

# WEIVER 2.0 Player MANUAL



manual

# WEIVER 2.0 Player

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### Environmental Issues

Thank you for buying a product which contributes to a reduction in pollution and thereby helps save the environment.

Our products reduce the need for travel and transport and thereby reduce pollution. Our products have either no or few consumable parts (chemicals, toner, gas, paper). Our products are low energy consuming products.

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### Production of products:

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## OPERATOR SAFETY SUMMARY

For your protection, please read these safety instructions completely before operating the equipment and keep this manual for future reference. The information in this summary is intended for operators. Carefully observe all warnings, precautions and instructions both on the apparatus and in the operating instructions.

### Equipment Markings

The lighting flash symbol within an equilateral triangle is intended to alert the user to the presence of un insulated "dangerous voltages" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electrical shock. The exclamation mark within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions within literature accompanying the equipment.

### Warnings

#### Water and Moisture :

Do not operate the equipment under or near water - for example near a bathtub, kitchen sink, or laundry tub, in a wet basement, near a swimming pool or in areas with high humidity. Cleaning - Unplug the apparatus from the wall outlet before cleaning or polishing. Do not use liquid cleaners or aerosol cleaners. Use a lint-free cloth lightly moistened with water for cleaning the exterior of the apparatus.

#### Ventilation :

Do not block any of the ventilation openings of the apparatus. Install in accordance with the installation instructions. Never cover the slots and openings with a cloth or other material. Never install the apparatus near heat sources such as radiator, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

Grounding or Polarization - Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plus has two blades and a third grounding prong.

The wide blade or third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician. Power-Cord Protection - Route the power cord so as to avoid it being walked on or pinched by items placed upon or against it, paying particular

attention to the plugs, receptacles, at the point where the cord exits form the apparatus.

#### Attachments :

Only use attachments as recommended by the manufacture.

#### Accessories :

Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

#### Lighting :

Unplug this apparatus during lightning storms or when unused for long periods of time.

#### ISDN cables :

CAUTION - to reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.

#### Servicing :

Do not attempt to service the apparatus yourself as opening or removing covers may expose you to dangerous voltages or other hazards, and will void the warranty. Refer all servicing to qualified service personnel.

#### Damaged Equipment :

Unplug the apparatus from the outlet and refer servicing to qualified personnel under the following conditions - When the power cord or plug is damaged or frayed If liquid has been spilled or objects have fallen into the apparatus If the apparatus has been exposed to rain or moisture If the apparatus has been subjected to excessive shock by being dropped, or the cabinet has been damaged If the apparatus fails to operate in accordance with the operating instruction

### Warranty Period

Lumantek Test & Measurement and Broadcasting products normally carry a 1-year limited warranty (including labor and parts) Unless noted, Lumantek Digital Media products normally carry a 1-year limited warranty (including labor and parts).



### **Return Material Authorization Policy**

No product may be returned directly to Lumantek without first contacting Lumantek for a Return Material Authorization ("RMA") Code. If it is determined that the product is defective, you will be given an RMA Code and instructions for product return for servicing or replacement. An unauthorized return such as where an RMA Code has not been issued, the product will be returned to you at your expense. Authorized returns are to be shipped prepaid and insured to the address on the RMA in an approved shipping container (original box and packaging materials or similar). To request an RMA Code, please visit on [http://www.lumantek.com/support/rma\\_services\\_instruction.html](http://www.lumantek.com/support/rma_services_instruction.html)

### **Warranty Limitations**

Lumantek's limited warranty provides that, subject to the following limitations, each product will be free from defects in material and workmanship and will conform to Lumantek's specification for the particular product.

### **Limitation of Remedies**

Your exclusive remedy for any defective product is limited to the repair or replacement of the defective product.

Lumantek may elect which remedy or combination of remedies to provide in its sole discretion. Lumantek shall have a reasonable time after determining that a defective product exists to repair or replace a defective product. Lumantek's replacement product under its limited warranty will be manufactured from new and serviceable used parts. Lumantek's warranty applies to repaired or replaced products for the balance of the applicable period of the original warranty or ninety days from the date of shipment of a repaired or replaced product, whichever is longer.

### **Limitation of Damages**

Lumantek's entire liability for any defective product shall in no event exceed the purchase price for the defective product. This limitation applies even if Lumantek cannot or does not repair or replace any defective product and your exclusive remedy fails of its essential purpose.

### **No Consequential or Other Damages**

Notwithstanding anything else in this policy or otherwise, Lumantek will not be liable with respect to the products under any contract, negligence, strict liability or other legal or equitable theory (i) for any amount in excess of the purchase price for the defective product or (ii) for any general, consequential, punitive, incidental or special damages. These include loss of recorded data, interruption of use, the cost of recovery of lost data, lost profits and the cost of the installation or removal of any products, the installation of replacement products, and any inspection, testing, or redesign caused by any defect or by the repair or replacement of products arising from a defect in any product. This section does not limit liability for bodily injury of a person.

### **Your Use of the Product**

Lumantek will have no liability for any product returned if Lumantek determines that:

The product was stolen from Lumantek.

The asserted defect:

- Is not present,
- Cannot reasonably be fixed because of damage occurring when the product is in the possession of someone other than Lumantek, or
- Is attributable to misuse, improper installation, alteration (including removing or obliterating labels and opening or removing external covers (unless authorized to do so by Lumantek), accident or mishandling while in the possession of someone other than Lumantek.

The product was not sold to you as new.

The product was not used in accordance with Lumantek specifications and instructions.

The product was not used for its intended function.

### **Additional Limitations on Warranty**

Lumantek's warranty does not cover products which have been received improperly packaged, altered, or physically damaged.



# Player WEIVER2.0





## 1. INTRODUCTION

### 1.1 / WEIVER 2.0 Player System

WEIVER 2.0 Player plays back the real world RF signals which had either recorded with WEIEVR - RF capture and playback platform or other RF capture equipments. Also, it comes with a converting utility that converts the I/Q data file into a possible data format, .wpj, with WEIVER 2.0 Player. It's all for to re-generate real world RF environments that are too complex To exact simulate.

It records signals directly to external SSD, and plays back directly from external SSD, so you can carry the "hassle-free heavy RF data copy" on your own.

#### FEATURES

- Supports all universal DTV and ATV broadcasting include Broadcasting Radio protocols
- Playback of real world broadcasting signals recorded with WEIEVR R & P platform to regenerate real world conditions that are too complex to simulate
- Front-access hot swappable SSD for fast reading and writing speed
- e-SATA interface for external storages
- Support for Real-time Spectrum and GPS location with Signal Tracer

WEIVER-RF capture and playback system can plays back RF signals covering the bandwidth range from 8M to 56M, or ARB in almost any environment, such as in laboratories or during on-site testings. You can see the all information about WEIVER-RF capture and playback equipment from LUMANTEK's web site ( [http://www.lumantek.com/prod/prod\\_detail.html?prod\\_num=A0001](http://www.lumantek.com/prod/prod_detail.html?prod_num=A0001) ).



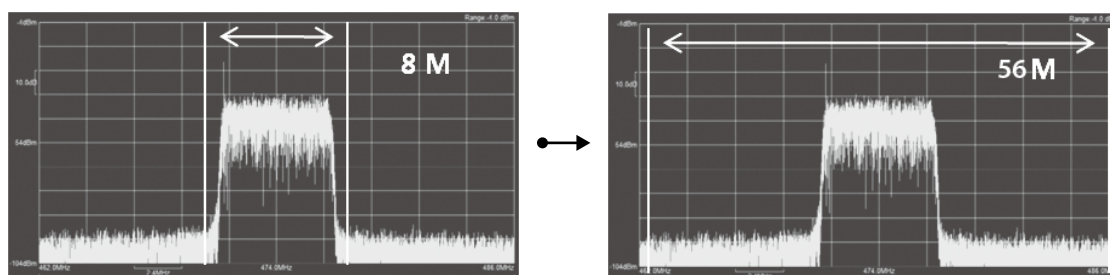
## 1.2 / User System Requirements

Your PC(System) must meet the following specification.

- **Computer / Processor**
  - Intel Pentium 4 2.33GHz
  - Athlon 64 2800 or the faster processor
- **Operating System**
  - Windows XP 32 bit service pack(sp2)
  - Windows Vista 32 bit service pack(sp2)
  - Windows Vista 64 bit service pack(sp2)
  - Windows 7 32bit
  - Windows 7 64bit
- **Memory**
  - 2GB RAM
- **Hard Disk Space**
  - 1TB GB SSD available hard disk space
- **Screen**
  - 1024x768, "32-bit True Color"
  - DirectX 9.0c or higher
- **Graphics Card**
  - DirectX 9.0c supported
- **Network**
  - 10/100 Mbps network card,
  - 10/100/1000Mbps network card(Recommend)
  - 802.11 b/g Wireless network card

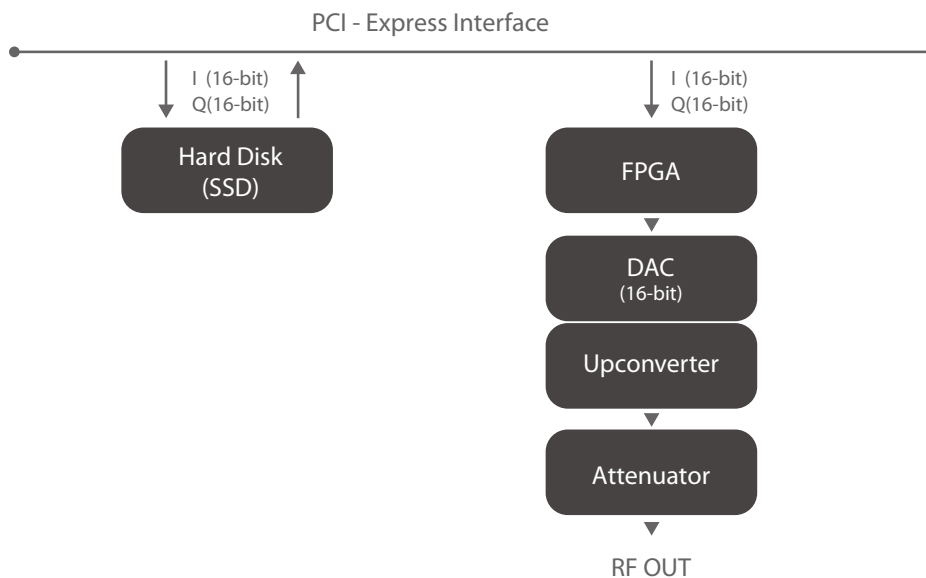
## 1.3 / Optional Upgrade

- **Bandwidth**
  - 8M,24M,48M,56M Band Width : User can play up to Wide 56M Band Width.

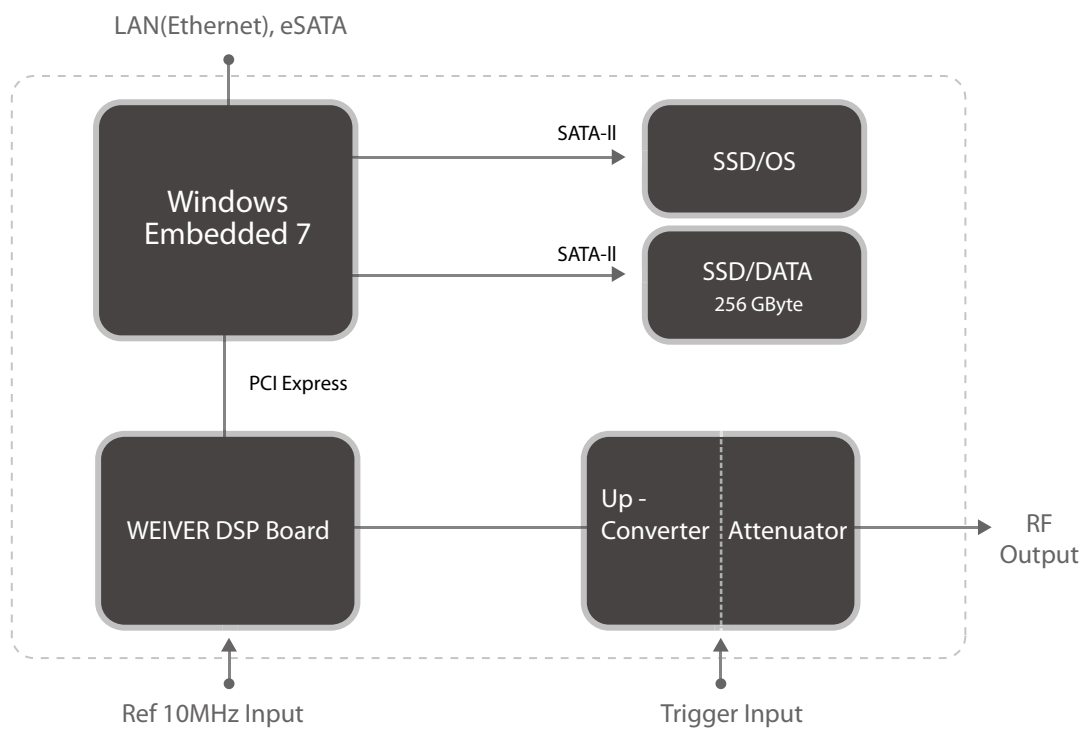


- **External SSD Hard disk (Optional)**
  - Size : 1 TB
  - Read Speed : 250 MB / Sec(Max.)
  - Write Speed : 220 MB / Sec(Max.)
  - TRIM : Yes

### 1.4 / Data Flow



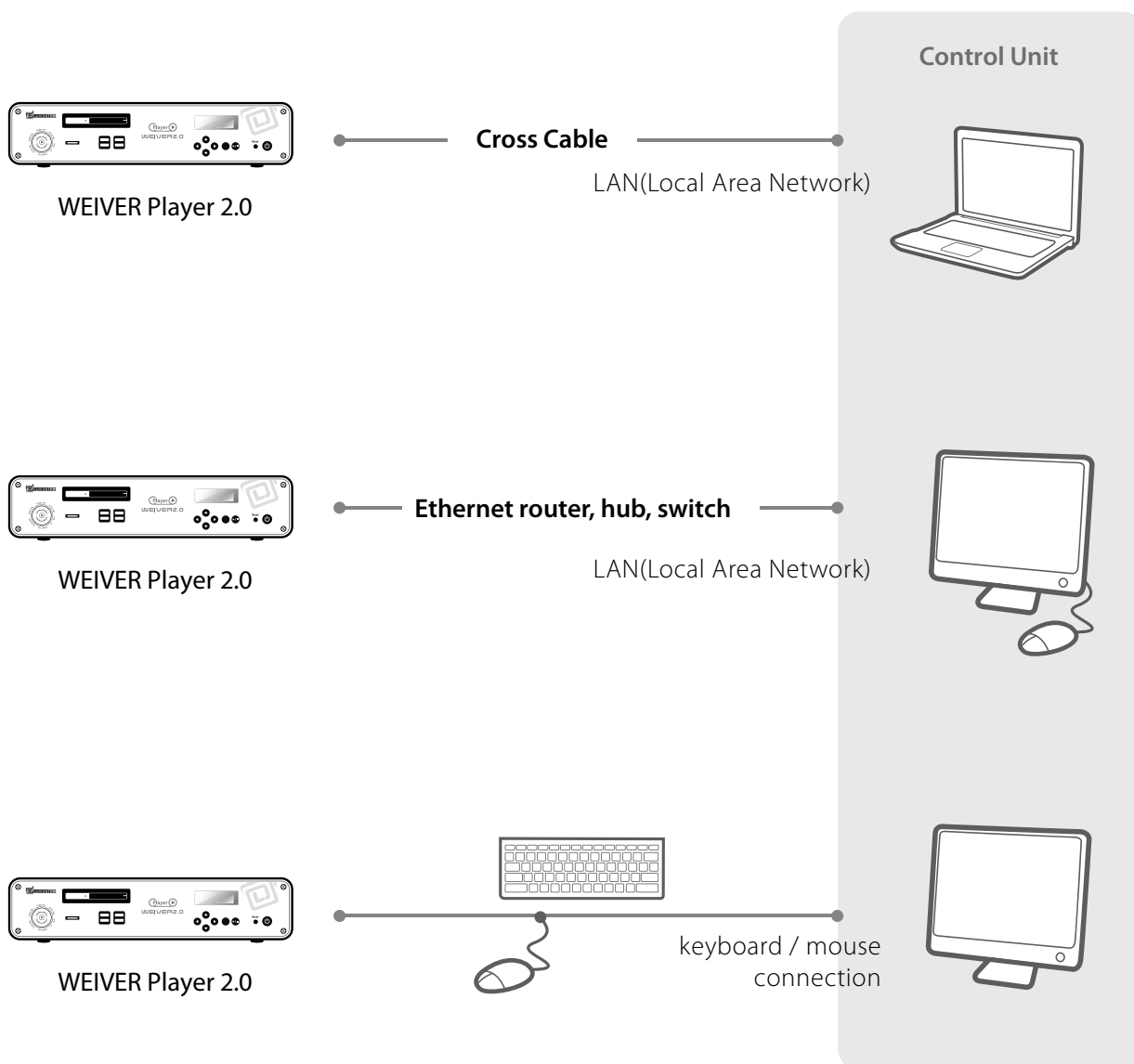
### 1.5 / Schematic Diagram



IQ data type stored in SSD

- I: signed 16-bit integers
- Q: signed 16-bit integers
- I0, Q0, I1, Q1, ..., In, Qn

1.6 / Control Configuration (Recommended)



### 1.7 / System Specification



#### Frequency

Frequency band	0.1 to 2700 MHz
Real time bandwidth	56MHz max. (Arbitrary variable BW, 1Hz step)
Frequency resolution	1Hz min.
Warm-up time	30 minutes (typ.)
Freq. Stability vs. Temp.	±20 ppb max.
Daily Aging	±1 ppb max.
Aging (PER year)	±50 ppb max.

#### Spectral Purity

Phase Noise@1 KHz offset	≤ -100 dBc/Hz (30 MHz)
	≤ -95 dBc/Hz (1 GHz)
	≤ -90 dBc/Hz (2.7 GHz)
Phase Noise@10 KHz offset	≤ -105 dBc/Hz (30 MHz)
	≤ -100 dBc/Hz (1 GHz)
	≤ -95 dBc/Hz (2.7 GHz)

#### Spurious Responses

2nd Harmonic	≤ -50dBc
3rd Harmonic	≤ -60dBc
other	≤ -60dBc

#### RF Output Characteristics

Gain range	-30 ~ +30dB (Input Level Basis)
Amplitude resolution	0.1dB step (Min.)
Amplitude accuracy	±1dB
Power	+3 dBm max.(48 to 2700 MHz) +10 dBm max.(0.1 to 48 MHz)

#### RF Output

RF output port	50ohm, N type female, DC-cpl
Max. DC input	±25 VDC max.
Max. reverse RF power	1 W (Max.)

#### Environment

Operating temperature	0 to +50 °C
Relative humidity	90%
Storage temperature	-20 to +70 °C

#### Power

Input power	100-240V ~ 3-1.5A, 50-60Hz
Lowest Power Consumption	70 Watt

#### Mechanical

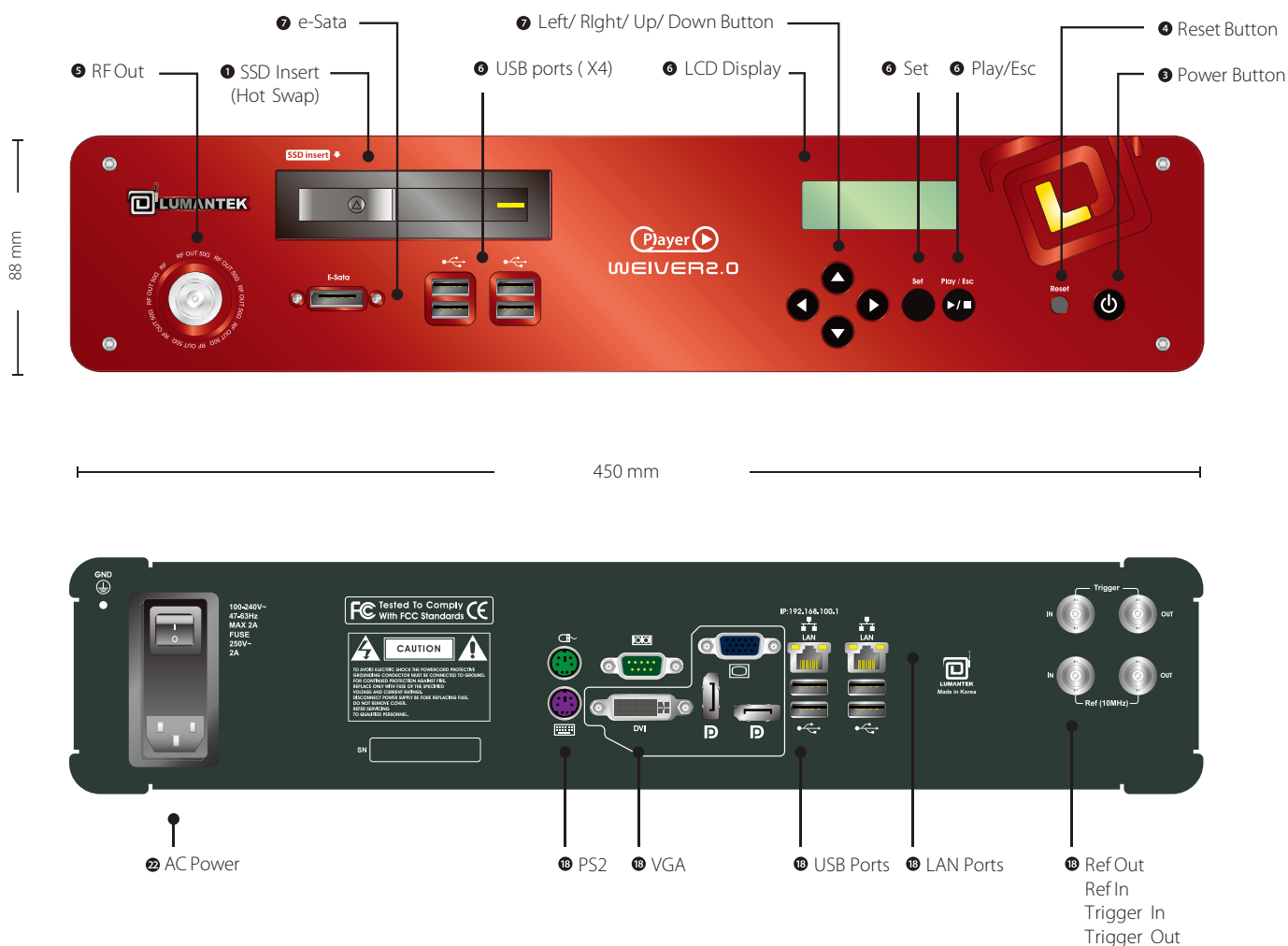
Dimensions	(W)478mm x (H)88mm x (D)462mm
Weight	5.5 kg (Approx.)



