

FCC ID: 2AUS4-NFA1
Report No.: T190902W03-RP4

Page: 1 / 251
Rev.: 02

RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART E

Test Standard	FCC Part 15.407
Brand name	neat.
Product name	Neat Pad
Model No.	A1
Test Result	Pass
Statements of Conformity	Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

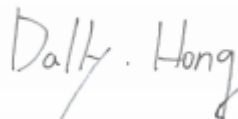
The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

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:

Reviewed by:



Kevin Tsai
Deputy Manager

Dally Hong
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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms_and_conditions.htm and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sgs.com/terms_e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Report No.: T190902W03-RP4

Page: 2 / 251
Rev.: 02

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	December 16, 2019	Initial Issue	ALL	May Lin
01	December 18, 2019	See the following Note Rev. (01)	P.6	May Lin
02	December 18, 2019	See the following Note Rev. (02)	P.79	May Lin

Rev (01):

1. Revised the section 1.3

Rev (02):

1. Revised the section 4.3



Report No.: T190902W03-RP4

Page: 3 / 251
Rev.: 02

Table of contents

1. GENERAL INFORMATION	4
1.1 EUT INFORMATION	4
1.2 EUT CHANNEL INFORMATION	5
1.3 ANTENNA INFORMATION	6
1.4 MEASUREMENT UNCERTAINTY	6
1.5 FACILITIES AND TEST LOCATION	7
1.6 INSTRUMENT CALIBRATION.....	8
1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT	10
1.8 TEST METHODOLOGY AND APPLIED STANDARDS	10
2. TEST SUMMERY	11
3. DESCRIPTION OF TEST MODES	12
3.1 THE WORST MODE OF OPERATING CONDITION.....	12
3.2 THE WORST MODE OF MEASUREMENT	13
3.3 EUT DUTY CYCLE	14
4. TEST RESULT	15
4.1 AC POWER LINE CONDUCTED EMISSION	15
4.2 26dB BANDWIDTH, 6dB BANDWIDTH AND OCCUPIED BANDWIDTH(99%)	18
4.3 OUTPUT POWER MEASUREMENT.....	74
4.4 POWER SPECTRAL DENSITY	80
4.5 RADIATION BANDEDGE AND SPURIOUS EMISSION	111
4.6 FREQUENCY STABILITY.....	235
4.7 DYNAMIC FREQUENCY SELECTION	238
APPENDIX-A TEST PHOTO	A-1
APPENDIX 1 - PHOTOGRAPHS OF EUT	

1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	Neatframe AS Martin Linges Vei 25 Fornebu Fornebu 1364 Norway																																																										
Manufacturer	Neatframe Limited The Charter Building Charter Place UXBRIDGE United Kingdom UB8 1JG United Kingdom Of Great Britain And Northern Ireland																																																										
Equipment	Neat Pad																																																										
Model No.	A1																																																										
Model Discrepancy	N/A																																																										
Trade Name	neat.																																																										
Received Date	September 02, 2019																																																										
Date of Test	October 30 ~ November 13, 2019																																																										
Power Supply	VDC from Power Adapter PHIHONG / POE16R-1AFG I/P: 100-240Vac, 0.8A, 50-60Hz, 32-44VA O/P: 56Vdc, 0.275A																																																										
Output Power(W)	<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>0.0894</td></tr> <tr> <td>IEEE 802.11n 20 MHz</td><td>5180 ~ 5240</td><td>0.1045</td></tr> <tr> <td>IEEE 802.11n 40 MHz</td><td>5190 ~ 5230</td><td>0.1063</td></tr> <tr> <td>IEEE 802.11ac VHT 80 MHz</td><td>5210</td><td>0.1085</td></tr> <tr> <td rowspan="4">U-NII-2a</td><td>IEEE 802.11a</td><td>5260 ~ 5320</td><td>0.0896</td></tr> <tr> <td>IEEE 802.11n 20 MHz</td><td>5260 ~ 5320</td><td>0.1529</td></tr> <tr> <td>IEEE 802.11n 40 MHz</td><td>5270 ~ 5310</td><td>0.1673</td></tr> <tr> <td>IEEE 802.11ac VHT 80 MHz</td><td>5290</td><td>0.1485</td></tr> <tr> <td rowspan="4">U-NII-2c</td><td>IEEE 802.11a</td><td>5500 ~ 5700</td><td>0.1025</td></tr> <tr> <td>IEEE 802.11n 20 MHz</td><td>5500 ~ 5700</td><td>0.1926</td></tr> <tr> <td>IEEE 802.11n 40 MHz</td><td>5510 ~ 5670</td><td>0.1843</td></tr> <tr> <td>IEEE 802.11ac VHT 80 MHz</td><td>5530</td><td>0.0920</td></tr> <tr> <td rowspan="4">U-NII-3</td><td>IEEE 802.11a</td><td>5745 ~ 5825</td><td>0.0906</td></tr> <tr> <td>IEEE 802.11n 20 MHz</td><td>5745 ~ 5825</td><td>0.2003</td></tr> <tr> <td>IEEE 802.11n 40 MHz</td><td>5755 ~ 5795</td><td>0.1590</td></tr> <tr> <td>IEEE 802.11ac VHT 80 MHz</td><td>5775</td><td>0.1204</td></tr> </table>			Band	Mode	Frequency Range (MHz)	Output Power (W)	U-NII-1	IEEE 802.11a	5180 ~ 5240	0.0894	IEEE 802.11n 20 MHz	5180 ~ 5240	0.1045	IEEE 802.11n 40 MHz	5190 ~ 5230	0.1063	IEEE 802.11ac VHT 80 MHz	5210	0.1085	U-NII-2a	IEEE 802.11a	5260 ~ 5320	0.0896	IEEE 802.11n 20 MHz	5260 ~ 5320	0.1529	IEEE 802.11n 40 MHz	5270 ~ 5310	0.1673	IEEE 802.11ac VHT 80 MHz	5290	0.1485	U-NII-2c	IEEE 802.11a	5500 ~ 5700	0.1025	IEEE 802.11n 20 MHz	5500 ~ 5700	0.1926	IEEE 802.11n 40 MHz	5510 ~ 5670	0.1843	IEEE 802.11ac VHT 80 MHz	5530	0.0920	U-NII-3	IEEE 802.11a	5745 ~ 5825	0.0906	IEEE 802.11n 20 MHz	5745 ~ 5825	0.2003	IEEE 802.11n 40 MHz	5755 ~ 5795	0.1590	IEEE 802.11ac VHT 80 MHz	5775	0.1204
Band	Mode	Frequency Range (MHz)	Output Power (W)																																																								
U-NII-1	IEEE 802.11a	5180 ~ 5240	0.0894																																																								
	IEEE 802.11n 20 MHz	5180 ~ 5240	0.1045																																																								
	IEEE 802.11n 40 MHz	5190 ~ 5230	0.1063																																																								
	IEEE 802.11ac VHT 80 MHz	5210	0.1085																																																								
U-NII-2a	IEEE 802.11a	5260 ~ 5320	0.0896																																																								
	IEEE 802.11n 20 MHz	5260 ~ 5320	0.1529																																																								
	IEEE 802.11n 40 MHz	5270 ~ 5310	0.1673																																																								
	IEEE 802.11ac VHT 80 MHz	5290	0.1485																																																								
U-NII-2c	IEEE 802.11a	5500 ~ 5700	0.1025																																																								
	IEEE 802.11n 20 MHz	5500 ~ 5700	0.1926																																																								
	IEEE 802.11n 40 MHz	5510 ~ 5670	0.1843																																																								
	IEEE 802.11ac VHT 80 MHz	5530	0.0920																																																								
U-NII-3	IEEE 802.11a	5745 ~ 5825	0.0906																																																								
	IEEE 802.11n 20 MHz	5745 ~ 5825	0.2003																																																								
	IEEE 802.11n 40 MHz	5755 ~ 5795	0.1590																																																								
	IEEE 802.11ac VHT 80 MHz	5775	0.1204																																																								

1.2 EUT CHANNEL INFORMATION

Frequency Range	UNII-1	
	IEEE 802.11a	5180 ~ 5240 MHz
	IEEE 802.11n 20 MHz	5180 ~ 5240 MHz
	IEEE 802.11n 40 MHz	5190 ~ 5230 MHz
	IEEE 802.11ac VHT 80 MHz	5210 MHz
	UNII-2a	
	IEEE 802.11a	5260 ~ 5320 MHz
	IEEE 802.11n 20 MHz	5260 ~ 5320 MHz
	IEEE 802.11n 40 MHz	5270 ~ 5310 MHz
	IEEE 802.11ac VHT 80 MHz	5290 MHz
	UNII-2c	
	IEEE 802.11a	5500 ~ 5700 MHz
	IEEE 802.11n 20 MHz	5500 ~ 5700 MHz
	IEEE 802.11n 40 MHz	5510 ~ 5670 MHz
	IEEE 802.11ac VHT 80 MHz	5530 MHz
	UNII-3	
	IEEE 802.11a	5745 ~ 5825 MHz
	IEEE 802.11n 20 MHz	5745 ~ 5825 MHz
	IEEE 802.11n 40 MHz	5755 ~ 5795 MHz
	IEEE 802.11ac VHT 80 MHz	5775 MHz
Modulation Type	1. IEEE 802.11a mode: OFDM 2. IEEE 802.11n 20 MHz mode: OFDM 3. IEEE 802.11n 40 MHz mode: OFDM 4. IEEE 802.11ac VHT 80 MHz mode: OFDM	

Remark:

Refer as ANSI C63.10: 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

1.3 ANTENNA INFORMATION

Antenna Type	☐ PIFA ☐ PCB ☐ Dipole ☐ Coils ☒ FPC				
Antenna Gain		Chain A (dBi)	Chain B (dBi)	Power Directional Gain (dBi)	
	Band 1	2.97	1.99	2.51	
	Band 2	3.46	2.82	3.15	
	Band 3	3.09	3.21	3.15	
	Band 4	3.47	3.11	3.29	
Antenna Connector	i-pex				

Notes:

1. Power Directional Gain: $10\text{LOG}(((10^{(\text{Ant1}/10)} + 10^{(\text{Ant2}/10)}))/2)$

1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 0.0014
RF output power, conducted	+/- 1.14
Power density, conducted	+/- 1.40
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87

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.



Report No.: T190902W03-RP4

Page: 7 / 251
Rev.: 02

1.5 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	Dally Hong	-
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.*



Report No.: T190902W03-RP4

Page: 8 / 251
Rev.: 02

1.6 INSTRUMENT CALIBRATION

Wugu 966 Chamber A					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Band Reject Filters	MICRO TRONICS	BRM 50702	120	02/26/2019	02/25/2020
Bilog Antenna	Sunol Sciences	JB3	A030105	07/26/2019	07/25/2020
Coaxial Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/26/2019	02/25/2020
Coaxial Cable	EMCI	EMC105	190914+25111	09/20/2019	09/19/2020
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/30/2019	01/29/2020
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	10/04/2019	10/03/2020
Loop Ant	COM-POWER	AL-130	121051	03/22/2019	03/21/2020
Pre-Amplifier	EMEC	EM330	060609	02/26/2019	02/25/2020
Pre-Amplifier	HP	8449B	3008A00965	02/26/2019	02/25/2020
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	05/29/2019	05/28/2020
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
Software	e3 6.11-20180413				

Conducted Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Coaxial Cable	Woken	WC12	CC003	06/28/2019	06/27/2020
Power Meter	Anritsu	ML2495A	1149001	02/12/2019	02/11/2020
Power Seneor	Anritsu	MA2491A	030982	02/12/2019	02/11/2020
Signal Analyzer	R&S	FSV 40	101073	09/25/2019	09/24/2020
Software	N/A				

Remark:

1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R. = No Calibration Request.



Report No.: T190902W03-RP4

Page: 9 / 251
Rev.: 02

AC Conduction Test Room					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
CABLE	EMCI	CFD300-NL	CERF	06/27/2019	06/26/2020
EMI Test Receiver	R&S	ESCI	100064	07/26/2019	07/25/2020
LISN	SCHWARZBECK	NSLK 8127	8127-541	01/31/2019	01/30/2020
LISN	SCHAFFNER	NNB 41	03/10013	02/13/2019	02/12/2020
Software	EZ-EMC(CCS-3A1-CE)				

Adaptivity / DFS Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Attenuator	E-INSTRUMENT	EPA-600H	EC1400050	07/26/2019	07/25/2020
Coaxial Cable	Woken	WC12	DC004	06/28/2019	06/27/2020
Power Divider	Solvang Technology	STI08-0015	008	08/06/2019	08/05/2020
Spectrum Analyzer	R&S	FSU 26	100258	06/20/2019	06/19/2020
Vector Signal Generator	R&S	SMU 200A	101480	03/27/2019	03/26/2020
Software	GPIBShot, DFS-Aggregate-Time FSU, R&S Pulse Sequencer DFS				

Remark:

1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R. = No Calibration Request.



Report No.: T190902W03-RP4

Page: 10 / 251
Rev.: 02

1.7 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.	NB(C)	HP	dv6-1332TX	N/A	CNF9491GPS
2.	AP	RT-AC66U	RT-AC66U	N/A	MSQ-RTAC66U
3.	NB(H)	Acer	Aspire 4320 series	N/A	QDS-BRCM1018

1.8 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, KDB 905462, KDB 662911D01.



