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Product Introduction

Anritsu

ME7873L

LTE RF Conformance Test System

ME7873L
LTE RF Conformance Test System

- Product Introduction -

February 2017
Anritsu Corporation
Version 14.0

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1. Summary of Conformance Test

What is the Conformance Test?

Conformance Test: CT

The CT is a 3GPP-defined (TS36.521*1 and TS36.523*1) test case consisting of a set of fundamental tests. Passing these tests certifies that the DUT is 3GPP compliant.

*1: In case of LTE

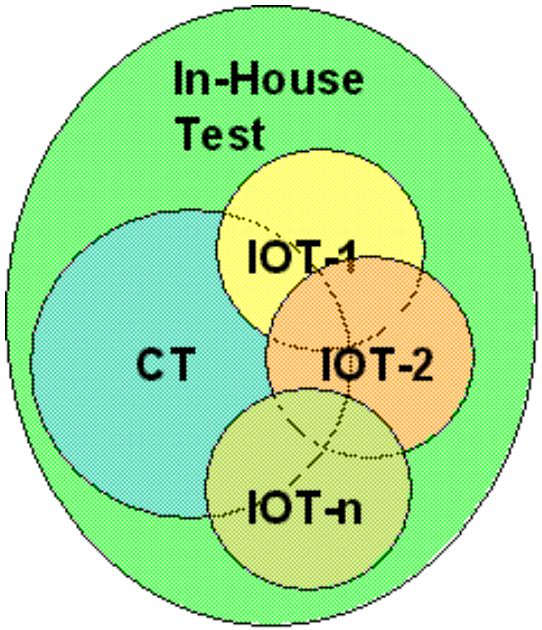
<Reference>

Inter Operability Test: IOT

The IOT is a CT with actual carriers (base stations). Because the 3GPP standard has a nearly infinite permutation of parameters, connectivity with actual base stations must be verified. The IOT is formulated for each carrier (base station) based on service details offered by carriers and base station vendors.

In-House Test:

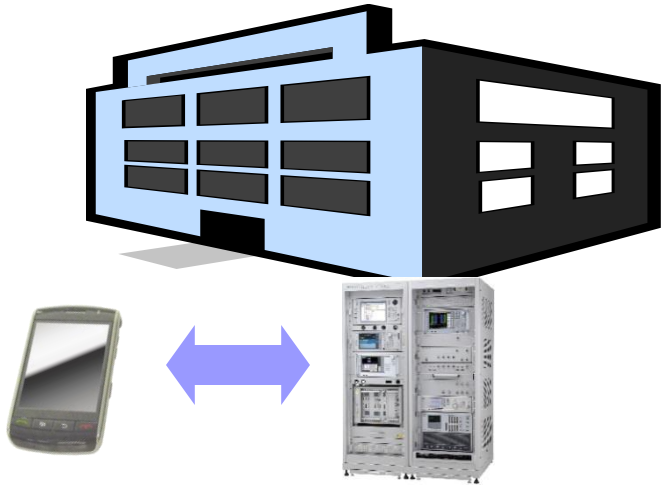
This in-house test is performed by UE vendors for quality assurance of their products. UE vendors create their own unique tests based on the design functions and data.



How Does the CT Fit Overall Product Verification?

- Network problems caused by non-compliant terminals not permitted
- Standard compliance important
- Conformance Test required for design inspection





Testing Real Network

- Proves terminal works with current
  - Network equipment
  - Configurations
  - Services

Conformance Testing

- Ensures terminal still works when:
  - Network equipment upgraded
  - New services added
  - Network architecture evolves

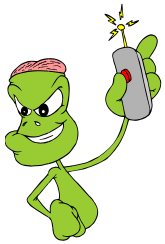
Who Should Do the Conformance Testing?



- Mobile terminal manufacturers
  - Proving to customers (network operators) that mobile terminals standard compliant



- Chipset and software component manufacturers supplying components or reference designs to mobile phone integrators
  - Proving that chipset designs standard compliant



- Specialist test houses
  - Offering conformance test and validation to manufacturers



- Network operators
  - Performing acceptance testing and QA

Race to Introduce LTE Service

3GPP Specifications Still Evolving

How to Test Conformance?

- **Which regulation version should we comply with?**
- **What test range required for "Conformance?"**
- **Who approves?**
- **Where is CT done?**
- **Possible in own facilities?**



Define International Rule and Procedures!

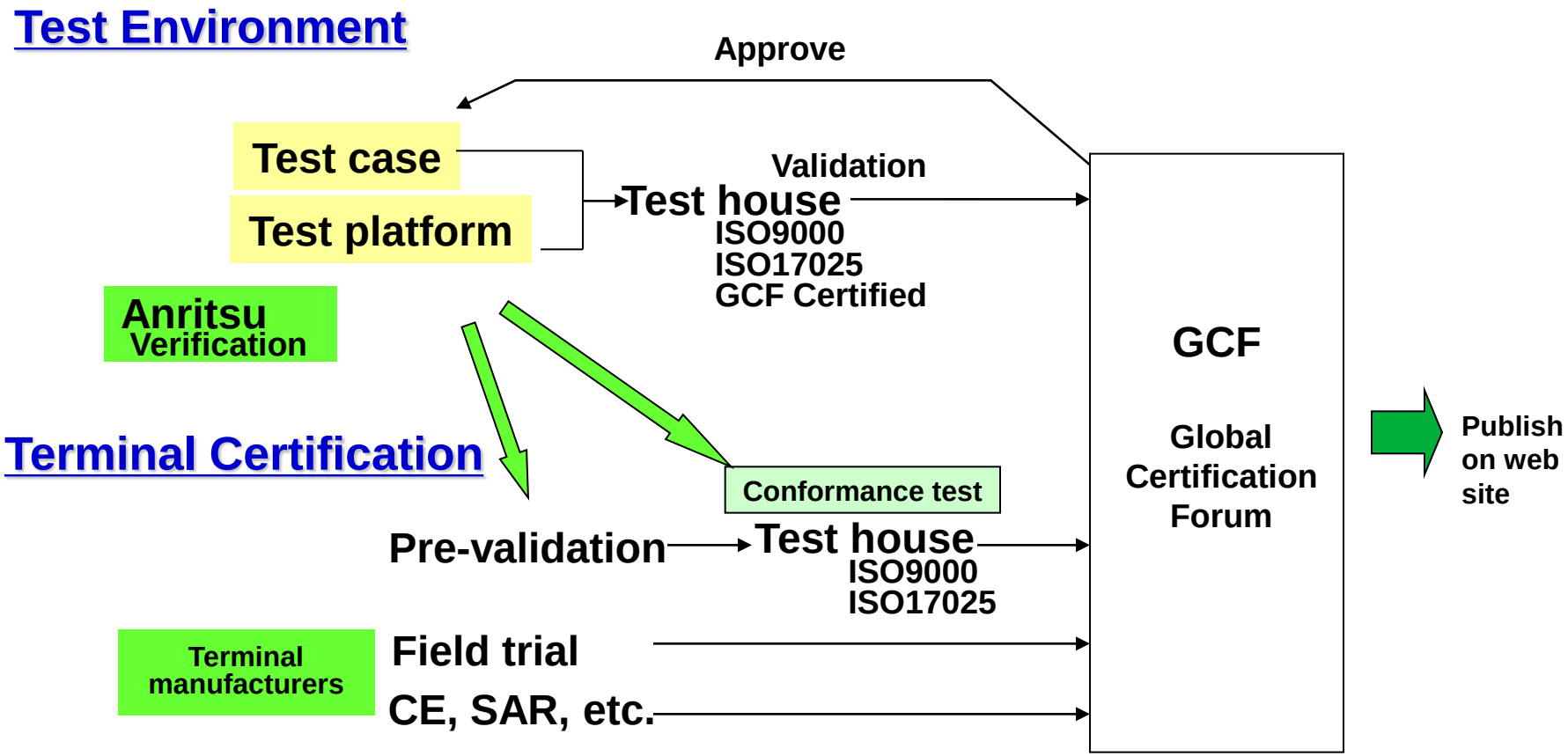
GCF (Global Certification Forum)

GCF(Global Certification Forum) PTCRB(PCS Type Certification Review Board)

- **The GCF and PTCRB were formed by network operators and UE manufacturers to provide consistent standards for product conformance testing.**
- **It is a forum where various parties, test houses, test equipment companies, operators, and manufacturers can make declarations, present evidence, and receive approval.**
- **The GCF itself does not perform any validation or conformance testing.**
- **The GCF also approves test equipment (Conformance Test System) that is 3GPP compliant.**



TP/TC Approval and Mobile Terminal Certification



2. Anritsu LTE Conformance Test System

Anritsu LTE Conformance Test Products

TS 36.521-1/-3

<RF/RRM Conformance Tests>



ME7873L
LTE RF Conformance Test System



ME7873L + W-CDMA
LTE RF Conformance Test System
+
W-CDMA Option

TS 36.523-1

<Protocol Conformance Tests>



ME7834L
LTE Mobile Device Test Platform



ME7834L+ W-CDMA
LTE Mobile Device Test Platform
+
W-CDMA Option

ME7873L LTE RF Conformance Test System

- **Automated system for running 3GPP TS36.521 and TS34.121-1 compliant conformance tests.**
- **GCF/PTCRB-approved test system for measuring items defined by WI-080/090/150/151/139/162/164/177/181/200/201/202/203/ E-UTRA RF/RRM Rel-8/9/10/11, and WI-069/070/113/129/124 UTRA RF Rel-7/8 test cases.**
- **Band options support FDD Band 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 17, 18, 19, 20, 21, 24, 25, 26, 27, 28, 29, and 30 / TDD Band 33, 34, 35, 36, 37, 38, 39, 40, and 41.**

ME7873L LTE RF Conformance Test System



MD8470A
Signalling Tester

MG3710A / MG3700A
Vector SG

MF6900A
Fading Simulator

MD8480C
W-CDMA
Signalling Tester

MN7451A
Switching Unit

ML2488B
Power Meter

MN7451A
Switching Unit

MS2692A
Signal Analyzer

MN7464D
Filter Unit

MN7462A
Interface Unit

MN7484B
Rx Div Unit

MN7463B
RF Combiner Unit

MG3692C
CW SG

MD8430A
LTE Signalling Tester

ME7873L Composition

The ME7873L is composed of dedicated components, stand-alone system components and dedicated software.

