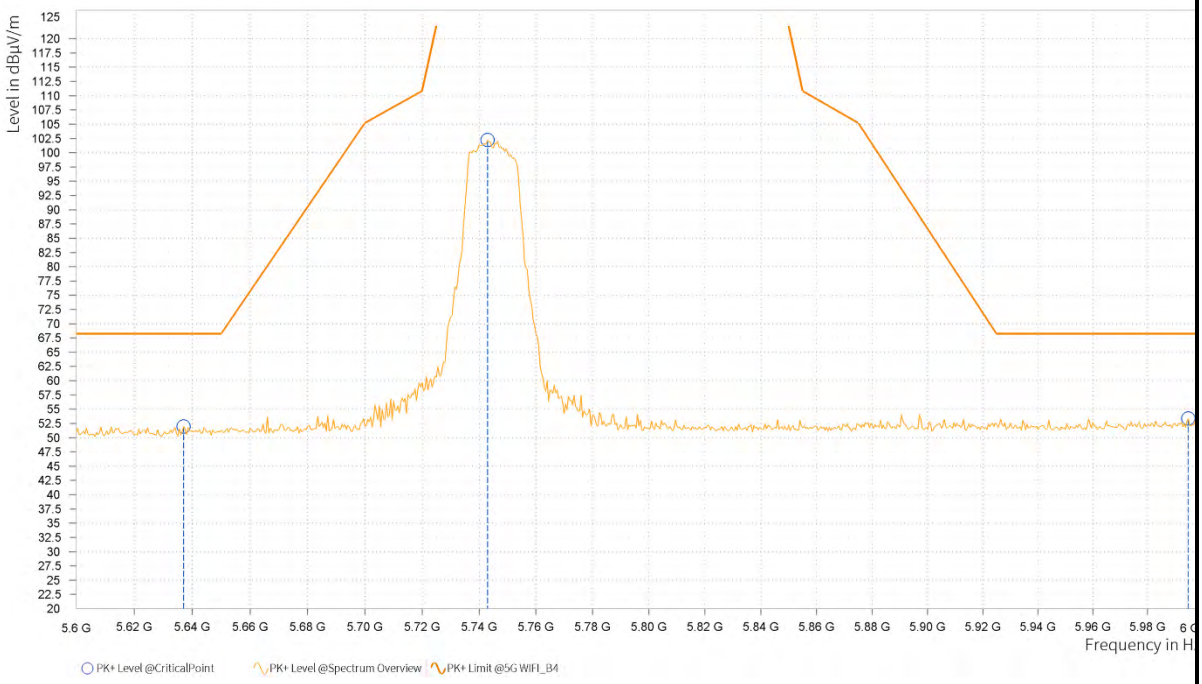
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
12	5,637.000	51.98	68.20	16.22	12.73	H	1	1.00
12	5,743.000	102.21			13.15	H	57.8	1.00
12	5,995.000	53.35	68.20	14.85	13.57	H	1	2.00



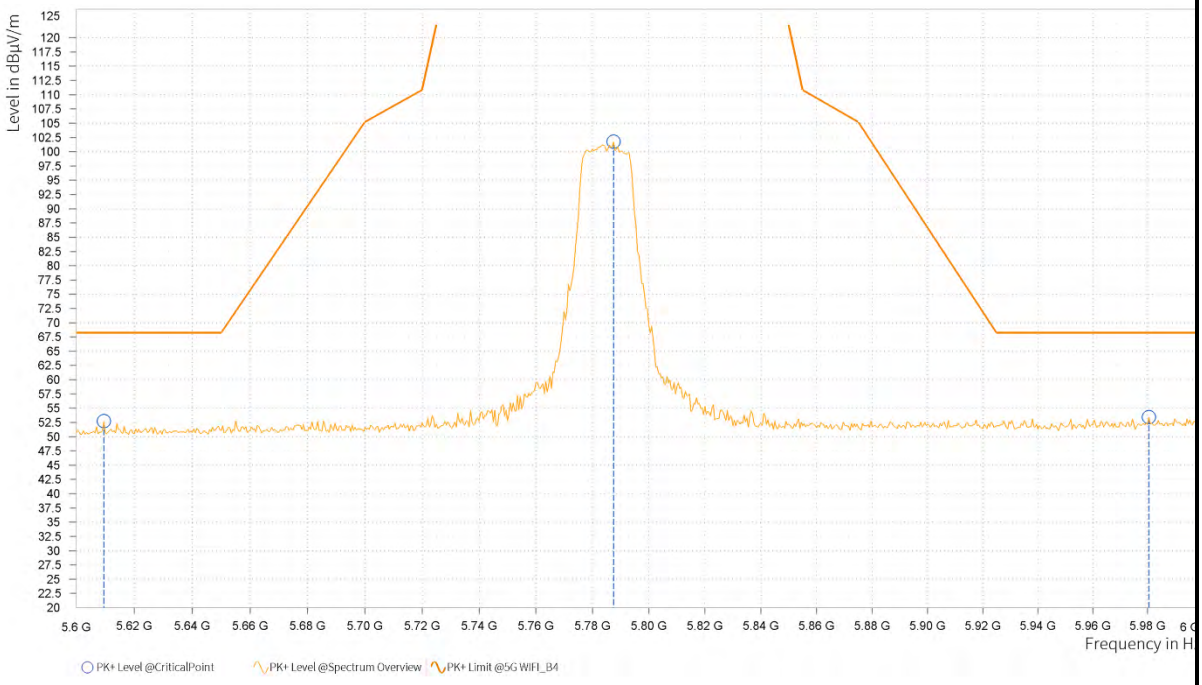
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value- Emission level.
3. 5745MHz: Fundamental frequency.

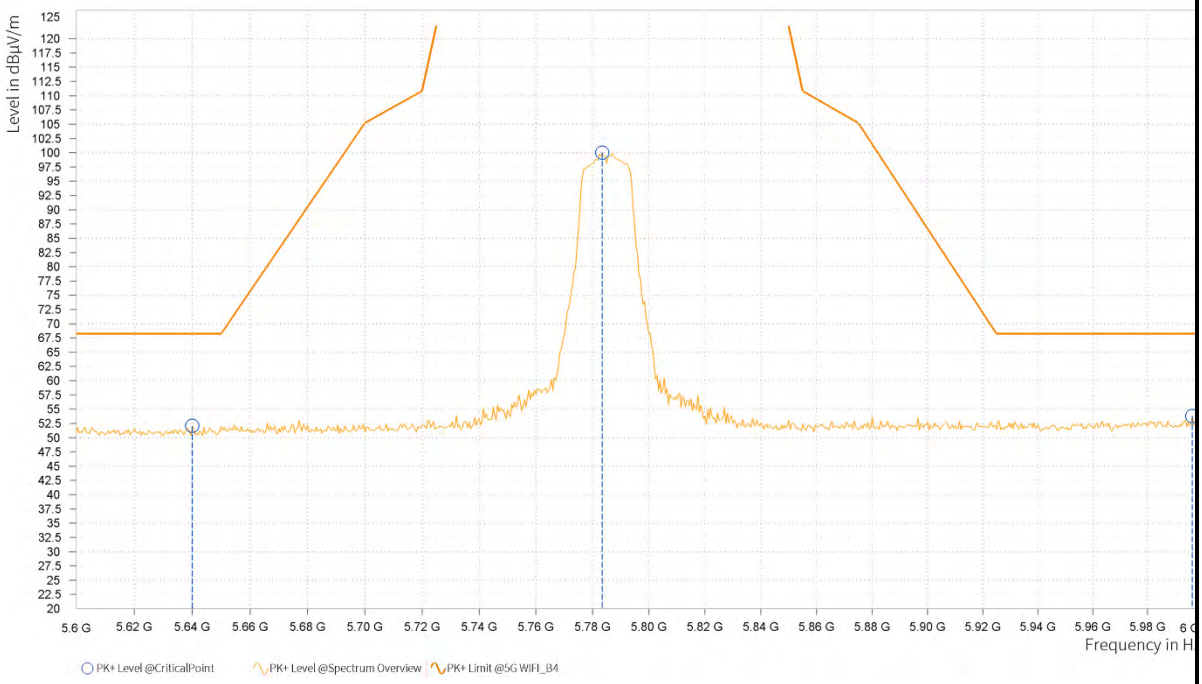
CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
12	5,609.500	52.73	68.20	15.47	12.58	H	113.3	2.00
12	5,787.500	101.77			13.13	H	113.3	2.00
12	5,980.500	53.41	68.20	14.79	13.50	H	359.1	1.00



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
12	5,640.000	52.09	68.20	16.11	12.74	V	115.7	2.00
12	5,783.500	100.03			13.13	V	135.5	1.00
12	5,996.500	53.80	68.20	14.40	13.57	V	135.5	1.00



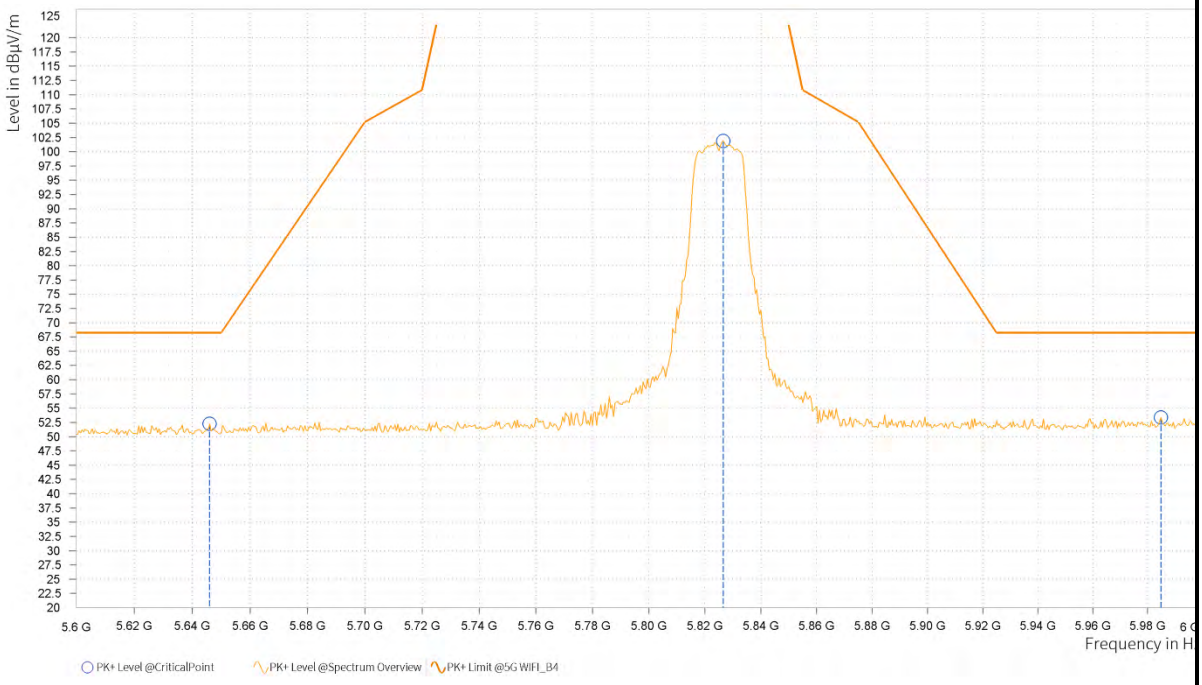
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value- Emission level.
3. 5785MHz: Fundamental frequency.

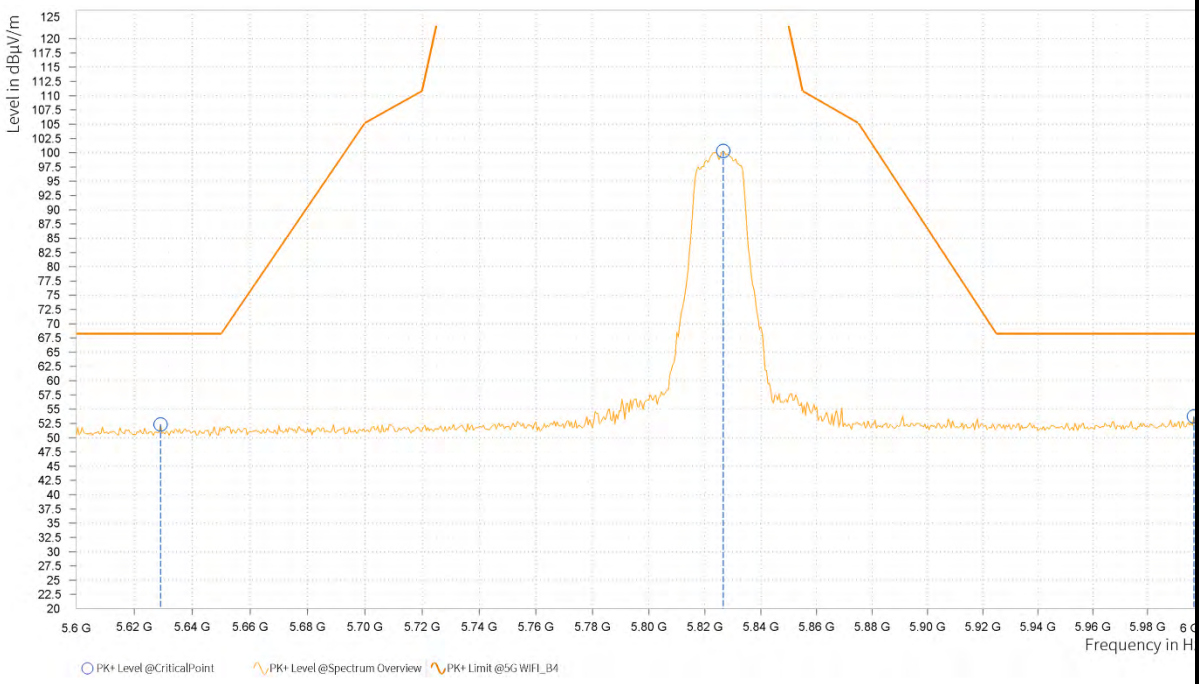
CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
12	5,646.000	52.27	68.20	15.93	12.78	H	311.2	1.00
12	5,826.500	101.91			13.07	H	60.2	1.00
12	5,985.000	53.38	68.20	14.82	13.52	H	355.1	2.00



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
12	5,629.000	52.32	68.20	15.88	12.69	V	1	1.00
12	5,826.500	100.32			13.07	V	359	2.00
12	5,997.000	53.73	68.20	14.47	13.58	V	300.9	2.00



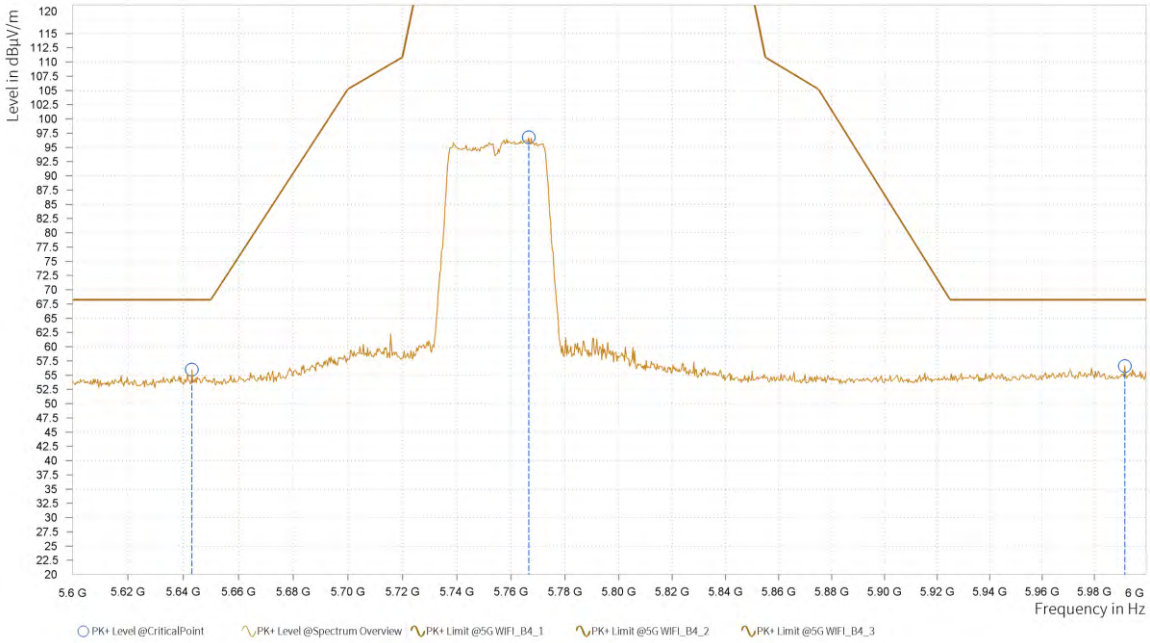
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value- Emission level.
3. 5825MHz: Fundamental frequency.

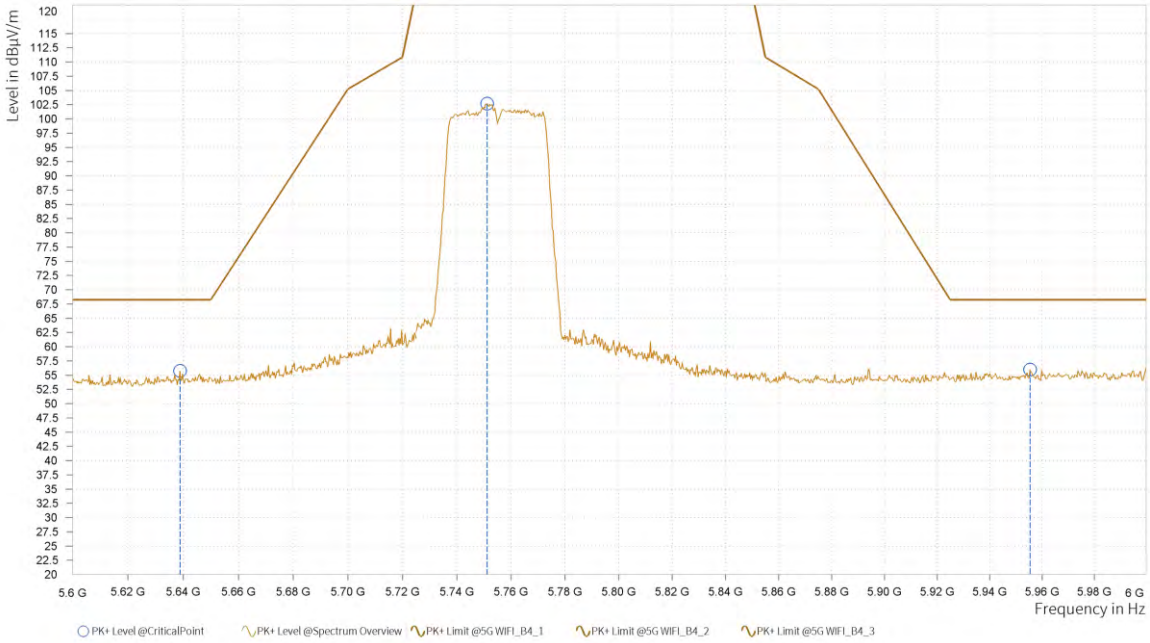
802.11ac (40MHz)			
CHANNEL	TX Channel 151	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
10	5,643.125	55.95	68.20	12.25	18.15	H	281	1.00
11	5,766.563	96.73			18.65	H	359.1	1.00
12	5,991.750	56.62	68.20	11.58	19.09	H	261.2	2.00



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
10	5,638.750	55.74	68.20	12.46	18.11	V	70.1	2.00
11	5,751.250	102.70			18.73	V	51.6	1.00
12	5,955.375	55.97	68.20	12.23	18.64	V	259.4	1.00



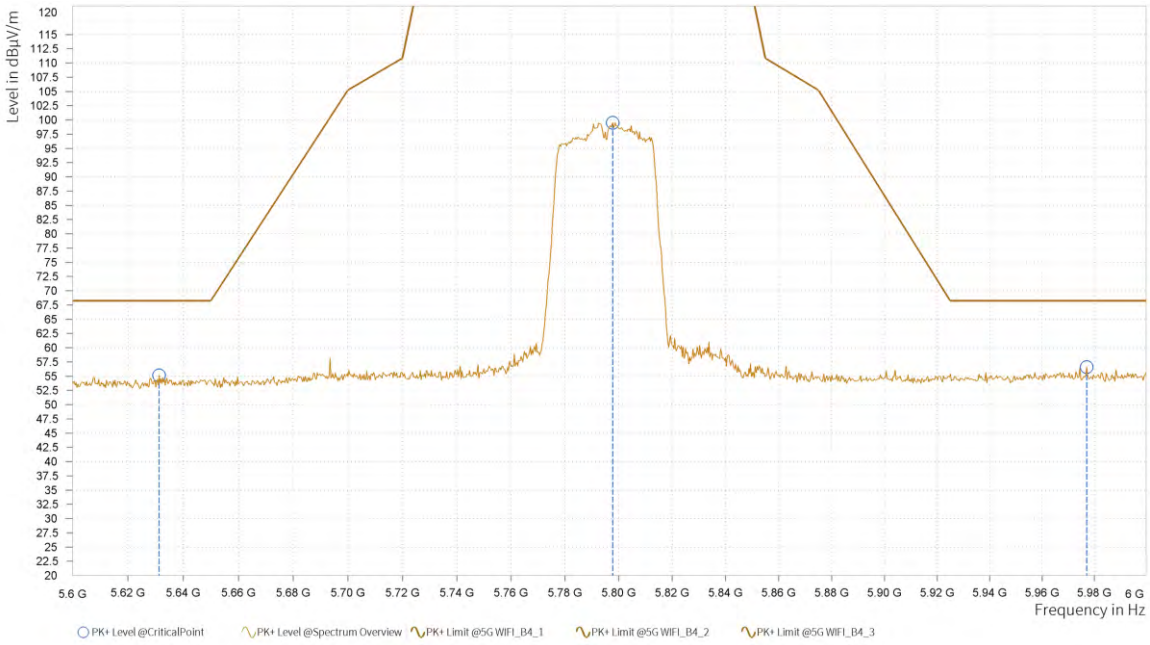
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value- Emission level.
3. 5755MHz: Fundamental frequency.

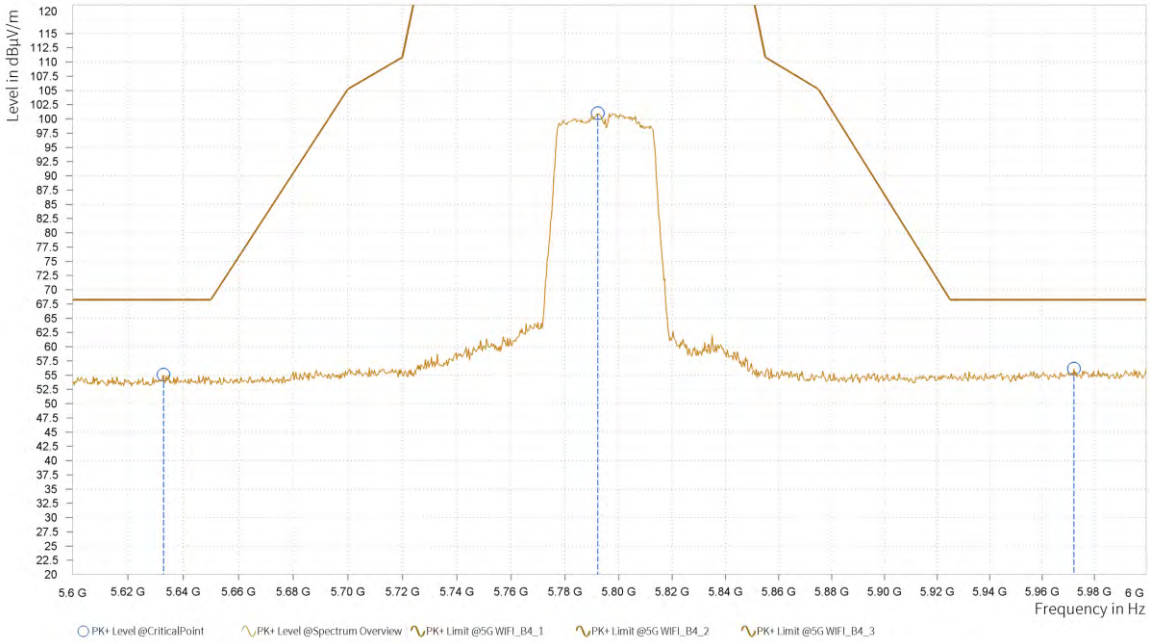
CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
10	5,631.250	55.15	68.20	13.05	18.04	H	153.2	2.00
11	5,797.813	99.52			18.50	H	125.7	2.00
12	5,977.125	56.59	68.20	11.61	18.89	H	336.4	1.00



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
10	5,632.813	55.08	68.20	13.12	18.06	V	238	2.00
11	5,792.190	100.99			18.53	V	148.3	1.00
12	5,972.250	56.15	68.20	12.05	18.82	V	1	1.00



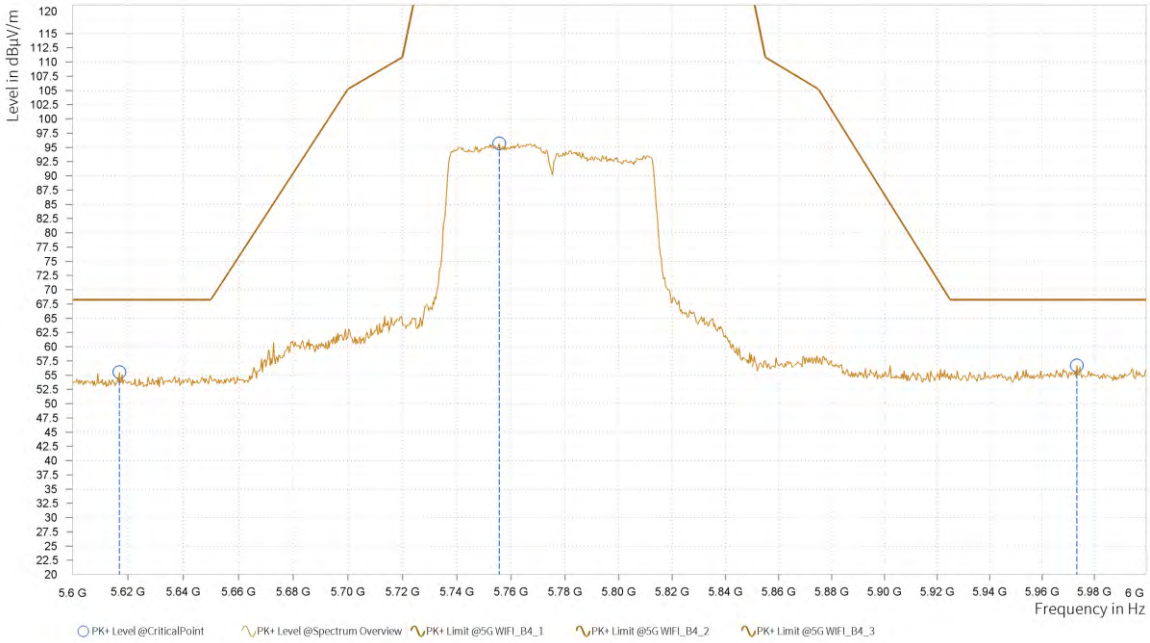
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value- Emission level.
3. 5795MHz: Fundamental frequency.

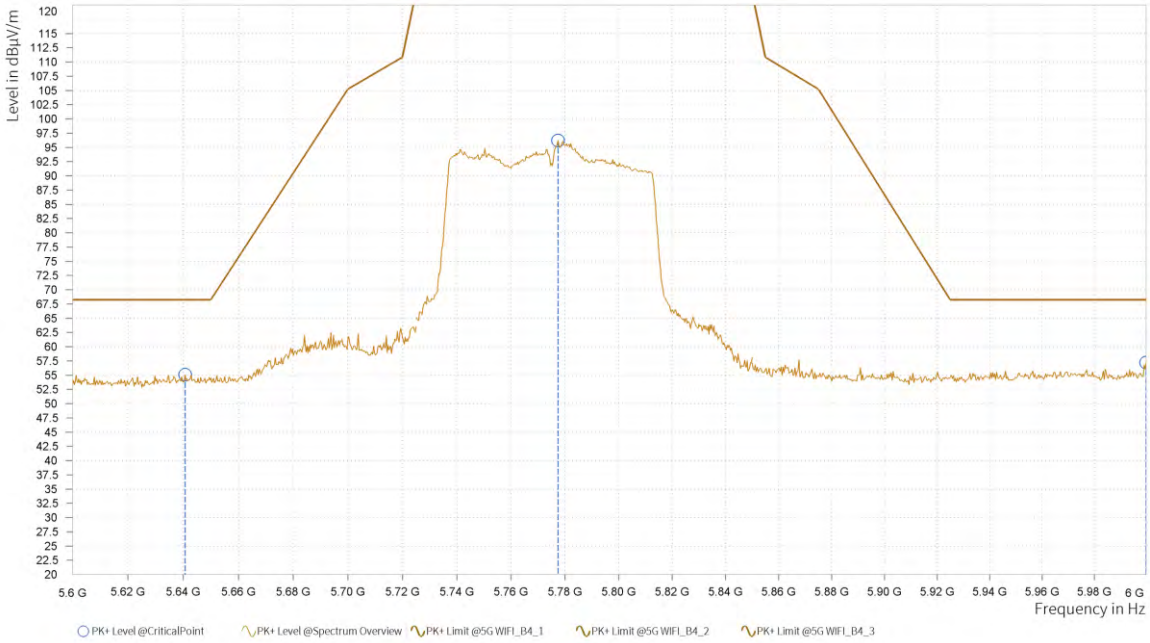
802.11ac (80MHz)			
CHANNEL	TX Channel 155	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	5,616.875	55.52	68.20	12.68	17.99	H	359.1	1.00
6	5,755.625	95.72			18.70	H	95.2	1.00
7	5,973.375	56.71	68.20	11.49	18.84	H	1	1.00



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	5,640.625	55.10	68.20	13.10	18.12	V	355.5	2.00
6	5,777.500	96.22			18.60	V	78.4	2.00
7	6,000.000	57.21	68.20	10.99	19.20	V	178.8	2.00



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value- Emission level.
3. 5775MHz: Fundamental frequency.

