



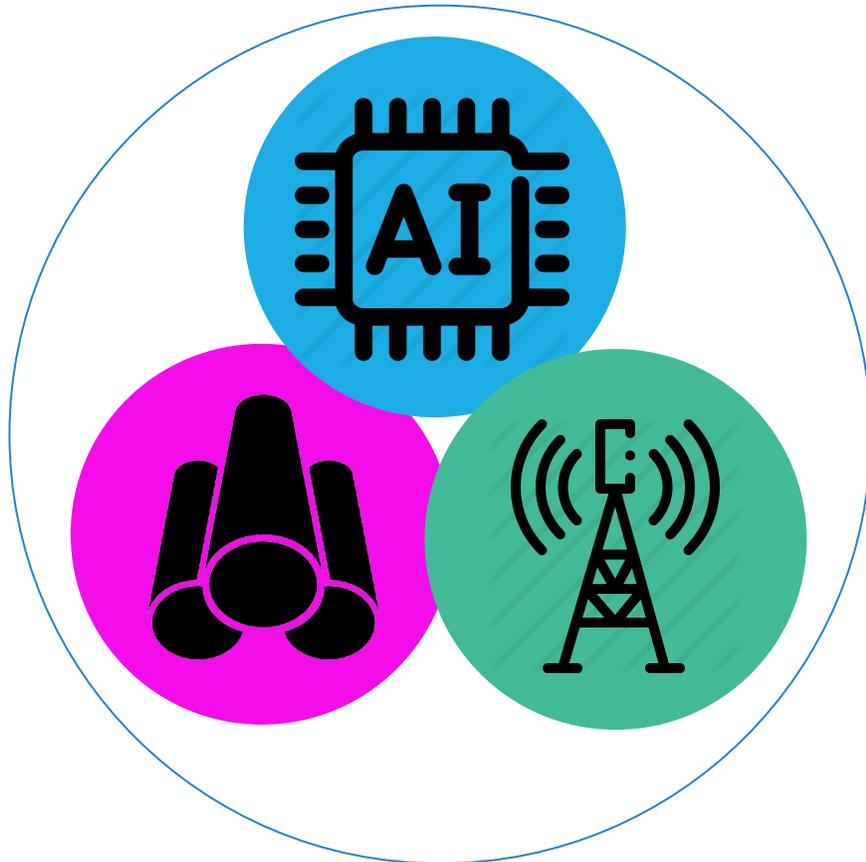
# 5G antenna evolution for Connected City

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31 AUG 2020

# Company profile

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We (since Sep, 2016) target to create a new antenna era to utilize A.I. technology & to enable product surface material for antenna design in multi-bands IoT, 5G & other millimeter wave applications.

# Traditional antenna

Still enough space?

Chip antenna

- Prod
- GPS
- Perf
- Prod

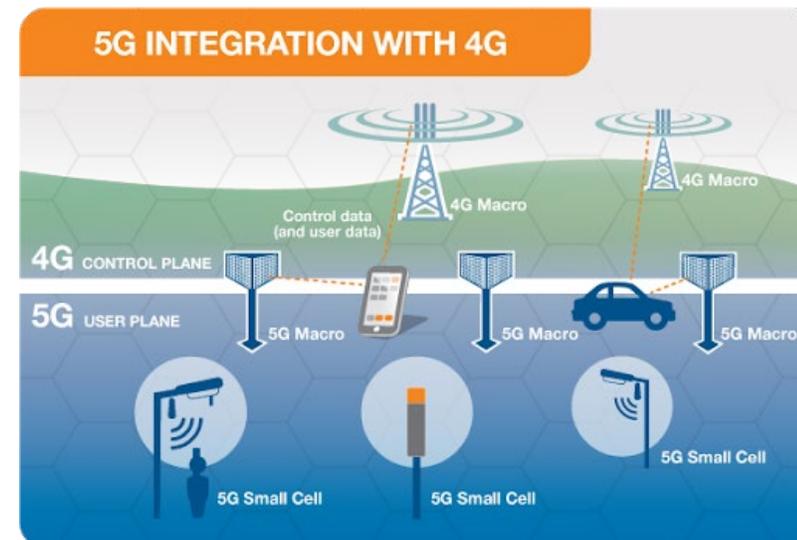
...?

