



# Cavli Wireless

Corporate Presentation

November 2023

# About Cavli

Cavli Wireless designs and manufactures cellular IoT modules with integrated eSIM and global connectivity powered by Cavli Hubble platform.

## We deliver

- Cellular Module for 5G, 4G, NB-IoT and LTE-M technologies
- IoT connectivity and device management platform

[Discover](#)

100+

Employees

60%

R&D Resources

5Mn+

Units Pipeline  
booking for 2023

4Mn

Current annual  
production  
capacity

40TB

Data per Month

20Bn

MQTT Messages per  
month



## Cavli Hubble Platform

Connectivity & Device management platform that makes Connectivity over Cellular, seamless, secure & cost effective



# Current Geographical Presence



Headquartered in US with Operations in India & Spain. All of Cavli modules are designed and manufactured from the facility in Kochi, India.



Headquarter - California, USA



Sales presence - India, Spain, Turkey, UK, France, Germany, Italy



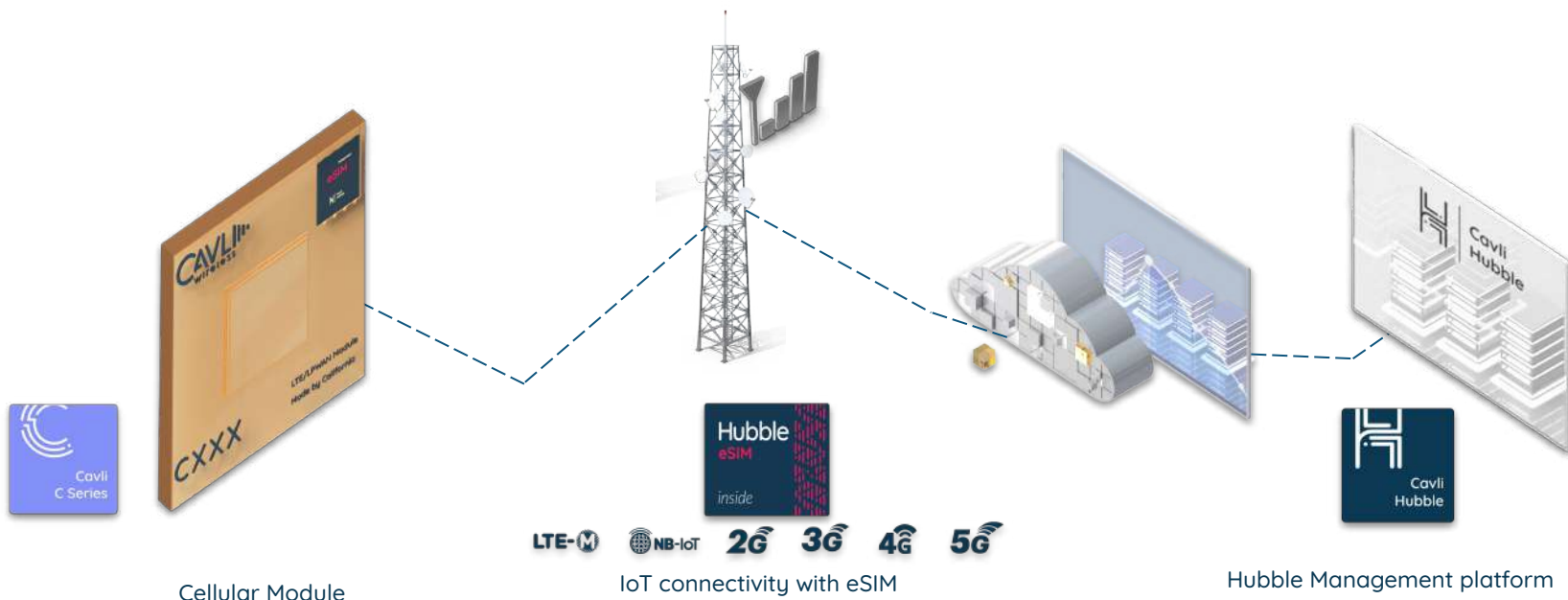
Research & Development - India, Vietnam



Manufacturing & Warehousing - India, Hong Kong

# Cavli Value Proposition

Cavli Wireless brings together the three basic building blocks of IoT connectivity enablement, required to build & scale IoT deployments and products across geographies in the most seamless & cost effective manner possible.



