

# 900MHz Radio Environment Measurement Results in the Tokyo Area

Date: 2024-01-15

Authors:

Name	Affiliations	Address	Phone	email
KITAZAWA Shoichi	Muroran IT			kitazawa@muroran-it.ac.jp
SASAKI Erina	Muroran IT			Sasaki_e@muroran-it.ac.jp

Notice: This document has been prepared to assist IEEE 802.19. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.

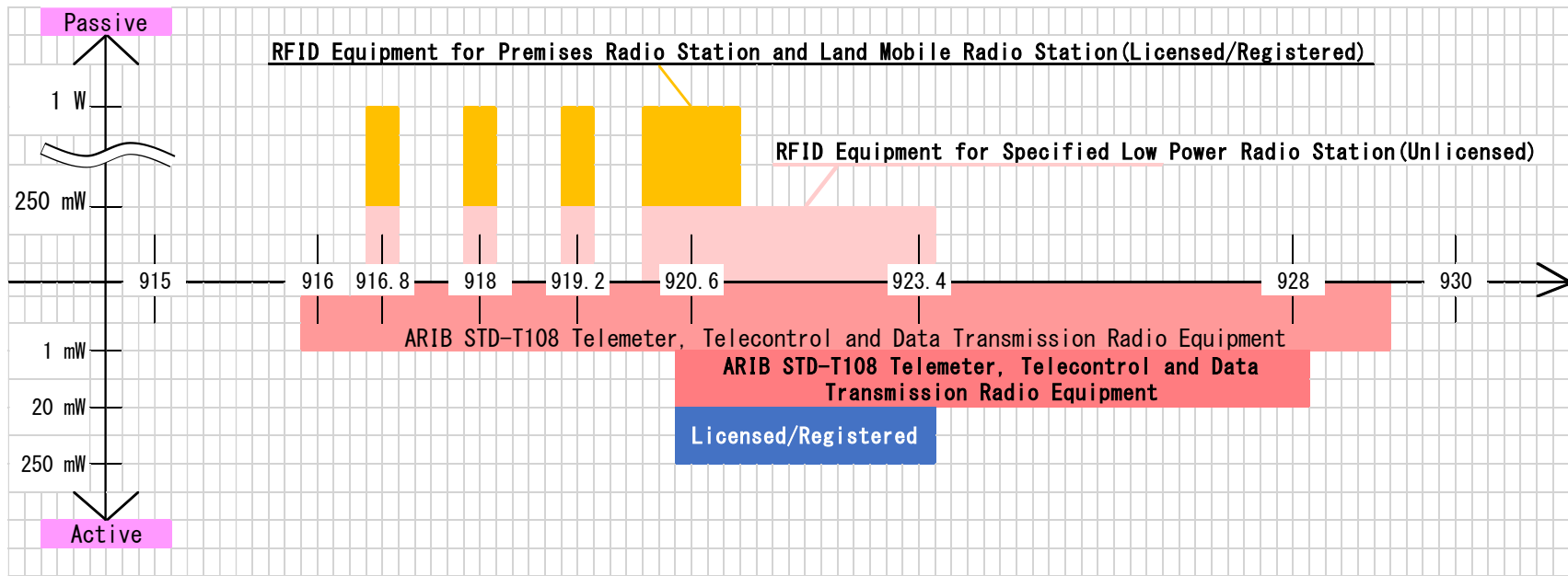
# Abstract

- **In the Tokyo area, electric power companies use Smart Meter in the 900 MHz band.**
  - It is important for this group to understand the current status of the radio environment in the 900 MHz band.
- **Three years ago, we measured the radio environment of the 900 MHz band at several locations in the Tokyo area, and we would like to introduce these measurements.**

# 920 MHz band frequency allocation in Japan

- **ARIB STD-T108 (20mW) operation Frequency**

- 920.5 to 928.1MHz
- Shearing with RF-ID, Licended/Registered Station and 11ah system
- For the 11ah system, the maximum occupied bandwidth extended from 1MHz to 4MHz



# Measurement Equipment

## Broadband Omnidirectional Antenna

Keysight Technologies N6850A	
Frequency range	300 MHz ~ 6 GHz
Gain	0 dBi
Type	Omnidirectional, Passive
Size	419 mm high, 156 mm wide
Weight	1.15 kg

## RF Sensor

Keysight Technologies N6841A	
Frequency range	20 MHz ~ 6 GHz,
Sweep speed	> 4 GHz/sec with 10 kHz RBW
Maximum Analysis Bandwidth	20 MHz
Size	292 mm × 54 mm × 246 mm
Weight	3.5 kg



# Measurement Setup

- Measurements were taken at different altitudes: 1 m, 15 m, and 30 m above the ground.
- Approximately 7 measurements per second were taken continuously for more than 20 minutes.



