FCC RF Test Report

APPLICANT	:	Quanzhou Tesunho Electronics Co., Ltd
EQUIPMENT	:	IP Trunking Radio
BRAND NAME	:	TESUNHO
MODEL NAME	:	TH-682pro
FCC ID	:	2AKS9TH682PRO
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System
TEST DATE(S)	:	May 23, 2024 ~ May 30, 2024

This product installed a RF module (Brand Name: Quectel, Model Name: FC30R, FCC ID: XMR2023FC30R) during the test, only Conducted Power, AC Conducted Emission and RSE test items are tested in this report, all the other test results are leveraged from module RF report.

We, Sporton International Inc. (Shenzhen), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Shenzhen), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia

ACCREDITED
Cert #5145.01

Sporton International Inc. (ShenZhen)

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People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR442609	Rev. 01	Initial issue of report	Jun. 06, 2024

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
-	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	1
-	-	99% Bandwidth	-	Report Only	1
3.1	15.247(b)	Power Output Measurement	≤ 30dBm	Pass	-
-	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass	1
-	15.247(d)	Conducted Band Edges	≤ 20dBc	Pass	1
		Conducted Spurious Emission		Pass	1
3.2	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 10.54 dB at 2483.51 MHz
3.3	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 3.58 dB at 0.610 MHz
3.4	15.203 & 15.247(b)	Antenna Requirement	15.203 & 15.247(b)	Pass	-
Remark 1: All test results were leveraged from module RF report which can refer to Report No "TCWA23120004801".					

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty"

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1 General Description

1.1 Applicant

Quanzhou Tesunho Electronics Co., Ltd
No.605 BLDG 1, 269 Tiyu Str. FZ, QZ, FJ

1.2 Manufacturer

Quanzhou Tesunho Electronics Co., Ltd
No.605 BLDG 1, 269 Tiyu Str. FZ, QZ, FJ

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	IP Trunking Radio
Brand Name	TESUNHO
Model Name	TH-682pro
FCC ID	2AKS9TH682PRO
IMEI Code	Conduction/Radiation: 863890053369005
HW Version	T12AV1.0-2125
SW Version	A110AG20000ZE10
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	2412 MHz ~ 2462 MHz
Maximum (Peak) Output Power to antenna	802.11b : 17.62 dBm (0.0578 W) 802.11g : 22.55 dBm (0.1799 W) 802.11n HT20 : 21.15 dBm (0.1303 W) 802.11n HT40 : 21.20 dBm (0.1318 W)
Antenna Type / Gain	PCB Antenna type with gain 3.5 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Location

Sporton International Inc. (ShenZhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	CO01-SZ TH01-SZ	CN1256	421272

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City, Guangdong Province 518103 People's Republic of China TEL: +86-755-86066985		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH03-SZ	CN1256	421272

1.7 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH03-SZ	AUDIX	E3	6.2009-8-24
2.	CO01-SZ	AUDIX	E3	6.120613b

1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 15 Subpart C §15.247
- FCC KDB 558074 D01 15.247 Meas Guidance v05r02
- ANSI C63.10-2013

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437	-	-

2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

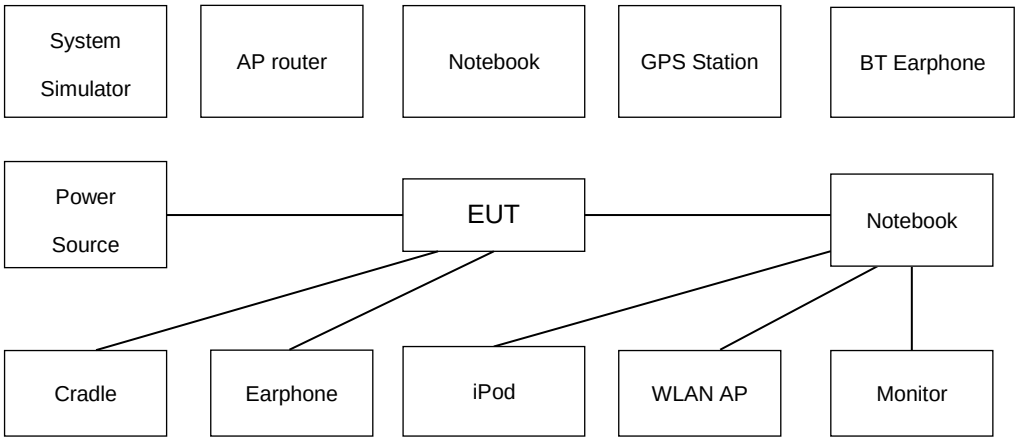
Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

Test Cases	
AC Conducted Emission	Mode 1 :WCDMA B5 Idle+ WLAN Link(2.4G)+ USB Cable (Charging from Adapter)+ Battery +Earphone Mode 2 LTE B2 Idle+ WLAN Link(2.4G)+ Charging from charger dock + Adapter+ Battery +Earphone

Remark:

1. The worst case of conducted emission is mode 2; only the test data of it was reported.
2. For Radiated Test Cases, the tests were performance with Adapter, Battery, Earphone, USB Cable and charging dock.

2.3 Connection Diagram of Test System



This example is connection diagram of EUT test configurations.

. For detail, please refer to test mode configuration and setup photographs for each test item.

2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
2.	WLAN AP	Dlink	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m
3.	Charging dock	N/A	N/A	N/A	N/A	N/A

2.5 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuous transmit.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

3 Test Result

3.1 Output Power Measurement

3.1.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna with directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

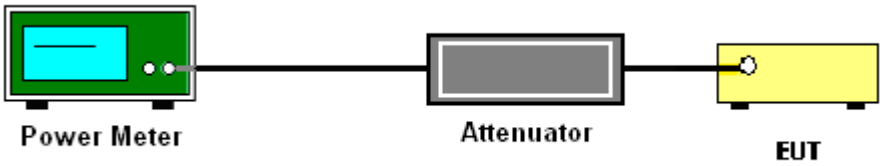
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows the Measurement Procedure of ANSI C63.10-2013 clause 11.9.1.3 PKPM1 Peak power meter or ANSI C63.10-2013 clause 11.9.2.3.1 Method AVGPM method.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of Peak Output Power

2.4GHz Band										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
					Ant 1	Ant 1	Ant 1	Ant 1	Ant 1	
11b	1Mbps	1	1	2412	16.30	30.00	3.50	19.80	36.00	Pass
11b	1Mbps	1	6	2437	16.85	30.00	3.50	20.35	36.00	Pass
11b	1Mbps	1	11	2462	17.62	30.00	3.50	21.12	36.00	Pass
11g	6Mbps	1	1	2412	22.20	30.00	3.50	25.70	36.00	Pass
11g	6Mbps	1	6	2437	21.86	30.00	3.50	25.36	36.00	Pass
11g	6Mbps	1	11	2462	22.55	30.00	3.50	26.05	36.00	Pass
HT20	MCS0	1	1	2412	20.95	30.00	3.50	24.45	36.00	Pass
HT20	MCS0	1	6	2437	20.78	30.00	3.50	24.28	36.00	Pass
HT20	MCS0	1	11	2462	21.15	30.00	3.50	24.65	36.00	Pass
HT40	MCS0	1	3	2422	20.85	30.00	3.50	24.35	36.00	Pass
HT40	MCS0	1	6	2437	21.12	30.00	3.50	24.62	36.00	Pass
HT40	MCS0	1	9	2452	21.20	30.00	3.50	24.70	36.00	Pass

3.1.6 Test Result of Average Output Power (Reporting Only)

2.4GHz Band											
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Setting
					Ant 1	Ant 1	Ant 1	Ant 1	Ant 1		Ant 1
11b	1Mbps	1	1	2412	13.36	30.00	3.50	16.86	36.00	Pass	43.00
11b	1Mbps	1	6	2437	13.61	30.00	3.50	17.11	36.00	Pass	43.00
11b	1Mbps	1	11	2462	14.94	30.00	3.50	18.44	36.00	Pass	43.00
11g	6Mbps	1	1	2412	12.31	30.00	3.50	15.81	36.00	Pass	52.00
11g	6Mbps	1	6	2437	12.08	30.00	3.50	15.58	36.00	Pass	52.00
11g	6Mbps	1	11	2462	14.12	30.00	3.50	17.62	36.00	Pass	53.00
HT20	MCS0	1	1	2412	10.04	30.00	3.50	13.54	36.00	Pass	47.00
HT20	MCS0	1	6	2437	9.94	30.00	3.50	13.44	36.00	Pass	47.00
HT20	MCS0	1	11	2462	11.38	30.00	3.50	14.88	36.00	Pass	47.00
HT40	MCS0	1	3	2422	9.28	30.00	3.50	12.78	36.00	Pass	47.00
HT40	MCS0	1	6	2437	9.40	30.00	3.50	12.90	36.00	Pass	47.00
HT40	MCS0	1	9	2452	9.83	30.00	3.50	13.33	36.00	Pass	47.00

3.2 Radiated Band Edges and Spurious Emission Measurement

3.2.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

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
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.2.2 Measuring Instruments

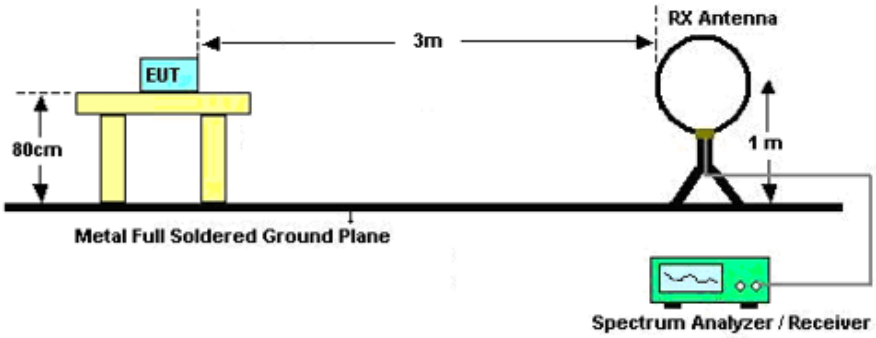
The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

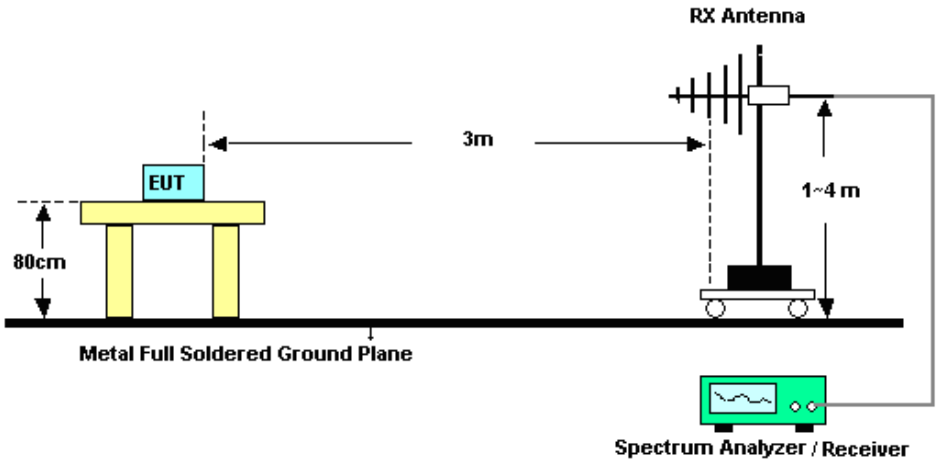
1. The testing follows ANSI C63.10-2013 clause 11.11 & 11.12
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively 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. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than peak limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
8. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.2.4 Test Setup

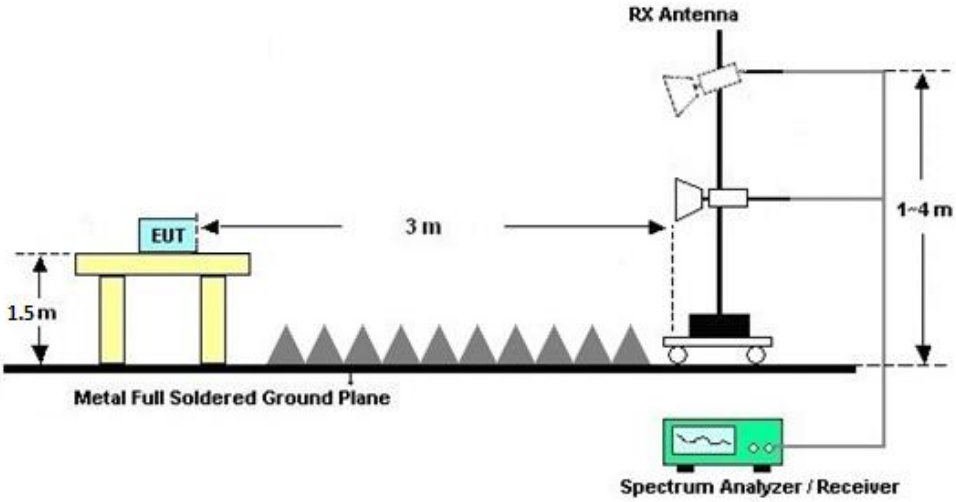
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.2.5 Test Results of Radiated Spurious Emissions (9kHz ~ 30MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B.

3.2.7 Duty Cycle

Please refer to Appendix C.

3.2.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic or 40GHz, whichever is lower)

Please refer to Appendix B.

3.3 AC Conducted Emission Measurement

3.3.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

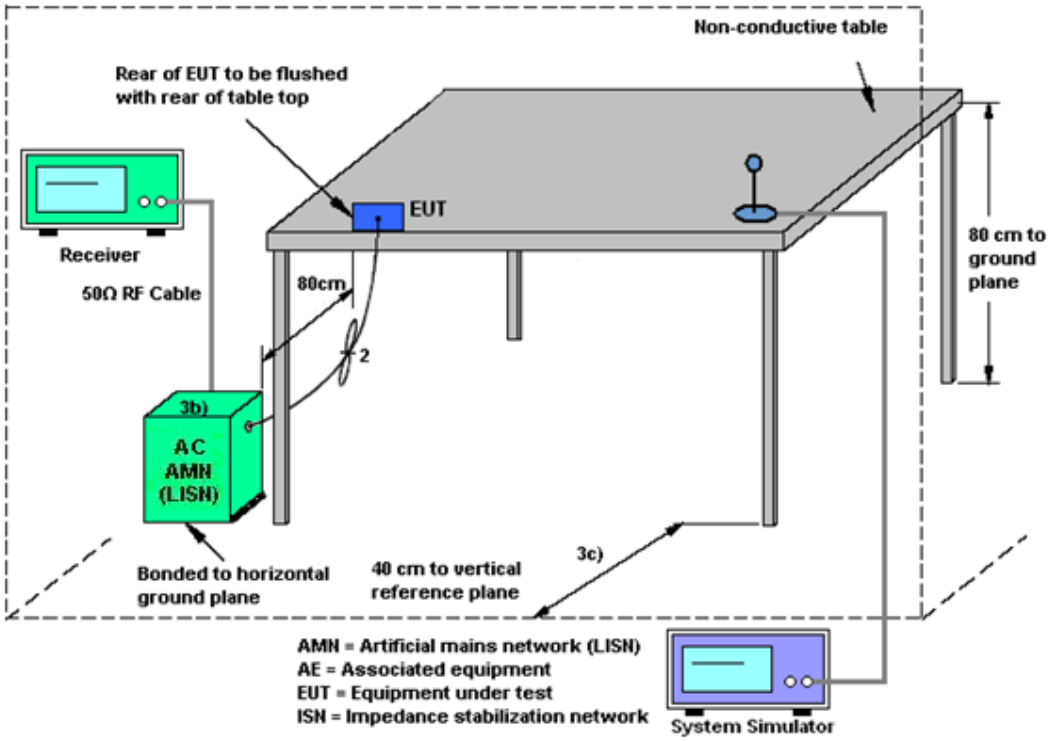
3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

3.3.4 Test Setup



3.3.5 Test Result of AC Conducted Emission

Please refer to Appendix A.

