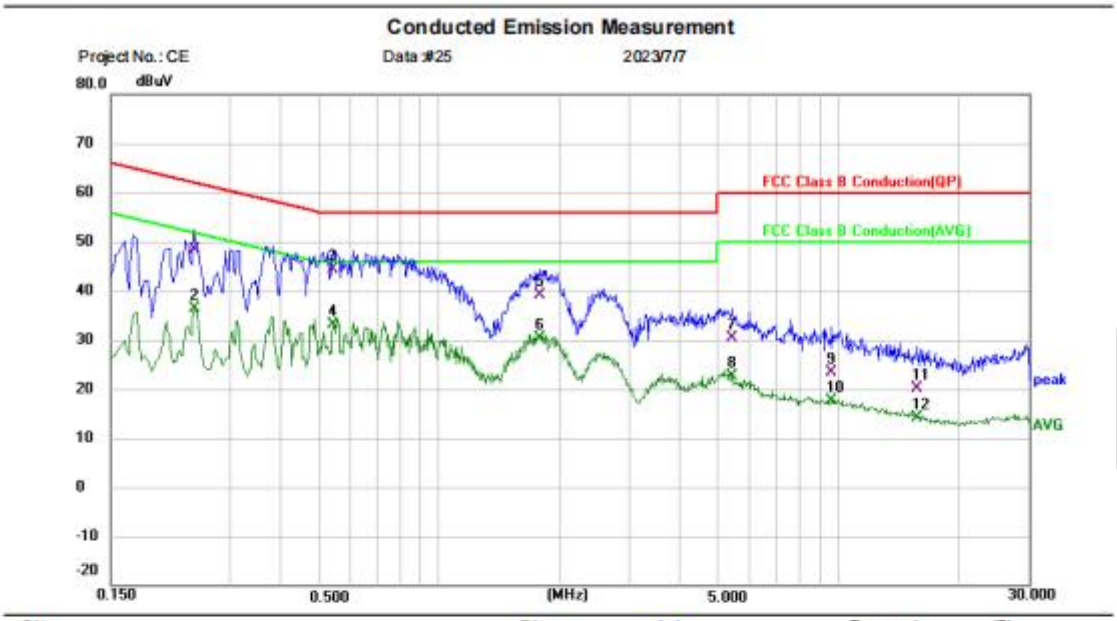
15.4 TEST DATA

[TestMode: TX mode]; [Line: Line]; [Power:120V/60Hz]



Site
Limit: FCC Class B Conduction(QP)
EUT: PANOX V2
M/N: PIP223
Mode: TX mode
Note:

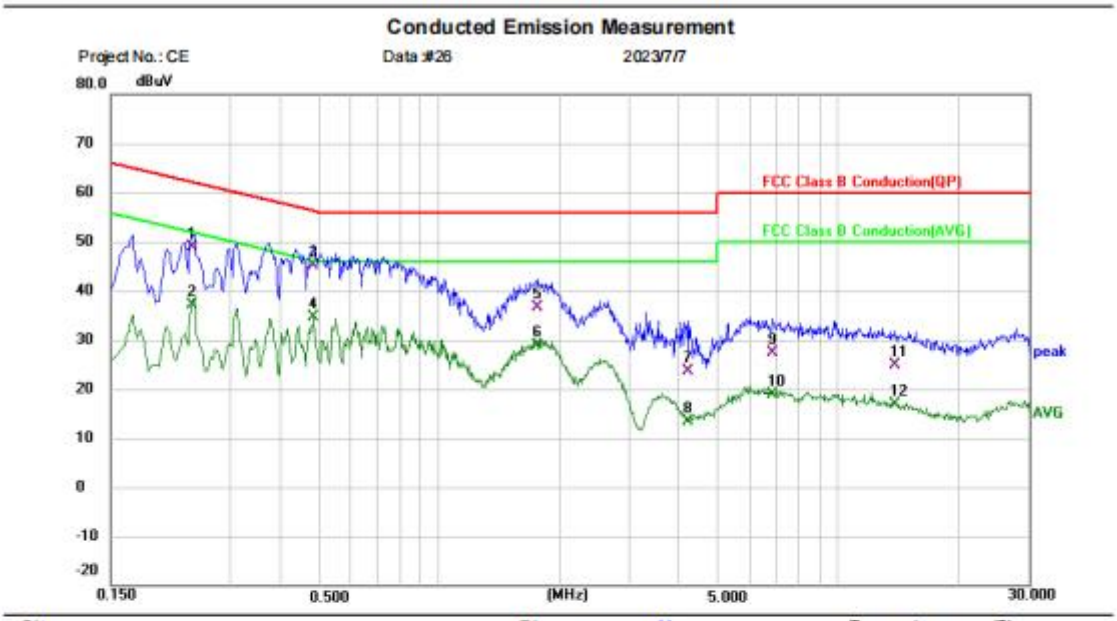
Phase: L1
Power:
Distance:
RBW: 9 KHz
VBW: 30 KHz

Temperature: (C)
Humidity: %RH
Sweep Time: 10 ms

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1		0.2420	37.81	10.59	48.40	62.03	-13.63	QP			
2		0.2420	25.75	10.59	36.34	52.03	-15.69	AVG			
3	*	0.5420	34.33	10.08	44.41	56.00	-11.59	QP			
4		0.5420	22.98	10.08	33.06	46.00	-12.94	AVG			
5		1.7900	28.77	10.27	39.04	56.00	-16.96	QP			
6		1.7900	20.12	10.27	30.39	46.00	-15.61	AVG			
7		5.4300	20.29	10.02	30.31	60.00	-29.69	QP			
8		5.4300	12.55	10.02	22.57	50.00	-27.43	AVG			
9		9.6220	13.37	10.13	23.50	60.00	-36.50	QP			
10		9.6220	7.40	10.13	17.53	50.00	-32.47	AVG			
11		15.7580	10.09	9.95	20.04	60.00	-39.96	QP			
12		15.7580	4.26	9.95	14.21	50.00	-35.79	AVG			

Test Result: Pass

[TestMode: TX mode]; [Line: Nutral]; [Power:120V/60Hz]



Site
Limit: FCC Class B Conduction(QP)
EUT: PANOX V2
M/N: PIP223
Mode: TX mode
Note:

Phase: N
Power:
Distance:
RBW: 9 KHz
VBW: 30 KHz

Temperature: (C)
Humidity: %RH
Sweep Time: 10 ms

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1		0.2380	38.45	10.55	49.00	62.17	-13.17	QP			
2		0.2380	26.50	10.55	37.05	52.17	-15.12	AVG			
3	*	0.4820	35.15	10.05	45.20	56.30	-11.10	QP			
4		0.4820	24.46	10.05	34.51	46.30	-11.79	AVG			
5		1.7620	26.54	10.09	36.63	56.00	-19.37	QP			
6		1.7620	18.71	10.09	28.80	46.00	-17.20	AVG			
7		4.2060	13.79	9.88	23.67	56.00	-32.33	QP			
8		4.2060	3.48	9.88	13.36	46.00	-32.64	AVG			
9		6.8660	17.52	9.87	27.39	60.00	-32.61	QP			
10		6.8660	8.90	9.87	18.77	50.00	-31.23	AVG			
11		13.9100	14.88	10.03	24.91	60.00	-35.09	QP			
12		13.9100	6.81	10.03	16.84	50.00	-33.16	AVG			

Test Result: Pass

16 RADIATED SPURIOUS EMISSIONS

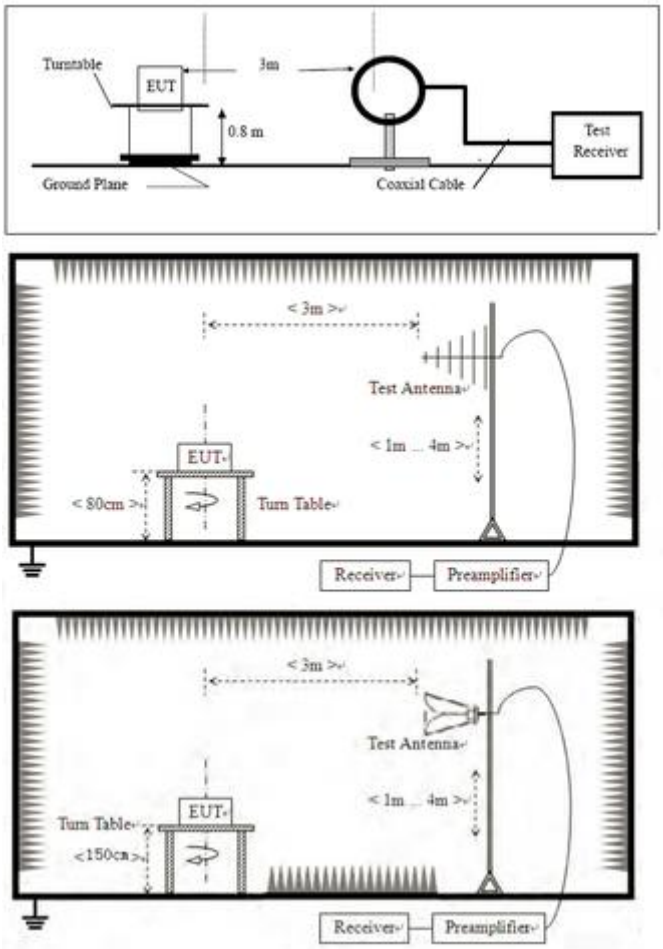
Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.4,6.5,6.6
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Charlie
Temperature	25℃
Humidity	60%

16.1 LIMITS

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

16.2 BLOCK DIAGRAM OF TEST SETUP



16.3 PROCEDURE

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

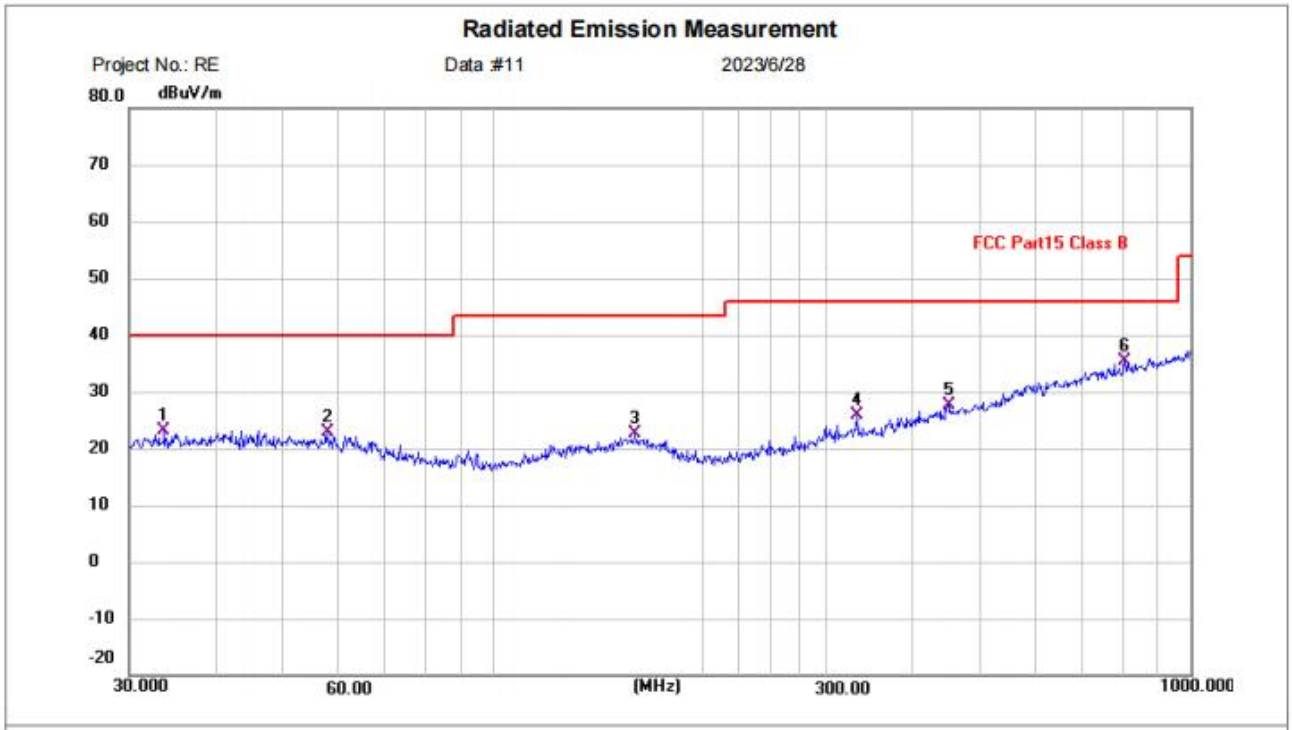
h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
j. Repeat above procedures until all frequencies measured was complete.