The complete IoT enablement package from smart modules to network access & connectivity management platform





CAVLI


Cavli IoT modules




# Cavli Module Portfolio/ Roadmap



Technology/ Focus	Production	Q4 2023	Q1 2024
4G/M2M	C10GS C120GS C16QS C10QM C20QM	C11QM CQS290	C17QS C11GS
LPWAN/M2M	C42GM C41QS	C42QM	C45QM
Automotive	-	AQ20	AQ62
5G/Telecom	-	-	CQM200 CQM220 CQM490

 In production

 Autograde



# 4G/ M2M

## C16QS



LTE Cat 1.bis  
(3GPP Release 14)

ARM Cortex M3 processor:  
204 MHz clock

4 MB Flash + 1.25 MB RAM

FreeRTOS + DFOTA

Integrated GNSS  
(GPS | BDS | QZSS)  
Extended GNSS Capabilities

Standalone GNSS working  
possible

Ultra low power  
consumption -  
PSM available (Idle| Slp 1 |  
Slp 2 | Hib

26,5 x 22,5 x 2,3 mm : LGA FF  
mPCIe FF Available

Pin compatible with C42GM,  
C42QM

## C10GS



LTE Cat 1 / Cat 4  
(3GPP Release 9)  
Global LTE Band support

ARM-11 processor: 400MHZ  
clock:32 KB D-Cache:16KB Data  
TCM for each CPU (Dual-core CPU)

256 MB Flash + 128 MB RAM

Linux OS (Kernel 3.4/5.4)  
With SDK + Full FOTA Support (No  
DFOTA)

Integrated GNSS  
132 Tracking Channels  
Extended GNSS Capabilities

Power Saving through DSM (Deep  
Sleep Mode) possible

37 x 21.8 x 2.8 mm : LGA FF  
mPCIe FF Available

Pin compatible with C10QM, C10QS,  
C20QM

## C10QM



LTE Cat 1 with 2G  
(3GPP Release 10)  
VoLTE Support

ARM Cortex A7 processor:  
1.3GHz clock

256/512 MB Flash +  
256 MB RAM

Yocto Linux OS (Kernel 4.14)  
With SDK + Full FOTA Support  
(No DFOTA Currently)

Integrated GNSS  
Qualcomm Location Suite

LCD Interface  
MIPI-DBI Type-B 8-bit

37 x 21.8 x 2.8 mm : LGA FF  
mPCIe FF Available

Pin compatible with C10GS



# 4G/ M2M



## C20QM



LTE Cat 4 with 2G  
(3GPP Release 10)  
VoLTE Support

ARM Cortex A7 processor:  
1.3GHz clock

256/512 MB Flash +  
256 MB RAM

Yocto Linux OS (Kernel 4.14)  
With SDK + Full FOTA Support  
(No DFOTA Currently)

Integrated GNSS  
Qualcomm Location Suite

LCD Interface  
MIPI-DBI Type-B 8-bit

37 x 21.8 x 2.8 mm : LGA FF  
mPCIe FF Available

Pin compatible with C10GS,  
C10QM, C10QS

## C120GS



LTE Cat 6  
(3GPP Release 10) (Upgradable to  
Release 11)

ARM Cortex A7 processor: 832MHz  
clock (Dual Core)

128MB Flash + 128MB RAM

Linux OS

M.2 Socket USB 3.0 (Type  
3042-S1-B) Form Factor

42 x 30 x 2.6mm : M.2 Key-B FF





# 4G/Automotive



## CQS290



LTE CAT 4 with 2G  
(3GPP Release 12)

Cortex A53 Quad-Core CPU 2GHz  
Architecture  
Adreno 702 GPU @ 845MHz

16GB eMMC + 2GB LPDDR4X  
64GB eMMC + 3GB LPDDR4X

Android 12  
Service packs till Android 15

Integrated GNSS  
Qualcomm Location Suite

WiFi a/b/g/n/ac

Bluetooth 5.0

40.4 x 35.4 x 2.7mm : LGA FF

## AQ20



LTE Cat 4 with 2G  
(3GPP Release 10)  
VoLTE Support

ARM Cortex A7 processor: 1.3GHz clock

256/512 MB Flash + 256/512 MB RAM

Yocto Linux OS (Kernel 4.14)  
With Tel-SDK + DFOTA\*

Integrated GNSS  
Qualcomm Location Suite

37.5 x 33 x TBD mm : LGA FF

IATF 16949:2016 quality management system

Automotive quality processes such as APQP, PPAP



# LPWAN/ M2M



## C42GM



LTE Cat M1/NB1/NB2  
(3GPP Release 14)  
Sigfox Support

ARM Cortex R4 processor:  
192MHz clock 32KB | Cache 32 KB  
D-Cache: 64KB A-TCM: 2MB  
B-TCM