3.4 Antenna Requirements

3.4.1 Standard Applicable

If directional gain of transmitting Antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached Antenna or of an Antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

3.4.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.4.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 09, 2024	May 30, 2024	Apr. 08, 2025	Conducted (TH01-SZ)
Pulse Power Senor	Anritsu	MA2411B	1339473	30MHz~40GHz	Dec. 29, 2023	May 30, 2024	Dec. 28, 2024	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Aug. 21, 2023	May 30, 2024	Aug. 20, 2024	Conducted (TH01-SZ)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 09, 2024	May 23, 2024~ May 29, 2024	Apr. 08, 2025	Radiation (03CH03-SZ)
EXA Spectrum Anaiyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 09, 2024	May 23, 2024~ May 29, 2024	Apr. 08, 2025	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jul. 28, 2022	May 23, 2024~ May 29, 2024	Jul. 27, 2024	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	Aug. 20, 2023	May 23, 2024~ May 29, 2024	Aug. 19, 2025	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Apr. 09, 2024	May 23, 2024~ May 29, 2024	Apr. 08, 2025	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 07, 2023	May 23, 2024~ May 29, 2024	Jul. 06, 2024	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 09, 2024	May 23, 2024~ May 29, 2024	Apr. 08, 2025	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102211	0.01Hz ~3000MHz	Oct. 18, 2023	May 23, 2024~ May 29, 2024	Oct. 17, 2024	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1943528	1GHz~18GHz	Oct. 18, 2023	May 23, 2024~ May 29, 2024	Oct. 17, 2024	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Dec. 27, 2023	May 23, 2024~ May 29, 2024	Dec. 26, 2024	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010002729	N/A	Oct. 18, 2023	May 23, 2024~ May 29, 2024	Oct. 17, 2024	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	May 23, 2024~ May 29, 2024	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	May 23, 2024~ May 29, 2024	NCR	Radiation (03CH03-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Jul. 06, 2023	May 28, 2024	Jul. 05, 2024	Conduction (CO01-SZ)
AC LISN	R&S	ENV216	100063	9kHz~30MHz	Aug. 21, 2023	May 28, 2024	Aug. 20, 2024	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Oct. 16, 2023	May 28, 2024	Oct. 15, 2024	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 07, 2023	May 28, 2024	Jul. 06, 2024	Conduction (CO01-SZ)

NCR: No Calibration Required

5 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Measurement

Test Item	Uncertainty
Conducted Power	**±1.34 dB**

Uncertainty of AC Conducted Emission Measurement (0.15 MHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.5 dB**

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.0 dB**

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.9 dB**

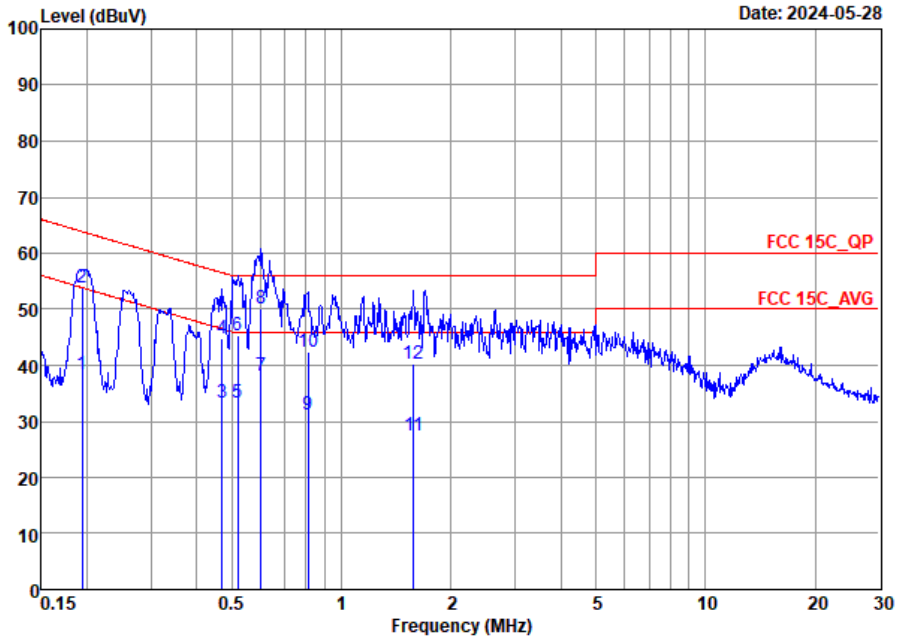
Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.0 dB**

---------- THE END ----------

Appendix A. AC Conducted Emission Test Results

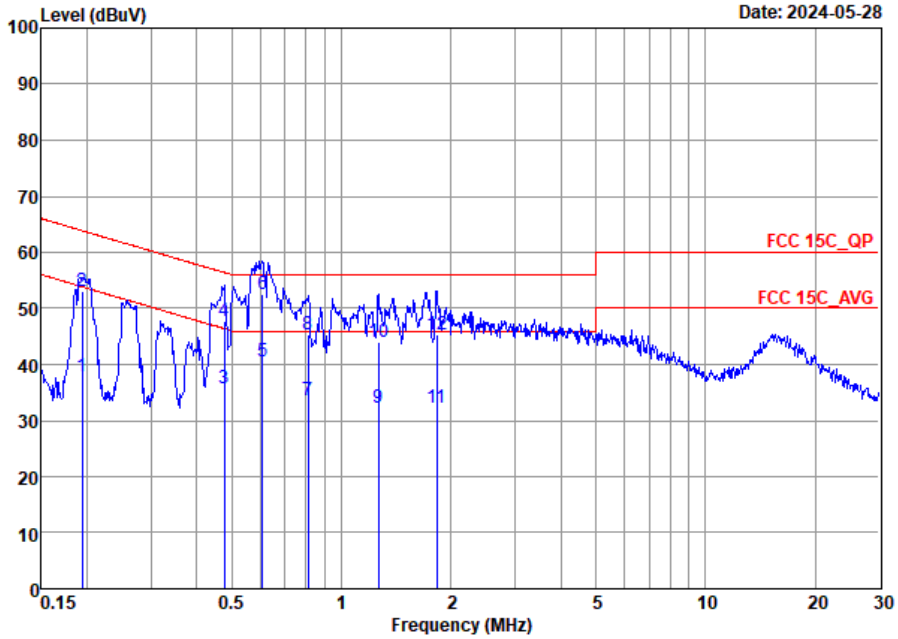
Test Engineer :	Yuki Tang	**Temperature :**	22~24℃
		Relative Humidity :	44~50%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-SZ
Condition: FCC 15C_QP AC LISN 100063_L LINE

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.19	38.30	-15.54	53.84	17.70	10.45	10.15	Average
2		0.19	54.00	-9.84	63.84	33.40	10.45	10.15	QP
3		0.47	33.27	-13.22	46.49	12.80	10.31	10.16	Average
4		0.47	44.77	-11.72	56.49	24.30	10.31	10.16	QP
5		0.52	33.20	-12.80	46.00	12.80	10.24	10.16	Average
6		0.52	45.30	-10.70	56.00	24.90	10.24	10.16	QP
7		0.60	38.12	-7.88	46.00	17.80	10.16	10.16	Average
8	*	0.60	50.02	-5.98	56.00	29.70	10.16	10.16	QP
9		0.81	31.12	-14.88	46.00	10.70	10.26	10.16	Average
10		0.81	42.52	-13.48	56.00	22.10	10.26	10.16	QP
11		1.58	27.38	-18.62	46.00	6.49	10.68	10.21	Average
12		1.58	40.28	-15.72	56.00	19.39	10.68	10.21	QP

Test Engineer :	Yuki Tang	**Temperature :**	22~24℃
		Relative Humidity :	44~50%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-SZ
Condition: FCC 15C QP AC LISN 100063 N NEUTRAL

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.19	37.96	-15.88	53.84	17.50	10.31	10.15	Average
2		0.19	52.96	-10.88	63.84	32.50	10.31	10.15	QP
3		0.48	35.64	-10.77	46.41	15.39	10.09	10.16	Average
4		0.48	47.84	-8.57	56.41	27.59	10.09	10.16	QP
5		0.61	40.62	-5.38	46.00	20.30	10.16	10.16	Average
6	*	0.61	52.42	-3.58	56.00	32.10	10.16	10.16	QP
7		0.81	33.70	-12.30	46.00	13.30	10.24	10.16	Average
8		0.81	45.20	-10.80	56.00	24.80	10.24	10.16	QP
9		1.26	32.14	-13.86	46.00	11.71	10.25	10.18	Average
10		1.26	43.94	-12.06	56.00	23.51	10.25	10.18	QP
11		1.83	32.29	-13.71	46.00	11.50	10.57	10.22	Average
12		1.83	45.29	-10.71	56.00	24.50	10.57	10.22	QP

Note:

1. Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
2. Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)

Appendix B. Radiated Spurious Emission Test Data

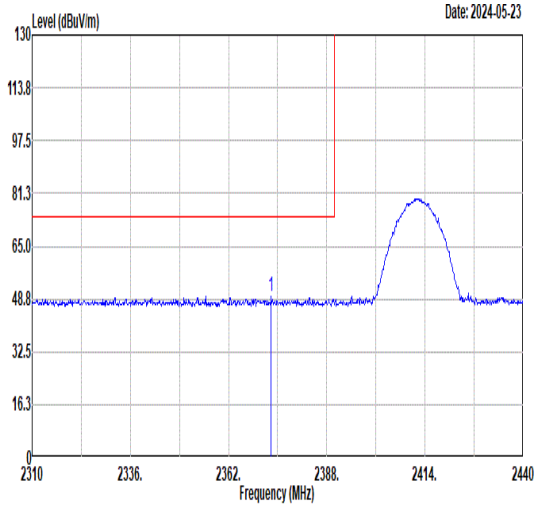
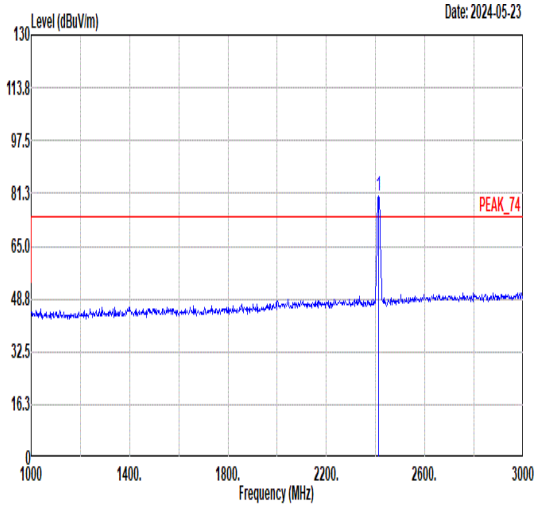
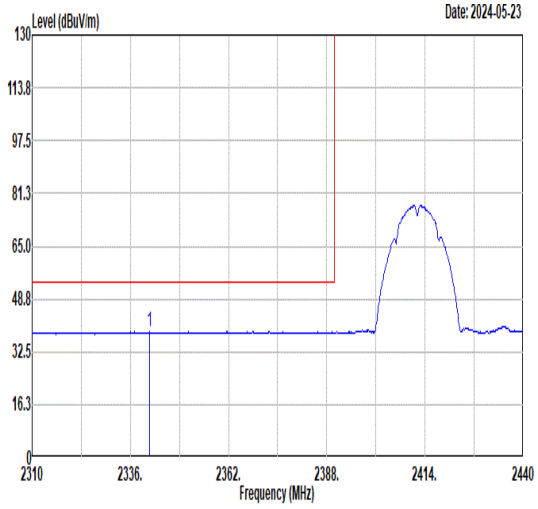
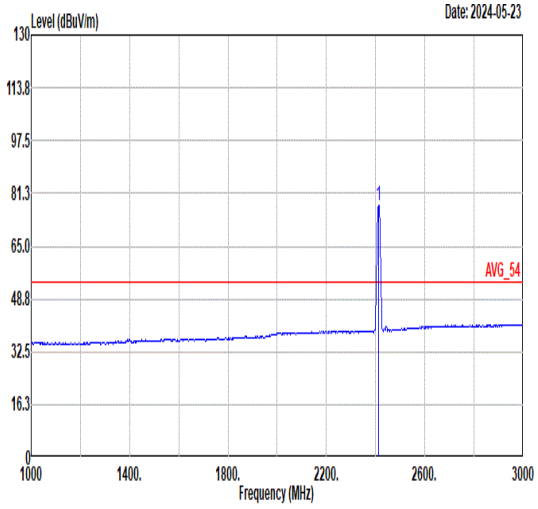
Test Engineer :	Kuang Jia	Relative Humidity :	50%
		Temperature :	20~22℃

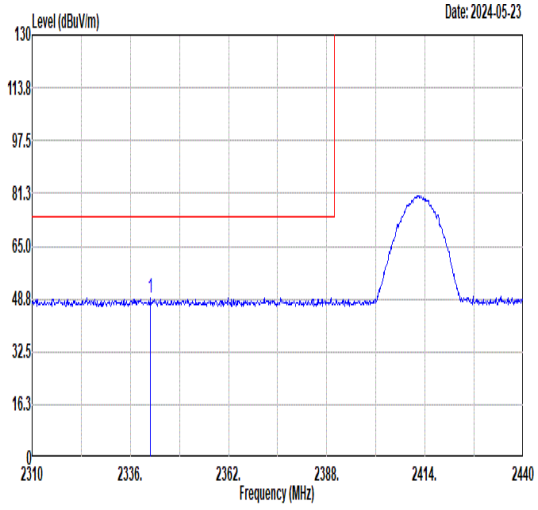
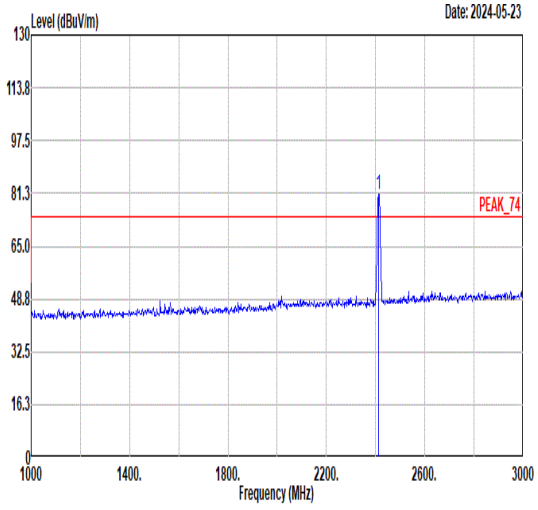
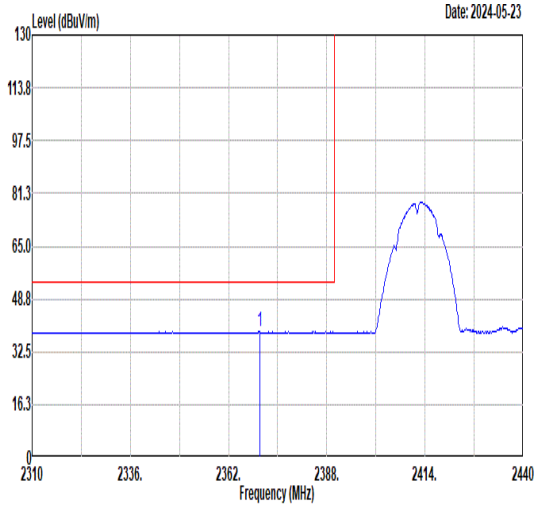
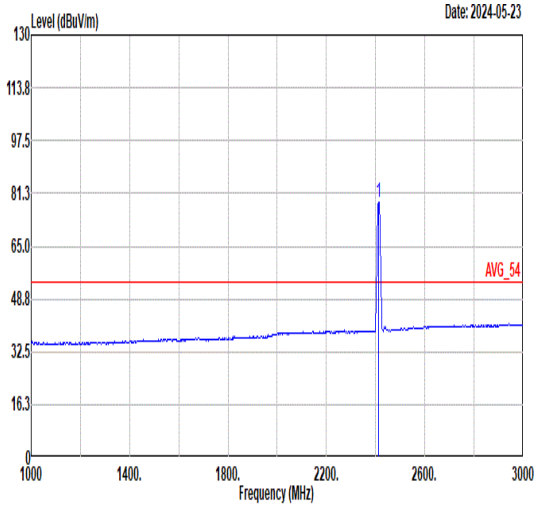
Radiated Spurious Emission Test Modes

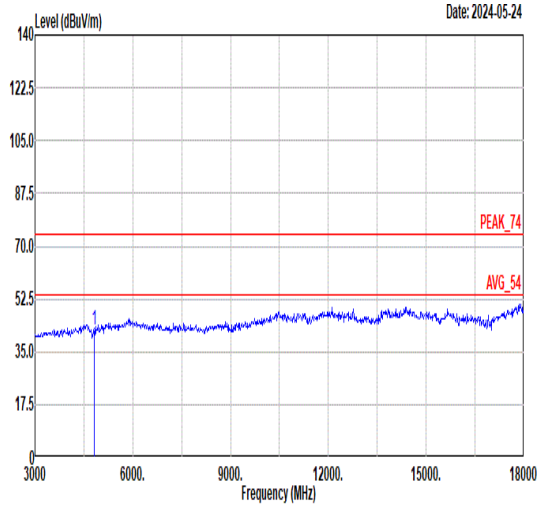
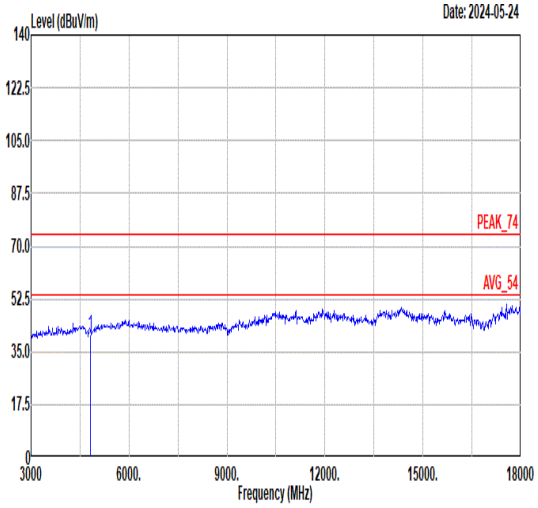
Mode	Band (MHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 1	2400-2483.5	1	802.11b	01	2412	1Mbps	-	-
Mode 2	2400-2483.5	1	802.11b	06	2437	1Mbps	-	-
Mode 3	2400-2483.5	1	802.11b	11	2462	1Mbps	-	-
Mode 4	2400-2483.5	1	802.11g	01	2412	6Mbps	-	-
Mode 5	2400-2483.5	1	802.11g	06	2437	6Mbps	-	-
Mode 6	2400-2483.5	1	802.11g	11	2462	6Mbps	-	-
Mode 7	2400-2483.5	1	802.11n HT20	01	2412	MCS0	-	-
Mode 8	2400-2483.5	1	802.11n HT20	06	2437	MCS0	-	-
Mode 9	2400-2483.5	1	802.11n HT20	11	2462	MCS0	-	-
Mode 10	2400-2483.5	1	802.11n HT40	03	2422	MCS0	-	-
Mode 11	2400-2483.5	1	802.11n HT40	09	2452	MCS0	-	-
Mode 12	2400-2483.5	1	802.11g	11	2462	MCS0	-	LF

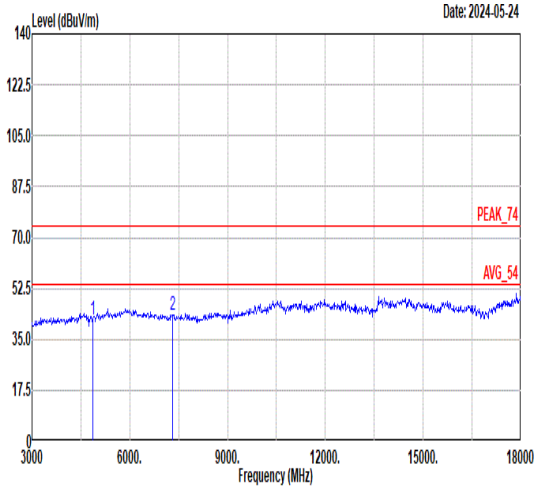
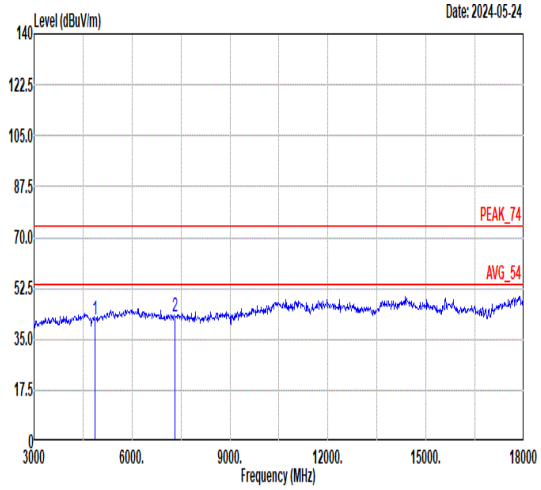
Summary of each worse mode