Remark:
1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor
3) Scan from 9kHz to 25GHz, the disturbance above 12.75GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.fundamental frequency is blocked by filter, and only spurious emission is shown.
4) For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

16.4 TEST DATA

Below 1GHz

[TestMode: TX]; [Polarity: Horizontal]



Site
Limit: FCC Part15 Class B
EUT: PANOX V2
M/N: PIP223
Mode: TX mode
Note:

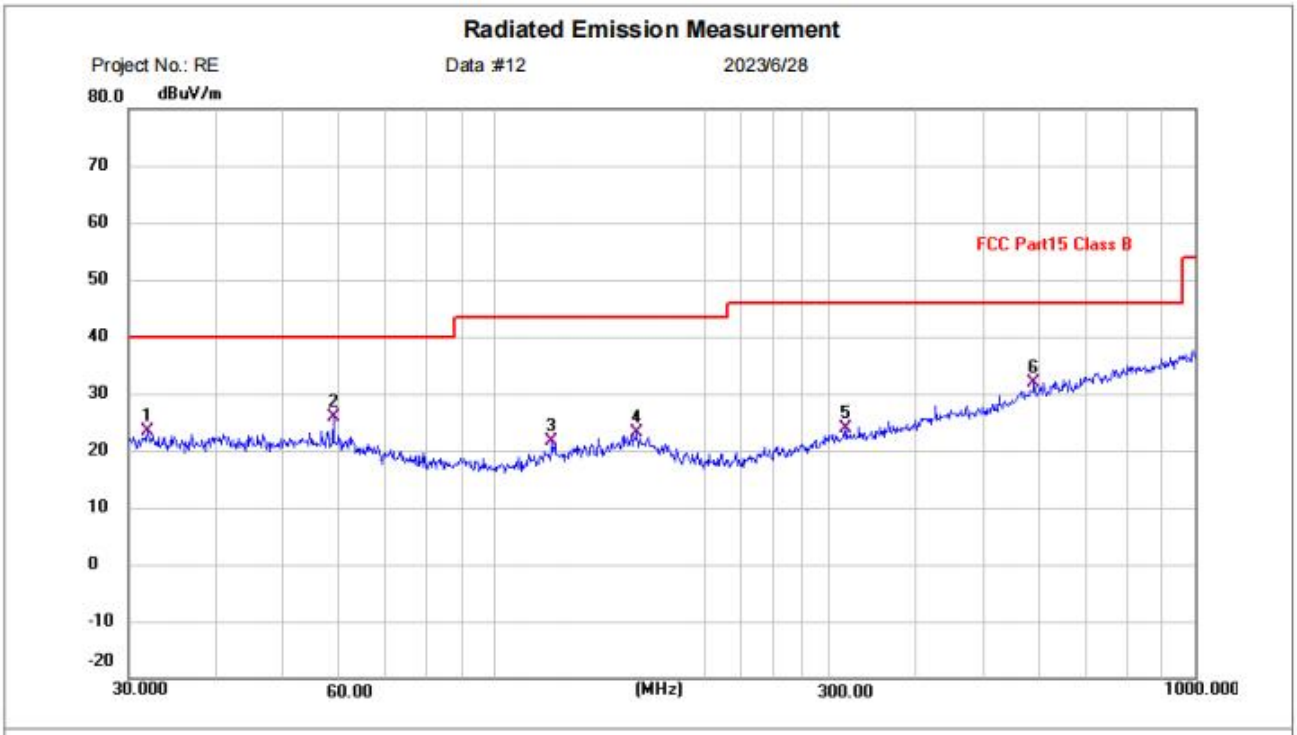
Polarization: *Horizontal*
Power:

Temperature: (C)
Humidity: %RH

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	33.6802	0.58	22.53	23.11	40.00	-16.89	QP	P	
2	57.7962	0.47	22.47	22.94	40.00	-17.06	QP	P	
3	159.2251	-0.95	23.64	22.69	43.50	-20.81	QP	P	
4	332.5187	1.68	24.18	25.86	46.00	-20.14	QP	P	
5	449.5558	0.33	27.26	27.59	46.00	-18.41	QP	P	
6 *	804.6027	1.77	33.69	35.46	46.00	-10.54	QP	P	

Test Result: Pass

[TestMode: TX]; [Polarity: Vertical]



Site
Limit: FCC Part15 Class B
EUT: PANOX V2
M/N: PIP223
Mode: TX mode
Note:

Polarization: *Vertical*
Power:

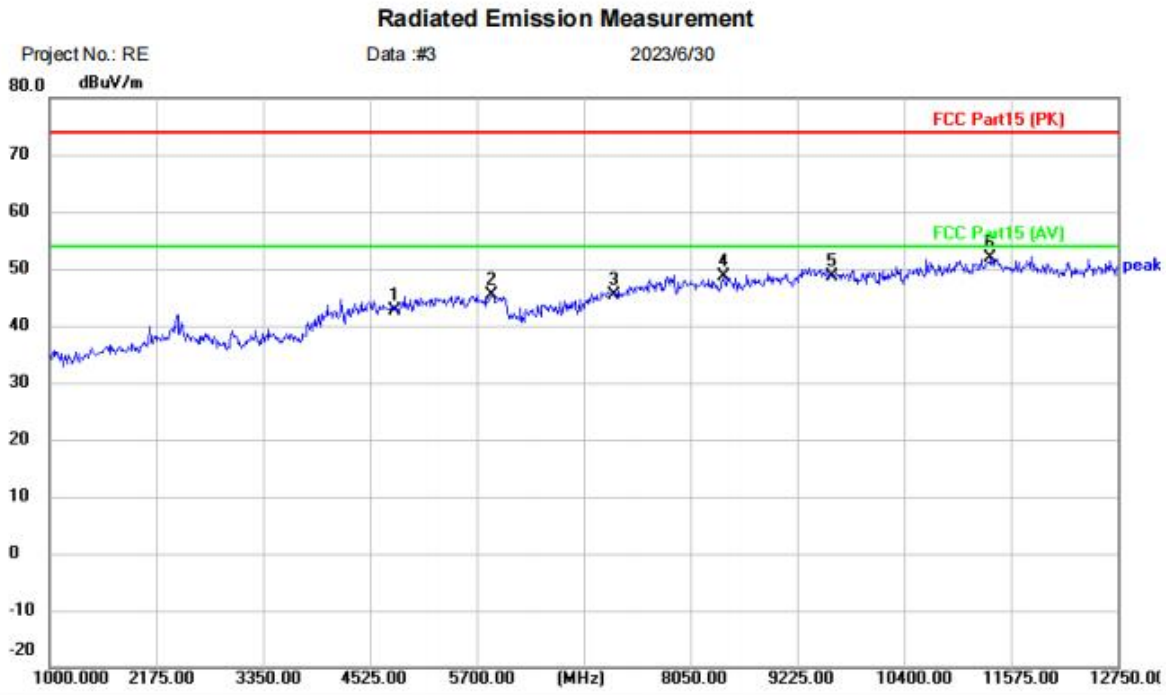
Temperature: (C)
Humidity: %RH

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	31.9545	0.52	22.82	23.34	40.00	-16.66	QP	P	
2	58.8185	3.09	22.77	25.86	40.00	-14.14	QP	P	
3	120.6991	-0.07	21.73	21.66	43.50	-21.84	QP	P	
4	159.7844	-0.44	23.47	23.03	43.50	-20.47	QP	P	
5	317.7010	0.00	23.96	23.96	46.00	-22.04	QP	P	
6 *	588.9050	1.47	30.40	31.87	46.00	-14.13	QP	P	

Test Result: Pass

Above 1GHz

[TestMode: TX lowest channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: PANOX V2
M/N: PIP223
Mode: TX-L
Note:

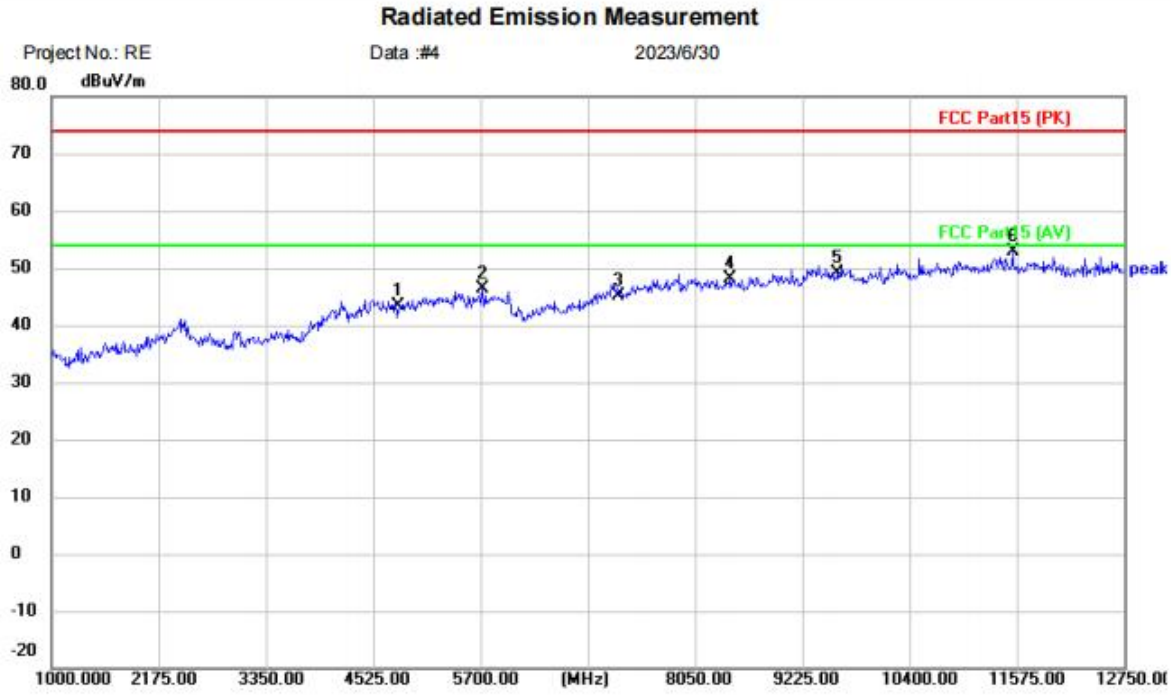
Polarization: *Horizontal*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4804.000	38.12	4.51	42.63	74.00	-31.37	peak	
2		5864.500	38.83	6.62	45.45	74.00	-28.55	peak	
3		7206.000	37.95	7.41	45.36	74.00	-28.64	peak	
4		8414.250	39.73	8.92	48.65	74.00	-25.35	peak	
5		9608.000	37.02	11.59	48.61	74.00	-25.39	peak	
6	*	11351.75	38.45	13.39	51.84	74.00	-22.16	peak	

Test Result: Pass

[TestMode:TX lowest channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: PANOX V2
M/N: PIP223
Mode: TX-L
Note:

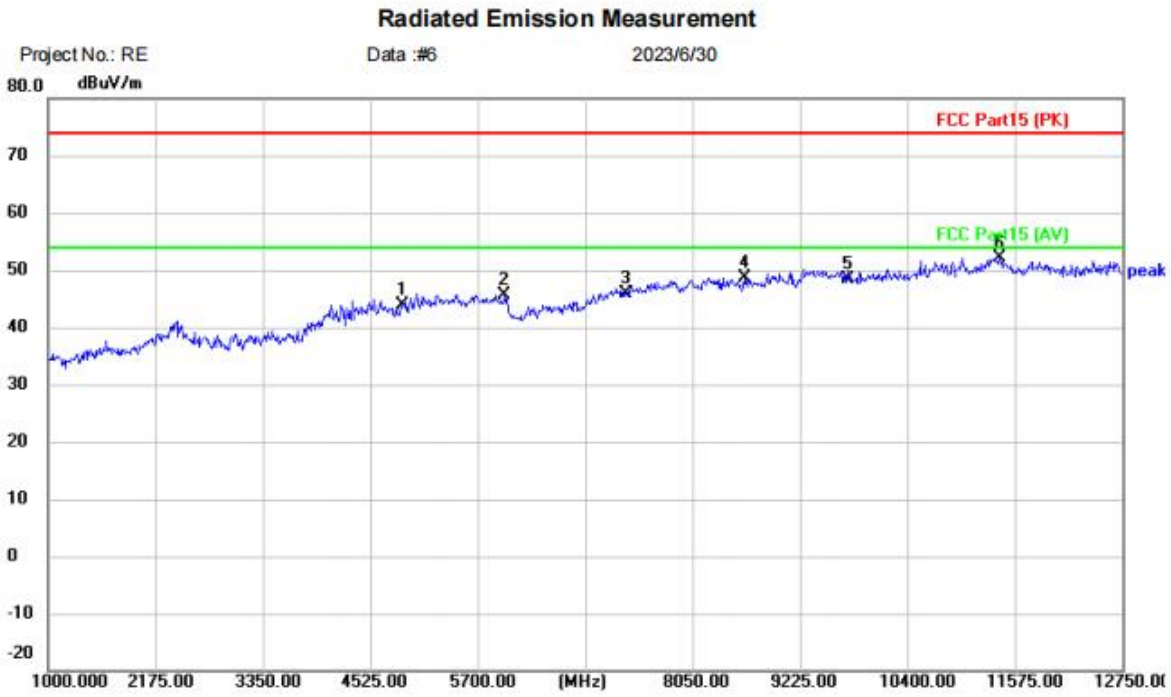
Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4804.000	38.99	4.51	43.50	74.00	-30.50	peak	
2		5723.500	40.00	6.43	46.43	74.00	-27.57	peak	
3		7206.000	37.80	7.41	45.21	74.00	-28.79	peak	
4		8426.000	39.24	9.01	48.25	74.00	-25.75	peak	
5		9608.000	37.44	11.59	49.03	74.00	-24.97	peak	
6	*	11528.00	39.51	13.42	52.93	74.00	-21.07	peak	

