

# Quectel Smart Module

## Product Overview

February, 2020

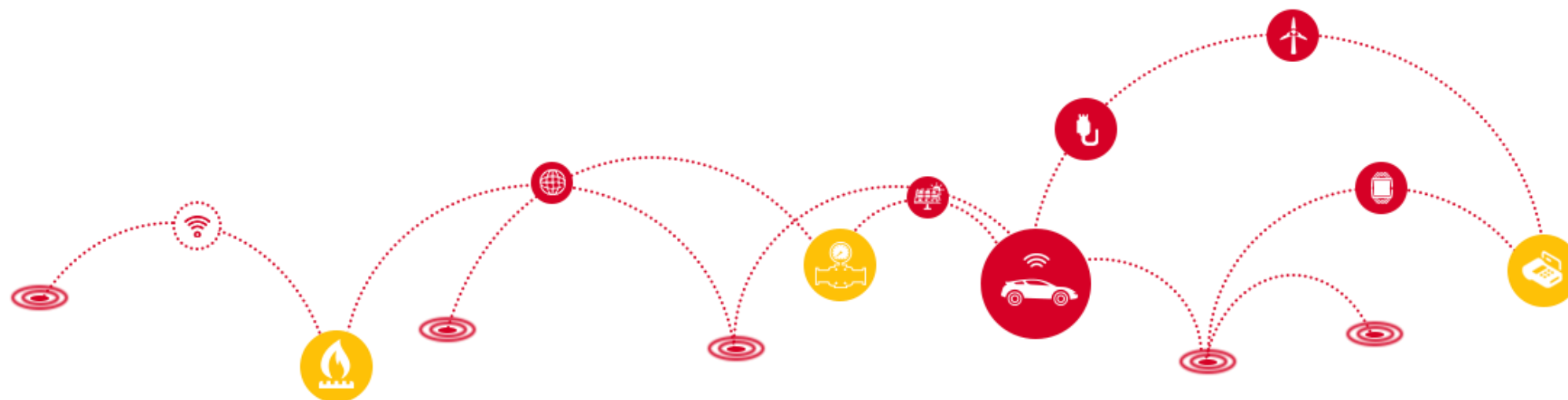
# Smart Solution Overview

Roadmap

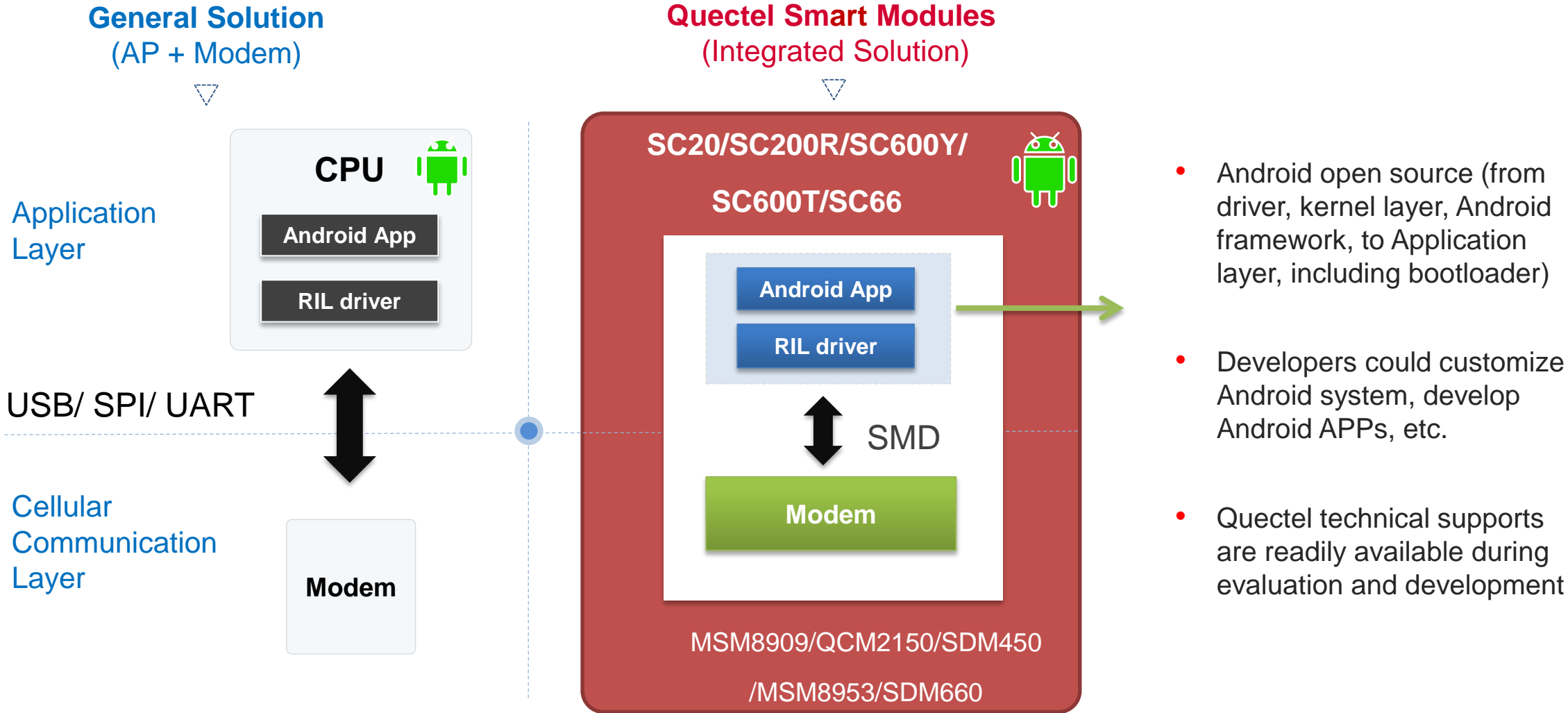
Specifications

Applications

Customer Support



# Smart Solution Overview

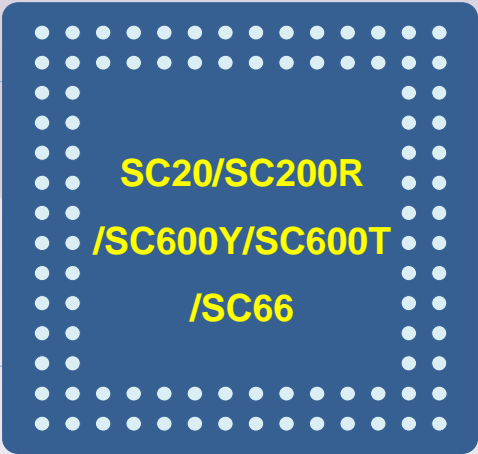


- Android open source (from driver, kernel layer, Android framework, to Application layer, including bootloader)
- Developers could customize Android system, develop Android APPs, etc.
- Quectel technical supports are readily available during evaluation and development

# Quectel Smart Solution Advantages



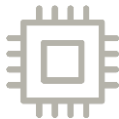
## Open Android



Strong Customer Support



Qualcomm SoC  
Android Platform



No Need for External CPU

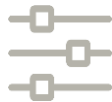
Various Multimedia Functions:  
LCD/ Audio/ Camera/ Video