Model	Name
<Stand-alone Components>	
MD8430A	Signalling Tester
MS2692A	Signal Analyzer
MG3692C	Synthesized CW Generator
MG3710A	Vector Signal Generator
ML2488B	Wideband Power Meter
SC7816	Thermal Sensor
MF6900A	Fading Simulator
MD8480C	W-CDMA Signalling Tester
MD8470A	Signalling Tester
MT8820C	Radio Communication Analyzer
< Dedicated Components>	
MN7462A	RF Interface Unit
MN7451A	RF Switch Driver Unit
MN7484B	RF Interface Unit for Diversity
MN7464D	Filter Unit
MN7464E	Additional Filter Unit
MN7464F	Filter Unit2
MN7464G	Filter Unit3
MN7464H	Filter Unit4
MN7463B	RF Combiner Unit

Model	Name
<Dedicated Software>	
MX787300L-0xx	FDD/TDD Band xx Capability
MX787311L	LTE RF Conformance Test Software
MX787361L	TD-LTE RF Conformance Test Software
MX787312L	FDD CA Test Software
MX787362L	TDD CA Test Software
MX787391L	HSPA RF Conformance Test Software

Features

- Full 3GPP compliance
- World First: Achieves 80% GCF Test Platform Approval
- Support TS36.521-1 TRX/Performance, TS36.521-3 RRM, and TS34.121-1 HSPA Rel-7/8 (partially)
- Support FDD/TDD
- Reduce Down Time Using the Tunable Filter
- R&TTE*1 Test
- LTE to CDMA2000/TD-SCDMA InterRAT Test
- Operator Acceptance Test
- Global Support
- Upgradeable from ME7873/74F
- LTE/UMTS Parallel Capability with ME7873L + W-CDMA option

*1: Compliant with the European ETSI-defined R&TTE RF TRx test items.

Scalable Test System

Conformance Test Function

- WI-080 Toolkit
- WI-090 Toolkit
- WI-150 Toolkit
- WI-139 Toolkit
- WI-151 Toolkit
- WI-162 Toolkit
- WI-164 Toolkit
- WI-200 Toolkit
- WI-177 Toolkit
- WI-181 Toolkit
- WI-201 Toolkit
- WI-202 Toolkit
- WI-203 Toolkit
- TRx
- Performance
- 4x2MIMO
- RRM
- LTE to/from UMTS/GSM I-RAT
- LTE to CDMA2000 I-RAT
- LTE to/from TD-SCDMA I-RAT
- WI-069 Toolkit
- WI-070 Toolkit
- WI-113 Toolkit
- WI-129 Toolkit
- WI-124 Toolkit

Non-CT Function

- R&TTE
- Band2/4/5/12/17/30 Supplementary
- Band2/4/5/13 Supplementary
- SV-LTE



Standard Functions

- Temperature Chamber Control
- DC Power Supply Control

Operating Band

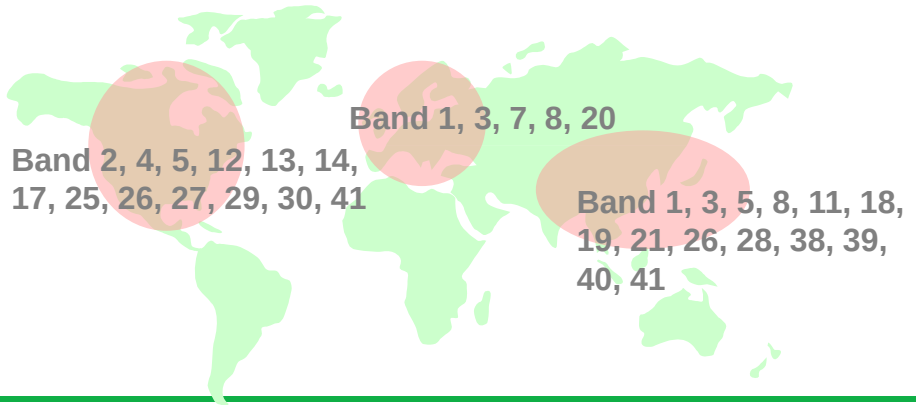
- Band 1 Capability
- Band 2 Capability
- Band 3 Capability
- Band 4 Capability
- Band 5 Capability
- Band 7 Capability
- Band 8 Capability
- Band 9 Capability
- Band 10 Capability
- Band 11 Capability
- Band 12 Capability
- Band 13 Capability
- Band 14 Capability
- Band 17 Capability
- Band 18 Capability
- Band 19 Capability
- Band 20 Capability
- Band 21 Capability
- Band 24 Capability
- Band 25 Capability
- Band 26 Capability
- Band 27 Capability
- Band 28 Capability
- Band 29 Capability
- Band 30 Capability
- Band 33 Capability
- Band 34 Capability
- Band 35 Capability
- Band 36 Capability
- Band 37 Capability
- Band 38 Capability
- Band 39 Capability
- Band 40 Capability
- Band 41 Capability

Additional Frequency Band Options

Not only are GCF/PTCRB-approved bands, but the following bands defined by 3GPP are also supported too. Unlisted bands can be supported by request.

E-UTRA Operating BAND	UL Frequency [MHz]	DL Frequency [MHz]	Condition
1	1920-1980	2110-2170	Available
2	1850-1910	1930-1990	Available
3	1710-1785	1805-1880	Available
4	1710-1755	2110-2155	Available
5	824-849	869-894	Available
6	830-840	875-885	N/A
7	2500-2570	2620-2690	Available
8	880-915	925-960	Available
9	1749.9-1784.9	1844.9-1879.9	Available
10	1710-1770	2110-2170	Available
11	1427.9-1447.9	1475.9-1495.9	Available
12	699-716	729-746	Available
13	777-787	746-756	Available
14	788-798	758-768	Available
15	Reserved	Reserved	No Plan
16	Reserved	Reserved	No Plan
17	704-716	734-746	Available
18	815-830	860-875	Available
19	830-845	875-890	Available
20	832-862	791-821	Available
21	1447.9-1462.9	1495.9-1510.9	Available
22	3410-3490	3510-3590	N/A
23	2000-2020	2180-2200	N/A
24	1626.5-1660.5	1525-1559	Available
25	1850-1915	1930-1995	Available
26	814-849	859-894	Available
27	807-824	852-869	Available
28	703-748	758-803	Available
29	N/A	717-728	Available
30	2305-2315	2350-2360	Available

E-UTRA Operating BAND	UL Frequency [MHz]	DL Frequency [MHz]	Condition
33	1900-1920	1900-1920	Available
34	2010-2025	2010-2025	Available
35	1850-1910	1850-1910	Available
36	1930-1990	1930-1990	Available
37	1910-1930	1910-1930	Available
38	2570-2620	2570-2620	Available
39	1880-1920	1880-1920	Available
40	2300-2400	2300-2400	Available
41	2496-2690	2496-2690	Available
42	3400-3600	3400-3600	N/A
43	3600-3800	3600-3800	N/A



Scalable System Configuration

The ME7873L can be customized from the TRX Basic configuration to TRX/Performance/RRM configuration depending on the customer's requirements.

TRX Basic



TS36.521-1 CH6,7
(Except spurious/ blocking measurement)

TRX Full



TS36.521-1 CH6,7

TRX/Perf



TS36.521-1 CH6-10
(TRx/PERF TCs)

TRX/Perf/RRM



TS36.521-1 CH6-10
(TRx/PERF)
+
TS36.521-3 RRM TCs

Upgrade from ME7873F/74F

Customers using the W-CDMA industry-standard ME7873F/ME7874F can optimize their investment by adding LTE functions to make the most of existing equipment.

