Website: www.cblueasia.com
Tel: +86-755-23059481
Email: marketing@cblueasia.com

Test Report

Applicant	:	Labpano Technology (Changzhou) Co., Ltd.
Address	:	Building 4D, No.160 Xihu West Road, Wujin National Hi-tech Industrial Zone, Changzhou, Jiangsu, China.
Product Name	:	PanoX V3
Brand Mark	:	PanoX
Model	:	PIP225
Extension model	:	PIP225+
FCC ID	:	2ARZ2-PIP225
Report Number	:	BLA-EMC-202407-A10405
Date of Receipt	:	2024.07.25
Date of Test	:	2024.07.25 to 2024.08.16
Test Standard	:	47 CFR Part 15, Subpart C 15.407
Test Result	:	Pass

Compiled by: Hugh **Review by:** Sweely **Approved by:** Blue Zheng

Issued Date: 2024. 08.16

BlueAsia of Technical Services(Shenzhen) Co.,Ltd.

Address: Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province, China

BlueAsia of Technical Services(Shenzhen) Co., Ltd. BLA

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Revise Record

Version No.	Date	Description
01	2024.08.16	Original

1 General information

1.1 General information

Applicant	Labpano Technology (Changzhou) Co., Ltd.
Address	Building 4D, No.160 Xihu West Road, Wujin National Hi-tech Industrial Zone, Changzhou, Jiangsu, China.
Manufacturer	Labpano Technology (Changzhou) Co., Ltd.
Address	Building 4D, No.160 Xihu West Road, Wujin National Hi-tech Industrial Zone, Changzhou, Jiangsu, China.
Factory	Labpano Technology (Changzhou) Co., Ltd.
Address	Building 4D, No.160 Xihu West Road, Wujin National Hi-tech Industrial Zone, Changzhou, Jiangsu, China.

1.2 General description of EUT

Product name	PanoX V3
Model no.	PIP225
Series model	PIP225+
Note	PIP225 and PiP225+ have the same circuit design, layout, used components and internal wiring, only the model and color are different because of the different sales channels
Operation Frequency	Band 1: 5180MHz-5240MHz; Band 4: 5745MHz-5825MHz;
Channel numbers	Band 1: 802.11a/802.11n(HT20)/802.11ac(HT20): 4, 802.11n(HT40)/ 802.11ac(HT40):2, 802.11ac(HT80): 1
	Band 4: 802.11a/802.11(HT20)/802.11ac(HT20): 5, 802.11n(HT40)/ 802.11ac(HT40): 2, 802.11ac(HT80): 1
Modulation Type	BPSK, QPSK,16-QAM, 64-QAM, 256QAM
Channel Spacing	802.11a/n/ac: 20MHz, 802.11n/ac: 40MHz, 802.11ac: 80MHz
Data speed	6Mbps, 9Mbps,12Mbps,18Mbps, 24Mbps,36Mbps,48Mbps, 54Mbps, Up to 866.7 Mbps
DFS type	Slave
Antenna Type:	Internal antenna
Antenna Gain:	ANT1: 1.18 dBi, ANT2: 2.24 dBi (Provided by customer)
Power supply or adapter information	DC3.85V
Hardware Version	FM05_MB_PCB_V1.0
Software Version	Pano2_QCS605_P225_Develop-#23-beta

Engineer sample no	BLA-EMC-202407-A104
Note: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.	

2 Test summary

No.	Test item	Result	Remark
1	Antenna Requirement	Pass	
2	Conducted Emissions at AC Power Line (150kHz-30MHz)	Pass	
3	Frequency Stability	Pass	
4	Maximum Conducted output power	Pass	
5	Transmitter Power Control	N/A	
6	Peak Power spectrum density	Pass	
7	Minimum 6 dB bandwidth (5.725-5.85 GHz band)	Pass	
8	26dB Emission bandwidth	Pass	
9	99% Bandwidth	Pass	
10	Duty Cycle	Pass	
11	Conducted Band Edges Measurement	Pass	
12	Conducted spurious emissions	Pass	
13	Radiated Emissions which fall in the restricted bands	Pass	
14	Radiated Emissions	Pass	
15	DFS: Channel Closing Transmission Time	N/A	
16	DFS: Non-occupancy period	N/A	

N/A: Not Applicable

3 Test Configuration

3.1 Test mode

Test Mode Note 1	Description
TX	Keep the EUT in continuously transmitting mode with modulation.

Note 1: The EUT was configured to measure its highest possible emission and/or immunity level. The test modes were adapted according to the operation manual for use

3.2 Operation frequency and test channel

802.11a/n/ac

Band \ Bandwidth	20(MHz)		40(MHz)		80(MHz)	
	Channel number	frequency (MHz)	Channel number	frequency (MHz)	Channel number	frequency(MHz)
U-NII-1	36	5180	38	5190	42	5210
	40	5200				
	44	5220	46	5230		
	48	5240				
U-NII-2A	52	5260	54	5270	58	5290
	56	5280				
	60	5300	62	5310		
	64	5320				
U-NII-2C	100	5500	102	5510	106	5530
	104	5520				
	108	5540	110	5550		
	112	5560				
	116	5580	--	--	--	--
	132	5660	134	5670	--	--
	136	5680			--	--
	140	5700	--	--	--	--
U-NII-3	149	5745	151	5755	155	5775
	153	5765				
	157	5785	159	5795		
	161	5805				
	165	5825	--	--	--	--

3.3 Auxiliary equipment

Device Type	Manufacturer	Model Name	Serial No.	Remark
PC	Lenovo	E460C	N/A	From lab (No.BLA-ZC-BS-2022005)
Note: "--" mean no any auxiliary device during testing.				

3.4 Test environment

Environment	Temperature	Voltage
Normal	25°C	DC3.85V

4 Laboratory information

4.1 Laboratory and accreditations

The test facility is recognized, certified, or accredited by the following organizations:

Company name:	BlueAsia of Technical Services(Shenzhen) Co., Ltd.
Address:	Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province, China
CNAS accredited No.:	L9788
A2LA Cert. No.:	5071.01
FCC Designation No.:	CN1252
ISED CAB identifier No.:	CN0028
Telephone:	+86-755-28682673
FAX:	+86-755-28682673

4.2 Measurement uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

Parameter	Expanded Uncertainty
Radiated Emission(9kHz-30MHz)	±4.34dB
Radiated Emission(30Mz-1000MHz)	±4.24dB
Radiated Emission(1GHz-18GHz)	±4.68dB
AC Power Line Conducted Emission(150kHz-30MHz)	±3.45dB
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1.5 dB
Power Spectral Density, conducted	±3.0 dB
Unwanted Emissions, conducted	±3.0 dB
Temperature	±3 °C
Supply voltages	±3 %
Time	±5 %

5 Test equipment

Equipment No.	Equipment Name	Model No.	Manufacture	S/N	Cal. Date	Next Cal. Date
BLA-EMC-008	Spectrum	FSP40	R&S	100817	2023/08/30	2024/08/29
BLA-EMC-009	EMI Receiver	ESR7	R&S	101199	2023/08/30	2024/08/29
BLA-EMC-012	broad band Antenna	VULB9168	Schwarz beck	00836 P:00227	2022/10/12	2025/10/11
BLA-EMC-013	Horn Antenna	BBHA9120D	Schwarz beck	01892	2022/09/13	2025/09/12
BLA-EMC-014	Amplifier	PA_000318G-45	SKET	PA2018043003	2023/08/30	2024/08/29
BLA-EMC-016	Signal Generator	N5182A	Agilent	MY52420567	2023/11/16	2024/11/15
BLA-EMC-028	Spectrum	N9020A	Agilent	MY53420839	2023/11/16	2024/11/15
BLA-EMC-038	Spectrum	N9020A	Agilent	MY49100060	2023/08/30	2024/08/29
BLA-EMC-042	Power sensor	RPR3006W	DARE	14I00889SN042	2023/09/01	2024/08/31
BLA-EMC-043	Loop antenna	FMZB1519B	SCHNARZBECK	00102	2022/09/14	2025/09/13
BLA-EMC-044	Wideband radio communication tester	CMW500	R&S	132429	2023/08/30	2024/08/29
BLA-EMC-046	Filter bank	2.4G/5G Filter bank	SKET	N/A	2024/07/07	2025/07/06
BLA-EMC-061	Receiver	ESPI7	R&S	101477	2024/07/07	2025/07/06
BLA-EMC-062	Signal Generator	N5181A	Agilent	MY46240904	2024/07/07	2025/07/06
BLA-EMC-064	Signal Generator	N5182B	KEYSIGHT	MY58108892	2024/07/07	2025/07/06
BLA-EMC-065	broadband Antenna	VULB9168	Schwarz beck	01065P	2022/12/12	2025/12/11
BLA-EMC-066	Amplifier	LNPA_30M01G-30	SKET	SK2021060801	2024/07/07	2025/07/06
BLA-EMC-079	Spectrum	N9020A	Agilent	MY54420161	2023/08/30	2024/08/29
BLA-EMC-080	Signal Generator	N5182A	Agilent	MY47420955	2023/08/30	2024/08/29
BLA-EMC-086	Amplifier	LNPA_18G40G-50dB	SKET	SK2022071301	2023/08/14	2024/08/13

6 Test result

6.1 Antenna requirement

Test Standard	47 CFR Part 15, Subpart C 15.407
Test Method	N/A

6.1.1 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of a so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT antenna:
The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is ANT1: 1.18 dBi, ANT2: 2.24 dBi.

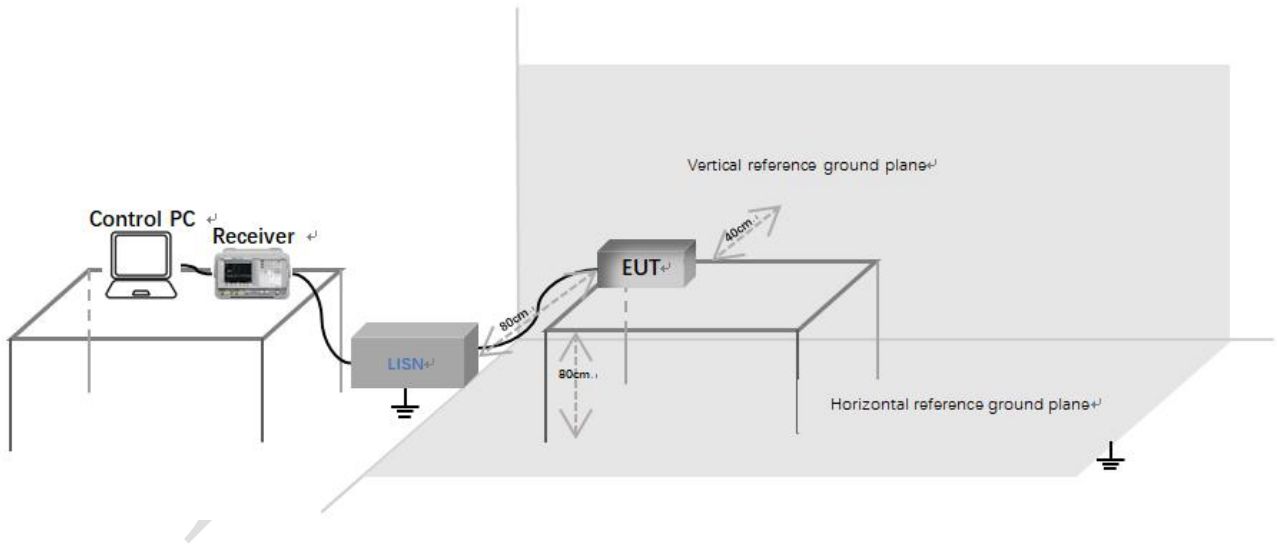
6.2 Conducted emissions at AC power line (150 kHz-30 MHz)

Test Standard	47 CFR Part 15, Subpart C 15.407
Test Method	ANSI C63.10 (2013) Section 6.2
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.2.1 Limit

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
*Decreases with the logarithm of the frequency.		

6.2.2 Test setup



Description of test setup connection:

a) Connect the control PC to the receiver through a USB to GPIB cable;

b) The receiver is connected to the LISN through a coaxial line;

c) Connect the power port of LISN to the EUT.

6.2.3 Procedure

1) The mains terminal disturbance voltage test was conducted in a shielded room.

