

TEST REPORT

Applicant: SHARP CORPORATION
EUT Description: Smartphone
Model: APYHRO00343
Brand: SHARP
FCC ID: APYHRO00343
Standards: FCC 47 CFR Part 15 Subpart E
Date of Receipt: 2026/04/13
Date of Test: 2026/04/13 to 2026/05/26
Date of Issue: 2026/05/26

TOWE. Tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of the model are manufactured with identical electrical and mechanical components. All sample tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise. Without written approval of TOWE, the test report shall not be reproduced except in full.



Jim Huang
Approved By:



Carey Chen
Reviewed By:

Revision History

Rev.	Issue Date	Description	Revised by
01	2026/05/26	Original	Carey Chen

Summary of Test Results

Clause	FCC Part	Test Items	Test Bands	Result
4.1	§15.203	Antenna Requirement	---	PASS
4.2	§15.407(g)	Frequency Stability	---	---
4.3	§15.207	AC Power Line Conducted Emission	Section 2.2	PASS
4.4	§15.407(a)(1)(iv) §15.407(a)(2) §15.407(a)(3)(i)	Maximum Conducted Output Power	U-NII-1 U-NII-2A U-NII-2C U-NII-3	PASS
4.5	§KDB 789033 II.C.1	Emission Bandwidth	U-NII-1 U-NII-2A U-NII-2C	Reporting purposes only
4.6	§15.407(e)	Minimum Emission Bandwidth	U-NII-3	PASS
4.7	§KDB 789033 II.D	Occupied Bandwidth	U-NII-1 U-NII-2A U-NII-2C U-NII-3	Reporting purposes only
4.8	§15.407(a)(1)(iv) §15.407(a)(2) §15.407(a)(3)(i)	Maximum Power Spectral Density	U-NII-1 U-NII-2A U-NII-2C U-NII-3	PASS
4.9	§15.407(b) §15.209(d)	Unwanted Emissions	U-NII-1 U-NII-2A U-NII-2C U-NII-3	PASS
Test Method: ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Remark: Pass is EUT meets standard requirements.				

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1 General Description

1.1 Lab Information

1.1.1 Testing Location

These measurements tests were conducted at the Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. Facility located at F401 and F101, Building E, Hongwei Industrial Zone, Liuxian 3rd Road, Bao'an District, Shenzhen, China. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014
Tel.: +86-755-27212361
Contact Email: info@towewireless.com

1.1.2 Test Facility / Accreditations

A2LA (Certificate Number: 7088.01)

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

FCC Designation No.: CN1353

Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized as an accredited testing laboratory.
Test Firm Registration Number: 684095
Designation Number: CN1353.

ISED CAB identifier: CN0152

Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized by ISED as an accredited testing laboratory.
CAB identifier: CN0152
Company Number: 31000

1.2 Client Information

1.2.1 Applicant

Applicant:	SHARP CORPORATION
Address:	2-1-25, Kyutaromachi, Chuo-ku, Osaka city, Osaka 541-8522, JAPAN

1.2.2 Manufacturer

Manufacturer:	SHARP CORPORATION
Address:	2-1-25, Kyutaromachi, Chuo-ku, Osaka city, Osaka 541-8522, JAPAN

1.3 Product Information

EUT Description:	Smartphone			
Model No.:	APYHRO00343			
Brand:	SHARP			
Hardware Version:	DVT			
Software Version:	BIN_SECBOOT_RAMBA_16_S4220_v6R3V_2026_EED3			
IMEI:	RF Conducted	004401232213674		
	RSE & AC power line	004401232211520		
Modulation Type:	802.11a/n:	OFDM-BPSK, QPSK, 16QAM, 64QAM		
	802.11ac:	OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM		
Smart System:	☒ SISO	802.11a/n/ac		
EUT Function	☒ Client	☐ Outdoor AP	☐ Indoor AP ☐ Fixed P2P AP	
DFS Function:	☐ Master ☐ Slave with radar detection ☒ Slave without radar detection			
Frequency Range:	U-NII-1:	5150 ~ 5250MHz		
	U-NII-2A:	5250 ~ 5350MHz		
	U-NII-2C:	5470 ~ 5725MHz		
	U-NII-3:	5725 ~ 5850MHz		
Channel Frequency:	20M BWch.:	U-NII-1:	5180 ~ 5240MHz	4 Channels
		U-NII-2A:	5260 ~ 5320MHz	4 Channels
		U-NII-2C:	5500 ~ 5700MHz	11 Channels
		U-NII-3:	5745 ~ 5825MHz	5 Channels
		Straddle Channel:	5720MHz	1 Channel
	40M BWch.:	U-NII-1:	5190 ~ 5230MHz	2 Channels
		U-NII-2A:	5270 ~ 5310MHz	2 Channels
		U-NII-2C:	5510 ~ 5670MHz	5 Channels
		U-NII-3:	5755 ~ 5795MHz	2 Channels
		Straddle Channel:	5710MHz	1 Channel
	80M BWch.:	U-NII-1:	5210MHz	1 Channel
		U-NII-2A:	5290MHz	1 Channel
		U-NII-2C:	5530 ~ 5610MHz	2 Channels
		U-NII-3:	5775MHz	1 Channel
		Straddle Channel:	5690MHz	1 Channel
Antenna Type:	☐ External, ☒ Integrated			
Antenna Gain:	Frequency Range	Ant7 (dBi)		
	U-NII-1:	-0.3		
	U-NII-2A:	-0.3		
	U-NII-2C:	-0.3		
	U-NII-3:	-0.3		
Remark: The above EUT's information was declared by applicant, please refer to the specifications or user's manual for more detailed description.				

2 Test Configuration

2.1 Test Channel

Frequency Channels for U-NII-1							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	40	5200MHz	44	5220MHz	48	5240MHz
38	5190MHz	42	5210MHz	46	5230MHz	/	

Remark:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the selected channel see below:

Modulation Type	Test Channel	Test Frequency
802.11a/n20 /ac20	The Lowest channel (CH36)	5180MHz
	The Middle channel (CH40)	5200MHz
	The Highest channel (CH48)	5240MHz
Modulation Type	Test Channel	Test Frequency
802.11n40 /ac40	The Lowest channel (CH38)	5190MHz
	The Highest channel (CH46)	5230MHz
Modulation Type	Test Channel	Test Frequency
802.11ac80	The Middle channel (CH42)	5210MHz

Frequency Channels for U-NII-2A							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
52	5260MHz	56	5280MHz	60	5300MHz	64	5320MHz
54	5270MHz	58	5290MHz	62	5310MHz	/	

Remark:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Modulation Type	Test Channel	Test Frequency
802.11a/n20 /ac20	The Lowest channel (CH52)	5260MHz
	The Middle channel (CH60)	5300MHz
	The Highest channel (CH64)	5320MHz
Modulation Type	Test Channel	Test Frequency
802.11n40 /ac4	The Lowest channel (CH54)	5270MHz
	The Highest channel (CH62)	5310MHz
Modulation Type	Test Channel	Test Frequency
802.11ac80	The Middle channel (CH58)	5290MHz

Frequency Channels for U-NII-2C							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
100	5500MHz	110	5550MHz	122	5610MHz	134	5670MHz
102	5510MHz	112	5560MHz	124	5620MHz	136	5680MHz
104	5520MHz	116	5580MHz	126	5630MHz	140	5700MHz
106	5530MHz	118	5590MHz	128	5640MHz	/	
108	5540MHz	120	5600MHz	132	5660MHz	/	

Remark:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Modulation Type	Test Channel	Test Frequency
802.11a/n20 /ac20	The Lowest channel (CH100)	5500MHz
	The channel (CH104)	5520MHz
	The Middle channel (CH120)	5600MHz
	The channel (CH136)	5680MHz
	The Highest channel (CH140)	5700MHz
Modulation Type	Test Channel	Test Frequency
802.11n40 /ac40	The Lowest channel (CH102)	5510MHz
	The channel (CH110)	5550MHz
	The Middle channel (CH118)	5590MHz
	The Highest channel (CH134)	5670MHz
Modulation Type	Test Channel	Test Frequency
802.11ac80	The Lowest channel (CH106)	5530MHz
	The Highest channel (CH122)	5610MHz

Frequency Channels for U-NII-3							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745MHz	153	5765MHz	157	5785MHz	161	5805MHz
151	5755MHz	155	5775MHz	159	5795MHz	165	5825MHz

Remark:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Modulation Type	Test Channel	Test Frequency
802.11a/n20 /ac20	The Lowest channel (CH149)	5745MHz
	The Middle channel (CH157)	5785MHz
	The Highest channel (CH165)	5825MHz
Modulation Type	Test Channel	Test Frequency
802.11n40 /ac40	The Lowest channel (CH151)	5755MHz
	The Highest channel (CH159)	5795MHz
Modulation Type	Test Channel	Test Frequency
802.11ac80	The Middle channel (CH155)	5775MHz

Straddle Channel		
Modulation Type	Test Channel	Test Frequency
802.11a/n20 /ac20	The channel (CH144)	5720MHz
Modulation Type	Test Channel	Test Frequency
802.11n40 /ac40	The channel (CH142)	5710MHz
Modulation Type	Test Channel	Test Frequency
802.11ac80	The channel (CH138)	5690MHz

2.2 Worst-case configuration and Mode

Modulation Type	SISO - Data Rate
802.11a	6 Mbps
802.11n20	MCS0 (6.5 Mbps)
802.11n40	MCS0 (13.5 Mbps)
802.11ac20	MCS0 (6.5 Mbps)
802.11ac40	MCS0 (13.5 Mbps)
802.11ac80	MCS0 (29.3 Mbps)
Transmitting mode:	Keep the EUT was programmed to be in continuously transmitting mode.
Normal Link:	Keep the EUT operation to normal function.

2.3 Support Unit used in test

The EUT has been tested as an independent unit.

2.4 Test Environment

Temperature:	Normal: 15°C ~ 35°C
Humidity:	45 ~ 56 % RH Ambient
Voltage:	DC 3.91V
AC Voltage:	AC 120V/60Hz for Conducted Emissions
Remark: The testing environment is within the scope of the EUT user manual and meets the requirements of the standard testing environment.	

2.5 Test RF Cable

For all conducted test items: The offset level is set spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

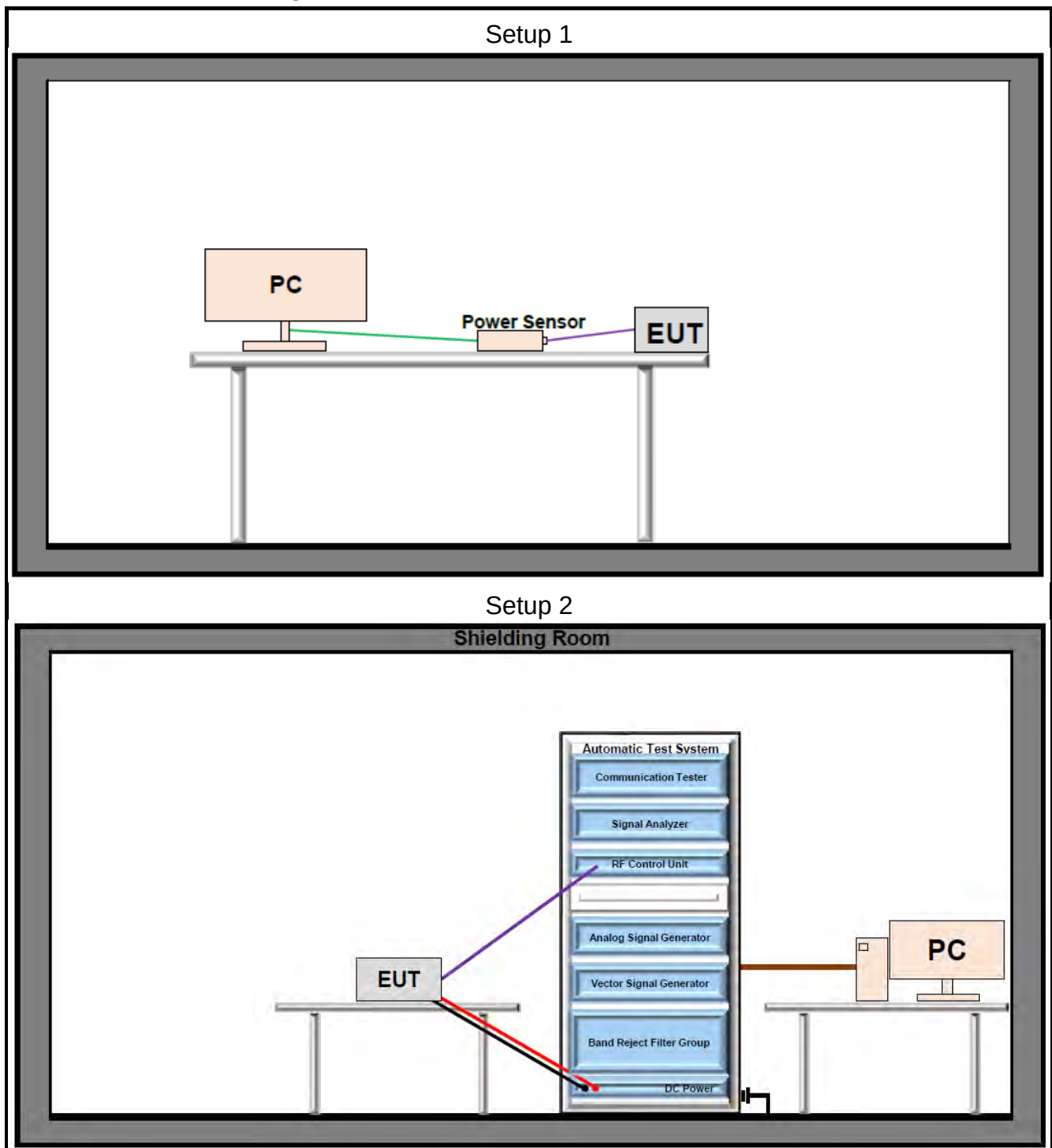
Offset = RF cable loss + attenuator factor.

