

Test Report

Applicant: Zhejiang Hanshow Technology Co., Ltd.
Address of Applicant: Bld. 33, No. 966 xiuyuan Rd., BeiKeJian Innovation Park, XiuZhou District, Jiaxing, Zhejiang, China
Manufacturer: Zhejiang Hanshow Technology Co., Ltd.
Address of Manufacturer: Bld. 33, No. 966 xiuyuan Rd., BeiKeJian Innovation Park, XiuZhou District, Jiaxing, Zhejiang, China
Factory: Dongguan AoJinKe Electronic Technology Co.,Ltd
Address of Factory: 2nd Floor,Building A,No.8,Juxiang 1 Road,Qiufu Road Community,Dalang Town,Dongguan, China
Equipment Under Test (EUT):
Product: Digital signage
Model No.: HS-AT2301, HS-AT2303, HS-AT2311, HS-AT2313, HSAT2321, HS-AT2323, HS-AT2331, HS-AT2333, HS-AT2351, HSAT2353, HS-AT2391, HS-AT2393
FCC ID: 2AHB5-AT2301
Standards: 47 CFR Part 15, Subpart E
KDB 789033 D02 General UNII Test Procedures New Rules v02r01
KDB 558074 D01 Meas Guidance v05r02
Date of Receipt: 2020-02-24
Date of Test: 2020-02-24 to 2020-03-03
Date of Issue: 2020-03-03
Test Result : **PASS***

***In the configuration tested, the EUT complied with the standards specified above**

Authorized Signature:



Robinson Lo

Laboratory Manager

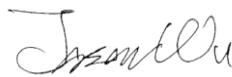
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1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
GTS202002000019F02	Rev.01	Initial report	2020-03-03

Prepared By:

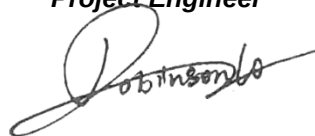


Date:

2020-03-03

Project Engineer

Check By:



Date:

2020-03-03

Reviewer

2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203	ANSI C63.10-2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15 Subpart E Section 15.407 (b)(6)	ANSI C63.10-2013	PASS
Conducted Output Power and transmit power control mechanism	47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(4)(h)(1)	ANSI C63.10-2013	PASS
Emission Bandwidth	47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)	ANSI C63.10-2013	PASS
Peak Power Spectral Density	47 CFR Part 15 Subpart E Section 15.407 (a)(1)(2)(5)	ANSI C63.10-2013	PASS
Frequency stability	47 CFR Part 15 Subpart E Section 15.407 (g)	ANSI C63.10-2013	PASS
Operation in the absence of information to the transmit	47 CFR Part 15 Subpart E Section 15.407 (c)	47 CFR Part 15 Subpart E	PASS
Unwanted Emissions that fall Outside of the Restricted Bands	47 CFR Part 15 Subpart E Section 15.407 (b)(1)(2)(3)(5)	ANSI C63.10-2013	PASS
Unwanted Emissions in the Restricted Bands	47 CFR Part 15 Subpart E Section 15.407 (b)(6)(7)(8)	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15 Subpart E Section 15.407 (b)(6)(7)(8)	ANSI C63.10-2013	PASS

Remark:

The tested sample(s) and the sample information are provided by the client.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radiated Frequency.

CH: In this whole report CH means channel.

Volt: In this whole report Volt means Voltage.

Temp: In this whole report Temp means Temperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: In this whole report not application

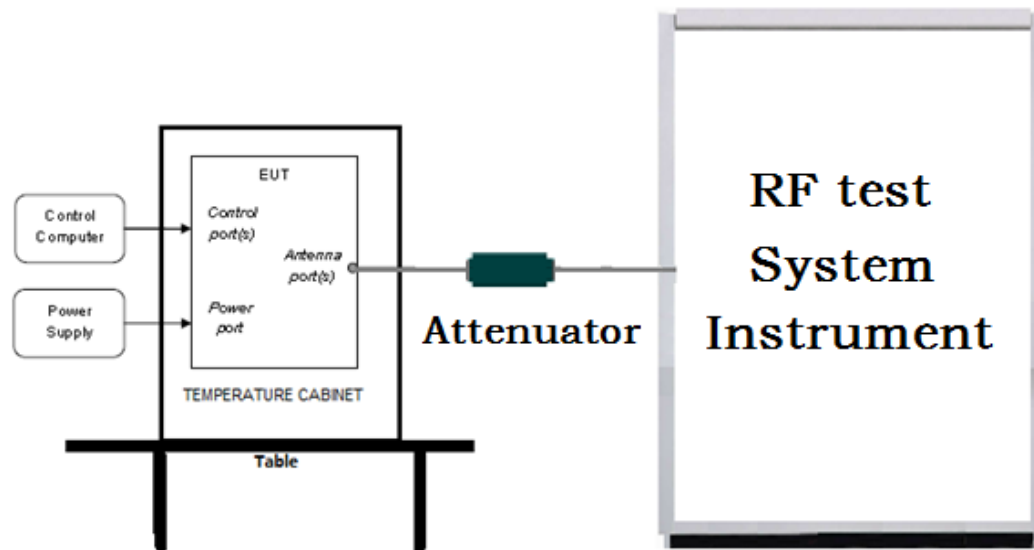
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4 Test Requirement

4.1 Test setup

4.1.1 For Conducted test setup



4.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

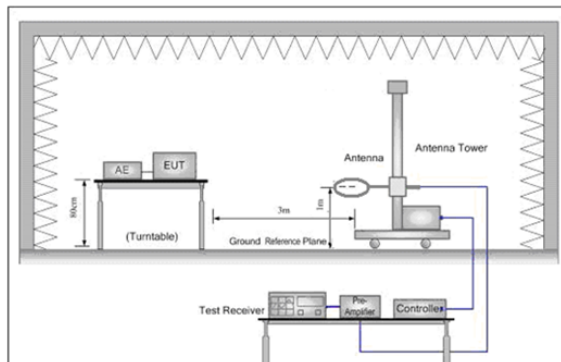


Figure 1. Below 30MHz

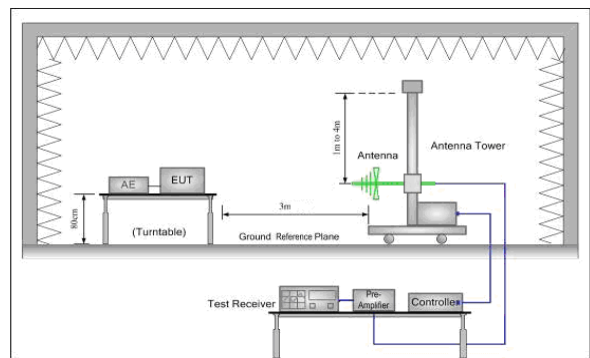


Figure 2. 30MHz to 1GHz

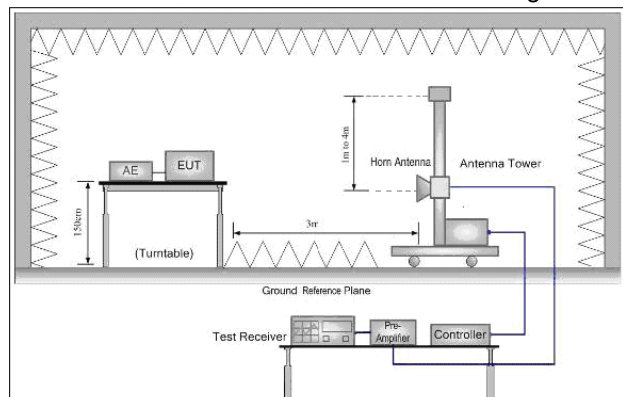
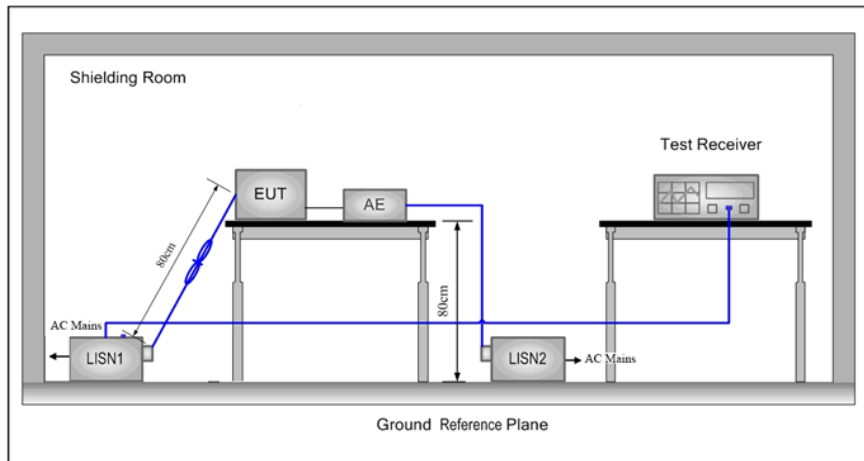


Figure 3. Above 1GHz

4.1.3 For Conducted Emissions test setup

Conducted Emissions setup



4.2 Test Environment

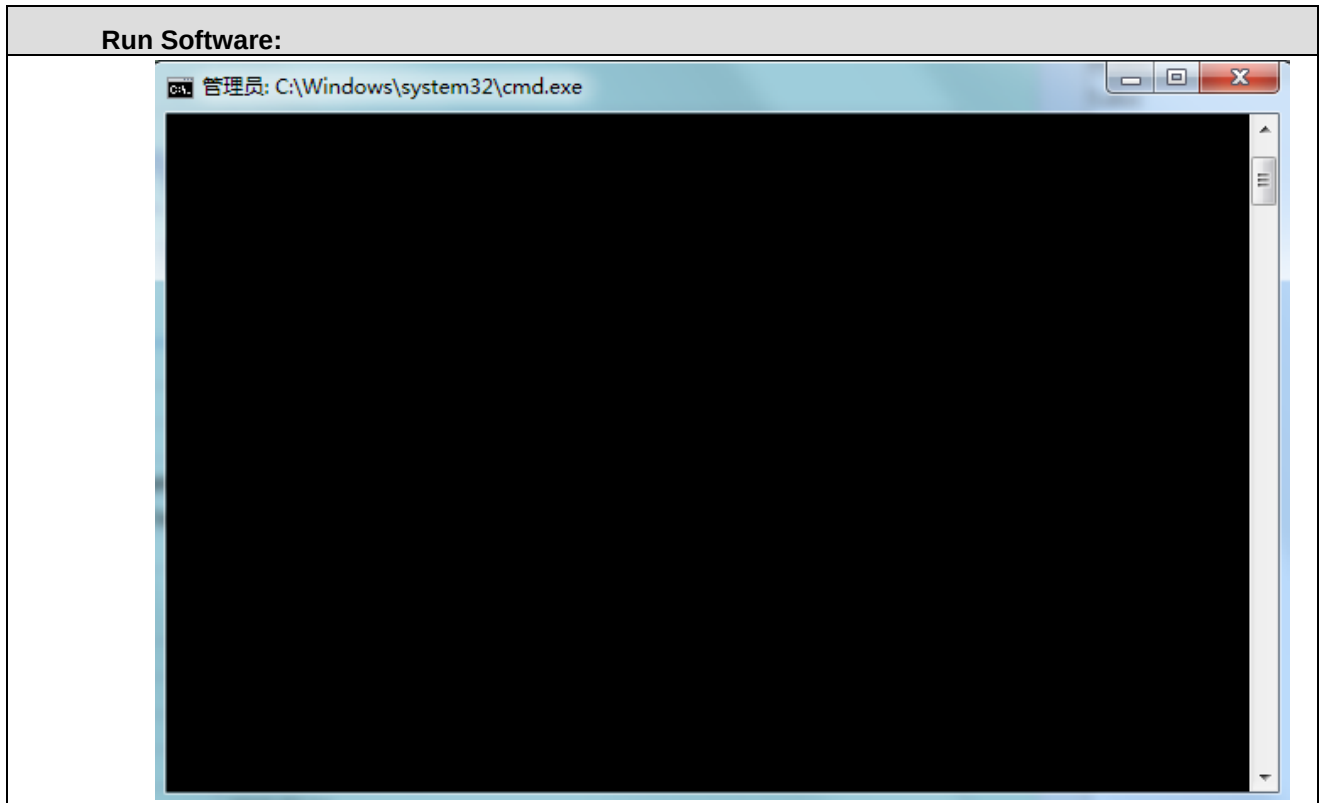
Operating Environment:		
Conducted Emissions:		
Temperature:	24.4 °C	
Humidity:	49% RH	
Atmospheric Pressure:	1015 mbar	
Radiated Emissions:		
Temperature:	23.9 °C	
Humidity:	51% RH	
Atmospheric Pressure:	1015 mbar	
Radio conducted item test (RF Conducted test room):		
Temperature:	24.0 °C	
Humidity:	68% RH	
Atmospheric Pressure:	1015 mbar	
Test Condition	Temperature (°C)	Voltage (V)
TN/VN	+15 to +35	12
TL/VL	-20	10.8
TH/VL	50	13.2
TL/VH	-20	10.8
TH/VH	50	13.2
Remark:		
1)The EUT just work in such extreme temperature of -20 °C to 50 °C and the extreme voltage of 10.8 V to 13.2 V, so here the EUT is tested in the temperature of -20 °C to 50 °C and the voltage of 10.8 V to 13.2 V.		
2VN: Normal Voltage; TN: Normal Temperature;		
TL: Low Extreme Test Temperature; TH: High Extreme Test Temperature;		

VL: Low Extreme Test Voltage; VH: High Extreme Test Voltage.

4.3 Test Condition

Test channel:

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11a/n/ac(20M)	5150MHz ~5250 MHz	Channel 36	Channel 40	Channel 48
		5180MHz	5200MHz	5240MHz
802.11n/ac(40M)	5150MHz ~5250 MHz	Channel 38	N/A	Channel 46
		5190MHz	N/A	5230MHz
802.11ac(80M)	5150MHz ~5250 MHz	N/A	Channel 42	N/A
		N/A	5210MHz	N/A
802.11a/n/ac(20M)	5250MHz ~5350 MHz	Channel 52	Channel 56	Channel 64
		5260MHz	5280MHz	5320MHz
802.11n/ac(40M)	5250MHz ~5350 MHz	Channel 54	N/A	Channel 62
		5270MHz	N/A	5310MHz
802.11ac(80M)	5250MHz ~5350 MHz	N/A	Channel 58	N/A
		N/A	5290MHz	N/A
802.11a/n/ac(20M)	5470MHz ~5725 MHz	Channel 100	Channel 116	Channel 140
		5500MHz	5580MHz	5700MHz
802.11n/ac(40M)	5470MHz ~5725 MHz	Channel 102	Channel 110	Channel 134
		5510MHz	5550MHz	5670MHz
802.11ac(80M)	5470MHz ~5725 MHz	N/A	Channel 106	N/A
		N/A	5530MHz	N/A
802.11a/n/ac(20M)	5725MHz ~5850 MHz	Channel 149	Channel 157	Channel 165
		5745MHz	5785MHz	5825MHz
802.11n/ac(40M)	5725MHz ~5850 MHz	Channel 151	N/A	Channel 159
		5755MHz	N/A	5795MHz
802.11ac(80M)	5725MHz ~5850 MHz	N/A	Channel 155	N/A
		N/A	5775MHz	N/A



Test mode:

Pre-scan under all rate at lowest channel for Ant1

Through Pre-scan, 6Mbps is the worst case of 802.11a (20M);MCS0 is the worst case of 802.11n (20M) ;MCS0 is the worst case of 802.11ac (20M) ;MCS0 is the worst case of 802.11n(40M) ;MCS0 is the worst case of 802.11ac (40M) ;MCS0 is the worst case of 802.11ac(80M).

5 General Information

5.1 General Description of EUT

Product Name:	Digital signage
Model No.:	HS-AT2301, HS-AT2303, HS-AT2311, HS-AT2313, HSAT2321, HS-AT2323, HS-AT2331, HS-AT2333, HS-AT2351, HSAT2353, HS-AT2391, HS-AT2393
Test Model No.:	HS-AT2311
Remark:	All above models are identical in the same PCB layout, interior structure and electrical circuits. The differences are colour and model name for commercial purpose.
Serial No.:	200700005195000155
Hardware version:	V04
Software version:	8171090000241
EUT Supports Radios application:	2.4GHz: Wi-Fi: IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz 5GHz: Wi-Fi: U-NII-1: 5.15-5.25GHz; U-NII-2A: 5.25-5.35GHz U-NII-2C: 5.470-5.725GHz; U-NII-3: 5.725-5.850GHz
Power Supply:	INPUT: 100-240V~50/60Hz 1.0A Max OUTPUT: 12V---2.0A

5.2 Product Specification subjective to this standard

Operation Frequency:	IEEE 802.11a/n/ac(20M): 5150MHz ~5250 MHz IEEE802.11n/ac(40M): 5150MHz ~5250 MHz IEEE802.11ac(80M): 5150MHz ~5250 MHz IEEE 802.11a/n/ac(20M): 5250MHz ~5350 MHz IEEE802.11n/ac(40M): 5250MHz ~5350 MHz IEEE802.11ac(80M): 5250MHz ~5350 MHz IEEE 802.11a/n/ac(20M): 5470MHz ~5725 MHz IEEE802.11n/ac(40M): 5470MHz ~5725 MHz IEEE802.11ac(80M): 5470MHz ~5725 MHz IEEE 802.11a/n/ac(20M): 5725MHz ~5850 MHz IEEE802.11n/ac(40M): 5725MHz ~5850 MHz IEEE802.11ac(80M): 5725MHz ~5850 MHz
Channel Numbers:	IEEE 802.11a/n/ac(20M): 5150MHz ~5250MHz/ 4 channel IEEE 802.11n/ac(40M): 5150MHz ~5250MHz/ 2 channel IEEE 802.11ac(80M): 5150MHz ~5250MHz/ 1 channel IEEE 802.11a/n/ac(20M): 5250MHz ~5350 MHz/ 4 channel IEEE802.11n/ac(40M): 5250MHz ~5350 MHz/ 2 channel IEEE802.11ac(80M): 5250MHz ~5350 MHz/ 1 channel IEEE 802.11a/n/ac(20M): 5470MHz ~5725 MHz/ 8 channel IEEE802.11n/ac(40M): 5470MHz ~5725 MHz/ 3 channel IEEE802.11ac(80M): 5470MHz ~5725 MHz/ 1 channel IEEE 802.11a/n/ac(20M): 5725MHz ~5850MHz/ 5 channel IEEE 802.11n/ac(40M): 5725MHz ~5850MHz/ 2 channel IEEE 802.11ac(80M): 5725MHz ~5850MHz/ 1 channel
Type of Modulation:	OFDM
Sample Type:	☒ Mobile ☐ Portable ☐ Fix Location
Test Software of EUT:	RF test (manufacturer declare)
Antenna Type:	FPC antenna
Antenna gain:	3.23dBi@5G
Test Voltage:	AC 120V, 60Hz

Operation Frequency each of channel

For 802.11a/n/ac(20M) Operation in the 5150MHz ~5250 MHz band			
Channel	Frequency	Channel	Frequency
36	5180MHz	44	5220MHz
40	5200MHz	48	5240MHz
For 802.11a/n/ac(20M) Operation in the 5250MHz ~5350 MHz band			
Channel	Frequency	Channel	Frequency
52	5260MHz	56	5280MHz
60	5300MHz	64	5320MHz
For 802.11a/n/ac(20M) Operation in the 5470MHz ~5725 MHz band			
Channel	Frequency	Channel	Frequency
100	5500MHz	104	5520MHz
108	5540MHz	112	5560MHz
116	5580MHz	132	5660MHz
136	5680MHz	140	5700MHz
For 802.11a/n/ac(20M) Operation in the 5725MHz ~5850 MHz band			
Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz	NA	NA

For 802.11n/ac(40M) Operation in the 5150MHz ~5250 MHz band			
Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz
For 802.11n/ac(40M) Operation in the 5250MHz ~5350 MHz band			
Channel	Frequency	Channel	Frequency
54	5270MHz	62	5310MHz
For 802.11n/ac(40M) Operation in the 5470MHz ~5725 MHz band			
Channel	Frequency	Channel	Frequency
102	5510MHz	110	5550MHz
134	5670MHz	NA	NA
For 802.11n/ac(40M) Operation in the 5725MHz ~5850 MHz band			
Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

For 802.11ac(80M) Operation in the 5150MHz ~5250 MHz band			
Channel	Frequency	NA	NA
42	5210MHz	NA	NA
For 802.11ac(80M) Operation in the 5250MHz ~5350 MHz band			
Channel	Frequency	NA	NA
58	5290MHz	NA	NA
For 802.11ac(80M) Operation in the 5470MHz ~5725 MHz band			
Channel	Frequency	NA	NA
106	5530MHz	NA	NA
For 802.11ac(80M) Operation in the 5725MHz ~5850 MHz band			
Channel	Frequency	NA	NA
155	5775MHz	NA	NA

5.3 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.
PC	Lenovo	ThinkPad E450c
Adapter	Supplied by client	GO24-120200-AC

5.4 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

5.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC —Registration No.: 381383**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383.

- **IC —Registration No.: 9079A**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A

- **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0

5.6 Deviation from Standards

None.

5.7 Abnormalities from Standard Conditions

None.

5.8 Other Information Requested by the Customer

None.

5.9 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	3×10^{-8}
2	RF power, conducted	0.86dB
3	Radiated Spurious emission test	5.12dB (Below 1GHz)
		4.6dB (Above 1GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.8°C
6	Humidity test	2.0%
7	DC power voltages	0.5%

6 Equipment List

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 26 2019	June. 25 2020
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 26 2019	June. 25 2020
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 26 2019	June. 25 2020
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 26 2019	June. 25 2020
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 26 2019	June. 25 2020
9	Coaxial Cable	GTS	N/A	GTS211	June. 26 2019	June. 25 2020
10	Coaxial cable	GTS	N/A	GTS210	June. 26 2019	June. 25 2020
11	Coaxial Cable	GTS	N/A	GTS212	June. 26 2019	June. 25 2020
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 26 2019	June. 25 2020
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 26 2019	June. 25 2020
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 26 2019	June. 25 2020
15	Band filter	Amindeon	82346	GTS219	June. 26 2019	June. 25 2020
16	Power Meter	Anritsu	ML2495A	GTS540	June. 26 2019	June. 25 2020
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 26 2019	June. 25 2020
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 26 2019	June. 25 2020
19	Splitter	Agilent	11636B	GTS237	June. 26 2019	June. 25 2020
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 26 2019	June. 25 2020
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 19 2019	Oct. 18 2020
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 19 2019	Oct. 18 2020
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 19 2019	Oct. 18 2020
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 26 2019	June. 25 2020

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 26 2019	June. 25 2020
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 26 2019	June. 25 2020
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 26 2019	June. 25 2020
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 26 2019	June. 25 2020
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 26 2019	June. 25 2020
9	ISN	SCHWARZBECK	NTFM 8158	GTD565	June. 26 2019	June. 25 2020

RF Conducted Test:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	June. 26 2019	June. 25 2020
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 26 2019	June. 25 2020
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 26 2019	June. 25 2020
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 26 2019	June. 25 2020
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 26 2019	June. 25 2020
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 26 2019	June. 25 2020
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 26 2019	June. 25 2020
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 26 2019	June. 25 2020

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 26 2019	June. 25 2020
2	Barometer	ChangChun	DYM3	GTS255	June. 26 2019	June. 25 2020

7 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC Part15E	Subpart C-Intentional Radiators
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices
3	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	Guidelines for compliance testing of unlicensed national information infrastructure (U-NII) device part 15, subpart E
4	KDB 662911 D01 Multiple Transmitter Output v02r01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band

Test Results List:

Test Requirement	Test method	Test item	Verdict	Note
Part15E Section 15.407 (a)(1)(2)	KDB789033	Emission Bandwidth and Occupied Bandwidth	PASS	Appendix A)
Part15E Section 15.407 (a)(1)(2)(4)(h)(1)	KDB789033 / KDB 662911	Conducted Output Power and transmit power control mechanism	PASS	Appendix B)
Part15E Section 15.407 (a)(1)(2)(5)	KDB789033 / KDB 662911	Power Spectral Density	PASS	Appendix C)
Part15E Section 15.407 (g)	KDB789033	Frequency stability	PASS	Appendix D)
Part15C Section 15.203	ANSI C63.10	Antenna Requirement	PASS	Appendix E)
Part15E Section 15.407 (c)	Section 15.407	Operation in the absence of information to the transmit	PASS	Appendix F)
Part15E Section 15.407 (b)(6)	ANSI C63.10	AC Power Line Conducted Emission	PASS	Appendix G)
Part15E Section 15.407 (b)(6)(7)(8)	KDB789033	Restricted bands around fundamental frequency (Radiated Emission)	PASS	Appendix H)
Part15E Section 15.407 (b)(1)(2)(3)(5)(6)(7)(8)	KDB789033	Radiated Spurious Emissions	PASS	Appendix I)

