2. Specification

2-1. GSM General Specification

	GSM850	EGSM900	DCS1800	PCS1900
Freq. Band[MHz] Uplink/Downlink	824~849 869~894	880~915 925~960	1710~1785 1805~1880	1850~1910 1930~1990
ARFCN range	128~251	0~124 & 975~1023	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	0pcl ~ 15pcl	0pcl ~ 15pcl	0pcl ~ 15pcl
Sensitivity	-102dBm	-102dBm	-100dBm	-100dBm
TDMA Mux	8	8	8	8
Cell Radius	35Km	35Km	2Km	2Km

2-2. GSM Tx Power Class

TX Power control level	GSM850 GSM900	TX Power control level	DCS1800	TX Power control level	PCS1800
5	33±2 dBm	0	30±3 dBm	0	30±3 dBm
6	31±2 dBm	1	28±3 dBm	1	28±3 dBm
7	29±2 dBm	2	26±3 dBm	2	26±3 dBm
8	27±2 dBm	3	24±3 dBm	3	24±3 dBm
9	25±2 dBm	4	22±3 dBm	4	22±3 dBm
10	23±2 dBm	5	20±3 dBm	5	20±3 dBm
11	21±2 dBm	6	18±3 dBm	6	18±3 dBm
12	19±2 dBm	7	16±3 dBm	7	16±3 dBm
13	17±2 dBm	8	14±3 dBm	8	14±3 dBm
14	15±2 dBm	9	12±4 dBm	9	12±4 dBm
15	13±2 dBm	10	10±4 dBm	10	10±4 dBm
16	11±3 dBm	11	8±4dBm	11	8±4dBm
17	9±3dBm	12	6±4 dBm	12	6±4 dBm
18	7±3 dBm	13	4±4 dBm	13	4±4 dBm
19	5±3 dBm	14	2±5 dBm	14	2±5 dBm
		15	0±5 dBm	15	0±5 dBm

3. Product Function

Main Function

- EDGE(Rx)/GPRS Function Supporting slide phone for Music
- 1.3 Mega Pixel, Digital zoom (x2) Camera
- 262K Color QCIF TFT LCD
- Internal memory: 15MB, External memory: up to 8GB
- Bluetooth v2.0, USB v2.0 Full Speed
- 3.5Ø 4Pin Earjack
- FM radio with RDS
- Built in Large Speaker (Mono,17Ø)
- Music Library, DISC UI,Find Music, DNSe

10. Reference data

Reference Abbreviate

- **ADC** : Analog to Digital Converter
- **AMPS** : Advanced Mobile Phone System(analog IS-95)
- **BGA** : Ball Grid Array
- **BPF** : Band Pass Filter
- **CDMA** : Code Division Multiple Access
- **DL** : Downlink
- **FTP** : File Transfer Protocol
- **GPS** : Global Positioning System
- **MMS** : Multimedia Messaging Service
- **PBA** : Panel Board Assembly
- **PCS** : Personal Communication System
- **PIM(S)** : Personal Information Management (System)
- **QPSK** : Quadrature Phase Shift Keying
- **RF** : Radio Frequency
- **RSS** : Received Signal Strength
- **SAW** : Surface Acoustic Wave
- **SMS** : Short Message Service
- **TCXO** : Temperature Compensated Crystal Oscillator
- **TSP** : Touch Screen Panel
- **UL** : Uplink
- **USB** : Universal Serial Bus

1. Safety Precautions

1-1. Repair Precaution

— Repair in Shield Box, during detailed tuning.
 Take specially care of tuning or test, because the specification 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 magnetic 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.

4. Array course control

4-1. Software Adjustments

Test Jig (GH99-36900A)

RF Test Cable (GH99-38251A)

Test Cable (GH39-01290A)

RF Test Cable (GH39-00985A)

4-2. Software Downloading

4-2-1. Downloading Binary Files

- 2 binary files for downloading M2520
 .CODE_M2520XXIE3.s3
  .CSC_M2520OXAIE3.csc

4-2-2. Pre-requsite for Downloading

- Downloader Program : (Optimay Flash v4.17 for optiflash.exe)
- GT- M2520 Mobile Phone
- JIG BOX
- Test Cable
- Serial Cable
- Binary files

