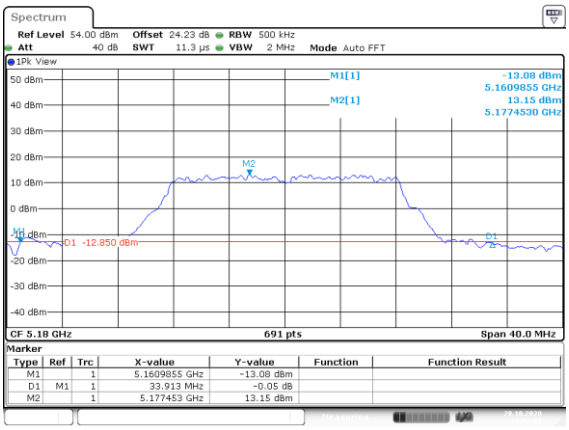
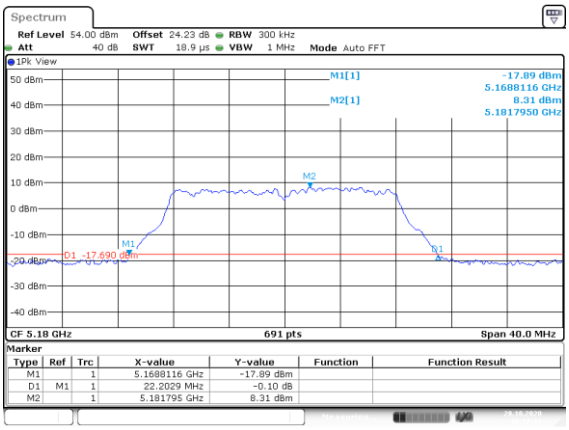
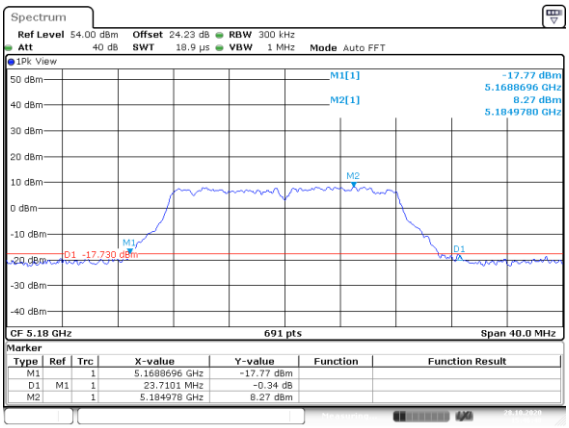
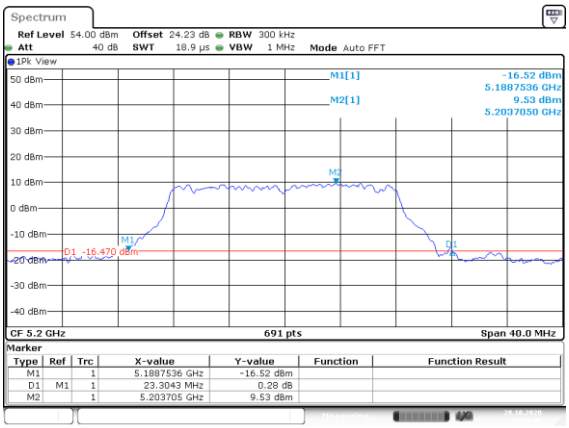
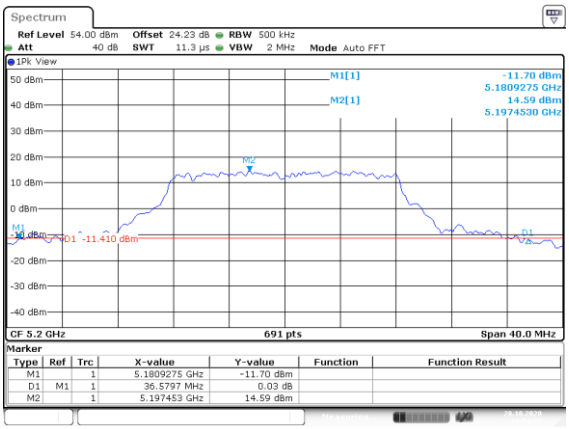
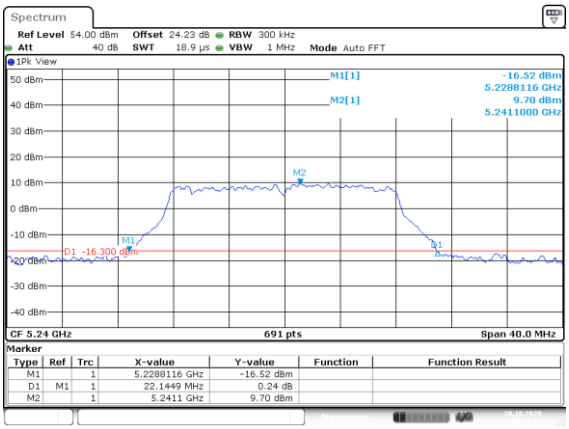
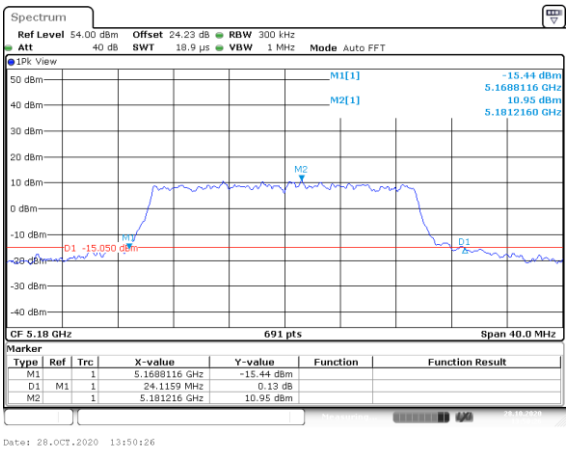
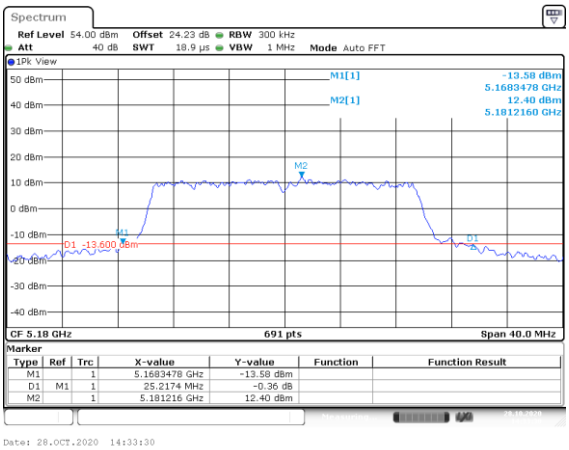
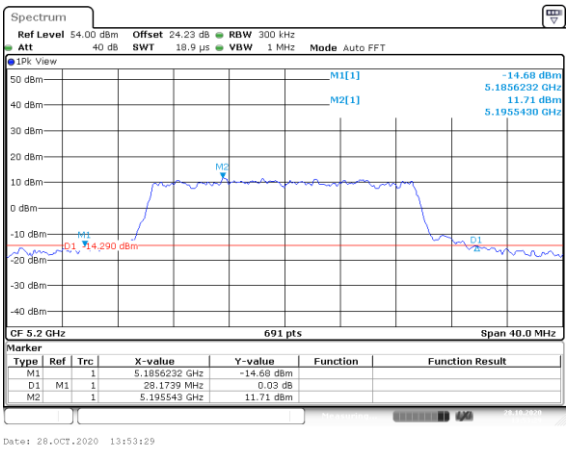
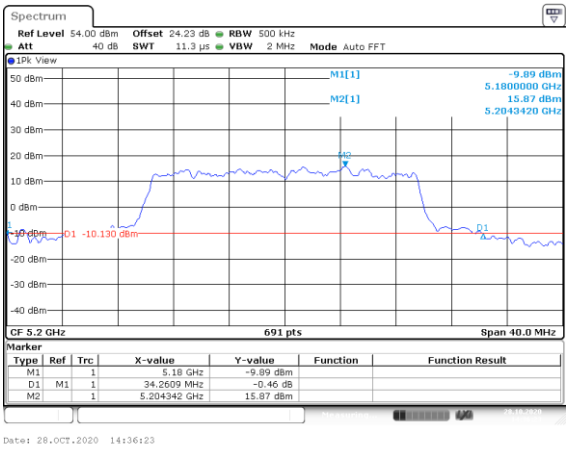
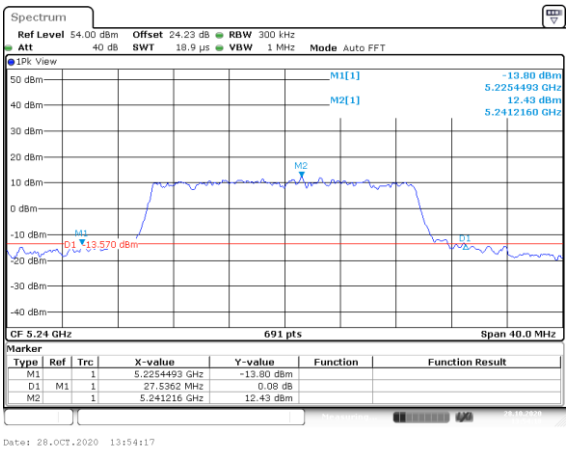
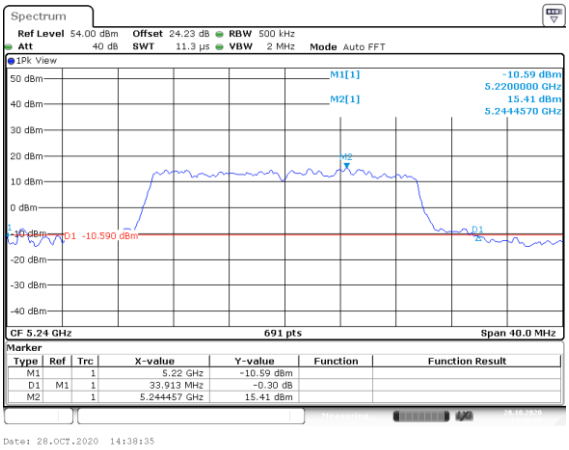
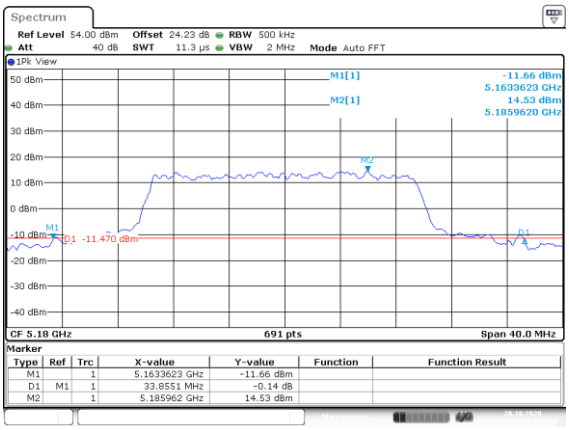
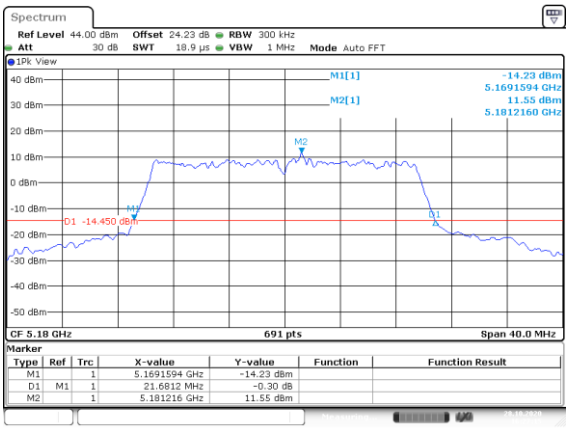
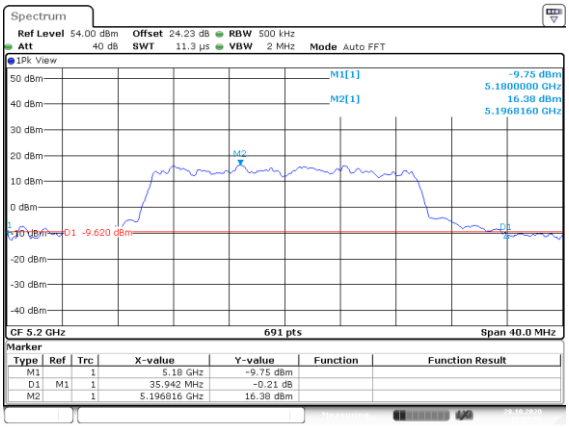
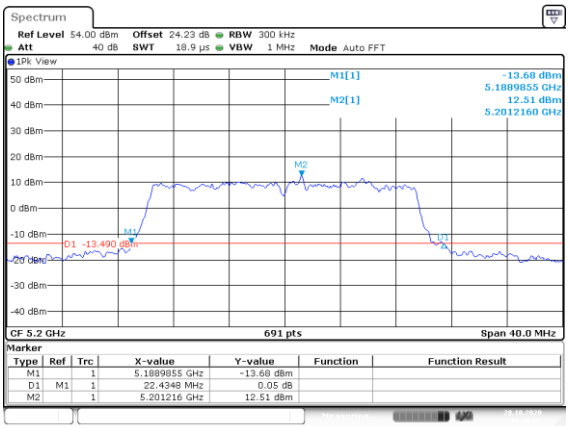
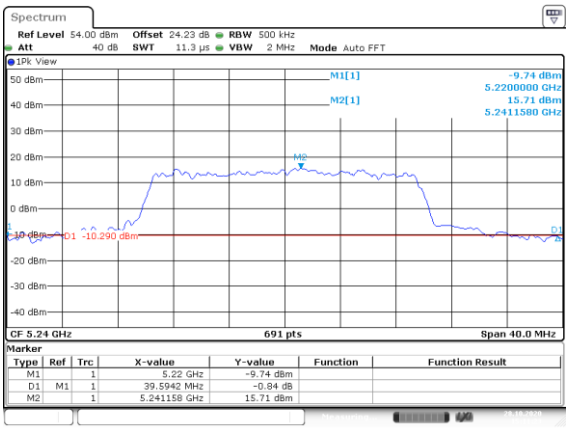
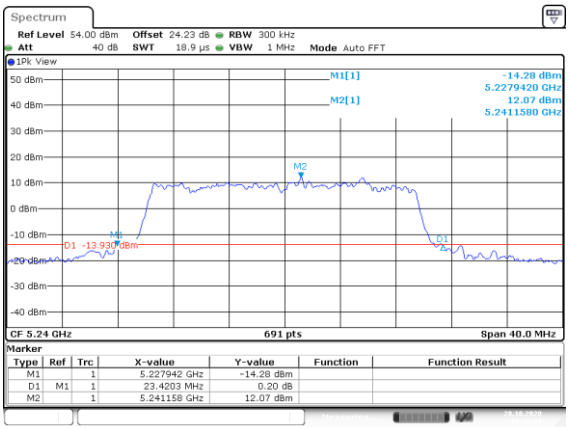
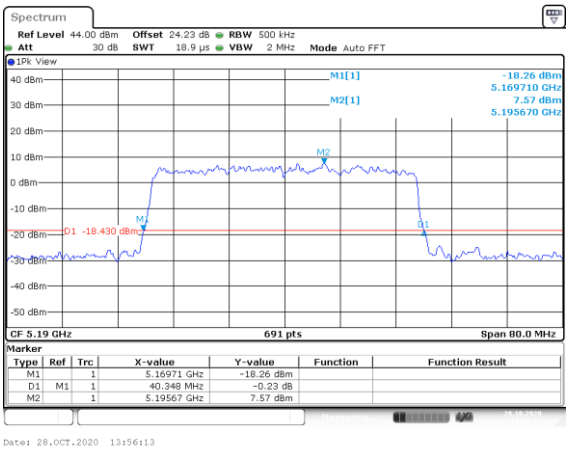
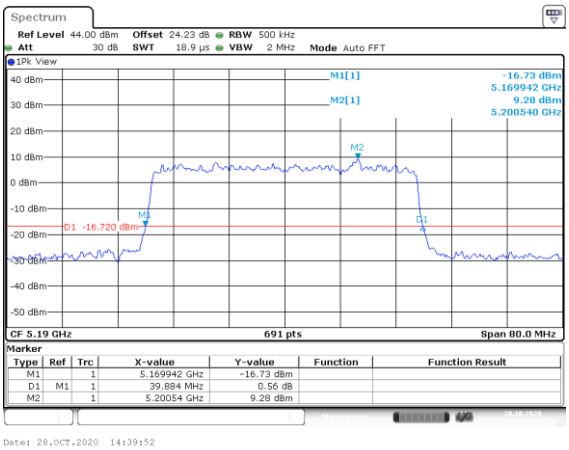
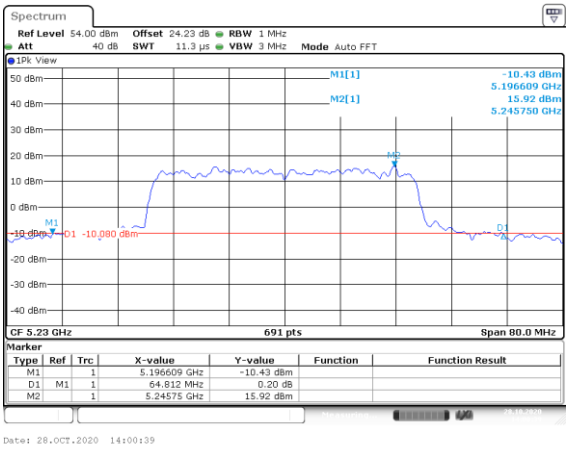
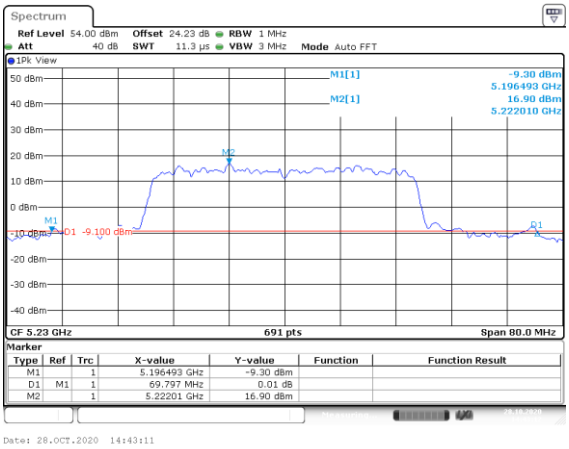
Ant. 3	Ant. 4
Low CH	**Low CH**
	
