



Vidya Vikas Education Trust's

Universal College of Engineering

Accredited with B+ Grade by NAAC

(Permanently Unaided | Approved by AICTE, DTE & Affiliated to University of Mumbai)

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College Profile:

Everything you need to know about us:

Embraced by lush greenery and scenic beauty, Universal College of Engineering is a treasured place for aspiring engineers to leave their imprints on success.

As a college within the wider network frame, we are one of the fastest-growing institutions in India. Our institute has been accredited by the National Assessment and Accreditation Council (NAAC) with a B+ grade in the first cycle of accreditation. Times of India Survey Ranked No.1 in India among Top Emerging Private Engineering Institutes for 6 consecutive years 2015, 2016, 2017, 2018, 2019, and 2020 and the saga of accolades still continues.

In response to the expectations of quality technical education, our college is approved by the All-India Council for Technical Education (AICTE), New Delhi; Recognized by the Directorate of Technical Education (DTE), Government of Maharashtra; affiliated to Mumbai University. Our college is also associated with professional bodies like IEEE, IETE, ISA, and CSI to update the revolutionary technological advancements.

We offer 4 years of full-time Bachelor of Engineering in Computer Engineering, Civil Engineering, Artificial Intelligence & Machine Learning, Information Technology

The unique state-of-the-art facility of the institute has been carefully designed to accommodate the needs of the students. Laboratories are equipped with world-class facilities based on the latest technology of different sectors. Our smart classrooms are well ventilated, spacious, and equipped with overhead and LCD projectors along with the public address system. The College library provides arich collection of specialist library resources and services to support student's academic work and enrich their research skills.



We are obliged to equip our students to get placed in highly reputed companies by mentoring their necessary skill set for cutting-edge technologies. The core highlighted areas are helping students with their technical competency, communication skills along with career guidance and counseling.

Universal College of Engineering has produced a large number of successful alumni who are working in reputed organizations in India and abroad and have contributed immensely to the cause of nation-building and society. We welcome all engineering aspirants to create an incredible legacy in the field of engineering.





5G-AI Marriage—Theme at 2022 Qualcomm 5G Summit

X70 5G AI Device Adds Enhancements:

First off, Qualcomm Technologies has announced new capabilities for its Snapdragon X70 5G AI processor modem-RF system. The new features add to the 5th gen 5G modem-to-antenna solution the company announced at the MWC Barcelona show in February.

The key enhancement to the X70 is Qualcomm's Smart Transmit 3.0 technology, an upgraded system-level feature that now extends support to Wi-Fi and Bluetooth transmit power management. As a result, the technology now enables real-time averaging of transmit power across 2G–5G, mmWave, Wi-Fi (2.4 GHz 6/6E/7), and Bluetooth (2.4) radios. This includes all versions of Wi-Fi, even Wi-Fi 7.

Last week the company launched its own Wi-Fi 7 platform.



