ZA0096A NB-IoT Signaling Test Solution

For NB-IoT Devices Manufacturing Test

Are you working on any of these devices or applications?

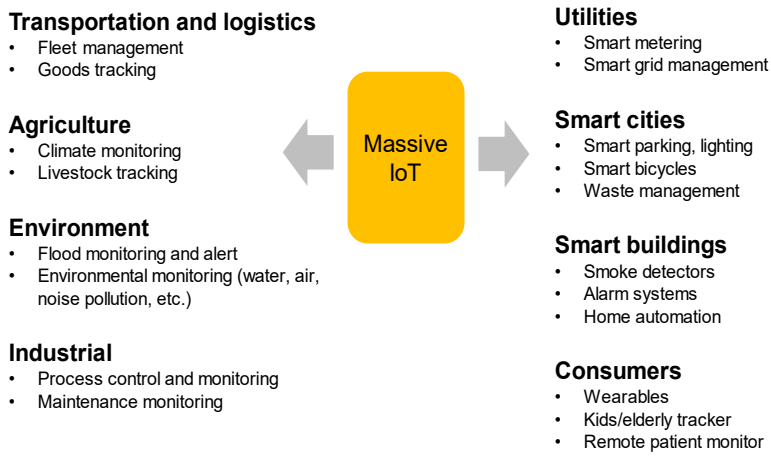

Figure 1: NB-IoT use cases and applications

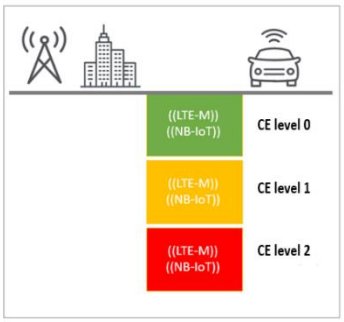

Figure 2: Three coverage enhancement levels to improve link budget.

NB-IoT Device Manufacturing Test Challenges

How do you test your NB-IoT device in production to ensure that it is meeting the performance expectation?

- Are you concerned about the ability of the device to successfully connect to the network and initiate the attach procedures?
- How do you validate the installed SIM card is able to connect to the base station during actual operation?
- Do you need to validate the sensitivity of your device to ensure it is meeting the required range?
- How do you know if your device is transmitting at the correct TX power level and able to reach the desired maximum power level?
- Do you have an easy way to retrieve and store the measurement results in Excel compatible formats for every unit tested?

Keysight can help

Keysight ZA0096A NB-IoT signaling tester can help you to solve these manufacturing test challenges.

- **SIM Card Operation:** The solution will ensure there is proper communication with SIM card of the device by retrieving certain information such as the IMSI number. In addition, the solution will check that the device is able to connect to the base station emulator (ZA0096A), which requires a stable and healthy SIM card operation.
- **Device Sensitivity (RX):** The solution emulates a challenging but realistic network connection, where the signal perceived by the device is at a very sensitive level (example: -120 dBm/180 kHz). The device will be tested to ensure it is able to initiate the attach procedure with the base station emulator at this sensitive level.
- **Device Transmission Power (TX):** The solution measures the TX power of device and verifies that it reaches the desired TX power level (example: +23 dBm), with built-in path loss compensation.
- **Output:** At the end of the test, it will generate CSV files with raw measurements data and summary results. For instance, power versus time data, protocol logs, and measurement results with timestamp will be available for post measurement analysis.