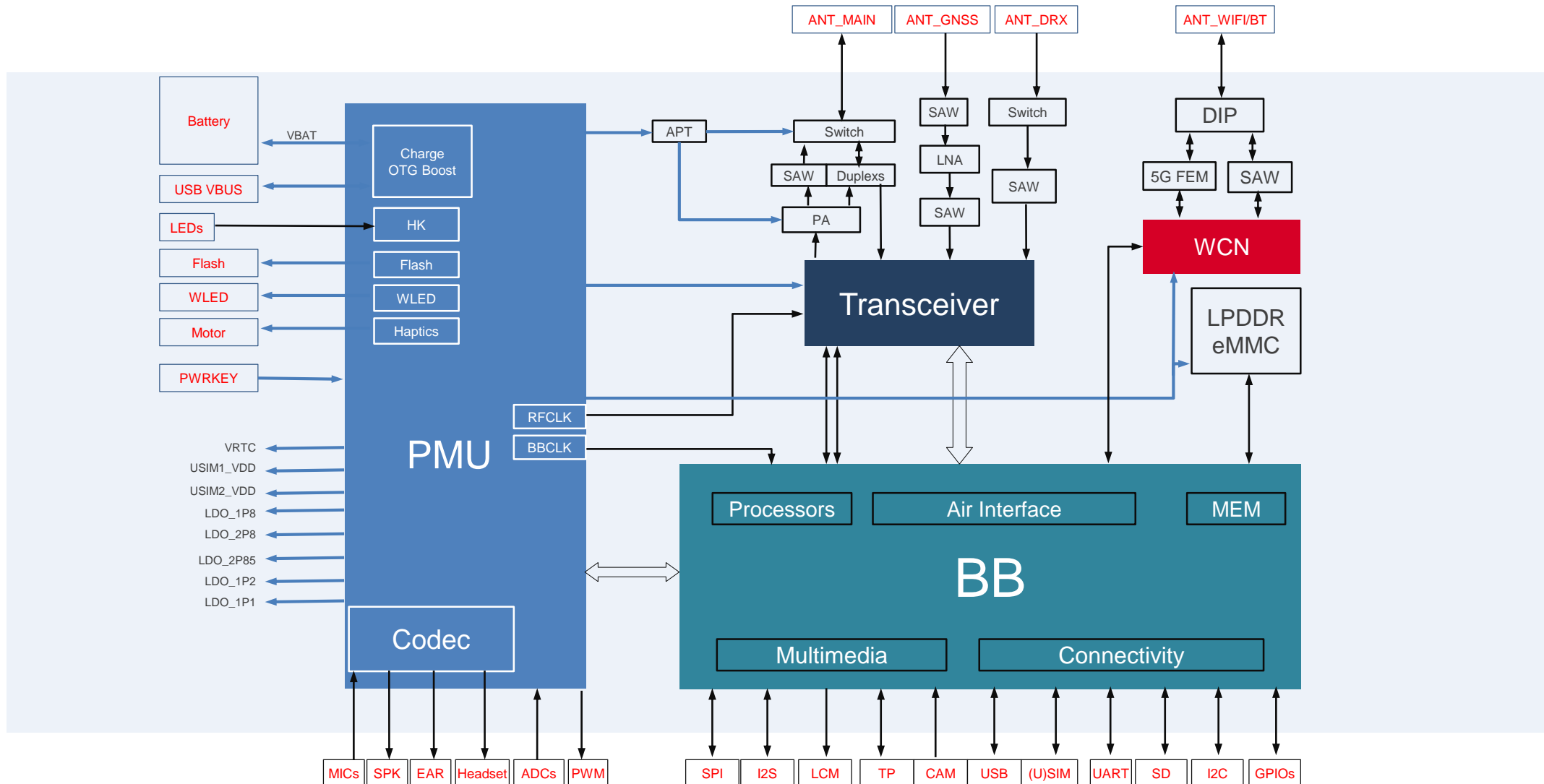
Built-in Wi-Fi/ BT/ GNSS



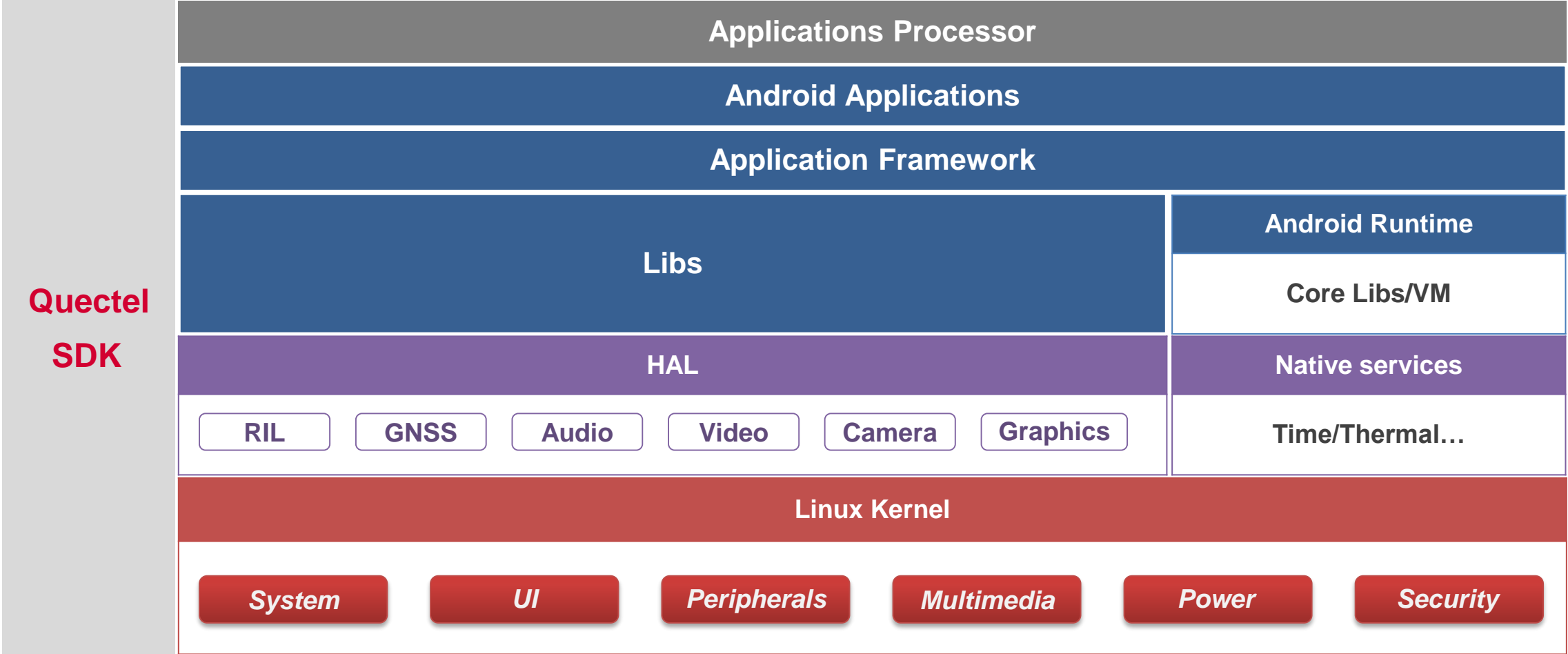
Abundant Interfaces



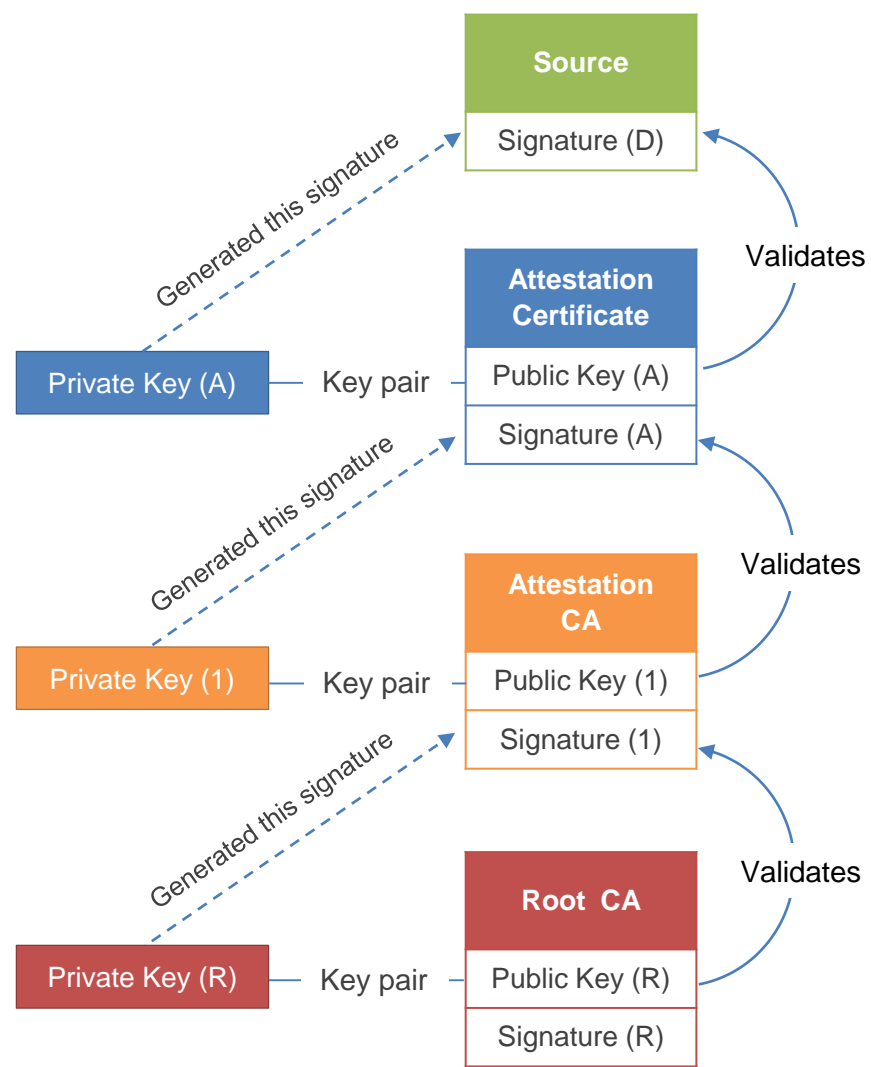
# Smart Module Hardware Structure



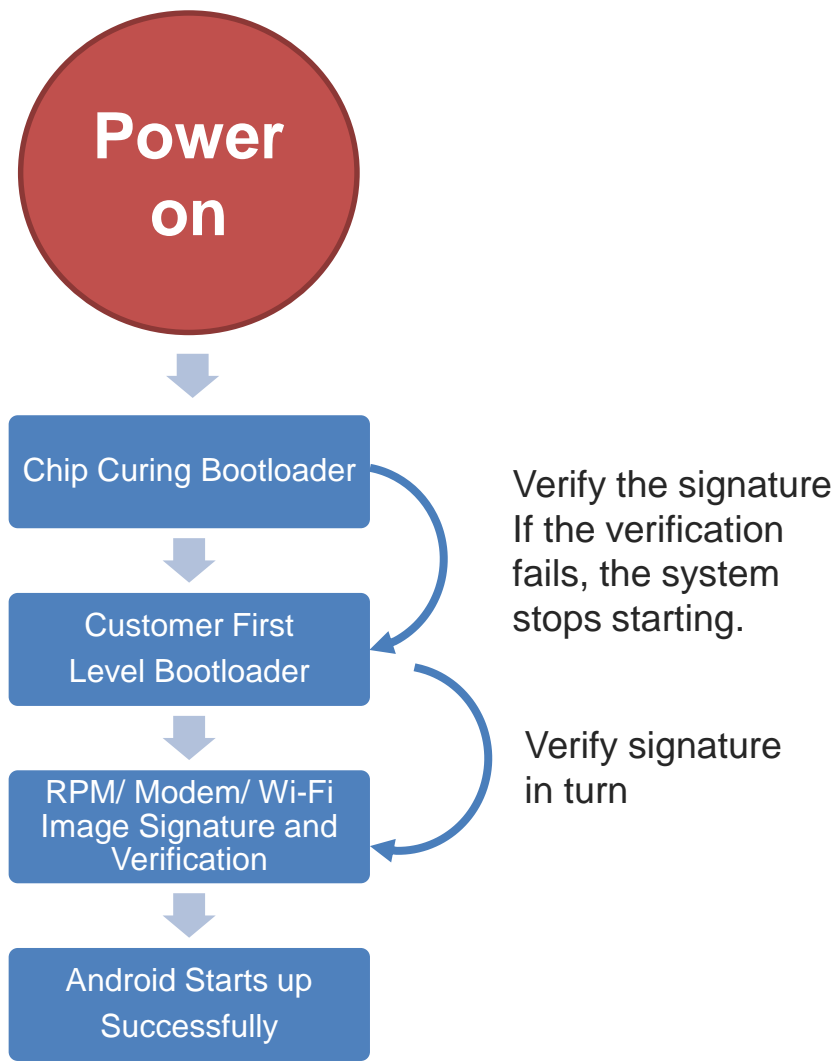
# Smart Module SDK Software Structure



# Firmware Signature and Secure Boot



- Sign every image with private key.
- Enhanced system security: the previous level trusted firmware will verify the signature of the next firmware in booting process, to prevent firmware on the Flash from malicious tampering.



# Android Security Solution



SeLinux Authority Control



Android Against Root



Boot Image Verification



Kernel Module Signature



eMMC File System Encryption



Android APK Signature



Copyright Protection





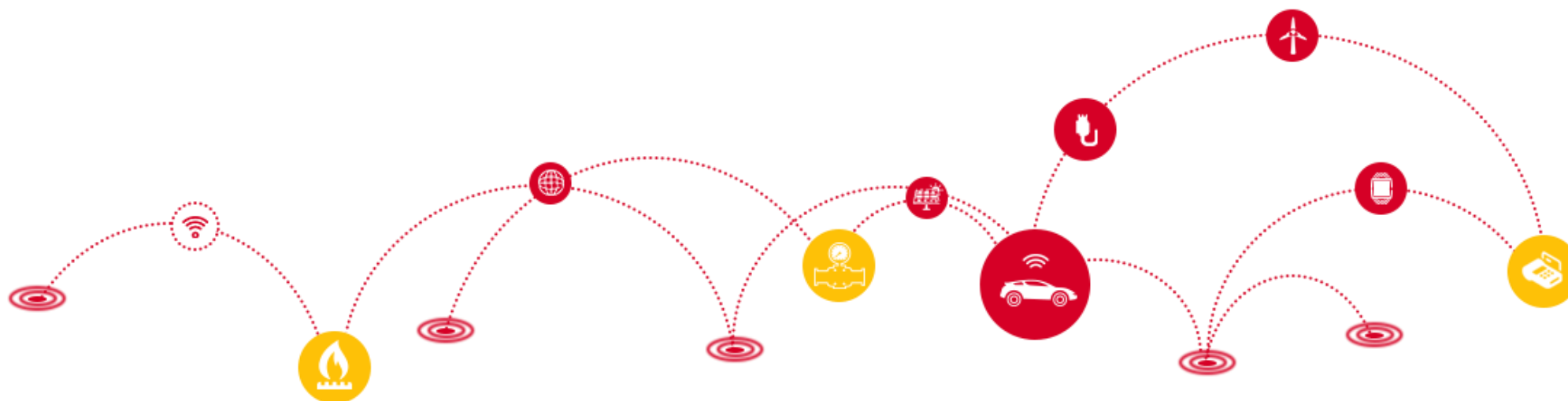
# Smart Solution Overview

## Roadmap

Specifications

Applications

Customer Support



# Smart Module Roadmap

LTE Cat 4  
**SC20**  
Snapdragon  
MSM8909



- Multi-mode LTE
- Quad-core A7 1.1GHz
- HD Display
- Camera 8MP
- Cat 4, 150M DL/ 50M UL
- LCC+LGA Form Factor



