

# MX882007C

TD-SCDMA Measurement Software

MT8820B/15B

Radio Communication Analyzer

# **MX882007C TD-SCDMA Measurement Software Product Introduction**

**Including MX882007C-001/-003/-011/-021**

**Version 5.0  
Sep. 2009**

**ANRITSU CORPORATION**

## ***MT8815/20B is the ideal platform for TD-SCDMA R&D and Manufacturing***

The all-in-one Anritsu MT8815/20B supports manufacturing of mobile terminals, especially W-CDMA and GSM, in China and worldwide.

At last July 2007, MT8815/20B TD-SCDMA(1.28 Mcps TDD) solution was launched and this time at April 2008, the options for TD-SCDMA HSDPA and Video Call that are the advanced technologies are released newly.

The MT8815/20B is the ideal platform for R&D, and manufacturing of TD-SCDMA/GSM terminals, because test times are cut by its Parallelphone Measurement (PPM), batch measurement, and TD-SCDMA to GSM handover functions. Its high performance has also established an excellent reputation in the W-CDMA/GSM market.



**MT8820B**

2 Ports



**MT8815B**

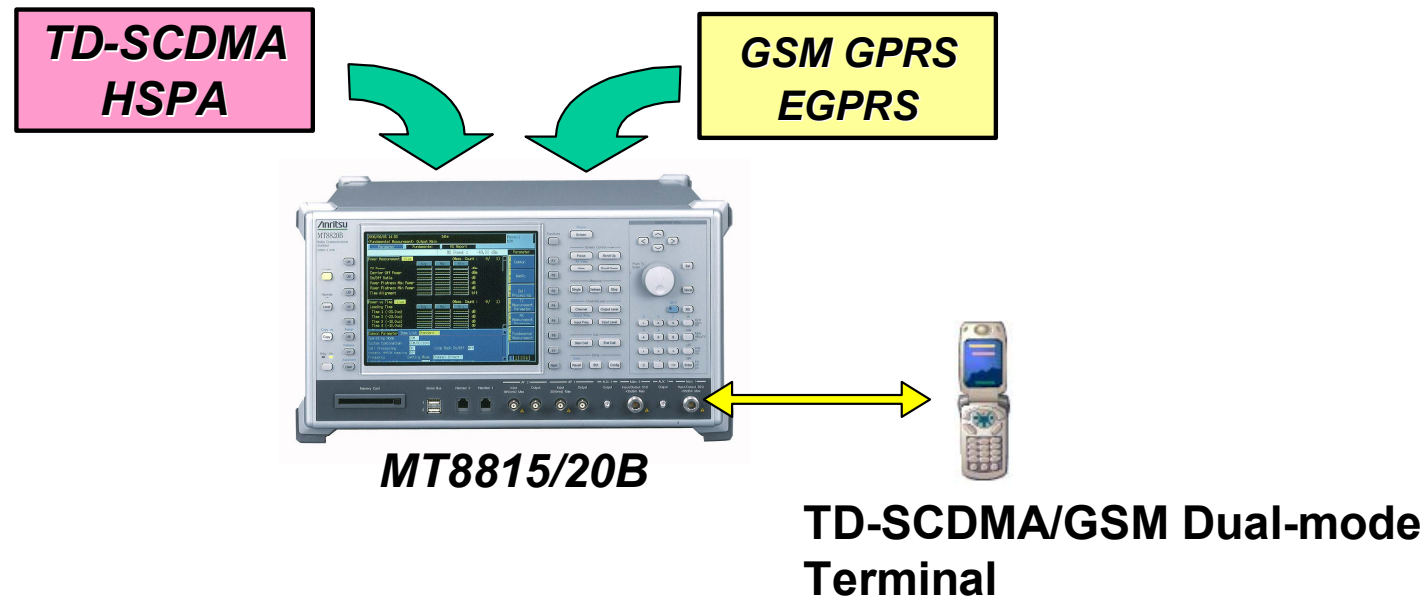
1 Port

## Key Features

- ✓ **TD-SCDMA and GSM in one tester**
- ✓ **Supports all manufacturing and R&D tests**
- ✓ **Parallelphone Measurement with TD-SCDMA/GSM and TD-SCDMA to GSM handover ideal for production lines**
- ✓ **Supports 3GPP Tx/Rx test items and batch measurement**
- ✓ **One-touch 3GPP TS 34.122 settings**
- ✓ **Test Plan – One-touch test sequence**
- ✓ **Screen views**
- ✓ **Automatic CLPC and Out-of-Sync Handling measurements**
- ✓ **OLPC, UE Report, and spectrum monitor functions**
- ✓ **Voice codec for end-to-end voice and audio tests**
- ✓ **Video Phone tests**
- ✓ **TD-SCDMA HSDPA tests**
- ✓ **TD-SCDMA HSUPA tests *New***

## All-in-One MT8815/20B Support for TD-SCDMA and GSM

The all-in-one MT8815/20B supports both TD-SCDMA and GSM, making it the ideal solution for manufacturing TD-SCDMA/GSM dual-mode terminals, because it cuts test times compared to two-box solutions.

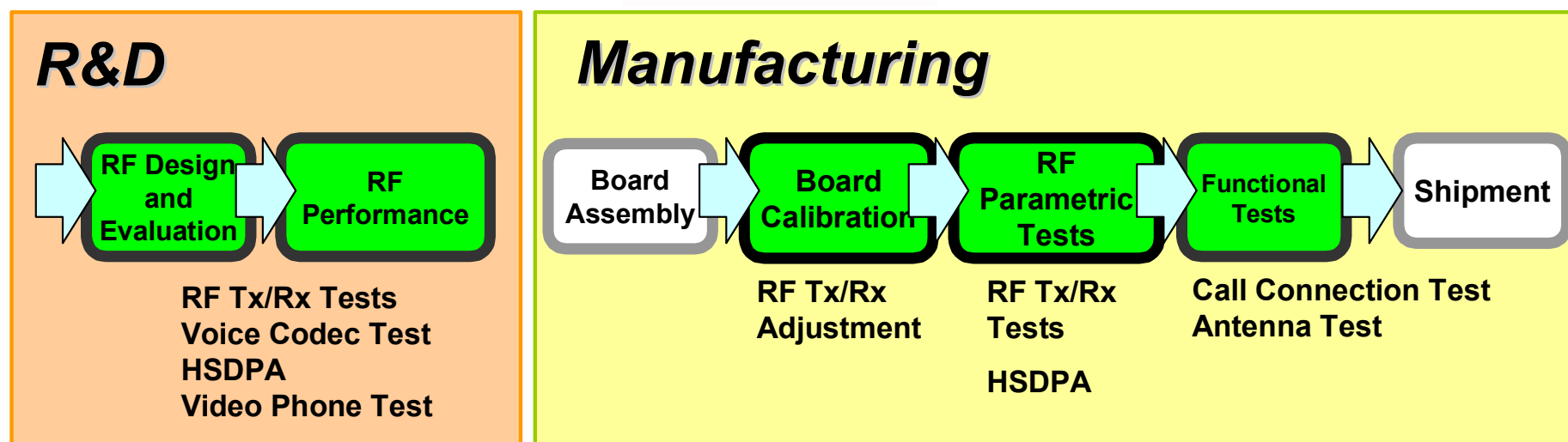


In addition, the MT8815/20B supports W-CDMA/HSPA, CDMA2000 1X, CDMA2000 1xEV-DO and PHS/Advanced PHS.

## Supports All Manufacturing and R&D Tests

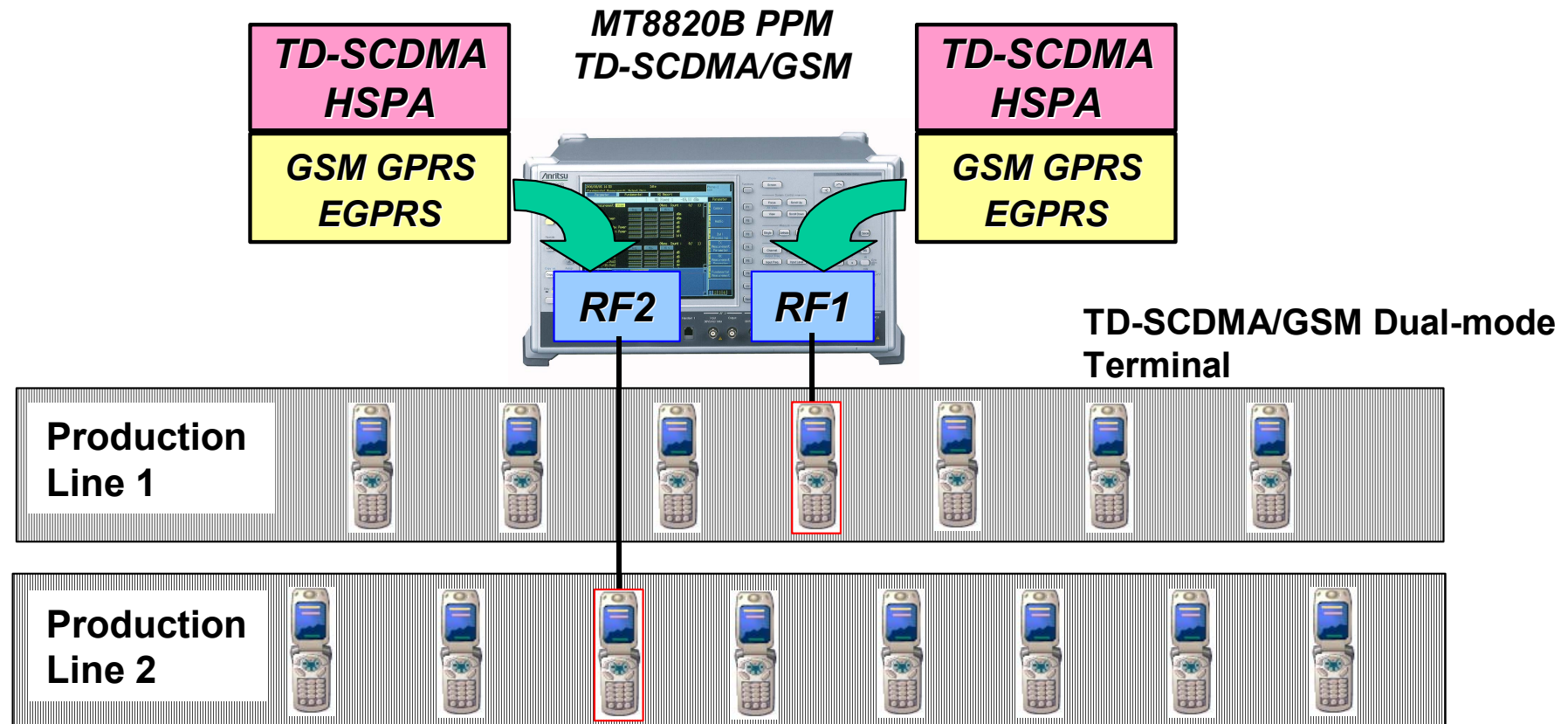
The various MT8815/20B functions, such as calibration, RF parametric testing, signalling, non-signalling, voice calling, HSDPA and video calling, support all manufacturing and R&D tests for TD-SCDMA/GSM terminals shown below. The MT8815/20B offers flexibility on production lines, avoiding the costs and risks of integrating various different instruments.

