Test report

5G Network Trial at 3.5GHz band
at Hospital Authority (HA) Lab at KITEC

Temporary Permit No. T00683 & T00701

China Mobile Hong Kong Co. Ltd. (CMHK)

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Version 1.1

1. Introduction

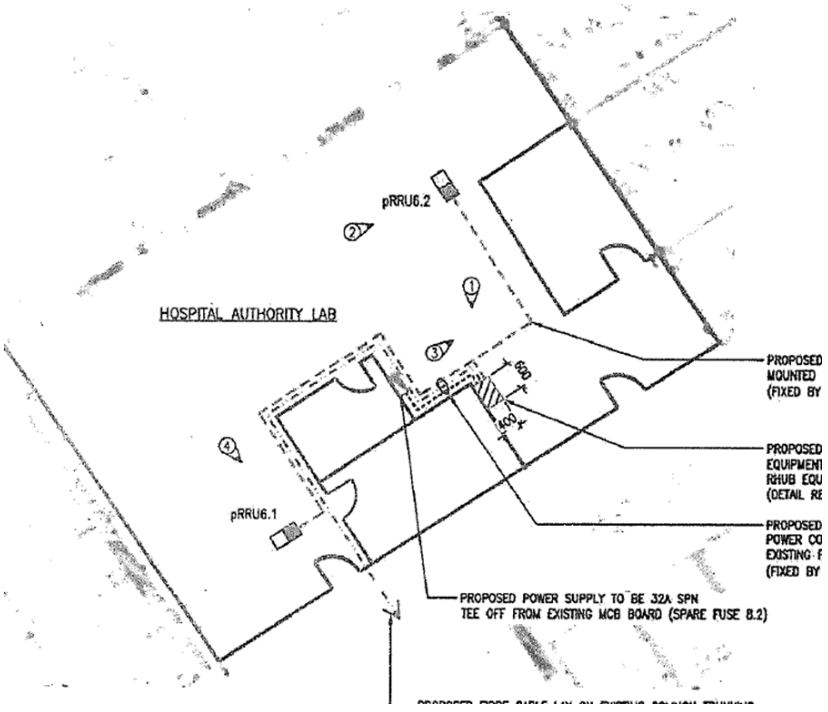
Hospital Authority (HA) has been studying the 5G network infrastructure deployment and applications in new hospital and redevelopment projects. As per request by HA, CMHK has provided 5G network coverage in HA Lab at KITEC for their trial.

This test report will describe the setup and trial result of 5G 3.5GHz small cells (Huawei Lampsites) at HA Lab. The trial period approved in Permit T00683 is from 15-Sep-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: 6/F, KITEC, 1 Trademart Drive, Kowloon Bay, Kowloon, Hong Kong
- Testing Area : HA Lab at KITEC
- 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 HA Lab as shown below.



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 T00683 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 T00683.

Below is the 5G cell configuration:

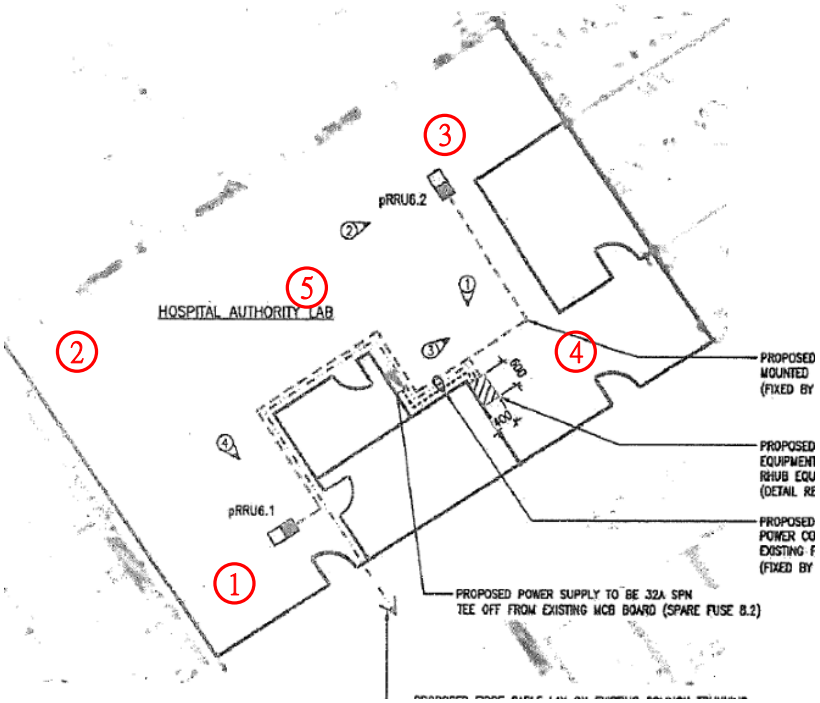
Site	Pcell PCI	Type
6248	0	NR

	Cell Configuration
Frequency Band	n78
Downlink NARFCN	638000
Downlink Bandwidth	60MHz
Subcarrier Spacing(KHz)	30
Slot Assignment	4:1
Max Transmit Power (EIRP)	34 dBm
EN-DC	OFF

4. Measurement Result

- 5 test positions (highlighted in red) at Hospital Authority Lab (6F, KITEC) were measured for coverage and throughput

Hospital Authority Lab (6F, KITEC) test positions:



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

Hospital Authority Lab (6F, KITEC):

Test position	RSRP (dBm)	SINR (dB)	Download (Mbps)	Upload (Mbps)	Network Latency (ms)
1	-70	22	622	65	10
2	-81	20	590	52	10
3	-69	22	593	39.2	10
4	-75	22	587	55.2	10
5	-79	22	611	53.1	10

Overall test summary:

Location	Avg RSRP (dBm)	Avg SINR (dB)	Avg Download (Mbps)	Avg Upload (Mbps)	Avg Latency (ms)
Hospital Authority Lab	-74.8	21.6	600.6	52.9	10.0

5. Conclusion

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