



FCC ID: KA2E15A1
Report No.: T210319W02-RP1

Page: 1 / 118
Rev.: 00

RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART C

(Class II Permissive Change)

Test Standard	FCC Part 15.247
Product name	(1) AX1500 Wi-Fi 6 AI Range Extender; (2) AX1500 Mesh Range Extender
Brand Name	D-Link
Model No.	E15
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:

Sehni Hu
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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com.tw/Terms-and-Conditions> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com.tw/Terms-and-Conditions>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Report No.: T210319W02-RP1

Page: 2 / 118

Rev.: 00

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	June 30, 2022	Initial Issue	ALL	Allison Chen

Table of contents

1.	GENERAL INFORMATION.....	4
1.1	EUT INFORMATION.....	4
1.2	EUT CHANNEL INFORMATION.....	5
1.3	ANTENNA INFORMATION.....	5
1.4	MEASUREMENT UNCERTAINTY	6
1.5	FACILITIES AND TEST LOCATION.....	7
1.6	INSTRUMENT CALIBRATION	7
1.7	SUPPORT AND EUT ACCESSORIES EQUIPMENT	9
1.8	TEST METHODOLOGY AND APPLIED STANDARDS.....	9
2.	TEST SUMMARY.....	10
3.	DESCRIPTION OF TEST MODES.....	11
3.1	THE WORST MODE OF OPERATING CONDITION	11
3.2	THE WORST MODE OF MEASUREMENT.....	12
3.3	EUT DUTY CYCLE	13
4.	TEST RESULT	14
4.1	AC POWER LINE CONDUCTED EMISSION.....	14
4.2	6DB BANDWIDTH AND OCCUPIED BANDWIDTH (99%).....	17
4.3	OUTPUT POWER MEASUREMENT	35
4.4	POWER SPECTRAL DENSITY	38
4.5	CONDUCTED BANDEDGE AND SPURIOUS EMISSION.....	48
4.6	RADIATION BANDEDGE AND SPURIOUS EMISSION.....	73
	APPENDIX 1 - PHOTOGRAPHS OF EUT	A-1

Report No.: T210319W02-RP1

1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	D-Link Corporation 14420 Myford Road Suite 100, Irvine, California 92606, United States
Manufacturer	Amigo Technology Inc. No.82, Gongye 2nd Rd., Annan Dist., Tainan City 709 Tainan, Taiwan.
Equipment	(1) AX1500 Wi-Fi 6 AI Range Extender; (2) AX1500 Mesh Range Extender
Model Name	E15
Model Discrepancy	N/A
Trade Name	D-Link
Received Date	March 19, 2021
Date of Test	November 11 ~ December 20, 2021
Power Supply	Power from AC 120V, 60Hz

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.
3. This project is a Permissive change II submission for the purpose of Reason of change and the difference between previous and new product is updated software to make it support adding DFS band and BF function. The device is identical to original certified device and there any no hardware change or modification to the device.

Report No.: T210319W02-RP1

1.2 EUT CHANNEL INFORMATION

Frequency Range	802.11b/g/n HT 20: 2412MHz ~ 2462MHz 802.11n HT 40: 2422MHz ~ 2452MHz
Modulation Type	1. IEEE 802.11b mode: CCK 2. IEEE 802.11g mode: OFDM 3. IEEE 802.11n HT 20 mode : OFDM 4. IEEE 802.11n HT 40 mode : OFDM
Number of channel	1. IEEE 802.11b mode: 11 Channels 2. IEEE 802.11g mode: 11 Channels 3. IEEE 802.11n HT 20 mode : 11 Channels 4. IEEE 802.11n HT 40 mode : 7 Channels

Remark:

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

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 ☒ embedded antenna
Antenna Gain	Chain 0: 3.1 dBi Chain 1: 3.1 dBi Power Directional Gain: 6.11 dBi
Antenna connector	MHF compatible

Notes:

- Power Directional Gain = $10 \cdot \log \{ [10^{(Ant1/20)} + 10^{(Ant2/20)} + \dots + 10^{(Ant N /20)}]^2 / N \}$ dBi
- Two dipole detachable Antennas used which uses a unique coupling to the EUT meeting rule 15.203.

1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 0.0014
RF output power, conducted	+/- 1.14
Power density, conducted	+/- 1.40
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

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.

Report No.: T210319W02-RP1

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	Ray Li, Tony Chao	-
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
Power Meter	Anritsu	ML2487A	6K00003260	05/24/2021	05/23/2022
Power Sensor	Anritsu	MA2490A	032910	05/24/2021	05/23/2022
Software	Radio Test Software Ver. 21				

Remark:

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

3M 966 Chamber Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
Band Reject Filters	MICRO TRONICS	BRM 50702	120	02/08/2021	02/07/2022
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
Coaxial Cable	EMCI	EMC105	190914+1111	09/17/2021	09/16/2022
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/06/2021	01/05/2022
Horn Antenna	ETS LINDGREN	3116	26370	12/11/2020	12/10/2021
Horn Antenna	ETS LINDGREN	3116	26370	11/30/2021	11/29/2022
Horn Antenna	ETS LINDGREN	3117	55165	07/29/2021	07/28/2022
K Type Cable	Huber+Suhner	SUCOFLEX 102	29406/2	12/09/2020	12/08/2021
K Type Cable	Huber+Suhner	SUCOFLEX 102	29406/2	12/05/2021	12/04/2022
Pre-Amplifier	EMEC	EM330	060609	02/24/2021	02/23/2022
Pre-Amplifier	HP	8449B	3008A00965	12/25/2020	12/24/2021
Pre-Amplifier	MITEQ	AMF-6F-1800400 0-37-8P	985646	09/08/2021	09/07/2022
Spectrum Analyzer	Agilent	E4446A	US42510268	09/23/2021	09/22/2022
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				

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	SCHAFFNER	NNB 41	03/10013	02/02/2021	02/01/2022
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.



Report No.: T210319W02-RP1

Page: 9 / 118

Rev.: 00

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	Lenovo	T440P	N/A	N/A
2	NB(L)	Toshiba	PORTEGE R30-A	N/A	N/A
3	Power Cable	N/A	N/A	N/A	N/A

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 15.247, KDB 662911 D01 and KDB 558074 D01.



Report No.: T210319W02-RP1

2. TEST SUMMARY

FCC Standard Section	Report Section	Test Item	Result
15.203	1.3	Antenna Requirement	Pass
15.207(a)	4.1	AC Conducted Emission	Pass
15.247(a)(2)	4.2	6 dB Bandwidth	Pass
-	4.2	Occupied Bandwidth (99%)	Pass
15.247(b)	4.3	Output Power Measurement	Pass
15.247(e)	4.4	Power Spectral Density	Pass
15.247(d)	4.5	Conducted Band Edge	Pass
15.247(d)	4.5	Conducted Spurious Emission	Pass
15.247(d)	4.6	Radiation Band Edge	Pass
15.247(d)	4.6	Radiation Spurious Emission	Pass

Report No.: T210319W02-RP1

3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	IEEE 802.11b mode :1Mbps IEEE 802.11g mode :6Mbps IEEE 802.11n HT20 mode :MCS8 IEEE 802.11n HT40 mode :MCS8
Test Channel Frequencies	IEEE 802.11b mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz IEEE 802.11g mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz IEEE 802.11n HT20 mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz IEEE 802.11n HT40 mode : 1. Lowest Channel : 2422MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2452MHz
Operation Transmitter	IEEE 802.11b mode : 2T2R IEEE 802.11g mode : 2T2R IEEE 802.11n HT20 mode : 2T2R IEEE 802.11n HT40 mode : 2T2R

Remark:

1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.
2. The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the power and PSD across all data rates, bandwidths, and modulations. The device supports SISO and MIMO at 802.11b/g/n20/n40 mode, per pre-test, MIMO 2TX mode was the worst and reported.

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 AC 120V
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 AC (120V)
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 AC (120V)
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(Y-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.

Report No.: T210319W02-RP1

Rev.: 00

3.3 EUT DUTY CYCLE

Temperature: 21.3~24.9°C

Test date:

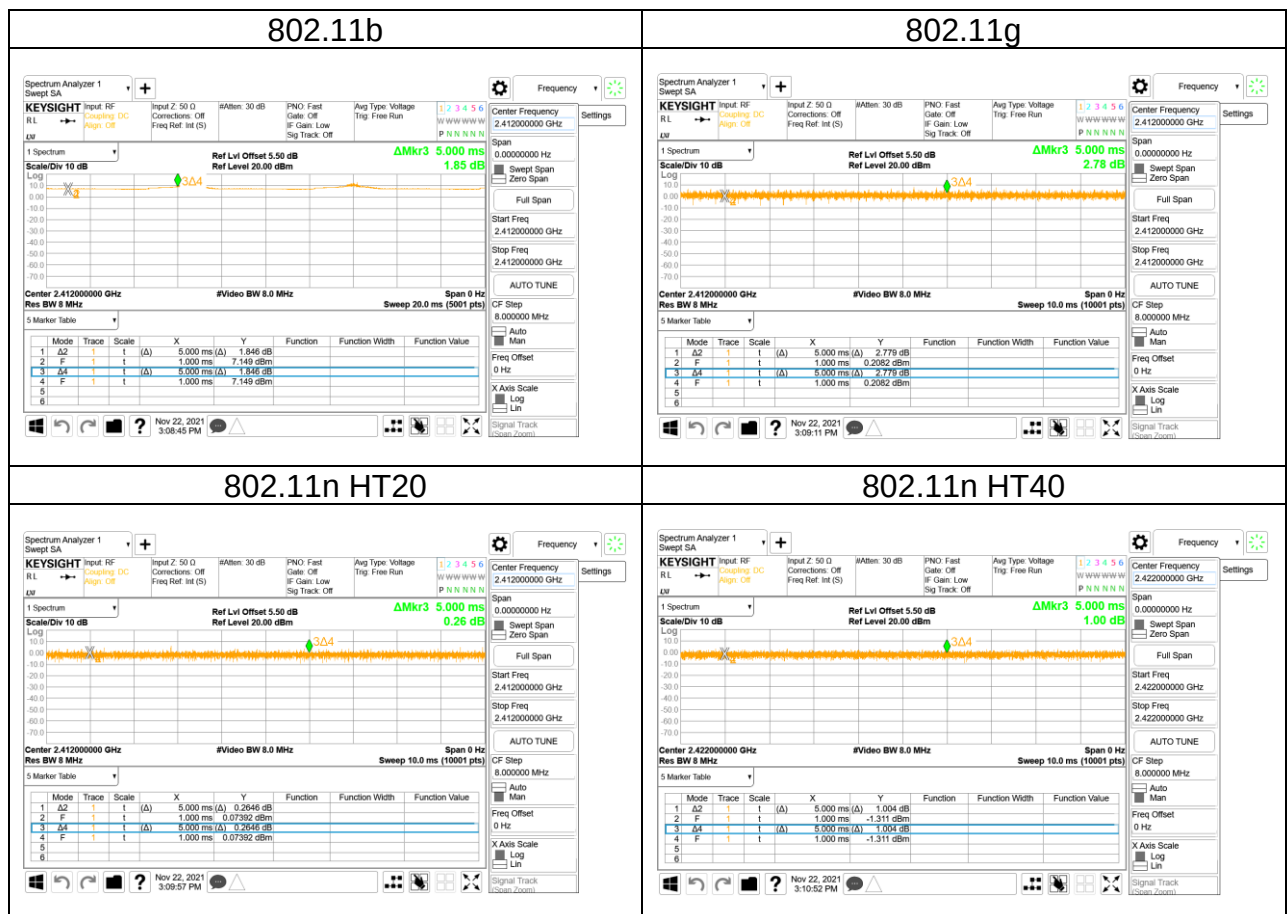
November 11, 2021
~ December 9, 2021

Humidity: 47~55% RH

Tested by:

Jack Chen

Duty Cycle				
Configuration	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11b	100.00	0.00	0.00	0.01
802.11g	100.00	0.00	0.00	0.01
802.11n HT20	100.00	0.00	0.00	0.01
802.11n HT40	100.00	0.00	0.00	0.01



4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a)(2),

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

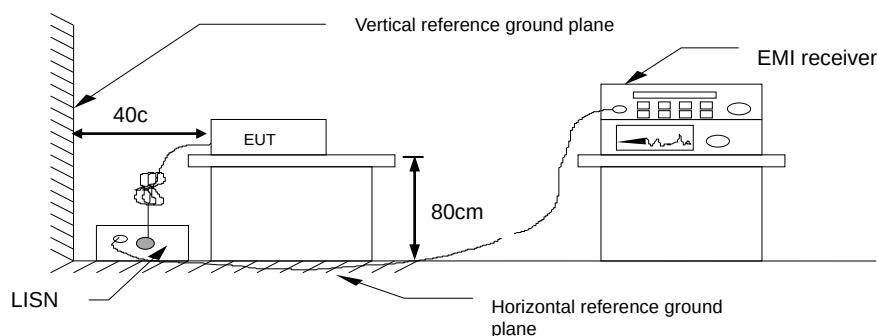
* Decreases with the logarithm of the frequency.

