

Test Report

Product: USB-A Wireless Car Screen Projection Adapter

Trade Mark: N/A

Model Number: CP02

FCC ID: 2BAUM-CP0001

Prepared for

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Prepared by

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TEST RESULT CERTIFICATION

Applicant's Name..... : Shenzhen kingminson Electronic Co., Ltd.
Address : 301, No. 192, jiangshi Road, Shiwai Community, Martian Street,
Guangming District, Shenzhen, Guangdong, China
Manufacturer's Name : Shenzhen kingminson Electronic Co., Ltd.
Address : 301, No. 192, jiangshi Road, Shiwai Community, Martian Street,
Guangming District, Shenzhen, Guangdong, China

Product description

Product name : USB-A Wireless Car Screen Projection Adapter
Model Number : CP02
Standards : FCC Part 15.407
Test procedure..... : IEEE/ANSI C63.10-2020
KDB 789033 D02 v02r01

This device described above has been tested by Shenzhen HongBiao Certification& Testing Co., Ltd and the test results show that the equipment under test (EUT) is in compliance with the EMC requirements. And it is applicable only to the tested sample identified in the report.

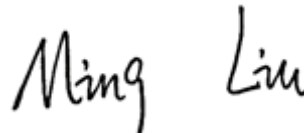
Date of Test

Date (s) of performance of tests..... : Aug. 08, 2024~ Sept. 03, 2024
Test Result..... : **Pass**

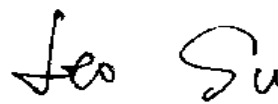
Testing Engineer :


(Z o e S u)

Technical Manager :


(M i n g L i u)

Authorized Signatory :


(L e o S u)

[illegible]

1 General Description

1.1 Description of EUT

Product name:	USB-A Wireless Car Screen Projection Adapter
Model name:	CP02
Series Model:	CP01, CP03, CP04, CP05, CP06, CP07, CP08, CP09, CP10
Different of series model:	All models are the same circuit and module, except for model number and color.
Frequency range:	U-NII-1: 5180 MHz to 5240 MHz, U-NII-3: 5745 MHz to 5825 MHz
Modulation type:	IEEE 802.11a/n: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ax: OFDM(1024QAM, 256QAM, 64QAM, 16QAM QPSK, BPSK)
Transfer rate:	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40): MCS0-MCS15; 802.11ac(VHT20): NSS1, MCS0-MCS8 802.11ac(VHT40):NSS1, MCS0-MCS9 802.11ac(HE20): NSS1, MCS0-MCS8 802.11ac(HE40):NSS1, MCS0-MCS9
Channel bandwidth:	802.11a: 20 MHz 802.11n: 20 MHz, 40 MHz 802.11ac: 20 MHz, 40 MHz 802.11ax: 20 MHz, 40 MHz
Antenna type:	On board Antenna
Antenna gain:	-1.91 dBi
Max. output power:	11.48dBm
Hardware version:	V1.0
Software version:	V1.0
Battery:	N/A
Power supply:	DC 5V from the USB port of the car screen
Adapter information:	N/A

1.2 Operation Channel List

For U-NII-1:

20 MHz		40 MHz		80 MHz	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
36	5180	38	5190	--	--
40	5200	46	5230	--	--
44	5220	--	--	--	--
48	5240	--	--	--	--

For U-NII-3:

20 MHz		40 MHz		80 MHz	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
149	5745	151	5755	--	--
153	5765	159	5795	--	--
157	5785	--	--	--	--
161	5805	--	--	--	--
165	5825	--	--	--	--

1.3 Test Mode

For 802.11a/n(HT20)/ ac(VHT20)

U-NII-1 (5150 - 5250 MHz)			U-NII-3(5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
36	Low	5180	149	Low	5745
40	Mid	5200	157	Mid	5785
48	High	5240	165	High	5825

For 802.11n (HT40)/ac (VHT40)

U-NII-1 (5150 - 5250 MHz)			U-NII-3(5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
38	Low	5190	151	Low	5755
46	High	5230	159	High	5795

1.4 Test Setup

See photographs of the test setup in the report for the actual setup and connections between EUT and support equipment.

1.5 Ancillary Equipment

Equipment	Model	S/N	Manufacturer
Laptop	NbDE-WFH9	/	HUAWEI

Note: The laptop is used to assist the RF test. In order to prevent the laptop from causing unnecessary impact on the test, the laptop will be removed from the test environment after the EUT successfully transmits at a fixed frequency using the laptop.

2 Summary of Test Result

No.	Standard Section	Test Item	Result	Remark
1	15.203/15.407	Antenna Requirement	Pass	
2	15.207	Power Line Conducted Emission	N/A	
3	15.407(b) 15.209	Radiation Spurious Emission	Pass	
4	15.407(a)	RF Output Power	Pass	
5	15.407(a)	Power Spectral Density	Pass	
6	15.407(a)	26dB Emission Bandwidth and Occupied bandwidth	Pass	
7	15.407(e)	6 dB bandwidth	Pass	
8	15.407(b)	Out Of Band Emission	Pass	
9	15.407(b)	Spurious RF Conducted Emissions	Pass	
10	15.407(g)	Frequency Stability	Pass	

3 Test Facilities and Accreditations

3.1 Test Laboratory

Test Site	Shenzhen HongBiao Certification& Testing Co., Ltd
Test Site Location	Room 102, 201, Building 2, Yuanwanggu RFID Industrial Park, Tongguan Road, Tianliao Community, Yutang Street, Guangming District, Shenzhen, China
Telephone:	(86-755) 2998 9321
Fax:	(86-755) 2998 5110
FCC Registration No.:	CN1341
A2LA Certificate No.:	6765.01

3.2 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15°C~35°C
Relative Humidity:	20%~75%
Air Pressure:	98kPa~101kPa

3.3 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

The data and results quoted in this document are true and accurate values, and uncertainties are not involved in the calculations.

In addition, components and mass production processes that are similar to testing equipment may introduce additional deviations, and the manufacturer is solely responsible for the continued compliance of the equipment.

Measurement Frequency Range	U, (dB)	Note
RF frequency	2×10^{-5}	
RF power, conducted	± 0.57 dB	
Conducted emission(150kHz~30MHz)	± 2.5 dB	
Radiated emission(9kHz-30MHz)	± 2.5 dB	
Radiated emission(30MHz~1GHz)	± 4.2 dB	
Radiated emission (above 1GHz)	± 4.7 dB	
Occupied Bandwidth	$\pm 3\%$	
Temperature	± 1 degree	

Humidity	± 5 %	
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3.4 Test Software

Software name	Manufacturer	Model	Version
Conducted Emission test Software	Farad	EZ-EMC	EMC-CON 3A1.1+
Radiated Emission test Software	Farad	EZ-EMC	FA-03A2
RF Test System	MWRF	MTS 8310	2.0.0.0

Software name	Manufacturer	Model	Version
EMI Measurement	Farad	EZ-EMC	V1.1.4.2
Conducted test system	MWRF-test	MTS 8310	V2.0.0

4 List of Test Equipment

Radiation emission							
Item	Equipment No.	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	HB-E001	Horn Antenna	Schwarzbeck	BBHA 9120D	02592	2024-05-18	2026-05-17
2	HB-E002	Biconical log-periodic composite antenna	Schwarzbeck	VULB 9168	01340	2024-05-18	2026-05-17
3	HB-E003	SHF-EHF Horn	Schwarzbeck	BBHA 91270	01193	2024-05-18	2026-05-17
4	HB-E005	Preamplifier	Noyetec	LAN-0118	NYCM1420102	2024-05-17	2025-05-16
5	HB-E006	Preamplifier	Noyetec	LAN-1840	NYCM1420103	2024-05-17	2025-05-16
6	HB-E007	EMI TEST RECEIVER	R&S	ESR7	102520	2024-05-17	2025-05-16
7	HB-E009	POSITINAL COTROLLE R	Noyetec	N/A	N/A	/	/
8	HB-E013	RF switch	Noyetec	NY-RF4	NY0CM1420204	/	/
9	HB-E066	Illuminance Tester	TASI	TA8121	N/A	2024-05-21	2025-05-20
10	HB-E075	Active loop antenna	Schwarzbeck	FMZB 1519B	1519B-245	2024-05-18	2026-05-17
11	HB-E076	Preamplifier	Hewlett Packard	8447D	1937A02278	2024-05-17	2025-05-16
Conduction emission							
Item	Equipment No.	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	HB-E014	4 Path V-LISN	Schwarzbeck	NNLK 8121	00770	2024-05-17	2025-05-16
2	HB-E015	Pulse Limiter	Schwarzbeck	VTSD 9561-F	00949	2024-05-17	2025-05-16
3	HB-E016	ZN23201	Noyetec	ZN23201	N/A	2024-05-21	2025-05-20
4	HB-E059	Attenuator	Xianghua	TS2-6-1	220215166	2024-05-17	2025-05-16
5	HB-E069	EMI TEST RECEIVER	R&S	ESCI	N/A	2024-05-17	2025-05-16
RF							
Item	Equipment No.	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	HB-E041	MXG Anaio Signal	Agilent	N5181A	MY47070421	2024-05-17	2025-05-16

		Generator					
2	HB-E042	WIDEBAND RADIO COMMUNICA TION TESTER	R&S	CMW500	132108	2024-05-17	2025-05-16
3	HB-E043	MXG Anaio g Signal Generator	Agilent	N5182A	US46240335	2024-05-17	2025-05-16
4	HB-E044	Signal& spectrum Analyzer	R&S	FSV3044	101264	2024-05-17	2025-05-16
5	HB-E045	RF Control Box	Noyetec	NY100-R FCB	N/A	2024-08-19	2025-08-18
6	HB-E058	Thermometer Clock Humidity Monitor	N/A	HTC-1	N/A	/	/

Note1: the calibration interval of the above test instruments is 12&24 months and the calibrations are traceable to international system unit (SI).

Note2: The instrument RF Control Box, numbered HB-E045, contains power meter.

5 Test Item And Results

5.1 Antenna Requirement

5.1.1 Standard Requirement

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device

5.1.2 Test Result

The antenna is On board Antenna, which was permanently affixed to the device and un-replaced, complies with 15.203. In addition, the maximum antenna gain is -1.91dBi.

