M11550 **Circuit description**

M11550 PCBA using MT8167 as the CPU(U1), MT8167 is qual-core Cortex-A35 processor, the highest frequency up to 1.5GHz. There are 2GB LPDDR3, 16G/32G EMMC Flash, and have a variety of interface: LCD(1920X1080);HDMI ;TF CARD;MICRO USB OTG; CAMERA; EARPHONE; MIC,etc.

The device has two crystels:X2 and YW1.X2 is working for CPU(MT8167),YW1 is working for wifi module(MT6630).

A 32.768 KHz crystal oscillator (X3) provides the base clock source for RTC controller.

M11550 has the following functions:

G-sensor

Using STK8BA50-R (U16) as the controller. The acceleration of gravity is converted into an electrical signal, through IIC transmitted to CPU.

WIFI/BT/FM

Using MT6630 (U2) IC as the controller, MT6630 contain WIFI,BT and FM functions. The IC size is 7x7 x 0.9mm (LxWxH).

MediaTek MT6630Q is the worldwide first 5-in-1 wireless connectivity combo chipset supporting 802.11a/b/g/n/ac 1T1R WLAN function at 20/40/80MHz bandwidth, Bluetooth v4.1+HS, multi-GNSS (Five systems: GPS, Glonass, Beidou, Galileo and QZSS) and FM Transceiver. By integrating the five advanced radio technologies, MT6630Q SoC delivers the system designers from the complexity and efforts. To prevent the crosstalk among different radios, MT6630Q implements advanced and sophisticated Radio Coexistence algorithms and hardware mechanisms. To reduce the external components, MT6630Q integrates most RF blocks such as PA, LNA, T/R switch etc. It also supports single antenna sharing among 5GHz WLAN, 2.4 GHz Bluetooth and WLAN, and 1.575 GHz GPS. For mobile devices, including mobile phones and media tablets, MT6630Q can simultaneously transmit and receive voice, data, and audio/video without interferences. To reduce the current consumption and offer high throughput on WLAN, MT6630Q equips 802.11ac function for over 200Mbps data rate Bluetooth devices, MT6630Q can communicate with those Wireless PAN products to fulfill user expectations as much as possible. The multi-GNSS capability of MT6630Q also improves the TTFF (Time-To-First-Fix) and less dead zones which single satellite signal might be too weak. The small footprint of WLCSP package with low-power consumption greatly reduces PCB layout area while QFN type supports the normal PCB with less cost.

WLAN

- Dual-band (2.4/5GHz) single stream 802.11 a/b/g/n/ac MAC/BB/RF SoC, 20/40/80MHz bandwidth, MCS0~9 (256-QAM)

- 802.11d international roaming
- 802.11e quality of service
- 802.11h transmit power control and DFS radar pulse detection
- 802.11i enhanced security
- 802.11j WLAN 4.9 to 5GHz operation in Japan
- 802.11k radio resource measurement
- 802.11r fast handoff for AP roaming
- 802.11v Timing Measurement
- 802.11w protected management frames
- Security: WFA WPA/WPA2 personal, AES-CCMP, WPI-SMS4, GCMP, WPS2.0, WAPI (Hardware)
- QoS: WFA WMM, WMM PS
- Supports 802.11n optional features: LDPC, STBC, A-MPDU, Blk-Ack, RIFS, MCS Feedback, 20/40MHz coexistence (PCO), unscheduled PSMP
- Supports MediaTek proprietary low power Green AP mode for portable hotspot operation
- Auto rate control for optimizing the signal range and performance
- Supports Wi-Fi Direct (WFA P-2-P standard) and Wi-Fi Miracast (Wi-Fi Display)
- Supports WFA Passpoint (HotSpot 2.0)
- Supports EAP-TLS / EAP-TTLS / EAP-PEAP / EAP-SIM / EAP-AKA / EAP-AKA'
- Interface: SDIO 3.0 (4-bit & 1-bit, DDR50 and SDR104 modes)
- Supports 32 multicast address filters and TCP/UDP/IP checksum offload
- Per packet Tx power control

Bluetooth

- Bluetooth specification v2.1+EDR, 3.0+HS, v4.1+HS compliant
- Rx sensitivity: GFSK -94dBm, DQPSK -95dBm, 8-DPSK -89dBm, BLE -96dBm
- HCI over high speed (4Mbps) UART(H4), and SDIO 3.0
- Best-in-class BT/Wi-Fi coexistence performance
- Up to 4 piconets simultaneously with background inquiry/page scan
- Supports BT legacy, BLE scatternet
- Packet loss concealment (PLC) function for better voice quality
- Low-power scan function to reduce the power consumption in scan modes
- Supports Wideband speech (16KHz sampling rate)
  - SBC encode include mono and stereo
  - SBC decode only support mono
  - mSBC support in controller
- Supports secure connection with AES128 and ECC256

- Supports FM over BT A2DP