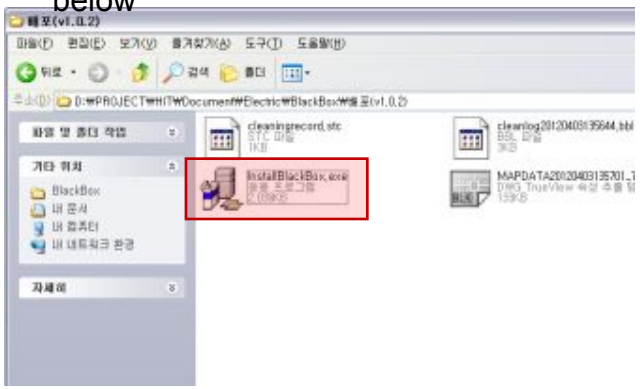
Black box viewer manual

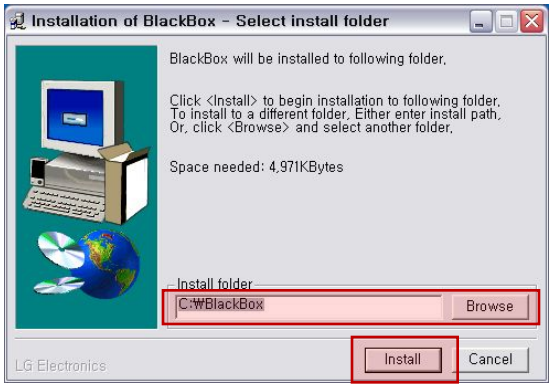
1. Black box viewer installation method

Download Black Box Install file from a server (http://biz.lgservice.com=> GCSC) and then install as an order below

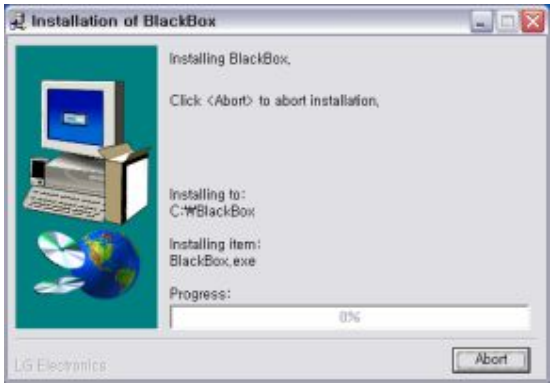


① Perform install program

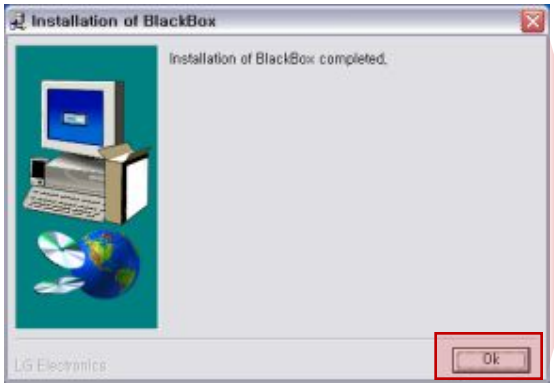
② Click **Next**



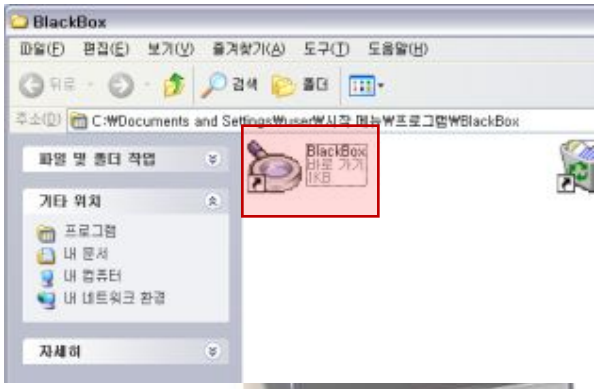
③ Select the path which black box viewer program is installed and then click **Install** button