Bulky traditional antenna

Patch, array antenna

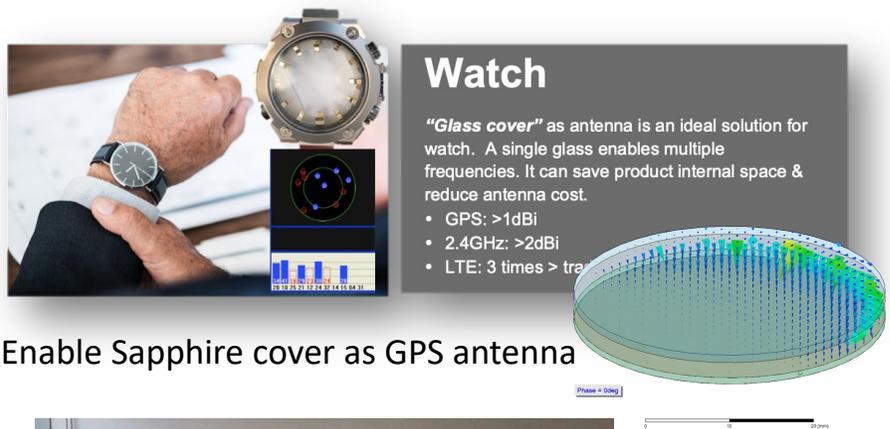


Too many antenna mounted on building



How about 5G (mmWave)?

# Our technologies (All invisible)

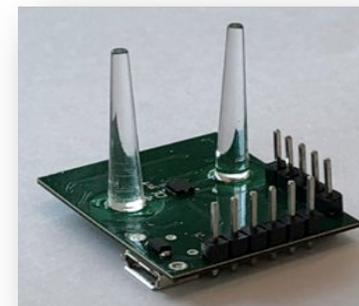


**Watch**

"Glass cover" as antenna is an ideal solution for watch. A single glass enables multiple frequencies. It can save product internal space & reduce antenna cost.

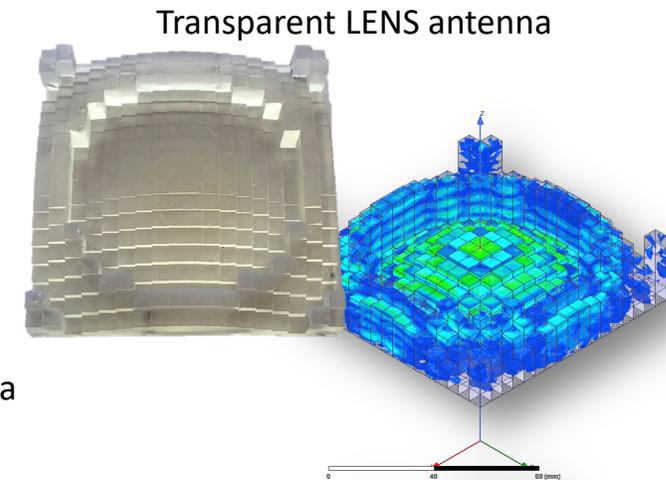
- GPS: >1dBi
- 2.4GHz: >2dBi
- LTE: 3 times > tra