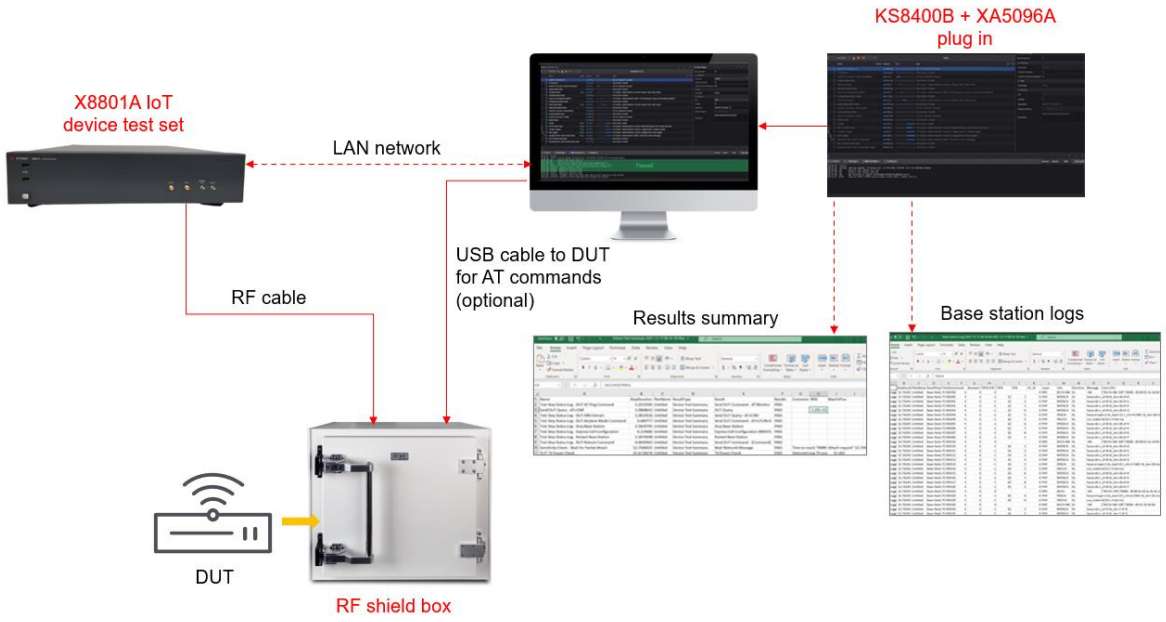

Figure 3: ZA0096A offers complete NB-IoT signaling test setup

Figure 4: Front and real panel views

Solution Overview

Characteristics

Item	Characteristics
NB-IoT signaling support	X8801A test set acts as an NB-IoT base station emulator
Output power (preliminary)	-40 to -120 dBm with 0.25 dB resolution, **accuracy ± 2 dB**
Power measurement (preliminary)	-47 to +20 dBm at RFIO port, **accuracy ± 2 dB**
Module dimension	2U full rack (L488.6 x W425.5 x H88.3 mm)
Control I/O	LAN
Control software	XA5096A NB-IoT signaling test suite Prerequisite software: KS8400B PathWave test automation

Test Parameters:

- Measurement of DUT transmitter radiated power in dBm and comparison with target range
- Test DUT receiver sensitivity for a given threshold (for example, -120 dBm)

Software Coverage:

KS8400B compatible test plan provided and will cover test steps below:

- Start the mobile network emulation
- Control of the DUT via AT commands (required for automated testing, optional as call box)
- Establish signaling link between test platform and DUT
- Read DUT IMSI and serial number
- Measure DUT radiated power (dBm)
- Measure DUT receiver sensitivity at a given threshold (dBm)
- Compare measurement results with configurable limits
- Simple user interfaces to quickly assess pass / fail results
- Export test results in CSV formats that includes summary test results, radiated power versus time, and base station logs

Accessories

Three different sizes of RF shied enclosures are available for purchase together with the ZA0096A. These enclosures are RoHS compliant and is shippable to most countries globally. To complement the ZA0096A, Keysight offers the ordering convenience to add RF shielded enclosure manufactured by and including 1-year warranty from BIP Roottek.

X8763A small shield box

X8764A medium shield box

X8765A large shield box

Ordering Information

Model	Descriptions
ZA0096A	NB-IoT Signaling Test Solution
R-55A-001-1	KeysightCare Assured – Extend to 3 years (includes Return to Keysight Extended Warranty)
XA5096A	NB-IoT Signaling Test Suite
KS8400B	PathWave Test Automation, Developer System
X8763A / 64A / 65A	Small / Medium / Large size shield box (optional)

XA5096A and KS8400B Software – License Types and Terms

Model numbers and support subscription terms		License types available
R-x4x-00x-L	Time-based license with 12 months KeysightCare software support subscription	Node-locked, floating (single region/worldwide), transportable, USB portable
R-x5x-00x-x R-x6x-00x-Y	Perpetual license with 36 months KeysightCare software support subscription	

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