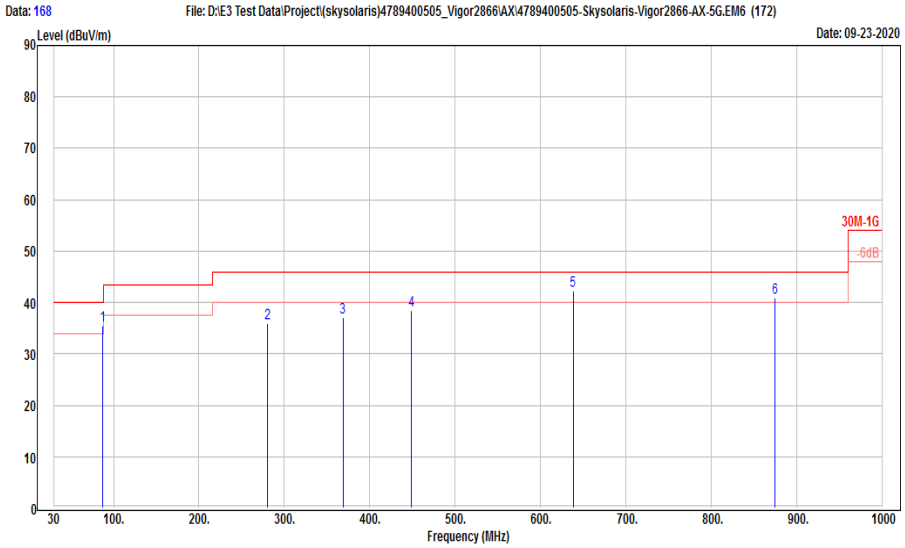
Co-Location Mode

Non-Beamforming mode

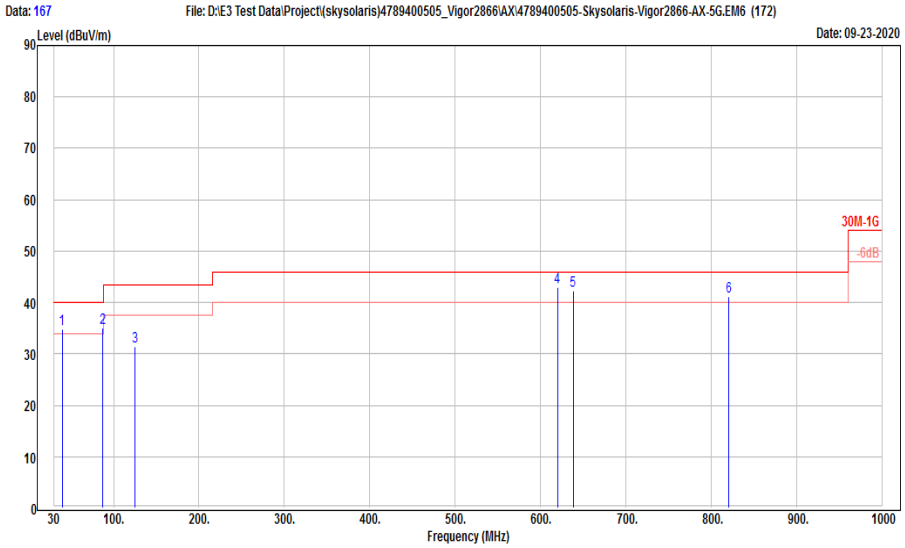
802.11b + 802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 11 + Channel 149	**Frequency Range**	30 MHz ~ 1 GHz

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	**Frequency**	**Reading**	**Correct**	**Result**	**Limit**	**Margin**	**Remark**
	(MHz)	**(dBuV/m)**	**dB/m**	**(dBuV/m)**	**(dBuV/m)**	**(dB)**	
-	87.23	52.99	-17.59	35.4	40	-4.6	Peak
-	280.26	46.31	-10.44	35.87	46	-10.13	Peak
-	368.53	44.94	-7.77	37.17	46	-8.83	Peak
-	449.04	44.23	-5.78	38.45	46	-7.55	Peak
-	638.19	43.52	-1.22	42.3	46	-3.7	Peak
-	874.87	38.32	2.5	40.82	46	-5.18	Peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	**Frequency**	**Reading**	**Correct**	**Result**	**Limit**	**Margin**	**Remark**
	(MHz)	**(dBuV/m)**	**dB/m**	**(dBuV/m)**	**(dBuV/m)**	**(dB)**	
-	39.7	46.79	-11.91	34.88	40	-5.12	Peak
-	87.23	52.75	-17.59	35.16	40	-4.84	Peak
-	125.06	44.97	-13.51	31.46	43.5	-12.04	Peak
-	619.76	44.29	-1.29	43	46	-3	Peak
-	638.19	43.45	-1.22	42.23	46	-3.77	Peak
-	820.55	39.77	1.29	41.06	46	-4.94	Peak

Remarks:

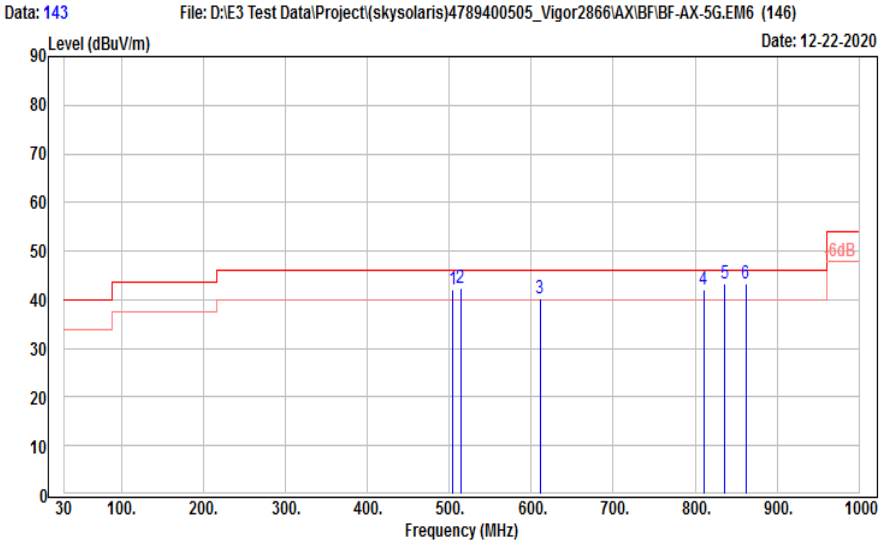
1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. The peak result complies with QP limit, QP result is deemed to comply with QP limit.
5. The other emission levels were very low against the limit.

Beamforming mode

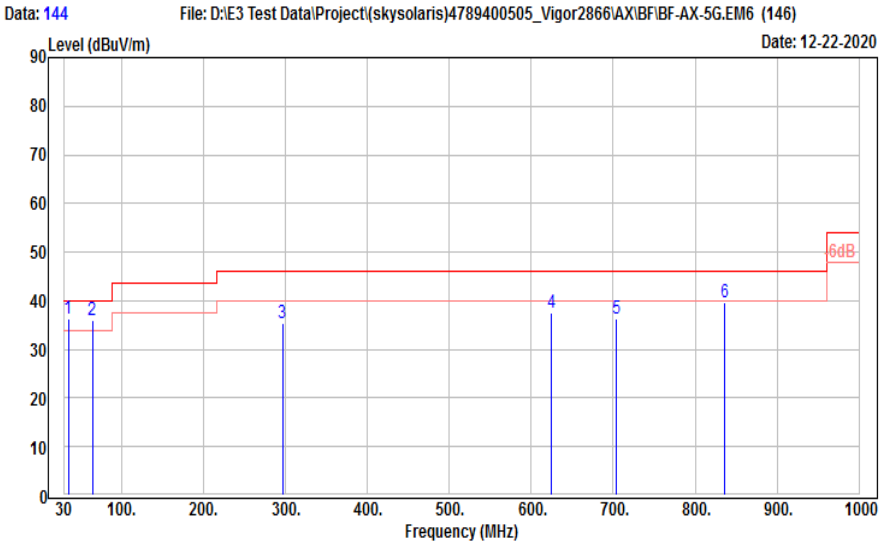
802.11ax (HE20) + 802.11ax (HE20)

EUT Test Condition		Measurement Detail	
Channel	Channel 6 + Channel 165	**Frequency Range**	30 MHz ~ 1 GHz

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	**Frequency**	**Reading**	**Correct**	**Result**	**Limit**	**Margin**	**Remark**
	(MHz)	**(dBuV/m)**	**dB/m**	**(dBuV/m)**	**(dBuV/m)**	**(dB)**	
-	504.33	46.58	-4.47	42.11	46	-3.89	Peak
-	514.03	46.53	-4.12	42.41	46	-3.59	Peak
-	611.03	42.46	-2.05	40.41	46	-5.59	Peak
-	810.85	40.98	1.2	42.18	46	-3.82	Peak
-	836.07	41.57	1.69	43.26	46	-2.74	Peak
-	862.26	41.26	2.08	43.34	46	-2.66	Peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	**Frequency**	**Reading**	**Correct**	**Result**	**Limit**	**Margin**	**Remark**
	(MHz)	**(dBuV/m)**	**dB/m**	**(dBuV/m)**	**(dBuV/m)**	**(dB)**	
-	34.85	48.79	-12.39	36.4	40	-3.6	Peak
-	64.92	48.89	-12.76	36.13	40	-3.87	Peak
-	296.75	45.54	-10.17	35.37	46	-10.63	Peak
-	624.61	38.89	-1.33	37.56	46	-8.44	Peak
-	704.15	36.59	-0.4	36.19	46	-9.81	Peak
-	836.07	38.06	1.69	39.75	46	-6.25	Peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. The peak result complies with QP limit, QP result is deemed to comply with QP limit.
5. The other emission levels were very low against the limit.

9.6. AC Power Line Conducted Emission

Requirements

Frequency (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

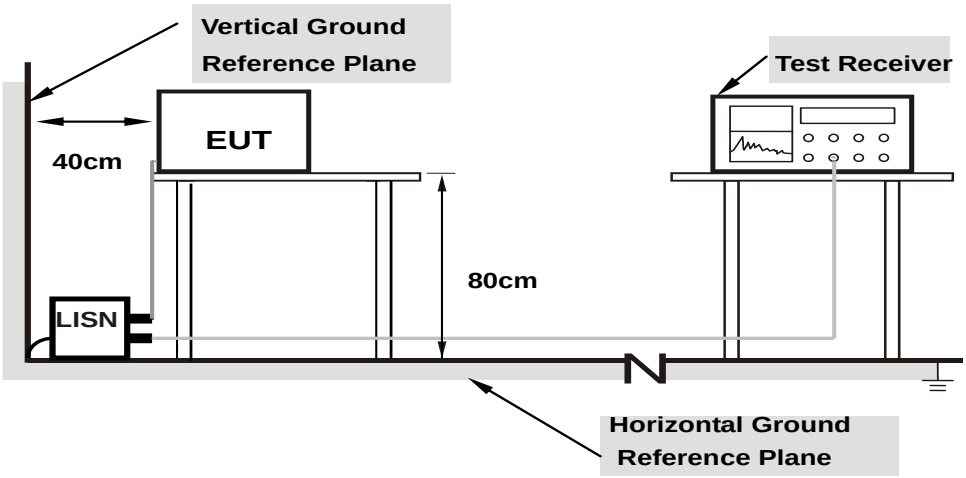
Note:
1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

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:
1. The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

Test Setup



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the Setup Configurations.

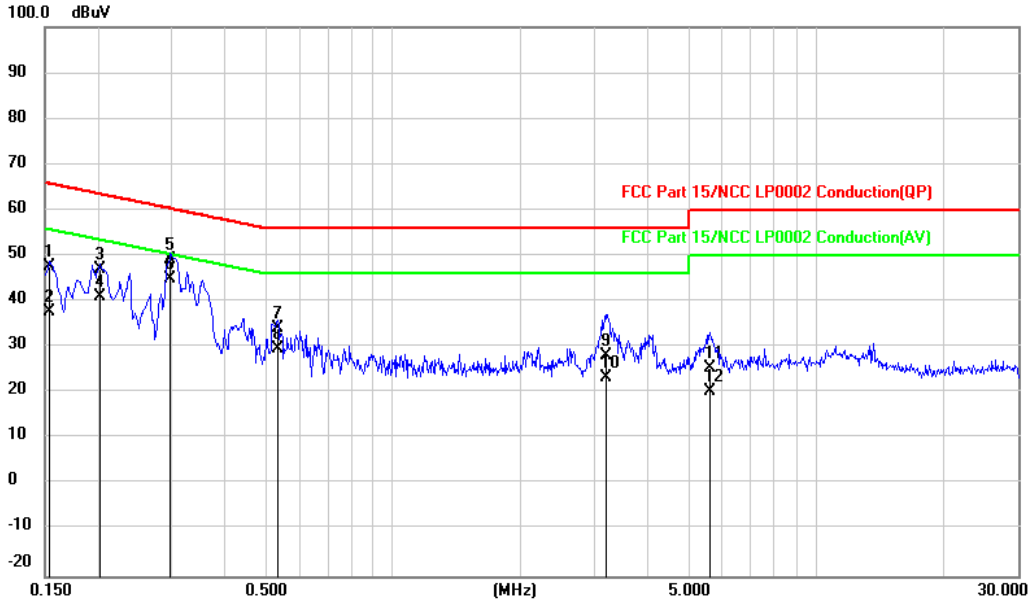
Test Data

Non-Beamforming Mode

802.11b

EUT Test Condition		Measurement Detail	
Channel	Channel 11	**Frequency Range**	150 kHz ~ 30 MHz

Phase of Power：Line (L)

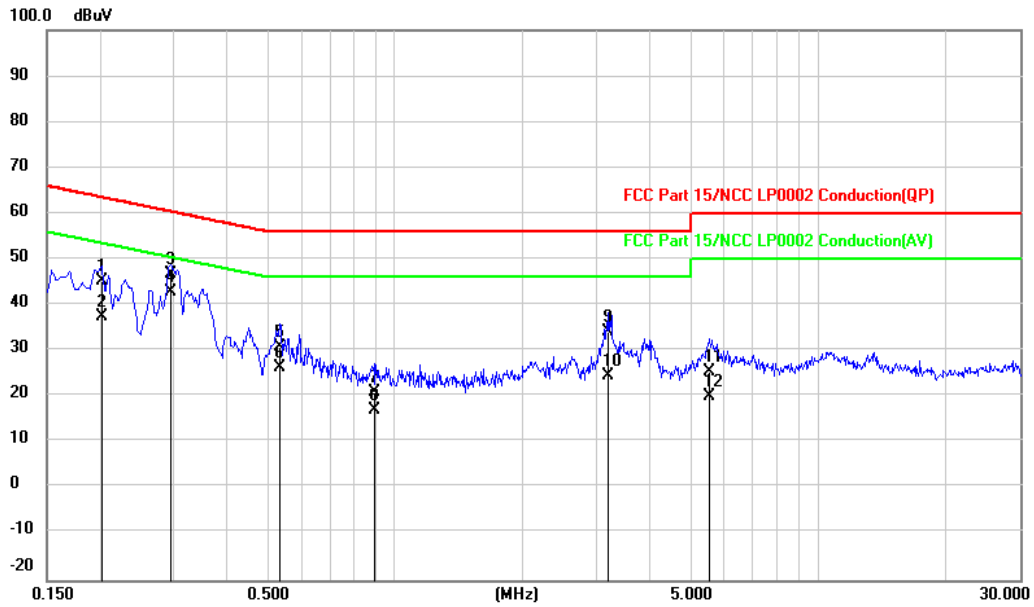


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	
1	0.1539	28.15	19.54	47.69	65.79	-18.10	QP
2	0.1539	18.35	19.54	37.89	55.79	-17.90	AVG
3	0.2020	27.62	19.53	47.15	63.53	-16.38	QP
4	0.2020	21.59	19.53	41.12	53.53	-12.41	AVG
5	0.2980	29.52	19.52	49.04	60.30	-11.26	QP
6	0.2980	25.49	19.52	45.01	50.30	-5.29	AVG
7	0.5340	14.55	19.52	34.07	56.00	-21.93	QP
8	0.5340	9.99	19.52	29.51	46.00	-16.49	AVG
9	3.1740	8.55	19.57	28.12	56.00	-27.88	QP
10	3.1740	3.69	19.57	23.26	46.00	-22.74	AVG
11	5.6140	5.94	19.60	25.54	60.00	-34.46	QP
12	5.6140	0.63	19.60	20.23	50.00	-29.77	AVG

Remarks:

1. Result value (dBuV) = Reading value (dBuV) + Correction Factor (dB)
2. Margin(dB) = Result value (dBuV) - Limit value (dBuV)
3. Correction Factor(dB) = Insertion loss(dB) + Cable loss(dB)
4. The other emission levels were very low against the limit.

Phase of Power：Neutral (N)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	
1	0.2020	25.83	19.53	45.36	63.53	-18.17	QP
2	0.2020	18.03	19.53	37.56	53.53	-15.97	AVG
3	0.2940	27.34	19.53	46.87	60.41	-13.54	QP
4	0.2940	23.28	19.53	42.81	50.41	-7.60	AVG
5	0.5340	11.41	19.52	30.93	56.00	-25.07	QP
6	0.5340	6.80	19.52	26.32	46.00	-19.68	AVG
7	0.8900	1.41	19.53	20.94	56.00	-35.06	QP
8	0.8900	-2.56	19.53	16.97	46.00	-29.03	AVG
9	3.2060	14.74	19.56	34.30	56.00	-21.70	QP
10	3.2060	4.98	19.56	24.54	46.00	-21.46	AVG
11	5.5340	5.80	19.60	25.40	60.00	-34.60	QP
12	5.5340	0.55	19.60	20.15	50.00	-29.85	AVG

Remarks:

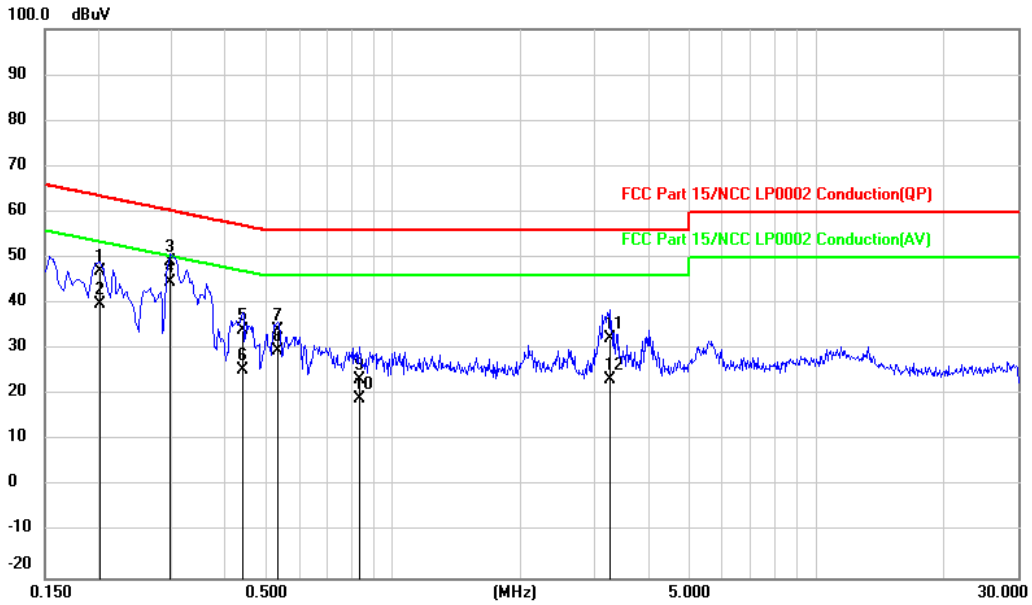
1. Result value (dBuV) = Reading value (dBuV) + Correction Factor (dB)
2. Margin(dB) = Result value (dBuV) - Limit value (dBuV)
3. Correction Factor(dB) = Insertion loss(dB) + Cable loss(dB)
4. The other emission levels were very low against the limit.