Middle CH	**Middle CH**
	
High CH	**High CH**
	

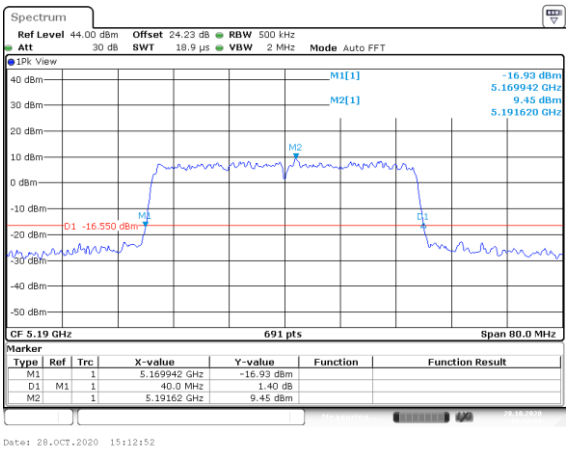
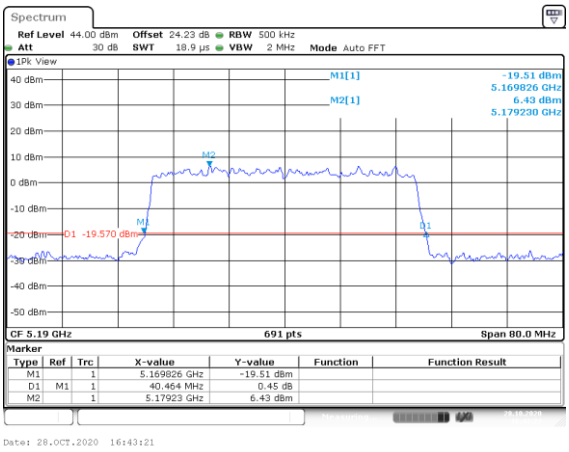
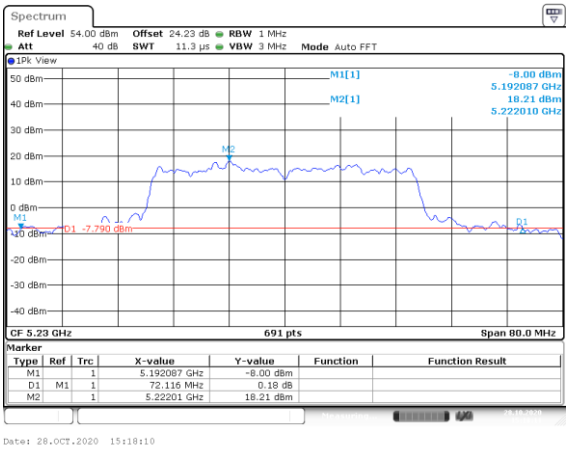
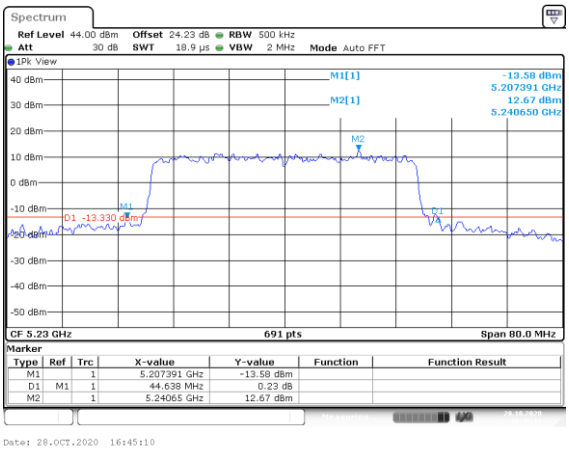
802.11ax HE20 mode:

Ant. 1	Ant. 2
Low CH	**Low CH**
	
Middle CH	**Middle CH**
	
High CH	**High CH**
	

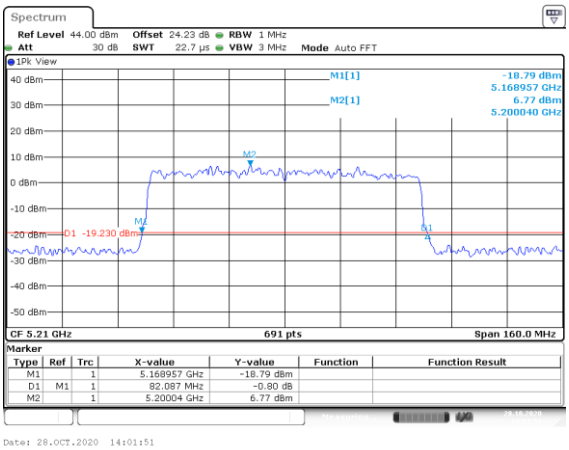
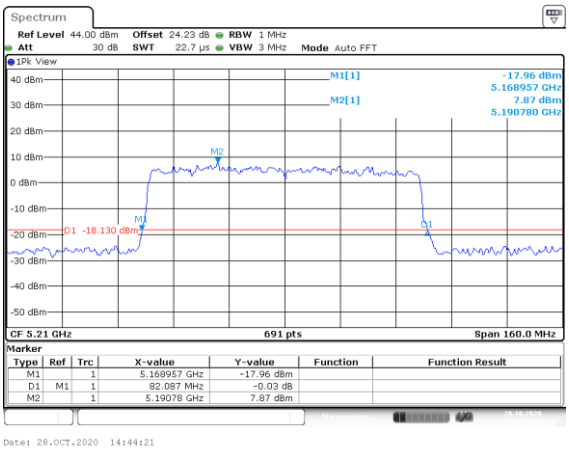
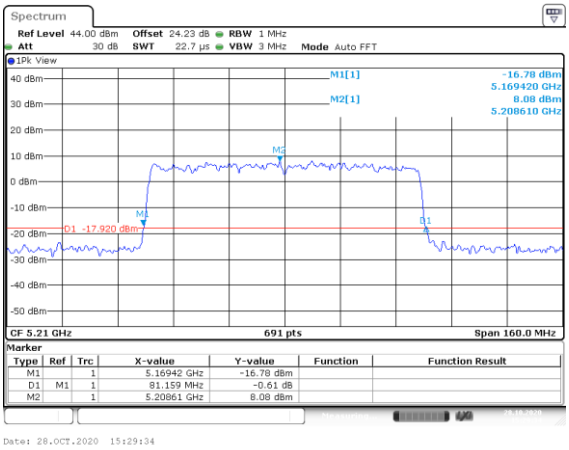
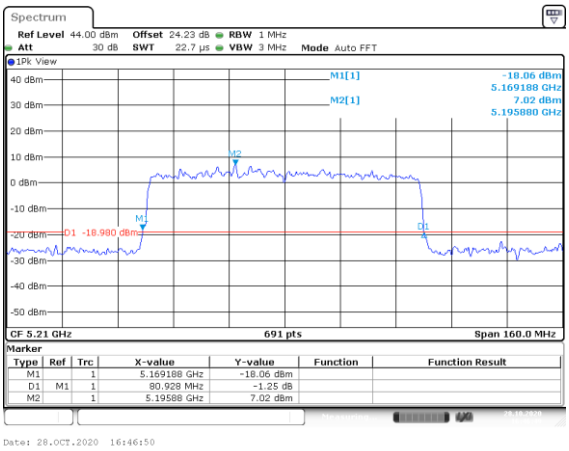
Ant. 3	Ant. 4
Low CH	**Low CH**
	
Middle CH	**Middle CH**
	
High CH	**High CH**
	

802.11ax HE40 mode:

Ant. 1	Ant. 2
Low CH	**Low CH**
	
High CH	**High CH**
	

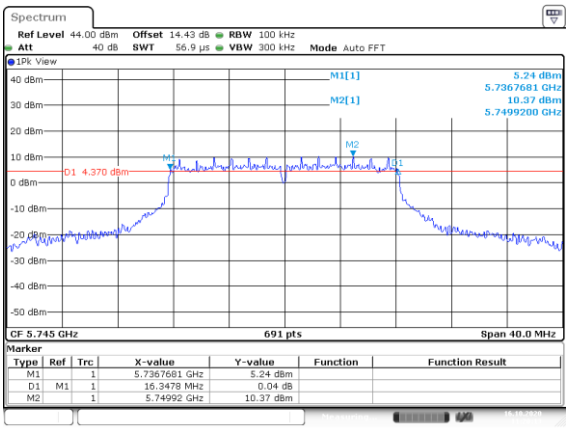
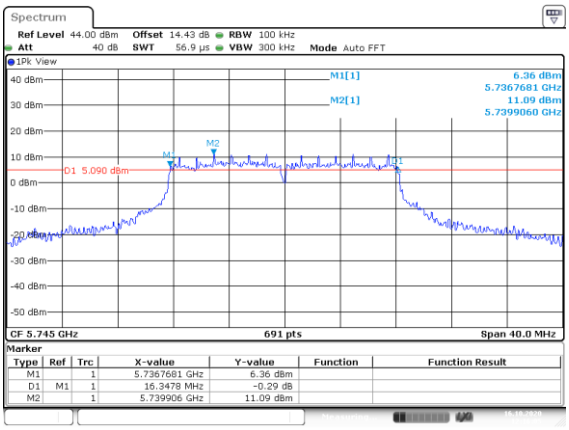
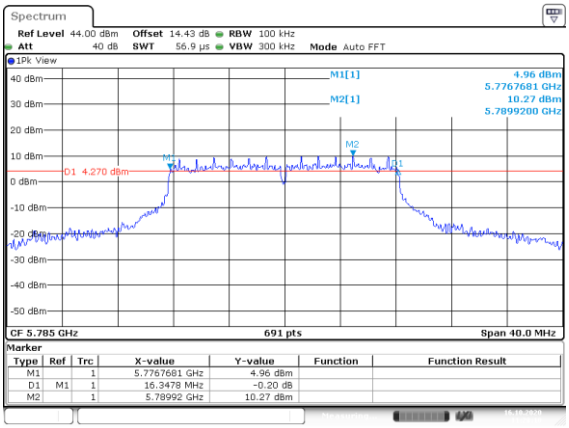
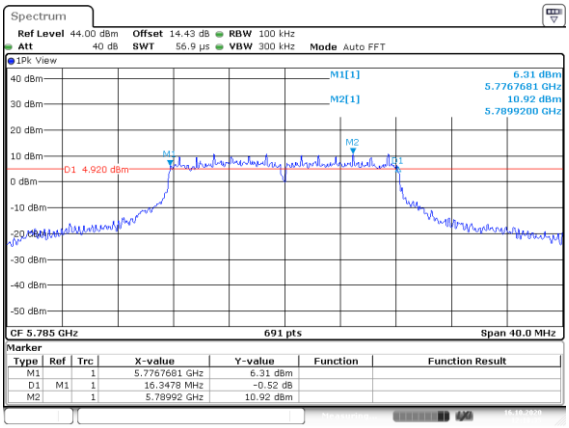
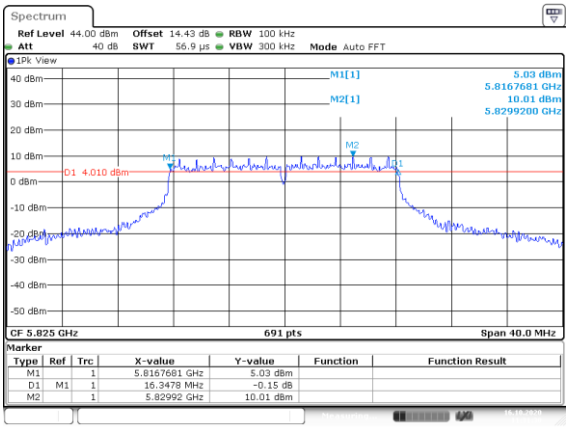
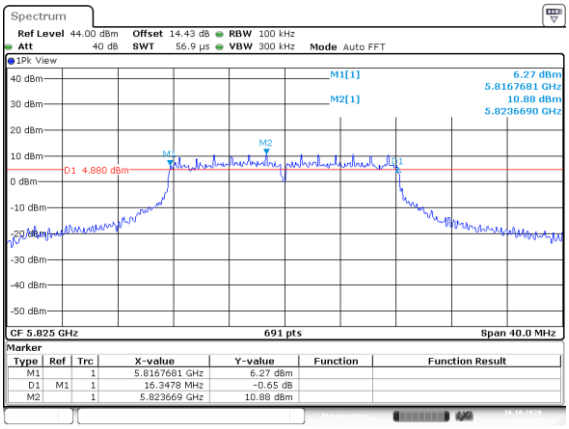
Ant. 3	Ant. 4
Low CH	**Low CH**
	