Report No.: T190902W03-RP4

Page: 11 / 251
Rev.: 02

2. TEST SUMMERY

FCC Standard Sec.	Chapter	Test Item	Result
15.203	1.3	Antenna Requirement	Pass
15.207	4.1	AC Conducted Emission	Pass
15.403(i)	4.2	26dB Bandwidth	Pass
15.407(e)	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
15.407(h)	4.7	Dynamic Frequency Selection	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 20 MHz mode: MCS8 3. IEEE 802.11n 40 MHz mode: MCS8 4. IEEE 802.11ac VHT 80 MHz mode: MCS8			
Operating Frequency Range & Number of Channels	U-NII-1	Mode	Frequency Range (MHz)	Number of Channels
		IEEE 802.11a	5180 ~ 5240	4 Channels
		IEEE 802.11n HT 20 MHz	5180 ~ 5240	4 Channels
		IEEE 802.11n HT 40 MHz	5190 ~ 5230	2 Channels
	U-NII-2a	IEEE 802.11ac VHT 80 MHz	5210	1 Channels
		IEEE 802.11a	5260 ~ 5320	4 Channels
		IEEE 802.11n HT 20 MHz	5260 ~ 5320	4 Channels
		IEEE 802.11n HT 40 MHz	5270 ~ 5310	2 Channels
	U-NII-2c	IEEE 802.11ac VHT 80 MHz	5290	1 Channels
		IEEE 802.11a	5500 ~ 5700	11 Channels
		IEEE 802.11n HT 20 MHz	5500 ~ 5700	11 Channels
		IEEE 802.11n HT 40 MHz	5510 ~ 5670	5 Channels
	U-NII-3	IEEE 802.11ac VHT 80 MHz	5530	1 Channels
		IEEE 802.11a	5745 ~ 5825	5 Channels
		IEEE 802.11n HT 20 MHz	5745 ~ 5825	5 Channels
		IEEE 802.11n HT 40 MHz	5755 ~ 5795	2 Channels
		IEEE 802.11ac VHT 80 MHz	5775	1 Channels

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
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
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)

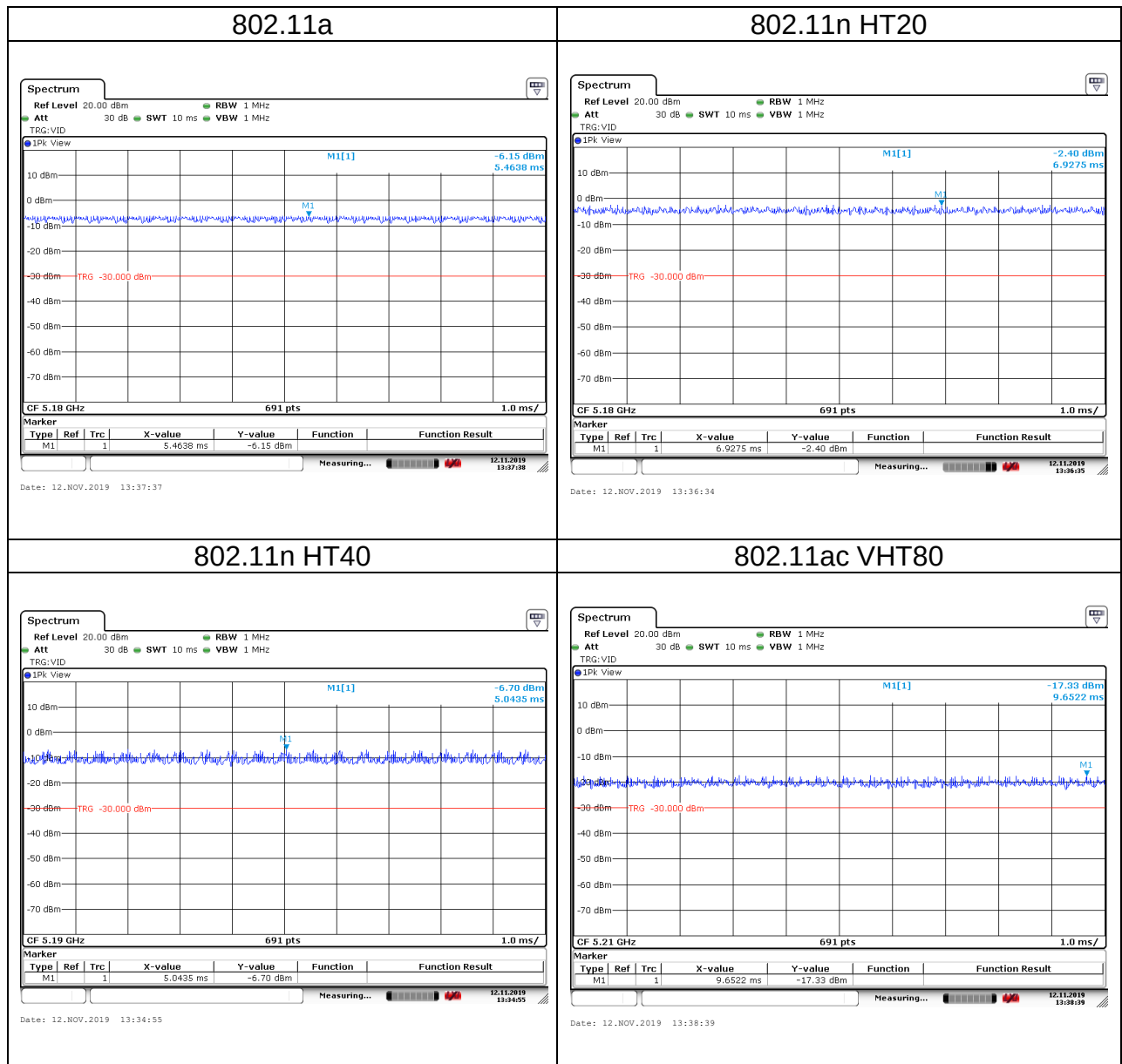
Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G
Power supply Mode	Mode 1: EUT power by adapter
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4

Remark:

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

3.3 EUT DUTY CYCLE

Duty Cycle				
Configuration	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11a	100.00%	0.00	0.00	1.00
802.11n HT20	100.00%	0.00	0.00	1.00
802.11n HT40	100.00%	0.00	0.00	1.00
802.11ac VHT80	100.00%	0.00	0.00	1.00



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

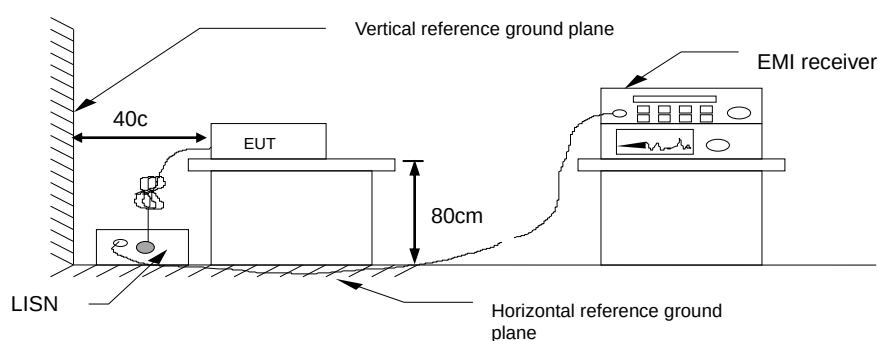
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

Test method Refer as ANSI C63.10: 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

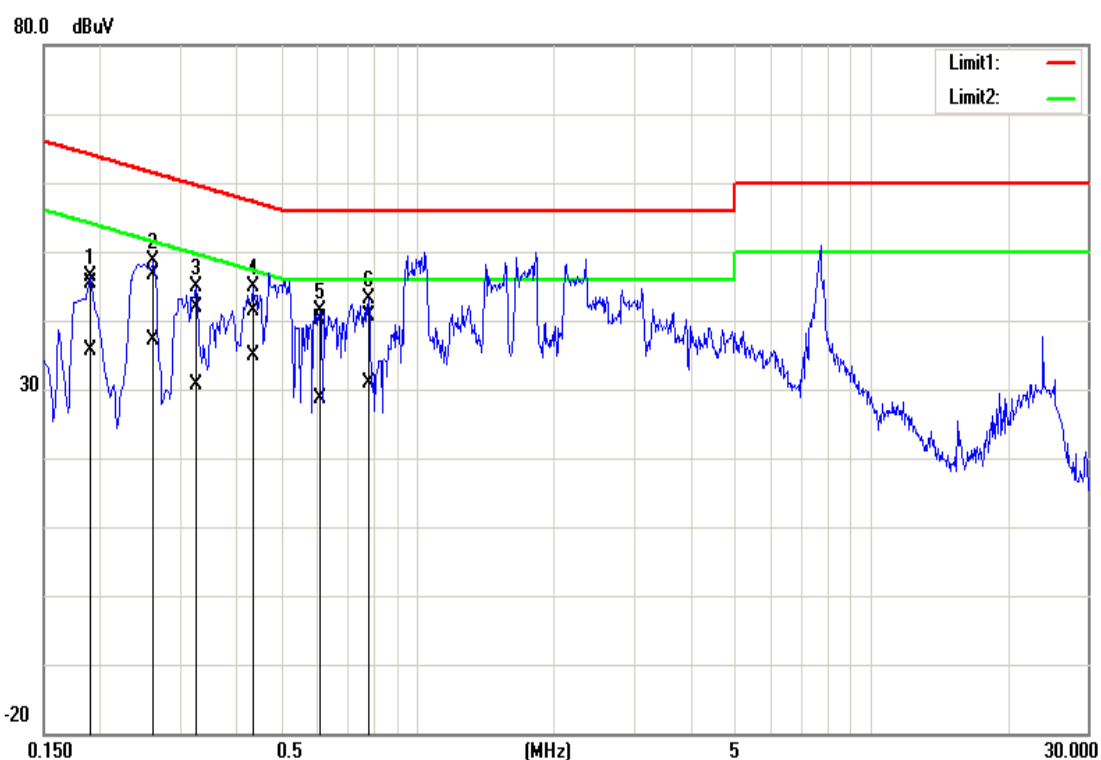


4.1.4 Test Result

Pass.

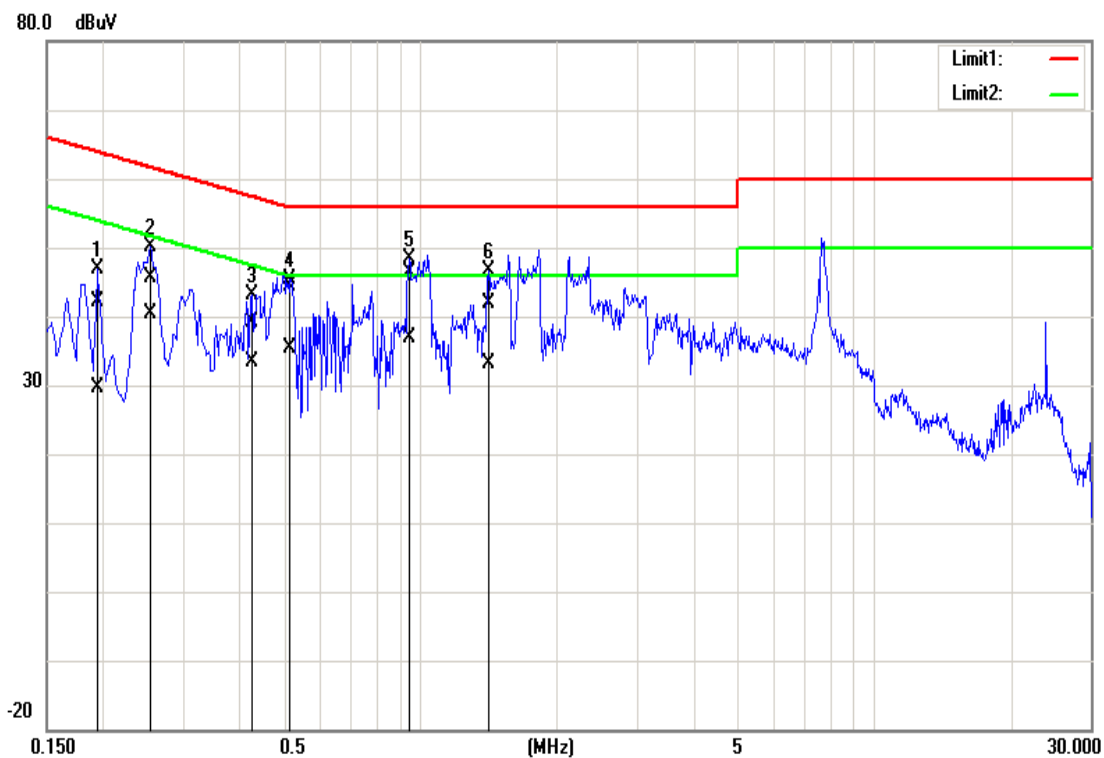
Test Data

Test Mode:	Mode 1	Temp/Hum	24(°C)/ 50%RH
Phase:	Line	Test Date	October 30, 2019
		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
0.1900	35.14	25.59	10.13	45.27	35.72	64.04	54.04	-18.77	-18.32	Pass
0.2620	36.42	27.05	10.13	46.55	37.18	61.37	51.37	-14.82	-14.19	Pass
0.3260	31.70	20.54	10.14	41.84	30.68	59.55	49.55	-17.71	-18.87	Pass
0.4340	31.13	24.78	10.14	41.27	34.92	57.18	47.18	-15.91	-12.26	Pass
0.6100	29.93	18.52	10.15	40.08	28.67	56.00	46.00	-15.92	-17.33	Pass
0.7820	30.40	20.75	10.16	40.56	30.91	56.00	46.00	-15.44	-15.09	Pass

Test Mode:	Mode 1	Temp/Hum	24(°C)/ 50%RH
Phase:	Line	Test Date	October 30, 2019
		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
0.1940	32.08	19.69	10.02	42.10	29.71	63.86	53.86	-21.76	-24.15	Pass
0.2540	35.73	30.34	10.02	45.75	40.36	61.63	51.63	-15.88	-11.27	Pass
0.4260	29.02	23.30	10.03	39.05	33.33	57.33	47.33	-18.28	-14.00	Pass
0.5180	34.28	25.39	10.03	44.31	35.42	56.00	46.00	-11.69	-10.58	Pass
0.9460	36.22	26.72	10.04	46.26	36.76	56.00	46.00	-9.74	-9.24	Pass
1.4100	31.73	23.04	10.04	41.77	33.08	56.00	46.00	-14.23	-12.92	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

26dB

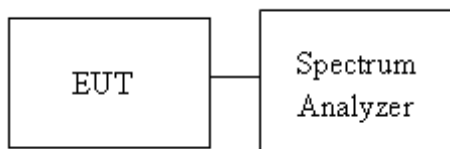
1. This measurement setting are specified in section D of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set RBW: approximately 1% of the emission bandwidth.
3. Set the VBW>RBW.
4. Detoctor = Peak.
5. Trace mode = max hold.
6. Measure the maximum width of the emission that is 26dB down from the peak of the emission. Compare this with the RBW setting of the analyser. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

6dB

1. This measurement setting are specified in section D of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set RBW = 100 kHz.
3. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
4. Detoctor = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

99%

1. This measurement setting are specified in section D of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set center frequency to the nominal EUT channel center frequency.
3. Set span = 1.5 times to 5.0 times the OBW.
4. Set RBW = 1 % to 5% of the OBW.
5. Set VBW $\geq 3 \times \text{RBW}$