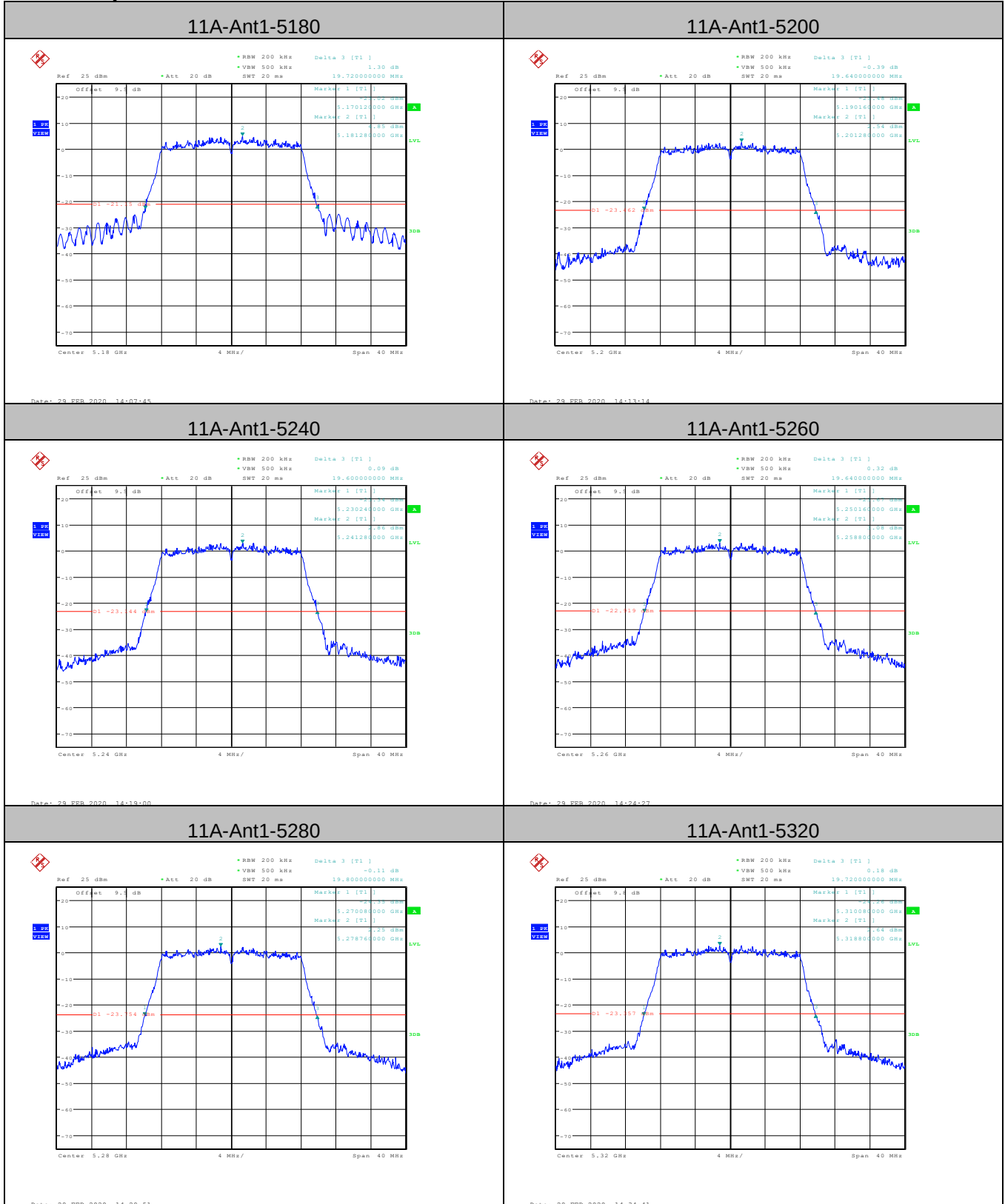
Appendix A): Emission Bandwidth

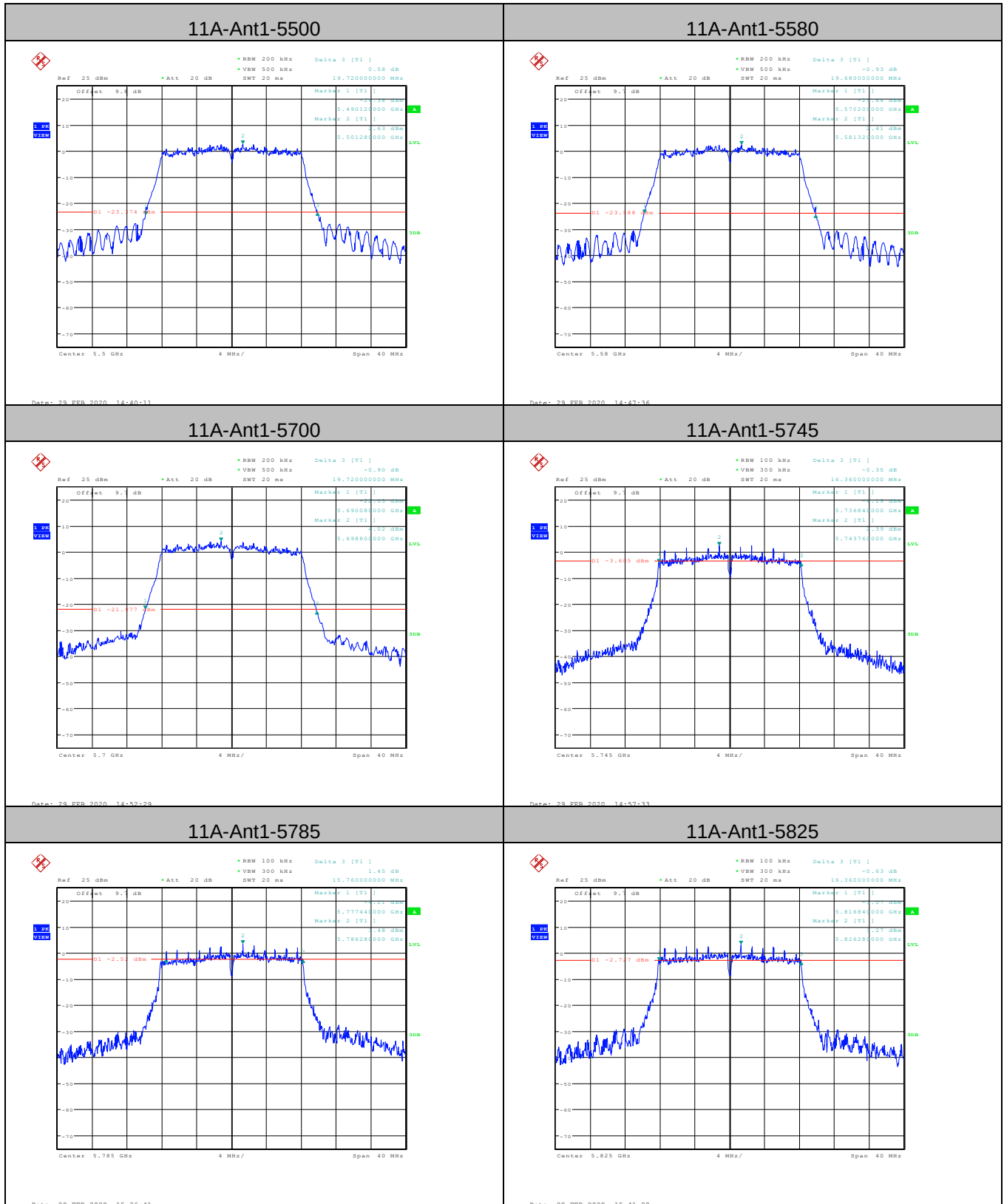
Result Table

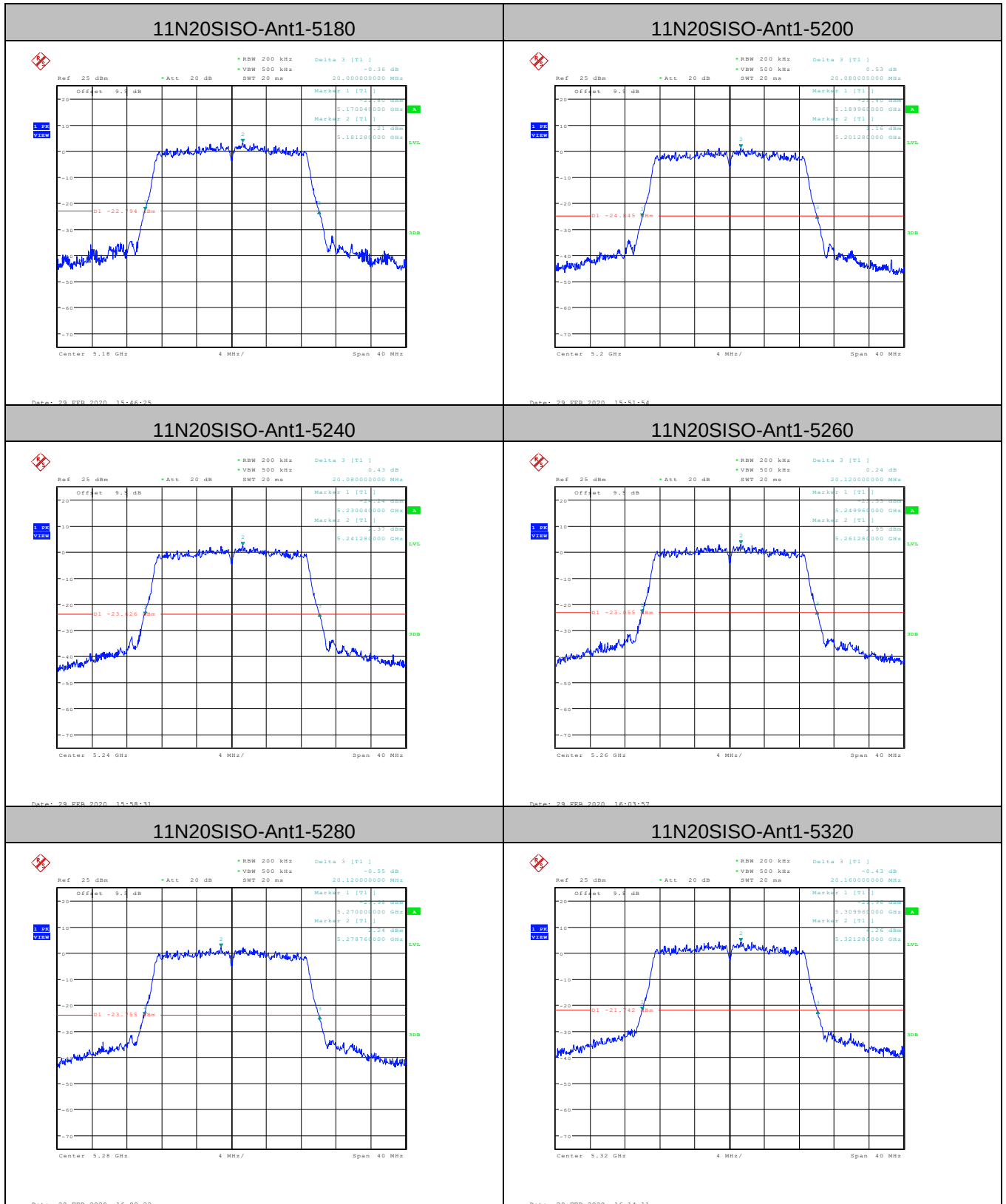
Test Mode	Antenna	Channel	EBW[MHz]	Verdict
11A	Ant1	5180	19.720	PASS
11A	Ant1	5200	19.640	PASS
11A	Ant1	5240	19.600	PASS
11A	Ant1	5260	19.640	PASS
11A	Ant1	5280	19.800	PASS
11A	Ant1	5320	19.720	PASS
11A	Ant1	5500	19.720	PASS
11A	Ant1	5580	19.680	PASS
11A	Ant1	5700	19.720	PASS
11A	Ant1	5745	16.360	PASS
11A	Ant1	5785	15.760	PASS
11A	Ant1	5825	16.360	PASS
11N20SISO	Ant1	5180	20.000	PASS
11N20SISO	Ant1	5200	20.080	PASS
11N20SISO	Ant1	5240	20.080	PASS
11N20SISO	Ant1	5260	20.120	PASS
11N20SISO	Ant1	5280	20.120	PASS
11N20SISO	Ant1	5320	20.160	PASS
11N20SISO	Ant1	5500	20.160	PASS
11N20SISO	Ant1	5580	20.080	PASS
11N20SISO	Ant1	5700	20.200	PASS
11N20SISO	Ant1	5745	16.560	PASS
11N20SISO	Ant1	5785	16.080	PASS
11N20SISO	Ant1	5825	17.160	PASS
11AC20SISO	Ant1	5180	20.080	PASS
11AC20SISO	Ant1	5200	20.120	PASS
11AC20SISO	Ant1	5240	20.120	PASS
11AC20SISO	Ant1	5260	20.120	PASS
11AC20SISO	Ant1	5280	20.200	PASS

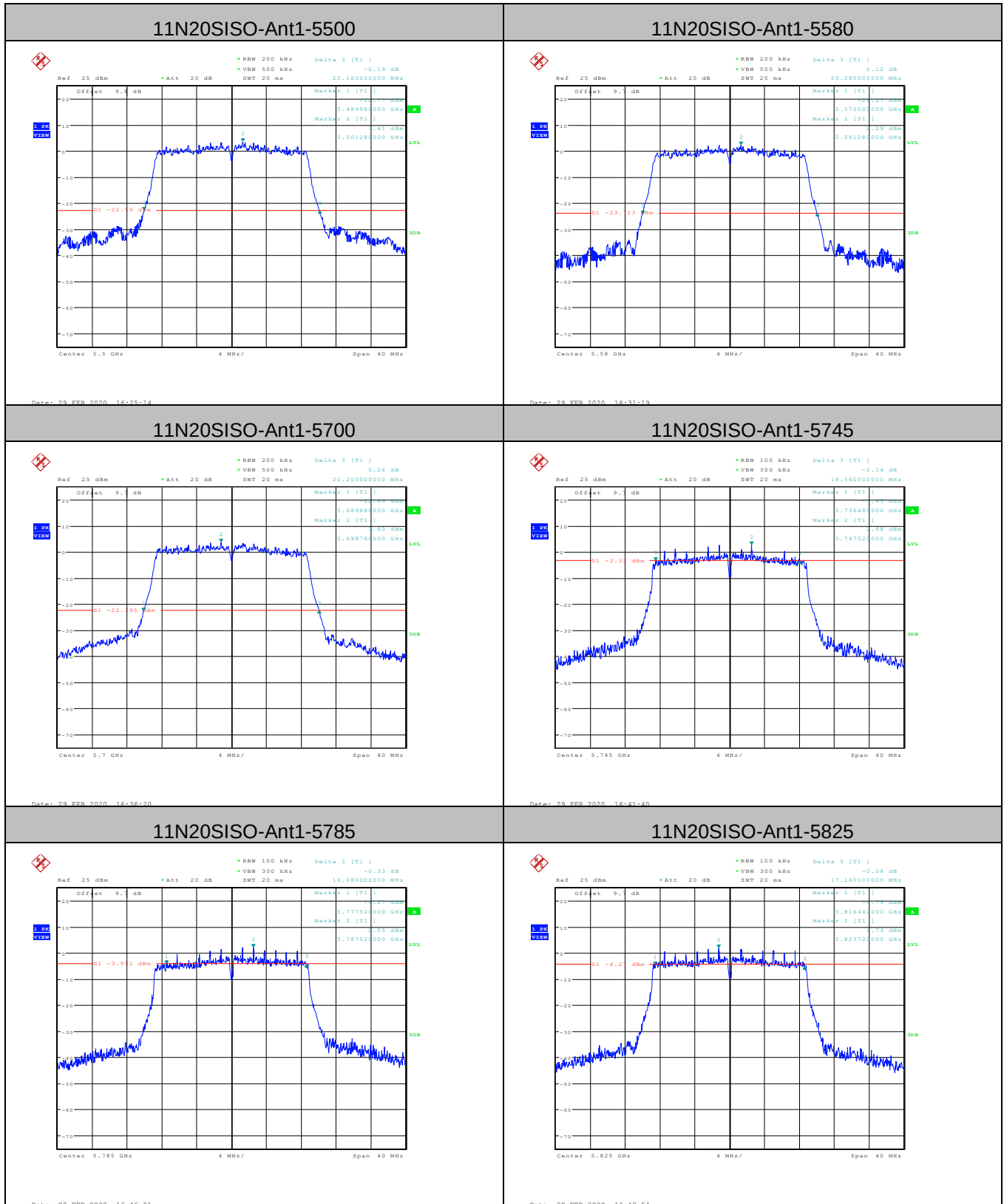
11AC20SISO	Ant1	5320	20.200	PASS
11AC20SISO	Ant1	5500	20.160	PASS
11AC20SISO	Ant1	5580	20.120	PASS
11AC20SISO	Ant1	5700	20.200	PASS
11AC20SISO	Ant1	5745	16.120	PASS
11AC20SISO	Ant1	5785	16.520	PASS
11AC20SISO	Ant1	5825	17.080	PASS
11N40SISO	Ant1	5190	40.400	PASS
11N40SISO	Ant1	5230	40.240	PASS
11N40SISO	Ant1	5270	40.560	PASS
11N40SISO	Ant1	5310	40.560	PASS
11N40SISO	Ant1	5510	40.480	PASS
11N40SISO	Ant1	5550	40.720	PASS
11N40SISO	Ant1	5670	40.720	PASS
11N40SISO	Ant1	5755	35.280	PASS
11N40SISO	Ant1	5795	35.280	PASS
11AC40SISO	Ant1	5190	40.800	PASS
11AC40SISO	Ant1	5230	41.040	PASS
11AC40SISO	Ant1	5270	40.560	PASS
11AC40SISO	Ant1	5310	40.080	PASS
11AC40SISO	Ant1	5510	40.800	PASS
11AC40SISO	Ant1	5550	40.400	PASS
11AC40SISO	Ant1	5670	40.720	PASS
11AC40SISO	Ant1	5755	35.280	PASS
11AC40SISO	Ant1	5795	35.280	PASS
11AC80SISO	Ant1	5210	81.760	PASS
11AC80SISO	Ant1	5290	82.240	PASS
11AC80SISO	Ant1	5530	81.760	PASS
11AC80SISO	Ant1	5775	75.520	PASS

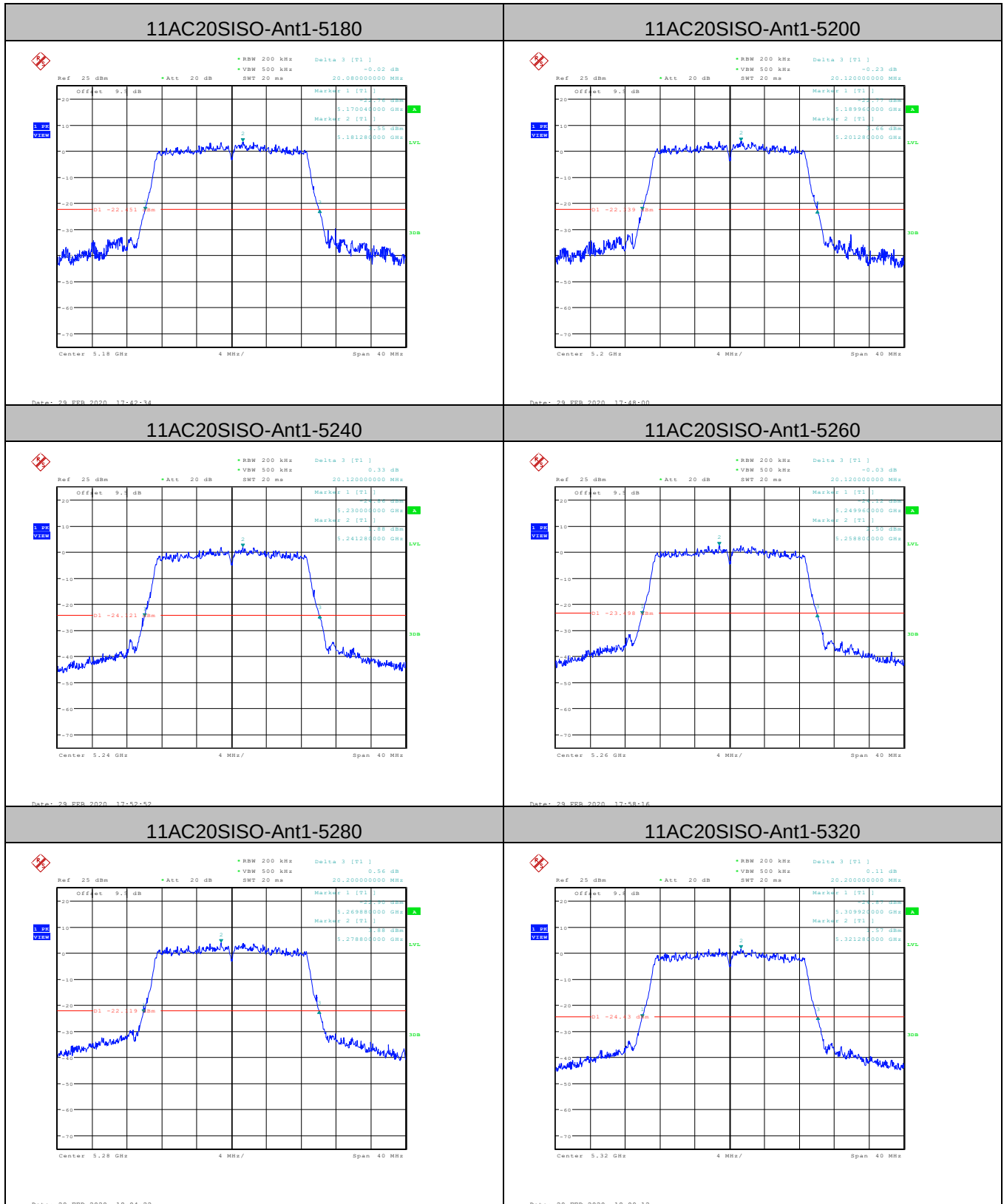
Test Graph

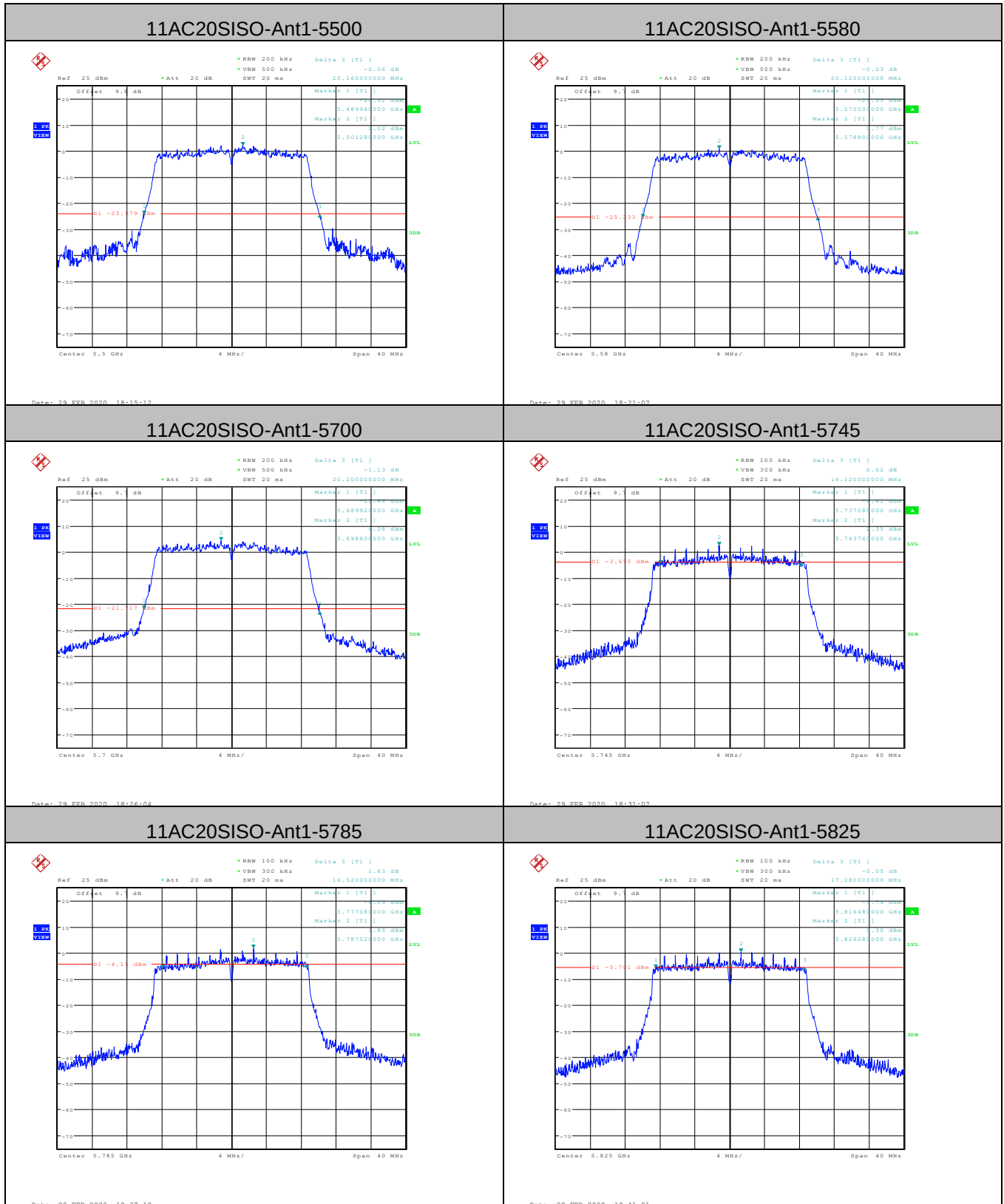


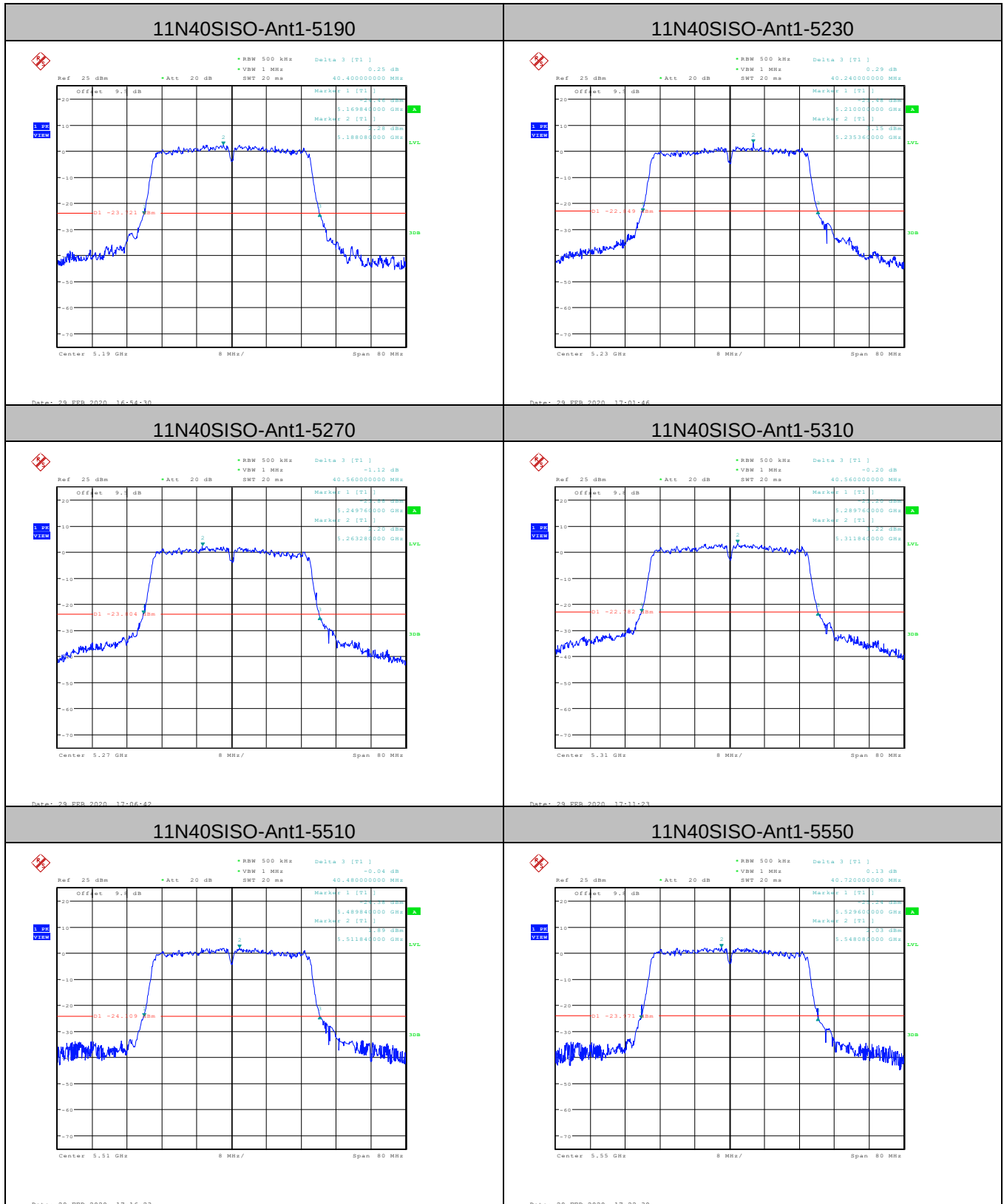


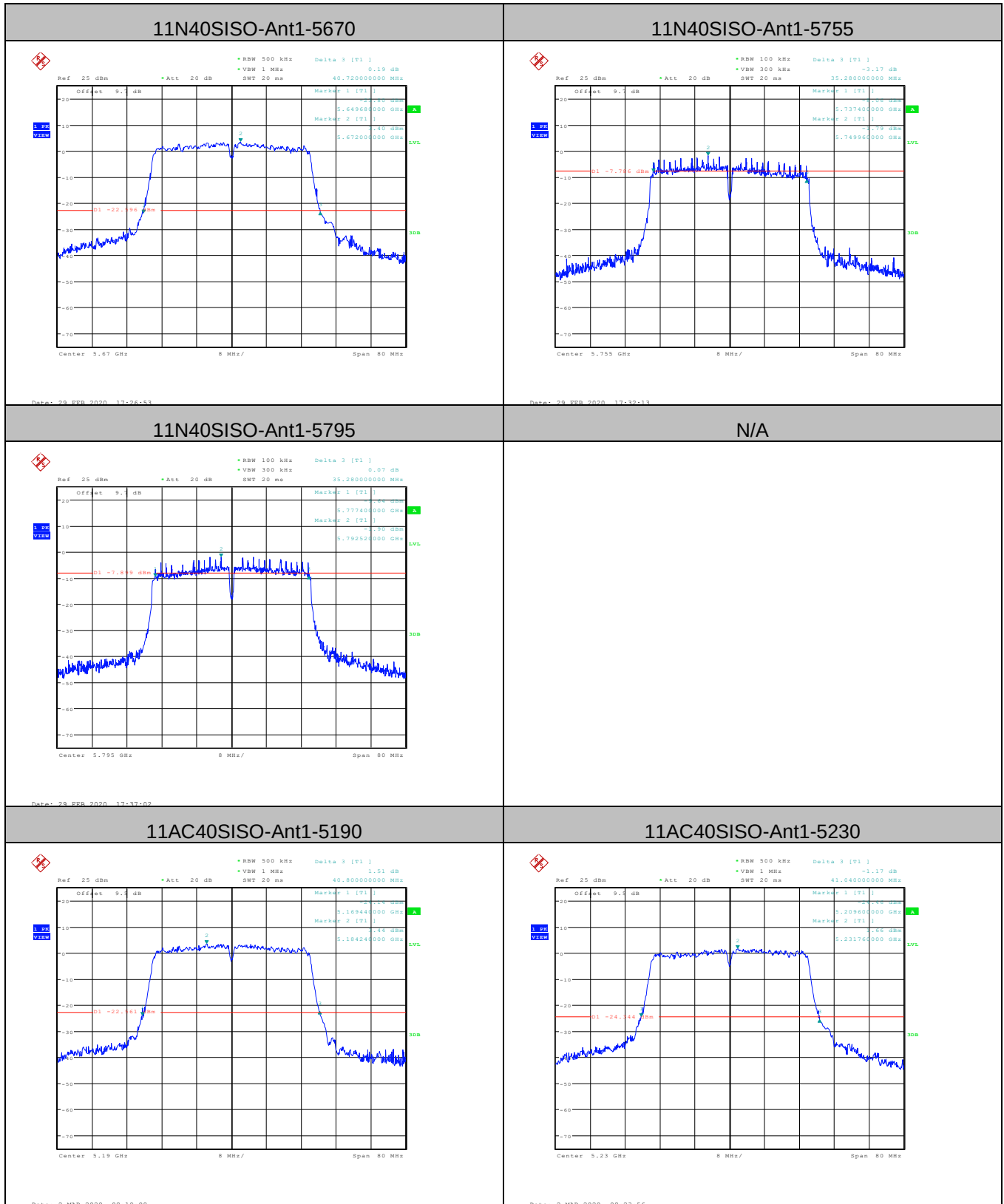


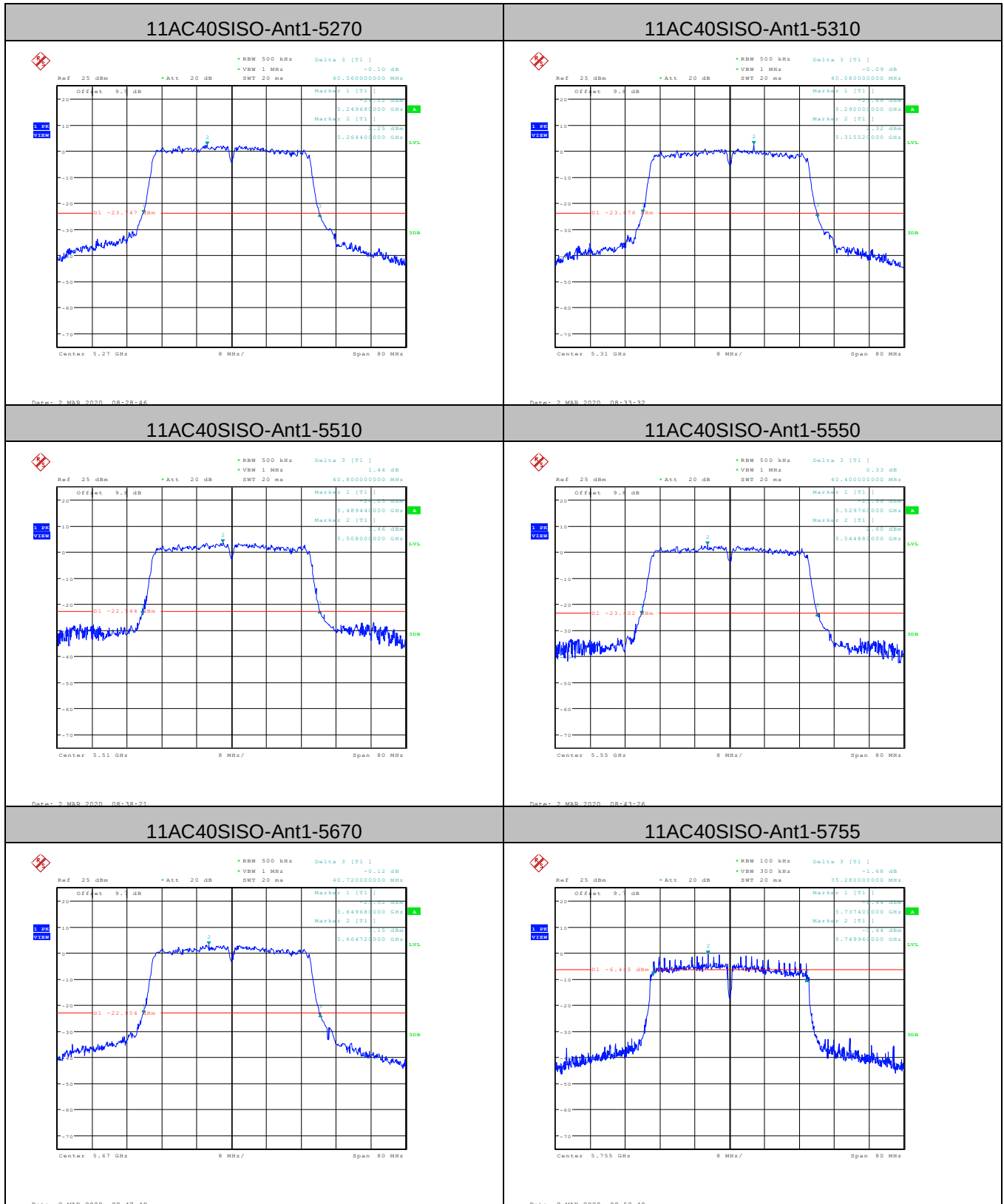


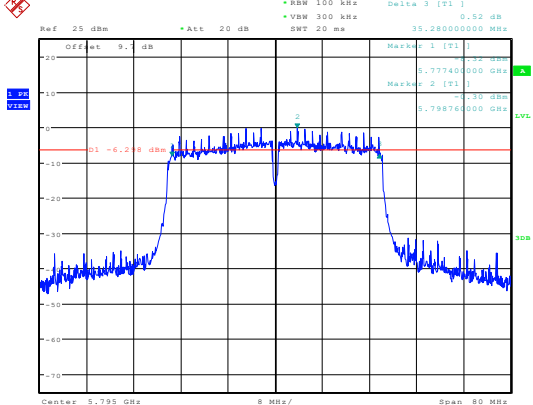
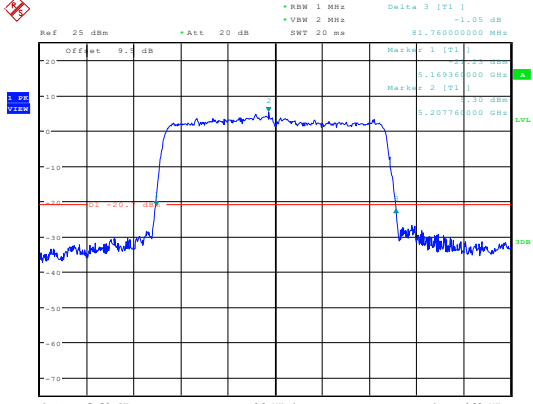
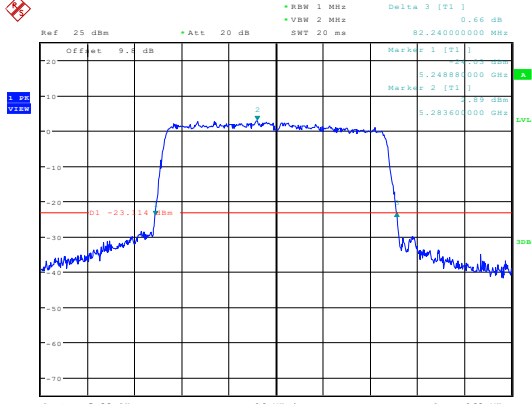
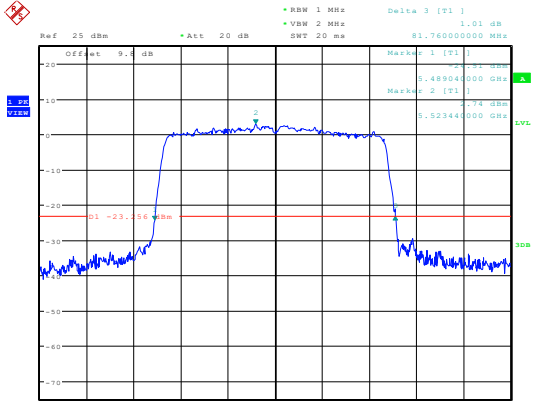
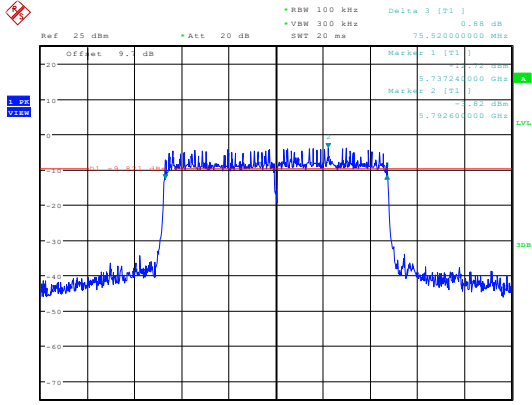










11AC40SISO-Ant1-5795	N/A
 Ref: 25 dBm *Att: 20 dB RBW 100 kHz Delta 3 [T1] 0.52 dB Offset 9.1 dB VSW 300 kHz SWT 20 ms 55.20000000 MHz Marker 1 [T1] 5.777400000 GHz -6.28 dBm Marker 2 [T1] 5.798760000 GHz -1.88 dBm Center 5.795 GHz 8 MHz/ Span 80 MHz Date: 2 MAR 2020 08:57:35	
11AC80SISO-Ant1-5210	11AC80SISO-Ant1-5290
 Ref: 25 dBm *Att: 20 dB RBW 1 MHz Delta 3 [T1] -1.05 dB Offset 9.1 dB VSW 2 MHz SWT 20 ms 51.76000000 MHz Marker 1 [T1] 5.169340000 GHz -1.05 dBm Marker 2 [T1] 5.207740000 GHz -5.30 dBm Center 5.21 GHz 16 MHz/ Span 160 MHz Date: 2 MAR 2020 08:07:56	 Ref: 25 dBm *Att: 20 dB RBW 1 MHz Delta 3 [T1] 0.66 dB Offset 9.1 dB VSW 2 MHz SWT 20 ms 52.24000000 MHz Marker 1 [T1] 5.248880000 GHz -0.64 dBm Marker 2 [T1] 5.289600000 GHz -1.89 dBm Center 5.29 GHz 16 MHz/ Span 160 MHz Date: 2 MAR 2020 09:08:12
11AC80SISO-Ant1-5530	11AC80SISO-Ant1-5775
 Ref: 25 dBm *Att: 20 dB RBW 1 MHz Delta 3 [T1] 1.01 dB Offset 9.1 dB VSW 2 MHz SWT 20 ms 51.76000000 MHz Marker 1 [T1] 5.489040000 GHz -1.88 dBm Marker 2 [T1] 5.523440000 GHz -1.74 dBm Center 5.53 GHz 16 MHz/ Span 160 MHz Date: 2 MAR 2020 09:13:17	 Ref: 25 dBm *Att: 20 dB RBW 100 kHz Delta 3 [T1] 0.88 dB Offset 9.1 dB VSW 300 kHz SWT 20 ms 75.52000000 MHz Marker 1 [T1] 5.737240000 GHz -2.74 dBm Marker 2 [T1] 5.792600000 GHz -1.82 dBm Center 5.775 GHz 16 MHz/ Span 160 MHz Date: 2 MAR 2020 09:18:19

Appendix B): Maximum Conduct Output Power

Directional Antenna Gain

The TX chains are correlated, the antenna gain is equal among the chains.