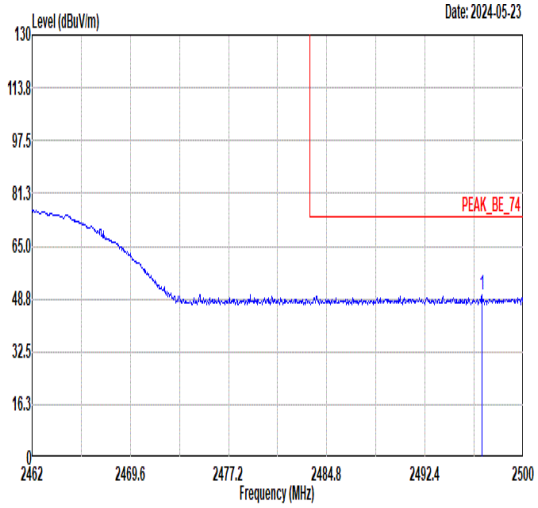
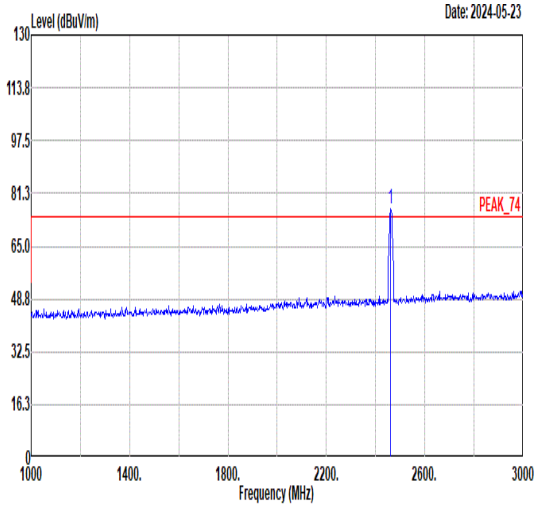
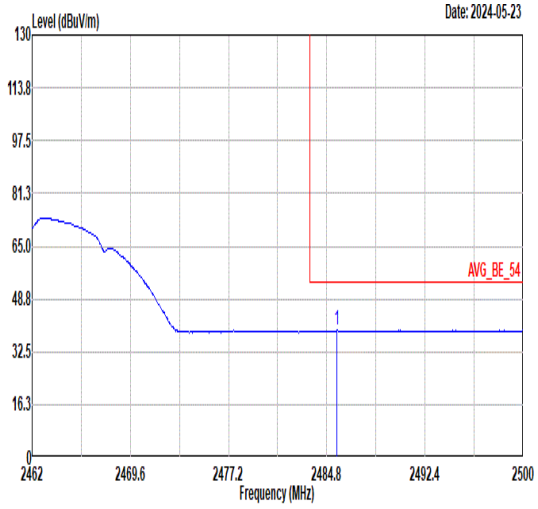
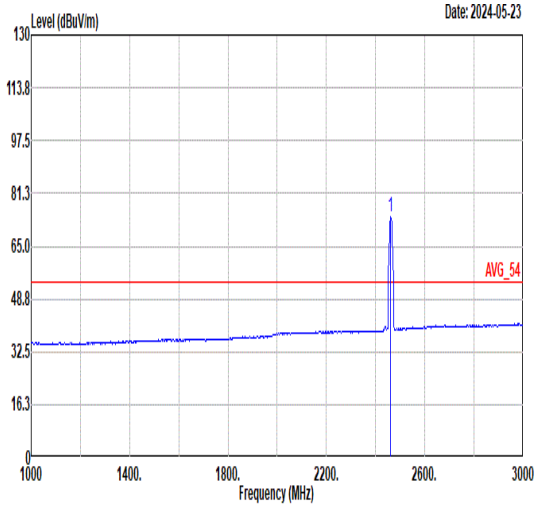
Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	Remark
1	802.11b	01	2341.07	38.82	54.00	-15.18	H	AVERAGE	Pass	Band Edge
1	802.11b	01	4824.00	42.31	74.00	-31.69	H	Peak	Pass	Harmonic
2	802.11b	06	-	-	-	-	-	-	-	Band Edge
2	802.11b	06	7311.00	43.16	74.00	-30.84	H	Peak	Pass	Harmonic
3	802.11b	11	2492.02	39.24	54.00	-14.76	V	AVERAGE	Pass	Band Edge
3	802.11b	11	7386.00	43.41	74.00	-30.59	V	Peak	Pass	Harmonic
4	802.11g	01	2336.13	39.00	54.00	-15.00	H	AVERAGE	Pass	Band Edge
4	802.11g	01	4824.00	41.25	74.00	-32.75	V	Peak	Pass	Harmonic
5	802.11g	06	2498.74	39.22	54.00	-14.78	H	AVERAGE	Pass	Band Edge
5	802.11g	06	7311.00	43.16	74.00	-30.84	H	Peak	Pass	Harmonic
6	802.11g	11	2483.51	43.46	54.00	-10.54	V	AVERAGE	Pass	Band Edge
6	802.11g	11	7386.00	43.33	74.00	-30.67	V	Peak	Pass	Harmonic
7	802.11n HT20	01	2370.32	39.12	54.00	-14.88	V	AVERAGE	Pass	Band Edge
7	802.11n HT20	01	4824.00	41.75	74.00	-32.25	V	Peak	Pass	Harmonic
8	802.11n HT20	06	-	-	-	-	-	-	-	Band Edge
8	802.11n HT20	06	7311.00	42.83	74.00	-31.17	V	Peak	Pass	Harmonic
9	802.11n HT20	11	2483.62	40.02	54.00	-13.98	V	AVERAGE	Pass	Band Edge
9	802.11n HT20	11	7386.00	42.76	74.00	-31.24	H	Peak	Pass	Harmonic
10	802.11n HT40	03	2497.04	40.45	54.00	-13.55	V	AVERAGE	Pass	Band Edge
10	802.11n HT40	03	-	-	-	-	-	-	-	Harmonic
11	802.11n HT40	09	2498.42	40.63	54.00	-13.37	V	AVERAGE	Pass	Band Edge
11	802.11n HT40	09	-	-	-	-	-	-	-	Harmonic
12	802.11g	11	959.26	32.42	46.00	-13.58	H	Peak	Pass	LF

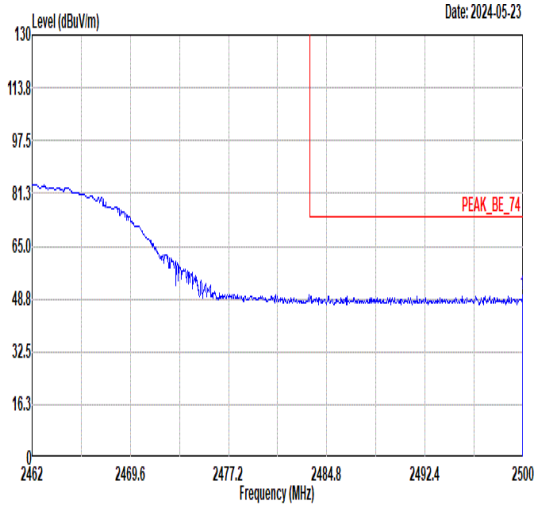
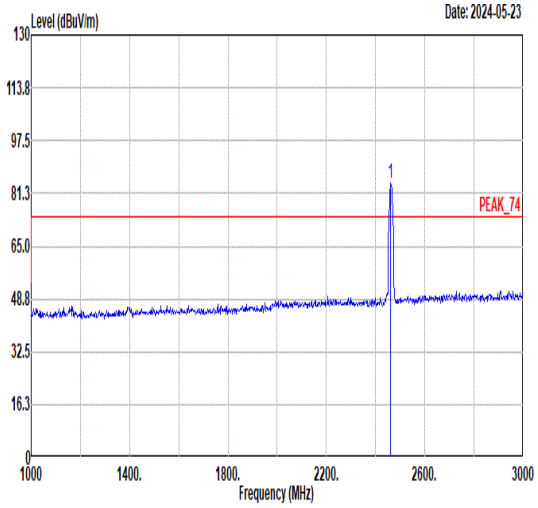
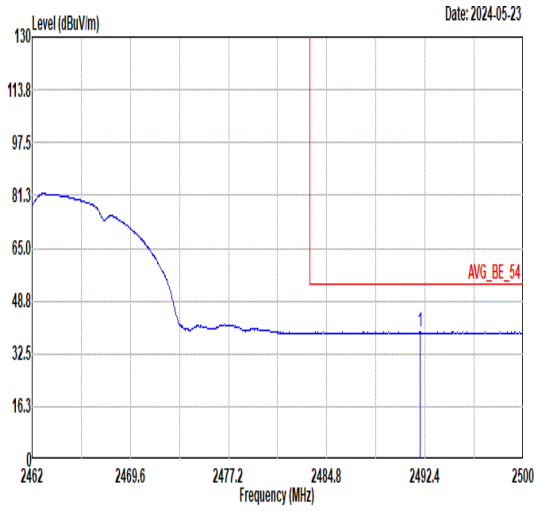
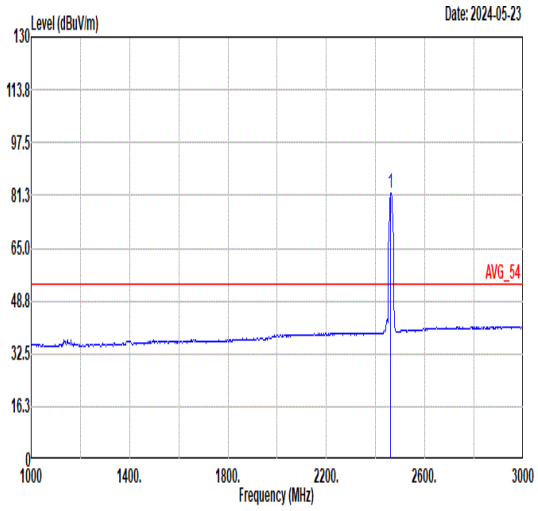
Mode	1	
	Band Edge	
	2400-2483.5_802.11b_CH01_2412MHz	
ANT	1	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2373.31 49.70 74.00 -24.30 47.86 30.64 4.78 33.58 356 111 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2412.00 80.36 ------ ------ 78.45 30.64 4.82 33.55 356 111 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2341.07 38.82 54.00 -15.18 36.97 30.70 4.75 33.60 356 111 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2412.00 77.52 ------ ------ 75.61 30.64 4.82 33.55 356 111 AVERAGE

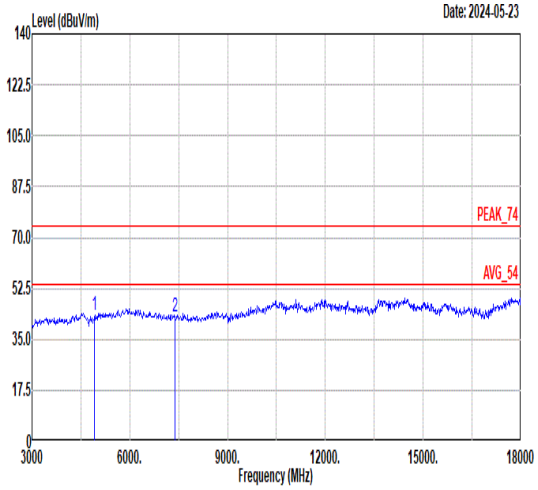
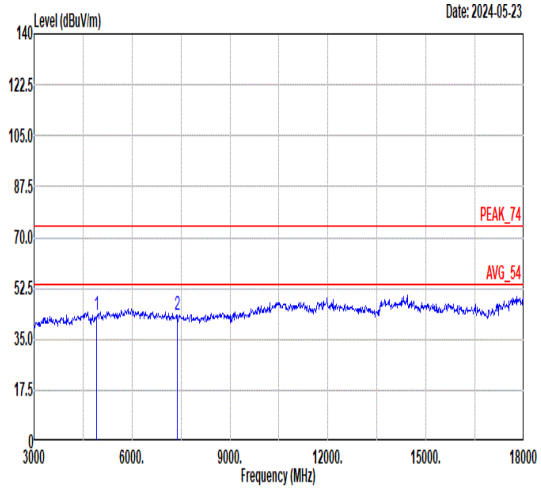
Mode	1	
	Band Edge	
	2400-2483.5_802.11b_CH01_2412MHz	
ANT	1	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2341.33 49.05 74.00 -24.95 47.20 30.70 4.75 33.60 371 70 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2412.00 80.96 ------ ------ 79.05 30.64 4.82 33.55 371 70 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2370.19 38.64 54.00 -15.36 36.79 30.65 4.78 33.58 371 70 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2412.00 78.53 ------ ------ 76.62 30.64 4.82 33.55 371 70 AVERAGE

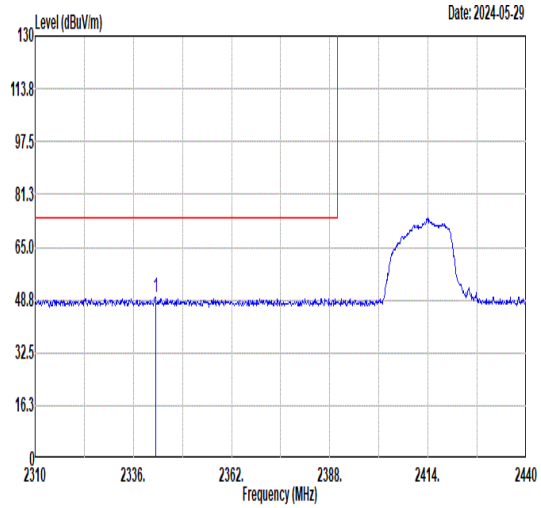
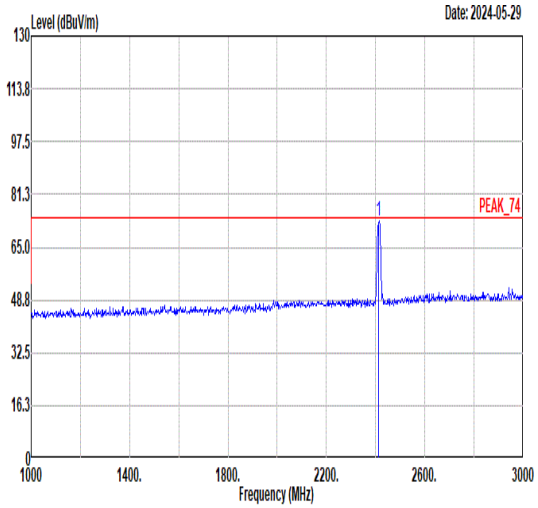
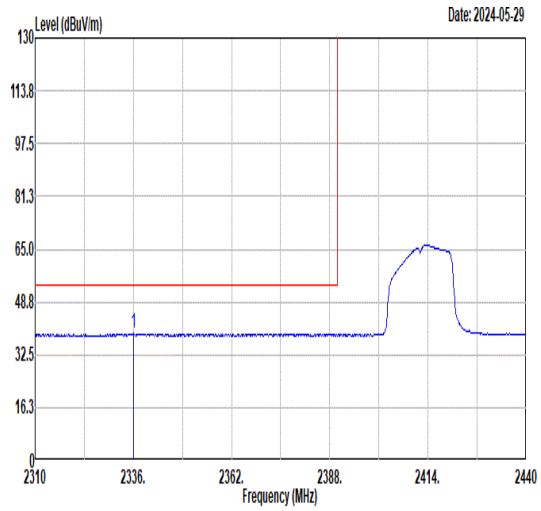
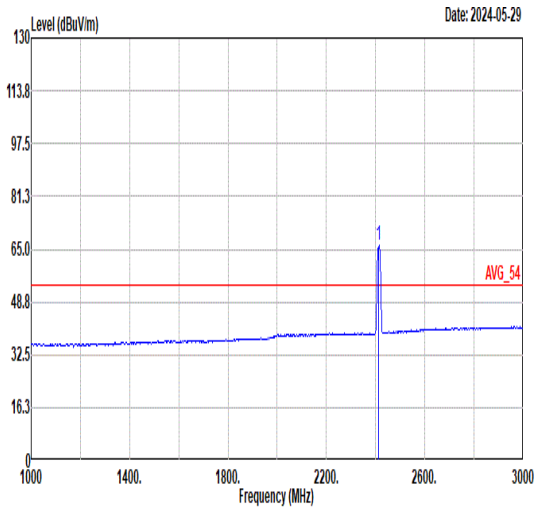
Mode	1	
	Harmonic	
	2400-2483.5_802.11b_CH01_2412MHz	
ANT	1	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4824.00 42.31 74.00 -31.69 57.78 34.26 7.75 57.48 -- -- Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4824.00 40.47 74.00 -33.53 55.94 34.26 7.75 57.48 -- -- Peak

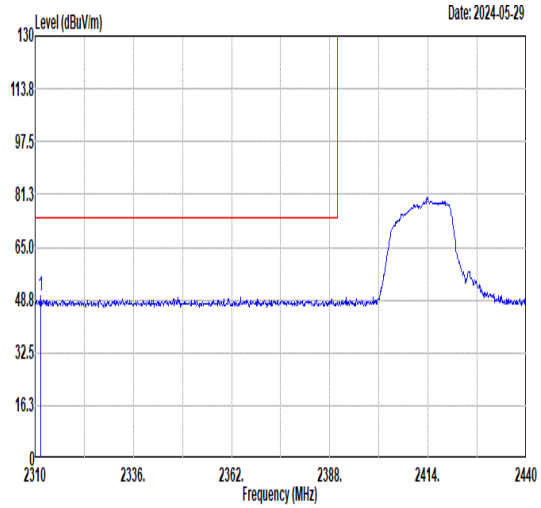
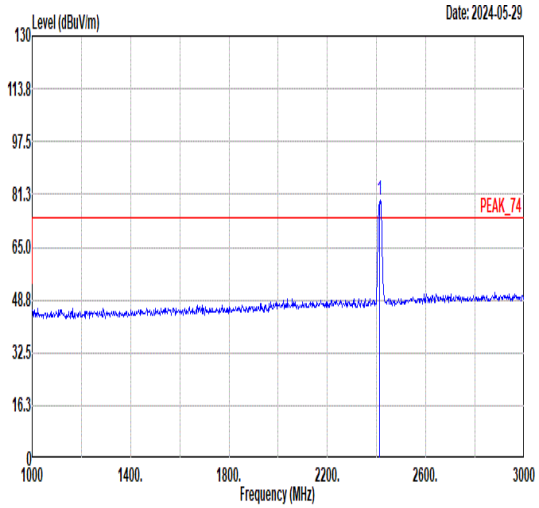
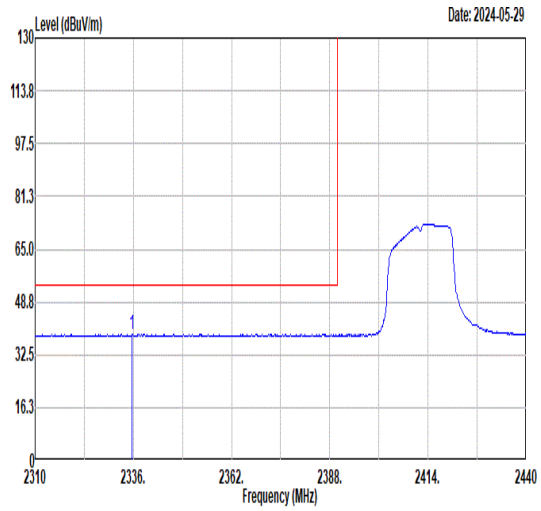
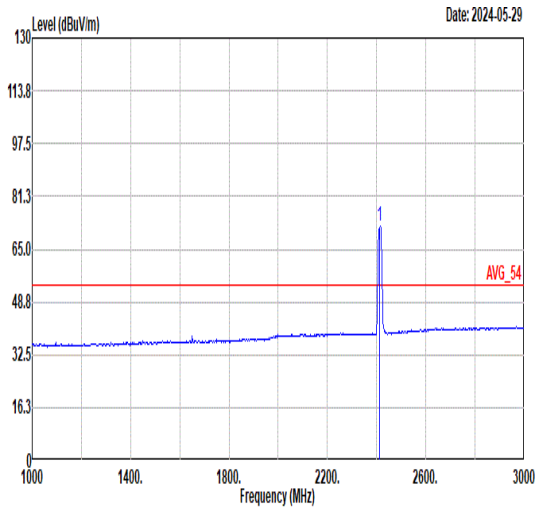
Mode	2	
	Harmonic	
	2400-2483.5_802.11b_CH06_2437MHz	
ANT	1	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4874.00 41.51 74.00 -32.49 56.93 34.33 7.77 57.52 -- -- Peak 2 7311.00 43.16 74.00 -30.84 57.71 35.44 8.93 58.92 -- -- Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4874.00 41.96 74.00 -32.04 57.38 34.33 7.77 57.52 -- -- Peak 2 7311.00 42.87 74.00 -31.13 57.42 35.44 8.93 58.92 -- -- Peak

