

Magic Words with Mickey

Radio Frequency (RF) and Wireless Technology Information

Operational Description

The Interactive Character Head Audio Controller (WDC# 6110-414070; Disney Drawing Number: MLLHEADSA0002), also known as the Interactive Controller, or Belt Pack Controller, provides a means to playback pre-reordered audio and animation, wirelessly receive and transmit real-time audio, and wirelessly receive and transmit real-time data to and from an Articulated Character Head or electrified costume application.

The human-worn belt pack device receives wireless data commands and audio from an external Audio Base Station (WDC# 5830-413983; Disney Drawing Number MLLHEADSA0020), and also transmits audio and data back to the Audio Base Station. Therefore, it can be considered a wireless transceiver for data transmission, and a full duplex audio intercom, allowing mono audio to travel from the ABS to the belt pack (for performer worn ear buds) and mono audio from the Belt Pack to the ABS (for microphone surveillance built into the character head).

References:

- See Disney Drawing MLLHEADSA0151 for depictions for Wearable Interactive System
- See Walt Disney Entertainment Operational Guidelines

For use in the USA, FCC Labels have been affixed to both the Interactive Character Head Audio Controller and the Audio Base station and is copied here as a reference:

Contains FCC ID: X7J-A10051702

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE!

All Radio Frequency power levels have been preprogrammed into the Belt Pack Device and cannot be changed by the end user.

Note to End User (Disney Cast Member)

The Interactive Character Head Audio Controller (WDC# 6110-414070; Drawing Number: MLLHEADSA0002) is to be worn on the waist of the Performer only, using the Disney-issued soft goods belt pack.

For Normal Operation, the Cast Member shall follow all Training Materials, Operational Guidelines, and Maintenance documentation.

For Maintenance, the Cast Member shall follow all Training Materials and Maintenance documentation.

Technical Details of integrated RF Devices

The Interactive Character Head Audio Controller uses a pre-packaged RF device, P/N **A8520E24A91** from Anaren Microwave, Inc.

Excerpt from Anaren:

The A8520E24A91 is a high-performance, FCC & IC certified and ETSI-compliant radio module that incorporates the Texas Instruments CC8520 PurePath wireless audio SoC, CC2591 Range Extender, and integral antenna.

The A8520E24A91 module has received regulatory approvals for modular devices in the United States (FCC), Canada (IC) and Europe (ETSI). The modular approval allows the end user to place an A8520E24A91 module inside a finished product without having to perform costly regulatory testing for an intentional RF radiator.

Within the USA and Canada, the A8520E24A91 modules have been approved for use as digitally modulated transmitters, for which they conform to the BW (a minimum of 500 kHz 6-dB BW for US, a maximum BW of 0.5% of the carrier frequency for Canada), power spectral density (max of 8 dBm / 3 kHz), total output power (max of 1W including the antenna gain) and spurious radiation (harmonics and others including the restricted bands) requirements.

See the A8520E24A91 User's Manual, available at www.anaren.com for more information.

NOTE!

The operating frequency of this device is 2.4 GHz, but this device **DOES NOT** utilize IEEE 802.11 (WiFi). This device is in the same frequency range of WiFi, but is proprietary to Texas Instruments:

Excerpt From TI:

The CC85xx includes a robust built-in wireless audio transmission protocol and can control selected external audio devices. Utilizing numerous coexistence mechanisms allows the CC85xx to avoid interfering with, or being interfered by other 2.4 GHz radio systems.

For more information on the CC85xx, see: www.ti.com

SAR Verification

"Specific Absorption Rate (SAR) testing is the radiofrequency (RF) dosimetry quantification of the magnitude and distribution of absorbed electromagnetic energy within biological objects that are exposed to RF fields."

The Interactive Character Head Audio Controller (WDC# 6110-414070; Disney Drawing Number: MLLHEADSA0002) was tested and verified via a third party verification laboratory conducting the SAR test as a Telecommunication Certification Body (TCB) for the FCC. The SAR test results Passed, meaning the measured power levels were below FCC limits for Human Exposure to Radio Frequency Electromagnetic Fields.

[SAR Test Report Forthcoming, Documents to be provided]

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