

CFR 47 FCC PART 15 SUBPART E

CERTIFICATION TEST REPORT

For

Wireless Moudle

MODEL NUMBER: VS0B9MW3565UE

PROJECT NUMBER: 4790751248

REPORT NUMBER: 4790751248-2

FCC ID: 2AL8S-0211C5L1

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Prepared for

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Prepared by

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: Address:	ZHEJIANG UNIVIEW TECHNOLOGIES CO., LTD 88 JIANGLING RD BINJIANG DISTRICT HANGZHOU ZHEJIANG 310051 CHINA
Manufacturer Information	
Company Name:	ZHEJIANG UNIVIEW TECHNOLOGIES CO., LTD
Address:	88 JIANGLING RD BINJIANG DISTRICT HANGZHOU ZHEJIANG
	310051 CHINA
EUT Description	
Product Name:	Wireless Moudle
Model Name:	VS0B9MW3565UE
Sample Number:	5811281
Data of Receipt Sample:	Feb. 21, 2023
Test Date:	Feb. 23, 2023~ Apr. 11, 2023

APPLICABLE STANDARDS				
STANDARD	TEST RESULTS			
CFR 47 FCC PART 15 SUBPART E	PASS			



Summary of Test Results					
Clause	Test Items	FCC Rules	Test Results		
1	6dB/26dB Bandwidth	FCC 15.407 (a)&(e)	PASS		
2	Maximum Conducted Output Power	FCC 15.407 (a)	PASS		
3	Power Spectral Density	FCC 15.407 (a)	PASS		
4	Antenna Conducted Spurious Emission	FCC 15.407 (b)	PASS		
5	Radiated Bandedge and Spurious Emission	FCC 15.407 (b), FCC 15.209, FCC 15.205	PASS		
6	Conducted Emission Test for AC Power Port	FCC 15.207	N/A(Note3)		
7	Frequency Stability	FCC 15.407 (g)	PASS		
8	Dynamic Frequency Selection	FCC 15.407 (h)	N/A		
9	Antenna Requirement	FCC 15.203	PASS		
Note					

Note

1) The measurement result for the sample received is <Pass> according to <ANSI C63.10-2013, FCC CFR 47 Part 2 and FCC CFR 47 Part 15E> when <Accuracy Method>

2) It is a slave device without radar detection.

3)This product is power supply by DC.

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Chris Zhong

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, CFR 47 FCC Part 2, CFR 47 FCC Part 15, KDB 789033 D02 v02r01, KDB414788 D01 Radiated Test Site v01r01, KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 and 905462 C Client Without DFS New Rules v01r02.

3. FACILITIES AND ACCREDITATIO

Accreditation Certificate	A2LA (Certificate No.: 4829.01) UL-CCIC COMPANY LIMITED has been assessed and proved to be in compliance with A2LA. FCC (FCC Designation No.: CN1247) UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules. IC (IC Designation No.: 25056; CAB No.: CN0073) UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.
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Note 1: All tests measurement facilities use to collect the measurement data are located at No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122, China

Note 2: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. These measurements below 30MHz had been correlated to measurements performed on an OFS.

Note 3: The test anechoic chamber in UL-CCIC COMPANY LIMITED had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.



4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognize national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty			
Uncertainty for Conduction emission test	3.1dB			
Uncertainty for Radiation Emission test (include Fundamental emission) (9kHz-30MHz)	3.4dB			
Uncertainty for Radiation Emission test (include Fundamental emission) (30MHz-1GHz)	3.4dB			
Uncertainty for Radiation Emission test (1GHz to 40GHz) (include Fundamental	3.5dB (1GHz-18Gz)			
emission)	3.9dB (18GHz-26.5Gz)			
	4.1dB (26.5GHz-40Gz)			
Remark: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.				



5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

Product Name:	Wireless Moudle			
Model No.:	VS0B9MW3565UE			
Operating Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz IEEE 802.11a/n/ac 20MHz:5180MHz to 5240MHz, 5745MHz to 5825MHz IEEE 802.11n/ac 40MHz: 5190MHz to 5230MHz, 5755MHz-5795MHz IEEE 802.11ac 80MHz: 5210MHz, 5775MHz			
	This report just i	ncluding 5G WIFI part.		
Type of Modulation:	IEEE for 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE for 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n (HT20 and HT40): OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11a/n: OFDM (BPSK, QPSK,16QAM, 64QAM) IEEE for 802.11ac: OFDM (BPSK, QPSK,16QAM, 64QAM, 256QAM)			
Channels Step:	Channels with 5MHz step			
Test software of EUT:	REALTEK 11ac	8822CU USB WLAN NIC Massproduction Kit		
Antenna Type:	PIFA antenna			
Antenna Gain:	UNII-1 BAND	Antenna1: 4.59 dBi Antenna2: 5.84dBi		
	Antenna1: 3.02dBi			
	UNII-3 DAIND	UNII-3 BAND Antenna2: 4.83dBi		
	Remark: This data is provided by customer and our lab isn't responsible for this data			



5.2. MAXIMUM OUTPUT POWER

UNII-1 BAND

IEEE Std. 802.11	Frequency (MHz)	Maximum Average Conducted Power (dBm)		
	,	Ant 1	Ant 2	Total
а		11.06	10.18	/
ac VHT20	5450 5050	/	/	14.97
ac VHT40	5150 ~ 5250	/	/	13.91
ac VHT80		/	/	12.48

UNII-3 BAND

IEEE Std. 802.11	Frequency	Maximum Average Conducted Power (dBm)		
	(MHz) Ant 1		Ant 2	Total
а		8.08	5.44	/
ac VHT20	5725 ~ 5850	/	/	4.37
ac VHT40		/	/	3.91
ac VHT80		/	/	3.47



5.3. CHANNEL LIST

UNII-1		UNII-1		UNII-1	
(For Bandwidt	th = 20 MHz)	(For Bandwidth = 40 MHz)		(For Bandwidth = 80 MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230		
44	5220				
48	5240				

UNII-3		UNII-3		UNII-3	
(For Bandwidth = 20 MHz)		(For Bandwidth = 40 MHz)		(For Bandwidth = 80 MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	151	5755	155	5775
153	5765	159	5795		
157	5785				
161	5805				
165	5825				



5.4. TEST CHANNEL CONFIGURATION

UNII-1 Test Channel Configuration					
IEEE Std.	Test Channel Number	Frequency			
802.11a	CH 36(Low Channel), CH 40(MID Channel), CH 48(High Channel) 5180 MHz, 5200 MHz, 5240				
802.11n HT20	11n HT20 CH 36(Low Channel), CH 40(MID Channel), CH 48(High Channel) 5180 MHz, 5200 MHz, 52				
802.11n HT40	CH 38(Low Channel), CH 46(High Channel)	5190 MHz, 5230 MHz			
802.11ac VHT20	CH 36(Low Channel), CH 40(MID Channel), CH 48(High Channel)	5180 MHz, 5200 MHz, 5240 MHz			
802.11ac VHT40	CH 38(Low Channel), CH 46(High Channel)	5190 MHz, 5230 MHz			
802.11ac VHT80	CH 42(Low Channel)	5210 MHz			