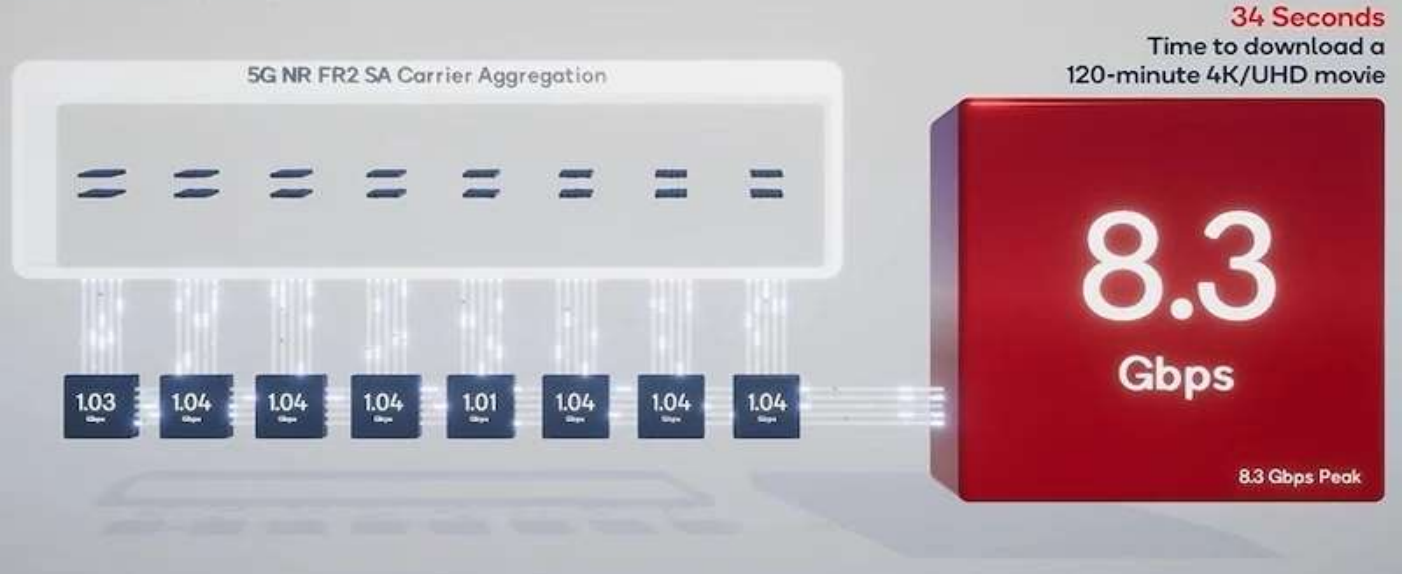
For the end-user, Smart Transmit 3.0 claims to help enable devices to intelligently manage transmit power, providing users with faster, more reliable wireless connections. Previous generations of Qualcomm's Smart Transmit technology introduced optimized uplinks, time-averaging, and spatial averaging of power across multiple antennas. Version 3.0 goes a step further extending optimizing transmissions across cellular, Wi-Fi, and Bluetooth antennas.

First 5G Standalone mmWave Link:

Qualcomm's second announcement at today's 5G Summit is what it claims is the world's first 5G standalone mmWave connection, with peak speeds of more than 8 Gbps. The test was achieved at Qualcomm Technologies' 5G Integration and Test Labs in San Diego using Keysight's 5G Protocol R&D Toolset and a test 5G device based on the Snapdragon X70.

Standalone mmWave

26 GHz band (n258), 8x100 MHz (8CC)



According to Qualcomm, the fact that the test occurred in 5G standalone mmWave opens the door for the deployment of 5G mmWave networks and devices without using an anchor on a sub-6 GHz spectrum. This means more flexibility for operators that are keen to provide wireless fiber broadband access with multi-Gigabit speeds and ultra-low latency to customers in both the residential and commercial markets.

At today's 5G Summit event, the company is also showing demos of other Snapdragon X70 capabilities. These demos display AI-enhanced 5G performance and 5G sub-6 GHz carrier aggregation across three TDD (time division duplex) channels, achieving peak download speeds up to 6 Gbps. The company says the Snapdragon X70 is currently sampling for customers and mobile devices based on the Snapdragon X70 are expected to debut by late 2022.

Robotics Platform Blends AI and 5G:

Rounding out its 5G-AI-themed announcements today at the 5G Summit, Qualcomm is unveiling two robotics development platforms—the Qualcomm Robotics RB6 Platform and the Qualcomm RB5 AMR reference design. The products are aimed at engineers developing a wide range of robotic systems, including autonomous mobile robots (AMRs), delivery robots, highly automated manufacturing robots, collaborative robots, urban airborne mobility (UAM) aircraft, industrial drone infrastructure, and autonomous defense units.

