

Project No: TM-2201000099P
Report No.: TMWK2201000111KR

FCC ID: KA2M18A1

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Rev.: 00

RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART E

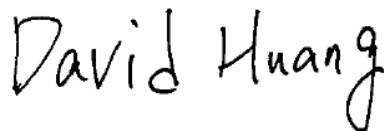
Test Standard	FCC Part 15.407
Product name	AX1800 Wi-Fi 6 AI Router, AX1800 MESH ROUTER, AX1800 MESH SYSTEM
Brand Name	D-Link
Model No.	M18
Test Result	Pass
Statements of Conformity	Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc.(Wugu Laboratory)

Approved by:



David Huang
Supervisor

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	August 2, 2022	Initial Issue	ALL	Doris Chu

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1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	D-Link Corporation 14420 Myford Road Suite 100 Irvine California United States 92606
Manufacturer	D-Link Corporation 14420 Myford Road Suite 100 Irvine California United States 92606
Equipment	AX1800 Wi-Fi 6 AI Router, AX1800 MESH ROUTER, AX1800 MESH SYSTEM
Model No.	M18
Model Discrepancy	N/A
Trade Name	D-Link
Received Date	January 17, 2022
Date of Test	February 9 ~ June 23, 2022
Power Operation	Power from Power Adapter AMIGO / AMS159A-1201000FU I/P: 100-240Vac, 50/60Hz, 0.5A O/P: 12Vdc, 1.0A

Remark:

1. For more details, please refer to the User's manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

1.2 EUT CHANNEL INFORMATION

Frequency Range	UNII-1	
	IEEE 802.11a	5180 ~ 5240 MHz
	IEEE 802.11n HT 20 MHz	5180 ~ 5240 MHz
	IEEE 802.11ac VHT 20 MHz	5180 ~ 5240 MHz
	IEEE 802.11n HT 40 MHz	5190 ~ 5230 MHz
	IEEE 802.11ac VHT 40 MHz	5190 ~ 5230 MHz
	IEEE 802.11ac VHT 80 MHz	5210 MHz
	IEEE 802.11ax HE 20 MHz	5180 ~ 5240 MHz
	IEEE 802.11ax HE 40 MHz	5190 ~ 5230 MHz
	IEEE 802.11ax HE 80 MHz	5210 MHz
	UNII-2a	
	IEEE 802.11a	5260 ~ 5320 MHz
	IEEE 802.11n HT 20 MHz	5260 ~ 5320 MHz
	IEEE 802.11ac VHT 20 MHz	5260 ~ 5320 MHz
	IEEE 802.11n HT 40 MHz	5270 ~ 5310 MHz
	IEEE 802.11ac VHT 40 MHz	5270 ~ 5310 MHz
	IEEE 802.11ac VHT 80 MHz	5290 MHz
	IEEE 802.11ax HE 20 MHz	5260 ~ 5320 MHz
	IEEE 802.11ax HE 40 MHz	5270 ~ 5310 MHz
	IEEE 802.11ax HE 80 MHz	5290 MHz
	UNII-2c	
	IEEE 802.11a	5500 ~ 5720 MHz
	IEEE 802.11n HT 20 MHz	5500 ~ 5720 MHz
	IEEE 802.11ac VHT 20 MHz	5500 ~ 5720 MHz
	IEEE 802.11n HT 40 MHz	5510 ~ 5710 MHz
	IEEE 802.11ac VHT 40 MHz	5510 ~ 5710 MHz
	IEEE 802.11ac VHT 80 MHz	5530 ~ 5690 MHz
	IEEE 802.11ax HE 20 MHz	5500 ~ 5720 MHz
	IEEE 802.11ax HE 40 MHz	5510 ~ 5710 MHz
	IEEE 802.11ax HE 80 MHz	5530 ~ 5690 MHz
	UNII-3	
	IEEE 802.11a	5745 ~ 5825 MHz
	IEEE 802.11n HT 20 MHz	5745 ~ 5825 MHz
	IEEE 802.11ac VHT 20 MHz	5745 ~ 5825 MHz
	IEEE 802.11n HT 40 MHz	5755 ~ 5795 MHz
	IEEE 802.11ac VHT 40 MHz	5755 ~ 5795 MHz
	IEEE 802.11ac VHT 80 MHz	5775 MHz
	IEEE 802.11ax HE 20 MHz	5745 ~ 5825 MHz
	IEEE 802.11ax HE 40 MHz	5755 ~ 5795 MHz
	IEEE 802.11ax HE 80 MHz	5775 MHz



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Modulation Type	1. IEEE 802.11a mode: OFDM 2. IEEE 802.11n HT 20 MHz mode: OFDM 3. IEEE 802.11ac VHT 20 MHz mode: OFDM 4. IEEE 802.11n HT 40 MHz mode: OFDM 5. IEEE 802.11ac VHT 40 MHz mode: OFDM 6. IEEE 802.11ac VHT 80 MHz mode: OFDM 7. IEEE 802.11ax HE 20 MHz mode: OFDMA 8. IEEE 802.11ax HE 40 MHz mode: OFDMA 9. IEEE 802.11ax HE 80 MHz mode: OFDMA
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Remark:

Refer as ANSI C63.10: 2013 clause 5.6.1 Table 4 for test channels



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Number of frequencies to be tested		
Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
☐ 1 MHz or less	1	Middle
☐ 1 MHz to 10 MHz	2	1 near top and 1 near bottom
☒ More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

1.3 ANTENNA INFORMATION

Antenna Specification	☐ PIFA ☒ PCB ☐ Dipole ☐ Coils
Antenna Gain	Chain 0: 5150~5250: Gain: 2.56 dBi 5250~5350: Gain: 2.56 dBi 5470~5725: Gain: 2.59 dBi 5725~5850: Gain: 2.68 dBi Chain 1: 5150~5250: Gain: 2.42 dBi 5250~5350: Gain: 2.42 dBi 5470~5725: Gain: 2.63 dBi 5725~5850: Gain: 2.72 dBi Power Directional Gain: 5150~5250: Gain: 5.50 dBi 5250~5350: Gain: 5.50 dBi 5470~5725: Gain: 5.62 dBi 5725~5850: Gain: 5.71 dBi
Antenna connector	MHF compatible

Notes:

1. Power Directional Gain = $10 \cdot \log \{ [10^{(Ant1/20)} + 10^{(Ant2/20)} + \dots + 10^{(Ant N /20)}]^2 / N \text{ ANT} \}$ dBi
2. The antenna(s) of the EUT are permanently attached and there are no provisions for connection to an external antenna. So the EUT complies with the requirements of §15.203.

1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 2.1183
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87
Channel Bandwidth	+/- 1.8006
RF output power	+/- 1.8009
Power Spectral density	+/- 1.7998

Remark:

- 1.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

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1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark
AC Conduction Room	Jack Chen	-
Radiation	Tony Chao, Ray Li, Czerny Lin	-
RF Conducted	Jack Chen	-

Remark: The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC public Access Link (PAL) database, FCC Registration No. :444940, the FCC Designation No.:TW1309.

1.6 INSTRUMENT CALIBRATION

RF Conducted Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EXA Signal Analyzer	KEYSIGHT	N9010B	MY59071573	05/25/2021	05/24/2022
EXA Signal Analyzer	KEYSIGHT	N9010B	MY55460167	09/07/2021	09/06/2022
Power Meter	Anritsu	ML2496A	2136002	12/06/2021	12/05/2022
Power Sensor	Anritsu	MA2411B	1911386	08/19/2021	08/18/2022
Power Sensor	Anritsu	MA2411B	1911387	08/19/2021	08/18/2022
Software	Radio Test Software Ver. 21				

AC Power Line Conducted Emission Test Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
CABLE	EMCI	CFD300-NL	CERF	06/28/2021	06/27/2022
EMI Test Receiver	R&S	ESCI	100064	07/05/2021	07/04/2022
LISN	SCHWARZBECK	NSLK 8127	8127-01068	01/17/2022	01/16/2023
Software	EZ-EMC(CCS-3A1-CE-wugu)				

Remark:

- Each piece of equipment is scheduled for calibration once a year.
- N.C.R. = No Calibration Required.

3M 966 Chamber Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Bilog Antenna	Sunol Sciences	JB3	A030105	07/19/2021	07/18/2022
Coaxial Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/24/2021	02/23/2022
				02/23/2022	02/22/2023
Coaxial Cable	EMCI	EMC105	190914+1111	09/17/2021	09/16/2022
Coaxial Cable	Woken	J-1099	201709090004	12/23/2021	12/22/2022
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	12/28/2021	12/27/2022
High Pass Filters	MICRO TRONICS	HPM13195	003	02/10/2022	02/09/2023
Horn Antenna	ETS LINDGREN	3116	00026370	11/30/2021	11/29/2022
Horn Antenna	ETS LINDGREN	3117	00055165	07/29/2021	07/28/2022
K Type Cable	Huber+Suhner	SUCOFLEX 102	29406/2	12/05/2021	12/04/2022
Loop Ant	COM-POWER	AL-130	121051	04/07/2021	04/06/2022
				04/13/2022	04/12/2023
Pre-Amplifier	EMEC	EM330	060609	02/24/2021	02/23/2022
				02/23/2022	02/22/2023
Pre-Amplifier	HP	8449B	3008A00965	12/24/2021	12/23/2022
Pre-Amplifier	MITEQ	AMF-6F-1800 4000-37-8P	985646	09/08/2021	09/07/2022
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	12/06/2021	12/05/2022
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Software	e3 6.11-20180419c				

Remark:

- Each piece of equipment is scheduled for calibration once a year.
- N.C.R. = No Calibration Required.

Dynamic Frequency Selection					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Attenuator	E-INSTRUMENT	EPA-600H	EC1400050	07/08/2021	07/07/2022
Coaxial Cable	Woken	WC12	DC004	06/28/2021	06/27/2022
Power Divider	Solvang Technology	STI08-0015	008	07/26/2021	07/25/2022
Spectrum Analyzer	R&S	FSU 26	100258	06/06/2022	06/05/2023
				06/17/2021	06/16/2022
Vector Signal Generator	R&S	SMU 200A	103439	04/11/2022	04/10/2023
Vector Signal Generator	KEYSIGHT	N5182B/N5182BX07	MY61252828/ MY59362552	02/22/2022	02/22/2023
Software	GPIBSHOT, DFS-Aggregate-Time FSU, LANLook				

Remark: Each piece of equipment is scheduled for calibration once a year.



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1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

EUT Accessories Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
	N/A				

Support Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
1	NB(J)	TOSHIBA	PT345T-00L002	N/A	PD97260H
2	wireless card	Netgear	A6210	N/A	PY313400249
3	NB	Lenovo	20175	N/A	TX2-RTL8723AS
4	AP	ASUS	RT-AX88U	N/A	MSQ-RTAXHP00

1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.407, KDB 789033 D02.