16/32 MB Flash + 2MB RAM

Zephyr RTOS

Low Power Consumption:  
PSM available

Integrated GNSS

26.5 x 22.5 x 2.3 mm : LGA FF

Classic CAN Interface

## C41QS



NB2  
(3GPP Release 14)  
2-HARQ Support  
Global NB2 Band Support

ARM Cortex M3 CPU  
Up to 204 MHz

4 MB Flash + 272 KB SRAM

FreeRTOS

Ultra low-power Consumption:  
PSM available

Integrated GNSS

17.7 x 15.8 x 2.0 mm : LGA FF  
Compact FF

## C42QM



LTE Cat M1, NB2 with 2G/EGPRS  
(3GPP Release 14)  
VoLTE Support

ARM Cortex-A7 CPU  
Up to 800 MHz

64 MB Flash + 32 MB RAM

ThreadX RTOS  
With SDK (Q4 2023)

Ultra low-power Consumption:  
PSM available

Integrated GNSS  
Qualcomm Location Suite

26.5 x 22.5 x 2.3 mm : LGA FF

Pin compatible with C42GM and  
C16QS



# Upcoming 5G

## CQM220

5G RedCap with LTE Cat 4

(3GPP Release 17)

VoNR and VoLTE support

Integrated GNSS  
L1 + L5 Band Support

LGA FF  
M.2 FF



## CQM200

5G Advanced  
With LTE Cat 19 & FR1/FR2

(3GPP Release 17 and 18)

VoNR and VoLTE support

Integrated GNSS  
L1 + L5 Band Support

LGA FF  
M.2 FF



## CQM490

5G NR  
(3GPP Release 16)

Kyro Octa core CPU: Cortex  
2\*A78 6\*A55  
Adreno 613 GPU

Android 13  
Service packs till Android 17

64 GB eMMC + 3 GB LPDDR5X

Integrated GNSS  
Qualcomm Location Suite  
(Gen 9)

WiFi 5 & WiFi 6  
Bluetooth 5.2

Camera, Display, Video  
Interface Support

LGA FF



# Upcoming 4G

## C11QM



LTE Cat 1 with 2G  
(3GPP release 10)  
VoLTE Support

ARM Cortex A7 processor  
@ 1.3GHz clock

128 MB Flash + 128 MB RAM

ThreadX RTOS  
With SDK

Integrated GNSS  
Qualcomm Location Suite

37 x 21.8 x 2.8 mm : LGA FF  
mPCIe FF Available

Pin compatible with C10GS,  
C10QM, C10QS, C20QM

## C11GS



LTE Cat 1 / Cat 4  
450 MHz band support  
(3GPP Release 9)  
Global LTE Band support

ARM-11 processor: 400MHZ  
clock:32 KB D-Cache:16KB Data  
TCM for each CPU (Dual-core  
CPU)

256 MB Flash + 128 MB RAM

Linux OS (Kernel 3.4/5.4)  
With SDK + Full FOTA Support (No  
DFOTA)

Integrated GNSS  
132 Tracking Channels  
Extended GNSS Capabilities

Power Saving through DSM (Deep  
Sleep Mode) possible

37 x 21.8 x 2.8 mm : LGA FF  
mPCIe FF Available

Pin compatible with C10QM,  
C10QS, C20QM, C10GS

## C17QS



LTE Cat 1.bis  
(3GPP Release 14)

ARM Cortex M3 processor  
@ 204 MHz clock

8 MB Flash + 2 MB RAM

FreeRTOS  
With SDK

Integrated GNSS

iSIM Support

WiFi Scanning Support

26.5 x 22.5 x 2.3 mm : LGA  
FF  
mPCIe FF Available

Pin compatible with C16QS



CAVLI



Cavli manufacturing



# Manufacturing Overview

A snapshot of Cavli's manufacturing capabilities

**500K**  
CPH

High Speed SMT line @ 500,000 cph rate which is upgradable

**Anritsu**  
envision · ensure  
**ROHDE & SCHWARZ**

Industry approved test equipments for RF calibration



Automated chip firmware flashing machines



Custom designed job boards & software tools for production automation

**4M**

Current Manufacturing Capacity:  
**4 Million** Modules/year



**Made in India**

Our modules are manufactured at ISO/ TS 16949 qualified sites in India



# IoT Connectivity and Cloud



# Cavli product suite - Integrated eSIM and connectivity



We work directly with Tier 1 Mobile Operators to provide connectivity via eSIM integrated modules. Our global connectivity offering enables us to address projects from almost any country in the world.

