

## 2. Specification

### 2-1. GSM General Specification

	<b>GSM900 Phase 1</b>	<b>GSM850 Phase 1</b>	<b>DCS1800 Phase 1</b>	<b>PCS1900</b>
Freq. Band[MHz] Uplink/Downlink	880~915 925~960	824.2~848.8 869.2~893.8	1710~1785 1805~1880	1850~1910 1930~1990
ARFCN range	0~124 & 975~1023	128~251	512~885	512~810
Tx/Rx spacing	45MHz	45MHz	95MHz	80MHz
Mod. Bit rate/ Bit Period	270.833kbps 3.692us	270.833kbps 3.692us	270.833kbps 3.692us	270.833kbps 3.692us
Time Slot Period/Frame Period	576.9us 4.615ms	576.9us 4.615ms	576.9us 4.615ms	576.9us 4.615ms
Modulation	0.3GMSK	0.3GMSK	0.3GMSK	0.3GMSK
MS Power	33dBm~5dBm	33dBm~5dBm	30dBm~0dBm	30dBm~0dBm
Power Class	5pcl ~ 19pcl	5pcl ~ 19pcl	0pcl ~ 15pcl	0pcl ~ 15pcl
Sensitivity	-102dBm	-102dBm	-100dBm	-100dBm
TDMA Mux	8	8	8	8
Cell Radius	35Km	35Km	2Km	-

## 2-2. GSM Tx Power Class

<b>TX Power control level</b>	<b>GSM850 GSM900</b>	<b>TX Power control level</b>	<b>DCS1800</b>	<b>TX Power control level</b>	<b>PCS1900</b>
5	33±3 dBm	0	30±3 dBm	0	30±3 dBm
6	31±3 dBm	1	28±3 dBm	1	28±3 dBm
7	29±3 dBm	2	26±3 dBm	2	26±3 dBm
8	27±3 dBm	3	24±3 dBm	3	24±3 dBm
9	25±3 dBm	4	22±3 dBm	4	22±3 dBm
10	23±3 dBm	5	20±3 dBm	5	20±3 dBm
11	21±3 dBm	6	18±3 dBm	6	18±3 dBm
12	19±3 dBm	7	16±3 dBm	7	16±3 dBm
13	17±3 dBm	8	14±3 dBm	8	14±3 dBm
14	15±3 dBm	9	12±4 dBm	9	12±4 dBm
15	13±3 dBm	10	10±4 dBm	10	10±4 dBm
16	11±5 dBm	11	8±4dBm	11	8±4dBm
17	9±5 dBm	12	6±4 dBm	12	6±4 dBm
18	7±5 dBm	13	4±4 dBm	13	4±4 dBm
19	5±5 dBm	14	2±5 dBm	14	2±5 dBm
		15	0±5 dBm	15	0±5 dBm

### 2-3. GSM EDGE TX power class

Only in Master

<b>TX Power control level</b>	<b>GSM900 GSM850</b>	<b>TX Power control level</b>	<b>DCS1800</b>	<b>TX Power control level</b>	<b>PCS1900</b>
8	27±3 dBm	2	26±3 dBm	2	26±3 dBm
9	25±3 dBm	3	24±3 dBm	3	24±3 dBm
10	23±3 dBm	4	22±3 dBm	4	22±3 dBm
11	21±3 dBm	5	20±3 dBm	5	20±3 dBm
12	19±3 dBm	6	18±3 dBm	6	18±3 dBm
13	17±3 dBm	7	16±3 dBm	7	16±3 dBm
14	15±3 dBm	8	12±3 dBm	8	12±3 dBm
15	13±3 dBm	9	10±3 dBm	9	10±3 dBm
16	11±5 dBm	10	14±3 dBm	10	14±3 dBm
17	9±5 dBm	11	12±4 dBm	11	12±4 dBm
18	7±5 dBm	12	10±4 dBm	12	10±4 dBm
19	5±5 dBm	13	8±4dBm	13	8±4dBm
		14	6±4 dBm	14	6±4 dBm
		15	4±4 dBm	15	4±4 dBm