5.2 Power Line Conducted Emission

5.2.1 Limits

Limits – Class B		
Frequency (MHz)	Limit (dBμV)	
	Quasi-Peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50
Note: 1. the tighter limit applies at the band edges. 2. the limit of "*" marked band means the limitation decreases linearly with the logarithm of the frequency in the range.		

5.2.2 Test Procedures

a) EUT Operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

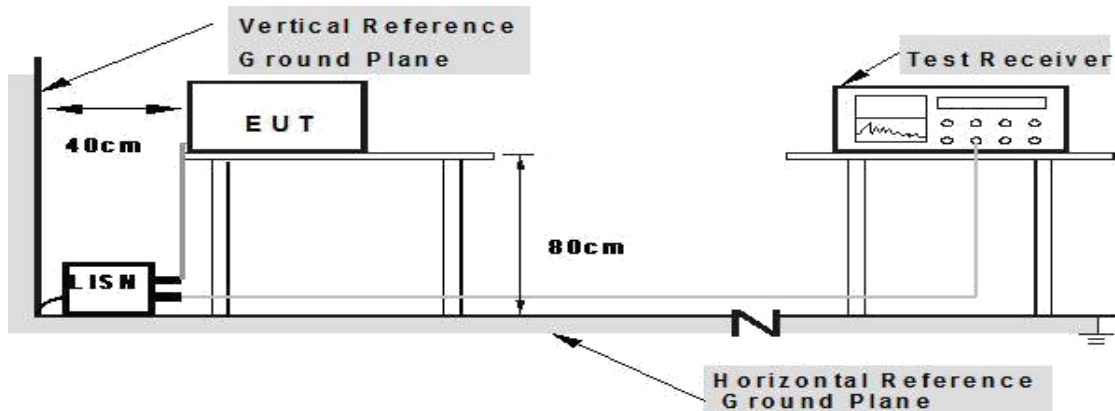
b) The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

- c) The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- d) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- e) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- f) LISN is at least 80 cm from nearest part of EUT chassis.
- g) For the actual test configuration, please refer to the related Item – photographs of the test

setup.

5.2.3 Test Setup



5.2.4 Test Result

Note: This device belongs to the vehicle product, the power supply mode is DC power supply, not applicable to conducted radiation.

5.3 Radiated Emission

5.3.1 Limits

1. For transmitters operating in the 5.15-5.25 GHz band:

All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

2. For transmitters operating in the 5.25-5.35 GHz band:

All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

3. For transmitters operating in the 5.47-5.725 GHz band:

All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

4. For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Frequency Range	RBW	VBW	Measurement
30MHz-1GHz	1MHz	3MHz	Peak
Above 1GHz	1MHz	10Hz ^{Note1}	Average
	1MHz	>1/T ^{Note2}	Average
Note1	When duty cycle is no less than 98%		

Note2	When duty cycle is less than 98%
-------	----------------------------------

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

5.3.2 Test Procedures

The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.

The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the floor on a support that is RF transparent for the frequencies of interest. Final measurements for the EUT require a measurement antenna height scan of 1 m to 4 m.

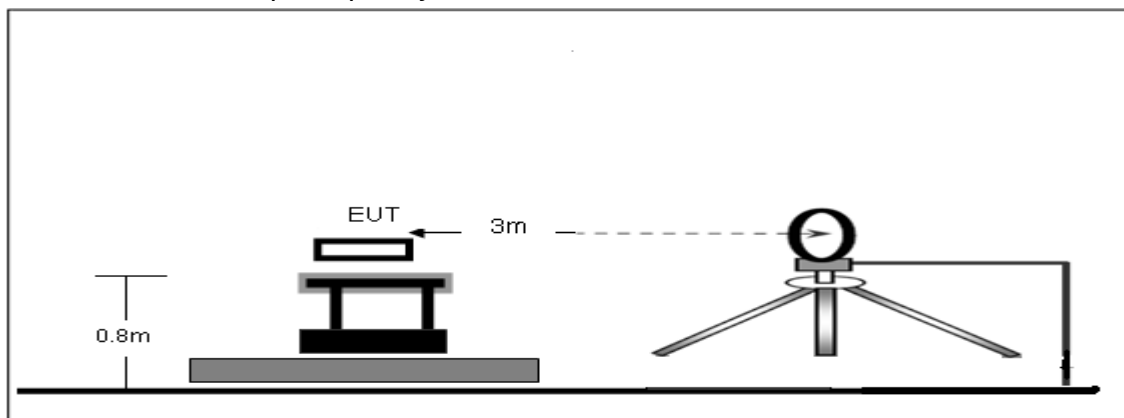
The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. For the actual test configuration, please refer to the related Item –EUT Test Photos.

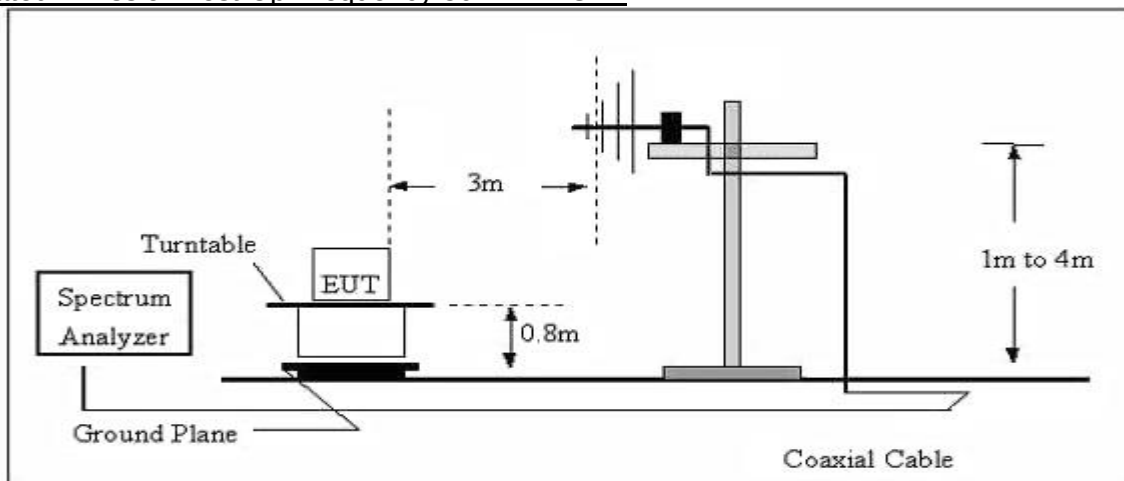
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

5.3.3 Test Setup

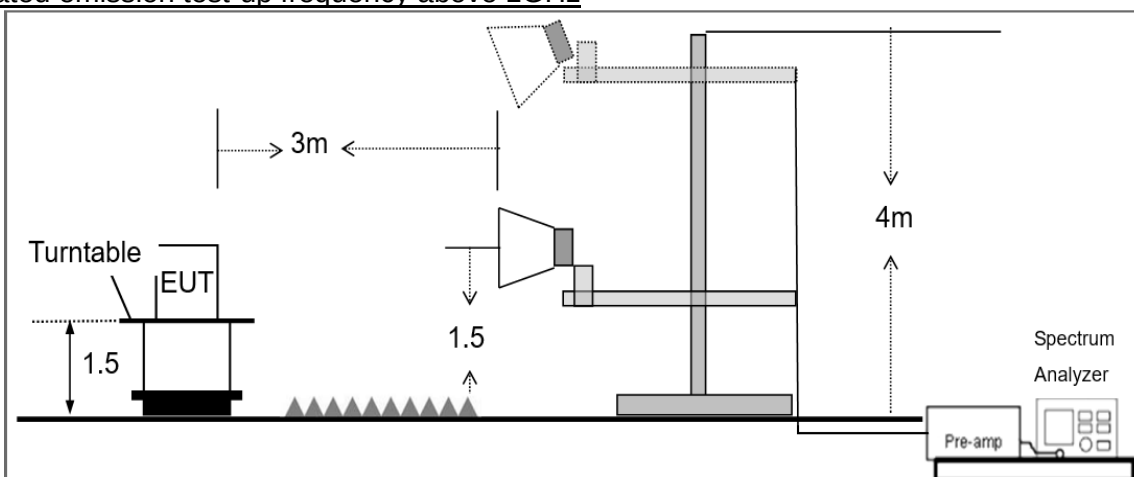
Radiated Emission Test-Up Frequency Below 30MHz



