

# The mass production test process of communication modes

## 1. GSM

We measure 8960 Agilent Test set when we test a Phone, which required specification is as followed

- 1) In a conduction test,  
(center frequency channel => GSM850:190ch PCS1900:661ch)  
GSM850 : Rx sensitivity Min  $-103\text{dBm}$ , Tx power :  $33\pm 2\text{dBm}$   
PCS1900 : Rx sensitivity Min  $-103\text{dBm}$ , Tx power :  $30\pm 2\text{dBm}$
- 2) Radiation test in a ten-cell is the same as conduction test spec. in additionally, RF offset(GSM850 : about  $-22\text{dB}$  PCS1900 : about  $-30\text{dB}$ ) has to add. The Most of Phone satisfy the GSM standard( e.g ETSI). But If Phone is below the spec., it regards as a inferior goods. And then we retest arepared product after we analyze and repair it.

The factor for poor goods is various. For example, poor antenna, bad SMT and noise(CPU, clock, codec..) etc. So we take the appropriate measures in accordance with the major cause.

# Measurement set up

- set up frequency band(GSM850 or PCS1900)
- set up frequency channel(GSM850 : 190ch PCS1900: 661ch)
- set up measurement menu ( Rx sensitivity and Tx transmit power)
- connect a Phone
- measurement

8960 Equipment Setup					
Call setup				Measurement	
Call control		Call parms		Transmit Power setup	Value
Operating Mode	Active cell	Cell power	-102dBm	Multi-measurement count	Off
	Originate call	Cell Band	EGSM/DCS	Trigger Arm	Continuous
Paging IMSI		Broadcast ch	30	Trigger Source	Auto
Cell info		Mobile Loopback	Off	Trigger Delay	0.000s
		Traffic Band	EGSM/DCS	Trigger Qualification	On
		Traffic ch	Low/Mid/High	Measurement Timeout	off
		Time slot	4		
		Timing advance	0		
		MS Tx Level			
		Speech	None		
		Receiver control	Auto		
		Expected power			
		Channel mode	FR Speech		

## 2. Bluetooth

We measure TC-3000B Bluetooth tester TESCO. Required specification is as followed

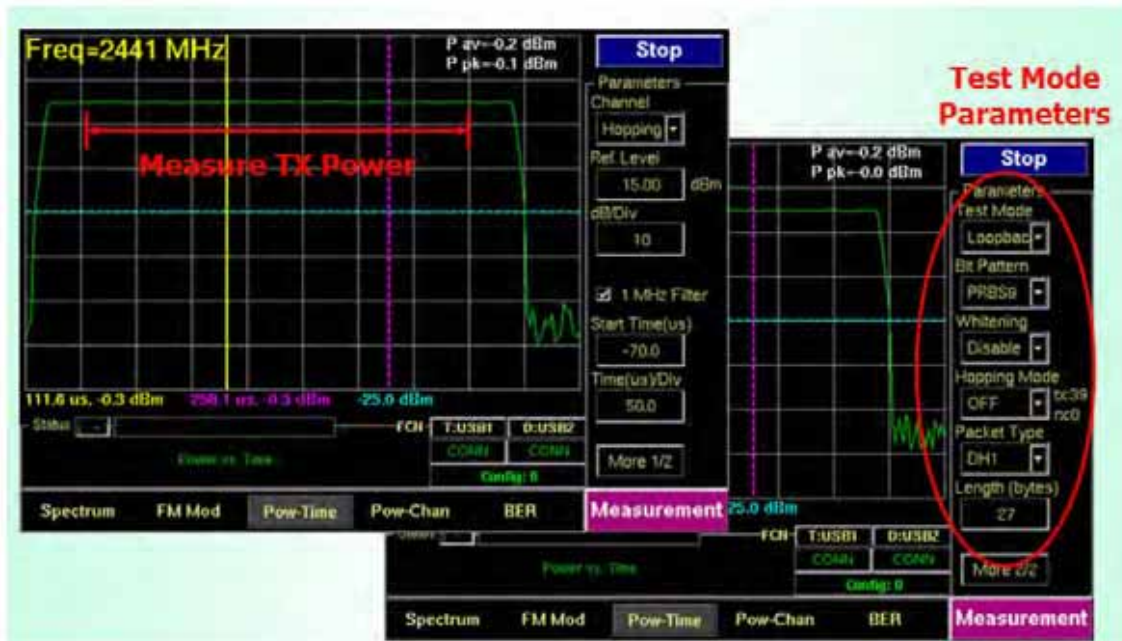
- 1) In ad conduction test, (Center frequency)  
Rx Sensitivity : -75dBm  
Tx power : -4dBm $\pm$ 2dBm
- 2) Radiation Test is measured for real condition( we confirm the state of data communication)