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



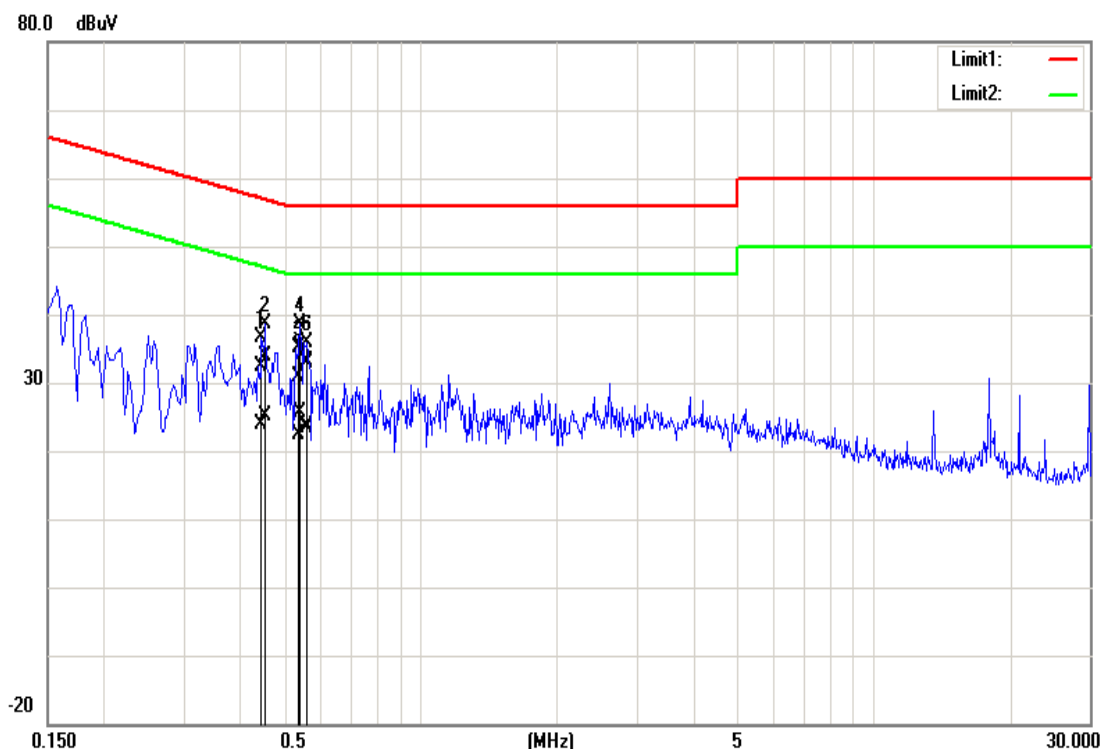
4.1.4 Test Result

Pass.

Report No.: T210319W02-RP1

Test Data

Test Mode:	Mode 1	Temp/Hum	21.3(°C)/ 48%RH
Phase:	Line	Test Date	December 16, 2021
Test Voltage:	120Vac, 60Hz	Test Engineer	Jack Chen

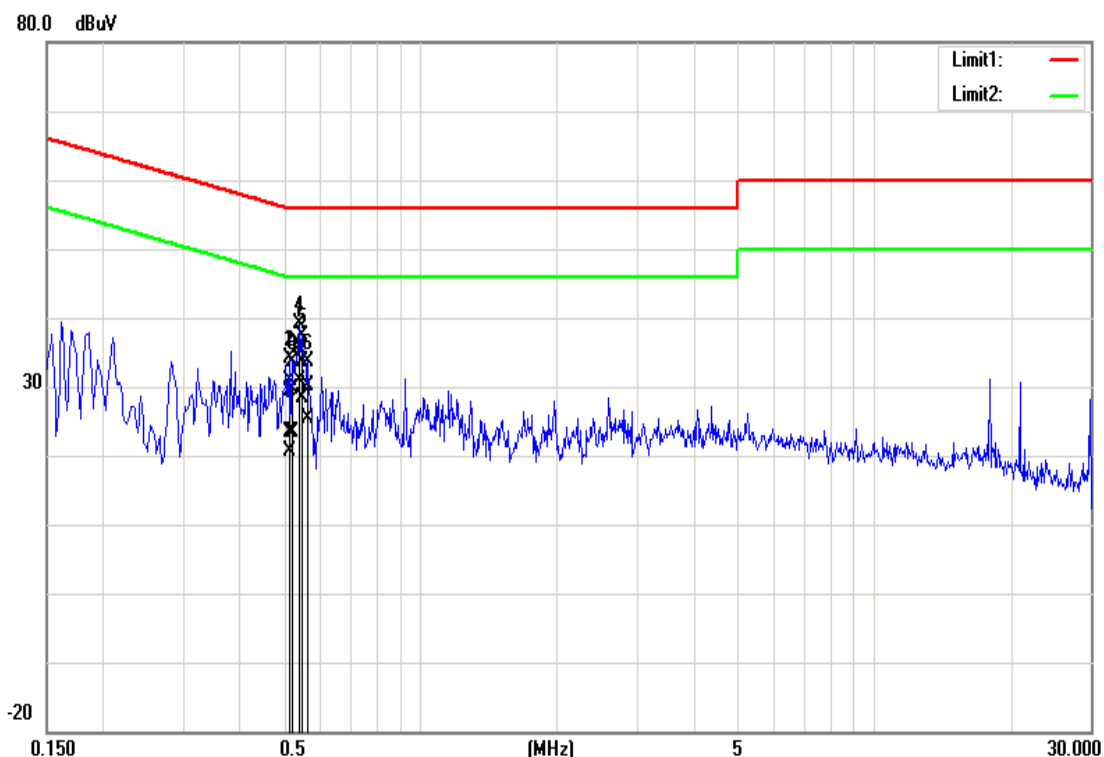


Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (d uV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1660	26.75	24.94	10.29	37.04	35.23	65.16	55.16	-28.12	-19.93	Pass
0.4220	20.72	12.87	10.29	31.01	23.16	57.41	47.41	-26.40	-24.25	Pass
0.4340	19.17	11.60	10.29	29.46	21.89	57.18	47.18	-27.72	-25.29	Pass
0.4500	24.39	16.44	10.29	34.68	26.73	56.88	46.88	-22.20	-20.15	Pass
0.4820	24.07	15.78	10.29	34.36	26.07	56.30	46.30	-21.94	-20.23	Pass
0.6900	16.58	9.44	10.29	26.87	19.73	56.00	46.00	-29.13	-26.27	Pass

Note: 1. Correction factor = LISN loss + Cable loss.

Report No.: T210319W02-RP1

Test Mode:	Mode 1	Temp/Hum	21.3(°C)/ 48%RH
Phase:	Neutral	Test Date	December 16, 2021
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
0.4580	25.13	17.43	10.26	35.39	27.69	56.73	46.73	-21.34	-19.04	Pass
0.5220	22.29	11.41	10.26	32.55	21.67	56.00	46.00	-23.45	-24.33	Pass
0.5300	26.04	15.22	10.26	36.30	25.48	56.00	46.00	-19.70	-20.52	Pass
0.5380	25.65	14.24	10.26	35.91	24.50	56.00	46.00	-20.09	-21.50	Pass
0.5460	22.98	12.73	10.26	33.24	22.99	56.00	46.00	-22.76	-23.01	Pass
0.5540	23.18	13.16	10.26	33.44	23.42	56.00	46.00	-22.56	-22.58	Pass

Note: 1. Correction factor = LISN loss + Cable loss.

Report No.: T210319W02-RP1

4.2 6dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

4.2.1 Test Limit

According to §15.247(a)(2),

6 dB Bandwidth :

Limit	Shall be at least 500kHz
-------	--------------------------

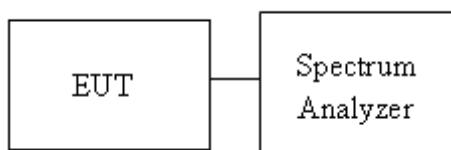
Occupied Bandwidth(99%) : For reporting purposes only.

4.2.2 Test Procedure

Test method Refer as ANSI C63.10: 2013,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 100kHz, VBW = 300kHz and Detector = Peak, to measurement 6 dB Bandwidth.
4. SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth
5. Measure and record the result of 6 dB Bandwidth and 99% Bandwidth. in the test report.

4.2.3 Test Setup



Report No.: T210319W02-RP1

4.2.4 Test Result

Temperature: 21.3~24.9°C

Test date:

November 11, 2021
~ December 9, 2021

Humidity: 47~55% RH

Tested by:

Jack Chen

Test mode: IEEE 802.11b mode / 2412-2462 MHz						
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (kHz)	Chain 1 6dB BW (kHz)	6dB limit (kHz)
Low	2412	15.389	15.309	10130.00	10130.00	≥500
Mid	2437	15.308	15.306	10130.00	10130.00	
High	2462	15.41	15.335	10130.00	10130.00	

Test mode: IEEE 802.11g mode / 2412-2462 MHz						
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (kHz)	Chain 1 6dB BW (kHz)	6dB limit (kHz)
Low	2412	16.835	16.778	16590.00	16550.00	≥500
Mid	2437	17.225	18.882	16580.00	16530.00	
High	2462	16.811	16.746	16580.00	16560.00	

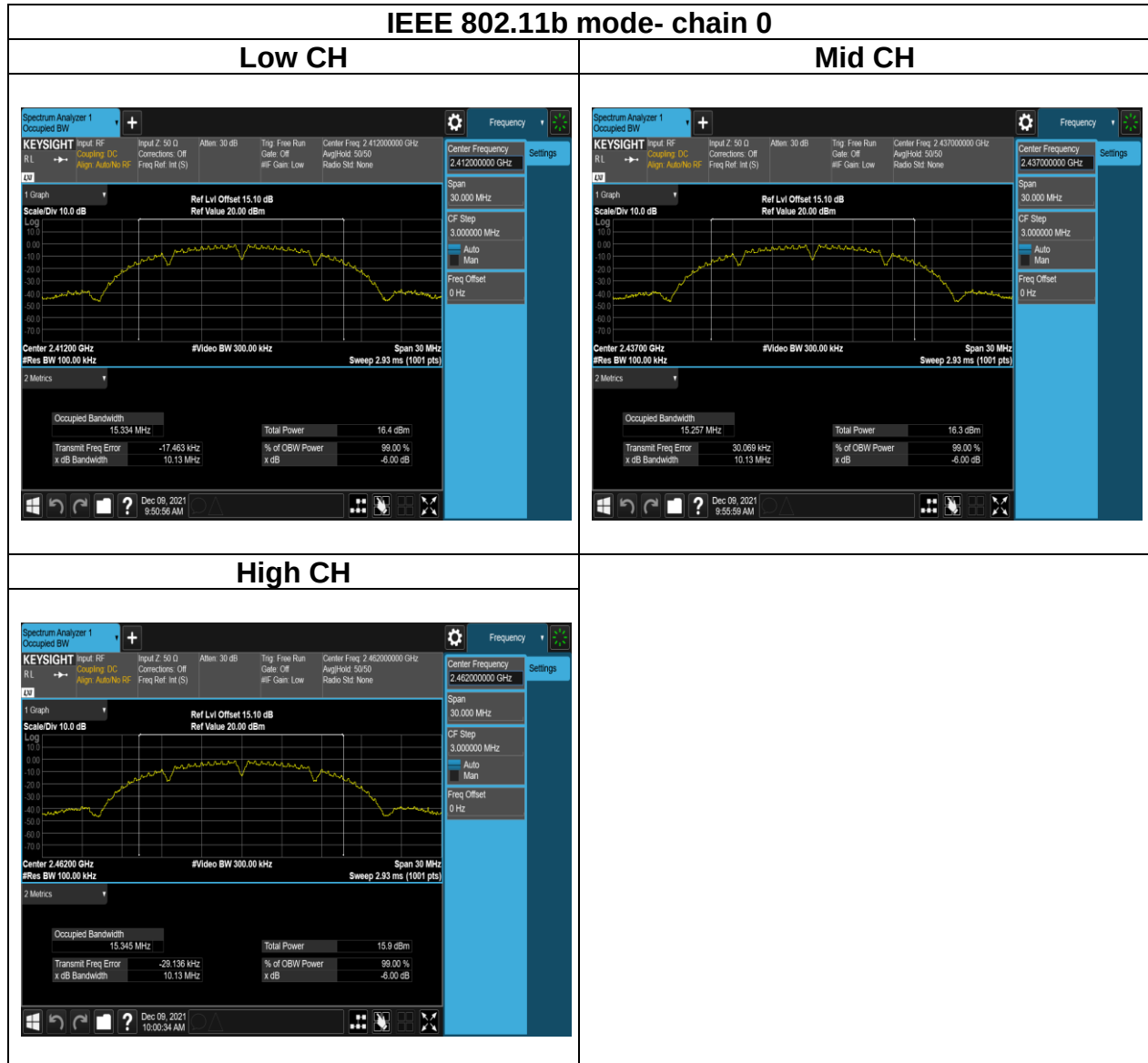
Test mode: IEEE 802.11n HT 20 mode / 2412-2462 MHz						
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (kHz)	Chain 1 6dB BW (kHz)	6dB limit (kHz)
Low	2412	17.897	17.769	17780.00	17710.00	≥500
Mid	2437	17.989	18.024	17790.00	17690.00	
High	2462	17.879	17.747	17800.00	17700.00	