## 2. SYSTEM DESCRIPTION

### 2.1 / WEIVER 2.0 Player Components

- External Component Feature Description



## 2.2 / WEIVER 2.0 Player System Configuration

- Basic Component



WEIVER 2.0 Player Body



WEIVER 2.0 Player AC Cord

WEIVER 2.0 Player USB

Weiver\_EX Program  
 WEIVER 2.0 Player Operation Manual  
 WEIVER 2.0 Player Test Report  
 WEIVER 2.0 Player Restore Data



- Optional Component



WEIVER External SSD



WEIVER External SSD USB Power



WEIVER External SSD e-SATA Cable

## 2.3 / Installation precautions

This section describes safety precautions that users shall be aware of during the system installation and operation. Not complying such precautions may result in serious harm or personal injuries. For that reason, please keep all details here in mind before installing or using the WEIVER 2.0 Player.

[Please carefully read the followings for safe use of Weiver 2.0 Player](#)

### ● General Precautions

- Must be operated and maintained free of dust or dirt.
- The cover should be securely fastened.
- Securely stow all the cables, external antennas, external SSD or any other tools away in a safe place after its use.
- Avoid wearing loose, draping clothing, and dangling jewelry when using WEIVER 2.0 Player.
- Do not open the WEIVER 2.0 Player case. Doing so may void the warranty and LUMANTEK takes no responsibility for the damages caused by such action. Should you be experiencing performance issues, please contact your local dealer for assistance.

### ● Power Precautions

- Make sure if it may cause overload in wiring when you connect the power source.
- Avoid wearing necklaces or watches when connecting the system to power source. These may cause electronic shocks to the system.
- Avoid operating on a wet floor out in the open (e.g., raining). Make sure the power extension cable is in satisfactory condition (e.g., not worn out).



- Disconnect the system from power source before hardware installation, rub or contact on the metal surface of the system to discharge statics from your body.
- Note: Manufacturer is not responsible for damages caused by using or replacing inappropriate components or not authorized services.
- Supplying power during installation may cause serious damages to the system and personal injuries.

### ● AC Power

- This unit comes with the AC power cord, grounding connection is necessary.
- In the event of a fire, please disconnect the system from power source.

### ● Log-off Caution

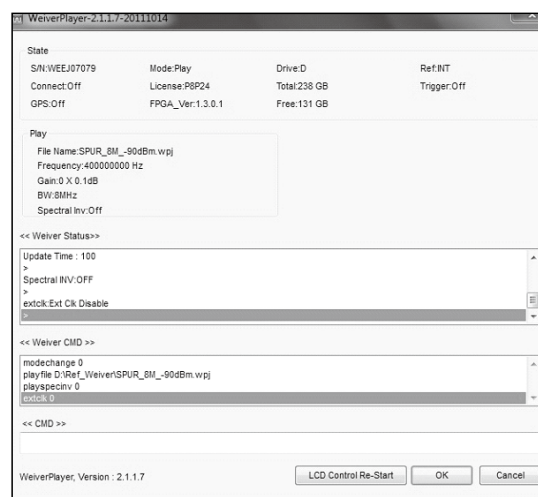


- [Do NOT log off while "Remote Desktop" is running. You must shut-down the program by pressing the close\[x\] button on top right. If you log-off the player, running program will be stopped and "Please Wait"sigh will be appeared on front panel. To recover from this state, you must log-on again after connecting the keyboard & monitor.](#)

### 3. CONTROL

#### 3.1 / Starting WEIVER 2.0 Player

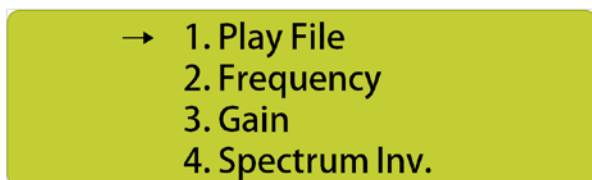
The "Weiver\_Ex" program is for connecting and controlling the Weiver 2.0 player system. You will see a "remote" sign displayed on front LCD panel when the system is being connected.



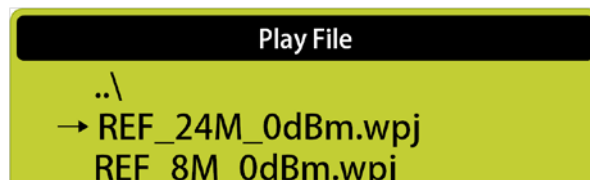
#### 3.2 / Front Panel Operation

[ Play ]

● Set --> 1. Play File --> ● Set



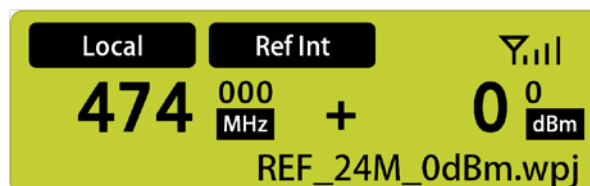
--> File Select



--> ● Set



--> ● Play



[ Frequency Change ]

● Set --> 2. Frequency --> ● Set

1. Play File  
 → 2. Frequency  
 3. Gain  
 4. Spectrum Inv.

--> Change (up / down / left / right)

Frequency  
 0400.000000 MHz  
 [0.1~2700MHz/1Hz]

--> Change (up / down / left / right)

Frequency  
 0474.000000 MHz  
 [0.1~2700MHz/1Hz]

● Set --> Esc

Local Ref Int Ȳ  
 474<sup>000</sup> MHz + 0<sup>0</sup> dBm  
 REF\_24M\_0dBm.wpj

[ Gain Change ]

● Set --> 3. Gain --> ● Set

1. Play File  
 2. Frequency  
 → 3. Gain  
 4. Spectrum Inv.

--> Change (up / down / left / right)

Gain  
 +00.0 dB  
 [+30 ~ -30dB/0.1dB]

● Set --> Esc

Local Ref Int Ȳ  
 474<sup>000</sup> MHz + 0<sup>0</sup> dBm  
 REF\_24M\_0dBm.wpj

[ Spectrum Invert ]

● Set --> 4. Spectrum Inv. --> ● Set

--> Change (up / down)

1. Play File  
2. Frequency  
3. Gain  
→ 4. Spectrum Inv.

**Spectrum Invert**  
→ ✓ Off  
On

● Set --> Esc

Local Ref Int  $\nabla_i$   
474 000 MHz + 0 0 dBm  
REF\_24M\_0dBm.wpj

[ Reference 10MHz ]

● Set --> 5. Ref 10MHz --> ● Set

--> Change (up / down)

2. Frequency  
3. Gain  
4. Spectrum Inv.  
→ 5. Ref 10MHz

**Reference 10MHz**  
→ ✓ Internal 10MHz  
External 10MHz

● Set --> Esc

Local Ref Int  $\nabla_i$   
474 000 MHz + 0 0 dBm  
REF\_24M\_0dBm.wpj

[ Rescan Disk ]

● Set --> - 6. Rescan Disk --> ● Set

--> Apply / Cancel

3. Gain  
4. Spectrum Inv.  
5. Ref 10MHz  
→ 6. Rescan Disk

**Rescan Disk**  
→ Apply  
Cancel

● Set --> Esc

Local Ref Int  $\nabla_i$   
474 000 MHz + 0 0 dBm  
REF\_24M\_0dBm.wpj

[ IP Setting ]

● Set --> 7. IP Setting --> ● Set

4. Spectrum Inv.  
5. Ref 10MHz  
6. Rescan Disk  
→ 7. IP Setting

--> DHCP

IP Setting  
→ DHCP/Static  
IP Address  
Subnet Mask

Change (up)

DHCP/Static  
→ ✓ DHCP  
STATIC

--> Static

IP Setting  
→ DHCP/Static  
IP Address  
Subnet Mask

Change (down)

DHCP/Static  
→ DHCP  
✓ STATIC

--> IP Address

IP Setting  
DHCP/Static  
→ IP Address  
Subnet Mask

--> Address Setting

IP Address  
000.000.000.000

--> Subnet Mask

IP Setting  
DHCP/Static  
IP Address  
→ Subnet Mask

--> Subnet Mask Setting

Subnet Mask  
000.000.000.000

--> Gateway

IP Setting  
IP Address  
Subnet Mask  
→ Def. Gateway

--> Gateway Setting

Default Gateway  
000.000.000.000

--> Apply / Cancel

IP Setting  
Def. Gateway  
→ Apply  
Cancel

[ Version ]

● Set --> 8.Version --> ● Set

5. Ref 10MHz  
 6. Rescan Disk  
 7. IP Setting  
 → 8. Version

Change ( up/down )

**Version**  
 S/N : WEE000000  
 → S/W Ver : 2.1.1.8  
 FPGA Ver : 1.3.0.1

● Set --> Esc

**Local**   **Ref Int**    $\nabla$   
 474<sup>000</sup> MHz + 0<sup>0</sup> dBm  
 REF\_24M\_0dBm.wpj

[ System Default ]

● Set --> 9.System Def. --> ● Set

6. Rescan Disk  
 7. IP Setting  
 8. Version  
 → 9. System Def.

--> Apply / Cancel

**System Default**  
 → Apply  
 Cancel

● Set --> Esc

**Local**   **Ref Int**    $\nabla$   
 474<sup>000</sup> MHz + 0<sup>0</sup> dBm  
 REF\_24M\_0dBm.wpj



## 4. SYSTEM OPERATION

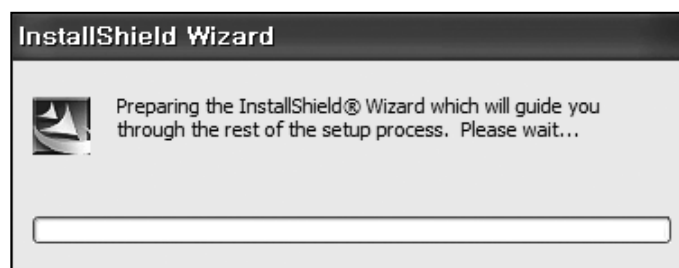
### 4.1 / WEIVER 2.0 Player Operation

Connect the WEIVER 2.0 Player to a laptop or desktop PC with both Microsoft Windows OS and the 'Weiver\_EX' program installed. In case where system update is necessary, please have a monitor, keyboard and mouse ready. You may also use remote access control.

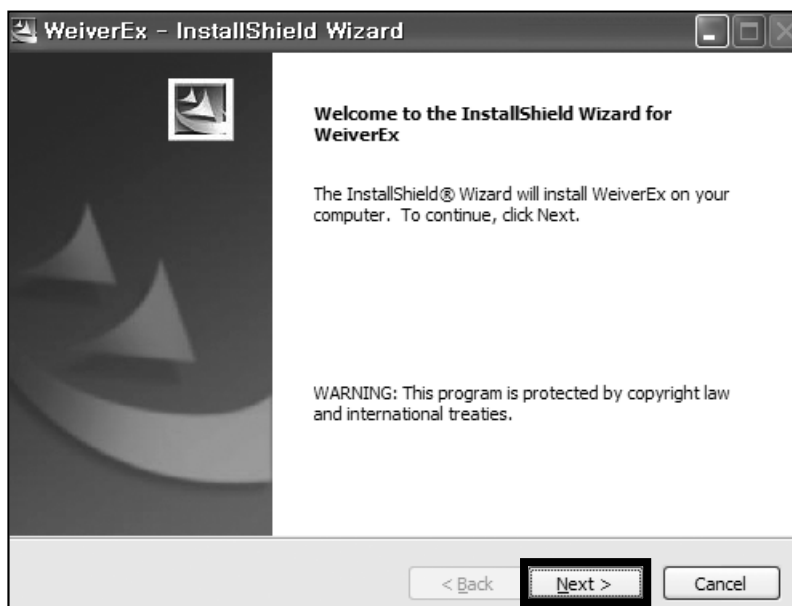
### 4.2 / Weiver\_EX Software Installation



Please visit LUMANTEK online Download Center at <http://www.lumantek.com/support/download.html> to download 'Weiver\_EX' program. Double-click on the program icon will initiate the installation.

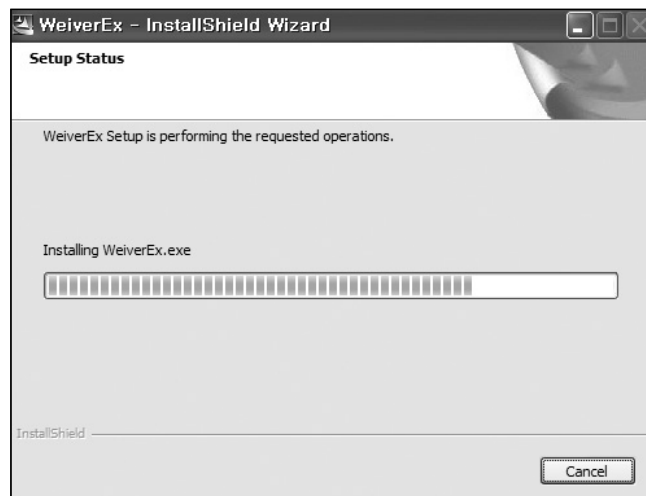


Click on 'Next' to proceed the 'Weiver\_EX' installation process.



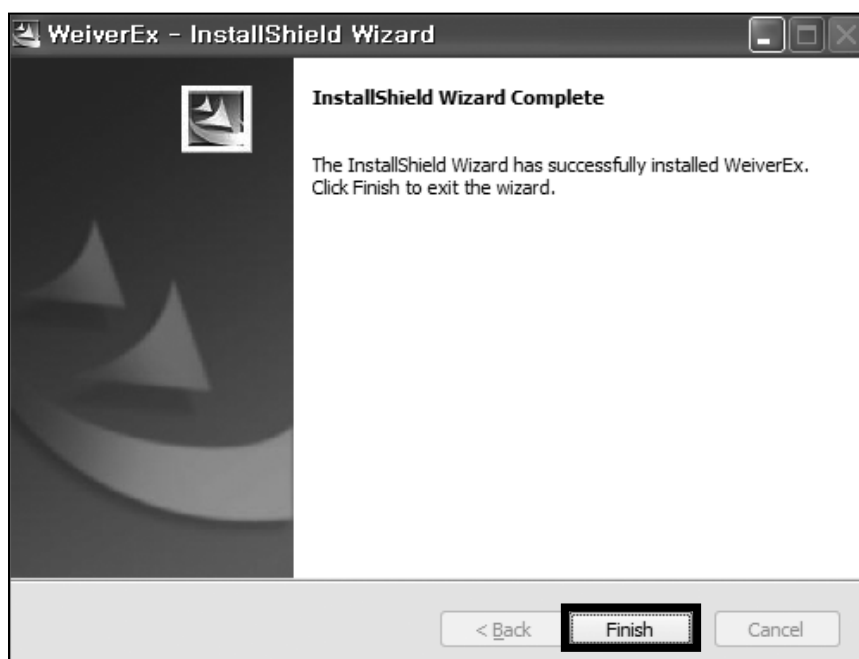


Click 'Install' to begin installation.



The 'Weiver\_EX' program installation status will be show as pictures below with a progress bar.

The 'Weiver\_EX' installation is now completed; click 'Finish' to exit the program.



### 4.3 / Weiver\_EX Software Update

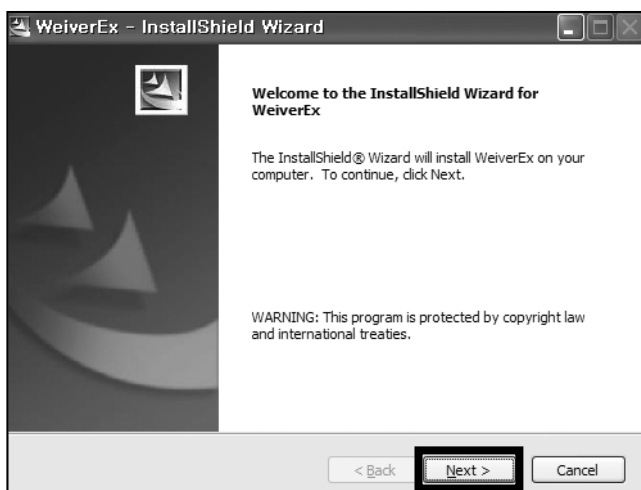
Please visit us at <http://www.lumantek.com/support/download.html> to download 'Weiver\_EX' program. Once downloaded, double-click to upgrade and select 'Yes' to uninstall previous version of 'Weiver\_EX'.



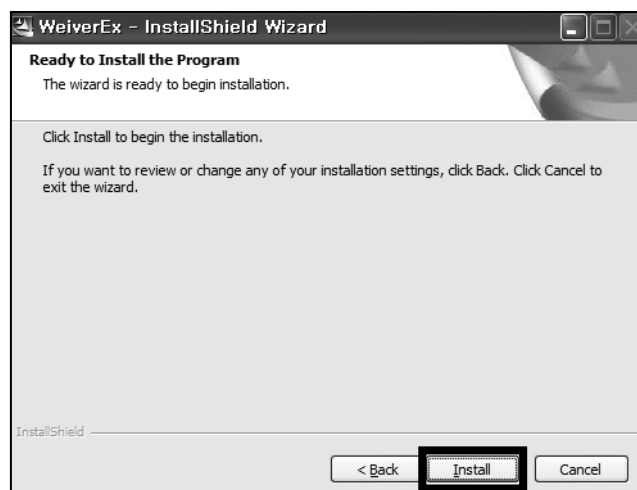
Once uninstallation is finished, double-click on 'Weiver\_EX\_Setup.exe' to install the program.



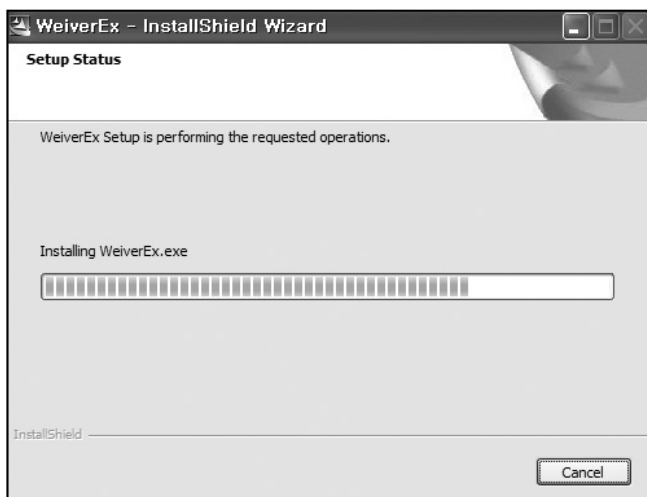
Click 'Next' to proceed with the 'Weiver\_EX' installation process.



Click 'Install' to begin installation.



The 'Weiver\_EX' program is being installed as shown with the progress bar.



The 'Weiver\_EX' installation is now completed. Click 'Finish' to exit the program.



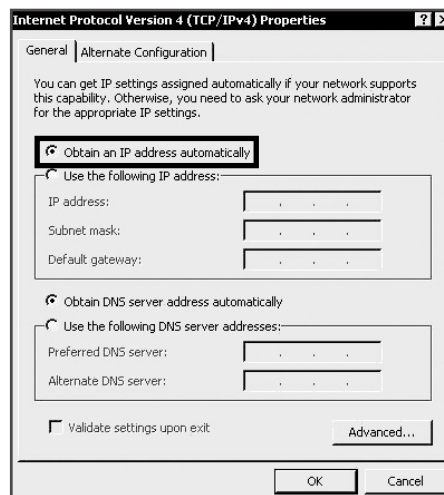
#### 4.4 / Ethernet Connection Method

- DHCP is default settings for the WEIVER 2.0 Player’s LAN connection. The WEIVER 2.0 Player automatically receives the IP address from the Network immediately.
- Please access to the ‘Internet Protocol (TCP/IP) Properties’ menu in both PC and the player, make sure ‘Obtain an IP address automatically’ has been selected

##### ● Laptop and Desktop PC: TCP/IP Configuration



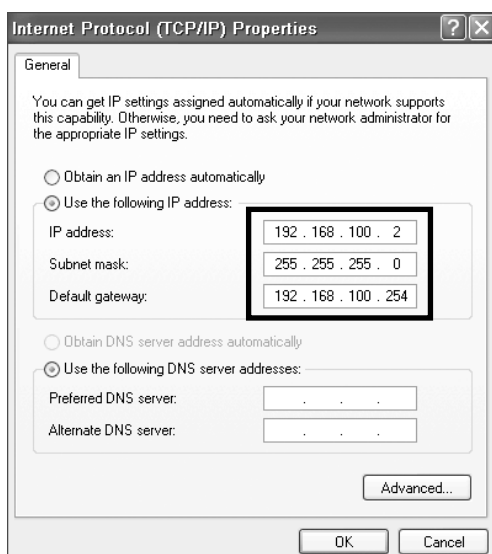
##### ● WEIVER 2.0 Player TCP/IP Configurations



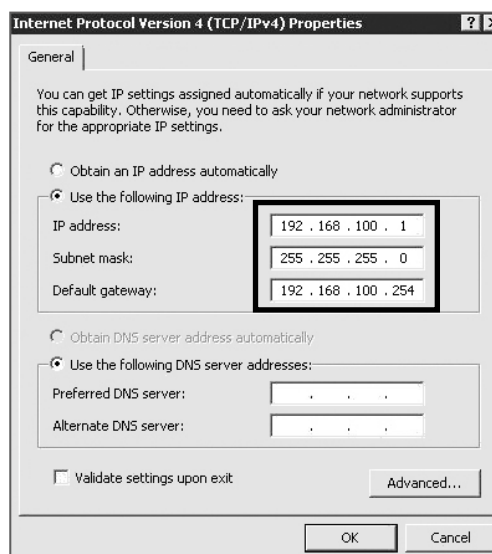
#### 4.5 / Cross Cable Connection Method( use Gigabit LAN port : see page17-no. 15 )

This section is to show cross cable connection between PC and the Player by using static IP address. Please note that the first three columns of the static IP address for both PC and the player must be identical. To control WEIVER 2.0 Player using fixed IP, move to the WEIVER 2.0 Player network setting menu and set IP address manually.