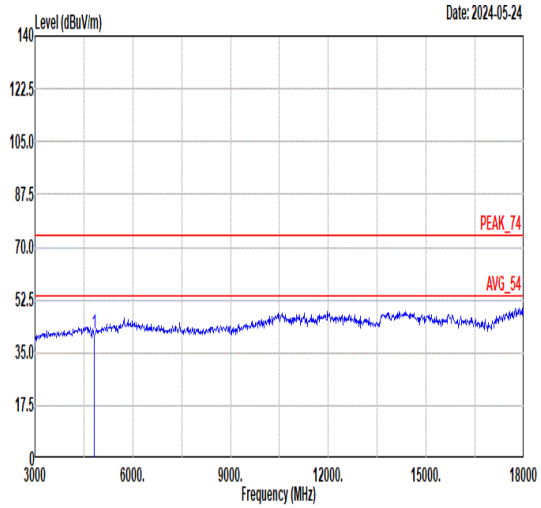
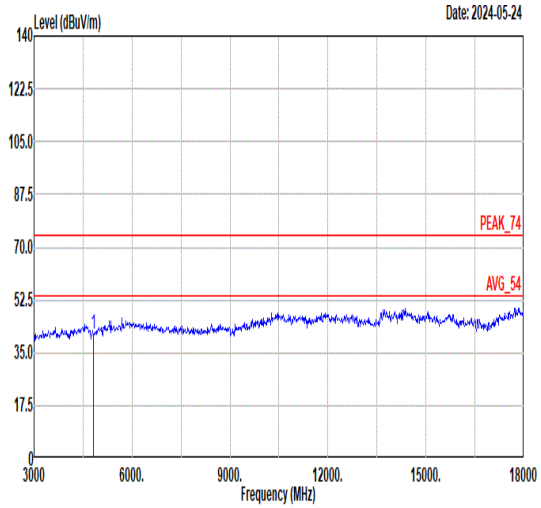
Mode	3	
	Band Edge	
	2400-2483.5_802.11b_CH11_2462MHz	
ANT	1	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2496.81 49.88 74.00 -24.12 47.54 30.90 4.94 33.50 200 186 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2462.00 76.63 ------ ------ 74.50 30.77 4.89 33.53 200 186 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2485.60 39.13 54.00 -14.87 36.86 30.86 4.92 33.51 200 186 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2462.00 73.88 ------ ------ 71.75 30.77 4.89 33.53 200 186 AVERAGE

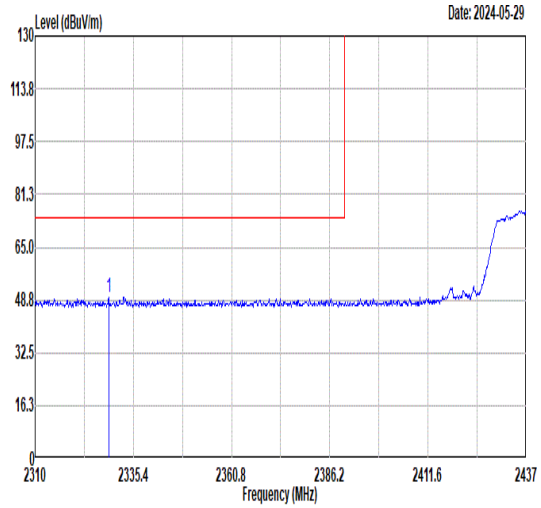
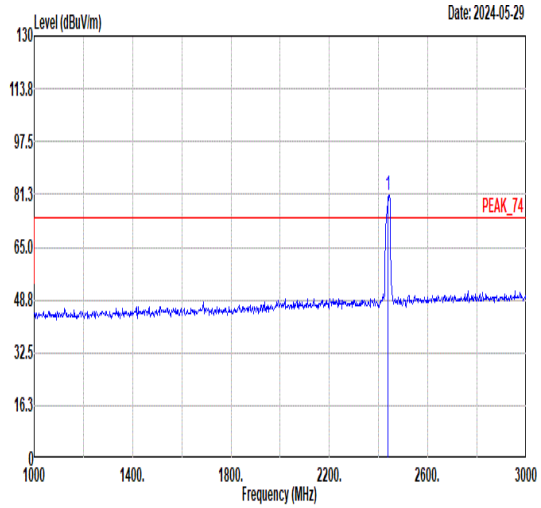
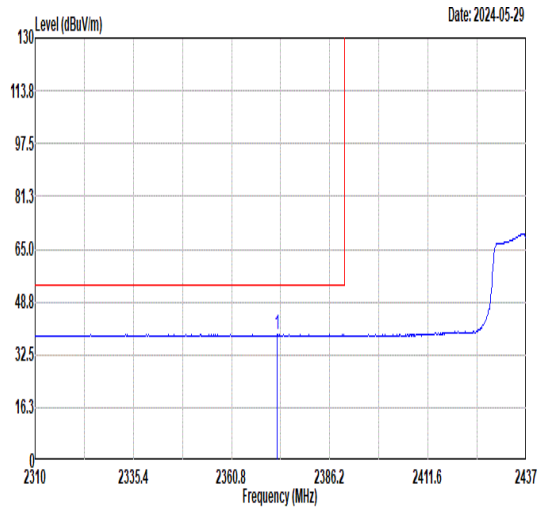
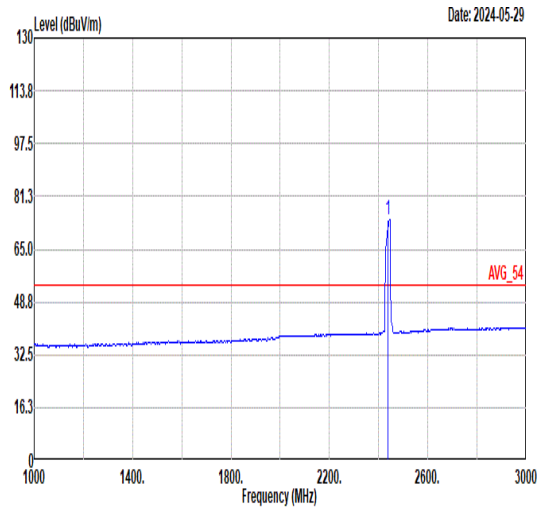
Mode	3	
	Band Edge	
	2400-2483.5_802.11b_CH11_2462MHz	
ANT	1	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2499.96 49.90 74.00 -24.10 47.54 30.92 4.94 33.50 100 204 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2462.00 84.58 ------ ------ 82.45 30.77 4.89 33.53 100 204 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2492.02 39.24 54.00 -14.76 36.94 30.88 4.93 33.51 100 204 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2462.00 81.79 ------ ------ 79.65 30.77 4.89 33.52 100 204 AVERAGE

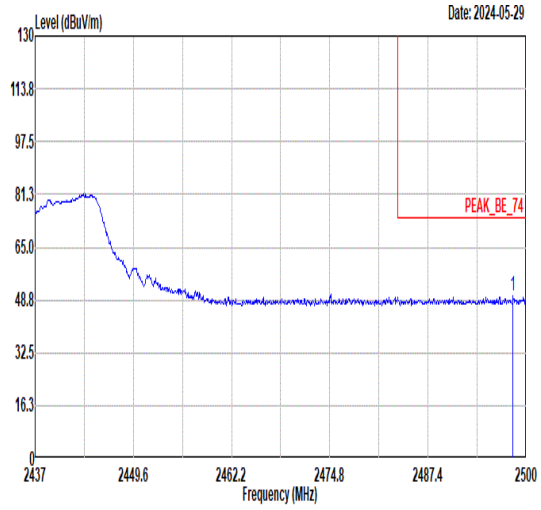
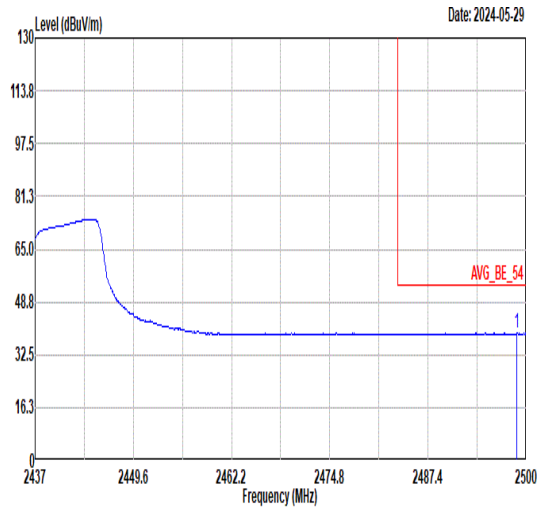
Mode	3	
	Harmonic	
	2400-2483.5_802.11b_CH11_2462MHz	
ANT	1	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4924.00 43.33 74.00 -30.67 58.69 34.40 7.79 57.55 -- -- Peak 2 7386.00 43.03 74.00 -30.97 57.39 35.42 9.17 58.95 -- -- Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4924.00 43.14 74.00 -30.86 58.50 34.40 7.79 57.55 -- -- Peak 2 7386.00 43.41 74.00 -30.59 57.77 35.42 9.17 58.95 -- -- Peak

Mode	4	
	Band Edge	
	2400-2483.5_802.11g_CH01_2412MHz	
ANT	3+5	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark 1 2341.85 49.62 74.00 -24.38 47.77 30.70 4.75 33.60 300 240 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark 1 2412.00 73.12 ------ ------ 71.21 30.64 4.82 33.55 300 240 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark 1 2336.13 39.00 54.00 -15.00 37.15 30.71 4.74 33.60 300 240 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark 1 2412.00 66.07 ------ ------ 64.16 30.64 4.82 33.55 300 240 AVERAGE

Mode	4	
	Band Edge	
	2400-2483.5_802.11g_CH01_2412MHz	
ANT	3+5	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2311.56 50.08 74.00 -23.92 48.21 30.76 4.72 33.61 221 360 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2412.00 79.66 ------ ------ 77.75 30.64 4.82 33.55 221 360 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2335.61 38.75 54.00 -15.25 36.90 30.71 4.74 33.60 221 360 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2412.00 72.02 ------ ------ 70.11 30.64 4.82 33.55 221 360 AVERAGE

Mode	4	
	Harmonic	
	2400-2483.5_802.11g_CH01_2412MHz	
ANT	1	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4824.00 41.16 74.00 -32.84 56.63 34.26 7.75 57.48 -- -- Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4824.00 41.25 74.00 -32.75 56.72 34.26 7.75 57.48 -- -- Peak

Mode	5	
	Band Edge - L	
	2400-2483.5_802.11g_CH06_2437MHz	
ANT	3+5	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2329.05 49.47 74.00 -24.53 47.61 30.73 4.73 33.60 100 54 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2437.00 80.97 ------ ------ 78.94 30.70 4.87 33.54 100 54 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2372.61 38.83 54.00 -15.17 36.99 30.64 4.78 33.58 100 54 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2437.00 74.24 ------ ------ 72.21 30.70 4.87 33.54 100 54 AVERAGE

Mode	5	
	Band Edge - R	
	2400-2483.5_802.11g_CH06_2437MHz	
ANT	3+5	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2498.30 49.91 74.00 -24.09 47.56 30.91 4.94 33.50 100 54 PEAK	Blank
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2498.74 39.22 54.00 -14.78 36.86 30.92 4.94 33.50 100 54 AVERAGE	Blank

Mode	5	
	Band Edge - L	
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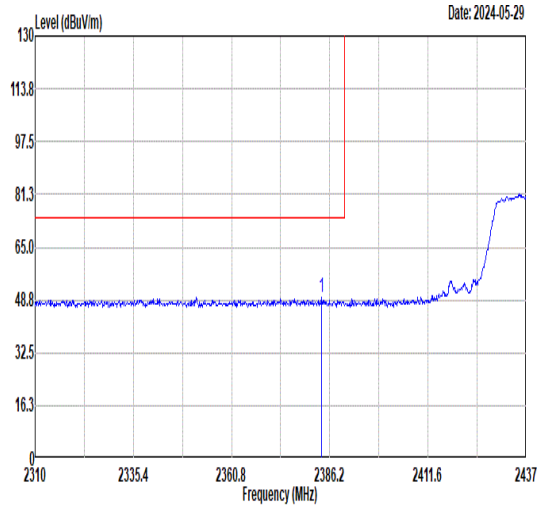
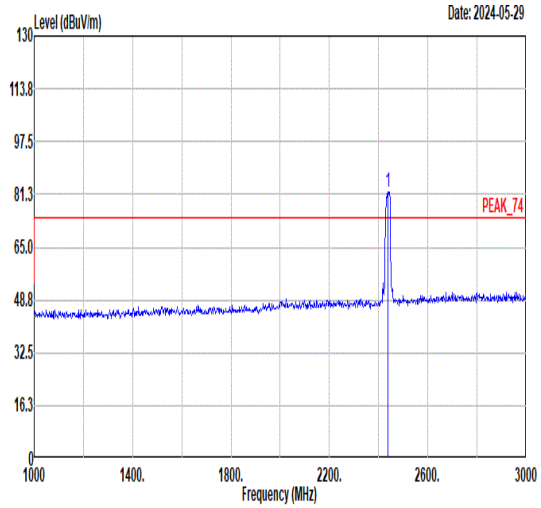
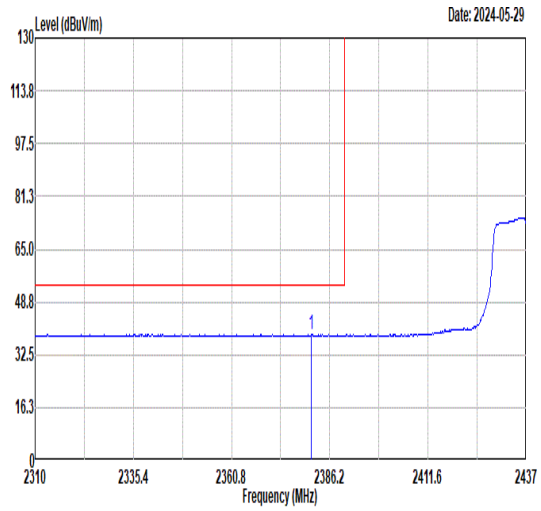
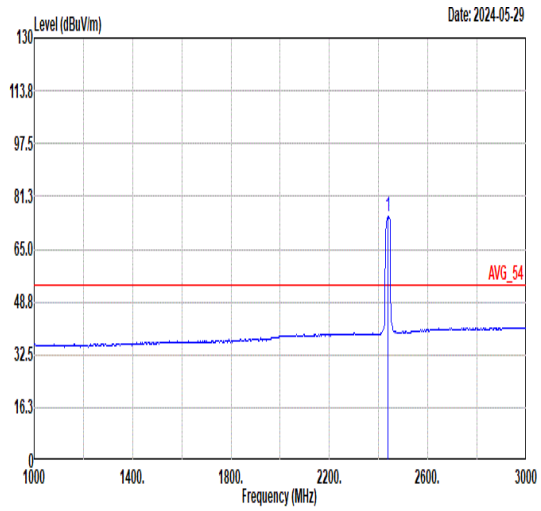
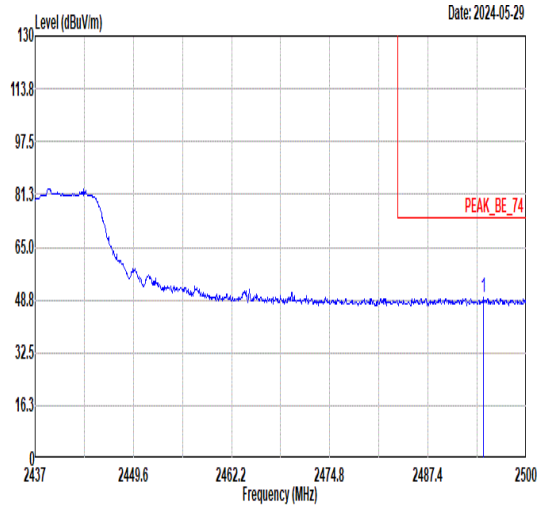
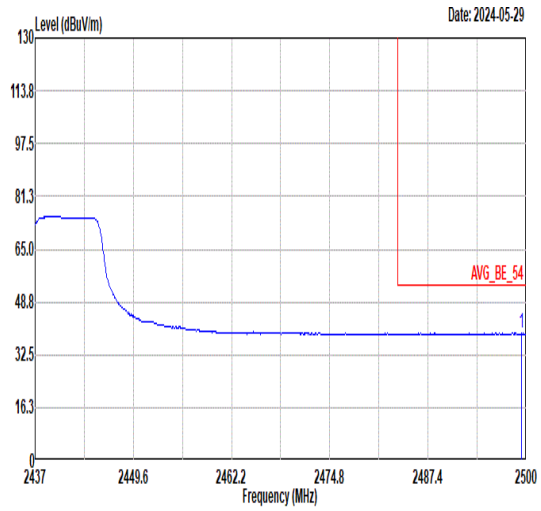
ANT	3+5	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2384.04 49.58 74.00 -24.42 47.74 30.62 4.79 33.57 220 358 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2437.00 81.86 ------ ------ 79.83 30.70 4.87 33.54 220 358 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2381.50 38.76 54.00 -15.24 36.92 30.62 4.79 33.57 220 358 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2437.00 74.91 ------ ------ 72.90 30.69 4.86 33.54 220 358 AVERAGE

