



Network Systems Organization

Federal Communications Commission
Equipment Approval Services
P.O. Box 358315
Pittsburgh, PA 15251-5315

Norman H. Nelson
Symbol Technologies, Inc.
6480 Via Del Oro
San Jose, CA 95119-1208
Voice:(408) 528-2649
FAX: (408) 528-2740
norm@sj.symbol.com

Re: FCC ID H9PLA3020 Ref # 15397

Date: 10/6/00

Dear Reviewer,

In response to the following Email:

1. For antennas number 1 & 2 (DASH-3000 and XP) to operate with a reduced output power version of the existing transmitter, a new FCC ID is required to distinguish between the output power differences in these transmitters.

Due to the recalculation of MPE distance for these two antennas it will not be necessary to use a reduced power version.

The output and EIRP indicated in the antenna summary table for these two antennas are computed incorrectly. If these are hand-held devices, they should be classified as mobile instead of portable transmitters. The users must have appropriate means to maintain 20 cm between the antenna and persons, and appropriate operating instructions and statements should be provided for users to satisfy RF exposure compliance. Please clarify and advise what Symbol intends to do with these antenna configurations.

These two antennas were reclassified and corrected calculations are included in the attached table. I have attached a copy of the statements that will be included with the operating instructions that will be provided to the users. Please retain these two antennas in this application.

2. Antenna number 4 is for a body-worn printer. The calculated EIRP in the antenna summary table for this antenna is incorrect. Please provide the actual separation distance between the antenna and a person's body when it is used in the specified configuration. If this antenna configuration also operates at a reduced output power, the issues in item number 1 above should also be addressed. Please clarify accordingly and also note that at higher output power levels, demonstration of SAR compliance may be required for body-worn devices.

$$\begin{aligned} \text{EIRP} &= 250 \text{ mW} * 0.918 \text{ (cable loss)} * 1.0 \text{ (antenna gain)} * 0.68 \text{ (duty cycle)} \\ &= 156 \text{ mW EIRP.} \end{aligned}$$

Perhaps you omitted the duty cycle. The antenna is 0.6 in. (1.5 cm) from the users body when worn on the belt. This configuration will not use a reduced power version. Please see the attached copy of statements that will be provided to users.

3. Three different antenna gains have been indicated in the submitted information for antenna # 3 - 1.6, 20 and 2.0 dBi, please clarify this inconsistency.

For #3 Amtrak Omni the antenna summary table lists the gain at 3.0 dBi, the text of the configuration page lists 3 dBi twice, and the outline drawing gives 3 dBi. I cannot find any reference for antenna # 3 for 1.6, 20, or 2.0 dBi. The gain is 3.0 dBi

4. Please clarify the duty factor claimed for the two handheld devices (68%). This duty factor was not included in the original and previous Permissive Change filings or applied to the other two antennas in the current Class II filing. Note: only source-based time averaging duty factors may be considered, if applicable, supporting information should be submitted.

I have uploaded a proprietary white paper on the duty cycle factors of our various radios including this one. I uploaded it as a confidential exhibit since it includes proprietary data that may give advantage to our competitors.

I hope these answers are satisfactory.

Respectfully,

Norman H. Nelson



RF Exposure Antenna Summary

Network Systems Organization

FCC ID: **H9PLA3020**

WLAN PC Card, 2 Mbps, Duo

Source Based

Mobile DC Factor: 1.000

Output Power: 250 mW

Class II Permissive Change

Portable DC Factor: 0.680

Mobile Antennas (R>20cm)

Ant No	Model	Symbol P/N	Type	Gain (dBi)	Cabel Loss (dB)	Pout (dBm)	MPE (cm)	TR Status	Device Type
01.	DASH 3000	50-21900-036	Dipole	2.2	0.62	23.36	5.4	Tested	Hand Held Ocp
02.	XP	50-21900-024	Slot	0.0	0.58	23.40	4.2	Tested	Hand Held Ocp
03.	Amtrak Omni	50-21900-027	Dipole	3.0	0.00	23.98	6.3	Tested	Fixed