**MT8815/20B**



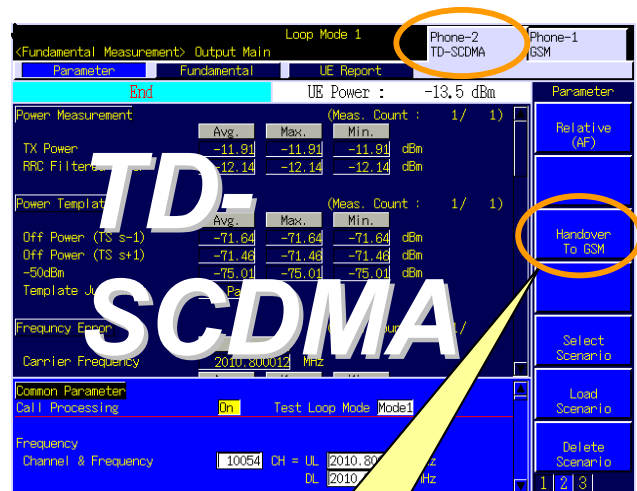
## PPM with TD-SCDMA/GSM as Best Manufacturing Solution

The all-in-one MT8820B's unique PPM function can test two TD-SCDMA/GSM mobile terminals simultaneously and independently, reducing equipment investment, footprint, and power consumption.



## TD-SCDMA to GSM Handover

The TD-SCDMA to GSM handover function cuts test times dramatically compared to re-registration.



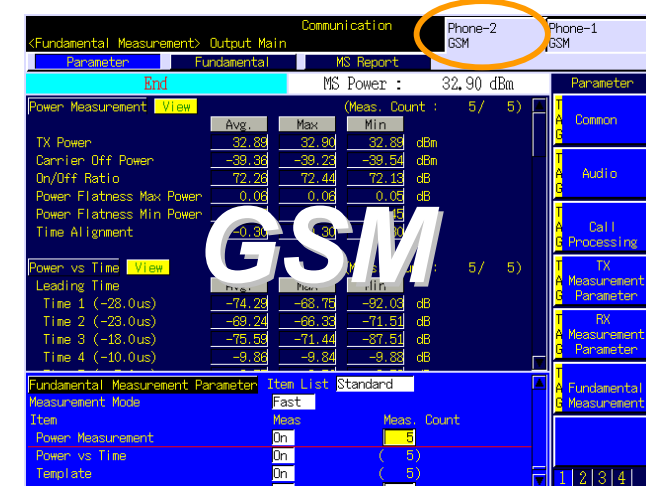
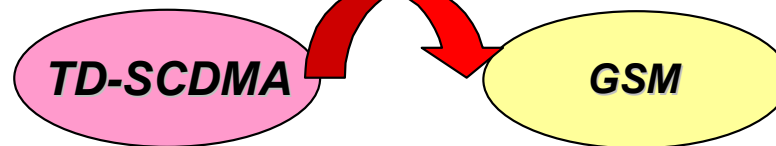
**TD-SCDMA to GSM Handover**



**MT8815/20B**



**TD-SCDMA/GSM Terminal**





## Supported Bands

The MX882007C TD-SCDMA Measurement S/W supports frequency range from 300 to 2700 MHz (UARFCN: 1500 to 13500). Thus, the s/w can support not only the current band that is defined in 3GPP, but also new additional band in this frequency range easily.

Frequency Band (currently TS 34.122 Ver. 8.2.0)\*

Operating Band	Uplink/Downlink [MHz]	UARFCN
a	1900 ~ 1920 2010 ~ 2025	9504 ~ 9596 10054 ~ 10121
b	1850 ~ 1910 1930 ~ 1990	9254 ~ 9546 9654 ~ 9946
c	1910 ~ 1930	9554 ~ 9646

\***The MX882007C has supported Operating Band f** (Uplink/Downlink [MHz]: 1880 ~ 1920 and UARFCN: 9404 ~ 9596) that is specified by TS 25.102 Ver8.2.0, a senior specification of TS 34.122.

## Supported Measurements

The MX882007C TD-SCDMA Measurement S/W supports 3GPP 34.122 Tx/Rx test items (1.28 Mcps TDD). Only the MT8815/20B is required for the main measurement items. Several Tx/Rx items can be measured using a combination of the MT8815/20B and a signal generator and/or spectrum analyzer.

	Item	Comment	
<b>5</b>	<b>Transmitter Characteristics</b>		
5.2	User Equipment maximum output power		√√
5.3	UE frequency stability		√√
<b>5.4</b>	<b>Output Power Dynamics</b>		
5.4.1.3	Open loop power control		√√
5.4.1.4	Closed loop power control		√√
5.4.2	Minimum output power		√√
5.4.3	Transmit OFF power		√√
5.4.4	Transmit ON/OFF Time mask		√√
5.4.5	Out-of-synchronisation handling of output power for continuous transmission		√√
5.4.6	Out-of-synchronisation handling of output power for discontinuous transmission		√√
<b>5.5</b>	<b>Output RF spectrum emissions</b>		
5.5.1	Occupied bandwidth		√√
5.5.2	Out of band emission		
5.5.2.1	Spectrum emission mask		√√
5.5.2.2	Adjacent Channel Leakage power Ratio (ACLR)		√√
5.5.3	Spurious Emissions	Requires SPA	√
5.6	Transmit Intermodulation	Requires SG and SPA	√
<b>5.7</b>	<b>Transmit Modulation</b>		
5.7.1	Error Vector Magnitude		√√
5.7.2	Peak code domain error		√√
<b>6</b>	<b>Receiver Characteristics</b>		
6.2	Reference sensitivity level		√√
6.3	Maximum Input Level		√√
6.4	Adjacent Channel Selectivity (ACS)	Requires SG	√
6.5	Blocking Characteristics	Requires SG	√
6.6	Spurious Response	Requires SG	√
6.7	Intermodulation Characteristics	Requires SG	√
6.8	Spurious Emissions	Requires SPA	√

<b>7</b>	<b>Performance requirements</b>		
7.2	Demodulation in static propagation conditions	Support 12.2kbps only	√√
7.5	Power control in downlink	Requires Fading Simulator	√

Discover What's Possible™

√√: Support | √: Requires external equipment (SPA or SG) | F: Future Support | -: Not Support

Note: 34.122 Ver. 8.2.0

Anritsu

# Batch Measurement

## Tx Items

### Power Measurement

Power Measurement	Avg.	Max.	Min.	Limit
TX Power	-8.73	-8.73	-8.73	-99.9 to 99.9 dBm
RRC Filtered Power	-8.95	-8.95	-8.95	dBm
Judgement	Pass			

### Power Template

Power Template	Avg.	Max.	Min.	Limit
Off Power (TS s-1)	-70.78	-70.78	-70.78	dBm ≤ -63.5 dBm
Off Power (TS s+1)	-70.81	-70.81	-70.81	dBm ≤ -63.5 dBm
-50dBm	-75.03	-75.03	-75.03	dBm ≤ -50.0 dBm
Template Judgement	Pass			

### Frequency Error

Frequency Error	Avg.	Max.	Min.	Limit
Carrier Frequency	2010.800000			MHz
Carrier Frequency Error	-0.0001	-0.0001	-0.0001	kHz
Judgement	0.00	0.00	0.00	ppm ≤ 0.1ppm+10Hz

### Occupied Bandwidth

Occupied Bandwidth	Avg.	Max.	Min.	Limit
OBW	1.372			MHz ≤ 1.6 MHz
Upper Frequency	0.705			MHz
Lower Frequency	-0.667			MHz
Center (Upper+Lower)/2	2010.818			MHz
Judgement	Pass			

