Spot Check Evaluation

APPLICANT	:	MeiG Smart Technology Co., Ltd
EQUIPMENT	:	SNM758
BRAND NAME	:	MEIGLink
MODEL NAME	:	SNM758
FCC ID	:	2APJ4-SNM758
STANDARD	:	47 CFR Part 15 Subpart C §15.247 47 CFR Part 15 Subpart E §15.407
TEST DATE(S)	:	Nov. 30, 2023 ~ Jan. 04, 2024

We, Sporton International Inc. (Kunshan), 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. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia

ACCREDITED
Cert #5145.02

Sporton International Inc. (Kunshan)
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
970101-01A	Rev. 01	Initial issue of report	Jan. 18, 2024

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

MeiG Smart Technology Co., Ltd
2nd Floor,Office Building,No.5 Lingxia Road,Fenghuang,Fuyong Street,Bao'an District,Shenzhen City.

1.2 Manufacturer

MeiG Smart Technology Co., Ltd
2nd Floor,Office Building,No.5 Lingxia Road,Fenghuang,Fuyong Street,Bao'an District,Shenzhen City.

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	SNM758
Brand Name	MEIGLink
Model Name	SNM758
FCC ID	2APJ4-SNM758
SN	Conducted: 758W016DYD050700303 Radiation: 758W016DYC122100193
Antenna Type/ Gain	WLAN(2.4GHz) : Glue Stick Antenna with gain 0 dBi WLAN(5GHz) : Glue Stick Antenna with gain 1.00 dBi Bluetooth : Glue Stick Antenna with gain 0 dBi
HW Version	V1.02
SW Version	SNM758EQ_EQ000_2774.51ABD20.4041C02_231026_100_V01_T12
EUT Stage	Identical Prototype

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 Modification of EUT

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

1.5 Testing Site

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH05-KS TH01-KS	CN1257	314309

1.6 Test Software

Item	Site	Manufacturer	Name	Version
1.	TH01-KS	SPORTON	FCC 15C-15E Test Tools Ver10.0_210607	10.0
2.	TH01-KS	SPORTON	FCC BT2.0 Ver3.0_For_CHINA_190111	3.0
3.	03CH05-KS	AUDIX	E3	210616

1.7 Applicable Standards

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

- FCC KDB 484596 D01 Referencing Test Data v02r02
- 47 CFR Part 15 Subpart C §15.247
- 47 CFR Part 15 Subpart E §15.407
- ANSI C63.10-2013

2 Re-use of Measured Data

2.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: SNM758, FCC ID: 2APJ4-SNM758) is electrically identical to the reference device (Model: SLM758, FCC ID: 2APJ4-SLM758) for the portions of the circuitry corresponding to the data being re-used. Based on their similarity, the FCC Part 15C (equipment class: DTS, DSS) and FCC Part 15E (equipment class: NII) reuse the original model's result and do spot-check, following the FCC KDB 484596 D01 Referencing Test Data v02r02.

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID: 2APJ4-SNM758 .

2.2 Model Difference Information

The **main** difference between FCC ID: 2APJ4-SLM758 and FCC ID: 2APJ4-SNM758 is as below:
2/3/4G function is removed by hardware.
Add 802.11ac mode for WIFI 5G by software.

Other differences and all the details of similarity and difference can be found in the confidential documents (SNM758_Operational Description of Product Equality Declaration).

2.3 Reference detail Section:

Rule Part	Equipment Class	Frequency Band (MHz)	Reference FCC ID (Parent)	Type Grant/ Permissive Change	Reference Title	FCC ID Filling (Variant)	Report Title/Section
15C	DSS (BR/EDR)	2400~2483.5	2APJ4-SLM758	Original Grant	FR970101A	2APJ4-SNM758	All sections applicable
	DTS (BLE)	2400~2483.5	2APJ4-SLM758	Original Grant	FR970101B	2APJ4-SNM758	All sections applicable
	DTS (WLAN)	2400~2483.5	2APJ4-SLM758	Original Grant	FR970101C	2APJ4-SNM758	All sections applicable
15E	U-NII	5180~5240	2APJ4-SLM758	Original Grant	FR970101D	2APJ4-SNM758	All sections applicablefor
		5260~5320	2APJ4-SLM758	Original Grant	FR970101D	2APJ4-SNM758	All sections applicablefor
		5500~5700	2APJ4-SLM758	Original Grant	FR970101D	2APJ4-SNM758	All sections applicablefor
		5745~5825	2APJ4-SLM758	Original Grant	FR970101E	2APJ4-SNM758	All sections applicablefor
		5260~5320 5500~5700	2APJ4-SLM758	Original Grant	FZ970101	2APJ4-SNM758	All sections applicable

Note: For WIFI 5G 802.11n HT20 / ac VHT20 and 802.11n HT40 / ac VHT40 mode, the whole testing have assessed only 802.11n HT20/HT40 by referring to their maximum conducted power.

2.4 Spot Check Verification Data Section

Conducted power test and radiated spurious emission test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.
All test procedures follow the related section of parent report.

Spot-check measurements, while being always compliant with the applicable rule part(s) for the test under consideration, show a deviation d_{dB} from the reference data no larger than 3 dB:

$$d_{dB} = | V_{dB} – R_{dB} | \leq 3 \text{ dB} \quad (1)$$

V_{dB}, the variant spot-check level
R_{dB}, the corresponding measurement level for the reference model

An alternative to the limit of eq. (1) is available, and is based on considering how far the reference data R_{dB} is from the compliance threshold C_{dB} (also expressed in dB), for the particular test under consideration. In this case, if $M_{dB} =|C_{dB} – R_{dB}|$ is the margin in dB from the compliance limit, a spot check may be considered acceptable when the deviation ddB from the reference data satisfies the following condition:

$$d_{dB} = | V_{dB} – R_{dB} | \leq (3 + M_{dB} /20) \text{ dB , for } 0 \leq M_{dB} \leq 60 \text{ dB} \quad (2)$$

where "| |" is the absolute value of the measured quantity.
When using the option in eq. (2), d_{dB} increases linearly from 3 dB to 6 dB.

Summary for power and RSE spot check for each rule entry and technology is listed as below:

Test Item	Mode	2APJ4-SLM758 Parent Worst mode Test Result	2APJ4-SNM758 Variant Check Test Result	Deviation (dB)	Limit (dB)
Conducted Power (dBm)	BT BR/EDR	8.61	8.10	0.51	3
	BLE 1Mbps	-1.11	-1.42	0.31	3
	11b, 2.4GHz	17.67	17.25	0.42	3
	11g, 2.4GHz	22.03	21.94	0.09	3
	11n HT20, 2.4GHz	21.02	20.85	0.17	3
	11n HT40, 2.4GHz	21.79	21.39	0.4	3
	11a, 5.2GHz	12.28	12.23	0.05	3
	11a, 5.3GHz	11.72	11.69	0.03	3
	11a, 5.5GHz	12.74	12.53	0.21	3
	11a, 5.8GHz	12.48	11.64	0.84	3
	11n HT20, 5.2GHz	11.43	11.25	0.18	3
	11n HT20, 5.3GHz	11.01	10.80	0.21	3
	11n HT20, 5.5GHz	11.53	11.23	0.3	3
	11n HT20, 5.8GHz	11.21	10.89	0.32	3
	11n HT40, 5.2GHz	9.87	9.83	0.04	3
	11n HT40, 5.3GHz	9.92	9.65	0.27	3
	11n HT40, 5.5GHz	10.42	10.02	0.4	3
	11n HT40, 5.8GHz	9.82	9.68	0.14	3

Test Item	Mode	2APJ4-SLM758 Parent Worst Result	2APJ4-SNM758 Variant Check Result	Deviation (dB)	Limit (dB)
Radiated Spurious Emission (dBm)	Bluetooth-LE_GSFK CH78	-21.16	-18.35	2.81	3
	Bluetooth BR_GFSK CH39	-10.89	-13.41	2.52	3
	802.11n HT40 CH09	-3.10	-3.12	0.02	3
	802.11a CH140	-3.76	-6.27	2.51	3
	802.11a CH149	-14.47	-17.08	2.61	3

Conclusion:
Radiated spurious emission test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

Based on the spot check test result, the test data from the original model is representative for the variant model. The power level and RSE spot check are shown within expected level compliant to limit line.

The same DFS detection mechanism/software is used in the variant. Hence, there is no spot check data for DFS hand-shaking mechanism.

We confirm that the test data reuse policy of FCC KDB 484596 D01 Referencing Test Data v02r02 has been followed and the test data as referenced from the parent model report represents compliance with new FCC ID.

3 Test Configuration of Equipment Under Test

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: 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.

3.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq.(MHz)	Channel	Freq. (MHz)
5180-5240 MHz U-NII-1	36	5180	44	5220
	38*	5190	46*	5230
	40	5200	48	5240
	42#	5210	-	-

Frequency Band	Channel	Freq.(MHz)	Channel	Freq. (MHz)
5260-5320 MHz U-NII-2A	52	5260	60	5300
	54*	5270	62*	5310
	56	5280	64	5320
	58#	5290	-	-

Frequency Band	Channel	Freq.(MHz)	Channel	Freq. (MHz)
5500-5700MHz U-NII-2C	100	5500	112	5560
	102*	5510	116	5580
	104	5520	132	5660
	106#	5530	134*	5670
	108	5540	136	5680
	110*	5550	140	5700

Frequency Band	Channel	Freq.(MHz)	Channel	Freq. (MHz)
5745-5825 MHz U-NII-3	149	5745	157	5785
	151*	5755	159*	5795
	153	5765	161	5805
	155#	5775	165	5825

Frequency Band	Channel	Freq.(MHz)	Channel	Freq. (MHz)
TDWR Channel	118*	5590	124	5620
	120	5600	126*	5630
	122#	5610	128	5640

Note:

1. The above Frequency and Channel in "*" are 40MHz bandwidth.
2. The above Frequency and Channel in "#" are 80MHz bandwidth.

3.2 Test Mode

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

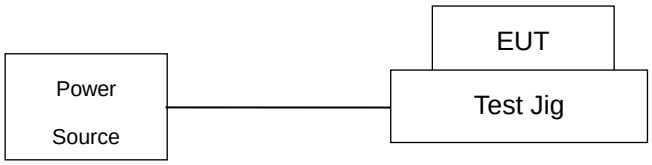
Modulation	Data Rate
802.11ac VHT20	**MCS0**
802.11ac VHT40	**MCS0**
802.11ac VHT80	**MCS0**

Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		20M BW	20M BW	20M BW	20M BW
L	Low	36	52	100	149
M	Middle	44	60	116	157
H	High	48	64	140	165

Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		40M BW	40M BW	40M BW	40M BW
L	Low	38	54	102	151
M	Middle	-	-	110	-
H	High	46	62	134	159

Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		80M BW	80M BW	80M BW	80M BW
L	Low	-	-	106	-
M	Middle	42	58	-	155
H	High	-	-	122	-

3.3 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.

3.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Test Jig	N/A	N/A	N/A	N/A	N/A
2.	Adapter	N/A	N/A	N/A	N/A	N/A
3.	Antenna	N/A	N/A	N/A	N/A	N/A

3.5 EUT Operation Test Setup

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

3.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 6.5 dB.

Offset(dB) = RF cable loss(dB) = 6.5 (dB)

4 Test Result

4.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

4.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

26dB and 99% Occupied bandwidth are reporting only.

4.1.2 Measuring Instruments

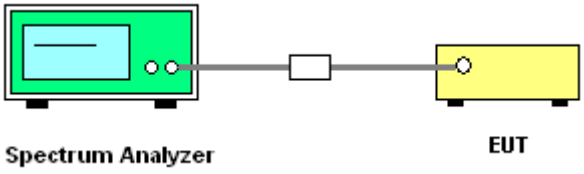
The measuring equipment is listed in the section 4 of this test report.

4.1.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

☒	Section C) Bandwidth Measurement 1. Emission Bandwidth (EBW) and 99% OBW
	1. Set RBW = approximately 1% of the emission bandwidth. **2.** Set the VBW > RBW. **3.** Detector = Peak. **4.** Trace mode = max hold **5.** Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%. **6.** For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set to 1%~5% of the OBW and set the Video bandwidth (VBW) ≥ 3 * RBW. **7.** Measure and record the results in the test report.
☒	Section C) Bandwidth Measurement 2. Minimum Emission Bandwidth for the band 5.725 - 5.85 GHz
	1. Set RBW = 100kHz. **2.** Set the VBW ≥ 3 x RBW. **3.** Detector = Peak. **4.** Trace mode = max hold **5.** Measure the maximum width of the emission that is 6 dB down from the peak of the emission. **6.** Measure and record the results in the test report.

4.1.4 Test Setup

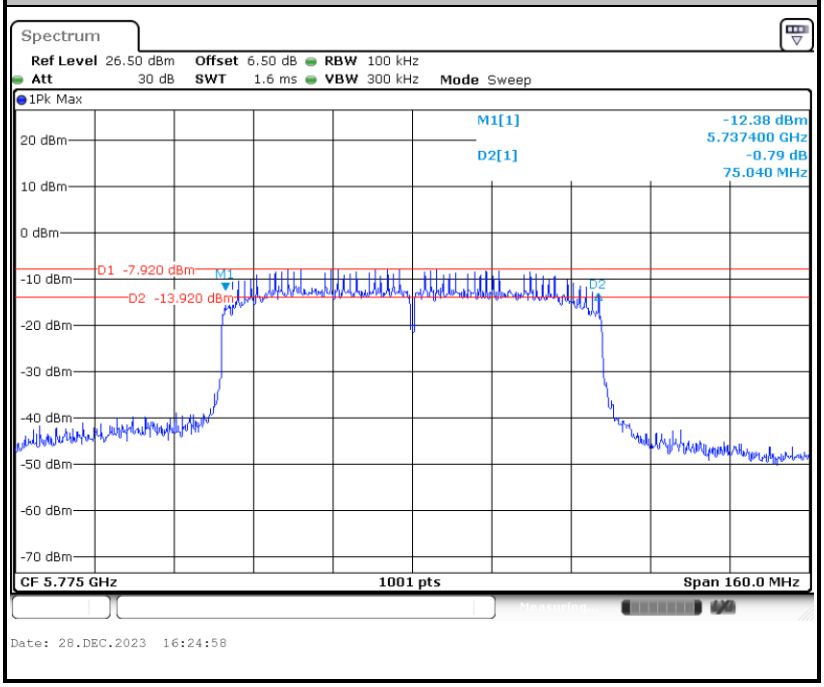


4.1.5 Test Result of 6dB Bandwidth

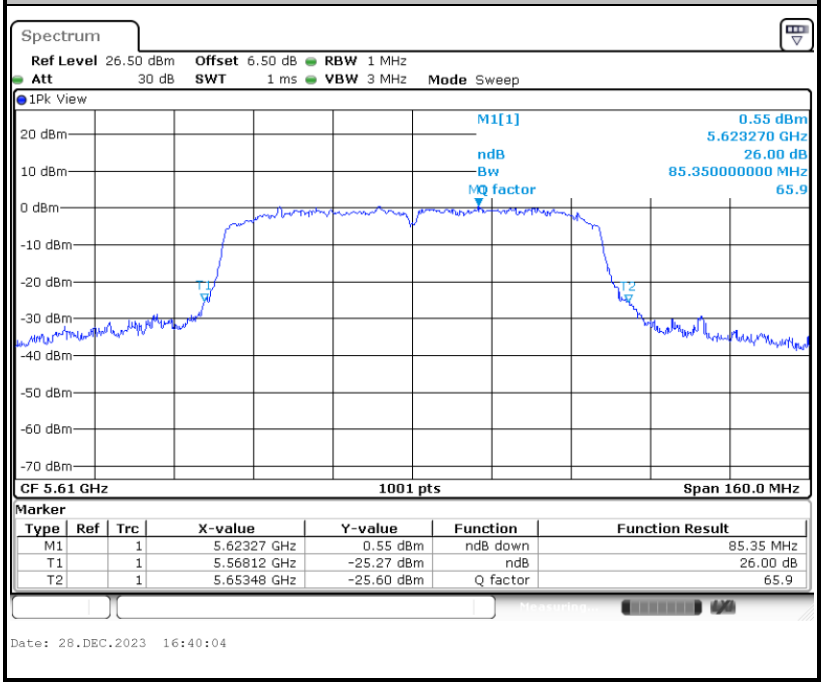
U-NII-1/2A/2C										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	IC 99% Bandwidth Power Limit (dBm)	IC 99% Bandwidth EIRP Limit (dBm)	26dB Bandwidth Power Limit (dBm)	Note
VHT80	MCS0	1	42	5210	74.81	83.12	-	23.01	-	----
VHT80	MCS0	1	58	5290	74.81	82.96	23.98	30.00	23.98	----
VHT80	MCS0	1	106	5530	74.69	84.88	23.98	30.00	23.98	----
VHT80	MCS0	1	122	5610	74.69	85.35	23.98	30.00	23.98	----