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## 3. Operation Instruction and Installation

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### Main Function

- 2 Mega Pixel (CMOS) Camera
- QVGA 2.1 inch 16M TFT
- SMS/MMS/EMS ( OMA v1.2 )
- WAP 2.0 Browser
- MP3/AMR/AAC/AAC+/e-AAC+/WMA
- Quad Band(EGSM900/DCS,PCS,EDGE)
- MicroSD Card Support
- External Memory
- USB v2.0 High-speed, Bluetooth v2.0
- FM Radio Support, Radio Data System

## 4. Array course control

### 4-1. Software Adjustments



**Test Jig (GH99-36900A)**



**Test Cable (GH39-01160A)**



**RF Test Cable (GH39-00985A)**



**Adapter (GH99-38251A)**

## 4-2. Software Downloading

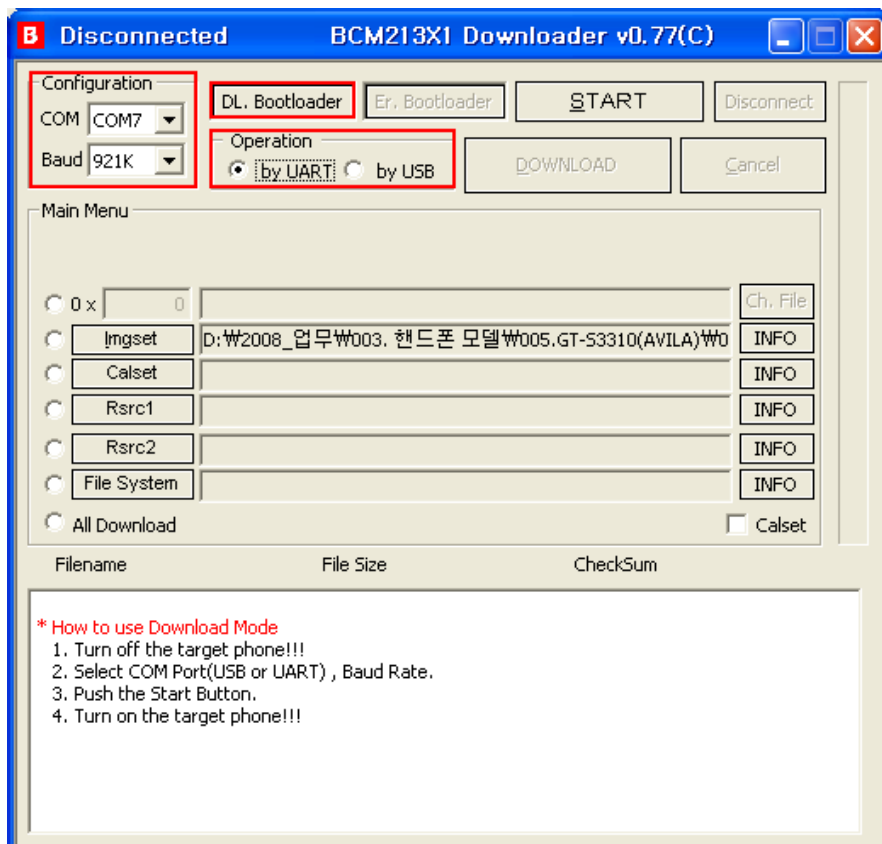
### 4-2-1. Pre-requisite for Downloading

- Downloader Program(**BCM213x1 Downloader v0.xx(C)**)
- GT-S3310 Mobile Phone
- Data Cable
  
