

FCC ID: P27RC8520S
Report No.: TMWK2109000768KR

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Rev.: 02

RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART C

Test Standard	FCC Part 15.247
Product name	Wireless Full HD Network Camera
Brand Name	Sercomm
Model No.	RC8520S; RC8520SXXXXXXXX (the 1st X should be "blank" or "-"; the rest X could be 0 to 9, A to Z, a to z, "blank" or "-", for marketing purpose)
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:



Shawn Wu
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	November 11, 2021	Initial Issue	ALL	Allison Chen
01	November 19, 2021	See the following Note Rev.(01)	P.4, P.6, P.9, P.17, P.80~103	Allison Chen
02	December 6, 2021	See the following Note Rev.(02)	P.4	Allison Chen

Note:

Rev.(01)

1. Modified power supply for adapter M/N, remark of directional gain formula and support equipment information.
2. Removed 99% OBW description in section 5.2, and remark of above 1GHz in section 5.6.

Rev.(02)

1. Modified power supply for adapter model number: MU05C2050100-A1.

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	APPENDIX 1 - PHOTOGRAPHS OF EUT	

1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	Sercomm Corporation 8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan
Manufacturer	Sercomm Corporation 8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan
Equipment	Wireless Full HD Network Camera
Model No.	RC8520S; RC8520SXXXXXXX (the 1st X should be "blank" or "-"; the rest X could be 0 to 9, A to Z, a to z, "blank" or "-", for marketing purpose)
Model Discrepancy	All the above models are identical except for the designation of model numbers. The suffix of (the 1st X should be "blank" or "-"; the rest X could be 0 to 9, A to Z, a to z, "blank" or "-") on model number is just for marketing purpose only.
Trade Name	Sercomm
Received Date	September 30, 2021
Date of Test	October 8 ~ 14, 2021
Power Supply	Power from Adapter. I.T.E.POWER SUPPLY / MU05C2050100-A1 I/P: 100-240VAC, 50/60Hz, 0.15A O/P: 5.0VDC, 1.0A, 5.0W
HW Version	Mainbaord: C-1 Wifi Board: B-1
SW Version	V1.2.01R01

Remark:

1. For more details, please refer to the User's manual of the EUT.
2. Disclaimer: Variant information between/among model numbers / trademarks is provided by the applicant, test results of this report are applicable to the sample EUT received of main test model name.

1.2 EUT CHANNEL INFORMATION

Frequency Range	802.11b/g/n HT 20: 2412MHz ~ 2462MHz 802.11n HT40: 2422MHz ~ 2452MHz
Modulation Type	1. IEEE 802.11b mode: CCK 2. IEEE 802.11g mode: OFDM 3. IEEE 802.11n HT 20 MHz mode : OFDM 4. IEEE 802.11n HT 40 MHz 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 MHz mode : 11 Channels 4. IEEE 802.11n HT 40 MHz 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
<input type="checkbox"/> 1 MHz or less	1	Middle
<input type="checkbox"/> 1 MHz to 10 MHz	2	1 near top and 1 near bottom
<input checked="" type="checkbox"/> More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

1.3 ANTENNA INFORMATION

Antenna Type	<input type="checkbox"/> PCB <input checked="" type="checkbox"/> Dipole <input type="checkbox"/> Coils <input type="checkbox"/> PIFA
Antenna Gain	Chain 0 (Ant 1): Gain: 2.9 dBi Chain 1 (Ant 2): Gain: 3.4 dBi Directional Gain: 6.16 dBi
Antenna Connector	I-PEX

Remark:

- 1.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.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.
3. Directional Gain = $10 \log [(10^{ANT1/20} + 10^{ANT2/20} + \dots + 10^{ANT N/20})^2 / N_{ANT}]$ dBi

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~1G (Horizontally)	+/- 3.91
3M Semi Anechoic Chamber / 30M~1G (Vertically)	+/- 4.57
3M Semi Anechoic Chamber / 1G~6G	+/- 5.20
3M Semi Anechoic Chamber / 6G~18G	+/- 5.18
3M Semi Anechoic Chamber / 18G~40G	+/- 3.68

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.

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.)

CAB identifier: TW1309

Test site	Test Engineer	Remark
AC Conduction Room	Jack Chen	-
Radiation	Ray Li, Tony Chao	-
RF Conducted	Lance 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
Coaxial Cable	Woken	WC12	CC001	06/28/2021	06/27/2022
Coaxial Cable	Woken	WC12	CC003	06/28/2021	06/27/2022
EXA Signal Analyzer	KEYSIGHT	N9010B	MY55460167	09/07/2021	09/06/2022
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				

Conducted Emission 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.

3M 966 Chamber Test Site					
Equipment	Manufacturer	Model	Serial Number	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+327109/4	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	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	22470/2	12/09/2020	12/08/2021
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-18004000-37-8P	985646	09/08/2021	09/07/2022
Signal Analyzer	R&S	FSV 40	101073	09/07/2021	09/06/2022
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.

1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

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

Support Equipment						
No.	Equipment	Brand	Model	Series No.	FCC ID	IC
1	NB	Lenovo	20175	N/A	TX2-RTL8723AS	6317A-RTL8723AS
2	NB (C)	HP	dv6-1332TX	CNF9491GM4	PD9112BNHU	1000M-112BNHU

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.

2. TEST SUMMARY

FCC Standard Section	Report Section	Test Item	Result
15.203	1.3	Antenna Requirement	Pass
15.207(a)	5.1	AC Conducted Emission	Pass
15.247(a)(2)	5.2	6 dB Bandwidth	Pass
-	5.2	Occupied Bandwidth (99%)	Pass
15.247(b)(3)	5.3	Output Power Measurement	Pass
15.247(e)	5.4	Power Spectral Density	Pass
15.247(d)	5.5	Conducted Band Edge	Pass
15.247(d)	5.5	Conducted Emission	Pass
15.247(d)	5.6	Radiation Band Edge	Pass
15.247(d)	5.6	Radiation Spurious Emission	Pass

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 :MCS0 IEEE 802.11n HT40 Mode: MCS0
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 :1T1R IEEE 802.11g mode :1T1R 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.

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	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4

Radiated Emission Measurement Above 1G	
Test Condition	Radiated Emission Above 1G
Power supply Mode	Mode 1: EUT power by Adapter
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4
Worst Position	<input type="checkbox"/> Placed in fixed position. <input checked="" type="checkbox"/> Placed in fixed position at X-Plane (E2-Plane) <input type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane) <input type="checkbox"/> 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	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> 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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4. EUT DUTY CYCLE

Temperature: 24.7°C

Test date: October 8, 2021

Humidity: 58% RH

Tested by: Lance Chen

Duty Cycle				
Configuration	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11b	99.14	0.04	0.08	0.01
802.11g	94.68	0.24	0.48	1.00
802.11n HT20	97.31	0.12	0.52	1.00
802.11n HT40	89.82	0.47	1.06	2.00



5. TEST RESULT

5.1 AC POWER LINE CONDUCTED EMISSION

5.1.1 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

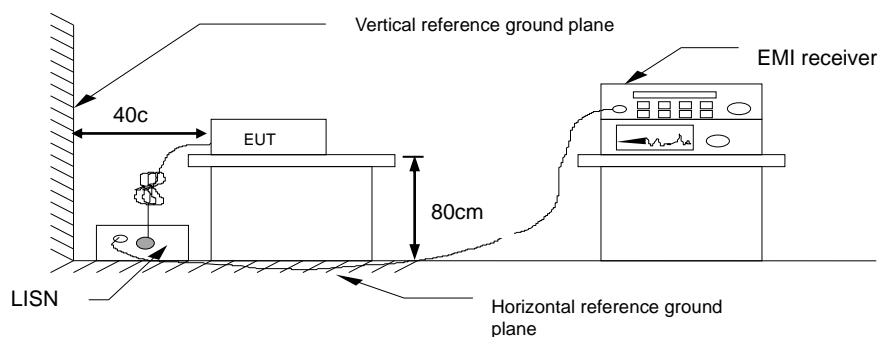
* Decreases with the logarithm of the frequency.

5.1.2 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.