LTE Cat 4  
**SC200R**  
Snapdragon  
QCM2150



- Multi-mode LTE
- Quad-core A53 1.3GHz
- HD+ Display
- Dual cameras 13MP (8M+8M)
- Cat 4, 150M DL/ 50M UL
- LCC+LGA Form Factor



LTE Cat 6  
**SC600Y**  
Snapdragon  
SDM450



- Multi-mode LTE
- Octa-core A53 (1.8GHz) /64 bit
- 2GB LPDDR3+16GB eMMC
- WUXGA Display
- Camera 21MP
- Cat 6, 300M DL/ 50M UL
- LCC+LGA Form Factor



LTE Cat 6  
**SC600T**  
Snapdragon  
MSM8953



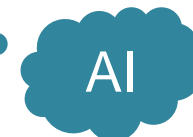
- Multi-mode LTE
- Octa-core A53 (2.0GHz) /64 bit
- 2GB LPDDR3+16GB eMMC
- WUXGA Display
- Camera 24MP
- Video 4K@30fps
- Cat 6, 300M DL/ 50M UL
- LCC+LGA Form Factor



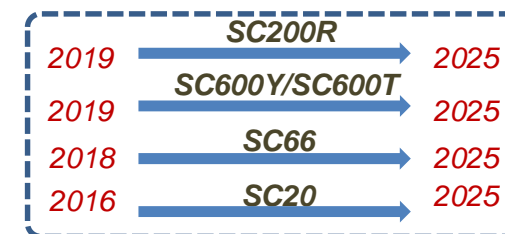
LTE Cat 6  
**SC66**  
Snapdragon  
SDM660



- Multi-mode LTE
- Octa-core Kryo 260(2.2GHz+1.84GHz) /64 bit
- 3GB LPDDR4X+32GB eMMC
- WQXGA Display
- Camera 24 MP at 30 fps ZSL
- Video 4K@30fps
- Snapdragon Neural Processing Engine inside
- Cat 6, 300M DL/ 50M UL
- LCC+LGA Form Factor



## Smart Module Life Cycle



.....2025

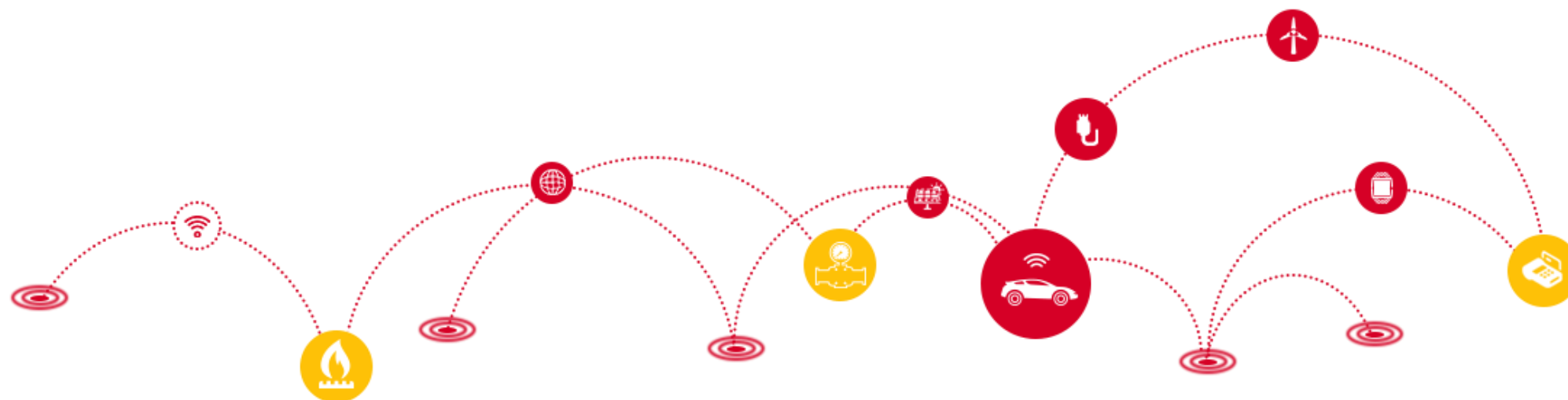
Smart Solution Overview

Roadmap

**Specifications**

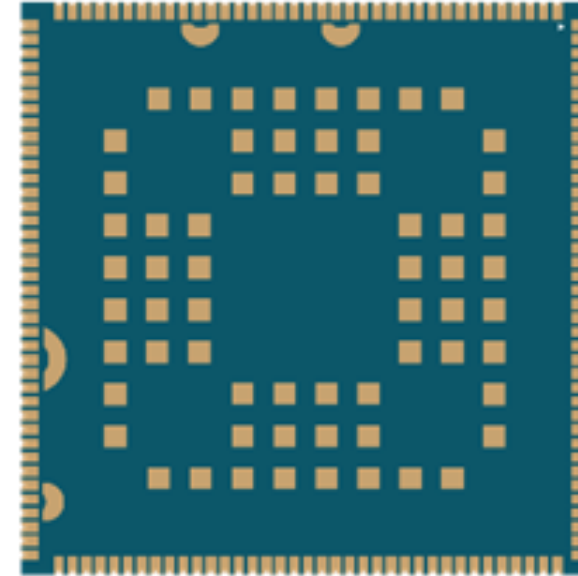
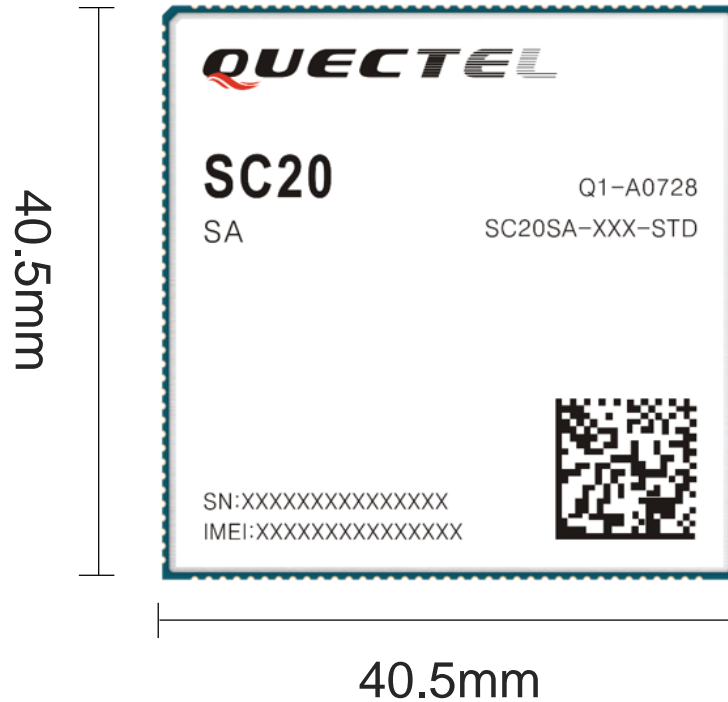
Applications

Customer Support



# SC20 Mechanical Dimensions

Multi-Mode LTE Cat 4 Module (MSM8909)



Length: 40.5mm ( $\pm 0.15$ mm)  
Width: 40.5mm ( $\pm 0.15$ mm)  
Height: 2.8mm ( $\pm 0.2$ mm)  
Weight: Approx. 9.8g

# SC20 Support Package



## Evaluation Board

### Interfaces

- Serial port
- Antenna interface
- Micro-USB interface

### Accessories

- Micro-USB cable
- USB to RS232 converter cable
- RF cables
- Power adapter
- Earphone
- Antennas
- USB flash drive

# SC20 Specifications

Variant		SC20-E/EL <sup>⑤</sup>	SC20-A/AL <sup>⑤</sup>	SC20-J/JL <sup>⑤</sup>	SC20-AU/AUL <sup>⑤</sup>	SC20-CE/CEL <sup>⑤</sup>	SC20-W/WL <sup>⑤</sup>
LTE	LTE-FDD	B1/ B3/ B5/ B7/ B8/ B20	B2/ B4/ B5/ B7/ B12/ B13/ B25/ B26	B1/ B3/ B8/ B18/ B19/ B26	B1/ B3/ B5/ B7/ B8/ B28	B1/ B3/ B5/ B8	\
	LTE-TDD	B38/ B40/ B41	\	B41	B40	B38/ B39/ B40/ B41	\
UMTS	WCDMA	B1/ B5/ B8	B1/ B2/ B4/ B5/ B8	B1/ B6/ B8/ B19	B1/ B2/ B5/ B8	B1/ B8	\
	TD-SCDMA	\	\	\	\	B34/ B39	\
EVDO/CDMA		\	\	\	\	BC0	\
GSM/EDGE		Quad-band	850/ 1900MHz	\	Quad-band	900/ 1800MHz	\
Embedded GNSS		Y	Y	Y	Y	Y	\
Wi-Fi/BT		Y	Y	Y	Y	Y	Y
Region		EMEA/ Korea/ Thailand/ India	America	Japan	Australia/ Brazil	China (CMCC, CUCC)	Global
Certification		<b>Regulatory:</b> GCF/ CE/ KC/ NBTC	<b>Carrier:</b> Verizon/ AT&T/ T-Mobile <sup>③</sup> / Sprint <sup>④</sup> / Rogers/ Telus <sup>③</sup> <b>Regulatory:</b> GCF/ FCC/ PTCRB/ IC	<b>Carrier:</b> NTT DOCOMO <b>Regulatory:</b> JATE/ TELEC	<b>Carrier:</b> Telstra <b>Regulatory:</b> GCF/ CE/ Anatel/ NCC/ RCM	<b>Regulatory:</b> SRRC/ NAL/ CCC	<b>Regulatory:</b> CE/ FCC/ IC/ Anatel/ JATE/ TELEC/ RCM

"Y" means supported.

① Rx-diversity is not supported on LTE B2/B5 for SC20-EU.

② LTE B41 for SC20-EU is optional and not certified by GCF.

③ T-Mobile/ Telus for Data Only version has been done and that for Voice version is TBD.

