



FCC ID: OHBNECSIGN
Report No.: T180802D05-RP3

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Rev.: 00

FCC RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART E

Test Standard	FCC Part 15.407
Brand name	AAEON
Product name	NEC-SIGN
Model No.	xNEC-SIGNxxxxxxxxxxxxxx (x can be 0-9, A-Z, a-z, "-", or blank)
Test Result	Pass

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc.(Wugu Laboratory)

Approved by:

Tested by:

Sam Chuang
Manager

Jerry Chuang
Engineer

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部分複製。

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	October 1, 2018	Initial Issue	ALL	Allison Chen



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1.1 GENERAL INFORMATION

1.2 EUT INFORMATION

Applicant	AAEON Technology Inc. 5F, No.135, Lane 235, Pao Chiao Rd, Hsin-Tien Dist., New Taipei City, Taiwan, R.O.C																																																														
Manufacturer	AAEON Technology Inc. 5F, No.135, Lane 235, Pao Chiao Rd, Hsin-Tien Dist., New Taipei City, Taiwan, R.O.C																																																														
Equipment	NEC-SIGN																																																														
Model Name	xNEC-SIGNxxxxxxxxxxxxx (x can be 0-9, A-Z, a-z, "-", or blank)																																																														
Model Discrepancy	All the above models are identical except for the designation of model numbers. The suffix of (x can be 0-9, A-Z, a-z, "-", or blank) on model number is just for marketing purpose only.																																																														
Received Date	August 2, 2018																																																														
Date of Test	August 13 ~ 28, 2018																																																														
Power Supply	Power from adapter via power cable. Powertron Electronics Corp. / PA1024-050IB400 I/P: 100-240Vac, 50-60Hz, 0.6A O/P: 5Vdc, 4.0A, 20W Max																																																														
Output Power(W)	For Chain 0: <table> <tr> <th>Band</th><th>Mode</th><th>Frequency Range (MHz)</th><th>Output Power (W)</th></tr> <tr> <td rowspan="4">U-NII-1</td><td>IEEE 802.11a</td><td>5180 ~ 5240</td><td>0.0318</td></tr> <tr> <td>IEEE 802.11n HT 20</td><td>5180 ~ 5240</td><td>0.0260</td></tr> <tr> <td>IEEE 802.11n HT 40</td><td>5190 ~ 5230</td><td>0.0157</td></tr> <tr> <td>IEEE 802.11ac VHT 80</td><td>5210</td><td>0.0061</td></tr> <tr> <td rowspan="4">U-NII-3</td><td>IEEE 802.11a</td><td>5745 ~ 5825</td><td>0.0490</td></tr> <tr> <td>IEEE 802.11n HT 20</td><td>5745 ~ 5825</td><td>0.0451</td></tr> <tr> <td>IEEE 802.11n HT 40</td><td>5755 ~ 5795</td><td>0.0400</td></tr> <tr> <td>IEEE 802.11ac VHT 80</td><td>5775</td><td>0.0955</td></tr> </table> For Chain 1: <table> <tr> <th>Band</th><th>Mode</th><th>Frequency Range (MHz)</th><th>Output Power (W)</th></tr> <tr> <td rowspan="4">U-NII-1</td><td>IEEE 802.11a</td><td>5180 ~ 5240</td><td>0.0346</td></tr> <tr> <td>IEEE 802.11n HT 20</td><td>5180 ~ 5240</td><td>0.0267</td></tr> <tr> <td>IEEE 802.11n HT 40</td><td>5190 ~ 5230</td><td>0.0162</td></tr> <tr> <td>IEEE 802.11ac VHT 80</td><td>5210</td><td>0.0050</td></tr> <tr> <td rowspan="4">U-NII-3</td><td>IEEE 802.11a</td><td>5745 ~ 5825</td><td>0.0498</td></tr> <tr> <td>IEEE 802.11n HT 20</td><td>5745 ~ 5825</td><td>0.0473</td></tr> <tr> <td>IEEE 802.11n HT 40</td><td>5755 ~ 5795</td><td>0.0409</td></tr> <tr> <td>IEEE 802.11ac VHT 80</td><td>5775</td><td>0.0918</td></tr> </table>			Band	Mode	Frequency Range (MHz)	Output Power (W)	U-NII-1	IEEE 802.11a	5180 ~ 5240	0.0318	IEEE 802.11n HT 20	5180 ~ 5240	0.0260	IEEE 802.11n HT 40	5190 ~ 5230	0.0157	IEEE 802.11ac VHT 80	5210	0.0061	U-NII-3	IEEE 802.11a	5745 ~ 5825	0.0490	IEEE 802.11n HT 20	5745 ~ 5825	0.0451	IEEE 802.11n HT 40	5755 ~ 5795	0.0400	IEEE 802.11ac VHT 80	5775	0.0955	Band	Mode	Frequency Range (MHz)	Output Power (W)	U-NII-1	IEEE 802.11a	5180 ~ 5240	0.0346	IEEE 802.11n HT 20	5180 ~ 5240	0.0267	IEEE 802.11n HT 40	5190 ~ 5230	0.0162	IEEE 802.11ac VHT 80	5210	0.0050	U-NII-3	IEEE 802.11a	5745 ~ 5825	0.0498	IEEE 802.11n HT 20	5745 ~ 5825	0.0473	IEEE 802.11n HT 40	5755 ~ 5795	0.0409	IEEE 802.11ac VHT 80	5775	0.0918
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1.3 EUT CHANNEL INFORMATION

Frequency Range	UNII-1	
	IEEE 802.11a	5180 ~ 5240 MHz
	IEEE 802.11n HT 20	5180 ~ 5240 MHz
	IEEE 802.11n HT 40	5190 ~ 5230 MHz
	IEEE 802.11ac VHT 80	5210 MHz
	UNII-3	
	IEEE 802.11a	5745 ~ 5825 MHz
	IEEE 802.11n HT 20	5745 ~ 5825 MHz
	IEEE 802.11n HT 40	5755 ~ 5795 MHz
	IEEE 802.11ac VHT 80	5775 MHz
Modulation Type	1. IEEE 802.11a mode: OFDM (BPSK/QPSK/16QAM/64QAM) 2. IEEE 802.11n HT 20 mode: OFDM (BPSK/QPSK/16QAM/64QAM) 3. IEEE 802.11n HT 40 mode: OFDM (BPSK/QPSK/16QAM/64QAM) 4. IEEE 802.11ac VHT 80 mode: OFDM (BPSK/QPSK/16QAM/64QAM/256QAM)	

Remark:

Refer as ANSI 63.10:2013 clause 5.6.1 Table 4 for test channels

Number of frequencies to be tested		
Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
☐ 1 MHz or less	1	Middle
☐ 1 MHz to 10 MHz	2	1 near top and 1 near bottom
☒ More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom



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1.4 ANTENNA INFORMATION

Antenna Type	☐ PIFA ☐ PCB ☒ Dipole ☐ Coils														
Antenna Gain	<table><tr><td></td><td>Model name</td><td>Type</td><td>Peak Gain</td></tr><tr><td>Ant 1</td><td>RFA-25-C2M2-M10-1</td><td>Dipole</td><td>2dBi</td></tr><tr><td>Ant 2</td><td>RFA-25-C2M2-M10-1</td><td>Dipole</td><td>2dBi</td></tr></table>				Model name	Type	Peak Gain	Ant 1	RFA-25-C2M2-M10-1	Dipole	2dBi	Ant 2	RFA-25-C2M2-M10-1	Dipole	2dBi
	Model name	Type	Peak Gain												
Ant 1	RFA-25-C2M2-M10-1	Dipole	2dBi												
Ant 2	RFA-25-C2M2-M10-1	Dipole	2dBi												
Antenna Connector	SMA Connector														

1.5 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 1.4003
RF output power, conducted	+/- 1.1372
Power density, conducted	+/- 1.4003
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683

Remark:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$

2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

1.6 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark
AC Conduction Room	Dally Hong	-
Radiation	Jerry Chuang	-
RF Conducted	Dally Hong	-

Remark: The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.7 INSTRUMENT CALIBRATION

RF Conducted Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
Coaxial Cable	Woken	WC12	CC002	06/29/2018	06/28/2019
Thermostatic/Hrgrosatic Chamber	TAICHY	MHG-150LF	930619	10/11/2017	10/10/2018
Power Meter	Anritsu	ML2495A	1149001	09/18/2017	09/17/2018
Power Sensor	Anritsu	MA2491A	30982	02/06/2018	02/05/2019
Signal Analyzer	R&S	FSV 40	101073	10/02/2017	10/01/2018

3M 966 Chamber Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
Bilog Antenna	Sunol Sciences	JB3	A030105	07/13/2018	07/12/2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	06/29/2018	06/28/2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	06/29/2018	06/28/2019
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	02/08/2018	02/07/2019
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	08/20/2018	08/19/2019
High Pass Filters	MICRO TRONICS	HPM13195	003	05/14/2018	05/13/2019
Horn Antenna	ETS LINDGREN	3116	00026370	01/04/2018	01/03/2019
Loop Ant	COM-POWER	AL-130	121051	03/21/2018	03/20/2019
Pre-Amplifier	EMEC	EM330	060609	06/29/2018	06/28/2019
Pre-Amplifier	MITEQ	AMF-6F-260400-40-8P	985646	06/21/2018	06/20/2019
Pre-Amplifier	HP	8449B	3008A00965	06/29/2018	06/28/2019
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	05/31/2018	05/30/2019
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R

Remark: Each piece of equipment is scheduled for calibration once a year.



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AC Conducted Emissions Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
CABLE	EMCI	CFD300-NL	CERF	07/03/2018	07/02/2019
EMI Test Receiver	R&S	ESCI	100064	07/24/2018	07/23/2019
LISN	SCHWARZBECK	NSLK 8127	8127-541	02/09/2018	02/08/2019
LISN	SCHAFFNER	NNB41	03/10013	02/06/2018	02/05/2019

Remark: Each piece of equipment is scheduled for calibration once a year.

1.8 SUPPORT AND EUT ACCESSORIES EQUIPMENT

EUT Accessories Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
	N/A				

Support Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
1	Monitor	DELL	U2410F	N/A	DoC
2	KeyBoard	DELL	SK-8115	T3A002	DoC
3	Mouse	DELL	M-UAL-96	R41105	DoC

1.9 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.407, KDB 789033 D02.



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2. TEST SUMMERY

FCC Standard Sec.	Chapter	Test Item	Result
15.203	1.4	Antenna Requirement	Pass
15.207	4.1	AC Conducted Emission	Pass
15.403(i)	4.2	26dB Bandwidth	Pass
15.403(i)	4.2	6dB Bandwidth	Pass
15.403(i)	4.2	Occupied Bandwidth (99%)	Pass
15.407(a)	4.3	Output Power Measurement	Pass
15.407(a)	4.4	Power Spectral Density	Pass
15.407(b)	4.5	Radiation Band Edge	Pass
15.407(b)	4.5	Radiation Spurious Emission	Pass
15.407(g)	4.6	Frequency Stability	Pass

3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	1. IEEE 802.11a mode: 6Mbps 2. IEEE 802.11n HT 20 mode: MCS0 3. IEEE 802.11n HT 40 mode: MCS0 4. IEEE 802.11ac VHT 80 mode: MCS0																																
Operating Frequency Range & Number of Channels	<table> <tr> <th></th><th>Mode</th><th>Frequency Range (MHz)</th><th>Number of Channels</th></tr> <tr> <td rowspan="4">U-NII-1</td><td>IEEE 802.11a</td><td>5180 ~ 5240</td><td>4 Channels</td></tr> <tr> <td>IEEE 802.11n HT 20</td><td>5180 ~ 5240</td><td>4 Channels</td></tr> <tr> <td>IEEE 802.11n HT 40</td><td>5190 ~ 5230</td><td>2 Channels</td></tr> <tr> <td>IEEE 802.11ac VHT 80</td><td>5210</td><td>1 Channels</td></tr> <tr> <td rowspan="4">U-NII-3</td><td>IEEE 802.11a</td><td>5745 ~ 5825</td><td>5 Channels</td></tr> <tr> <td>IEEE 802.11n HT 20</td><td>5745 ~ 5825</td><td>5 Channels</td></tr> <tr> <td>IEEE 802.11n HT 40</td><td>5755 ~ 5795</td><td>2 Channels</td></tr> <tr> <td>IEEE 802.11ac VHT 80</td><td>5775</td><td>1 Channels</td></tr> </table>				Mode	Frequency Range (MHz)	Number of Channels	U-NII-1	IEEE 802.11a	5180 ~ 5240	4 Channels	IEEE 802.11n HT 20	5180 ~ 5240	4 Channels	IEEE 802.11n HT 40	5190 ~ 5230	2 Channels	IEEE 802.11ac VHT 80	5210	1 Channels	U-NII-3	IEEE 802.11a	5745 ~ 5825	5 Channels	IEEE 802.11n HT 20	5745 ~ 5825	5 Channels	IEEE 802.11n HT 40	5755 ~ 5795	2 Channels	IEEE 802.11ac VHT 80	5775	1 Channels
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Remark:

1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.

2. Covered modes are test reduction modes. The output powers on the covered modes are equal to or less than the mode referenced and use the same module

3.2 THE WORST MODE OF MEASUREMENT

AC Power Line Conducted Emission	
Test Condition	AC Power line conducted emission for line and neutral
Power supply Mode	Mode 1:EUT power by adapter via power cable
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4

Radiated Emission Measurement Above 1G	
Test Condition	Band edge, Emission for Unwanted and Fundamental
Power supply Mode	Mode 1:EUT power by adapter via power cable
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4
Worst Position	☐ Placed in fixed position. ☒ Placed in fixed position at X-Plane (E2-Plane) ☐ Placed in fixed position at Y-Plane (E1-Plane) ☐ Placed in fixed position at Z-Plane (H-Plane)
Worst Polarity	☒ Horizontal ☐ Vertical

Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G
Power supply Mode	Mode 1:EUT power by adapter via power cable
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4

Remark:

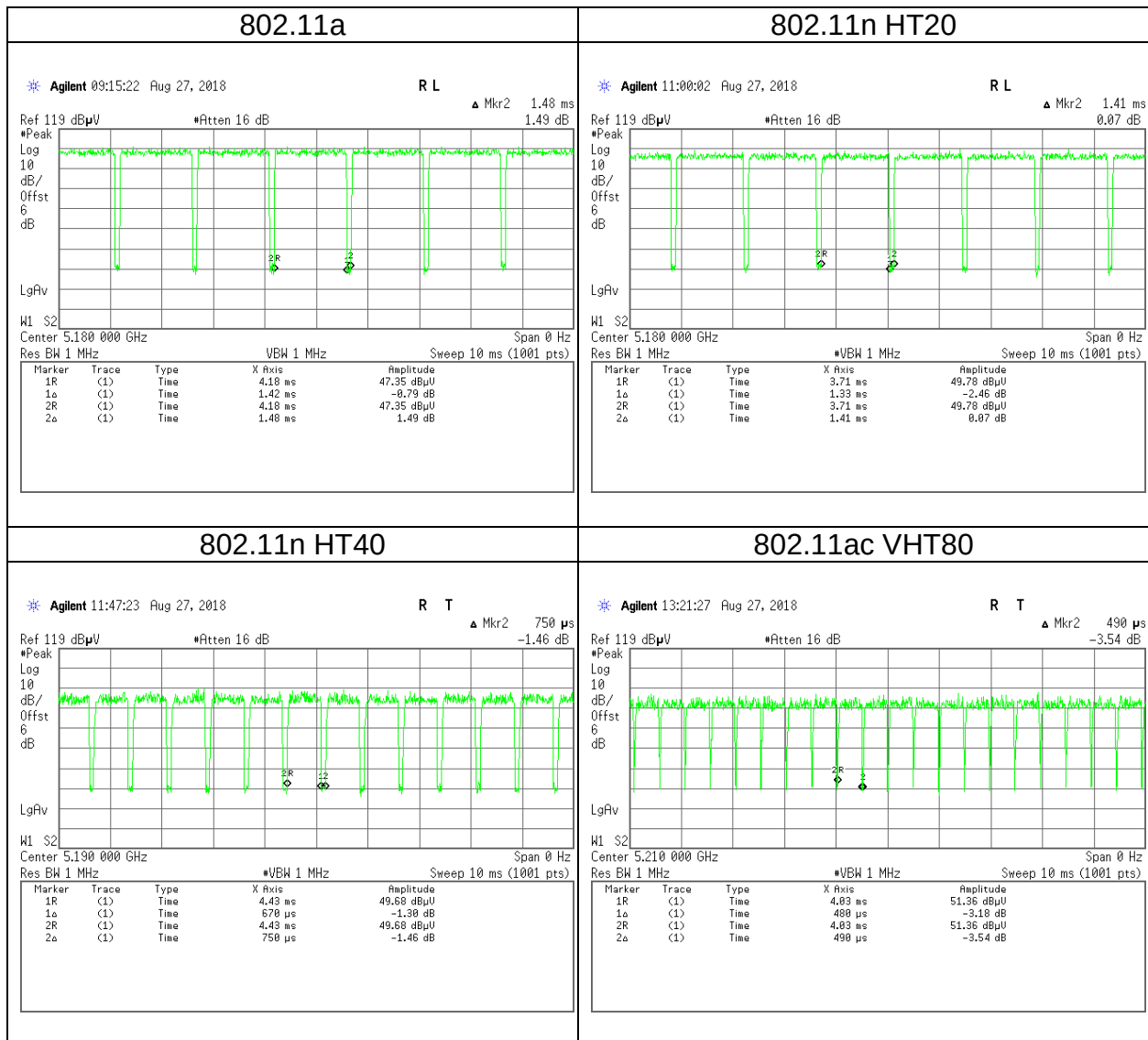
1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case(XPlane and Horizontal) were recorded in this report
3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.



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3.3 EUT DUTY CYCLE

Duty Cycle			
Configuration	TX ON (ms)	TX ALL (ms)	Duty Cycle (%)
802.11a	1.4200	1.4800	95.95%
802.11n HT20	1.3300	1.4100	94.33%
802.11n HT40	0.6700	0.7500	89.33%
802.11ac VHT80	0.4800	0.4900	97.96%



4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a),

Frequency Range (MHz)	Limits(dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

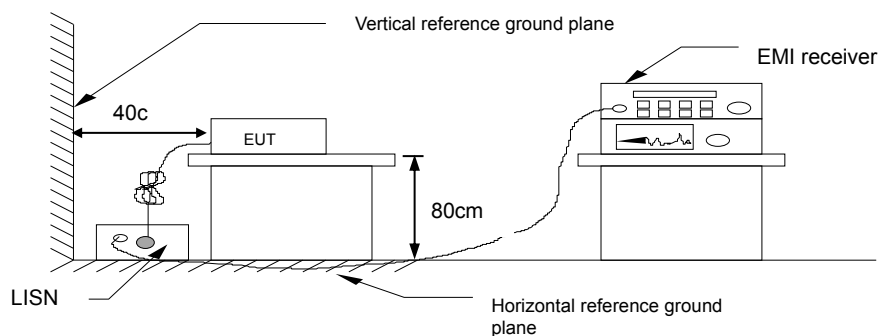
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 6.2,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

4.1.3 Test Setup



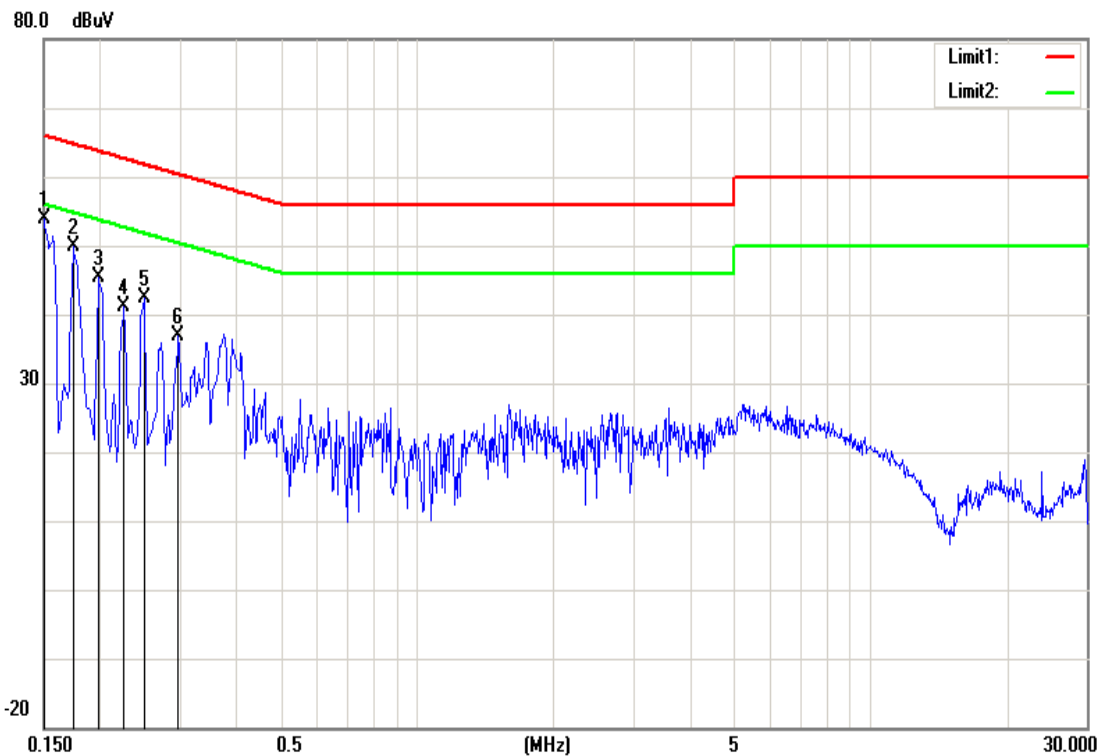
4.1.4 Test Result

Pass.