④ Install progress status



⑤ Click install end **OK** button



⑥ After completing the installation, confirm the implemented file

Black box viewer manual

2. Black box viewer explanation

Manu bar

B.B file loading
Roboking accumulated data loading

Map

Mark barriers and cleaning areas

Event list

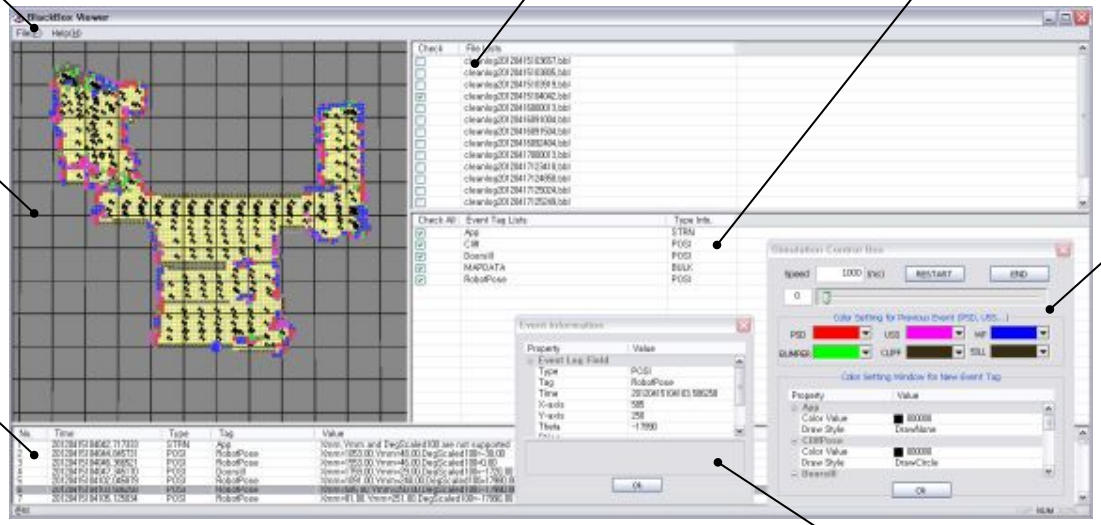
Time sequencing organization of a list that is selected on an event tag list

B.B file list

*B.B file (One unit per cleaning) list

Event tag list

Occurred event list
(Start, error, trajectory ,, etc)



Simulation control box

Time slide bar, barrier color setting
event color setting section

Information

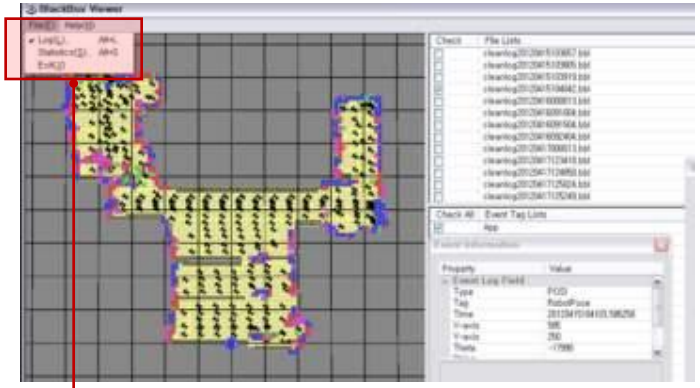
Mark detail information of selected event

