



G H Patel College of Engineering & Technology
(A Constituent College of CVM University)



VIRTUAL INDUSTRIAL VISIT REPORT

NAME OF THE INDUSTRY: VOLANSYS

DATE: 4th, JUNE, 2021

**VENUE: BLOCK A-7TH FLOOR, SAFAL PROFITAIRE, CORPORATE ROAD,
PRAHLADNAGAR, AHMEDABAD-380 015, GUJARAT.**

NO. OF STUDENTS PARTICIPATED: 44 (All Year EC Students)

FACULTY MEMBERS: 04

Dr. Hitesh Shah
Prof. Rohit Parmar
Dr. Kavindra Jain
Prof. Nirav Desai

About VOLANSYS:

VOLANSYS is a Silicon Valley- based next generation Digital Transformation, Product Realization, and Data Science company offering Internet of Things, cloud and mobility solutions from conceptualization to manufacturing.

Since 2008, VOLANSYS has been powering enterprises worldwide to engineer smart connected products and applications to reduce the time-to-market and lower total cost of ownership by utilizing our ready to use OEM solution platforms.

With 50+ products implemented, 500+ employees and 9+ industry-standard reference platforms including CENTAURI 200 IoT Gateway, IoT cloud framework, Modular IoT Gateway and HomeBridge®, VOLANSYS is recognized as an end-to-end IoT solutions provider in Product Engineering, ODM and Manufacturing services. VOLANSYS is headquartered in India with eight offices across the globe.

PHOTOGRAPHS

5 DAYS EDN (4th - 8th JUNE 2020)
ON
"WIRELESS EMBEDDED SYSTEMS & SENSOR NETWORKS"
VIRTUAL INDUSTRIAL VISIT DEMONSTRATIONS

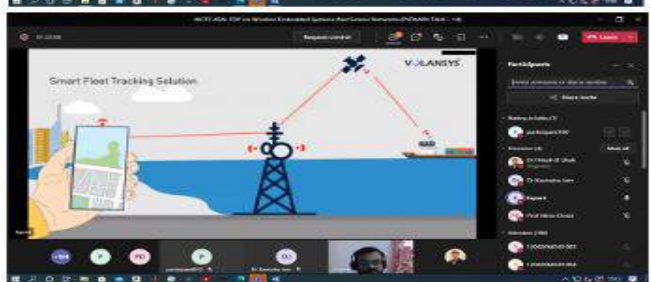
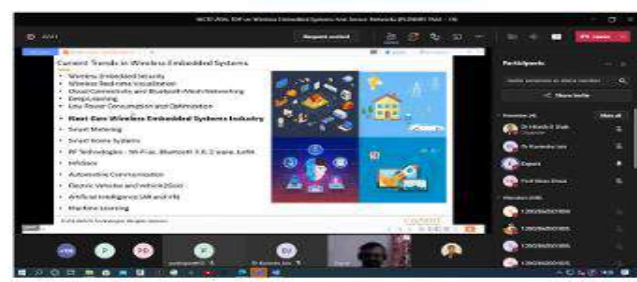
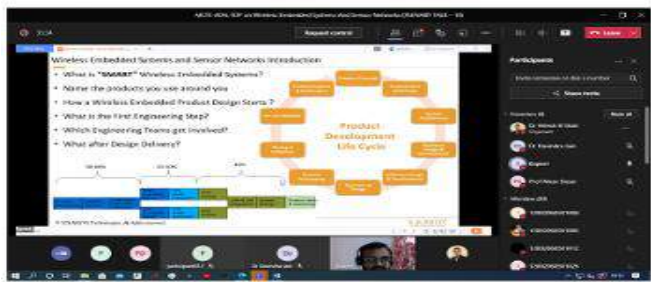
Er. Nilav Choksi
 VOLANSYS, Ahmedabad