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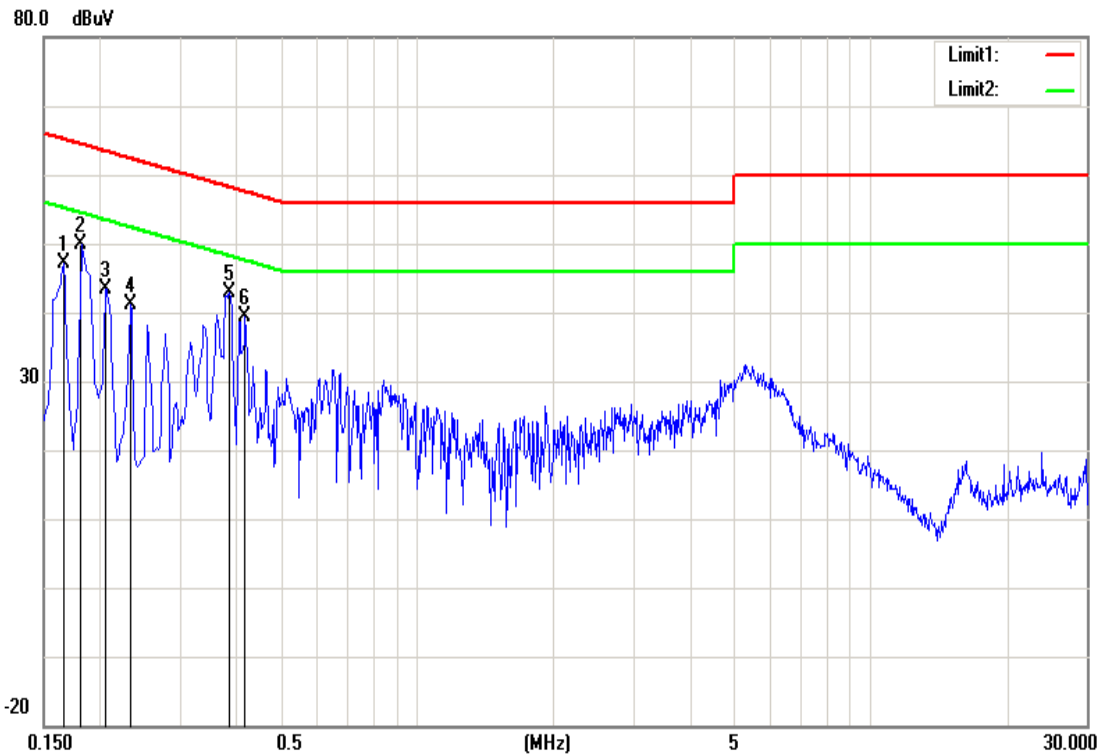
Test Data

Test Mode	Mode 1	Temp/Hum	24(°C)/ 50%RH
Phase	Line	Test Date	August 13, 2018
Test Voltage:	120V	Test Engineer	Dally Hong



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1500	51.64	33.05	0.11	51.75	33.16	65.99	56.00	-14.24	-22.84	Pass
0.1740	46.12	28.61	0.11	46.23	28.72	64.76	54.77	-18.53	-26.05	Pass
0.1980	41.96	24.98	0.11	42.07	25.09	63.69	53.69	-21.62	-28.60	Pass
0.2260	39.81	22.78	0.11	39.92	22.89	62.59	52.60	-22.67	-29.71	Pass
0.2500	35.78	17.76	0.11	35.89	17.87	61.75	51.76	-25.86	-33.89	Pass
0.2980	30.77	16.88	0.11	30.88	16.99	60.30	50.30	-29.42	-33.31	Pass

Test Mode	Mode 1	Temp/Hum	24(°C)/ 50%RH
Phase	Neutral	Test Date	August 13, 2018
Test Voltage:	120V	Test Engineer	Dally Hong



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1660	48.37	30.29	0.14	48.51	30.43	65.16	55.16	-16.65	-24.73	Pass
0.1820	47.79	29.28	0.13	47.92	29.41	64.39	54.39	-16.47	-24.98	Pass
0.2060	44.03	26.49	0.13	44.16	26.62	63.37	53.37	-19.21	-26.75	Pass
0.2340	39.20	21.74	0.13	39.33	21.87	62.31	52.31	-22.98	-30.44	Pass
0.3860	44.49	39.57	0.13	44.62	39.70	58.15	48.15	-13.53	-8.45	Pass
0.4180	38.88	27.31	0.13	39.01	27.44	57.49	47.49	-18.48	-20.05	Pass

4.2 26dB BANDWIDTH, 6dB BANDWIDTH AND OCCUPIED BANDWIDTH(99%)

4.2.1 Test Limit

26 dB Bandwidth : For reporting purposes only.

6 dB Bandwidth : Least 500kHz.

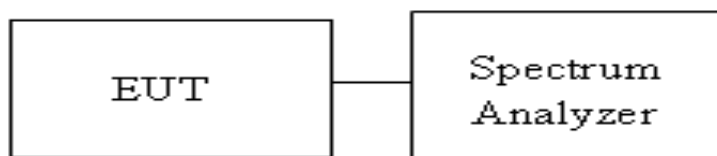
Occupied Bandwidth(99%) : For reporting purposes only.

4.2.2 Test Procedure

Test method Refer as KDB 789033 D02 Section C, D, and ANSI 63.10:2013 clause 6.9.2,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. UNII-1, UNII-2a and UNII-2c,
 - (1) BW=20MHz : SA set RBW = 300kHz, VBW = 1MHz and Detector = Peak, to measurement 26 dB Bandwidth
 - (2) BW=40MHz : SA set RBW = 1MHz, VBW = 3MHz and Detector = Peak, to measurement 26 dB Bandwidth
 - (3) BW=80MHz : SA set RBW = 1MHz, VBW = 3MHz and Detector = Peak, to measurement 26 dB Bandwidth
4. UNII-3, SA set RBW = 100kHz, VBW = 300kHz and Detector = Peak, to measurement 6 dB Bandwidth
5. SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth
6. Measure and record the result of 6 dB Bandwidth and 99% Bandwidth. in the test report.

4.2.3 Test Setup

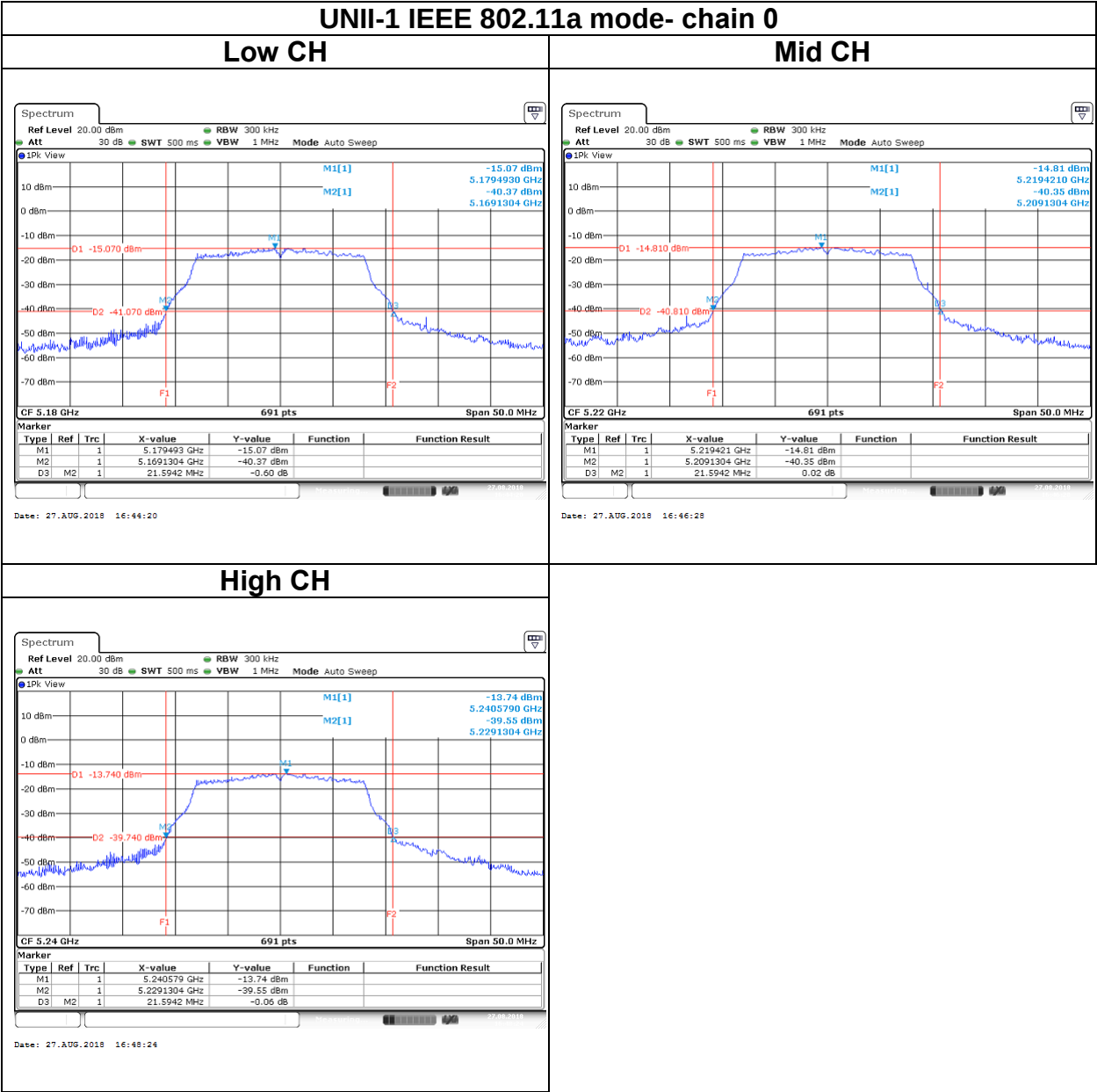


4.2.4 Test Result

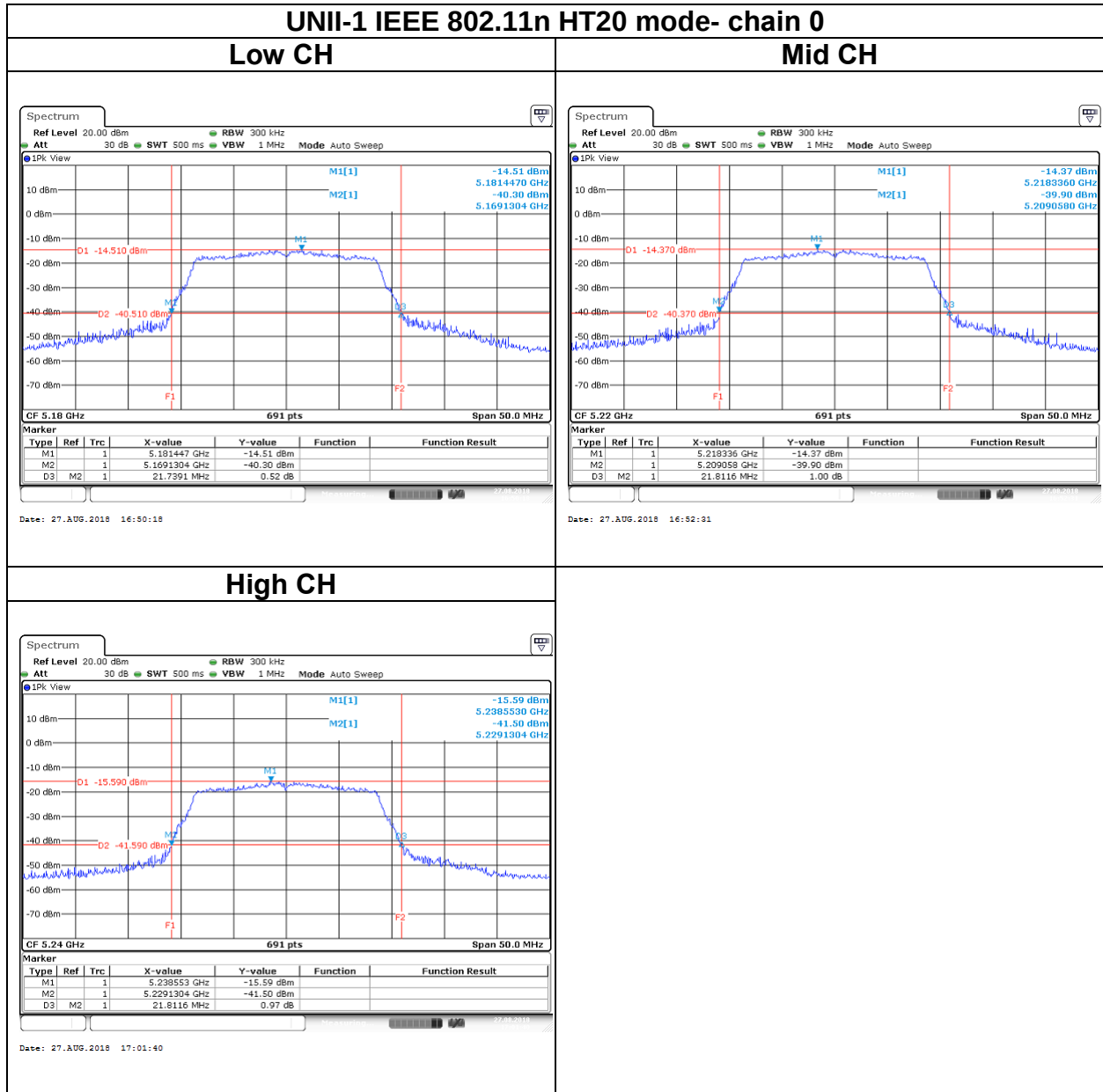
UNII-1					
Test mode: IEEE 802.11a mode					
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
Low	5180	16.6425	16.7872	21.5942	21.3768
Mid	5220	16.7149	16.7149	21.5942	21.6667
High	5240	16.7149	16.7149	21.5942	21.5942
Test mode: IEEE 802.11n HT20 mode					
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
Low	5180	17.8726	17.8726	21.7391	21.7391
Mid	5220	17.8726	17.8726	21.8116	21.9565
High	5240	18.0173	18.0173	21.8116	21.8116
Test mode: IEEE 802.11n HT40 mode					
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
Low	5190	36.5846	36.5846	41.159	40.928
High	5230	36.5846	36.3531	41.043	41.275
Test mode: IEEE 802.11ac VHT80 mode					
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 26dB BW (MHz)	Chain 1 26dB BW (MHz)
Mid	5210	75.7163	75.9479	83.478	82.783

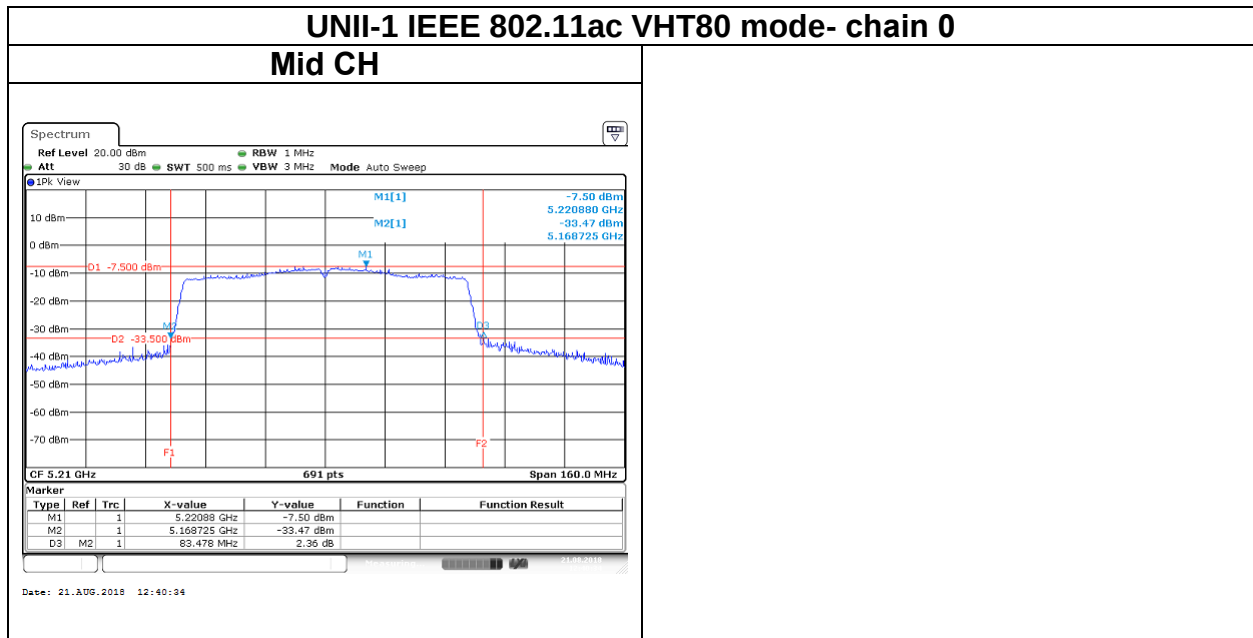
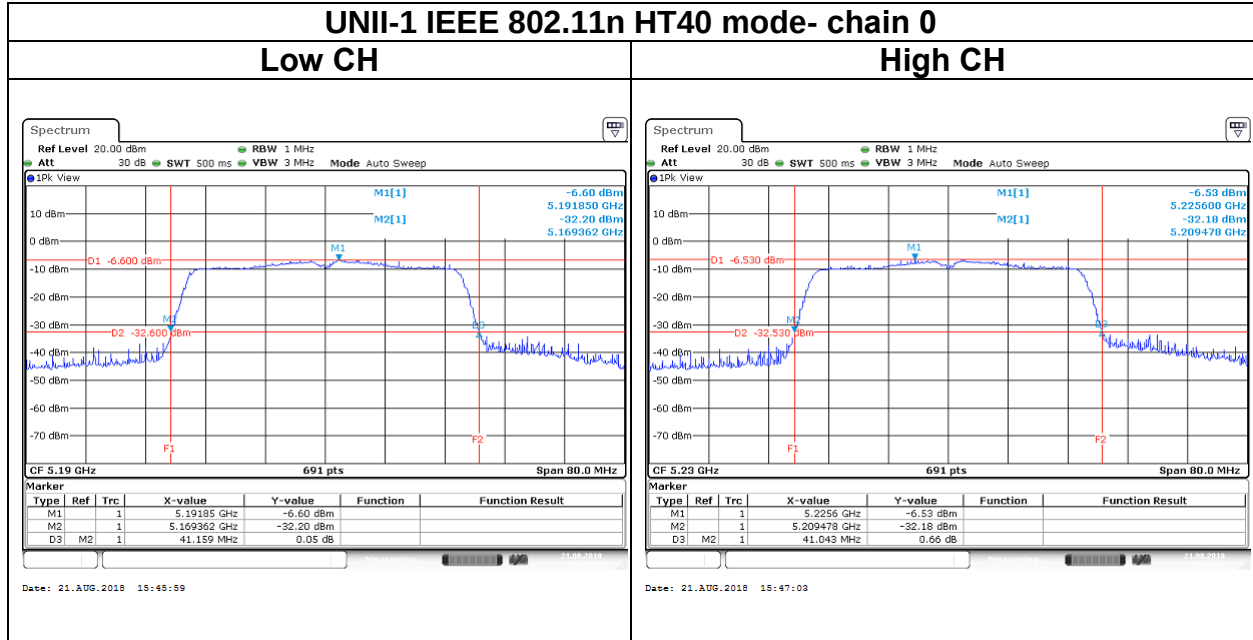
UNII-3					
Test mode: IEEE 802.11a mode					
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)
Low	5745	16.7872	16.9319	16.3043	16.3043
Mid	5785	16.7149	17.0043	16.3478	16.3478
High	5825	16.6425	17.0043	16.3043	16.3478
Test mode: IEEE 802.11n HT20 mode					
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)
Low	5745	18.0173	18.1620	17.1739	17.3043
Mid	5785	18.0897	17.9450	17.5652	17.3043
High	5825	18.0897	18.0897	17.5217	17.5652
Test mode: IEEE 802.11n HT40 mode					
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)
Low	5755	36.8162	36.7004	35.826	35.826
High	5795	36.7004	36.8162	36.29	35.826
Test mode: IEEE 802.11ac VHT80 mode					
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)
Mid	5775	75.4848	75.4848	75.13	75.13