- Image file, TFS file, rc1 file, rc2 file, Calset file

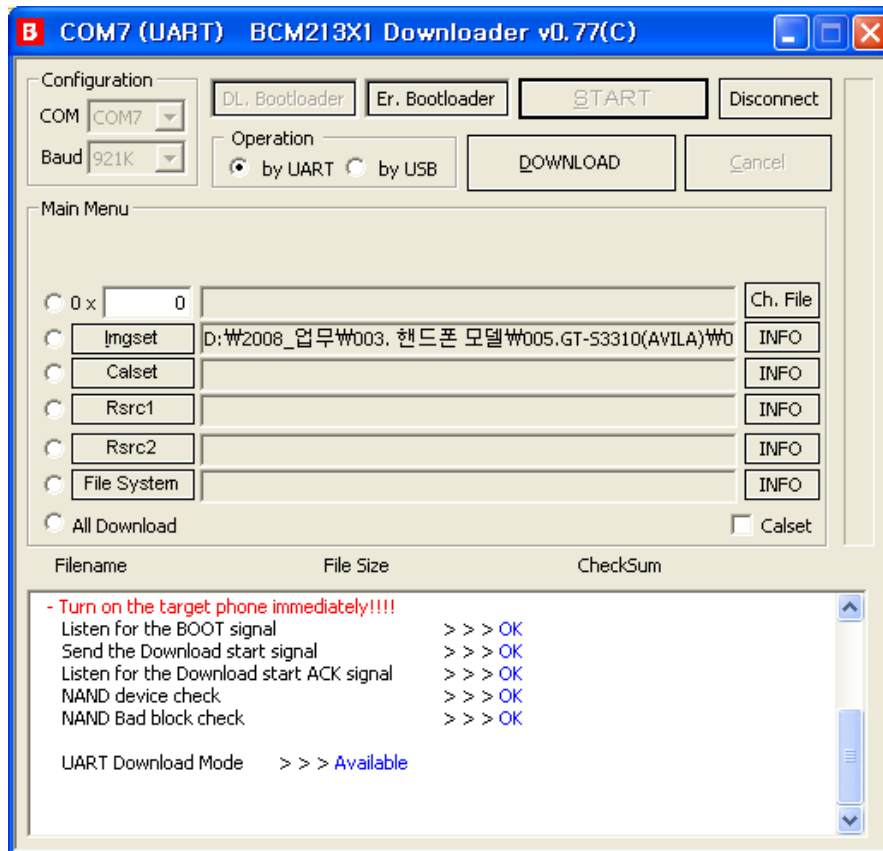
### 4-2-2. S/W Downloader Program

- Load the binary download program by executing the  
" **BCM213x1 Downloader v0.xx(C)** "

1. Select the connected serial port and the rate of speed.
2. Select the check box, Connect cable to phone after Click **DL.Bootloader** Button.

