6GHz Ecosystem Readiness and Products

USTDA Thailand 6GHz Spectrum Virtual Workshop

Day 2 - Session 4: Use Cases/Investment Opportunities
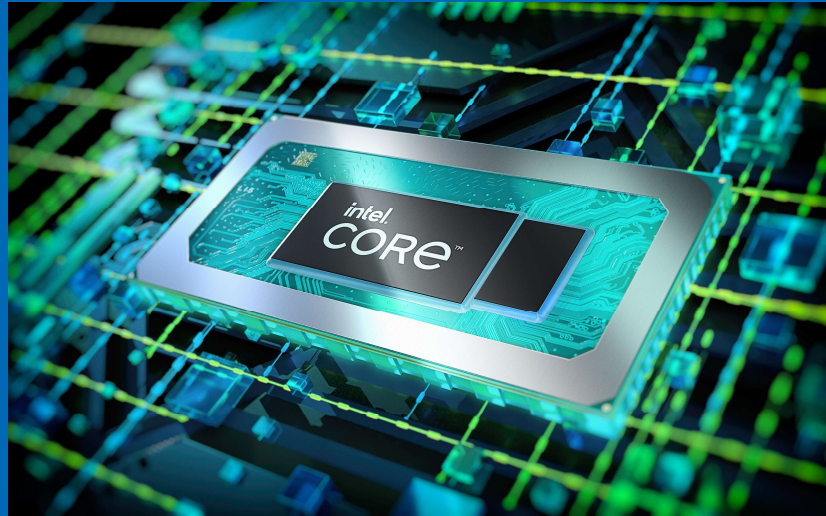
February 17-18, 2022

intel.

6 GHz Wi-Fi Technology Is Here!

"More than **338 million Wi-Fi 6E** devices are expected to come to market this year."

"Nearly **20% of all Wi-Fi 6** device shipments will support 6 GHz by 2022."

STANDRADS

- IEEE 802.11ax (Wi-Fi 6) ratified and published Feb 2021
- IEEE 802.11be (Wi-Fi 7) is targeting ballot in May 2023

CERTIFICATIONS

- Wi-Fi Alliance started Wi-Fi 6 in 2019 and Wi-Fi 6E in Jan 2021
- More than 2000 Wi-Fi 6 and 55 Wi-Fi 6E certifications
- US FCC KDB Phase I & II, ETSI EN Notified Body Process (2021)
- FCC AFC System Cert. (2022)
- Proceeding with Certification: S Korea, Brazil, Saudi Arabia, others
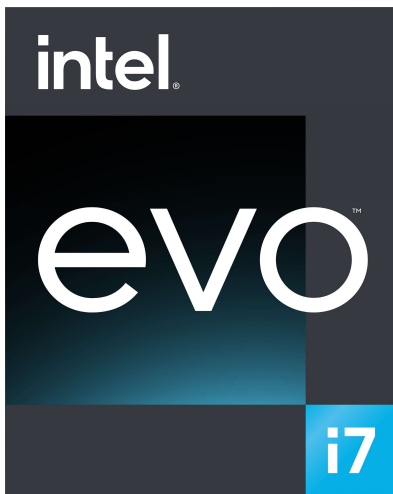
PRODUCTS

- ~160 of products targeting various form factors and use cases already in market or being introduced
- Routers/Access Points, Smart Phones, Laptop/Desktop PCs, Smart TVs, etc.

ECOSYSTEM

- World's leading silicon vendors, system manufacturers, and application providers, operators, test equipment manufacturers, test labs through participation in various industry bodies
- IEEE 802.11, Wi-Fi Alliance, WBA, ETSI BRAN, WInnForum

intel

Wi-Fi 6E Product Ecosystem Is Rapidly Maturing

- The Wi-Fi 6E product ecosystem is rapidly maturing with Windows 11 support + increasing number of devices (160+ Products: PCs, routers, APs, phones, TV, others)

- Intel just launched our 12th Generation Intel® Core™ PC (DT + NB) platforms that have partially integrated Wi-Fi 6E (easier for PC OEMs to configure with Wi-Fi 6E products)

- Intel new premium 12th Gen platforms – Intel® Evo™ Laptops for consumers and Intel® vPro® DT/NB for business will require Intel Wi-Fi 6E

