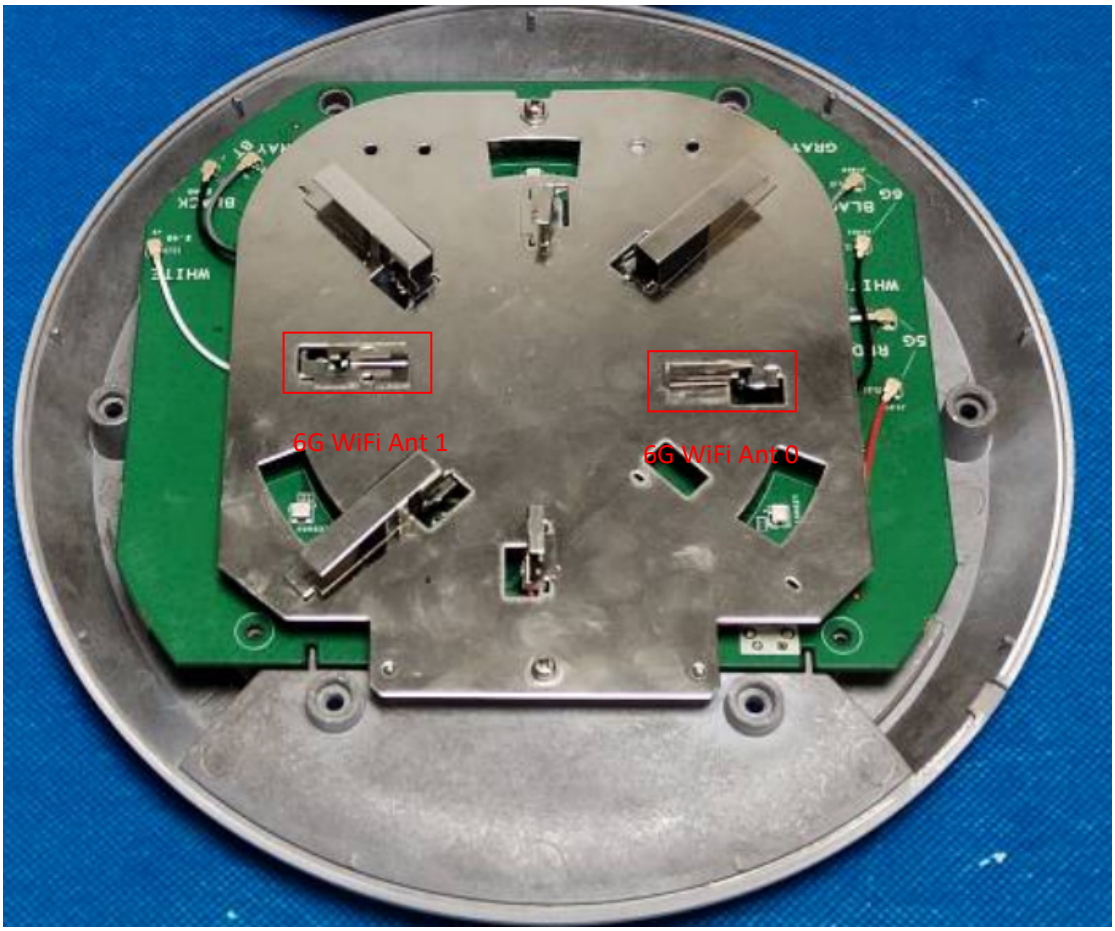
UN6GHz PRE-APPROVAL GUIDANCE CHECKLIST

1. Antennas

1.1 Information for all the antennas, i.e., type, gain and relative positions within host, must be included in the filing.

Reply: The EUT have two same PIFA Antennas for Wi-Fi 6E radio, the maximum antenna gain is 4.55dBi which was declared by the applicant, also refer to the Antenna specifications.



1.2 Show how the (aggregate, if applicable) antenna gain was computed/measured (as in TCB Workshop Presentation Aggregate Antenna Gain Review, April 2021). Provide equation(s) used to calculate Directional Gain and provide example calculation showing how the DG was calculated with the antenna gain of individual antennas. Provide details (references or attached documents) on how the individual antenna gains were derived, i.e., declared by the host manufacturer, based on data sheet, or measured. Since the CBP needs to detect a small signal, the worst-case scenario to consider is when the receiver has the lowest antenna gain.

Reply: The antenna gain was show in the antenna specification which was provided by the applicant.

Directional gain = G_{ANT} + 10 log (N_{ANT}) dBi

G_{ANT}=4.55dBi, N_{ANT}=2; So the Directional gain=7.55dBi

For the CBP test, the two antennas are same with the same antenna gain.

1.3 For conducted test in MIMO cases, show that the testing was done for that path that has the lowest antenna gain.

Reply: The two antennas are same with the same antenna gain.

2. Contention Based Protocol (CBP)

2.1 CBP testing shall be performed on one channel in each sub-band of operation for both narrowest and widest bandwidths.

Reply: Comply. Please refer to the data table in the document “Appendix C-CBP”. (Page 1&2)

2.2 Use three separate 10 MHz AWGN signals when testing a 160 MHz channel. The simulated incumbent signal must be a 10 MHz wide AWGN signal.