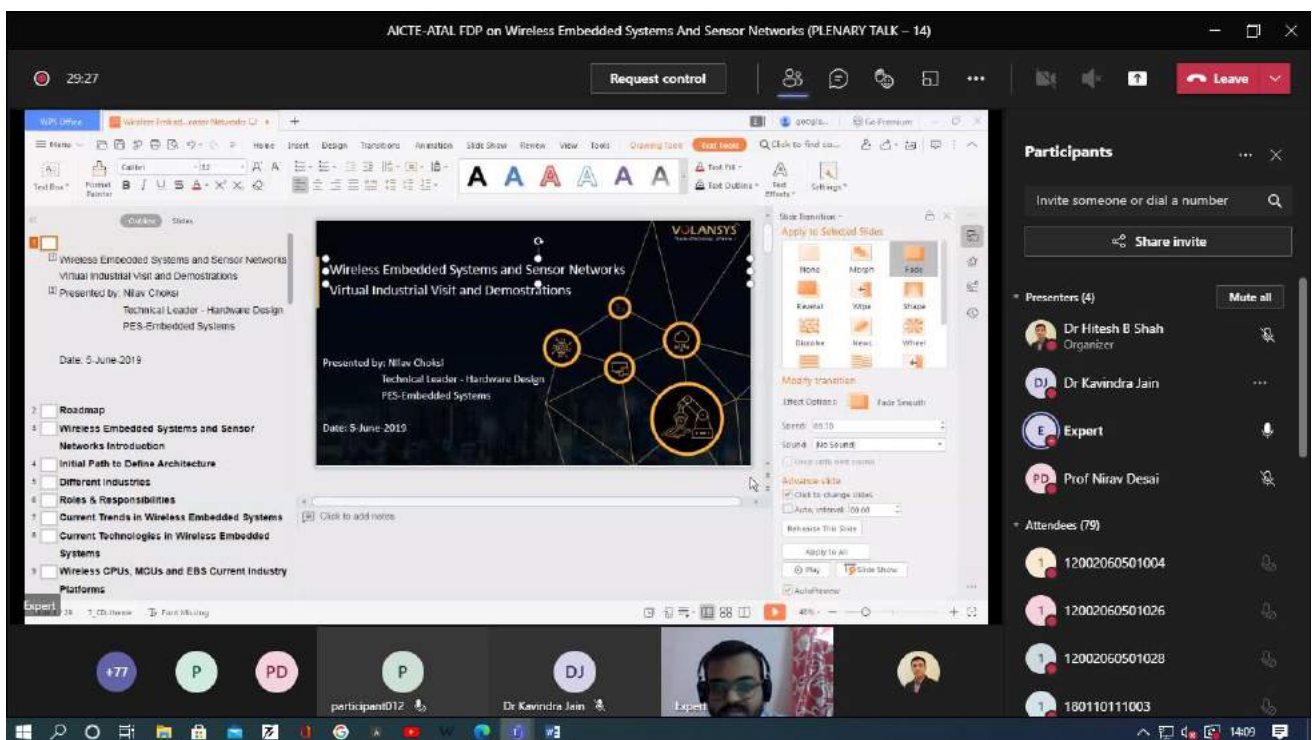
PLATFORM	MS TEAMS
DATE	04 June 2020
TIME	02:00 PM - 03:00 PM

Organized By:
 Department of Electronics & Communication Engineering,
 G. H. Patel College of Engineering & Technology
 (A Constituent College of CVM University)

Er. Nilav Choksi
 VOLANSYS, Ahmedabad

- Er. Nilav Choksi received his B.E. in 2011 & his M.Tech. in Embedded Systems in 2014.
- He has had 9 years of experience in Embedded Hardware Design and Development under Product Engineering Services. He started working at Knowledge Innovations Private Limited, Ahmedabad, Gujarat, India in R&D Department from October 2011 to 2012.
- He had successfully completed M.Tech training of embedded – nVRA from 2013 to 2014 and also worked as an instructor till June 2014 to July 2015.
- During this tenure, he has already conducted more than 20 workshops/seminars of Embedded system, MSP430 and Embedded hardware design in different Embedded domain companies, colleges and CEMs.
- He has also guided more than 15 projects in M.Tech and it's tech level also involves projects in different National events.
- Since Sept. 2015, he is working as Technical Leader in Embedded Hardware Division in Volansys Technology, Ahmedabad, Gujarat, India. He has more experience in embedded Hardware design especially high speed and precision based design in IoT, Atomic, Consumer Electronics, Automotive, Medical and Aerospace.
- He has worked on more than 75 low projects till now in Embedded domain. He is expert in FCC, CE, IC, safety and reliability Certifications of different Embedded products and passed more than 10 products with different certifications.