High CH	**High CH**
	

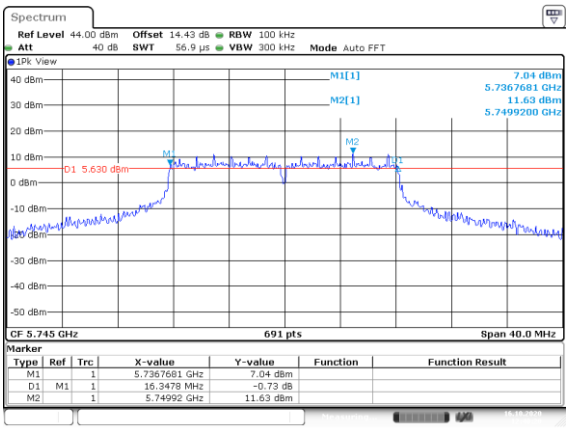
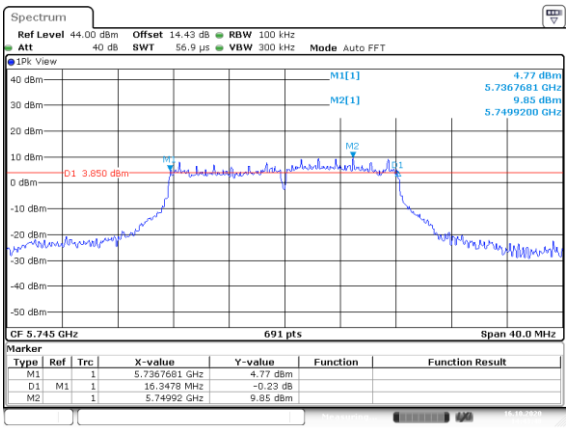
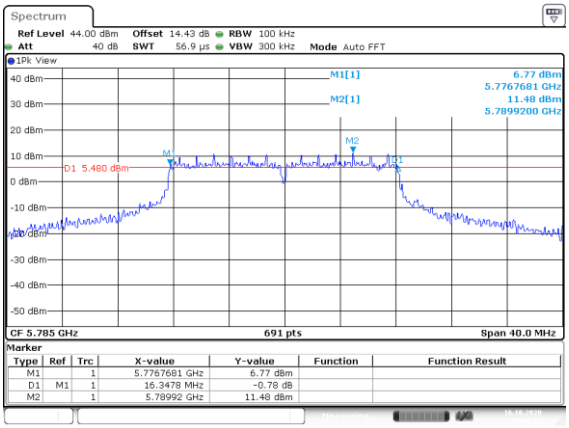
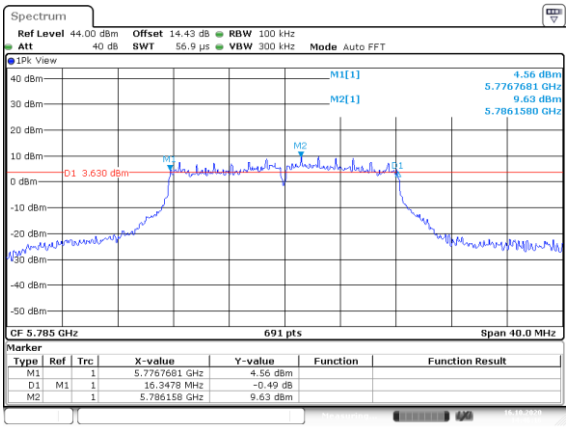
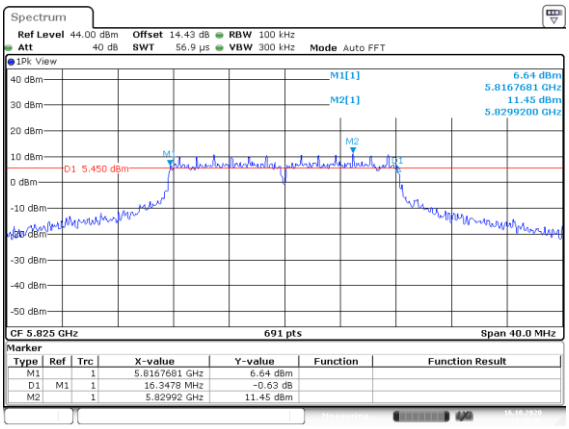
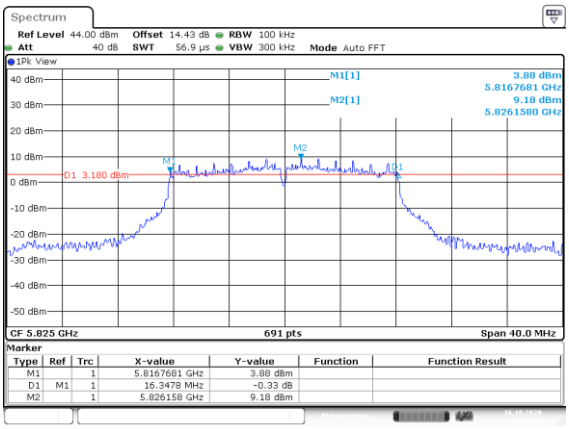
802.11ax HE80 mode:

Ant. 1	Ant. 2
Middle CH	**Middle CH**
	
Ant. 3	**Ant. 4**
Middle CH	**Middle CH**
	

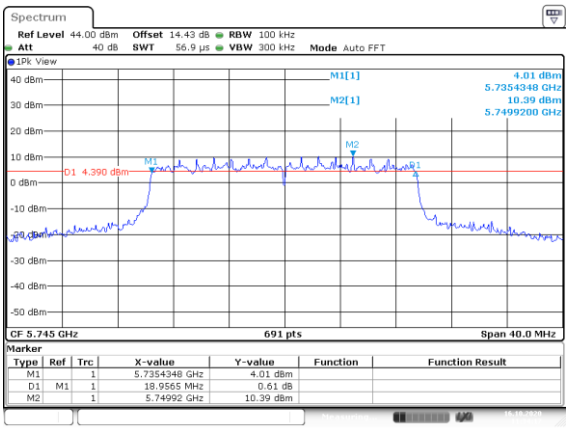
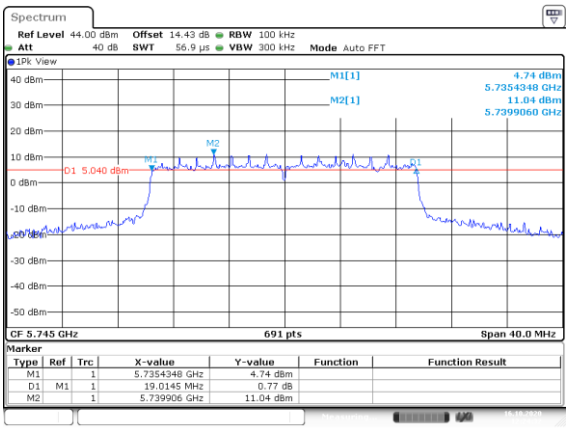
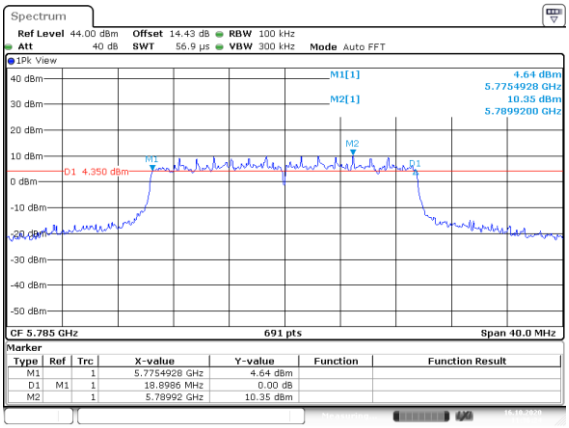
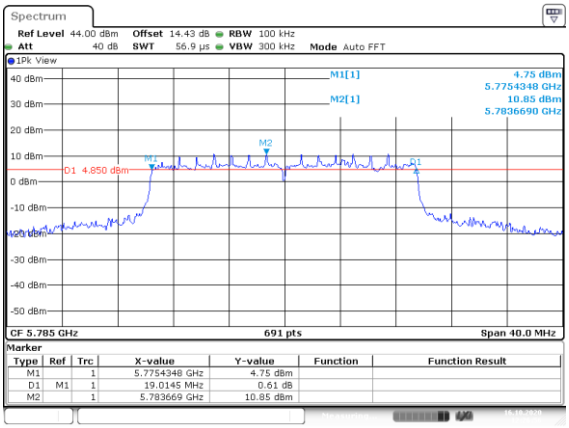
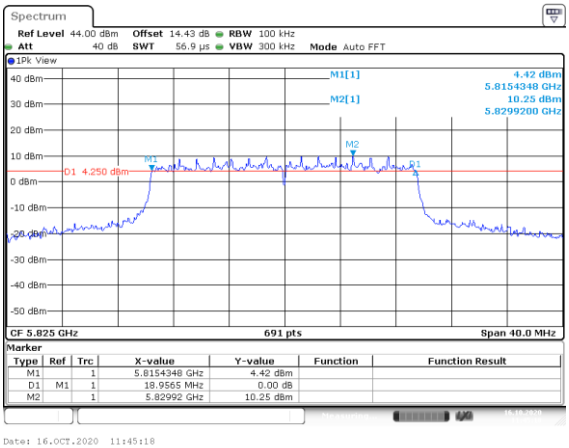
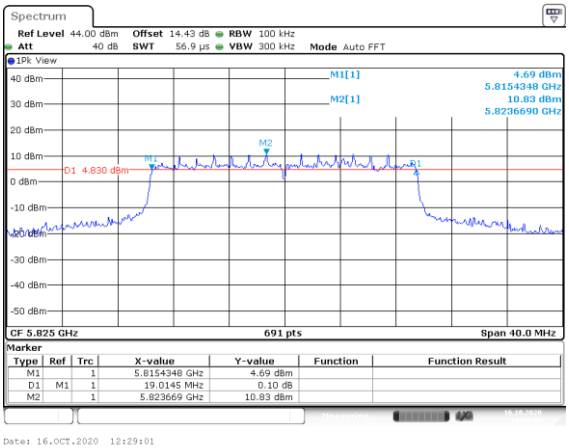
For UNII-3

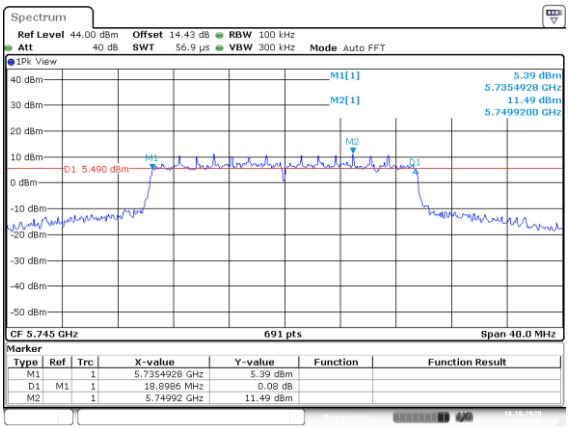
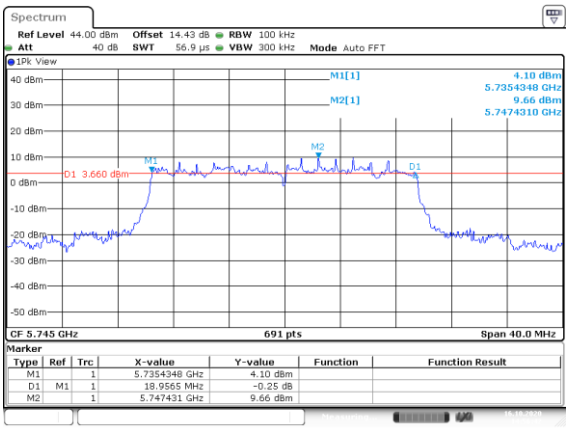
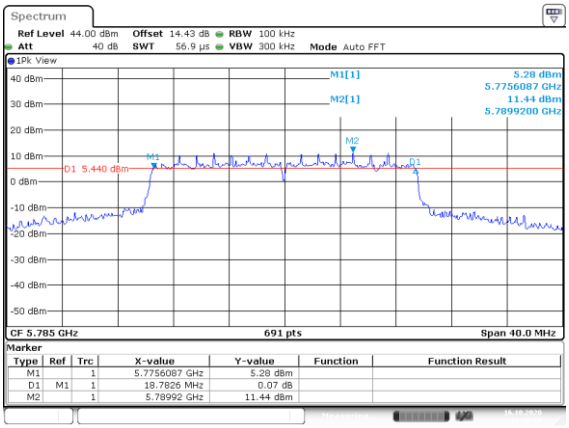
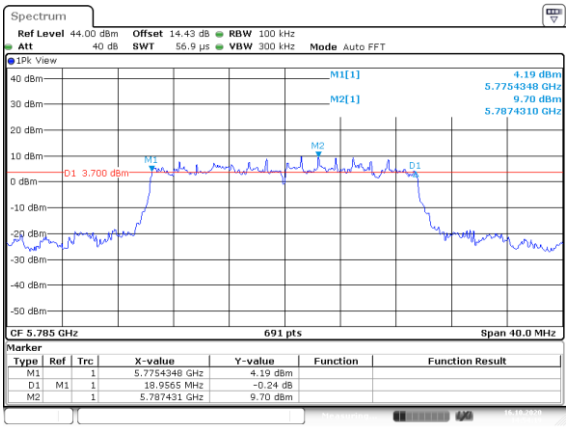
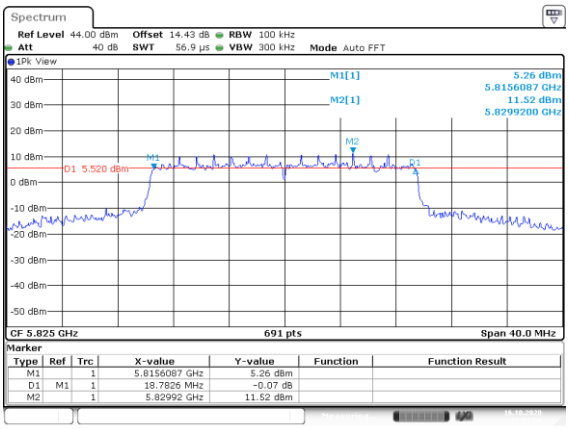
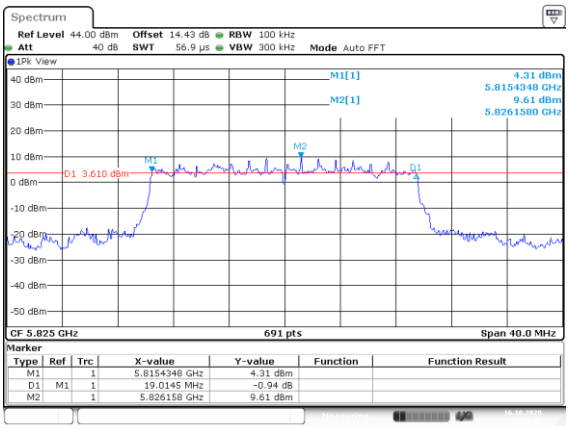
802.11a mode

Ant. 1	Ant. 2
Low CH	**Low CH**
	
Middle CH	**Middle CH**
	
High CH	**High CH**
	

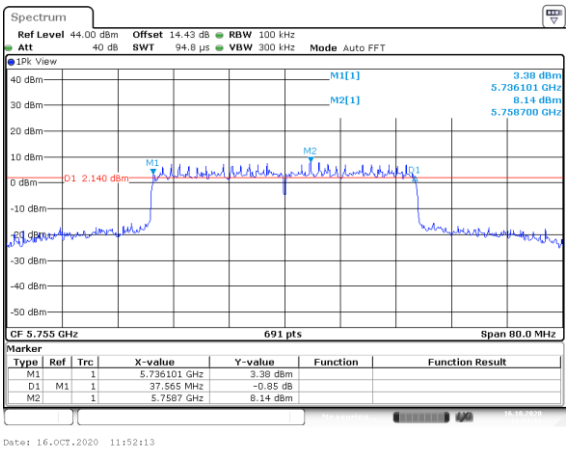
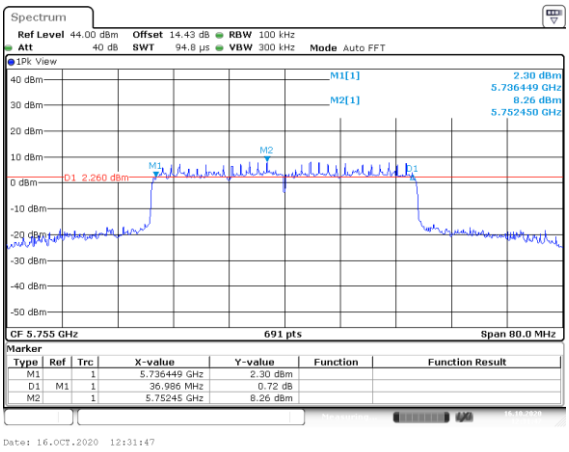
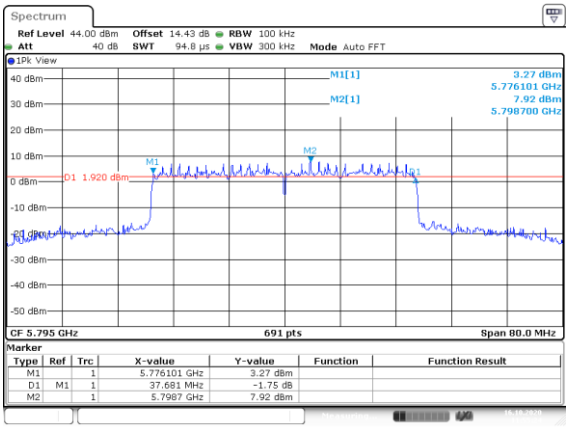
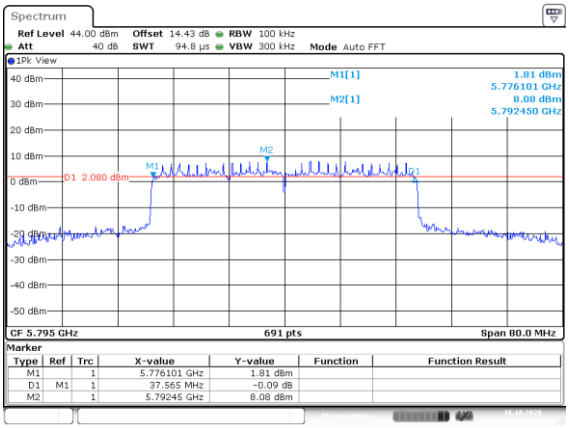
Ant. 3	Ant. 4
Low CH	**Low CH**
	