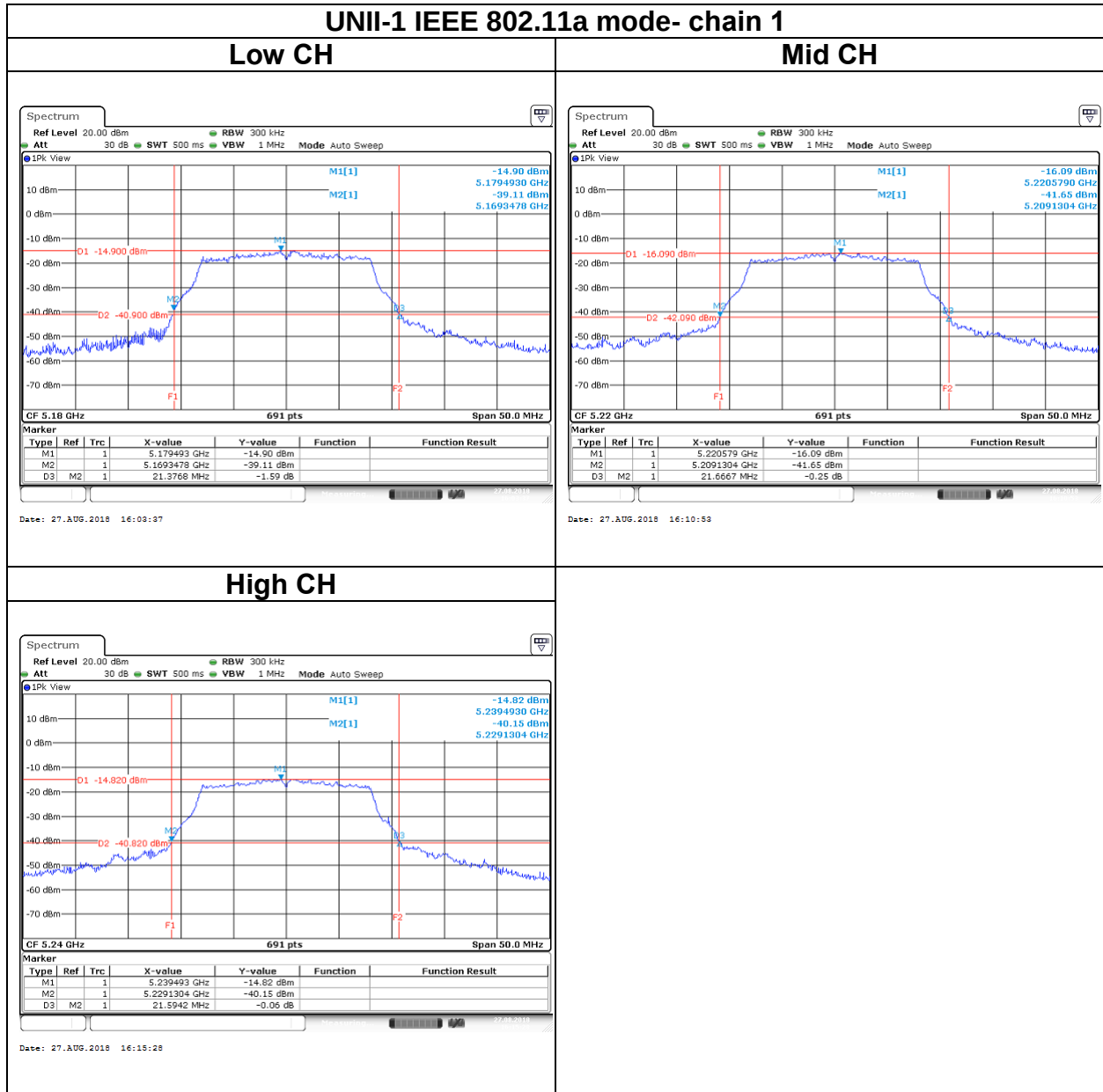
Test Data (26dB)



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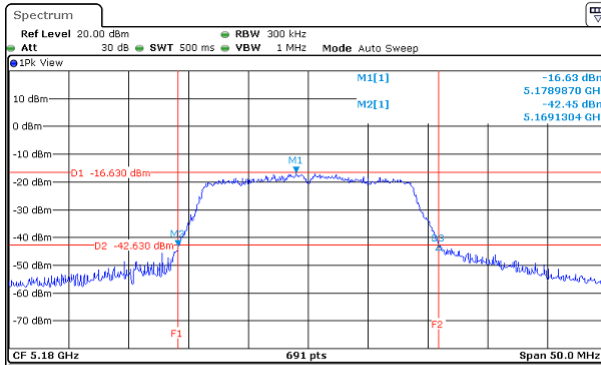






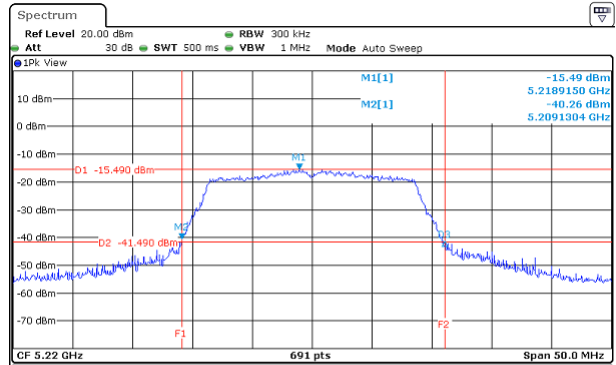
UNII-1 IEEE 802.11n HT20 mode- chain 1

Low CH



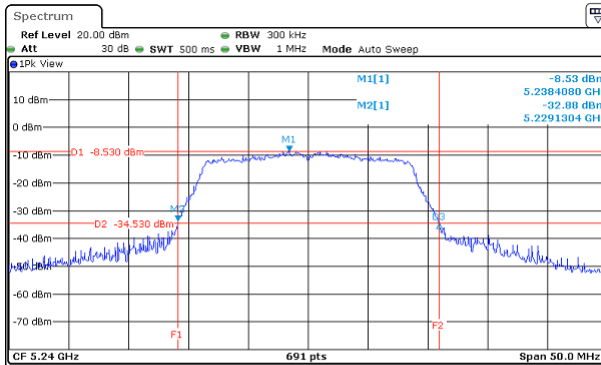
Date: 27.AUG.2018 16:20:23

Mid CH



Date: 27.AUG.2018 16:24:54

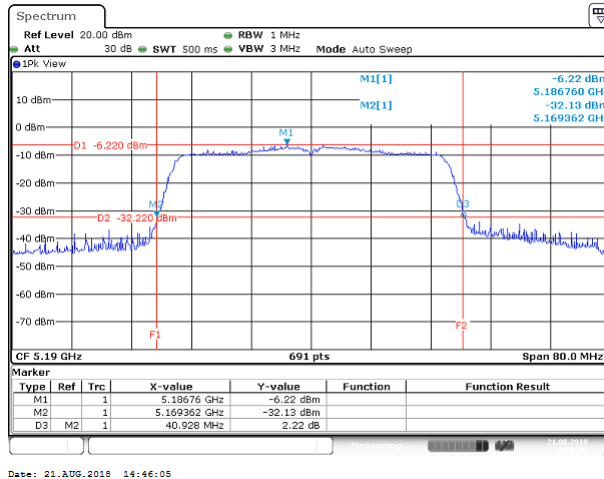
High CH



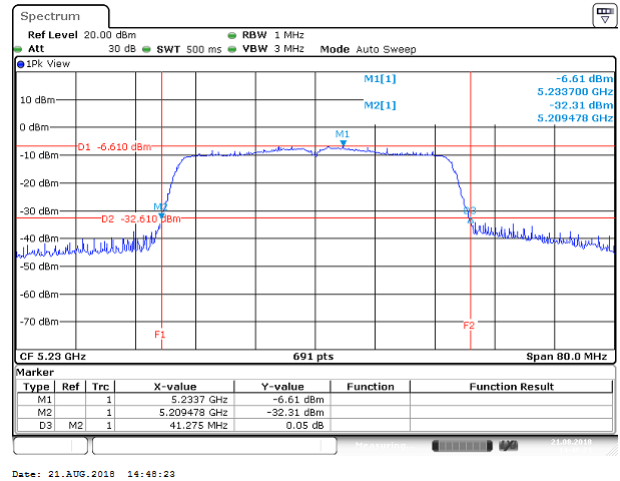
Date: 21.AUG.2018 14:44:34

UNII-1 IEEE 802.11n HT40 mode- chain 1

Low CH

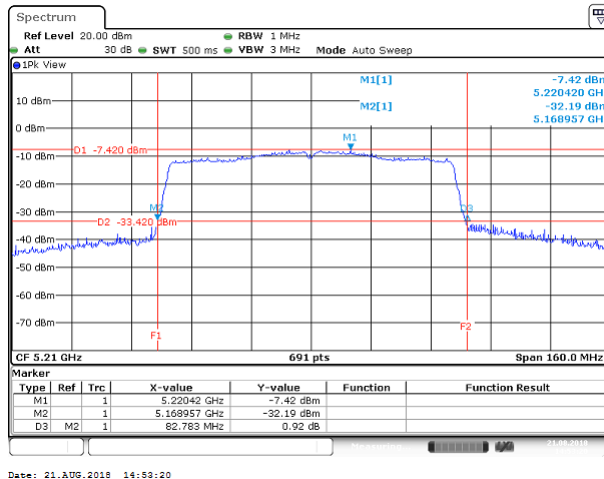


High CH

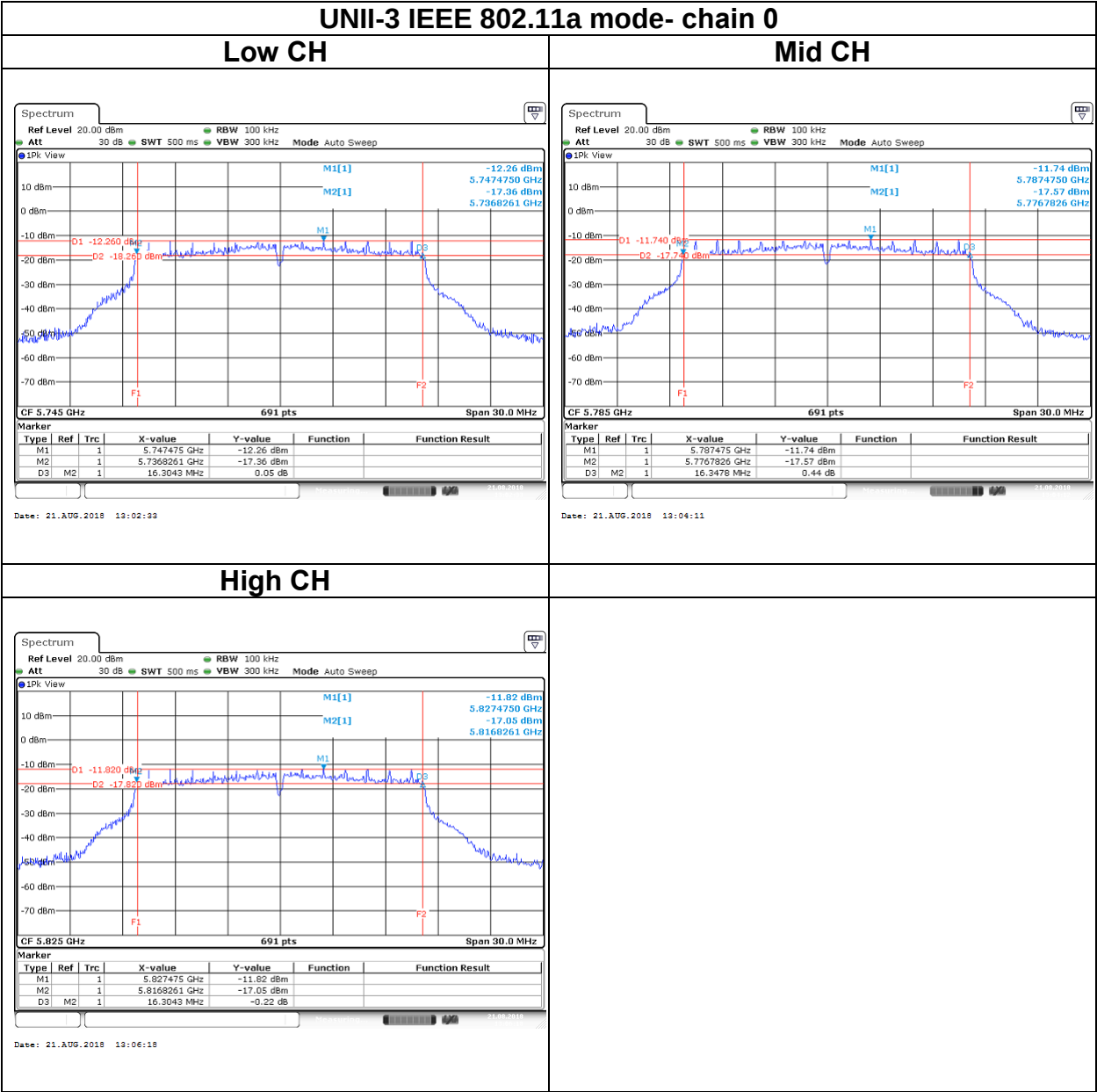


UNII-1 IEEE 802.11ac VHT80 mode- chain 1

Mid CH

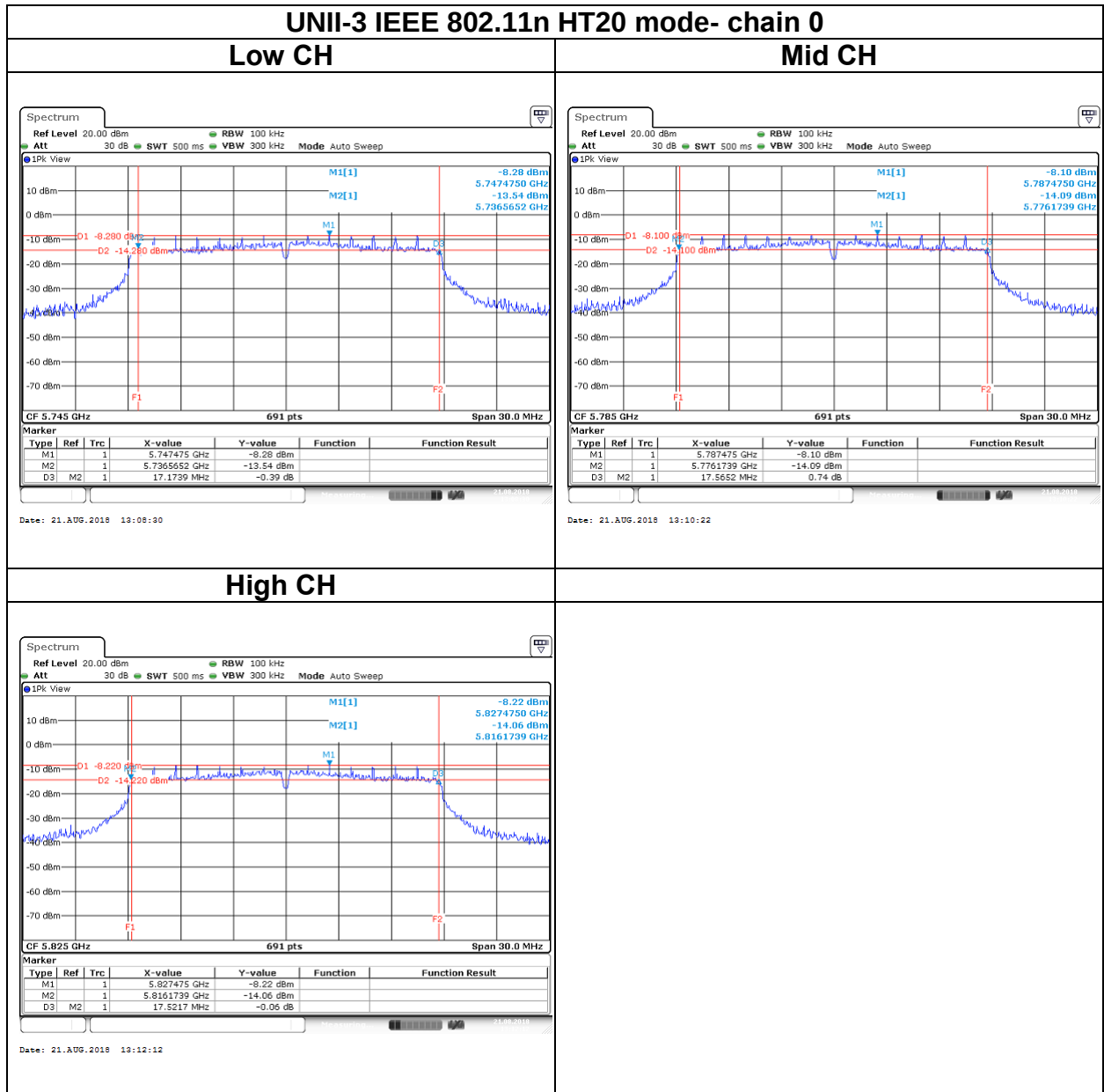


Test Data (6dB)