If Phone is below the spec., it regards as a inferior goods. And then we retest a repaired product after we analyze and repair it.

The factor for poor goods is various. For example, poor antenna, bad SMT and noise(CPU, clock, codec..) etc. So we take the appropriate measures in accordance with the major cause.

Measurement set up

### 1)Tx test



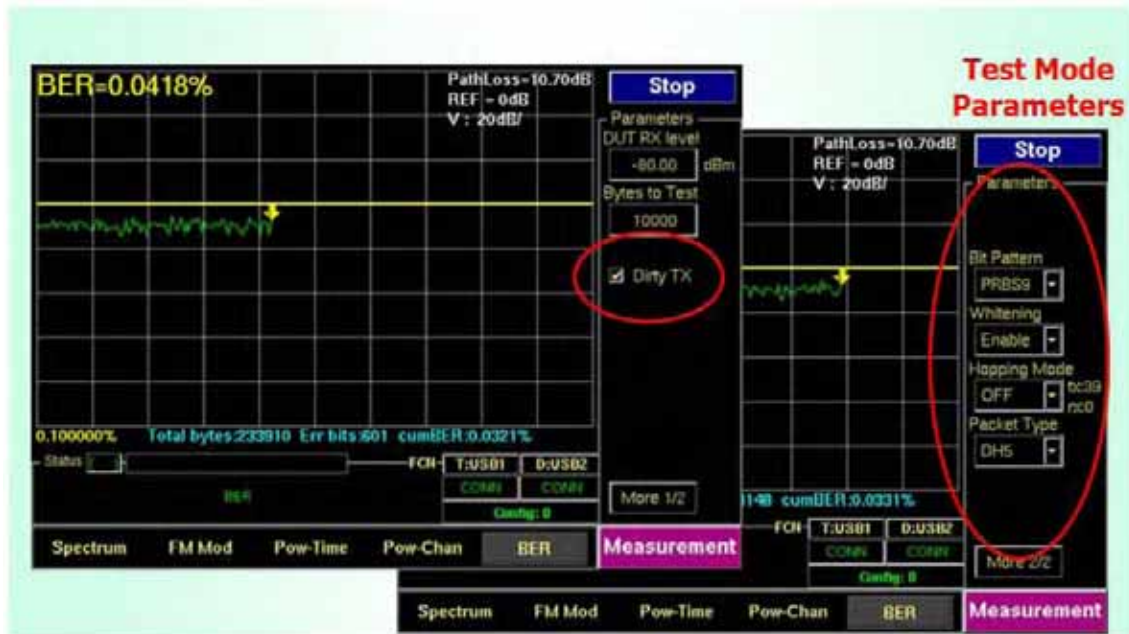
#BT channels : 39

Packet Type : DH5

Test mode : Transmitter

Hopping Mode : On

2) Rx test



#BT channels : 39

Hopping Mode : On

Dirty TX Mode : On

Packet Type : DH1

RX power in dBm : -75

Number of samples in bytes : 200000

In conclusion, the flow is as followed

1. Phone test

2. The criterion of Phone -> Pass or Fail for a required spec.

If the Phone is Failed -> analyze a Phone

( If any problem is happened, we check the following condition.

- 3) Check the power supply.(GSM: 4V, Bluetooth : 3.2V)
- 4) Check the state of combination with main board
- 5) Check the Matching circuit.
- 6) Check the noise source.

- 7) Check another part( SMT, component etc)
3. Retest after a product is repaired
4. Repeat 1. ~ 3.