Real-Time 5G/B5G Demonstrations



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DemoI: Multi-User Full Duplex (Dec. 10th ~ Dec. 11th)

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- World's first multiuser full duplex for efficient network sharing
- Downlink: Multi-user MIMO (LTE Codebook)
- Uplink:Video transmission (from each UE)
- Prior work
 - Full Duplex SISO (Austin, USA, 2014)
 - Full Duplex MIMO (San Diego, USA, 2015)
 - Wideband Full Duplex (Washington DC, USA, 2016)
 - OP-map based Flexible Duplex (Singapore, 2017)

Demo2: Planar-Lens Based mm-Wave System (Dec. 10th ~ Dec. 12th)

Contributors: Sang Hyun Park, Inseok Jang, Byoungnam Kim, Dong Ku Kim, and Chan-Byoung Chae





Demo3: Wireless Haptic Communications (Dec. 12th)

Contributors: Taehun Jung, Jinwoo Lee, Jonghyun Kim, Kwang Soon Kim, and Chan-Byoung Chae



- Proposed low-rate/latency haptic codecs
- Haptic signal transmission over various

waveforms (e.g., OFDM, GFDM, USFDM)

- Haptic device: Geomagic Touch[™]
 - ⁻ Force feedback: $160 \text{ W} \times 120 \text{ H} \times 70 \text{ D} \text{ mm}$ - Footprint: $168 \text{ W} \times 203 \text{ D} \text{ mm}$
 - Footprint: 168 vv x 203 D mm
 - Nominal resolution > 450 dpi ~ 0.055 mm
 Maximum exertable force at nominal: 3.3 N
 - Stiffness: 1.26 N/mm (x), 2.31N/mm (y), 1.02N/mm (z)
 - Inertia: 45 g

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Full demo videos are available at https://www.youtube.com/channel/UCJpSD96cr8FfMD-kXUdZ7tg

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