Report No.: T180802D05-RP3

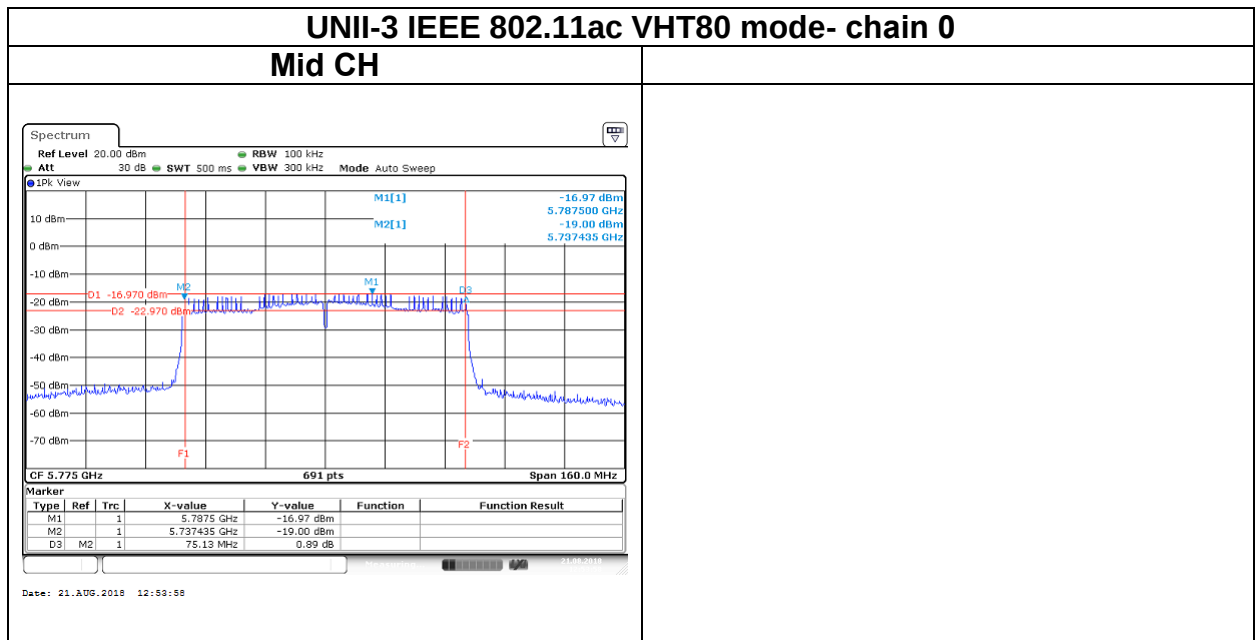
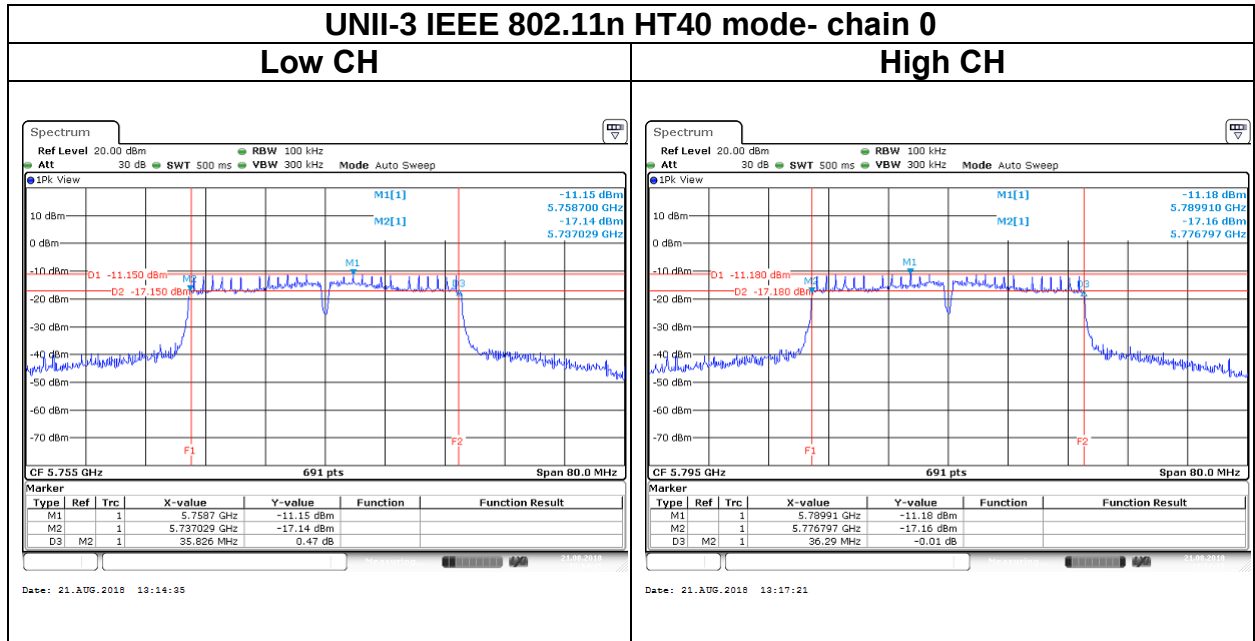




Report No.: T180802D05-RP3

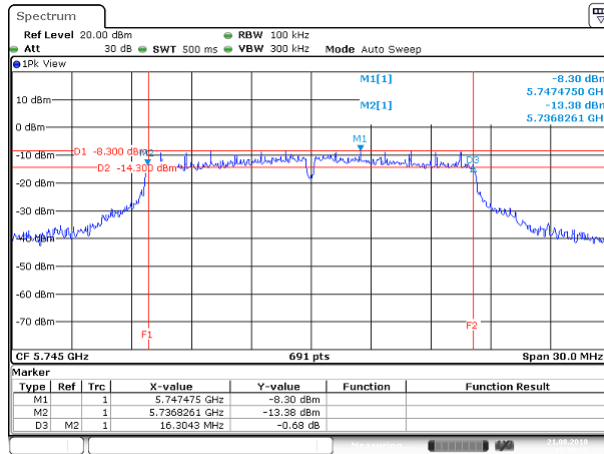
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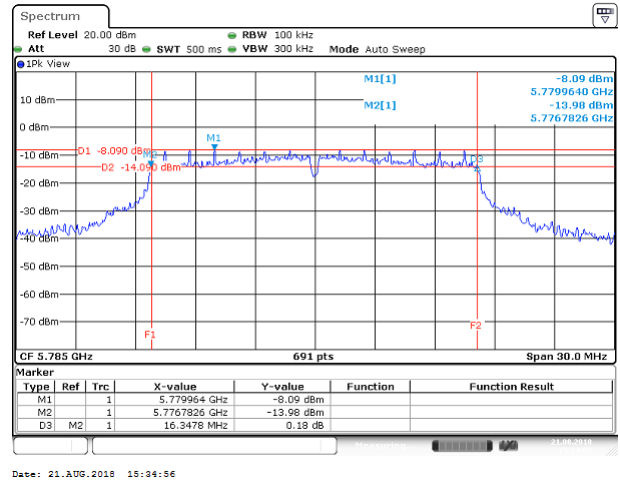


UNII-3 IEEE 802.11a mode- chain 1

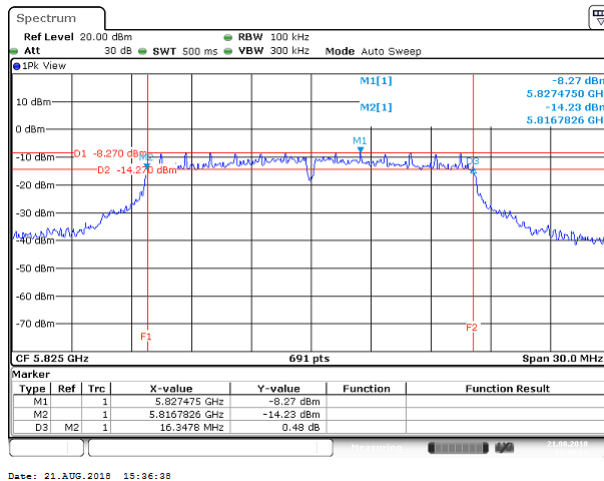
Low CH



Mid CH

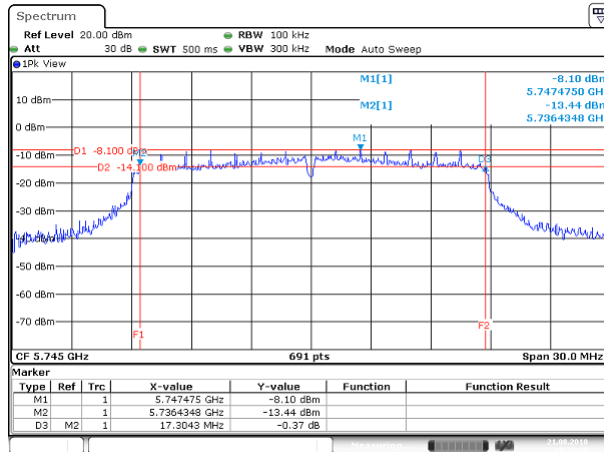


High CH

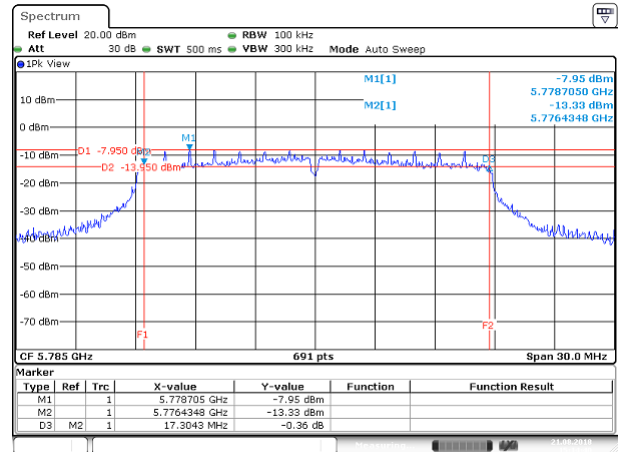


UNII-3 IEEE 802.11n HT20 mode- chain 1

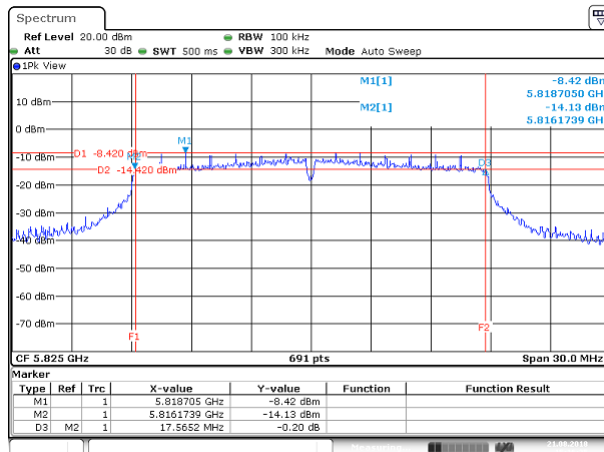
Low CH

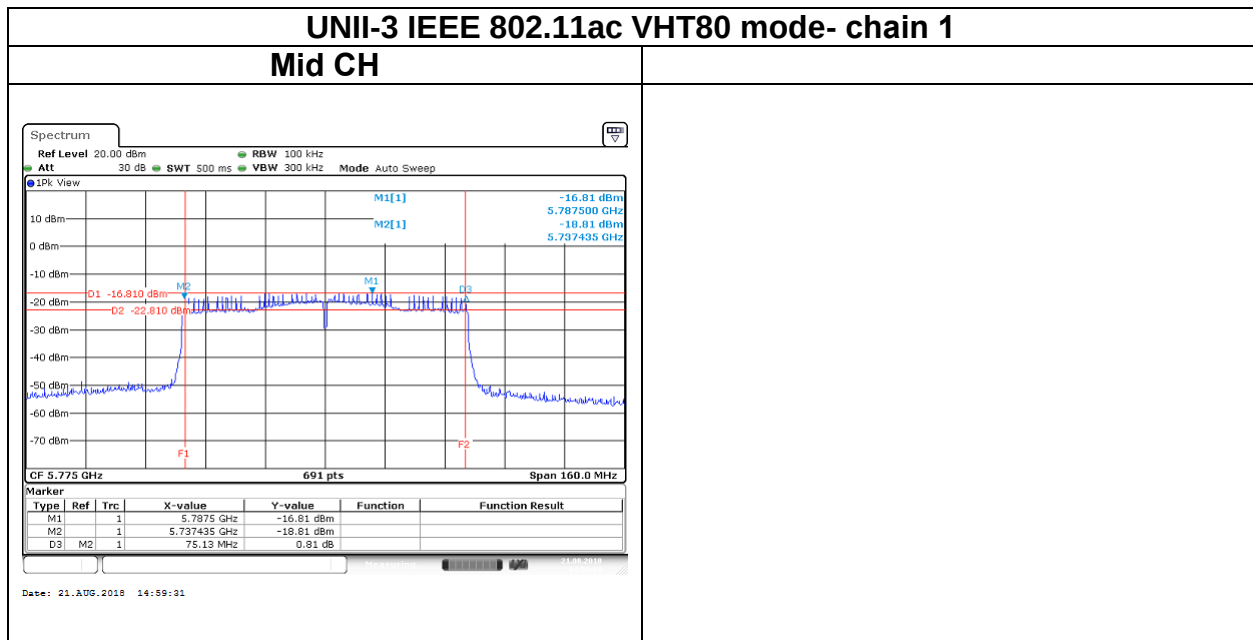
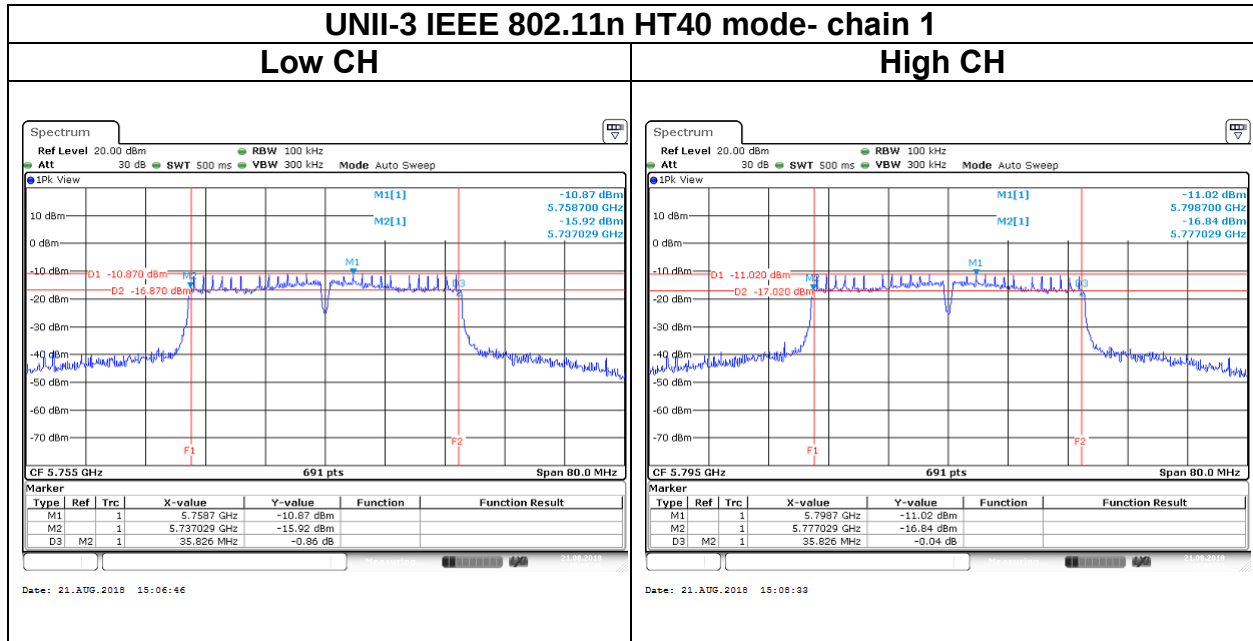


