APPLICATION NOTE

MG3681A
Digital Modulation Signal Generator

ANRITSU CORPORATION
MG3681A
Digital Modulation Signal Generator
Application Note
W-CDMA experiment equipment for base station construction

Anritsu Co.
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**Purpose**

The optimum cell arrangement and the antenna parameters must be set in building a base station.

- **Verification of downlink**
  - The experiment which simulated actual communication service by general signal generator MG3681A simulating a base station can verify the following.
    - Identifying radio wave propagation loss, interference, and weak electric field strength area in downlink
    - Inter-Cell Soft Handover test and pinpointing the area points
      - Analyzing the level fluctuation in fading propagation, the delay profile characteristic, BLER, and the number of effective paths at handover

- **Verification of uplink**
  - The experiment which simulated actual communication service by general signal generator MG3681A simulating a user equipment can verify the following.
    - The receiving diversity characteristic test in a base station
    - Analyzing the necessity or non-necessity for attachment of LNA directly under the antenna

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**Outline**

- **Verification of downlink**
  - Power amplifier (JRC makes) is connected to MG3681A (RF output), and it considers as 20W transmitter.
  - Three transmitters simulate the base station of a different cell.
    - The timing of three MG3681A is synchronized.
      - SCH timing differs mutually.
      - Scrambling code: same
      - Cell: 0, 1, 2
  - Output signal formats are custom-made patterns based on DL RMC.
    - Ch. 1: P-CCPCH + P/S-SCH
    - Ch. 4: DPCH (RMC 12.2 k, 64 k, 144 k, 384 kbps)
    - Ch. 5: PICH
    - Ch. 6: CPICH
    - Add Ch.: 63 DPCH (63 OCNS) * referred Test Model 1 (64 DPCH)
  - CPICH power and DPCH BLER are measured by an in-car UE area analyzer.
Outline

- Verification of uplink
  - Power amplifier (JRC makes) is connected to MG3681A (RF output), and it considers as 250mW transmitter.
  - A transmitter simulates a in-car user equipment.
  - Output signal formats are DL RMC. (Frequency is Uplink.)
    - Ch. 1: P-CCPCH + P/S-SCH
    - Ch. 4: DPCH (RMC 12.2 k, 64 k, 144 k, 384 kbps)
    - Ch. 5: PICH
    - Ch. 6: CPICH
  - Two area testers ML8720B simulate the base station of the receiving diversity antennas.
    - They are connects to the up-converter toward downlink frequency.
  - CPICH power is measured by ML8720B.

Configuration (Verification of downlink)

MG3681A + MG3681A-42 RF High Level Output + MU368040A CDMA Modulation Unit + MX368041B W-CDMA Software

20W (43dBm)

Area analyzer

GPS navigator

10MHz

Power amplifier

MG3681A

GPS receiver

Trigger
**Configuration (Verification of uplink)**

- MG3681A
- MG3681A-42 RF High Level Output
- MU368040A CDMA Modulation Unit
- MX368041B W-CDMA Software

**Appearance of equipment**

- MG3681A
- GPS receiver
- Power amplifier (JRC makes)
- Antenna
Appearance of equipment

MG3681A-E-F-1

MG3681A setup

- **Setting External Start trigger**
  - Captures/Synchronizes the Trigger only once

- **ACP priority filter**

- **Connect with GPS receiver**
Thank you.
Specifications are subject to change without notice.