2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50H + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,

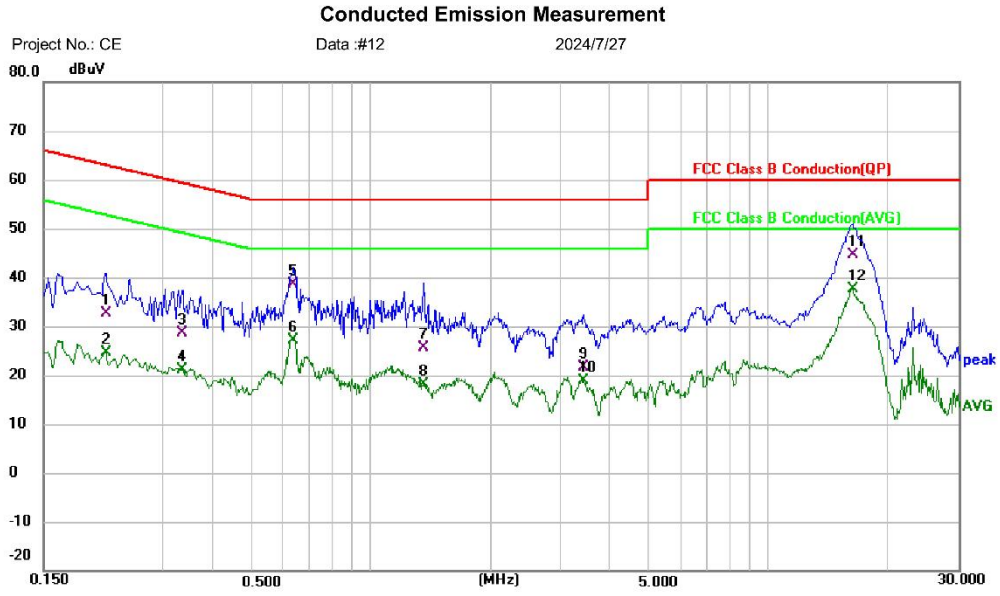
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

LISN=Read Level+ Cable Loss+ LISN Factor

6.2.4 Test data

[TestMode: TM1]; [Line: Line]; [Voltage:120V/60Hz]



Site	Phase: L1	Temperature: (C)	
Limit: FCC Class B Conduction(QP)	Power:	Humidity: %RH	
EUT: PanoX V3	Distance:	RBW: 9 KHz	
M/N: PIP225		VBW: 30 KHz	Sweep Time: 10 ms
Mode: 5GWIFI TX			
Note:			

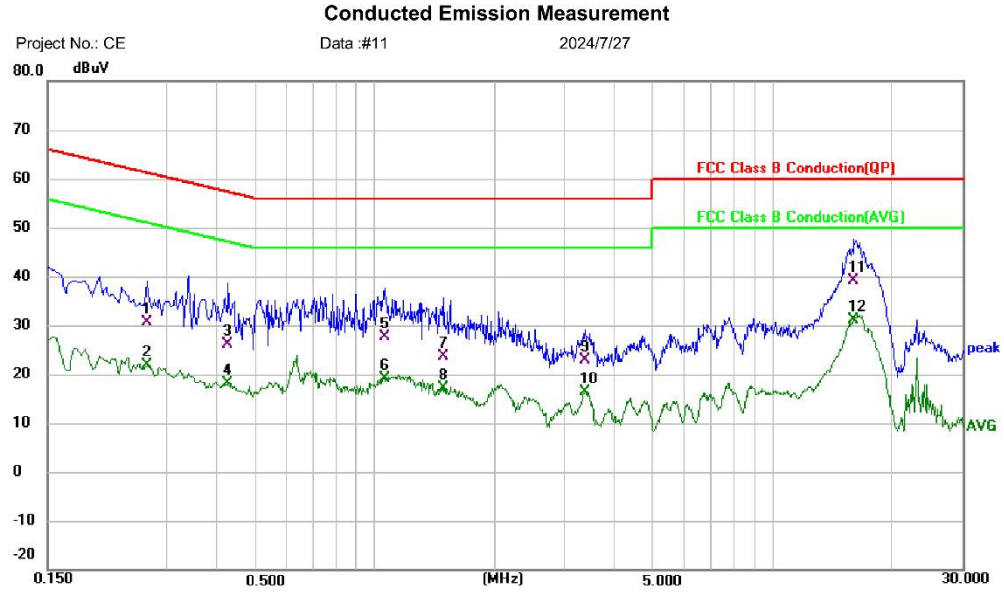
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1		0.2140	22.11	10.40	32.51	63.05	-30.54	QP			
2		0.2140	14.34	10.40	24.74	53.05	-28.31	AVG			
3		0.3339	18.73	9.95	28.68	59.35	-30.67	QP			
4		0.3339	11.28	9.95	21.23	49.35	-28.12	AVG			
5		0.6380	28.59	9.96	38.55	56.00	-17.45	QP			
6		0.6380	17.20	9.96	27.16	46.00	-18.84	AVG			
7		1.3540	15.67	9.92	25.59	56.00	-30.41	QP			
8		1.3540	8.16	9.92	18.08	46.00	-27.92	AVG			
9		3.4180	11.61	10.02	21.63	56.00	-34.37	QP			
10		3.4180	8.78	10.02	18.80	46.00	-27.20	AVG			
11		16.2460	31.11	13.52	44.63	60.00	-15.37	QP			
12	*	16.2460	24.07	13.52	37.59	50.00	-12.41	AVG			

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESPI_1 Spectrum Analyzer: ESPI

Test Result: Pass

[TestMode: TM1]; [Line: Nutral] ;[Voltage:120V/60Hz]



Site	Phase: N	Temperature: (C)	
Limit: FCC Class B Conduction(QP)	Power:	Humidity: %RH	
EUT: PanoX V3	Distance:	RBW: 9 KHz	
M/N: PIP225		VBW: 30 KHz	Sweep Time: 10 ms
Mode: 5GWIFI TX			
Note:			

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		0.2660	20.15	10.44	30.59	61.24	-30.65	QP			
2		0.2660	11.39	10.44	21.83	51.24	-29.41	AVG			
3		0.4260	16.33	9.81	26.14	57.33	-31.19	QP			
4		0.4260	8.31	9.81	18.12	47.33	-29.21	AVG			
5		1.0580	17.86	9.87	27.73	56.00	-28.27	QP			
6		1.0580	9.38	9.87	19.25	46.00	-26.75	AVG			
7		1.4940	13.78	9.94	23.72	56.00	-32.28	QP			
8		1.4940	7.13	9.94	17.07	46.00	-28.93	AVG			
9		3.3740	12.78	10.05	22.83	56.00	-33.17	QP			
10		3.3740	6.26	10.05	16.31	46.00	-29.69	AVG			
11		16.0300	25.83	13.35	39.18	60.00	-20.82	QP			
12	*	16.0300	17.82	13.35	31.17	50.00	-18.83	AVG			

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESPI_1 Spectrum Analyzer: ESPI

Test Result: Pass

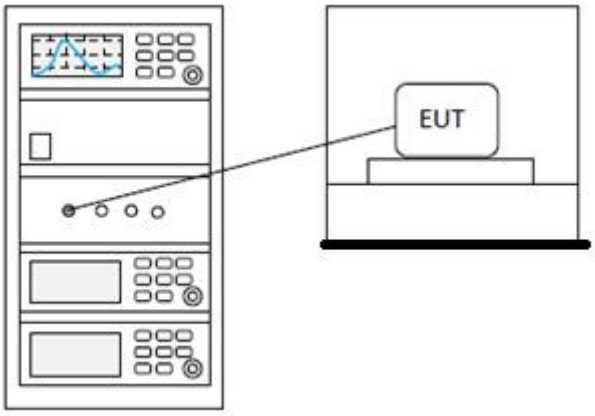
6.3 Frequency Stability

Test Standard	47 CFR Part 15, Subpart E 15.407
Test Method	ANSI C63.10 (2013) Section 6.8
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.3.1 Limit

The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 35 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

6.3.2 Test setup



6.3.3 Test data

Pass: Please refer to appendix A for details

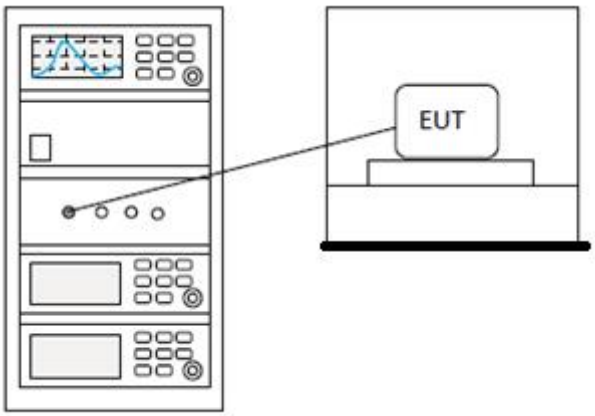
6.4 Maximum conducted output Power

Test Standard	47 CFR Part 15, Subpart E 15.407
Test Method	KDB 789033 D02 II E
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.4.1 Limit

Frequency band(MHz)	Limit
5150-5250	≤1W(30dBm) for master device
	≤250mW(24dBm) for client device
5250-5350	≤250mW(24dBm) for client device or 11dBm+10logB*
5470-5725	≤250mW(24dBm) for client device or 11dBm+10logB*
5725-5850	≤1W(30dBm)
Remark: Where B is the 26dB emission bandwidth in MHz.* *The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.*	

6.4.2 Test setup



6.4.3 Test data

Pass: Please refer to appendix A for details

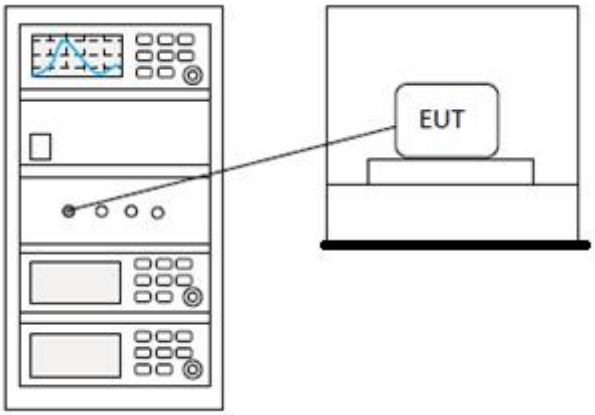
6.5 Peak power spectrum density

Test Standard	47 CFR Part 15, Subpart E 15.407
Test Method	KDB 789033 D02 II F
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.5.1 Limit

Frequency band(MHz)	Limit
5150-5250	≤17dBm in 1MHz for master device
	≤11dBm in 1MHz for client device
5250-5350	≤11dBm in 1MHz for client device
5470-5725	≤11dBm in 1MHz for client device
5725-5850	≤30dBm in 500 kHz
Remark: The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test.	