U-NII-3									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
VHT80	MCS0	1	155	5775	74.81	84.40	75.04	0.5	Pass

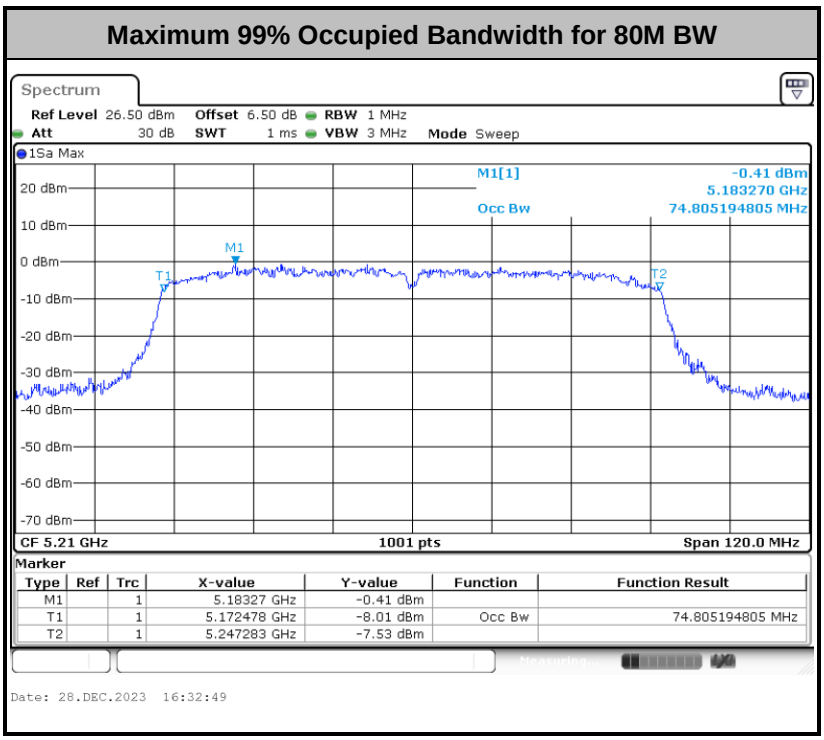
Minimum 6dB Bandwidth



Maximum 26dB Bandwidth for 80M BW



Maximum 99% Occupied Bandwidth for 80M BW



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

4.2 Maximum Conducted Output Power Measurement

4.2.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW.

For the 5.25–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

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4.2.2 Measuring Instruments

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

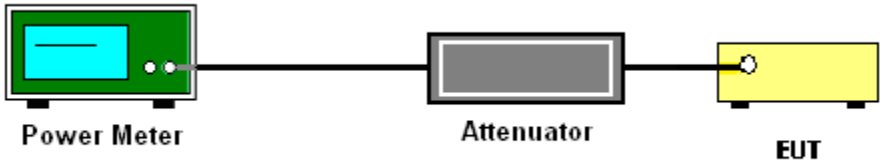
4.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, 10 log(1/x), where x is the duty cycle.

4.2.4 Test Setup



4.2.5 Test Result of Maximum Conducted Output Power

U-NII-1											
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power with duty factor (dBm)	Conducted Power Limit (dBm)	DG (dBi)	/	Pass/Fail	Power Setting
VHT20	MCS0	1	36	5180	0.60	10.95	24.00	1.00	/	Pass	10
VHT20	MCS0	1	44	5220	0.60	10.28	24.00	1.00		Pass	10
VHT20	MCS0	1	48	5240	0.60	10.22	24.00	1.00		Pass	10
VHT40	MCS0	1	38	5190	1.48	8.87	24.00	1.00		Pass	9
VHT40	MCS0	1	46	5230	1.48	8.40	24.00	1.00		Pass	9
VHT80	MCS0	1	42	5210	2.63	9.08	24.00	1.00		Pass	11

U-NII-2A											
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power with duty factor (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail	Power Setting
VHT20	MCS0	1	52	5260	0.60	10.16	23.98	1.00	26.99	Pass	10.5
VHT20	MCS0	1	60	5300	0.60	9.32	23.98	1.00	26.99	Pass	10.5
VHT20	MCS0	1	64	5320	0.60	9.25	23.98	1.00	26.99	Pass	10.5
VHT40	MCS0	1	54	5270	1.48	7.82	23.98	1.00	26.99	Pass	9.5
VHT40	MCS0	1	62	5310	1.48	7.11	23.98	1.00	26.99	Pass	9.5
VHT80	MCS0	1	58	5290	2.63	7.99	23.98	1.00	26.99	Pass	11

U-NII-2C											
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power with duty factor (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail	Power Setting
VHT20	MCS0	1	100	5500	0.60	9.19	23.98	1.00	26.99	Pass	9
VHT20	MCS0	1	116	5580	0.60	9.27	23.98	1.00	26.99	Pass	9
VHT20	MCS0	1	140	5700	0.60	9.89	23.98	1.00	26.99	Pass	9
VHT40	MCS0	1	102	5510	1.48	6.88	23.98	1.00	26.99	Pass	8.5
VHT40	MCS0	1	110	5550	1.48	7.06	23.98	1.00	26.99	Pass	8.5
VHT40	MCS0	1	134	5670	1.48	8.67	23.98	1.00	26.99	Pass	8.5
VHT80	MCS0	1	106	5530	2.63	8.62	23.98	1.00	26.99	Pass	11
VHT80	MCS0	1	122	5610	2.63	9.35	23.98	1.00	26.99	Pass	11

U-NII-3										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power with duty factor (dBm)	Conducted Power Limit (dBm)	DG (dBi)	Pass/Fail	Power Setting
VHT20	MCS0	1	149	5745	0.60	9.15	30.00	1.00	Pass	9.5
VHT20	MCS0	1	157	5785	0.60	9.26	30.00	1.00	Pass	9.5
VHT20	MCS0	1	165	5825	0.60	8.93	30.00	1.00	Pass	9.5
VHT40	MCS0	1	151	5755	1.48	8.63	30.00	1.00	Pass	9
VHT40	MCS0	1	159	5795	1.48	8.83	30.00	1.00	Pass	9
VHT80	MCS0	1	155	5775	2.63	8.80	30.00	1.00	Pass	11

4.3 Power Spectral Density Measurement

4.3.1 Limit of Power Spectral Density

<FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.

For the 5.25–5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.3.2 Measuring Instruments

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

4.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.
Section F) Maximum power spectral density.

For devices operating in the bands UNII-1/2A/2C

 # Method SA-2 #

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW ≥ 3 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6

dB if the duty cycle is 25 percent.

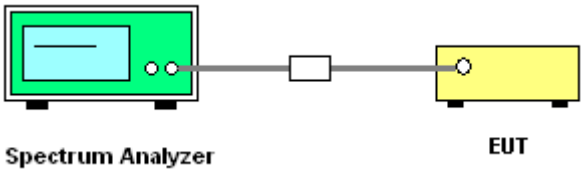
For devices operating in the band UNII-3

 # Method SA-2 #

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 500KHz (or 300 kHz if the SA can't set RBW=500KHz).
- Set VBW ≥ 1 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- If the SA can't set RBW=500KHz, then add 10 log(500kHz/RBW) to the test result.
- Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.

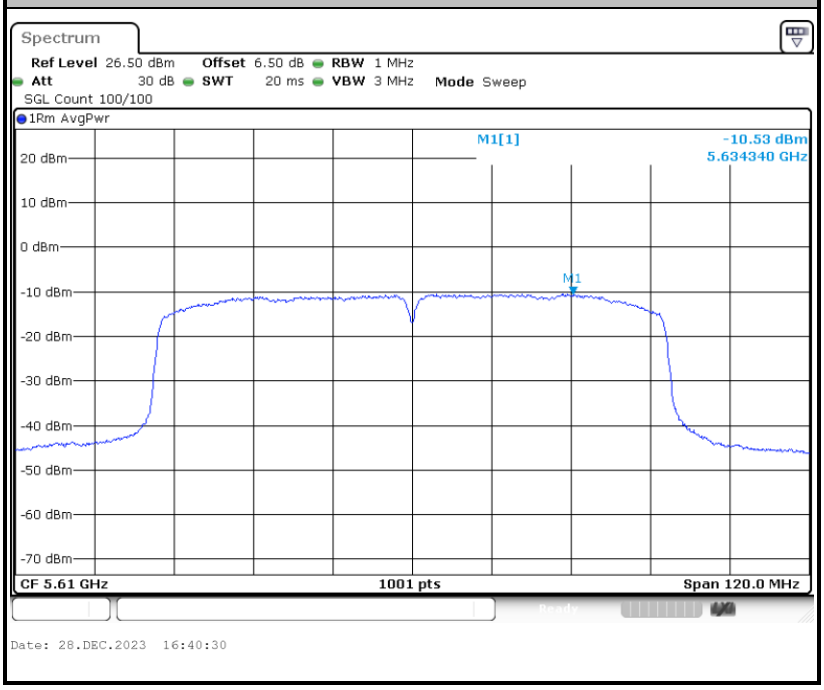
4.3.4 Test Setup



4.3.5 Test Result of Power Spectral Density

UNII-1/2A/2C									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Power Density with Duty Factor (dBm/MHz)	Average PSD Limit (dBm/MHz)	DG (dBi)	Pass /Fail
VHT80	MCS0	1	42	5210	2.63	-9.17	11.00	1.00	Pass
VHT80	MCS0	1	58	5290	2.63	-10.11	11.00	1.00	Pass
VHT80	MCS0	1	106	5530	2.63	-8.12	11.00	1.00	Pass
VHT80	MCS0	1	122	5610	2.63	-7.90	11.00	1.00	Pass

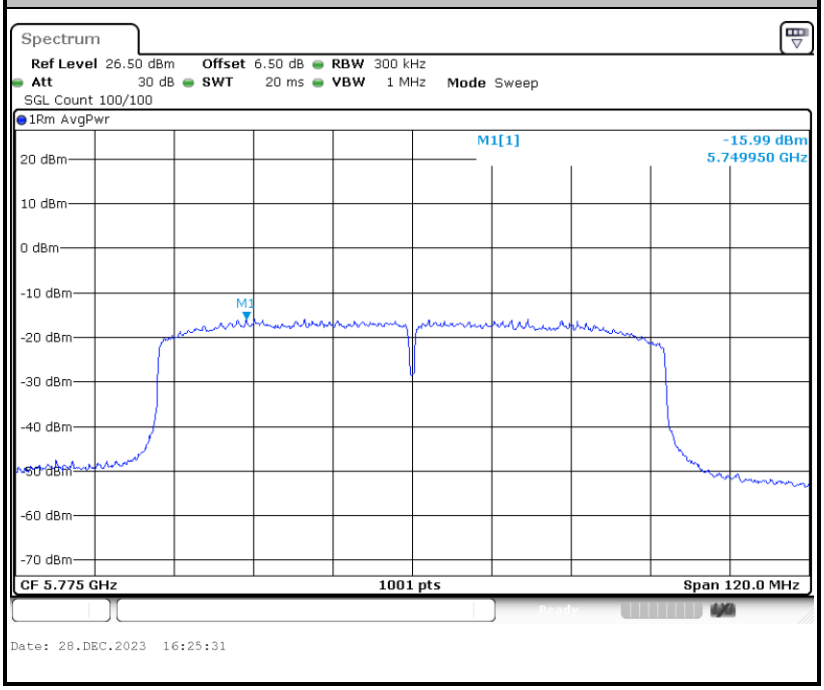
Worst Case Power Density (dBm/MHz)



Note: Average Power Density (dB) = Measured value+ Duty Factor

U-NII-3										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	10log (500kHz /RBW) Factor (dB)	Average Power Density with Duty Factor (dBm/500kHz)	Average PSD Limit (dBm/500kHz)	DG (dBi)	Pass /Fail
VHT80	MCS0	1	155	5775	2.63	2.22	-11.14	30.00	1.00	Pass

Worst Case Power Density (dBm/300kHz)



4.4 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part15.205.

4.4.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of –27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5600 MHz and 5650-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

(2) For transmitters operating in the 5.725-5.85 GHz band:
15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(3) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

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

(4) EIRP (dBm)	Field Strength at 3m (dBµV/m)
- 27	68.2

Note: The following formula is used to convert the EIRP to field strength.

$$EIRP = E_{Meas} + 20\log(d_{Meas}) - 104.7$$

where

EIRP is the equivalent isotropically radiated power, in dBm

E_{Meas} is the field strength of the emission at the measurement distance, in dBµV/m

d_{Meas} is the measurement distance, in m

(4) ANSI C63.10-2013 clause 12.7.3 note 97

As specified by regulatory requirements, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit. However, an out-of-band emission that complies with both the average and peak general regulatory limits is not required to satisfy the peak emission limit.

4.4.2 Measuring Instruments

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

4.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04. Section G) Unwanted emissions measurement.

   (1) Procedure for Unwanted Emissions Measurements Below 1000MHz

   - RBW = 120 kHz
   - VBW = 300 kHz
   - Detector = Peak
   - Trace mode = max hold

   (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

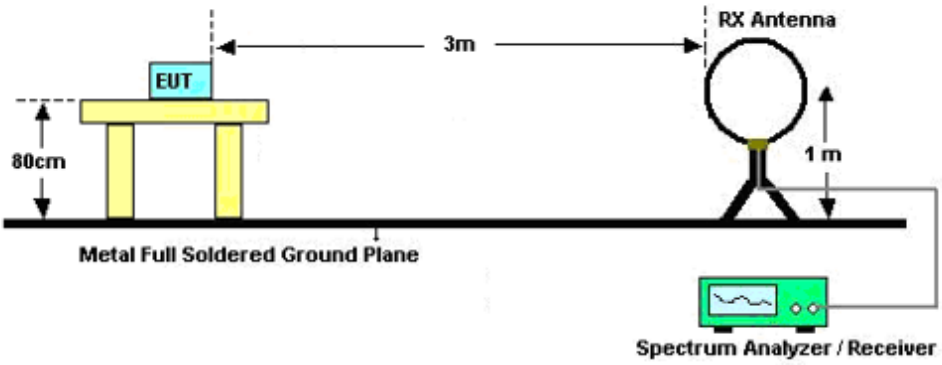
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

   - RBW = 1 MHz
   - 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.

