

# Manufacturer Test Suite

MT8820B/MT8815B  
Radio Communication Analyzer

# **MT8820B/MT8815B Manufacturer Test Suite Product Introduction**

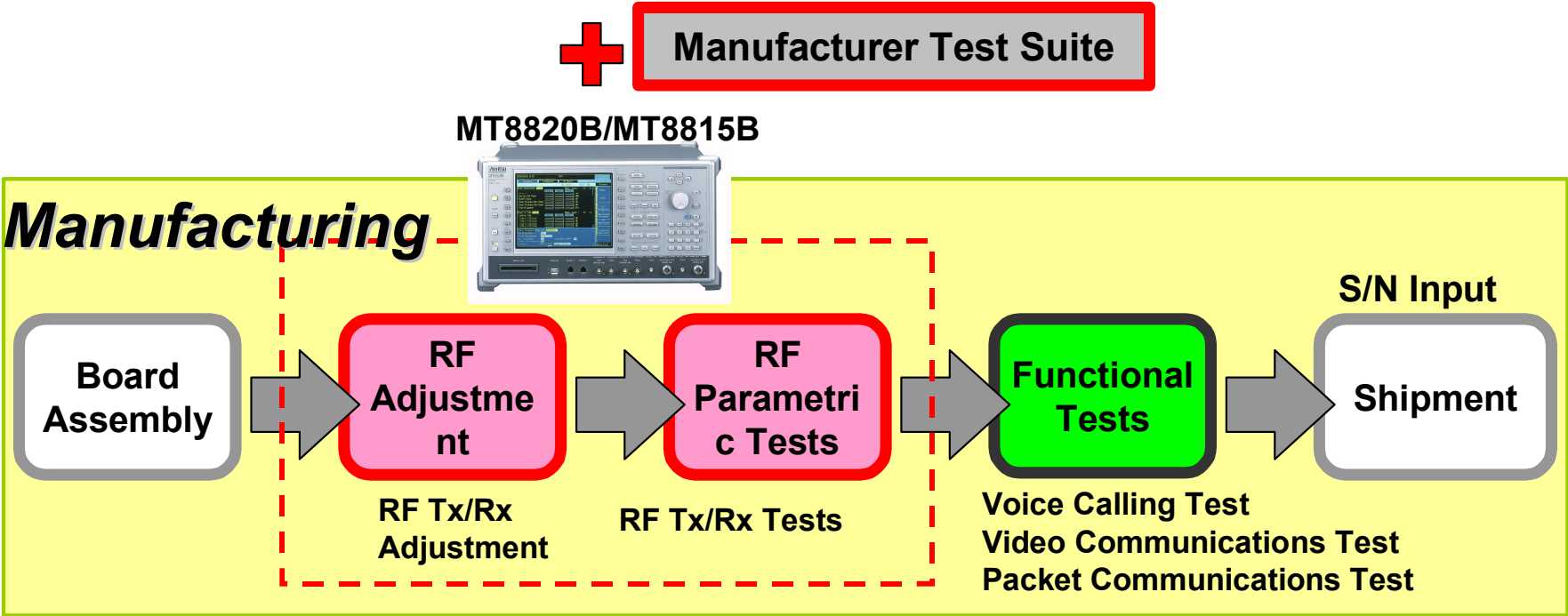
**MT8820B-031/MX882030C/MX882030C-011/-021 for W-CDMA/HSDPA/HSUPA  
MT8820B-032/MX882031C/MX882031C-011 for GSM/GPRS/EGPRS**

**Version 3.0  
May 2009**

**ANRITSU CORPORATION**

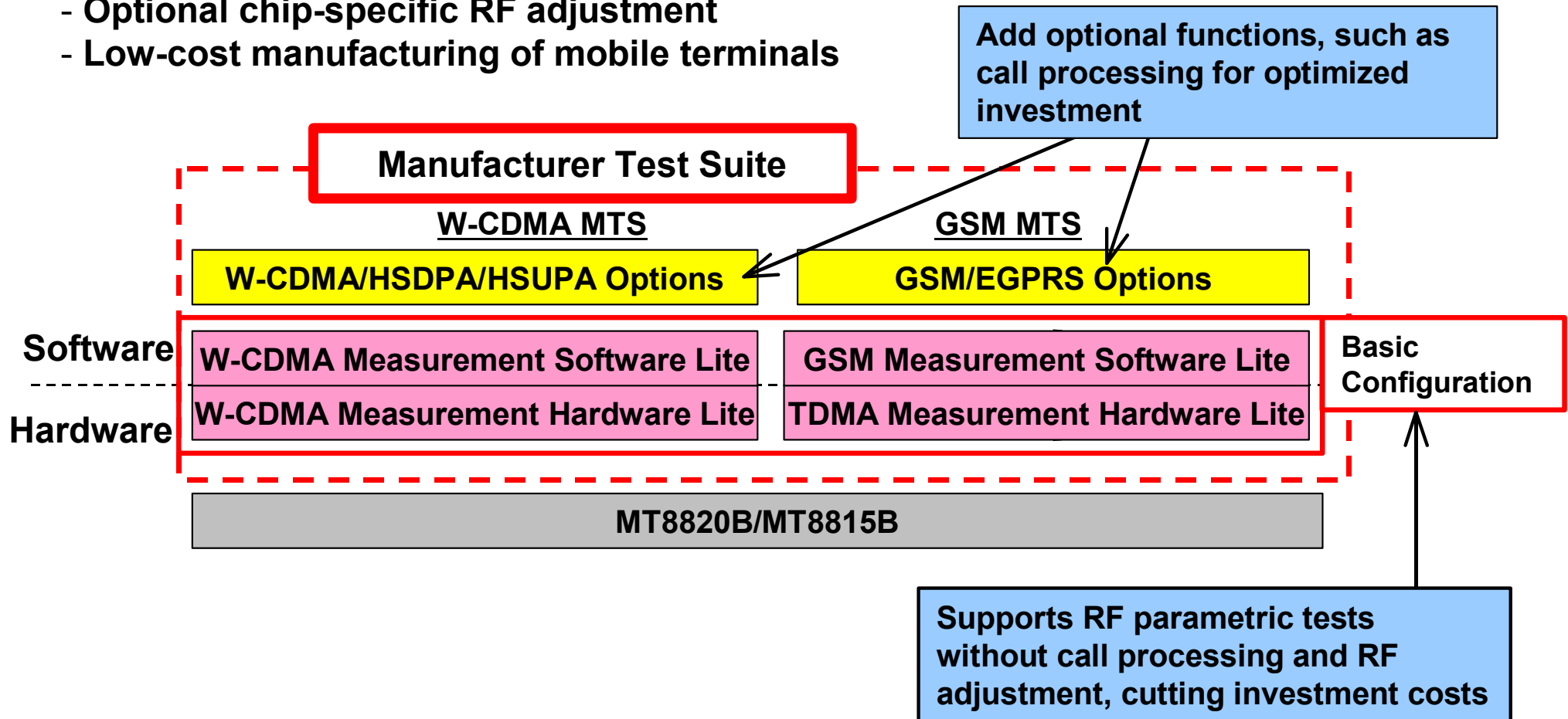
# Manufacturer Test Suite Outline

Manufacturer Test Suite (MTS) runs on the MT8820B/MT8815B platform and is the generic name for the combination of hardware and software focusing on RF adjustments and RF parametric tests for manufacturing mobile terminals. It is a new low-price solution for the MT8820B/MT8815B offering flexible configuration of options. It supports both W-CDMA/HSDPA/HSUPA and GSM/GPRS/EGPRS.