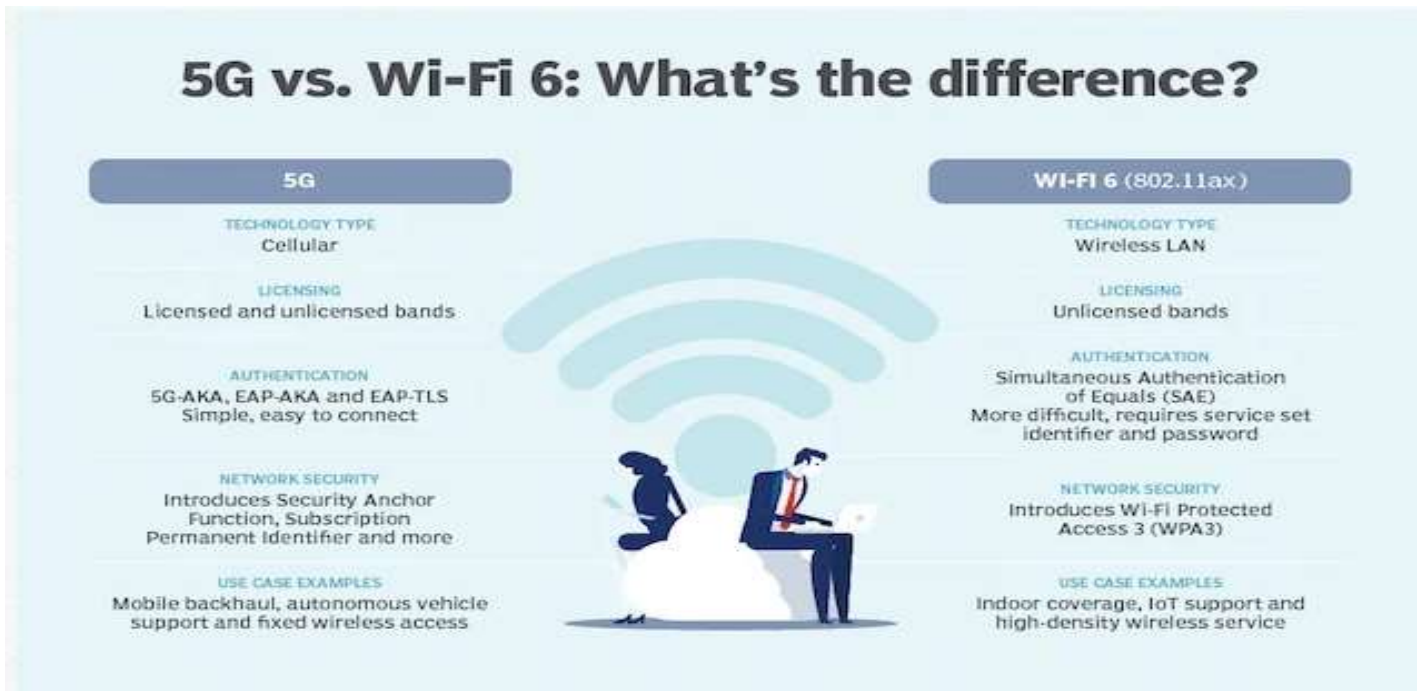
The Qualcomm Robotics RB6 platform continues the company's roadmap of robotics development platforms, the most recent example being its drone-focused Qualcomm Flight RB5 product launched last summer. Like that system, the new RB6 marries 5G and AI, but it goes beyond with 5G connectivity that supports global sub-6 GHz and mmWave bands in a mainstream, enterprise, and private networks.

The RB6 platform has a flexible architecture with expansion cards. Those cards can be used to add support for 3GPP Release 15, and Releases 16, 17, and 18 features when those boards become available. Edge AI and video processing capabilities on the RB6 are available through its enhanced Qualcomm AI Engine, which is capable of 70 to 200 trillion operations per second (TOPS). Aside from the hardware, the Qualcomm Robotics RB6 platform includes an integrated, premium AI software development kit (SDK): the Qualcomm Intelligent Multimedia SDK. The SDK blends "multimedia, AI and ML, computer vision, and networking building blocks to support the end-to-end deployment of robotic applications," states Qualcomm.



