

TEST REPORT

Part 15 Subpart E 15.407 & RSS-247 (Issue 2)

Equipment under test Flat Panel Digital X-ray Detector

Model name EVS 4343W

FCC ID RNH-EVS4343W

IC ID 29808-EVS4343W

Applicant DRTECH Corporation

Manufacturer DRTECH Corporation

Date of test(s) 2022.09.01 ~ 2022.09.30

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Issued to

DRTECH Corporation

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Revision history

Revision	Date of issue	Test report No.	Description
-	2023.01.09	KES-RF-23T0010	Initial

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1. General information

Applicant: DRTECH Corporation
Applicant address: Suite No.1, 1Floor / Suite No.2, 3Floor, 29, Dunchon-daero 541 beon-gil,
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Test Facility: FCC Accreditation Designation No.: KR0100, Registration No.: 444148
ISED Registration No.: 23298
FCC, IC rule part(s): FCC : 15.407 / IC : RSS-247
FCC ID: RNH-EVS4343W
IC ID: 29808-EVS4343W
Test device serial No.: ☒ Production ☐ Pre-production ☐ Engineering

1.1. EUT description

Equipment under test: Flat Panel Digital X-ray Detector
Frequency range: 2 412 MHz ~ 2 462 MHz (11b/g/n_HT20)
2 422 MHz ~ 2 452 MHz (11n_HT40)
UNII-1 5 180 MHz ~ 5 240 MHz (11a/an_VHT20/ac_VHT20)
5 190 MHz ~ 5 230 MHz (11an_VHT40/ac_VHT40)
5 210 MHz (11ac_VHT80)
UNII-2A 5 260 MHz ~ 5 320 MHz (11a/an_VHT20/ac_VHT20)
5 270 MHz ~ 5 310 MHz (11an_VHT40/ac_VHT40)
5 290 MHz (11ac_VHT80)
UNII-2C 5 500 MHz ~ 5 700 MHz (11a/an_VHT20/ac_VHT20)
5 510 MHz ~ 5 670 MHz (11an_VHT40/ac_VHT40)
5 530 MHz ~ 5 610 MHz (11ac_VHT80)
UNII-3 5 745 MHz ~ 5 825 MHz (11a/an_VHT20/ac_VHT20)
5 755 MHz ~ 5 795 MHz (11an_VHT40/ac_VHT40)
5 775 MHz (11ac_VHT80)
Model: EVS 4343W
Modulation technique: OFDM

Number of channels	2 412 MHz ~ 2 462 MHz (11b/g/n_HT20) : 11ch 2 422 MHz ~ 2 452 MHz (11n_HT40) : 7ch
UNII-1	5 180 MHz ~ 5 240 MHz (11a/an_VHT20/ac_VHT20) : 4ch 5 190 MHz ~ 5 230 MHz (11an_VHT40/ac_VHT40) : 2ch 5 210 MHz (11ac_VHT80) : 1ch
UNII-2A	5 260 MHz ~ 5 320 MHz (11a/an_VHT20/ac_VHT20) : 4ch 5 270 MHz ~ 5 310 MHz (11an_VHT40/ac_VHT40) : 2ch 5 290 MHz (11ac_VHT80) : 1ch
UNII-2C	5 500 MHz ~ 5 700 MHz (11a/an_VHT20/ac_VHT20) : 11ch 5 510 MHz ~ 5 670 MHz (11an_VHT40/ac_VHT40) : 5ch 5 530 MHz ~ 5 610 MHz (11ac_VHT80) : 2ch
UNII-3	5 745 MHz ~ 5 825 MHz (11a/an_VHT20/ac_VHT20) : 5ch 5 755 MHz ~ 5 795 MHz (11an_VHT40/ac_VHT40) : 2ch 5 775 MHz (11ac_VHT80) : 1ch
Antenna specification	ANT 1 / 2 : PCB Antenna
Antenna Gain(SISO)	2.4 GHz band : -5.6 dBi 5 GHz band : UNII-1 ,UNII-2A : 0.7 dBi / UNII-2C, UNII-3 : 0.5 dBi
Antenna Gain(MIMO)	2.4 GHz band : -2.6 dBi 5 GHz band : UNII-1 ,UNII-2A : 3.7 dBi / UNII-2C, UNII-3 : 3.5 dBi
Power source	DC 7 V (Battery)
H/W version	0.3
S/W version	2207292b

1.2. Test configuration

The **DRTECH Corporation // Flat Panel Digital X-ray Detector // EVS 4343 W //**

FCC ID: RNH-EVS4343W // IC ID:29808-EVS4343W was tested according to the specification of EUT, the EUT must comply with following standards and KDB documents.

FCC Part 15.407
ISED RSS-247 Issue 2 and RSS-Gen Issue 5
KDB 789033 D02 v02r01
ANSI C63.10-2013

1.3. Derivative Model Information

Model name	Remark
EVS3643W	There is no difference in circuitry between the basic model and the multi-model. Addition of variant models for marketing purposes only.
EVS 4343WP	
EVS 3643WP	

1.4. Accessory information

Equipment	Manufacturer	Model	Serial No.	Power source
Battery Charger	DRETECH Corporation	EVS-BCS	HH220401935	DC 8.4 V
AC Adapter	XP Power	AHM85PS12	V21290190	AC 120 V

1.5. Sample calculation

Where relevant, the following sample calculation is provided

For all conducted test items :

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 1.52 + 10 = 11.52 \text{ (dB)}\end{aligned}$$

For Radiation test :

$$\text{Field strength level (dB}\mu\text{V/m)} = \text{Measured level (dB}\mu\text{V)} + \text{Antenna factor (dB)} + \text{Cable loss (dB)} - \text{Amplifier gain (dB)}$$

1.6. Measurement Uncertainty

Test Item		Uncertainty
Uncertainty for Conduction emission test		2.38 dB (SHIELD ROOM #6)
Uncertainty for Radiation emission test (include Fundamental emission)	Below 1 GHz	4.50 dB (SAC #6)
	Above 1 GHz	4.90 dB (SAC #5)
Note. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.		

1.7. Maximum average output power

Refer to the average output power

Note.

1. Radiated emission were performed with the EUT set to transmit at the channel with highest output Power as worst-case scenario.
2. Worst-case data rates as provided by the client were:
ANT1 - 802.11a : **6Mbps** ,802.11an_HT20/ac_VHT20/an_HT40/ac_VHT40/ac_VHT80 : **MCS0**
ANT2 - 802.11a : **6Mbps** ,802.11an_HT20/ac_VHT20/an_HT40/ac_VHT40/ac_VHT80 : **MCS0**
ANT1+2 - 802.11an_HT20/ac_VHT20/an_HT40/ac_VHT40/ac_VHT80 : **MCS8**

1.8. Application for Testing

Application Name	Version
REALTEK 11n 8188EUS USB WLAN NIC Massproduction kit	0.28.119.2010

1.9. Frequency/channel operations

Ch.	Frequency (MHz)	Mode
1	2 412	802.11b/g/n_HT20
.	.	.
6	2 437	802.11b/g/n_HT20
.	.	.
11	2 462	802.11b/g/n_HT20

Ch.	Frequency (MHz)	Mode
3	2 422	802.11n_HT40
.	.	.
6	2 437	802.11n_HT40
.	.	.
9	2 452	802.11n_HT40

UNII-1

Ch.	Frequency (MHz)
36	5 180
44	5 220
48	5 240

UNII-2A

Ch.	Frequency (MHz)
52	5 260
56	5 280
64	5 320

UNII-2C

Ch.	Frequency (MHz)
100	5 500
120	5 600
140	5 700

UNII-3

Ch.	Frequency (MHz)
149	5 745
157	5 785
165	5 825

802.11a/an_VHT20/ac_VHT20 mode

UNII-1

Ch.	Frequency (MHz)
38	5 190
46	5 230

UNII-2A

Ch.	Frequency (MHz)
54	5 270
62	5 310

UNII-2C

Ch.	Frequency (MHz)
102	5 510
118	5 590
134	5 670

UNII-3

Ch.	Frequency (MHz)
151	5 755
159	5 795

802.11an_VHT40/ac_VHT40 mode

UNII-1

Ch.	Frequency (MHz)
42	5 210

UNII-2A

Ch.	Frequency (MHz)
58	5 290

UNII-2C

Ch.	Frequency (MHz)
106	5 530
122	5 610

UNII-3

Ch.	Frequency (MHz)
155	5 775

802.11ac_VHT80 mode

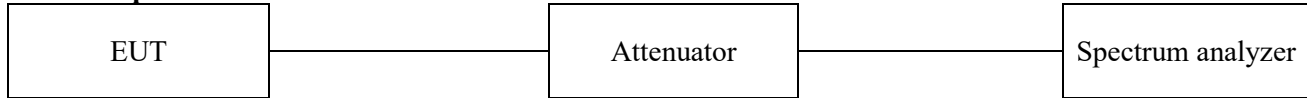
2. Summary of tests

Section in FCC Part 15	Section in RSS-247 & Gen	Parameter	Test results
15.407(a)	RSS-247 6.2	26 dB bandwidth & 99 % bandwidth	Pass
15.407(a)	-	6 dB bandwidth	Pass
15.407(a)	RSS-247 6.2	Maximum conducted output power	Pass
15.407(a)	RSS-247 6.2	Power spectral density	Pass
15.407(g)	RSS-Gen 6.11	Frequency stability	Pass
15.205 15.209 15.407(b)	RSS-247 6.2 RSS-Gen 8.9, 8.10	Radiated restricted band and emission	Pass
15.207	RSS-Gen 8.8	AC power line conducted emissions	Pass
15.203	-	Antenna Requirement	Pass

3. Test results

3.1. 26 dB bandwidth & 99% Occupied Bandwidth

Test setup



Test procedure

26 dB bandwidth

KDB 789033 D02 v02r01– Section C.1

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

99 % bandwidth

KDB 789033 D02 v02r01– Section D

1. Set span = 1.5 times to 5.0 times the OBW.
2. Set RBW = 1% to 5% of the OBW
3. Set the VBW > 3 x RBW.
4. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak bandwidth function of the instrument (if available).
5. Use the 99% power bandwidth function of the instrument (if available).
6. If the instrument does not have a 99% power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

Limit

N/A

Test results
ANT1

Band	Frequency(MHz)	Mode	26 dB bandwidth(MHz)	99 % bandwidth(MHz)
UNII-1	5 180	a	19.70	16.69
	5 220		19.79	16.75
	5 240		19.90	16.74
UNII-2A	5 260		21.51	16.97
	5 280		20.62	16.87
	5 320		20.30	16.81
UNII-2C	5 500		20.56	16.81
	5 600		20.63	16.86
	5 700		23.92	17.10
UNII-3	5 745		21.30	16.98
	5 785		21.63	17.10
	5 825		20.54	16.88
UNII-1	5 180	an_HT20	20.49	17.71
	5 220		20.52	17.71
	5 240		20.40	17.73
UNII-2A	5 260		21.31	17.99
	5 280		21.73	17.86
	5 320		21.15	17.82
UNII-2C	5 500		21.02	17.83
	5 600		20.81	17.84
	5 700		21.61	18.12
UNII-3	5 745		20.16	17.66
	5 785		20.42	17.74
	5 825		20.53	17.73

Band	Frequency(MHz)	Mode	26 dB bandwidth(MHz)	99 % bandwidth(MHz)
UNII-1	5 180	ac_VHT20	20.46	17.72
	5 220		20.49	17.73
	5 240		20.34	17.70
UNII-2A	5 260		21.38	17.98
	5 280		21.28	17.88
	5 320		21.02	17.84
UNII-2C	5 500		21.13	17.85
	5 600		20.90	17.88
	5 700		21.75	18.11
UNII-3	5 745		20.44	17.79
	5 785		20.52	17.75
	5 825		20.63	17.76
UNII-1	5 190	an_HT40	39.71	36.14
	5 230		40.45	36.15
UNII-2A	5 270		40.14	36.16
	5 310		40.21	36.13
UNII-2C	5 510		40.17	36.16
	5 590		40.41	36.15
	5 690		40.20	36.15
UNII-3	5 755		39.90	36.21
	5 795		40.39	36.20
UNII-1	5 190	ac_VHT40	40.21	36.14
	5 230		40.03	36.14
UNII-2A	5 270		39.87	36.13
	5 310		40.18	36.14
UNII-2C	5 510		40.05	36.16
	5 590		40.18	36.14
	5 690		40.18	36.14
UNII-3	5 755		40.05	36.14
	5 795		40.60	36.20



Band	Frequency(MHz)	Mode	26 dB bandwidth(MHz)	99 % bandwidth(MHz)
UNII-1	5 210	ac_VHT80	79.42	75.46
UNII-2A	5 290		79.38	75.51
UNII-2C	5 530		79.46	75.55
	5 610		79.66	75.55
UNII-3	5 775		79.38	75.46

ANT2

Band	Frequency(MHz)	Mode	26 dB bandwidth(MHz)	99 % bandwidth(MHz)
UNII-1	5 180	a	19.73	16.72
	5 220		19.91	16.68
	5 240		20.02	16.71
UNII-2A	5 260		19.90	16.72
	5 280		20.06	16.72
	5 320		20.10	16.72
UNII-2C	5 500		20.66	16.83
	5 600		20.25	16.72
	5 700		19.87	16.70
UNII-3	5 745		19.57	16.66
	5 785		19.84	16.66
	5 825		19.67	16.64
UNII-1	5 180	an_HT20	20.86	17.76
	5 220		20.68	17.75
	5 240		20.67	17.74
UNII-2A	5 260		20.44	17.72
	5 280		20.50	17.72
	5 320		20.46	17.72
UNII-2C	5 500		21.64	17.82
	5 600		20.77	17.74
	5 700		20.53	17.72
UNII-3	5 745		20.37	17.69
	5 785		19.96	17.63
	5 825		20.79	17.77

Band	Frequency(MHz)	Mode	26 dB bandwidth(MHz)	99 % bandwidth(MHz)
UNII-1	5 180	ac_VHT20	20.37	17.74
	5 220		20.38	17.75
	5 240		20.72	17.75
UNII-2A	5 260		20.50	17.76
	5 280		20.62	17.74
	5 320		20.48	17.74
UNII-2C	5 500		21.03	17.86
	5 600		20.52	17.76
	5 700		20.66	17.74
UNII-3	5 745		20.52	17.71
	5 785		20.47	17.71
	5 825		20.28	17.65
UNII-1	5 190	an_HT40	40.17	36.17
	5 230		40.13	36.18
UNII-2A	5 270		40.06	36.18
	5 310		40.14	36.18
UNII-2C	5 510		40.21	36.19
	5 590		40.06	36.18
	5 690		40.35	36.18
UNII-3	5 755		40.25	36.17
	5 795		40.42	36.18
UNII-1	5 190	ac_VHT40	40.37	36.16
	5 230		40.45	36.16
UNII-2A	5 270		40.09	36.17
	5 310		40.45	36.17
UNII-2C	5 510		40.30	36.17
	5 590		40.34	36.17
	5 690		40.09	36.16
UNII-3	5 755		40.37	36.16
	5 795		40.00	36.16



Band	Frequency(MHz)	Mode	26 dB bandwidth(MHz)	99 % bandwidth(MHz)
UNII-1	5 210	ac_VHT80	79.19	75.37
UNII-2A	5 290		79.16	75.42
UNII-2C	5 530		79.67	75.44
	5 610		79.27	75.42
UNII-3	5 775		79.03	75.39

MIMO ANT1

Band	Frequency(MHz)	Mode	26 dB bandwidth(MHz)	99 % bandwidth(MHz)
UNII-1	5 180	an_HT20	20.36	17.77
	5 220		21.31	17.89
	5 240		21.61	17.97
UNII-2A	5 260		21.21	17.84
	5 280		20.54	17.78
	5 320		20.67	17.75
UNII-2C	5 500		20.68	17.73
	5 600		20.74	17.72
	5 700		20.53	17.72
UNII-3	5 745		20.17	18.02
	5 785		20.57	17.73
	5 825		20.55	17.75
UNII-1	5 180	ac_VHT20	20.70	17.83
	5 220		20.62	17.82
	5 240		20.93	17.87
UNII-2A	5 260		21.08	17.83
	5 280		20.62	17.74
	5 320		20.64	17.74
UNII-2C	5 500		20.54	17.76
	5 600		20.70	17.75
	5 700		20.40	17.74
UNII-3	5 745		20.60	17.76
	5 785		20.36	17.76
	5 825		20.50	17.75

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Band	Frequency(MHz)	Mode	26 dB bandwidth(MHz)	99 % bandwidth(MHz)
UNII-1	5 190	an_HT40	40.21	36.16
	5 230		40.03	36.18
UNII-2A	5 270		40.21	36.19
	5 310		40.11	36.18
UNII-2C	5 510		40.19	36.19
	5 590		39.97	36.18
	5 690		40.27	36.17
UNII-3	5 755		40.25	36.17
	5 795		40.29	36.18
UNII-1	5 190	ac_VHT40	40.20	36.15
	5 230		40.15	36.17
UNII-2A	5 270		40.15	36.17
	5 310		40.10	36.17
UNII-2C	5 510		40.18	36.17
	5 590		40.44	36.17
	5 690		40.44	36.16
UNII-3	5 755		40.23	36.16
	5 795		40.31	36.17
UNII-1	5 210	ac_VHT80	79.21	75.39
UNII-2A	5 290		79.54	75.41
UNII-2C	5 530		79.37	75.44
	5 610		79.37	75.42
UNII-3	5 775		79.18	75.37

MIMO ANT2

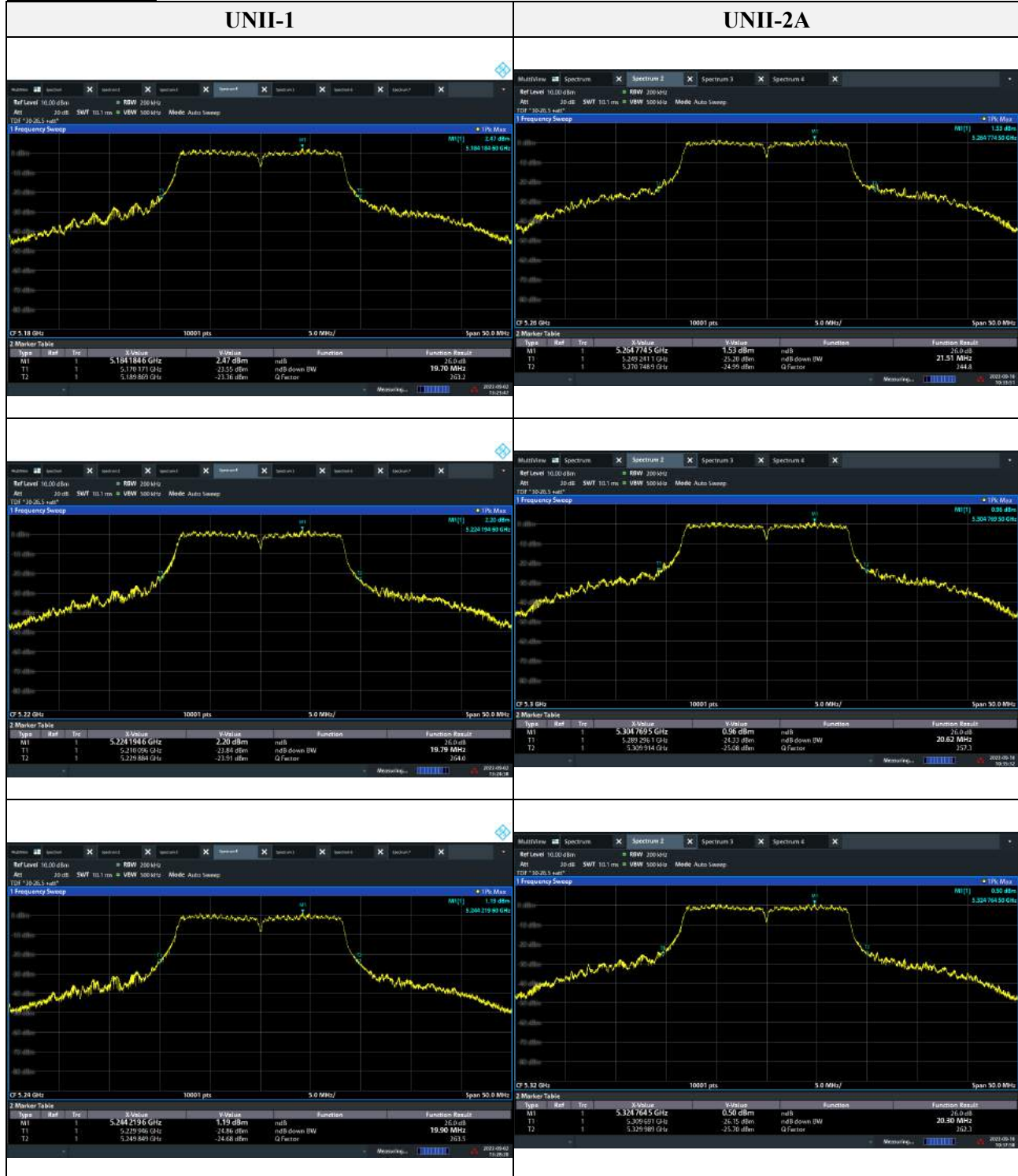
Band	Frequency(MHz)	Mode	26 dB bandwidth(MHz)	99 % bandwidth(MHz)
UNII-1	5 180	an_HT20	20.50	17.70
	5 220		20.47	17.69
	5 240		20.40	17.69
UNII-2A	5 260		20.53	17.71
	5 280		20.39	17.70
	5 320		20.42	17.70
UNII-2C	5 500		20.53	17.70
	5 600		20.72	17.70
	5 700		20.63	17.69
UNII-3	5 745		20.41	17.69
	5 785		20.15	17.62
	5 825		20.71	17.77
UNII-1	5 180	ac_VHT20	20.36	17.73
	5 220		20.52	17.72
	5 240		20.38	17.72
UNII-2A	5 260		20.61	17.73
	5 280		20.55	17.72
	5 320		20.56	17.73
UNII-2C	5 500		20.52	17.74
	5 600		20.61	17.73
	5 700		20.43	17.72
UNII-3	5 745		20.60	17.71
	5 785		20.42	17.72
	5 825		20.50	17.65

Band	Frequency(MHz)	Mode	26 dB bandwidth(MHz)	99 % bandwidth(MHz)
UNII-1	5 190	an_HT40	40.07	36.14
	5 230		40.14	36.15
UNII-2A	5 270		40.09	36.15
	5 310		39.97	36.14
UNII-2C	5 510		40.12	36.16
	5 590		40.31	36.13
	5 690		39.97	36.15
UNII-3	5 755		40.40	36.21
	5 795		40.28	36.20
UNII-1	5 190	ac_VHT40	40.36	36.13
	5 230		40.10	36.15
UNII-2A	5 270		40.06	36.13
	5 310		40.04	36.15
UNII-2C	5 510		40.34	36.16
	5 590		40.30	36.15
	5 690		40.23	36.14
UNII-3	5 755		40.06	36.14
	5 795		40.41	36.18
UNII-1	5 210	ac_VHT80	79.54	75.47
UNII-2A	5 290		79.37	75.50
UNII-2C	5 530		79.42	75.56
	5 610		79.66	75.55
UNII-3	5 775		79.14	75.46