Test mode: IEEE 802.11n HT 40 mode / 2422-2452 MHz						
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (kHz)	Chain 1 6dB BW (kHz)	6dB limit (kHz)
Low	2422	35.892	35.821	36400.00	36420.00	≥500
Mid	2437	35.972	36.151	36380.00	36410.00	
High	2452	35.857	35.836	36390.00	36390.00	

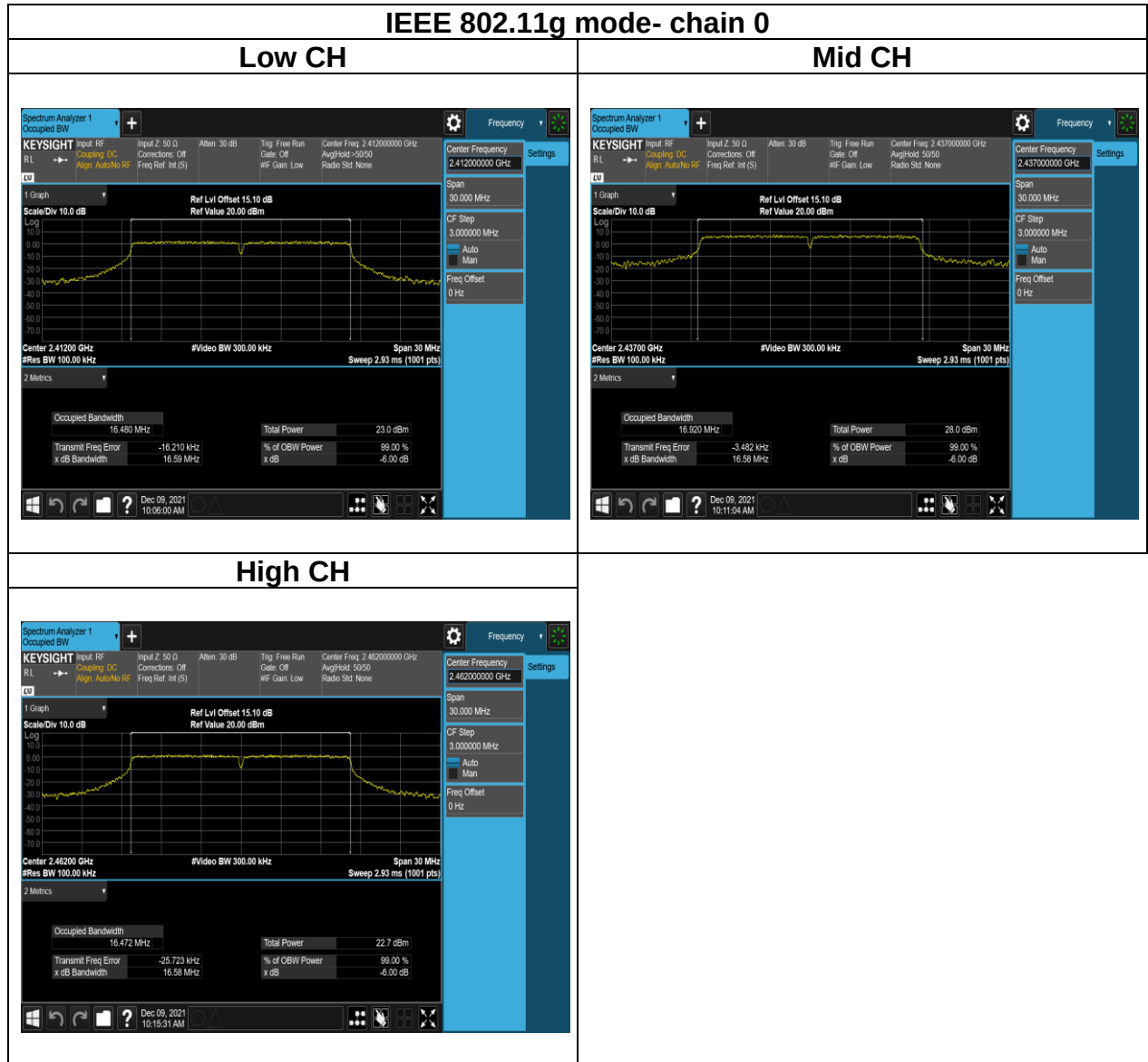
Report No.: T210319W02-RP1

Test Data

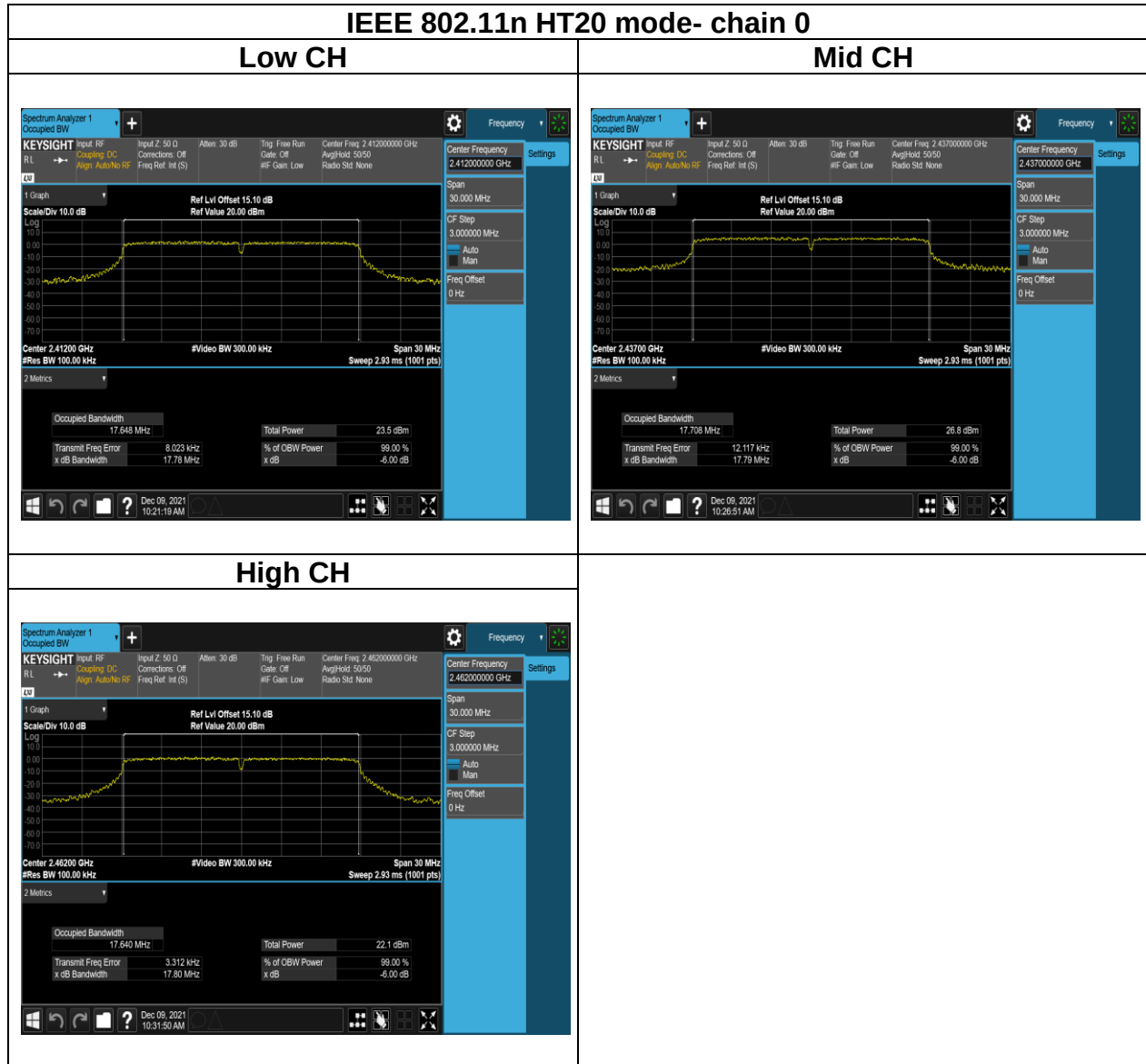
6dB BANDWIDTH



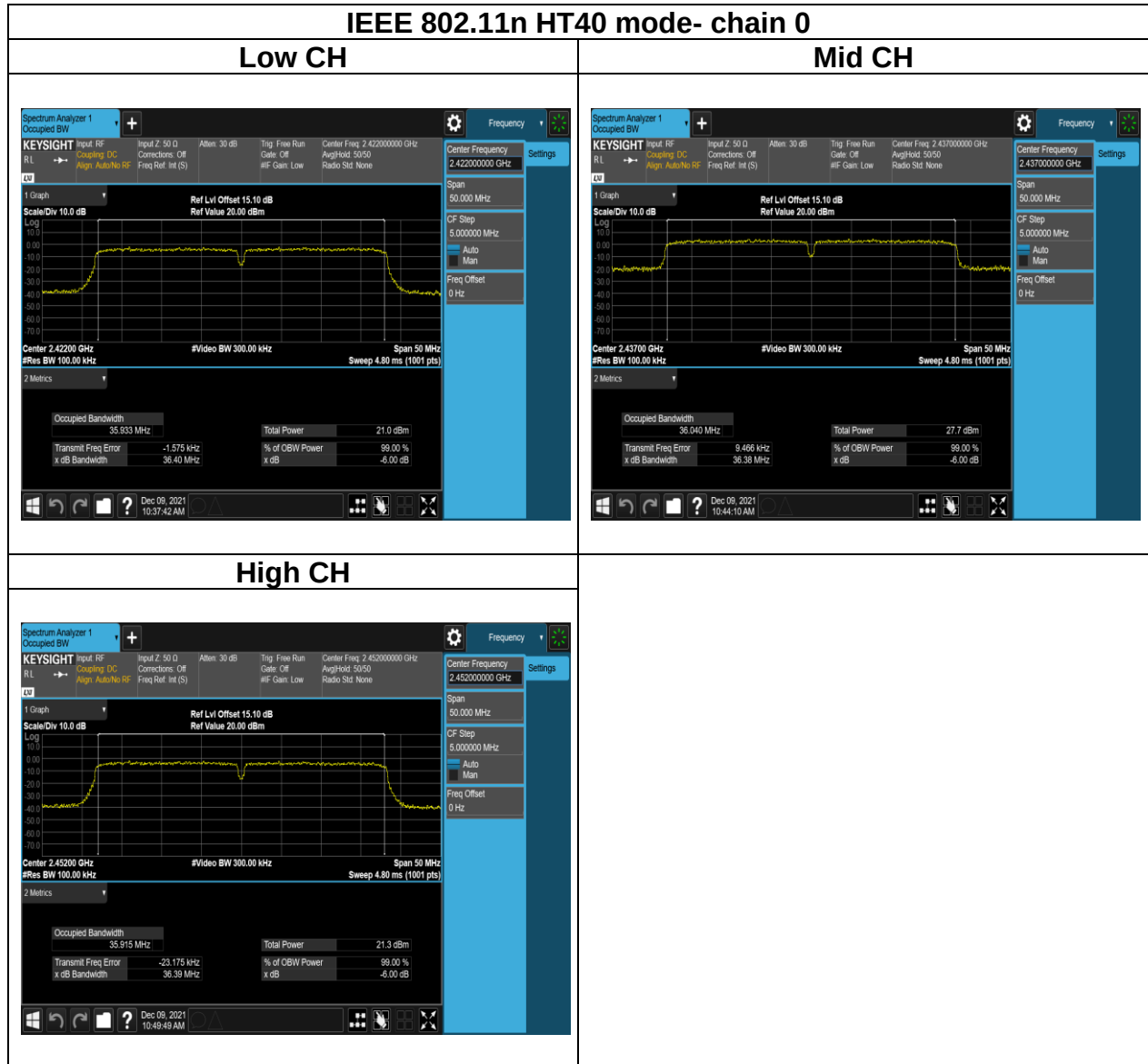
Report No.: T210319W02-RP1



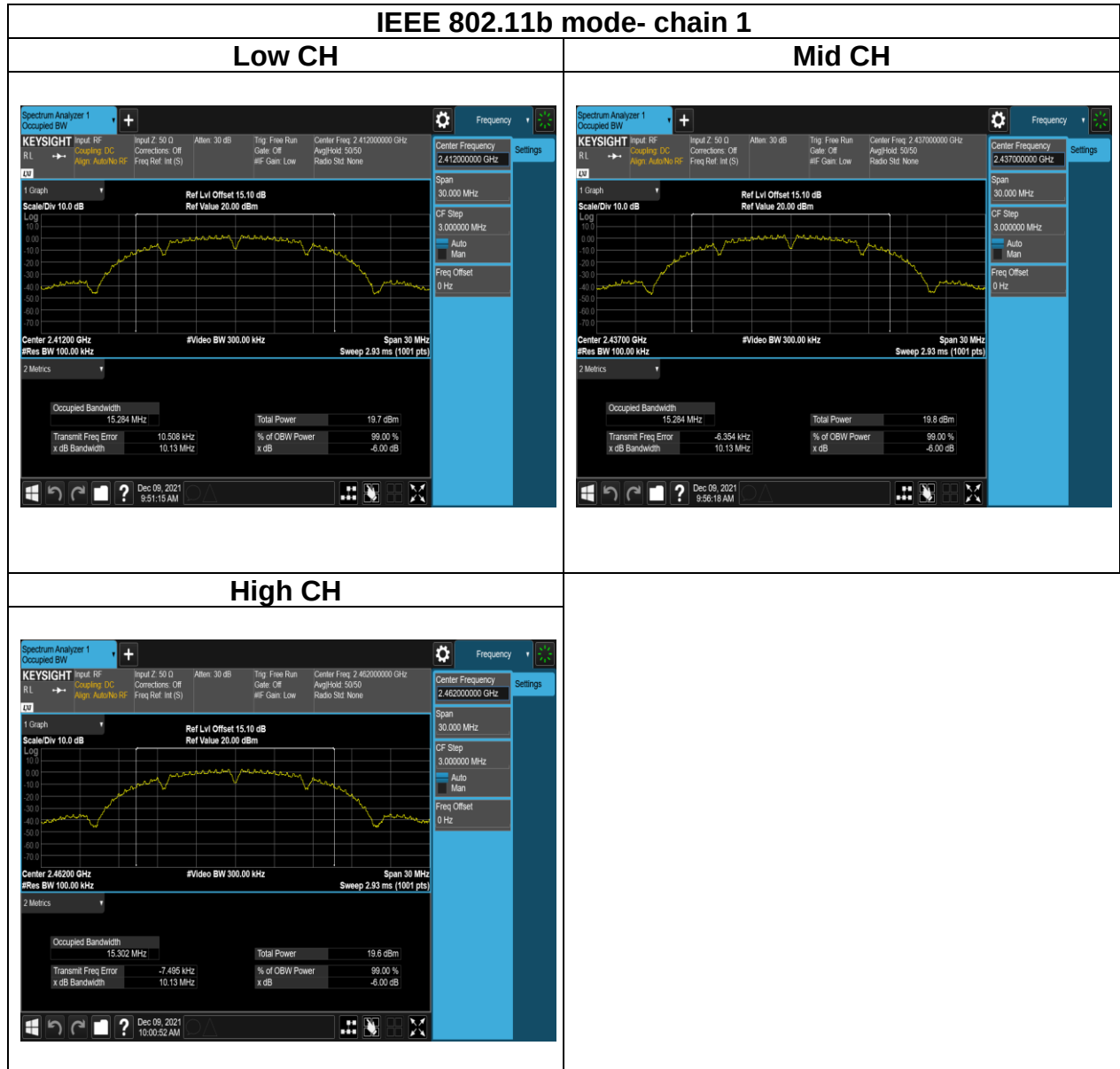
Report No.: T210319W02-RP1



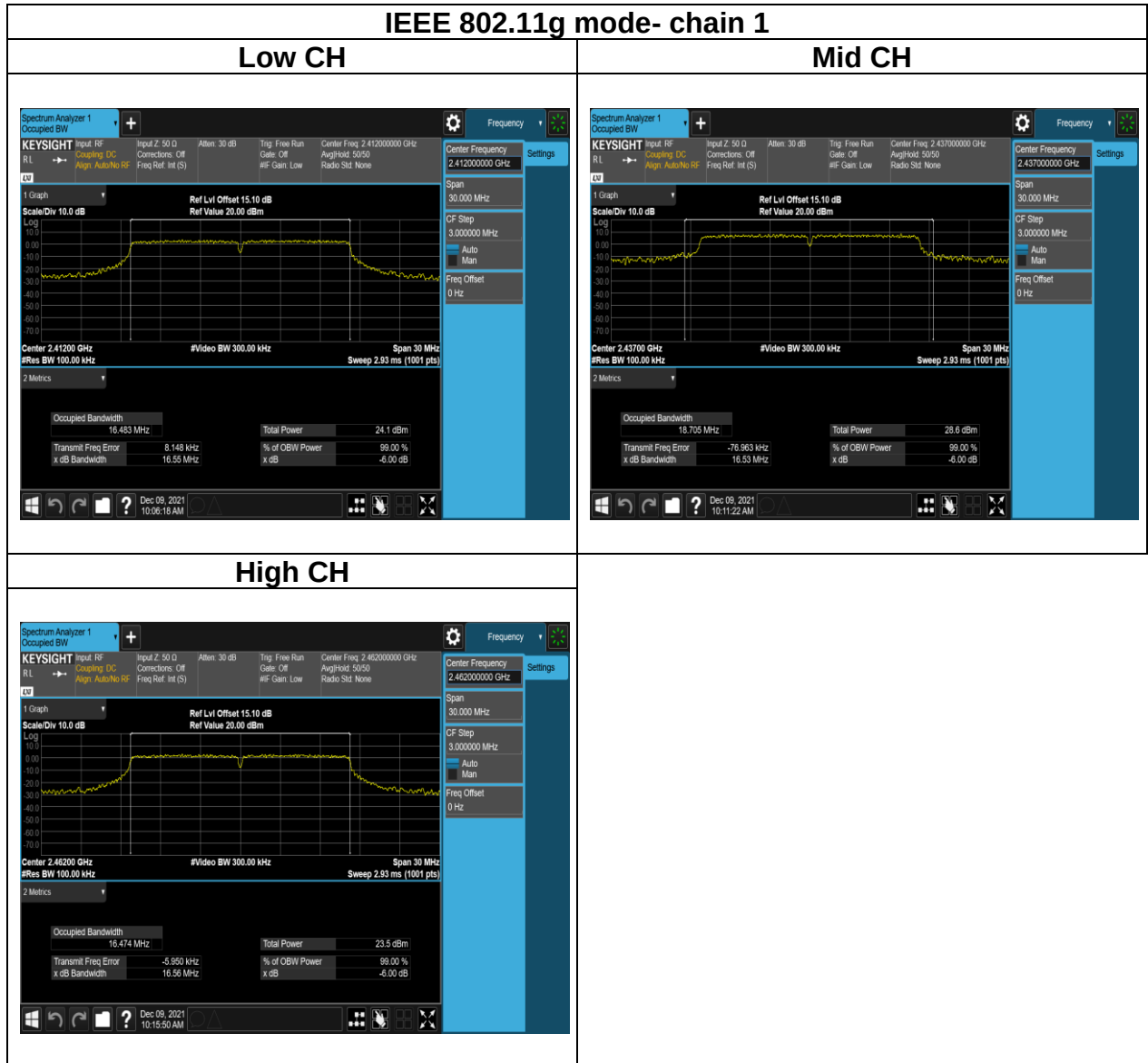
Report No.: T210319W02-RP1



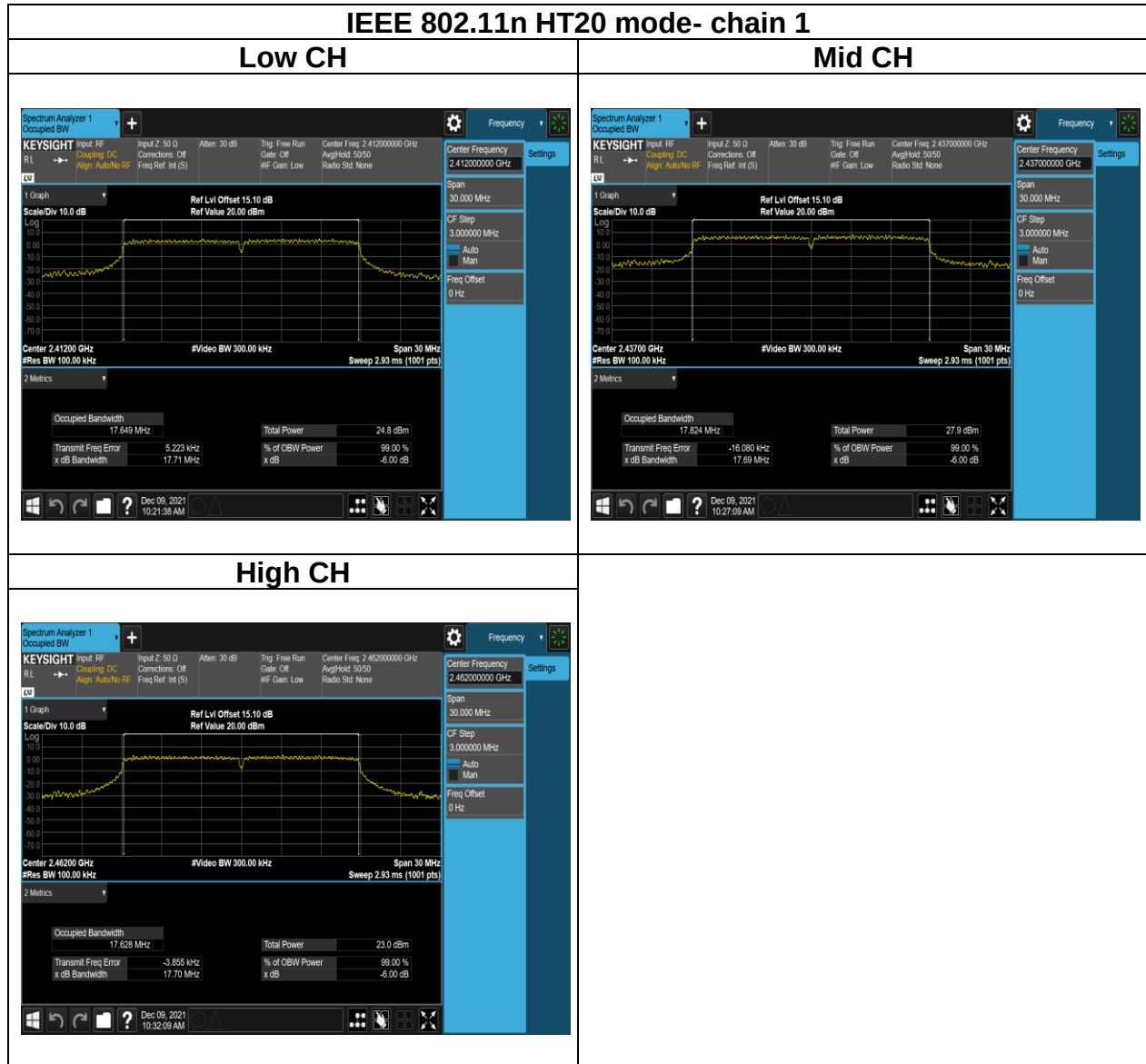
Report No.: T210319W02-RP1



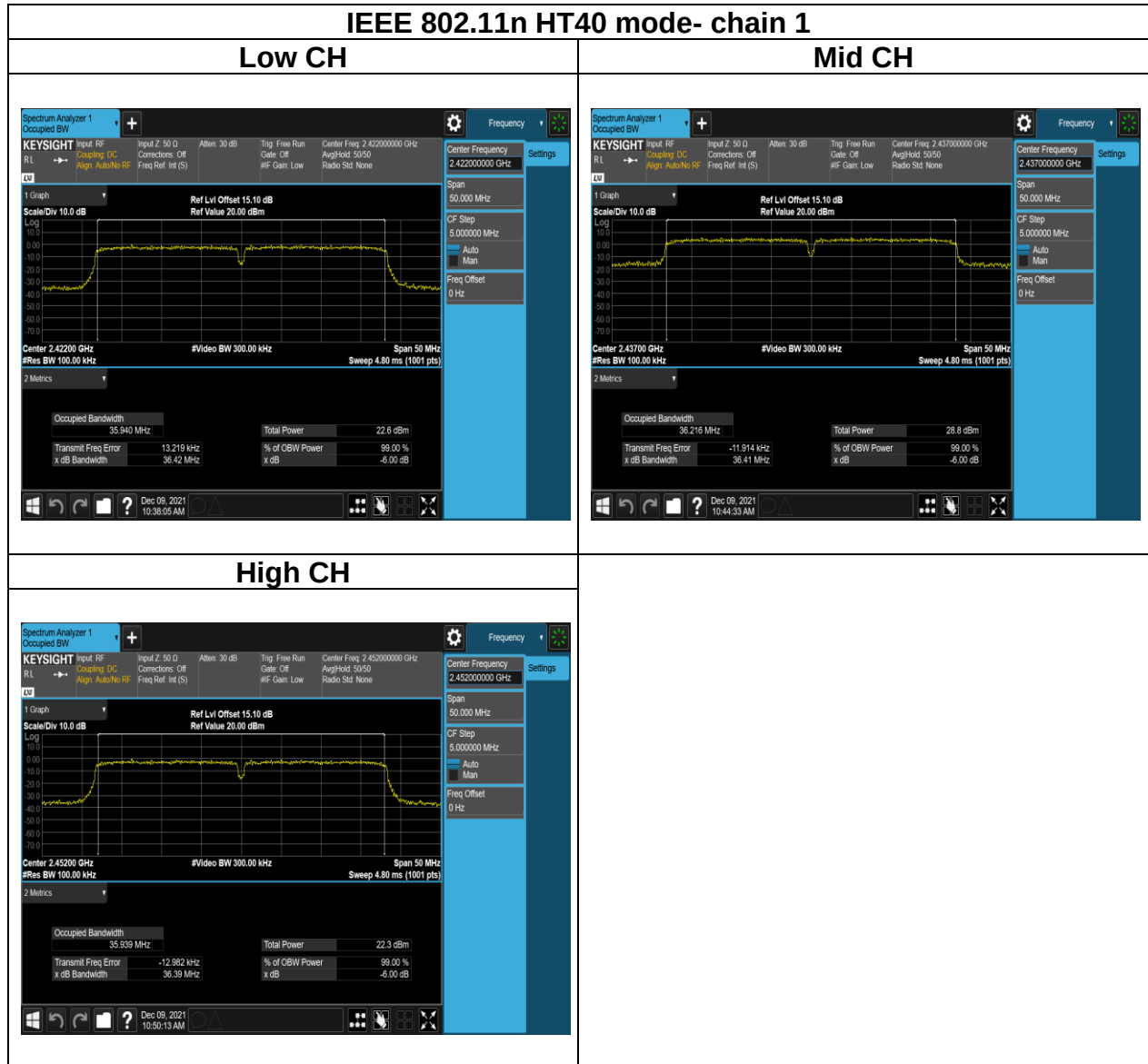
Report No.: T210319W02-RP1



Report No.: T210319W02-RP1



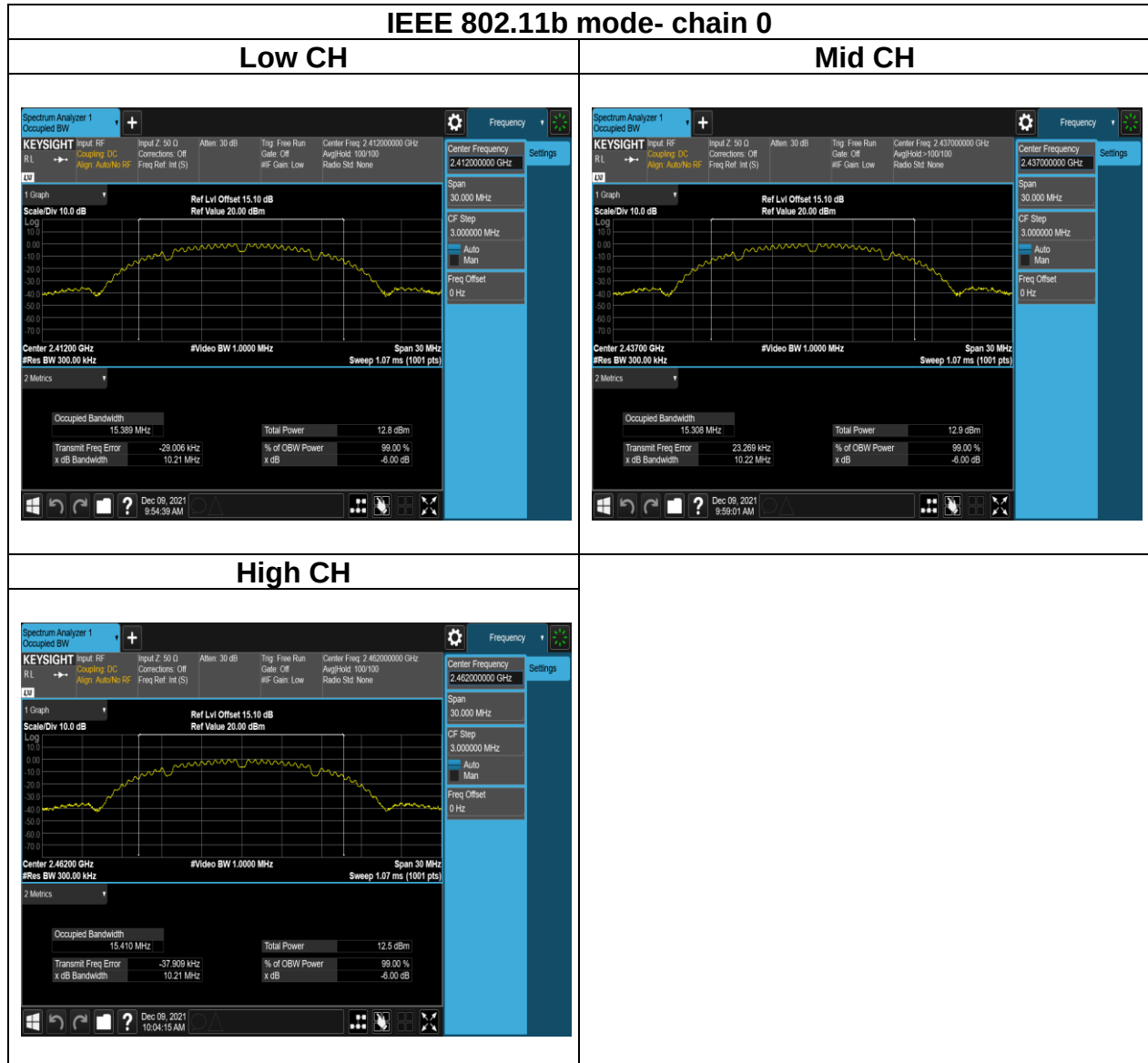
Report No.: T210319W02-RP1



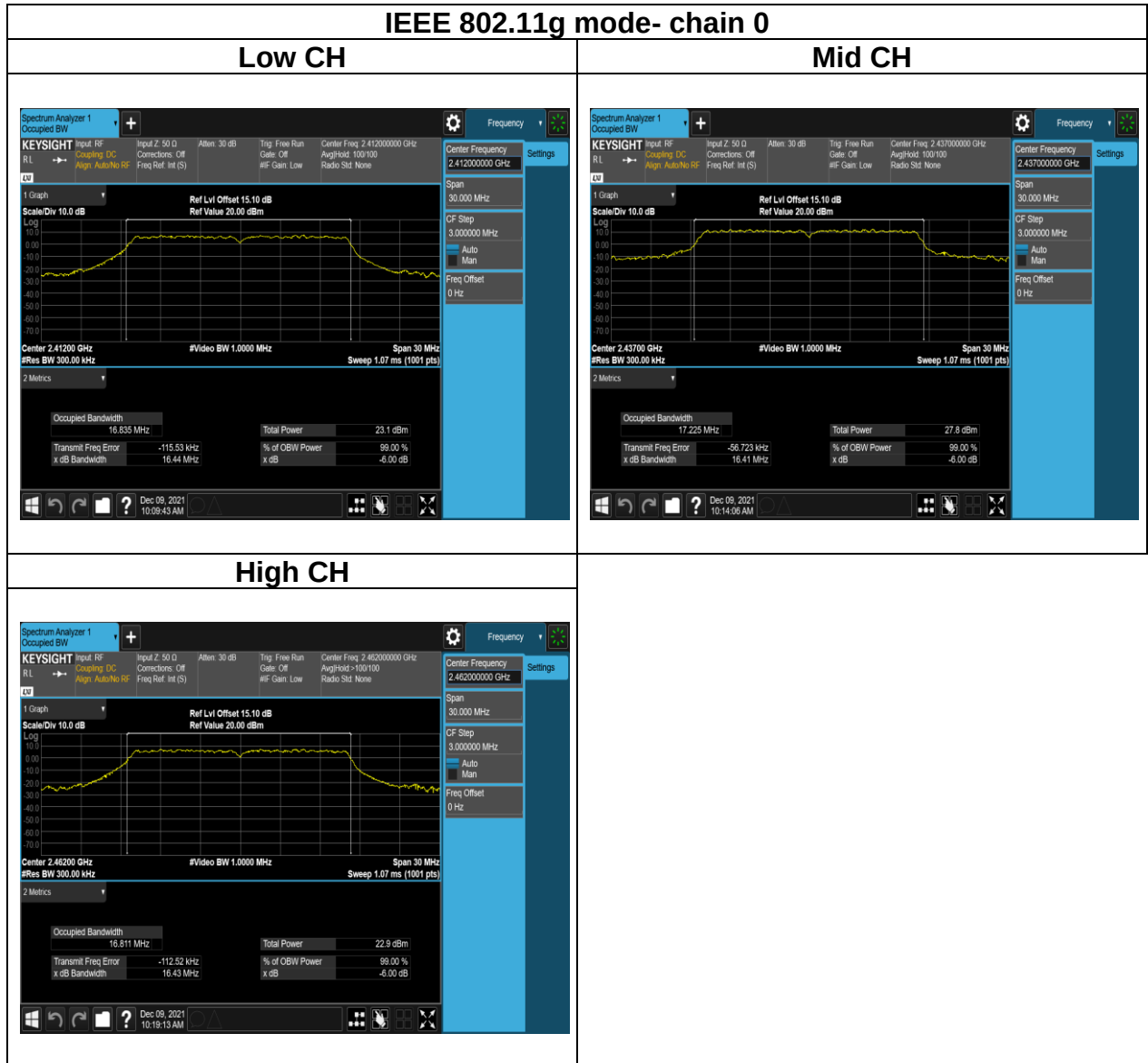
Report No.: T210319W02-RP1

Test Data

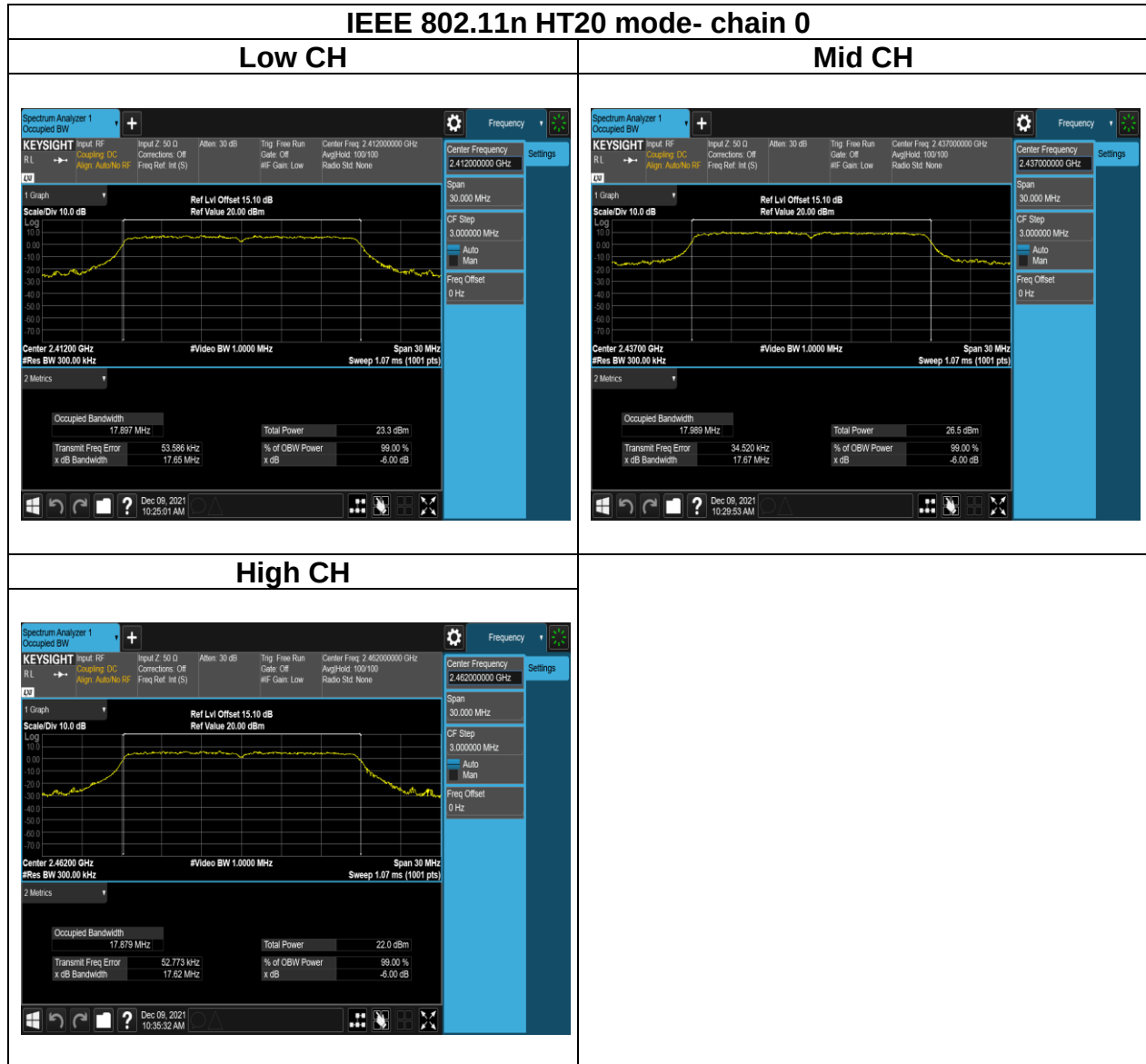
BANDWIDTH 99%



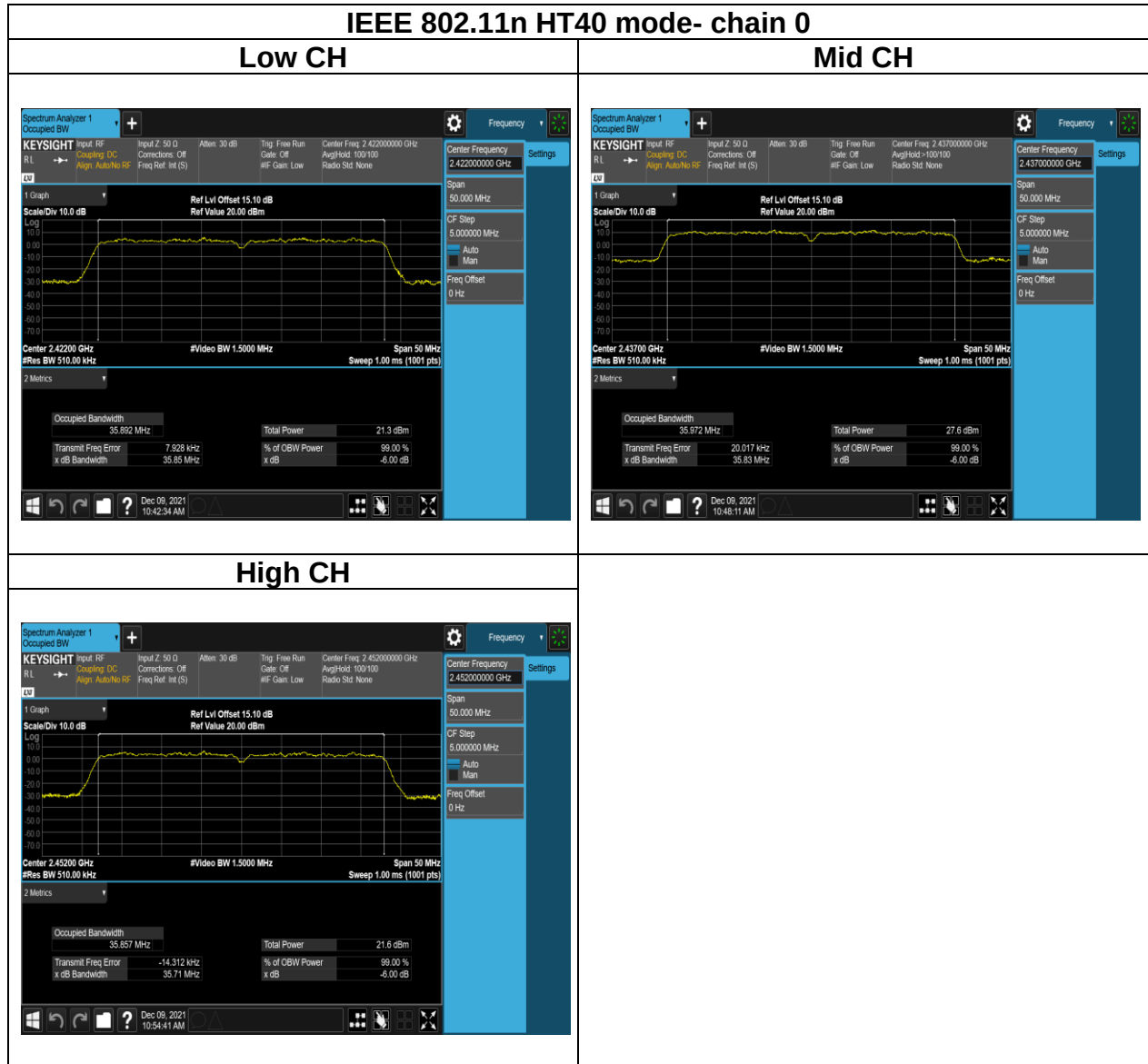
Report No.: T210319W02-RP1



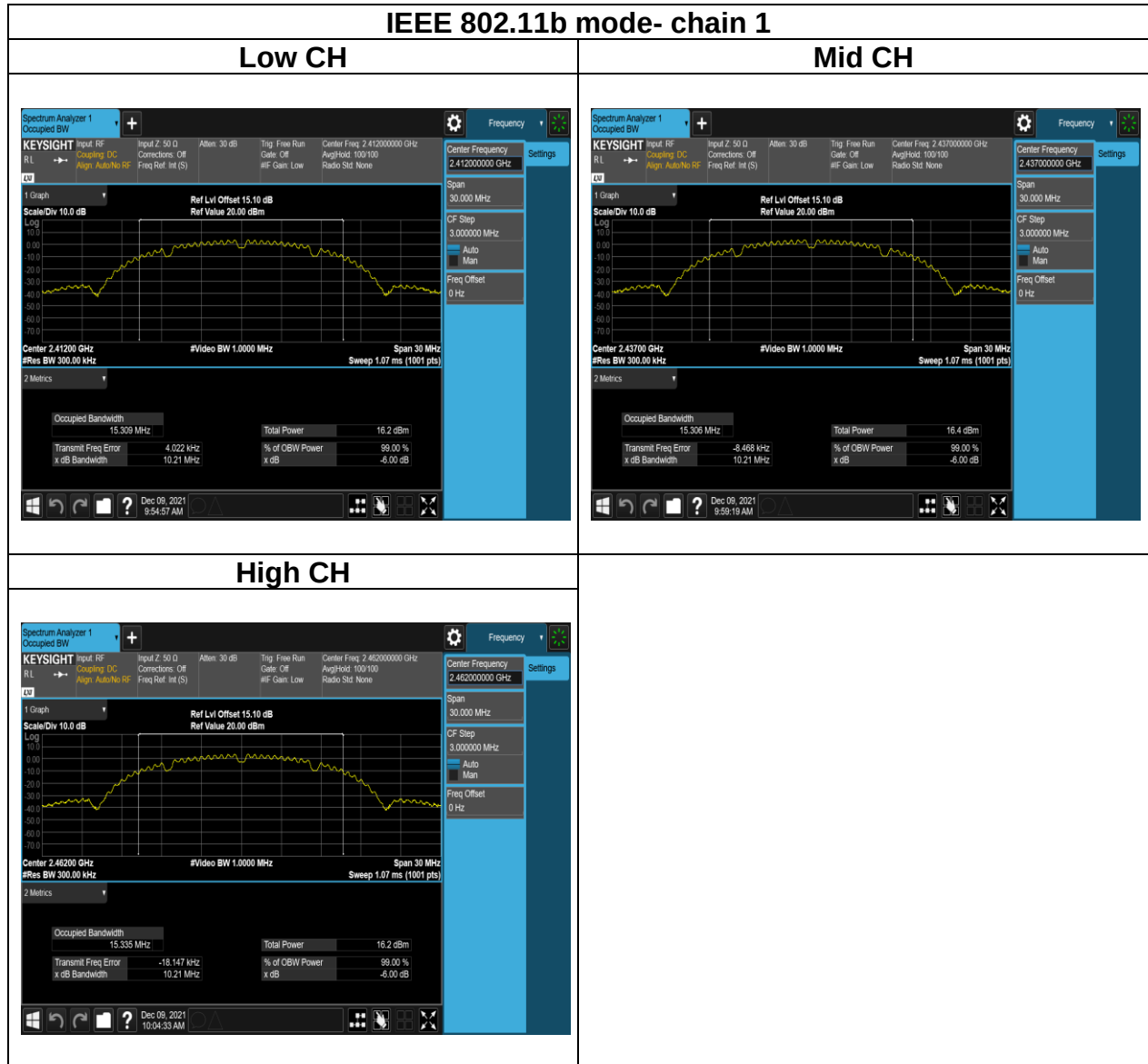
Report No.: T210319W02-RP1



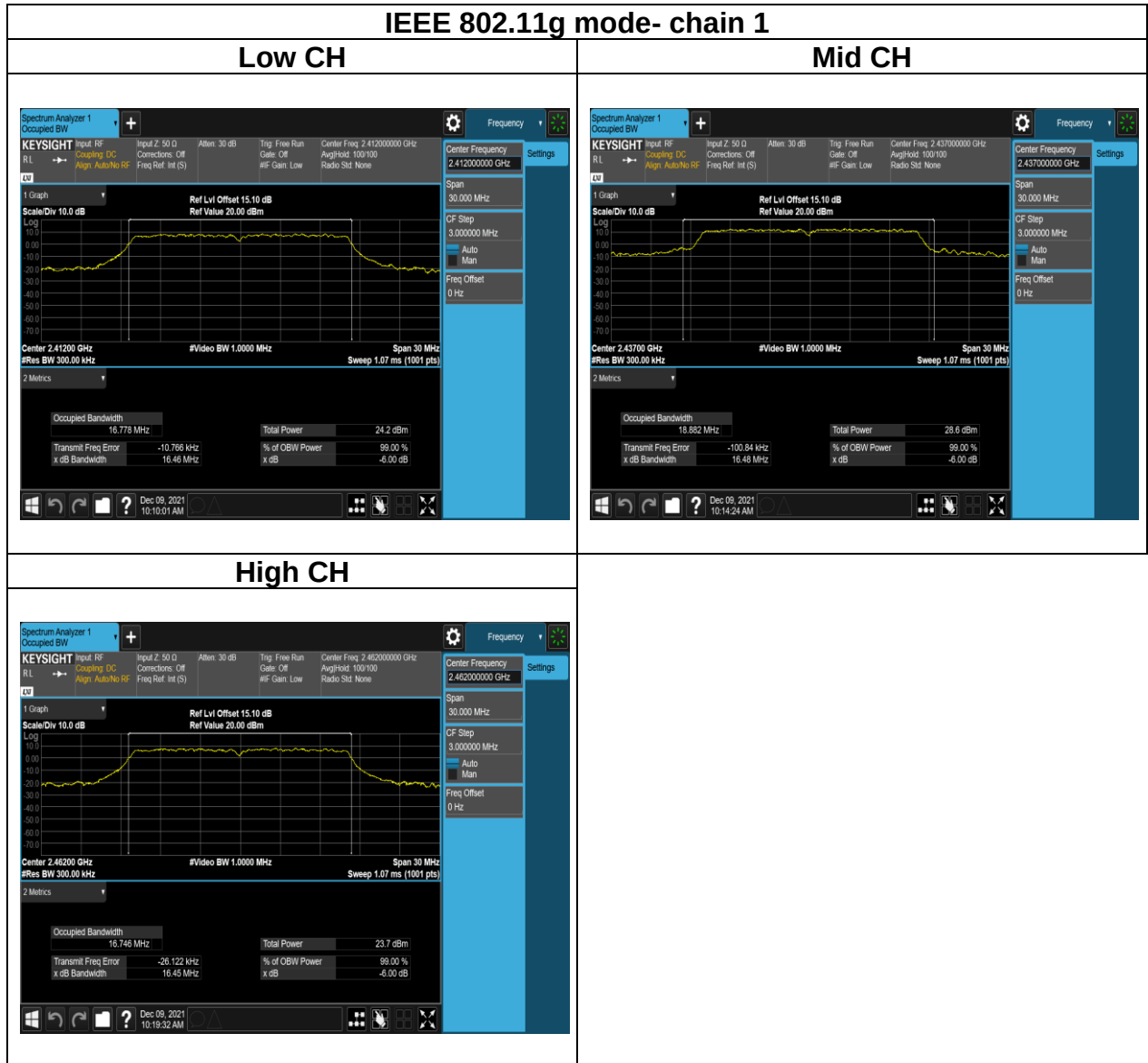
Report No.: T210319W02-RP1



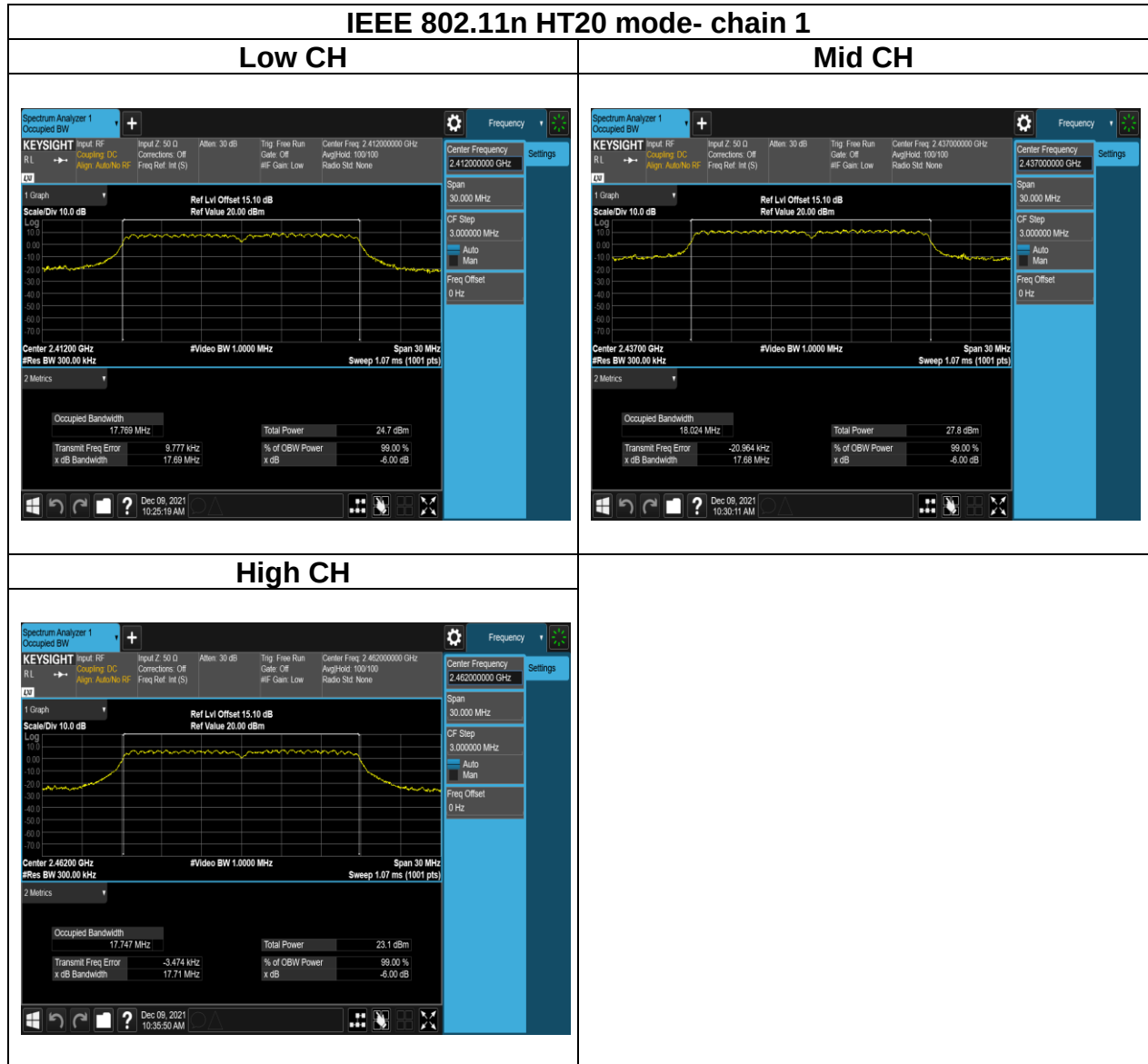
Report No.: T210319W02-RP1