Qualcomm Helps Push Wi-Fi 7 From Theory to Hardware

The field of wireless communications is a dynamic and rapidly evolving one. In just the past two years alone, the industry has seen a plethora of new and transformative technologies roll out, including Wi-Fi 6 and 5G. Despite this, the field is showing no signs of slowing down.

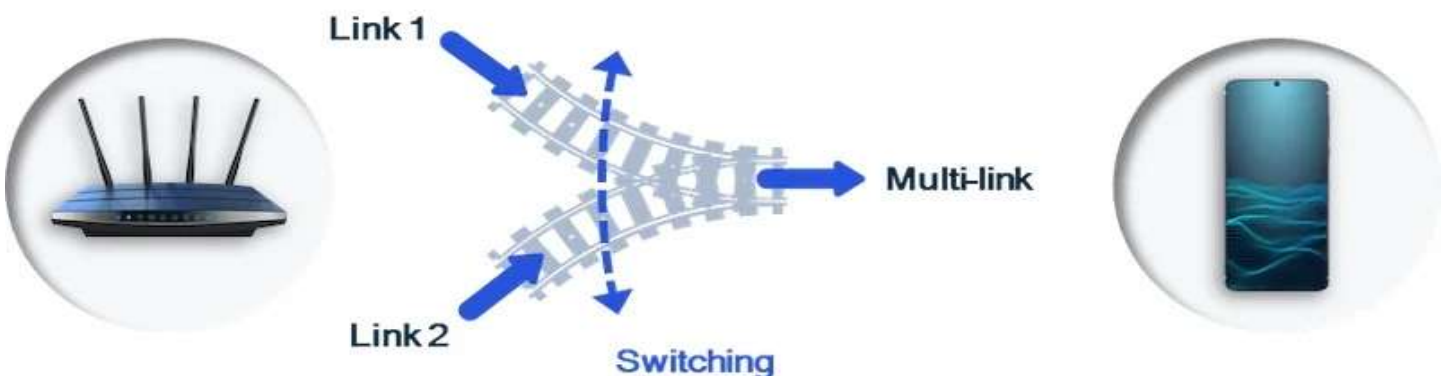


Shifting Towards Wi-Fi 7:

As All About Circuits contributor Robert Keim describes in his technical article on the subject, Wi-Fi 7 is an exciting new technology that plans to improve on existing technologies such as Wi-Fi 6.

Formally known as IEEE 802.11be, Wi-Fi 7's goal is to define new features of 802.11 on bands between 1 and 7.125 GHz, with the primary objective of increasing peak throughput and data rates while reducing latency in wireless connections.

For this reason, Wi-Fi 7 aims to achieve a maximum throughput of at least 30 Gbps, with a maximum theoretical throughput of 46 Gbps. This throughput represents a maximum 4.8x improvement over Wi-Fi 6, whose maximum throughput is 9.6 Gbps.



While more details are still being ironed out, it is speculated that this technology will achieve these data rates by using a 320 MHz channel width, 4096-QAM modulation, and access to additional spectrum resources from the 6 GHz band.

On top of this, a considerably revolutionary aspect of Wi-Fi 7 is its support for the multi-link operation. In this scheme, a connected device can alternate between either the 2.4 GHz, 5 GHz, or 6 GHz band in such a way as to always ensure maximum data rates while minimizing network congestion.

Qualcomm's "Highest-performance" Wi-Fi 7 Platform:

This week, Qualcomm made headlines in the wireless industry when it debuted its new commercial Wi-Fi 7 platform. Called the Wi-Fi 7 Networking Pro Series, the new platform is being called the "world's highest-performance Wi-Fi 7 network infrastructure platform" currently available.

To quantify this, Qualcomm claims that the new family can achieve a peak aggregate wireless capacity of 33 Gbps and point-to-point connections that exceed 10 Gbps. Further, Qualcomm states that the family supports several key features, including 320 MHz channels and multi-link support.

On a hardware level, the family consists of four unique offerings.

