



Technical Specification Document

AQ20

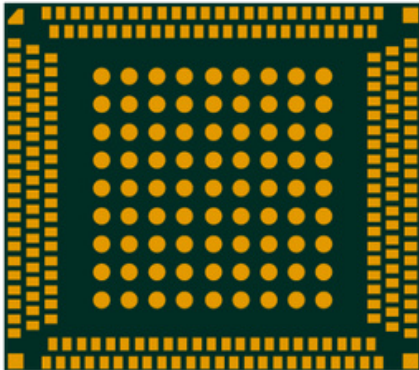
LTE Cat 4 / 2G Module





Cavli C-Series AQ20 Module

LTE Cat 4/ 2G Module



AQ20 is an Automotive Grade Cat 4 module with 2G fall back supporting 3GPP release 10 designed for IoT and M2M applications. It delivers a maximum data rate of 150 Mbit/s DL & 50 Mbit/s UL. It has a compact LGA form factor. AQ20 supports integrated GNSS with Qualcomm® IZat™ location technology Gen8C Lite (GPS, GLONASS, BeiDou/ Compass, Galileo and QZSS), for precise and dependable positioning. AQ20 supports VoLTE and SMS over IMS/SG/CS and supports wide set Internet protocols and industry-standard interfaces.

They come in 2 variants: AQ20-EA for the Europe and Asia market and AQ20-NA for the North America market. With optional integrated eSIM powered by Cavli Hubble platform, it provides global connectivity that helps to further reduce the time to market. AQ20 is ideal for IoT applications such as asset tracking, automotive, e-mobility, data loggers, fleet management and environmental monitoring.

Key features



4G
LTE

LTE Cat 4



eSIM

eSIM



Cavli Hubble Platform



Integrated GNSS



USB 2.0 Interface



Open
SDK

OpenSDK Support



2G

2G fallback



LGA

Small Form Factor Design



VoLTE

VoLTE Support



SMS

SMS over IMS/SG/CS



Automotive

Grade

	AQ20-EA	AQ20-NA
Basic Information		
Region	EMEA, APAC	North America
CPU	ARM Cortex-A7 @ 1.3 GHz	ARM Cortex-A7 @ 1.3 GHz
Memory	256 MB RAM 256/ 512 MB Flash	256 MB RAM 256/512 MB Flash
OS	Linux 4.14	Linux 4.14
Package	LGA	LGA
Pin Count	299	299
Dimensions	33 x 37.5 x 3.0 mm	33 x 37.5 x 3.0 mm
Weight	TBD	TBD
Operating Temperature	-30 °C to +105 °C	-30 °C to +105 °C
Extended Operating Temperature	-40 °C to +105 °C	-40 °C to +105 °C
Radio Frequency Bands		
RAT	Cat 4 GSM	Cat 4 GSM
Transmission Rates	Cat 4: DL 150 Mbps & UL 50 Mbps GSM (2G): DL 236.8 Kbps & UL 236.8 Kbps	Cat 4: DL 150 Mbps & UL 50 Mbps GSM (2G): DL 236.8 Kbps & UL 236.8 Kbps
LTE Band List GSM Band List	B1/ B3/ B5/ B7/ B8/ B20/ B28A/ B40 900/ 1800MHz	B2/ B4/ B5/ B7/ B12/ B13/ B25/ B66
3GPP Release	10	10
GNSS Capability		
GNSS (GNA Variant)	GPS/ GLONASS/ BeiDou/ Galileo QZSS Capable	GPS/ GLONASS/ BeiDou/ Galileo QZSS Capable
Network Protocols		
Internet Protocols	TCP(S), HTTP(S), MQTT(S), FTP(S), UDP, PPP, SMTP(S), NTP, MMS, SSL	TCP(S), HTTP(S), MQTT(S), FTP(S), UDP, PPP, SMTP(S), NTP, MMS, SSL
Interfaces		
UART	x3	x3
USB 2.0 (HS)	x1	x1
SDIO 3.0	x1	x1
SDC	x1	x1
USIM (DSSS) (1.8V / 3.0V)	x1	x1
Network Status Indicator	x1	x1
Power ON Status Indicator	x1	x1
SGMII	x1	x1
I2C ²	x2	x2

¹Optional

²Needs SDK

³In Progress

	AQ20-EA	AQ20-NA
SPI ²	x1	x1
ADC	x3	x3
HSIC	x1	x1
MIC ²	x2	x2
PCM ²	x1	x1
SPK	x2	x2
Main ANT	x1	x1
GNSS ANT	x1	x1
Diversity ANT	x1	x1
Electrical Characteristics		
Operating Voltage	Range: 3.3 V to 4.3 V Typical: 3.8 V	Range: 3.3 V to 4.3 V Typical: 3.8 V
TxD Peak	TBD	TBD
TxD Idle	TBD	TBD
GNSS (Fix)	TBD	TBD
Enhanced Features		
VoLTE	Yes	Yes
SMS - IMS	Yes	Yes
SMS - SG	Yes	Yes
SMS - CS	Yes	Yes
Driver Support		
USB Driver	TBD	TBD
Certifications		
Regulatory	Global: GCF ³ Europe: CE ³ Taiwan: NCC ³	Global: GCF ³ North America: PTCRB ³ America: FCC ³ Canada: IC ³
Carrier	TBD	Verizon ³ /AT&T ³ /TMobil ³
Others	RoHS / REACH	RoHS / REACH
Other Features		
Integrated GNSS	Optional	Optional
Integrated eSIM + Cavli Hubble Global Connectivity and Device Management Platform	Optional	Optional
miniPCIe Form Factor	Optional	Optional

¹ Optional

² Needs SDK

³ In Progress



Product Variants

Variant Name	Region	RAM	Flash	Integrated eSIM
AQ20-EA-22GNN	EMEA, APAC	256 MB	256 MB	✗
AQ20-EA-22GNH	EMEA, APAC	256 MB	256 MB	✓
AQ20-NA-22GNN	North America	256 MB	256 MB	✗
AQ20-NA-22GNH	North America	256 MB	256 MB	✓
AQ20-EA-24GNN	EMEA, APAC	256 MB	512 MB	✗
AQ20-EA-24GNH	EMEA, APAC	256 MB	512 MB	✓
AQ20-NA-24GNN	North America	256 MB	512 MB	✗
AQ20-NA-24GNH	North America	256 MB	512 MB	✓



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This document is a pre-release version. Some of the technical specifications are subject to change.

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