Report No.: T210319W02-RP1



Report No.: T210319W02-RP1



Report No.: T210319W02-RP1



Report No.: T210319W02-RP1

4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.247(b),

Peak output power :

For systems using digital modulation in the 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt(30 dBm) and the e.i.r.p. shall not exceed 4Watt(36 dBm), base on the use of antennas with directional gain not exceed 6 dBi If transmitting antennas of directional gain greater than 6dBi are used the peak output power the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Limit	☐ Antenna not exceed 6 dBi : 30dBm ☒ Antenna with DG greater than 6 dBi : [Limit = 30 – (DG – 6)] ☐ Point-to-point operation :
-------	---

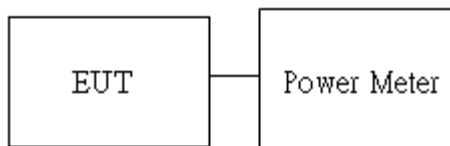
Average output power : For reporting purposes only.

4.3.2 Test Procedure

Test method Refer as ANSI C63.10:2013.

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power. in the test report.

4.3.3 Test Setup



Report No.: T210319W02-RP1

Rev.: 00

4.3.4 Test Result

Temperature: 21.3~24.9°C

Test date:

November 11, 2021
~ December 9, 2021

Humidity: 47~55% RH

Tested by:

Jack Chen

Peak output power :

Test Mode: IEEE 802.11b Mode

CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)		Total Peak Output Power		Limit (dBm)	RESULT