Mode	5	
	Band Edge - R	
	2400-2483.5_802.11g_CH06_2437MHz	
ANT	3+5	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2494.52 49.47 74.00 -24.53 47.15 30.89 4.94 33.51 220 358 PEAK	Blank
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2499.37 39.19 54.00 -14.81 36.83 30.92 4.94 33.50 220 358 AVERAGE	Blank

Mode	5	
	Harmonic	
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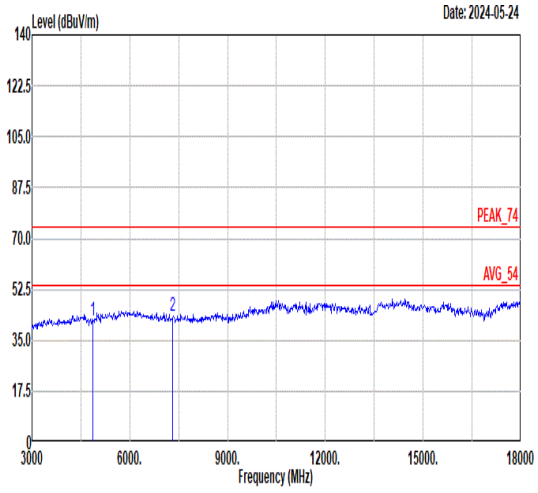
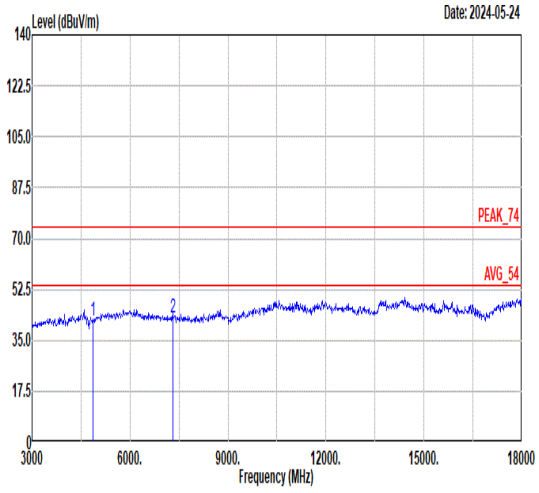
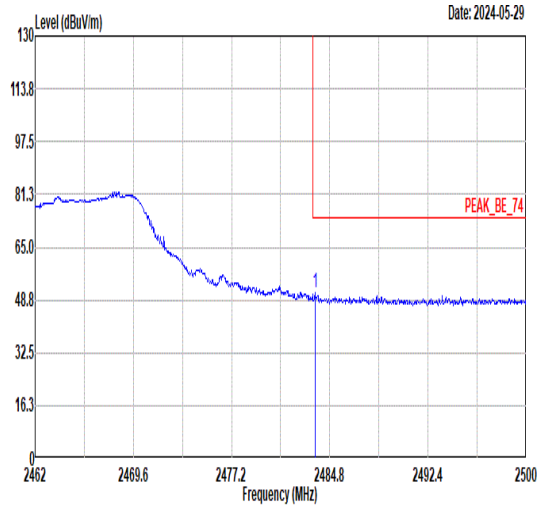
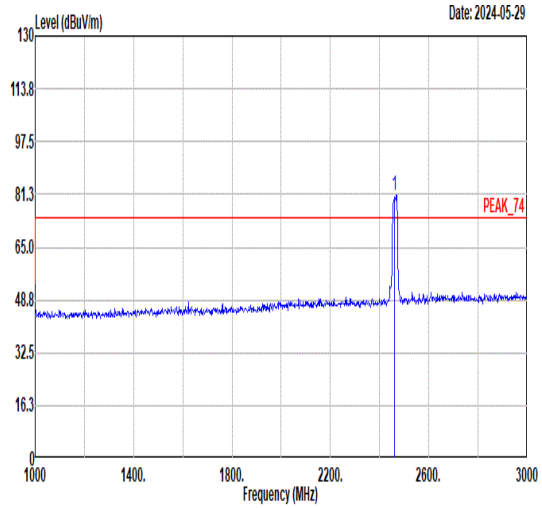
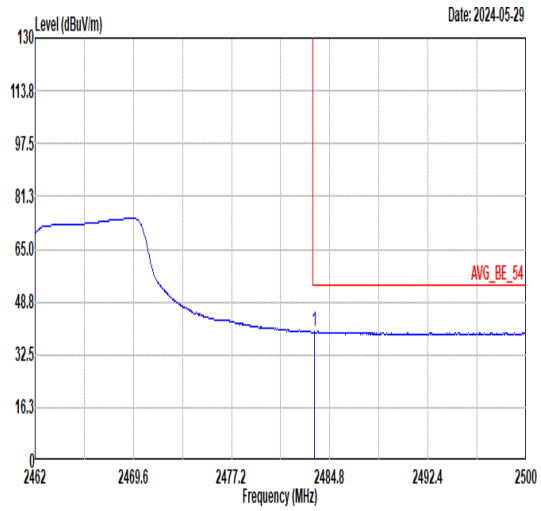
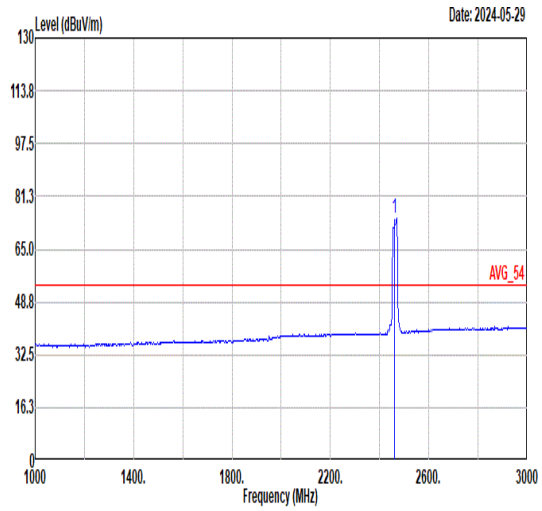
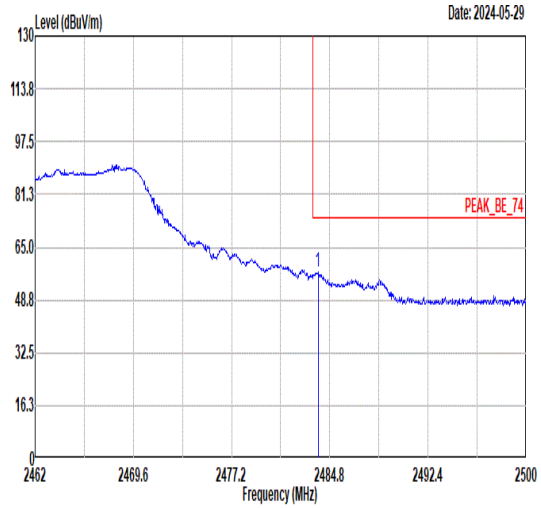
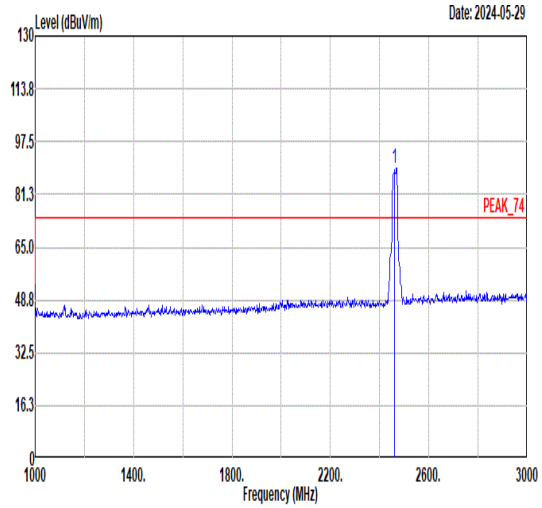
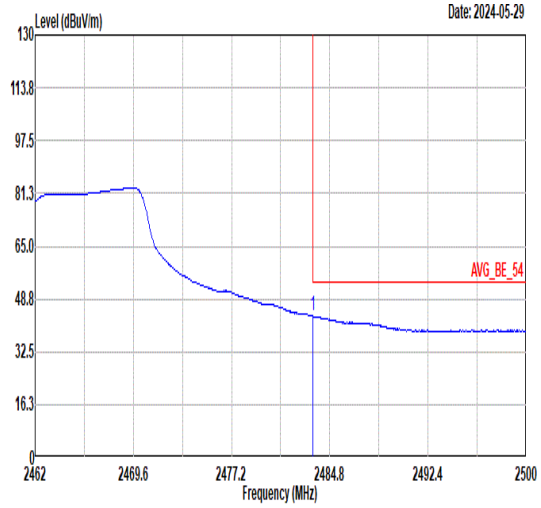
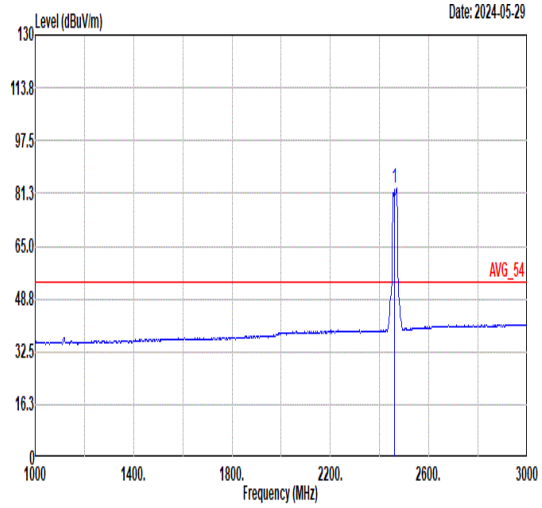
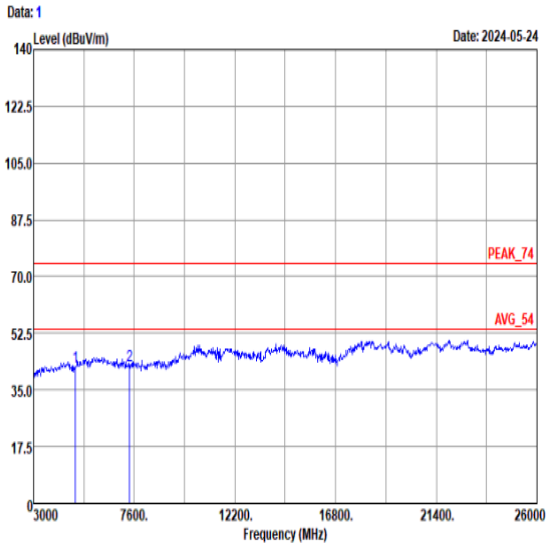
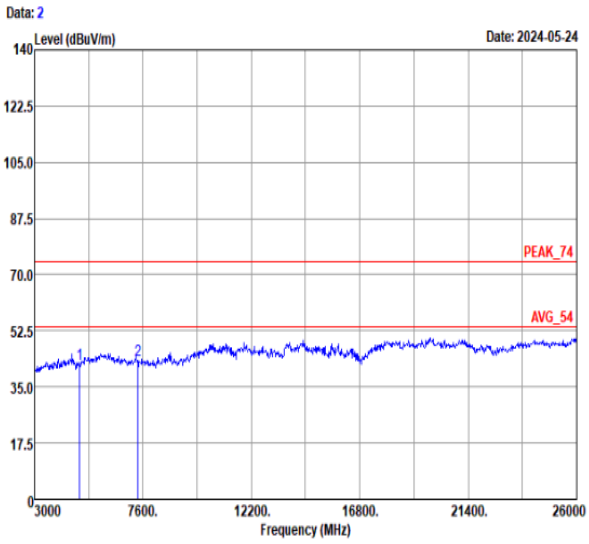
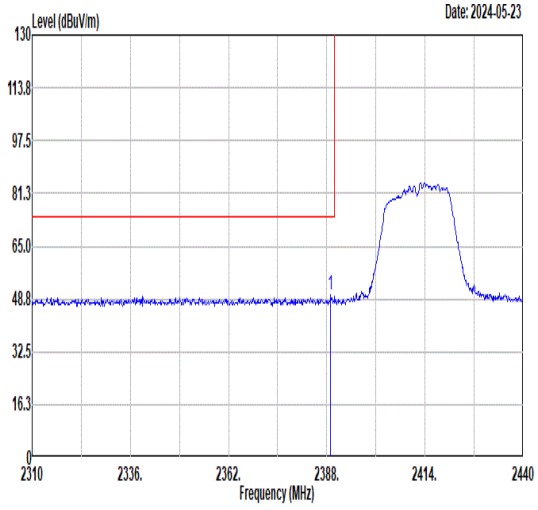
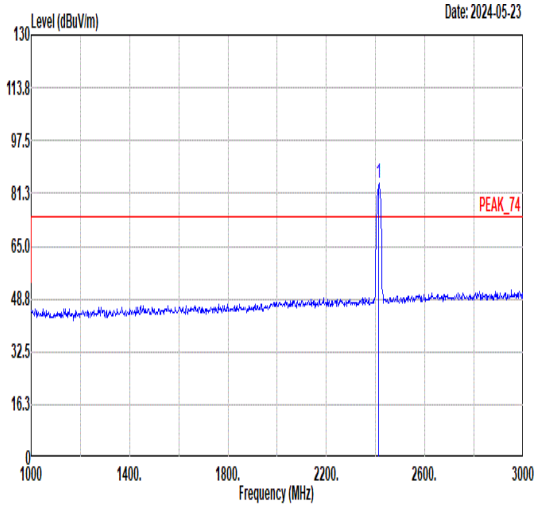
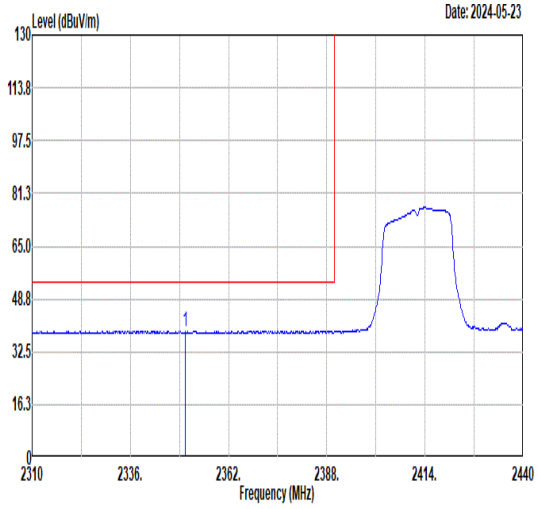
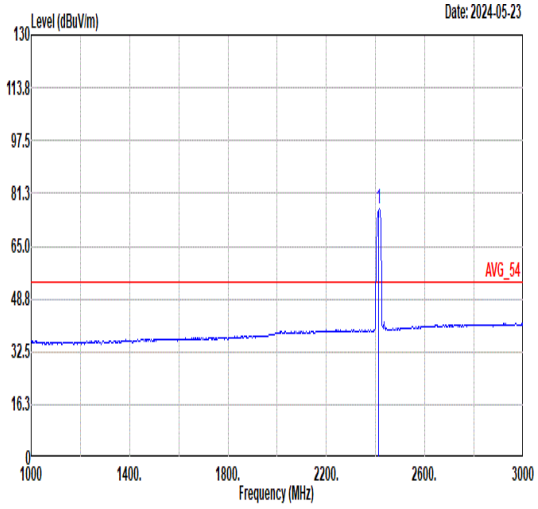
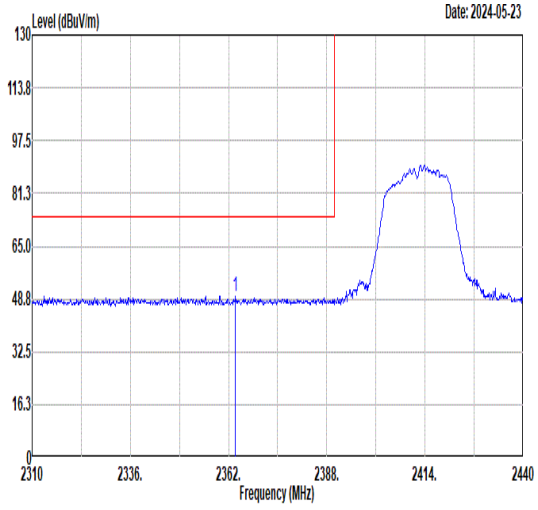
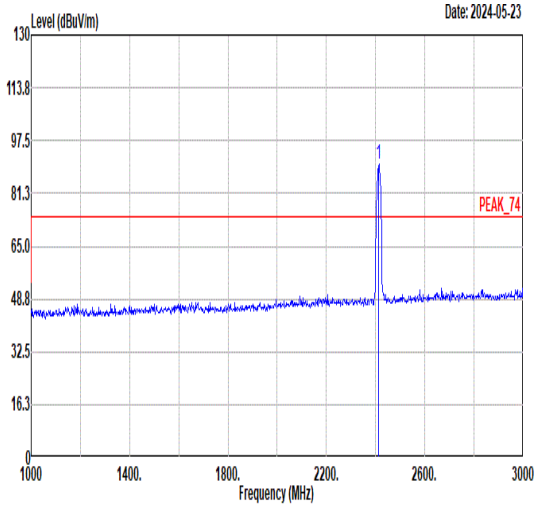
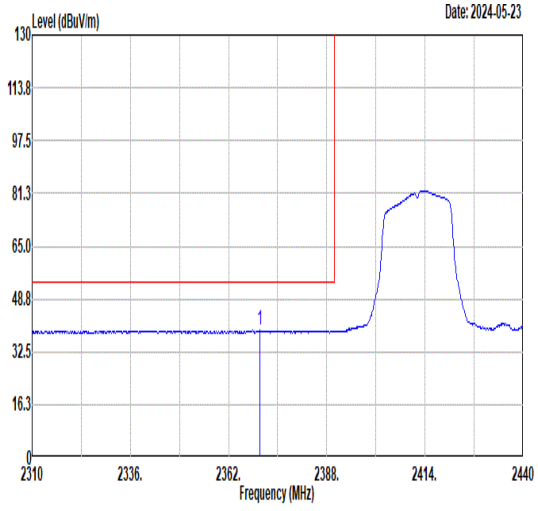
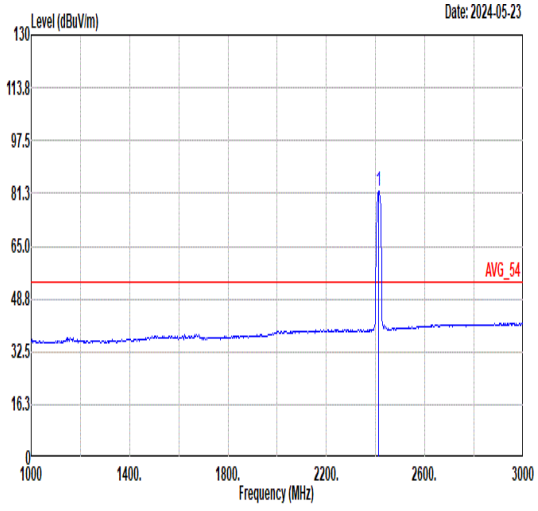
ANT	1	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4874.00 41.74 74.00 -32.26 57.16 34.33 7.77 57.52 -- -- Peak 2 7311.00 43.16 74.00 -30.84 57.71 35.44 8.93 58.92 -- -- Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4874.00 41.91 74.00 -32.09 57.33 34.33 7.77 57.52 -- -- Peak 2 7311.00 43.02 74.00 -30.98 57.57 35.44 8.93 58.92 -- -- Peak