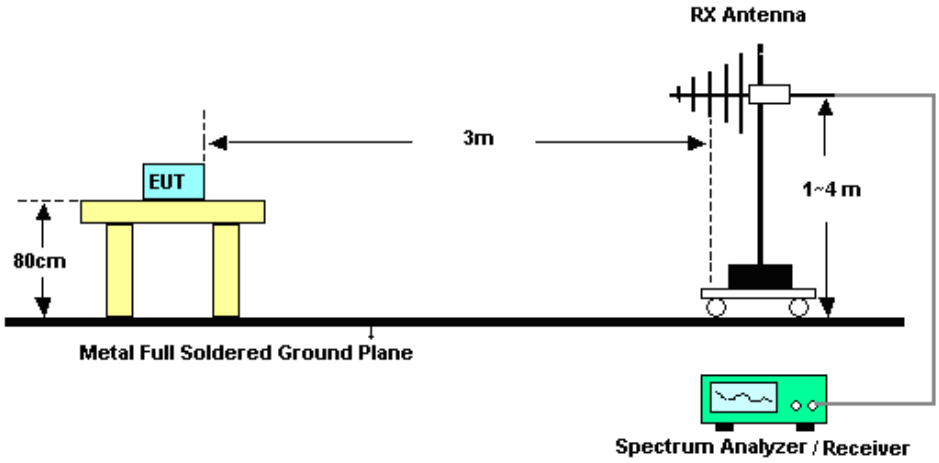
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
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 average 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.

4.4.4 Test Setup

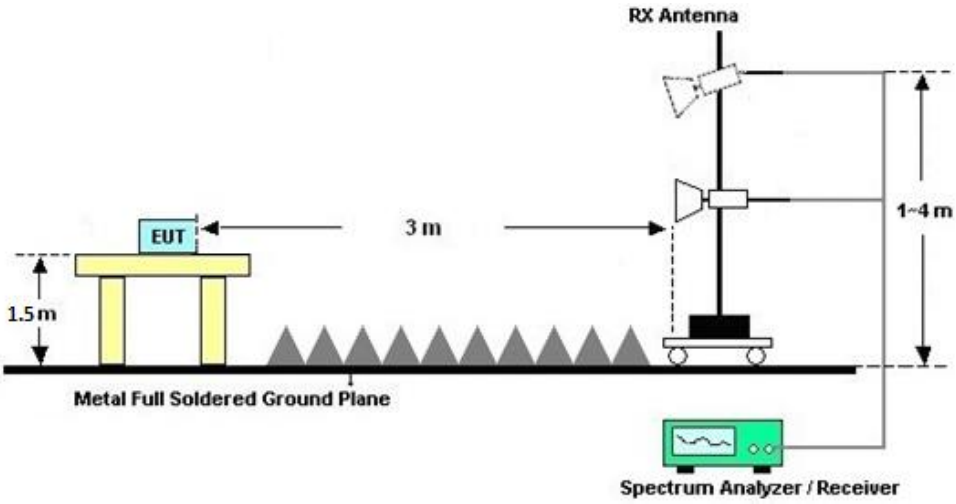
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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.

4.4.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix A.

4.4.7 Duty Cycle

Please refer to Appendix B.

4.4.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix A.

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 11, 2023	Dec. 05, 2023~ Dec. 28, 2023	Oct. 10, 2024	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 05, 2023	Dec. 05, 2023~ Dec. 28, 2023	Jan. 04, 2024	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 05, 2023	Dec. 05, 2023~ Dec. 28, 2023	Jan. 04, 2024	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY56400004	3Hz~8.5GHz;Max 30dBm	Oct. 10, 2023	Nov. 30, 2023~ Jan. 04, 2024	Oct. 09, 2024	Radiation (03CH05-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44G,MAX 30dB	Mar. 24, 2023	Nov. 30, 2023~ Jan. 04, 2024	Mar. 23, 2024	Radiation (03CH05-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 10, 2023	Nov. 30, 2023~ Jan. 04, 2024	Oct. 09, 2024	Radiation (03CH05-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	Apr. 09, 2023	Nov. 30, 2023~ Jan. 04, 2024	Apr. 08, 2024	Radiation (03CH05-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218642	1GHz~18GHz	Apr. 06, 2023	Nov. 30, 2023~ Jan. 04, 2024	Apr. 05, 2024	Radiation (03CH05-KS)
SHF-EHF Horn	Com-power	AH-840	101093	18GHz~40GHz	Jan. 08, 2023	Nov. 30, 2023~ Jan. 04, 2024	Jan. 07, 2024	Radiation (03CH05-KS)
Amplifier	SONOMA	310N	380826	9KHz-1GHz	Jul. 06, 2023	Nov. 30, 2023~ Jan. 04, 2024	Jul. 05, 2024	Radiation (03CH05-KS)
Amplifier	EM	EM18G40GA	060852	18~40GHz	Jan. 05, 2023	Nov. 30, 2023~ Jan. 04, 2024	Jan. 04, 2024	Radiation (03CH05-KS)
high gain Amplifier	EM	EM01G18GA	060839	1Ghz-18Ghz	Oct. 10, 2023	Nov. 30, 2023~ Jan. 04, 2024	Oct. 09, 2024	Radiation (03CH05-KS)
Amplifier	EM	EM01G18GA	060833	1Ghz-18Ghz	Jan. 05, 2023	Nov. 30, 2023~ Jan. 04, 2024	Jan. 04, 2024	Radiation (03CH05-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Nov. 30, 2023~ Jan. 04, 2024	NCR	Radiation (03CH05-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Nov. 30, 2023~ Jan. 04, 2024	NCR	Radiation (03CH05-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Nov. 30, 2023~ Jan. 04, 2024	NCR	Radiation (03CH05-KS)

NCR: No Calibration Required.

6 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. 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 Spurious Emission & Bandedge	±2.26 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.46 dB
Conducted Power Spectral Density	±0.88 dB
Frequency	±0.4 Hz

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.28dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.88dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.26dB

-THE END-

Appendix A. Radiated Spurious Emission Test Data

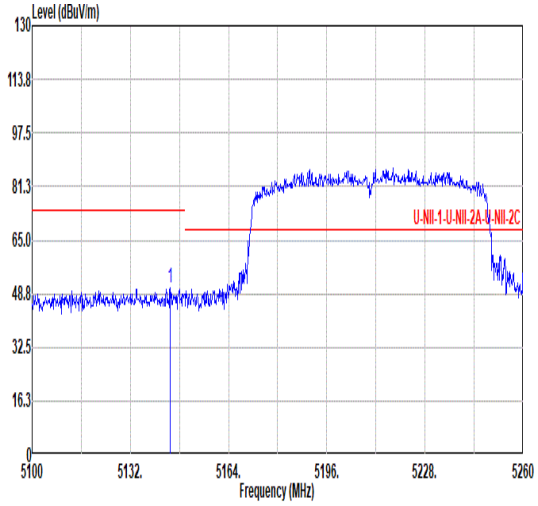
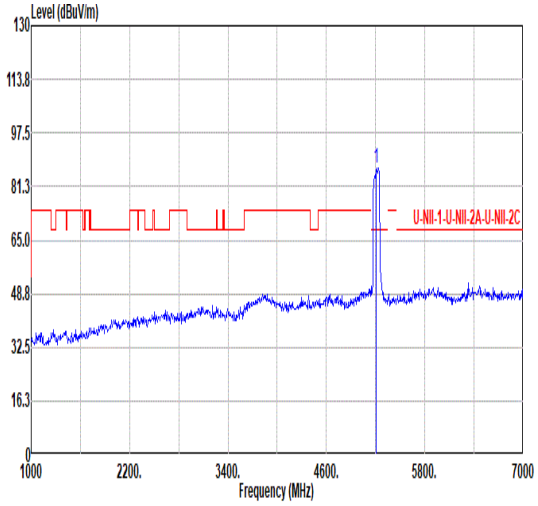
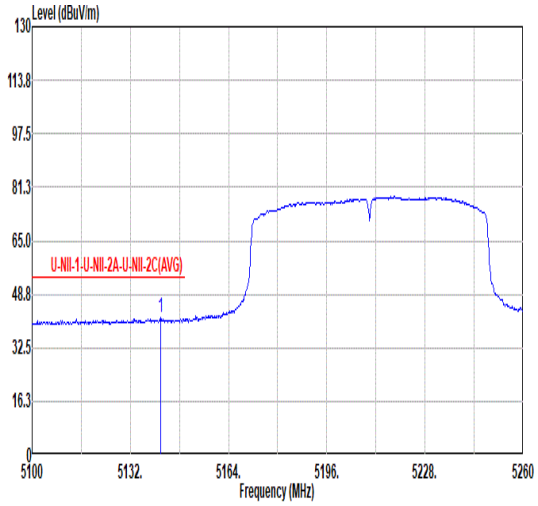
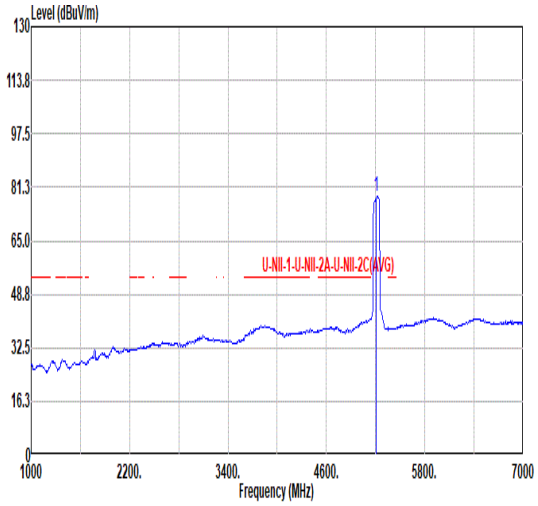
Test Engineer :	Carry Xu	Relative Humidity :	41 ~ 42 %
		Temperature :	22 ~ 23 ℃

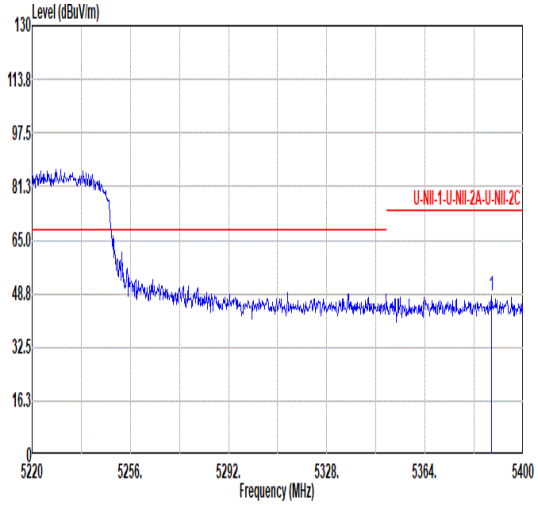
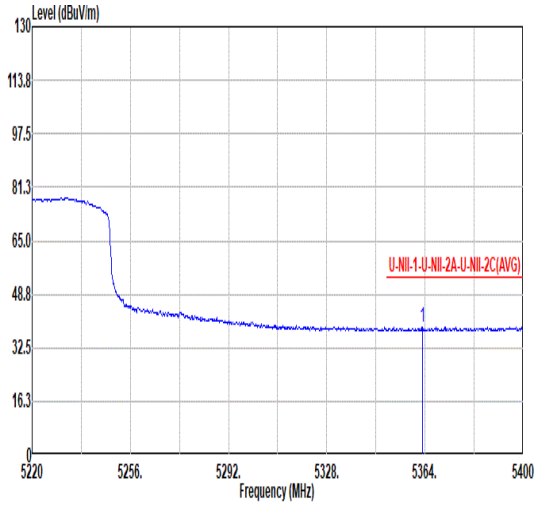
Radiated Spurious Emission Test Modes

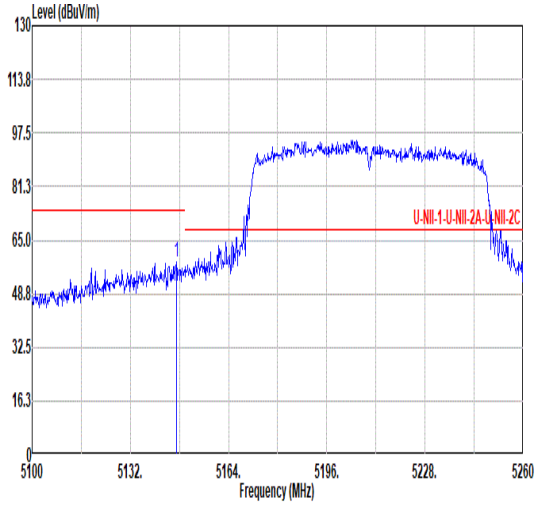
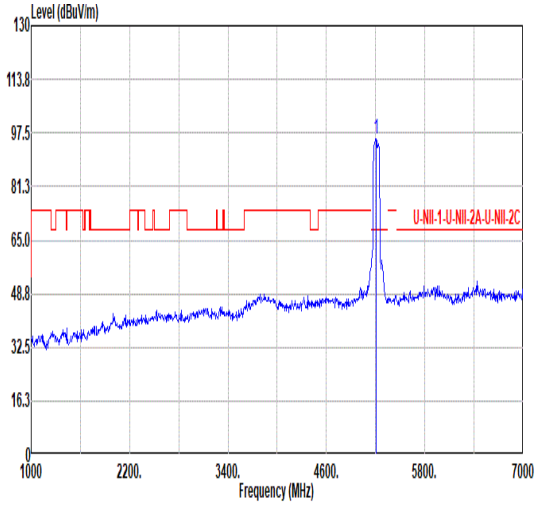
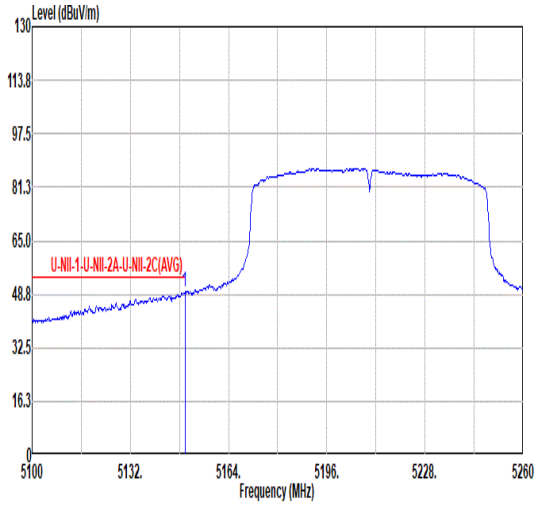
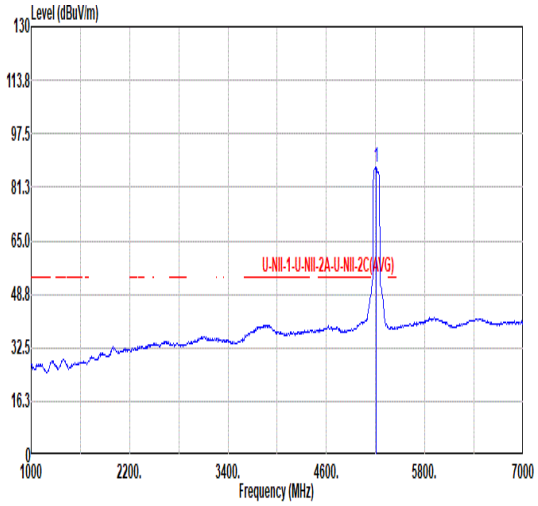
Mode	Band	Band (GHz)	Modulation	Channel	Frequency	Data Rate	Remark
Mode 1	U-NII-1	5.15-5.25	802.11ac VHT80	42	5210	MCS0	-
Mode 2	U-NII-2A	5.25-5.35	802.11ac VHT80	58	5290	MCS0	-
Mode 3	U-NII-2C	5.47-5.725	802.11ac VHT80	106	5530	MCS0	-
Mode 4	U-NII-2C	5.47-5.725	802.11ac VHT80	122	5610	MCS0	-
Mode 5	U-NII-3	5.725-5.85	802.11ac VHT80	155	5775	MCS0	-