UNII-3 Test Channel Configuration						
IEEE Std.	Test Channel Number	Frequency				
802.11a	CH 149(Low Channel), CH 157(MID Channel), CH 165(High Channel)					
802.11n HT20	02.11n HT20 CH 149(Low Channel), CH 157(MID Channel), CH 165(High Channel) 5745 MHz, 5785 MHz, 582					
802.11n HT40	CH 151(Low Channel), CH 159(High Channel)	5755MHz, 5795MHz				
802.11ac VHT20	CH 149(Low Channel), CH 157(MID Channel), CH 165(High Channel)	5745 MHz, 5785 MHz, 5825 MHz				
802.11ac VHT40	CH 151(Low Channel), CH 159(High Channel)	5755 MHz, 5795 MHz				
802.11ac VHT80	CH 155(Low Channel)	5775 MHz				



5.5. DESCRIPTION OF AVAILABLE ANTENNAS

Antonno	Frequency	Antenna	Maximum Antenna Gain	Directional Gain (dBi)			
Antenna	Antenna Band		(dBi)	MIMO Mode			
1	UNII-1	PIFA	4.59	8.27			
2	UNII-1	antenna	5.84	0.27			
1	UNII-3	PIFA	3.02	7.03			
2	UNII-3	antenna	4.83	7.03			
Remark : MIMO Mode Directional gain= 10 log [(10 ^{G1/20} + 10 ^{G2/20}) ² /NANT]							
	G _{ANT} : Average of the Antenna Gain						
	N _{ANT} : Antenn	a numbers					

IEEE Std. 802.11	Transmit and Receive Mode	Description		
а	⊠2TX, 2RX	ANT 1, 2 can be used as transmitting/receiving antenna		
n HT20	⊠2TX, 2RX	ANT 1, 2 can be used as transmitting/receiving antenna.		
n HT40	⊠2TX, 2RX	ANT 1, 2 can be used as transmitting/receiving antenna.		
ac VHT20	⊠2TX, 2RX	ANT 1, 2 can be used as transmitting/receiving antenna.		
ac VHT40	⊠2TX, 2RX	ANT 1, 2 can be used as transmitting/receiving antenna.		
ac VHT80	⊠2TX, 2RX	ANT 1, 2 can be used as transmitting/receiving antenna.		

Remark:

1. For this product, it has five antennas, but only two antennas for M8822CU3 RF module. For this M8822CU3 RF module, only the 802.11N HT20, 802.11N HT40, 802.11 ac VHT20, 802.11 ac VHT40 and 802.11 ac VHT80 modes can support both the SISO and MIMO technical. For the modes of 11a only support SISO mode.

2. 2.4 GHz WLAN& 5 GHz WLAN can't transmit simultaneously. (Declared by customer.)3. SISO mode and MIMO mode have the same power setting, so only the worst case power mode (MIMO) will be record in the report.

4. The EUT support Cyclic Shift Diversity (CDD), Space Time Coding (STBC), Spartial Division Multiplexing (SDM) modes. They use the same conducted power per chain in any given mode, CDD mode have the maximum power setting, so we only chose the worst case mode CDD for final testing.

5. For this product can support hotspot function, they use the same RF parameter and after evaluated by the lab, there no any change, so only the data of worse case is included in this report.



5.6. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter				
Test Software	REALTEK 11ac 8822CU USB WLAN NIC Massproduction Kit			

<u>UNII-1</u>							
IEEE Std. 802.11	Rate	Channel	Test Software	Test Software Setting Value			
1222 Std. 002.11	Nate	Channel	ANT 1	ANT 2			
		36	Default	Default			
а	6M	40	Default	Default			
		48	Default	Default			
		36	Default	Default			
ac VHT20	MCS0	40	Default	Default			
		48	Default	Default			
ac VHT40	MCS0	38	Default	Default			
		46	Default	Default			
ac VHT80	MCS0	42	Default	Default			

UNII-3

	Data	Roto Channel		Test Software Setting Value		
IEEE Std. 802.11	Rate	Channel	ANT 1	ANT 2		
		149	50	50		
а	6M	157	50	50		
		165	50	50		
		149	32	32		
ac VHT20	MCS0	157	32	32		
		165	32	32		
	MCSO	151	32	32		
ac VHT40	MCS0	159	32	32		
ac VHT80	MCS0	155	32	32		

Remark:

1) Since 802.11ac VHT20/VHT40 modes are different from 802.11n HT20/HT40 only in control messages, so all the tests are performed on the worst case (802.11ac VHT20/802.11ac VHT40) mode between these 4 modes and only the worst data is recorded in this report.



5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Description
1	Laptop	ThinkPad	E590	N/A

I/O PORT

Cable No	Port	Connector Type	Connector Type Cable Type		Remarks
1	USB	USB	USB	100cm Length	N/A

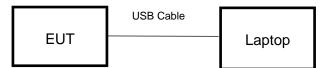
ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	N/A	N/A	N/A	N/A

TEST SETUP

The EUT can work in an engineer mode with a software through a PC.

