

An aerial night view of a city skyline, illuminated with blue and white lights. A complex network of glowing blue nodes and lines is overlaid on the city, representing a smart city or IoT network. The nodes are connected by thin lines, creating a dense web of connections across the urban landscape.

QUECTEL

Quectel Smart Module Product Overview

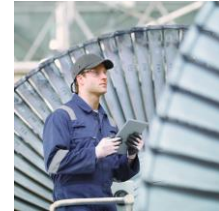
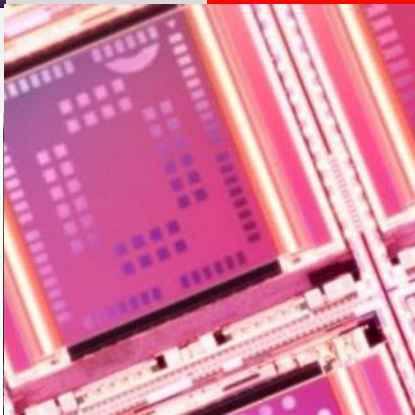
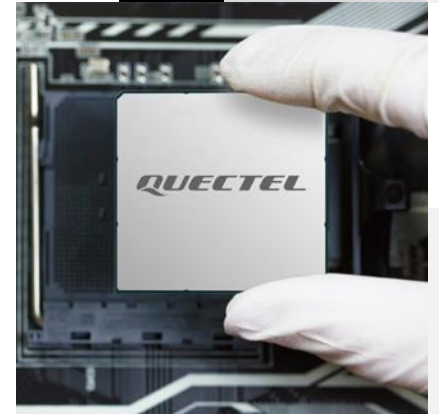
Build a Smarter World



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Build a Smarter World





Smart Solution Introduction

Smart Module Portfolio

Specifications & Timelines

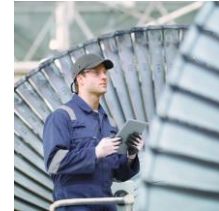
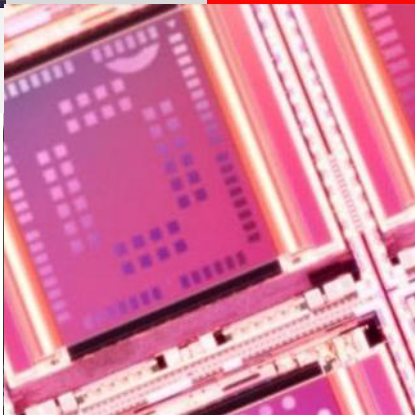
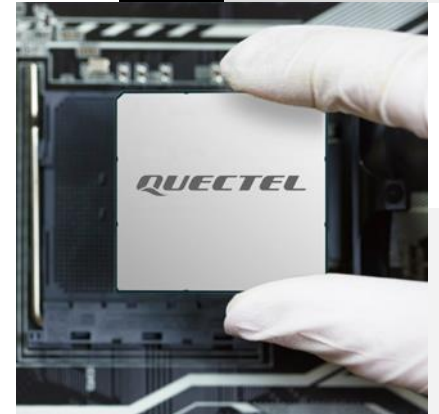
Enhancements

Typical Applications

Customer Support

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Build a Smarter World

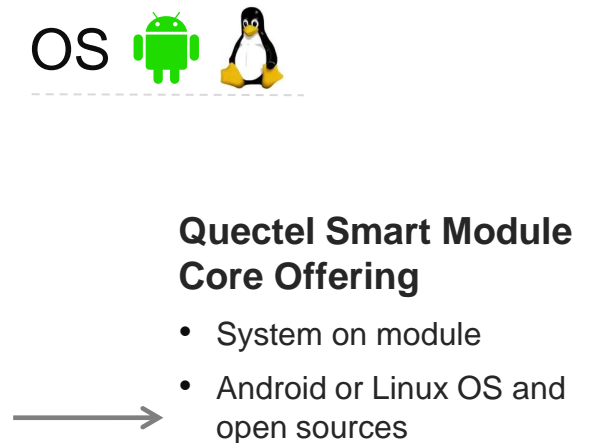
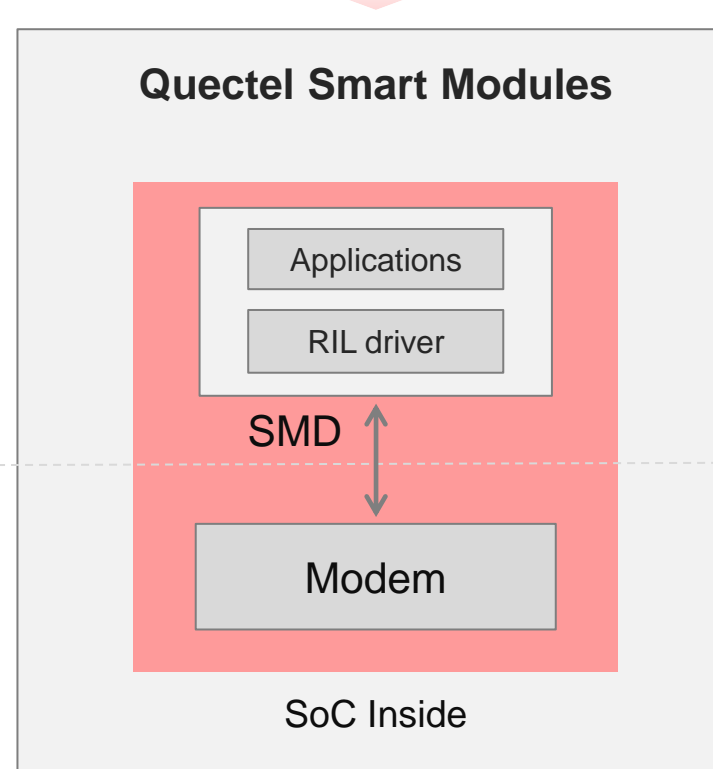
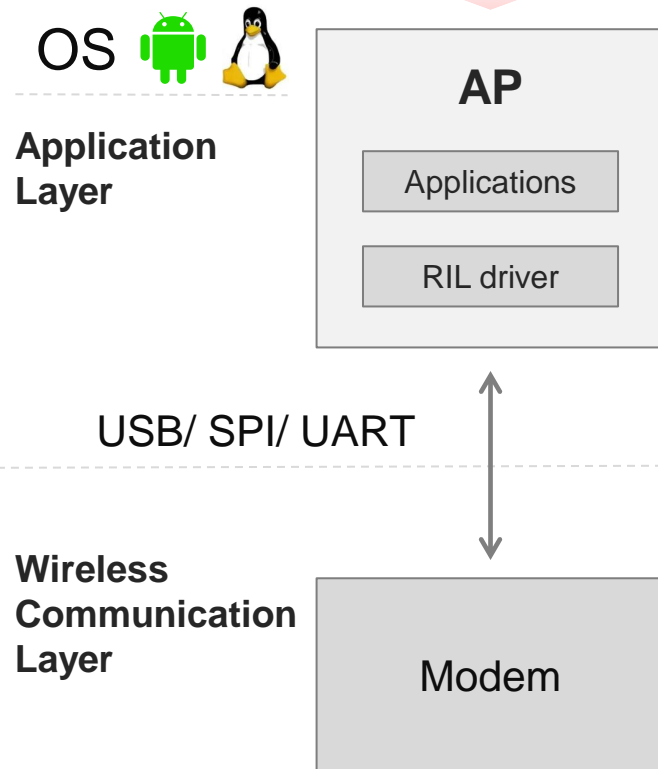


Smart Solution Architecture Comparison



Discrete Smart Solution (AP + Modem)

Integrated Smart Solution (System on Module)



AP: Application Processor.
OS: Operating System.
SMD: Shared Memory Driver.
SoC: System On a Chip.

Quectel Smart Solution Advantages



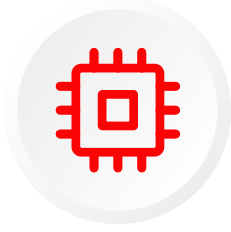
SoC Platforms



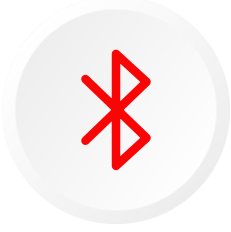
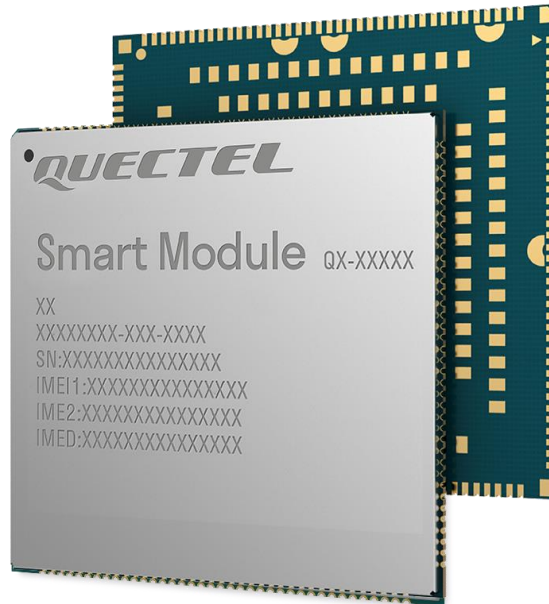
Open Android or Linux