④ TBD

⑤ SC20-EL/-AL/-JL/-AUL/-CEL/-WL are modules with Yocto Linux OS inside 

# SC20 Features

Item	Description
CPU	<ul style="list-style-type: none"><li>• MSM8909, Quad-core A7, up to 1.1GHz</li></ul>
Memory	<ul style="list-style-type: none"><li>• 1GB LPDDR3 + 8GB eMMC</li><li>• 2GB LPDDR3 + 16GB eMMC</li></ul>
OS	<ul style="list-style-type: none"><li>• Android 7.1/ 8.1 supported by SC20-E/-A/-J/-AU/-CE/-W</li><li>• Yocto Linux(Kernel 3.18) supported only by SC20-EL/-AL/-JL/-AUL/-CEL/-WL</li></ul>
WLAN	<ul style="list-style-type: none"><li>• 2.4G/5G, 802.11 a/b/g/n</li><li>• 150Mbps, STA/AP/P2P</li></ul>
BT	<ul style="list-style-type: none"><li>• BT 2.1 + EDR/3.0/4.1 LE (BT4.2 available on Android 7.0)</li><li>• Support a maximum of 10 ACL/BEL/SCO links</li></ul>
GNSS	<ul style="list-style-type: none"><li>• GPS/BeiDou/GLONASS, or GPS/BeiDou/Galileo</li></ul>
Modem	<ul style="list-style-type: none"><li>• 3GPP Release 10 compliant</li></ul>

# SC20 Interfaces

Item	Description
LCM	<ul style="list-style-type: none"><li>• 4-lane MIPI_DSI, 1.5Gbps/lane, HD (720P) @60fps</li><li>• Support MIPI to RGB, MIPI to LVDS and MIPI to HDMI</li></ul>
Camera	<ul style="list-style-type: none"><li>• 4-lane MIPI_CSI, 1.5Gbps/lane, 1 ISP, Bayer/YUV format</li></ul>
Touch panel	<ul style="list-style-type: none"><li>• Capacitive-screen, I2C controls</li></ul>
Audio	<b>Analog channels:</b> <ul style="list-style-type: none"><li>• Two inputs: MIC1, MIC2</li><li>• Three outputs: speaker, earpiece, headphone</li></ul>
Video	<ul style="list-style-type: none"><li>• Encode: 720P (H.264) @30fps; WVGA (MPEG-4/VP8) @30fps</li><li>• Decode: 1080P (H.264/MPEG-4/VP8/H.265/DivX4/5/6) @30fps; WVGA (H.263) @30fps</li></ul>
USB 2.0 Device	<ul style="list-style-type: none"><li>• High Speed, 480Mbps</li><li>• Support USB 2.0 OTG, USB OTG+Charge and USB to Ethernet functions</li></ul>
(U)SIM	<ul style="list-style-type: none"><li>• 2, support 1.8/3V (U)SIM cards, with (U)SIM card detection function; DSDS supported</li></ul>
UART	<ul style="list-style-type: none"><li>• 2, support up to 4Mbps with Hardware Flow Control</li></ul>
SDIO	<ul style="list-style-type: none"><li>• SD 3.0, 4 bit SDIO</li></ul>
I2C/SPI/ADC/GPIO	<ul style="list-style-type: none"><li>• Supported</li></ul>
PWRKEY	<ul style="list-style-type: none"><li>• Supported</li></ul>
Antenna	<ul style="list-style-type: none"><li>• 4 pads (for main antenna, diversity antenna, GNSS antenna and BT/Wi-Fi antenna, respectively)</li></ul>



# SC20-A Timeline



2019									
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.

## Project Stage

SC20-A MP

## Carrier Certification Schedule

Verizon/ AT&T/ T-Mobile<sup>Data Version</sup> / Rogers/ Telus<sup>Data Version</sup> Completed



## Regulatory Certification

GCF/ FCC/ PTCRB/ IC Completed

# SC20-AU Timeline



2019									
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.

## Project Stage

SC20-AU 

## Carrier Certification

Telstra



## Regulatory Certification

GCF/ CE/ Anatel/ NCC/ RCM



# SC20-E Timeline

2019									
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.

## Project Stage

**SC20-E** 

## Regulatory Certification

**GCF /CE / KC/ NBTC**



# SC20-W Timeline



2019									
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.

## Project Stage

SC20-W 

## Regulatory Certification

CE/ FCC/ IC/ Anatel/ JATE/ TELEC/ RCM

Completed



# SC20-J Timeline



2019											
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.

## Project Stage

SC20-J 

## Carrier Certification

NTT DOCOMO



## Regulatory Certification

JATE/ TELEC



# SC20-CE Timeline

2019									
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.

## Project Stage

SC20-CE

MP

## Regulatory Certification

SRRC/ NAL/ CCC



# SC20-EL Timeline



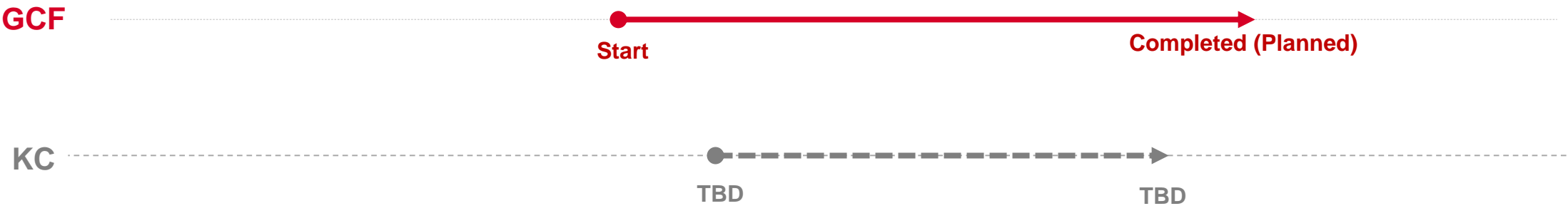
2019					2020				
Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May

## Project Stage

SC20-EL MP

## Regulatory Certification Schedule

CE/RCM Completed

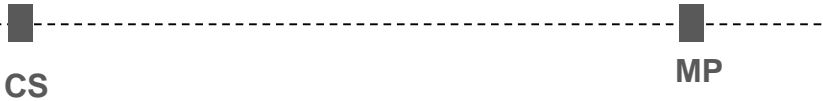


# SC20-AL Timeline



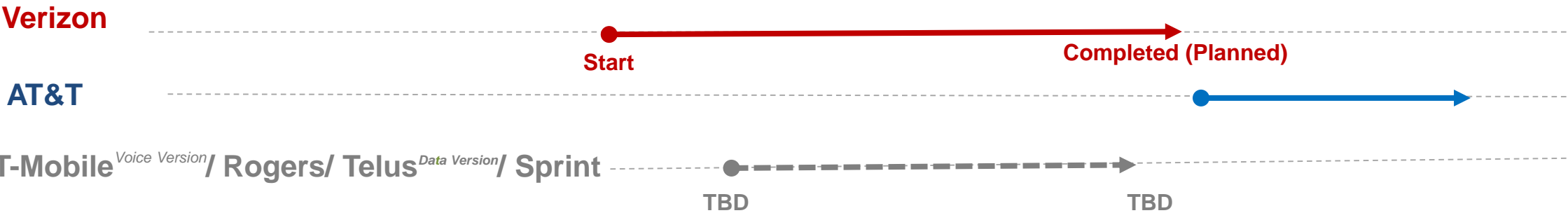
2019					2020				
Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May

## Project Schedule



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”.

## Carrier Certification Schedule



## Regulatory Certification Schedule

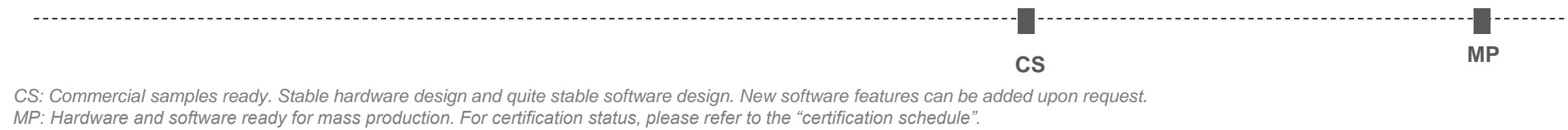




# SC20-JL Timeline



## Project Schedule



## Carrier Certification Schedule



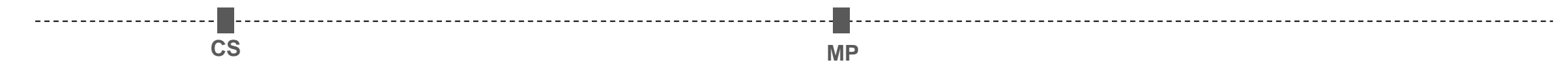
## Regulatory Certification Schedule



# SC20-AUL Timeline



## Project Schedule



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”.

## Carrier Certification Schedule



## Regulatory Certification Schedule



# SC20-CEL Timeline



## Project Stage



## Regulatory Certification Schedule



# SC20-WL Timeline



2020									
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.

## Project Stage

SC20-WL 

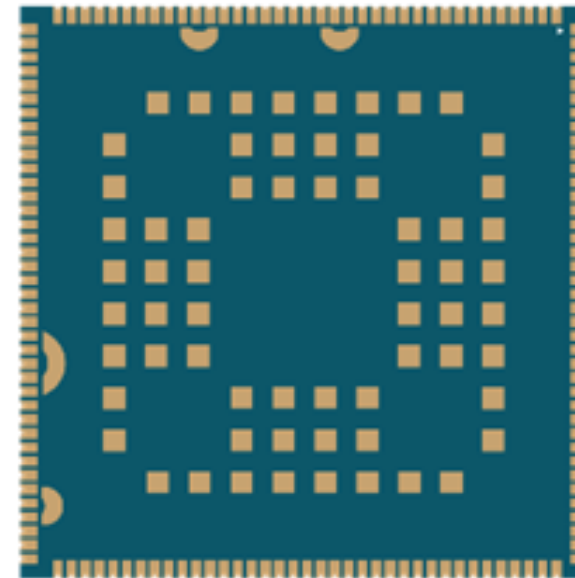
## Regulatory Certification

CE/ FCC/ IC/ Anatel/ JATE/ TELEC/ RCM    Completed



# SC200R Mechanical Dimensions

## Multi-Mode LTE Cat 4 Module (QCM2150)



Length: 40.5mm ( $\pm 0.15$ mm)  
Width: 40.5mm ( $\pm 0.15$ mm)  
Height: 2.8mm ( $\pm 0.2$ mm)  
Weight: Approx. 10.2g

# SC200R Evaluation Kit



## Evaluation Board

### Interfaces

- Serial port
- Antenna interface
- Micro-USB interface

### Accessories

- Micro-USB cable
- USB to RS232 converter cable
- Antennas
- Power adapter

# SC200R Specifications

Variant		SC200R-EM*	SC200R-NA*	SC200R-JP*	SC200R-CE	SC200R-WF*
LTE	LTE-FDD	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B20/ B28	B2/ B4/ B5/ B7/ B12/ B13/ B14/ B17/ B25/ B26/ B66/ B71	B1/ B3/ B5/ B8/ B11/ B18/ B19/ B21/ B26/ B28	B1/ B3/ B5/ B8	\
	LTE-TDD	B38/ B39/ B40/ B41	B41	B41	B34/ B38/ B39/ B40/ B41	\
UMTS	WCDMA	B1/ B2/ B4/ B5/ B8	B2/ B4/ B5	B1/ B6/ B8/ B19	B1/ B8	\
CDMA		\	\	\	BC0	\
GSM/EDGE		850/900/1800/1900MHz	\	\	900/ 1800MHz	\
Embedded GNSS		Y	Y	Y	Y	\
Wi-Fi/BT		Y	Y	Y	Y	Y
Region		EMEA/ India/ Korea/ South Asia/ Latin America/ Australia/ New Zealand/ South Africa	North America	Japan	China	Global
Certification		<b>Carrier:</b> Telstra* <b>Regulatory:</b> GCF*/ CE*/ RCM*	<b>Carrier:</b> Verizon*/ AT&T* <b>Regulatory:</b> GCF*/ FCC*/ PTCRB*/ IC*	<b>Carrier:</b> NTT DOMOCO* <b>Regulatory:</b> JATE*/ TELEC*	<b>Regulatory:</b> SRRC <sup>①</sup> / NAL <sup>①</sup> / CCC*	TBD

“Y” means supported.  
 “\*” means under development.  
 ① TBD

# SC200R Features

Item	Description
CPU	<ul style="list-style-type: none"><li>• <b>QCM2150</b>, Quad-core ARM Cortex-A53 64-bit CPU @1.3GHz</li></ul>
GPU	<ul style="list-style-type: none"><li>• Qualcomm® Adreno™ 308 graphics processing unit (GPU) with 64-bit addressing</li></ul>
Memory	<ul style="list-style-type: none"><li>• 1GB LPDDR3 + 8GB eMMC</li><li>• 2GB LPDDR3 + 16GB eMMC</li></ul>
OS	<ul style="list-style-type: none"><li>• Android 10.0</li></ul>
Battery Charge	<ul style="list-style-type: none"><li>• Supported</li></ul>
WLAN	<ul style="list-style-type: none"><li>• 2.4G/5GHz, 802.11 a/b/g/n, 150Mbps, STA/AP/P2P</li></ul>
BT	<ul style="list-style-type: none"><li>• BT 2.1 + EDR/3.0/4.1 LE /BT4.2</li><li>• Support a maximum of 10 ACL/BEL/SCO links</li></ul>
GNSS	<ul style="list-style-type: none"><li>• GPS/ BeiDou/ GLONASS/ Galileo</li></ul>
Modem	<ul style="list-style-type: none"><li>• 3GPP Release 10</li></ul>