### Spectrum Emission Mask

Spectrum Emission Mask	Avg.	Max.	Min.	Limit
Worst Value of Each Frequency Range				
Frequency Range	Level	Mask Margin	Frequency	
0.8MHz	-45.23	dBc	-11.73	dB 0.800 MHz
0.8 to 1.8MHz	-59.10	dBc	-11.60	dB -1.800 MHz
1.8 to 2.4MHz	-65.11	dBc	-8.94	dB 2.310 MHz
2.4 to 4.0MHz	-51.48	dBc	-8.98	dB 2.910 MHz
Template Judgement	Pass			

### Adjacent Channel Power

Adjacent Channel Power	Avg.	Max.	Min.	Limit
Offset Frequency	Power			
-3.2MHz	-51.10	-51.10	-51.10	dB ≤ -42.2 dB
-1.6MHz	-45.42	-45.42	-45.42	dB ≤ -32.2 dB
1.6MHz	-45.68	-45.68	-45.68	dB ≤ -32.2 dB
3.2MHz	-50.87	-50.87	-50.87	dB ≤ -42.2 dB
Judgement	Pass			

### Modulation Analysis

Modulation Analysis	Avg.	Max.	Min.	Limit
Error Vector Magnitude	6.12	6.12	6.12	%(rms) ≤ 17.5 %(rms)
Peak Vector Error	16.12	16.12	16.12	%
Phase Error	3.05	3.05	3.05	deg.(rms)
Magnitude Error	3.04	3.04	3.04	%(rms)
Origin Offset	-28.51	-28.51	-28.51	dB
IQ Imbalance	101.89	101.89	101.89	%(1/Q)
Rho	0.99626	0.99626	0.99626	
Judgement	Pass			

The TD-SCDMA measurement Tx/Rx items shown on the left and below can be measured and evaluated simultaneously (batch measurement), increasing measurement speed. In addition, the MT8815/20B supports high-speed Tx measurement.

Both Single Code and Multi Code RMC 12.2kbps connections are supported and can be switched without call drop.

## Tx Items

### Peak Code Domain Error

Peak Code Domain Error	Avg.	Max.	Min.	Limit
Peak Code Domain Error	-33.52	-33.52	-33.52	dB ≤ -20 dB
Judgement	Pass			

Bit Error Rate	End	Limit
Bit Error Rate	0.0000 (= 0.00 %)	≤ 0.001
Error Count	0	
Transmitted/Sample	10228 / 10000 Bit	
Judgement	Pass	

Block Error Rate	End	Limit
Block Error Rate	0.0000 (= 0.00 %)	
Error Count	0	
Transmitted/Sample	50 / 50 Block	

## Rx Items

### Bit Error Rate

### Block Error Rate

## One-touch 3GPP TS34.122 Settings - 1/2

One-touch setting is supported for main 3GPP 34.122 Tx/Rx test conditions, eliminating complex parameter settings and providing easy standard tests. In addition, control is simple and fast using GPIB commands.

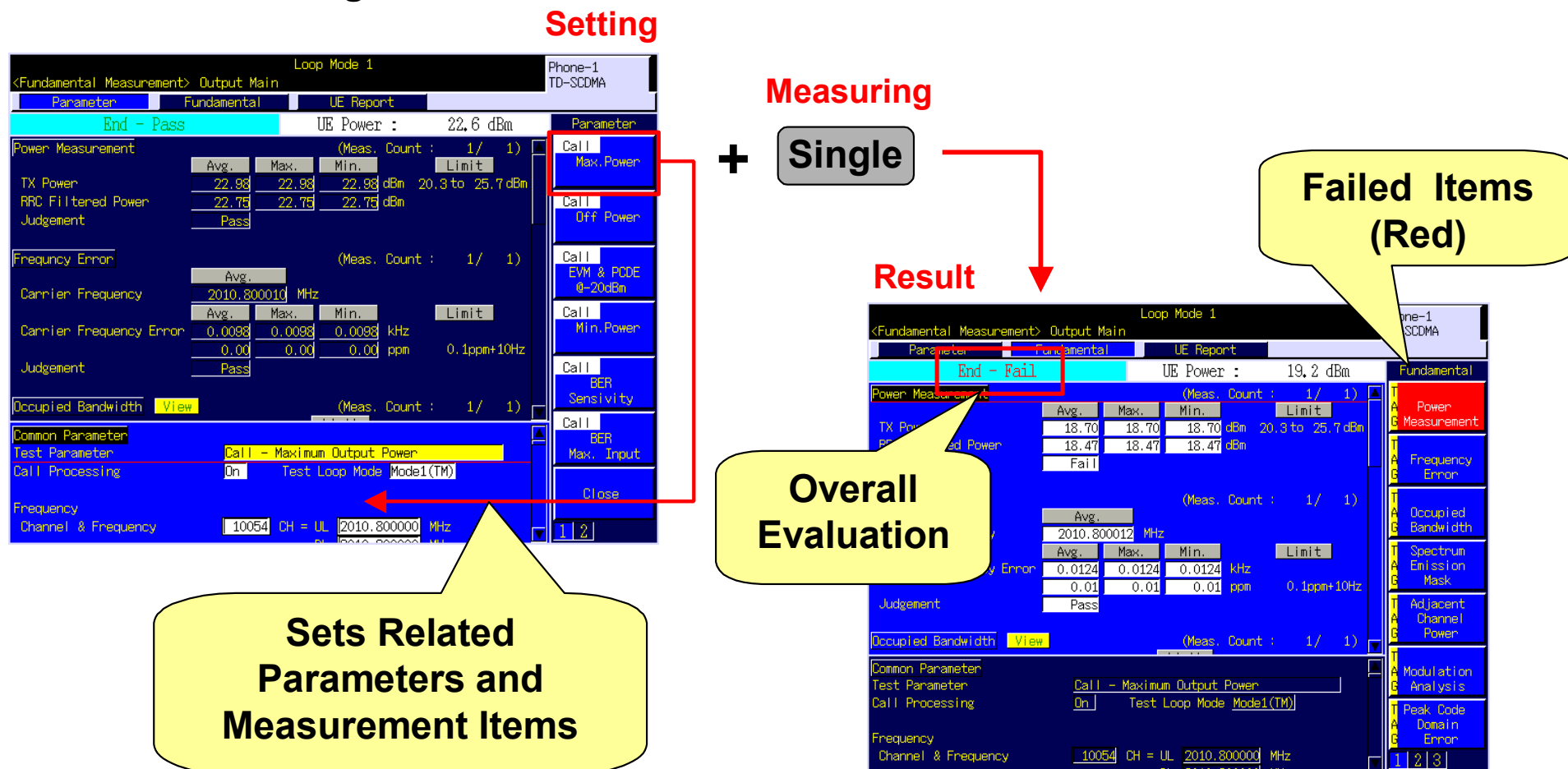
The screenshot displays the 'Fundamental Measurement' screen of a test equipment interface. The main window shows various measurement parameters and their limits. On the right side, there is a 'Parameter' list with buttons for 'Normal', 'Idle', 'Call', and 'Idle&Call'. Red arrows point from these buttons to three separate sub-menus:

- OLPC Setting**: A menu with buttons for 'Idle', 'OLPC', 'RX Upper', 'Idle', 'OLPC', 'RX Middle', 'Idle', 'OLPC', 'RX Sens', 'Increment LAC', 'Single Meas. & Start Call', and 'Close'.
- Call Test Setting**: A menu with buttons for 'Call', 'Max. Power', 'Call', 'Off Power', 'Call', 'EVM & PCODE @-20dBm', 'Call', 'Min. Power', 'Call', 'BER Sensivity', 'Call', 'BER Max. Input', and 'Close'.
- Out-of-Sync Test Setting**: A menu with buttons for 'Idle', 'Out of Sync. Setting', 'Call', 'Out of Sync. Cont.', 'Call', 'Out of Sync. DisCont.', 'Increment LAC', and 'Close'.

The main screen also shows a 'Page 3' indicator at the bottom right.

## One-touch 3GPP TS34.122 Settings - 2/2

For example, pressing **Call Max. Power** automatically sets related parameters controlling the mobile terminal maximum output level, and measurement items. After measurement, overall evaluation, pass and fail items (displayed in red) can be seen at a glance.



## Test Plan – One-touch Test Sequence - 1/2

With one touch of a button, Test Plan performs 3GPP test items including call processing, and displays the results and overall Pass/Fail test status.

**Overall Evaluation**

End - Pass UE Power : -61.5 dBm

**Test Information**

Test Information Passed. 62sec.