5.1.3 Test Setup

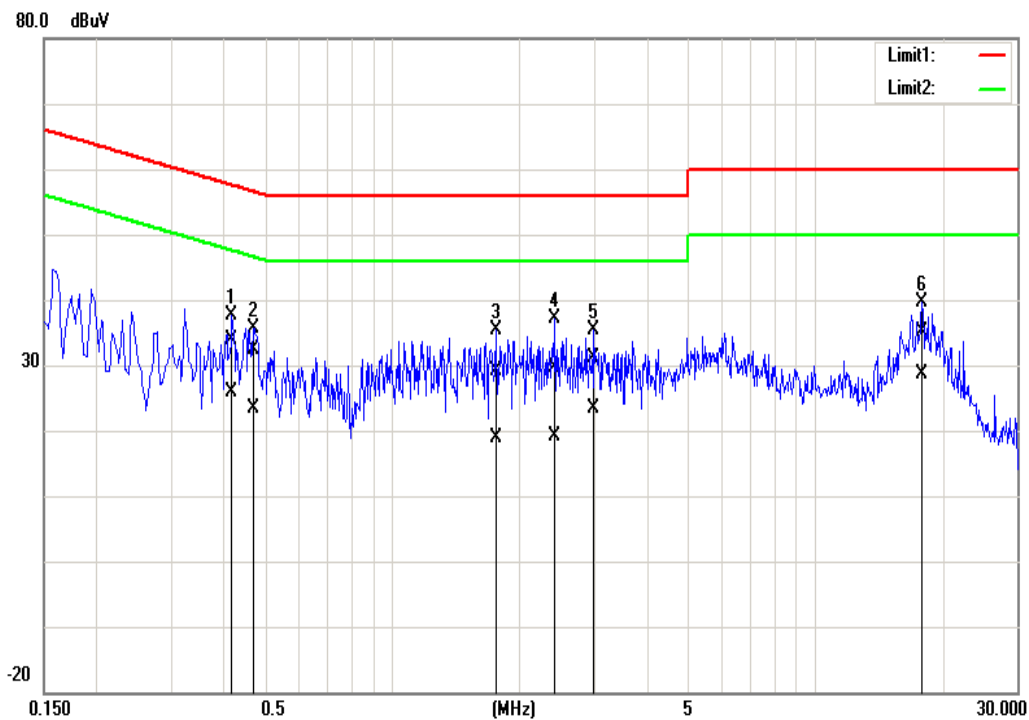


5.1.4 Test Result

PASS

Test Data

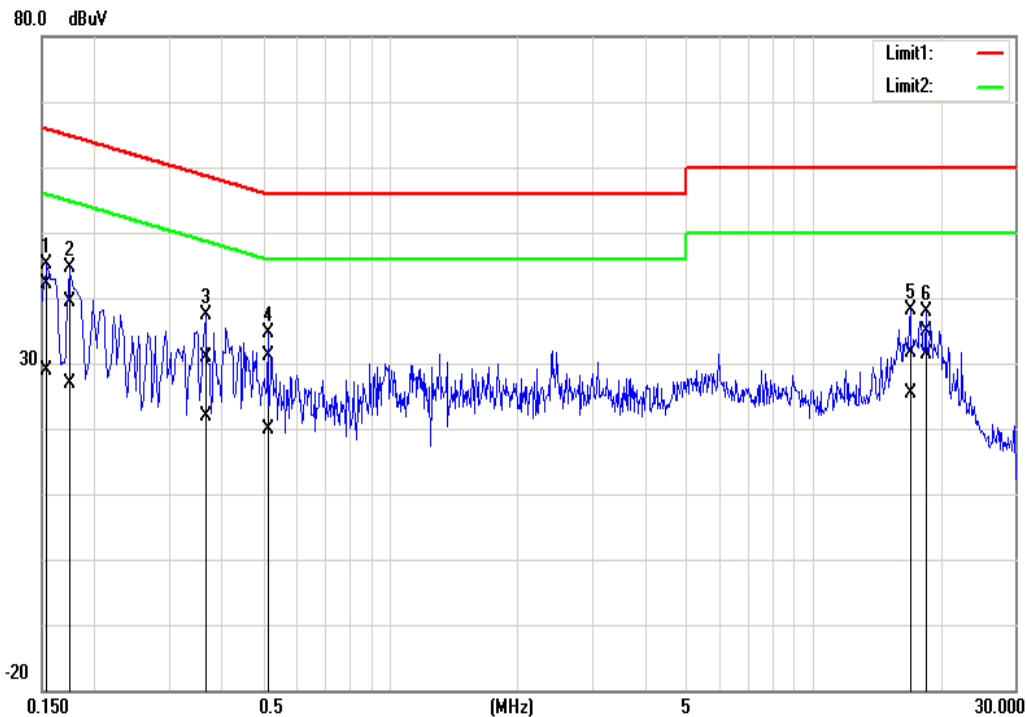
Test Mode:	Mode 1	Temp/Hum	26.5(°C)/ 45%RH
Phase:	Line	Test Date	October 12, 2021
		Test Engineer	Jack Chen



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
0.4180	23.55	15.65	10.29	33.84	25.94	57.49	47.49	-23.65	-21.55	Pass
0.4700	22.14	13.16	10.29	32.43	23.45	56.51	46.51	-24.08	-23.06	Pass
1.7620	18.85	8.60	10.34	29.19	18.94	56.00	46.00	-26.81	-27.06	Pass
2.4220	19.41	8.84	10.34	29.75	19.18	56.00	46.00	-26.25	-26.82	Pass
3.0060	20.68	13.09	10.36	31.04	23.45	56.00	46.00	-24.96	-22.55	Pass
17.9420	24.76	18.18	10.46	35.22	28.64	60.00	50.00	-24.78	-21.36	Pass

Note: Correction factor = LISN loss + Cable loss.

Test Mode:	Mode 1	Temp/Hum	26.5(°C)/ 45%RH
Phase:	Neutral	Test Date	October 12, 2021
		Test Engineer	Jack Chen



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBuV)	Correctio n factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1540	31.79	18.49	10.29	42.08	28.78	65.78	55.78	-23.70	-27.00	Pass
0.1740	29.12	16.51	10.29	39.41	26.80	64.77	54.77	-25.36	-27.97	Pass
0.3660	20.48	11.64	10.29	30.77	21.93	58.59	48.59	-27.82	-26.66	Pass
0.5140	20.93	9.68	10.29	31.22	19.97	56.00	46.00	-24.78	-26.03	Pass
16.9500	21.16	14.84	10.46	31.62	25.30	60.00	50.00	-28.38	-24.70	Pass
18.4300	24.48	20.89	10.46	34.94	31.35	60.00	50.00	-25.06	-18.65	Pass

Note: Correction factor = LISN loss + Cable loss.

5.26dB BANDWIDTH

5.2.1 Test Limit

According to §15.247(a)(2),

6 dB Bandwidth :

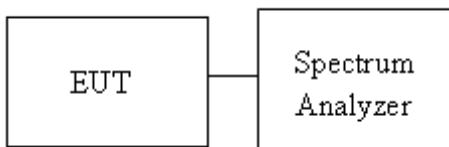
Limit	Shall be at least 500kHz
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5.2.2 Test Procedure

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. Measure and record the result of 6 dB Bandwidth in the test report.

5.2.3 Test Setup



5.2.4 Test Result

Temperature: 24.7°C

Test date: October 8, 2021

Humidity: 58% RH

Tested by: Lance Chen

Chain 0 (ANT 1)

Test mode: IEEE 802.11b mode / 2412-2462 MHz			
Channel	Frequency (MHz)	6dB BW (kHz)	6dB limit (kHz)
Low	2412	10080.00	≥500
Mid	2437	10080.00	
High	2462	10080.00	

Test mode: IEEE 802.11g mode / 2412-2462 MHz			
Channel	Frequency (MHz)	6dB BW (kHz)	6dB limit (kHz)
Low	2412	16380.00	≥500
Mid	2437	16370.00	
High	2462	16360.00	

Test mode: IEEE 802.11n HT 20 MHz mode / 2412-2462 MHz			
Channel	Frequency (MHz)	6dB BW (kHz)	6dB limit (kHz)
Low	2412	17230.00	≥500
Mid	2437	17140.00	
High	2462	17340.00	

Test mode: IEEE 802.11n HT40 Mode / 2422-2452 MHz			
Channel	Frequency (MHz)	6dB BW (kHz)	6dB limit (kHz)
Low	2422	35200.00	≥500
Mid	2437	35190.00	
High	2452	35210.00	

Chain 1 (ANT 2)

Test mode: IEEE 802.11n HT 20 MHz mode / 2412-2462 MHz			
Channel	Frequency (MHz)	6dB BW (kHz)	6dB limit (kHz)
Low	2412	17220.00	≥500
Mid	2437	17360.00	
High	2462	17340.00	

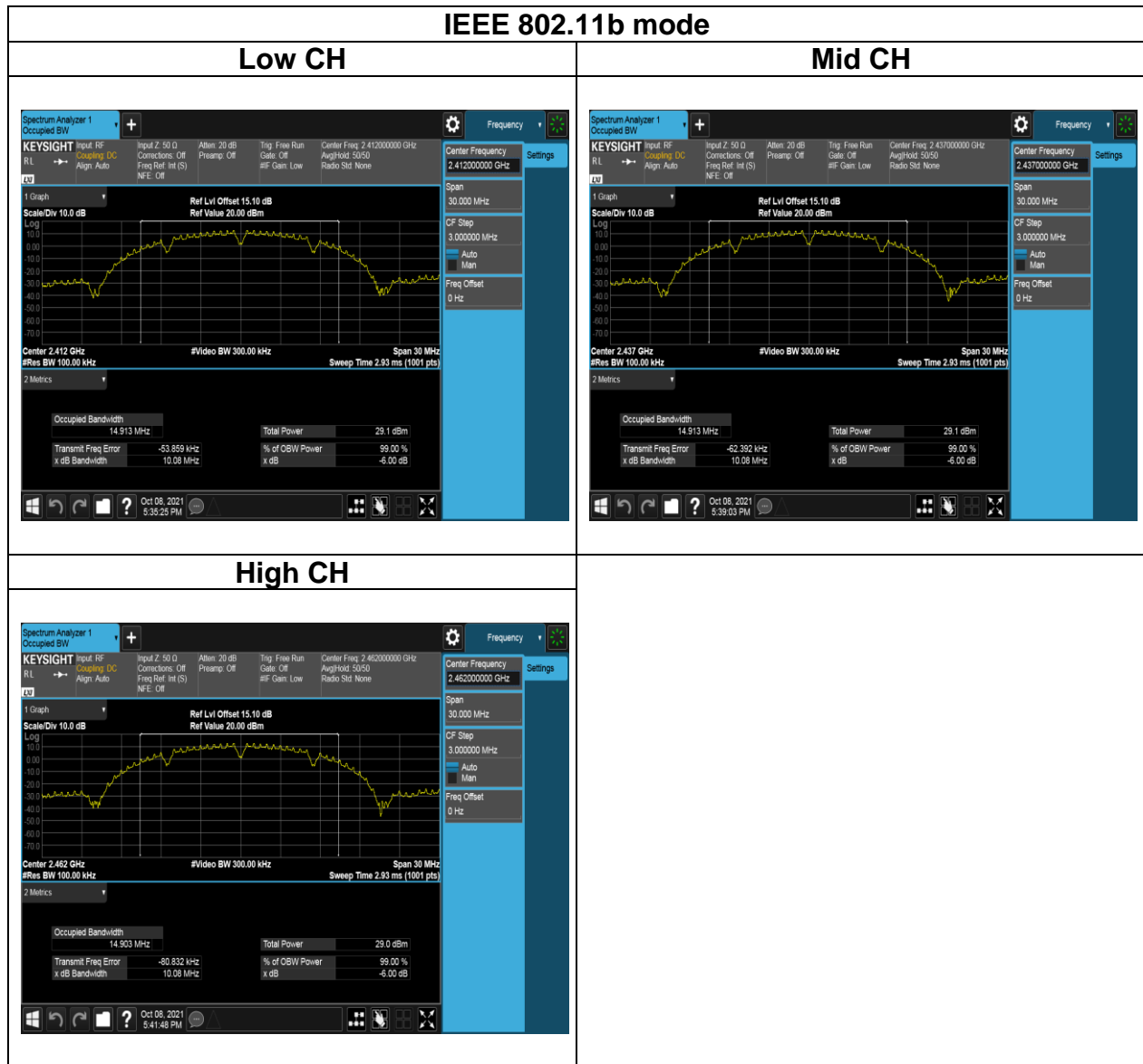
Test mode: IEEE 802.11n HT40 Mode / 2422-2452 MHz			
Channel	Frequency (MHz)	6dB BW (kHz)	6dB limit (kHz)
Low	2422	35180.00	≥500
Mid	2437	35200.00	
High	2452	35190.00	

