

## 2. Specification

### 2-1. GSM General Specification

|                                    | <b>EGSM 850<br/>Phase 2</b> | <b>EGSM 900<br/>Phase 2</b> | <b>DCS1800</b>           | <b>PCS1900</b>           | <b>WCDMA</b>                     |
|------------------------------------|-----------------------------|-----------------------------|--------------------------|--------------------------|----------------------------------|
| Freq. Band[MHz]<br>Uplink/Downlink | 824~849<br>869~894          | 880~915<br>925~960          | 1710~1785<br>1805~1880   | 1850~1910<br>1930~1990   | 1920~1980<br>2110~2170           |
| ARFCN range                        | 128~251                     | 0~124 &<br>975~1023         | 512~885                  | 512~810                  | 10562~10838                      |
| Tx/Rx spacing                      | 45 MHz                      | 45 MHz                      | 95 MHz                   | 80MHz                    | 190MHz                           |
| Mod. Bit rate/<br>Bit Period       | 270.833 Kbps<br>3.692 us    | 270.833 Kbps<br>3.692 us    | 270.833 Kbps<br>3.692 us | 270.833 Kbps<br>3.692 us | 3.84Mcps/s                       |
| Time Slot Period/<br>Frame Period  | 576.9 us<br>4.615 ms        | 576.9 us<br>4.615 ms        | 576.9 us<br>4.615 ms     | 576.9 us<br>4.615 ms     | 10ms                             |
| Modulation                         | 0.3 GMSK                    | 0.3 GMSK                    | 0.3 GMSK                 | 0.3 GMSK                 | Up Link:2BPSK<br>Down Link:QPSK  |
| MS Power                           | 33 dBm~5 dBm                | 33 dBm~5 dBm                | 30 dBm~0 dBm             | 30 dBm~0 dBm             | MAX:24(+1.-3) dBm<br>MIN:<-50dBm |
| Power Class                        | 5 pcl ~ 19 pcl              | 5 pcl ~ 19 pcl              | 0 pcl ~ 15 pcl           | 0 pcl ~ 15 pcl           | CLASS 3                          |
| Sensitivity                        | -102 dBm                    | -102 dBm                    | -100 dBm                 | -100 dBm                 | -106.7 dBm                       |
| TDMA Mux                           | 8                           | 8                           | 8                        | 8                        | -                                |
| Cell Radius                        | -                           | 35 Km                       | 2 Km                     | -                        | -                                |

## 2-2. GSM TX power class

| TX Power control level | EGSM850  |
|------------------------|----------|
| 5                      | 33±2 dBm |
| 6                      | 31±2 dBm |
| 7                      | 29±2 dBm |
| 8                      | 27±2 dBm |
| 9                      | 25±2 dBm |
| 10                     | 23±2 dBm |
| 11                     | 21±2 dBm |
| 12                     | 19±2 dBm |
| 13                     | 17±2 dBm |
| 14                     | 15±2 dBm |
| 15                     | 13±2 dBm |
| 16                     | 11±3 dBm |
| 17                     | 9±3 dBm  |
| 18                     | 7±3 dBm  |
| 19                     | 5±3 dBm  |

| TX Power control level | EGSM900  |
|------------------------|----------|
| 5                      | 33±2 dBm |
| 6                      | 31±2 dBm |
| 7                      | 29±2 dBm |
| 8                      | 27±2 dBm |
| 9                      | 25±2 dBm |
| 10                     | 23±2 dBm |
| 11                     | 21±2 dBm |
| 12                     | 19±2 dBm |
| 13                     | 17±2 dBm |
| 14                     | 15±2 dBm |
| 15                     | 13±2 dBm |
| 16                     | 11±3 dBm |
| 17                     | 9±3 dBm  |
| 18                     | 7±3 dBm  |
| 19                     | 5±3 dBm  |