2.6 Modifications

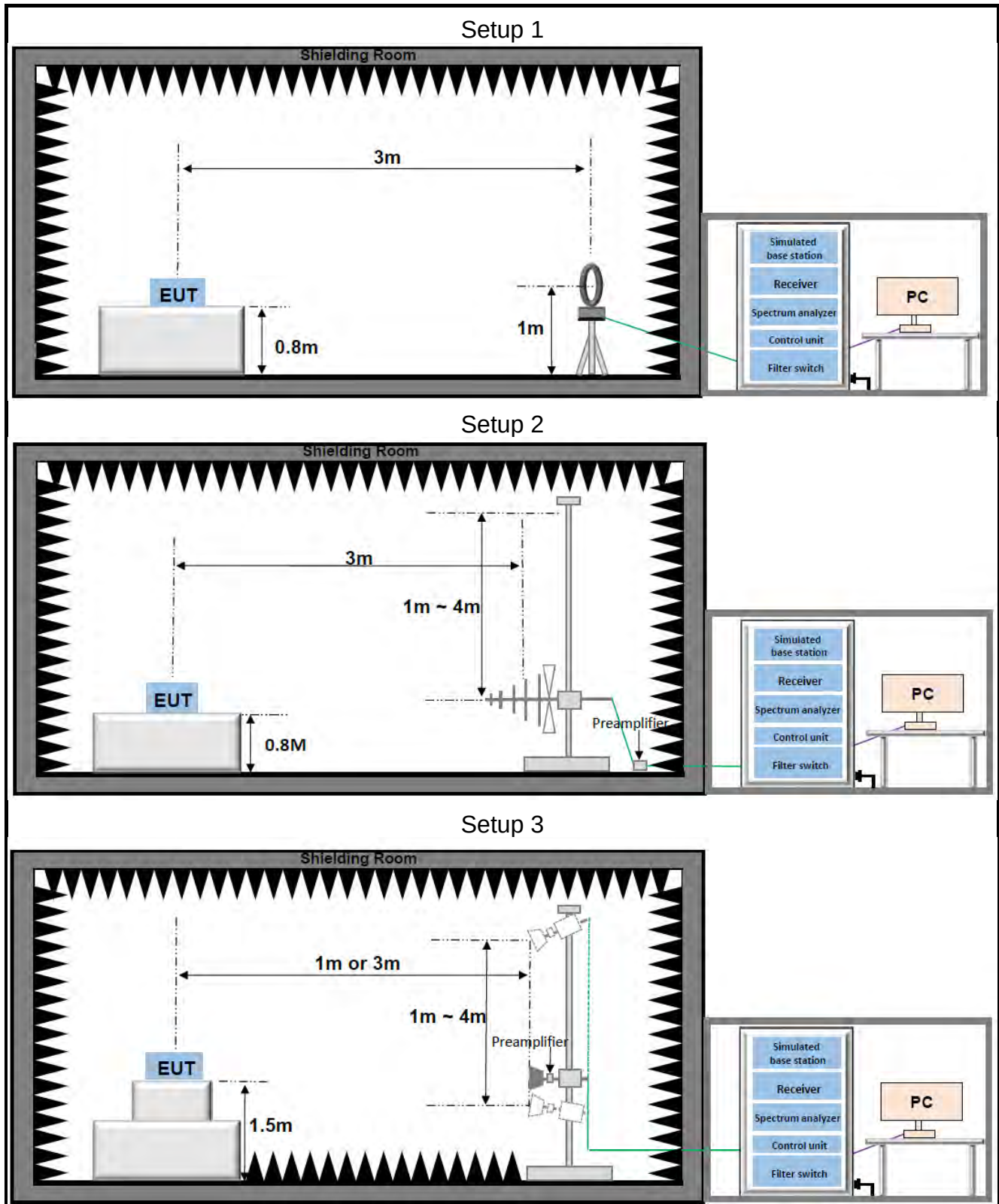
No modifications were made during testing.

2.7 Test Setup Diagram

2.7.1 Conducted Configuration



2.7.2 Radiated Configuration



3 Equipment and Measurement Uncertainty

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, whichever is less, and where applicable is traceable to recognized national standards.

3.1 Test Equipment List

RF Conducted					
Description	Manufacturer	Model	S.N.	Last Due	Cal Due
Signal Analyzer	Keysight	N9020A	US46470429	2026/03/05	2027/03/04
Signal Generator	R&S	SMR20	101027	2026/03/05	2027/03/04
Vector Signal Generator	R&S	SMM100A	549353	2025/05/29	2026/05/28
Power Sensor	Anritsu	MA24408A	12520	2025/05/29	2026/05/28
RF Control Unit	Tonscend	JS0806-2	23C80620671	2025/05/29	2026/05/28
EXA Signal Analyzer, Multi-touch	Keysight	N9010B	MY63440541	2025/05/29	2026/05/28
Attenuator	Yin Saige	SMA-10dBm	N/A	N/A	N/A
Measurement Software	Tonscend	TS1120-3	10659	N/A	N/A

Radiated Emission					
Description	Manufacturer	Model	S.N.	Last Due	Cal Due
Biconic Logarithmic Periodic Antennas	Schwarzbeck	VULB9163	1643	2023/06/25	2026/06/24
Double-Ridged Horn Antennas	Schwarzbeck	BBHA 9120D	2809	2023/06/25	2026/06/24
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	1290	2023/06/25	2026/06/24
Loop Antenna	Schwarzbeck	FMZB 1519C	1519C-028	2023/06/29	2026/06/28
Signal Analyzer	Keysight	N9020A	MY49100252	2026/04/03	2027/04/02
EXA Signal Analyzer, Multi-touch	Keysight	N9010B	MY63440541	2025/05/29	2026/05/28
Wideband Radio Communication Tester	R&S	CMW500	150645	2026/03/06	2027/03/05
Low Noise Amplifier	Tonscend	TAP9K3G40	AP23A8060273	2025/03/11	2027/03/10
Low Noise Amplifier	Tonscend	TAP01018050	AP22G806258	2025/03/11	2027/03/10
Low Noise Amplifier	Tonscend	TAP18040048	AP22G806247	2025/03/11	2027/03/10
Hygrometer	BINGYU	HTC-1	N/A	2025/07/25	2026/07/24
Band Reject Filter Group	Townshend	JS0806-F	23A806F0652	N/A	N/A
Test Software	Tonscend	TS+	Version: 5.0.0	N/A	N/A

Conducted Emission					
Description	Manufacturer	Model	S.N.	Last Due	Cal Due
EMI Tester Receiver	Rohde & Schwarz	ESR3	103108	2025/05/29	2026/05/28
LISN	Rohde & Schwarz	ENV 216	102836	2026/01/19	2027/01/18
Test software	Rohde & Schwarz	ELEKTRA V4.61	N/A	N/A	N/A

3.2 Measurement Uncertainty

Parameter	U _{lab}
Frequency Error	679.98Hz
Output Power	0.76dB
Conducted Spurious Emissions	2.22dB
Conducted Emissions(150kHz~30MHz)	2.43dB
Radiated Emissions(9kHz~30MHz)	2.40dB
Radiated Emissions(30MHz~1000MHz)	4.66dB
Radiated Emissions(1GHz~18GHz)	5.42dB
Radiated Emissions(18GHz~40GHz)	5.46dB

Uncertainty figures are valid to a confidence level of 95%

4 Test Results

4.1 Antenna Requirement

Standard Applicable:	47 CFR Part 15E Section 15.203
15.203 requirement: 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
The antenna gain and type as provided by the manufacturer are as follows: The antenna Type is Integrated. With Antenna gain is -0.3dBi. Antenna Anti-Replacement Construction: An embedded-in antenna design is used.	

4.2 Frequency Stability

Standard Applicable:	47 CFR Part 15E Section 15.407(g)
Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.	

4.3 AC Power Line Conducted Emissions

Limits

Frequency range (MHz)	Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

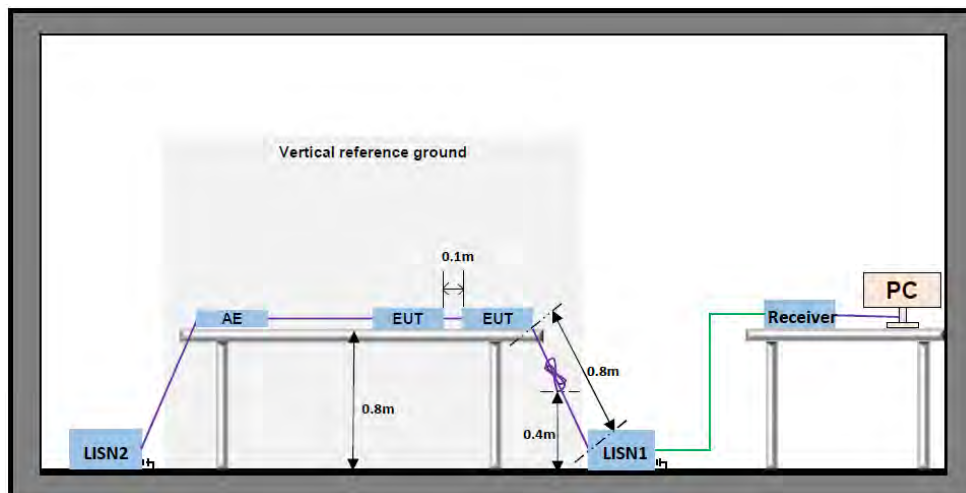
Test Procedure

ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, Section 6.2.

Test Settings

1. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
2. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.
3. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
4. Set the test-receiver system to Peak detect function and specified bandwidth (if bandwidth =9kHz) with maximum hold mode. Then measurement is also conducted by average detector and Quasi-Peak detector function respectively
5. Both sides of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