**TS 34.122 Section Number**

**Measurement Results and Evaluation**

Idle Test		Upper	Middle	Sens.
No.	Test Items			
5.4.1.3	OLPC	-----	-8.83 Pass	----- dBm

Call Test		L ch	M ch	H ch
No.	Test Items			
5.2	Max. Power	22.00 Pass	21.74 Pass	21.48 Pass dBm
	(Multi Code)	19.07 Pass	18.72 Pass	18.50 Pass dBm
5.3	Frequency Error	0.01 Pass	0.00 Pass	0.00 Pass ppm
5.4.1.4	CLPC	Pass	Pass	Pass
5.4.2	Min. Power	-55.59 Pass	-54.43 Pass	-54.77 Pass dBm
5.4.4	Power Temp. s-1	-72.91 Pass	-74.44 Pass	-73.83 Pass dBm
(5.4.3)	Off Power) s+1	-75.38	-76.39	-75.39 dBm
	-50dBm	-78.78	-77.17	-78.80 dBm
5.5.1	OBW	1.380 Pass	1.380 Pass	1.380 Pass MHz
5.5.2.1	SEM	Pass	Pass	Pass
5.5.2.2	ACLR -3.2MHz	-59.52 Pass	-59.97 Pass	-60.57 Pass dB
	-1.6MHz	-37.03	-39.61	-39.98 dB
	1.6MHz	-39.37	-40.66	-39.53 dB
	3.2MHz	-60.72	-60.96	-60.43 dB
5.7.1	EVM @Max	3.80 Pass	3.59 Pass	3.76 Pass %
	@-20dBm	3.63 Pass	3.41 Pass	3.60 Pass %
5.7.2	PCDE @Max	-32.67 Pass	-34.18 Pass	-33.33 Pass dB
	@-20dBm	-36.31 Pass	-36.03 Pass	-35.91 Pass dB
6.2	Ref. Sens. (BER)	0.0000 Pass	0.0000 Pass	0.0000 Pass
6.3	Max. Input (BER)	0.0000 Pass	0.0000 Pass	0.0000 Pass
	P-CCPCH_RSCP	47 Pass	47 Pass	46 Pass

## Test Plan – One-touch Test Sequence - 2/2

The test sequence is edited easily on-screen, without requiring an external PC or programming.

**Test Plan Parameter**

**Idle Test**

Registration	10054	CH	Registration Check	On
OLPC(Upper)	On			
OLPC(Middle)	On			
OLPC(Sens.)	On			

**Call Test**

Start Call: 10054 CH

Test Channel: L 10054 CH M Off CH H Off CH

Max. Power/DBM/SEM/ACLR/EVM	L	On	M	On	H	On	Meas. Count	1
Max. Power/PCDE(Multi Code)	L	On	M	On	H	On	Meas. Count	1
Power Temp.	L	On	M	On	H	On	Meas. Count	1
Min. Power	L	On	M	On	H	On	Meas. Count	1
EVM @-20dBm	L	On	M	On	H	On	Meas. Count	1
PCDE @-20dBm(Multi Code)	L	On	M	On	H	On	Meas. Count	1
CLPC	L	On	M	On	H	On		
Ref. Sens.(BER)/Freq. Error	L	On	M	On	H	On	Meas. Count	1
Max. Input(BER)	L	On	M	On	H	On		
PCCPCH_RSCP	L	Off	M	Off	H	Off		

End Call: On

**Test Condition**

Max. Power	Limit	20.3	to	25.7	dBm
Max. Power(Multi Code)	Limit	17.3	to	22.7	dBm
Ref. Sens.(BER) Output Level		-107.3	dBm		
PCCPCH_RSCP Output Level		-66.0	dBm		
	Limit	45	to	55	

Fail Action: None

**Set Open Loop Test**

**Edit Test during Call Processing**

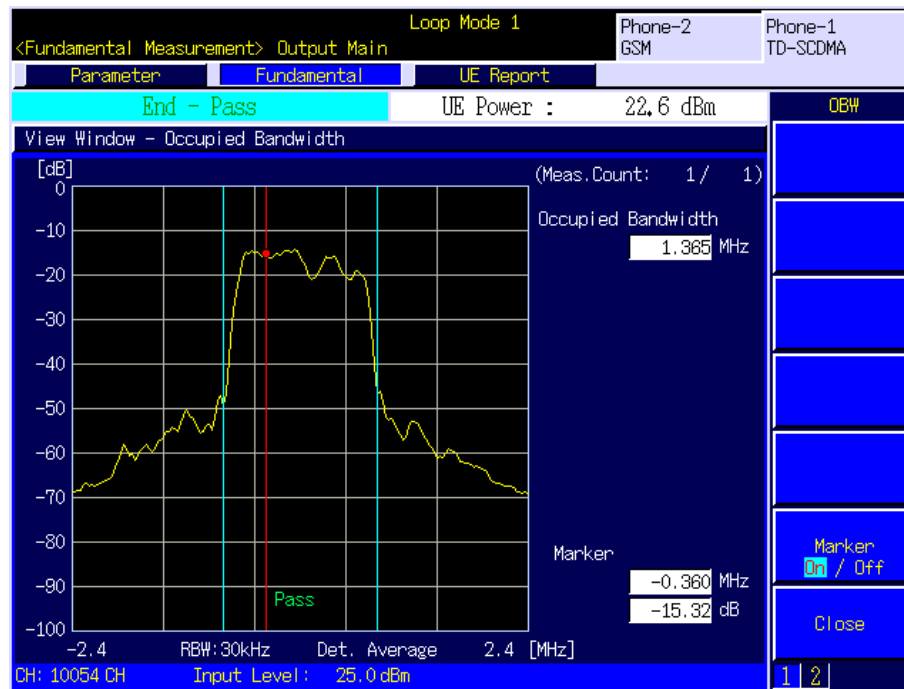
**3CH Setting**

**Edit Test Condition**

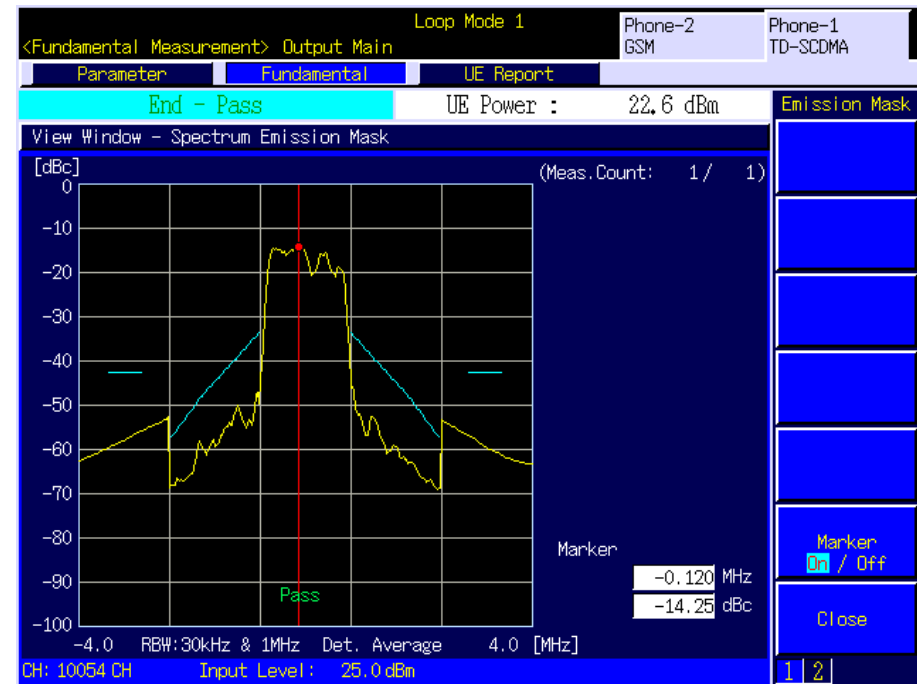
## Screen Views - 1/3

The TD-SCDMA option supports Power Template, Occupied Bandwidth, Spectrum Emission Mask and Modulation Analysis (EVM, Phase Error, Magnitude Error and Constellation) screens, which are useful for investigating detailed RF characteristics.

### Occupied Bandwidth



### Spectrum Emission Mask



Spectrum Emission Mask Template		
0.8MHz	-33.5	dBc / 30kHz
1.8MHz	-47.5	dBc / 30kHz
2.4MHz	-57.7	dBc / 30kHz
2.4 to 4.0MHz	-42.5	dBc / 1MHz
Lower Limit (dBm)	-53.5	dBm / 1.23MHz