Beamforming mode

802.11ax (HE20)

EUT Test Condition		Measurement Detail	
Channel	Channel 6	**Frequency Range**	150 kHz ~ 30 MHz

Phase of Power：Line (L)

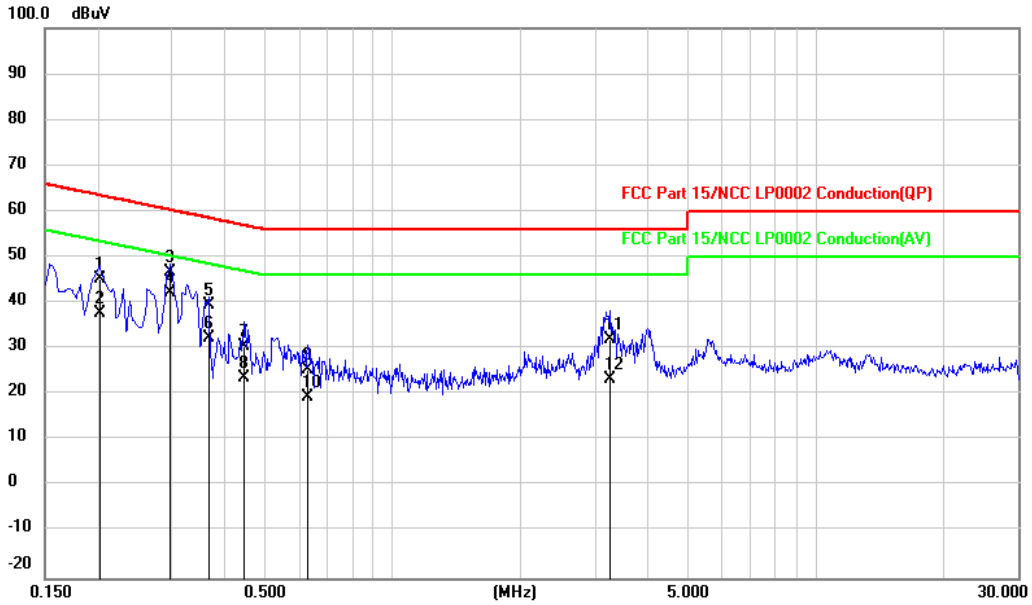


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	
1	0.2020	27.57	19.53	47.10	63.53	-16.43	QP
2	0.2020	20.47	19.53	40.00	53.53	-13.53	AVG
3	0.2980	29.58	19.52	49.10	60.30	-11.20	QP
4	0.2980	25.12	19.52	44.64	50.30	-5.66	AVG
5	0.4420	14.70	19.51	34.21	57.02	-22.81	QP
6	0.4420	5.89	19.51	25.40	47.02	-21.62	AVG
7	0.5340	14.55	19.52	34.07	56.00	-21.93	QP
8	0.5340	10.04	19.52	29.56	46.00	-16.44	AVG
9	0.8340	3.96	19.54	23.50	56.00	-32.50	QP
10	0.8340	-0.40	19.54	19.14	46.00	-26.86	AVG
11	3.2500	12.88	19.57	32.45	56.00	-23.55	QP
12	3.2500	3.80	19.57	23.37	46.00	-22.63	AVG

Remarks:

1. Result value (dBuV) = Reading value (dBuV) + Correction Factor (dB)
2. Margin(dB) = Result value (dBuV) - Limit value (dBuV)
3. Correction Factor(dB) = Insertion loss(dB) + Cable loss(dB)
4. The other emission levels were very low against the limit.

Phase of Power：Neutral (N)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	
1	0.2020	25.80	19.53	45.33	63.53	-18.20	QP
2	0.2020	18.23	19.53	37.76	53.53	-15.77	AVG
3	0.2980	27.26	19.53	46.79	60.30	-13.51	QP
4	0.2980	22.62	19.53	42.15	50.30	-8.15	AVG
5	0.3660	20.09	19.51	39.60	58.59	-18.99	QP
6	0.3660	12.72	19.51	32.23	48.59	-16.36	AVG
7	0.4460	10.98	19.51	30.49	56.95	-26.46	QP
8	0.4460	4.01	19.51	23.52	46.95	-23.43	AVG
9	0.6300	5.88	19.52	25.40	56.00	-30.60	QP
10	0.6300	-0.15	19.52	19.37	46.00	-26.63	AVG
11	3.2700	12.47	19.56	32.03	56.00	-23.97	QP
12	3.2700	3.81	19.56	23.37	46.00	-22.63	AVG

Remarks:

1. Result value (dBuV) = Reading value (dBuV) + Correction Factor (dB)
2. Margin(dB) = Result value (dBuV) - Limit value (dBuV)
3. Correction Factor(dB) = Insertion loss(dB) + Cable loss(dB)
4. The other emission levels were very low against the limit.

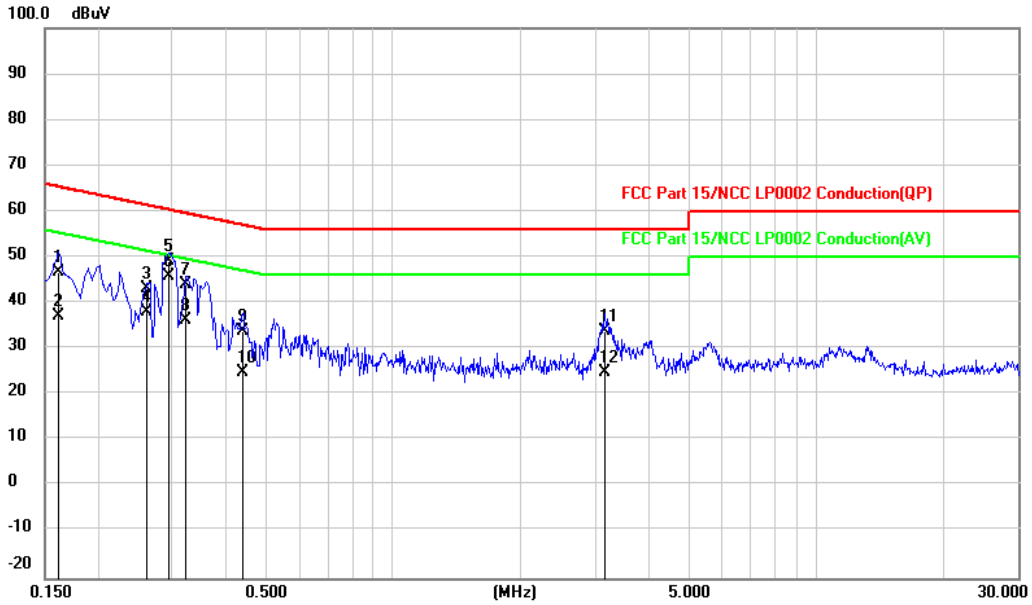
Co-Location Mode

Non-Beamforming mode

802.11b + 802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 11 + Channel 149	**Frequency Range**	150 kHz ~ 30 MHz

Phase of Power：Line (L)

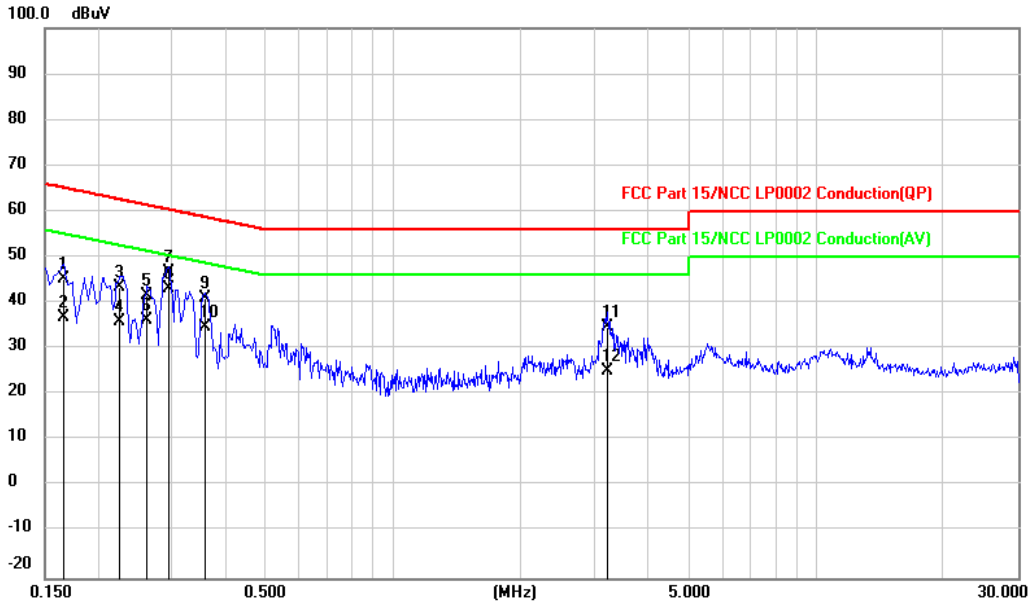


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	
1	0.1620	27.22	19.54	46.76	65.36	-18.60	QP
2	0.1620	17.75	19.54	37.29	55.36	-18.07	AVG
3	0.2620	23.61	19.53	43.14	61.37	-18.23	QP
4	0.2620	18.56	19.53	38.09	51.37	-13.28	AVG
5	0.2940	29.76	19.53	49.29	60.41	-11.12	QP
6	0.2940	26.38	19.53	45.91	50.41	-4.50	AVG
7	0.3220	24.42	19.51	43.93	59.66	-15.73	QP
8	0.3220	16.79	19.51	36.30	49.66	-13.36	AVG
9	0.4420	14.42	19.51	33.93	57.02	-23.09	QP
10	0.4420	5.49	19.51	25.00	47.02	-22.02	AVG
11	3.1660	14.27	19.57	33.84	56.00	-22.16	QP
12	3.1660	5.19	19.57	24.76	46.00	-21.24	AVG

Remarks:

1. Result value (dBuV) = Reading value (dBuV) + Correction Factor (dB)
2. Margin(dB) = Result value (dBuV) - Limit value (dBuV)
3. Correction Factor(dB) = Insertion loss(dB) + Cable loss(dB)
4. The other emission levels were very low against the limit.

Phase of Power：Neutral (N)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	
1	0.1660	25.68	19.54	45.22	65.16	-19.94	QP
2	0.1660	17.31	19.54	36.85	55.16	-18.31	AVG
3	0.2260	23.82	19.53	43.35	62.60	-19.25	QP
4	0.2260	16.39	19.53	35.92	52.60	-16.68	AVG
5	0.2620	22.09	19.53	41.62	61.37	-19.75	QP
6	0.2620	16.63	19.53	36.16	51.37	-15.21	AVG
7	0.2940	27.21	19.53	46.74	60.41	-13.67	QP
8	0.2940	23.49	19.53	43.02	50.41	-7.39	AVG
9	0.3580	21.53	19.51	41.04	58.77	-17.73	QP
10	0.3580	15.27	19.51	34.78	48.77	-13.99	AVG
11	3.2100	15.14	19.56	34.70	56.00	-21.30	QP
12	3.2100	5.71	19.56	25.27	46.00	-20.73	AVG

Remarks:

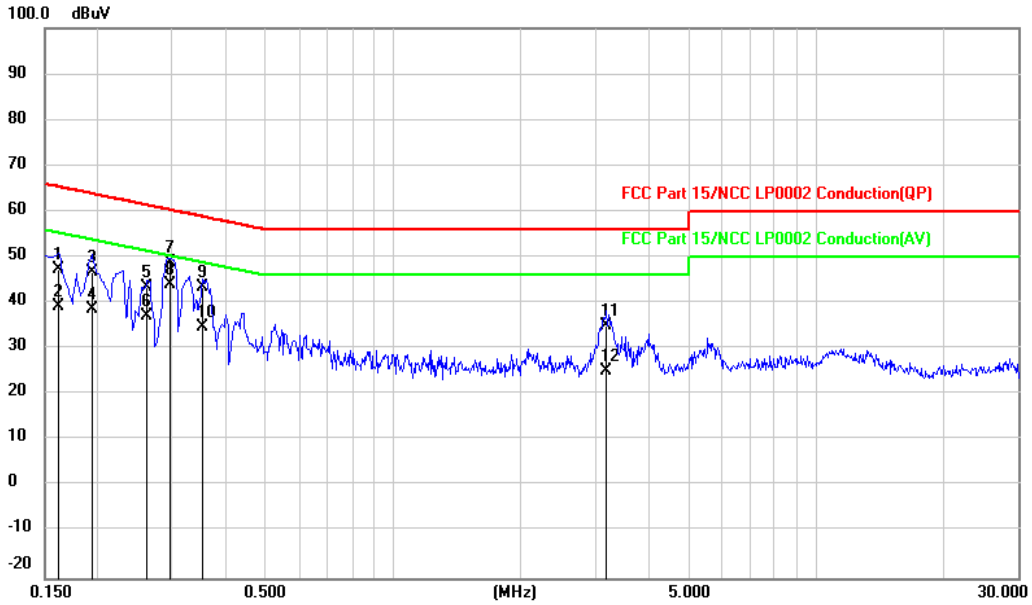
1. Result value (dBuV) = Reading value (dBuV) + Correction Factor (dB)
2. Margin(dB) = Result value (dBuV) - Limit value (dBuV)
3. Correction Factor(dB) = Insertion loss(dB) + Cable loss(dB)
4. The other emission levels were very low against the limit.

Beamforming mode

802.11ax (HE20) + 802.11ax (HE20)

EUT Test Condition		Measurement Detail	
Channel	Channel 6 + Channel 165	**Frequency Range**	150 kHz ~ 30 MHz

Phase of Power：Line (L)

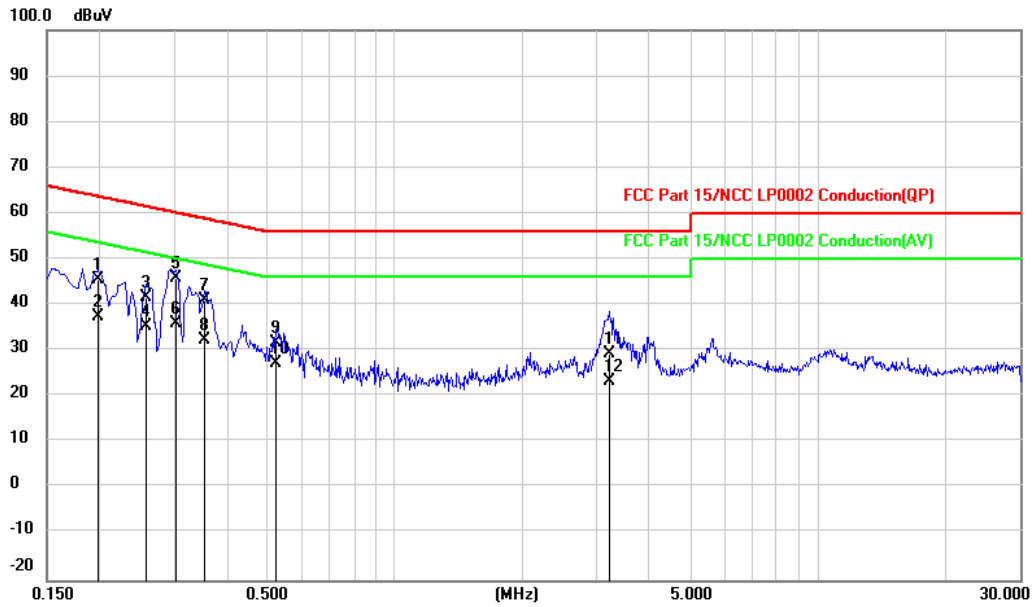


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	
1	0.1620	27.94	19.54	47.48	65.36	-17.88	QP
2	0.1620	19.67	19.54	39.21	55.36	-16.15	AVG
3	0.1940	27.26	19.53	46.79	63.86	-17.07	QP
4	0.1940	19.12	19.53	38.65	53.86	-15.21	AVG
5	0.2620	23.81	19.53	43.34	61.37	-18.03	QP
6	0.2620	17.58	19.53	37.11	51.37	-14.26	AVG
7	0.2980	29.42	19.53	48.95	60.30	-11.35	QP
8	0.2980	24.58	19.53	44.11	50.30	-6.19	AVG
9	0.3540	23.91	19.51	43.42	58.87	-15.45	QP
10	0.3540	15.35	19.51	34.86	48.87	-14.01	AVG
11	3.2060	15.45	19.57	35.02	56.00	-20.98	QP
12	3.2060	5.52	19.57	25.09	46.00	-20.91	AVG

Remarks:

1. Result value (dBuV) = Reading value (dBuV) + Correction Factor (dB)
2. Margin(dB) = Result value (dBuV) - Limit value (dBuV)
3. Correction Factor(dB) = Insertion loss(dB) + Cable loss(dB)
4. The other emission levels were very low against the limit.

Phase of Power：Neutral (N)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	
1	0.1980	25.96	19.53	45.49	63.69	-18.20	QP
2	0.1980	17.97	19.53	37.50	53.69	-16.19	AVG
3	0.2580	22.22	19.53	41.75	61.50	-19.75	QP
4	0.2580	15.84	19.53	35.37	51.50	-16.13	AVG
5	0.3020	26.21	19.51	45.72	60.19	-14.47	QP
6	0.3020	16.47	19.51	35.98	50.19	-14.21	AVG
7	0.3540	21.64	19.51	41.15	58.87	-17.72	QP
8	0.3540	12.95	19.51	32.46	48.87	-16.41	AVG
9	0.5220	12.35	19.52	31.87	56.00	-24.13	QP
10	0.5220	7.86	19.52	27.38	46.00	-18.62	AVG
11	3.2100	9.92	19.56	29.48	56.00	-26.52	QP
12	3.2100	3.81	19.56	23.37	46.00	-22.63	AVG

Remarks:

1. Result value (dBuV) = Reading value (dBuV) + Correction Factor (dB)
2. Margin(dB) = Result value (dBuV) - Limit value (dBuV)
3. Correction Factor(dB) = Insertion loss(dB) + Cable loss(dB)
4. The other emission levels were very low against the limit.

