FCC RF Test Report
(FHSS)

Report No.:	JYTSZ-R12-2400357
Applicant:	PICA Product Development
Address of Applicant:	4 Ash Street Extension, Derry, NH 03038 USA
Equipment Under Test (EUT)	
Product Name:	Skyhawk Hub
Model No.:	HUB3VZW
Trade Mark:	N/A
FCC ID:	UOXSKYHAWKHUBTYP3
Applicable Standards:	FCC CFR Title 47 Part 15C (§15.247)
Date of Sample Receipt:	15 Mar., 2024
Date of Test:	16 Mar., to 09 May, 2024
Date of Report Issued:	10 May, 2024
Test Result:	PASS

Tested by:	Jack Li ***Project Engineer***	***Date:***	*10 May, 2024*
Reviewed by:	Peter Chang ***Senior Engineer***	***Date:***	*10 May, 2024*
Approved by:	James Wei ***Manager***	***Date:***	*10 May, 2024*

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in above the application standard version. Test results reported herein relate only to the item(s) tested.

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1 Version

Version No.	Date	Description
00	*10 May, 2024*	*Original*

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3 General Information

3.1 Client Information

Applicant:	PICA Product Development
Address:	4 Ash Street Extension, Derry, NH 03038 USA
Manufacturer:	PICA Product Development
Address:	4 Ash Street Extension, Derry, NH 03038 USA

3.2 General Description of E.U.T.

Product Name:	Skyhawk Hub
Model No.:	HUB3VZW
Operation Frequency:	906 MHz - 924 MHz
Number of Channel:	50
Modulation Technology:	FSK
Antenna Type:	PCB Antenna
Antenna Gain:	3.42 dBi (declare by applicant)
Power Supply:	DC 4.5V with 3*AA battery
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

3.3 Test Mode and Test Environment

Test Modes:	
Non-hopping mode:	Keep the EUT in continuous transmitting mode.
Hopping mode:	Keep the EUT in hopping mode.
Remark: *For spurious emission of below 1GHz, pre-scan lowest, middle and highest channel, found lowest channel was worse case mode. The report only reflects the test data of worst mode.*	
Operating Environment:	
Temperature:	15℃ ~ 35℃
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1008 mbar
Voltage:	Nominal: 4.5 Vdc, Extreme: Low 4.05 Vdc, High 4.95 Vdc
Test Engineer:	June Li(Conducted measurement) Kiran Zeng (Radiated measurement)

3.4 Description of Test Auxiliary Equipment

The EUT has been tested as an independent unit.

3.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
Radiated Emission (30MHz ~ 200MHz) (10m SAC)	4.3 dB
Radiated Emission (200MHz ~ 1000MHz) (10m SAC)	4.3 dB
Radiated Emission (1GHz ~ 6GHz) (3m FAR)	4.95 dB
Radiated Emission (6GHz ~ 18GHz) (3m FAR)	5.23 dB
Radiated Emission (18GHz ~ 40GHz) (3m FAR)	5.32 dB
Note: *All the measurement uncertainty value were shown with a coverage k=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.*	

3.6 Additions to, Deviations, or Exclusions From the Method

No

3.7 Laboratory Facility

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

- **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

- **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L15527**

JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

3.8 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.
Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info-JYTee@lets.com, Website: http://jyt.lets.com

3.9 Test Instruments List

Radiated Emission(3m FAR):					
Test Equipment	**Manufacturer**	**Model No.**	**Manage No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
3m FAR	YUNYI	9m*6m*6m	WXJ097	06-15-2023	06-14-2028
BiConiLog Antenna	Schwarzbeck	VULB9163	WXJ097-2	07-13-2023	07-12-2024
Biconical Antenna	Schwarzbeck	VUBA9117	WXJ002-1	07-02-2021	07-01-2024
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ097-3	07-14-2023	07-13-2024
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-3	12-28-2023	12-27-2024
Horn Antenna	Schwarzbeck	BBHA9170	WXJ002-5	12-28-2023	12-27-2024
Horn Antenna	Schwarzbeck	BBHA9170	WXJ002-6	12-28-2023	12-27-2024
Pre-amplifier (30MHz ~ 1GHz)	YUNYI	PAM-310N	WXJ097-5	05-14-2023	05-13-2024
Pre-amplifier (1GHz ~ 18GHz)	YUNYI	PAM-118N	WXJ097-6	05-14-2023	05-13-2024
Pre-amplifier (18GHz ~ 40GHz)	RF System	TRLA-180400G45B	WXJ002-7	12-28-2023	12-27-2024
EMI Test Receiver	Rohde & Schwarz	ESCI3	WXJ003	12-27-2023	12-26-2024
Spectrum Analyzer	Rohde & Schwarz	FSP 30	WXJ004	12-27-2023	12-26-2024
Spectrum Analyzer	KEYSIGHT	N9010B	WXJ081-1	06-13-2023	06-12-2024
Coaxial Cable (30MHz ~ 1GHz)	JYTSZ	JYT3M-1G-NN-13M	WXG097-1	08-01-2023	07-31-2024
Coaxial Cable (1GHz ~ 18GHz)	JYTSZ	JYT3M-18G-NN-8M	WXG097-2	08-01-2023	07-31-2024
Coaxial Cable (18GHz ~ 40GHz)	JYTSZ	JYT3M-40G-SS-8M	WXG097-3	08-01-2023	07-31-2024
High Band Reject Filter Group	Tonscend	JS0806-F	WXJ089	N/A	
Low Band Reject Filter Group	Tonscend	JS0806-F	WXJ097-4	N/A	
Test Software	Tonscend	TS+	Version: 5.0.0		

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Radiated Emission(10m SAC):					
Test Equipment	**Manufacturer**	**Model No.**	**Manage No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
10m SAC	ETS	RFSD-100-F/A	WXJ090	04-28-2021	04-27-2026
BiConiLog Antenna	SCHWARZBECK	VULB 9168	WXJ090-1	01-05-2024	01-04-2025
BiConiLog Antenna	SCHWARZBECK	VULB 9168	WXJ090-2	12-28-2023	12-27-2024
EMI Test Receiver	R&S	ESR 3	WXJ090-3	12-27-2023	12-26-2024
EMI Test Receiver	R&S	ESR 3	WXJ090-4	12-27-2023	12-26-2024
Low Pre-amplifier	Bost	LNA 0920N	WXJ090-6	12-27-2023	12-26-2024
Low Pre-amplifier	Bost	LNA 0920N	WXJ090-7	12-27-2023	12-26-2024
Cable	Bost	JYT10M-1G-NN-10M	WXG002-7	01-17-2024	01-16-2025
Cable	Bost	JYT10M-1G-NN-10M	WXG002-8	01-17-2024	01-16-2025
Test Software	R&S	EMC32	Version: 10.50.40		

11					
Test Equipment	**Manufacturer**	**Model No.**	**Manage No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
Spectrum Analyzer	Keysight	N9010B	WXJ004-3	11-01-2023	10-31-2024
DC Power Supply	Keysight	E3642A	WXJ025-2	N/A	

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4 Measurement Setup and Procedure

4.1 Test Channel

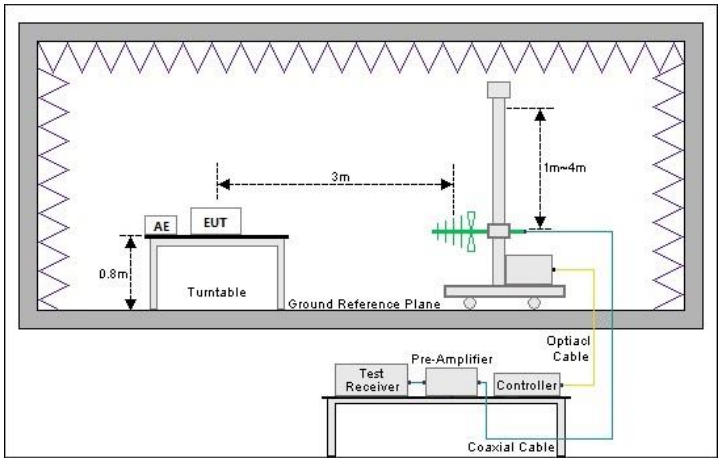
According to ANSI C63.10-2013 chapter 5.6.1 Table 4 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows:

Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	906	25	912.75	50	923.5

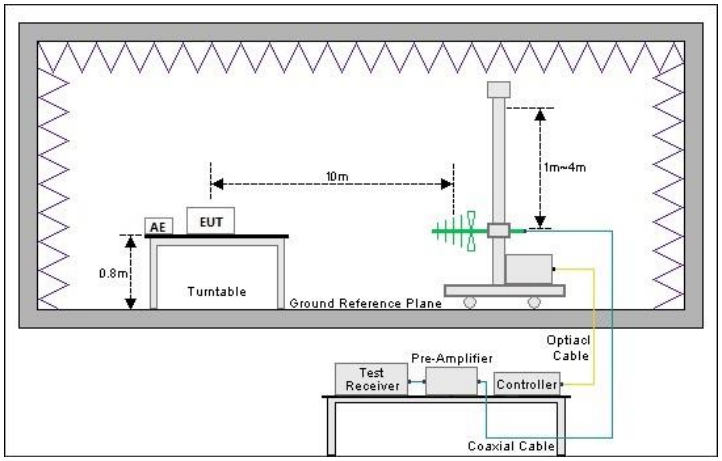
4.2 Test Setup

1) Radiated emission measurement:

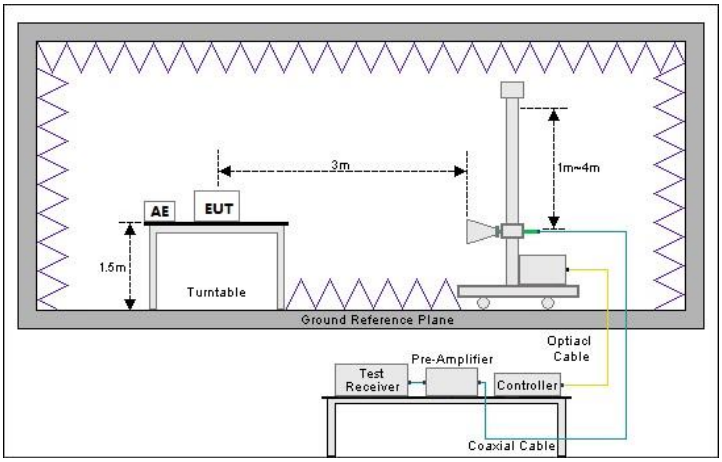
Below 1GHz (3m SAC)



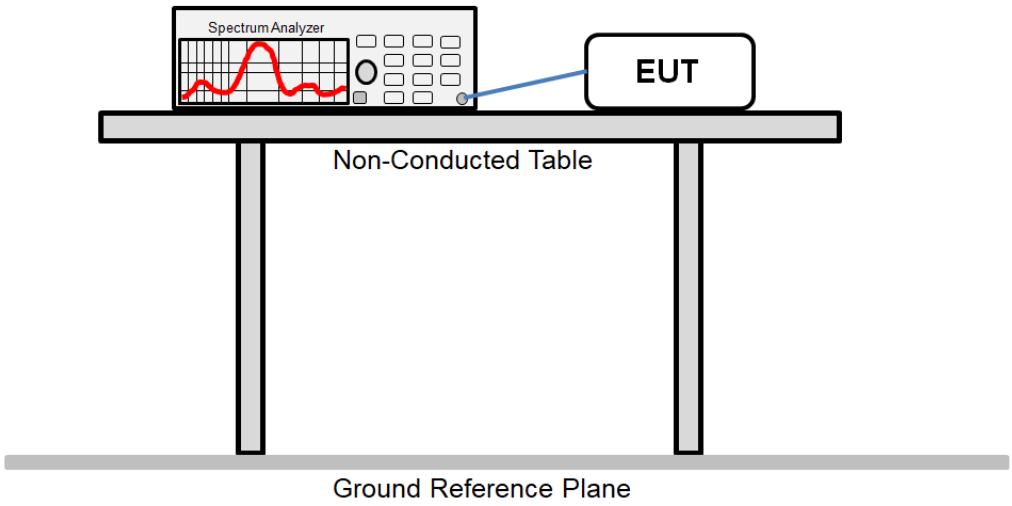
Below 1GHz (10m SAC)



Above 1GHz (3m FAR)



2) Conducted test method



4.3 Test Procedure

Test method	Test step
Radiated emission	**For below 1GHz:** 1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m or 10 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 10 m. 2. EUT works in each mode of operation that needs to be tested，and having the EUT continuously working, respectively on 3 axis (X, Y & Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. 3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data. **For above 1GHz:** 1. The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m. 2. EUT works in each mode of operation that needs to be tested，and having the EUT continuously working, respectively on 3 axis (X, Y & Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. 3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.
Conducted test method	1. The antenna port of EUT was connected to the test port of the test system through an RF cable. 2. The EUT is keeping in continuous transmission mode and tested in all modulation modes. 3. Open the test software, prepare a test plan, and control the system through the software. After the test is completed, the test report is exported through the test software.

5 Test Results

5.1 Summary

5.1.1 Clause and data summary

Test items	Standard clause	Test data	Result
Antenna Requirement	15.203 15.247 (b)(4)	See Section 5.2	Pass
AC Power Line Conducted Emission	15.207	N/A	N/A
Conducted Output Power	15.247 (b)(2)	See Section 5.3	Pass
20dB Occupied Bandwidth	15.247 (a)(1)(i)	See Section 5.4	Pass
Carrier Frequencies Separation	15.247 (a)(1)	See Section 5.5	Pass
Hopping Channel Number	5.247 (a)(1)(i)	See Section 5.6	Pass
Dwell Time	15.247 (a)(1)(i)	See Section 5.7	Pass
Spurious Emission	15.205 15.209 15.247 (d)	See Section 5.8	Pass

Remark:

1. *Pass: The EUT complies with the essential requirements in the standard.*
2. *N/A: Not Applicable.*
3. *The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by the customer).*

Test Method:	*ANSI C63.10-2013* *KDB 558074 D01 15.247 Meas Guidance v05r02*

5.1.2 Test Limit

<table>
<tr><th>Test items</th><th>Limit</th></tr>
<tr><td>Conducted Output Power</td><td>For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.</td></tr>
<tr><td>20dB Occupied Bandwidth

Hopping Channel Number

Dwell Time</td><td>For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.</td></tr>
<tr><td>Carrier Frequencies Separation</td><td>Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater</td></tr>
<tr><td>Spurious Emission</td><td>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 20 dB. 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)):
<table>
<tr><th rowspan="2">Frequency (MHz)</th><th colspan="2">Limit (dBμV/m)</th><th rowspan="2">Detector</th></tr>
<tr><th>@ 3m</th><th>@ 10m</th></tr>
<tr><td>30 – 88</td><td>40.0</td><td>30.0</td><td>Quasi-peak</td></tr>
<tr><td>88 – 216</td><td>43.5</td><td>33.5</td><td>Quasi-peak</td></tr>
<tr><td>216 – 960</td><td>46.0</td><td>36.0</td><td>Quasi-peak</td></tr>
<tr><td>960 – 1000</td><td>54.0</td><td>44.0</td><td>Quasi-peak</td></tr>
<tr><td colspan="4">Note: The more stringent limit applies at transition frequencies.</td></tr>
<tr><th rowspan="2">Frequency</th><th colspan="3">Limit (dBμV/m) @ 3m</th></tr>
<tr><th colspan="2">Average</th><th>Peake</th></tr>
<tr><td>Above 1 GHz</td><td colspan="2">54.0</td><td>74.0</td></tr>
<tr><td colspan="4">Note: The measurement bandwidth shall be 1 MHz or greater.</td></tr>
</table></td></tr>
</table>

5.2 Antenna Requirement

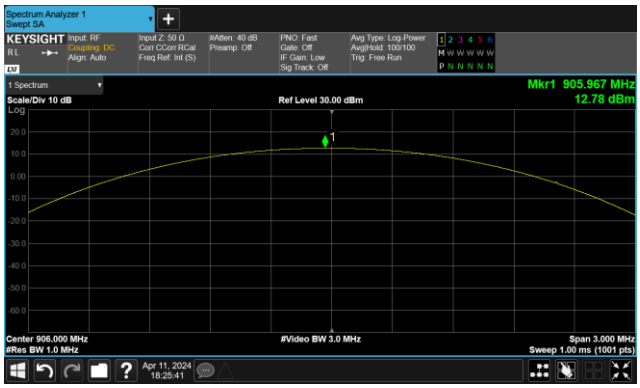
Standard requirement:	FCC Part 15 C Section 15.203 & 247(b)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(b) (4) requirement: (4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	
E.U.T Antenna:	
The EUT antenna is an Internal antenna which permanently attached, and the best case gain of the antenna is 3.42 dBi. See product internal photos for details.	

5.3 Conducted Output Power

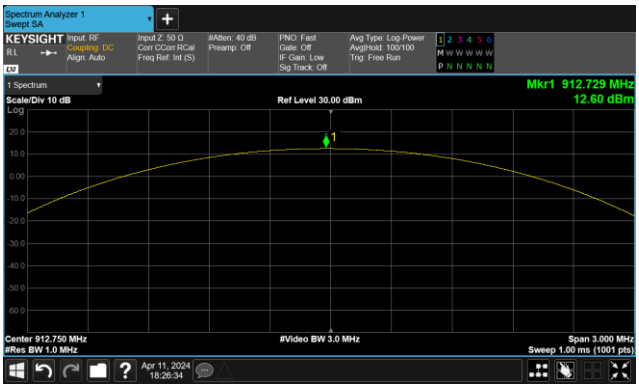
Test channel	Maximum Output Power (dBm)	Limit (dBm)	Result
Lowest channel	12.78	30.00	Pass
Middle channel	12.60	30.00	Pass
Highest channel	12.21	30.00	Pass

Test plot as follows:

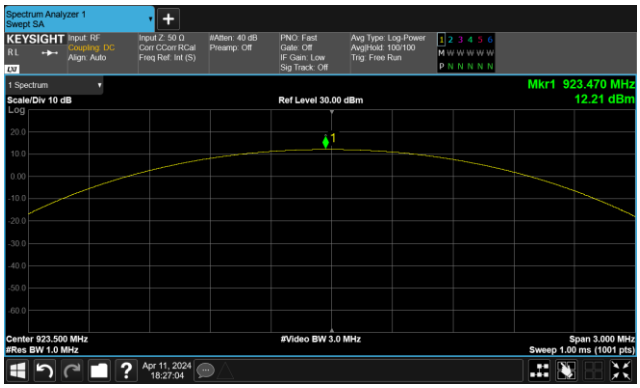
Lowest channel



Middle channel



Highest channel

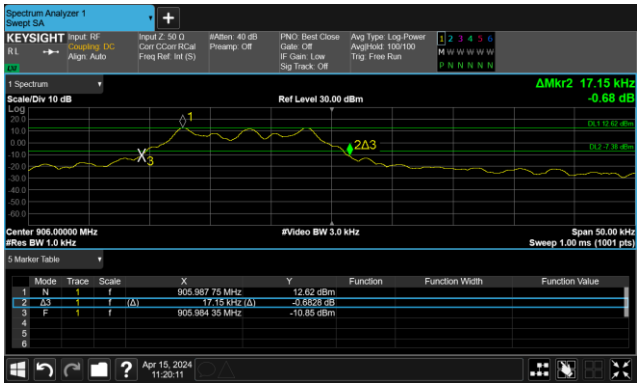


5.4 20dB Occupied Bandwidth

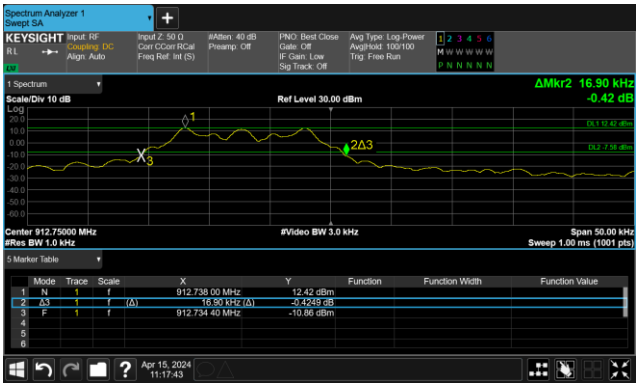
Test channel	20dB Occupy Bandwidth (kHz)	Limit (kHz)	Result
Lowest channel	17.15	$BW_{20dB} \leq 250$	Pass
Middle channel	16.90	$BW_{20dB} \leq 250$	Pass
Highest channel	17.10	$BW_{20dB} \leq 250$	Pass

