

Measured radio wave of LoRa (920MHz band: LPWA)

By using the signal analyzer MSA500 series, the signal of LoRa (LPWA using 920MHz band) will be acquired.

[*Application*]

We received such an inquiry as "Can be measured the LoRa signal using the MSA500 series ?" and then measured it actually.

LoRa is one of LPWA (Low Power Wide Area) using the 920 MHz band, and the origin of the name comes from "Long Range". It can communicate at a maximum of several tens of kilometers, and features low power consumption.

The LoRa signal adopts a special modulation scheme called chirp spread spectrum. Although the amplitude is constant and the frequency is changed, instead of transmitting 0 or 1 by high or low of the frequency as in ordinary PSK, 0 or 1 is transmitted using a signal (chirp signal) whose frequency continuously varies. The signal is transmitted by combining a signal of frequency becoming high (up chirp) and a signal of frequency becoming low (down chirp).

[*Solution*]

■ Comparison of sweep type spectrum analyzer MSA400 series and real-time spectrum analyzer MSA500 series



MSA400 Series - Sweep time:30s

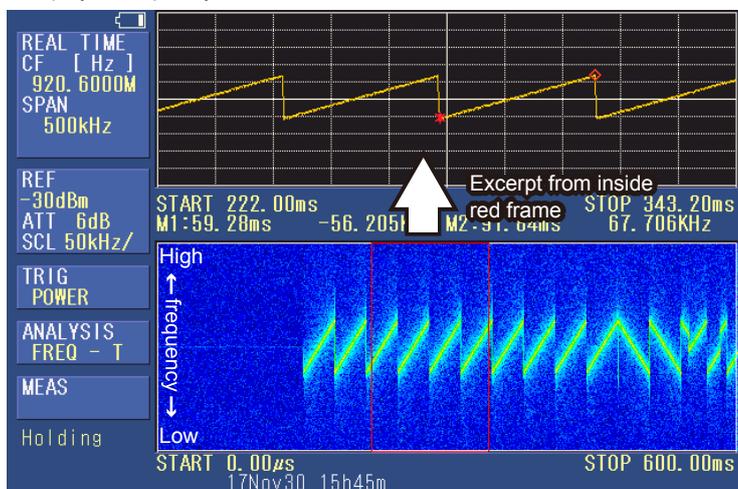
MSA500 Series - Real time mode



[MSA538]
Measurement frequency:20kHz to 3.3GHz

[MSA558]
Measurement frequency:20kHz to 8.5GHz

■ Display of frequency vs. time



By displaying the frequency vs. time, it is possible to observe the frequency bandwidth and transmission time of the chirp signal.

The following items can be measured in addition to the above.

- Occupied bandwidth
- Permissible deviation of frequency
- Strength of unwanted emission
- Antenna power
- Adjacent channel leakage power
- Radio waves emitted by the secondary
- Transmission time

[*System constitution*]

- Handheld signal analyzer MSA538
- Portable antenna M401