4-2-3. S/W Downloader Program

1 Before downloading program, insert into micro usb in the phone with pressing
  * button

2. Load the binary download program by executing the "Optimay Flash v4.17 for optiflash.exe".
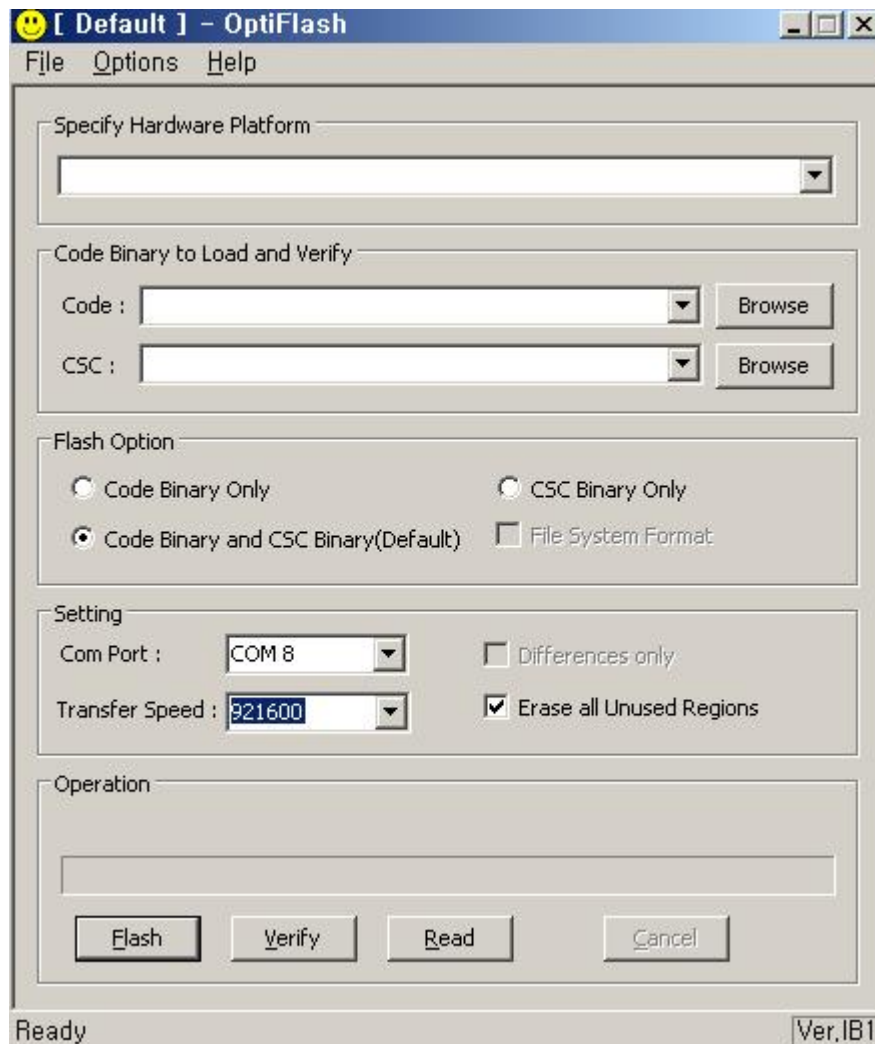
3. Select the Specify Hardware Platfom and flash option(recommand default), Baud Rate and Mode.and choice Com port number that finded in the Microsoft Management Console. Check buttom