# SC200R Interfaces

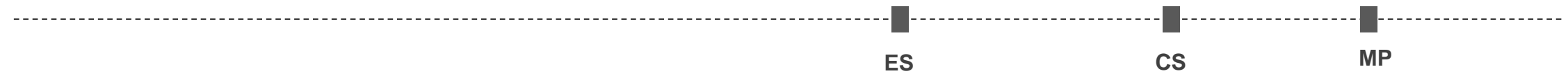
Item	Description
LCM	<ul style="list-style-type: none"><li>• 4-lane MIPI_DSI; HD+ (1440*720) @60fps</li><li>• Wi-Fi display: 1080P 30fps (UBWC)</li></ul>
Camera	<ul style="list-style-type: none"><li>• 2 groups of 4-lane MIPI_CSI, up to 2.1Gbps per lane</li><li>• Up to 13MP with dual ISP</li></ul>
Touch panel	<ul style="list-style-type: none"><li>• Capacitive-screen, I2C controls</li></ul>
Audio	Analog channels: <ul style="list-style-type: none"><li>• Three inputs: MIC1, MIC2 and MIC3 (including one Noise-cancelling Microphone)</li><li>• Three outputs: speaker, earpiece, headphone</li></ul>
Video	<ul style="list-style-type: none"><li>• Video encoding :1080p @30fps(H.264)</li><li>• Video decoding :1080p @30fps(H.264, HEVC, and VP8)</li><li>• Video encoding and decoding: 1080p @30fps + 720p@30fps</li></ul> For HEVC playback, concurrency is 720p at 30 fps decode + 720p at 30 fps encode
USB	<ul style="list-style-type: none"><li>• USB 2.0,USB OTG + Charge</li></ul>
(U)SIM	<ul style="list-style-type: none"><li>• 2, support 1.8/3V (U)SIM cards, with (U)SIM card detection function; DSDS supported</li></ul>
UART	<ul style="list-style-type: none"><li>• 2, support up to 4Mbps with Hardware Flow Control</li></ul>
SDIO	<ul style="list-style-type: none"><li>• SD 3.0, 4 bit SDIO</li></ul>
I2C/SPI/PWM/ADC/GPIO/PWRKEY	<ul style="list-style-type: none"><li>• Supported</li></ul>
Antenna	<ul style="list-style-type: none"><li>• 4 pads (for main antenna, diversity antenna, GNSS antenna and BT/Wi-Fi antenna, respectively)</li></ul>

# SC200R-EM Timeline



2019						2020					
Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May

## Project Schedule

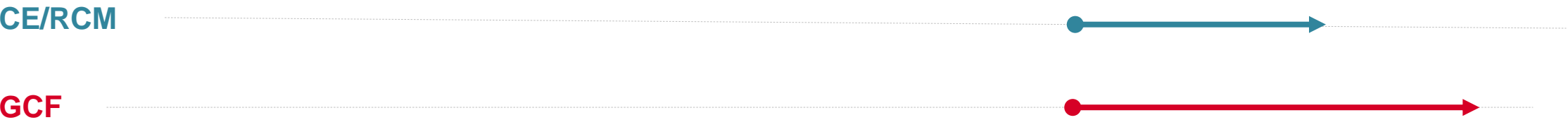


ES: Engineering samples ready. Basic functions are available for customers’ simple demo purpose.  
CS: Commercial samples ready. Stable hardware design and quite stable software design. New software features can be added upon request.  
MP: Hardware and software ready for mass production. For certification status, please refer to the “certification schedule”.

## Carrier Certification Schedule



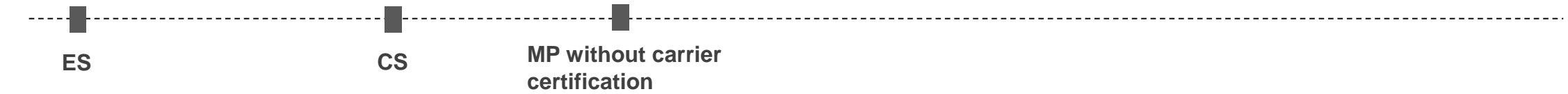
## Regulatory Certification Schedule



# SC200R-NA Timeline



## Project Schedule

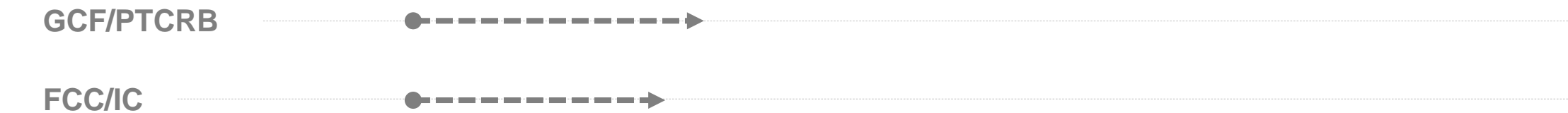


ES: Engineering samples ready. Basic functions are available for customers' simple demo purpose.  
CS: Commercial samples ready. Stable hardware design and quite stable software design. New software features can be added upon request.  
MP: Hardware and software ready for mass production. For certification status, please refer to the "certification schedule".

## Carrier Certification Schedule



## Regulatory Certification Schedule



# SC200R-JP Timeline



## Project Schedule



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”.

## Carrier Certification Schedule



## Regulatory Certification Schedule

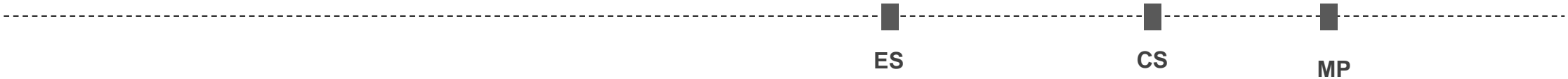


# SC200R-CE Timeline



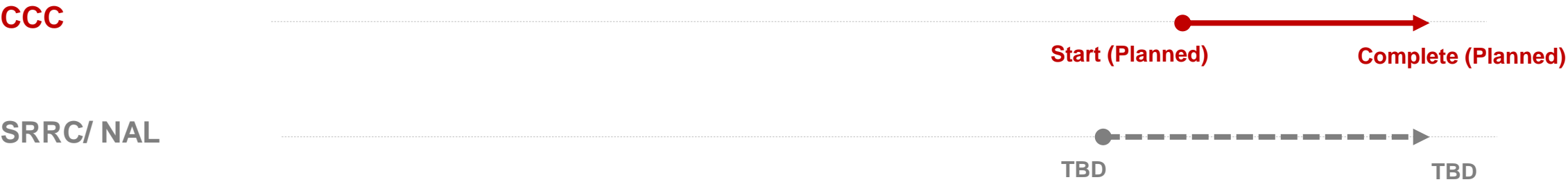
2019						2020					
Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May

## Project Schedule



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".

## Regulatory Certification Schedule



# SC200R-WF Timeline



2019						2020					
Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May

## Project Schedule

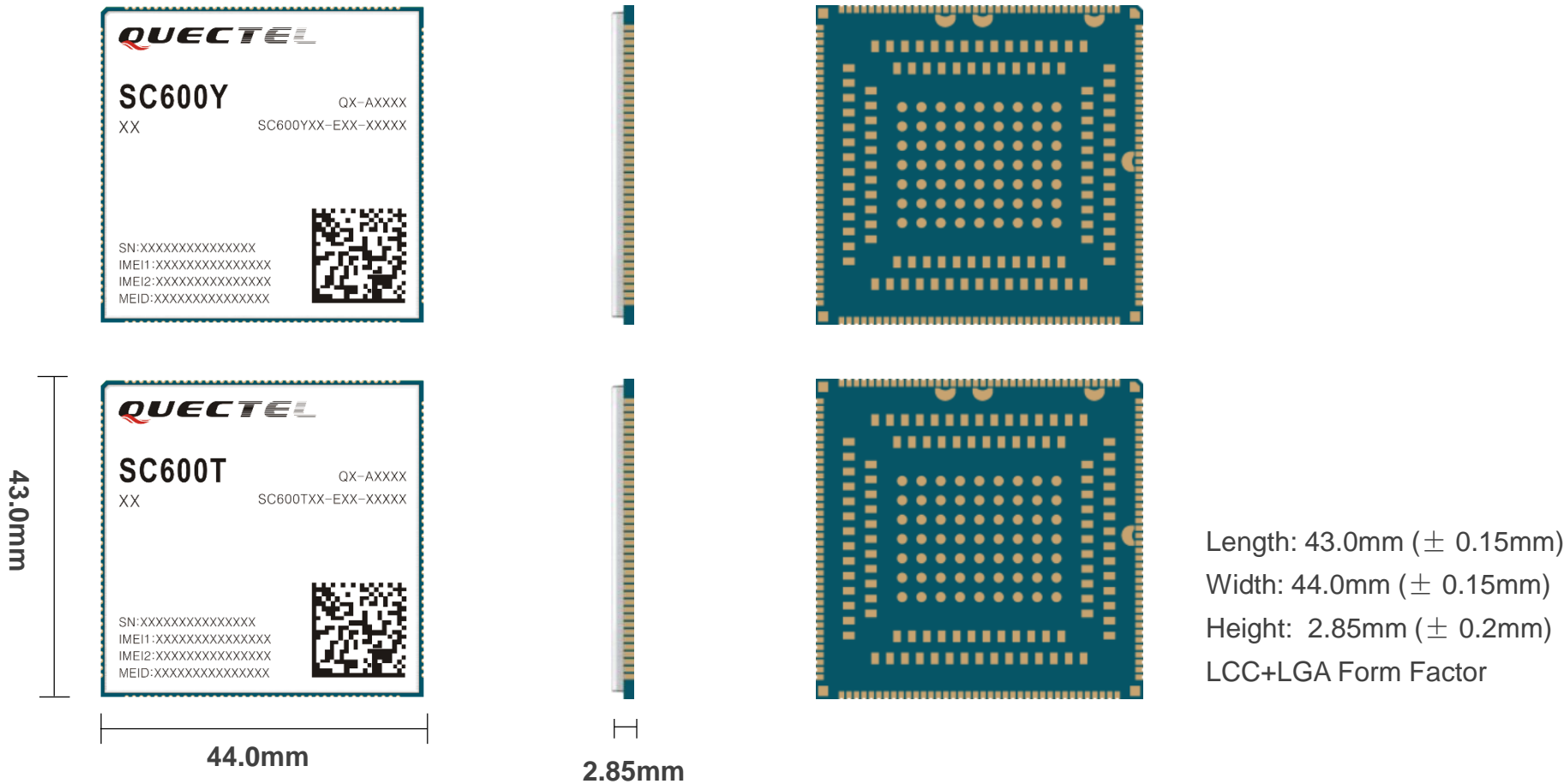


ES: Engineering samples ready. Basic functions are available for customers' simple demo purpose.  
CS: Commercial samples ready. Stable hardware design and quite stable software design. New software features can be added upon request.  
MP: Hardware and software ready for mass production. For certification status, please refer to the "certification schedule".