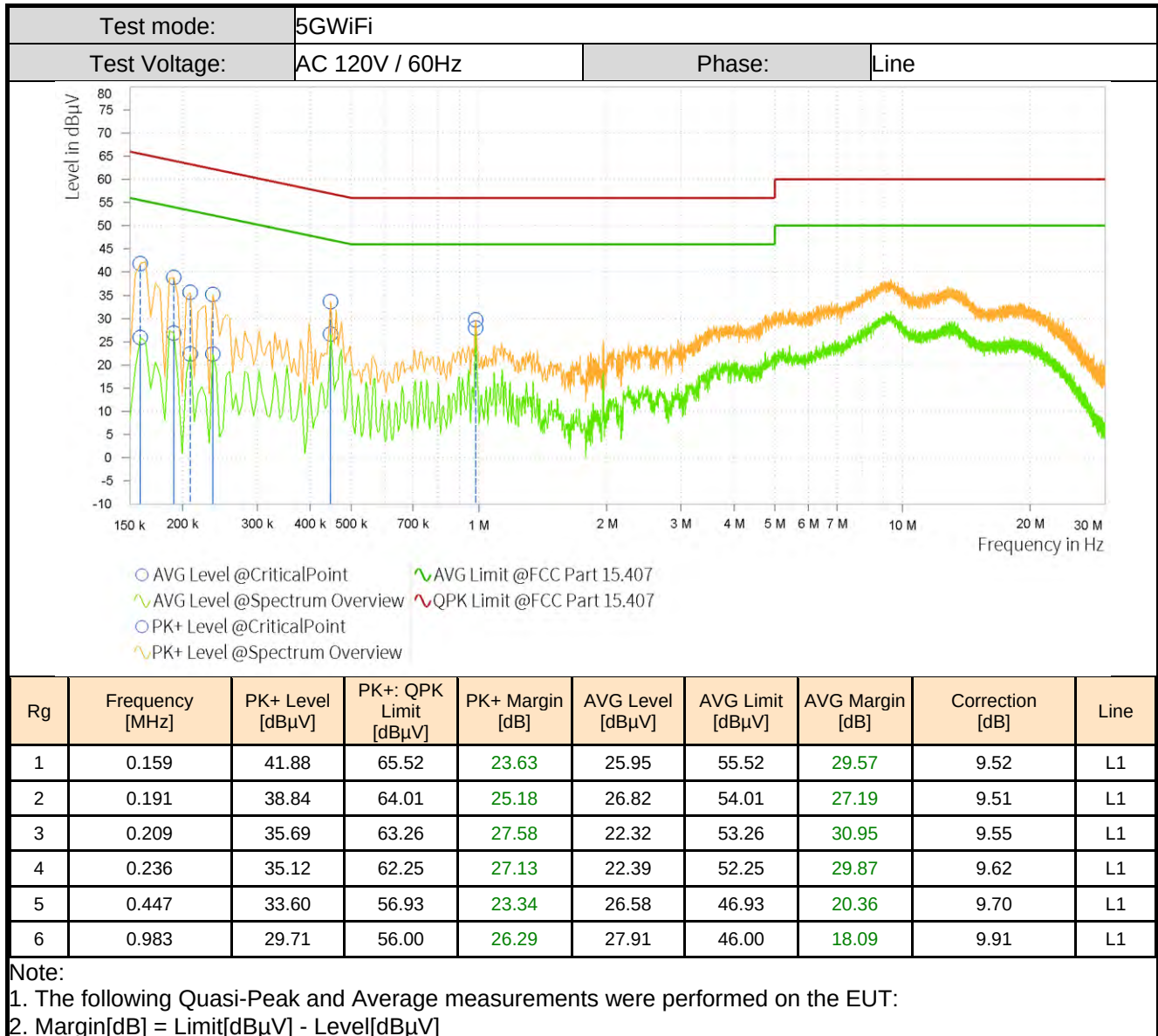
Test Setup

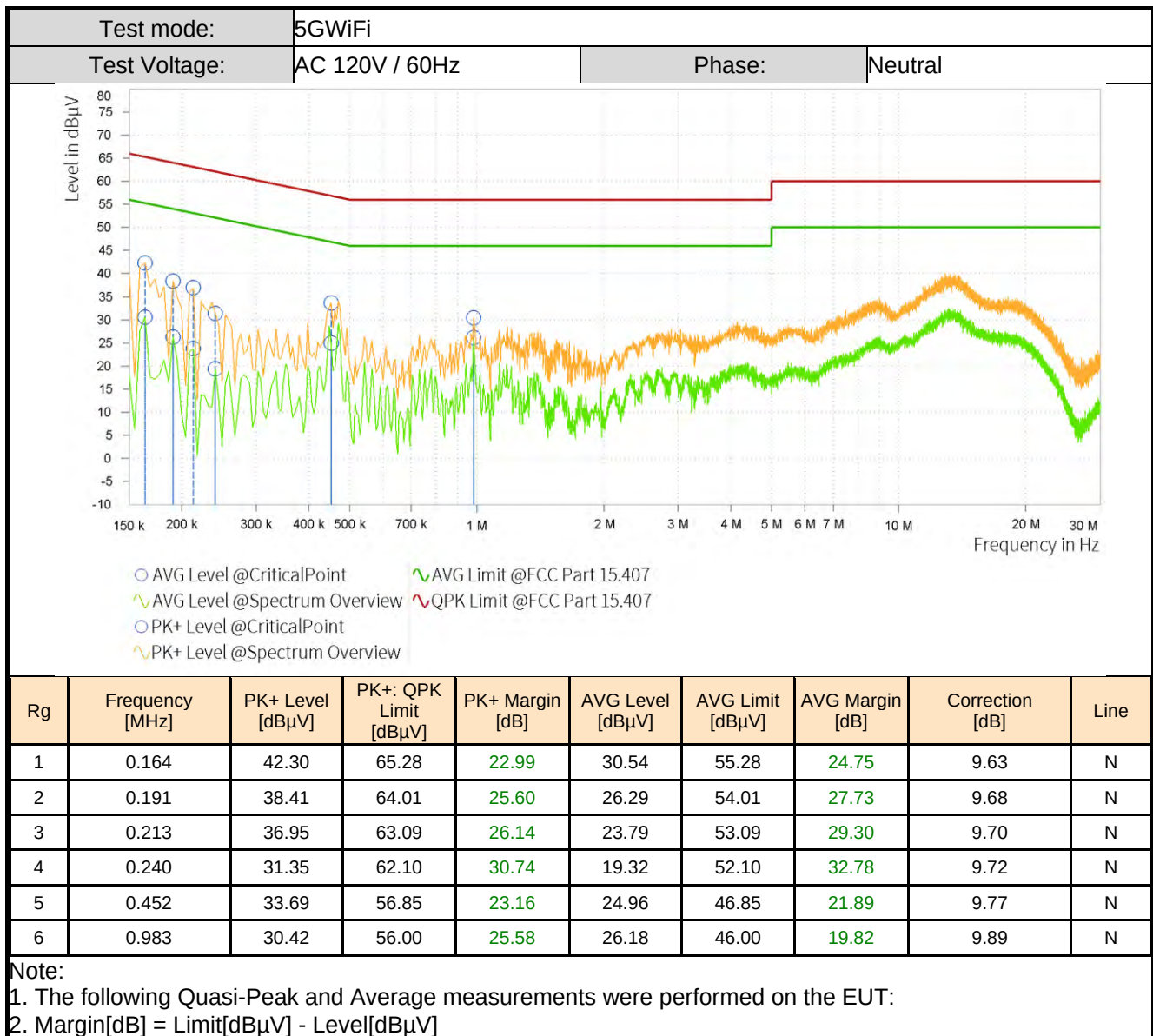


Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result:





4.4 Maximum Conducted Output Power

Limits

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.

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.

For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

Test Procedure

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.E.3.b (Other Channel)

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.E.2.b(Straddle Channel)

Test Settings

1. PM-G:
Set to the maximum power setting and enable the EUT transmit continuously.
The power output was measured on the EUT antenna port using RF Cable with an attenuator connected to a power sensor. Output power was read directly from the power sensor.
Measure and record the results in the test report.
2. SA:
RBW = 1MHz
VBW $\geq$ 3MHz
Span = Encompass the EBW (or, alternatively, the entire 99% occupied bandwidth)
Sweep = Auto
Detector = power averaging (rms)

Test Setup

Refer to section 2.7.1 Setup 1 for details.

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result

The detailed test data see: **Appendix**.

4.5 Emission Bandwidth

Limits

None, for reporting purposes only.

Test Procedure

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.C.1.

Test Settings

1. Set to the maximum power setting and enable the EUT transmit continuously.
2. The transmitter output is connected to a spectrum analyzer:
3. RBW = 1% - 5%(99%BW)
4. VBW = 3 times the RBW
5. Sweep = Auto
6. Detector = Peak
7. Trace = Max hold
8. The trace was allowed to stabilize
9. Measure and record the results in the test report.

Test Notes

The signal analyzers' automatic bandwidth measurement capability of the spectrum analyzer was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to X= 26. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.

Test Setup

Refer to section 2.7.1 Setup 2 for details.

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result

The detailed test data see: **Appendix**.

4.6 Minimum Emission Bandwidth

Limits

Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Procedure

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.C.2.

Test Settings

1. Set to the maximum power setting and enable the EUT transmit continuously.
2. The transmitter output is connected to a spectrum analyzer:
3. RBW = 100kHz(DTS)
4. VBW = 3 times the RBW
5. Sweep = Auto
6. Detector = Peak
7. Trace = Max hold
8. The trace was allowed to stabilize
9. Measure and record the results in the test report.

Test Notes

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test Setup

Refer to section 2.7.1- Setup 2 for details.

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result

The detailed test data see: **Appendix**.

4.7 Occupied Bandwidth

Limits

None, for reporting purposes only.

Test Procedure

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.D.

Test Settings

1. Set to the maximum power setting and enable the EUT transmit continuously.
2. The transmitter output is connected to a spectrum analyzer:
3. RBW = 1% - 5%(99%BW)
4. VBW = 3 times the RBW
5. Sweep = Auto
6. Detector = Peak
7. Trace = Max hold
8. The trace was allowed to stabilize
9. Measure and record the results in the test report.

Test Setup

Refer to section 2.7.1- Setup 2 for details.

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result

The detailed test data see: **Appendix**.

4.8 Maximum Power Spectral Density

Limits

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.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1-megahertz band.

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

Test Procedure

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.F

Test Settings

1. Set to the maximum power setting and enable the EUT transmit continuously
2. The transmitter output is connected to a spectrum analyzer
3. RBW = 1MHz (for 5.15–5.25 GHz, 5.25–5.35 GHz, and 5.47–5.725 GHz)
4. RBW = 500kHz (for 5.725–5.85 GHz)
5. VBW $\geq$ 3 times RBW
6. Sweep = Auto
7. Detector = Peak
8. Trace = Max hold
9. The trace was allowed to stabilize
10. Measure and record the results in the test report.

Test Setup

Refer to section 2.7.1- Setup 2 for details.

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result

The detailed test data see: **Appendix**.

4.9 Unwanted Emissions

Limits

Spurious emissions are permitted in an of the frequency bands:

MHz	MHz	MHz	MHz	GHz	GHz
0.090 - 0.110	12.29 - 12.293	149.9 - 150.05	1660 - 1710	4.5 - 5.15	14.47 - 14.5
0.495 - 0.505	12.51975 - 12.52025	156.52475 - 156.52525	1718.8 - 1722.2	5.35 - 5.46	15.35 - 16.2
2.1735 - 2.1905	12.5767 - 12.57725	156.7 - 156.9	2200 - 2300	7.25 - 7.75	17.7 - 21.4
4.125 - 128	13.36 - 13.41	162.0125 - 167.17	2310 - 2390	8.025 - 8.5	22.01 - 23.12
4.17725 - 4.17775	16.42 - 16.423	167.72 - 173.2	2483.5 - 2500	9.0 - 9.2	23.6 - 24.0
4.20725 - 4.20775	16.69475 - 16.69525	240 - 285	2655 - 2900	9.3 - 9.5	31.2 - 31.8
6.215 - 6.218	1680425 - 1680475	322 - 335.4	3260 - 3267	10.6 - 12.7	36.43 - 36.5
6.26775 - 6.26825	25.5 - 25.67	399.9 - 410	3332 - 3339	13.25 - 13.4	
6.31175 - 6.31225	37.5 - 38.25	608 - 614	3345.8 - 3358		
8.291 - 8.294	73 - 74.6	960 - 1240	3600 - 4400		
8.362 - 8.366	74.8 - 75.2	1300 - 1427			
8.37625 - 8.38675	108 - 121.94	1435 - 1626.5			
8.41425 - 8.41475	123 - 138	1645.5 - 1646.5			

Radiated disturbance of an intentional radiator:

Frequency	Field strength ($\mu\text{V/m}$)	Limit (dB $\mu\text{V/m}$)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
1.705MHz-30MHz	30	-	-	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	74.0	Peak	3
		54.0	Average	

Un-restricted band emissions above 1GHz limit:

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.

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.

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.

For transmitters operating solely in the 5.725-5.850 GHz band:

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.

Test Procedure

ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 Section 6.4 & 6.5 & 6.6.

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.G.3 ~ 6.

Test Settings

1. For radiated emissions measurements performed at frequencies less than or equal to 1GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 80cm above the reference ground plane.
2. For radiated emissions measurements performed at frequencies above 1GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 80cm above the ground plane.
3. Radiated measurements shall be made with the measurement antenna positioned in both horizontal and vertical polarization. The measurement antenna shall be varied from 1m to 4m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level (i.e, field strength or received power), when orienting the measurement antenna in vertical polarization, the minimum height of the lowest element of the antenna shall clear the site reference ground plane by at least 25cm.
4. For each suspected emission, the EUT was ranged its worst case and then tune the antenna tower(from 1~4m) and turntable(from 0~360°) find the maximum reading. Preamplifier and a high pass filter are used for the test in order get better signal level comply with the guidelines.
5. The simulated base station was set to force the EUT to its maximum transmitting power.
6. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
7. spectrum analyzer setting:
Measurements Below 1000MHz: RBW = 120 kHz; VBW ≥ 300 kHz; Detector = Peak
Measurements Above 1000MHz: RBW = 1 MHz; VBW ≥ 3 MHz; Detector = Peak
Average Measurements Above 1000MHz:
RBW = 1 MHz, VBW ≥ 1/T, with peak detector for average measurements.
8. The field strength is calculated by adding the Antenna Factor, Cable Factor. The basic equation with a sample calculation is as follows:
Level = Reading(dBμV) + Factor(dB):
Factor = Cable Factor(dB) + AF(dB/m) - Preamplifier gain(dB)
AF = Antenna Factor(dB/m)
Margin = Limit(dBμV/m) – Level(dBμV/m)
9. Repeat above procedures until all frequencies measured was complete.
10. Measure and record the results in the test report.