| TX Power control level | DCS1800  |
|------------------------|----------|
| 0                      | 30±3 dBm |
| 1                      | 28±3 dBm |
| 2                      | 26±3 dBm |
| 3                      | 24±3 dBm |
| 4                      | 22±3 dBm |
| 5                      | 20±3 dBm |
| 6                      | 18±3 dBm |
| 7                      | 16±3 dBm |
| 8                      | 14±3 dBm |
| 9                      | 12±4 dBm |
| 10                     | 10±4 dBm |
| 11                     | 8±4 dBm  |
| 12                     | 6±4 dBm  |
| 13                     | 4±4 dBm  |
| 14                     | 2±5 dBm  |
| 15                     | 0±5 dBm  |

| TX Power control level | PCS1900  |
|------------------------|----------|
| 0                      | 30±3 dBm |
| 1                      | 28±3 dBm |
| 2                      | 26±3 dBm |
| 3                      | 24±3 dBm |
| 4                      | 22±3 dBm |
| 5                      | 20±3 dBm |
| 6                      | 18±3 dBm |
| 7                      | 16±3 dBm |
| 8                      | 14±3 dBm |
| 9                      | 12±4 dBm |
| 10                     | 10±4 dBm |
| 11                     | 8±4 dBm  |
| 12                     | 6±4 dBm  |
| 13                     | 4±4 dBm  |
| 14                     | 2±5 dBm  |
| 15                     | 0±5 dBm  |

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## 3. Operation Instruction and Installation

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### Main Function

- Simple Bar Design
- 3.2", 480x320 HVGA 16M Color
- 5MP + AF
- Full Touch
- GPS/BT v2.0/USB v2.0
- Android OS
- Full Google Service(Google Mail,Google Map, YouTube Service)
- Full browsing Google Chrome-Lite Browser
- S/W Download via Android Market