Portable Antennas (R < 5cm)

Ant No	Model	Symbol P/N	Type	Gain (dBi)	Cabel Loss (dB)	Pout (dBm)	EIRP (mW)	TR Status	Device Type	Tx Limited
04.	Oniel MMCX	50-21900-031	Slot	0.0	0.37	23.61	156.1	Tested	Belt Worn 5-	

Antenna Gain listed without cable

TR Status refers to whether the antenna was tested. If not refer to the directed antenna test data

Duty Cycle Factors are applied to MPE and EIRP

Tx Limited configurations are for low power versions of the radio. See the specific antenna exhibit for detail

Friday, October 06, 2000 07:59 PM

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INTER OFFICE MEMO

To: Technical Publications Managers & Technical Writers
From: Norm Nelson
Subject: Required language for PRGs for FCC RF Exposure
Date: October 6, 2000
CC: Ray Martino, Dean Kawaguchi, Dornu Narnor

In order to satisfy the FCC's RF Exposure requirements we must include notes, cautions, and warnings in our Product Reference Guides for the LA4111 and LA4121 Wireless LAN cards and all devices that use these cards. The purpose of these texts are to inform users, administrators, and installers on the correct use and installation of our Spectrum 24 systems and equipment in a way that protects users and the general public from RF exposure.

Currently the FCC categorizes our equipment configurations into four categories.

Radio devices with antennas mounted at fixed locations.

This includes access points with antennas that are fixed in place. Usually the antennas are mounted on ceilings, walls, or vehicles etc.

The following text will be located in a conspicuous place in the section describing proper antenna installation.

"CAUTION: Exposure to Radio Frequency radiation. To conform to FCC RF exposure requirements this antenna shall be installed to ensure a minimum separation distance of 20 cm from all persons during normal operating conditions."

Radio devices with antennas not mounted at fixed locations.

This includes laptops and desktop types of equipment and their antennas that can be moved fairly easily. A laptop with an antenna velcroed to the back of the display cover is a good example.

The following text will be located in a conspicuous place in the section describing proper antenna installation.

"CAUTION: Exposure to Radio Frequency radiation. To conform to FCC RF exposure requirements this antenna shall be installed in such a manner that it may be located near hands but must be more than 20 cm from any persons body during normal operating conditions."

Radio devices in hand held units.

All of Symbol's or OEM's hand held terminals that incorporate either internal or external antennas.

The following text will be located in a conspicuous place in the section describing proper usage of the hand held device.

“CAUTION: Exposure to Radio Frequency radiation. To conform to FCC RF exposure requirements this hand held device is only approved for use in the user's hand when there is 20 cm or more between the antenna and any persons body during normal operating conditions.”

Radio devices with antennas in body worn units.

All terminals that are either strapped to a person's body with belts or other devices that could come in close proximity to the users body. This would include Symbol's wrist mounted unit as well as OEMs belt worn and belt slung devices. In addition medical monitoring equipment that could be placed against a patient is one of these devices as well.

Devices for Trained Users

Trained users are employees and industrial users that have access to the User's Manual for operation and safety guidelines.

The following text will be located in a conspicuous place in the section describing proper positioning and operation of the body worn device.

“Warning: Exposure to Radio Frequency radiation. To conform to FCC RF exposure requirements this device shall be used in accordance with the operating conditions and instructions listed in this manual.”

Devices for general public

General public devices are those devices used by the general public that don't have access to the users guide and must either rely on the intrinsic design of the device or instructions form an administrator for correct use of the device. For devices that will be used without the guidance of an administrator a SAR test must be performed so this warning can be omitted.

The following text will be located in a conspicuous place in the section describing proper positioning and usage of the body worn device.

“Warning: Exposure to Radio Frequency radiation. To conform to FCC RF exposure requirements this device shall be used in accordance with the operating conditions and instructions listed in this manual. It is the responsibility of the person administering this device to ensure proper operation by the end user.”