CTTL-Terminals Initiative Helping Customers to Accelerate Commercial Solutions (IoT Products and Applications)

CHINA TTL-Terminals, CAICT

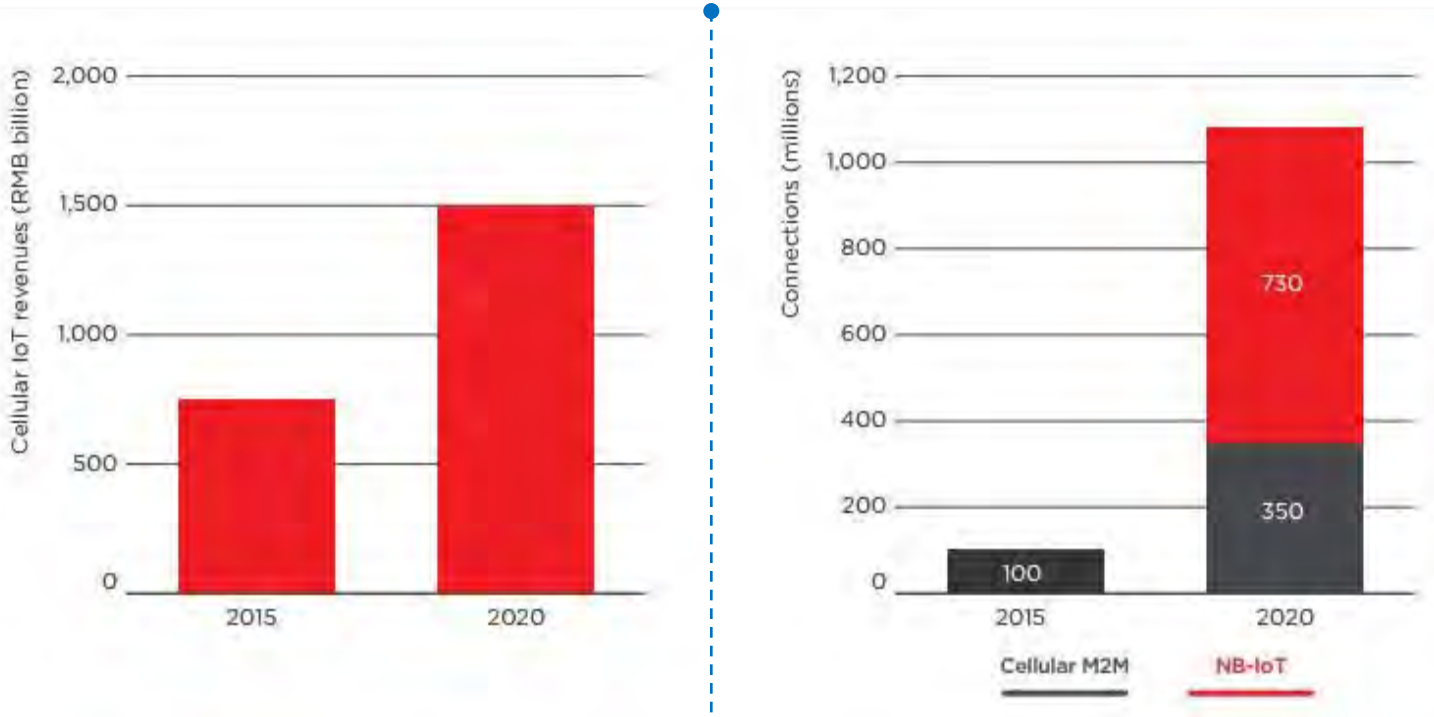
Sep. 7, 2017 @ Shenzhen

1、Value of test / certification for IoT products and applications

2、Brief introduction of CTTL-T CAICT

IoT Driving Huge Market Growth Presenting New Opportunities

IoT revenues and connections forecasts in China – 2015 and 2020



source: CAICT , GSMA Intelligence

Differentiation is the key characteristics of IoT

The platform of traditional mobile smart terminal has the characteristics of homogenization.However, IoT has the characteristics of differentiation, which can be particularized in the followings:

Industry/Area

Fragmentation

- Different industry users
- Different business scenarios

Products

Diversification

- Different demands of module specifications.
- Various of product forms

Commercial Model

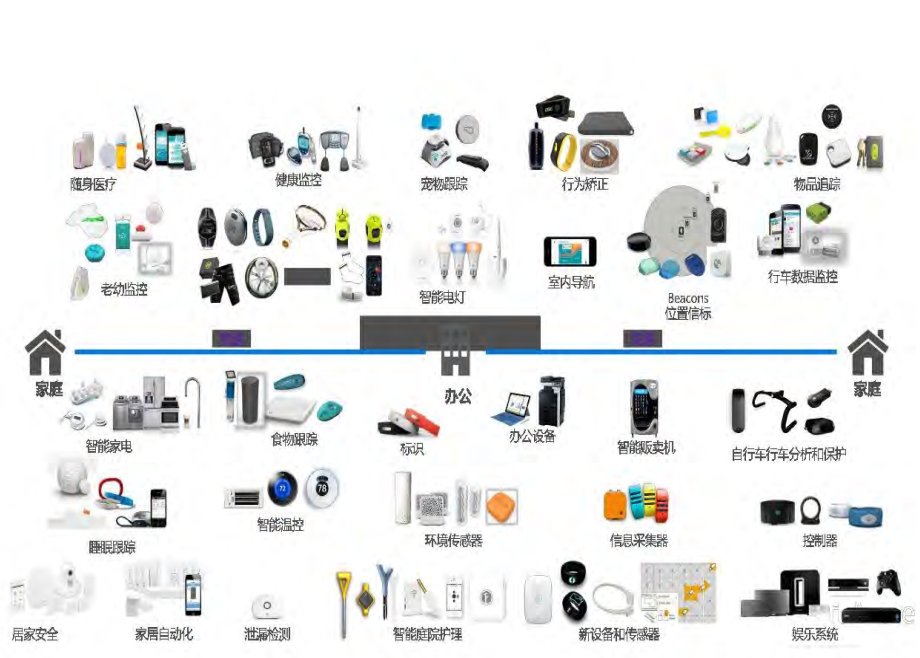
- IoT contains abundant high-tech fields, such as traditional telecomunication, sensors, computer technology, softwares, and etc.
- Its value chain and commercial model need to be futher claritied.

Test requirements for IoT can be the same as smart phones?

Importance of IoT Test

The Internet of Things means different divices to different companies. How to make different things work in order ?
The answer is to establish an effective and specific IoT testing and evaluation framework.

IoT Devices



compatibility ?
reliability ?
concurrency ?
network friendly ?

IoT Services

Smart Home

Smart Transport

LBS Service

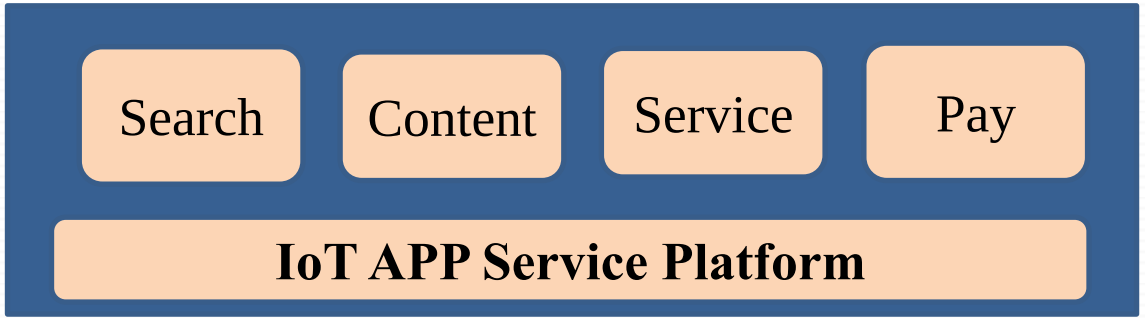
Smart City

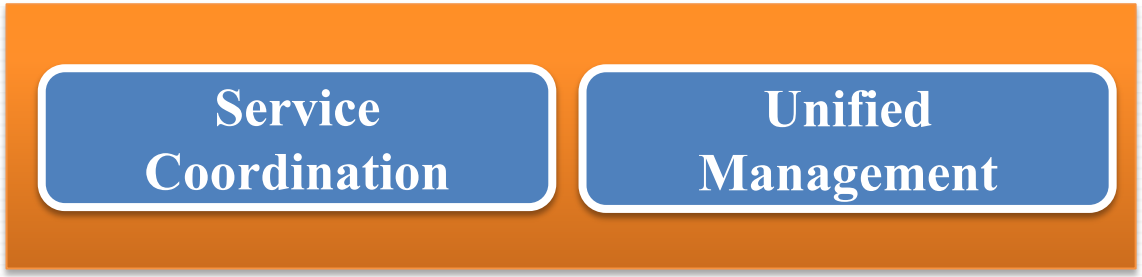
Different layer, different demand on IoT testing