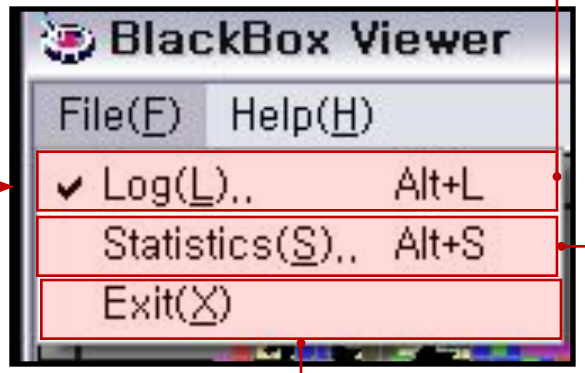
* B.B : Black Box

Black box viewer manual

2. Black box viewer explanation

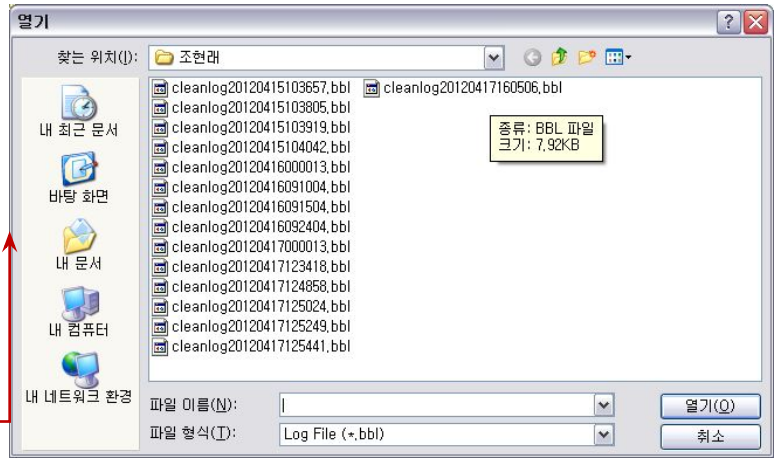
2.1. Manu Bar



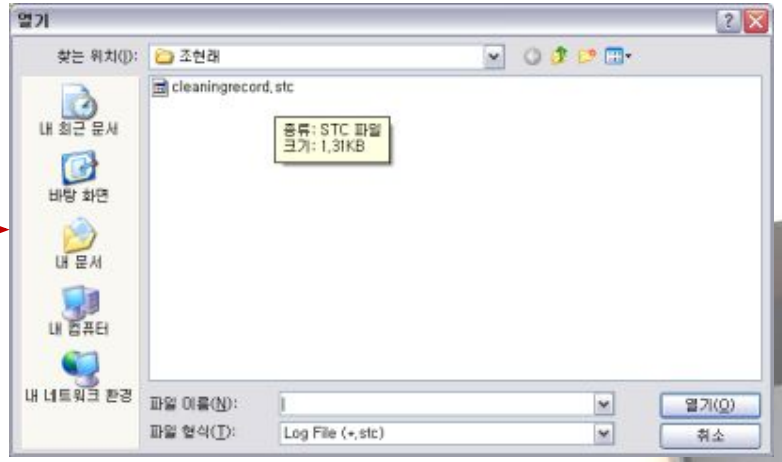


Program end

* Log (L) : B/.B file (*.ddl) loading, multiple selection is possible



* Statistics (S) : Whole set accumulated file (*.stc) loading



* B.B : Black Box

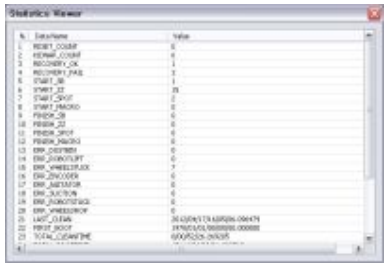
Black box viewer manual

2. Black box viewer explanation

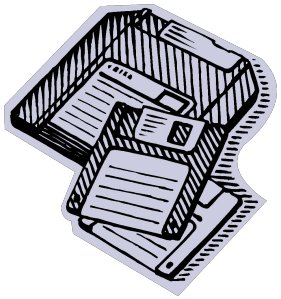
2.1. Manu bar

Statistics (S) : Whole set accumulated file (*.stc) data list (1)