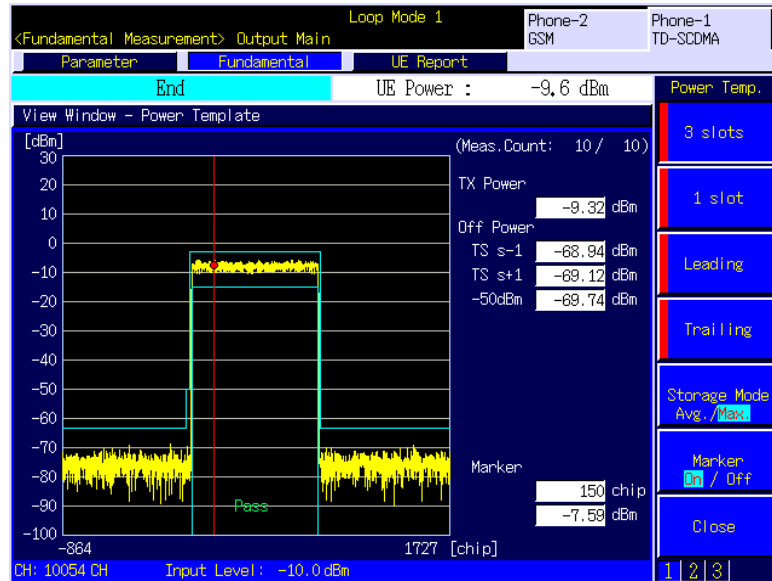
Changeable  
SEM Template



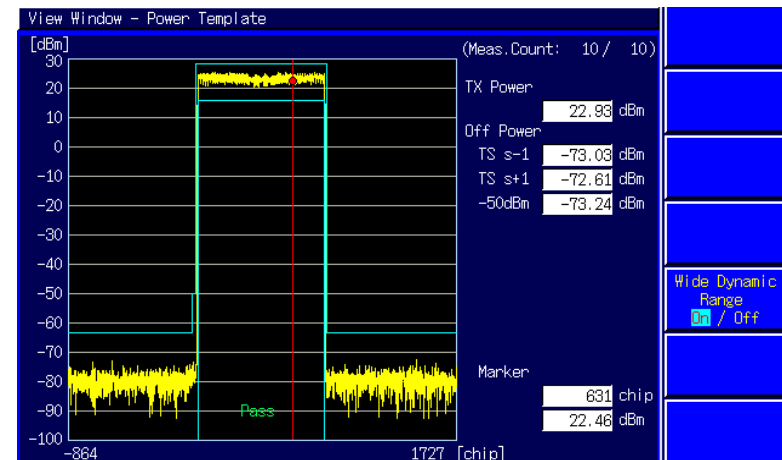
## Screen Views - 2/3

### Power Template

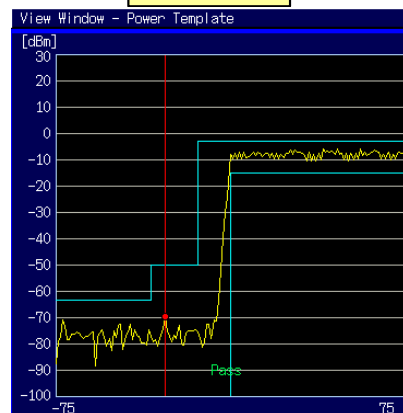
3 Slots



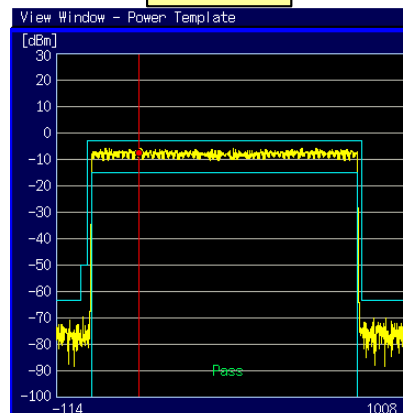
Wide Dynamic Range



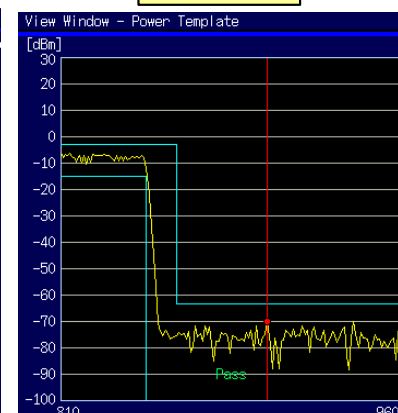
Leading



1 Slot

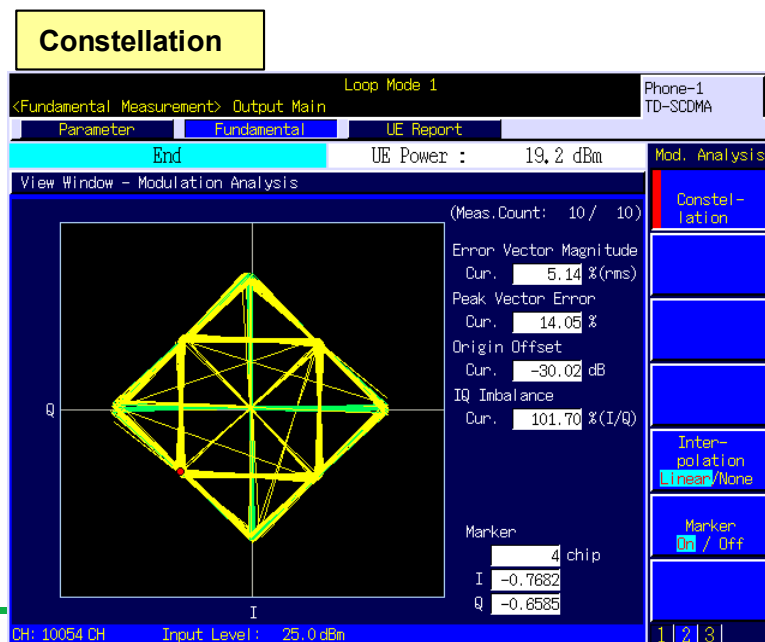
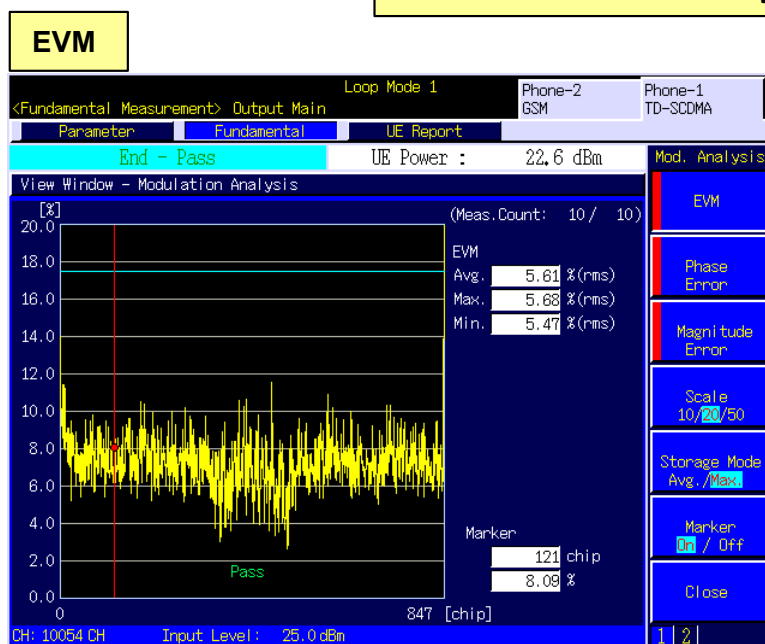


Trailing

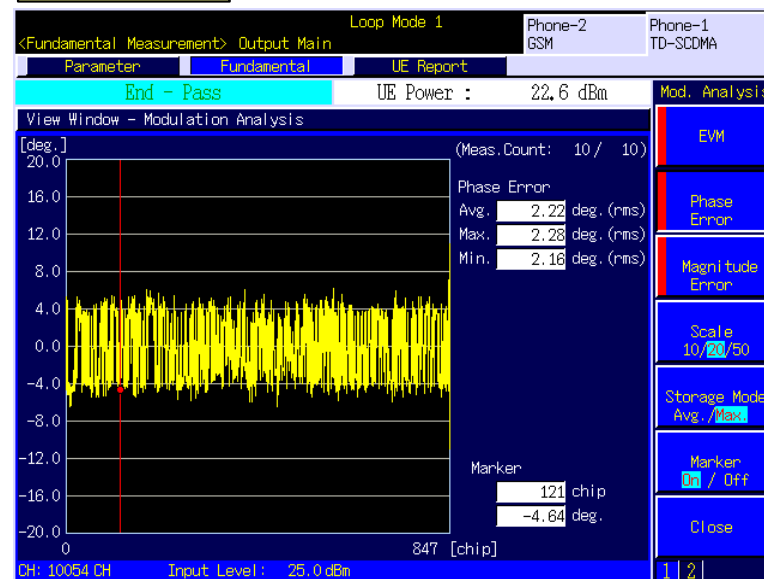


## Screen Views - 3/3

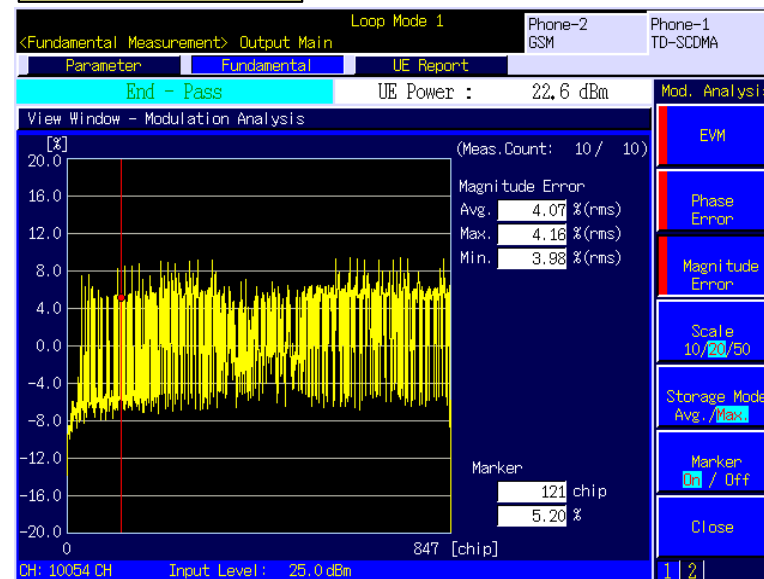
### Modulation Analysis



### Phase Error



### Magnitude Error



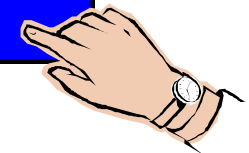
## Automatic 3GPP-compliant CLPC Measurement

The TD-SCDMA option supports 3GPP-compliant Automatic Closed Loop Power Control measurement. Users can test CLPC easily without technical knowledge or difficult procedures. The CLPC View shows each and every step of the results while the Fail Slot Search function finds failure points quickly and easily. Of course, operators can set user-defined CLPC settings too.