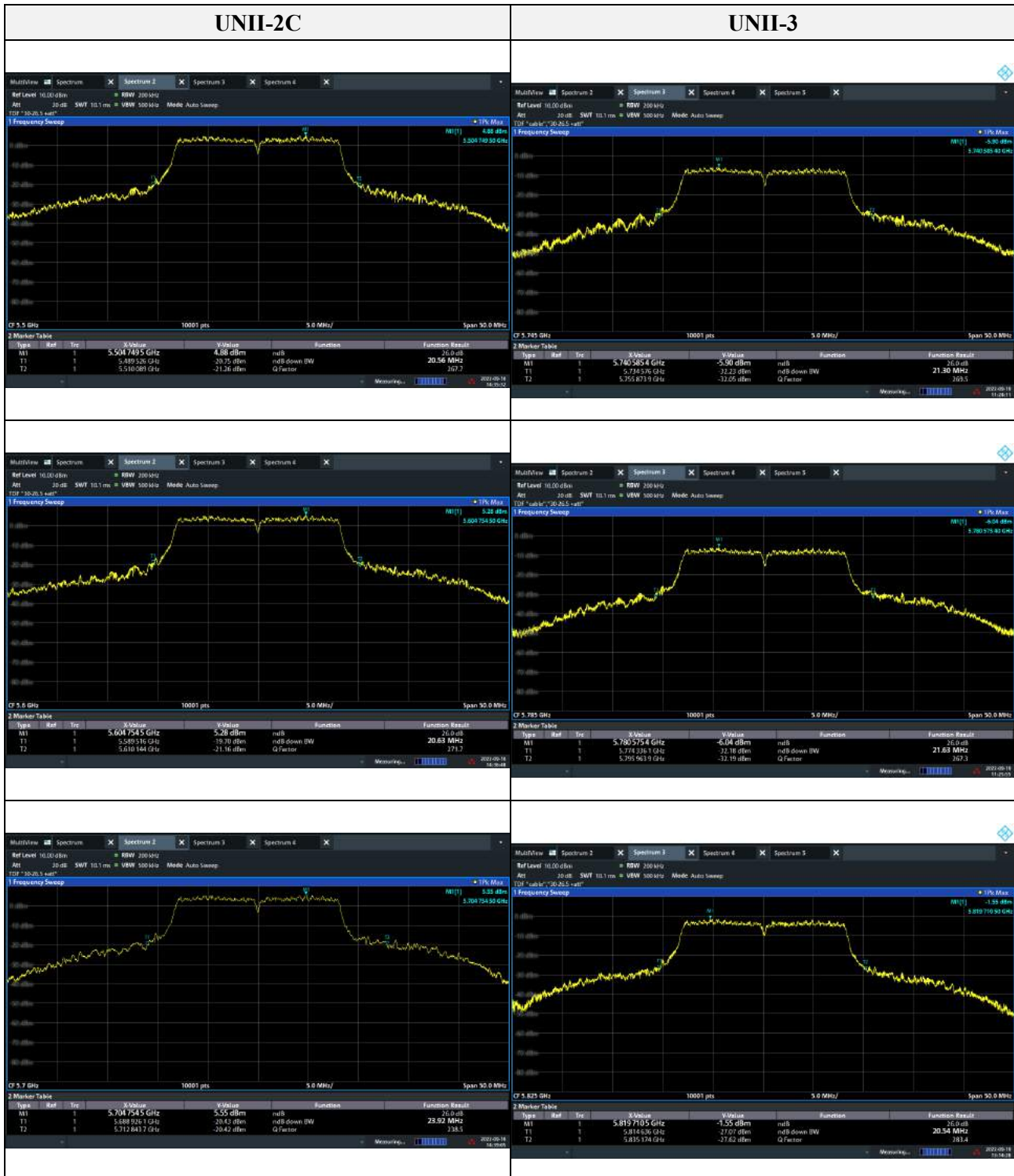
26 dB bandwidth

ANT1

Mode : 802.11a

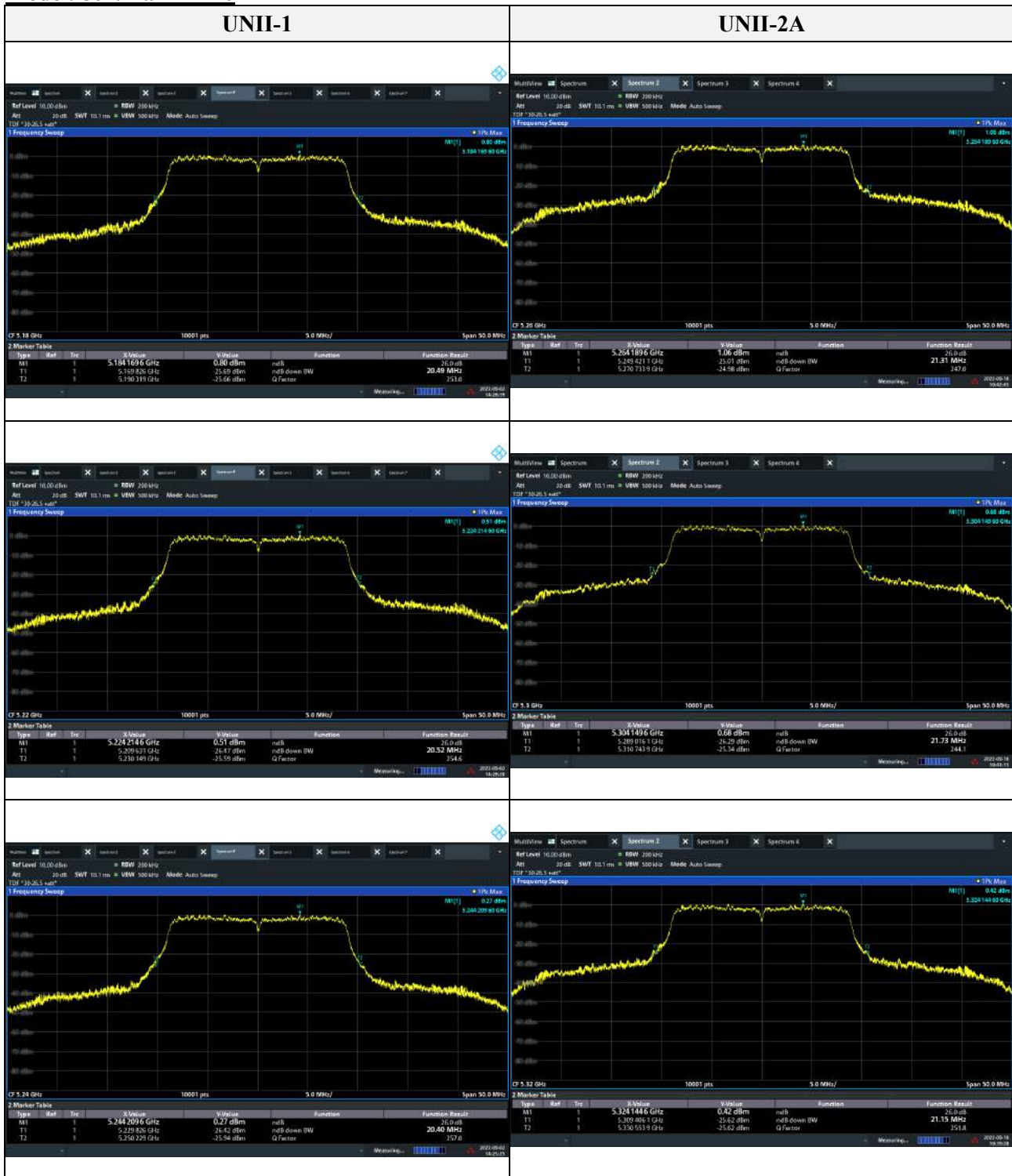


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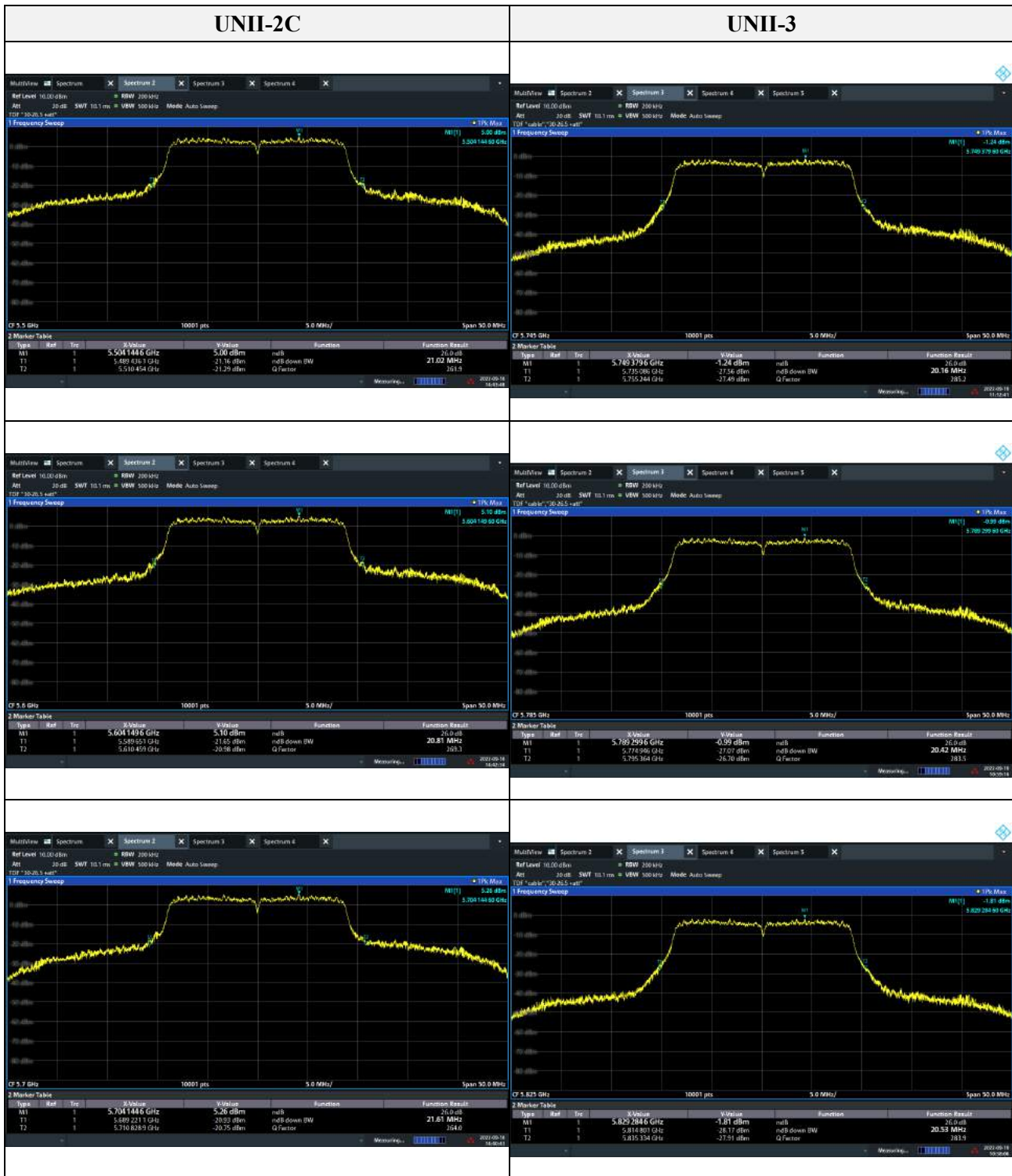


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Mode : 802.11an HT20

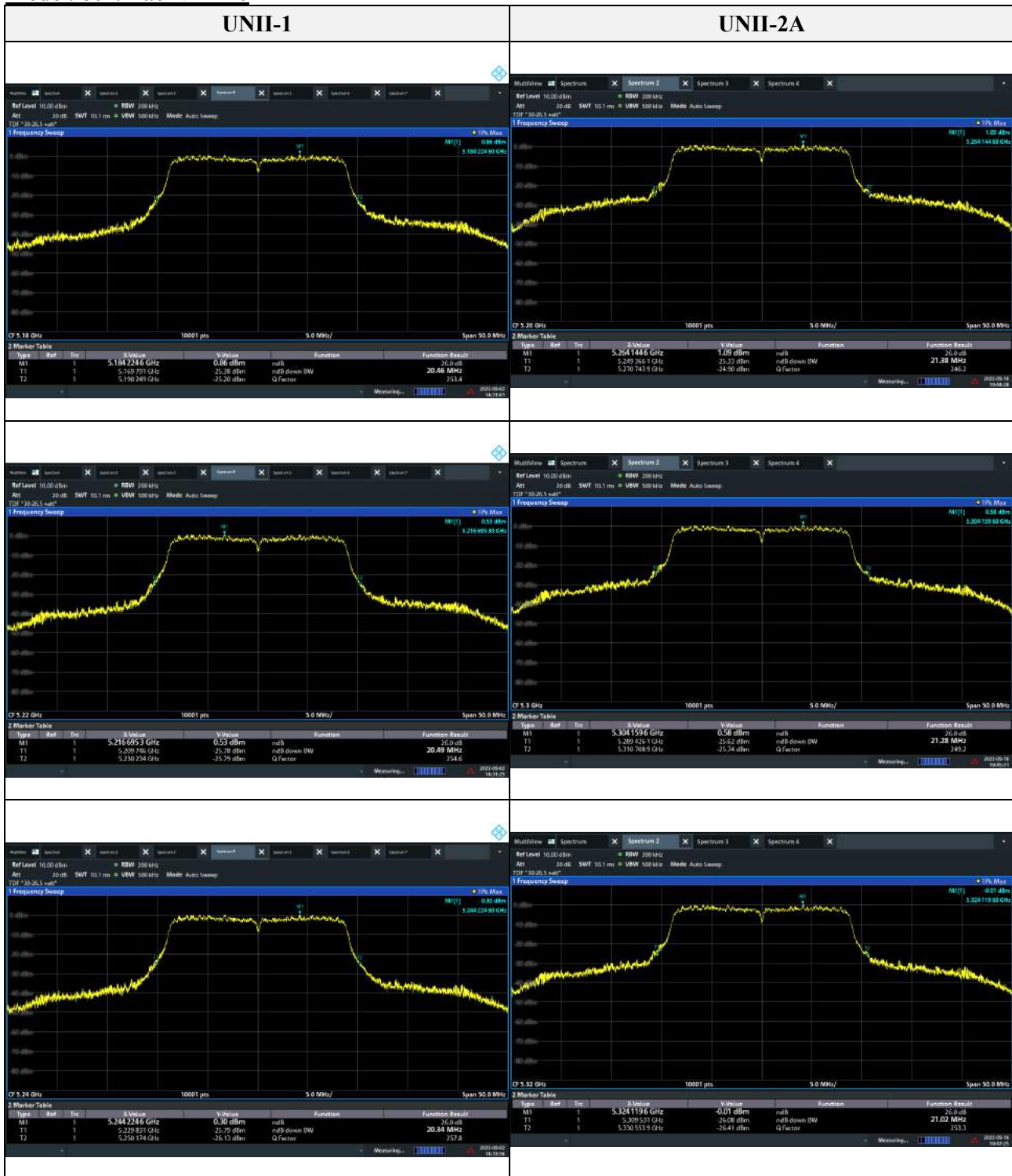


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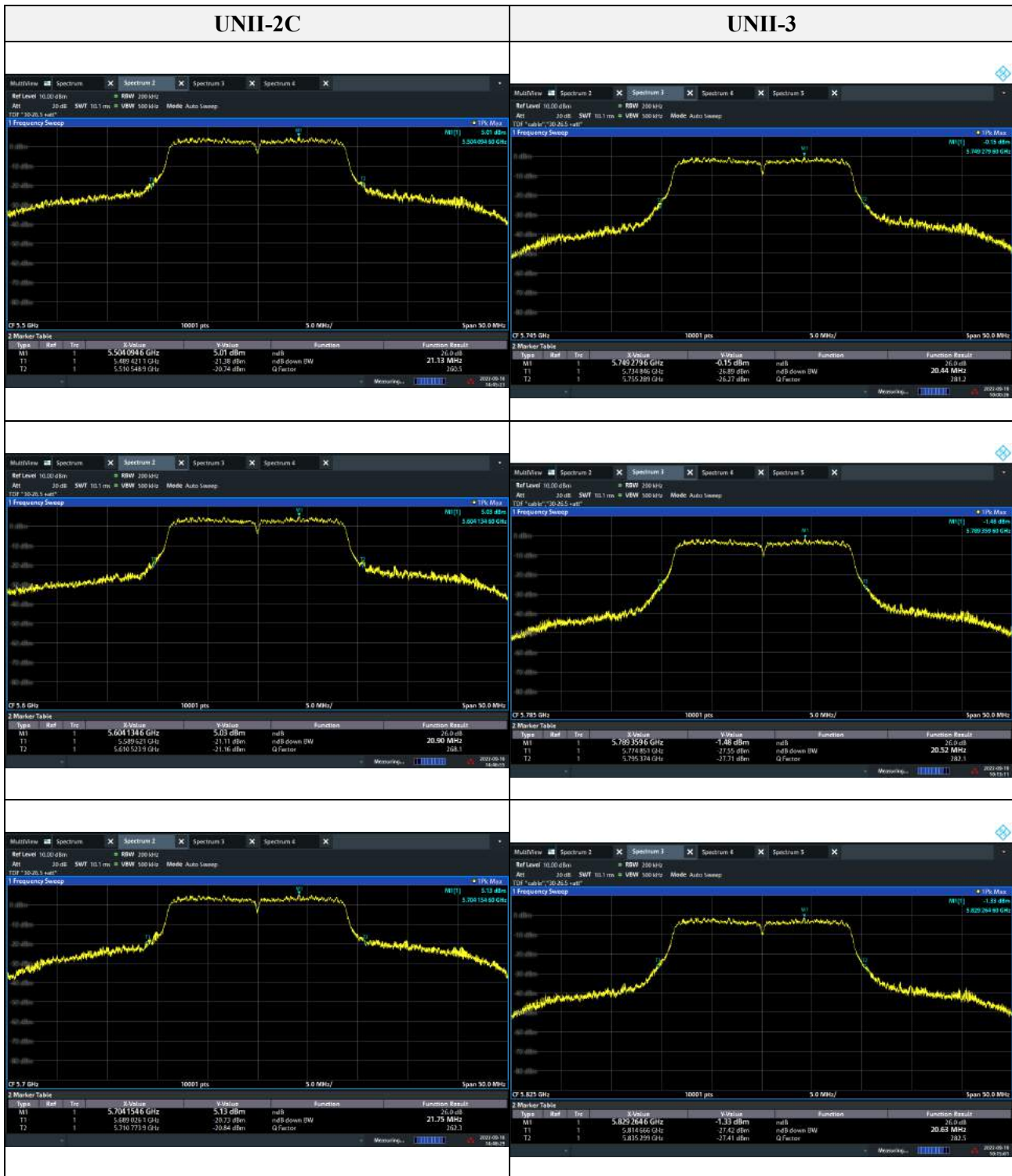


