**2A64W-ESP32WROOM32E User Manual**

1. **Applicable FCC rules**

This module is granted Single Modular Approval. This module complies to the requirements of FCC Part 15C, section 15.247.

2. **Operational use conditions**

**This module is only to be used within Volk VistaView**, the Class A ophthalmic camera. The input voltage to the module is nominally 3.0V DC. The operational ambient temperature of the module is -30 to 85 degrees C. Only the PCB antenna included in ESP32WROOM32E is permitted. Another other external antenna is prohibited.

3. **RF exposure considerations**

To comply with FCC's RF radiation exposure requirements, the antenna(s) used for this transmitter must be installed such that a minimum separation distance of 5mm is maintained between the radiating element (antenna) & any user's or bystander at all times.

4. **Antenna**

Antenna type: PCB antenna

Peak gain: 3.40dBi

5. **Label and compliance information**

The module must be properly labelled with the text "FCC ID: 2A64W-ESP32WROOM32E"

The FCC ID e-label for the module must be retrievable by the user per requirements outlined in KDB 784749 D02.

The physical temporary label must include the text "Contains FCC ID: 2A64W-ESP32WROOM32E"

The following note must be included in the IFU for the VistaView (Class A device):

*Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his expense.*

6. **Information on test modes and additional testing requirements**
   a) The modular transmitter has been fully tested by original module grantee (Espressif, grantee code 2AC7Z) on the required number of channels, modulation types, and modes. It should not be necessary for the host installer to re-test all the available transmitter modes or settings. It is recommended that the host product manufacturer (the installer of the modular transmitter) perform some investigative measurements to confirm that the resulting composite system does not exceed the spurious emissions limits or band edge limits.

b) The testing should check for emissions that may occur due to the intermixing of emissions with the other transmitters, digital circuity, or due to physical properties of the host product (enclosure). This investigation is especially important when integrating multiple modular transmitters where the certification is based on testing each of them in a stand-alone configuration. It is important to note that host product manufacturers should not assume that because the modular transmitter is certified that they do not have any responsibility for final product compliance.

c) If the investigation indicates a compliance concern, the host product manufacturer is obligated to mitigate the issue. Host products using a modular transmitter are subject to all the applicable individual technical rules as well as to the general conditions of operation in Sections 15.5, 15.15, and 15.29 to not cause interference. The operator of the host product will be obligated to stop operating the device until the interference has been corrected.

## 7. Additional testing, Part 15 subpart B disclaimer

The final host/module combination must be evaluated against the FCC Part 15B criteria for unintentional radiators in order to be properly authorized for operation as a Part 15 digital device.

The host integrator installing this module into their product must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules, including the transmitter operation and should refer to guidance in KDB 996369. For host products including a certified modular transmitter, the frequency range of investigation of the composite system is specified by rule in Sections 15.33(a)(1) through (a)(3), or the range applicable to the digital device, as shown in Sections 15.33(b)(1), whichever is the higher frequency range of investigation.

When testing the host product, all the transmitters must be operating. The transmitters can be enabled by using publicly available drivers and turned on, so the transmitters are active. In certain conditions, it might be appropriate to use a technology-specific call box (test set) where accessory 50 devices or drivers are not available. When testing for emissions from the unintentional radiator, the transmitter shall be placed in the receive mode or idle mode, if possible. If receive-mode only is not possible, then the radio shall be passive (preferred) and/or active scanning. In these cases, this would need to enable activity on the communication BUS (i.e., PCIe, SDIO, USB) to ensure the unintentional radiator circuitry is enabled. Testing laboratories may need to add attenuation or filters depending on the signal strength of any active beacons (if applicable) from the enabled radio(s). See ANSI C63.4, ANSI C63.10, and ANSI C63.26 for further general testing details.

The product under test is set into a link/association with a partnering device, as per the normal intended use of the product. To ease testing, the product under test is set to transmit at a high duty cycle, such as by sending a file or streaming some media content.

## 8. FCC Warning

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.