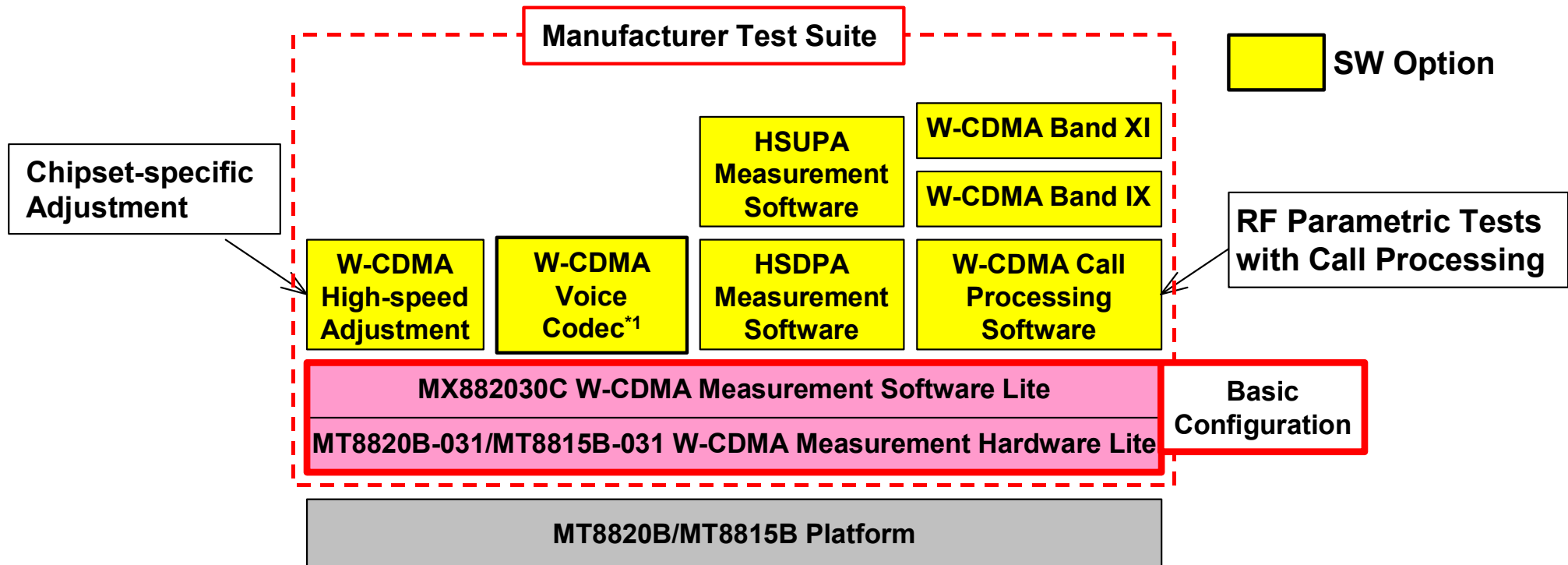
## Manufacturer Test Suite Features

- Basic configuration focusing on RF adjustment and RF parametric tests in test mode (without call processing)
- Optional call processing
- Optional chip-specific RF adjustment
- Low-cost manufacturing of mobile terminals



## Manufacturer Test Suite Options (W-CDMA/HSDPA/HSUPA)

The Manufacturer Test Suite options for W-CDMA/HSDPA/HSUPA are shown below.



\*1: Requires MT8820B/15B-011 Audio Board

## W-CDMA Basic Configuration (MT8820B-031/MT8815B-031 + MX882030C)

The Manufacturer Test Suite W-CDMA basic configuration supports W-CDMA RF parametric tests (without call processing) in the test mode. The MT8820B/MT8815B functions as a real-time signal generator and signal analyzer. Only RMC 12.2k is supported.

### W-CDMA Measurement Items (Test Mode)

#### Tx Measurements (Fundamental Measurement)

- TX Power and Filtered Power
- Frequency Error
- Occupied Bandwidth
- Spectrum Emission Mask
- Adjacent Channel Leakage Power Ratio
- Error Vector Magnitude
- Peak Code Domain Error

#### Tx Measurements (Time Domain)

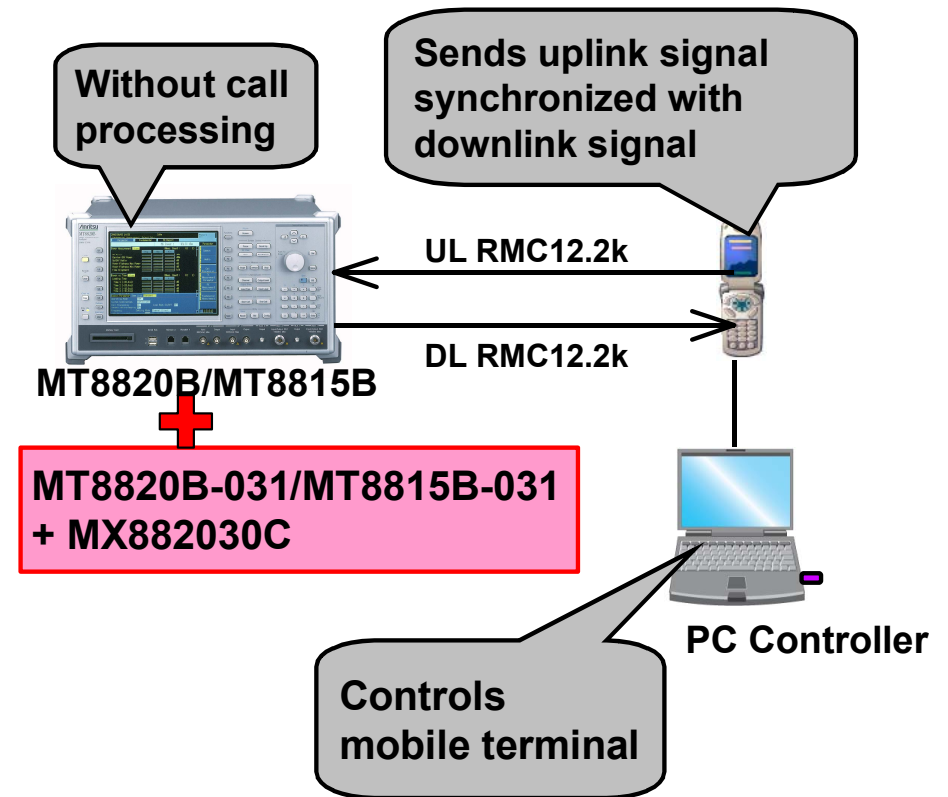
- Power Results for Each Timeslot
- Transmit On/Off Power
- Phase Discontinuity
- PRACH Preamble Quality

#### Rx Measurement (Fundamental Measurement)

- BER (RMC12.2k)

#### Spectrum Monitor

- Spectrum in 5 and 25 MHz Bandwidth



## W-CDMA Call Processing Software (MX882030C-050)

Adding the W-CDMA call processing software supports W-CDMA RF parametric tests with call processing and voice communication tests. When the HSDPA/HSUPA Measurement Software (MX882030C-011/-021) is installed, HSDPA/HSUPA RF parametric tests can be performed too.

### W-CDMA Measurement Items (Call Processing)

#### TX Measurements (Fundamental Measurement)

- TX Power and Filtered Power
- Frequency Error
- Occupied Bandwidth
- Spectrum Emission Mask
- Adjacent Channel Leakage Power Ratio
- Error Vector Magnitude
- Peak Code Domain Error

#### TX Measurements (Time Domain)

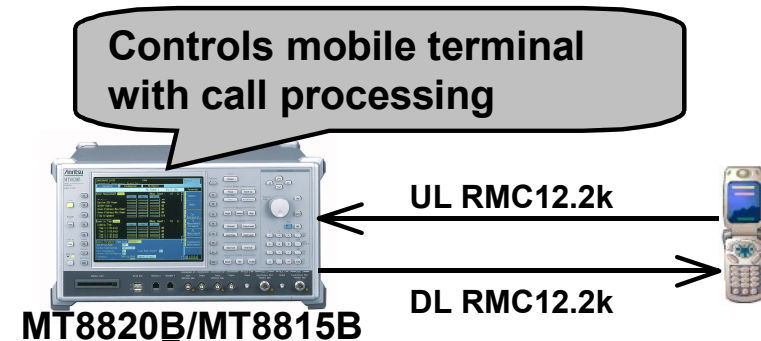
- Open Loop Power
- Inner Loop Power
- Transmit On/Off Power
- Phase Discontinuity
- PRACH Preamble Quality

#### RX Measurement (Fundamental Measurement)

- BER (RMC12.2k)
- BLER (RMC12.2k)

#### Spectrum Monitor

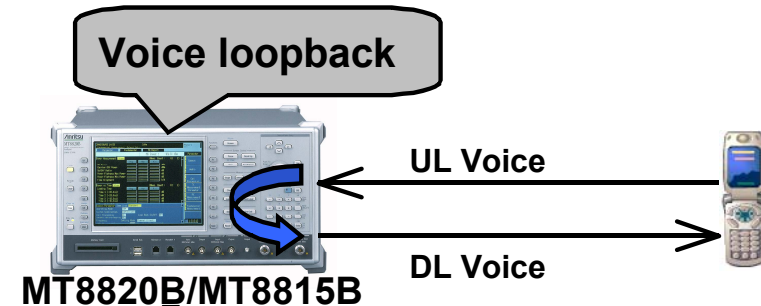
- Spectrum in 5 and 25 MHz Bandwidth



+

MT8820B-031/MT8815B-031

MX882030C + MX882030C-050



+

MT8820B-031/MT8815B-031

MX882030C + MX882030C-050

## HSDPA Measurement Software (MX882030C-011)

Installing the HSDPA Measurement Software supports HSDPA RF parametric tests. When the W-CDMA Call Processing Software is not installed, HSDPA RF parametric tests (without call processing) can be performed in the test mode. When the W-CDMA Call Processing Software is installed, HSDPA RF parametric tests with call processing can be performed too. Only FRC H-Set 1 (QPSK, 16QAM) is supported.