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Mode : 802.11ac VHT20

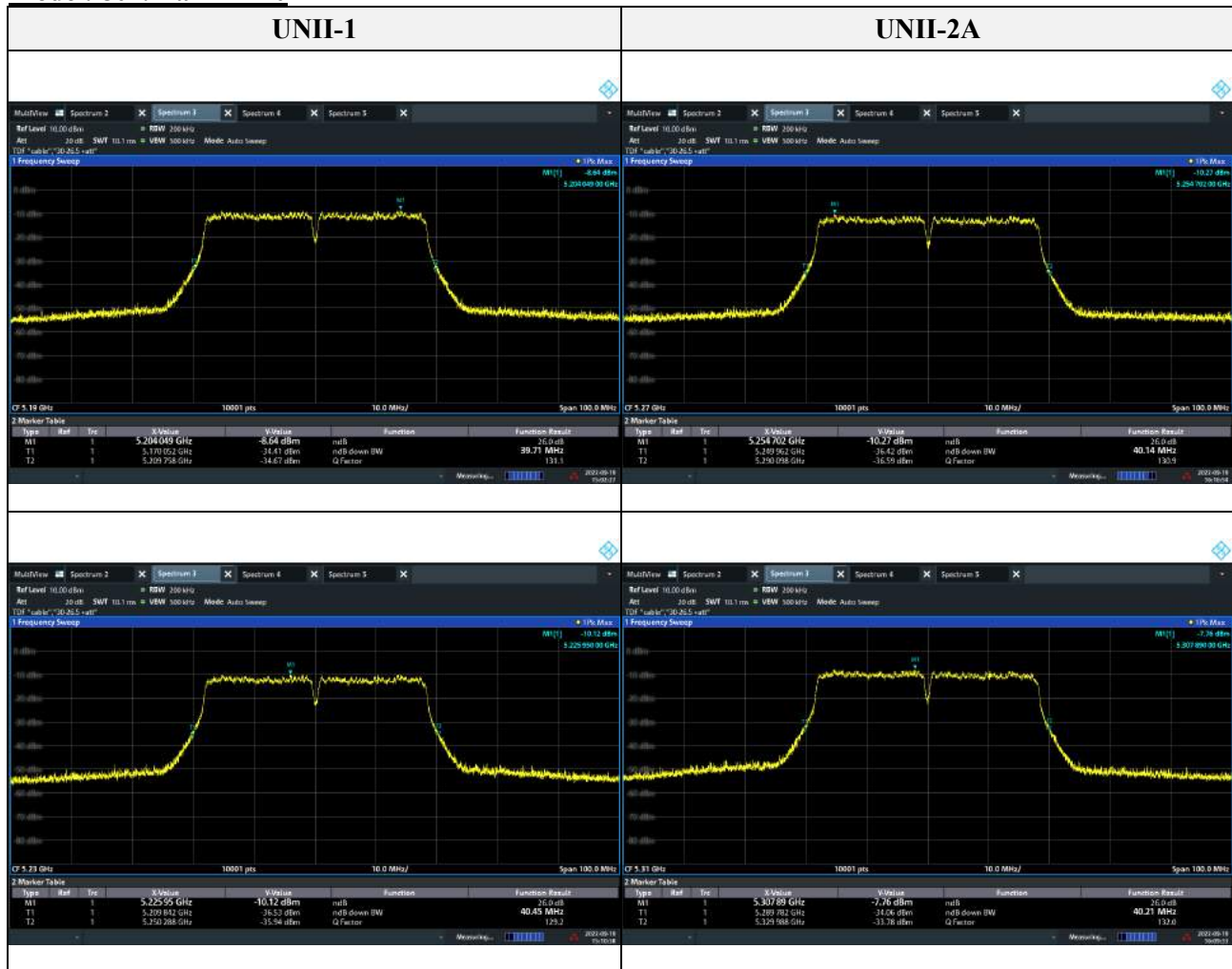


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Mode : 802.11an HT40

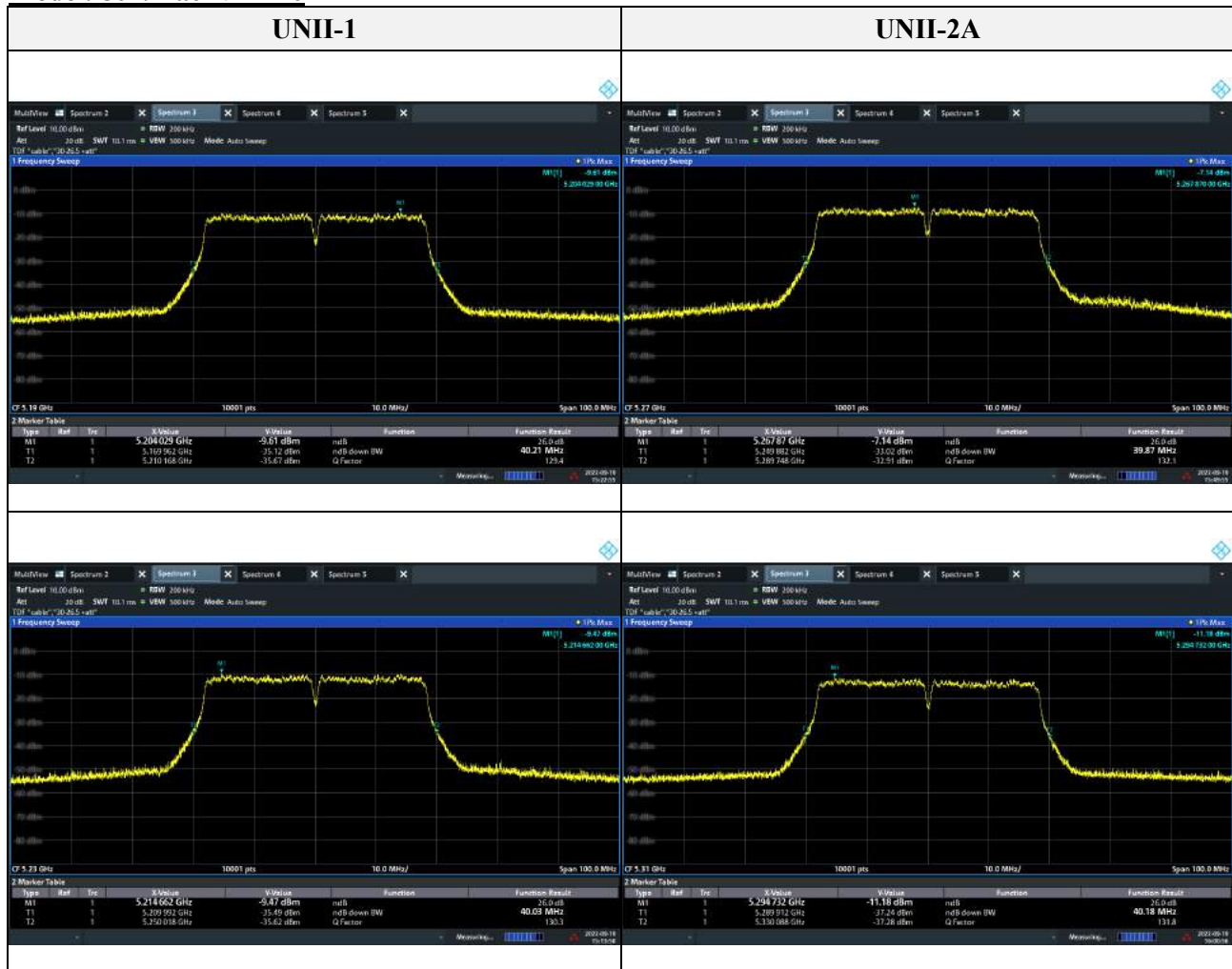


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Mode : 802.11ac VHT40

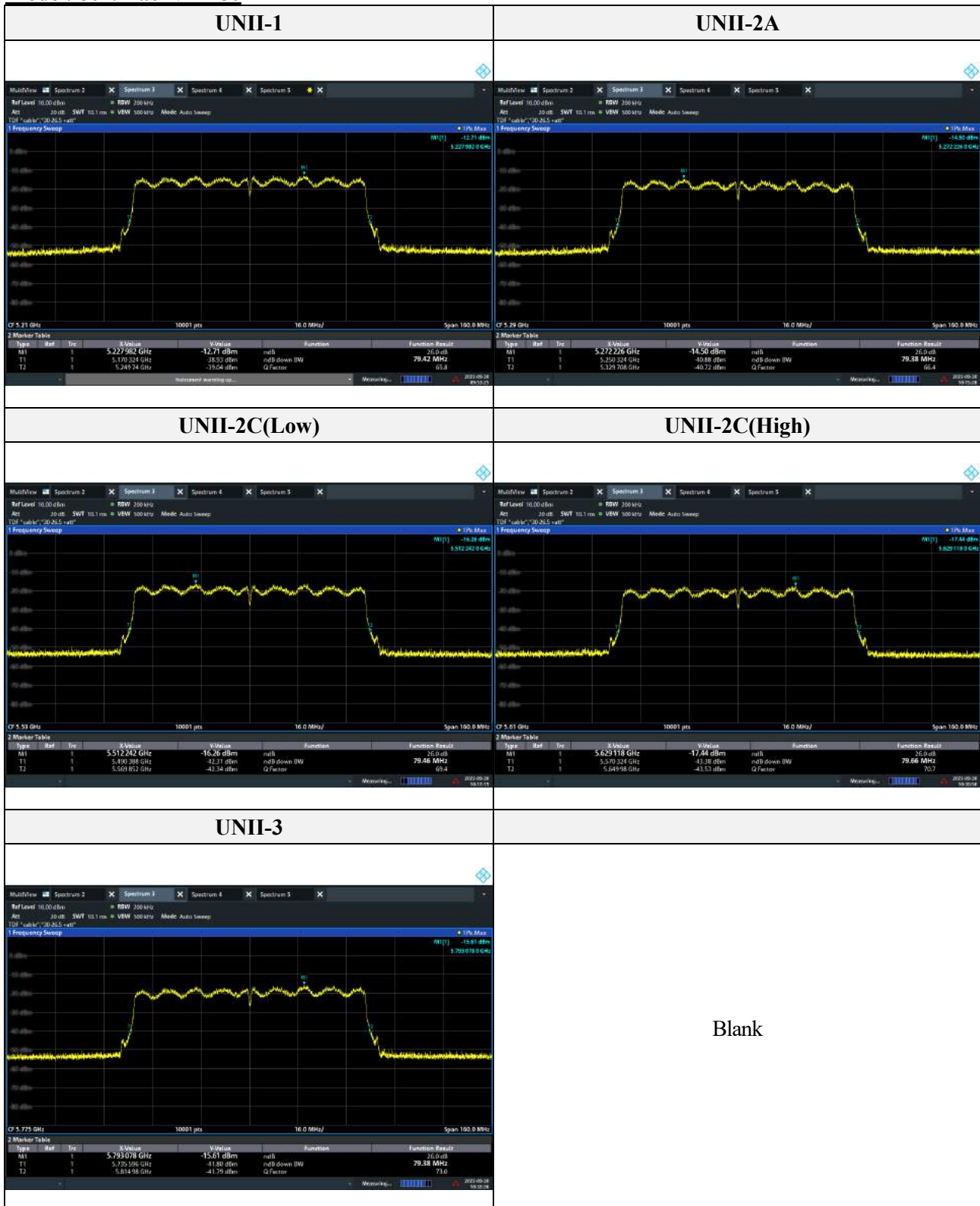


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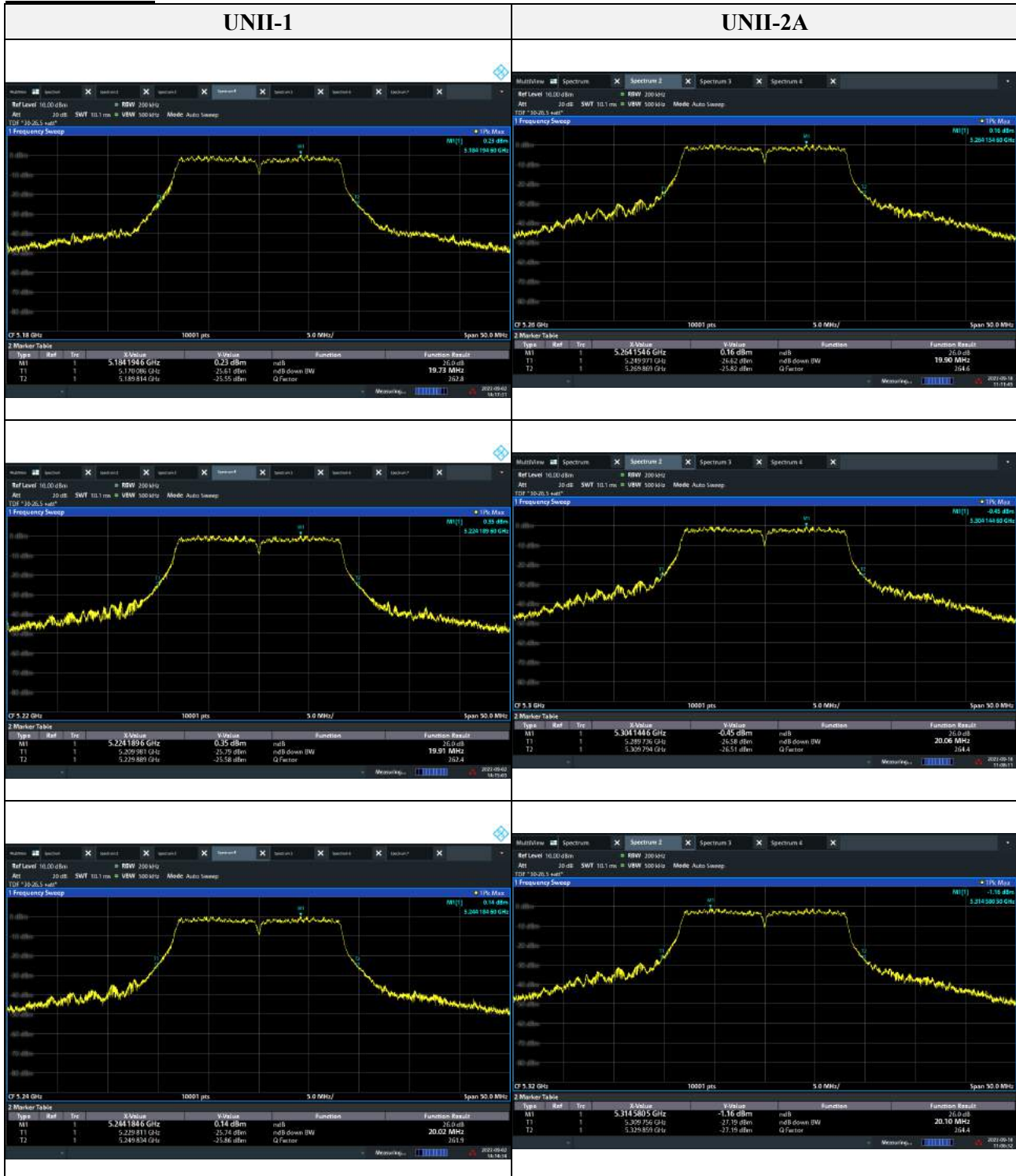
Mode : 802.11ac VHT80



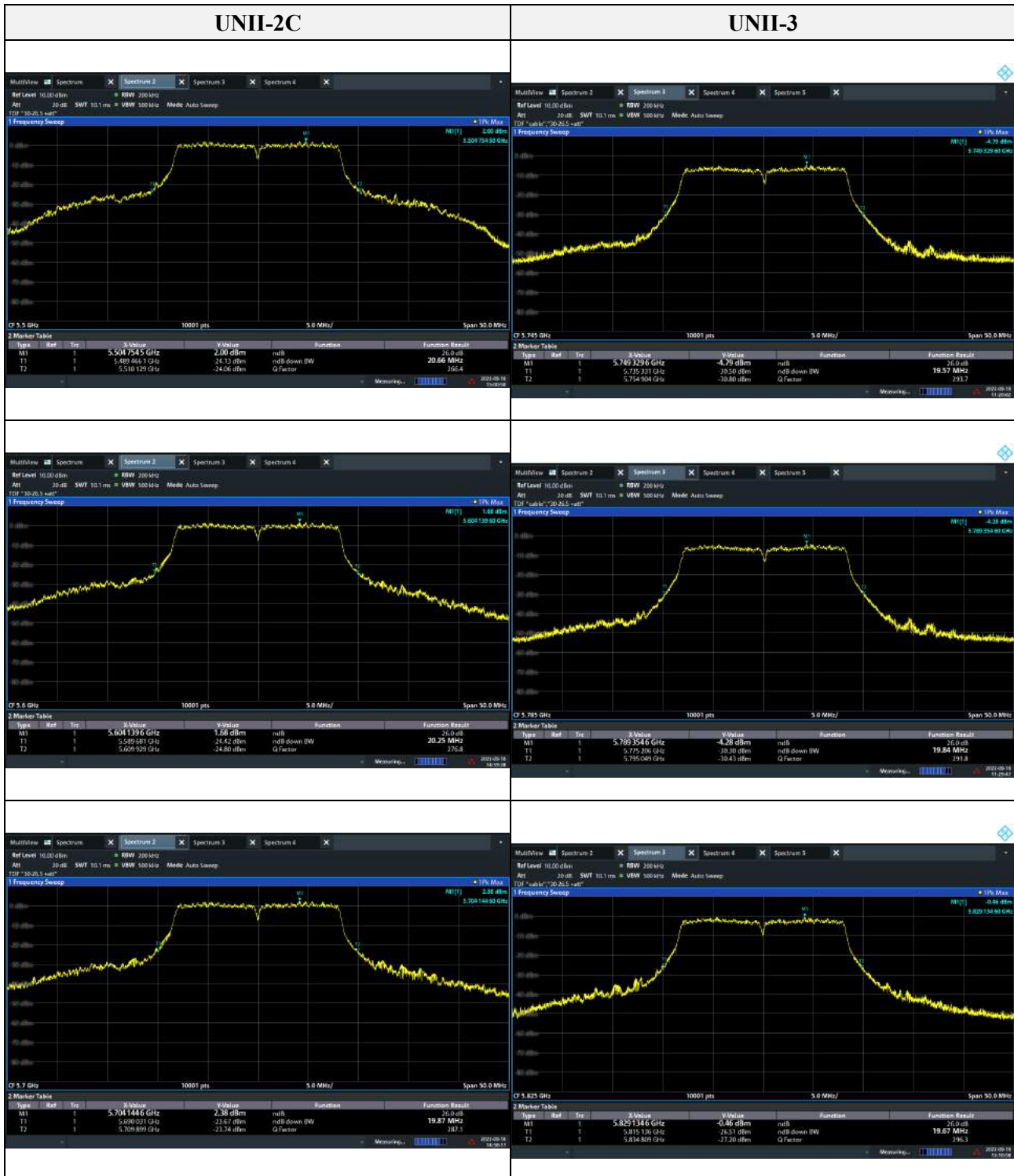
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ANT2

Mode : 802.11a

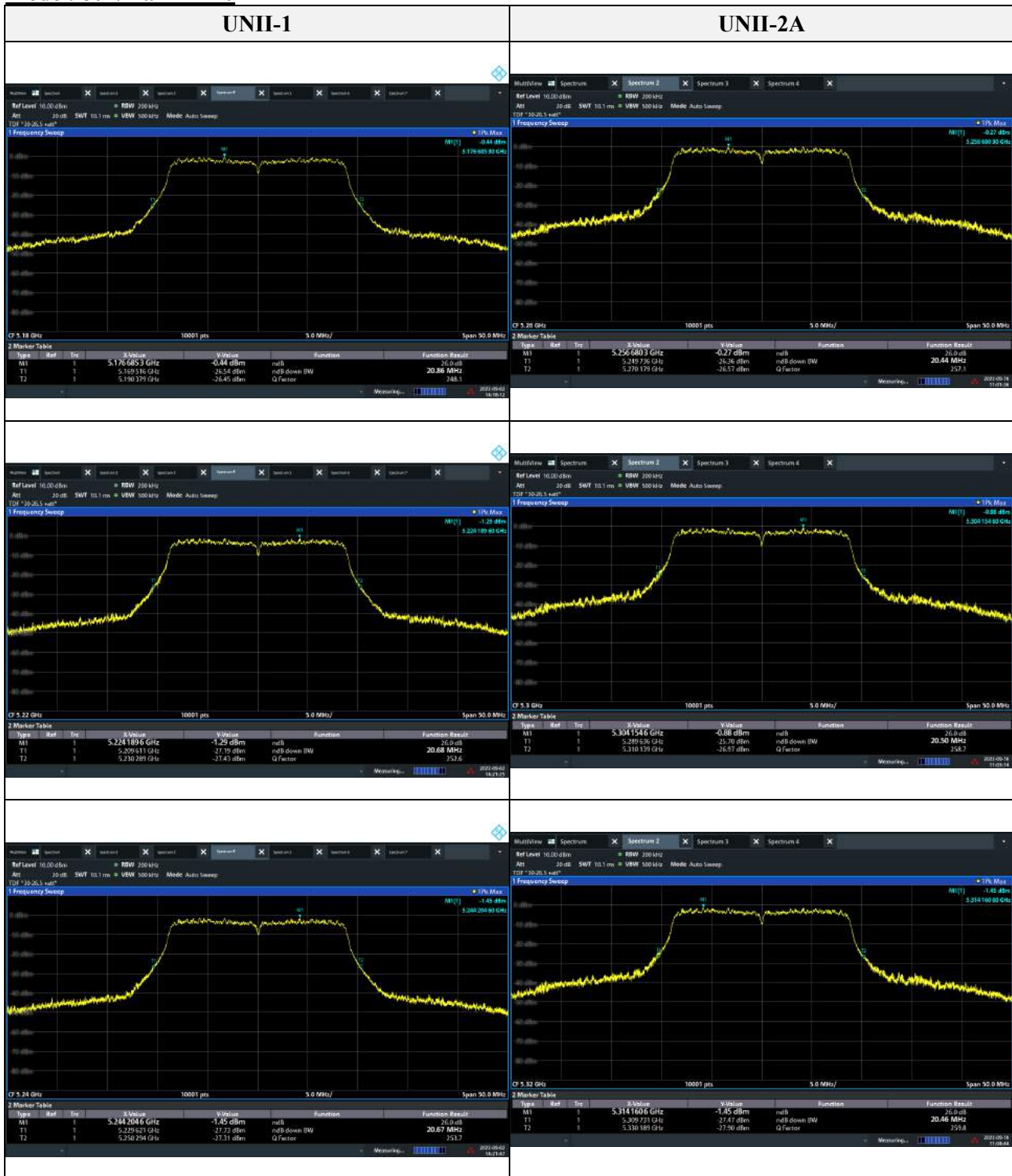


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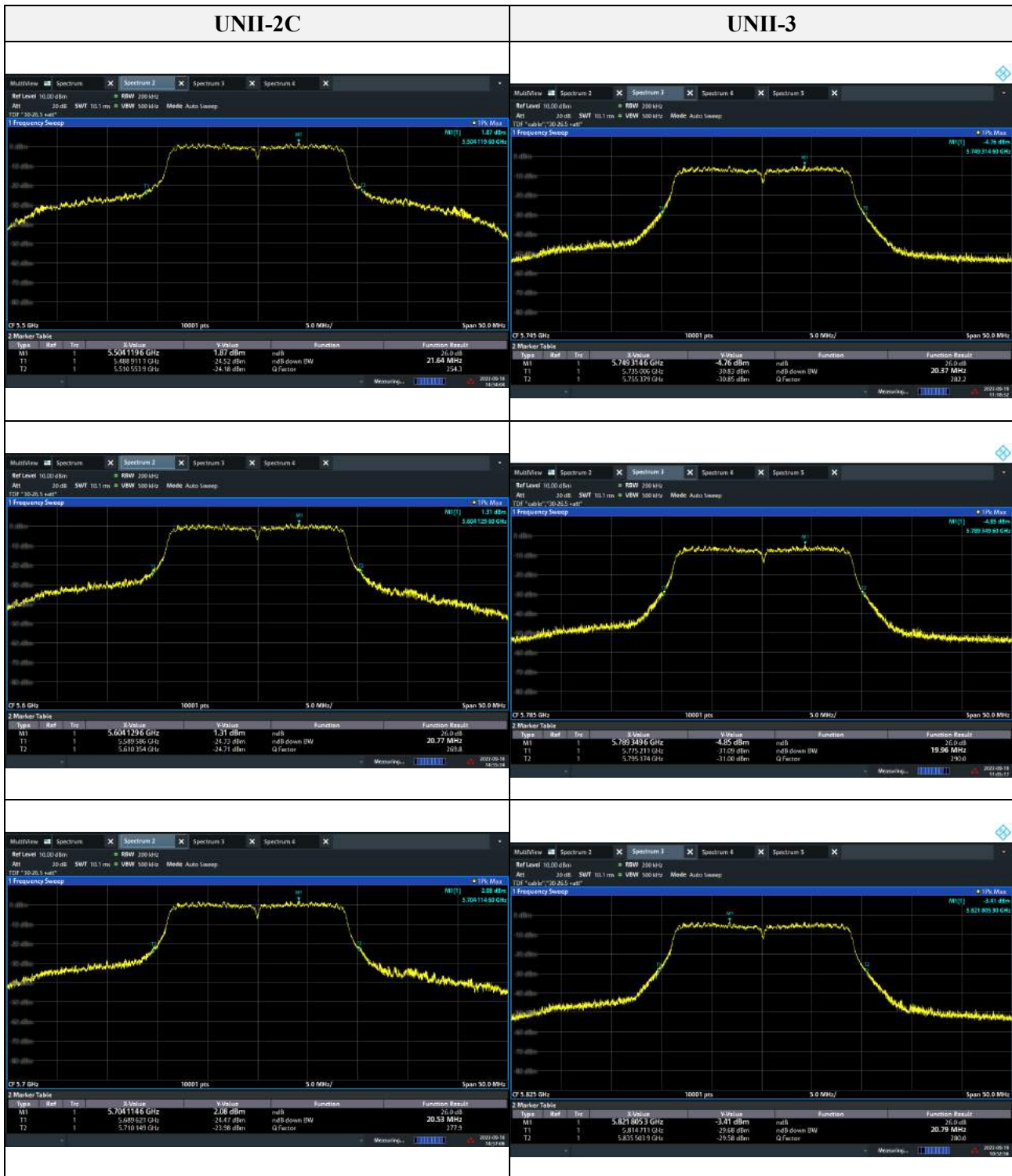


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Mode : 802.11an HT20

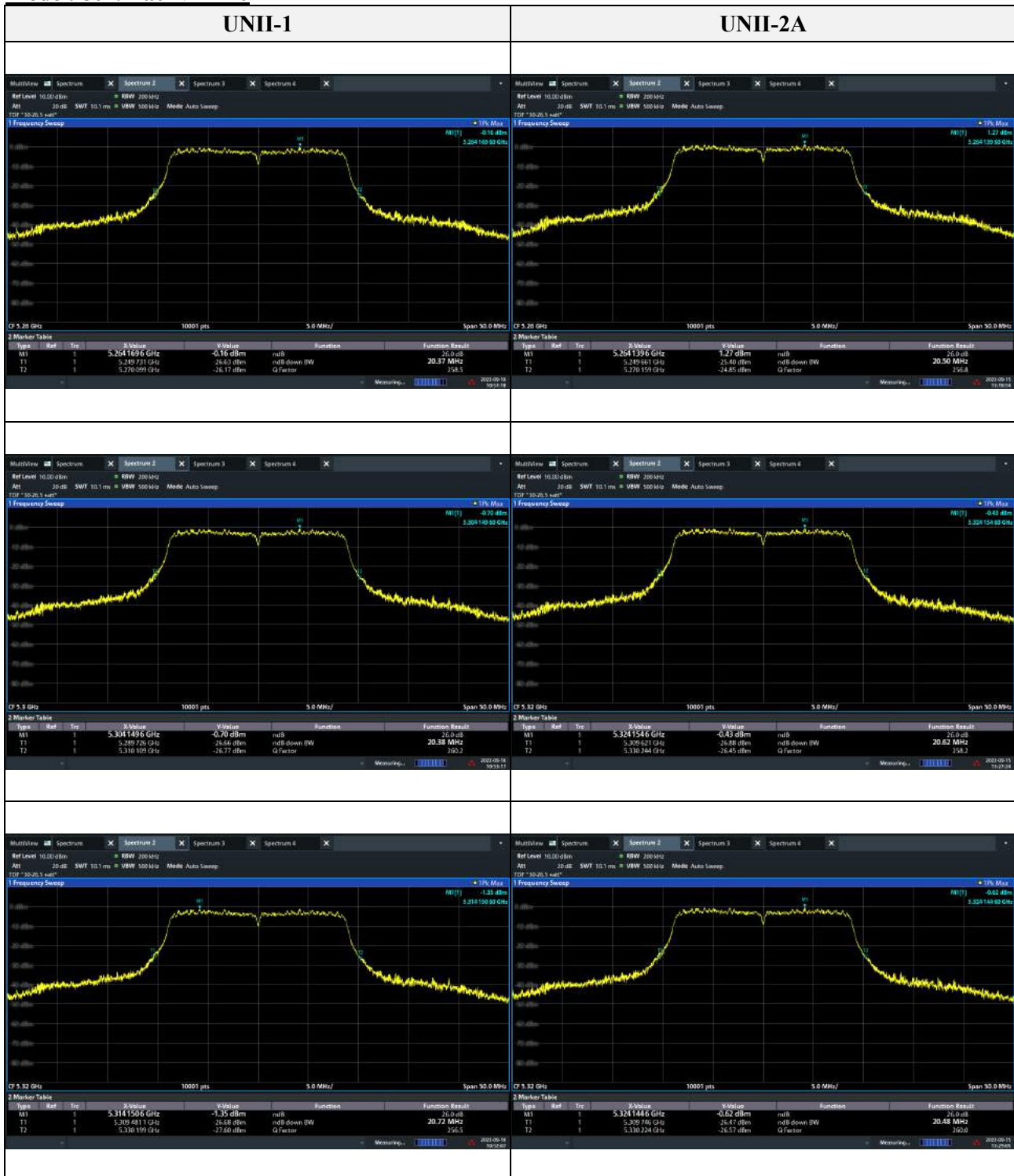


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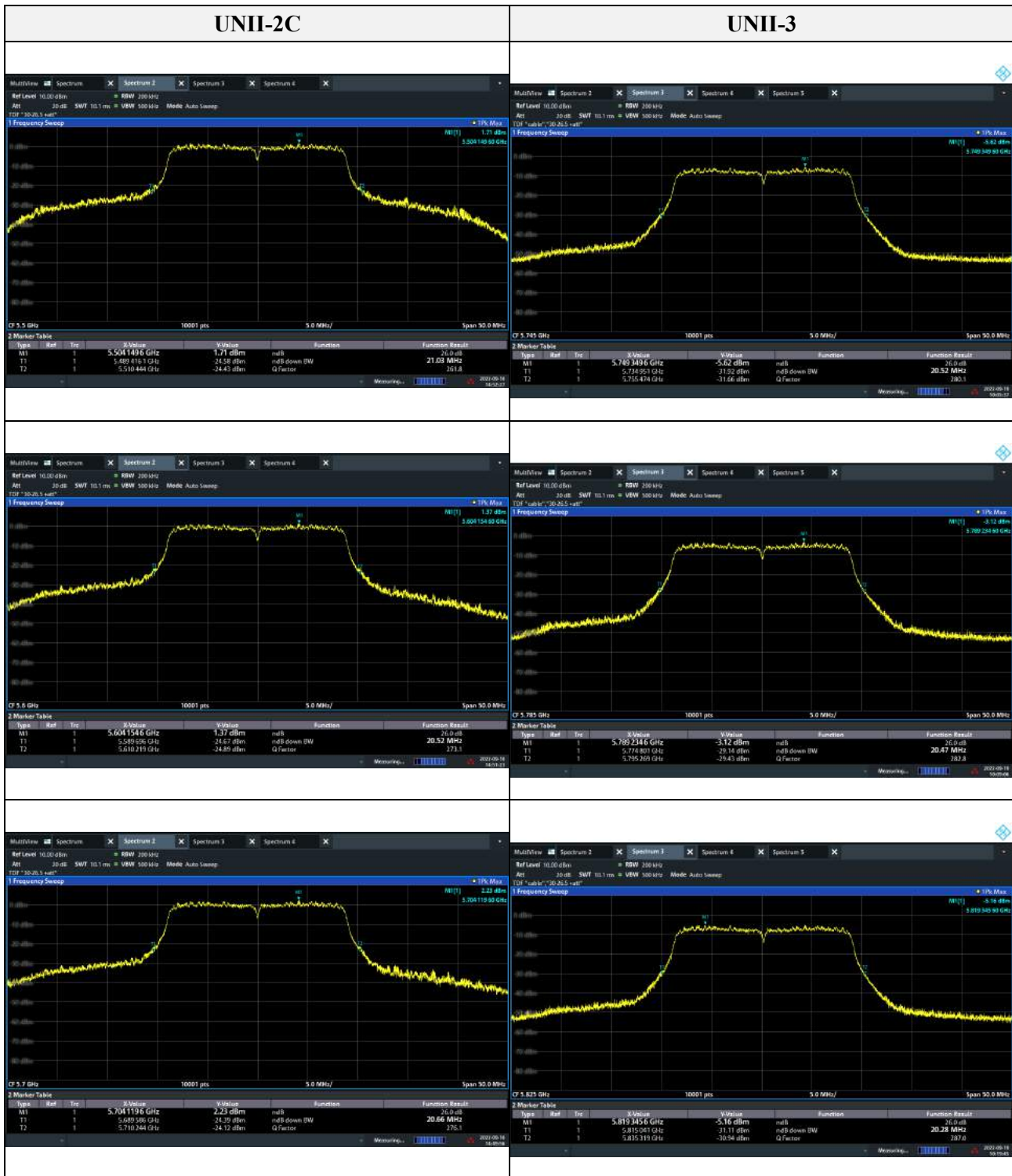