## 4. Array course control

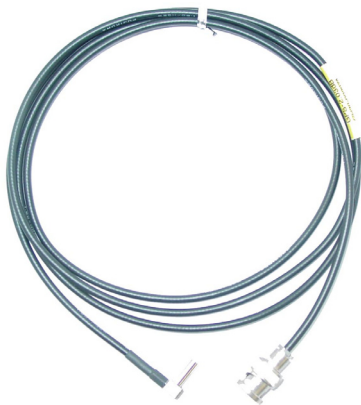
### 4-1. Software Adjustments



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



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



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



**Adapter (GH99-38251A)**

## **4-2. Software Downloading**

### **4-2-1. Downloading Binary Files**

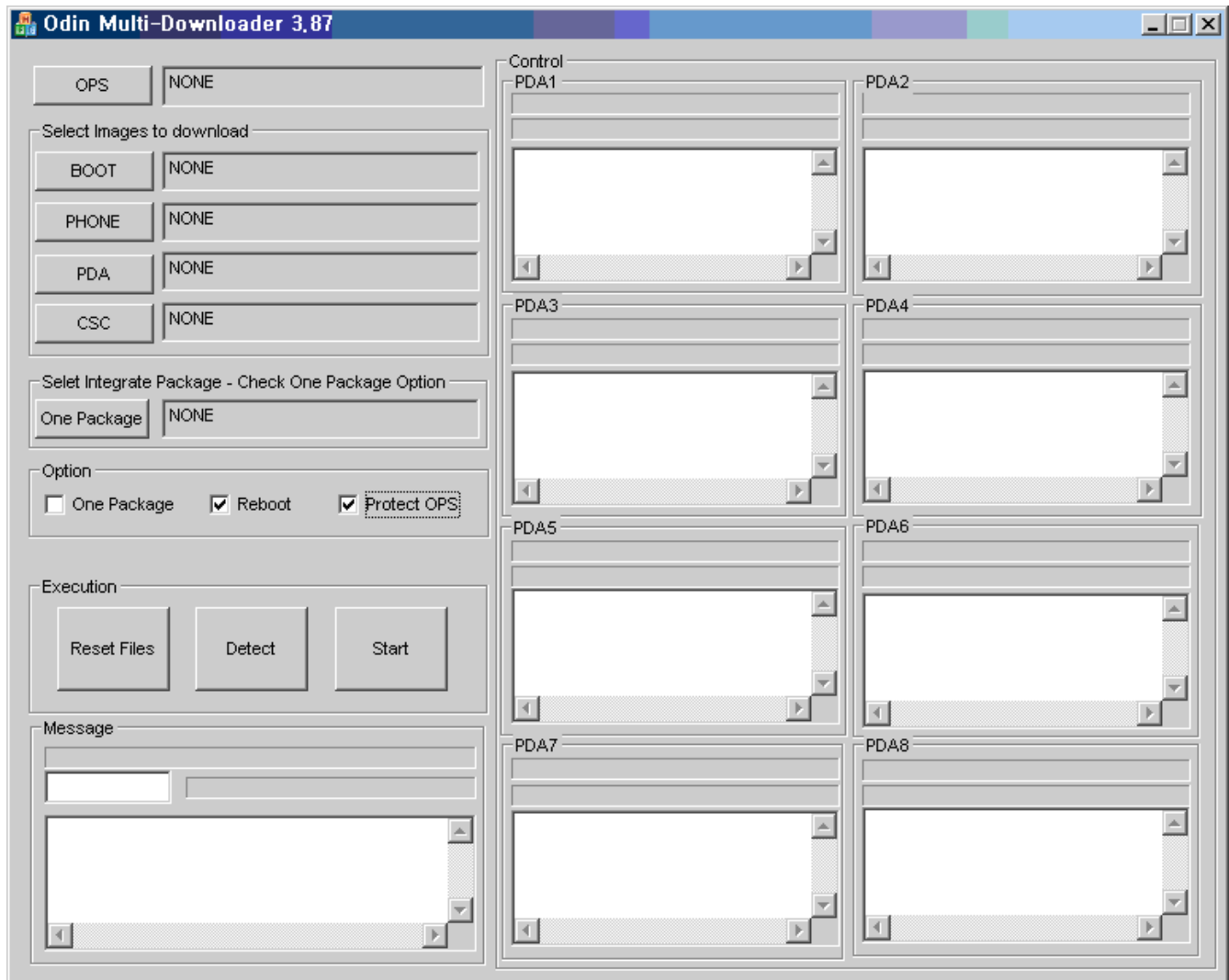
- 2 binary files for downloading I7500
  - I7500XXIXX-BOOTLOADER.tar : Bootloader
  - I7500XXIXX-PDA.tar : PDA File
  - I7500XXIXX-PHONE.tar : PHONE File
  - I7500XXIXX-CSC.tar : CSC File
  - ORION.ops : OPS File

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

- Downloader Program (MultiOdin3.87.exe)
- GT-I7500 Mobile Phone
- JIG BOX
- Test Cable
- Serial Cable
- Binary files