Multi-Mode: 5G/ LTE/ UMTS/ GSM



High-performance CPU/ GPU/
NPU/ DSP



Built-in Wi-Fi/ Bluetooth/ GNSS



Various Multimedia Functions:
LCD/ Audio/ Camera/ Video



Abundant Peripheral Interfaces



Global Certifications



Strong Customer Support



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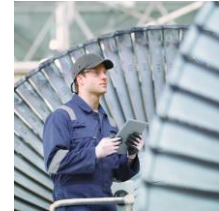
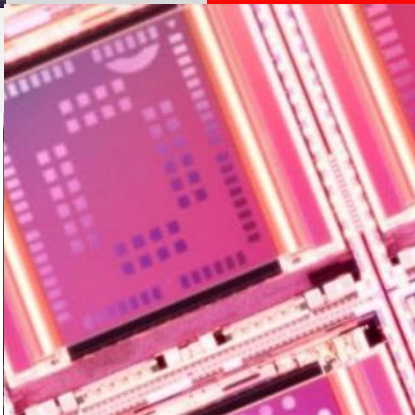
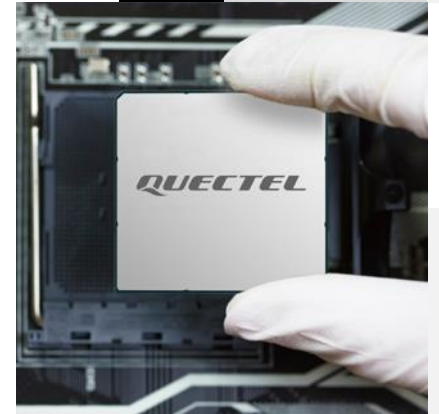
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Appendix

Build a Smarter World



Smart Module Portfolio



<p>Premium Level</p>	 <p>SA800U</p> <ul style="list-style-type: none"> • SDA845 ① • CPU: 4 + 4 Kryo 2.7/ 2.0 GHz • GPU: Adreno 630 • Camera: 32 MP • Video: 4K @ 60fps • Wi-Fi: 2 × 2 11ac; Bluetooth 5.0 	 <p>SG865W</p> <ul style="list-style-type: none"> • QCS8250 ① • CPU: 8x Kryo 585/ 2.84 GHz • GPU: Adreno 650 • Camera: 64 MP • Video: 4K @ 240fps/ 8K @ 60fps • Wi-Fi: 2 × 2 11ax; Bluetooth 5.1 			
<p>High Level</p>	 <p>SC600T</p> <ul style="list-style-type: none"> • MSM8953 ① • CPU: 8x A53/ 2.0 GHz • GPU: Adreno 506 • Camera: 24 MP • Video: 4K @ 30fps • Wi-Fi: 11ac; Bluetooth 4.2 • Modem: LTE Cat 6 • GNSS: L1 	 <p>SC66</p> <ul style="list-style-type: none"> • SDM660 ① • CPU: 4 + 4 Kryo 2.2/ 1.8 GHz • GPU: Adreno 512 • Camera: 24 MP • Video: 4K @ 30fps • Wi-Fi: 2 × 2 11ac; Bluetooth 5.0 • Modem: LTE Cat 6 • GNSS: L1 	 <p>SG560D </p> <ul style="list-style-type: none"> • QCM6490 ① • CPU: 1 + 3 + 4 (2.7/ 2.4/ 1.9 GHz) • GPU: Adreno 643 • Camera: 64 MP • Video: 4K30D/ 4K30E • Wi-Fi: 2 × 2 11ax DBS; Bluetooth 5.2 • Modem: 5G Sub 6/ LTE Cat 18 • GNSS: L1 + L5 	 <p>SC606T</p> <ul style="list-style-type: none"> • MSM8953 ① • CPU: 8x A53/ 2.0 GHz • GPU: Adreno 506 • Camera: 24 MP • Video: 4K @ 30fps • Wi-Fi: 11ac; Bluetooth 4.2 • Modem: LTE Cat 6 • GNSS: L1 	
<p>Medium Level</p>	 <p>SC600Y</p> <ul style="list-style-type: none"> • SDM450 ① • CPU: 8x A53/ 1.8 GHz • GPU: Adreno 506 • Camera: 21 MP • Video: 1080P @ 60fps • Wi-Fi: 11ac; Bluetooth 4.2 • Modem: LTE Cat 6 • GNSS: L1 	 <p>SC200K</p> <ul style="list-style-type: none"> • UIS8581E ② • CPU: 8x A55 1.6 GHz • GPU: GE8322 • Camera: 16 MP • Video: 1080P @ 60fps • Wi-Fi: 11ac; Bluetooth 5.0 • Modem: LTE Cat 4 • GNSS: L1 	 <p>SC680A</p> <ul style="list-style-type: none"> • QCM4290 ① • CPU: 4 + 4 Kryo260: 2.0/ 1.8 GHz • GPU: Adreno 506 • Camera: 25 MP • Video: 1080P @ 60fps • Wi-Fi: 11ac; Bluetooth 5.0 • Modem: LTE Cat 6 • GNSS: L1 + L5 	 <p>SC686A</p> <ul style="list-style-type: none"> • QCM4290 ① • CPU: 4+4 Kryo260; • 2.0/ 1.8 GHz • GPU: Adreno 506 • Camera: 25 MP • Video: 1080P @ 60fps • Wi-Fi: 11ac; Bluetooth 5.0 • Modem: LTE Cat 6 • GNSS: L1 + L5 	
<p>Entry Level</p>	 <p>SC200R</p> <ul style="list-style-type: none"> • QCM2150 ① • CPU: 4x A53/ 1.3 GHz • GPU: Adreno 308 • Camera: 13 MP • Video: 1080P @ 30fps • Wi-Fi: 11n; Bluetooth 4.2 • Modem: LTE Cat 4 • GNSS: L1 	 <p>SC200L</p> <ul style="list-style-type: none"> • SL8541E ② • CPU: 4x A53/ 1.4GHz • GPU: Mali-T820 • Camera: 8 MP • Video: 1080P @ 30fps • Wi-Fi: 11ac; Bluetooth 5.0 • Modem: LTE Cat 4 • GNSS: L1 	 <p>SC200E</p> <ul style="list-style-type: none"> • QCM2290 ① • CPU: 4x A53/ 2.0 GHz • GPU: Adreno 702 • Camera: 25 MP • Video: 1080P @ 30fps • Wi-Fi: 11ac; Bluetooth 5.0 • Modem: LTE Cat 4 • GNSS: L1 	 <p>SC20</p> <ul style="list-style-type: none"> • MSM8909 ① • CPU: 4x A7 1.1GHz • GPU: Adreno 304 • Camera: 8 MP • Video: 1080P @ 30fps • Wi-Fi: 11n; Bluetooth 4.2 • Modem: LTE Cat 4 • GNSS: L1 	 <p>SC206E</p> <ul style="list-style-type: none"> • QCM2290 ① • CPU: 4x A53/ 2.0 GHz • GPU: Adreno 702 • Camera: 25 MP • Video: 1080P @ 30fps • Wi-Fi: 11ac; Bluetooth 5.0 • Modem: LTE Cat 4 • GNSS: L1



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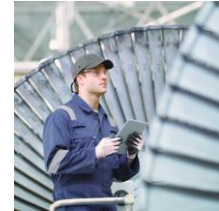
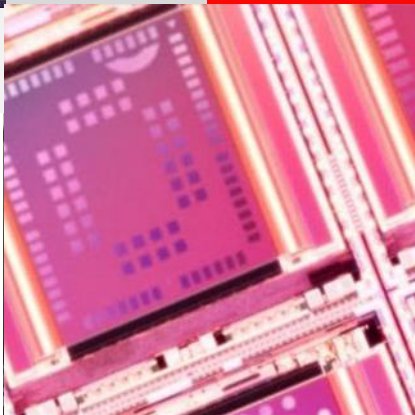
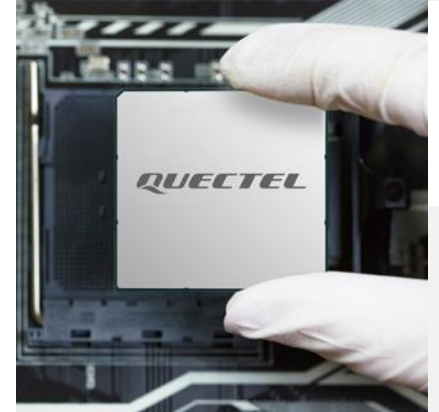
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SC686A Series Highlights

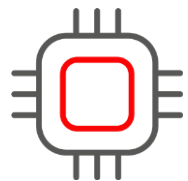


Multiple Variants:

- Multi-region variants with global certifications
- Multiple memory configuration



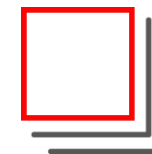
Linux OS:
Yocto Linux (Kernel 5.4)



Chipset platform: QCM4290.
Powerful system performance,
multimedia, LTE Cat 6, Wi-Fi
802.11ac, Bluetooth, GNSS L1+L5



Long life time:
Till the year of 2028



Compatible with SC600Y,
SC600T, SC606T and
SC680A series

SC686A Series Specifications



Variant		SC686A-EM	SC686A-NA	SC686A-WF
Region		EMEA/ Korea/ South Asia/ Latin America/ India/ Australia/ New Zealand/ South Africa	North America	Global
LTE	FDD Band	B1/ 2/ 3/ 4/ 5/ 7/ 8/ 20/ 28	B2/ 4/ 5/ 7/ 12/ 13/ 14/ 17/ 25/ 26/ 66/ 71	-
	TDD Band	B38/ 40/ 41	B41	-
UMTS	WCDMA Band	B1/ 2/ 4/ 5/ 8	-	-
GSM/ EDGE		Quad-band	-	-
GNSS		Supported	Supported	-
Wi-Fi/ Bluetooth Interface		Supported	Supported	Supported
Certification ^①		Carrier: Telstra Regulatory: GCF/ CE/ UKCA/ Anatel/ KC/ RCM	Carrier: Verizon/ AT&T/ T-Mobile Regulatory: GCF/ PTCRB/ FCC/ IC	Regulatory: CE/ UKCA/ KC/ NCC/ JATE/ TELEC/ RCM/ NBTC
Project Stage		Pre-ES	Developing	Developing

①: TBD.