writting 'Earse all unused Regions'
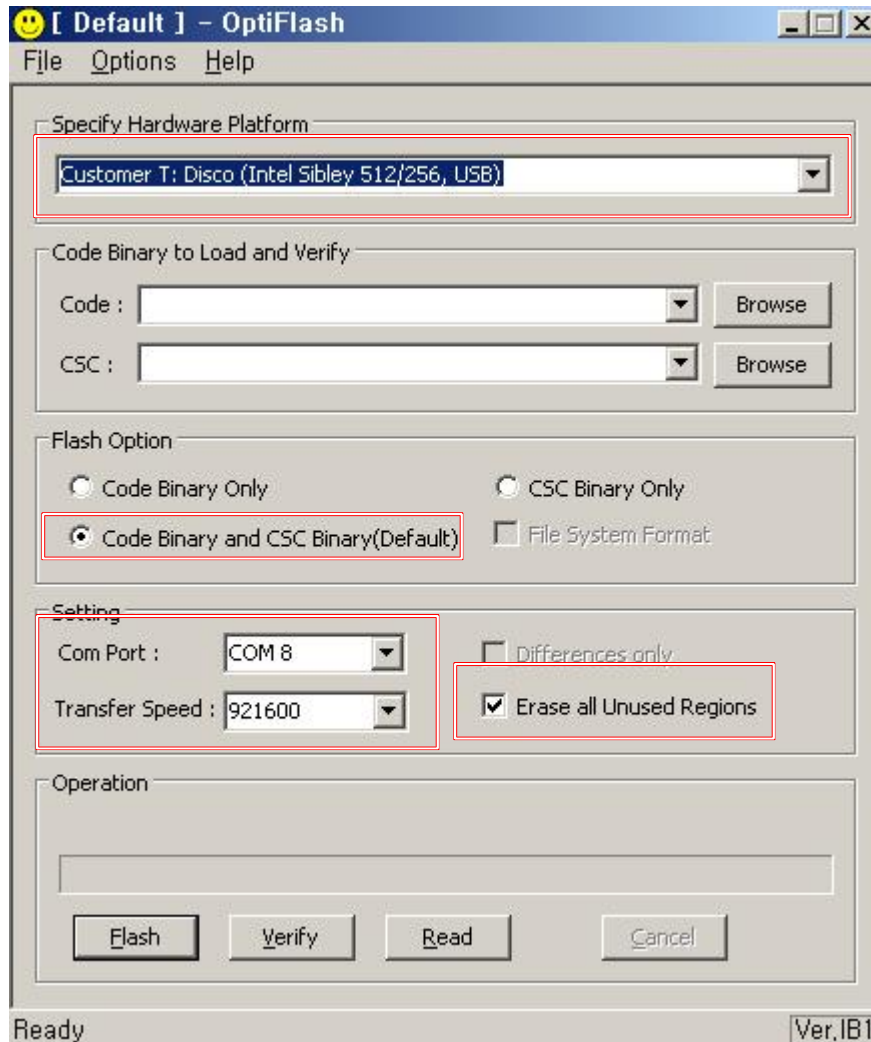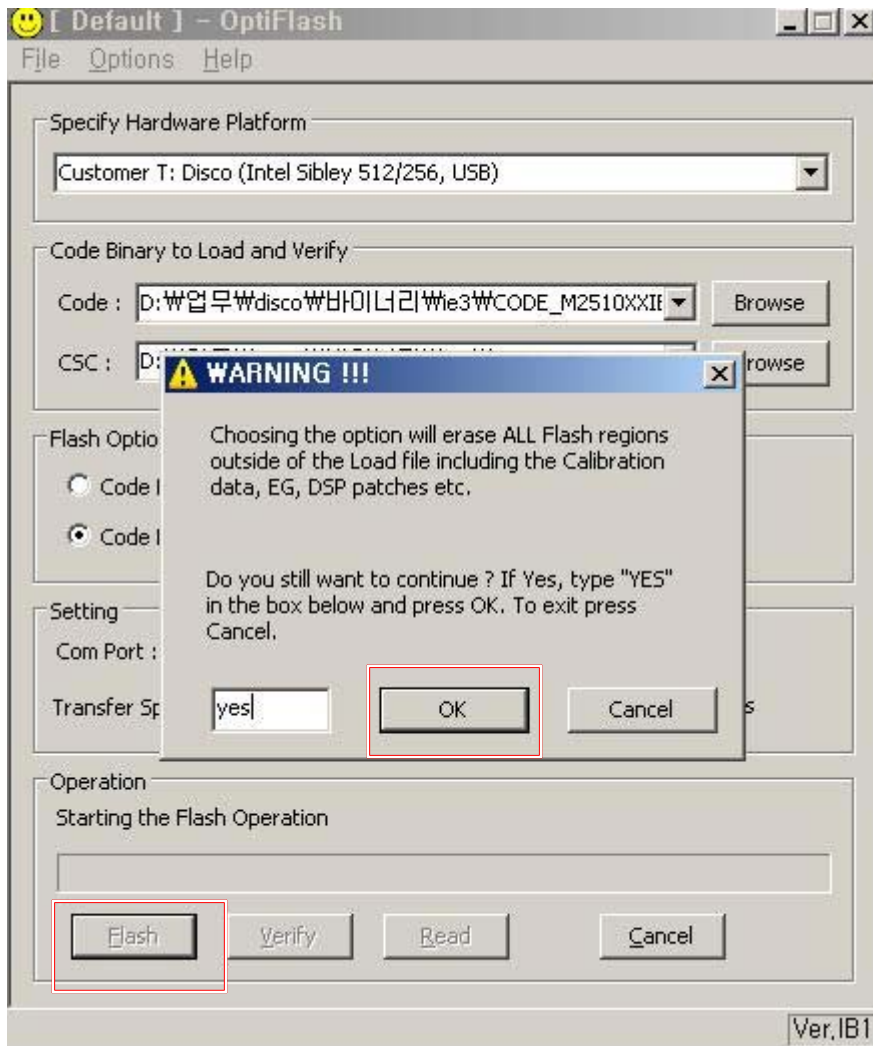
4. Select the code files what you want to download
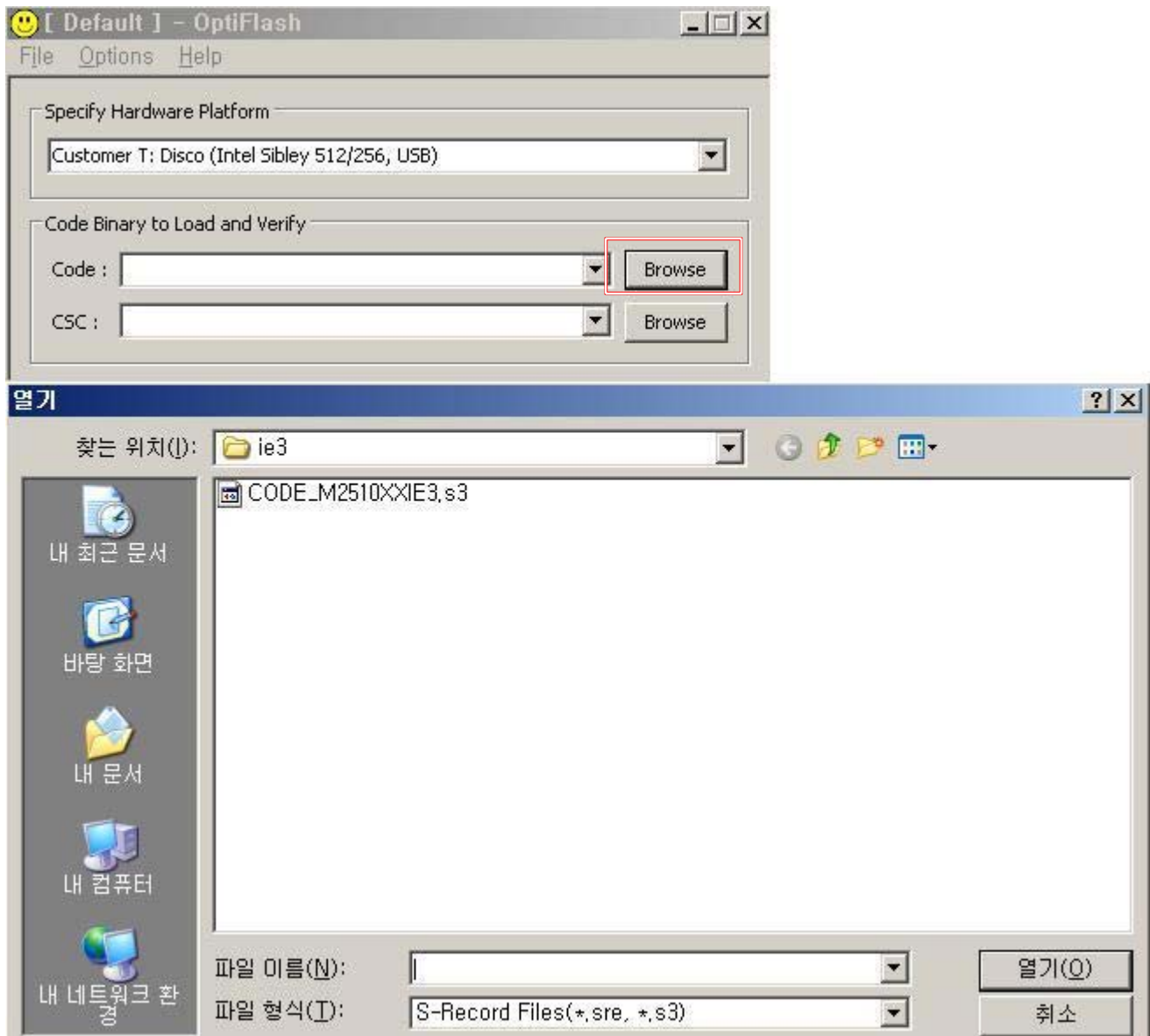