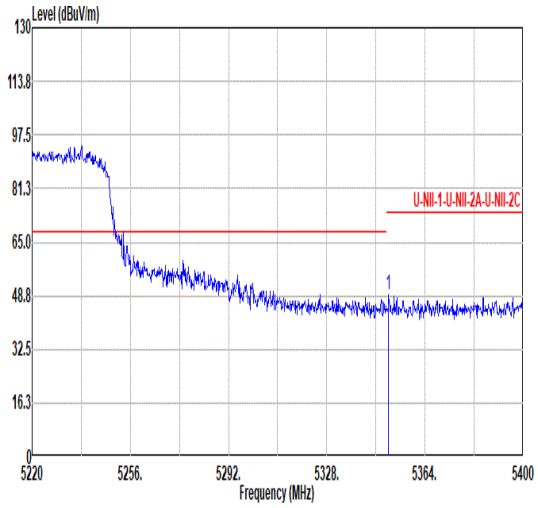
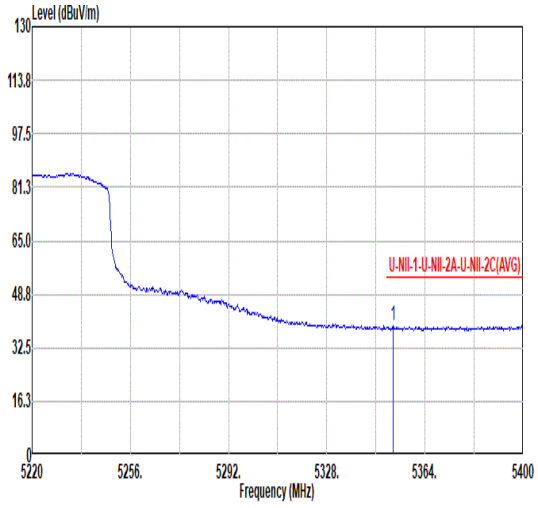
Summary of each worse mode

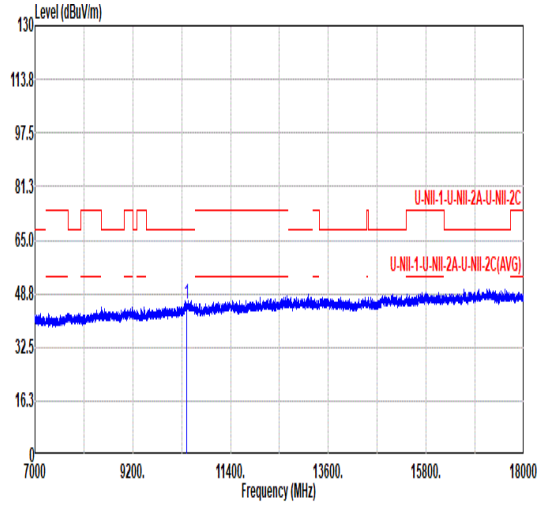
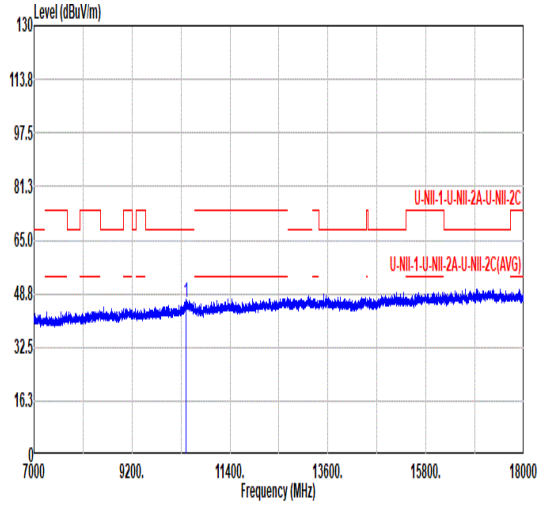
Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	Remark
1	802.11ac VHT80	42	5149.76	49.41	54.00	-4.59	V	AVERAGE	Pass	Band Edge
	802.11ac VHT80	42	10420.00	45.88	68.20	-22.32	V	PEAK	Pass	Harmonic
2	802.11ac VHT80	58	5351.00	48.61	54.00	-5.39	V	AVERAGE	Pass	Band Edge
	802.11ac VHT80	58	10580.00	45.43	68.20	-22.77	H	PEAK	Pass	Harmonic
3	802.11ac VHT80	106	5459.92	50.94	54.00	-3.06	V	AVERAGE	Pass	Band Edge
	802.11ac VHT80	106	11060.00	43.94	54.00	-10.06	V	AVERAGE	Pass	Harmonic
4	802.11ac VHT80	122	5456.56	39.42	54.00	-14.58	V	AVERAGE	Pass	Band Edge
	802.11ac VHT80	122	11220.00	47.52	54.00	-6.48	V	AVERAGE	Pass	Harmonic
5	802.11ac VHT80	155	5634.40	50.96	68.20	-17.24	V	PEAK	Pass	Band Edge
	802.11ac VHT80	155	11550.00	50.32	54.00	-3.68	V	AVERAGE	Pass	Harmonic

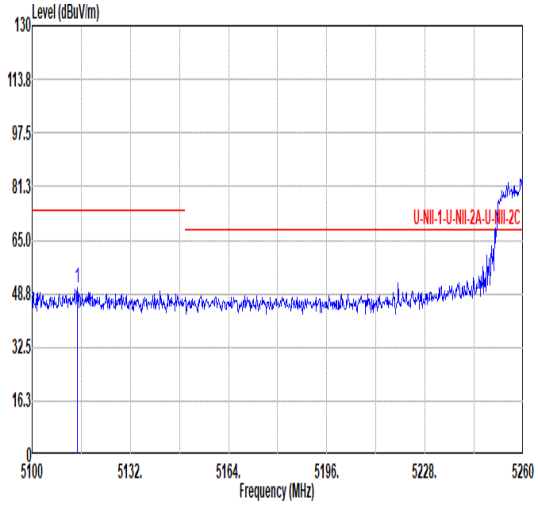
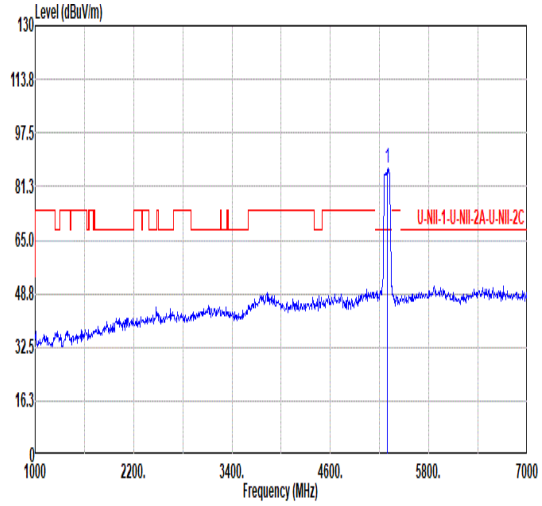
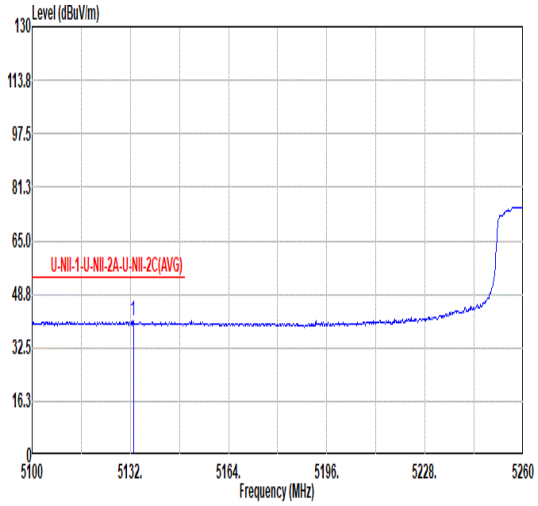
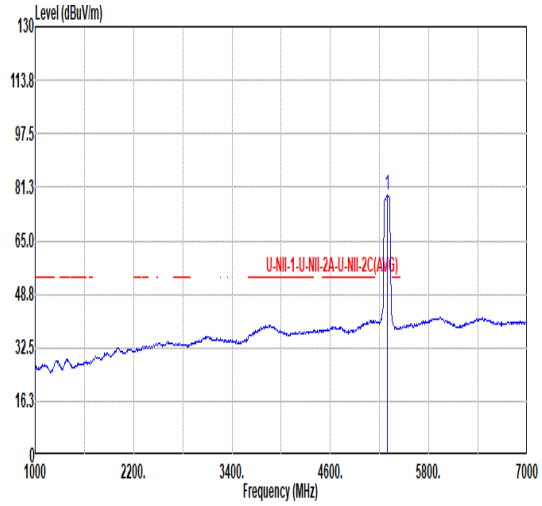
Mode	1	
	Band Edge - L	
	U-NII-1_5.15-5.25_802.11ac VHT80_CH42_5210MHz	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5144.96 50.41 74.00 -23.59 42.16 34.13 10.60 36.48 0.00 358 326 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5210.00 87.07 ------ ------ 78.70 34.34 10.67 36.64 0.00 358 326 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5141.76 41.51 54.00 -12.49 33.26 34.13 10.60 36.48 0.00 358 326 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5210.00 78.65 ------ ------ 70.28 34.34 10.67 36.64 0.00 358 326 AVERAGE

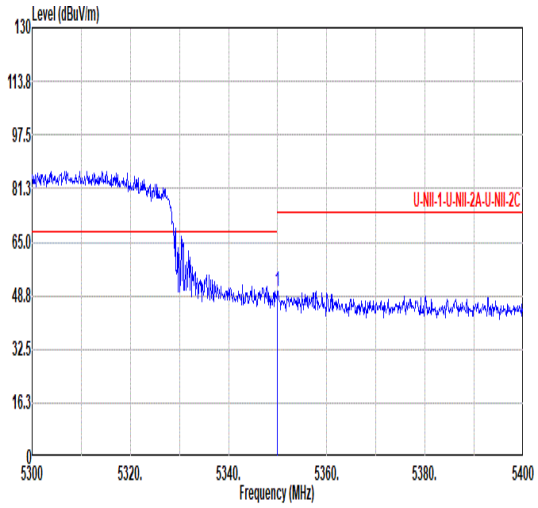
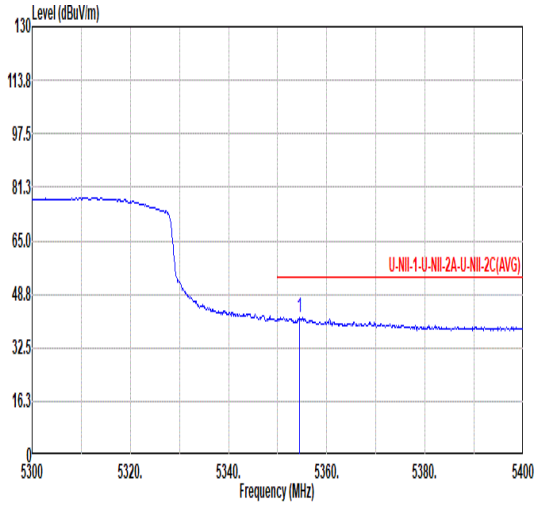
Mode	1	
	Band Edge - R	
	U-NII-1_5.15-5.25_802.11ac VHT80_CH42_5210MHz	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5388.48 48.00 74.00 -26.00 38.94 34.50 10.77 36.21 0.00 358 326 PEAK	Blank
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5363.10 38.73 54.00 -15.27 29.84 34.50 10.75 36.36 0.00 358 326 AVERAGE	Blank

