

Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)

Submission Title: [Use case for JRE: Remote monitoring experiments using low power radio]

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Source: [Kiyoshi Fukui] Company [OKI]

Address [2-6-8 Bingomachi, Chuo-ku, Osaka 541-0051, Japan]

Voice:[+81 6 6260 0700], FAX: [+81 6 6260 0770], E-Mail:[fukui535@oki.com]

Abstract: [Introduce our field experiments using low power remote monitoring system as JRE use case.]

Purpose: [Introduce our field experiments using low power remote monitoring system as JRE use case.]

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Use case for JRE

Remote monitoring experiments
using low power radio

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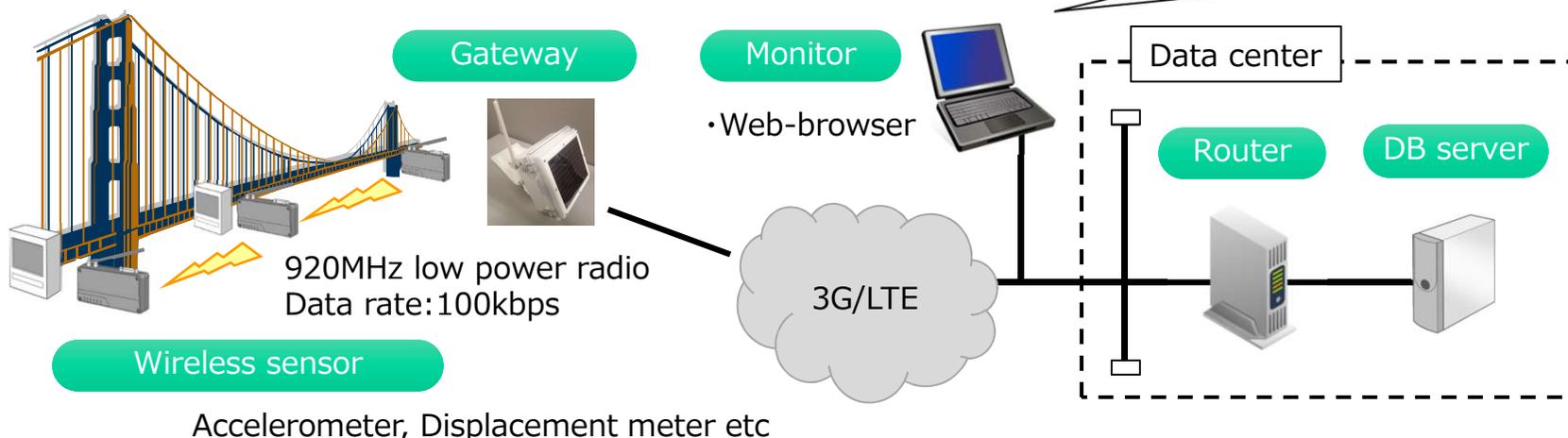
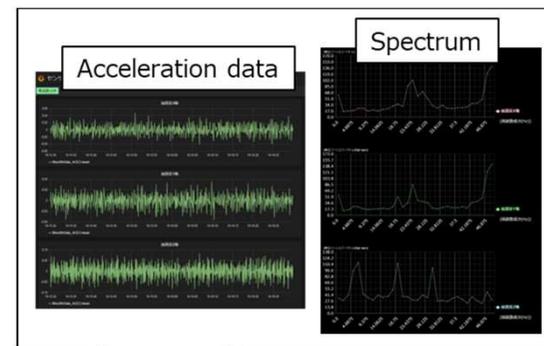
- Overview of our system
- Field experiments
- Expectation for JRE

Low Power Remote Monitoring System

- 920MHz band low-power radio that is battery-operated and support multi-hop transmission.
- Gateway is also battery-operated in latest version of our system.
- Collect the data measured by wireless sensors in DB server.
- Display graphs of the measured data or the spectrum of the measured data on Web-browser.