##### ● Laptop and Desktop PC Configuration



##### ● WEIVER 2.0 Player Configuration

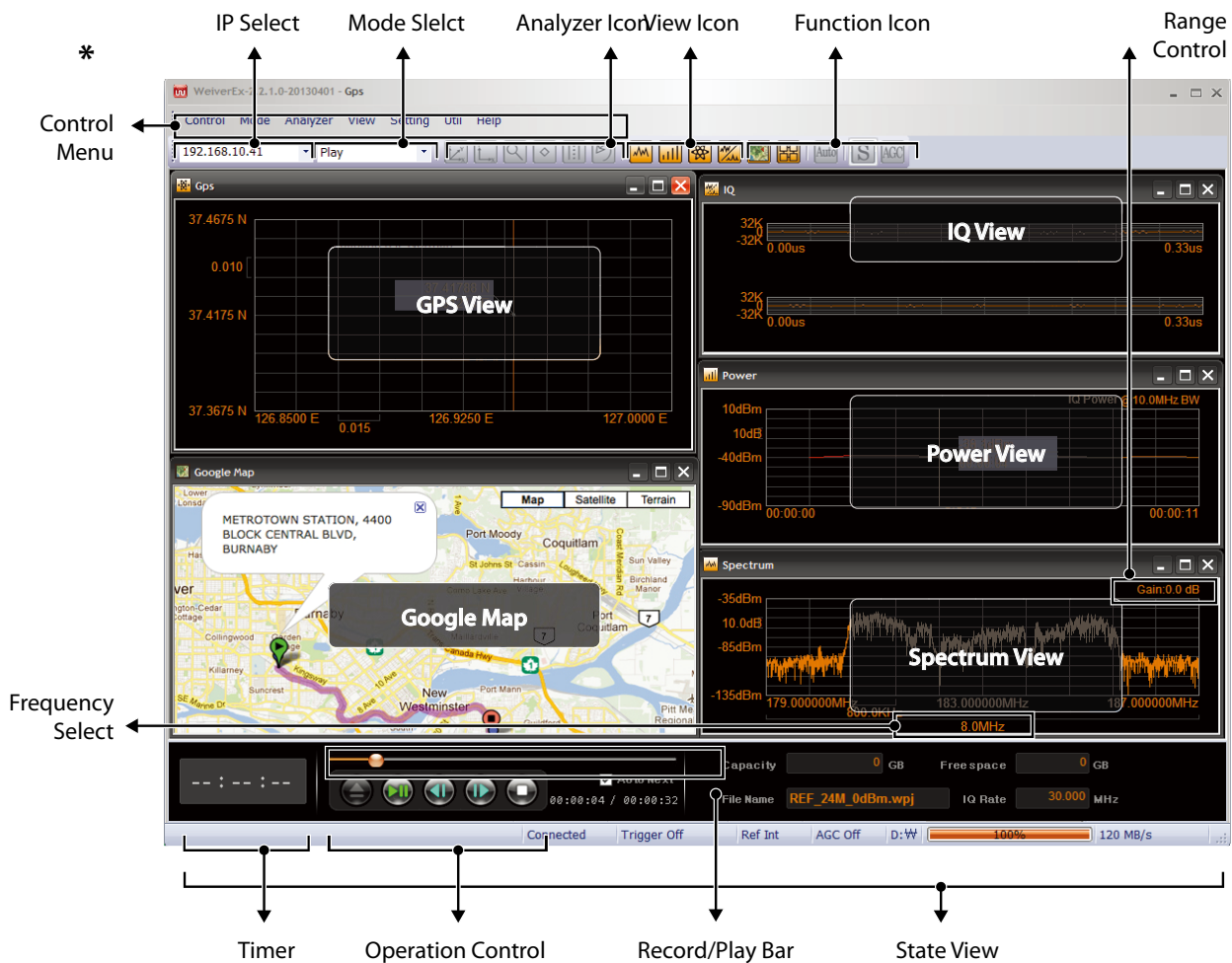


Now, the Weiver\_EX program can be initiated to access and monitor the WEIVER 2.0 Player operations

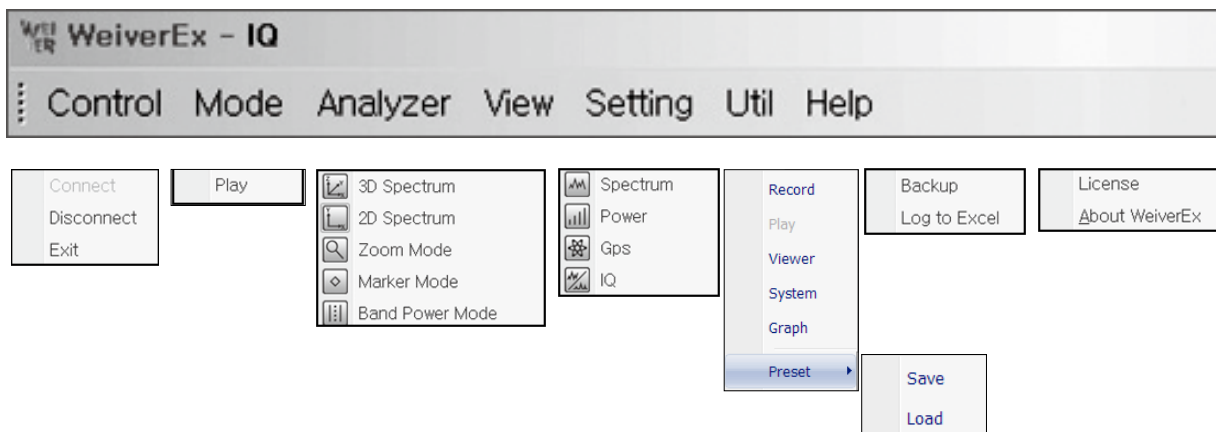
### 4.6 / Weiver\_EX Operation

To use the latest version of the 'Weiver\_EX program', please visit our S/W Download page at <http://www.lumantek.com>. You can find detailed features and functionalities of the 'Weiver\_EX' program.

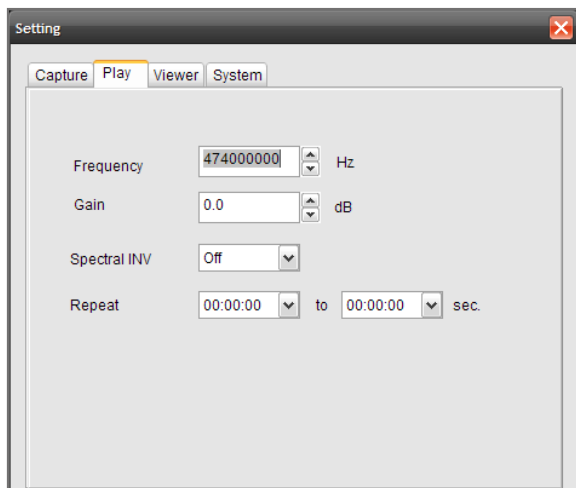
● Weiver\_EX Program(software)



\* The Weiver\_EX control menu and sub-menu is as shown below



- Setting



There are four unique tabs in 'Setting' menu.

The 'Play' tab includes Frequency, Gain, Spectrum INV and Repeat settings.

**- Frequency**

Adjust the RF signal Center Frequency at user's choice.

**- Gain**

Amplify or reduce the signal strength. (Input RF signal power of -30dB to +30dB). Zero (0dB) indicates that the power of the captured and playback signal are equal. The maximum output signal cannot exceed +10dBm.

**- Spectral INV**

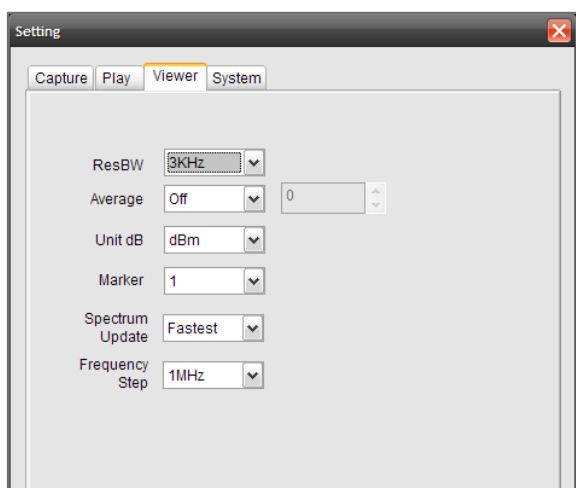
Inverting I/Q signal output function On / OFF

**- Repeat**

Repeated (loop) play function in specific time duration.

**- Trigger \***

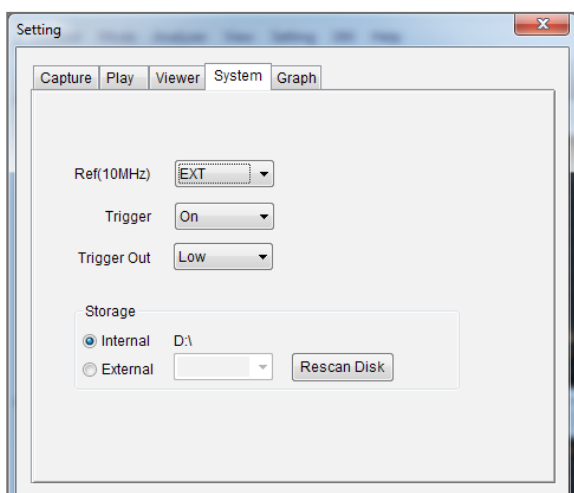
Activate the synchronization with the Signal Generator by external Trigger Signal.



The 'Viewer' tab includes ResBW, Average, Unit dB and Marker settings.

**- ResBW**

Adjust the resolution of 'Spectrum Window'. [3 KHz, 5 KHz, 10 KHz, 20 KHz]



#### - Average

Enable/Disable 'Exponential' features in Spectrum Window.

#### - Unit dB

The RF Power level indication unit can be changed into dBm, dBmV, dBuV individually at user's convenience.

#### - Marker

Mark up to four (4) random individual points in spectrum window and display them simultaneously with power level indications.

#### - Spectrum Update

Change the spectrum window update interval in five different speeds. The Fastest, Faster, Normal, Slower, and the Slowest.

#### - Frequency Step

From 1 to 100MHz, a user can change a frequency in every 10 MHz step. Change the frequency setting, shifting up/down will occur in spectrum window in accordance with the setting value.

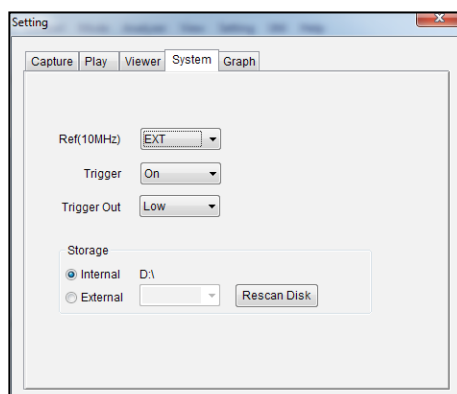
*The 'System' tab includes Ref(10MHz), Trigger, and Storage settings.*

#### - Ref(10MHz)

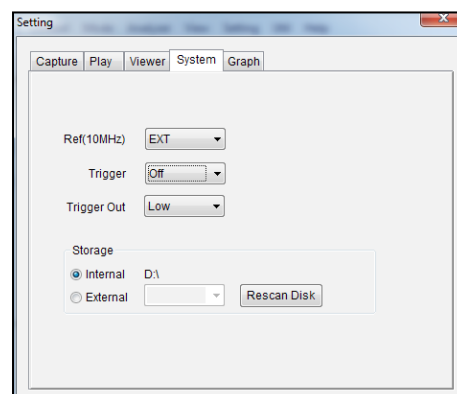
Select the EXT external Clock for synchronizing with the PLL Clock by external clock signal input.

### \* Trigger Operation

In WEIVER\_Ex setting, user can choose to use an external trigger.

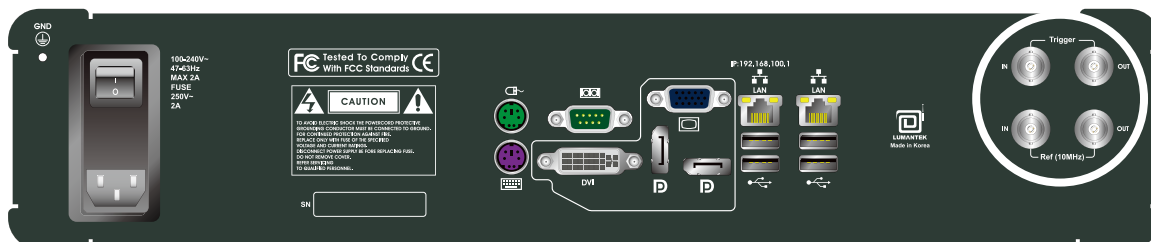


Trigger On



Trigger Off

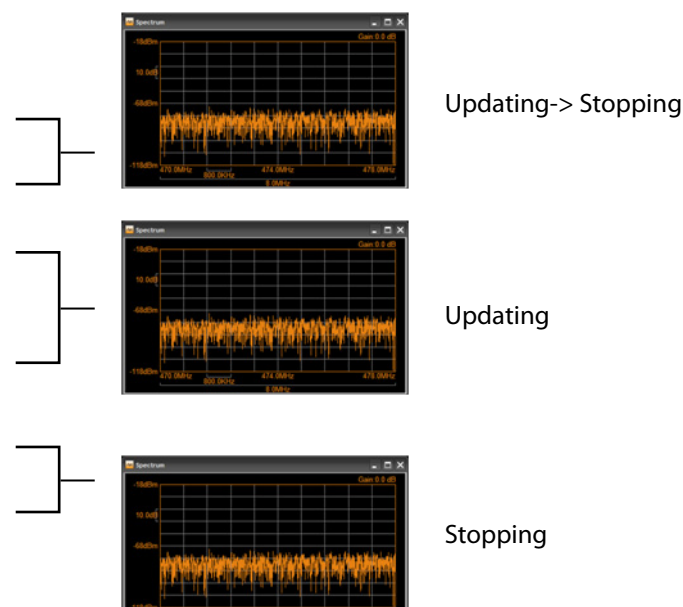
If the user is equipped with an external trigger and set the trigger on (in previous page),



- **0V** Trigger button NOT pushed: Low Level(0V) – In capture & play mode, WEIVER 2.0 Player doesn't work, 0V
- **3.3V** Trigger button pushed: High Level(3.3V)– In capture & play mode, WEIVER 2.0 Player starts to work, 3.3V

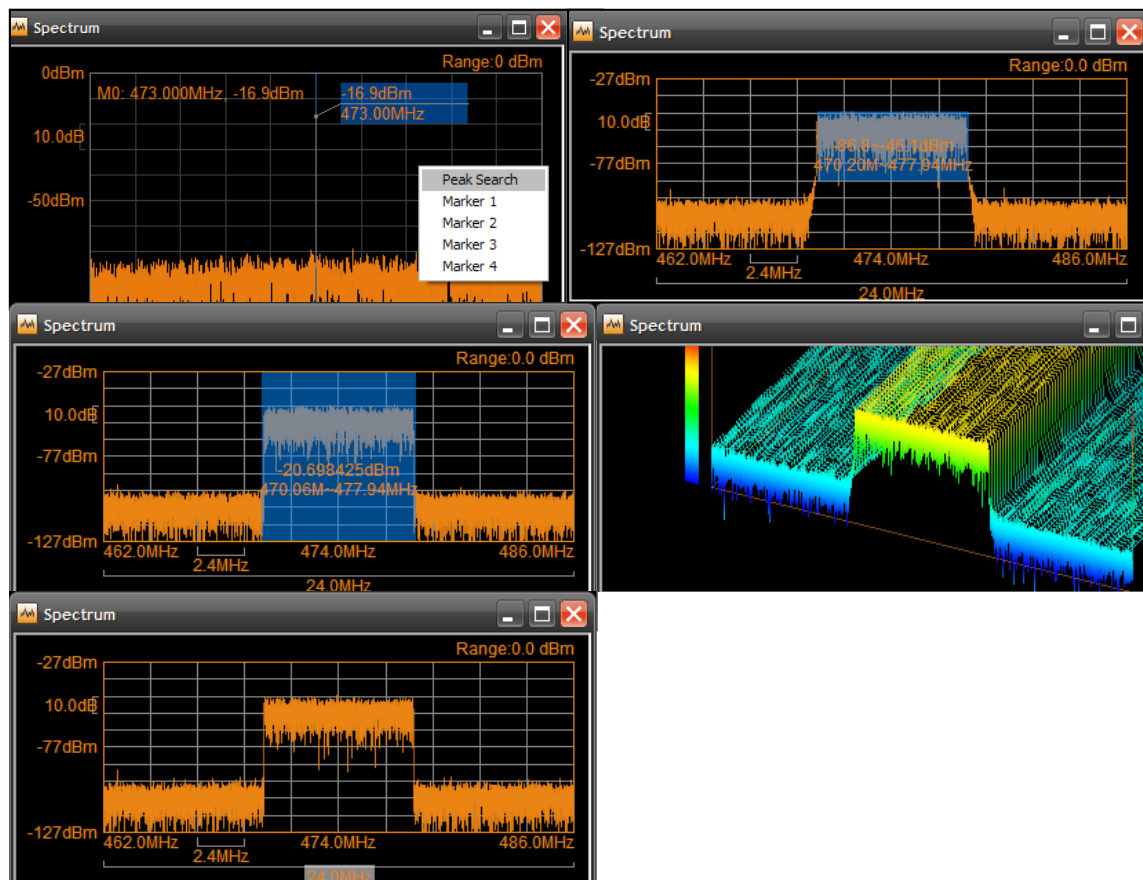
### Play Mode Scenario with trigger

1. Insert a trigger in 'trigger port': Low Level(0V)
2. Trigger's power On
3. In WEIVER\_Ex, select the file and click on Play (start) Button
4. Activate (push) the Trigger: High Level(3.3V)
5. Playing file(iqw, wpj)  
Playing... Playing
6. Deactivate(push again) the Trigger : Low Level(0V)
7. In WEIVER\_Ex, Click on the stop button
8. Trigger power OFF





## ● Analyzer



### - 3D Spectrum

Spectrum window can be displayed in 3D view.

### - 2D Spectrum

The default setting is in 2D style. The Complex FFT Spectrum will display captured 8M bandwidth and captured 24M bandwidth.

### - Zoom Mode

Zoom on the area by clicking first on the left mouse button and dragging to the preferred point and then clicking on the left mouse button. The area the user has selected will be highlighted. If you want to zoom back to the previous screen, or to the original state, click on or simultaneously press Ctrl and Z.

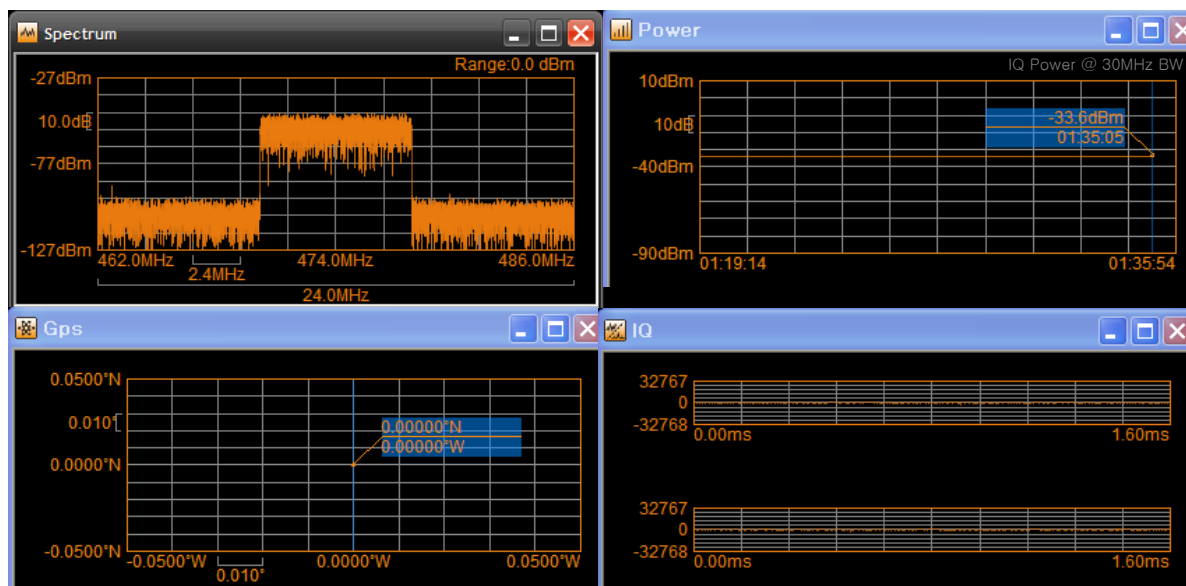
### - Marker Mode

The Marker feature indicates the power level of RF signal.

### - Band Power Mode

In the Spectrum View, drag your mouse to the desired Band Power Range to see the respective measurement.

- View



#### - Spectrum

By adjusting the frequency in spectrum window, user can observe in-band RF signal (within range from 8M to 56M bandwidth). By adjusting the Range Input Capture mode, the RF IN signal power can be optimized by controlling the range in a capture mode.

#### - Power

The power level of RF IN signals from the Antenna or RF Cable can be observed.

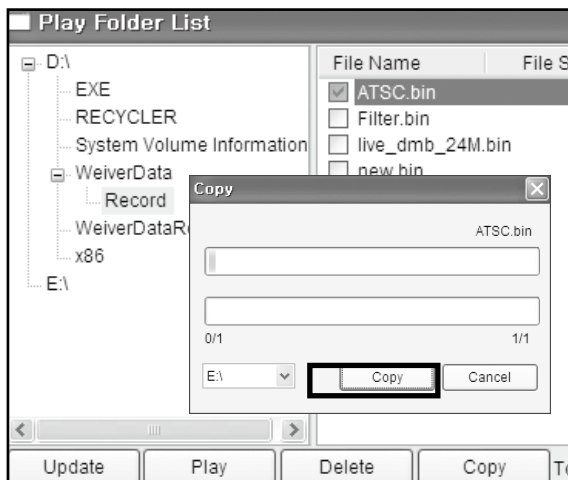
#### - GPS

In the Preview Mode, the current GPS coordinates is displayed. In the Capture Mode, the actual GPS coordinates of the captured data is shown and recorded.

#### - IQ

The RF input signal I (In-Phase) / Q (Quad-Phase) signal is displayed separately.