Department of Electronics & Communication Engineering
G. H. PATEL COLLEGE OF ENGINEERING & TECHNOLOGY, VALLABH VIDYANAGAR
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30:18

Request control

Wireless Embedded Systems and Sensor Networks (PLENARY TALK – 14)

Roadmap

- Wireless Embedded Systems and Sensor Networks Introduction
- Current Trends in Wireless Embedded Systems
- CPUs, MCUs and EBS Current Industry Platforms
- Wireless Industry Services Offerings to it's customers
- Current Industry Wireless Product Engineering Services
- Current Wireless Embedded Systems Industry Case studies and Demonstrations
 - ❖ Modular IoT Gateway,
 - ❖ Modular End Node,
 - ❖ Wireless Module
 - ❖ Homebridge
 - ❖ Voice Control System
 - ❖ Tier Pressure Monitoring system
 - ❖ Smart Wearable Band Prototype for Human Activity and Wellness Monitoring

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Participants

Invite someone or dial a number

Share invite

Presenters (4) Mute all

- Dr Hitesh B Shah Organizer
- Dr Kavindra Jain
- Expert
- Prof Nirav Desai

Attendees (81)

- 12002060501004
- 12002060501026
- 12002060501028
- 180110111003

Dr Kavindra Jain

Expert

14:09

33:34

Request control

Wireless Embedded Systems and Sensor Networks (PLENARY TALK – 14)

Wireless Embedded Systems and Sensor Networks Introduction

- What is "SMART" Wireless Embedded Systems?
- Name the products you use around you
- How a Wireless Embedded Product Design Starts ?
- What is the First Engineering Step?
- Which Engineering Teams get involved?
- What after Design Delivery?

