



Technical Specification Document

C16QS

Cat 1.bis LTE Module

Contact: sales@cavliwireless.com
Visit : www.cavliwireless.com



Cavli
C Series

CAVLI
wireless

C16QS

PN: C16QS - XXXX

SN: XXXXXXXX

IMEI: XXXXXXXXXXXXXXXX



RoHS
compliant

LTE Cat 1.bis

Cavli C-Series C16QSMModule

Cat 1.bis LTE Module



Cavli C16QS modules use their LTE Cat 1.bis technology and optional GNSS tracking capabilities to simplify global connectivity and tracking solutions. Coming with an optional integrated SIM and the Hubble device management platform, C16QS is capable of ensuring remote management and seamless global coverage. The C16QS series, with its power saving and DRx/eDRx modes, ensure prolonged battery life.

The module's LTE and GNSS subsystems can be operated independently resulting in an optimized workflow. Being pin compatible with Cavli's C42QM and C42GM, C16QS enables easy design migration.

The above-mentioned features along with its small form-factor and interfacing capabilities ensure simpler designs and makes C16QS ideal for solutions that require great connectivity, tracking capabilities and have space and power constraints.

Key features



LTE Cat 1.bis



Integrated GNSS



Small Form
Factor Design



USB 2.0 Interface



eSIM



Cavli Hubble
Platform



Low Power
Consumption



Power
Saving Mode

	C16QS-EA	C16QS-NA	C16QS-LA	C16QS-AN	C16QS-WW
Basic Information					
Region	EMEA, APAC	North America	Latin America	Australia, New Zealand	Global
CPU	ARM Cortex M3 processor @204MHz clock	ARM Cortex M3 processor @204MHz clock	ARM Cortex M3 processor @204MHz clock	ARM Cortex M3 processor @204MHz clock	ARM Cortex M3 processor @204MHz clock
Memory	4MB NOR Flash + 1.25MB RAM	4MB NOR Flash + 1.25MB RAM	4MB NOR Flash + 1.25MB RAM	4MB NOR Flash + 1.25MB RAM	4MB NOR Flash + 1.25MB RAM
OS	FreeRTOS	FreeRTOS	FreeRTOS	FreeRTOS	FreeRTOS
Package	LGA	LGA	LGA	LGA	LGA
Dimensions	26.5 x 22.5 x 2.3 mm	26.5 x 22.5 x 2.3 mm	26.5 x 22.5 x 2.3 mm	26.5 x 22.5 x 2.3 mm	26.5 x 22.5 x 2.3 mm
Weight	3.9 mg	3.9 mg	3.9 mg	3.9 mg	3.9 mg
Operating Temperature	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C
Storage Temperature	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
Radio Frequency Bands					
RAT	Cat1.bis	Cat1.bis	Cat1.bis	Cat1.bis	Cat1.bis
Transmission Rates (Peak)	DL 10Mbps & UL 5 Mbps	DL 10Mbps & UL 5 Mbps	DL 10Mbps & UL 5 Mbps	DL 10Mbps & UL 5 Mbps	DL 10Mbps & UL 5 Mbps
LTE Band List	B1/ B3/ B5/ B7/ B8/ B20	B2/ B4/ B5/ B12/ B13/ B66	B2/ B3/ B4/ B7/ B8/ B28	B1/ B3/ B5/ B8/ B18/ B19/ B26/ B28	B1/ B2/ B3/ B4/ B5/ B8/ B12/ B18/ B19/ B20/ B26/ B28/ B66

* Optional

** Needs SDK. Not available currently

*** In Progress

3GPP Release	14	14	14	14	14
GNSS (GNA Variant)	GPS/ BeiDou SBAS + QZSS Capable	GPS/ BeiDou SBAS + QZSS Capable	GPS/ BeiDou SBAS + QZSS Capable	GPS/ BeiDou SBAS + QZSS Capable	GPS/ BeiDou SBAS + QZSS Capable
GNSS (GNB Variant)	TBD	TBD	TBD	TBD	TBD
Network Protocols					
Internet Protocols	TCP(S), HTTP(S), FTP(S), MQTT(S), UDP, PPP	TCP(S), HTTP(S), FTP(S), MQTT(S), UDP, PPP	TCP(S), HTTP(S), FTP(S), MQTT(S), UDP, PPP	TCP(S), HTTP(S), FTP(S), MQTT(S), UDP, PPP	TCP(S), HTTP(S), FTP(S), MQTT(S), UDP, PPP
Interfaces					
UART	x3	x3	x3	x3	x3
USB 2.0	x1	x1	x1	x1	x1
USIM (DSSS) (1.8V / 3.0V)	x1	x1	x1	x1	x1
SWD	x1	x1	x1	x1	x1
Network Status Indicator	x1	x1	x1	x1	x1
Power ON Status Indicator	x1	x1	x1	x1	x1
ADC**	x2	x2	x2	x2	x2
I2S**	x1	x1	x1	x1	x1
I2C**	x1	x1	x1	x1	x1