RADIATED EMISSION
BELOW 1GHz WORST-CASE DATA

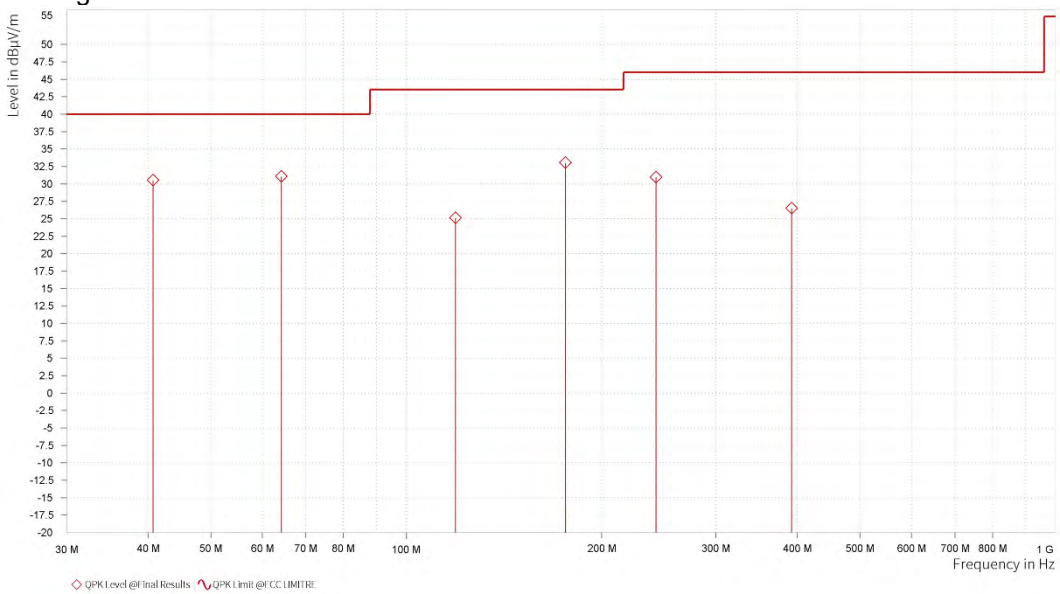
Band 2 802.11ac (80MHz)			
CHANNEL	TX Channel 58	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	40.719	30.52	40.00	9.48	-3.83	H	4.2	1.00	120.000
1	64.193	31.07	40.00	8.93	-5.08	H	225.6	2.00	120.000
1	119.095	25.13	43.50	18.37	-6.57	H	274.2	1.00	120.000
1	175.791	33.04	43.50	10.46	-7.00	H	134.3	1.00	120.000
1	242.382	30.97	46.00	15.03	-2.07	H	274.2	1.00	120.000
1	392.344	26.51	46.00	19.49	3.04	H	4.2	1.00	120.000

REMARKS:

1. Emission level (dBuV/m) = Read level (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Limit value- Emission level.



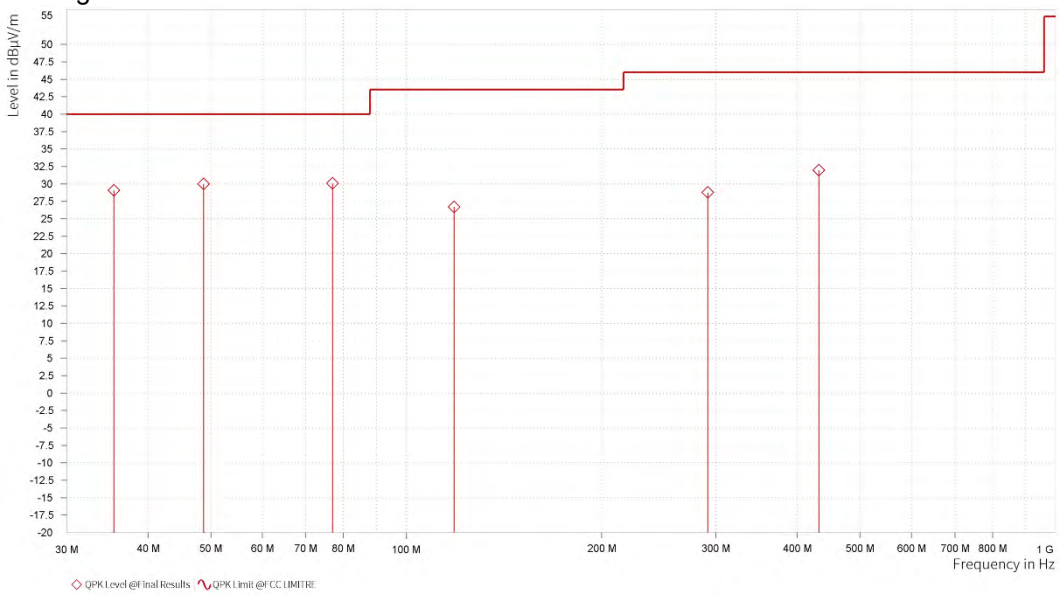
CHANNEL	Channel 58	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	35.432	29.06	40.00	10.94	-7.27	V	1	2.00	120.000
1	48.721	30.00	40.00	10.00	-3.73	V	359	1.00	120.000
1	76.997	30.06	40.00	9.94	-10.74	V	133.1	1.00	120.000
1	118.416	26.69	43.50	16.81	-5.68	V	273	1.00	120.000
1	291.318	28.76	46.00	17.24	-0.53	V	359	2.00	120.000
1	431.968	31.95	46.00	14.05	3.34	V	359	1.00	120.000

REMARKS:

1. Emission level (dBuV/m) = Read level (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Limit value- Emission level.



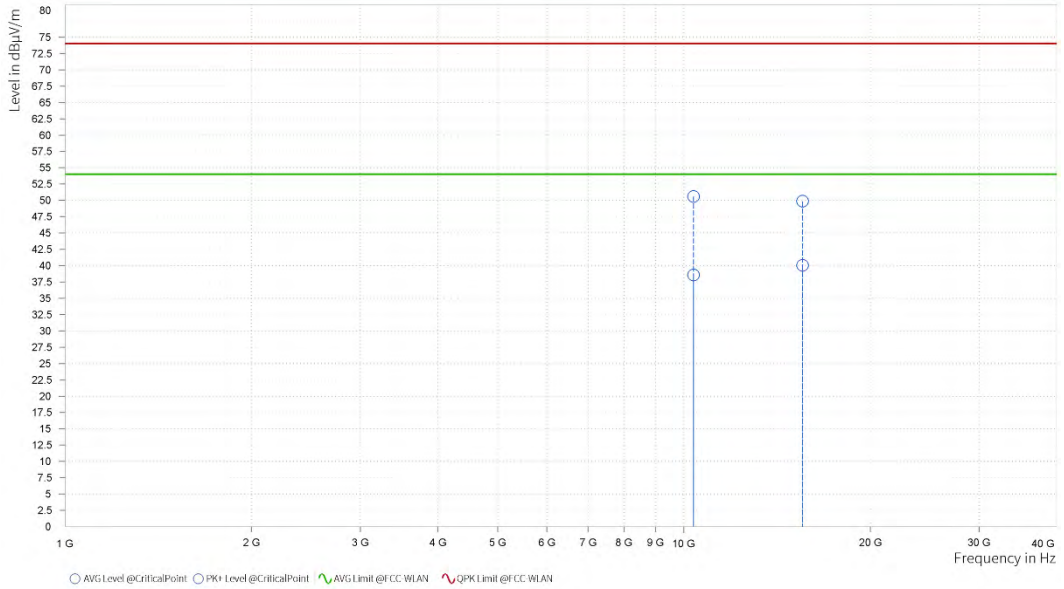
ABOVE 1GHz WORST-CASE DATA

Note: 1. For higher frequency, the emission is too low to be detected.

2.For radiated emission testing, all supported channels, bandwidths and modes have been tested, the report only shown the worst-case data of each sub-band.

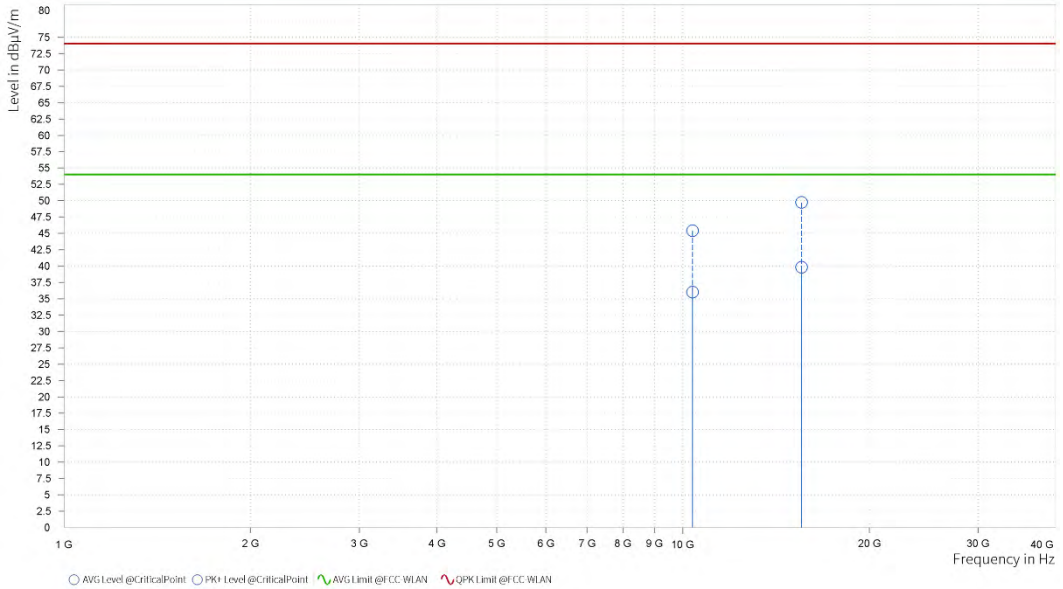
Band 1 802.11a			
CHANNEL	TX Channel 36	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	10,360.000	50.60	74.00	23.40	38.56	54.00	15.44	13.95	H	1	1.00
4	15,540.000	49.87	74.00	24.13	40.06	54.00	13.94	20.68	H	1	1.00



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	10,360.000	45.40	74.00	28.60	36.01	54.00	17.99	13.95	V	1	1.00
4	15,540.000	49.73	74.00	24.27	39.80	54.00	14.20	20.68	V	1	1.00



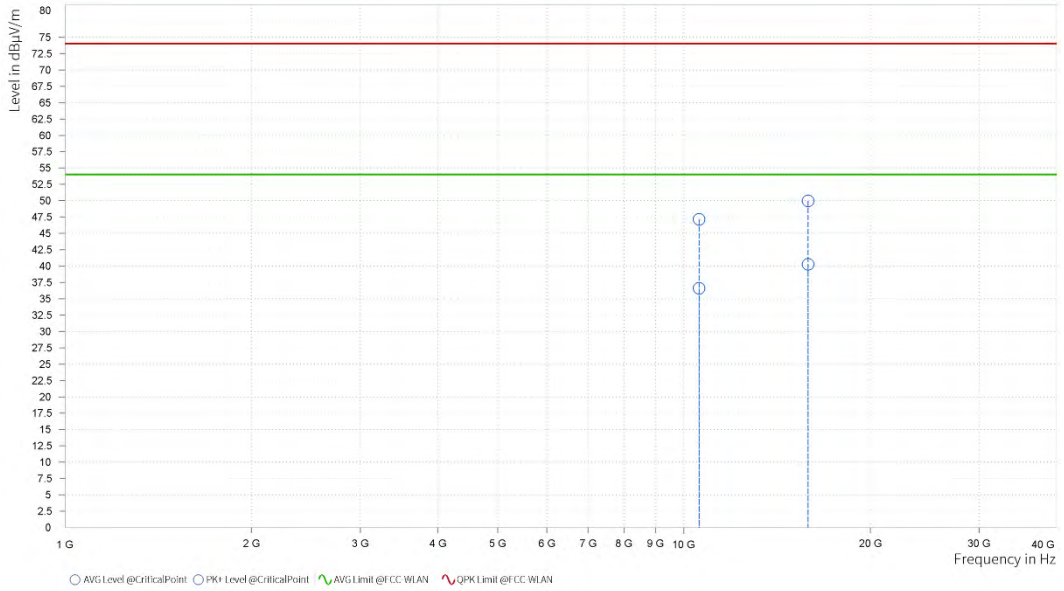
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value- Emission level.
3. 5210MHz: Fundamental frequency.

Band 2 802.11ac(80MHz)			
CHANNEL	TX Channel 58	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

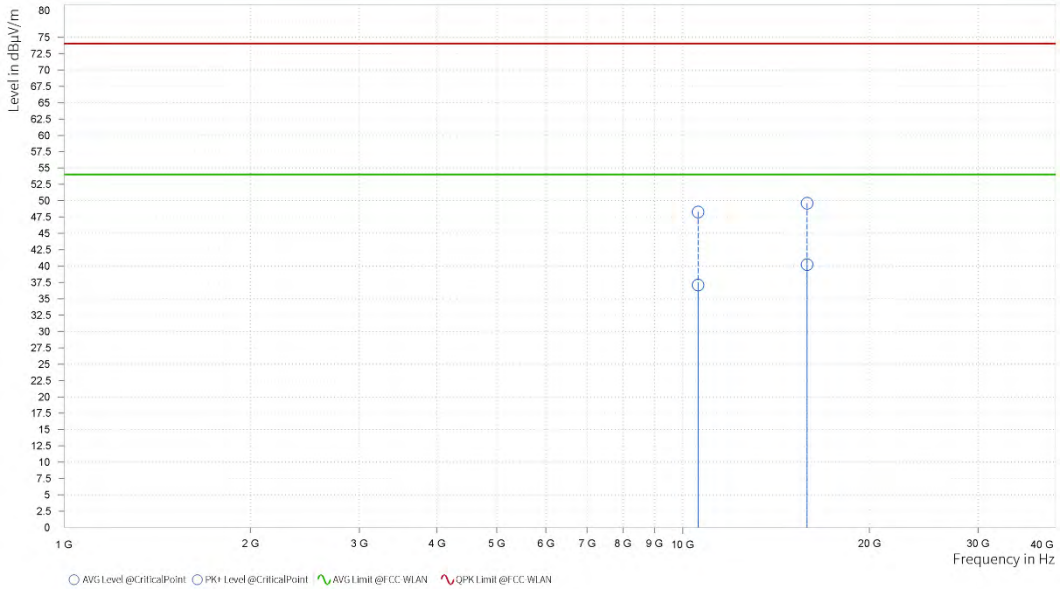
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+: QPK Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	10,580.000	47.16	74.00	26.84	36.58	54.00	17.42	15.09	H	1	1.00
4	15,870.000	49.98	74.00	24.02	40.25	54.00	13.75	20.19	H	1	1.00



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	10,580.000	48.27	74.00	25.73	37.07	54.00	16.93	15.09	V	1	1.00
4	15,870.000	49.63	74.00	24.37	40.22	54.00	13.78	20.19	V	1	1.00



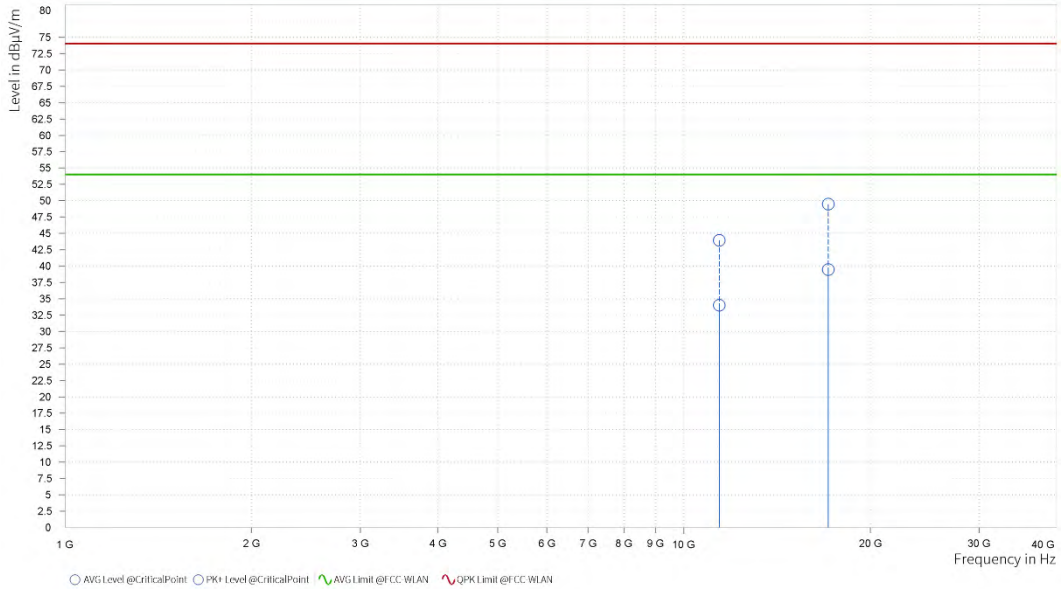
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value- Emission level.
3. 5290MHz: Fundamental frequency.

Band 3 802.11ac (20MHz)			
CHANNEL	TX Channel 140	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

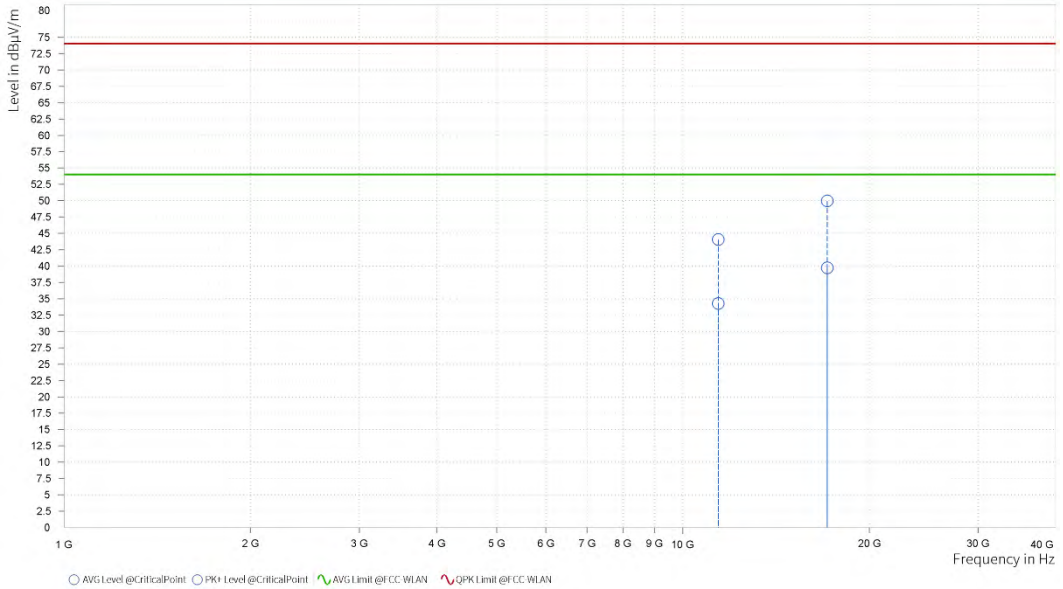
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	11,400.000	43.94	74.00	30.06	34.02	54.00	19.98	13.17	H	359	1.00
4	17,100.000	49.47	74.00	24.53	39.45	54.00	14.55	22.50	H	1	1.00



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	11,400.000	44.06	74.00	29.94	34.30	54.00	19.70	13.17	V	1	1.00
4	17,100.000	49.95	74.00	24.05	39.72	54.00	14.28	22.50	V	1	1.00

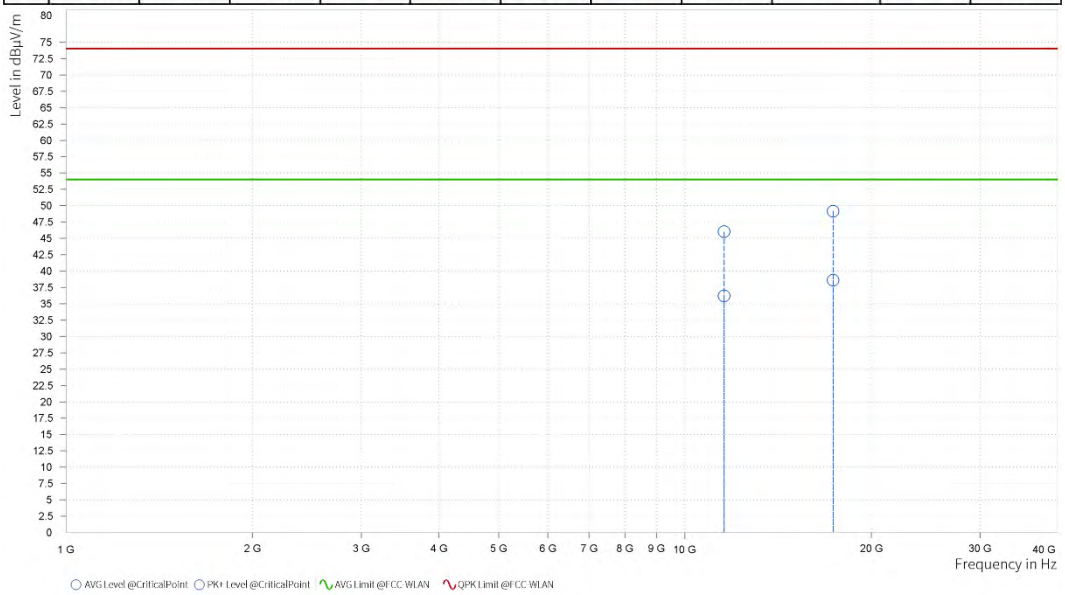


REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value- Emission level.
3. 5530MHz: Fundamental frequency.
4. #: Out of restricted band.

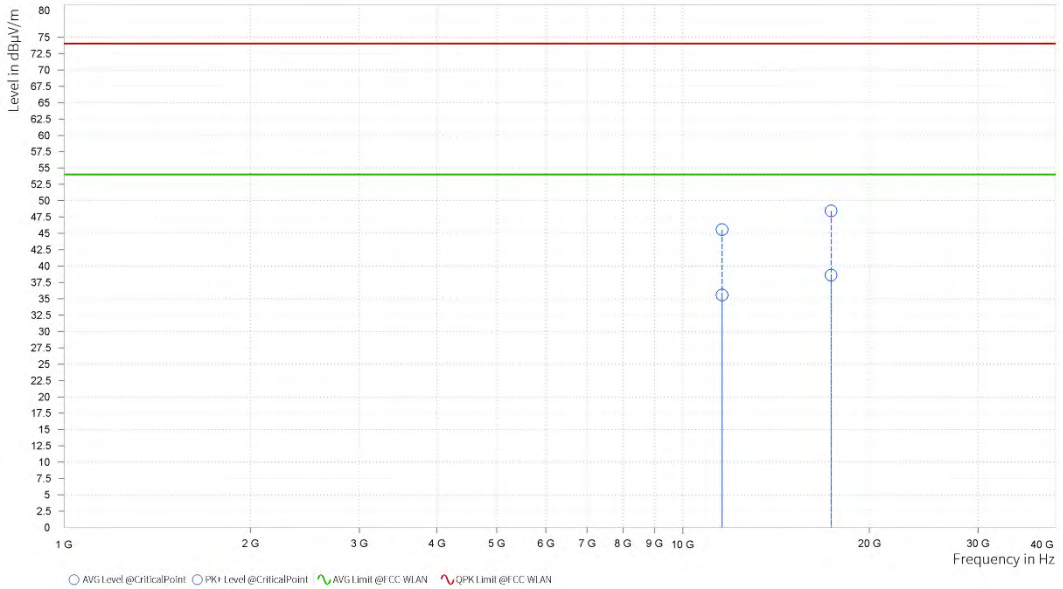
Band 4 802.11n(20MHz)			
CHANNEL	TX Channel 157	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+: QPK Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	11,570.000	46.02	74.00	27.98	36.18	54.00	17.82	14.55	H	359	1.00
4	17,355.000	49.18	74.00	24.82	38.59	54.00	15.41	22.32	H	1	1.00



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	11,570.000	45.57	74.00	28.43	35.59	54.00	18.41	14.55	V	359	1.00
4	17,355.000	48.44	74.00	25.56	38.60	54.00	15.40	22.32	V	1	1.00



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value- Emission level.
3. 5785MHz: Fundamental frequency.

3.2 CONDUCTED EMISSION MEASUREMENT

3.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE:

1 The lower limit shall apply at the transition frequencies.

2 The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3 All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR3	102749	Mar.28,24	Mar.27,26
ELEKTRA test software	Rohde&Schwarz	ELEKTRA	NA	N/A	N/A
LISN network	Rohde&Schwarz	ENV216	102640	Mar.28,24	Mar.27,26
CABLE	Rohde&Schwarz	W61.01	N/A	Apr.27,24	Apr.26,25
CABLE	Rohde&Schwarz	W601	N/A	Apr.27,24	Apr.26,25

NOTE:

1. The test was performed in CE shielded room.
2. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

3.2.3 TEST PROCEDURES

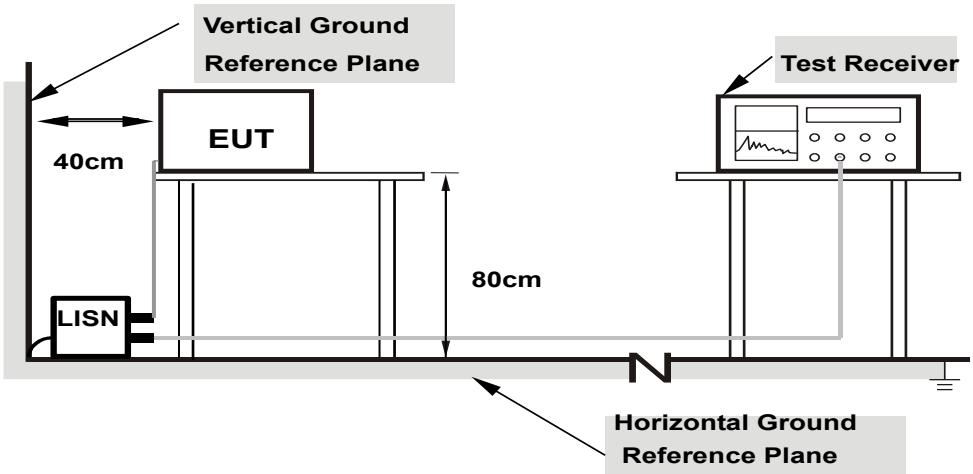
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation.

3.2.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.2.6 EUT OPERATING CONDITIONS

Same as 3.1.7.

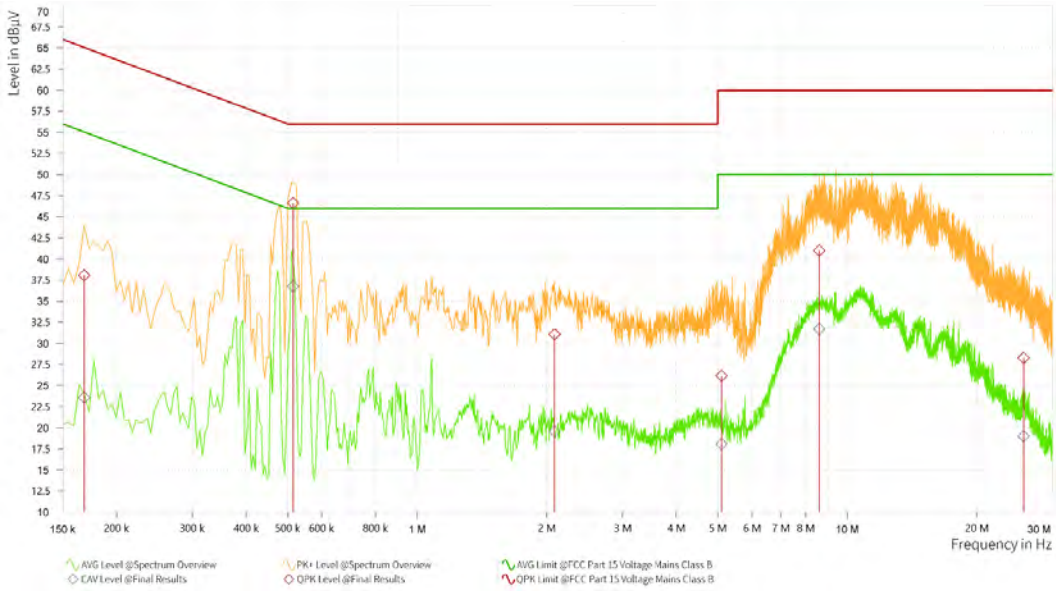
3.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA			
FREQUENCY RANGE	150KHz ~ 30MHz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Quasi-Peak (QP) / Average (AV), 9 kHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	26deg. C, 51%RH
TESTED BY	Hanwen Xu		

Rg	Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	CAV Level [dBμV]	CAV: AVG Limit [dBμV]	CAV Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]
1	0.168	38.07	65.06	26.99	23.59	55.06	31.47	12.36	L1	9.000
1	0.515	46.63	56.00	9.37	36.74	46.00	9.26	11.75	L1	9.000
1	2.085	31.09	56.00	24.91	19.57	46.00	26.43	11.76	L1	9.000
1	5.100	26.17	60.00	33.83	18.09	50.00	31.91	11.79	L1	9.000
1	8.606	40.99	60.00	19.01	31.70	50.00	18.30	11.82	L1	9.000
1	25.715	28.27	60.00	31.73	19.00	50.00	31.00	11.90	L1	9.000

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and
3. measurement with the average detector is unnecessary.
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Limit value - Emission level
6. Correction factor = Insertion loss + Cable loss
7. Emission Level = Correction Factor + Reading Value.