### HSDPA Measurement Items

#### TX Measurements (Fundamental Measurement)

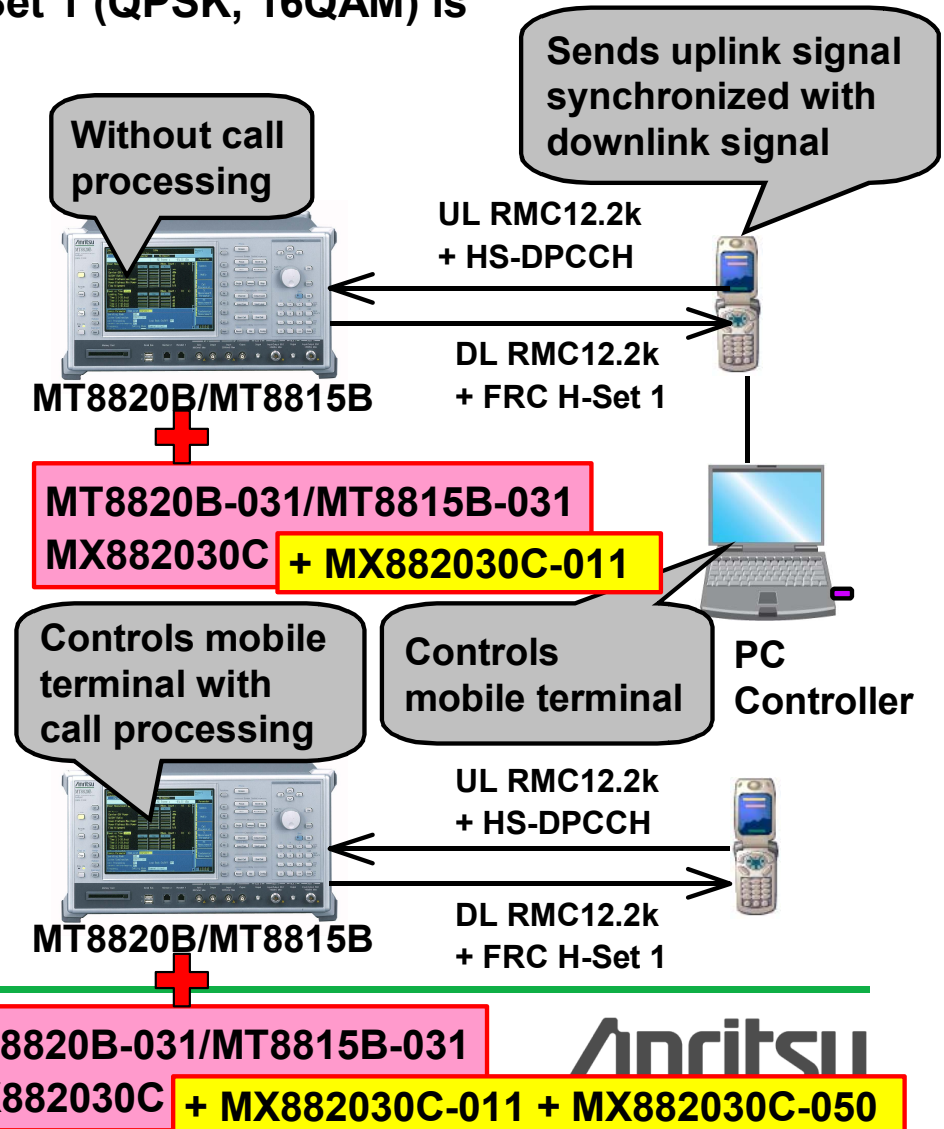
- TX Power and Filtered Power
- Frequency Error
- Occupied Bandwidth
- Spectrum Emission Mask
- Adjacent Channel Leakage Power Ratio
- Error Vector Magnitude

#### TX Measurement (Time Domain)

- HS-DPCCH Power Control

#### RX Measurement (Fundamental Measurement)

- Throughput (H-Set 1)





## HSUPA Measurement Software (MX882030C-021)

Installing the HSUPA Measurement Software supports HSUPA RF parametric tests. When the W-CDMA Call Processing Software is not installed, HSUPA RF parametric tests (without call processing) can be performed in the test mode. When the W-CDMA Call Processing Software is installed, HSUPA RF parametric tests with call processing can be performed too.

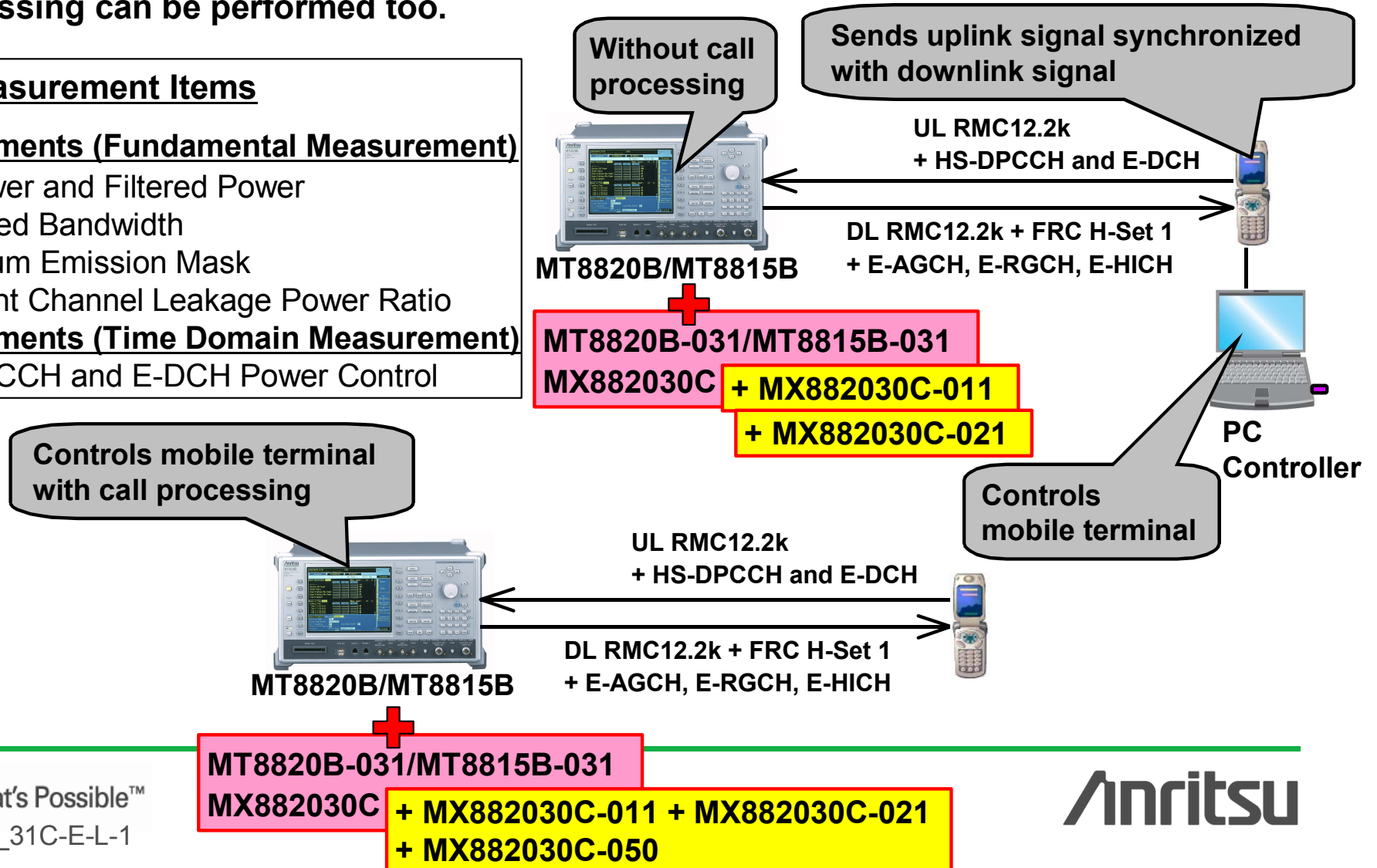
### HSUPA Measurement Items

#### TX Measurements (Fundamental Measurement)

TX Power and Filtered Power  
Occupied Bandwidth  
Spectrum Emission Mask  
Adjacent Channel Leakage Power Ratio