* Optional

** Needs SDK. Not available currently

*** In Progress

SPI**	x1	x1	x1	x1	x1
GPIO**	x4	x4	x4	x4	x4
Main ANT	x1	x1	x1	x1	x1
GNSS ANT*	x1	x1	x1	x1	x1

Electrical Characteristics

Operating Voltage]	Range: 3.4 V to 4.2 V Typical: 3.7 V	Range: 3.4 V to 4.2 V Typical: 3.7 V	Range: 3.4 V to 4.2 V Typical: 3.7 V	Range: 3.4 V to 4.2 V Typical: 3.7 V	Range: 3.4 V to 4.2 V Typical: 3.7 V
TxD Peak (@23dBm)	620 mA	TBD	TBD	TBD	TBD
TxD Typical	70 mA	TBD	TBD	TBD	TBD
TxD Idle (@23dBm)	18 mA	TBD	TBD	TBD	TBD
Sleep Mode	TBD	TBD	TBD	TBD	TBD
GNSS (Fix)	60 mA	60 mA	60 mA	60 mA	60 mA

Enhanced Features

SMS-SG	Yes	Yes	Yes	Yes	Yes
DFOTA	Yes	Yes	Yes	Yes	Yes

Driver Support

USB Driver	Windows 7 and above, Linux Kernel 4.4 – 5.15	Windows 7 and above, Linux Kernel 4.4 – 5.15	Windows 7 and above, Linux Kernel 4.4 – 5.15	Windows 7 and above, Linux Kernel 4.4 – 5.15	Windows 7 and above, Linux Kernel 4.4 – 5.15
RNDIS Driver	Windows 7 and above	Windows 7 and above	Windows 7 and above	Windows 7 and above	Windows 7 and above

* Optional

** Needs SDK. Not available currently

*** In Progress

CDC ACM Driver	Linux Kernel 4.4 – 5.15	Linux Kernel 4.4 – 5.15	Linux Kernel 4.4 – 5.15	Linux Kernel 4.4 – 5.15	Linux Kernel 4.4 – 5.15
Certifications					
Regulatory	Global: GCF*** Europe: CE*** UK: UKCA*** South Korea: KC***	Global: GCF*** North America: PTCRB*** America: FCC*** Canada: IC***	Global: GCF*** Europe: CE*** UK: UKCA** Taiwan: NCC***	Global: GCF*** Europe: CE*** UK: UKCA** Taiwan: NCC***	Global: GCF*** North America: PTCRB*** America: FCC*** Canada: IC***
Carrier	TBD	Verizon*** /AT&T*** /T-Mobile***	Verizon*** /AT&T*** /T-Mobile***	Verizon*** /AT&T*** /T-Mobile***	Verizon*** /AT&T*** /T-Mobile***
Others	RoHS/REACH	RoHS/REACH	RoHS/REACH	RoHS/REACH	RoHS/REACH
Other Features					
Integrated GNSS	Optional	Optional	Optional	Optional	Optional
Integrated eSIM + Hubble	Optional	Optional	Optional	Optional	Optional

* Optional

** Needs SDK. Not available currently

*** In Progress

Product Variants



Features	EA EMEA and APAC	AN Australia, New Zealand, Taiwan and South Korea	NA North America	LA Latin America	WW World Wide
Modem Only	C16QS-EA-S00N	C16QS-AN-S00N	C16QS-NA-S00N	C16QS-LA-S00N	C16QS-WW-S00N
Modem + eSIM	C16QS-EA-S00H	C16QS-AN-S00H	C16QS-NA-S00H	C16QS-LA-S00H	C16QS-WW-S00H
Modem + GNSS (L1)	C16QS-EA-GNAN	C16QS-AN-GNAN	C16QS-NA-GNAN	C16QS-LA-GNAN	C16QS-WW-GNAN
Modem + eSIM + GNSS (L1)	C16QS-EA-GNAH	C16QS-AN-GNAH	C16QS-NA-GNAH	C16QS-LA-GNAH	C16QS-WW-GNAH
Modem + GNSS (L1 L5)	-	-	-	-	C16QS-WW-GNBN
Modem + eSIM + GNSS (L1 L5)	-	-	-	-	C16QS-WW-GNBH

Cavli Inc. All rights reserved. No portions of this document may be reproduced without prior written consent of Cavli Inc. Specifications are subject to change without notice. Cavli, the Cavli logo are trademarks or registered trademarks of Cavli Inc. in the United States and/or other countries. All other brands or products are trademarks or registered trademarks of their respective holders and should be treated as such.

For more information

Contact : sales@cavliwireless.com | Visit : www.cavliwireless.com