Mid CH

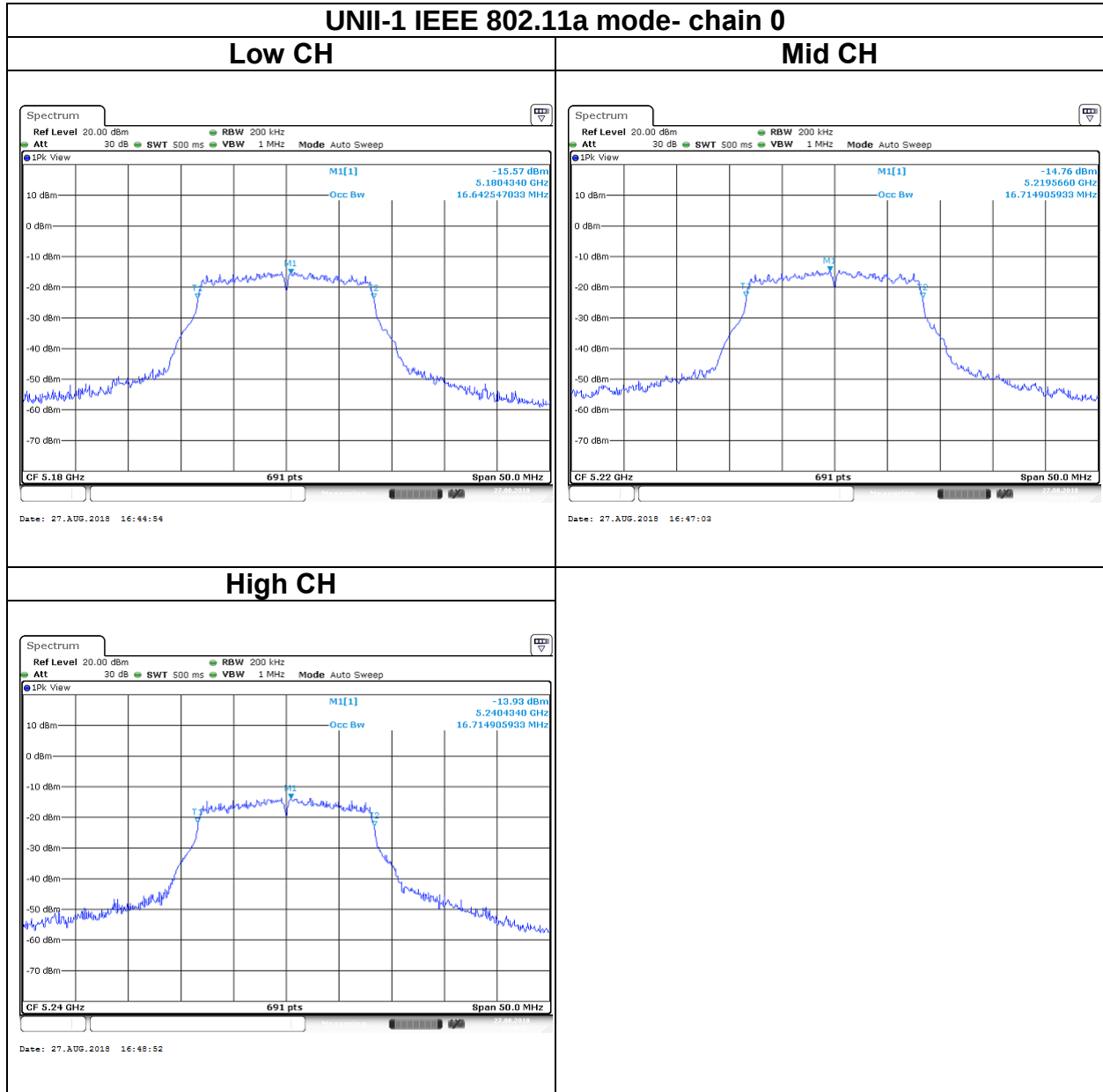


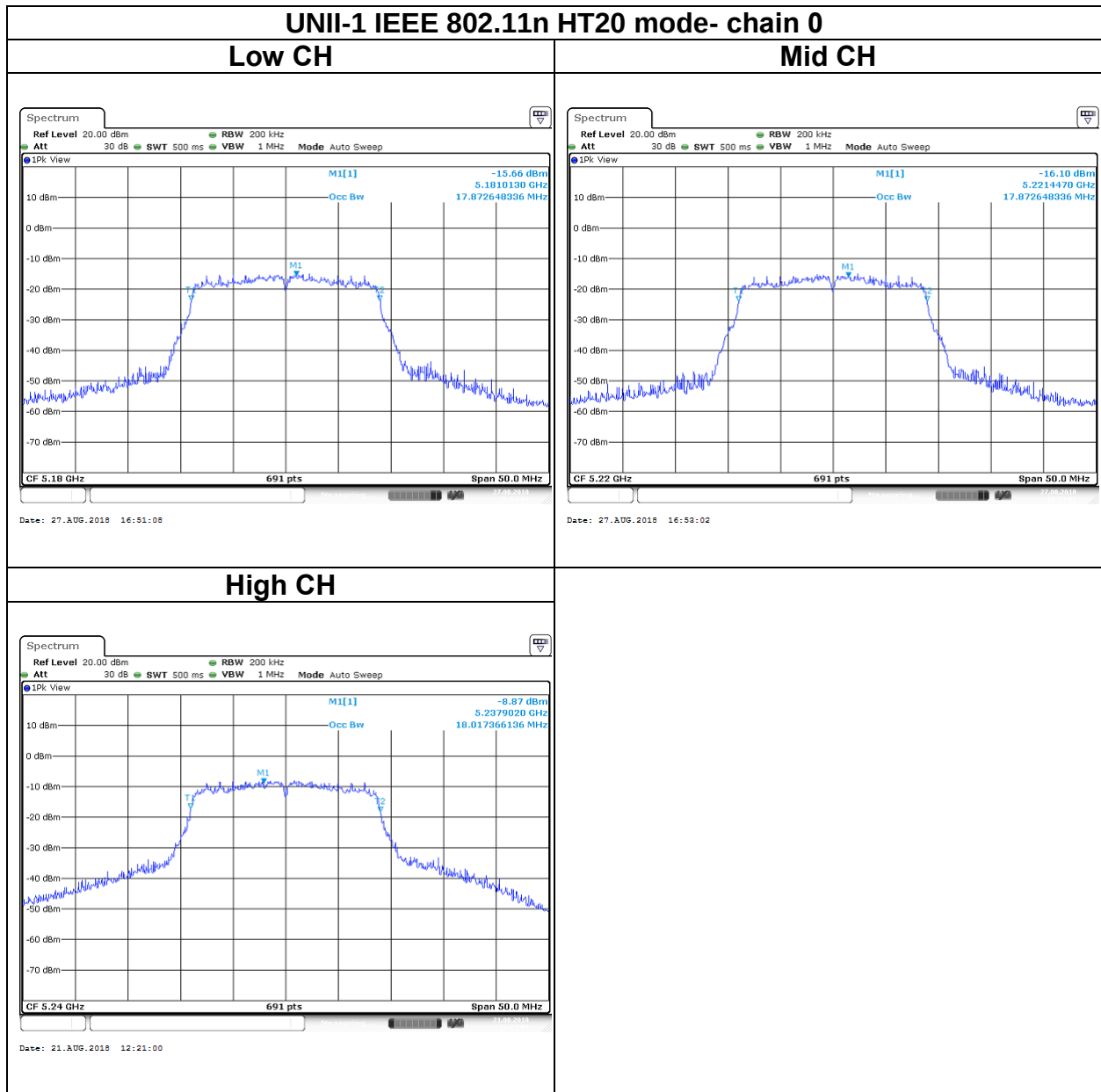
High CH

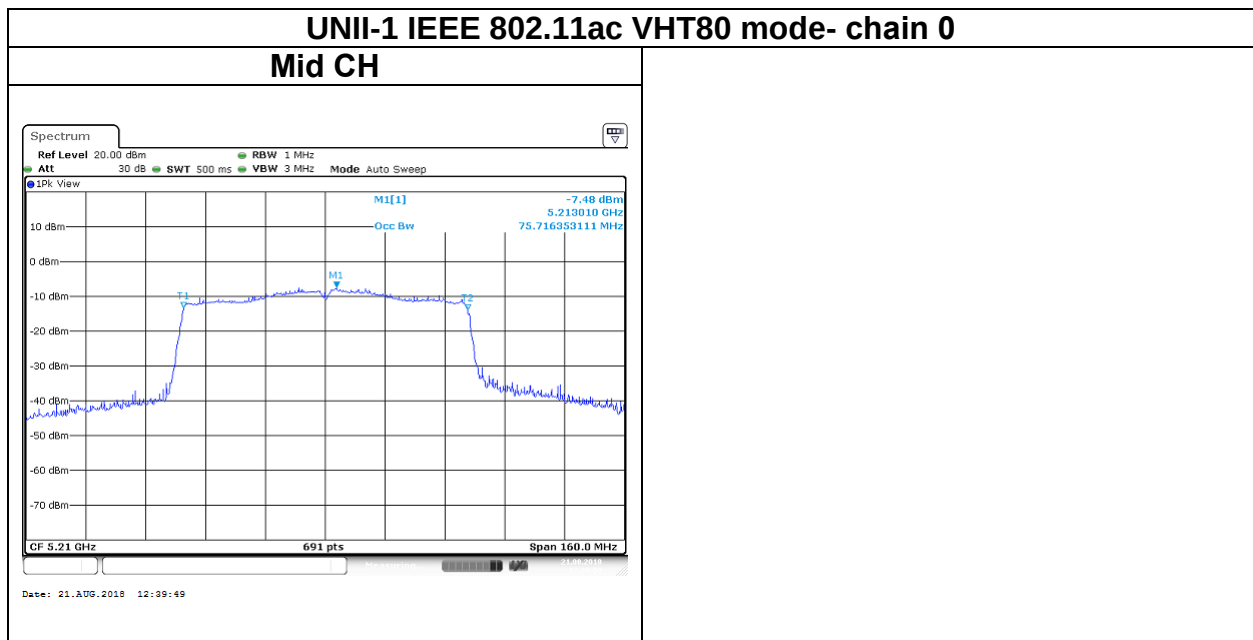
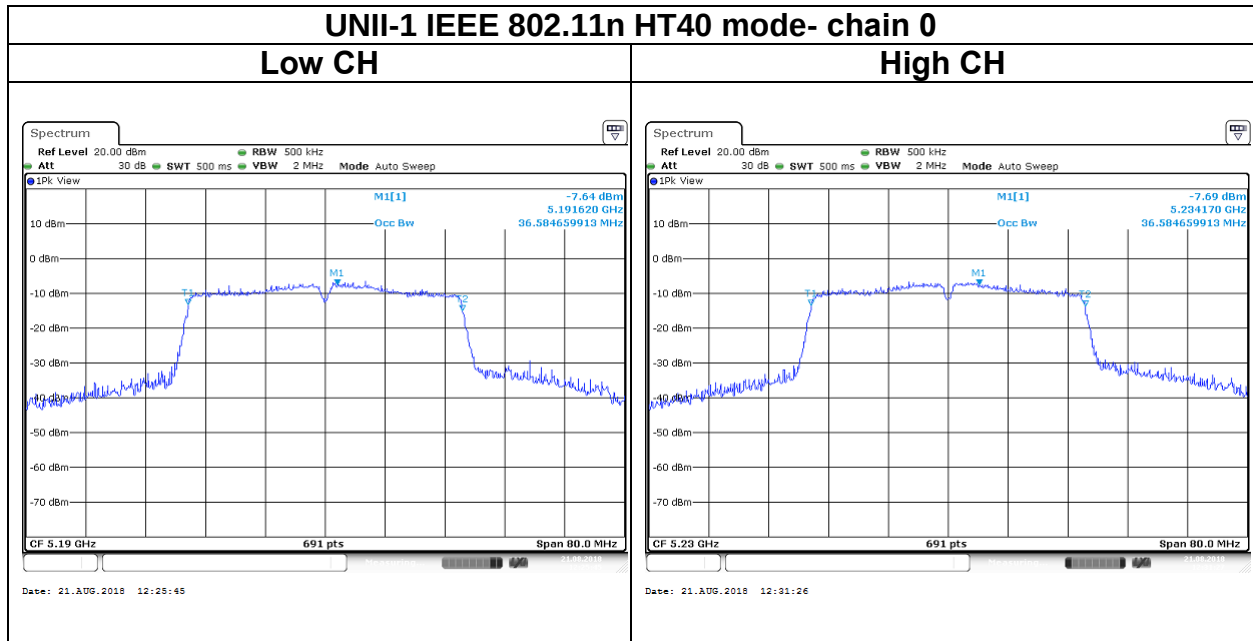


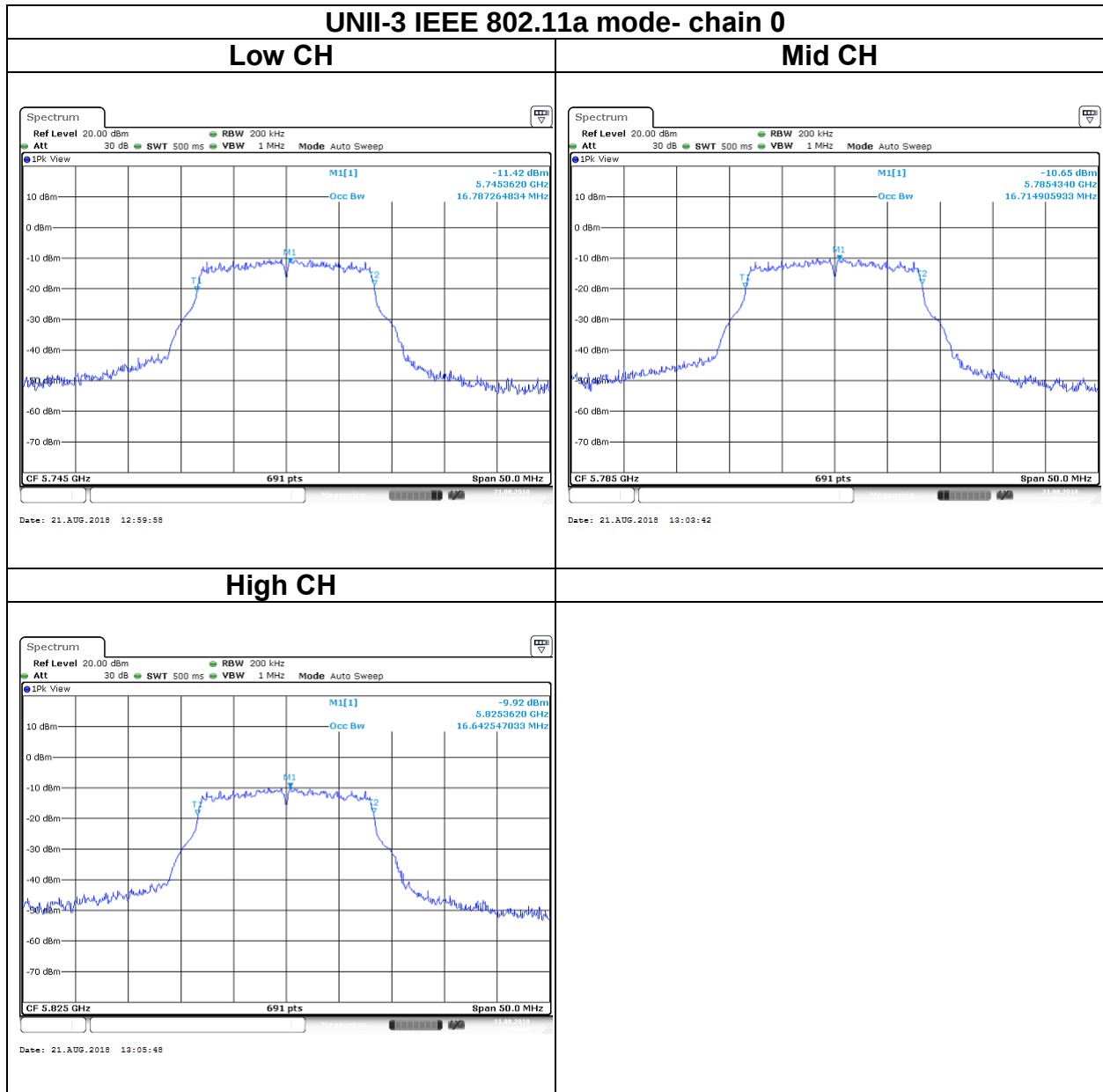


Test Data (OBW 99%)

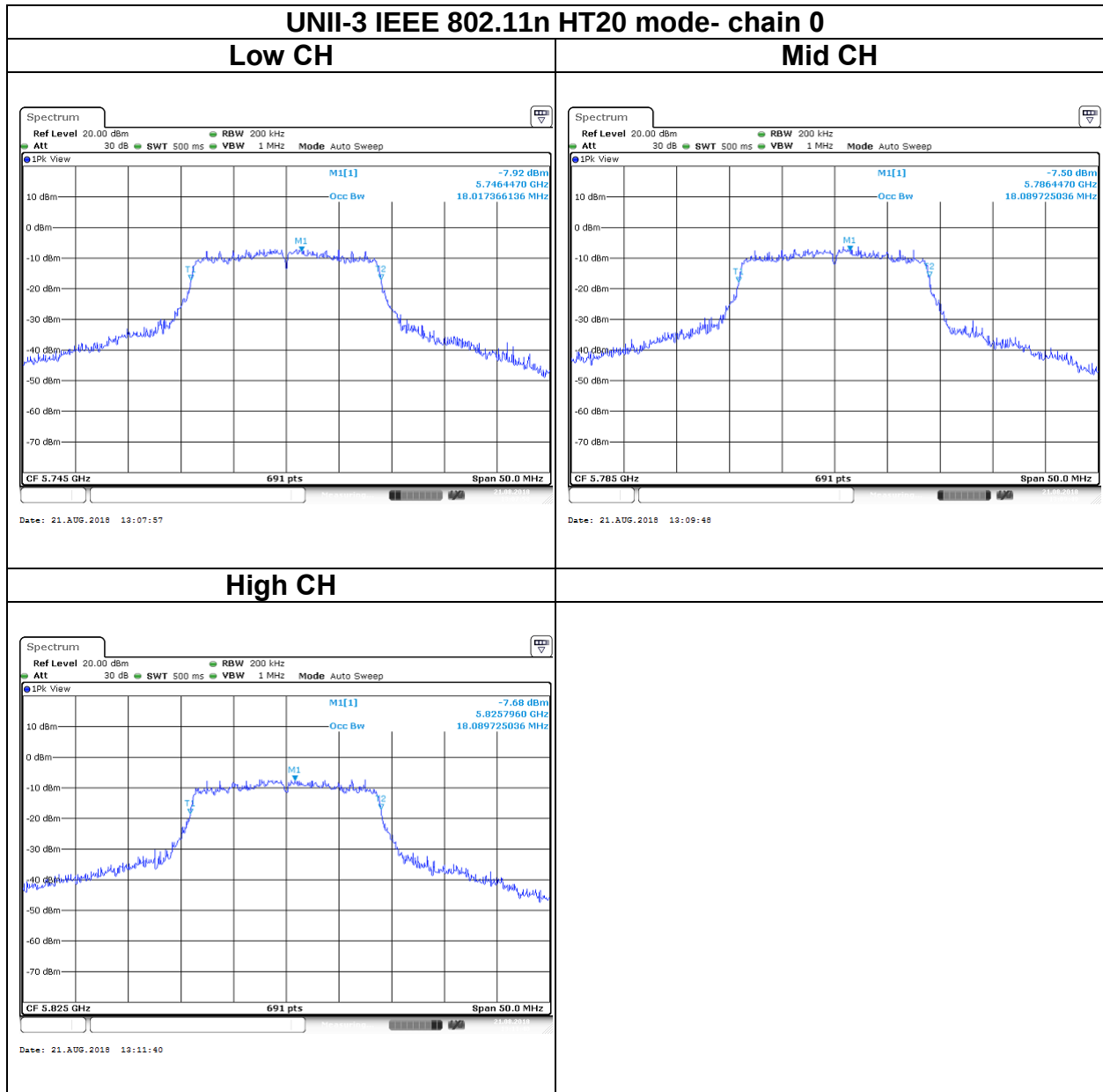


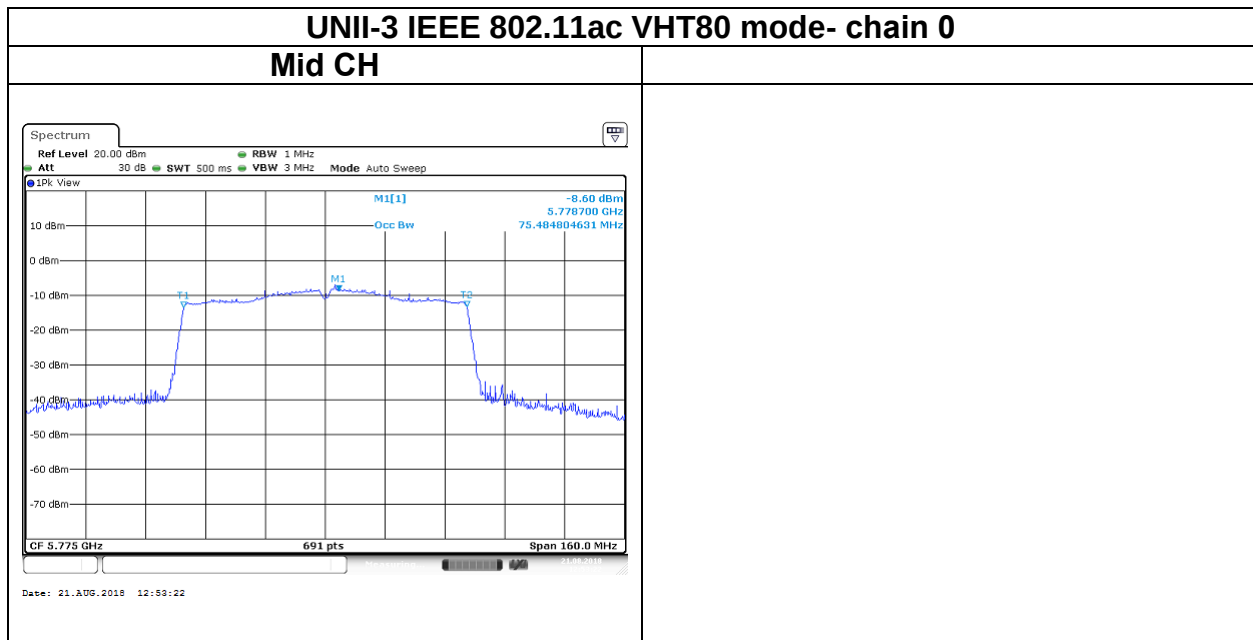
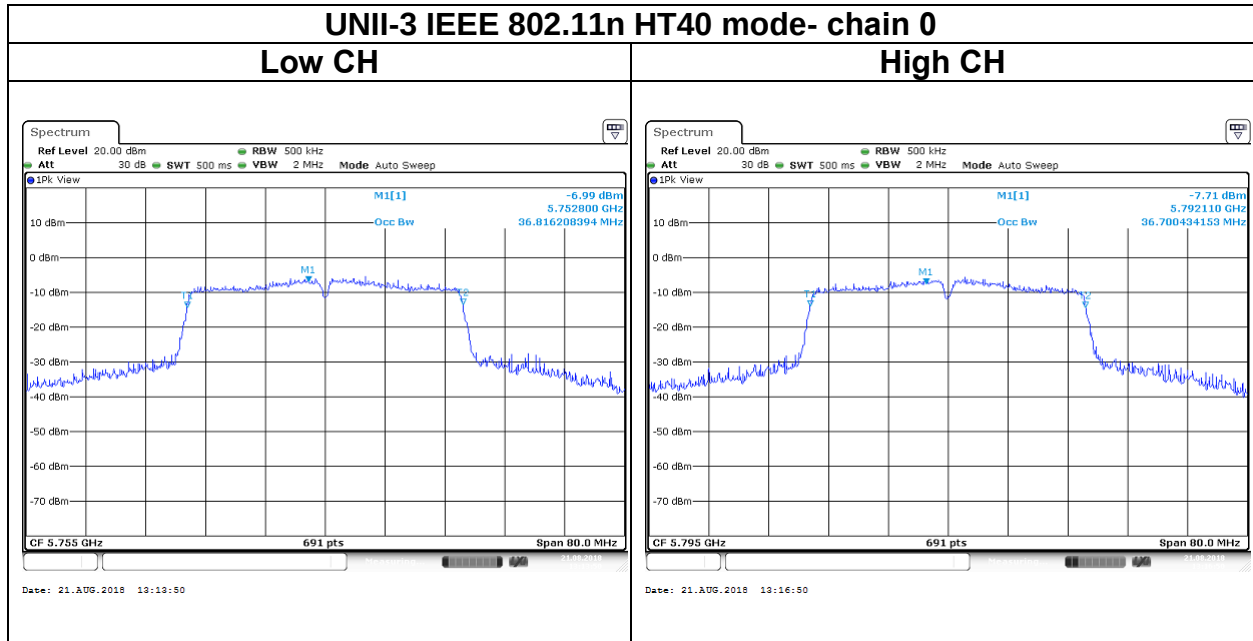