These offerings include:

- Qualcomm Networking Pro 1620: A quad-band, 16-stream device capable of achieving 33.1 Gbps peak capacity
- Qualcomm Networking Pro 1220: A tri-band, 12-stream, device capable of 21.6 Gbps peak wireless capacity
- Qualcomm Networking Pro 820: A quad-band, 8-stream device capable of 13.7 Gbps peak wireless capacity
- Qualcomm Networking Pro 620: A tri-band, 6-stream device capable of 10.8Gbps peak wireless capacity

Industry Impact—From Theory to Industry:

By taking Wi-Fi 7 from theory to industry, Qualcomm is making huge strides in wireless communications.

What was once thought impossible is now being done in practice, as Qualcomm has created the hardware that supports wireless data rates up to 33.1 Gbps—a number that blows Wi-Fi 6 out of the water.

As the Wi-Fi 7 continues to evolve and roll out, Qualcomm is proving the technology's viability, which should serve as a huge catalyst for the industry.

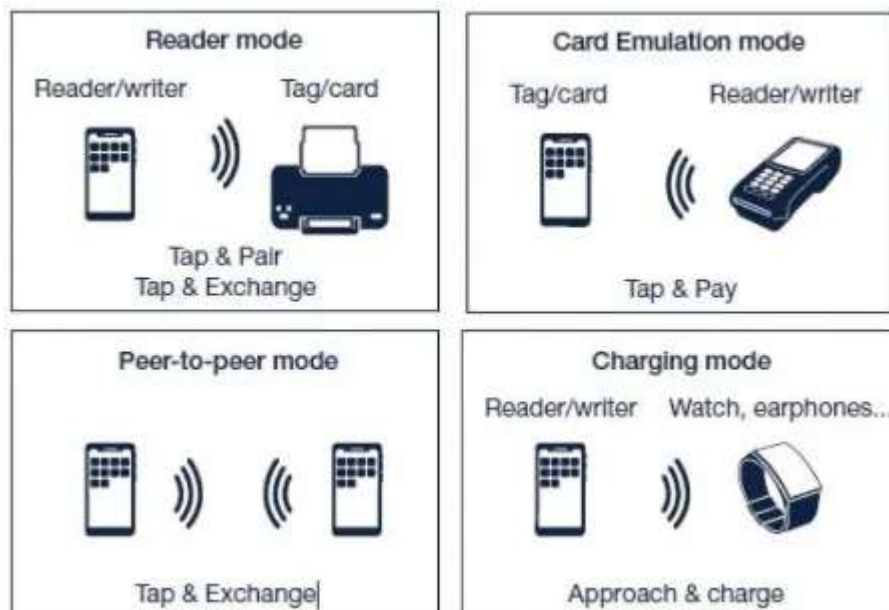
New Smart Syringe Uses NFC to Store Drug Information



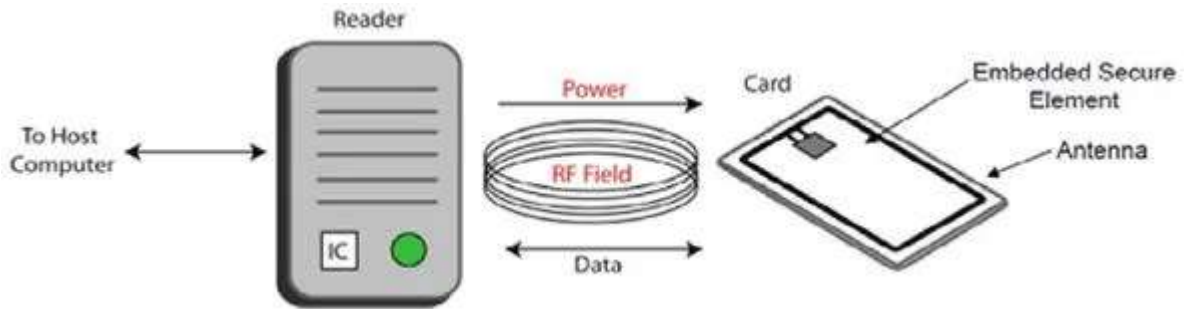
From smart thermostats to toothbrushes with built-in Bluetooth connectivity, smart devices play an increasingly important role in our lives today. Yet the importance of smart devices is extending beyond our households and into critical areas like healthcare.