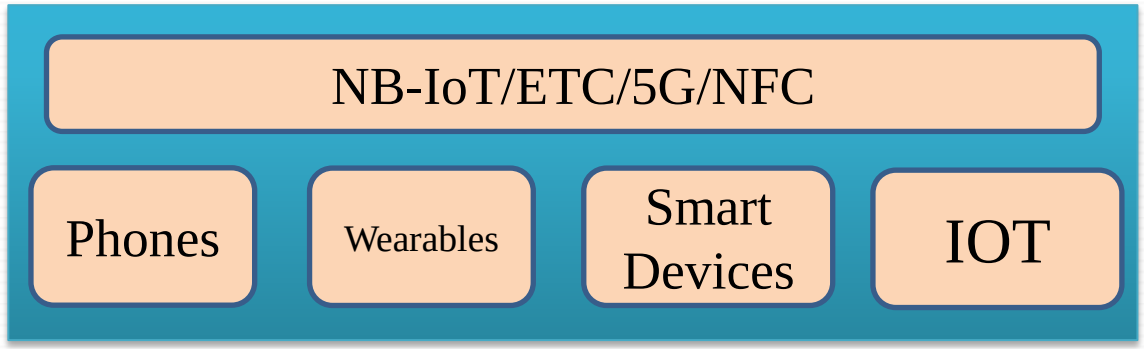
bicycle sharing+ electronic fence+ Pay (Fines)