FREQUENCY RANGE	150KHz ~ 30MHz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Quasi-Peak (QP) / Average (AV), 9 kHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	26deg. C, 51%RH
TESTED BY	Hanwen Xu		

Rg	Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	CAV Level [dBμV]	CAV: AVG Limit [dBμV]	CAV Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]
1	0.164	39.09	65.28	26.19	22.71	55.28	32.57	12.18	N	9.000
1	0.492	36.94	56.13	19.19	28.48	46.13	17.65	12.78	N	9.000
1	1.374	24.98	56.00	31.02	15.84	46.00	30.16	12.74	N	9.000
1	4.673	23.95	56.00	32.05	15.03	46.00	30.97	12.76	N	9.000
1	12.134	41.59	60.00	18.41	30.56	50.00	19.44	12.80	N	9.000
1	25.562	24.73	60.00	35.27	15.08	50.00	34.92	12.88	N	9.000

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and
3. measurement with the average detector is unnecessary.
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Limit value - Emission level
6. Correction factor = Insertion loss + Cable loss
7. Emission Level = Correction Factor + Reading Value.

3.3 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

3.3.1 LIMITS OF MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

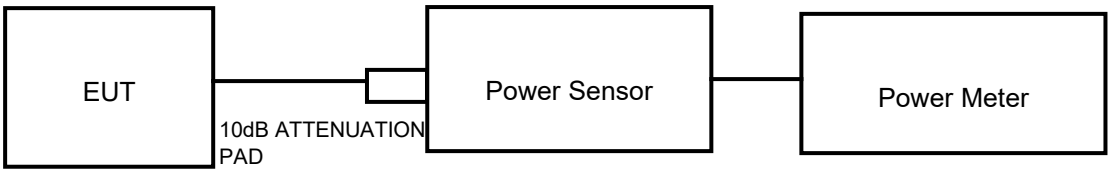
Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
	B	Indoor Access Point	1 Watt (30 dBm)
	√	Client devices	250mW (24 dBm)
U-NII-2A	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

NOTE: Where B is the 26dB emission bandwidth in MHz.

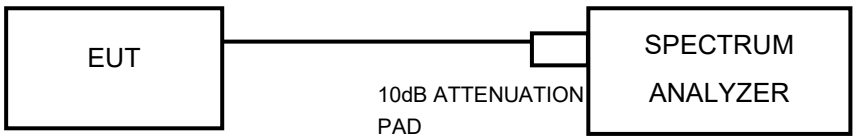
3.3.2 TEST SETUP

FOR POWER OUTPUT MEASUREMENT

802.11a, 802.11n/ac/ax (20MHz), 802.11 n/ac/ax (40MHz) ,802.11 ac/ax (160MHz) TEST CONFIGURATION



FOR 26dB BANDWIDTH



3.3.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	R&S	ESW 44	101973	Mar.28,24	Mar.27,26
Open Switch and Control Unit	R&S	OSP-B157W8	100836	N/A	N/A
Vector Signal Generator	R&S	SMBV100B	102176	Mar.29,24	Mar.28,26
Signal Generator	R&S	SMB100A03	182185	Mar.29,24	Mar.28,26
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.19,24	Jun.18,26
Hygrothermograph	DELI	20210528	SZ015	Sep.06,23	Sep.05,25
PC	LENOVO	E14	HRSW0024	N/A	N/A
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.27,24	Apr.26,25
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.27,24	Apr.26,25
Test Software	EMC32	EMC32	N/A	N/A	N/A
Temperature Chamber	votsch	VT4002	58566078100050	May.30,24	May.29,26
Power Meter	R&S	NRX	102380	Mar.28,24	Mar.27,26
Power Meter probe	R&S	NRP6A	102942	Mar.28,24	Mar.27,26

NOTE:

1. The calibration interval of the above test instruments is 12 /24months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in RF Oven room.

3.3.4 TEST PROCEDURE

FOR POWER MEASUREMENT

For 802.11a, 802.11n/ac/ax (20MHz), 802.11 n/ac/ax (40MHz) ,802.11 ac/ax (160MHz)

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

FOR 99 PERCENT OCCUPIED BANDWIDTH

The following procedure shall be used for measuring (99 %) power bandwidth:

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

FOR 26dB BANDWIDTH

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

FOR 6dB BANDWIDTH

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. 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.

3.3.5 DEVIATION FROM TEST STANDARD

No deviation.

3.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

3.3.7 TEST RESULTS

Please Refer to Appendix of this test report.

3.4 MAXIMUM POWER SPECTRAL DENSITY MEASUREMENT

3.4.1 LIMITS OF MAXIMUM POWER SPECTRAL DENSITY MEASUREMENT

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
	√	Client devices	11dBm/ MHz
U-NII-2A	√		11dBm/ MHz
U-NII-2C	√		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

3.4.2 TEST SETUP

3.4.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.4.4 TEST PROCEDURES

Using method SA-2(Band1/2/3)

1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
3) Set Channel power measure = 1MHz
4) Sweep time = auto, trigger set to “free run”.
5) Trace average at least 100 traces in power averaging mode.
6) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission).
7) Record the max value

Using method SA-2 (Band4)

1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
3) Set Channel power measure = 1MHz
4) Sweep time = auto, trigger set to “free run”.
5) Trace average at least 100 traces in power averaging mode.
6) Add 10 log(500kHz/RBW) to the test result. 10 log(500kHz/300KHZ) = 2.22dBm
7) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission).
8) Record the max value

3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

3.4.6 EUT OPERATING CONDITIONS

Same as 3.1.7.

3.4.7 TEST RESULTS

Please Refer to Appendix of this test report.

3.5 AUTOMATICALLY DISCONTINUE TRANSMISSION

3.5.1 LIMIT OF AUTOMATICALLY DISCONTINUE TRANSMISSION

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

3.5.2 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.5.3 TEST RESULT

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

3.6 ANTENNA REQUIREMENTS

3.6.1 STANDARD APPLICABLE

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmits power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.6.2 ANTENNA CONNECTED CONSTRUCTION

An embedded-in antenna design is used.

3.6.3 ANTENNA GAIN

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit and PSD limit.

4. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

5. MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

6. Appendix:RLAN

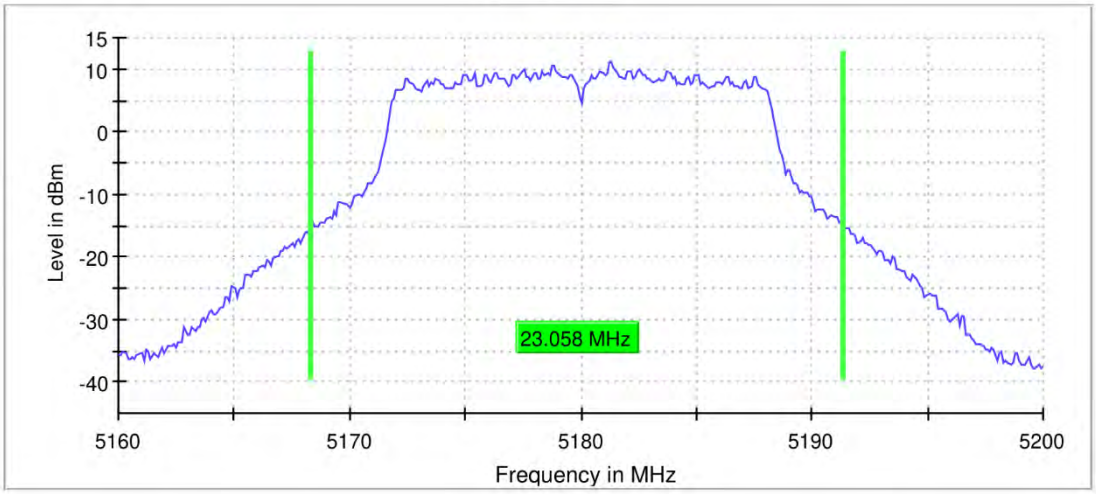
EMISSION BANDWIDTH

TEST RESULT

TestMode	Antenna	Frequency [MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	ANT6	5180	23.058	5168.321	5191.379	---	---
	ANT6	5200	23.559	5187.920	5211.479	---	---
	ANT6	5240	22.757	5228.622	5251.379	---	---
	ANT6	5260	22.957	5248.521	5271.478	---	---
	ANT6	5300	23.559	5288.221	5311.78	---	---
	ANT6	5320	23.358	5308.221	5331.579	---	---
	ANT6	5500	23.258	5488.221	5511.479	---	---
	ANT6	5580	23.158	5568.221	5591.379	---	---
	ANT6	5700	22.757	5688.822	5711.579	---	---
	ANT6	5720	23.158	5708.321	5731.479	---	---
11N20SISO	ANT6	5180	23.960	5167.920	5191.88	---	---
	ANT6	5200	23.860	5187.920	5211.78	---	---
	ANT6	5240	23.358	5228.622	5251.98	---	---
	ANT6	5260	23.860	5247.920	5271.78	---	---
	ANT6	5300	23.559	5288.221	5311.78	---	---
	ANT6	5320	24.361	5308.020	5332.381	---	---
	ANT6	5500	23.860	5488.020	5511.88	---	---
	ANT6	5580	23.459	5568.020	5591.479	---	---
	ANT6	5700	23.358	5688.221	5711.579	---	---
	ANT6	5720	23.258	5708.221	5731.479	---	---
11N40SISO	ANT6	5190	42.256	5168.797	5211.053	---	---
	ANT6	5230	42.105	5209.098	5251.203	---	---
	ANT6	5270	41.805	5248.947	5290.752	---	---
	ANT6	5310	42.256	5288.947	5331.203	---	---
	ANT6	5510	41.654	5489.248	5530.902	---	---
	ANT6	5550	42.105	5529.098	5571.203	---	---
	ANT6	5670	42.256	5649.098	5691.354	---	---
	ANT6	5710	42.105	5689.098	5731.203	---	---
11AC80SISO	ANT6	5210	84.263	5167.618	5251.881	---	---

	ANT6	5290	84.765	5247.618	5332.382	---	---
	ANT6	5530	85.266	5487.618	5572.884	---	---
	ANT6	5610	84.263	5568.119	5652.382	---	---
	ANT6	5690	42.105	5689.098	5731.203	---	---

TEST GRAPHS

11A_ANT6_5180
26 dB Bandwidth 
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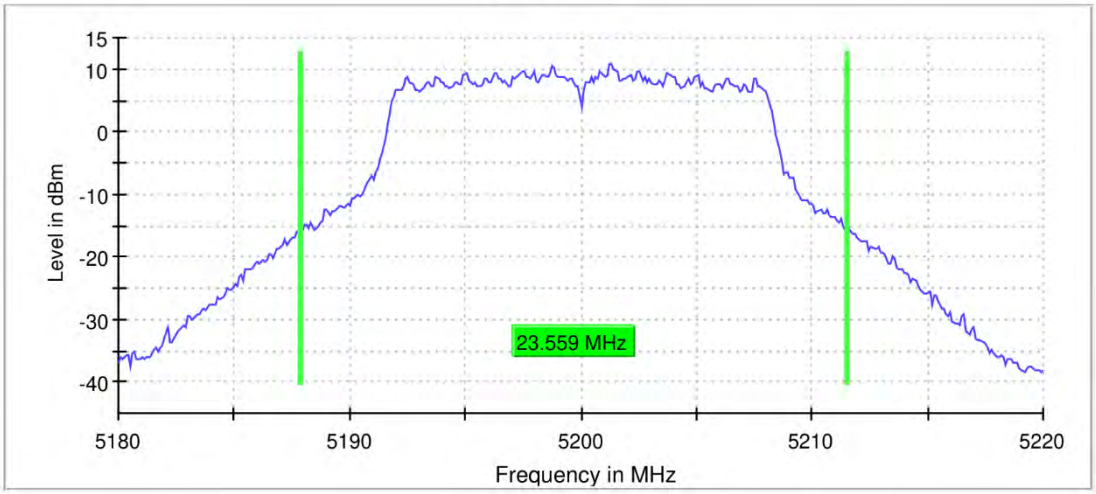
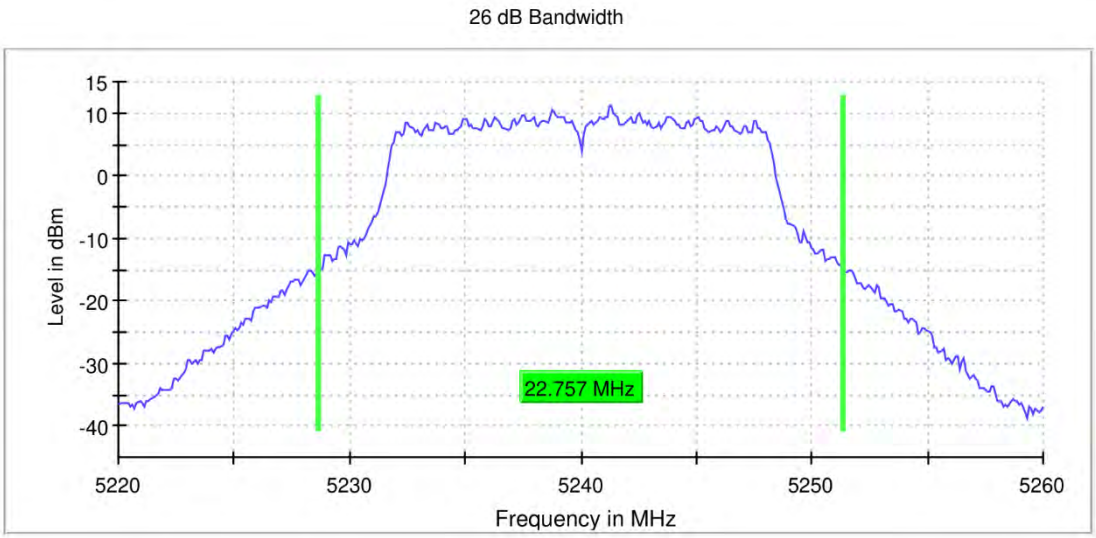
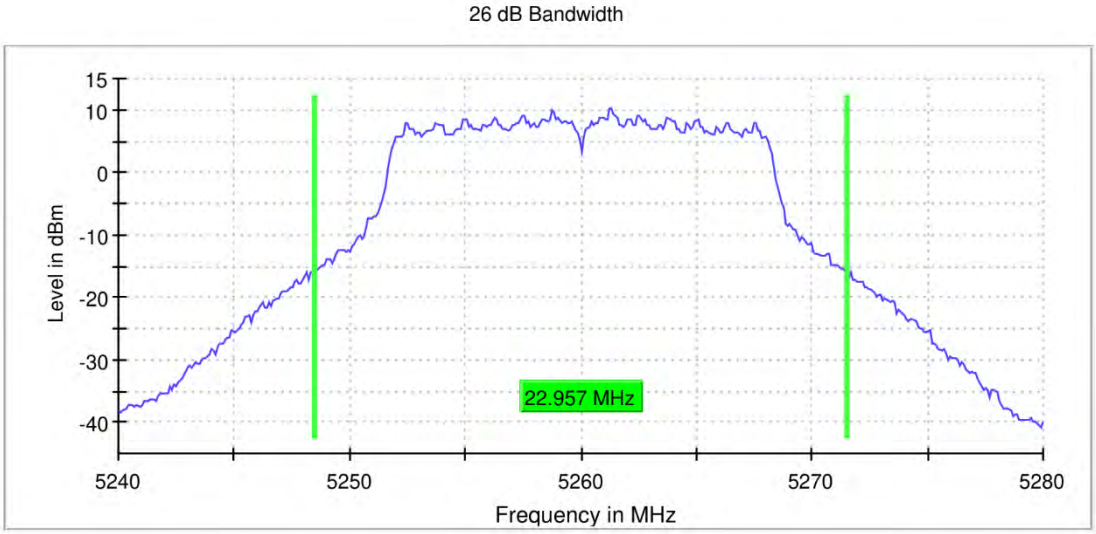
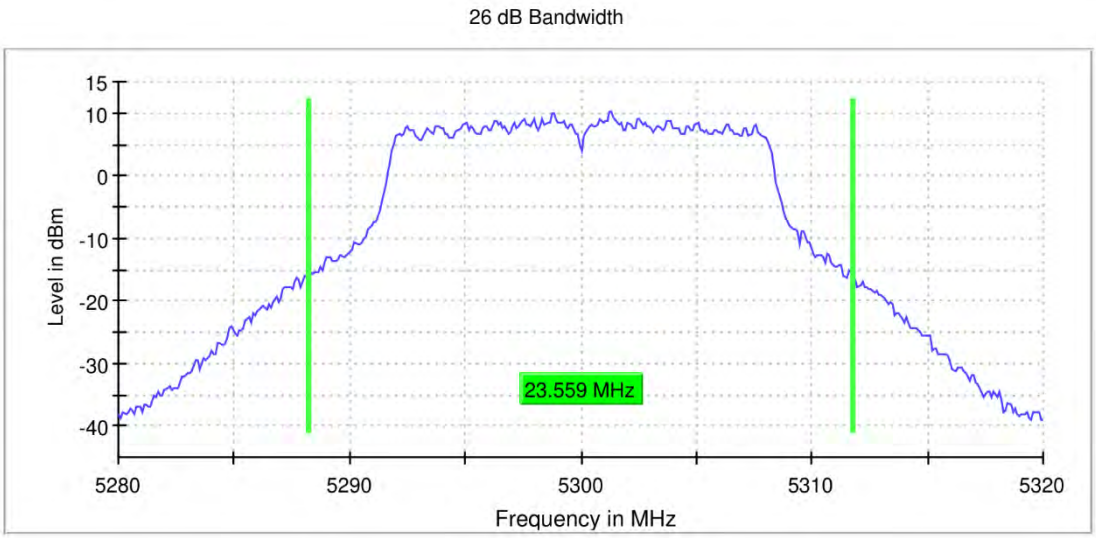
26 dB Bandwidth 
11A _ANT6_5240



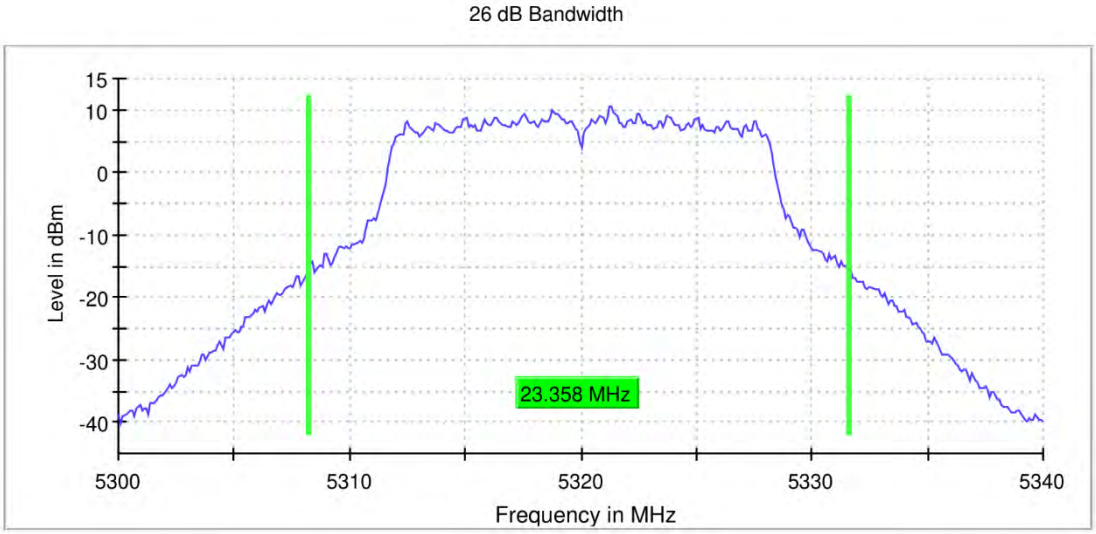
11A _ANT6_5260



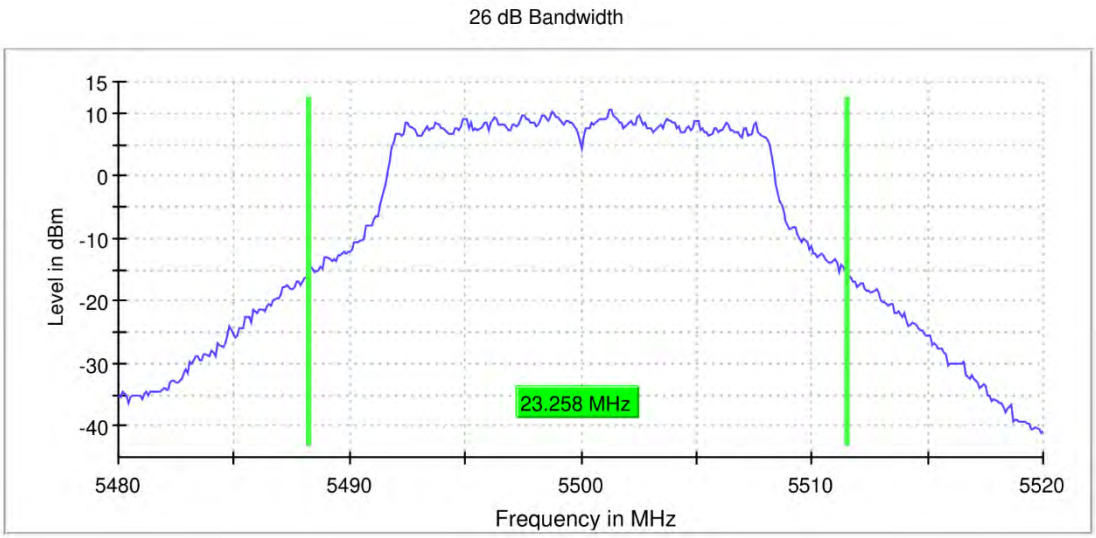
11A _ANT6_5300



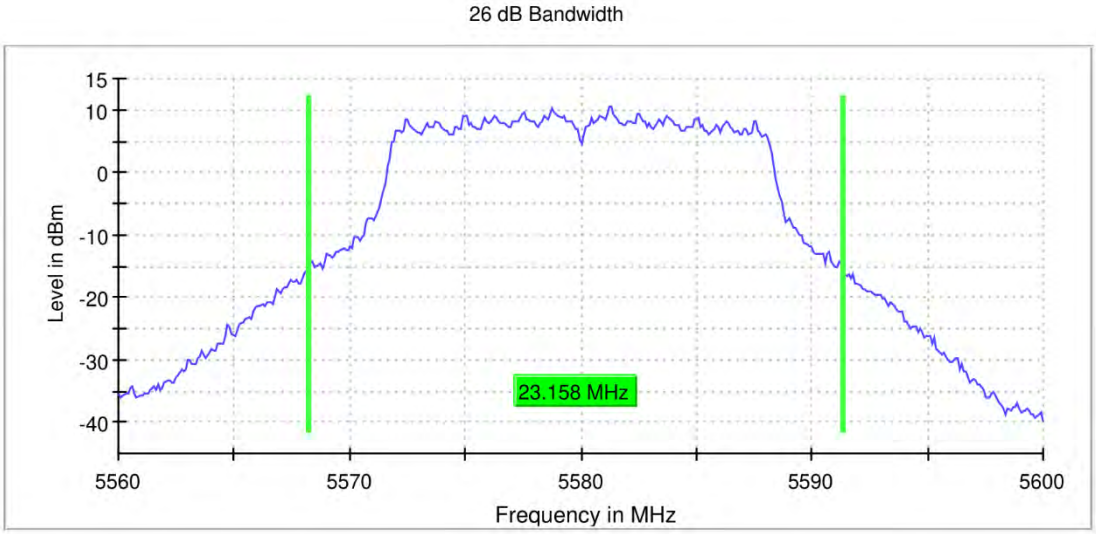
11A _ANT6_5320



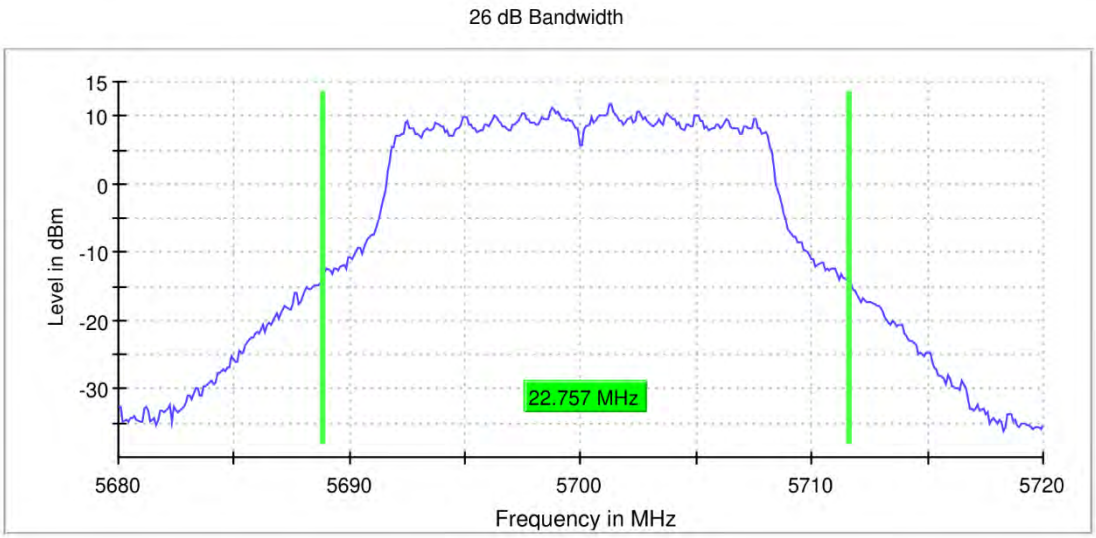
11A _ANT6_5500



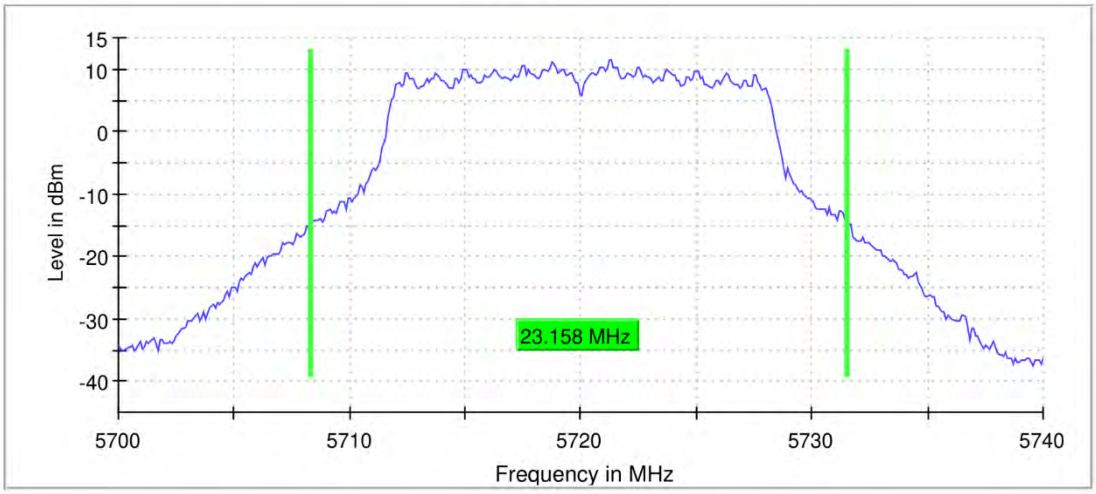
11A _ANT6_5580



11A _ANT6_5700



11A _ANT6_5720



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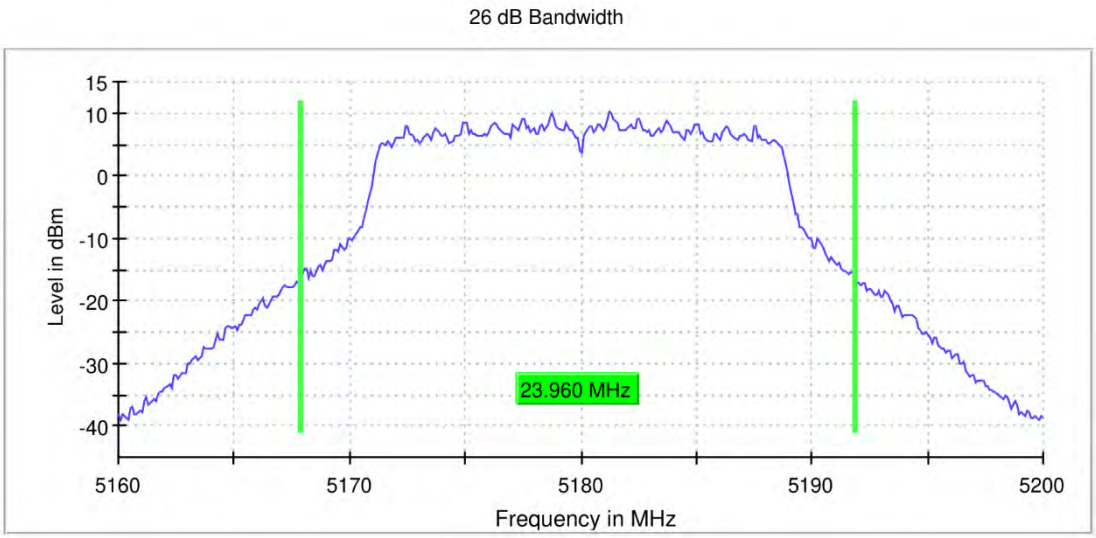
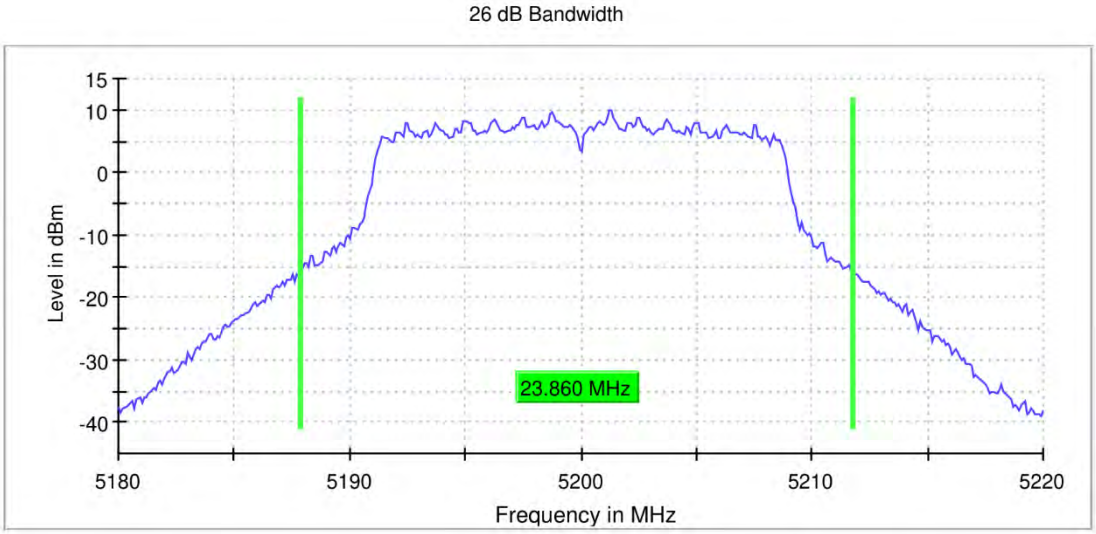
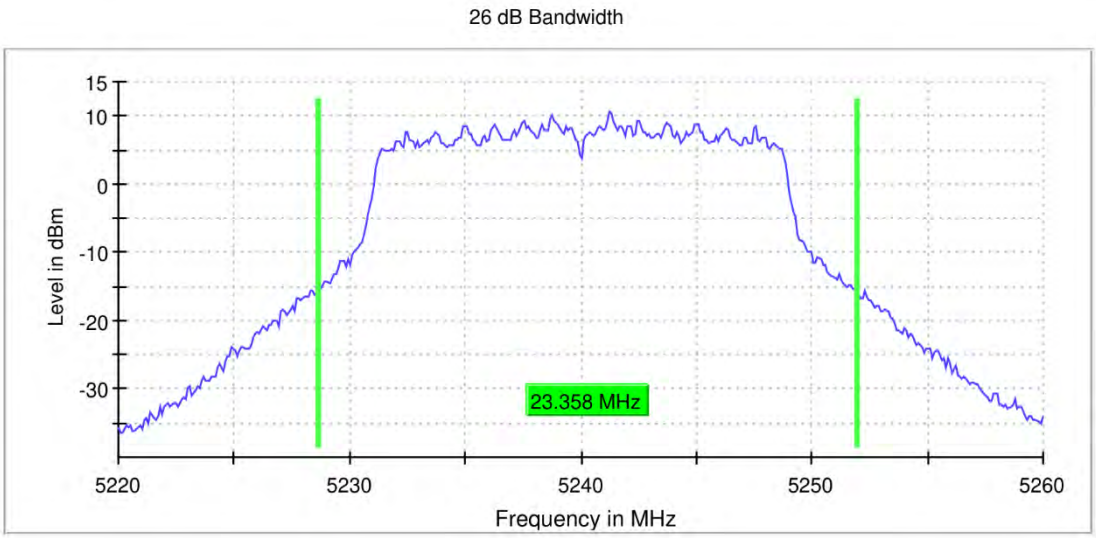