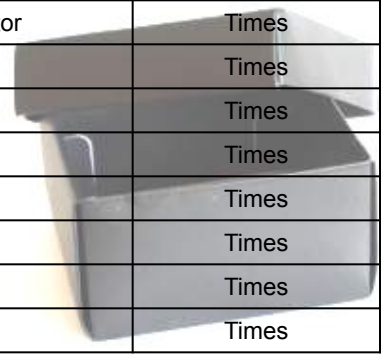
Statistics viewer screen



Confirm accumulated data of Roboking since outgoing



No.	Indication	Error classification	Indication method
1	RESET_COUNT	Accumulated number of reset occurrence	Times
2	KIDNAP_COUNT	Accumulated number of kidnap occurrence	Times
3	RECOVERY_OK	Accumulated number of kidnap success	Times
4	RECOVERY_FAIL	Accumulated number of kidnap failure	Times
5	START_SB	Accumulated number of meticulous cleaning mode start	Times
6	START_ZZ	Accumulated number of zigzag mode start	Times
7	START_SPOT	Accumulated number of intense cleaning mode start	Times
8	START_MACRO	Accumulated number of designated area mode start	Times
9	FINISH_SB	Accumulated number of meticulous cleaning completion	Times
10	FINISH_ZZ	Accumulated number of zigzag cleaning completion	Times
11	FINISH_SPOT	Accumulated number of intense cleaning completion	Times
12	FINISH_MACRO	Accumulated number of designated area cleaning completion	Times
13	ERR_DUSTBIN	Accumulated number of dust bin error occurrence	Times
14	ERR_ROBOTLIFT	Accumulated number of main body lifting error occurrence	Times
15	ERR_LWHEELSTUCK	Accumulated number of stuck error occurrence on left wheel	Times
16	ERR_RWHEELSTUCK	Accumulated number of stuck error occurrence on right wheel	Times
17	ERR_AGITATOR	Accumulated number of stuck error on main body floor agitator	Times
18	ERR_SUCTION	Accumulated number of stuck error on suction motor	Times
19	ERR_ROBOTSTUCK	Accumulated number of stuck error on main body	Times
20	ERR_WHEELDROP	Accumulated number of wheel lifting error	Times
21	ERR_ENCODER_L	Accumulated number of left wheel encoder error	Times
22	ERR_ENCODER_R	Accumulated number of right wheel encoder error	Times
23	ERR_MOTOR_L	Accumulated number of left motor short error	Times
24	ERR_MOTOR_R	Accumulated number of right motor short error	Times



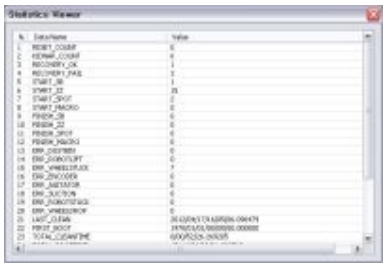
Black box viewer manual

2. Black box viewer explanation

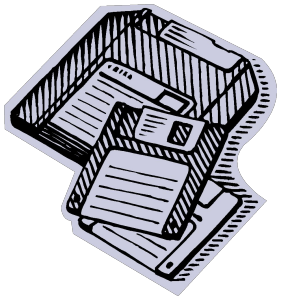
2.1. Manu bar

Statistics (S) : Whole set accumulated file (*.stc) data list (2)

