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March 11, 2016

VIA ELECTRONIC FILING

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Notice of *Ex Parte* Presentation
Use of Spectrum Bands Above 24 GHz for Mobile Radio Services *et al*., GN Docket No. 14-177, IB Docket No. 15-256, RM-11664, WT Docket No. 10-112, IB Docket No. 97-95

Dear Ms. Dortch:

On March 9, 2016, John Godfrey (Senior Vice President, Public Policy), Vazrik Hovsepian of Samsung Electronics America, Dr. Thomas Novlan of Samsung Research America ("Samsung"), the undersigned, and Tom Dombrowsky, Senior Engineering Advisor, Wiley Rein LLP for Samsung, met separately with Brendan Carr, Legal Advisor to Commissioner Ajit Pai and Erin McGrath, Legal Advisor to Commissioner Michael O'Rielly. Additionally, the parties except for John Godfrey also met with Edward Smith, Legal Advisor to Chairman Thomas Wheeler. In these meetings, the parties discussed Samsung's comments in the above-captioned proceeding as well as the attached presentation.

Consistent with Samsung's prior filings in this proceeding, the parties discussed Samsung's support for the Commission's proposal to make spectrum above 24 GHz available for 5G. Samsung noted its support for establishment of a regulatory framework for provision of mobile services in the 28 GHz (27.5-28.35 GHz), 39 GHz (38.6 to 40 GHz), and 37 GHz (37 to 38.6 GHz) bands. Samsung also urged the Commission to make development of a regulatory framework for the millimeter wave spectrum bands a priority.

Pursuant to Section 1.1206(b)(2) of the Commission's Rules, a copy of this letter is being filed electronically for inclusion in the above-captioned docket. Please direct any questions about this matter to the undersigned.

Respectfully submitted,

/s/ Robert Kubik.

Robert Kubik, Ph.D.
Director, Public Policy, Engineering and Technology
Samsung Electronics Washington Office
1200 New Hampshire Ave, NW #650
Washington, DC 20036

cc: Brendan Carr
Erin McGrath
Edward Smith

Attachment

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Spectrum Frontiers

March 9, 2016

5G Service Scenarios

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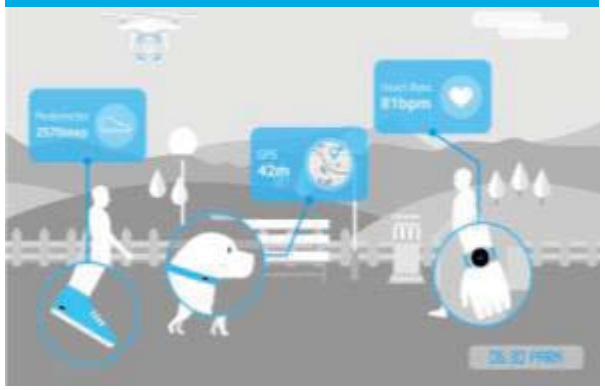
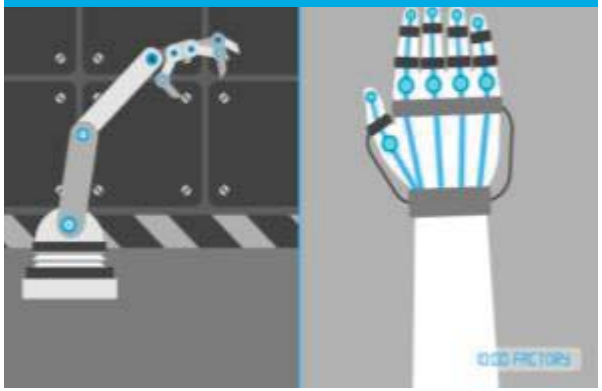
Mobile Cloud Service