SETUP DIAGRAM FOR TESTS





5.8. MEASURING INSTRUMENT AND SOFTWARE USED

Radiated Emissions (Instrument)									
Used	Equipment	Manufacturer	Мс	odel No.	Seri	al No.	Upper Last Cal.	Last Cal.	Next Cal.
\checkmark	EMI test receiver	R&S		ESR7	22	2993	/	2022-05-20	2023-05-19
\checkmark	EMI test receiver	R&S	E	SR26	12	6703	2021-12-04	2022-12-03	2023-12-02
\checkmark	Spectrum Analyzer	R&S	FS	SV3044	22	2992	2022-05-27	2023-04-08	2024-04-07
V	Receiver Antenna (9kHz-30MHz)	Schwarzbeck	FM	ZB 1513	15	5456	2018-06-15	2021-06-03	2024-06-02
	Receiver Antenna (30MHz-1GHz)	Schwarzbeck	VU	LB 9163	12	6704	2019-01-28	2022-01-18	2025-01-17
V	Receiver Antenna (1GHz-18GHz)	R&S	F	IF907	12	6705	2018-01-29	2022-02-28	2025-02-27
\checkmark	Receiver Antenna (18GHz-26.5GHz)	Schwarzbeck	BB	HA9170	12	6706	2019-01-05	2021-07-15	2024-07-14
V	Pre-amplification (To 18GHz)	Tonscned	TAP	01018050	22	4539	/	2022-10-20	2023-10-19
\checkmark	Pre-amplification (To 18GHz)	R&S	SC	CU-18D	13	4667	2021-12-05	2022-12-04	2023-12-03
V	Pre-amplification (To 26.5GHz)	R&S		CU-26D	13	5391	2021-12-05	2022-12-04	2023-12-03
	Band Reject Filter	Wainwright	WRCGV12- 2375-2400- 2485-2510- 40SS			1	2021-12-05	2022-12-04	2023-12-03
V	High Pass Filter	COM-MW	ZBF	13-3-18G- 01		2	2021-12-05	2022-12-04	2023-12-03
	Chamber A	Albatross	9	9*6*6	12	6721	2019-05-31	2022-05-30	2025-05-29
	Chamber B	SAEMC	9	9*6*6	22	0350	/	2022-07-03	2025-06-01
	Temperature and Humidity Datalogger	Omega Engineering Inc.	iT⊦	IX-SD-5	18	3135	/	2022-07-20	2023-07-19
				Soft	ware				
Used		ription		Manufac			Name	Version	
	Test Software for R			JSTONSC			S32-RE	Ver. 4.0.0.1	
\checkmark	Test Software for R	adiated disturbar	nce	Chinese-	EMC	R	E_RSE	Ver. 3.03	
			(Other ins	trume	ents			
Used	Equipment	Manufacturer	Мо	del No.	Seri	al No.	Upper Last Cal.	Last Cal.	Next Cal.
	Spectrum Analyzer	Keysight	N	9010B	15	5368	2022-04-09	2023-04-08	2024-04-07
V	Power Meter	MWT	MW1	00-RFCB	22	1694	2022-04-09	2023-04-08	2024-04-07
\checkmark	Attenuator	PASTERNACK	PE	7087-6	1	624	2022-04-09	2023-04-08	2024-04-07



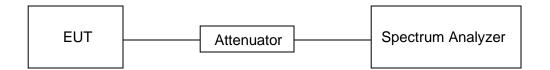
6. ANTENNA PORT TEST RESULTS

6.1. ON TIME AND DUTY CYCLE

<u>LIMITS</u>

None; for reporting purposes only.

TEST SETUP



TEST ENVIRONMENT

Temperature	23.0°C	Relative Humidity	44%
Atmosphere Pressure	102kpa	Test Voltage	DC5V

RESULTS

ANTENNA 1

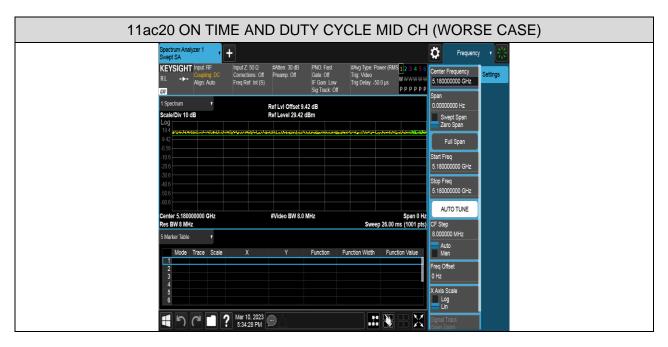
Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
11a	100	100	1	100	0	0.01	0.01
11ac HT20	100	100	1	100	0	0.01	0.01
11ac HT40	100	100	1	100	0	0.01	0.01
11ac HT80	100	100	1	100	0	0.01	0.01

Remark:

- 1. Duty Cycle Correction Factor=10log (1/x).
- 2. Where: x is Duty Cycle (Linear)
- 3. Where: T is On Time
- 4. If that calculated VBW is not available on the analyzer then the next higher value should be used.
- 5. Antenna 1 and Antenna 2 has the same duty cycle, only Antenna 1 data show here.

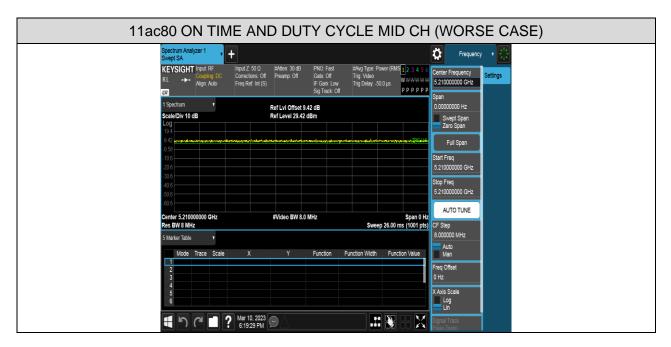


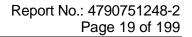














6.2. 6dB/26dB OCCUPIED BANDWIDTH

LIMITS

	CFR 47 FCC Part15, Subpart E ISED RSS-247 ISSUE 2	
Test Item	Limit	Frequency Range (MHz)
26 dB Emission Bandwidth	For reporting purposes only.	5150 ~ 5250
6 dB Emission Bandwidth	The minimum 6 dB emission bandwidth shall be 500 kHz.	5725 ~ 5850

TEST PROCEDURE

Refer to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 section II.C1. for 26 dB Emission Bandwidth; section II.C2. for 6 dB Emission Bandwidth. Connect the EUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
IRBWV	For 6 dB Emission Bandwidth: RBW=100 kHz For 26 dB Emission bandwidth: approximately 1 % of the EBW.
VBW	For 6 dB Bandwidth: ≥ 3*RBW For 26 dB Bandwidth: > RBW
Trace	Max hold
Sweep	Auto couple

a) Use the 99 % power bandwidth function of the instrument, allow the trace to stabilize and report the measured bandwidth.

b) Allow the trace to stabilize and 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 6/26 dB relative to the maximum level measured in the fundamental emission.



Calculation for 99 % Bandwidth and 26 dB Bandwidth of UNII-2C and UNII-3 Straddle

Channel:

For Example: Fundamental Frequency: 5720 MHz

FL: 5710.60 MHz FH: 5728.33 MHz Turning Frequency: 5725 MHz UNII-2C Band Portion = 5725-5710.60 = 14.40 MHz UNII-3 Band Portion = 5728.33-5725 = 3.30 MHz

Calculation for 6dB Bandwidth of UNII-3 Straddle Channel:

For Example: Fundamental frequency: 5720 MHz

6 dB BW: 16.44 MHz FL: 5711.76 MHz FH: 5728.2 MHz Turning Frequency: 5725 MHz 6 dB Bandwidth of UNII-3 band Portion = 5728.2-5725=3.2 MHz

TEST ENVIRONMENT

Temperature	22° ℃	Relative Humidity	58.5%
Atmosphere Pressure	102kpa	Test Voltage	DC5V

TEST SETUP





RESULTS TABLE ANTENNA 1 (WORST-CASE CONFIGURATION)

I) For 26 dB Emission Bandwidth Part:

Test Mode	Antenna	Frequency [MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Verdict
	Ant1	5180	18.561	5170.595	5189.156	PASS
-	Ant2	5180	18.512	5170.717	5189.229	PASS
-	Ant1	5200	18.584	5190.635	5209.219	PASS
	Ant2	5200	18.403	5190.760	5209.163	PASS
	Ant1	5240	18.557	5230.617	5249.175	PASS
11A	Ant2	5240	18.400	5230.799	5249.199	PASS
IIA	Ant1	5745	18.132	5735.885	5754.017	PASS
	Ant2	5745	17.996	5735.957	5753.953	PASS
	Ant1	5785	18.060	5775.925	5793.985	PASS
	Ant2	5785	18.088	5775.889	5793.977	PASS
-	Ant1	5825	18.107	5815.875	5833.981	PASS
-	Ant2	5825	17.988	5816.021	5834.009	PASS
	Ant1	5180	19.439	5170.251	5189.689	PASS
-	Ant2	5180	19.432	5170.264	5189.696	PASS
-	Ant1	5200	19.525	5190.180	5209.705	PASS
	Ant2	5200	19.471	5190.280	5209.751	PASS
	Ant1	5240	19.481	5230.264	5249.745	PASS
11AC20MIMO	Ant2	5240	19.388	5230.301	5249.689	PASS
	Ant1	5745	19.292	5735.343	5754.635	PASS
	Ant2	5745	19.337	5735.307	5754.644	PASS
	Ant1	5785	19.235	5775.373	5794.608	PASS
	Ant2	5785	19.265	5775.364	5794.629	PASS
	Ant1	5825	19.193	5815.401	5834.595	PASS
	Ant2	5825	19.240	5815.336	5834.576	PASS
	Ant1	5190	40.971	5169.397	5210.368	PASS
	Ant2	5190	41.205	5169.371	5210.576	PASS
	Ant1	5230	40.976	5209.592	5250.568	PASS
11AC40MIMO	Ant2	5230	40.944	5209.571	5250.515	PASS
	Ant1	5755	41.187	5734.552	5775.739	PASS
	Ant2	5755	41.064	5734.581	5775.645	PASS
ſ	Ant1	5795	40.832	5774.659	5815.491	PASS
	Ant2	5795	40.960	5774.635	5815.595	PASS
	Ant1	5210	81.291	5169.099	5250.389	PASS
11AC80MIMO	Ant2	5210	81.195	5169.061	5250.256	PASS
	Ant1	5775	80.123	5734.851	5814.973	PASS
	Ant2	5775	80.272	5734.915	5815.187	PASS

Remark: The two antennas had been tested, but only the worst data was recorded in the report.

Test Mode	Antenna	Frequency[MHz]	6db EBW [MHz]	Limit[MHz]	Verdict
	Ant1	5745	15.95	≥0.5	PASS
	Ant2	5745	16.25	≥0.5	PASS
11A	Ant1	5785	15.60	≥0.5	PASS
IIA	Ant2	5785	16.30	≥0.5	PASS
	Ant1	5825	16.10	≥0.5	PASS
	Ant2	5825	15.46	≥0.5	PASS
	Ant1	5745	17.59	≥0.5	PASS
	Ant2	5745	17.57	≥0.5	PASS
11AC20MIMO	Ant1	5785	17.58	≥0.5	PASS
TACZUMINO	Ant2	5785	17.58	≥0.5	PASS
	Ant1	5825	17.58	≥0.5	PASS
	Ant2	5825	17.58	≥0.5	PASS
	Ant1	5755	22.28	≥0.5	PASS
11AC40MIMO	Ant2	5755	18.18	≥0.5	PASS
	Ant1	5795	25.05	≥0.5	PASS
	Ant2	5795	18.28	≥0.5	PASS
11AC80MIMO	Ant1	5775	56.29	≥0.5	FAIL
	Ant2	5775	48.05	≥0.5	FAIL

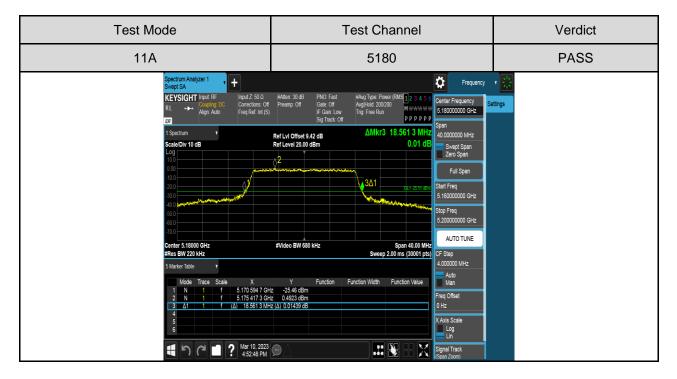
II) 6dB Minimum Emission Bandwidth

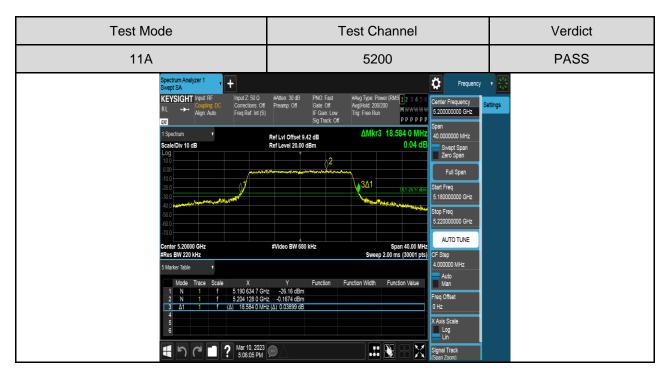
Remark: The two antennas had been tested, but only the worst data was recorded in the report.



Test Graphs

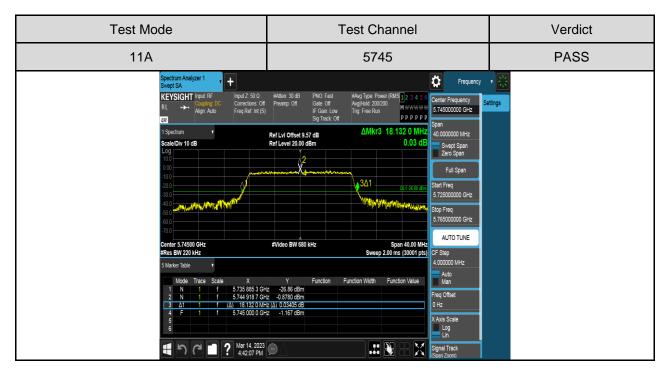
I) For 26 dB Emission Bandwidth Antenna 1 Part:





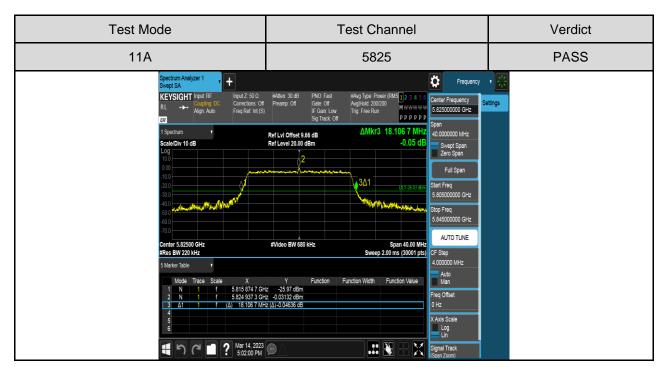


Test Mode	Test Channel	Verdict
11A	5240	PASS
	IF Gain. Low Sig Track. Off Trig Free Run Minimum 5.24000000 GHz Sig Track. Off AMkr3 18.557 3 MHz Span 40.000000 MHz Ref Level 20.00 dBm 0.11 dB Sweet Span Zero Span 2 2 - Sweet Span Zero Span 2 3Δ1 01.783 rdm Stat Freq 5.2000000 GHz Stat Freq 5.2000000 GHz Stat Freq 5.2000000 GHz Stop Freq #Video BW 680 kHz Span 40.00 MHz Autor UNE Autor UNE Autor UNE Y Function Function Vidue Function Value Freq 0ffset 2 -26 49 dBm Freq 0ffset Freq 0ffset	ettings
5 6 1 C 1 C Mar 10, 2023 52003 PM	X Avis Scale Lin Signal Track Kena Zoom	



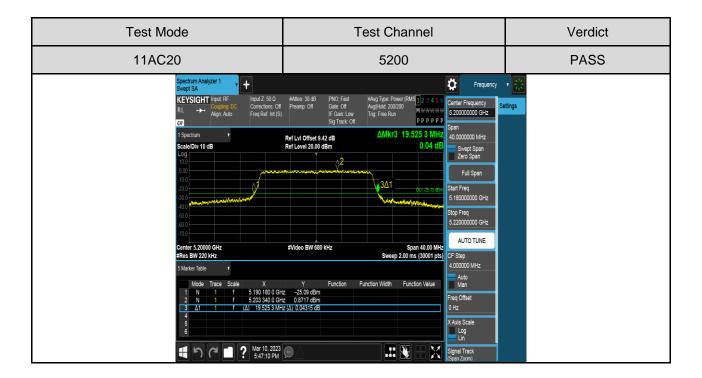


Test Mode	Test Channel	Verdict
11A	5785	PASS
100 300 400 400 700 Center 5.78500 OHz #Res BW 220 KHz 5 Marker Table 1 N 1 f 5.775 925 3 GH	IF Gan. Low Sig Track. Off Trig: Free Run M.W.W.W.W.W.W.W.W.W.W.W.W.W.W.W.W.W.W.W	ettings
4 5 C i ? Mar 14,2023 45048 PM	💬 🕂 🔛 🕨 🕅 Signal Track (Span Zoom)	





Test Mode	Test Channel	Verdict
11AC20	5180	PASS
Spectrum Analyzer 1 + KEYSIGHT Input RF Input Z: 50 0. RL + Align Auto 1 Spectrum • Scale Div 10 dB • Log • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • 00 • </td <td>IF Gam. Low Sig Track off Trig: Free Run MWWWWW 51 8000000 GHz Sig Track off ΔMIkr3 19.438 7 MHz 40 0000000 MHz Ref Level 20.00 Bm -0.05 dB -0.05 dB 2 -0.05 dB Span 2 -0.05 dB Span 3Δ1 -0.05 dB Span 3Δ1 -0.05 dB Span 3Δ1 -0.05 dB Span 51 8000000 GHz Span Span 40 -0.00000 MHz Span 40 -0.0000 GHz Span 51 8000000 GHz Start Freq 51 8000000 GHz Start Freq 51 8000000 GHz \$Video BW 680 kHz Span 40.00 MHz Start Freq 5 1000000 GHz 4.000000 MHz Span 40.00 MHz -0.00000 MHz * -0.0000 Shz -0.00000 MHz * -0.00000 MHz -0.00000 MHz * 1.016 Mbdm -0.00000 MHz</td> <td>stings</td>	IF Gam. Low Sig Track off Trig: Free Run MWWWWW 51 8000000 GHz Sig Track off ΔMIkr3 19.438 7 MHz 40 0000000 MHz Ref Level 20.00 Bm -0.05 dB -0.05 dB 2 -0.05 dB Span 2 -0.05 dB Span 3Δ1 -0.05 dB Span 3Δ1 -0.05 dB Span 3Δ1 -0.05 dB Span 51 8000000 GHz Span Span 40 -0.00000 MHz Span 40 -0.0000 GHz Span 51 8000000 GHz Start Freq 51 8000000 GHz Start Freq 51 8000000 GHz \$Video BW 680 kHz Span 40.00 MHz Start Freq 5 1000000 GHz 4.000000 MHz Span 40.00 MHz -0.00000 MHz * -0.0000 Shz -0.00000 MHz * -0.00000 MHz -0.00000 MHz * 1.016 Mbdm -0.00000 MHz	stings



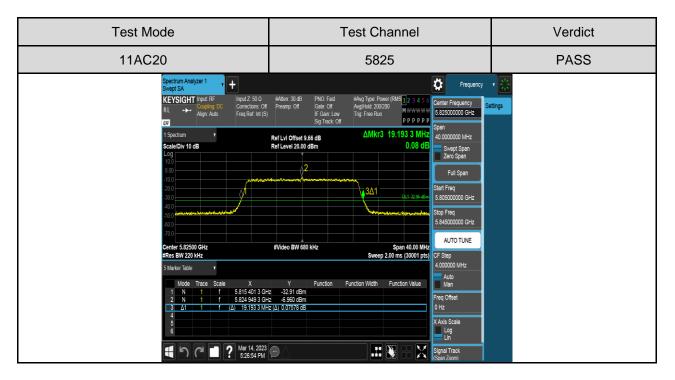


11AC20 5240 PASS Spectrum Analyzer 1 + - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - <th>Test Mode</th> <th>Test Channel</th> <th>Verdict</th>	Test Mode	Test Channel	Verdict
KEYSIGHT Input RF Input RF Comparing IDC Proof Ratting S #Atten 30 dB PNO Fast Gale Off #Ang Type Power (RMS 12 3 4 5 G Center Frequency Settings RL → Align Audo Fine Ref Int (S) Fine	11AC20	5240	PASS
300 300 32000000 GHz 522000000 GHz 400 500 500 500 700 600 600 600 600 700 600 600 600 600 700 600 600 600 600 700 600 600 600 600 700 700 700 600 600 700 700 700 700 600 700 700 700 700 700 Center 524000 GHz 700 700 700 700 Sweep 2.00 ms (30001 pts) 75 5220 1200 700 6000 1 1 1 5224 1200 700 124 7000 700 1 1 1 1 7100 124 7000 124 7000 124 7000 124 7000 124 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Swept SA T KEYSIGH Input: RF RL → Aign Auto Input: Corrections: Off 1 Spectrum * Scale Div 10 dB Log 10 200 400 700 700 Center 524000 GHz SMarker Table 1 Mode Trace 23 d1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	#Auten: 30 dB Preamp: Off Gate: Off Sg Tack: Off #Aug Type: Power (RMS) Augited: 2020/00 Trg: Free Run 2 3 4 5 6 W WWWWW P P P P P P P P P P P P P P P P	ettings