Employs an antenna that operates simultaneously on multiple directional beams using the same frequency channels. No carrier aggregation techniques.

The directional gain is:

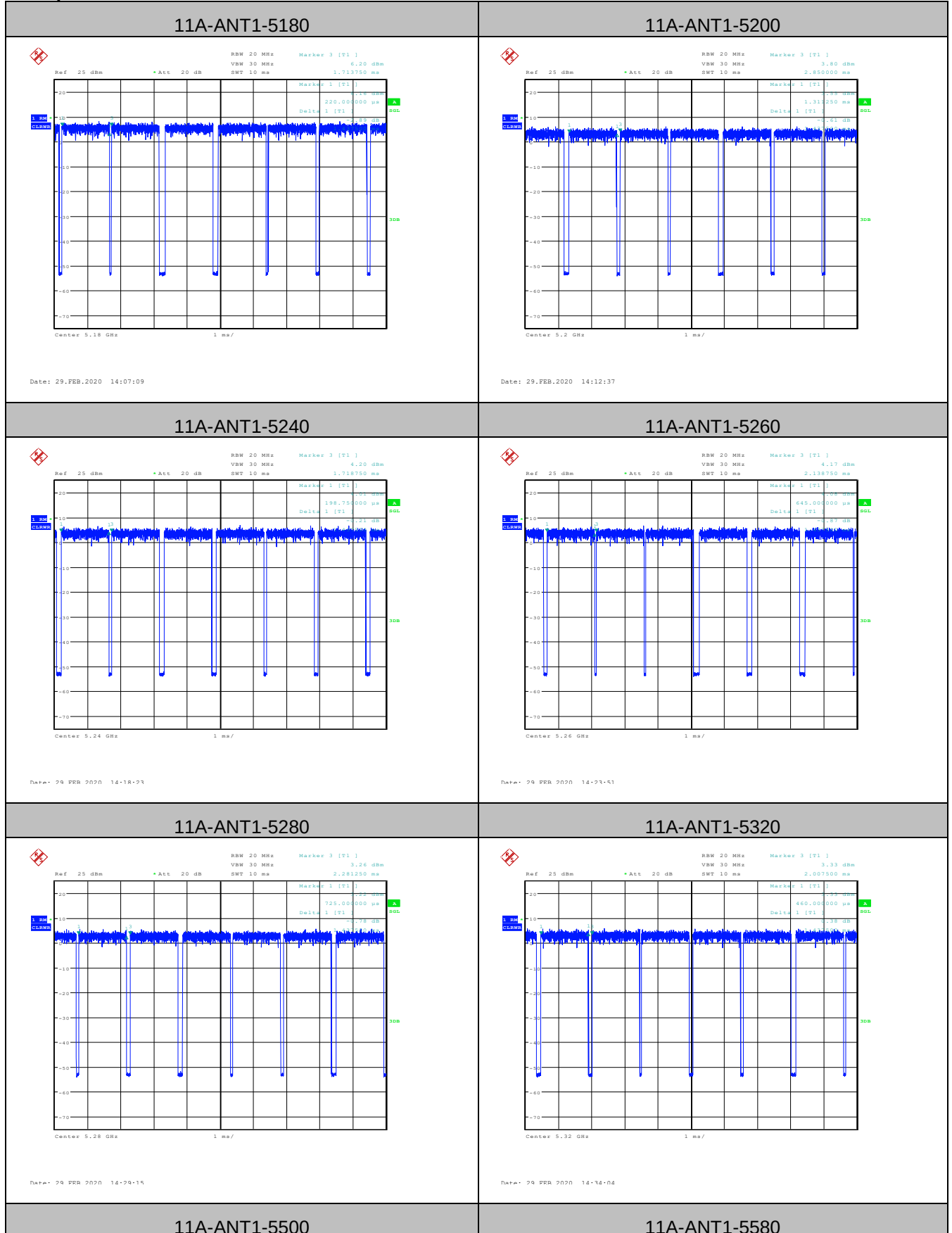
Antenna 1 Gain(dBi)	3.23
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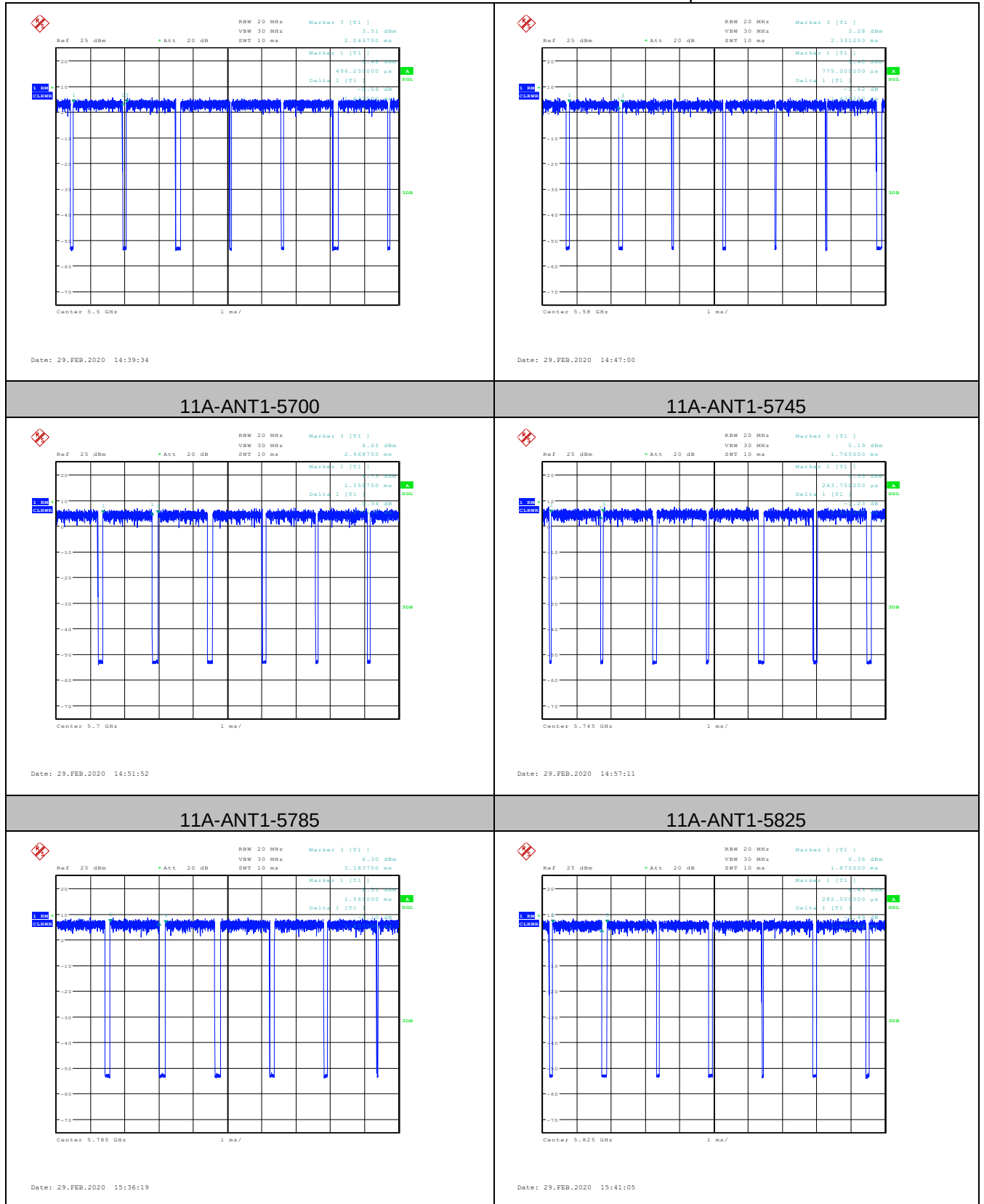
Duty Cycle:

ANT1			
Test Mode	Channel	Duty Cycle[%]	Duty Cycle factor (dB)
11A	5180	96.23	0.17
11A	5200	93.42	0.30
11A	5240	94.57	0.24
11A	5260	96.23	0.17
11A	5280	92.37	0.34
11A	5320	92.89	0.32
11A	5500	92.89	0.32
11A	5580	92.29	0.35
11A	5700	89.29	0.49
11A	5745	94.49	0.25
11A	5785	88.8	0.52
11A	5825	90.19	0.45
11N20SISO	5180	89.07	0.50
11N20SISO	5200	89.07	0.50
11N20SISO	5240	92.94	0.32
11N20SISO	5260	91.82	0.37
11N20SISO	5280	95.35	0.21
11N20SISO	5320	88.98	0.51
11N20SISO	5500	95.95	0.18
11N20SISO	5580	91.82	0.37
11N20SISO	5700	90.11	0.45
11N20SISO	5745	94.17	0.26
11N20SISO	5785	91.82	0.37
11N20SISO	5825	96.56	0.15
11AC20SISO	5180	94.27	0.26
11AC20SISO	5200	96.62	0.15
11AC20SISO	5240	89.75	0.47
11AC20SISO	5260	94.85	0.23
11AC20SISO	5280	92.5	0.34
11AC20SISO	5320	88.22	0.54
11AC20SISO	5500	88.15	0.55
11AC20SISO	5580	92.42	0.34

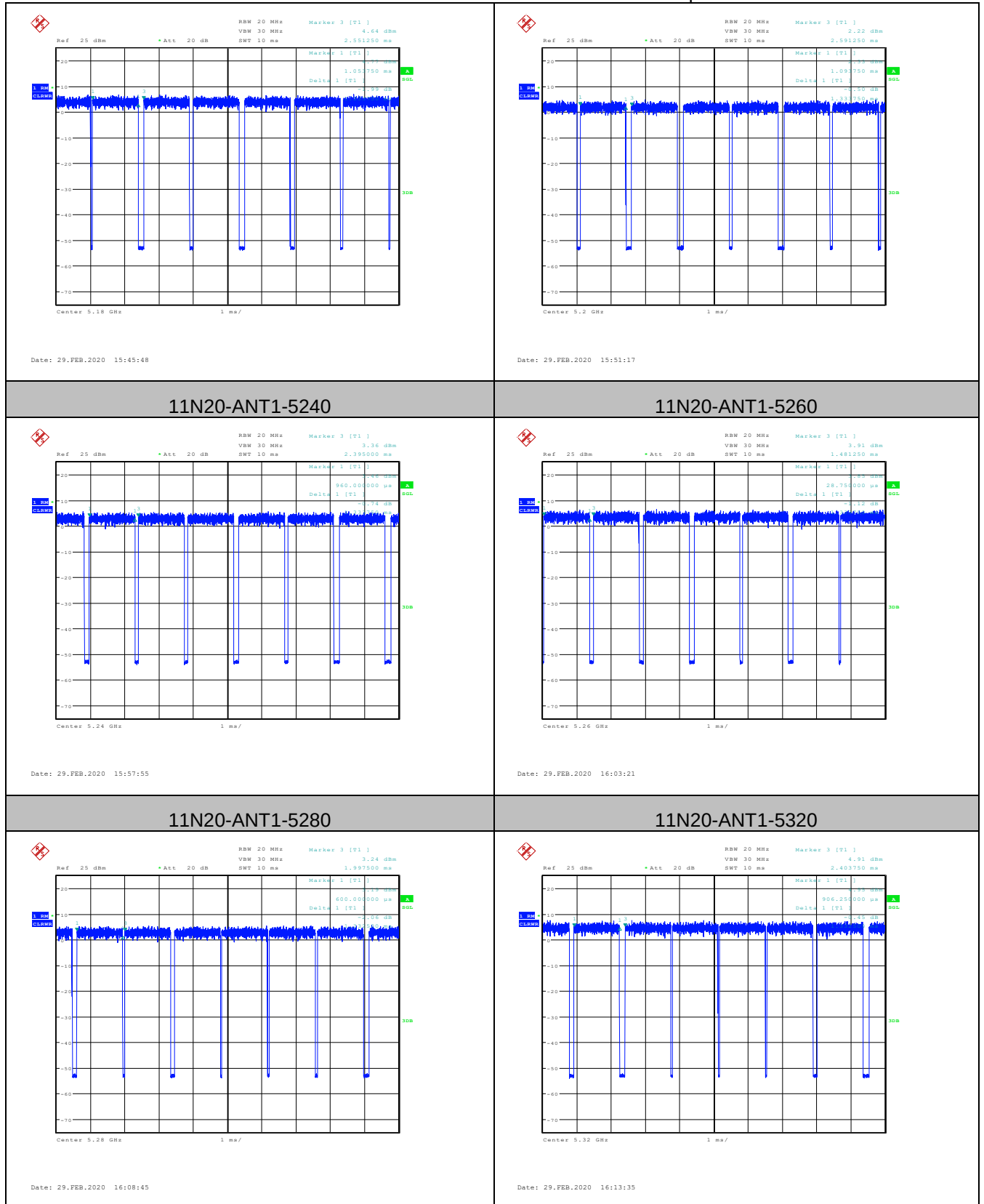
11AC20SISO	5700	90.27	0.44
11AC20SISO	5745	89.75	0.47
11AC20SISO	5785	96.62	0.15
11AC20SISO	5825	96.02	0.18
11N40SISO	5190	88.78	0.52
11N40SISO	5230	82.73	0.82
11N40SISO	5270	92.24	0.35
11N40SISO	5310	85.74	0.67
11N40SISO	5510	93.56	0.29
11N40SISO	5550	81.09	0.91
11N40SISO	5670	83.81	0.77
11N40SISO	5755	79.09	1.02
11N40SISO	5795	88.95	0.51
11AC40SISO	5190	87.56	0.58
11AC40SISO	5230	91.1	0.40
11AC40SISO	5270	88.95	0.51
11AC40SISO	5310	80.93	0.92
11AC40SISO	5510	90	0.46
11AC40 SISO	5550	81.82	0.87
11AC40SISO	5670	80.93	0.92
11AC40SISO	5755	79.24	1.01
11AC40SISO	5795	84.9	0.71
11AC80SISO	5210	64.72	1.89
11AC80SISO	5290	72.48	1.40
11AC80SISO	5530	82.1	0.86
11AC80SISO	5775	73.89	1.31

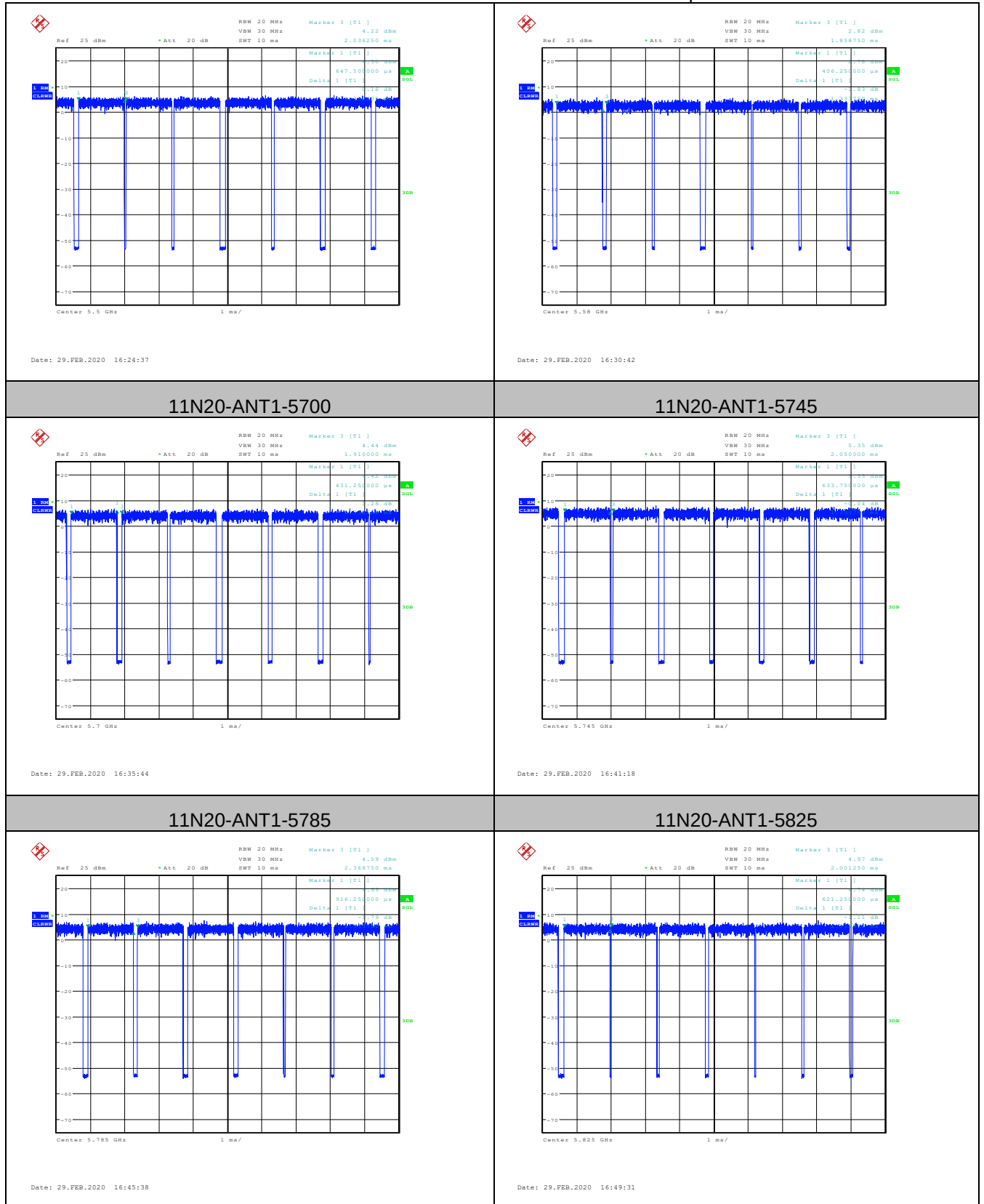
Test plot as follows:



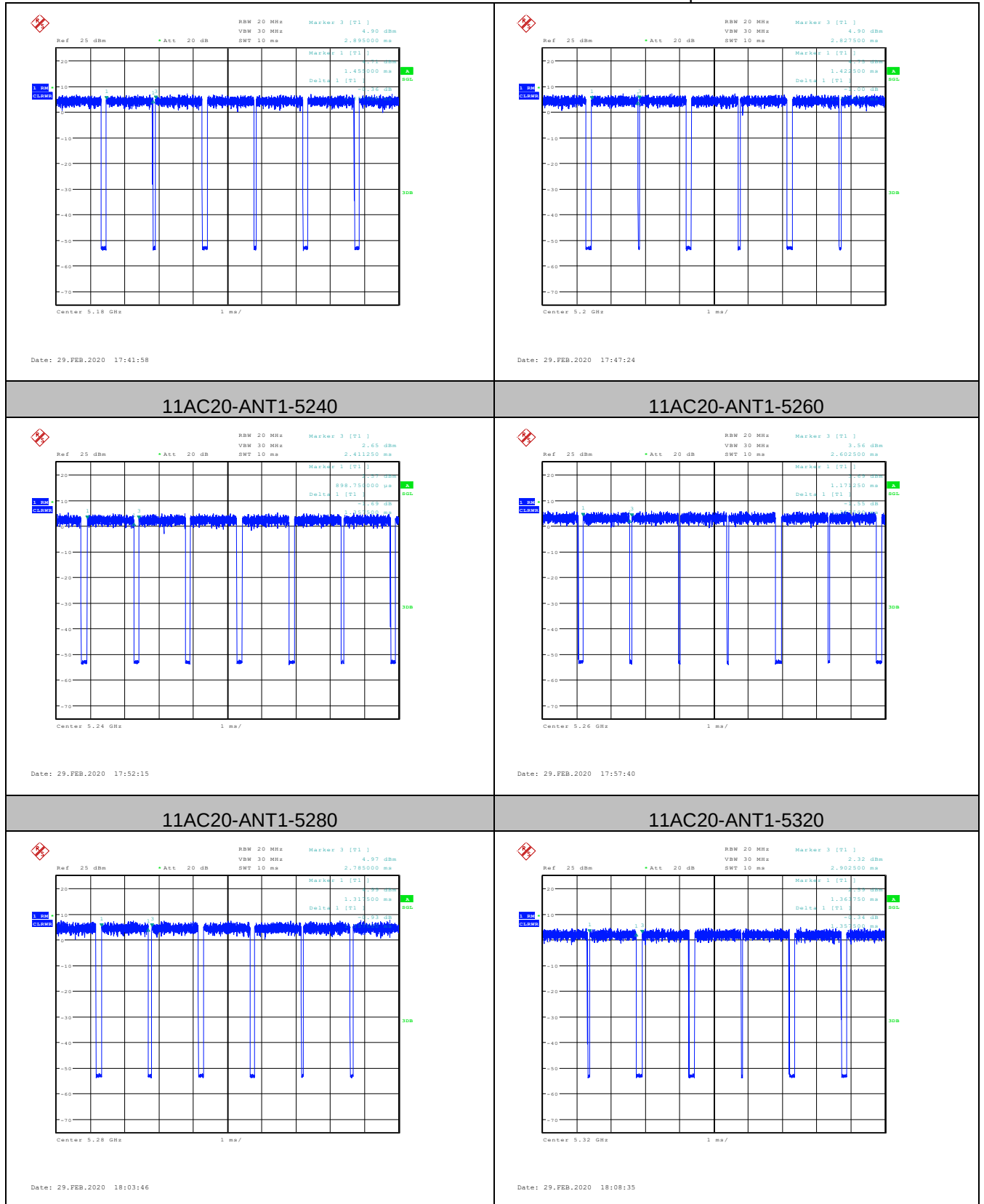


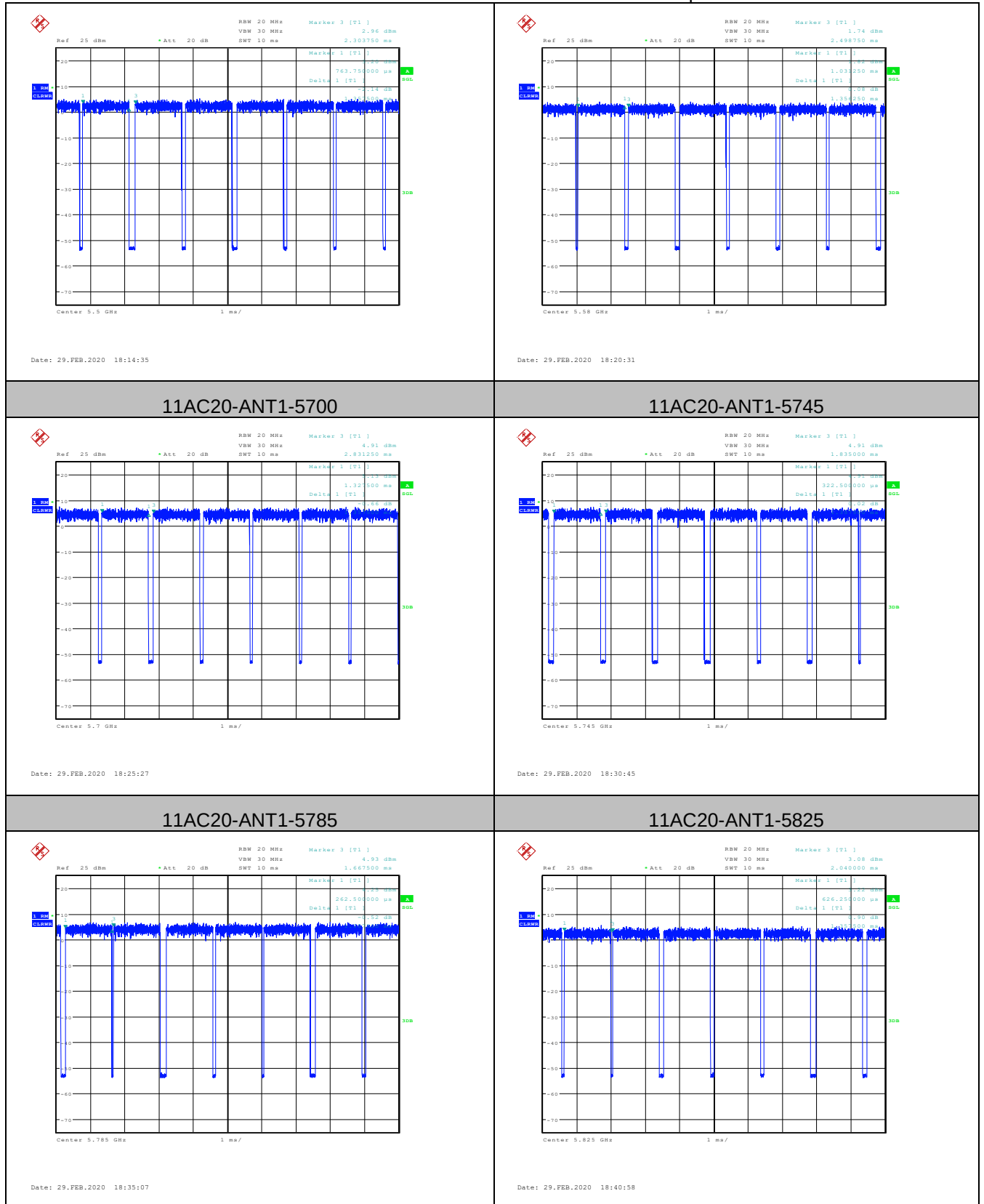
11N20-ANT1-5180	11N20-ANT1-5200
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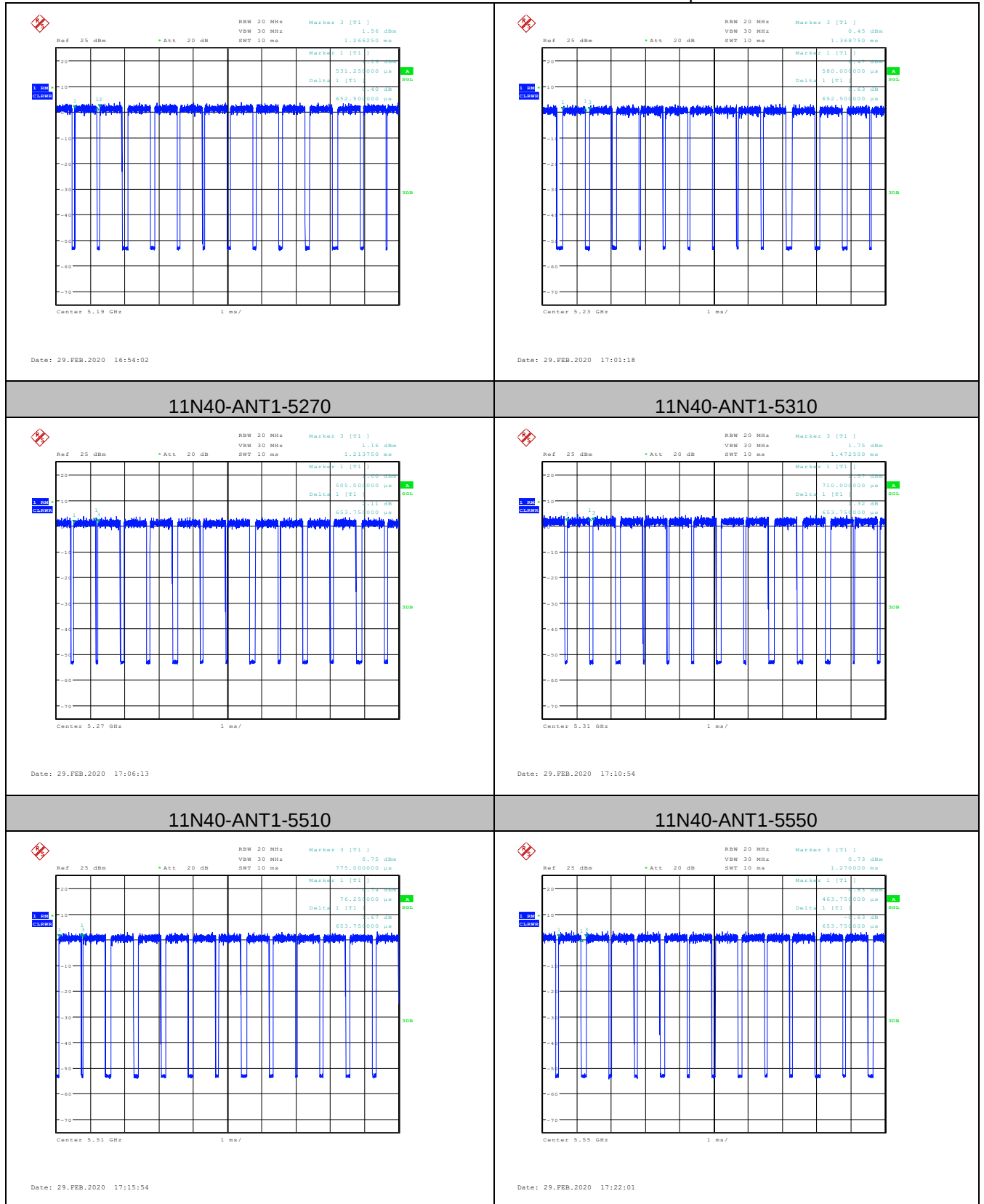