Test Notes

1. Emissions below 18GHz were measured at a 3-meter test distance while emissions above 18GHz were measured at a 1-meter test distance with the application of a distance correction factor.
2. Radiated spurious emissions were investigated from 9kHz to 30MHz, 30MHz-1GHz and above 1GHz. the disturbance between 9kHz to 30MHz and 18GHz to 40GHz was very low. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be recorded, so only the harmonics had been displayed.
3. These frequencies which near "-" should be ignored because they are Fundamental frequency.

Test Setup

Refer to section 2.7.2 for details.

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result

The detailed test data see: **Appendix.**

5 Test Setup Photos

The detailed test data see: **Appendix-E BTWIFI Setup Photos**

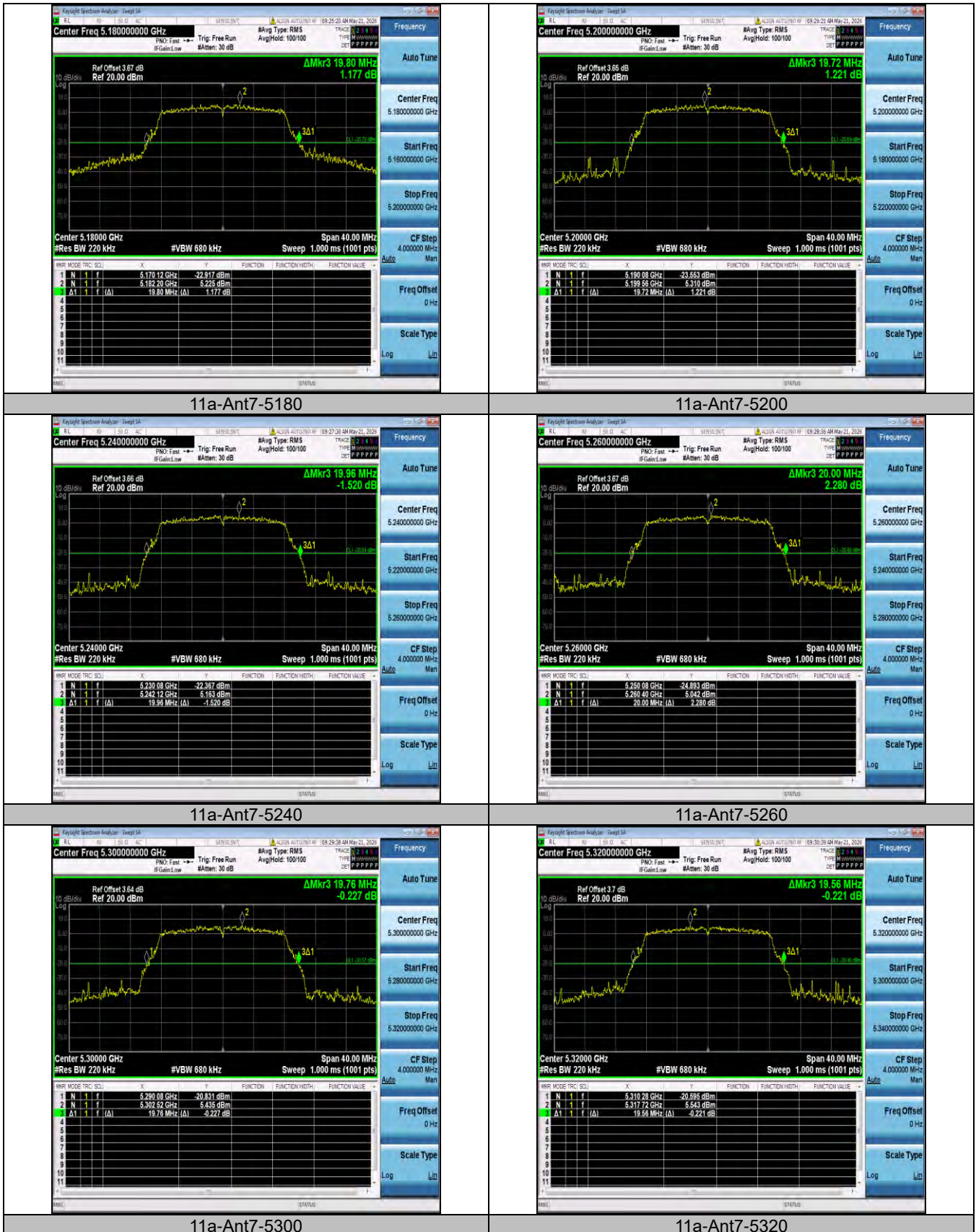
Appendix

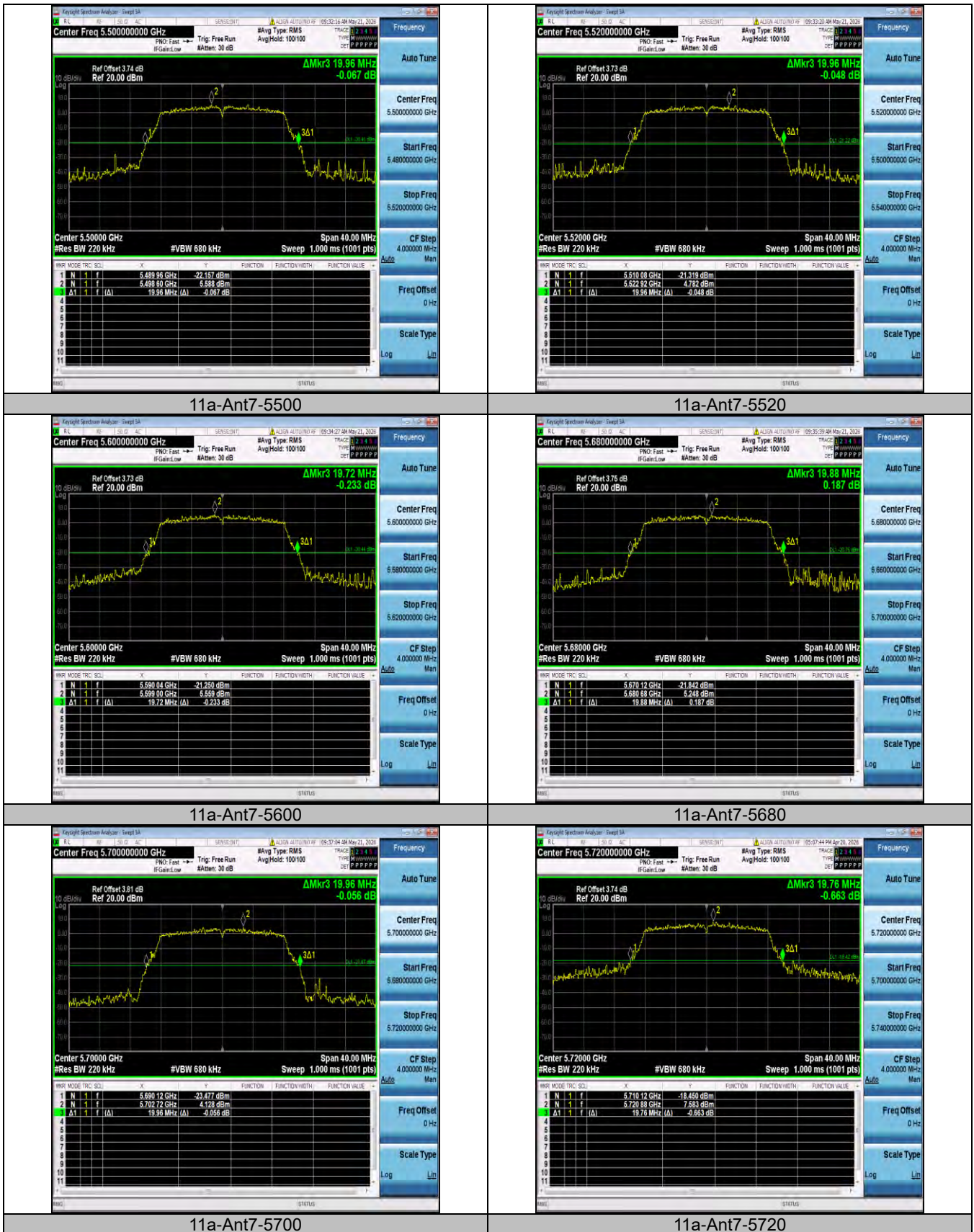
Emission Bandwidth Test Result

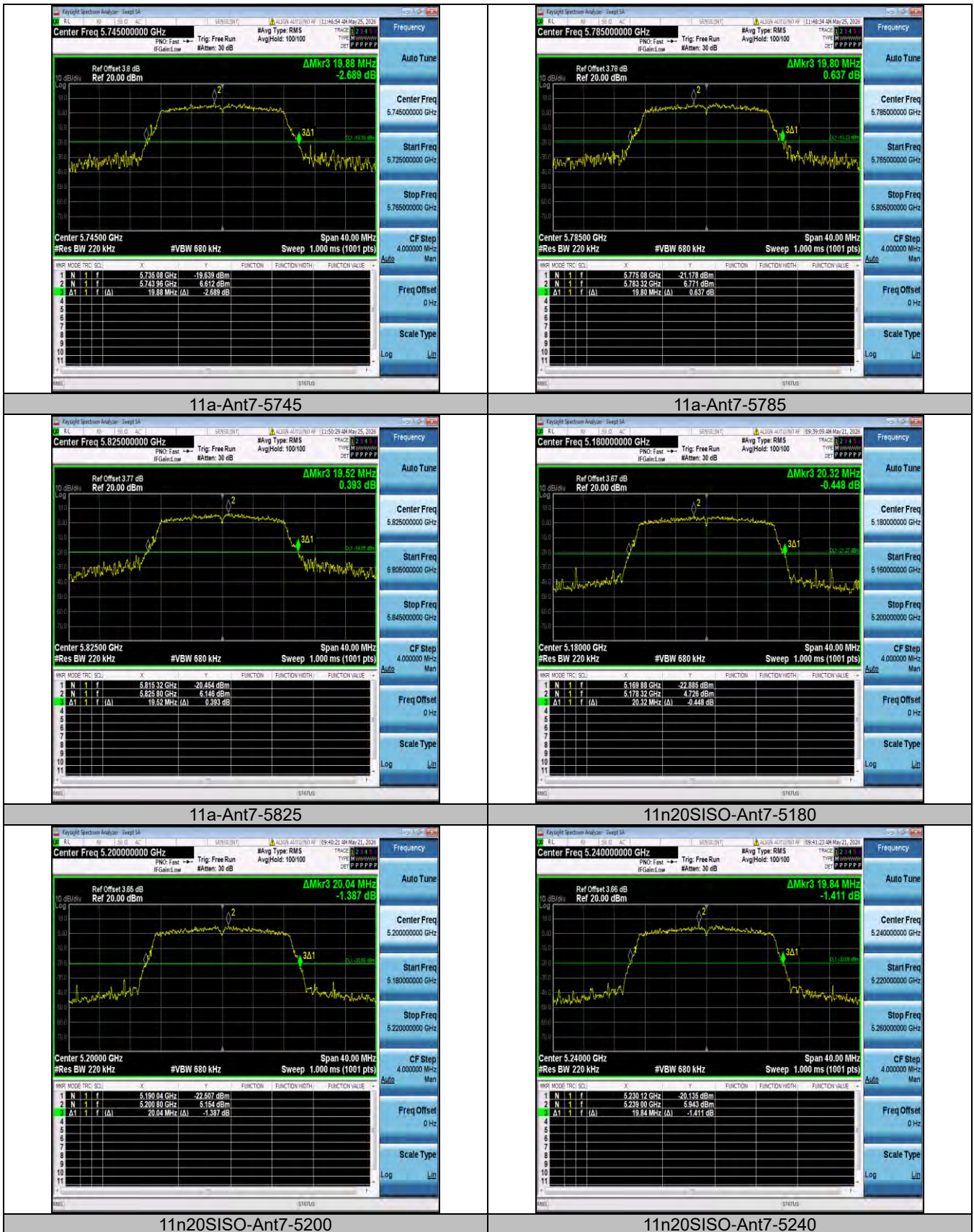
TestMode	Antenna	Frequency[MHz]	26dB EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11a	Ant7	5180	19.800	5170.120	5189.920	---	---
11a	Ant7	5200	19.720	5190.080	5209.800	---	---
11a	Ant7	5240	19.960	5230.080	5250.040	---	---
11a	Ant7	5260	20.000	5250.080	5270.080	---	---
11a	Ant7	5300	19.760	5290.080	5309.840	---	---
11a	Ant7	5320	19.560	5310.280	5329.840	---	---
11a	Ant7	5500	19.960	5489.960	5509.920	---	---
11a	Ant7	5520	19.960	5510.080	5530.040	---	---
11a	Ant7	5600	19.720	5590.040	5609.760	---	---
11a	Ant7	5680	19.880	5670.120	5690.000	---	---
11a	Ant7	5700	19.960	5690.120	5710.080	---	---
11a	Ant7	5720	19.760	5710.120	5729.880	---	---
11a	Ant7	5720 UNII-2C	14.88	5710.120	5725	---	---
11a	Ant7	5720 UNII-3	4.88	5725	5729.880	---	---
11a	Ant7	5745	19.880	5735.080	5754.960	---	---
11a	Ant7	5785	19.800	5775.080	5794.880	---	---
11a	Ant7	5825	19.520	5815.320	5834.840	---	---
11n20SISO	Ant7	5180	20.320	5169.880	5190.200	---	---
11n20SISO	Ant7	5200	20.040	5190.040	5210.080	---	---
11n20SISO	Ant7	5240	19.840	5230.120	5249.960	---	---
11n20SISO	Ant7	5260	20.120	5249.920	5270.040	---	---
11n20SISO	Ant7	5300	20.040	5290.040	5310.080	---	---
11n20SISO	Ant7	5320	20.280	5309.840	5330.120	---	---
11n20SISO	Ant7	5500	20.200	5489.840	5510.040	---	---
11n20SISO	Ant7	5520	20.200	5509.960	5530.160	---	---
11n20SISO	Ant7	5600	20.040	5590.040	5610.080	---	---
11n20SISO	Ant7	5680	20.360	5669.840	5690.200	---	---
11n20SISO	Ant7	5700	19.880	5690.160	5710.040	---	---
11n20SISO	Ant7	5720	22.560	5709.440	5732.000	---	---
11n20SISO	Ant7	5720 UNII-2C	15.56	5709.440	5725	---	---
11n20SISO	Ant7	5720 UNII-3	7	5725	5732.000	---	---
11n20SISO	Ant7	5745	20.120	5734.920	5755.040	---	---
11n20SISO	Ant7	5785	20.080	5775.080	5795.160	---	---
11n20SISO	Ant7	5825	20.640	5814.520	5835.160	---	---
11n40SISO	Ant7	5190	40.000	5170.080	5210.080	---	---
11n40SISO	Ant7	5230	40.480	5209.760	5250.240	---	---
11n40SISO	Ant7	5270	39.760	5249.920	5289.680	---	---
11n40SISO	Ant7	5310	40.000	5290.080	5330.080	---	---
11n40SISO	Ant7	5510	40.240	5489.760	5530.000	---	---
11n40SISO	Ant7	5550	40.720	5529.840	5570.560	---	---
11n40SISO	Ant7	5590	40.400	5569.520	5609.920	---	---
11n40SISO	Ant7	5670	40.240	5649.840	5690.080	---	---
11n40SISO	Ant7	5710	42.480	5687.760	5730.240	---	---
11n40SISO	Ant7	5710 UNII-2C	37.24	5687.760	5725	---	---
11n40SISO	Ant7	5710 UNII-3	5.24	5725	5730.240	---	---
11n40SISO	Ant7	5755	40.240	5734.840	5775.080	---	---
11n40SISO	Ant7	5795	40.240	5774.760	5815.000	---	---
11ac20SISO	Ant7	5180	20.320	5169.800	5190.120	---	---
11ac20SISO	Ant7	5200	20.080	5190.000	5210.080	---	---
11ac20SISO	Ant7	5240	20.200	5229.920	5250.120	---	---
11ac20SISO	Ant7	5260	20.240	5249.960	5270.200	---	---
11ac20SISO	Ant7	5300	20.240	5289.920	5310.160	---	---
11ac20SISO	Ant7	5320	20.200	5309.960	5330.160	---	---
11ac20SISO	Ant7	5500	20.480	5489.800	5510.280	---	---
11ac20SISO	Ant7	5520	20.040	5510.000	5530.040	---	---
11ac20SISO	Ant7	5600	19.720	5590.160	5609.880	---	---