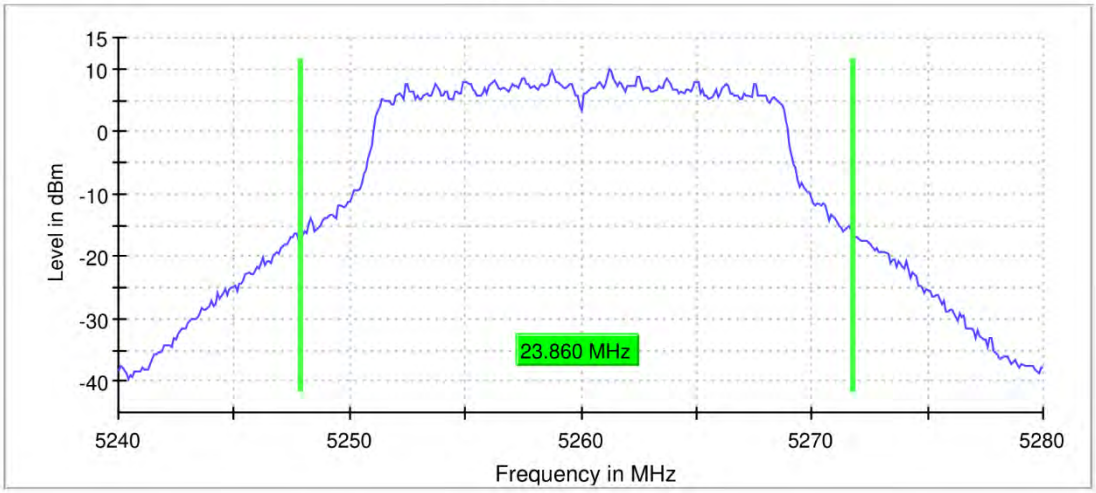
11N20 _ANT6_5200



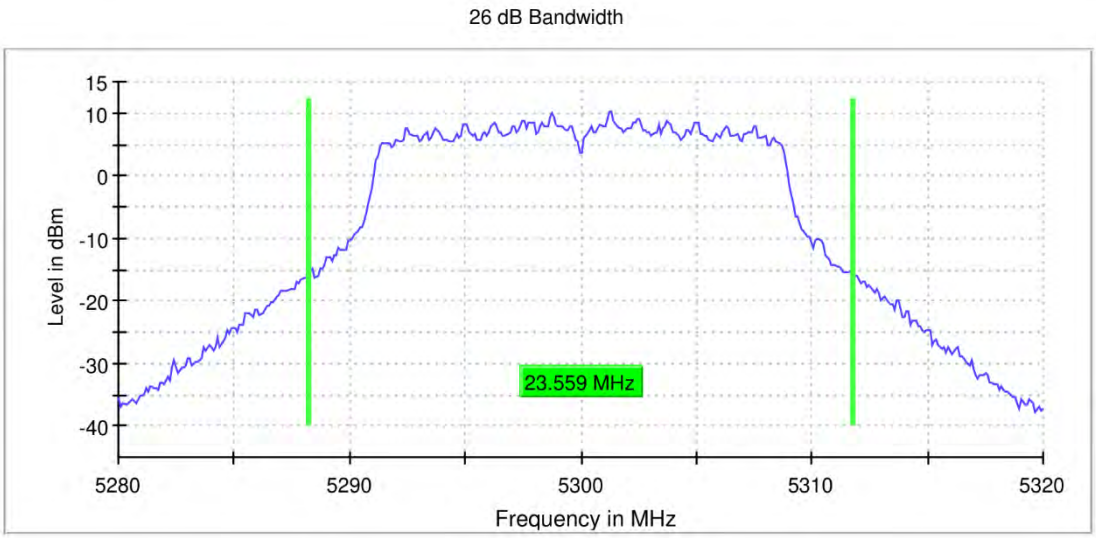
11N20 _ANT6_5240



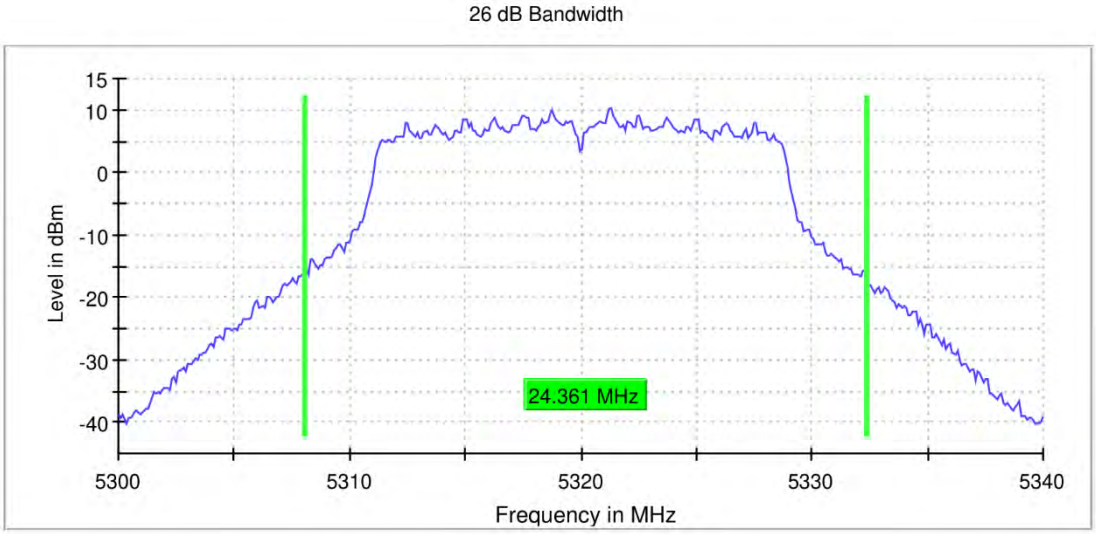
11N20 _ANT6_5260



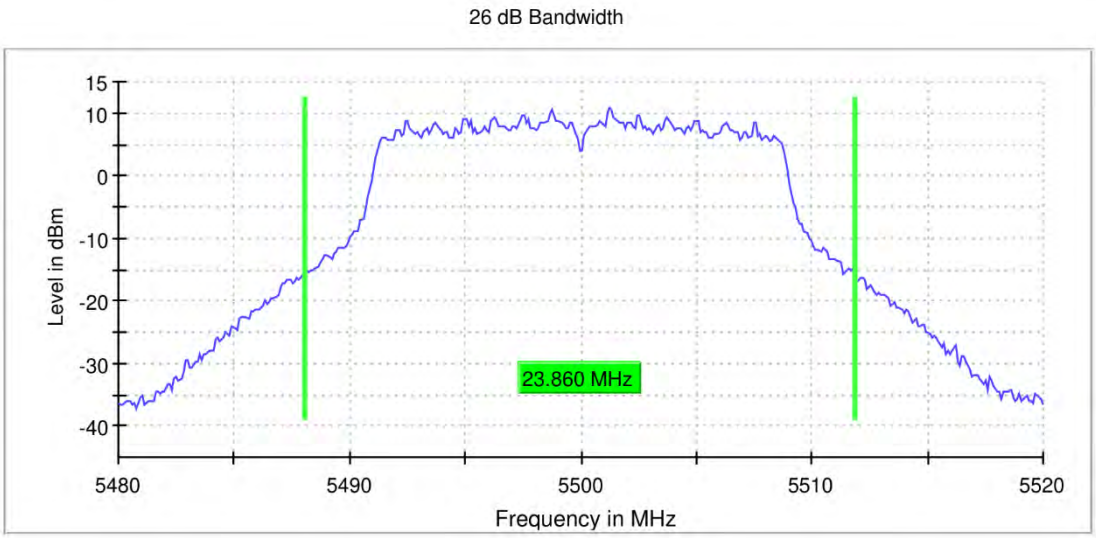
11N20_ANT6_5300



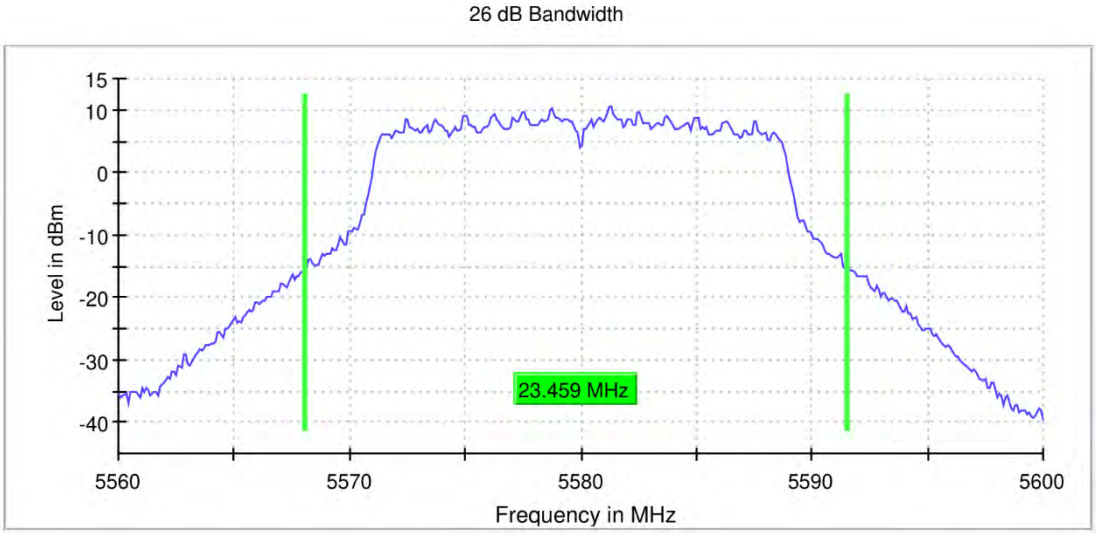
11N20 _ANT6_5320



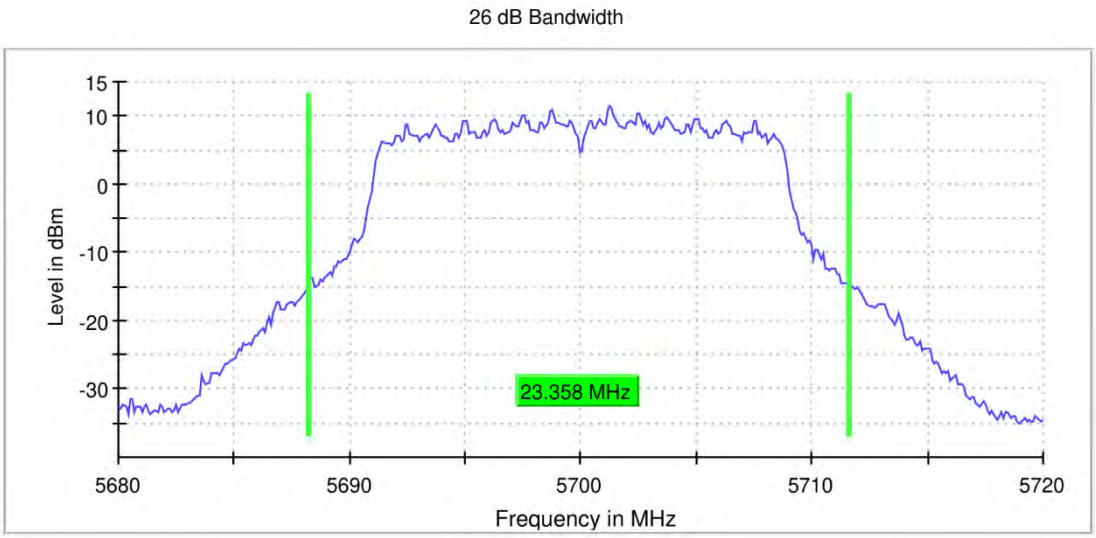
11N20 _ANT6_5500



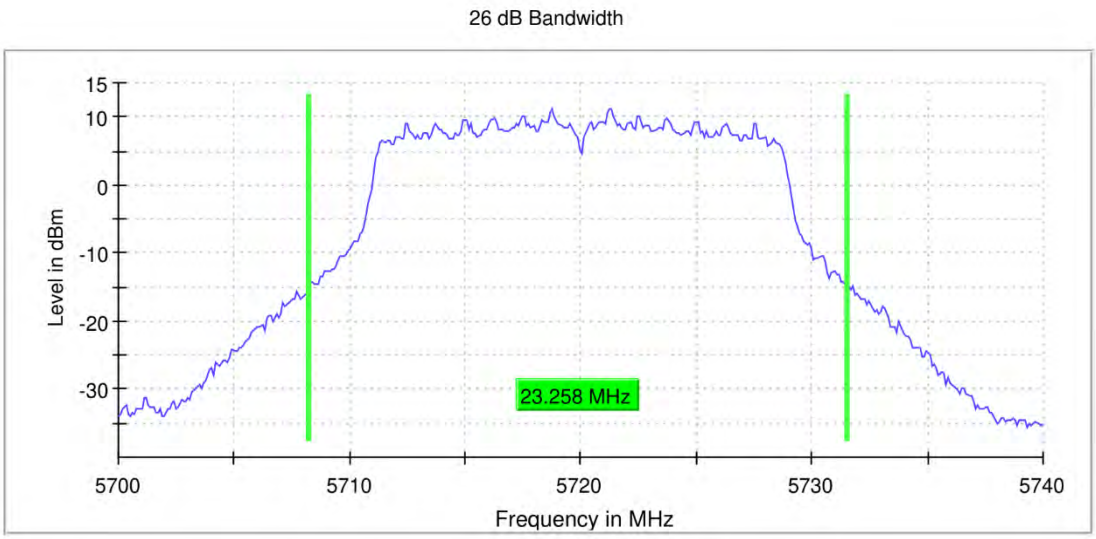
11N20_ANT6_5580



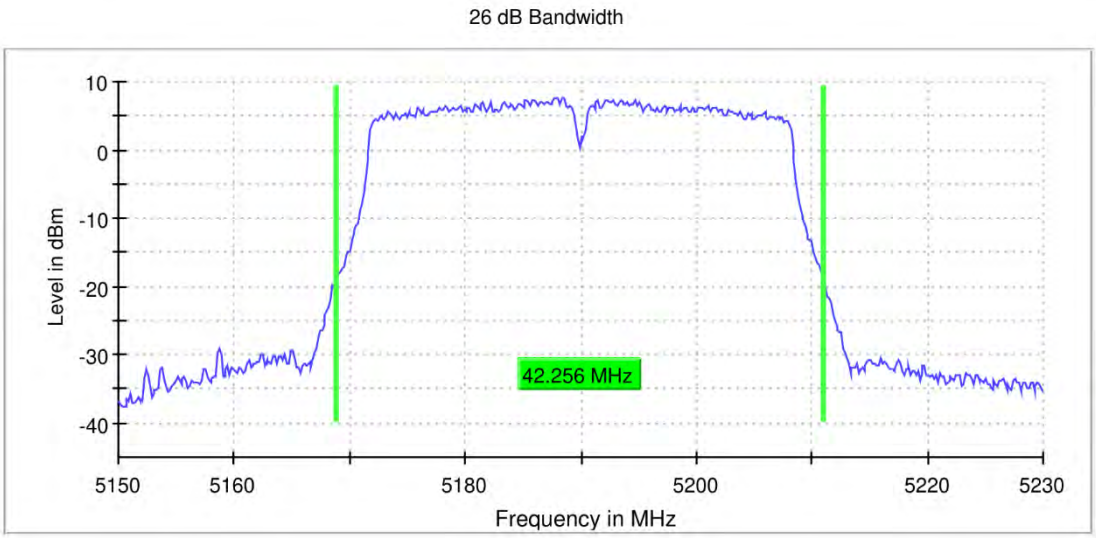
11N20_ANT6_5700



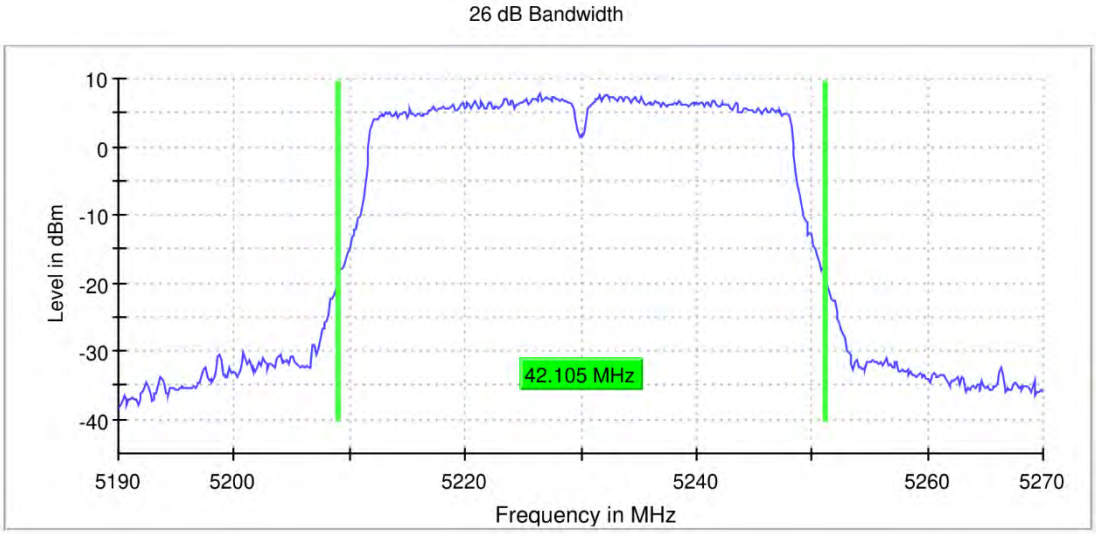
11N20_ANT6_5720



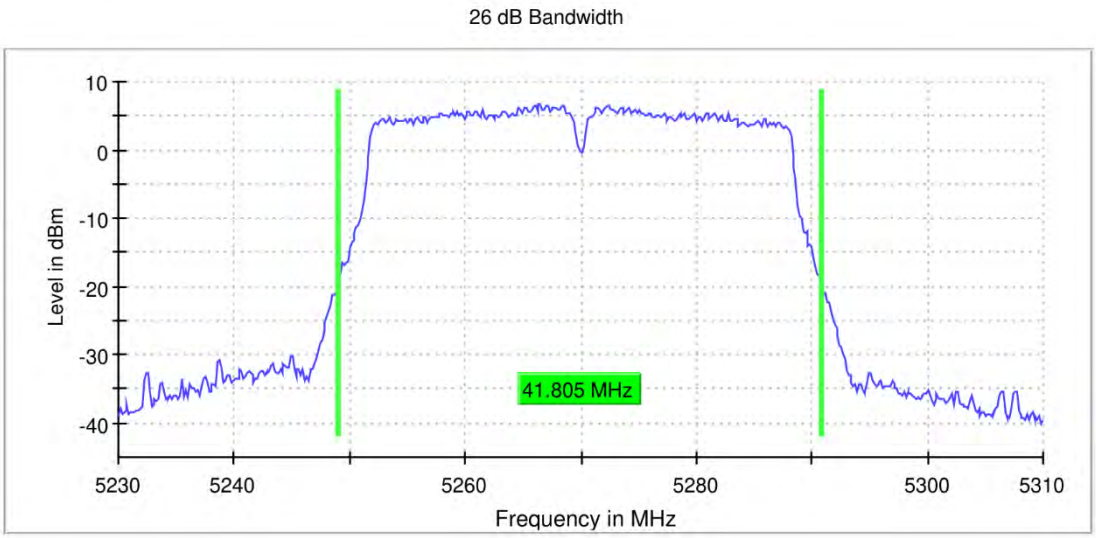
11N40 _ANT6_5190



11N40 _ANT6_5230



11N40 _ANT6_5270



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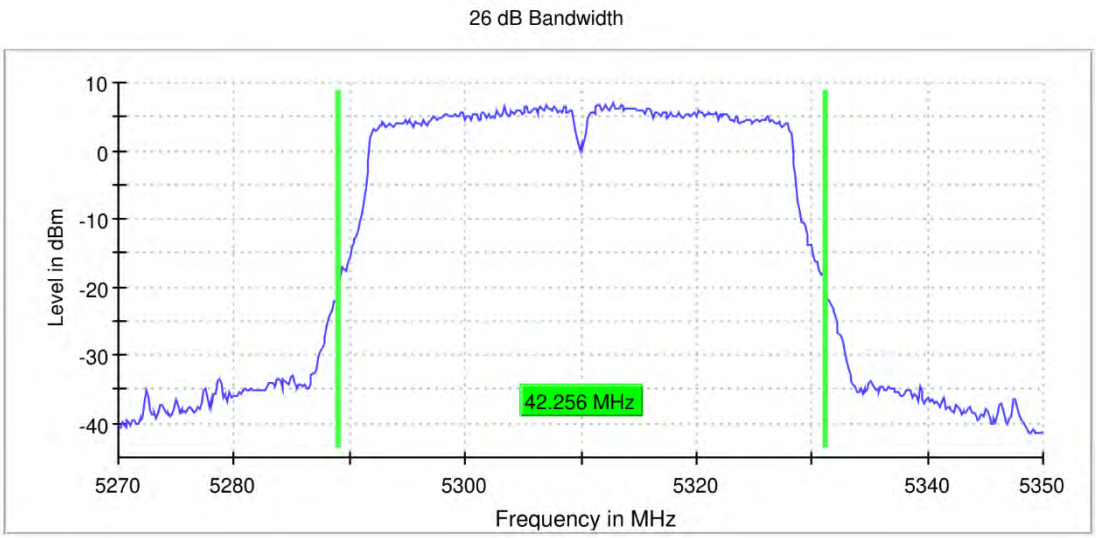
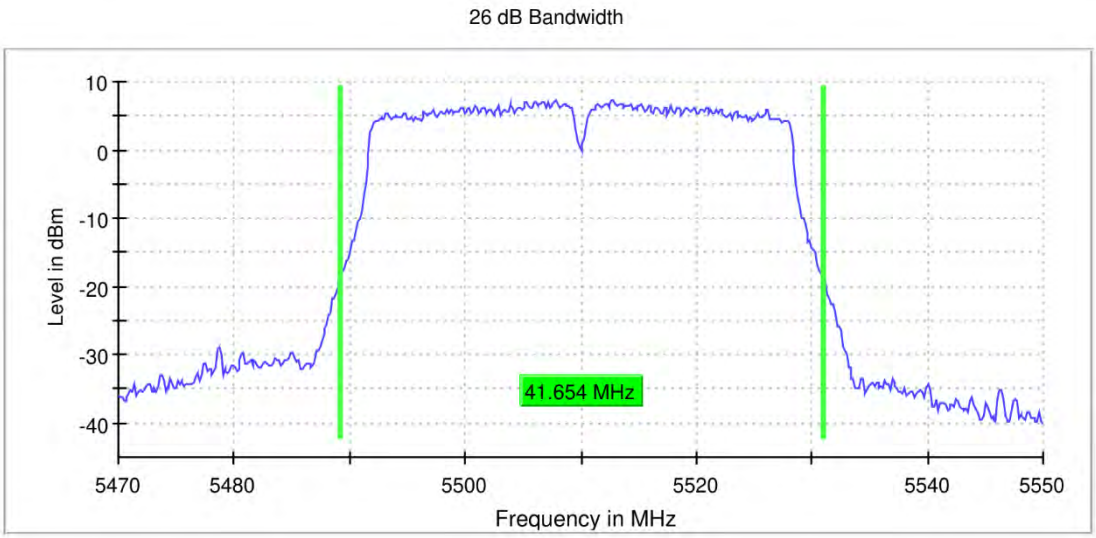


11N40 _ANT6_5510



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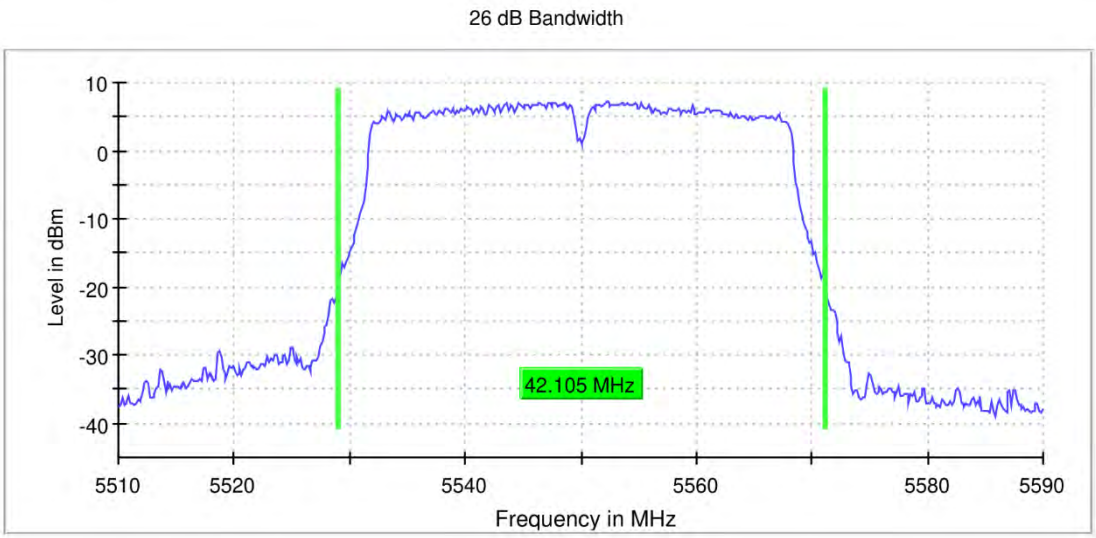
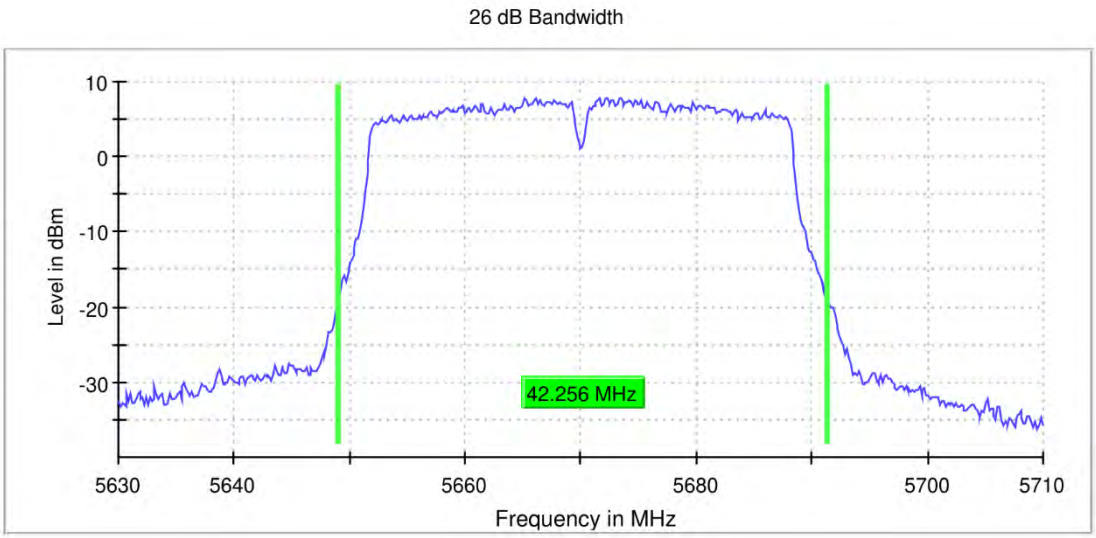
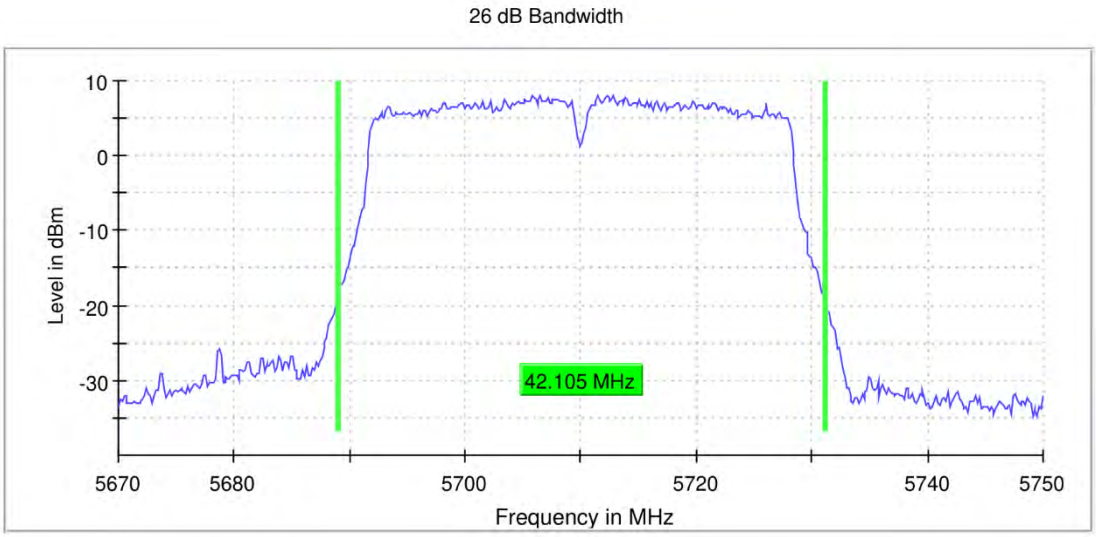