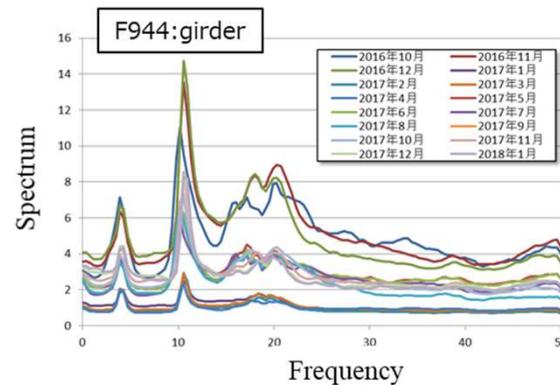
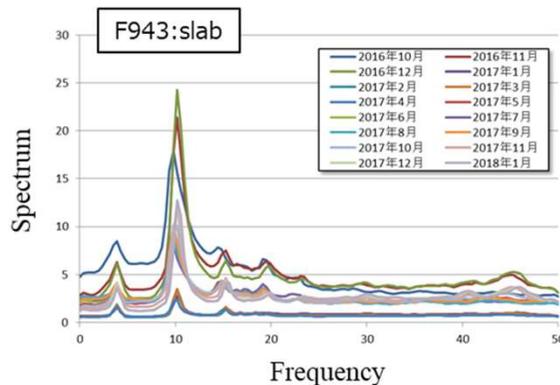
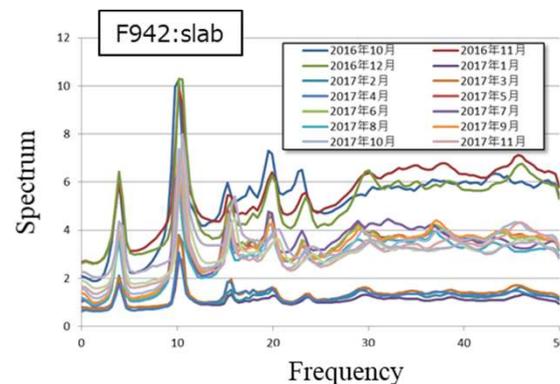
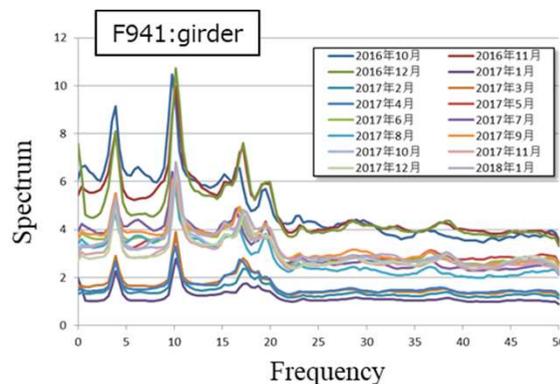
Spec. of our low power radio

	description
Radio freq.	922.3~928.1MHz
PHY/MAC	IEEE802.15.4
NWK	OKI original (Router has also sleeping function)
Output power	Maximum: 20mW
Data rate	100kbps
Size	18mm x 70mm (モジュールのみ)
Power resource	Lithium manganese dioxide battery x 4



Field experiment

- Collect acceleration data of girder (2 points) and slab (2 points) on an expressway.
- Realize continuous operation for more than one year from Oct. in 2016 to Jan. in 2018. (30 minutes/day)



Cited from OKI Technical Review May 2017 / Issue 229 Vol. 84 No.1 (Japanese version)

Expectation for JRE

- Additional needs for our current systems
 - Higher data rate to increase number of sensors for more accurate sensing.
 - Image transmission to confirm installation situation and surrounding environment of the sensors and monitoring target.
- JRE PHY is suitable for our low power remote monitoring system.
 - Our system is consisted with battery operated wireless sensors and gateway. So, low power consumption is very important.
 - Additional needs expect to be realized by JRE higher data rate.