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Preface

The Polycom KIRK DECT Application Module 6.0 (KDAM 6.0) is used to transfer messaging, data, and voice signals by use of the radio frequency spectrum according to the DECT standard.

The module is shipped with a default DECT protocol stack that supplies the module with default behavior. You have the option, however, of developing and running your own applications on top of the protocol stack and of changing the pre supplied software. This is done via the EKGAP Desktop Development Environment, which is further described in the KDAM 6.0 Software User Guide.

This user guide describes the KDAM 6.0 hardware and how to use it. The guide is intended for qualified technicians who will install, register and configure the KDAM 6.0.

Related Documentation

There are three approaches to using the module: Using AT commands, using a virtual handset, and using the EKGAP Desktop Development environment to program applications. For more information about all three approaches, see the Polycom KIRK DECT Application Module 6.0 Software User Guide. You can download the guide from www.polycom.com.

For data sheets with detailed information about the DECT Transceiver and Baseband SC14480 chip, please contact Sitel Semiconductor. Note that you may have to sign a non-disclosure agreement (NDA) to obtain the information.
# Acronyms

<table>
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<th>Meaning</th>
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<tr>
<td>ARI no.</td>
<td>Access Rights Identity - Serial number of the DECT system</td>
</tr>
<tr>
<td>DECT</td>
<td>Digital Enhanced Cordless TElecommunications</td>
</tr>
<tr>
<td>GAP</td>
<td>Generic Access Profile</td>
</tr>
<tr>
<td>HW PCS</td>
<td>Hardware Product Change Status - Hardware edition</td>
</tr>
<tr>
<td>IPEI</td>
<td>International Portable Equipment Identity - Serial number of the handset - SN</td>
</tr>
<tr>
<td>KDAM</td>
<td>KIRK DECT Application Module</td>
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## Hardware Description

### KIRK DECT Application Module 6.0 Features

**Table 2-2  Feature Overview**

- **RF range:** 1870-1930 MHz
- **DECT channels:** 60 logical duplex channels
- **Receiver sensitivity:** Typ.<-94 dBm[BER, 1000 ppm].
- **Transmit power (NTP):** Typ. 22 dBm (Vbat=2.7V)
- **Power supply range:** 2.7-5.50V
- **Current consumption** (Preliminary information)
  - 200mA avg., 500mA peak (VBAT=2.7V)
- **Temperature range:** -20°C to +60°C.
- **Size:** 27.0 X 27.0 X 3.0 mm.

*Figure 2-1  KIRK DECT Application Module 6.0*
Standards and Certification

The KDAM 6.0 is a fully approved module that complies with the following standards and certifications. This means that by integration on a main board no radio test is required. For detailed information, see Standards and Certification.

Circuit Description

The KDAM 6.0 consists of the fully integrated CMOS transceiver and baseband processor SC14480A5M8OVE from SiTel semiconductor for DECT 6.0 handsets and base stations. The power amplifier (PA), SPDT switches and other components are added to the design to perform the desired functionality required for DECT/GAP.

The following figure shows a block diagram of the KDAM 6.0 module.

**Figure 2-2 Block Diagram**

DECT Transceiver and Baseband SC14480

The SC14480A5M8OVE is a 1.8V single chip DECT solution which contains a fully integrated radio transceiver and a baseband processor. It is designed to perform the complete transmitter and receiver function. Furthermore, the
SC14480 is designed to operate the frequency synthesizer in a close loop configuration during both transmit and receive mode. Logic output ports are used to control the power amplifier, T/R switch, and antenna switch for FAD (Fast Antenna Diversity).

The Compact RISC CR 16C plus microprocessor, which has a single wire debug port running from ROM, controls the protocol stack, the I/O peripherals, the keyboard, the UART, the ACCESS bus, the SPI, the LED drivers, and the RF switches.

The audio part comprises a 16 bit CODEC with an analog frontend that includes a high efficiency 4 ohm audio amplifier (class D) and a programmable Gen2DSP, which supports various telecommunication algorithms. For detailed information about the SC14480, please contact SiTel semiconductor.

