

Test Report

For

**Trial of 5G Base Station and User Equipment
operating at 700MHz band**

Version 1

SmarTone

September 2022

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1. Introduction

SmarTone has acquired 700MHz spectrum in the end of October 2021 for further advancement of 5G technology development in Hong Kong. The spectrum is in 2 x 5 MHz bandwidth between 713 - 718 MHz paired with 768 – 773 MHz (Band n28).

Temporary permit was granted by CA to SmarTone Mobile Communications Limited (“SmarTone”) in the 1st half of 2022 for 5G NR network trial in the 700MHz band before the official service launch in the end of June, 2022.

2. Test Scope

The scope of the test was concentrated on the radio propagation characteristics and outdoor coverage in Hong Kong environment.
For the field trial, 700MHz cell was set up in Sai Kung.

2.1. Test Equipment

Equipment	Technical Specifications	
Remote Radio Unit	Frequency Band	700 MHz
	Bandwidth	2 x 20 MHz
	MIMO Configuration	2Tx/2Rx
Test User Equipment	Frequency Band	700 MHz
	MIMO Configuration	2Tx/1Rx



(A)

(B)

Figure 1. (A) 700 MHz Remote Radio Unit, (B) 700 MHz Test User Equipment

2.2. Test location

Location	Area	Test Scenario	Band	Antenna Configuration
1	Sai Kung	Outdoor	700 MHz	Bearing = 265° & 330° Down-tilt = 0° & 2°



Figure 2. 5G 700MHz Test Location 1

2.3. Test configuration

5G network configuration was based on 3GPP Release 15 Option 3x. Co-located LTE cell was served as the anchor cell of 5G NR carrier.

Band	Operating Frequency	Bandwidth	EIRP (5G Remote Radio Unit)
700MHz	713 - 718 MHz paired with 768 – 773 MHz	2 x 5 MHz	43 dBm

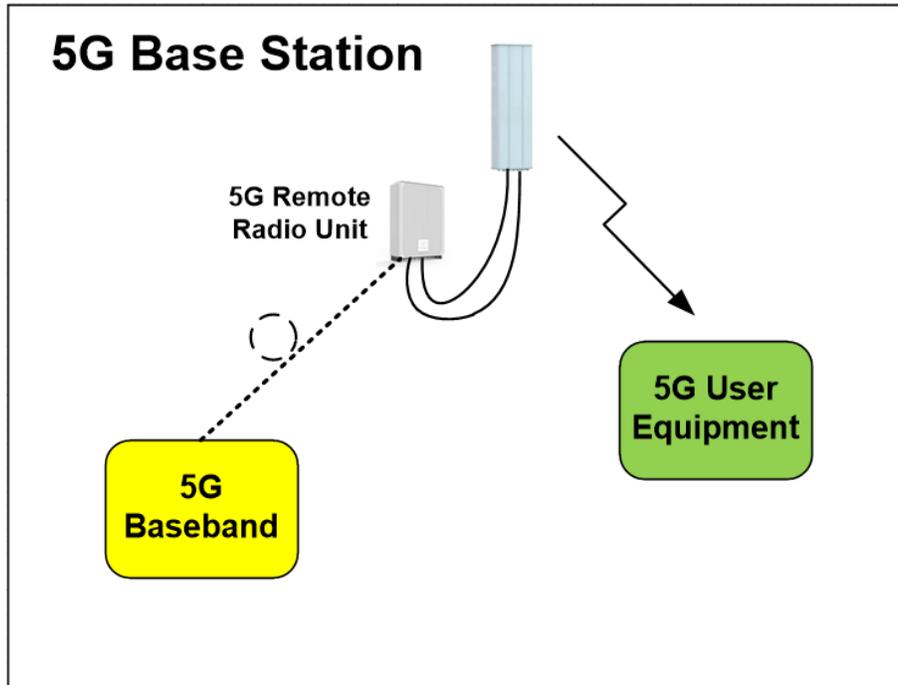


Figure 3. 5G test configuration

3.1.2. Downlink throughput test

The downlink throughput over 40Mbps was achieved at the area with the strongest coverage.