Statistics viewer screen



Confirm accumulated data of Roboking since outgoing

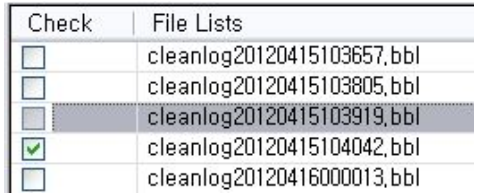


No.	Indication	Error classification	Indication method
25	ERR_MOTOR_RCV	Accumulated number of motor short sense trial	Times
26	START_RESERV	Accumulated number of reserved cleaning start	Times
27	VOICE_COMEHERE	[Voice] Accumulated number of “Come here Roboking “	Times
28	VOICE_START	[Voice] Accumulated number of “Roboking cleaning start“	Times
29	VOICE_PAUSE	[Voice] Accumulated number of " Roboking“	Times
30	VOICE_SPOT	[Voice] Accumulated number of “Intense cleaning“	Times
31	VOICE_HOMING	[Voice] Accumulated number of " Roboking charge“	Times
32	VOICE_WAIT	[Voice] Accumulated number of “Roboking wait“	Times
33	CURRENTBUMPING	Accumulated number of wheel bumping occurrence	Times
34	LAST_CLEAN	Last cleaning time	Year/month/date/time/minute/second
35	FIRST_BOOT	First booting time	Year/month/date/time/minute/second
36	TOTAL_CLEANTIME	Accumulated time of total cleaning	Date/time/minute/second
37	TOTAL_RUNTIME	Accumulated time of total power on	Date/time/minute/second
38	TOTAL_CARPET	Accumulated time of carpet cleaning	Date/time/minute/second
39	VER_REVISION	Vision program version	no.
40	VER_REV_DATE	Update date	Year/month/date/time/minute/second
41	VER_REPOSITORY	svn path	Dir.
42	VER_BOOTLOADER	Mainboard Bootloader version	no.
43	VER_MAINSW	Mainboard program version	no.
44	MODEL_NO	Model number (0xB0)	no.

Black box viewer manual

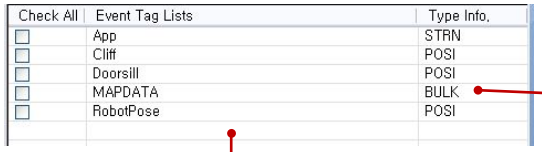
2. Black box viewer explanation

2.2. B.B file lists



- Black box list saved in the Roboking
  => It is saved with a file of **cleanlog year month date time minute second.bbl**

2.3. Event tag lists



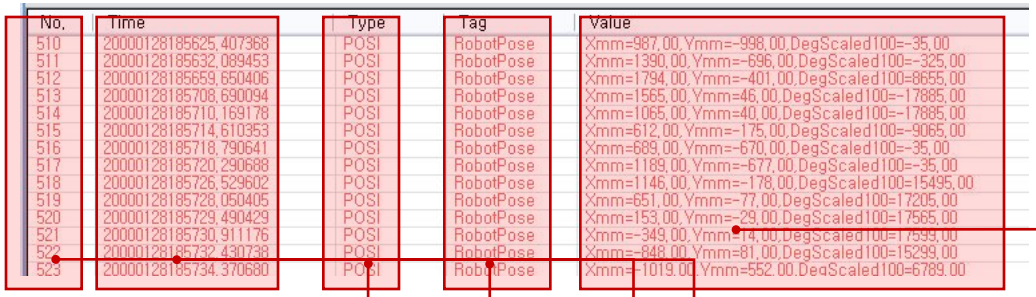
- The event list will be organized in a time sequencing as checking of an event that you want to look at by using an event tag list save in the black box

Information classification : Letter, position, bulk transmission,

Event tag list : Application, error (Bumping,), MAP DATA, ,

Event tag list classification

2.4. Event list



- Event list defined in the event tag of B.B file is organized in a time sequencing.

*** Coordinate starting point is (550.0, 50, 0°)**

When double clicking while playing, directly move to the correspond position

Image capture position : X coordinate, Y coordinate, angle

Event tag list classification

Event tag list classification

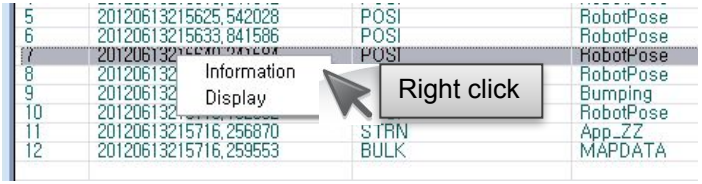
Image capture time : Year month date time minute second