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Mode : 802.11ac VHT20

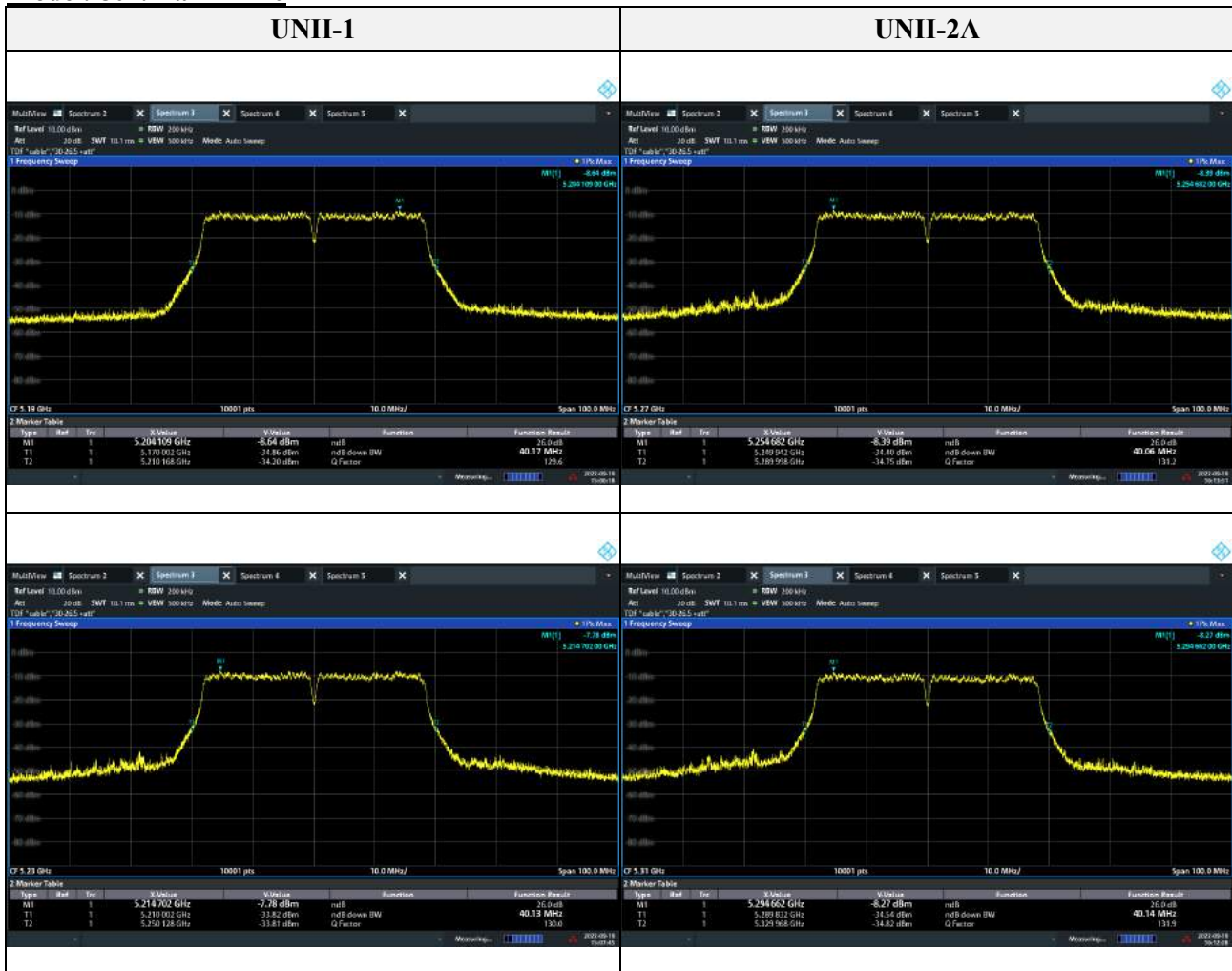


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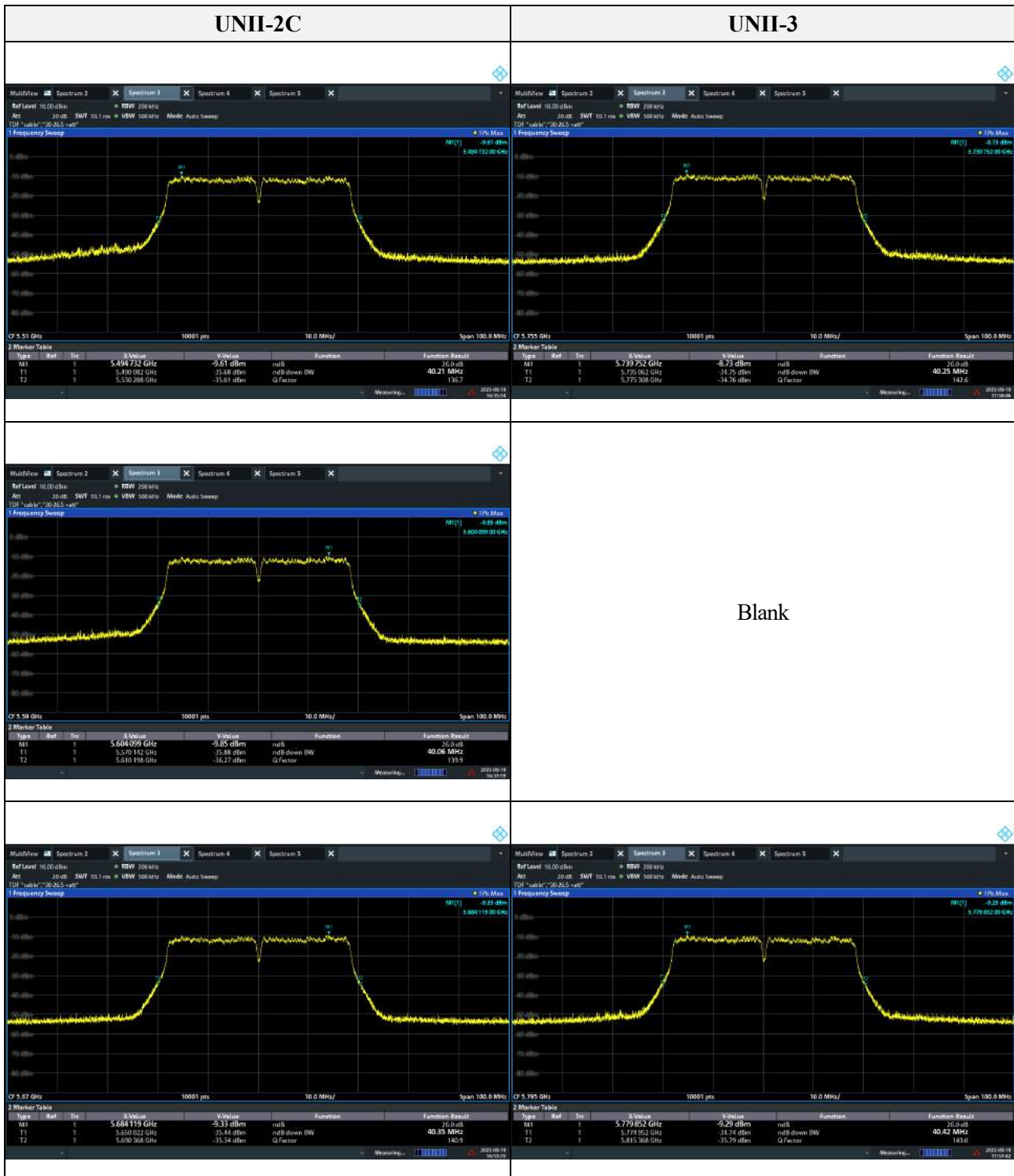


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Mode : 802.11an HT40

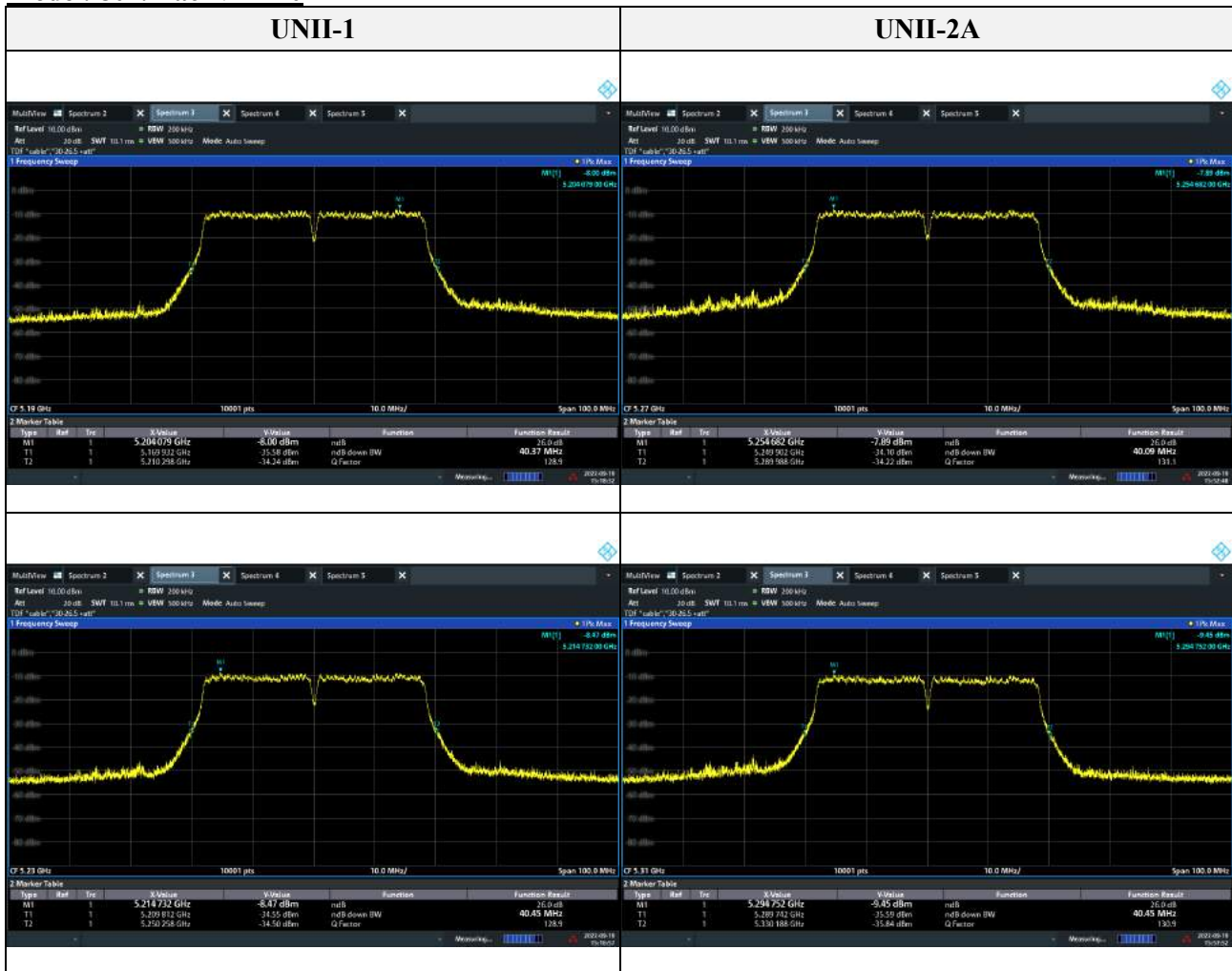


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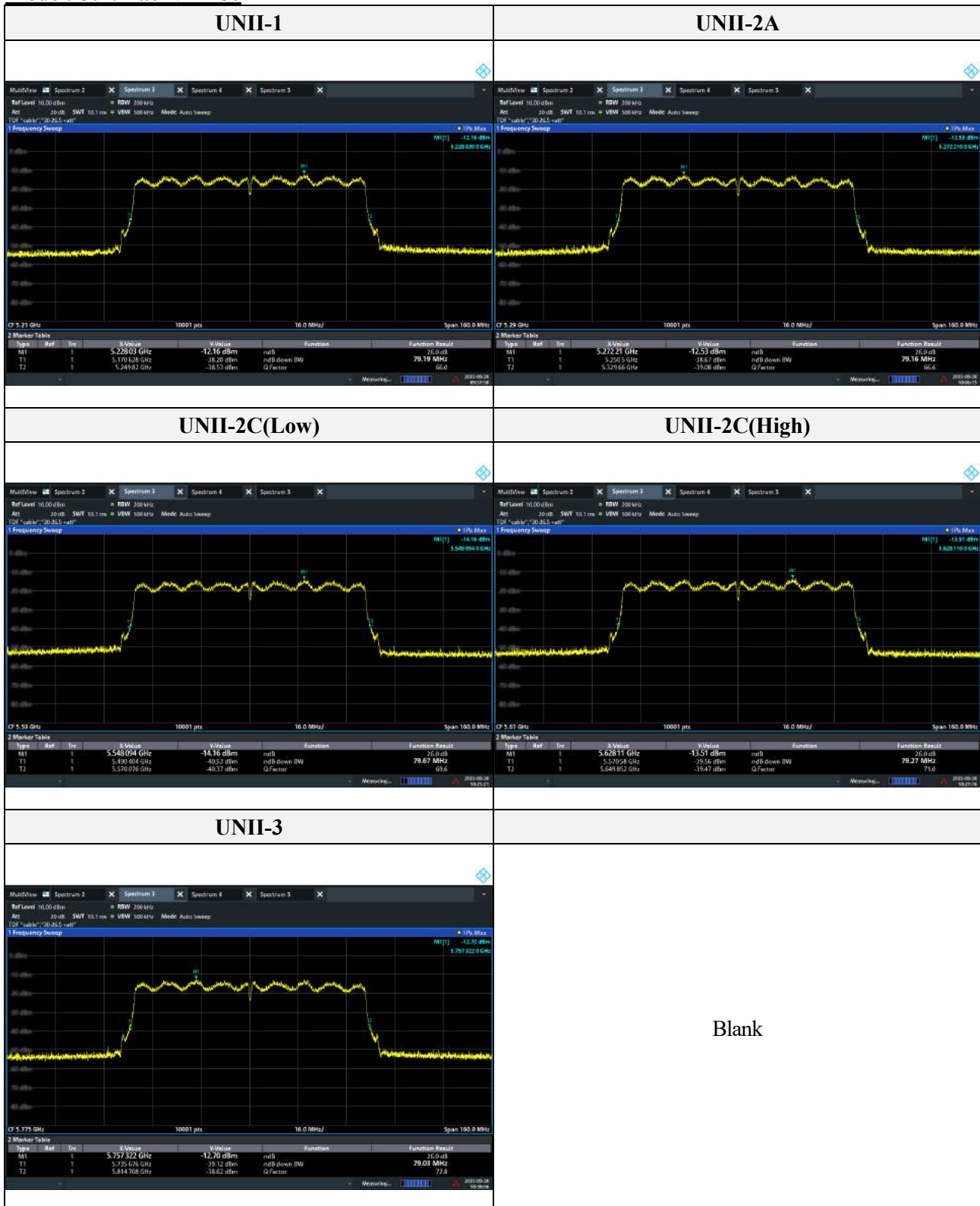
Mode : 802.11ac VHT40





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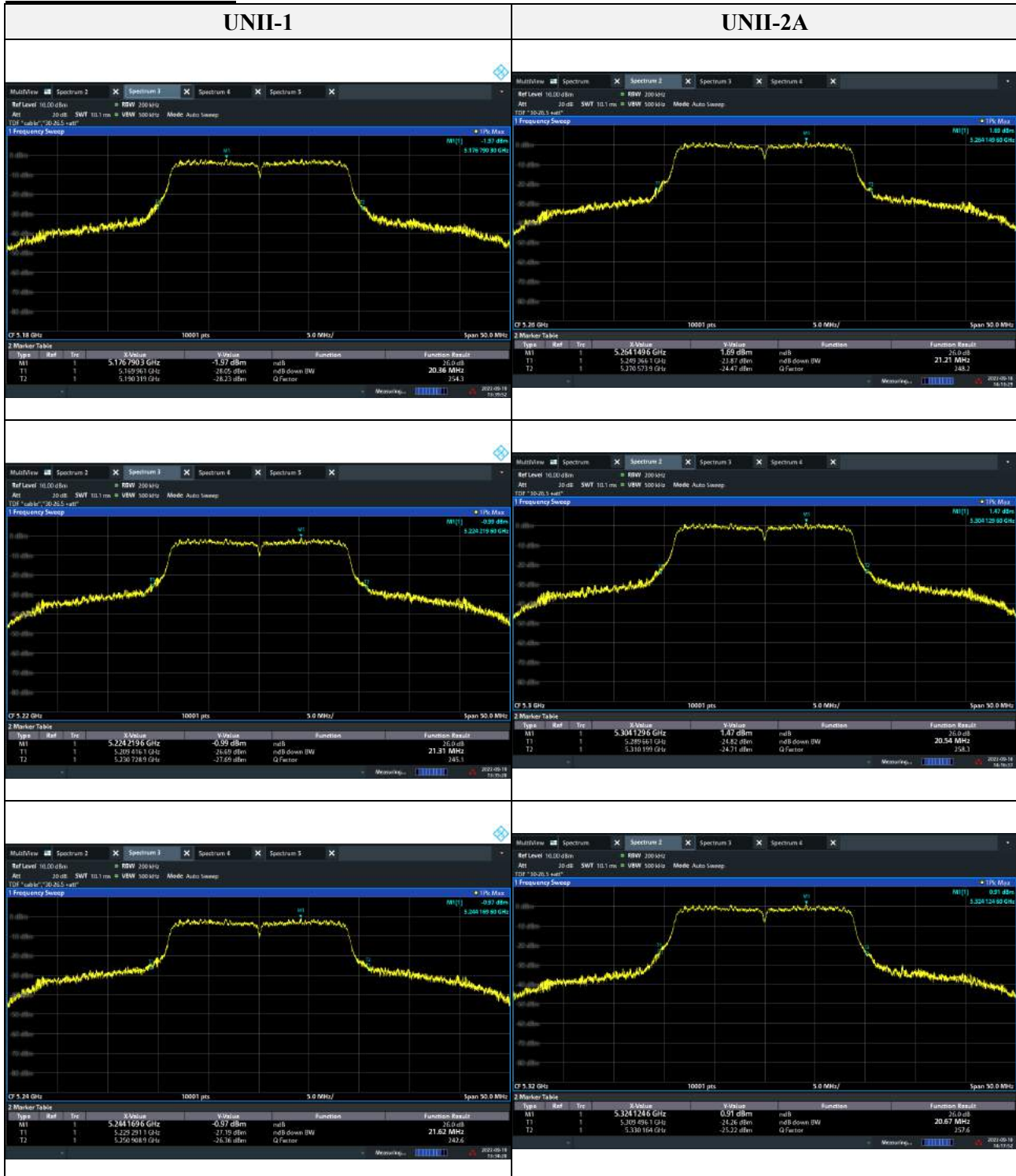
Mode : 802.11ac VHT80



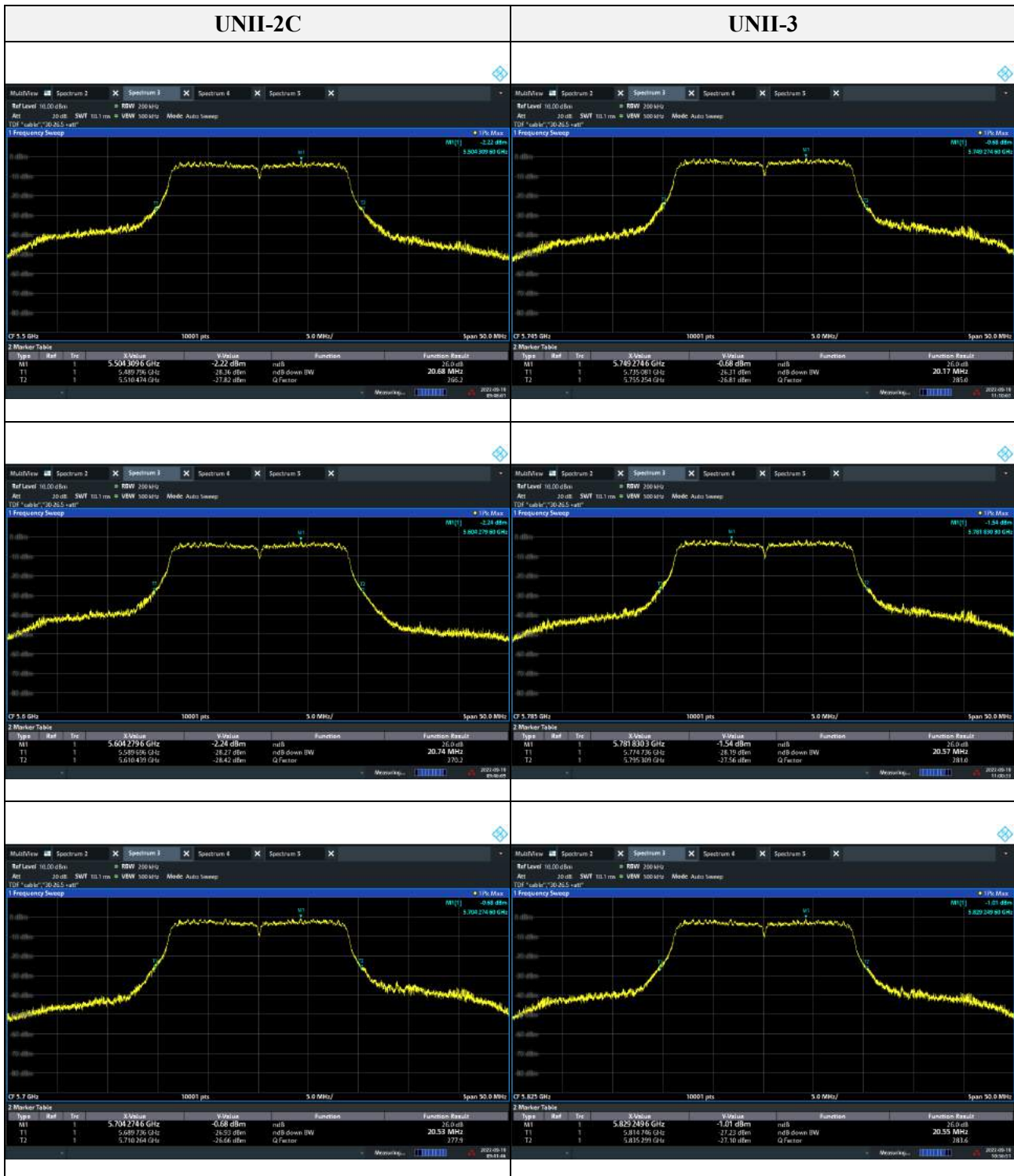
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MIMO ANT1

Mode : 802.11an HT20

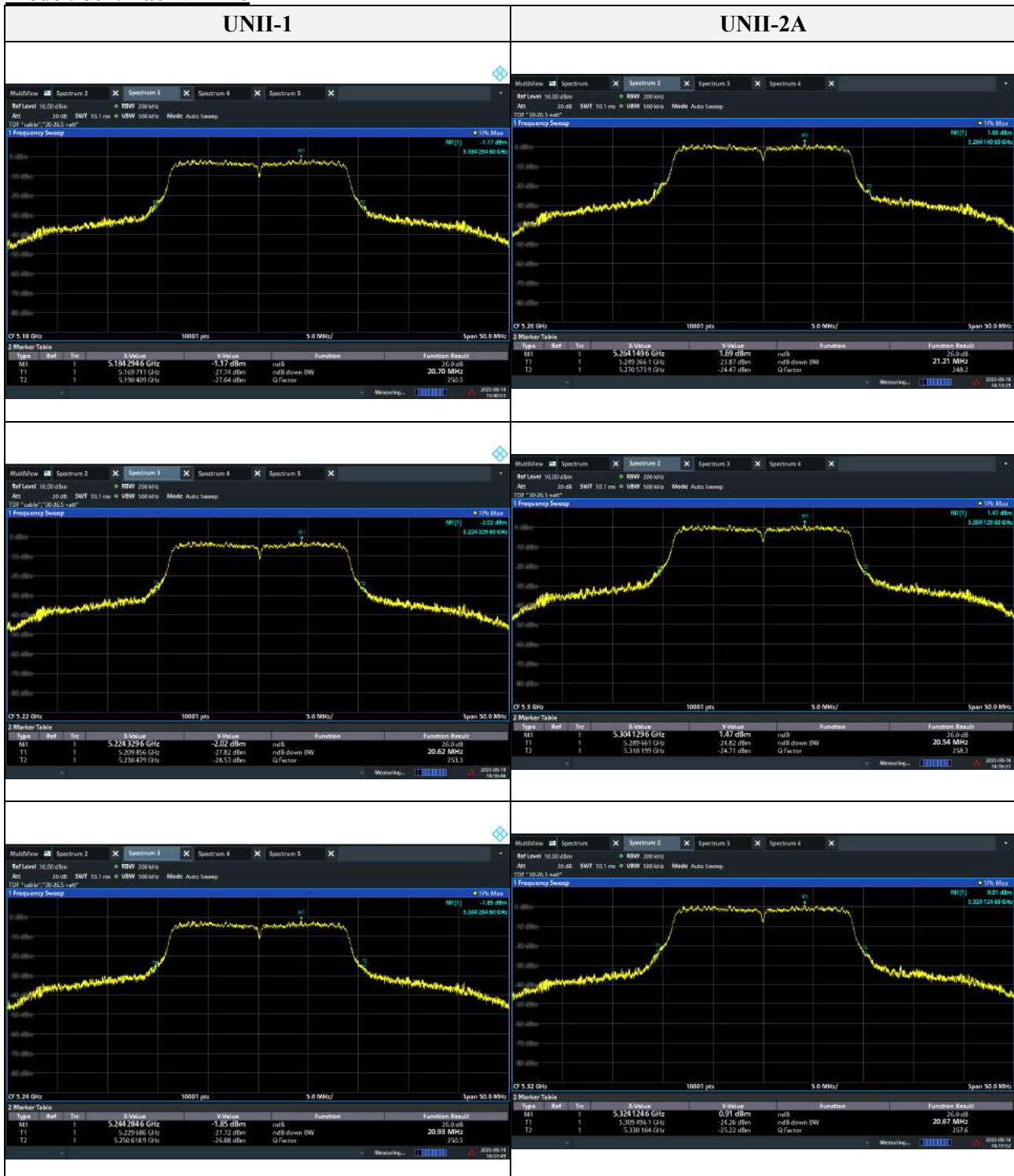


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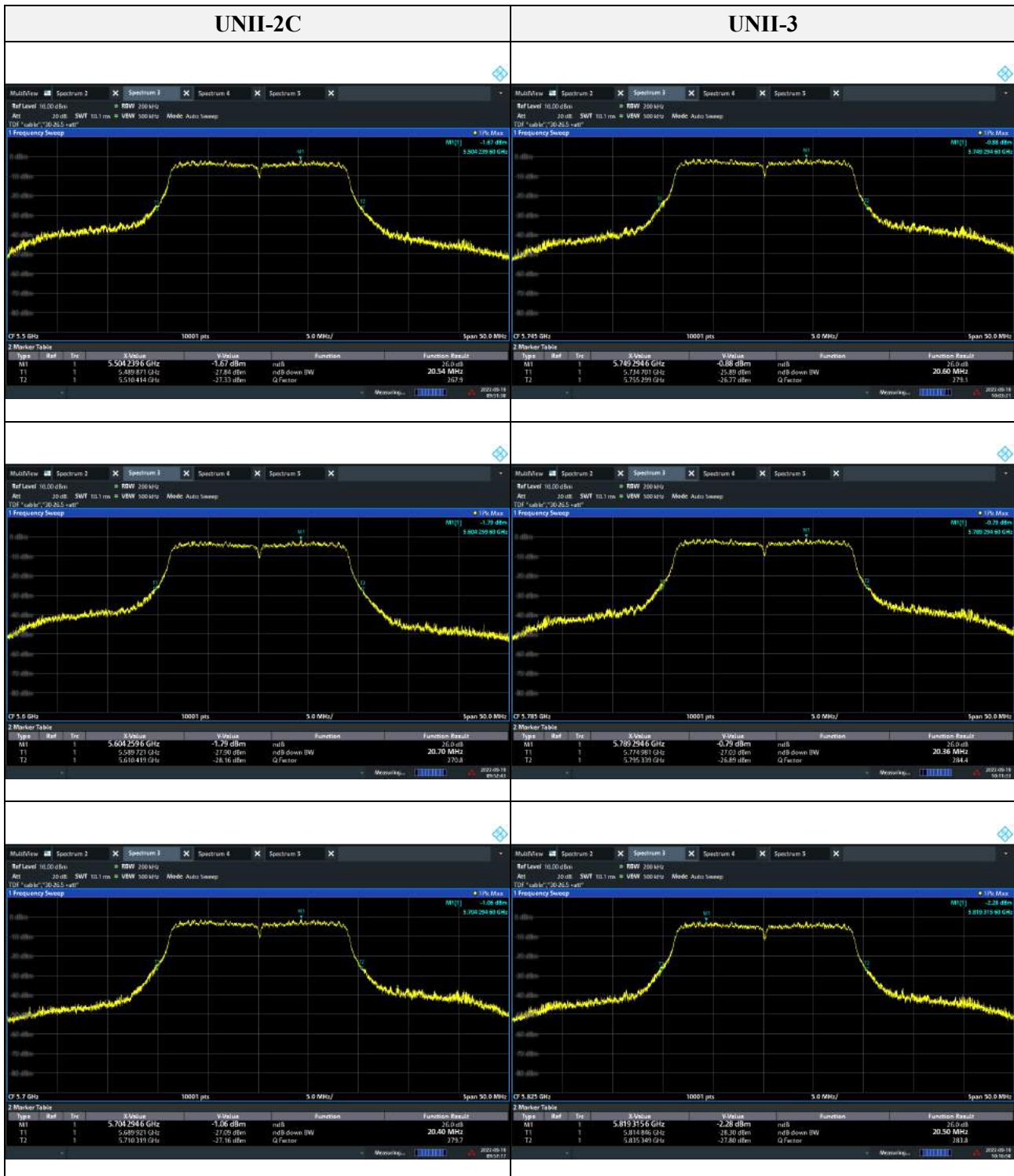