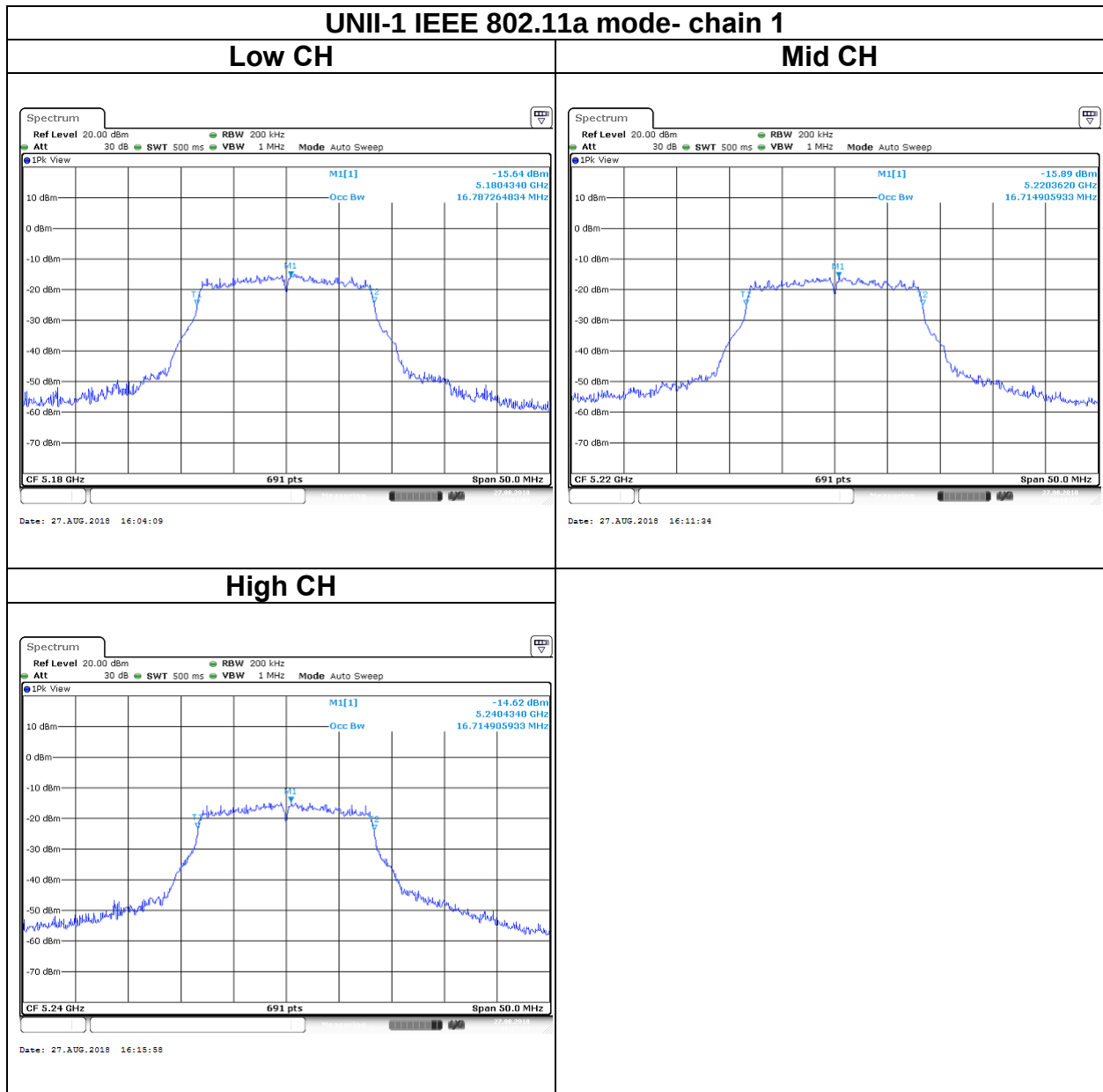




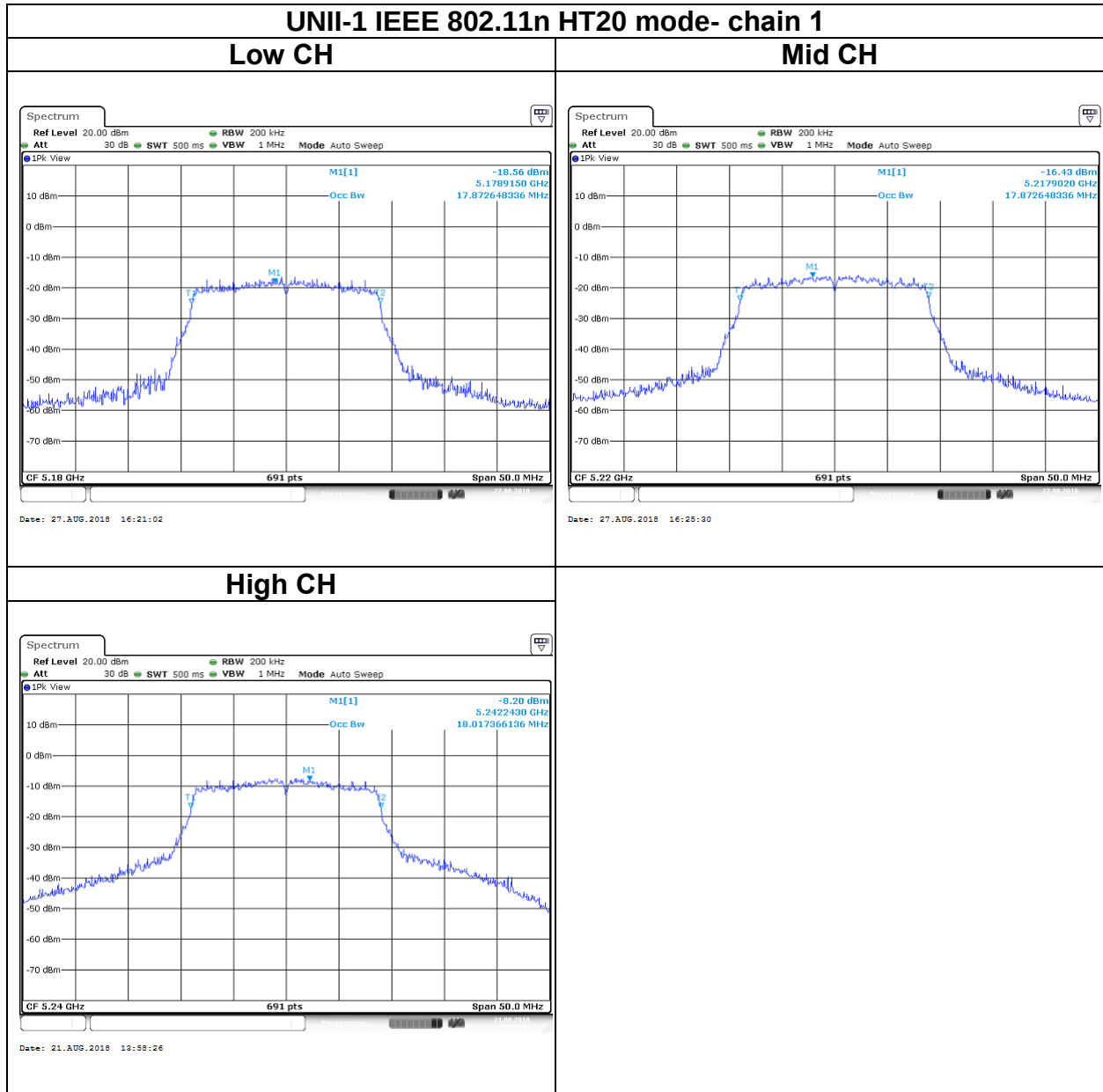
Report No.: T180802D05-RP3

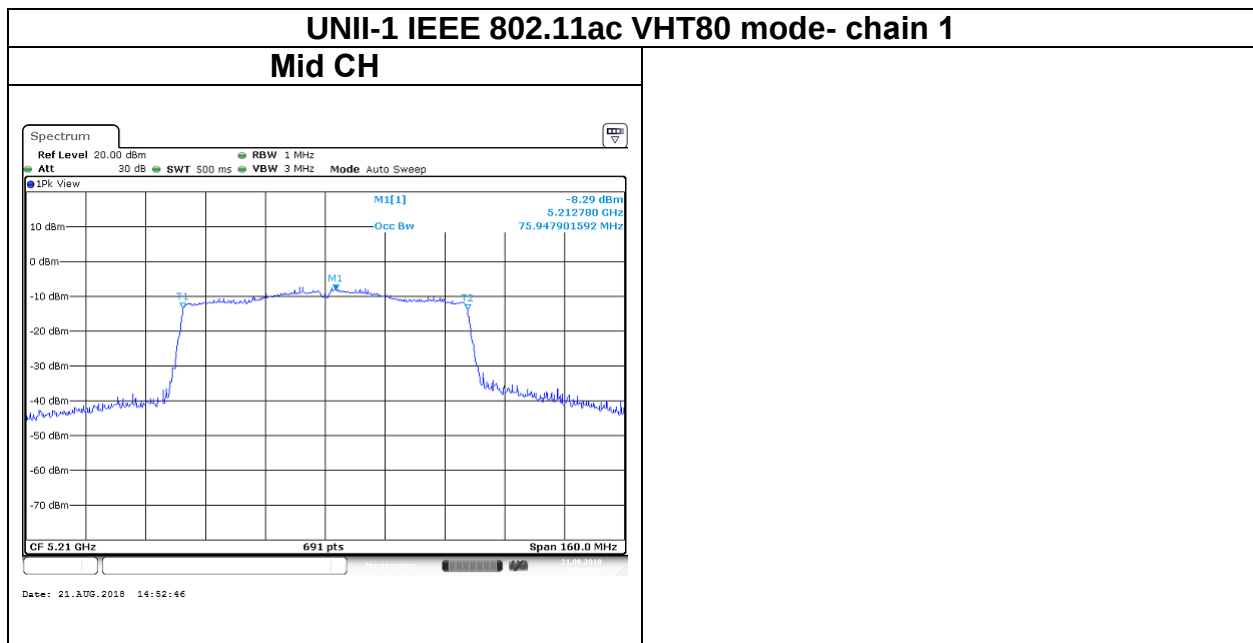
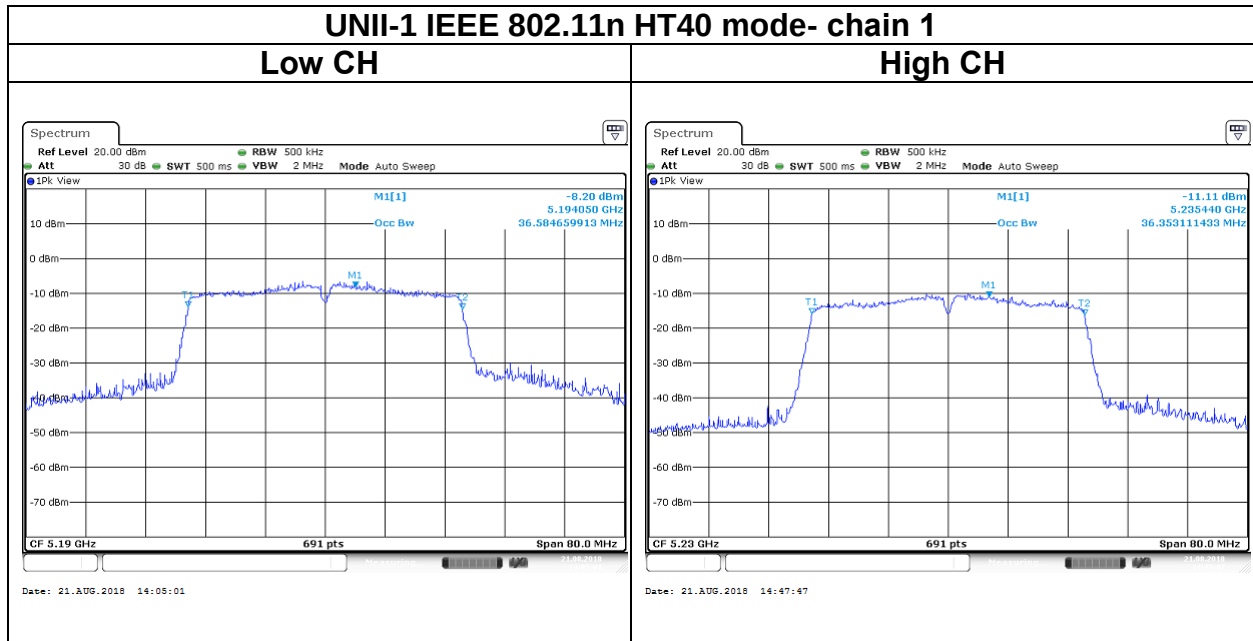