Time No. : The order of image capture to the upper camera while driving

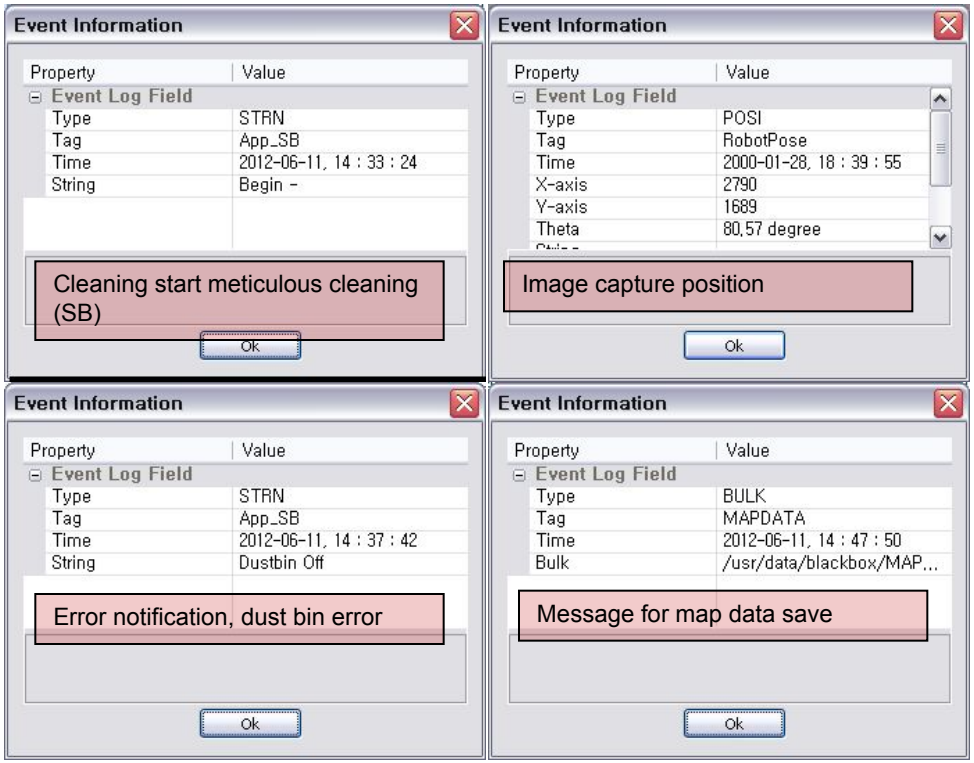
Black box viewer manual

2. Black box viewer explanation

2.5. Information

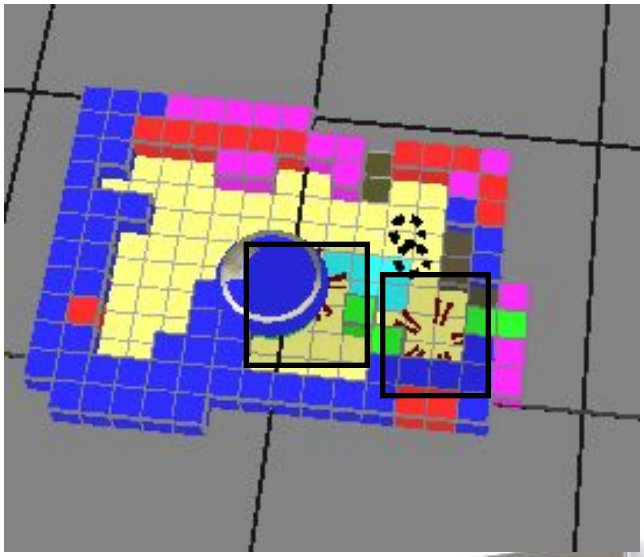


When clicking information (Example)



- Possible to see the details of correspond event list
  => Event type, tag, occurrence time, coordinate, angle event explanation