2. TEST SUMMARY

FCC Standard Sec.	Chapter	Test Item	Result
15.203	1.3	Antenna Requirement	Pass
15.207	4.1	AC Conducted Emission	Pass
15.407(a)	4.2	26dB Bandwidth	Pass
15.407(e)	4.2	6dB Bandwidth	Pass
2.1049	4.2	Occupied Bandwidth (99%)	Pass
15.407(a)	4.3	Output Power Measurement	Pass
15.407(a)	4.4	Power Spectral Density	Pass
15.407(b)	4.5	Radiation Band Edge	Pass
15.407(b)	4.5	Radiation Spurious Emission	Pass
15.407(h)	5	Dynamic Frequency Selection	Pass

Summary of Dynamic Frequency of Selection Test For Master

UNII	Description	Limit	Result
U-NII Band 2-A 5250-5350MHz	Channel Availability Check Time	> 60sec	Pass
	U-NII Detection Bandwidth	> 100% of the U-NII 99% transmission power bandwidth	Pass
	Statistical Performance Check	Type 1,2,3,4 >= 60% Type 1~4 and 5 >= 80% Type 6 >= 70%	Pass
	Channel Move Time	< 10 sec	Pass
	Channel Closing Transmission Time	< 200 ms + aggregate of 60 ms over remaining 10 s period	Pass
	Non-Occupancy Period Test	> 30 minutes	Pass
U-NII Band 2-C 5470-5725MHz	Channel Availability Check Time	> 60sec	Pass
	U-NII Detection Bandwidth	> 100% of the U-NII 99% transmission power bandwidth	Pass
	Statistical Performance Check	Type 1,2,3,4 >= 60% Type 1~4 and 5 >= 80% Type 6 >= 70%	Pass
	Channel Move Time	< 10 sec	Pass
	Channel Closing Transmission Time	< 200 ms + aggregate of 60 ms over remaining 10 s period	Pass
	Non-Occupancy Period Test	> 30 minutes	Pass

3. DESCRIPTION OF TEST MODES

3.1 THE EUT CHANNEL NUMBER OF OPERATING CONDITION

Operation mode	1. IEEE 802.11a mode: 6Mbps 2. IEEE 802.11n HT 20 MHz mode: MCS0 3. IEEE 802.11ac VHT 20 MHz mode: MCS0 4. IEEE 802.11n HT 40 MHz mode: MCS0 5. IEEE 802.11ac VHT 40 MHz mode: MCS0 6. IEEE 802.11ac VHT 80 MHz mode: MCS0 7. IEEE 802.11ax HE 20 mode: MCS0 8. IEEE 802.11ax HE 40 mode: MCS0 9. IEEE 802.11ax HE 80 mode: MCS0																																																																																	
Operating Frequency	<table><tr><th></th><th>Mode</th><th>Frequency Range (MHz)</th></tr><tr><td rowspan="9">U-NII-1</td><td>IEEE 802.11a</td><td>5180, 5220, 5240</td></tr><tr><td>IEEE 802.11n HT 20 MHz</td><td>5180, 5220, 5240</td></tr><tr><td>IEEE 802.11ac VHT 20 MHz</td><td>5180, 5220, 5240</td></tr><tr><td>IEEE 802.11n HT 40 MHz</td><td>5190, 5230</td></tr><tr><td>IEEE 802.11ac VHT 40 MHz</td><td>5190, 5230</td></tr><tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5210</td></tr><tr><td>IEEE 802.11ax HE 20 MHz</td><td>5180, 5220, 5240</td></tr><tr><td>IEEE 802.11ax HE 40 MHz</td><td>5190, 5230</td></tr><tr><td>IEEE 802.11ax HE 80 MHz</td><td>5210</td></tr><tr><td rowspan="9">U-NII-2a</td><td>IEEE 802.11a</td><td>5260, 5300, 5320</td></tr><tr><td>IEEE 802.11n HT 20 MHz</td><td>5260, 5300, 5320</td></tr><tr><td>IEEE 802.11ac VHT 20 MHz</td><td>5260, 5300, 5320</td></tr><tr><td>IEEE 802.11n HT 40 MHz</td><td>5270, 5310</td></tr><tr><td>IEEE 802.11ac VHT 40 MHz</td><td>5270, 5310</td></tr><tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5290</td></tr><tr><td>IEEE 802.11ax HE 20 MHz</td><td>5260, 5300, 5320</td></tr><tr><td>IEEE 802.11ax HE 40 MHz</td><td>5270, 5310</td></tr><tr><td>IEEE 802.11ax HE 80 MHz</td><td>5290</td></tr><tr><td rowspan="9">U-NII-2c</td><td>IEEE 802.11a</td><td>5500, 5580, 5700, 5720</td></tr><tr><td>IEEE 802.11n HT 20 MHz</td><td>5500, 5580, 5700, 5720</td></tr><tr><td>IEEE 802.11ac VHT 20 MHz</td><td>5500, 5580, 5700, 5720</td></tr><tr><td>IEEE 802.11n HT 40 MHz</td><td>5510, 5550, 5670, 5710</td></tr><tr><td>IEEE 802.11ac VHT 40 MHz</td><td>5510, 5550, 5670, 5710</td></tr><tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5530, 5690</td></tr><tr><td>IEEE 802.11ax HE 20 MHz</td><td>5500, 5580, 5700, 5720</td></tr><tr><td>IEEE 802.11ax HE 40 MHz</td><td>5510, 5550, 5670, 5710</td></tr><tr><td>IEEE 802.11ax HE 80 MHz</td><td>5530, 5690</td></tr><tr><td rowspan="9">U-NII-3</td><td>IEEE 802.11a</td><td>5745, 5785, 5825</td></tr><tr><td>IEEE 802.11n HT 20 MHz</td><td>5745, 5785, 5825</td></tr><tr><td>IEEE 802.11ac VHT 20 MHz</td><td>5745, 5785, 5825</td></tr><tr><td>IEEE 802.11n HT 40 MHz</td><td>5755, 5795</td></tr><tr><td>IEEE 802.11ac VHT 40 MHz</td><td>5755, 5795</td></tr><tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5775</td></tr><tr><td>IEEE 802.11ax HE 20 MHz</td><td>5745, 5785, 5825</td></tr><tr><td>IEEE 802.11ax HE 40 MHz</td><td>5755, 5795</td></tr><tr><td>IEEE 802.11ax HE 80 MHz</td><td>5775</td></tr></table>				Mode	Frequency Range (MHz)	U-NII-1	IEEE 802.11a	5180, 5220, 5240	IEEE 802.11n HT 20 MHz	5180, 5220, 5240	IEEE 802.11ac VHT 20 MHz	5180, 5220, 5240	IEEE 802.11n HT 40 MHz	5190, 5230	IEEE 802.11ac VHT 40 MHz	5190, 5230	IEEE 802.11ac VHT 80 MHz	5210	IEEE 802.11ax HE 20 MHz	5180, 5220, 5240	IEEE 802.11ax HE 40 MHz	5190, 5230	IEEE 802.11ax HE 80 MHz	5210	U-NII-2a	IEEE 802.11a	5260, 5300, 5320	IEEE 802.11n HT 20 MHz	5260, 5300, 5320	IEEE 802.11ac VHT 20 MHz	5260, 5300, 5320	IEEE 802.11n HT 40 MHz	5270, 5310	IEEE 802.11ac VHT 40 MHz	5270, 5310	IEEE 802.11ac VHT 80 MHz	5290	IEEE 802.11ax HE 20 MHz	5260, 5300, 5320	IEEE 802.11ax HE 40 MHz	5270, 5310	IEEE 802.11ax HE 80 MHz	5290	U-NII-2c	IEEE 802.11a	5500, 5580, 5700, 5720	IEEE 802.11n HT 20 MHz	5500, 5580, 5700, 5720	IEEE 802.11ac VHT 20 MHz	5500, 5580, 5700, 5720	IEEE 802.11n HT 40 MHz	5510, 5550, 5670, 5710	IEEE 802.11ac VHT 40 MHz	5510, 5550, 5670, 5710	IEEE 802.11ac VHT 80 MHz	5530, 5690	IEEE 802.11ax HE 20 MHz	5500, 5580, 5700, 5720	IEEE 802.11ax HE 40 MHz	5510, 5550, 5670, 5710	IEEE 802.11ax HE 80 MHz	5530, 5690	U-NII-3	IEEE 802.11a	5745, 5785, 5825	IEEE 802.11n HT 20 MHz	5745, 5785, 5825	IEEE 802.11ac VHT 20 MHz	5745, 5785, 5825	IEEE 802.11n HT 40 MHz	5755, 5795	IEEE 802.11ac VHT 40 MHz	5755, 5795	IEEE 802.11ac VHT 80 MHz	5775	IEEE 802.11ax HE 20 MHz	5745, 5785, 5825	IEEE 802.11ax HE 40 MHz	5755, 5795	IEEE 802.11ax HE 80 MHz	5775
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	IEEE 802.11n HT 20 MHz	5500, 5580, 5700, 5720																																																																																
	IEEE 802.11ac VHT 20 MHz	5500, 5580, 5700, 5720																																																																																
	IEEE 802.11n HT 40 MHz	5510, 5550, 5670, 5710																																																																																
	IEEE 802.11ac VHT 40 MHz	5510, 5550, 5670, 5710																																																																																
	IEEE 802.11ac VHT 80 MHz	5530, 5690																																																																																
	IEEE 802.11ax HE 20 MHz	5500, 5580, 5700, 5720																																																																																
	IEEE 802.11ax HE 40 MHz	5510, 5550, 5670, 5710																																																																																
	IEEE 802.11ax HE 80 MHz	5530, 5690																																																																																
U-NII-3	IEEE 802.11a	5745, 5785, 5825																																																																																
	IEEE 802.11n HT 20 MHz	5745, 5785, 5825																																																																																
	IEEE 802.11ac VHT 20 MHz	5745, 5785, 5825																																																																																
	IEEE 802.11n HT 40 MHz	5755, 5795																																																																																
	IEEE 802.11ac VHT 40 MHz	5755, 5795																																																																																
	IEEE 802.11ac VHT 80 MHz	5775																																																																																
	IEEE 802.11ax HE 20 MHz	5745, 5785, 5825																																																																																
	IEEE 802.11ax HE 40 MHz	5755, 5795																																																																																
	IEEE 802.11ax HE 80 MHz	5775																																																																																

Remark:

1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.
2. The system support 802.11a/n ht20/n ht40/ac vht20/40/80/ax he 20/40/80, the ht20/ht40 were reduced since the identical parameters with 802.11ac vht20 and vht40.
3. The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all data rates, bandwidths, and modulations. The device supports SISO and MIMO at 802.11a/n/ac/ax mode, per pre-test, MIMO 2TX mode was the worst and reported.
4. The device supports indoor access points and client devices. Both modes have evaluation power and PSD. Since the power of indoor access points is greater than the client device , the client device will be exempt from bandwidth and radiation tests.
5. The EUT support Beamforming off and beamforming on mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.

3.2 THE WORST MODE OF MEASUREMENT

AC Power Line Conducted Emission	
Test Condition	AC Power line conducted emission for line and neutral
Power supply Mode	Mode 1: EUT power by Adapter
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4

Radiated Emission Measurement Above 1G	
Test Condition	Radiated Emission Above 1G
Power supply Mode	Mode 1: EUT power by Adapter
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4
Worst Position	☐ Placed in fixed position. ☒ Placed in fixed position at X-Plane (E2-Plane) ☐ Placed in fixed position at Y-Plane (E1-Plane) ☐ Placed in fixed position at Z-Plane (H-Plane)

Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G
Power supply Mode	Mode 1: EUT power by Adapter
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4

Remark:

1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(X-Plane) were recorded in this report
3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.