# SC600Y/SC600T Mechanical Dimensions



## Multi-Mode LTE Cat 6 Module (SDM450/MSM8953)



# SC600Y&SC600T Evaluation Kit



## Evaluation Board

### Interfaces

- Serial port
- Antenna interface
- USB Type-C Interface

### Accessories

- USB Type-C cable
- USB to RS232 converter cable
- Antennas
- Power adapter



# SC600Y/SC600T Specifications



Variant		SC600Y-EM/SC600T-EM	SC600Y-NA/SC600T-NA	SC600Y-JP/SC600T-JP	SC600Y-WF/SC600T-WF
LTE	LTE-FDD	B1/B2/B3/B4/B5/B7/B8/B20/B28	B2/ B4/ B5/ B7/ B12/ B13/ B14/ B17/ B25/ B26/ B66/ B71	B1/ B3/ B5/ B8/ B11/ B18/ B19/ B21/ B26/ B28	\
	LTE-TDD	B38/ B39/ B40/ B41	B41	B41	\
UMTS	WCDMA	B1/ B2/ B4/ B5/ B8	B2/ B4/ B5	B1/ B6/ B8/ B19	\
	TD-SCDMA	\	\	\	\
CDMA		\	\	\	\
GSM/EDGE		850/900/1800/1900MHz	\	\	\
Embedded GNSS		Y	Y	Y	\
Wi-Fi/BT		Y	Y	Y	Y
Region		EMEA/ India/ Korea// South Asia/ Latin America/ Australia/ New Zealand/ South Africa	North America	Japan	Global
Certification		<b>Carrier:</b> Telstra* <b>Regulatory:</b> CE/ NCC/ RCM/ GCF	<b>Carrier:</b> AT&T/ T-Mobile/ Verizon* <b>Regulatory:</b> GCF/ FCC/ PTCEB/ IC	<b>Carrier:</b> KDDI/ NTT DOCOMO* <b>Regulatory:</b> JATE/ TELEC	<b>Regulatory:</b> CE/ FCC/ IC/ JATE/ TELEC/ RCM

“Y” means supported.  
 “\*” means under development.

# SC600Y/SC600T Features

Item	Description
CPU	<ul style="list-style-type: none"><li>• <b>SC600Y</b>: SDM450, Octa-core ARM Cortex-A53 64-bit CPU @1.8GHz</li><li>• <b>SC600T</b>: MSM8953, Octa-core ARM Cortex-A53 64-bit CPU @2.0GHz</li></ul>
GPU	<ul style="list-style-type: none"><li>• Qualcomm® Adreno™ 506 graphics processing unit (GPU) with 64-bit addressing</li></ul>
Memory	<ul style="list-style-type: none"><li>• 2GB LPDDR3 + 16GB eMMC (default)</li><li>• 4GB LPDDR3 + 64GB eMMC (optional)</li></ul>
OS	<ul style="list-style-type: none"><li>• Android 9.0/ 10.0</li></ul>
WLAN	<ul style="list-style-type: none"><li>• 2.4G/5GHz, 802.11 a/b/g/n/ac, 433Mbps, STA/AP/P2P</li></ul>
BT	<ul style="list-style-type: none"><li>• BT2.1+EDR/ 3.0/ 4.1LE/ 4.2LE</li><li>• Support a maximum of 10 ACL/BEL/SCO links</li></ul>
GNSS	<ul style="list-style-type: none"><li>• GPS/ BeiDou/ GLONASS, or GPS/ BeiDou/ Galileo</li></ul>
Modem	<ul style="list-style-type: none"><li>• Partial 3GPP Release 10 compliant</li></ul>

# SC600Y/SC600T Interfaces

Item	Description
LCM	<ul style="list-style-type: none"><li>Support dual LCDs for independent display: dual 4-lane MIPI_DSI; WUXGA (1920*1200) @60fps</li><li>Wi-Fi display: 1080P 30fps (UBWC)</li></ul>
Camera	<ul style="list-style-type: none"><li>3 groups of 4-lane MIPI_CSI, up to 2.1Gbps per lane</li><li>Support three cameras (4-lane + 4-lane + 4-lane) or four cameras (4-lane + 4-lane + 2-lane + 1-lane)</li><li>Up to 21MP with dual ISP @ <b>SC600Y</b></li><li>Up to 24MP with dual ISP @ <b>SC600T</b></li></ul>
Touch panel	<ul style="list-style-type: none"><li>2, Capacitive-screen, I2C controls</li></ul>
Audio	<b>Analog channels:</b> <ul style="list-style-type: none"><li>Two inputs: MIC1, MIC2</li><li>Three outputs: speaker, earpiece, headphone</li></ul>
Video	<ul style="list-style-type: none"><li>Video encoding and decoding: up to 1080P @60fps @ <b>SC600Y</b></li><li>Video encoding and decoding: up to 4K at 30fps @ <b>SC600T</b></li></ul> Encoder HFR: 720P @120ps; 60Mbps; Maximum 972000 macro block/s; 1080P @60fps decode+1080P @30fps encode
USB	<ul style="list-style-type: none"><li>USB 3.0 and 2.0 Compliant, Type-C, USB OTG + Charge</li></ul>
(U)SIM	<ul style="list-style-type: none"><li>2, support 1.8/3V (U)SIM cards, with (U)SIM card detection function; DSDS supported</li></ul>
UART	<ul style="list-style-type: none"><li>3, support 4Mbps with hardware flow control</li></ul>
SDIO	<ul style="list-style-type: none"><li>SD 3.0, 4 bit SDIO</li></ul>
I2C/SPI/PWM/ADC/GPIO/PWRKEY	<ul style="list-style-type: none"><li>Supported</li></ul>
Antenna	<ul style="list-style-type: none"><li>4 pads (for main antenna, diversity antenna, GNSS antenna and BT/Wi-Fi antenna, respectively)</li></ul>

# SC600Y-NA/ SC600T-NA Timeline



2019						2020					
Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.

## Project Stage

**SC600Y-NA/ SC600T-NA** MP

## Carrier Certification Schedule

AT&T / T-Mobile Completed



## Regulatory Certification

GCF/ FCC/ PTCRB/ IC Completed

# SC600Y-EM/ SC600T-EM Timeline



2019								2020			
May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.

## Project Stage

**SC600Y-EM/ SC600T-EM** MP

## Carrier Certification Schedule



## Regulatory Certification Schedule

**CE/ NCC/ RCM / GCF** **Completed**

# SC600Y-JP/ SC600T-JP Timeline



2019											
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.

## Project Stage

SC600Y-JP/ SC600T-JP MP

## Carrier Certification Schedule

KDDI Completed



## Regulatory Certification

JATE/TELEC Completed

# SC600Y-WF/ SC600T-WF Timeline

2019

Jan.

Feb.

Mar.

Apr.

May

Jun.

Jul.

Aug.

Sep.

Oct.

Nov.

Dec.

## Project Stage

MP

SC600Y-WF/ SC600T-WF

## Regulatory Certification

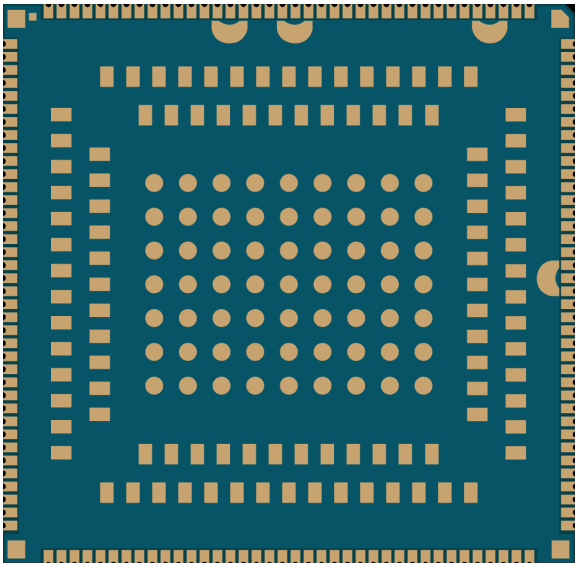
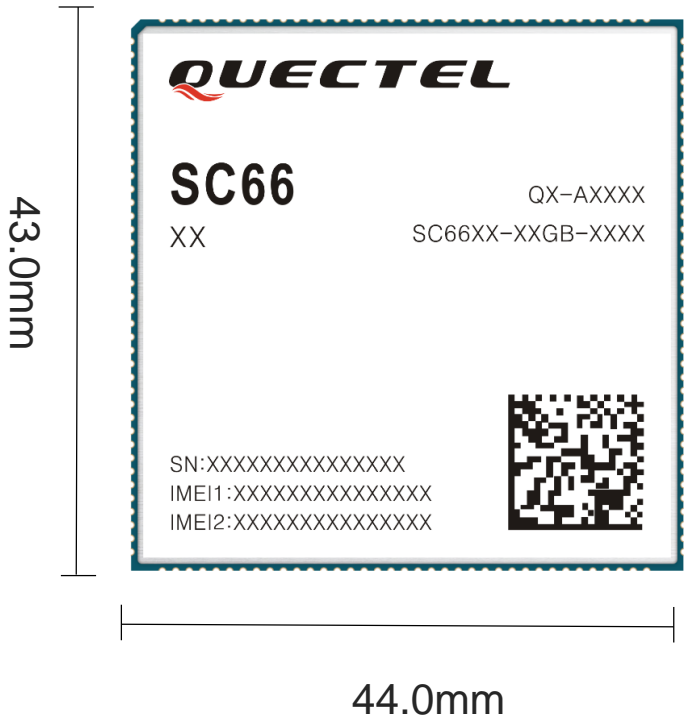
CE/ FCC/ IC/ JATE/TELEC/ RCM

Completed



# SC66 Mechanical Dimensions

Multi-Mode LTE Cat 6 Module (SDM660)



Length: 43.0mm ( $\pm 0.15$ mm)  
Width: 44.0mm ( $\pm 0.15$ mm)  
Height: 2.85mm ( $\pm 0.2$ mm)  
Form Factor: LCC+LGA



# SC66 Support Package



## Evaluation Board

### Interfaces

- Serial port
- Antenna interface
- USB Type-C interface

### Accessories

- USB Type-C cable
- USB to RS232 converter cable
- RF cables
- Power adapter
- Earphone
- Antennas
- USB flash drive

# SC66 Specifications

Variant		SC66-E	SC66-A	SC66-J	SC66-CE	SC66-MW
LTE	LTE-FDD	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B20/ B28(A+B)	B2/ B4/ B5/ B7/ B12/ B13/ B14/ B17/ B25/ B26/ B66/ B71	B1/ B3/ B5/ B8/ B11/ B18/ B19/ B21/ B26/ B28(A+B)	B1/ B3/ B5/ B8/	\
	LTE-TDD	B38/ B39/ B40/ B41 <sup>①</sup>	B41 <sup>①</sup>	B41 <sup>②</sup>	B34/ B38/ B39/ B40/ B41 <sup>②</sup>	\
UMTS	WCDMA	B1/ B2/ B4/ B5/ B8	B2/ B4/ B5	B1/ B6/ B8/ B19	B1/ B8	\
	TD-SCDMA	\	\	\	B34/ B39	\
EVDO/CDMA		\	\	\	BC0	\
GSM/EDGE		B2/ B3/ B5/ B8	\	\	B3/ B8	\
Embedded GNSS		Y	Y	Y	\	\
Wi-Fi/BT		Y (MIMO supported)	Y (MIMO supported)	Y (MIMO supported)	Y (MIMO is not supported)	Y (MIMO supported)
Region		Europe/ India/ Korea/ South Asia/ Latin America/ Australia/ South Africa	North America	Japan	China	Global
Certification		<b>Carrier:</b> Telstra <sup>③</sup> <b>Regulatory:</b> GCF/ CE/ NCC/ RCM/ Anatel <sup>③</sup> / KC <sup>③</sup>	<b>Carrier:</b> Verizon*/ AT&T* <b>Regulatory:</b> GCF/ FCC/ IC/ PTCRB	<b>Carrier:</b> NTT DOCOMO <sup>③</sup> <b>Regulatory:</b> JATE/ TELEC	<b>Regulatory:</b> SRRC/ NAL/ CCC	<b>Regulatory:</b> CE/ FCC/ IC/ RCM

“Y” means supported.