Test Result: Pass

[TestMode: TX middle channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: PANOX V2
M/N: PIP223
Mode: TX-M
Note:

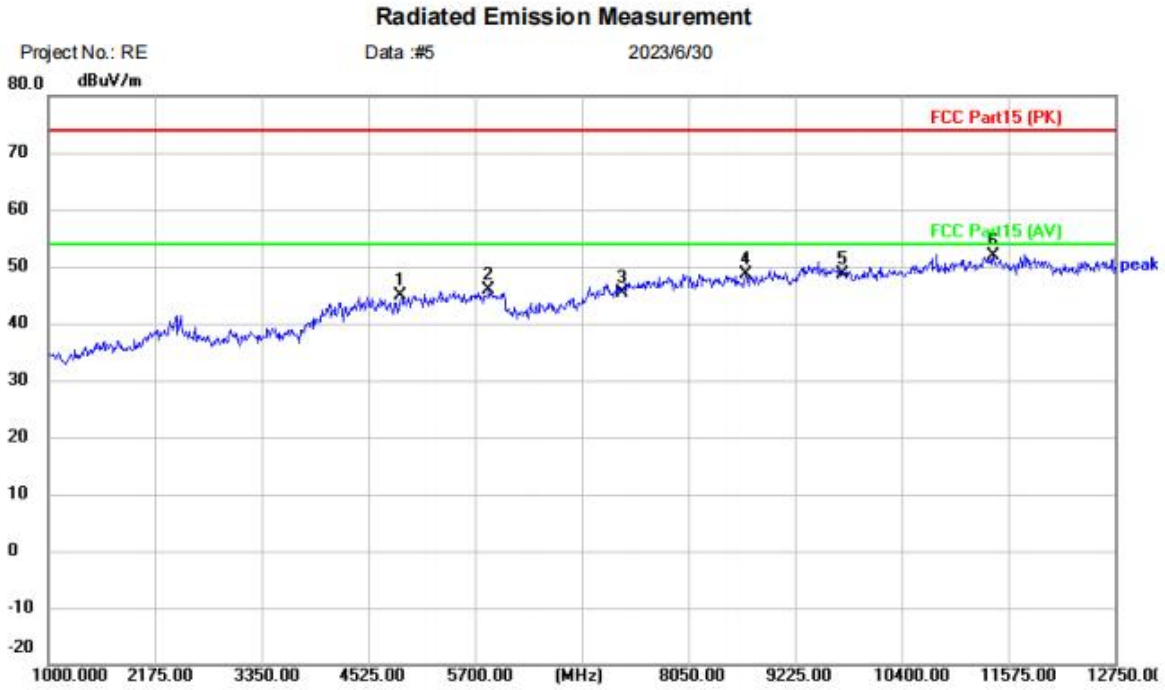
Polarization: *Horizontal*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4882.000	39.34	4.60	43.94	74.00	-30.06	peak	
2		5993.750	39.05	6.70	45.75	74.00	-28.25	peak	
3		7323.000	38.17	7.82	45.99	74.00	-28.01	peak	
4		8614.000	39.10	9.61	48.71	74.00	-25.29	peak	
5		9764.000	36.74	11.76	48.50	74.00	-25.50	peak	
6	*	11410.50	38.75	13.42	52.17	74.00	-21.83	peak	

Test Result: Pass

[TestMode: TX middle channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: PANOX V2
M/N: PIP223
Mode: TX-M
Note:

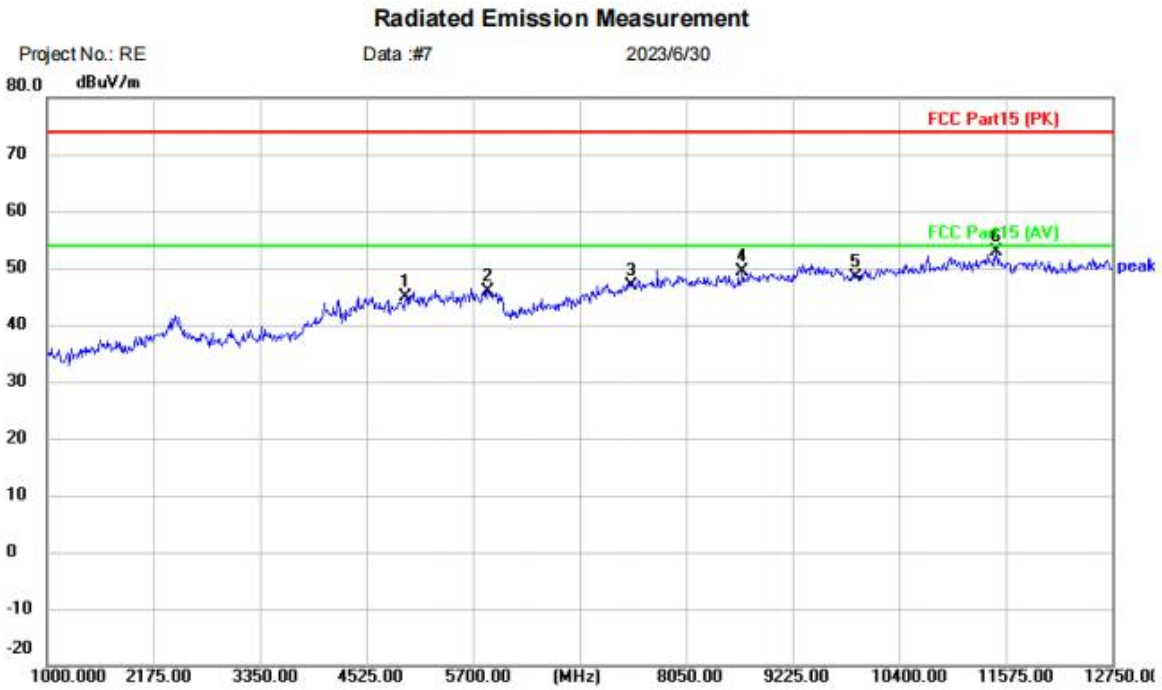
Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4882.000	40.31	4.60	44.91	74.00	-29.09	peak	
2		5852.750	39.22	6.58	45.80	74.00	-28.20	peak	
3		7323.000	37.68	7.82	45.50	74.00	-28.50	peak	
4		8684.500	38.67	9.84	48.51	74.00	-25.49	peak	
5		9764.000	36.78	11.76	48.54	74.00	-25.46	peak	
6	*	11410.50	38.35	13.42	51.77	74.00	-22.23	peak	

