

# Principle & block diagram for DK-Em4PS Auto-dial testing

## Device

### Overview

DK-Em4PS Auto-dial testing Device is a Wireless Test Product based on Mobile communication network platform, this product is tested up to 4 channels embedded. Test channel can be configured according to test requirements. including 2 channels for GSM and 2 channels for TD-SCDMA. The device adopts standard design of industrial-grade, with English and Chinese SMS sending, voice and wireless data mode functions and etc.

Users can connect with PC by USB2.0 port & Ethernet Interface. This device can be widely used in monitoring for mobile network coverage.

Principle of DK-Em4PS is shown in figure 1

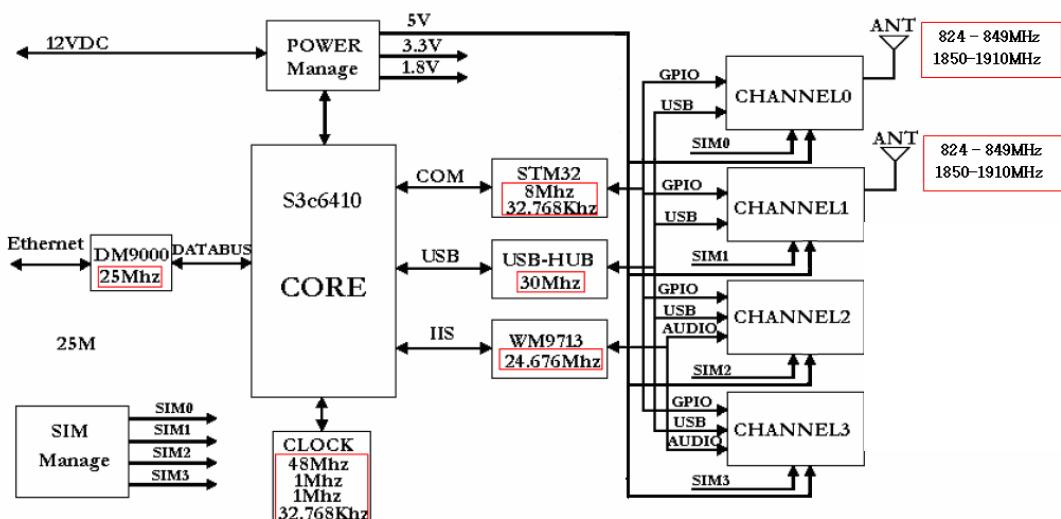


Figure1 Block Diagram for the Principle of DK-Em4

As shown in figure 1, DK-Em4PS device is made of three parts, namely backplane, channel plate and core plate. The core board makes use of ARM11 core processors, mainly for data transmission and processing, through the network chip DM9000A to achieve connection with Internet. The core board reality the data communication and function control with the channel plate through USB port and serial interface. DK-Em4PS device supports up to four channels test at the same time.

The backplane is the bridge connecting a core board and a channel plate, through the USB-HUB and STM32 processors on the floor plate, to achieve data transmission channel plate and signal control. The main interfaces on the backplane are:

1. Ethernet Interface: Network chip DM9000A
2. USB-OTG port: Upgrade the inner core of a core board
3. USB-host Port: Convert 4 USB ports through USB-HUB clips on the backplane to

use for communication with channel plate.

4. RS232 port: connected with COM0 at the core plate to use for communication with LINUX Console.
5. SIM card port: total 4, corresponding to 4 communication modules
6. Audio Interface: AC97 audio chip.
7. Power Interface: Input voltage 12VDC (220VAC input needs be converted by an adapter)
8. Antenna Interface: Used for Coupling between Communication module signal and spatial signal.

Channel plate is mainly used for completion of a test function, the diagram block for the Principle of a channel plate shown in Figure 2.