“\*” means under development.

① Only 200MHz bandwidth is supported.

② Only 120MHz bandwidth is supported.

③ means TBD

# SC66 Features

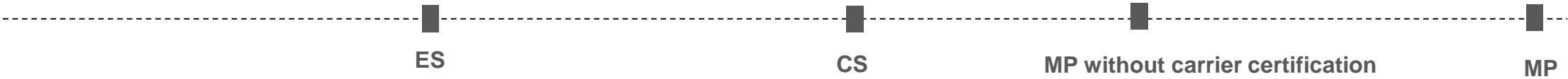
Item	Description
CPU	<ul style="list-style-type: none"><li>• SDM660, Customized 64-bit ARM v8.0-compliant AP (Kryo260 CPU)</li><li>• KryoGold Quad high-performance cores targeting 2.2GHz, L2 - 1MB</li><li>• KryoSilver Quad low-power cores targeting 1.843GHz, L2 - 1MB</li></ul>
GPU	<ul style="list-style-type: none"><li>• Qualcomm® Adreno 512 at 650MHz, OpenGL ES3.1 + AEP, DX12_FL12, Vulkan, OpenCL2.0 FP, RenderScript</li></ul>
Memory	<ul style="list-style-type: none"><li>• 3GB LPDDR4X + 32GB eMMC</li><li>• 4GB LPDDR4X + 64GB eMMC</li></ul>
WLAN/BT	<ul style="list-style-type: none"><li>• 2.4G/5GHz, 802.11 a/b/g/n/ac;</li><li>• Bluetooth 5.0;</li><li>• 2×2 MIMO Wi-Fi (except SC66-CE)</li></ul>
Video	<ul style="list-style-type: none"><li>• Decoder: 4K@30fps; H.264, VP8, VP9 and HEVC</li><li>• Encoder: 4K@30fps; HEVC, H264, VP8 and MPEG-4</li></ul>
GNSS	<ul style="list-style-type: none"><li>• GPS, GLONASS, BeiDou, Galileo</li></ul>
Modem	<ul style="list-style-type: none"><li>• 3GPP Release 12 compliant (parts of Release 13 features are supported)</li></ul>
OS	<ul style="list-style-type: none"><li>• Android 9.0/ 10.0</li></ul>
AI Engine	<ul style="list-style-type: none"><li>• Vector DSP, CPU and GPU work together, providing neural network SDK, supporting Caffe/Caffe2/Tensorflow</li></ul>
USB	<ul style="list-style-type: none"><li>• Dual USB, 3.1x1, 2.0x1</li></ul>
LCM	<ul style="list-style-type: none"><li>• 2560×1600 @60fps primary display</li><li>• 4k @30fps over DP</li><li>• Dual MIPI DSI</li><li>• Wi-Fi display: 1080P @30fps</li></ul>

# SC66-A Timeline



2019						2020					
Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.

## Project Schedule



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”.

## Carrier Certification Schedule



## Regulatory Certification Schedule

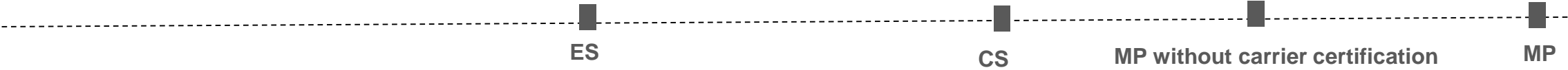
GCF/ FCC/ IC/ PTCRB                      Completed

# SC66-E Timeline



2019										2020	
Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.

## Project Schedule

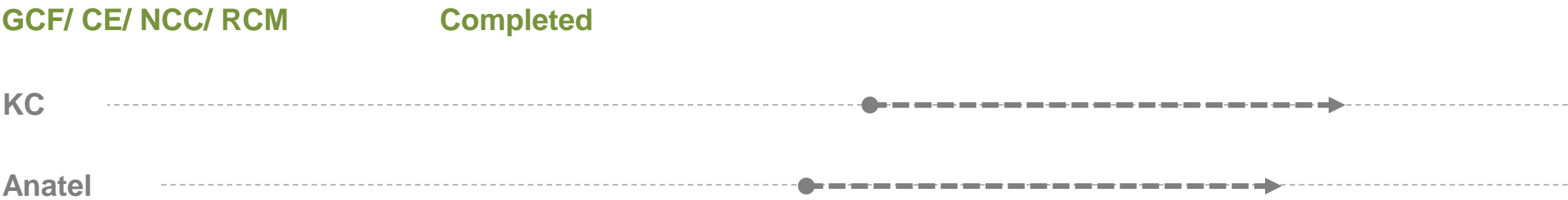


ES: Engineering samples ready. Basic functions are available for customers’ simple demo purpose.  
CS: Commercial samples ready. Stable hardware design and quite stable software design. New software features can be added upon request.  
MP: Hardware and software ready for mass production. For certification status, please refer to the “certification schedule”.

## Carrier Certification Schedule



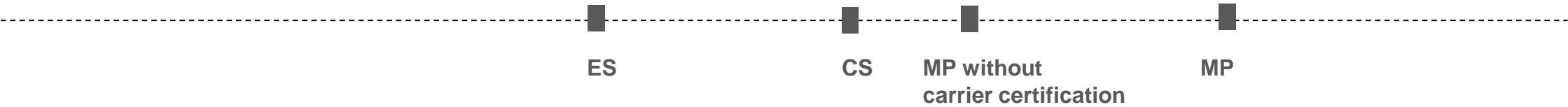
## Regulatory Certification Schedule



# SC66-J Timeline



## Project Schedule



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".

## Carrier Certification Schedule



## Regulatory Certification

**JATE/TELEC**      **Completed**

# SC66-MW Timeline



2019						2020					
Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.

## Project Schedule



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".

## Regulatory Certification

CE/ FCC/ IC/ RCM



# SC66-CE Timeline



2019											
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.

## Project Stage

SC66-CE 

## Regulatory Certification

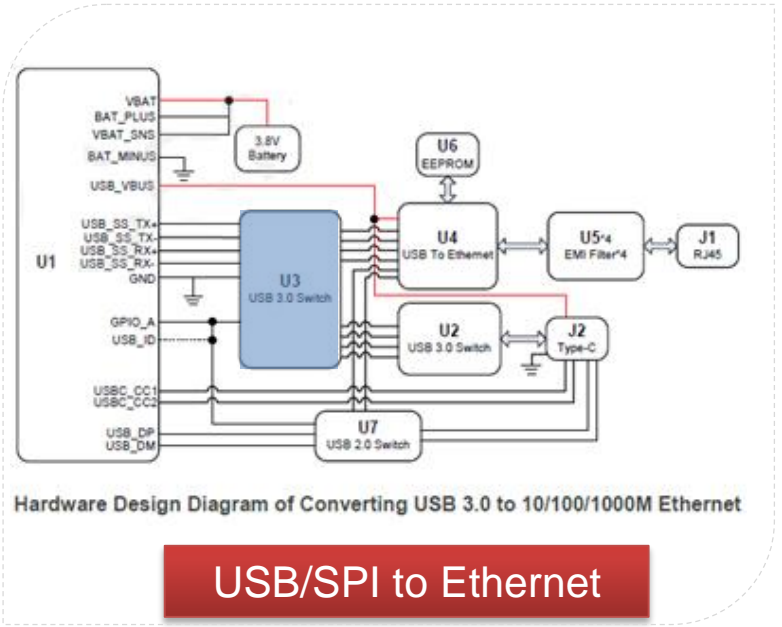
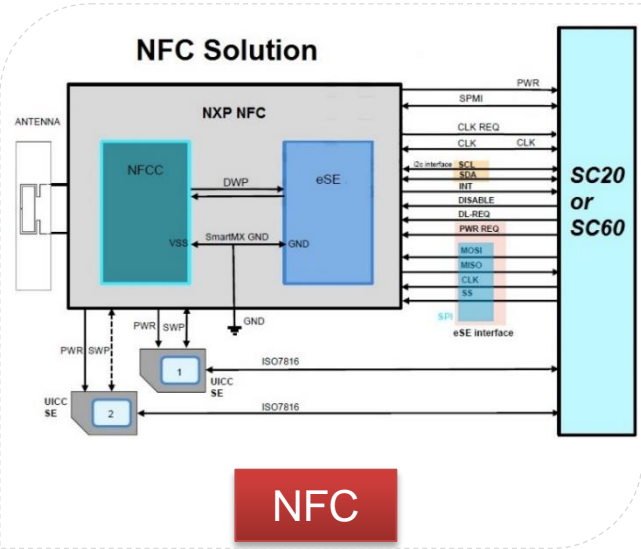
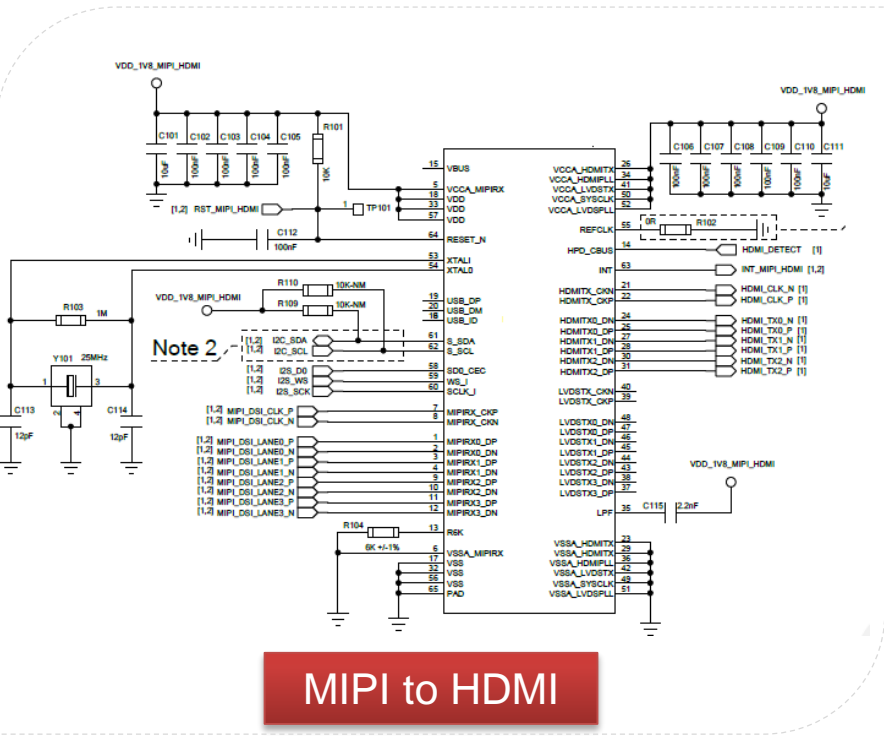
SRRC/ NAL/ CCC





# Extensive Functions

Quectel Smart modules provide abundant interfaces to support extensive peripherals.



Quectel provides hardware reference designs for various peripherals.