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Mode : 802.11ac VHT20

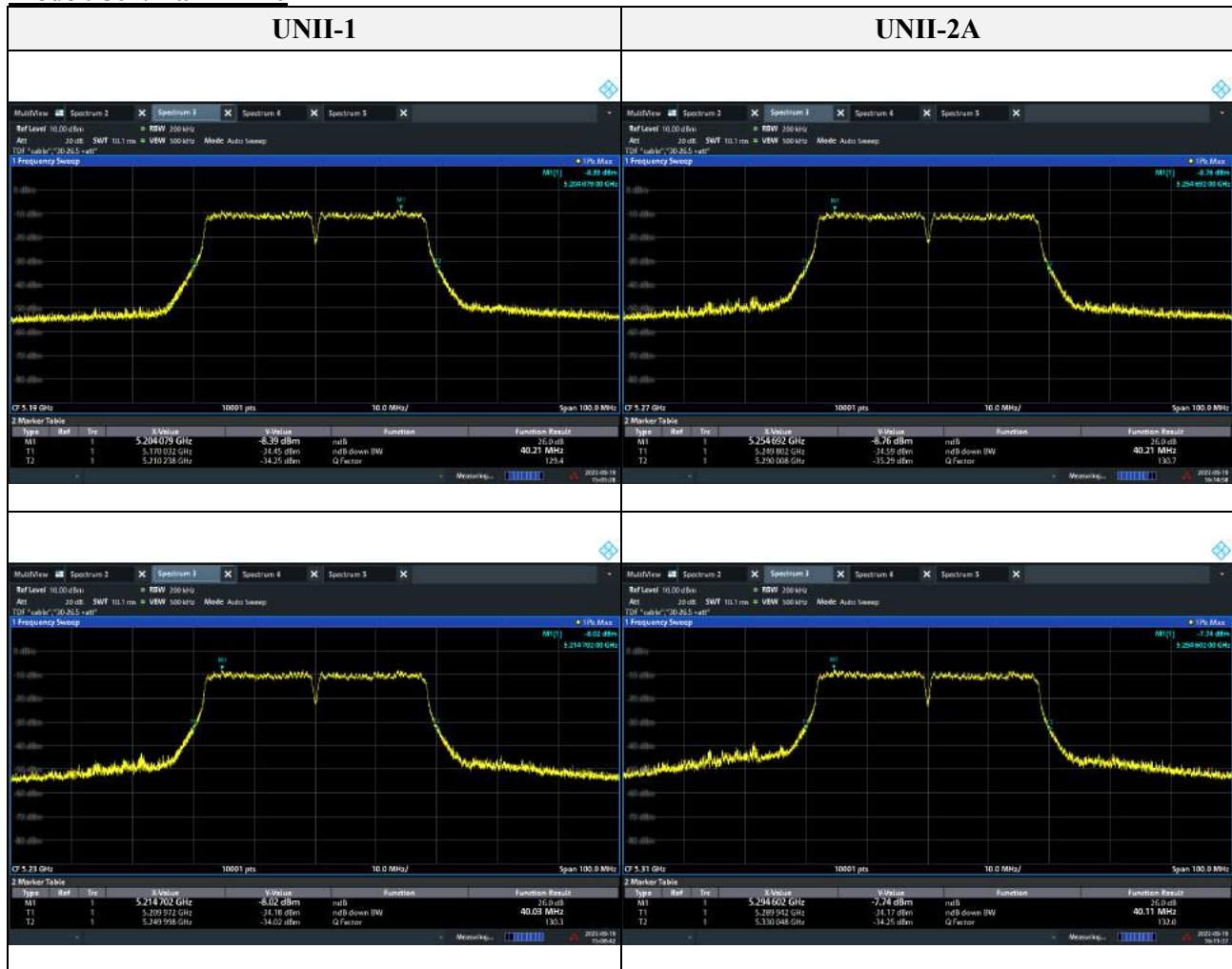


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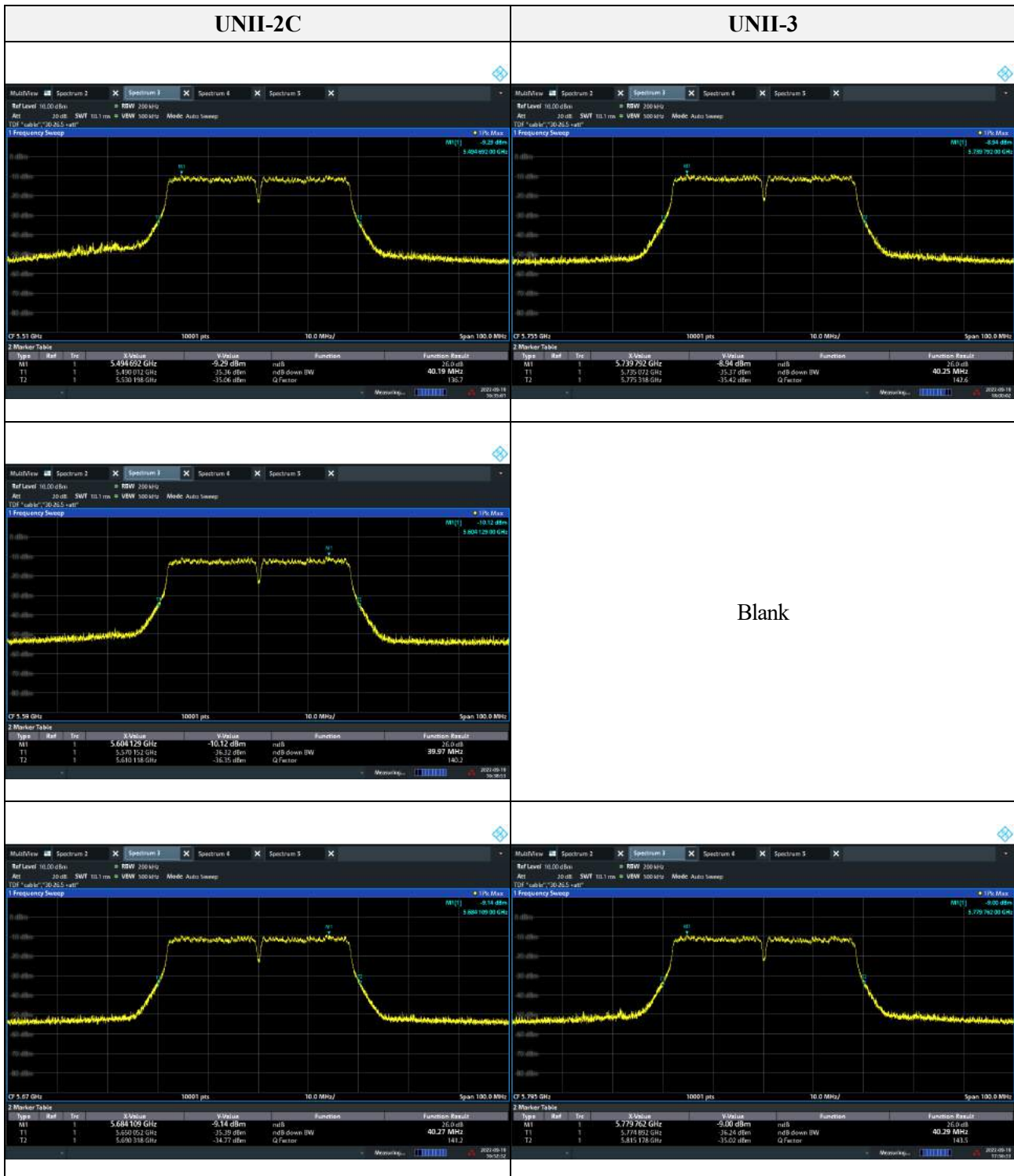


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Mode : 802.11an HT40

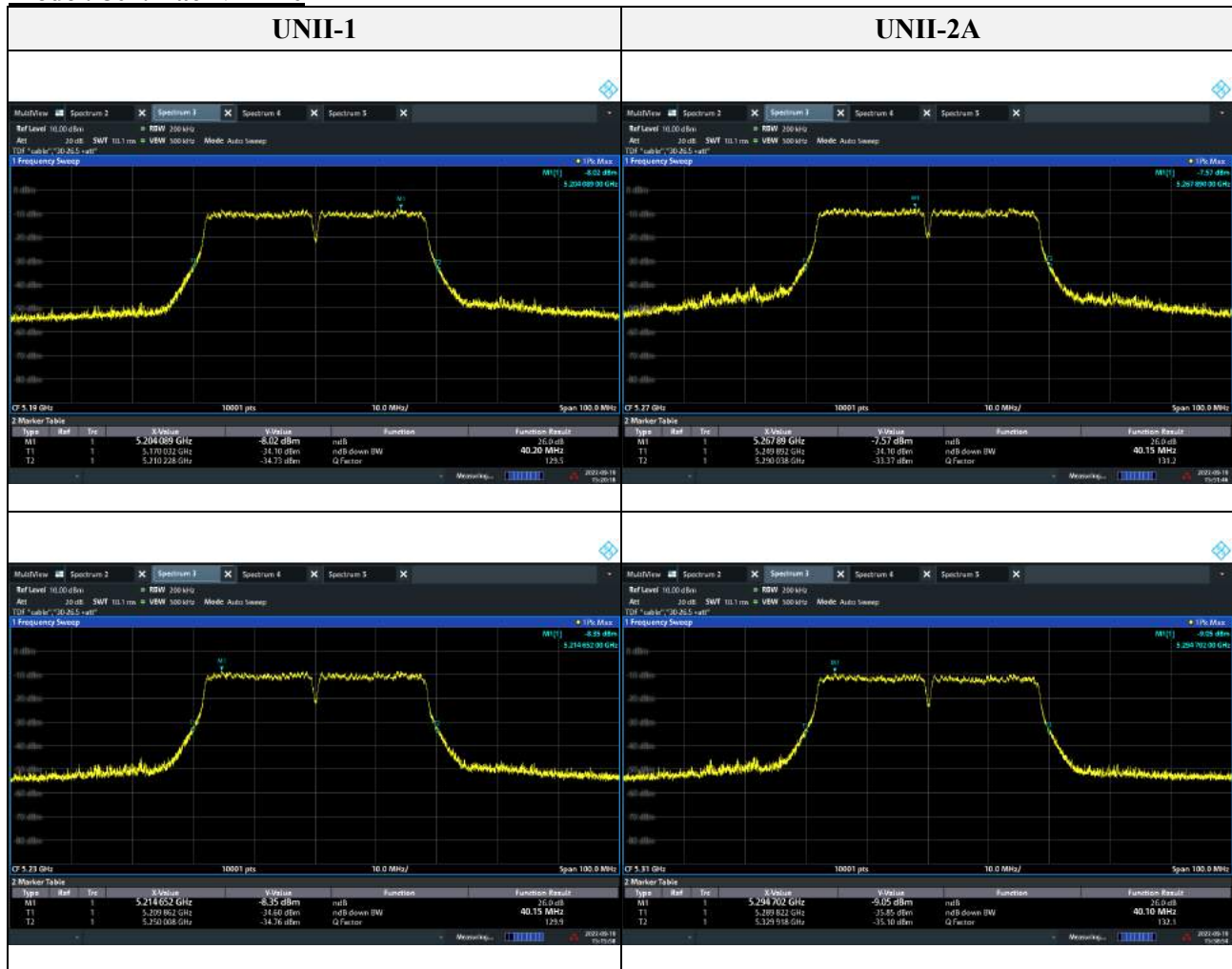


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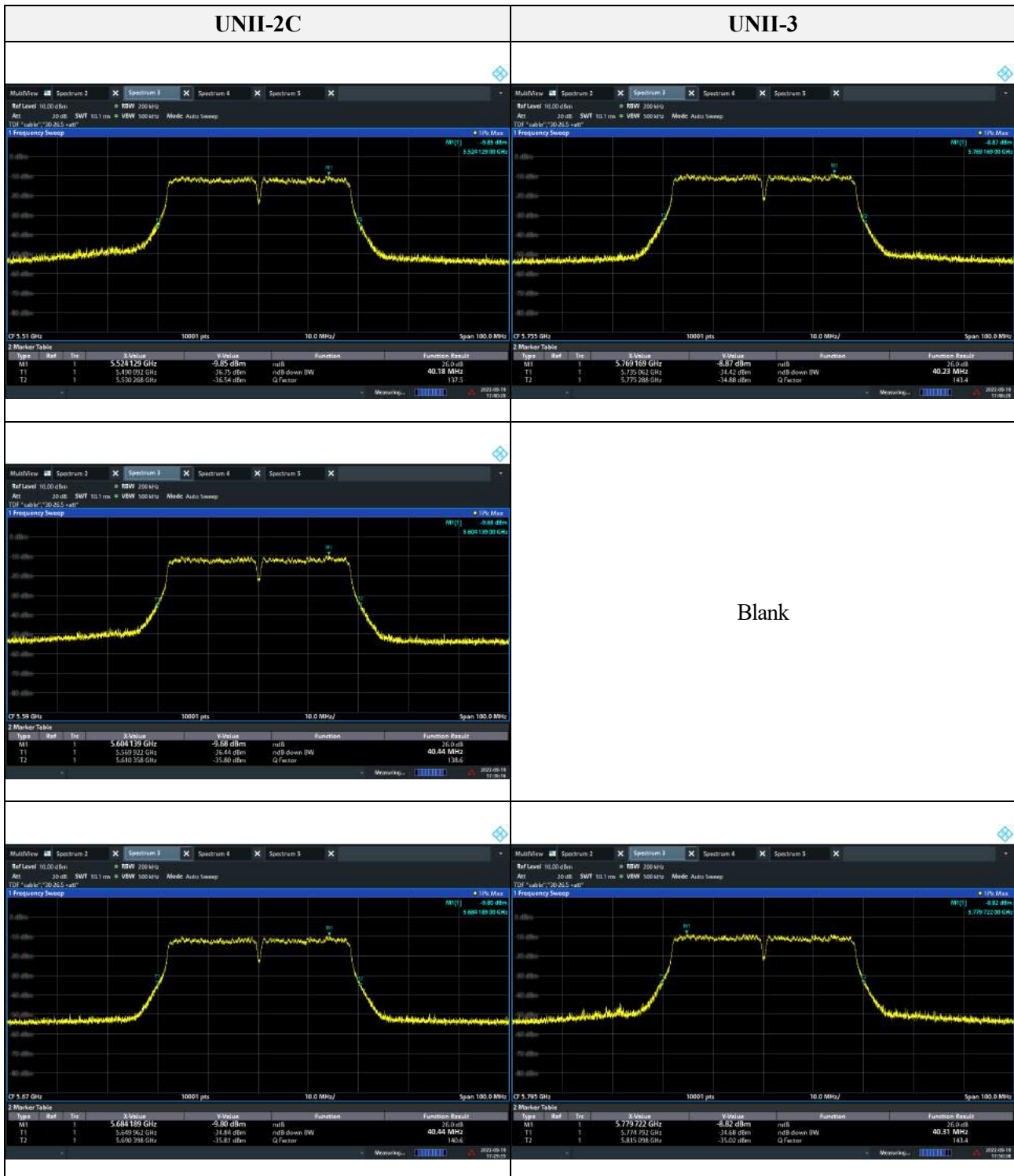


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Mode : 802.11ac VHT40

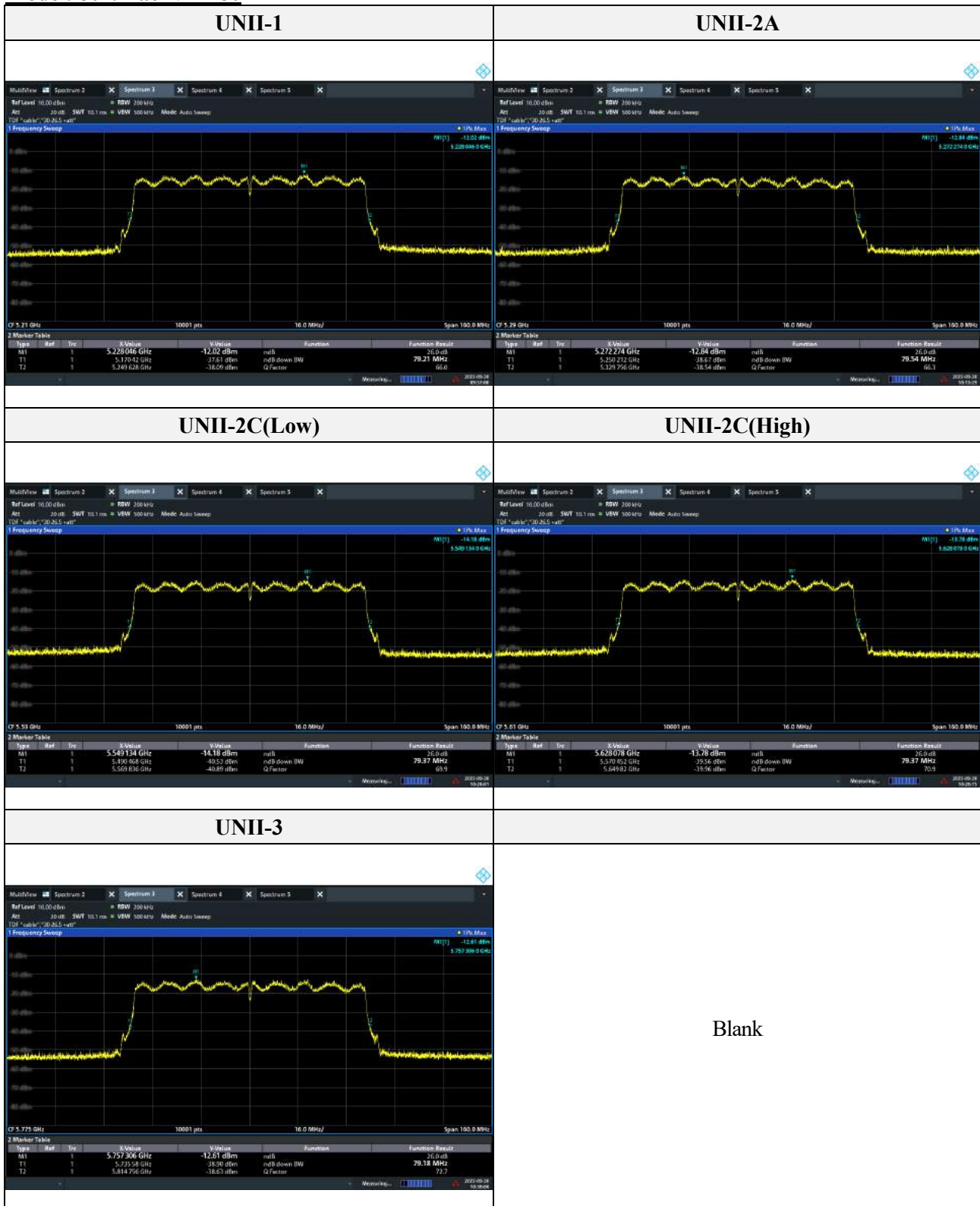


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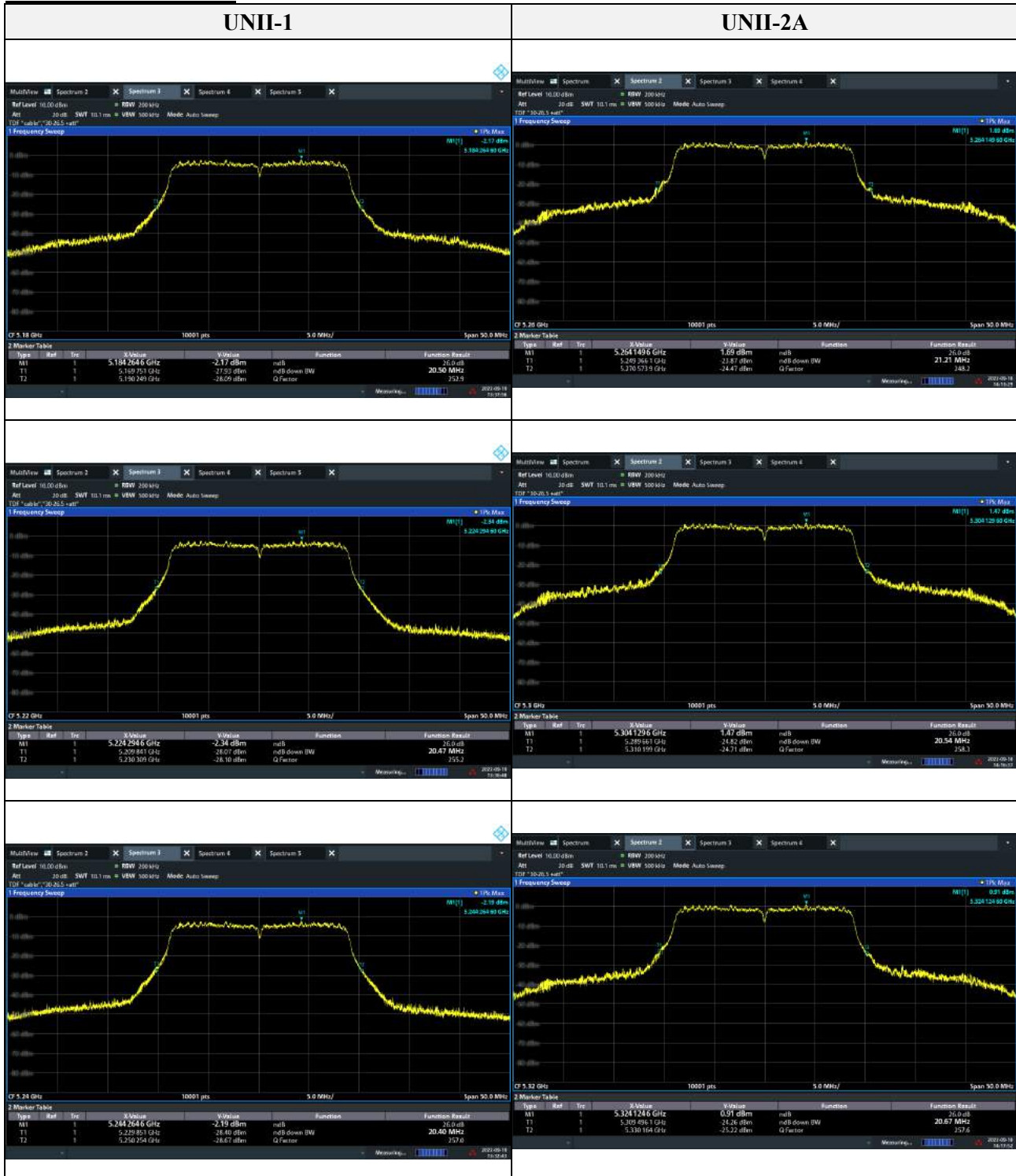
Mode : 802.11ac VHT80