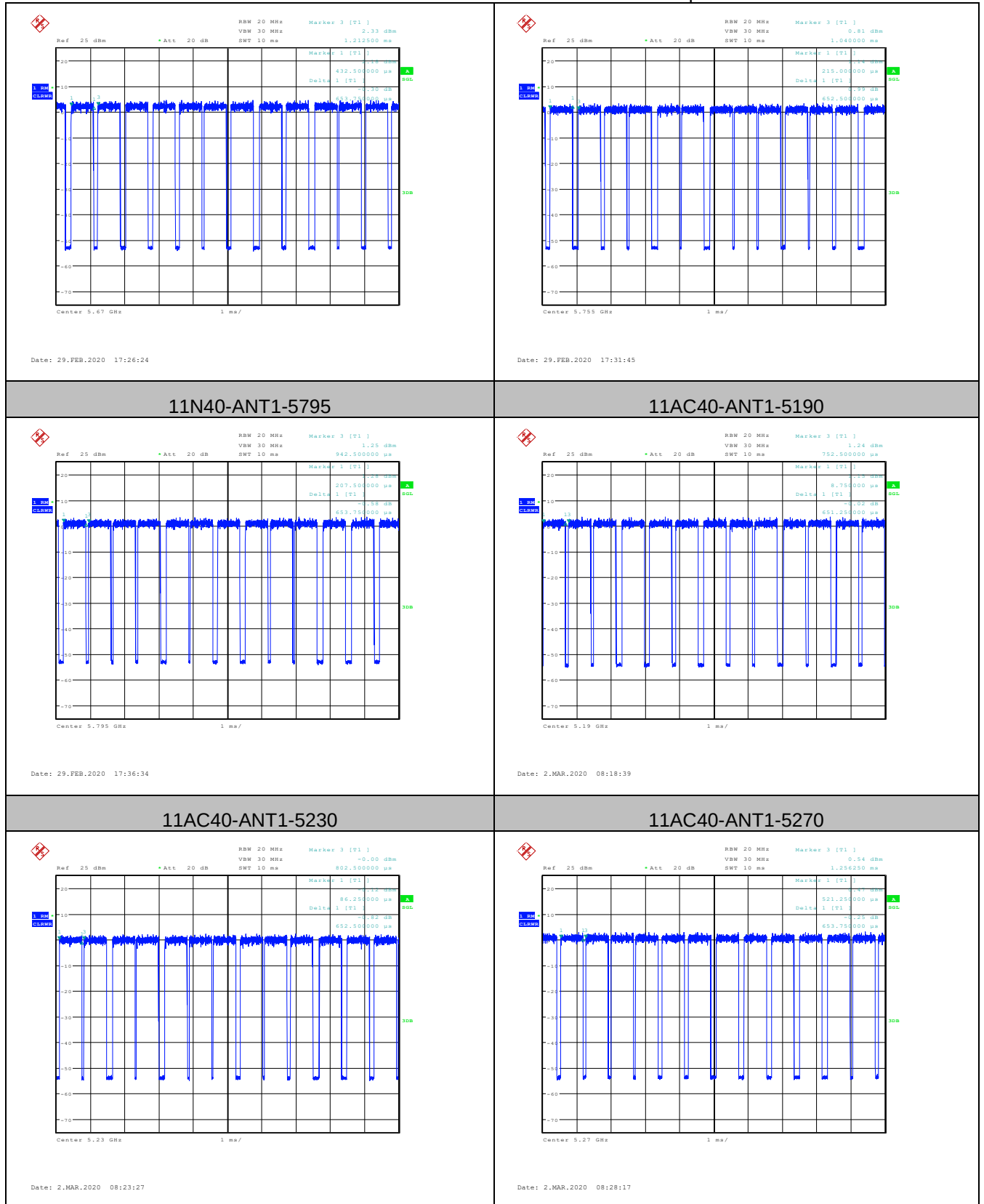
11AC20-ANT1-5180	11AC20-ANT1-5200
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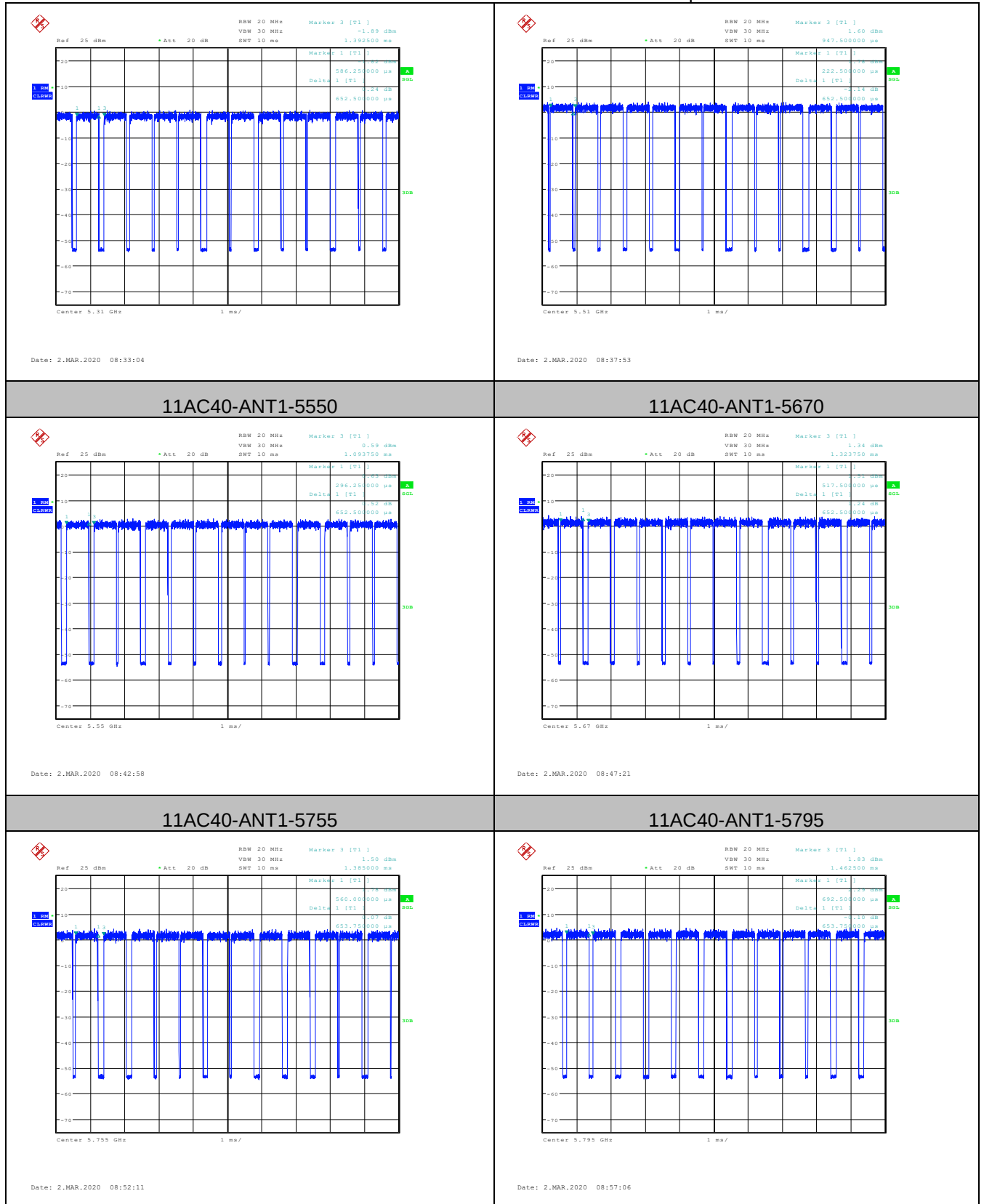


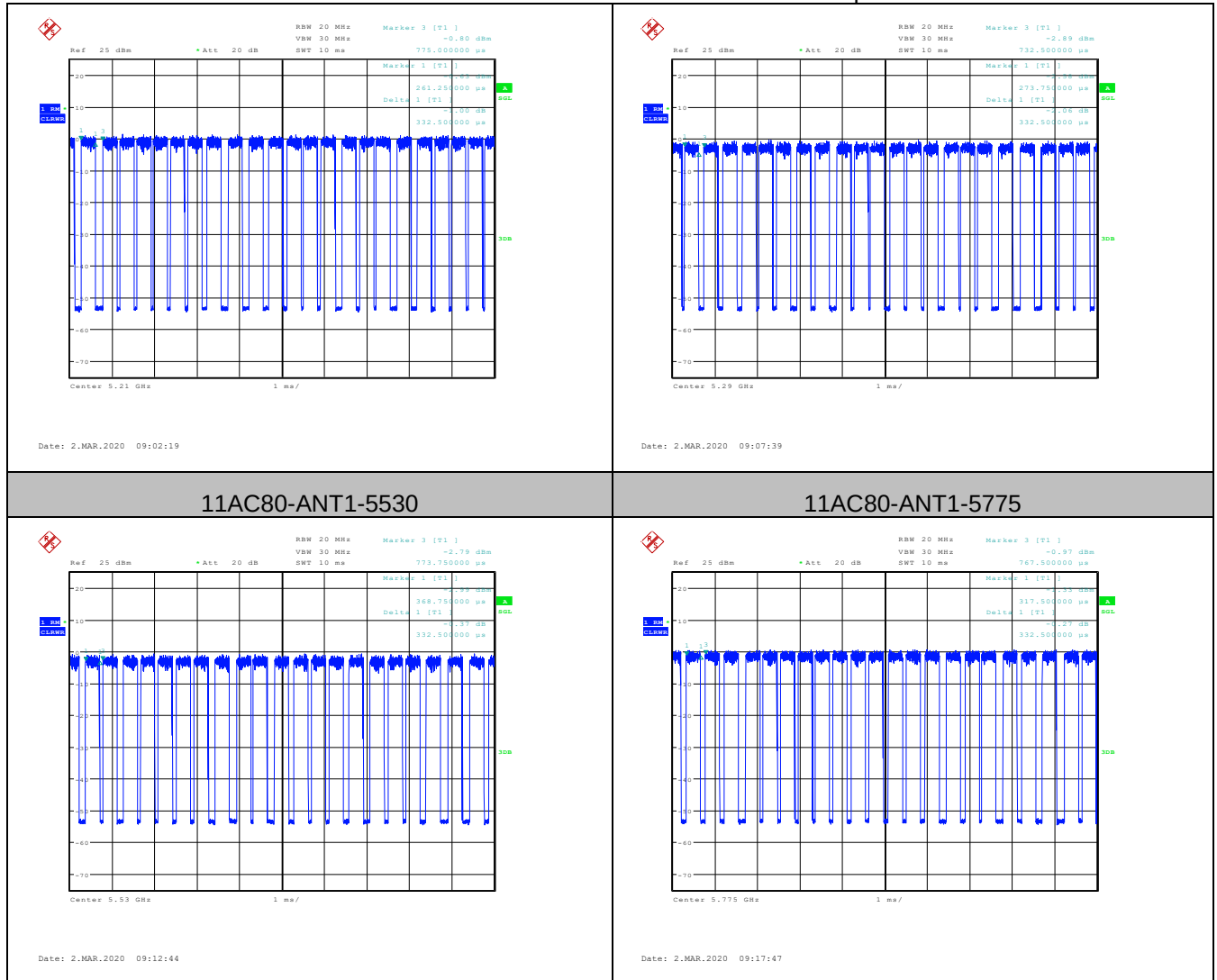


11N40-ANT1-5190	11N40-ANT1-5230
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Conducted Average Output Power:

Result Table

Test Mode	Antenna	Channel	Meas.Level [dBm]	Av.Power [dBm]	Verdict
11A	Ant1	5180	13.95	14.12	PASS
11A	Ant1	5200	12.09	12.39	PASS
11A	Ant1	5240	12.32	12.56	PASS
11A	Ant1	5260	12.36	12.53	PASS
11A	Ant1	5280	12.1	12.44	PASS
11A	Ant1	5320	12.09	12.41	PASS
11A	Ant1	5500	12.15	12.47	PASS
11A	Ant1	5580	12.25	12.60	PASS
11A	Ant1	5700	12.16	12.65	PASS
11A	Ant1	5745	12.15	12.40	PASS
11A	Ant1	5785	12.5	13.02	PASS
11A	Ant1	5825	12.25	12.70	PASS
11N20SISO	Ant1	5180	12.24	12.74	PASS
11N20SISO	Ant1	5200	12.04	12.54	PASS
11N20SISO	Ant1	5240	12.24	12.56	PASS
11N20SISO	Ant1	5260	12.4	12.77	PASS
11N20SISO	Ant1	5280	12.18	12.39	PASS
11N20SISO	Ant1	5320	12.61	13.12	PASS
11N20SISO	Ant1	5500	12.78	12.96	PASS
11N20SISO	Ant1	5580	11.56	11.93	PASS
11N20SISO	Ant1	5700	13.06	13.51	PASS
11N20SISO	Ant1	5745	13.36	13.62	PASS
11N20SISO	Ant1	5785	12.41	12.78	PASS
11N20SISO	Ant1	5825	12.81	12.96	PASS
11AC20SISO	Ant1	5180	12.64	12.90	PASS
11AC20SISO	Ant1	5200	12.53	12.68	PASS
11AC20SISO	Ant1	5240	11.22	11.69	PASS
11AC20SISO	Ant1	5260	12.44	12.67	PASS
11AC20SISO	Ant1	5280	12.24	12.58	PASS

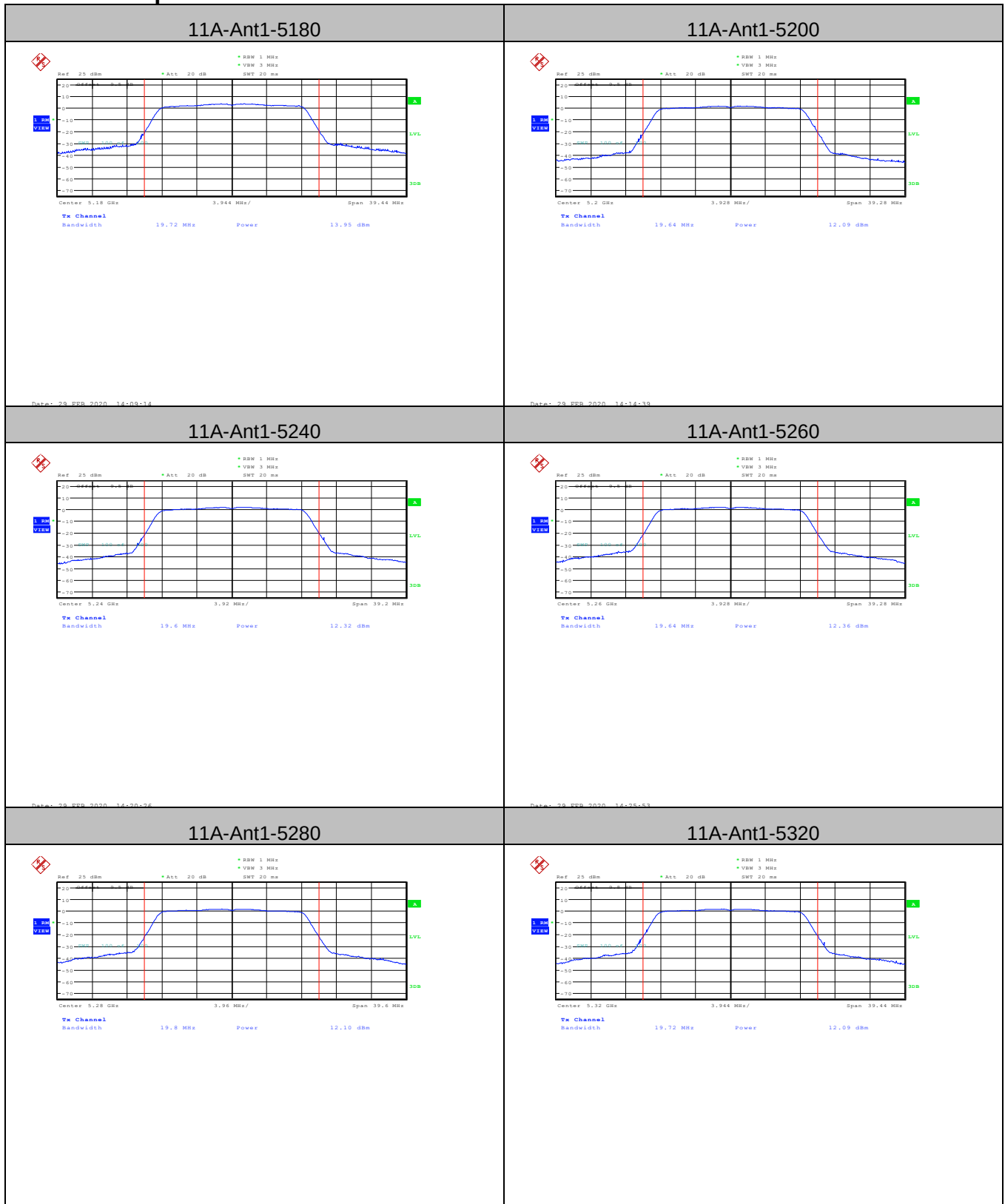
11AC20SISO	Ant1	5320	11.07	11.61	PASS
11AC20SISO	Ant1	5500	11.58	12.13	PASS
11AC20SISO	Ant1	5580	11.46	11.80	PASS
11AC20SISO	Ant1	5700	12.26	12.70	PASS
11AC20SISO	Ant1	5745	12.91	13.38	PASS
11AC20SISO	Ant1	5785	12.49	12.64	PASS
11AC20SISO	Ant1	5825	11.1	11.28	PASS
11N40SISO	Ant1	5190	12.05	12.57	PASS
11N40SISO	Ant1	5230	11.94	12.76	PASS
11N40SISO	Ant1	5270	11.71	12.06	PASS
11N40SISO	Ant1	5310	12.46	13.13	PASS
11N40SISO	Ant1	5510	12.26	12.55	PASS
11N40SISO	Ant1	5550	12.06	12.97	PASS
11N40SISO	Ant1	5670	13.26	14.03	PASS
11N40SISO	Ant1	5755	12	13.02	PASS
11N40SISO	Ant1	5795	12.29	12.80	PASS
11AC40SISO	Ant1	5190	13.18	13.76	PASS
11AC40SISO	Ant1	5230	11.74	12.14	PASS
11AC40SISO	Ant1	5270	12.11	12.62	PASS
11AC40SISO	Ant1	5310	12.26	13.18	PASS
11AC40SISO	Ant1	5510	12.01	12.47	PASS
11AC40SISO	Ant1	5550	12.46	13.33	PASS
11AC40SISO	Ant1	5670	12.82	13.74	PASS
11AC40SISO	Ant1	5755	13.13	14.14	PASS
11AC40SISO	Ant1	5795	13.46	14.17	PASS
11AC80SISO	Ant1	5210	12.02	13.91	PASS
11AC80SISO	Ant1	5290	11.99	13.39	PASS
11AC80SISO	Ant1	5530	11.68	12.54	PASS
11AC80SISO	Ant1	5775	11.44	12.75	PASS

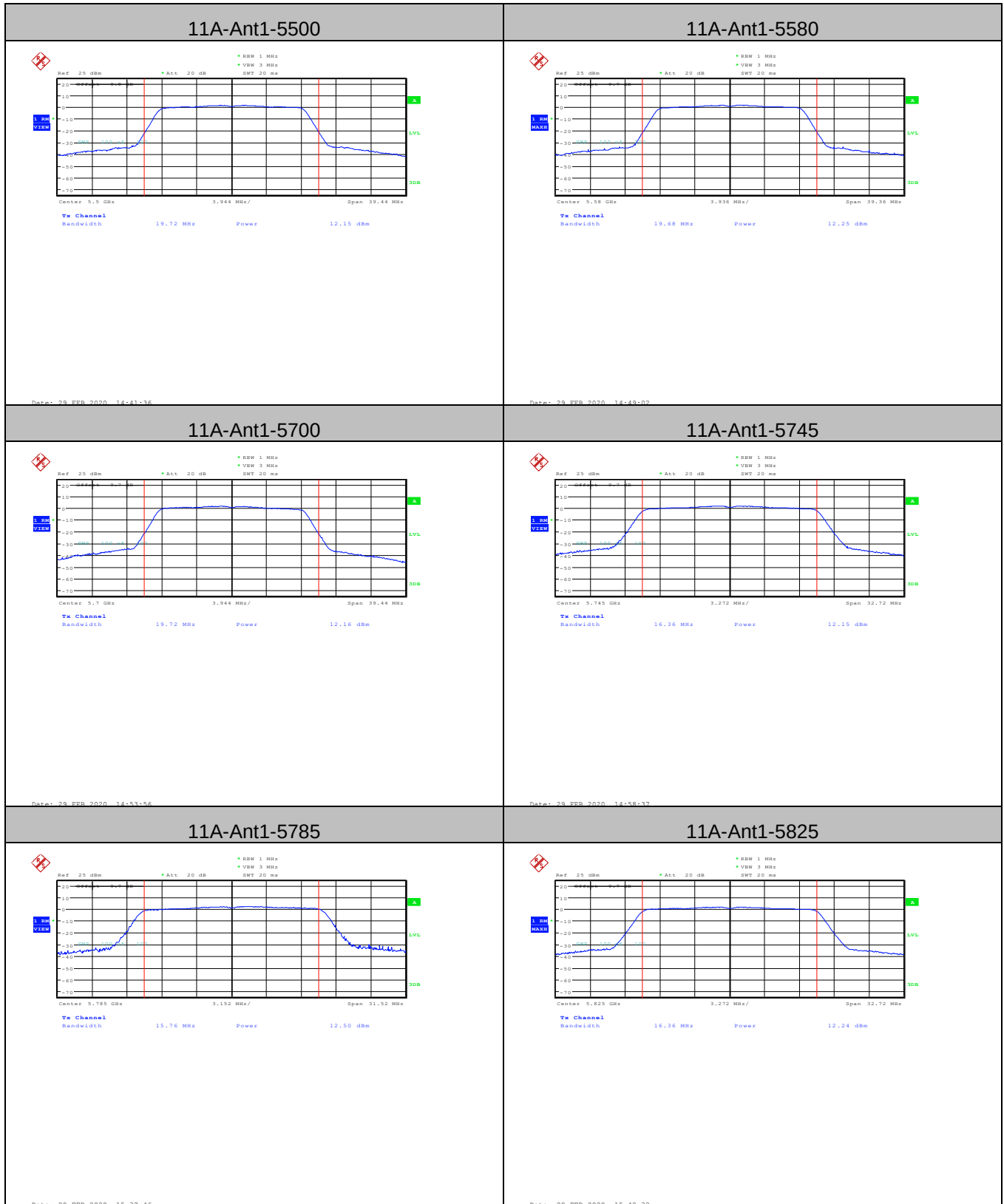
Remark:

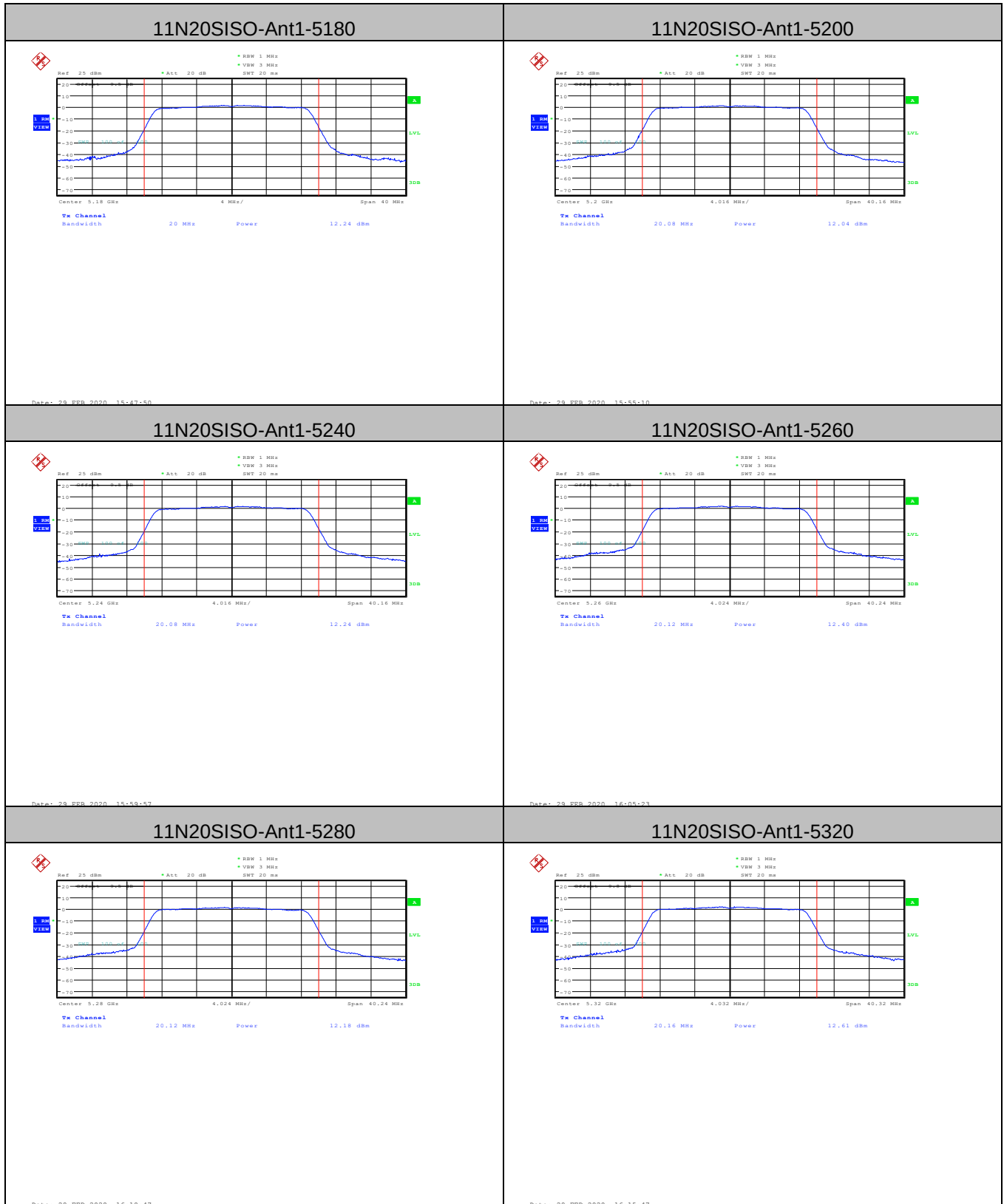
1. According KDB789033 D02, If continuous transmission cannot be achieved the 10 log (1/duty cycle) should be add.

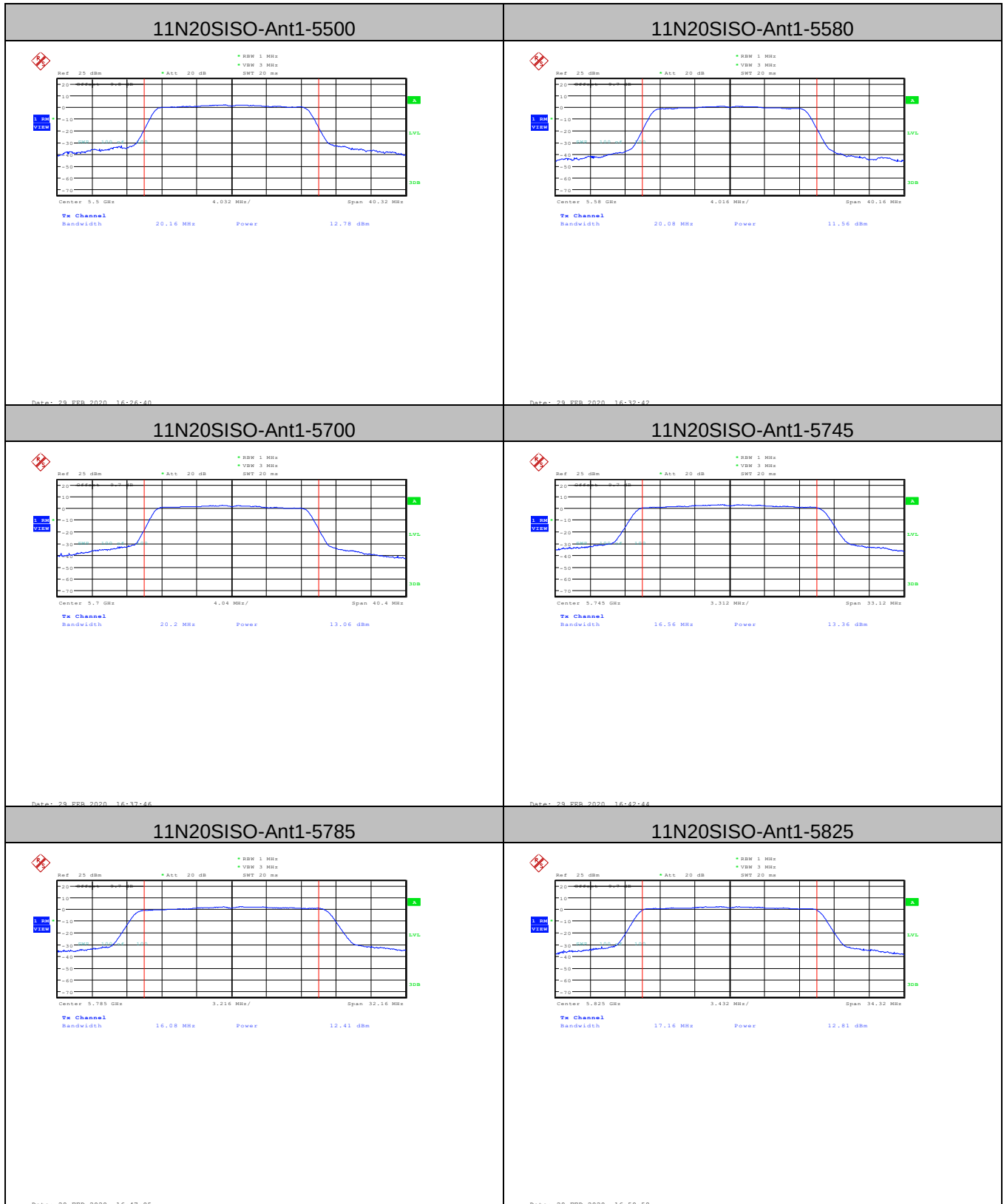
Av.Power=Meas.Level+10 log (1/duty cycle)

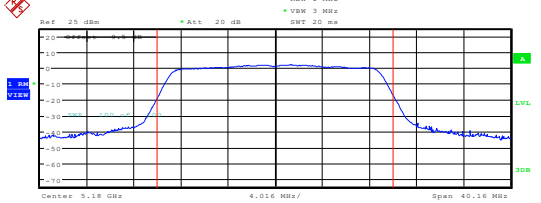
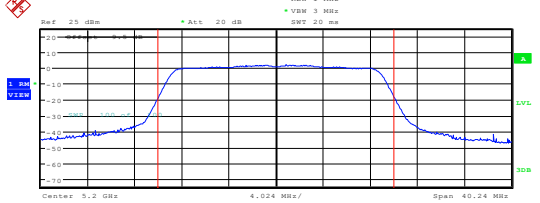
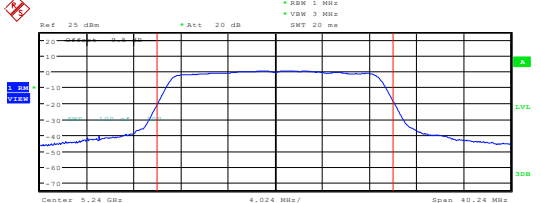
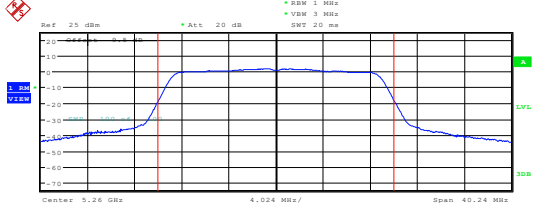
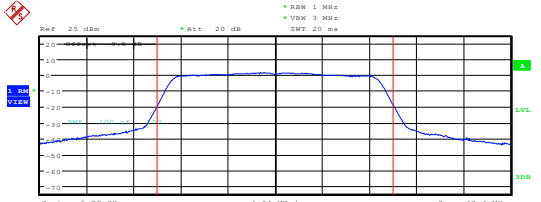
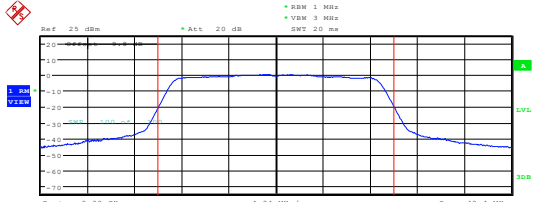
Test Graph

