

Marianne Bosley

From: Chris Harvey [Chrisharveyemc@comcast.net]
Sent: Friday, August 13, 2004 2:01 PM
To: 'Chris Harvey'; 'Jenny Chen'
Cc: MBosley@metlabs.com; 'william chua'; Chris Harvey
Subject: RE: Additional information needed Nakamichi MT#15846

Jenny, per our phone conversation this morning I looked back into the technical information for this Nakamichi application and find that the Report seems to document Frequency Hopping capability. The information provided during the phone conversation seemed to imply that this device is not a FHSS system. You indicated that this device operates using Amplitude Shift Key (ASK) modulation.

In FCC 15.247 for operation at 2.4GHz band you can either be a FHSS device or a Digital Transmission System (DTS).

FHSS devices must comply with the following sections:

15.247(a)(1), 15.247(a)(1)(iii), 15.247(b)(1, 2 & 4), 15.247(g), 15.247(h)

DTS (Digitally Modulated Systems) must comply with the following sections:

15.247(a)(2), 15.247(b)(3), 15.247(c), 15.247(d)

The original request was to show compliance with the 15.247(a)(1) and 15.247(a)(iii) and 15.247(h):

- 3) Please provide the following items defining the FHSS operation of this device:
 - a) Is the hopping sequence pseudorandom, based on the technical description?
(Op Description states random but predictable)
 - b) Is each channel used equally on average, based on the technical description?
 - c) Does the associated system receiver have a compliant input bandwidth, based on the measured 20 dB emission bandwidth?
 - d) Does the associated system receiver have the ability to hop in synchronization with the transmitter, based on the technical description?
 - e) Does the frequency hopping system comply with the non-coordination requirement?

Please either address the questions above or show that this device complies with all the requirements for a Digitally Modulated System (DTS). If this is a DTS device, please amend the test report to show compliance with the DTS requirements listed earlier in this e-mail.

I think the confusion in this application is that the test report seems to partially document compliance as an FHSS device and partially as a DTS device.

I look forward to your reply to clarify the intent of this application and exhibits.

Best regards,

Chris Harvey

-----Original Message-----

From: Chris Harvey [mailto:Chrisharveyemc@comcast.net]
Sent: Tuesday, August 10, 2004 10:37 AM
To: 'Jenny Chen'
Cc: 'MBosley@metlabs.com'; 'william chua'; Chris Harvey (charvey@ieee.org)
Subject: RE: Additional information needed Nakamichi MT#15846

Jenny, thank you for all the files.

The response for Question #3 does not address the questions being asked. From the description provided this does not sound like Frequency Hopping Spread Spectrum. Please ask the customer for assistance in providing full technical response to the specific questions to determine if this device operates using the FCC definitions of FHSS (by the way Bluetooth devices do meet the FCC definition, but I do not see in the documentation that this device meets the Bluetooth requirements).

I am still awaiting the manual revision with the RF Exposure statements per question #4.

Please note that each attachment must be uploaded. In the future, please try to submit one PDF file for each exhibit type. So for example, please submit one PDF document for the Schematic exhibit. When you submit 20 separate exhibits, even if they are zipped into a compressed folder, this causes much extra work when uploading these documents to the FCC. There is a 4MB file size restriction, so please make sure to reduce the resolution to that necessary to view the file correctly if file size is an issue.

Best regards,

Chris Harvey

-----Original Message-----

From: Jenny Chen [mailto:jenny.chen@sibercert.com]

Sent: Wednesday, August 04, 2004 8:07 AM

To: Chris Harvey

Cc: MBosley@metlabs.com; william chua

Subject: Re: Additional information needed Nakamichi MT#15846

Dear Chris

Please see my red remark.

Thank you

Warmest Regards

Jenny Chen

Compliance Manager

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----- Original Message -----

From: [Chris Harvey](#)

To: jenny.chen@sibercert.com

Cc: [Shari Meyers](#) ; [Christina Karlhoff](#) ; ['Marianne Bosley'](#)

Sent: Saturday, July 24, 2004 2:19 AM

Subject: Additional information needed Nakamichi MT#15846

Jenny, I have reviewed the above referenced applications for the AV Unit and Wireless Speakers and have the following questions that need to be addressed before the review can be completed.

1) I can not find the RF Transmitter parts in the Block Diagrams. Please provide Block Diagrams that include the RF Transmission portion and the signal paths and frequencies.

Ans by JC : Refer to Wireless Transceiver Unit Block Diagram and Wireless Speaker Block Diagram

2) There were 19 PDF documents submitted for the Schematic Diagram exhibits for these devices. Many of these schematics are for portions of the system that are not the EUT's. Please consolidate the schematics for the AV Unit into one file and the Wireless Speakers into one file, each containing the RF transmitter portion of the device.

Ans by JC : Please refer to each zip file.

3) Please provide the following items defining the FHSS operation of this device:

- a) Is the hopping sequence pseudorandom, based on the technical description?
(Op Desc. states random but predictable)
- b) Is each channel used equally on average, based on the technical description?
- c) Does the associated system receiver have a compliant input bandwidth, based on the measured 20 dB emission bandwidth?
- d) Does the associated system receiver have the ability to hop in synchronization with the transmitter, based on the technical description?
- e) Does the frequency hopping system comply with the non-coordination requirement

Ans by JC : Description of Adaptive Frequency Selection (AFS)

Description of Adaptive Frequency Selection

Power up

During the initialization, the VConnect master (audio transmitter) randomly hops on the 79 channels in the 2.4GHz ISM band to search for the VConnect slave (audio receiver) which scans 79 channels for the VConnect master. Once both the master and slave modules are able to communicate on a non-interfered, and reliable channel, both modules will remain communication on the same channel.

Normal operation (AFS)

During operation, the master module transmit audio to the slave module at the same channel. If the channel becomes unreliable and the error detection from FEC block exceeds the preset error threshold value, the VConnect automatically executes a setup scanning, as in initialization, and reselects a new clear and reliable channel. The audio transmission between the master and slave modules is started again on the new channel.

4) Please submit the required RF Exposure information in the users manual for these devices indicating the need to keep 20cm spacing from the transmitters. Here is an example of acceptable information:

Manual info needed: **RF Exposure Information:** 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.

Ans by JC : I will provide to you later after receiving from the clients.

Best regards,

Chris Harvey
charvey@ieee.org