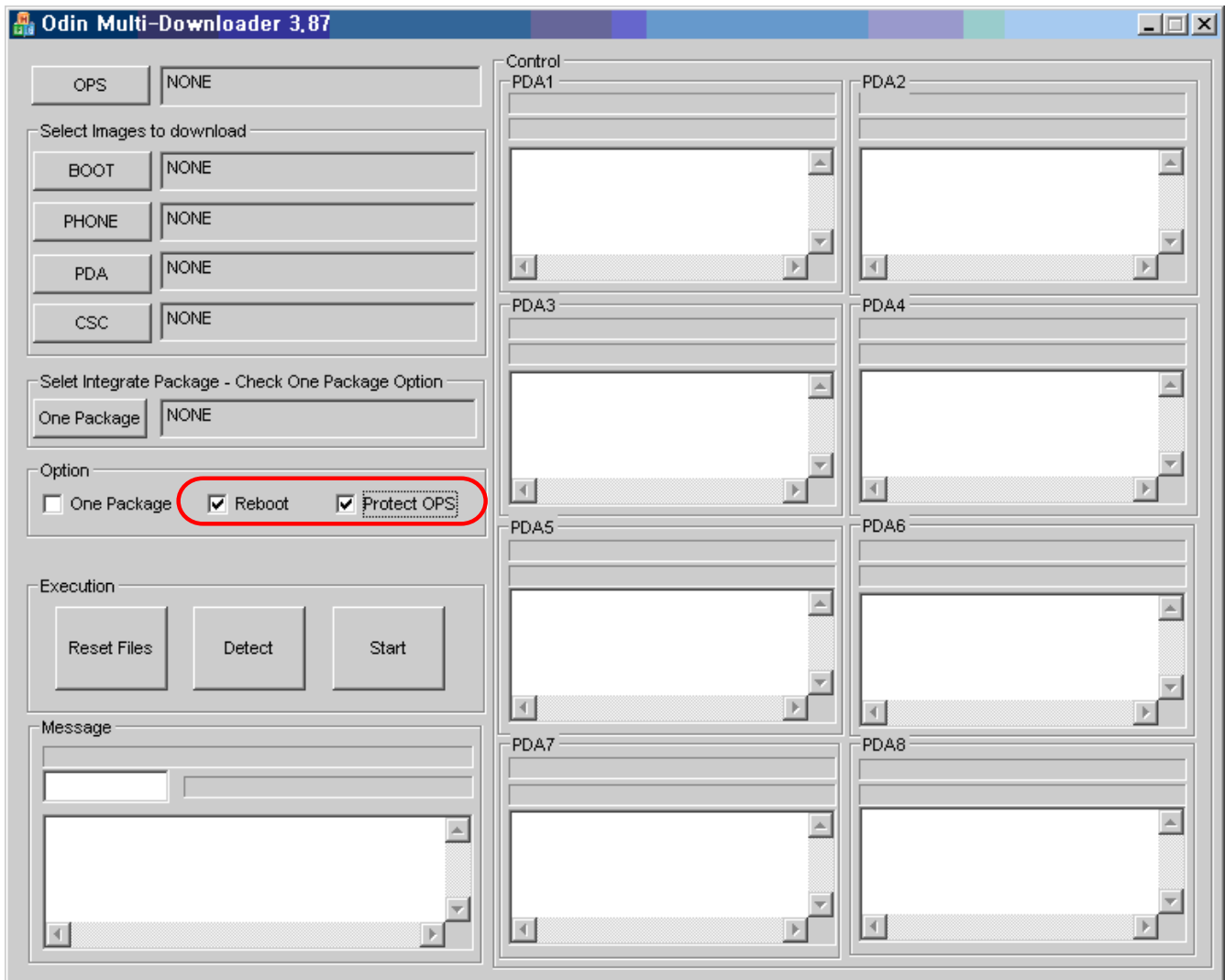
### 4-2-3. S/W Downloader Program

1. Load the binary download program by executing the “MultiOdin Downloader v3.87”

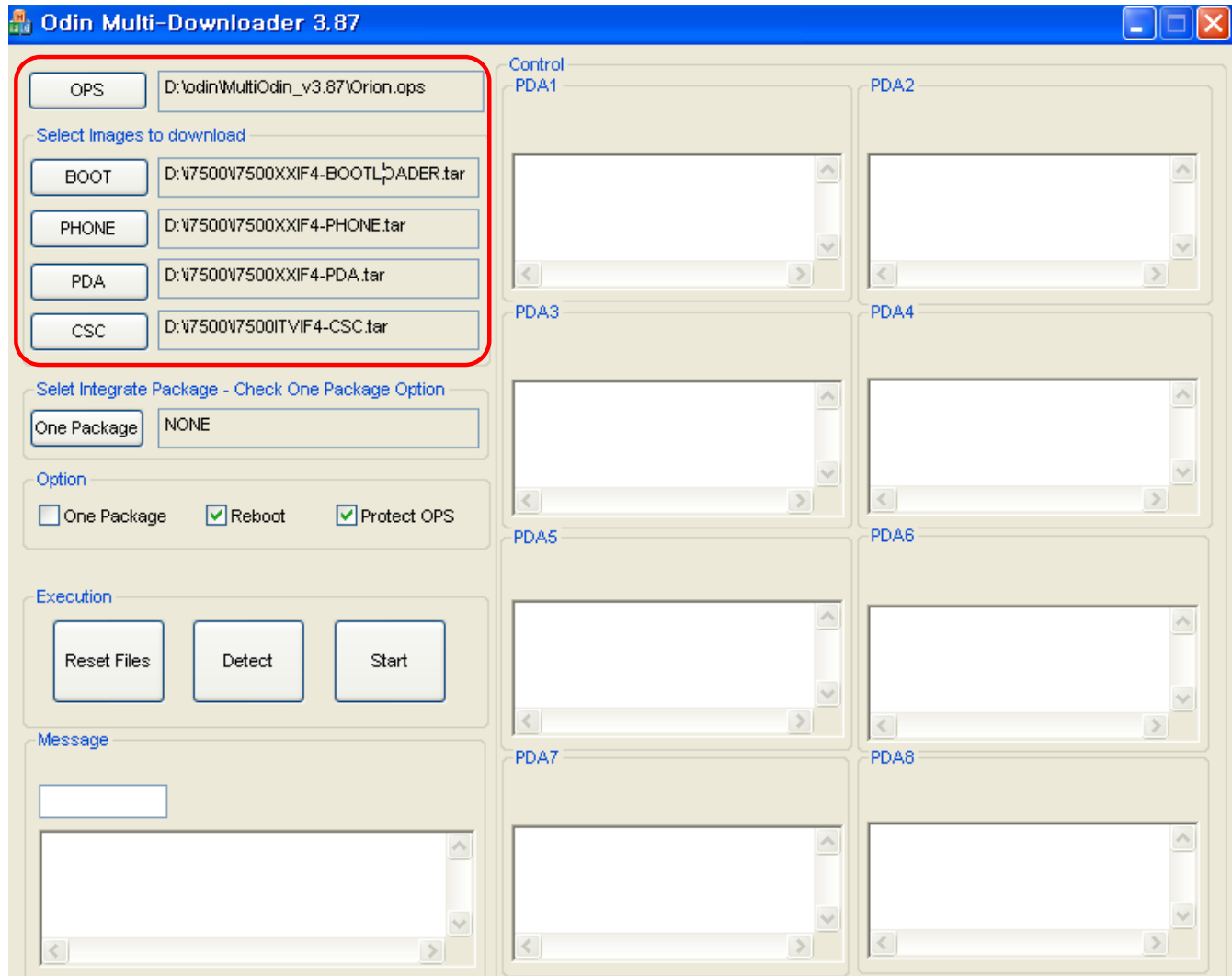


## 2. Select Option

- Check Reboot and Project OPS



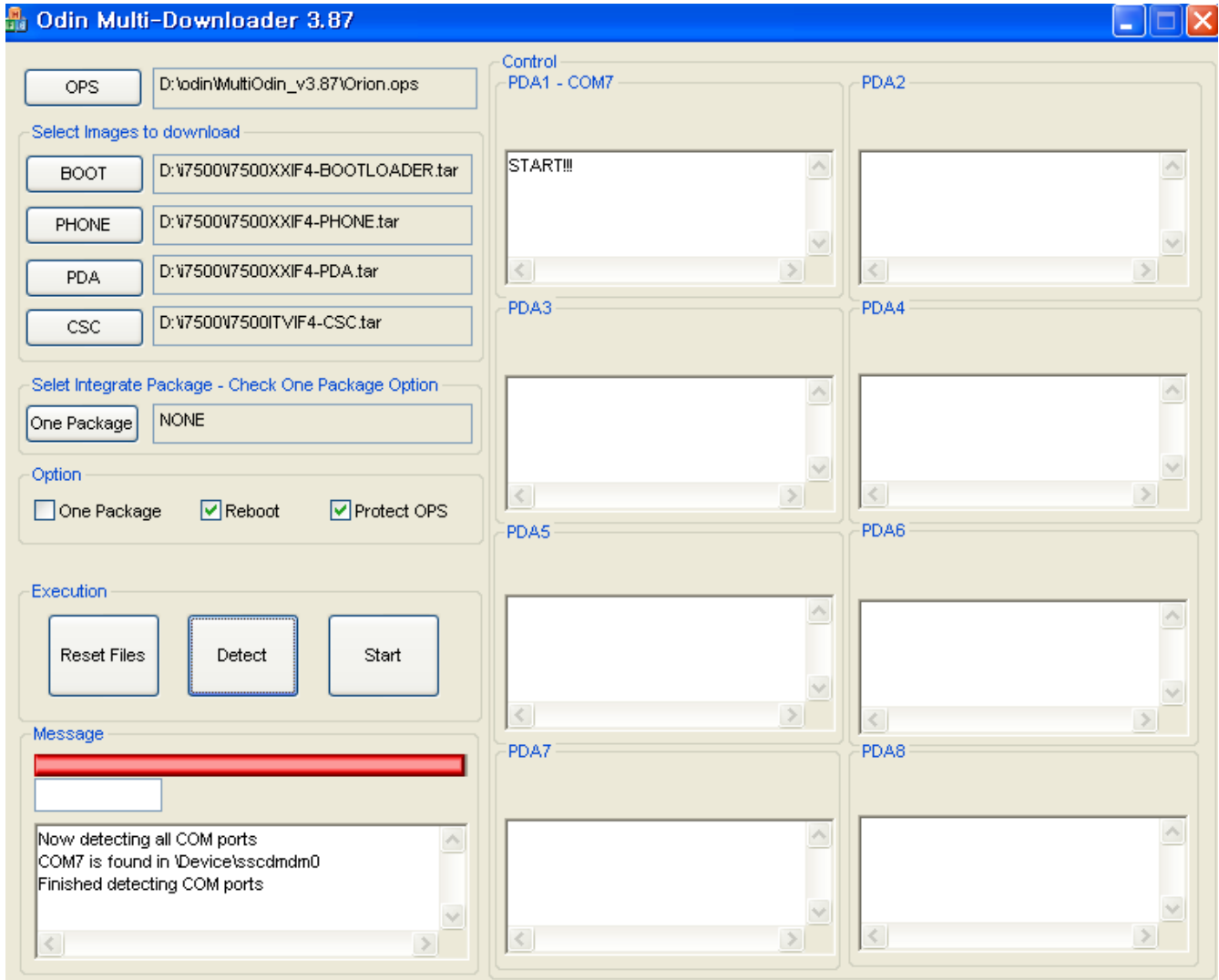
### 3. Select file(s) what you want to download



- Click OPS Button and specify "Orion.ops" file.
- Click BOOT Button and specify file such as "i7500XXIXX\_BOOT.tar" file.
- Click Phone Button and specify file such as "i7500XXIXX\_PHONE.tar" file.
- Click PDA Button and specify file such as "i7500XXIXX\_PDA.tar" file.
- Click CSC Button and specify file such as "i7500XXIXX\_CSC.tar" file.



4. Connect the USB cable, and press "Detect" button.
  - After detecting the phone, "finished detecting COM ports" message is shown.



5. Press the "Start" button.
6. When downloading is complete, the phone will automatically reboot.
7. Confirm the downloaded version name and etc. :
  - \*#1234#**
  - Full Reset :
    - Setting - SD card & phone storage - Factory data reset - Reset phone - Erase everything**

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## 10. Reference data

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### Reference Abbreviation

- **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.