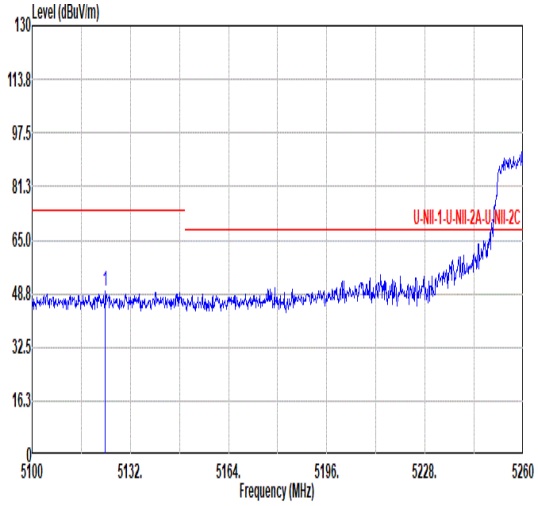
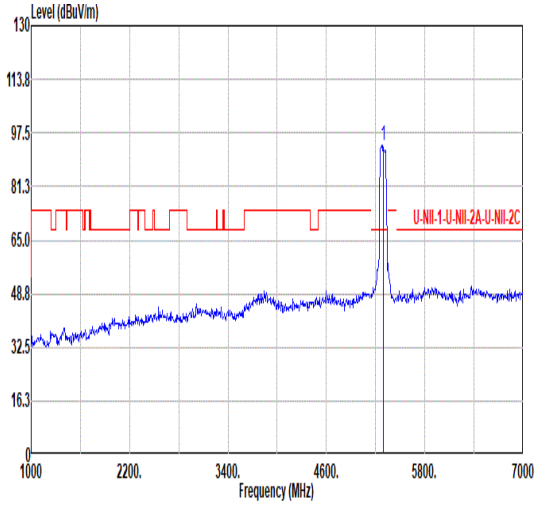
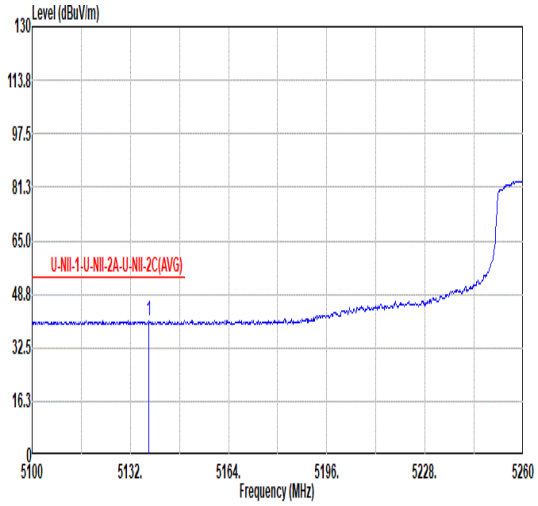
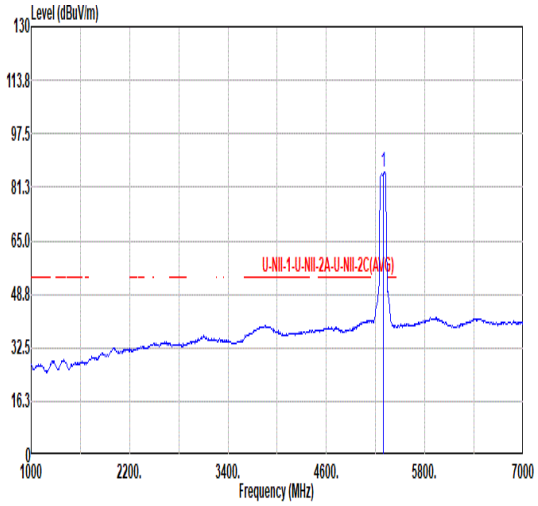
Mode	1	
	Band Edge - L	
	U-NII-1_5.15-5.25_802.11ac VHT80_CH42_5210MHz	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5147.04 58.28 74.00 -15.72 50.01 34.14 10.61 36.48 0.00 267 311 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5210.00 95.48 ------ ------ 87.18 34.28 10.65 36.63 0.00 267 311 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5149.76 49.41 54.00 -4.59 41.14 34.15 10.61 36.49 0.00 267 311 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5210.00 87.20 ------ ------ 78.90 34.28 10.65 36.63 0.00 267 311 AVERAGE

Mode	1	
	Band Edge - R	
	U-NII-1_5.15-5.25_802.11ac VHT80_CH42_5210MHz	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5350.68 49.04 74.00 -24.96 40.22 34.50 10.75 36.43 0.00 267 311 PEAK	Blank
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5352.30 39.24 54.00 -14.76 30.41 34.50 10.75 36.42 0.00 267 311 AVERAGE	Blank

Mode	1	
	Harmonic	
	U-NII-1_5.15-5.25_802.11ac VHT80_CH42_5210MHz	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 10420.00 45.79 68.20 -22.41 59.51 37.49 15.51 66.72 0.00 -- -- PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 10420.00 45.88 68.20 -22.32 59.60 37.49 15.51 66.72 0.00 -- -- PEAK

Mode	2	
	Band Edge - L	
	U-NII-2A_5.25-5.35_802.11ac VHT80_CH58_5290MHz	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5114.72 50.57 74.00 -23.43 42.42 34.04 10.57 36.46 0.00 369 325 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5290.00 86.77 ------ ------ 78.07 34.50 10.72 36.52 0.00 369 325 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5132.96 40.68 54.00 -13.32 32.46 34.10 10.59 36.47 0.00 369 325 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5290.00 78.80 ------ ------ 70.12 34.49 10.72 36.53 0.00 369 325 AVERAGE

Mode	2	
	Band Edge - R	
	U-NII-2A_5.25-5.35_802.11ac VHT80_CH58_5290MHz	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5350.00 50.28 74.00 -23.72 41.47 34.50 10.75 36.44 0.00 369 325 PEAK	Blank
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5354.40 41.64 54.00 -12.36 32.80 34.50 10.75 36.41 0.00 369 325 AVERAGE	Blank

Mode	2	
	Band Edge - L	
	U-NII-2A_5.25-5.35_802.11ac VHT80_CH58_5290MHz	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5123.84 49.73 74.00 -24.27 41.55 34.07 10.58 36.47 0.00 271 310 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5290.00 93.81 ------ ------ 85.24 34.44 10.70 36.57 0.00 271 310 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5138.08 40.87 54.00 -13.13 32.64 34.11 10.60 36.48 0.00 271 310 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5290.00 85.95 ------ ------ 77.22 34.50 10.73 36.50 0.00 271 310 AVERAGE

Mode	2	
	Band Edge - R	
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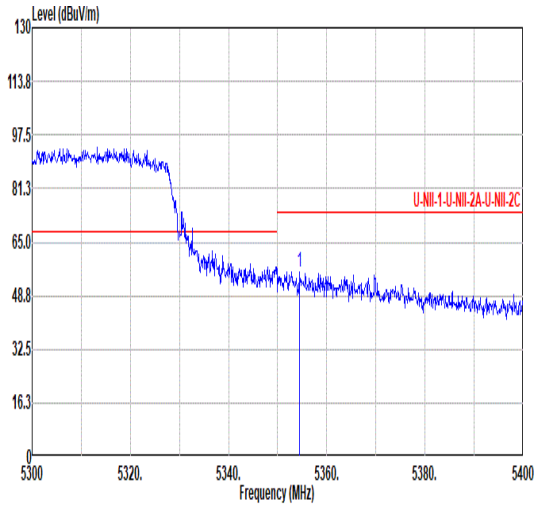
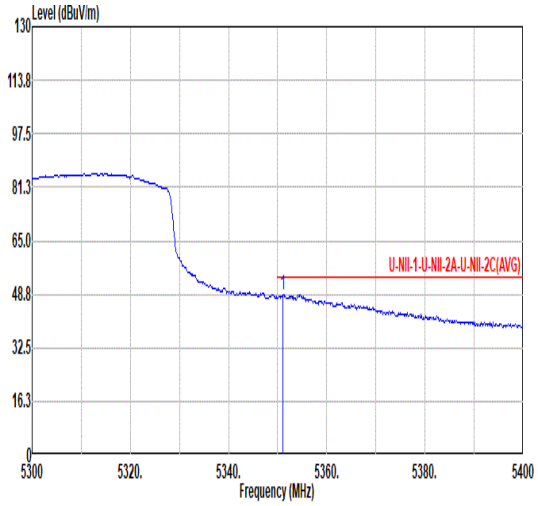
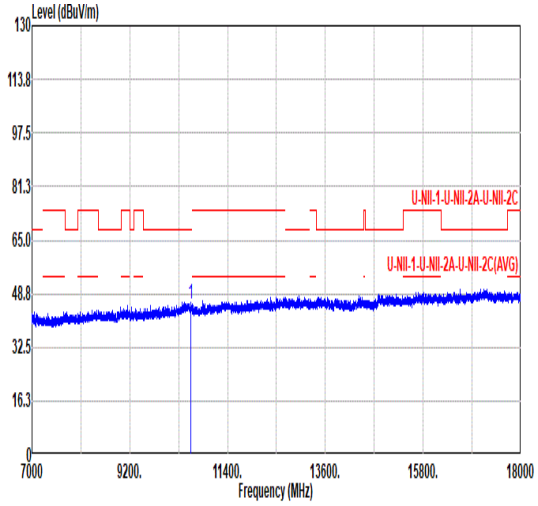
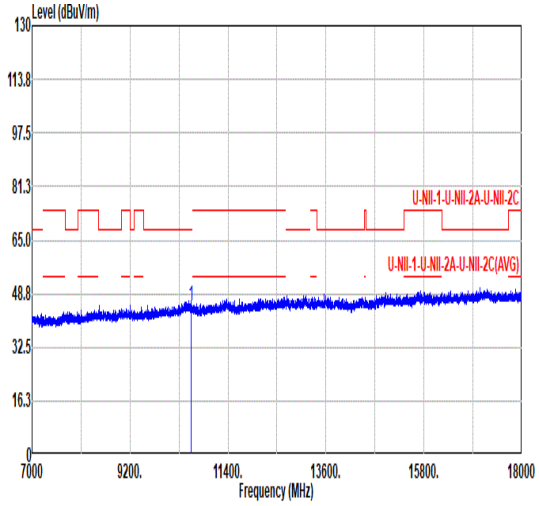
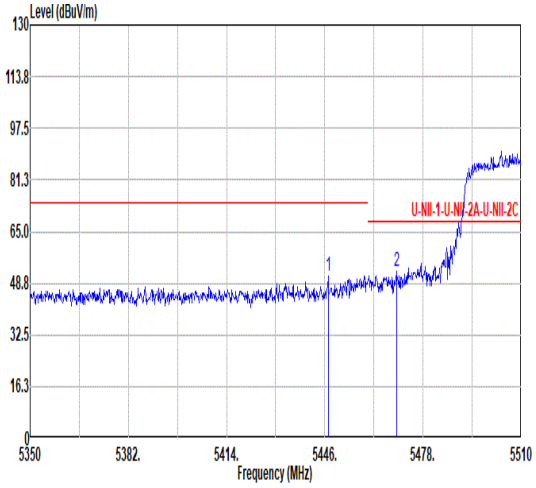
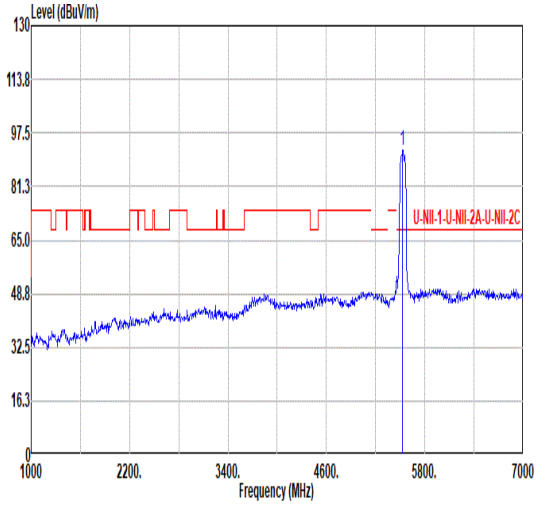
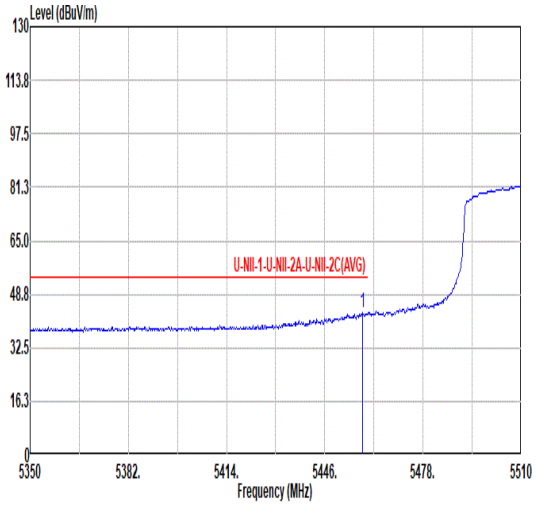
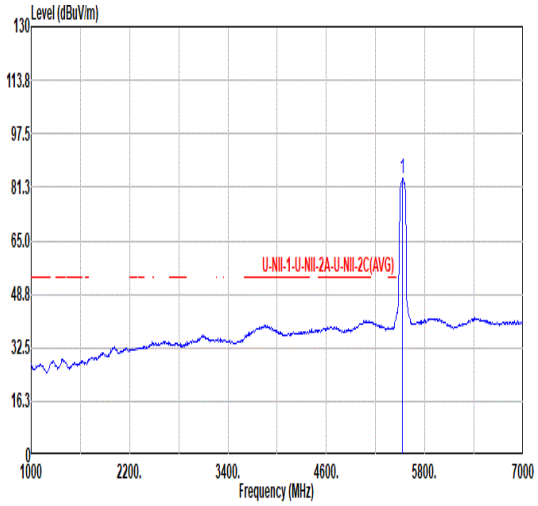
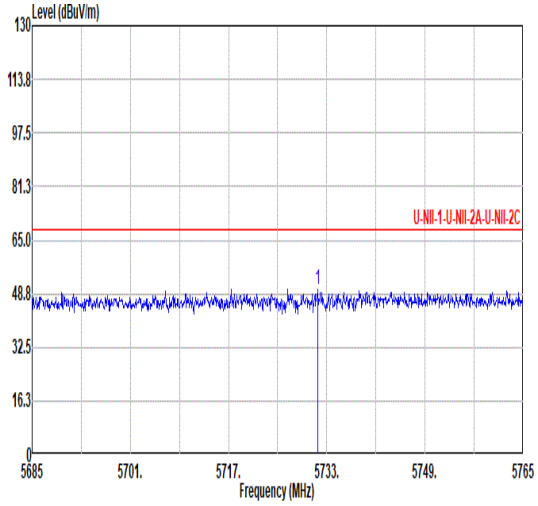
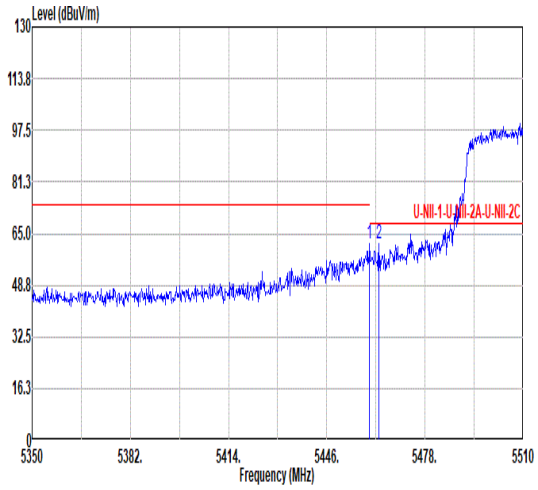
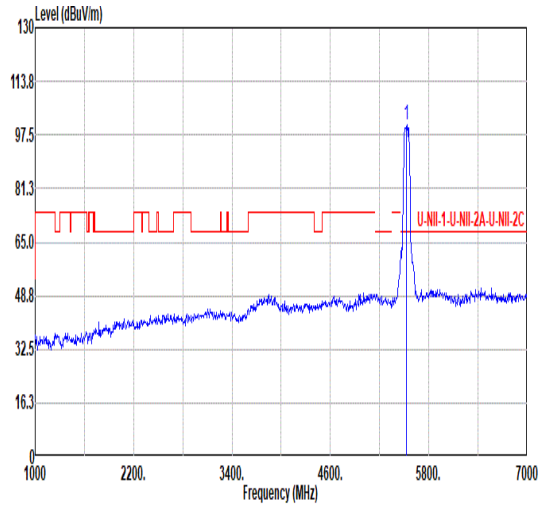
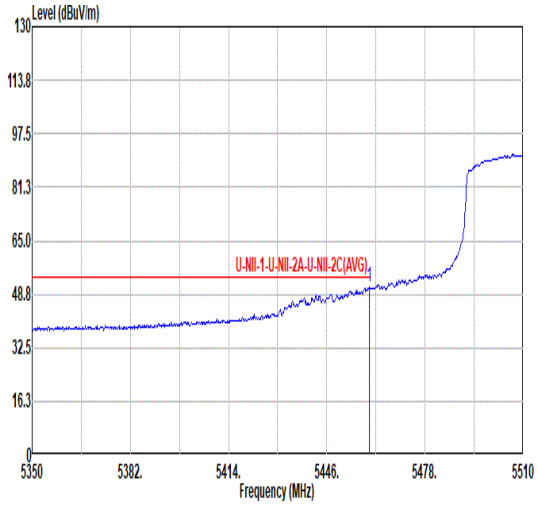
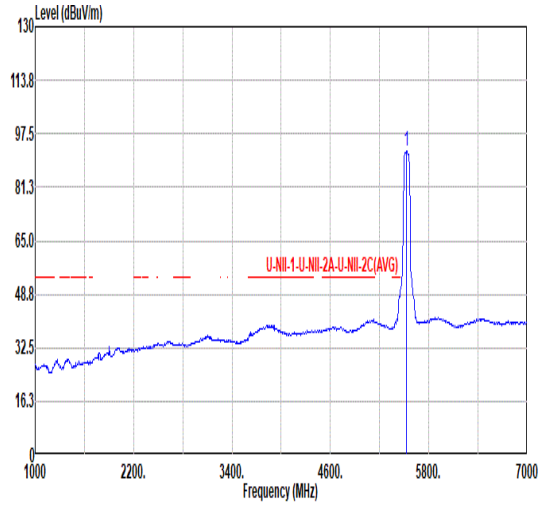
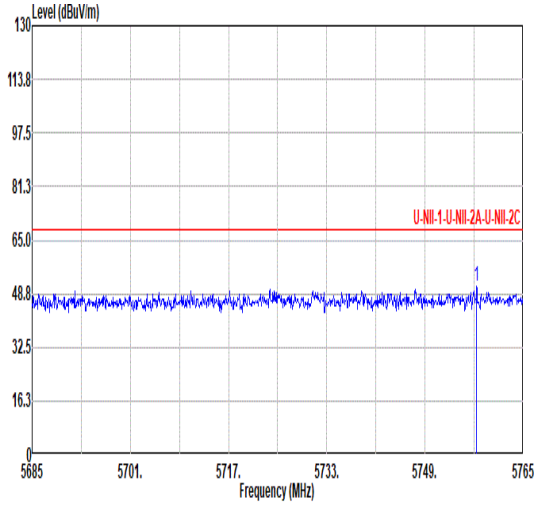
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5354.40 55.96 74.00 -18.04 47.12 34.50 10.75 36.41 0.00 271 310 PEAK	Blank
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5351.00 48.61 54.00 -5.39 39.79 34.50 10.75 36.43 0.00 271 310 AVERAGE	Blank