Enable Sapphire cover as GPS antenna

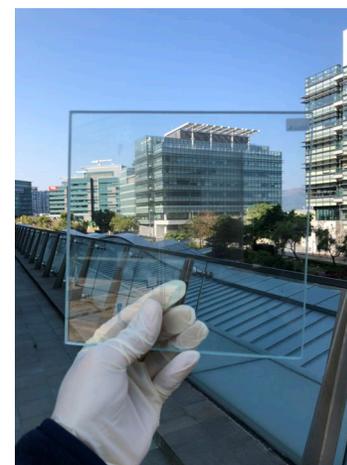


Enable light pipe as 24GHz antenna

Transparent LENS antenna




Enable glass as antenna



Transparent 5G (mmWave) film

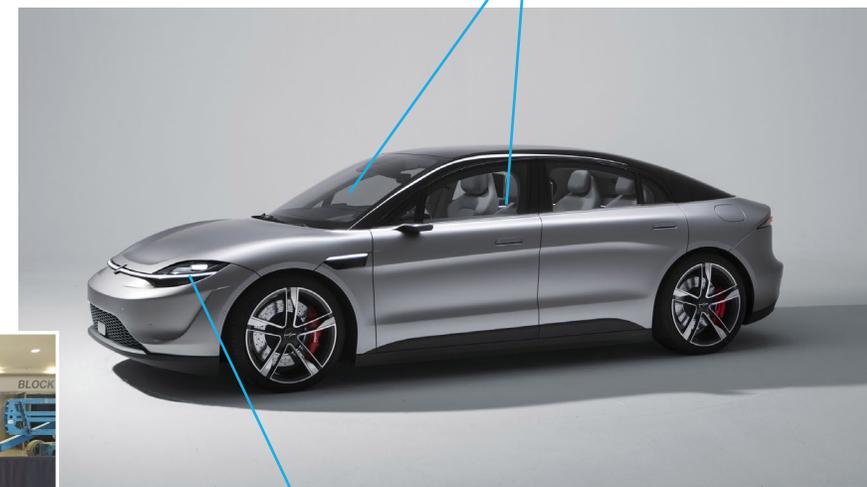
# Glass antenna application



2.4GHz, 5.8GHz glass antenna  
(indoor location)