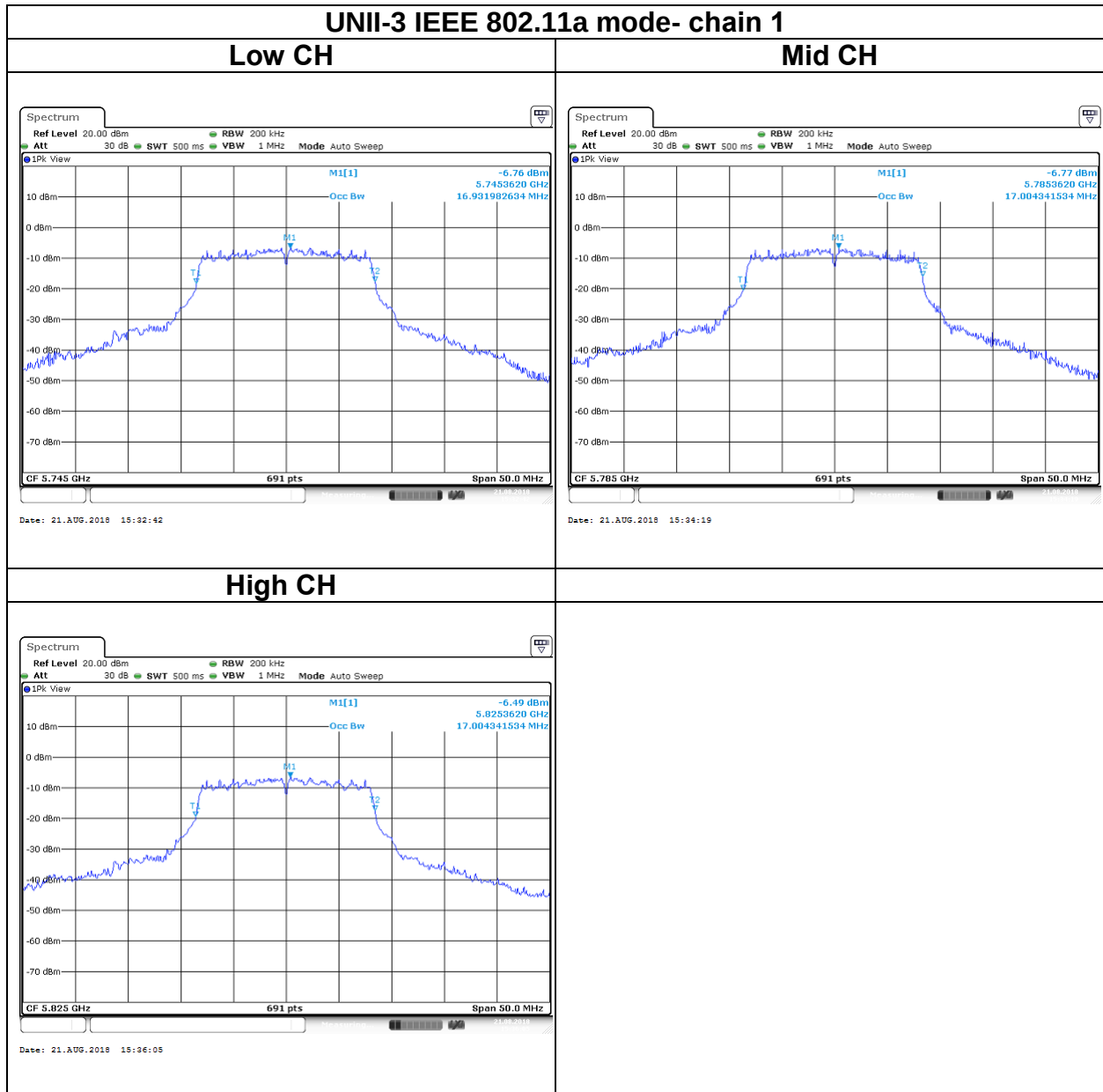


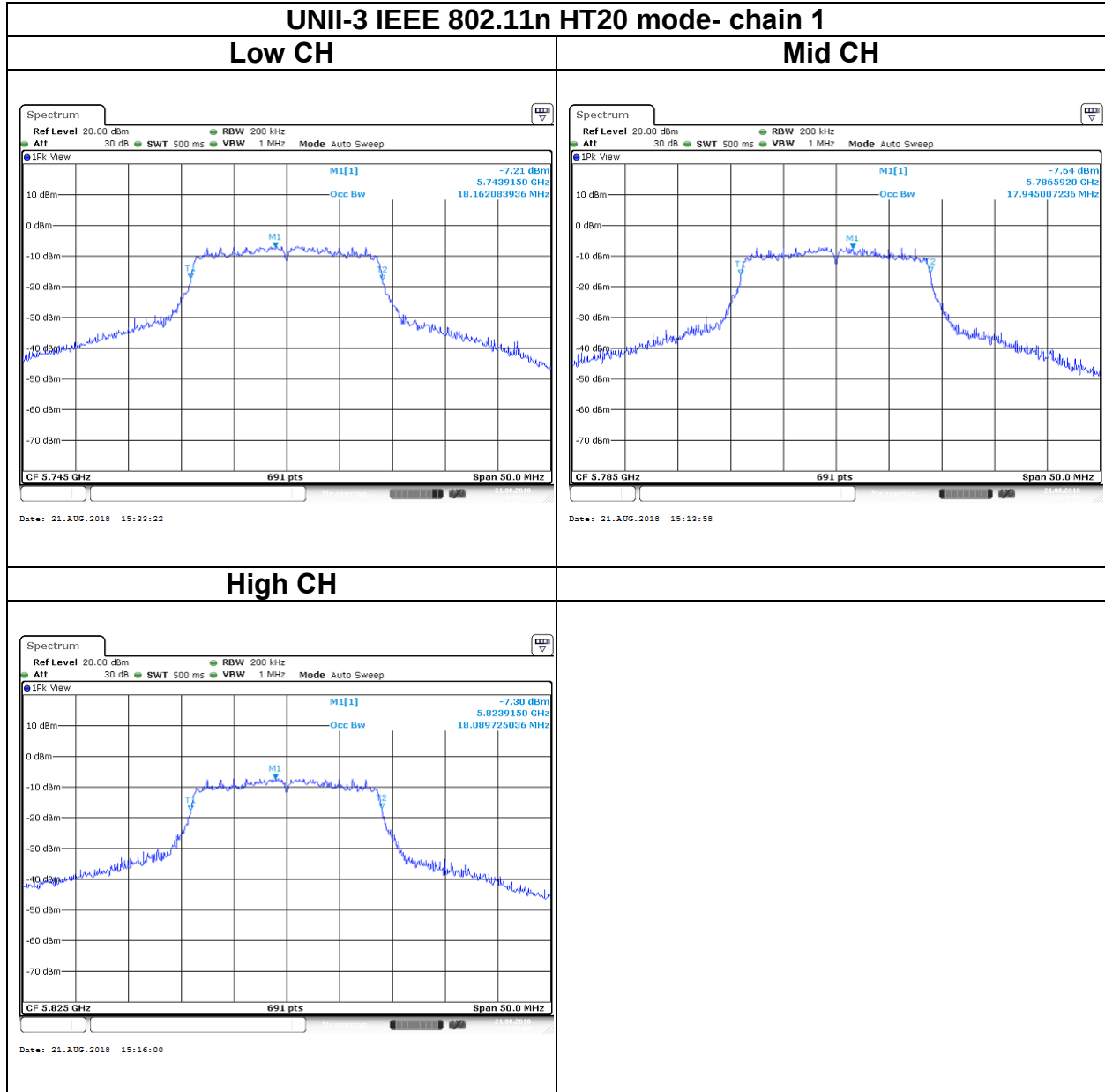
Report No.: T180802D05-RP3

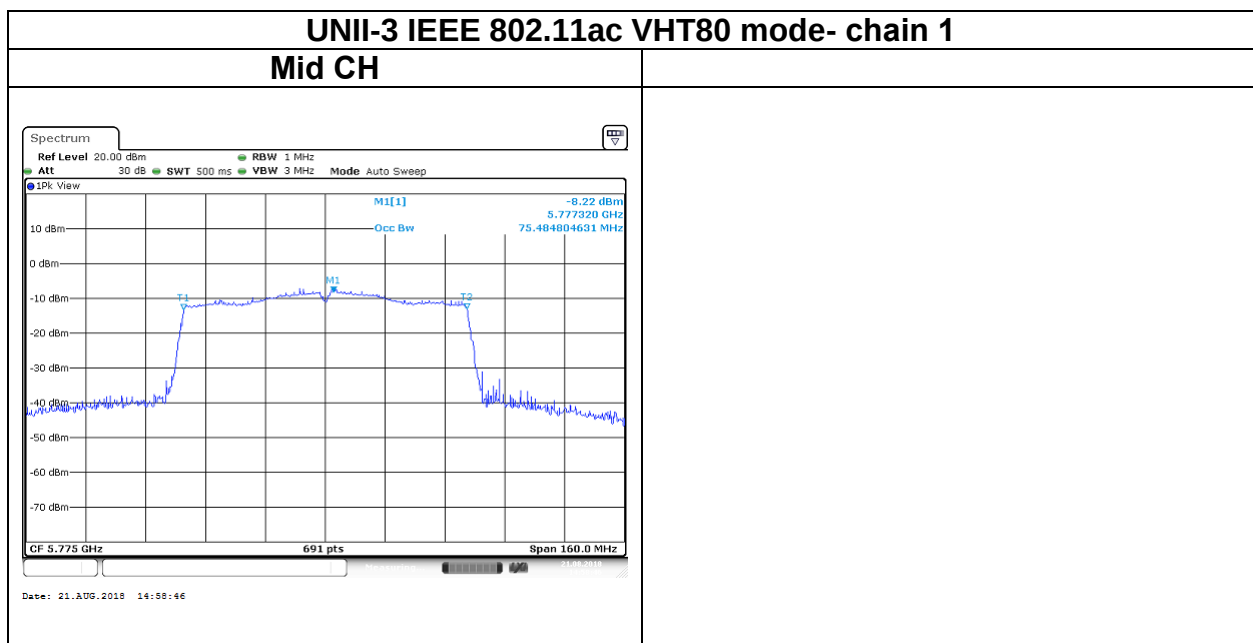
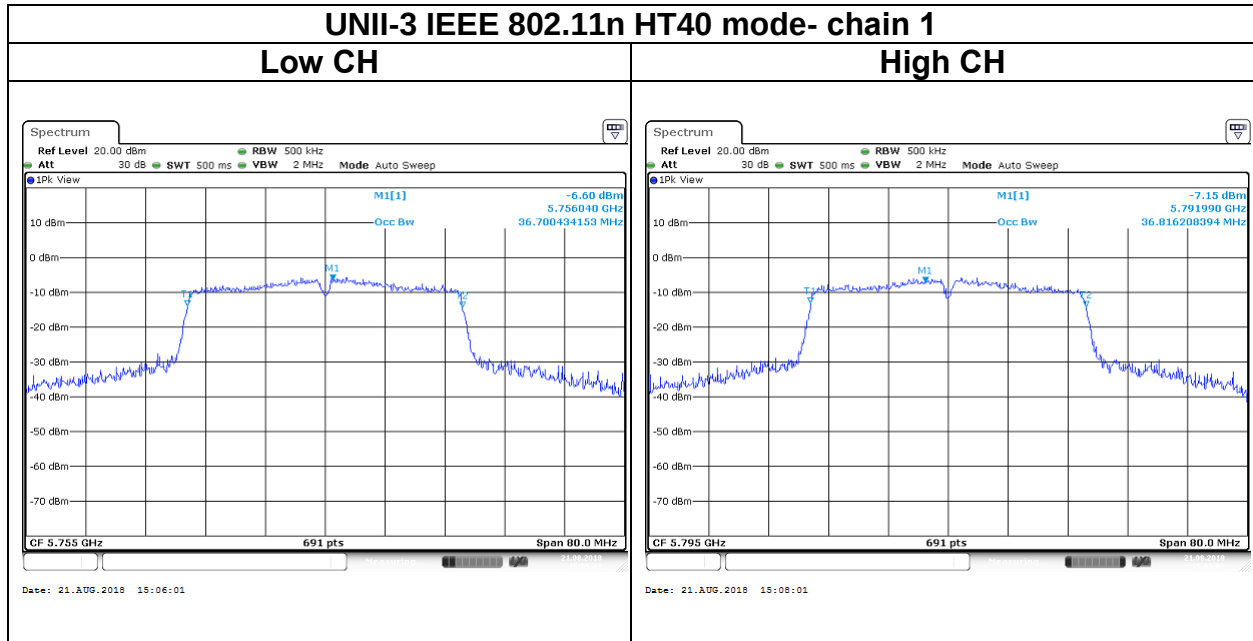




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4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.407 (a)

UNII-1 :

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

UNII-3:

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

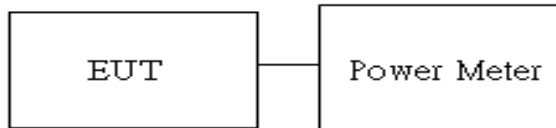
UNII-1 Limit	☒ Antenna not exceed 6 dBi : 24dBm ☐ Antenna with DG greater than 6 dBi : [Limit = 24 – (DG – 6)]
UNII-3 Limit	☒ Antenna not exceed 6 dBi : 30dBm ☐ Antenna with DG greater than 6 dBi : [Limit = 24 – (DG – 6)]

4.3.2 Test Procedure

Test method Refer as KDB 789033 D02, Section E.3.b.

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Average output power. in the test report.

4.3.3 Test Setup



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4.3.4 Test Result

Conducted output power :
For Chain 0

UNII-1							
Config	CH	Freq. (MHz)	Power Set	AV Power(dBm)		AV Power (W)	Limit (dBm)
				chain0	chain1		
IEEE 802.11a	36	5180	13	14.28	-	0.0268	24
	44	5220	13	14.09	-	0.0256	
	48	5240	14	15.02	-	0.0318	
IEEE 802.11n HT20	36	5180	13	14.15	-	0.0260	
	44	5220	13	14.11	-	0.0258	
	48	5240	12	12.93	-	0.0196	
IEEE 802.11n HT40	38	5190	12	11.96	-	0.0157	
	46	5230	12	11.93	-	0.0156	
IEEE 802.11ac VHT80	42	5210	8	7.87	-	0.0061	

UNII-3							
Config	CH	Freq. (MHz)	Power Set	AV Power(dBm)		AV Power (W)	Limit (dBm)
				chain0	chain1		
IEEE 802.11a	149	5745	-1	16.74	-	0.0472	30
	157	5785	-1	16.68	-	0.0466	
	165	5825	-1	16.90	-	0.0490	
IEEE 802.11n HT20	149	5745	-1	16.54	-	0.0451	
	157	5785	-1	16.49	-	0.0446	
	165	5825	-1	16.51	-	0.0448	
IEEE 802.11n HT40	151	5755	-1	16.02	-	0.0400	
	159	5795	-1	16.01	-	0.0399	
IEEE 802.11ac VHT80	155	5775	-1	19.80	-	0.0955	

For Chain 1

UNII-1							
Config	CH	Freq. (MHz)	Power Set	AV Power(dBm)		AV Power (W)	Limit (dBm)
				chain0	chain1		
IEEE 802.11a	36	5180	13	-	14.23	0.0265	24
	44	5220	13	-	14.24	0.0265	
	48	5240	14	-	15.39	0.0346	
IEEE 802.11n HT20	36	5180	13	-	14.27	0.0267	
	44	5220	13	-	13.75	0.0237	
	48	5240	12	-	13.09	0.0204	
IEEE 802.11n HT40	38	5190	12	-	12.09	0.0162	
	46	5230	12	-	12.02	0.0159	
IEEE 802.11ac VHT80	42	5210	8	-	7.00	0.0050	

UNII-3							
Config	CH	Freq. (MHz)	Power Set	AV Power(dBm)		AV Power (W)	Limit (dBm)
				chain0	chain1		
IEEE 802.11a	149	5745	-1	-	16.71	0.0469	30
	157	5785	-1	-	16.87	0.0486	
	165	5825	-1	-	16.97	0.0498	
IEEE 802.11n HT20	149	5745	-1	-	16.75	0.0473	
	157	5785	-1	-	16.66	0.0463	
	165	5825	-1	-	16.59	0.0456	
IEEE 802.11n HT40	151	5755	-1	-	16.08	0.0406	
	159	5795	-1	-	16.12	0.0409	
IEEE 802.11ac VHT80	155	5775	-1	-	19.63	0.0918	



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4.4 POWER SPECTRAL DENSITY

4.4.1 Test Limit

According to §15.407 (a)

UNII-1 :

FCC: The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

UNII-3:

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

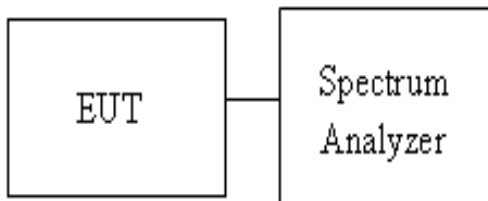
UNII-1 Limit	☒ Antenna not exceed 6 dBi : 11 dBm ☐ Antenna with DG greater than 6 dBi : [Limit = 11 – (DG – 6)]
UNII-3 Limit	☒ Antenna not exceed 6 dBi : 30 dBm ☐ Antenna with DG greater than 6 dBi : [Limit = 30 – (DG – 6)]

4.4.2 Test Procedure

Test method Refer as KDB 789033 D02, Section F

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. UNII-1, UNII-2a and UNII-2c, SA set RBW = 1MHz, VBW = 3MHz and Detector = RMS, to measurement Power Density.
4. UNII-3, SA set RBW = 500kHz, VBW = 2MHz and Detector = RMS, to measurement Power Density
5. The path loss and Duty Factor were compensated to the results for each measurement by SA.
6. Mark the maximum level.
7. Measure and record the result of power spectral density. in the test report.

4.4.3 Test Setup





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4.4.4 Test Result

For Chain 0:

UNII-1			
Test mode: IEEE 802.11a mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Low	5180	-5.67	11
Mid	5220	-5.38	
High	5240	-4.30	
Test mode: IEEE 802.11n HT20 mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Low	5180	-5.64	11
Mid	5220	-6.05	
High	5240	2.94	
Test mode: IEEE 802.11n HT40 mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Low	5190	-0.83	11
High	5230	-0.88	
Test mode: IEEE 802.11ac VHT80 mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Mid	5210	-5.23	11



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UNII-3			
Test mode: IEEE 802.11a mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Low	5745	5.73	30
Mid	5785	5.90	
High	5825	5.71	
Test mode: IEEE 802.11n HT20 mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Low	5745	9.27	30
Mid	5785	9.63	
High	5825	9.95	
Test mode: IEEE 802.11n HT40 mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Low	5755	5.87	30
High	5795	6.15	
Test mode: IEEE 802.11ac VHT80 mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Mid	5775	0.33	30

For Chain 1:

UNII-1			
Test mode: IEEE 802.11a mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Low	5180	-5.46	11
Mid	5220	-6.68	
High	5240	-5.34	
Test mode: IEEE 802.11n HT20 mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Low	5180	-7.67	11
Mid	5220	-7.12	
High	5240	3.05	
Test mode: IEEE 802.11n HT40 mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Low	5190	-4.37	11
High	5230	-4.66	
Test mode: IEEE 802.11ac VHT80 mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Mid	5210	-5.03	11



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UNII-3			
Test mode: IEEE 802.11a mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Low	5745	9.09	30
Mid	5785	9.17	
High	5825	9.03	
Test mode: IEEE 802.11n HT20 mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Low	5745	10.03	30
Mid	5785	9.96	
High	5825	9.48	
Test mode: IEEE 802.11n HT40 mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Low	5755	6.06	30
High	5795	5.96	
Test mode: IEEE 802.11ac VHT80 mode			
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)
Mid	5775	0.54	30

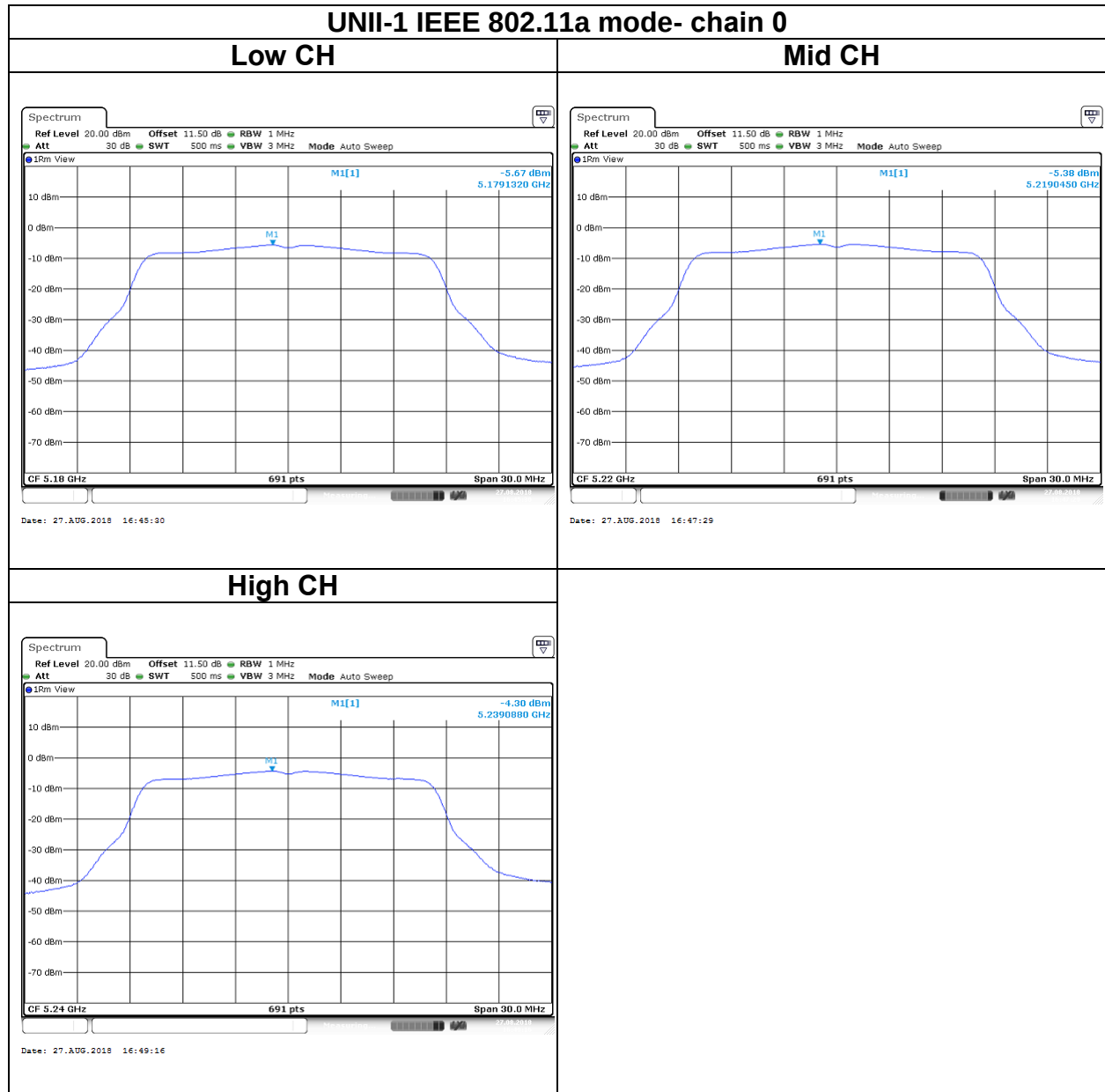


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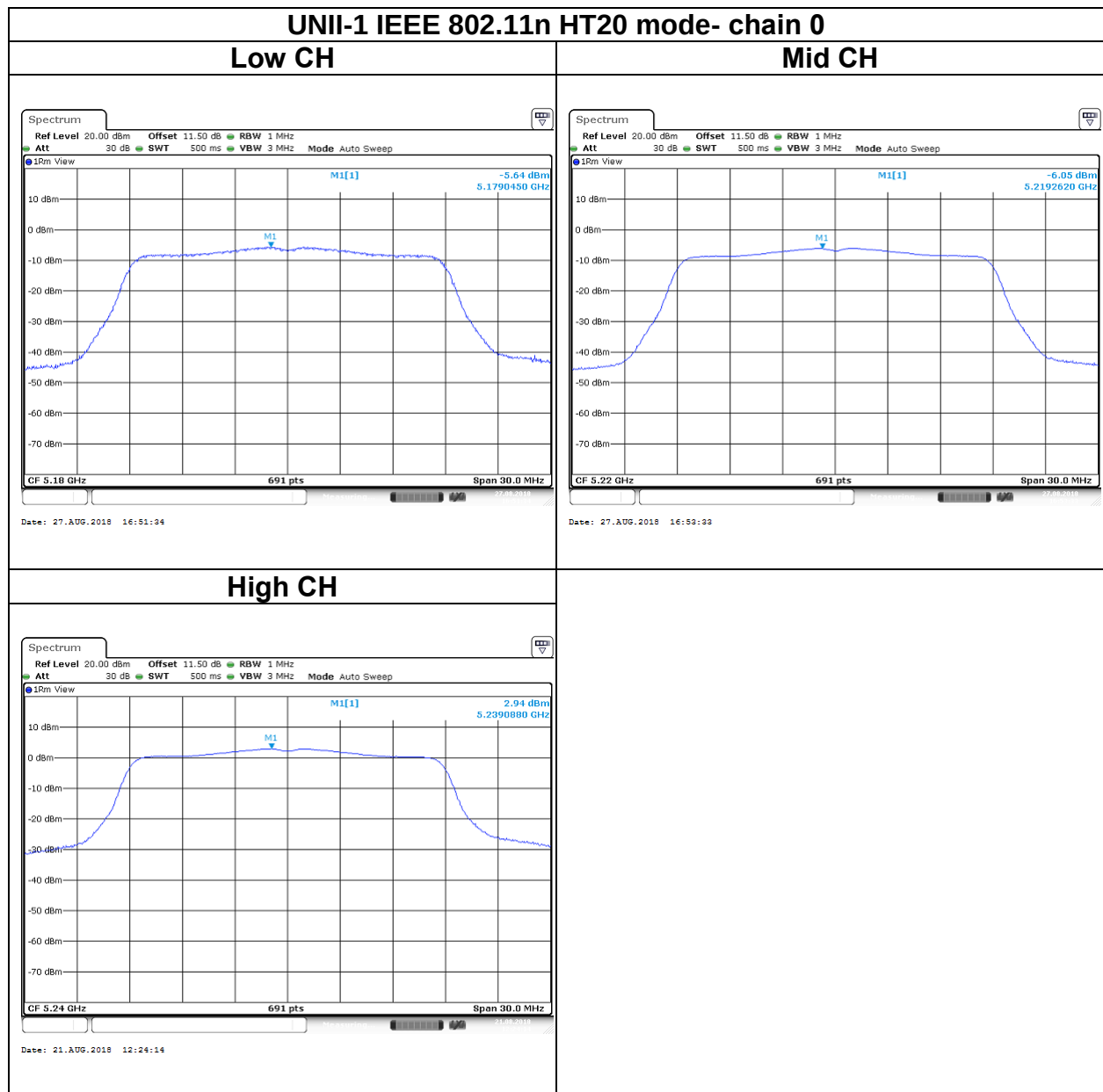
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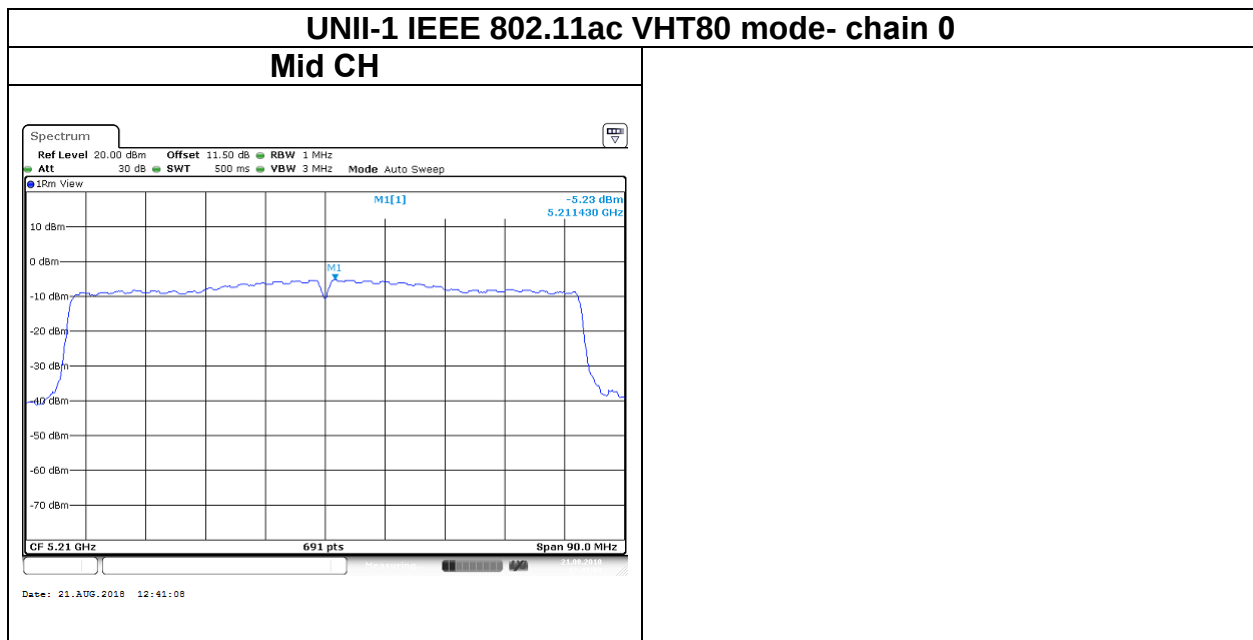
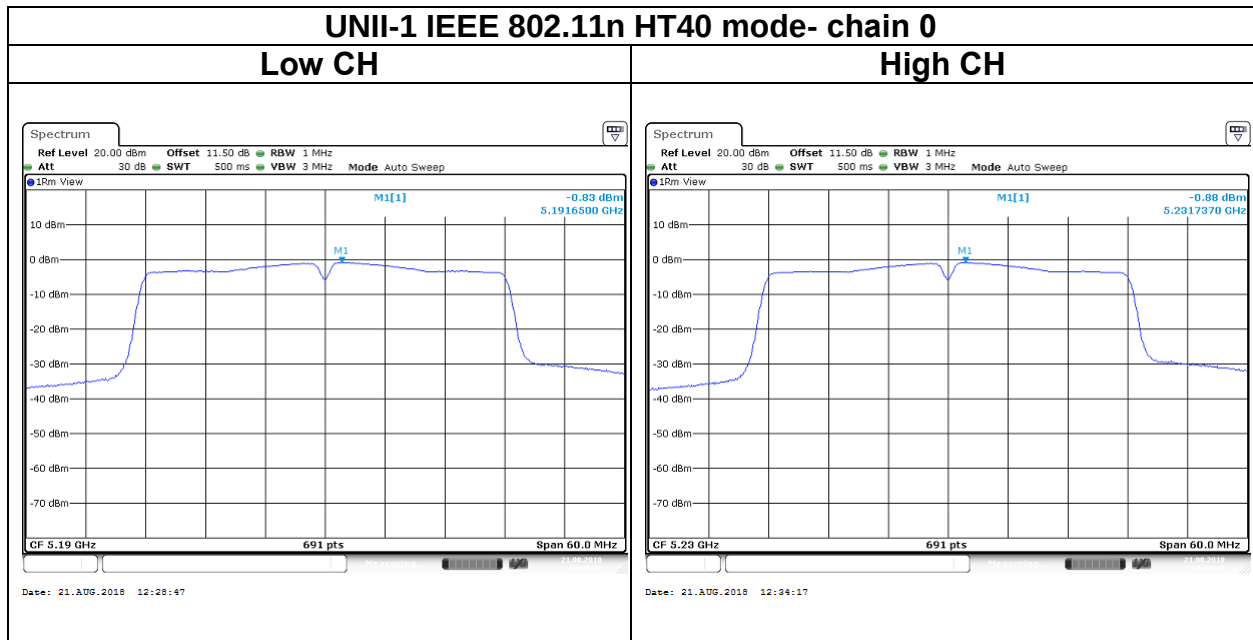