Middle CH	**Middle CH**
	
High CH	**High CH**
	

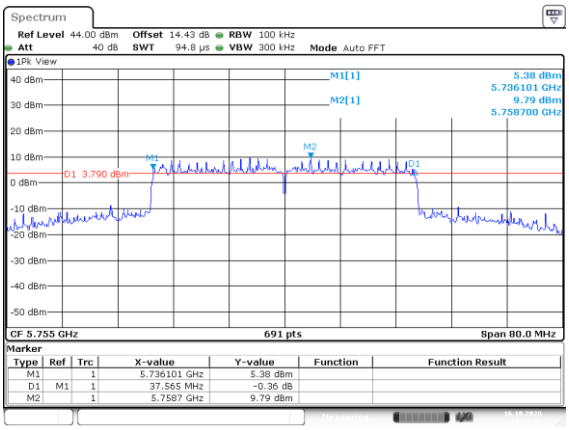
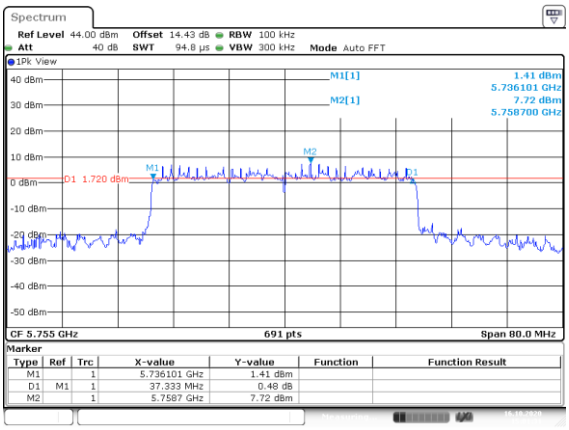
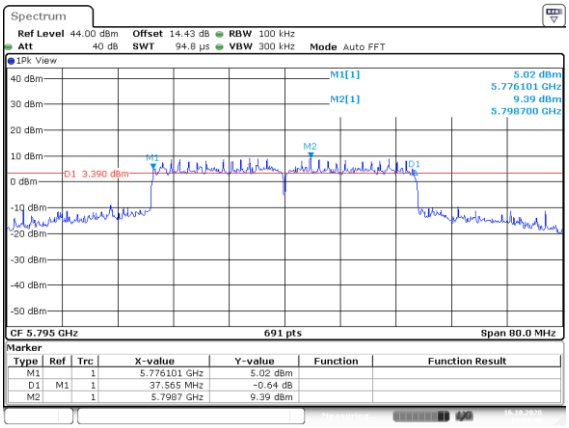
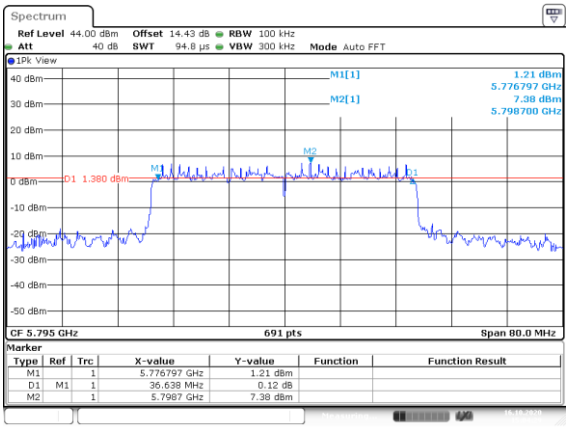
802.11ax HE20 mode:

Ant. 1	Ant. 2
Low CH	**Low CH**
	
Middle CH	**Middle CH**
	
High CH	**High CH**
	

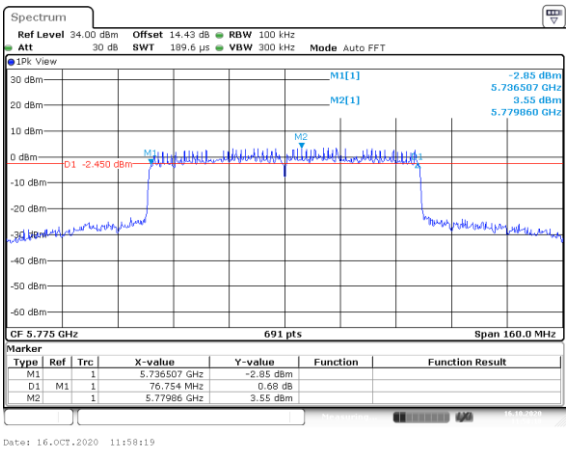
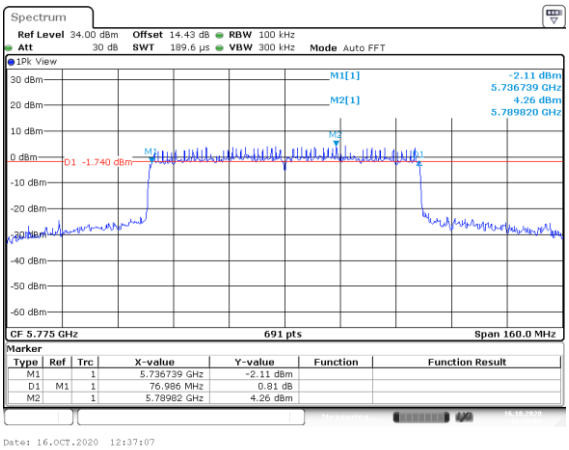
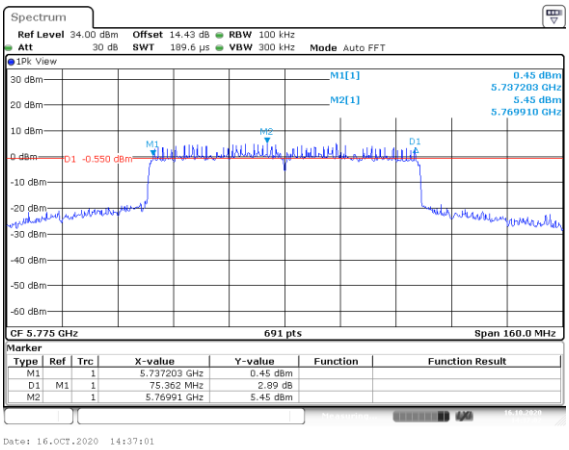
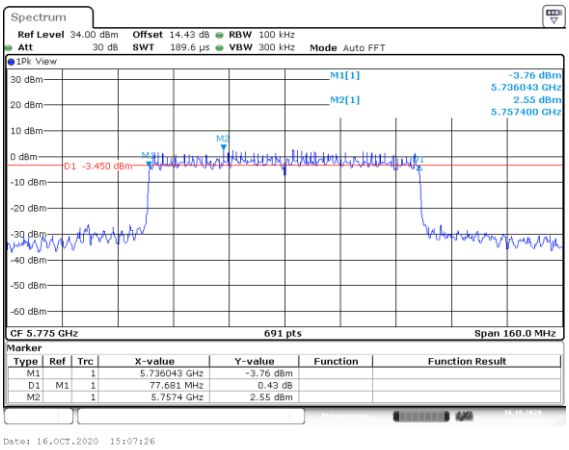
Ant. 3	Ant. 4
Low CH	**Low CH**
	
Middle CH	**Middle CH**
	
High CH	**High CH**
	

802.11ax HE40 mode:

Ant. 1	Ant. 2
Low CH	**Low CH**
	
High CH	**High CH**
	

Ant. 3	Ant. 4
Low CH	**Low CH**
	
High CH	**High CH**
	

802.11ax HE80 mode:

Ant. 1	Ant. 2
Middle CH	**Middle CH**
	
Ant. 3	**Ant. 4**
Middle CH	**Middle CH**
	

9 FCC §15.407(a)(1) – Maximum Output Power

9.1 Applicable Standard

According to FCC §15.407(a),

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.

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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

9.2 Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01,

The use Power Meter

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to a Power sensor.

9.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room					
USB Wideband Power Sensor	Agilent	U2021XA	MY52500008	2020/01/06	2021/01/05
Cable	MTJ	MT40S	620620-MT40S-100	Each use	-

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).*

9.4 Test Data

Channel	Frequency (MHz)	Average Output Power (dBm)					Limit (dBm)
		Ant. 1	Ant. 2	Ant. 3	Ant. 4	Sum	
IEEE 802.11a mode							
36	**5180**	18.33	19.47	20.24	17.31	25.00	30.00
40	**5200**	19.81	20.82	21.46	18.74	26.35	30.00
48	**5240**	19.97	20.76	21.38	18.69	26.33	30.00
149	**5745**	21.68	22.32	22.52	20.38	27.82	30.00
157	**5785**	21.64	22.26	22.37	20.35	27.75	30.00
165	**5825**	21.35	22.25	22.33	20.31	27.65	30.00
IEEE 802.11n HT20 mode							
36	**5180**	18.35	19.21	20.18	17.44	24.93	30.00
40	**5200**	19.95	20.86	21.35	18.65	26.34	30.00
48	**5240**	19.96	20.81	21.34	18.62	26.32	30.00
149	**5745**	21.36	22.03	22.17	20.15	27.52	30.00
157	**5785**	21.28	22.17	22.41	19.87	27.56	30.00
165	**5825**	21.17	22.08	22.05	20.13	27.45	30.00
IEEE 802.11n HT40 mode							
38	**5190**	15.62	16.13	17.02	14.83	21.99	30.00
46	**5230**	21.03	21.26	22.16	19.86	27.17	30.00
151	**5755**	22.46	22.79	24.06	21.65	28.85	30.00
159	**5795**	22.05	22.74	23.65	21.35	28.55	30.00

Channel	Frequency (MHz)	Average Output Power (dBm)					Limit (dBm)
		Ant. 1	Ant. 2	Ant. 3	Ant. 4	Sum	
IEEE 802.11ac VHT20 mode							
36	**5180**	18.44	19.44	20.35	17.59	25.10	30.00
40	**5200**	20.13	21.05	21.47	18.73	26.49	30.00
48	**5240**	20.16	21.03	21.46	18.76	26.49	30.00
149	**5745**	21.65	22.15	22.38	20.38	27.73	30.00
157	**5785**	21.47	22.37	22.47	20.07	27.72	30.00
165	**5825**	21.36	22.16	22.11	20.31	27.57	30.00
IEEE 802.11ac VHT40 mode							
38	**5190**	15.75	16.33	17.18	14.95	22.15	30.00
46	**5230**	21.26	21.44	22.39	20.13	27.40	30.00
151	**5755**	22.57	23.05	24.16	21.74	28.99	30.00
159	**5795**	22.28	22.96	23.87	21.62	28.78	30.00
IEEE 802.11ac VHT80 mode							
42	**5210**	14.68	18.76	16.59	14.24	22.47	30.00
155	**5775**	20.74	21.07	21.66	19.13	26.77	30.00
IEEE 802.11ax HE20 mode							
36	**5180**	18.51	19.58	20.42	17.68	25.19	30.00
40	**5200**	20.18	21.11	21.63	18.84	26.58	30.00
48	**5240**	20.26	21.17	21.65	18.92	26.64	30.00
149	**5745**	21.73	22.36	22.65	20.65	27.93	30.00
157	**5785**	21.65	22.45	22.51	20.33	27.84	30.00
165	**5825**	21.53	22.21	22.25	20.42	27.68	30.00
IEEE 802.11ax HE40 mode							
38	**5190**	15.81	16.39	17.26	15.03	22.22	30.00
46	**5230**	21.31	21.51	22.48	20.37	27.50	30.00
151	**5755**	22.71	23.17	24.31	21.91	29.13	30.00
159	**5795**	22.46	23.05	24.06	21.87	28.96	30.00
IEEE 802.11ax HE80 mode							
42	**5210**	14.76	15.83	16.71	14.46	21.55	30.00
155	**5775**	20.81	21.21	21.84	19.27	26.90	30.00

10 FCC §15.407(a) – Power Spectral Density

10.1 Applicable Standard

According to FCC §15.407(a),

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.

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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

10.2 Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01 and ANSI 63.10: 2013 Sec 10.3.7.
For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in Section 15.407(a)(5).
For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:

a) Set the RBW to 1 MHz.

b) Set the VBW to be at least 1 MHz (a VBW of 3 MHz is desirable).

c) Set the frequency span to examine the spectrum across a convenient frequency segment (e.g., 600 MHz).

d) Select the power averaging (rms) detector.

e) Set the sweep time so that there is no more than a 1 ms integration period over each measurement bin.

f) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

10.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room					
Spectrum Analyzer	Rohde & Schwarz	FSV40	101140	2020/03/11	2021/03/10
Cable	WOKEN	SFL402	S02-160323-07	Each use	-