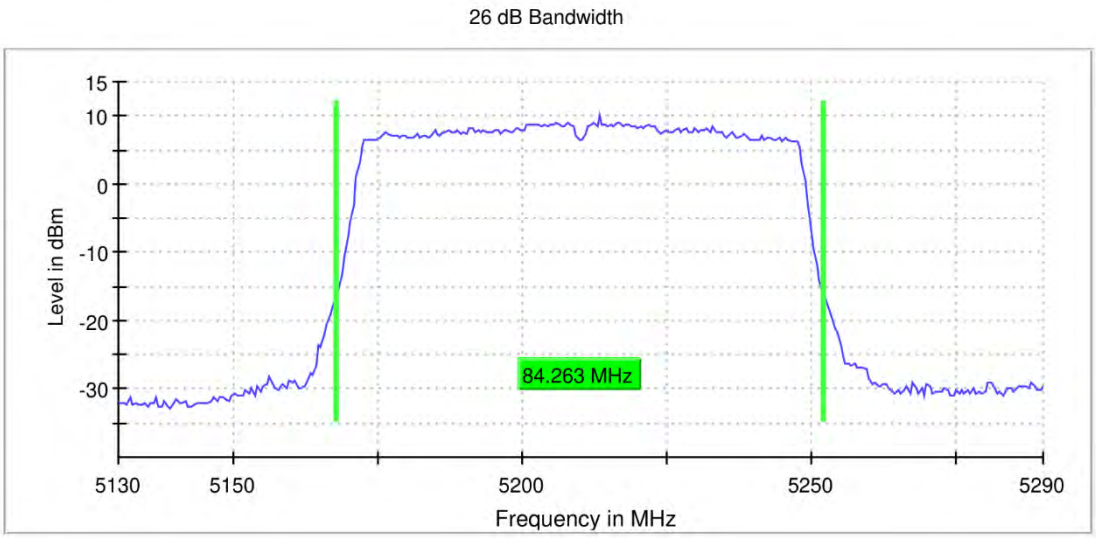
11N40 _ANT6_5670



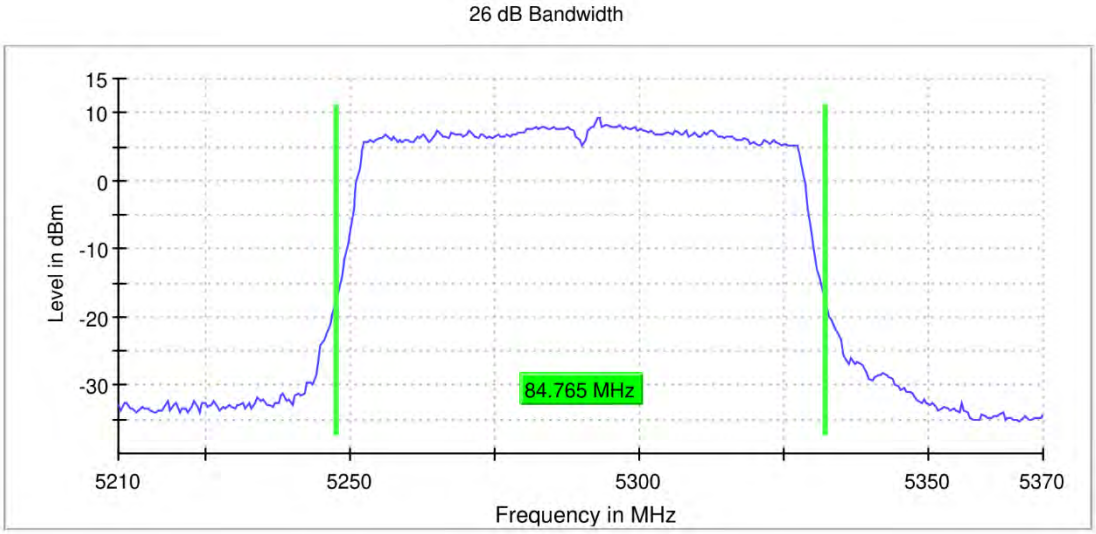
11N40 _ANT6_5710



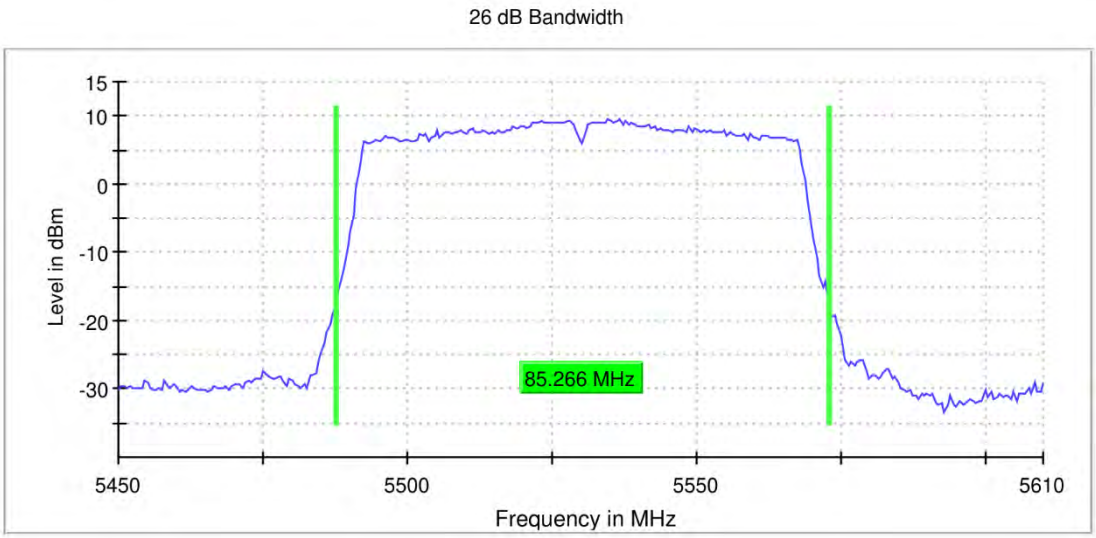
11AC80 _ANT6_5210



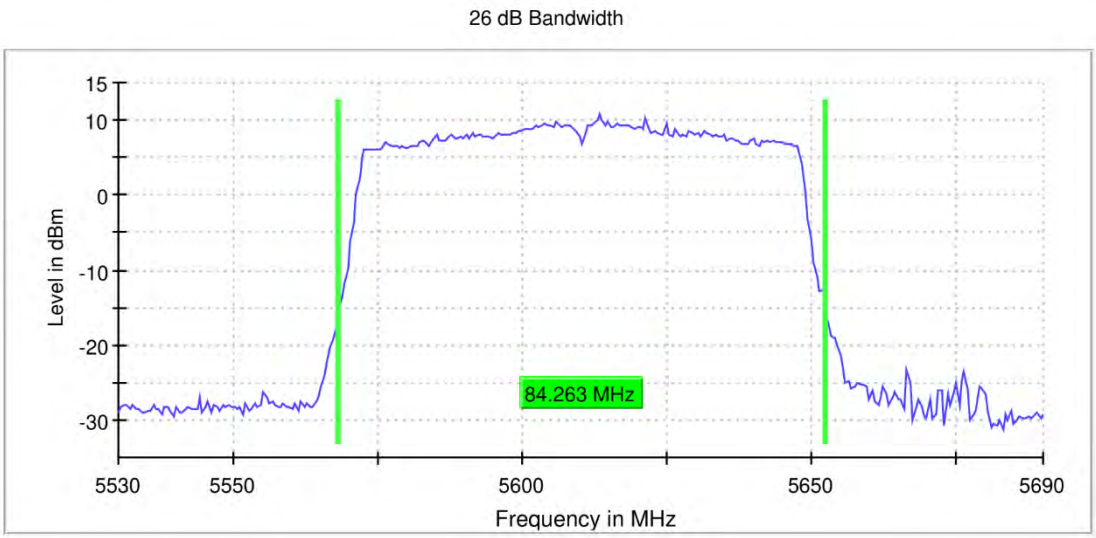
11AC80 _ANT6_5290



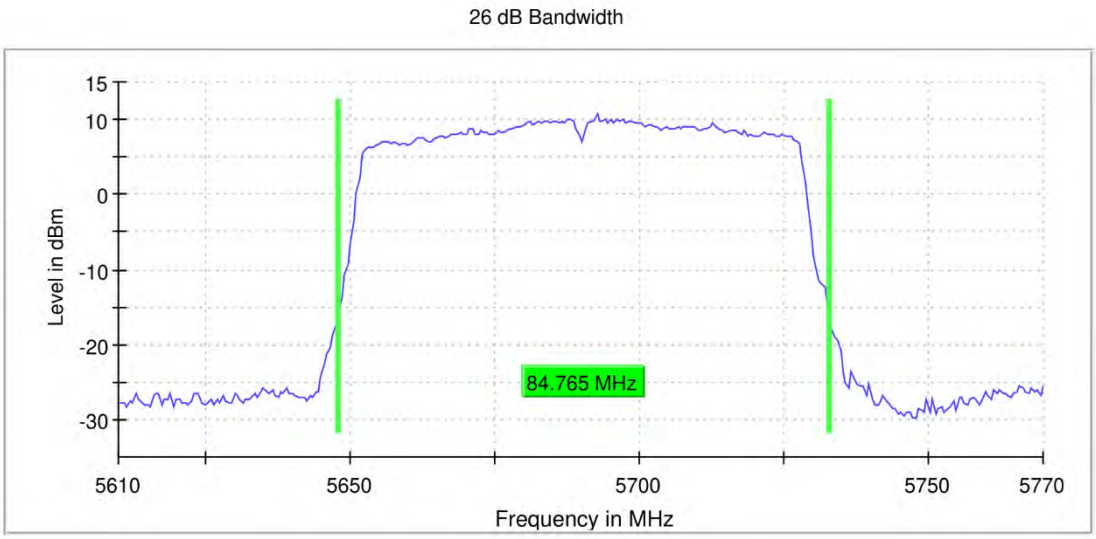
11AC80 _ANT6_5530



11AC80 _ANT6_5610



11AC80 _ANT6_5690



20M

RBW300 KHz

VBW 1 MHz

40M

RBW500 KHz

VBW 2 MHz

80M

RBW 1.000 MHz

VBW 3.000 MHz

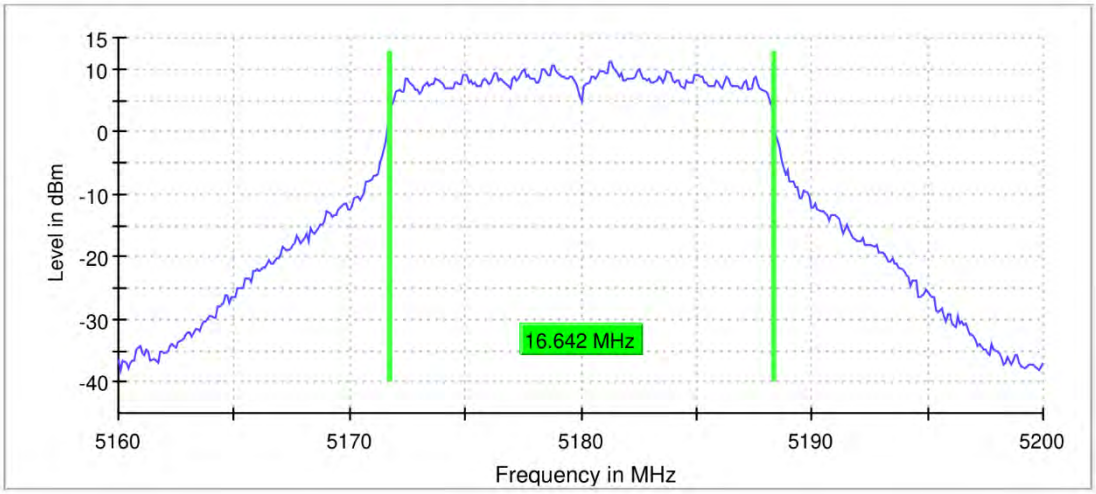
OCCUPIED CHANNEL BANDWIDTH

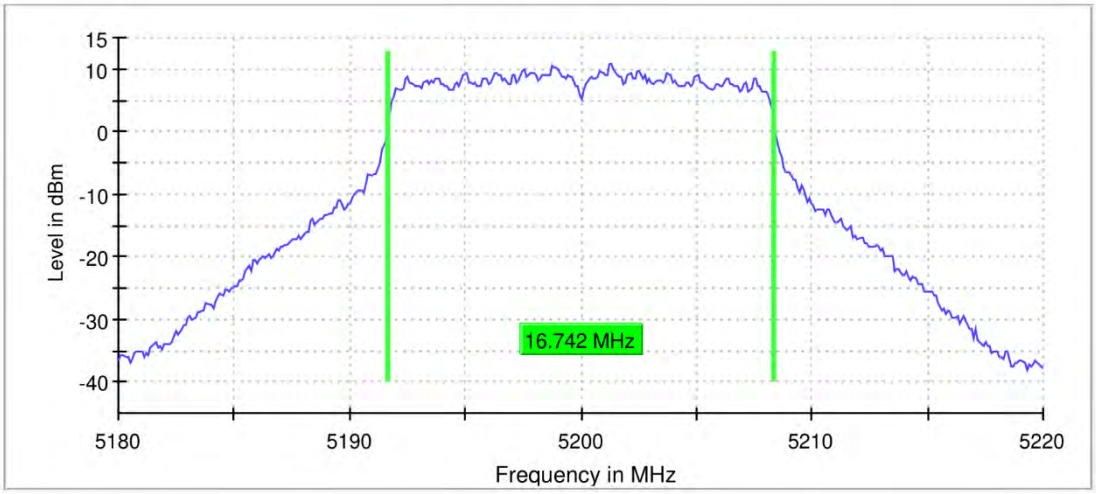
TEST RESULT

TestMode	Antenna	Frequency [MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	ANT6	5180	16.642	5171.729	5188.371	---	---
	ANT6	5200	16.742	5191.629	5208.371	---	---
	ANT6	5240	16.742	5231.629	5248.371	---	---
	ANT6	5260	16.742	5251.629	5268.371	---	---
	ANT6	5300	16.742	5291.629	5308.371	---	---
	ANT6	5320	16.742	5311.629	5328.371	---	---
	ANT6	5500	16.742	5491.629	5508.371	---	---
	ANT6	5580	16.742	5571.629	5588.371	---	---
	ANT6	5700	16.642	5691.729	5708.371	---	---
	ANT6	5720	16.742	5711.629	5728.371	---	---
	ANT6	5745	16.742	5736.629	5753.371	---	---
	ANT6	5785	16.742	5776.629	5793.371	---	---
	ANT6	5825	16.742	5816.629	5833.371	---	---
11N20SISO	ANT6	5180	17.945	5171.028	5188.973	---	---
	ANT6	5200	17.845	5191.028	5208.873	---	---
	ANT6	5240	17.845	5231.128	5248.973	---	---
	ANT6	5260	17.845	5251.028	5268.873	---	---
	ANT6	5300	17.845	5291.128	5308.973	---	---
	ANT6	5320	17.845	5311.028	5328.873	---	---
	ANT6	5500	17.845	5491.028	5508.873	---	---
	ANT6	5580	17.845	5571.028	5588.873	---	---
	ANT6	5700	17.845	5691.128	5708.973	---	---
	ANT6	5720	17.845	5711.028	5728.873	---	---
	ANT6	5745	17.845	5736.028	5753.873	---	---
	ANT6	5785	17.845	5776.128	5793.973	---	---
	ANT6	5825	17.945	5816.028	5833.973	---	---
11N20SISO	ANT6	5190	36.614	5171.818	5208.432	---	---
	ANT6	5230	36.614	5211.818	5248.432	---	---
	ANT6	5270	36.364	5251.818	5288.182	---	---
	ANT6	5310	36.614	5291.818	5328.432	---	---

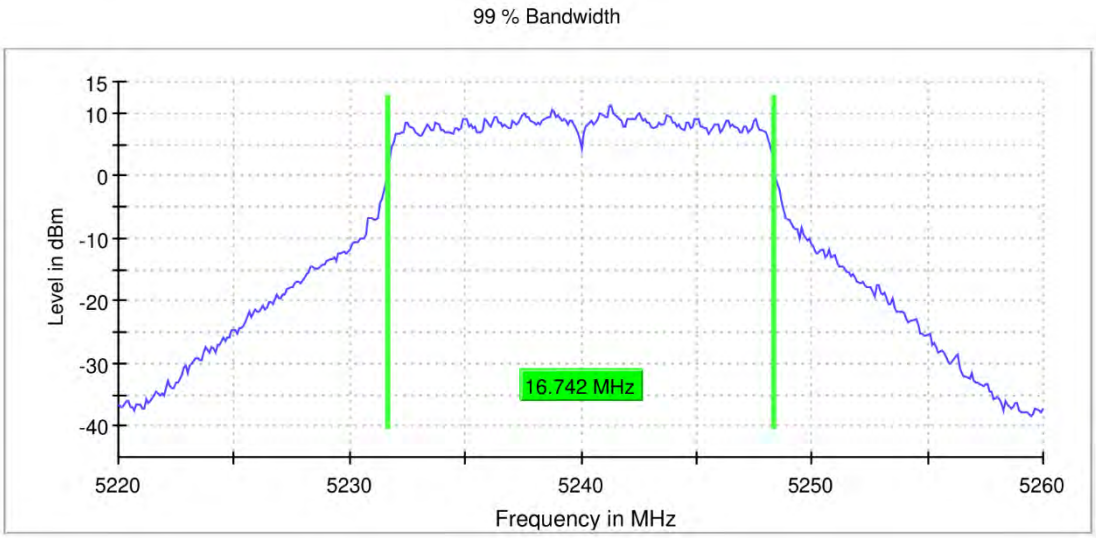
	ANT6	5510	36.614	5491.818	5528.432	---	---
	ANT6	5550	36.364	5531.818	5568.182	---	---
	ANT6	5670	36.614	5651.818	5688.432	---	---
	ANT6	5710	36.865	5691.567	5728.432	---	---
	ANT6	5755	36.614	5736.818	5773.432	---	---
	ANT6	5795	36.614	5776.567	5813.181	---	---
11AC80SISO	ANT6	5210	75.737	5172.132	5247.869	---	---
	ANT6	5290	75.737	5252.132	5327.869	---	---
	ANT6	5530	75.737	5492.132	5567.869	---	---
	ANT6	5610	75.737	5572.132	5647.869	---	---
	ANT6	5690	76.238	5652.132	5728.370	---	---
	ANT6	5775	76.238	5737.132	5813.370	---	---