Radiated Emission Test-Up Frequency 30MHz~1GHz



Radiated emission test-up frequency above 1GHz



5.3.4 Test Result

Below 30MHz

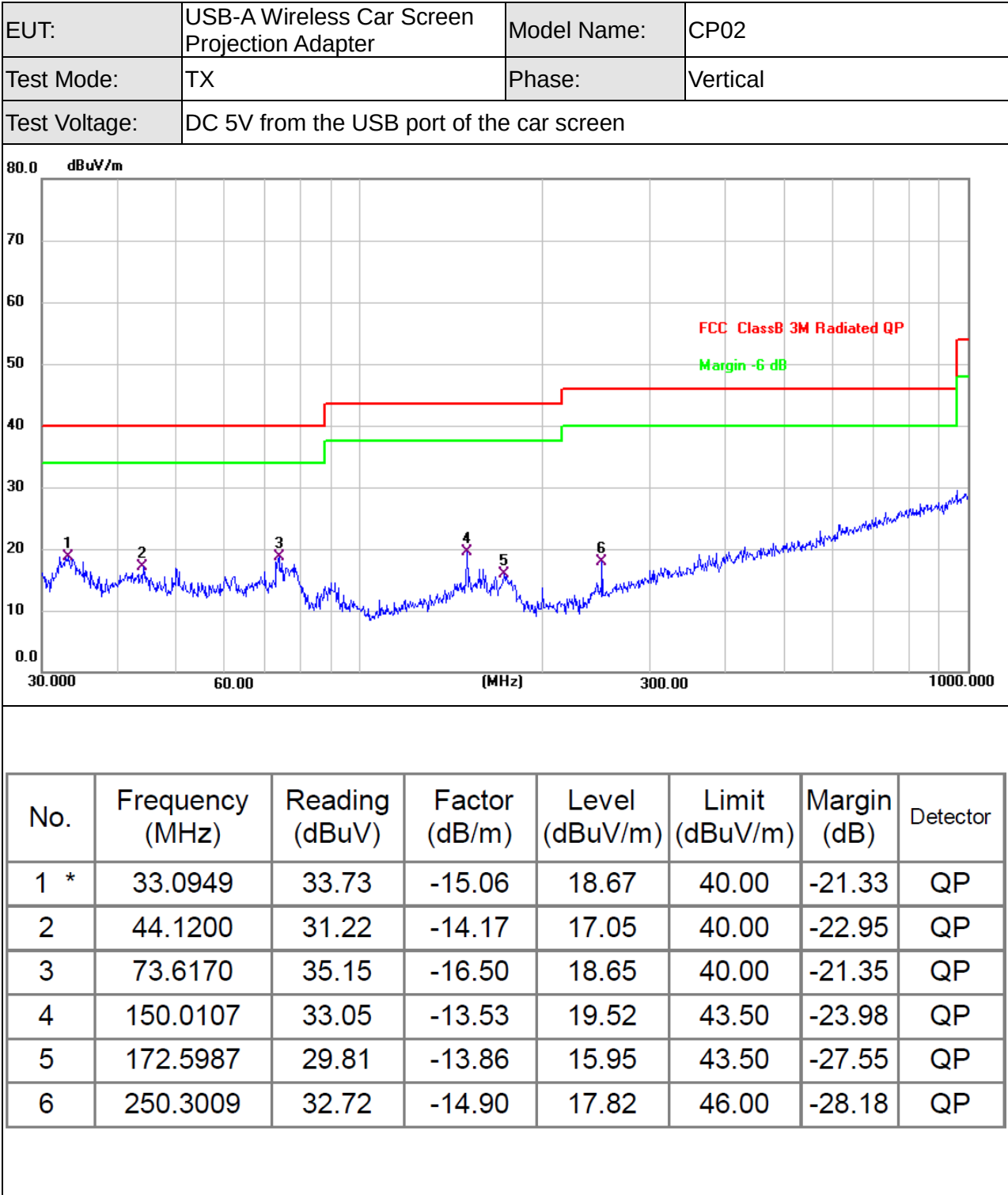
EUT:	USB-A Wireless Car Screen Projection Adapter	Model Name:	CP02
Pressure:	1010 hPa	Test Voltage:	DC 5V from the USB port of the car screen
Test Mode:	TX	Polarization:	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	Pass
--	--	--	--	Pass

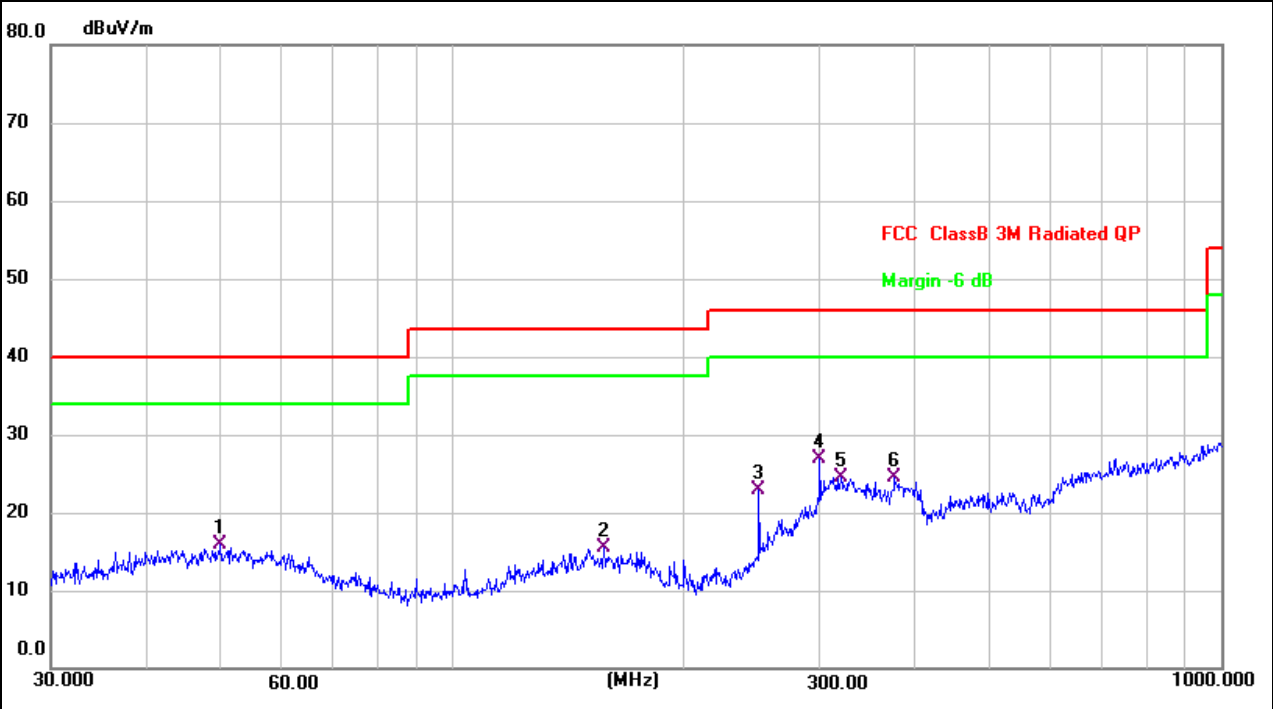
Note:

1. For 9kHz-30MHz, the amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
2. Distance extrapolation factor =40 log (specific distance/test distance)(dB);
3. Limit line = specific limits (dBuV) + distance extrapolation factor.

Frequency range (30MHz – 1GHz)



EUT:	USB-A Wireless Car Screen Projection Adapter	Model Name:	CP02
Test Mode:	TX	Phase:	Horizontal
Test Voltage:	DC 5V from the USB port of the car screen		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	49.8813	30.11	-14.28	15.83	40.00	-24.17	QP
2	157.5586	28.83	-13.31	15.52	43.50	-27.98	QP
3	250.3009	37.78	-14.90	22.88	46.00	-23.12	QP
4 *	300.3672	39.52	-12.56	26.96	46.00	-19.04	QP
5	319.9368	36.72	-12.13	24.59	46.00	-21.41	QP
6	375.9384	34.85	-10.39	24.46	46.00	-21.54	QP

Frequency range (1GHz-40GHz)
For U-NII-1

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamplifier Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
Vertical	4434.935	55.70	5.94	35.40	44.00	53.04	74.00	-20.96	Pk
Vertical	4434.625	43.69	5.94	35.40	44.00	41.03	54.00	-12.97	AV
Vertical	10371.084	62.25	8.46	39.75	44.50	65.96	74.00	-8.04	Pk
Vertical	10370.308	43.04	8.46	39.75	44.50	46.75	54.00	-7.25	Pk
Vertical	15541.218	57.31	10.12	38.80	44.10	62.13	74.00	-11.87	AV
Horizontal	15541.787	43.57	10.12	38.80	42.70	49.79	54.00	-4.21	Pk
Horizontal	4434.851	59.62	5.94	35.18	44.00	56.74	74.00	-17.26	AV
Horizontal	4436.327	42.28	5.94	35.18	44.00	39.40	54.00	-14.60	Pk
Horizontal	10370.405	62.36	8.46	38.71	44.50	65.03	74.00	-8.97	Pk
Horizontal	10731.222	45.20	8.46	38.71	44.50	47.87	54.00	-6.13	AV
middle Channel (5200 MHz)-Above 1G									
Vertical	4594.057	56.50	6.48	36.35	44.05	55.28	74.00	-18.72	Pk
Vertical	4593.954	41.69	6.48	36.35	44.05	40.47	54.00	-13.53	AV
Vertical	10401.210	61.98	8.47	37.88	44.51	63.82	74.00	-10.18	Pk
Vertical	10402.089	45.43	8.47	37.88	44.51	47.27	54.00	-6.73	Pk
Vertical	15600.304	58.09	10.12	38.8	44.10	62.91	74.00	-11.09	AV
Horizontal	15600.222	40.91	10.12	38.8	42.70	47.13	54.00	-6.87	Pk
Horizontal	4593.157	59.81	6.48	36.37	44.05	58.61	74.00	-15.39	AV
Horizontal	4593.371	42.59	6.48	36.37	44.05	41.39	54.00	-12.61	Pk
Horizontal	10401.548	60.66	8.47	38.64	44.50	63.27	74.00	-10.73	Pk
Horizontal	10401.420	48.17	8.47	38.64	44.50	50.78	54.00	-3.22	AV
High Channel (5240 MHz)-Above 1G									
Vertical	4739.619	58.82	7.10	37.24	43.50	59.66	74.00	-14.34	Pk
Vertical	4740.042	46.99	7.10	37.24	43.50	47.83	54.00	-6.17	AV
Vertical	10481.319	61.32	8.46	37.68	44.50	62.96	74.00	-11.04	Pk
Vertical	10482.313	46.36	8.46	37.68	44.50	48.00	54.00	-6.00	Pk
Vertical	15721.735	57.73	10.12	38.8	44.10	62.55	74.00	-11.45	AV
Horizontal	15720.873	42.96	10.12	38.8	42.70	49.18	54.00	-4.82	Pk
Horizontal	4739.183	59.80	7.10	37.24	43.50	60.64	74.00	-13.36	AV
Horizontal	4739.136	43.24	7.10	37.24	43.50	44.08	54.00	-9.92	Pk
Horizontal	10481.739	58.55	8.46	38.57	44.50	61.08	74.00	-12.92	Pk
Horizontal	10483.256	44.30	8.46	38.57	44.50	46.83	54.00	-7.17	AV