Appendix I Radiated Band Edge Measurement

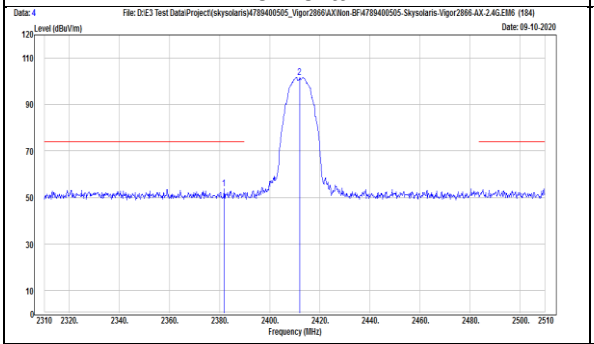
Non-Beamforming Mode

802.11b

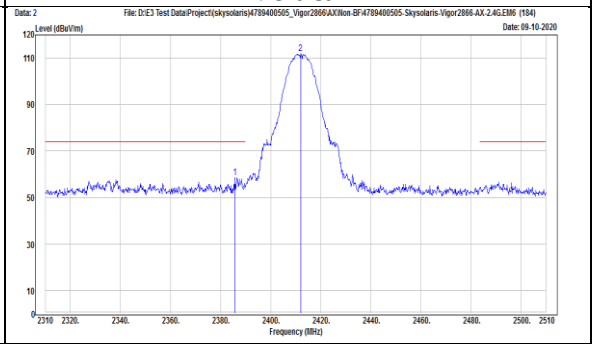
Peak

Ch1

Horizontal

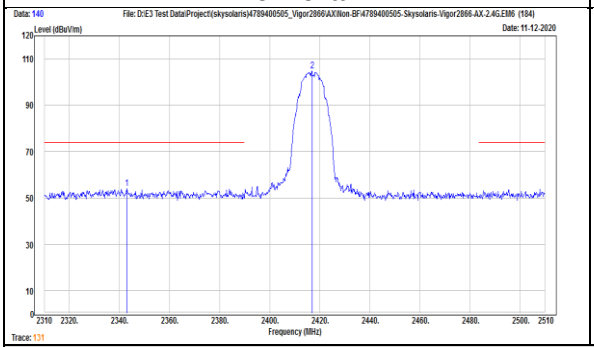


Vertical



Ch2

Horizontal



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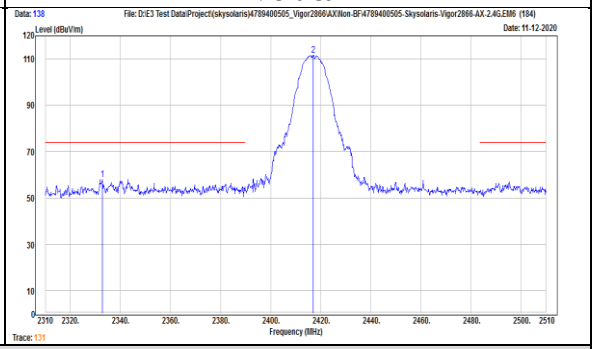
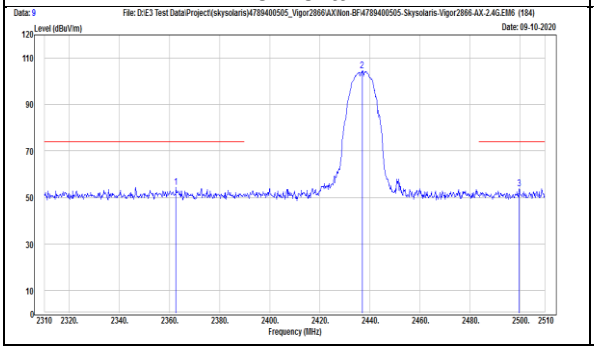


Ch6

Horizontal



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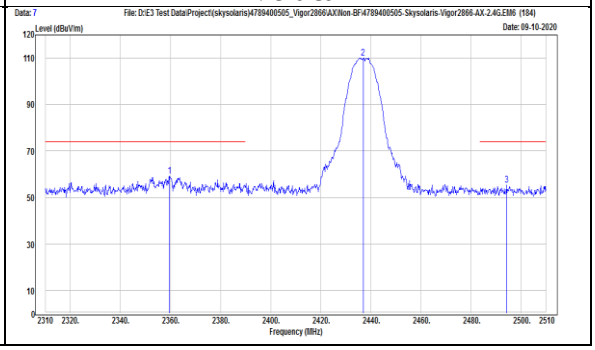
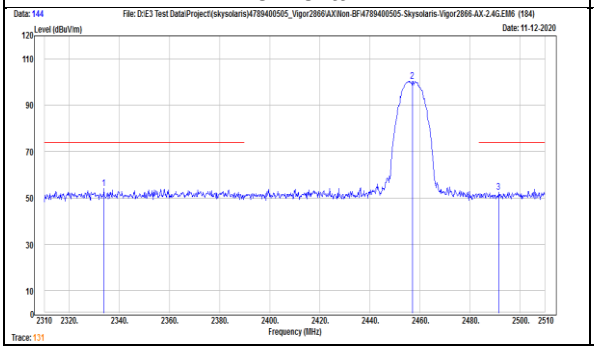
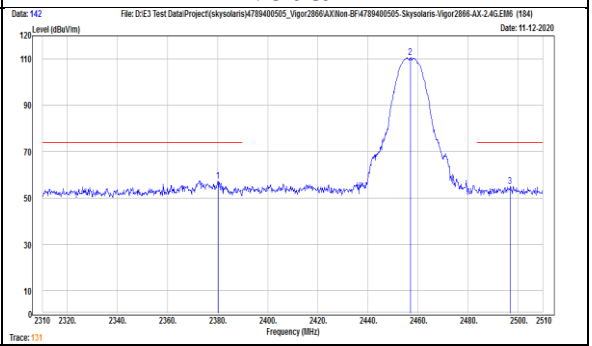
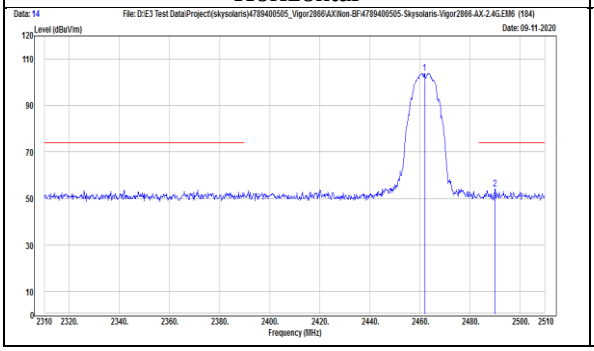
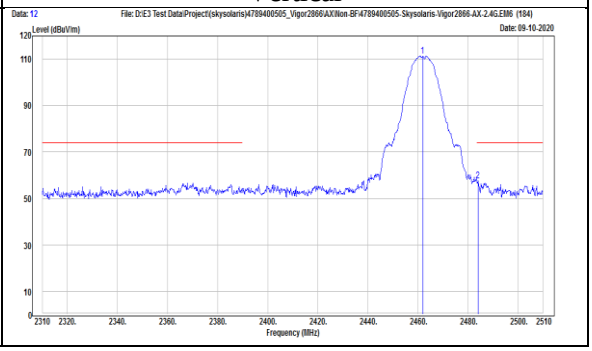


Ch10

Horizontal	Vertical
	

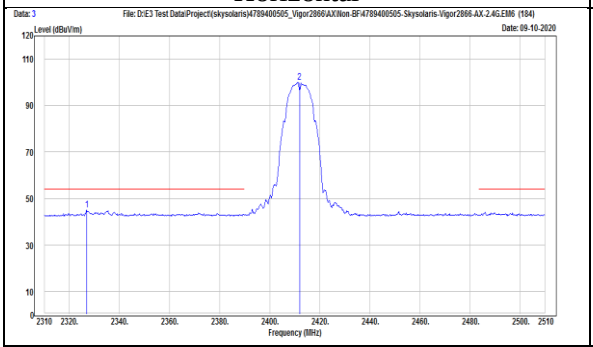
Ch11

Horizontal	Vertical
	

Average

Ch1

Horizontal



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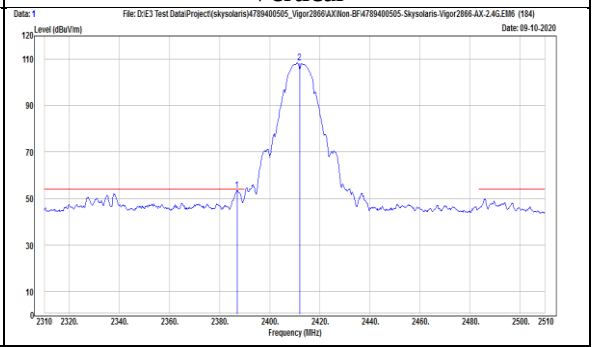

Ch2

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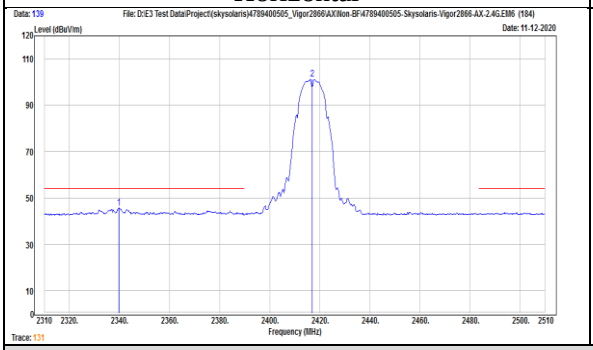

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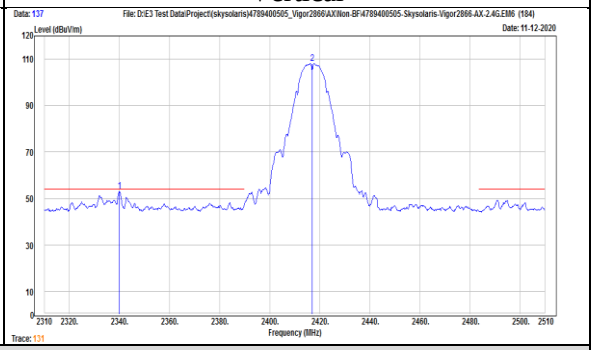
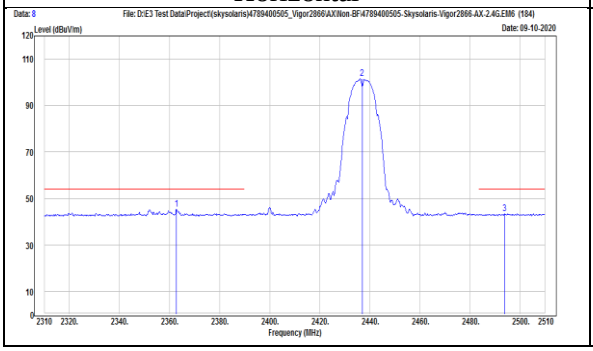


Ch6

Horizontal



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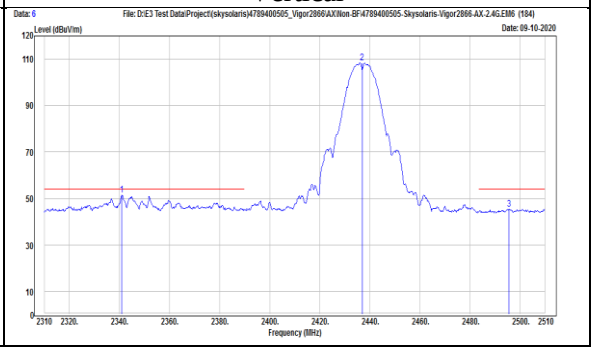
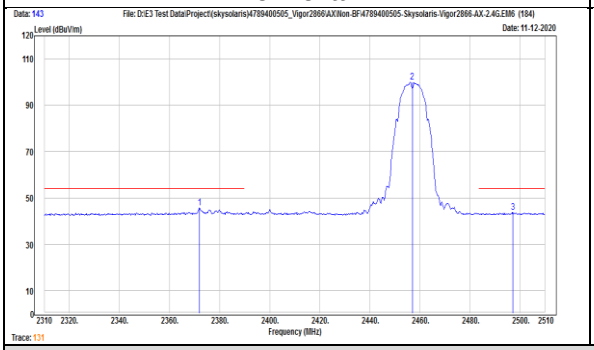
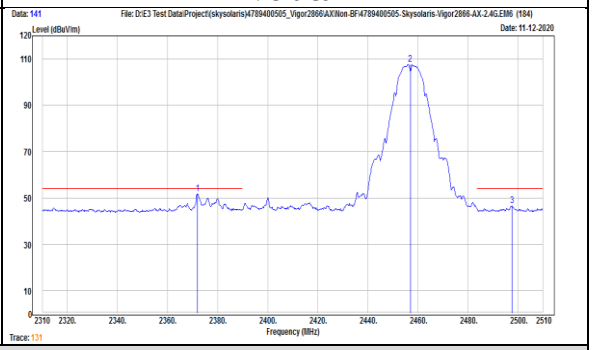
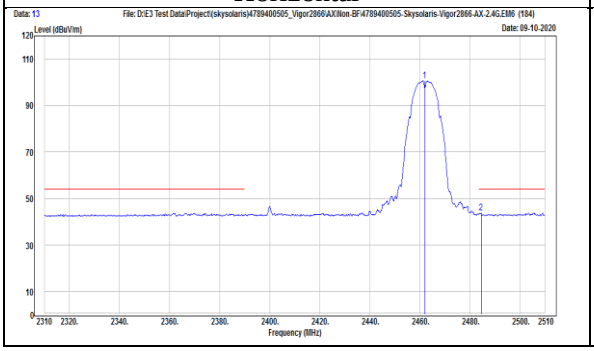
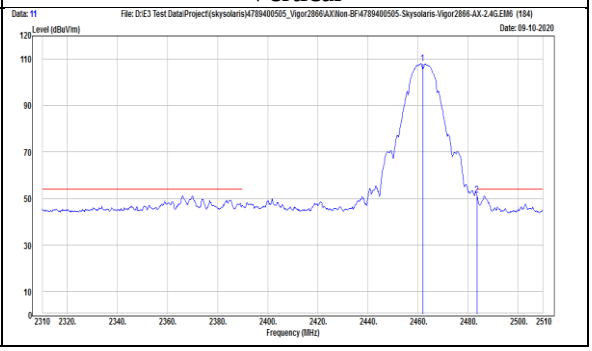


Ch10

Horizontal	Vertical
	

Ch11

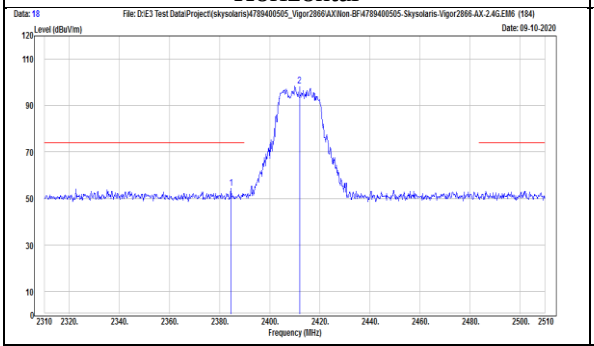
Horizontal	Vertical
	

802.11g

Peak

Ch1

Horizontal



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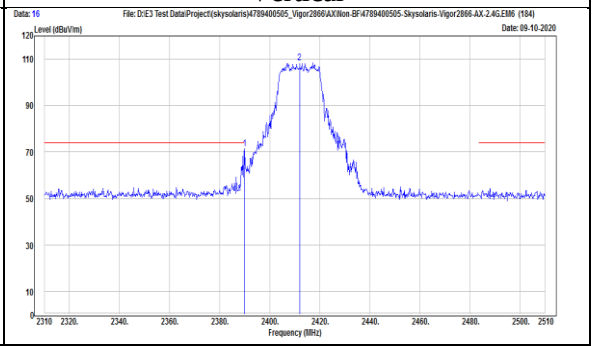

Ch2

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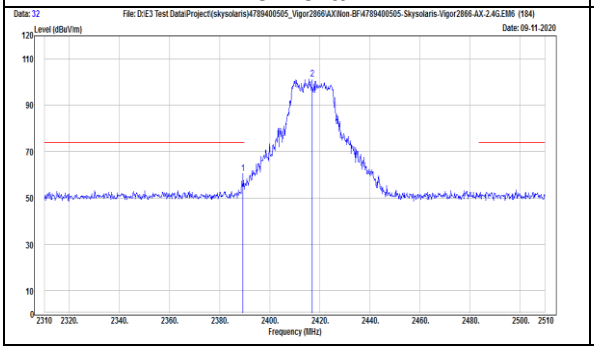

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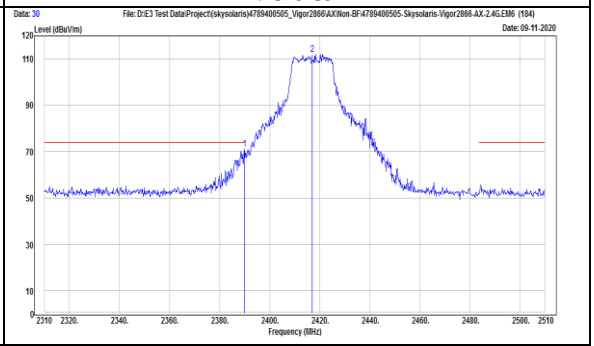
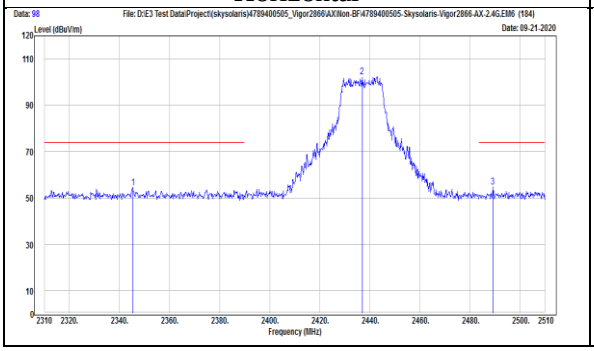
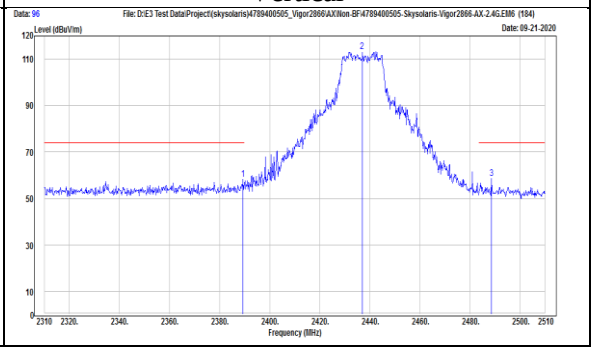


Ch6

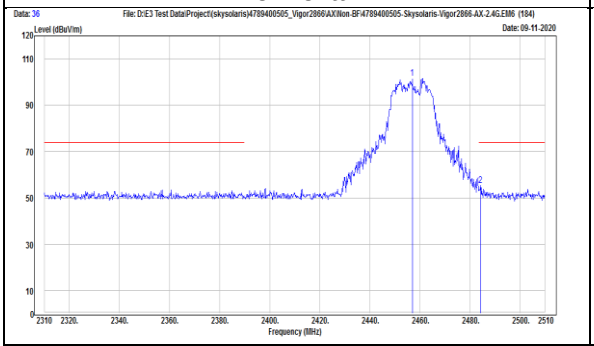
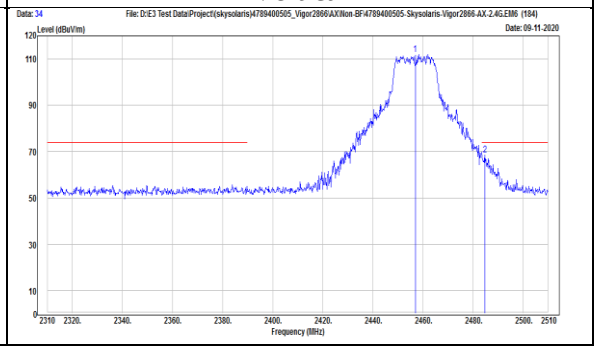
Horizontal



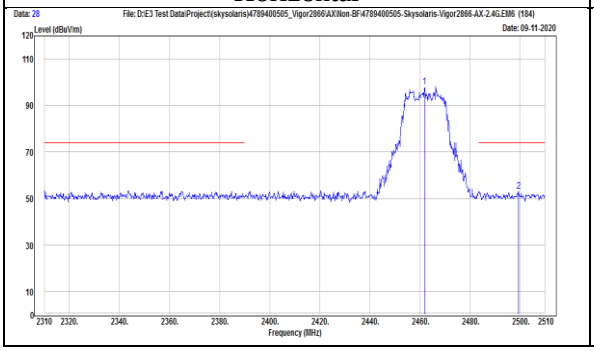
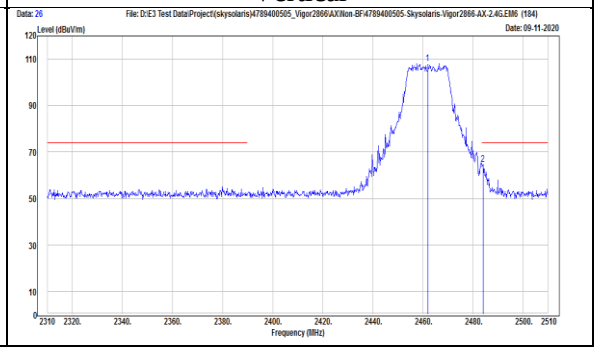
Vertical



Ch10

Horizontal	Vertical
	

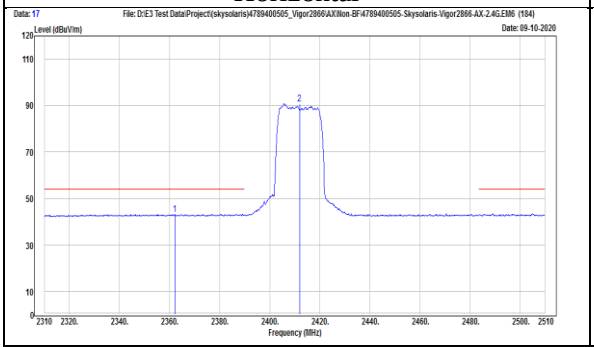
Ch11

Horizontal	Vertical
	

Average

Ch1

Horizontal



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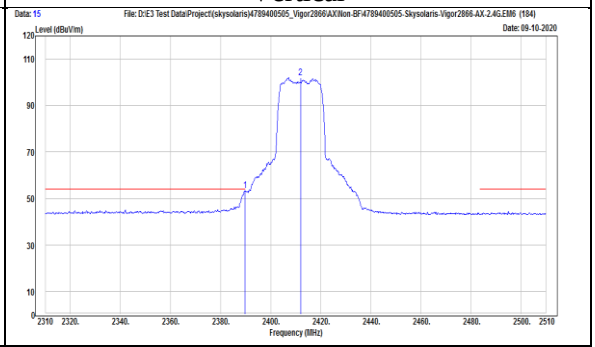
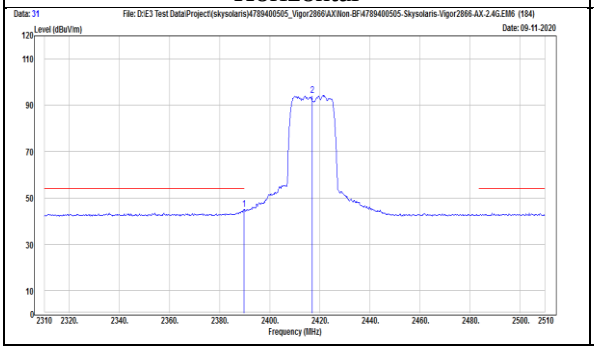