Test Result: Pass

[TestMode: TX highest channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: PANOX V2
M/N: PIP223
Mode: TX-H
Note:

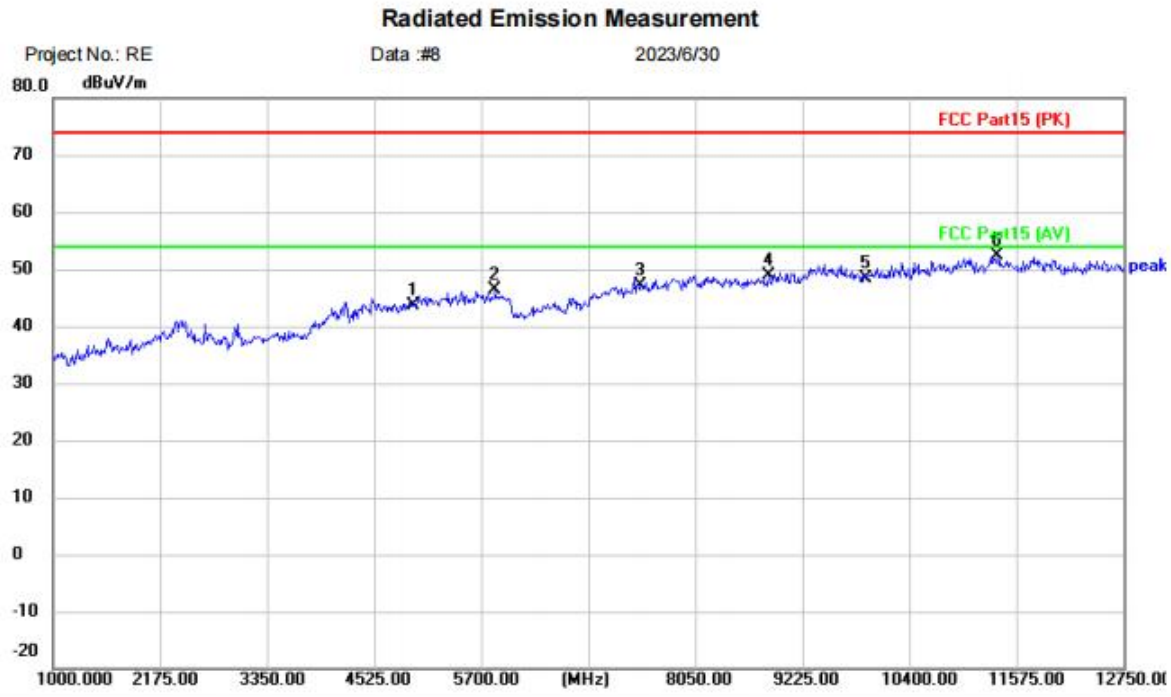
Polarization: *Horizontal*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.000	39.36	5.47	44.83	74.00	-29.17	peak	
2		5864.500	39.37	6.62	45.99	74.00	-28.01	peak	
3		7440.000	38.59	8.24	46.83	74.00	-27.17	peak	
4		8672.750	39.63	9.81	49.44	74.00	-24.56	peak	
5		9920.000	36.35	11.96	48.31	74.00	-25.69	peak	
6	*	11469.25	39.41	13.49	52.90	74.00	-21.10	peak	

Test Result: Pass

[TestMode: TX highest channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: PANOX V2
M/N: PIP223
Mode: TX-H
Note:

Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.000	38.23	5.47	43.70	74.00	-30.30	peak	
2		5852.750	39.82	6.58	46.40	74.00	-27.60	peak	
3		7440.000	38.98	8.24	47.22	74.00	-26.78	peak	
4		8849.000	38.76	10.08	48.84	74.00	-25.16	peak	
5		9920.000	36.49	11.96	48.45	74.00	-25.55	peak	
6	*	11363.50	38.97	13.40	52.37	74.00	-21.63	peak	

Test Result: Pass

17 RADIATED EMISSIONS WHICH FALL IN THE RESTRICTED BANDS

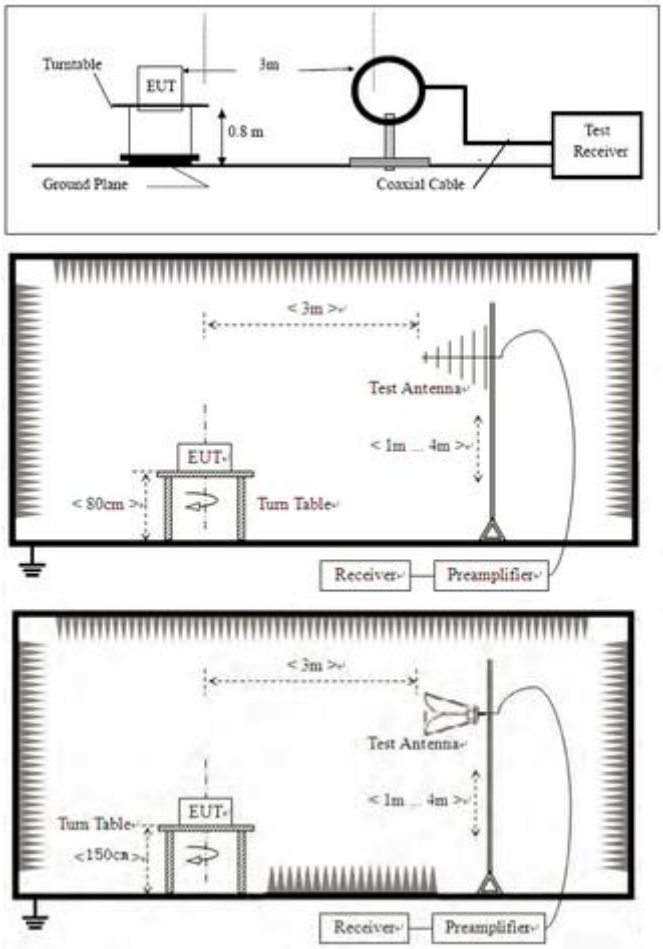
Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.10.5
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Charlie
Temperature	25℃
Humidity	60%