				CH 0	CH 1	(dBm)	(W)		
1	2412	1	30	14.13	16.89	18.74	0.0748	29.89	PASS
6	2437	1	30	13.35	16.83	18.44	0.0698	29.89	PASS
11	2462	1	30	13.47	16.95	18.56	0.0718	29.89	PASS

Test Mode: IEEE 802.11g Mode

CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)		Total Peak Output Power		Limit (dBm)	RESULT
				CH 0	CH 1	(dBm)	(W)		
1	2412	6	50	25.39	25.21	28.31	0.6776	29.89	PASS
6	2437	6	62	26.07	25.42	28.77	0.7534	29.89	PASS
11	2462	6	50	25.10	25.53	28.33	0.6808	29.89	PASS

Test Mode: IEEE 802.11n HT 20 Mode

CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)		Total Peak Output Power		Limit (dBm)	RESULT
				CH 0	CH 1	(dBm)	(W)		
1	2412	MCS8	51	24.97	24.63	27.81	0.6039	29.89	PASS
6	2437	MCS8	58	25.89	25.56	28.74	0.7482	29.89	PASS
11	2462	MCS8	48	24.58	25.19	27.91	0.6180	29.89	PASS

Test Mode: IEEE 802.11n HT 40 Mode

CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)		Total Peak Output Power		Limit (dBm)	RESULT
				CH 0	CH 1	(dBm)	(W)		
3	2422	MCS8	45	22.87	23.66	26.29	0.4256	29.89	PASS
6	2437	MCS8	59	25.74	25.48	28.62	0.7278	29.89	PASS
9	2452	MCS8	45	23.42	24.26	26.87	0.4864	29.89	PASS

Average output power :

Test Mode: IEEE 802.11b Mode

CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Max. Avg. Output include tune up tolerance Power		Limit (dBm)	RESULT