#### TX Measurements (Time Domain Measurement)

HS-DPCCH and E-DCH Power Control

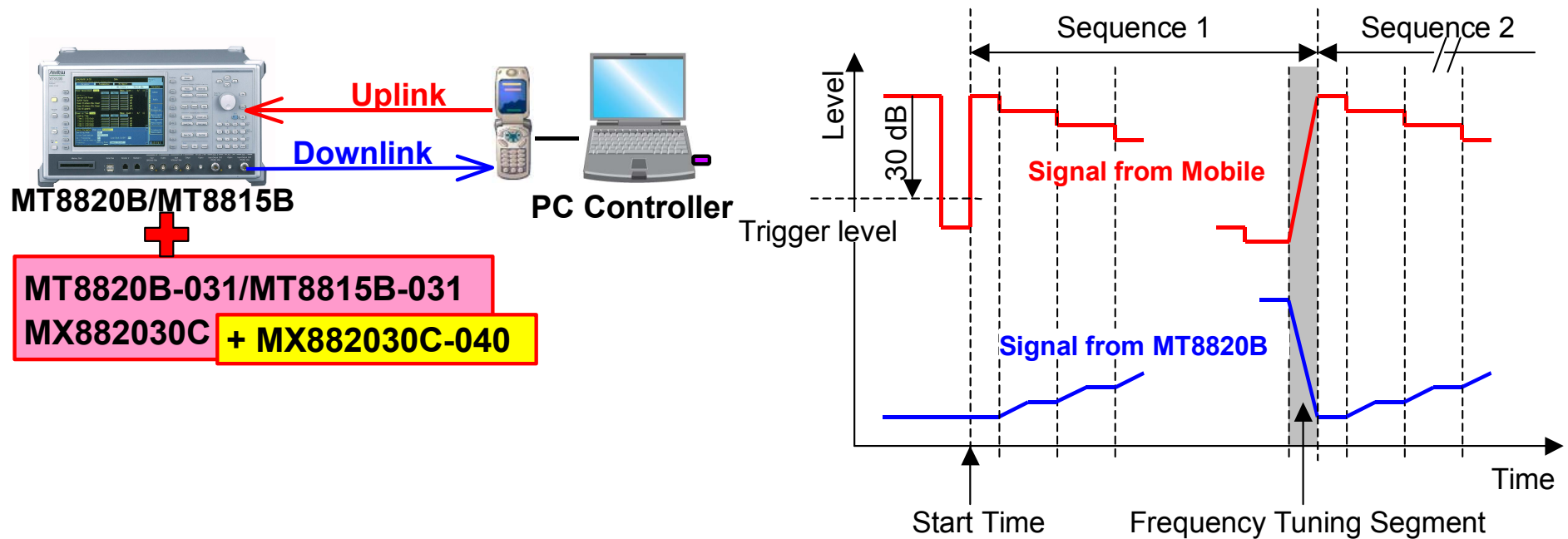


## W-CDMA High-speed Adjustment (MX882030C-040)

W-CDMA High-speed Adjustment is a function for fast adjustment of the RF Tx/Rx part of W-CDMA terminals. High-speed adjustment is performed in conjunction with the mobile adjustment function.

### Tx/Rx versus Frequency

Simultaneous adjustment of Tx output power and Rx input level at several frequencies in one sweep

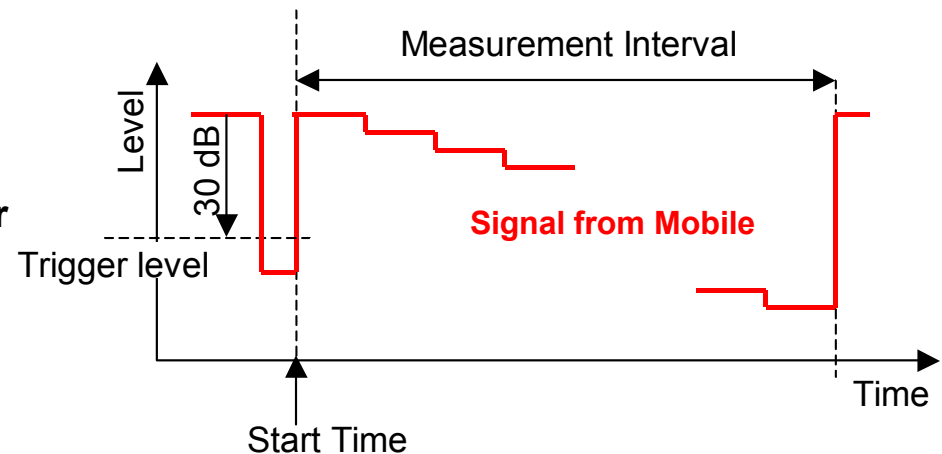
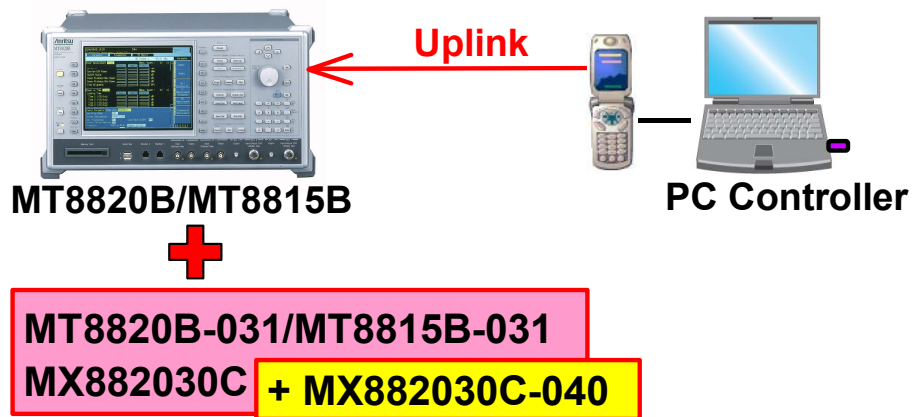


## W-CDMA High-speed Adjustment (MX882030C-040)

W-CDMA High-speed Adjustment is a function for fast adjustment of the RF Tx/Rx part of W-CDMA terminals. High-speed adjustment is performed in conjunction with the mobile adjustment function.

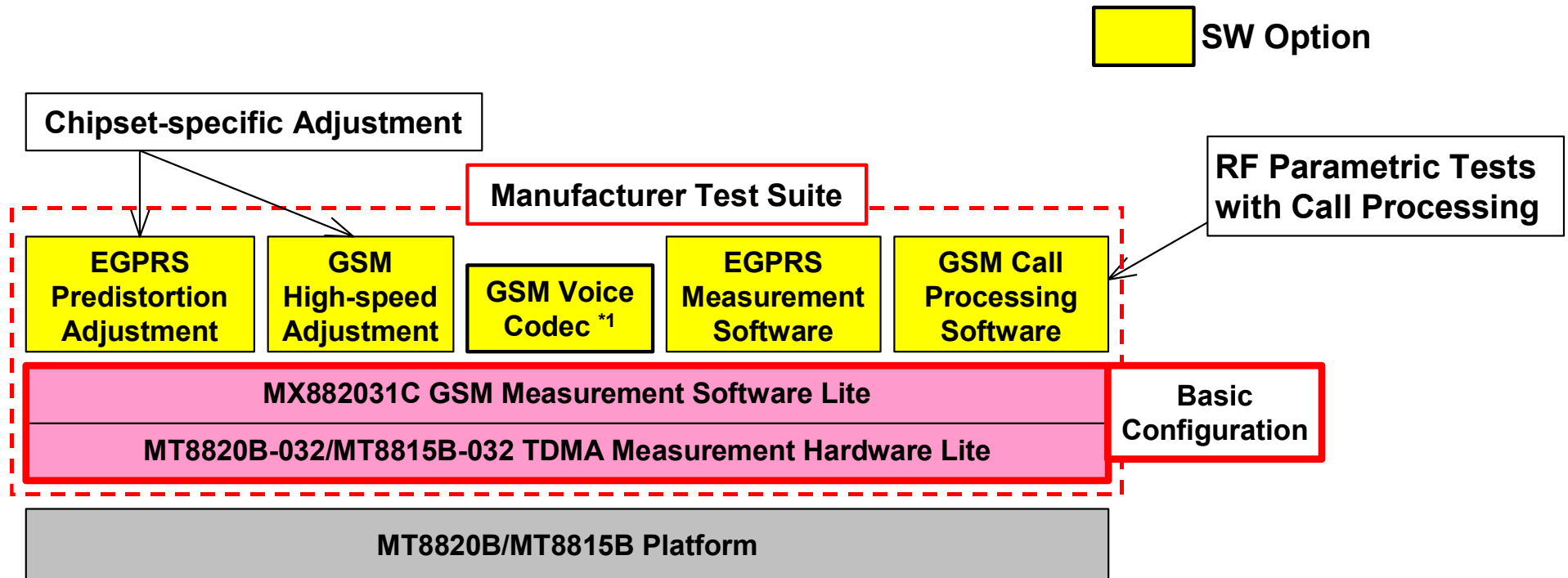
### Multi-power Measurement

Adjustment of transmitter output power in one sweep



## Manufacturer Test Suite Options (GSM/GPRS/EGPRS)

The Manufacturer Test Suite options for GSM/GPRS/EGPRS are shown below.



\*1: Requires MT8820B/15B-011 Audio Board

## GSM/GPRS Basic Configuration (MT8820B-032/MT8815B-032 + MX882031C)

The Manufacturer Test Suite GSM/GPRS basic configuration supports GSM/GPRS RF parametric tests (without call processing) in the test mode. The MT8820B/MT8815B functions as a real-time signal generator and signal analyzer. Only enhanced full rate speech and full rate speech are supported.