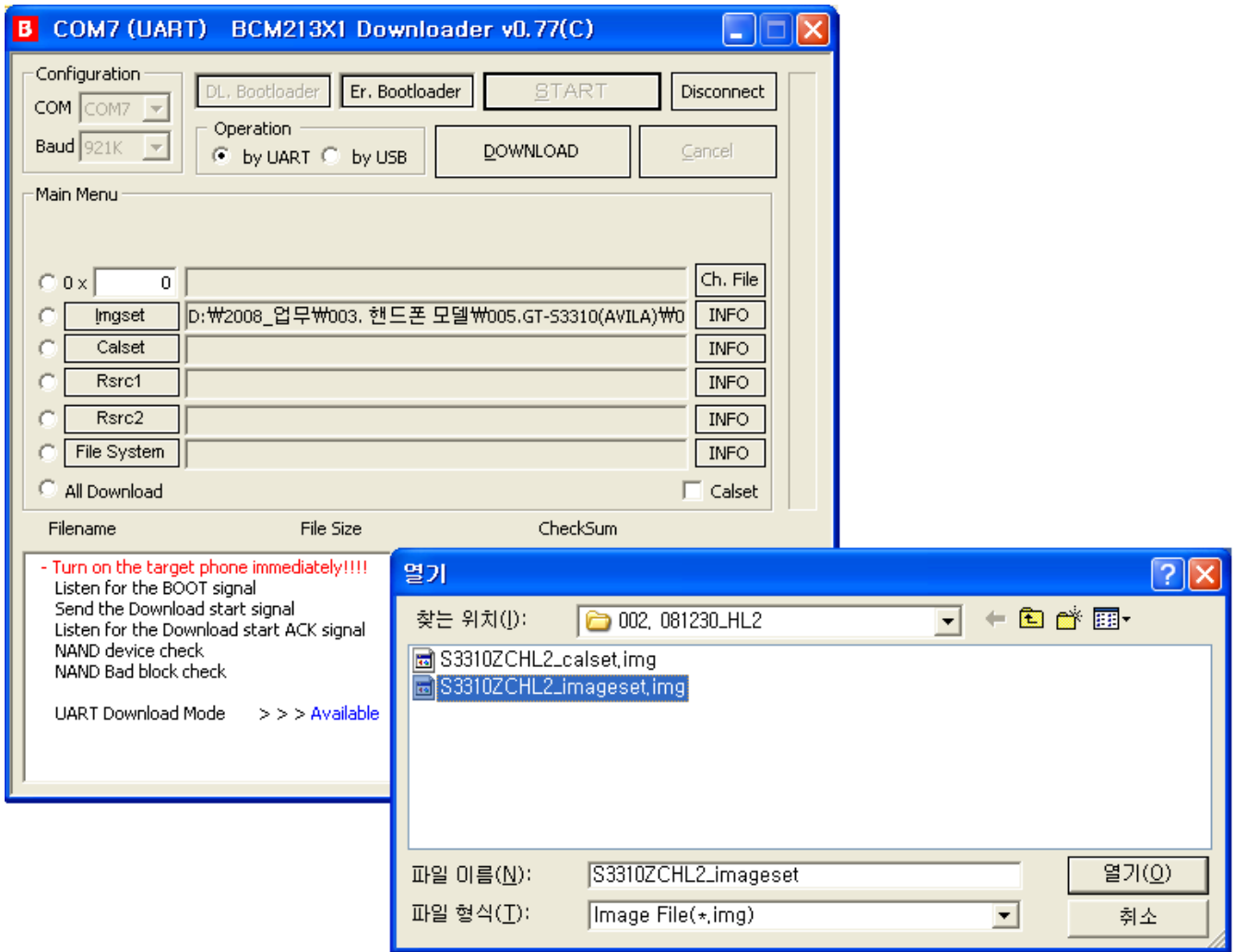


### 3. Select the START Button, When Complete DL.Bootloader.



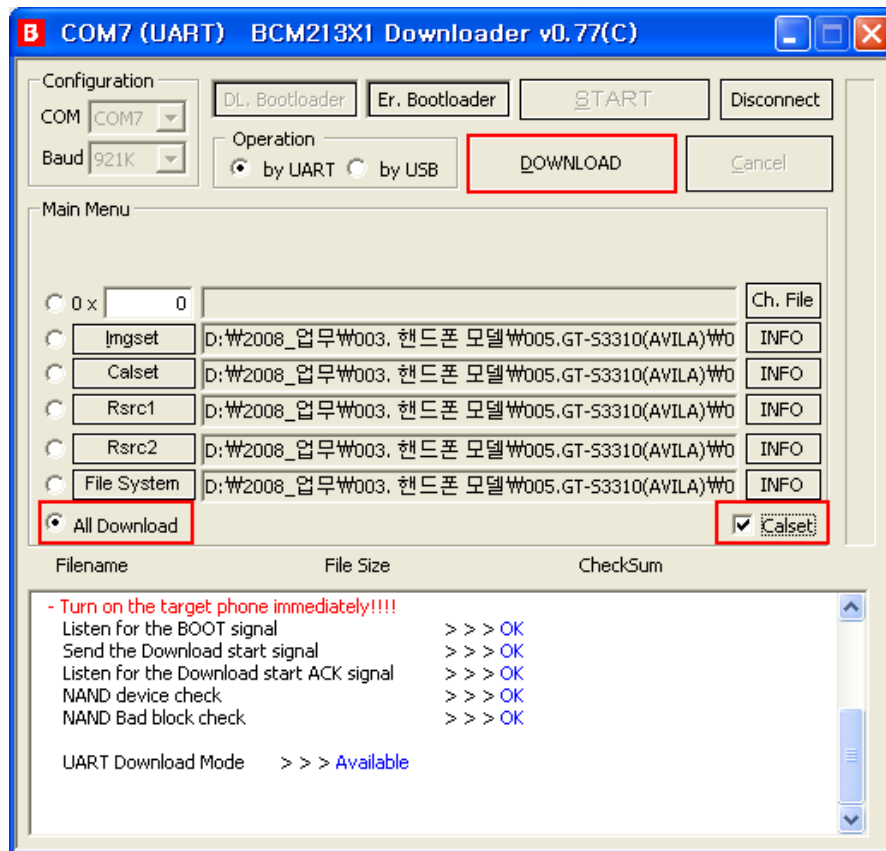
### 4. Select the file(s) what you want to download