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3.3 EUT DUTY CYCLE

BFM OFF- Master

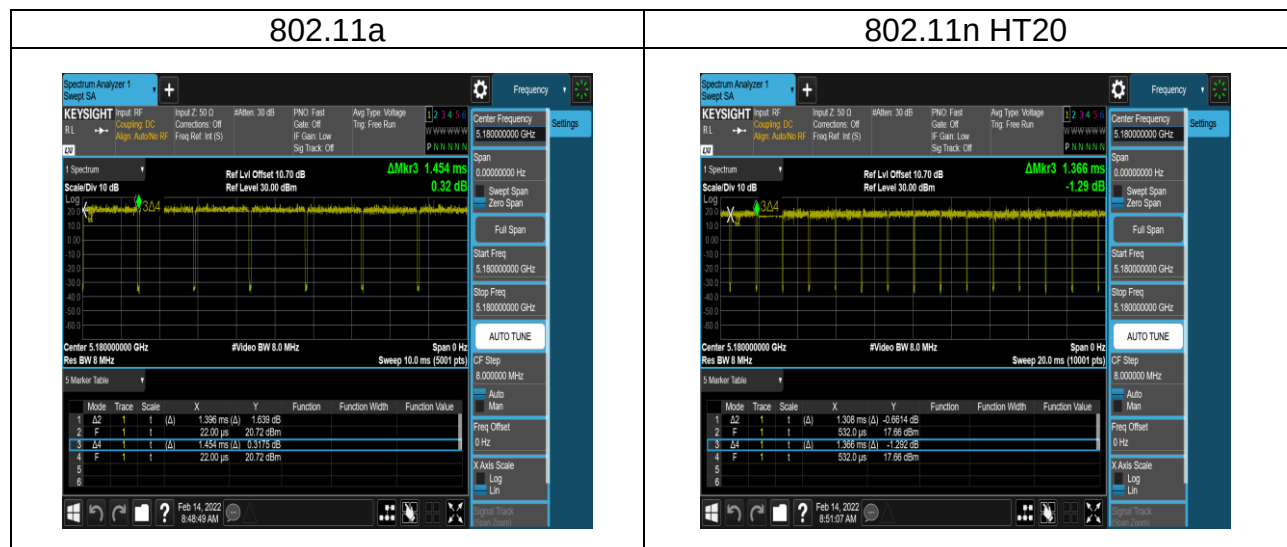
Temperature: 16.5 ~ 25.3°C

Test date: February 11 ~ May 18, 2022

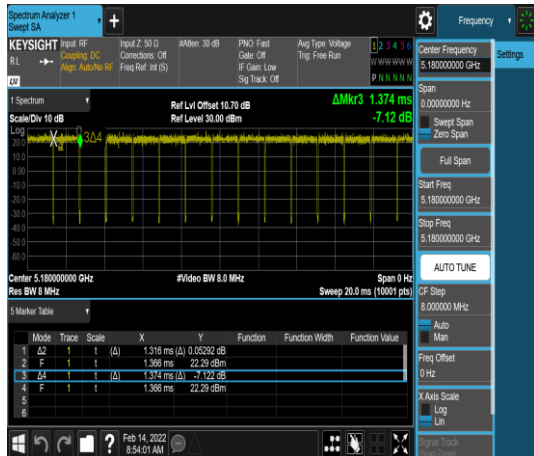
Humidity: 46 ~ 68% RH

Tested by: Jack Chen

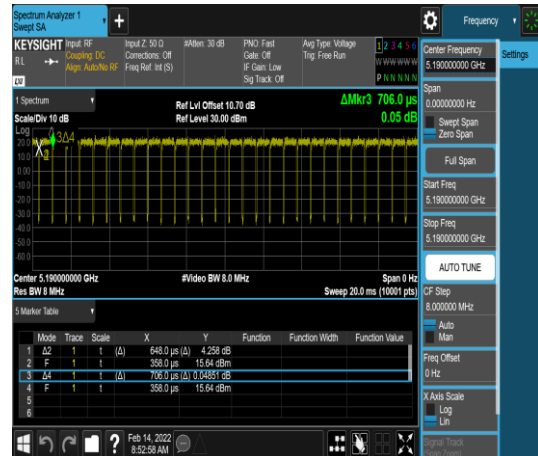
Duty Cycle				
Configuration	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11a	96.01	0.18	0.72	1.00
802.11n_20	95.75	0.19	0.76	1.00
802.11ac_20	95.78	0.19	0.76	1.00
802.11n_40	91.78	0.37	1.54	2.00
802.11ac_40	91.88	0.37	1.52	2.00
802.11ac_80	84.82	0.72	3.09	4.00
802.11ax_20	94.66	0.24	0.97	1.00
802.11ax_40	90.43	0.44	1.82	2.00
802.11ax_80	83.71	0.77	3.36	4.00



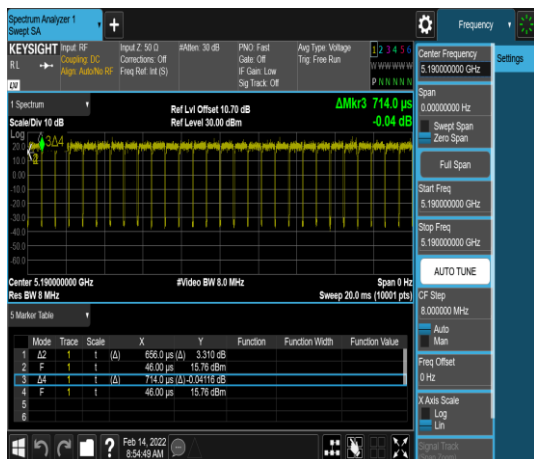
802.11ac 20



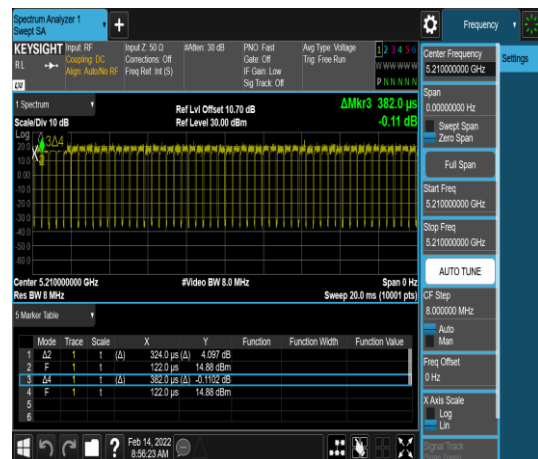
802.11n HT40

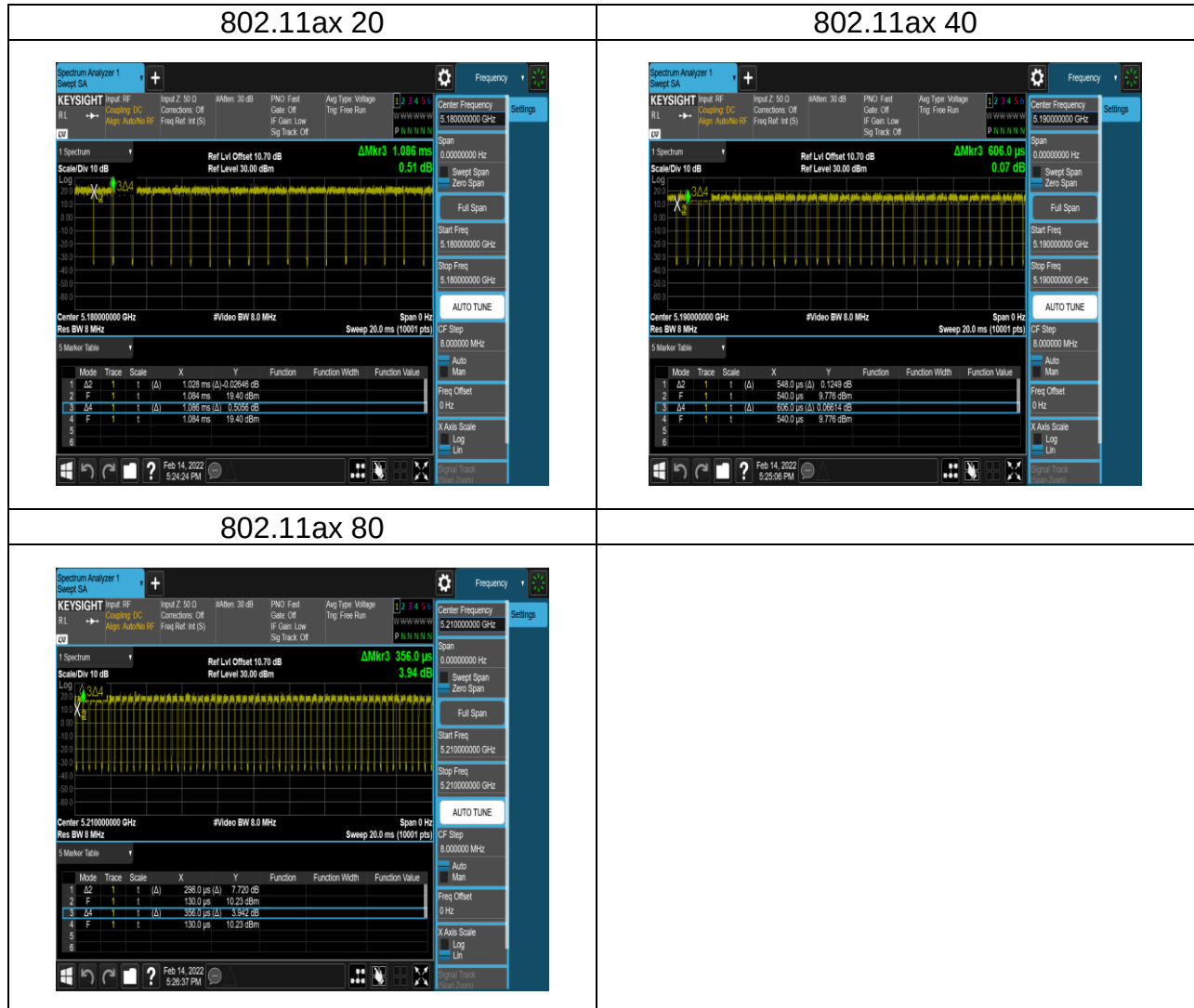


802.11ac 40



802.11ac 80





4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a),

Frequency Range (MHz)	Limits(dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

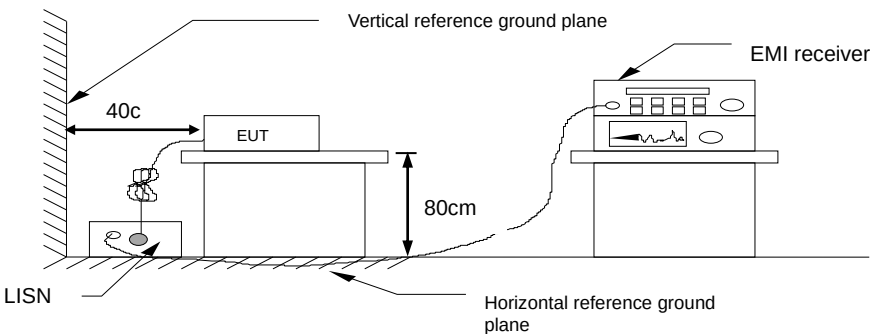
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 6.2,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

4.1.3 Test Setup



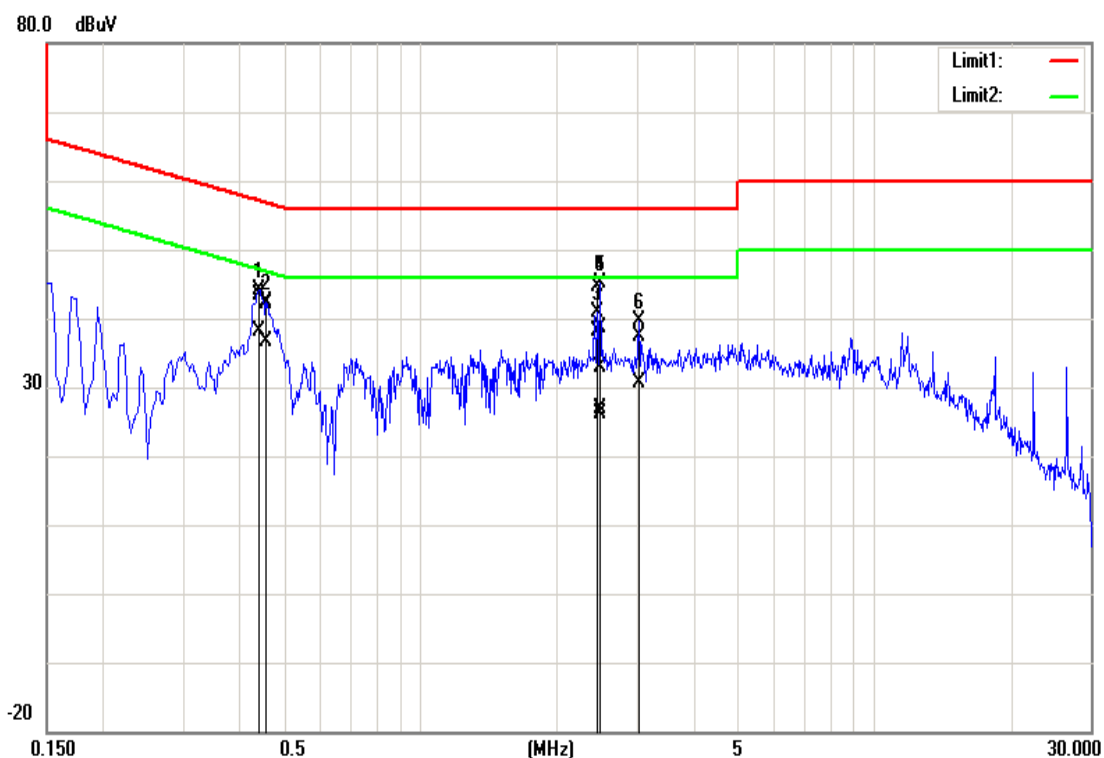
4.1.4 Test Result

Pass.