### GSM/GPRS Measurement Items (Test Mode)

#### TX Measurements (Fundamental Measurement)

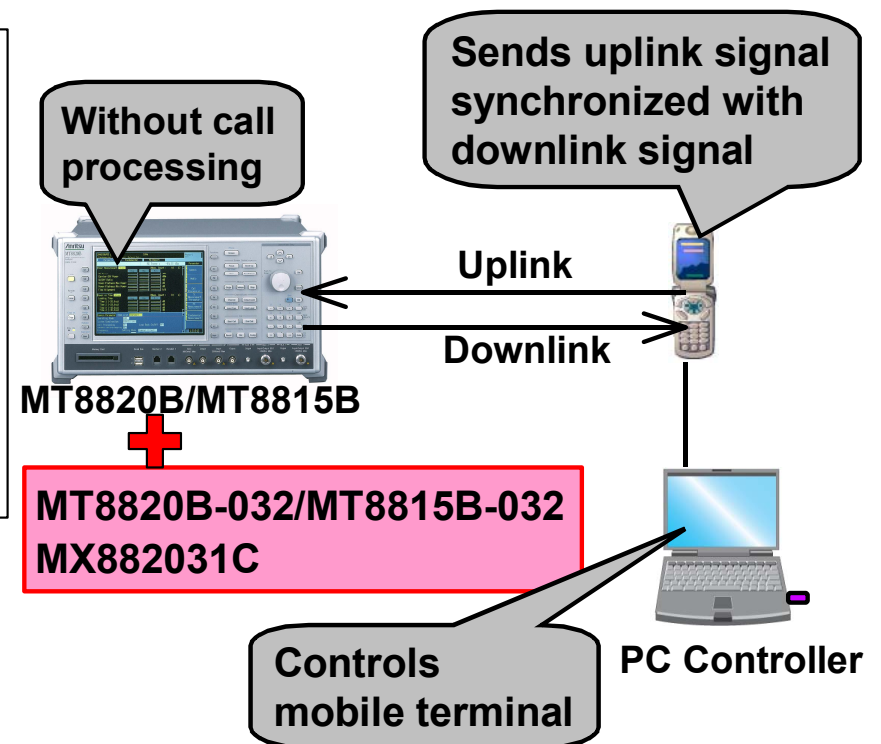
- Frequency Error and Phase Error
- Transmit Output Power and Burst Timing
- Output RF Spectrum (Modulation and Switching)

#### RX Measurements (Fundamental Measurement)

- FER, CRC Error and BER (FS and EFS)(GSM)

#### Spectrum Monitor

- Spectrum in 250k, 1M, 5M to 25 MHz Bandwidth



## GSM Call Processing Software (MX882031C-050)

Adding the GSM call processing software supports GSM/GPRS RF parametric tests with call processing and voice communication tests. When the EGPRS Measurement Software (MX882031C-011) is installed, EGPRS RF parametric test can be performed too.

### GSM/GPRS Measurement Items (Call Processing)

#### TX Measurements (Fundamental Measurement)

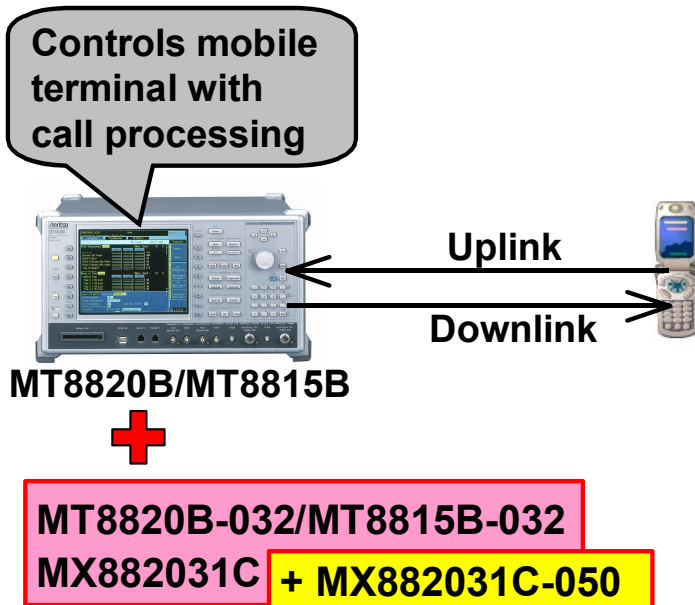
- Frequency Error and Phase Error
- Transmit Output Power and Burst Timing
- Output RF Spectrum (Modulation and Switching)

#### RX Measurements (Fundamental Measurement)

- FER, CRC Error and BER (FS and EFS) (GSM)
- BLER (GPRS)

#### Spectrum Monitor

- Spectrum in 250k, 1M, 5M to 25 MHz Bandwidth



## EGPRS Measurement Software (MX882031C-011)

Installing the EGPRS Measurement Software supports EGPRS RF parametric tests. When the GSM Call Processing Software is not installed, EGPRS RF parametric tests (without call processing) can be performed in the test mode. When the GSM Call Processing Software is installed, EGPRS RF parametric tests with call processing can be performed too.

### EGPRS Measurement Items

#### TX Measurements (Fundamental Measurement)

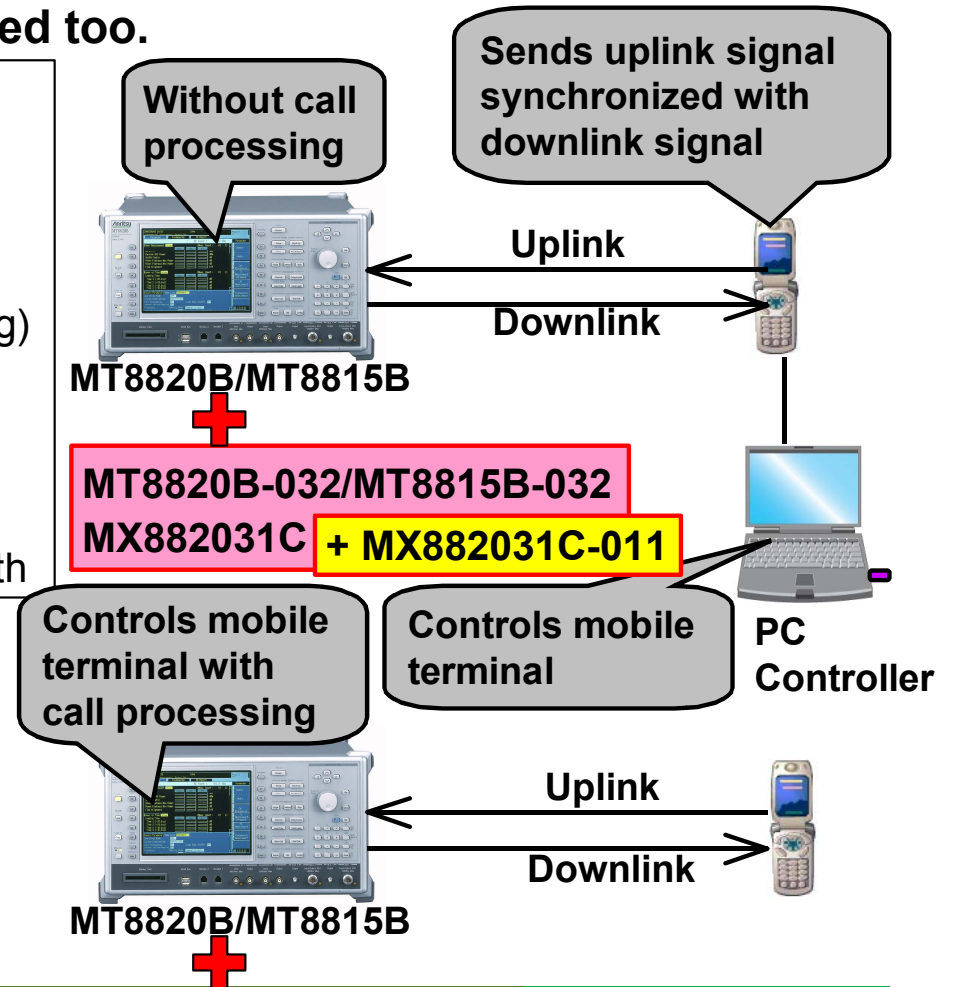
Frequency Error and Modulation Accuracy  
 Transmit Output Power and Burst Timing  
 Output RF Spectrum (Modulation and Switching)

#### RX Measurements (Fundamental Measurement)

SRB Loopback BER  
 BLER (call processing)

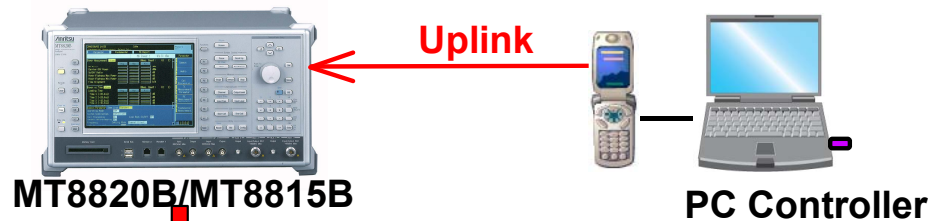
#### Spectrum Monitor

Spectrum in 250k, 1M, 5M to 25 MHz Bandwidth



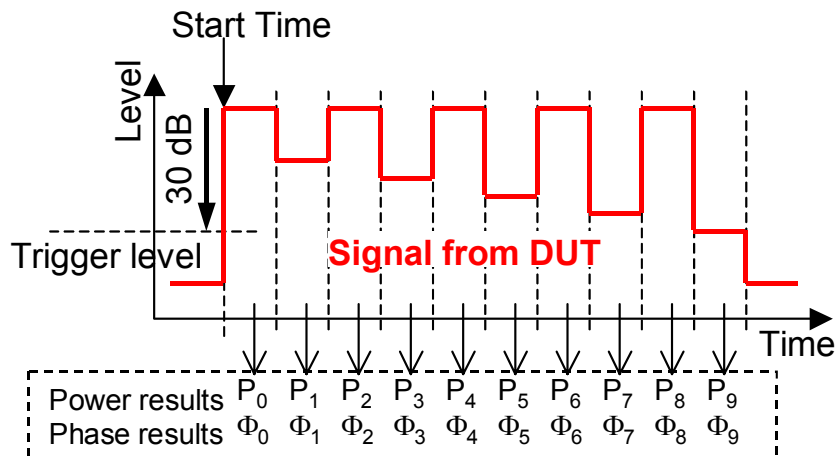
## EGPRS Predistortion Adjustment (MX882031C-040)\*

EGPRS Predistortion Adjustment is a function to adjust the predistortion part of EGPRS terminals. Predistortion adjustment is performed in conjunction with the mobile adjustment function.