Reply: Comply. Please refer to the data table in the document “Appendix C-CBP”. (Page 1&2)
The 10MHz wide AWGN signal please refer to the document “Appendix C-CBP”. (Page 3-10)

2.3 Report lowest AWGN signal detectable by EUT.

Reply: Please refer to the data table in the document “Appendix C-CBP”. (Page 1&2)

2.4 Verify that the testing was performed with the AWGN signal set to lowest level (for example, -100 dBm) and increased until the EUT detects and stops transmitting.

Reply: Comply. Please refer to the data table in the document “Appendix C-CBP”. (Page 1&2)

2.5 If conducted measurements are used, the detection threshold needs to be corrected to refer to a 0 dBi gain antennaand include all the applicable losses (cables, etc.). For instance, the report should show (at least): Detection Level = Injected AWGN Power (dBm) – Antenna Gain (dBi) + Path Loss (dB)

Reply: Yes, please refer to the note below the data table in the document “Appendix C-CBP”. (Page 1&2).

2.6 Include plots showing EUT has stopped transmitting after detection of AWGN signal.

Reply: Comply. Please refer to the plots in the document “Appendix C-CBP”. (Page 11-18)

2.7 Describe whether channel puncturing and/or bandwidth reduction mechanisms supported. The report needs to include a plot as an example for at least one of the AWGN signals used.

Reply: The EUT has no channel puncturing.

2.8 If radiated testing is used, show that spot-checks were done to identify which side of the EUT has the lowest sensitivity to the incumbent signal detection, and that side was indeed chosen for the test.

Reply: Conducted test was used.

3. Client Device Limitations

Reply: The EUT is Low-power indoor Access Points.

4. Emission Mask

4.1 Power spectral density suppression complies with 47 CFR § 15.407(b)(6).

Reply: Comply. Please refer to the data and plots in section 4.2 at page 35-82 in the document of "CR230955399-00G WIFI Report-Part15.407-WiFi 6E" report.

4.2 If EUT supports OFDMA discuss testing of partial Resource Unit (RU) configurations. In any case the shape of the mask shall be based on full RU.

Reply: The EUT only support the full RU.

4.3 OOBE limits only apply outside of the 5.925-7.125 GHz band. All in-band emissions need to meet the channel mask. In case a higher RBW for the in-Band Emissions Mask is used (i.e., a more conservative case) that should be noted.

Reply: Comply. The OOBE data please refer to section 4.2 at page 35-82 in the document of "CR230955399-00G WIFI Report-Part15.407-WiFi 6E" report.
The mask plots refers to the "Appendix A-Mask".

5. Filing
Fundamental signal: 99% of the occupied bandwidth must be contained within all the U-NII sub bands authorized for that equipment class

Reply: Comply. Please refer to the OBW data at page 83-86 in the "CR230955399-00G WIFI Report-Part15.407-WiFi 6E" report. The plots refers to "Appendix B".

6. Hearing Aid Compatibility (HAC)

Reply: The EUT is Low-power indoor Access Points. Not needs to test the HAC.

7. Labelling

7.1 Label showing indoor only for Subordinate and APs.

Reply: Please refer to the label as below:

7.2 E-labelling may be acceptable if proper justification is provided.

Reply: No E-Labelling for the device.

8. Modular Certifications (when applicable)

Reply: The EUT is not modular.

9. RF Exposure

9.1 Demonstrate applicable classification (portable/mobile/fixed) in reference to worst-case scenario use cases
9.2 Address f > 6 GHz RF exposure via most recent applicable KDB or TCB Workshop procedures
9.3 Address all applicable simultaneous transmission conditions using the compliance condition TER ≤ 1, where TER (total exposure ratio) in this context is defined as:

$$TER = \sum_{k=1}^{N_S} \left(\frac{SAR_k}{SAR_{\lim}} \right) + \sum_{k=1}^{N_f} \left(\frac{MPE_{field,\,k}}{MPE_{field,\,\lim}} \right)^2 + \sum_{k=1}^{N_{PD}} \left(\frac{MPE_{PD,\,k}}{MPE_{PD,\,\lim}} \right)$$

with N S , N f , and N PD referring to sources requiring SAR, field-MPE, or PD-MPE, respectively, k referring to measured or estimated values for the source k, and “lim” to the corresponding applicable compliance limit. Simultaneous transmit evaluations and test exemption analyses may use SPLSR per KDB Publication 447498.

Reply: Comply; The EUT is mobile device. The data refers to the section 5 at page 139&140 in the“CR230955399-00G WIFI Report-Part15.407-WiFi 6E” report.

10. Security
Provide specific exhibit with device security description is required (complying with 47 CFR § 15.407(i))

Reply: Please refer to the document “SOFTWARE SECURITY DESCRIPTION”

11. Spurious Emissions

Show that measurements are made at the prescribed antenna heights, per KDB Publication 987594 D01, including measurements along all three axes, as per ANSI C63.10

Reply: Comply. Please refer to the data and plots in section 4.2 at page 35-82 in the document of “CR230955399-00G WIFI Report-Part15.407-WiFi 6E” report.

12. Standard Power Access Points and Fixed Client

Reply: The EUT is not Standard Power Access Points and Fixed Client.

13. AFC DUT Test Harness Report

Reply: The EUT is Low-power indoor Access Points. No needs to test the AFC.

14. Operating Modes

List all modes of operation, such as:

1. Is channel puncturing supported?

Reply: No

2. If indoor AP is a composite of LPI and St. power, does it support dividing a single channel between LPI client and Standard client? And if so, is power boosting supported?

Reply: It is only the indoor AP.

3. Partial RU configurations supported?

Reply: Only support the full RU.