

# 5G Networks

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**SAMSUNG**

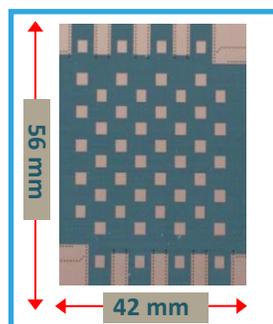
Woojune Kim

Vice President, Samsung Electronics

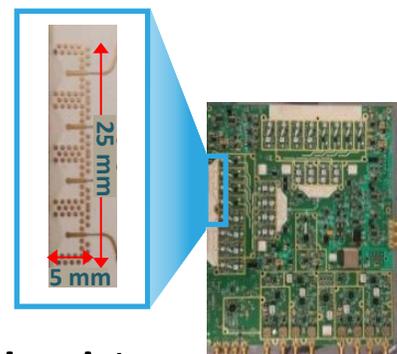
## World's 1st mmWave Testbed and Antenna/RFIC for Devices

### Base Station

### Mobile Station



**Array Antenna**  
8x6 (=48) Antenna Elements



**Array Antenna**  
4x1 (=4) Antenna Elements

	BS	MS
Carrier Frequency	27.925 GHz	
Bandwidth	800 MHz	
FFT Size	4096-FFT	
Power (EIRP)	59dBm	30dBm
Beam Width	10°	20°(AZ) /60°(EL)