- The 12th Generation Intel® Core™ i9-12900HK mobile gaming platform

  - Best in class connectivity - Wi-Fi 6E (Gig+) , Thunderbolt 4
  - Intel® Killer™ Wi-Fi 6E : Low Latency Gameplay
  - Intel® Killer™ Wi-Fi 6E (Gig+): Intel® Double Connect

- Expect >3X the number of Intel PC models with Wi-Fi 6E in 2022 vs. 2021

6 GHz - Wi-Fi 6E PC Products Expanding Exponentially! (Dec'21)

Laptop PCs (72+)

- **Dell**
  - Alienware X15
  - Alienware X17
  - Latitude 5320
  - Latitude 5420
  - Latitude 5421
  - Latitude 5430 Rugged
  - Latitude 5520
  - Latitude 5521
  - Latitude 7330 Rugged Extreme
  - Latitude 9420
  - Precision 3560
  - Precision 3561
  - Precision 7560
  - Precision 7760
- **HP**
  - Omen 16
  - Omen 16
  - Omen 17
  - Spectre x360 16 (EVO)
- **Lenovo**
  - ThinkPad P1 G4
  - ThinkPad P15 G2
  - ThinkPad P15s G2
  - ThinkPad P17 G2
  - ThinkPad T14 G2
  - ThinkPad T14s G2
  - ThinkPad T15 G2
  - ThinkPad T15g G2
  - ThinkPad X1 Extreme G4
  - ThinkPad X13 G2
- **LG**
  - UltraGear 17G90Q
- **ZEBRA**
  - ET80 12" 2in1
  - ET85 12" Tablet
- **FRAMEWORK**
  - ET80 12" 2in1

- **MSI**
  - Creator 15 (10th Gen)
  - Creator 15 (11th Gen)
  - Creator 17
  - Creator M16
  - Creator Z16
  - Delta 15 (AMD)
  - GE66 (10th Gen)
  - GE66 (11th Gen)
  - GE66 (12th Gen)
  - GE76 (10th Gen)
  - GE76 (11th Gen)
  - GE76 (12th Gen)
  - GL66 (11th Gen)
  - GL76 (11th Gen)
  - GP66 (11th Gen)
  - GP76 (11th Gen)
  - GP76 (12th Gen)
  - GS66 (10th Gen)
  - GS66 (11th Gen)
  - GS66 (12th Gen)
  - GS76 (11th Gen)
  - GS77 (12th Gen)
  - Prestige 14 EVO
  - Prestige 15
  - Summit E13 Flip EVO
  - Summit E16 Flip EVO
  - WE76
  - WS66
  - WS76
- **Razer**
  - Blade 14
  - Blade 15 Advanced (10th Gen)
  - Blade 15 Advanced (11th Gen)
  - Blade 17 (11th)
  - Blade Pro 17 (10th Gen)
  - Blade Pro 17 (11th Gen)
- **Samsung**
  - Galaxy Book Odyssey
  - Galaxy Book Pro 13
  - Galaxy Book Pro 15
  - Galaxy Book Pro 360 13
  - Galaxy Book Pro 360 15

Desktop PCs (18+)

- **MSI**
  - Aegis RS 11th
  - Creator P50
  - MAG Codex 5 11th
  - MAG Codex X5 11th
  - MAG Codex X5 12th
  - MAG Infinite 11th
  - MAG Infinite S3 11th
  - MEG Aegis Ti5 11th
  - MEG Aegis Ti5 12th
  - MEG Infinite X 11th
  - MEG Trident X 12th
  - MPG Trident 3 11th
  - MPG Trident AS 11th
- **Asus**
  - ExpertCenter AIO E5
- **Intel**
  - NUC 11 Extreme
  - NUC 11 Enthusiast
- **Acer**
  - Predator Orion 7000 (12th Gen)

