

## Adrián Gallardo Alcázar

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**De:** oetech@fcc.gov  
**Enviado el:** viernes, 9 de febrero de 2024 18:14  
**Para:** DEKRA Spain - RCB Admin SP  
**Asunto:** Response to Inquiry to FCC (Tracking Number 141398) (TCB)

**Importancia:** Alta

**Inquiry on 01/22/2024 :**

**Inquiry:**

Dear Sirs,

We hereby  
request approval for the following original equipment application, which has  
already been submitted:

FCC ID:  
2AD9Q-X4F103

Confirmation  
Number: TC693540

We read the  
KDB 388624 D02 and we summarize next the checklist for PAG UWB15F:

1. Show  
that the device mode operation is permissible under the specific Part 15  
subpart

UWB module to be granted under the requirements  
specified in §15.519 (b) – (e) as per KDB 393764 D01 UWB FAQ v02r01 (question  
7)

2. Specify  
if § 15.250 (15C) is used as alternative to §15.517 or §15.519 (15F)

The part applicable is the 15.519.

3. Show  
that KDB 393764 Q6 is being followed

Test report 3992ERM.004A1 shows conformity with  
KDB 393764 Q6

4. Account  
for all technical requirements specific to each UWB mode of operation

Technical requirements for part 15.519 taken  
into account.

5. Verify  
that §15.519 devices do not utilize fixed infrastructure

Module equipment. User manual states: This  
module is to be used in handheld application. Only is included it in the grant  
comments.

6. Verify  
that grant restrictions and notices are in accordance with specific rule part

Grant restrictions included:

This module is to be  
used in host for handheld applications, i.e., small  
devices that are primarily hand held while being operated and do not employ a  
fixed infrastructure. UWB devices may not be employed for the operation of  
toys. Operation onboard an aircraft, a ship or a satellite is prohibited.

Notes included in the integration guide:

UWB devices may not be employed for the operation of toys. Operation onboard an aircraft, a ship or a satellite is prohibited. This module is to be used in handheld applications

7. Verify requirements and restrictions for UWB modular approvals

UWB module to be granted under the requirements specified in §15.519 (b) – (e) as per KDB 393764 D01 UWB FAQ v02r01 (question 7)

8. TCB to include §15.521(a) statement on Grant Restrictions and verify the required device/user manual for all UWB modes of operation

Note included in the grant:

“UWB devices may not be employed for the operation of toys. Operation onboard an aircraft, a ship or a satellite is prohibited.”

Thank you in advance and best regards.

#### **FCC response on 01/25/2024**

Thankyou for your inquiry.

Are you applying for Limited Module? If so, please address the below items:

1. The applicant for certification must state how they can control the end product into which the module will be installed and maintained, such that full compliance of the end product is always ensured. Please describe in detail and upload it to 731.

2. Please justify in detail why the module is limited?

3. In addition to the User Manual, please provide clear integration instructions and submit under the “User Manual” tab.

4. Per KDB Publication 996369 D01 Module Equip Auth Guide v02, A limited modular approval is based on conditions established in the application such as: the host device(s) into which the module can be installed; documented requirements for professional installation; the antenna separation distance from persons; or the locations where a device may be used (e.g., outdoor only). Please ensure this requirement is met.

5. Please describe the typical use conditions of the DUT.

6. For the future, please make the Checklist in a table format.

7. For the future, if the application for the Limited Module, please indicate MODLIM as indicated in KDB Publication 388624 D02

---Reply from Customer on 01/26/2024---

Dear Sirs,

For module under certification (with FCC ID: 2AD9Q-X4F103), we submitted two PAGs:

- PAG number 141398. PAG type: UWB15F. Because the module is an UWB device. This is the present PAG.

- PAG number 469189 . PAG type: MODLIM. Because the module has no shield.

Could you please check the PAG number 469189 to verify if everything that you ask for in the present PAG is ok?

Don't hesitate to contact us.

Best regards.

#### **FCC response on 01/26/2024**

You need to provide where the answer is located for each of the questions we asked. That is, you need to tell us the file name, page number, for each of the questions. Please refer to the FCC presentation at the recent TCB Workshop. It is up to the grantee to provide detailed information in the KDB.

---Reply from Customer on 02/01/2024---

Dear Sirs,

You can find the answers of each of the questions you asked below:

1. The applicant for certification must state how they can control the end product into which the module will be installed and maintained, such that full compliance of the end product is always ensured. Please describe in detail and upload it to 731.

According to the user manual (that we attach), the section 4.5 (page 10) provides integration instructions for the host integrators explaining how to integrate the module into the host to achieve RF shielding for the circuitry on the module.