4.2.3 Test Setup

4.2.4 Test Result

UNII-1 5150-5250 MHz					
Test mode: IEEE 802.11a mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 26dB BW (MHz)	Chain B 26dB BW (MHz)
Low	5180	16.5701	16.5701	21.0145	25.942
Mid	5220	16.5701	16.5701	21.087	26.2319
High	5240	16.5701	19.3921	20.7971	26.2319
Test mode: IEEE 802.11n HT20 mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 26dB BW (MHz)	Chain B 26dB BW (MHz)
Low	5180	17.7279	17.6555	21.4493	20.942
Mid	5220	17.8726	17.6555	36.5942	21.087
High	5240	17.8726	19.8263	29.058	37.3188
Test mode: IEEE 802.11n HT40 mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 26dB BW (MHz)	Chain B 26dB BW (MHz)
Low	5190	37.5108	36.2373	79.42	43.246
High	5230	36.9319	36.8162	45.333	64.76
Test mode: IEEE 802.11ac VHT80 mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 26dB BW (MHz)	Chain B 26dB BW (MHz)
Mid	5210	76.1794	75.4848	82.319	81.391

UNII-2a 5250-5350 MHz					
Test mode: IEEE 802.11a mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 26dB BW (MHz)	Chain B 26dB BW (MHz)
Low	5260	16.5701	16.6425	20.942	23.2609
Mid	5280	16.5701	16.5701	21.087	21.3768
High	5320	17.2214	16.5701	33.1159	21.087
Test mode: IEEE 802.11n HT20 mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 26dB BW (MHz)	Chain B 26dB BW (MHz)
Low	5260	17.6555	17.6555	21.5217	20.942
Mid	5280	17.6555	19.6092	21.4493	38.9855
High	5320	17.8002	17.6555	35.942	21.0145
Test mode: IEEE 802.11n HT40 mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 26dB BW (MHz)	Chain B 26dB BW (MHz)
Low	5270	37.0477	39.5947	45.681	65.22
High	5310	36.9319	37.0477	45.565	62.79
Test mode: IEEE 802.11ac VHT80 mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 26dB BW (MHz)	Chain B 26dB BW (MHz)
Mid	5290	75.9479	75.7163	83.014	81.855

UNII-2c 5475-5725 MHz					
Test mode: IEEE 802.11a mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 26dB BW (MHz)	Chain B 26dB BW (MHz)
Low	5500	17.1490	16.5701	33.0435	20.942
Mid	5580	16.5701	16.5701	21.0145	20.7246
High	5700	16.7872	16.5701	32.971	20.942
Test mode: IEEE 802.11n HT20 mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 26dB BW (MHz)	Chain B 26dB BW (MHz)
Low	5500	17.8726	18.0173	29.3478	36.5217
Mid	5580	17.7279	17.8726	22.3913	28.9855
High	5700	17.7279	17.5832	21.5217	21.087
Test mode: IEEE 802.11n HT40 mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 26dB BW (MHz)	Chain B 26dB BW (MHz)
Low	5510	37.5108	36.7004	65.93	62.73
Mid	5550	36.8162	36.3531	44.986	69.4
High	5670	37.5108	39.9421	62.69	72.71
Test mode: IEEE 802.11ac VHT80 mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 26dB BW (MHz)	Chain B 26dB BW (MHz)
Mid	5530	75.9479	75.4848	82.783	87.884

UNII-3 5725-5825MHz					
Test mode: IEEE 802.11a mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 6dB BW (MHz)	Chain B 6dB BW (MHz)
Low	5745	16.5701	16.5701	16.5217	16.4348
Mid	5785	16.6425	16.6425	16.5217	16.4348
High	5825	16.5701	16.5701	16.5217	16.4348
Test mode: IEEE 802.11n HT20 mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 6dB BW (MHz)	Chain B 6dB BW (MHz)
Low	5745	17.7279	18.3791	17.6522	17.6087
Mid	5785	17.7279	17.5832	17.6522	17.6087
High	5825	17.8002	17.5832	17.6087	17.6087
Test mode: IEEE 802.11n HT40 mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 6dB BW (MHz)	Chain B 6dB BW (MHz)
Low	5755	37.6266	36.3531	36.522	36.406
High	5795	37.2793	36.8162	36.638	36.406
Test mode: IEEE 802.11ac VHT80 mode					
Channel	Frequency (MHz)	Chain A OBW(99%) (MHz)	Chain B OBW(99%) (MHz)	Chain A 6dB BW (MHz)	Chain B 6dB BW (MHz)
Mid	5775	75.9479	75.7163	76.522	75.826