Product Development Life Cycle

30-40%

20-30%

40%

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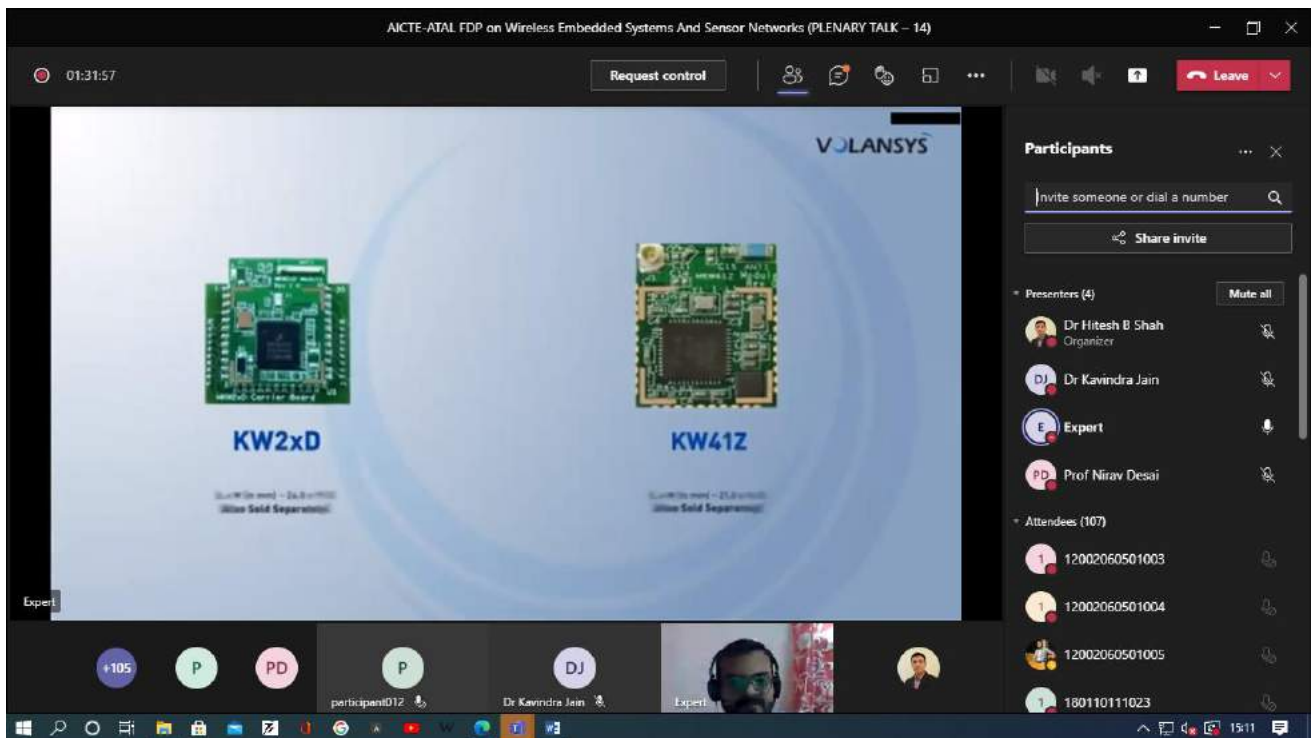
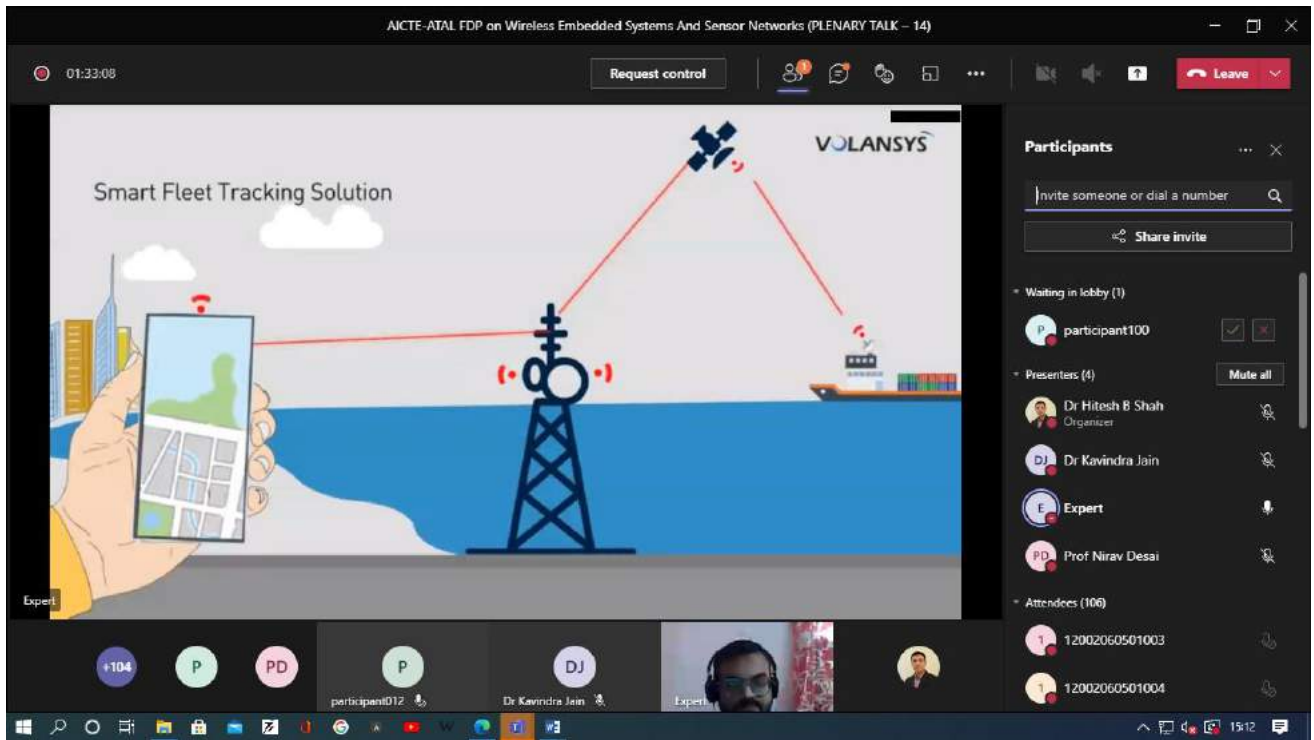
Attendees (90)