27

NB-IoT

18

LTE-M

Countries

180+

LTE/2G



Industrial eSIMs  
integrated to module



Partnerships with  
Tier 1 MNOs



Flexible  
pricing/Pay-as-you-go  
(PAYG) plans



Supports NB-IoT,  
LTE-M, 2G, 3G, 4G, 5G



eSIM and data  
managed via cloud





# Cavli product suite - Cavli Hubble Platform



**Cavli Hubble Platform** enables devices to get connected to the cloud from wide range of customer applications with connectivity modes ranging from LPWAN, 4G , 5G to even legacy networks like 2G via our eSIM



Device Orchestration  
and Monitoring



Intelligent eSIM  
provisioning



Application Data  
Routing



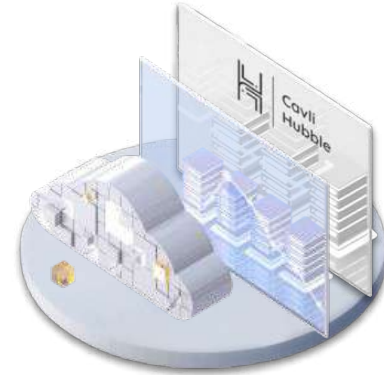
Firmware Updates  
Over-the-Air (FOTA)



IoT Data Subscription  
management



Web Service  
API



✓ **GSMA SGP02 v3.4 SAS accredited RSP platform**



Hubble MQTT  
Messaging Service

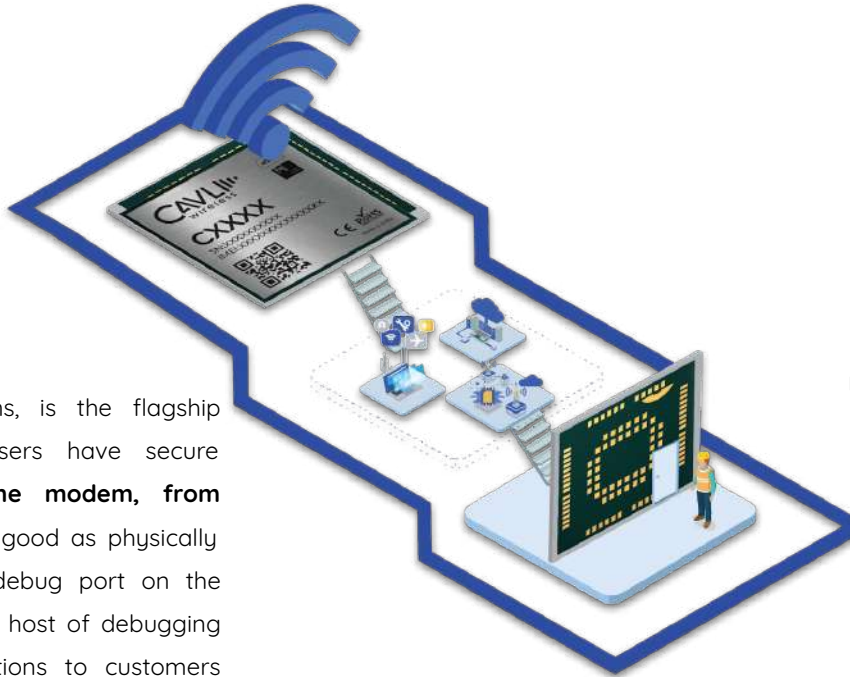


Hubble Cloud  
Connector Service



# Cavli Hubble Cloud Platform - Hubble Lens

Introducing Cavli Hubble Lens - Virtualizing the physical access to the modem



The Cavli Hubble Lens, is the flagship feature where the users have secure **remote access to the modem, from anywhere virtually**, as good as physically connecting into the debug port on the modem. This enables a host of debugging and configurations options to customers and developers.



READ and WRITE over  
10+ critical parameters



AT Commands  
Over The Air



Live / Historical system  
Logs



Reboot when modem  
performance is slow



Switch operators  
on the fly



Diagnose faulty responses  
of MCU commands.





# Thank You

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