For U-NII-3

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G									
Vertical	4680.724	59.47	5.94	35.40	44.00	56.81	74.00	-17.19	Pk
Vertical	4680.961	46.82	5.94	35.40	44.00	44.16	54.00	-9.84	AV
Vertical	11490.791	59.81	8.46	39.75	44.50	63.52	74.00	-10.48	Pk
Vertical	11490.929	45.81	8.46	39.75	44.50	49.52	54.00	-4.48	AV
Vertical	17236.260	58.06	10.12	38.80	44.10	62.88	74.00	-11.12	Pk
Horizontal	17236.327	40.94	10.12	38.80	42.70	47.16	54.00	-6.84	Pk
Horizontal	4680.946	57.53	5.94	35.18	44.00	54.65	74.00	-19.35	AV
Horizontal	4679.376	44.91	5.94	35.18	44.00	42.03	54.00	-11.97	Pk
Horizontal	11491.536	61.11	8.46	38.71	44.50	63.78	74.00	-10.22	AV
Horizontal	11490.901	44.68	8.46	38.71	44.50	47.35	54.00	-6.65	Pk
middle Channel (5785 MHz)-Above 1G									
Vertical	4592.510	58.18	6.48	36.35	44.05	56.96	74.00	-17.04	Pk
Vertical	4592.458	45.15	6.48	36.35	44.05	43.93	54.00	-10.07	AV
Vertical	11571.450	61.56	8.47	37.88	44.51	63.40	74.00	-10.60	Pk
Vertical	11570.886	43.85	8.47	37.88	44.51	45.69	54.00	-8.31	AV
Vertical	17355.984	58.24	10.12	38.8	44.10	63.06	74.00	-10.94	Pk
Horizontal	17356.973	42.55	10.12	38.8	42.70	48.77	54.00	-5.23	Pk
Horizontal	4593.661	60.00	6.48	36.37	44.05	58.80	74.00	-15.20	AV
Horizontal	4593.856	44.27	6.48	36.37	44.05	43.07	54.00	-10.93	Pk
Horizontal	11570.342	61.70	8.47	38.64	44.50	64.31	74.00	-9.69	AV
Horizontal	11570.277	47.66	8.47	38.64	44.50	50.27	54.00	-3.73	Pk
High Channel (5825 MHz)-Above 1G									
Vertical	5040.707	59.58	7.10	37.24	43.50	60.42	74.00	-13.58	Pk
Vertical	5039.641	47.03	7.10	37.24	43.50	47.87	54.00	-6.13	AV
Vertical	11651.840	56.75	8.46	37.68	44.50	58.39	74.00	-15.61	Pk
Vertical	11651.461	42.88	8.46	37.68	44.50	44.52	54.00	-9.48	AV
Vertical	17476.856	59.42	10.12	38.8	44.10	64.24	74.00	-9.76	Pk
Horizontal	17477.328	39.81	10.12	38.8	42.70	46.03	54.00	-7.97	Pk
Horizontal	5041.006	67.29	7.10	37.24	43.50	68.13	74.00	-5.87	AV
Horizontal	5039.909	43.30	7.10	37.24	43.50	44.14	54.00	-9.86	Pk
Horizontal	11652.276	58.15	8.46	38.57	44.50	60.68	74.00	-13.32	AV
Horizontal	11651.745	44.97	8.46	38.57	44.50	47.50	54.00	-6.50	Pk

Note:

All modes have been tested, and only the worst mode 802.11a mode is mentioned in the report.

5.3.5 Radiated Band Edge

1For U-NII-1

For 802.11a mode: (CH36 5180MHz)

Polarization	Frequency	Read Level	Cable loss	Antenna Factor	Preamplifier Factor	Emission Level	Limits	Over Limit	Detector Type
/	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5150	65.94	8.69	29.4	42.59	61.44	74	-12.56	Pk
Vertical	5150	67.68	9.21	29.4	42.59	63.70	74	-10.30	Pk
Horizontal	5150	47.12	8.69	29.4	42.59	42.62	54	-11.38	AV
Vertical	5150	49.86	9.21	29.4	42.59	45.88	54	-8.12	AV

For U-NII-3

For 802.11a mode: (CH149 5745MHz&CH165 5825MHz)

Polarization	Frequency	Read Level	Cable loss	Antenna Factor	Preamplifier Factor	Emission Level	Limits	Over Limit	Detector Type
/	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5725	67.13	8.69	29.4	42.59	62.63	74	-11.37	Pk
Horizontal	5850	63.10	9.37	30.41	43.25	59.63	74	-14.37	Pk
Vertical	5725	67.63	9.21	29.4	42.59	63.65	74	-10.35	Pk
Vertical	5850	59.44	9.12	30.41	43.25	55.72	74	-18.28	Pk
Horizontal	5725	45.76	8.69	29.4	42.59	41.26	54	-12.74	AV
Horizontal	5850	52.39	8.46	30.41	43.25	48.01	54	-5.99	AV
Vertical	5725	51.26	9.21	29.4	42.59	47.28	54	-6.72	AV
Vertical	5850	50.74	9.12	30.41	43.25	47.02	54	-6.98	AV

Note:

All modes have been tested, and only the worst mode 802.11a mode is mentioned in the report.

5.4 Peak Output Power

5.4.1 Limit

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz band

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

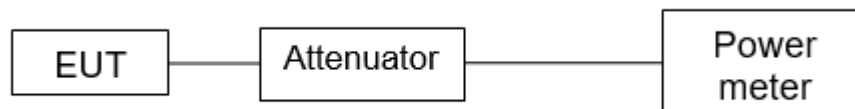
For the band 5.725-5.85 GHz

The maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.4.2 Test Procedure

The maximum peak conducted output power may be measured using a broadband Average RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the emission bandwidth and utilize a fast-responding diode detector.

5.4.3 Test Setup



5.4.4 Test Results

EUT:	USB-A Wireless Car Screen Projection Adapter	Model Name:	CP02
Test Mode:	TX	Test Voltage:	DC 5V from the USB port of the car screen

For U-NII-1

Modulation mode	Test Channel	Frequency(MHz)	Conducte d Power	Limit(dBM)
			(dBm)	
11a	CH36	5180	10.21	23.98
11a	CH40	5200	10.48	23.98
11a	CH48	5240	10.15	23.98
11n (HT20)	CH36	5180	10.13	23.98
11n (HT20)	CH40	5200	10.57	23.98
11n (HT20)	CH48	5240	10.02	23.98
11n (HT40)	CH38	5190	10.2	23.98
11n (HT40)	CH46	5230	10.32	23.98
11ac (HT20)	CH36	5180	10.12	23.98
11ac (HT20)	CH40	5200	10.74	23.98
11ac (HT20)	CH48	5240	10.23	23.98
11ac (HT40)	CH38	5190	10.3	23.98
11ac (HT40)	CH46	5230	10.3	23.98
11ax (HE20)	CH36	5180	10.3	23.98
11ax (HE20)	CH40	5200	10.67	23.98
11ax (HE20)	CH48	5240	10.27	23.98
11ax (HE40)	CH38	5190	10.48	23.98
11ax (HE40)	CH46	5230	10.15	23.98

For U-NII-3

Modulation mode	Test Channel	Frequency(MHz)	Conducte d Power	Limit(dBm)
			(dBm)	
11a	CH149	5745	10.99	30
11a	CH157	5785	9.81	30
11a	CH165	5825	11.33	30
11n (HT20)	CH149	5745	10.88	30
11n (HT20)	CH157	5785	9.79	30
11n (HT20)	CH165	5825	11.48	30
11n (HT40)	CH151	5755	11.45	30
11n (HT40)	CH159	5795	10.21	30

11ac (HT20)	CH149	5745	11.06	30
11ac (HT20)	CH157	5785	9.89	30
11ac (HT20)	CH165	5825	11.47	30
11ac (HT40)	CH151	5755	11.32	30
11ac (HT40)	CH159	5795	10.14	30
11ax (HE20)	CH149	5745	10.91	30
11ax (HE20)	CH157	5785	9.95	30
11ax (HE20)	CH165	5825	11.35	30
11ax (HE40)	CH151	5755	11.48	30
11ax (HE40)	CH159	5795	10.36	30

5.5 Power Spectral Density

5.5.1 Limit

For the band 5.15-5.25 GHz

For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.25-5.35 GHz and 5.47-5.725 GHz

The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz

The maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.5.2 Test Procedure

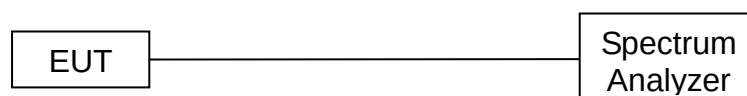
For U-NII-1

1. Set analyzer center frequency to NII channel center frequency.
2. Set the RBW $\geq$ 1MHz.
3. Set the VBW $\geq$ 3 x RBW.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the maximum amplitude level.

For U-NII-3

1. Set analyzer center frequency to NII channel center frequency.
2. Set the RBW $\geq$ 510kHz.
3. Set the VBW $\geq$ 3 x RBW.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the maximum amplitude level.