In case that integration of this module on a host is not properly done, the user manual provides instructions that the host manufacturers shall do (section 5.1.6, page 14):

- Host device manufacturers must test their own device according to the same rules as this module and whichever ones additionally applicable (aside from testing other radio interfaces, or other testing simultaneous transmission, or other potentially necessary testing).
- Host manufacturers must follow some of the alternative options described below to associate their host to the module such as filing a Class 2 Permissive Change (C2PC) to the module, filing a Change FCC ID and then a C2PC, or pursuing full certification for their device including the UWB interface.

2. Please justify in detail why the module is limited?

The module consists of a PCB board with mounted components on one side and the antenna on the other side. The module will be soldered onto a host PCB with antenna facing up and components facing down. The side of the PCB with the components has no shield, and the module has to be installed according to the section 4.5 (page 10) of the user manual in order to achieve RF shielding for the circuitry.

Also, on the user manual, section 4 (page 7), you can find the top and bottom view of the module.

3. In addition to the User Manual, please provide clear integration instructions and submit under the "User Manual" tab.

The section 4.5 and 4.6 of the user manual (pages 10 and 11) provides clear integrated instructions about how to integrate the module into the host.

4. Per KDB Publication 996369D01 Module Equip Auth Guide v02, A limited modular approval is based on conditions established in the application such as: the host device(s) into which the module can be installed; documented requirements for professional installation; the antenna separation distance from persons; or the locations where a device may be used (e.g., outdoor only). Please ensure this requirement is met.

We explain each point next:

- The host device(s) into which the module can be installed: all devices that follow the integration instructions on section 4.5 (page 10) of the user manual. In case that integration of this module on a host is not properly done, the user manual provides instructions that the host manufacturers shall do (section 5.1.6, page 14):

- Host device manufacturers must test their own device according to the same rules as this module and whichever ones additionally applicable (aside from testing other radio interfaces, or other testing simultaneous transmission, or other potentially necessary testing).
- Host manufacturers must follow some of the alternative options described below to associate their host to the module such as filing a Class 2 Permissive Change (C2PC) to the module, filing a Change FCC ID and then a C2PC, or pursuing full certification for their device including the UWB interface.
- Documented requirements for professional installation: the section 4 (pages from 7 to 11) of the user manual provides instructions for the professional installation of the module.

- The antenna separation distance from persons: The evaluation determined that the device is actually exempted from SAR testing and establishes that there is no minimum distance to which the device must be used from the human body (section 5.1.3 of the user manual, page 12).
- The locations where a device may be used: the device is used typically for display control, appliances, occupancy detection for light control applications such as luminaire control, etc. (Page 1 of the user manual). Also, the device may not be employed for the operation of toys, operation onboard an aircraft, a ship or a satellite. You can find this information on the user manual, section 5.1.5 (page 13).

5. Please describe the typical use conditions of the DUT.

The typical user conditions are for display control, appliances, occupancy detection for light control applications such as luminaire control, etc. (Page 1 of the user manual).

Also, this module is for hand held devices, for example small devices that are primarily hand held while being operated and do not employ a fixed infrastructure. The device may not be employed for the operation of toys, operation onboard an aircraft, a ship or a satellite. You can find this information on the user manual, section 5.1.5 (page 13).

6. For the future, please make the Checklist in a table format.

Sure. We will do it next time.

7. For the future, if the application for the Limited Module, please indicate MODLIM as indicated in KDB Publication 388624 D02

For module under certification (with FCC ID: 2AD9Q-X4F103), we submitted two PAGs:

- PAG number 141398. PAG type: UWB15F. Because the module is an UWB device. This is the present PAG.
- PAG number 469189. PAG type: MODLIM. Because the module has no shield.

In the future, for this kind of modules (UWB module and no shield), do we have to submit two PAGs?

Don't hesitate to contact us.

Thank you in advance and best regards.

## **FCC response on 02/05/2024**

Please refer to FCC presentation provided at the April 27, 2022, TCB Workshop and address all items described in slides on page 3 and page 11. For example, we don't seem to locate the restorations.

---Reply from Customer on 02/07/2024---

Dear sirs,

According to FCC presentation provided at the April 27, 2022 TCB Workshop, we address next all items described in slides on page 3 and page 11:

Page 3 (common requirements):

· Technical:

o Bandwidth:  $10 \text{ dB BW} \geq 500 \text{ MHz}$ , or Fractional BW  $\geq .2$  (15.503(a))

[TCB] On test report 3992ERM.004A1 submitted (we also attach it), Testcase A.4: 10 dB BANDWIDTH (page 24), you can find that the BW 10 dB is 1054 MHz (which is higher than 500 MHz).

o Frequency of highest emission occurs within the UWB bandwidth (15.521(e))

[TCB] On test report 3992ERM.004A1, Test case A.4: 10 dB BANDWIDTH (page 24), you can find that the highest emission is 7989 MHz, which is below the limit (10600 MHz).

o Digital circuitry are subject limits as specified in (15.521(c))

[TCB] On test report 3992ERM.004A1, test case A.1: Radiated emission (page 13), you can find that the device satisfies the limits specified in 15.521(c).