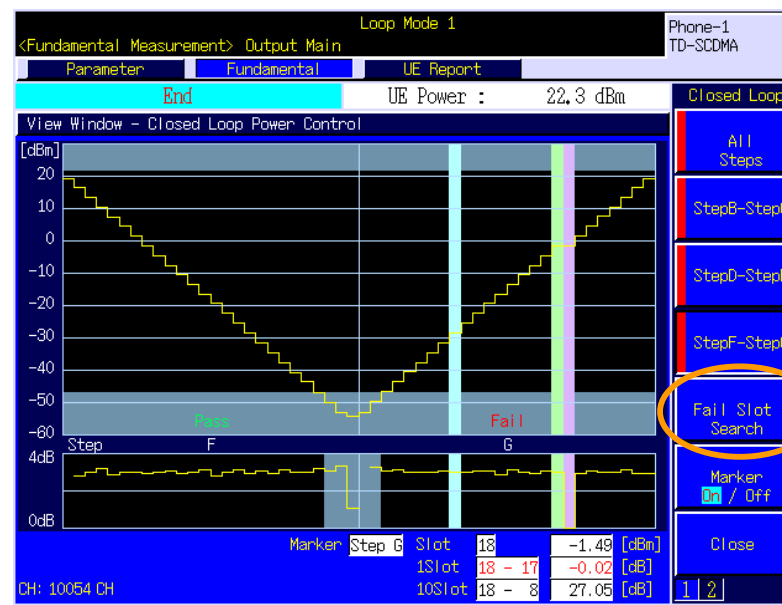
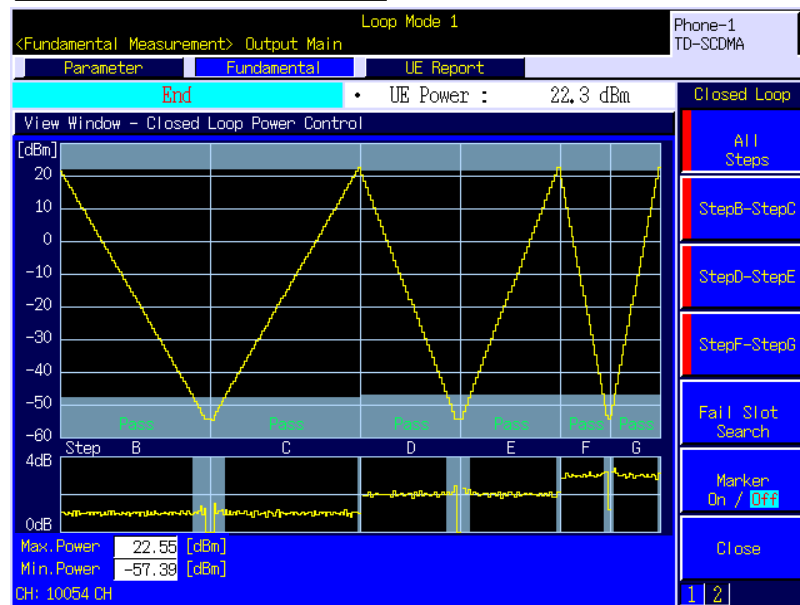
**3GPP-compliant  
Automatic Testing  
and Evaluation**

Loop Mode 1		Phone-1 TD-SCDMA
<Fundamental Measurement> Output Main		
Parameter	Fundamental	UE Report
End	UE Power : 12.7 dBm	
Closed Loop Power Control		Closed Loop Power Control
Step B	Pass	
Step C	Pass	
Step D	Pass	
Step E	Pass	
Step F	Pass	
Step G	Pass	

Call  
CLPC



**CLPC View (ALL Steps)**



**Easy Fail  
Slot Search  
Function**

## OLPC Measurement

The TD-SCDMA option supports Open Loop Power Control measurements with preset parameters, allowing testing under both 3GPP and user-defined conditions.

### Open Loop Power Control

Idle		Phone-2	Phone-1
<Fundamental Measurement> Output Main		GSM	TD-SCDMA
Parameter	Fundamental	UE Report	
End - Pass		UE Power : -50.9 dBm	Fundamental
Open Loop Power Control			
Limit			
UpPCH Power	-7.24 dBm	-10.0 dBm ± 10dB	
SYNC_UL ID	5		
Judgement	Pass		

Parameter
Idle
OLPC
RX Upper
Idle
OLPC
RX Middle
Idle
OLPC
RX Sens.



### OLPC Parameters

Open Loop Power Control	
Primary CCPCH TX Power	24 dBm
PRXUpPCHdes	-100 dBm
Power Ramp Step	0 dB
Max SYNC_UL Transmissions	1
RAB Connection	Off

Setting RAB Connection to Off returns the call status to Idle without RAB connection when entering the Test Loop Mode and OLPC measurement can then be performed continuously.

## Automatic Out-of-Sync Handling Measurement

The TD-SCDMA option supports Automatic Out-of-Sync Handling measurement for easy testing without technical knowledge or difficult operations.

Out-of-Sync Handling (Continuous/Discontinuous)				
<Fundamental Measurement> Output Main		Loop Mode 1	Phone-2 GSM	Phone-1 TD-SCDMA
Parameter	Fundamental	UE Report		
End - Fail		UE Power : -9.6 dBm		Fundamental
Out of Synchronisation		Idle		
	DPCH_Ec/Ior	UE Signal		Out of Sync. Setting
Step A	-2.4 dB	On	Pass	
Step B	-6.0 dB	On	Pass	Call
Step C	-16.0 dB	Turns Off	Fail	Out of Sync. Cont.
Step E	-14.0 dB	Off	Fail	
Step F	-3.0 dB	Turns On	Pass	Call
		Out of Sync. Discont.		



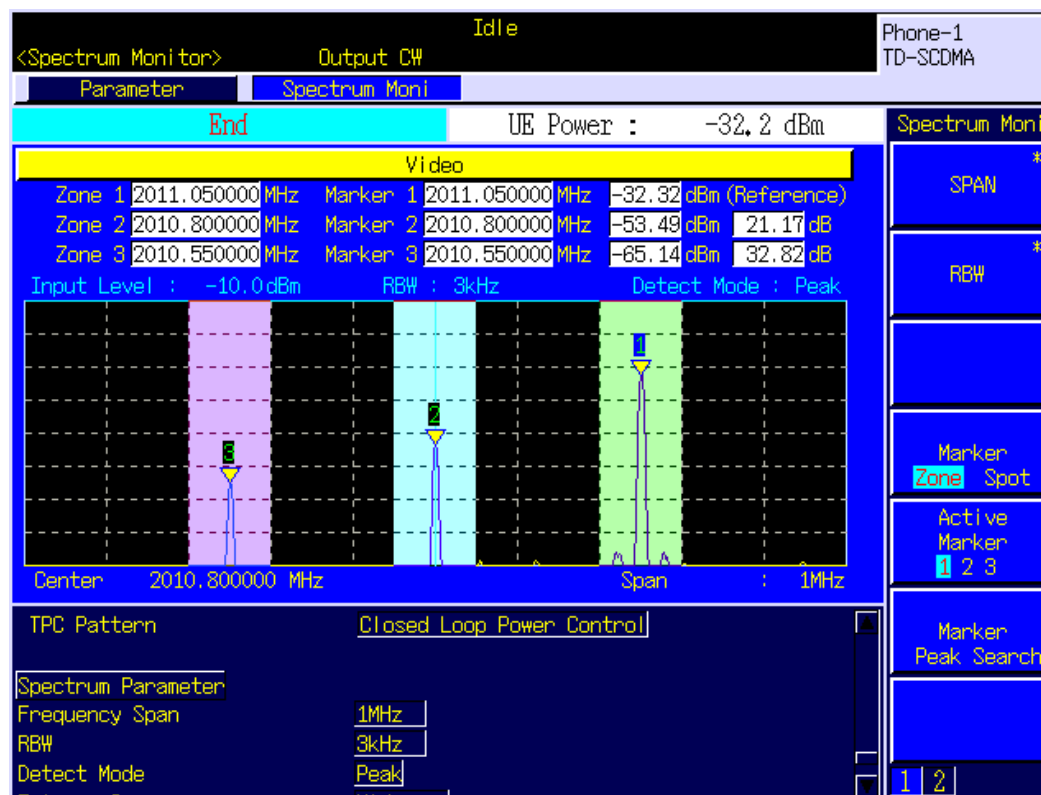
## UE Report

The mobile terminal Power Class and Primary CCPCH RSCP are displayed at the UE Report screen where the user can check the received signal level and estimate the DL external loss from the Primary CCPCH RSCP.