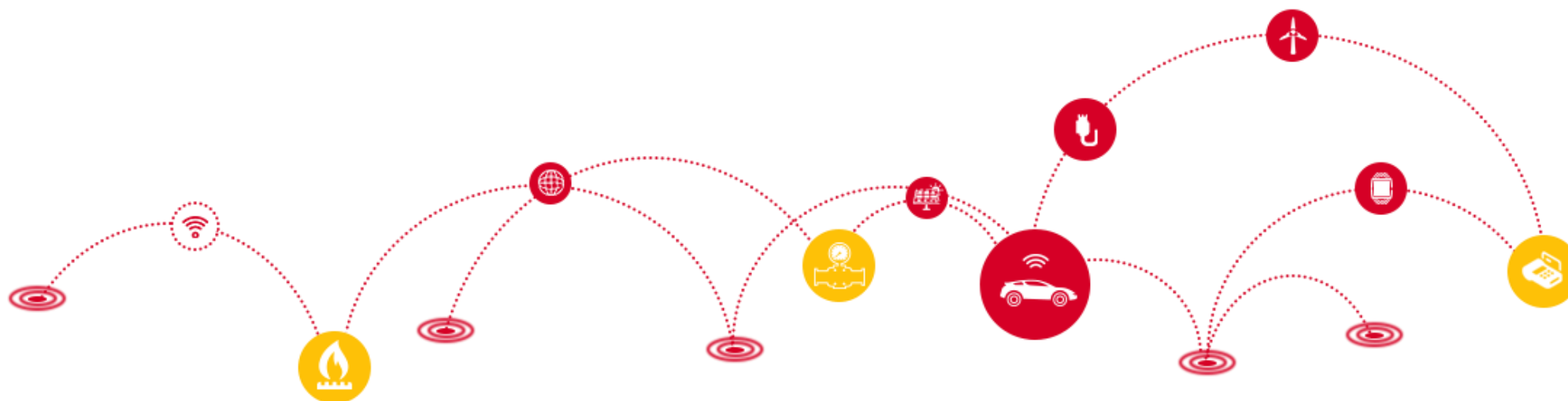
# Smart Solution Overview

## Roadmap

## Specifications

## **Applications**

## Customer Support



# Target Applications

## Wireless POS

Support Magnetic Stripe Cards, Contact Smart Cards, and Bill Printing



## Government Agency

ID Card Verification  
Fingerprint Capturing  
Parking Ticket Printing



## Mobile Devices

Phone  
PAD



## Smart City

Event Data Recorder  
Digital Advertising  
Vending Machine  
Smart Home



## Express Delivery Industry

Barcode Scanning  
RFID



## Public Utilities/ Petrochemical/ Medical/Tobacco

Infrared Meter Reading  
HD Camera



# Smart POS, Payment terminal





# Cash Register, Vending Machine

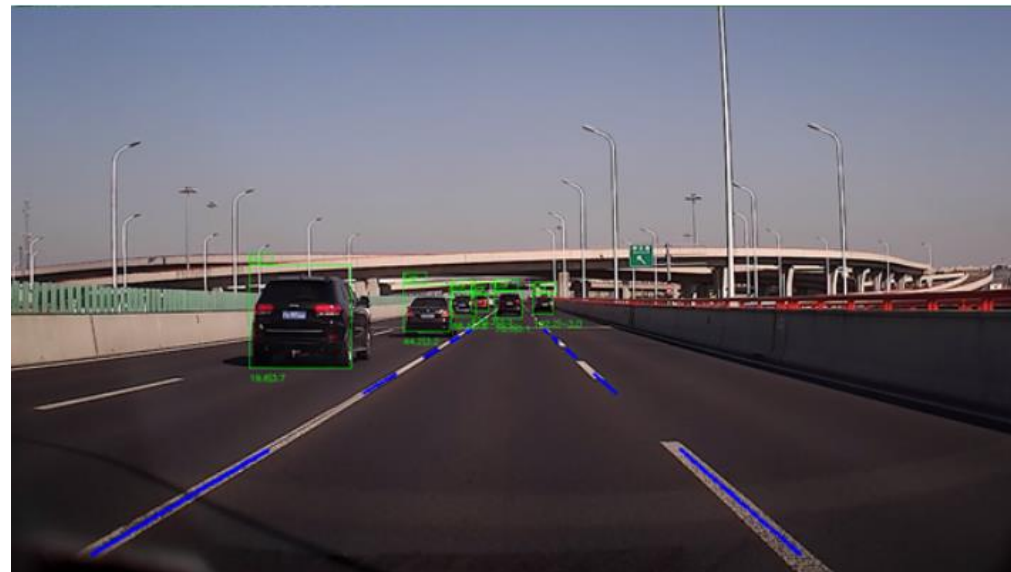
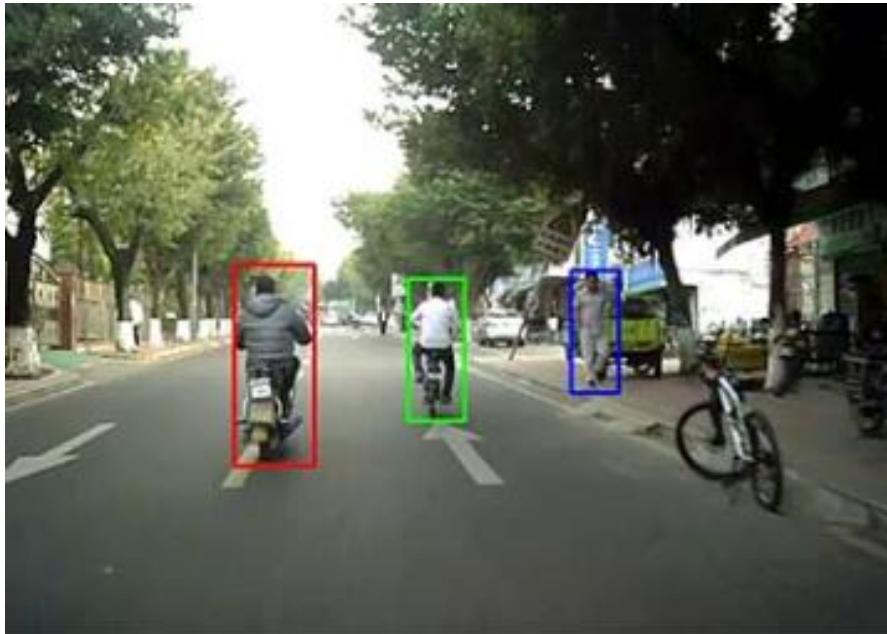


# Industrial PDA , Tablets & PTT





# Infotainment, Mirror, ADAS+DMS+DVR (SC600Y/T&SC66)

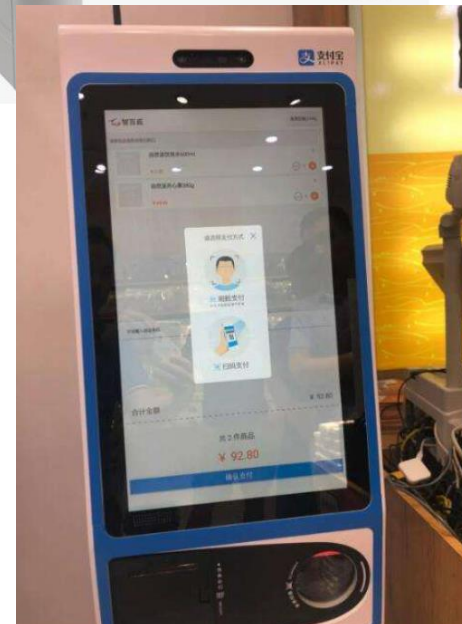


# Robot, Industrial Control Devices





**QUECTEL®**  
Build a Smarter World



# Surveillance Equipment



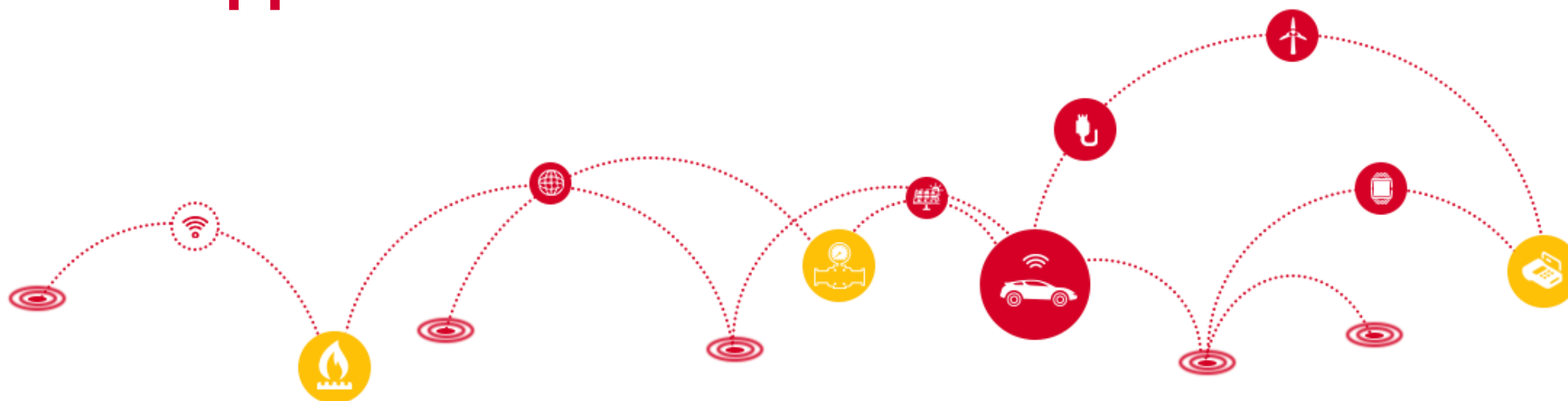
# Smart Solution Overview

## Roadmap

## Specifications

## Applications

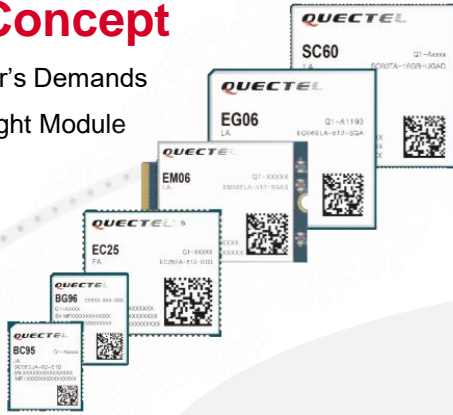
## **Customer Support**



# Quectel 360-Degree Support

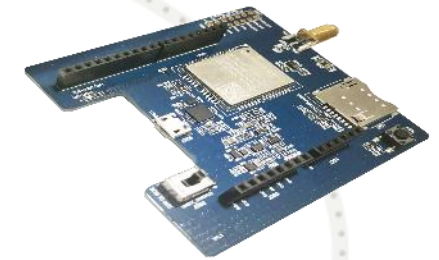
## 1. Design Concept

- Analyze Customer's Demands
- Recommend a Right Module for the Customer



## 2. Design In

- Recommend Referenced Hardware Designs
- Check Schematic and Layout
- Provide Quectel SDK
- Provide Software Design Support



[www.quectel.com](http://www.quectel.com)



On-site Support



[support@quectel.com](mailto:support@quectel.com)

## 5. Mass Production

- Provide Assembly and Test Guidelines
- After-sales Service



## 3. Prototype

- Provide Design Validation Test.
- Recommend Suppliers

## 4. Test Service

- RF Test
- Power Consumption Test
- Audio Test
- Reliability & Environmental Test
- ESD Test



# Thank you!

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