17.1 LIMITS

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

17.2 BLOCK DIAGRAM OF TEST SETUP



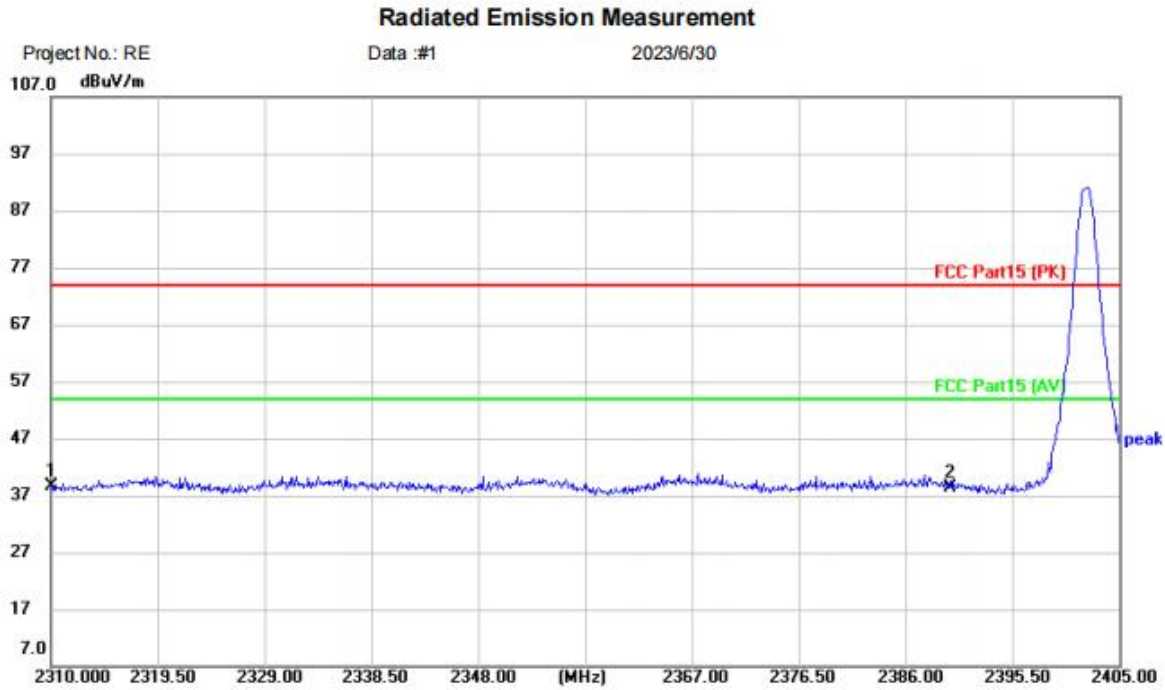
17.3 PROCEDURE

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
j. Repeat above procedures until all frequencies measured was complete.
Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

17.4 TEST DATA

[TestMode: TX lowest channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: PANOX V2
M/N: PIP223
Mode: TX-L
Note:

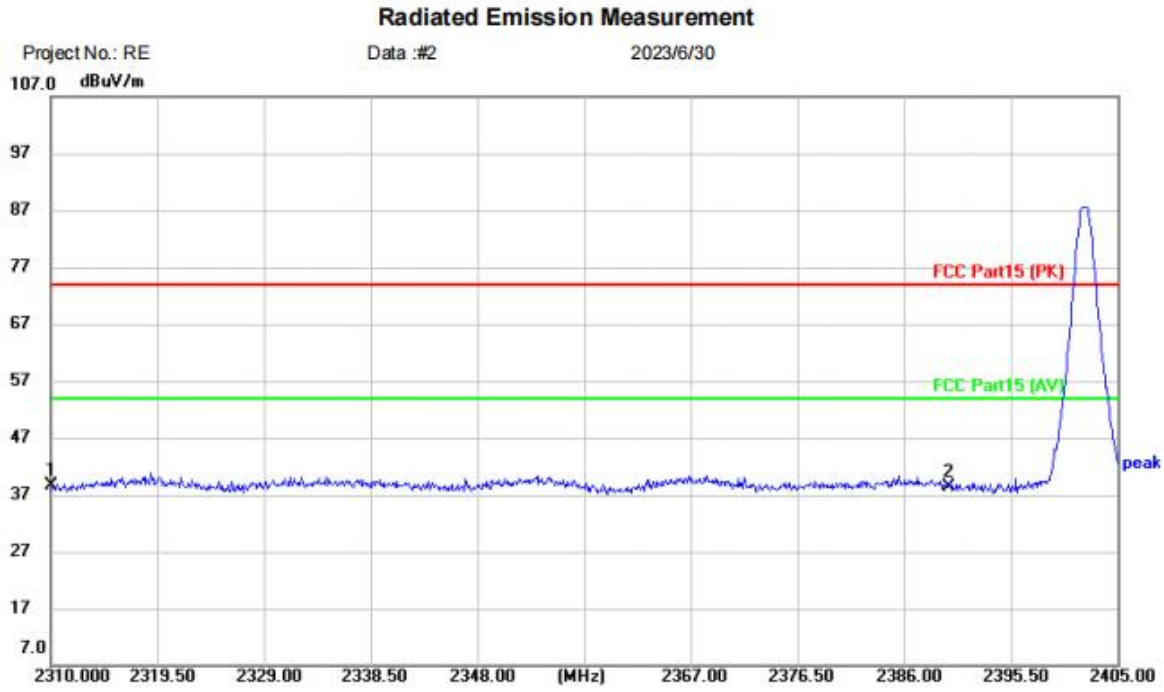
Polarization: *Horizontal*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2310.000	43.15	-4.40	38.75	74.00	-35.25	peak	
2		2390.000	42.73	-4.31	38.42	74.00	-35.58	peak	