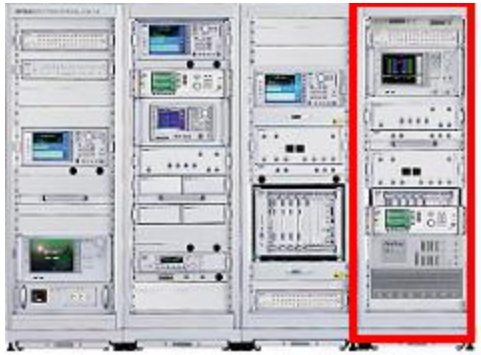
ME7873F



Supports W-CDMA

LTE Upgrade

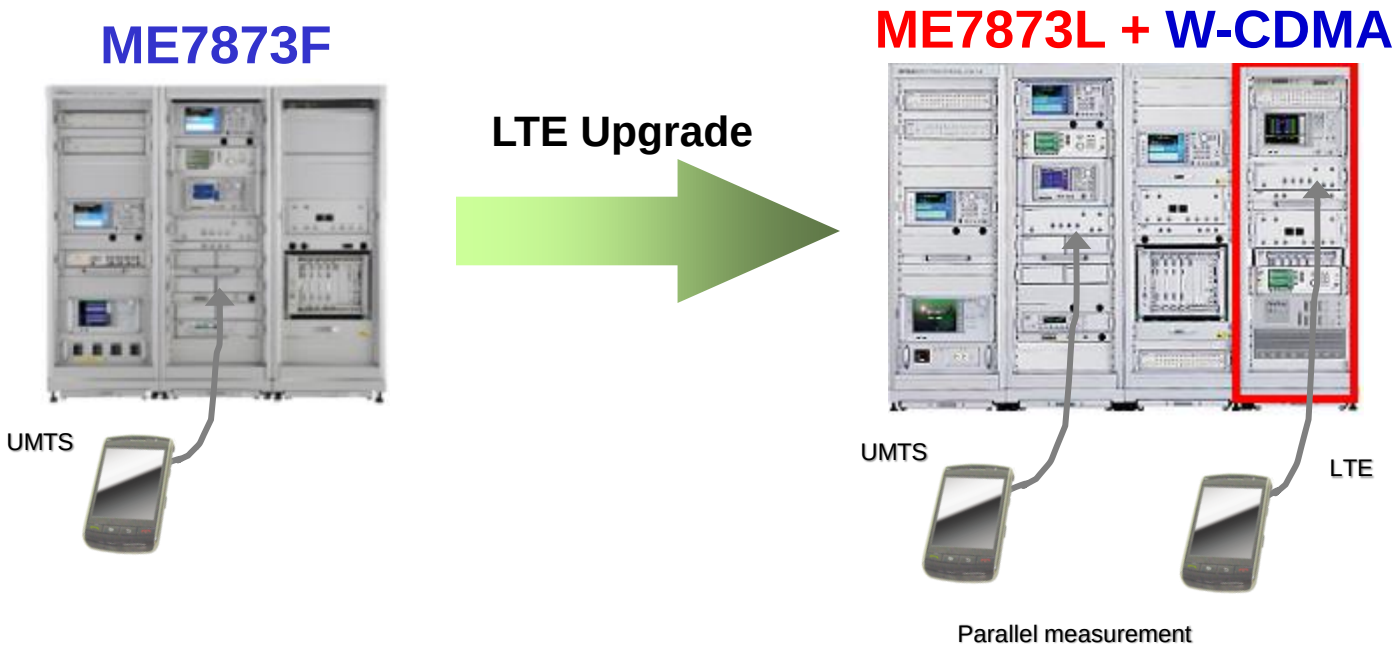
ME7873L + W-CDMA



Supports W-CDMA + LTE

UMTS/LTE Parallel Test Capability

Because the ME7873L + W-CDMA configuration performs parallel W-CDMA and LTE tests, the measurement time is the same as using two separate test sets*1 but the cost is almost halved.

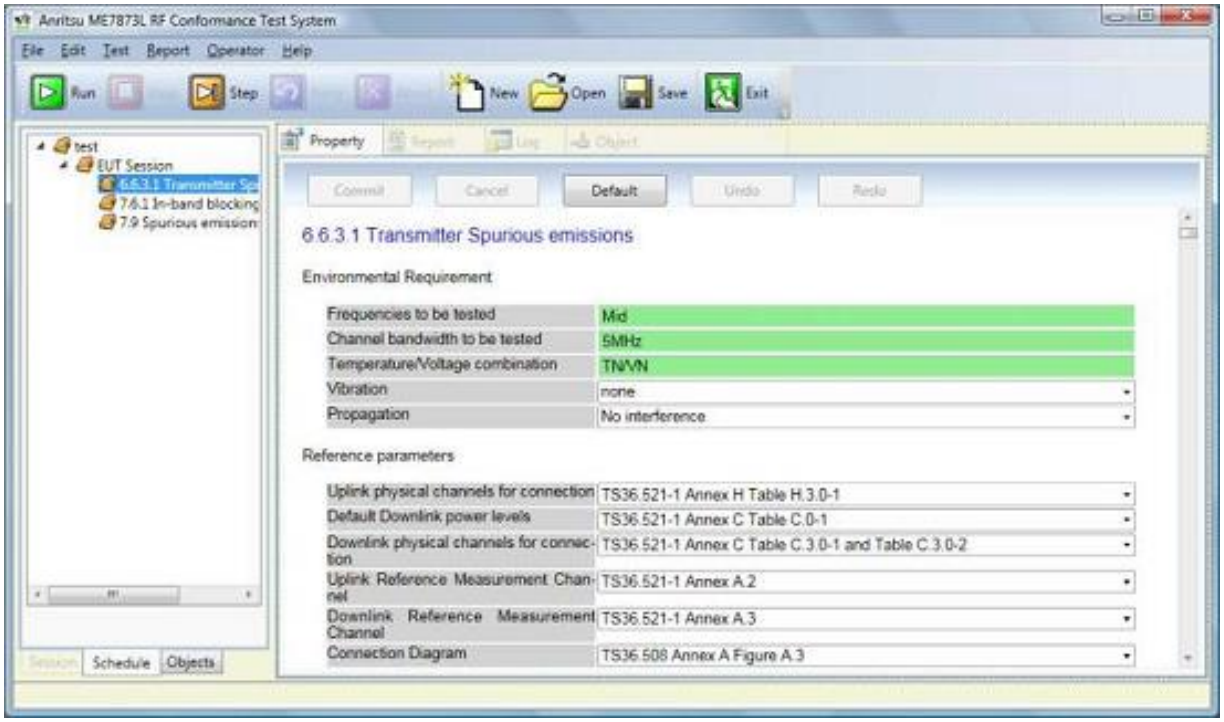


***1: Some test cases are not supported parallel testing.**

R&D Functions (1/8)

♦Change parameters, such as level and frequency

Default parameters are set to 3GPP-standard values. Parameters, such as level, frequency, and RBs are changed easily by the control software. Non-default parameters are displayed in green.

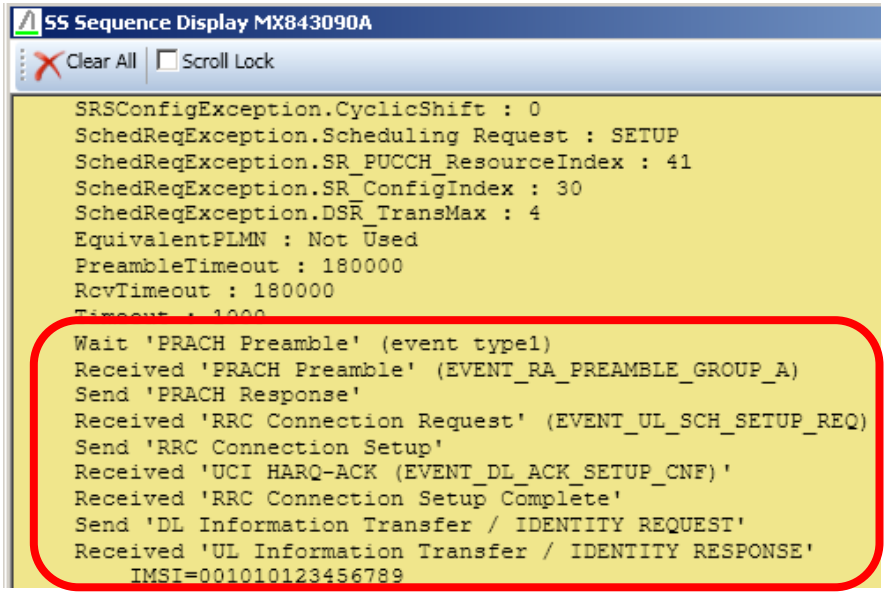


R&D Functions (2/8)

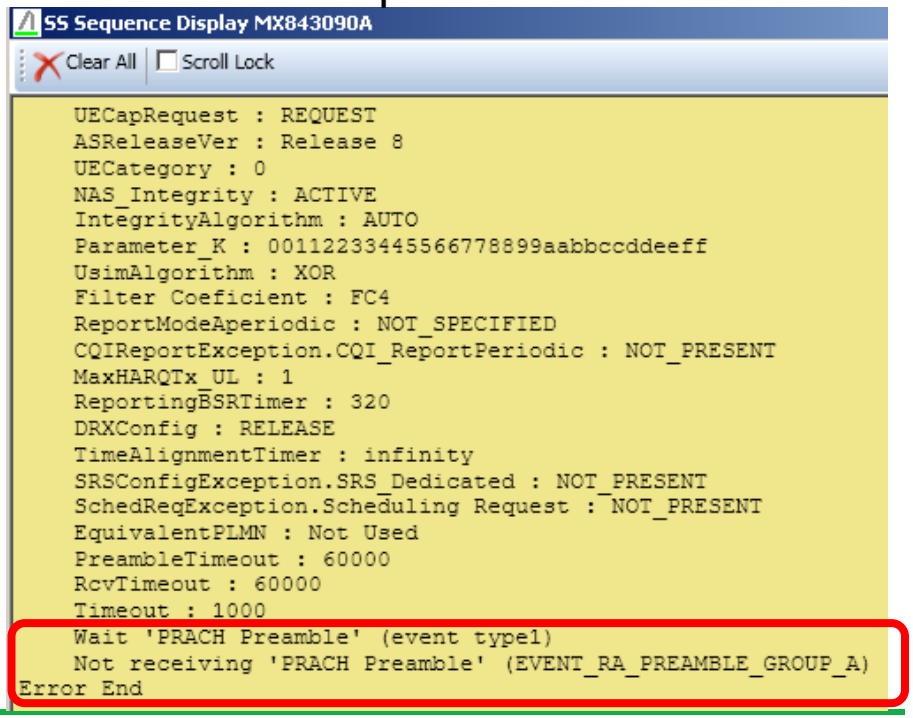
♦Real-time SS Log Trace

An SS log is displayed automatically when measurement starts. Real-time confirmation of message exchanges between the SS and terminal supports effective operation verification.