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MIMO ANT2

Mode : 802.11an HT20

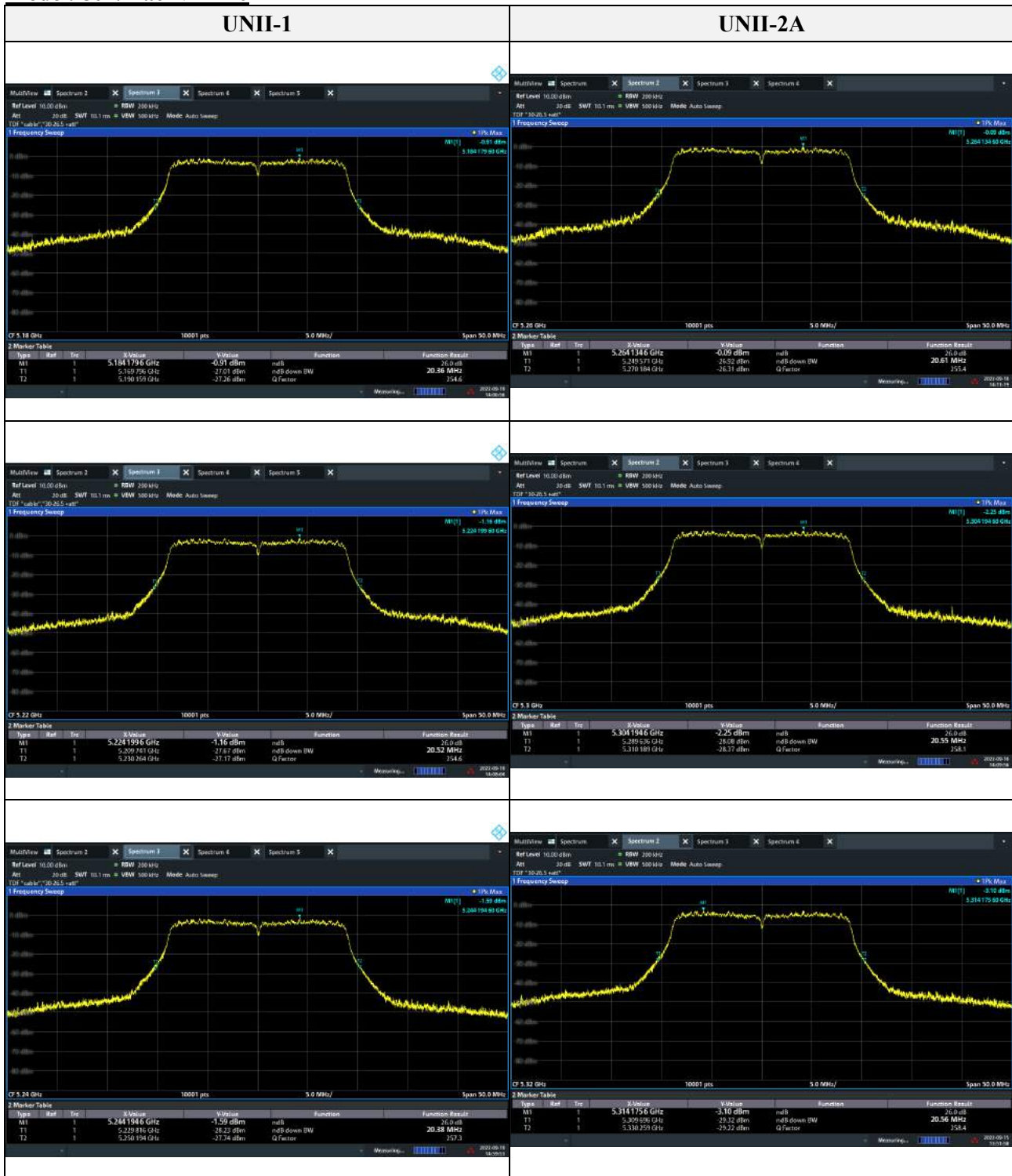


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Mode : 802.11ac VHT20

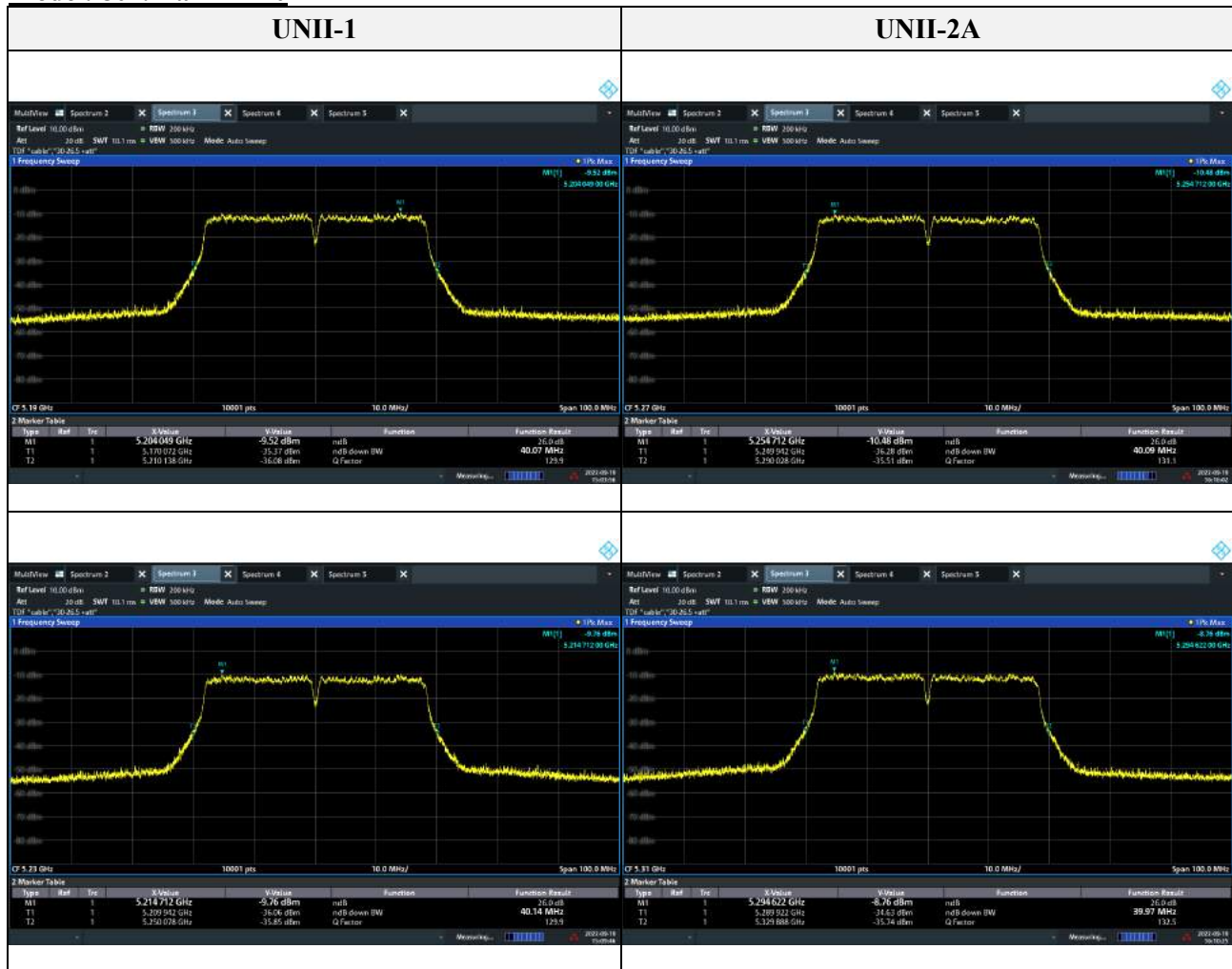


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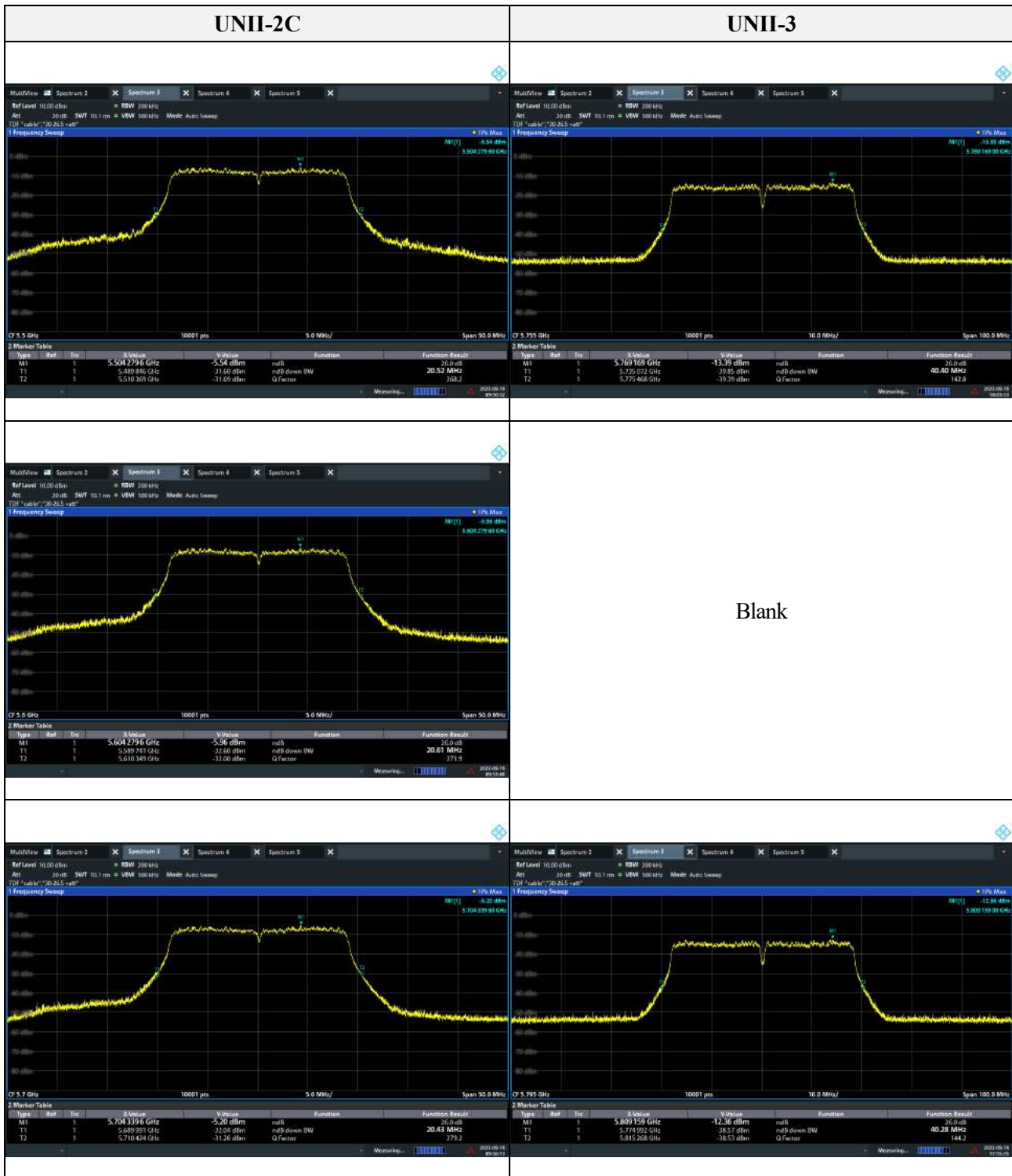


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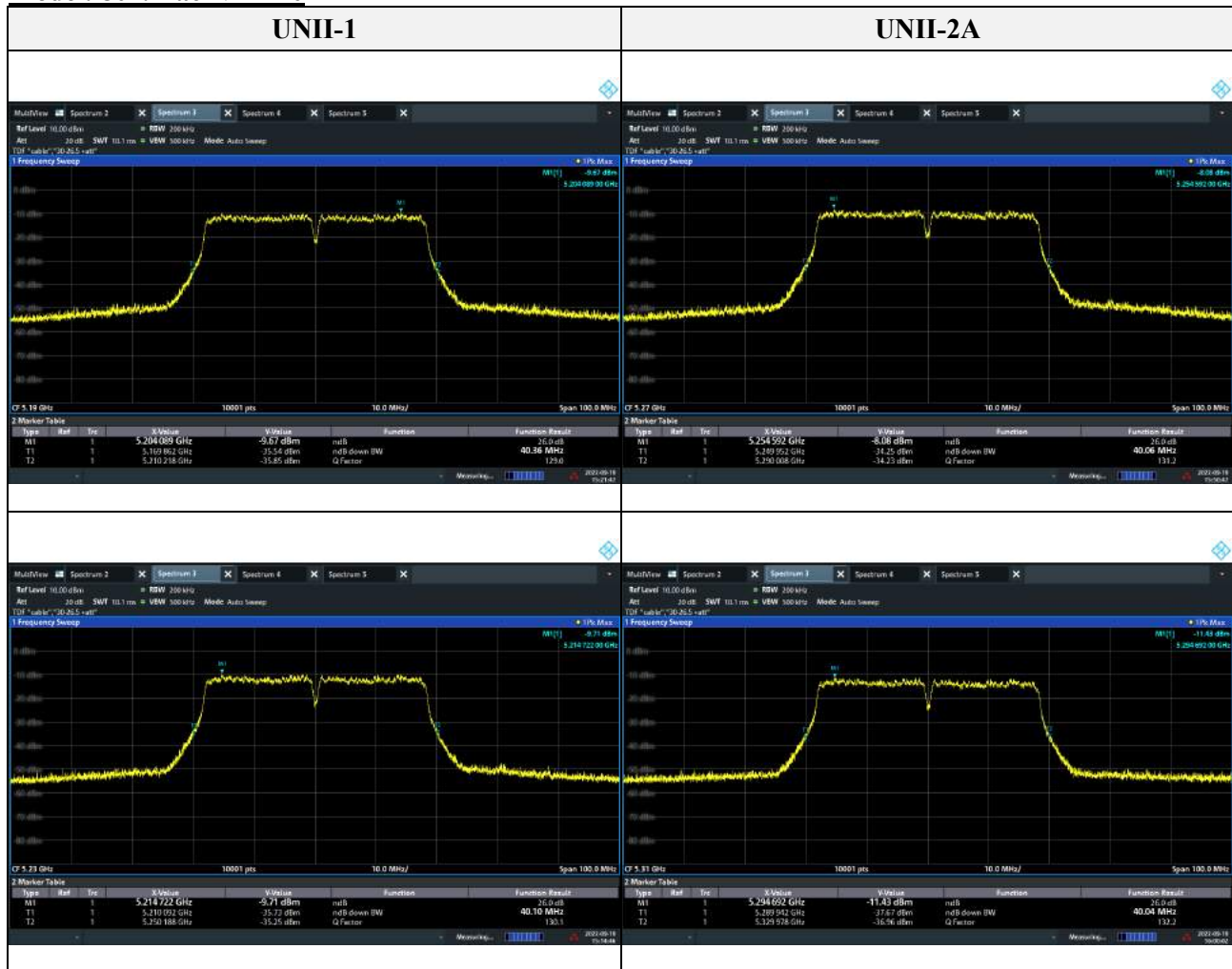
Mode : 802.11an HT40



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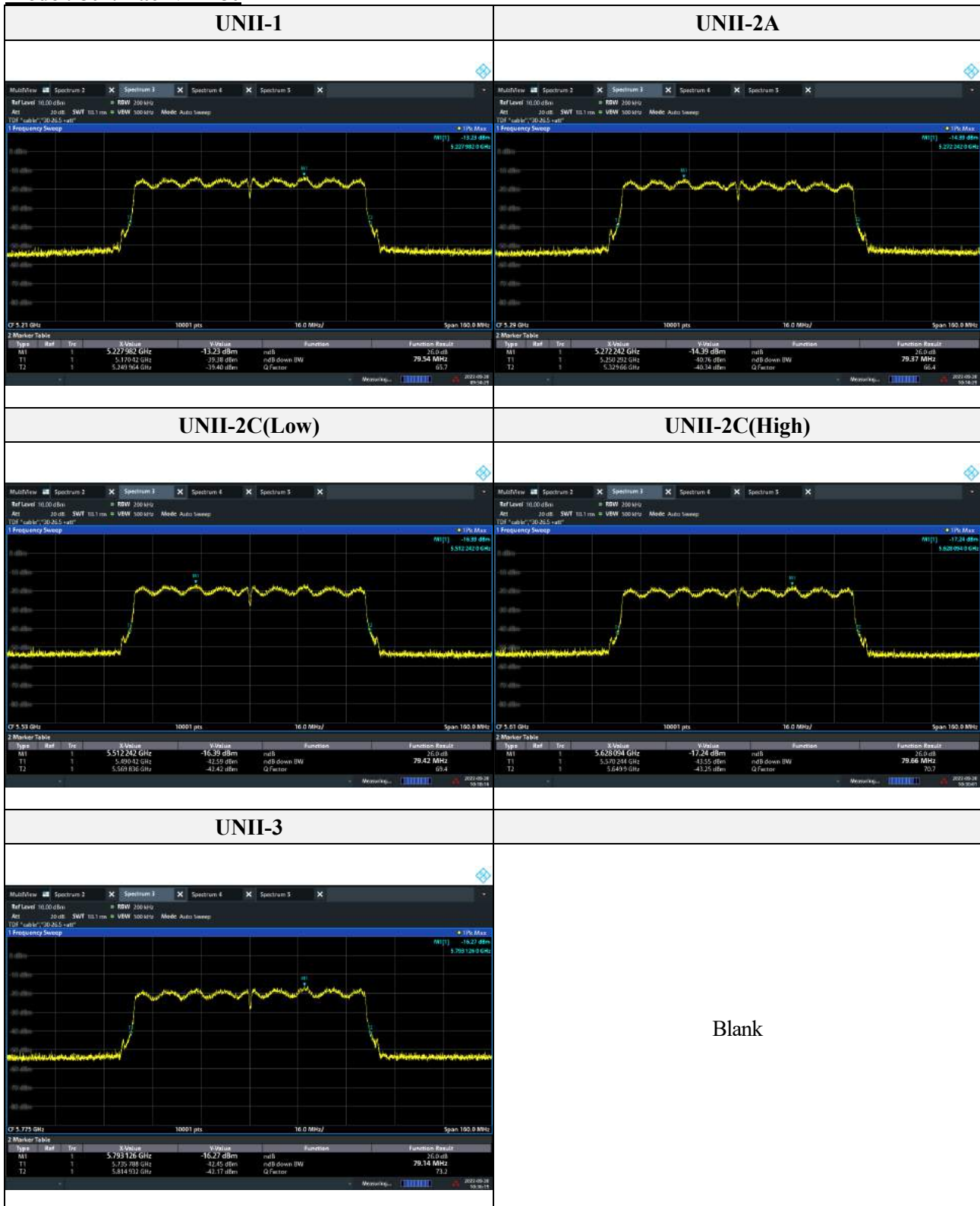
Mode : 802.11ac VHT40



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Mode : 802.11ac VHT80

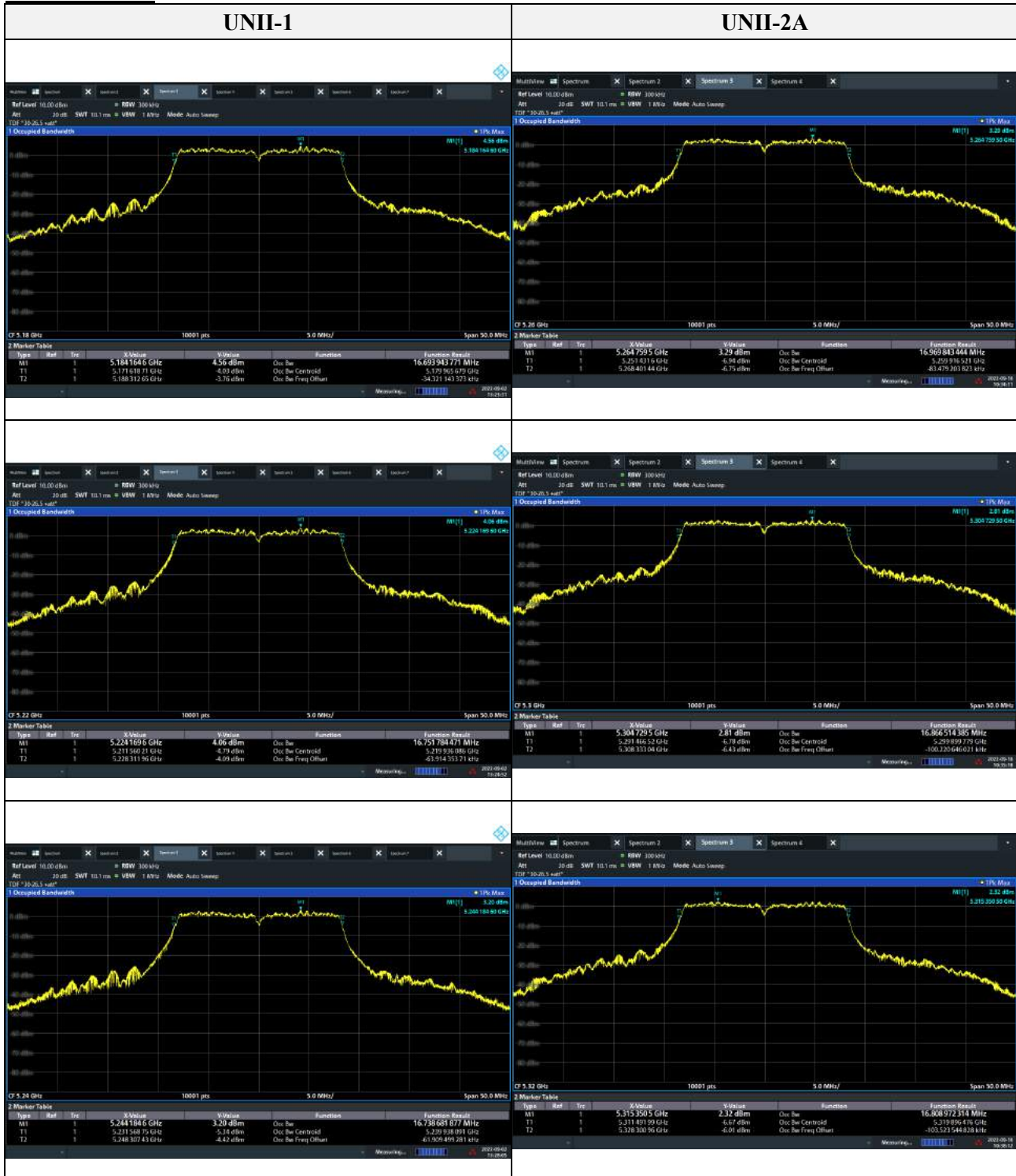


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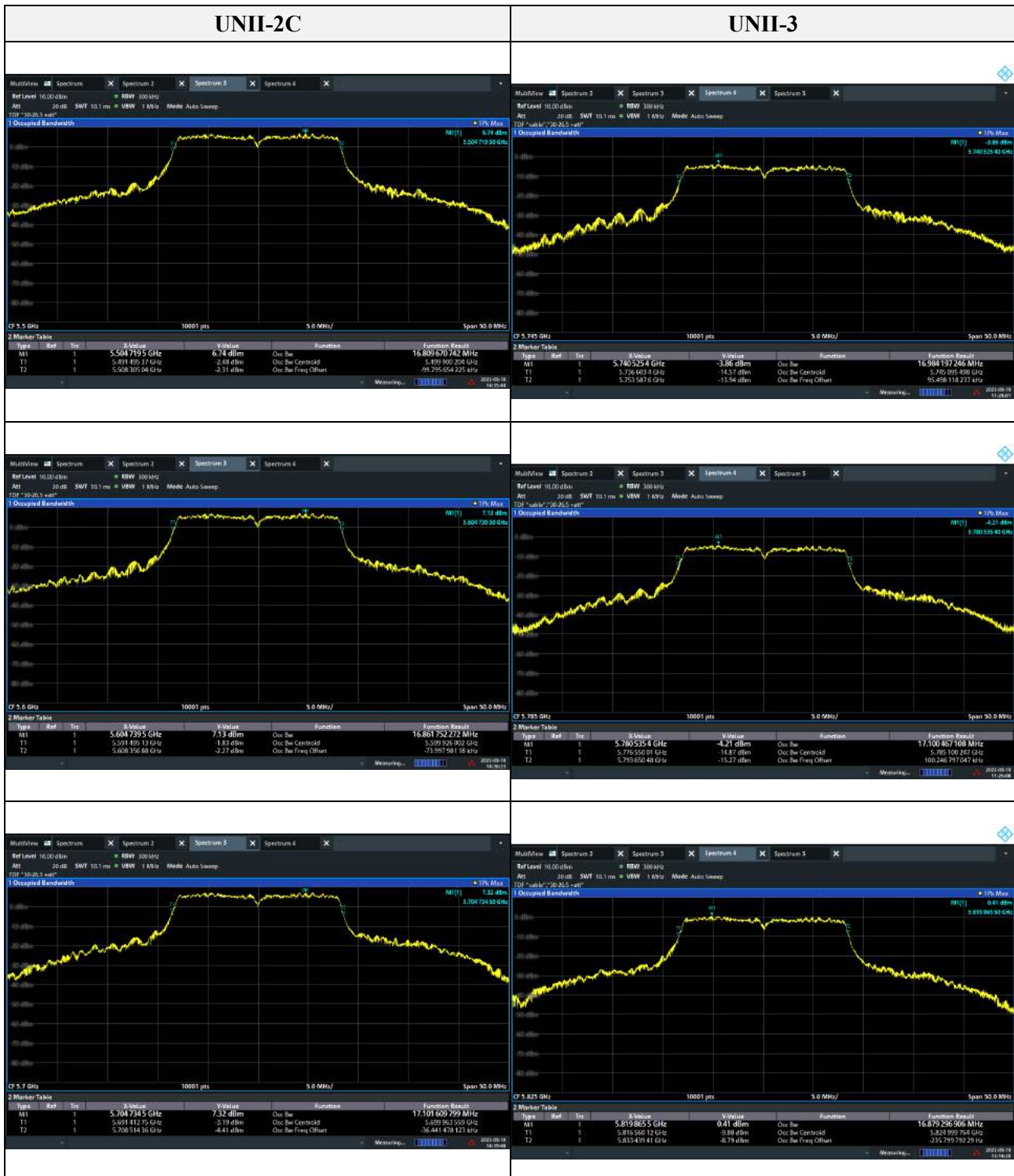
99% bandwidth