Test plot as follows:

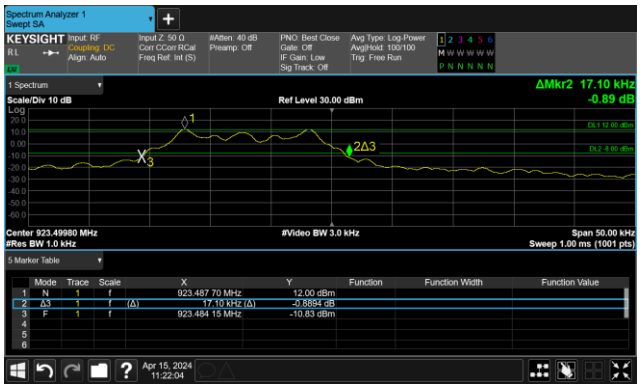
Lowest channel



Middle channel



Highest channel

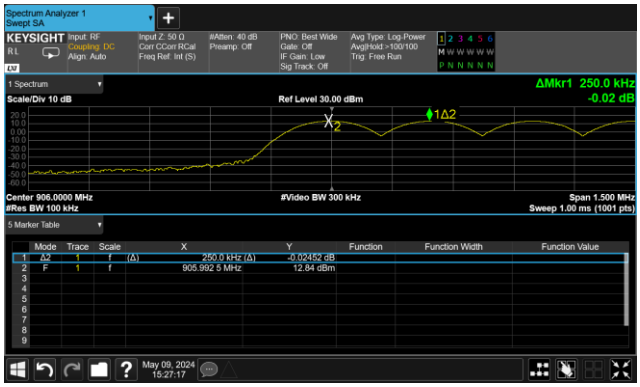


5.5 Carrier Frequencies Separation

Test channel	Carrier Frequencies Separation (kHz)	Limit (kHz)	Result
Lowest channel	250	⩾25KHz	Pass
Middle channel	250	⩾25KHz	Pass
Highest channel	250	⩾25KHz	Pass

Test plot as follows:

Lowest channel



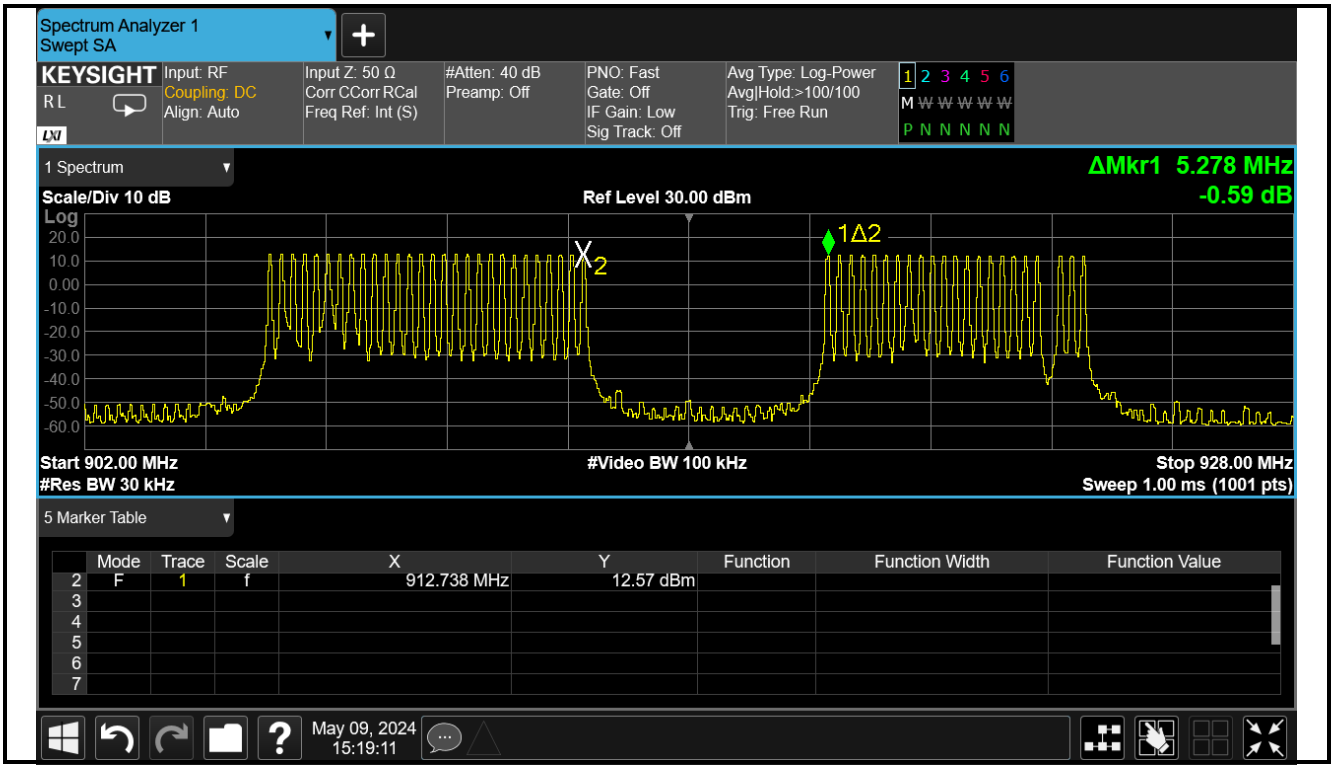
Middle channel

Highest channel

5.6 Hopping Channel Number

Hopping channel numbers	Limit	Result
50	$N_{ch} \geq 50$	Pass

Test plot as follows:



5.7 Dwell Time

T_{on} (s)	Hopping numbers (20 s period)	Dwell time (s)	Limit (s)	Result
0.163	2	0.326	0.4	Pass

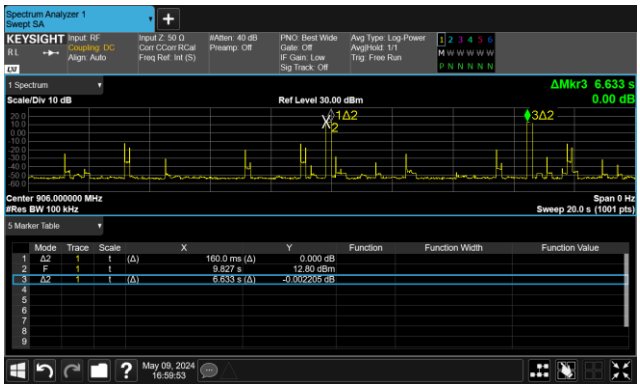
Note:

1. T_{on} is time per hop.

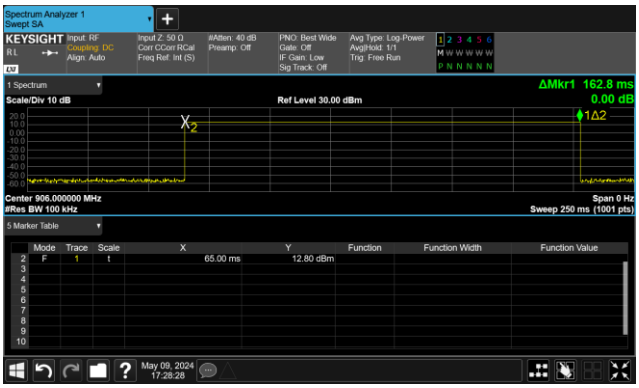
*2. Dwell time = T_{on} * Hopping numbers.*

Test plot as follows:

906MHz:

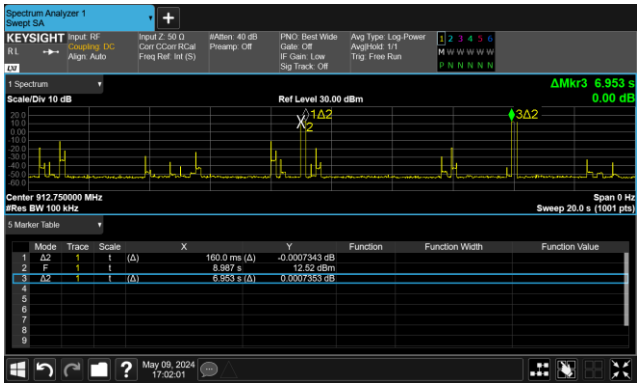


10 s

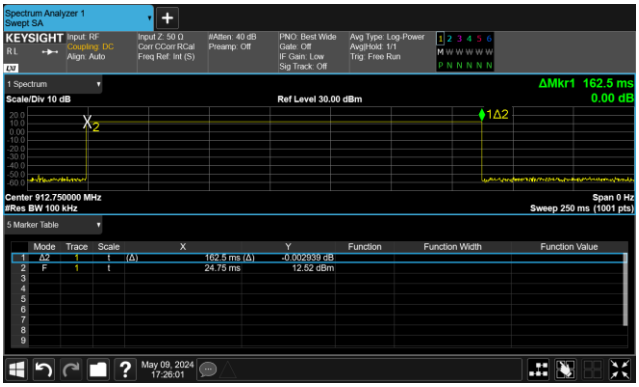


T_{on}

912.75MHz:

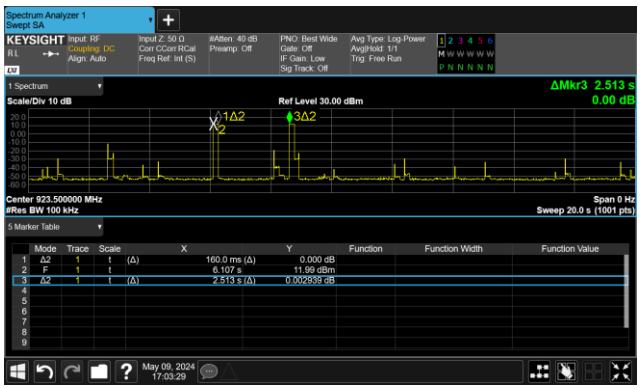
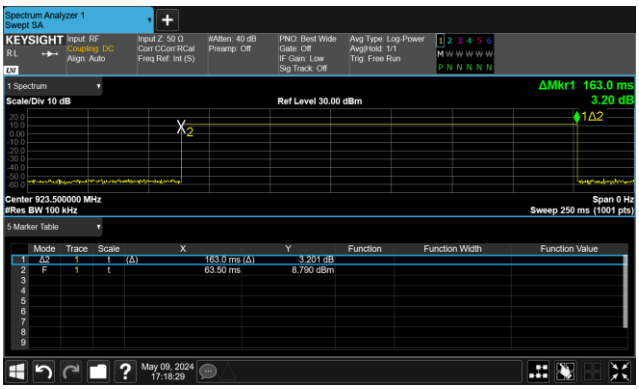


10 s



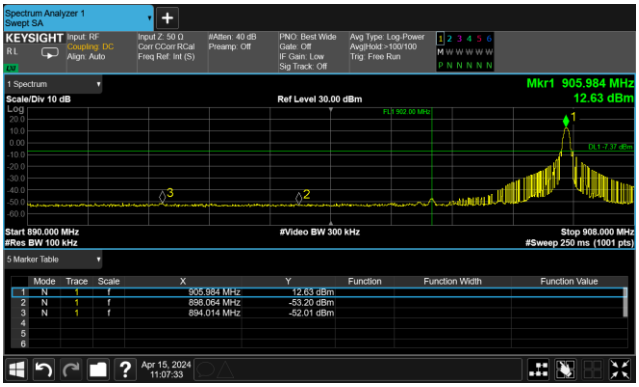
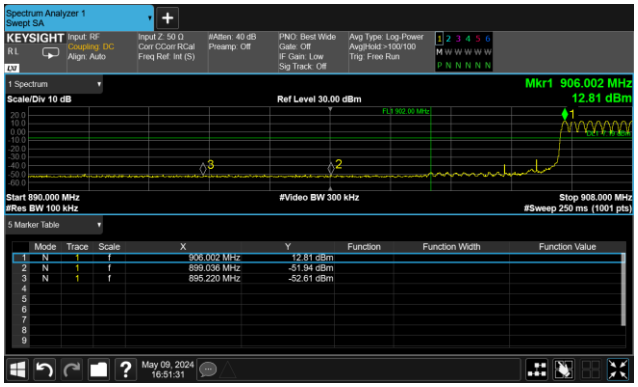
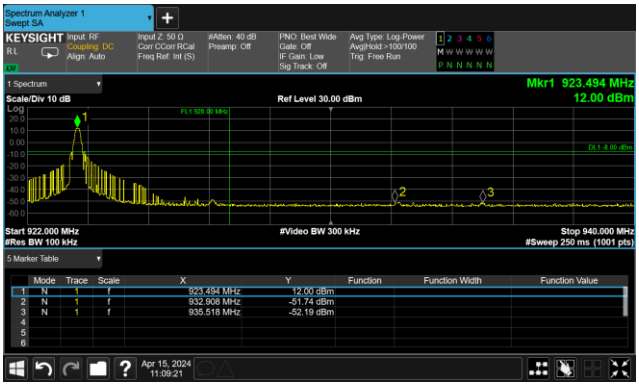
T_{on}

923.5MHz:

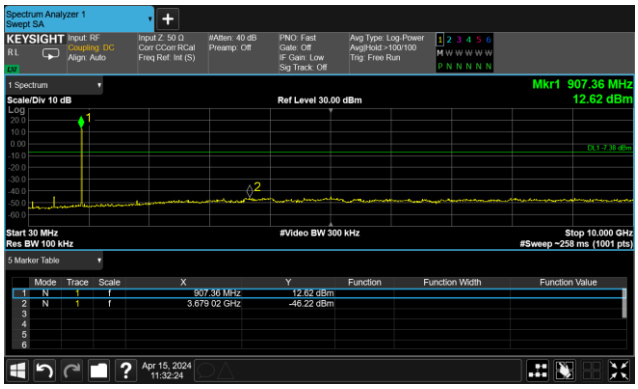
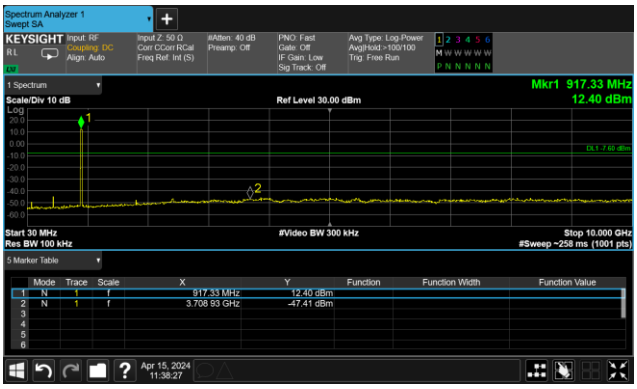
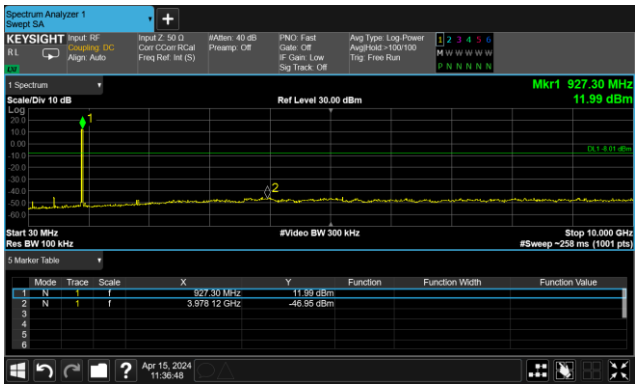
	
10 s	T_{on}

5.8 Spurious Emission

5.8.1 Band-edge Emission

Lowest Channel	
	
No-hopping mode	Hopping mode
Highest Channel	
	
No-hopping mode	Hopping mode

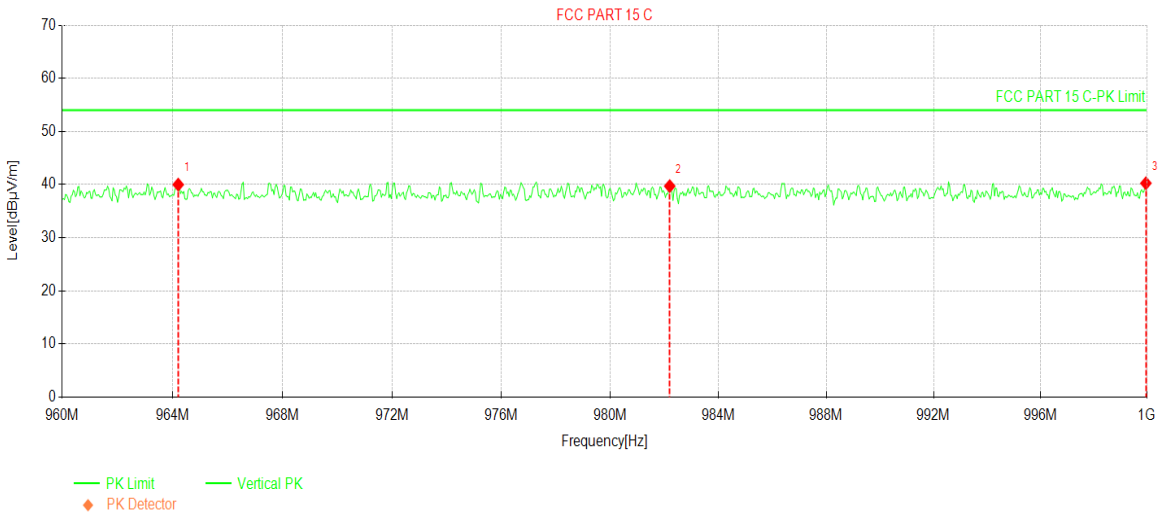
5.8.2 Conducted Spurious Emission

Lowest channel	Middle channel
	
30MHz~10GHz	30MHz~10GHz
Highest channel	
	
30MHz~10GHz	

5.8.3 Emissions in Restricted Frequency Bands

903MHz:

Product Name:	Skyhawk Hub	**Product Model:**	HUB3VZW
Test By:	Kiran	**Test mode:**	Tx mode
Test Channel:	Lowest channel	**Polarization:**	Vertical
Test Voltage:	AC 120/60Hz		

