

FCC RADIO TEST REPORT

Applicant..... : Unfolded Circle ApS

Address..... : Nordre Fasanvej 124a 1tv Frederiksberg, 2000 Denmark

Manufacturer..... : Unfolded Circle ApS

Address..... : Nordre Fasanvej 124a 1tv Frederiksberg, 2000 Denmark

Factory..... : Unfolded Circle ApS

Address..... : Nordre Fasanvej 124a 1tv Frederiksberg, 2000 Denmark

Product Name..... : Unfolded Circle Remote 3

Brand Name..... : Unfolded Circle

Model No. : UCR3

FCC ID..... : 2BAA9-UCR3

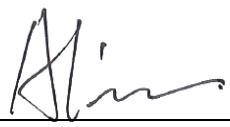
Measurement Standard.... : 47 CFR FCC PART 15 Subpart E (section 407)

Receipt Date of Samples.... : January 02, 2025

Date of Tested..... : January 08, 2025 to May 16, 2025

Date of Report..... : May 16, 2025

This report shows that above equipment is technically compliant with the requirements of the standards above. All test results in this report apply only to the tested sample(s). Without prior written approval of Dongguan Nore Testing Center Co., Ltd, this report shall not be reproduced except in full.



Prepared by

Alina Guo / Project Engineer



Approved by

Iori Fan / Authorized Signatory

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Revision History

Report Number	Description	Issued Date
NTC2501045FV00	Initial Issue	2025-05-16

1. Summary of Test Result

FCC Rules	Description of Test	Result	Remarks
§15.207 (a)	AC Power Conducted Emission	PASS	---
§15.407(a)	Max. Conducted Output Power	PASS	---
§15.407(a)	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	PASS	---
§15.407(e)	6dB Bandwidth	PASS	---
§15.407(a)	Power Spectral Density	PASS	---
§15.407(b) §15.205	Radiated Emissions	PASS	---
§15.407(b)	Band Edge Emissions	PASS	---
§15.407(g)	Frequency Stability	PASS	---
§15.203	Antenna Requirement	PASS	---
§15.407(h)	Dynamic Frequency Selection	PASS	---

2. General Description of EUT

Product Information	
Product Name:	Unfolded Circle Remote 3
Main Model Name:	UCR3
Additional Model Name:	N/A
Model difference:	N/A
S/N:	2409-5262
Brand Name:	Unfolded Circle
Hardware Version:	V01
Software Version:	V01
Rating:	DC 3.7V internal li-ion battery DC 5V come from charging dock DC 5V come from wireless charger
Typical Arrangement:	Tabletop
I/O Port:	Refer to the user manual
Accessories Information	
Adapter:	N/A
Cable:	N/A
Other:	N/A
Additional Information	
Note:	The EUT consists of remote unit and charging dock unit, this report only applies for remote unit.
Remark:	All the information above are provided by the manufacturer. More detailed feature of the EUT please refers to the user manual.

Technical Specification	
Frequency Range:	5180-5240MHz 5260-5320MHz, 5500-5700MHz, 5745-5825MHz
Modulation Technology:	DSSS, OFDM
Modulation Type:	BPSK, QPSK for 802.11a 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for 802.11n/ac
Number of Channel:	U-NII-1, U-NII-2A: 4 Channel for 802.11a/n(HT20)/ac(VHT20) 2 Channel for 802.11n(HT40)/ac(VHT40) 1 Channel for 802.11ac(VHT80) U-NII-2C: 11 Channel for 802.11a/n(HT20)/ac(VHT20) 5 Channel for 802.11n(HT40)/ac(VHT40) 2 Channel for 802.11ac(VHT80) U-NII-3: 5 Channel for 802.11a/n(HT20)/ac(VHT20) 2 Channel for 802.11n(HT40)/ac(VHT40) 1 Channel for 802.11ac(VHT80)
Antenna Type:	Embedded Ceramic Antenna
Number of Antenna:	1
Antenna Gain:	2.6 dBi (Declared by the manufacturer)
Beamforming Gain:	Not support
Type:	Client without Radar detection.
Note: This report only replies to 5G WIFI feature of the EUT.	

Channel List					
U-NII-1 Band 5180~5240MHz					
IEEE 802.11a/n(HT20)/ac(VHT20)		IEEE 802.11n(HT40)/ac(VHT40)		IEEE 802.11 ac (VHT80)	
Channel	Frequency MHz	Channel	Frequency MHz	Channel	Frequency MHz
36	5180	38	5190	42	5210
40	5200	46	5230	-	-
44	5220	-	-	-	-
48	5240	-	-	-	-
U-NII-2A Band 5260-5320MHz					
52	5260	54	5270	58	5290
56	5280	62	5310	-	-
60	5300	-	-	-	-
64	5320	-	-	-	-
U-NII-2C Band 5500-5700MHz					
100	5500	102	5510	106	5530
104	5520	110	5550	122	5610
108	5540	118	5590	-	-
112	5560	126	5630	-	-
116	5580	134	5670	-	-
132	5660	-	-	-	-
136	5680	-	-	-	-
140	5700	-	-	-	-

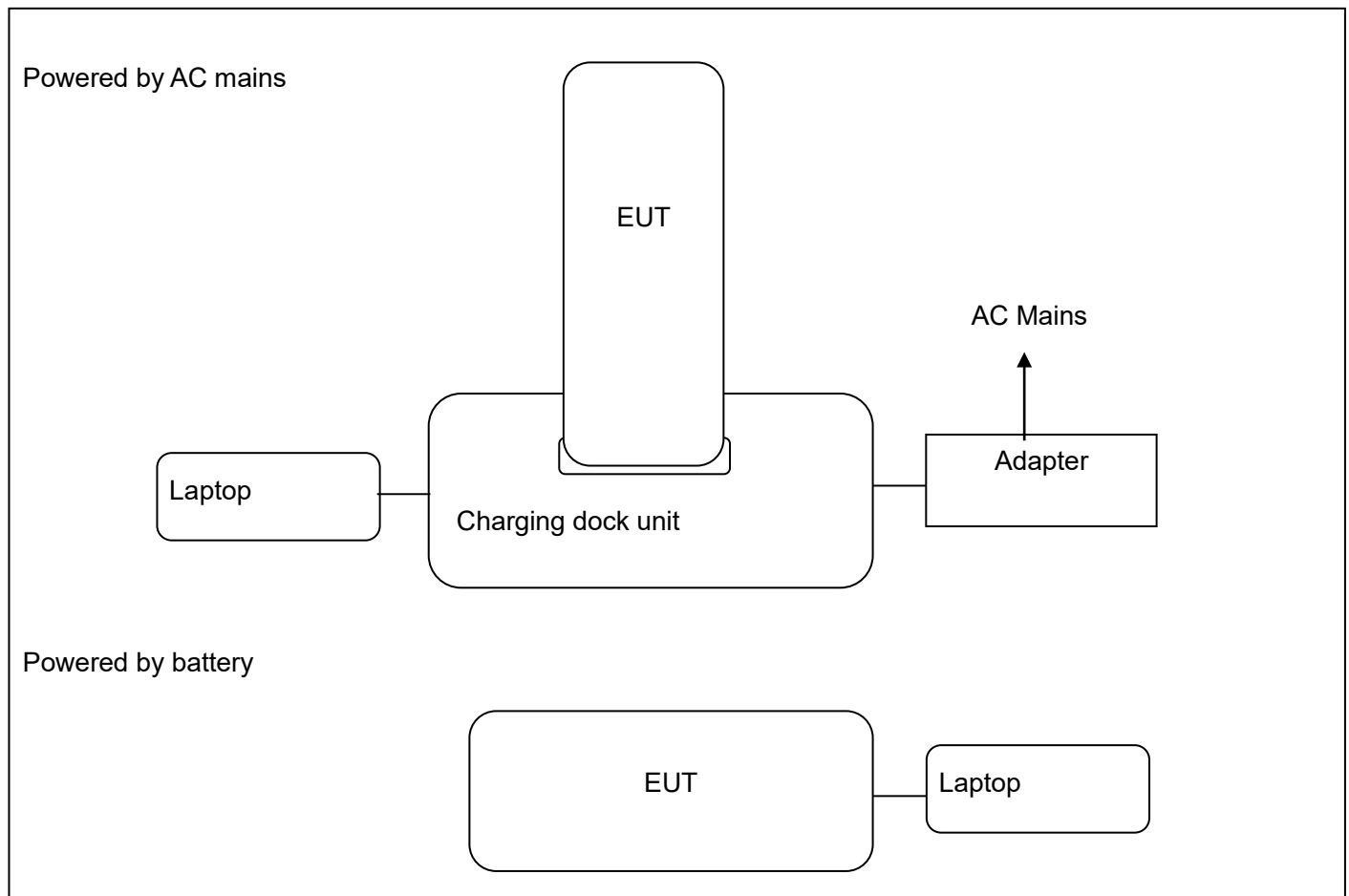
U-NII-3 Band 5745~5825MHz					
IEEE 802.11a/n(HT20)/ac(VHT20)		IEEE 802.11n(HT40)/ac(VHT40)		IEEE 802.11 ac (VHT80)	
Channel	Frequency MHz	Channel	Frequency MHz	Channel	Frequency MHz
149	5745	151	5755	155	5775
153	5765	159	5795	-	-
157	5785	-	-		
161	5805	-	-		
165	5825	-	-		

3. Test Channels and Modes Detail

No.	Mode	Channel	Frequency (MHz)	Remark
1	TX	36	5180	IEEE 802.11a/n(HT20)/ac(HT20)
		40	5200	IEEE 802.11a/n(HT20)/ac(HT20)
		48	5240	IEEE 802.11a/n(HT20) /ac(HT20)
		52	5260	IEEE 802.11a/n(HT20) /ac(HT20)
		60	5300	IEEE 802.11a/n(HT20) /ac(HT20)
		64	5320	IEEE 802.11a/n(HT20) /ac(HT20)
		100	5500	IEEE 802.11a/n(HT20) /ac(HT20)
		116	5580	IEEE 802.11a/n(HT20) /ac(HT20)
		140	5700	IEEE 802.11a/n(HT20) /ac(HT20)
		149	5745	IEEE 802.11a/n(HT20) /ac(HT20)
		157	5785	IEEE 802.11a/n(HT20) /ac(HT20)
		165	5825	IEEE 802.11a/n(HT20) /ac(HT20)
		38	5190	IEEE 802.11n(HT40) /ac(VHT40)
		46	5230	IEEE 802.11n(HT40) /ac(VHT40)
		54	5270	IEEE 802.11n(HT40) /ac(VHT40)
		62	5310	IEEE 802.11n(HT40) /ac(VHT40)
		102	5510	IEEE 802.11n(HT40) /ac(VHT40)
		134	5670	IEEE 802.11n(HT40) /ac(VHT40)
		151	5755	IEEE 802.11n(HT40) /ac(VHT40)
		159	5795	IEEE 802.11n(HT40) /ac(VHT40)
		42	5210	IEEE 802.11ac(VHT80)
		58	5290	IEEE 802.11ac(VHT80)
		122	5610	IEEE 802.11ac(VHT80)
		155	5775	IEEE 802.11ac(VHT80)
2.	Normal Mode	---	---	---

Note: TX mode means that the EUT was programmed to be in continuously transmitting mode.

