

# **Test report**

**5G Network Trial at 3.5GHz band  
at Hong Kong University of  
Science & Technology (HKUST)**

**Temporary Permit No. T00701**

**China Mobile Hong Kong Co. Ltd. (CMHK)**

May-2020

Version 1.0

## 1. Introduction

To support local R&D institution, CMHK has provided 5G trial network indoor coverage for Computer Barns at 4/F and Research Lab at 6/F of Academy Building at HKUST.

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

## 2. Trial Location

- Location: Academy Building of HKUST
- Testing Area : Rm4578 & Rm4579-4580 & Rm6581, Academy Building
- 5G site location: Indoor

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

Rm4578 & Rm4579-4580, Academy Building area:



Rm6581, Academy Building area:



### 3. Trial Setup

#### 3.1 Test Equipment

Item	Device	Count
1	5G pRRU5935	3
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 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
6021	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	Off

## 4. Measurement Result

4 test positions (highlighted in red) at Rm4578 & Rm4579-4580, were measured for coverage and throughput

Rm4578 & Rm4579-4580, Academy Building test positions:



2 test positions (highlighted in red) at Rm6581, were measured for coverage and throughput

Rm6581, Academy Building test positions:





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

Rm4578 & Rm4579-4580, Academy Building:

Test position	RSRP (dBm)	SINR (dB)	Download (Mbps)	Upload (Mbps)	Network Latency (ms)
1	-87	29	546	139	11
2	-91	27	505	122	11
3	-77	29	584	138	10
4	-93	24	508	129	10

Rm6581, Academy Building:

Test position	RSRP (dBm)	SINR (dB)	Download (Mbps)	Upload (Mbps)	Network Latency (ms)
1	-78	27	596	144	10
2	-62	28	580	138	11

Overall test summary:

Location	Avg RSRP (dBm)	Avg SINR (dB)	Avg Download (Mbps)	Avg Upload (Mbps)	Avg Latency (ms)
HKUST	-81.3	27.3	553.1	135	10.5

## 5. Conclusion

The 5G trial indoor site (lampsites) at 3.5GHz band is successfully deployed at a few locations in Academy Building of HKUST, in order to support their research studies. The measurement results verify that the coverage and data throughput of 5G NR are satisfactory with 60MHz bandwidth in the indoor environment.