

Test report

**5G Network Trial at 3.5GHz band
in CMHK 5G Open Lab at Science Park**

Temporary Permit No. T00701

China Mobile Hong Kong Co. Ltd. (CMHK)

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Version 1.0

1. Introduction

CMHK has set up a CMCC 5G Innovation Center Hong Kong Open Lab at Hong Kong Science Park in April 2019. In order to support 5G development in Hong Kong, three outdoor 5G sites at 28GHz band were set up at Science Park in 2018. Though Hong Kong Science Park falls within the 3.5GHz restriction zone area, CMHK has successfully demonstrated the feasibility of installing 3.5GHz indoor site inside the 5G Open Lab.

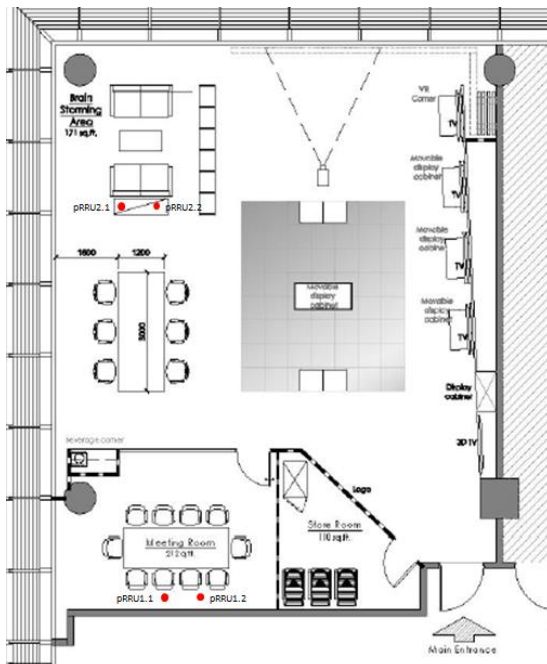
This test report will describe the setup and trial result of 5G 3.5GHz small cells (Huawei Lampsites) in CMHK 5G Open Lab at Science park. The trial period approved in temp permit T00701 is from 6-Nov-2019 to 31-Mar-2020.

2. Trial Location

- Location: CMCC 5G Innovation Center Hong Kong Open Lab
- Testing Area : Rm316, 10W Hong Kong Science Park, Shatin
- 5G site location: Indoor

The trial is based on 5G NSA network configuration. Two set of 5G 3.5GHz lampsite pRRU with anchored 4G lampsites are installed inside the lab.

Rm316, 10W Hong Kong Science Park area:



3. Trial Setup

3.1 Test Equipment

Item	Device	Count
1	5G pRRU5935	2
2	4G pRRU5923	2
3	5G Huawei Mobile	1

Huawei 5G pRRU5935 specification:

Frequency Band (MHz)	RX Frequency Band (MHz)	TX Frequency Band (MHz)	IBW (MHz)
3500	3400 - 3600	3400 - 3600	100

Mode	Capacity	Tx/Rx Channel
NR	1 carrier	4T4R

Frequency Band (MHz)	Maximum Output Power (mW)
3500	4x250 mW

Frequency Band (MHz)	Gain (dBi)	Polarization Mode	Directionality
3500	4	Linear	Omnidirectional

3.2 5G Test Equipment Setting

The spectrum approved for trial in permit T00701 is 3.40GHz to 3.46GHz, which is the spectrum acquired by CMHK through the OFCA C-band auction.

Below is the 5G cell configuration:

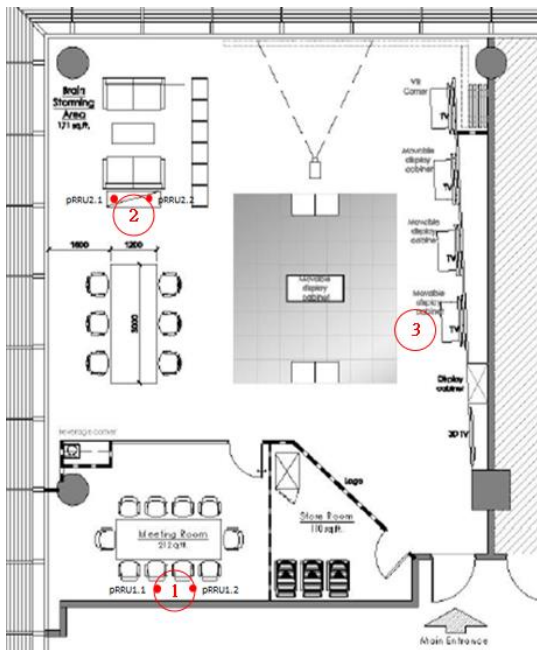
Site	Pcell PCI	Type
8009	0	NR

Cell Configuration	
Frequency Band	n78
Downlink NARFCN	628666
Downlink Bandwidth	60MHz
Subcarrier Spacing(KHz)	30
Slot Assignment	7:3
Max Transmit Power (EIRP)	34 dBm
EN-DC	On

4. Measurement Result

3 test positions (highlighted in red) at Rm316 were measured for coverage and throughput

Rm316, 10W Hong Kong Science Park test positions:





Test mobile (Huawei Mate20x) was used to test the throughput by OFCA speed test APP.

CMHK 5G Open Lab at Hong Kong Science Park

Test position	RSRP (dBm)	SINR (dB)	Download (Mbps)	Upload (Mbps)	Network Latency (ms)
1	-71	17.9	751	106	9
2	-68	17.4	785	105	10
3	-81	17.6	750	109	10

Overall test summary:

Location	Avg RSRP (dBm)	Avg SINR (dB)	Avg Download (Mbps)	Avg Upload (Mbps)	Avg Latency (ms)
5G Open Lab	-73.3	17.6	762	106.6	9.6

5. Conclusion

The 5G indoor site (lampsites) at 3.5GHz band is successfully deployed and tested in 5G Open Lab at Hong Kong Science Park, though the location is within the 3.5GHz restriction zone. This demonstrates the feasibility of indoor 5G site deployment at suitable location in restriction zone. The measurement results verified that the coverage and data throughput of 5G NR are satisfactory with 60MHz bandwidth in the indoor environment.