4.7 / Weiver Utilities



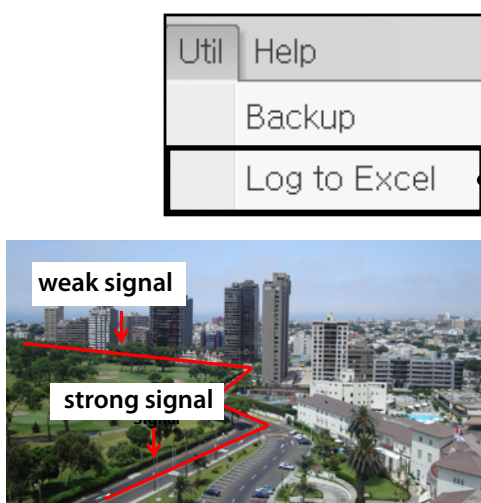
● Backup

Default storage for captured data is in D:\ (D Drive). When default internal storage reaches to the point where remaining storage capacity is 2GB or less, it automatically stops. To ensure continuous uninterrupted data capture, a backup external storage device (e-SATA SSD) must be enabled/connected.

● Log to Excel

Provides the functions of extracting information such as File Names, File Sizes, BW, Sample Clock, Frequency, Time, Time Based Signal power, Time Based GPS Location, and saving them in form of excel files. All raw data gained during field testing can be harvested for documentation and reporting.

[.xls format]



	A	B	C	D
1	FileName:DRV-TDMB-8M-183.008.iqw			
2	FileSize:24065MB			
3	BW:8MHz			
4	Sample Clock:10000000Hz			
5	Frequency:183008000Hz			
6	Time:601 Seconds			
7				
8				
9	Time(s)	Power(dBr)	Longitude	Latitude
10	1	-35.2	126.8871	37.4678
11	2	-36.4	126.8871	37.4679
12	3	-35.3	126.8871	37.4679
13	4	-35.3	126.8871	37.4679
14	5	-34.6	126.8871	37.468
15	6	-35.2	126.8871	37.468

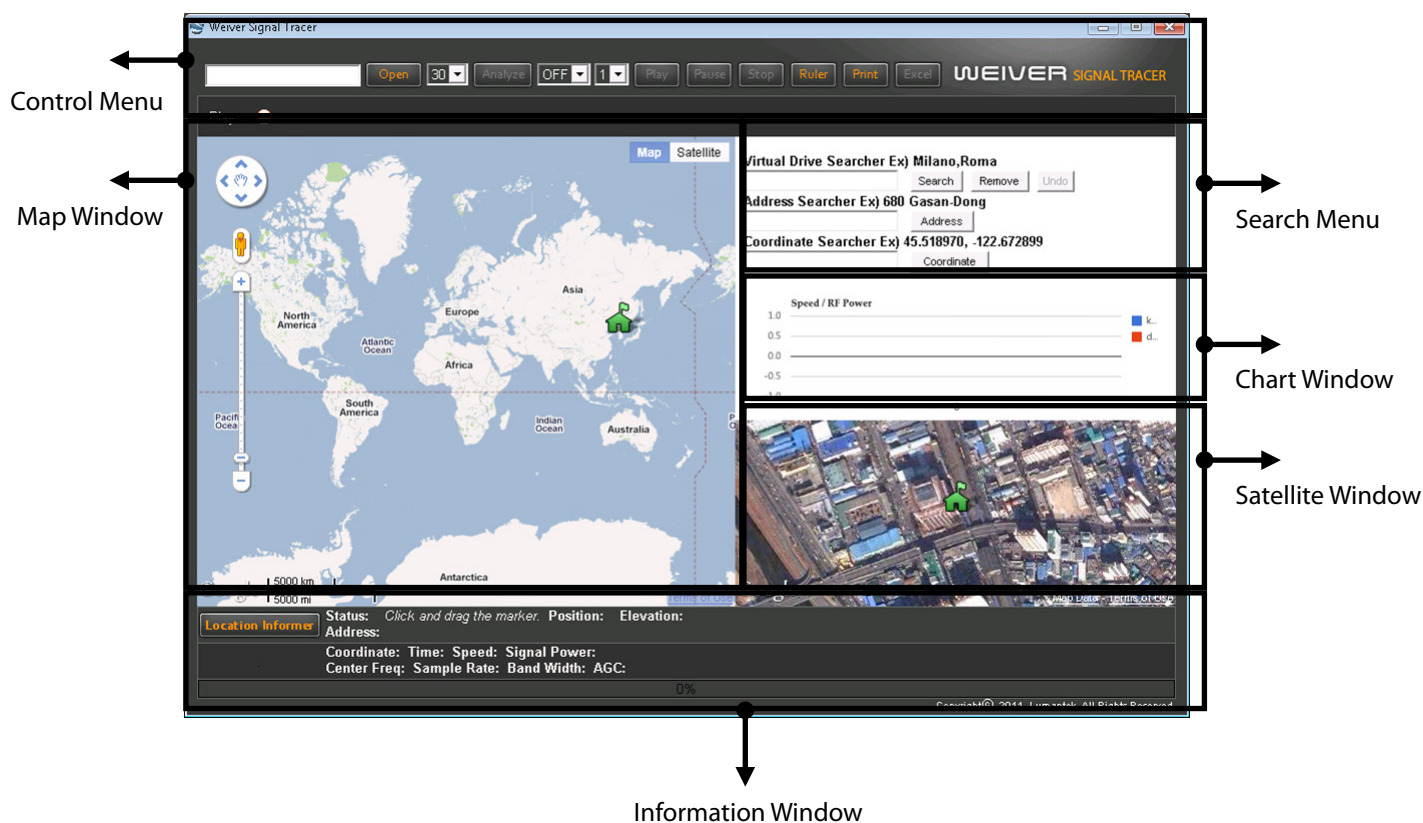
## \* Weiver Signal Tracer

### Introduction

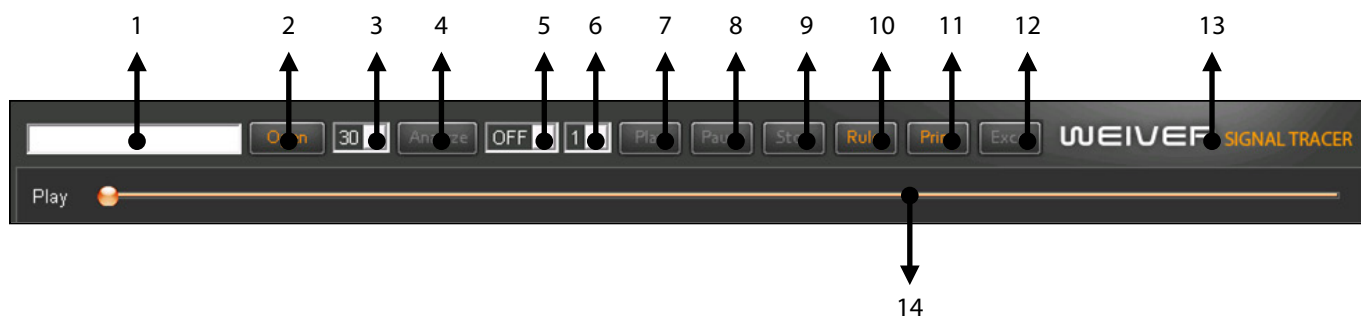
'Weiver Signal Tracer' provides a user information regarding location, power of RF signal, velocity when analyzing the data captured by WEIVER. In many cases, many circumstantial variables makes user have problem to analyze after user captured the data with RF capture equipment. Using map and captured data, Weiver Signal Tracer allows user to analyze the geographical peculiarity such as skyscrapers and tunnels and vehicle's velocity when user was capturing the data. Checking a virtual drive route before a drive test and Searching the geography with address or longitude and altitude is able to do.

Weiver Signal Tracer is based on Google Map API V3 and required the Internet connection. Microsoft Internet Explorer (IE) 7.0 or later version should be installed at user's PC. Loading time for map is varies depending on the network and PC's specification and control name in Graphic User Interface, copyrights notice, navigation, and label in map is followed by the language setting for PC's browsers. Supported language list can be found at the appendix.

### Specification



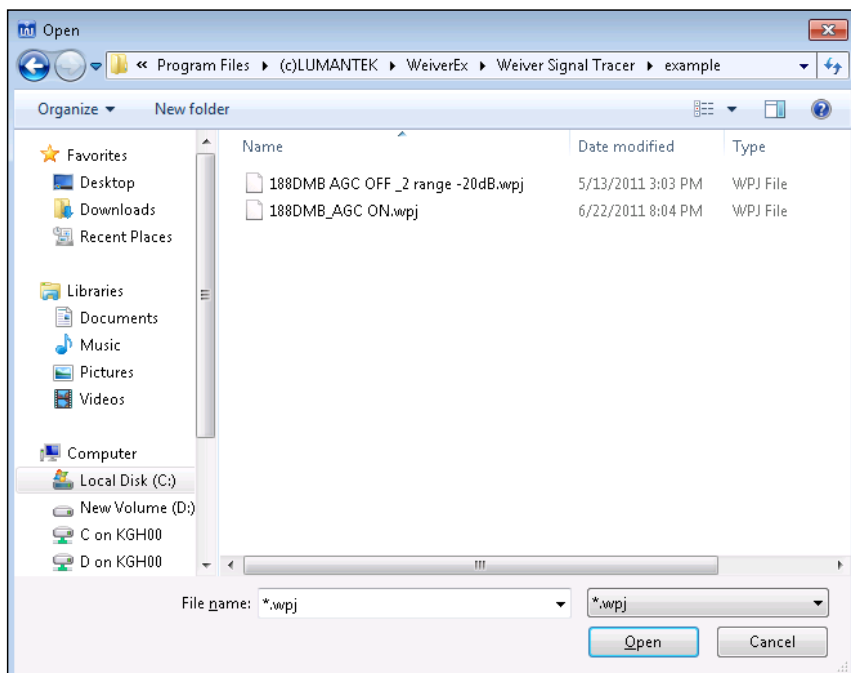
### Control Menu



#### 1. File Window

Displaying the file's name after choosing a file.

#### 2. Open button



Opening Windows to select \*.wpj file.

#### 3. Sample Interval

wpj-typed(\*.wpj) file stores information in one second however, for displaying all information at the map and chart needs sufficient time. Therefore user can choose time interval from 5 to 30 seconds to selectively extract information.

ex) 10 Sec Sample Interval

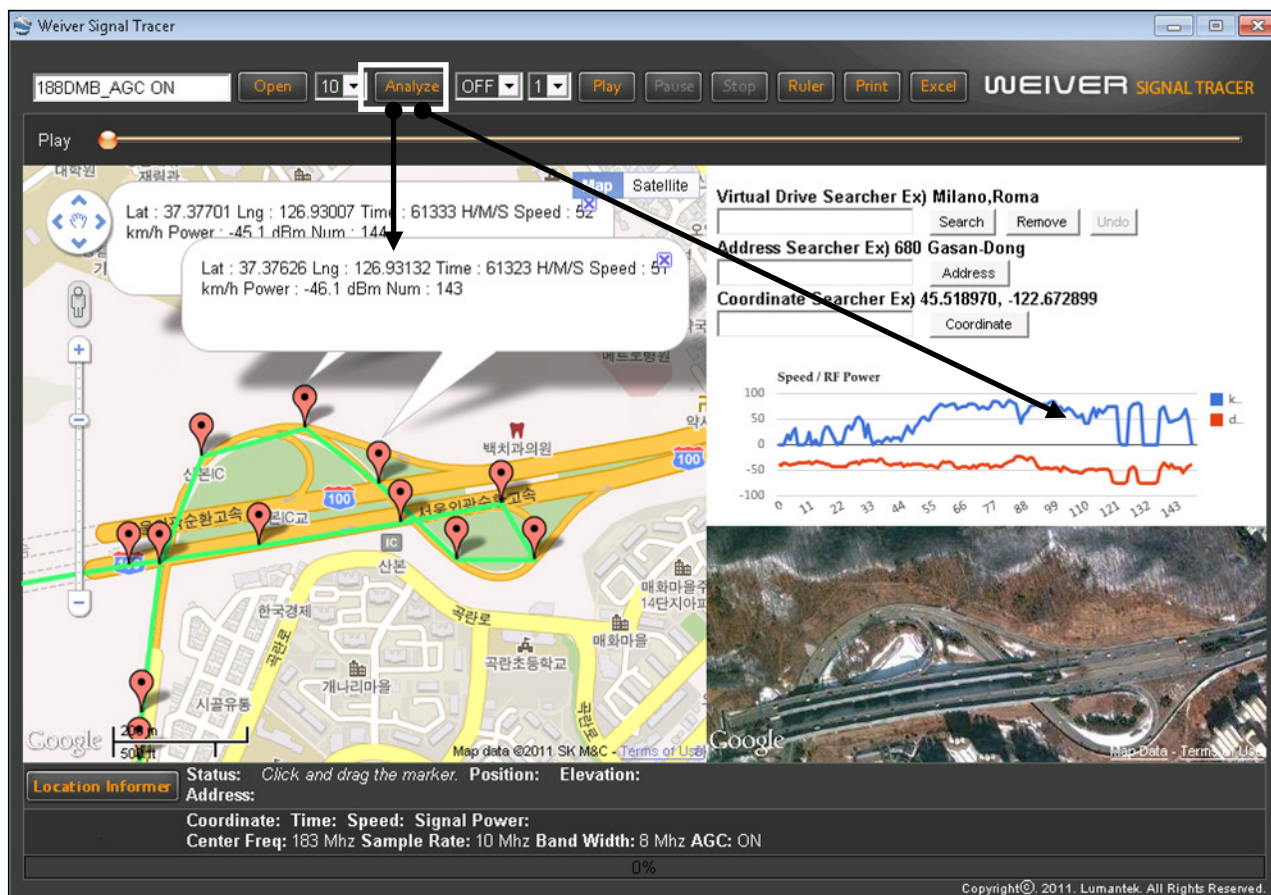
Time interval between two points in the picture above is 10 seconds (6h 13m 23s ~ 6h 13m 33s)





#### 4. Analyze button

Displaying information of wpj file on map and chart, using the sample's time interval. Double-click a marker on the map shows information and click it then information disappear.



#### 5. Repeat button

Selecting play mode: one time or repeat .



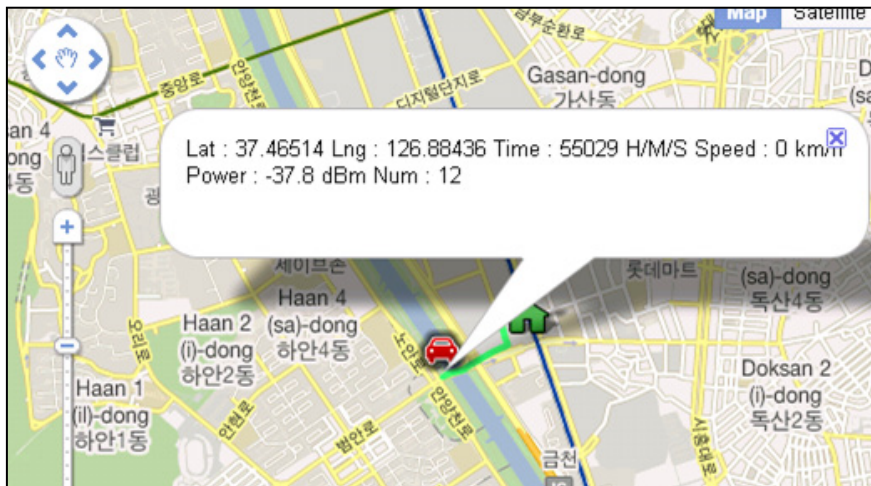
#### 6. Play Time Interval

Play mode basically support in one second. However, increasing sample interval results of various changes since an interval between two points gets away. Play time interval can be controlled at each point by 'play time interval' function.



### 7. Play button

Being based on an analyzed data, user can follow the actual driving route and check information.



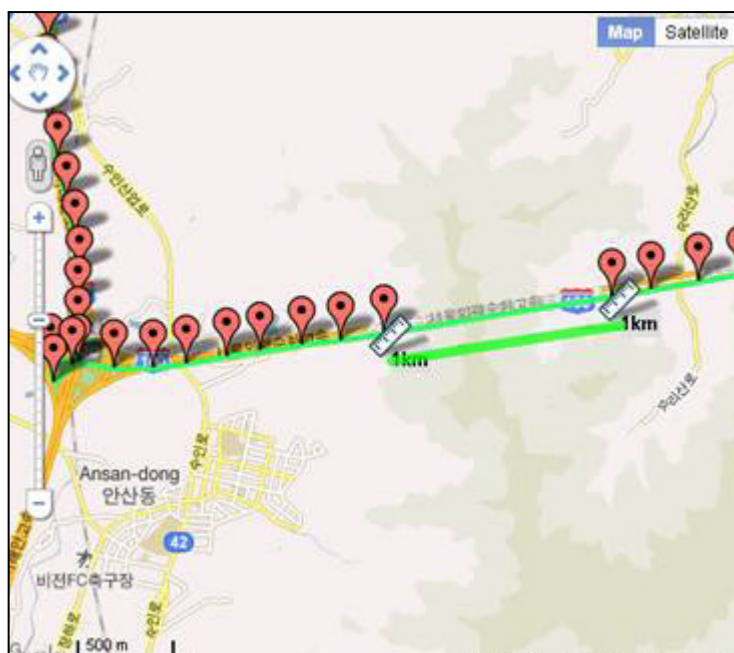
### 8. Pause button

### 9. Stop button

If stop button clicks, a map moves to start point.

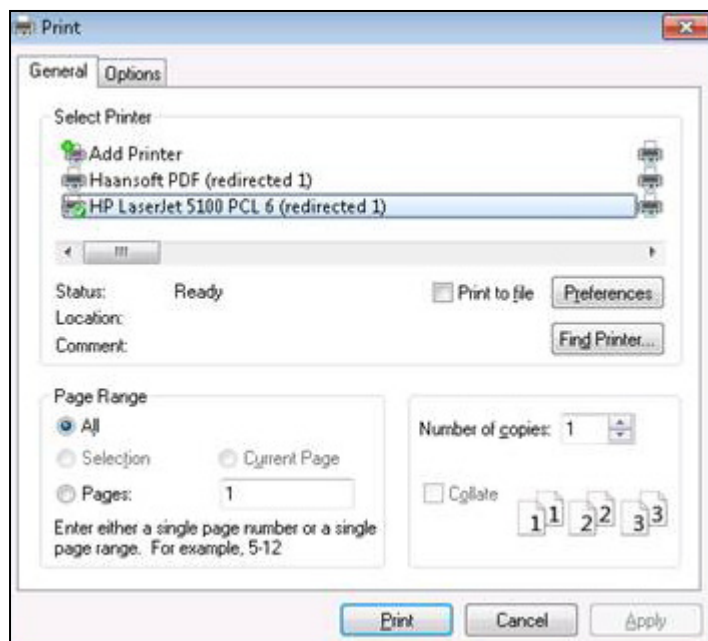
### 10. Ruler button

User can find out the length with ruler. After estimating the length, if user clicks this button, label about length remains and ruler is disappear. This measurement can be used in multiple times.



### 11. Print button

User can print out a result through a designated printer.



### 12. Excel button

This function supports user to extract an analyzed data as an Excel format file (\*.csv) and open and store the file on user's demand.

	A	B	C	D	E	F	G
1	Number	Latitude	Longitude	Time[UTC]	Speed[km]	RF Power[dBm]	
2	0	37.46711	126.8874	54823	0	-38	
3	1	37.46712	126.8874	54834	0	-38.9	
4	2	37.46712	126.8874	54844	0	-33.9	
5	3	37.46678	126.8876	54855	20	-38.7	
6	4	37.46638	126.8877	5495	9	-39.5	
7	5	37.46613	126.8869	54916	26	-37.9	
8	6	37.46569	126.8859	54926	33	-38.5	
9	7	37.46548	126.8855	54937	0	-35	
10	8	37.46548	126.8855	54947	0	-34.6	
11	9	37.46548	126.8855	54958	0	-34.4	
12	10	37.46541	126.8854	5508	8	-34.7	
13	11	37.46522	126.8847	55019	25	-32.4	
14	12	37.46514	126.8844	55029	0	-37.8	
15	13	37.4651	126.8842	55040	9	-33.1	
16	14	37.4651	126.8842	55050	0	-33.3	
17	15	37.4651	126.8841	5511	0	-35.5	
18	16	37.46533	126.8839	55111	25	-34.7	
19	17	37.46603	126.8833	55122	34	-37.1	
20	18	37.46681	126.8826	55132	36	-37.4	
21	19	37.46749	126.8819	55143	21	-42.8	
22	20	37.46751	126.8819	55153	9	-43.5	

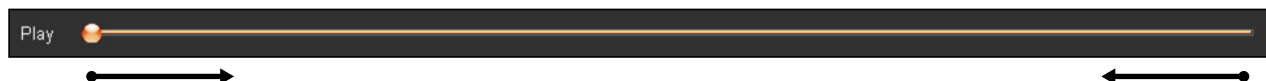


### 13. Lumantek Webpage

Moving to Lumantek's webpage when user clicks the logo.