Normal Example



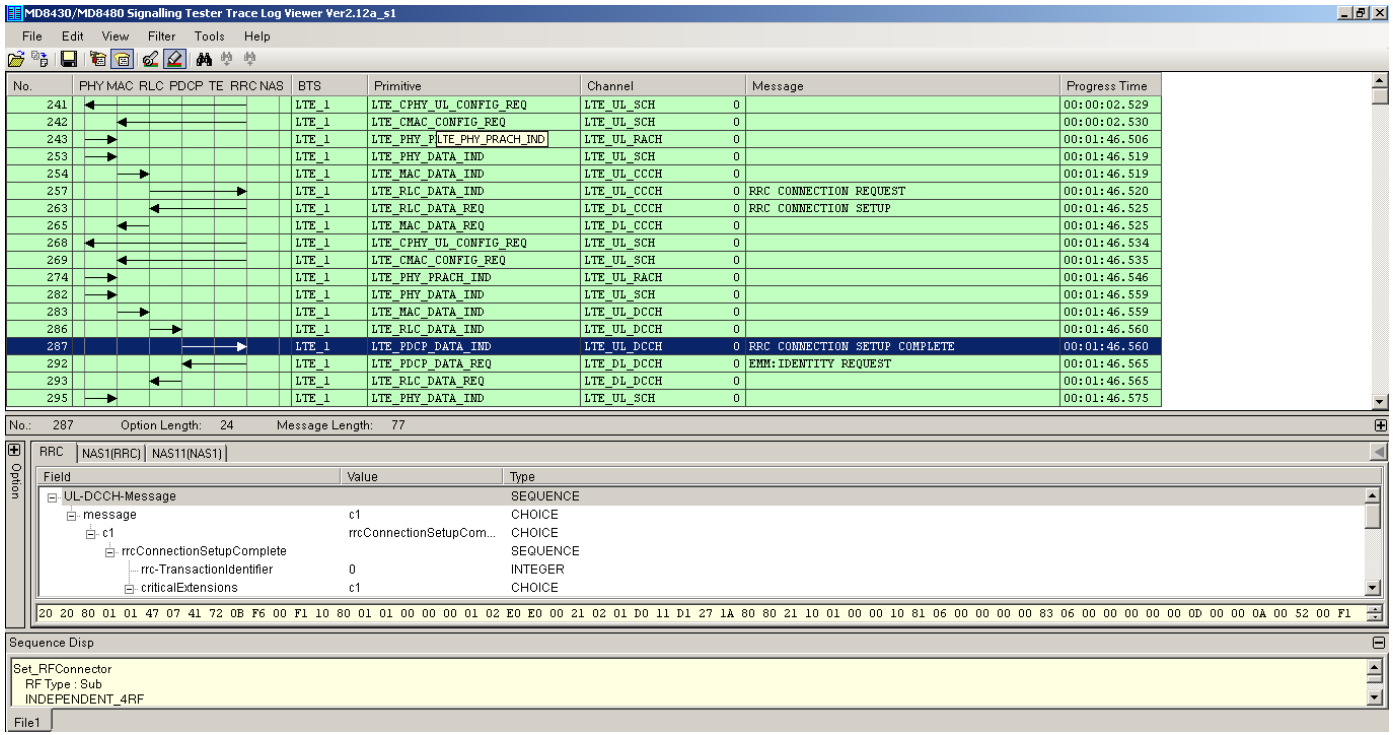
Abnormal Example



R&D Functions (3/8)

♦SS Log display function

An SS log is created automatically for each measurement item when measurement finishes. The logs can be checked using viewer software bundled with the ME7873L to troubleshoot test problems between the UE and test platform.

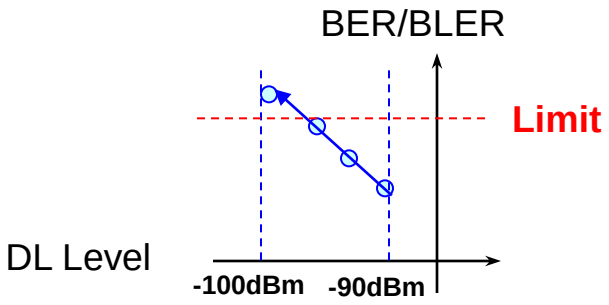


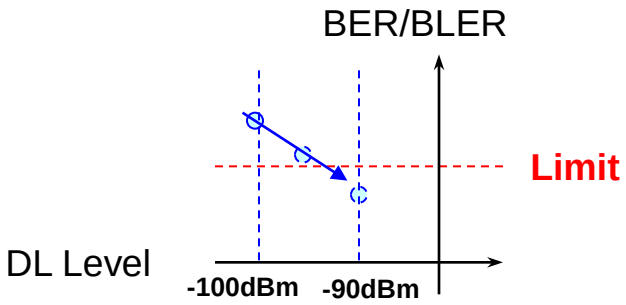
R&D Functions (4/8)

♦Search mode function

To develop reliable UE terminals with stable performance, the performance limits must be confirmed. The Search mode function performs tests while changing conditions to confirm UE performance.

The ME7873L can measure in two ways: “Hard Condition” with tight conditions and “Easy Condition” with looser conditions.





Hard Condition

It changes to severer measurement conditions, such as downlink and interference signal levels, and SNR, etc., at fixed steps.

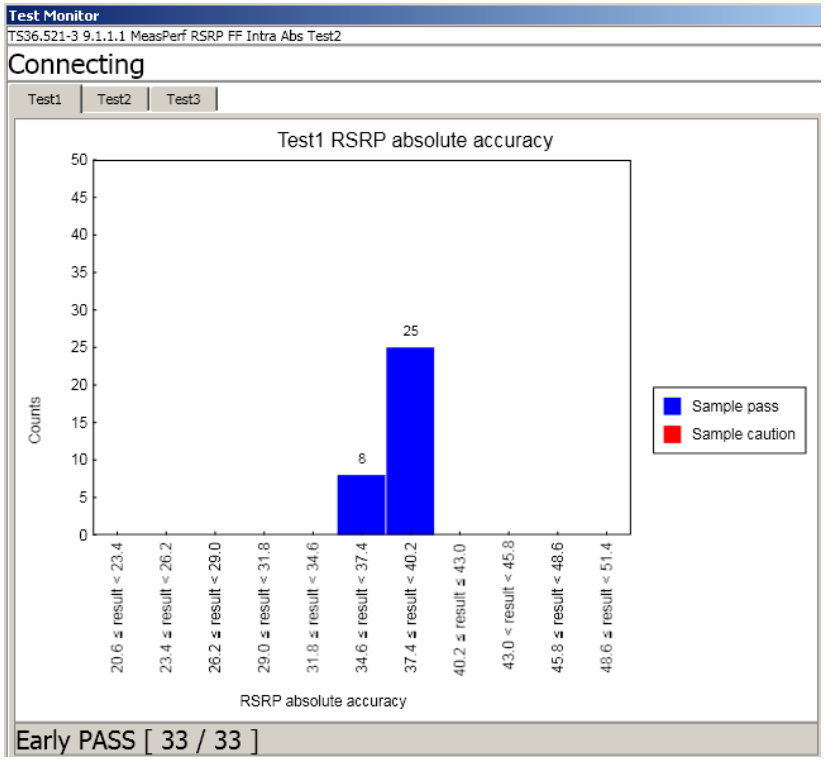
Easy Condition

It changes to easier measurement conditions, such as downlink and interference signal levels, and SNR, etc., at fixed steps.

R&D Functions (5/8)

♦ RRM Graphical Tool

Test items and results are displayed in real time as a histogram showing the UE operation trends at a glance.



R&D Functions (6/8)

♦ Auto re-measurement function for Fail test

When multiple items are tested by one sequence file, Fail items are re-measured automatically.

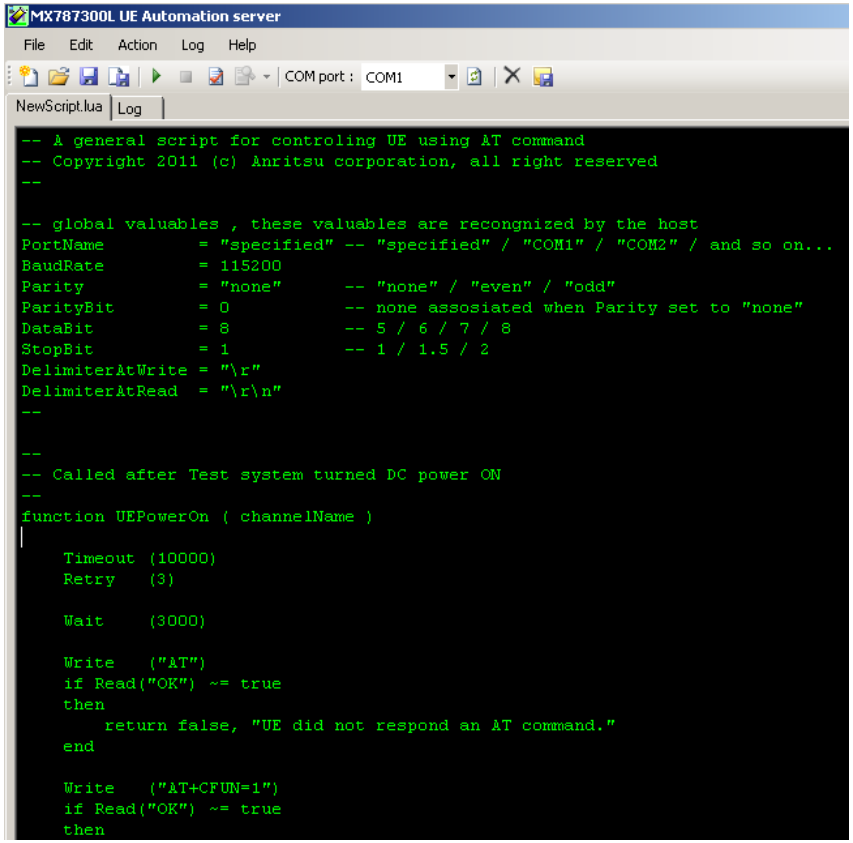
♦ Auto-measurement optimization to minimize measurement time

When multiple items are tested by one sequence file, the test system automatically measures in the order that minimizes measurement times.