5. Select the csc files what you want to download
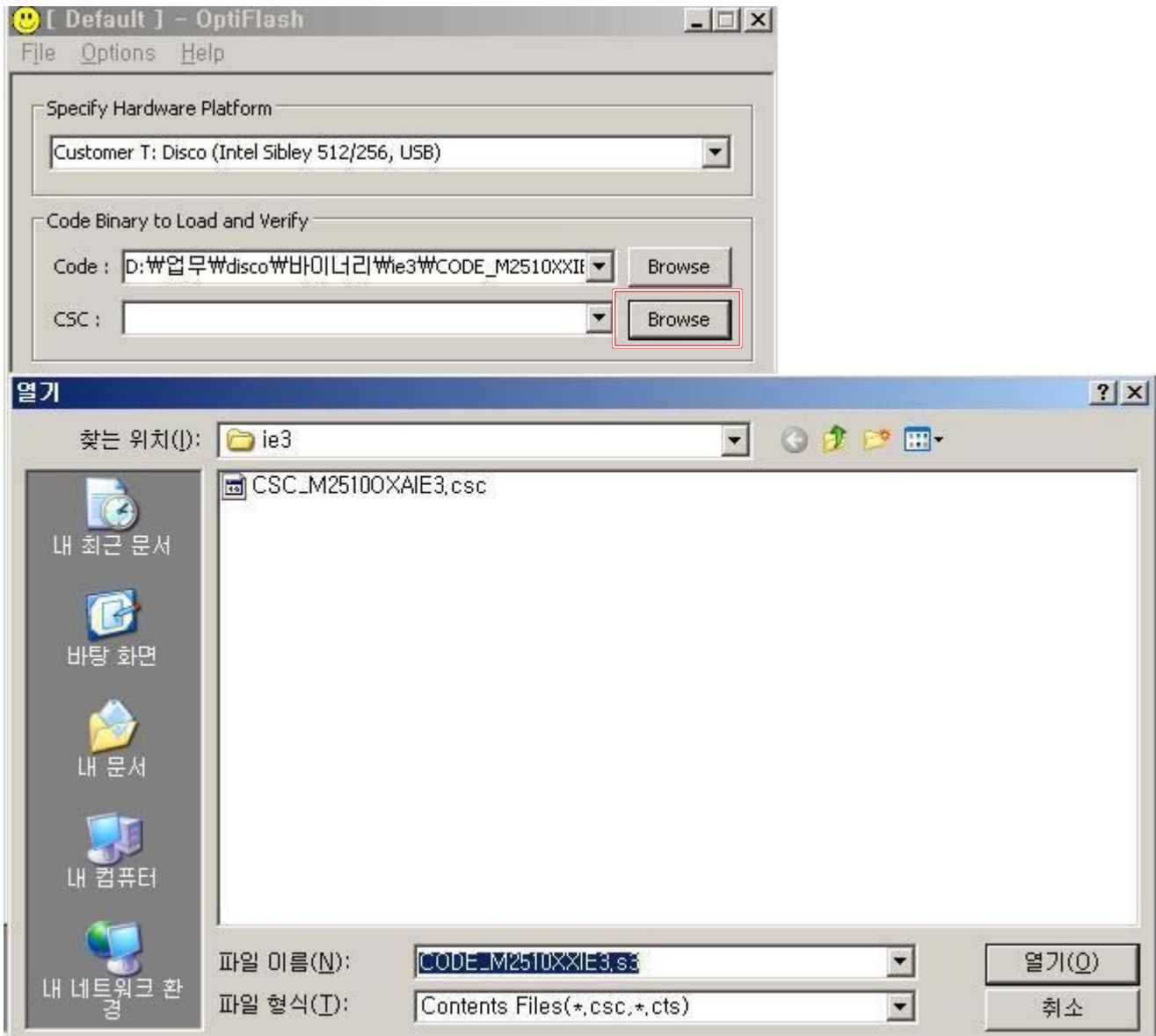
6. press the Flash button and than write "yes" in the box and press ok button

7. When downloading is complete, Can see text " All is well"