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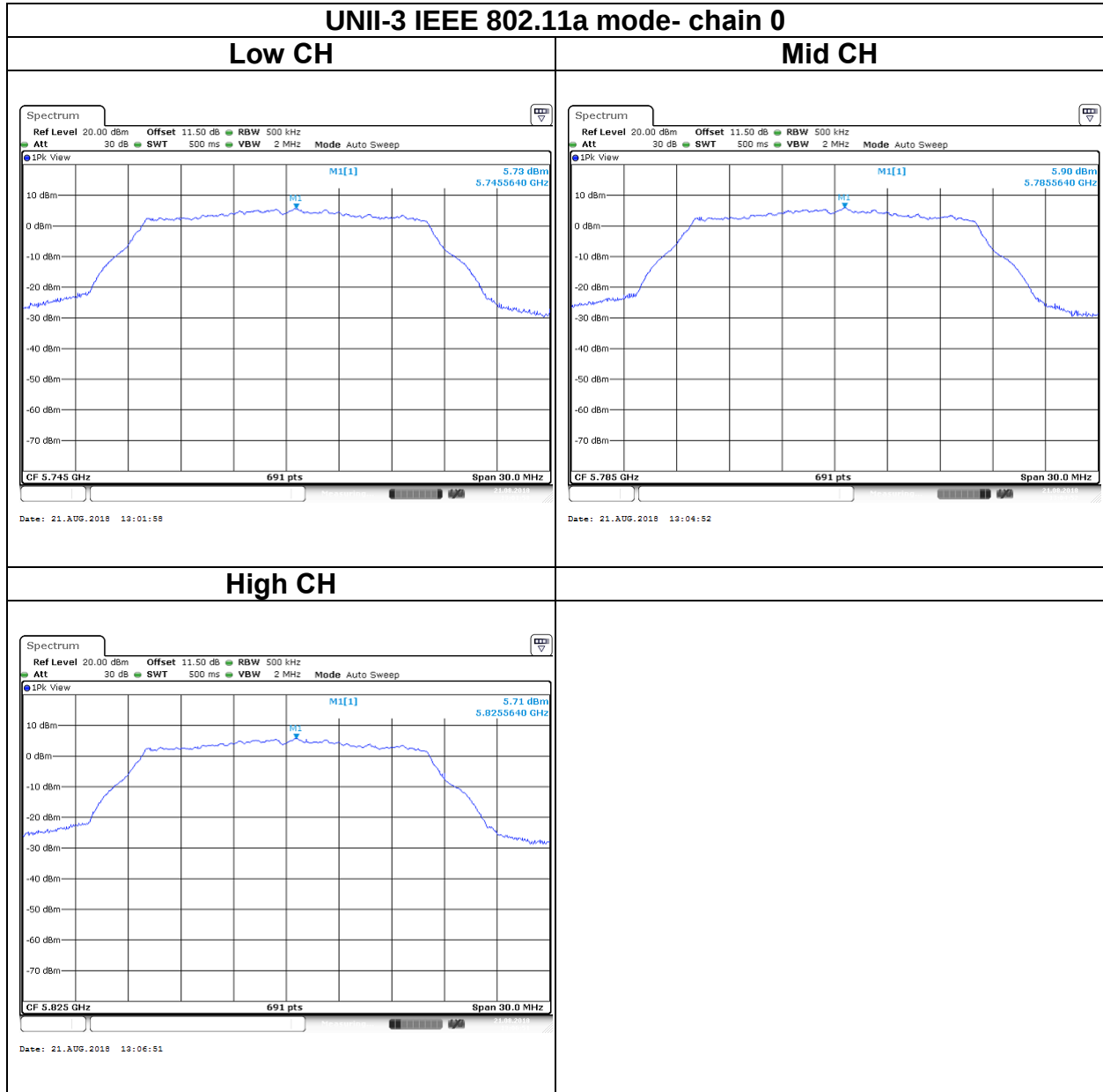


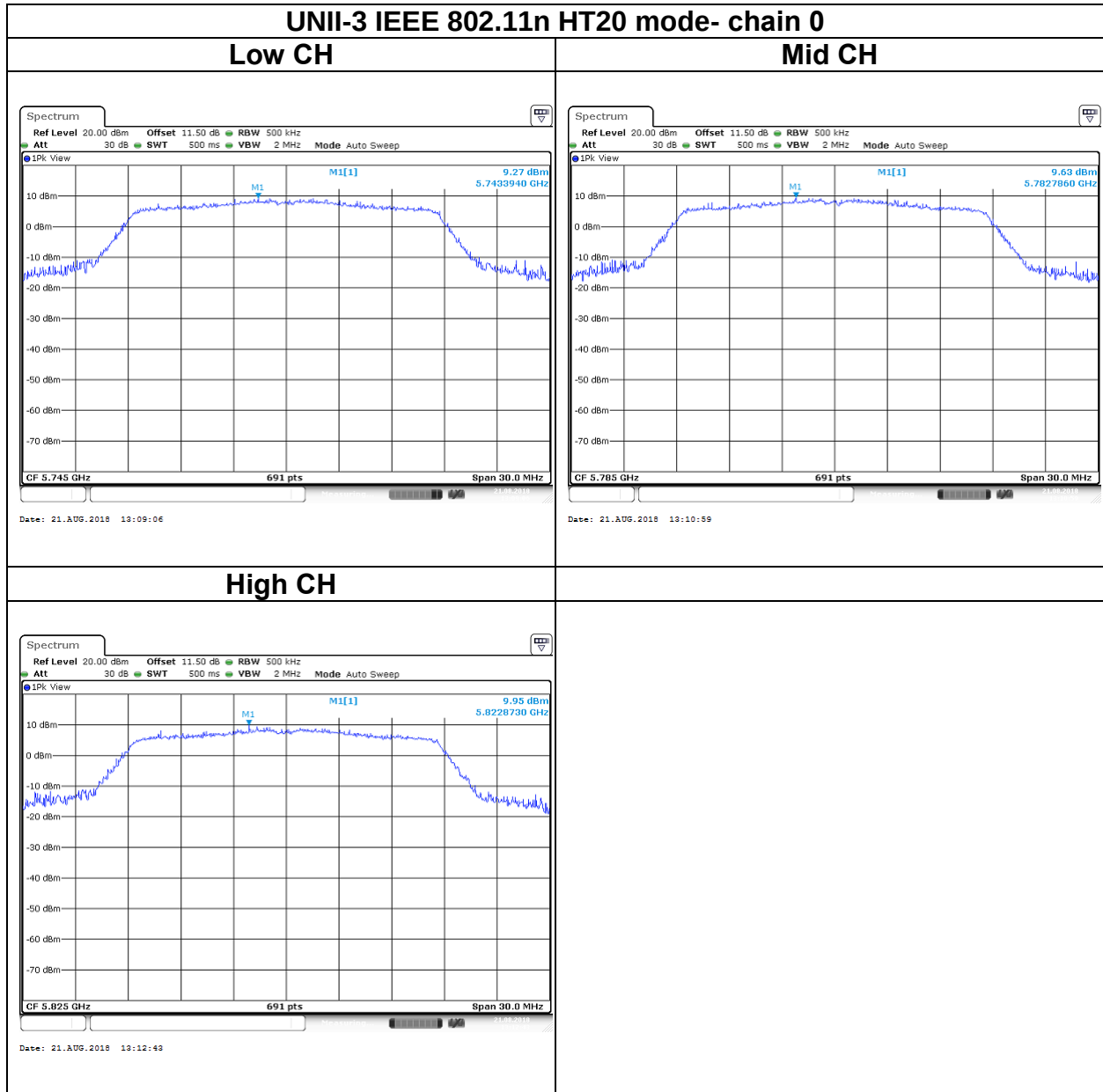
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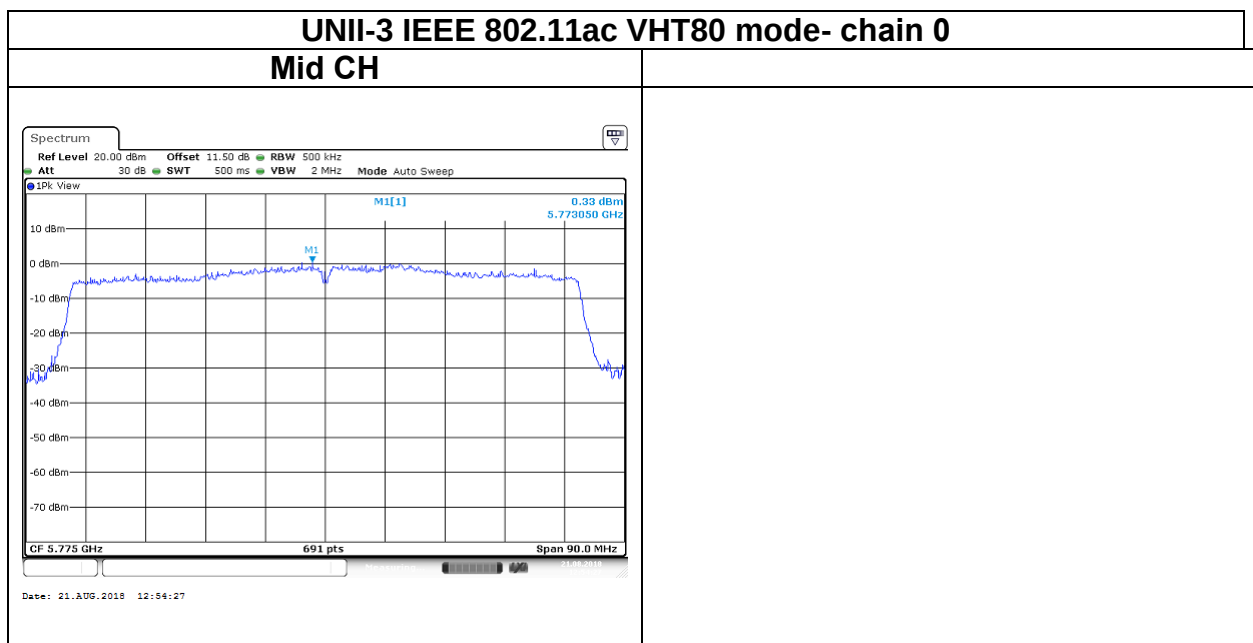
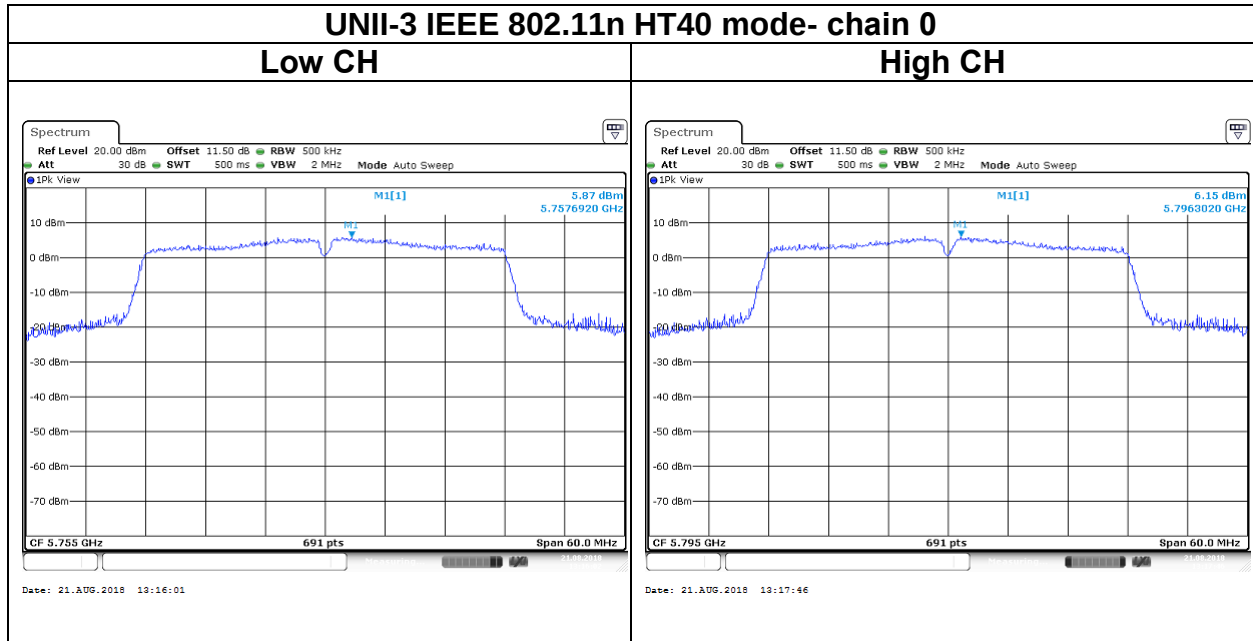
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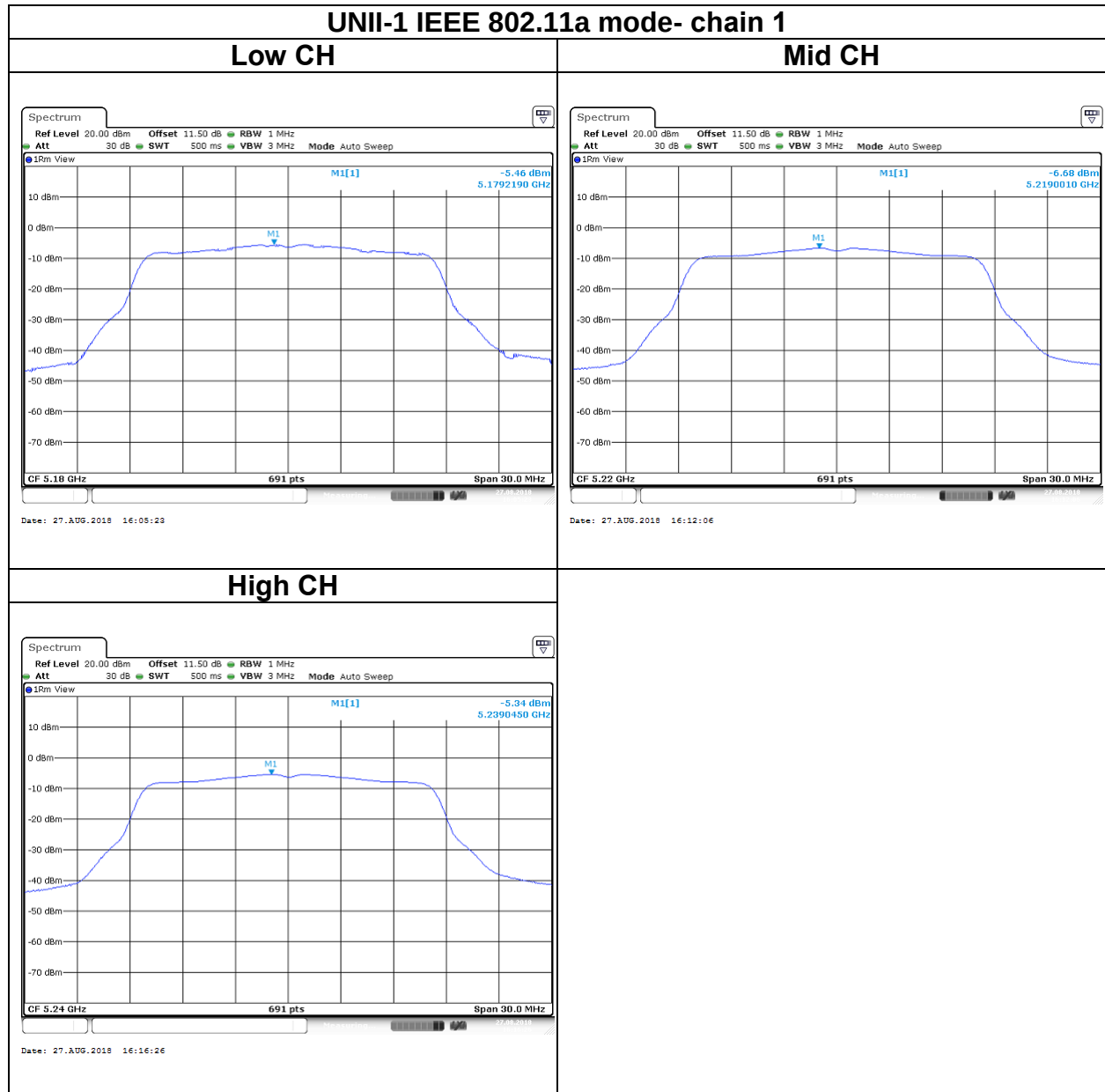


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