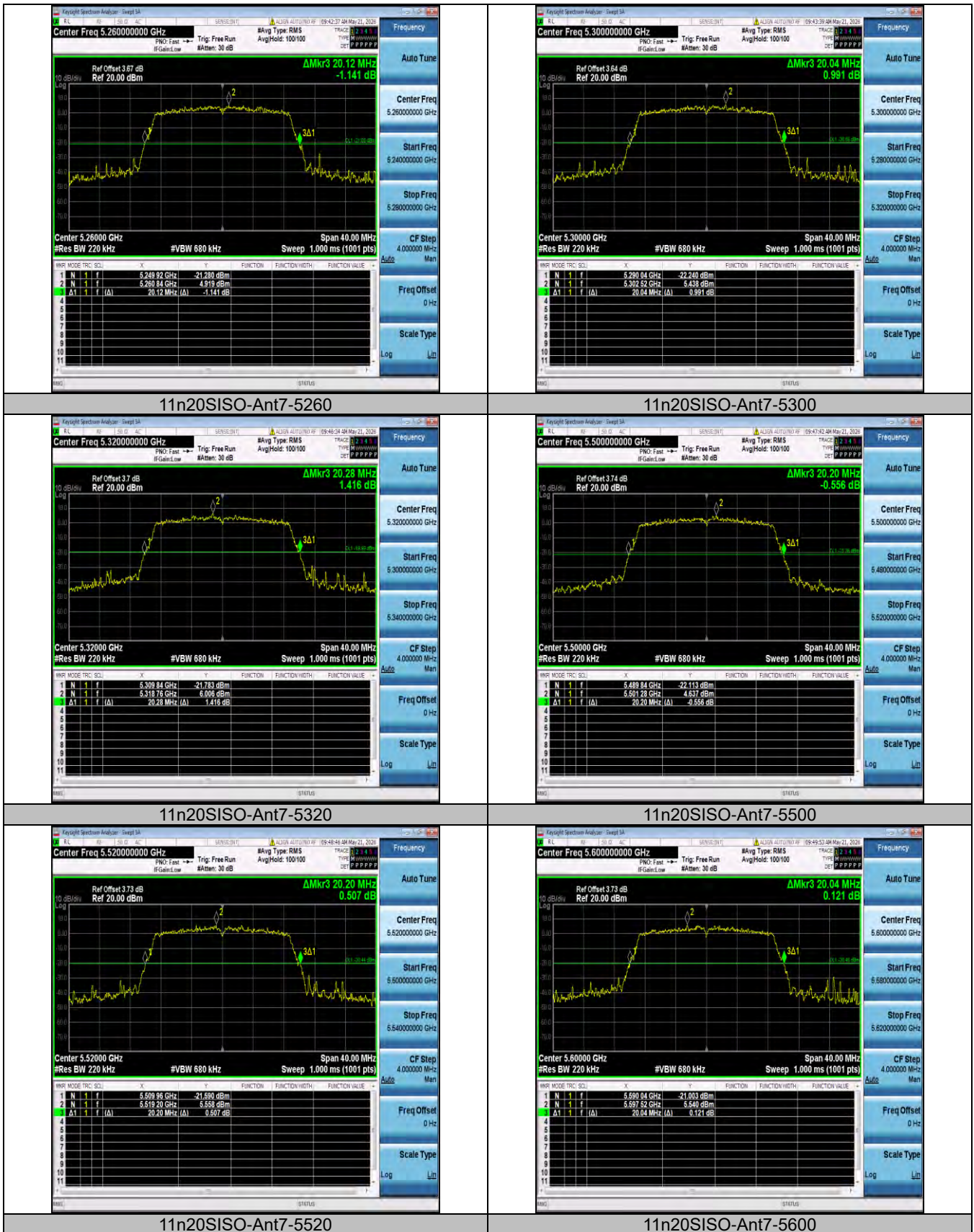
11ac20SISO	Ant7	5680	20.440	5669.840	5690.280	---	---
11ac20SISO	Ant7	5700	20.080	5690.120	5710.200	---	---
11ac20SISO	Ant7	5720	20.360	5709.720	5730.080	---	---
11ac20SISO	Ant7	5720 UNII-2C	15.28	5709.720	5725	---	---
11ac20SISO	Ant7	5720 UNII-3	5.08	5725	5730.080	---	---
11ac20SISO	Ant7	5745	20.360	5734.840	5755.200	---	---
11ac20SISO	Ant7	5785	19.920	5775.080	5795.000	---	---
11ac20SISO	Ant7	5825	20.160	5814.880	5835.040	---	---
11ac40SISO	Ant7	5190	40.080	5169.760	5209.840	---	---
11ac40SISO	Ant7	5230	40.400	5209.840	5250.240	---	---
11ac40SISO	Ant7	5270	40.080	5250.160	5290.240	---	---
11ac40SISO	Ant7	5310	40.480	5289.920	5330.400	---	---
11ac40SISO	Ant7	5510	39.840	5490.080	5529.920	---	---
11ac40SISO	Ant7	5550	40.080	5530.000	5570.080	---	---
11ac40SISO	Ant7	5590	39.760	5570.000	5609.760	---	---
11ac40SISO	Ant7	5670	40.880	5649.600	5690.480	---	---
11ac40SISO	Ant7	5710	40.000	5690.240	5730.240	---	---
11ac40SISO	Ant7	5710 UNII-2C	34.76	5690.240	5725	---	---
11ac40SISO	Ant7	5710 UNII-3	5.24	5725	5730.240	---	---
11ac40SISO	Ant7	5755	40.480	5734.920	5775.400	---	---
11ac40SISO	Ant7	5795	40.320	5774.920	5815.240	---	---
11ac80SISO	Ant7	5210	80.160	5169.840	5250.000	---	---
11ac80SISO	Ant7	5290	80.160	5250.160	5330.320	---	---
11ac80SISO	Ant7	5530	80.480	5490.000	5570.480	---	---
11ac80SISO	Ant7	5610	80.640	5569.680	5650.320	---	---
11ac80SISO	Ant7	5690	80.000	5650.000	5730.000	---	---
11ac80SISO	Ant7	5690 UNII-2C	75	5650.000	5725	---	---
11ac80SISO	Ant7	5690 UNII-3	5	5725	5730.000	---	---
11ac80SISO	Ant7	5775	81.760	5733.400	5815.160	---	---