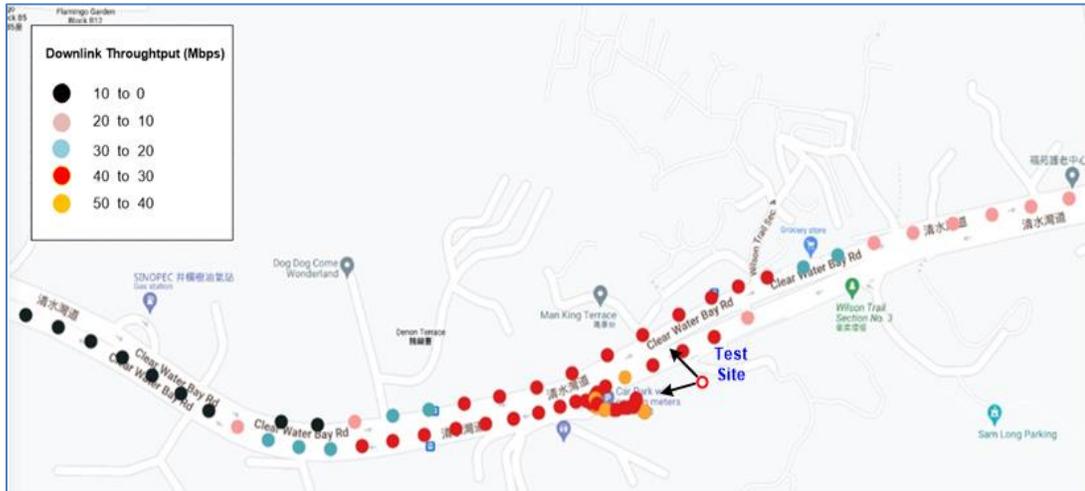


Figure 5. Downlink throughput test result

3.1.3. Uplink throughput test

The uplink throughput between 15-20Mbps was achieved at the serving area.

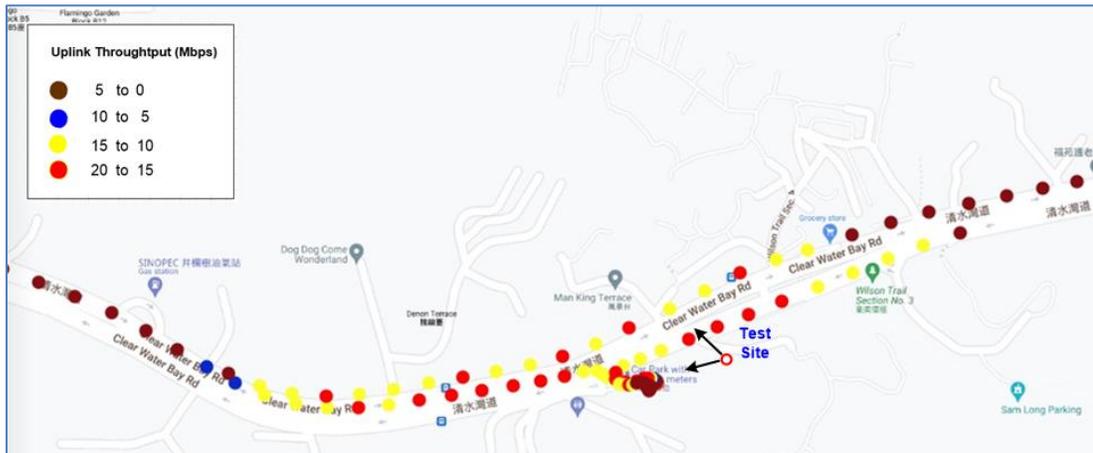


Figure 6. Uplink throughput test result

4. Conclusions

The 5G NR trial tests were conducted to evaluate the 5G performance operating at 700MHz frequency band.

For 700MHz band performance, the download throughput >40Mbps and uplink throughput > 15Mbps were achieved with 5MHz carrier bandwidth under good signal strength LOS outdoor environment.

Based on the trial test results, 700MHz band can provide wider coverage when compared with other 5G frequency bands. It can provide more cost-efficient 5G coverage in rural areas. Moreover, 5G in-building coverage can be further enhanced by the better indoor penetration of 700MHz band. It can also serve as coverage band of 5G standalone network. With the deployment of 5G spectrum in 700MHz band, customers can have better 5G experience in both outdoor and indoor areas.