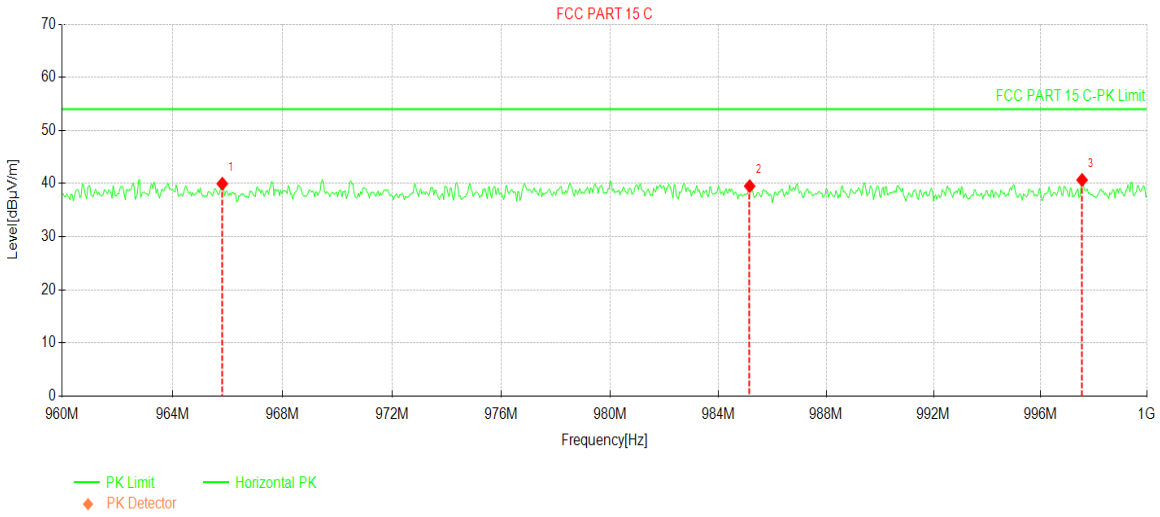


Suspected Data List								
NO.	Freq. [MHz]	Reading[dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Trace	Polarity
1	964.2000	13.39	26.60	39.99	54.00	14.01	PK	Vertical
2	982.2000	12.90	26.81	39.71	54.00	14.29	PK	Vertical
3	999.9600	13.52	26.74	40.26	54.00	13.74	PK	Vertical

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	Skyhawk Hub	**Product Model:**	HUB3VZW
Test By:	Kiran	**Test mode:**	Tx mode
Test Channel:	Lowest channel	**Polarization:**	Horizontal
Test Voltage:	AC 120/60Hz		

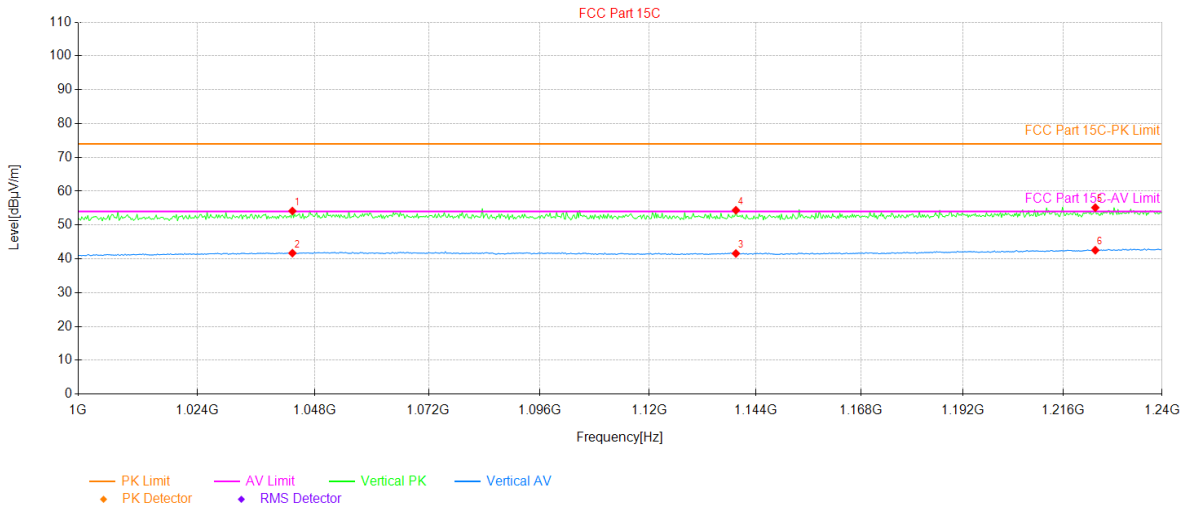


Suspected Data List								
NO.	Freq. [MHz]	Reading[dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Trace	Polarity
1	965.8000	13.35	26.62	39.97	54.00	14.03	PK	Horizontal
2	985.1600	12.70	26.82	39.52	54.00	14.48	PK	Horizontal
3	997.5600	13.92	26.76	40.68	54.00	13.32	PK	Horizontal

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	Skyhawk Hub	**Product Model:**	HUB3VZW
Test By:	Kiran	**Test mode:**	Tx mode
Test Channel:	Highest channel	**Polarization:**	Vertical
Test Voltage:	AC 120/60Hz		

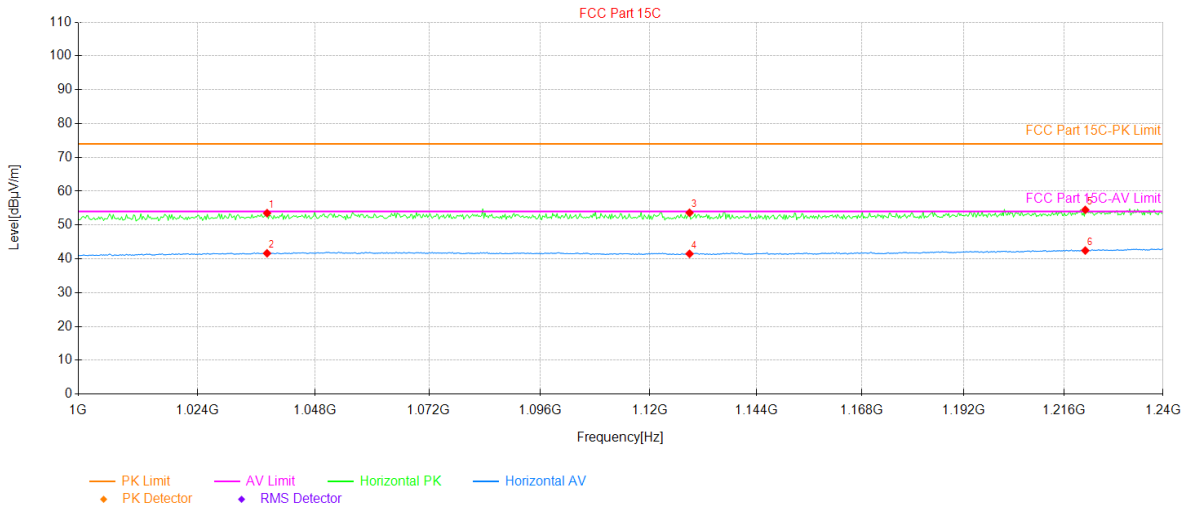


Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Verdict	Polarity
1	1043.44	23.44	30.71	54.15	74.00	19.85	130	PK	PASS	Vertical
2	1043.44	10.98	30.71	41.69	54.00	12.31	330	AV	PASS	Vertical
3	1139.44	10.69	30.90	41.59	54.00	12.41	140	AV	PASS	Vertical
4	1139.44	23.47	30.90	54.37	74.00	19.63	0	PK	PASS	Vertical
5	1223.68	23.82	31.34	55.16	74.00	18.84	340	PK	PASS	Vertical
6	1223.68	11.21	31.34	42.55	54.00	11.45	160	AV	PASS	Vertical

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	Skyhawk Hub	**Product Model:**	HUB3VZW
Test By:	Kiran	**Test mode:**	Tx mode
Test Channel:	Highest channel	**Polarization:**	Horizontal
Test Voltage:	AC 120/60Hz		



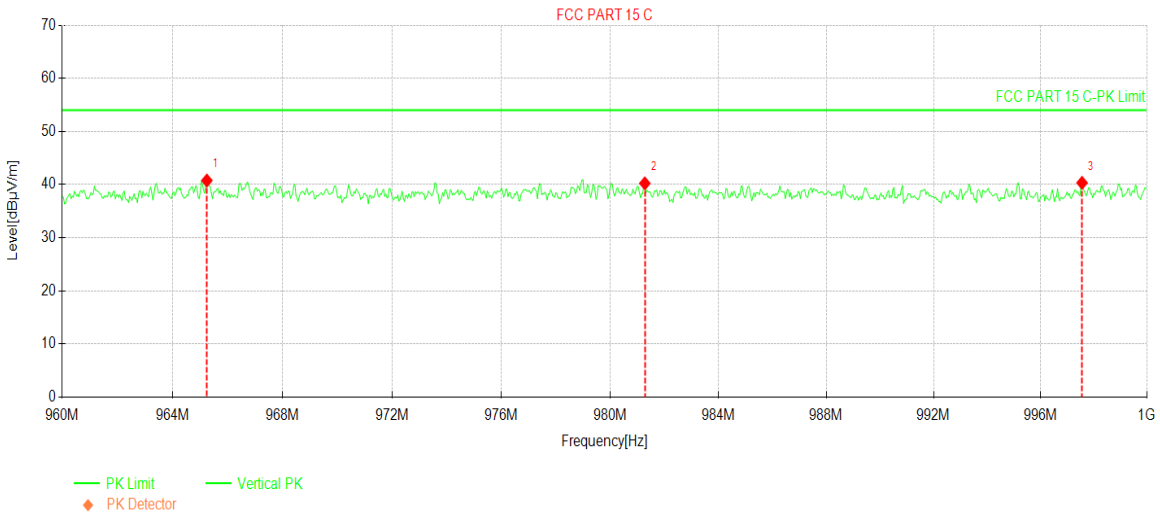
Suspected Data List										
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Angle [°]	Detector	Verdict	Polarity
1	1038.16	22.83	30.68	53.51	74.00	20.49	50	PK	PASS	Horizontal
2	1038.16	10.96	30.68	41.64	54.00	12.36	10	AV	PASS	Horizontal
3	1128.88	22.78	30.85	53.63	74.00	20.37	30	PK	PASS	Horizontal
4	1128.88	10.64	30.85	41.49	54.00	12.51	70	AV	PASS	Horizontal
5	1221.04	23.18	31.32	54.50	74.00	19.50	90	PK	PASS	Horizontal
6	1221.04	11.13	31.32	42.45	54.00	11.55	50	AV	PASS	Horizontal