### 14. Play Bar

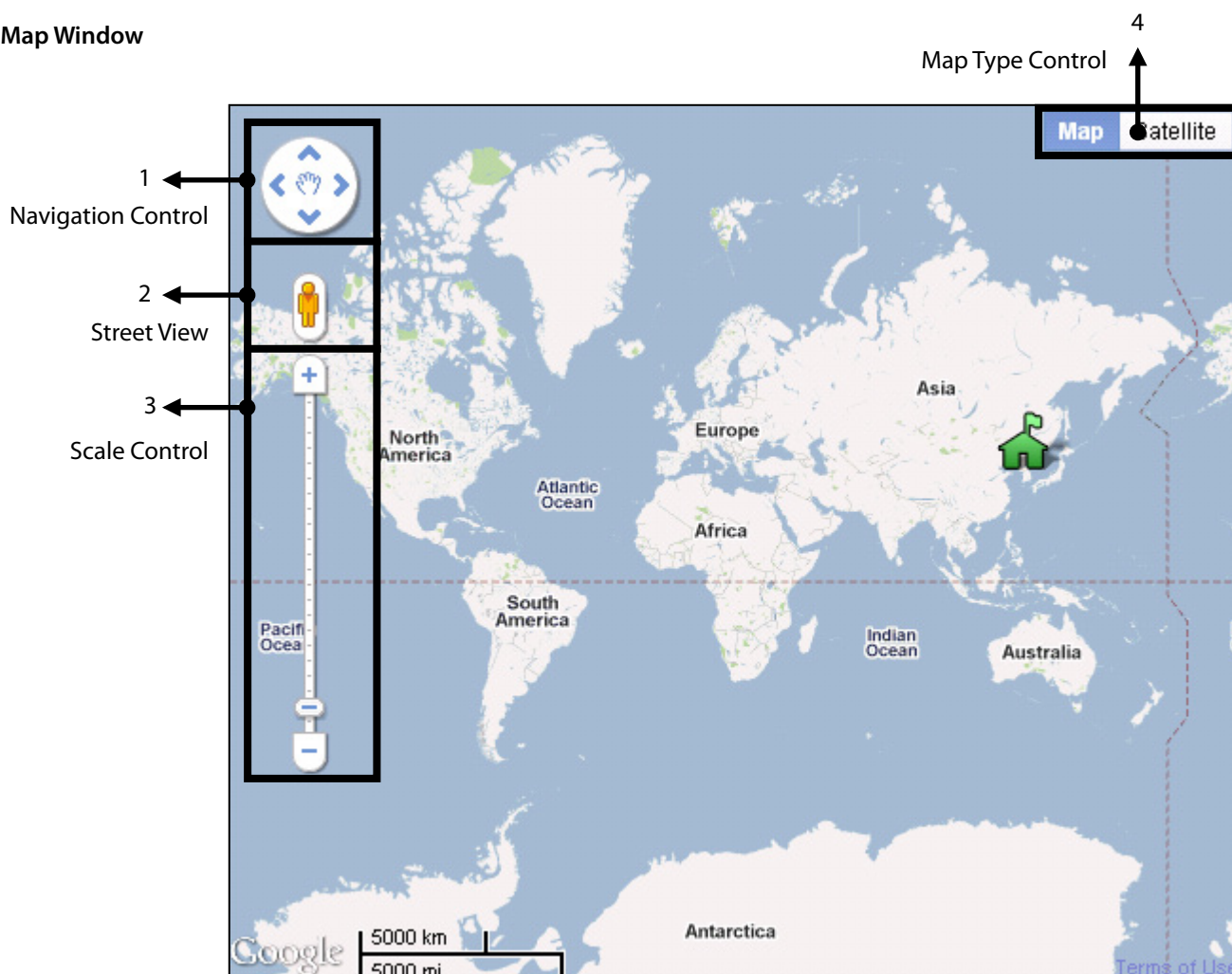
Displaying the current condition during playing. User can use 'drag and play' function.



### 13. Lumantek Webpage

Moving to Lumantek's webpage when user clicks the logo.

### Map Window





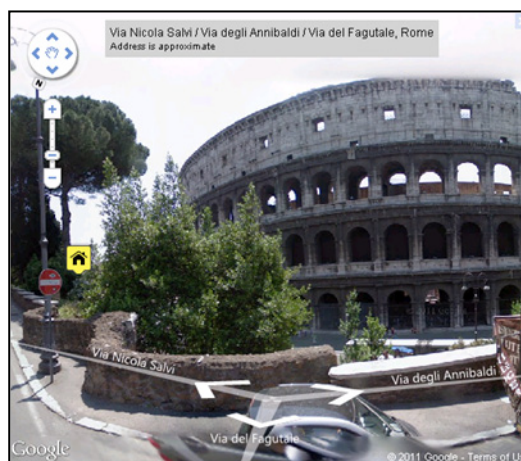
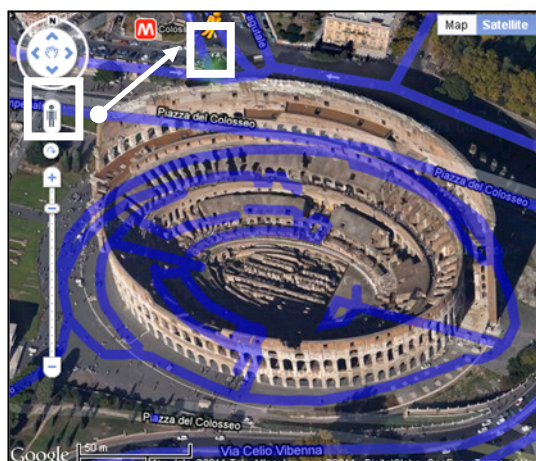
### 1. Navigation Control

User can control left and right or top and bottom of map by clicking navigation control and the movement of map is possible with mouse's drag.



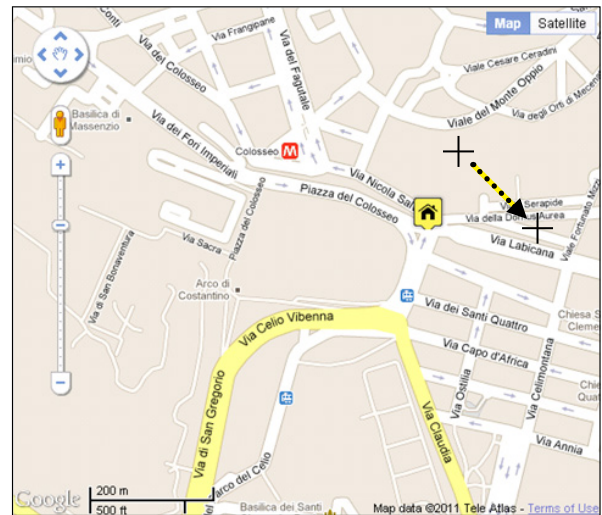
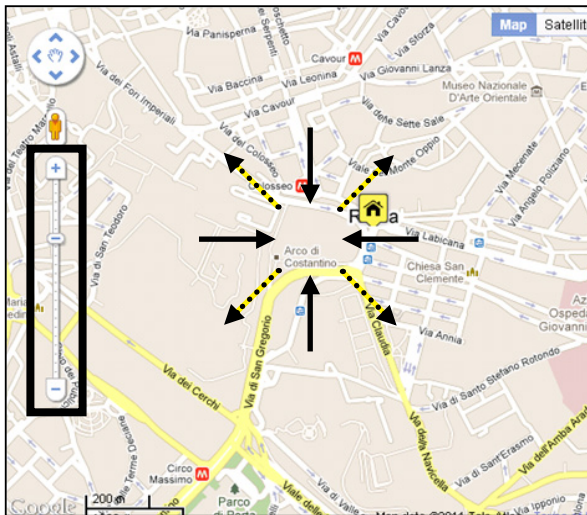
### 2. Street View

To view street-level imagery for a specific location, click and drag [man icon]  to the location a user wants. Roads with available street-level imagery appear with a blue border. Navigate to the location you want. Zoom in all the way. If street-level imagery is available, it appears when you zoom in all the way. To navigate along a street, a user needs to click one of the white arrows overlaid on the street to move in that direction, or use the arrow keys and to close the view, click [x] button . The situation of 'Street View service' is varied over the world so please check Google map service at the appendix



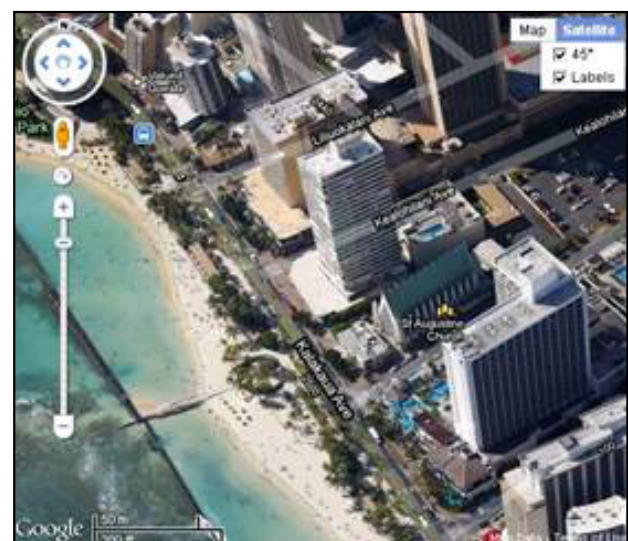
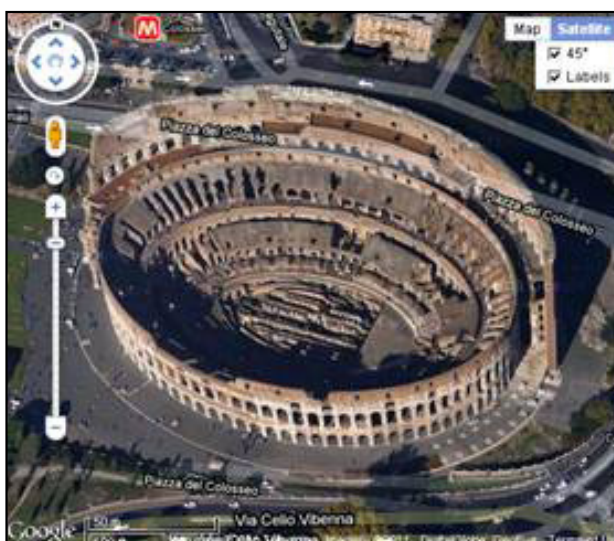
### 3. Scale Control

To expand or reduce the size of map, it can be controlled by clicking a mouse left-button and the other way is a mouse pointer with scroll function; pointing at the location where a user wants can change the size of the map. Double-clicking of mouse left-button at the location on the map makes it expand and doing of mouse right-button makes it reduce. Another way is to push 'shift' key on the map window.



### 4. Map Type Control

Weiver Signal Tracer's default map type is a normal-typed map; however, a user is able to select a satellite map, locating at the right above. A 45° slop satellite map is provided depending on country and region. A map can be rotated 360 degrees at the location where a 45° slop satellite map is provided.



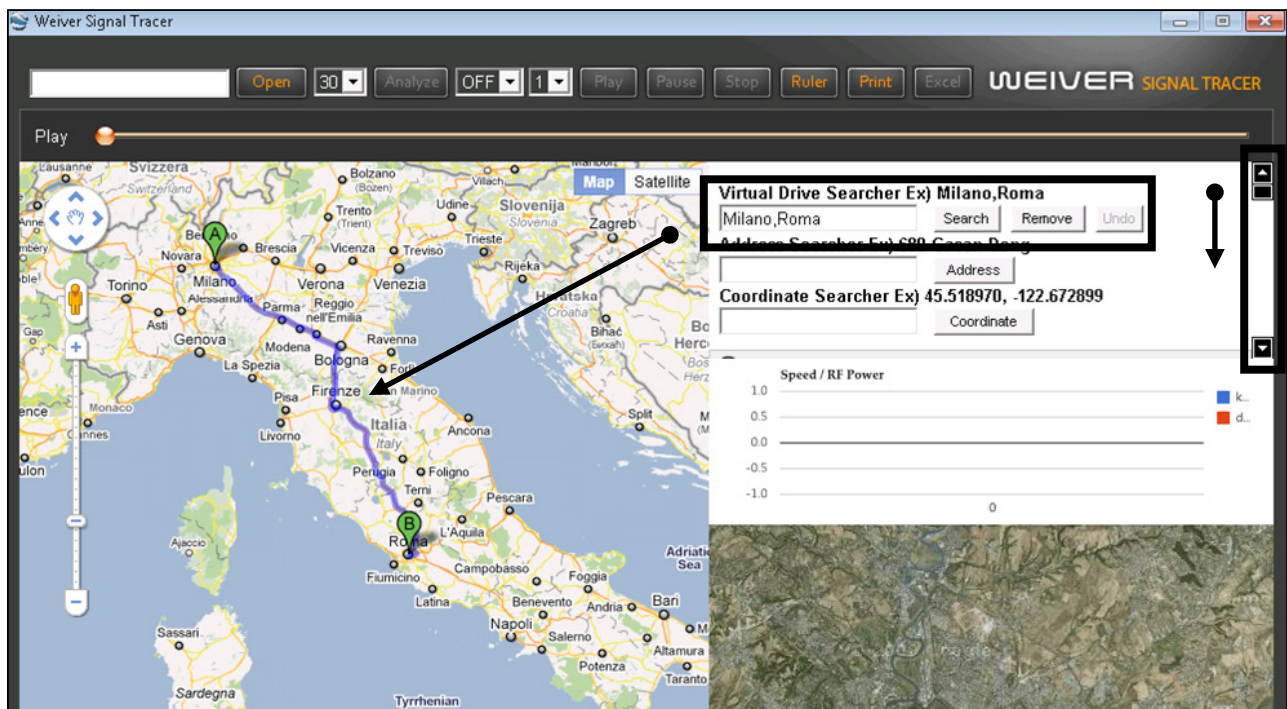


Search Menu

<b>Virtual Drive Searcher Ex) Milano,Roma</b>	● → 1
<input type="text"/> Search Remove Undo	
<b>Address Searcher Ex) 680 Gasan-Dong</b>	● → 2
<input type="text"/> Address	
<b>Coordinate Searcher Ex) 45.518970, -122.672899</b>	● → 3
<input type="text"/> Coordinate	

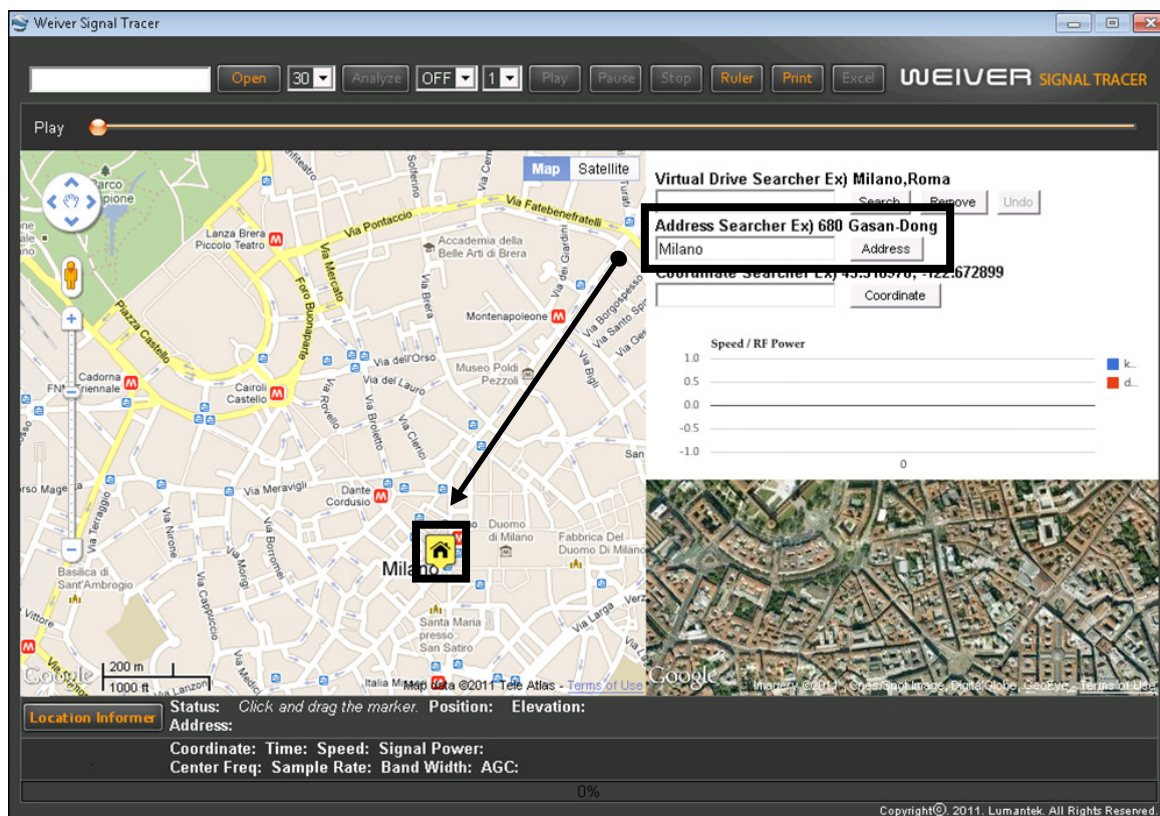
1. Virtual Drive Searcher

This function supports to search a driving test route before user has. At the route input window, 1) inputting a departure point and an arrival point and then 2) pushing enter or clicking 'Search button.' activates 'Virtual Drive searcher.' When it performs, a scroll bar appears on the right and, if each driving route is clicked, detailed driving routes between the departure point and the arrival point show up. If each driving point is clicked, it leads to being moved to the corresponding location. 'Virtual Drive Searcher' service is varied on each country so please refer to the appendix, 'Google map Service.'



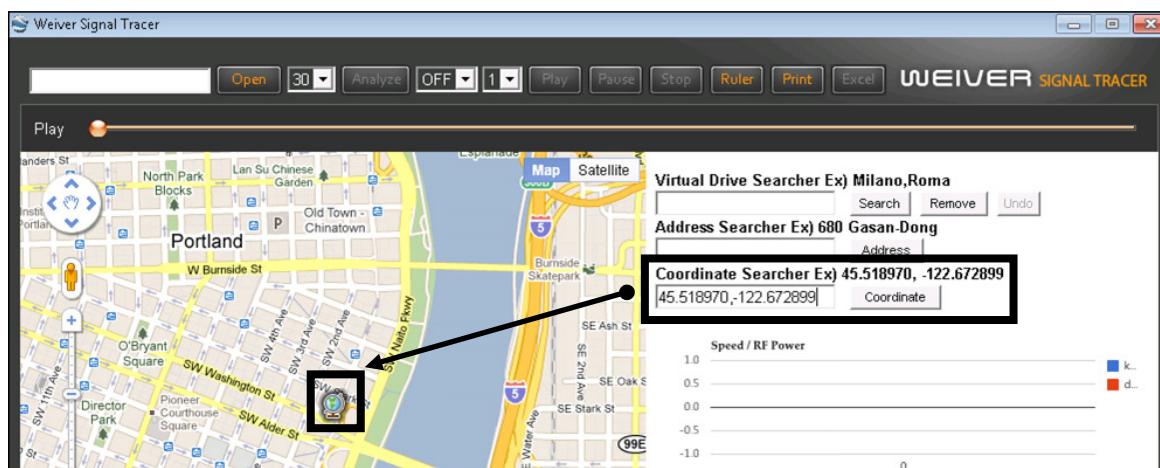
## 2. Address Searcher

After inputting information regarding the location a user likes to see, pushing 'enter' or clicking 'Address button' activates 'Address searcher' and the searched result displays on the map with a marker. Address searcher service is varied for each country so please refer to the appendix, 'Google map Service.'



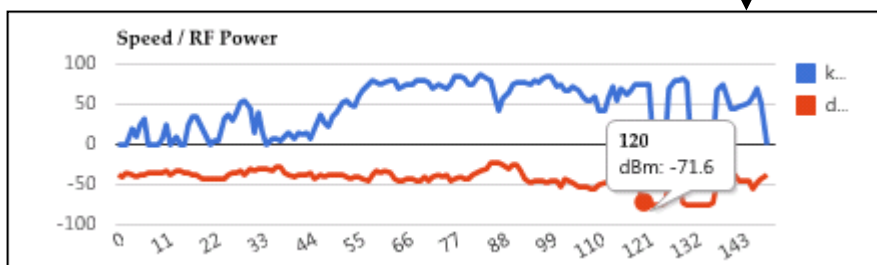
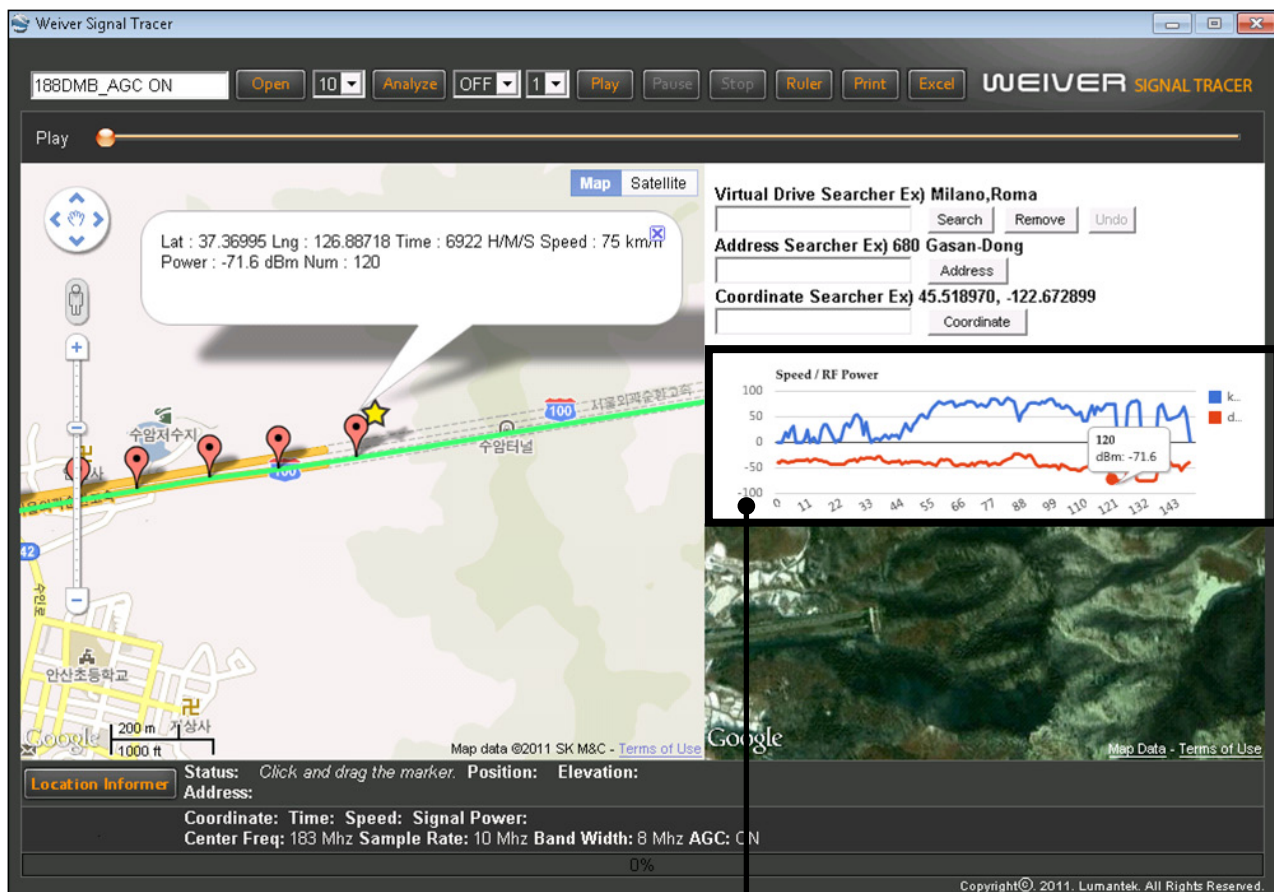
## 3. Coordinate Searcher

After inputting a coordinates which user wants to see at input window, pushing 'enter' or clicking 'coordinate button' activates 'Coordinate Searcher' and the searched result displays on the map with a marker. Entering a coordinates should follow 'WGS-84 Decimal Number Format.'



