PAG ITEM UN5GHZ - U-NII devices authorized in- U-NII-4 band 5.850-5.895 GHz **TC: TC721926**		
Pag checklist item	Exhibit Category	Additional details
EIRP	Test Report	EIRP was measured for channel power and PSD for channels fully or partially contained in the UNII-4 band. For straddle channels they measured conducted output power and PSD. For bands either partially or fully contained in the UNII-4 band the radiated power is calculated by adding the effective directional antenna gain to the conducted power. Power measurements for the non OFDM-A modes are summarized on page 9 and complete measurement data is on pages 66-78 (output power) and 79 - 91 of the report ***SM-F946BDS [UNII] Test Report_R1_PART1***. Plots are on pages 92-105 for PSD. Data for the OFDM-A modes include measurements for different RU allocations and are in report ***SM-F946BDS [UNII] 802.11ax Test Report_part1,*** on page 64 through 73 (output power) and 74 – 83 (PSD). The results tables include the conducted power / PSD, the antenna gain and the corrected EIRP value. Plots are in test report exhibit ***SM-F946BDS [5GHz] 802.11ax Plot Annex B*** on pages 40-45. The grant conditions will confirm that the listed powers are conducted for UNII 1, 2A, 2C and 3 and EIRP for UNII-4. We will use the grant note EP for those line entries.
1. Antennas .	Internal photos, Operational description, test report	*1.1 Information for all the antennas, i.e., type, gain and relative positions within host, must be included in the filing* See internal photo exhibit, operational description exhibit ***A3LSMF946B Antenna Distance_230525***
	Test Report	*1.2 Show how the (aggregate, if applicable) antenna gain was computed/measured, including 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.* Antenna gain values are provided in test report exhibit ***A3LSMF946B Unlicensed Band Antenna Gain_20230525***. MIMO antenna gain calculations are provided on page 7 section 3 of the report ***SM-F946BDS [UNII] Test Report_R1_PART1*** and on page 8 section 3 in report ***SM-F946BDS [UNII] 802.11ax Test Report_part1.***
	Internal Photos	*1.3 Indoor devices shall have an integrated antenna* Antenna is integral to device – refer to internal photos etc.
2. Labelling	Label and User Manual	Label showing “Indoor Use Only” for Subordinate and APs. Not applicable, this is a client device.
3. Band Edge Measurements	Test Report	*3.1 Band Edge measurements made below 5725 MHz are to be made with a Peak detector*. Refer to e.g. page 227 (page 83 of the pdf) in ***SM-F946BDS [UNII] Test Report_R1_PART2*** showing peak measurements complying with the mask / out of band limits. Plots start on page 317 of the 802.11ax OFDM-A test report ***SM-F946BDS [UNII] 802.11ax Test Report_part1*** and continue through to page 325 (page 6 of ***SM-F946BDS [UNII] 802.11ax Test Report_part2***). The frequency marker is at 5725MHz and peak detection / max hold is indicated on the analyser. *3.2 Band Edge measurements above 5895 MHz are to be made with an RMS detector.* *3.3 Band Edge measurements above 5895 MHz should also include Peak plots to show compliance with 15.35(b) where the peak emissions must be limited to no more than 20 dB above the average limit.* Refer to e.g. page 238 (Page 94 of the pdf) in ***SM-F946BDS [UNII] Test Report_R1_PART2*** (page 106 of 132 in report page numbering) for the peak measurements and page 242 for the average measurements. Plots start on page 317 test report (page 7 of ***SM-F946BDS [UNII] 802.11ax Test Report_part1***) for UNII-3 of the 802.11ax OFDM-A with only peak measurements made as they show compliance with average limits). Plots for UNII-4 high channel start on page 335 (page 16 of ***SM-F946BDS [UNII] 802.11ax Test Report_part2***) with both peak and average plots provided. For all band edge plots the limit line is the peak (or average) limit adjusted for antenna factor, cable loss and amplifier gain and so are not at the expected 68.2 / 88.2 dBuV/m levels for the -27dBm / -7dBm EIRP limit values.
4. Declaration Requirements	Attestation Letter	*The application should contain a declaration letter which satisfies the declaration requirements from Section 3. of KDB 291074 D02.* Refer to attestation letter ***A3LSMF946B_UNII-4 Attestation letter*** for the grantee attestations as required by KDB 291704.
5. Indoor Device Limitations	Not applicable	*5.1 Indoor Access Points and Subordinate Devices cannot use weatherized enclosure.* *5.2 May not be battery powered. Power must be provided from a wired permanent indoor local power connection. Automatic battery back operation is permitted during power loss*
6. Modular Certifications (when applicable)	Not applicable	*6.1 Modular approval letter to be uploaded with the application* *6.2 No subordinate devices can be modules* *6.3 Show notification for the host manufacturer about referencing KDB Publication 996369 D04 Module Integration Guide*
7. Security	Software description	*Provide specific exhibit with device security description is required (complying with 47 CFR § 15.407(i).* Refer to exhibit ***A3LSMF946B U-NII Device SW Security Statement 230510***
8. Spurious Emissions	Test report	*Show that measurements are made at the prescribed antenna heights, per KDB Publication 291074 D02, including measurements along all three axes, as per ANSI C63.10.* Refer to pages 23 – 27 of ***SM-F946BDS [UNII] Test Report_R1_PART1*** and pages 25-27 of ***SM-F946BDS [UNII] 802.11ax Test Report_part1*** for confirmation that X/Y/Z orientations were tested and the measurement antenna heigh scans were 1 – 4m for all measurements above 30 MHz.
9. Hearing Aid Compatibility	-	Not assessed.