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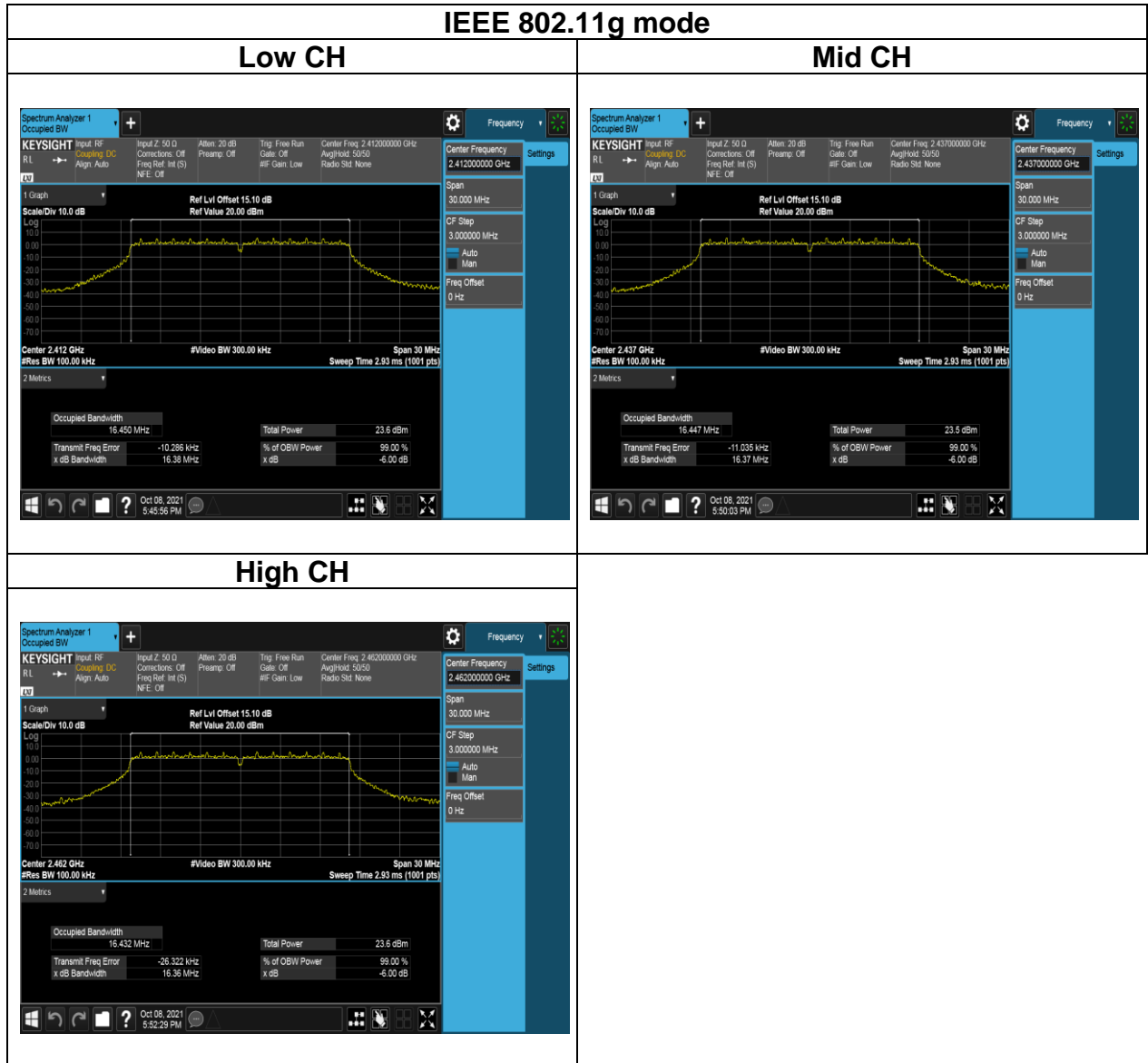
Test Data

6dB BANDWIDTH

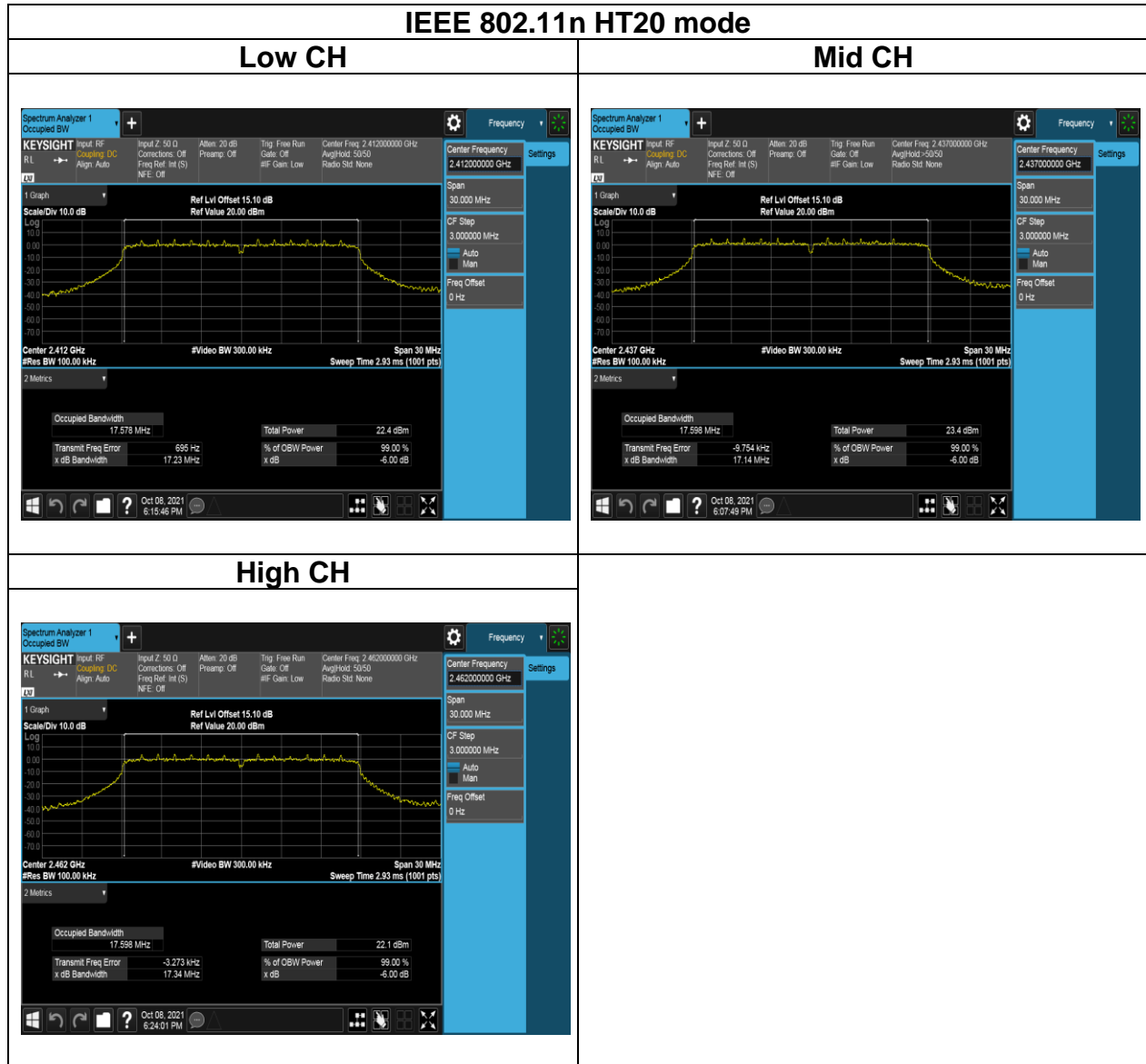
Chain 0 (ANT 1)



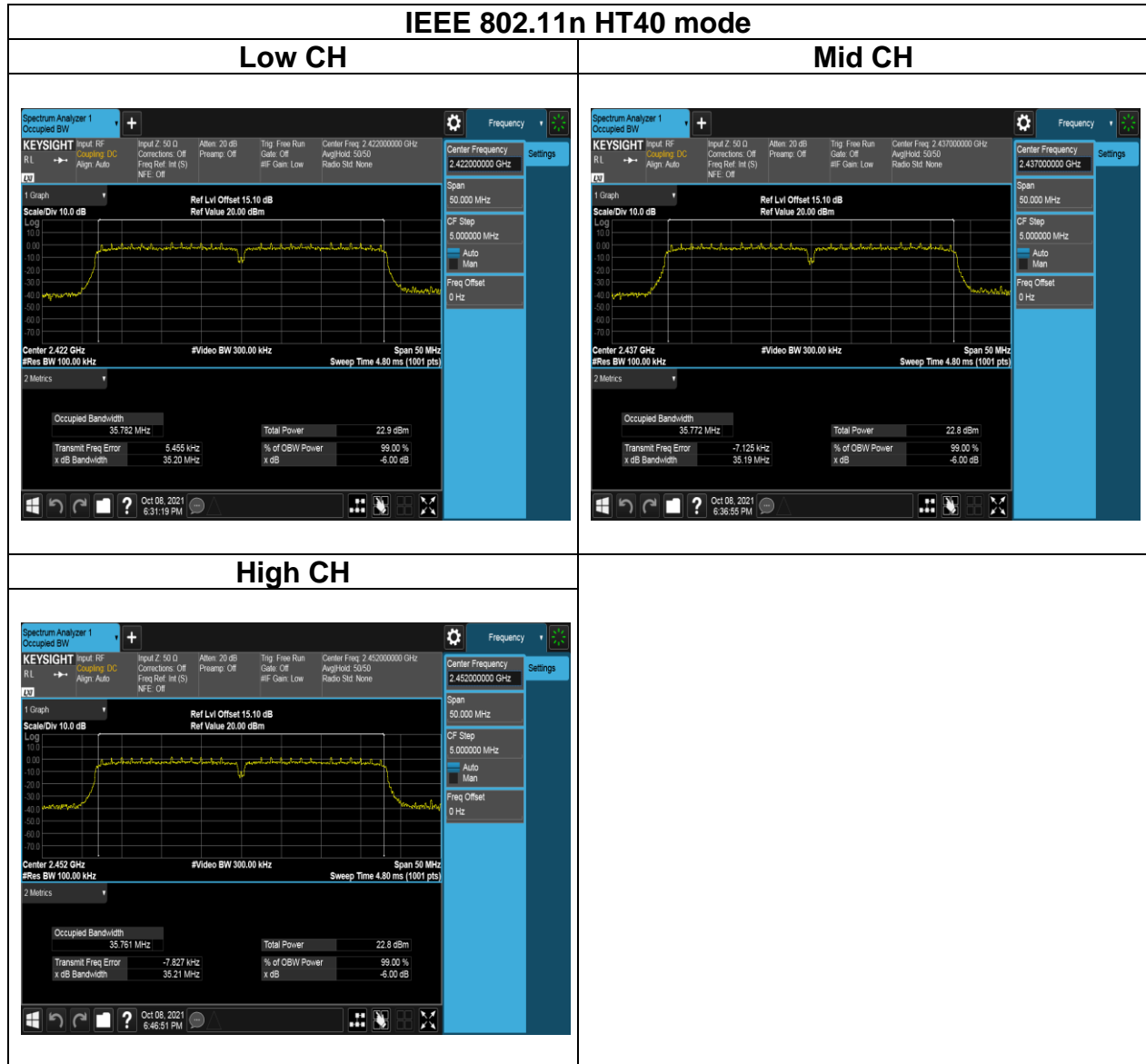
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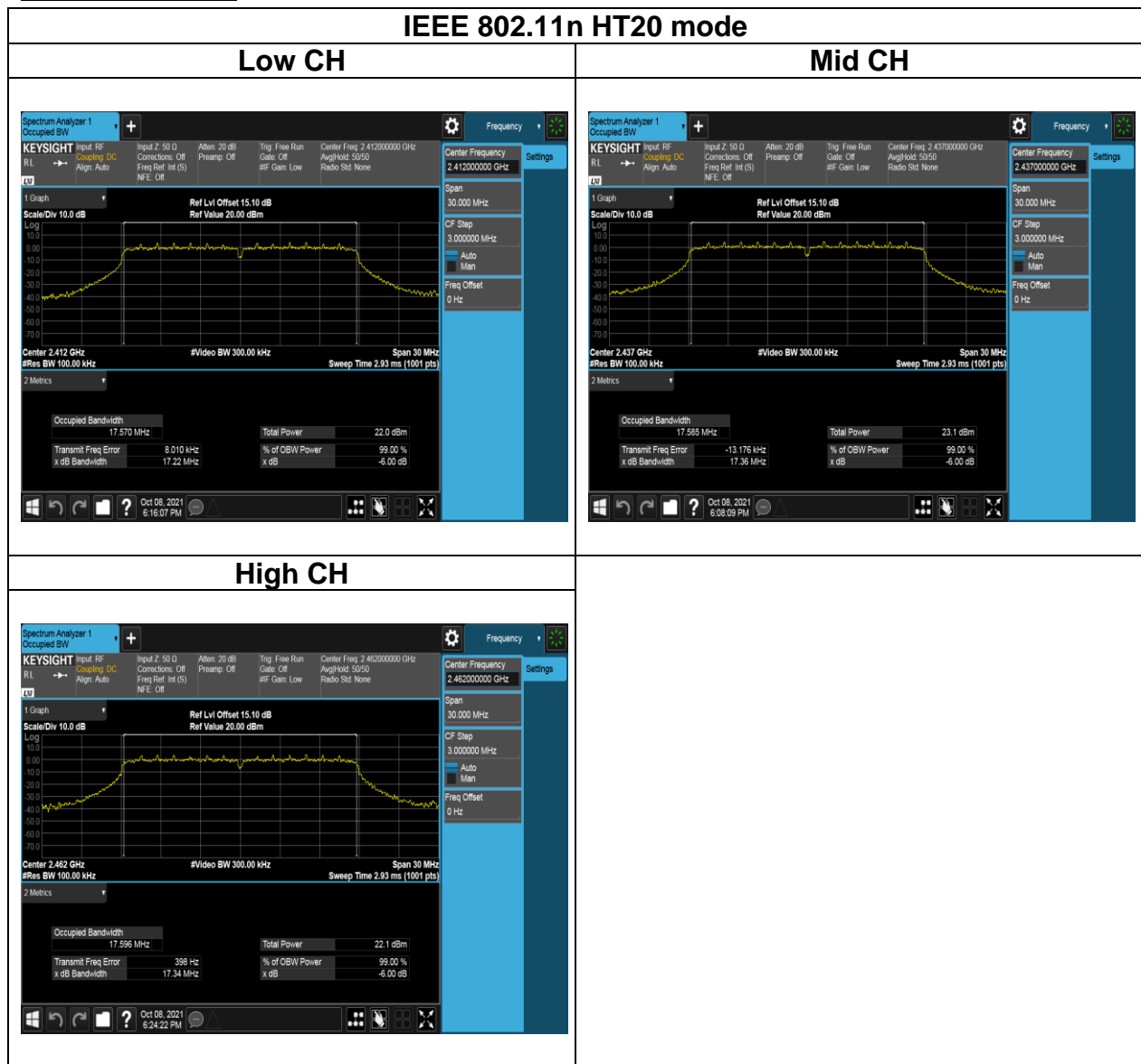