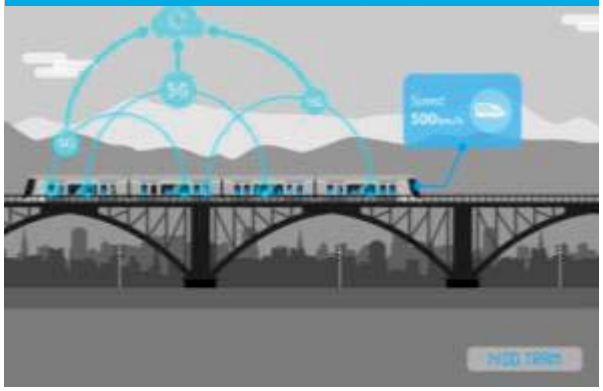
Internet of Things



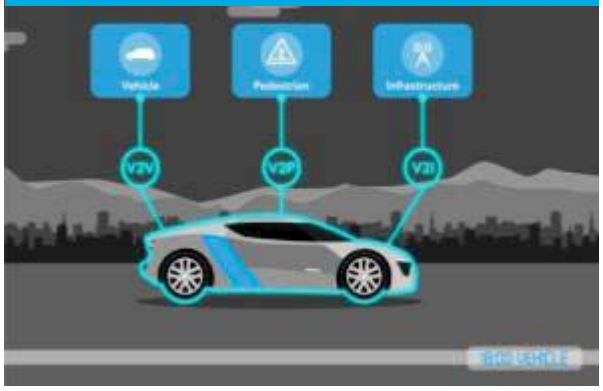
VR Remote Machine Control



Mobile Giga Internet Service



Autonomous Driving and V2X



Wireless Backhaul Service

5G Use Cases and Requirements

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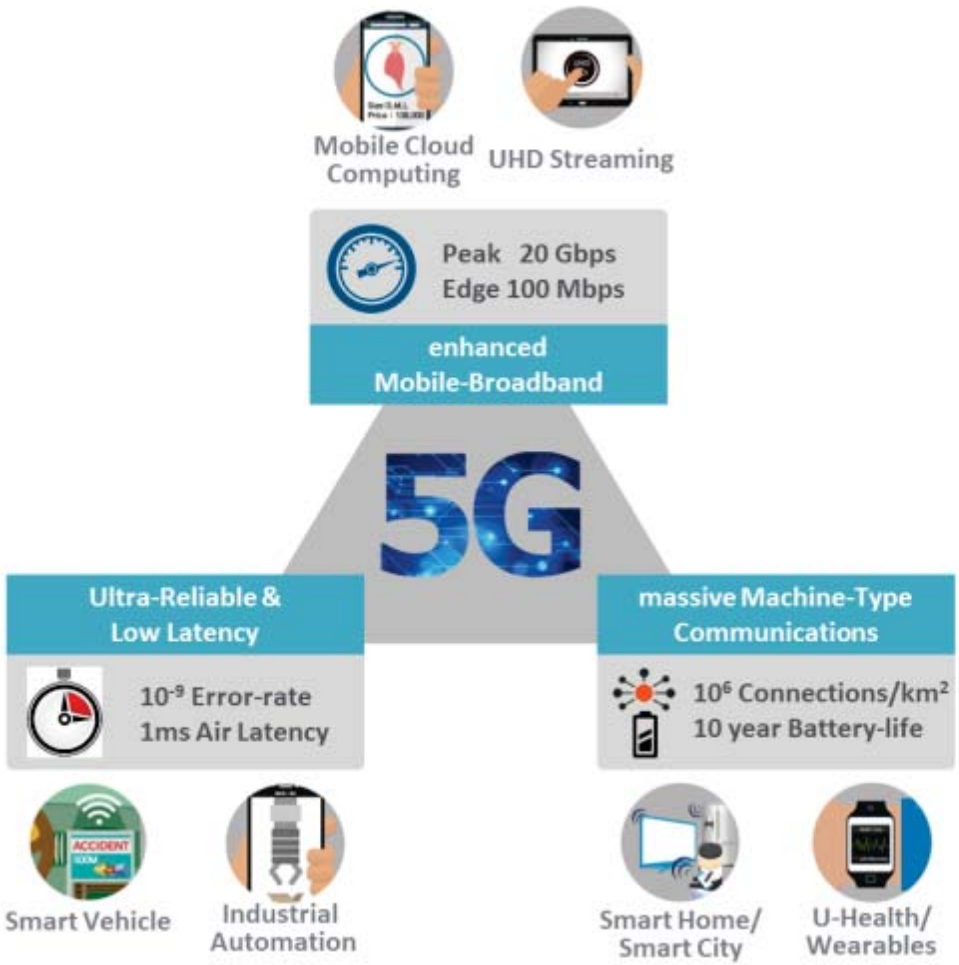