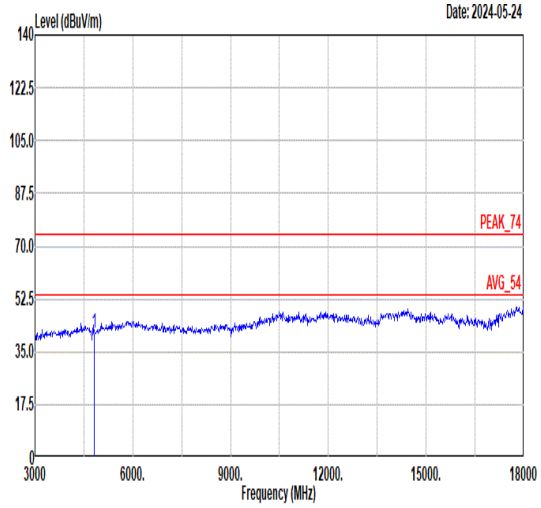
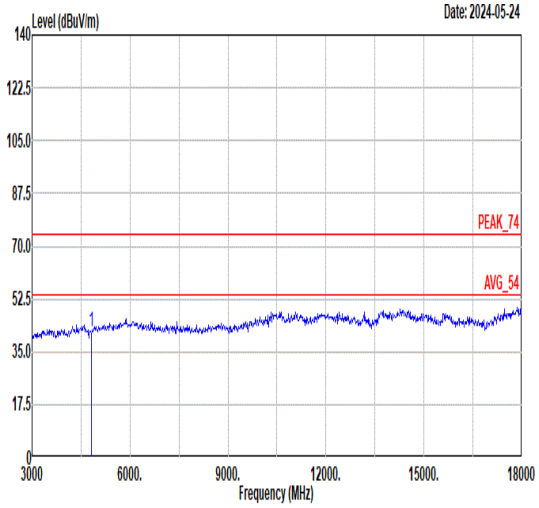
Mode	6	
	Band Edge	
	2400-2483.5_802.11g_CH11_2462MHz	
ANT	3+5	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2483.66 50.79 74.00 -23.21 48.53 30.85 4.92 33.51 110 45 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2462.00 81.11 ------ ------ 78.93 30.80 4.90 33.52 110 45 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2483.62 39.59 54.00 -14.41 37.33 30.85 4.92 33.51 110 45 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2462.00 74.55 ------ ------ 72.37 30.80 4.90 33.52 110 45 AVERAGE

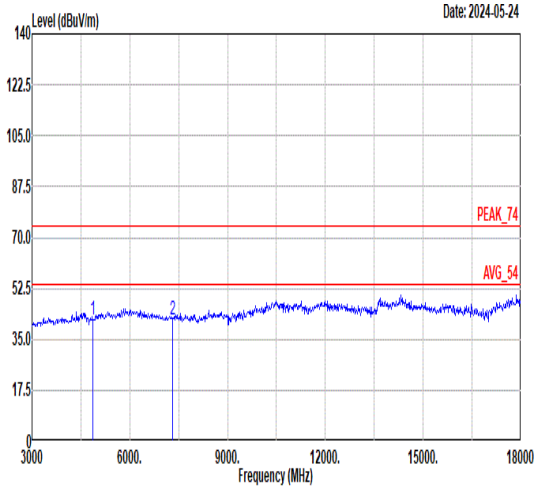
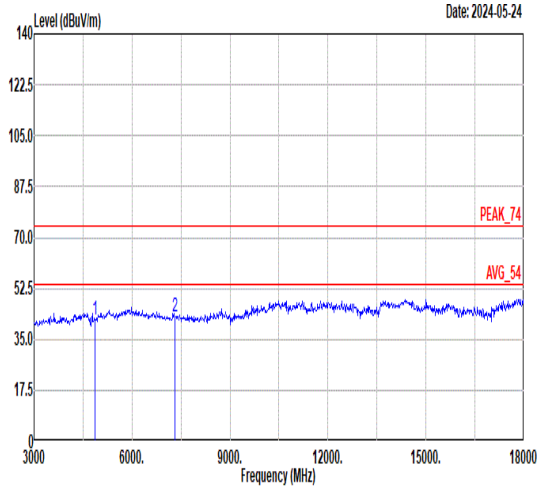
Mode	6	
	Band Edge	
	2400-2483.5_802.11g_CH11_2462MHz	
ANT	3+5	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2483.89 57.53 74.00 -16.47 55.27 30.85 4.92 33.51 110 179 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2462.00 89.32 ------ ------ 87.14 30.80 4.90 33.52 110 179 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2483.51 43.46 54.00 -10.54 41.20 30.85 4.92 33.51 110 179 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2462.00 82.93 ------ ------ 80.75 30.80 4.90 33.52 110 179 AVERAGE

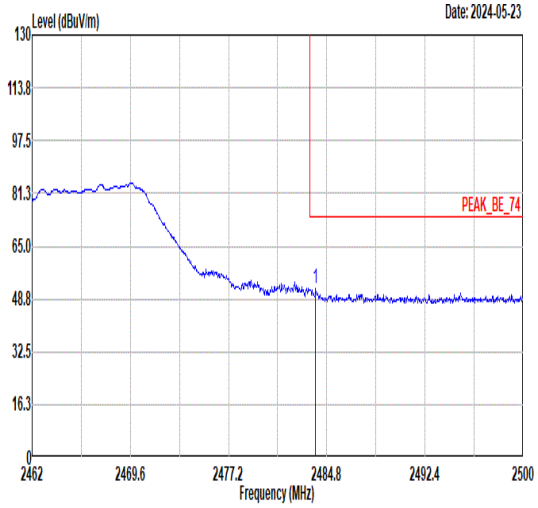
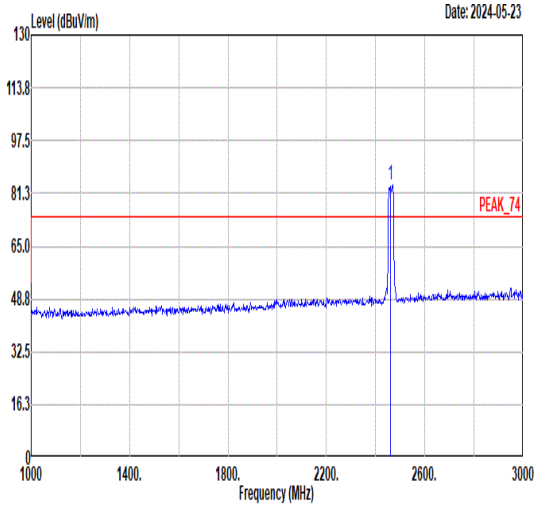
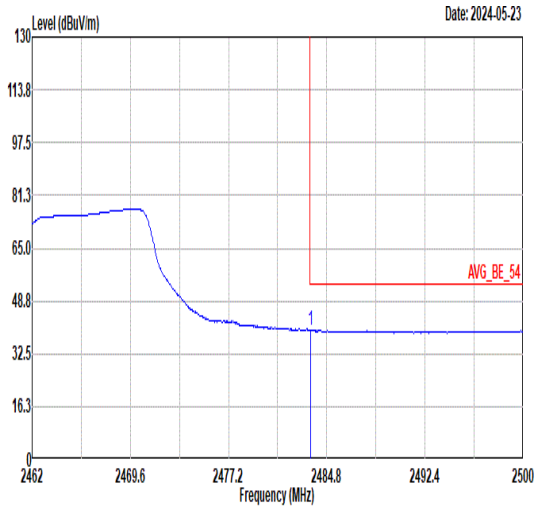
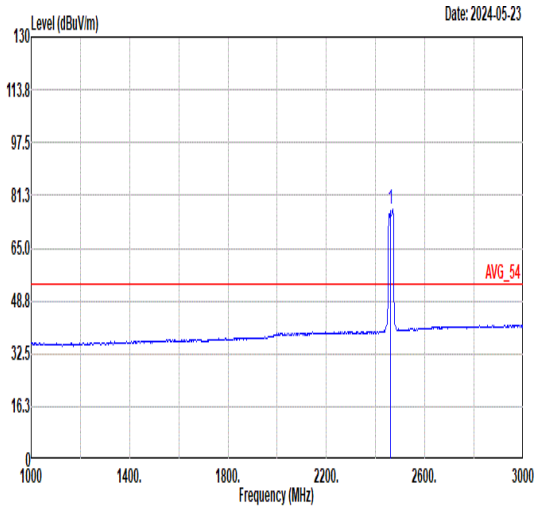
Mode	6	
	Harmonic	
	2400-2483.5_802.11g_CH11_2462MHz	
ANT	1	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Over Limit Limit Line ReadLevel Antenna Factor Cable Loss Preamp Factor A/Pos T/Pos Remark MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 4924.00 42.14 -31.86 74.00 57.49 34.40 7.80 57.55 --- --- Peak 2 7386.00 42.35 -31.65 74.00 56.69 35.42 9.20 58.96 --- --- Peak	 Freq Level Over Limit Limit Line ReadLevel Antenna Factor Cable Loss Preamp Factor A/Pos T/Pos Remark MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 4924.00 42.23 -31.77 74.00 57.58 34.40 7.80 57.55 --- --- Peak 2 7386.00 43.33 -30.67 74.00 57.67 35.42 9.20 58.96 --- --- Peak

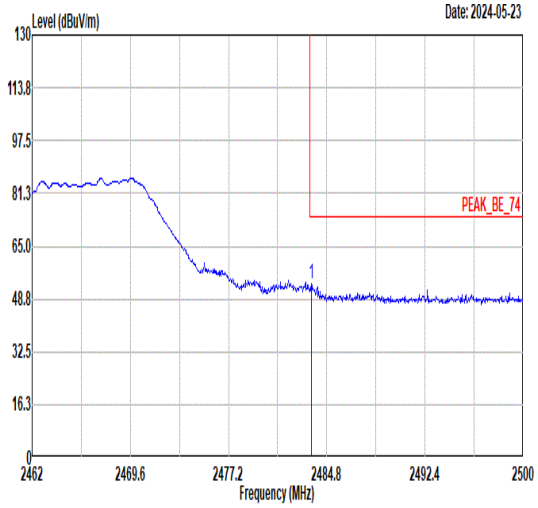
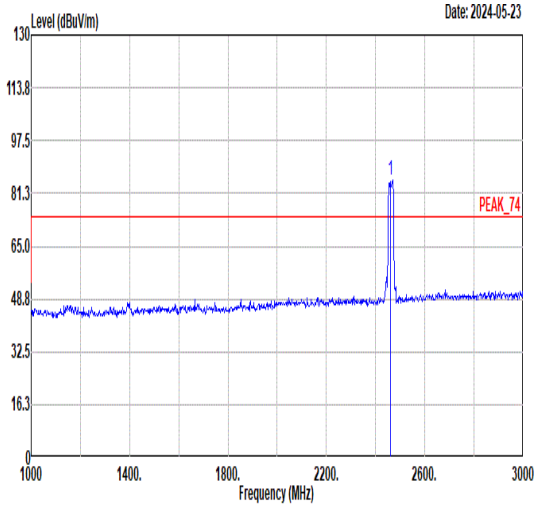
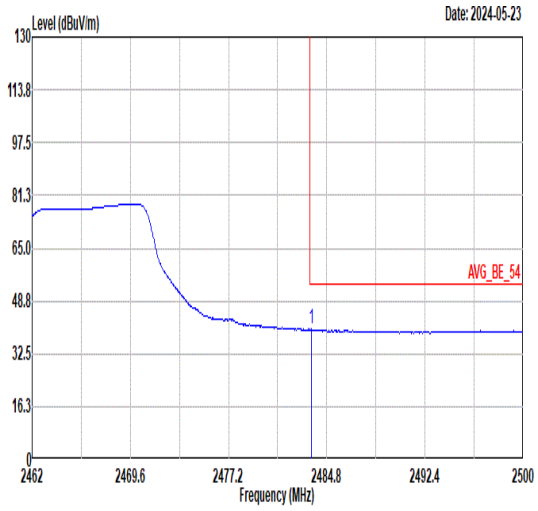
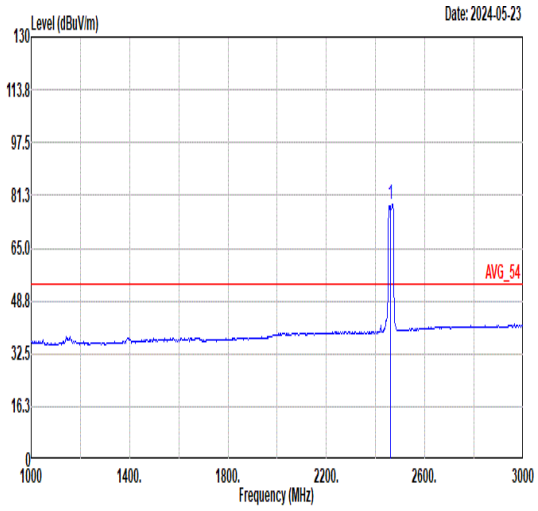
Mode	7	
	Band Edge	
	2400-2483.5_802.11n HT20_CH01_2412MHz	
ANT	1	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2389.04 50.02 74.00 -23.98 48.19 30.61 4.79 33.57 354 0 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2412.00 84.48 ------ ------ 82.57 30.64 4.82 33.55 354 0 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2350.56 38.86 54.00 -15.14 37.00 30.69 4.76 33.59 354 0 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2412.00 76.67 ------ ------ 74.76 30.64 4.82 33.55 354 0 AVERAGE

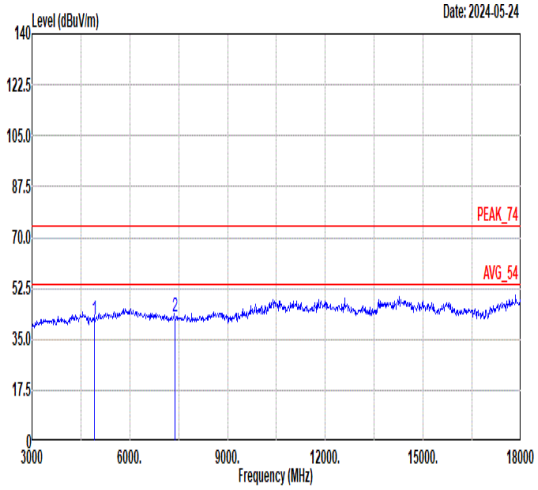
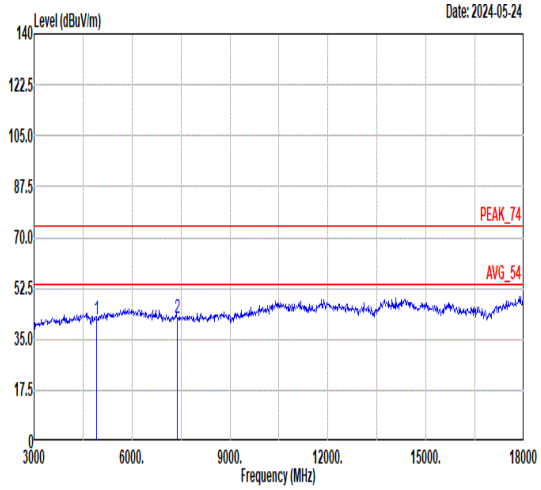
Mode	7	
	Band Edge	
	2400-2483.5_802.11n HT20_CH01_2412MHz	
ANT	1	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2363.82 49.78 74.00 -24.22 47.93 30.66 4.77 33.58 209 205 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2412.00 90.04 ------ ------ 88.13 30.64 4.82 33.55 209 205 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2370.32 39.12 54.00 -14.88 37.27 30.65 4.78 33.58 209 205 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2412.00 82.01 ------ ------ 80.10 30.64 4.82 33.55 209 205 AVERAGE