				CH 0	CH 1	(dBm)	(W)		
1	2412	1	30	10.95	14.38	16.01	0.0399	29.89	PASS
6	2437	1	30	10.93	14.51	16.09	0.0406	29.89	PASS
11	2462	1	30	10.85	14.25	15.88	0.0387	29.89	PASS

Test Mode: IEEE 802.11g Mode

CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Max. Avg. Output include tune up tolerance Power		Limit (dBm)	RESULT
				CH 0	CH 1	(dBm)	(W)		
1	2412	6	50	17.53	18.47	21.04	0.1271	29.89	PASS
6	2437	6	62	21.43	21.85	24.66	0.2924	29.89	PASS
11	2462	6	50	17.68	18.77	21.27	0.1340	29.89	PASS

Test Mode: IEEE 802.11n HT 20 Mode

CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Max. Avg. Output include tune up tolerance Power		Limit (dBm)	RESULT
				CH 0	CH 1	(dBm)	(W)		
1	2412	MCS8	51	18.22	18.82	21.54	0.1426	29.89	PASS
6	2437	MCS8	58	20.69	21.22	23.97	0.2495	29.89	PASS
11	2462	MCS8	48	16.98	18.01	20.54	0.1132	29.89	PASS

Test Mode: IEEE 802.11n HT 40 Mode

CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Max. Avg. Output include tune up tolerance Power		Limit (dBm)	RESULT
				CH 0	CH 1	(dBm)	(W)		
3	2422	MCS8	45	14.95	16.09	18.57	0.0719	29.89	PASS
6	2437	MCS8	59	21.31	21.75	24.55	0.2851	29.89	PASS
9	2452	MCS8	45	15.38	16.84	19.18	0.0828	29.89	PASS

4.4 POWER SPECTRAL DENSITY

4.4.1 Test Limit

According to §15.247(e),