TEST GRAPHS

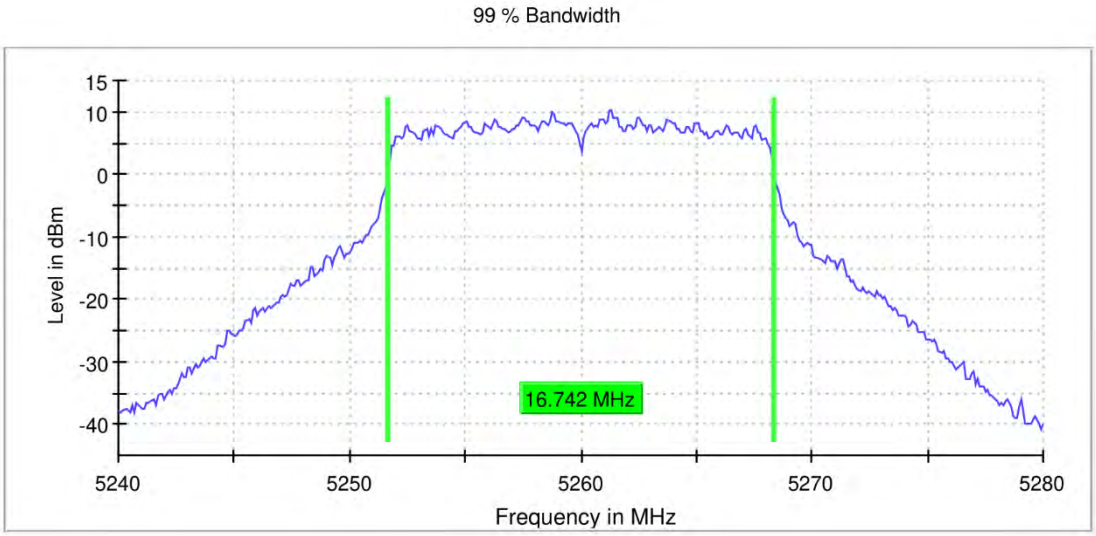
11A_ANT6_5180


11A _ANT6_5200


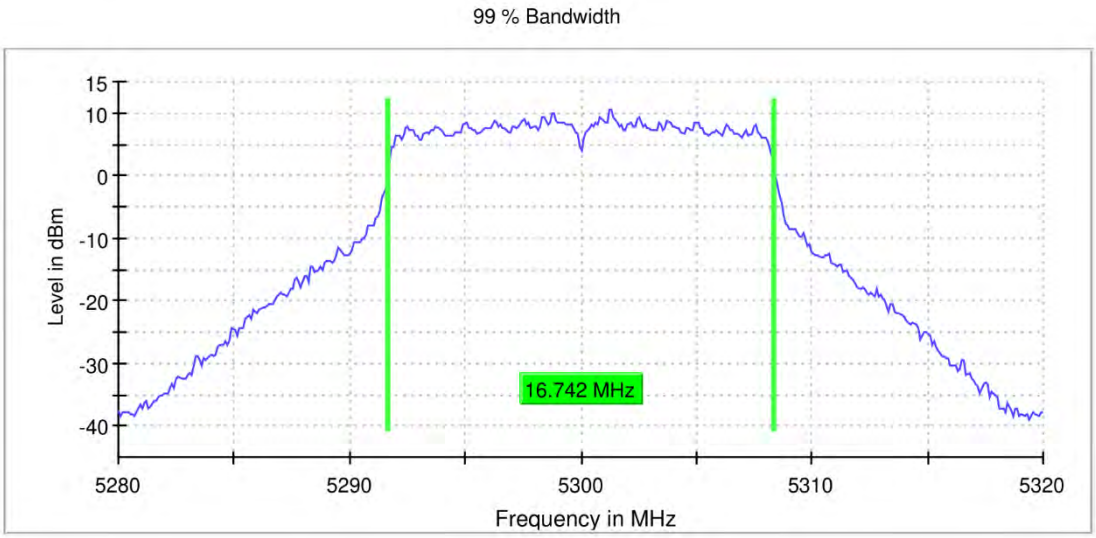
11A _ANT6_5240



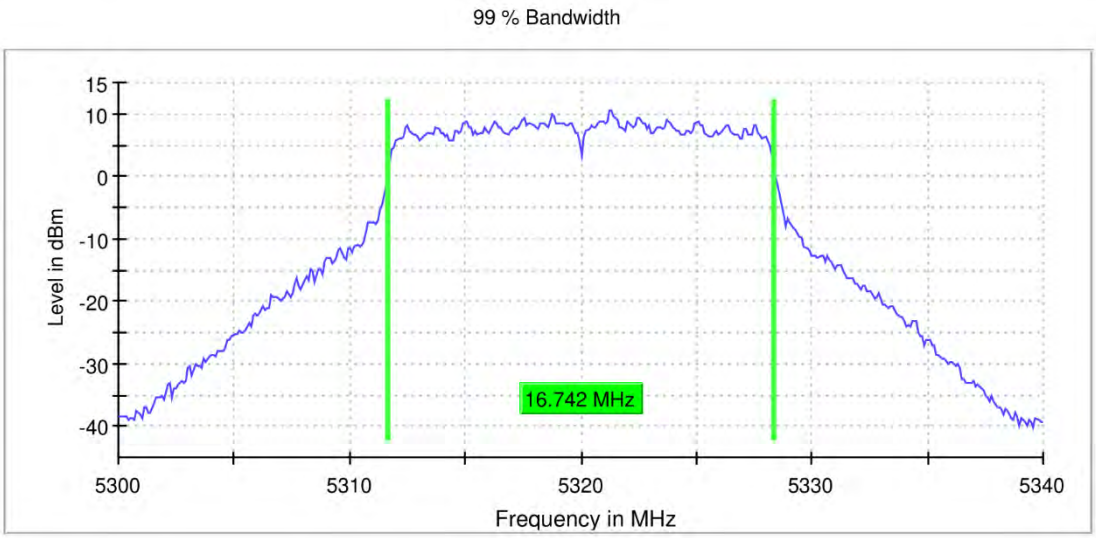
11A _ANT6_5260



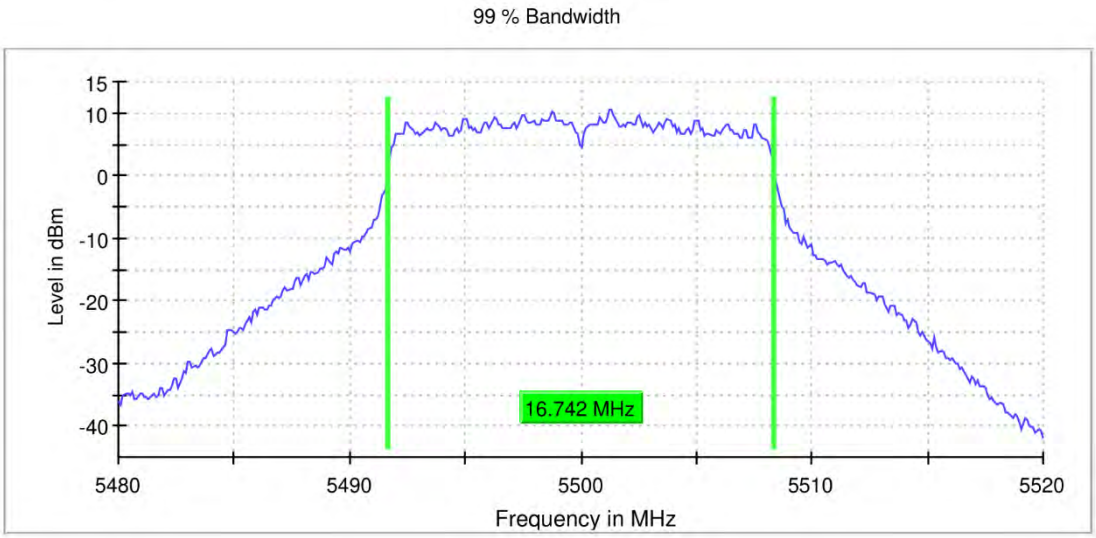
11A _ANT6_5300



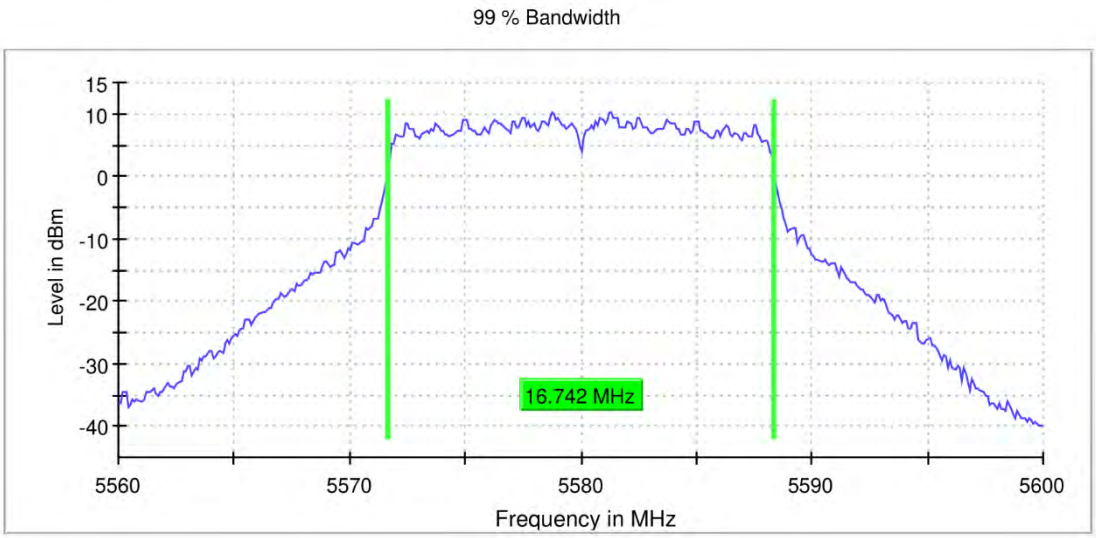
11A _ANT6_5320



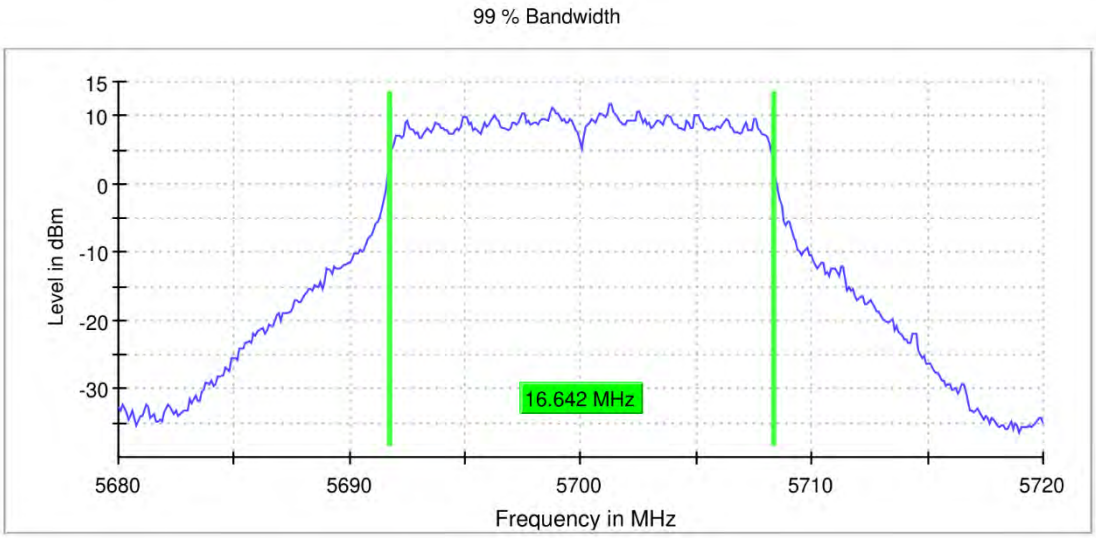
11A _ANT6_5500



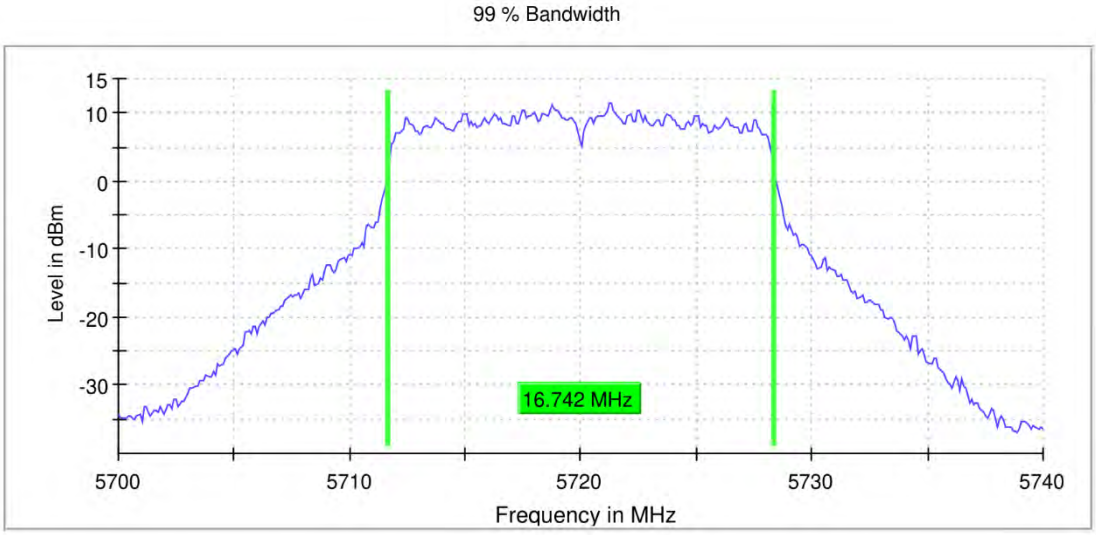
11A _ANT6_5580



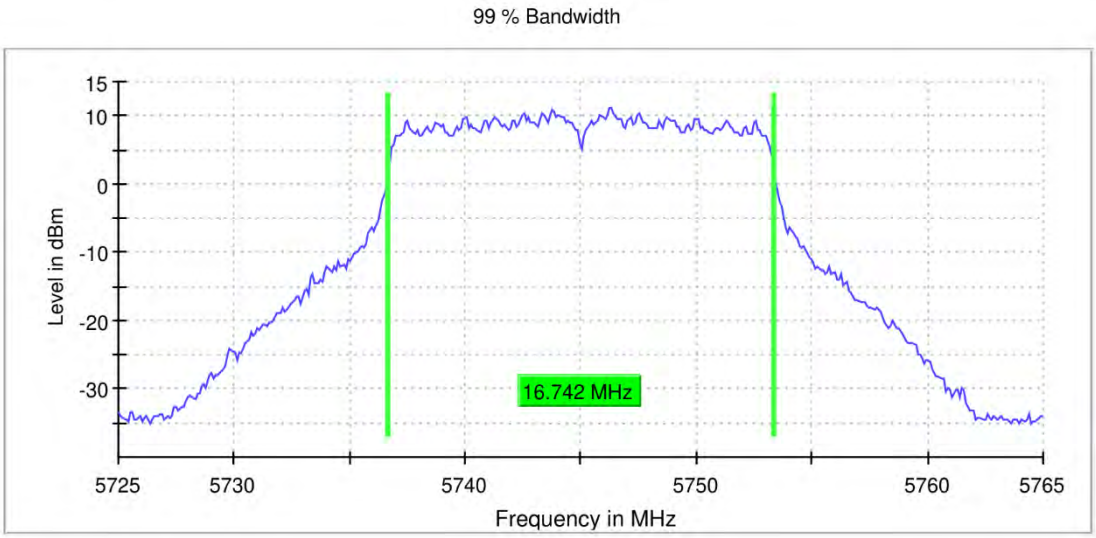
11A _ANT6_5700



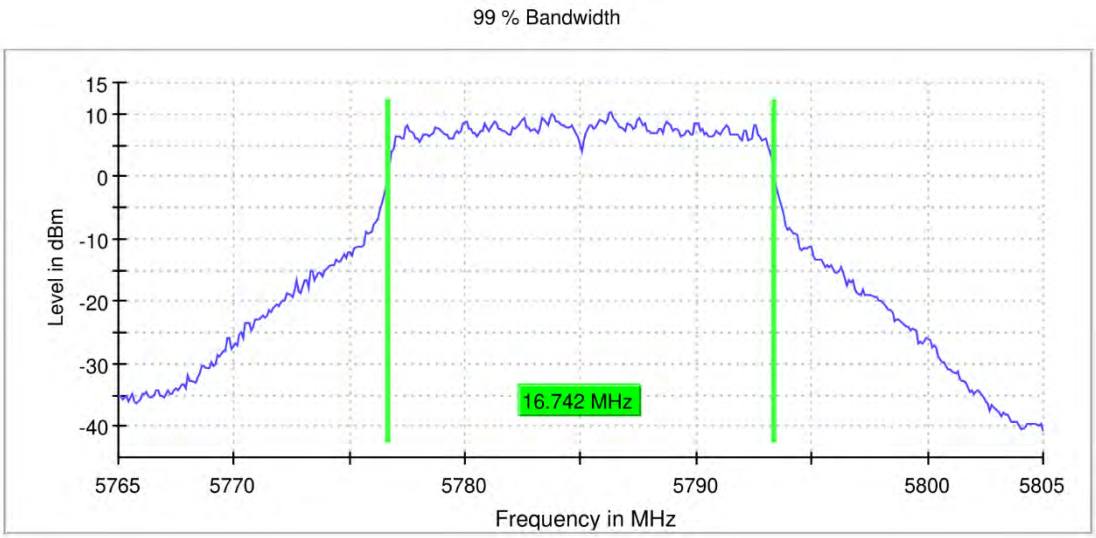
11A _ANT6_5720



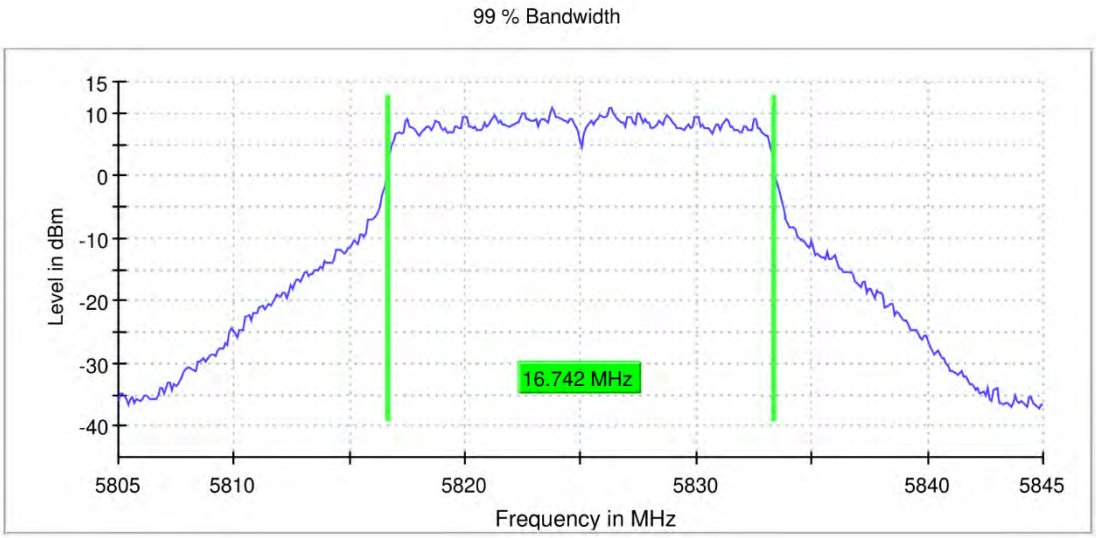
11A _ANT6_5745



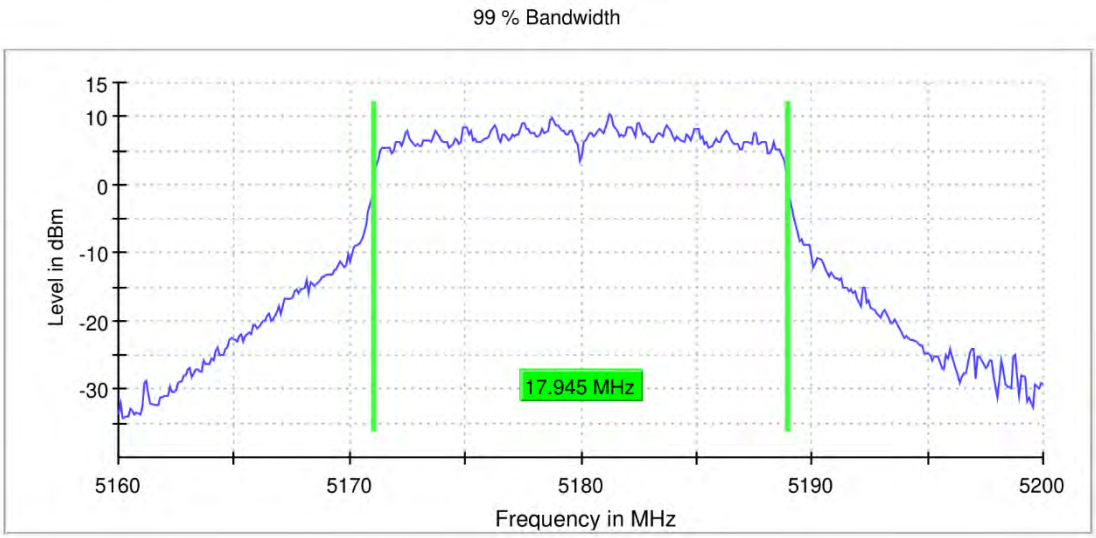
11A _ANT6_5785



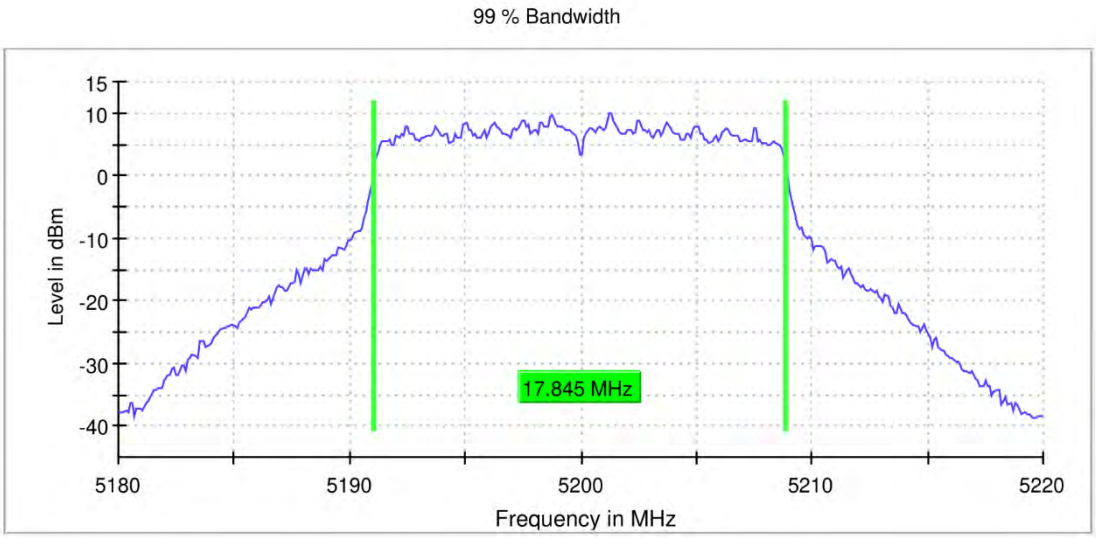
11A_ANT6_5825



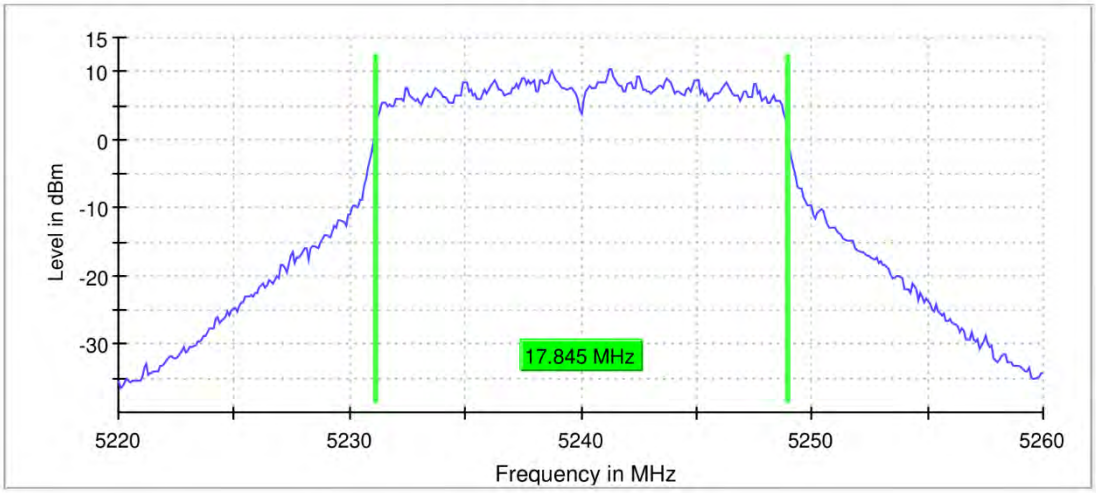
11N20_ANT6_5180



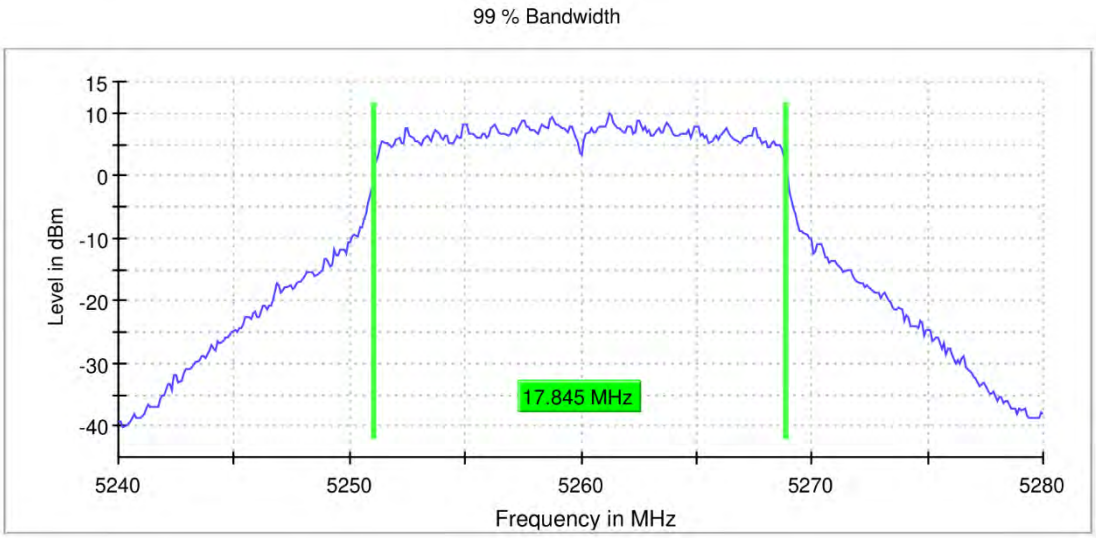
11N20 _ANT6_5200



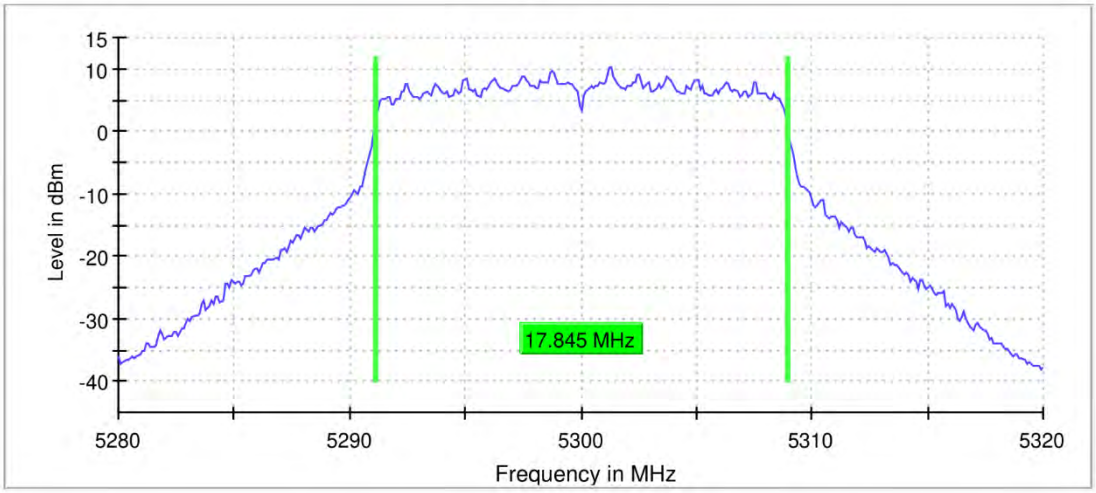
11N20 _ANT6_5240



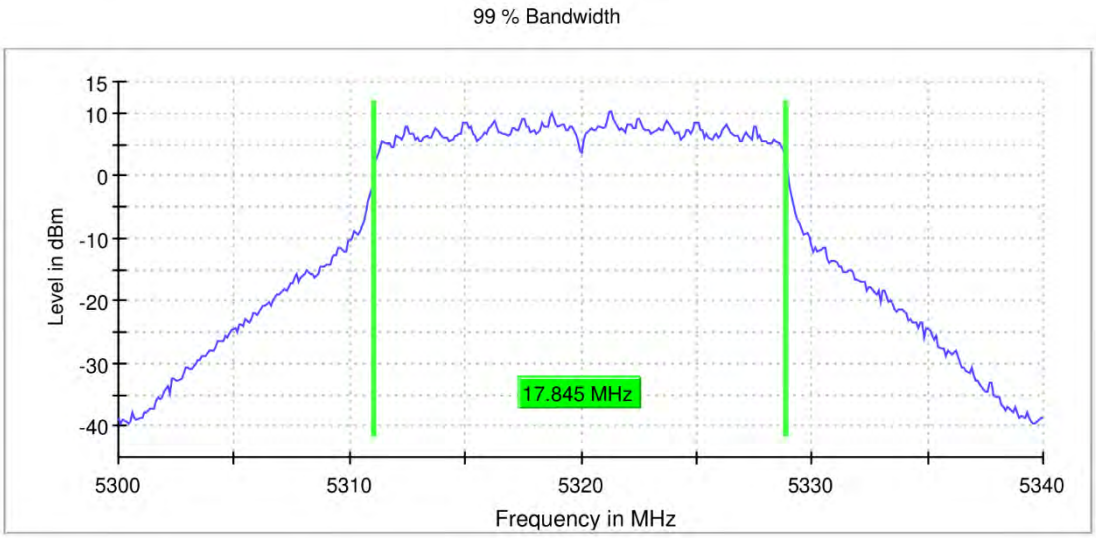
11N20 _ANT6_5260



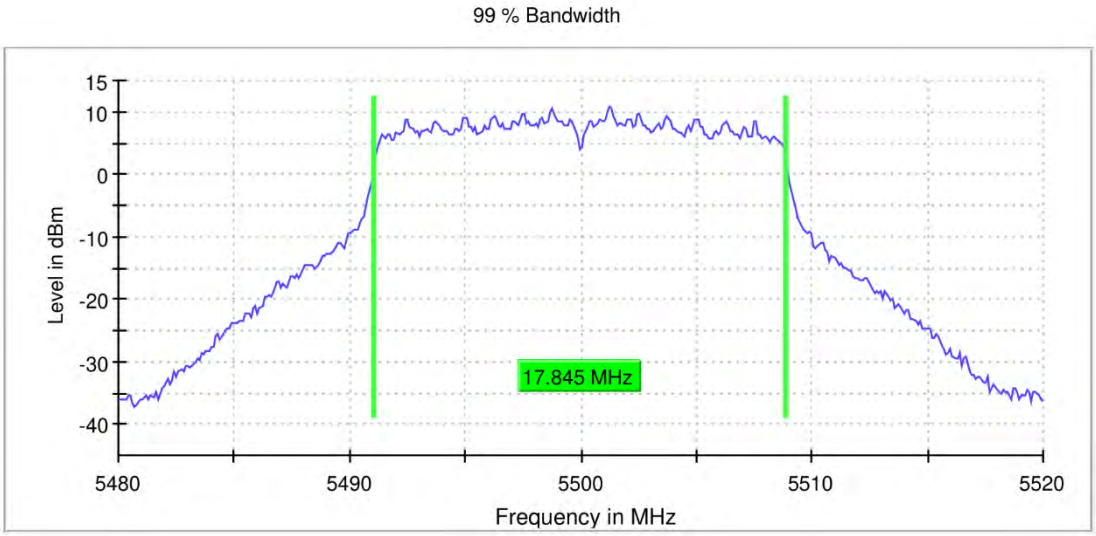
11N20_ANT6_5300



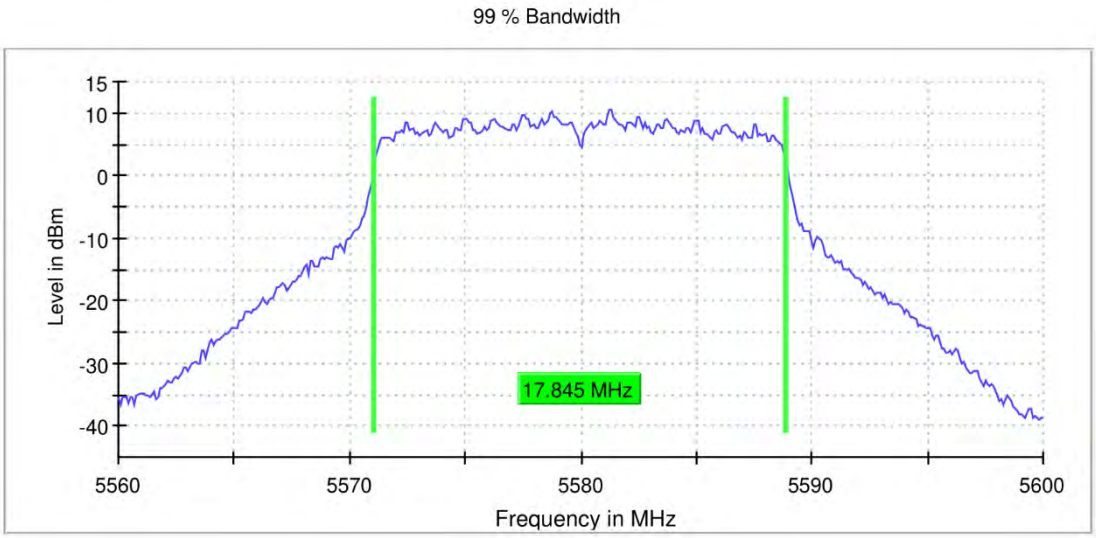
11N20 _ANT6_5320



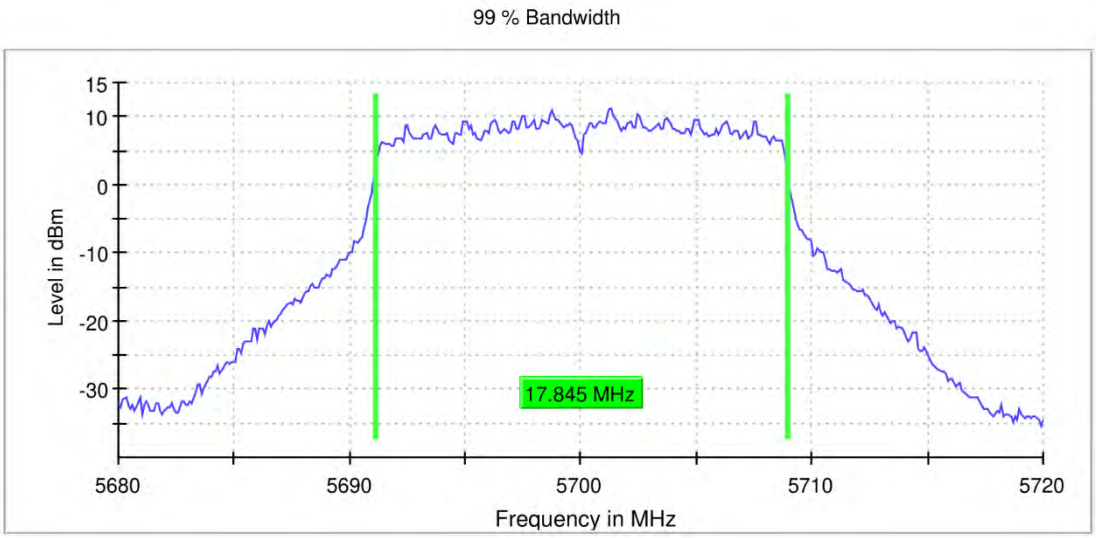
11N20 _ANT6_5500



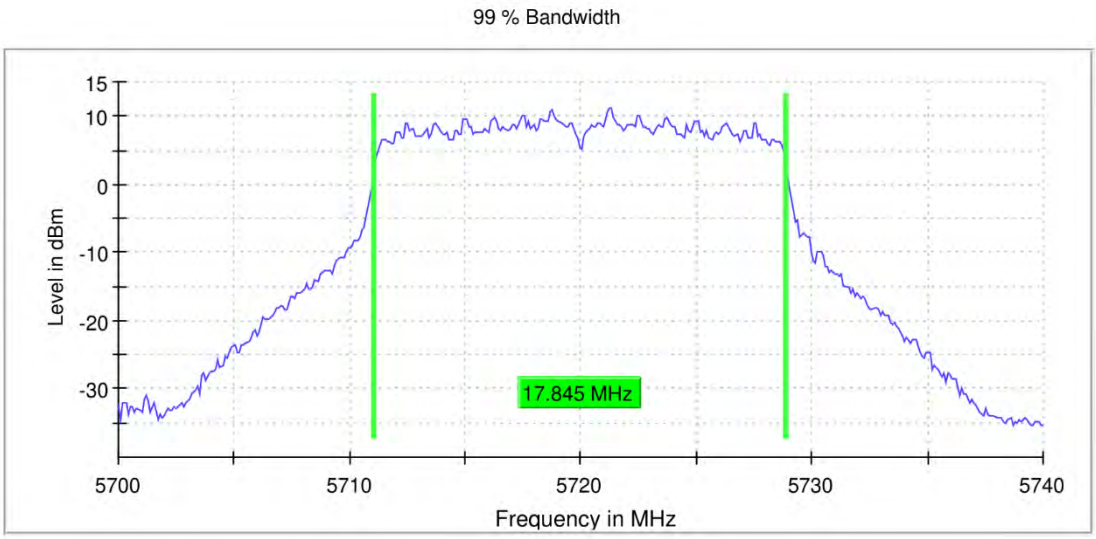
11N20_ANT6_5580



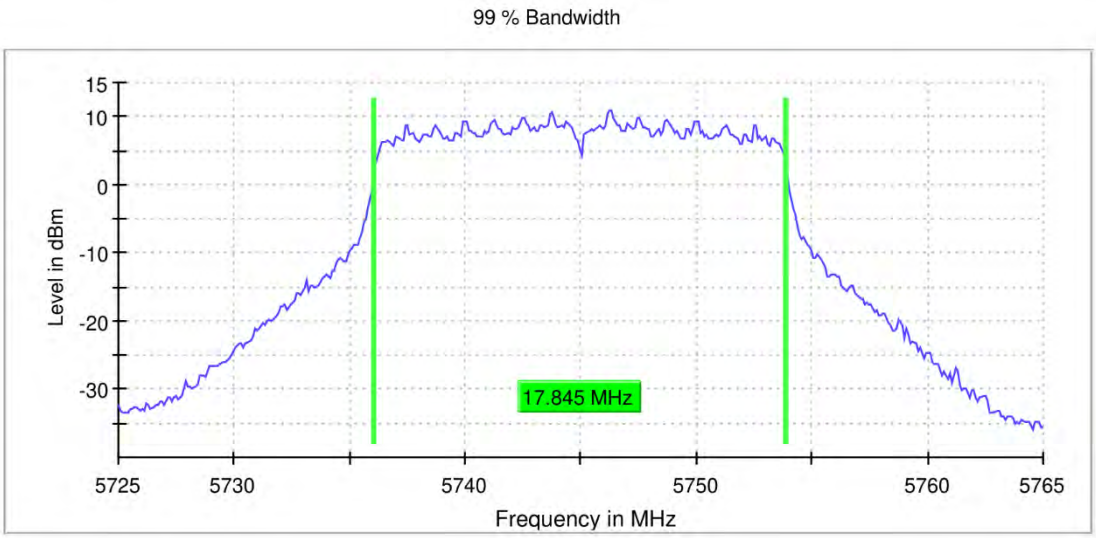
11N20_ANT6_5700



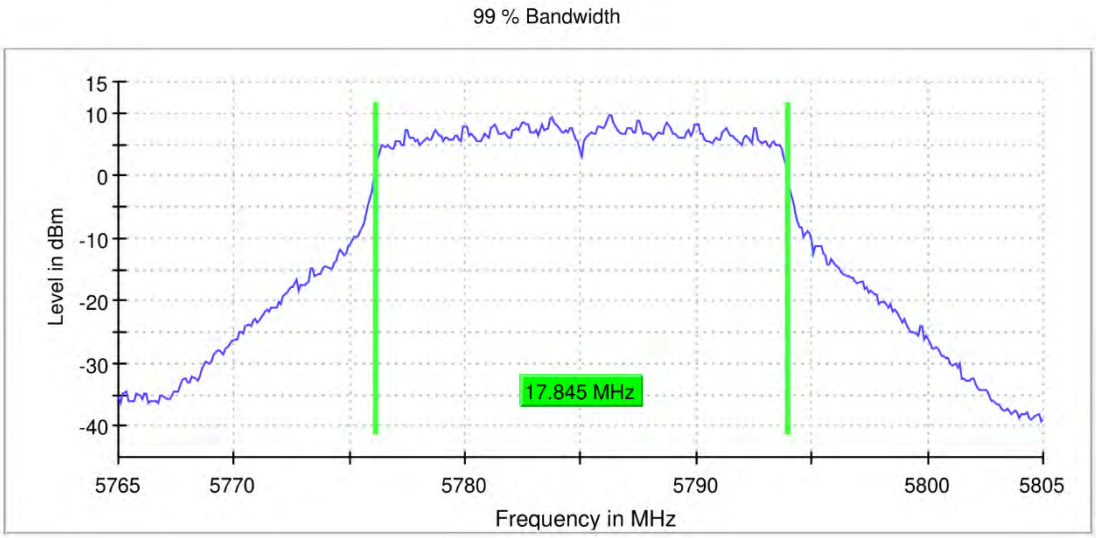
11N20 _ANT6_5720



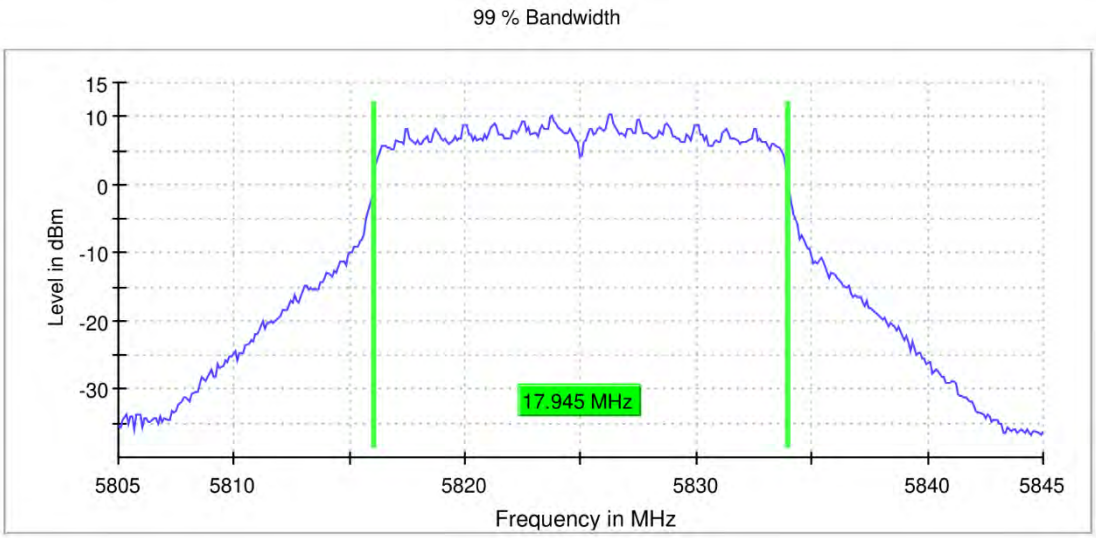
11N20 _ANT6_5745



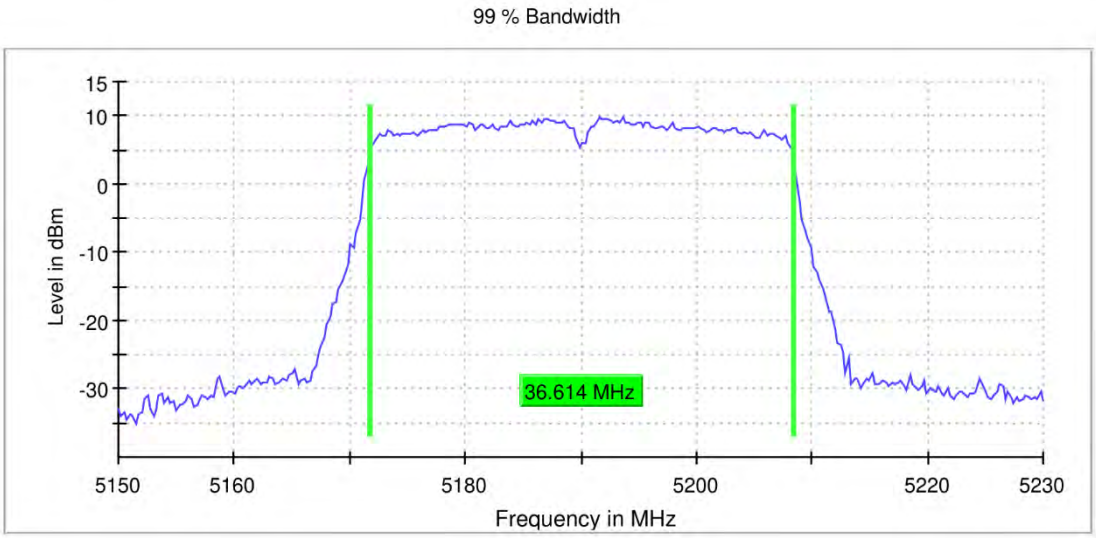