Desktop PC MBs (25+)
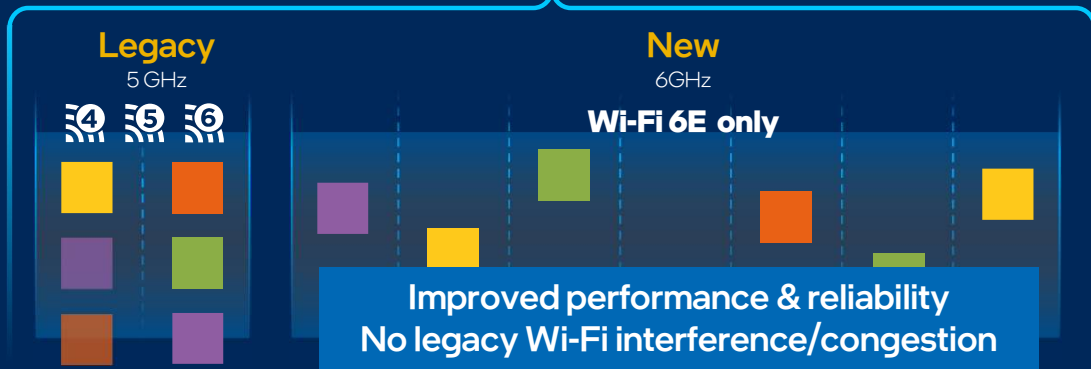
- **MSI**
- **Gigabyte**
- **Asus**
- **Asrock**

Many more to come...

Intel® Killer™ Wi-Fi 6/6E (Gig+)
Best of both worlds (Legacy + New)

6 GHz
Wi-Fi 6E

PC gaming's biggest
Wi-Fi advancement
in 20 Years

More large high-speed channels

Legacy
5 GHz
④ ⑤ ⑥

New
6GHz
Wi-Fi 6E only

**Improved performance & reliability
No legacy Wi-Fi interference/congestion**

Nearly
3x faster
speed

Up to
75%
lower
latency

intel KiLLER

The Killer Intelligent Engine
auto-detects & switches to
faster access points.

Intel® Killer™ Networking makes Wi-Fi 6/6E gaming even better
The Killer Prioritization Engine detects and prioritizes game traffic.

Protect your PC investment
Intel® Killer™ Wi-Fi 6/6E (Gig+)

intel KiLLER
WI-FI 6E
AX1675

- Amazing 6 GHz capabilities
  (when available)
- Legacy Intel® Killer™ Wi-Fi 6
  (Gig+) (when needed)

Learn more at
intel.com/wireless

Intel® Evo™
Project Athena 3rd Edition Specification Target Highlights

12th Gen Intel® Core™ Processors with Intel® Iris® Xe Graphics Based Laptops
Co-engineered Designs Verified to Deliver

Instant Wake
- ✓ Adaptive Connected Standby / Lucid Sleep
- ✓ Biometric login: fingerprint sensor, face recognition or Bluetooth phone proximity

Incredible Performance and Responsiveness
- ✓ 12th Gen Intel® Core™ i5, i7, i9 processors with Iris® Xe graphics
- ✓ Optional Intel® Arc™ Discrete Graphics
- ✓ Optimized with Windows 11 or Chrome OS
- ✓ Intel® Adaptix™ Technology
- ✓ ≥8GB, 128b Dual Channel Memory and ≥256GB PCIe/NVMe SSD

Intelligence Built Across Platform Levels
- ✓ AI-assisted Dynamic Background Noise Suppression
- ✓ Intel® DL Boost + Intel® GNA 3.0 enabled
- ✓ Far-field voice services
- ✓ OpenVINO™ AI on PC; WinML support
- ✓ Optional Intel Visual Sensing Technology for adaptive usages including Wake-on-Approach, Gaze-Based Dimming and Walk-Away Lock

intel.
evo
i7

Responsiveness on Battery
Real World Battery Life
Instant Wake
Fast Charging
NEW Intelligent Collaboration Experience

Focus. Always Ready. Adaptive.

Battery Life For The Real World
- ✓ Fast charging capabilities over USB Type C
- ✓ Integration and optimization of low-power components and co-engineering support for power efficiency

Lightning-Fast Connectivity
- ✓ Fast and persistent connection with Intel® Wi-Fi 6E (Gig+)*
- ✓ Intel® Connectivity Performance Suite for intelligent Wi-Fi connection management**
- ✓ Universal cable connectivity over USB Type C with Thunderbolt™ 4
- ✓ Optional Intel® Gb LTE or 5G

Innovative and Engaging Form Factor
- ✓ >12"-16.x" > FHD bright displays, backlit keyboards, precision touchpads and more
- ✓ <15mm fanned / fanless designs
- ✓ Sleek, thin-and-light and 2-in-1 chassis designs with narrow bezels for a more immersive experience
- ✓ Immersive audio with premium high-fidelity audio codec/speaker and microphone tuning
- ✓ User-facing camera ≥ FHD 1080p @ 30 fps (optional camera collaboration imaging effects)

intel.