SC686A Series Features and Interfaces



Key Features		Interfaces	
CPU	QCM4290, A customized 64-bit Arm v-8.0 compliant applications processor (Qualcomm® Kryo™ 260 CPU) Kryo 260 Gold: quad high-performance cores 2.0 GHz Kryo 260 Silver: quad low-power cores 1.8 GHz	LCM	4-lane MIPI_DSI; DSI D-PHY 1.2; Split link supported FHD+ (1080 × 2520) aspect ratio, up to 10 bpc QSEED4, 4 L, Q-SYNC, SVI, CABL, and FOSS
GPU	Qualcomm® Kryo™ GPU 610 at 950 MHz graphics processing unit	Camera	3 × ISP, (13 MP + 13 MP) or (25 MP + 5 MP) at 30 fps or (16 MP + 16 MP) @ 24 fps 3 groups of 4-lane MIPI_CSI, up to 2.1 Gbps/ lane Support 3 or 4 cameras, up to 25 MP with dual ISP
Video	Encode: • 1080p60 8 bit H.265 • 1080p60 8 bit H.264 Decode: • 1080p60 8 bit H.265, VP9 • 1080p60 8 bit H.264	Touch Panel	Capacitive touch panel, I2C controls
Memory	4 GB LPDDR4X + 64 GB eMMC	Audio	Analog channels: 3 inputs: MIC1, MIC2, MIC3 (including one noise-canceling MIC) 3 outputs: speaker, earpiece, headphone
OS	Yocto Linux (Kernel 5.4)	USB	× 1 USB 2.0/ 3.1 (Type-C)
Wi-Fi	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac/ ax-ready	(U)SIM	× 2 Support 1.8/ 2.95 V (U)SIM cards, with (U)SIM card detection function DSDS supported
Bluetooth	Bluetooth 2.1 EDR/ 3.0 HS/ 4.2 LE/ 5.1 LE	UART	× 3 Up to 4 Mbps, one of them supports hardware flow control
GNSS ①	• GPS/ BDS/ GLONASS/ Galileo/ NavIC/ QZSS/ SBAS • L1 + L5	SD Card	× 1 SD 3.0, 4-bit SDIO
Modem	3GPP Release 10 with selected Release 12 features	I2C/ SPI/ ADC/ GPIO/ PWRKEY	Supported
Battery Charge	Supported	Antenna	× 4 Main/ Rx-diversity/ GNSS/ Wi-Fi & Bluetooth

①: GNSS is not supported on SC686A-WF.

SC686A Series Timelines



2022							2023						
Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.

SC686A-EM

Project Schedule

Pre-ES

ES

CS

MP

Certification TBD

SC686A-NA

Project Schedule

Pre-ES

ES

CS

MP

Certification TBD

SC686A-WF

Project Schedule

Pre-ES

ES

CS

MP

Certification TBD

ES: Engineering samples ready. Basic functions are available for customers' simple demo purpose.

CS: Commercial samples ready. Stable hardware design and quite stable software design. New software features can be added upon request.

MP: Hardware and software ready for mass production. For certification status, please refer to the "certification schedule".



Smart Solution Introduction

Smart Module Portfolio

Specifications & Timelines

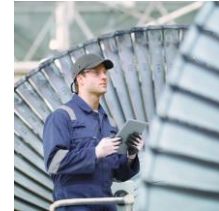
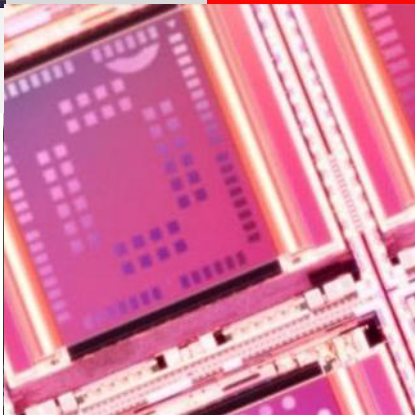
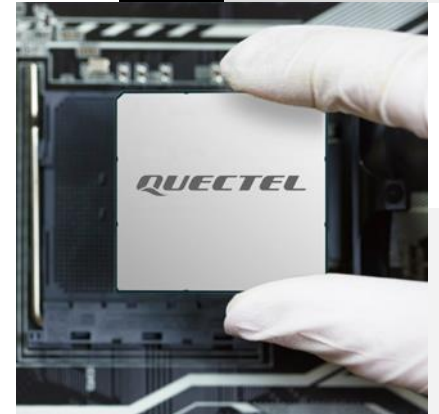
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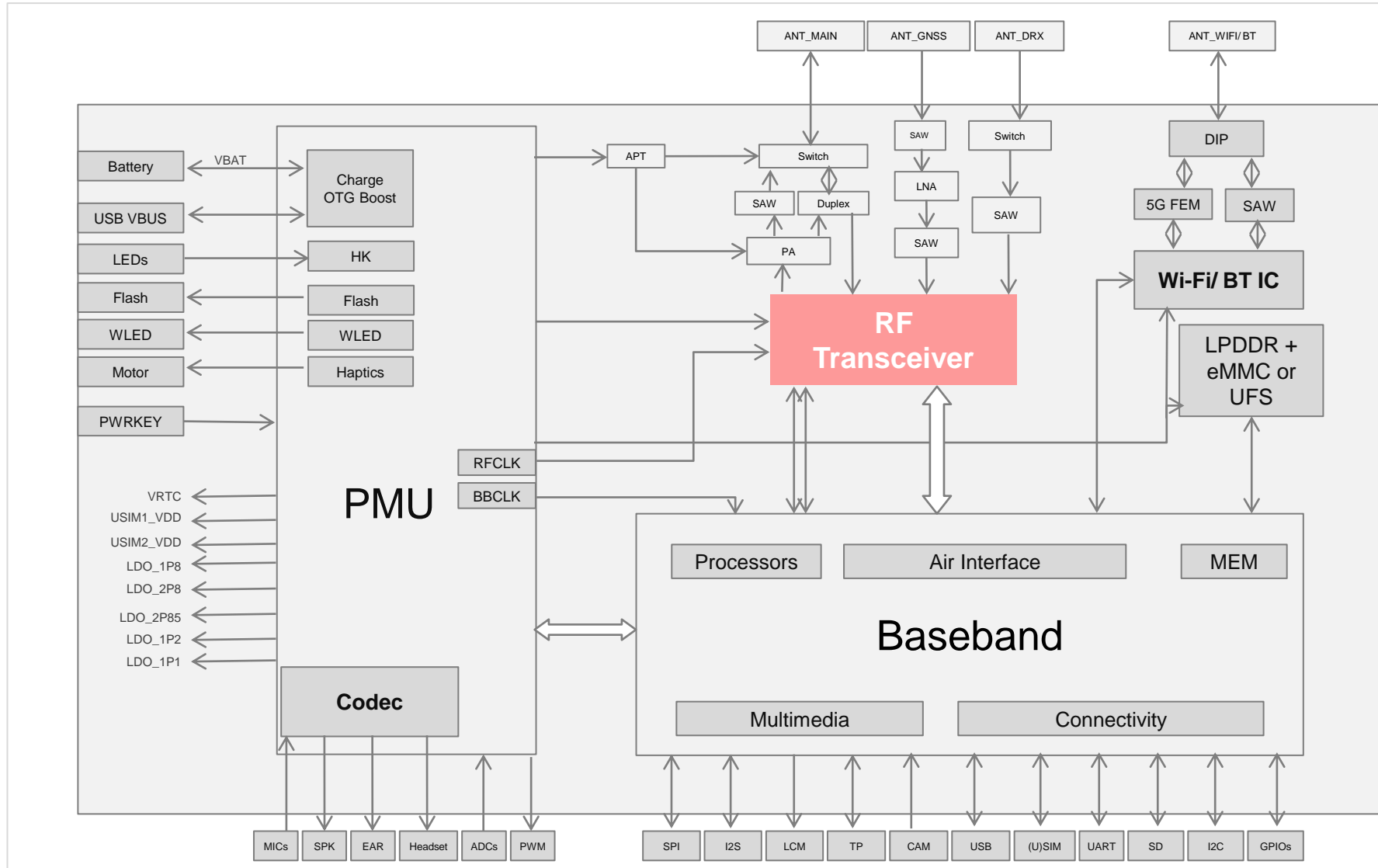
Customer Support

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Smart Module Hardware Block Diagram