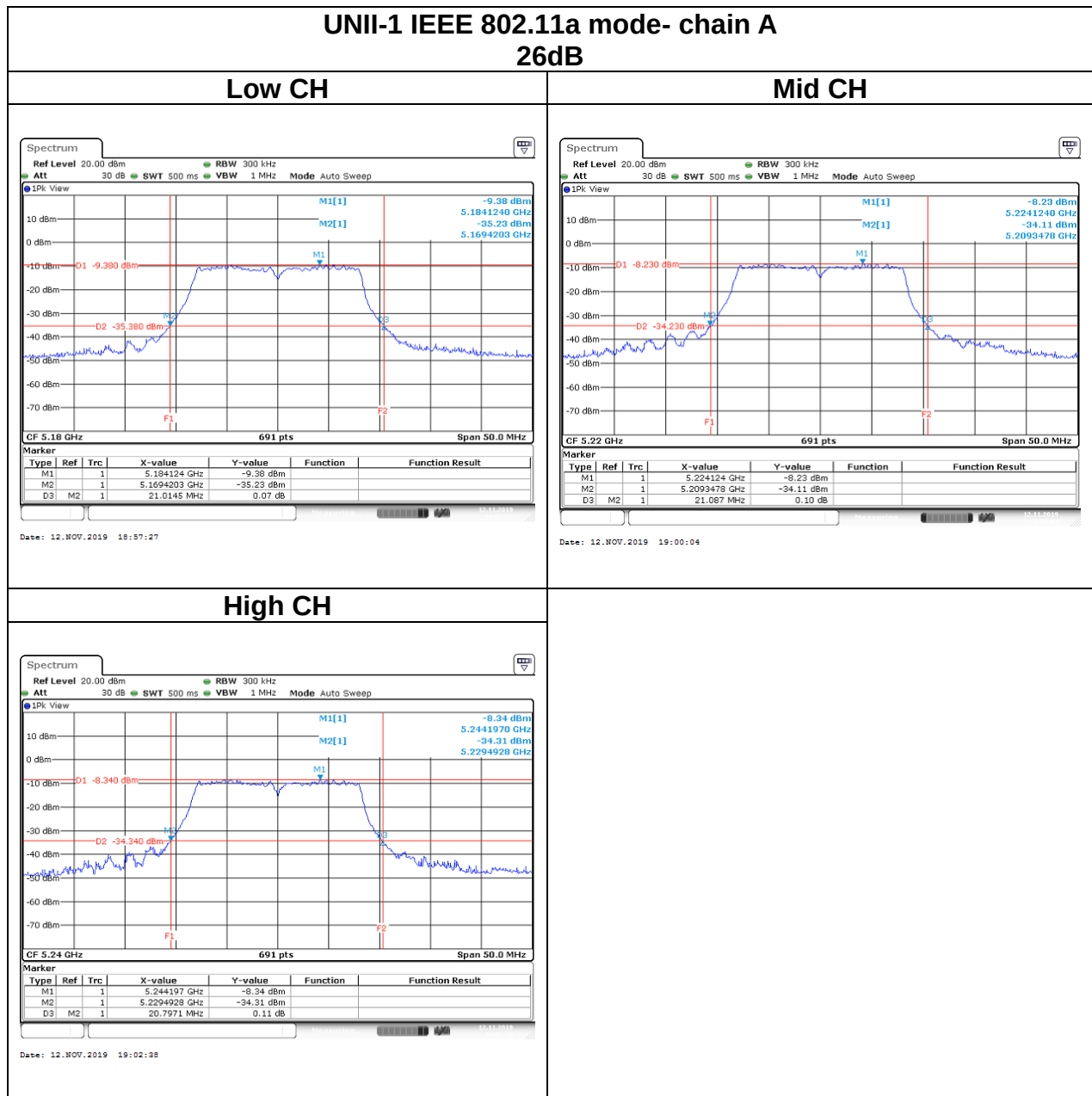


Report No.: T190902W03-RP4

Page: 24 / 251
Rev.: 02

Test Data

26dB



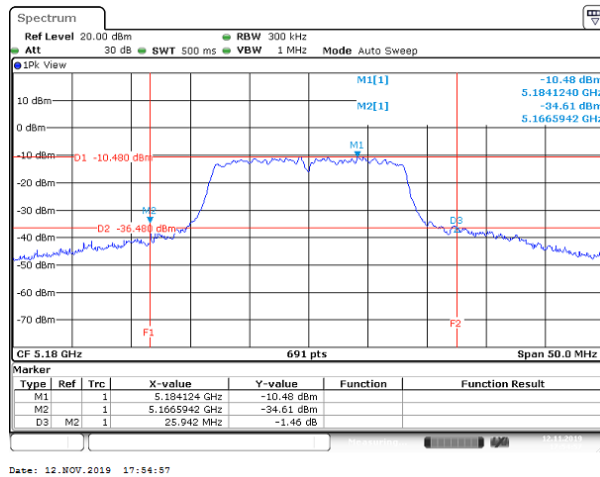


Report No.: T190902W03-RP4

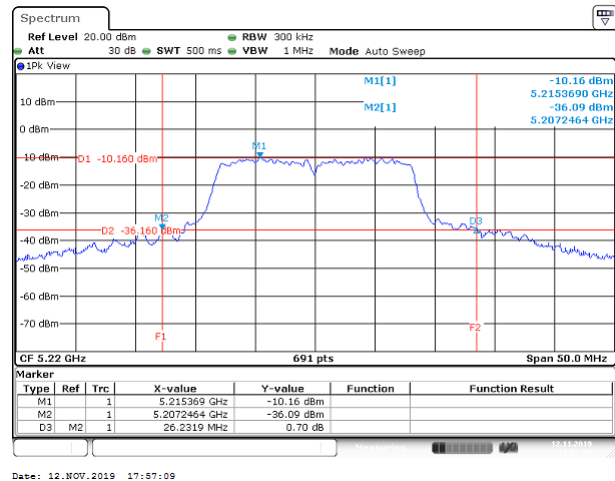
Page: 25 / 251
Rev.: 02

UNII-1 IEEE 802.11a mode- chain B 26dB

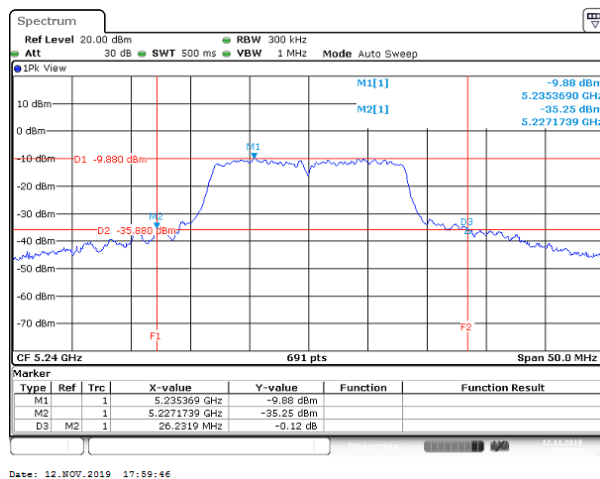
Low CH



Mid CH



High CH



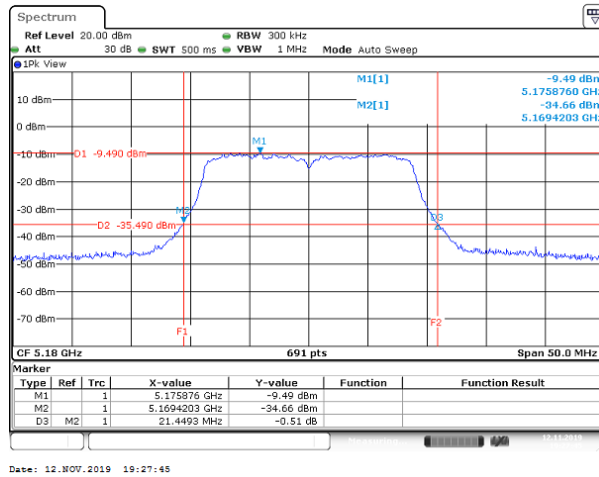


Report No.: T190902W03-RP4

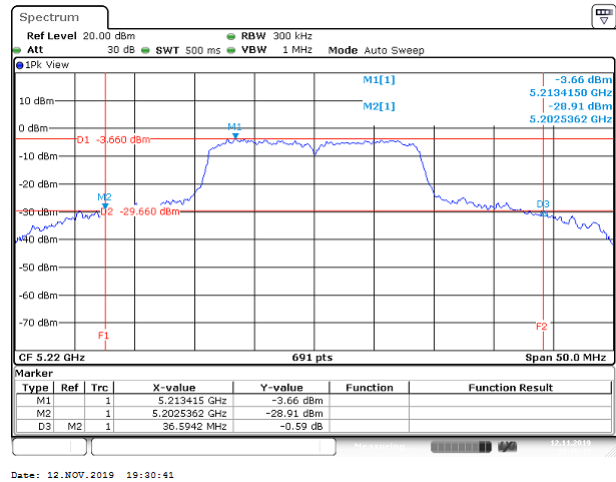
Page: 26 / 251
Rev.: 02

UNII-1 IEEE 802.11n HT20 mode- chain A 26dB

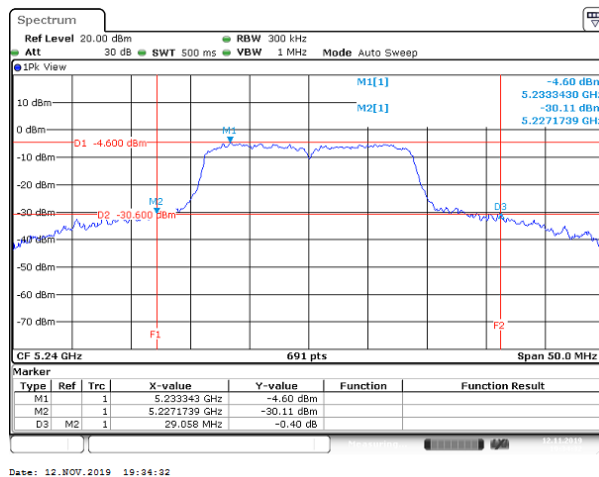
Low CH



Mid CH

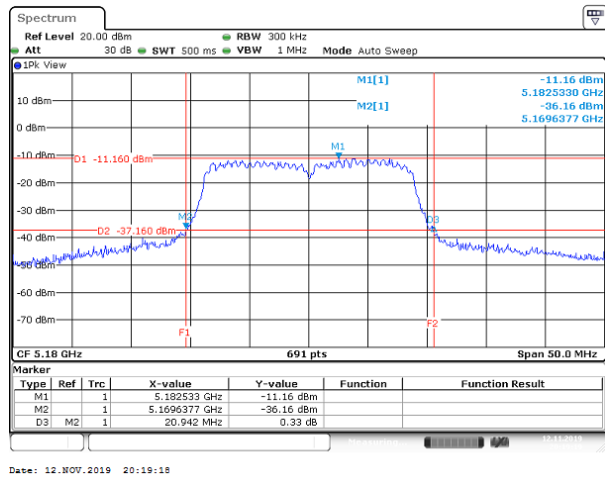


High CH

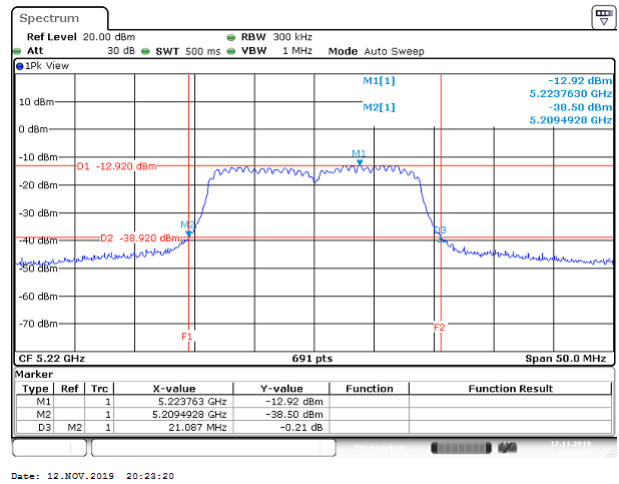


UNII-1 IEEE 802.11n HT20 mode- chain B 26dB

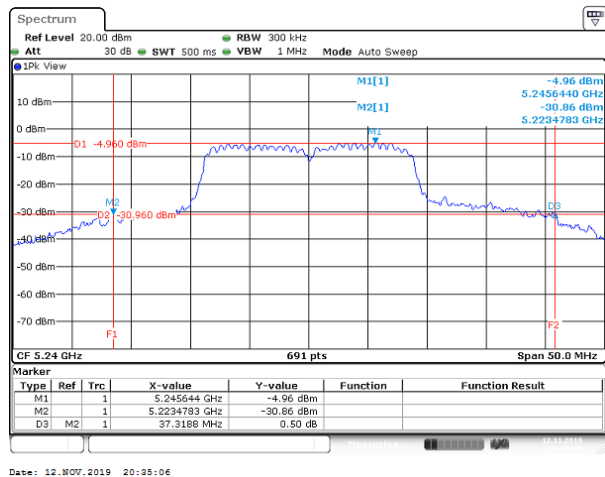
Low CH

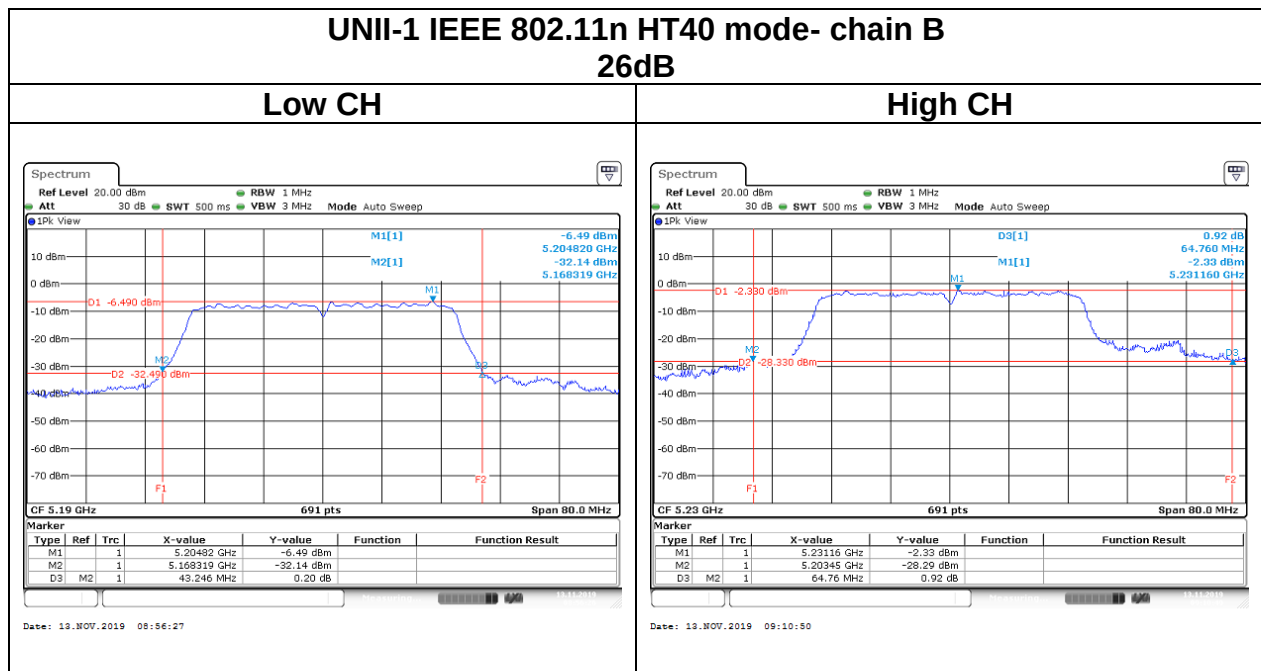
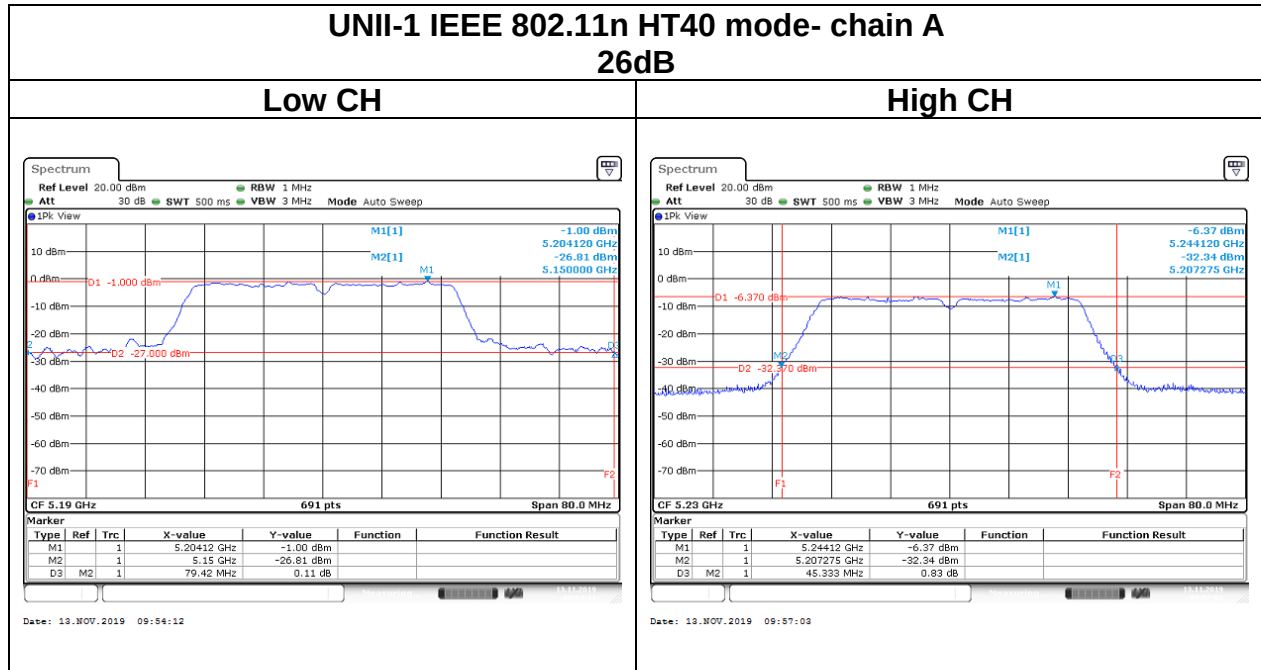