Ch2

Horizontal



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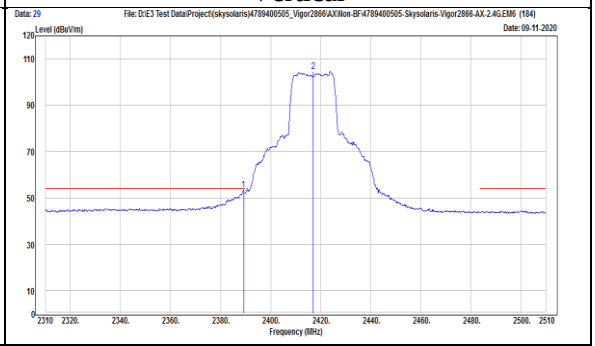
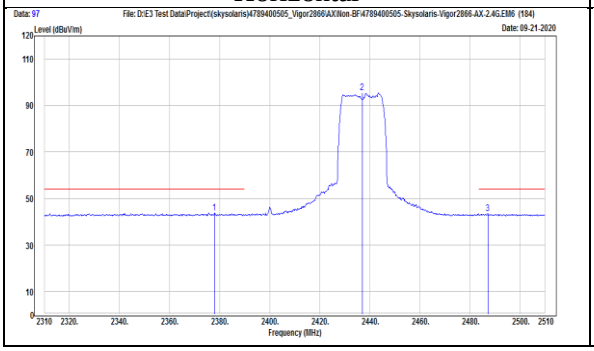
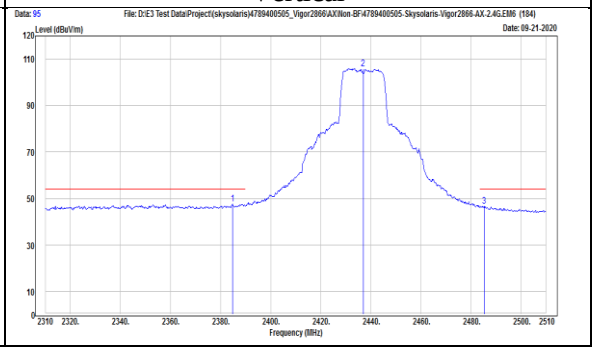


Ch6

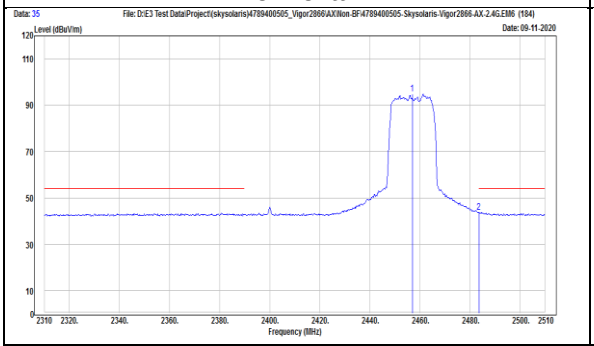
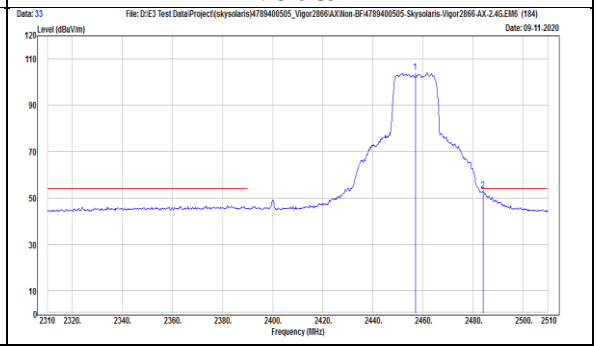
Horizontal



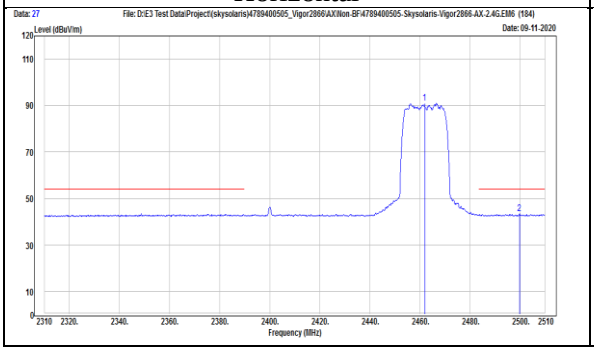
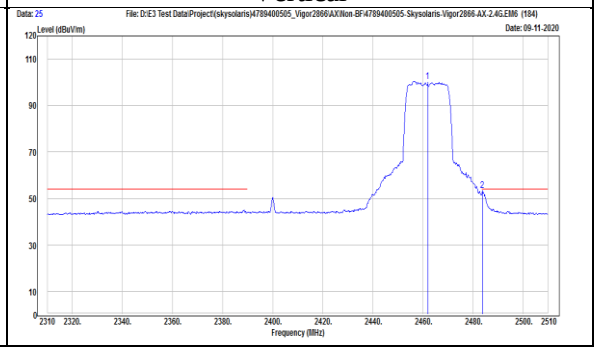
Vertical



Ch10

Horizontal	Vertical
	

Ch11

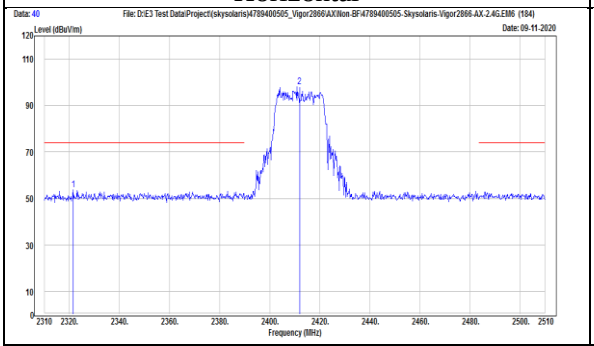
Horizontal	Vertical
	

802.11ax (HE20)

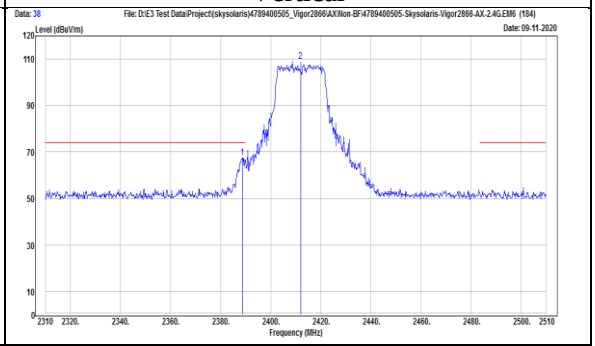
Peak

Ch1

Horizontal

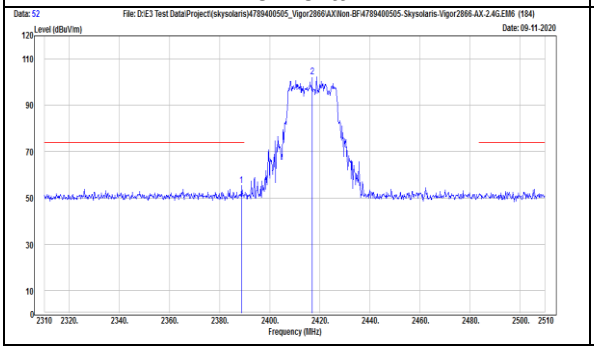


Vertical



Ch2

Horizontal



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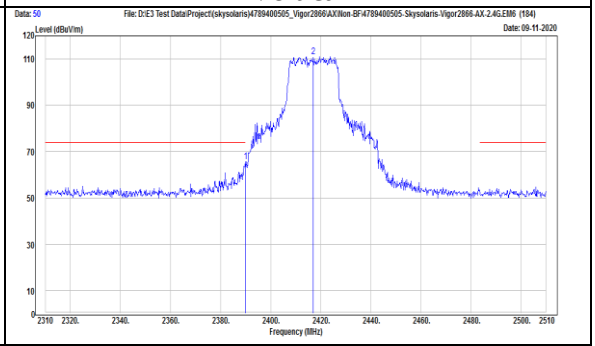
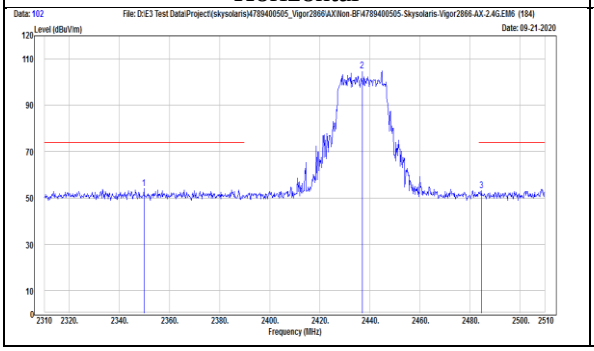
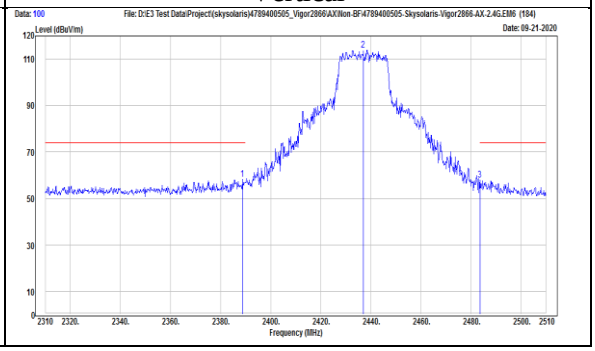


Ch6

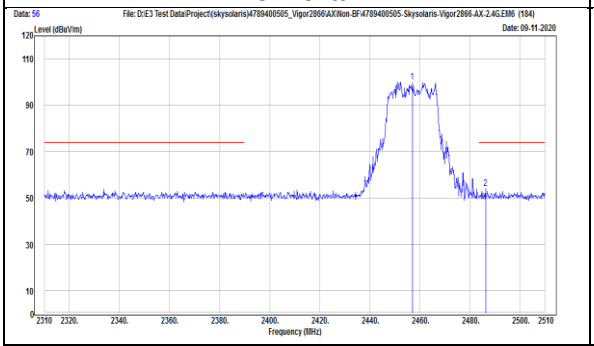
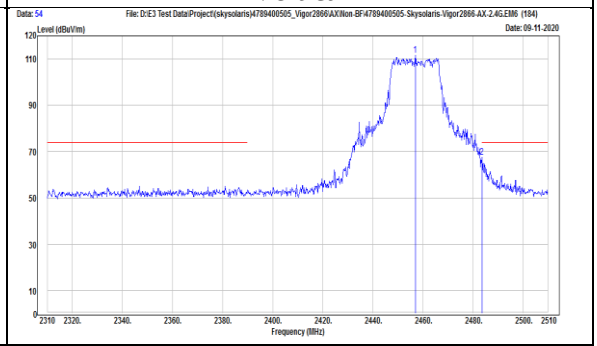
Horizontal



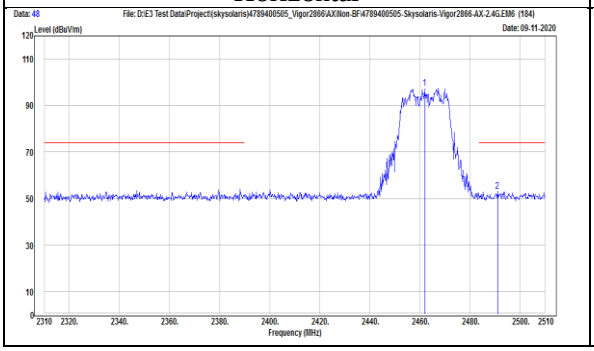
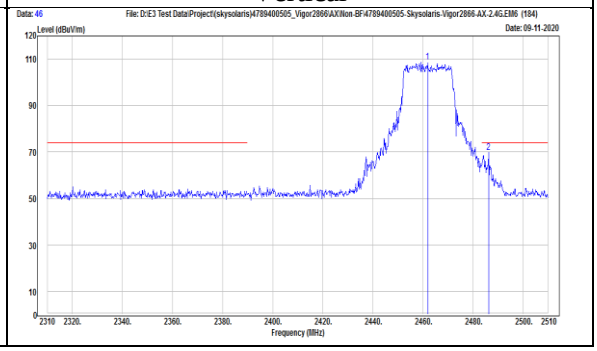
Vertical



Ch10

Horizontal	Vertical
	

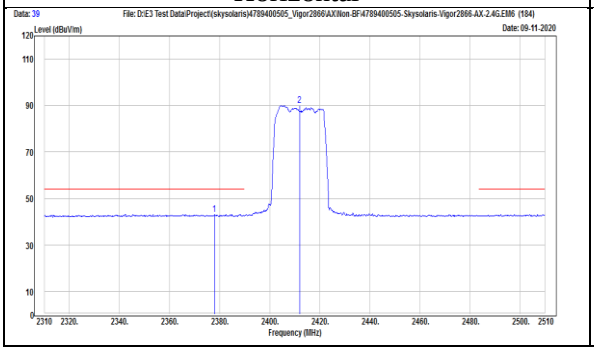
Ch11

Horizontal	Vertical
	

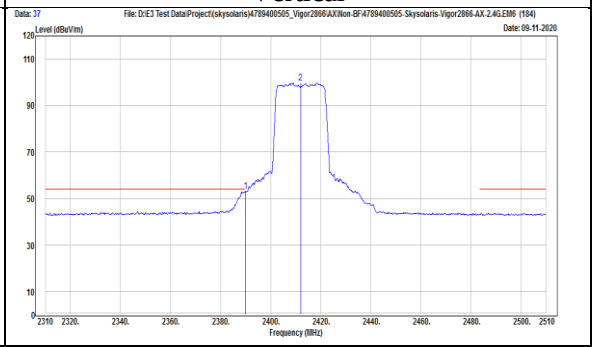
Average

Ch1

Horizontal

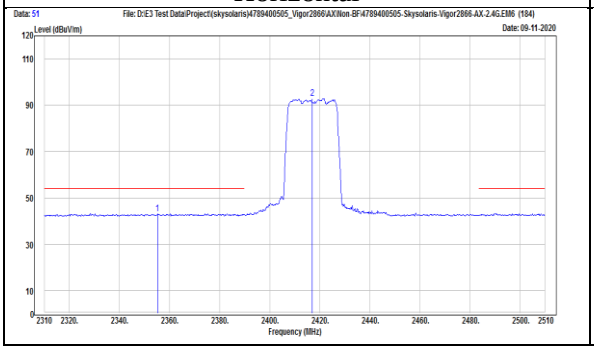


Vertical



Ch2

Horizontal



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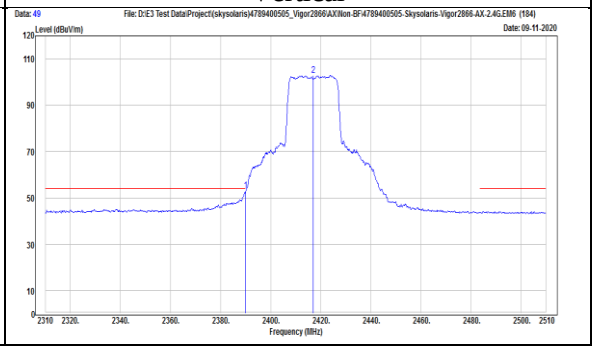
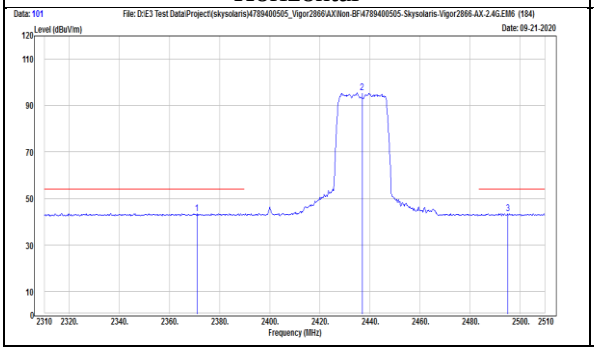
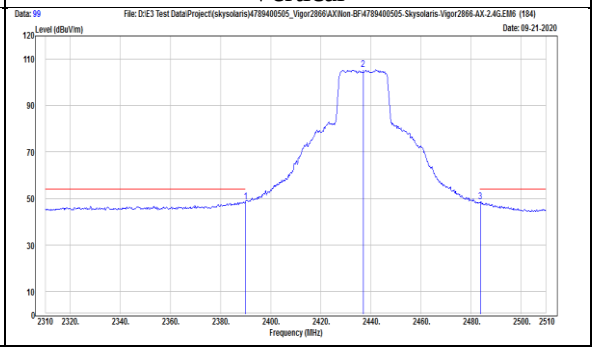


Ch6

Horizontal

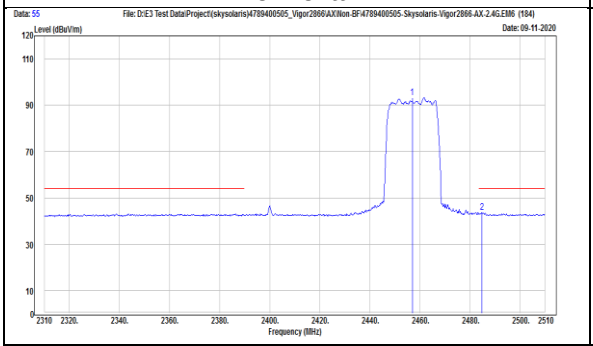


Vertical



Ch10

Horizontal



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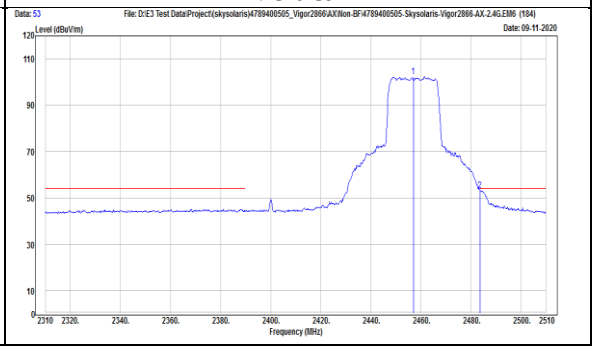
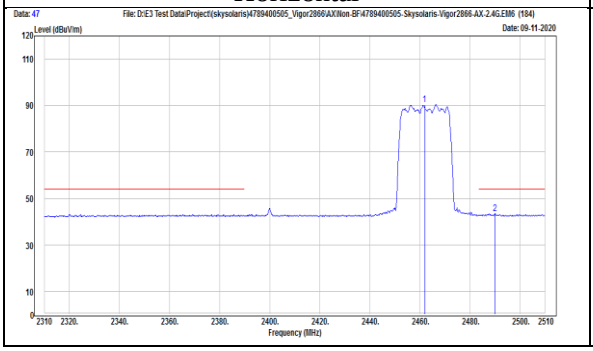