R&D Functions (7/8)

♦UE Automation Tool

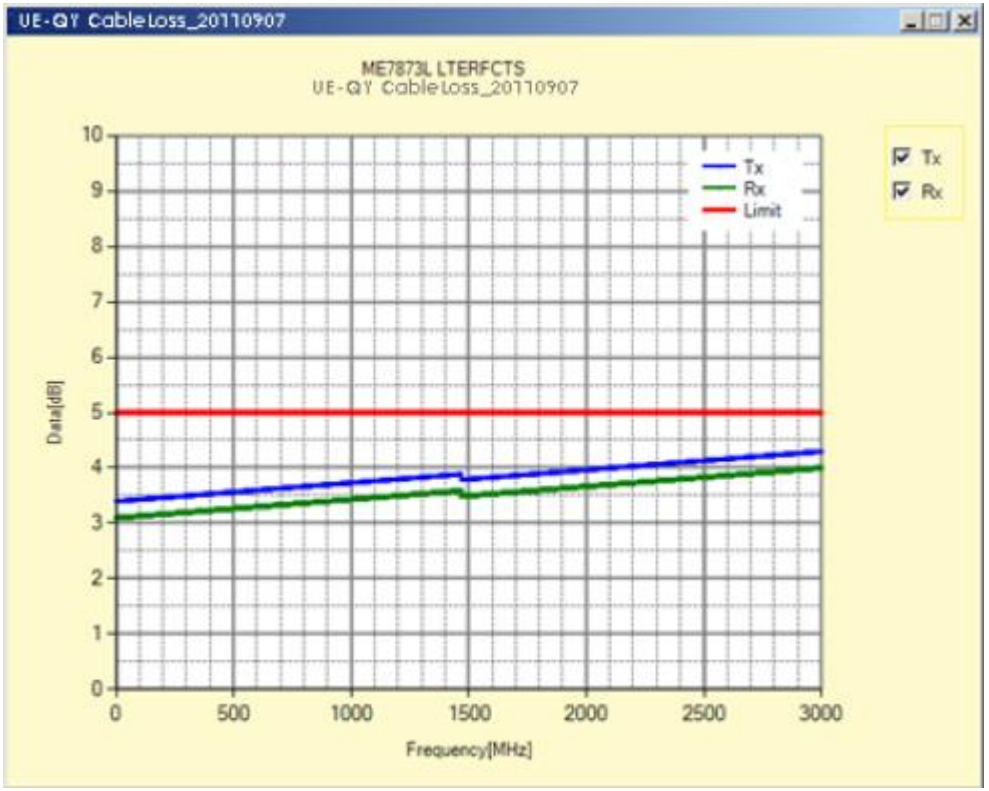
The UE Automation tool is a standard function. Customers can use it to send AT commands, simplifying automated measurement of various terminal types.



R&D Functions (8/8)

♦Cable Loss Measurement Tool

This tool measures the frequency characteristics of the RF cable connecting the ME7873L and UE for use as cable loss data.



Test Result Format

Measurement results are saved to the server PC automatically in html, xml, or csv format.



6.2.2 UE Maximum Output Power

3GPP TS36.521-1 Version 8.4.0 (2009-12)

Test case verdict :PASS

Test case information

Test case	6.2.2 UE Maximum Output Power
Test case limitation	none
Test specification	3GPP TS36.521-1
Test specification version	Version 8.4.0 (2009-12)
Test case software	MX787311L-002 LTE TRX Test Case Conformance Package1
Test case software version	Version 2.0.0 (2010.03)
Test case verdict	PASS
Test case session ID	5a8c69dc-2192-4b9e-8e88-d0457e4a551

Test case result summary

Band	LTE FDD 1
Vibration	none
Parameter	Low(25,100),Mid(300,300),High(575,600)
Channel BW	5MHz,Highest(20MHz)
Voltage	Normal(3.80V)
Temperature	Normal(25.0℃)

Verdicts		Voltage/Temperature Combination
Parameter	Channel BW	TN/VN
Low	5MHz	PASS
Low	Highest	PASS
Mid	5MHz	PASS
Mid	Highest	PASS
High	Highest	PASS
High	5MHz	PASS

Test case configration

Test case detail

PASS LTE FDD 1/zone/Low(25)/ Nominal(5MHz)/VN(3.80V)/TN(25.0℃)
PASS LTE FDD 1/zone/Low(100)/ Highest(20MHz)/VN(3.80V)/TN(25.0℃)
PASS LTE FDD 1/zone/Mid(300)/ Nominal(5MHz)/VN(3.80V)/TN(25.0℃)
PASS LTE FDD 1/zone/Mid(300)/ Highest(20MHz)/VN(3.80V)/TN(25.0℃)
PASS LTE FDD 1/zone/High(500)/ Highest(20MHz)/VN(3.80V)/TN(25.0℃)
PASS LTE FDD 1/zone/High(575)/ Nominal(5MHz)/VN(3.80V)/TN(25.0℃)

HTML



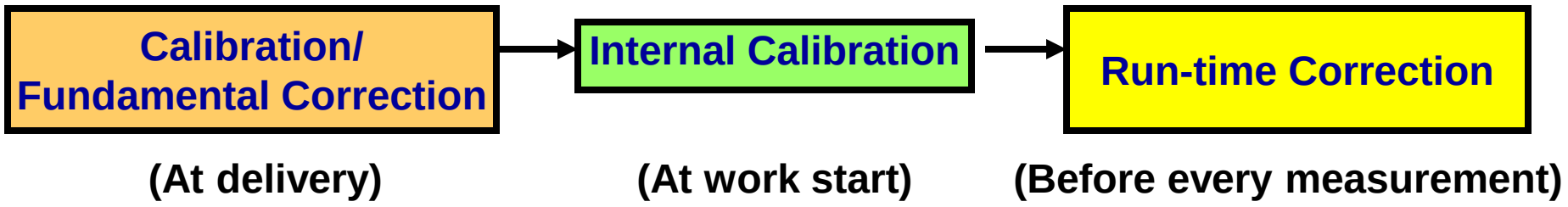
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<Band>LTE FDD 1</Band>
<TestSeqNumber>1</TestSeqNumber>
<DetailReadSeqNumber>1</DetailReadSeqNumber>
<DetailReadRetrySeqNumber>0</DetailReadRetrySeqNumber>
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<LogSeqNumber>1</LogSeqNumber>
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<SendData>Send</SendData>
<ReceiveData />
<MessageType>6.2.2 UE Maximum Output Power Testcase log (LTE FDD 1/TN(25.0℃)/Low(25)/Nominal(5MHz)/VN(3.80V))
</MessageType>
</TestCaseTraceLog>
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<EutSeqNumber>1</EutSeqNumber>
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<DetailReadRetrySeqNumber>0</DetailReadRetrySeqNumber>
<ProcessType>20</ProcessType>
<LogSeqNumber>1</LogSeqNumber>
<GenerationTime>30/03/2010 13:06:37</GenerationTime>
<Duration>00:00:00</Duration>
<SendData>TC1</SendData>
<ReceiveData />
<MessageType>Starting Pre-procedure...</MessageType>
</TestCaseTraceLog>

XML

Calibration and Correction

The measurement system uncertainty at each test procedure must comply with the 3GPP standards. The ME7873L has the following three calibration and correction functions to assure compliance.