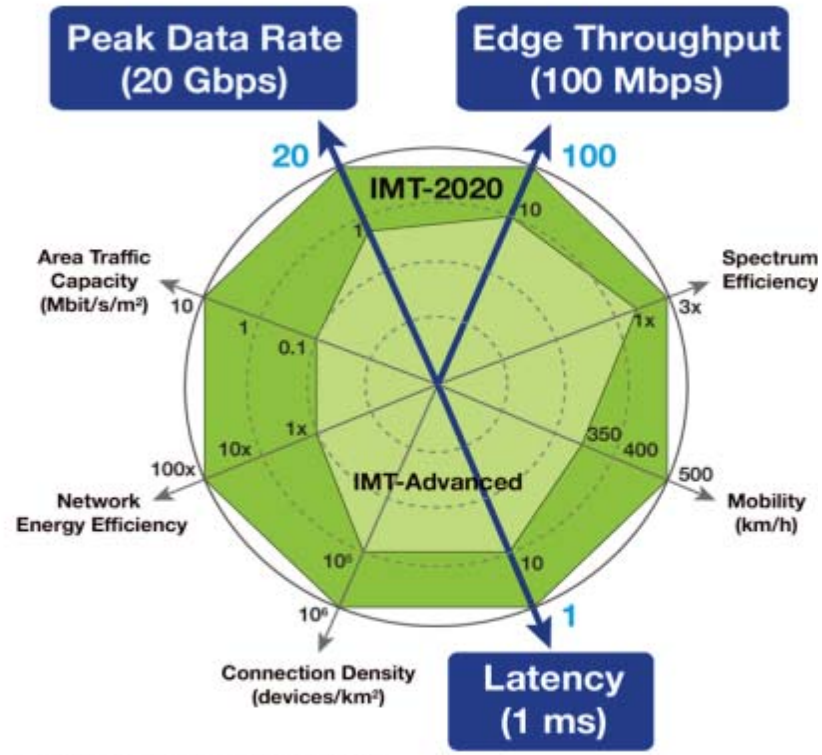

※ ITU-R document 5D/TEMP/625

※ ITU-R document 5D/929 (June 2015)

