## **Real-time 5G Radio Wave Visualizer**

## **5G Cell Design**

Small cells of high frequency added on macro cell in high traffic areas



Must clarify propagation characteristics in high frequency bands

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## Factors affecting high frequency radio propagation

#### Deployment scenarios

- •Environments: Urban hightraffic areas, etc.
- •Base station antenna heights: under 10 meters
- •Base station antennas: Massive MIMO type



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#### 20 GHz Channel Sounder & Massive Array Antenna

High-resolution propagation measurements using a massive array antenna in 20 GHz band

BS Antenna Antenna Pole (Max 10m)	256 elements (16 by 16)	7mm   Antenna   Element	Center frequency	19.85 GHz
			Bandwidth	50 MHz
			Transmission power	1W
			Tx antenna	Sleeve
			Rx antenna	256 elements
			Trevenieriere	(10 DY 10)
			signal	OFDM

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These slides include a part of the results from "The research and development project for realization of the fifth-generation mobile communications system" commissioned by The Ministry of Internal Affairs and Communications, Japan.