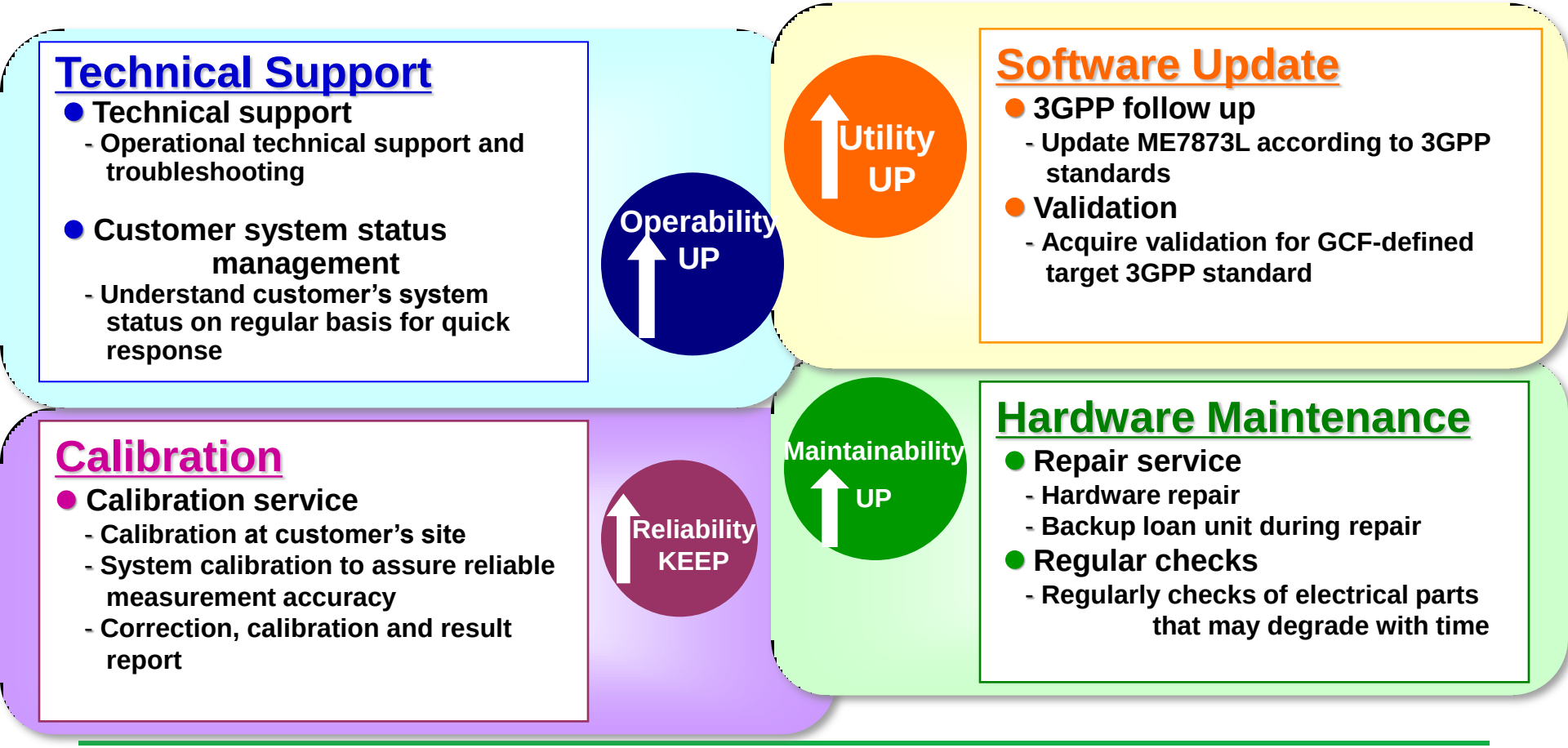
- **Fundamental correction at delivery**
- **Internal calibration at work start**
- **Run-time correction before each measurement**



3. Support Service Proposal

Support Service Outline

The support service includes hardware and software from operation to maintenance to assure stable ME7873L operation.



4. Summary

Anritsu offers a future-proof conformance test system with wide scalability and high reliability

Reliability

- Full 3GPP compliance (GCF Approved Test System)
- Various correction/calibration functions to improve measurement reliability

Evolving

- Fast and flexible response to new technology
- Updates to evolving 3GPP standard

Scalability

- Measurement functions implemented selectively
- Operating bands implemented selectively
- Future-proof upgrades based on existing platform

Appendix1
Measurement Functional Options

Measurement Functional Options 1

[LTE Rel-8 FDD RF/RRM Conformance Test Case]

- **MX787311L-002 LTE TRX Test Cases Conformance Package1**
  Measurement of WI-080 TRX Test cases (TS36.521-1 Part of Chapter 6 and 7)
- **MX787311L-003 LTE TRX Test Cases Conformance Package2**
  Measurement of WI-080 TRX Test cases (TS36.521-1 Part of Chapter 6 and 7)
- **MX787311L-021 LTE TRX Test Cases Conformance Package3**
  Measurement of WI-080 TRX Test cases (TS36.521-1 Part of Chapter 6)
- **MX787311L-004 LTE Performance Test Cases Conformance Package1**
  Measurement of WI-080 Performance Test cases (TS36.521-1 Part of Chapter 8)
- **MX787311L-005 LTE 4x2MIMO Test Cases Conformance Package1**
  Measurement of WI-080 4x2MIMO Test cases (TS36.521-1 Part of Chapter 8)
- **MX787311L-006 LTE CQI Test Cases Conformance Package1**
  Measurement of WI-080 CQI Test cases (TS36.521-1 Part of Chapter 9)
- **MX787311L-011 LTE RRM Test Cases Conformance Package1**
  Measurement of WI-080 RRM Test cases (Part of TS36.521-3)
- **MX787311L-023 LTE RRM Test Cases Conformance Package2**
  Measurement of WI-080 RRM Test cases (Part of TS36.521-3)

Measurement Functional Options 2

[LTE Rel-8 FDD RF/RRM Conformance Test Case]

- **MX787311L-012 LTE to UMTS/GSM Test Cases Conformance Package1**
  Measurement of WI-080 RRM LTE to UMTS/GSM InterRAT Test cases (Part of TS36.521-3)
- **MX787311L-022 UMTS to LTE Test Cases Conformance Package1**
  Measurement of WI-080 RRM UMTS to LTE InterRAT Test cases (Part of TS34.121-1)
- **MX787311L-024 LTE to UMTS/GSM Test Cases Conformance Package2**
  Measurement of WI-080 RRM LTE to UMTS/GSM InterRAT Test cases (Part of TS36.521-3)
- **MX787311L-013 LTE to CDMA2000 Test Cases Conformance Package1**
  Measurement of WI-080 RRM LTE to CDMA2000 InterRAT Test cases (Part of TS36.521-3)

Measurement Functional Options 3

[LTE Rel-9 FDD RF/RRM Conformance Test Case]

- **MX787311L-061 WI-150 Performance Package1**
  Measurement of WI-150 Performance Test cases (Part of TS36.521-1)
- **MX787311L-062 WI-150 4x2MIMO Package1**
  Measurement of WI-150 4x2MIMO Test cases (Part of TS36.521-1)
- **MX787311L-063 WI-150 RRM Package1**
  Measurement of WI-150 RRM Test cases (Part of TS36.521-3)
- **MX787311L-064 WI-150 LTE to UMTS/GSM Package1**
  Measurement of WI-150 RRM LTE to UMTS/GSM InterRAT Test cases (Part of TS36.521-3)
- **MX787311L-065 WI-150 UMTS to LTE Package1**
  Measurement of WI-150 RRM UMTS to LTE InterRAT Test cases (Part of TS34.121-1)
- **MX787311L-066 LTE to UMTS/GSM Package2**
  Measurement of Rel-9 RRM LTE to UMTS/GSM InterRAT Test cases (Part of TS36.521-3)
- **MX787311L-075 eMBMS Package1**
  Measurement of WI-164 eMBMS test cases (TS36.521-1 Part of Chapter 10)

Measurement Functional Options 4

[LTE Rel-10 Non CA FDD RF/RRM Conformance Test Case]

- **MX787311L-067 WI-177 LTE Performance Package1**
  Measurement of WI-177 Performance Test cases (Part of TS36.521-1)
- **MX787311L-068 WI-177 LTE RRM Package1**
  Measurement of WI-177 RRM Test cases (Part of TS36.521-3)
- **MX787311L-069 WI-181 LTE RRM Package1**
  Measurement of WI-181 RRM Test cases (Part of TS36.521-3)
- **MX787311L-085 eICIC Performance Package1**
  Measurement of FDD eICIC performance test cases (TS36.521-1 Part of Chapter 8 and 9)
- **MX787311L-086 eICIC RRM Package1**
  Measurement of FDD eICIC RRM test cases (Part of TS36.521-3)

Measurement Functional Options 5

[LTE Rel-11 Non CA FDD RF/RRM Conformance Test Case]

- **MX787311L-087 feICIC Performance Package1**
  Measurement of WI-202 feICIC Performance Test cases (Part of TS36.521-1)
- **MX787311L-088 feICIC RRM Package1**
  Measurement of WI-202 feICIC RRM Test cases (Part of TS36.521-3)

Measurement Functional Options 6

[LTE Rel-10 FDD CA RF/RRM Conformance Test Case]

- **MX787312L-001 TRX Test Cases Package1**
  Measurement of Rel-10 FDD CA TRX test cases (TS36.521-1 Part of Chapter 6 and 7)
- **MX787312L-002 TRX Test Cases Package2**
  Measurement of WI-162 FDD TRX test cases (TS36.521-1 Part of Chapter 7)
- **MX787312L-003 TRX Test Cases Package3**
  Measurement of WI-162 FDD TRX test cases (TS36.521-1 Part of Chapter 6 and 7)
- **MX787312L-004 Performance Test Cases Package1**
  Measurement of WI-162 FDD Performance test cases (TS36.521-1 Part of Chapter 8 and 9)
- **MX787312L-005 Performance Test Cases Package2**
  Measurement of Rel-10 FDD CA Performance test cases (TS36.521-1 Part of Chapter 8)
- **MX787312L-006 4x2MIMO Test Cases Package1**
  Measurement of WI-162 FDD 4x2MIMO test cases (TS36.521-1 Part of Chapter 8)
- **MX787312L-007 4x2MIMO Test Cases Package2**
  Measurement of Rel-10 FDD CA 4x2MIMO test cases (TS36.521-1 Part of Chapter 8)
- **MX787312L-008 Performance Test Cases Package3**
  Measurement of WI-162 FDD Performance test cases (TS36.521-1 Part of Chapter 8)
- **MX787312L-009 Performance Test Cases Package4**
  Measurement of Rel-10 FDD CA Performance test cases (TS36.521-1 Part of Chapter 8)

Measurement Functional Options 7

[LTE Rel-10 FDD CA RF/RRM Conformance Test Case]

- **MX787312L-011 RRM Test Cases Package1**
  Measurement of WI-162 FDD RRM test cases (Part of TS36.521-3)
- **MX787312L-012 LTE to UMTS Test Cases Package1**
  Measurement of WI-162 FDD RRM LTE to UMTS InterRAT test cases (Part of TS36.521-3)
- **MX787312L-013 RRM Test Cases Package2**
  Measurement of WI-162 FDD RRM test cases (Part of TS36.521-3)
- **MX787312L-015 Performance Test Cases Package5**
  Measurement of WI-162 FDD performance test cases (Part of TS36.521-1)