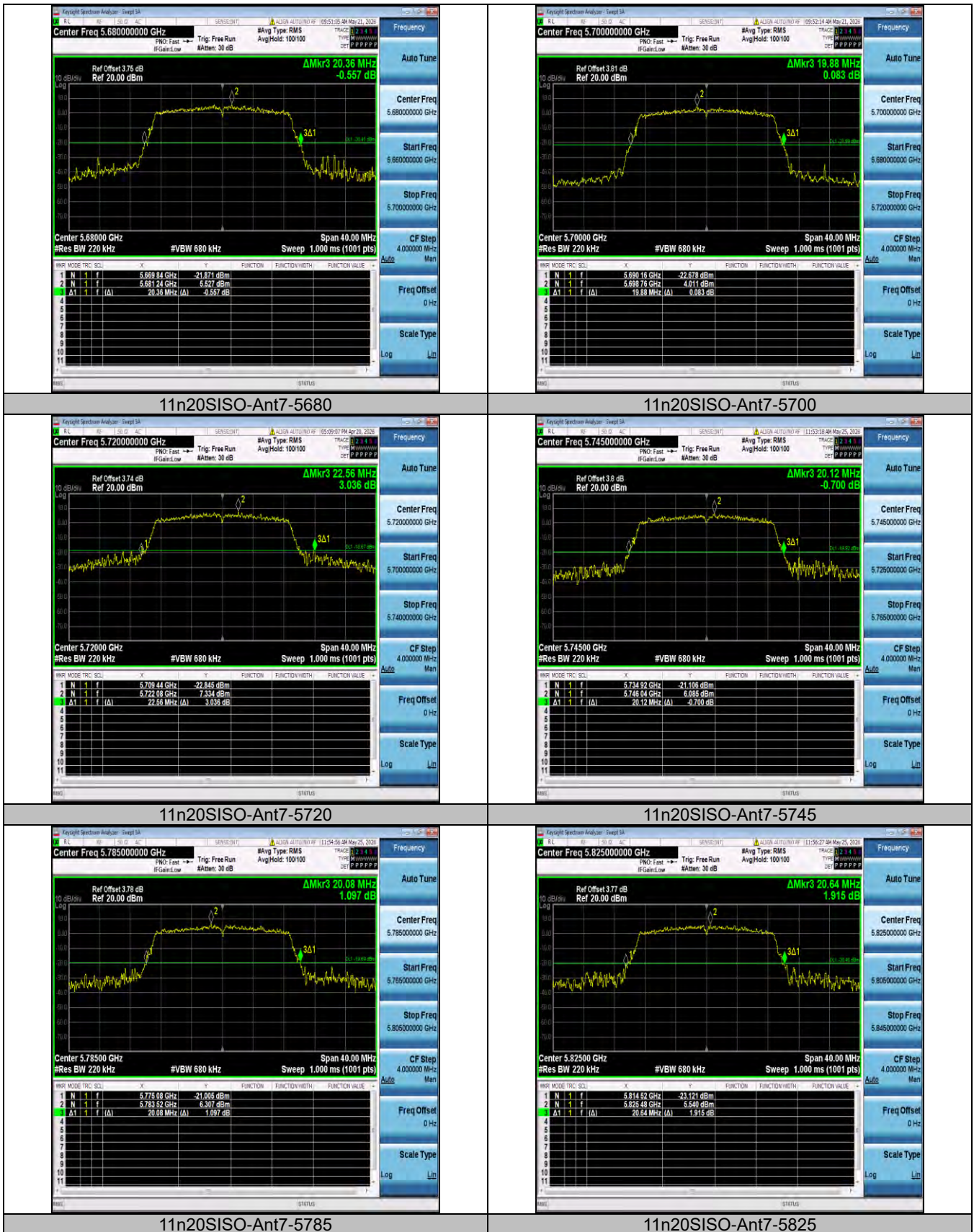
Test Graphs

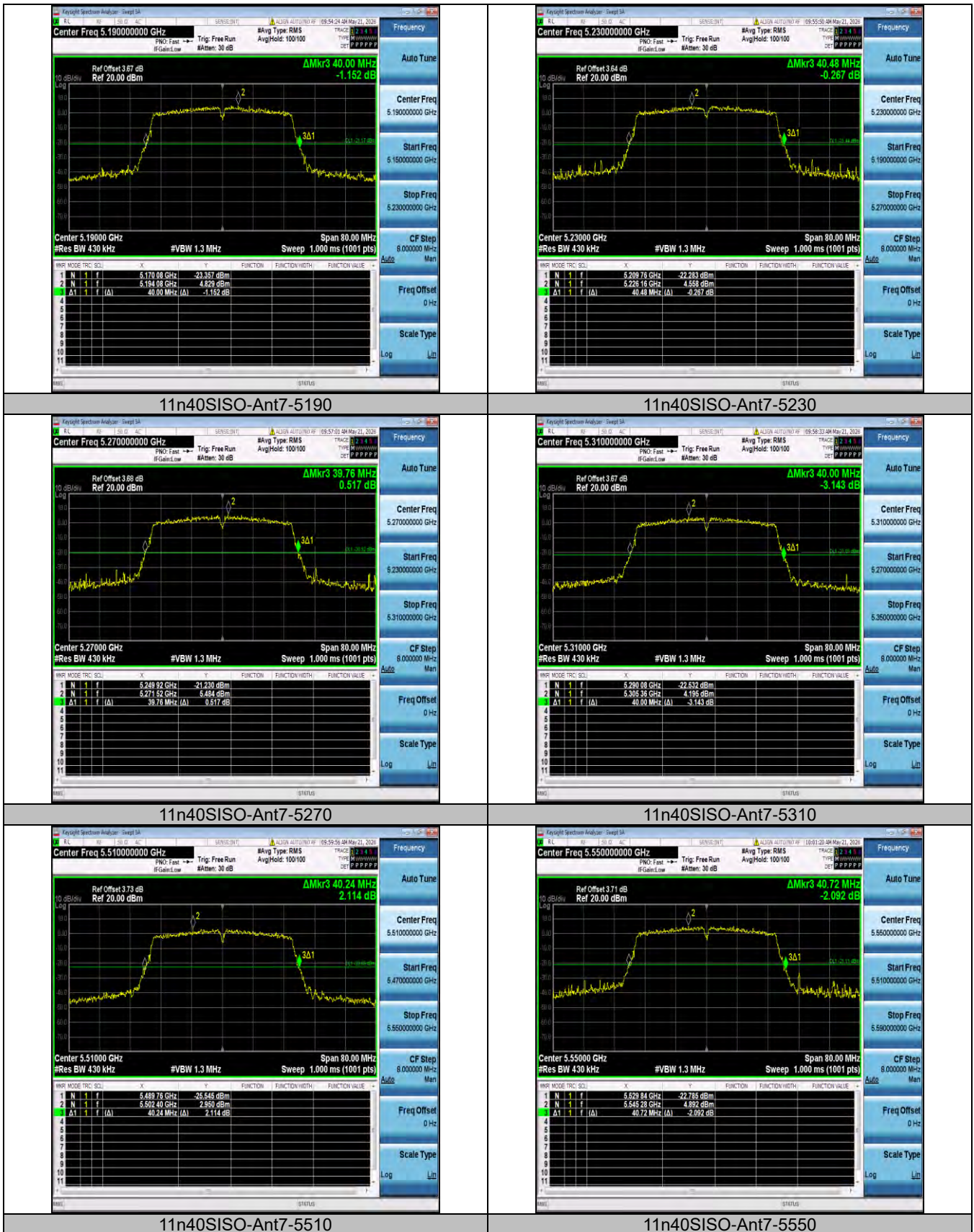


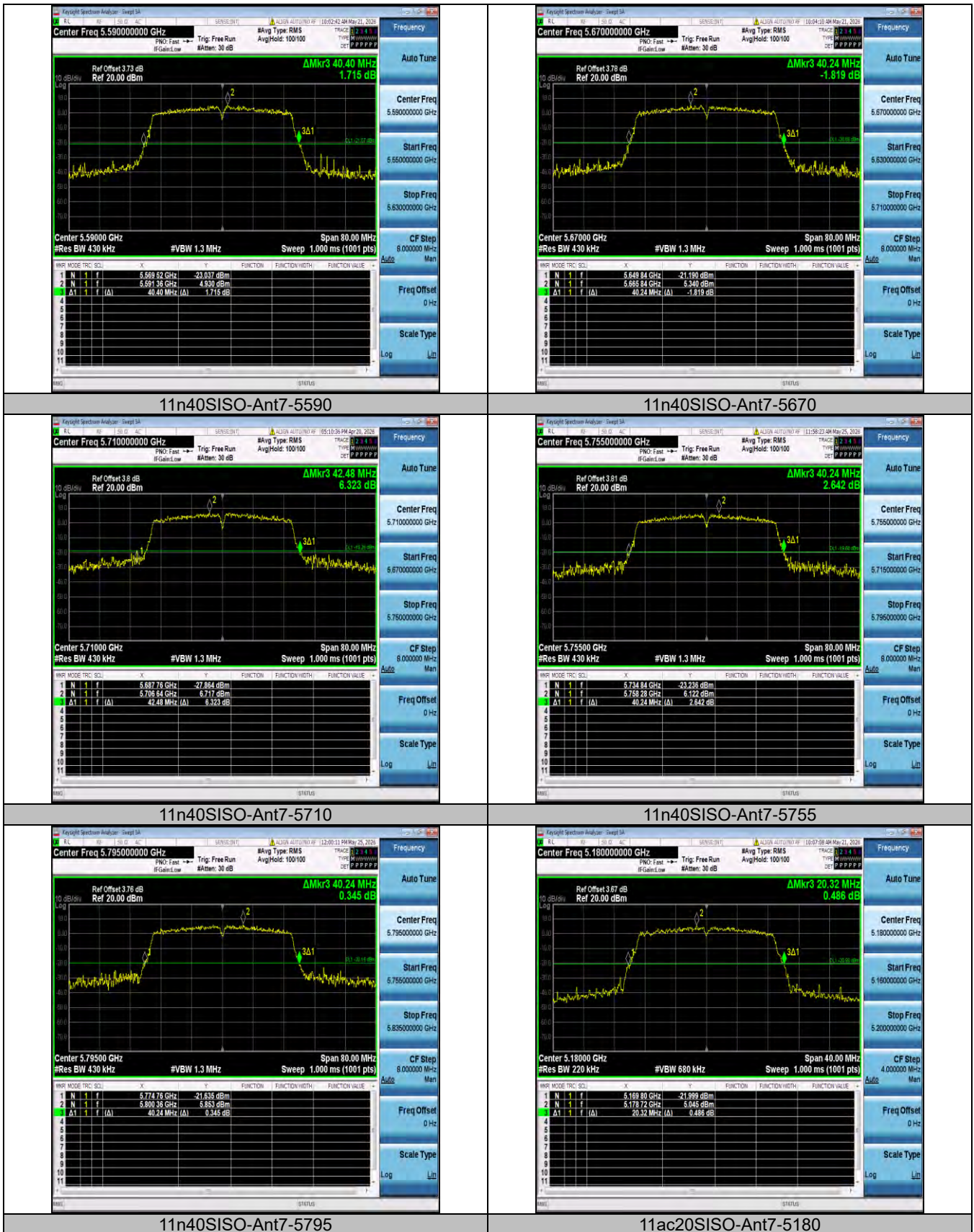


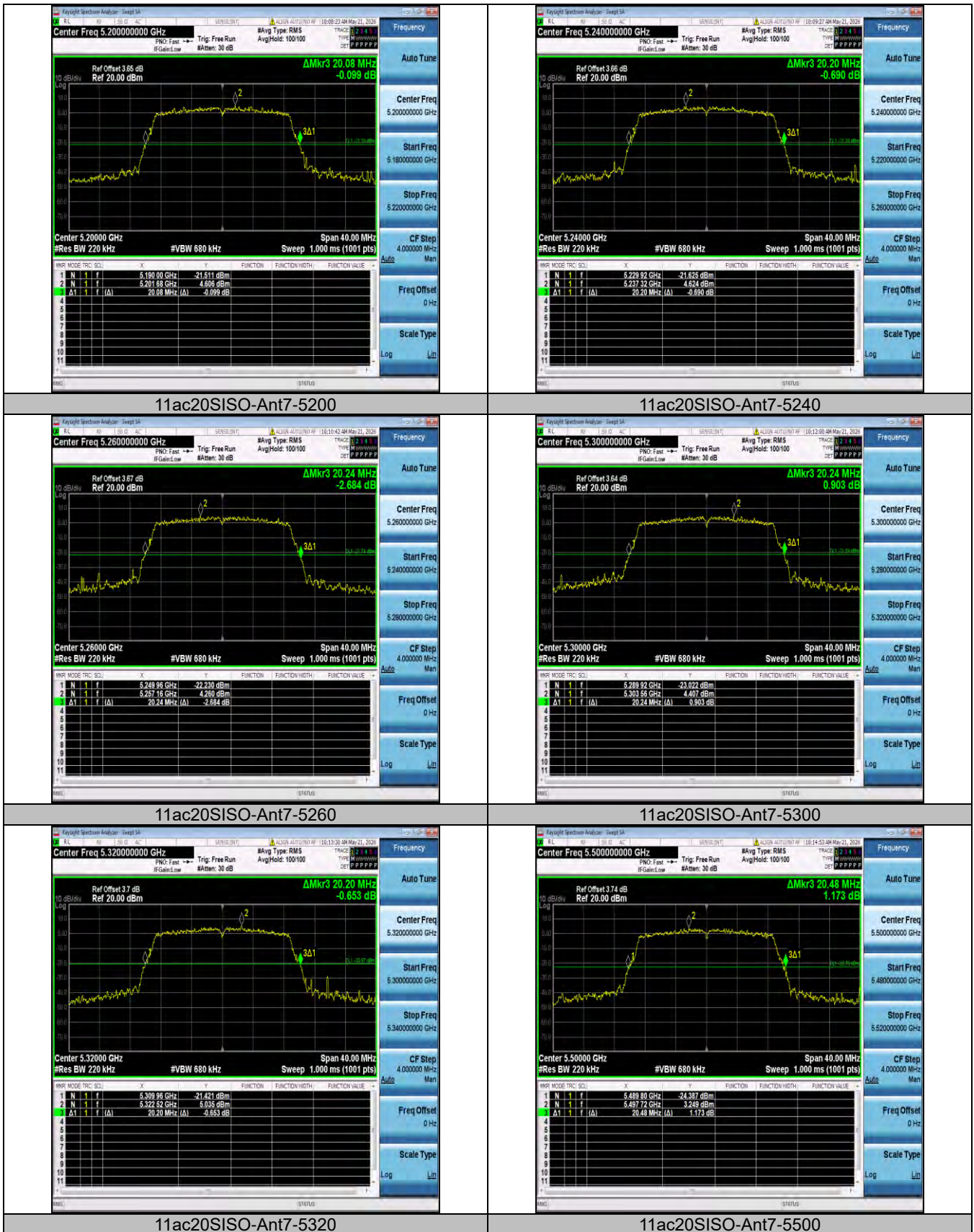


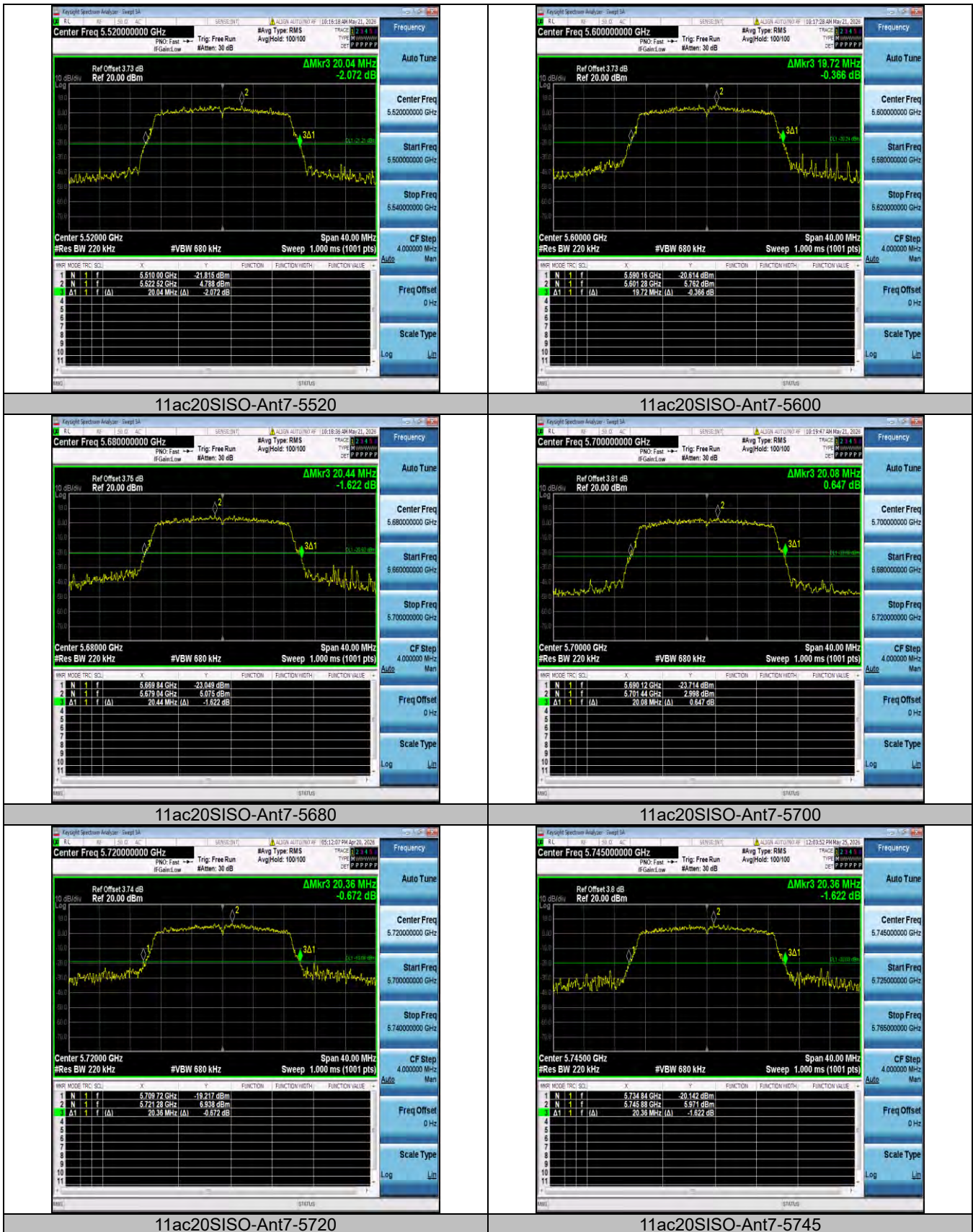


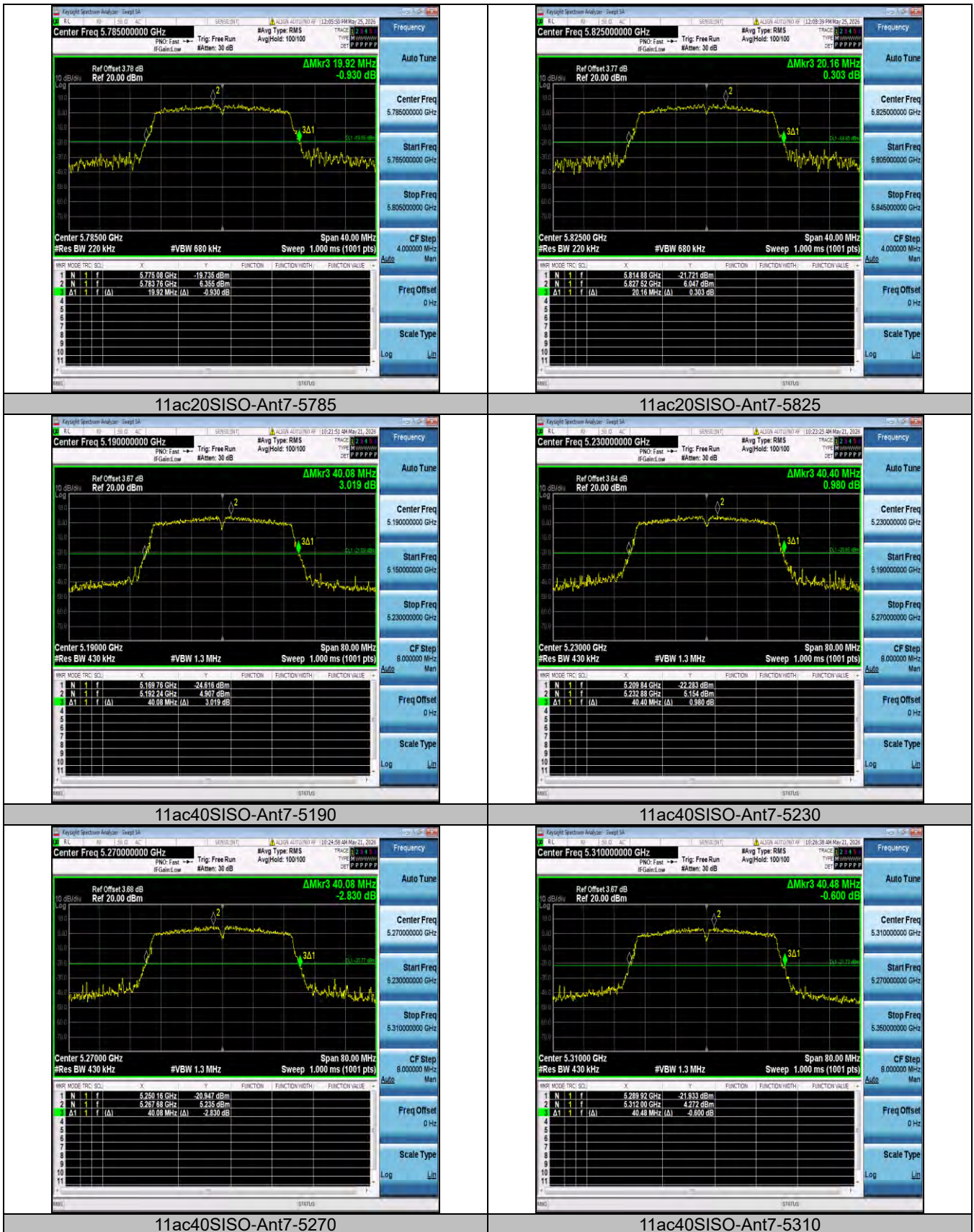


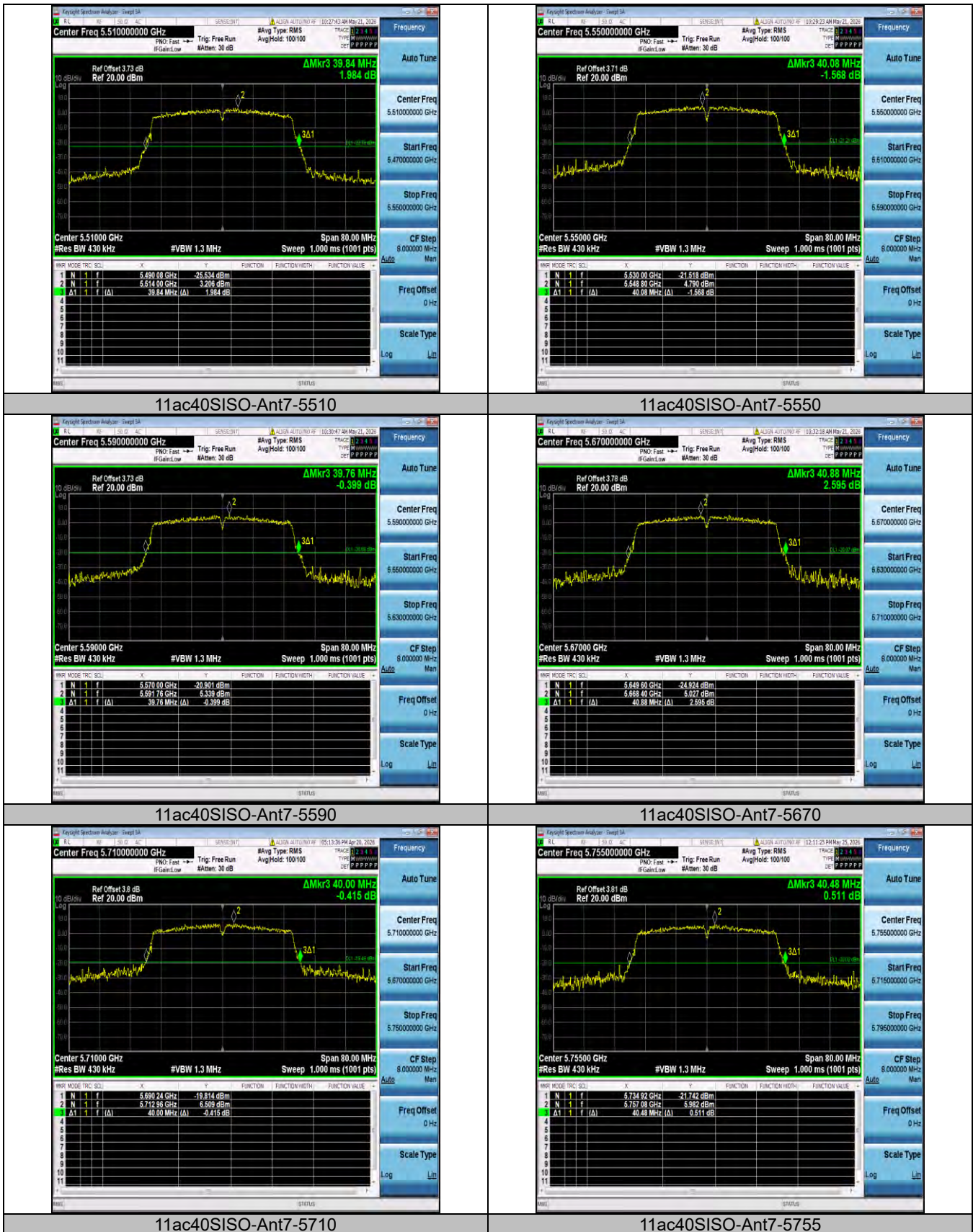






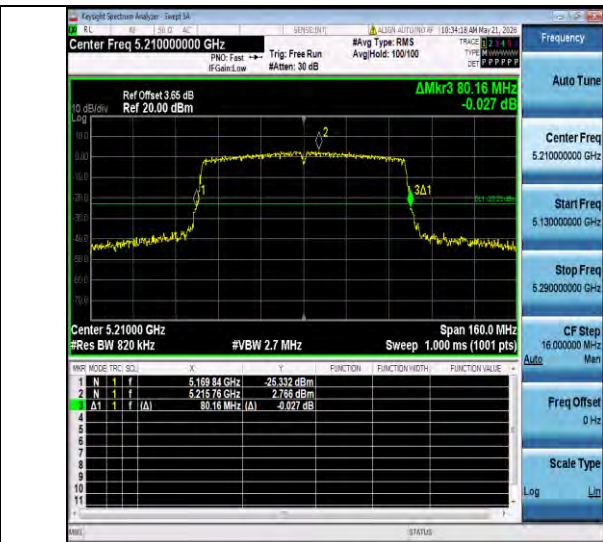








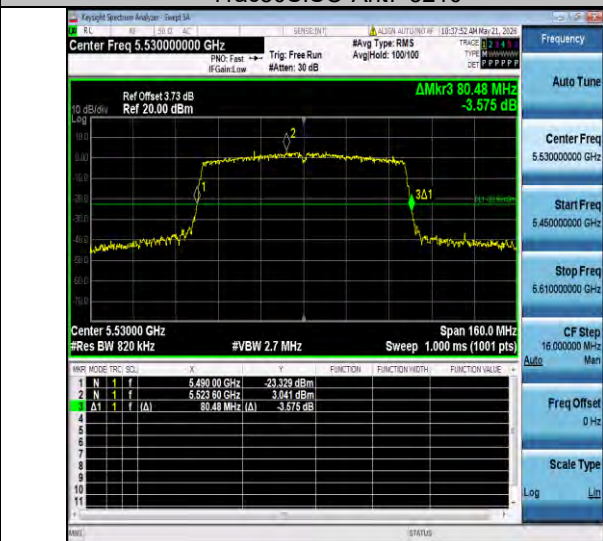
11ac40SISO-Ant7-5795



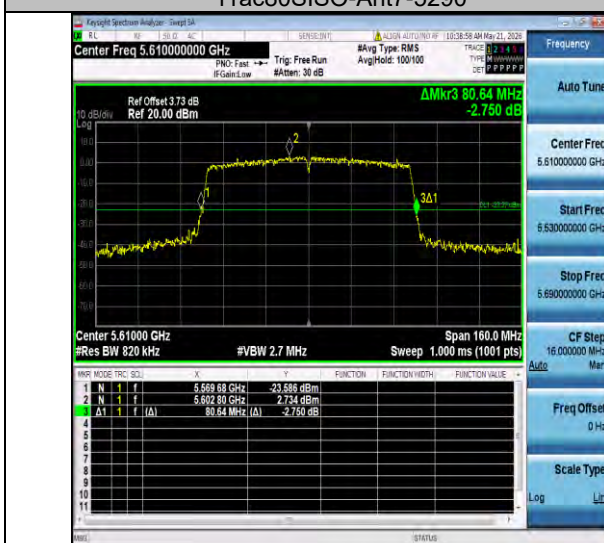
11ac80SISO-Ant7-5210



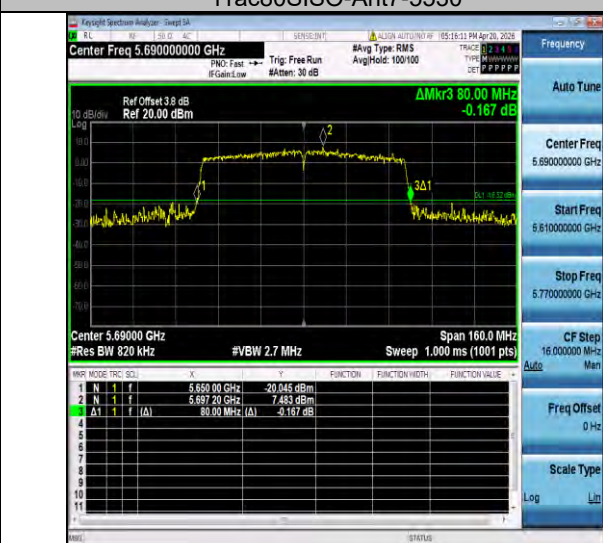
11ac80SISO-Ant7-5290



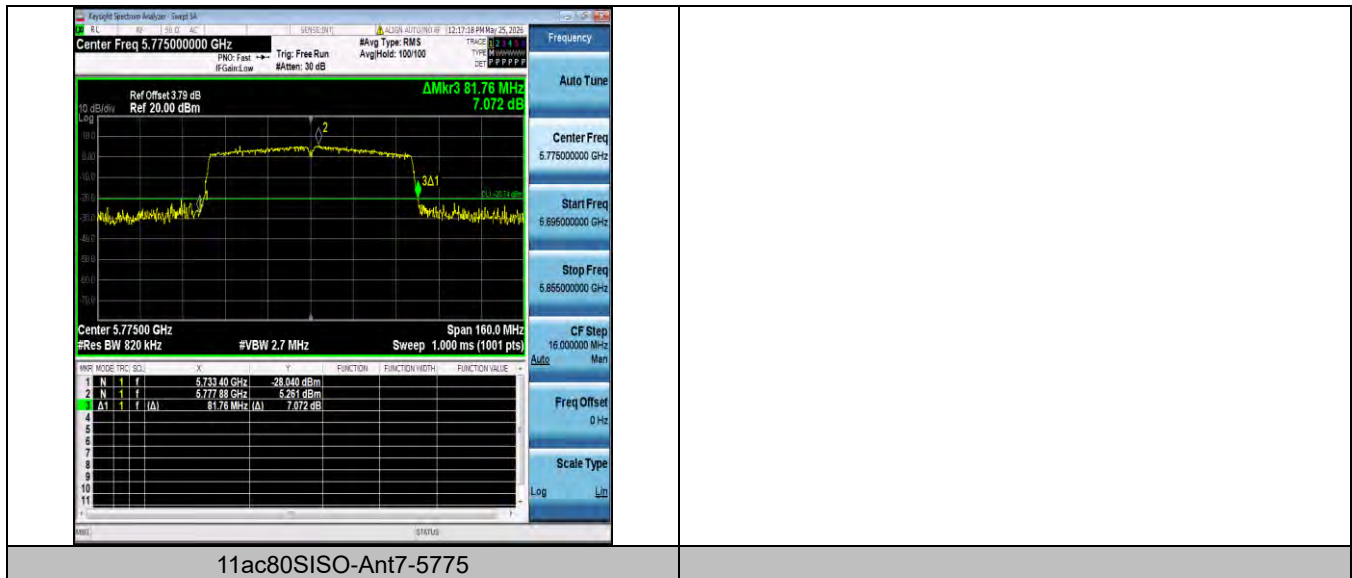
11ac80SISO-Ant7-5530



11ac80SISO-Ant7-5610



11ac80SISO-Ant7-5690



Occupied channel bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11a	Ant7	5180	16.950	5171.5416	5188.4916	---	---
11a	Ant7	5200	16.846	5191.6000	5208.4460	---	---
11a	Ant7	5240	16.847	5231.5721	5248.4191	---	---
11a	Ant7	5260	16.844	5251.5829	5268.4269	---	---
11a	Ant7	5300	16.832	5291.5928	5308.4248	---	---
11a	Ant7	5320	16.840	5311.5784	5328.4184	---	---
11a	Ant7	5500	16.902	5491.5305	5508.4325	---	---
11a	Ant7	5520	16.861	5511.5490	5528.4100	---	---
11a	Ant7	5600	16.868	5591.5588	5608.4268	---	---
11a	Ant7	5680	16.898	5671.5537	5688.4517	---	---
11a	Ant7	5700	16.857	5691.5834	5708.4404	---	---
11a	Ant7	5720	17.047	5711.5072	5728.5542	---	---
11a	Ant7	5720 UNII-2C	13.493	5711.5072	5725	---	---
11a	Ant7	5720 UNII-3	3.554	5725	5728.5542	---	---
11a	Ant7	5745	16.967	5736.5470	5753.5140	---	---
11a	Ant7	5785	17.003	5776.5218	5793.5248	---	---
11a	Ant7	5825	16.998	5816.5031	5833.5011	---	---
11n20SISO	Ant7	5180	17.817	5171.0726	5188.8896	---	---
11n20SISO	Ant7	5200	17.852	5191.0839	5208.9359	---	---
11n20SISO	Ant7	5240	17.868	5231.0479	5248.9159	---	---
11n20SISO	Ant7	5260	17.846	5251.0932	5268.9392	---	---