### Chart Window

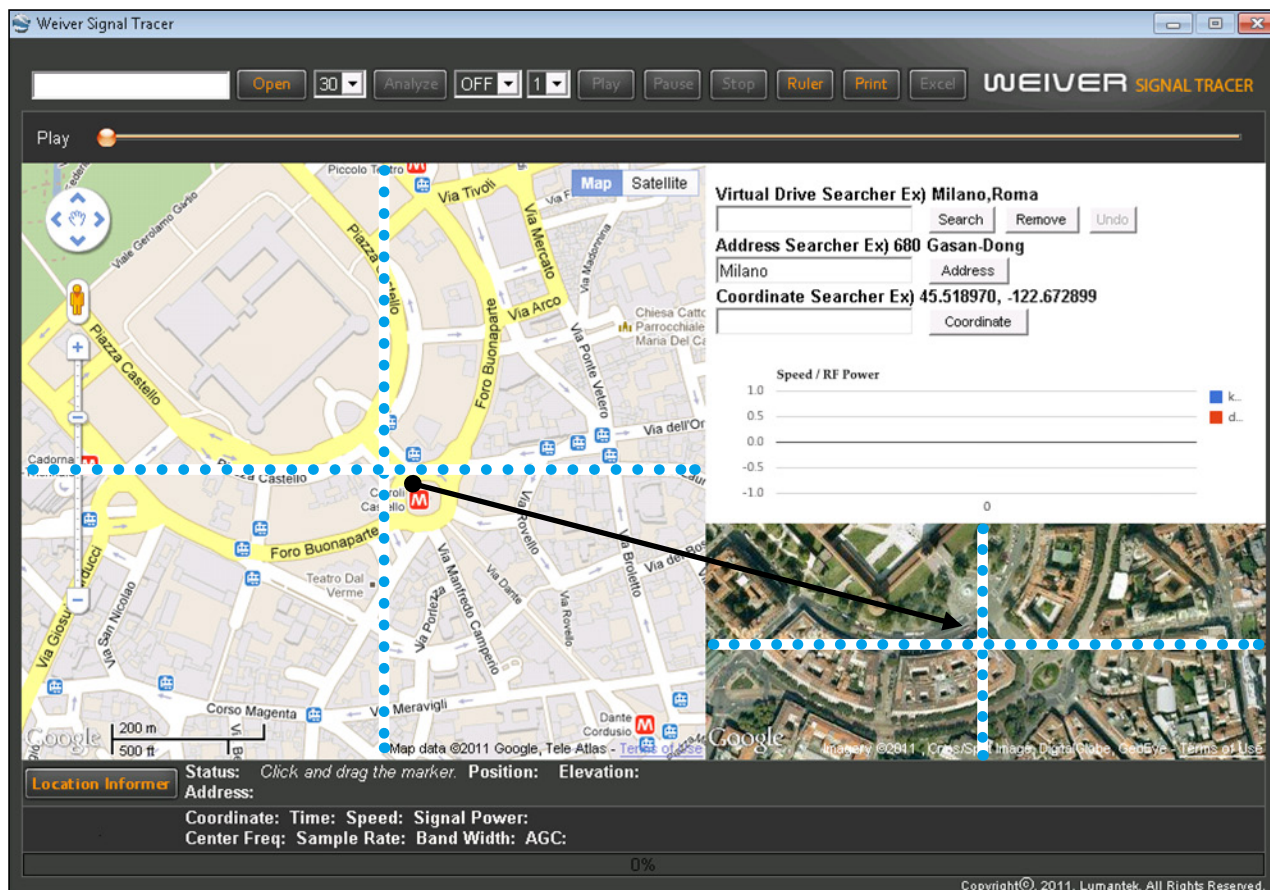
Chart window displays after analyze. The blue-colored graph is for a velocity of the vehicle and the red-colored graph is for RF signal's power. According to the chart in the above, the signal sharply dropped in two times, approaching mouse pointer to these points makes information of each point indicate at the note. Clicking the note allows it to move the corresponding location in the map (In the tunnel, GPS coordinates cannot be received, therefore clicking any points of tunnel leads to display the latest GPS coordinates).





### Satellite Window

It is difficult for user to analyze geographical features only with map, in this case, 'Satellite Window' helps user analyze, providing satellite map which shares same center with a map. 'Satellite window' is automatically controlled by map window and, depending on user's needs, can be controlled by mouse drag or wheel (Satellite Window can perform when zoom level of map window is above the certain level).



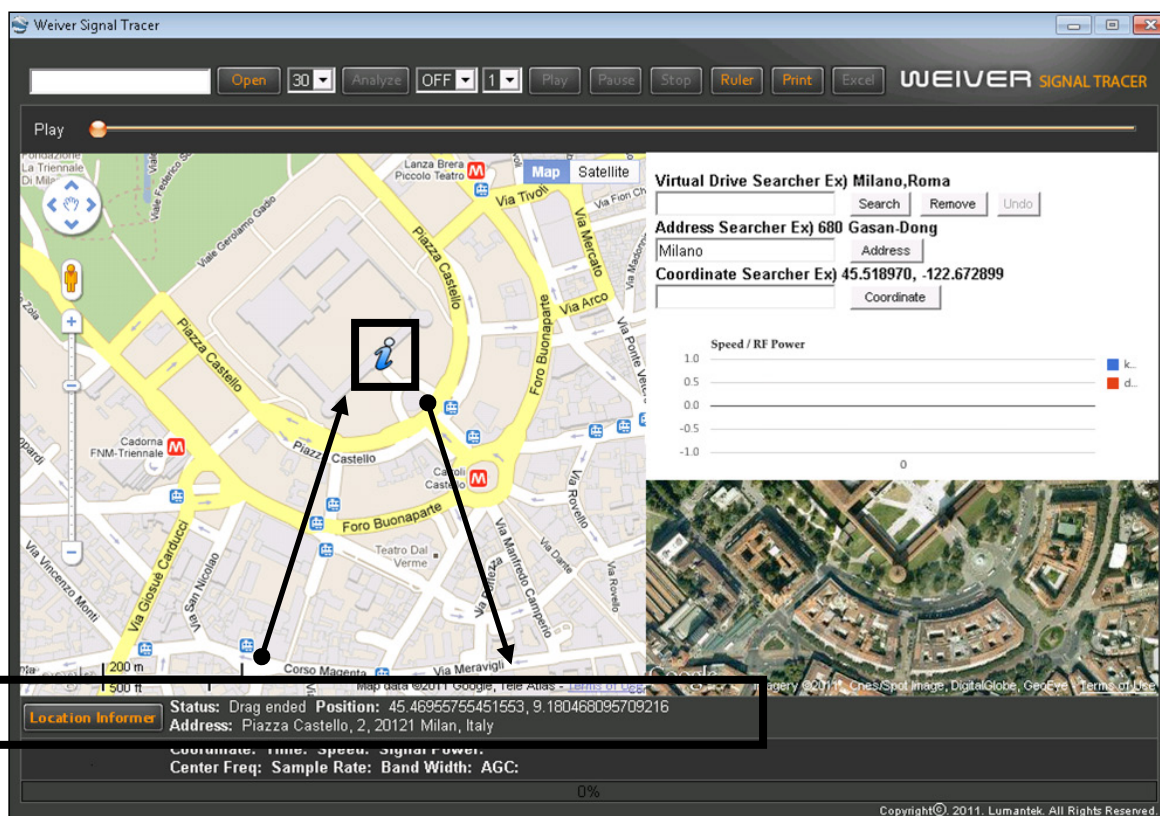
### Information Window

Location Informer	Status: Drag ended	Position: 37.46809, 126.881290000000003	Elevation: 11.30368804931641 meters	1
	Address: South Korea Gyeonggi-do Gwangmyeong-si Haan 4(sa)-dong 809-1			2
	Coordinate: 37.46809, 126.88129	Time: 55235 H/M/S	Speed: 32 km/h	Signal Power: -42.2 dBm
Center Freq: 183 Mhz				
Sample Rate: 10 Mhz				
Band Width: 8 Mhz				
AGC: ON				
0%				

1. Location Informer Window
2. Play & File Information Window
3. Progress Bar

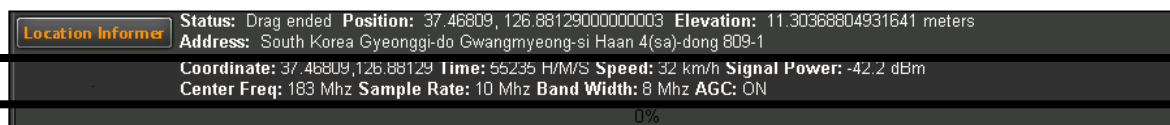
### 1. Location Informer Window

If a user wants to know address and coordinates of the certain location, clicking 'Location informer button' makes a marker appear in the center of a map. It indicates the coordinates for the nearest address and the altitude based on the average 0 sea level. The marker can be moved by drag & drop of mouse and whenever it moves, it displays new information.



### 2. Play & File Information Window

During analyzing, this part shows information (Center Frequency, Sample Rate, Band Width, and AGC) of captured file and, during playing, indicates coordinates, time, velocity, and RF signal power of each point.



### 3. Progress Bar

During analyzing, progress displays at the 'progress bar'





## \* Appendix. Google Map Service

country/region	map tiles	geocoding	street	driving directions
Afghanistan	Yes (Major Roads Only)	Yes (same as tiles)	No	No
Albania	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes (Major Cities Only)
Algeria	Yes	Yes (same as tiles)	No	Yes
American Samoa	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Andorra	Yes	Yes (same as tiles)	No	Yes (Major Cities Only)
Anguilla	Yes (MapMaker Only)	Yes (same as tiles)	No	No
Angola	Yes (Major Roads Only)	Yes (same as tiles)	No	Yes
Antigua and Barbuda	Yes	Yes (same as tiles)	No	Yes
Argentina	Yes	Yes (same as tiles)	No	Yes
Armenia	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Aruba	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Australia	Yes	Yes (same as tiles)	Yes	Yes
Austria	Yes	Yes (same as tiles)	No	Yes
Azerbaijan	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Bahamas	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Bahrain	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Bangladesh	Yes (Major Roads Only)	Yes (same as tiles)	No	No
Barbados	Yes (Lacks street names)	Yes (same as tiles)	No	Yes
Belarus	Yes (MapMaker Only)	Yes (same as tiles)	No	No
Belgium	Yes	Yes (same as tiles)	No	Yes
Belize	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Benin	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Bermuda	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Bhutan	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Bolivia	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Bosnia and Herzegovina	Yes (MapMaker Only)	Yes (same as tiles)	No	No
Botswana	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Brazil	Yes	Yes (same as tiles)	No	Yes
British Indian Ocean Territory	Yes (MapMaker Only)	Yes (same as tiles)	No	No
Brunei	Yes (Major Roads Only)	Yes (same as tiles)	No	No
Bulgaria	Yes (Major Roads Only)	Yes (same as tiles)	No	Yes (Major Cities Only)

Burkina Faso	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Burundi	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Cambodia	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	No
Cameroon	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Canada	Yes	Yes (same as tiles)	Yes	Yes
Cape Verde	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Cayman Islands	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Central African Republic	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Chad	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Chile	Yes	Yes (same as tiles)	No	Yes
China	Yes	Yes (same as tiles)	No	Yes (Domain-restricted)
Christmas Island	Yes (MapMaker Only)	Yes (same as tiles)	No	No
Cocos Islands	Yes (MapMaker Only)	Yes (same as tiles)	No	No
Colombia	Yes	Yes (same as tiles)	No	No
Comoros	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Cook Islands	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Congo	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Costa Rica	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Côte d'Ivoire	Yes (Major Roads Only)	Yes (same as tiles)	No	Yes
Croatia	Yes	Yes (same as tiles)	No	No
Cuba	Yes	Yes (same as tiles)	No	No
Cyprus	No	No	No	No
Czech Republic	Yes	Yes (same as tiles)	Yes	Yes
Denmark	Yes	Yes (same as tiles)	Yes	Yes
Djibouti	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
DRC	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Dominica	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Dominican Republic	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Ecuador	Yes	Yes (same as tiles)	No	No
Egypt	Yes	Yes (same as tiles)	No	Yes

El Salvador	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Equatorial Guinea	Yes (Major Roads Only)	Yes (same as tiles)	No	Yes
Eritrea	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Estonia	Yes	Yes (same as tiles)	No	Yes (Major Cities Only)
Ethiopia	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Fiji	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Finland	Yes	Yes (same as tiles)	Yes	Yes
France	Yes	Yes (same as tiles)	Yes	Yes
French Guiana	Yes (Major Roads Only)	Yes (same as tiles)	No	Yes
Gabon	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Gambia	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Germany	Yes	Yes (same as tiles)	No	Yes
Ghana	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Greenland	Yes (MapMaker Only)	Yes (same as tiles)	Yes	Yes
Greece	Yes	Yes (same as tiles)	No	Yes (Major Cities Only)
Grenada	Yes (Lacks street names)	Yes (same as tiles)	No	Yes
Guam	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	No
Guadeloupe	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Guatemala	Yes	Yes (same as tiles)	No	No
Guinea	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Guinea-Bissau	Yes (Major Roads Only)	Yes (same as tiles)	No	Yes
Guyana	No	No	No	Yes
Haiti	Yes	Yes (same as tiles)	No	Yes
Honduras	Yes	Yes (same as tiles)	No	No
Hong Kong	Yes	Yes (same as tiles)	No	Yes
Hungary	Yes	Yes (same as tiles)	No	Yes
Iceland	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	Yes	Yes
India	Yes	Yes (same as tiles)	No	No
Indonesia	Yes	Yes (same as tiles)	No	Yes
Iran	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Iraq	Yes (Major Roads Only)	Yes (same as tiles)	No	No
Ireland	Yes	Yes (same as tiles)	No	Yes
Israel	No	No	No	No
Italy	Yes	Yes (same as tiles)	Yes	Yes
Ivory Coast	Yes (MapMaker Only)	Yes (same as tiles)	No	No
Jamaica	Yes	Yes (same as tiles)	No	Yes

Japan	Yes	Yes (same as tiles)	Yes	No
Jordan	Yes (Lacks street names)	Yes (same as tiles)	No	Yes
Kazakhstan	Yes (Major Roads Only)	Yes (same as tiles)	No	No
Kenya	Yes (Major Roads Only)	Yes (same as tiles)	No	No
Kiribati	No	No	No	No
Kuwait	Yes (Major cities only)	Yes (same as tiles)	No	No
Kyrgyzstan	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Laos	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Latvia	Yes	Yes (same as tiles)	No	Yes (Major Cities Only)
Lebanon	Yes	Yes (Lacks street numbers/some towns)	No	Yes
Lesotho	Yes (Major Roads Only)	Yes (same as tiles)	No	No
Liberia	Yes (Major Roads Only)	Yes (same as tiles)	No	Yes
Libya	Yes	Yes (same as tiles)	No	Yes
Liechtenstein	Yes	Yes (same as tiles)	No	Yes
Lithuania	Yes	Yes (same as tiles)	No	Yes (Major Cities Only)
Luxembourg	Yes	Yes (same as tiles)	No	Yes
Macau	Yes	Yes (same as tiles)	No	No
Macedonia	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes (Major Cities Only)
Madagascar	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Malawi	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Malaysia	Yes	Yes (same as tiles)	No	Yes
Maldives	No	No	No	Yes
Mali	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Malta	No	No	No	Yes
Marshall Islands	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Martinique	Yes (MapMaker Additions)	Yes (same as tiles)	No	Yes
Mauritania	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Mauritius	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Mexico	Yes	Yes (same as tiles)	Yes	No
Micronesia	Yes (MapMaker Only)	Yes (same as tiles)	No	No
Moldova	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes (Major Cities Only)
Monaco	Yes	Yes (same as tiles)	No	Yes (Major Cities Only)
Mongolia	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	No

Montenegro	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes (Major Cities Only)
Montserrat	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Morocco	Yes (Lacks street names)	Yes (same as tiles)	No	Yes
Mozambique	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Myanmar	Yes (MapMaker Only)	Yes (same as tiles)	No	No
Namibia	Yes (Major Roads Only)	Yes (same as tiles)	No	Yes
Nauru	Yes (MapMaker Only)	Yes (same as tiles)	No	No
Nepal	Yes (Major Roads Only)	Yes (same as tiles)	No	No
Netherlands	Yes	Yes (same as tiles)	Yes	Yes
Netherlands Antilles	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
New Zealand	Yes	Yes (same as tiles)	Yes	Yes
Nicaragua	Yes	Yes (same as tiles)	No	No
Niger	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Nigeria	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Niue	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Northern Mariana Islands	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
North Korea	No	No	No	No
Norway	Yes	Yes (same as tiles)	Yes	Yes
Oman	Yes (Major cities only)	Yes (same as tiles)	No	No
Pakistan	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	No
Palau	No	No	No	Yes
Panama	Yes	Yes (same as tiles)	No	No
Papua New Guinea	Yes (Major Roads Only)	Yes (same as tiles)	No	Yes
Paraguay	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Peru	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Philippines	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	No
Pitcairn Islands	Yes (MapMaker Only)	Yes (same as tiles)	No	No
Poland	Yes	Yes (same as tiles)	No	Yes
Portugal	Yes	Yes (same as tiles)	Yes	Yes
Qatar	Yes (Major cities only)	Yes (same as tiles)	No	Yes
Reunion	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Romania	Yes (MapMaker Only)	Yes (same as tiles)	No	No
Russia	Yes	Yes (In local character set only)	Yes	Yes (Moscow + Suburbs Only)

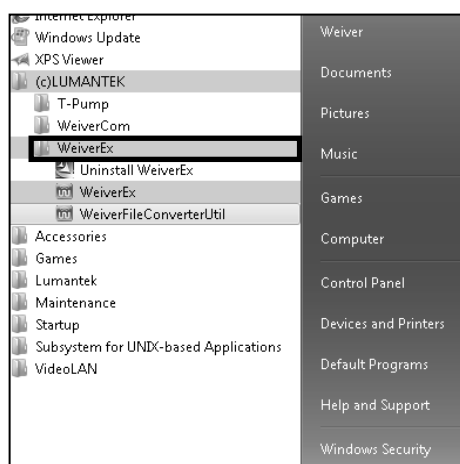
Rwanda	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Saint Helena	Yes (MapMaker Only)	Yes (same as tiles)	No	No
Saint Kitts and Nevis	Yes	Yes (same as tiles)	No	No
Saint Vincent and the Grenadines	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Saint Lucia	Yes	Yes (same as tiles)	No	Yes
Samoa	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
San Marino	Yes	Yes (same as tiles)	No	Yes (Major Cities Only)
São Tomé and Príncipe	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Saudi Arabia	Yes (Major cities only)	Yes (same as tiles)	No	No
Senegal	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Serbia	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes (Major Cities Only)
Seychelles	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Sierra Leone	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Singapore	Yes	Yes (same as tiles)	Yes	Yes
Slovakia	Yes	Yes (same as tiles)	No	Yes (Major Cities Only)
Slovenia	Yes	Yes (same as tiles)	No	No
Solomon Islands	Yes (MapMaker Only)	Yes (same as tiles)	No	Yes
Somalia	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
South Africa	Yes	Yes (same as tiles)	No	Yes
South Korea	Yes (Domain-restricted)	Yes (same as tiles)	No	No
Spain	Yes	Yes (same as tiles)	Yes	Yes
Sri Lanka	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	No
Sudan	Yes (Major Roads Only)	Yes (same as tiles)	No	Yes
Suriname	No	No	No	Yes
Swaziland	Yes (Major Roads Only)	Yes (same as tiles)	No	Yes
Sweden	Yes	Yes (same as tiles)	Yes	Yes
Switzerland	Yes	Yes (same as tiles)	Yes	Yes
Syria	Yes (Major Roads Only)	Yes (same as tiles)	No	No
Taiwan	Yes	Yes (In local character set only)	Yes	Yes
Tajikistan	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Tanzania	Yes (Major Roads, MapMaker Additions)	Yes (same as tiles)	No	Yes
Thailand	Yes	Yes (same as tiles)	No	Yes
Timor-Leste	Yes (Major Roads Only)	Yes (same as tiles)	No	Yes
Tokelau	Yes (MapMaker Only)	Yes (same as tiles)	No	No

## \* Appendix. Google Map Language Service

language code	language name	v3
ar	ARABIC	Yes
eu	BASQUE	Yes
bg	BULGARIAN	Yes
bn	BENGALI	Yes
ca	CATALAN	Yes
cs	CZECH	Yes
da	DANISH	Yes
de	GERMAN	Yes
el	GREEK	Yes
en	ENGLISH	Yes
en-AU	ENGLISH (AUSTRALIAN)	Yes
en-GB	ENGLISH (GREAT BRITAIN)	Yes
es	SPANISH	Yes
eu	BASQUE	Yes
fa	FARSI	Yes
fi	FINNISH	Yes
fil	FILIPINO	Yes
fr	FRENCH	Yes
gl	GALICIAN	Yes
gu	GUJARATI	Yes
hi	HINDI	Yes
hr	CROATIAN	Yes
hu	HUNGARIAN	Yes
id	INDONESIAN	Yes
it	ITALIAN	Yes
iw	HEBREW	Yes
ja	JAPANESE	Yes
kn	KANNADA	Yes
ko	KOREAN	Yes
lt	LITHUANIAN	Yes
lv	LATVIAN	Yes
ml	MALAYALAM	Yes
mr	MARATHI	Yes
nl	DUTCH	Yes
nn	NORWEGIAN NYNORSK	No
no	NORWEGIAN	Yes
or	ORIYA	No
pl	POLISH	Yes
pt	PORTUGUESE	Yes

pt-BR	PORTUGUESE (BRAZIL)	Yes
pt-PT	PORTUGUESE (PORTUGAL)	Yes
rm	ROMANSCH	No
ro	ROMANIAN	Yes
ru	RUSSIAN	Yes
sk	SLOVAK	Yes
sl	SLOVENIAN	Yes
sr	SERBIAN	Yes
sv	SWEDISH	Yes
tl	TAGALOG	Yes
ta	TAMIL	Yes
te	TELUGU	Yes
th	THAI	Yes
tr	TURKISH	Yes
uk	UKRAINIAN	Yes
vi	VIETNAMESE	Yes
zh-CN	CHINESE (SIMPLIFIED)	Yes
zh-TW	CHINESE (TRADITIONAL)	Yes