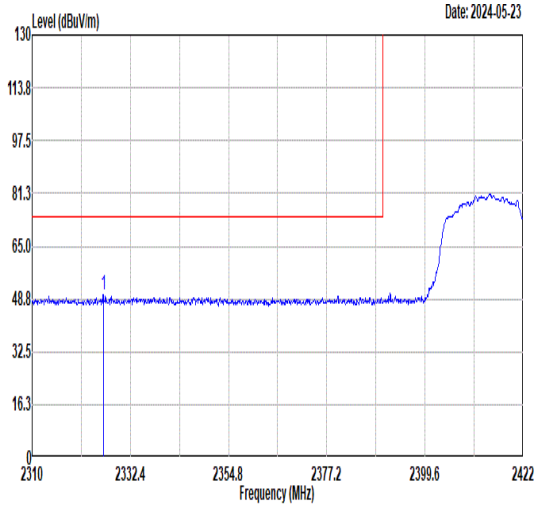
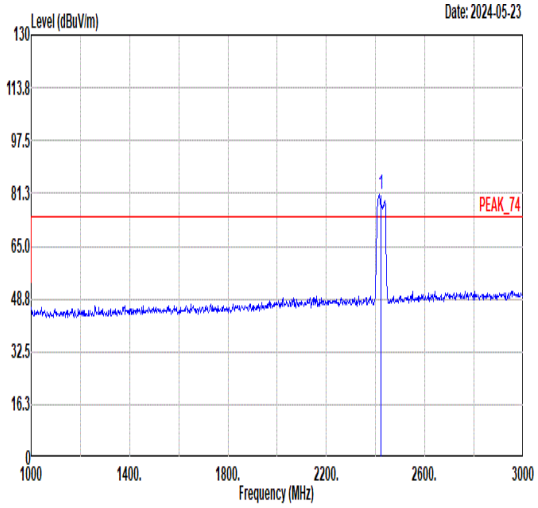
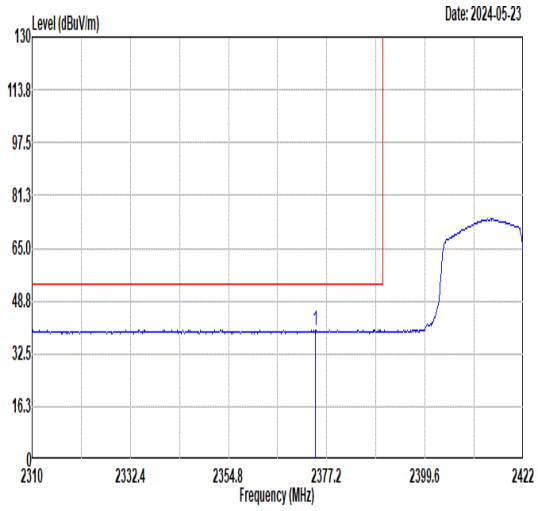
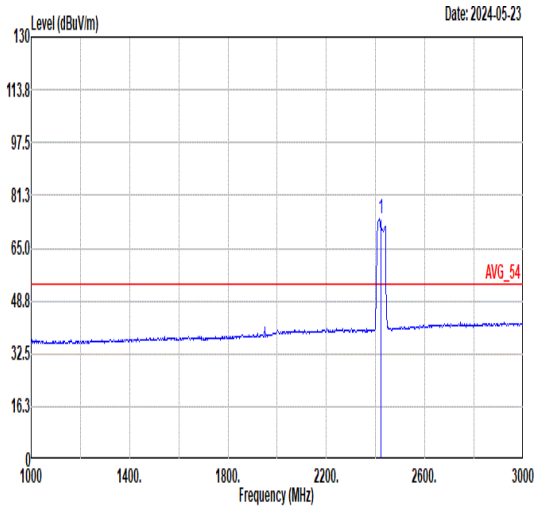
Mode	7	
	Harmonic	
	2400-2483.5_802.11n HT20_CH01_2412MHz	
ANT	1	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4824.00 41.45 74.00 -32.55 56.92 34.26 7.75 57.48 -- -- Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4824.00 41.75 74.00 -32.25 57.22 34.26 7.75 57.48 -- -- Peak

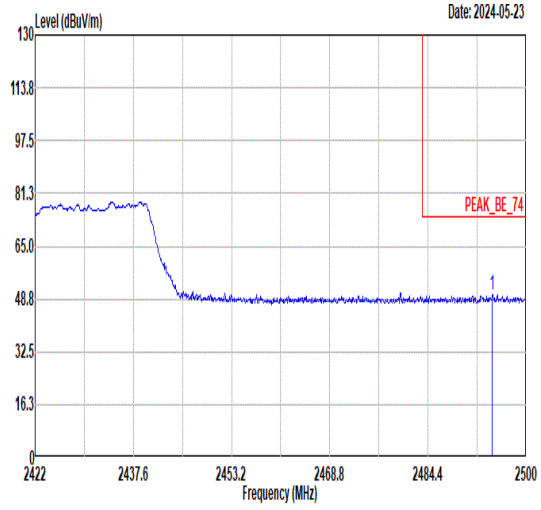
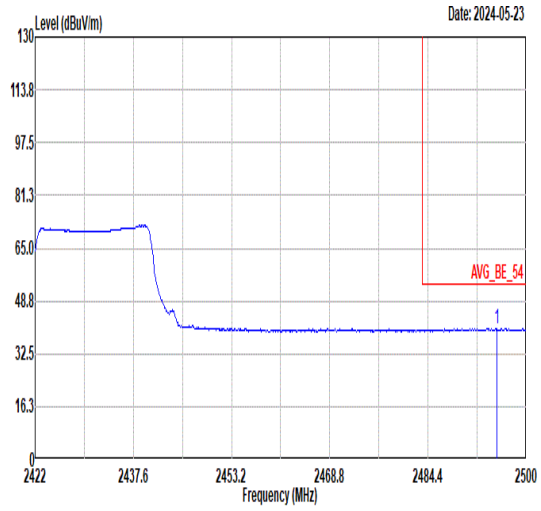
Mode	8	
	Harmonic	
	2400-2483.5_802.11n HT20_CH06_2437MHz	
ANT	1	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4874.00 41.99 74.00 -32.01 57.41 34.33 7.77 57.52 -- -- Peak 2 7311.00 41.77 74.00 -32.23 56.32 35.44 8.93 58.92 -- -- Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4874.00 41.49 74.00 -32.51 56.91 34.33 7.77 57.52 -- -- Peak 2 7311.00 42.83 74.00 -31.17 57.38 35.44 8.93 58.92 -- -- Peak

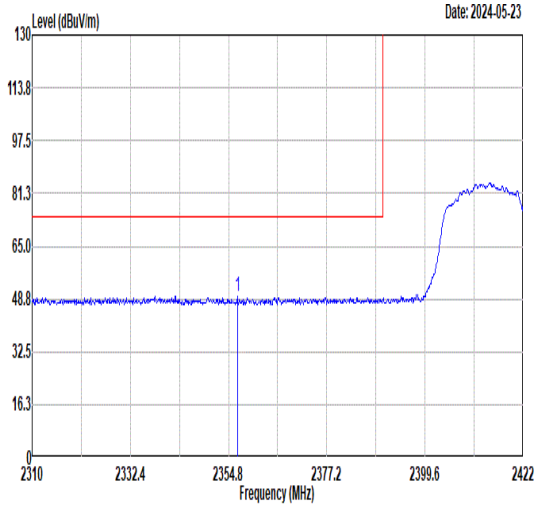
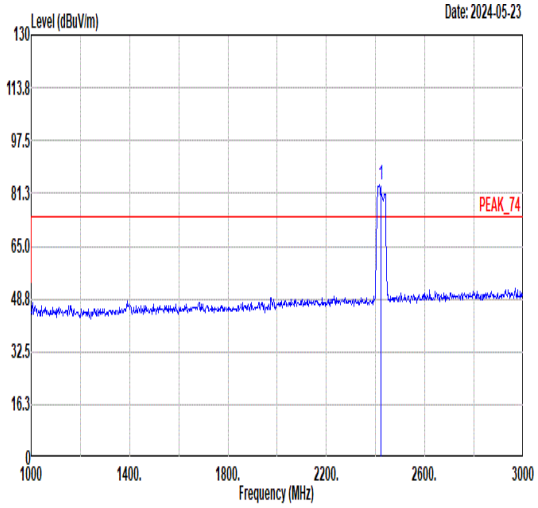
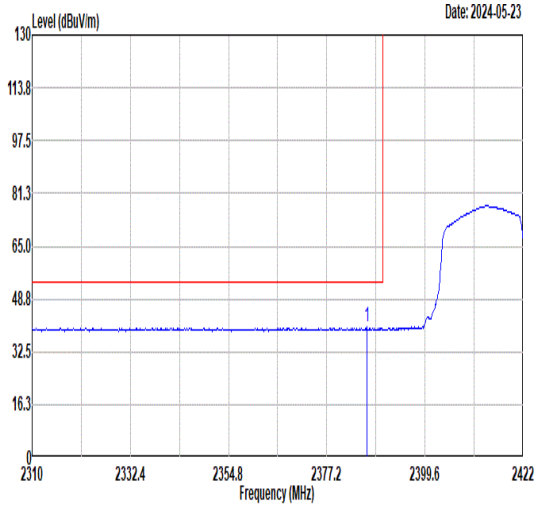
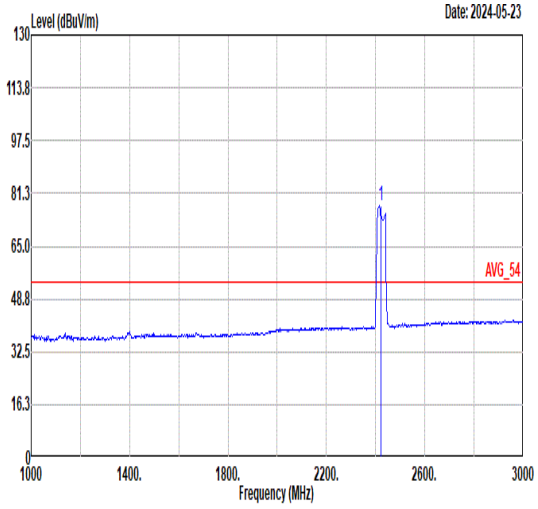
Mode	9	
	Band Edge	
	2400-2483.5_802.11n HT20_CH11_2462MHz	
ANT	1	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2483.93 51.85 74.00 -22.15 49.59 30.85 4.92 33.51 300 0 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2462.00 84.04 ------ ------ 81.86 30.80 4.90 33.52 300 0 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2483.55 39.81 54.00 -14.19 37.55 30.85 4.92 33.51 300 0 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2462.00 77.01 ------ ------ 74.83 30.80 4.90 33.52 300 0 AVERAGE

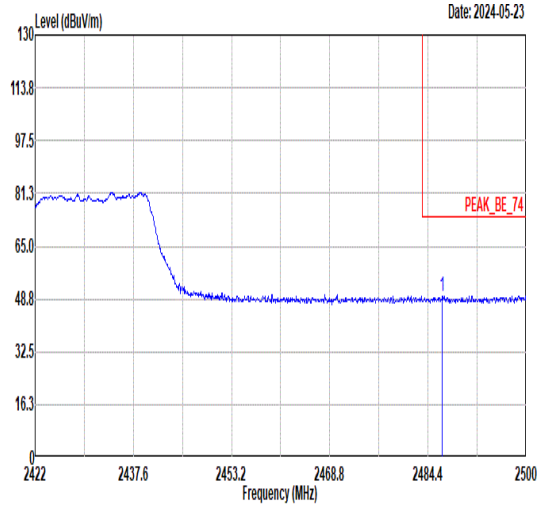
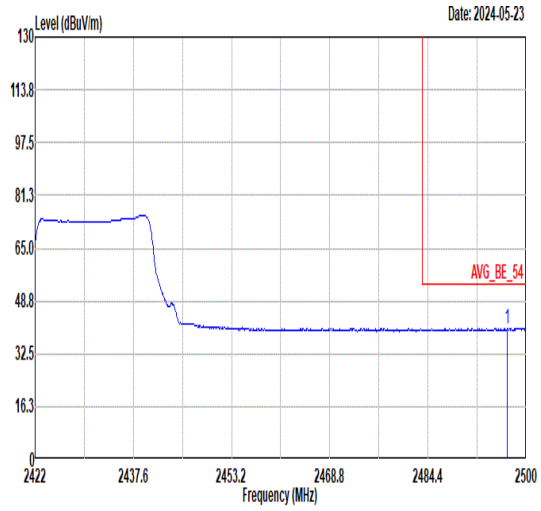
Mode	9	
	Band Edge	
	2400-2483.5_802.11n HT20_CH11_2462MHz	
ANT	1	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2483.58 53.35 74.00 -20.65 51.09 30.85 4.92 33.51 209 205 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2462.00 85.42 ------ ------ 83.24 30.80 4.90 33.52 209 205 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2483.62 40.02 54.00 -13.98 37.76 30.85 4.92 33.51 209 205 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2462.00 78.51 ------ ------ 76.33 30.80 4.90 33.52 209 205 AVERAGE

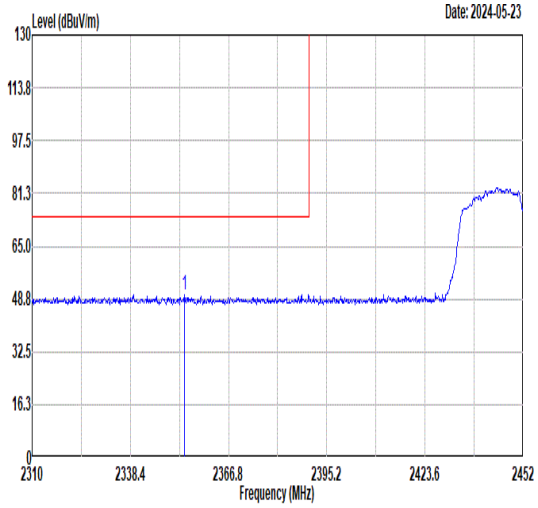
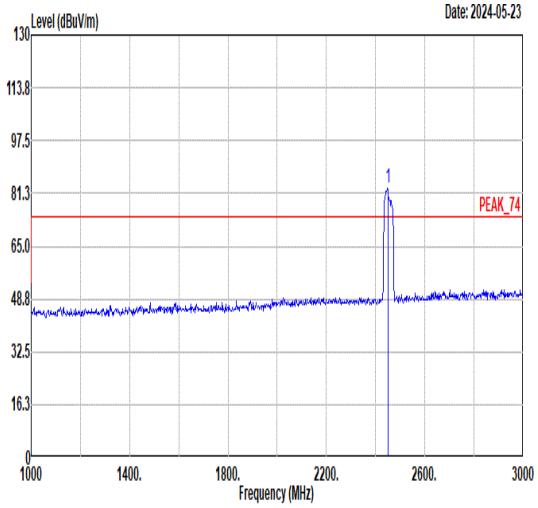
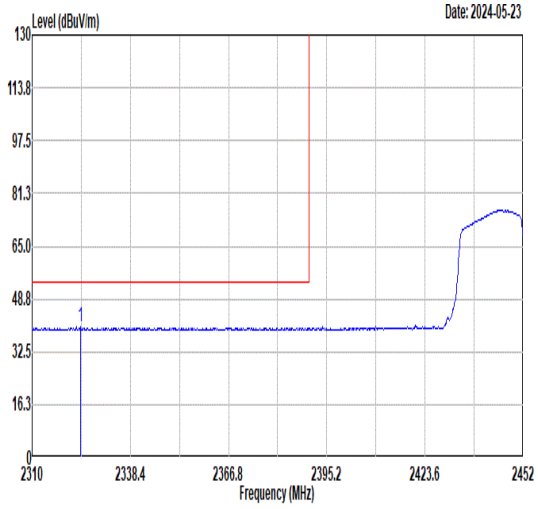
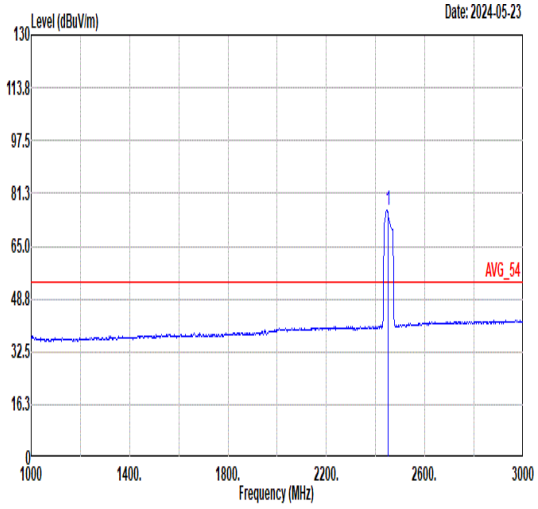
Mode	9	
	Harmonic	
	2400-2483.5_802.11n HT20_CH11_2462MHz	
ANT	1	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4924.00 41.88 74.00 -32.12 57.24 34.40 7.79 57.55 -- -- Peak 2 7386.00 42.76 74.00 -31.24 57.12 35.42 9.17 58.95 -- -- Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 4924.00 41.99 74.00 -32.01 57.35 34.40 7.79 57.55 -- -- Peak 2 7386.00 42.02 74.00 -31.98 56.38 35.42 9.17 58.95 -- -- Peak

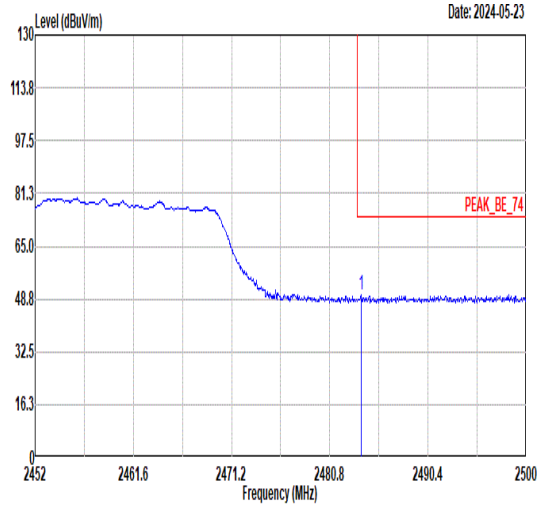
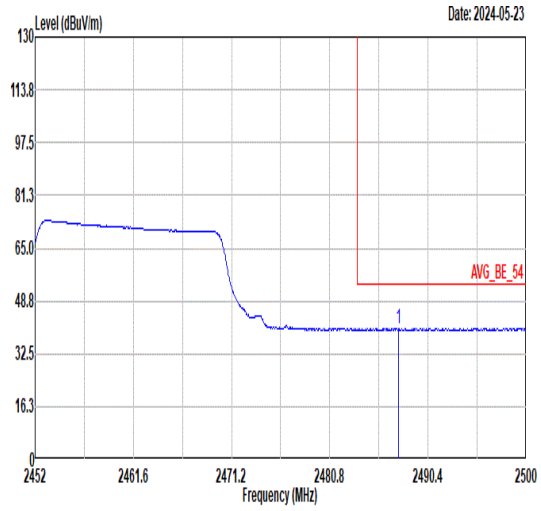
Mode	10	
	Band Edge - L	
	2400-2483.5_802.11n HT40_CH03_2422MHz	
ANT	1	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2326.24 50.12 74.00 -23.88 48.26 30.73 4.73 33.60 259 4 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2422.00 81.09 ------ ------ 79.18 30.64 4.82 33.55 259 4 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2374.62 39.84 54.00 -14.16 38.00 30.64 4.78 33.58 259 4 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2422.00 73.85 ------ ------ 71.94 30.64 4.82 33.55 259 4 AVERAGE

