

Test report

**5G Network Trial at 3.5GHz band
at Tsim Sha Tsui (TST) Flagship shop**

Temporary Permit No. T00678 & T00701

China Mobile Hong Kong Co. Ltd. (CMHK)

May-2020

Version 1.1

1. Introduction

CMHK has opened a few Flagship shops in Hong Kong, in which 5G network coverage is provided. 3.5GHz small cells are installed at the new TST Flagship shop.

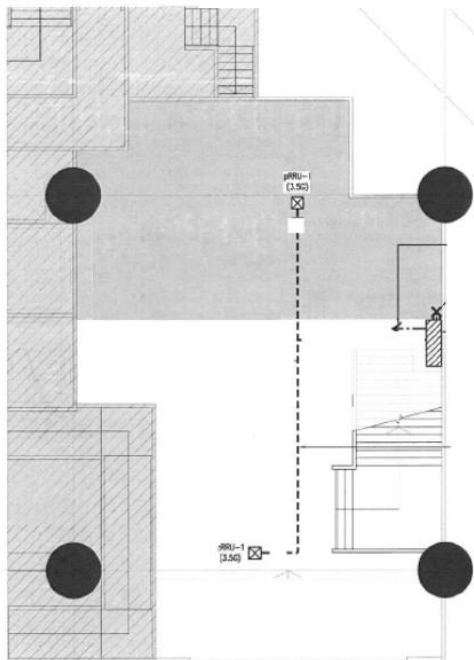
This test report will describe the setup and trial result of 5G 3.5GHz small cells (Huawei Lampsites) at TST Flagship shop. The trial period approved in Permit T00678 is from 19-Aug-2019 to 5-Nov-2019, and the trial period approved in Permit T00701 is from 6-Nov-2019 to 31-Mar-2020.

2. Trial Location

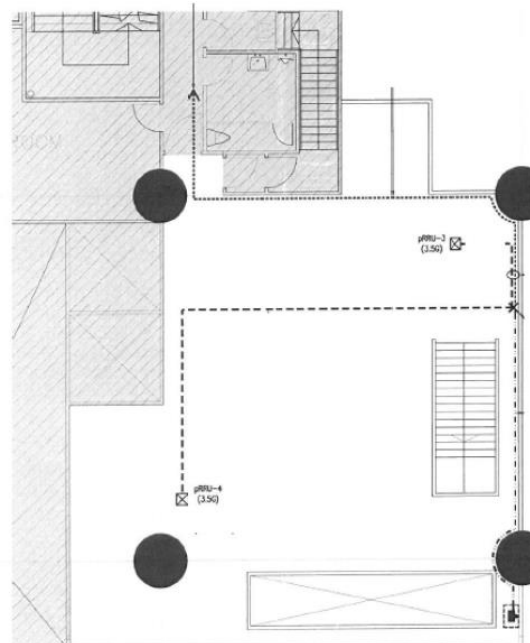
- Location: CMHK TST Flagship shop at China Hong Kong City
- Testing Area : G/F, UG/F
- 5G site location: Indoor

The trial is based on 5G NSA network configuration. 5G 3.5GHz lampsite pRRU with anchored 4G lampsites are installed at G/F, UG/F area of TST Flagship shop as shown below.

G/F area:



UG/F area:



3. Trial Setup

3.1 Test Equipment

Item	Device	Count
1	5G pRRU5935	4
2	4G pRRU5923	4
2	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 T00678 is 3.54GHz to 3.6GHz, and was amended to 3.40GHz to 3.46GHz in permit T00701. The test result is based on 60MHz bandwidth setting approved in T00678.

Below is the 5G cell configuration:

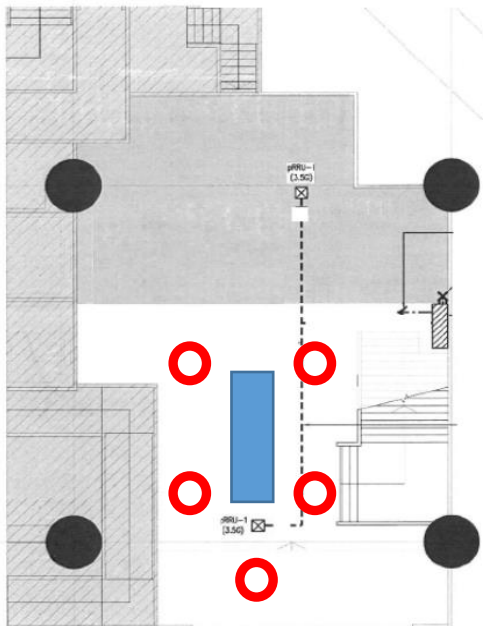
Site	Pcell PCI	Type
206239	0	NR

	Cell Configuration
Frequency Band	n78
Downlink NARFCN	638000
Downlink Bandwidth	60MHz
Subcarrier Spacing(KHz)	30
Slot Assignment	7:3
Max Transmit Power (EIRP)	34 dBm
EN-DC	OFF

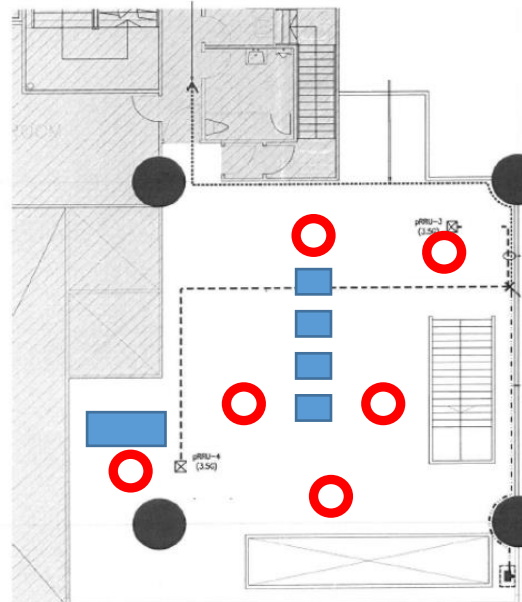
4. Measurement Result

- 5 test positions (highlighted in red) at G/F were measured for coverage and throughput
- 6 test positions (highlighted in red) at UG/F was measured for coverage and throughput

G/F test positions:



UG/F test positions:





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

G/F area:

Test position	RSRP (dBm)	SINR (dB)	Download (Mbps)	Upload (Mbps)	Network Latency (ms)
1	-75	24	466	106	10
2	-80	24	465	108	10
3	-77	23	470	107	10
4	-79	23	479	101	10
5	-83	24	464	106	10

UG/F area:

Test position	RSRP (dBm)	SINR (dB)	Download (Mbps)	Upload (Mbps)	Network Latency (ms)
1	-75	26	466	111	11
2	-78	22	469	119	10
3	-83	21	458	115	10
4	-86	22	471	119	10
5	-87	22	457	114	10
6	-82	23	455	119	10

Overall test summary:

Location	Avg RSRP (dBm)	Avg SINR (dB)	Avg Download (Mbps)	Avg Upload (Mbps)	Avg Latency (ms)
G/F	-78.80	23.6	468.80	105.60	10.00
UG/F	-81.83	22.67	462.67	116.17	10.17

5. Conclusion

The 5G indoor site (lampsite) at 3.5GHz band is successfully deployed and tested at CMHK TST Flagship shop. The measurement results verified that the coverage and data throughput of 5G NR are satisfactory with 60MHz bandwidth in the indoor environment.