Mid CH



High CH

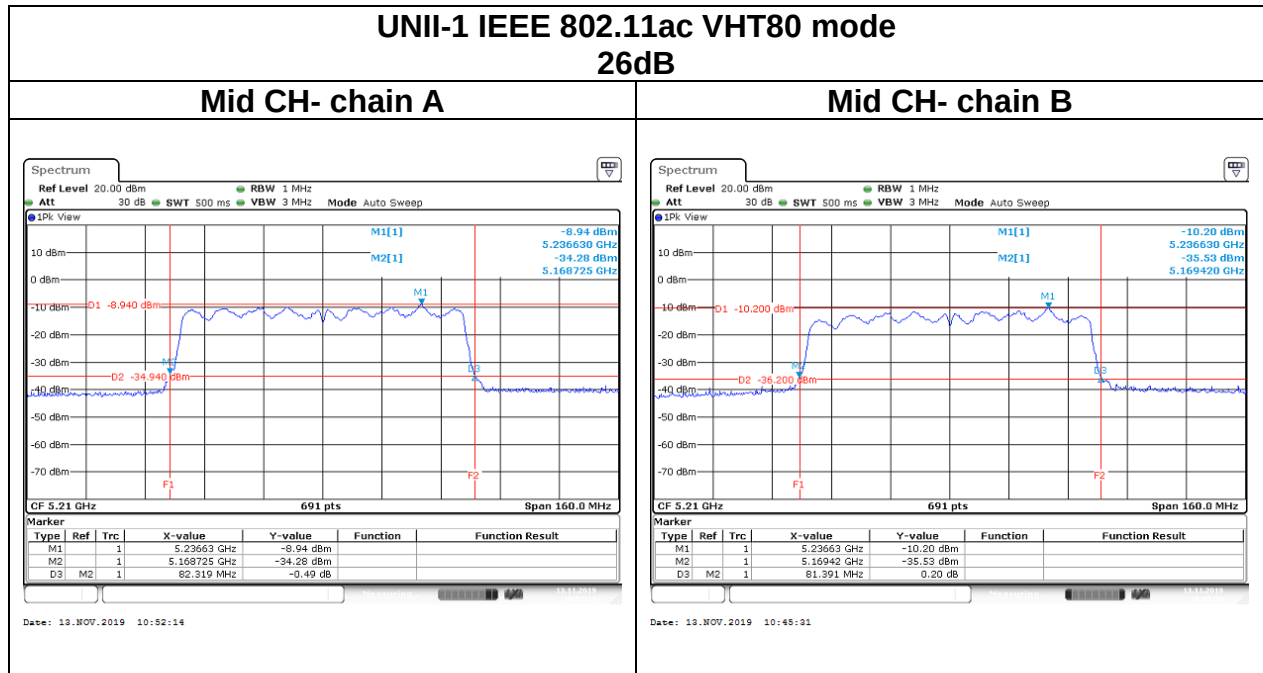






Report No.: T190902W03-RP4

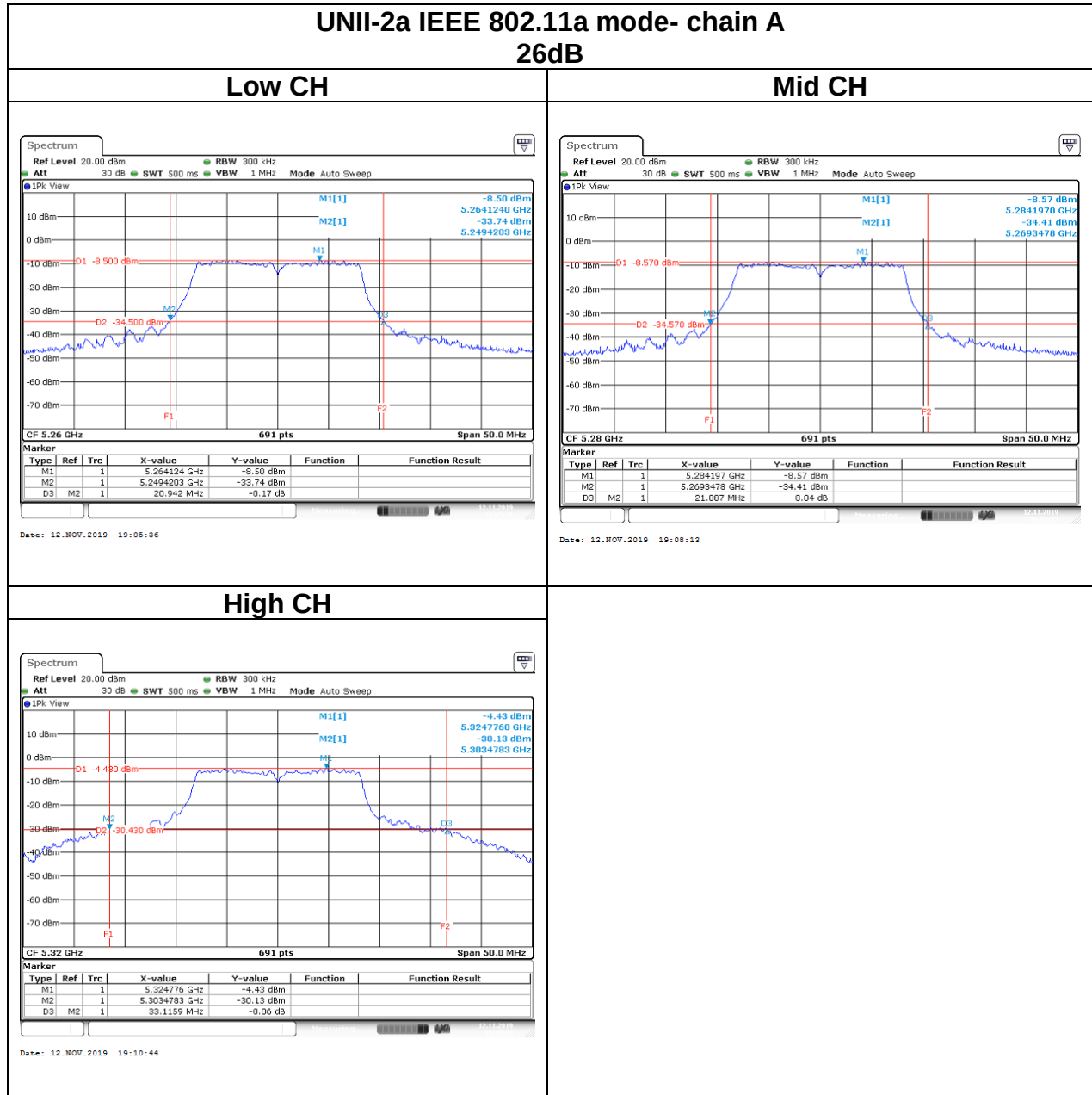
Page: 29 / 251
Rev.: 02

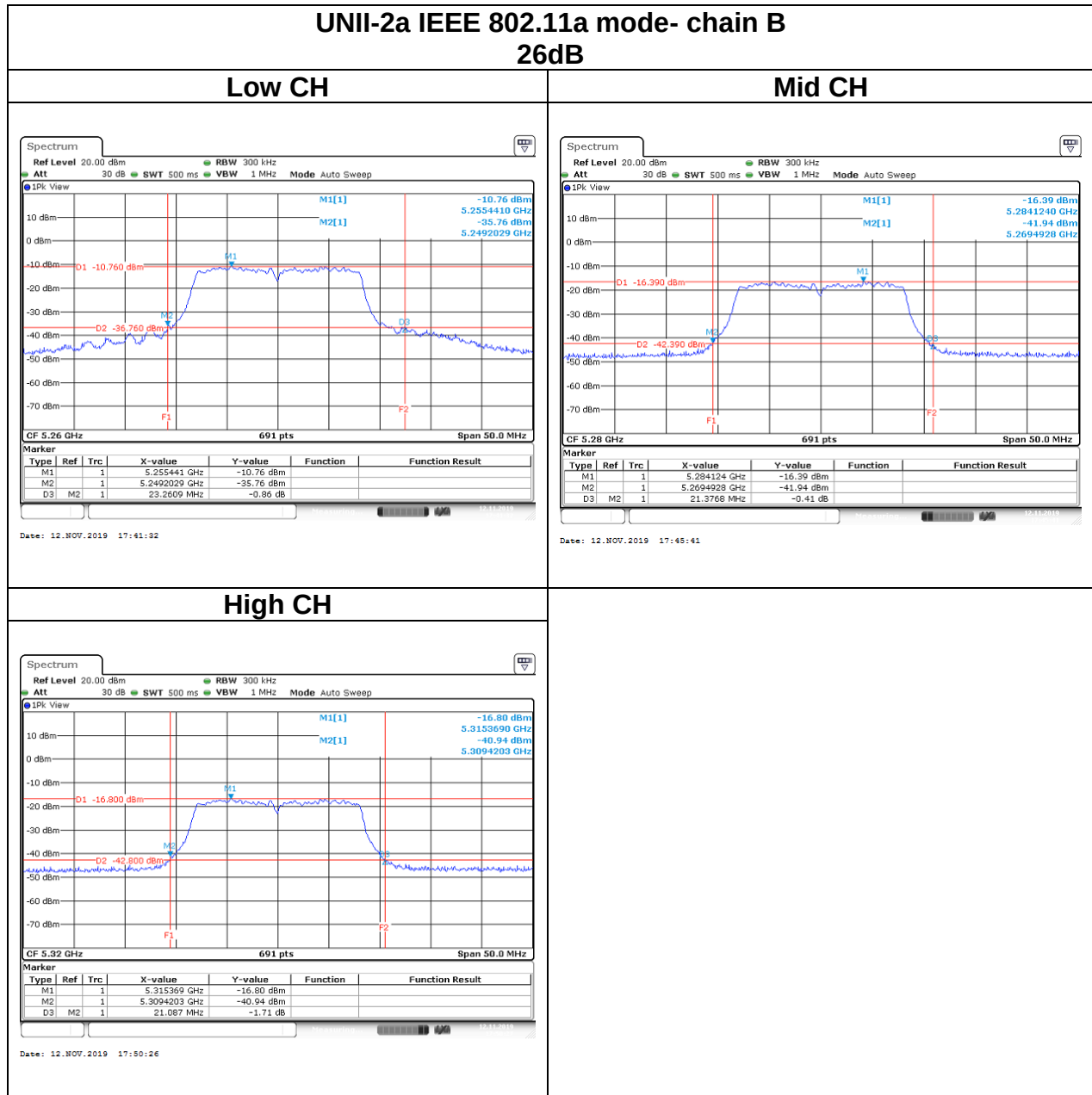




Report No.: T190902W03-RP4

Test Data

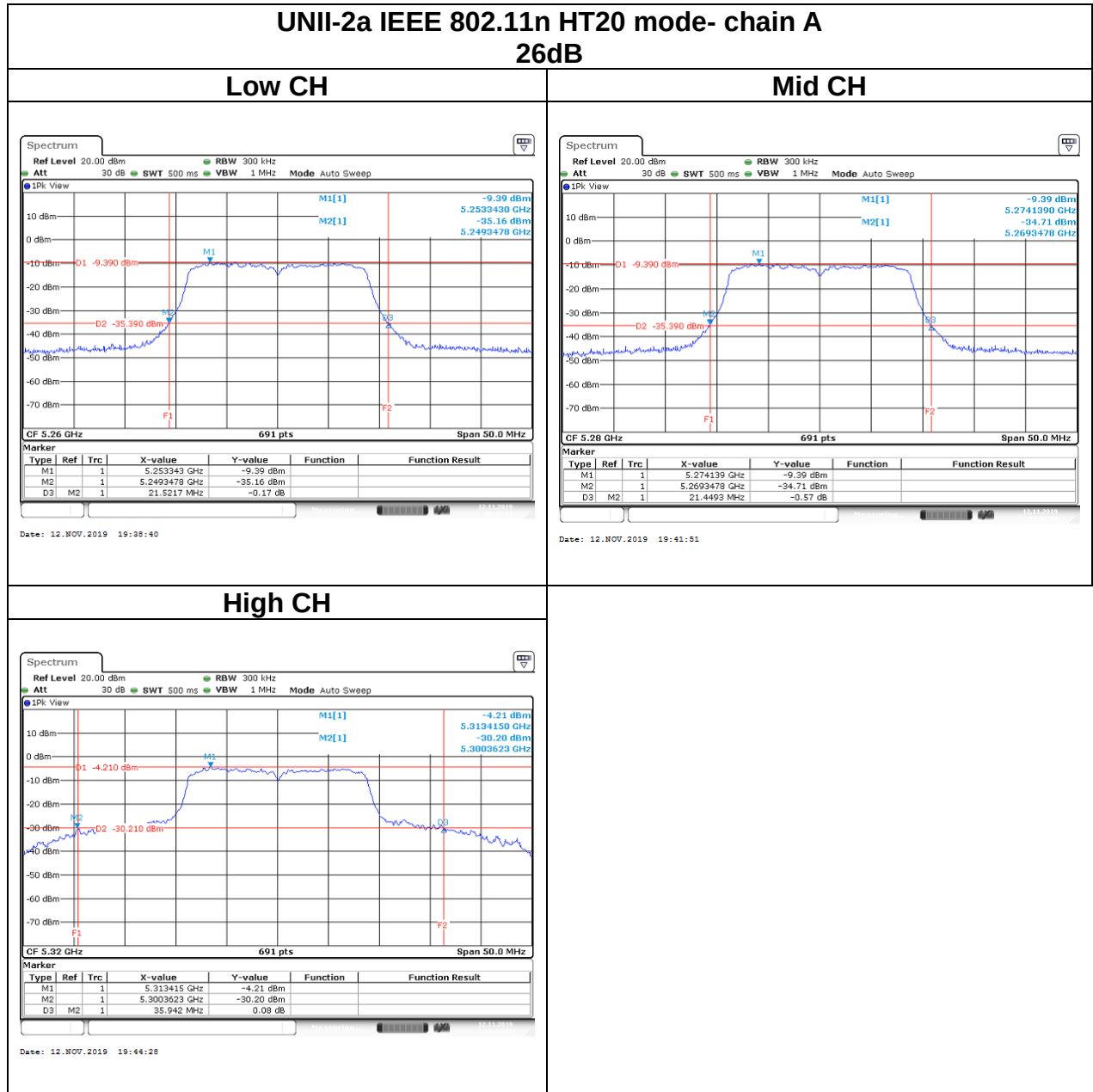






Report No.: T190902W03-RP4

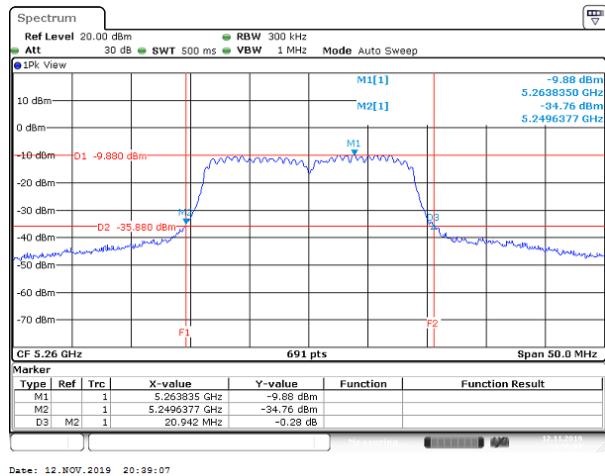
Page: 32 / 251
Rev.: 02



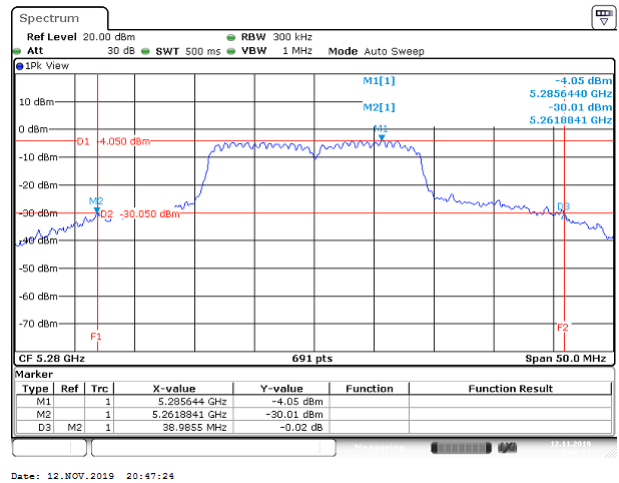
UNII-2a IEEE 802.11n HT20 mode- chain B

26dB

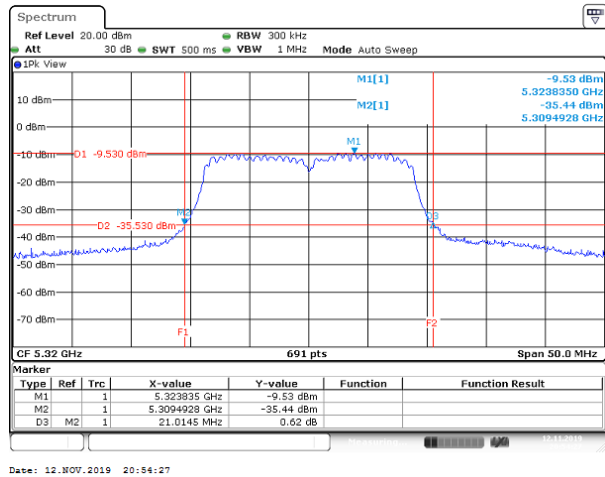
Low CH



Mid CH



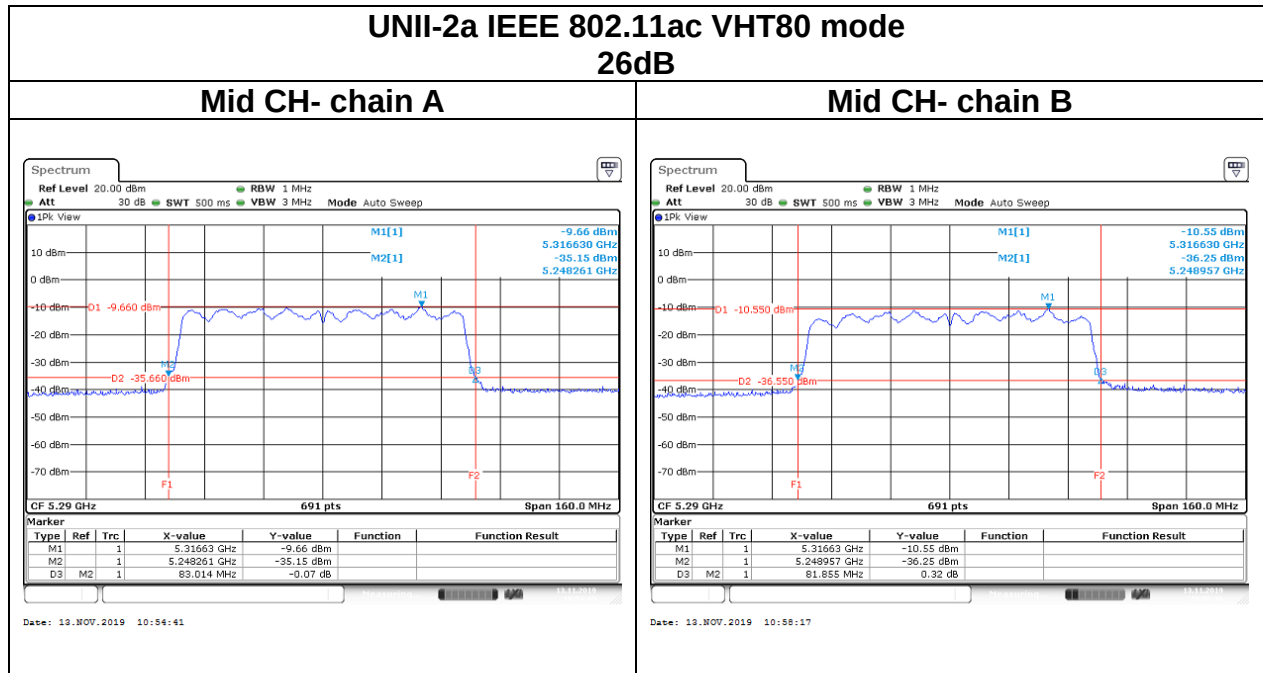
High CH





Report No.: T190902W03-RP4

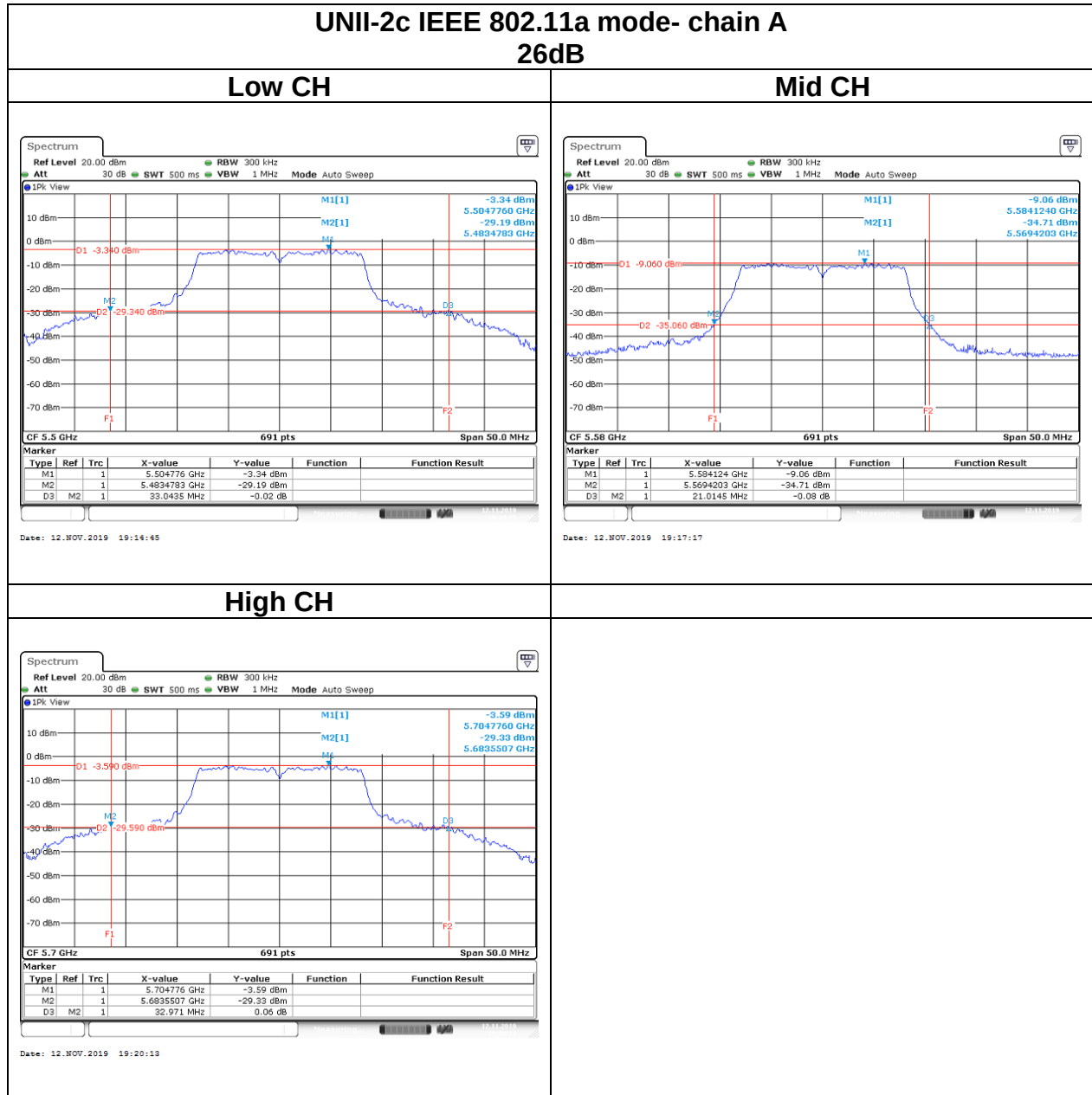
Page: 35 / 251