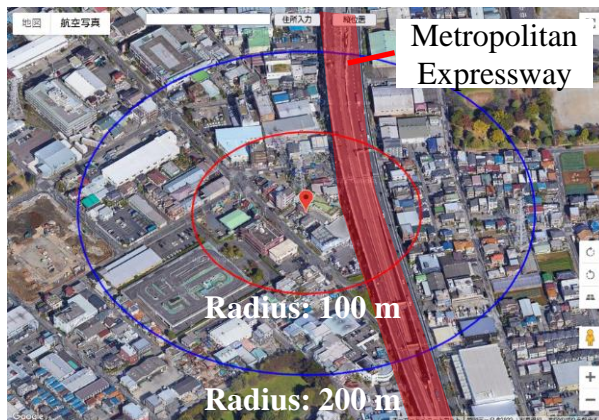
1 m



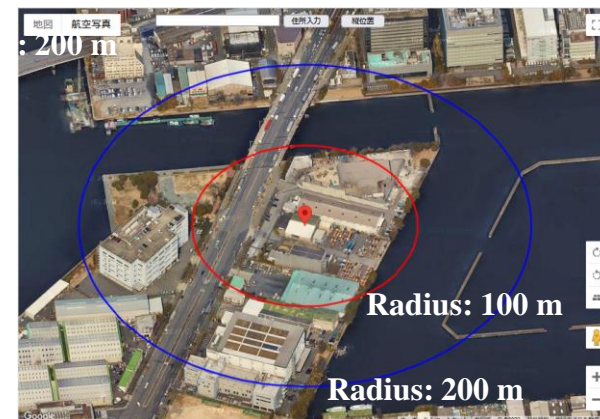
15/30 m

# Measurement Locations

- **Adachi Ward**
  - Mixed commercial and residential area
- **Koto Ward**
  - Bay Area