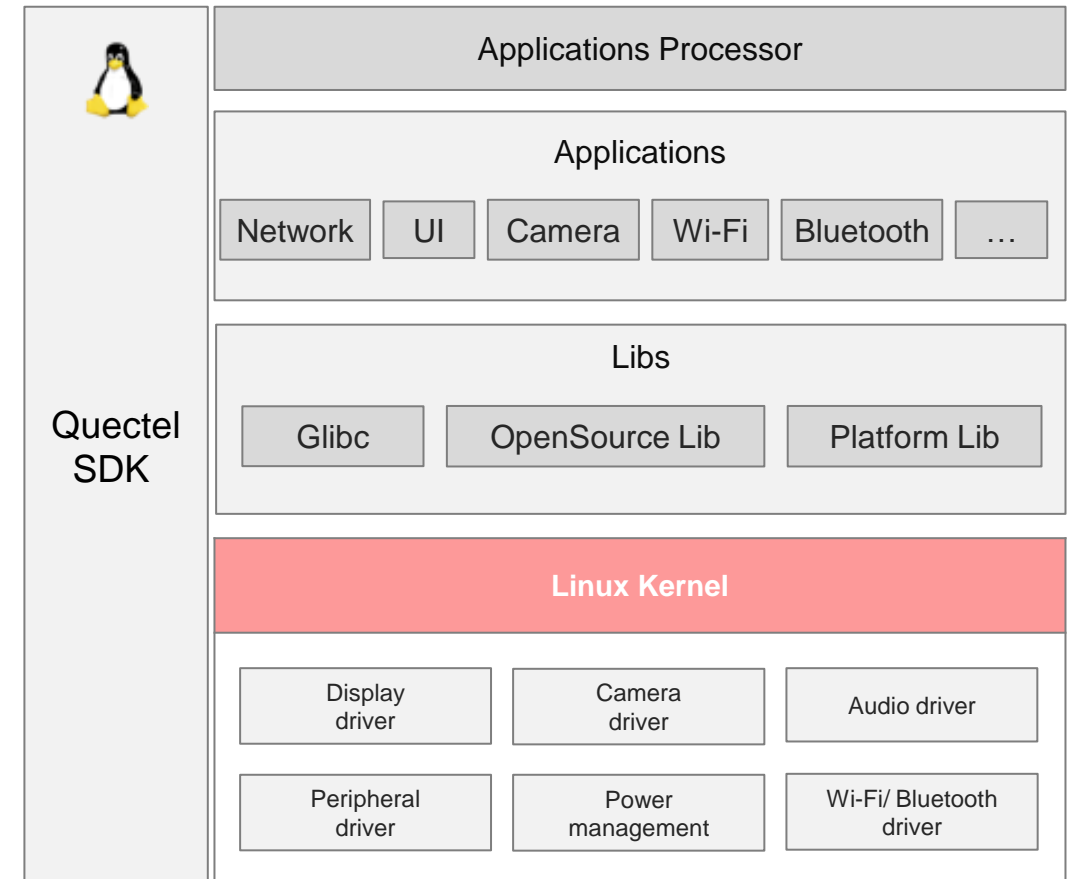
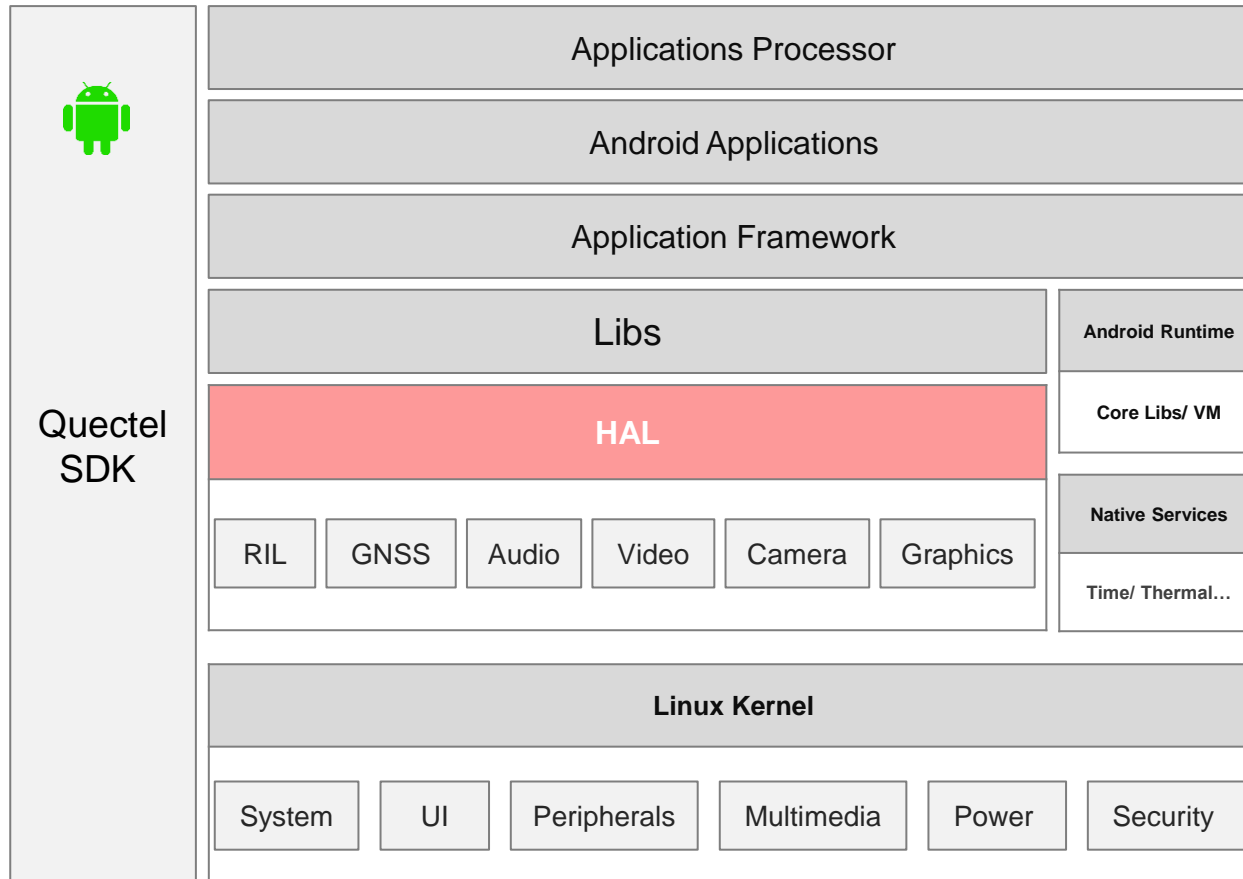


- Baseband: SoC with CPU, GPU, DSP, NPU processors, multimedia and other digital peripherals
- PMU: Provides power supply internally; some PMUs have codec inside
- RF Transceiver: Implements 2G/ 3G/ 4G/ 5G and GNSS functionalities
- Wi-Fi/ Bluetooth IC: Implements Wi-Fi/ Bluetooth functionalities
- LPDDR + eMMC or UFS: Internal DDR and storage

Smart Module SDK System Architecture



Quectel provides Android AOSP or Linux SDK which include libs and source codes to customers under NDA.

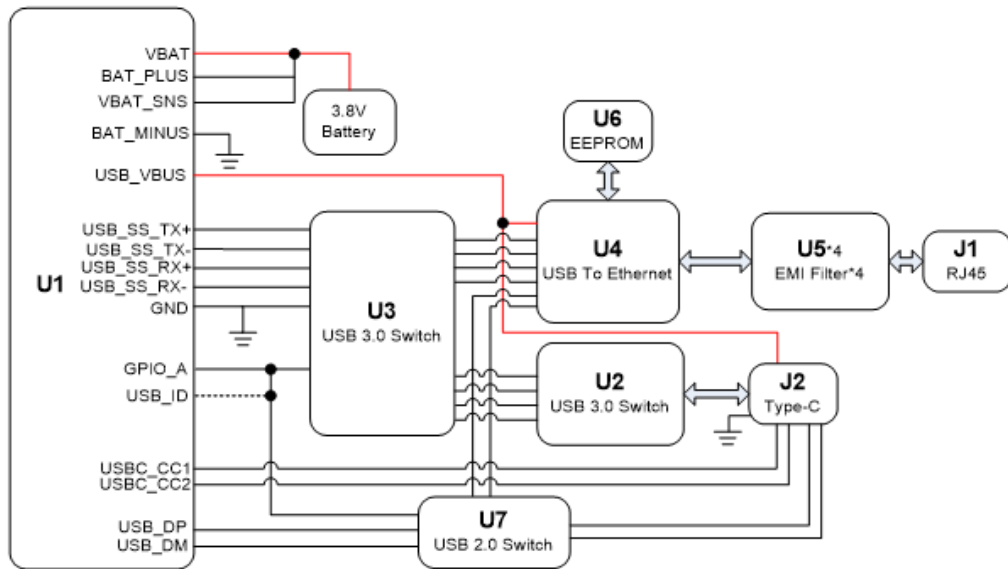


Extensive Function – USB to Ethernet

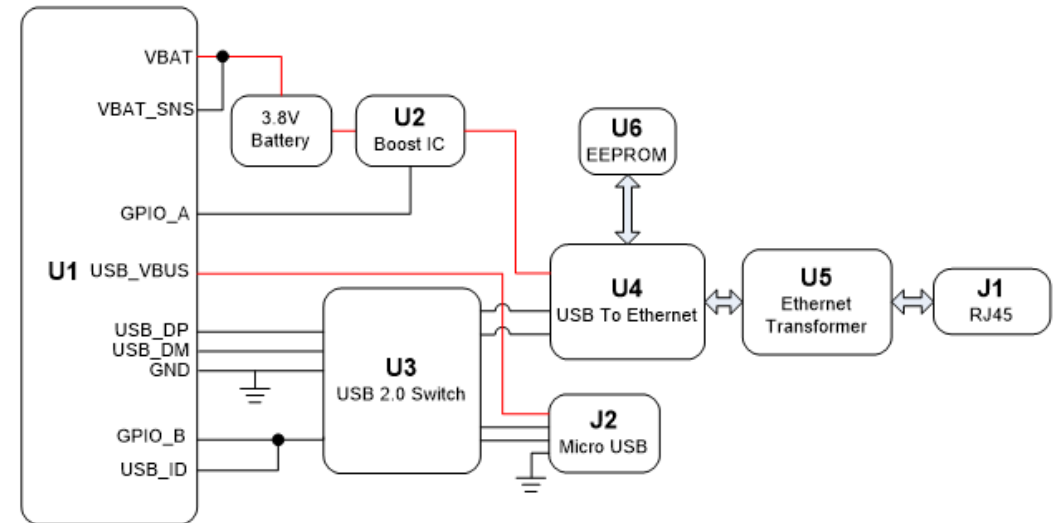


Smart modules have no Ethernet interface, while the USB can be converted to Ethernet when the smart modules work in Host mode. External conversion chipset is needed for the conversion.