U-NII devices authorized in U-NII bands 5.925-7.125 GHz (Wi-Fi 6E), PAG ITEM UN6GHZ, Equipment Code 6CD - TC450106 This is a dual client device requesting approval under equipment code **6CD**.	
Attestation Letter	Refer to attestation letter **A3LSMF946B_WiFi6e_Attestation letter** and **A3LSMF946B_WiFi6e_Power adjustment letter** for the required grantee attestations.
Label	This is a client-only device, Indoor Use Only warning is not required
Test report	**Antenna Gain information** Gain information can be found in the Test Report exhibit ***A3LSMF946B Unlicensed Band Antenna Gain_20230525***. The Part 15 test report ***SM-F946BDS [UNII 6e] Test Report_R1*** uses the appropriate values from the antenna test report exhibit with effective gain calculated for MIMO operations in section 3 on page 7.

Test Report	Test report exhibit ***SM-F946BDS [UNII 6e] Test Report_R1***
	• PSD meets 15.407(b)(6) – section 10.4 starting on page 115 for low power indoor operations and section 10.5 on page 129 for standard power operations. PSD EIRP is calculated from conducted power plus duty factor plus EUT antenna gain (directional gain). Plots for highest values are provided in test report exhibit ***Test Report-SM-F946BDS [UNII 6e] Plot Annex B*** for plots starting on page 39.
	• Mask based on Full RU for 802.11ax / OFDMA. Partial RU also tested. Top of mask adjusted to top of signal. Refer to test report exhibit ***Test Report-SM-F946BDS [UNII 6e] Plot Annex B*** for plots starting on page 23.
	• RBW used for mask was 1-5% of 26dB bandwidth (e.g. 200kHz for 20MHz channel, 400kHz for 40MHz channel etc). This is acceptable as it is >= required measurement bandwidth.
	• Width of mask based on the 26dB bandwidth;
	• 99% bandwidth contained within the allocated band for indoor operations - tabular data starts on page 38 and shows that the 99% bandwidth < nominal channel bandwidth. Channel plan ensures nominal channel bandwidths remain within the indoor / outdoor band as applicable.
	• Spurious emissions:
	  ○ Correct antenna height range used per ANSI C63.10 – pages 23 through 28 reference height of EUT and measurement antenna for each frequency range.
	  ○ Tested in X/Y/Z orientations consistent with intended installation / use – pages 28 through 30 indicate all three orientations are tested for each test frequency range. Section 8.9 explains that the device was tested in three configurations – a foldable phone tested completely opened, completely closed and half-closed.
	• MIMO devices – the antenna gain calculations to determine aggregate gain are in section 3 on page 7. The report includes the formula used and a sample calculation. Same information also in the test plots exhibit ***Test Report-SM-F946BDS [UNII 6e] Plot Annex B*** on page 39.

Test Report	**CBP -** test report exhibit ***SM-F946BDS [UNII 6e] Test Report_R1*** – method described on page 23, data starts starting on page 140 (section 10.7)
	• Performed on one channel in each sub-band of operation for both narrowest and widest bandwidths - page 141 (20MHz and 160MHz channel bandwidths tested)
	• 10 MHz wide AWGN signal is used – plots for each test provided on page 57 - 60 of test report exhibit ***Test Report-SM-F946BDS [UNII 6e] Plot Annex B***.
	  ○ 160MHz channel tested with three different AWGN signals at lower, upper and center of channel – page 141 (three tests for each 160 MHz bandwidth)
	• **Detection threshold adjusted to consider lowest gain antenna**
	  ○ MIMO device – detection threshold is evaluated based on lowest gain antenna value for all chains
	  ○ Report includes calculation showing the Required Detection Level = Injected AWGN Power (dBm) – Antenna Gain (dBi) + Path Loss (dB) – see table on page 143 which shows just the final threshold for detection, all < -65dBm.
	• Lowest detection level is reported for each test – see table on page 141 - 142 showing minimum detection level, point at which some detection occurs and point at which no detection occurs.
	• Test is performed by starting at a level much lower than required detection level and then increased - page 23, step 6 of the procedure.
	• Plots showing device stopped transmitting - page 57 - 60 of test report exhibit ***Test Report-SM-F946BDS [UNII 6e] Plot Annex B***.
	• Channel puncturing / bandwidth reduction: Not supported

Attestation Letter	**Client Device** Refer to attestation letter **A3LSMF946B_WiFi6e_Attestation letter** for the grantee attestations as required including: • Confirming that the device will not connect directly to other clients and does not have its own direct internet connection. • Device can only operate under the control of a low-power indoor access point and subordinate in all bands. • Only operating at standard power levels when connected to an outdoor AP and setting power to 6dB below the AP power (see also **A3LSMF946B_WiFi6e_Power adjustment letter**).
External Photos and Operational Description	**Limitations for indoor AP / subordinate device** Not applicable – this is a client device.
	Modular device Not a modular device – not applicable.
RF Exposure exhibit	**RF Exposure** Classification is portable. This is consistent with intended use. Simultaneous transmissions with other co-located transmitters is addressed in SAR Part 1 report and total exposure ratio remains < 1.0.
Software description	Refer to exhibit ***A3LSMF946B U-NII Device SW Security Statement 230510***