ANT1

Mode : 802.11a

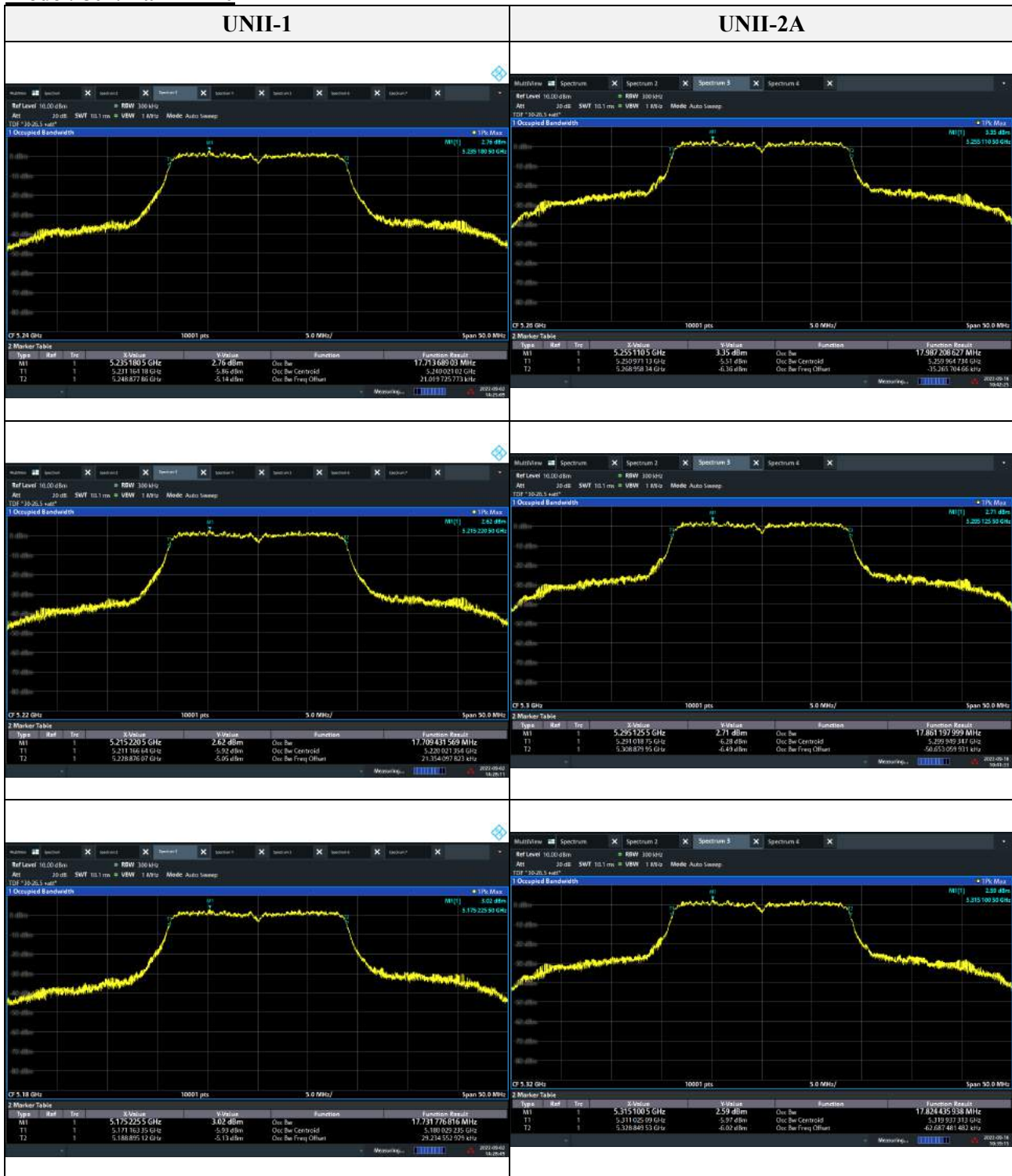


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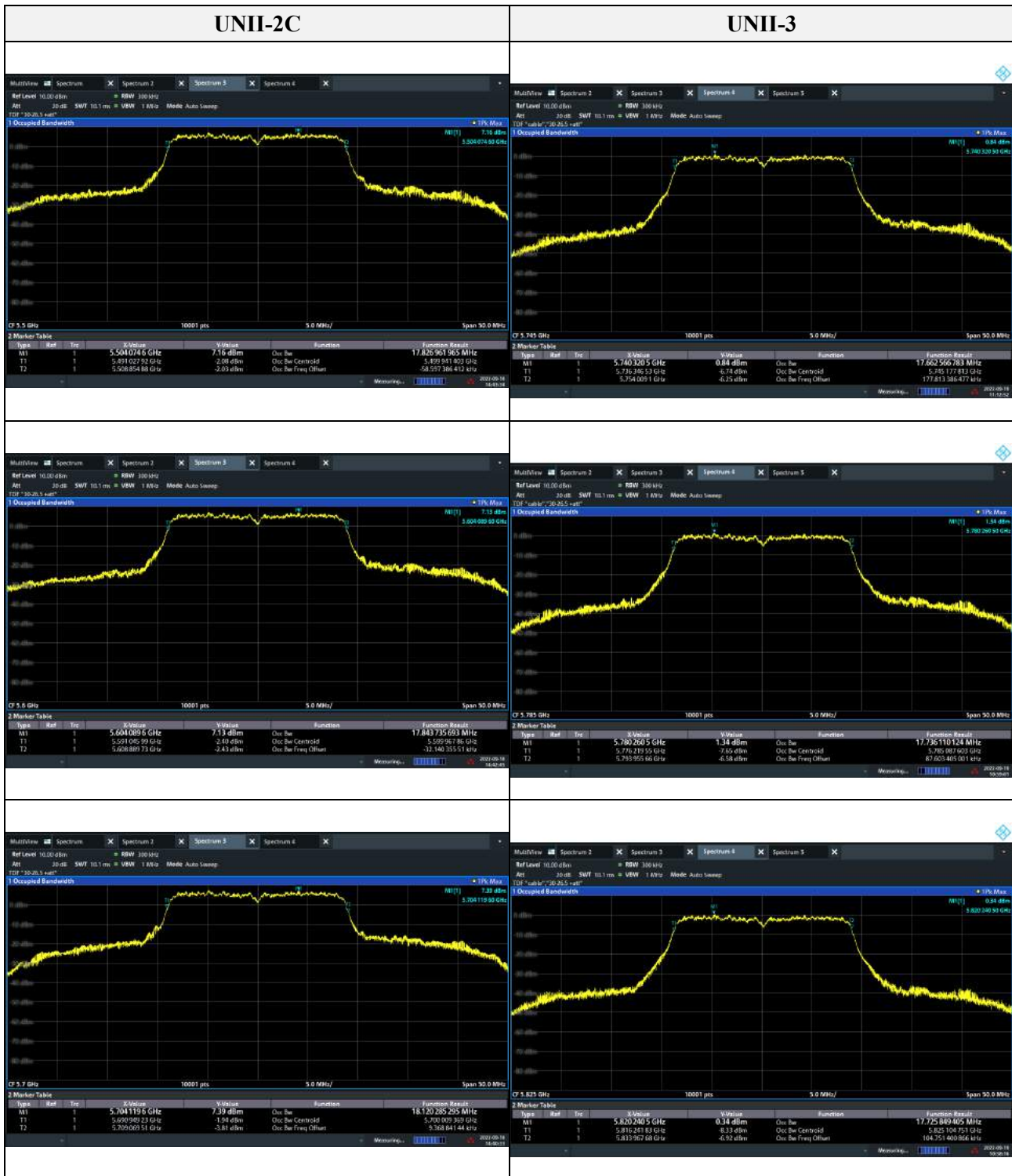


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Mode : 802.11an HT20

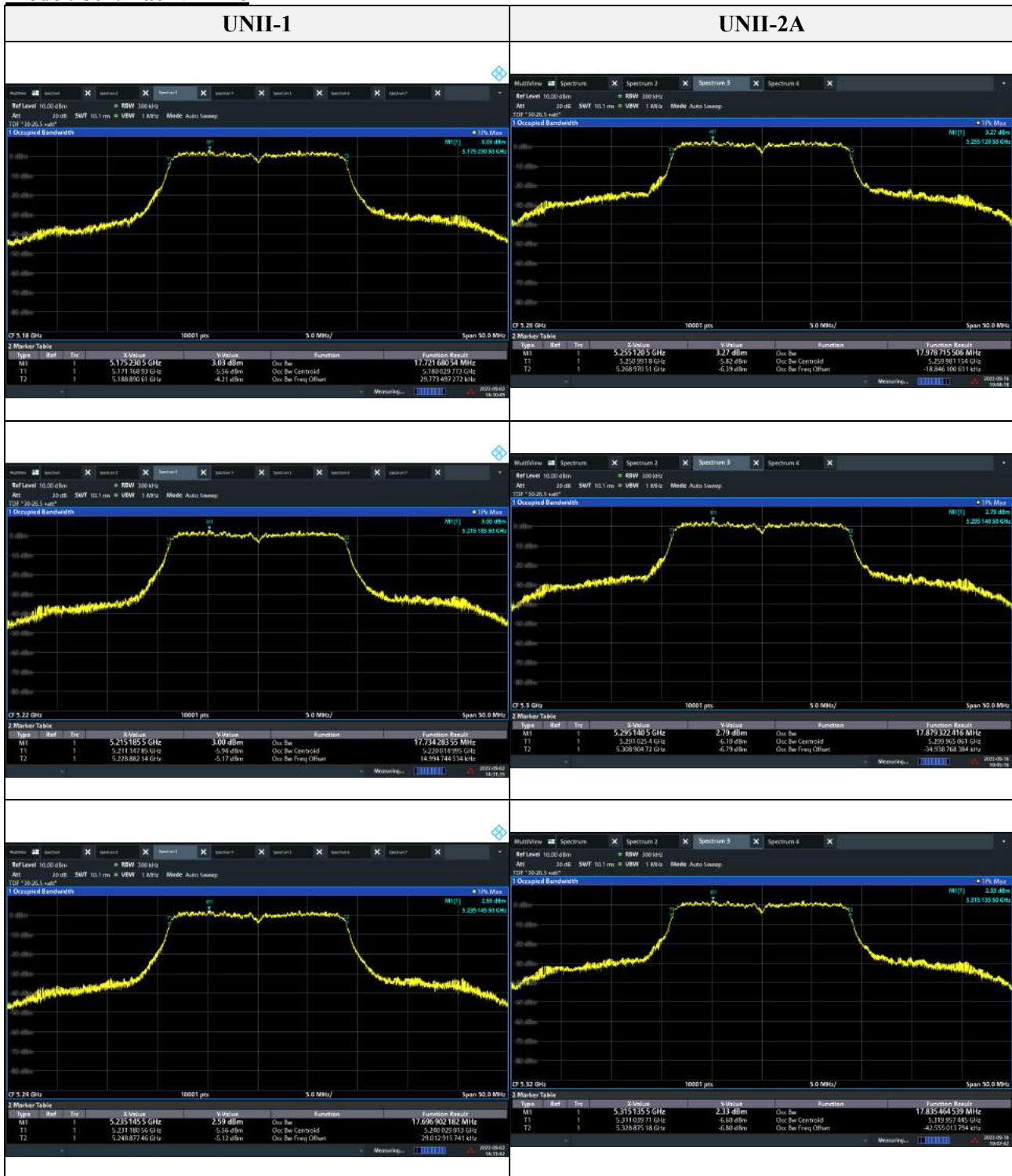


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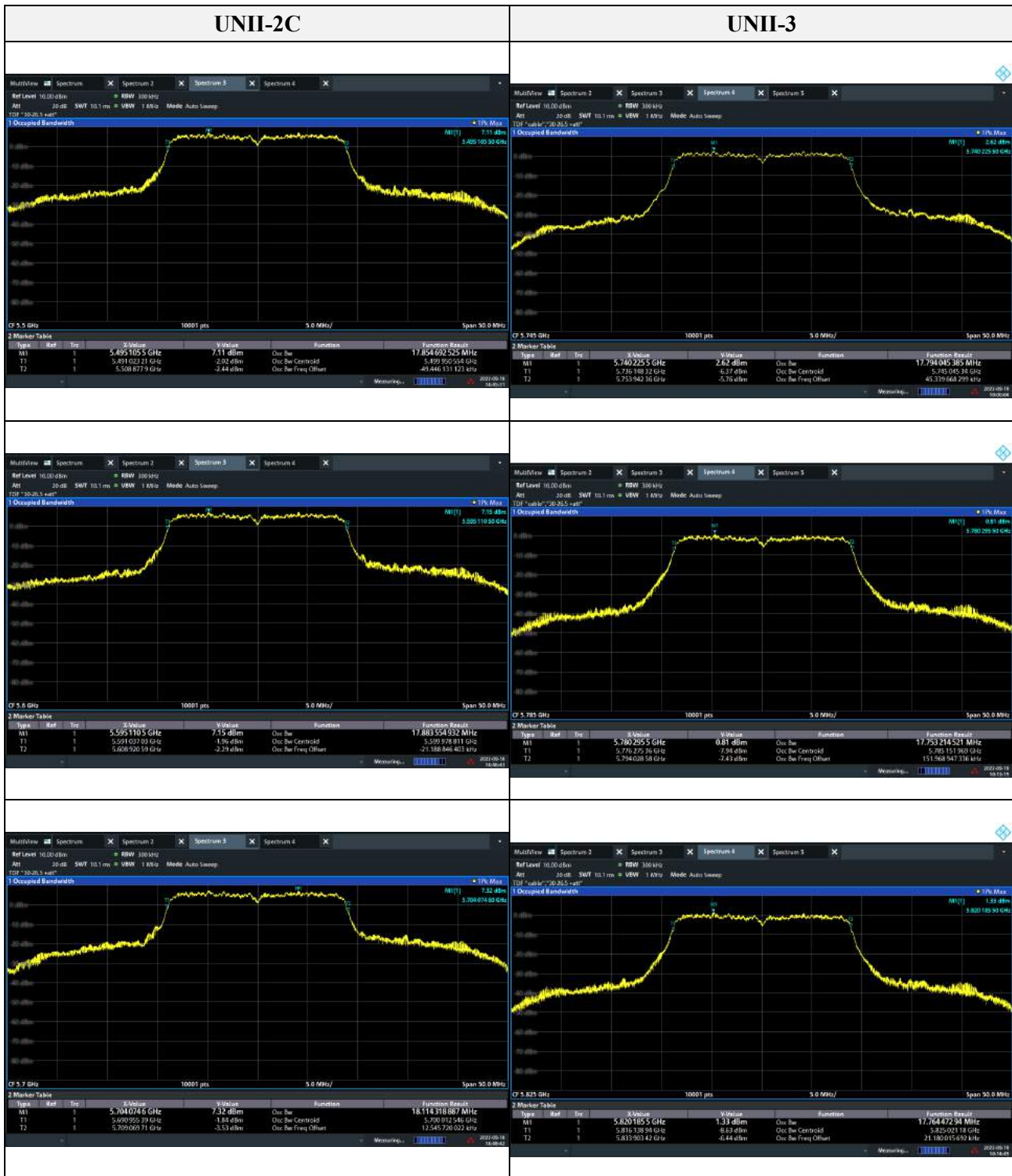


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Mode : 802.11ac VHT20

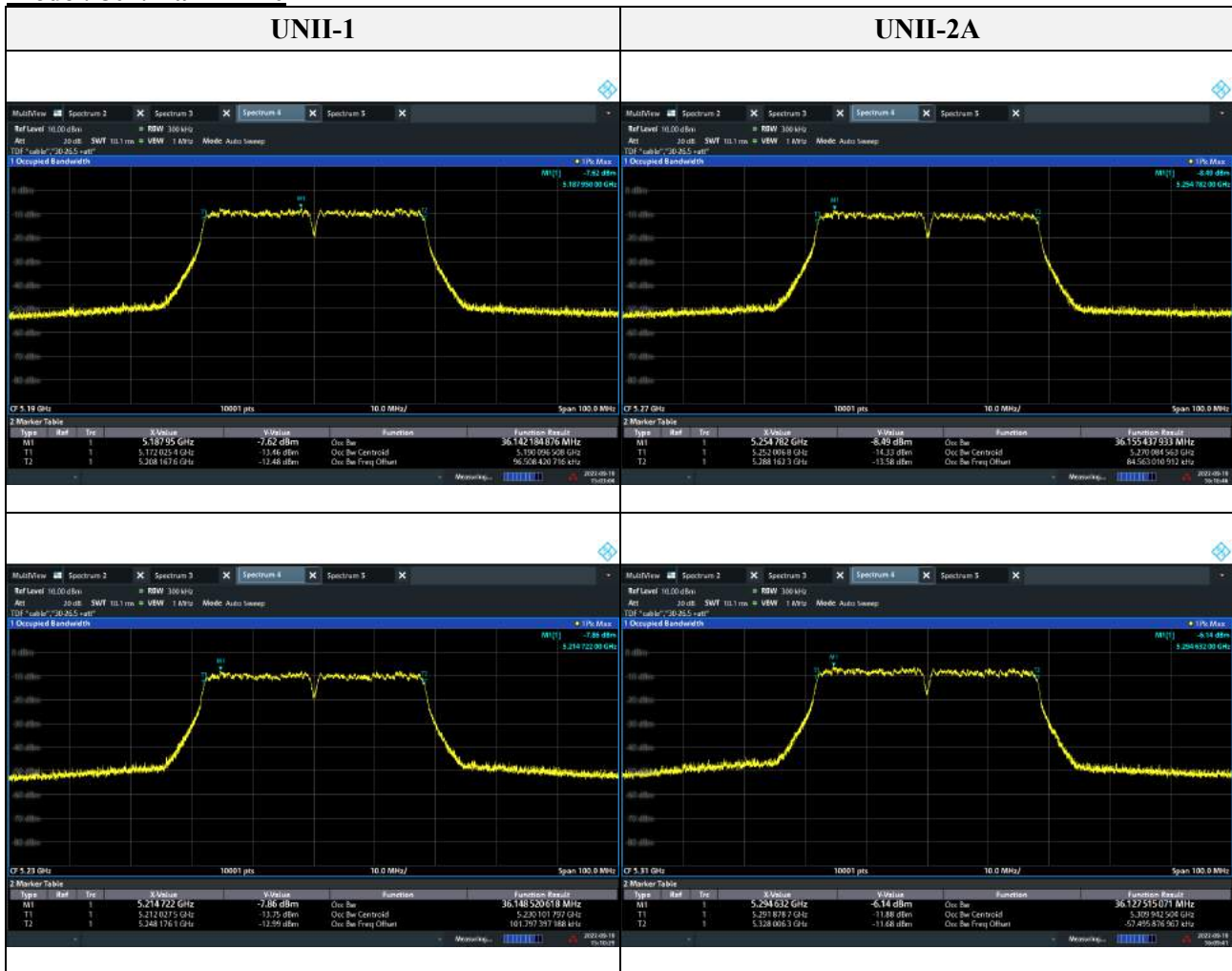


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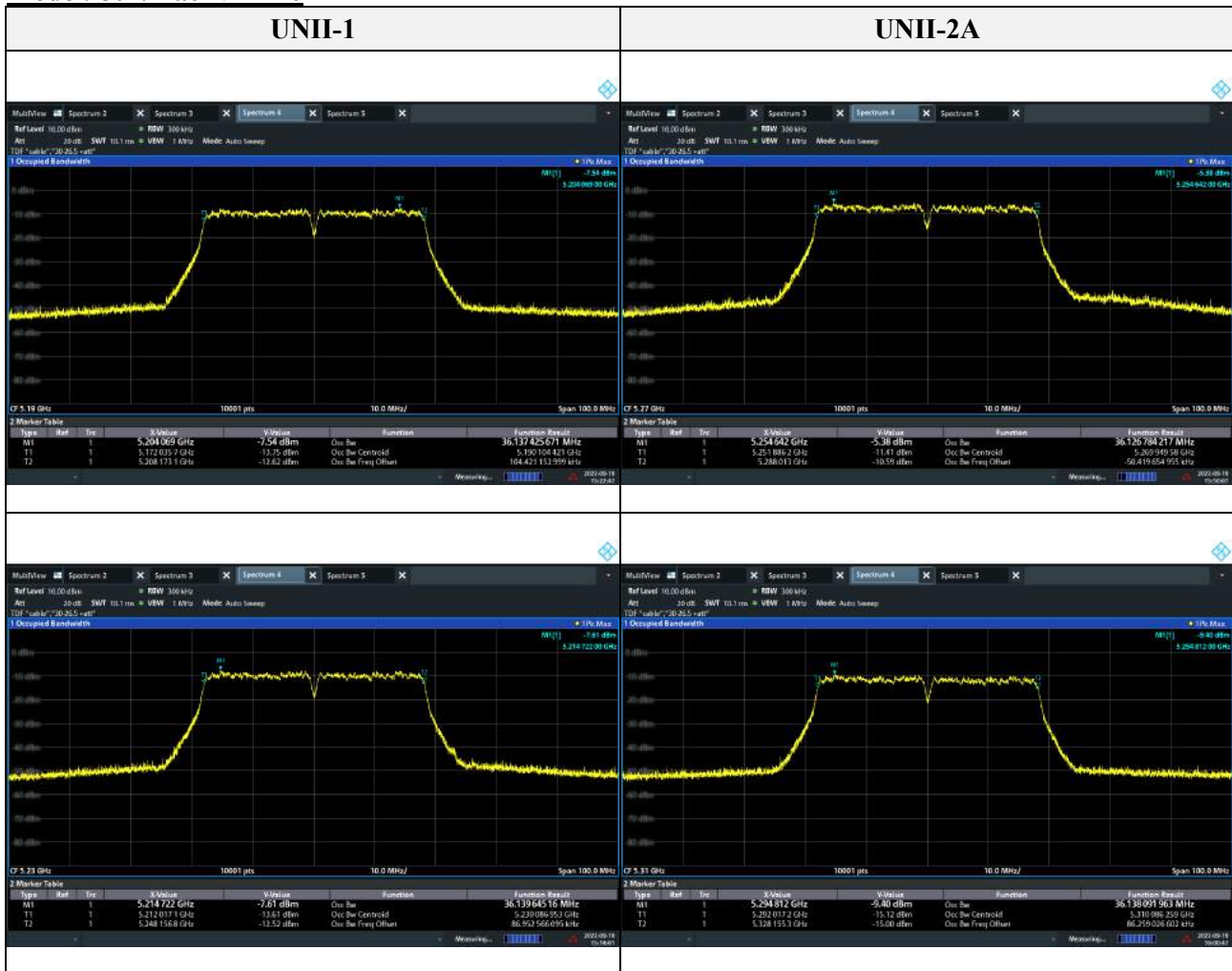
Mode : 802.11an HT40



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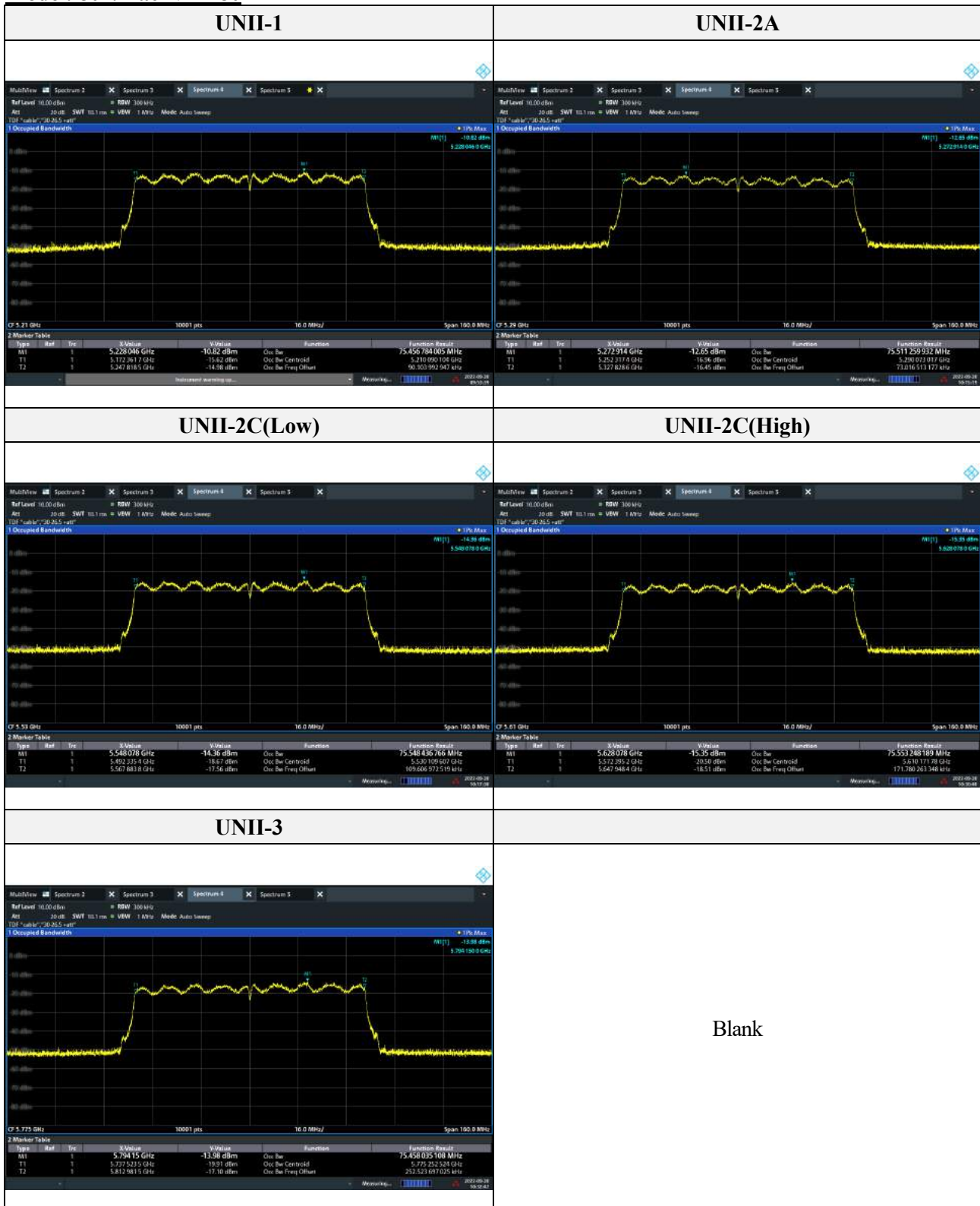
Mode : 802.11ac VHT40