4. Configuration of EUT



5. Modification of EUT

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

6. Description of Support Device

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Brand	M/N	S/N	Specification	Remarks
1.	Laptop	DELL	VOSTR0 3400	H3K2XA01	I/P: AC 100-240V 50-60Hz, 1.3A O/P: DC 19.5V 2.31A 45W	Provided by the Lab
2.	Adapter (For Laptop)	DELL	HA45NM 140	ZBH18436	AC Line: 1.13m unshielded DC Line: 1.15m unshielded with a core	Provided by the Lab
3.	Test fixture	---	---	---	----	Provide by the manufacturer
4.	Router	LINKSYS	WRT320 0ACM	060A621419	FCC ID: Q87-WRT3200ACM IC: 3839A-WRT3200ACM	Provided by the Lab
5.	Adapter (for router)	LINKSYS	Mu42-31 20300-A1	2A5C142	1.50m unshielded	Input: AC 100-240V 50/60Hz 1.5A Output: DC 12V 3A
6.	Charging dock	Unfolded	UCD3	2409-5261	---	Provided by the Manufacturer.
7.	Adapter	Tongtaike	DT-WC3 0	BSA21402	Input AC100-240V 50/60Hz, 1.5A Output: DC 5V3A DC 9V3A DC 15V3A 65W Max	Provided by the Lab.

No.	Test Software	Modulation	Power Setting
1.	System default (Tests)	IEEE 802.11a	Default
2.		IEEE 802.11n(HT20)	Default
3.		IEEE 802.11ac(VHT20)	Default
4.		IEEE 802.11n(HT40)	Default
5.		IEEE 802.11ac(VHT40)	Default
6.		IEEE 802.11ac(VHT80)	Default

7. Test Facility and Location

Test Site	:	Dongguan Nore Testing Center Co., Ltd. (Dongguan NTC Co., Ltd.)
Accreditations and Authorizations	:	The Laboratory has been assessed and proved to be in compliance with CNAS/CL01 Listed by CNAS, August 13, 2018 The Certificate Registration Number is L5795. The Certificate is valid until August 13, 2030 The Laboratory has been assessed and proved to be in compliance with ISO17025 Listed by A2LA, November 01, 2017 The Certificate Registration Number is 4429.01 The Certificate is valid until December 31, 2025 Listed by FCC, November 06, 2017 Test Firm Registration Number: 907417 Listed by ISED, June 08, 2017 The Certificate Registration Number. Is 46405-9743A The CAB identifier number: CN0015
Test Site Location	:	Building D, Gaosheng Science and Technology Park, Hongtu Road, Nancheng District, Dongguan City, Guangdong Province, China

8. Applicable Standards and References

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

Test Standards:

47 CFR Part 15, Subpart E, 15.407

ANSI C63.10-2013

References Test Guidance:

KDB 789033 D02 v02r01

KDB 905462 D03 v01r02

KDB 905462 D02 v02

9. Deviations and Abnormalities from Standard Conditions

No additions, deviations and exclusions from the standard.

10. Test Conditions

No.	Test Item	Test Mode	Test Voltage	Tested by	Remarks
1.	AC Power Conducted Emission	1-2	AC 120V 60Hz	Sean	See note 1
2.	Max. Conducted Output Power	1	DC 3.7V	Sean	See note 1
3.	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	1	DC 3.7V	Sean	See note 1
4.	6dB Bandwidth	1	DC 3.7V	Sean	See note 1
5.	Power Spectral Density	1	DC 3.7V	Sean	See note 1
6.	Radiated Emissions	1, 2	AC 120V 60Hz DC 3.7V	Sean	See note 1,3
7.	Band Edge Emissions	1	DC 3.7V	Sean	See note 1
8.	Frequency Stability	1	DC 3.7V	Sean	See note 1
9.	Antenna Requirement	---	---	---	See note 1
10.	Dynamic Frequency Selection	1	DC 3.7V	Sean	See note 1

Note:

1. The testing climatic conditions for temperature, humidity, and atmospheric pressure are within: 15~35°C, 30~70%, 86~106kPa
2. For test voltage AC 120V 60Hz come from adapter; DC 3.7V come from internal li-ion battery.
3. Only the worst case was recorded in the report.
4. As the EUT can be operated multiple positions, all X,Y,Z axis were considered during the test and only the worst case X was recorded.

11. Measurement Uncertainty

No.	Test Item	Frequency	Uncertainty	Remarks
1.	Conducted Emission	150KHz ~ 30MHz	±2.52 dB	---
2.	Radiated Emission Test	9kHz ~ 30MHz	±5.60 dB	---
		30MHz ~ 1GHz	±5.60 dB	---
		1GHz ~ 18GHz	±5.22 dB	---
		18GHz ~ 40GHz	±5.22 dB	---
3.	Conducted Spurious Emissions	10Hz ~ 40GHz	±1.02 dB	---
4.	RF Output Power	10Hz ~ 40GHz	±1.08 dB	---
5.	Power Spectral Density	10Hz ~ 40GHz	±1.08 dB	---
6.	Occupied Channel Bandwidth	---	±1.05%	---
7.	Time	---	±5%	---
8.	Radio Frequency	---	0.8*10 ⁻⁷	---

Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The measurement uncertainty levels above are estimated and calculated according to CISPR 16-4-2.
3. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

12. Sample Calculations

Conducted Emission						
Freq. (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector
0.1900	30.10	10.60	40.70	79.00	-38.30	QP
Where, Freq. = Emission frequency in MHz Reading Level = Spectrum Analyzer/Receiver reading Corrector Factor = Insertion loss of LISN + Cable Loss + RF Switching Unit attenuation Measurement = Reading + Corrector Factor Limit = Limit stated in standard Margin = Measurement - Limit Detector = Reading for Quasi-Peak / Average / Peak						

Radiated Spurious Emissions and Restricted Bands						
Freq. (MHz)	Reading Level (dBuV)	Correct Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
60.0700	45.88	-18.38	27.50	49.00	-21.50	QP
Where, Freq. = Emission frequency in MHz Reading Level = Spectrum Analyzer/Receiver reading Corrector Factor = Antenna Factor + Cable Loss - Pre-amplifier Measurement = Reading + Corrector Factor Limit = Limit stated in standard Over = Margin, which calculated by Measurement - Limit Detector = Reading for Quasi-Peak / Average / Peak						

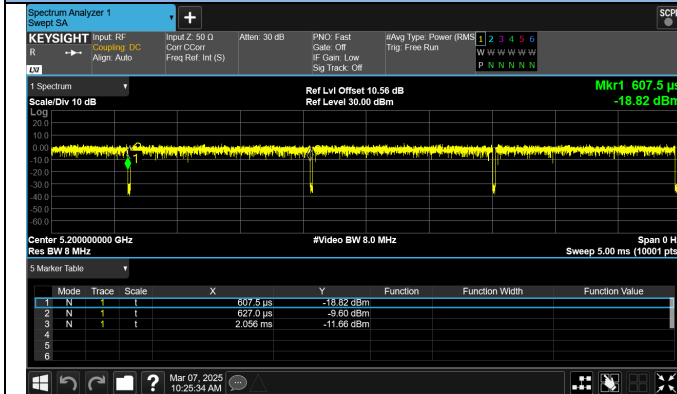
Note: For all conducted test items, the spectrum analyzer offset or transducer is derived from RF cable loss and attenuator factor. The offset or transducer is equal to the RF cable loss plus attenuator factor.

13. Duty cycle

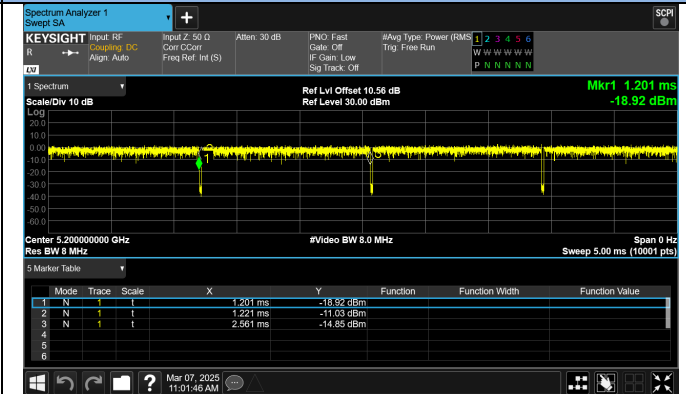
Operation Band (MHz)	Mode	Ton (ms)	Ton+off (ms)	Duty Cycle (%)	1/T minimum VBW (kHz)	Duty Cycle Factor (dB)
U-NII-1	802.11a	1.4290	1.4485	98.65%	0.70	0.0590
	802.11n(HT20)	1.3400	1.3600	98.53%	0.75	0.0640
	802.11n(HT40)	0.6640	0.6845	97.01%	1.51	0.1320
	802.11ac(VHT20)	1.3410	1.3610	98.53%	0.75	0.0640
	802.11ac(VHT40)	0.6645	0.6850	97.01%	1.50	0.1320
	802.11ac(VHT80)	0.3320	0.3525	94.18%	3.01	0.2600
U-NII-2A	802.11a	1.4285	1.4480	98.65%	0.70	0.0590
	802.11n(HT20)	1.3405	1.3610	98.49%	0.75	0.0660
	802.11n(HT40)	0.6650	0.6840	97.22%	1.50	0.1220
	802.11ac(VHT20)	1.3410	1.3610	98.53%	0.75	0.0640
	802.11ac(VHT40)	0.6640	0.6830	97.22%	1.51	0.1220
	802.11ac(VHT80)	0.3320	0.3500	94.86%	3.01	0.2290
U-NII-2C	802.11a	1.4290	1.4490	98.62%	0.70	0.0600
	802.11n(HT20)	1.3405	1.3605	98.53%	0.75	0.0640
	802.11n(HT40)	0.6660	0.6850	97.23%	1.50	0.1220
	802.11ac(VHT20)	1.3405	1.3605	98.53%	0.75	0.0640
	802.11ac(VHT40)	0.6640	0.6845	97.01%	1.51	0.1320
	802.11ac(VHT80)	0.3320	0.3525	94.18%	3.01	0.2600
U-NII-3	802.11a	1.4290	1.4490	98.62%	0.70	0.0600
	802.11n(HT20)	1.3410	1.3610	98.53%	0.75	0.0640
	802.11n(HT40)	0.6660	0.6850	97.23%	1.50	0.1220
	802.11ac(VHT20)	1.3410	1.3615	98.49%	0.75	0.0660
	802.11ac(VHT40)	0.6650	0.6850	97.08%	1.50	0.1290
	802.11ac(VHT80)	0.3320	0.3510	94.59%	3.01	0.2420
Remark: Duty Cycle= (Ton/ Ton+off)*100% Duty Cycle factor=10*log(1/ Duty cycle)						