Measurement Functional Options 8

[LTE Rel-8 TDD RF/RRM Conformance Test Case]

- **MX787361L-002 TD-LTE TRX Test Cases Conformance Package1**
  Measurement of WI-090 TRX Test cases (TS36.521-1 Part of Chapter 6 and 7)
- **MX787361L-003 TD-LTE TRX Test Cases Conformance Package2**
  Measurement of WI-090 TRX Test cases (TS36.521-1 Part of Chapter 6 and 7)
- **MX787361L-004 TD-LTE Perf Test Cases Conformance Package1**
  Measurement of WI-090 Performance Test cases (TS36.521-1 Part of Chapter 8)
- **MX787361L-005 TD-LTE 4x2MIMO Test Cases Conformance Package1**
  Measurement of WI-090 4x2MIMO Test cases (TS36.521-1 Part of Chapter 8)
- **MX787361L-006 TD-LTE CQI Test Cases Conformance Package1**
  Measurement of WI-090 CQI Test cases (TS36.521-1 Part of Chapter 9)
- **MX787361L-026 TD-LTE CQI Test Cases Conformance Package2**
  Measurement of WI-090 CQI Test cases (TS36.521-1 Part of Chapter 9)
- **MX787361L-011 TD-LTE RRM Test Cases Conformance Package1**
  Measurement of WI-090 RRM Test cases (Part of TS36.521-3)
- **MX787361L-023 TD-LTE RRM Test Cases Conformance Package2**
  Measurement of WI-090 RRM Test cases (Part of TS36.521-3)

Measurement Functional Options 9

[LTE Rel-8/Rel-9 TDD RF/RRM Conformance Test Case]

- **MX787361L-022 TD-SCDMA to TD-LTE Test Cases Conformance Package1**
  Measurement of WI-090 RRM TD-SCDMA to LTE InterRAT Test cases (Part of TS34.122)
- **MX787361L-024 TD-LTE to UMTS/GSM Test Cases Conformance Package1**
  Measurement of WI-090 LTE to UMTS/GSM InterRAT Test cases (Part of TS36.521-3)
- **MX787361L-025 TD-LTE to TD-SCDMA Test Cases Conformance Package1**
  Measurement of WI-090 LTE to TD-SCDMA InterRAT Test cases (Part of TS36.521-3)
- **MX787361L-061 WI-150 TD-LTE Performance Package1**
  Measurement of WI-150 TD-LTE Performance Test cases (TS36.521-1 Part of Chapter 8)
- **MX787361L-062 WI-150 TD-LTE 4x2MIMO Package1**
  Measurement of WI-150 TD-LTE 4x2MIMO Test cases (TS36.521-1 Part of Chapter 8)
- **MX787361L-063 WI-150 TD-LTE RRM Package1**
  Measurement of WI-150 TD-LTE RRM Test cases (Part of TS36.521-3)
- **MX787361L-064 WI-150 TD-LTE to UMTS/GSM Package1**
  Measurement of WI-150 TD-LTE to UMTS/GSM InterRAT Test cases (Part of TS36.521-3)
- **MX787361L-065 WI-150 TD-LTE to TD-SCDMA Package1**
  Measurement of WI-150 TD-LTE to TD-SCDMA InterRAT Test cases (Part of TS36.521-3)
- **MX787361L-066 WI-150 TD-LTE to UMTS/GSM Package2**
  Measurement of WI-150 TD-LTE to UMTS/GSM InterRAT Test cases (Part of TS36.521-3)

Measurement Functional Options 10

[LTE Rel-9 TDD RF/RRM Conformance Test Case]

- **MX787361L-070 WI-151 Package1**
  Measurement of WI-151 Test cases (Part of TS36.521-3)
- **MX787361L-071 WI-151 Package2**
  Measurement of WI-151 Test cases (Part of TS36.521-3)
- **MX787361L-075 TD-LTE eMBMS Package1**
  Measurement of Rel-9 TD-LTE eMBMS test cases (TS36.521-1 Part of Chapter 10)
- **MX787361L-080 WI-139 Package1**
  Measurement of WI-139 Test cases (TS36.521-1 Part of Chapter 8)
- **MX787361L-081 WI-139 Package2**
  Measurement of WI-139 Test cases (TS36.521-1 Part of Chapter 8)

Measurement Functional Options 11

[LTE Rel-10 Non CA TDD RF/RRM Conformance Test Case]

- **MX787361L-067 WI-177 TD-LTE Performance Package1**
  Measurement of TDD WI-177 performance Test cases (TS36.521-1 Part of Chapter 8 and 9)
- **MX787361L-068 WI-177 TD-LTE RRM Package1**
  Measurement of TDD WI-177 RRM Test cases (TS36.521-3 Part of Chapter 7, 8 and 9)
- **MX787361L-085 TD-LTE eICIC Performance Package1**
  Measurement of TDD eICIC performance Test cases (TS36.521-1 Part of Chapter 8 and 9)
- **MX787361L-086 TD-LTE eICIC RRM Package1**
  Measurement of TDD eICIC RRM Test cases (TS36.521-3 Part of Chapter 7, 8 and 9)

Measurement Functional Options 12

[LTE Rel-10 Non CA TDD RF/RRM Conformance Test Case]

- **MX787361L-087 TD-LTE feICIC Performance Package1**
  Measurement of TDD feICIC performance Test cases (TS36.521-1 Part of Chapter 8 and 9)
- **MX787361L-088 TD-LTE feICIC RRM Package1**
  Measurement of TDD feICIC RRM Test cases (TS36.521-3 Part of Chapter 7, 8 and 9)

Measurement Functional Options 13

[LTE Rel-10 TDD CA RF/RRM Conformance Test Case]

- **MX787362L-001 TRX Test Cases Package3**
  Measurement of WI-162 TDD TRX test cases (TS36.521-1 Part of Chapter 6 and 7)
- **MX787362L-002 TRX Test Cases Package1**
  Measurement of WI-162 TDD TRX test cases (TS36.521-1 Part of Chapter 6 and 7)
- **MX787362L-003 TRX Test Cases Package2**
  Measurement of WI-162 TDD TRX test cases (TS36.521-1 Part of Chapter 6)
- **MX787362L-004 Performance Test Cases Package3**
  Measurement of WI-162 TDD Performance test cases (TS36.521-1 Part of Chapter 8)
- **MX787362L-005 Performance Test Cases Package2**
  Measurement of WI-162 TDD Performance test cases (TS36.521-1 Part of Chapter 8)
- **MX787362L-006 4x2MIMO Test Cases Package2**
  Measurement of WI-162 TDD 4x2MIMO test cases (TS36.521-1 Part of Chapter 8)
- **MX787362L-007 4x2MIMO Test Cases Package2**
  Measurement of WI-162 TDD 4x2MIMO test cases (TS36.521-1 Part of Chapter 8)

Measurement Functional Options 14

[LTE Rel-10 TDD CA RF/RRM Conformance Test Case]

- **MX787362L-008 Performance Test Cases Package4**
  Measurement of WI-162 TDD Performance test cases (TS36.521-1 Part of Chapter 8)
- **MX787362L-009 Performance Test Cases Package2**
  Measurement of WI-162 TDD Performance test cases (TS36.521-1 Part of Chapter 8)
- **MX787362L-011 RRM Test Cases Package1**
  Measurement of WI-162 TDD RRM test cases (Part of TS36.521-3)
- **MX787362L-013 RRM Test Cases Package2**
  Measurement of WI-162 TDD RRM test cases (Part of TS36.521-3)
- **MX787362L-014 RRM Test Cases Package3**
  Measurement of WI-162 TDD RRM test cases (Part of TS36.521-3)
- **MX787362L-015 Performance Test Cases Package5**
  Measurement of WI-162 TDD Performance test cases (Part of TS36.521-1)

Measurement Functional Options 15

[RF Test Case]

- **MX787311L-033 R&TTE Test Cases**
  Measurement of R&TTE RF Test cases
- **MX787311L-037 Band17 Supplementary RF Test Cases**
  Acceptance RF Test Cases for the US operator
- **MX787311L-038 Band17 Supplementary RF Test Cases2**
  Acceptance RF Test Cases for the US operator
- **MX787311L-039 Band17 Supplementary RF Test Cases3**
  Acceptance RF Test Cases for the US operator
- **MX787311L-040 R61 RRM Test Cases1**
  Acceptance RRM Test Cases for the US operator
- **MX787311L-041 R61 RRM Test Cases2**
  Acceptance RRM Test Cases for the US operator
- **MX787312L-040 R61 CA RRM Test Cases1**
  Acceptance CA RRM Test Cases for the US operator
- **MX787312L-037 R64 CA TRX Test Cases1**
  Acceptance CA RF Test Cases for the US operator

Measurement Functional Options 16

[RF Test Case]

- **MX787311L-057 R1 Band12 Supplementary RF Test Cases1**
  Acceptance RF Test Cases for the US operator
- **MX787311L-058 R1 Band12 Supplementary RF Test Cases2**
  Acceptance RF Test Cases for the US operator
- **MX787311L-071 R1 Band2 Supplementary RF Test Cases1**
  Acceptance RF Test Cases for the US operator
- **MX787311L-072 R1 Band4 Supplementary RF Test Cases1**
  Acceptance RF Test Cases for the US operator
- **MX787311L-073 R1 Band5 Supplementary RF Test Cases1**
  Acceptance RRM Test Cases for the US operator
- **MX787311L-074 R1 Band30 Supplementary RF Test Cases1**
  Acceptance RRM Test Cases for the US operator