5G Standardization Timeline

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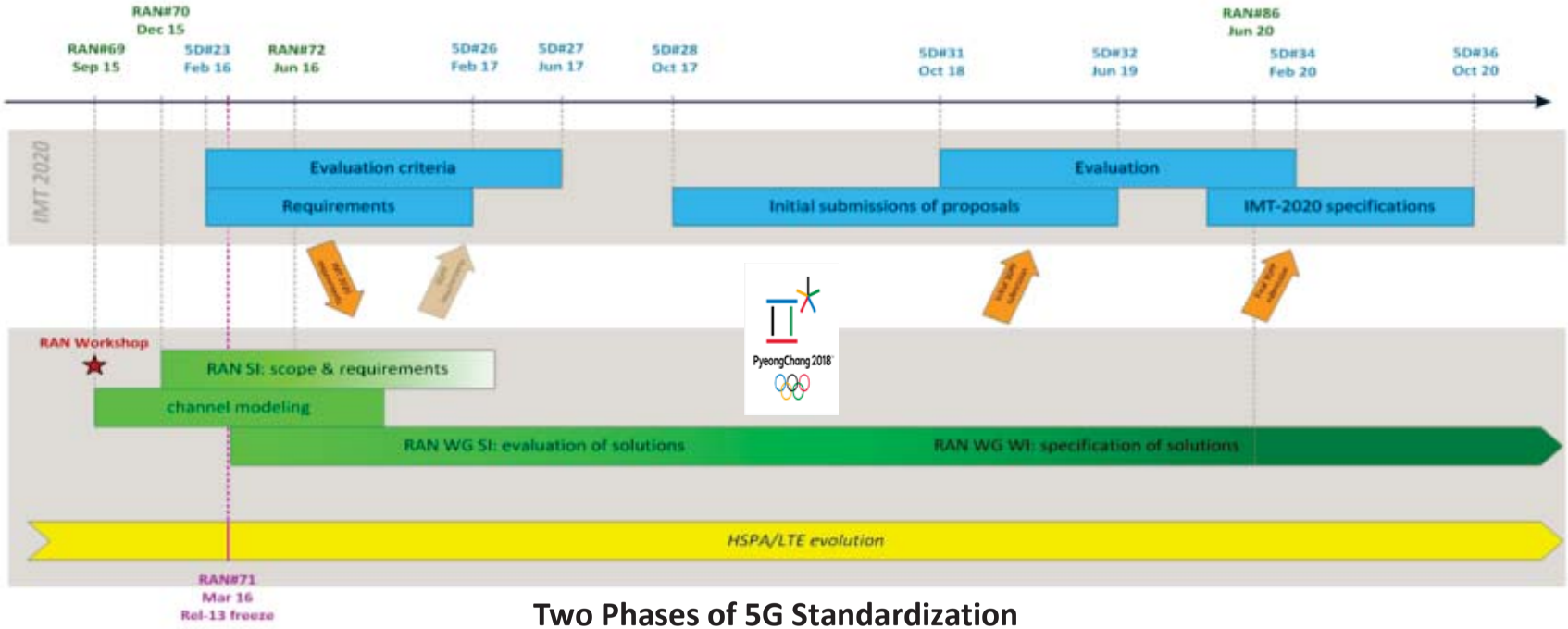

Two Phases of 5G Standardization

'16. 3 — '17. 6 — '18. 9 — '19.12

Phase I

New RAT SI (Rel-14)
- Primary focus on eMBB
- Both > 6 GHz and < 6 GHz

New RAT WI (Rel-15)
- Optimized for eMBB
- Both > 6 GHz and < 6 GHz

- Target Spectrum : Up to 40 GHz
- Deployment Scenario : HetNet / UMi for eMBB
- Waveform : OFDM-based (Potentially w/ Filtering)
- Mobility : Optimized for Low Mobility
- TDD, Massive-MIMO

Phase II

Further Enhancements (Rel-16)
- Optimized for all use cases

- Optimized for All Scenarios
- Both TDD and FDD
- D2D
- Unlicensed Bands Operation

Key Enabling Technologies

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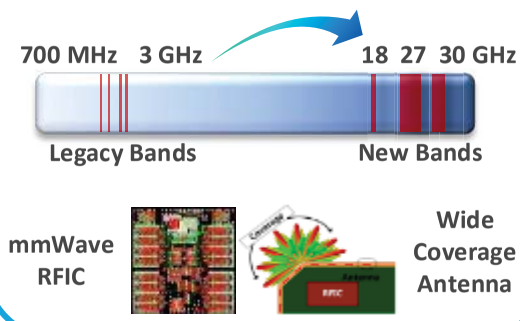
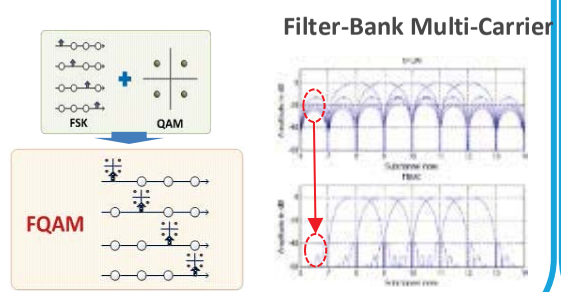
- Disruptive Technologies for Significant Performance Enhancement

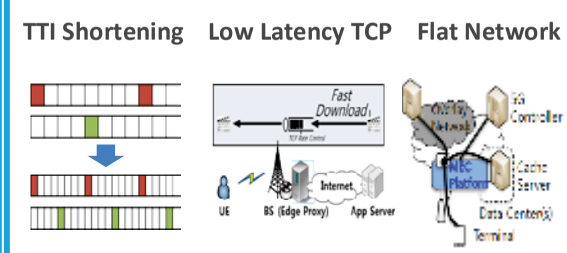
> 6 GHz System/RFIC/Ant.