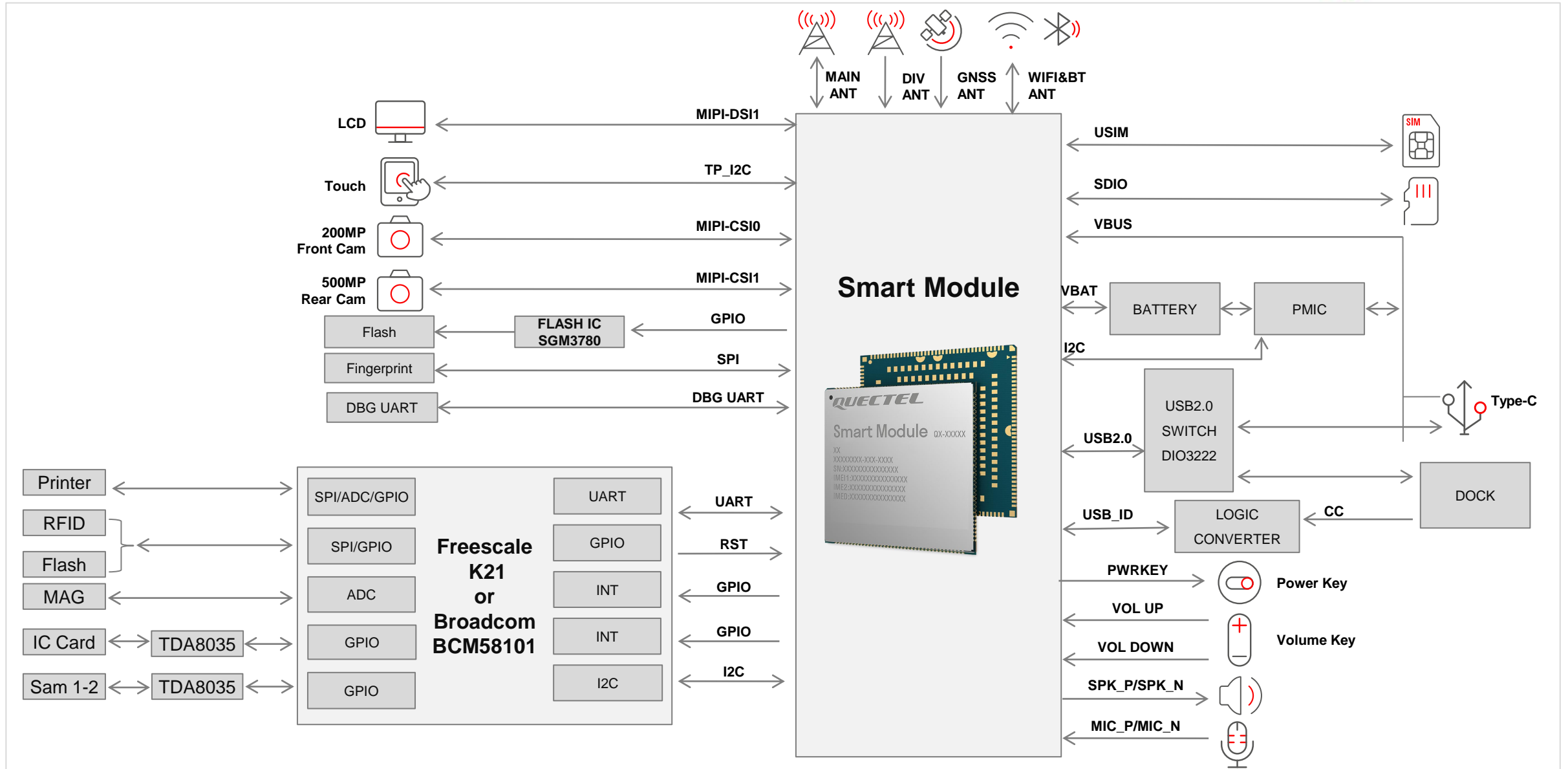
USB 3.0 to 10/ 100/ 1000M Ethernet



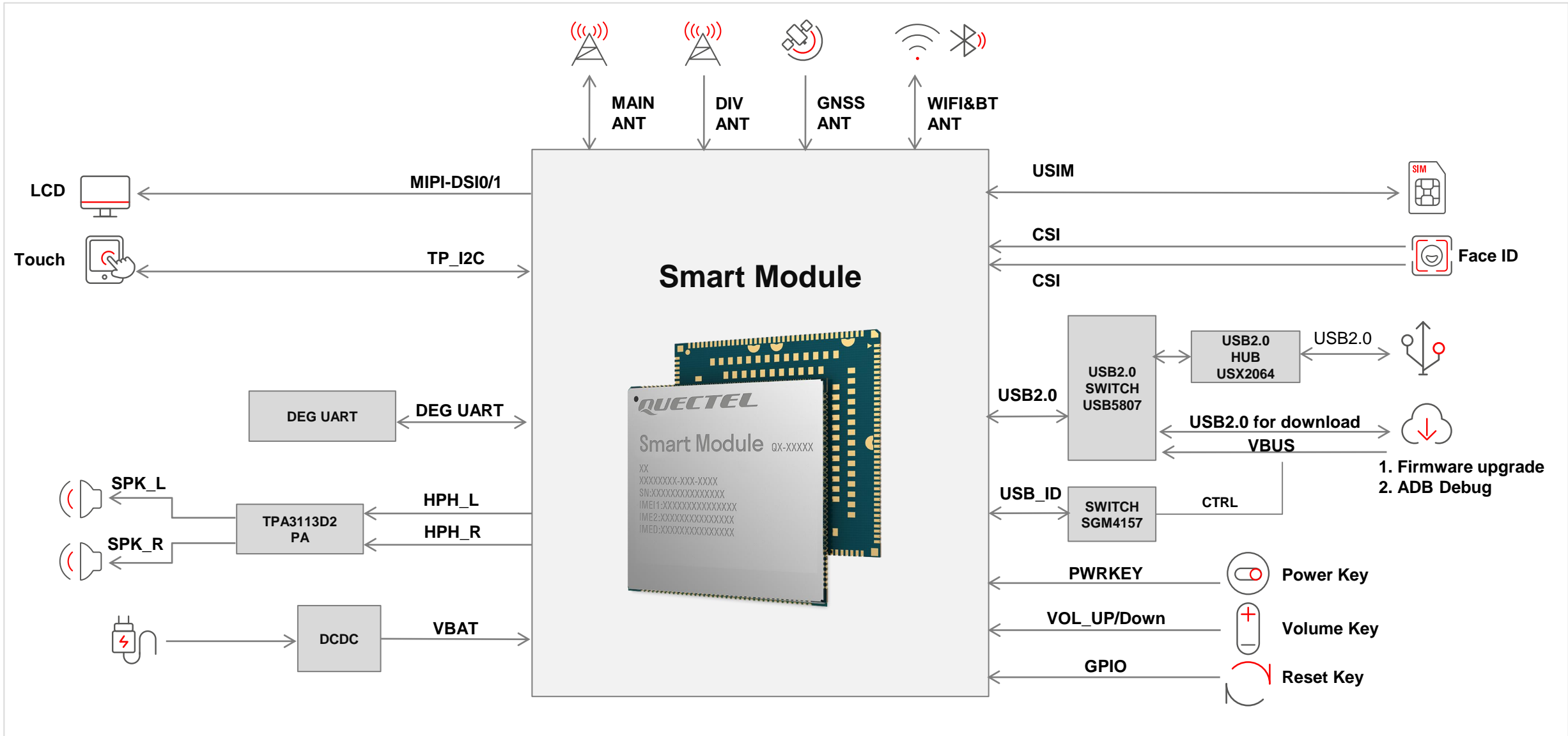
USB 2.0 to 10/ 100M Ethernet



Typical Solution – POS



Typical Solution – Access Control



Support Package



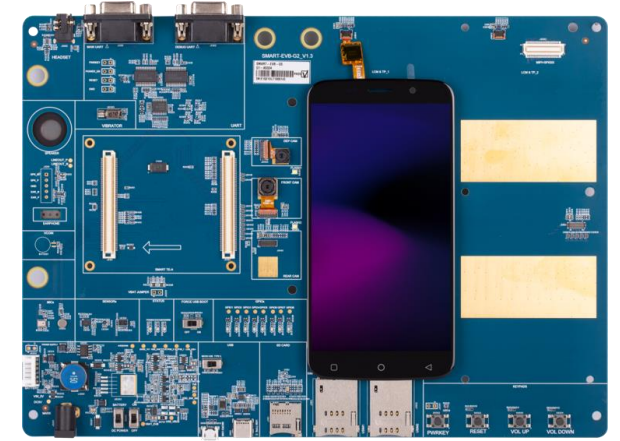
EVB Kits



SMARTEVB-INT-KIT: SC20



SMARTEVB-DL-INT-KIT: SC600/ SC606T/ SC66



SMARTEVBSL-INT-KIT: SC200R
SMARTEVBG5-INT-KIT: SC200E/ SC206E/ SC200K/ SC200L/
SC680A/ SC686A



SMART5GEVB-INT-KIT: SG560D



SA800UEVBKIT: SA800U/ SG865W



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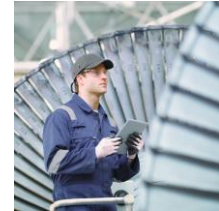
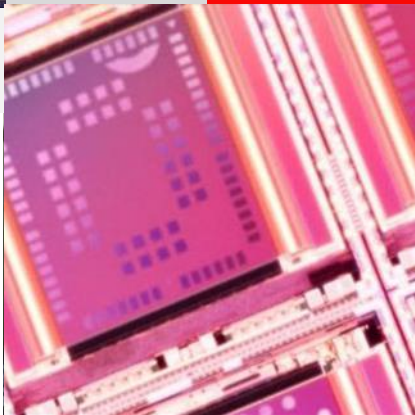
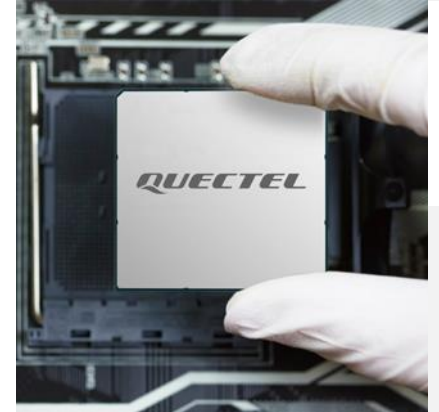
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Build a Smarter World



POS and Payment Terminal



Vending Machine



Electronic Cash Register and Kiosk



Configuration

- Magnetic strip cards, IC cards, contactless/ NFC, 1D & 2D codes reader
- Android
- Processor: Quad-Core or Octa-Core
- Memory: eMCP, 1 GB + 8 GB or higher
- Camera: 2 MP or higher
- Display: HD with touchscreen
- 5G/ 4G/ 3G/ Wi-Fi/ Bluetooth/ GNSS
- SAM, SIM Cards
- Audio
- USB ports

Recommended Smart Module



Industrial Handheld



Different Industrial Applications



Retail



Transportation



Manufacturing



Field Mobility



Warehouse Management



Hospitality

Configuration

- Android
- Processor: Quad-Core or Octa-Core CPU
- Memory: 2 GB + 16 GB or higher
- Camera: 20MP or higher pixel cameras
- Display: 5" HD with touch or higher
- 5G/ 4G/ 3G/ Wi-Fi/ Bluetooth/ GNSS
- RFID
- Scanner
- Audio
- Battery
- IP Sealing: IP68
- TUMBLE: Meet IEC tumble spec
- Drop: Multiple 1.8 m drops to concrete per MIL STD 810H

Recommended Smart Module



Vehicle Aftermarket — Infotainment & DashCam



Smart modules provide flexible, reliable, safe, and secure integration for In-Vehicle Infotainment and DashCam products.