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

912.75MHz:

Product Name:	Skyhawk Hub	**Product Model:**	HUB3VZW
Test By:	Kiran	**Test mode:**	Tx mode
Test Channel:	Lowest channel	**Polarization:**	Vertical
Test Voltage:	AC 120/60Hz		

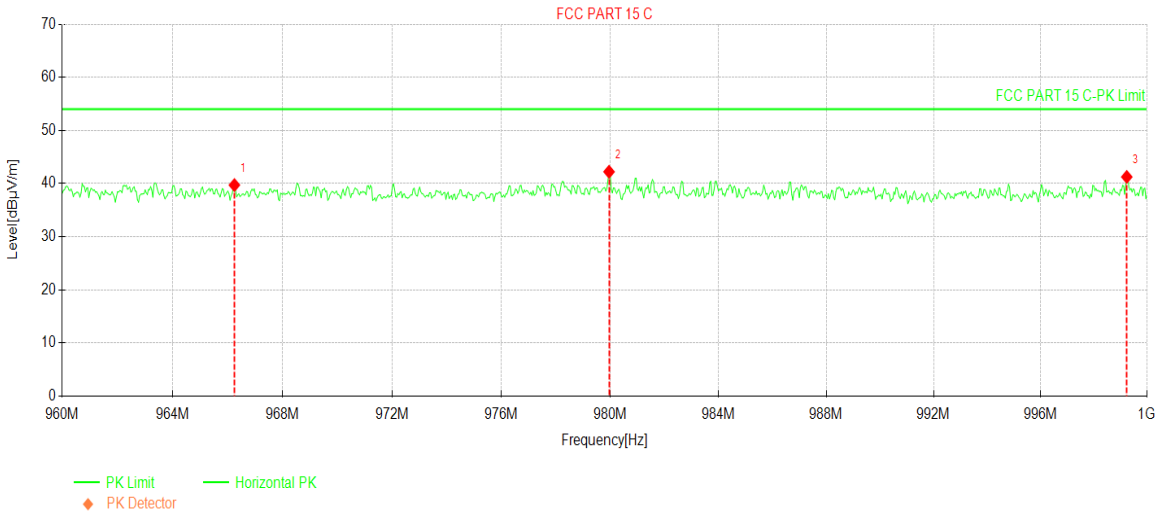


Suspected Data List								
NO.	Freq. [MHz]	Reading[dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Trace	Polarity
1	965.2400	14.16	26.61	40.77	54.00	13.23	PK	Vertical
2	981.2800	13.42	26.81	40.23	54.00	13.77	PK	Vertical
3	997.5600	13.57	26.76	40.33	54.00	13.67	PK	Vertical

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	Skyhawk Hub	**Product Model:**	HUB3VZW
Test By:	Kiran	**Test mode:**	Tx mode
Test Channel:	Lowest channel	**Polarization:**	Horizontal
Test Voltage:	AC 120/60Hz		

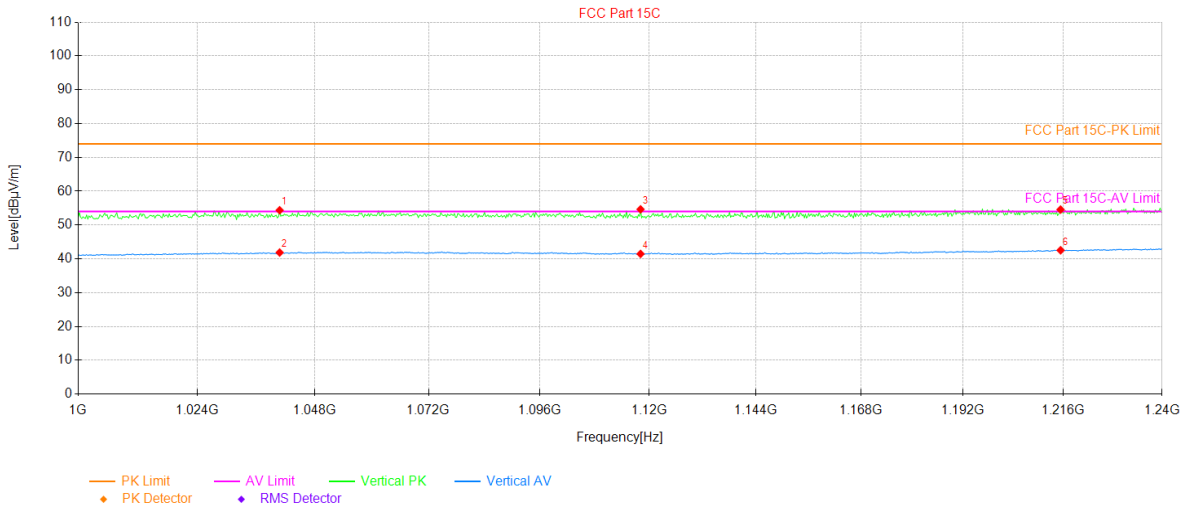


Suspected Data List								
NO.	Freq. [MHz]	Reading[dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Trace	Polarity
1	966.2400	13.09	26.63	39.72	54.00	14.28	PK	Horizontal
2	979.9600	15.41	26.81	42.22	54.00	11.78	PK	Horizontal
3	999.2400	14.51	26.75	41.26	54.00	12.74	PK	Horizontal

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	Skyhawk Hub	**Product Model:**	HUB3VZW
Test By:	Kiran	**Test mode:**	Tx mode
Test Channel:	Highest channel	**Polarization:**	Vertical
Test Voltage:	AC 120/60Hz		

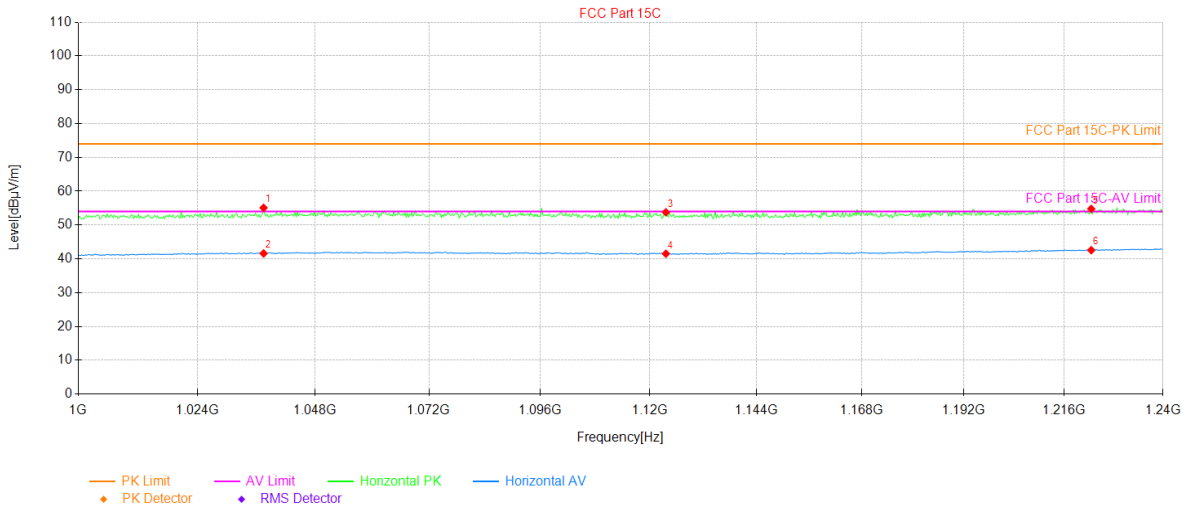


Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Verdict	Polarity
1	1040.80	23.68	30.69	54.37	74.00	19.63	46	PK	PASS	Vertical
2	1040.80	11.18	30.69	41.87	54.00	12.13	64	AV	PASS	Vertical
3	1118.08	23.85	30.80	54.65	74.00	19.35	157	PK	PASS	Vertical
4	1118.08	10.67	30.80	41.47	54.00	12.53	189	AV	PASS	Vertical
5	1215.28	23.29	31.28	54.57	74.00	19.43	82	PK	PASS	Vertical
6	1215.28	11.26	31.28	42.54	54.00	11.46	122	AV	PASS	Vertical

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	Skyhawk Hub	**Product Model:**	HUB3VZW
Test By:	Kiran	**Test mode:**	Tx mode
Test Channel:	Highest channel	**Polarization:**	Horizontal
Test Voltage:	AC 120/60Hz		