Loop Mode 1		Phone-1 TD-SCDMA
<Fundamental Measurement> Output Main		
Parameter	Fundamental	UE Report
UE Power :		-8.9 dBm
UE Report		UE Report
IMSI(DEC)	001010123456789	
UE Power Class	2	
Primary CCPCH RSCP	48 ( -68 to -67 dBm )	

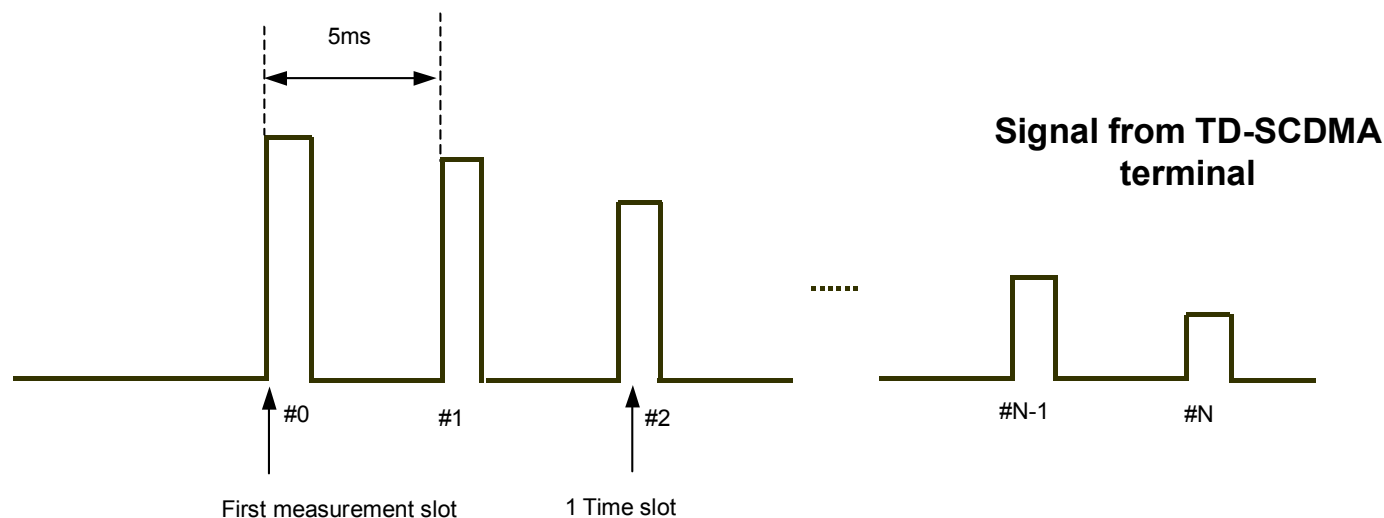
## Spectrum Monitor

The spectrum in the 25-MHz band can be viewed using the Spectrum Monitor function to check in-band spurious easily. Moreover, the IQ and carrier leakage from the orthogonal modulator are easily adjusted. The SPAN and RBW can be changed, and marker (zone and spot) and peak search functions are supported.



## UE Tx Calibration Measurements

This function measures the power of each burst by outputting a step signal from the UE for Tx calibration in synchronization with the chipset adjustment function, greatly shortening calibration time.



### Multi Power Measurement



## TD-SCDMA Key Specifications

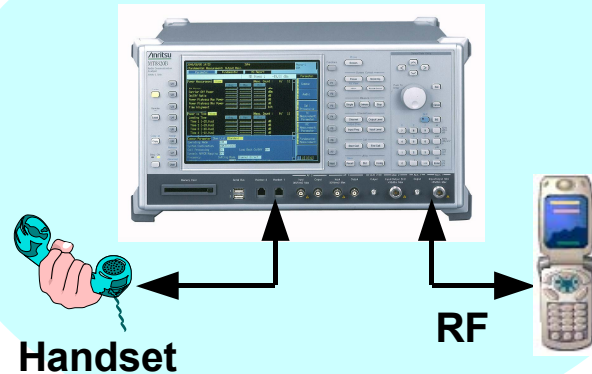
Frequency range:	300 to 2700 MHz
Maximum input level:	+35 dBm
Amplitude measurement accuracy:	$\pm 0.5$ dB (–25 to +35 dBm) $\pm 0.7$ dB (–55 to –25 dBm) $\pm 0.9$ dB (–70 to –55 dBm) after calibration
EVM (residual vector error):	$\leq 2.5\%$ (single code)
ACLR:	>50 dB at $\pm 1.6$ MHz >55 dB at $\pm 3.2$ MHz
RF Output level range:	–140 to –10 dBm (MAIN) –130 to 0 dBm (AUX)
RF Output level accuracy:	$\pm 1.0$ dB (–120 to –10 dBm, MAIN) $\pm 1.0$ dB (–110 to 0 dBm, AUX) after calibration

## ***MX882007C-001 TD-SCDMA Voice Codec***

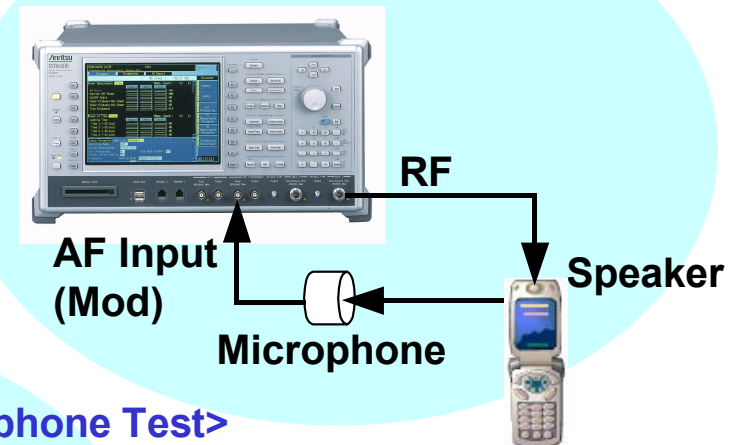
### **Voice Codec for End-to-End Voice and Audio Tests**

The MX882007C-001 TD-SCDMA Voice Codec software option adds real-time voice encoding/decoding to the TD-SCDMA measurement software. Live end-to-end voice tests between a handset and TD-SCDMA mobile are supported by installing the MT8815/20B-011 Audio Board. Moreover, the MT8815/20B can measure the audio Tx/Rx without an external audio analyzer and generator.

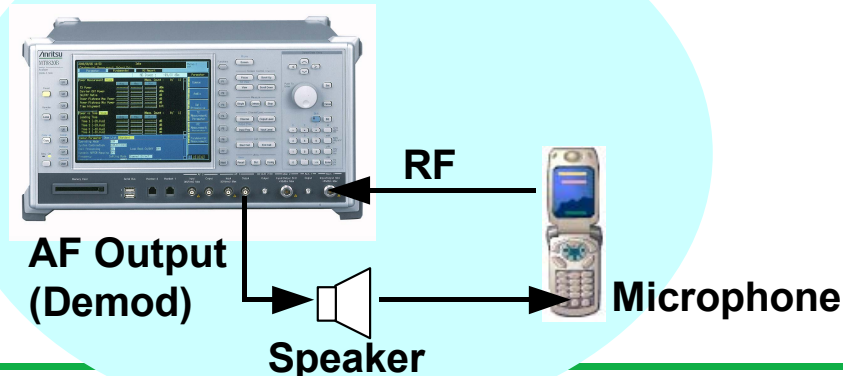
#### **<Live End-to-End Voice Test>**



#### **<Audio Rx and Mobile Test>**



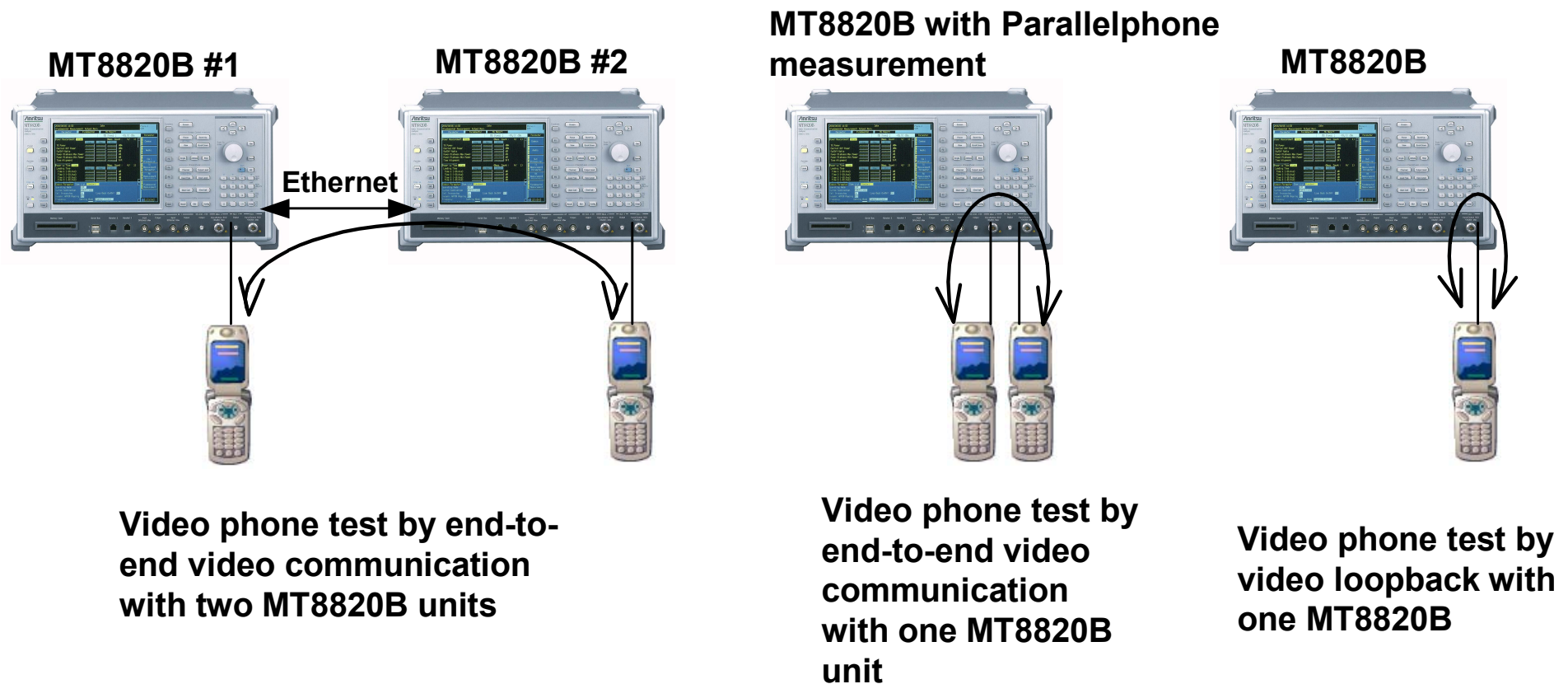
#### **<Audio Tx and Mobile Microphone Test>**



## ***MX882007C-003 TD-SCDMA Video Phone Test***

### **Video Phone test for End-to-End or loopback**

The MX882007C-003 TD-SCDMA Video Phone Test option can test end-to-end video communication between two TD-SCDMA mobiles using either two MT8820B units or one MT8820B unit with the Parallelphone Measurement option. Moreover, video communication can be tested with a single TD-SCDMA mobile using the video loopback function.