U-NII-1 Band

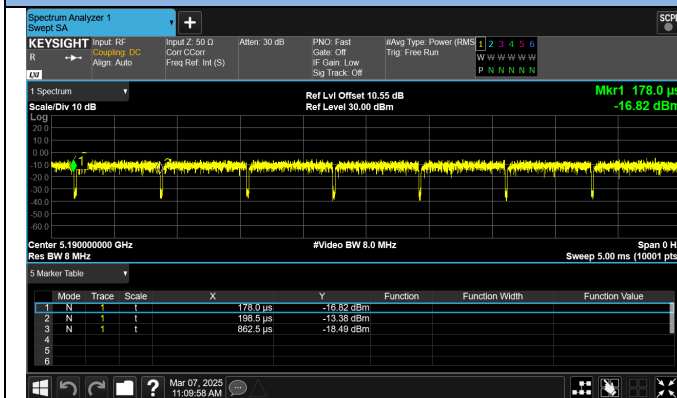
IEEE 802.11a



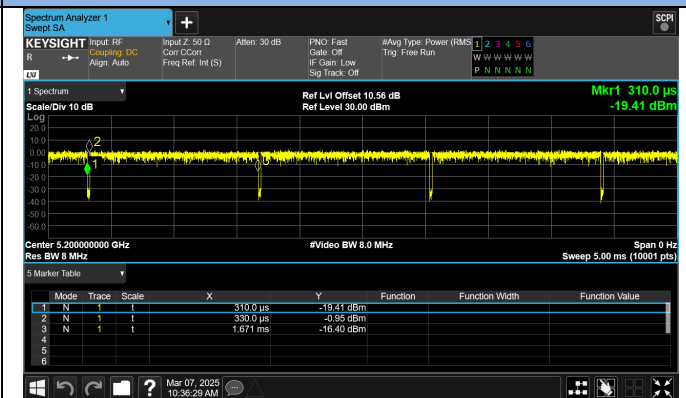
IEEE 802.11n(HT20)



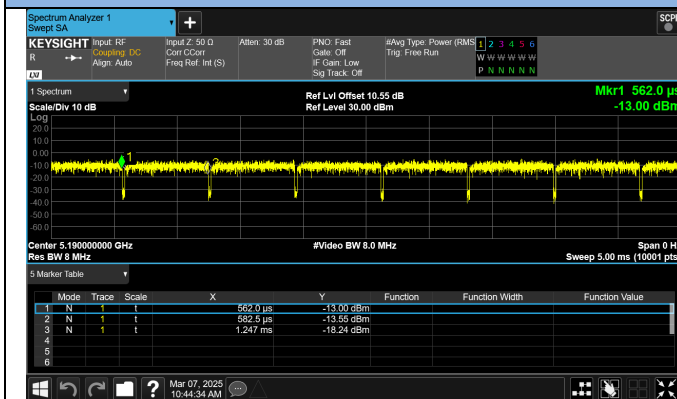
IEEE 802.11n(HT40)



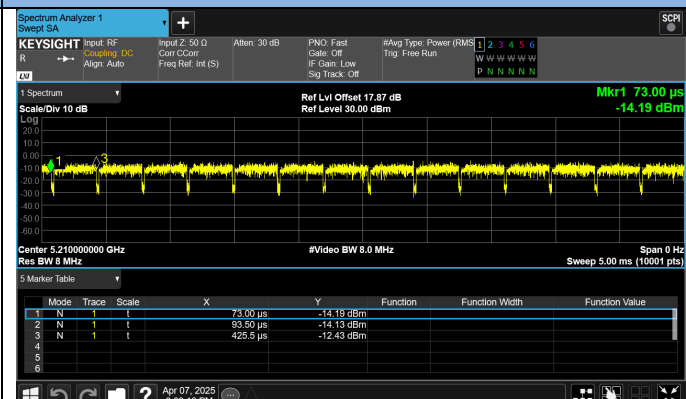
IEEE 802.11ac(VHT20)



IEEE 802.11ac(VHT40)

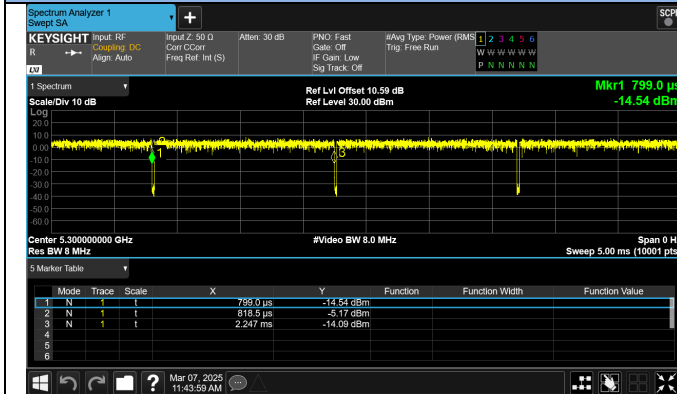


IEEE 802.11ac(VHT80)

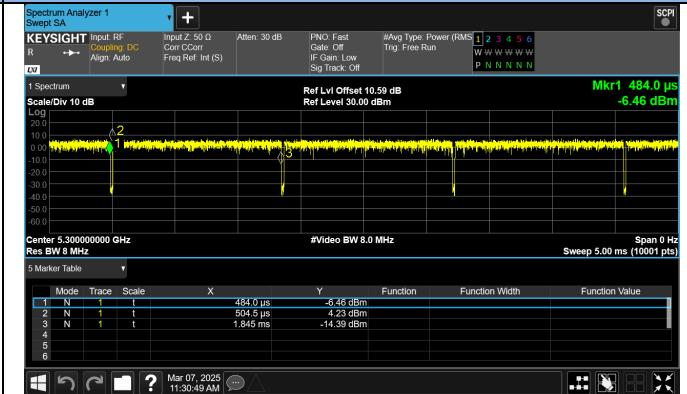


U-NII-2A Band

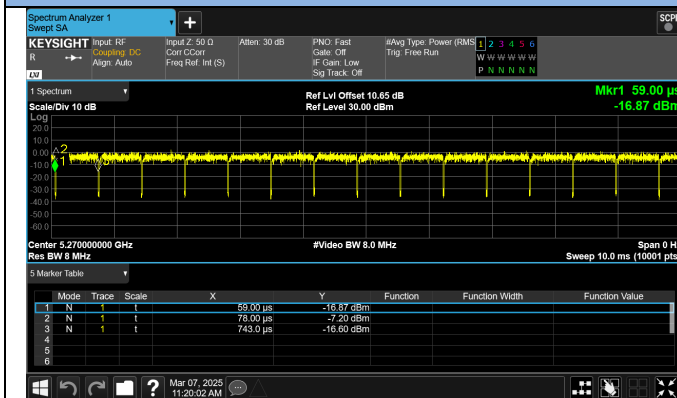
IEEE 802.11a



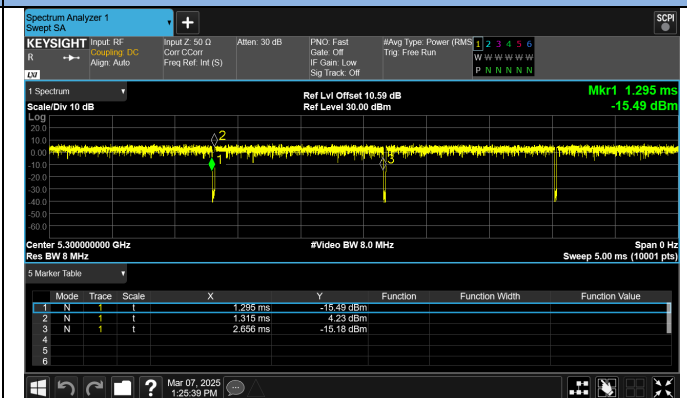
IEEE 802.11n(HT20)



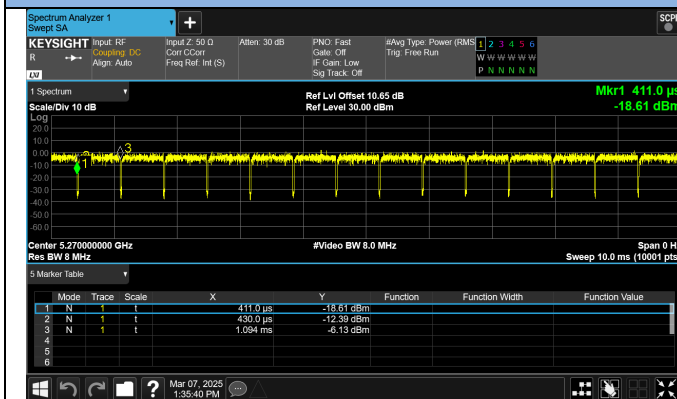
IEEE 802.11n(HT40)



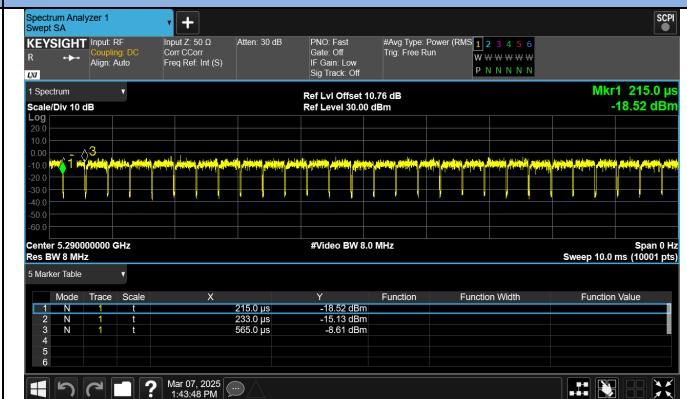
IEEE 802.11ac(VHT20)



IEEE 802.11ac(VHT40)

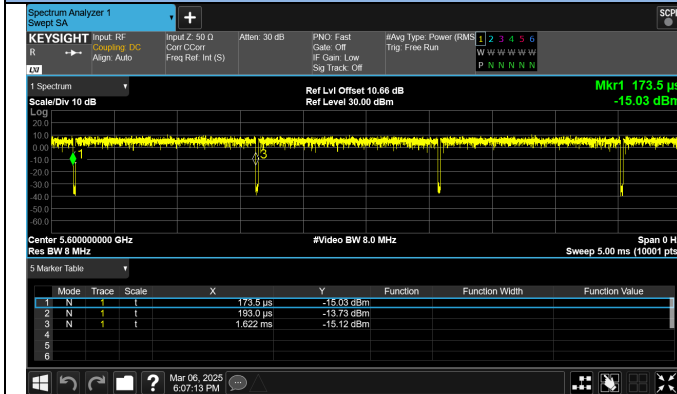


IEEE 802.11ac(VHT80)