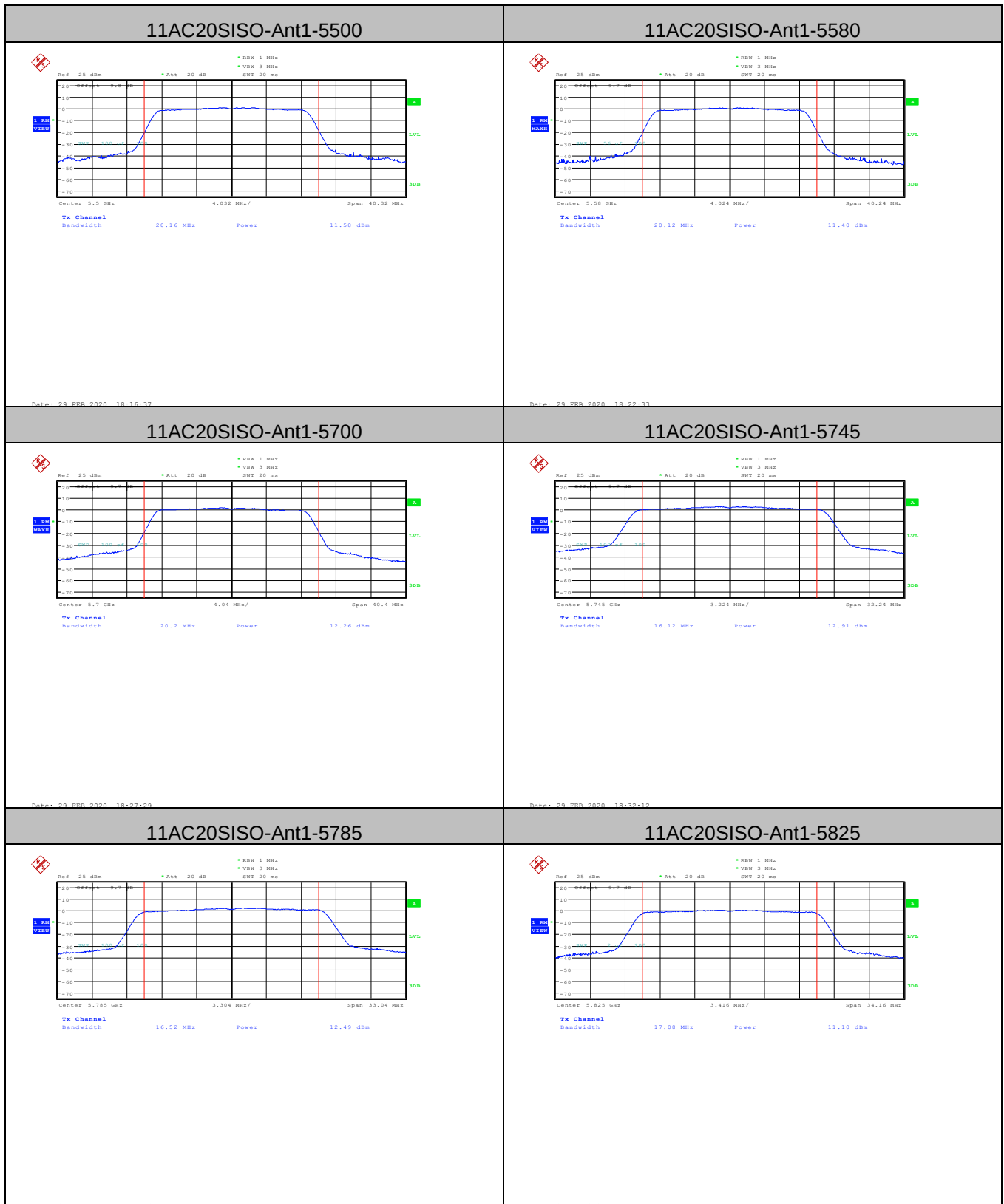


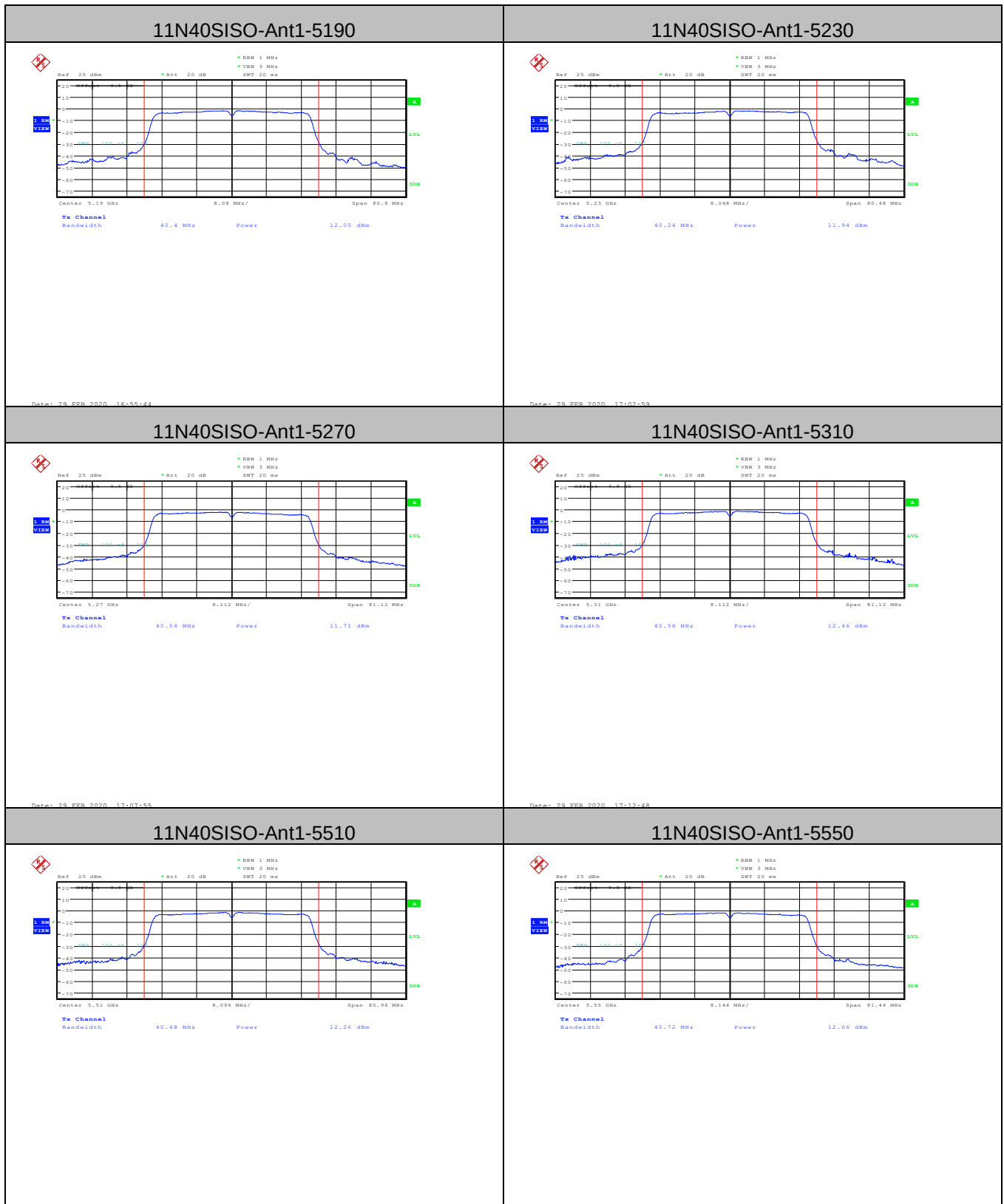


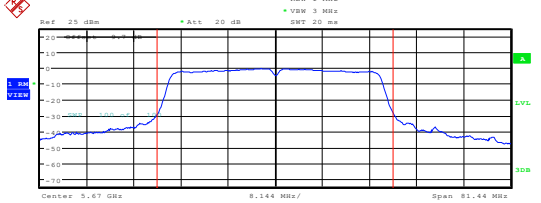
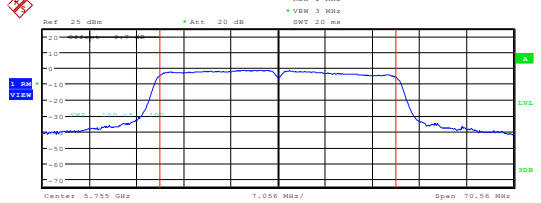
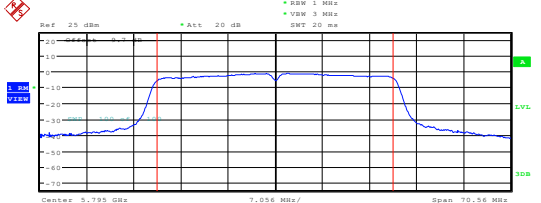
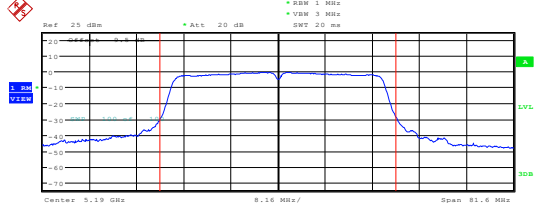
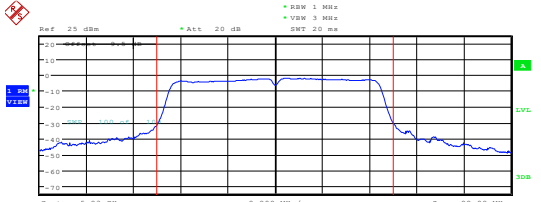
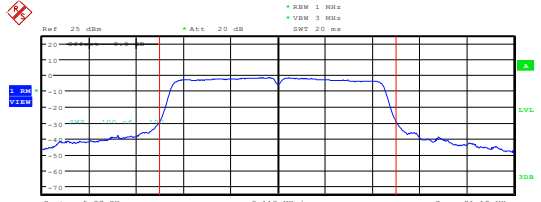


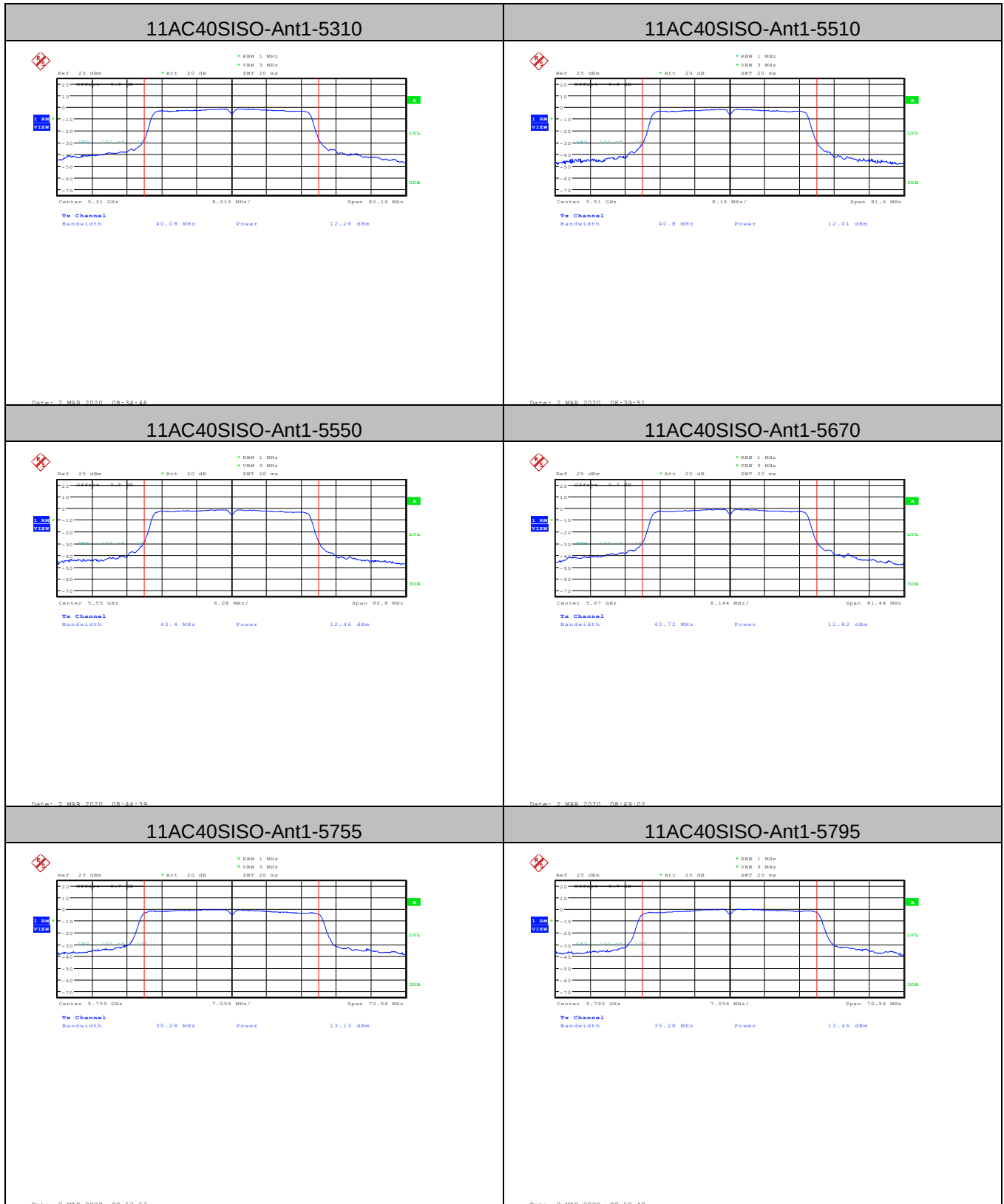


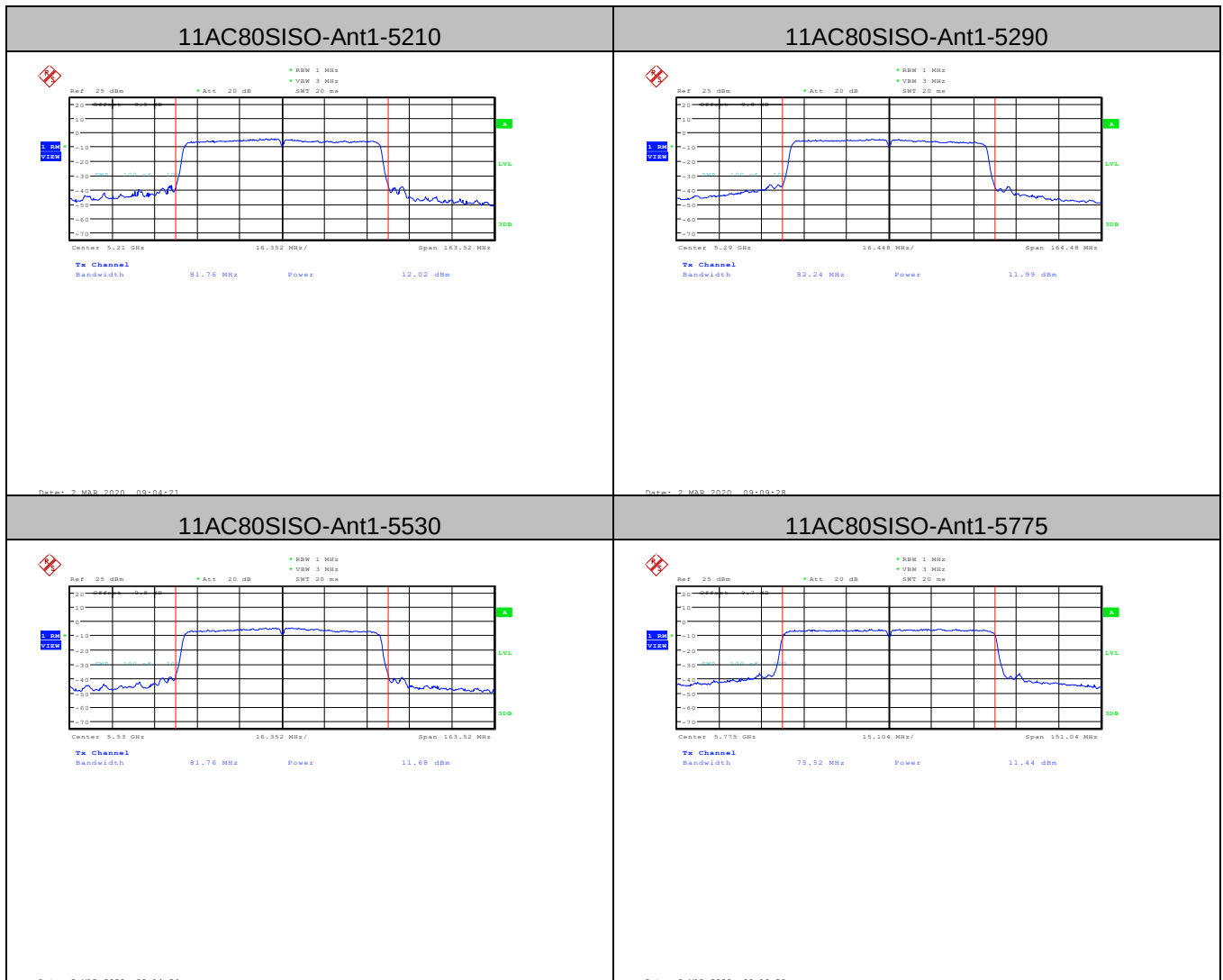
11AC20SISO-Ant1-5180  Ref: 25 dBm, Att: 20 dB, RBW: 1 MHz, VSW: 3 MHz, SWT: 20 ms Center: 5.18 GHz, Span: 40.16 MHz, Power: 12.64 dBm Date: 29 FEB 2020 17:43:59	11AC20SISO-Ant1-5200  Ref: 25 dBm, Att: 20 dB, RBW: 1 MHz, VSW: 3 MHz, SWT: 20 ms Center: 5.2 GHz, Span: 40.24 MHz, Power: 12.53 dBm Date: 29 FEB 2020 17:49:25
11AC20SISO-Ant1-5240  Ref: 25 dBm, Att: 20 dB, RBW: 1 MHz, VSW: 3 MHz, SWT: 20 ms Center: 5.24 GHz, Span: 40.24 MHz, Power: 11.22 dBm Date: 29 FEB 2020 17:56:17	11AC20SISO-Ant1-5260  Ref: 25 dBm, Att: 20 dB, RBW: 1 MHz, VSW: 3 MHz, SWT: 20 ms Center: 5.26 GHz, Span: 40.24 MHz, Power: 12.44 dBm Date: 29 FEB 2020 17:59:41
11AC20SISO-Ant1-5280  Ref: 25 dBm, Att: 20 dB, RBW: 1 MHz, VSW: 3 MHz, SWT: 20 ms Center: 5.28 GHz, Span: 40.4 MHz, Power: 12.24 dBm Date: 29 FEB 2020 18:05:48	11AC20SISO-Ant1-5320  Ref: 25 dBm, Att: 20 dB, RBW: 1 MHz, VSW: 3 MHz, SWT: 20 ms Center: 5.32 GHz, Span: 40.4 MHz, Power: 11.07 dBm Date: 29 FEB 2020 18:10:37





11N40SISO-Ant1-5670  Ref: 25 dBm, Att: 20 dB, RBW: 1 MHz, VBW: 3 MHz, SWT: 20 ms Center 5.67 GHz, Span 81.44 MHz Tx Channel Bandwidth 40.72 MHz, Power 13.26 dBm Date: 29 FEB 2020 17:28:06	11N40SISO-Ant1-5755  Ref: 25 dBm, Att: 20 dB, RBW: 1 MHz, VBW: 3 MHz, SWT: 20 ms Center 5.755 GHz, Span 70.56 MHz Tx Channel Bandwidth 35.28 MHz, Power 12.00 dBm Date: 29 FEB 2020 17:33:27
11N40SISO-Ant1-5795  Ref: 25 dBm, Att: 20 dB, RBW: 1 MHz, VBW: 3 MHz, SWT: 20 ms Center 5.795 GHz, Span 70.56 MHz Tx Channel Bandwidth 35.28 MHz, Power 12.29 dBm Date: 29 FEB 2020 17:38:16	11AC40SISO-Ant1-5190  Ref: 25 dBm, Att: 20 dB, RBW: 1 MHz, VBW: 3 MHz, SWT: 20 ms Center 5.19 GHz, Span 81.6 MHz Tx Channel Bandwidth 40.8 MHz, Power 13.18 dBm Date: 2 MAR 2020 08:20:23
11AC40SISO-Ant1-5230  Ref: 25 dBm, Att: 20 dB, RBW: 1 MHz, VBW: 3 MHz, SWT: 20 ms Center 5.23 GHz, Span 82.08 MHz Tx Channel Bandwidth 41.04 MHz, Power 11.74 dBm Date: 2 MAR 2020 08:25:09	11AC40SISO-Ant1-5270  Ref: 25 dBm, Att: 20 dB, RBW: 1 MHz, VBW: 3 MHz, SWT: 20 ms Center 5.27 GHz, Span 81.12 MHz Tx Channel Bandwidth 40.56 MHz, Power 12.11 dBm Date: 2 MAR 2020 08:29:59





Appendix C): Power Spectral Density

Result Table

Test Mode	Antenna	Channel	Meas.Level [dBm]	PSD [dBm/MHz]	Verdict
11A	Ant1	5180	3.76	3.93	PASS
11A	Ant1	5200	1.93	2.23	PASS
11A	Ant1	5240	2.04	2.28	PASS
11A	Ant1	5260	2.30	2.47	PASS
11A	Ant1	5280	1.91	2.25	PASS
11A	Ant1	5320	1.94	2.26	PASS
11A	Ant1	5500	1.86	2.18	PASS
11A	Ant1	5580	2.08	2.43	PASS
11A	Ant1	5700	2.28	2.77	PASS
Test Mode	Antenna	Channel	Meas.Level [dBm]	PSD [dBm/500kHz]	Verdict
11A	Ant1	5745	0.27	0.52	PASS
11A	Ant1	5785	0.83	1.35	PASS
11A	Ant1	5825	0.25	0.70	PASS
Test Mode	Antenna	Channel	Meas.Level [dBm]	PSD [dBm/MHz]	Verdict
11N20SISO	Ant1	5180	1.82	2.32	PASS
11N20SISO	Ant1	5200	1.49	1.99	PASS
11N20SISO	Ant1	5240	1.99	2.31	PASS
11N20SISO	Ant1	5260	1.95	2.32	PASS
11N20SISO	Ant1	5280	1.68	1.89	PASS
11N20SISO	Ant1	5320	2.54	3.05	PASS
11N20SISO	Ant1	5500	2.49	2.67	PASS
11N20SISO	Ant1	5580	1.30	1.67	PASS
11N20SISO	Ant1	5700	2.74	3.19	PASS
Test Mode	Antenna	Channel	Meas.Level [dBm]	PSD [dBm/500kHz]	Verdict
11N20SISO	Ant1	5745	1.59	1.85	PASS
11N20SISO	Ant1	5785	0.92	1.29	PASS
11N20SISO	Ant1	5825	0.92	1.07	PASS

Test Mode	Antenna	Channel	Meas.Level [dBm]	PSD [dBm/MHz]	Verdict
11N40SISO	Ant1	5190	-1.51	-0.99	PASS
11N40SISO	Ant1	5230	-1.36	-0.54	PASS
11N40SISO	Ant1	5270	-1.92	-1.57	PASS
11N40SISO	Ant1	5310	-0.76	-0.09	PASS
11N40SISO	Ant1	5510	-1.04	-0.75	PASS
11N40SISO	Ant1	5550	-1.54	-0.63	PASS
11N40SISO	Ant1	5670	0.16	0.93	PASS
Test Mode	Antenna	Channel	Meas.Level [dBm]	PSD [dBm/500kHz]	Verdict
11N40SISO	Ant1	5755	-2.77	-1.75	PASS
11N40SISO	Ant1	5795	-2.81	-2.30	PASS
Test Mode	Antenna	Channel	Meas.Level [dBm]	PSD [dBm/MHz]	Verdict
11AC20SISO	Ant1	5180	2.29	2.55	PASS
11AC20SISO	Ant1	5200	2.19	2.34	PASS
11AC20SISO	Ant1	5240	0.85	1.32	PASS
11AC20SISO	Ant1	5260	2.04	2.27	PASS
11AC20SISO	Ant1	5280	1.81	2.15	PASS
11AC20SISO	Ant1	5320	0.63	1.17	PASS
11AC20SISO	Ant1	5500	1.11	1.66	PASS
11AC20SISO	Ant1	5580	1.41	1.75	PASS
11AC20SISO	Ant1	5700	1.75	2.19	PASS
Test Mode	Antenna	Channel	Meas.Level [dBm]	PSD [dBm/500kHz]	Verdict
11AC20SISO	Ant1	5745	1.30	1.77	PASS
11AC20SISO	Ant1	5785	0.38	0.53	PASS
11AC20SISO	Ant1	5825	-0.04	0.14	PASS
Test Mode	Antenna	Channel	Meas.Level [dBm]	PSD [dBm/MHz]	Verdict
11AC40SISO	Ant1	5190	-0.43	0.15	PASS
11AC40SISO	Ant1	5230	-1.72	-1.32	PASS
11AC40SISO	Ant1	5270	-1.51	-1.00	PASS
11AC40SISO	Ant1	5310	-1.13	-0.21	PASS
11AC40SISO	Ant1	5510	-1.13	-0.67	PASS

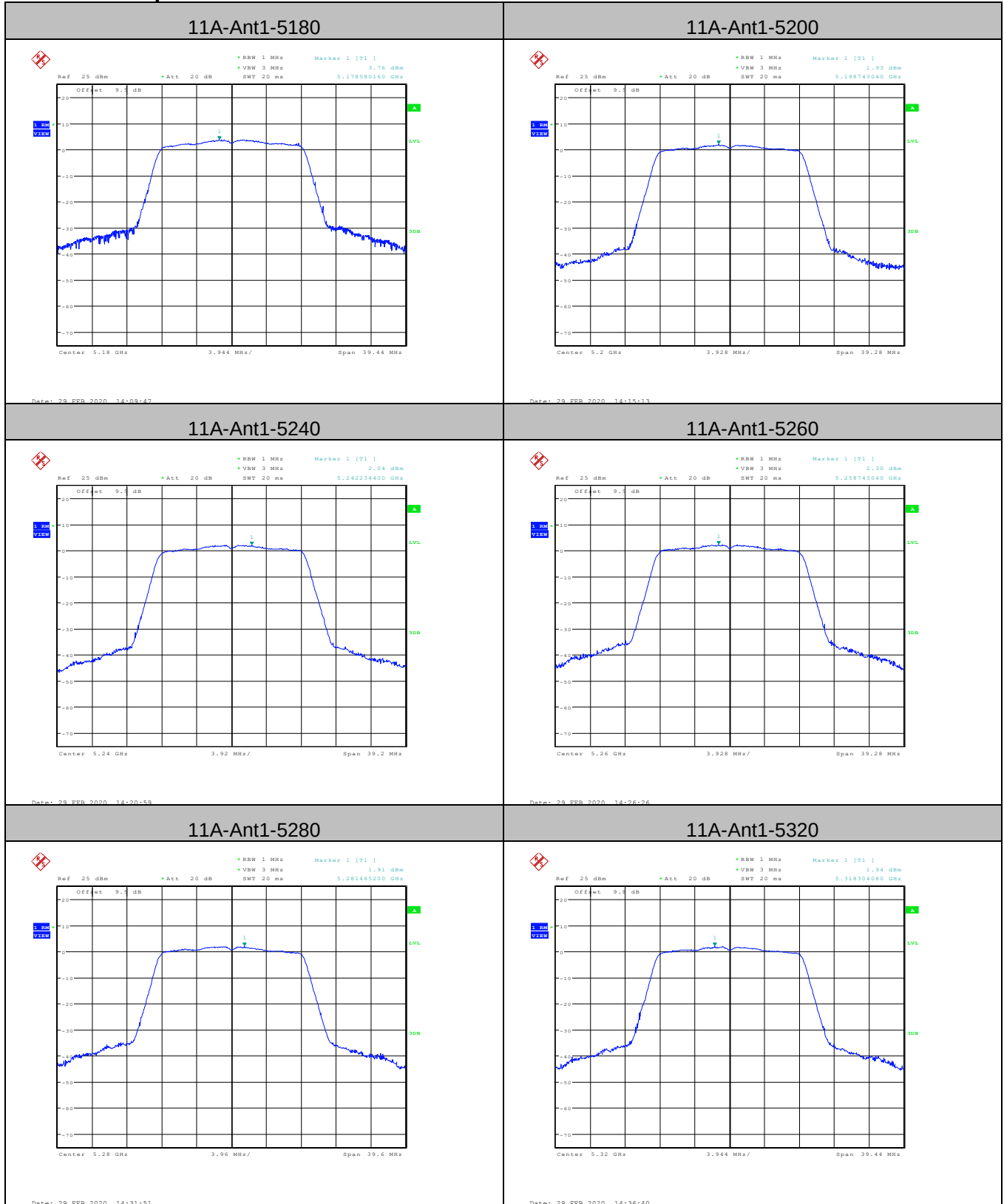
11AC40SISO	Ant1	5550	-1.14	-0.27	PASS
11AC40SISO	Ant1	5670	-0.52	0.40	PASS
Test Mode	Antenna	Channel	Meas.Level [dBm]	PSD [dBm/500kHz]	Verdict
11AC40SISO	Ant1	5755	-2.29	-1.28	PASS
11AC40SISO	Ant1	5795	-1.44	-0.73	PASS
Test Mode	Antenna	Channel	Meas.Level [dBm]	PSD [dBm/MHz]	Verdict
11AC80SISO	Ant1	5210	-3.66	-1.77	PASS
11AC80SISO	Ant1	5290	-4.48	-3.08	PASS
11AC80SISO	Ant1	5530	-4.55	-3.69	PASS
Test Mode	Antenna	Channel	Meas.Level [dBm]	PSD [dBm/500kHz]	Verdict
11AC80SISO	Ant1	5775	-6.87	-5.56	PASS

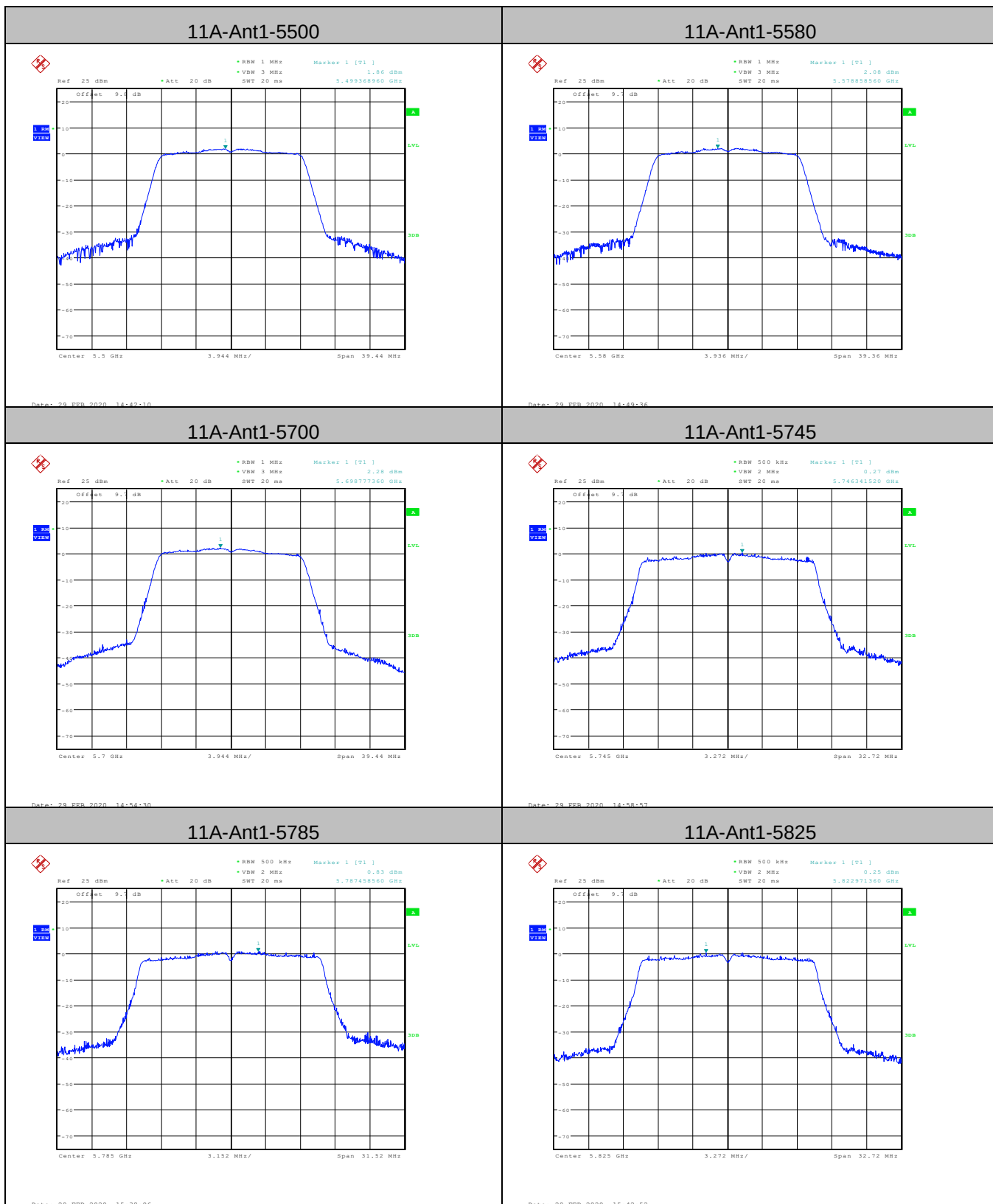
Remark:

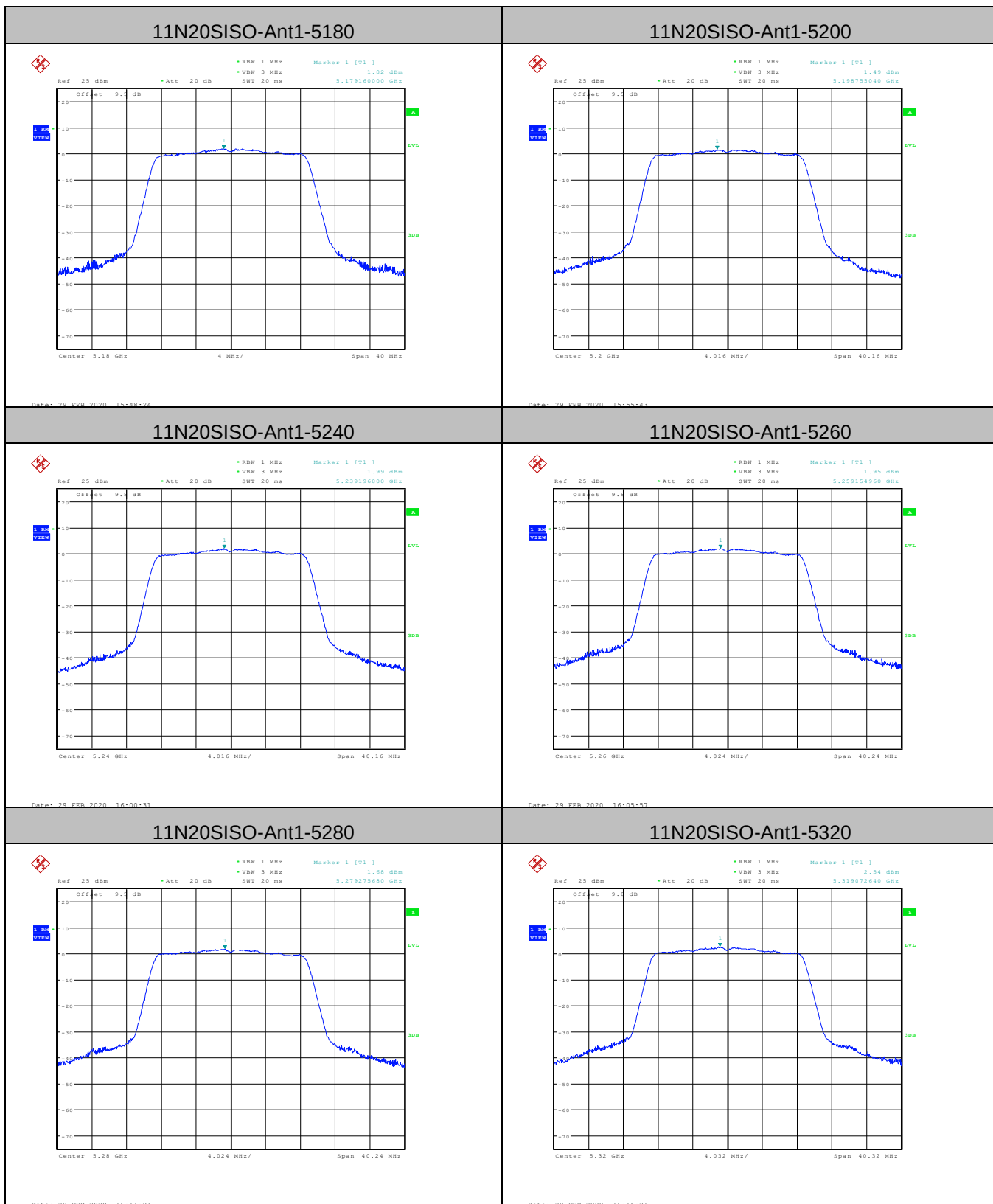
1. According KDB789033 D02, If continuous transmission cannot be achieved the 10 log (1/duty cycle) should be add.