Supported functionalities



360 reversing camera



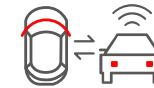
Voice recognition



Real time navigation



App store



Multi-view



CarPlay

Configuration

- Android
- Processor: Quad-Core or Octa-Core CPU
- Memory: 2 GB + 16 GB or higher
- Camera: AHD 2M or higher pixel reversing cameras
- Display: 10" HD with touch
- 5G/ 4G/ 3G/ Wi-Fi/ Bluetooth/ GNSS
- DSP audio, speaker power amplifier, Mic
- 360 cameras input
- CAN bus protocol interface
- USB ports spec

Recommended Smart Module



Vehicle Aftermarket — 2-Wheeler, Small Electric Car



Supported functionalities



Real time navigation



Music



Voice recognition



Call



Configuration

- Android
- Processor: Quad-Core or Octa-Core CPU
- Memory: 2 GB + 16 GB or higher
- Display: 7" HD with touch
- 4G/ Wi-Fi/ Bluetooth/ GNSS
- Speaker, Mic
- USB ports
- Mileage: 80–100 km
- Battery: 48 V or higher

Recommended Smart Module



Livestreaming and Video Conferences



Live shopping and B2B live broadcast have become the new normal of world's e-commerce development. Video conference system enables people to join the meeting remotely just the same as the off-line meeting. Smart modules provide the premium system performance and are very suitable to be the platforms to design these types of products.



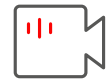
Supported functionalities



Multi-function



Mic



Virtual background



Multi app



Multi shot switching

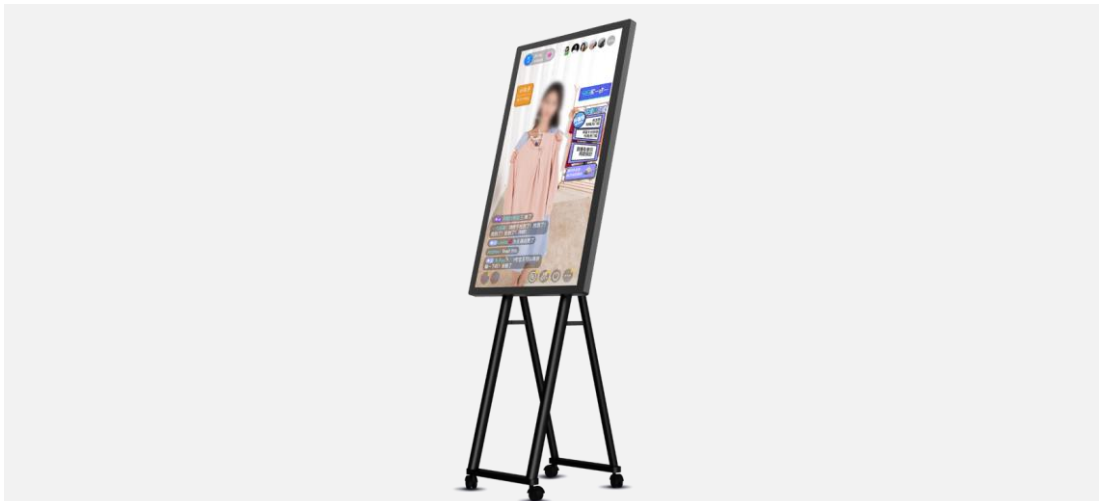
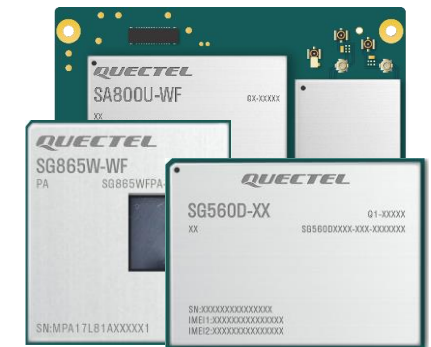


App store

Configuration

- Android
- Processor: Octa-Core CPU
- Memory: 8 GB + 256 GB or higher
- Camera: 21M or higher pixels
- Video: 4K,1080p
- TOPS: 3.5–12.5 TOPS
- Display: 10",32/43" with touch
- 4G/ Wi-Fi/ Bluetooth/ GNSS
- Speaker, Mic
- Remote control

Recommended Smart Module





Application Scenarios



Reception



Airport guider



Bank guider



Lawn mower



Hospital guider



Hotel reception



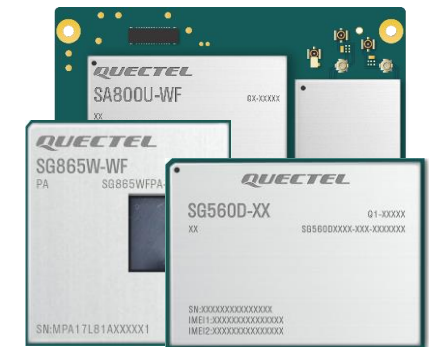
Logistics



Configuration

- Android or Linux
- Processor: Octa-Core CPU
- TOPS: 3.5–12.5 TOPS
- Memory: 8 GB + 256 GB or higher
- Camera: 21M or higher pixels
- Video: 4K, 1080p, 720p
- Display: 10" or larger with touch
- 4G/ Wi-Fi/ Bluetooth/ GNSS
- Speaker, Mic
- Battery
- Machinery parts

Recommended Smart Module





Augmented Reality

Augmented reality overlays computer-generated images on the view of the natural world with the camera on smart phones, tablets, or other mobile devices. Quectel works hard to bring the vision of lightweight and stylish AR glasses to life.

Virtual Reality

Through cutting-edge graphics, best-in-class hardware, and artistically rendering experiences, VR lets us explore new worlds, defy obstacles. VR has enormous potential to transform how we play, work, learn, communicate, and experience the world around us.

3D Scanner

3D measurement scanners can measure cross-sections, thickness, and perform GD&T measurements in a single scan.



Configuration

- Android or Linux
- Memory: 8 GB + 64 GB or higher
- TOPS: 12.5 TOPS

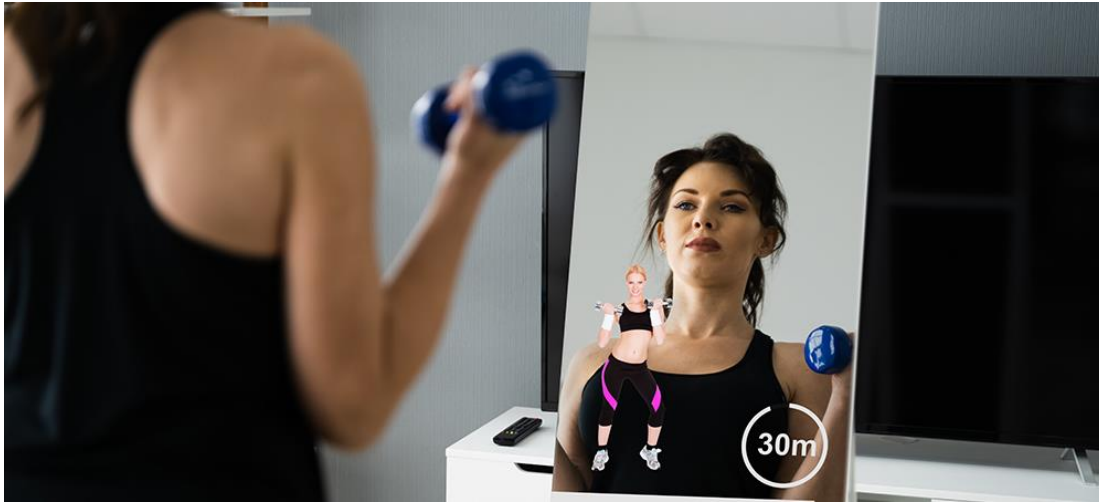
Recommended Smart Module



Intelligent Fitness Mirror



Intelligent fitness mirror is the product of home fitness needs. It can play fitness course videos and the virtual coaches can correct users' fitness movements in real time.



Installation method and supported functionalities



Floor standing



Wall mount



Full HD IPS



Touch



Infrared sensor

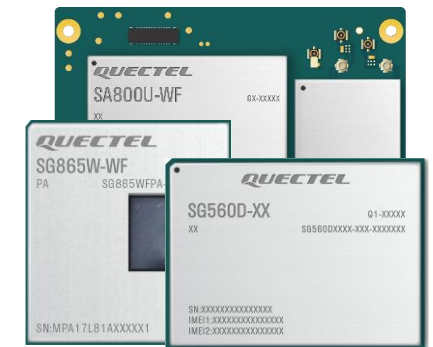


Camera

Configuration

- Android
- Processor: Octa-Core CPU
- Memory: 4 GB + 64 GB or higher
- Camera: 21M or higher pixels
- Video: 4K,1080p
- TOPS: 3.5–12.5 TOPS
- Display: 43" or 55" with touch
- Wi-Fi/ Bluetooth
- Speaker, Mic
- Adapter
- Machinery parts

Recommended Smart Module



ARM Based SoC Array Server



Mobile applications mushroom and the demands for end-cloud architecture increase with the rapid development of mobile Internet. The ARM based SoC array server, instead of the traditional x86 architecture, can be well compatible with mobile applications since most mobile applications are developed based on the ARM architecture.