- 12002060501004
- 12002060501005
- 12002060501012
- 12002060501026

Dr Kavindra Jain

Expert

14:13




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AICTE-ATAL FDP on Wireless Embedded Systems And Sensor Networks (PLENARY TALK – 14)

01:31:41

Request control

Leave



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- ↳ Modular Hardware Design
- ↳ Multi Radio Connectivity
- ↳ Ultralow Powered Application Processor
- ↳ Quick & Easy Edge Device Commissioning
- ↳ Secure Authentication via Hardware
- ↳ Radios: Thread, ZigBee, NFC, Wi-Fi, BLE, 802.15.4, Support External 3G Connectivity
- ↳ OS: Linux, Brillo, OpenWrt, Yocto
- ↳ Monitor & Control End Devices via Mobile & Amazon Alexa
- ↳ Connect 2 Radio Modules simultaneously
- ↳ Easily Customizable & Expandable
- ↳ mikroBUS™ Compatible Connectivity
- ↳ Support of SigFox & LoRaWAN (Coming Soon)
- ↳ FCC/CE Certification (Coming Soon)

Participants

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Presenters (4) Mute all

- Dr Hitesh B Shah Organizer
- Dr Kavindra Jain
- Expert
- Prof Nirav Desai

Attendees (107)

- 12002060501003
- 12002060501004
- 12002060501005
- 180110111023

Expert

+105 P PD P DJ

participant012 Dr Kavindra Jain Expert


15:11

AICTE-ATAL FDP on Wireless Embedded Systems And Sensor Networks (PLENARY TALK – 14)

01:31:25

Request control

Leave



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IoT Platform Enabler for Multiple Industries

Participants

Invite someone or dial a number

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Presenters (4) Mute all

- Dr Hitesh B Shah Organizer
- Dr Kavindra Jain
- Expert
- Prof Nirav Desai

Attendees (107)

- 12002060501003
- 12002060501004
- 12002060501005
- 180110111023

Expert

+105 P PD P DJ

participant012 Dr Kavindra Jain Expert


15:11

01:30:09

Request control

ACITE-ATAT FDP on Wireless Embedded Systems And Sensor Networks (PLENARY TALK - 14)

Modular Edge Node Platform



74.98mm
49.69mm

24.18mm

Technical Specifications:

- Memory: Onboard SPI Flash 1MB
- Pluggable Modules: KW41Z, KW2xD, NXP JN5169, NXP JN5179, ZigBee Modules
- RoHS compliant

Connectivity:

- End Device (Southbound):
 - Thread, Zigbee®, BLE, using KW41Z, NFC - NXP JN5169
- Cloud (Northbound): Wi-Fi/3G, USB, Ethernet (through MikroE devices)
- Interfaces: Pluggable mikroBUS™ compatible sensor interface, SPI, UART, I2C, GPIO, USB, JTAG, Analog, LED, Switch

Power Supply:

- micro USB: 5V, 500mA from
- Battery: 3V from 2xAAA or external Li-ion Battery- 3.8V to 4.2V from

MENP Platform with VOL KW41Z Module For Thread/Zigbee/BLE Connectivity

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Participants

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Presenters (4) Mute all

- Dr Hitesh B Shah Organizer
- Dr Kavindra Jain
- Expert
- Prof Nirav Desai

Attendees (107)

- 1200260501003
- 1200260501004
- 1200260501005
- 1200260501006

105 P PD P DJ Expert

participant012 Dr Kavindra Jain Expert


15:03

01:20:02

Request control

ACITE-ATAT FDP on Wireless Embedded Systems And Sensor Networks (PLENARY TALK - 14)

Modular IoT Gateway Solution



VOL NXP IMX6UL SOM
VOL KW2xD
VOL KW41Z
Modular Edge Node Platform

Enterprise and Industrial IoT Gateway Platform

Securely connect hundreds of sensors and edge devices to build Large Node Network (LNNs) based IoT solutions for Buildings, Manufacturing, Smart Cities, Energy & Utility, Agriculture and more.