6.5.2 Test setup



6.5.3 Test data

Pass: Please refer to appendix A for details

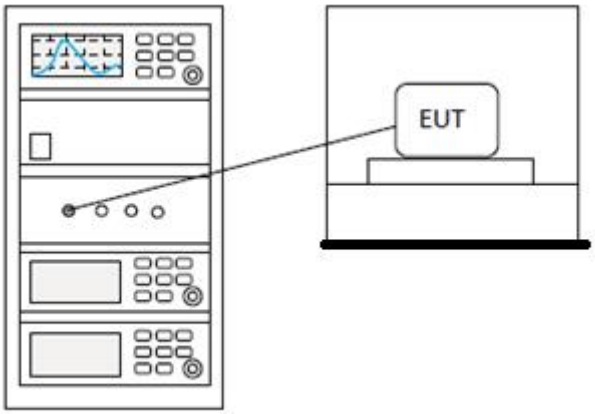
6.6 Minimum 6dB bandwidth (5.725-5.85 GHz band)

Test Standard	47 CFR Part 15, Subpart E 15.407
Test Method	KDB 789033 D02 II C 2
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.6.1 Limit

≥500 kHz

6.6.2 Test setup



6.6.3 Test data

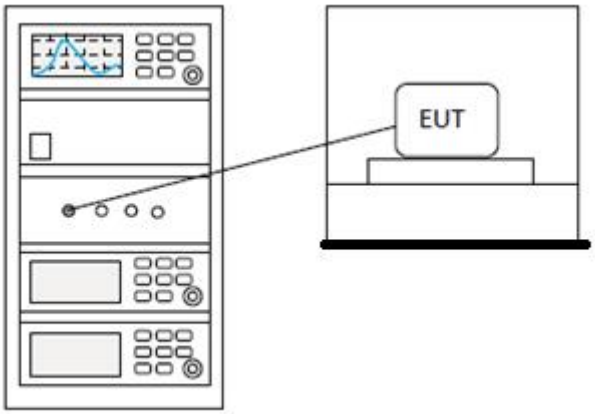
Pass: Please refer to appendix A for details

6.7 26dB Emission bandwidth

Test Standard	47 CFR Part 15, Subpart E 15.407
Test Method	KDB 789033 D02 II C 1
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.7.1 Limit

6.7.2 Test setup



6.7.3 Test data

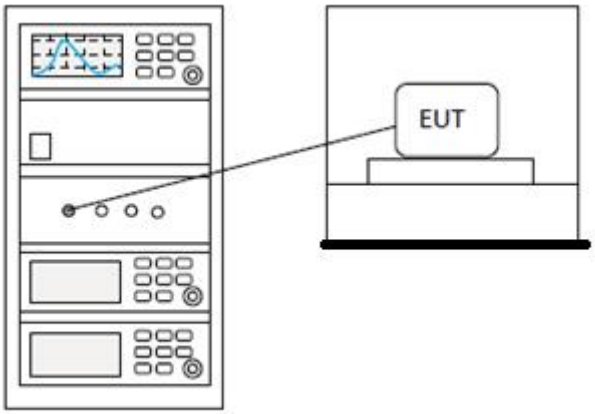
Pass: Please refer to appendix A for details

6.8 99% Bandwidth

Test Standard	47 CFR Part 15, Subpart E 15.407
Test Method	KDB 789033 II D
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.8.1 Limit

6.8.2 Test setup



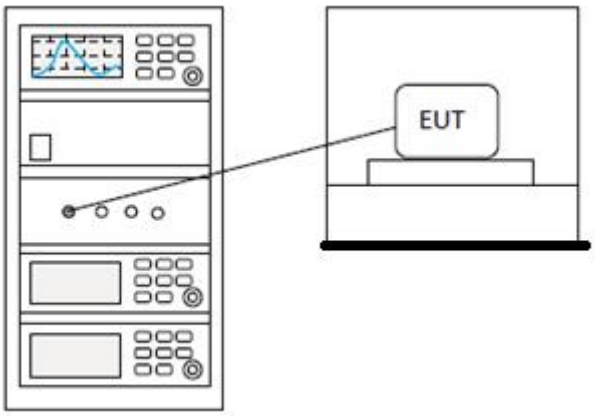
6.8.3 Test data

Pass: Please refer to appendix A for details

6.9 Duty Cycle

Test Standard	47 CFR Part 15, Subpart E 15.407
Test Method	KDB 789033 II B 1
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.9.1 Test setup



6.9.2 Test data

Pass: Please refer to appendix A for details

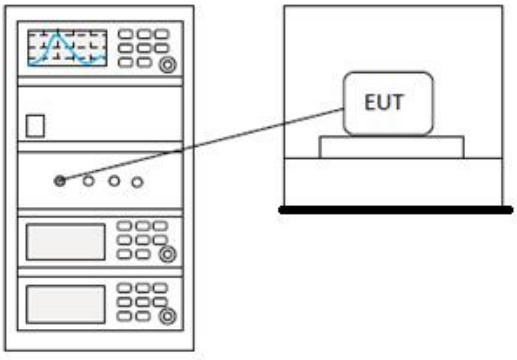
6.10 Conducted Band Edges Measurement

Test Standard	47 CFR Part 15, Subpart C 15.407
Test Method	ANSI C63.10 (2013) Section 7.8.8 & Section 11.13.3.2
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.10.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.
If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20dB.
Attenuation below the general limits specified in §15.209(a) is not required.
In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

6.10.2 Test setup



6.10.3 Test data

Pass: Please refer to appendix A for details

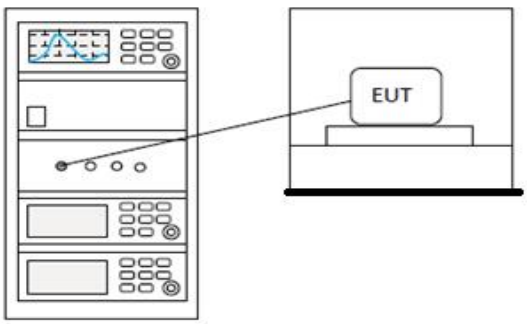
6.11 Conducted spurious emissions

Test Standard	47 CFR Part 15, Subpart C 15.407
Test Method	ANSI C63.10 (2013) Section 7.8.6 & Section 11.11
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.11.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.
If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20dB.
Attenuation below the general limits specified in §15.209(a) is not required.
In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

6.11.2 Test setup



6.11.3 Test data

Pass: Please refer to appendix A for details

6.12 Radiated emissions

Test Standard	47 CFR Part 15, Subpart E 15.407
Test Method	KDB 789033 D02 II G
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

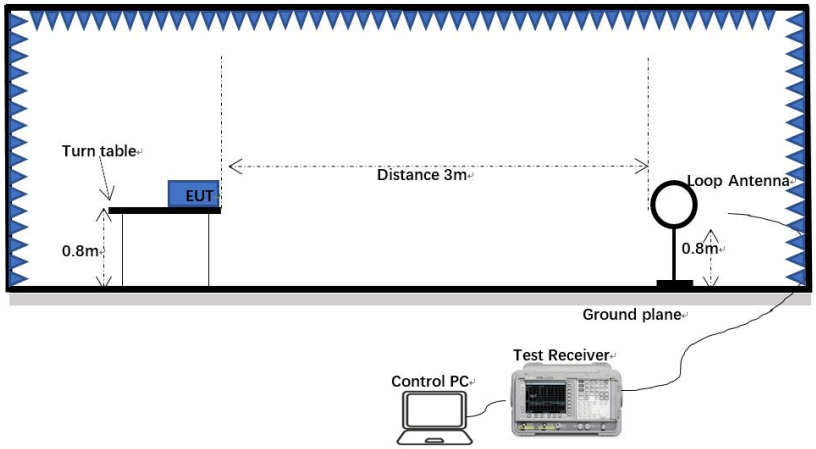
6.12.1 Limit

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

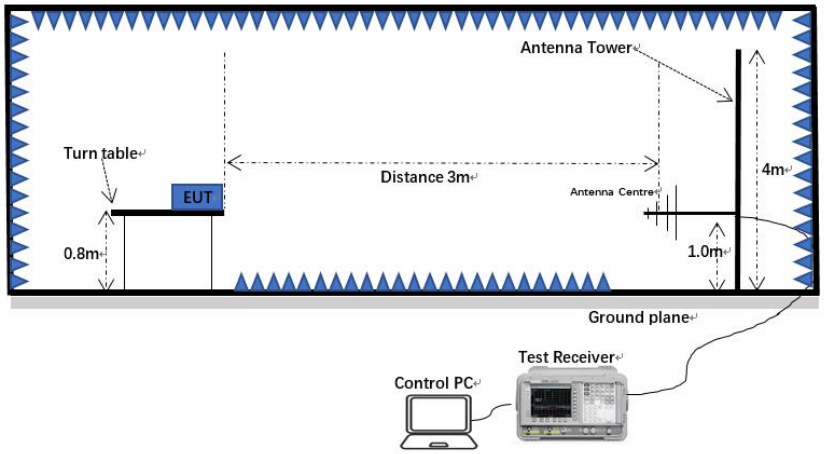
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field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

6.12.2 Test setup

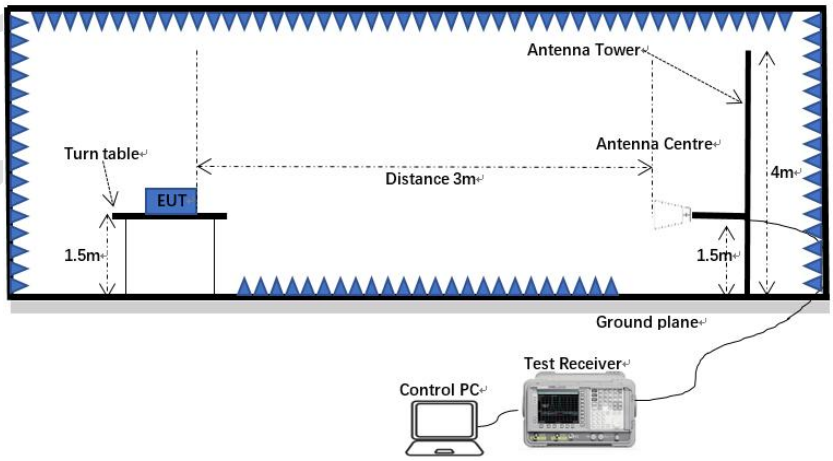
Below 1GHz：



30MHz-1GHz：



Above 1GHz：



6.12.3 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.

Note 1: Scan from 9 kHz to 40GHz, 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.

Note 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.

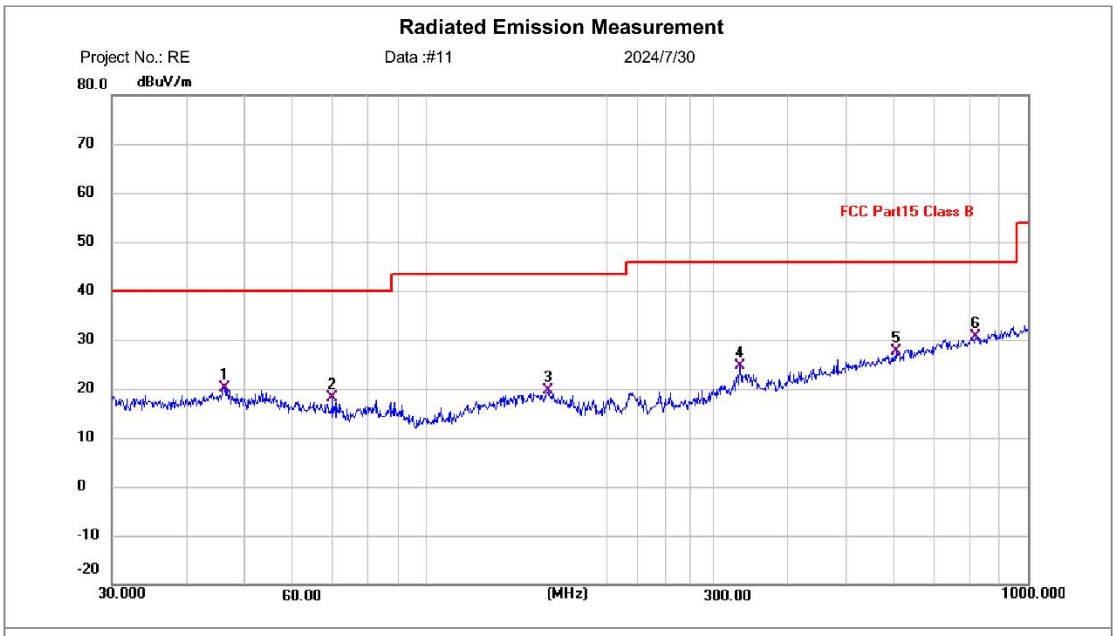
Note 3: The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Level (dBuV) = Reading (dBuV) + Factor (dB/m)

6.12.4 Test data

Below 1GHz

[Test mode: TX]; [Polarity: Horizontal]



Site
Limit: FCC Part15 Class B
EUT: PanoX V3
M/N: PIP225
Mode: 5G TX
Note:

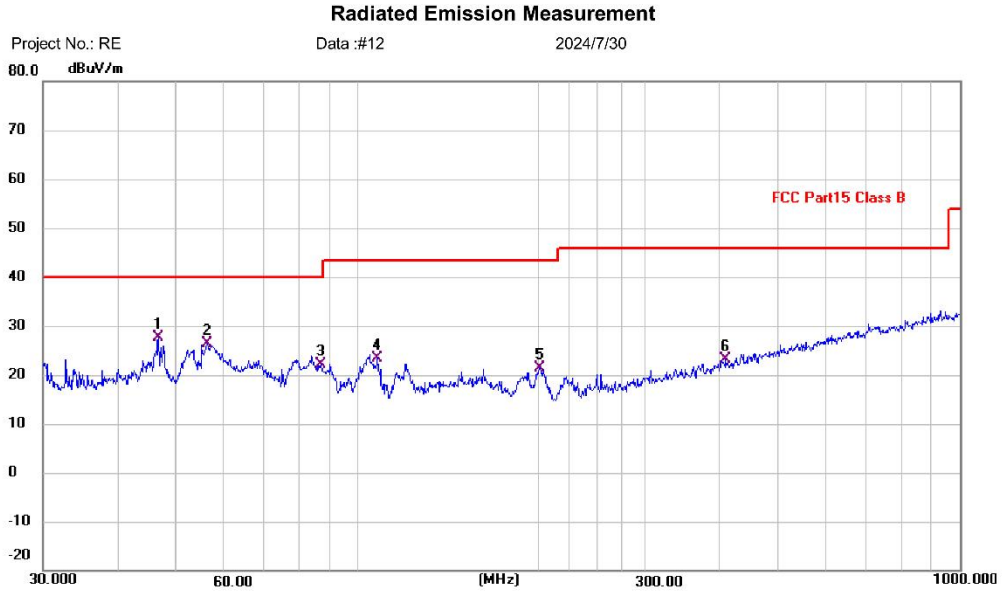
Polarization: *Horizontal*
Power:

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	46.1779	0.62	19.55	20.17	40.00	-19.83	QP	P	
2	69.8450	1.39	16.69	18.08	40.00	-21.92	QP	P	
3	159.7844	-0.72	20.41	19.69	43.50	-23.81	QP	P	
4	332.5187	3.07	21.48	24.55	46.00	-21.45	QP	P	
5	603.5392	0.66	26.88	27.54	46.00	-18.46	QP	P	
6 *	821.7103	0.44	30.19	30.63	46.00	-15.37	QP	P	

Test Result: Pass

[Test mode: TX]; [Polarity: Vertical]



Site
Limit: FCC Part15 Class B
EUT: PanoX V3
M/N: PIP225
Mode: 5G TX
Note:

Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

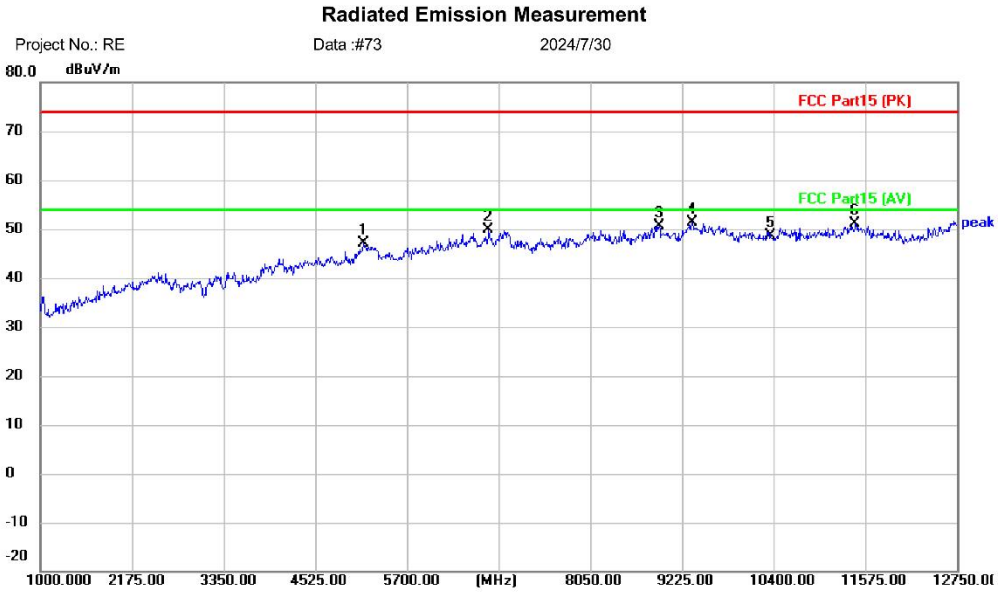
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	46.6664	8.24	19.46	27.70	40.00	-12.30	QP	P	
2	56.1974	7.23	19.14	26.37	40.00	-13.63	QP	P	
3	86.8068	6.70	15.54	22.24	40.00	-17.76	QP	P	
4	107.8877	6.86	16.61	23.47	43.50	-20.03	QP	P	
5	200.6881	5.12	16.20	21.32	43.50	-22.18	QP	P	
6	408.9460	-0.09	23.26	23.17	46.00	-22.83	QP	P	

Test Result: Pass

Above 1GHz:

Remark: During the test, pre-scan the 802.11a/n/ac mode, and found the 802.11a mode which it is worse case.

[Test mode: TX band1 a 5180 channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band1 A TX 5180
Note:

Polarization: ***Horizontal***
Power:

Temperature: (C)
Humidity: %RH

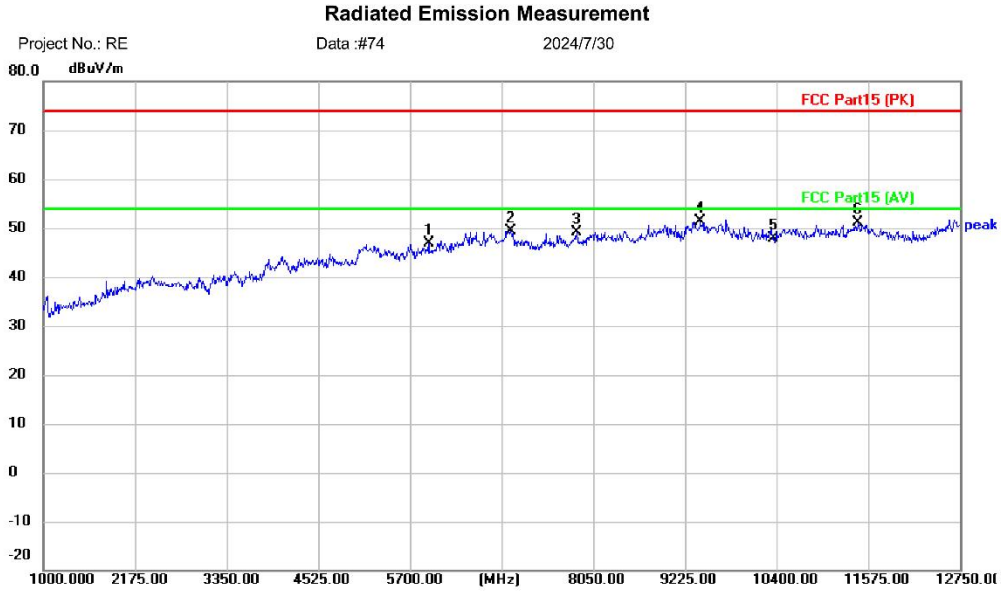
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5136.000	38.60	8.41	47.01	74.00	-26.99	peak	
2		6745.750	39.03	10.96	49.99	74.00	-24.01	peak	
3		8931.250	37.86	12.83	50.69	74.00	-23.31	peak	
4	*	9354.250	37.60	13.77	51.37	74.00	-22.63	peak	
5		10360.00	35.03	13.51	48.54	74.00	-25.46	peak	
6		11445.75	37.13	13.90	51.03	74.00	-22.97	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode: TX band1 a 5180 channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band1 A TX 5180
Note:

Polarization: *Vertical*
Power:

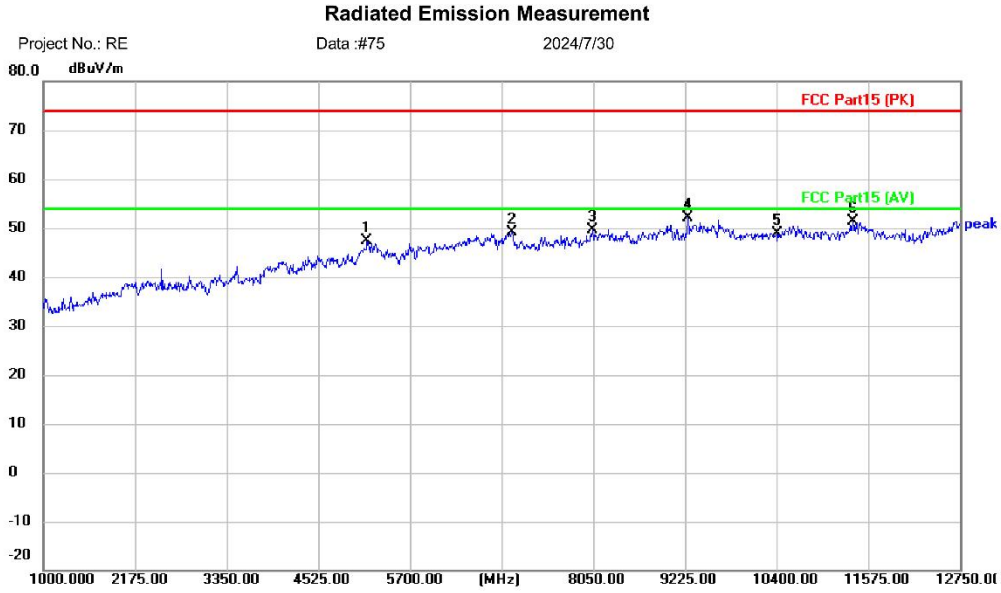
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5935.000	38.22	8.56	46.78	74.00	-27.22	peak	
2		6992.500	38.01	11.47	49.48	74.00	-24.52	peak	
3		7838.500	39.54	9.55	49.09	74.00	-24.91	peak	
4	*	9424.750	38.13	13.28	51.41	74.00	-22.59	peak	
5		10360.00	34.43	13.51	47.94	74.00	-26.06	peak	
6		11445.75	37.15	13.90	51.05	74.00	-22.95	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode: TX band1 a 5200 channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band1 A TX 5200
Note:

Polarization: *Horizontal*
Power:

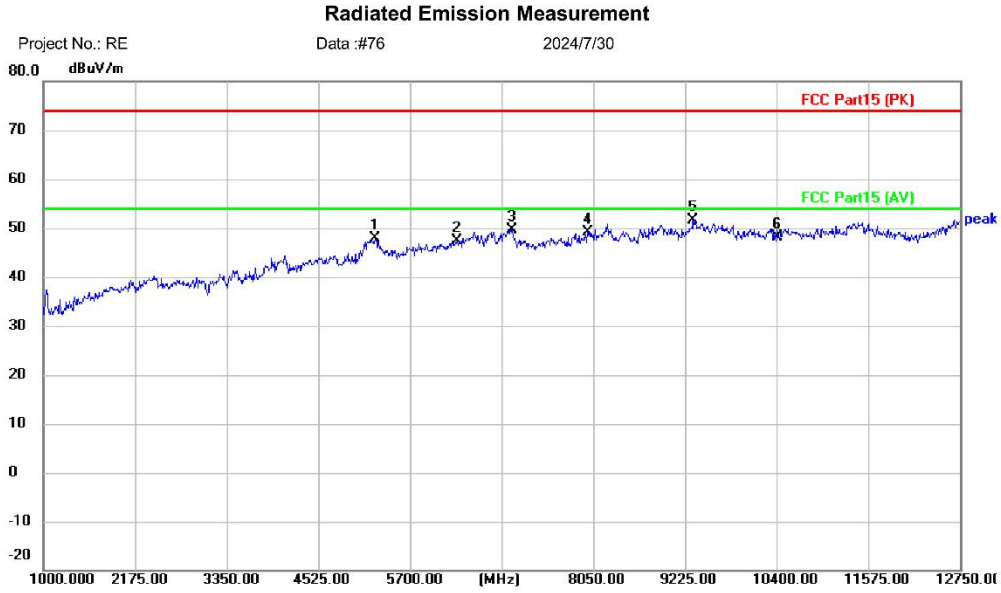
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5147.750	38.77	8.65	47.42	74.00	-26.58	peak	
2		7004.250	40.51	8.62	49.13	74.00	-24.87	peak	
3		8038.250	38.90	10.65	49.55	74.00	-24.45	peak	
4	*	9260.250	38.51	13.54	52.05	74.00	-21.95	peak	
5		10400.00	35.33	13.49	48.82	74.00	-25.18	peak	
6		11375.25	37.80	13.48	51.28	74.00	-22.72	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode: TX band1 a 5200 channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band1 A TX 5200
Note:

Polarization: *Vertical*
Power:

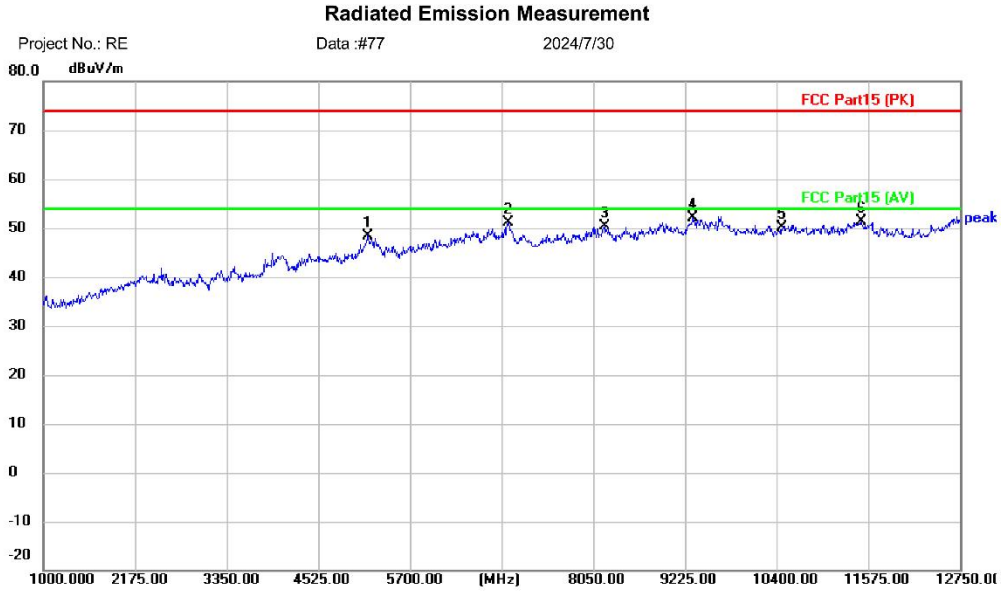
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5253.500	37.62	10.36	47.98	74.00	-26.02	peak	
2		6299.250	37.83	9.66	47.49	74.00	-26.51	peak	
3		7004.250	41.00	8.62	49.62	74.00	-24.38	peak	
4		7979.500	38.78	10.38	49.16	74.00	-24.84	peak	
5	*	9330.750	37.90	13.74	51.64	74.00	-22.36	peak	
6		10400.00	34.67	13.49	48.16	74.00	-25.84	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode: TX band1 a 5240 channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band1 A TX 5240
Note:

Polarization: *Horizontal*
Power:

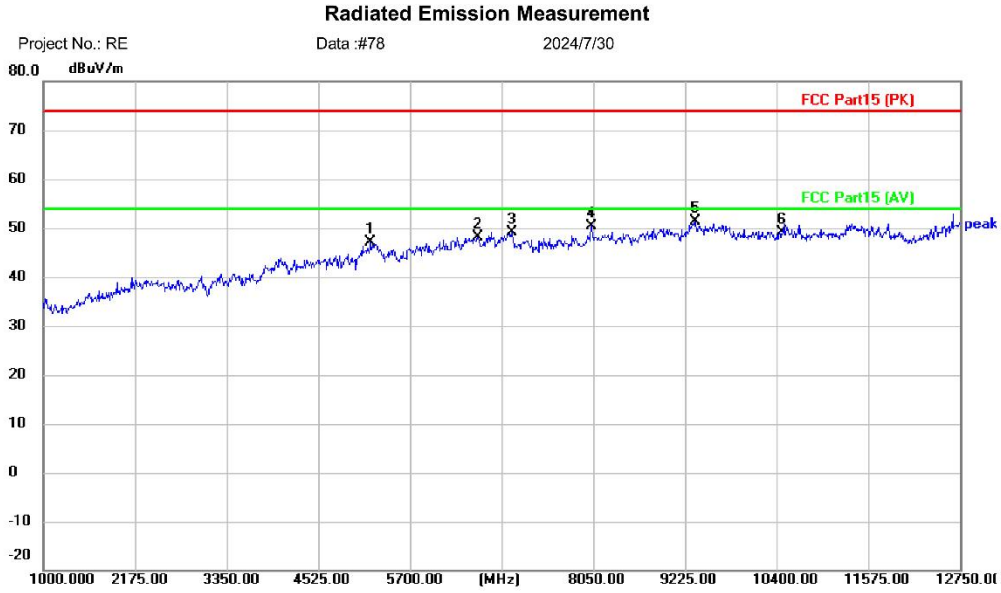
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5159.500	39.64	8.84	48.48	74.00	-25.52	peak	
2		6957.250	39.57	11.65	51.22	74.00	-22.78	peak	
3		8191.000	39.63	10.76	50.39	74.00	-23.61	peak	
4	*	9330.750	38.29	13.74	52.03	74.00	-21.97	peak	
5		10480.00	36.43	13.72	50.15	74.00	-23.85	peak	
6		11481.00	37.44	14.05	51.49	74.00	-22.51	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode: TX band1 a 5240 channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band1 A TX 5240
Note:

Polarization: *Vertical*
Power:

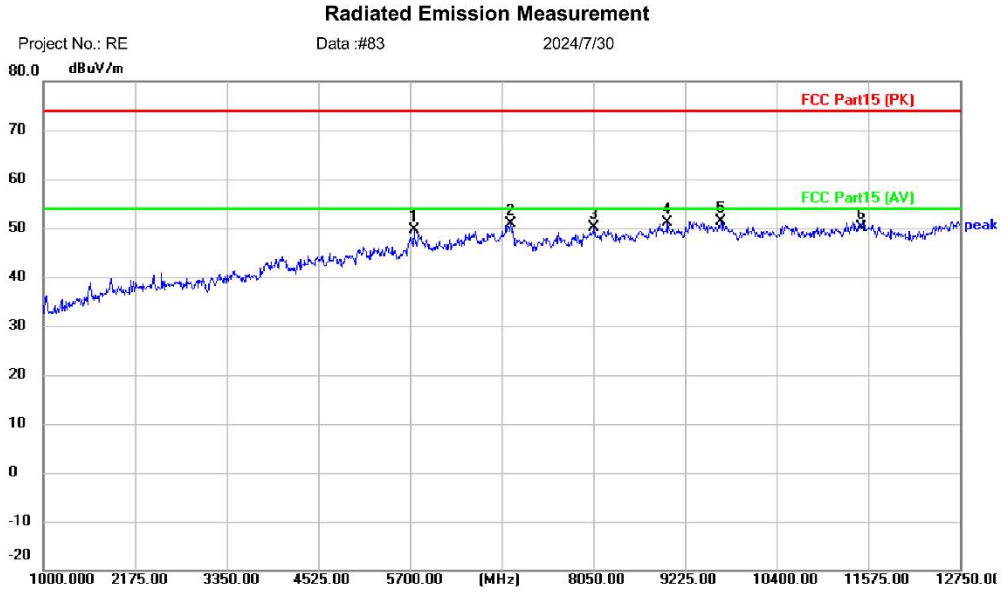
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5194.750	37.77	9.36	47.13	74.00	-26.87	peak	
2		6569.500	37.78	10.46	48.24	74.00	-25.76	peak	
3		7004.250	40.58	8.62	49.20	74.00	-24.80	peak	
4		8026.500	39.67	10.60	50.27	74.00	-23.73	peak	
5	*	9354.250	37.70	13.77	51.47	74.00	-22.53	peak	
6		10480.00	35.43	13.72	49.15	74.00	-24.85	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode: TX band4 a 5745 channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band4 A TX 5745
Note:

Polarization: *Horizontal*
Power:

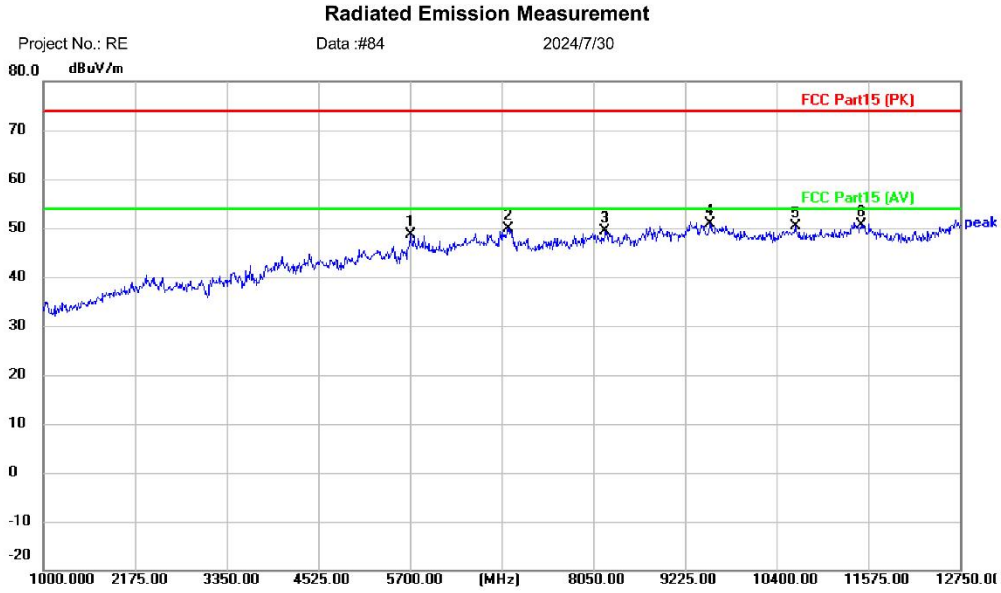
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5747.000	39.52	10.01	49.53	74.00	-24.47	peak	
2		6992.500	39.32	11.53	50.85	74.00	-23.15	peak	
3		8061.750	39.40	10.73	50.13	74.00	-23.87	peak	
4		9001.750	38.06	13.03	51.09	74.00	-22.91	peak	
5	*	9683.250	37.69	13.65	51.34	74.00	-22.66	peak	
6		11490.00	36.12	14.08	50.20	74.00	-23.80	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode: TX band4 a 5745 channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band4 A TX 5745
Note:

Polarization: *Vertical*
Power:

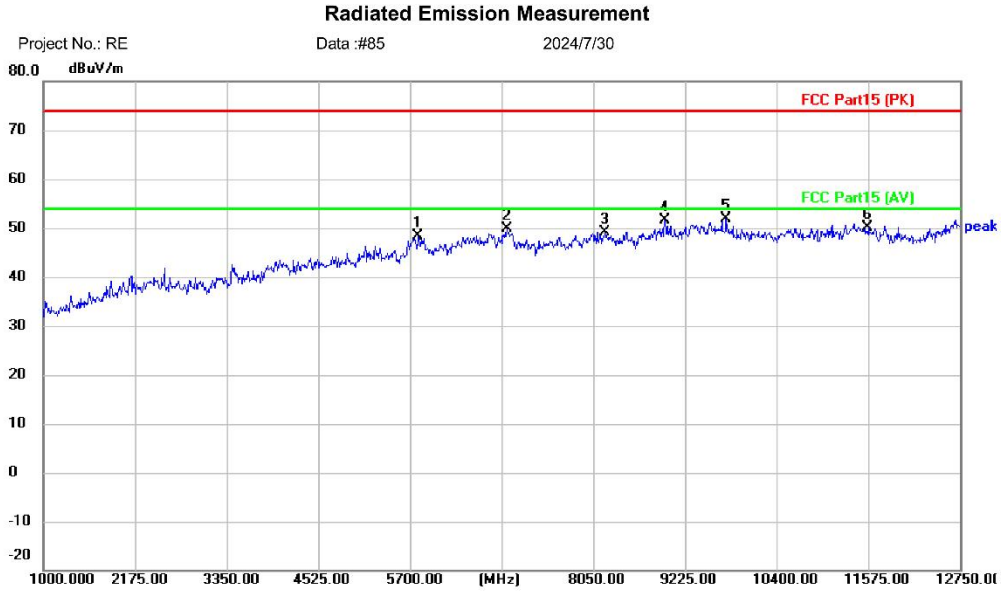
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5700.000	38.49	10.20	48.69	74.00	-25.31	peak	
2		6957.250	38.13	11.79	49.92	74.00	-24.08	peak	
3		8202.750	38.60	10.75	49.35	74.00	-24.65	peak	
4	*	9542.250	37.45	13.35	50.80	74.00	-23.20	peak	
5		10635.00	36.91	13.40	50.31	74.00	-23.69	peak	
6		11490.00	36.62	14.08	50.70	74.00	-23.30	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode: TX band4 a 5785 channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band4 A TX 5785
Note:

Polarization: *Horizontal*
Power:

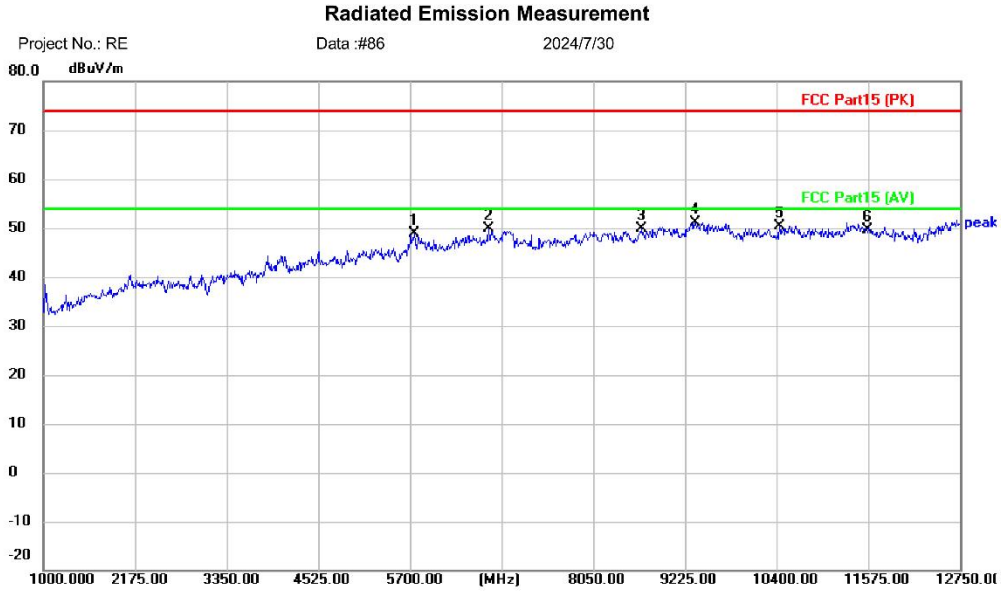
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5805.750	38.23	10.26	48.49	74.00	-25.51	peak	
2		6945.500	37.98	11.79	49.77	74.00	-24.23	peak	
3		8202.750	38.43	10.75	49.18	74.00	-24.82	peak	
4		8966.500	38.86	12.72	51.58	74.00	-22.42	peak	
5	*	9753.750	37.99	13.86	51.85	74.00	-22.15	peak	
6		11570.00	36.14	13.92	50.06	74.00	-23.94	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode: TX band4 a 5785 channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band4 A TX 5785
Note:

Polarization: *Vertical*
Power:

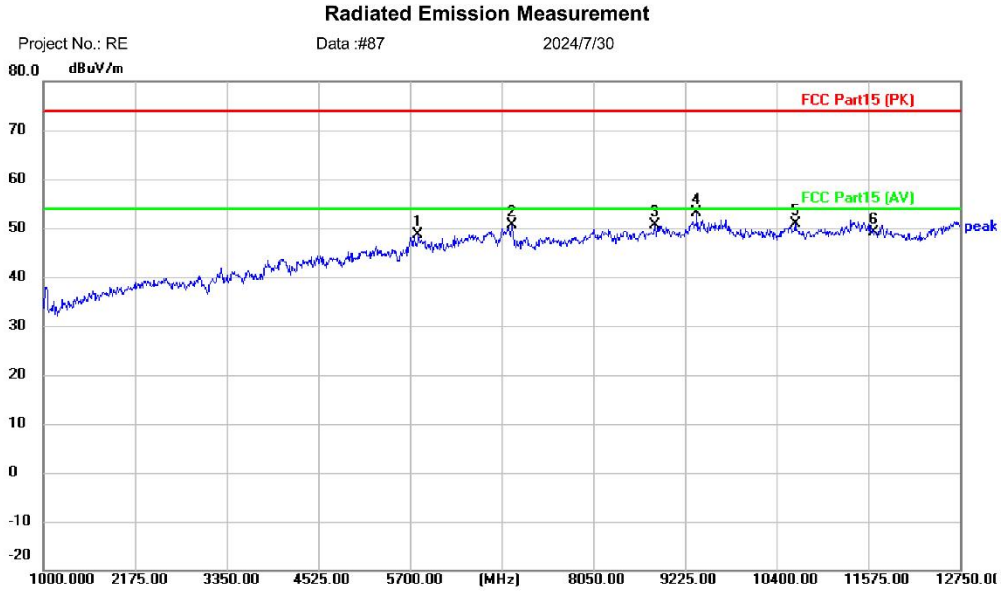
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5758.750	38.94	10.00	48.94	74.00	-25.06	peak	
2		6710.500	39.07	10.71	49.78	74.00	-24.22	peak	
3		8661.000	37.94	11.92	49.86	74.00	-24.14	peak	
4	*	9354.250	37.48	13.77	51.25	74.00	-22.75	peak	
5		10435.25	36.86	13.59	50.45	74.00	-23.55	peak	
6		11570.00	35.81	13.92	49.73	74.00	-24.27	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode: TX band4 a 5825 channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band4 A TX 5825
Note:

Polarization: *Horizontal*
Power:

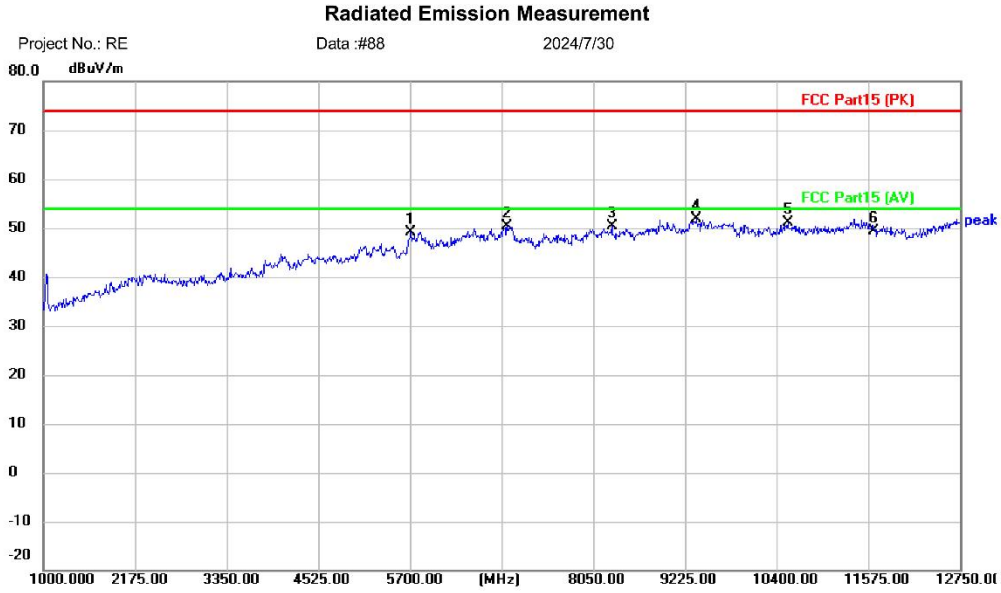
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5805.750	38.29	10.26	48.55	74.00	-25.45	peak	
2		7004.250	41.90	8.62	50.52	74.00	-23.48	peak	
3		8837.250	38.16	12.38	50.54	74.00	-23.46	peak	
4	*	9377.750	39.61	13.43	53.04	74.00	-20.96	peak	
5		10635.00	37.37	13.40	50.77	74.00	-23.23	peak	
6		11650.00	36.12	13.08	49.20	74.00	-24.80	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode: TX band4 a 5825 channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band4 A TX 5825
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		5711.750	38.13	11.06	49.19	74.00	-24.81	peak	
2		6945.500	38.58	11.79	50.37	74.00	-23.63	peak	
3		8285.000	39.96	10.49	50.45	74.00	-23.55	peak	
4	*	9377.750	38.37	13.43	51.80	74.00	-22.20	peak	
5		10541.00	37.47	13.73	51.20	74.00	-22.80	peak	
6		11650.00	36.39	13.08	49.47	74.00	-24.53	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

6.13 Radiated emissions which fall in the restricted bands

Test Standard	47 CFR Part 15, Subpart E 15.407
Test Method	KDB 789033 D02 II G
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

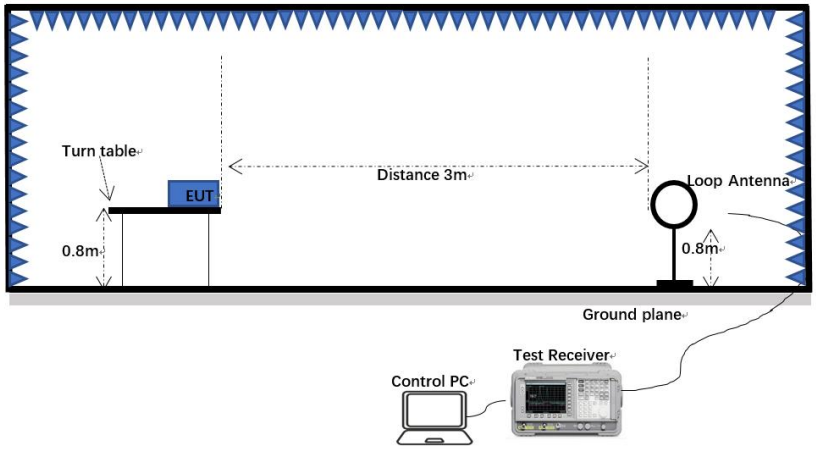
6.13.1 Limit

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

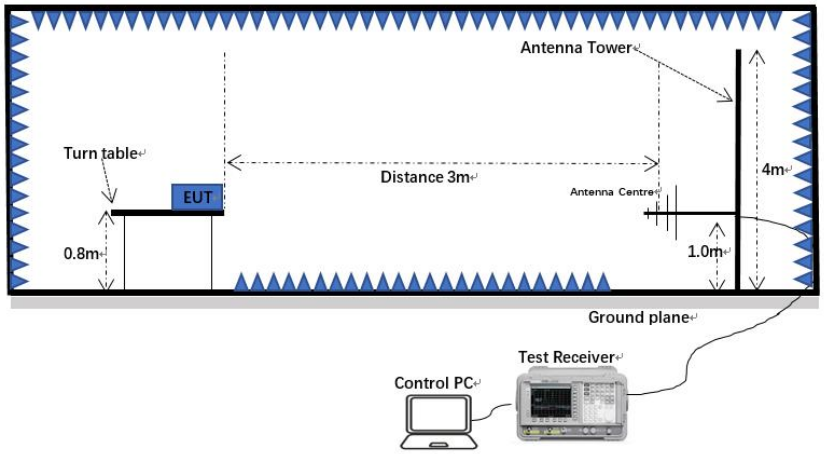
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field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

6.13.2 Test setup

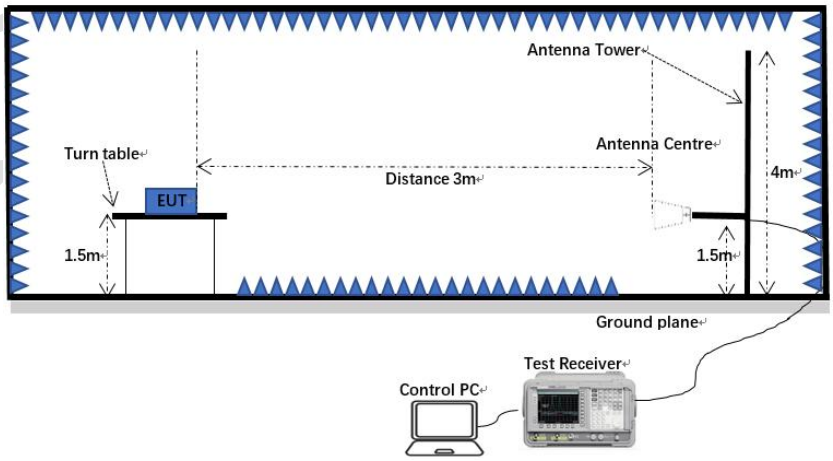
Below 1GHz：



30MHz-1GHz：



Above 1GHz：



6.13.3 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.