11n20SISO	Ant7	5300	17.820	5291.1046	5308.9246	---	---
11n20SISO	Ant7	5320	17.857	5311.1006	5328.9576	---	---
11n20SISO	Ant7	5500	17.817	5491.0958	5508.9128	---	---
11n20SISO	Ant7	5520	17.839	5511.0783	5528.9173	---	---
11n20SISO	Ant7	5600	17.802	5591.1044	5608.9064	---	---
11n20SISO	Ant7	5680	17.881	5671.0600	5688.9410	---	---
11n20SISO	Ant7	5700	17.820	5691.1102	5708.9302	---	---
11n20SISO	Ant7	5720	18.064	5710.9845	5729.0485	---	---
11n20SISO	Ant7	5720 UNII-2C	14.016	5710.9845	5725	---	---
11n20SISO	Ant7	5720 UNII-3	4.048	5725	5729.0485	---	---
11n20SISO	Ant7	5745	17.885	5736.0428	5753.9278	---	---
11n20SISO	Ant7	5785	17.969	5776.0326	5794.0016	---	---
11n20SISO	Ant7	5825	17.971	5816.0180	5833.9890	---	---
11n40SISO	Ant7	5190	36.091	5171.9821	5208.0731	---	---
11n40SISO	Ant7	5230	36.127	5211.9870	5248.1140	---	---
11n40SISO	Ant7	5270	36.180	5251.9264	5288.1064	---	---
11n40SISO	Ant7	5310	36.100	5292.0051	5328.1051	---	---
11n40SISO	Ant7	5510	36.170	5491.8780	5528.0480	---	---
11n40SISO	Ant7	5550	36.316	5531.8532	5568.1692	---	---
11n40SISO	Ant7	5590	36.247	5571.8593	5608.1063	---	---
11n40SISO	Ant7	5670	36.220	5651.9175	5688.1375	---	---
11n40SISO	Ant7	5710	36.338	5691.8800	5728.2180	---	---
11n40SISO	Ant7	5710 UNII-2C	33.12	5691.8800	5725	---	---
11n40SISO	Ant7	5710 UNII-3	3.218	5725	5728.2180	---	---
11n40SISO	Ant7	5755	36.313	5736.8375	5773.1505	---	---
11n40SISO	Ant7	5795	36.298	5776.8756	5813.1736	---	---
11ac20SISO	Ant7	5180	17.846	5171.0969	5188.9429	---	---
11ac20SISO	Ant7	5200	17.841	5191.0902	5208.9312	---	---
11ac20SISO	Ant7	5240	17.793	5231.1110	5248.9040	---	---
11ac20SISO	Ant7	5260	17.795	5251.0941	5268.8891	---	---
11ac20SISO	Ant7	5300	17.836	5291.0998	5308.9358	---	---
11ac20SISO	Ant7	5320	17.790	5311.0836	5328.8736	---	---