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Mode : 802.11ac VHT80

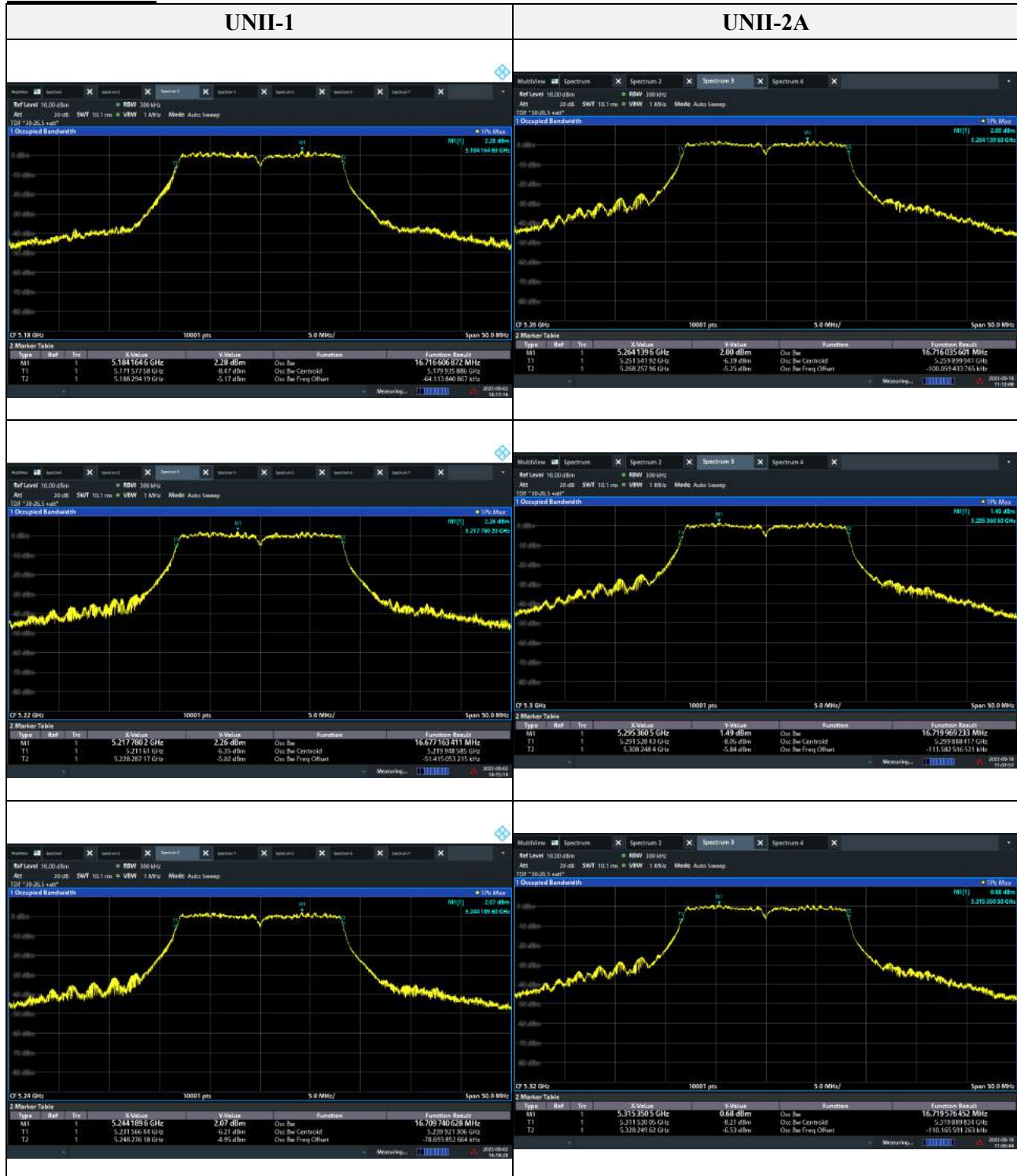


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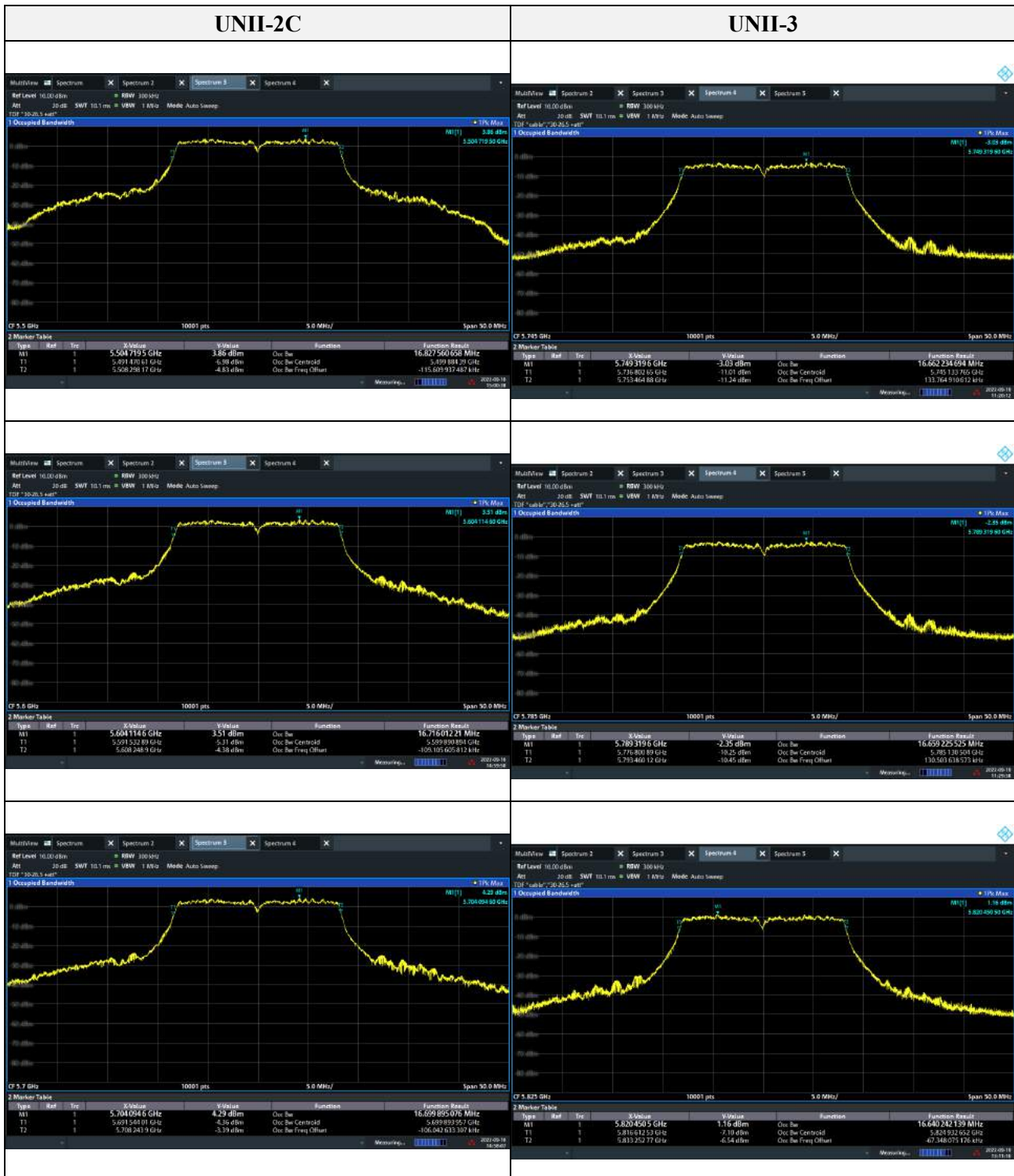
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ANT2

Mode : 802.11a

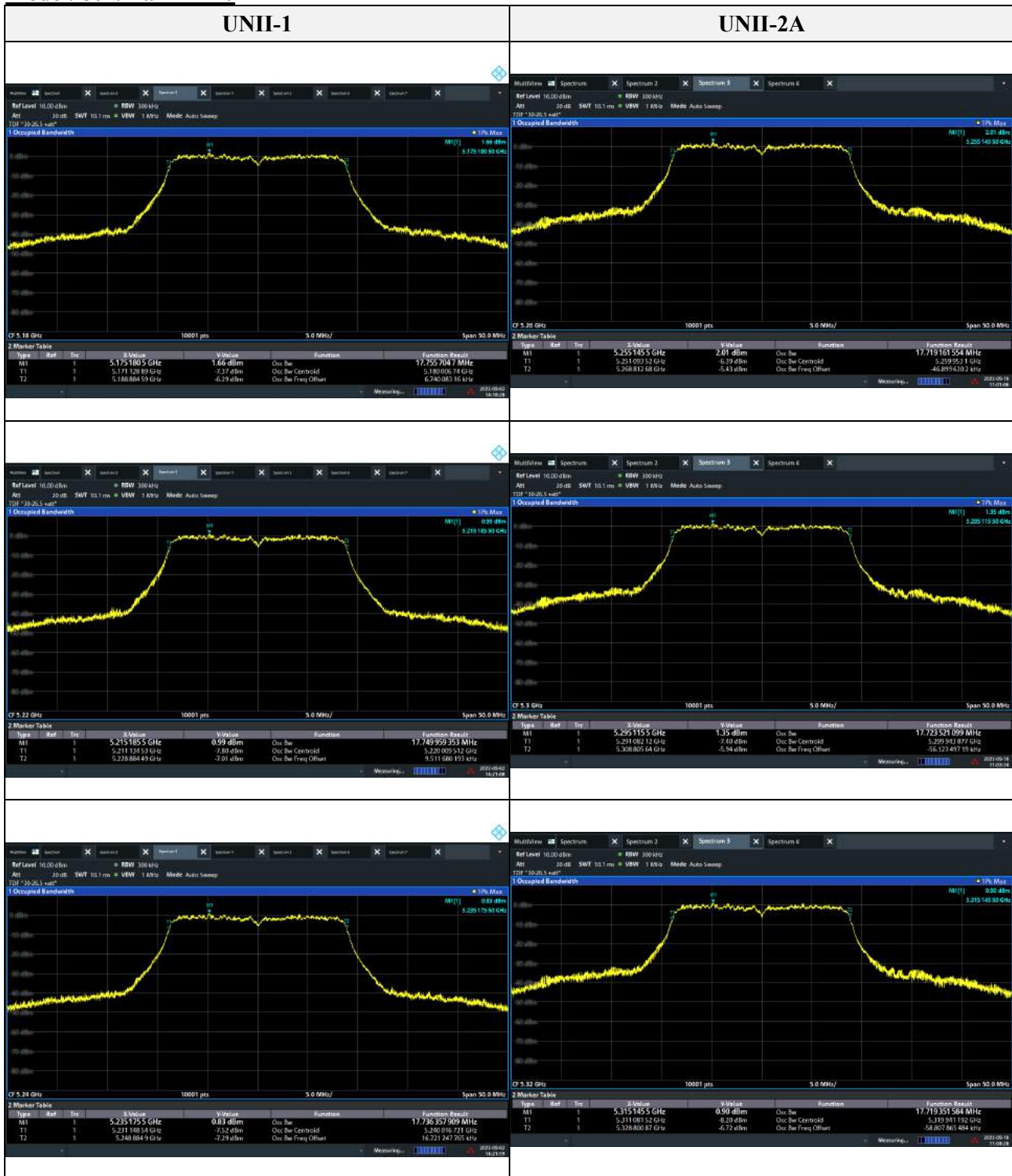


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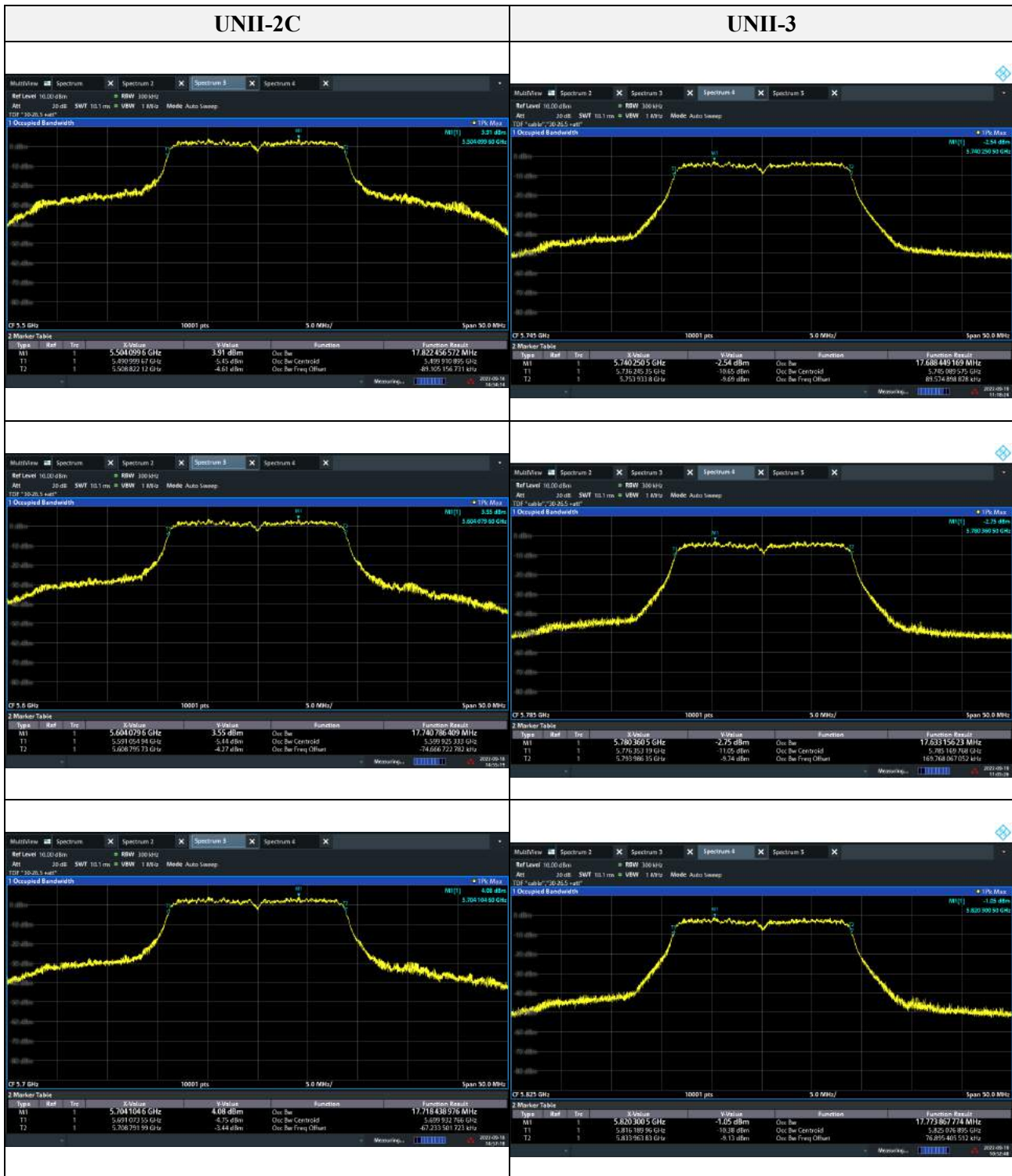


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Mode : 802.11an HT20

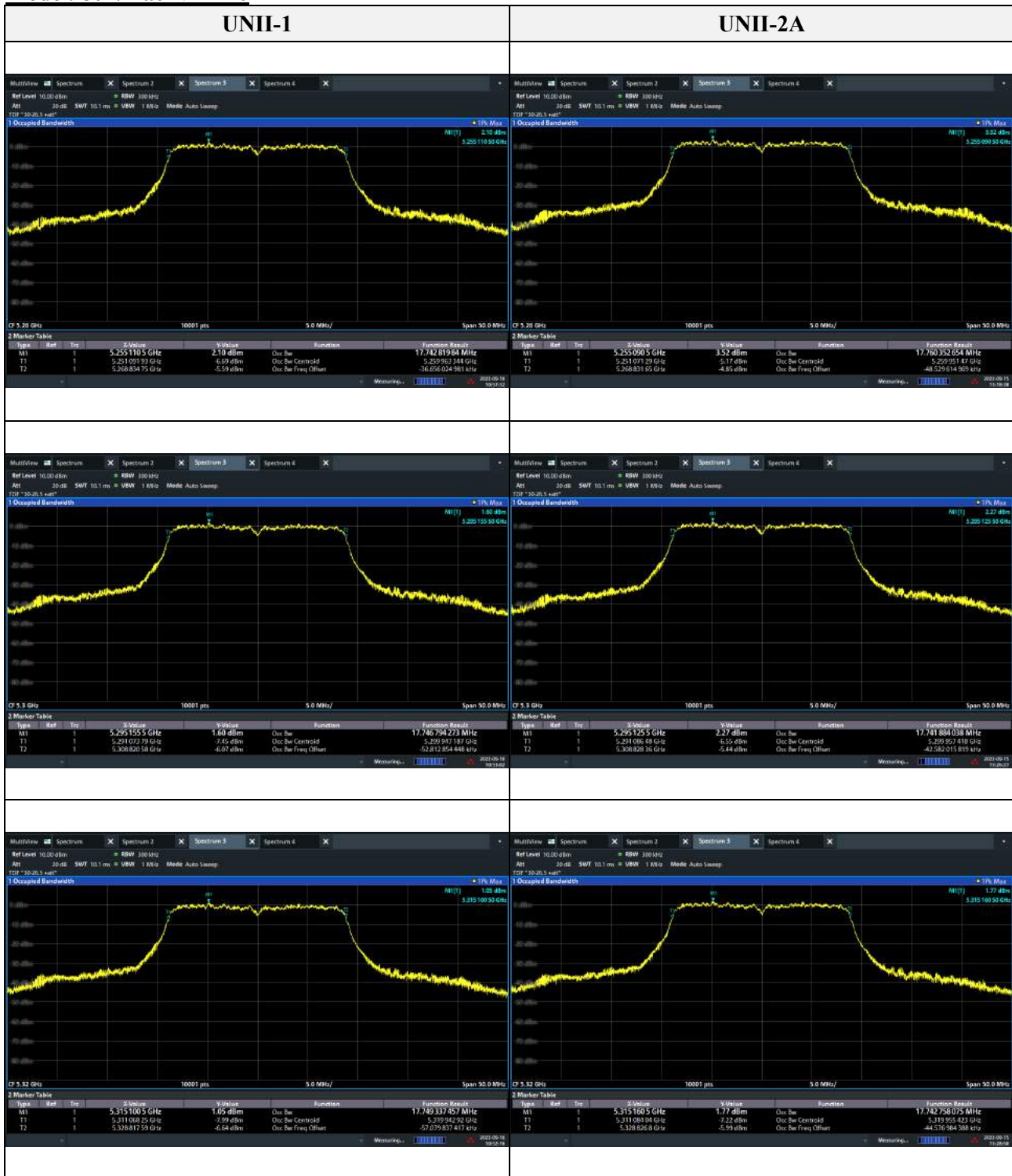


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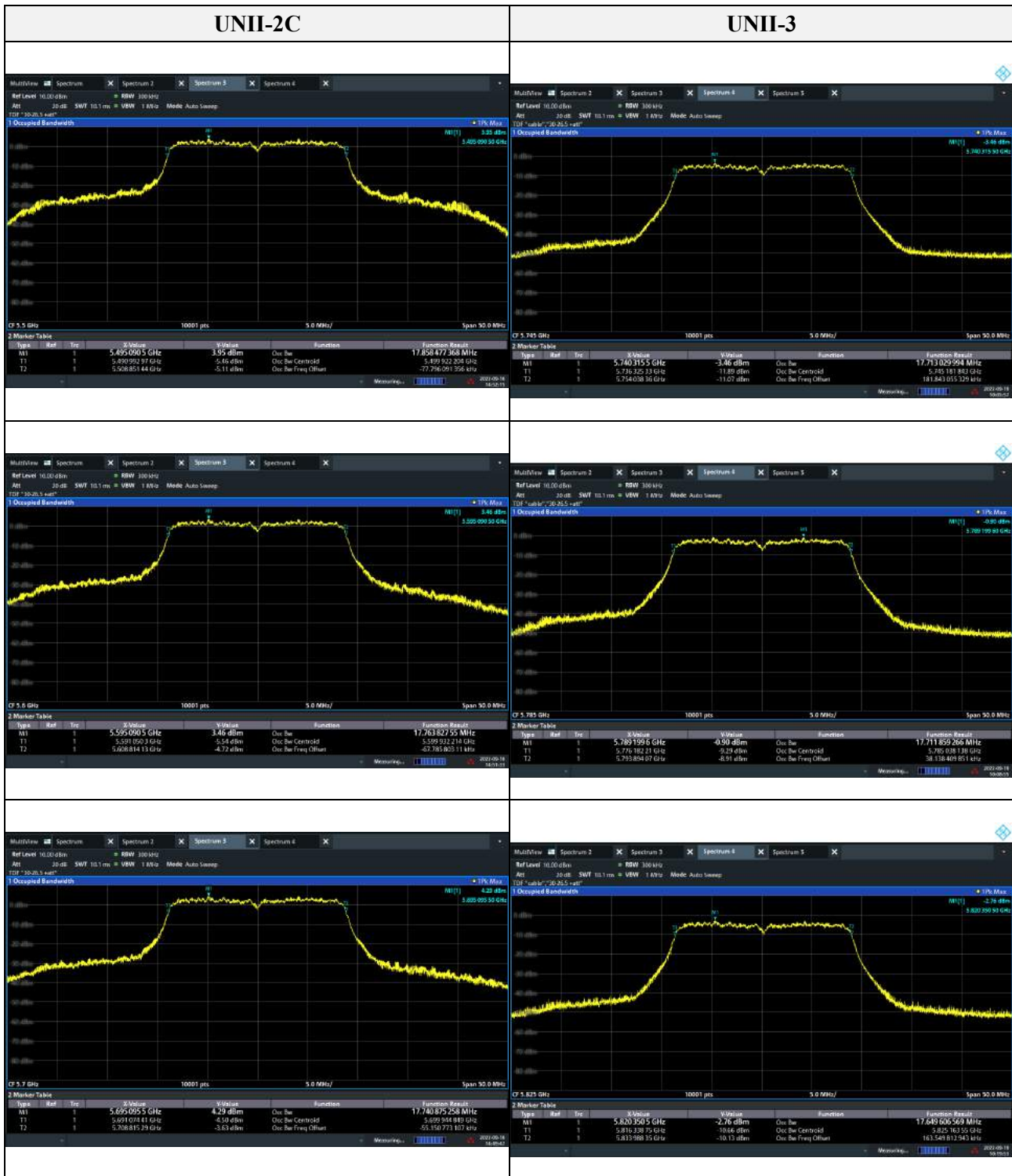


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Mode : 802.11ac VHT20

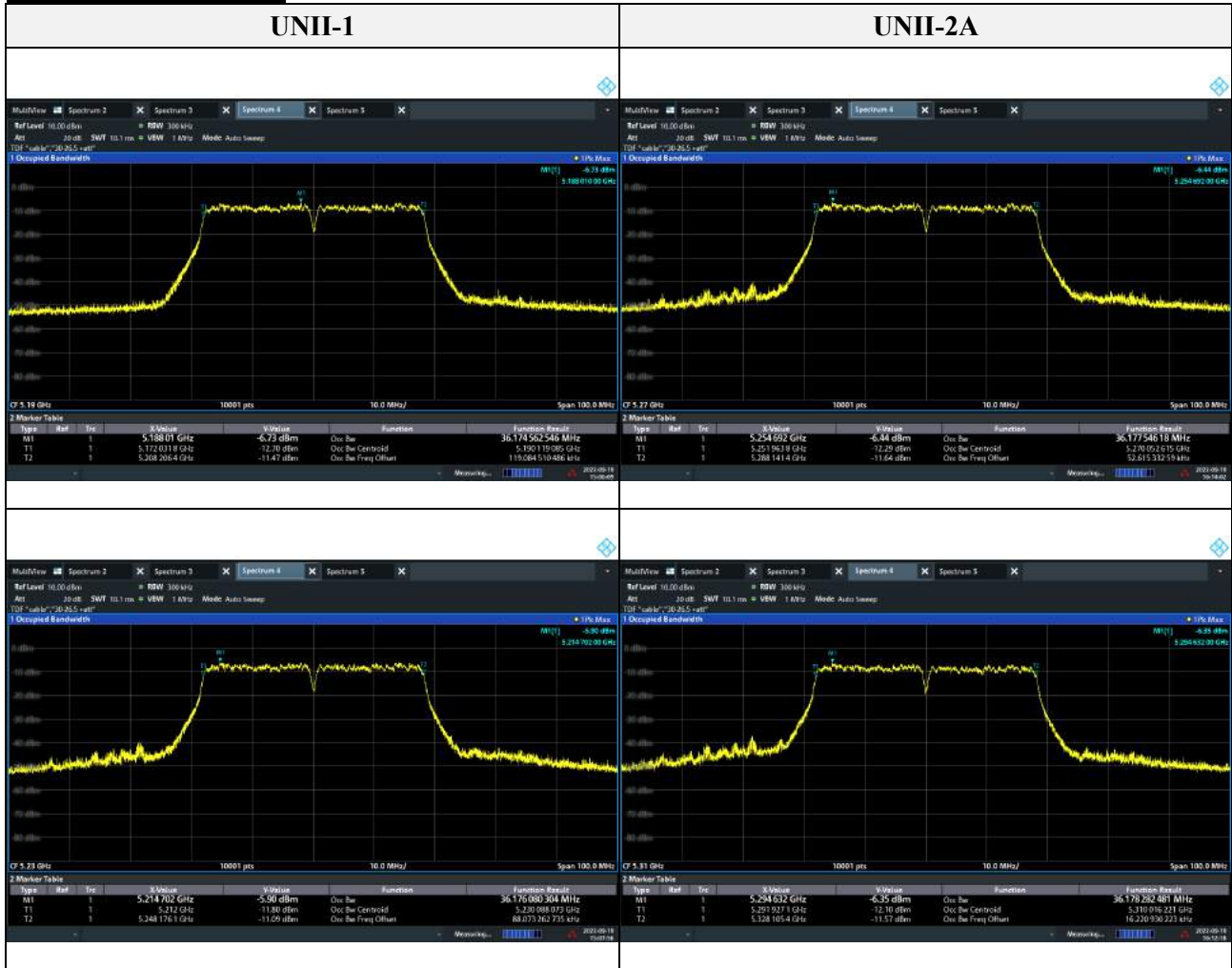


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Mode : 802.11an HT40



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