bicycle sharing+ electronic fence

bicycle sharing







Idea of enriching the test for IoT: Communication -> Application

AT command enhancement

Compatibility: network -> service

Vertical industry traffic modeling

Power consumption: network -> service

layer3

Communication oriented

layer1

RF

PCT

RRM

USIM

AT

Power consumption

Network security

Network Compatibility

Service robustness

Service compatibility

Service stability

Service performance

application power consumption

Information security

AT enhancement

Application layer

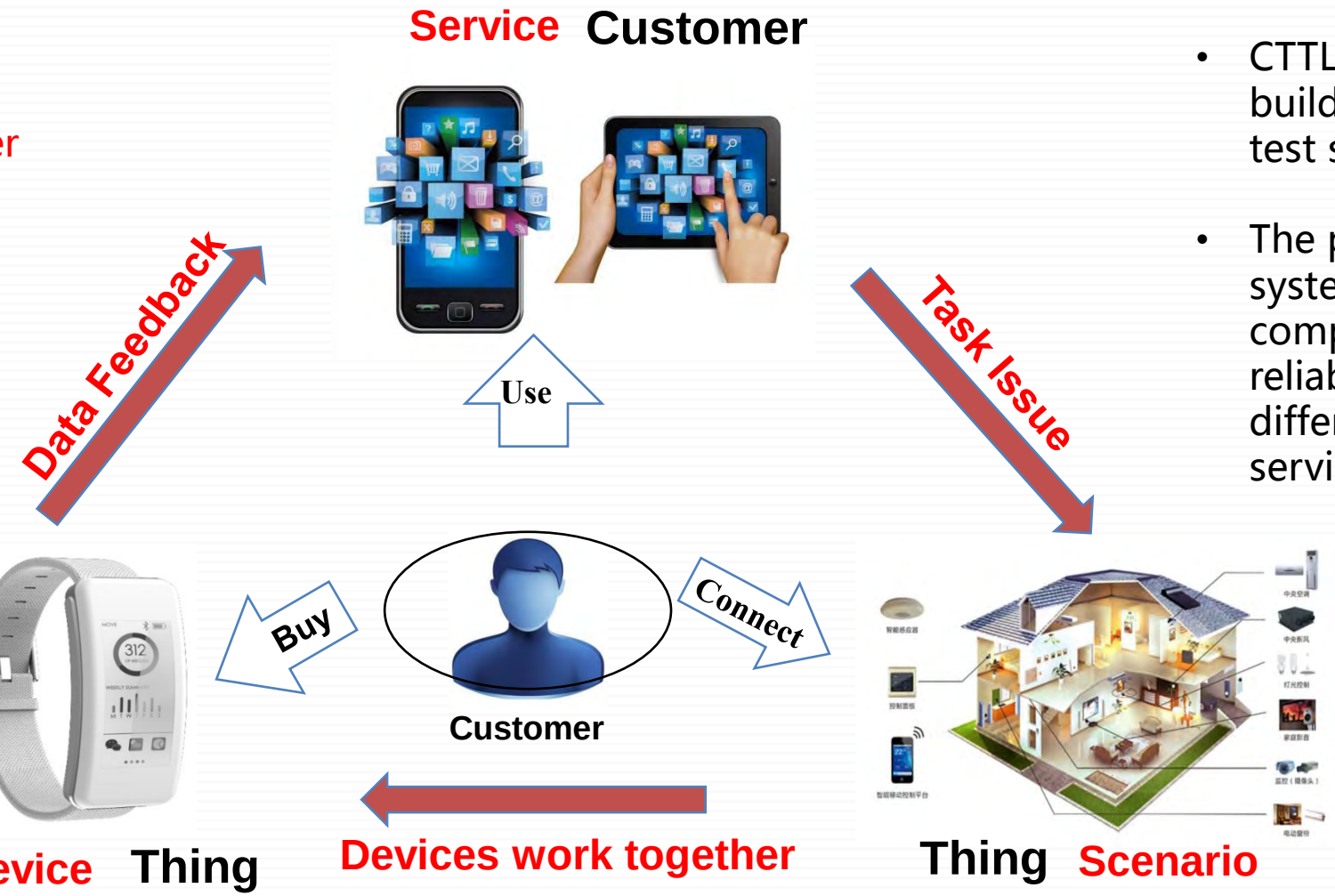
system oriented

Physical layer

Communication oriented -> Industry case oriented

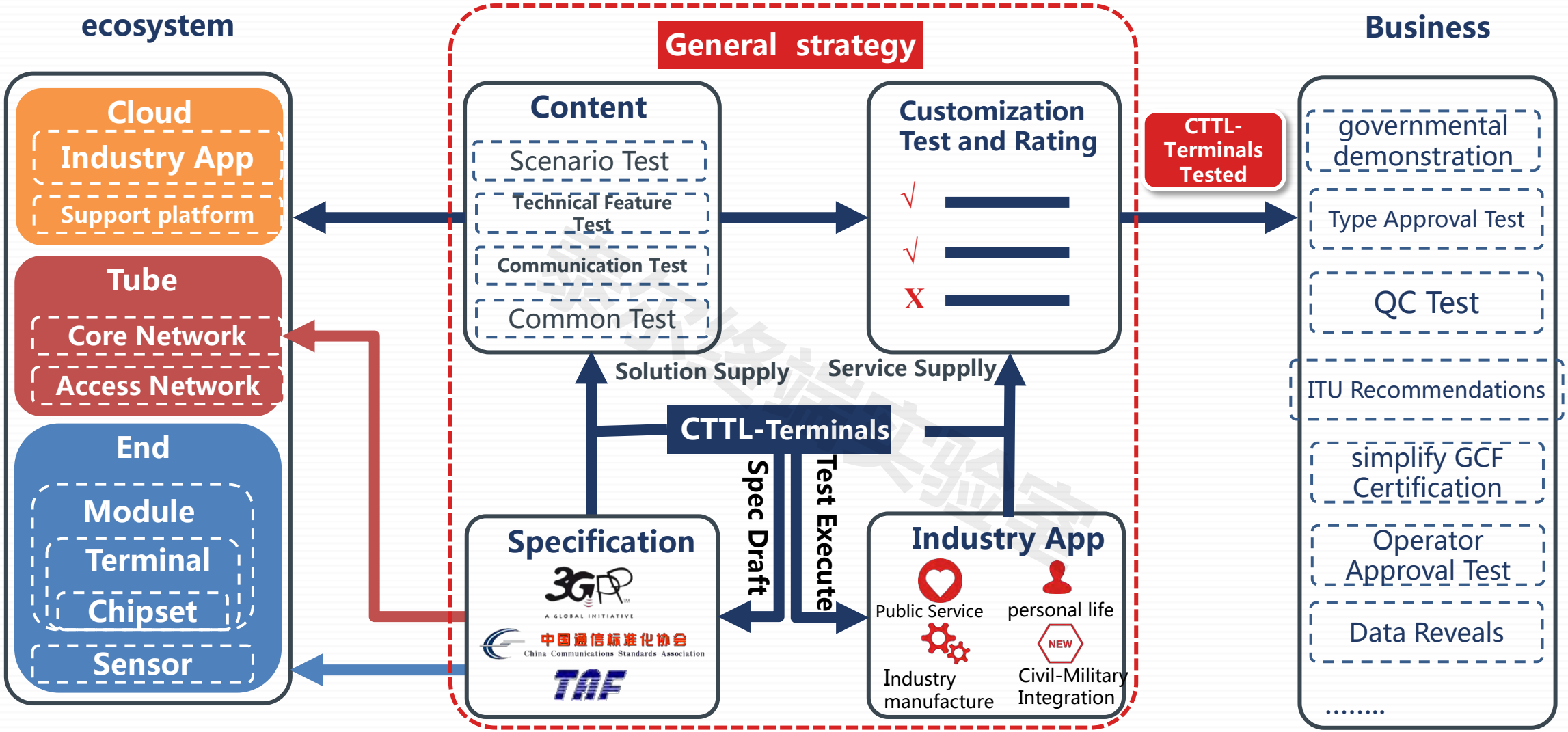
The Key goal of IoT testing: **Trust**

IoT Services refers to
customer——customer
customer——thing
thing——thing



- CTTL-Termianls is now building a brand of IoT test system.
- The purpose of IoT test system is to ensure the compatibility and reliability among different IoT devices and services.

