



29-Mar-02

Re: FCC ID H9PLA4137

Subject: Response to Correspondence Reference Number: 22425
(731 Confirmation Number EA953106)

Joe,

I have responded to all your questions by the ITEM numbers.

a) Provide justification for modular approval. Address each requirement in the Public Notice that I e-mailed to you.

[Response ITEM a](#)

1. The modular transmitter must have its own RF shielding.
[The LA-4137 uses a soldered on case to provide the necessary RF shielding.](#)
2. The modular transmitter must have buffered modulation/data inputs.
[U301 provides buffered modulation/data inputs.](#)
3. The modular transmitter must have its own power supply regulation
[B302 provides voltage regulation.](#)
4. The modular transmitter must comply with the antenna requirements of Section 15.203 and 15.204(c). The antenna must either be permanently attached or employ a “unique” antenna.
[The device uses a muRata GSC connector; additionally the antenna is mounted internally in the host and not end user accessible.](#)
5. The modular transmitter must be tested in a stand-alone configuration.
[The module was tested in a stand-alone condition as seen in the Test Set up photographs.](#)
6. The modular transmitter must be labeled with its own FCC ID number.
[The FCC ID was placed on the Regulatory label and can be seen on the external photographs.](#)
7. The modular transmitter must comply with any specific rule or operating requirements applicable to the transmitter and the manufacturer must provide adequate instructions along with the module to explain any such requirements. A copy of these instructions must be included in the application for equipment authorization
[The LA-4137 Integration guide is included for the manufacturers that provides instructions on necessary SAR and EMC compliance.](#)
8. The modular transmitter must comply with any applicable RF exposure requirements.



The LA-4137 SAR Test Report documents compliance to the existing RF exposure limits for portable body-worn devices. The separation distance used during SAR testing was 2 cm or less, when the module is integrated into future host devices this device is mounted internally along with the antenna.

2. Please confirm that grant request is for:

Card with one sleeved dipole for use in handheld terminals (portable conditions with respect to hand), no body-worn.

Response ITEM 2

Card with one sleeved dipole for use in portable handheld terminals **or body worn devices**. The device passed the body worn RF exposure limits.

Hand SAR limit is 4 W/kg in 10g.

As stated before, we may not be able to make good use of this SAR data with respect to final host products.

SAR data for future configurations will be submitted in Permissive Change filing. All manufacturers that are integrating this module are told they must have SAR measurements taken to ensure compliance.

3. Describe/demonstrate how antenna gain of 2 dBi is determined.

Response ITEM 3

The antenna was mounted on a turntable in a semi-anechoic chamber. A cable was connected from a signal generator and power adjusted to 0 dBm at the input to the antenna cable. The maximum fundamental emission was measured following ANSI C63.4 and the gain calculated from the field strength and input power. The measured field strength was 97.2 dBuV/m.

The calculations were derived from the following relationships.

$S=4*\pi*r^2$ S = surface area of a square, r = radius.

$P=p*S$ P = power, p = power density

$p=E^2/Z_0$, E field strength in V/m. $Z_0 120 * \pi$ ohms (free space)

for r = 3m

$EdB = PdBm + 95.2 + dBi$

$dBi = EdB - PdBm - 95.2$

$dBi = 97.2 - 0 - 95.2 = 2.0$

4. I did not find description of how device is used in 2 antenna mode. Will that be 2 sleeve dipoles side-by-side? Are both antennas on at same time?

Response ITEM 4

Only one antenna is normally used to transmit, when two antennas are used they function in a receive diversity mode. One antenna is oriented along the devices y-axis and one antenna is oriented along the X-axis.



Symbol Technologies, Inc.

5. Will there be intermediate cabling between card connectors and antenna(s) installed in host?

[Response ITEM 5](#)

No, the antenna is connected directly to the card, no additional cables are used.

6. Will the sleeve antenna be internal to device housing, or protrude out of case away from hand in monopole-fashion?

[Response ITEM 6](#)

The antennas are placed internally.

7. I didn't find any installation instructions for 1- or 2-antenna configurations. Please submit if applicable. Will instructions specify install at some minimum distance?

[Response ITEM 7](#)

At this time, it is not applicable.

8. Form 731 states 0.142 W, EMC report states ~99mW, SAR reports states ~109mW. Please clarify what grant power is requested.

[Response ITEM 8](#)

The nominal power output for this device is 100 mW; please use 99 mW on the grant.

Draft grant comments, pending outcome of above RTs:

Device with sleeve-dipole antenna as shown in this filing is approved for use in [portable](#) handheld terminals [or body worn devices](#). Grantee must coordinate with OEM manufacturers to determine that RF exposure and emissions requirements have been satisfied for the final device configuration. OEM manufacturers must be informed of the compliance requirements for using this device with their products. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation and transmitter operating conditions for satisfying RF exposure compliance.

Output power is conducted. EIRP is [99 m W](#) in stand-alone configuration as described in filing. Device is approved for [portable](#) hand-held terminal use [or body worn devices](#) with similar installation and operating configurations as tested in this filing only. Device with specific antenna has been tested stand-alone for SAR compliance as described in this filing. Device has not been tested in a host product for RF exposure compliance in combination with other transmitters. Users and installers must be informed of the installation and operating requirements and configurations for satisfying RF exposure compliance. The highest reported [body worn](#) SAR value is [1.16 W/g](#).

Regards,

Mark S. Luksich