Ch11

Horizontal



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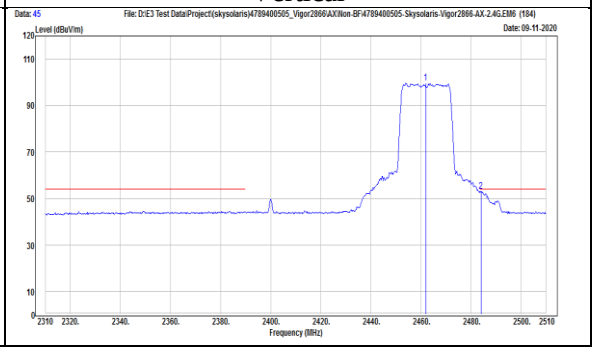
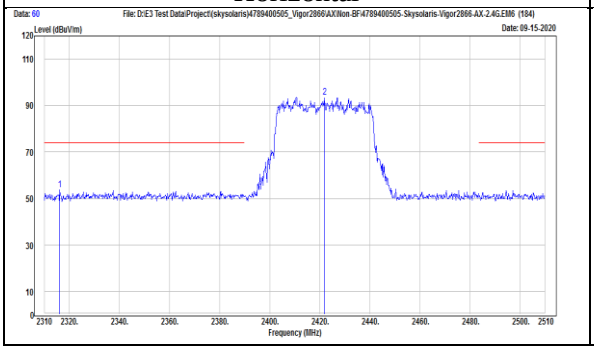


802.11ax (HE40)

Peak

Ch3

Horizontal



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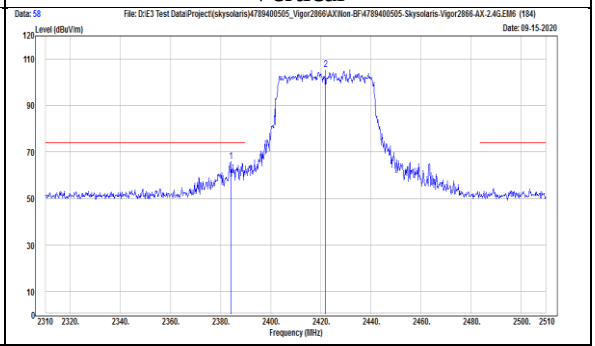
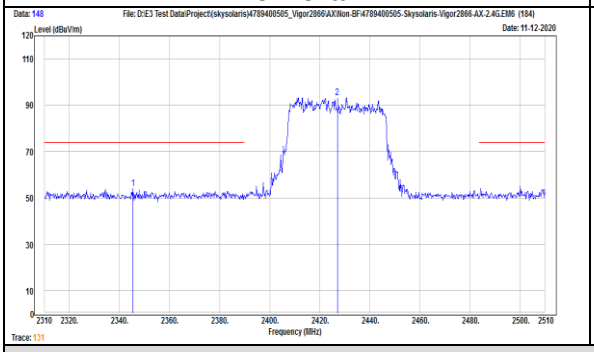


Ch4

Horizontal



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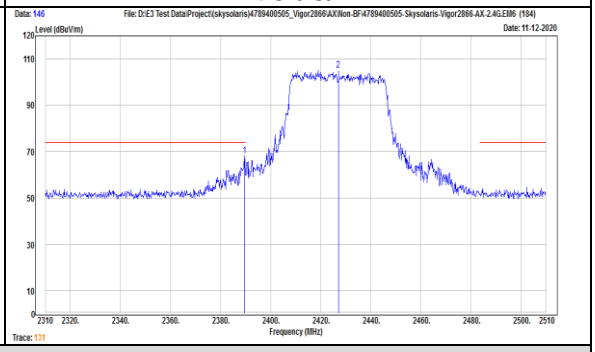
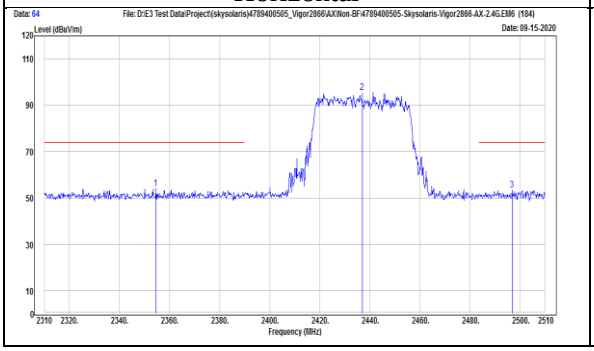


Ch6

Horizontal



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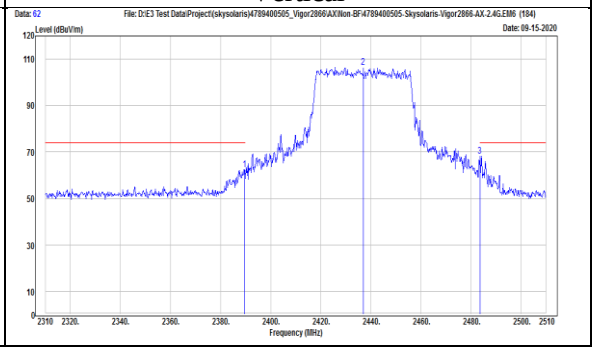
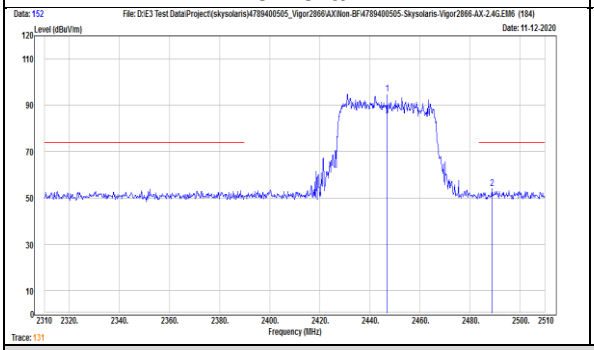
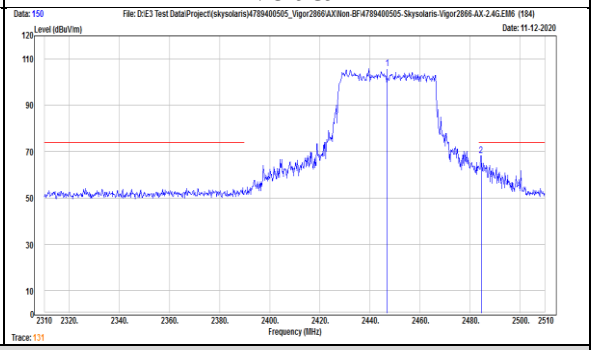
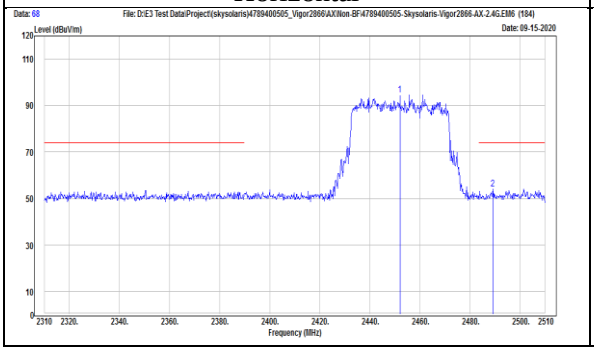
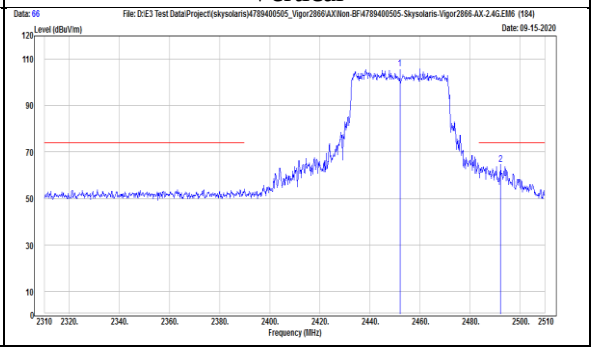


Ch8

Horizontal	Vertical
	

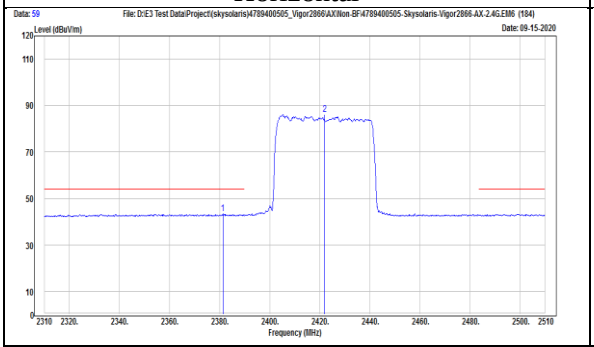
Ch9

Horizontal	Vertical
	

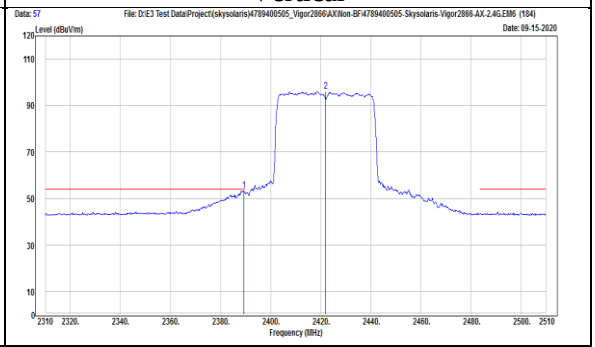
Average

Ch3

Horizontal

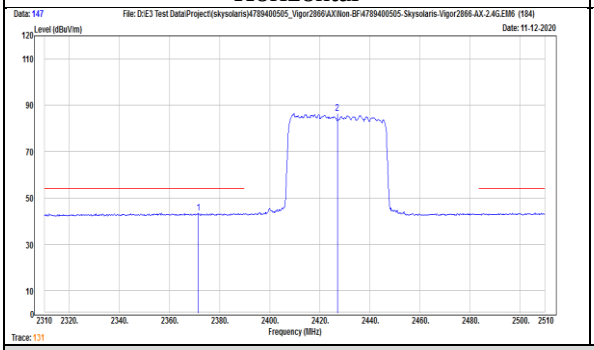


Vertical



Ch4

Horizontal



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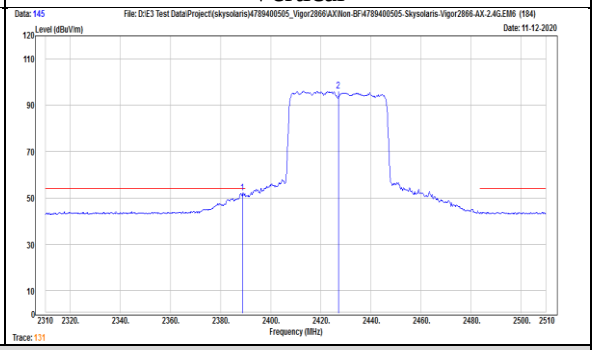
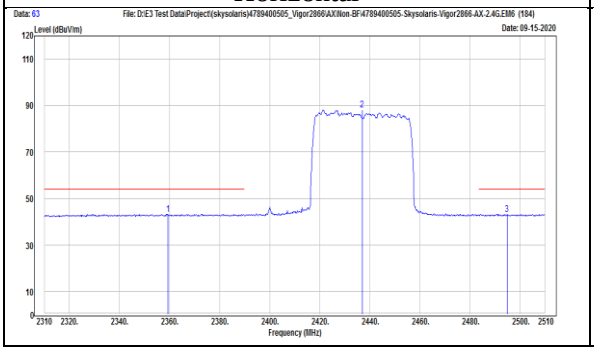


Ch6

Horizontal



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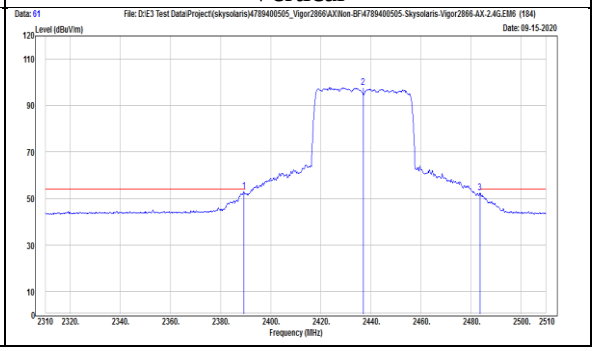
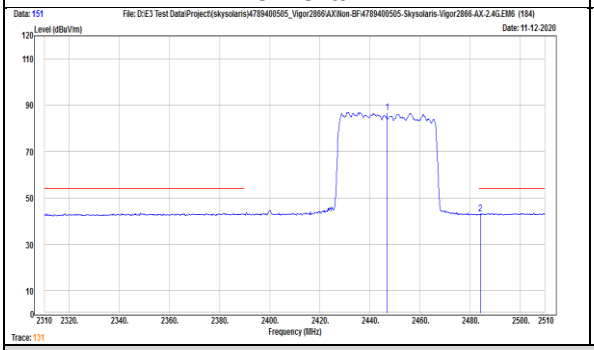


Ch8

Horizontal



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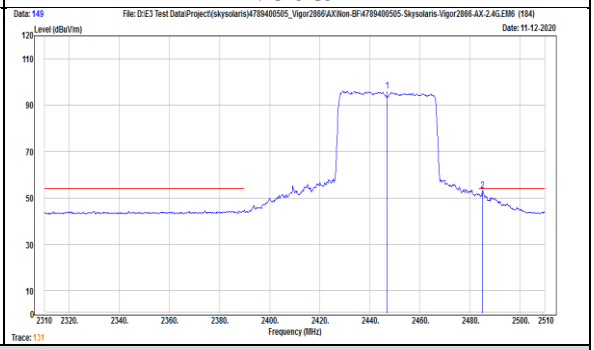
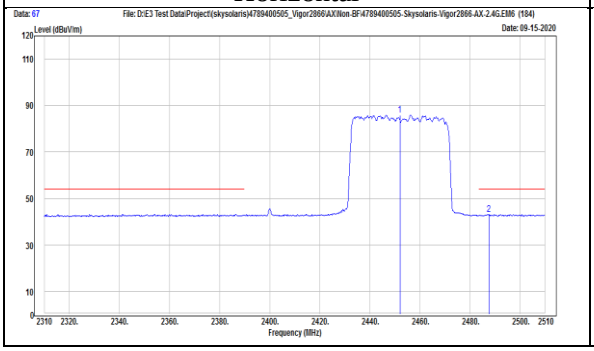


Ch9

Horizontal



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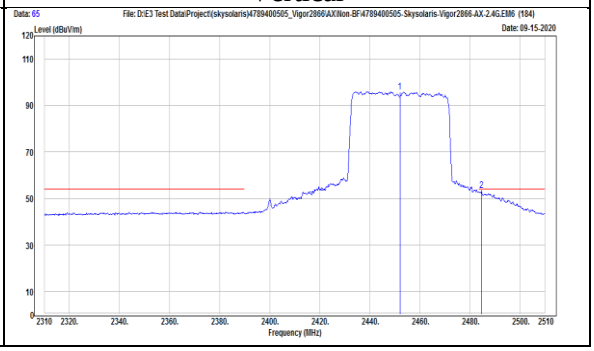


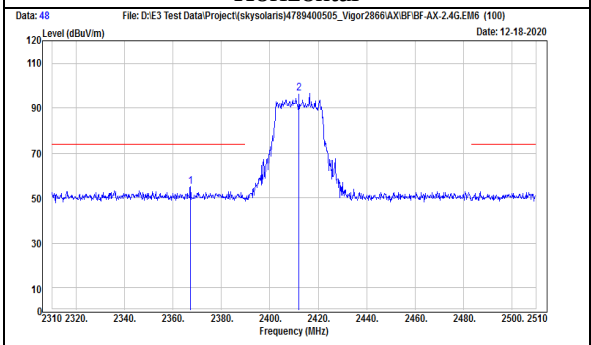
Beamforming mode

802.11ax (HE20)

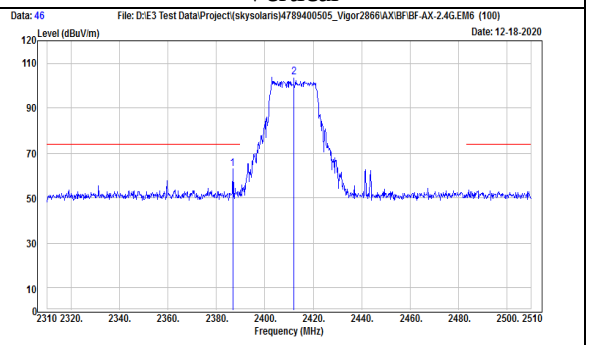
Peak

Ch1

Horizontal

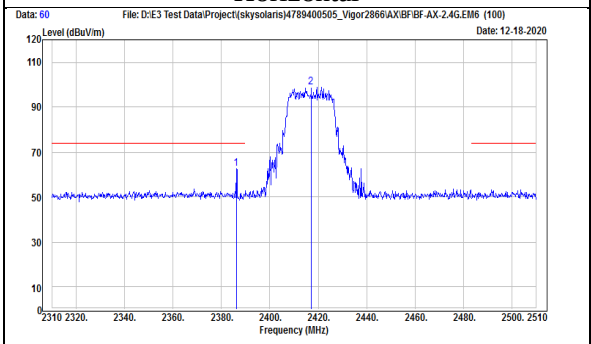


Vertical

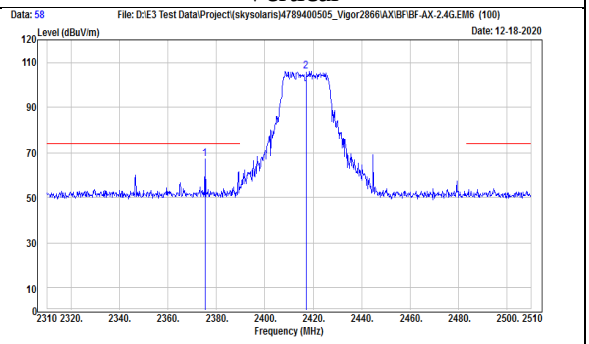


Ch2

Horizontal

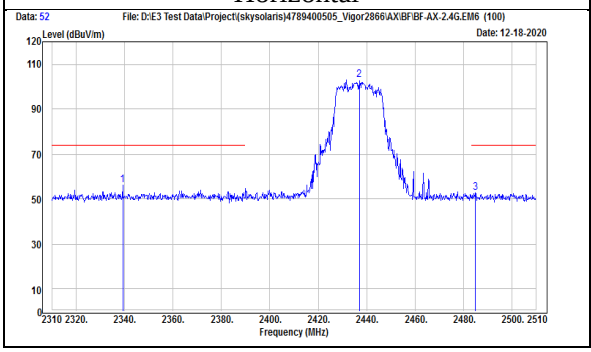


Vertical



Ch6

Horizontal



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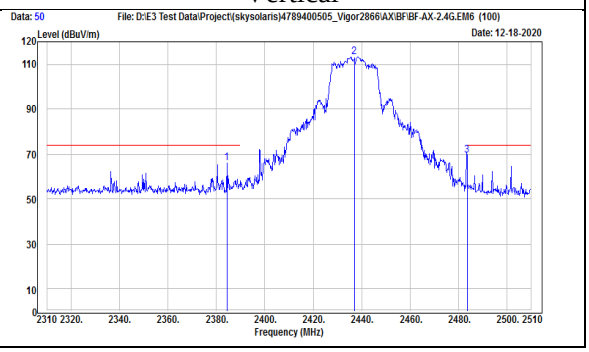
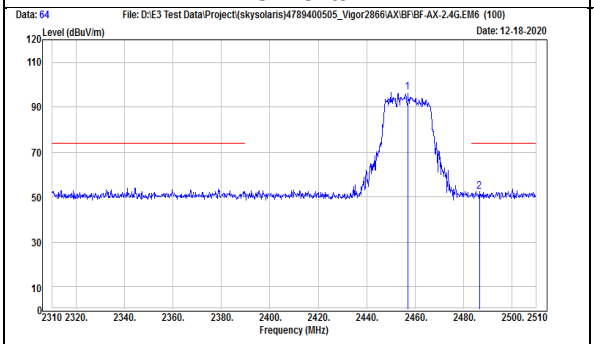
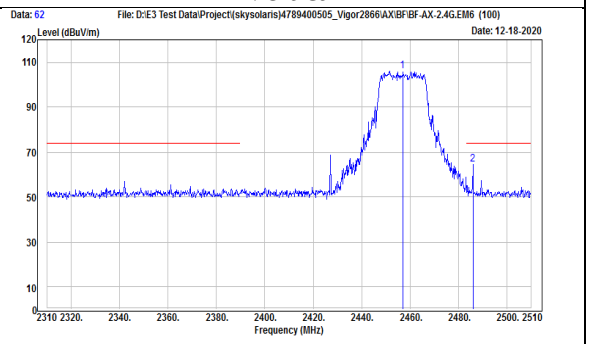