5.5.3 Test Setup



5.5.4 Test Results

For U-NII-1

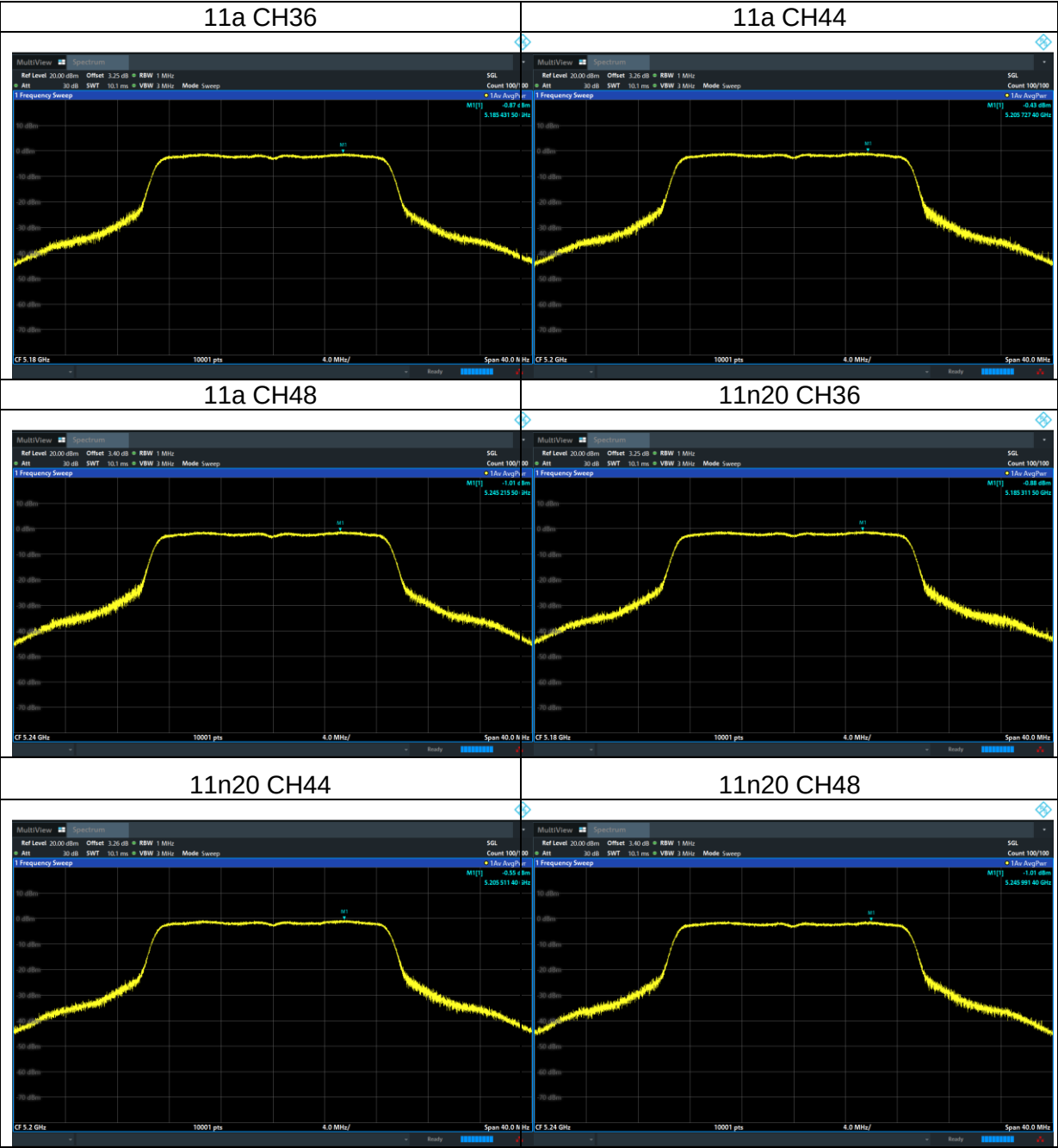
Mode	Channel	Frequency(MHz)	Conducted PSD (dBm)	Duty Factor (dB)	Total PSD (dBm)	Limit (dBm/MHz)	Result
11a	CH36	5180	-0.87	0.13	-0.74	11	Pass
11a	CH40	5200	-0.43	0.1	-0.33	11	Pass
11a	CH48	5240	-1.01	0	-1.01	11	Pass
11n(HT20)	CH36	5180	-0.88	0.1	-0.78	11	Pass
11n(HT20)	CH40	5200	-0.55	0.13	-0.42	11	Pass
11n(HT20)	CH48	5240	-1.01	0	-1.01	11	Pass
11n(HT40)	CH38	5190	-3.91	0.12	-3.79	11	Pass
11n(HT40)	CH46	5230	-4.1	0.31	-3.79	11	Pass
11ac(HT20)	CH36	5180	-0.68	0	-0.68	11	Pass
11ac(HT20)	CH40	5200	-0.26	0	-0.26	11	Pass
11ac(HT20)	CH48	5240	-0.8	0.19	-0.61	11	Pass
11ac(HT40)	CH38	5190	-4.01	0.13	-3.88	11	Pass
11ac(HT40)	CH46	5230	-4.13	0.3	-3.83	11	Pass
11ax(HE20)	CH36	5180	-0.68	0	-0.68	11	Pass
11ax(HE20)	CH40	5200	-0.38	0.1	-0.28	11	Pass
11ax(HE20)	CH48	5240	-0.93	0.13	-0.8	11	Pass
11ax(HE40)	CH38	5190	-4.03	0.37	-3.66	11	Pass
11ax(HE40)	CH46	5230	-4.32	0.09	-4.23	11	Pass

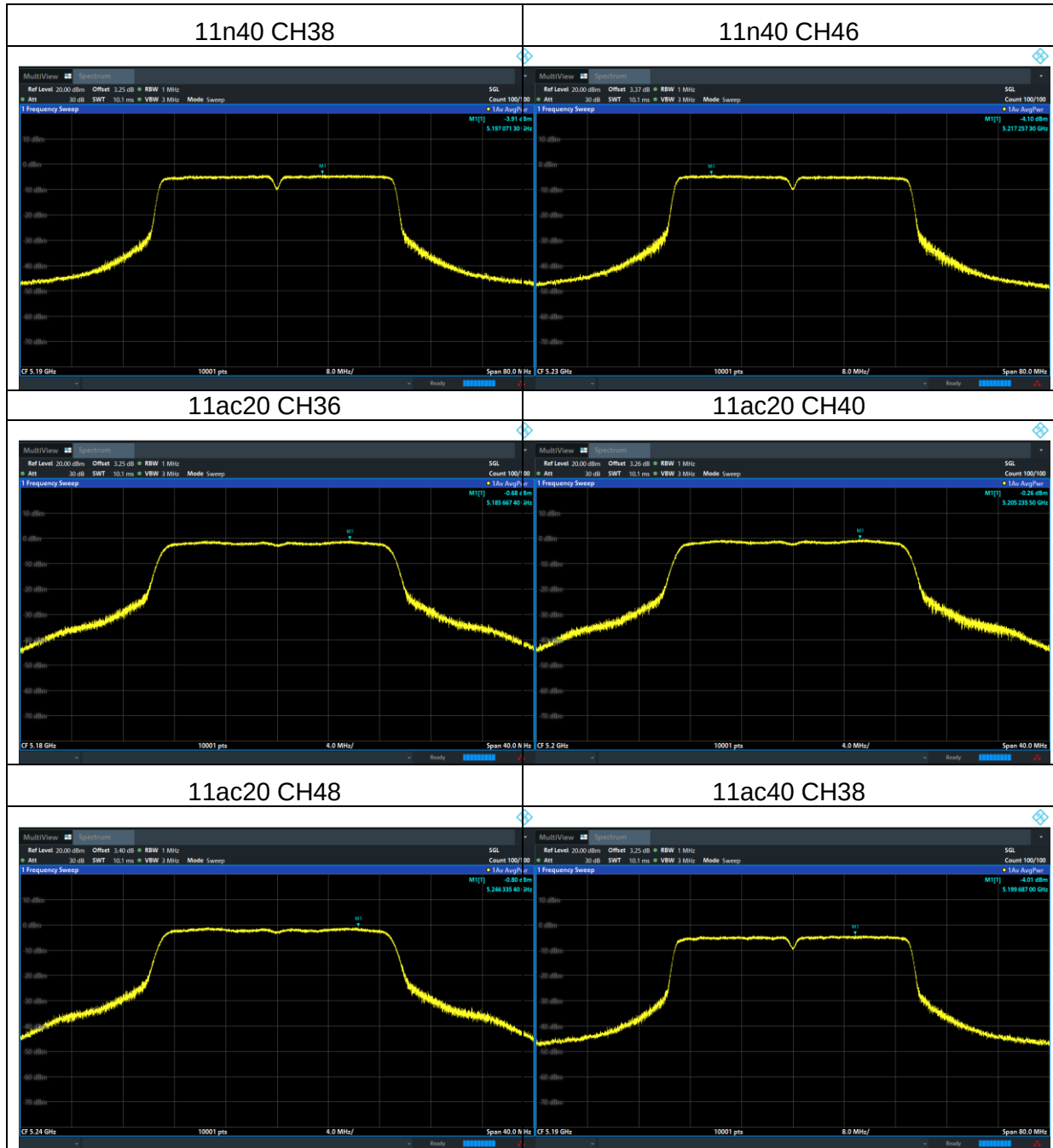
For U-NII-3

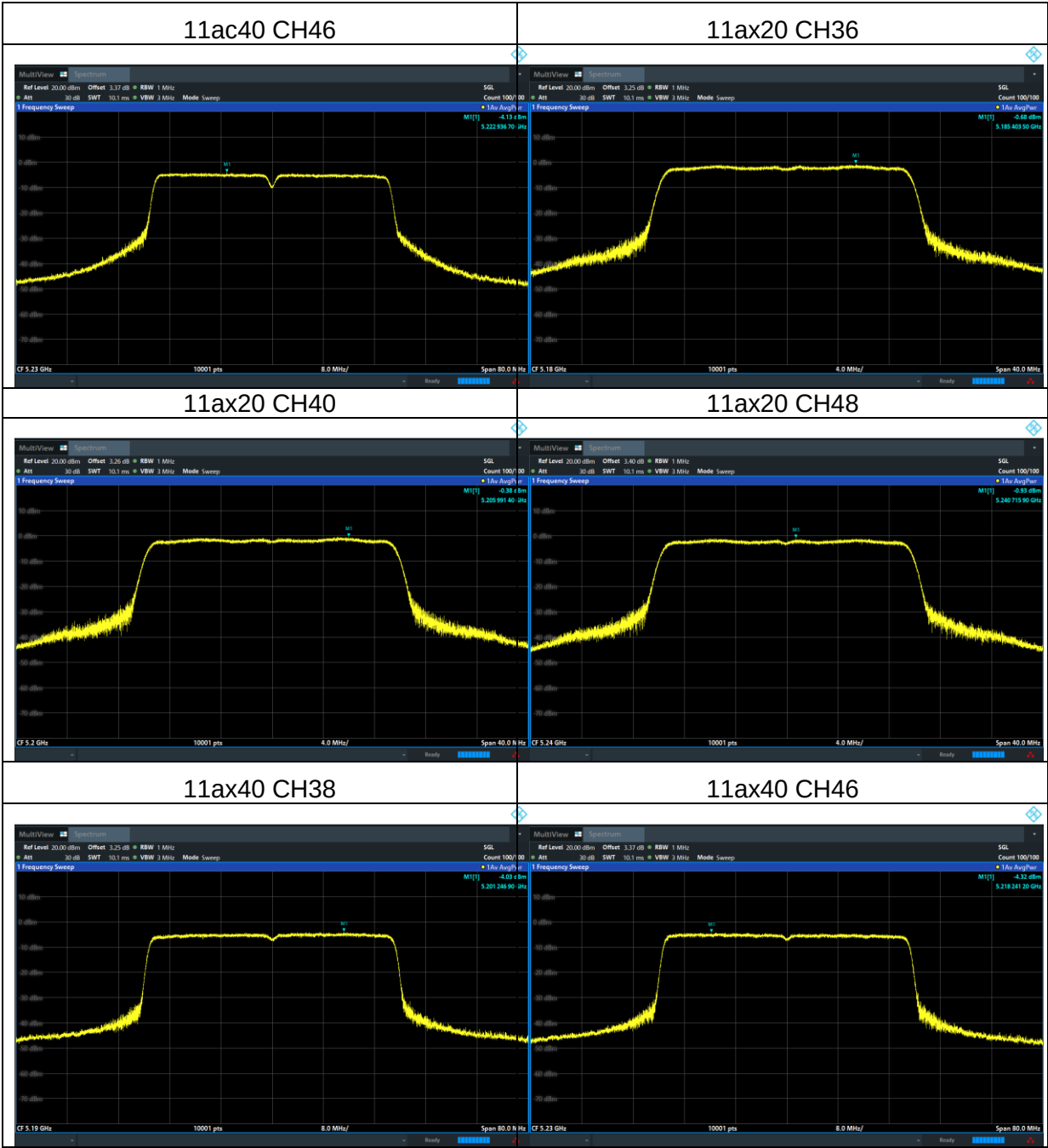
Mode	Channel	Frequency (MHz)	Conducted PSD (dBm)	Duty Factor (dB)	Total PSD (dBm)	Limit (dBm/500k Hz)	Result
11a	CH149	5745	-2.65	0.12	-2.53	30	Pass
11a	CH157	5785	-3.78	0.1	-3.68	30	Pass
11a	CH165	5825	-1.85	0	-1.85	30	Pass
11n(HT20)	CH149	5745	-2.62	0	-2.62	30	Pass
11n(HT20)	CH157	5785	-3.67	0	-3.67	30	Pass
11n(HT20)	CH165	5825	-2.09	0.14	-1.95	30	Pass
11n(HT40)	CH151	5755	-5	0.21	-4.79	30	Pass
11n(HT40)	CH159	5795	-6.41	0.25	-6.16	30	Pass
11ac(HT20)	CH149	5745	-2.6	0.15	-2.45	30	Pass
11ac(HT20)	CH157	5785	-3.8	0.1	-3.7	30	Pass
11ac(HT20)	CH165	5825	-2.04	0.1	-1.94	30	Pass
11ac(HT40)	CH151	5755	-5.11	0.18	-4.93	30	Pass
11ac(HT40)	CH159	5795	-6.46	0.18	-6.28	30	Pass
11ax(HE20)	CH149	5745	-2.56	0	-2.56	30	Pass
11ax(HE20)	CH157	5785	-3.94	0.2	-3.74	30	Pass
11ax(HE20)	CH165	5825	-2.11	0	-2.11	30	Pass
11ax(HE40)	CH151	5755	-5.22	0.45	-4.77	30	Pass
11ax(HE40)	CH159	5795	-6.44	0.37	-6.07	30	Pass