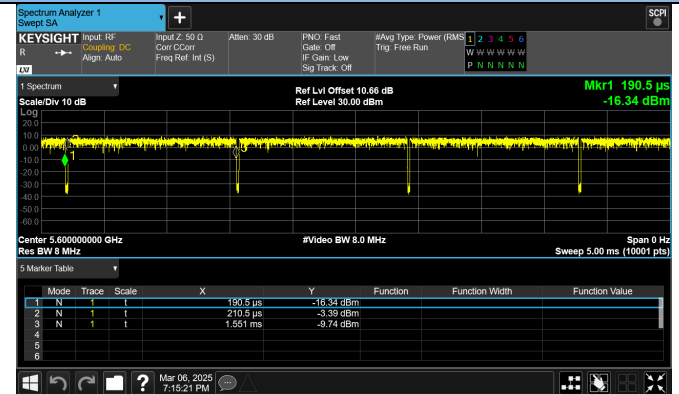


U-NII-2C Band

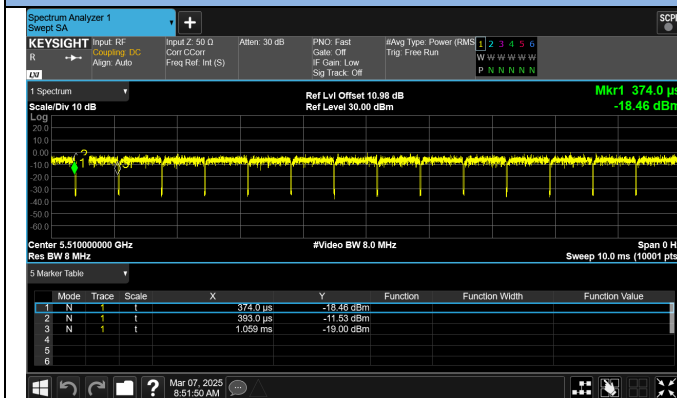
IEEE 802.11a



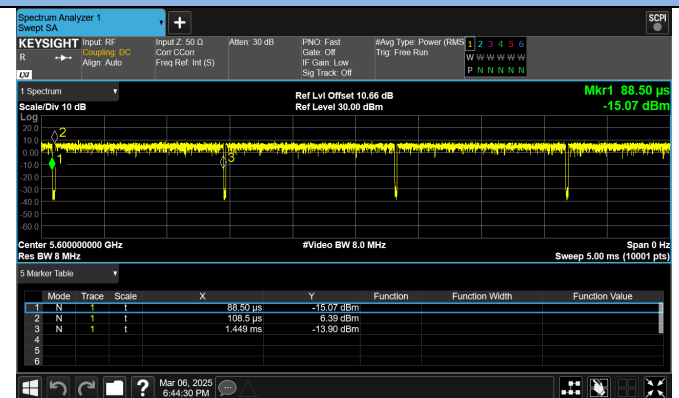
IEEE 802.11n(HT20)



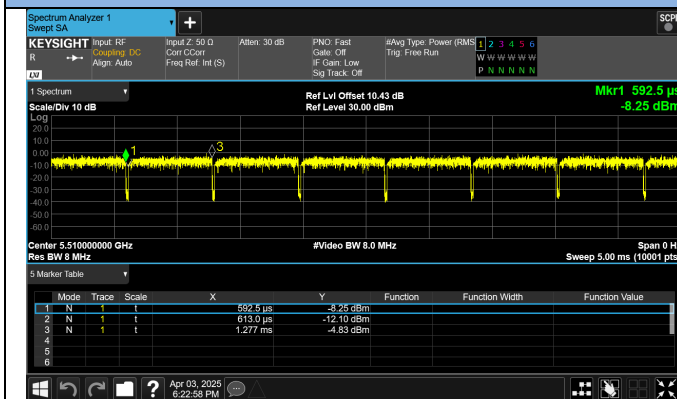
IEEE 802.11n(HT40)



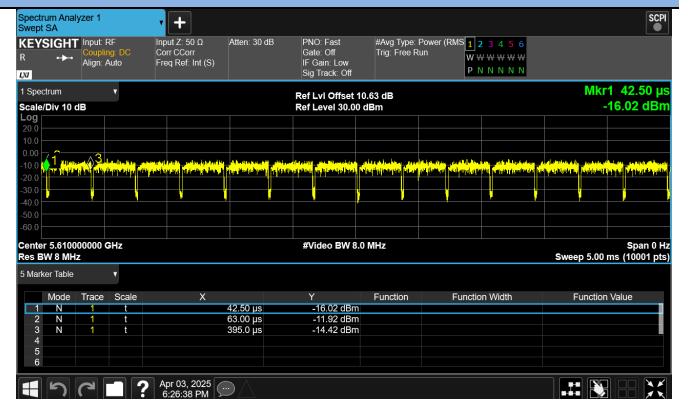
IEEE 802.11ac(VHT20)



IEEE 802.11ac(VHT40)

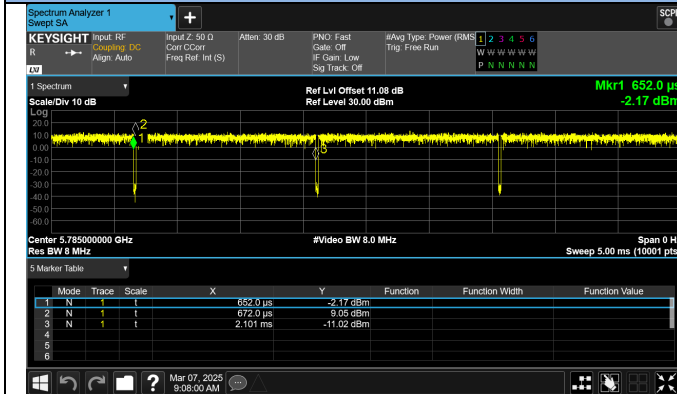


IEEE 802.11ac(VHT80)

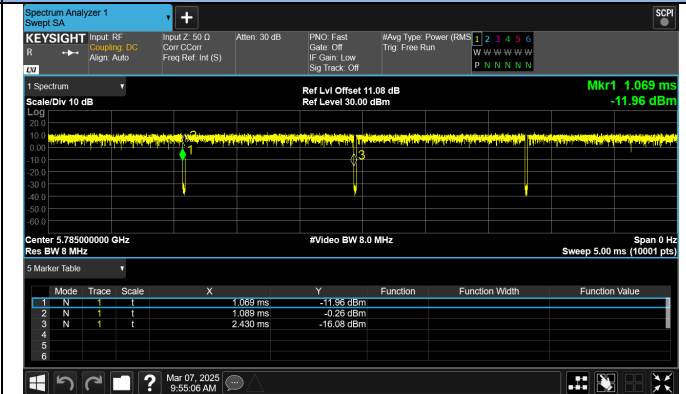


U-NII-3 Band

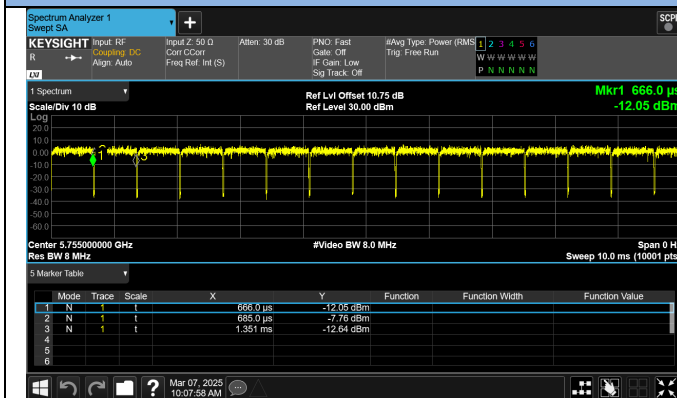
IEEE 802.11a



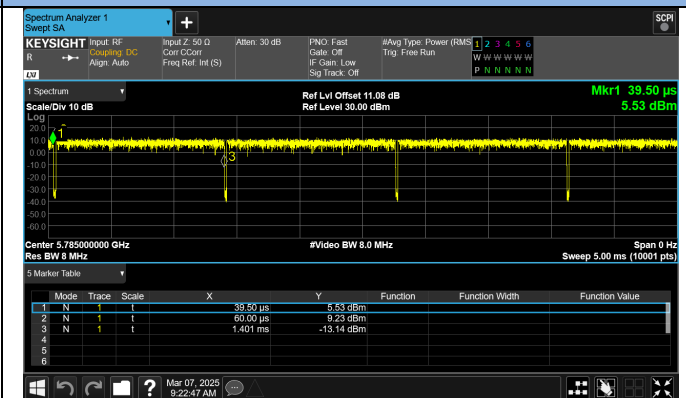
IEEE 802.11n(HT20)



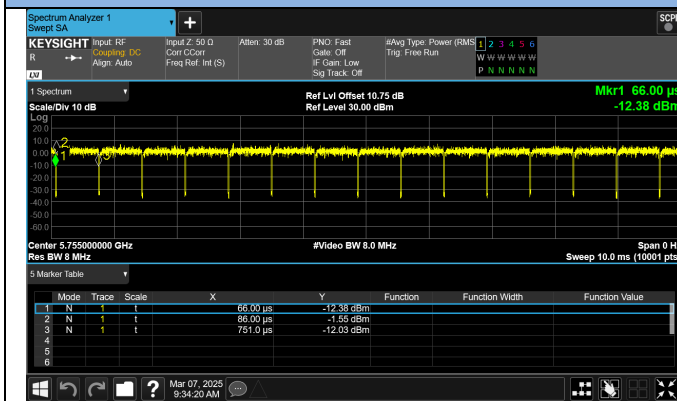
IEEE 802.11n(HT40)



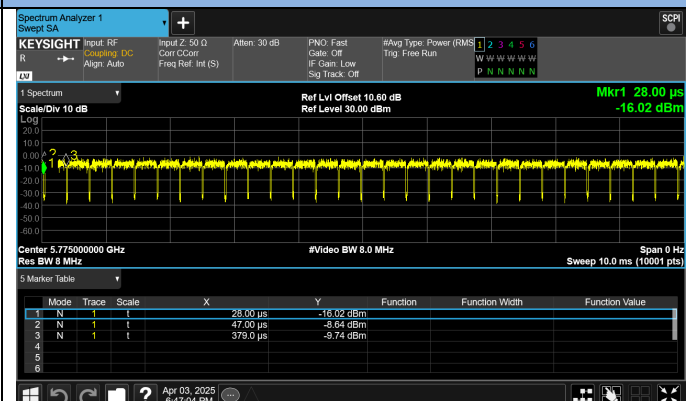
IEEE 802.11ac(VHT20)



IEEE 802.11ac(VHT40)



IEEE 802.11ac(VHT80)



14. Test Items and Results

14.1 Conducted Emissions Measurement

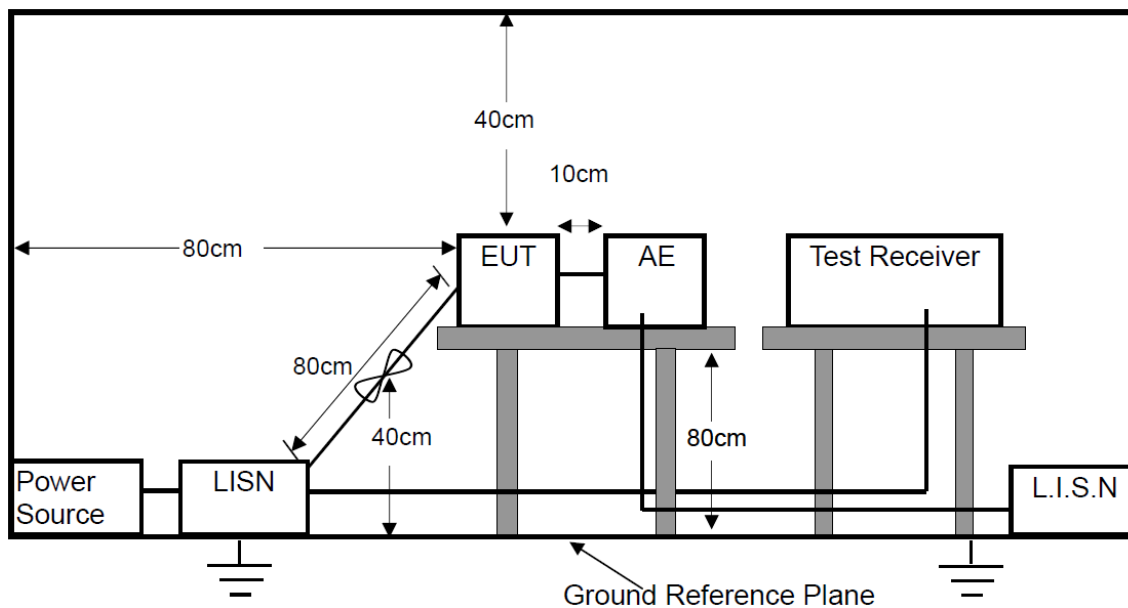
LIMITS

According to the requirements of FCC PART 15.207, the limits are as follows:

Frequency (MHz)	Quasi-peak	Average
0.15 to 0.5	66 to 56	56 to 46
0.5 to 5	56	46
5 to 30	60	50

- Note:
1. If the limits for the average detector are met when using the quasi-peak detector, then the limits for the measurements with the average detector are considered to be met.
 2. The lower limit shall apply at the transition frequencies.
 3. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5MHz.