Report No.: TMWK2109000768KR

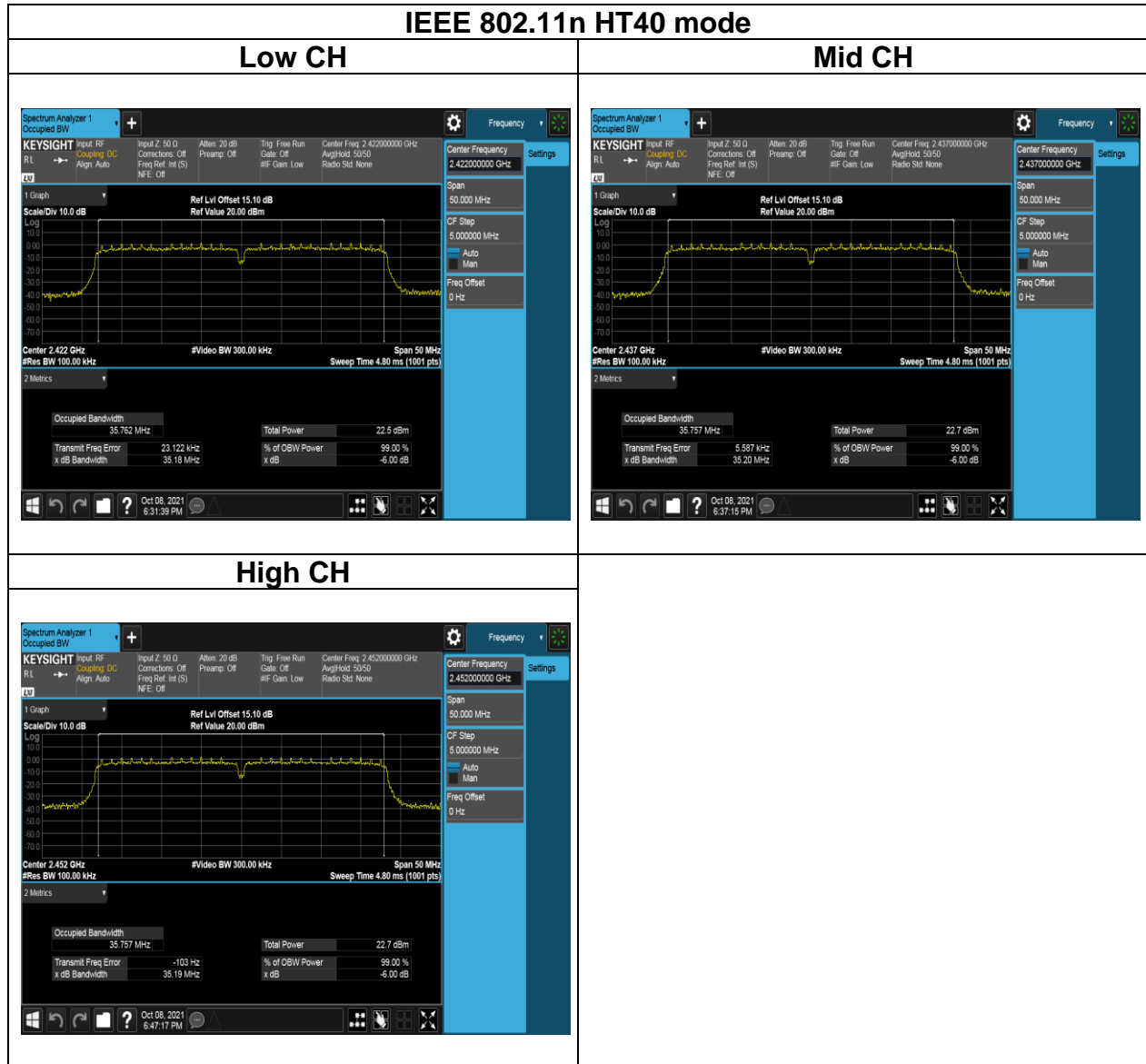


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Chain 1 (ANT 2)



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5.3 OUTPUT POWER MEASUREMENT

5.3.1 Test Limit

According to §15.247(b),

Peak output power :

FCC:

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement,

Limit	<input type="checkbox"/> Antenna not exceed 6 dBi : 30dBm <input checked="" type="checkbox"/> Antenna with DG greater than 6 dBi : [Limit = 30 – (DG – 6)] <input type="checkbox"/> Point-to-point operation :
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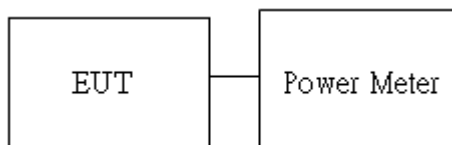
Average output power : For reporting purposes only.

5.3.2 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.

5.3.3 Test Setup



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5.3.4 Test Result

Temperature: 24.7°C

Test date: October 8, 2021

Humidity: 58% RH

Tested by: Lance Chen

Peak output power :

802.11b Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	40	23.41	30.00	PASS
6	2437	1	45	24.97	30.00	PASS
11	2462	1	45	24.82	30.00	PASS

802.11g Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	39	24.42	30.00	PASS
6	2437	6	45	25.92	30.00	PASS
11	2462	6	44	25.53	30.00	PASS

802.11b Ch1						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	42	22.93	30.00	PASS
6	2437	1	47	24.79	30.00	PASS
11	2462	1	47	24.67	30.00	PASS

802.11g Ch1						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	39	23.79	30.00	PASS
6	2437	6	45	25.76	30.00	PASS
11	2462	6	44	23.56	30.00	PASS

802.11n_HT20M MIMO								
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
1	2412	MCS0	43	25.35	25.13	28.25	29.84	PASS
6	2437	MCS0	45	25.96	25.75	28.87	29.84	PASS
11	2462	MCS0	41	24.11	24.05	27.09	29.84	PASS

802.11n_HT40M MIMO								
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
3	2422	MCS0	35	22.94	22.29	25.64	29.84	PASS
6	2437	MCS0	45	25.51	25.36	28.45	29.84	PASS
9	2452	MCS0	36	23.42	23.27	26.36	29.84	PASS

Average output power :

802.11b Ch0					
CH	Freq. (MHz)	Data Rate	Power set	Total avg power (dBm)	RESULT
1	2412	1	40	21.67	PASS
6	2437	1	45	22.49	PASS
11	2462	1	45	22.37	PASS

802.11g Ch0					
CH	Freq. (MHz)	Data Rate	Power set	Total avg power (dBm)	RESULT
1	2412	6	39	15.51	PASS
6	2437	6	45	17.30	PASS
11	2462	6	44	16.96	PASS

802.11b Ch1					
CH	Freq. (MHz)	Data Rate	Power set	Total avg power (dBm)	RESULT
1	2412	1	42	21.53	PASS
6	2437	1	47	22.41	PASS
11	2462	1	47	22.35	PASS

802.11g Ch1					
CH	Freq. (MHz)	Data Rate	Power set	Total avg power (dBm)	RESULT
1	2412	6	39	15.18	PASS
6	2437	6	45	16.85	PASS
11	2462	6	44	16.72	PASS

802.11n_HT20M MIMO							
CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Total avg power (dBm)	RESULT
				CH 0	CH 1		
1	2412	MCS0	43	15.97	15.84	19.04	PASS
6	2437	MCS0	45	16.47	16.22	19.48	PASS
11	2462	MCS0	41	14.93	14.79	17.99	PASS

802.11n_HT40M MIMO							
CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Total avg power (dBm)	RESULT
				CH 0	CH 1		
3	2422	MCS0	35	12.52	11.76	15.64	PASS
6	2437	MCS0	45	16.04	15.93	19.47	PASS
9	2452	MCS0	36	12.91	12.88	16.38	PASS

5.4 POWER SPECTRAL DENSITY

5.4.1 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.

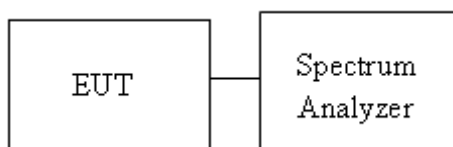
Limit	<input type="checkbox"/> Antenna not exceed 6 dBi : 8dBm <input checked="" type="checkbox"/> Antenna with DG greater than 6 dBi : [Limit = 8 – (DG – 6)] <input type="checkbox"/> Point-to-point operation :
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5.4.2 Test Procedure

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.