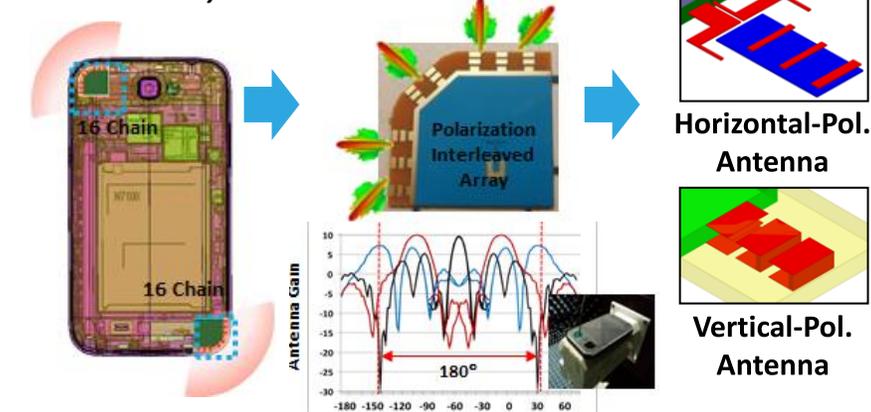
Baseband Modem



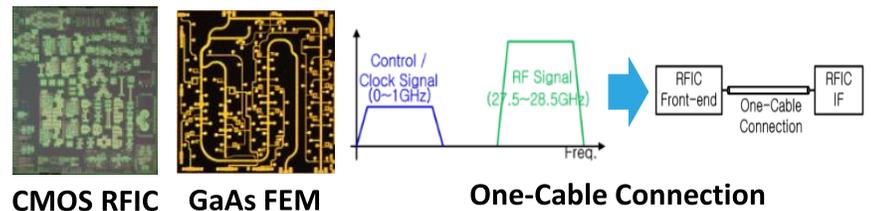
RF + Array Antenna

### 28 GHz Antenna/RFIC

#### 28GHz Array Antenna Module



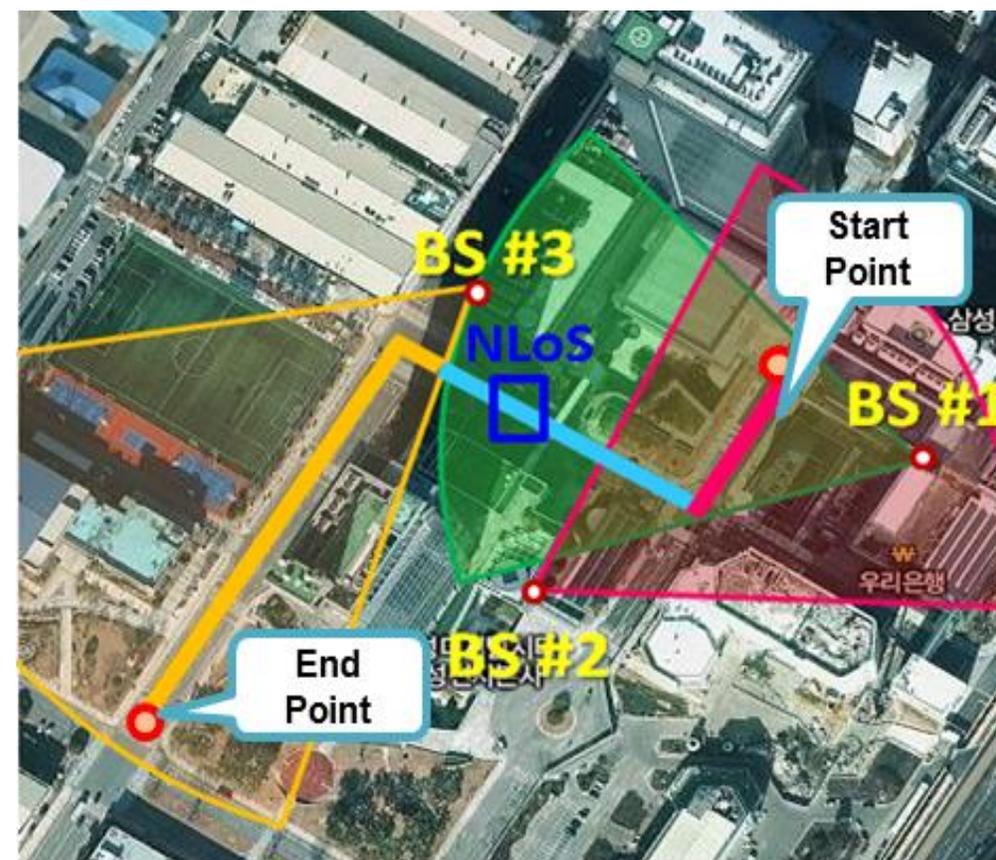
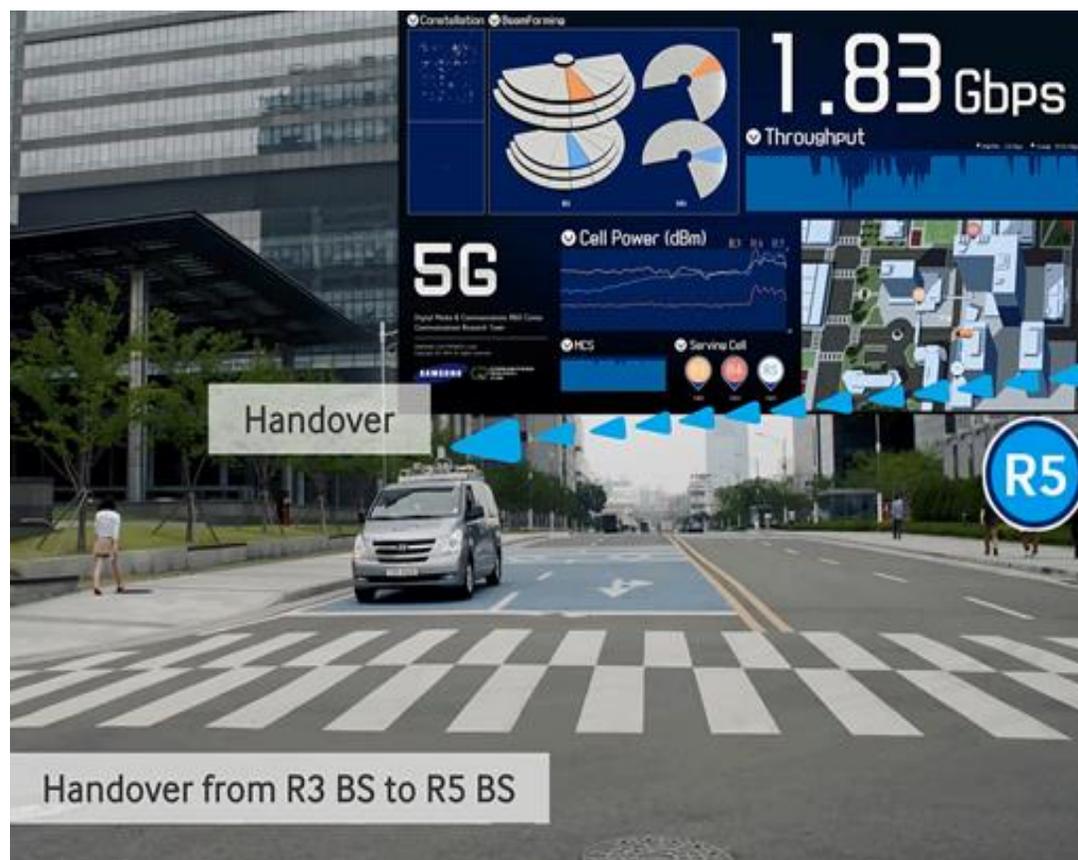
#### Beamforming CMOS RFIC / GaAs FEM