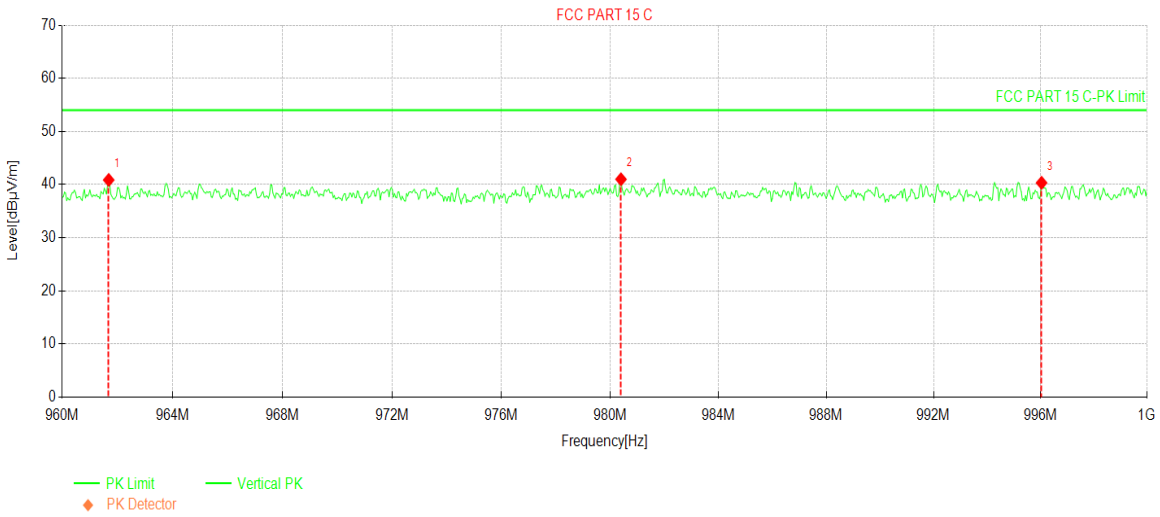
Suspected Data List										
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Angle [°]	Detector	Verdict	Polarity
1	1037.44	24.43	30.66	55.09	74.00	18.91	196	PK	PASS	Horizontal
2	1037.44	10.93	30.66	41.59	54.00	12.41	196	AV	PASS	Horizontal
3	1123.60	22.95	30.82	53.77	74.00	20.23	335	PK	PASS	Horizontal
4	1123.60	10.69	30.82	41.51	54.00	12.49	255	AV	PASS	Horizontal
5	1222.48	23.46	31.33	54.79	74.00	19.21	48	PK	PASS	Horizontal
6	1222.48	11.25	31.33	42.58	54.00	11.42	223	AV	PASS	Horizontal

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

923.5MHz:

Product Name:	Skyhawk Hub	**Product Model:**	HUB3VZW
Test By:	Kiran	**Test mode:**	Tx mode
Test Channel:	Lowest channel	**Polarization:**	Vertical
Test Voltage:	AC 120/60Hz		

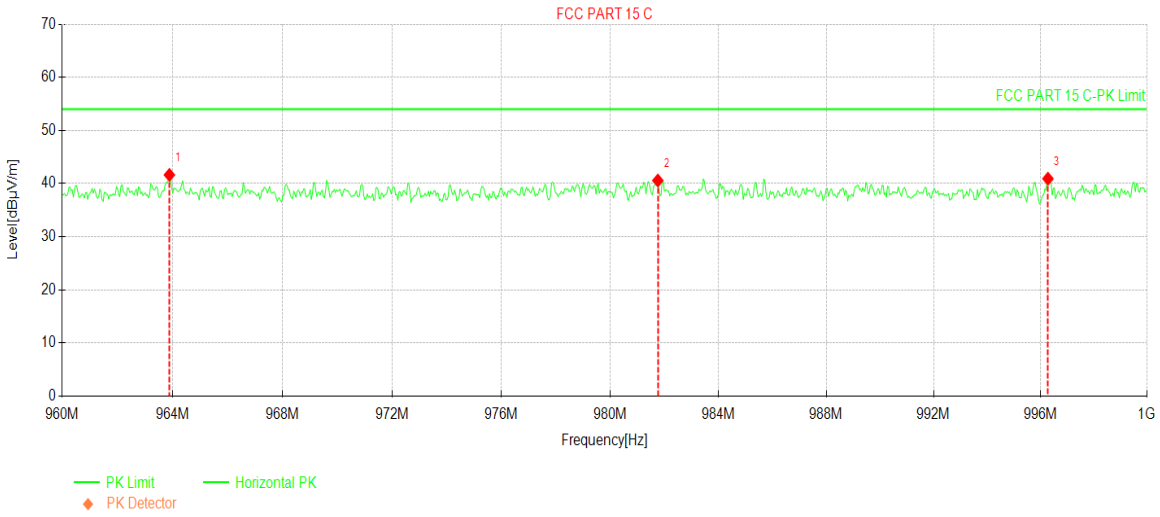


Suspected Data List								
NO.	Freq. [MHz]	Reading[dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Trace	Polarity
1	961.6800	14.28	26.59	40.87	54.00	13.13	PK	Vertical
2	980.4000	14.19	26.81	41.00	54.00	13.00	PK	Vertical
3	996.0400	13.56	26.77	40.33	54.00	13.67	PK	Vertical

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	Skyhawk Hub	**Product Model:**	HUB3VZW
Test By:	Kiran	**Test mode:**	Tx mode
Test Channel:	Lowest channel	**Polarization:**	Horizontal
Test Voltage:	AC 120/60Hz		

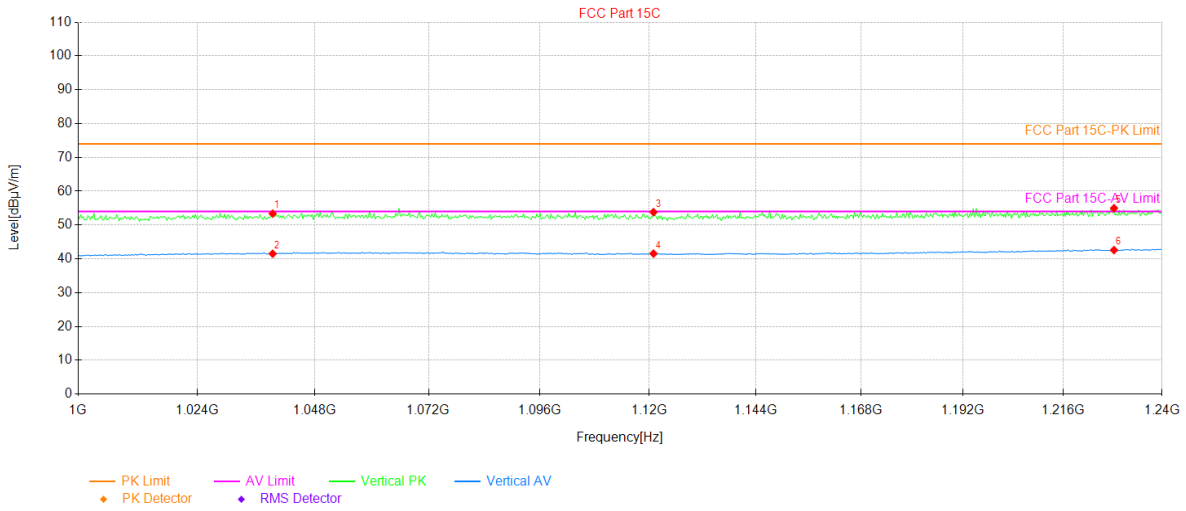


Suspected Data List								
NO.	Freq. [MHz]	Reading[dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Trace	Polarity
1	963.8800	15.04	26.60	41.64	54.00	12.36	PK	Horizontal
2	981.7600	13.77	26.81	40.58	54.00	13.42	PK	Horizontal
3	996.2800	14.15	26.77	40.92	54.00	13.08	PK	Horizontal

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	Skyhawk Hub	**Product Model:**	HUB3VZW
Test By:	Kiran	**Test mode:**	Tx mode
Test Channel:	Highest channel	**Polarization:**	Vertical
Test Voltage:	AC 120/60Hz		

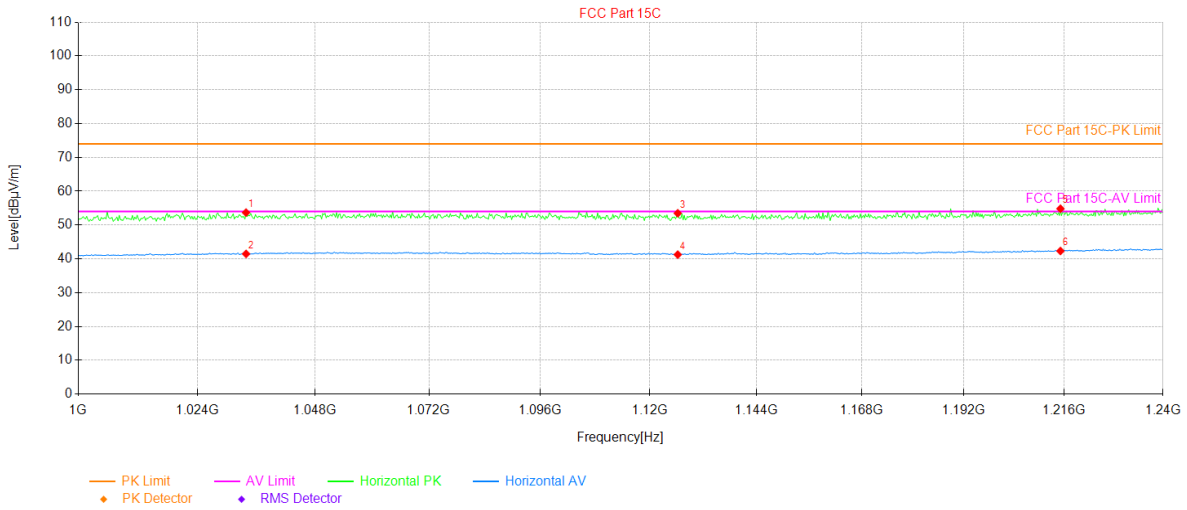


Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Verdict	Polarity
1	1039.36	22.69	30.68	53.37	74.00	20.63	190	PK	PASS	Vertical
2	1039.36	10.84	30.68	41.52	54.00	12.48	300	AV	PASS	Vertical
3	1120.96	23.00	30.81	53.81	74.00	20.19	290	PK	PASS	Vertical
4	1120.96	10.74	30.81	41.55	54.00	12.45	170	AV	PASS	Vertical
5	1228.24	23.60	31.38	54.98	74.00	19.02	140	PK	PASS	Vertical
6	1228.24	11.22	31.38	42.60	54.00	11.40	160	AV	PASS	Vertical