Test plots

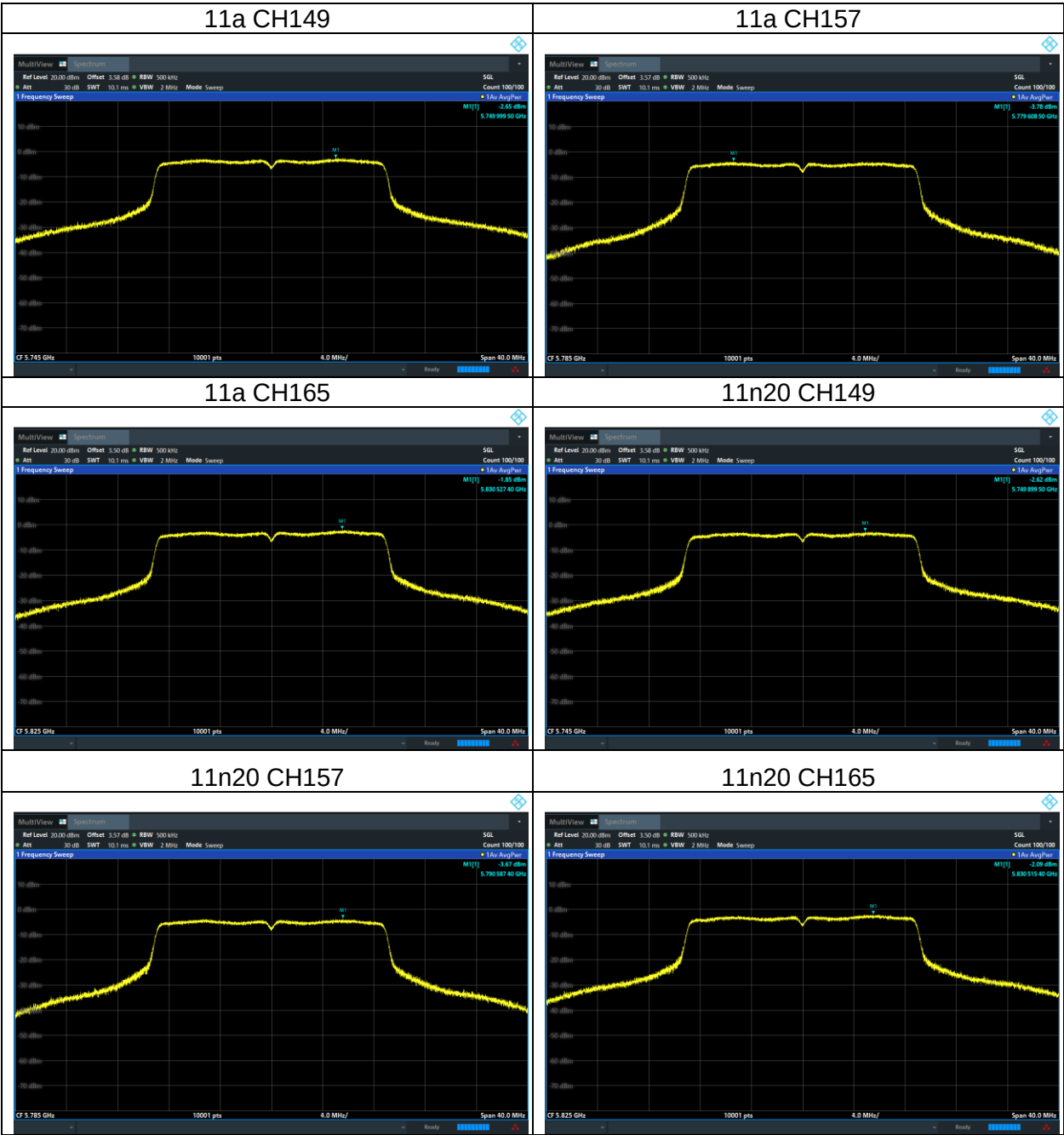
For U-NII-1

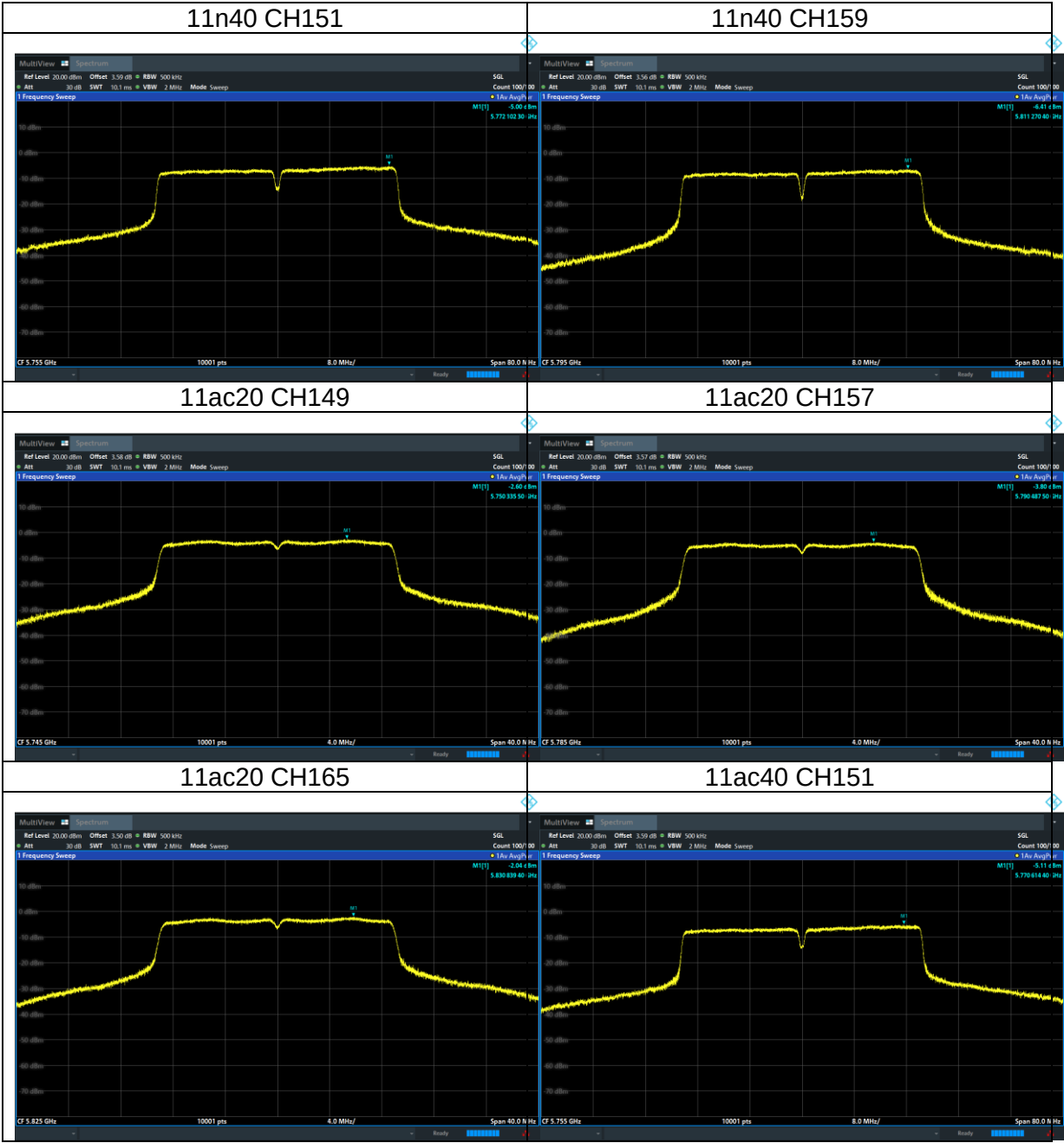


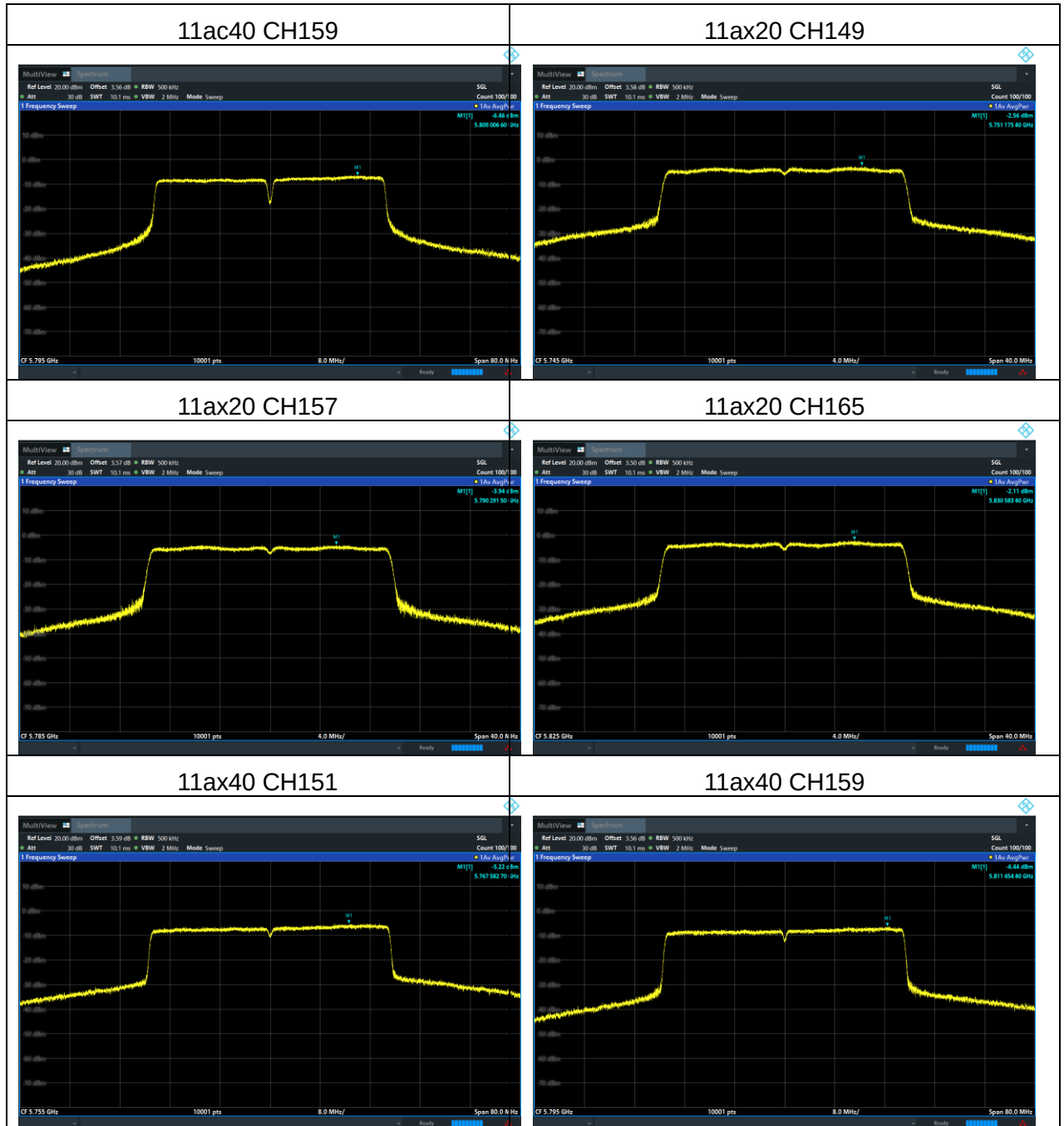




Test plots
For U-NII-3







5.6 26dB Emission Bandwidth and Occupied bandwidth

5.6.1 Limit

For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier

5.6.2 Test Procedure

26dB Emission bandwidth

Set RBW = approximately 1% of the emission bandwidth.

Set VBW $\geq 3 \times \text{RBW}$

Detector = Peak.

Trace mode = Max hold.

Measure the maximum width of the emission that is 26 dB down from the peak of the emission.

Occupied Bandwidth

Set Span = 1.5 times to 5.0 times the OBW

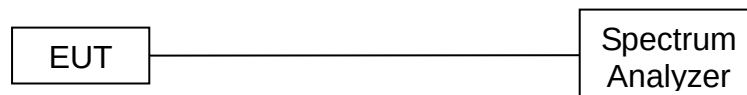
Set RBW = 1% to 5% of the OBW.

Set VBW $\geq 3 \times \text{RBW}$, Detector = Peak.

Trace mode = Max hold.

Use the 99% power bandwidth function of the instrument.

5.6.3 Test Setup

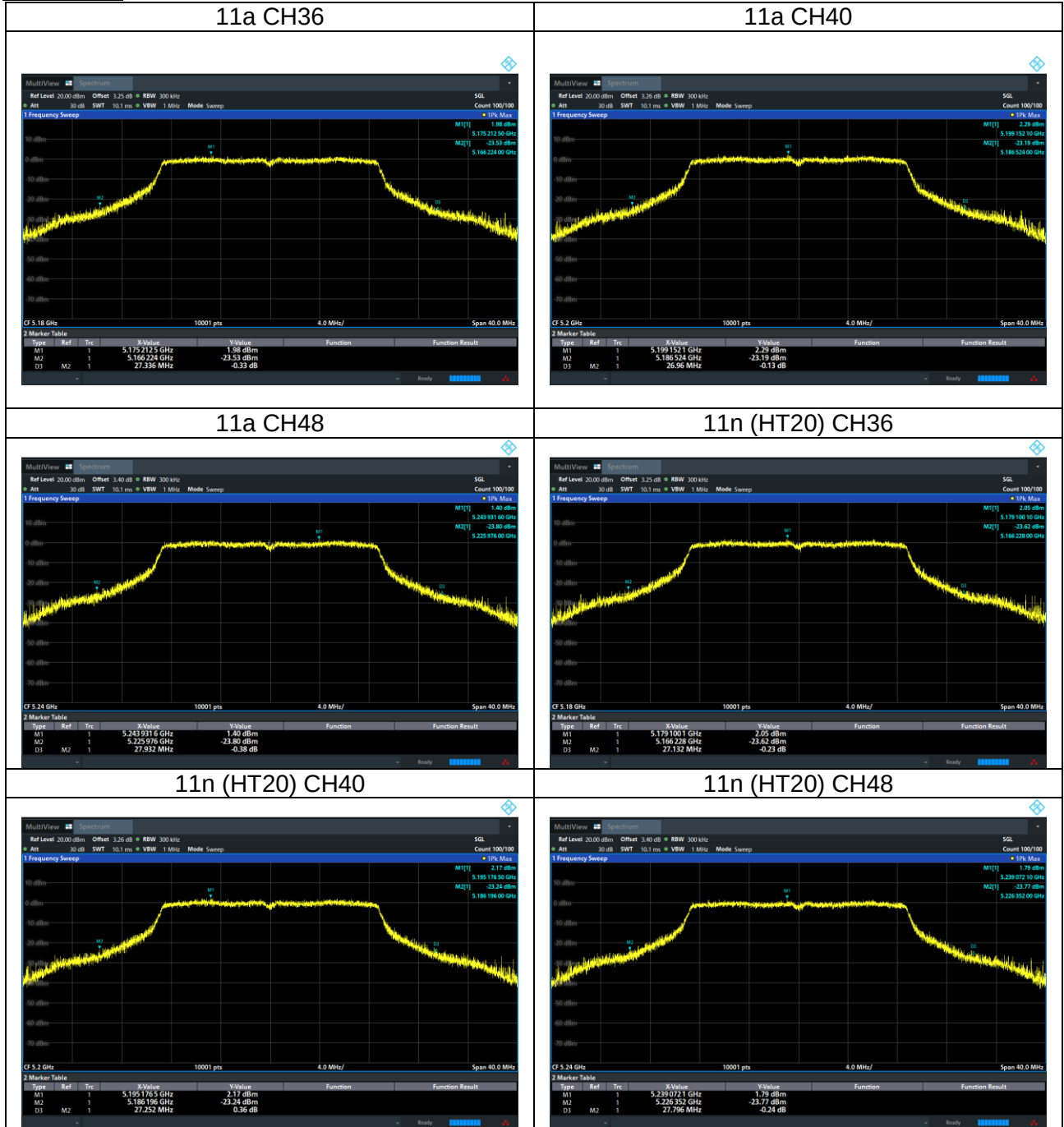