5G glass cover antenna



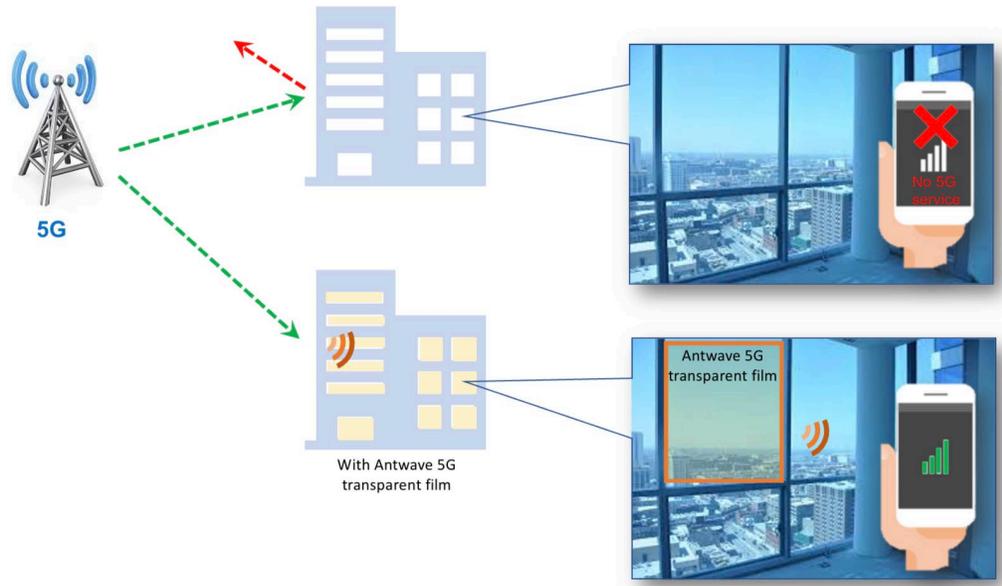
5G glass antenna

77GHz radar glass cover antenna



24GHz light pipe antenna

# 5G (28GHz) Problem



**"20dB loss"** through glass window

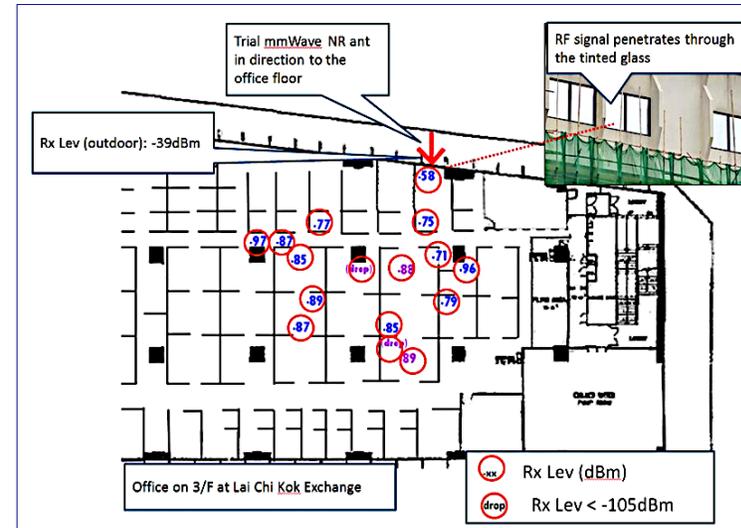


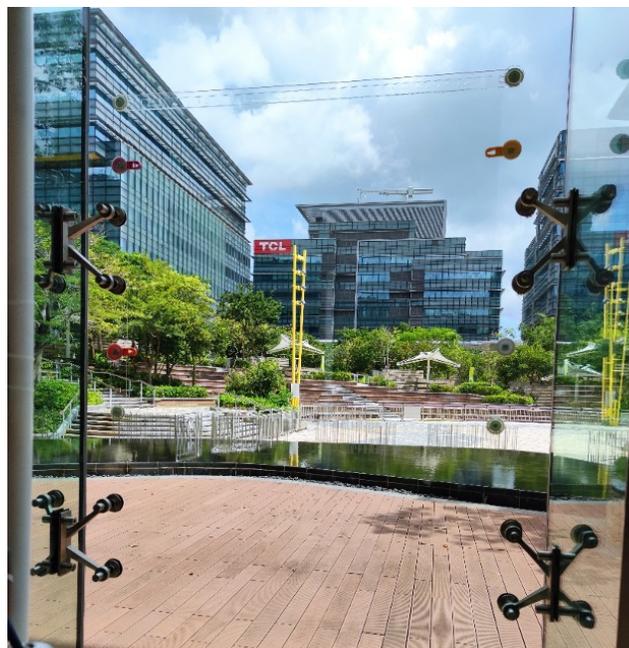
Figure : Measurement location and result of in building measurement

Field test by HKT " HKT 5G mmWave (28GHz) Field Trial, 2018"

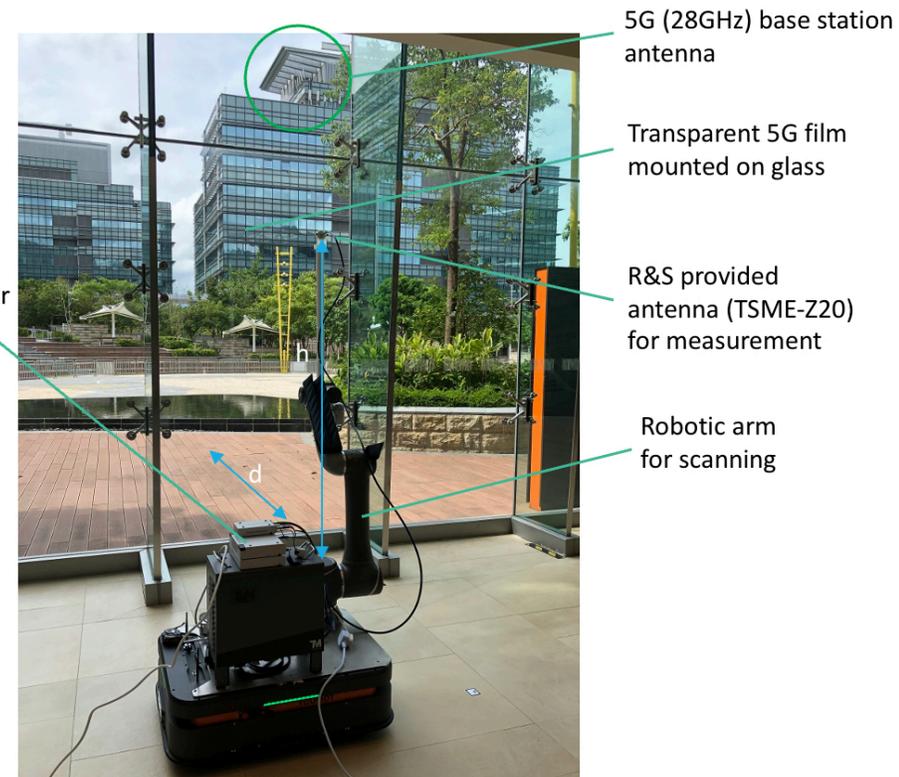
# Our solution: 5G film (Phase 1 trial)



Our film on glass idea



Demo in Science Park



Science Park 12W G/F

Test setup

~ **“8-13dB”** Improvement

# Feel free to contact us!

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