Architecture of IoT Test System



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Brief introduction of CTTL-Terminals

Test Environment

- GSM / WCDMA / LTE / CDMA / TD-SCDMA test network and instrument

One-stop Test service

- IoT Test
- User Experience Test
- Certification Test
- Operator access Test

World wide customers

3rd party service provider

Over 500 engineers in Beijing

One-stop Approval

- GCF / PTCRB
- CE / FCC / IC / CTA
- Wi-Fi / Bluetooth / NFC / USB / NB-IoT

Global Standard-setting

- TAF
- CCSA
- ITU / OMA
- 3GPP/3GPP2
- IEC / IEEE / CTIA

Achievements of CTTL-Terminals

Quality System: DAkkS Deutsche Akkreditierungsstelle, CNAS, CMMI

From Operators: orange, vodafone, 中国移动 China Mobile, 中国电信 CHINA TELECOM, NTT docomo, T-Mobile, SoftBank

From Industry Forums: GCF Global Certification Forum, PTCRB, CTIA The Wireless Association, CCF CDMA Certification Forum, Wi Fi Alliance, Bluetooth SPECIAL INTEREST GROUP, HI-SPEED USB On-The-Go, NFC Forum, RFID Test Center, GS1 EPCglobal, EMVCo, MasterCard, VISA, MirrorLink, HOMEPLUG ALLIANCE, nVoy, Continua, WIRELESS POWER CONSORTIUM

From Governments: CCC, FC, CE, Industry Canada Canada, NTRA National Telecommunication Regulatory Authority, RoHS COMPLIANT

Others: Preferred Test Labs for Qualcomm technologies

Full Test Coverage

All communication technologies

WiMAX FORUM, CTIA Authorized Testing Laboratory, AllJoyn, Bluetooth, NB-IoT, Wi Fi ALLIANCE, ZigBee, RFid, NFC, EMV, HI-SPEED USB On-The-Go, WiGig, Optical, CARCONNECTIVITY consortium, Continua HEALTH ALLIANCE, WIRELESS POWER CONSORTIUM, HOMEPLUG POWERLINE ALLIANCE, HDMI HIGH DEFINITION MULTIMEDIA INTERFACE, MHL Mobile High-Definition Link

Terminals under tested

IoT can be applied in many ways

Communications | Home | Electric power | Transport | Vehicles | Health | Security | Retail

Cooperation Partners

Operators	中国移动 China Mobile, 中国电信 CHINA TELECOM, AT&T, China unicom 中国联通, smartfren live smart, 歌华有线 BGCTV, Sprint, T-Mobile, vodafone, orange
Chipset and Module Manufactures	QUALCOMM, intel, RDA, NXP, MEDIATEK, SPREADTRUM, freescale, HUAWEI
Mobile Manufacturers and design house	HUAWEI, ZTE 中兴, SAMSUNG, SHARP, Haier, 上海贝尔 Alcatel·Lucent, SONY, 美的 Midea, htc, TCL, 长安汽车 CHANGAN, 小米 xiaomi.com, GREE 格力, Hisense, H3C, HUAMAI 华脉, Letv
OTHERS	JD.COM 京东, Alibaba.com, 出门问问, 蓝光 BRC, 红星·美凯龙 MACALLINE, Face++ 旷视 人工智能开放平台, UIOT 紫光物联

Contribution to NB-IoT

3GPP A GLOBAL INITIATIVE

GCF Global Certification Forum

中国通信标准化协会 China Communications Standards Association

ETSI World Class Standards

ETSI TF160

TDIA TD Industry Association TD Industry Alliance

CAICT 中国信息通信研究院

大唐移动 DTmobile

1st Validation Report for SP8630 NB-IoT Testing System on Jan.18, 2017 at GCF CAG#49

1st GCF test report of NB-IoT Module

CTTL

NB-IOT TEST REPORT

No.I17Z60183-GPM01

for

Quectel Wireless Solution Co.,Ltd.

Product Name: BC95-B8

Model Name: BC95-B8

Marketing Name: Quectel BC95-B8

with

Hardware Version: v1.1

Software Version: BC95B8HAR01A03W16

Issued Date: 2017-03-07

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