● Play File Converting Util

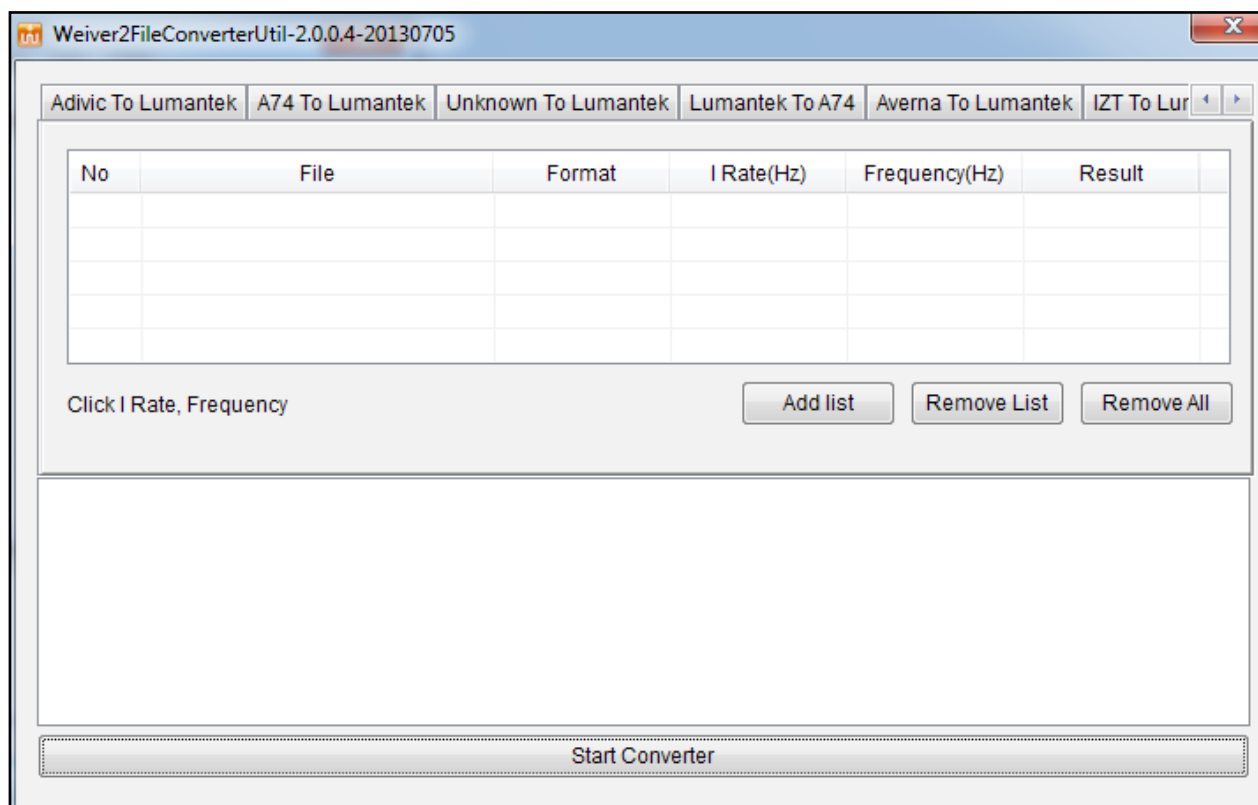


Click the start button on your OS and select WeiverFileConverterUtil inside Weiver\_EX Program.

Once you get the window for converting, 'Complex type' files can be played on WEIVER 2.0 Player.

For Real type file, WeiverFileConverterUtil converts it into a Complex type file and generates Log data.  
For the Complex type file, Log data is generated.

When Real type file is converted, two files generate with \*.iqw and \*.wpj extensions.  
In case of converting the Complex type file, Log data will be generated and one file with wpj extension.

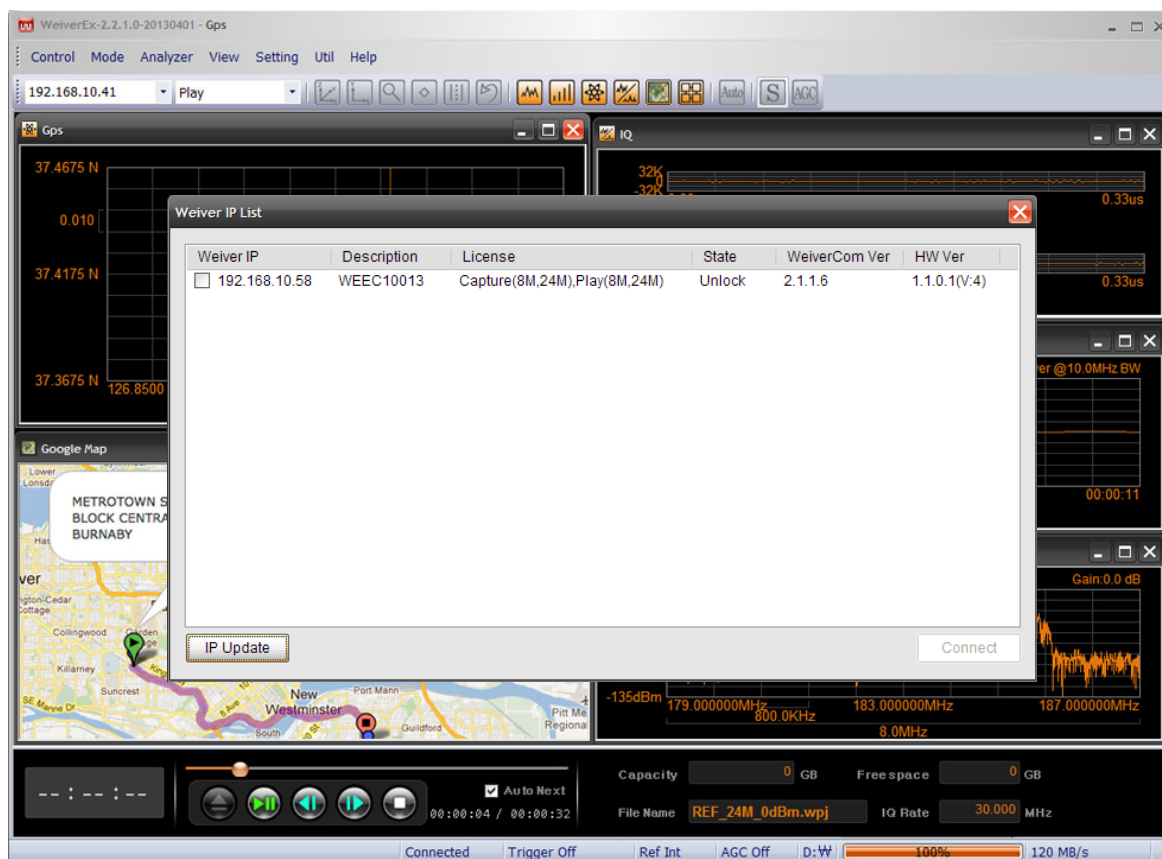




## 4.8 / Weiver\_EX Program Introduction

When the Weiver\_EX program is initiated, the WEIVER unit is not yet connected. To proceed with connecting the WEIVER 2.0 Player, follow the following sequence:

**Select Main Menu -> Control-> Connect the device and search WEIVER 2.0 Player**



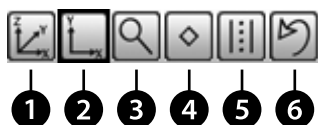
To connect with WEIVER 2.0 Player, a separate WEIVER 2.0 Player IP List sub-window will appear. There are various methods of connecting the WEIVER 2.0 Player. . To connect through IP, the subnet of the WEIVER 2.0 Player unit and control PC must be matched to connect for security purposes properly.




Once the WEIVER 2.0 Player has successfully connected another window will display "Connected!"

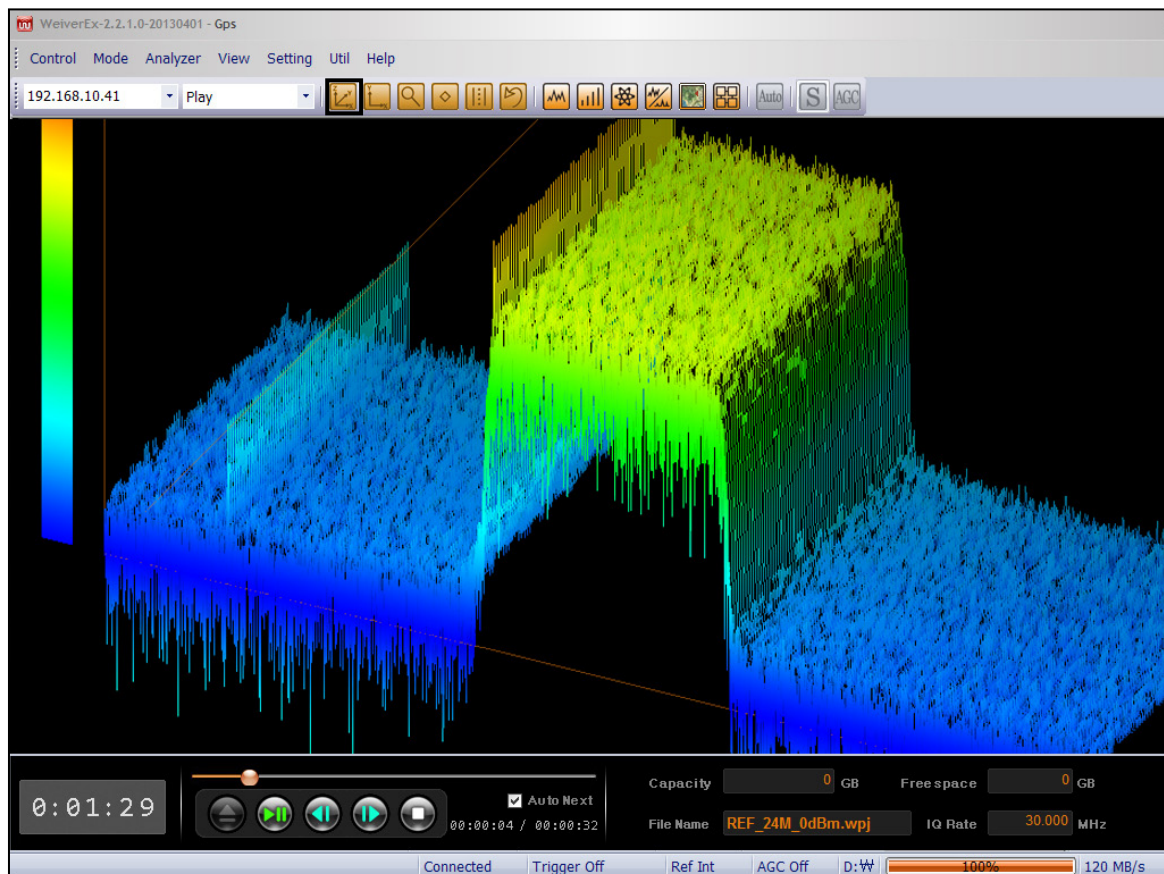
Once the WEIVER 2.0 Player has successfully connected.


● Analyzer Menu

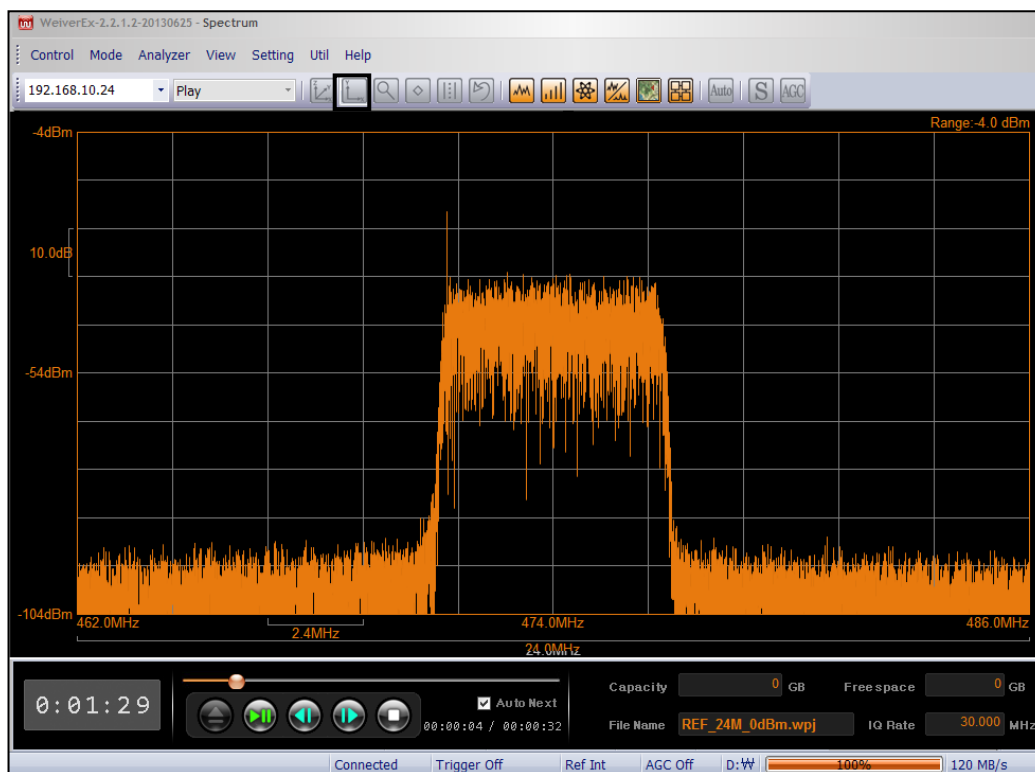


The Analyzer Menu has five kinds of features in measuring or observing the Spectrum from Zoom to Undo. (3D Spectrum Analyzer, 2D Spectrum Analyzer, Spectrum Zoom in Analyzer, Spectrum Power Marker, Band Power Analyzer, State Undo)

1 3D Spectrum Analyzer 

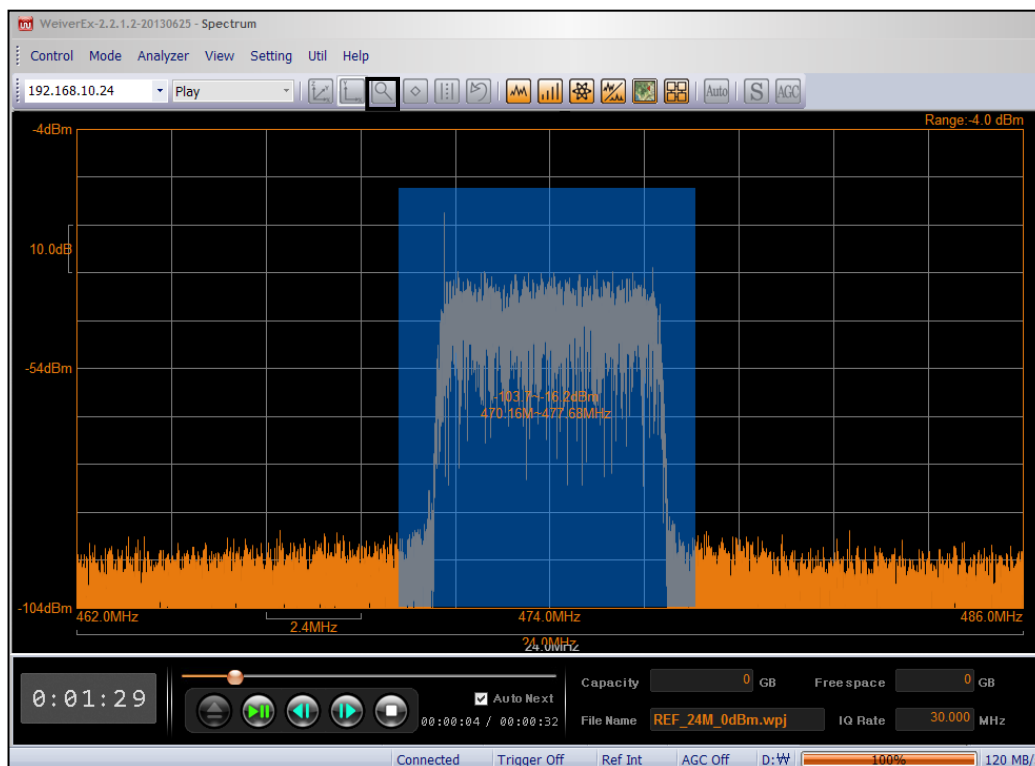



2 2D Spectrum Analyzer 



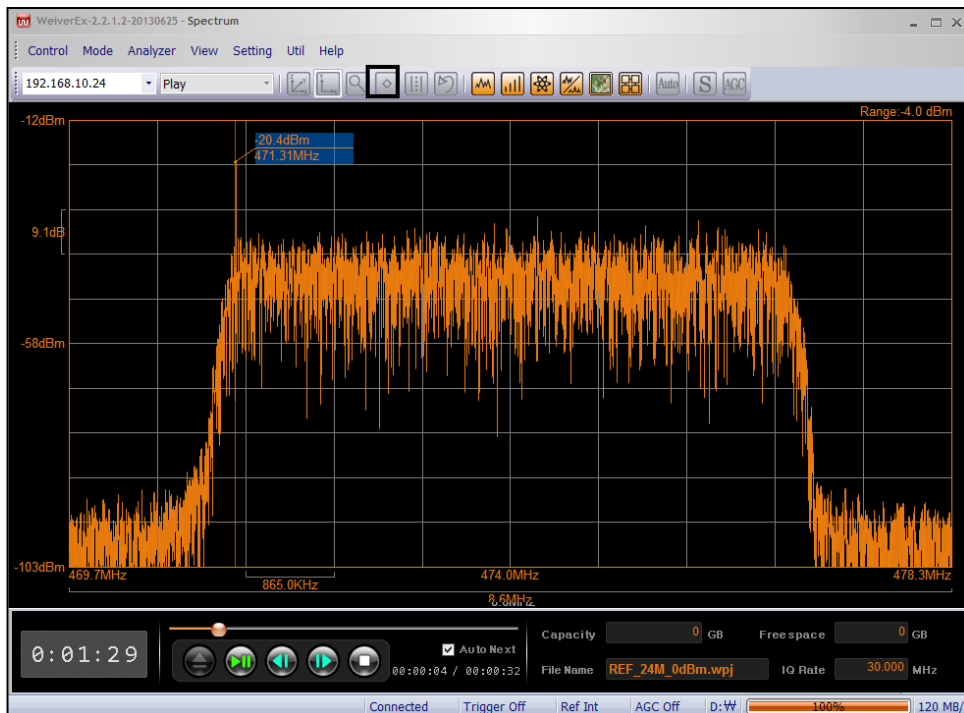
3 Spectrum Zoom in Analyzer 

Zoom on the area by clicking first on the left mouse button and dragging to the preferred point and then clicking on the left mouse button. The area the user has selected will be highlighted.



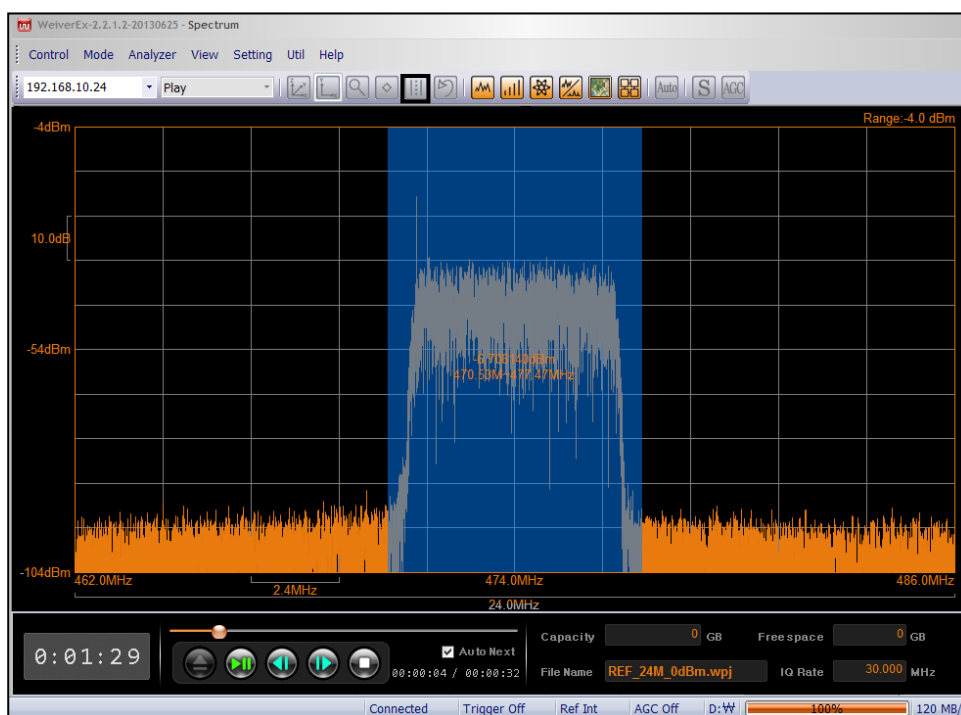
If you want to zoom back to the previous screen, or to the original state, click **5**  or simultaneously press Ctrl and Z.

**4** Spectrum Power Marker 

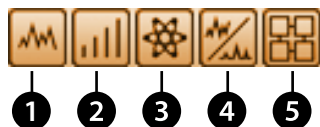


**5** Band Power Analyzer 

The Band Power can be measured by clicking the left mouse button and dragging. Once the area has been selected, clicking the left mouse button will disengage and the results will be shown.