Ch10

Horizontal

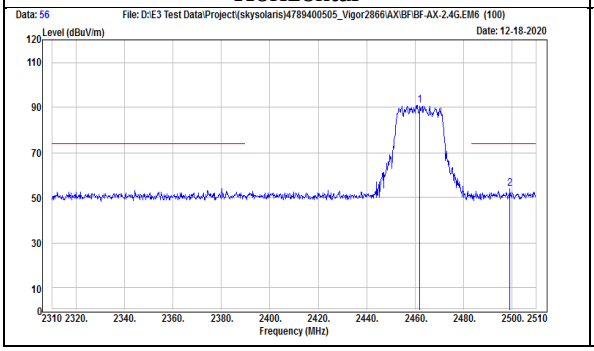


Vertical

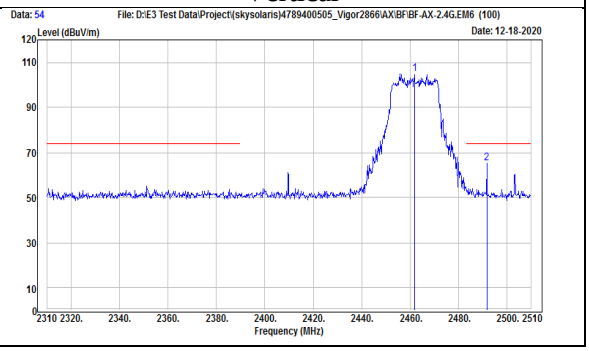


Ch11

Horizontal



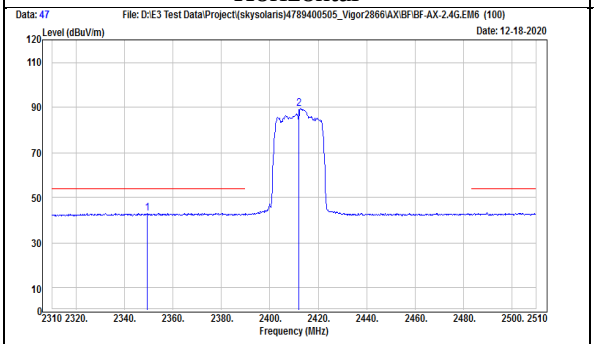
Vertical



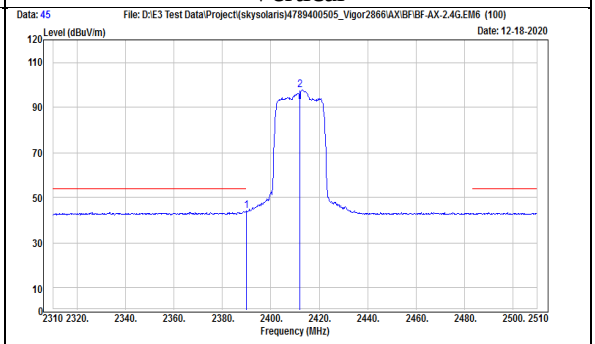
Average

Ch1

Horizontal

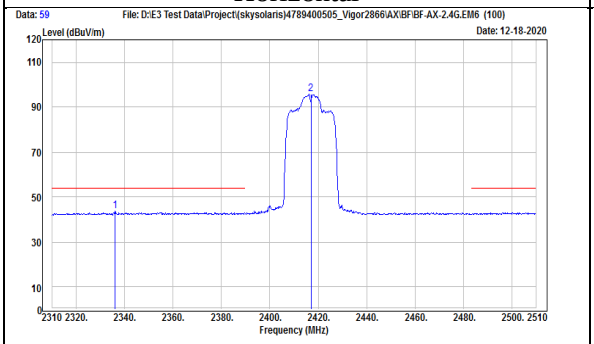


Vertical

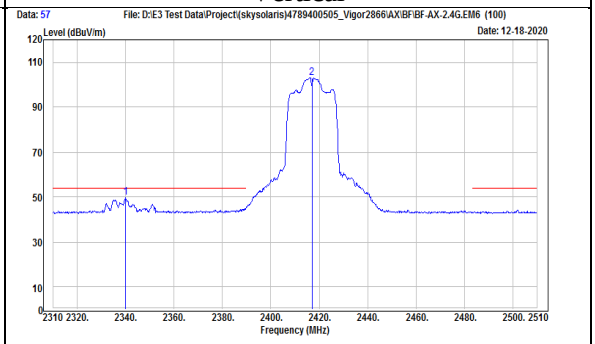


Ch2

Horizontal

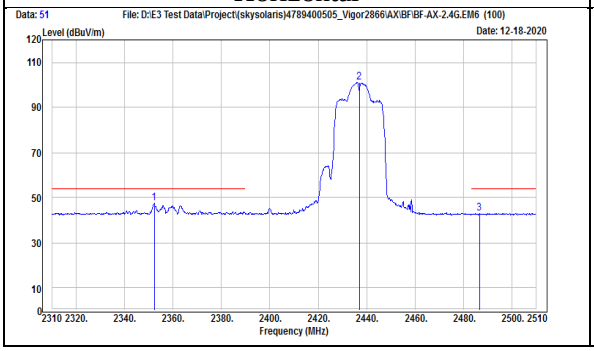


Vertical



Ch6

Horizontal



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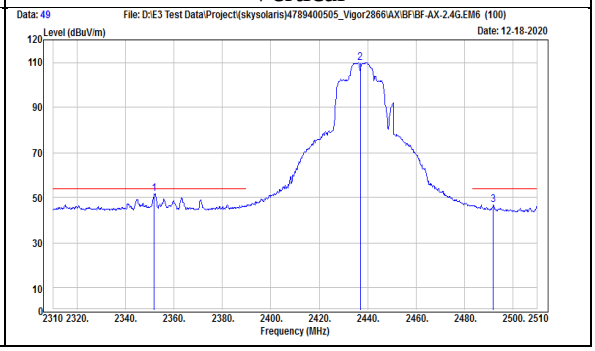
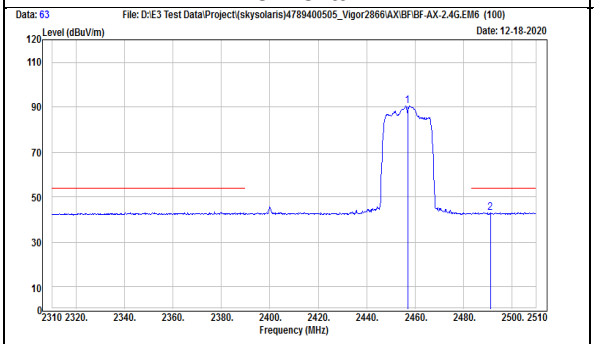
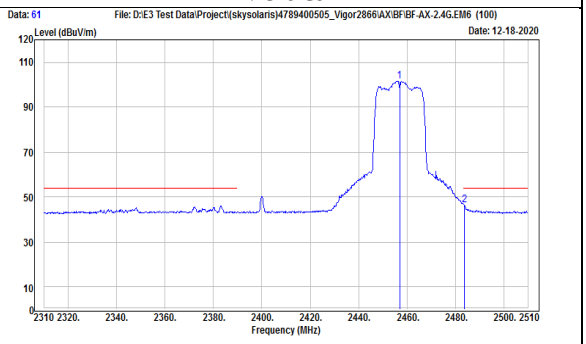


Ch10

Horizontal

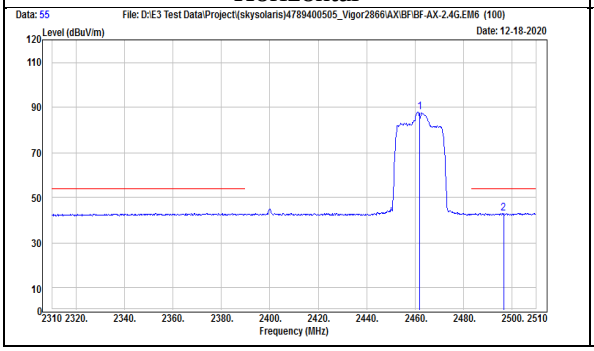


Vertical

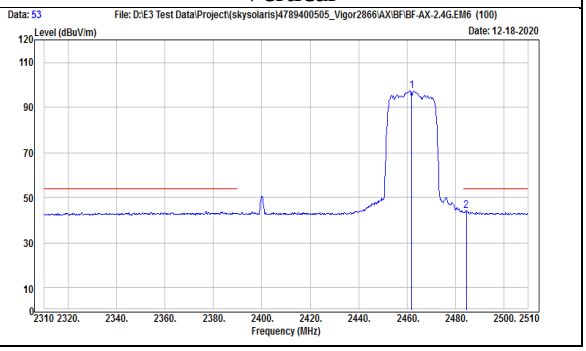


Ch11

Horizontal



Vertical

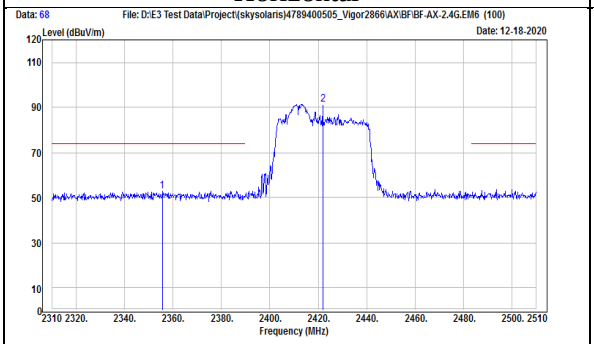


802.11ax (HE40)

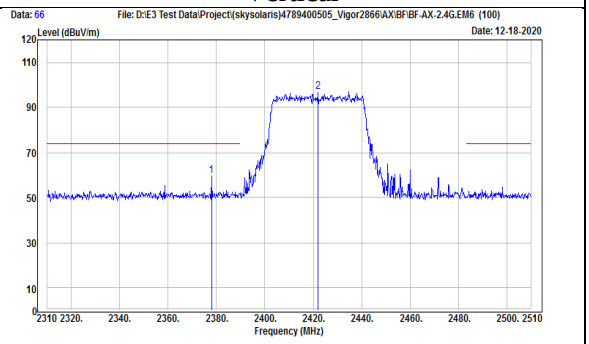
Peak

Ch3

Horizontal

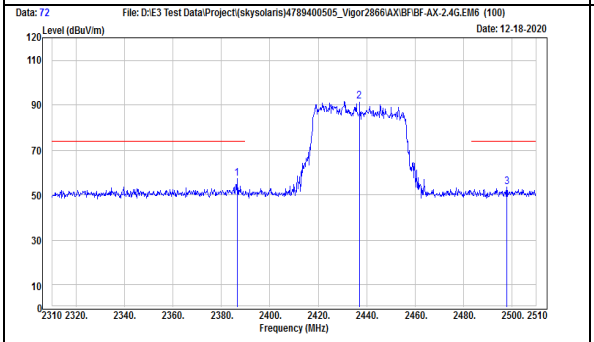


Vertical

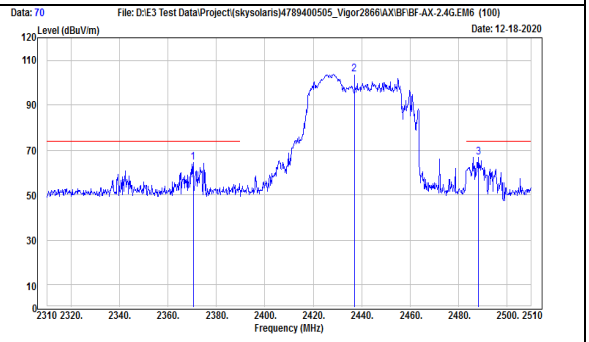


Ch6

Horizontal

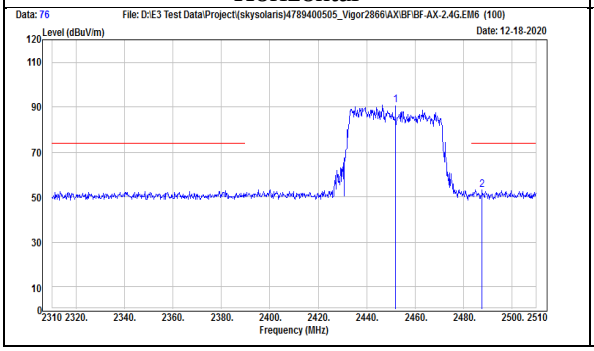


Vertical

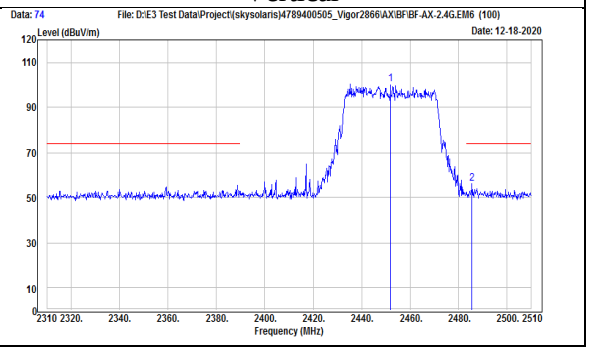


Ch9

Horizontal



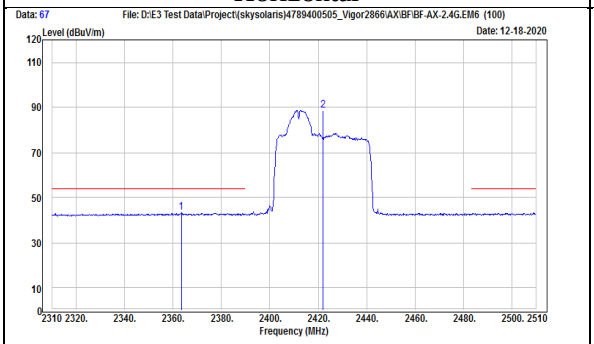
Vertical



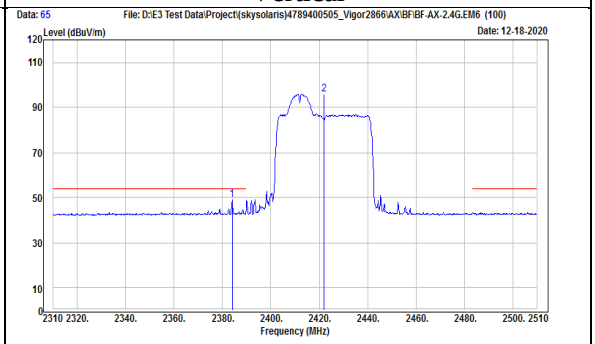
Average

Ch3

Horizontal

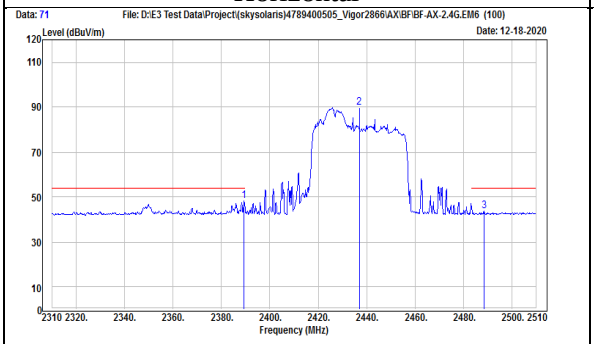


Vertical

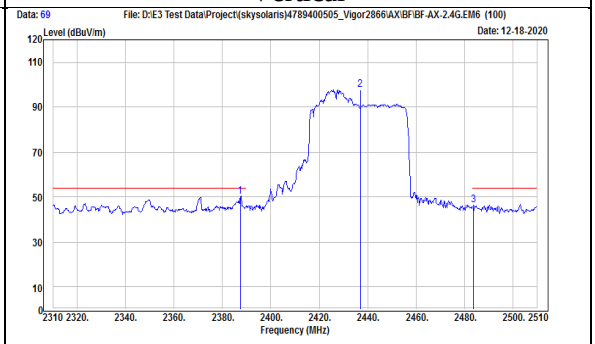


Ch6

Horizontal

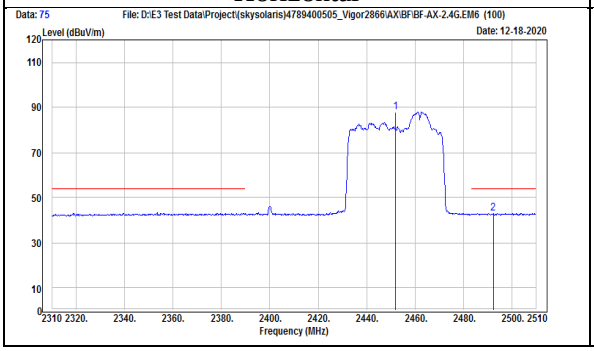


Vertical

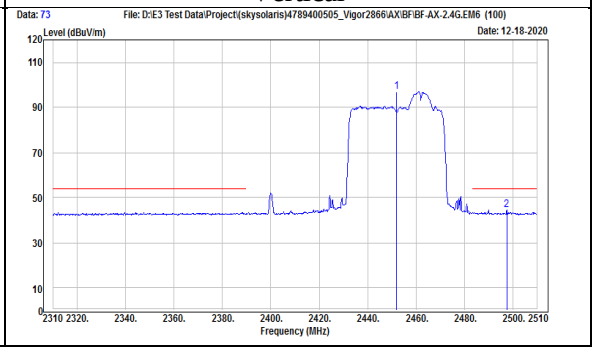


Ch9

Horizontal



Vertical



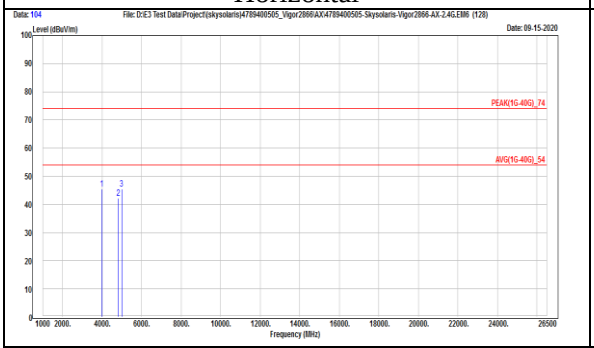
Appendix II Radiated Spurious Emission Measurement

