LOGIC PD™

FCC Certification Guidelines for End Products Using the AM35x SOM-M2
Application Note 447

Logic PD // Products
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Revision History

REV	EDITOR	DESCRIPTION	APPROVAL	DATE
A	NJK	-Initial release	KTL	07/22/10
B	NJK	-Added Section 2, Section 3, and Section 4; -Section 5: Updated to indicate that FM transmitter and receiver function are not supported and SOM is not certified for their use	KJH, JMC	10/17/12

Table of Contents

1 Introduction

The AM35x SOM-M2 is a modular transmitter; therefore, customers who wish to use the AM35x SOM-M2 and 802.11b/g/n and/or Bluetooth in their end product must follow region-specific regulations.

This application note provides guidelines for the specific United States of America Federal Communications Commission (FCC) regulations that pertain to the AM35x SOM-M2. End products may be subject to additional regulations and it is the responsibility of the customer to determine and comply with those regulations.

2 Certification Overview

2.1 Unintentional vs. Intentional Radiation

The FCC requires end products to comply with both unintentional and intentional radiation regulations.

Unintentional radiation occurs from a product that inherently or unwillingly transmits RF signals.

Intentional radiation occurs from a product that is designed to radiate or transmit RF signals for the purpose of wireless communication. The AM35x SOM-M2 is an intentional radiation emitter.

2.2 Modular Transmitter Approval

A modular transmitter is an intentional radiator device, such as the AM35x SOM-M2, that is designed to be installed in a host device. Obtaining modular transmitter approval allows the modular transmitter to be integrated into an end product without the need for additional intentional radiation testing of the final end-product assembly, as long as the modular transmitter is installed and operated in accordance with certain guidelines.

NOTE: Unintentional conducted and radiated emissions testing of the end product is still required to ensure compliance with the rules governing unintentional radiators. It is the responsibility of the end-product manufacturer to verify the end product meets these regulations. Additionally, the customer is responsible for any and all tests and/or certifications pertaining to their end product. This may include but is not limited to Specific Absorption Rate (SAR) compliance and potential recertification as an intentional radiation emitter if the AM35x SOM-M2 is installed or operated in a manner that differs from the instructions herein.

3 FCC Product Approval

The AM35x SOM-M2 has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, and has been assigned the following FCC identification number (FCC ID):

- YKP1016323[1]

Operation of the module is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by Logic PD could void the user's authority to use this device.

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[1] https://apps.fcc.gov/oetcf/eas/reports/GenericSearch.cfm

In addition, the AM35x SOM-M2 has been tested to comply with FCC CFR47, Part 15, Sub-Part C "Intentional Radiators" and meets the requirements for modular transmitter approval as detailed in FCC Public Notice DA 00-1407, released June 26, 2000.

4 Compliance Guidelines

4.1 Overview

Modular approval permits the AM35x SOM-M2 to be integrated into an end product without the need to recertify the end product as long as the following guidelines are followed by the module integrator.

4.2 Integration Requirements

4.2.1 Antenna System

The AM35x SOM-M2 has been approved using the antenna and coaxial cable specified below. Use of this antenna and cable will satisfy FCC modular transmitter requirements. Substituting a different antenna of the same type with a peak gain of 4.9 dBi or less is permitted. Also, substituting a different cable of the same loss at the frequencies of interest is permitted. **NOTE:** Both the antenna and cable are required per the FCC certification obtained by Logic PD.

- Antenna:
    - □ Manufacturer: Pulse
    - □ Model number: W1038
    - □ Description: Whip, omni-directional
    - □ Gain: 4.9 dBi peak
- Coaxial cable:
    - □ Manufacturer: Sunridge Corporation
    - □ Model number: MCBG-RH-54-080-SMAJB281
    - □ Description: U.FL to SMAJB, 80 mm, reverse polarity (RP) SMA
    - □ Cable Loss: 0.21 dB

4.2.2 Substitute Antennas/Cables

If an antenna with a higher gain, of a different type, or with a shorter U.FL to RP-SMA coaxial cable (i.e., less cable loss) is used, the end product must be put through intentional radiation testing at a qualified test lab.

Please refer to FCC rules 47 CFR § 15.204 for more information.

If a different antenna is desired, please <u>contact Logic PD</u>[2] for assistance with certification.

4.2.3 SAR Testing Requirements for End-Products

This device is to be used in mobile configurations. To comply with FCC RF exposure limits for general population/uncontrolled exposure, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

As long as the two conditions above are met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing the end product for any additional compliance requirements that are necessary when this module is installed (e.g., digital device emissions, PC peripheral requirements).

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[2] <u>http://support.logicpd.com/support/askaquestion.php</u>

IMPORTANT NOTE: In the event that these conditions cannot be met (for certain configurations or because of co-location with another transmitter), the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product, including the transmitter, and obtaining a separate FCC authorization.

4.2.4   Software Requirements

The AM35x SOM-M2 has been tested using the Bluetooth firmware *TIInit_7.6.15.bts* and the 802.11 radio initialization parameters *tiwlan.ini*. Both files have been modified for controlled output power and are available from Logic PD as the AM35x SOM-M2 WLS1271L Configuration Files download.[3]

Modular approval applies as long as these approved firmware and initialization files are used to create the end product and the radio initialization parameters are not modified. If software modification is desired, please contact Logic PD for assistance with certification.

4.3   Labeling Guidelines

The AM35x SOM-M2 has been certified by the FCC as a Modular Transmitter. As such, it has been assigned an FCC ID that is printed on a label permanently affixed to the SOM.

If the AM35x SOM-M2 is installed inside an end product, this FCC ID must be located on the exterior surface of the end product where users can easily access it. The end product's exterior label or etching should use wording similar to one of the examples below.

- Contains FCC ID: YKP1016323

- Contains Transmitter Module FCC ID: YKP1016323

Please refer to FCC rules 47 CFR § 15.212(vi)(A) for additional information.

IMPORTANT NOTE: FCC Modular Transmitter labeling is only required for AM35x SOM-M2 configurations with the wireless circuits populated.

4.4   FCC End-Product User Manual Statement Requirements

For products marketed and used in the United States, the end-product user manual must include the following caution statement in a prominent location in order to maintain modular transmitter approval from the FCC:

To satisfy FCC RF exposure requirements for mobile and base station transmission devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operation at closer than this distance is not recommended. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

5   Disclaimer

The FM transmitter and receiver functions are not supported and the AM35x SOM-M2 is not certified for their application.

6   Summary

Using the AM35x SOM-M2 with wireless circuits populated in an end product requires compliance with region-specific regulations pertaining to certified modular transmitters. This compliance includes but is not limited to following the integration, end-product labeling, and user manual statement requirements outlined in this document.

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[3] http://support.logicpd.com/downloads/1567/