## **Supported TD-SCDMA HSDPA Measurements**

The MX882007C-011 TD-SCDMA HSDPA Measurement Software supports call processing, throughput measurements and CQI(Channel Quality Indicator) measurement for Rx measurements of TD-SCDMA HSDPA(High Speed Downlink Packet Access) terminal. The related 3GPP standards are listed below.

	3GPP TS 34.122*	Test Item	Comment
Receiver Test	6.3A	Maximum Input Level for HS-PDSCH Reception (16QAM)	
Performance Test	9.3.1	HS-DSCH throughput for Fixed Reference Channels	Not support Fading.
	9.3.2	HS-DSCH Throughput for Variable Reference Channels	Not support Fading.
	9.3.3	Reporting of HS-DSCH Channel Quality Indicator	Not support Fading.
	9.3.4	HS-SCCH Detection Performance	Not support Fading.

\*: Ver. 8.2.0

## **Supported TD-SCDMA HSDPA Measurements**

Throughout measurements for both Reference Measurement Channel (RMC) signals supporting all HSDPA categories and for maximum data rate category-15 (2.8 Mbps) are supported. The HSDPA throughout measurement DUT signals are listed in the table below.

Parameter (HSDPA Data Rate)	Max. Data Rate	HS-DSCH Categories	Modulation Type	Comment
0.5 Mbps UE Class (QPSK)	199.2 kbps	1/2/3	QPSK	RMC
1.1 Mbps UE Class (QPSK)	199.2 kbps	4/5/6	QPSK	RMC
1.1 Mbps UE Class (16QAM)	578.6 kbps	4/5/6	16QAM	RMC
1.6 Mbps UE Class (QPSK)	357.4 kbps	7/8/9	QPSK	RMC
1.6 Mbps UE Class (16QAM)	634.6 kbps	7/8/9	16QAM	RMC
2.2 Mbps UE Class (QPSK)	539 kbps	10/11/12	QPSK	RMC
2.2 Mbps UE Class (16QAM)	782.2 kbps	10/11/12	16QAM	RMC
2.8 Mbps UE Class (QPSK)	621 kbps	13/14/15	QPSK	RMC
2.8 Mbps UE Class (16QAM)	1278.6 kbps	13/14/15	16QAM	RMC
Category 15, Max	2808.6 kbps	15	16QAM	Maximum Data Rate

## TD-SCDMA HSDPA Throughput and CQI measurement

### Example: HSDPA Throughput and CQI measurement

Communication		Phone-1
<Fundamental Measurement> Output Main		TD-SCDMA
Parameter	Fundamental	UE Report
End	UE Power :	0.0 dBm
Fundamental		
HSDPA Throughput		End
Throughput	1278.6000 kbps	
Block Error Rate	0.0000 (= 0.00 %)	
	0.00E+00	
Error Count	0	
	(NACK 0 DTX 0)	
Transmitted/Sample	2000 / 2000 Block	
HSDPA CQI		End
	Avg. Median Max. Min.	
CQI (RTBS)	30.0 30 30 30	
Sum in Median CQI ± 3	2000	
Rate	100.00 %	
RMF	QPSK 0 16QAM 2000	
Received/Sample	2000 / 2000 Block	
Signal		
Channel Coding	HSDPA RMC	
HSDPA Data Rate	2.8Mbps UE Class(16QAM)	
DTCH Data Pattern	PN9	
		1 2 3

## **MX882007C-021 TD-SCDMA HSUPA Measurement Software**

### **Supported TD-SCDMA HSUPA Measurements New**

The MX882007C-021 TD-SCDMA HSUPA Measurement Software supports call processing, Modulation Analysis and Performance measurement of TD-SCDMA HSUPA(High Speed Uplink Packet Access) terminal. The related 3GPP standards are listed below.

	3GPP TS 34.122*	Test Item	Comment
Transmitter Test	5.7.1A	Error Vector Magnitude with E-DCH 16QAM	
Performance Test	11.1	Detection of E-DCH HARQ ACK Indicator Channel (E-HICH)	Not support Fading.
	11.2	Demodulation of E-DCH Absolute Grant Channel (E-AGCH)	Not support Fading.

\*: Ver. 8.2.0

# MX882007C-021 TD-SCDMA HSUPA Measurement Software

## Supported TD-SCDMA HSUPA Measurements **New**

This software supports RF Tx characteristics tests of HSUPA terminals specified in TS34.122 chapter 5 and evaluating the RF performance of HSUPA terminals. Both RMC signals supporting TD-SCDMA HSUPA category 1 to 6 (2.88 Mbps UE class) are provided as DUT throughput test signals.

### Call Processing Parameters Setting View Window

Idle Phone-2 TD-SCDMA Phone-1 TD-SCDMA

<Fundamental Measurement> Output Main

Parameter Fundamental UE Report

UE Power : -55.0 dBm

Output Level(Total) -68.0 dBm On Level Continuation

AWGN Level -20.0 dB Off

External Loss Off

Main UL 0.0 dB

Main DL 0.0 dB

AUX 0.0 dB

Signal

Channel Coding HSUPA RMC

HSUPA Data Rate 0.5Mbps UE Class(QPSK) FRC

HSUPA Data Rate FRC1(Category1-2)

DTCH Data Pattern FRC1(Category1-2)

Physical Channel Parameter FRC2

Scrambling Code ID Peak Data Rate

Midamble Allocation Mode (Default Midamble)

Downlink Physical Channel

P-CCPCH Power -3.0 dB

DwPCH Power 0.0 dB

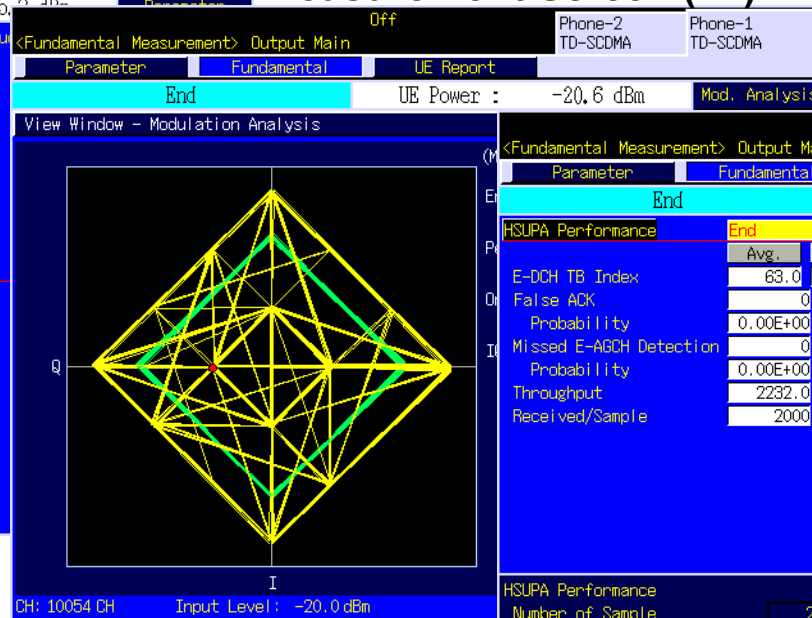
DPCH Timeslot (----) to (----)

Power ---- dB

Channelisation Code (----) to (----)

### Fundamental

### Measurement Screen (Tx)



### Performance

### Measurement Screen

Off Phone-2 TD-SCDMA Phone-1 TD-SCDMA

<Fundamental Measurement> Output Main

Parameter Fundamental UE Report

End UE Power : -15.5 dBm

HSUPA Performance

	Avg.	Median	Max.	Min.
E-DCH TB Index	63.0	63	63	63
False ACK Probability	0.00E+00	Block		
Missed E-AGCH Detection Probability	0.00E+00	Block		
Throughput	2232.0	kbps		
Received/Sample	2000	/ 2000	Block	

HSUPA Performance

Number of Sample 2000 Block

RX Measurement Timeout Length 10 sec

Fundamental Measurement Parameter

1 2 3

\*For terminal connectivity, contact your Anritsu sales representative

\*Throughput monitor value is calculated based on bit rate information of E-DCH TE Index value.



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