11ac20SISO	Ant7	5500	17.830	5491.0795	5508.9095	---	---
11ac20SISO	Ant7	5520	17.853	5511.0616	5528.9146	---	---
11ac20SISO	Ant7	5600	17.803	5591.0974	5608.9004	---	---
11ac20SISO	Ant7	5680	17.855	5671.0806	5688.9356	---	---
11ac20SISO	Ant7	5700	17.811	5691.1217	5708.9327	---	---
11ac20SISO	Ant7	5720	17.966	5711.0232	5728.9892	---	---
11ac20SISO	Ant7	5720 UNII-2C	13.977	5711.0232	5725	---	---
11ac20SISO	Ant7	5720 UNII-3	3.989	5725	5728.9892	---	---
11ac20SISO	Ant7	5745	17.855	5736.0987	5753.9537	---	---

11ac20SISO	Ant7	5785	17.879	5776.0545	5793.9335	---	---
11ac20SISO	Ant7	5825	17.881	5816.0734	5833.9544	---	---
11ac40SISO	Ant7	5190	36.268	5171.9243	5208.1923	---	---
11ac40SISO	Ant7	5230	36.223	5211.8958	5248.1188	---	---
11ac40SISO	Ant7	5270	36.194	5251.9015	5288.0955	---	---
11ac40SISO	Ant7	5310	36.224	5291.9115	5328.1355	---	---
11ac40SISO	Ant7	5510	36.144	5491.9387	5528.0827	---	---
11ac40SISO	Ant7	5550	36.283	5531.9026	5568.1856	---	---
11ac40SISO	Ant7	5590	36.193	5571.9173	5608.1103	---	---
11ac40SISO	Ant7	5670	36.308	5651.9203	5688.2283	---	---
11ac40SISO	Ant7	5710	36.397	5691.8642	5728.2612	---	---
11ac40SISO	Ant7	5710 UNII-2C	33.136	5691.8642	5725	---	---
11ac40SISO	Ant7	5710 UNII-3	3.261	5725	5728.2612	---	---
11ac40SISO	Ant7	5755	36.260	5736.9403	5773.2003	---	---
11ac40SISO	Ant7	5795	36.362	5776.8145	5813.1765	---	---
11ac80SISO	Ant7	5210	75.204	5172.5130	5247.7170	---	---
11ac80SISO	Ant7	5290	75.278	5252.4570	5327.7350	---	---
11ac80SISO	Ant7	5530	75.254	5492.4230	5567.6770	---	---
11ac80SISO	Ant7	5610	75.301	5572.4714	5647.7724	---	---
11ac80SISO	Ant7	5690	75.635	5652.2174	5727.8524	---	---
11ac80SISO	Ant7	5690 UNII-2C	72.783	5652.2174	5725	---	---
11ac80SISO	Ant7	5690 UNII-3	2.852	5725	5727.8524	---	---
11ac80SISO	Ant7	5775	75.401	5737.2712	5812.6722	---	---

Test Graphs