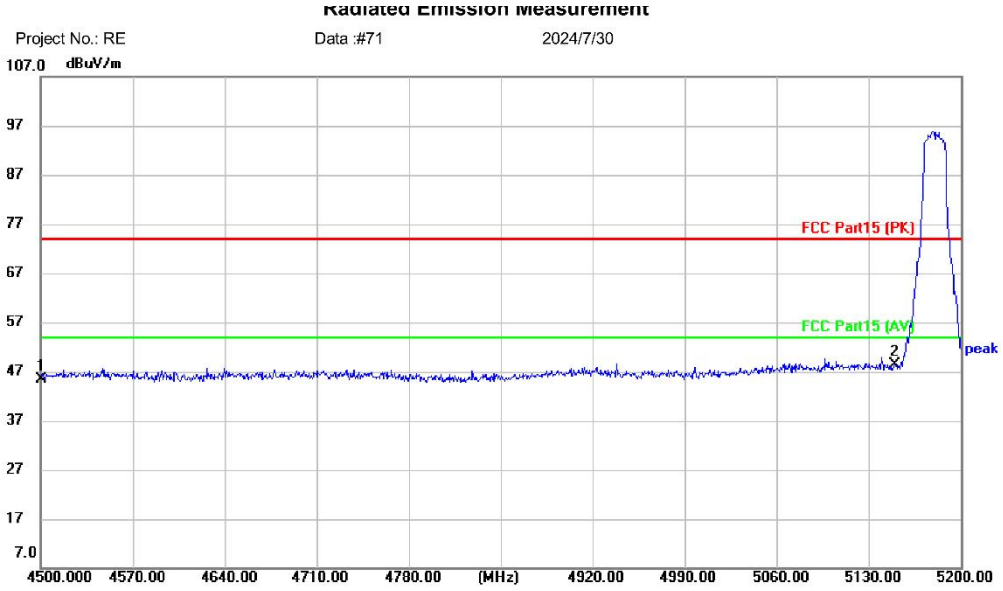
j) Repeat above procedures until all frequencies measured was complete.

Note 1: Level (dBuV) = Reading (dBuV) + Factor (dB/m)
Note 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.

6.13.4 Test data

Remark: During the test, pre-scan the 802.11a/n/ac mode, and found the 802.11a mode which it is worse case.

[TestMode: TX band 1 a 5180 channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band1 A TX 5180
Note:

Polarization: *Horizontal*
Power:

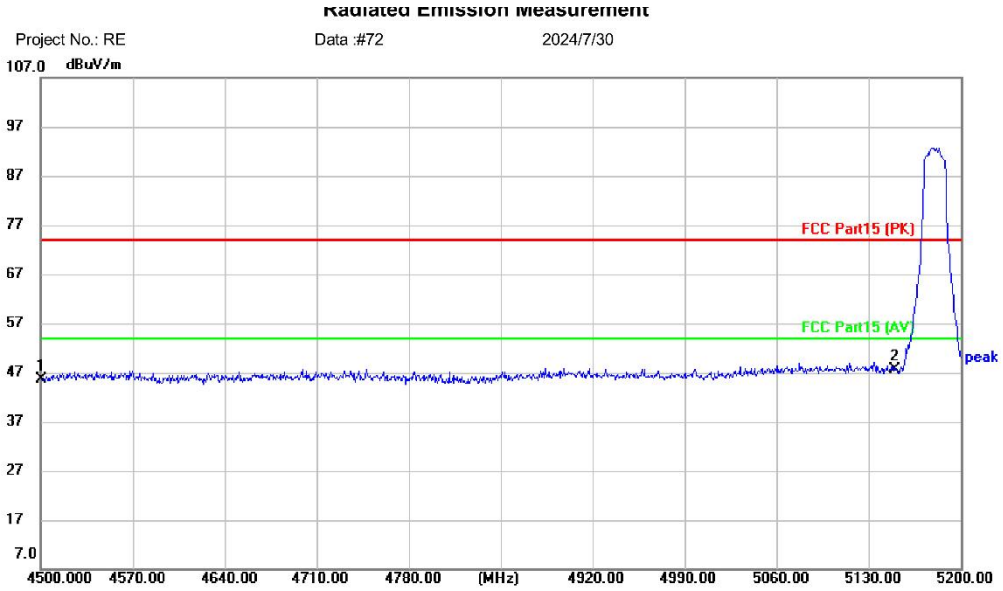
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4500.000	42.55	2.92	45.47	74.00	-28.53	peak	
2	*	5150.000	42.83	5.59	48.42	74.00	-25.58	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[TestMode: TX band 1 a 5180 channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band1 A TX 5180
Note:

Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

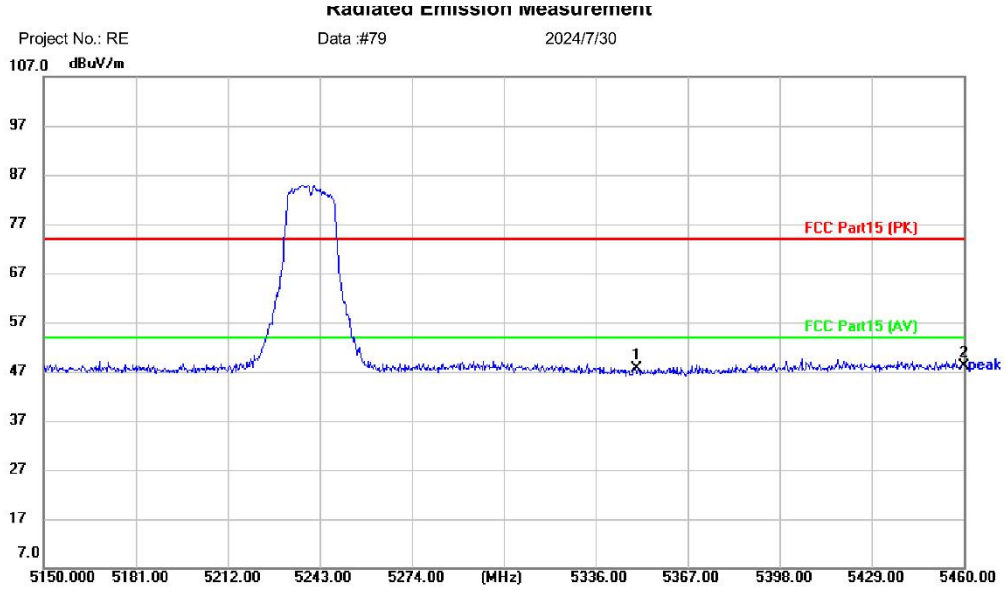
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4500.000	42.80	2.92	45.72	74.00	-28.28	peak	
2	*	5150.000	42.08	5.59	47.67	74.00	-26.33	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[TestMode: TX band1 a 5240 channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band1 A TX 5240
Note:

Polarization: *Horizontal*
Power:

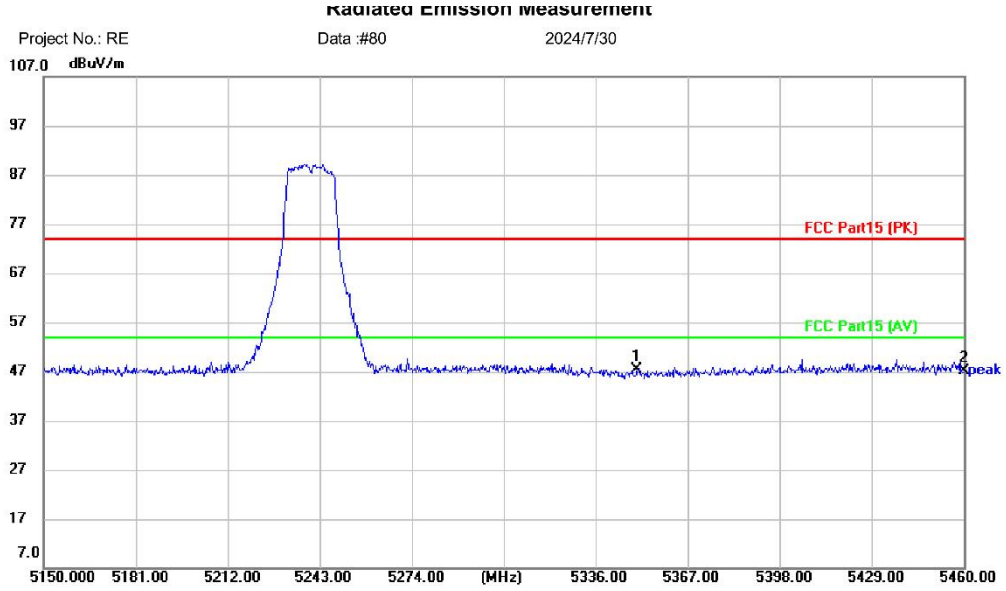
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5350.000	42.69	4.95	47.64	74.00	-26.36	peak	
2	*	5460.000	42.45	5.70	48.15	74.00	-25.85	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[TestMode: TX band1 a 5240 channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band1 A TX 5240
Note:

Polarization: *Vertical*
Power:

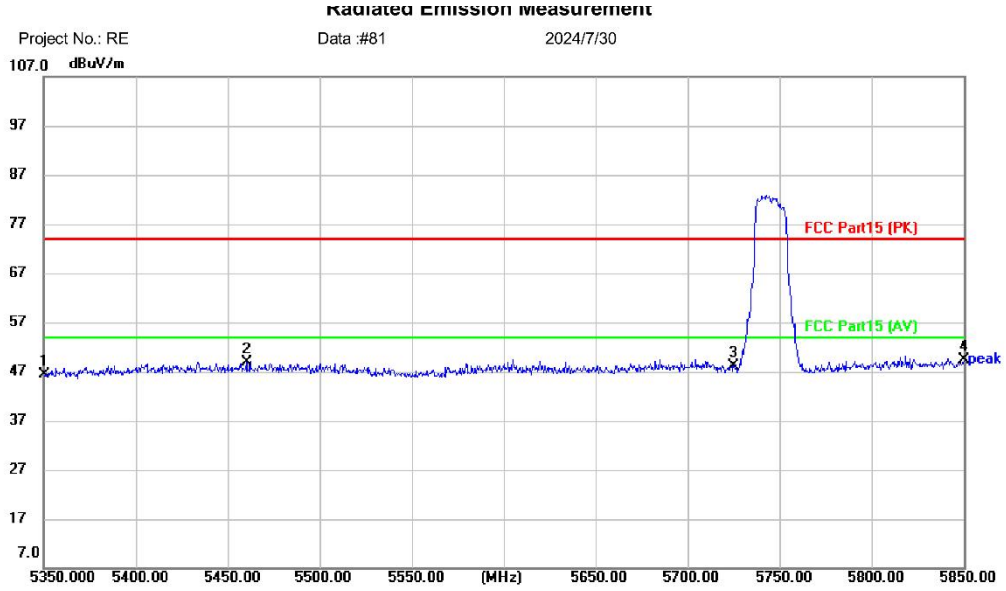
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	5350.000	42.55	4.95	47.50	74.00	-26.50	peak	
2		5460.000	41.49	5.70	47.19	74.00	-26.81	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[TestMode: TX band4 a 5745 channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band4 A TX 5745
Note:

Polarization: *Horizontal*
Power:

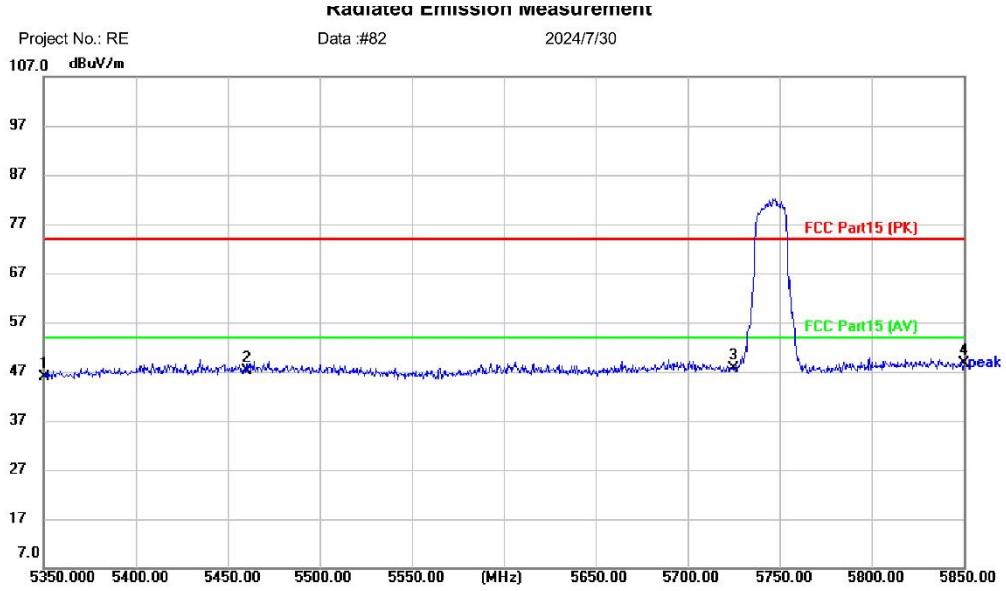
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5350.000	41.45	4.95	46.40	74.00	-27.60	peak	
2		5460.000	43.22	5.70	48.92	74.00	-25.08	peak	
3		5725.000	41.82	6.24	48.06	74.00	-25.94	peak	
4	*	5850.000	42.58	6.70	49.28	74.00	-24.72	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[TestMode: TX band4 a 5745 channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band4 A TX 5745
Note:

Polarization: *Vertical*
Power:

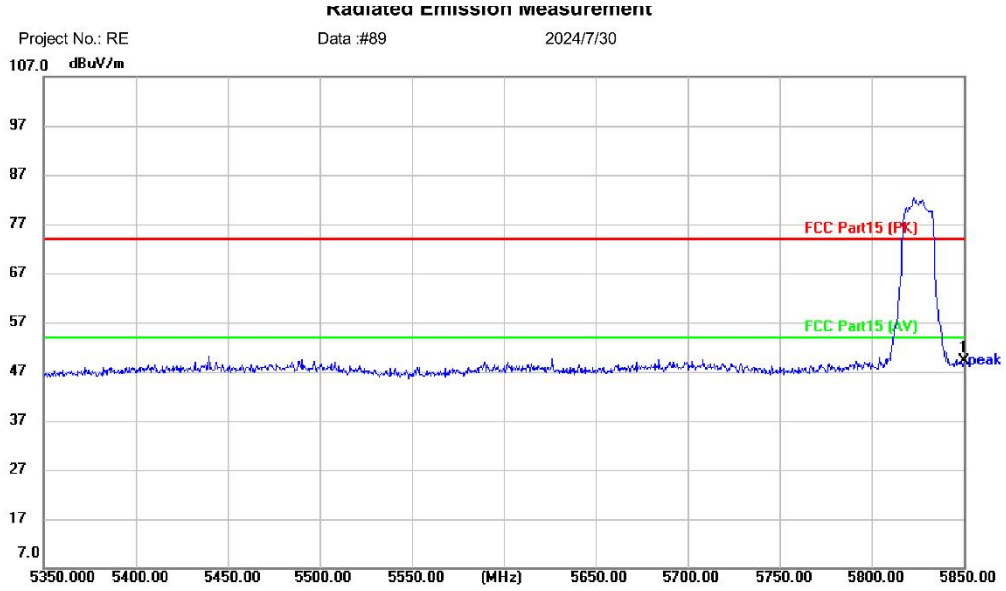
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5350.000	40.97	4.95	45.92	74.00	-28.08	peak	
2		5460.000	41.35	5.70	47.05	74.00	-26.95	peak	
3		5725.000	41.48	6.24	47.72	74.00	-26.28	peak	
4	*	5850.000	41.88	6.70	48.58	74.00	-25.42	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[TestMode: TX band4 a 5825 channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band4 A TX 5825
Note:

Polarization: ***Horizontal***
Power:

Temperature: (C)
Humidity: %RH

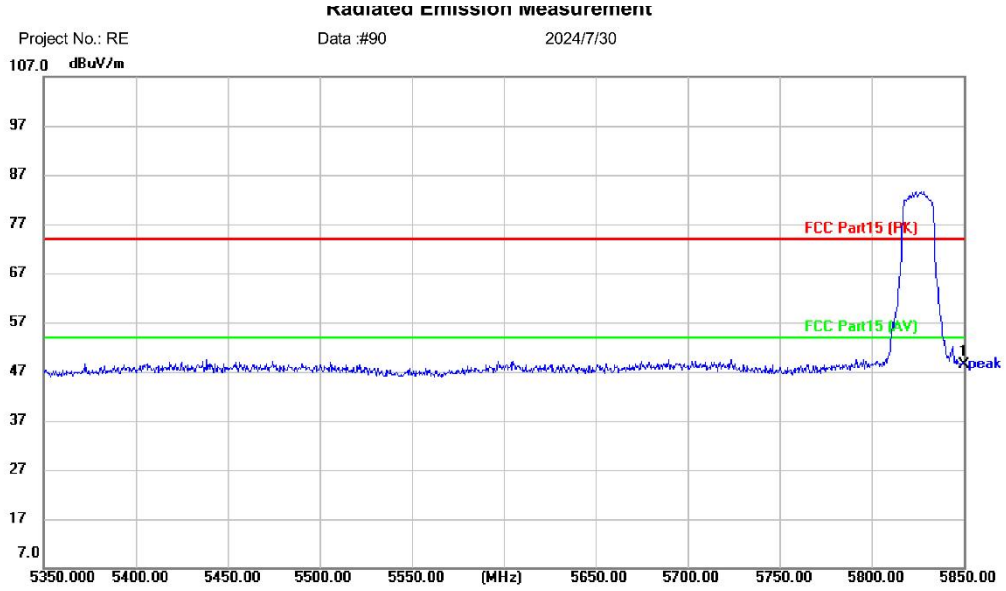
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	5850.000	42.41	6.70	49.11	74.00	-24.89	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

[TestMode: TX band4 a 5825 channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: PanoX V3
M/N: PIP225
Mode: 5G Band4 A TX 5825
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	*	5850.000	41.57	6.70	48.27	74.00	-25.73	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only
Receiver: Spectrum Analyzer: FSP40

Test Result: Pass

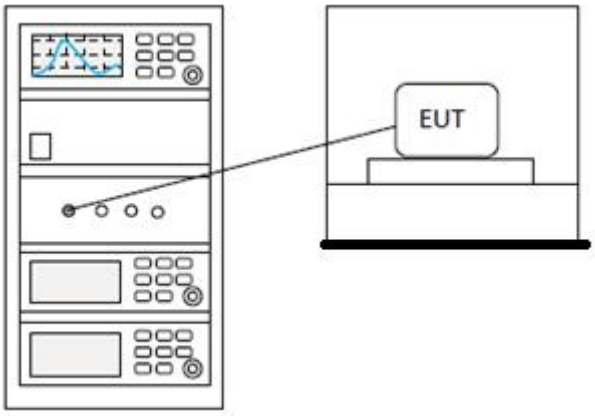
6.14 DFS: Channel Closing Transmission Time

Test Standard	47 CFR Part 15, Subpart E 15.407
Test Method	KDB 905462 D02 Section 7.8.3
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.14.1 Limit

200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period (should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. It is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required facilitating a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions)

6.14.2 Test setup



6.14.3 Procedure

1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.

2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.

3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.

4) EUT will associate with the master at channel. The file ¡°iperf.exe¡± specified by the FCC is

streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.

5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.

6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.

7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

6.14.4 Test data

N/A

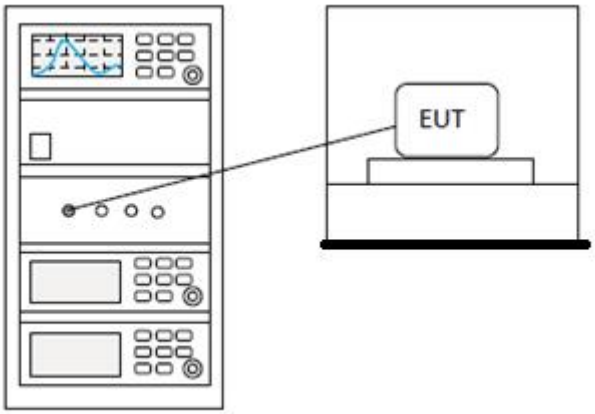
6.15 DFS: Non-occupancy period

Test Standard	47 CFR Part 15, Subpart E 15.407
Test Method	KDB 905462 D02 Section 7.8.3
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.15.1 Limit

Minimum 30 minutes

6.15.2 Test setup



6.15.3 Procedure

1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.

2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.

3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.

4) EUT will associate with the master at channel. The file ¡°iperf.exe¡± specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.

5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.

6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure

and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.

7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

6.15.4 Test data

N/A

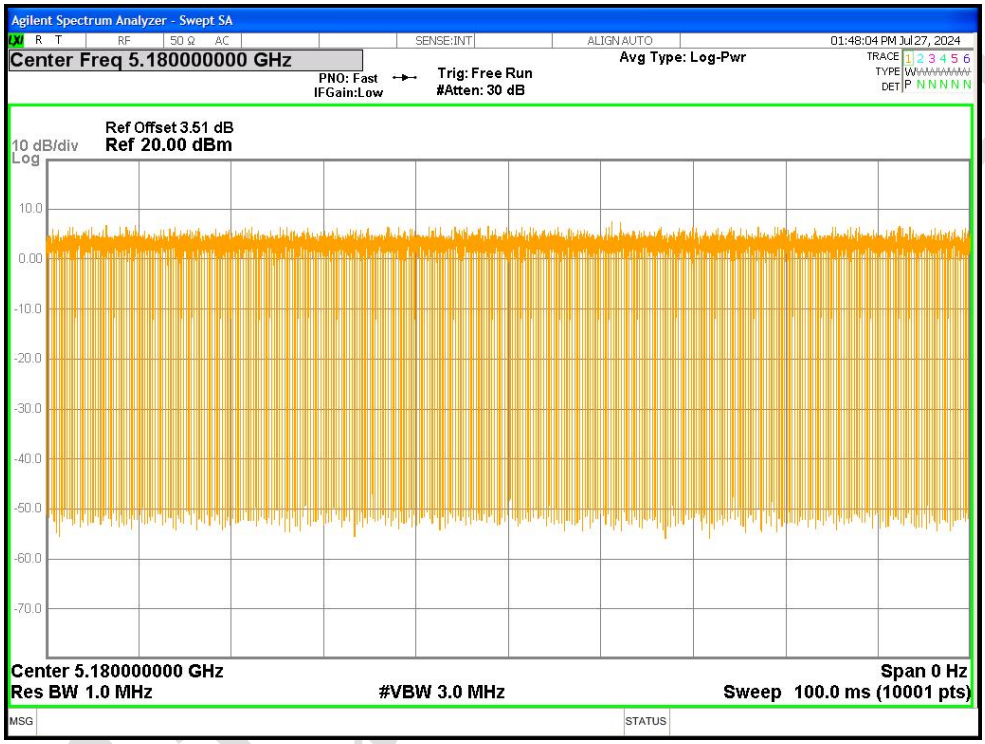
7 Appendix A

7.1 Duty Cycle

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)
NVNT	a	5180	Ant1	89.26	0.49
NVNT	a	5200	Ant1	92.86	0.32
NVNT	a	5240	Ant1	89.26	0.49
NVNT	a	5745	Ant1	92.86	0.32
NVNT	a	5785	Ant1	92.86	0.32
NVNT	a	5825	Ant1	89.29	0.49
NVNT	a	5180	Ant2	92.86	0.32
NVNT	a	5200	Ant2	92.86	0.32
NVNT	a	5240	Ant2	89.29	0.49
NVNT	a	5745	Ant2	89.29	0.49
NVNT	a	5785	Ant2	92.86	0.32
NVNT	a	5825	Ant2	92.84	0.32
NVNT	ac20	5180	Sum	90.17	0.45
NVNT	ac20	5200	Sum	90.25	0.45
NVNT	ac20	5240	Sum	89.44	0.48
NVNT	ac20	5745	Sum	90.23	0.45
NVNT	ac20	5785	Sum	89.42	0.49
NVNT	ac20	5825	Sum	90.26	0.44
NVNT	ac40	5190	Sum	84.28	0.74
NVNT	ac40	5230	Sum	84.27	0.74
NVNT	ac40	5755	Sum	84.27	0.74
NVNT	ac40	5795	Sum	84.9	0.71
NVNT	ac80	5210	Sum	78.25	1.07
NVNT	ac80	5775	Sum	78.25	1.07
NVNT	n20	5180	Sum	90.08	0.45
NVNT	n20	5200	Sum	90.06	0.45
NVNT	n20	5240	Sum	89.25	0.49
NVNT	n20	5745	Sum	90.08	0.45
NVNT	n20	5785	Sum	90.06	0.45
NVNT	n20	5825	Sum	90.09	0.45

NVNT	n40	5190	Sum	83.87	0.76
NVNT	n40	5230	Sum	83.88	0.76
NVNT	n40	5755	Sum	83.87	0.76
NVNT	n40	5795	Sum	83.88	0.76

Duty Cycle NVNT a 5180MHz Ant1



Duty Cycle NVNT a 5200MHz Ant1