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

- a. The EUT was placed on a wooden table 0.8m height from the metal ground plan and 0.4m from the conducting wall of the shielding room and it was kept at 0.8m from any other grounded conducting surface.
- b. All I/O cables and support devices were positioned as per ANSI C63.10.
- c. Connect mains power port of the EUT to a line impedance stabilization network (LISN).
- d. Connect all support devices to the other LISN and AAN, if needed.
- e. Scan the frequency range from 150KHz to 30MHz at both sides of AC line for maximum conducted interference checking and record the test data.

TEST RESULTS

PASS

Please refer to the following pages.

M/N: UCR3

Testing Voltage: AC 120V/60Hz

Phase: L1

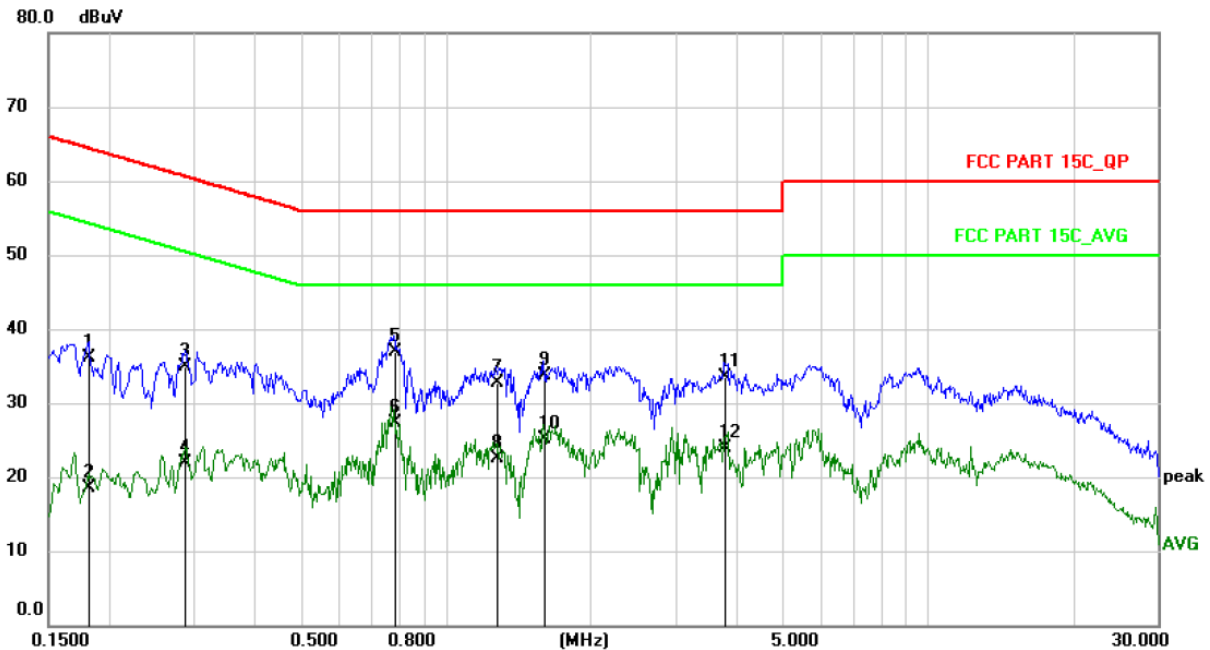
Detector: QP & AVG

Test Mode: 2

Conducted Emission Measurement

Date: 2025/4/1

Time: 15:26:54



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.1819	26.20	10.00	36.20	64.40	-28.20	QP	
2	0.1819	8.50	10.00	18.50	54.40	-35.90	AVG	
3	0.2878	24.95	10.05	35.00	60.59	-25.59	QP	
4	0.2878	11.95	10.05	22.00	50.59	-28.59	AVG	
5	0.7820	26.98	10.02	37.00	56.00	-19.00	QP	
6 *	0.7820	17.38	10.02	27.40	46.00	-18.60	AVG	
7	1.2740	22.80	10.00	32.80	56.00	-23.20	QP	
8	1.2740	12.50	10.00	22.50	46.00	-23.50	AVG	
9	1.5980	23.69	10.01	33.70	56.00	-22.30	QP	
10	1.5980	15.09	10.01	25.10	46.00	-20.90	AVG	
11	3.7940	23.45	10.05	33.50	56.00	-22.50	QP	
12	3.7940	13.95	10.05	24.00	46.00	-22.00	AVG	

M/N: UCR3

Testing Voltage: AC 120V/60Hz

Phase: N

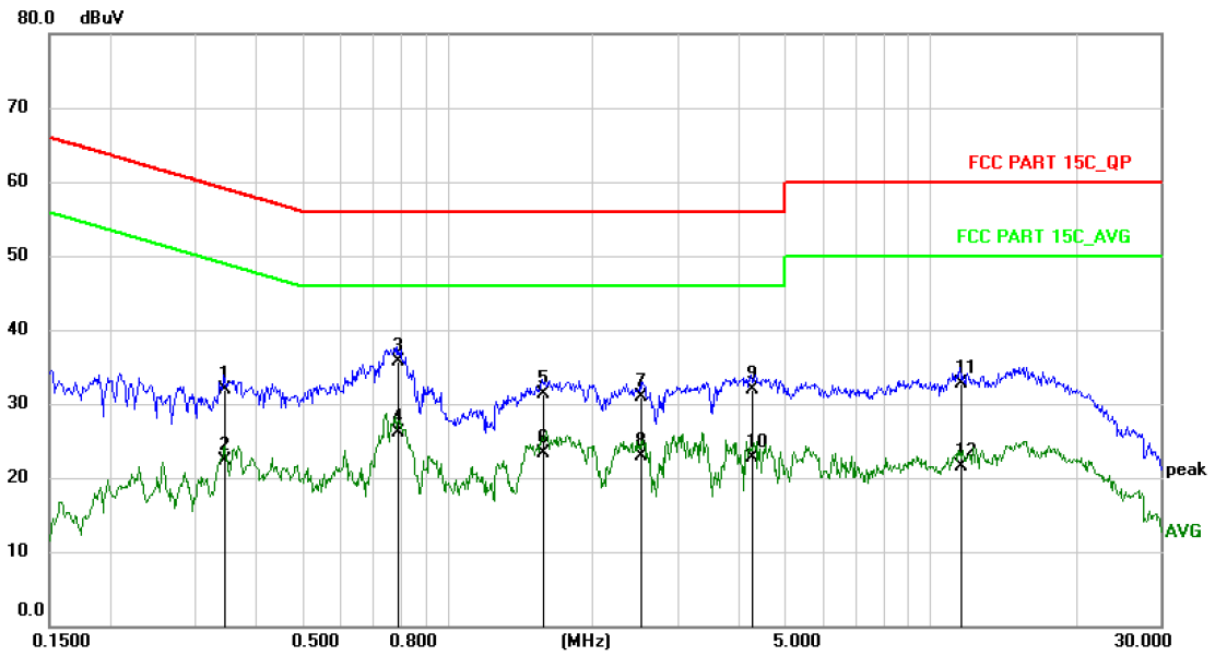
Detector: QP & AVG

Test Mode: 2

Conducted Emission Measurement

Date: 2025/4/1

Time: 15:32:22



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.3457	21.88	10.02	31.90	59.07	-27.17	QP	
2	0.3457	12.28	10.02	22.30	49.07	-26.77	AVG	
3	0.7900	25.73	9.97	35.70	56.00	-20.30	QP	
4 *	0.7900	16.23	9.97	26.20	46.00	-19.80	AVG	
5	1.5700	21.33	9.97	31.30	56.00	-24.70	QP	
6	1.5700	13.43	9.97	23.40	46.00	-22.60	AVG	
7	2.5219	20.92	9.98	30.90	56.00	-25.10	QP	
8	2.5219	13.02	9.98	23.00	46.00	-23.00	AVG	
9	4.2579	21.98	10.02	32.00	56.00	-24.00	QP	
10	4.2579	12.78	10.02	22.80	46.00	-23.20	AVG	
11	11.5014	22.67	10.13	32.80	60.00	-27.20	QP	
12	11.5014	11.47	10.13	21.60	50.00	-28.40	AVG	

14.2 Maximum Conducted Output Power Measurement

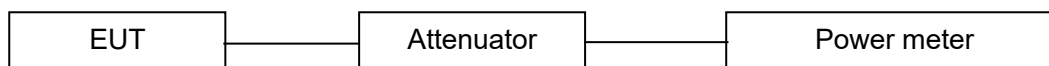
LIMITS

Operation Band	EUT category	Limit
☒5180~5240MHz	☐ Outdoor Access Point	1 Watt (30dBm) (Max. e.i.r.p ≤ 125mW(21dBm) at any elevation angle above 30 degrees as measured from the horizon)
	☐ Fixed point-to-point Access Point	1 Watt (30dBm)
	☐ Indoor Access Point	1 Watt (30dBm) ^{see note 1}
	☒Mobile and Portable client device	250mW (24dBm) ^{see note 2}
☒5260~5320MHz	-	250mW (24dBm) or (11+10log10B*) dBm whichever power is less.
☒5500~5700MHz	-	250mW (24dBm) or (11+10log10B*) dBm whichever power is less.
☒5745~5825MHz	-	1 Watt (30dBm)

Note:

- For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional the antenna exceeds 6 dBi.
- For 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 provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- *Where B is the 99% emission bandwidth in megahertz.

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 v02r01 for compliance testing of Unlicensed National Information Infrastructure (U-NII) Device -section (E) Maximum conducted output power.
3. Measurement using a power meter (PM) =b Method PM-G (Measurement using a gated RF average power meter).

TEST RESULTS

PASS

Please refer to the following tables.

U-NII-1			
Frequency MHz	Data Rate Mbps	Average Output Power dBm	Limit dBm
IEEE 802.11a Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5180	6	-3.451	24.00
Channel: 5200	6	-3.194	24.00
Channel: 5240	6	-0.829	24.00
IEEE 802.11n(HT20) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5180	MCS 8	-3.660	24.00
Channel: 5200	MCS 8	-3.351	24.00
Channel: 5240	MCS 8	-0.910	24.00
IEEE 802.11n(HT40) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5190	MCS 8	-7.411	24.00
Channel: 5230	MCS 8	-3.091	24.00
IEEE 802.11ac (VHT20) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5180	MCS 8	-3.706	24.00
Channel: 5200	MCS 8	-3.347	24.00
Channel: 5240	MCS 8	-0.855	24.00
IEEE 802.11ac (VHT40) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5190	MCS 8	-7.479	24.00
Channel: 5230	MCS 8	-3.011	24.00
IEEE 802.11ac (VHT80) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5210	MCS 8	-6.302	24.00
Note: Duty Cycle Factor was considered during the test.			