**Power Amplifier XF 2400PL**

The power amplifier XP2400PL from Murata is designed for DECT applications. The amplifier includes features for power ramping, and the output power level can be controlled by an external power handling circuit. The matching network at the amplifier input and output terminals in combination with the LP-filter perform proper rejection of harmonics from the whole transmitter chain.
PIN Configuration

The following figure shows the KDAM 6.0 PIN configuration.

*Figure 2-3  PIN Configuration*

![PIN Configuration Diagram]

To Connect Pins

The pin connections comply with the connections specified by SiTel for the SC14480 chip. The only exceptions are the following:
• Connect D2, H2, H7, K4, K8 (test pins) to GND on the main board.
• Leave D10, E8 (test pins) unconnected to the main board.
• Connect J10 to J11. (J10 and J11 can be used for RF power control with an external reg. circuit on the main board. Schematic for reg. circuit can be provided on request).
• JTAG: Internal pull up to 1.8V
• VREFm: Connect to local GND on main board
• VBAT: Main supply (2.7-5.5V)
• CHRG = CHARGE_CTRL

**Note** To learn more about the connections specified for the SC14480 chip, you have to contact SiTel Semiconductor.

The following figure shows the top view of the pin configuration.

*Figure 2-4  Pin Configuration Top View*
Mechanical dimensions

The following figure shows the mechanical dimensions of the KDAM 6.0.

*Figure 2-5  Mechanical Dimensions*
PCB Integration and Soldering

The following figure shows the recommended integration on the main PCB.

Figure 2-6  Integration on the Main PCB
The following figure shows the recommended copper pad and solder mask opening (NSMD.)

**Figure 2-7** Copper Pad and Solder Mask Opening

The following figure shows the recommended stencil design. Stencil thickness 0.125-0.150 mm.

**Figure 2-8** Stencil Design
The following figure shows the recommended re-flow profile

**Figure 2-9  Re-flow Profile**

![Reflow profile - leadfree](image)

- **t1**: Maximum change in temperature 3°C/sec.
- **t2**: Time in preheat (150°C < temp. < 190°C) 60-120 sec.
- **t3**: Time in reflow zone (temp. > 220°C) 30-60 sec.
- **t4**: Peak temperature 237°C ± 5°C

**t1**: Preheat zone bottom 150°C
**t2**: Preheat zone top 190°C
**t3**: Reflow zone 220°C

**Note** We recommend to fabricate PCB in accordance with IPC-A-600G, IPC-6012B, IPC-6016/A and IPC-6018A, Class 2; per IPC-6011 using customer supplied data files.
Safety Requirements

This section provides an overview of the safety requirements you must adhere to when working with the Polycom KIRK DECT Application Module 6.0.

Safety requirements

1. The specific external power supply for the Polycom KIRK DECT Application Module has to fulfil the requirements according to clause 2.5 (Limited power source) of this standard EN 60950-1:2006.

2. Interconnection circuits shall be selected to provide continued conformance to the requirements of clause 2.2 for SELV (Safety Extra Low Voltage) circuits according to EN 60950-1:2006 after making connections.

3. Interface type not subjected to over voltages (i.e. does not leave the building).

4. Requirements additional to those specified in this standard may be necessary for:
   a. Equipment intended for operation in special environments (for example, extremes of temperature, excessive dust, moisture or vibration, flammable gases and corrosive or explosive atmospheres).
   b. Equipment intended to be used in vehicles, on board ships or aircraft, in tropical countries or at altitudes greater than 2000 m.
   c. Equipment intended for use where ingress of water is possible.

5. Installation by qualified personnel only!

6. The product is a component intended for installation and use in complete equipment. The final acceptance of the component is dependent upon its installation and use in complete equipment.
Standards and Certification

Standards and Certifications

The KDAM 6.0 is a fully approved module that complies with the following standards and certifications.

- EN 301 406 (DECT radio)
- EN 300 444 (GAP)
- EN 300 175-1 to 8 (DECT CI)
- EN 60950-1 (Safety)
- EN 301 489-1/301 489-6 (EMC)
- EN50385:2002 (Health)
- Prepared to comply with FCC rules part15/subpart D, IC, and UL requirements.
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