11N20 _ANT6_5785



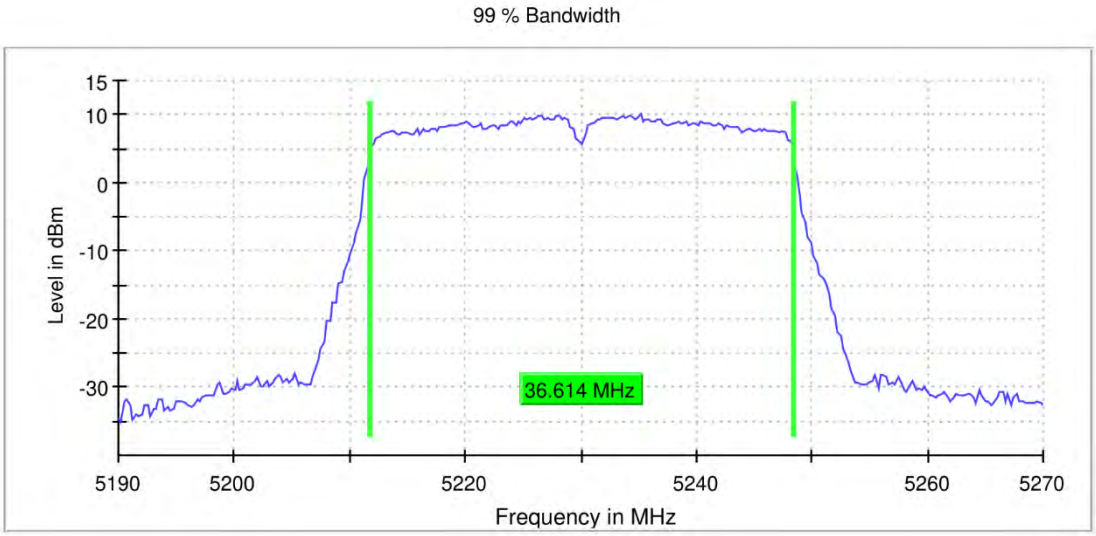
11N20 _ANT6_5825



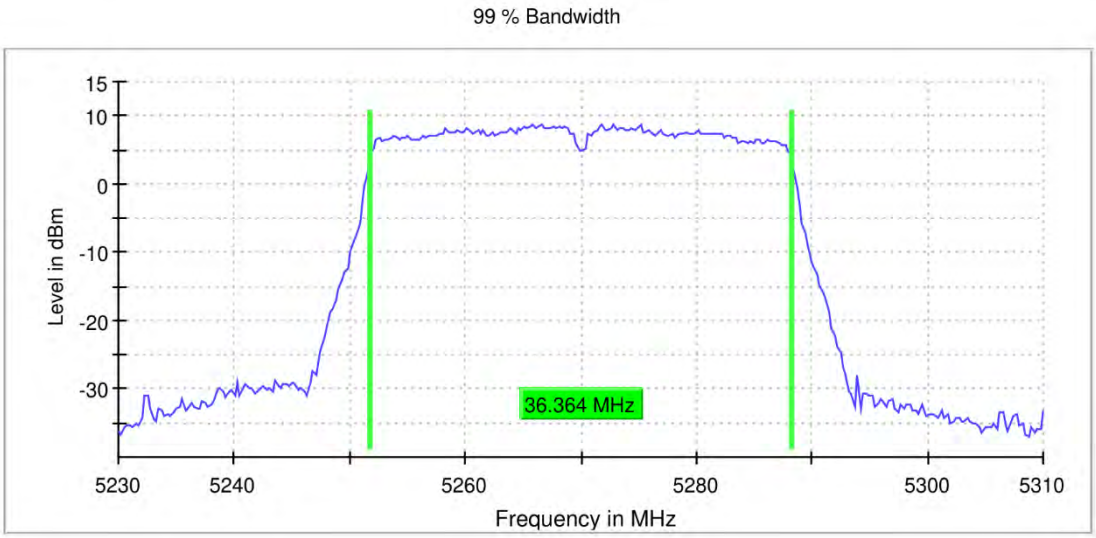
11N40 _ANT6_5190



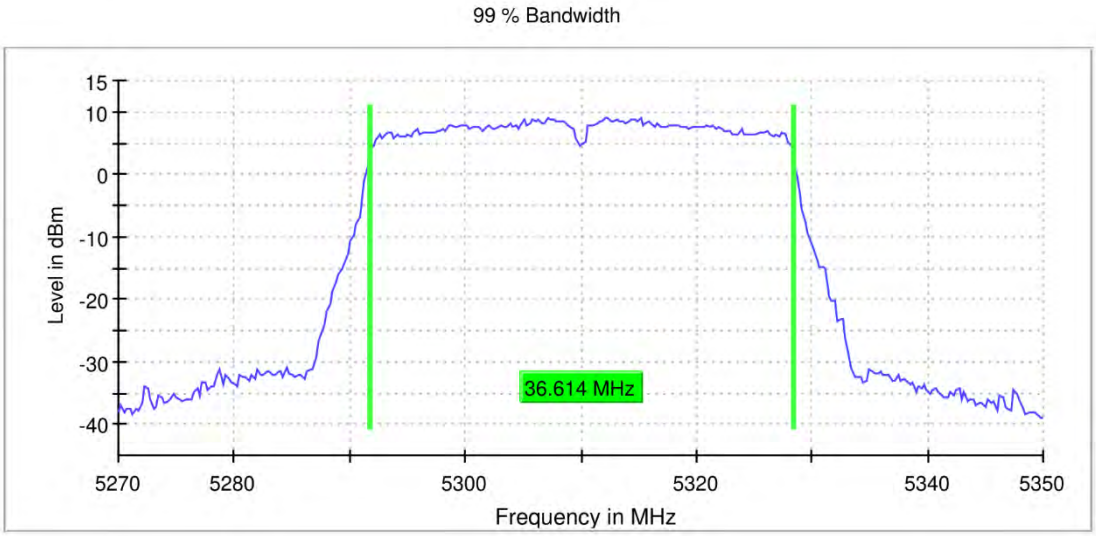
11N40 _ANT6_5230



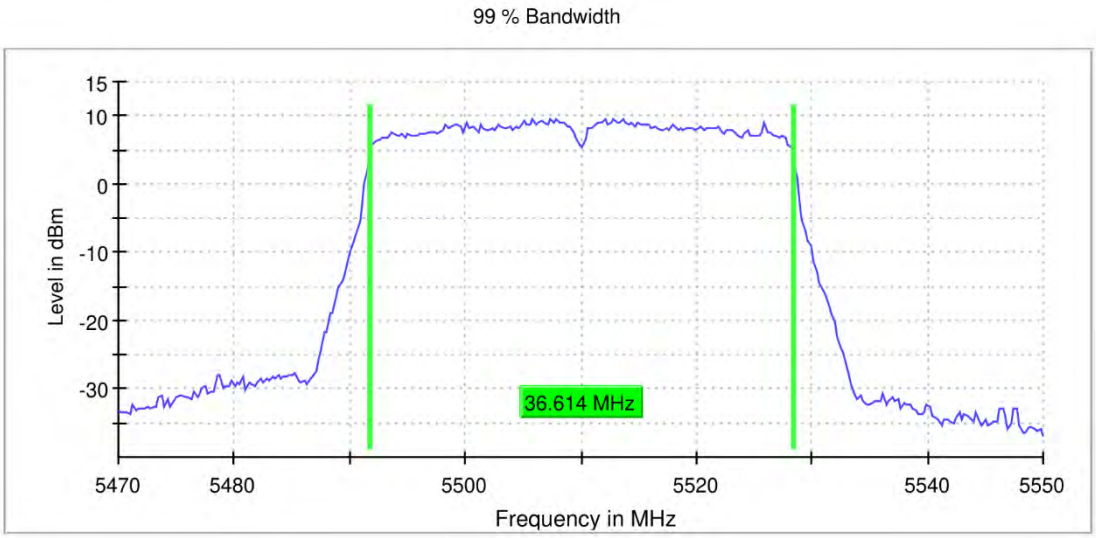
11N40 _ANT6_5270



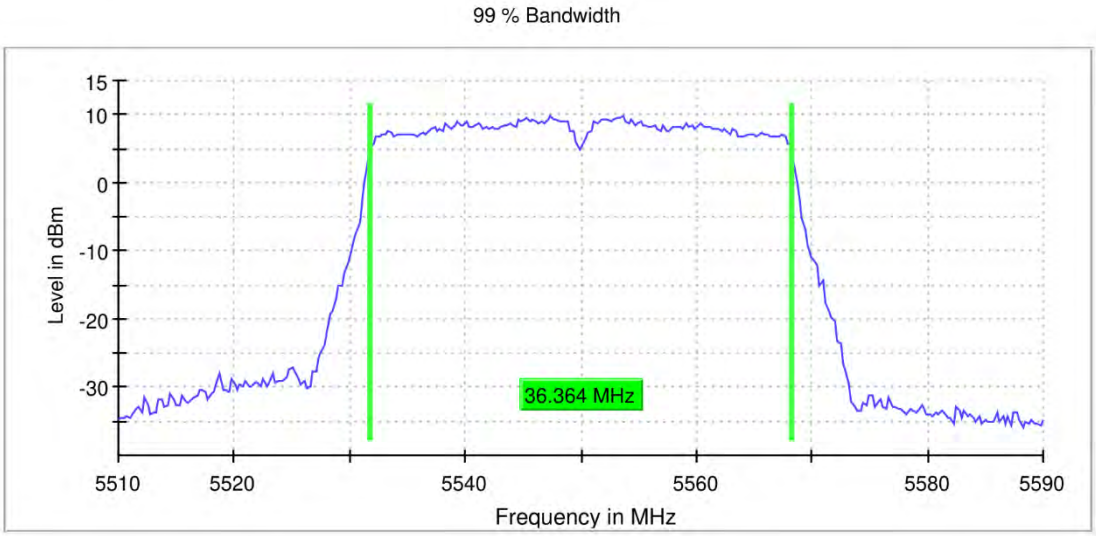
11N40 _ANT6_5310



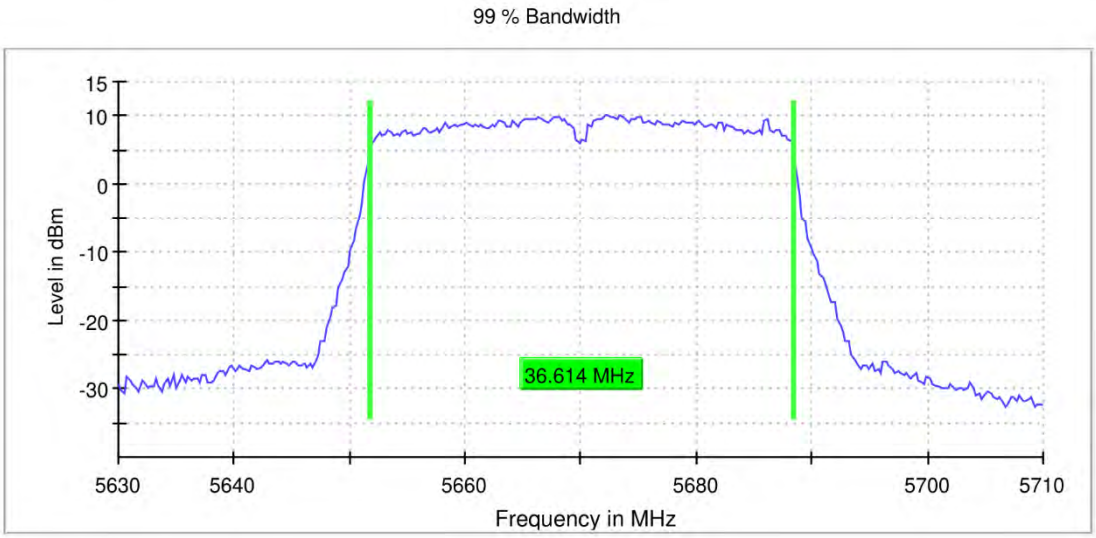
11N40 _ANT6_5510



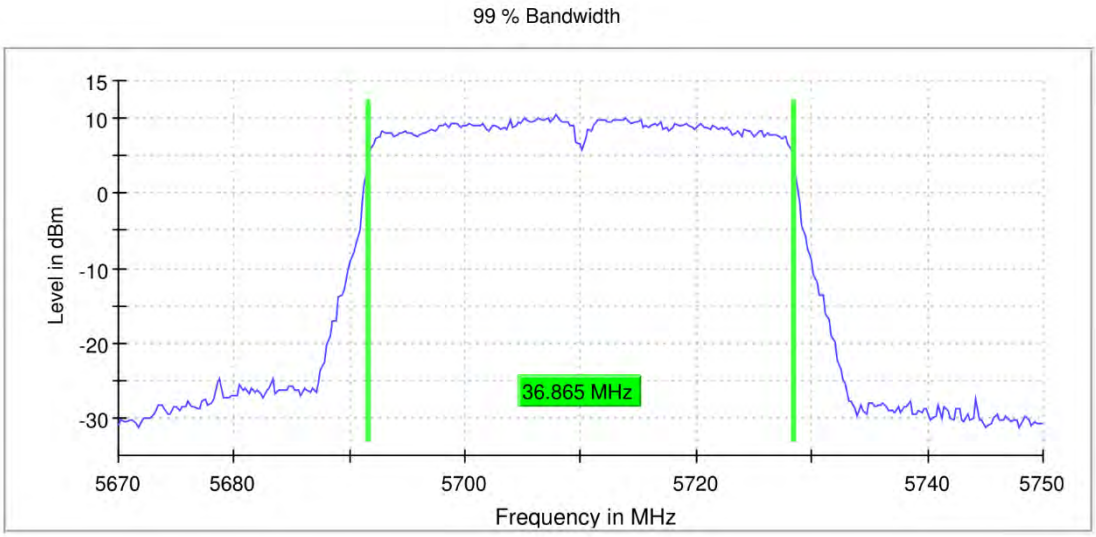
11N40 _ANT6_5550



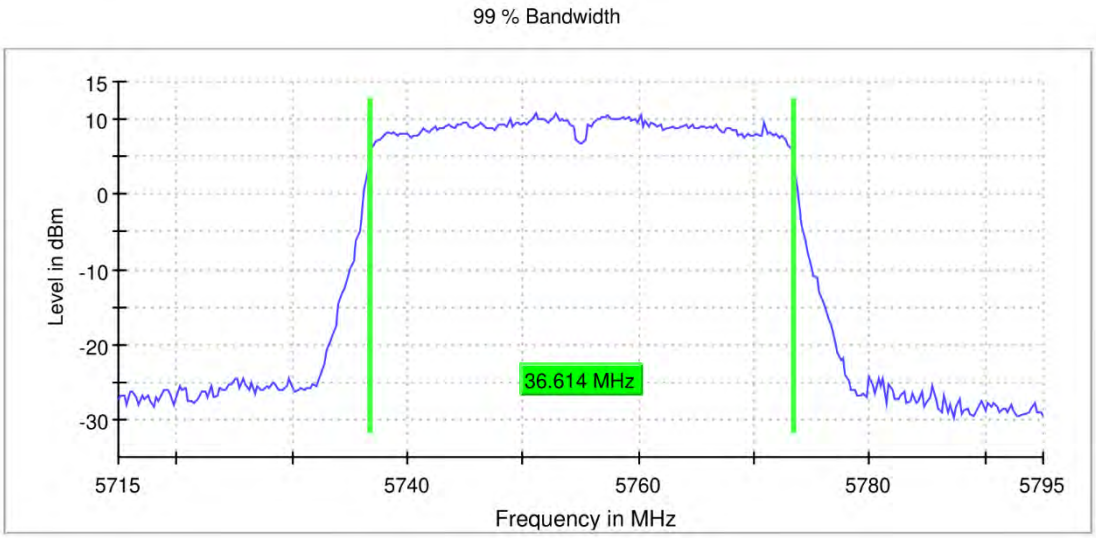
11N40 _ANT6_5670



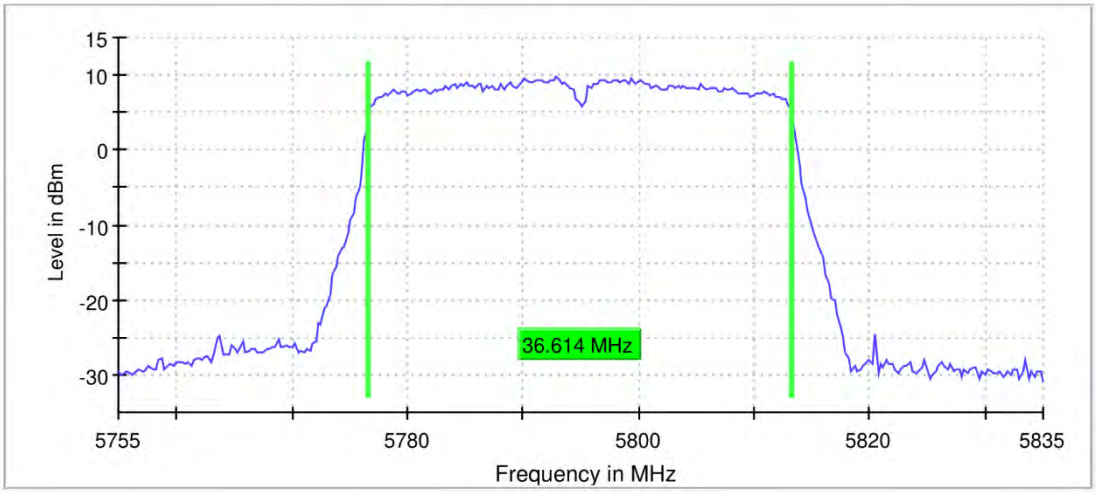
11N40 _ANT6_5710



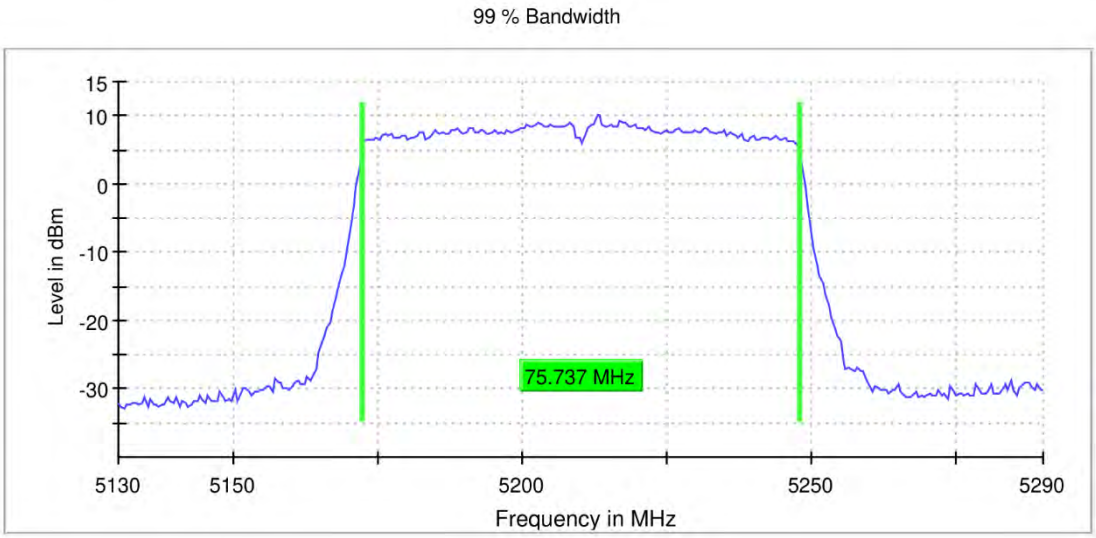
11N40 _ANT6_5755



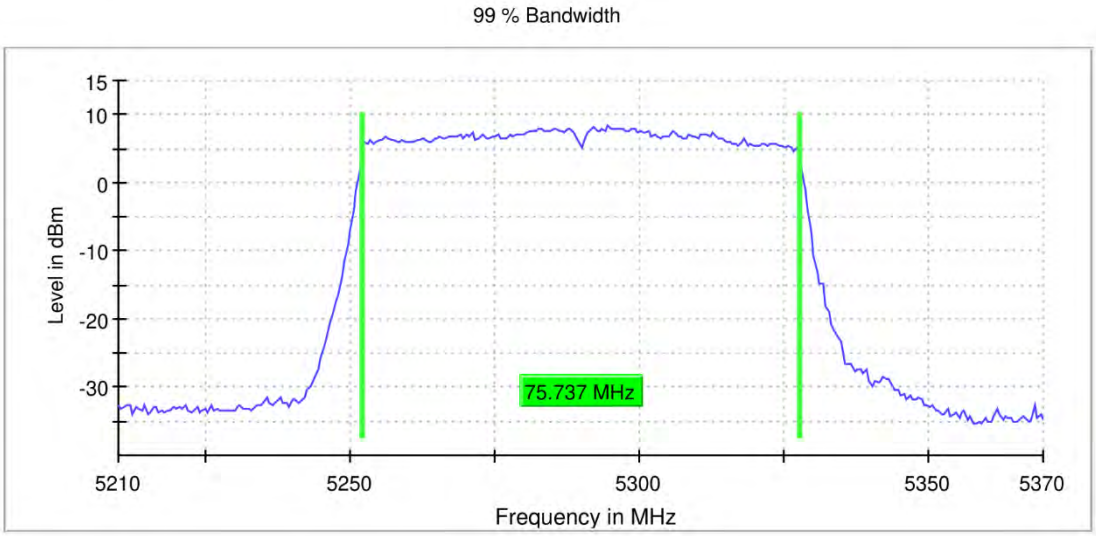
11N40 _ANT6_5795



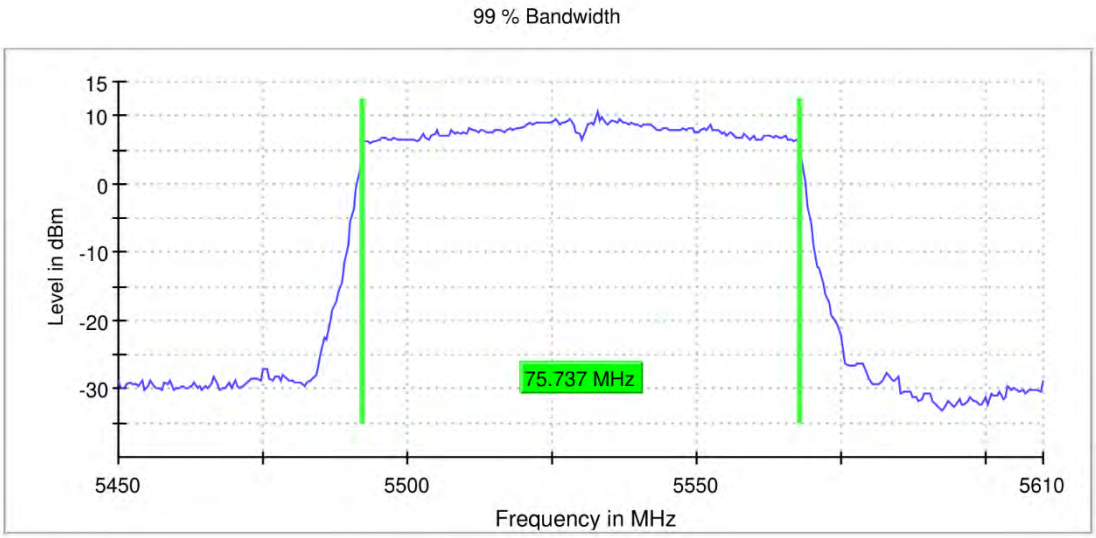
11AC80 _ANT6_5210



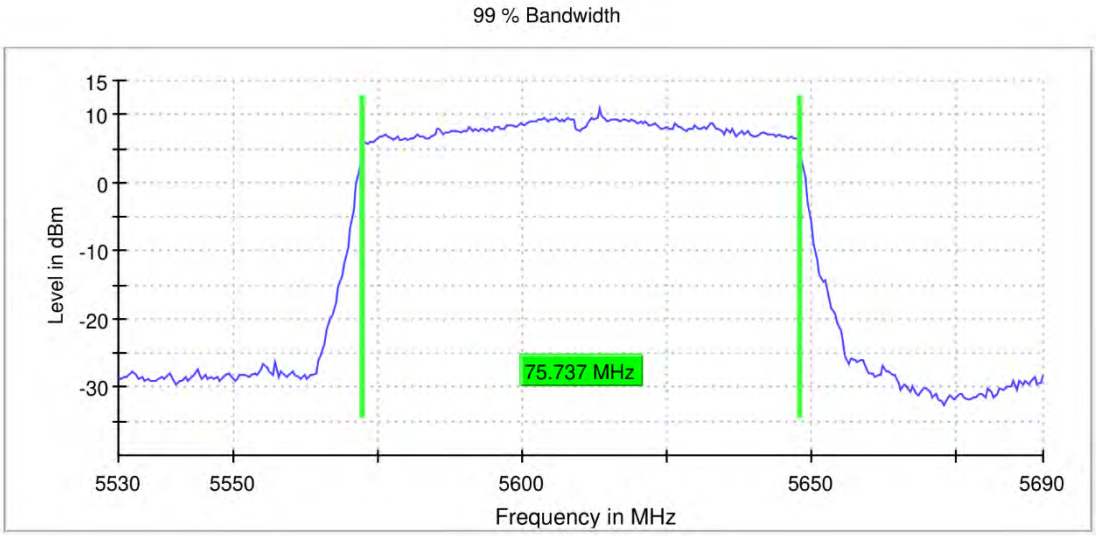
11AC80 _ANT6_5290



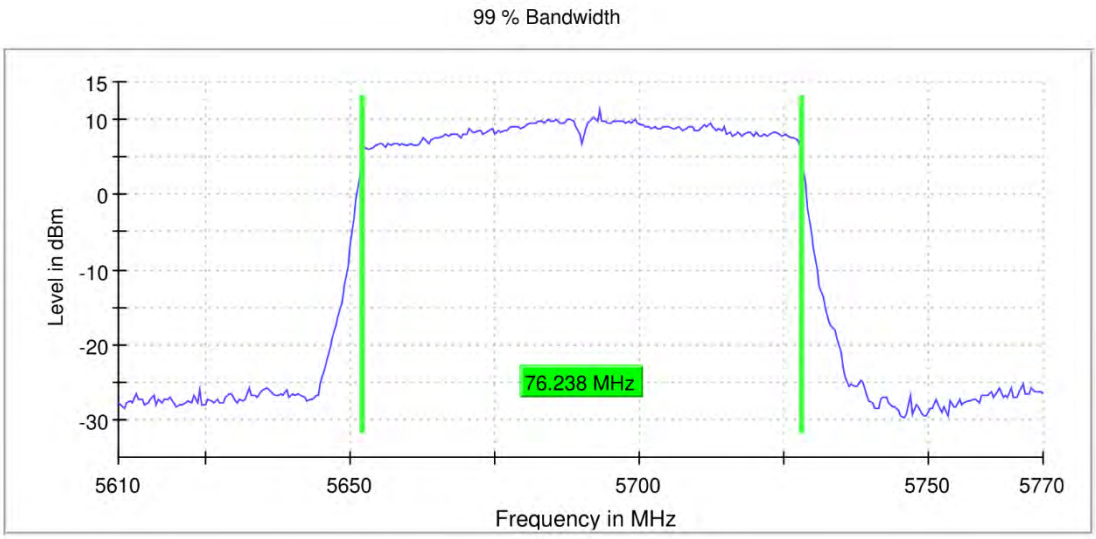
11AC80 _ANT6_5530



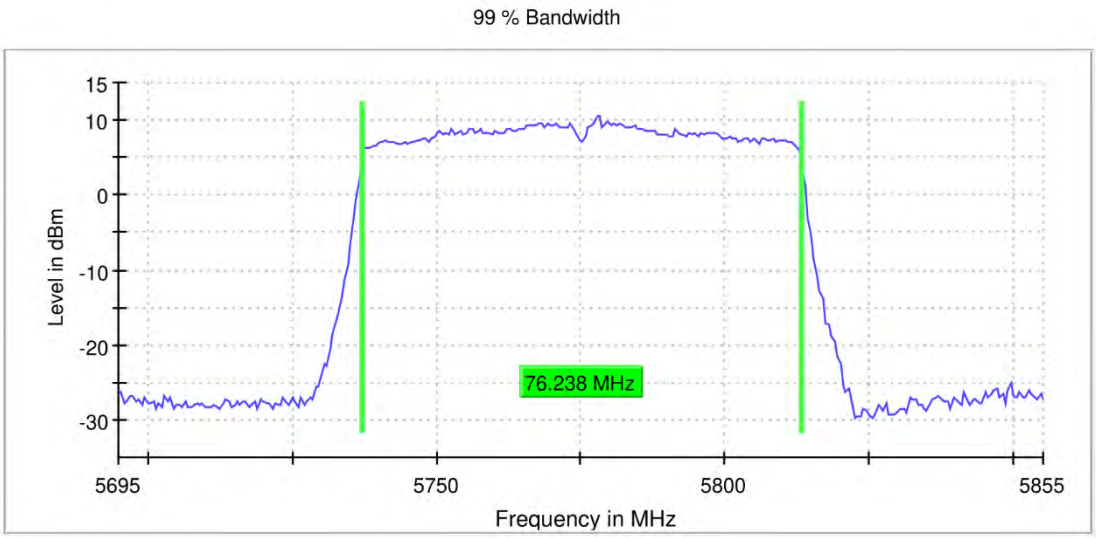
11AC80 _ANT6_5610



11AC80 _ANT6_5690



11AC80 _ANT6_5775



20M

RBW 200.000 kHz

VBW 1.000 MHz

40M

RBW 500.000 kHz

VBW 2.000 MHz

80M

RBW 1.000 MHz

VBW 3.000 MHz

MIN EMISSION BANDWIDTH

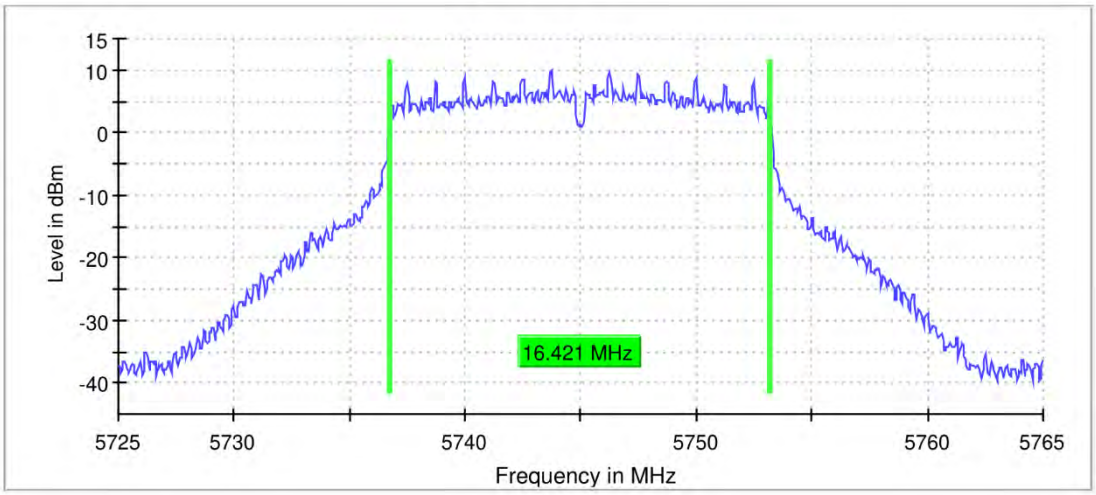
TEST RESULT B4

TestMode	Antenna	Frequency [MHz]	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	ANT6	5745	16.421	5736.765	5753.186	0.5	PASS
	ANT6	5785	16.170	5776.765	5792.935	0.5	PASS
	ANT6	5825	16.220	5816.765	5832.985	0.5	PASS
