

OPERATIONAL DESCRIPTION

FCC ID:SY4-A01020

The main function of the equipment under test (EUT) is consists of the following Eight parts :CPU, USB HUB, RTC module, 2/3/4G module, BT and WIFI module, GNSS module, UHF radio module and Voice module.

CPU:

The i.MX 6UltraLite is a high performance, ultra efficient processor family with featuring Freescale' s advanced implementation of the single ARM Cortex®-A7 core, which operates at speeds of up to 528 MHz. i.MX 6UltraLite includes integrated power management module that reduces the complexity of external power supply and simplifies the power sequencing. Each processor in this family provides various memory interfaces, including LPDDR2, DDR3, DDR3L, Raw and Managed NAND flash, NOR flash, eMMC, Quad SPI, and a wide range of other interfaces for connecting peripherals, such as WLAN, Bluetooth™, GPS, displays, and camera sensors.

Y1: 24MHz

Y10: 32.768KHz

USB HUB:

1. USB251xB/xBi products are fully footprint compatible with USB251x/xi/xA/xAi products as direct drop-in replacements

— Cost savings include using the same PCB components and application of USB-IF Compliance by Similarity

2. Full power management with individual or ganged power control of each downstream port

2. Fully integrated USB termination and pull-up/pulldown resistors

4. Supports a single external 3.3 V supply source; internal regulators provide 1.2 V internal core voltage

5. Onboard 24 MHz crystal driver or external 24 MHz clock input

6. Customizable vendor ID, product ID, and device ID

- 7. 4 kilovolts of HBM JESD22-A114F ESD protection (powered and unpowered)
- 8. Supports self- or bus-powered operation
- 9. Supports the USB Battery Charging specification Rev. 1.1 for Charging Downstream Ports (CDP)

Y5: 24MHz

RTC module:

The DS1339 serial real-time clock (RTC) is a lowpower clock/date device with two programmable time-of-day alarms and a programmable square-wave output. Address and data are transferred serially through an I2C bus. The clock/date provides seconds, minutes, hours, day, date, month, and year information. The date at the end of the month is automatically adjusted for months with fewer than 31 days, including corrections for leap year. The clock operates in either the 24-hour or 12-hour format with AM/PM indicator. The DS1339 has a built-in powersense circuit that detects power failures and automatically switches to the backup supply, maintaining time, date, and alarm operation.

Y2:32.768KHz

2/3/4G module :

The ME909S-821A are quad-band GSM/GPRS/EDGE. GSM Quad band (850, 900, 1800, 1900) WCDMA Multi-band (B5,B8,B2,B1,B4), FDD-LTE (B1,B3,B5,B8), TDD-LTE (B38, B39,B40,B41)

GSM850:824.2MHz-848.8MHz

GSM1900:1850.2MHz-1909.8MHz

WCDMA BAND V : 826.4MHz-846.6MHz

WCDMA BAND II : 1852.4MHz-1907.6MHz

LTE Band 2:1850.7MHz~1909.3MHz

LTE Band 4:1710.7MHz~1754.3MHz

LTE Band 5:824.7MHz~848.3MHz

LTE Band 7:2502.5MHz~2567.5MHz

This product disables LTE band 2 and Band 4, 1.4M and 3M bandwidth

BT and Wifi module

WG7831-D0, a WiFi, BT, BLE SiP (system in package) module, is the most demanded design for mobile devices, audio, computer, PDA and embedded system applications with Wilink8 solution from TI.

Y11: 26MHz

Y4: 32.768KHz

WLAN :

- Integrated 2.4 GHz Power Amplifier (PA) for WLAN solution
- WLAN Baseband Processor and RF transceiver supporting IEEE 802.11b/g/n.
- WLAN 2.4GHz SISO (20/40 MHz channels)
- Baseband Processor
 - IEEE Std 802.11b/g/n data rates and IEEE Std 802.11n data rates with 20 or 40 MHz SISO.
- Fully calibrated system. Production calibration not required.
- Medium Access Controller (MAC)
 - Embedded ARM™ Central Processing Unit (CPU)
 - Hardware-Based Encryption/Decryption using 64-, 128-, and 256-Bit WEP, TKIP or AES Keys,
 - Supports requirements for Wi-Fi Protected Access (WPA and WPA2.0) and IEEE Std 802.11i [includes hardware-accelerated Advanced Encryption Standard (AES)]
 - Designed to work with IEEE Std 802.1x
- IEEE Std 802.11d,e,h,i,k,r PICS compliant.
- New advanced co-existence scheme with BT/BLE.
- 2.4 GHz Radio
 - Internal LNA and PA
 - Supports: IEEE Std 802.11b, 802.11g and 802.11n

Bluetooth :

Supports Bluetooth Core Specification Version 4.2.

- Includes concurrent operation and built -in coexisting and prioritization handling of Bluetooth, BLE, audio processing and WLAN
- Dedicated Audio processor supporting on chip SBC encoding + A2DP:
 - Assisted A2DP (A3DP) support - SBC encoding implemented internally
 - Assisted WB-Speech (AWBS) support - modified SBC codec implemented internally

- Fully compliant with BT and BLE dual mode standard
- Support for all roles and role-combinations, mandatory as well as optional
- Supports up to 10 BLE connections
- Independent buffering for LE allows having large number of multiple connections without

GNSS module and Feature

GNSS Module of i90 Pro:

- GPS: L1 C/A, L2E, L2C, L5
- BeiDou B1, B2, B3
- GLONASS: L1 C/A, L2 C/A, L3 CDMA
- Galileo: E1, E5A, E5B, E5AltBOC, E6
- IRNSS L5
- QZSS: L1 C/A, L1 SAIF, L1C, L2C, L5, LEX
- SBAS: L1 C/A, L5
- MSS L-Band: OmniSTAR, Trimble RTX

GNSS Module of i90:

- BDS B1/B2/B3 + GPS L1/L2/L5 + GLONASS L1/L2 + Galileo E1/E5a/E5b

UHF Radio module

HX-DU2005D radio transceiver module has been designed to operate on 410-470 MHz, the exact use of which differs from one region and/or country to another.

- Carrier Power 2W、1W、0.5W programmable
- Channel Width 25 kHz
- Modulation GMSK

Voice module:

XFS5152CE is a highly integrated speech synthesis chip that can realize Chinese and English speech synthesis. It also integrates speech coding and decoding functions to support users to record and play. In addition, it is innovatively integrated with lightweight. Level speech recognition, support for the recognition of 30 command words, and support the user's command word customization needs.

Y9:12MHz

One External Antenna for UHF, 4dBi (max.).

One Internal antenna is used for GSM/WCDMA/LTE 0.5dBi(Max.) and 2dBi(Max.) for BT,WIFI.

One Internal antenna for GPS(RX)

Note: The WIFI, BT, GSM, WCDMA, LTE and GPS use the same Internal antenna.