USER GUIDE

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Polycom® P008 Embedded ISM43341 SIP Application Module for the Polycom RealPresence Trio™ Solution

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Features

The Polycom P008 ISM43341 single-chip quad-radio device provides the highest level of integration for a mobile or handheld wireless system, with integrated dual band (2.4 GHz/ 5 GHz) IEEE 802.11 a/b/g and single-stream IEEE 802.11n MAC/baseband/radio, and Bluetooth 4.0. It integrates a low power NFC controller. The ISM43341 includes integrated power amplifiers, LNAs and T/R switches for the 2.4 GHz and 5 GHz WLAN bands, which greatly reduces the external part count, PCB footprint, and cost of the solution.

The Polycom P008 ISM43341 is a fully approved module that complies with the following standards and certifications:

- ETSI EN 300 328 v1.9.1
- ETSI EN 301 893 v1.7.1
- ETSI EN 300 330
- FCC Part 15 Unintentional emissions
- FCC Part 15.247
- RSS103 I.C
- CISPR 22
- ETSI EN 301 489-3
- ETSI EN 301 489-17
- EN 62311

The ISM43341 application module transfers data signals by use of the radio frequency spectrum according to the WiFi, Bluetooth, and NFC standards. It is connected to the Polycom RealPresence Trio solution by a 40-pin flexible cable and is mounted with two machine screws.

Specifications

For specifications not listed in the following table, refer to the data sheet for the ISM43341 chip device.

Radio Frequency Range	
WiFi	2400MHz to 2483.5MHZ 5150MHz to 5250MHz 5250MHz to 5350MHz 5470MHz to 5725MHz 5725MHz to 5825MHz
Bluetooth	2400MHz to 2483.5MHz
NFC	13.56MHz 1.8MHz bandwidth
Modulation	Dynamic Frequency Selection (DFS) OFDM BT FHSS NFC 10% ASK, 100% ASK
Power	Power over Ethernet (PoE) – also uses PoE+ with external DC-powered Power Injector
Temperature Range	0 to 40°C
Size	3.3” x 1.1” x 0.25” high

Output Power Levels

Frequency (MHz)	Rate	Tx Setting (-q)	Measured Output Power (dBm)
2412	802.11b	Max	20.10
2442	802.11b	Max	19.80
2462	802.11b	Max	20.10
2412	802.11g	Max	19.10
2442	802.11g	Max	19.30
2462	802.11g	Max	19.10
2412	802.11n	Max	19.30
2442	802.11n	Max	19.90
2462	802.11n	Max	19.80

Frequency (MHz)	Rate	Tx Setting (-q)	Measured Output Power (dBm)
2412	802.11b	73	17.60
2442	802.11b	70	17.74
2462	802.11b	69	17.93
2412	802.11g	69	15.47
2442	802.11g	70	15.79
2462	802.11g	69	16.25
2412	802.11n	64	13.01
2442	802.11n	73	14.80
2462	802.11n	73	15.36

Frequency (MHz)	Rate	Tx Setting (-q)	Measured Output Power (dBm)
5180	802.11a	Max	13.08
5240	802.11a	Max	12.69
5260	802.11a	Max	12.93
5320	802.11a	Max	13.20
5500	802.11a	Max	13.90
5700	802.11a	Max	13.36
5745	802.11a	Max	13.09
5825	802.11a	Max	12.68
5180	802.11n	Max	13.40
5240	802.11n	Max	13.54
5260	802.11n	Max	13.43
5320	802.11n	Max	13.34
5500	802.11n	Max	13.64
5700	802.11n	Max	13.70
5745	802.11n	Max	13.90
5825	802.11n	Max	13.22

Frequency (MHz)	Rate	Tx Setting (-q)	Measured Output Power (dBm)
5180	802.11a	Max	15.17
5320	802.11a	Max	14.70
5500	802.11a	Max	14.39
5700	802.11a	Max	13.41
5745	802.11a	Max	13.06
5825	802.11a	Max	12.41
5180	802.11n	Max	14.64
5320	802.11n	Max	14.69
5500	802.11n	Max	14.65
5700	802.11n	Max	13.59
5745	802.11n	Max	13.24
5825	802.11n	Max	12.59

Circuit Description

The Polycom P008 ISM43341 single-chip device provides a small form-factor solution with minimal external components to drive down cost for mass volumes, and allows for handheld device flexibility in size, form, and function. Comprehensive power management circuitry and software ensure the system can meet the needs of high mobile devices that require minimal power consumption and reliable operations.