Non-Beamforming Mode

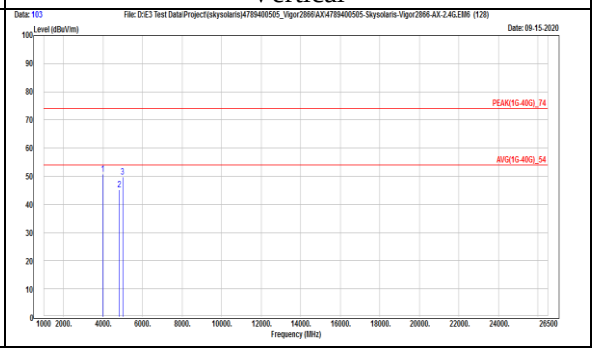
802.11b

Ch1

Horizontal

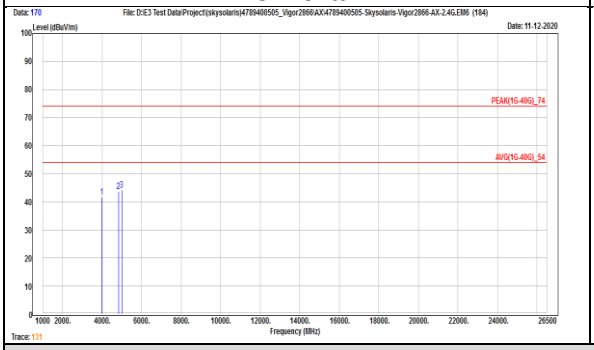


Vertical

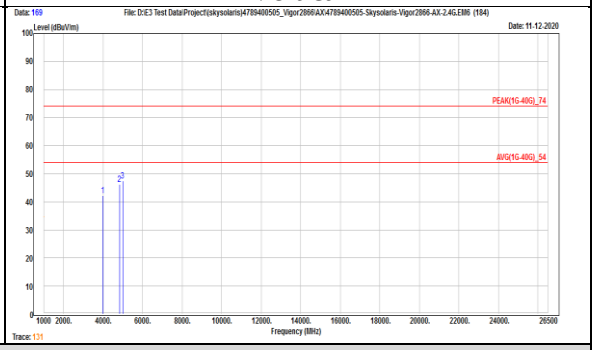


Ch2

Horizontal

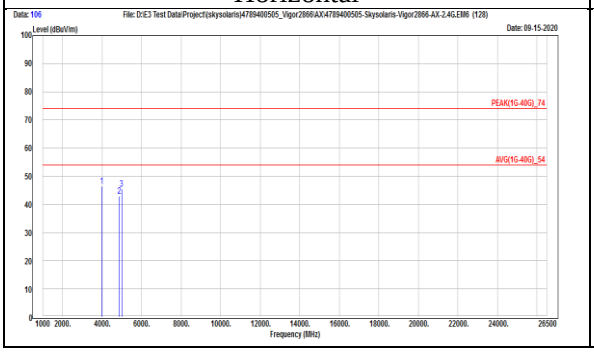


Vertical

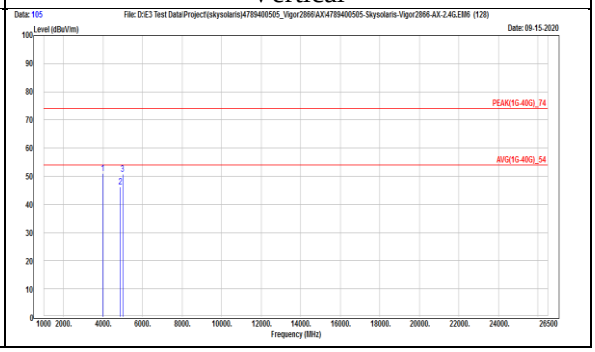


Ch6

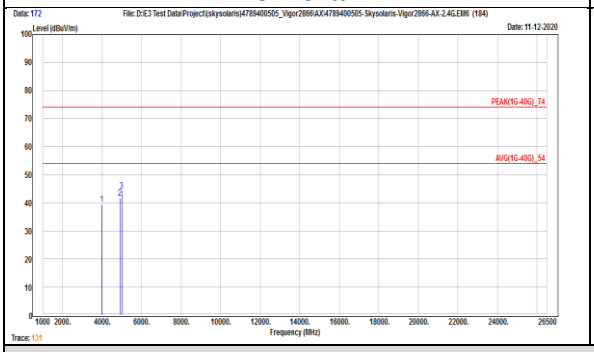
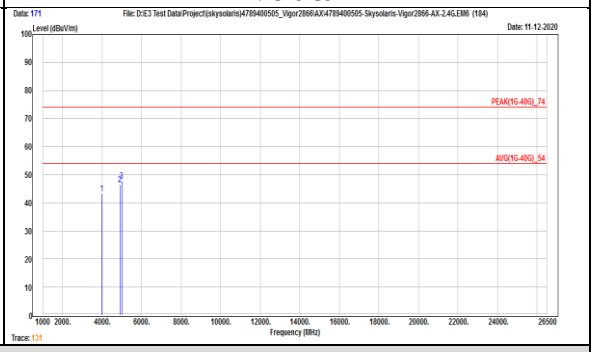
Horizontal



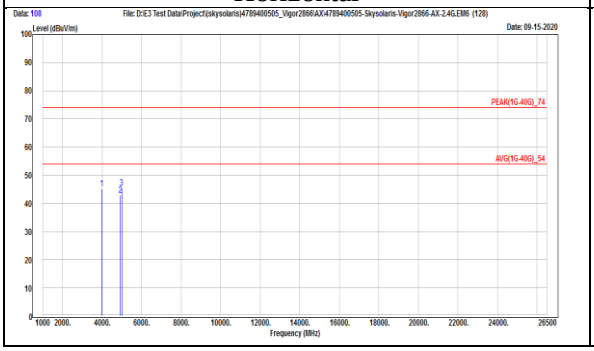
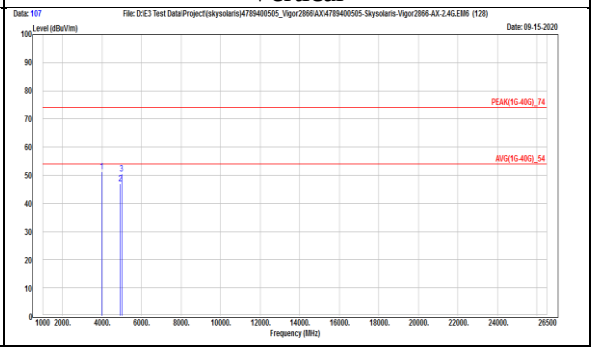
Vertical



Ch10

Horizontal	Vertical
	

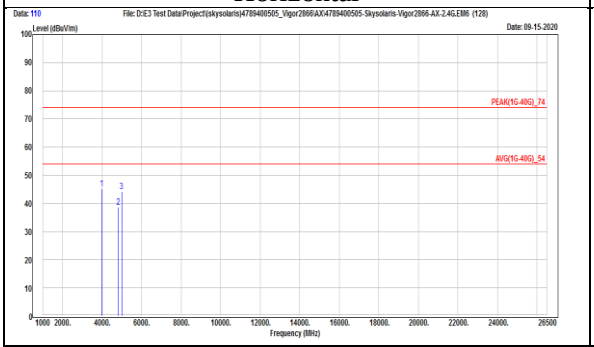
Ch11

Horizontal	Vertical
	

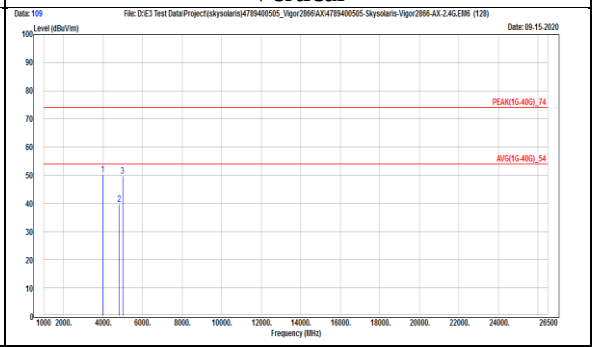
802.11g

Ch1

Horizontal

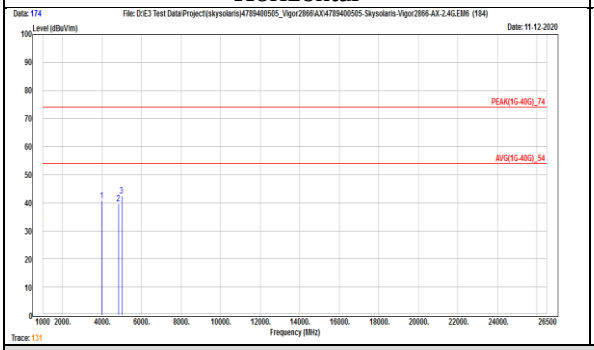


Vertical

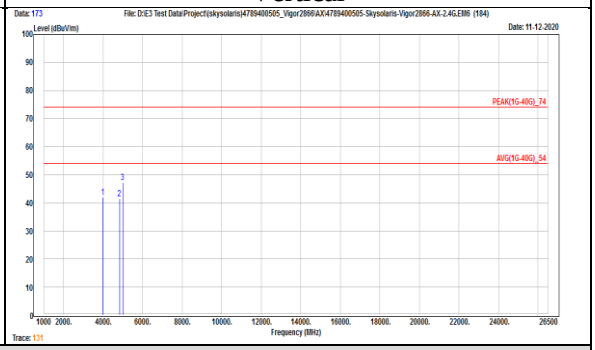


Ch2

Horizontal

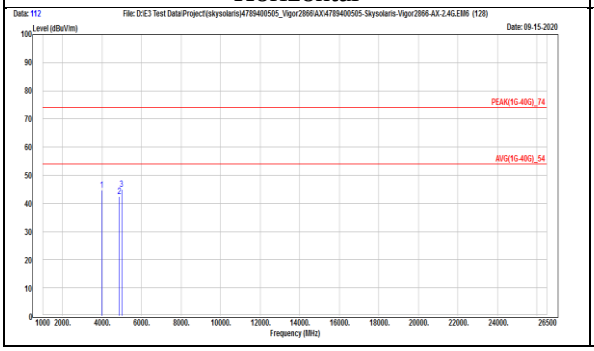


Vertical

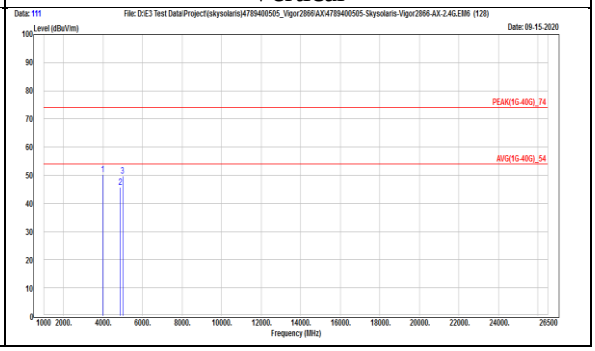


Ch6

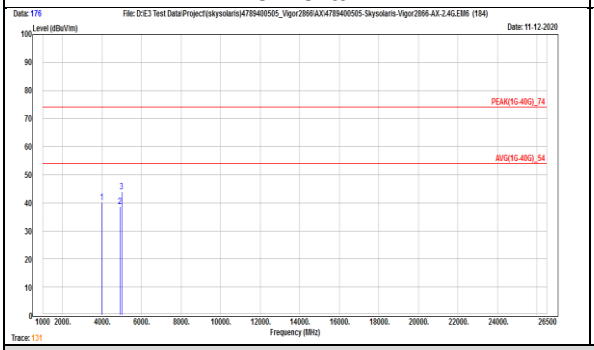
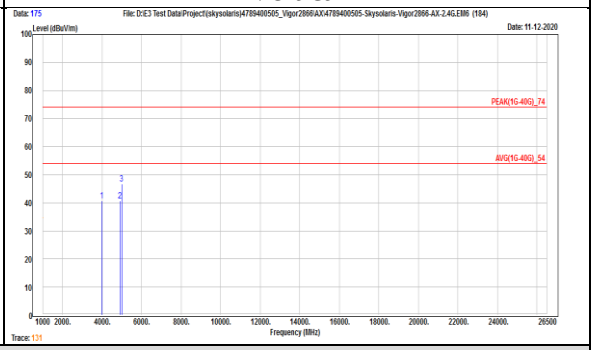
Horizontal



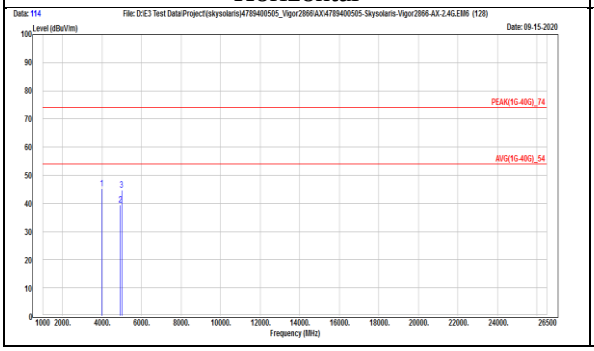
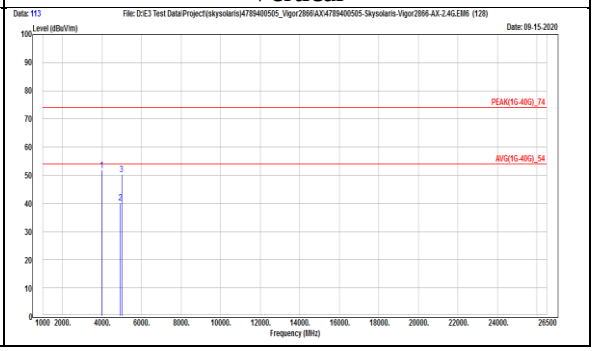
Vertical



Ch10

Horizontal	Vertical
	

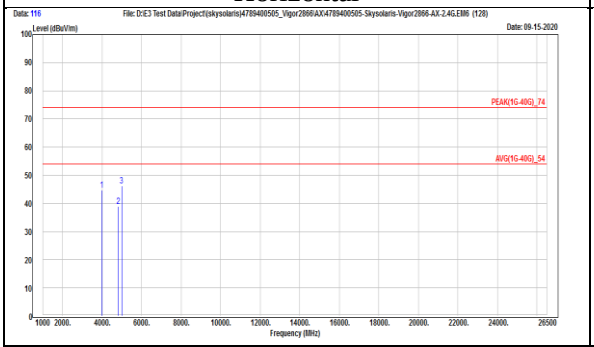
Ch11

Horizontal	Vertical
	

802.11ax (HE20)

Ch1

Horizontal



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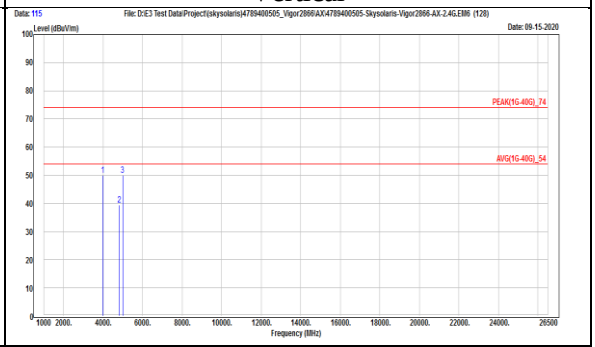
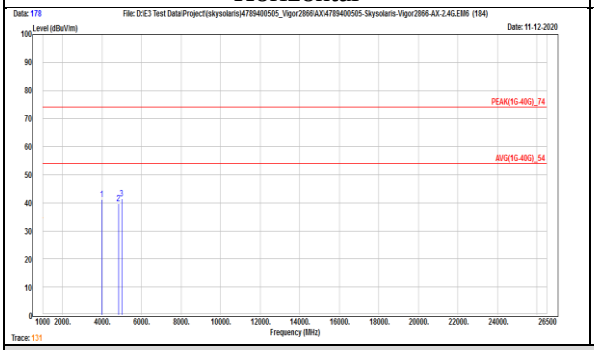
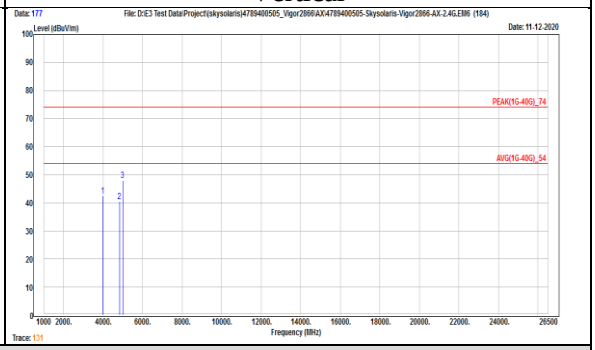


Ch2

Horizontal

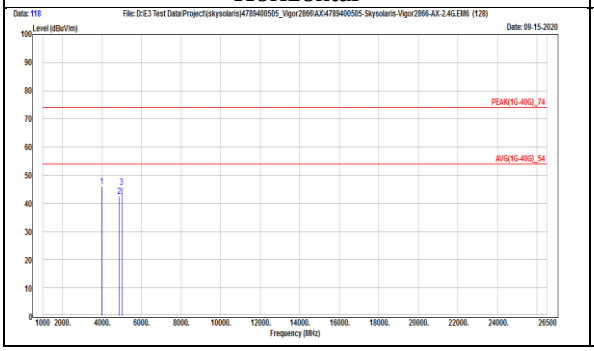


Vertical

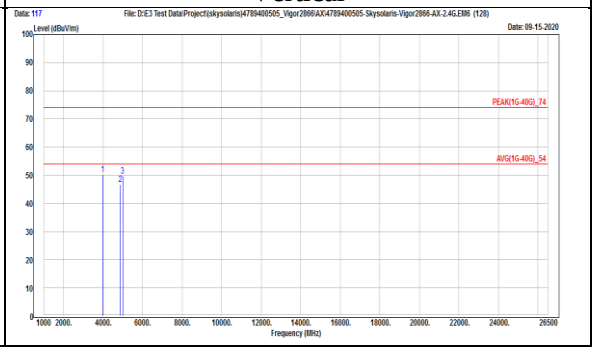


Ch6

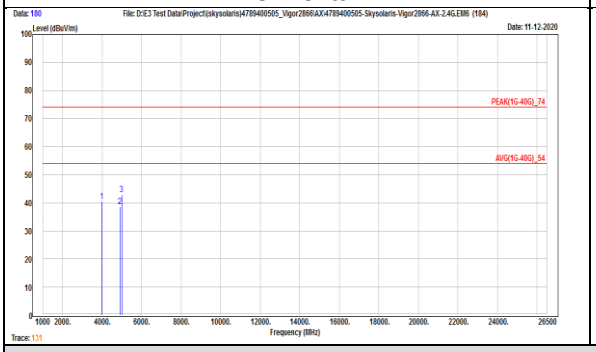
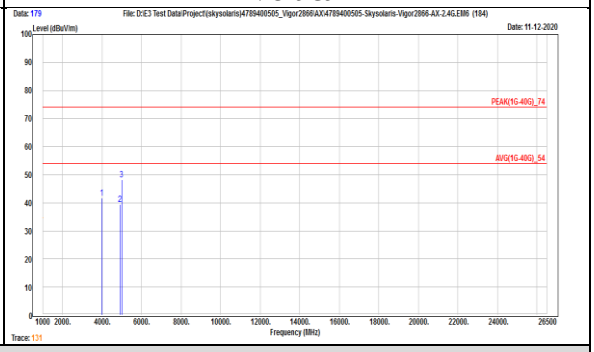
Horizontal



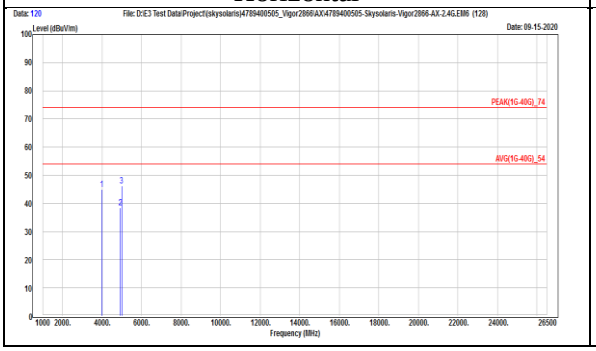
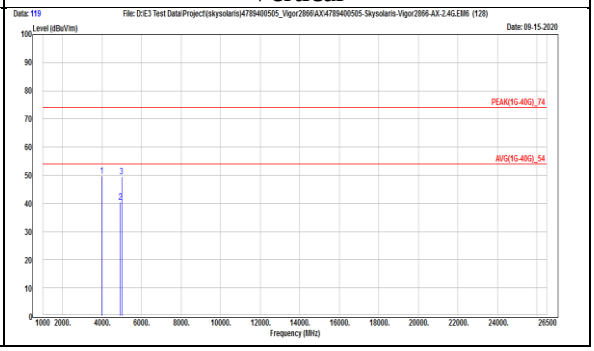
Vertical



Ch10

Horizontal	Vertical
	

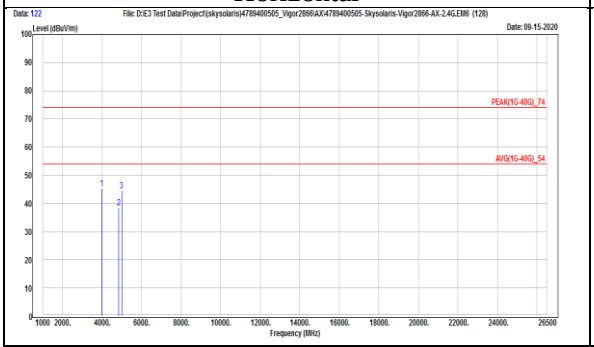
Ch11

Horizontal	Vertical
	

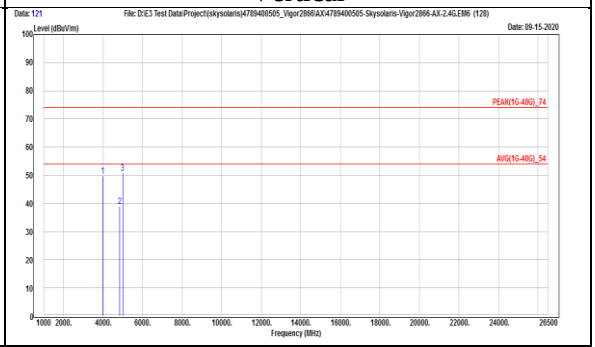
802.11n (HT40)