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	Skyhawk Hub	**Product Model:**	HUB3VZW
Test By:	Kiran	**Test mode:**	Tx mode
Test Channel:	Highest channel	**Polarization:**	Horizontal
Test Voltage:	AC 120/60Hz		



Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Verdict	Polarity
1	1033.84	23.03	30.65	53.68	74.00	20.32	210	PK	PASS	Horizontal
2	1033.84	10.82	30.65	41.47	54.00	12.53	300	AV	PASS	Horizontal
3	1126.24	22.66	30.83	53.49	74.00	20.51	210	PK	PASS	Horizontal
4	1126.24	10.43	30.83	41.26	54.00	12.74	100	AV	PASS	Horizontal
5	1215.04	23.55	31.28	54.83	74.00	19.17	290	PK	PASS	Horizontal
6	1215.04	11.05	31.28	42.33	54.00	11.67	120	AV	PASS	Horizontal

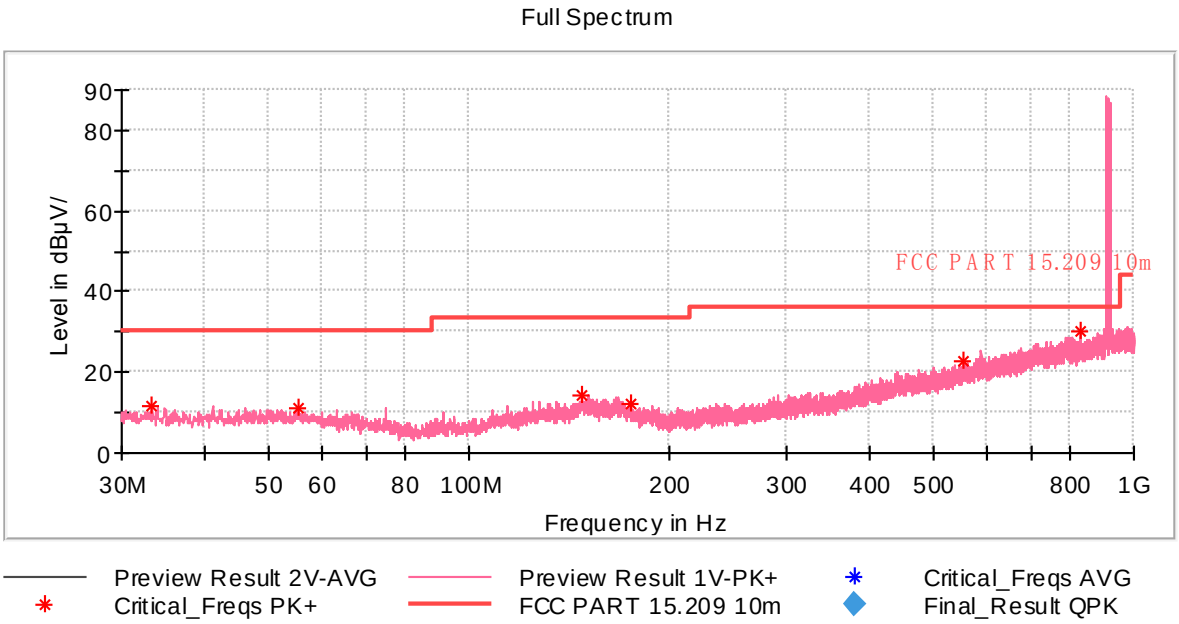
Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

5.8.4 Emissions in Non-restricted Frequency Bands

Below 1GHz:

Product Name:	Skyhawk Hub	**Product Model:**	HUB3VZW
Test By:	Asher	**Test mode:**	Tx mode
Test Frequency:	30 MHz ~ 1 GHz	**Polarization:**	Vertical
Test Voltage:	AC 120/60Hz		



Critical_Freqs

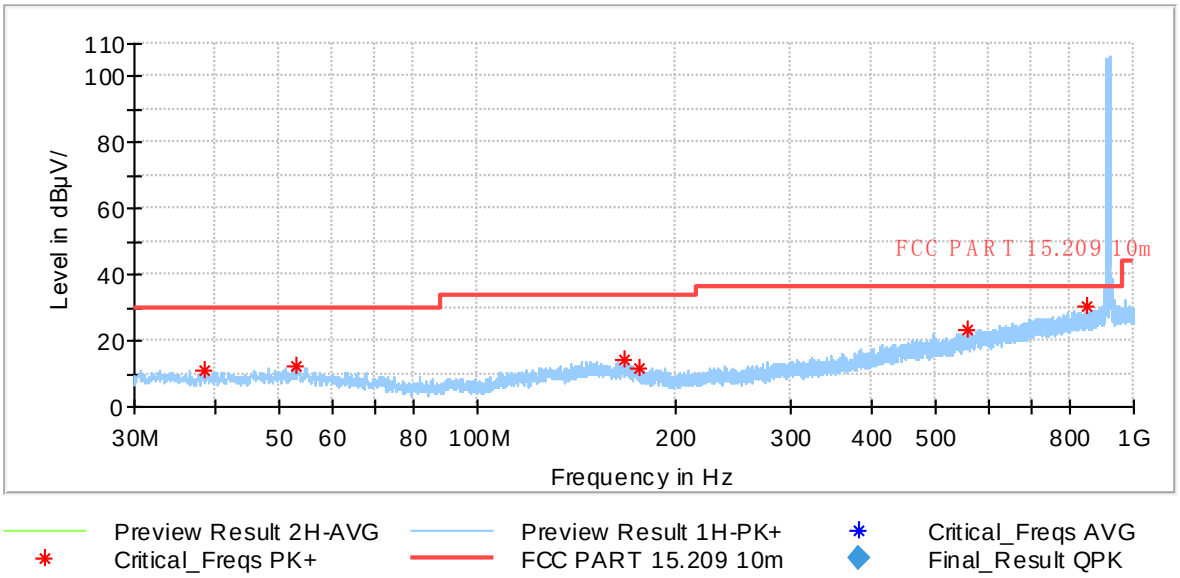
Frequency (MHz)	MaxPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
33.298000	11.68	30.00	18.32	100.0	V	322.0	-17.2	10:08:43 - 2024/3/21
55.171500	11.26	30.00	18.74	100.0	V	242.0	-16.5	10:08:43 - 2024/3/21
148.000500	14.51	33.50	18.99	100.0	V	51.0	-15.4	10:08:43 - 2024/3/21
175.694000	12.04	33.50	21.46	100.0	V	209.0	-16.7	10:08:43 - 2024/3/21
554.576000	22.86	36.00	13.14	100.0	V	84.0	-7.7	10:08:43 - 2024/3/21
830.395500	29.95	36.00	6.05	100.0	V	123.0	-2.2	10:16:45 - 2024/3/21

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	Skyhawk Hub	**Product Model:**	HUB3VZW
Test By:	Asher	**Test mode:**	Tx mode
Test Frequency:	30 MHz ~ 1 GHz	**Polarization:**	Horizontal
Test Voltage:	AC 120/60Hz		

Full Spectrum



Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
38.390500	11.08	30.00	18.92	100.0	H	28.0	-16.7	9:48:30 - 2024/3/21
53.086000	12.11	30.00	17.89	100.0	H	320.0	-16.5	9:48:03 - 2024/3/21
166.915500	14.42	33.50	19.08	100.0	H	0.0	-15.7	9:48:03 - 2024/3/21
176.518500	11.86	33.50	21.64	100.0	H	256.0	-16.8	9:48:03 - 2024/3/21
557.001000	23.16	36.00	12.84	100.0	H	5.0	-7.7	9:48:03 - 2024/3/21
845.188000	30.20	36.00	5.80	100.0	H	53.0	-2.1	9:48:13 - 2024/3/21

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Above 1GHz:

Lowest channel						
Peak Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polarization
1812.00	54.29	-20.86	33.43	74.00	40.57	Vertical
1812.00	56.01	-20.86	35.15	74.00	38.85	Horizontal
Average Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polarization
1812.00	47.80	-20.86	26.94	54.00	27.06	Vertical
1812.00	48.21	-20.86	27.35	54.00	26.65	Horizontal
Middle channel						
Peak Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polarization
1825.50	54.17	-20.86	33.31	74.00	40.69	Vertical
1825.50	60.76	-20.86	39.90	74.00	34.10	Horizontal
Average Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polarization
1825.50	44.64	-20.86	23.78	54.00	30.22	Vertical
1825.50	52.07	-20.86	31.21	54.00	22.79	Horizontal
Highest channel						
Peak Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polarization
1847.00	54.81	-20.86	33.95	74.00	40.05	Vertical
1847.00	57.45	-20.86	36.59	74.00	37.41	Horizontal
Average Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polarization
1847.00	46.26	-20.86	25.40	54.00	28.60	Vertical
1847.00	46.03	-20.86	25.17	54.00	28.83	Horizontal
Remark:						
1. Level = Read level + Factor.						

------End of report------