5.4.3 Test Setup



Report No.: TMWK2109000768KR

5.4.4 Test Result

Temperature: 24.7°C

Test date: October 8, 2021

Humidity: 58% RH

Tested by: Lance Chen

Gain				3.40	dBi
				SISO	
POWER DENSITY 802.11b					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-1.97	-	-1.97	8.00	PASS
2437	-2.4	-	-2.40	8.00	PASS
2462	-1.95	-	-1.95	8.00	PASS

Gain				3.40	dBi
				SISO	
POWER DENSITY 802.11g					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-7.01	-	-7.01	8.00	PASS
2437	-9.1	-	-9.10	8.00	PASS
2462	-8.41	-	-8.41	8.00	PASS

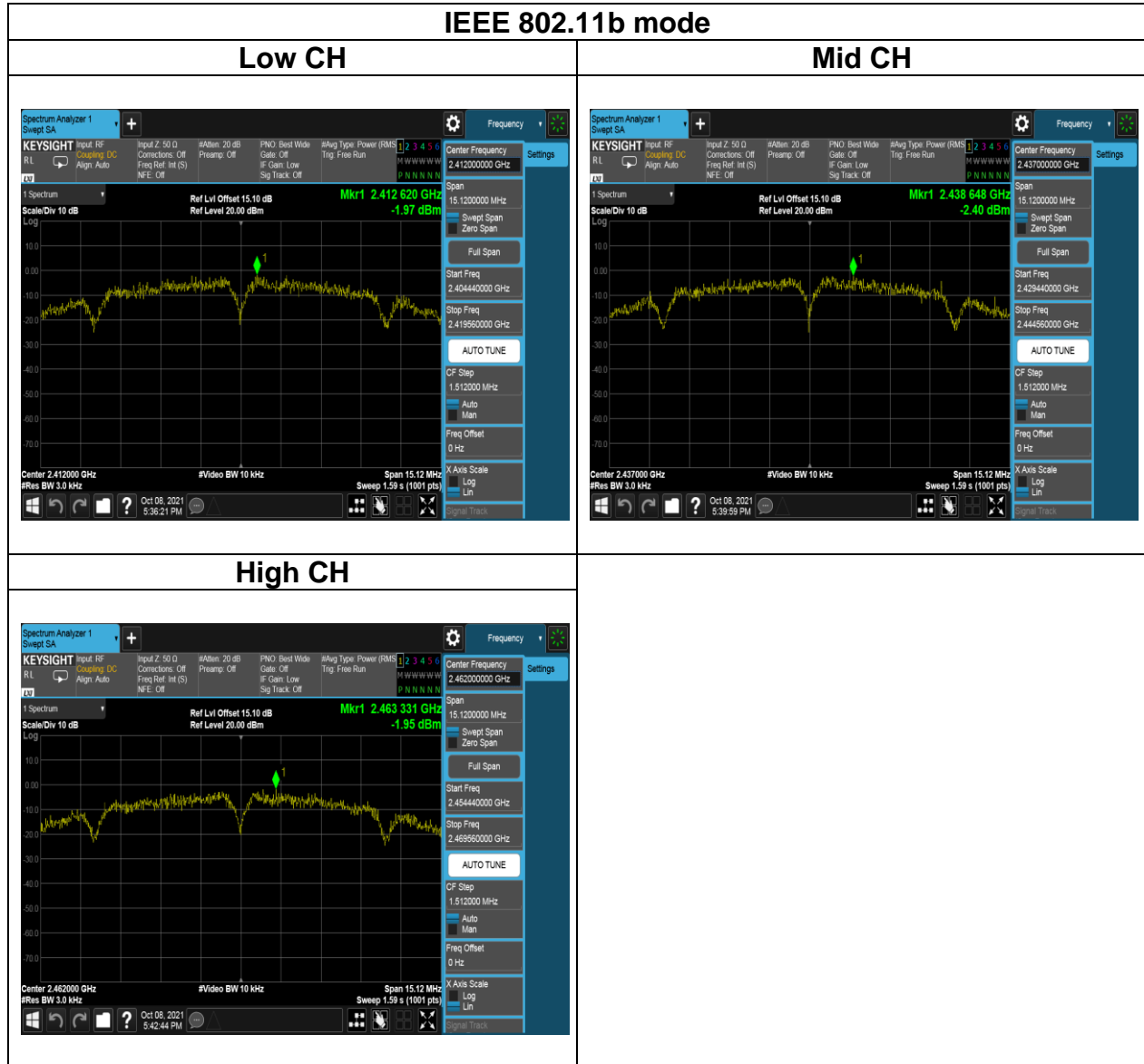
Gain				6.16	dBi
Mimo support				2 Transmit antennas	
POWER DENSITY 802.11n HT20					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-10.94	-10.86	-7.89	7.84	PASS
2437	-10.39	-9.92	-7.14	7.84	PASS
2462	-10.53	-11.38	-7.92	7.84	PASS

Gain				6.16	dBi
Mimo support				2 Transmit antennas	
POWER DENSITY 802.11n HT40					
Freq. (MHz)	Ch0 PSD	Ch1 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2422	-12.06	-12.31	-9.17	7.84	PASS
2437	-12.66	-12.81	-9.72	7.84	PASS
2452	-13.02	-13.92	-10.44	7.84	PASS

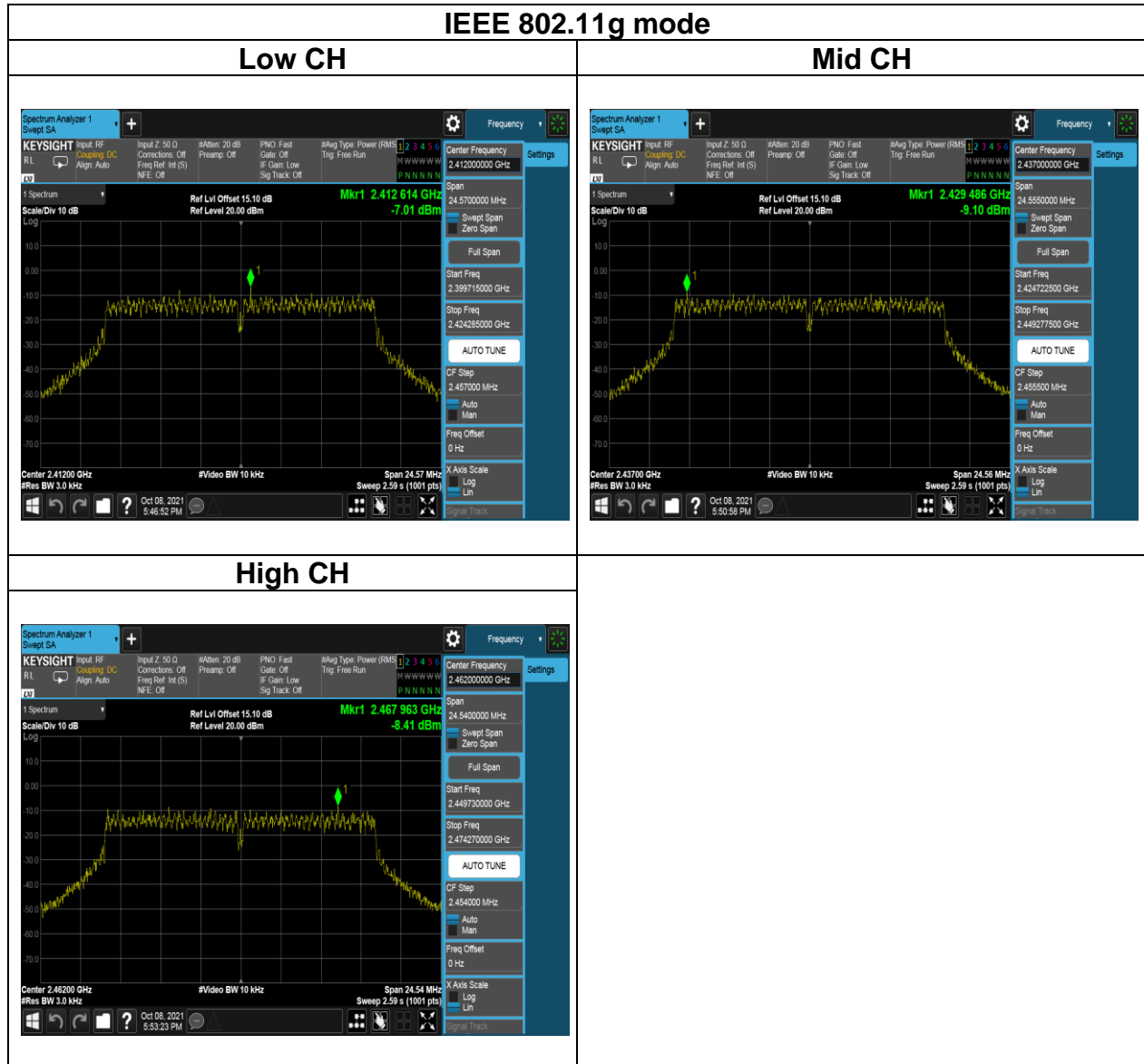
Report No.: TMWK2109000768KR

Test Data

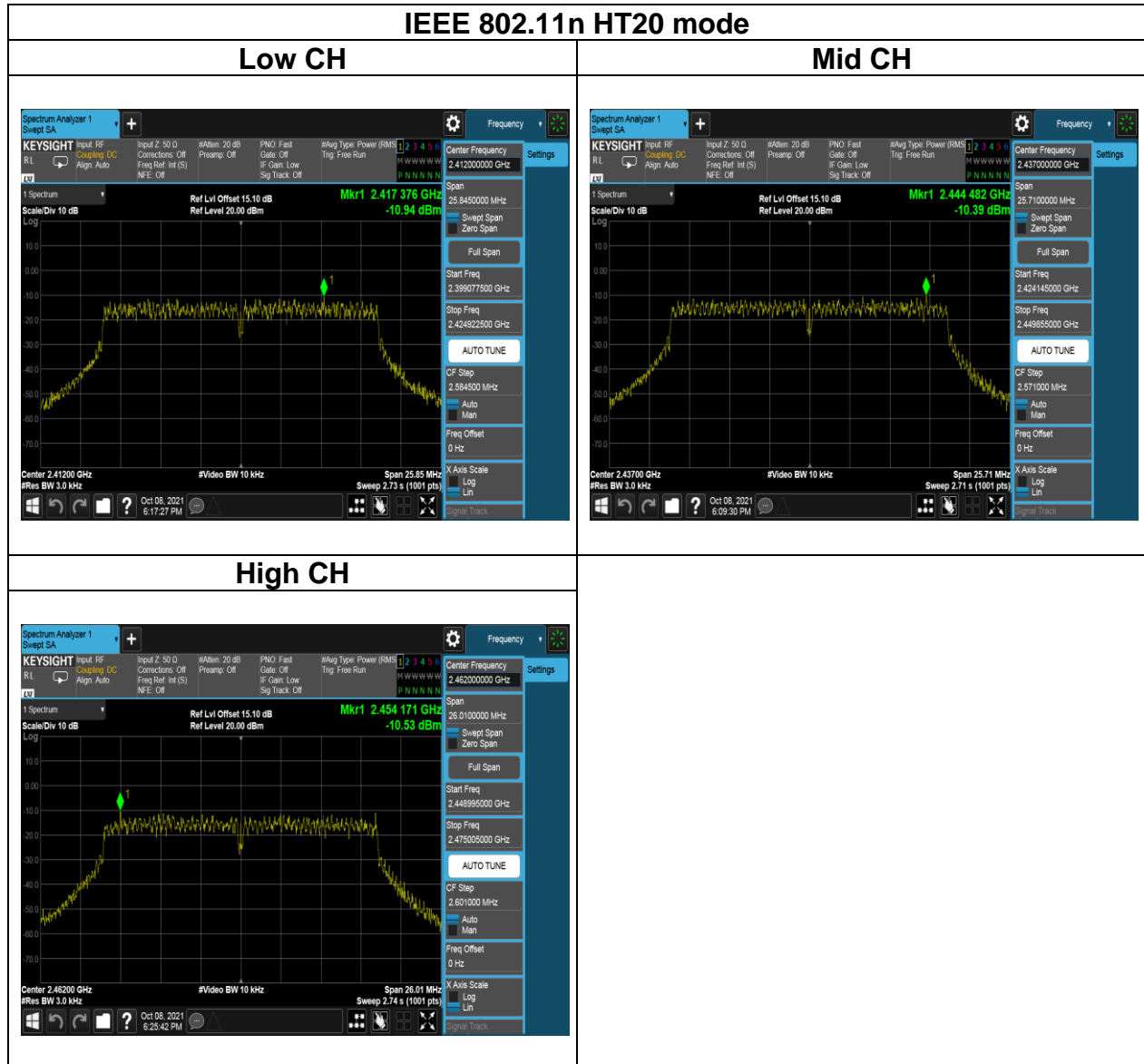
Chain 0 (ANT 1)