One such example of a smart device is a recently announced pre-filled syringe made by NP Plastibell that is able to relay important information about its contents to doctors and patients using near-field communications (NFC) technology.

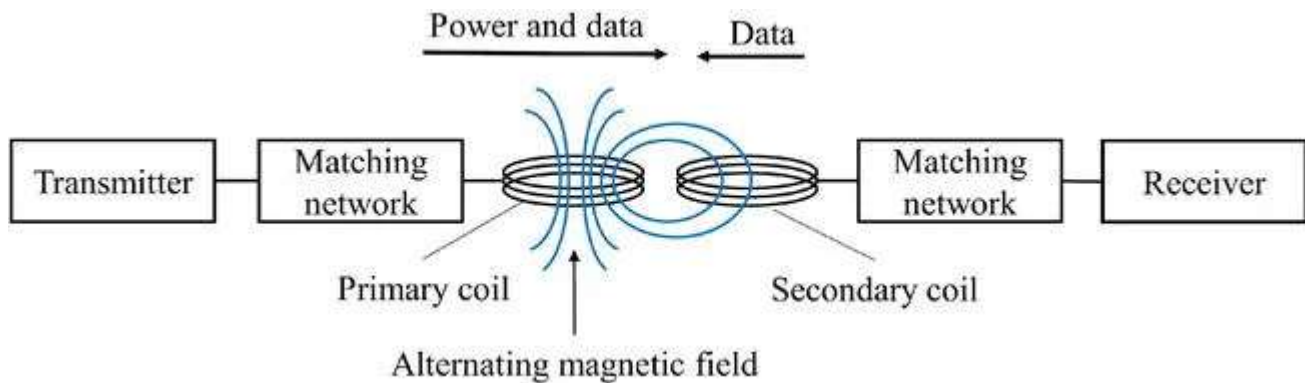
NFC Enables Data Storage Onboard Syringe: While the syringe itself may appear ordinary from the outside, it contains an embedded NFC tag inside that can store and transmit information about the pre-filled contents of the syringe. The tag is the STMicroelectronics' ST25TV NFC tag. The ST25TV uses an onboard EEPROM to store data that can be communicated to an NFC reader. In the case of a smart syringe, this data could be the expiration date, dosage, and side effects of the pre-filled medicine in the syringe. One of the fundamental values of NFC tags is that they do not require batteries to operate. They are powered when placed in close proximity to an NFC reader, such as a smartphone. Together, the NFC reader and NFC tag form the entire NFC system, which enables communication with objects such as the NP Plastibell syringe. The NFC reader is known as the “active” part of the NFC system and the NFC tag is known as the “passive” part of the system. The NFC reader initiates all communication with the NFC tag. For example, when the user brings the NFC reader in close proximity to the NFC tag, the reader initiates communication, powers up the tag, and transmits information to and from the tag to the reader. Only an NFC reader can communicate with an NFC tag; this adds a layer of authentication by only allowing NFC devices to read the data stored on the tag. There are four main modes in which the system can operate: reader mode, card emulation mode, peer-to-peer mode, and charging mode. As shown in the image below, these modes describe the ways the reader and tag can interact.



Inductive Coupling Underlies NFC Technology: NFC can be thought of as a shorter-range type of RFID (radio frequency identification) technology. While RFID technology operates over a range measured in meters, NFC operates over centimeters.



The NFC reader generally communicates with the NFC tag using a standard frequency of 13.56 MHz. The underlying phenomenon enabling this communication is called inductive coupling. Inductive coupling allows communication between the reader and tag.



VidyaVikas Education Trust's
Universal College of Engineering
 Kaman-Bhiwandi Road, Survey
 No. 146 (Part), Village Kaman, Taluka Vasai,
 District Palghar-401208
 Ph- 8007090722, 8407979167, 8007478659
 Website: www.ucoe.edu.in/www.universalcollegeofengineering.edu.in