When clicking display

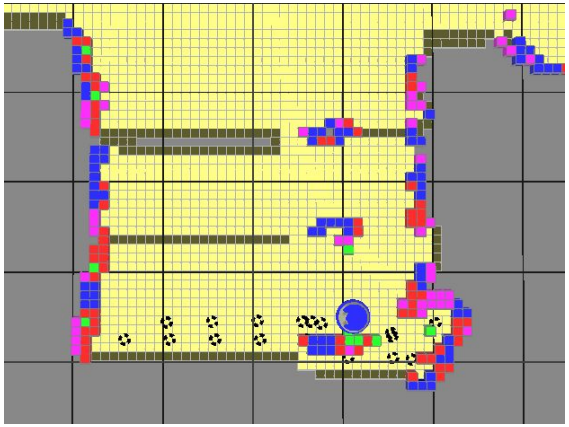


- Indicate the correspond event on the map

Black box viewer manual

2. Black box viewer explanation

2.6. Map



- Driving information saved in B.B can be confirmed visually
- Debugging can be done by confirming the event (Cliff, doorsill)
- Each color can be set and confirmed in the simulation control box
- Classified three areas (Cleaning area/ non-cleaning area/barrier)

2.7. Simulation control box

Possible to set regarding map
- Possible to play and stop based upon an event list content
- Possible to set color and shape of occurred event

Black box viewer manual

3. Black box viewer use method

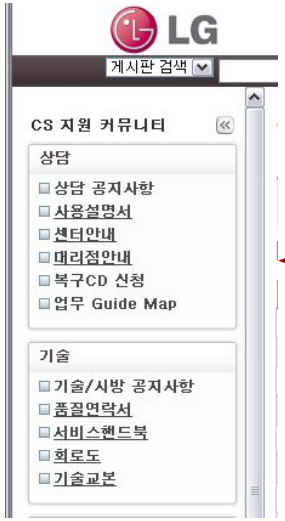
3.1. Program download for black box data upload

Black box save implementation script should be downloaded from the server

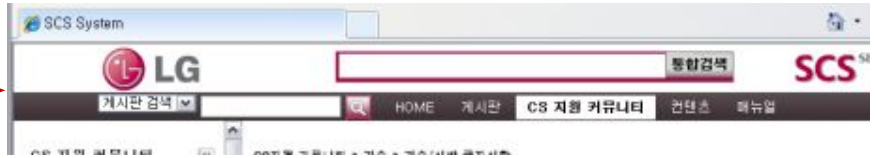
http://smile.lge.com

① Input employee number and pw

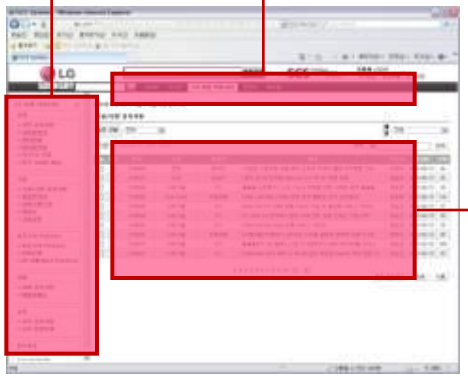
② Select SCS of SITE LINK



④ Click technology/ Specification notice



③ Click CS support community



⑤ Select the program from a list and save in attached file USB

(It is not implemented well on a security program installed (Navi) PC because the file is save as a code.)

*** File list**
- blackbox.sh (File)
- blackbox (Folder)

Place above tow files at the top path of the USB

B.B data is automatically saved under the black box folder

Black box viewer manual

3. Black box viewer use method

3.1. Program download for black box data upload

⑥ Open the cover while power is off.