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Test Data

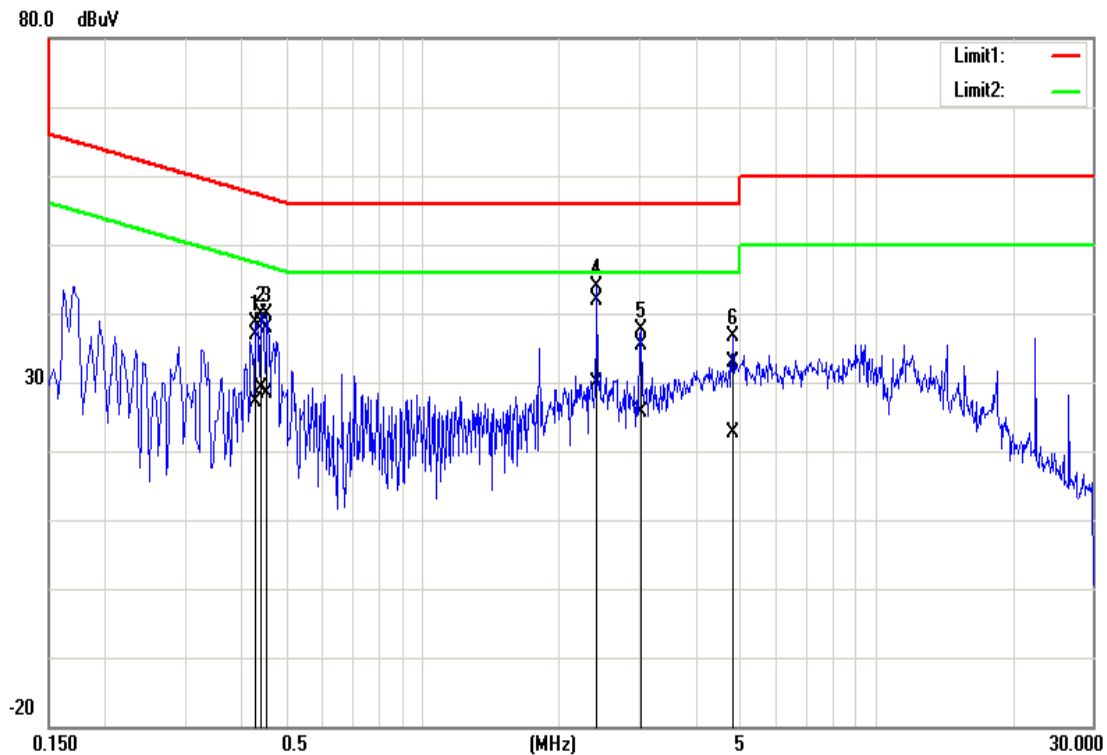
Test Mode:	Mode 1	Temp/Hum	19.9(°C)/ 58%RH
Phase:	Line	Test Date	February 9, 2022
Test Voltage:	120Vac, 60Hz	Test Engineer	Jack Chen



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.4420	43.17	37.92	0.10	43.27	38.02	57.02	47.02	-13.75	-9.00	Pass
0.4580	42.03	36.59	0.10	42.13	36.69	56.73	46.73	-14.60	-10.04	Pass
2.4220	44.39	37.85	0.16	44.55	38.01	56.00	46.00	-11.45	-7.99	Pass
2.4540	32.70	25.94	0.16	32.86	26.10	56.00	46.00	-23.14	-19.90	Pass
2.4900	38.46	26.83	0.16	38.62	26.99	56.00	46.00	-17.38	-19.01	Pass
3.0260	37.12	30.54	0.18	37.30	30.72	56.00	46.00	-18.70	-15.28	Pass

Note: Correction factor = LISN loss + Cable loss.

Test Mode:	Mode 1	Temp/Hum	19.9(°C)/ 58%RH
Phase:	Neutral	Test Date	February 9, 2022
Test Voltage:	120Vac, 60Hz	Test Engineer	Jack Chen



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.4300	36.76	26.97	0.10	36.86	27.07	57.25	47.25	-20.39	-20.18	Pass
0.4420	38.44	29.06	0.10	38.54	29.16	57.02	47.02	-18.48	-17.86	Pass
0.4540	37.86	28.28	0.10	37.96	28.38	56.80	46.80	-18.84	-18.42	Pass
2.4260	41.61	29.60	0.16	41.77	29.76	56.00	46.00	-14.23	-16.24	Pass
3.0300	35.10	25.35	0.18	35.28	25.53	56.00	46.00	-20.72	-20.47	Pass
4.8460	32.61	22.30	0.22	32.83	22.52	56.00	46.00	-23.17	-23.48	Pass

Note: Correction factor = LISN loss + Cable loss.

4.2 26dB BANDWIDTH, 6dB BANDWIDTH AND OCCUPIED BANDWIDTH(99%)

4.2.1 Test Limit

26 dB Bandwidth : For reporting purposes only.

6 dB Bandwidth : Least 500kHz.

Occupied Bandwidth(99%) : For reporting purposes only.

4.2.2 Test Procedure

26dB

1. This measurement setting are specified in section D of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set RBW: approximately 1% of the emission bandwidth.
3. Set the VBW>RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Measure the maximum width of the emission that is 26dB down from the peak of the emission. Compare this with the RBW setting of the analyser. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

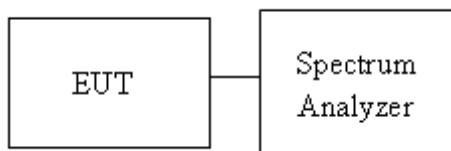
6dB

1. This measurement setting are specified in section D of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set RBW = 100 kHz.
3. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. 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.

99%

1. This measurement setting are specified in section D of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set center frequency to the nominal EUT channel center frequency.
3. Set span = 1.5 times to 5.0 times the OBW.
4. Set RBW = 1 % to 5% of the OBW.
5. Set VBW $\geq 3 \times \text{RBW}$

4.2.3 Test Setup



4.2.4 Test Result

BFM OFF- Master

Temperature: 16.5 ~ 25.3°C

Test date: February 11 ~ May 18, 2022

Humidity: 46 ~ 68% RH

Tested by: Jack Chen

UNII-1 5150-5250 MHz

Test mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
36	5180	16.453	16.436	19.76	19.94
44	5220	16.531	16.410	19.89	19.71
48	5240	16.490	16.425	19.96	19.75

Test mode: IEEE 802.11ac VHT20 mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
36	5180	17.625	17.598	20.00	20.07
44	5220	17.652	17.602	20.05	19.97
48	5240	17.619	17.612	20.13	20.01

Test mode: IEEE 802.11ac VHT40 mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
38	5190	35.764	35.784	39.70	39.23
46	5230	35.809	35.893	39.95	39.61

Test mode: IEEE 802.11ac VHT80 mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
42	5210	75.049	74.989	79.53	78.92

Test mode: IEEE 802.11ax HE20 mode

Channel	Frequency (MHz)	RU config	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
36	5180	full	18.943	18.961	23.64	22.03
44	5220	full	18.943	18.972	22.56	22.28
48	5240	full	18.943	18.972	21.75	22.30

Test mode: IEEE 802.11ax HE40 mode

Channel	Frequency (MHz)	RU config	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
38	5190	full	37.521	37.379	39.18	39.35
46	5230	full	37.477	37.471	39.37	39.30

Test mode: IEEE 802.11ax HE80 mode

Channel	Frequency (MHz)	RU config	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
42	5210	full	76.647	76.771	79.80	79.72

UNII-2a 5250-5350 MHz

Test mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
52	5260	16.499	16.432	19.77	19.73
60	5300	16.459	16.452	19.55	19.80
64	5320	16.477	16.459	19.92	19.81

Test mode: IEEE 802.11ac VHT20 mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
52	5260	17.631	17.595	20.35	20.03
60	5300	17.617	17.610	20.08	20.37
64	5320	17.608	17.597	20.07	20.08

Test mode: IEEE 802.11ac VHT40 mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
54	5270	35.733	35.831	39.41	39.20
62	5310	35.848	35.842	39.77	39.13

Test mode: IEEE 802.11ac VHT80 mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
58	5290	74.914	75.008	79.03	79.18

Test mode: IEEE 802.11ax HE20 mode

Channel	Frequency (MHz)	RU config	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
52	5260	full	18.964	18.922	22.69	22.01
60	5300	full	18.975	18.965	23.42	21.32
64	5320	full	18.950	18.986	22.95	25.20

Test mode: IEEE 802.11ax HE40 mode

Channel	Frequency (MHz)	RU config	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
54	5270	full	37.545	37.470	39.36	39.21
62	5310	full	37.434	37.438	39.35	39.24

Test mode: IEEE 802.11ax HE80 mode

Channel	Frequency (MHz)	RU config	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
58	5290	full	76.740	76.595	79.76	79.68

UNII-2c 5475-5725 MHz

Test mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
100	5500	16.452	16.454	19.70	19.72
116	5580	16.421	16.465	19.74	19.76
140	5700	16.448	16.456	19.97	19.82
144	5720(U-NII 2C)	13.251	13.206	14.760	14.865
144	5720(U-NII 3)	3.251	3.206	4.760	4.865

Test mode: IEEE 802.11ac VHT20 mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
100	5500	17.600	17.604	19.88	19.93
116	5580	17.602	17.608	20.05	20.07
140	5700	17.595	17.591	20.22	19.82
144	5720(U-NII 2C)	13.811	13.813	15.060	14.965
144	5720(U-NII 3)	3.811	3.813	5.060	4.965

Test mode: IEEE 802.11ac VHT40 mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
102	5510	35.772	35.805	40.21	39.27
110	5550	35.711	35.768	39.86	39.42
134	5670	35.830	35.867	39.60	38.88
142	5710(U-NII 2C)	32.896	32.909	35.04	34.655
142	5710(U-NII 3)	2.896	2.909	5.04	4.655

Test mode: IEEE 802.11ac VHT80 mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
106	5530	74.783	74.975	79.08	79.02
138	5690(U-NII 2C)	72.466	72.502	74.725	74.540
138	5690(U-NII 3)	2.466	2.502	4.725	4.540

Test mode: IEEE 802.11ax HE20 mode

Channel	Frequency (MHz)	RU config	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
100	5500	full	18.972	18.952	23.70	21.63
116	5580	full	18.973	18.961	22.97	22.06
140	5700	full	18.972	18.962	22.41	21.41
144	5720(U-NII 2C)	full	14.471	14.465	15.695	16.255
144	5720(U-NII 3)	full	4.471	4.465	5.695	6.255

Test mode: IEEE 802.11ax HE40 mode

Channel	Frequency (MHz)	RU config	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
102	5510	full	37.506	37.430	39.27	39.37
110	5550	full	37.408	37.492	39.30	39.35
134	5670	full	37.493	37.438	39.34	39.23
142	5710(U-NII 2C)	full	33.745	33.724	34.575	34.565
142	5710(U-NII 3)	full	3.745	3.724	4.575	4.565

Test mode: IEEE 802.11ax HE80 mode

Channel	Frequency (MHz)	RU config	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
106	5530	full	76.563	76.526	79.67	79.52
138	5690(U-NII 2C)	full	73.176	73.375	74.940	74.910
138	5690(U-NII 3)	full	3.176	3.375	4.940	4.910

UNII-3 5750-5825 MHz

Test mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)
149	5745	16.521	16.459	15.29	16.34
157	5785	16.479	16.426	16.31	16.33
165	5825	16.401	16.421	14.05	16.31

Test mode: IEEE 802.11ac VHT20 mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)
149	5745	17.782	17.653	16.66	17.52
157	5785	17.691	17.597	16.43	17.58
165	5825	17.871	17.977	17.05	17.06

Test mode: IEEE 802.11ac VHT40 mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)
151	5755	36.040	35.821	28.79	35.15
159	5795	36.081	35.926	35.12	32.61

Test mode: IEEE 802.11ac VHT80 mode

Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)
155	5775	75.224	75.048	75.08	75.15

Test mode: IEEE 802.11ax HE20 mode

Channel	Frequency (MHz)	RU config	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)
149	5745	full	19.051	18.976	18.25	18.15
157	5785	full	19.097	19.040	18.23	18.48
165	5825	full	19.207	19.247	18.41	16.84