U-NII-2A			
Frequency MHz	Data Rate Mbps	Average Output Power dBm	Limit dBm
IEEE 802.11a Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5260	6	-0.228	24.00
Channel: 5300	6	1.759	24.00
Channel: 5320	6	1.438	24.00
IEEE 802.11n(HT20) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5260	MCS 8	-0.362	24.00
Channel: 5300	MCS 8	1.668	24.00
Channel: 5320	MCS 8	1.241	24.00
IEEE 802.11n(HT40) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5270	MCS 8	-1.710	24.00
Channel: 5310	MCS 8	-3.413	24.00
IEEE 802.11ac (VHT20) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5260	MCS 8	-0.19	24.00
Channel: 5300	MCS 8	1.628	24.00
Channel: 5320	MCS 8	1.515	24.00
IEEE 802.11ac (VHT40) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5270	MCS 8	-1.732	24.00
Channel: 5310	MCS 8	0.000	24.00
IEEE 802.11ac (VHT80) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5290	MCS 8	-3.546	24.00
Note: Duty Cycle Factor was considered during the test.			

U-NII-2C			
Frequency MHz	Data Rate Mbps	Average Output Power dBm	Limit dBm
IEEE 802.11a Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5500	6	1.277	24.00
Channel: 5580	6	4.125	24.00
Channel: 5700	6	3.918	24.00
IEEE 802.11n(HT20) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5500	MCS 8	0.362	24.00
Channel: 5580	MCS 8	3.997	24.00
Channel: 5700	MCS 8	2.926	24.00
IEEE 802.11n(HT40) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5510	MCS 8	-4.836	24.00
Channel: 5670	MCS 8	-1.916	24.00
IEEE 802.11ac (VHT20) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5500	MCS 8	0.545	24.00
Channel: 5580	MCS 8	4.041	24.00
Channel: 5700	MCS 8	3.260	24.00
IEEE 802.11ac (VHT40) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5510	MCS 8	-2.061	24.00
Channel: 5670	MCS 8	0.388	24.00
IEEE 802.11ac (VHT80) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5610	MCS 8	-0.561	24.00
Note: Duty Cycle Factor was considered during the test.			

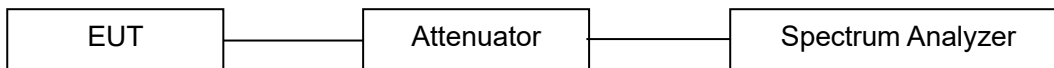
U-NII-3			
Frequency MHz	Data Rate Mbps	Average Output Power dBm	Limit dBm
IEEE 802.11a Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5745	6	4.947	30.00
Channel: 5785	6	7.144	30.00
Channel: 5825	6	8.008	30.00
IEEE 802.11n(HT20) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5745	MCS 8	4.886	30.00
Channel: 5785	MCS 8	7.033	30.00
Channel: 5825	MCS 8	7.880	30.00
IEEE 802.11n(HT40) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5755	MCS 8	4.186	30.00
Channel: 5795	MCS 8	5.694	30.00
IEEE 802.11ac (VHT20) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5745	MCS 8	5.057	30.00
Channel: 5785	MCS 8	7.068	30.00
Channel: 5825	MCS 8	7.961	30.00
IEEE 802.11ac (VHT40) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5755	MCS 8	4.184	30.00
Channel: 5795	MCS 8	5.772	30.00
IEEE 802.11ac (VHT80) Mode (OFDM, Antenna Gain=2.6dBi)			
Channel: 5775	MCS 8	2.065	30.00
Note: Duty Cycle Factor was considered during the test.			

14.3 6dB Bandwidth Measurement

LIMITS

The minimum 6dB bandwidth shall be at least 500 kHz

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer was set as below according to ANSI C63.10 clause 11.8.1:

- Set the RBW = 100KHz.
- Set the VBW $\geq 3 \times$ RBW
- Set the Detector = peak.
- Set the Sweep time = auto couple.
- Set the Trace mode = max hold.
- Allow trace to fully stabilize.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

TEST RESULTS

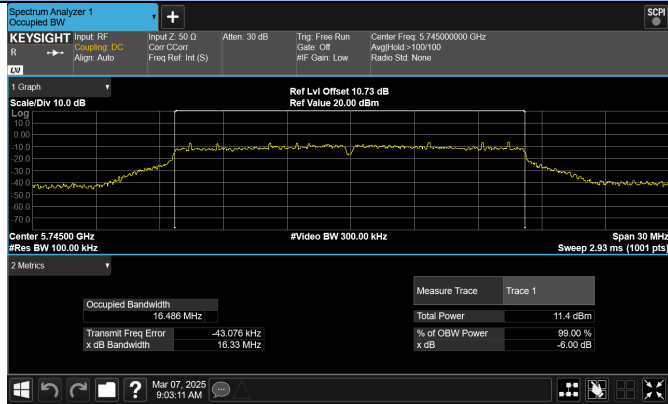
PASS

Please refer to the following tables.

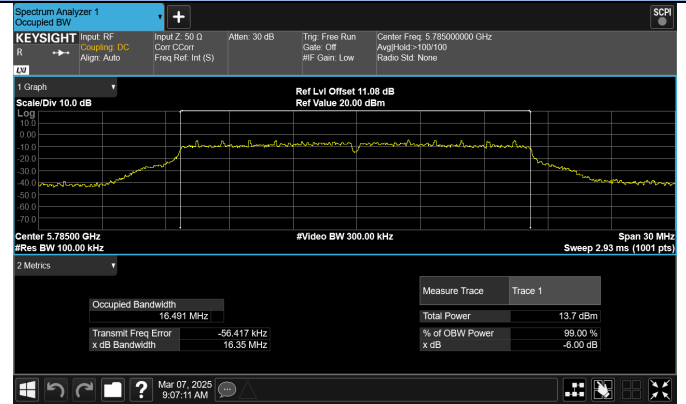
U-NII-3 Band			
Frequency MHz	Data Rate Mbps	6dB Bandwidth MHz	Limit
IEEE 802.11a Mode (OFDM)			
Channel: 5745	6	16.33	>500KHz
Channel: 5785	6	16.35	>500KHz
Channel: 5825	6	15.71	>500KHz
IEEE 802.11n(HT20) Mode (OFDM)			
Channel: 5745	MCS0	17.35	>500KHz
Channel: 5785	MCS0	17.54	>500KHz
Channel: 5825	MCS0	17.29	>500KHz
IEEE 802.11n(HT40) Mode (OFDM)			
Channel: 5755	MCS0	36.36	>500KHz
Channel: 5795	MCS0	36.38	>500KHz
IEEE 802.11ac (VHT20) Mode (OFDM)			
Channel: 5745	MCS0	16.87	>500KHz
Channel: 5785	MCS0	17.58	>500KHz
Channel: 5825	MCS0	17.29	>500KHz
IEEE 802.11ac (VHT40) Mode (OFDM)			
Channel: 5755	MCS0	36.34	>500KHz
Channel: 5795	MCS0	36.37	>500KHz
IEEE 802.11ac (VHT80) Mode (OFDM)			
Channel: 5775	MCS0	75.51	>500KHz