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

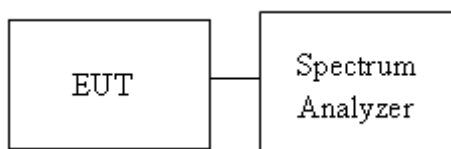
Limit	☐ Antenna not exceed 6 dBi : 8dBm ☒ Antenna with DG greater than 6 dBi : [Limit = 8 – (DG – 6)] ☐ Point-to-point operation :
-------	---

4.4.2 Test Procedure

Test method Refer as ANSI C63.10:2013,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 3kHz, VBW = 10kHz, Span = 1.5 times DTS Bandwidth (6 dB BW), Detector = Peak, Sweep Time = Auto and Trace = Max hold.
4. The path loss and Duty Factor were compensated to the results for each measurement by SA.
5. Mark the maximum level.
6. Measure and record the result of power spectral density. in the test report.

4.4.3 Test Setup



4.4.4 Test Result

Temperature: 21.3~24.9℃

Test date:

November 11, 2021
~ December 9, 2021

Humidity: 47~55% RH

Tested by:

Jack Chen

Test mode: IEEE 802.11b mode / 2412-2462 MHz					
Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm/3kHz)	Limit (dBm/3kHz)
Low	2412	-20.98	-17.55	-15.92	7.89
Mid	2437	-20.9	-17.36	-15.77	
High	2462	-21.28	-17.55	-16.02	

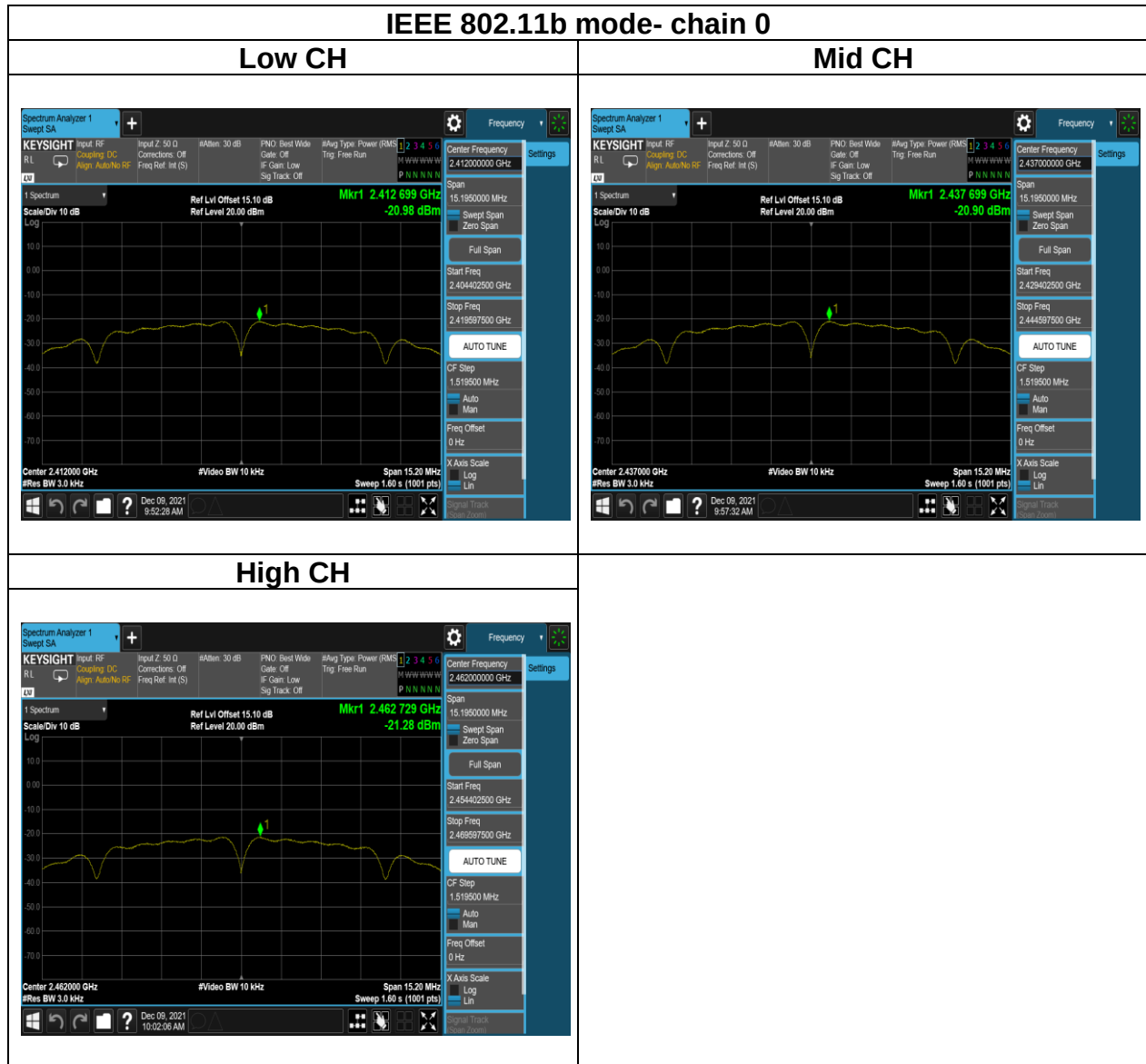
Test mode: IEEE 802.11g mode / 2412-2462 MHz					
Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm/3kHz)	Limit (dBm/3kHz)
Low	2412	-12.02	-10.55	-8.21	7.89
Mid	2437	-7.2	-6.21	-3.67	
High	2462	-12.18	-11.27	-8.69	