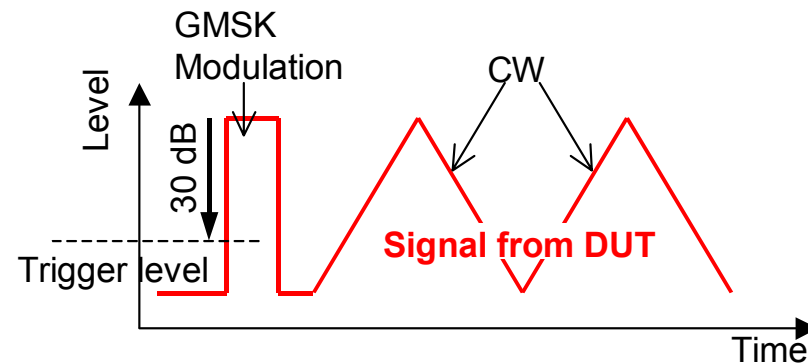


\*The measurement runs Fundamental Measurement screen.  
The measurement runs with Call Processing Off only.  
The measurement runs with Remote Control only.

MT8820B-032/MT8815B-032  
MX882031C + MX882031C-040



Measure power and phase of each step

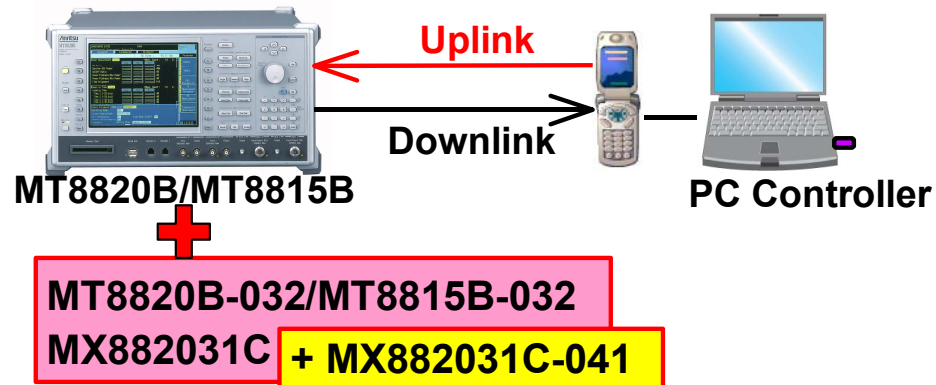


Measure amplitude and phase at each sample time in CW duration

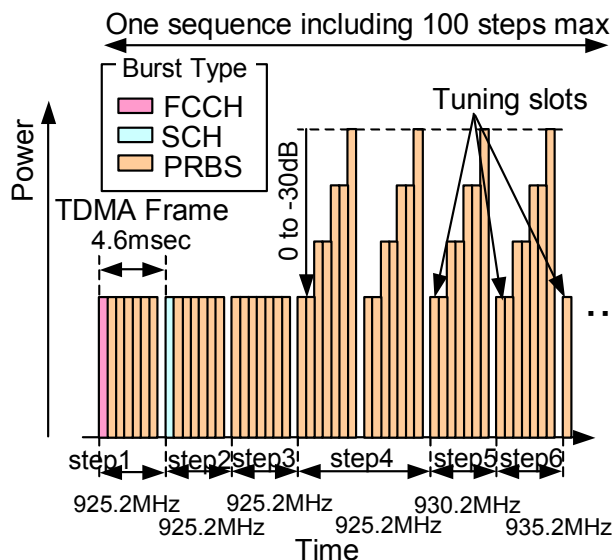


# GSM High-Speed Adjustment (MX882031C-041)\*

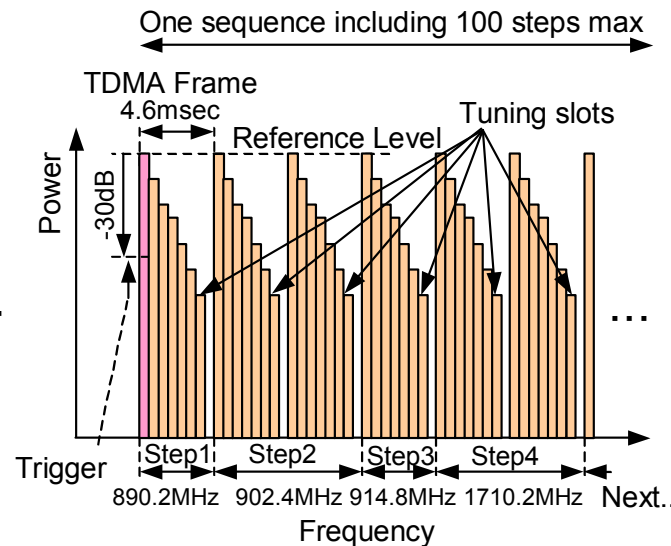
**GSM High-Speed Adjustment is a function of GSM terminals, running in synchronization with the chipset adjustment function. And it runs IQ Capturing Measurement.**



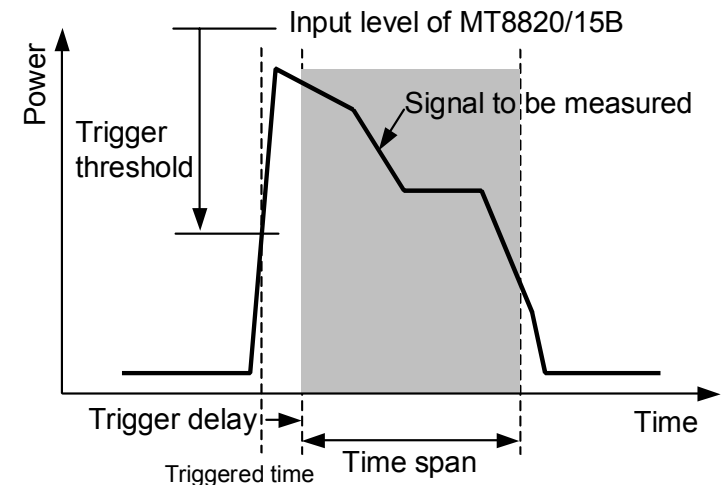
\*The measurement runs Fundamental Measurement screen. The measurement can't run Fundamental Measurement, and IQ Capturing Measurement, or High-Speed Adjustment Measurement when the measurement is effective. The measurement runs with Remote Control only.