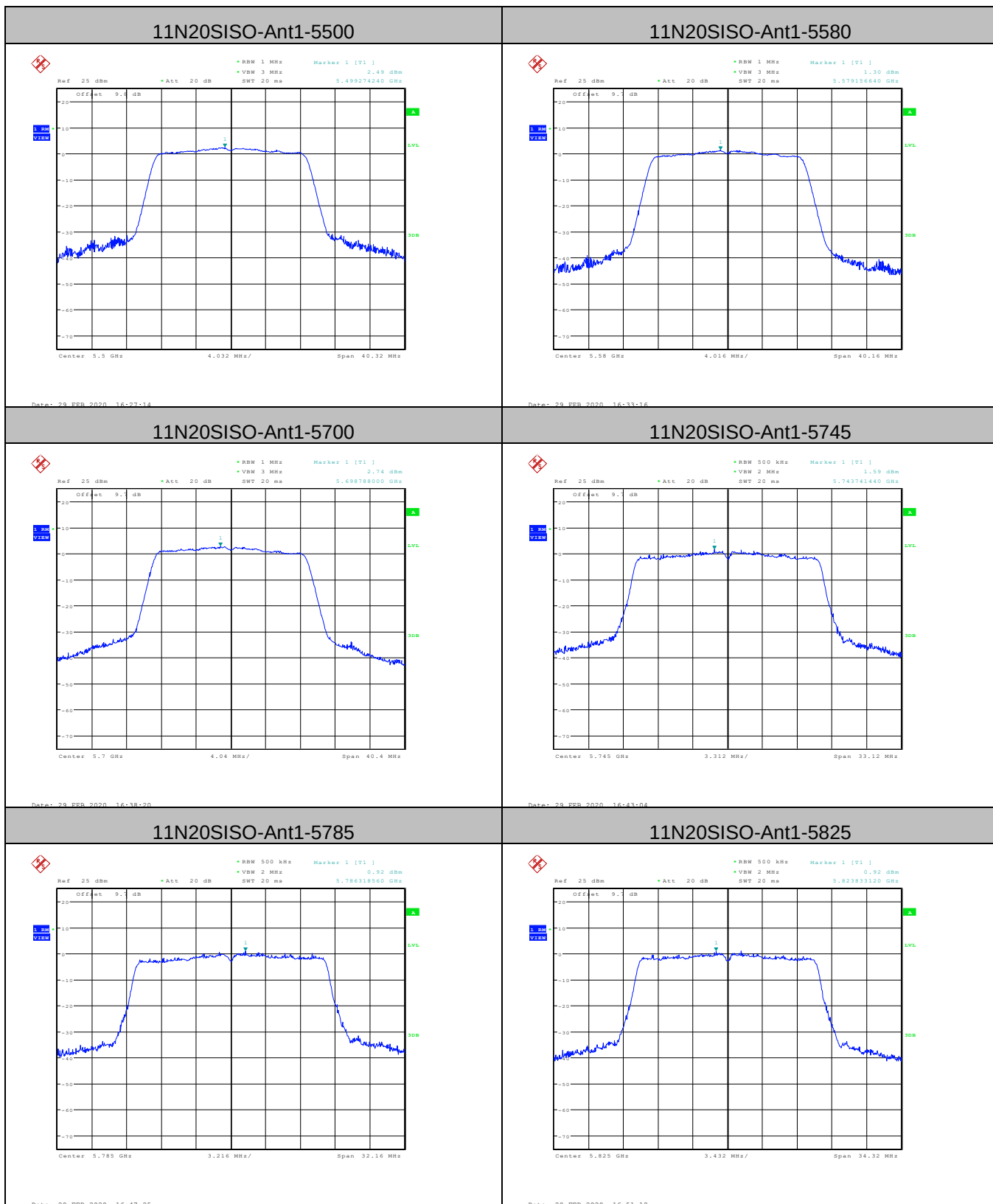
PSD=Meas.Level+10 log (1/duty cycle)

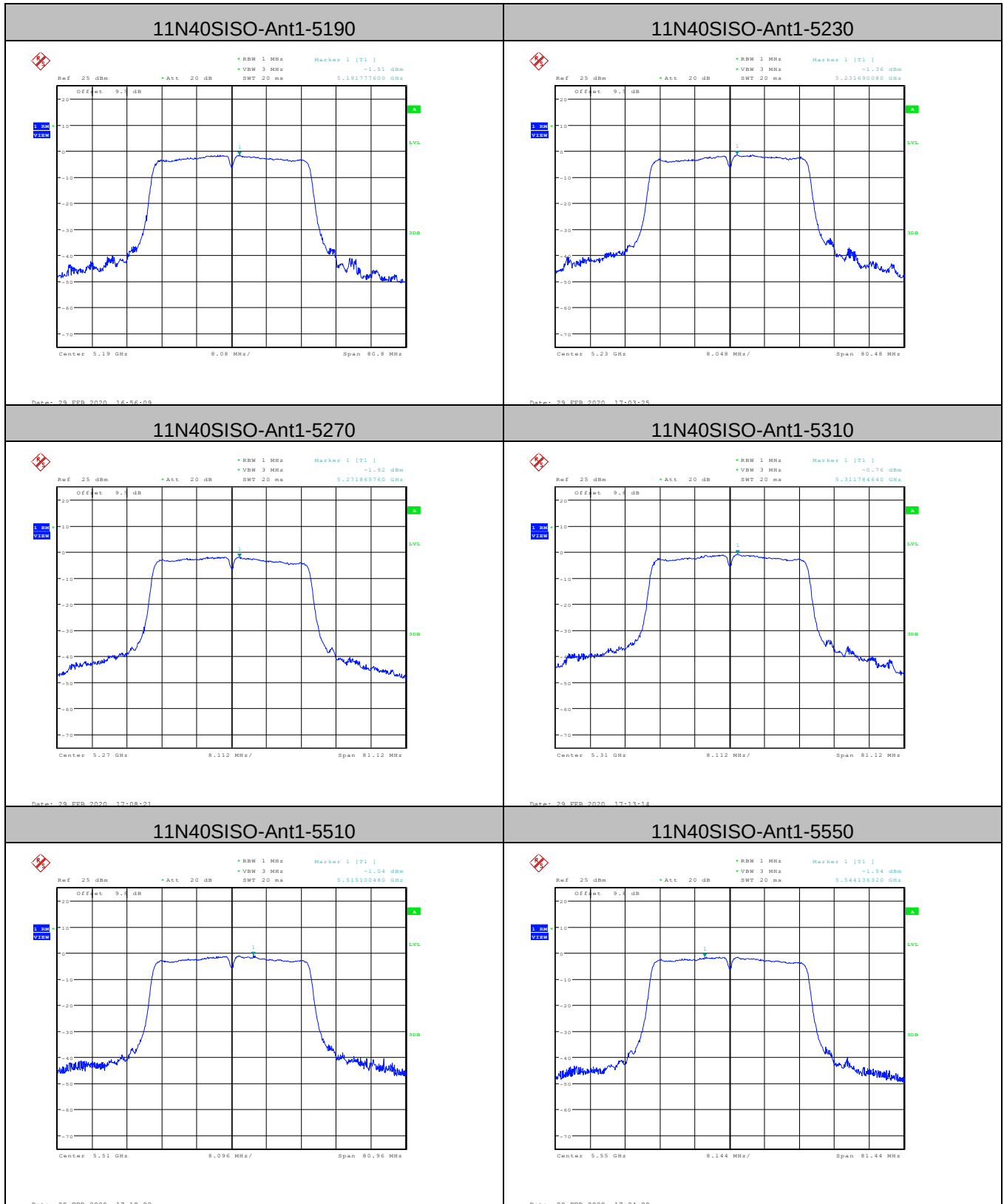
Test Graph

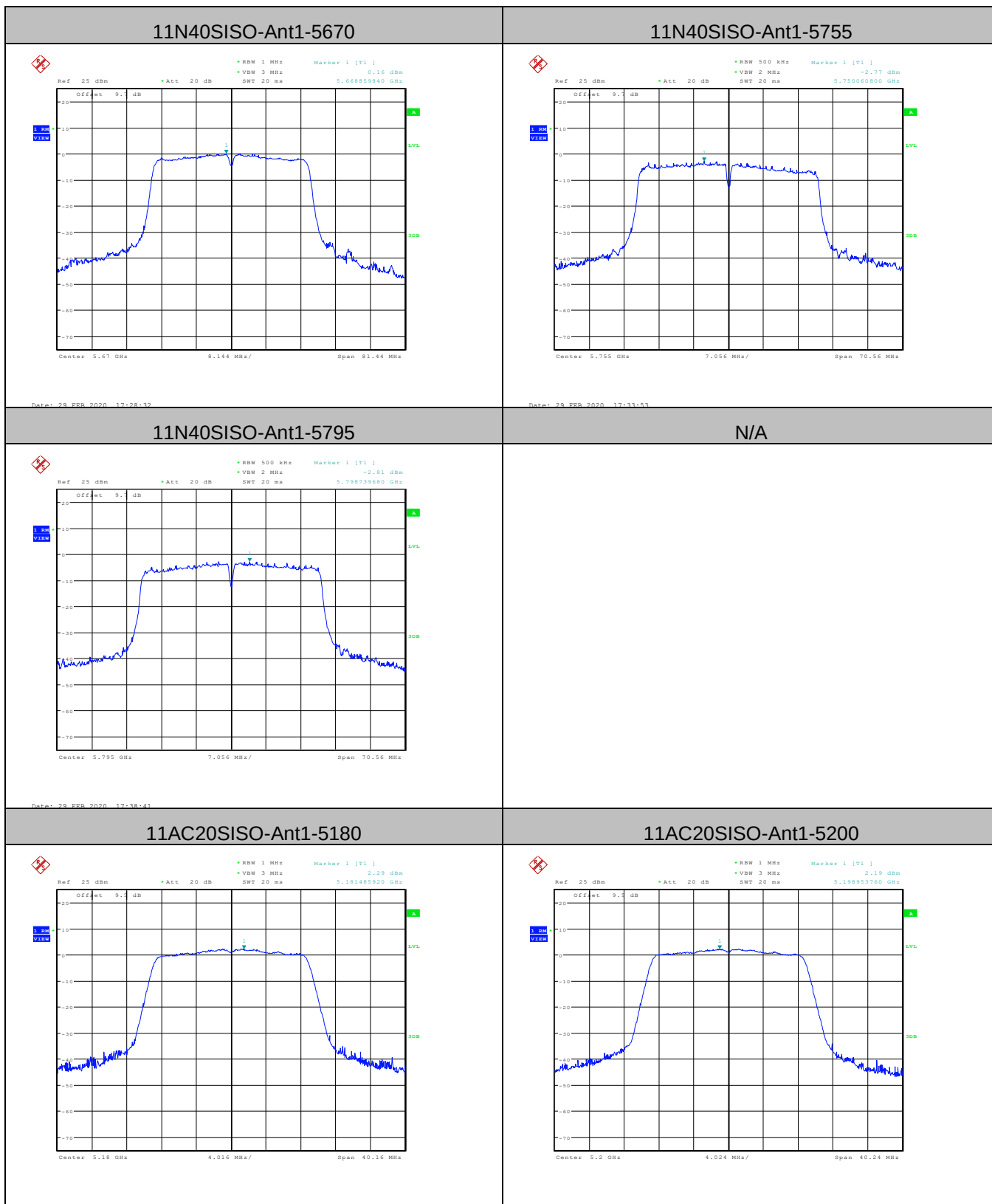


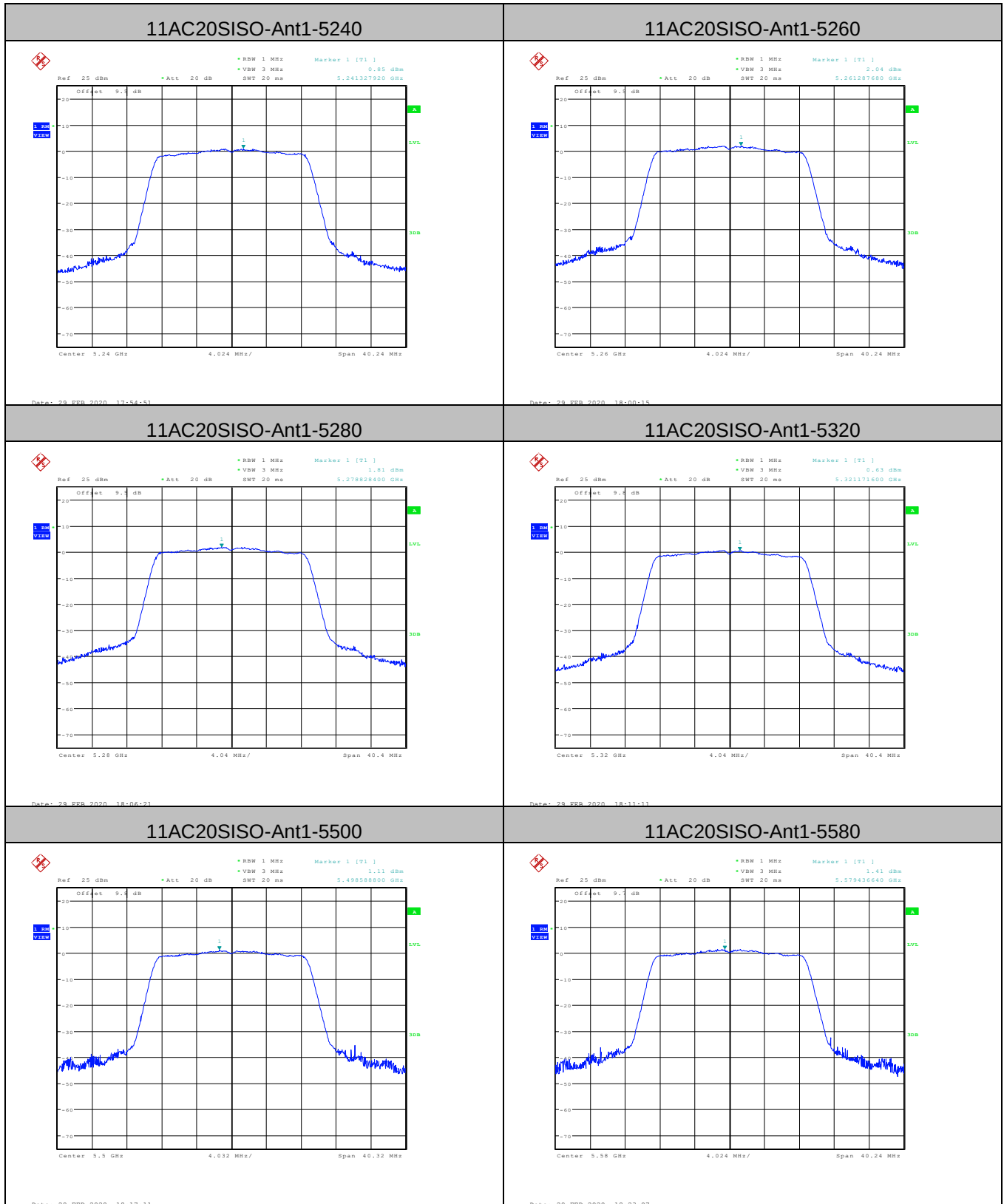


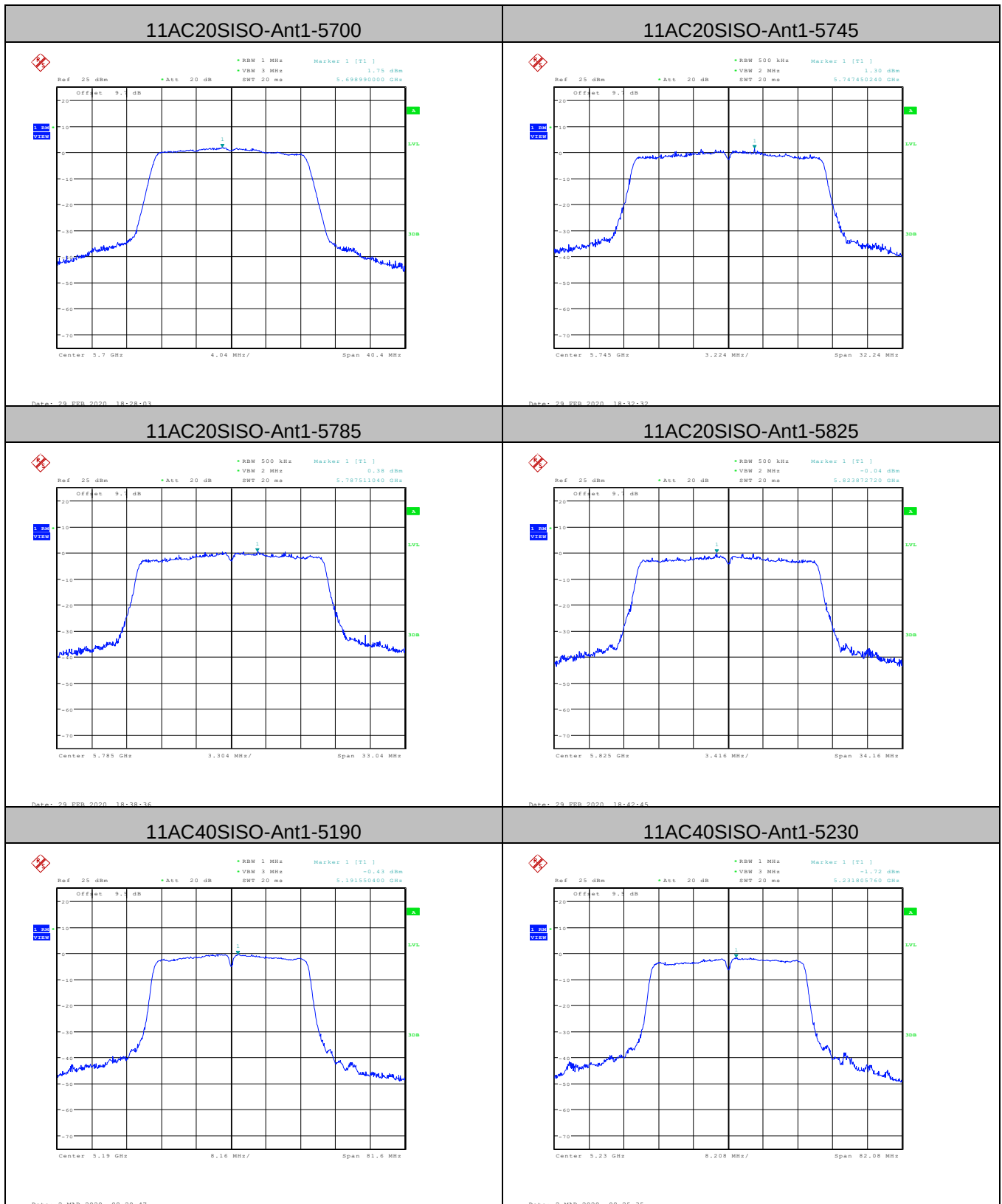


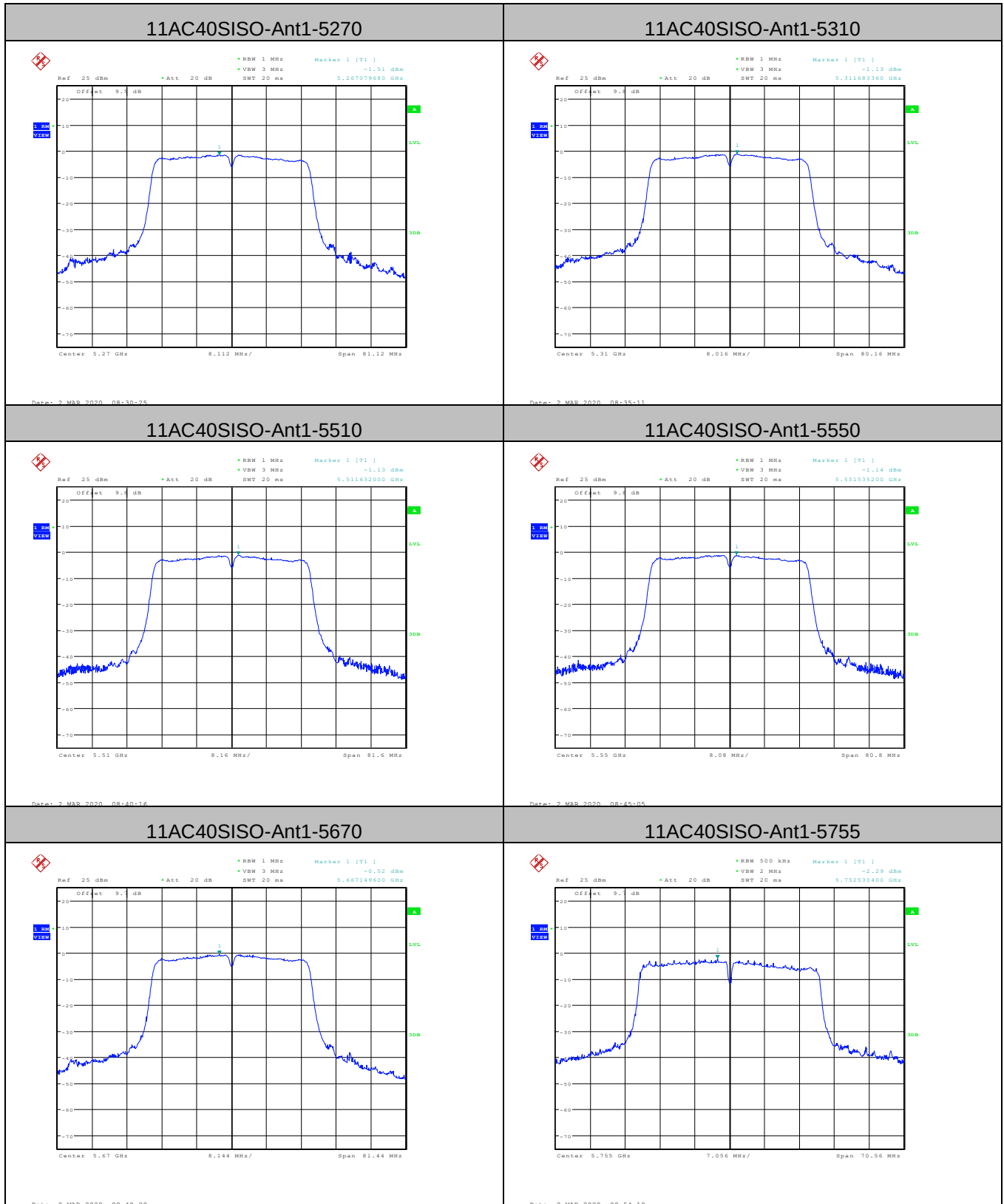


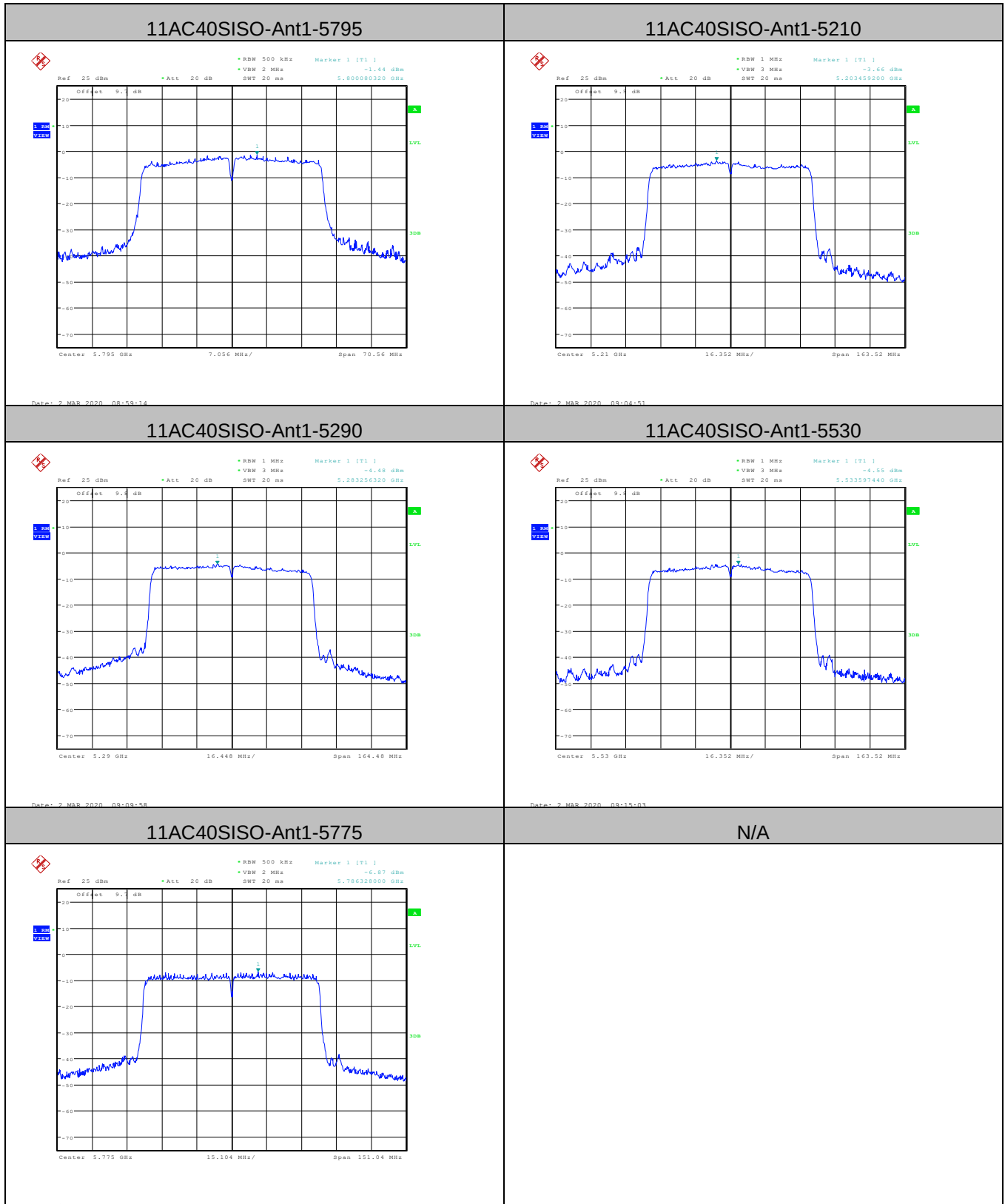












Appendix D): Frequency Stability

Frequency Error vs. Voltage:

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11A	Ant1	5180	TN	VL	5180.05	8.68726	PASS
			TN	VN	5180.03	5.79151	PASS
			TN	VH	5180.03	5.79151	PASS
11A	Ant1	5200	TN	VL	5200.03	5.76923	PASS
			TN	VN	5200.02	2.88462	PASS
			TN	VH	5200.03	5.76923	PASS
11A	Ant1	5240	TN	VL	5240.06	11.45038	PASS
			TN	VN	5240.03	5.72519	PASS
			TN	VH	5240.05	8.58779	PASS
11A	Ant1	5260	TN	VL	5260.02	2.85171	PASS
			TN	VN	5260.02	2.85171	PASS
			TN	VH	5260.02	2.85171	PASS
11A	Ant1	5280	TN	VL	5280.02	2.84091	PASS
			TN	VN	5280.03	5.68182	PASS
			TN	VH	5280.02	2.84091	PASS
11A	Ant1	5320	TN	VL	5320.02	2.81955	PASS
			TN	VN	5320.02	2.81955	PASS
			TN	VH	5320.02	2.81955	PASS
11A	Ant1	5500	TN	VL	5500.05	8.18182	PASS
			TN	VN	5500.02	2.72727	PASS
			TN	VH	5500.05	8.18182	PASS
11A	Ant1	5580	TN	VL	5580.05	8.06452	PASS
			TN	VN	5580.03	5.37634	PASS
			TN	VH	5580.03	5.37634	PASS
11A	Ant1	5700	TN	VL	5700.00	0.00000	PASS
			TN	VN	5699.99	-2.63158	PASS
			TN	VH	5699.99	-2.63158	PASS
11A	Ant1	5745	TN	VL	5745.02	2.61097	PASS
			TN	VN	5745.02	2.61097	PASS
			TN	VH	5745.02	2.61097	PASS