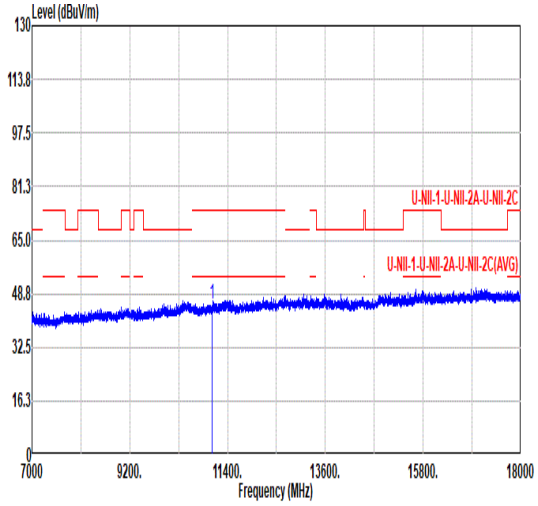
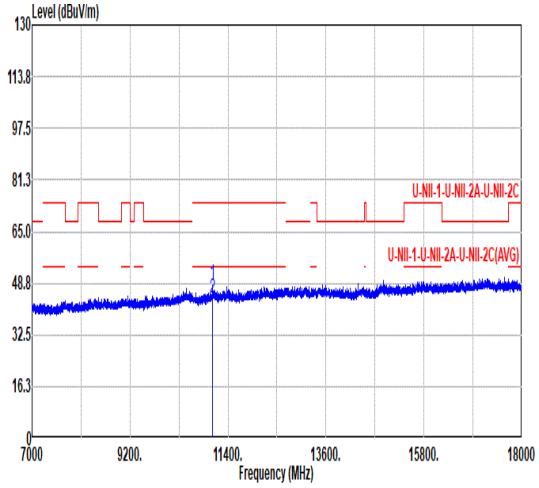
Mode	2	
	Harmonic	
	U-NII-2A_5.25-5.35_802.11ac VHT80_CH58_5290MHz	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 10580.00 45.43 68.20 -22.77 58.87 37.59 15.63 66.66 0.00 -- -- PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 10580.00 45.03 68.20 -23.17 58.42 37.61 15.65 66.65 0.00 -- -- PEAK

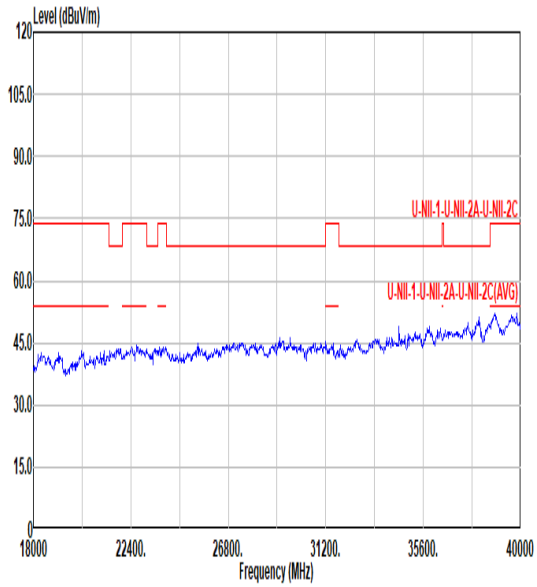
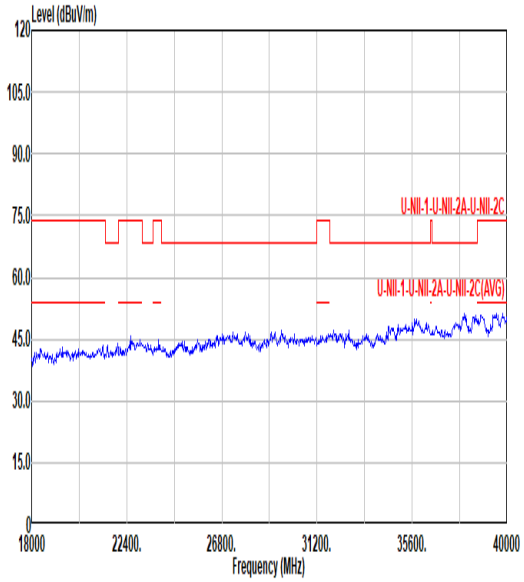
Mode	3	
	Band Edge - L	
	U-NII-2C_5.47-5.725_802.11ac VHT80_CH106_5530MHz	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5447.12 50.92 74.00 -23.08 41.62 34.55 10.83 36.08 0.00 281 223 PEAK 2 5469.36 52.44 68.20 -15.76 43.07 34.57 10.85 36.05 0.00 281 223 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5530.00 92.19 ------ ------ 82.74 34.60 10.92 36.07 0.00 281 223 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5458.32 43.27 54.00 -10.73 33.94 34.56 10.84 36.07 0.00 281 223 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5530.00 83.74 ------ ------ 74.29 34.60 10.92 36.07 0.00 281 223 AVERAGE

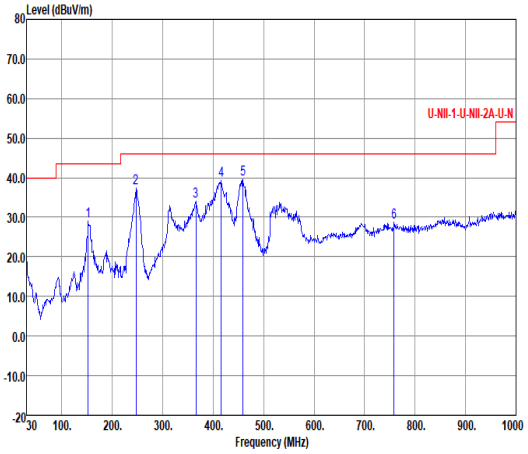
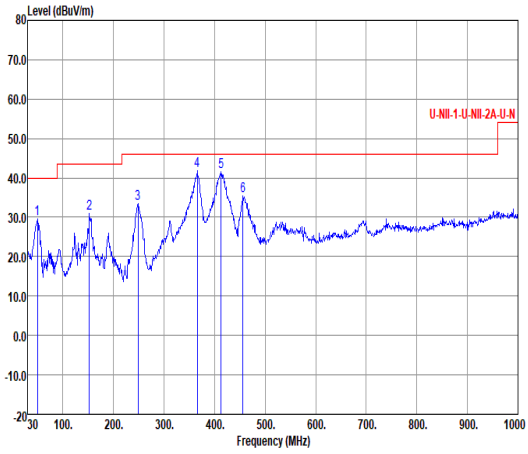
Mode	3	
	Band Edge - R	
	U-NII-2C_5.47-5.725_802.11ac VHT80_CH106_5530MHz	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5731.48 50.07 68.20 -18.13 40.19 34.69 11.19 36.00 0.00 281 223 PEAK	Blank

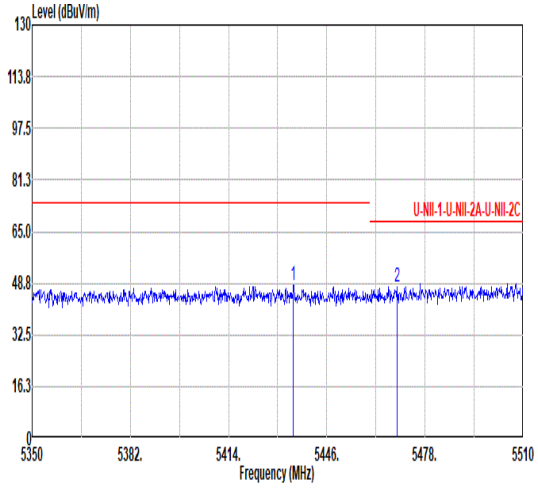
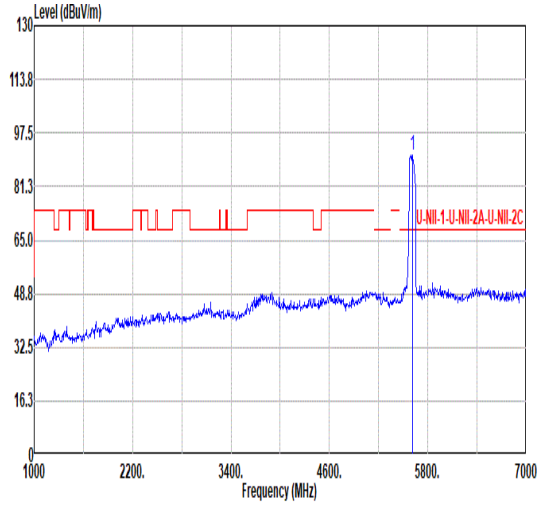
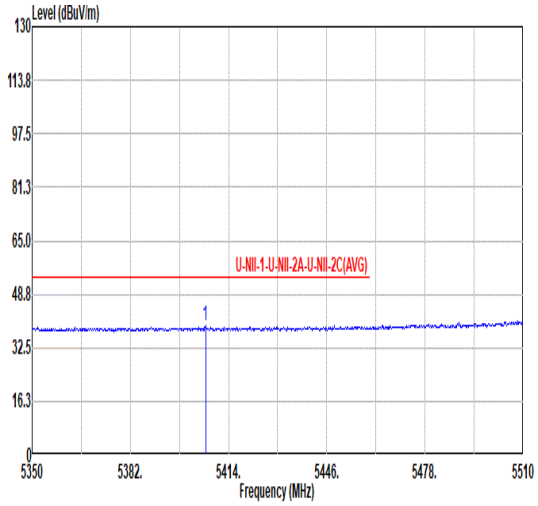
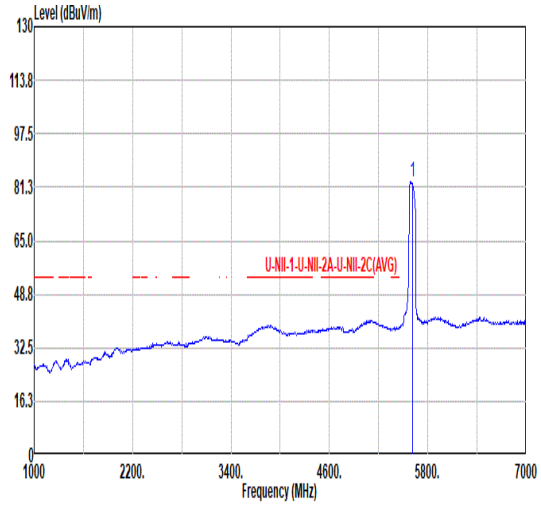
Mode	3	
	Band Edge - L	
	U-NII-2C_5.47-5.725_802.11ac VHT80_CH106_5530MHz	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5459.92 61.70 74.00 -12.30 52.36 34.56 10.84 36.06 0.00 295 306 PEAK 2 5462.96 61.81 68.20 -6.39 52.47 34.56 10.84 36.06 0.00 295 306 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5530.00 100.58 ------ ------ 91.14 34.60 10.93 36.09 0.00 295 306 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5459.92 50.94 54.00 -3.06 41.60 34.56 10.84 36.06 0.00 295 306 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5530.00 92.14 ------ ------ 82.69 34.60 10.92 36.07 0.00 295 306 AVERAGE

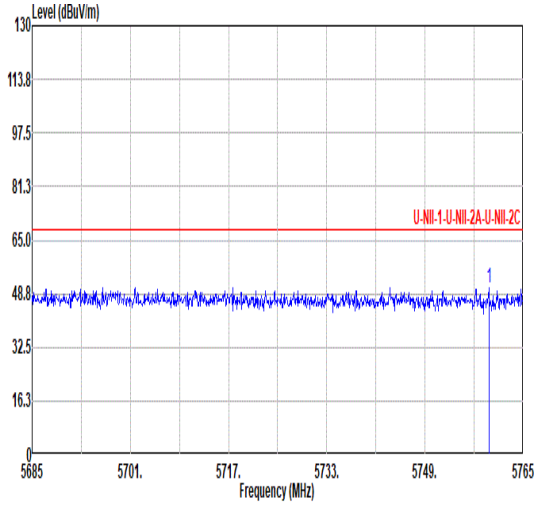
Mode	3	
	Band Edge - R	
	U-NII-2C_5.47-5.725_802.11ac VHT80_CH106_5530MHz	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5757.40 51.00 68.20 -17.20 41.01 34.77 11.22 36.00 0.00 295 306 PEAK	Blank