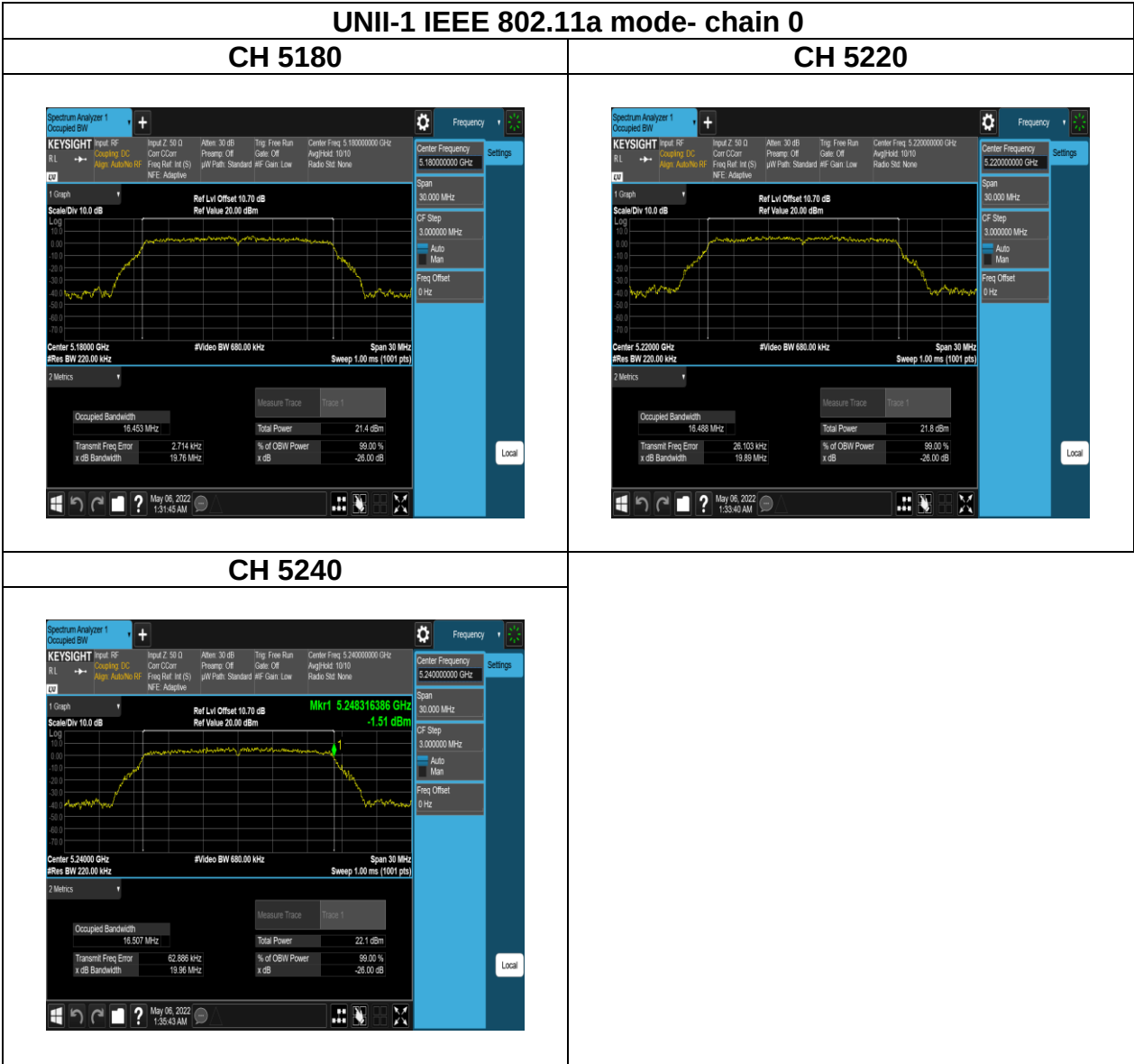
Test mode: IEEE 802.11ax HE40 mode

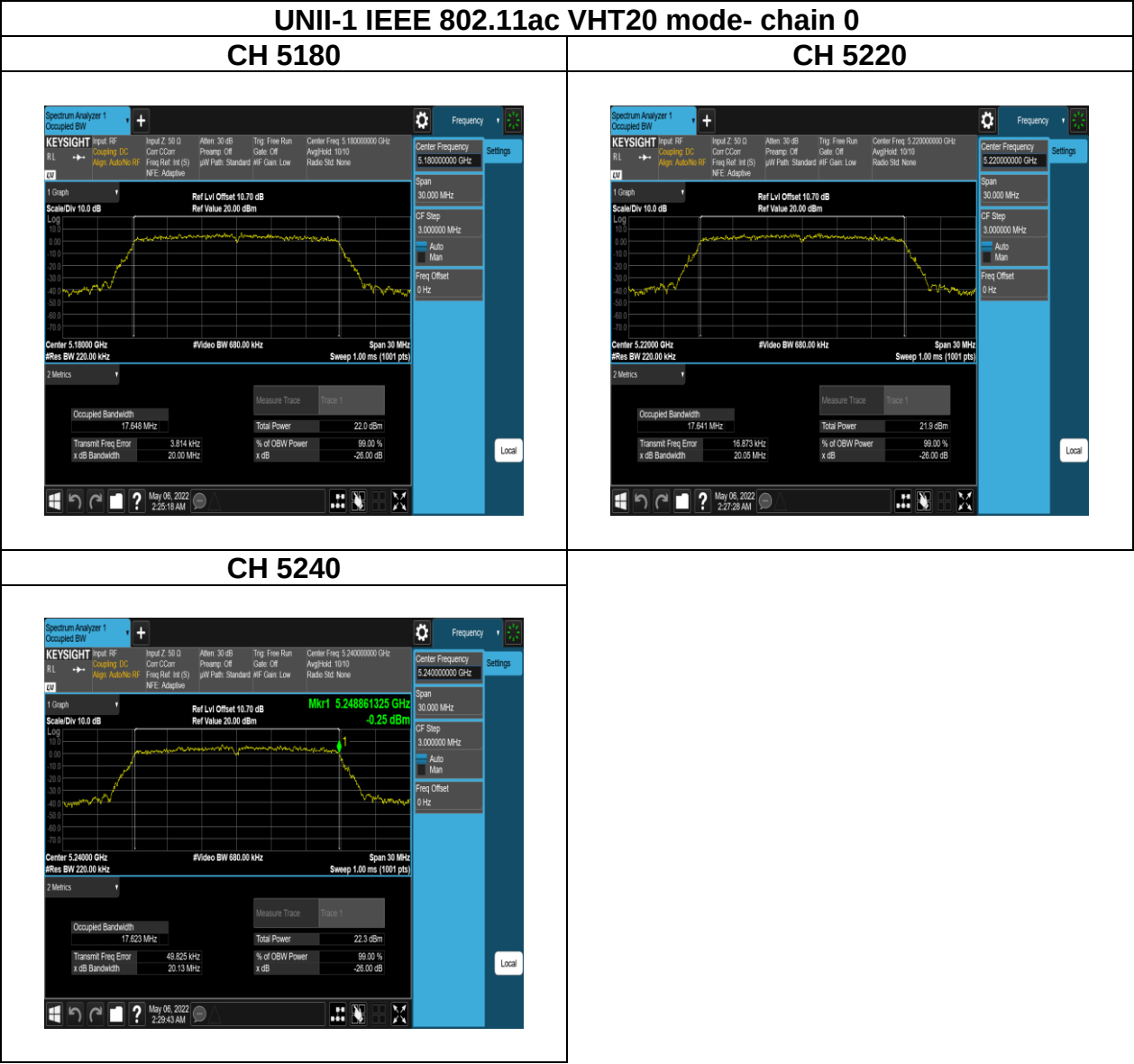
Channel	Frequency (MHz)	RU config	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)
151	5755	full	37.625	37.574	37.53	32.59
159	5795	full	38.139	37.776	32.67	32.51

Test mode: IEEE 802.11ax HE80 mode

Channel	Frequency (MHz)	RU config	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)
155	5775	full	76.724	76.458	73.74	71.29

Test Plots (26dB BANDWIDTH)





Report No.: TMWK2201000111KR

UNII-1 IEEE 802.11ac VHT40 mode- chain 0

CH 5190

Spectrum Analyzer 1
Occupied BW

KEYSIGHT Input RF Input 7.50 D Core CCo: Preamp 30 dB Trig Free Run Gate Off Center Freq 5.190000000 GHz
R/L Cresting MC High Auto/No 60 Freq Ref Int (S) NFE: Adaptive uW Path: Standard RF Gain Low Radio Std: None

Center Frequency 5.190000000 GHz
Span 60.000 MHz
CF Step 5.000000 MHz
Auto Man
Freq Offset 0 Hz

Scale Div 10.0 dB
Log
Ref Lvl Offset 10.70 dB
Ref Value 20.00 dBm

Center 5.19000 GHz #Video BW 1.3000 MHz Span 50 MHz
#Res BW 430.00 MHz Sweep 1.00 ms (1001 pts)

2 Metrics

Measure Trace		Trace 1
Occupied Bandwidth	35.822 MHz	Total Power 26.6 dBm
Transmit Freq Error	42.786 kHz	% of OBW Power 99.00 %
x dB Bandwidth	39.70 MHz	x dB -26.00 dB

May 06, 2022 3:03:14 AM

CH 5230

Spectrum Analyzer 1
Occupied BW

KEYSIGHT Input RF Input 7.50 D Core CCo: Preamp 30 dB Trig Free Run Gate Off Center Freq 5.230000000 GHz
R/L Cresting MC High Auto/No 60 Freq Ref Int (S) NFE: Adaptive uW Path: Standard RF Gain Low Radio Std: None

Center Frequency 5.230000000 GHz
Span 60.000 MHz
CF Step 5.000000 MHz
Auto Man
Freq Offset 0 Hz

Scale Div 10.0 dB
Log
Ref Lvl Offset 10.70 dB
Ref Value 20.00 dBm

Center 5.23000 GHz #Video BW 1.3000 MHz Span 50 MHz
#Res BW 430.00 MHz Sweep 1.00 ms (1001 pts)

2 Metrics

Measure Trace		Trace 1
Occupied Bandwidth	35.841 MHz	Total Power 26.6 dBm
Transmit Freq Error	66.541 kHz	% of OBW Power 99.00 %
x dB Bandwidth	39.95 MHz	x dB -26.00 dB

May 06, 2022 3:05:09 AM

UNII-1 IEEE 802.11ac VHT80 mode- chain 0

CH 5210

Spectrum Analyzer 1
Occupied BW

KEYSIGHT Input RF Input 7.50 D Core CCo: Preamp 30 dB Trig Free Run Gate Off Center Freq 5.210000000 GHz
R/L Cresting MC High Auto/No 60 Freq Ref Int (S) NFE: Adaptive uW Path: Standard RF Gain Low Radio Std: None

Center Frequency 5.210000000 GHz
Span 100.00 MHz
CF Step 10.000000 MHz
Auto Man
Freq Offset 0 Hz

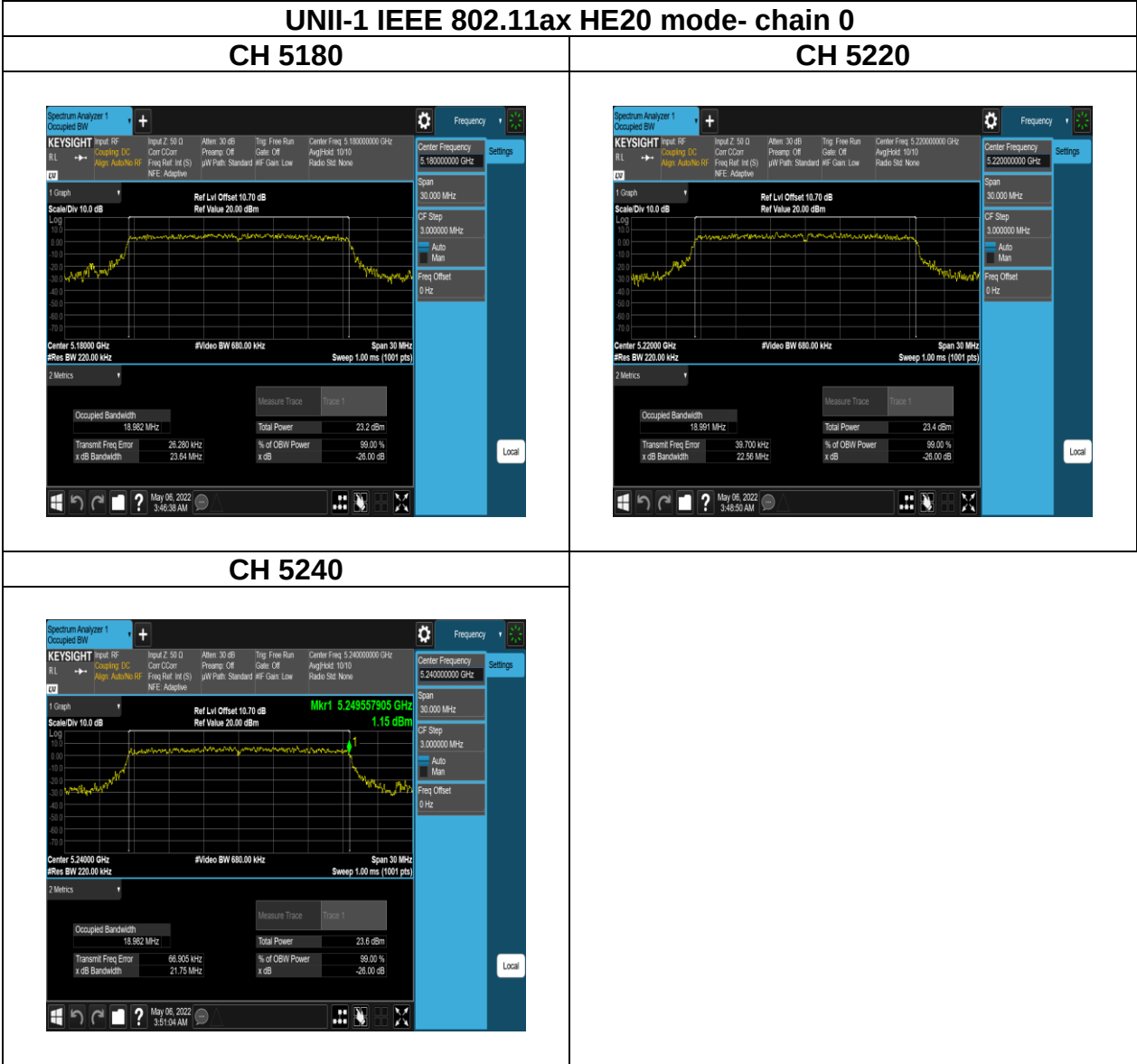
Scale Div 10.0 dB
Log
Ref Lvl Offset 10.70 dB
Ref Value 20.00 dBm