PCB Integration

SDIO/I2S/UART Interface/Connection to Motherboard

The RealPresence Trio radio module PCB employs a 40-pin flex circuit socket to connect to a motherboard 40-pin flex circuit cable. This interface is for the 3.3 VDC and 1.8Vpower sources and all necessary data lines to communicate with the radio module.

Mounting

The radio module has two mounting holes. The module should be placed down and fastened onto a motherboard containing two standoffs with metal screws. At the same time, the 40-pin flex cable connector will be engaged by locking the flex connector.

Antenna

The 2.4GHz/5GHz radio module PCB antennas are mounted permanently for WiFi/BT operation. No external WiFi/BT antennas are allowed.

The NFC antenna loop is connected via a two-pin locking connector. Only the Polycom NFC antenna loop or equivalent is allowed.

FCC IC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.
- Changes or modifications not expressly approved by the party responsible for compliance could void the users authority to operate the equipment

User Information

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, can cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This module is limited to OEM installation ONLY.

The OEM integrator is responsible for ensuring that the end user has no manual instructions to remove or install the module.

The module is limited to installation in mobile or fixed applications according to Part 2.1091(b).

Separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations.

The user’s manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

LE-LAN devices are restricted to indoor operation only in the band 5150MHz to 5250MHz.

FCC / IC Canada Labeling of host device

The modular transmitter is labeled with its own FCC and IC identification number. If the FCC or IC identification numbers are not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label shall use wording as the following: **Contains FCC ID: M72-P008 and Contains IC: 1849C-P008**.

FCC RF Exposure requirements

The antenna used with this module must be installed to provide a separation distance of at least 20cm from all persons, and must not transmit simultaneously with any other antenna or transmitter. OEM integrators and end users must be provided with transmitter operating conditions for satisfying RF exposure compliance.

Antennas

The 2.4GHz/5GHz radio module PCB antennas are mounted permanently for WiFi/BT operation. Only the following, or equivalent, are permitted: Unictron Technologies Corp. Chip antenna with 1.4dBi gain at 2.4GHz and 2.3 dBi gain at 5GHz. No external WiFi/BT antennas are allowed.

The NFC antenna loop is connected via a two-pin locking connector. Only the Polycom NFC magnetic wire loop antenna with 0db gain or equivalent is allowed

Antenna information

The module has been tested and approved for use with only the permanently mounted chip antennas on the radio PCB. This radio module is not approved for use with external WiFi/BT antennas.

The radio module is approved for NFC use with the plug-in Polycom NFC antenna 2457-69045-003 or equivalent, typically 1.85uHy for a peak field of 1.85A/m or less at 5mm.

Antenna types

- The onboard WiFi/BT antennas are a dual-band ceramic chip type AA077 from Unictron Technologies.
- The plug-in NFC antenna is a thin multi-turn loop flex circuit.

Antenna gain

- The WiFi/BT antenna gain varies from 1.4dBi, typical for the 2.4GHz band, and 2.3dBi, typical for the 5GHz band (WiFi only).
- The NFC antenna is a magnetic loop that does not radiate and thus has no gain.

Note: Obtain authorization for use with unlisted antennas

The use of this module in combination with an antenna that is not listed must be authorized with respective regulatory agencies.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication.

Safety Information

Canada - Industry Canada (IC)

Operation is subject to the following two conditions:

(1) this device may not cause interference, and

(2) this device must accept any interference, including interference that may cause undesired operation of this device.

L‘utilisation de ce dispositif est autorisée seulement aux conditions suivantes:

(1) il ne doit pas produire de brouillage et

(2) l’ utilisateur du dispositif doit être prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

Caution: Exposure to radio frequency radiation

To comply with RSS 102 RF exposure compliance requirements for mobile configurations, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons. This device must not be co-located or operating in conjunction with any other antenna or transmitter.

Informations sur l'exposition RF

Les antennes internes utilisées pour ce transmetteur mobile doivent offrir une distance de séparation d'au moins 20 cm de toute personne. Les conditions de fonctionnement d'émetteur offertes aux intégrateurs OEM et aux utilisateurs finaux doivent satisfaire les normes d'exposition RF.

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