Rev.: 02

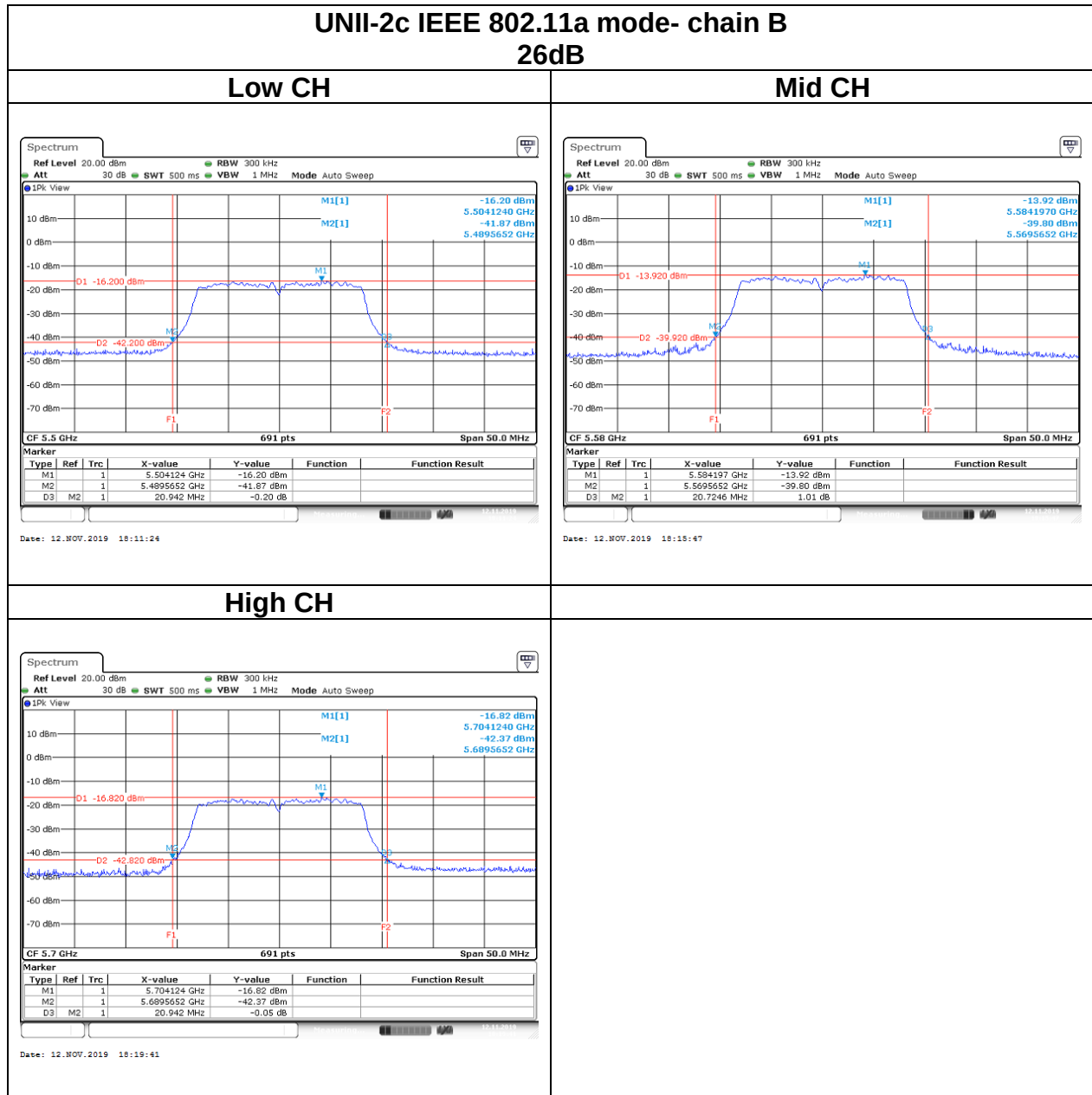




Report No.: T190902W03-RP4

Test Data

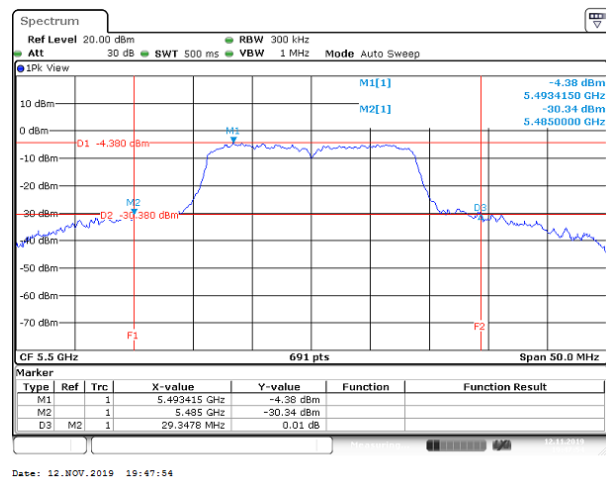




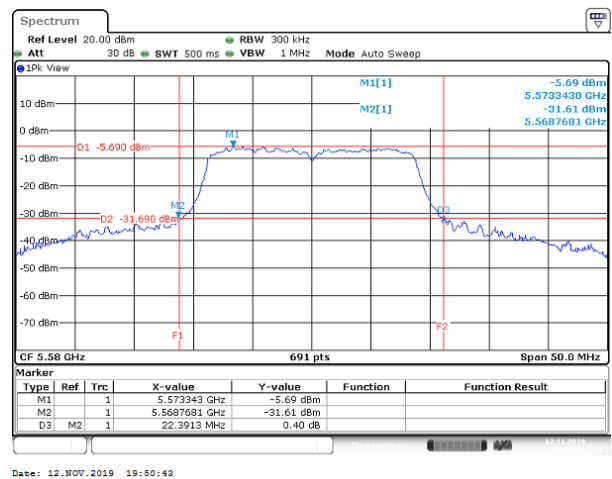
UNII-2c IEEE 802.11n HT20 mode- chain A

26dB

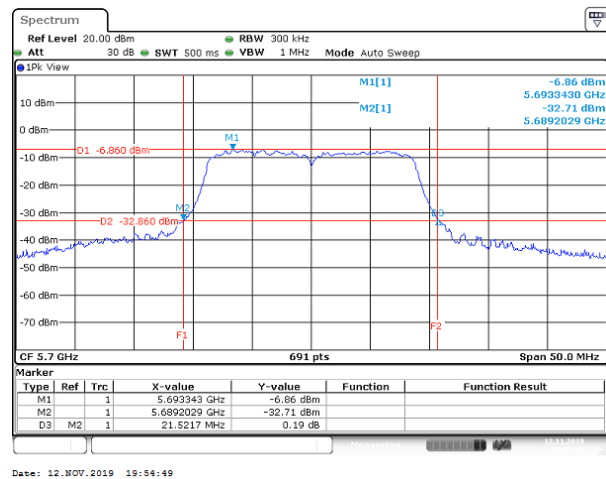
Low CH



Mid CH



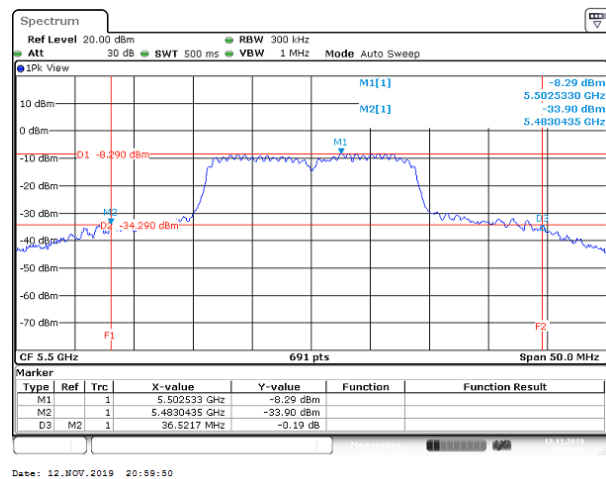
High CH



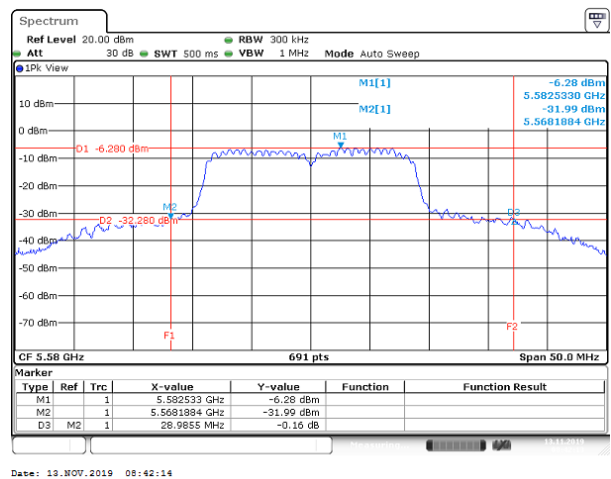
UNII-2c IEEE 802.11n HT20 mode- chain B

26dB

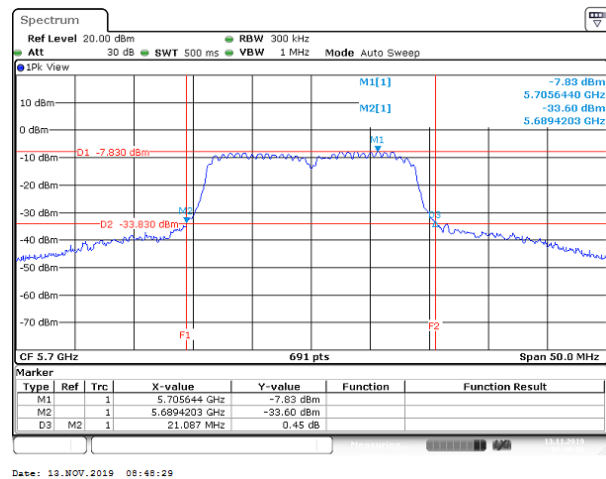
Low CH



Mid CH

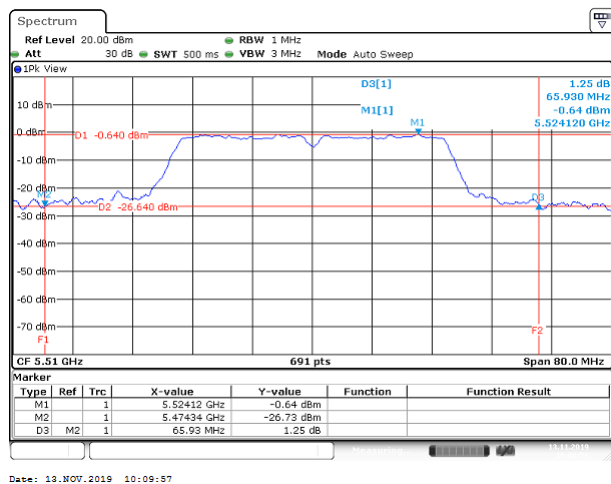


High CH

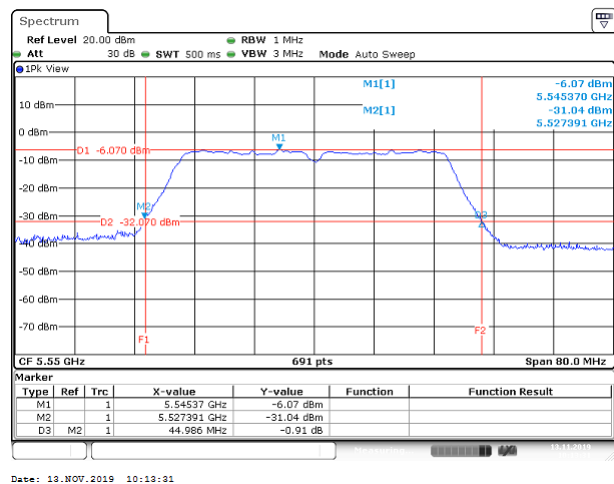


UNII-2c IEEE 802.11n HT40 mode- chain A 26dB

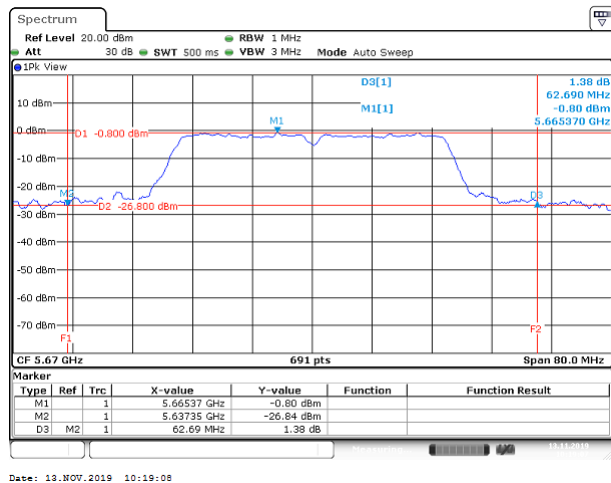