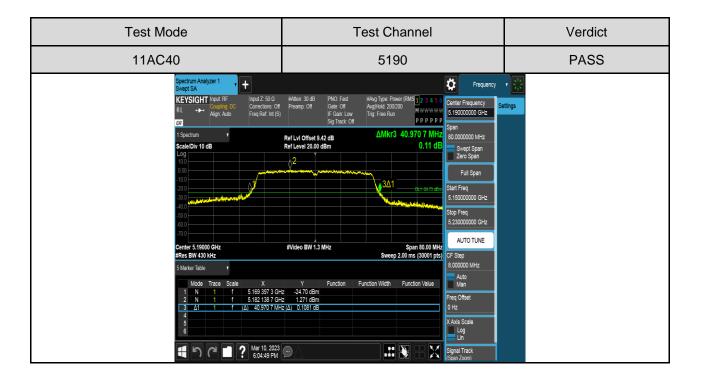


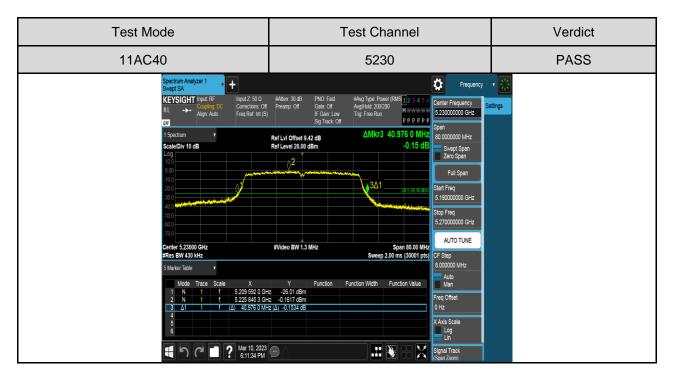




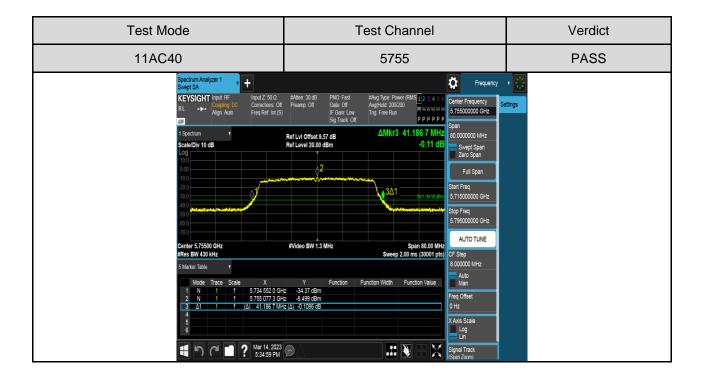


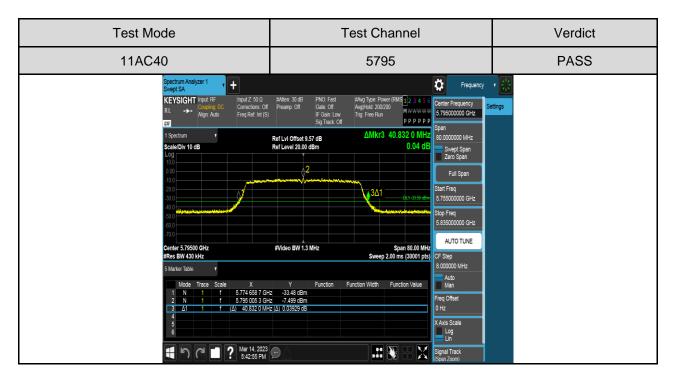




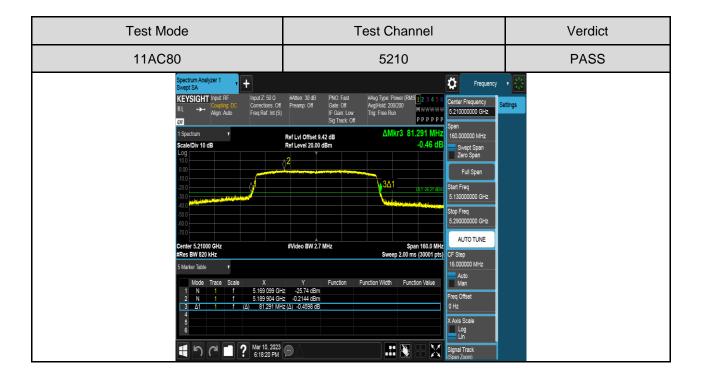


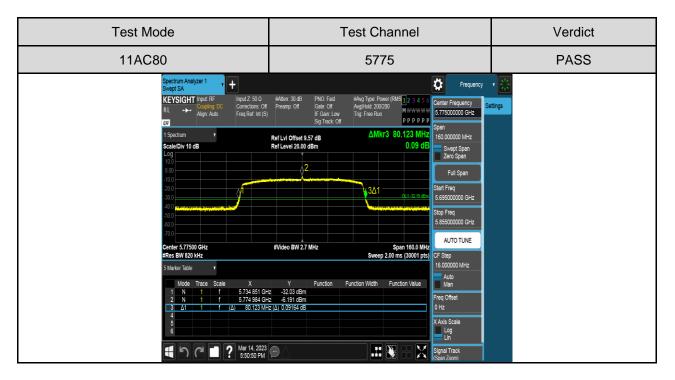








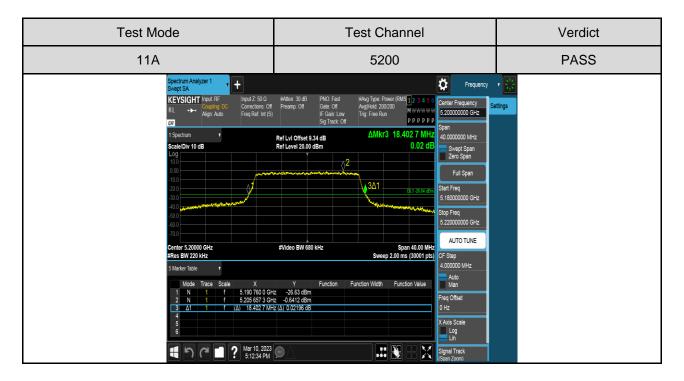




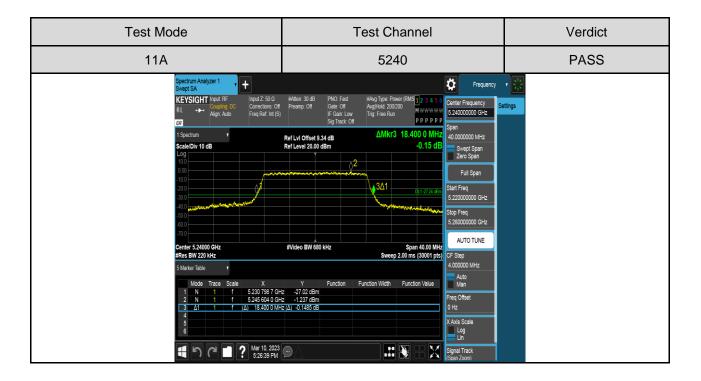


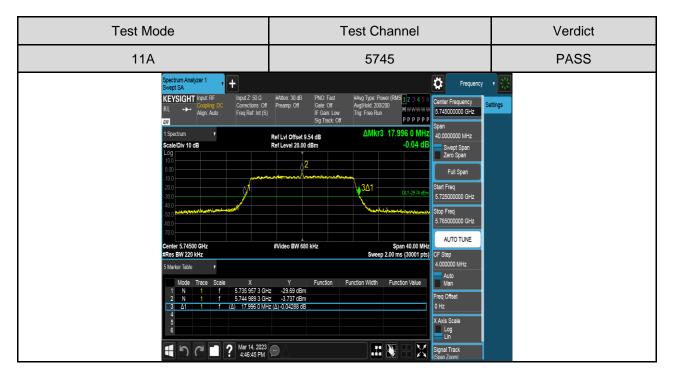
II) For 26 dB Emission Bandwidth Antenna 2 Part:





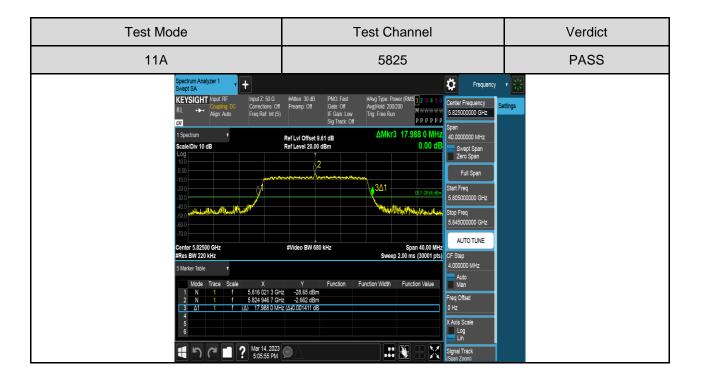






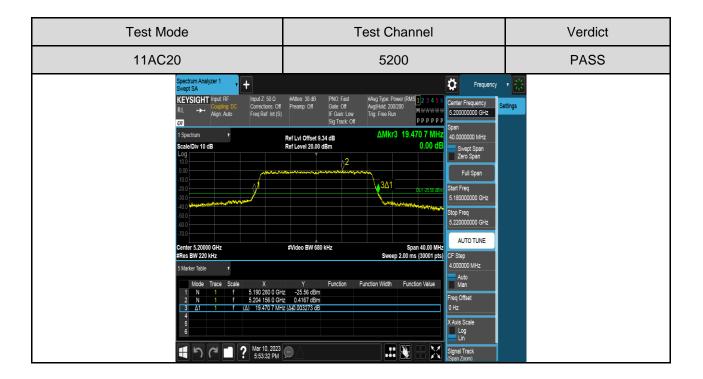


Test Mode	Test Channel	Verdict
11A	5785	PASS
	i F Gam. Low Sig Track off Trig: Free Run MWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	eting





Test Mode	Test Channel	Verdict
11AC20	5180	PASS