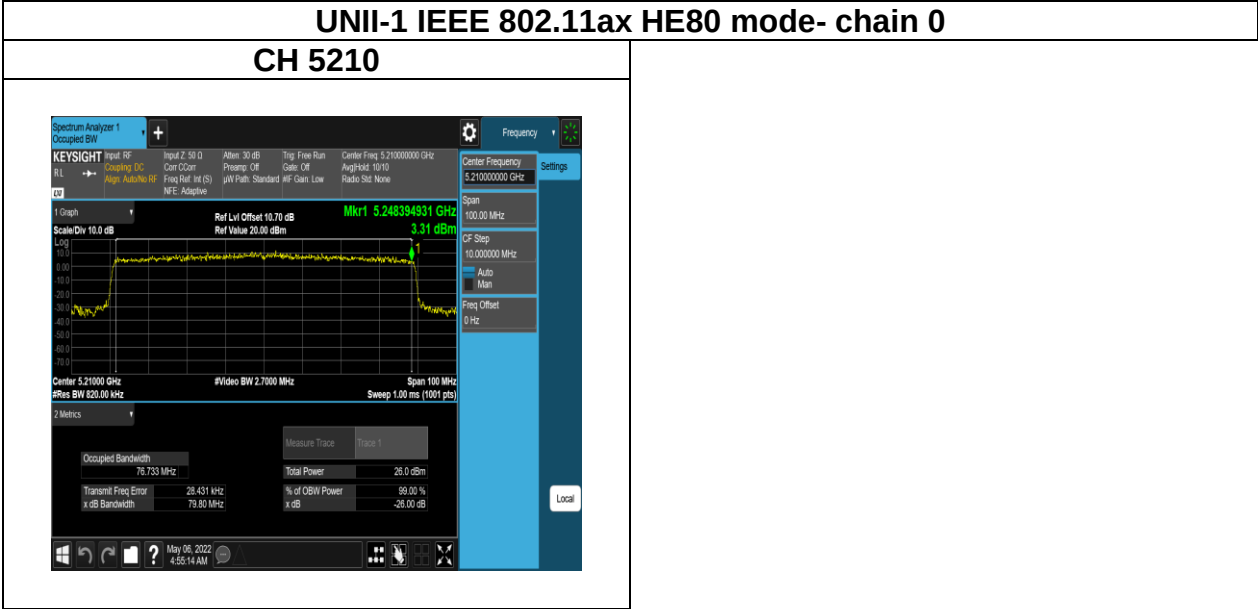
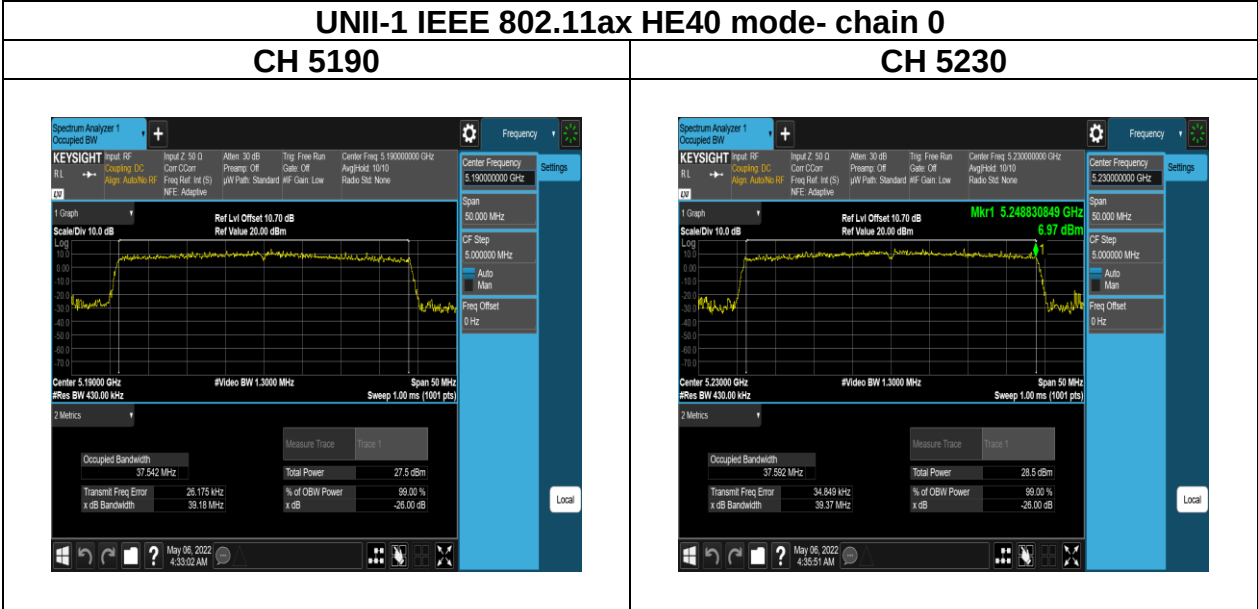
Center 5.21000 GHz #Video BW 2.7000 MHz Span 100 MHz
#Res BW 820.00 MHz Sweep 1.00 ms (1001 pts)

2 Metrics

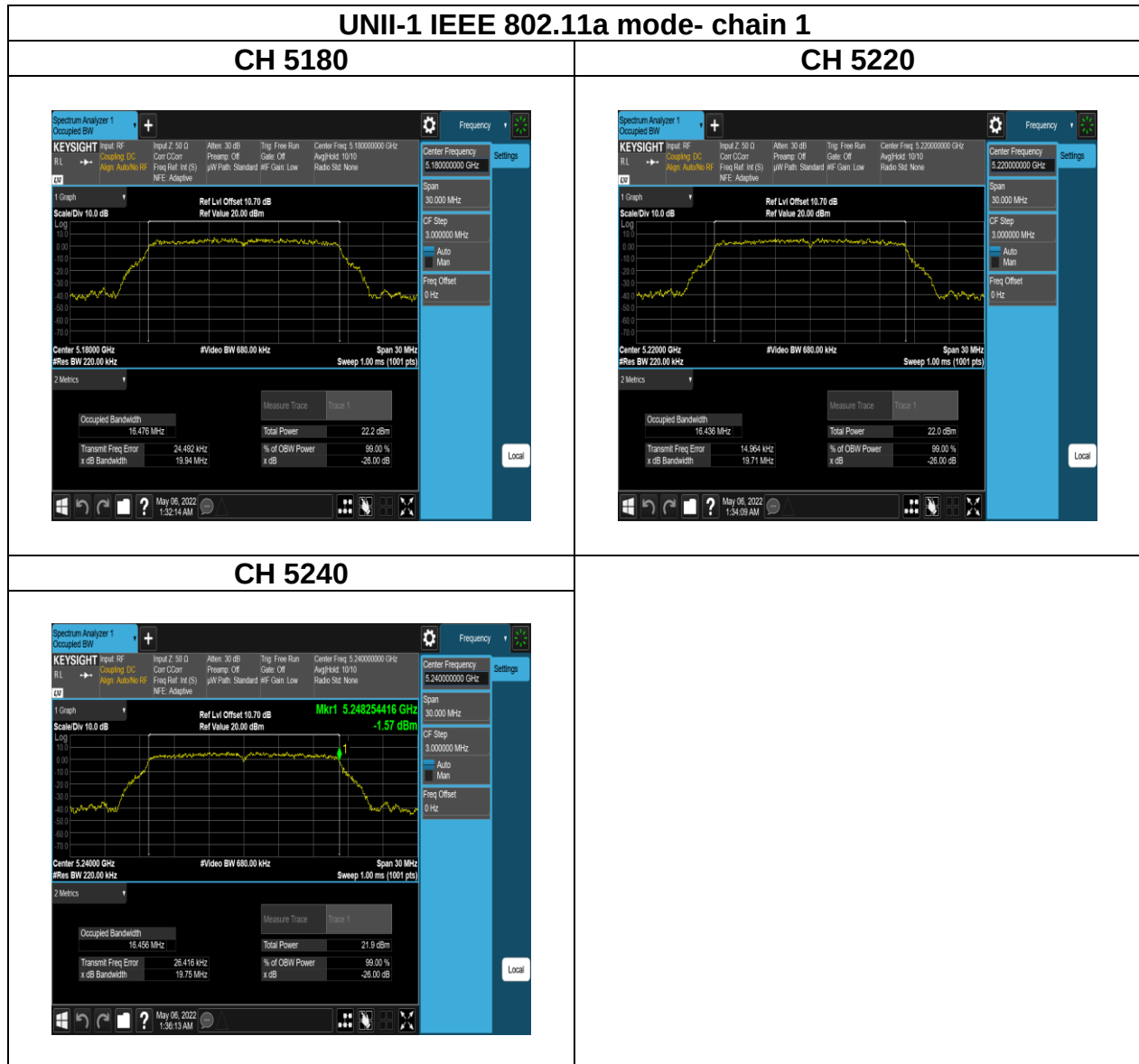
Measure Trace		Trace 1
Occupied Bandwidth	75.009 MHz	Total Power 24.1 dBm
Transmit Freq Error	-20.043 kHz	% of OBW Power 99.00 %
x dB Bandwidth	79.53 MHz	x dB -26.00 dB