Application Scenarios



Cloud game



Distributed computing



Cloud mobile phone



Distributed storage



Edge computing



Operation management

Configuration

- Android or Linux
- ARM Based SoC Array Server
- Memory: 8 GB + 64 GB or higher
- Blade quantity: 16
- Net work: 1 Gbps or higher
- TOPS: 12.5 TOPS
- Power supply: AC 100–240 V
- Heat dissipation: Fan or Sink

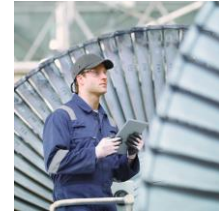
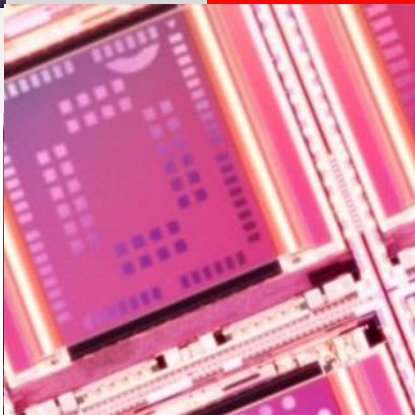
Recommended Smart Module





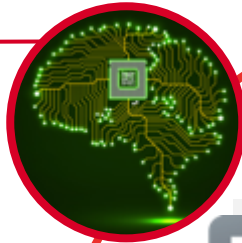
Smart Solution Introduction
Smart Module Portfolio
Specifications & Timelines
Enhancements
Typical Applications
Customer Support
Appendix

Build a Smarter World



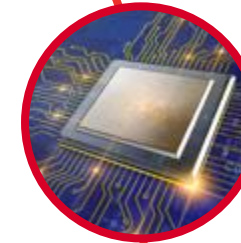
1. System Evaluation

- Analyzing customer requirements
- Recommending the right module for the customer
- Evaluating antenna placement
- Designing antennas



2. Design In

- Recommending referenced hardware designs
- Checking schematics and layouts
- Providing software design support



3. Prototype

- Providing design validation testing
- Recommending suppliers

5. Mass Production

- Providing assembly and testing guidelines
- Providing after-sales services



4. Testing Service

- RF testing
- Power consumption testing
- Audio testing
- Reliability & environmental testing
- ESD testing
- Certification testing
- Antenna debugging



Smart Solution Introduction

Smart Module Portfolio

Specifications & Timelines

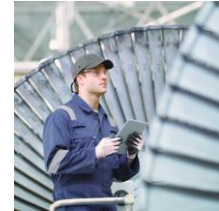
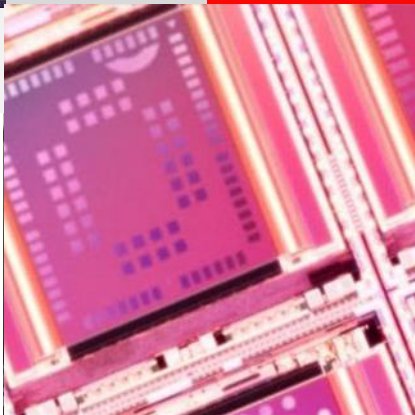
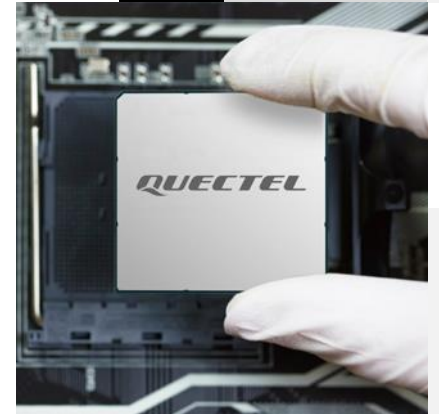
Enhancements

Typical Applications

Customer Support

Appendix

Build a Smarter World



Appendix - Entry Level Smart Module Comparison



	Entry Level				
Item	SC20 Series	SC200R Series	SC200E Series	SC206E Series	SC200L Series
Dimensions	40.5 × 40.5 × 2.8 mm	40.5 × 40.5 × 2.85 mm	40.5 × 40.5 × 2.85 mm	40.5 × 40.5 × 2.85 mm	40.5 × 40.5 × 2.85 mm
Form-factor	LCC + LGA	LCC + LGA	LCC + LGA	LCC + LGA	LCC + LGA
SKUs	-CE/ -E/ -A/ -AU/ -J/ -W/ -EL/ -EX/ -AL/ -AX/ -WL	-CE/ -EM/ -NA/ -WF/ -JP ^①	-CE/ -EM/ -NA/ -WF	-EM/ -NA/ -WF	-CE/ -EU/ -AU/ -WF
Memory	1 GB + 8 GB/ 2 GB + 16 GB	1 GB + 8 GB/ 2 GB +16 GB	2 GB + 32 GB	2 GB + 32 GB	1 GB + 8 GB/ 2 GB +16 GB
Platform	MSM8909	QCM2150	QCM2290	QCM2290	SL8541E
Process	28 nm	28 nm	11 nm	11 nm	28 nm
Modem	LTE Cat 4	LTE Cat 4	LTE Cat 4	LTE Cat 4	LTE Cat 4
OS	Android 7.1/ 8.1/ Linux ^①	Android 10	Android 12/ 13 ^② / 14 ^②	Yocto Linux	Android 10
CPU	4 × A7 @ 1.1 GHz	4 × A53 @ 1.3 GHz	4 × A53 @ 2.0 GHz	4 × A53 @ 2.0 GHz	4 × A53 @ 1.4 GHz
GPU	Adreno 304 @ 409.6 MHz	Adreno 308 @ 485 MHz	Adreno 702 @ 845 MHz	Adreno 702 @ 845 MHz	Mali-T820 MP1 @ 680 MHz
Display	1 × MIPI_DSI HD (1280 × 720)	1 × MIPI_DSI HD+ (1440 × 720)	1 × MIPI_DSI HD+ (1680 × 720)	1 × MIPI_DSI HD+ (1680 × 720)	1 × MIPI_DSI HD+ (1440 × 720)
Camera	1 × ISP Max. 8 MP @ 1 × ISP	2 × ISP 8 MP @ 1 × ISP + 8 MP @ 1 × ISP Max. 13 MP @ 2 × ISP	2 × ISP 13 MP @ 1 × ISP + 13 MP @ 1 × ISP Max. 25 MP @ 2 × ISP	2 × ISP 13 MP @ 1 × ISP + 13 MP @ 1 × ISP Max. 25 MP @ 2 × ISP	1 × ISP Max. 8 MP + 2 MP
Video	Encode: 720p30, H.264 Decode: 1080p30, H.264, H.265	Encode: 1080p30, H.264 Decode: 1080p30, H.264, H.265	Encode/ Decode: 1080p30, H.264, H.265	Encode/ Decode: 1080p30, H.264, H.265	Encode: 1080p30, H.264 Decode: 1080p30, H.264, H.265
Bluetooth	Bluetooth 4.2/ BLE	Bluetooth 4.2/ BLE	Bluetooth 5.0/ BLE	Bluetooth 5.0/ BLE	Bluetooth 5.0/ BLE
Wi-Fi	2.4 & 5 GHz, 802.11a/ b/ g/ n	2.4 & 5 GHz, 802.11a/ b/ g/ n	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac
GNSS	GPS/ GLONASS/ BDS	GPS/ GLONASS/ BDS/ Galileo	GPS/ GLONASS/ BDS/ Galileo/ QZSS/ SBAS/ NavIC (supported by SC200E-NA)	GPS, GLONASS, BDS, Galileo, QZSS, SBAS, NavIC (supported by SC206E-NA)	GPS/ GLONASS/ BDS
USB	1 × USB 2.0	1 × USB 2.0	1 × USB 2.0/ 3.1 (Type-C)	1 × USB 2.0/ 3.1 (Type-C)	2 × USB 2.0
Lifetime	2025	2025	2028	2028	2025
Antutu(V6.3.3) benchmark	21,036 (AOS 7.1, 1+8GB) / 26,945 (AOS 7.1, 2+16GB)	35,115 (AOS10, 1+8GB) 35,940 (AOS10, 2+16GB)	56,318 (AOS11, 2+32GB)	/	35,101 (AOS10, 1+8GB) 35,195 (AOS10, 2+16GB)