5.6.4 Test Results

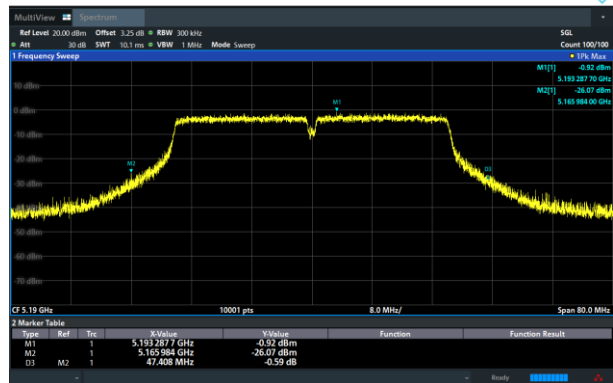
For U-NII-1

Channel	Test Channel	Frequency (MHz)	26dB bandwidth (MHz)	99% bandwidth	Limit (kHz)	Result
11a	CH36	5180	27.336	18.067	/	Pass
11a	CH40	5200	26.96	18.049	/	Pass
11a	CH48	5240	27.932	18.082	/	Pass
11n (HT20)	CH36	5180	27.132	18.055	/	Pass
11n (HT20)	CH40	5200	27.252	18.035	/	Pass
11n (HT20)	CH48	5240	27.796	18.059	/	Pass
11n (HT40)	CH38	5190	47.408	36.828	/	Pass
11n (HT40)	CH46	5230	46.528	36.853	/	Pass
11ac (HT20)	CH36	5180	28.748	18.036	/	Pass
11ac (HT20)	CH40	5200	29.12	18.03	/	Pass
11ac (HT20)	CH48	5240	27.784	18.031	/	Pass
11ac (HT40)	CH38	5190	47.632	36.767	/	Pass
11ac (HT40)	CH46	5230	47	36.851	/	Pass
11ax(HE20)	CH36	5180	25.452	19.185	/	Pass
11ax (HE20)	CH40	5200	25.456	19.163	/	Pass
11ax (HE20)	CH48	5240	26.232	19.136	/	Pass
11ax (HE40)	CH38	5190	43.496	37.959	/	Pass
11ac (HE40)	CH46	5230	44.408	38.017	/	Pass