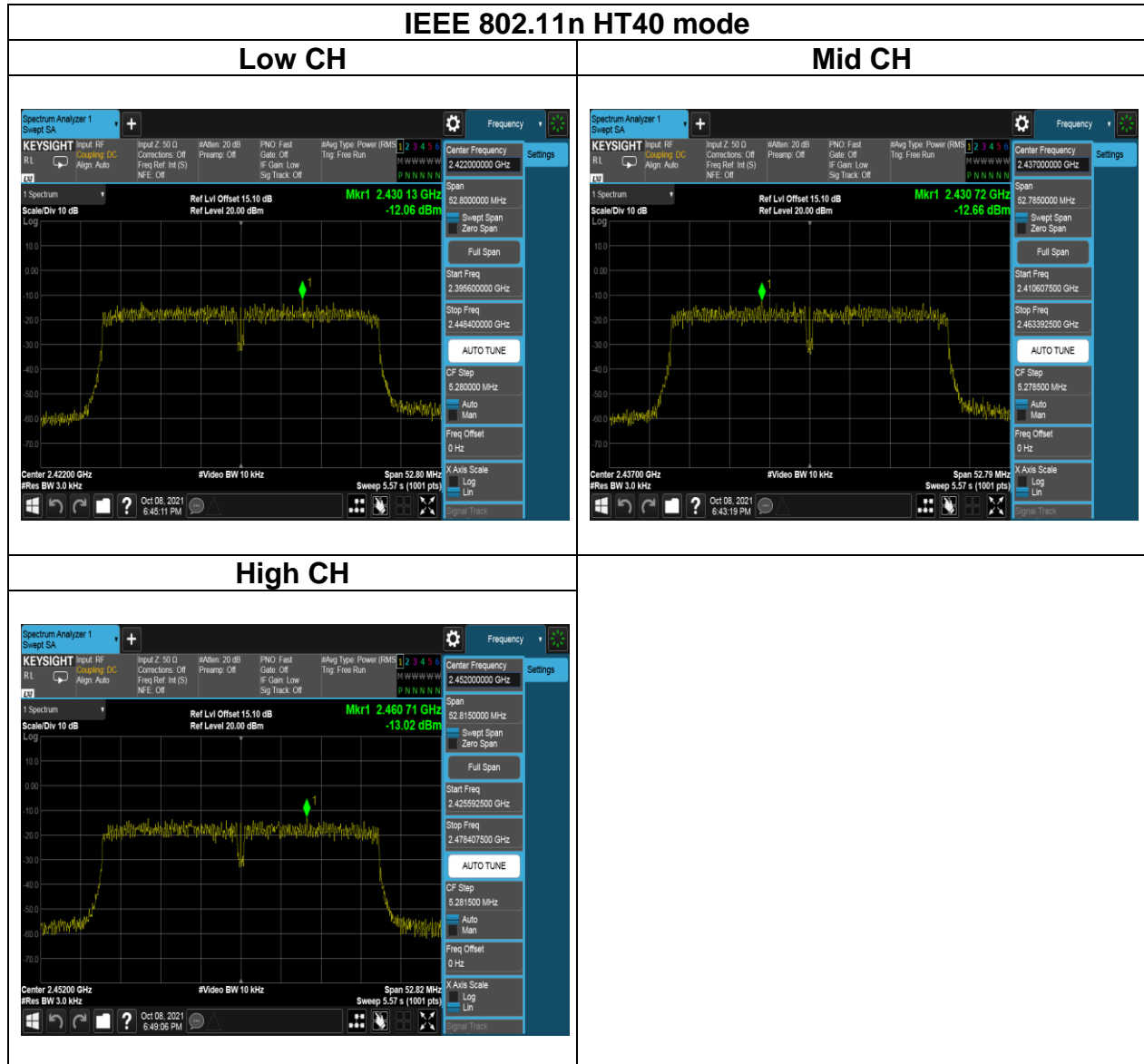
Report No.: TMWK2109000768KR



Report No.: TMWK2109000768KR

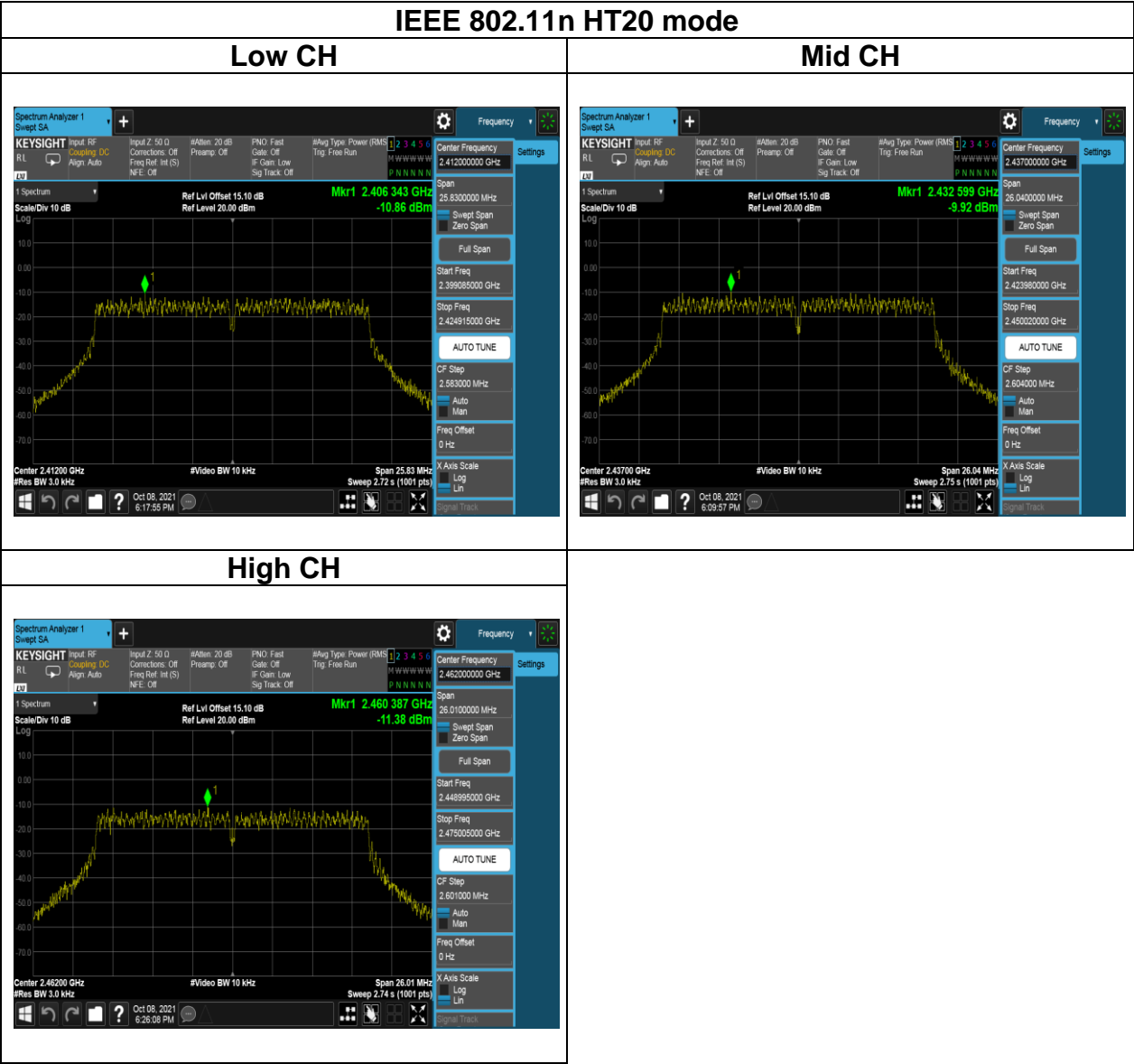


Report No.: TMWK2109000768KR

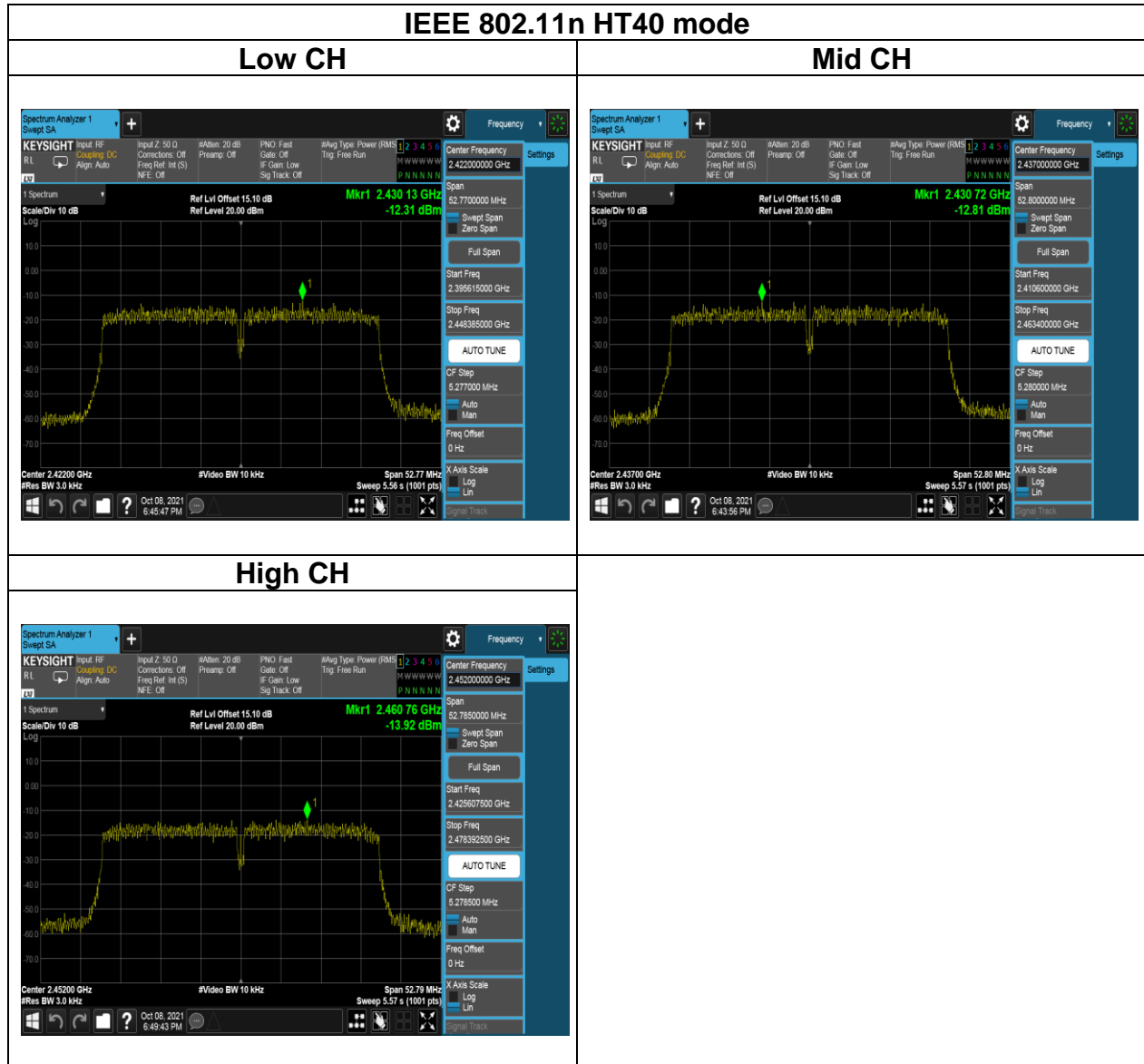


Report No.: TMWK2109000768KR

Chain 1 (ANT 2)



Report No.: TMWK2109000768KR



5.5 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

5.5.1 Test Limit

According to §15.247(d),

FCC:

In any 100 kHz bandwidth outside the authorized frequency band,

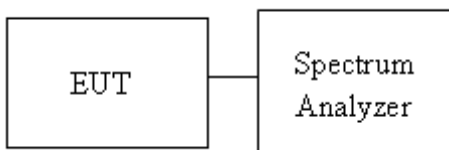
Non-restricted bands shall be attenuated at least 20 dB/30 dB relative to the maximum PSD level in 100 kHz by RF conducted or a radiated measurement which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

5.5.2 Test Procedure

Test method Refer as ANSI C63.10:2013.

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.
2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.
3. In any 100 kHz bandwidth outside the authorized frequency band, shall be attenuated at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when conducted power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

5.5.3 Test Setup



Report No.: TMWK2109000768KR

5.5.4 Test Result

Test Data

Temperature: 24.7°C

Test date: October 8, 2021

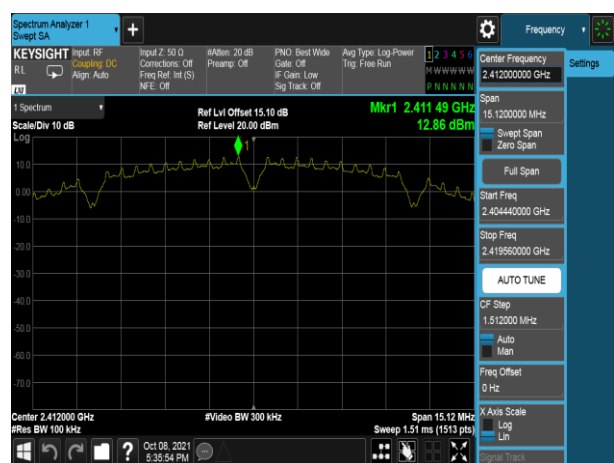
Humidity: 58% RH

Tested by: Lance Chen

Chain 0 (ANT 1)