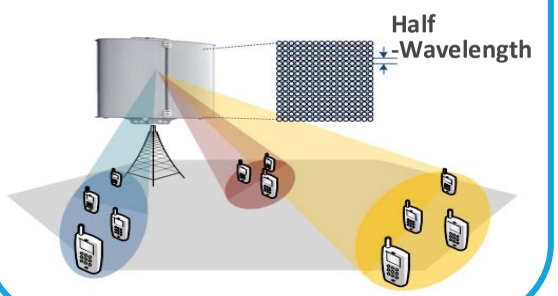
Post-OFDM



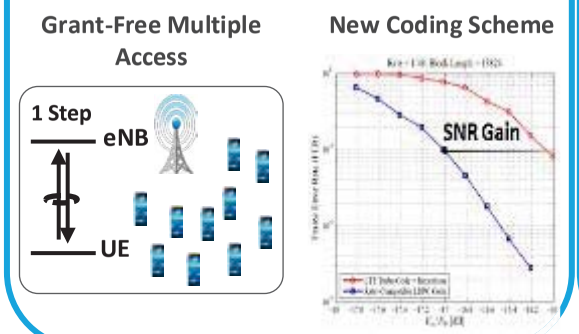
Low Latency NW



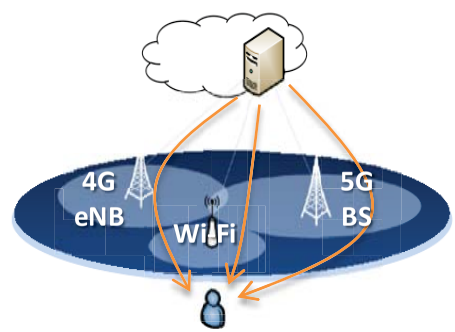
< 6 GHz Massive MIMO



Massive Connectivity



Multi-RAT Interworking



5G Trials and Initiatives

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- Global pre-commercial 5G initiatives are accelerating with multiple field trial plans announced in the 2016-2018 timeframe
- **Open Trial Specification Alliance** announced in February plans to develop an aligned 5G trial specification between members that would serve as a common, extendable platform for different 5G trial activity around the world
- Provide input to specification bodies, by complementing simulation studies with real data from different trial deployments

mmWave 5G system demo in Basking Ridge, NJ

5G Technology Demo

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- Radio Link speeds in MIMO and SISO Transmission
  - Maximum 1.83 Gbps in SISO mode
  - Maximum 3.77 Gbps in MIMO mode
- Beam Switching
  - Adaptive Beam Switching between Base Station and CPE to provide high beam-forming gain
- Adaptive Modulation & Coding Scheme
  - Adapting modulation and coding based on channel conditions
- Ultra High Definition Video (4K)
  - Stream high bitrate 4K video from Base Station to CPE

Rulemaking Comments

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- FCC can move forward with a decision that will solidify the Framework for 5G deployment
- Licensed operation for mobile broadband in 27.5-28.35 GHz and 37-40 GHz bands
  - Support
    - Common licensing scheme and band plan in 37-40 GHz
    - License Certainty critical for 5G Deployment
      - Current LMDS licensees be granted mobile deployment rights
      - Licenses retain current geographical licensing and 10 year license terms
      - Reasonable and flexible performance requirements
  - Oppose
    - Hybrid licensing scheme in 37 GHz
    - Proposals for use of Spectrum Access System in 28 GHz and 37-40 GHz
    - Interoperability requirement between different air interfaces

Thank You!

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Questions?

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