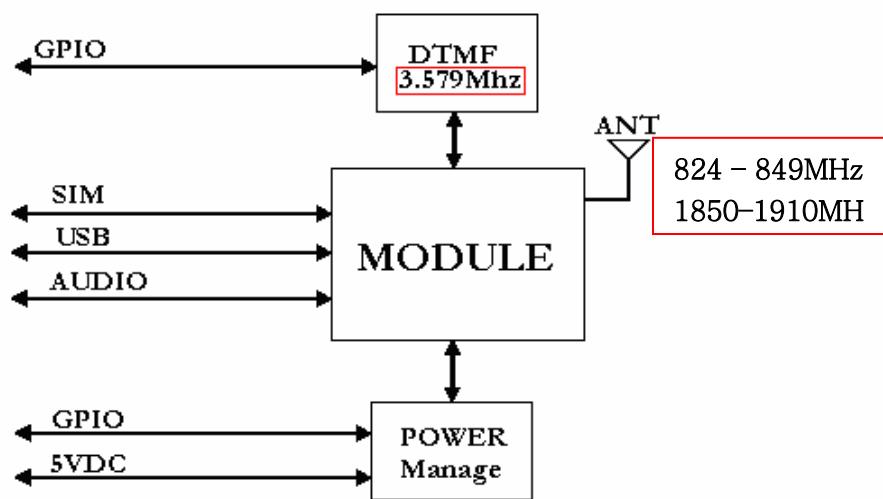


Figure 2 Diagram for the Principle of a channel plate

The channel plate is made of 3 parts, namely Power management part, communication module part and the DTMF detection part.

Power management part of them is mainly used for the module power control.

Communication module part is made of the USB and AUDIO signals mainly, USB is used for a communication module and a core board, AUDIO signal is used for Voice record & play of the module 'sound'.

DTMF detect is mainly used for detecting DTMF code.

SIM port: used for connecting between port & outer SIM card.

The principle of the module is shown in Figure 3:

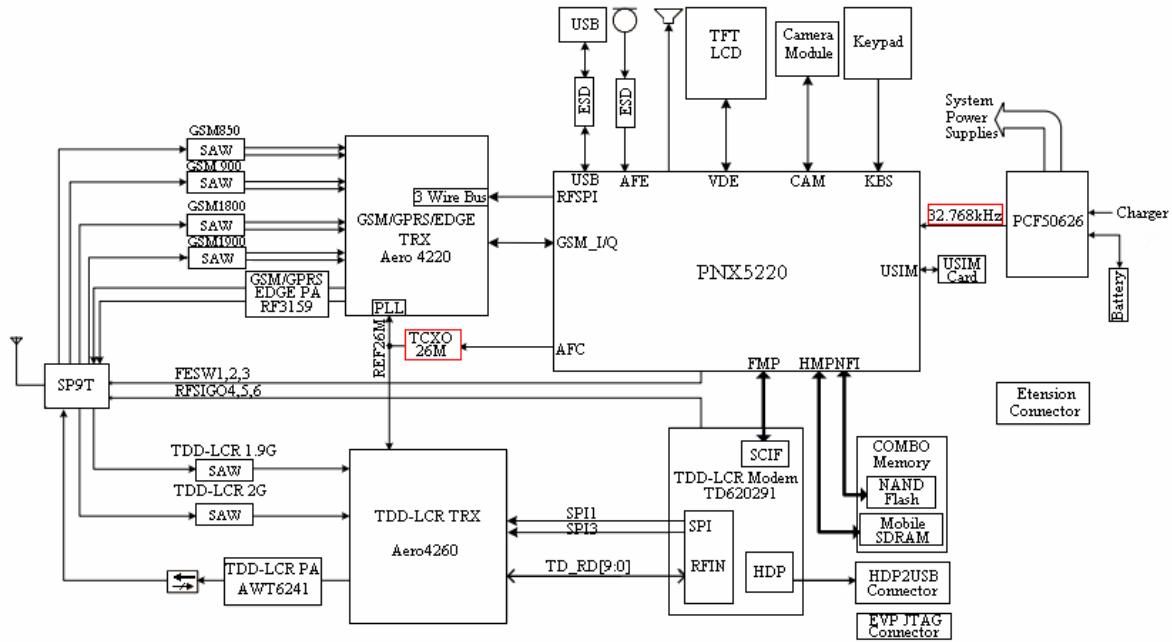


Figure 3 Module Block Diagram

As shown, the module function can be divided into the following functional components:

Baseband Module

TD-SCDMA Modem Module

TD-SCDMA RF Module

GPRS/EDGE RF Module

RF Front End Module