⑦ Open USB cap and put USB memory that the program for black box upload is saved. Then close the cover

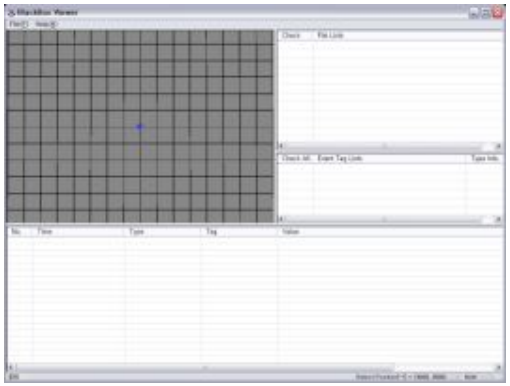
⑧ Turn the power on

⑨ Booting starts by showing a booting animation,
Upload starts with a voice guidance of **"Black box data loading begins."** ,
Upload completion is notified with a voice guidance of
"Black box data loading is completed." Then booting starts automatically.

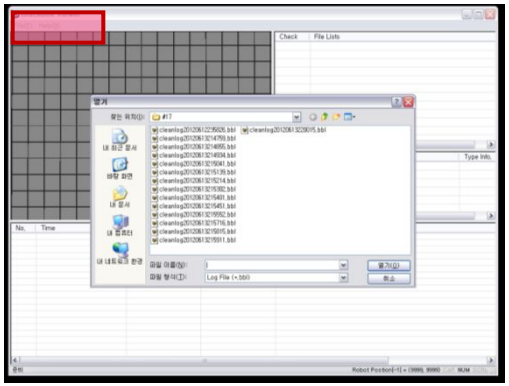
Black box viewer manual

3. Black box viewer use method

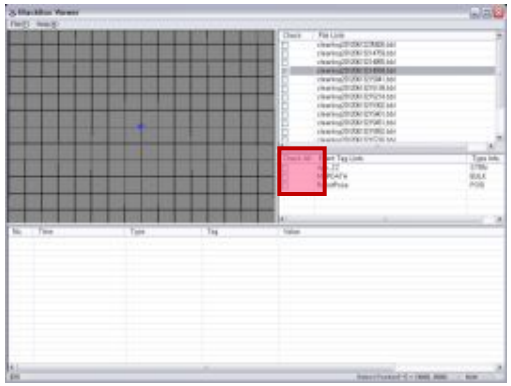
3.1. Program download for black box data upload



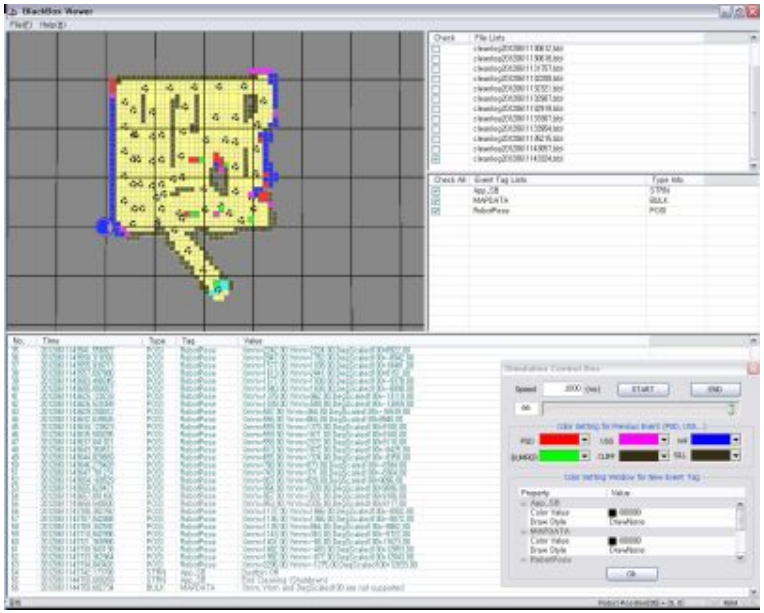
① Black box viewer program implementation



② Click File -> Log and load log file



3. Click the list which you want to look at on the check box of the event tag list



④ Upload completion
Debugging by using the loaded file
=> Find out the error type and position
=> Improve robot key use environment for users

⑤ Implement start/end/color selection by using a simulation control box