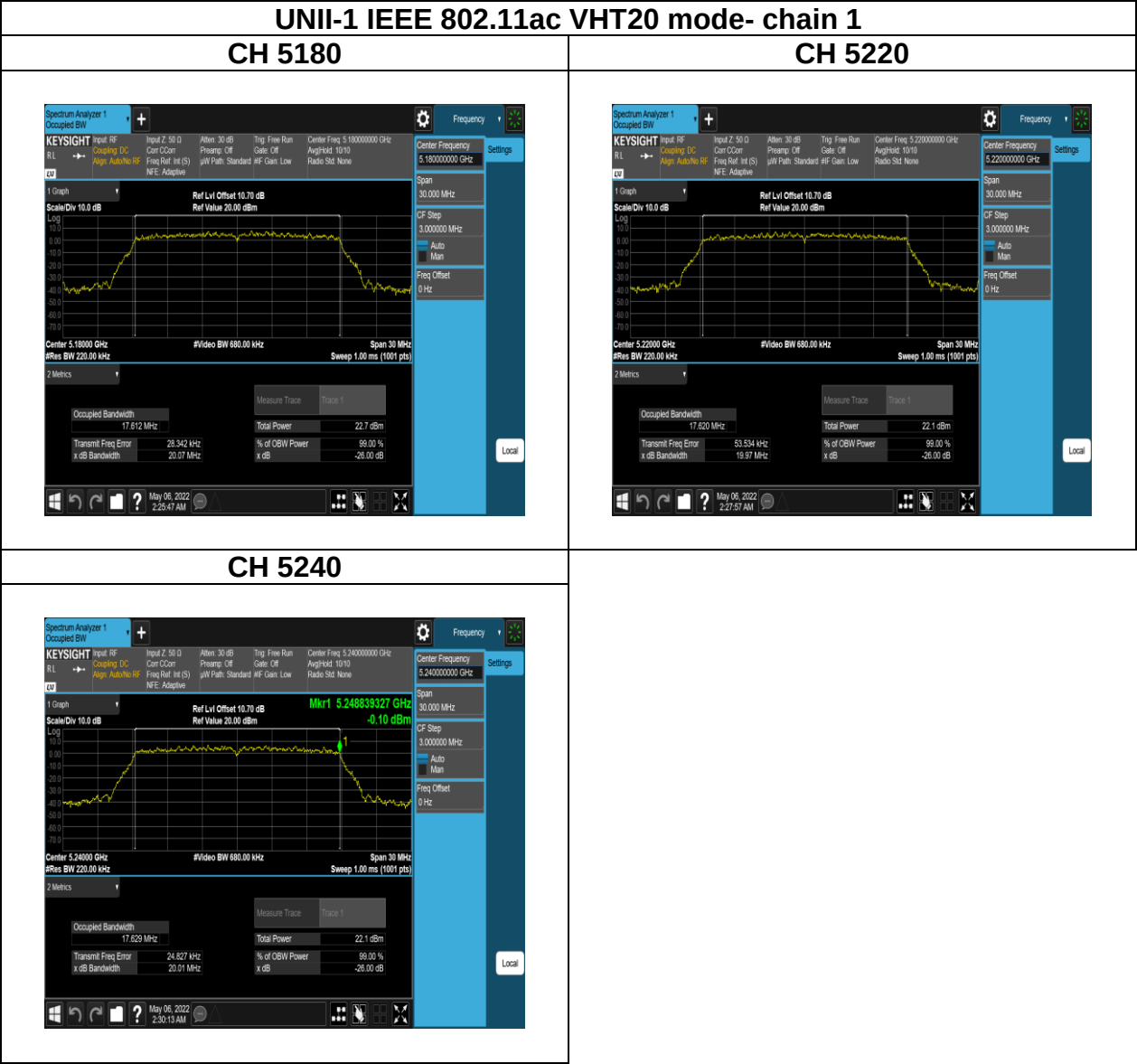
May 06, 2022 3:43:24 AM



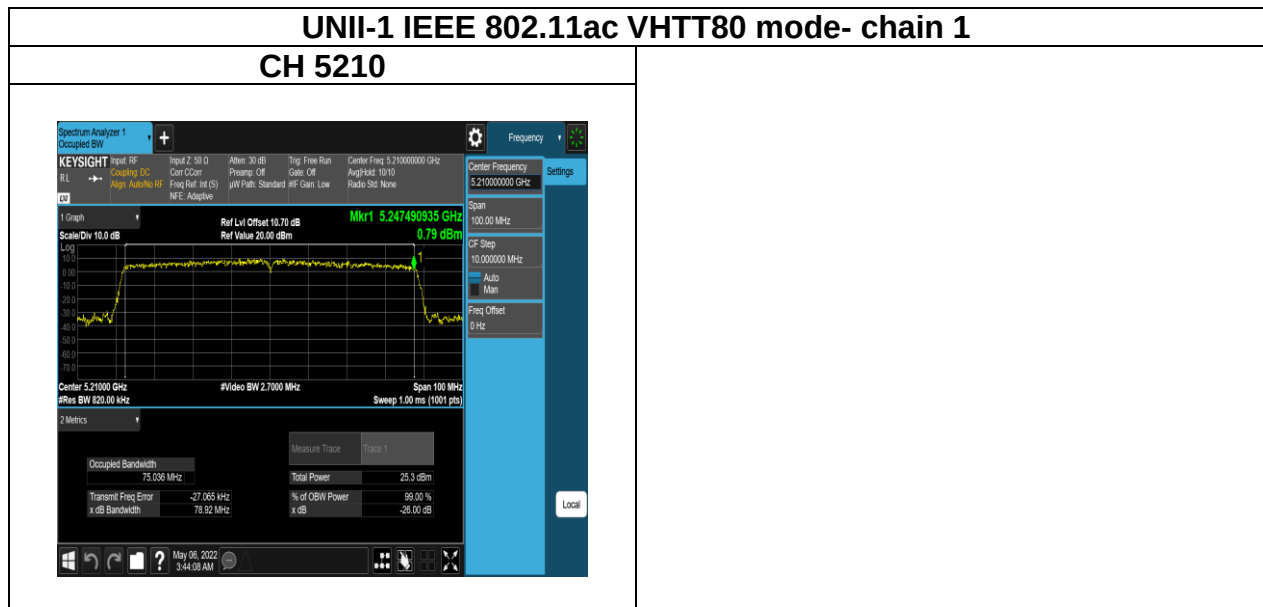
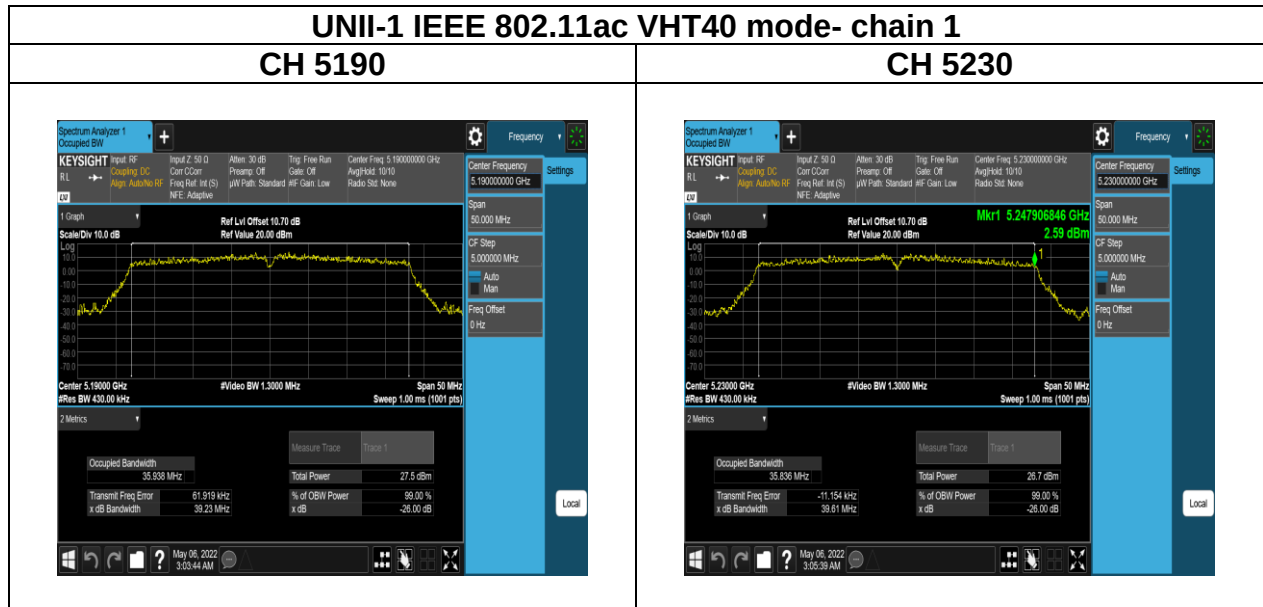


