

# Noise immunity evaluation of information and communication equipment

◇ The correlation between noise level and transmission speed are verified.

## \*Application\*

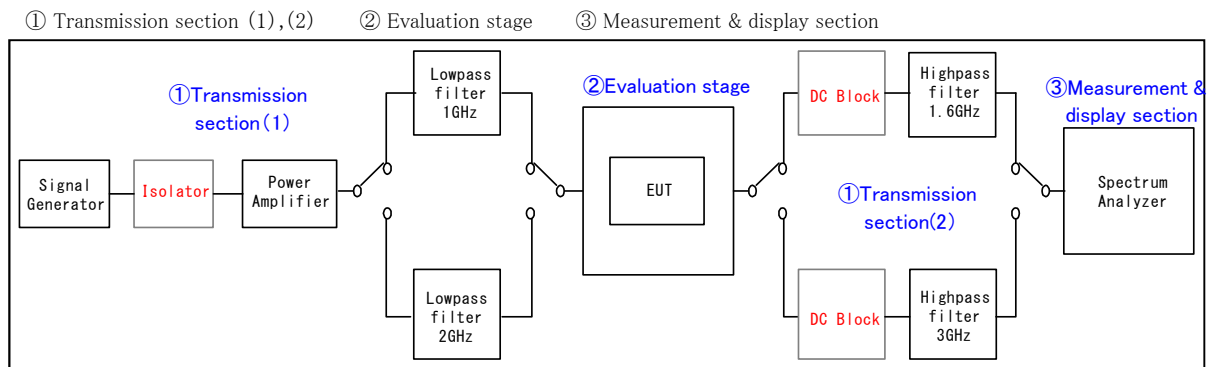
In this paper, the evaluation of a mobile phone module is mentioned as an example.

This system intends to evaluate how the EUT (mobile phone module) put in anechoic box is affected after the signal output from signal generator (SG) is radiated in it.

This system has the frequency range from 800MHz to 2.5GHz and is a tool for detecting the EMC problem in the early stage of design or measuring a communication effective throughput by the program of EUT or control equipment.

## \*Solution\*

【System configuration example】



【System specification example】

### ① Transmission section ※ Insert an isolator if necessary.

The signal to be applied to EUT is generated. The power is roughly +30 dBm but depending on the measurement band. Transmission section (1) and (2) are installed in one case.

|                  |   |                   |
|------------------|---|-------------------|
| Signal generator | Frequency range   | 9kHz to 3GHz (CW) |
|                  | Output level  | -127 to +13dBm    |
| Power amplifier  | Frequency range   | 800MHz to 2.5GHz  |
|                  | Output power  | more than 5W      |
| LPF※             | Cutoff frequency is 1GHz at the measurement from 800MHz to 1GHz, and 2GHz at the measurement from 1.5GHz to 2GHz.   |                   |
| HPF※             | Cutoff frequency is 1.6GHz at the measurement from 800MHz to 1GHz, and 3GHz at the measurement from 1.5GHz to 2GHz. |                   |
| DC block         | Parts for cutting DC  |                   |

### ② Evaluation stage

The signal generated at ① is radiated in anechoic box through an antenna coupler.

|                 |                         |  |
|-----------------|-------------------------|--|
| Anechoic box    | Shielding effectiveness | 800MHz to 3GHz (more than 50dB)        |
|                 | Outside dimensions      | approx. 260 (W) × 260 (H) × 360 (D) mm |
|                 | Inside dimensions       | approx. 200 (W) × 100 (H) × 300 (D) mm |
|                 | Table for put EUT       | 200 (W) × 280 (D) mm                   |
| Antenna coupler | I/F                     | SMA connector *2pcs                    |
|                 | Frequency range         | 800MHz to 2.5GHz                       |
|                 | VSWR                    | less than 2.5 (0.8 to 2.2GHz)          |
|                 | Maximum output level    | +38dBm                                 |

### ③ Measurement & display section

The report will be drawn up after measured in the circumstance of ②.

|                   |  |                 |
|-------------------|--|-----------------|
| Spectrum analyzer | Frequency range  | 50kHz to 8.5GHz |
| PC software       | The result obtained by spectrum analyzer is displayed and the report is drawn up.                                      |                 |
| PC                | The communication status such as the effective throughput is made sure using the program of control equipment and EUT. |                 |