Low CH



Mid CH

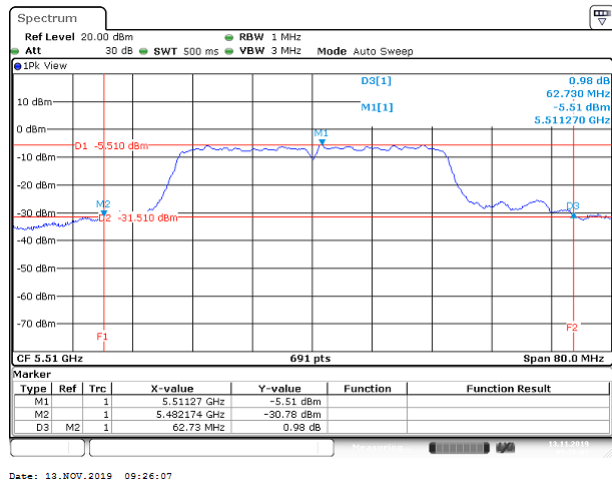


High CH

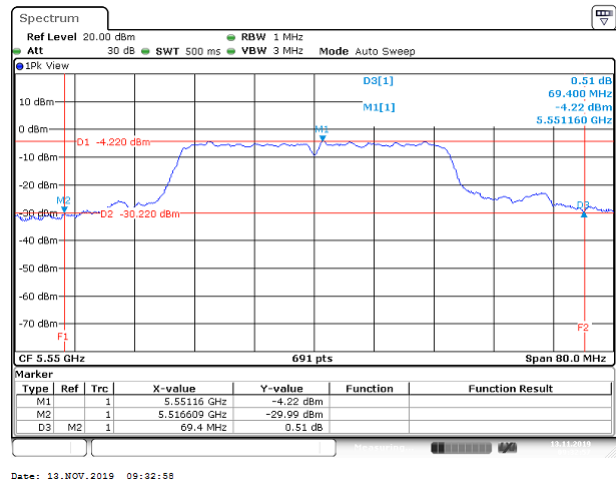


UNII-2c IEEE 802.11n HT40 mode- chain B 26dB

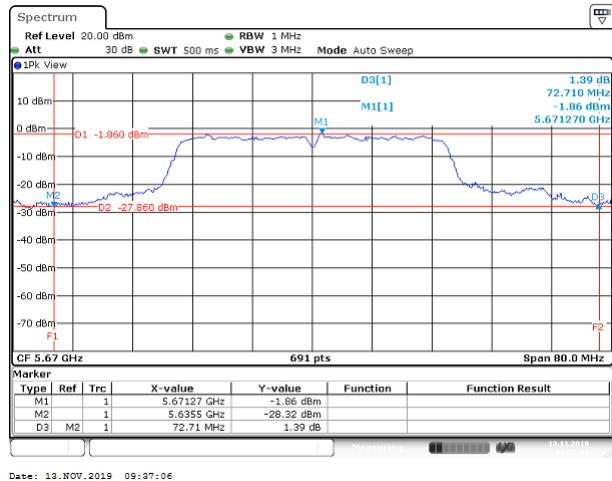
Low CH



Mid CH



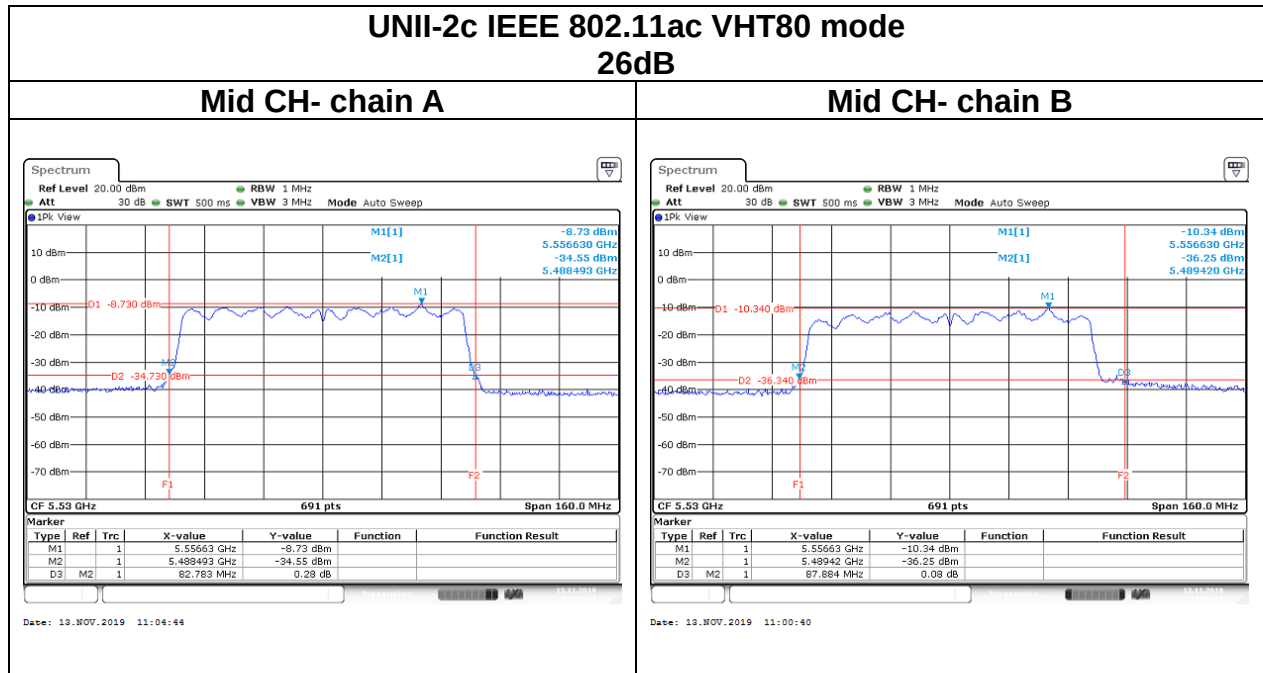
High CH





Report No.: T190902W03-RP4

Page: 42 / 251
Rev.: 02



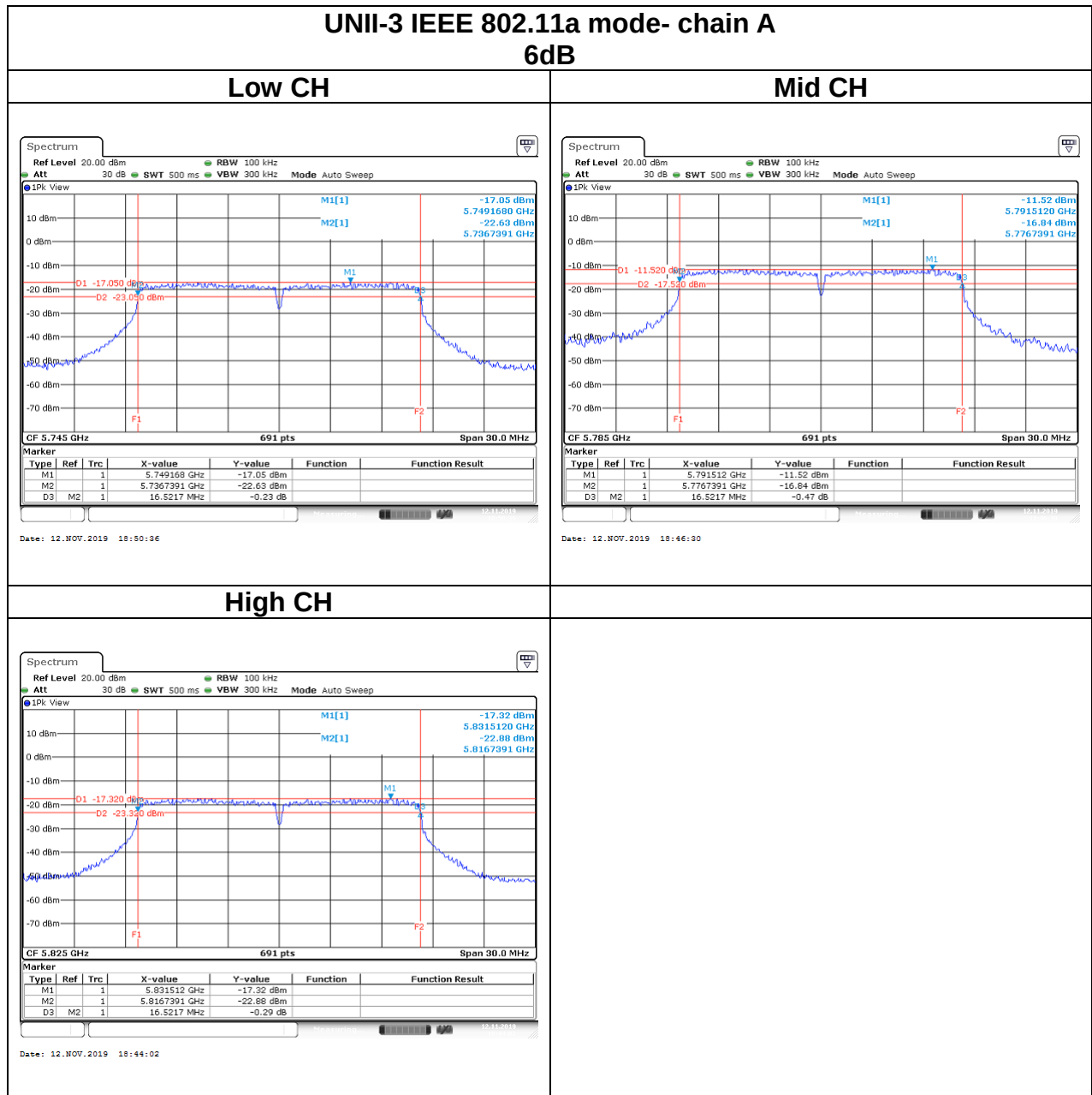


Report No.: T190902W03-RP4

Page: 43 / 251
Rev.: 02

Test Data

6dB



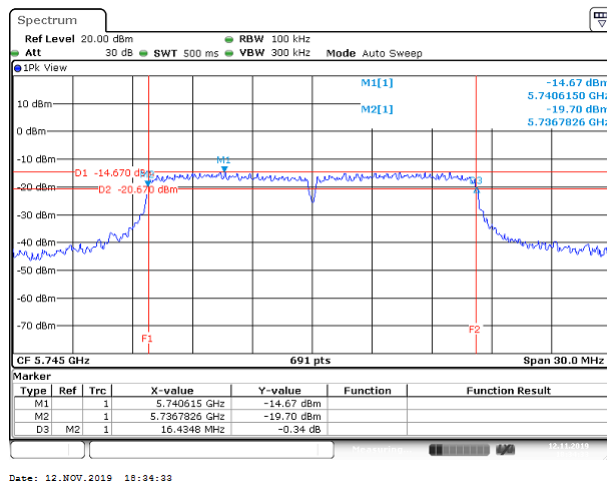


Report No.: T190902W03-RP4

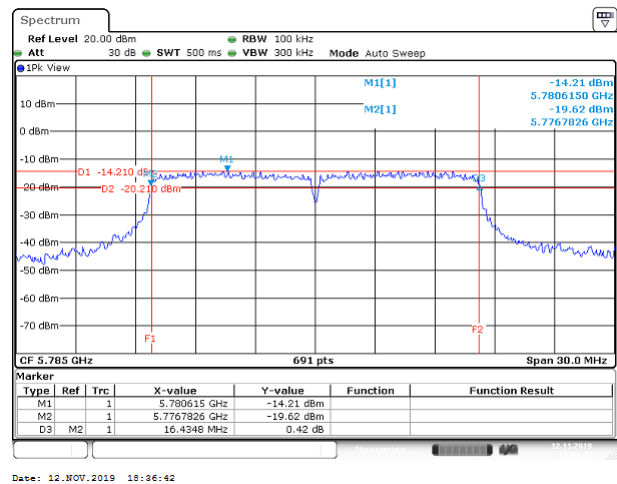
Page: 44 / 251
Rev.: 02

UNII-3 IEEE 802.11a mode- chain B 6dB

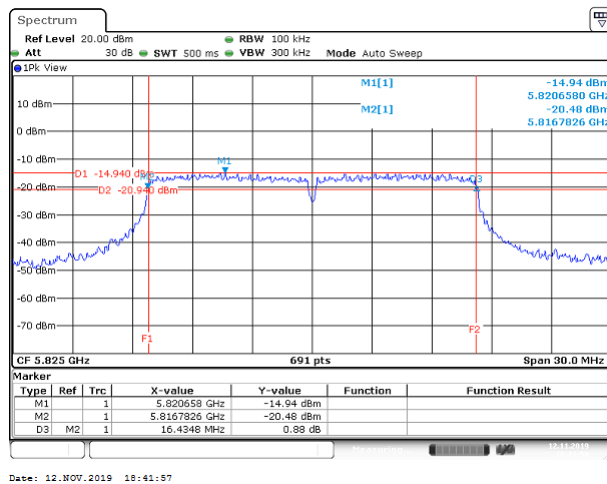
Low CH