Ch3

Horizontal

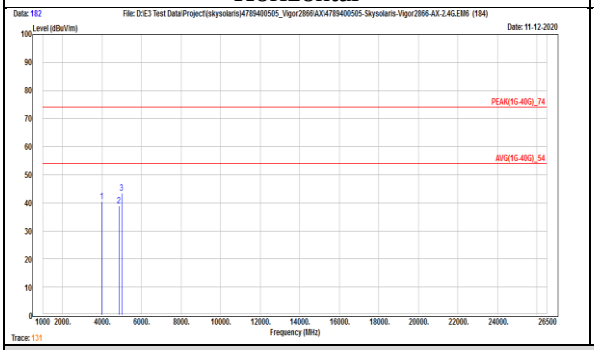


Vertical

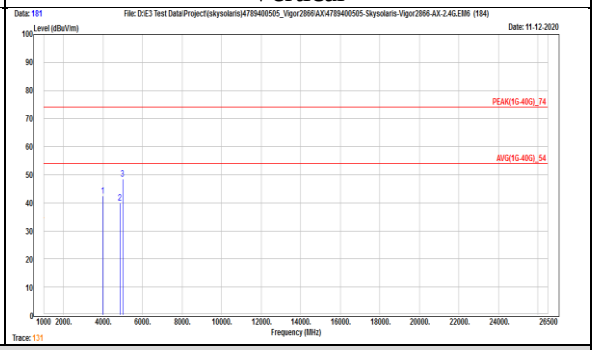


Ch4

Horizontal

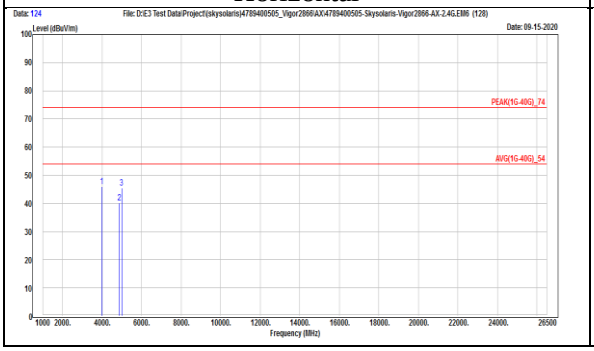


Vertical

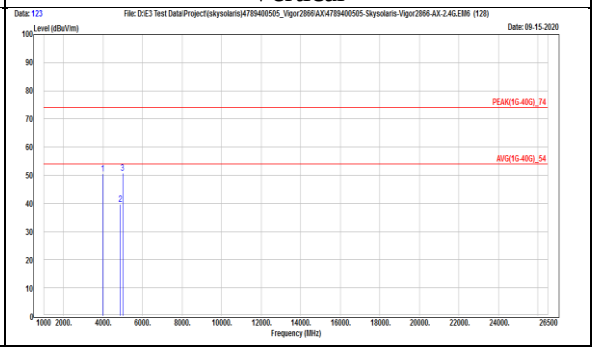


Ch6

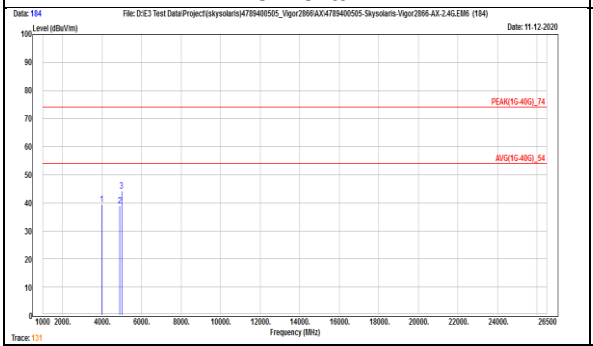
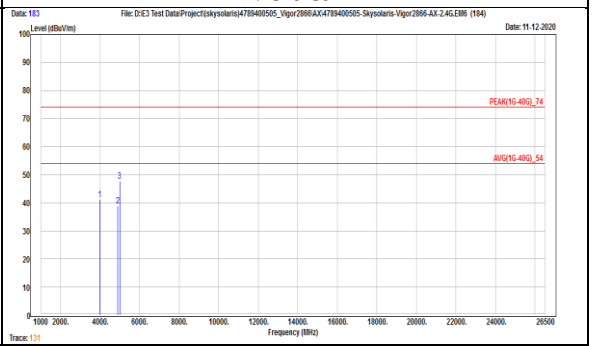
Horizontal



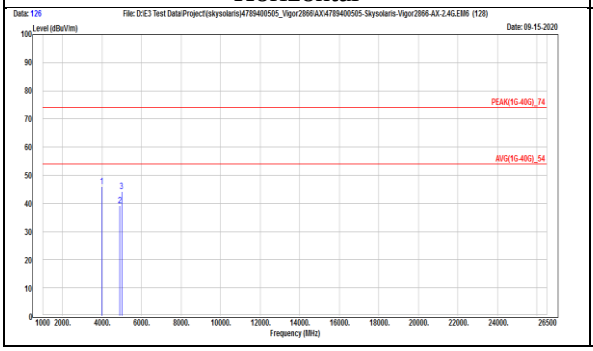
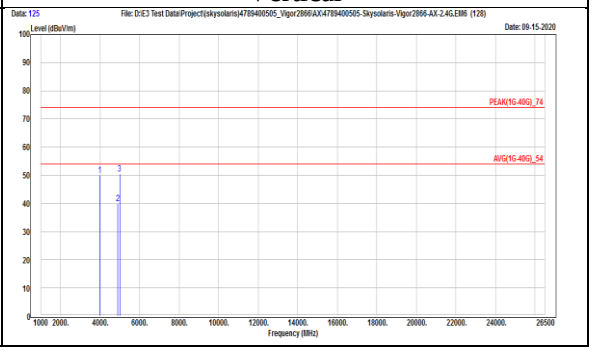
Vertical



Ch8

Horizontal	Vertical
	

Ch9

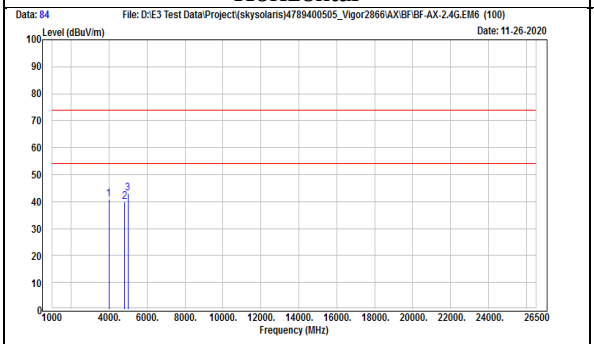
Horizontal	Vertical
	

Beamforming mode

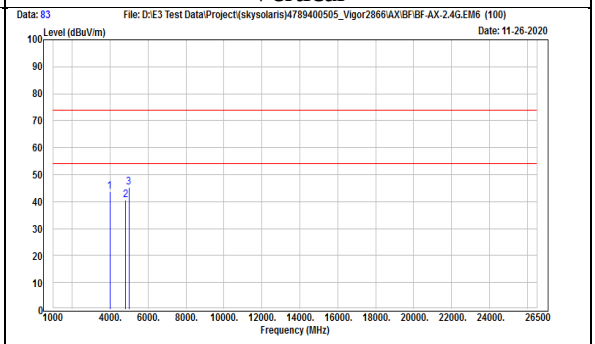
802.11ax (HE20)

Ch1

Horizontal

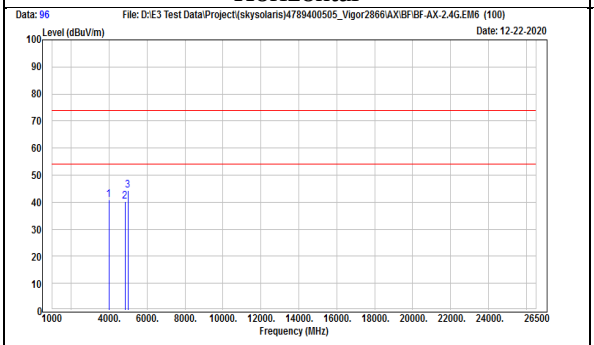


Vertical

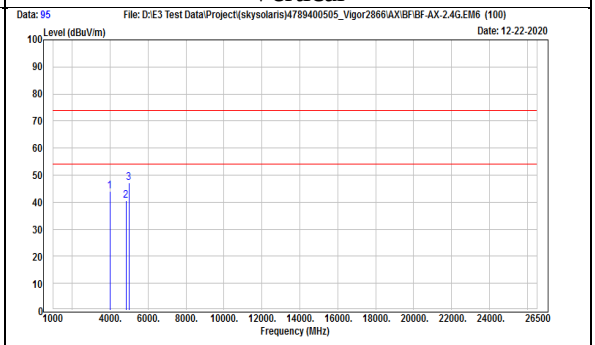


Ch2

Horizontal

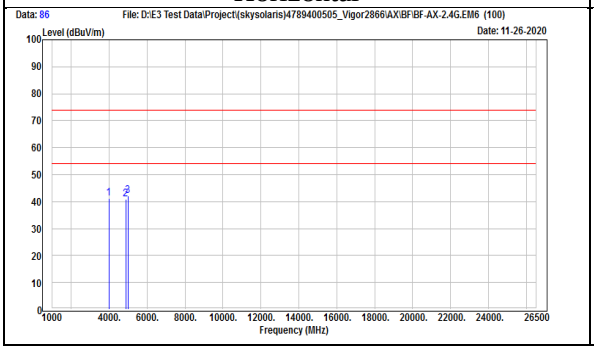


Vertical

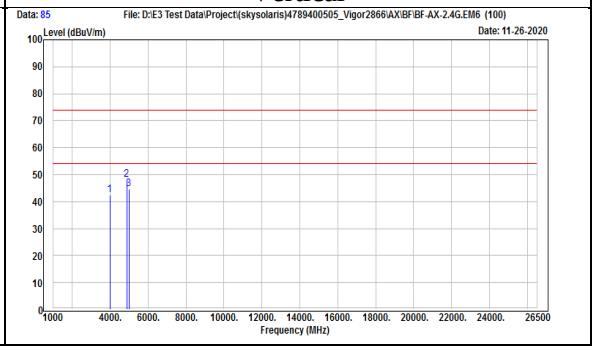


Ch6

Horizontal

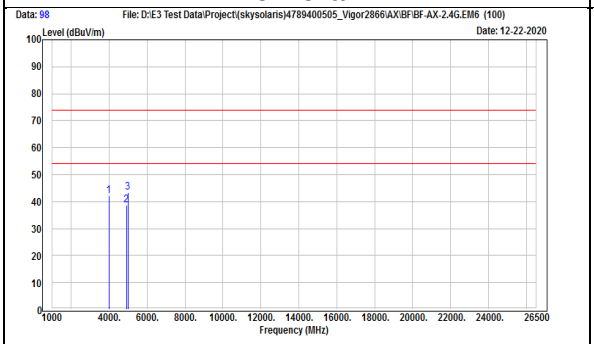


Vertical

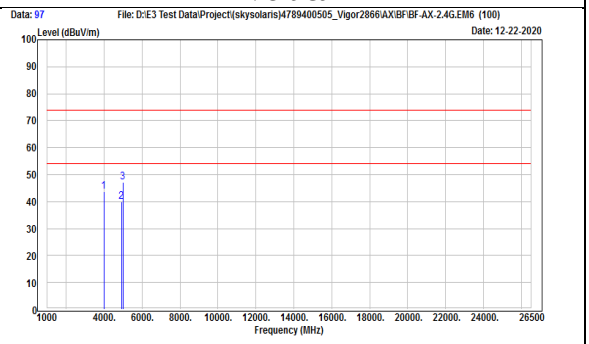


Ch10

Horizontal

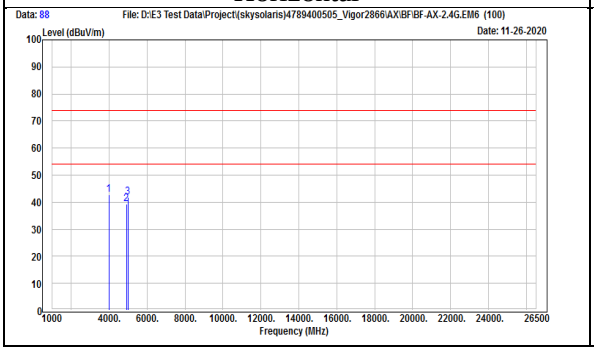


Vertical

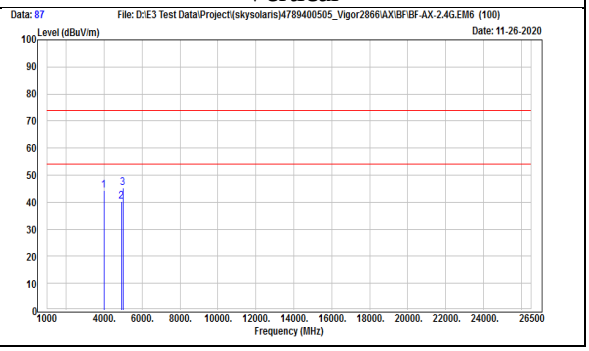


Ch11

Horizontal



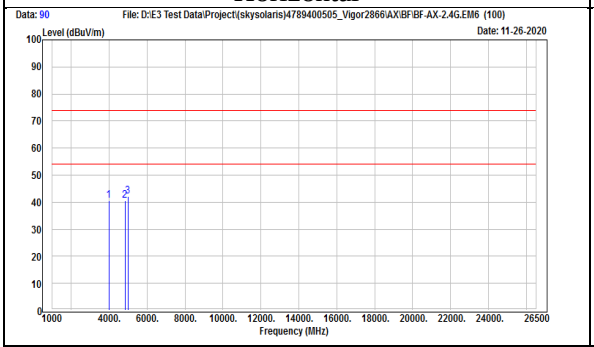
Vertical



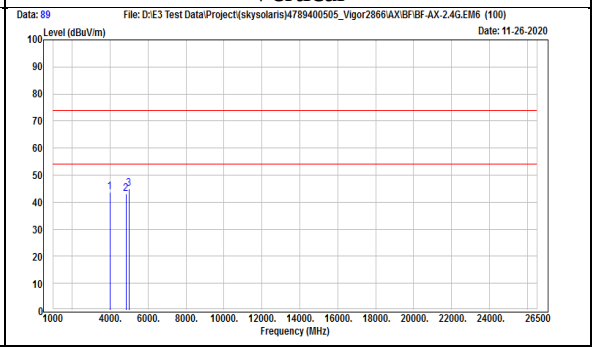
802.11n (HT40)

Ch3

Horizontal

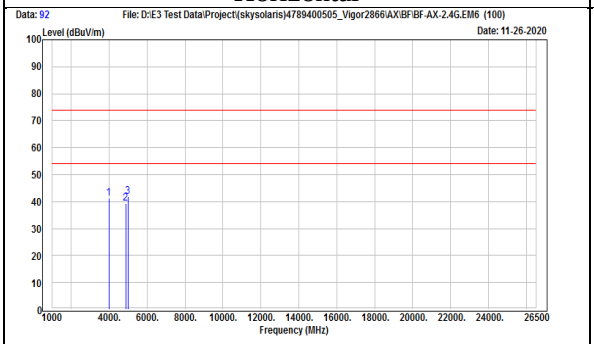


Vertical



Ch6

Horizontal



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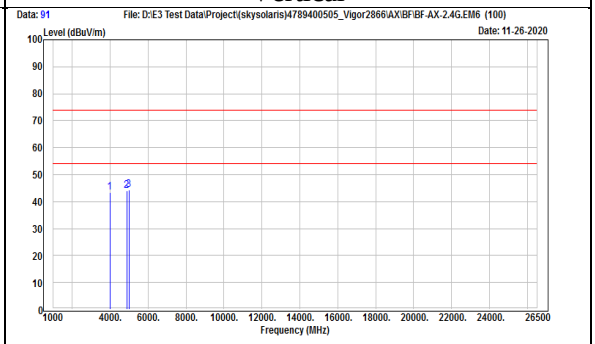
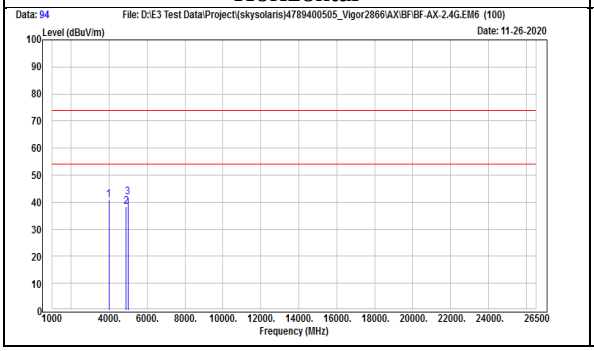
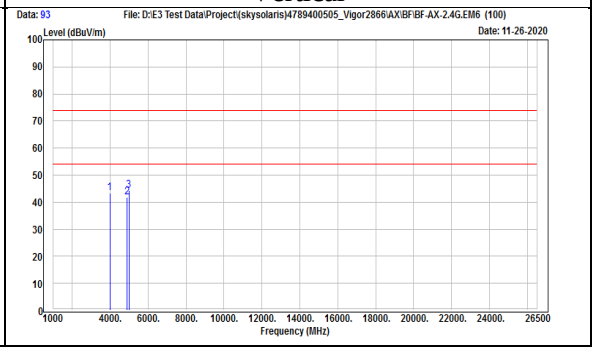


Ch9

Horizontal



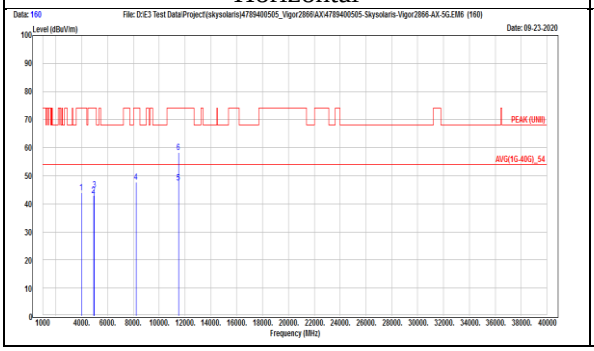
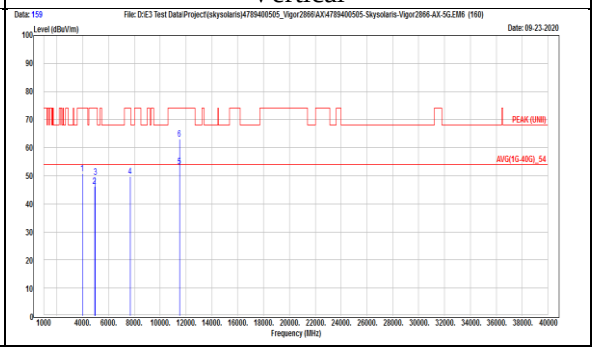
Vertical



Co-Location Mode

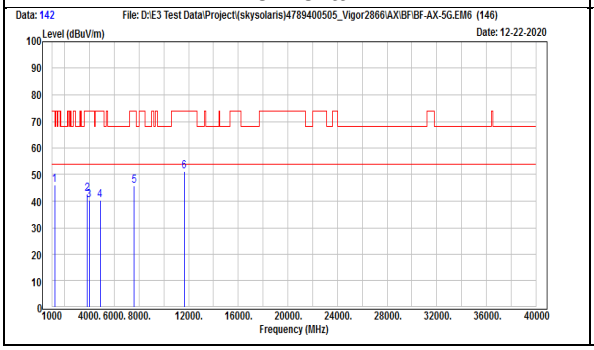
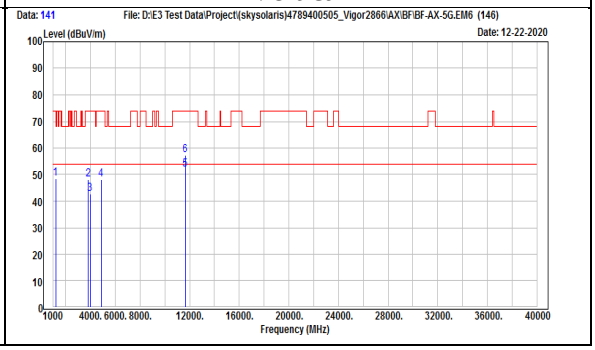
Non-Beamforming mode

802.11b + 802.11a

Ch11 + Ch149	
Horizontal	Vertical
	

Beamforming mode

802.11ax (HE20) + 802.11ax (HE20)

Ch6 + Ch165	
Horizontal	Vertical
	

END OF REPORT