11A	Ant1	5785	TN	VL	5785.06	10.37165	PASS
			TN	VN	5785.08	12.96456	PASS
			TN	VH	5785.06	10.37165	PASS
11A	Ant1	5825	TN	VL	5825.02	2.57511	PASS
			TN	VN	5825.00	0.00000	PASS
			TN	VH	5825.02	2.57511	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11N20	Ant1	5180	TN	VL	5180.03	5.79151	PASS
			TN	VN	5180.03	5.79151	PASS
			TN	VH	5180.05	8.68726	PASS
11N20	Ant1	5200	TN	VL	5200.02	2.88462	PASS
			TN	VN	5200.05	8.65385	PASS
			TN	VH	5200.05	8.65385	PASS
11N20	Ant1	5240	TN	VL	5240.05	8.58779	PASS
			TN	VN	5240.05	8.58779	PASS
			TN	VH	5240.03	5.72519	PASS
11N20	Ant1	5260	TN	VL	5260.02	2.85171	PASS
			TN	VN	5260.03	5.70342	PASS
			TN	VH	5260.00	0.00000	PASS
11N20	Ant1	5280	TN	VL	5280.02	2.84091	PASS
			TN	VN	5280.02	2.84091	PASS
			TN	VH	5280.00	0.00000	PASS
11N20	Ant1	5320	TN	VL	5320.02	2.81955	PASS
			TN	VN	5320.02	2.81955	PASS
			TN	VH	5320.03	5.63910	PASS
11N20	Ant1	5500	TN	VL	5500.03	5.45455	PASS
			TN	VN	5500.02	2.72727	PASS
			TN	VH	5500.03	5.45455	PASS
11N20	Ant1	5580	TN	VL	5580.02	2.68817	PASS
			TN	VN	5580.03	5.37634	PASS
			TN	VH	5580.03	5.37634	PASS
11N20	Ant1	5700	TN	VL	5699.99	-2.63158	PASS

			TN	VN	5700.00	0.00000	PASS
			TN	VH	5699.99	-2.63158	PASS
11N20	Ant1	5745	TN	VL	5745.03	5.22193	PASS
			TN	VN	5745.03	5.22193	PASS
			TN	VH	5745.05	7.83290	PASS
11N20	Ant1	5785	TN	VL	5785.06	10.37165	PASS
			TN	VN	5785.08	12.96456	PASS
			TN	VH	5785.06	10.37165	PASS
11N20	Ant1	5825	TN	VL	5825.02	2.57511	PASS
			TN	VN	5825.03	5.15022	PASS
			TN	VH	5825.05	7.72532	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11N40	Ant1	5190	TN	VL	5190.03	5.78035	PASS
			TN	VN	5190.06	11.56069	PASS
			TN	VH	5190.03	5.78035	PASS
11N40	Ant1	5230	TN	VL	5230.06	11.47228	PASS
			TN	VN	5230.03	5.73614	PASS
			TN	VH	5230.03	5.73614	PASS
11N40	Ant1	5270	TN	VL	5270.00	0.00000	PASS
			TN	VN	5270.03	5.69260	PASS
			TN	VH	5270.00	0.00000	PASS
11N40	Ant1	5310	TN	VL	5310.03	5.64972	PASS
			TN	VN	5310.03	5.64972	PASS
			TN	VH	5310.03	5.64972	PASS
11N40	Ant1	5510	TN	VL	5510.03	5.44465	PASS
			TN	VN	5510.06	10.88929	PASS
			TN	VH	5510.03	5.44465	PASS
11N40	Ant1	5550	TN	VL	5550.03	5.40541	PASS
			TN	VN	5550.03	5.40541	PASS
			TN	VH	5550.03	5.40541	PASS
11N40	Ant1	5670	TN	VL	5670.03	5.29101	PASS
			TN	VN	5670.03	5.29101	PASS
			TN	VH	5670.03	5.29101	PASS

11N40	Ant1	5755	TN	VL	5755.00	0.00000	PASS
			TN	VN	5754.97	-5.21286	PASS
			TN	VH	5755.00	0.00000	PASS
11N40	Ant1	5795	TN	VL	5795.09	15.53063	PASS
			TN	VN	5795.06	10.35375	PASS
			TN	VH	5795.06	10.35375	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC20	Ant1	5180	TN	VL	5180.03	5.79151	PASS
			TN	VN	5180.03	5.79151	PASS
			TN	VH	5180.03	5.79151	PASS
11AC20	Ant1	5200	TN	VL	5200.00	0.00000	PASS
			TN	VN	5200.02	2.88462	PASS
			TN	VH	5200.02	2.88462	PASS
11AC20	Ant1	5240	TN	VL	5240.03	5.72519	PASS
			TN	VN	5240.05	8.58779	PASS
			TN	VH	5240.03	5.72519	PASS
11AC20	Ant1	5260	TN	VL	5260.00	0.00000	PASS
			TN	VN	5260.02	2.85171	PASS
			TN	VH	5260.03	5.70342	PASS
11AC20	Ant1	5280	TN	VL	5279.99	-2.84091	PASS
			TN	VN	5280.00	0.00000	PASS
			TN	VH	5280.00	0.00000	PASS
11AC20	Ant1	5320	TN	VL	5320.00	0.00000	PASS
			TN	VN	5320.02	2.81955	PASS
			TN	VH	5320.02	2.81955	PASS
11AC20	Ant1	5500	TN	VL	5500.02	2.72727	PASS
			TN	VN	5500.03	5.45455	PASS
			TN	VH	5500.03	5.45455	PASS
11AC20	Ant1	5580	TN	VL	5580.03	5.37634	PASS
			TN	VN	5580.03	5.37634	PASS
			TN	VH	5580.03	5.37634	PASS

11AC20	Ant1	5700	TN	VL	5700.02	2.63158	PASS
			TN	VN	5700.00	0.00000	PASS
			TN	VH	5699.99	-2.63158	PASS
11AC20	Ant1	5745	TN	VL	5745.03	5.22193	PASS
			TN	VN	5745.02	2.61097	PASS
			TN	VH	5745.02	2.61097	PASS
11AC20	Ant1	5785	TN	VL	5785.06	10.37165	PASS
			TN	VN	5785.06	10.37165	PASS
			TN	VH	5785.05	7.77874	PASS
11AC20	Ant1	5825	TN	VL	5825.03	5.15022	PASS
			TN	VN	5825.00	0.00000	PASS
			TN	VH	5825.03	5.15022	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC40	Ant1	5190	TN	VL	5190.03	5.78035	PASS
			TN	VN	5190.03	5.78035	PASS
			TN	VH	5190.03	5.78035	PASS
11AC40	Ant1	5230	TN	VL	5230.03	5.73614	PASS
			TN	VN	5230.00	0.00000	PASS
			TN	VH	5230.00	0.00000	PASS
11AC40	Ant1	5270	TN	VL	5269.97	-5.69260	PASS
			TN	VN	5269.97	-5.69260	PASS
			TN	VH	5270.00	0.00000	PASS
11AC40	Ant1	5310	TN	VL	5310.00	0.00000	PASS
			TN	VN	5310.00	0.00000	PASS
			TN	VH	5310.03	5.64972	PASS
11AC40	Ant1	5510	TN	VL	5510.03	5.44465	PASS
			TN	VN	5510.00	0.00000	PASS
			TN	VH	5510.00	0.00000	PASS
11AC40	Ant1	5550	TN	VL	5550.00	0.00000	PASS
			TN	VN	5550.00	0.00000	PASS
			TN	VH	5550.00	0.00000	PASS

11AC40	Ant1	5670	TN	VL	5670.03	5.29101	PASS
			TN	VN	5670.03	5.29101	PASS
			TN	VH	5670.03	5.29101	PASS
11AC40	Ant1	5755	TN	VL	5755.00	0.00000	PASS
			TN	VN	5754.97	-5.21286	PASS
			TN	VH	5755.00	0.00000	PASS
11AC40	Ant1	5795	TN	VL	5795.09	15.53063	PASS
			TN	VN	5795.03	5.17688	PASS
			TN	VH	5795.09	15.53063	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC80	Ant1	5210	TN	VL	5210.06	11.51632	PASS
			TN	VN	5210.06	11.51632	PASS
			TN	VH	5210.06	11.51632	PASS
11AC80	Ant1	5290	TN	VL	5290.00	0.00000	PASS
			TN	VN	5290.00	0.00000	PASS
			TN	VH	5289.94	-11.34216	PASS
11AC80	Ant1	5530	TN	VL	5529.94	-10.84991	PASS
			TN	VN	5530.00	0.00000	PASS
			TN	VH	5530.00	0.00000	PASS
11AC80	Ant1	5775	TN	VL	5775.06	10.38961	PASS
			TN	VN	5775.00	0.00000	PASS
			TN	VH	5775.00	0.00000	PASS

Frequency Error vs. Temperature:

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11A	Ant1	5180	-30	VN	5180.05	8.68726	PASS
			-20	VN	5180.06	11.58301	PASS
			-10	VN	5180.05	8.68726	PASS
			0	VN	5180.05	8.68726	PASS
			10	VN	5180.03	5.79151	PASS
			20	VN	5180.06	11.58301	PASS
			30	VN	5180.05	8.68726	PASS
			40	VN	5180.05	8.68726	PASS
			50	VN	5180.05	8.68726	PASS
11A	Ant1	5200	-30	VN	5200.05	8.65385	PASS
			-20	VN	5200.02	2.88462	PASS
			-10	VN	5200.03	5.76923	PASS
			0	VN	5200.03	5.76923	PASS
			10	VN	5200.00	0.00000	PASS
			20	VN	5200.03	5.76923	PASS
			30	VN	5200.03	5.76923	PASS
			40	VN	5200.03	5.76923	PASS
			50	VN	5200.03	5.76923	PASS
11A	Ant1	5240	-30	VN	5240.03	5.72519	PASS
			-20	VN	5240.05	8.58779	PASS
			-10	VN	5240.03	5.72519	PASS
			0	VN	5240.05	8.58779	PASS
			10	VN	5240.05	8.58779	PASS
			20	VN	5240.05	8.58779	PASS
			30	VN	5240.02	2.86260	PASS
			40	VN	5240.02	2.86260	PASS
			50	VN	5240.03	5.72519	PASS
11A	Ant1	5260	-30	VN	5260.03	5.70342	PASS
			-20	VN	5260.02	2.85171	PASS
			-10	VN	5260.00	0.00000	PASS
			0	VN	5260.02	2.85171	PASS

			10	VN	5260.02	2.85171	PASS
			20	VN	5260.00	0.00000	PASS
			30	VN	5260.03	5.70342	PASS
			40	VN	5260.02	2.85171	PASS
			50	VN	5260.00	0.00000	PASS
11A	Ant1	5280	-30	VN	5280.00	0.00000	PASS
			-20	VN	5280.00	0.00000	PASS
			-10	VN	5280.00	0.00000	PASS
			0	VN	5280.02	2.84091	PASS
			10	VN	5279.99	-2.84091	PASS
			20	VN	5279.99	-2.84091	PASS
			30	VN	5280.00	0.00000	PASS
			40	VN	5280.02	2.84091	PASS
			50	VN	5280.02	2.84091	PASS
11A	Ant1	5320	-30	VN	5320.02	2.81955	PASS
			-20	VN	5320.00	0.00000	PASS
			-10	VN	5320.02	2.81955	PASS
			0	VN	5320.02	2.81955	PASS
			10	VN	5320.02	2.81955	PASS
			20	VN	5320.02	2.81955	PASS
			30	VN	5320.00	0.00000	PASS
			40	VN	5320.02	2.81955	PASS
			50	VN	5320.00	0.00000	PASS
11A	Ant1	5500	-30	VN	5500.03	5.45455	PASS
			-20	VN	5500.02	2.72727	PASS
			-10	VN	5500.05	8.18182	PASS
			0	VN	5500.02	2.72727	PASS
			10	VN	5500.05	8.18182	PASS
			20	VN	5500.03	5.45455	PASS
			30	VN	5500.03	5.45455	PASS
			40	VN	5500.03	5.45455	PASS
			50	VN	5500.03	5.45455	PASS
11A	Ant1	5580	-30	VN	5580.02	2.68817	PASS
			-20	VN	5580.03	5.37634	PASS

			-10	VN	5580.02	2.68817	PASS
			0	VN	5580.03	5.37634	PASS
			10	VN	5580.02	2.68817	PASS
			20	VN	5580.02	2.68817	PASS
			30	VN	5580.03	5.37634	PASS
			40	VN	5580.05	8.06452	PASS
			50	VN	5580.03	5.37634	PASS
11A	Ant1	5700	-30	VN	5700.00	0.00000	PASS
			-20	VN	5700.00	0.00000	PASS
			-10	VN	5700.00	0.00000	PASS
			0	VN	5700.02	2.63158	PASS
			10	VN	5699.99	-2.63158	PASS
			20	VN	5699.97	-5.26316	PASS
			30	VN	5700.00	0.00000	PASS
			40	VN	5700.00	0.00000	PASS
			50	VN	5699.99	-2.63158	PASS
11A	Ant1	5745	-30	VN	5745.02	2.61097	PASS
			-20	VN	5744.99	-2.61097	PASS
			-10	VN	5745.02	2.61097	PASS
			0	VN	5745.02	2.61097	PASS
			10	VN	5745.02	2.61097	PASS
			20	VN	5745.02	2.61097	PASS
			30	VN	5745.02	2.61097	PASS
			40	VN	5745.02	2.61097	PASS
			50	VN	5745.03	5.22193	PASS
11A	Ant1	5785	-30	VN	5785.06	10.37165	PASS
			-20	VN	5785.08	12.96456	PASS
			-10	VN	5785.08	12.96456	PASS
			0	VN	5785.05	7.77874	PASS
			10	VN	5785.06	10.37165	PASS
			20	VN	5785.08	12.96456	PASS
			30	VN	5785.05	7.77874	PASS
			40	VN	5785.06	10.37165	PASS
			50	VN	5785.06	10.37165	PASS

11A	Ant1	5825	-30	VN	5825.02	2.57511	PASS
			-20	VN	5824.99	-2.57511	PASS
			-10	VN	5825.02	2.57511	PASS
			0	VN	5825.02	2.57511	PASS
			10	VN	5825.02	2.57511	PASS
			20	VN	5825.02	2.57511	PASS
			30	VN	5825.02	2.57511	PASS
			40	VN	5825.02	2.57511	PASS
			50	VN	5825.03	5.15022	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11N20	Ant1	5180	-30	VN	5180.05	8.68726	PASS
			-20	VN	5180.03	5.79151	PASS
			-10	VN	5180.03	5.79151	PASS
			0	VN	5180.06	11.58301	PASS
			10	VN	5180.03	5.79151	PASS
			20	VN	5180.03	5.79151	PASS
			30	VN	5180.05	8.68726	PASS
			40	VN	5180.05	8.68726	PASS
			50	VN	5180.03	5.79151	PASS
11N20	Ant1	5200	-30	VN	5200.02	2.88462	PASS
			-20	VN	5200.02	2.88462	PASS
			-10	VN	5200.00	0.00000	PASS
			0	VN	5200.02	2.88462	PASS
			10	VN	5200.03	5.76923	PASS
			20	VN	5200.03	5.76923	PASS
			30	VN	5200.02	2.88462	PASS
			40	VN	5200.00	0.00000	PASS
			50	VN	5200.03	5.76923	PASS
11N20	Ant1	5240	-30	VN	5240.05	8.58779	PASS
			-20	VN	5240.03	5.72519	PASS
			-10	VN	5240.03	5.72519	PASS
			0	VN	5240.05	8.58779	PASS

			10	VN	5240.02	2.86260	PASS
			20	VN	5240.05	8.58779	PASS
			30	VN	5240.05	8.58779	PASS
			40	VN	5240.05	8.58779	PASS
			50	VN	5240.03	5.72519	PASS
11N20	Ant1	5260	-30	VN	5260.02	2.85171	PASS
			-20	VN	5260.02	2.85171	PASS
			-10	VN	5260.03	5.70342	PASS
			0	VN	5260.02	2.85171	PASS
			10	VN	5260.02	2.85171	PASS
			20	VN	5260.02	2.85171	PASS
			30	VN	5260.02	2.85171	PASS
			40	VN	5260.00	0.00000	PASS
			50	VN	5260.02	2.85171	PASS
11N20	Ant1	5280	-30	VN	5280.00	0.00000	PASS
			-20	VN	5280.02	2.84091	PASS
			-10	VN	5280.02	2.84091	PASS
			0	VN	5280.00	0.00000	PASS
			10	VN	5280.02	2.84091	PASS
			20	VN	5280.00	0.00000	PASS
			30	VN	5280.02	2.84091	PASS
			40	VN	5280.02	2.84091	PASS
			50	VN	5280.03	5.68182	PASS
11N20	Ant1	5320	-30	VN	5320.02	2.81955	PASS
			-20	VN	5320.03	5.63910	PASS
			-10	VN	5320.02	2.81955	PASS
			0	VN	5320.03	5.63910	PASS
			10	VN	5320.02	2.81955	PASS
			20	VN	5320.00	0.00000	PASS
			30	VN	5320.03	5.63910	PASS
			40	VN	5320.00	0.00000	PASS
			50	VN	5320.02	2.81955	PASS
11N20	Ant1	5500	-30	VN	5500.03	5.45455	PASS
			-20	VN	5500.03	5.45455	PASS

			-10	VN	5500.03	5.45455	PASS
			0	VN	5500.03	5.45455	PASS
			10	VN	5500.02	2.72727	PASS
			20	VN	5500.03	5.45455	PASS
			30	VN	5500.02	2.72727	PASS
			40	VN	5500.02	2.72727	PASS
			50	VN	5500.03	5.45455	PASS
11N20	Ant1	5580	-30	VN	5580.03	5.37634	PASS
			-20	VN	5580.03	5.37634	PASS
			-10	VN	5580.03	5.37634	PASS
			0	VN	5580.02	2.68817	PASS
			10	VN	5580.03	5.37634	PASS
			20	VN	5580.02	2.68817	PASS
			30	VN	5580.03	5.37634	PASS
			40	VN	5580.03	5.37634	PASS
			50	VN	5580.02	2.68817	PASS
11N20	Ant1	5700	-30	VN	5699.99	-2.63158	PASS
			-20	VN	5699.99	-2.63158	PASS
			-10	VN	5700.02	2.63158	PASS
			0	VN	5699.99	-2.63158	PASS
			10	VN	5699.99	-2.63158	PASS
			20	VN	5700.02	2.63158	PASS
			30	VN	5700.00	0.00000	PASS
			40	VN	5700.00	0.00000	PASS
			50	VN	5700.00	0.00000	PASS
11N20	Ant1	5745	-30	VN	5745.03	5.22193	PASS
			-20	VN	5745.02	2.61097	PASS
			-10	VN	5745.03	5.22193	PASS
			0	VN	5745.02	2.61097	PASS
			10	VN	5745.03	5.22193	PASS
			20	VN	5745.02	2.61097	PASS
			30	VN	5745.05	7.83290	PASS
			40	VN	5745.05	7.83290	PASS
			50	VN	5745.03	5.22193	PASS

11N20	Ant1	5785	-30	VN	5785.06	10.37165	PASS
			-20	VN	5785.06	10.37165	PASS
			-10	VN	5785.06	10.37165	PASS
			0	VN	5785.05	7.77874	PASS
			10	VN	5785.06	10.37165	PASS
			20	VN	5785.06	10.37165	PASS
			30	VN	5785.08	12.96456	PASS
			40	VN	5785.05	7.77874	PASS
			50	VN	5785.05	7.77874	PASS
11N20	Ant1	5825	-30	VN	5825.02	2.57511	PASS
			-20	VN	5825.02	2.57511	PASS
			-10	VN	5825.03	5.15022	PASS
			0	VN	5825.02	2.57511	PASS
			10	VN	5825.00	0.00000	PASS
			20	VN	5825.02	2.57511	PASS
			30	VN	5825.02	2.57511	PASS
			40	VN	5825.03	5.15022	PASS
			50	VN	5825.02	2.57511	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11N40	Ant1	5190	-30	VN	5190.03	5.78035	PASS
			-20	VN	5190.06	11.56069	PASS
			-10	VN	5190.03	5.78035	PASS
			0	VN	5190.03	5.78035	PASS
			10	VN	5190.03	5.78035	PASS
			20	VN	5190.03	5.78035	PASS
			30	VN	5190.03	5.78035	PASS
			40	VN	5190.03	5.78035	PASS
			50	VN	5190.03	5.78035	PASS
11N40	Ant1	5230	-30	VN	5230.03	5.73614	PASS
			-20	VN	5230.06	11.47228	PASS
			-10	VN	5230.00	0.00000	PASS
			0	VN	5230.06	11.47228	PASS

			10	VN	5230.06	11.47228	PASS
			20	VN	5230.03	5.73614	PASS
			30	VN	5230.00	0.00000	PASS
			40	VN	5230.06	11.47228	PASS
			50	VN	5230.06	11.47228	PASS
11N40	Ant1	5270	-30	VN	5270.00	0.00000	PASS
			-20	VN	5270.00	0.00000	PASS
			-10	VN	5269.97	-5.69260	PASS
			0	VN	5270.00	0.00000	PASS
			10	VN	5270.00	0.00000	PASS
			20	VN	5269.97	-5.69260	PASS
			30	VN	5270.00	0.00000	PASS
			40	VN	5270.00	0.00000	PASS
			50	VN	5270.00	0.00000	PASS
11N40	Ant1	5310	-30	VN	5310.03	5.64972	PASS
			-20	VN	5310.06	11.29944	PASS
			-10	VN	5310.03	5.64972	PASS
			0	VN	5310.03	5.64972	PASS
			10	VN	5310.06	11.29944	PASS
			20	VN	5310.03	5.64972	PASS
			30	VN	5310.03	5.64972	PASS
			40	VN	5310.03	5.64972	PASS
			50	VN	5310.03	5.64972	PASS
11N40	Ant1	5510	-30	VN	5510.03	5.44465	PASS
			-20	VN	5510.03	5.44465	PASS
			-10	VN	5510.06	10.88929	PASS
			0	VN	5510.03	5.44465	PASS
			10	VN	5510.06	10.88929	PASS
			20	VN	5510.03	5.44465	PASS
			30	VN	5510.03	5.44465	PASS
			40	VN	5510.03	5.44465	PASS
			50	VN	5510.06	10.88929	PASS
11N40	Ant1	5550	-30	VN	5550.00	0.00000	PASS
			-20	VN	5550.03	5.40541	PASS

			-10	VN	5550.00	0.00000	PASS
			0	VN	5550.00	0.00000	PASS
			10	VN	5550.00	0.00000	PASS
			20	VN	5550.00	0.00000	PASS
			30	VN	5550.03	5.40541	PASS
			40	VN	5550.03	5.40541	PASS
			50	VN	5550.03	5.40541	PASS
11N40	Ant1	5670	-30	VN	5670.06	10.58201	PASS
			-20	VN	5670.03	5.29101	PASS
			-10	VN	5670.03	5.29101	PASS
			0	VN	5670.06	10.58201	PASS
			10	VN	5670.06	10.58201	PASS
			20	VN	5670.06	10.58201	PASS
			30	VN	5670.03	5.29101	PASS
			40	VN	5670.06	10.58201	PASS
			50	VN	5670.00	0.00000	PASS
11N40	Ant1	5755	-30	VN	5755.00	0.00000	PASS
			-20	VN	5755.03	5.21286	PASS
			-10	VN	5754.97	-5.21286	PASS
			0	VN	5755.00	0.00000	PASS
			10	VN	5755.00	0.00000	PASS
			20	VN	5754.97	-5.21286	PASS
			30	VN	5755.00	0.00000	PASS
			40	VN	5755.00	0.00000	PASS
			50	VN	5755.00	0.00000	PASS
11N40	Ant1	5795	-30	VN	5795.09	15.53063	PASS
			-20	VN	5795.06	10.35375	PASS
			-10	VN	5795.09	15.53063	PASS
			0	VN	5795.09	15.53063	PASS
			10	VN	5795.06	10.35375	PASS
			20	VN	5795.09	15.53063	PASS
			30	VN	5795.06	10.35375	PASS
			40	VN	5795.06	10.35375	PASS
			50	VN	5795.09	15.53063	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC20	Ant1	5180	-30	VN	5180.03	5.79151	PASS
			-20	VN	5180.03	5.79151	PASS
			-10	VN	5180.03	5.79151	PASS
			0	VN	5180.02	2.89575	PASS
			10	VN	5180.03	5.79151	PASS
			20	VN	5180.05	8.68726	PASS
			30	VN	5180.03	5.79151	PASS
			40	VN	5180.03	5.79151	PASS
			50	VN	5180.03	5.79151	PASS
11AC20	Ant1	5200	-30	VN	5200.02	2.88462	PASS
			-20	VN	5200.00	0.00000	PASS
			-10	VN	5200.02	2.88462	PASS
			0	VN	5200.03	5.76923	PASS
			10	VN	5200.02	2.88462	PASS
			20	VN	5200.02	2.88462	PASS
			30	VN	5200.02	2.88462	PASS
			40	VN	5200.02	2.88462	PASS
			50	VN	5200.00	0.00000	PASS
11AC20	Ant1	5240	-30	VN	5240.05	8.58779	PASS
			-20	VN	5240.03	5.72519	PASS
			-10	VN	5240.03	5.72519	PASS
			0	VN	5240.05	8.58779	PASS
			10	VN	5240.02	2.86260	PASS
			20	VN	5240.03	5.72519	PASS
			30	VN	5240.02	2.86260	PASS
			40	VN	5240.05	8.58779	PASS
			50	VN	5240.03	5.72519	PASS
11AC20	Ant1	5260	-30	VN	5260.00	0.00000	PASS
			-20	VN	5260.00	0.00000	PASS
			-10	VN	5260.00	0.00000	PASS
			0	VN	5260.02	2.85171	PASS

			10	VN	5260.02	2.85171	PASS
			20	VN	5260.02	2.85171	PASS
			30	VN	5260.03	5.70342	PASS
			40	VN	5260.02	2.85171	PASS
			50	VN	5260.02	2.85171	PASS
11AC20	Ant1	5280	-30	VN	5280.02	2.84091	PASS
			-20	VN	5280.00	0.00000	PASS
			-10	VN	5280.02	2.84091	PASS
			0	VN	5280.00	0.00000	PASS
			10	VN	5280.03	5.68182	PASS
			20	VN	5280.02	2.84091	PASS
			30	VN	5280.02	2.84091	PASS
			40	VN	5280.00	0.00000	PASS
			50	VN	5280.00	0.00000	PASS
11AC20	Ant1	5320	-30	VN	5320.00	0.00000	PASS
			-20	VN	5320.02	2.81955	PASS
			-10	VN	5320.03	5.63910	PASS
			0	VN	5320.03	5.63910	PASS
			10	VN	5320.02	2.81955	PASS
			20	VN	5320.02	2.81955	PASS
			30	VN	5320.03	5.63910	PASS
			40	VN	5320.00	0.00000	PASS
			50	VN	5320.00	0.00000	PASS
11AC20	Ant1	5500	-30	VN	5500.02	2.72727	PASS
			-20	VN	5500.02	2.72727	PASS
			-10	VN	5500.03	5.45455	PASS
			0	VN	5500.03	5.45455	PASS
			10	VN	5500.03	5.45455	PASS
			20	VN	5500.03	5.45455	PASS
			30	VN	5500.03	5.45455	PASS
			40	VN	5500.03	5.45455	PASS
			50	VN	5500.03	5.45455	PASS
11AC20	Ant1	5580	-30	VN	5580.03	5.37634	PASS
			-20	VN	5580.03	5.37634	PASS

			-10	VN	5580.02	2.68817	PASS
			0	VN	5580.00	0.00000	PASS
			10	VN	5580.03	5.37634	PASS
			20	VN	5580.02	2.68817	PASS
			30	VN	5580.02	2.68817	PASS
			40	VN	5580.03	5.37634	PASS
			50	VN	5580.03	5.37634	PASS
11AC20	Ant1	5700	-30	VN	5700.00	0.00000	PASS
			-20	VN	5699.99	-2.63158	PASS
			-10	VN	5699.99	-2.63158	PASS
			0	VN	5699.99	-2.63158	PASS
			10	VN	5700.00	0.00000	PASS
			20	VN	5700.00	0.00000	PASS
			30	VN	5700.00	0.00000	PASS
			40	VN	5700.00	0.00000	PASS
			50	VN	5700.00	0.00000	PASS
11AC20	Ant1	5745	-30	VN	5745.03	5.22193	PASS
			-20	VN	5745.02	2.61097	PASS
			-10	VN	5745.03	5.22193	PASS
			0	VN	5745.05	7.83290	PASS
			10	VN	5745.03	5.22193	PASS
			20	VN	5745.05	7.83290	PASS
			30	VN	5745.03	5.22193	PASS
			40	VN	5745.03	5.22193	PASS
			50	VN	5745.03	5.22193	PASS
11AC20	Ant1	5785	-30	VN	5785.05	7.77874	PASS
			-20	VN	5785.06	10.37165	PASS
			-10	VN	5785.06	10.37165	PASS
			0	VN	5785.08	12.96456	PASS
			10	VN	5785.06	10.37165	PASS
			20	VN	5785.06	10.37165	PASS
			30	VN	5785.06	10.37165	PASS
			40	VN	5785.05	7.77874	PASS
			50	VN	5785.06	10.37165	PASS

11AC20	Ant1	5825	-30	VN	5825.02	2.57511	PASS
			-20	VN	5825.03	5.15022	PASS
			-10	VN	5825.02	2.57511	PASS
			0	VN	5825.03	5.15022	PASS
			10	VN	5825.03	5.15022	PASS
			20	VN	5825.05	7.72532	PASS
			30	VN	5825.02	2.57511	PASS
			40	VN	5825.02	2.57511	PASS
			50	VN	5825.02	2.57511	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC40	Ant1	5190	-30	VN	5190.03	5.78035	PASS
			-20	VN	5190.03	5.78035	PASS
			-10	VN	5190.03	5.78035	PASS
			0	VN	5190.03	5.78035	PASS
			10	VN	5190.03	5.78035	PASS
			20	VN	5190.03	5.78035	PASS
			30	VN	5190.03	5.78035	PASS
			40	VN	5190.03	5.78035	PASS
			50	VN	5190.03	5.78035	PASS
11AC40	Ant1	5230	-30	VN	5230.03	5.73614	PASS
			-20	VN	5230.06	11.47228	PASS
			-10	VN	5230.03	5.73614	PASS
			0	VN	5230.00	0.00000	PASS
			10	VN	5230.03	5.73614	PASS
			20	VN	5230.00	0.00000	PASS
			30	VN	5230.03	5.73614	PASS
			40	VN	5230.00	0.00000	PASS
			50	VN	5230.03	5.73614	PASS
11AC40	Ant1	5270	-30	VN	5270.00	0.00000	PASS
			-20	VN	5270.00	0.00000	PASS
			-10	VN	5270.00	0.00000	PASS
			0	VN	5270.00	0.00000	PASS

			10	VN	5270.00	0.00000	PASS
			20	VN	5269.97	-5.69260	PASS
			30	VN	5270.00	0.00000	PASS
			40	VN	5269.97	-5.69260	PASS
			50	VN	5270.00	0.00000	PASS
11AC40	Ant1	5310	-30	VN	5310.00	0.00000	PASS
			-20	VN	5310.00	0.00000	PASS
			-10	VN	5310.03	5.64972	PASS
			0	VN	5310.00	0.00000	PASS
			10	VN	5310.00	0.00000	PASS
			20	VN	5310.03	5.64972	PASS
			30	VN	5309.97	-5.64972	PASS
			40	VN	5310.03	5.64972	PASS
			50	VN	5310.00	0.00000	PASS
11AC40	Ant1	5510	-30	VN	5510.03	5.44465	PASS
			-20	VN	5510.00	0.00000	PASS
			-10	VN	5510.00	0.00000	PASS
			0	VN	5510.03	5.44465	PASS
			10	VN	5510.03	5.44465	PASS
			20	VN	5510.00	0.00000	PASS
			30	VN	5510.00	0.00000	PASS
			40	VN	5510.00	0.00000	PASS
			50	VN	5510.00	0.00000	PASS
11AC40	Ant1	5550	-30	VN	5550.00	0.00000	PASS
			-20	VN	5550.00	0.00000	PASS
			-10	VN	5549.97	-5.40541	PASS
			0	VN	5550.00	0.00000	PASS
			10	VN	5550.00	0.00000	PASS
			20	VN	5550.00	0.00000	PASS
			30	VN	5549.97	-5.40541	PASS
			40	VN	5549.97	-5.40541	PASS
			50	VN	5550.00	0.00000	PASS
11AC40	Ant1	5670	-30	VN	5670.03	5.29101	PASS
			-20	VN	5670.00	0.00000	PASS

			-10	VN	5670.03	5.29101	PASS
			0	VN	5670.03	5.29101	PASS
			10	VN	5670.03	5.29101	PASS
			20	VN	5670.00	0.00000	PASS
			30	VN	5670.00	0.00000	PASS
			40	VN	5670.03	5.29101	PASS
			50	VN	5670.00	0.00000	PASS
11AC40	Ant1	5755	-30	VN	5755.00	0.00000	PASS
			-20	VN	5755.00	0.00000	PASS
			-10	VN	5755.00	0.00000	PASS
			0	VN	5755.00	0.00000	PASS
			10	VN	5755.00	0.00000	PASS
			20	VN	5755.00	0.00000	PASS
			30	VN	5755.00	0.00000	PASS
			40	VN	5754.97	-5.21286	PASS
			50	VN	5755.00	0.00000	PASS
11AC40	Ant1	5795	-30	VN	5795.09	15.53063	PASS
			-20	VN	5795.06	10.35375	PASS
			-10	VN	5795.06	10.35375	PASS
			0	VN	5795.09	15.53063	PASS
			10	VN	5795.09	15.53063	PASS
			20	VN	5795.06	10.35375	PASS
			30	VN	5795.06	10.35375	PASS
			40	VN	5795.06	10.35375	PASS
			50	VN	5795.06	10.35375	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC80	Ant1	5210	-30	VN	5210.06	11.51632	PASS
			-20	VN	5210.06	11.51632	PASS
			-10	VN	5210.06	11.51632	PASS
			0	VN	5210.06	11.51632	PASS
			10	VN	5210.06	11.51632	PASS
			20	VN	5210.06	11.51632	PASS

			30	VN	5210.06	11.51632	PASS
			40	VN	5210.06	11.51632	PASS
			50	VN	5210.06	11.51632	PASS
11AC80	Ant1	5290	-30	VN	5289.94	-11.34216	PASS
			-20	VN	5289.94	-11.34216	PASS
			-10	VN	5290.00	0.00000	PASS
			0	VN	5290.00	0.00000	PASS
			10	VN	5290.00	0.00000	PASS
			20	VN	5290.00	0.00000	PASS
			30	VN	5290.00	0.00000	PASS
			40	VN	5290.00	0.00000	PASS
			50	VN	5290.00	0.00000	PASS
11AC80	Ant1	5530	-30	VN	5530.00	0.00000	PASS
			-20	VN	5530.00	0.00000	PASS
			-10	VN	5529.94	-10.84991	PASS
			0	VN	5530.00	0.00000	PASS
			10	VN	5529.94	-10.84991	PASS
			20	VN	5530.00	0.00000	PASS
			30	VN	5530.00	0.00000	PASS
			40	VN	5529.94	-10.84991	PASS
			50	VN	5529.94	-10.84991	PASS
11AC80	Ant1	5775	-30	VN	5775.00	0.00000	PASS
			-20	VN	5775.00	0.00000	PASS
			-10	VN	5775.06	10.38961	PASS
			0	VN	5775.06	10.38961	PASS
			10	VN	5775.00	0.00000	PASS
			20	VN	5775.00	0.00000	PASS
			30	VN	5775.00	0.00000	PASS
			40	VN	5775.00	0.00000	PASS
			50	VN	5775.06	10.38961	PASS

Appendix E): Antenna Requirement

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.