IEEE 802.11b mode Low CH

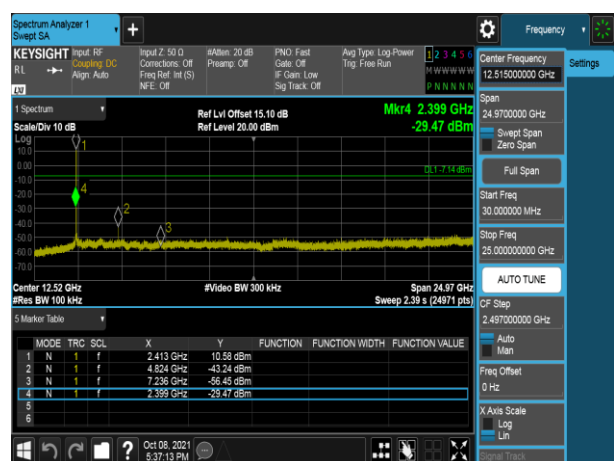
Reference Level

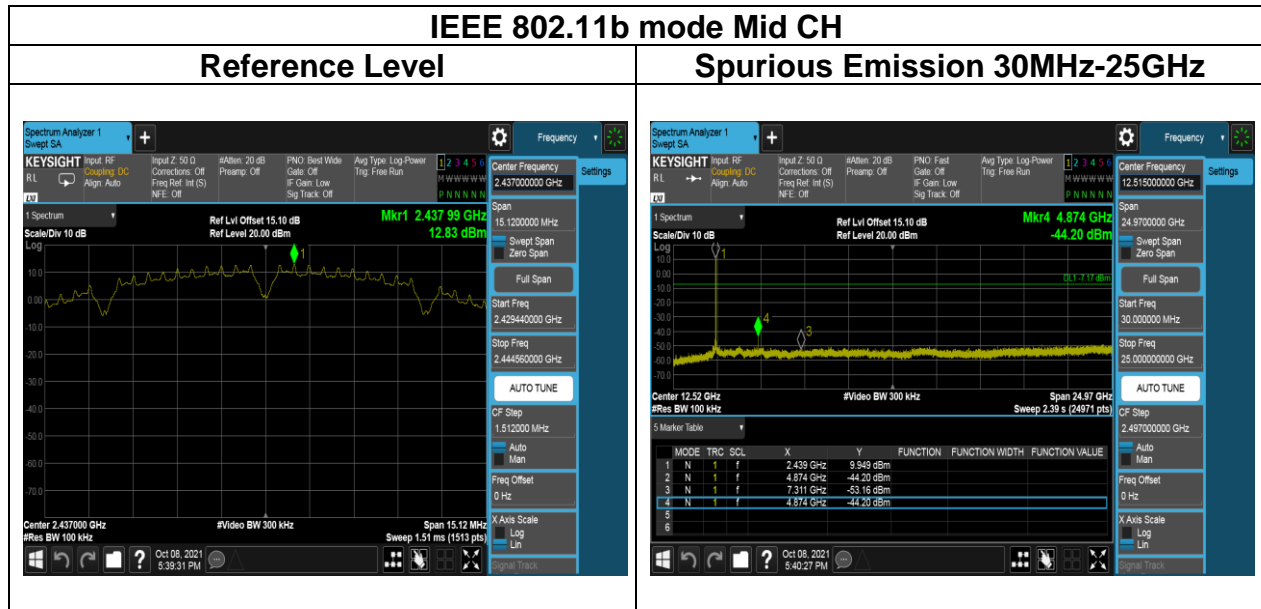


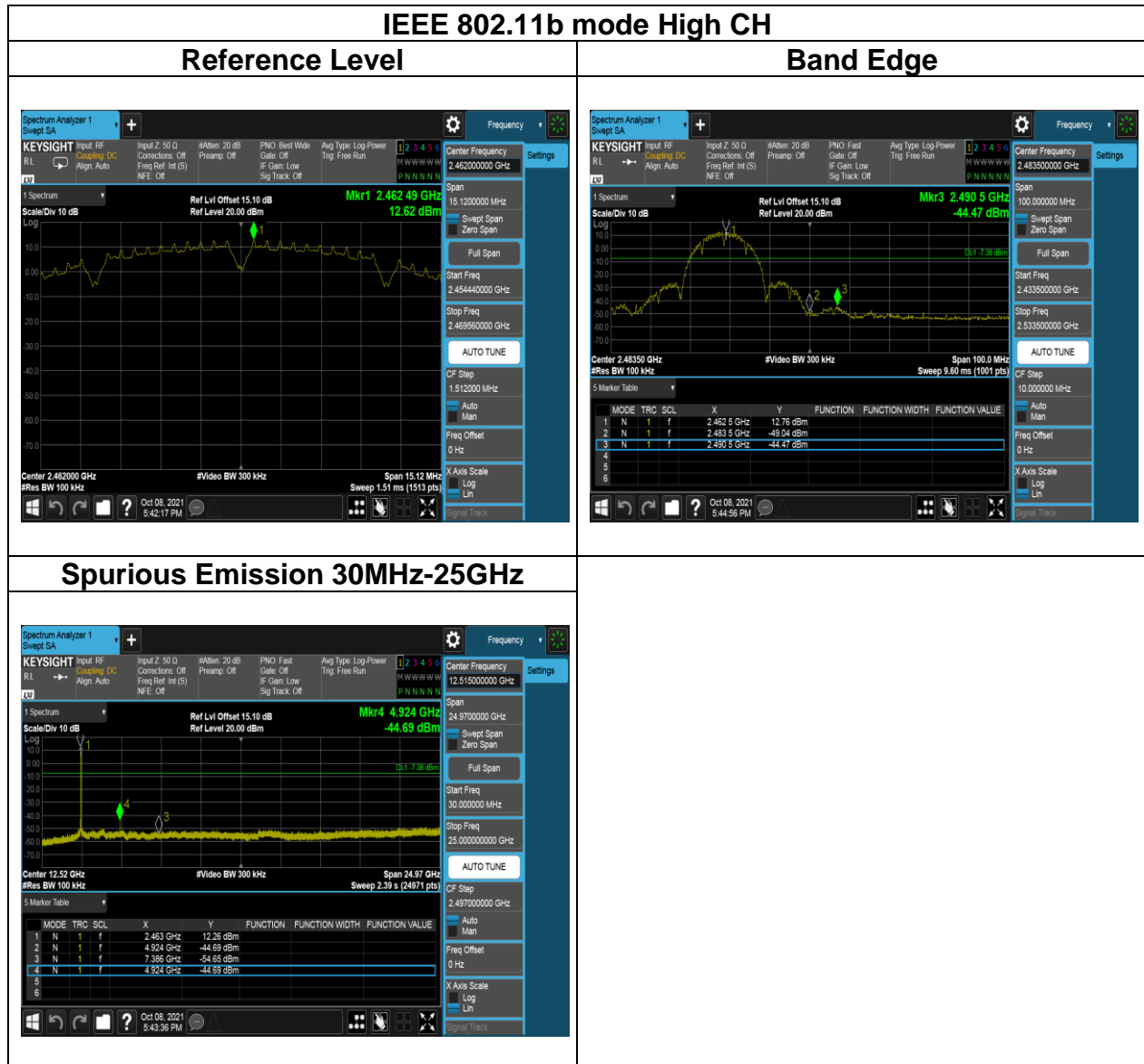
Band Edge

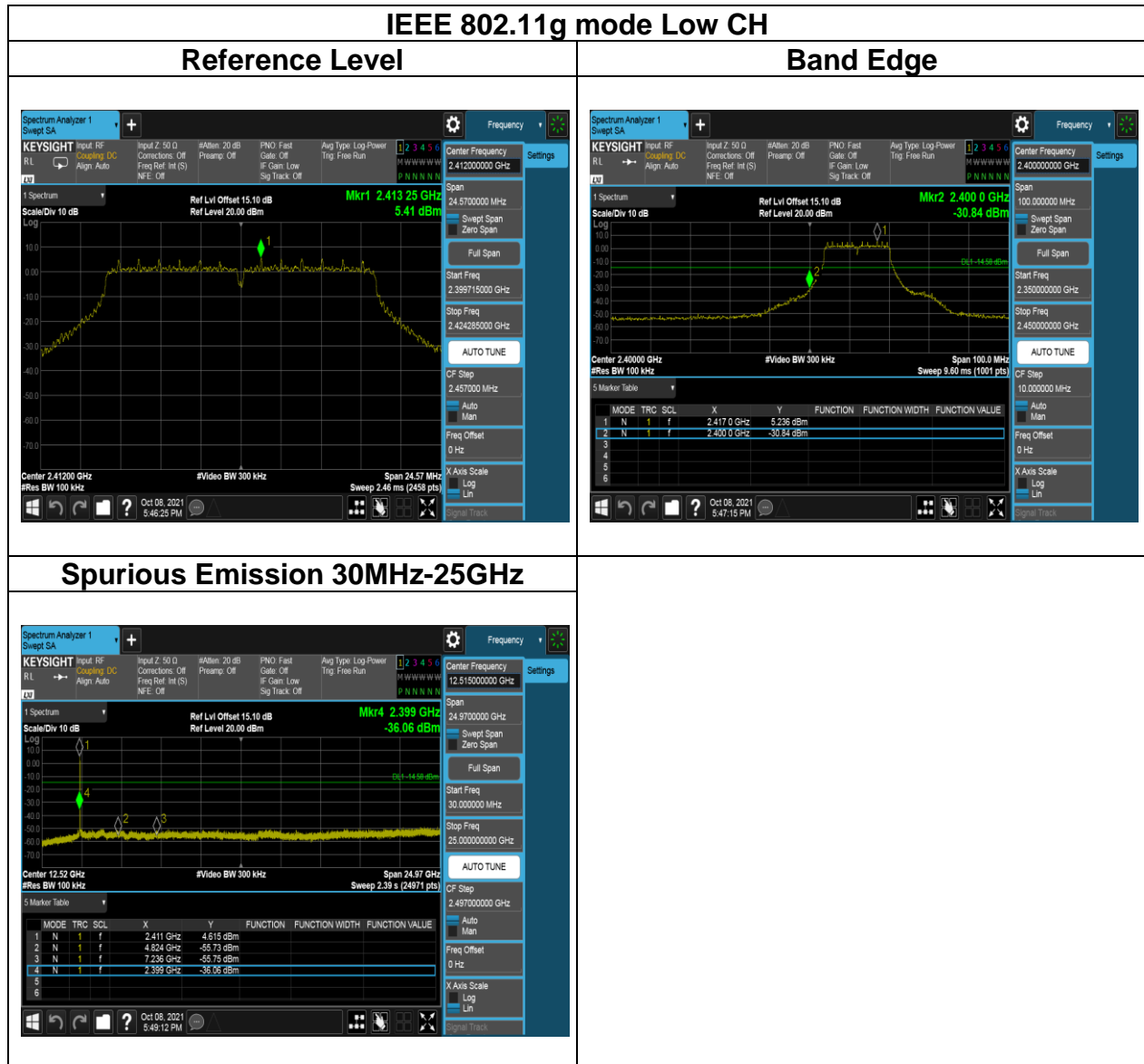