11N20SISO	ANT6	5745	16.621	5736.514	5753.135	0.5	PASS
	ANT6	5785	16.170	5777.015	5793.185	0.5	PASS
	ANT6	5825	16.671	5816.514	5833.185	0.5	PASS
11N40SISO	ANT6	5755	35.922	5737.064	5772.986	0.5	PASS
	ANT6	5795	36.173	5776.814	5812.987	0.5	PASS
11AC80SISO	ANT6	5775	75.224	5737.413	5812.637	0.5	PASS

TEST GRAPHS B4

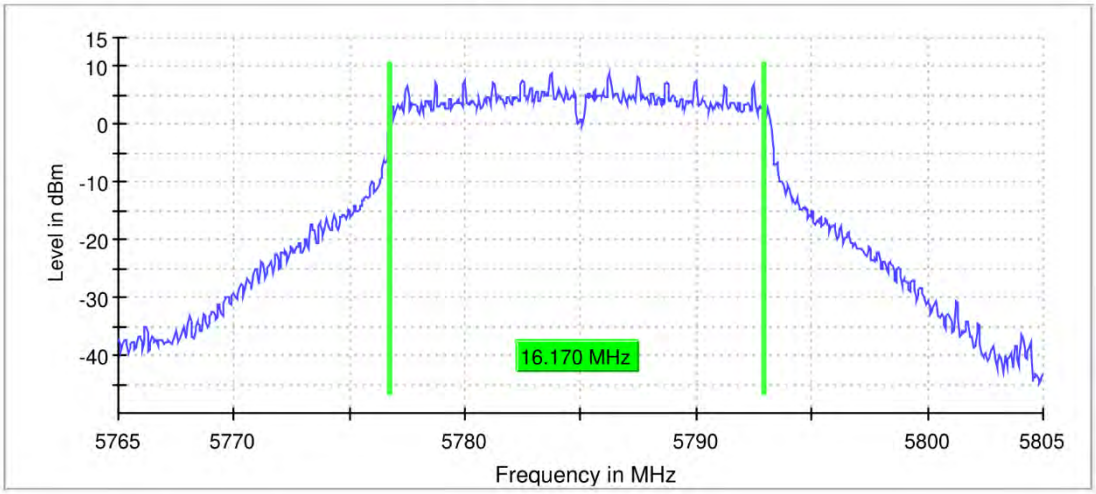
11A _ANT6_5745

6 dB Bandwidth

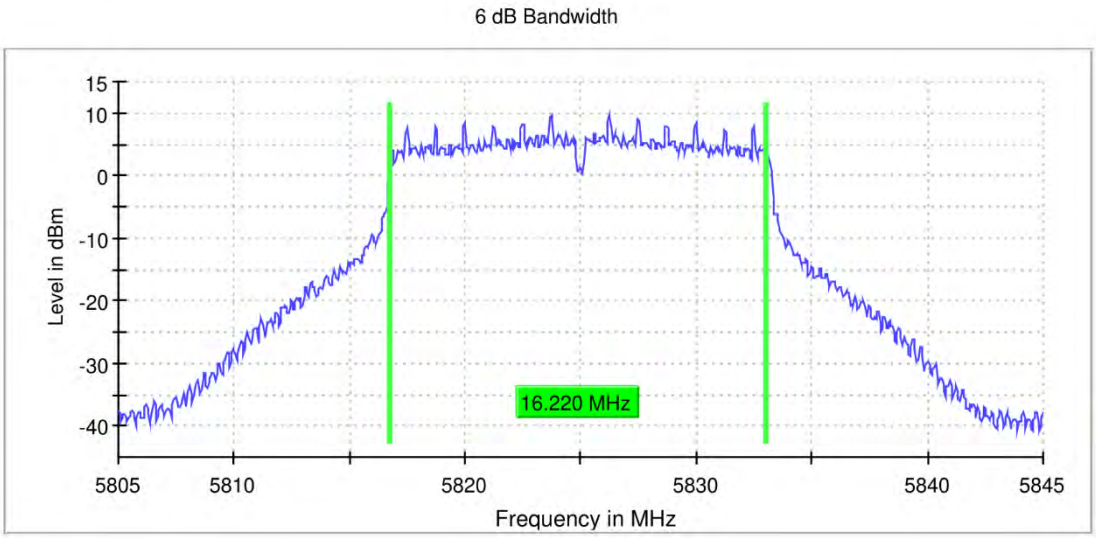


11A _ANT6_5785

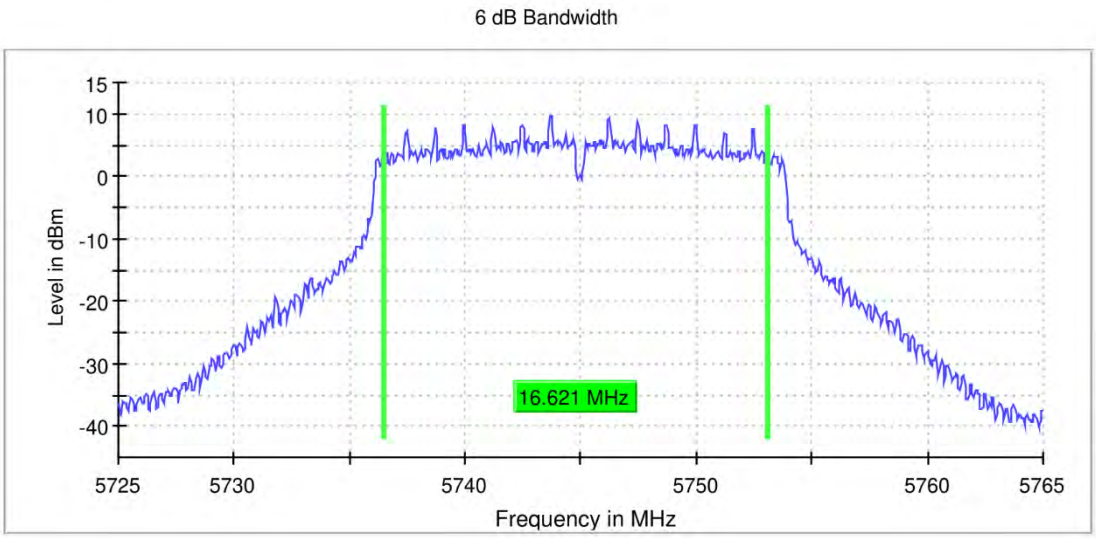
6 dB Bandwidth



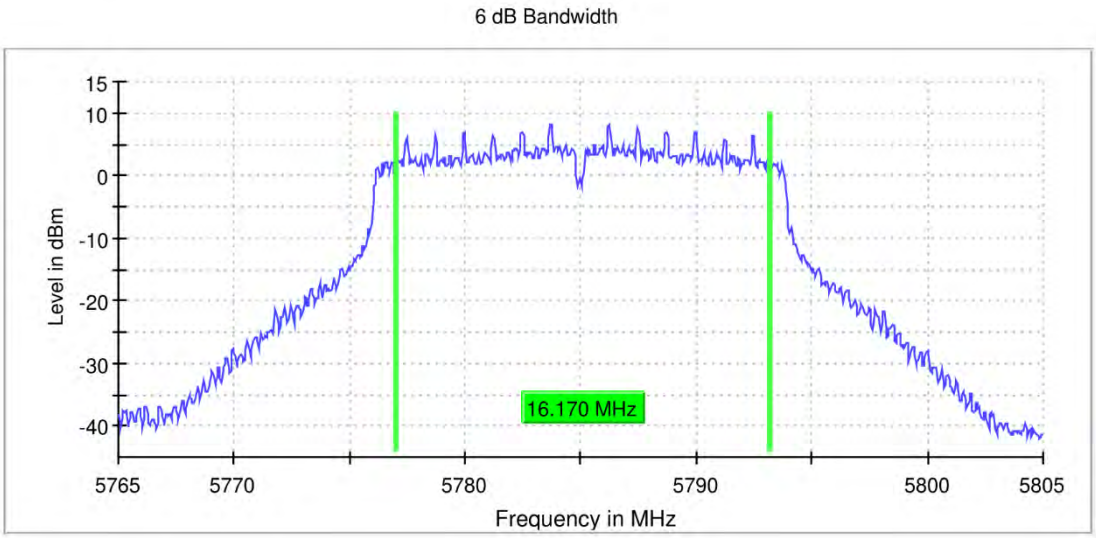
11A _ANT6_5825



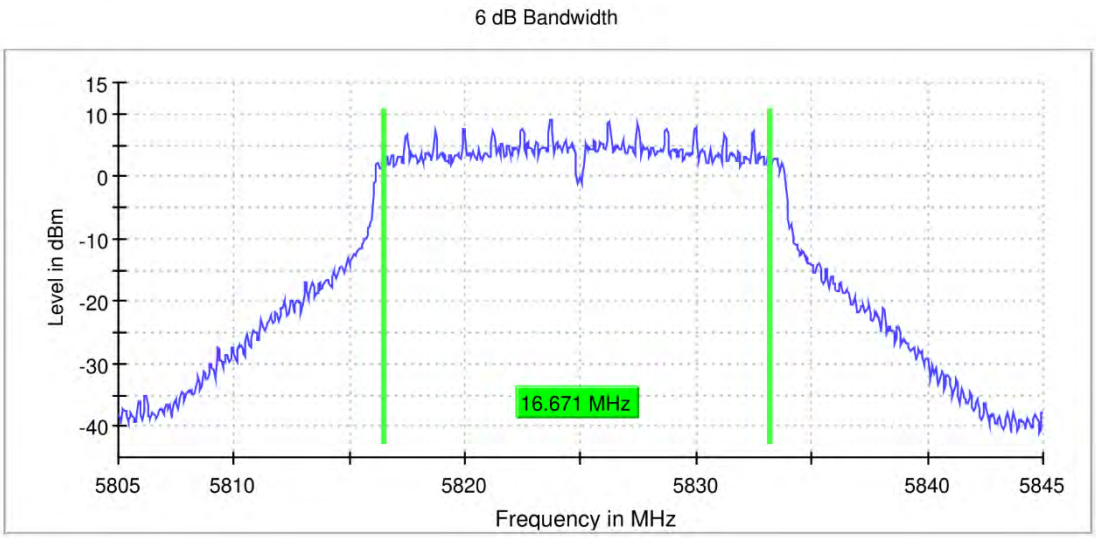
11N20 _ANT6_5745



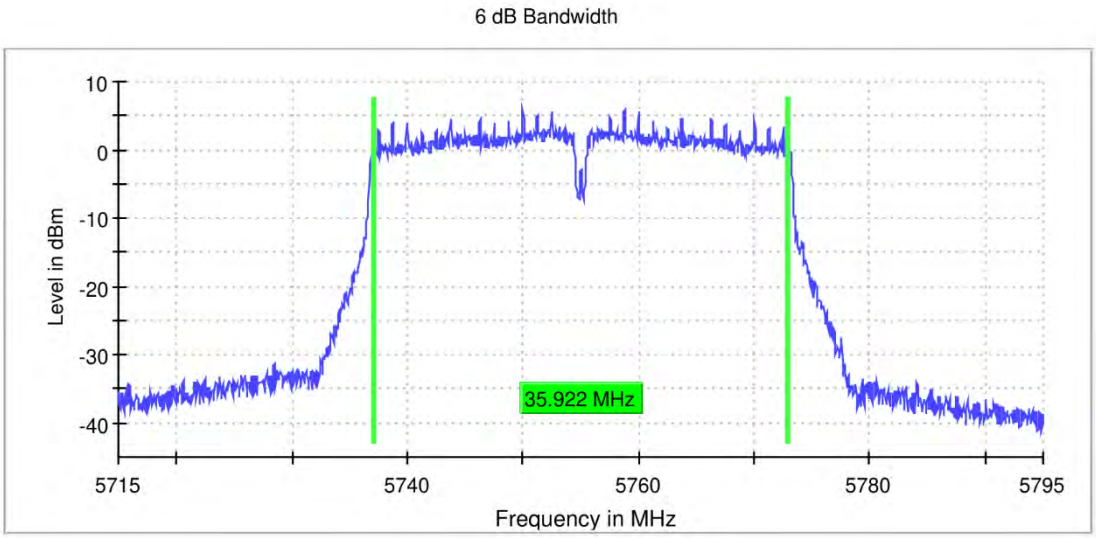
11N20_ANT6_5785



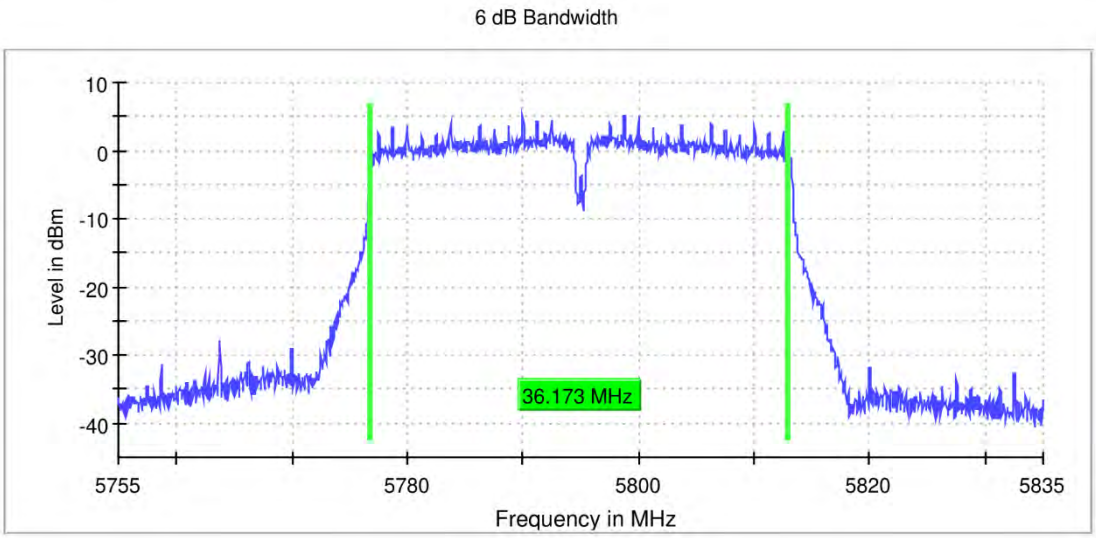
11N20_ANT6_5825



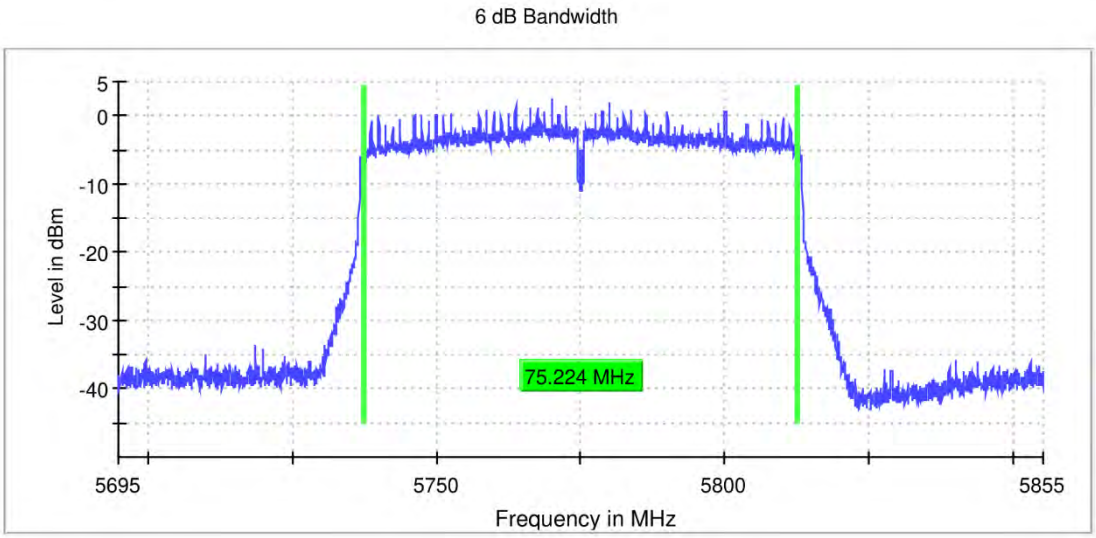
11N40_ANT6_5755



11N40_ANT6_5795



11AC80_ANT6_5775



20M
RBW 100.000 kHz
VBW 300.000 kHz
40M
RBW 100.000 kHz
VBW 300.000 kHz
80M
RBW 100.000 kHz
VBW 300.000 kHz

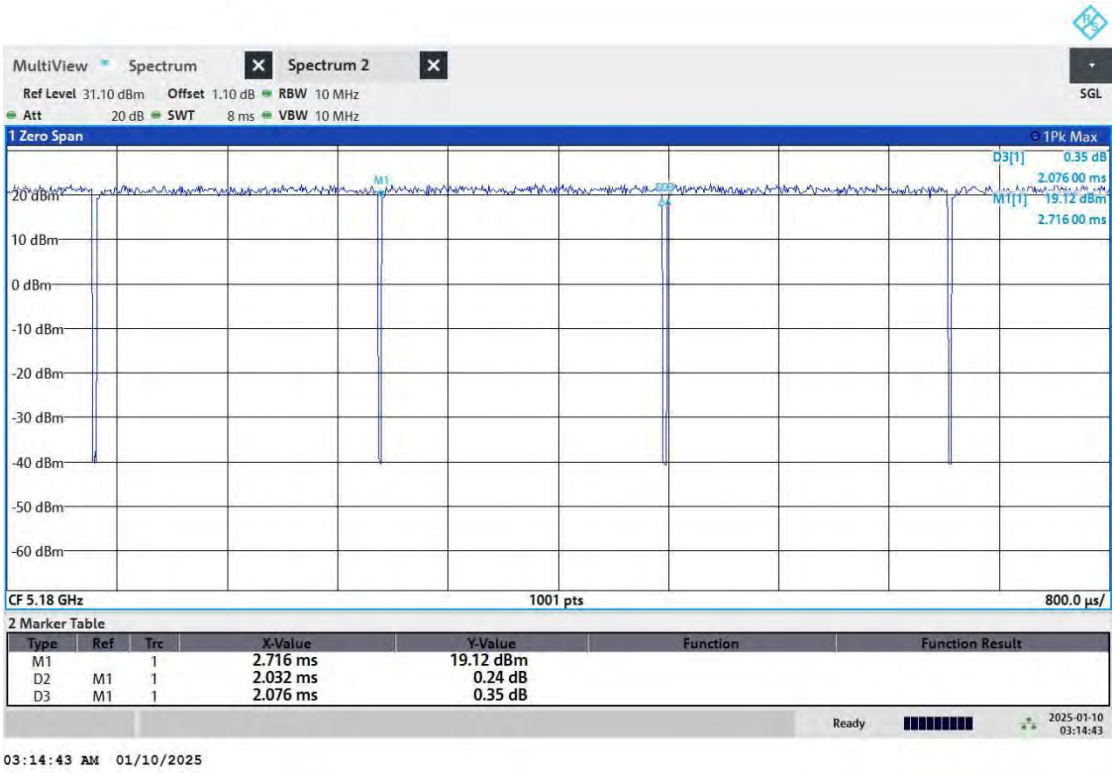
DUTY CYCLE

TEST RESULT

TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	dutycycle factor
11A	ANT6	5180	2.032	2.076	97.88	0.09
	ANT6	5745	2.024	2.068	97.87	0.09
11N20SISO	ANT6	5180	1.888	1.924	98.13	0.08
	ANT6	5745	1.896	1.924	98.54	0.06
11N40SISO	ANT6	5180	1.900	1.936	98.14	0.08
	ANT6	5745	1.900	1.936	98.14	0.1
11AC80SISO	ANT6	5210	0.456	0.492	92.68	0.33
	ANT6	5775	0.456	0.492	92.68	0.33

TEST GRAPHS

11A _ANT6_5180



Band4-11A _ANT6_5745