Test mode: IEEE 802.11n HT 20 mode / 2412-2462 MHz					
Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm/3kHz)	Limit (dBm/3kHz)
Low	2412	-9.83	-10.61	-7.19	7.89
Mid	2437	-8.06	-7.73	-4.88	
High	2462	-11.9	-10.6	-8.19	

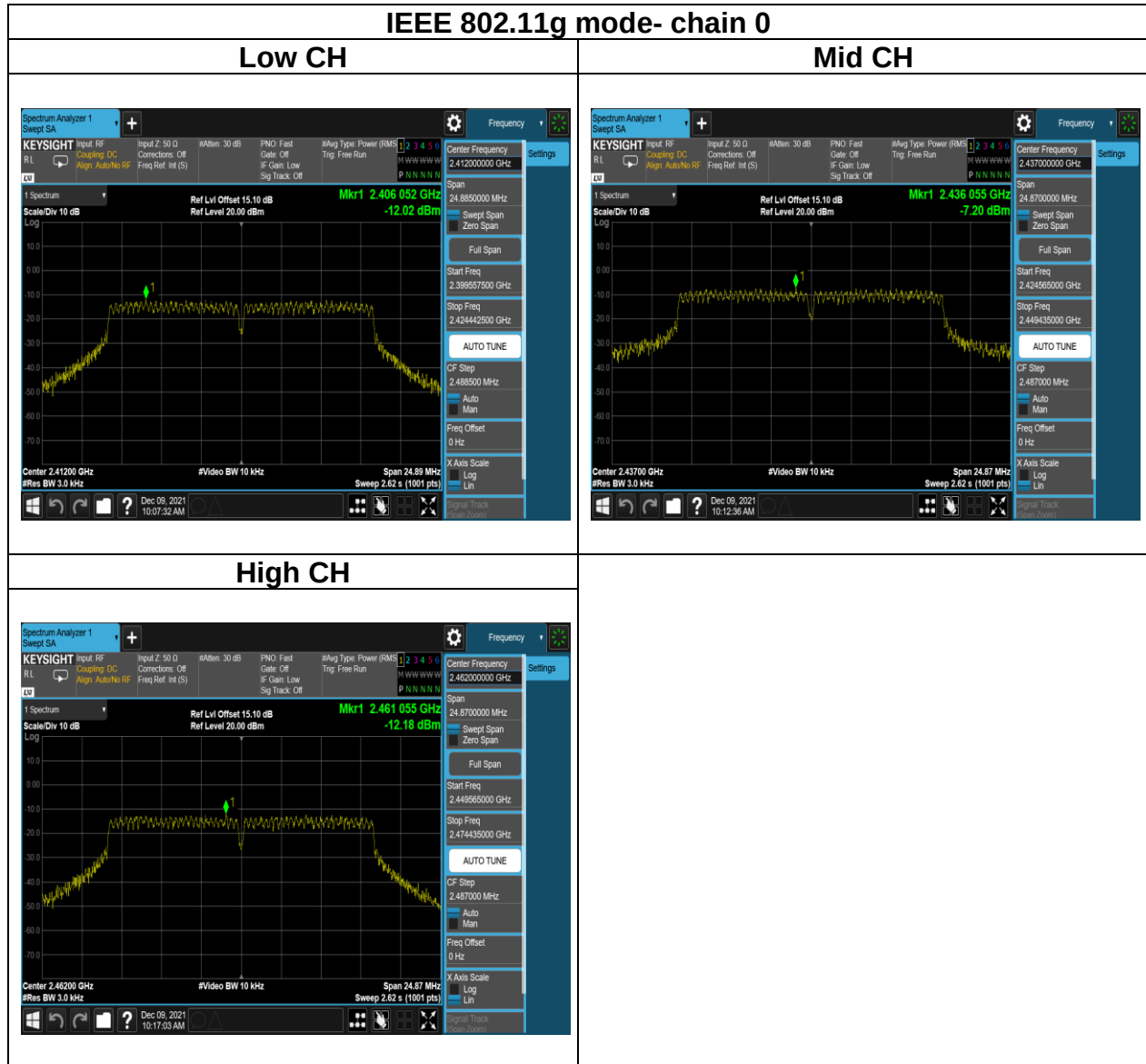
Test mode: IEEE 802.11n HT 40 mode / 2422-2452 MHz					
Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm/3kHz)	Limit (dBm/3kHz)
Low	2422	-14.54	-14.96	-11.73	7.89
Mid	2437	-8.11	-9.49	-5.74	
High	2452	-15.38	-15.68	-12.52	

Report No.: T210319W02-RP1

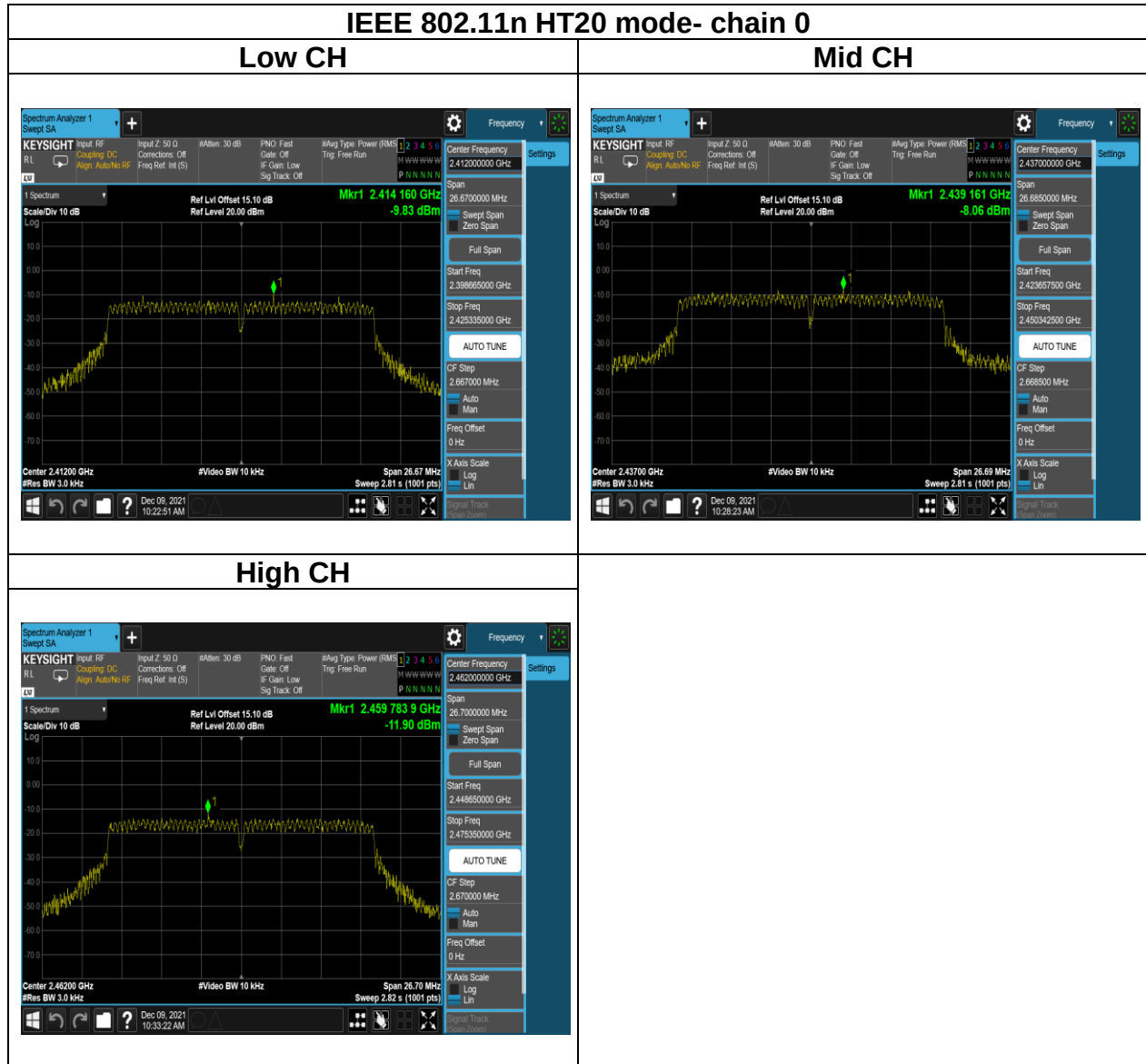
Test Data



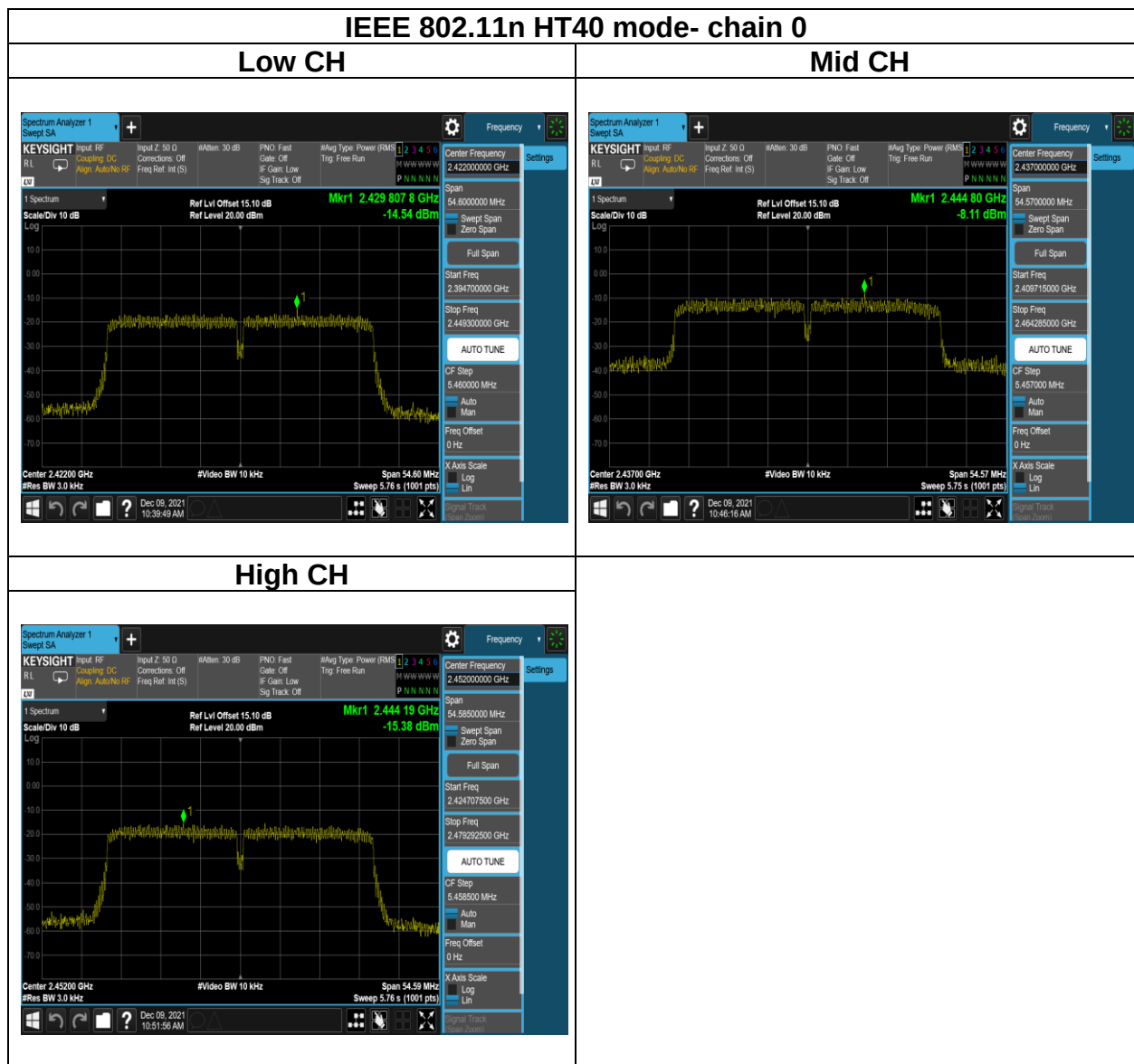
Report No.: T210319W02-RP1



Report No.: T210319W02-RP1



Report No.: T210319W02-RP1



Report No.: T210319W02-RP1