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).*

10.4 Test Data and Test Plot

UNII-1

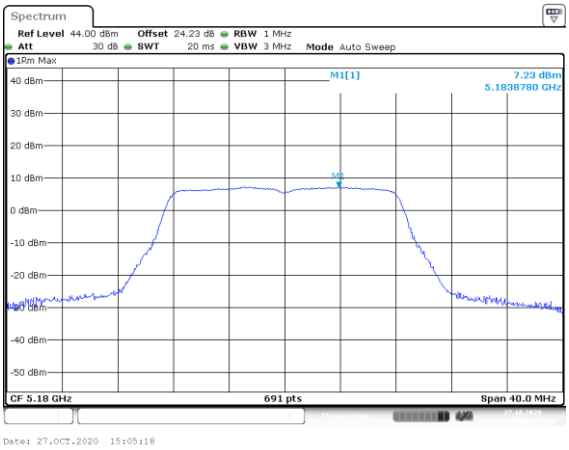
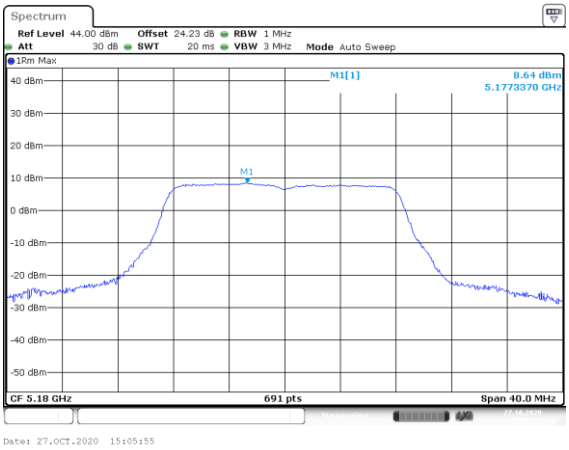
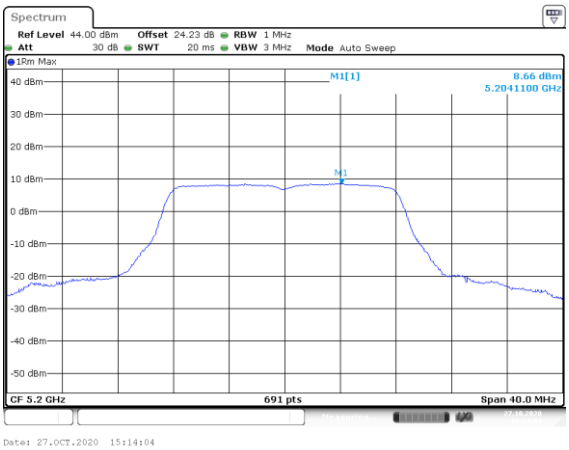
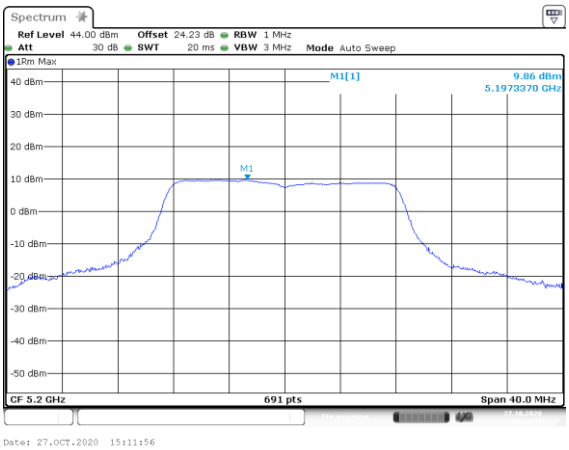
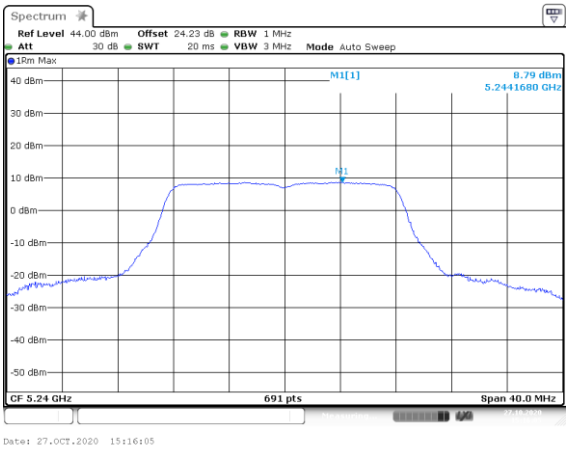
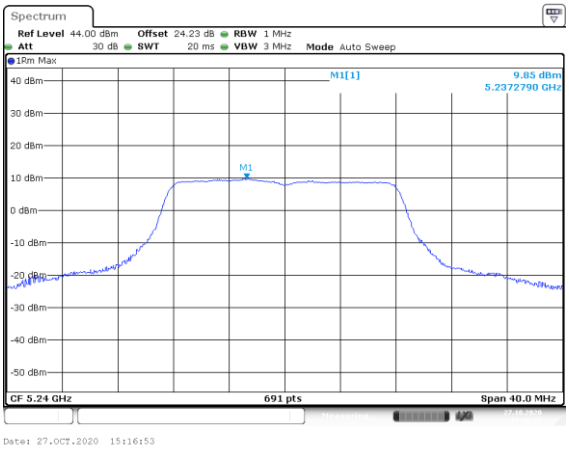
Mode	Channel	Frequency (MHz)	PSD (dBm/MHz)				Total PSD (dBm/MHz)	Duty Factor (dB)	Limit (dBm/MHz)
			Ant. 1	Ant. 2	Ant. 3	Ant. 4			
802.11a	36	5180	7.38	8.79	9.15	6.83	14.16	0.15	15.61
	40	5200	8.81	10.01	10.35	8.14	15.44	0.15	15.61
	48	5240	8.94	10.00	10.41	7.99	15.45	0.15	15.61
802.11ax HE20	36	5180	7.27	8.40	8.86	6.62	13.90	0.04	15.61
	40	5200	8.83	9.75	10.07	7.48	15.17	0.04	15.61
	48	5240	8.45	9.82	10.14	7.46	15.12	0.04	15.61
802.11ax HE40	38	5190	1.61	2.01	2.87	1.33	8.02	0.08	15.61
	46	5230	6.96	7.46	8.00	6.57	13.30	0.08	15.61
802.11ax HE80	42	5210	-2.05	-1.04	-0.17	-2.31	4.72	0.22	15.61

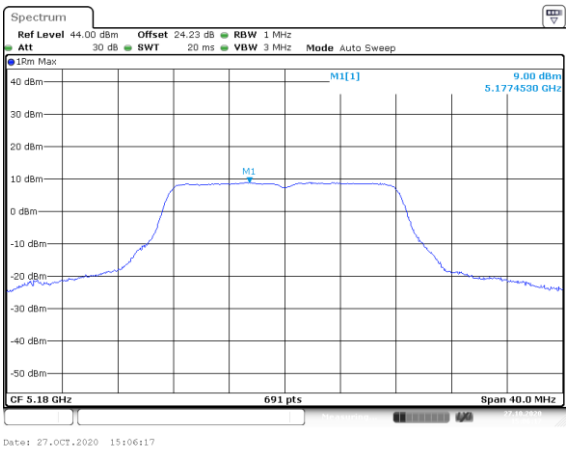
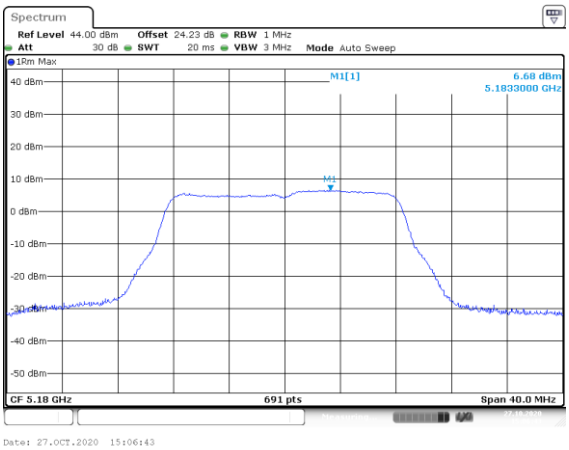
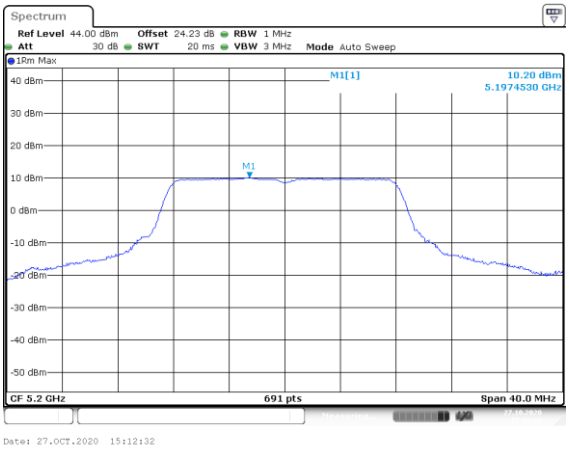
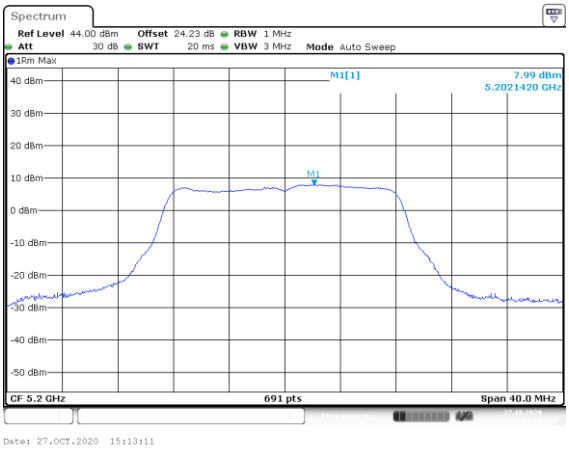
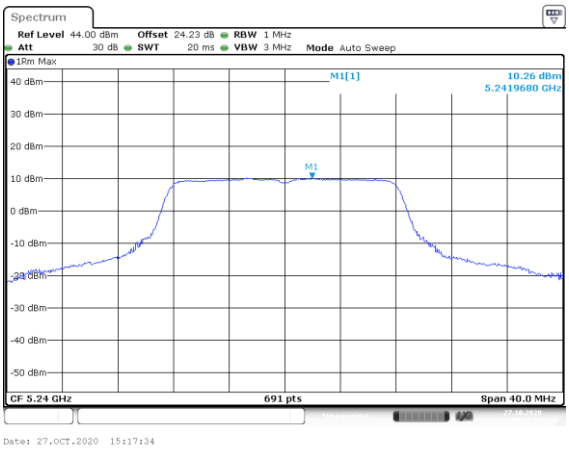
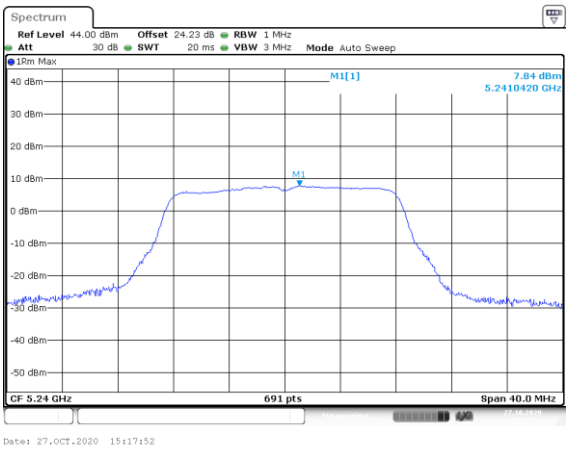
UNII-3

Mode	Channel	Frequency (MHz)	PSD (dBm/MHz)				Total PSD (dBm/MHz)	Duty Factor (dB)	Limit (dBm/MHz)
			Ant. 1	Ant. 2	Ant. 3	Ant. 4			
802.11a	149	5745	8.65	9.65	9.57	8.24	15.09	0.15	28.31
	157	5785	8.53	9.58	9.26	8.32	14.97	0.15	28.31
	165	5825	8.39	9.41	9.45	8.19	14.92	0.15	28.31
802.11ax HE20	149	5745	8.20	9.39	9.60	7.91	14.86	0.04	28.31
	157	5785	8.21	9.57	9.34	7.72	14.80	0.04	28.31
	165	5825	8.08	9.03	9.25	7.74	14.59	0.04	28.31
802.11ax HE40	151	5755	6.25	6.32	7.49	5.85	12.54	0.08	28.31
	159	5795	6.16	6.30	7.25	5.60	12.39	0.08	28.31
802.11ax HE80	155	5775	2.17	2.72	3.34	1.28	8.47	0.22	28.31

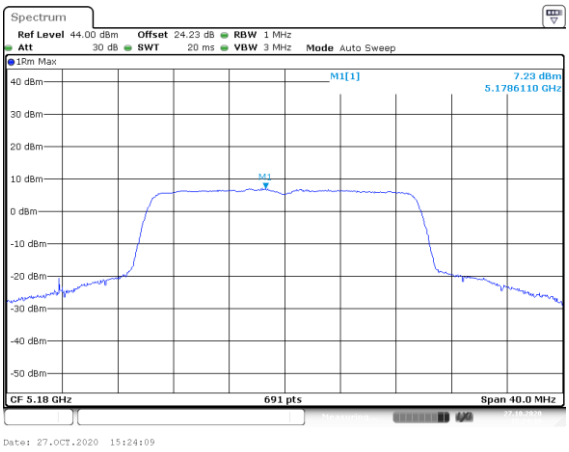
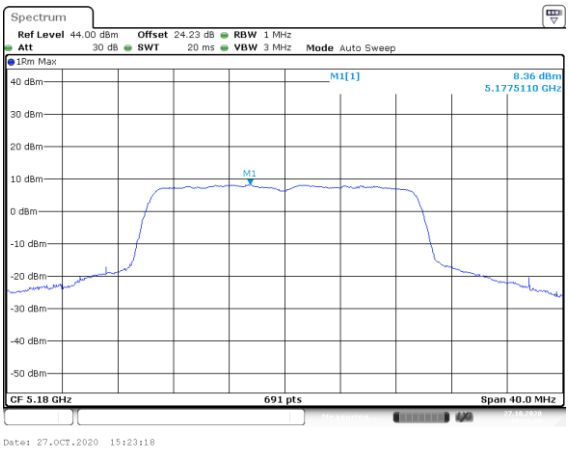
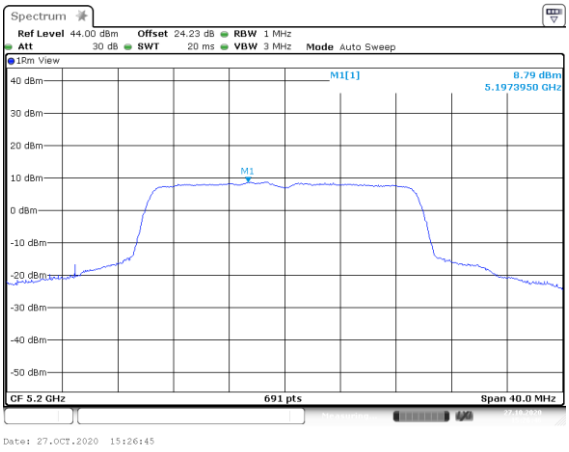
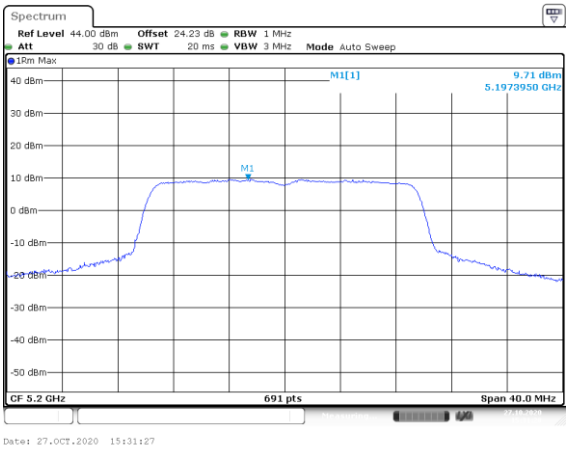
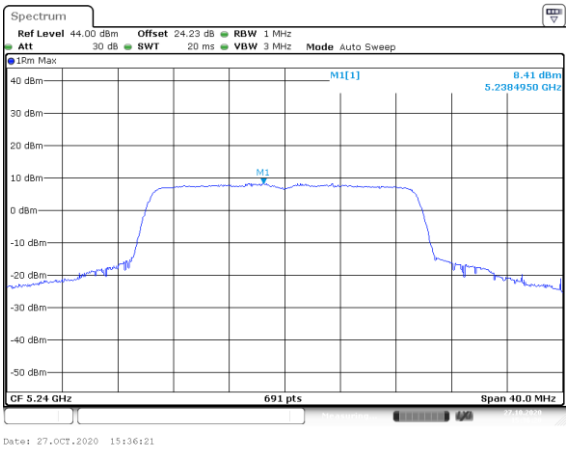
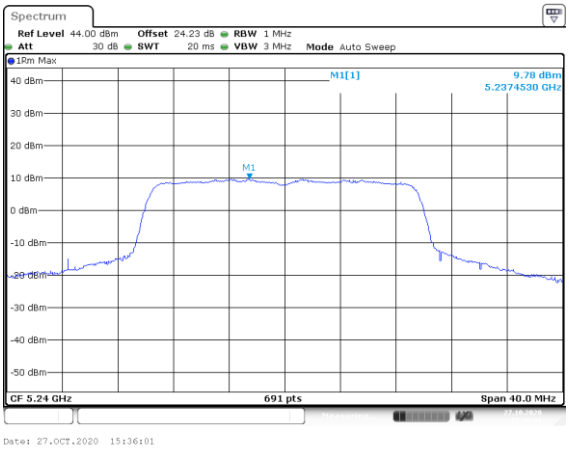
For UNII-1:

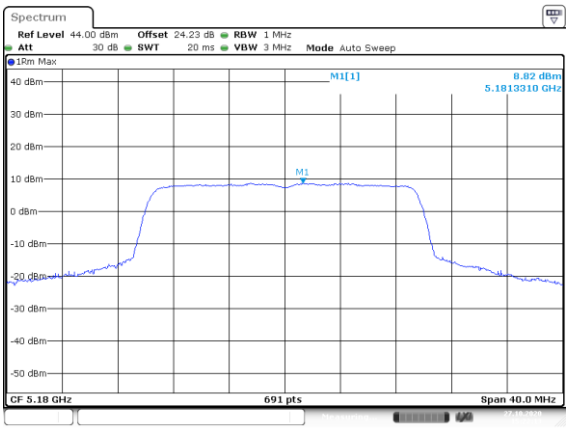
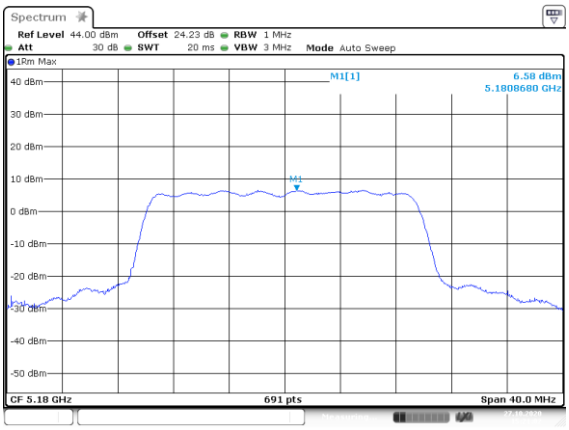
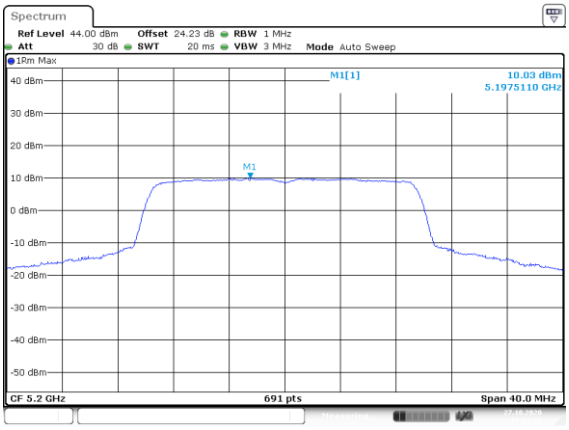
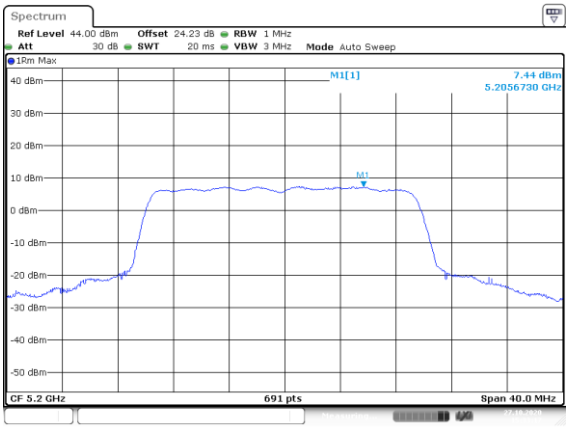
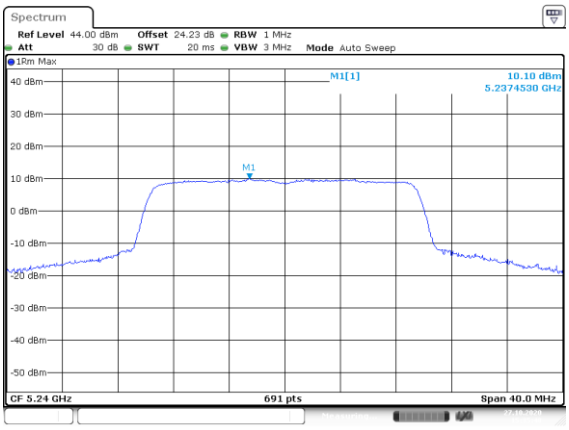
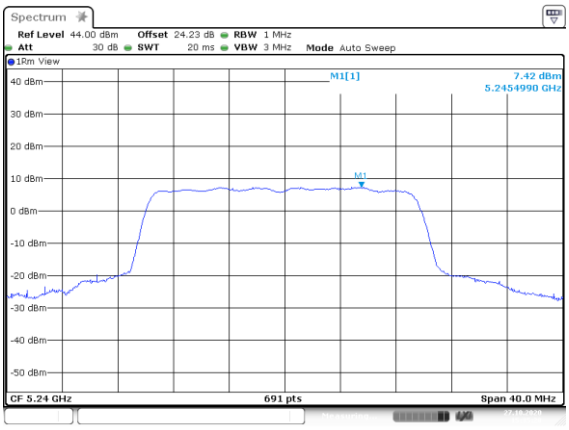
802.11a mode

Ant. 1	Ant. 2
Low CH	**Low CH**
	
Middle CH	**Middle CH**
	
High CH	**High CH**
	

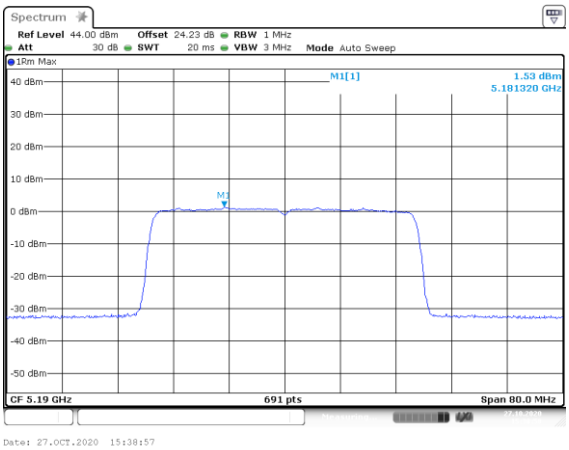
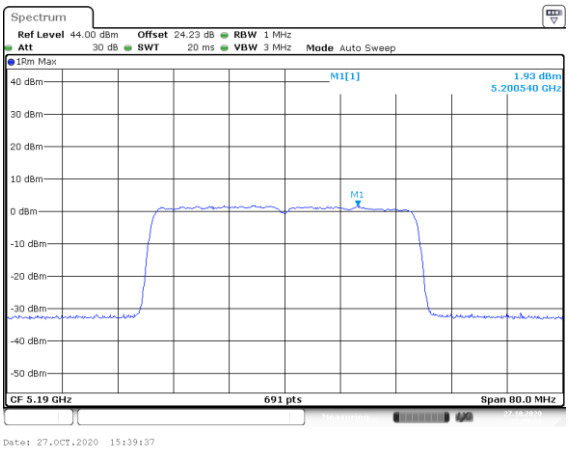
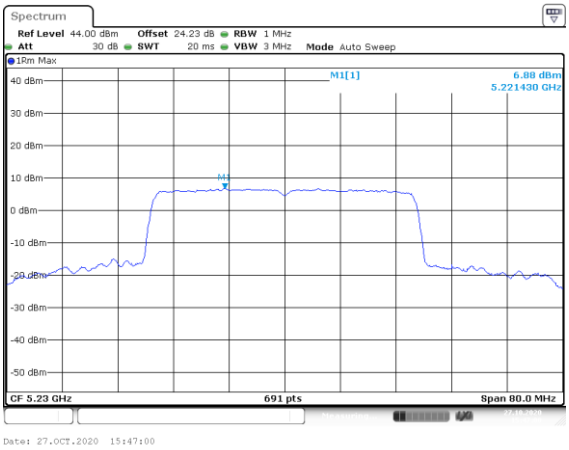
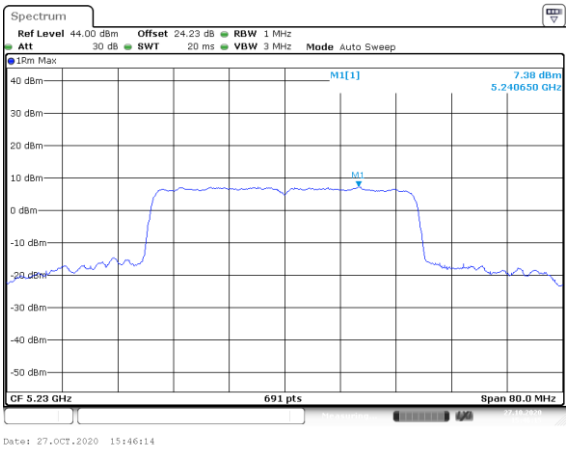
Ant. 3	Ant. 4
Low CH	**Low CH**
	
Middle CH	**Middle CH**
	
High CH	**High CH**
	

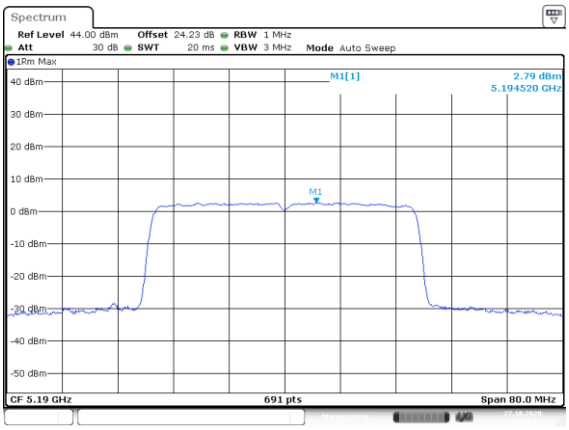
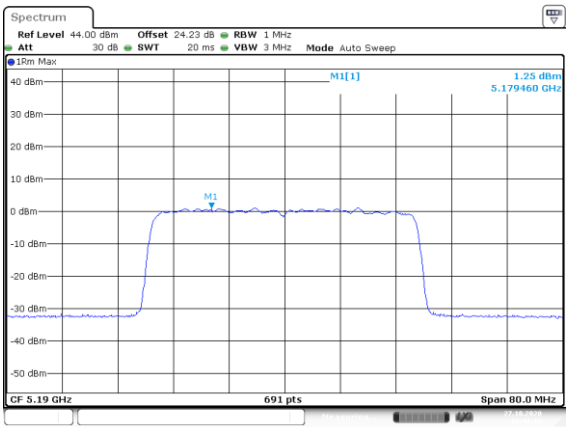
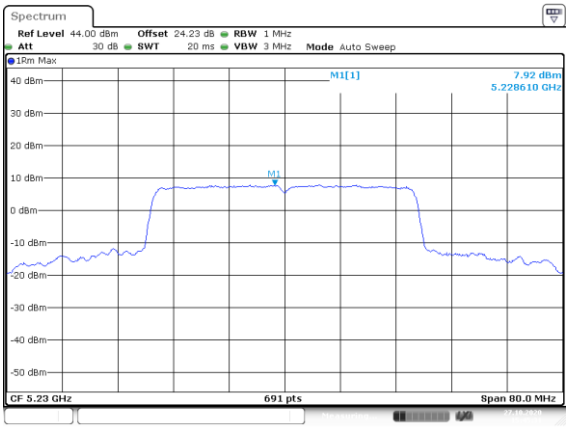
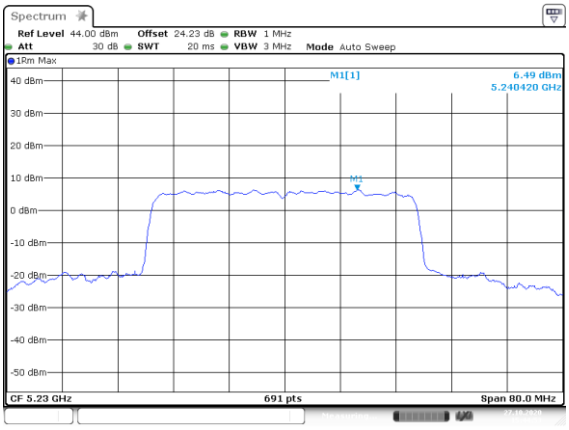
802.11ax HE20 mode:

Ant. 1	Ant. 2
Low CH	**Low CH**
	
Middle CH	**Middle CH**
	
High CH	**High CH**
	

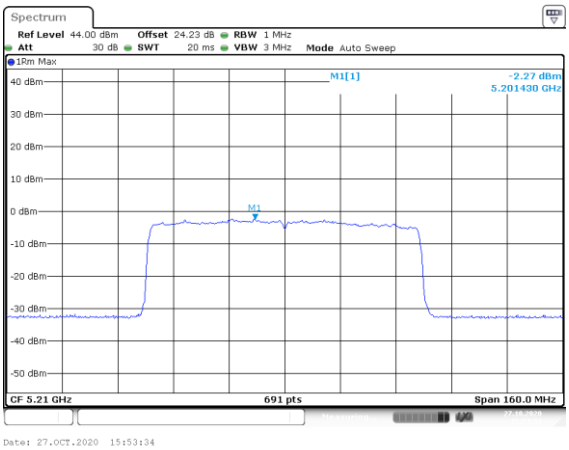
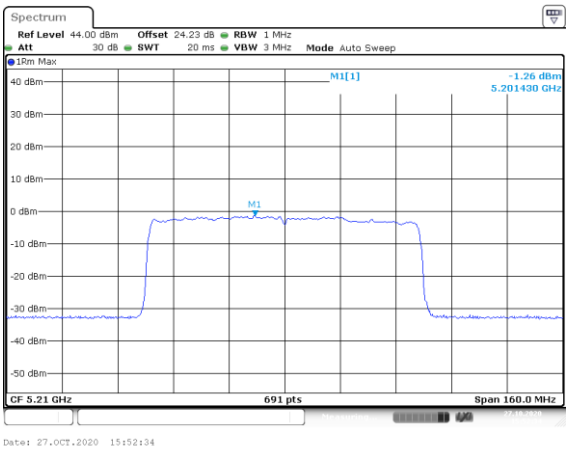
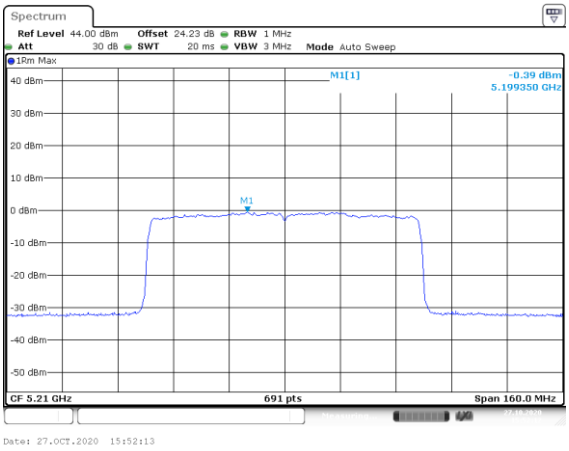
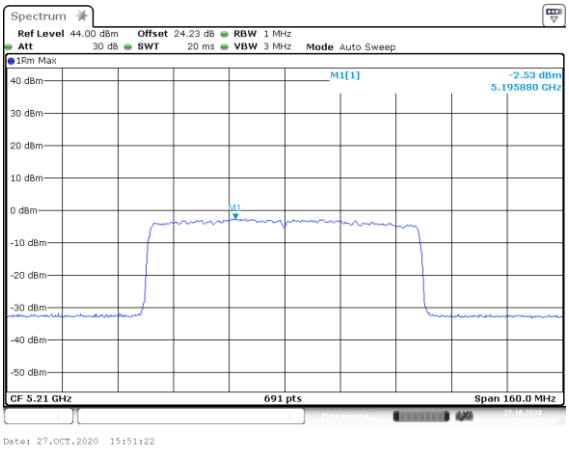
Ant. 3	Ant. 4
Low CH	**Low CH**
	
Middle CH	**Middle CH**
	
High CH	**High CH**
	

802.11ax HE40 mode:

Ant. 1	Ant. 2
Low CH	**Low CH**
	
High CH	**High CH**
	

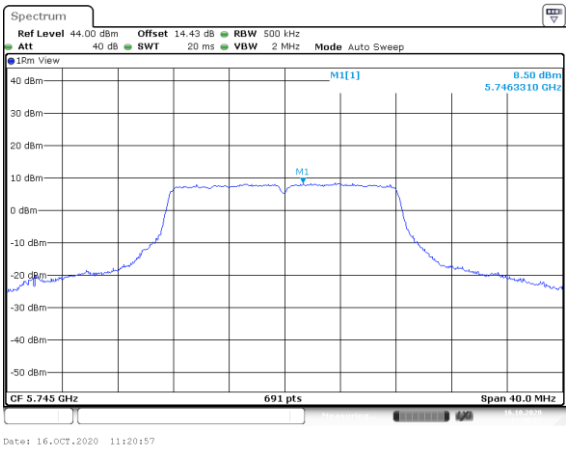
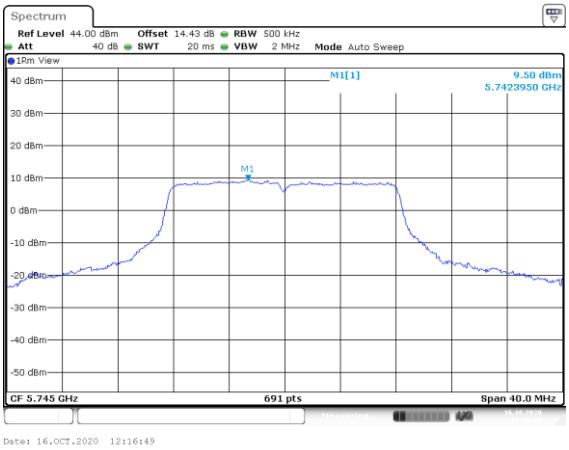
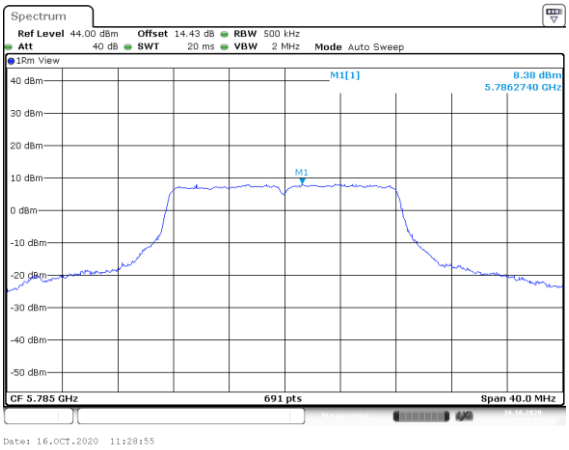
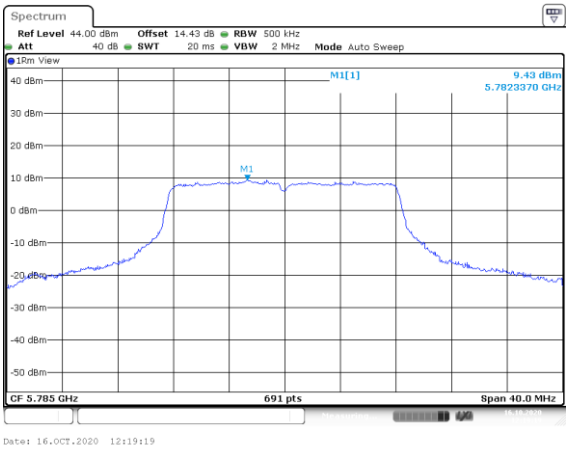
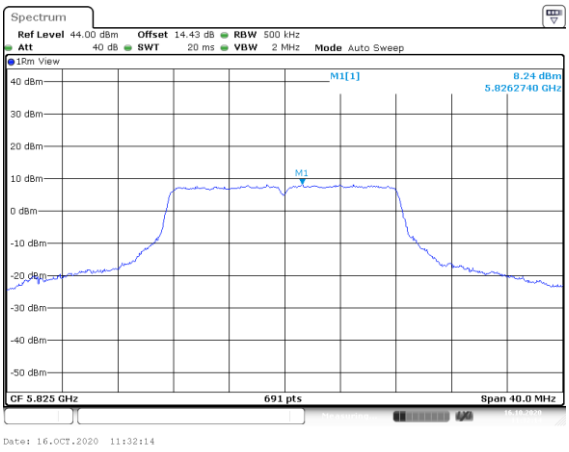
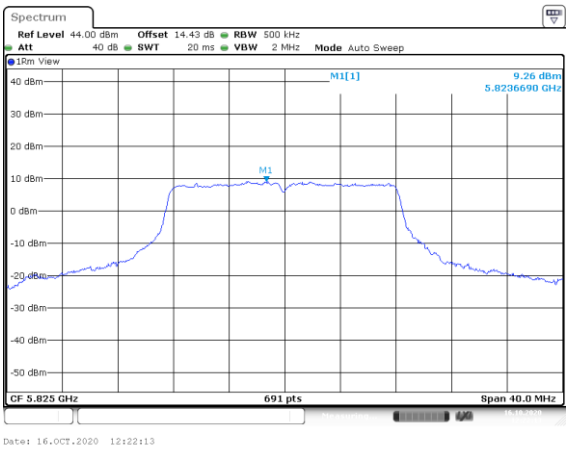
Ant. 3	Ant. 4
Low CH	**Low CH**
 Date: 27.OCT.2020 15:40:14	 Date: 27.OCT.2020 15:41:10
High CH	**High CH**
 Date: 27.OCT.2020 15:45:31	 Date: 27.OCT.2020 15:44:52

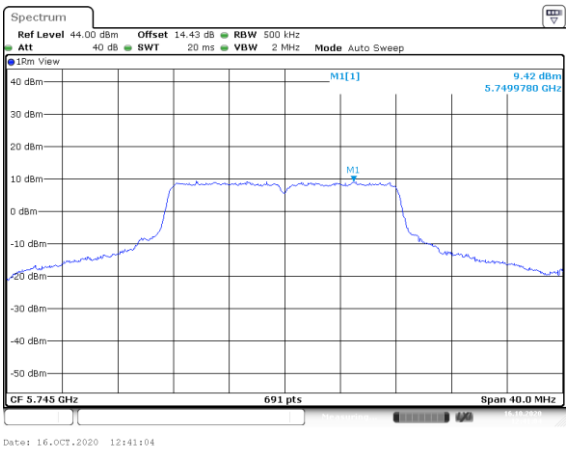
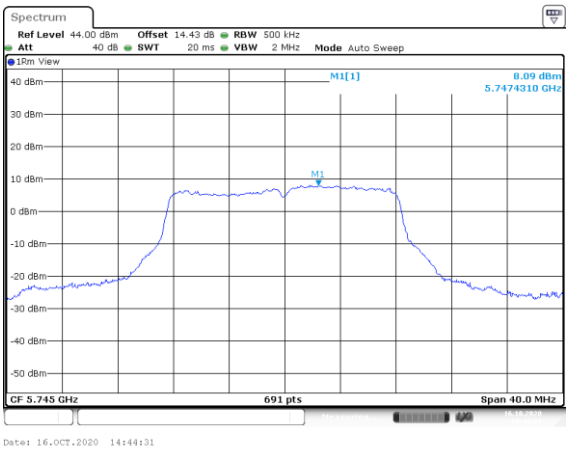
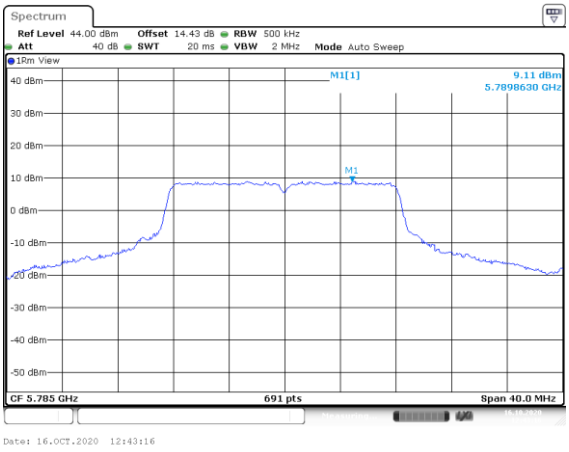
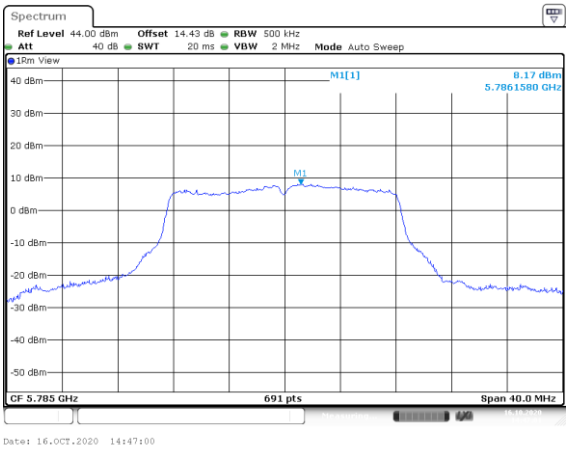
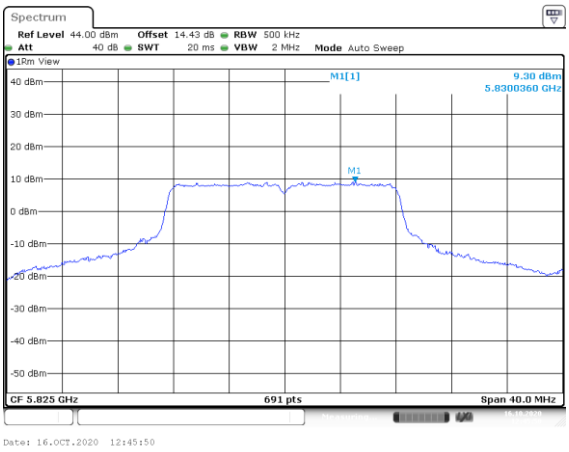
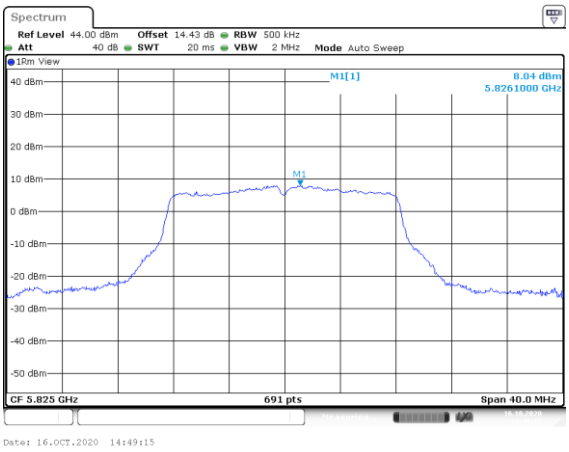
802.11ax HE80 mode

Ant. 1	Ant. 2
Middle CH	**Middle CH**
	
Ant. 3	**Ant. 4**
Middle CH	**Middle CH**
	

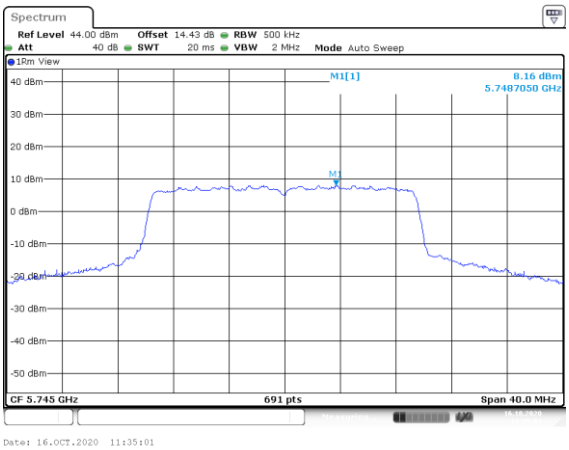
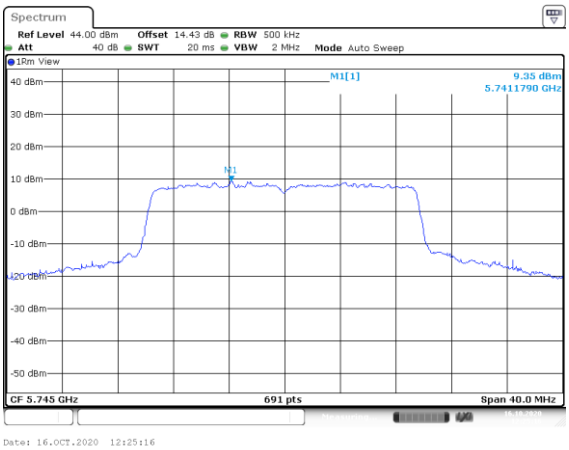
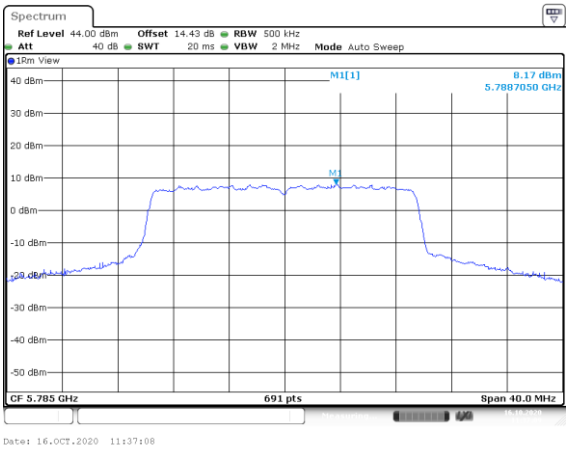
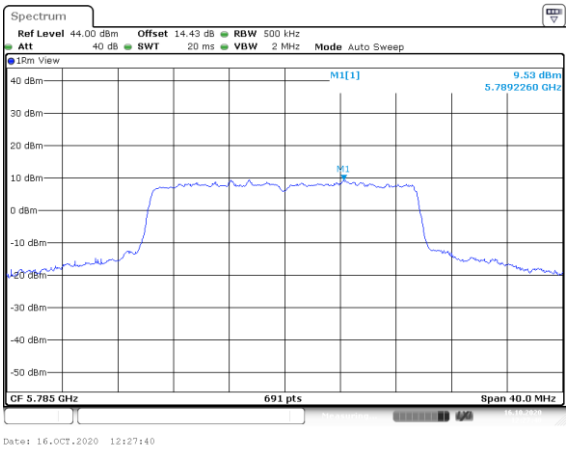
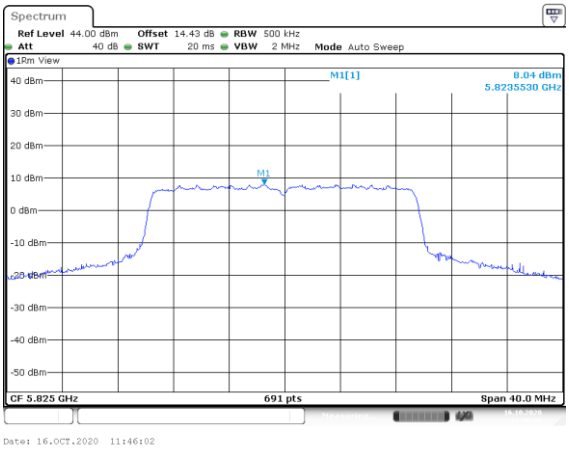
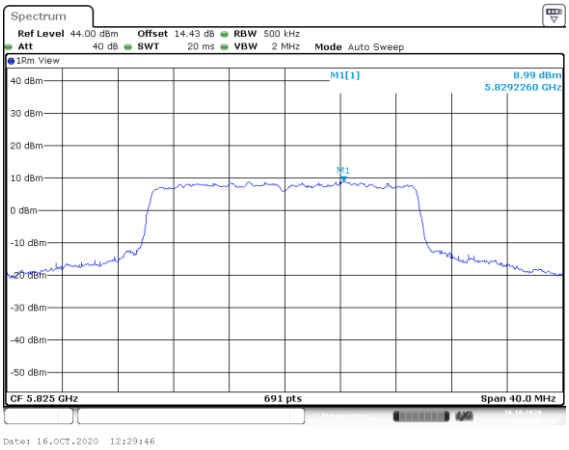
For UNII-3:

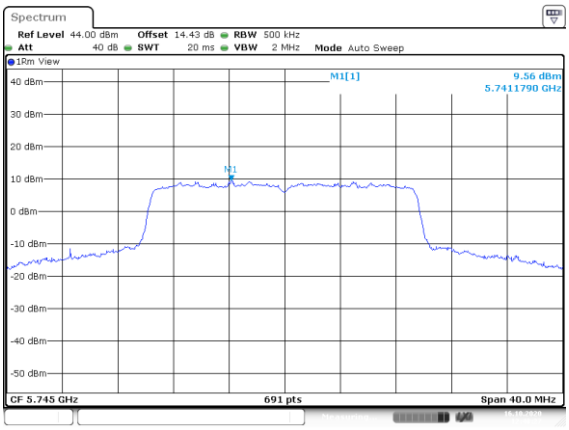
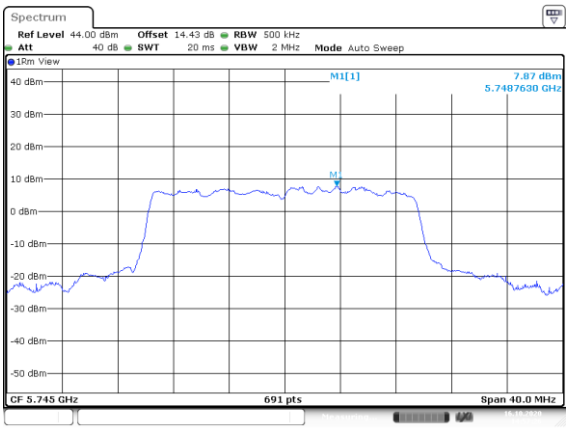
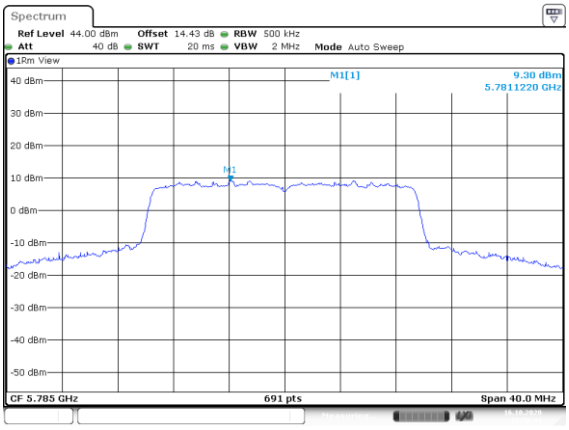
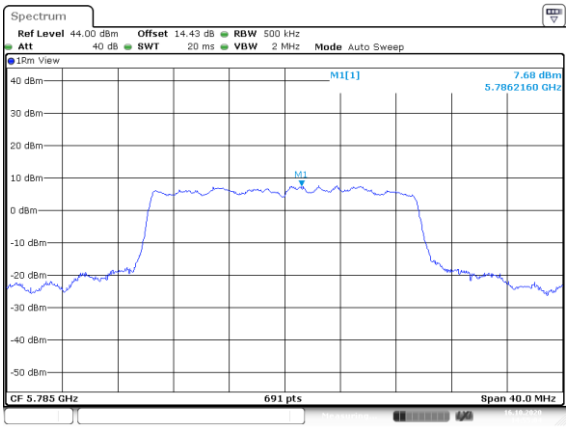
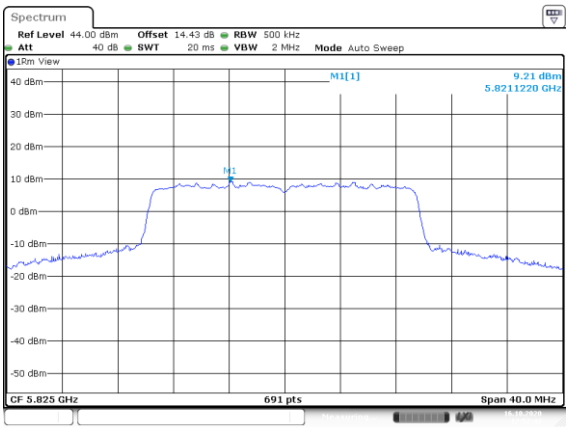
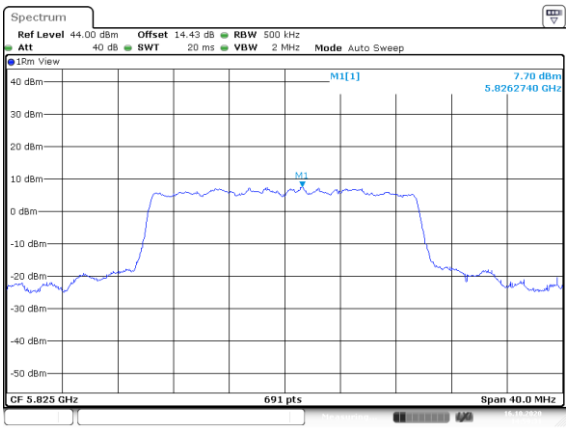
802.11a mode

Ant. 1	Ant. 2
Low CH	**Low CH**
	
Middle CH	**Middle CH**
	
High CH	**High CH**
	

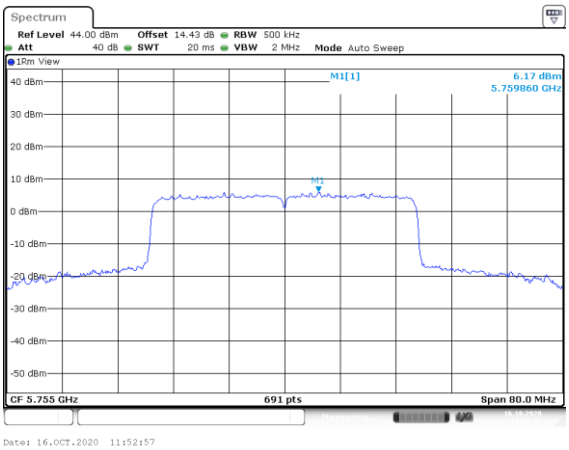
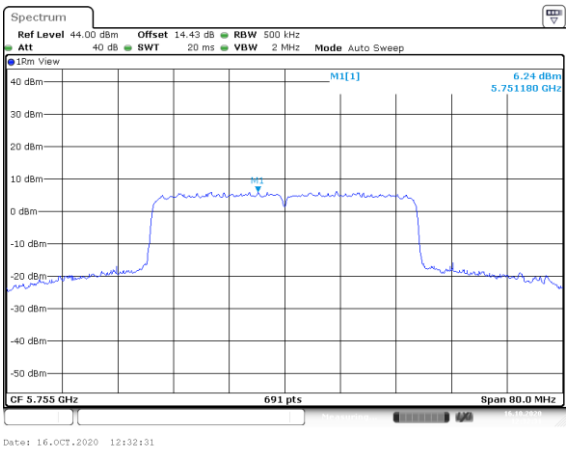
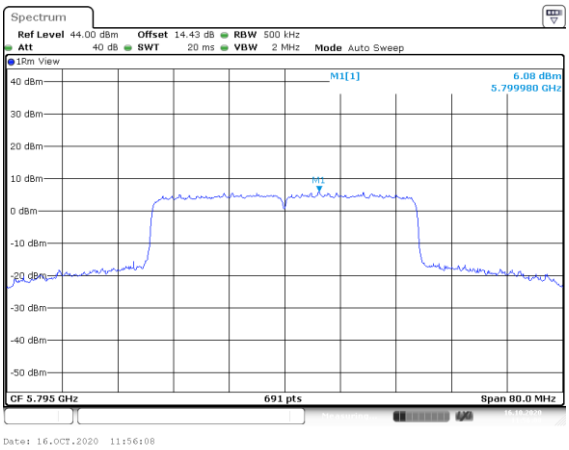
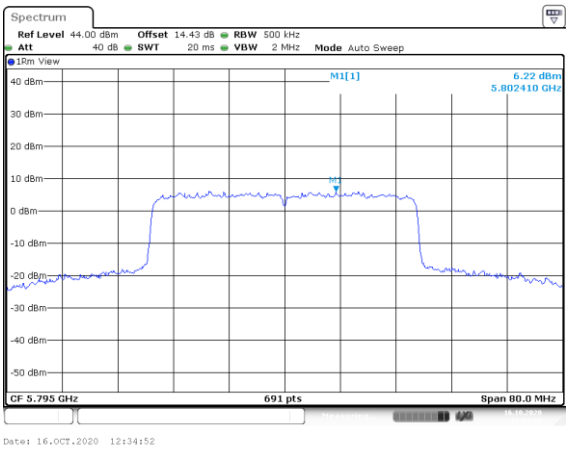
Ant. 3	Ant. 4
Low CH	**Low CH**
	
Middle CH	**Middle CH**
	
High CH	**High CH**
	

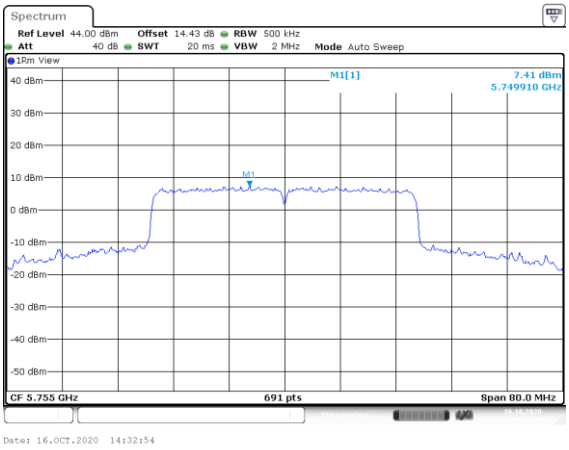
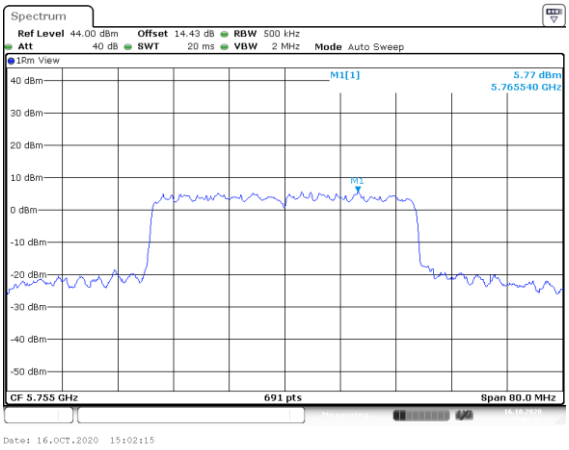
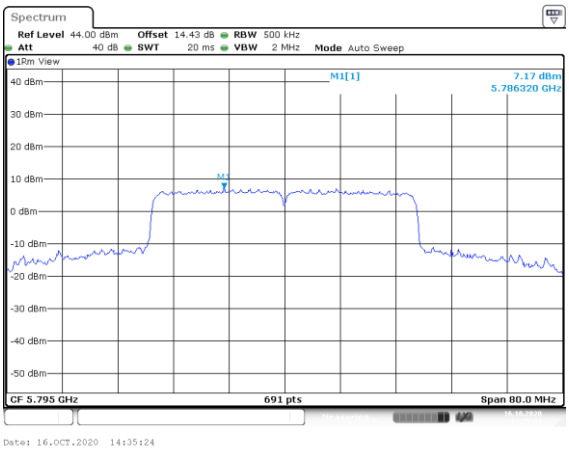
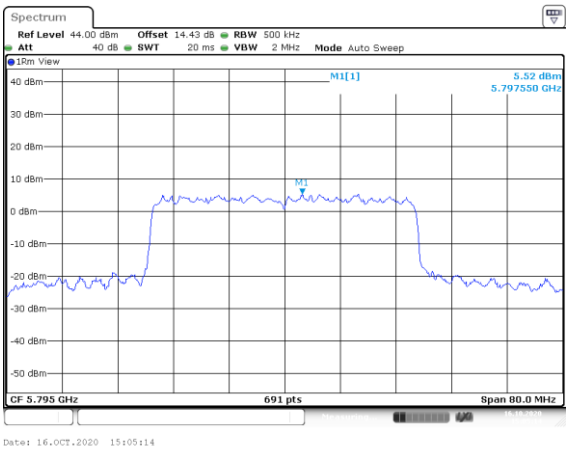
802.11ax HE20 mode:

Ant. 1	Ant. 2
Low CH	**Low CH**
	
Middle CH	**Middle CH**
	
High CH	**High CH**
	

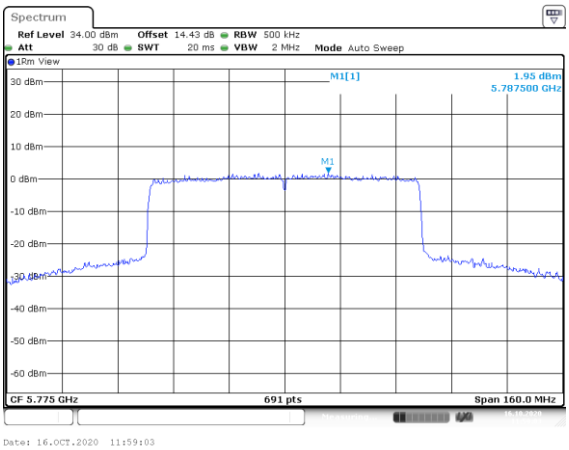
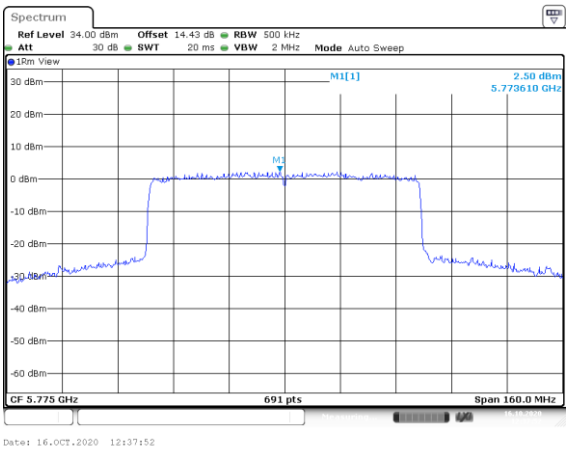
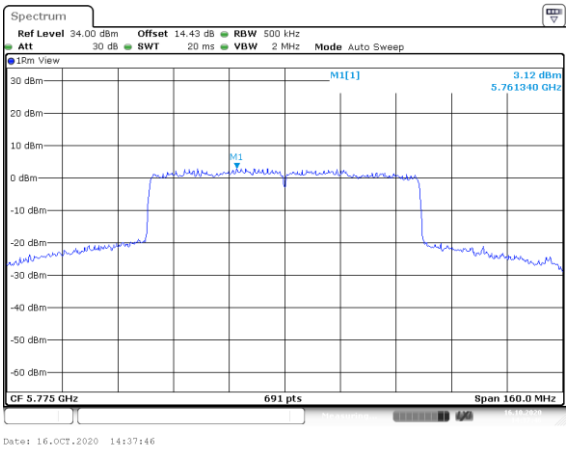
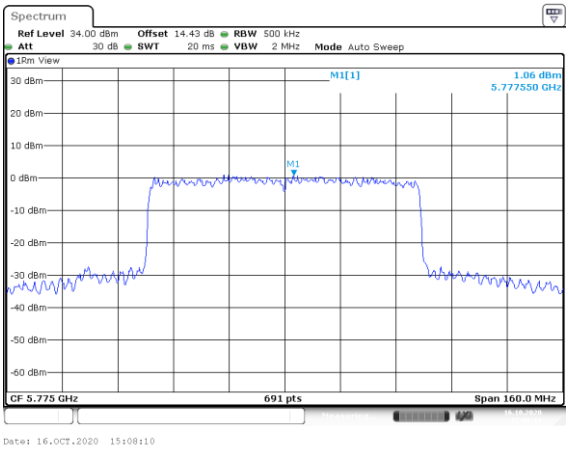
Ant. 3	Ant. 4
Low CH	**Low CH**
 Date: 16.OCT.2020 12:48:26	 Date: 16.OCT.2020 14:57:26
Middle CH	**Middle CH**
 Date: 16.OCT.2020 12:50:44	 Date: 16.OCT.2020 14:55:03
High CH	**High CH**
 Date: 16.OCT.2020 12:52:42	 Date: 16.OCT.2020 14:59:31

802.11ax HE40 mode:

Ant. 1	Ant. 2
Low CH	**Low CH**
	
High CH	**High CH**
	

Ant. 3	Ant. 4
Low CH	**Low CH**
	
High CH	**High CH**
	

802.11ax HE80 mode

Ant. 1	Ant. 2
Middle CH	**Middle CH**
	
Ant. 3	**Ant. 4**
Middle CH	**Middle CH**
	

******* END OF REPORT *******