U-NII-3

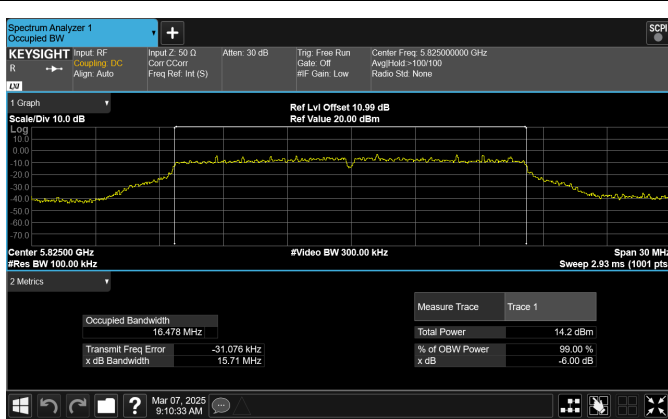
IEEE 802.11a Low Channel



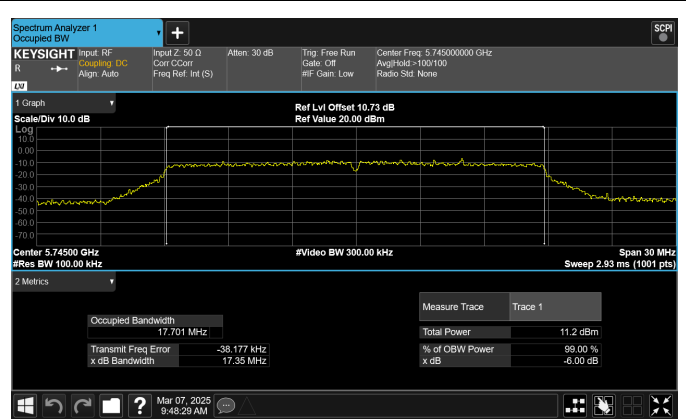
IEEE 802.11a Middle Channel



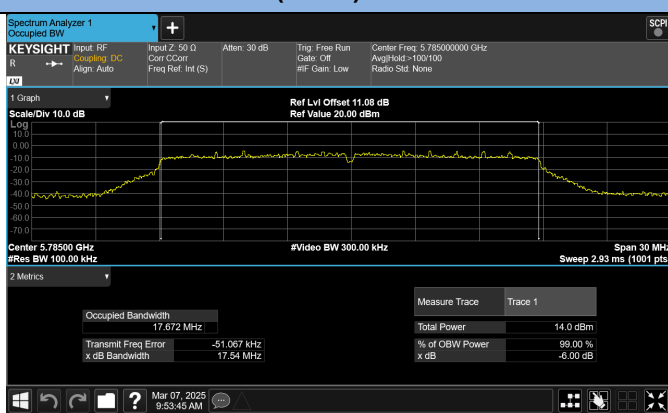
IEEE 802.11a High Channel



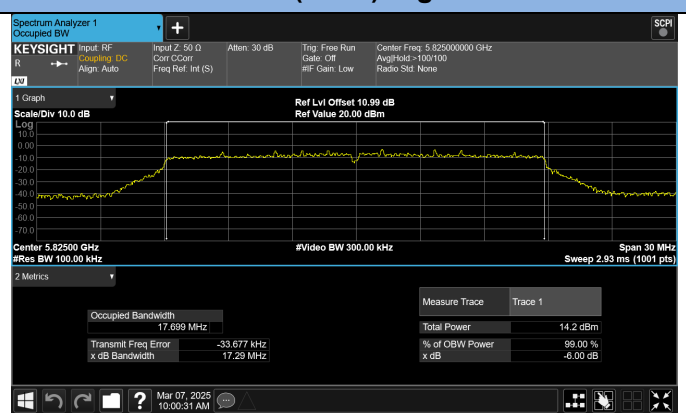
IEEE 802.11n(HT20) Low Channel



IEEE 802.11n(HT20) Middle Channel

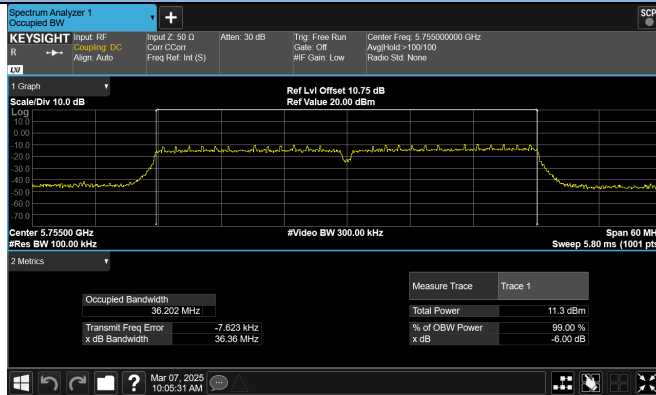


IEEE 802.11n(HT20) High Channel

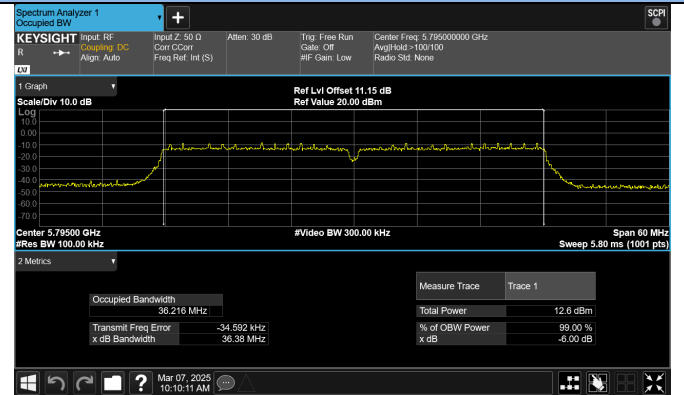


U-NII-3

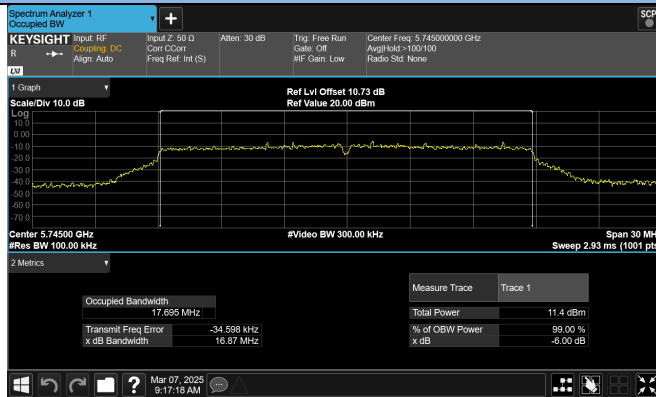
IEEE 802.11n(HT40) Low Channel



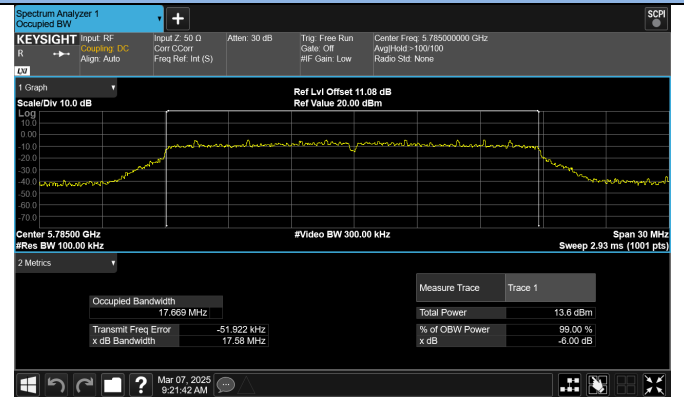
IEEE 802.11n(HT40) High Channel



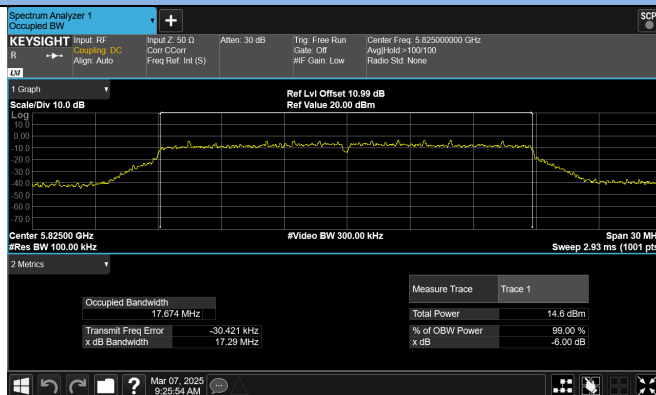
IEEE 802.11ac(VHT20) Low Channel



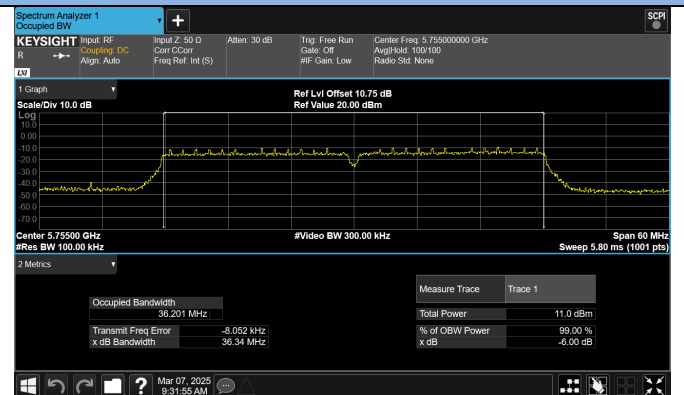
IEEE 802.11ac(VHT20) Middle Channel



IEEE 802.11ac(VHT20) High Channel



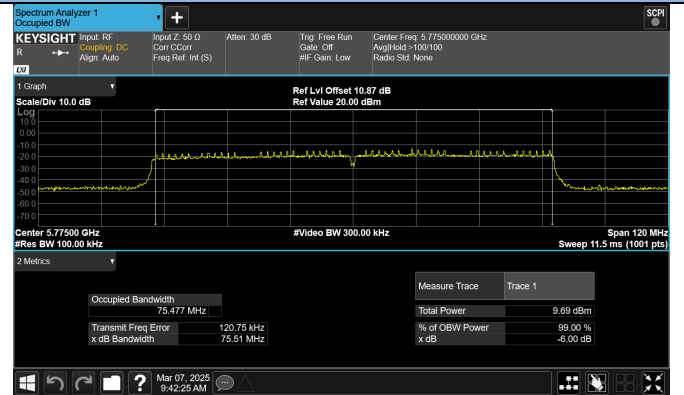
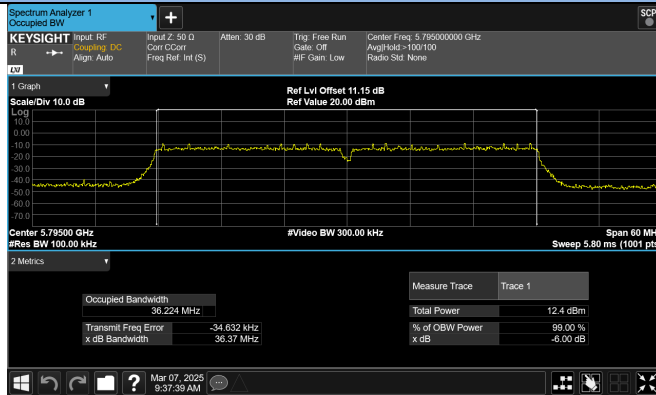
IEEE 802.11ac(VHT40) Low Channel



U-NII-3

IEEE 802.11ac(VHT40) High Channel

IEEE 802.11ac(VHT80)

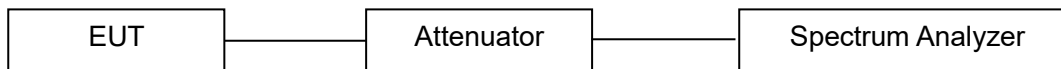


14.4 26dB Bandwidth & 99% Occupied Bandwidth

LIMITS

No restriction limits.

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

The antenna port of the EUT was connected to the input of a spectrum analyzer.

Analyzer was set as below according to FCC KDB789033(v02r01):

- a. For 26dB bandwidth, Set the RBW = Approximately 1% of the emission bandwidth
 - b. Set the VBW $>$ RBW
 - c. Detector = peak.
 - d. Sweep time = auto couple.
 - e. Trace mode = max hold.
 - f. Allow trace to fully stabilize.
 - g. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.
-
1. For 99% occupied bandwidth, Set the RBW = 1% to 5% of the OBW
 2. Set the VBW $\geq 3 \times$ RBW
 3. Detector = peak.
 4. Span = 1.5 times to 5.0 times the OBW
 5. Sweep time = auto couple.
 6. Trace mode = max hold. Allow trace to fully stabilize.
 7. Use the 99% power bandwidth function of the spectrum analyzer measure the occupied bandwidth.

TEST RESULTS

PASS

Please refer to the following tables.

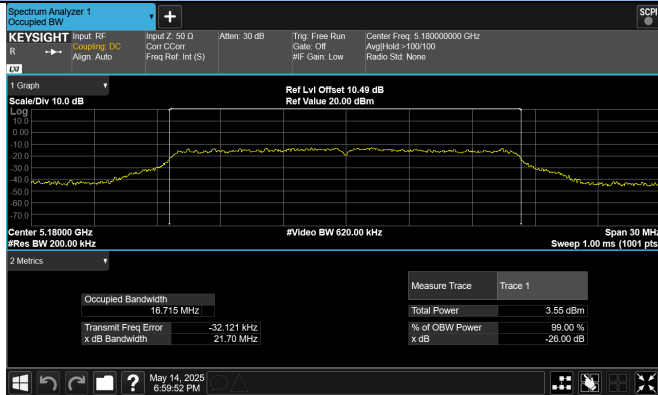
U-NII-1 Band			
Frequency MHz	Data Rate Mbps	26dB Bandwidth MHz	99% Occupied Bandwidth MHz
IEEE 802.11a Mode (OFDM)			
Channel: 5180	6	21.70	---
Channel: 5200	6	21.18	---
Channel: 5240	6	21.62	---
IEEE 802.11n(HT20) Mode (OFDM)			
Channel: 5180	MCS0	21.60	---
Channel: 5200	MCS0	21.39	---
Channel: 5240	MCS0	21.62	---
IEEE 802.11n(HT40) Mode (OFDM)			
Channel: 5190	MCS0	46.23	---
Channel: 5230	MCS0	40.42	---
IEEE 802.11ac (VHT20) Mode (OFDM)			
Channel: 5180	MCS0	21.52	---
Channel: 5200	MCS0	21.37	---
Channel: 5240	MCS0	21.56	---
IEEE 802.11ac (VHT40) Mode (OFDM)			
Channel: 5190	MCS0	43.12	---
Channel: 5230	MCS0	40.44	---
IEEE 802.11ac (VHT80) Mode (OFDM)			
Channel: 5210	MCS0	118.70	---