Technical Specifications:

- Processor: ARM Cortex-A7 CPU on VOL NXP IMX6UL or GULL SO-DIMM SOM
- Memory: 256MB DDR3L SDRAM, 1GB NAND Flash, 4GB eMMC, 4GB uSD Card, 4KB EEPROM (all expandable)
- Operating System: Linux, Yocto, Google Brillo, Weave, OpenWRT
- Wireless Device connectivity: Thread, Zigbee, BLE, Wi-Fi, LoRaWAN, Sub-GHz
- Cloud Connectivity: Wi-Fi/3G, USB, Ethernet
- IoT Protocol Support: MQTT, CoAP (Constrained Application Protocol)
- Cloud IoT Platform Integration: AWS IoT, Ayla, ClearBlade, Samsung ARTIK, IBM Watson, GCP, Everything, Amazon Alexa Voice Assistant
- Security: advanced hardware-level security using NXP AC70CM
- OTA firmware update: Gateway and on-field devices
- Semi-automated installation of edge node using NFC interface

Increases speed to market | Easy to customize with SDK

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Participants

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Presenters (4) Mute all

- Dr Hitesh B Shah Organizer
- Dr Kavindra Jain
- Expert
- Prof Nirav Desai

Attendees (107)

- 1200260501003
- 1200260501004
- 1200260501005
- 1200260501006

109 P P P PD P DJ Expert

participant028 Prof Nirav Desai participant012 Dr Kavindra Jain Expert

14:59

AICTE-ATAL FDP on Wireless Embedded Systems And Sensor Networks (PLENARY TALK – 14)

01:16:38

Request control

Participants

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Presenters (4) Mute all

Dr Hitesh B Shah Organizer

Dr Kavindra Jain

Expert

Prof Nirav Desai

Attendees (113)

12002060501003

12002060501004

12002060501005

12002060501006

14:56

Current Industry Product Engineering Services

HARDWARE	EMBEDDED SOFTWARE	CONNECTIVITY	MANUFACTURING
<ul style="list-style-type: none"> Hardware Selection Multi-layer PCB Design Sensor Infusion RF Antenna Design PCB Fabrication, Assembly Hardware DVT and EVT Mechanical Enclosure 	<ul style="list-style-type: none"> OS, Kernel, Protocol Porting Board support package(BSP) Interfaces development Embedded Application Multimedia and Audio Power and Memory Mgmt. Identification and Security O/A updates 	<ul style="list-style-type: none"> Wireless Connectivity Digital Networking Cloud Platform Integration Connected Mobile Apps Voice and NLP Third-party API Integration Machine Learning, AI 	<ul style="list-style-type: none"> Material Procurement Pilot Validation Testing (PVT) Compliance and Certifications PCB Assembly Product Enclosure Assembly Eng. to Production Transfer Product Packaging Pre-dispatch Quality Control Product Shipment Pilot / Mass Production

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VCLANSYS

Expert

participantD12

Dr Kavindra Jain

Expert

AICTE-ATAL FDP on Wireless Embedded Systems And Sensor Networks (PLENARY TALK – 14)

01:34:38

Request control

Participants

Invite someone or dial a number

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Presenters (4) Mute all

Dr Hitesh B Shah Organizer

Dr Kavindra Jain

Expert

Prof Nirav Desai

Attendees (107)

12002060501003

12002060501004

12002060501005

180110111023

13:14

VOL KW41Z

Technical Specifications:

- Powerful processor:** 32-bit ARM® Cortex®-M0 operating up to 48 MHz
- Ultra-compact form factor:** 19mm x 11.5mm x 2.8mm (LxWxD)
- On-board memory:** 64KB of SRAM, 512KB Flash
- Hardware supported encryption AES 128 bit, TRN G Supported
- RoHS compliant

Connectivity:

- Zigbee/Thread (IEEE 802.15.4) – 100 dBm Rx Sensitivity
- Bluetooth Low Energy (BLE 4.2) – 96 dBm Rx Sensitivity
- Interfaces:** mikroBUS™ compatibility, Integrated chip antenna or U.FL connector, xSPI, 1xUART, 2xI2C, CMT, SWD, 16-bit ADC, Timers

Power Supply:

- Configurable 9 MCU low power modes for better battery optimization
- Max output power: +3.5 dbm
- Operating range from 0.9 V to 4.2 V

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Expert

participantD12

Dr Kavindra Jain

Expert