Test Result: Pass

[TestMode: TX lowest channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: PANOX V2
M/N: PIP223
Mode: TX-L
Note:

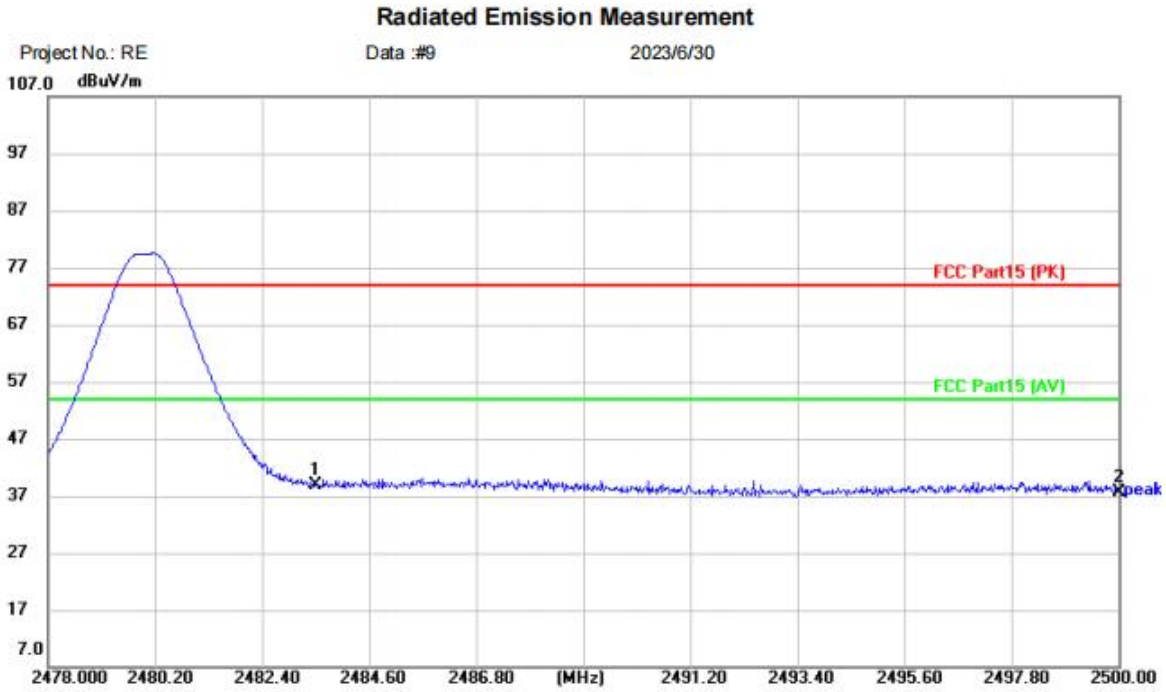
Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2310.000	42.92	-4.40	38.52	74.00	-35.48	peak	
2		2390.000	42.67	-4.31	38.36	74.00	-35.64	peak	

Test Result: Pass

[TestMode: TX highest channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: PANOX V2
M/N: PIP223
Mode: TX-H
Note:

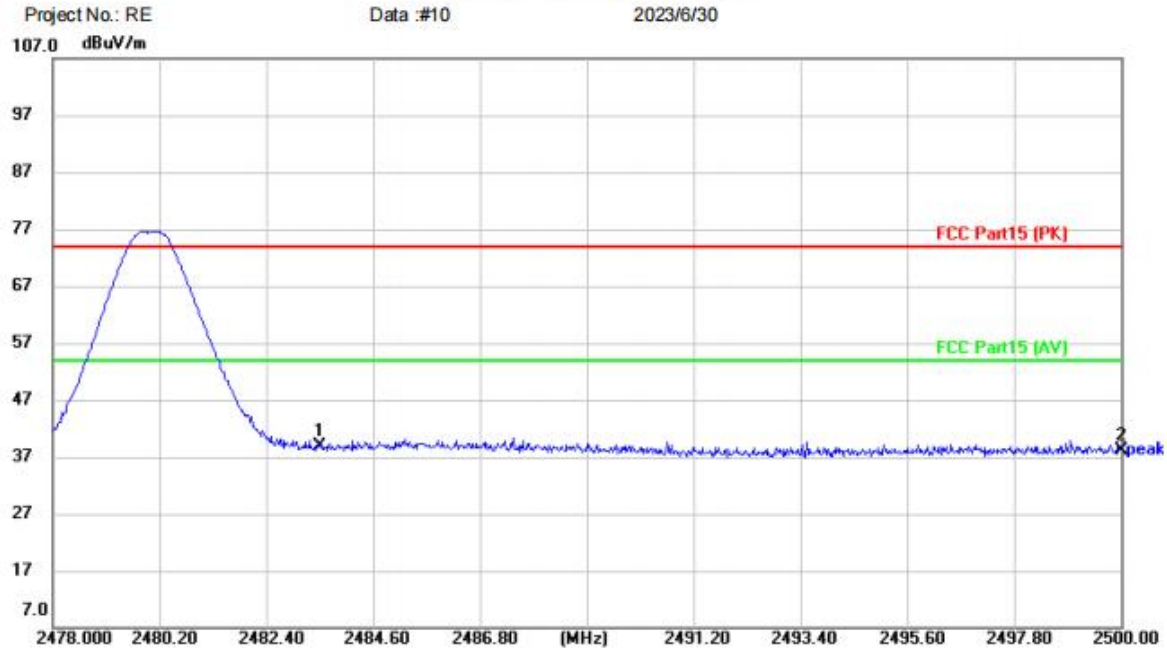
Polarization: *Horizontal*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2483.500	43.62	-4.64	38.98	74.00	-35.02	peak	
2		2500.000	42.50	-4.75	37.75	74.00	-36.25	peak	

Test Result: Pass

[TestMode: TX highest channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: PANOX V2
M/N: PIP223
Mode: TX-H
Note:

Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2483.500	43.40	-4.64	38.76	74.00	-35.24	peak	
2		2500.000	42.88	-4.75	38.13	74.00	-35.87	peak	

Test Result: Pass