	IF Gam. Low Sig Track Off Trig Free Run P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P	etings



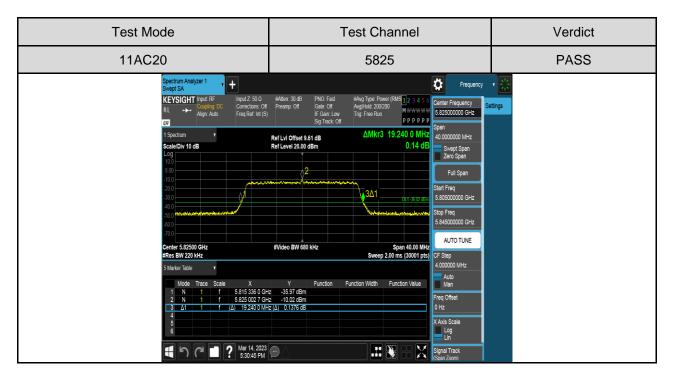


Test Mode	Test Channel	Verdict
11AC20	5240	PASS
	IF Gam. Low Sig Track Off Trig Free Run MWWWWW 52.4000000 GHz Ref Lvi Offset 9.34 dB ΔMkr3 19.388 0 MHZ Gpan 40.000000 MHz Ref Level 20.00 dBm 0.14 dB System Span Zero Span Zero Span VIEW WW 3Δ1 0.12 2010 dB Start Freq 5.2000000 GHz Start Freq 5.2000000 GHz FVideo BW 680 kHz Span 40.00 MHz Start Freq 5.2000000 GHz Start Freq 5.2000000 GHz FVideo BW 680 kHz Span 40.00 MHz Man FVideo BW 680 kHz Span 40.00 MHz Man FVideo BW 680 kHz Span 40.00 MHz Man Freq Offset Man Freq Offset Freg Offset Man Freq Offset Start Freq 5.2000000 GHz Man Freq Offset Man Freq Offset DHz XAris Scale Lin	ting:

