



# KDB 996369 – Modules

Jim Szeliga

FCC OET Lab- Customer Service Branch

7435 Oakland Mills Road

Columbia, MD 21046

Note: The views expressed in this presentation are those of the author and may not necessarily represent the views of the Federal Communications Commission



# 996369 Modules

- The 996369 Module Certification Guide DR08-44859 Oct 25, 2022, was expired on 01/09/2023 to be a second draft 996369 Module Certification Guide DR09-45040.
- Added a section for PAG MODLIM for Limited Module Approval
  - LMA MODLIM is for modules that cannot comply with (1) RF shielding, (2) buffered modulation/data inputs, (3) power regulation, (4) antenna LMA only for professional host installation, (5) can not be tested in a stand-alone configuration.
  - Modules must comply with: (4) antenna requirements for modules, (6) labelling –small size can qualify 2.925(f), (7) to all specific rules and operating requirements.(8) Radio frequency exposure.



# 996369 Modules

## ● RF shielding

- Require a C2PC\* for that module.

## ● Buffered modulation/data inputs

- Modules are expected to comply with this requirement but if they can not;
- Grantee must provide a verification test in the integration instructions

## ● Voltage regulation

- require that the host design must include voltage regulation as a manufacturer's product development practices and procedures.

## ● Antenna LMA for Professional Host Installation

- The integration instructions shall provide detailed instructions in the integration instructions to the host manufacturers of their obligation to document in their user manual the professional installer's instructions for the proper antenna arrangement

## ● Not To Be Tested in a Stand-Alone Configuration (aside from RF exposure)

- This LMA can be used when the Grantee is also the host manufacturer for a series of similar host models to allow the host and the module to share compliance responsibilities.



# 996369 Modules

Using Limited on a grant by current policy could also mean:

- For RF exposure (i.e., mobile use when used in a portable host) is not a question of not complying with RF exposure it is how it complies. Compliance with RF exposure. Guidance is in publication 447498. Not a MODLIM PAG.
- Limited tag on the grant for modules with DFS may be limited by policy on a case-by-case bases. Not a MODLIM PAG.
- Intégration Instructions. Attachment 996369 D03 OEM Manual v01 guides what must be included in the application for equipment authorization
- 731 File Requirent for LMA MODLIM
  - Additional requirements or LMA under PAG MODLIM
  - State why the module is limited in the module cover letter
  - limited module test procedure in the integration instructions
  - MODLIM PAG, inquiry tracking number
  - Grant comments: This Module is limited, requiring the host integrator to perform additional verification testing as provided by the manufacturer's integration instructions for: <provided reason>





# 996369 Modules

## RF Exposure

- When a host integrator needs to use the module differently than the way it was initially certified, an RF exposure evaluation is mandatory and typically update in the filing is done via Class 2 Permissive Change (C2PC).
- Grantee must do an RF exposure evaluation to determine if the conditions still qualify for an RF exposure test exemption per KDB 447498. If no exemptions are permitted, RF exposure testing is required as a C2PC; only the Grantee can add the RF exposure test reports to the filing via C2PC.
- The evaluation to determine if the conditions still qualify for an RF exposure exemption, the Grantee shall use the applicable procedure defined in the 447498 01 General RF Exposure Guidance for Equipment Authorization DR05-44791.pdf or the published version, "447498 D01 General RF Exposure Guidance v06.

## ● EMC Considerations

- For single transmitter module, it is recommended for the host manufacturer to use attachment D04 Module Integration Guide.
- When a module is used with other transmitters D04 Module Integration Guide conform compliance when installed in the host. Required by D02 Module Q&A Question 12 and is considered sufficient to confirm compliance.



# 996369 Modules

## Antennas

- For Part 15 and licensed client modules, the antennas shall comply with §15.212(a)(1)(iv).
- When the antenna is supplied, for each type: bandwidth, impedance, form factor, directivity and gain, and polarization, in the test report.
- When the antenna is not supplied the antenna shall also be specified, mechanically and electrically, including type, form factor, frequency, bandwidth, impedance, directivity and gain, and polarization and shall be in the integration instructions.
- Trace antennas or trace to an antenna design shall follow the requirements of question 11 of 996369 D02 Module Q&A.
- When a module is positioned to be installed by end users, it must include the antenna.
- Licensed (non-client station) modules for a base station, non-client, or non-client fixed station can be certified using conducted power and antenna data.



# Questions and Answers

**Thanks**