Measurement in band from 9 to 13GHz by parabolic antenna with down-converter

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■ Concrete application example

The signal of band from 7.9 to 14.5GHz is received by a parabolic antenna, and then it is converted to the lower frequency from 50kHz to 3.3GHz by a down-converter attached to the parabolic antenna. MSA338 can observe this signal converted to the lower frequency.

■ Contents

Antenna used :45 type CS antenna CSA-453W4K (made by DX ANTENNA)
Frequency bandwidth :7.9 to 14.5GHz
※ LPF in the down-converter is removed.
※ The local frequency is 11.2GHz.

■ Block diagram and measuring method

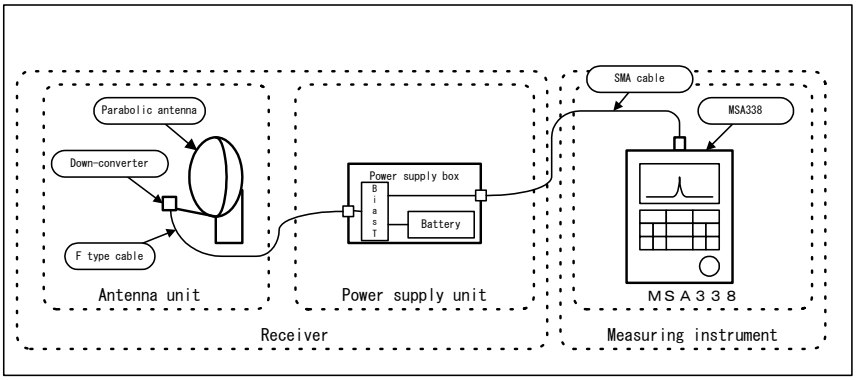

Fig.1 Block diagram

The antenna unit is connected with the power supply unit with F type cable. And at the antenna side this cable is directly connected there. The power supply unit is connected with MSA338 with the SMA cable.

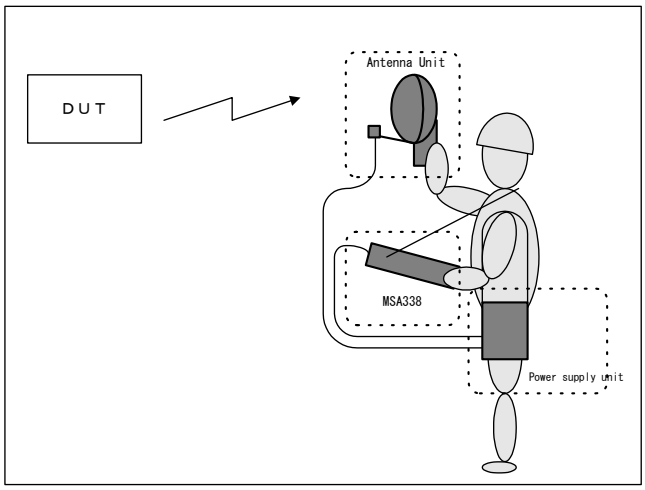

Fig.2 Measurement image drawing

As shown in Fig.2, when the measurement is done at the site, the antenna unit is held by one hand and MSA338 is held by the other hand, and then the power supply unit is shouldered.
※ We supplies the power supply unit.

■ Relation between measurement frequency and reception frequency

The signal (measurement frequency) displayed on the screen of MSA338 is different at the frequency from the signal (reception frequency) actually received by a parabolic antenna because the reception signal more than 3.3GHz is converted down to the lower frequency. Moreover, the measurement range is limited.
The measurement frequency is calculated from the reception frequency by the following equation.

[Calculation expression]
When the reception frequency is 11.2GHz or less:
[Measurement frequency (GHz)]＝11.2GHz－[Reception frequency (GHz)]
When the reception frequency is 11.2GHz or more:
[Measurement frequency (GHz)]＝[Reception frequency (GHz)]－11.2GHz
※ However, the local frequency is 11.2GHz, and the measurement frequency must become 3.3GHz or less.

The reception frequency is as follows from the above expression.
7.9 to 11.2GHz, and 11.2 to 14.5GHz
However, it narrows as follows by the receiving sensitivity of the antenna unit.
9.7 to 11.0GHz, and 11.4 to 12.7GHz

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