15.407(a)(1) (2) requirement:

The conducted output power limit specified in paragraph (a) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (a) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power and the peak power spectral density shall be reduced by the by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The antenna is FPC Antenna and no consideration of replacement. The best case gain of the 5G WiFi antenna is 3.23dBi, reference to the appendix II for details.

Appendix F): Operation in the absence of information to the transmit

15.407(c) requirement:

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signal ling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

Operation in the absence of information to the transmit

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ASK message transmitting from remote device and verify whether it shall resend or discontinue transmission. (manufacturer declare)

Appendix G): AC Power Line Conducted Emission

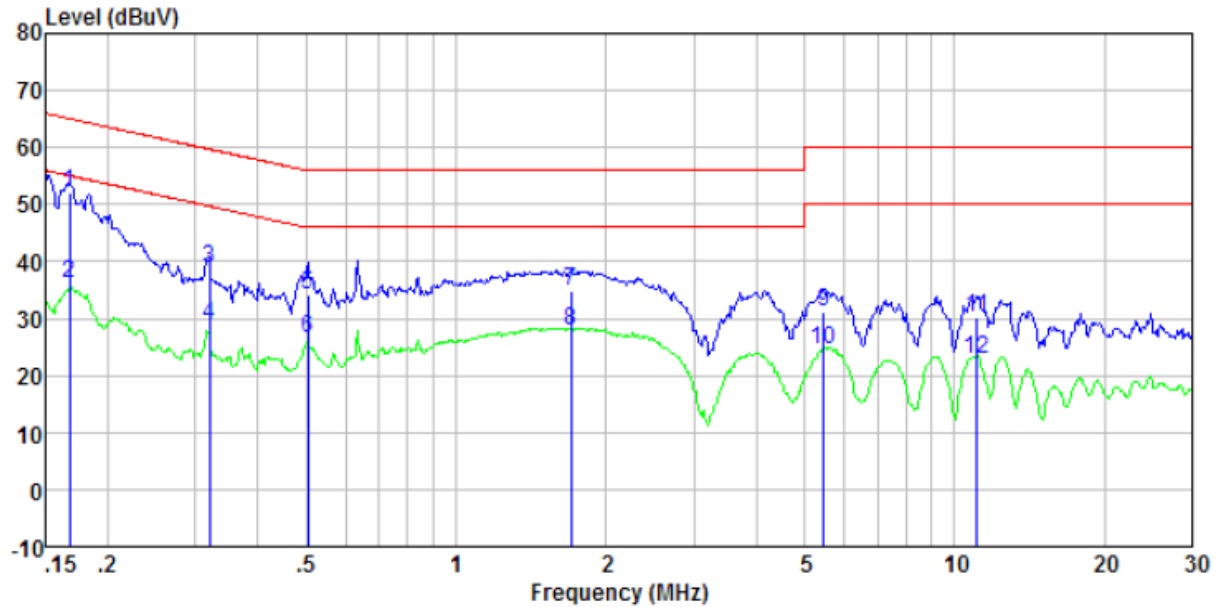
Test Procedure:	Test frequency range :150KHz-30MHz 1)The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. 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. 3)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, 4) 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. 5) 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.															
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBμV)</th></tr> <tr> <th>Quasi-peak</th><th>Average</th></tr> </thead> <tbody> <tr> <td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr> <tr> <td>0.5-5</td><td>56</td><td>46</td></tr> <tr> <td>5-30</td><td>60</td><td>50</td></tr> </tbody> </table> * The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz. NOTE : The lower limit is applicable at the transition frequency		Frequency range (MHz)	Limit (dB μ V)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dB μ V)															
	Quasi-peak	Average														
0.15-0.5	66 to 56*	56 to 46*														
0.5-5	56	46														
5-30	60	50														

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

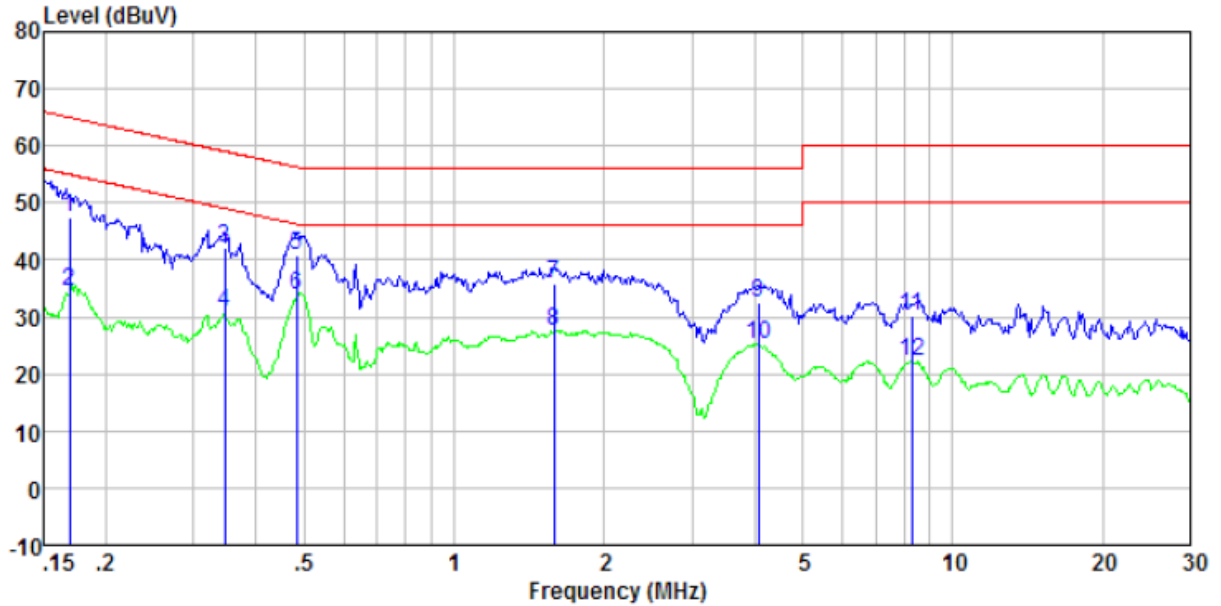
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live line:



Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.17	31.48	20.40	0.09	51.97	65.08	-13.11	QP
0.17	15.52	20.40	0.09	36.01	55.08	-19.07	Average
0.32	18.44	20.39	0.10	38.93	59.71	-20.78	QP
0.32	8.32	20.39	0.10	28.81	49.71	-20.90	Average
0.50	13.70	20.31	0.11	34.12	56.00	-21.88	QP
0.50	6.09	20.31	0.11	26.51	46.00	-19.49	Average
1.70	14.59	20.20	0.17	34.96	56.00	-21.04	QP
1.70	7.59	20.20	0.17	27.96	46.00	-18.04	Average
5.48	10.76	20.20	0.17	31.13	60.00	-28.87	QP
5.48	4.21	20.20	0.17	24.58	50.00	-25.42	Average
11.08	9.65	20.20	0.20	30.05	60.00	-29.95	QP
11.08	2.57	20.20	0.20	22.97	50.00	-27.03	Average

Neutral line:



Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.17	27.08	20.40	0.09	47.57	64.99	-17.42	QP
0.17	14.09	20.40	0.09	34.58	54.99	-20.41	Average
0.35	21.62	20.38	0.10	42.10	59.05	-16.95	QP
0.35	10.43	20.38	0.10	30.91	49.05	-18.14	Average
0.48	20.46	20.32	0.11	40.89	56.27	-15.38	QP
0.48	13.50	20.32	0.11	33.93	46.27	-12.34	Average
1.59	15.43	20.20	0.17	35.80	56.00	-20.20	QP
1.59	7.00	20.20	0.17	27.37	46.00	-18.63	Average
4.07	12.28	20.20	0.18	32.66	56.00	-23.34	QP
4.07	4.99	20.20	0.18	25.37	46.00	-20.63	Average
8.28	9.73	20.20	0.19	30.12	60.00	-29.88	QP
8.28	1.79	20.20	0.19	22.18	50.00	-27.82	Average

Notes:

1. All the modulation and channels had been tested, but only the worst data recorded in the report.
2. The following Quasi-Peak and Average measurements were performed on the EUT.
3. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

Appendix H): Restricted bands around fundamental frequency (Radiated Emission)

Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Test Procedure:	Below 1GHz test procedure as below: - The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. - The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. - The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. - For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading. - The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. - Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel Above 1GHz test procedure as below: - Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre). - Test the EUT in the lowest channel , the Highest channel - The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. - Repeat above procedures until all frequencies measured was complete.				
Limit:	Frequency	Limit (dBμV/m @3cm)	Remark		
	30MHz-88MHz	40.0	Quasi-peak Value		
	88MHz-216MHz	43.5	Quasi-peak Value		
	216MHz-960MHz	46.0	Quasi-peak Value		
	960MHz-1GHz	54.0	Quasi-peak Value		
	Above 1GHz	54.0	Average Value		
		74.0	Peak Value		

Test plot as follows:

Worse case mode:		802.11a(6Mbps)		Test channel:		36	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150	55.68	-3.63	52.05	74	-21.95	peak	H
5150	43.35	-3.63	39.72	54	-14.28	AVG	H
5150	55.85	-3.63	52.22	74	-21.78	peak	V
5150	43.76	-3.63	40.13	54	-13.87	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		64	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350	54.54	-3.59	50.95	74	-23.05	peak	H
5350	45.27	-3.59	41.68	54	-12.32	AVG	H
5350	56.12	-3.59	52.53	74	-21.47	peak	V
5350	45.10	-3.59	41.51	54	-12.49	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		100	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5460	55.95	-3.54	52.41	74	-21.59	peak	H
5460	45.49	-3.54	41.95	54	-12.05	AVG	H
5460	53.65	-3.54	50.11	74	-23.89	peak	V
5460	44.87	-3.54	41.33	54	-12.67	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		140	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5725	54.67	-3.45	51.22	74	-22.78	peak	H
5725	44.53	-3.45	41.08	54	-12.92	AVG	H
5725	53.60	-3.45	50.15	74	-23.85	peak	V
5725	44.74	-3.45	41.29	54	-12.71	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		149	
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Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	58.33	-3.46	54.87	68.2	-13.33	peak	H
5742.67	98.30	-3.44	94.86	122.2	-27.34	peak	H
5650	57.61	-3.46	54.15	68.2	-14.05	peak	V
5744.37	97.31	-3.44	93.87	122.2	-28.33	peak	V

Worse case mode:		802.11a(6Mbps)		Test channel:		165	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5821.48	95.70	-3.42	92.28	122.2	-29.92	peak	H
5925	57.28	-3.41	53.87	68.2	-14.33	peak	H
5821.78	96.84	-3.42	93.42	122.2	-28.78	peak	V
5925	56.81	-3.41	53.40	68.2	-14.80	peak	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		36	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150	58.93	-3.63	52.40	74	-21.60	peak	H
5150	44.56	-3.63	39.26	54	-14.74	AVG	H
5150	59.65	-3.63	51.73	74	-22.27	peak	V
5150	46.6	-3.63	39.63	54	-14.37	AVG	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		64	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350	54.45	-3.59	50.86	74	-23.14	peak	H
5350	43.57	-3.59	39.98	54	-14.02	AVG	H
5350	55.67	-3.59	52.08	74	-21.92	peak	V
5350	45.14	-3.59	41.55	54	-12.45	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		100	
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Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5460	56.25	-3.54	52.71	74	-21.29	peak	H
5460	43.87	-3.54	40.33	54	-13.67	AVG	H
5460	56.09	-3.54	52.55	74	-21.45	peak	V
5460	44.04	-3.54	40.50	54	-13.50	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		140	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5725	54.86	-3.45	51.41	74	-22.59	peak	H
5725	44.85	-3.45	41.40	54	-12.60	AVG	H
5725	53.78	-3.45	50.33	74	-23.67	peak	V
5725	44.81	-3.45	41.36	54	-12.64	AVG	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		149	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	57.70	-3.46	54.24	68.2	-13.96	peak	H
5745.44	95.95	-3.44	92.51	122.2	-29.69	peak	H
5650	56.02	-3.46	52.56	68.2	-15.64	peak	V
5740.34	98.39	-3.44	94.95	122.2	-27.25	peak	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		165	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5825.73	96.27	-3.42	92.85	122.2	-29.35	peak	H
5925	58.44	-3.41	55.03	68.2	-13.17	peak	H
5827.77	96.04	-3.42	92.62	122.2	-29.58	peak	V
5925	55.83	-3.41	52.42	68.2	-15.78	peak	V

Worse case mode:		802.11n(HT40)(13.5Mbps)		Test channel:		38	
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Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150	54.04	-3.63	50.41	74	-23.59	peak	H
5150	44.79	-3.63	41.16	54	-12.84	AVG	H
5150	56.05	-3.63	52.42	74	-21.58	peak	V
5150	45.05	-3.63	41.42	54	-12.58	AVG	V

Worse case mode:		802.11n(HT40)(13.5Mbps)		Test channel:		62	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350	56.53	-3.59	52.94	74	-21.06	peak	H
5350	42.78	-3.59	39.19	54	-14.81	AVG	H
5350	53.89	-3.59	50.30	74	-23.70	peak	V
5350	45.14	-3.59	41.55	54	-12.45	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		102	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5460	54.87	-3.54	51.33	74	-22.67	peak	H
5460	44.12	-3.54	40.58	54	-13.42	AVG	H
5460	53.56	-3.54	50.02	74	-23.98	peak	V
5460	44.56	-3.54	41.02	54	-12.98	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		134	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5725	55.40	-3.45	51.95	74	-22.05	peak	H
5725	44.19	-3.45	40.74	54	-13.26	AVG	H
5725	55.50	-3.45	52.05	74	-21.95	peak	V
5725	44.48	-3.45	41.03	54	-12.97	AVG	V

Worse case mode:		802.11n(HT40)(13.5Mbps)		Test channel:		151	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.

(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	58.21	-3.46	54.75	68.2	-13.45	peak	H
5757.31	97.34	-3.44	93.90	122.2	-28.30	peak	H
5650	55.98	-3.46	52.52	68.2	-15.68	peak	V
5756.68	97.13	-3.44	93.69	122.2	-28.51	peak	V

Worse case mode:		802.11n(HT40)(13.5Mbps)		Test channel:		159	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5786.89	97.88	-3.42	94.46	122.2	-27.74	peak	H
5925	57.59	-3.41	54.18	68.2	-14.02	peak	H
5785.94	95.95	-3.42	92.53	122.2	-29.67	peak	V
5925	58.43	-3.41	55.02	68.2	-13.18	peak	V

Worse case mode:		802.11ac(HT20)(6.5Mbps)		Test channel:		36	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150	53.88	-3.63	50.25	74	-23.75	peak	H
5150	44.10	-3.63	40.47	54	-13.53	AVG	H
5150	53.74	-3.63	50.11	74	-23.89	peak	V
5150	43.19	-3.63	39.56	54	-14.44	AVG	V

Worse case mode:		802.11ac(HT20)(6.5Mbps)		Test channel:		64	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350	55.85	-3.59	52.26	74	-21.74	peak	H
5350	44.96	-3.59	41.37	54	-12.63	AVG	H
5350	55.00	-3.59	51.41	74	-22.59	peak	V
5350	43.69	-3.59	40.10	54	-13.90	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		100	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V

5460	53.74	-3.54	50.20	74	-23.80	peak	H
5460	43.98	-3.54	40.44	54	-13.56	AVG	H
5460	55.85	-3.54	52.31	74	-21.69	peak	V
5460	43.57	-3.54	40.03	54	-13.97	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		140	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5725	54.94	-3.45	51.49	74	-22.51	peak	H
5725	44.07	-3.45	40.62	54	-13.38	AVG	H
5725	54.90	-3.45	51.45	74	-22.55	peak	V
5725	42.48	-3.45	39.03	54	-14.97	AVG	V

Worse case mode:		802.11ac(HT20)(6.5Mbps)		Test channel:		149	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	57.08	-3.46	53.62	68.2	-14.58	peak	H
5738.23	95.86	-3.44	92.42	122.2	-29.78	peak	H
5650	57.70	-3.46	54.24	68.2	-13.96	peak	V
5738.63	98.00	-3.44	94.56	122.2	-27.64	peak	V

Worse case mode:		802.11ac(HT20)(6.5Mbps)		Test channel:		165	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5822.31	96.62	-3.42	93.20	122.2	-29.00	peak	H
5925	57.21	-3.41	53.80	68.2	-14.40	peak	H
5824.93	98.15	-3.42	94.73	122.2	-27.47	peak	V
5925	57.05	-3.41	53.64	68.2	-14.56	peak	V

Worse case mode:		802.11ac(VHT40)(13.5Mbps)		Test channel:		38	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150	56.60	-3.63	52.97	74	-21.03	peak	H

5150	43.99	-3.63	40.36	54	-13.64	AVG	H
5150	54.09	-3.63	50.46	74	-23.54	peak	V
5150	44.09	-3.63	40.46	54	-13.54	AVG	V

Worse case mode:		802.11ac(VHT40)(13.5Mbps)		Test channel:		62	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350	53.81	-3.59	50.22	74	-23.78	peak	H
5350	45.36	-3.59	41.77	54	-12.23	AVG	H
5350	56.52	-3.59	52.93	74	-21.07	peak	V
5350	42.61	-3.59	39.02	54	-14.98	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		102	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5460	53.62	-3.54	50.08	74	-23.92	peak	H
5460	44.51	-3.54	40.97	54	-13.03	AVG	H
5460	53.90	-3.54	50.36	74	-23.64	peak	V
5460	43.48	-3.54	39.94	54	-14.06	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		134	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5725	54.22	-3.45	50.77	74	-23.23	peak	H
5725	43.53	-3.45	40.08	54	-13.92	AVG	H
5725	55.30	-3.45	51.85	74	-22.15	peak	V
5725	45.00	-3.45	41.55	54	-12.45	AVG	V

Worse case mode:		802.11ac(VHT40)(13.5Mbps)		Test channel:		151	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	55.72	-3.46	52.26	68.2	-15.94	peak	H
5753.22	97.78	-3.44	94.34	122.2	-27.86	peak	H

5650	57.77	-3.46	54.31	68.2	-13.89	peak	V
5753.90	98.18	-3.44	94.74	122.2	-27.46	peak	V

Worse case mode:		802.11ac(VHT40)(13.5Mbps)		Test channel:		159	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5794.39	95.90	-3.42	92.48	122.2	-29.72	peak	H
5925	56.68	-3.41	53.27	68.2	-14.93	peak	H
5793.16	96.35	-3.42	92.93	122.2	-29.27	peak	V
5925	56.27	-3.41	52.86	68.2	-15.34	peak	V

Worse case mode:		802.11ac(VHT80)(29.3Mbps)		Test channel:		42	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150	56.55	-3.63	52.92	74	-21.08	peak	H
5150	43.32	-3.63	39.69	54	-14.31	AVG	H
5150	54.58	-3.63	50.95	74	-23.05	peak	V
5150	43.96	-3.63	40.33	54	-13.67	AVG	V
5350	53.80	-3.59	50.21	74	-23.79	peak	H
5350	43.17	-3.59	39.58	54	-14.42	AVG	H
5350	54.32	-3.59	50.73	74	-23.27	peak	V
5350	44.11	-3.59	40.52	54	-13.48	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		106	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5460	53.93	-3.54	50.39	74	-23.61	peak	H
5460	45.20	-3.54	41.66	54	-12.34	AVG	H
5460	53.90	-3.54	50.36	74	-23.64	peak	V

5460	44.57	-3.54	41.03	54	-12.97	AVG	V
5725	55.91	-3.45	52.46	74	-21.54	peak	H
5725	45.18	-3.45	41.73	54	-12.27	AVG	H
5725	53.83	-3.45	50.38	74	-23.62	peak	V
5725	44.93	-3.45	41.48	54	-12.52	AVG	V

Worse case mode:		802.11ac(VHT80)(29.3Mbps)		Test channel:		155	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	56.38	-3.46	52.92	68.2	-15.28	peak	H
5778.38	95.68	-3.44	92.24	122.2	-29.96	peak	H
5925	56.68	-3.46	53.22	68.2	-14.98	peak	H
5650	56.88	-3.41	53.47	68.2	-14.73	peak	V
5776.55	98.59	-3.42	95.17	122.2	-27.03	peak	V
5925	58.13	-3.41	54.72	68.2	-13.48	peak	V

Note:

1) Through Pre-scan transmitting mode with all kind of modulation and data rate, find the 6Mbps is the worst case of 802.11a; MCS0 is the worst case of 802.11n(20M)(40M); MCS0 is the worst case of 802.11ac(20M)(40M)(80M); and then Only the worst case is recorded in the report.

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading - Correct Factor

Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

3) All modes and antenna are tested, and found the antenna 1 which is worst case for 802.11a/n(20M)(40M)/ac(20M)(40M)(80M),so only the worst case mode is recorded in the report.

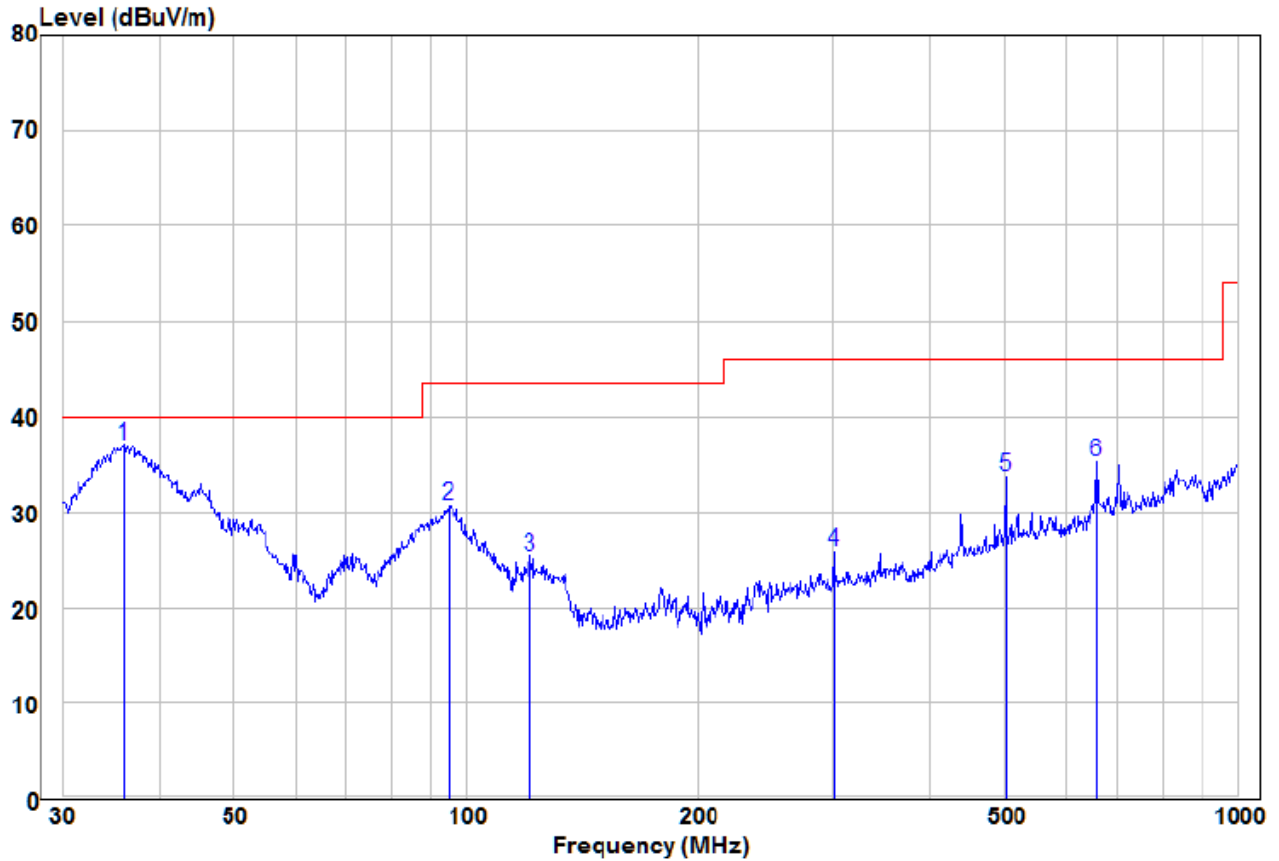
Appendix I): Radiated Spurious Emission

Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Test Procedure:					
Below 1GHz test procedure as below:					
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.					
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.					
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.					
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.					
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.					
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.					
Above 1GHz test procedure as below:					
g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre)					
h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel					
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.					
j. Repeat above procedures until all frequencies measured was complete.					
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBµV/cm)	Remark	Measurement distance (cm)
	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	54.0	Average	3
	Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.				
Test result:	PASS				

Test Data:

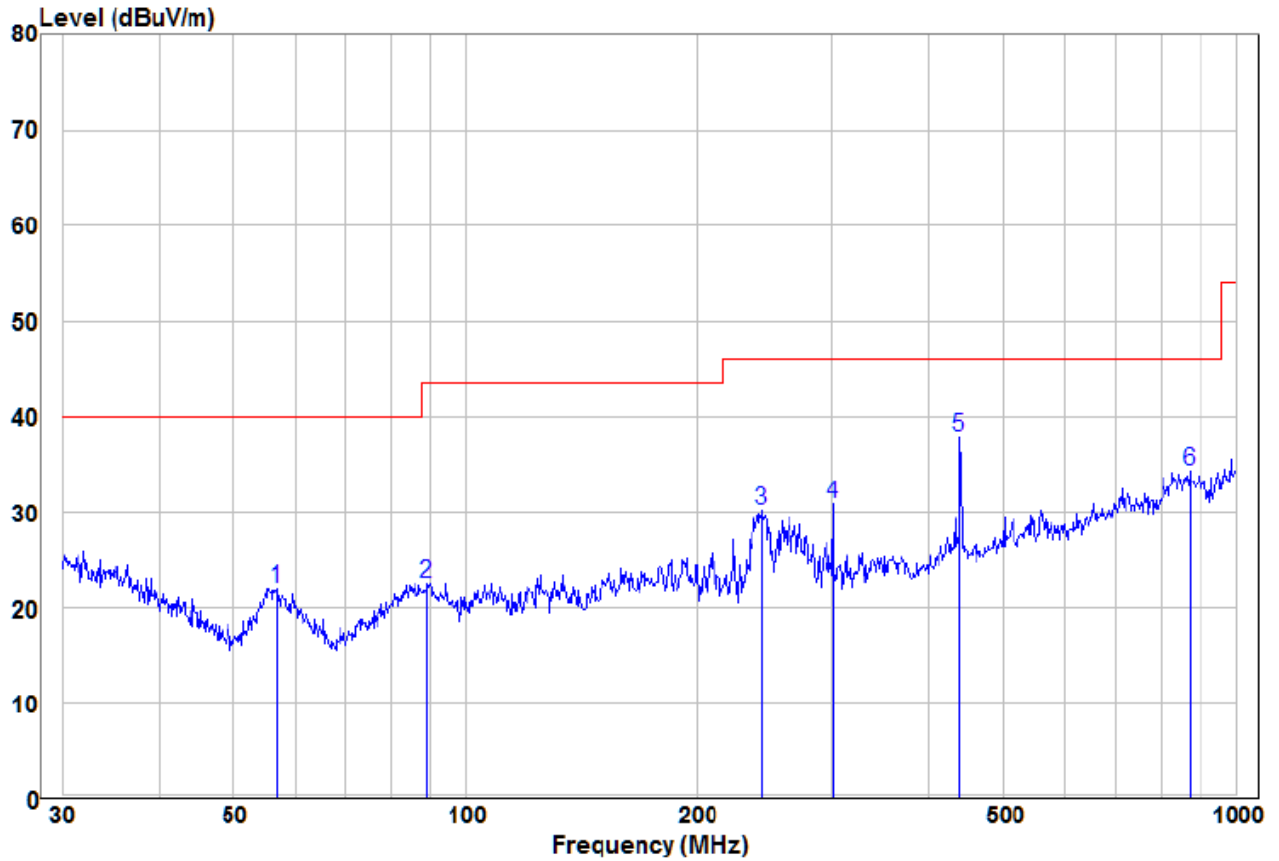
Radiated Emission below 1GHz

30MHz~1GHz		
Test mode:	Transmitting	Vertical



		Read		Limit	Over		
	Freq	Level	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Pol/Phase
1	pp	36.00	22.76	14.24	37.00	40.00	-3.00 Peak
2		94.76	20.43	10.32	30.75	43.50	-12.75 Peak
3		121.12	14.75	10.66	25.41	43.50	-18.09 Peak
4		300.37	12.21	13.74	25.95	46.00	-20.05 Peak
5		501.18	15.53	18.29	33.82	46.00	-12.18 Peak
6		658.84	15.43	19.84	35.27	46.00	-10.73 Peak

Test mode:	Transmitting	Horizontal
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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	56.79	15.73	6.33	22.06	40.00	-17.94	Peak	HORIZONTAL
2	89.28	12.54	10.01	22.55	43.50	-20.95	Peak	HORIZONTAL
3	243.38	18.47	11.80	30.27	46.00	-15.73	Peak	HORIZONTAL
4	300.37	17.18	13.74	30.92	46.00	-15.08	Peak	HORIZONTAL
5	438.66	21.52	16.37	37.89	46.00	-8.11	Peak	HORIZONTAL
6	872.18	10.41	23.96	34.37	46.00	-11.63	Peak	HORIZONTAL

Transmitter Emission above 1GHz

Test mode:		802.11ac(VHT40)_Ant1 (13.5Mbps)		Test channel:		159	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
11590.00	48.37	2.31	50.68	68.2	-17.52	peak	H
17385.00	47.35	3.79	51.14	74	-22.86	peak	H
17385.00	37.09	3.79	40.88	54	-13.12	AVG	H
11590.00	46.75	3.79	50.54	68.2	-17.66	peak	V
17385.00	46.75	3.79	50.54	74	-23.46	peak	V
17385.00	37.63	3.79	41.42	54	-12.58	AVG	V

Remark:

- 1) The 13.5Mbps of rate of 802.11ac(VHT40)_Ant1 at 159 is the worst case, only the worst data recorded in the report.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 3) Scan from 9kHz to 40GHz,The disturbance above 18GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

PHOTOGRAPHS OF TEST SETUP

Reference to the **appendix I** for details.

PHOTOGRAPHS OF EUT Constructional Details

Reference to the **appendix II** for details.

*** End of Report ***