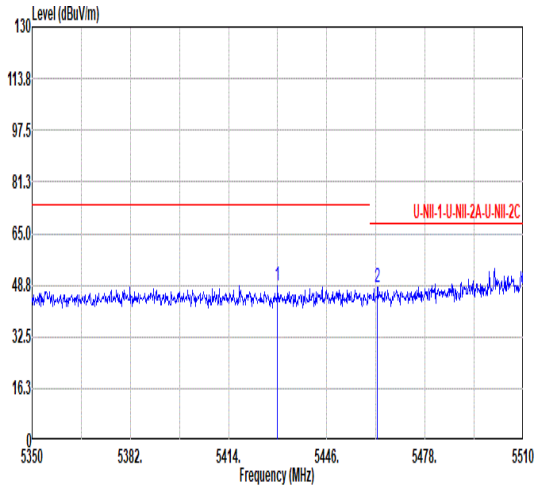
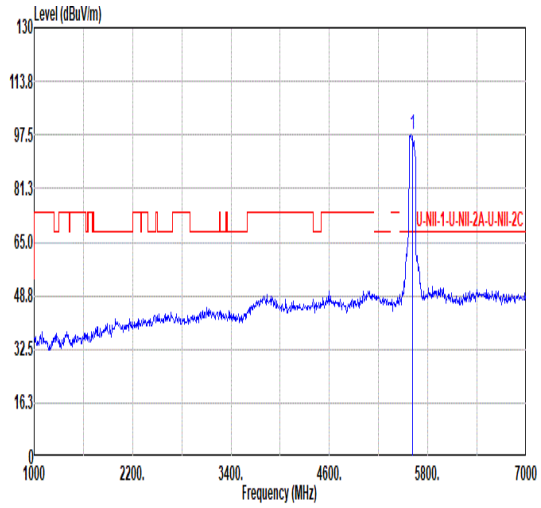
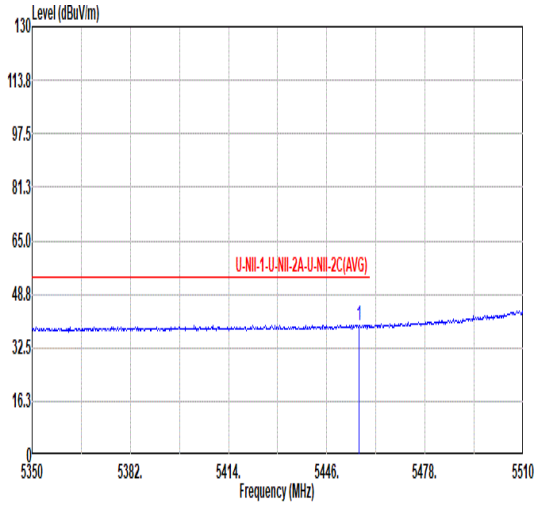
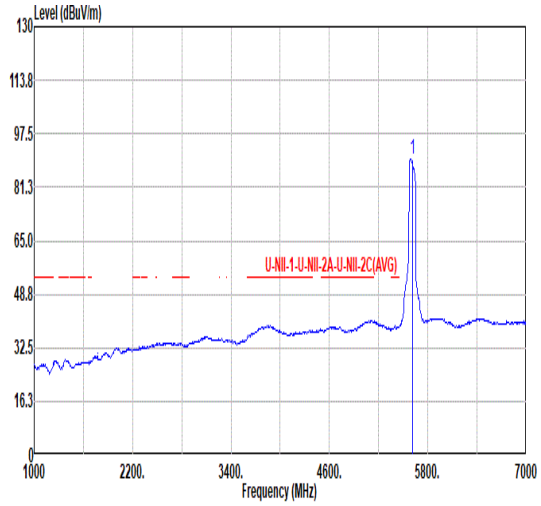
Mode	3	
	Harmonic	
	U-NII-2C_5.47-5.725_802.11ac VHT80_CH106_5530MHz	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 11060.00 45.54 74.00 -28.46 57.95 37.95 16.08 66.44 0.00 -- -- PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 11060.00 48.51 74.00 -25.49 60.92 37.95 16.08 66.44 0.00 300 0 PEAK 2 11060.00 43.94 54.00 -10.06 56.35 37.95 16.08 66.44 0.00 300 0 AVERAGE

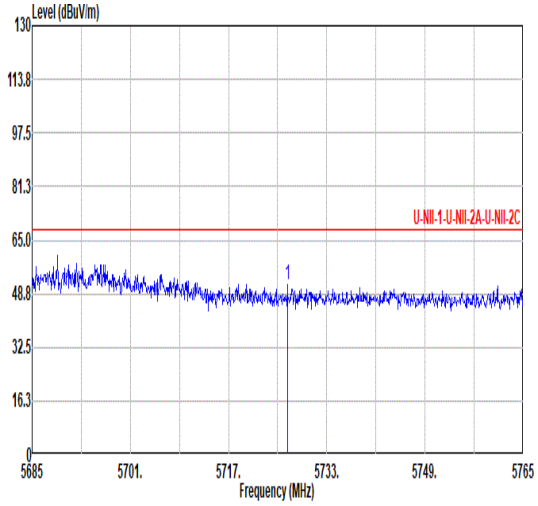
Mode	3	
	18G-40G	
	U-NII-2C_5.47-5.725_802.11ac VHT80_CH106_5530MHz	
Pol.	Horizontal	Vertical
Peak Avg		

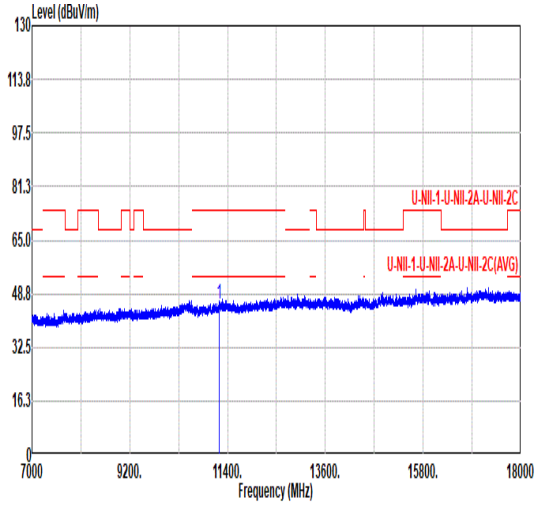
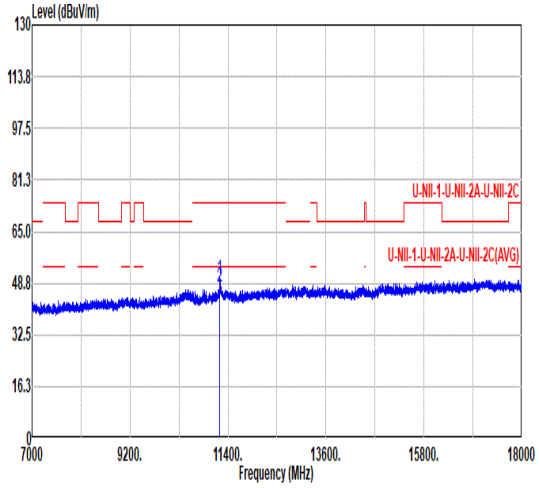
Mode	3	
	LF	
	U-NII-2C_5.47-5.725_802.11ac VHT80_CH106_5530MHz	
Pol.	Horizontal	Vertical
Peak QP	 Freq Level Over Limit Limit Line ReadAntenna Level Cable Loss Preamp Factor A/Pos T/Pos Remark Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 152.22 29.02 -14.48 43.50 43.60 16.38 1.86 32.82 --- --- Peak HORIZONT 2 247.28 37.44 -8.56 46.00 49.56 18.25 2.40 32.77 --- --- Peak HORIZONT 3 365.62 34.15 -11.85 46.00 43.32 20.82 2.91 32.90 --- --- Peak HORIZONT 4 416.06 39.33 -6.67 46.00 47.18 21.95 3.11 32.91 --- --- Peak HORIZONT 5 458.74 39.54 -6.46 46.00 46.59 22.72 3.27 33.04 --- --- Peak HORIZONT 6 758.47 28.81 -17.19 46.00 31.48 25.90 4.21 32.78 --- --- Peak HORIZONT	 Freq Level Over Limit Limit Line ReadAntenna Level Cable Loss Preamp Factor A/Pos T/Pos Remark Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 49.40 29.68 -10.32 40.00 46.87 14.69 1.04 32.92 --- --- Peak VERTICAL 2 152.22 30.94 -12.56 43.50 45.52 16.38 1.86 32.82 --- --- Peak VERTICAL 3 248.25 33.62 -12.38 46.00 45.68 18.30 2.41 32.77 --- --- Peak VERTICAL 4 365.62 41.81 -4.19 46.00 50.98 20.82 2.91 32.90 --- --- Peak VERTICAL 5 413.15 41.44 -4.56 46.00 49.33 21.90 3.10 32.89 --- --- Peak VERTICAL 6 455.83 35.32 -10.68 46.00 42.45 22.65 3.26 33.04 --- --- Peak VERTICAL

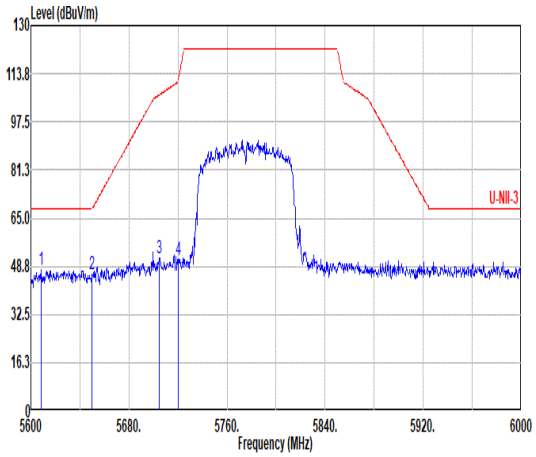
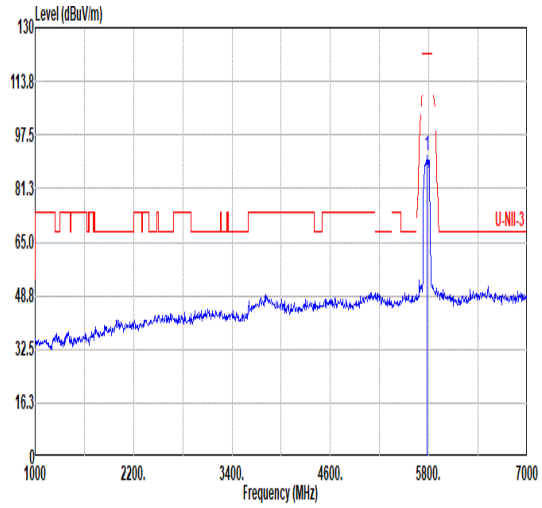
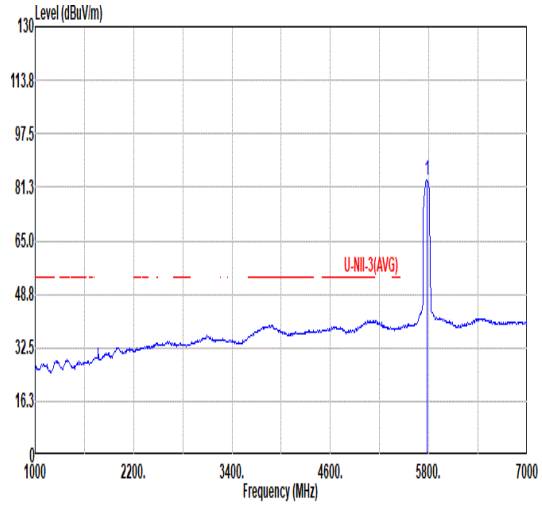
Mode	4	
	Band Edge - L	
	U-NII-2C_5.47-5.725_802.11ac VHT80_CH122_5610MHz	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5435.12 48.08 74.00 -25.92 38.83 34.54 10.81 36.10 0.00 320 195 PEAK 2 5468.88 47.53 68.20 -20.67 38.16 34.57 10.85 36.05 0.00 320 195 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5610.00 90.89 ------ ------ 81.54 34.60 10.99 36.24 0.00 320 195 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5406.48 39.22 54.00 -14.78 30.07 34.51 10.78 36.14 0.00 320 195 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5610.00 82.78 ------ ------ 73.43 34.60 10.99 36.24 0.00 320 195 AVERAGE

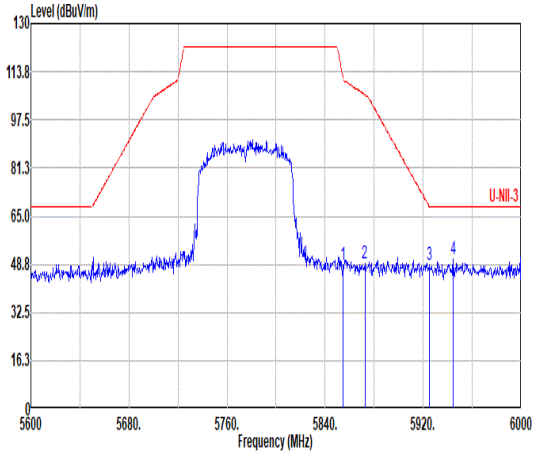
Mode	4	
	Band Edge - R	
	U-NII-2C_5.47-5.725_802.11ac VHT80_CH122_5610MHz	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5759.40 50.54 68.20 -17.66 40.55 34.78 11.22 36.01 0.00 320 195 PEAK	Blank

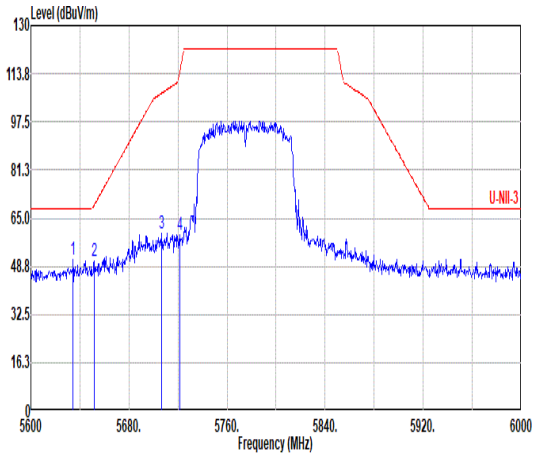
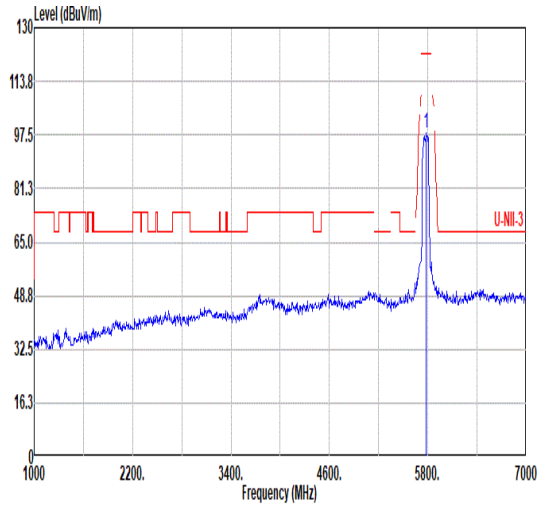
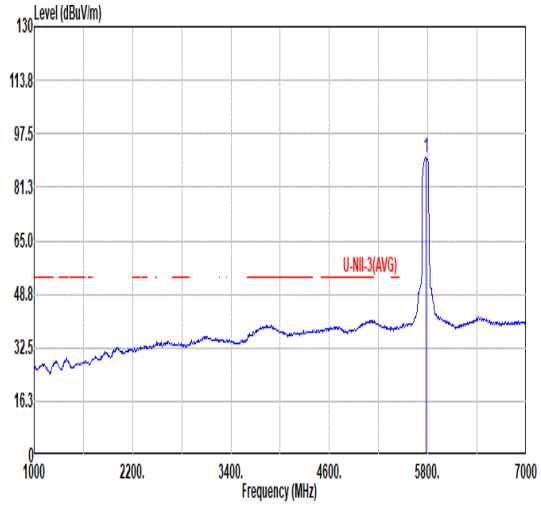
Mode	4	
	Band Edge - L	
	U-NII-2C_5.47-5.725_802.11ac VHT80_CH122_5610MHz	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5430.00 48.62 74.00 -25.38 39.38 34.53 10.81 36.10 0.00 304 240 PEAK 2 5462.48 47.89 68.20 -20.31 38.55 34.56 10.84 36.06 0.00 304 240 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5610.00 97.38 ------ ------ 88.03 34.60 10.99 36.24 0.00 304 240 PEAK
Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5456.56 39.42 54.00 -14.58 30.09 34.56 10.84 36.07 0.00 304 240 AVERAGE	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5610.00 89.84 ------ ------ 80.49 34.60 10.99 36.24 0.00 304 240 AVERAGE