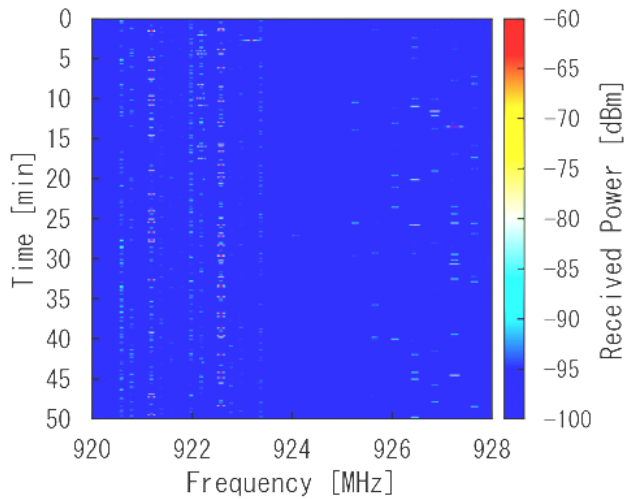


Adachi Ward, Tokyo

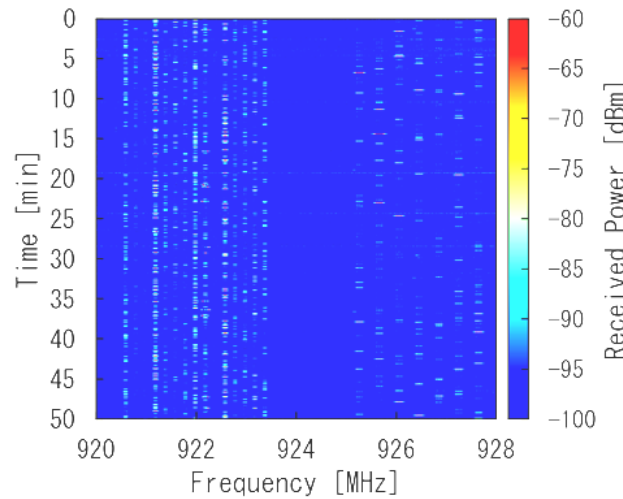


Koto Ward, Tokyo

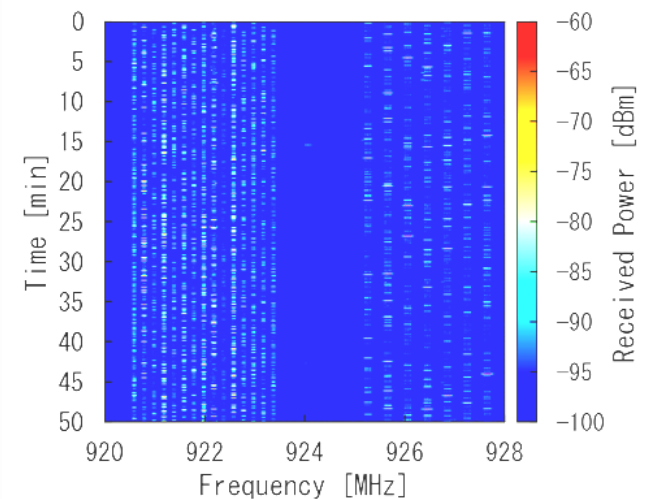
# Measurement Results at Adachi Ward



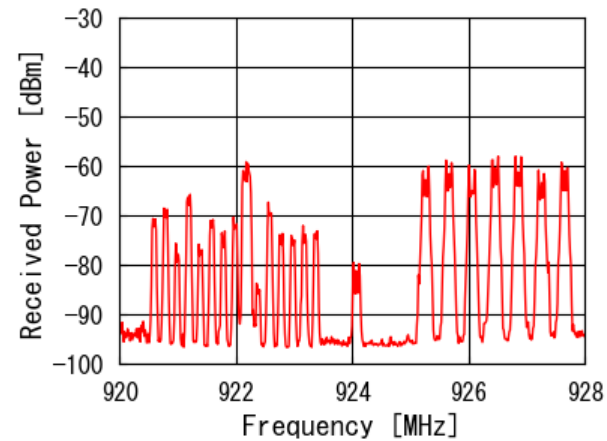
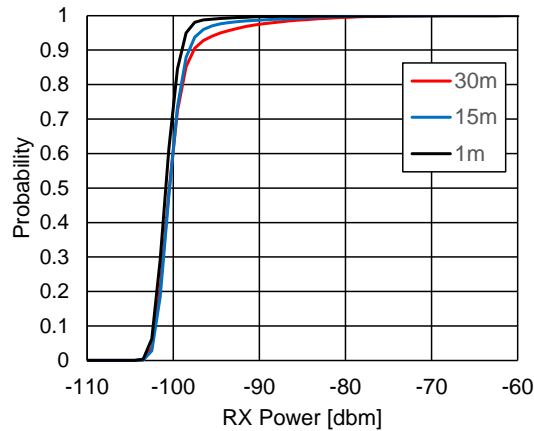
1 m