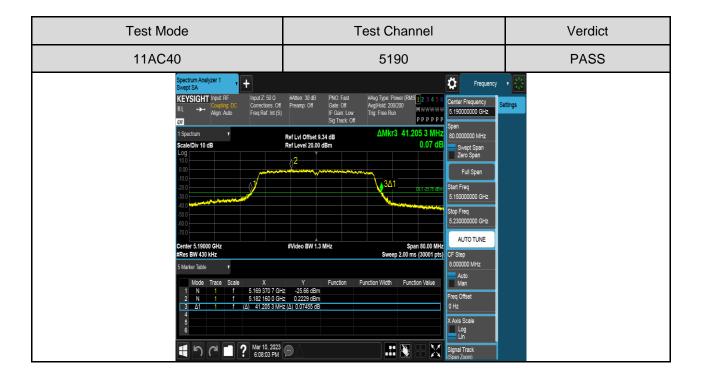


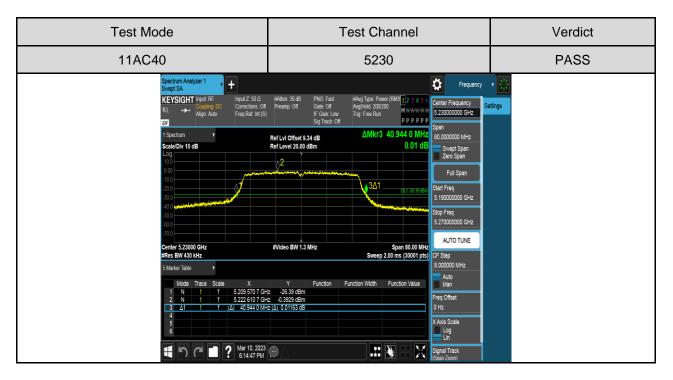




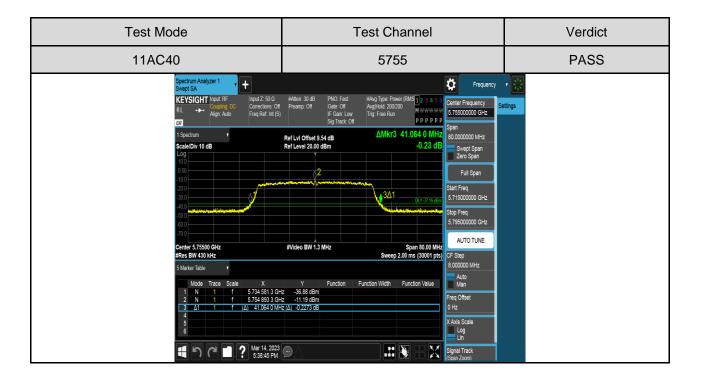


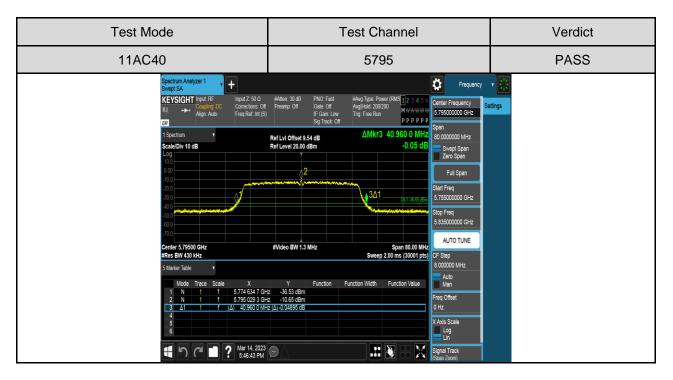




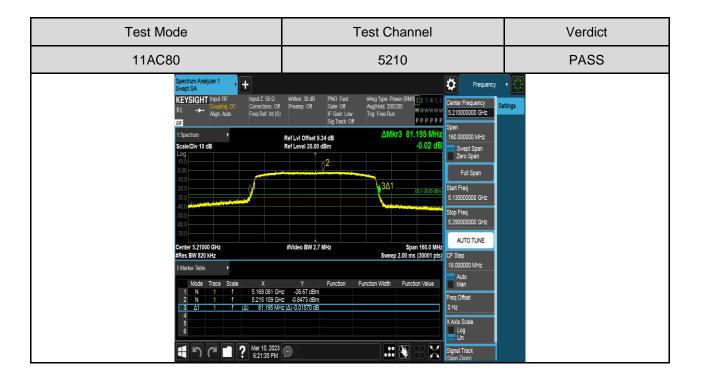


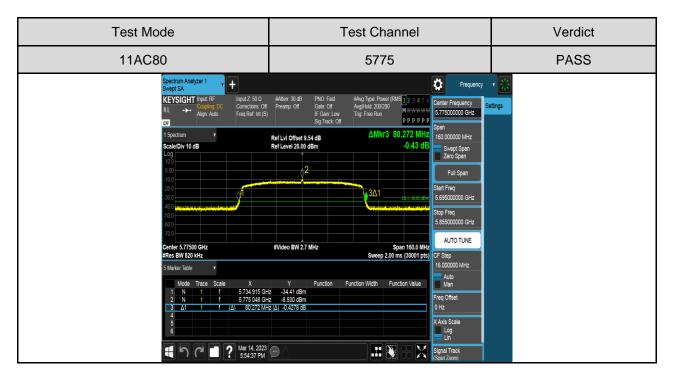






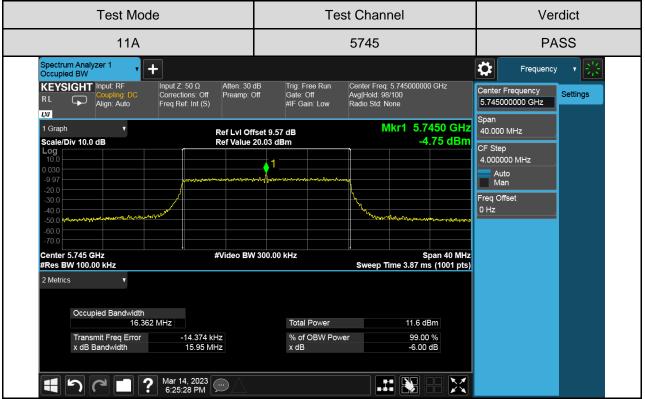












Test Mode	Test Channel	Verdict
11A	5785	PASS
Spectrum Analyzer 1 Occupied BW KEYSIGHT Input: RF Input Z: 50 Ω Atten: 30	JB Trig: Free Run Center Freg: 5.785000000 GHz	Frequency V 🔆
RL Corrections: Off Align: Auto Freq Ref: Int (S)		Center Frequency 5.785000000 GHz
1 Graph r Ref Lvl Of Scale/Div 10.0 dB Ref Value	iset 9.57 dB Mkr1 5.7850 GHz 20.00 dBm -1.12 dBm	Span 40.000 MHz
Log 10.0 -10.0	1	CF Step 4.000000 MHz Auto Man
-20 0 -30 0 -40 0 -50 0 -60 0	high he have been a for the high here and here a	Freq Offset 0 Hz
-70.0 Center 5.785 GHz #Video BW #Res BW 100.00 kHz	/ 300.00 kHz Span 40 MHz Sweep Time 3.87 ms (1001 pts)	
2 Metrics 🔹	<u> </u>	
Occupied Bandwidth 16.352 MHz	Total Power 15.3 dBm	
Transmit Freq Error-22.502 kHzx dB Bandwidth15.60 MHz	% of OBW Power 99.00 % x dB -6.00 dB	