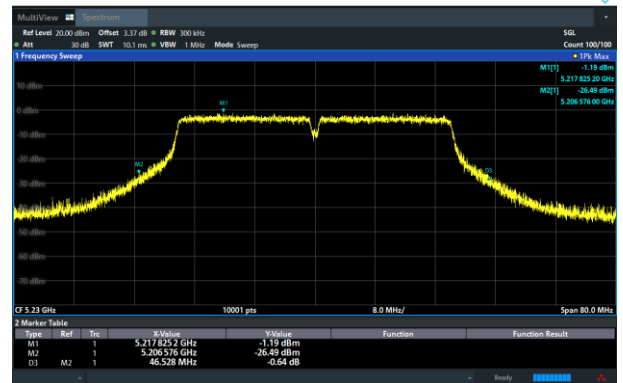
Test plots:
For U-NII-1



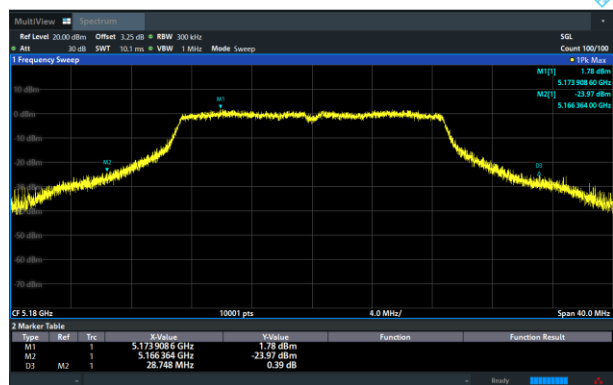
11n (HT40) CH38



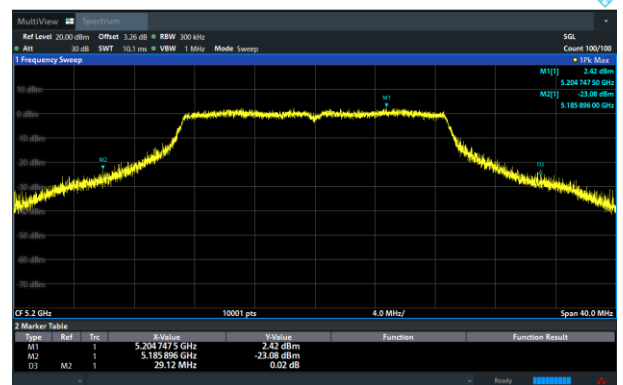
11n (HT40) CH46



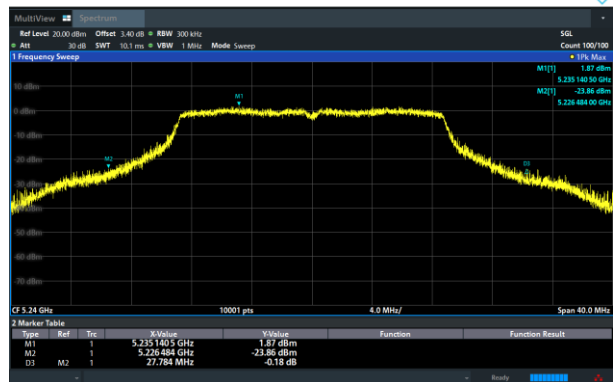
11ac (HT20) CH36



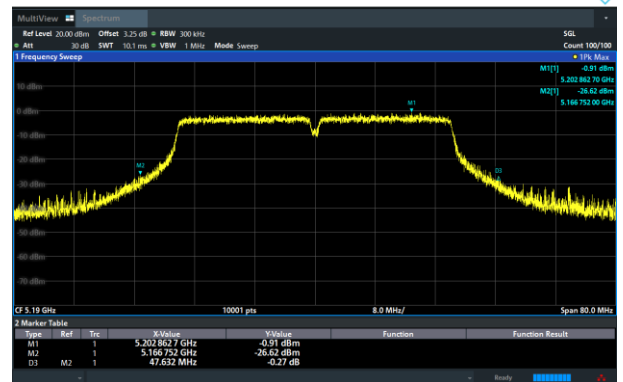
11ac (HT20) CH40

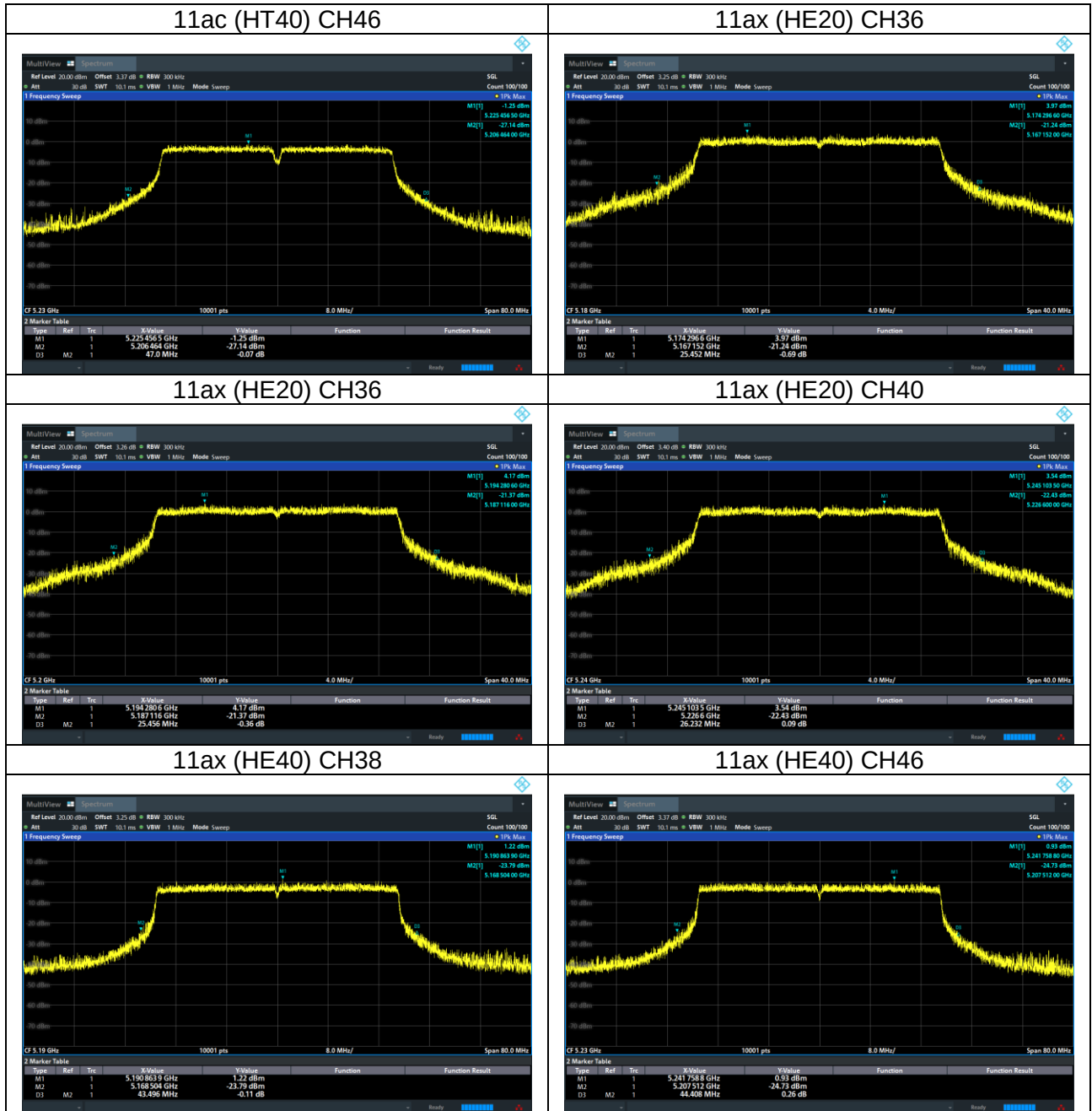


11ac (HT20) CH48



11ac (HT40) CH38





5.7 6 dB Bandwidth

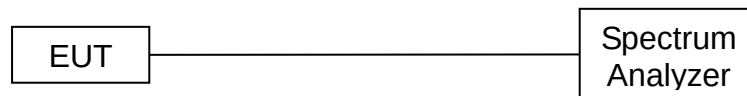
5.7.1 Limit

(e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

5.7.2 Test Procedure

1. Set RBW= 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

5.7.3 Test Setup



5.7.4 Test Results

EUT:	USB-A Wireless Car Screen Projection Adapter	Model Name:	CP02
Test Mode:	TX	Test Voltage:	DC 5V from the USB port of the car screen

For U-NII-3

Channel	Test Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
11a	CH149	5745	17.568	500	Pass
11a	CH157	5785	17.676	500	Pass
11a	CH165	5825	17.572	500	Pass
11n (HT20)	CH149	5745	17.572	500	Pass
11n (HT20)	CH157	5785	17.58	500	Pass
11n (HT20)	CH165	5825	17.588	500	Pass
11n (HT40)	CH151	5755	36.384	500	Pass
11n (HT40)	CH159	5795	36.344	500	Pass

Channel	Test Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
11ac (HT20)	CH149	5745	17.568	500	Pass
11ac (HT20)	CH157	5785	17.588	500	Pass
11ac (HT20)	CH165	5825	17.564	500	Pass
11ac (HT40)	CH151	5755	36.08	500	Pass
11ac (HT40)	CH159	5795	36.288	500	Pass
11ax (HE20)	CH149	5745	19	500	Pass
11ax (HE20)	CH157	5785	18.928	500	Pass
11ax (HE20)	CH165	5825	18.98	500	Pass
11ax (HE40)	CH151	5755	36.896	500	Pass
11ax (HE40)	CH159	5795	37.584	500	Pass