

## The working principle of products

The system has the following parts: i.MX21 processor, MMI (LCD, Touch Screen), Power Supply, WiFi module. Please find infrastructure below. i.MX21 processor is CPU of the system. The touch screen will collect axis signal and sent to processor after A/D conversion. i.MX21 read the data by touch screen controller interrupt signal. The processor will establish TCP/IP connection with server by WiFi module which is USB interfaced, as soon as the link established, the processor sends the data to the Server via wireless network.

### i. i.MX21 processor

The MX21 processor consists FLASH, SDRAM and MC9328MX21. The system uses K9F2G08U0A of FREESCALE to build 8 bits FLASH system. The capacity of the chip is 256MB. The SDRAM parts consists of 2 pieces of H57V561620FTP-H, which is 32MB, 16bits wide. Therefore the system has 64M SDRAM memory to satisfy different requirements from embedded OS and application software. i.MX21 controls each modules via hardware drivers and generating different control signals.

### ii. TOUCHSRC Module

Touch Screen is 7 inches four lines Resistive Touch Panel (RTP), control chip is TI's TSC2046. TSC2046 has the following specs:

12 bits A/D converter with serial port

750uW in 2.7V and 125KHz throughput

0.5uW in off mode

TSC2046 is used widely in battery supplied PDA equipments, the chip is SSOP-16 package with -40 ~ +85 temperature range.

### iii. WiFi Module

WiFi module consist of receiver and transmitter. When system is receiving Access Point (AP) signal, it uses antenna to receive 2.4GHz ~ 2.5GHz RF signal, through WiFi Module splits transmitting signal and receiving signal, to eliminated interference.

To establish a WiFi link, it should have at least 1 Access Point(AP) and 1 Client(hi).

AP broadcasts Service Set Identifier (SSID) every 100ms through beacons encapsulation. Beacons transmission speed is 1Mbits/s, and is very short, therefore the broadcast will not affect the whole network performance. As WiFi standard defines the lowest transmission speed is 1Mbits/s, it guaranteed all WiFi clients will receive this SSID broadcast packet, clients then decide whether to link this SSID. The user can configure to link to which SSID.

WiFi system always opens its connecting standard and supports roaming, this is the advantage of WiFi. However, it also means that a wireless adapter is possibly better than others in the performance matter. As WiFi transmit signal of the air, it has the same specification as un-switching Ethernet.