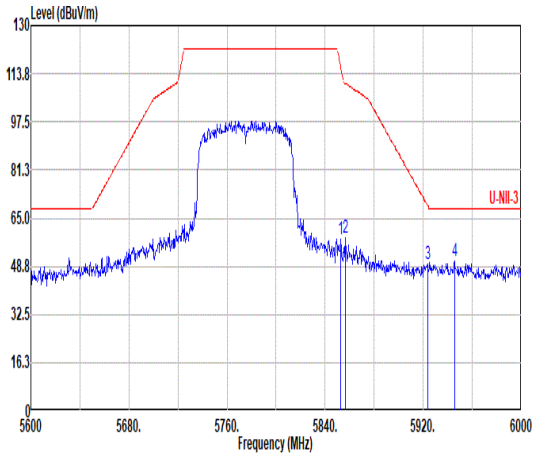
Mode	4	
	Band Edge - R	
	U-NII-2C_5.47-5.725_802.11ac VHT80_CH122_5610MHz	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5726.60 51.44 68.20 -16.76 41.59 34.68 11.18 36.01 0.00 304 240 PEAK	Blank

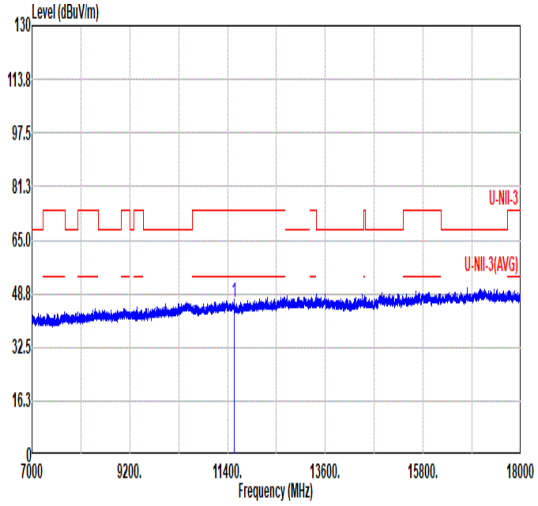
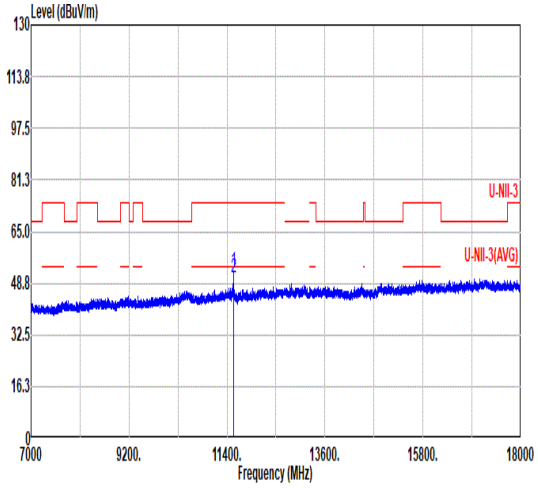
Mode	4	
	Harmonic	
	U-NII-2C_5.47-5.725_802.11ac VHT80_CH122_5610MHz	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 11220.00 45.84 74.00 -28.16 57.95 38.08 16.18 66.37 0.00 -- -- PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 11220.00 50.26 74.00 -23.74 62.37 38.08 16.18 66.37 0.00 259 6 PEAK 2 11220.00 47.52 54.00 -6.48 59.63 38.08 16.18 66.37 0.00 259 6 AVERAGE

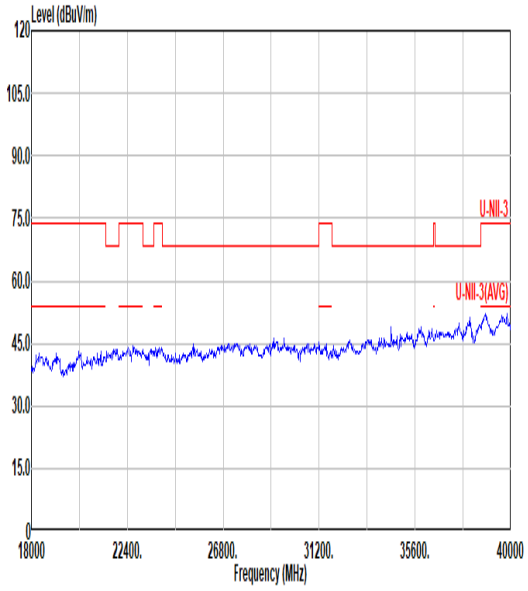
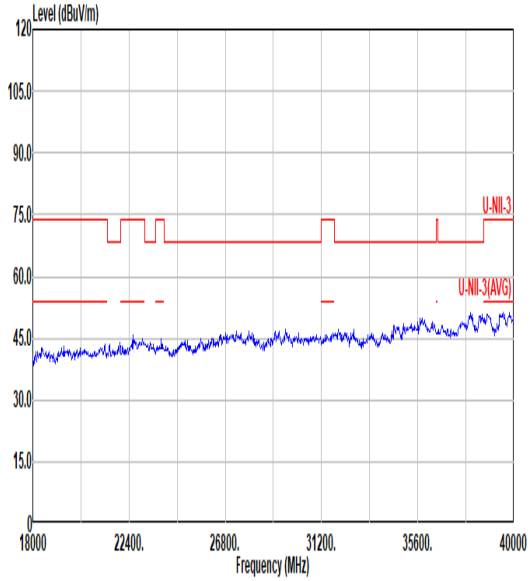
Mode	5	
	Band Edge - L	
	U-NII-3_5.725-5.85_802.11ac VHT80_CH155_5775MHz	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5608.40 47.54 68.20 -20.66 38.21 34.60 11.01 36.28 0.00 316 202 PEAK 2 5650.00 45.98 68.20 -22.22 36.63 34.60 11.07 36.32 0.00 316 202 PEAK 3 5704.80 51.73 106.65 -54.92 42.02 34.61 11.15 36.05 0.00 316 202 PEAK 4 5720.00 51.08 110.90 -59.82 41.28 34.66 11.17 36.03 0.00 316 202 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5775.00 91.21 ------ ------ 81.20 34.83 11.25 36.07 0.00 316 202 PEAK
Avg	Blank	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5775.00 83.53 ------ ------ 73.52 34.83 11.25 36.07 0.00 316 202 AVERAGE

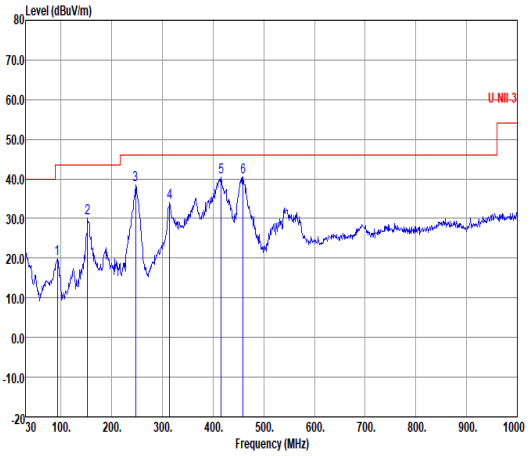
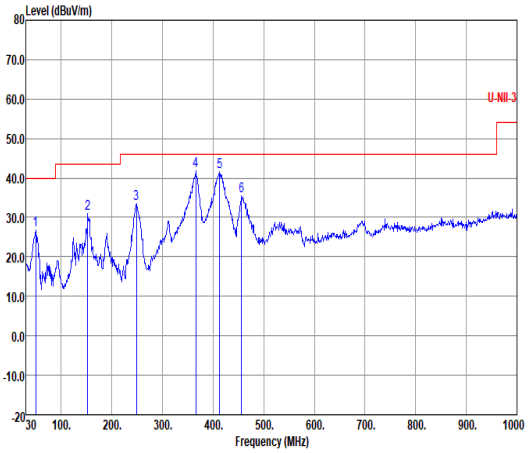
Mode	5	
	Band Edge - R	
	U-NII-3_5.725-5.85_802.11ac VHT80_CH155_5775MHz	
Pol.	Horizontal	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5854.80 48.76 111.36 -62.60 38.59 35.01 11.34 36.18 0.00 316 202 PEAK 2 5872.40 48.90 106.03 -57.13 38.84 35.04 11.35 36.33 0.00 316 202 PEAK 3 5924.80 48.55 68.35 -19.80 38.63 35.12 11.40 36.60 0.00 316 202 PEAK 4 5944.40 50.40 68.20 -17.80 40.47 35.14 11.42 36.63 0.00 316 202 PEAK	Blank

Mode	5	
	Band Edge - L	
	U-NII-3_5.725-5.85_802.11ac VHT80_CH155_5775MHz	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5634.40 50.96 68.20 -17.24 41.61 34.60 11.05 36.30 0.00 287 303 PEAK 2 5651.60 50.75 69.39 -18.64 41.39 34.60 11.07 36.31 0.00 287 303 PEAK 3 5706.40 59.67 107.09 -47.42 49.95 34.62 11.15 36.05 0.00 287 303 PEAK 4 5721.20 59.23 113.64 -54.41 49.42 34.66 11.17 36.02 0.00 287 303 PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5775.00 98.02 ------ ------ 88.01 34.85 11.26 36.10 0.00 287 303 PEAK
Avg	Blank	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5775.00 90.12 ------ ------ 80.11 34.83 11.25 36.07 0.00 287 303 AVERAGE

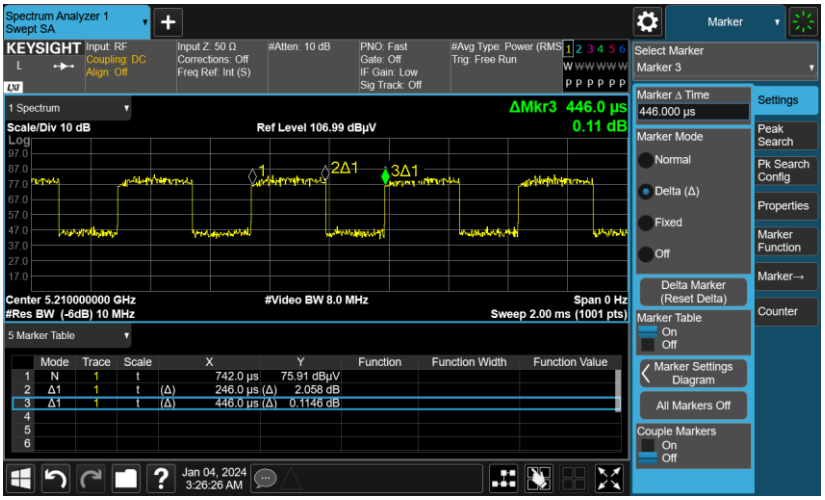
Mode	5	
	Band Edge - R	
	U-NII-3_5.725-5.85_802.11ac VHT80_CH155_5775MHz	
Pol.	Vertical	Fundamental
Peak	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 5852.80 58.09 115.92 -57.83 47.91 35.01 11.33 36.16 0.00 287 303 PEAK 2 5856.80 58.15 110.40 -52.25 48.00 35.01 11.34 36.20 0.00 287 303 PEAK 3 5923.60 49.58 69.23 -19.65 39.66 35.12 11.40 36.60 0.00 287 303 PEAK 4 5945.60 50.29 68.20 -17.91 40.35 35.15 11.42 36.63 0.00 287 303 PEAK	Blank

Mode	5	
	Harmonic	
	U-NII-3_5.725-5.85_802.11ac VHT80_CH155_5775MHz	
Pol.	Horizontal	Vertical
Peak Avg	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 11550.00 46.22 74.00 -27.78 57.72 38.34 16.39 66.23 0.00 -- -- PEAK	 Freq Level Limit Line Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 11550.00 52.61 74.00 -21.39 64.11 38.34 16.39 66.23 0.00 253 12 PEAK 2 11550.00 50.32 54.00 -3.68 61.82 38.34 16.39 66.23 0.00 253 12 AVERAGE

Mode	5	
	18G-40G	
	U-NII-3_5.725-5.85_802.11ac VHT80_CH155_5775MHz	
Pol.	Horizontal	Vertical
Peak Avg		

Mode	5	
	LF	
	U-NII-3_5.725-5.85_802.11ac VHT80_CH155_5775MHz	
Pol.	Horizontal	Vertical
Peak QP	 Freq Level Over Limit Limit Line ReadLevel Antenna Factor Cable Loss Preamp Factor A/Pos T/Pos Remark Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 93.05 19.84 -23.66 43.50 35.52 15.73 1.45 32.86 --- --- Peak HORIZONT 2 152.22 30.02 -13.48 43.50 44.60 16.38 1.86 32.82 --- --- Peak HORIZONT 3 247.28 38.44 -7.56 46.00 50.56 18.25 2.40 32.77 --- --- Peak HORIZONT 4 314.21 33.92 -12.08 46.00 44.43 19.64 2.70 32.85 --- --- Peak HORIZONT 5 416.06 40.33 -5.67 46.00 48.18 21.95 3.11 32.91 --- --- Peak HORIZONT 6 458.74 40.54 -5.46 46.00 47.59 22.72 3.27 33.04 --- --- Peak HORIZONT	 Freq Level Over Limit Limit Line ReadLevel Antenna Factor Cable Loss Preamp Factor A/Pos T/Pos Remark Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 49.40 26.68 -13.32 40.00 43.87 14.69 1.04 32.92 --- --- Peak VERTICAL 2 152.22 30.94 -12.56 43.50 45.52 16.38 1.86 32.82 --- --- Peak VERTICAL 3 248.25 33.62 -12.38 46.00 45.68 18.30 2.41 32.77 --- --- Peak VERTICAL 4 365.62 41.81 -4.19 46.00 50.98 20.82 2.91 32.90 --- --- Peak VERTICAL 5 413.15 41.44 -4.56 46.00 49.33 21.90 3.10 32.89 --- --- Peak VERTICAL 6 455.83 35.32 -10.68 46.00 42.45 22.65 3.26 33.04 --- --- Peak VERTICAL

Appendix B. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
5GHz 802.11ac VHT80	55.16	0.246	4.065	4.3kHz

802.11ac VHT80