U-NII-2A Band			
Frequency MHz	Data Rate Mbps	26dB Bandwidth MHz	99% Occupied Bandwidth MHz
IEEE 802.11a Mode (OFDM)			
Channel: 5260	6	21.36	---
Channel: 5300	6	21.46	---
Channel: 5320	6	21.15	---
IEEE 802.11n(HT20) Mode (OFDM)			
Channel: 5260	MCS0	21.47	---
Channel: 5300	MCS0	21.55	---
Channel: 5320	MCS0	21.39	---
IEEE 802.11n(HT40) Mode (OFDM)			
Channel: 5270	MCS0	39.93	---
Channel: 5310	MCS0	40.09	---
IEEE 802.11ac (VHT20) Mode (OFDM)			
Channel: 5260	MCS0	21.60	---
Channel: 5300	MCS0	21.40	---
Channel: 5320	MCS0	21.52	---
IEEE 802.11ac (VHT40) Mode (OFDM)			
Channel: 5270	MCS0	40.03	---
Channel: 5310	MCS0	40.28	---
IEEE 802.11ac (VHT80) Mode (OFDM)			
Channel:5290	MCS0	81.65	---

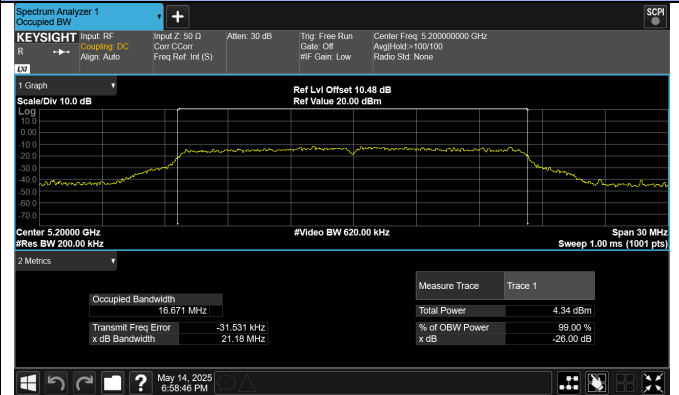
U-NII-2C Band			
Frequency MHz	Data Rate Mbps	26dB Bandwidth MHz	99% Occupied Bandwidth MHz
IEEE 802.11a Mode (OFDM)			
Channel: 5500	6	21.15	---
Channel: 5580	6	21.50	---
Channel: 5700	6	21.16	---
IEEE 802.11n(HT20) Mode (OFDM)			
Channel: 5500	MCS0	21.72	---
Channel: 5580	MCS0	21.36	---
Channel: 5700	MCS0	21.38	---
IEEE 802.11n(HT40) Mode (OFDM)			
Channel: 5510	MCS0	39.94	---
Channel: 5670	MCS0	40.27	---
IEEE 802.11ac (VHT20) Mode (OFDM)			
Channel: 5500	MCS0	21.46	---
Channel: 5580	MCS0	21.69	---
Channel: 5700	MCS0	21.37	---
IEEE 802.11ac (VHT40) Mode (OFDM)			
Channel: 5510	MCS0	39.97	---
Channel: 5670	MCS0	40.13	---
IEEE 802.11ac (VHT80) Mode (OFDM)			
Channel: 5610	MCS0	80.94	---

U-NII-1 Band 26dB Bandwidth

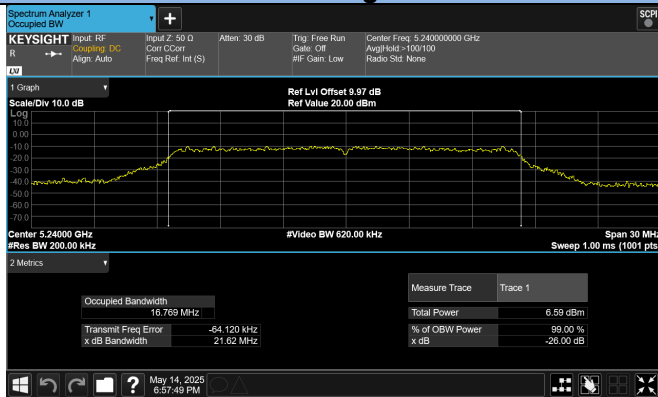
IEEE 802.11a Low Channel



IEEE 802.11a Middle Channel



IEEE 802.11a High Channel



IEEE 802.11n(HT20) Low Channel



IEEE 802.11n(HT20) Middle Channel

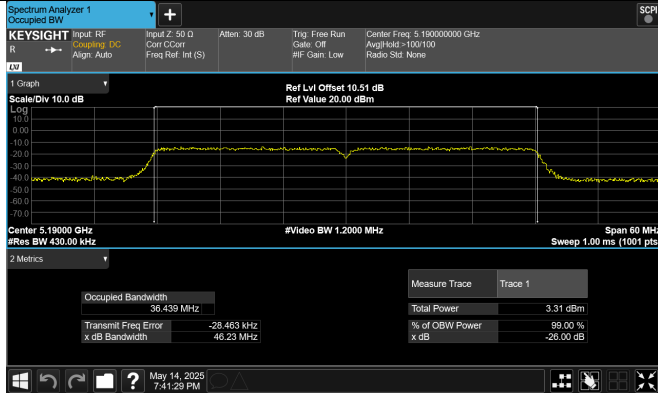


IEEE 802.11n(HT20) High Channel

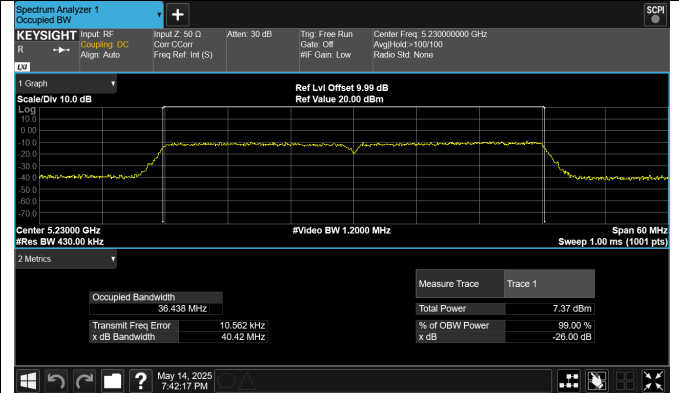


U-NII-1 Band 26dB Bandwidth

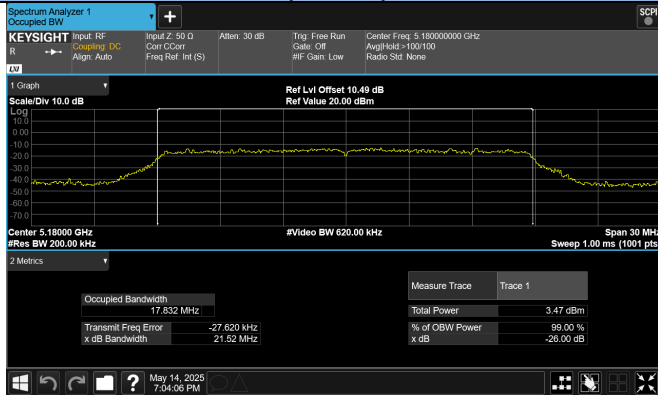
IEEE 802.11n(HT40) Low Channel



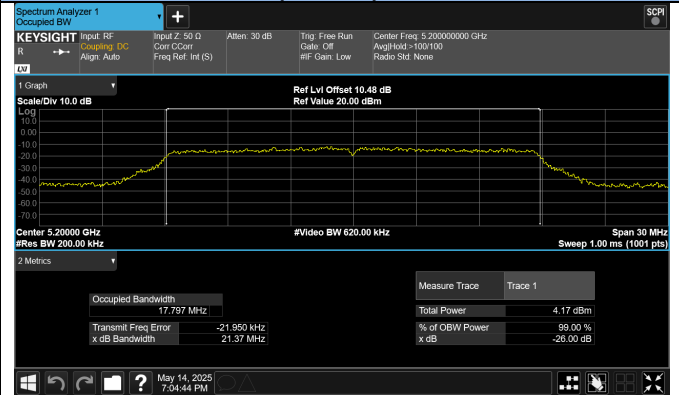
IEEE 802.11n(HT40) High Channel



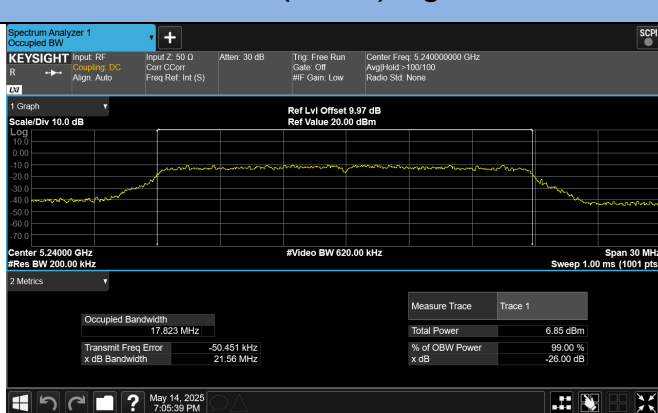
IEEE 802.11ac(VHT20) Low Channel



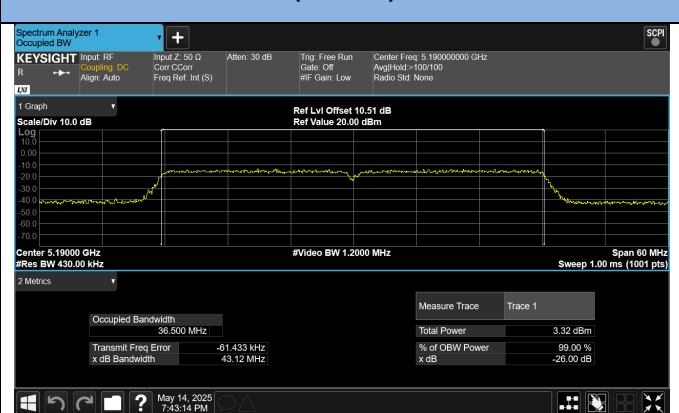
IEEE 802.11ac(VHT20) Middle Channel



IEEE 802.11ac(VHT20) High Channel

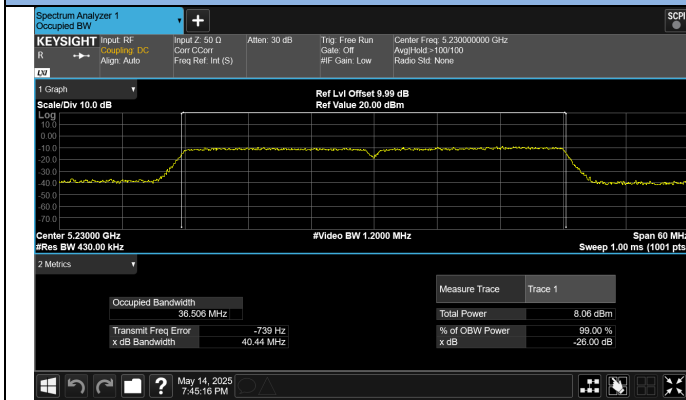


IEEE 802.11ac(VHT40) Low Channel



U-NII-1 Band 26dB Bandwidth

IEEE 802.11ac(VHT40) High Channel



IEEE 802.11ac(VHT80)