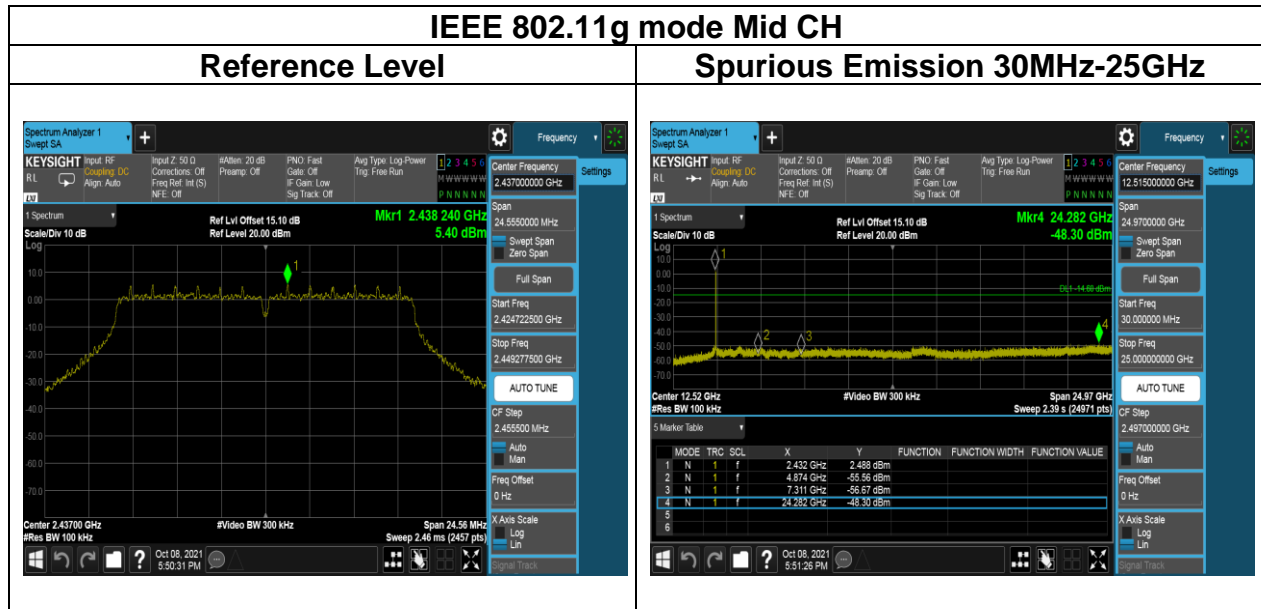
Spurious Emission 30MHz-25GHz

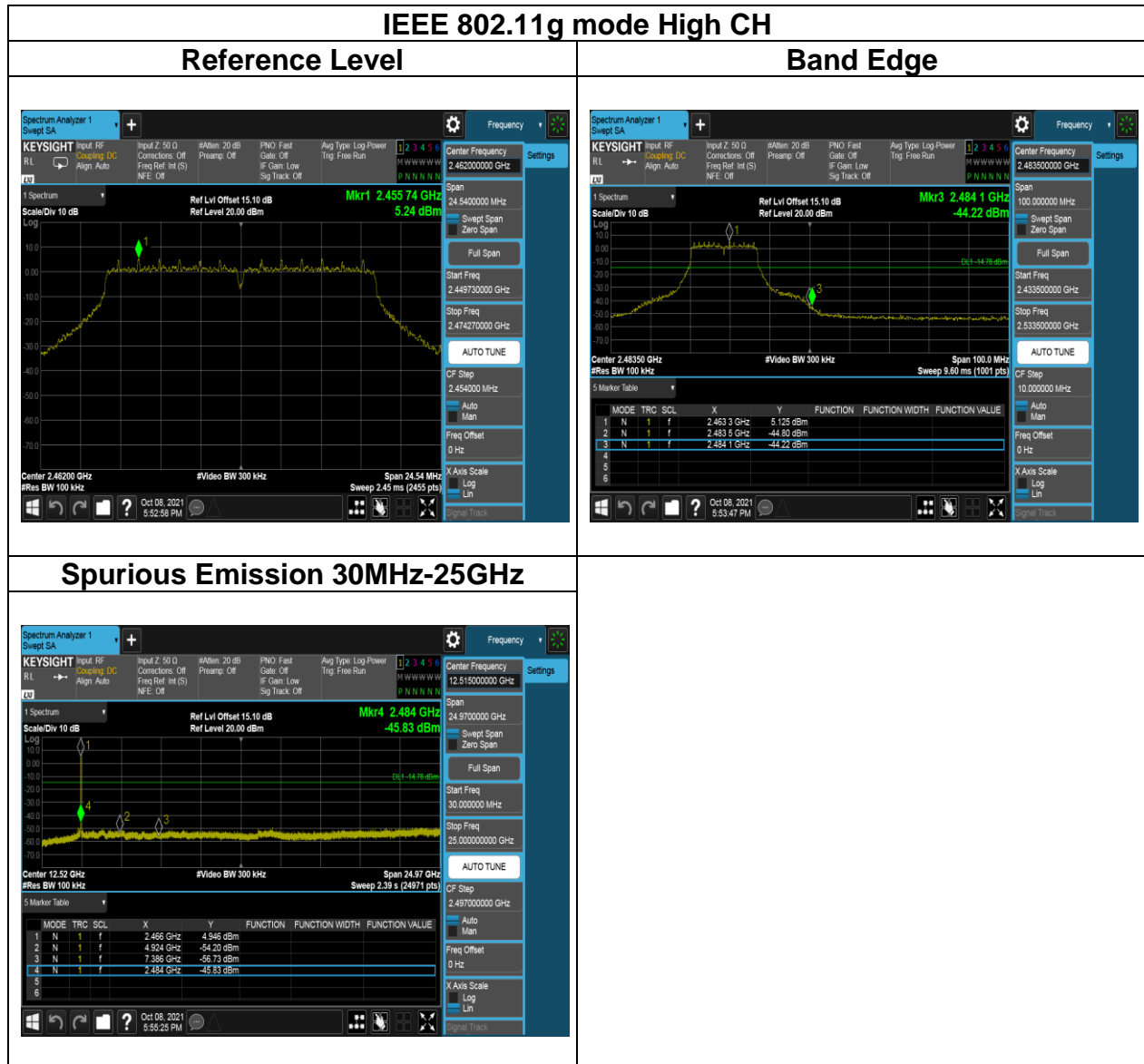






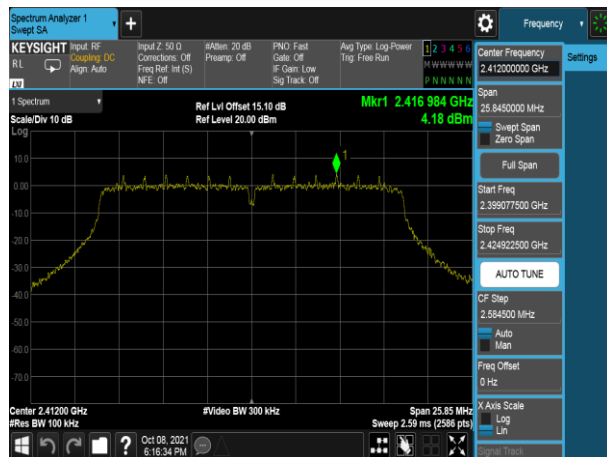






IEEE 802.11 n HT20 mode Low CH

Reference Level



Band Edge



Spurious Emission 30MHz-25GHz