Report No.: TMWK2201000111KR

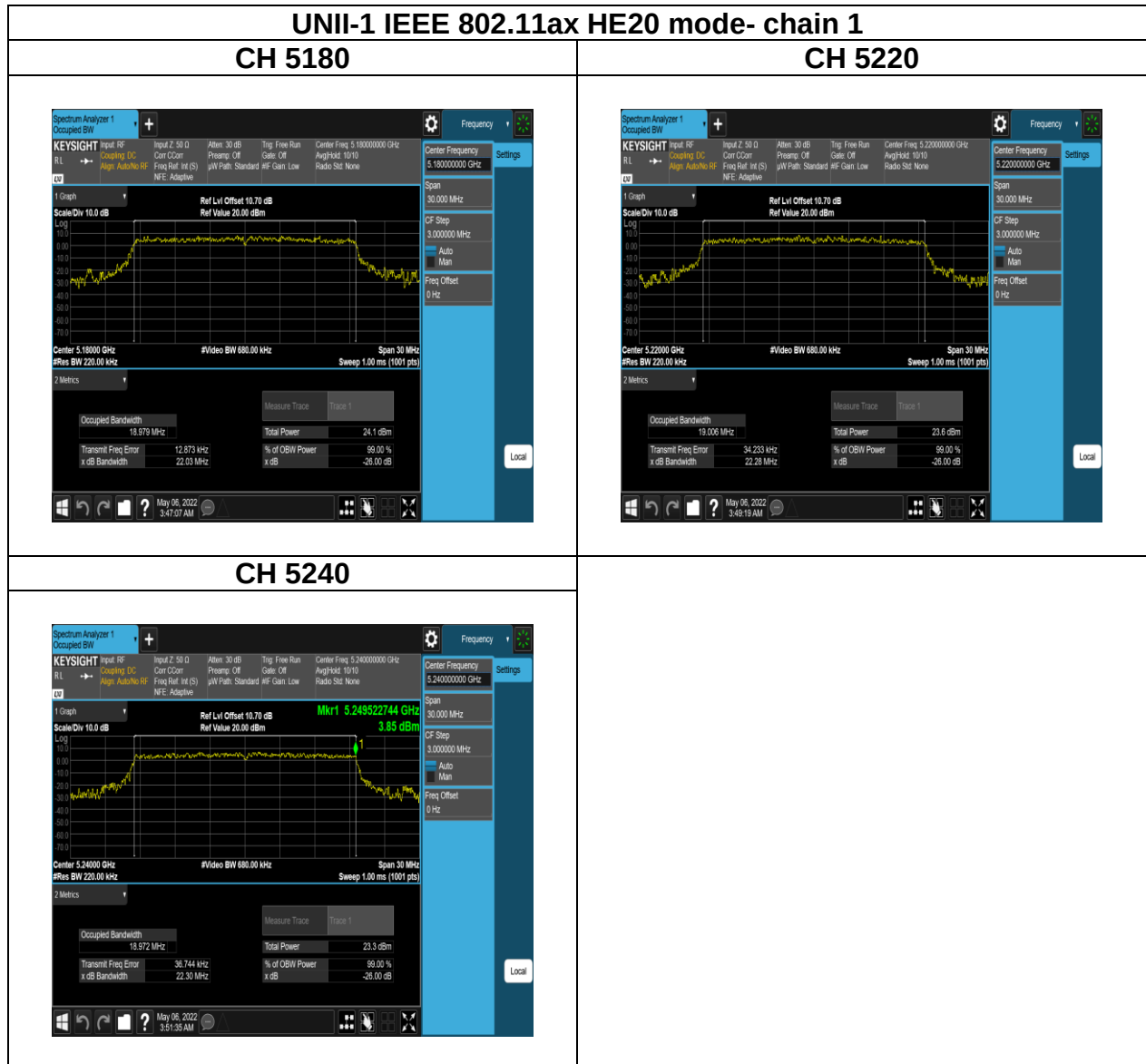


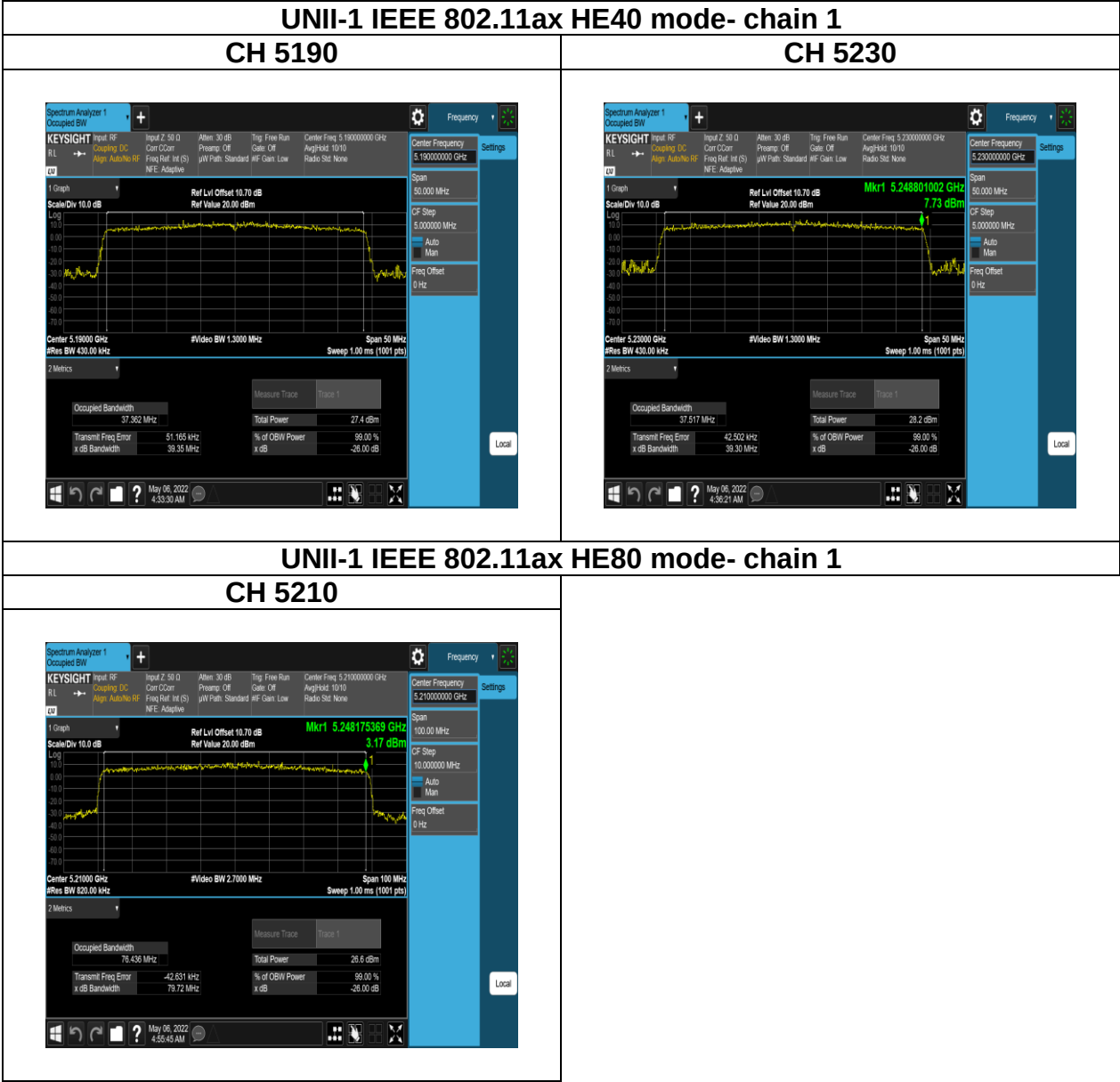


Report No.: TMWK2201000111KR



Report No.: TMWK2201000111KR





Report No.: TMWK2201000111KR

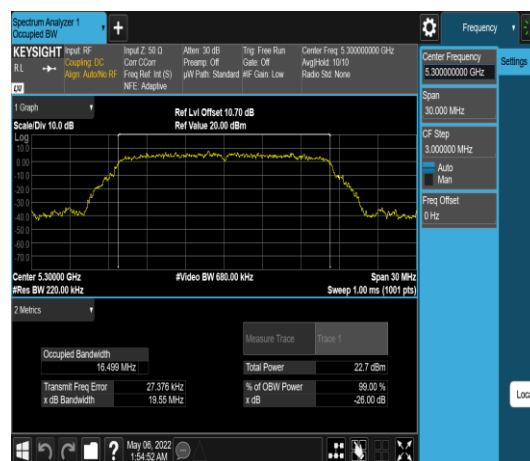
Test Plots (26dB BANDWIDTH)

UNII-2a IEEE 802.11a mode- chain 0

CH 5260

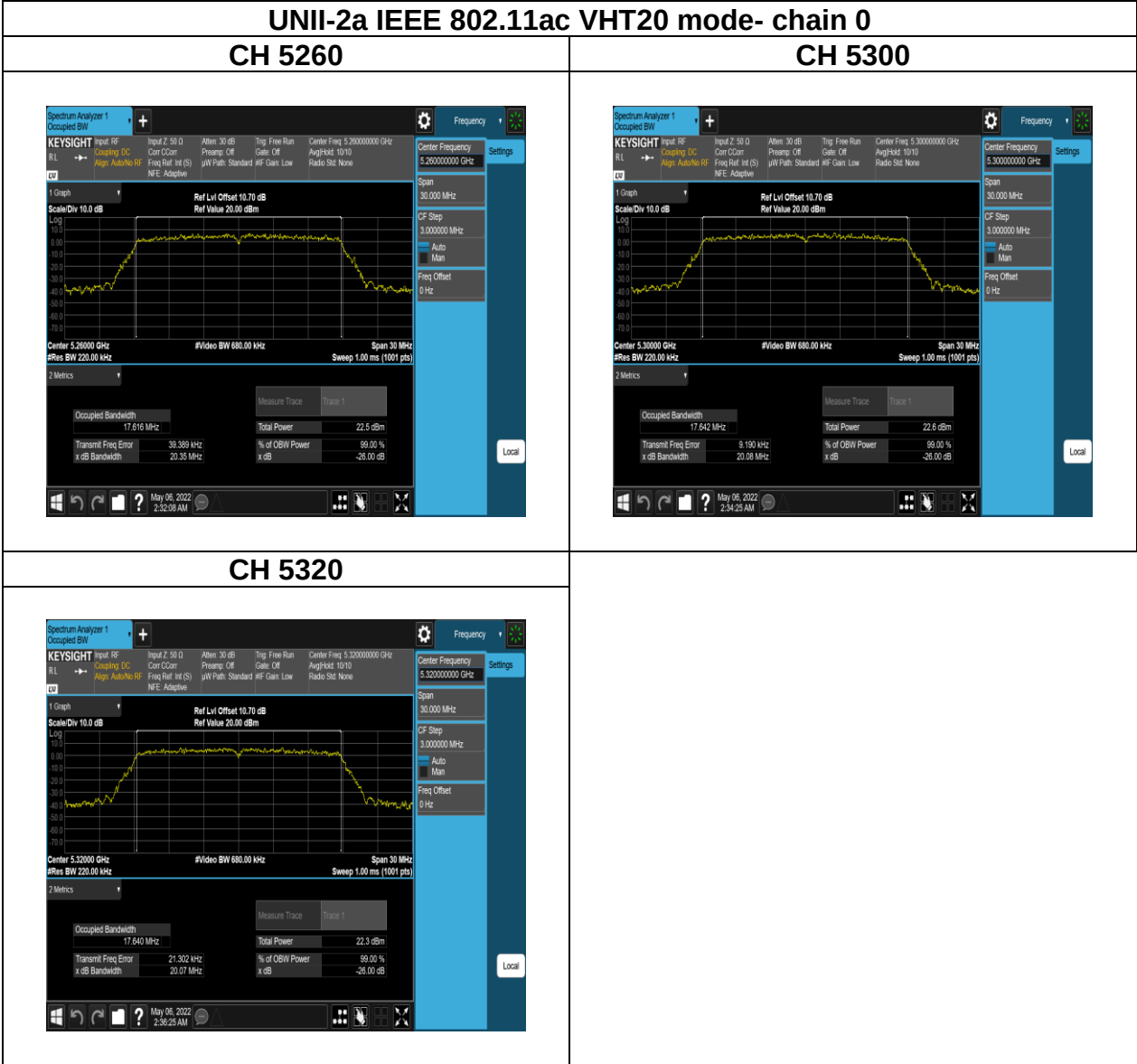


CH 5300

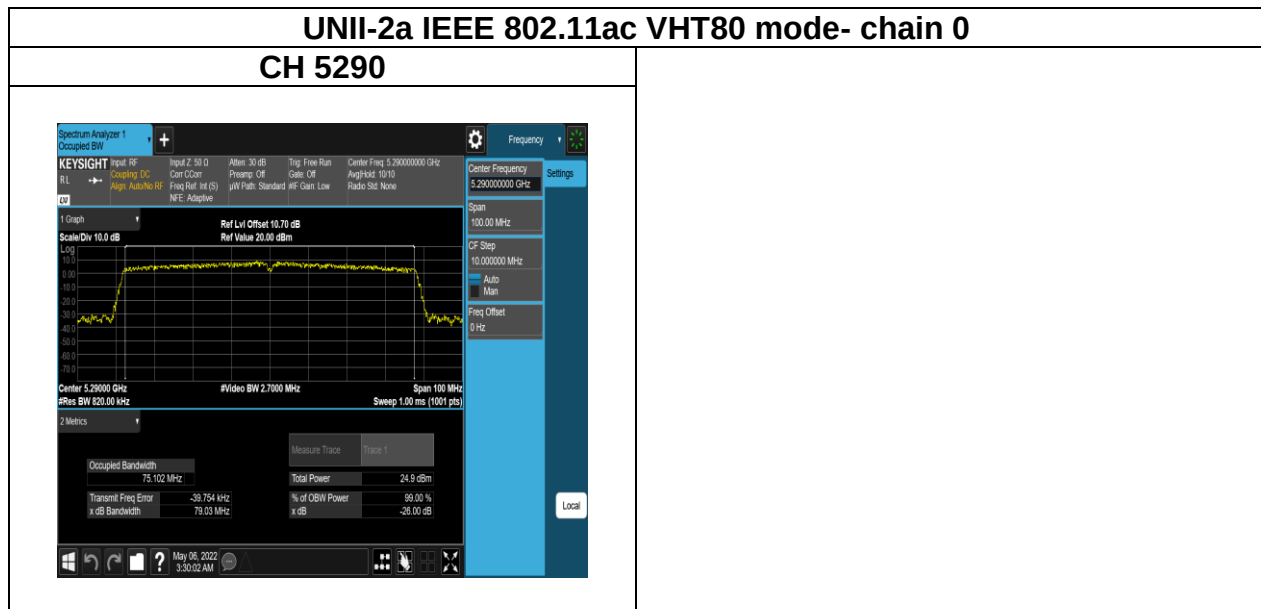
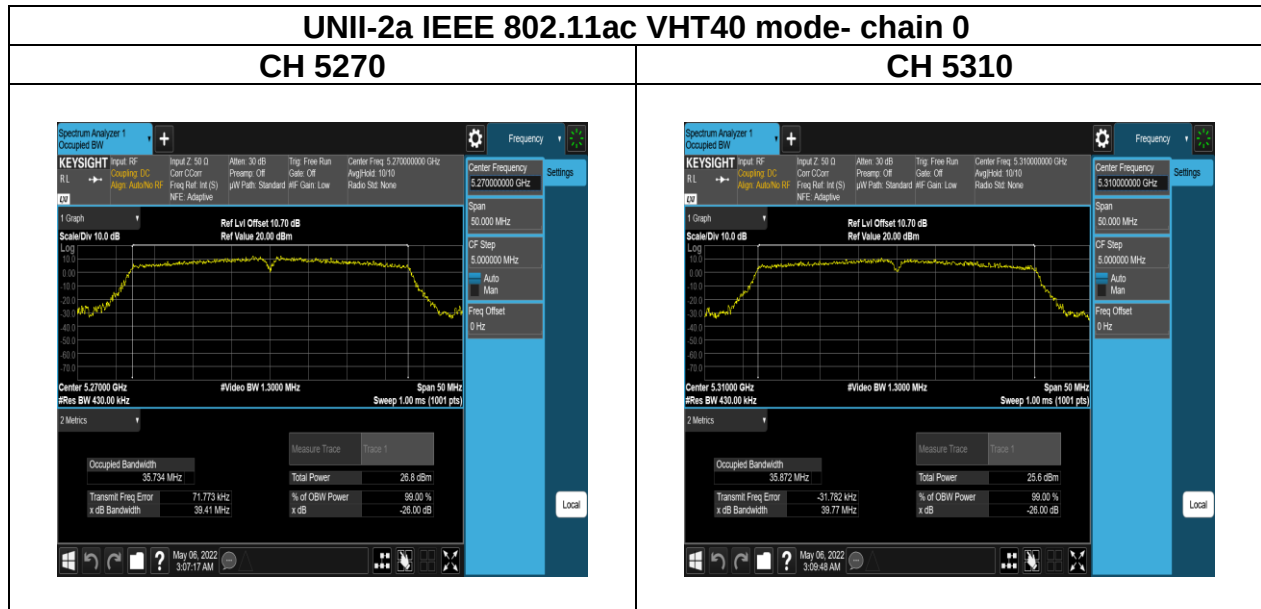


CH 5320





Report No.: TMWK2201000111KR



Report No.: TMWK2201000111KR