# World's 1<sup>st</sup> mmWave Multi-Cell Handover

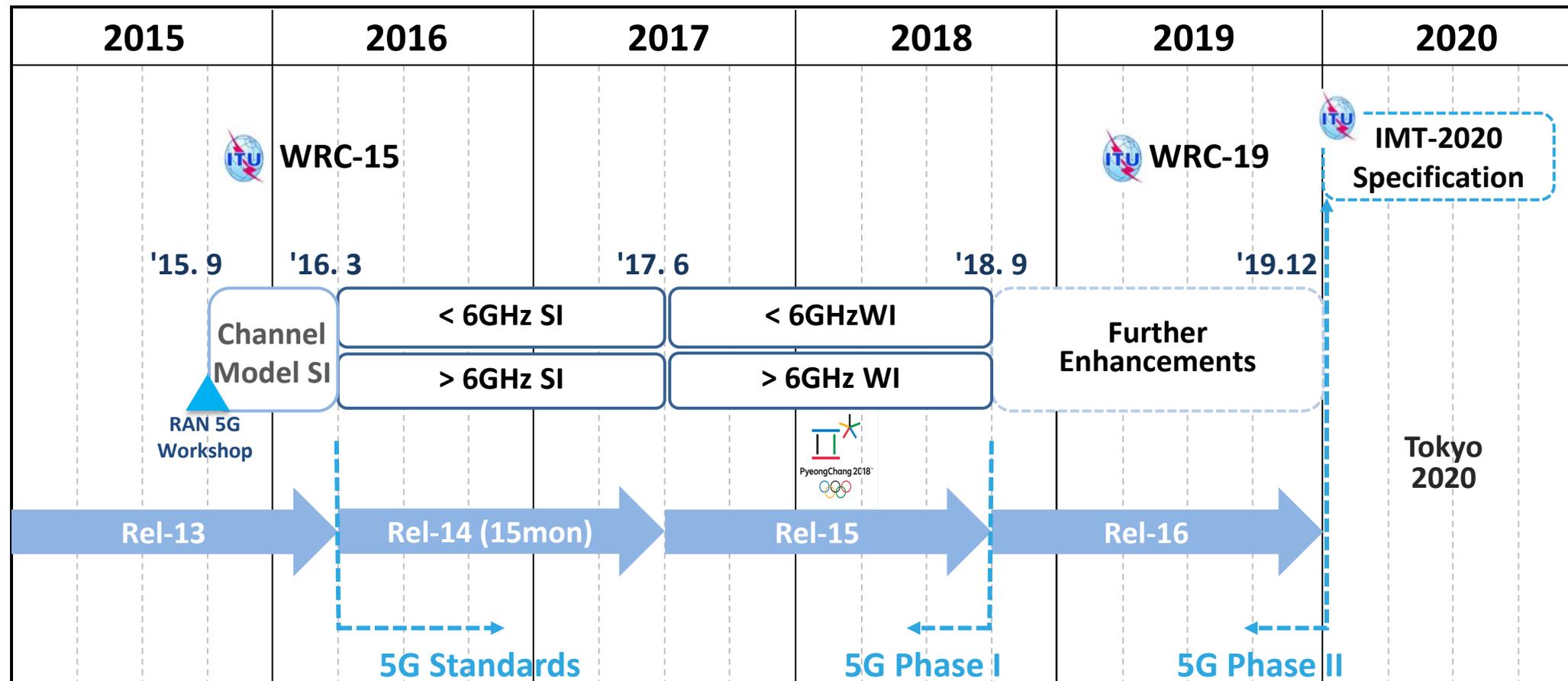
## Handover Tests in 3-Cell Network (Average ISD : 178m)

- Handover Latency of 21 ms
- Average Throughput of 1.67 Gbps at Driving Speed of 25 km/h



# Expected 5G Timelines

## Standardization and Spectrum Allocation





**Thank you**

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