o General Part 15 (15.209) limits apply below 960 MHz

[TCB] On test report 3992ERM.004A1, test case A.1: Radiated emission (page 13), you can find that the device satisfies the limits specified in 15.209.

o 15.505 Cross Reference (15.521(a))

[TCB] The 15.521 (a) says "UWB devices may not be employed for the operation of toys. Operation onboard an aircraft, a ship or a satellite is prohibited". The user manual informs the user about this, on page 13. We attach the user manual. Also, the grants comments inform about that. We attach a draft version of the grant, in PDF format.

o Unwanted emissions must be measured over the frequency ranges as specified in 15.521(h)

[TCB] On test report 3992ERM.004A1, test case A.1: Radiated emission (page 13), you can find that the spectrum has been investigated up to 40 GHz, as the fundamental frequency ( $f_c$ ) is less than 10 GHz.

· Grants restrictions:

o UWB devices may not be employed for the operation of toys.

o Operation onboard an aircraft, a ship or a satellite is prohibited (15.521(a))

[TCB] You can find that those grants restrictions are included on the grants comments.

· Technical Requirements:

- o Must be primarily handheld while being operated (15.519(a))

[TCB] The device is a module of 12 X 12 mm, and does not employ a fixed infrastructure. The user manual informs about this on page 13. Also, there is a comment related to this section on the grants comments: “This module is to be used in host for handheld applications, i.e., small devices that are primarily hand held while being operated and do not employ a fixed infrastructure.”

- o Transmit only when it is sending information to an associated receiver and cease transmission unless it receives acknowledgement from an associated receiver at least every 10 seconds (15.519(a)(1))

[TCB] On test report 3992ERM.004A1, test case A.3: TRANSMITTER ON/OFF REQUIREMENT (page 22), you can find that the measurement result is 0.24 seconds (below the limit of 10 seconds).

- o The use of antennas mounted on outdoor structures prohibited (15.519(a)(2)). Antennas may be mounted only on the handheld UWB device

[TCB] The device is a module of 12 X 12 mm, and does not employ a fixed infrastructure. The user manual informs about this on page 13. Also, there is a comment related to this section on the grants comments: “This module is to be used in host for handheld applications, i.e., small devices that are primarily hand held while being operated and do not employ a fixed infrastructure.”

Regarding to the antenna, the antenna is integrated on the module. No external antenna is required.

- o Handheld UWB devices may operate indoors or outdoors (15.519(a)(3))

The device may operate indoors. By the nature of the design, must be capable of operation only indoors. The necessity to operate with a fixed indoor infrastructure, e.g., a transmitter that must be connected to the AC powerlines, may be considered sufficient to demonstrate this.

- o The UWB bandwidth shall be contained between 3100 MHz and 10,600 MHz (15.519(b))

[TCB] On test report 3992ERM.004A1, test case A.4: 10 dB BANDWIDTH (page 24), you can see that the lower frequency is 6935 MHz, and the upper frequency is 7989 MHz. So, the UWB bandwidth is contained between 3100 MHz and 10600 MHz.

- o Radiated emissions above 960 MHz shall conform to the mask specified in 15.519(c)

[TCB] On test report 3992ERM.004A1, test case A.1: RADIATED EMISSION (page 13), you can find that the device satisfies the limits specified in 15.519(c)

- o Peak EIRP limit of 0 dBm/50 MHz applies (15.519(e))

[TCB] On test report 3992ERM.004A1, test case A.5: PEAK LEVEL OF THE EMISSION (page 26), you can find that the device satisfies the limits specified in 15.519 (e).

- o Radiated emissions in the 1164-1240 MHz and 1559-1610 MHz bands limits as specified in 15.519(d)

[TCB] On test report 3992ERM.004A1, test case A.2: RADIATED EMISSION IN GPS BAND (page 19), you can find that the device satisfies the limits specified in 15.519 (d).



· Grantsrestrictions

o Antennasmounted on outdoor structures such, as antennas mounted on the outside of abuilding or on a telephone pole, or any fixed outdoors infrastructure areprohibited for use with this device.

[TCB] This grant restriction is included on the grants comments.

On theother hand, could you please clarify what do you mean when you said “we don’tseem to locate the restorations”? We think that we don’t understand.

We hopethat our answer satisfies what yourequested.

Don’thesitate to contact us.

Bestregards.

**FCC response on 02/08/2024**

Please enter the KDB Tracking Number in Form 731. It is blank at a moment.

---Reply from Customer on 02/09/2024---

Dear Sir,

Now it is included the KDB tracking number in form 731.

Could you please confirm if everything is ok now?

Best regards.

**FCC response on 02/09/2024**

You may proceed with the grant.

**Attachment Details:**

[Test report](#)

[Draft version of the grant](#)

Do not reply to this message. Please select the [Reply to an Inquiry Response](#) link from the OET Inquiry System to add any additional information pertaining to this inquiry.