Mid CH

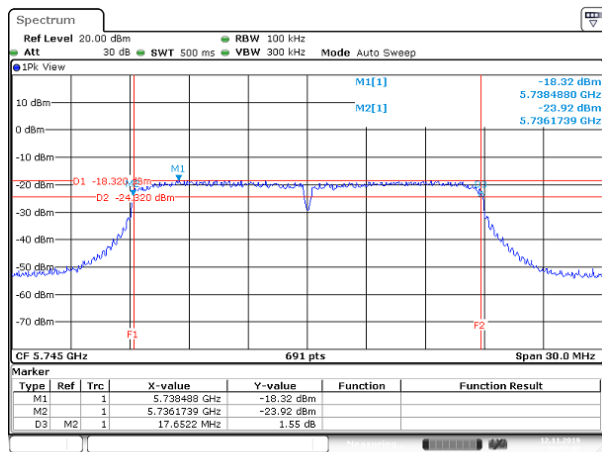


High CH

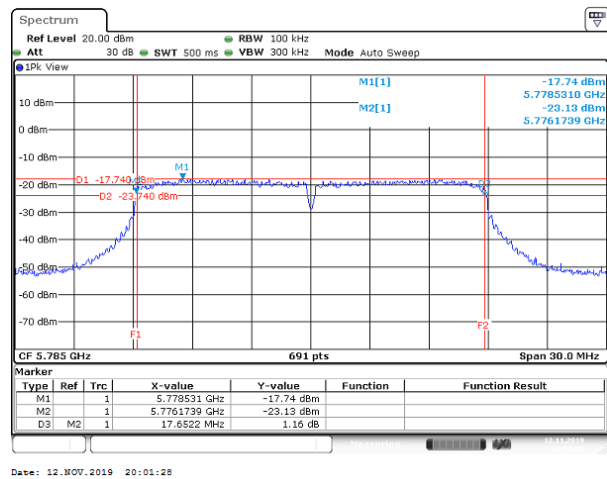


UNII-3 IEEE 802.11n HT20 mode- chain A 6dB

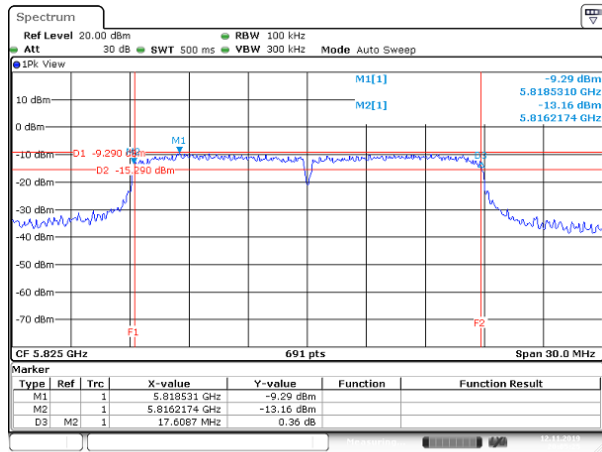
Low CH



Mid CH

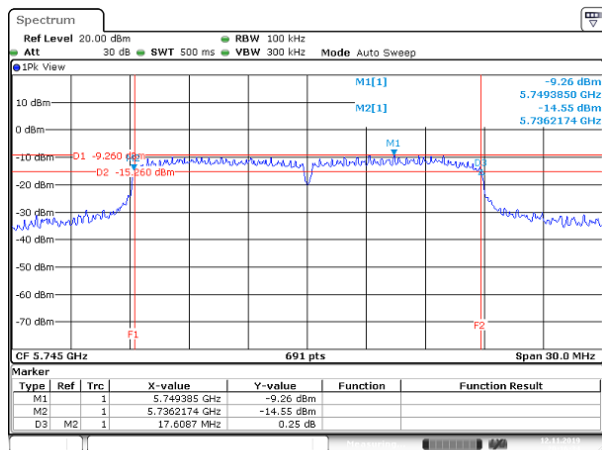


High CH

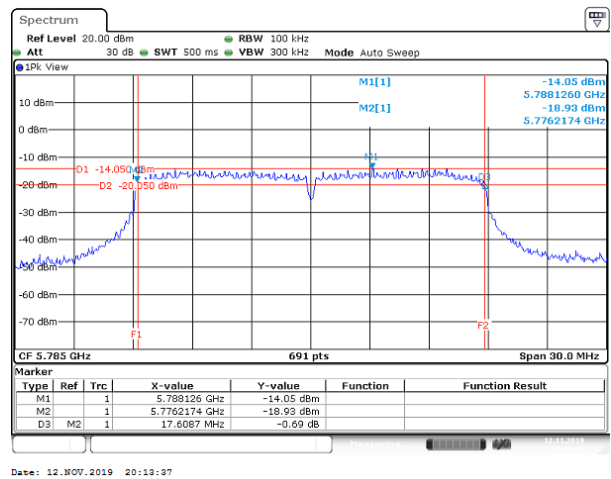


UNII-3 IEEE 802.11n HT20 mode- chain B 6dB

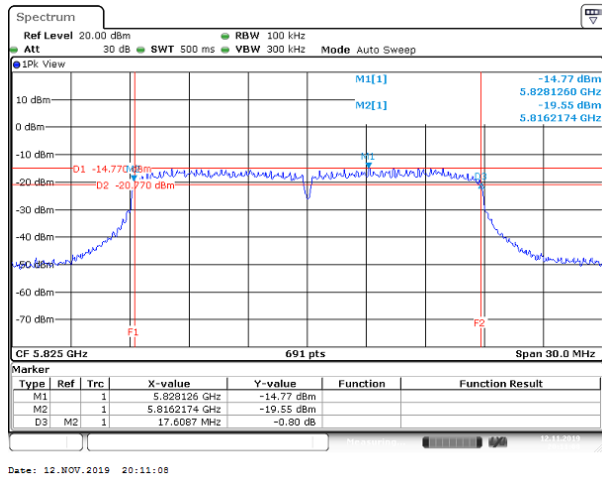
Low CH



Mid CH



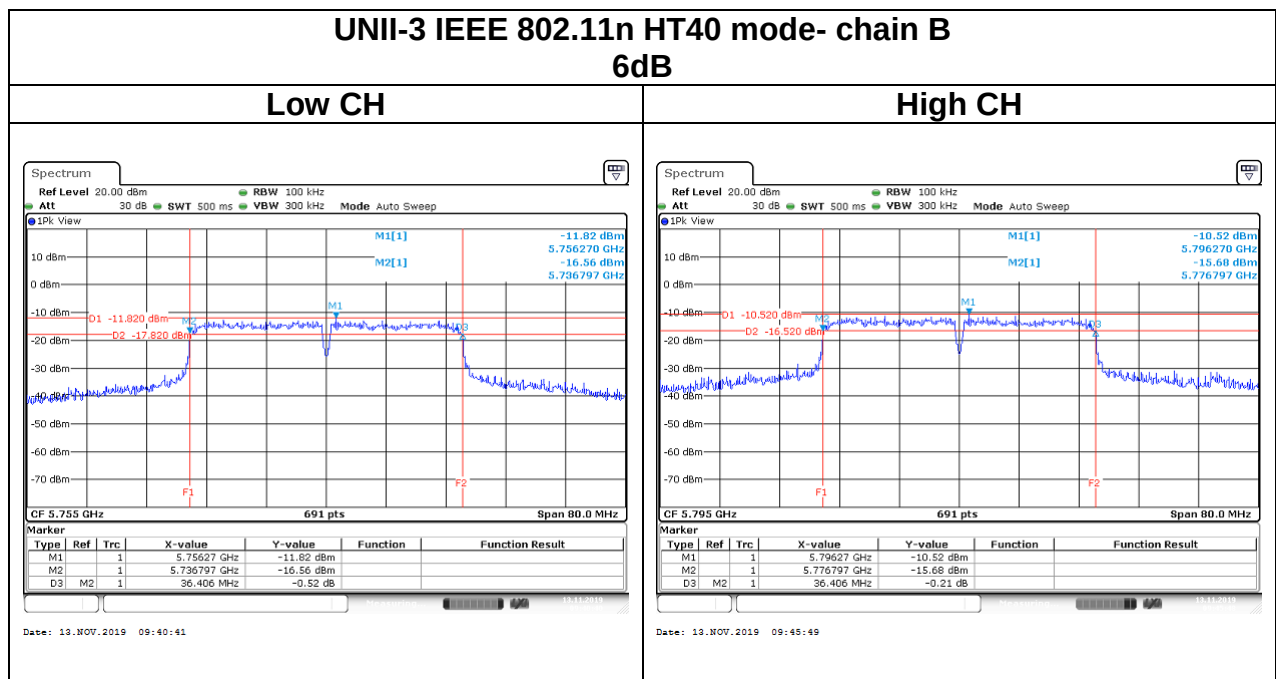
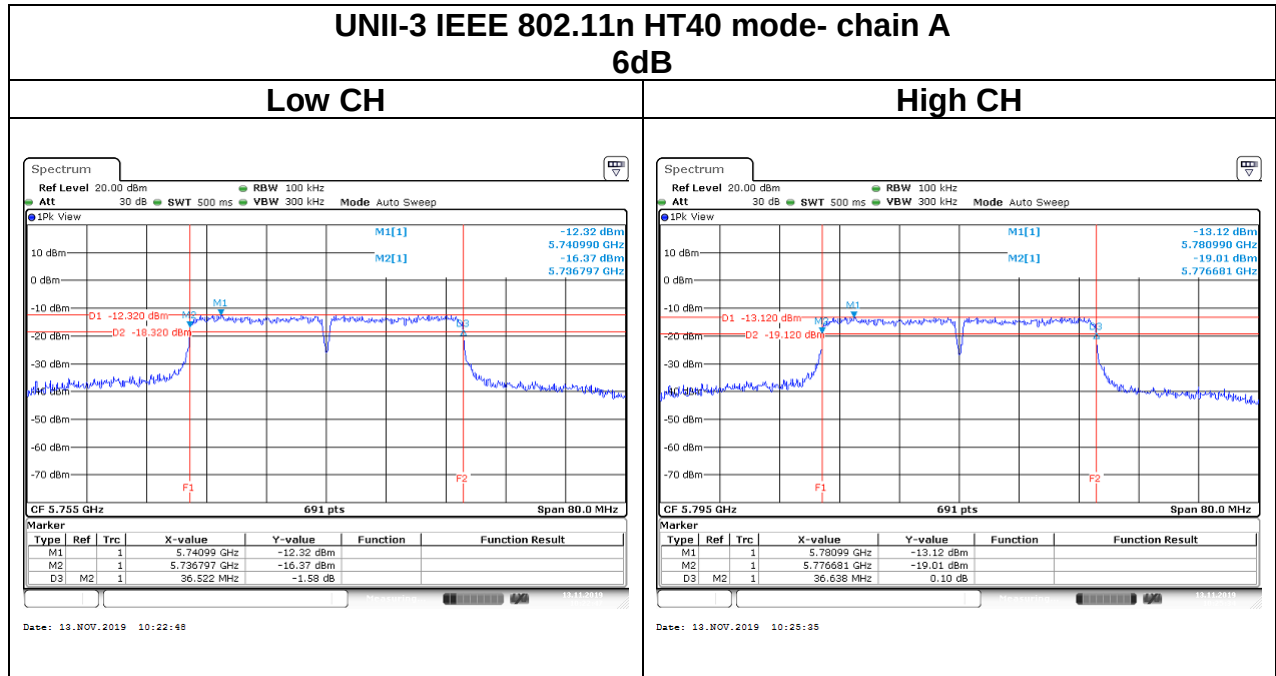
High CH

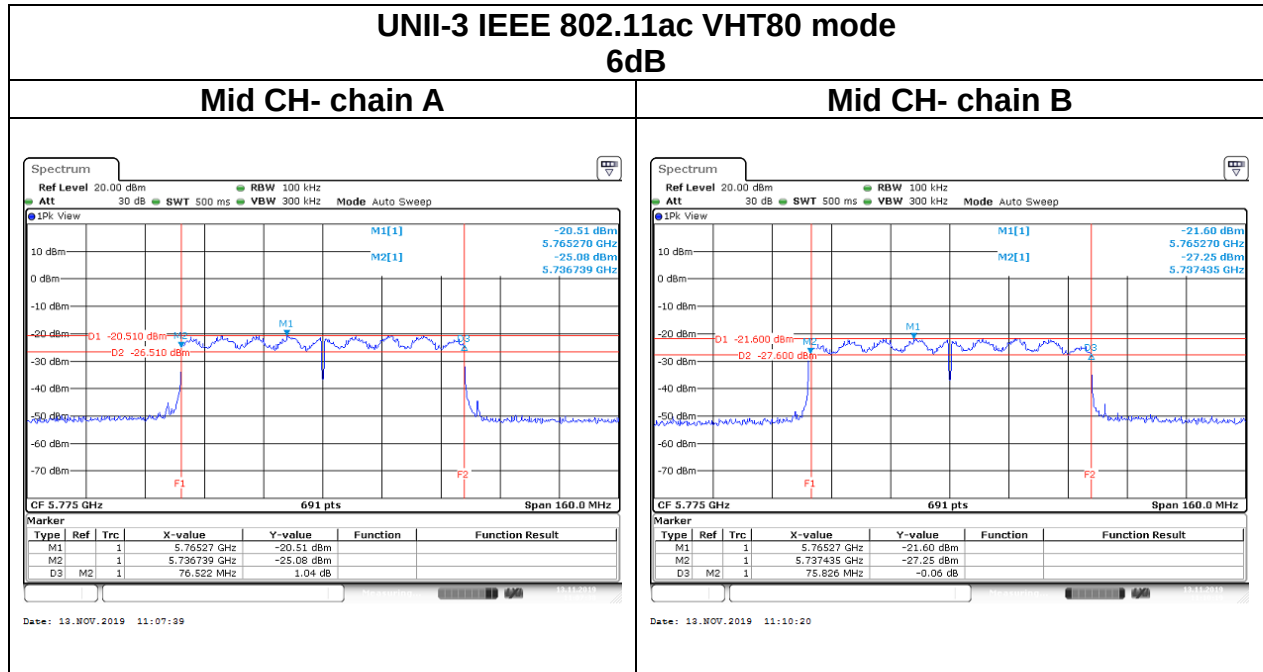




Report No.: T190902W03-RP4

Page: 47 / 251
Rev.: 02







Report No.: T190902W03-RP4

Page: 49 / 251
Rev.: 02

Test Data

99% OBW