**Sequence of Rx Sweep**



**Sequence of Tx Sweep**













**IQ Capturing Measurement**

## Flexible Configuration

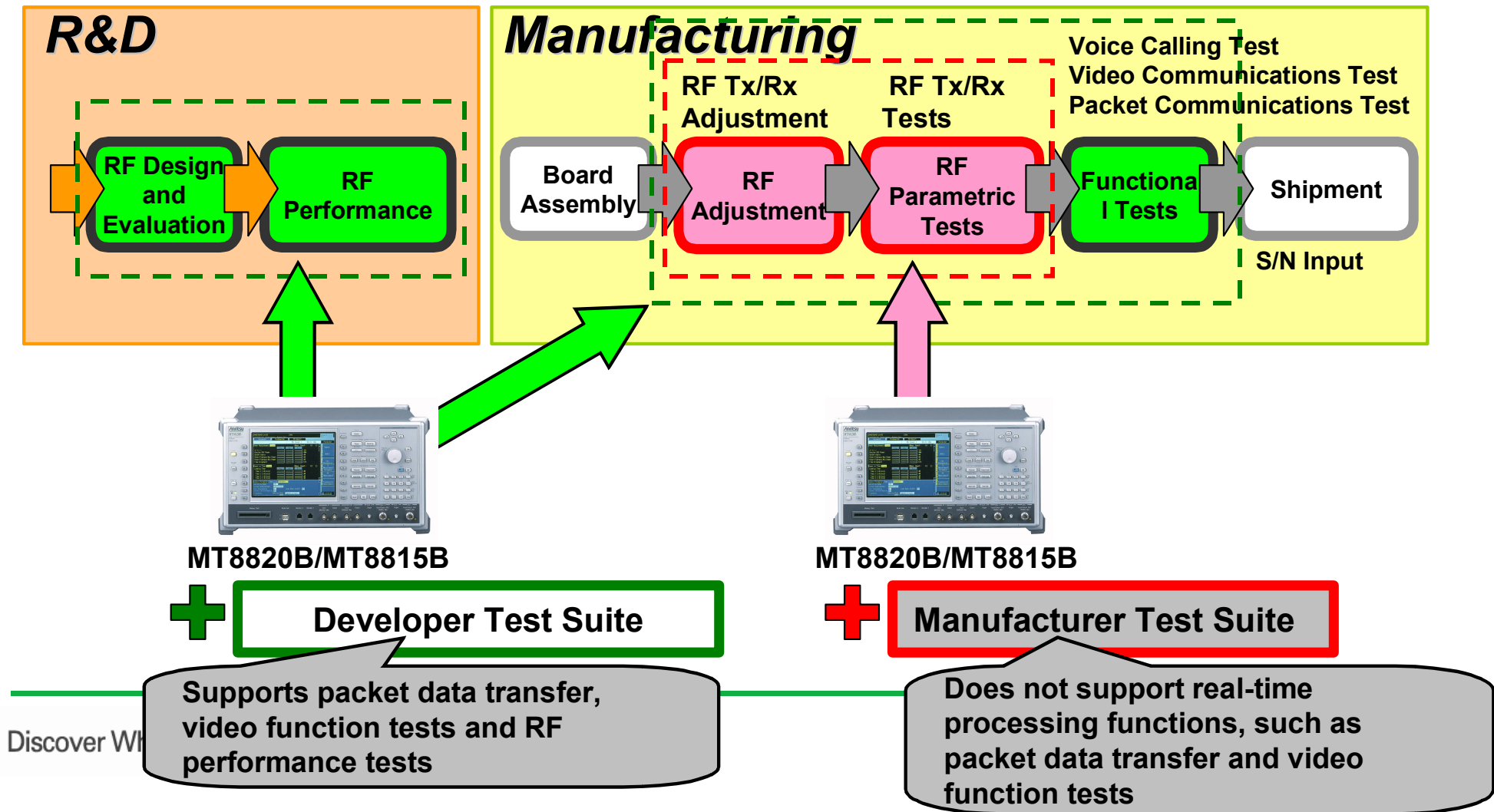
The Manufacturer Test Suite cuts equipment investment by offering optimum configuration to each test method.

 Option

RF Adjustment	No Call Processing Traditional Adjustment Function as SG + SA	MT8820B/MT8815B  +	
	No Call Processing Chip-specific Adjustment	MT8820B/MT8815B  +	 
RF Parametric Tests	RF Parametric Tests in Test Mode (Without Call Processing)	MT8820B/MT8815B  +	
	RF Parametric Tests with Call Processing	MT8820B/MT8815B  +	 

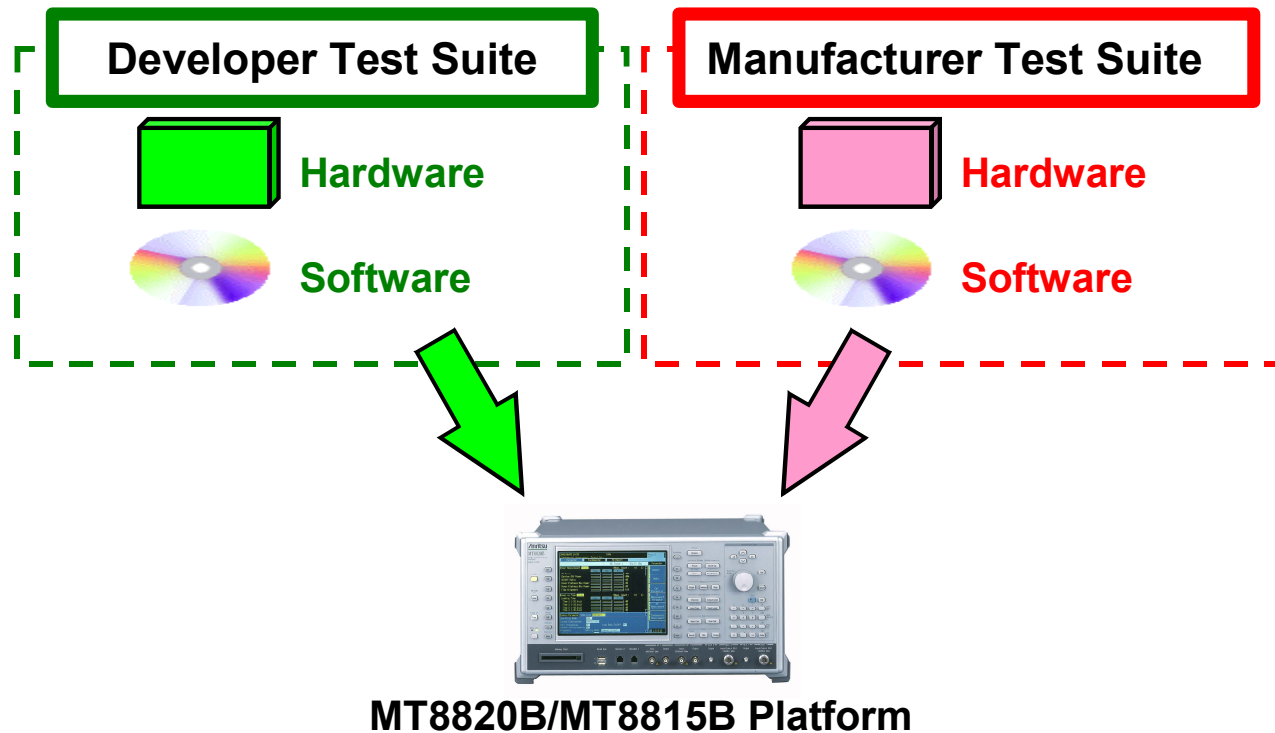
## Two Test Solutions on One Platform

Manufacturer Test Suite is a manufacturing solution focused on RF adjustment and RF parametric tests of mobile terminals. Developer Test Suite launched in October 2006 is a solution targeted at RF design, RF performance tests, and all of stages for manufacturing. Both solutions are supported by the MT8820B/MT8815B platform.