- click 'Image' to select a Image file.
- click 'Calset' to select a Calset file.
- click 'Rsrc1' to select a Calset file.
- click 'Rsrc2' to select a Calset file.
- click 'File system' to select a Calset file.



5. Check the All Download & Calset , Click the Download Botton,





6. Confirm the downloaded version name and etc. :

**\*#1234#**

Full Reset :

**\*0206\*3855#**

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## 10. Reference data

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### Reference Abbreviate

- **AAC**: Advanced Audio Coding.
- **AVC** : Advanced Video Coding.
- **BER** : Bit Error Rate
- **BPSK**: Binary Phase Shift Keying
- **CA** : Conditional Access
- **CDM** : Code Division Multiplexing
- **C/I** : Carrier to Interference
- **DMB** : Digital Multimedia Broadcasting
- **EN** : European Standard
- **ES** : Elementary Stream
- **ETSI**: European Telecommunications Standards Institute
- **MPEG**: Moving Picture Experts Group
- **PN** : Pseudo-random Noise
- **PS** : Pilot Symbol
- **QPSK**: Quadrature Phase Shift Keying
- **RS** : Reed-Solomon
- **SI** : Service Information
- **TDM** : Time Division Multiplexing
- **TS** : Transport Stream

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# 1. Safety Precautions

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## 1-1. Repair Precaution

- Repair in Shield Box, during detailed tuning.  
Take specially care of tuning or test,  
because specipcty of cellular phone is sensitive for surrounding interference(RF noise).
- Be careful to use a kind of magnetic object or tool,  
because performance of parts is damaged by the influence of manetic force.
- Surely use a standard screwdriver when you disassemble this product,  
otherwise screw will be worn away.
- Use a thicken twisted wire when you measure level.  
A thicken twisted wire has low resistance, therefore error of measurement is few.
- Repair after separate Test Pack and Set because for short danger (for example an  
overcurrent and furious flames of parts etc) when you repair board in condition of  
connecting Test Pack and tuning on.
- Take specially care of soldering, because Land of PCB is small and weak in heat.
- Surely tune on/off while using AC power plug, because a repair of battery charger is  
dangerous when tuning ON/OFF PBA and Connector after disassembling charger.
- Don't use as you pleases after change other material than replacement registered on SEC  
System.  
Otherwise engineer in charge isn't charged with problem that you don't keep this rules.

## 1-2. ESD(Electrostatically Sensitive Devices) Precaution

Several semiconductor may be damaged easily by static electricity. Such parts are called by ESD(Electrostatically Sensitive Devices), for example IC,BGA chip etc. Read Precaution below. You can prevent from ESD damage by static electricity.

- Remove static electricity remained your body before you touch semiconductor or parts with semiconductor. There are ways that you touch an earthed place or wear static electricity prevention string on wrist.
- Use earthed soldering steel when you connect or disconnect ESD.
- Use soldering removing tool to break static electricity. , otherwise ESD will be damaged by static electricity.
- Don't unpack until you set up ESD on product. Because most of ESD are packed by box and aluminum plate to have conductive power,they are prevented from static electricity.
- You must maintain electric contact between ESD and place due to be set up until ESD is connected completely to the proper place or a circuit board.