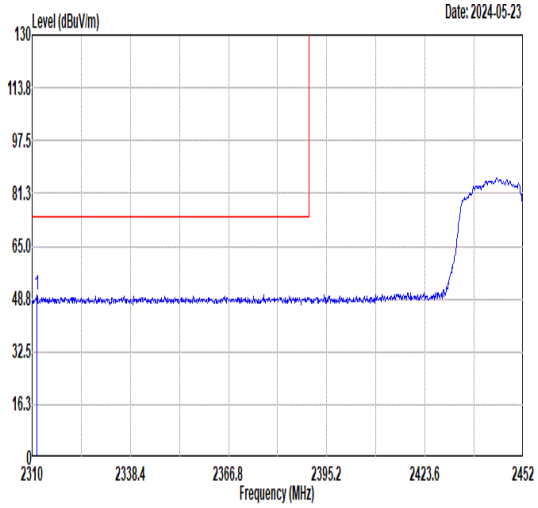
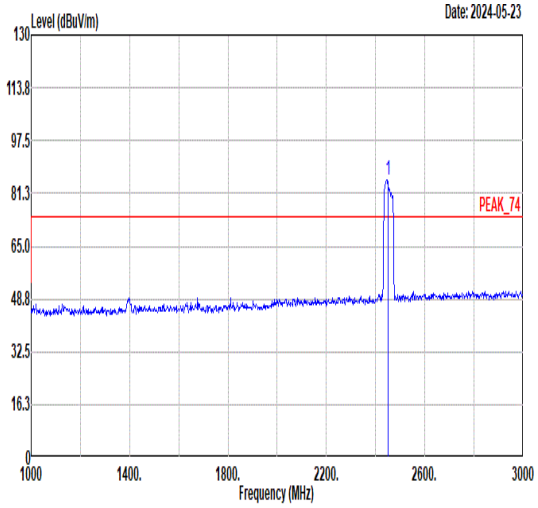
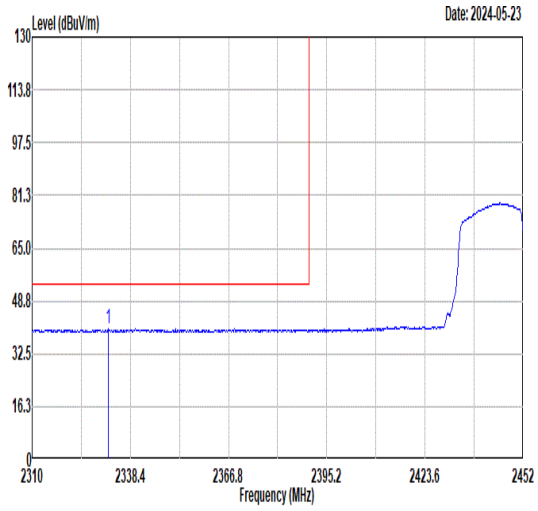
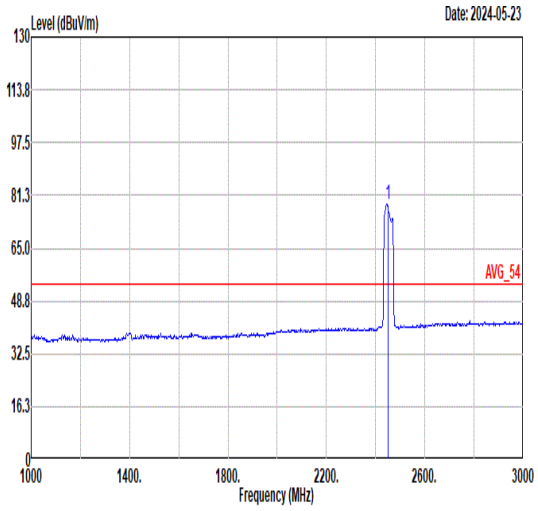
Mode	10	
	Band Edge - R	
	2400-2483.5_802.11n HT40_CH03_2422MHz	
ANT	1	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2494.62 49.95 74.00 -24.05 47.63 30.89 4.94 33.51 259 4 PEAK	Blank
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2495.32 40.37 54.00 -13.63 38.04 30.90 4.94 33.51 259 4 AVERAGE	Blank

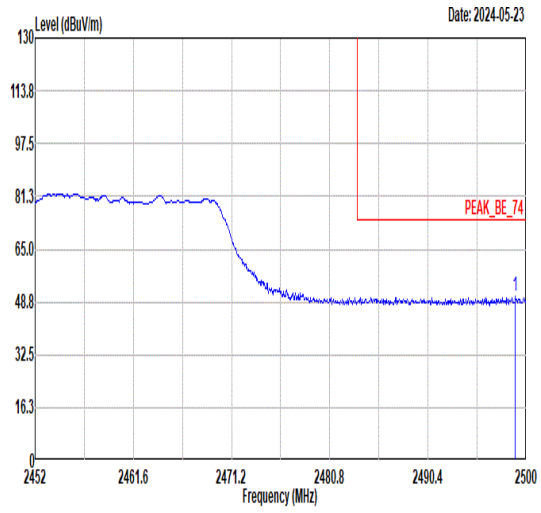
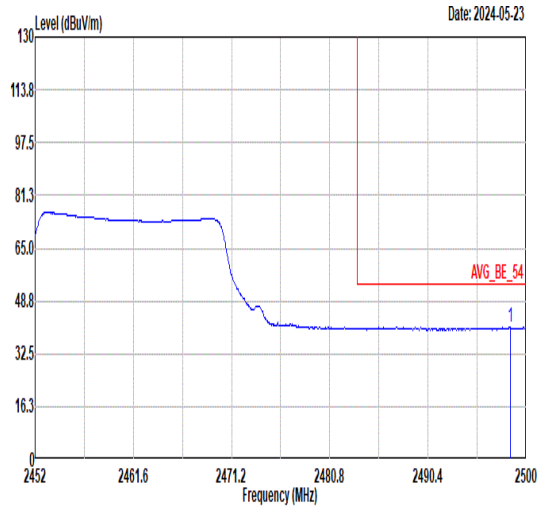
Mode	10	
	Band Edge - L	
	2400-2483.5_802.11n HT40_CH03_2422MHz	
ANT	1	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2356.82 49.59 74.00 -24.41 47.75 30.67 4.76 33.59 207 193 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2422.00 84.02 ------ ------ 82.10 30.64 4.83 33.55 207 193 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2386.38 40.05 54.00 -13.95 38.22 30.61 4.79 33.57 207 193 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2422.00 77.28 ------ ------ 75.37 30.64 4.82 33.55 207 193 AVERAGE

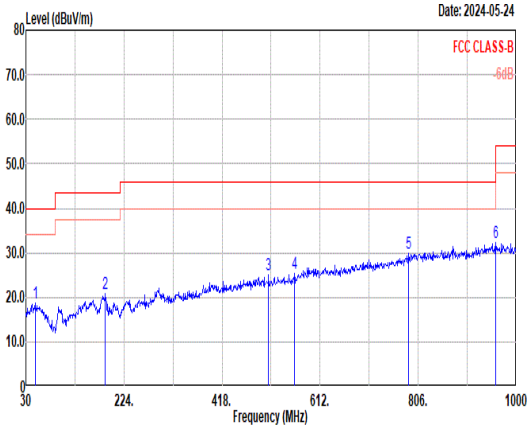
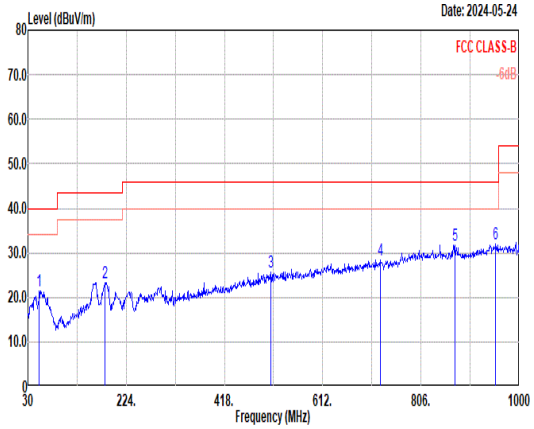
Mode	10	
	Band Edge - R	
	2400-2483.5_802.11n HT40_CH03_2422MHz	
ANT	1	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2486.66 49.74 74.00 -24.26 47.47 30.86 4.92 33.51 207 193 PEAK	Blank
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2497.04 40.45 54.00 -13.55 38.10 30.91 4.94 33.50 207 193 AVERAGE	Blank

Mode	11	
	Band Edge - L	
	2400-2483.5_802.11n HT40_CH09_2452MHz	
ANT	1	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2354.02 50.21 74.00 -23.79 48.36 30.68 4.76 33.59 329 328 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2452.00 82.84 ------ ------ 80.79 30.71 4.87 33.53 329 328 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2323.92 40.22 54.00 -13.78 38.36 30.74 4.73 33.61 329 328 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2452.00 75.98 ------ ------ 73.94 30.70 4.87 33.53 329 328 AVERAGE

Mode	11	
	Band Edge - R	
	2400-2483.5_802.11n HT40_CH09_2452MHz	
ANT	1	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2483.87 49.94 74.00 -24.06 47.68 30.85 4.92 33.51 329 328 PEAK	Blank
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2487.52 40.43 54.00 -13.57 38.14 30.87 4.93 33.51 329 328 AVERAGE	Blank

Mode	11	
	Band Edge - L	
	2400-2483.5_802.11n HT40_CH09_2452MHz	
ANT	1	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2311.42 50.20 74.00 -23.80 48.33 30.76 4.72 33.61 210 196 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2452.00 85.39 ------ ------ 83.35 30.70 4.87 33.53 210 196 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2332.01 40.04 54.00 -13.96 38.18 30.72 4.74 33.60 210 196 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2452.00 78.69 ------ ------ 76.65 30.70 4.87 33.53 210 196 AVERAGE

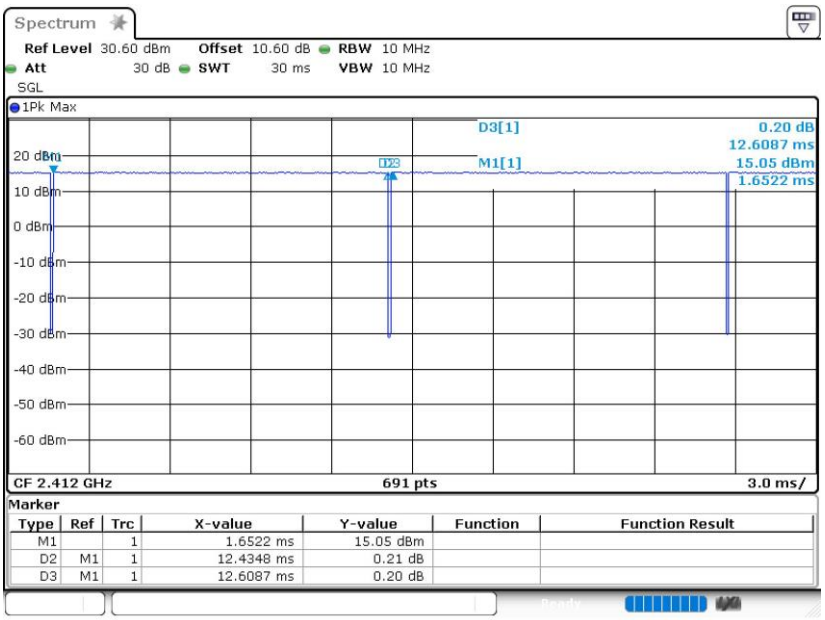
Mode	11	
	Band Edge - R	
	2400-2483.5_802.11n HT40_CH09_2452MHz	
ANT	1	
Pol.	Vertical	Fundamental
Peak	 Limit Read Ant Cable Preamp APos TPos Freq Level Line Margin Level Factor Loss Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2498.94 50.43 74.00 -23.57 48.07 30.92 4.94 33.50 210 196 PEAK	Blank
Avg	 Limit Read Ant Cable Preamp APos TPos Freq Level Line Margin Level Factor Loss Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 2498.42 40.63 54.00 -13.37 38.28 30.91 4.94 33.50 210 196 AVERAGE	Blank

Mode	12	
	LF	
	2400-2483.5_802.11g_CH11_LFMHz	
ANT	1	
Pol.	Horizontal	Vertical
QP/ Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 48.43 18.75 40.00 -21.25 33.43 19.62 0.70 35.00 -- -- Peak 2 187.14 20.76 43.50 -22.74 37.27 16.75 1.44 34.70 -- -- Peak 3 510.15 25.01 46.00 -20.99 33.60 23.52 2.39 34.50 -- -- Peak 4 561.56 25.32 46.00 -20.68 32.69 24.63 2.52 34.52 -- -- Peak 5 787.57 29.83 46.00 -16.17 33.37 27.78 3.01 34.33 -- -- Peak 6 959.26 32.42 46.00 -13.58 33.61 29.81 3.28 34.28 -- -- Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB cm deg 1 52.31 21.54 40.00 -18.46 36.23 19.53 0.74 34.96 -- -- Peak 2 182.29 23.37 43.50 -20.13 39.59 17.05 1.43 34.70 -- -- Peak 3 510.15 25.76 46.00 -20.24 34.35 23.52 2.39 34.50 -- -- Peak 4 726.46 28.26 46.00 -17.74 32.42 27.36 2.88 34.40 -- -- Peak 5 872.93 31.75 46.00 -14.25 34.21 28.72 3.12 34.30 -- -- Peak 6 953.44 32.04 46.00 -13.96 33.28 29.78 3.27 34.29 -- -- Peak

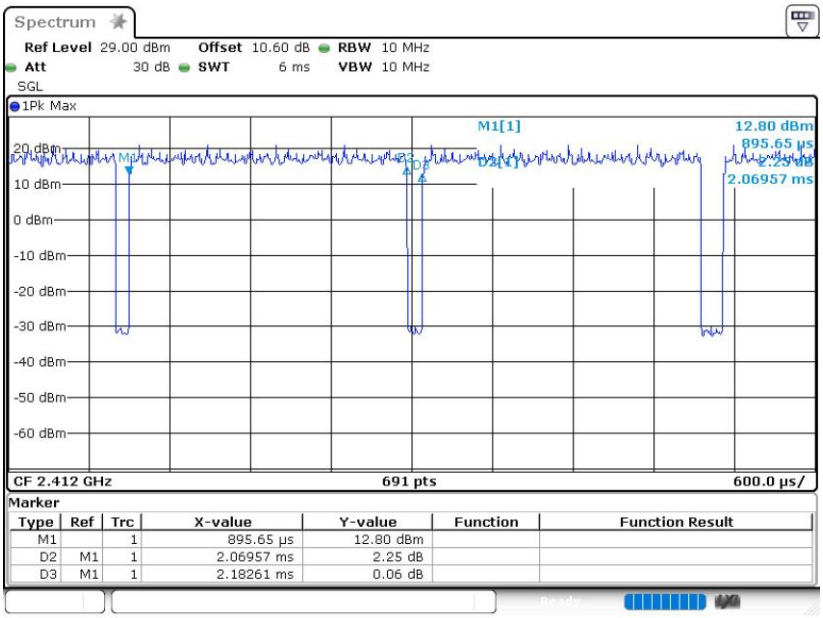
Appendix C. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	98.62	-	-	10Hz
802.11g	94.82	2.070	0.483	1KHz
802.11n HT20	92.83	1.913	0.523	1KHz
802.11n HT40	87.45	0.929	1.076	3KHz

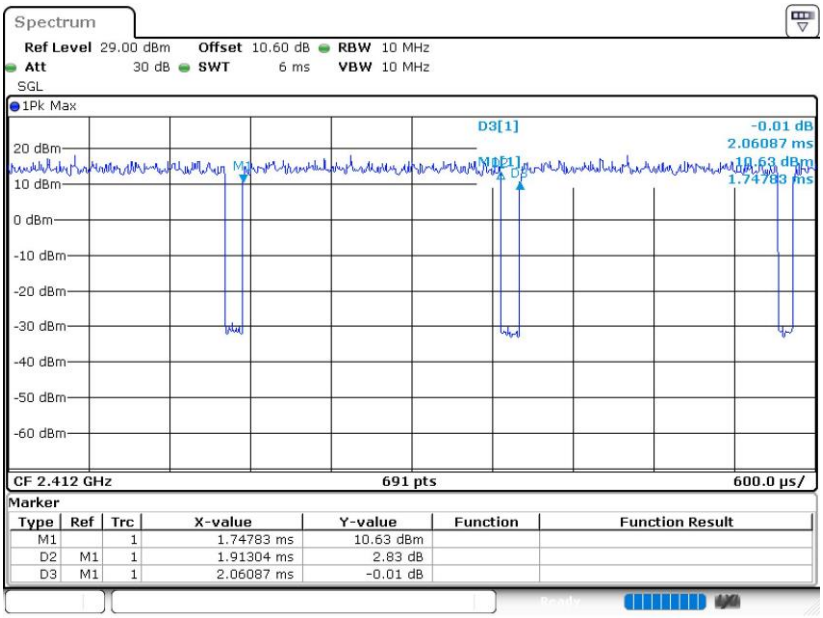
802.11b



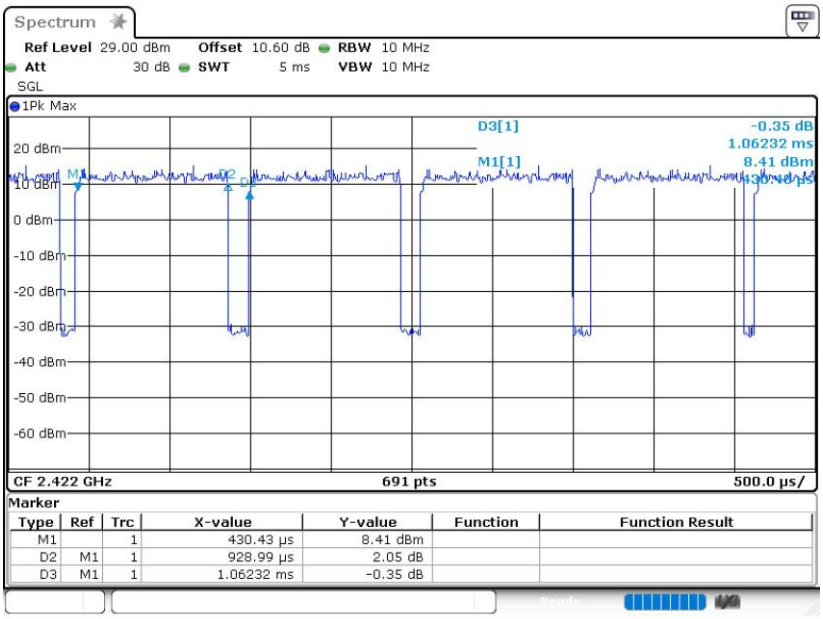
802.11g



802.11n HT20



802.11n HT40


Spectrum
Ref Level 29.00 dBm Offset 10.60 dB RBW 10 MHz
Att 30 dB SWT 5 ms VBW 10 MHz
SGL
1Pk Max
D3[1] -0.35 dB
1.06232 ms
M1[1] 8.41 dBm
430.43 µs
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
CF 2.422 GHz
691 pts
500.0 µs/
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 430.43 µs 8.41 dBm
D2 M1 1 928.99 µs 2.05 dB
D3 M1 1 1.06232 ms -0.35 dB