Measurement Functional Options 17

[RF Test Case]

- **MX787311L-076 R1 Band2 Supplementary RF Test Cases2**
  Acceptance RF Test Cases for the US operator
- **MX787311L-077 R1 Band4 Supplementary RF Test Cases2**
  Acceptance RF Test Cases for the US operator
- **MX787311L-078 Band5 Supplementary RF Test Cases2**
  Acceptance RF Test Cases for the US operator
- **MX787311L-079 R1 Band30 Supplementary RF Test Cases2**
  Acceptance RF Test Cases for the US operator

Measurement Functional Options 18

[RF Test Case]

- **MX787312L-044 R64 CA TRX B2-29 Test Cases1**
  Acceptance RF Test Cases for the US operator
- **MX787312L-045 R64 CA TRX B4-29 Test Cases1**
  Acceptance RF Test Cases for the US operator
- **MX787312L-046 R64 CA TRX B2-5 Test Cases1**
  Acceptance RF Test Cases for the US operator
- **MX787312L-047 R64 CA TRX B4-5 Test Cases1**
  Acceptance RF Test Cases for the US operator
- **MX787312L-048 R64 CA TRX B2-12 Test Cases1**
  Acceptance RF Test Cases for the US operator
- **MX787312L-049 R64 CA TRX B4-12 Test Cases1**
  Acceptance RF Test Cases for the US operator

Measurement Functional Options 19

[RF Test Case]

- **MX787312L-047 Band13 Supplementary RF Test Cases**
  Acceptance CA RF Test Cases for the US operator
- **MX787312L-049 Band13 Supplementary RRM Test Cases**
  Acceptance CA RF Test Cases for the US operator
- **MX787312L-034 Band4 Supplementary TRx Test Cases**
  Acceptance RRM Test Cases for the US operator
- **MX787311L-035 Band4 Supplementary Performance Test Cases**
  Acceptance SV-LTE Test Cases for the US operator
- **MX787311L-036 Band4 Supplementary 4x2MIMO Test Cases**
  Acceptance SV-LTE Test Cases for the US operator
- **MX787311L-054 Band2 Supplementary TRx Test Cases**
  Acceptance SV-LTE Test Cases for the US operator
- **MX787311L-055 Band2 Supplementary Performance Test Cases**
  Acceptance SV-LTE Test Cases for the US operator
- **MX787311L-056 Band2 Supplementary 4x2MIMO Test Cases**
  Acceptance SV-LTE Test Cases for the US operator
- **MX787311L-059 Band5 Supplementary RF Test Cases**
  Acceptance SV-LTE Test Cases for the US operator

Measurement Functional Options 20

[RF Test Case]

- **MX787312L-034 CA Supplementary RX Test Cases**
  Acceptance CA RF Test Cases for the US operator
- **MX787312L-035 CA Supplementary Performance Test Cases**
  Acceptance CA RF Test Cases for the US operator
- **MX787312L-050 InterBand RRM Test Cases1**
  Acceptance RRM Test Cases for the US operator
- **MX787311L-044 SV-LTE TRX Test Cases**
  Acceptance SV-LTE Test Cases for the US operator
- **MX787311L-045 SV-LTE Power Backoff Test Case**
  Acceptance SV-LTE Test Cases for the US operator
- **MX787311L-046 SV-LTE Power Headroom Reporting Test Cases**
  Acceptance SV-LTE Test Cases for the US operator
- **MX787311L-048 SV-LTE CDMA2000 RF Test Cases**
  Acceptance SV-LTE Test Cases for the US operator

Measurement Functional Options 21

[RF Test Case]

- **MX787311L-092 RF Supplementary Test Cases4 for T-Mobile**
  Acceptance RF Test Cases for the US operator
- **MX787311L-094 RF Supplementary Test Cases1 for T-Mobile**
  Acceptance RF Test Cases for the US operator
- **MX787311L-095 RF Supplementary Test Cases2 for T-Mobile**
  Acceptance RF Test Cases for the US operator
- **MX787311L-096 RF Supplementary Test Cases3 for T-Mobile**
  Acceptance RF Test Cases for the US operator
- **MX787312L-038 CA Supplementary Test Cases1 for T-Mobile**
  Acceptance RF Test Cases for the US operator
- **MX787311L-091 Band26 Supplementary TRX Test Cases**
  Acceptance RF Test Cases for the US operator
- **MX787361L-090 Band41 Supplementary TRX Test Cases**
  Acceptance RF Test Cases for the US operator

Measurement Functional Options 22

[UMTS Rel-7/8 RF Conformance Test Case]

- **MX787391L-001 WI-069 TRx Test Case**
  Measurement of WI-069 TRX Test cases (TS34.121-1 Part of Chapter 6)
- **MX787391L-002 WI-069 Performance Test Cases**
  Measurement of WI-069 Performance Test cases (TS34.121-1 Part of Chapter 9)
- **MX787391L-011 WI-070 Performance Test Cases**
  Measurement of WI-070 Performance Test cases (TS34.121-1 Part of Chapter 9)
- **MX787391L-021 WI-113 Performance Test Cases**
  Measurement of WI-113 Performance Test cases (TS34.121-1 Part of Chapter 9)
- **MX787391L-031 WI-129 TRx Test Cases**
  Measurement of WI-129 TRX Test cases (TS34.121-1 Part of Chapter 6 and 7)
- **MX787391L-032 WI-129 Performance Test Cases**
  Measurement of WI-129 Performance Test cases (TS34.121-1 Part of Chapter 9)
- **MX787391L-041 WI-124 Performance Test Case**
  Measurement of WI-124 Performance Test case (TS34.121-1 Part of Chapter 9)
- **MX787391L-091 UMTS Test Cases Package1**
  Acceptance RF Test Cases for the Japan operator

Appendix2
System Installation

Customer Supplied Parts (1/2)

● DC Power Supply

The following models is required when controlling the power supply using the ME7873L.

Model	Name	pcs	Manufacturer
N6700B	Mainframe	1	Keysight Technologies, Inc
N6732B*1	8 V, 6.25 A, 50 W DC Power Module	4*2	
N6709A	Low-Profile MPS Mainframe Rack Mount Kit	1	

***1: At rack mounting, the maximum current is 2 A. To draw more than 2 A of current, use a separate cable to supply DC to the terminal. However, since this will prevent rack mounting, decide on the installation location for the DC power supply in advance.**
When using a power supply other than the N6732B, ask the power supply manufacture for details.
***2: Four modules are required when testing up to four mobiles continuously.**

In addition, the following equipment can also be controlled. However, since rack-mounting is not possible when using the 2306-PJ, decide on the installation location for the DC power supply in advance.

Model	Name	pcs	Manufacturer
2306-PJ	Dual-Channel Battery/Charger Simulator with 500mA Range	2*3	Keithley Instruments

***3: Two sets of the 2306-PJ are required when testing up to four mobiles continuously.**

Customer Supplied Parts (2/2)

● Temperature Chamber

One of the following equipment is required to control the temperature chamber from the ME7873L.

Model	Name	Manufacturer
SH-241 *1	Temperature & Humidity Chamber	ESPEC Corp.
SH-242 *1	Temperature & Humidity Chamber	
VT4002 *2	EMC Shielding with Temperature	Votsch
105 *1	Benchtop Temperature Chamber	TestEquity
107 *1	Benchtop Temperature Chamber	
115 *1	Temperature Chamber	

***1: GPIB Cable (Double-Shield, 2m) is required to control this chamber automatically.**
***2: USB-RS232C Converter Cable (2m) is required to control this chamber automatically.**

Delivery (1/2)

Delivery Time

3 months (changes with stock situation)

Onsite Installation

Anritsu engineer visits delivery site to perform system setup calibration. Required time varies with system composition

- **System Setup (assembly, wiring, software installation)**
- **System Correction**
- **UE Functional Tests**
- **System Performance Tests**
- **Explanation at Delivery Acceptance**

Delivery (2/2)

Support After Delivery

The following warranty is offered for free of charge after product delivery.

Duration

- **Newly Purchased: 1 year (from next month after installation)**
- **Upgrade: 3 month (from next month after installation)**

Support Contents

- **Hardware guarantee: Repair faults for all products in the system and re-calibration if needed**

Support service applies to new hardware and software. Guarantee for customer-provided parts follows the upgrade guarantee on condition of calibrating each instrument.

Hardware guarantee in upgrading is applied only when a hardware is added or modified.

Free-of-charge guarantee period extendable by charged service contract.

System Installation Environment

The system installation environment must meet the following specifications.

Items	Condition	Remarks
Size	1597(H) × 570(W) × 797(D) mm 1597(H) × 1140(W) × 797(D) mm 1597(H) × 2280(W) × 797(D) mm	1 rack *1 2 rack *1 4 rack *1 (ME7873L + W-CDMA configuration)
Weight	510 kg or less 1010 kg or less	ME7873L Configuration *2 ME7873L + W-CDMA Configuration *2
Power Supply	100 to 120, or 200 to 240 Vac	
Wattage	4400 VA or less 6600 VA or less	ME7873L Configuration *3 ME7873L + W-CDMA Configuration *3
Temperature Range	15 to 35°C*4 (Operating) 0 to 50°C*4 (Storage)	

*1: Secure using hooks at rack top recommended. Basic calibration at acceptance inspection must meet this requirement.

*2: The installation location must be able to safely bear the above floor loads plus 100 kg for basic calibration equipment at acceptance inspection.

*3: Sufficient power (600 VA) for basic calibration at acceptance inspection as well as for ME7873L must be supplied.

*4: Basic calibration at acceptance inspection must meet this requirement. Use in air-conditioned room recommended for stable measurement.

Anritsu

Specifications are subject to change without notice.

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