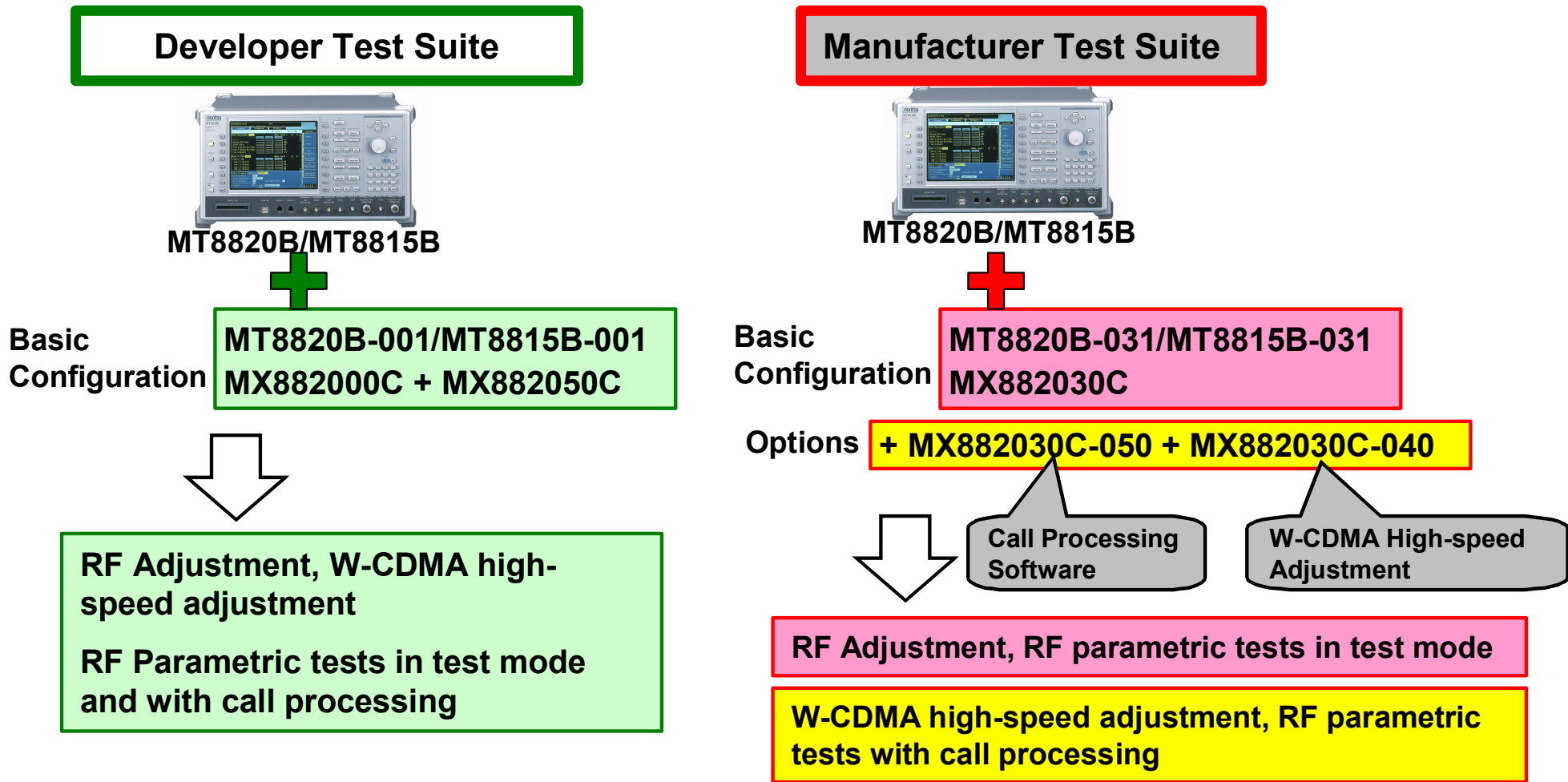
## Two Test Solutions on One Platform

Because two solutions runs on the MT8820B/MT8815B platform, the GPIB commands, measurement speed, and measurement results of Developer Test Suite (DTS) and Manufacturer Test Suite are the same. The lower internal temperature and fan noise when MTS is installed is also achieved as same level as when DTS is installed.



# Comparison of Manufacturer Test Suite and Developer Test Suite Functions (W-CDMA)

The required functions are installed as options for Manufacturer Test Suite. Meanwhile, Developer Test Suite includes call processing and chip-specific adjustment as basic functions.



## Comparison of Manufacturer Test Suite and Developer Test Suite Functions (W-CDMA)

The Manufacturer Test Suite and Developer Test Suite functions are compared below.

W-CDMA	Manufacturer Test Suite	Developer Test Suite
Packet data transfer	No	Option
Video function test	No	Option
Ciphering	No	Option
Call processing	Option	Yes
RMC	12.2k	12.2k/64k/144k/384k
Sequence monitor	No	Yes
High-speed adjustment	Option	Yes

TS34.121 chapters 5 and 6 specify RMC 12.2k for the RF parametric tests.

TS34.121 chapter 7 specifies RMC 12.2k, 64k, 144k and 384k for the RF performance tests.

## Comparison of Manufacturer Test Suite and Developer Test Suite Functions (HSDPA)

The Manufacturer Test Suite and Developer Test Suite functions are compared below. Because DTS supports FRC H-Set 1 to 5, it supports throughput tests (demodulation of HS-DSCH – Single Link Performance) in addition to RF parametric tests.

HSDPA	Manufacturer Test Suite	Developer Test Suite
Packet data transfer	No	Option
FRC	H-Set 1	H-Set 1 to 5

TS34.121 chapters 5 and 6 specify FRC H-Set 1 for the RF parametric tests.

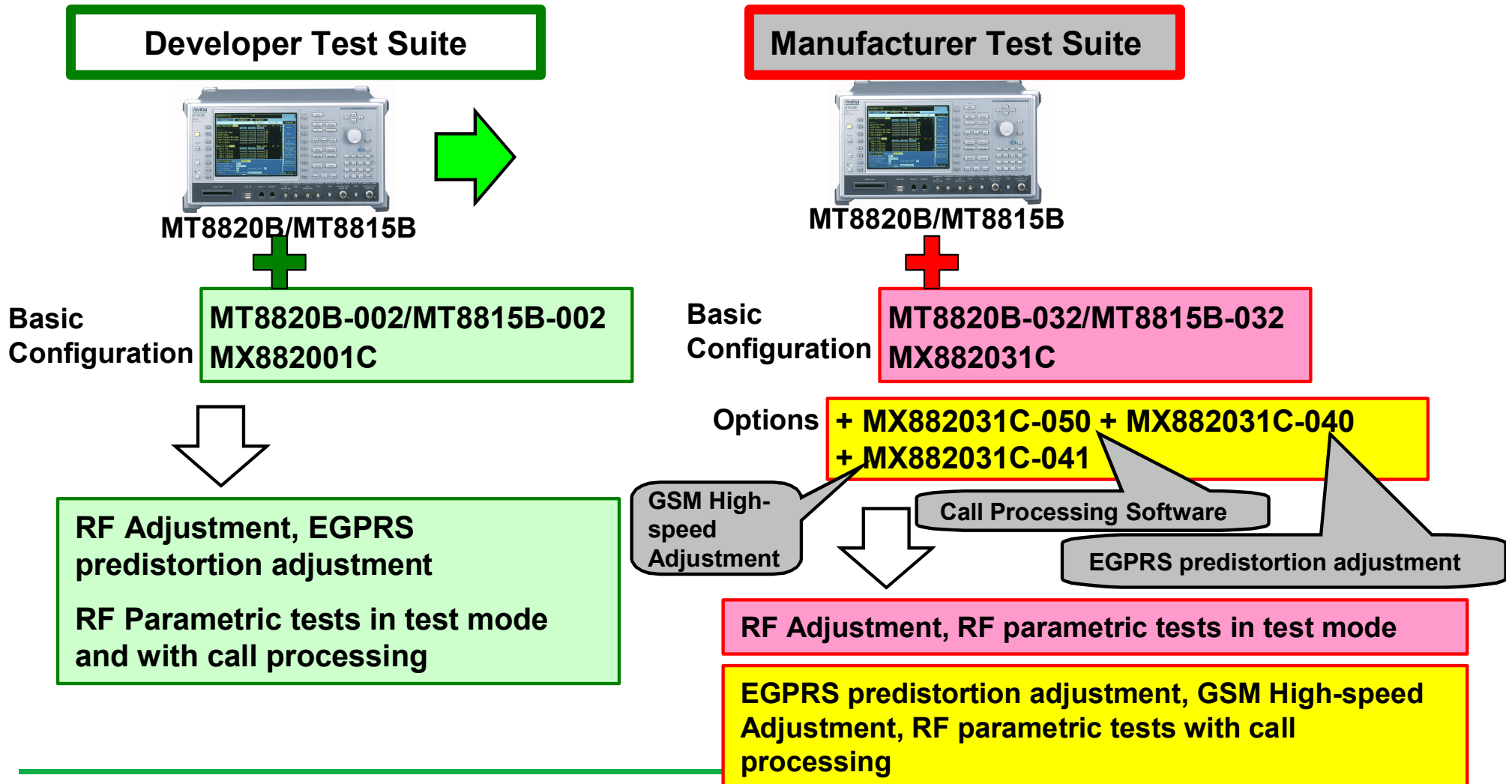
TS34.121 chapter 9 specifies FRC H-Set 1 to 5 for the RF performance tests (throughput).

## Comparison of Manufacturer Test Suite and Developer Test Suite Functions (HSUPA)

There are no functional differences in the MTS and DTS for HSUPA Software.

# Comparison of Manufacturer Test Suite and Developer Test Suite Functions (GSM/GPRS)

The required functions are installed as options for Manufacturer Test Suite. Meanwhile, Developer Test Suite includes call processing and chip-specific adjustment as basic functions.





## Comparison of Manufacturer Test Suite and Developer Test Suite Functions (GSM/GPRS)

The Manufacturer Test Suite and Developer Test Suite functions are compared below. DTS supports half rate speech and AMR as channel coding in addition to full rate speech and enhanced full rate speech.

GSM/GPRS/EGPRS	Manufacturer Test Suite	Developer Test Suite
Packet data transfer	No	Option
Voice Codec	Option (EFS)	Option (EFS/AMR)
SMS	No	Yes
Predistortion adjustment	Option	Yes
GSM High-speed Adjustment	Option	Option
Channel coding	FS/EFS	FS/EFS/HS0/HS1/ AFS/AHS0/AHS1

## Ordering Information

### Manufacturer Test Suite

Model	Name
MT8815B-031	W-CDMA Measurement Hardware Lite
MT8820B-031	W-CDMA Measurement Hardware Lite
MX882030C	W-CDMA Measurement Software Lite
MX882030C-050	W-CDMA Call Processing Software
MX882030C-040	W-CDMA High-speed Adjustment
MX882030C-011	HSDPA Measurement Software
MX882030C-021	HSUPA Measurement Software
MX882030C-008	W-CDMA Band XI
MX882030C-009	W-CDMA Band IX
MX882030C-001	W-CDMA Voice Codec
MT8815B-032	TDMA Measurement Hardware Lite
MT8820B-032	TDMA Measurement Hardware Lite
MX882031C	GSM Measurement Software Lite
MX882031C-050	GSM Call Processing Software
MX882031C-040	EGPRS Predistortion Adjustment
MX882031C-041	GSM High-speed Adjustment
MX882031C-011	EGPRS Measurement Software
MX882031C-001	GSM Voice Codec

# Note

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