Appendix - Medium Level Smart Module Comparison



	Medium Level			
Item	SC600Y Series	SC680A Series	SC686A Series	SC200K Series
Dimensions	43.0 × 44.0 × 2.85 mm	43.0 × 44.0 × 2.85 mm	43.0 × 44.0 × 2.85mm	40.5 × 40.5 × 2.85 mm
Form-factor	LCC + LGA	LCC + LGA	LCC + LGA	LCC + LGA
SKUs	-EM/ -NA/ -JP/ -WF	-EM/ -NA/ -WF/ -JP ^①	-EM/ -NA/ -WF	-CE/ -WF/ -EU ^①
Memory	2 GB + 16 GB	4 GB + 64 GB	4 GB + 64 GB	2 GB + 32 GB/ 3 GB + 32 GB/ 4 GB + 64 GB
Platform	SDM450	QCM4290	QCM4290	UIS8581E
Process	14 nm	11 nm	11 nm	28 nm
Modem	LTE Cat 6	LTE Cat 6	LTE Cat 6	LTE Cat 4
OS	Android 9/ 10	Android 12/ 13/ 14 ^①	Yocto Linux	Android 10
CPU	8 × A53 @ 1.8 GHz	4 × Kryo Gold 260 @ 2.0 GHz + 4 × Kryo Silver 260 @ 1.8 GHz	4 × Kryo Gold 260 @ 2.0 GHz + 4 × Kryo Silver 260 @ 1.8 GHz	4 × A55 @ 1.6 GHz
GPU	Adreno 506 @ 600 MHz	Adreno 610 @ 950 MHz	Adreno 610 @ 950 MHz	GE8322 @ 550 MHz
Display	2 × MIPI_DSI WUXGA (1920 × 1200) FHD (1920 × 1080)	1 × MIPI_DSI FHD+ (1080 × 2520)	1 × MIPI_DSI FHD+ (1080 × 2520)	1 × MIPI_DSI FHD+ (2160 × 1080)
Camera	2 × ISP 13 MP @ 1 × ISP + 13 MP @ 1 × ISP Max. 21 MP @ 2 × ISP	3 × ISP 13 MP @ 1 × ISP + 13 MP @ 1 × ISP Max. 25 MP @ 2 × ISP	3 × ISP 13 MP @ 1 × ISP + 13 MP @ 1 × ISP Max. 25 MP @ 2 × ISP	2 × ISP 13 MP @ 1 × ISP + 5 MP @ 1 × ISP Max. 16 MP @ 2 × ISP
Video	Encode/ Decode: 1080p60, H.264, H.265	Encode/ Decode: 1080p60, H.264, H.265	Encode/ Decode: 1080p60, H.264, H.265	Encode/ Decode: 1080p30, H.264, H.265
Bluetooth	Bluetooth 4.2/ BLE	Bluetooth 5.1/ BLE	Bluetooth 5.1/ BLE	Bluetooth 5.0/ BLE
Wi-Fi	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac/ ax-ready	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac/ ax-ready	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac
GNSS	GPS/ GLONASS/ BDS/ Galileo	GPS/ GLONASS/ BDS/ Galileo/ NavIC/ QZSS/ SBAS	GPS, GLONASS, BDS, Galileo, NavIC, QZSS, SBAS	GPS/ GLONASS/ BDS
USB	1 × USB 2.0/ 3.0 (Type-C)	1 × USB 2.0/ 3.1 (Type-C)	1 × USB 2.0/ 3.1 (Type-C)	2 × USB 2.0
Lifetime	2025	2028	2028	2025
Antutu(V7.2.8) benchmark	72,427 (AOS9, 2+16GB) 74,216 (AOS10, 2+16GB)	141,064 (AOS12, 4+64GB)	/	99,553 (AOS10, 2+32GB, tested with Antutu V8.4.6, about equivalent to 76,861 with Antutu V7.2.8)

Appendix - High Level Smart Module Comparison



Item	High Level			
	SC600T Series	SC606T Series	SC66 Series	SG560D Series
Dimensions	43.0 × 44.0 × 2.85 mm	43.0 × 44.0 × 2.85 mm	43.0 × 44.0 × 2.85 mm	42.5 × 58.5 × 2.95 mm
Form-factor	LCC + LGA	LCC + LGA	LCC + LGA	LGA
SKUs	-EM/ -NA/ -JP/ -WF	-EM/ -NA/ -JP ^① / -WF	-CE/ -E/ -A/ -J/ -MW	-CN/ -EU/ -NA ^① / -WF ^①
Memory	2 GB + 16 GB	2 GB + 16 GB	3 GB + 32 GB/ 4 GB + 64 GB	4 GB + 64 GB
Platform	MSM8953	MSM8953	SDM660	QCM6490
Process	14 nm	14 nm	14 nm	6 nm
Modem	LTE Cat 6	LTE Cat 6	LTE Cat 6	5G & LTE Cat 18
OS	Android 9/ 10	Yocto Linux	Android 9/ 10	Android 12/ 13/ 14/ 15
CPU	8 × A53 @ 2.0 GHz	8 × A53 @ 2.0 GHz	4 × Kryo Gold 260 @ 2.2 GHz + 4 × Kryo Silver 260 @ 1.8 GHz	1 × Kryo Gold Plus @ 2.7 GHz + 3 × Kryo Gold @ 2.4 GHz + 4 × Kryo Silver @ 1.9 GHz
GPU	Adreno 506 @ 650 MHz	Adreno 506 @ 650 MHz	Adreno 512 @ 650 MHz	Adreno 643 @ 812 MHz
Display	2 × MIPI_DSI, WUXGA (1920 × 1200) FHD (1920 × 1080)	2 × MIPI_DSI, WUXGA (1920 × 1200) FHD (1920 × 1080)	2 × MIPI_DSI, WQXGA (2560 × 1600) WQXGA (2560 × 1600)	MIPI: 1200 × 2520 @ 144 fps DP: 4K (3840 × 2160) @ 60 fps Wi-Fi: 4K @ 60fps
Camera	2 × ISP, 13 MP @ 1 × ISP + 13 MP @ 1 × ISP Max. 24 MP @ 2 × ISP	2 × ISP, 13 MP @ 1 × ISP + 13 MP @ 1 × ISP, Max. 24 MP @ 2 × ISP	2 × ISP, 16 MP @ 1 × ISP + 16 MP @ 1 × ISP Max. 24 MP @ 2 × ISP	4 × 4-lane MIPI_CSI, Supports up to 2.5 Gbps/ lane; 3 × ISP, 3 × 27 MP @ 24 fps; or 3 × 22MP @ 30 fps ; or 36 MP + 27 MP @ 24 fps; or 36MP + 22MP @ 30 fps; or Max. 1 × 64 MP @ 30 fps
Video	Encode/ Decode: 4K30, 1080p60, H.264, H.265	Encode/ Decode: 4K30, 1080p60, H.264, H.265	Encode/ Decode: 4K30, 1080p60, H.264, H.265	Encode: 4K (H.264/ H.265) @ 30 fps Decode: 4K (H.264/ H.265/ VP9) @ 30 fps
Bluetooth	Bluetooth 4.2/ BLE	Bluetooth 4.2/ BLE	Bluetooth 5.0/ BLE	Bluetooth 5.2
Wi-Fi	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac	2.4 & 5 GHz, 2 × 2 MIMO 802.11a/ b/ g/ n/ ac	2.4 & 5 & 6 GHz, 2 × 2 MU-MIMO 802.11a/ b/ g/ n/ ac/ ax, Wi-Fi 6E
GNSS	GPS/ GLONASS/ BDS/ Galileo	GPS/ GLONASS/ BDS/ Galileo	GPS/ GLONASS/ BDS/ Galileo/ QZSS/ SBAS	GPS/ GLONASS/ BDS/ NavIC/ Galileo/ QZSS/ SBAS
USB	1 × USB 2.0/ 3.0 (Type-C)	1 × USB 2.0/ 3.0 (Type-C)	1 × USB 3.1 (DP over Type-C) + 1 × USB 2.0	1 × USB 3.1 (DP over Type-C) + 1 × USB 2.0
PCIe	-	-	-	1 × 2-lane PCIe Gen 3
Lifetime	2025	2025	2025	2028
Antutu(V7.2.8) benchmark	80,712 (AOS9, 2+16GB) 82,273 (AOS10, 2+16GB)	/	141,958 (AOS10, 3+32GB) 142,754 (AOS10, 4+64GB)	547,276 (AOS12, 4+64GB, tested with Antutu V9.3.5, about equivalent to 398,155 with Antutu V7.2.8)

Appendix - Premium Level Smart Module Comparison



Item	Premium Level	
	SA800U-WF	SG865W-WF
Dimensions	37.0 × 60.0 × 6.55 mm	42.0 × 46.0 × 2.95 mm
Form-factor	B2B Connector	LGA
SKUs	-WF	-WF
Memory	4 GB + 64 GB/ 8 GB + 256 GB	8 GB + 64 GB/ 12 GB + 256 GB
Platform	SDA845	QCS8250
Process	10 nm	7 nm
Modem	Wi-Fi/ Bluetooth only	Wi-Fi/ Bluetooth only
OS	Android 9/ 10	Android 10
CPU	4 × Kryo 385 @ 2.649 GHz + 4 × Kryo 385 @ 1.766 GHz	1 × Kryo 585 Gold prime @ 2.842 GHz + 3 × Kryo 585 Gold @ 2.419 GHz + 4 × Kryo 585 Silver @ 1.805 GHz
GPU	Adreno 630 @ 710 MHz	Adreno 650 @ 587 MHz
NPU	-	NPU230
Display	Adreno DPU 795 2 × MIPI_DSI + 1 × DP (SST Mode), 4K (3840 × 2400)	Adreno DPU 995 2 × MIPI_DSI + 1 × DP (MST Mode), 4K (5040 × 2160)
Camera	2 × ISP + 1 × Lite ISP 16 MP @ 1 × ISP + 16 MP @ 1 × ISP Max. 32 MP @ 2 × ISP	2 × ISP + 2 × Lite ISP 25 MP @ 1 × ISP + 25 MP @ 1 × ISP Max. 64 MP @ 2 × ISP
Video	Encode/ Decode: 4K60, H.264, H.265	Encode: 4K120/ 8K30, H.264, H.265, VP8, VP9 Decode: 4K240/ 8K60, H.264, H.265, VP8
Bluetooth	Bluetooth 5.0/ BLE	Bluetooth 5.1/ BLE
Wi-Fi	2.4 & 5 GHz, 2 × 2 MIMO, 802.11a/ b/ g/ n/ ac	2.4 & 5 GHz, 2 × 2 MIMO, 802.11a/ b/ g/ n/ ac/ ax, Wi-Fi 6
GNSS	-	-
USB	1 × USB 3.1 (DP over Type-C) + 1 × USB 3.1	1 × USB 3.1 (DP over type-C) + 1 × USB 3.1
PCIe	1 × 1-lane PCIe Gen 2 + 1 × 1-lane PCIe Gen 3	2 × 2-lane PCIe Gen 3
Lifetime	2025	2025



We are a global IoT solutions provider, backed by outstanding support and services, to deliver a smarter world.

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