15 m

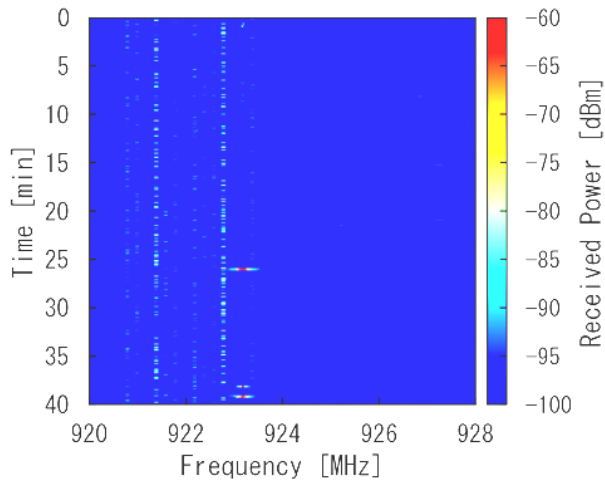


30 m

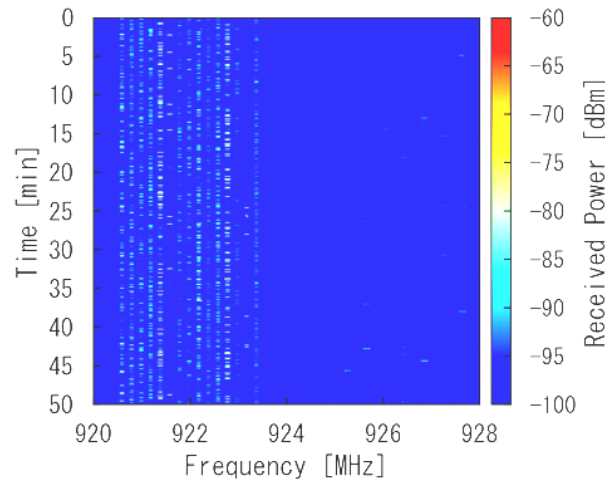




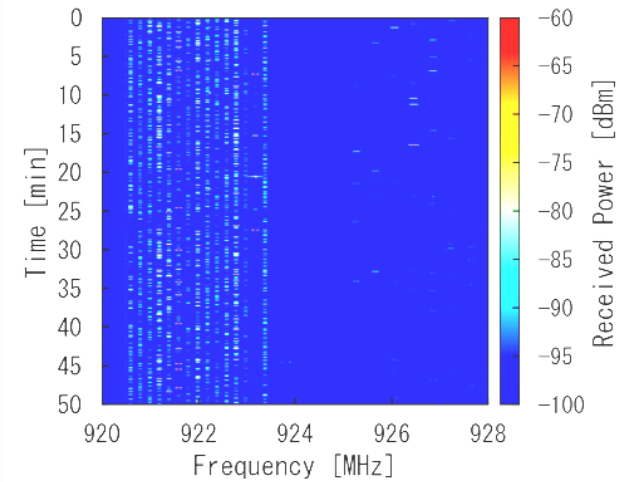
# Measurement Results at Koto Ward



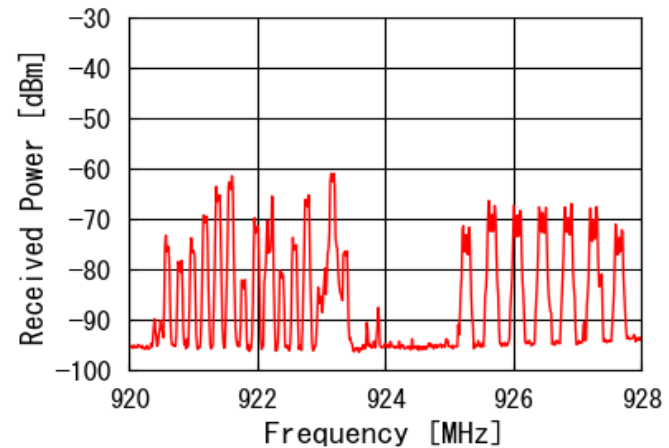
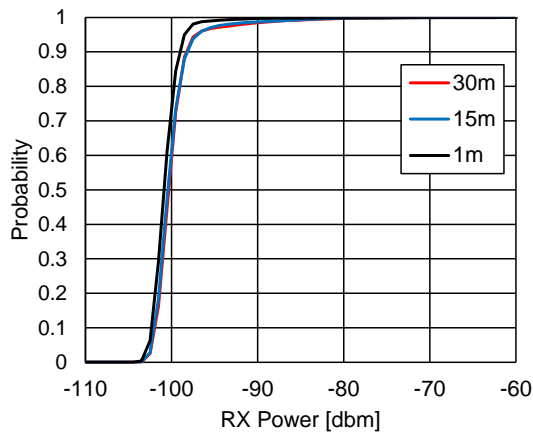
1 m



15 m



30 m





# Summary

- **It is important to understand the current 900 MHz band radio environment.**
- **The 900 MHz band in the Tokyo area has high in-band utilization, albeit with intermittent transmission.**
- **Further details will be reported when TG starts.**