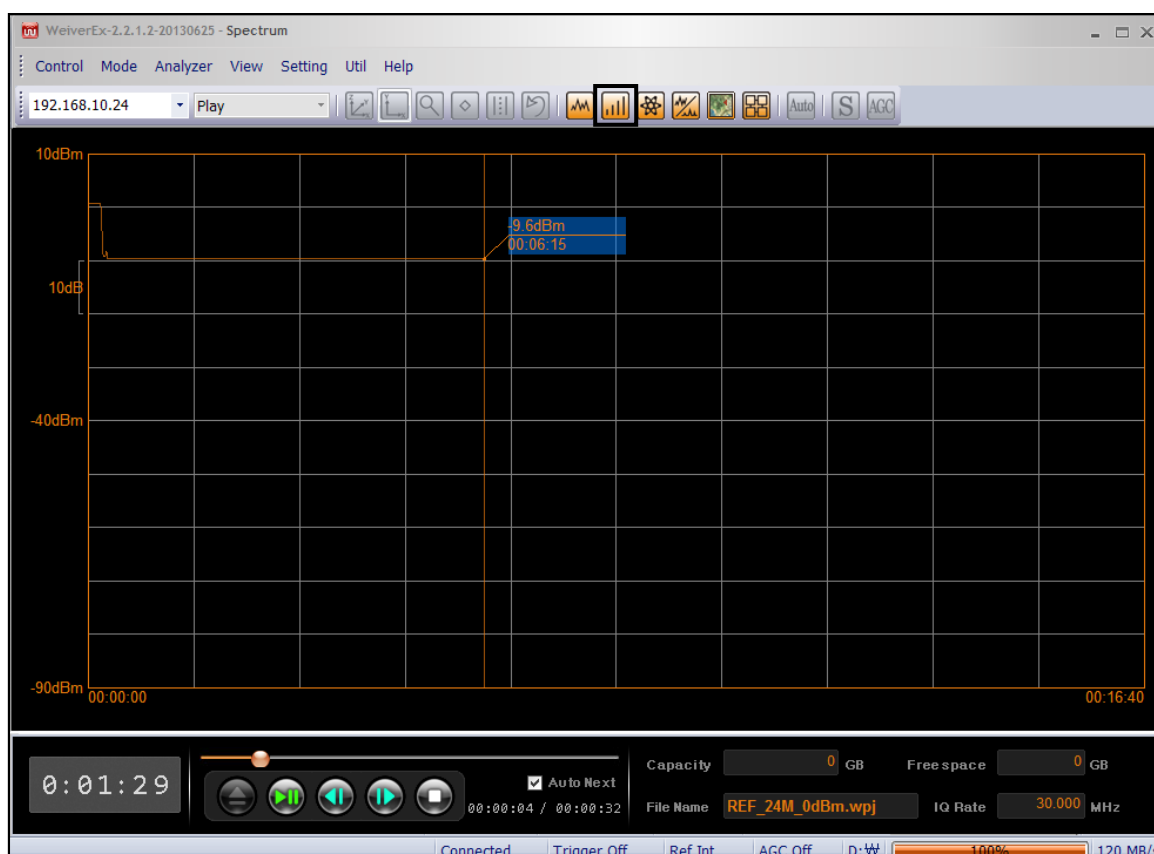
● View Menu



Weiver\_EX has four sub-windows (with dedicated functions) in the main window. Each sub-window can be repositioned and resized. Further, the Auto Window Position function will automatically resize and reposition the five windows by Auto Win Position. (Spectrum Window, Power Window, GPS Window, I/Q Window, Auto Window Position)

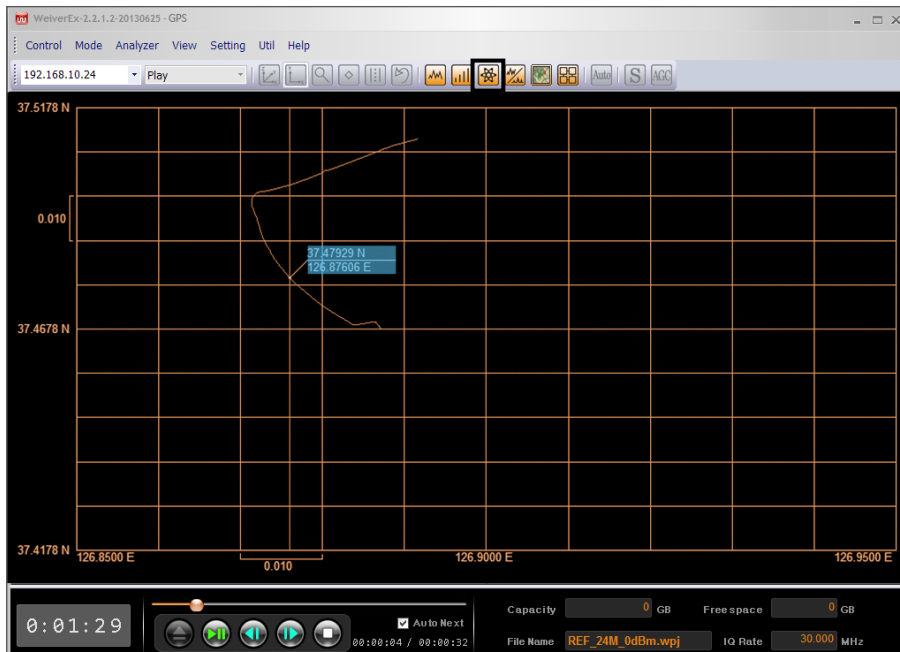
2 Power Graph

I,Q data power values and the down converter's actual gain value will be calculated in second by second and displayed. Values in the power graph are the actual coming RF IN power.



### 3 GPS Graph

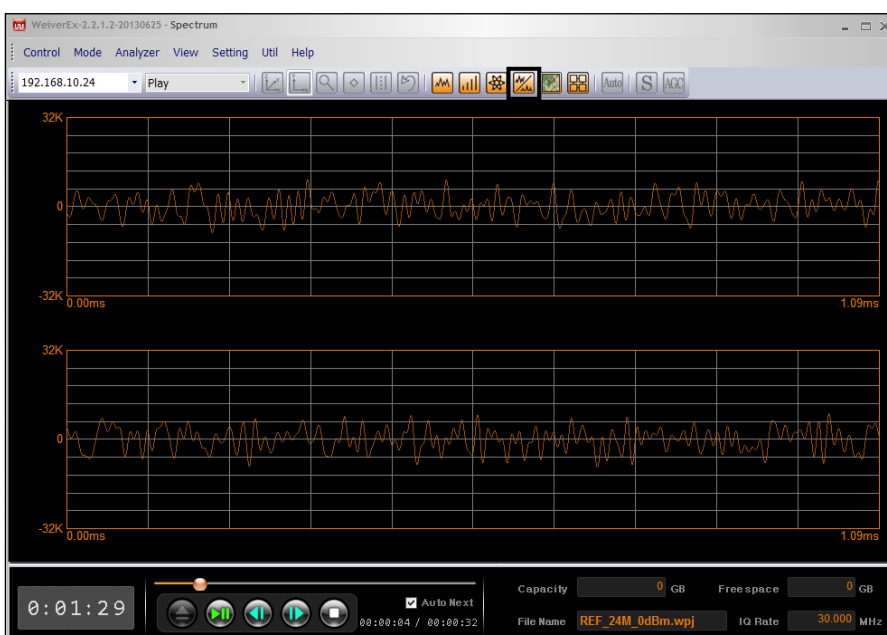
Displays current location (latitude, longitude) coordinates updated in every second.



The sizes of the Spectrum Graph , IQ Graph , Power Graph , GPS Graph  can be adjusted at the same time.

### 4 IQ Graph ( I:16bits, Q:16bits )

In the capture mode, there is an advantage to capture while the user's looking at I, Q graphs. I, Q is assigned 16bit integer value (maximum value 32,767, the minimum -32,768) and when transmitting arbitrary I, Q files created by users, WEIVER 2.0 Player will produce the most excellent RF signal when I/Q 16 bit signal has full swing.



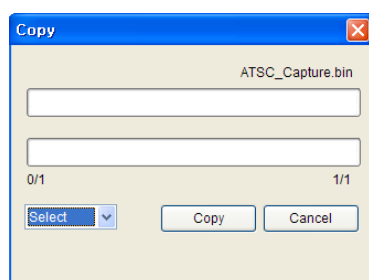
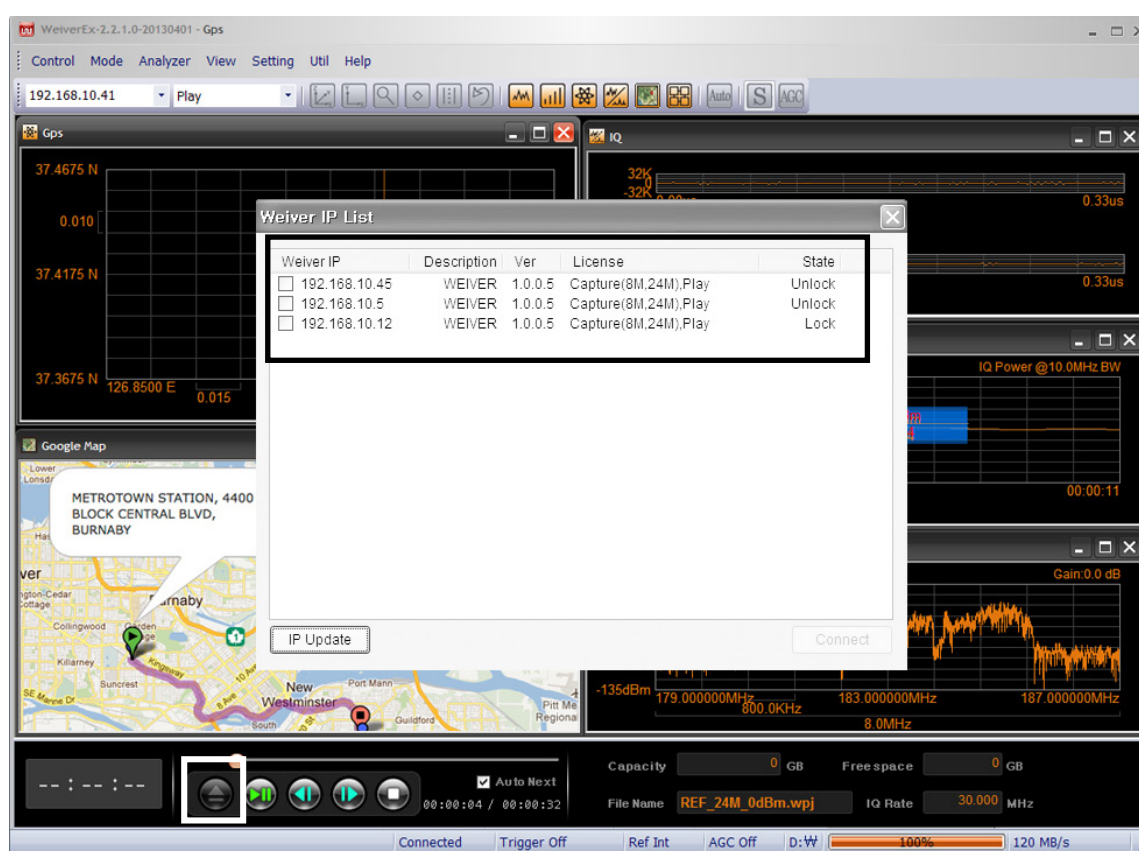
- Play Mode

The data files stored in a capture mode are generated in two types (File Name.iqw, File Name.log).

File Name.iqw is stored in the order of [I : 2Bytes, Q 2Bytes], File Name.log includes the records of Name.iqw file additional information. If File Name.log doesn't exist, Bandwidth is represented by the ARB, you can play the file by typing IQ rate and the Center Frequency .

To play back the captured RF data files. Please open the list of captured data files.

Click on the File Open button



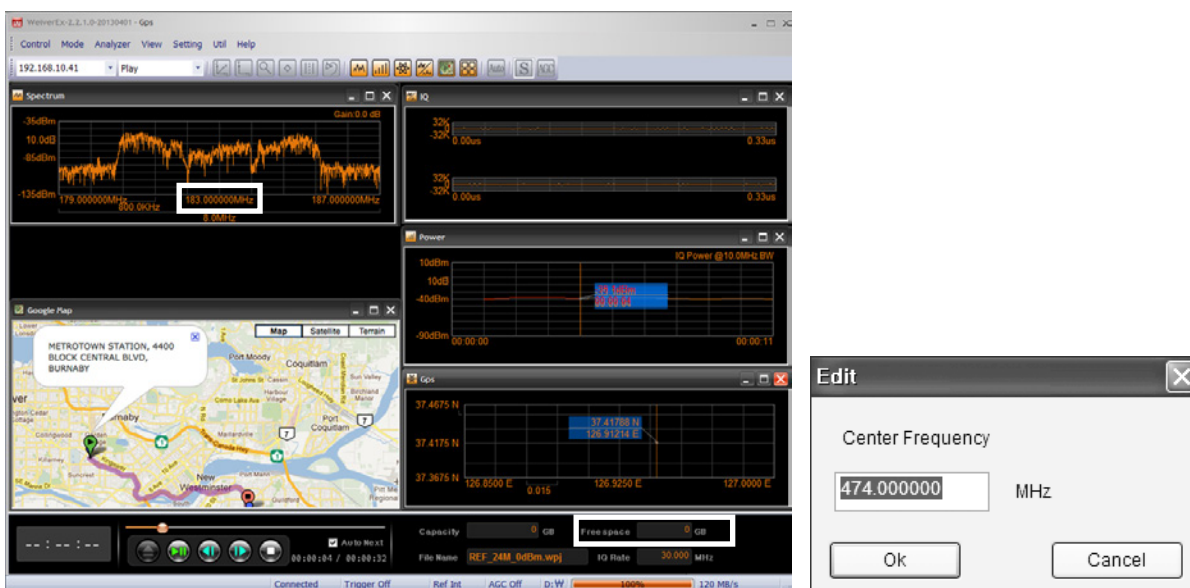
To delete a saved file, check the box next to the file name and click the Delete button.

To backup or to copy the files, check the boxes adjacent to the file name and click the Copy button. Select the save path (e.g., E:\)

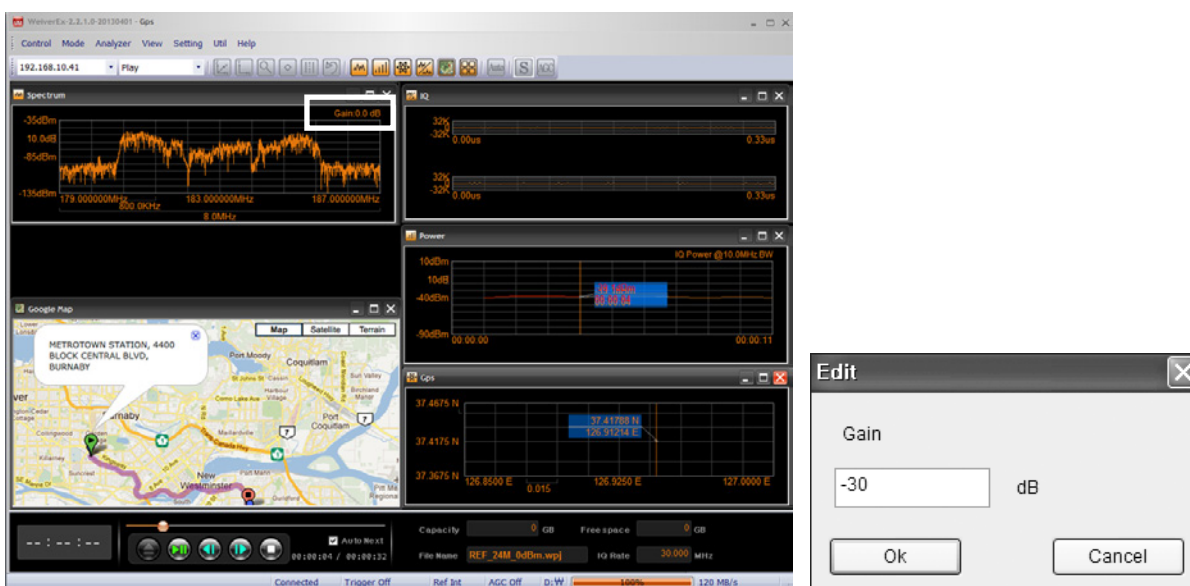
To play, check the relevant box adjacent to the file and click the play button

To stop play, click on the Stop button





The frequency can be changed with the mouse wheel or by double-clicking and entering in the figures.



The transmission power can be changed with the mouse wheel or by double-clicking and entering the figures.



# API

for WEIVER & WEIVER 2.0 Player



By LUMANTEK

## 5. API OPERATION

### 5.1 / API Description

There are three ways to control the Weiver 2.0 Player

1. Using the buttons at the front panel
2. Using an operating software, the Weiver\_Ex
3. Using API

The first and second methods are supported all previous versions of the WeiverPlayer software, however, the third method can be supported from the WeiverPlayer software version 2.1.2.0. Hence, if previous version is installed in the WeiverPlayer, API function is not able to use.



[ WEIVER 2.0 Player ]



[ WEIVER 2.0 Player Software ]

### 5.2 / WeiverPlayer API Performance Property

The Weiver\_Ex software connects the Weiver 2.0 Player software as IP and send UDP packets to run the Weiver 2.0 Player.

We have opened the WeiverPlayer API example program and packet information because the purpose of the WeiverPlayer API is to control the Weiver 2.0 Player without the Weiver\_Ex software. You can download reference sources at Lumantek website. ( <http://www.lumantek.com/support/download.html> )

The contents in the below are the structure of API packets (ref.:WvPlayerRemoteAPI.h).

```
#define WEIVER_PLAYER_ID 0x057b50b7
#define WEIVER_PLAYER_API_RX_PORT 50504

#define REMOTE_STRING_SUCCESS_T("Received")
#define REMOTE_STRING_INVALIDE_PARAM_T("Invalid Param")

typedef enum _WvPlayerRemoteCMD_e
{
    WV_PLAYER_REMOTE_CMD_SET_STRING,
    WV_PLAYER_REMOTE_CMD_MAX
}WvPlayerRemoteCMD_t;

typedef struct _WvPlayerRemotePacket_t
{
    unsigned int u4_ID;// WEIVER_PLAYER_ID
    unsigned int u4_Reserved;//WV_PLAYER_REMOTE_CMD_SET_STRING
    unsigned int u4_DataSize;
    unsigned char u1a_Data[1000];
}WvPlayerRemotePacket_t, *WvPlayerRemotePacket_tp;
```

For controlling the WeiverPlayer via API, an UDP Port (50504) has been opened. Hence, if data is added to 'WvPlayerRemotePacket' structure, the WeiverPlayer program is running with these packet data.

These open sources are for Windows but can be applied to other OSs.

Before explaining the command list, we have five conditions of the program (WeiverPlayerRemoteAPI.exe).

1. IP address of the WeiverPlayer is 192.168.100.1.
2. An opened port number for API control is 50504 (fixed).
3. After sending packet to the WeiverPlayer 1.0, a receiving port number is 50000 (variable).
4. One letter accounts for 2 byte respectively.
5. After sending the packet, 'Time out' occurs if there is no response.

## 5.3 / Data Packet Structure

[ connect 50000 ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	26	L"connect 50000"
Size(Byte)	4	4	4	13x2

[ disconnect ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	10x2	L"disconnect"
Size(Byte)	4	4	4	10x2

[ rescandisk ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	20	L"rescandisk"
Size(Byte)	4	4	4	10x2

[ openfile test.wpj ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	34	L"openfile test.wpj"
Size(Byte)	4	4	4	17x2

[ get openfile ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	24	L"get openfile"
Size(Byte)	4	4	4	12x2

[ play start ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	24	L"get openfile"
Size(Byte)	4	4	4	12x2

**[ play stop ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	18	L"play stop"
Size(Byte)	4	4	4	9x2

**[ play pause ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	20	L"play pause"
Size(Byte)	4	4	4	10x2

**[ play resume ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	22	L" play resume"
Size(Byte)	4	4	4	11x2

**[ get play\_status ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	30	L"get play_status"
Size(Byte)	4	4	4	15x2

**[ set freq 40000000 ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	36	L"set freq 40000000"
Size(Byte)	4	4	4	18x2

**[ set freq 40000000 hz ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	42	L"set freq 40000000 hz"
Size(Byte)	4	4	4	21x2

[ set freq 400 mhz ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	38	L"set freq 400000 khz"
Size(Byte)	4	4	4	19x2

[ set freq 400000 khz ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	38	L"set freq 400000 khz"
Size(Byte)	4	4	4	19x2

[ get freq ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	16	L"get freq"
Size(Byte)	4	4	4	8x2

[ get gain\_min ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	24	L"get gain_max"
Size(Byte)	4	4	4	12x2

[ get gain ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	16	L"get gain"
Size(Byte)	4	4	4	8x2

[ get rf\_out\_level 1 ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	36	L"get rf_out_level 1"
Size(Byte)	4	4	4	18x2

[ set gain 100 ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	24	L"set gain 100"
Size(Byte)	4	4	4	12x2

[ set gain -100 ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	26	L"set gain -100"
Size(Byte)	4	4	4	13x2

[ get play\_time\_total ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	38	L"get play_time_total"
Size(Byte)	4	4	4	19x2

[ get play\_time\_current ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	42	L"get play_time_current"
Size(Byte)	4	4	4	21x2

[ set play\_time\_current 5 ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	46	L"set play_time_current 5"
Size(Byte)	4	4	4	23x2

[ get play\_section ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	32	L"get play_section"
Size(Byte)	4	4	4	16x2

**[ get play\_section ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	32	L"get play_section"
Size(Byte)	4	4	4	16x2

**[ set play\_section 10 20 ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	44	L"set play_section 10 20"
Size(Byte)	4	4	4	22x2

**[ get spec\_inv ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	24	L"get spec_inv"
Size(Byte)	4	4	4	12x2

**[ set spec\_inv off ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	32	L"set spec_inv off"
Size(Byte)	4	4	4	16x2

**[ set spec\_inv on ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	30	L"set spec_inv on"
Size(Byte)	4	4	4	15x2

**[ get sample\_rate ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	30	L"get sample_rate"
Size(Byte)	4	4	4	15x2



[ set sample\_rate 10000000 ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	48	L"set sample_rate 10000000"
Size(Byte)	4	4	4	24x2

[ set sample\_rate 10000000 hz ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	54	L"set sample_rate 10000000 hz"
Size(Byte)	4	4	4	27x2

[ set sample\_rate 10 mhz ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	44	L"set sample_rate 10 mhz"
Size(Byte)	4	4	4	22x2

[ set sample\_rate 10000 khz ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	54	L"set sample_rate 10000 khz"
Size(Byte)	4	4	4	27x2

[ set trigger\_out\_level low ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	50	L"set trigger_out_level low"
Size(Byte)	4	4	4	25x2

[ set trigger\_out\_level high ]

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	52	L"set trigger_out_level low"
Size(Byte)	4	4	4	26x2

**[ get trigger\_out\_level ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	42	L"get trigger_out_level"
Size(Byte)	4	4	4	21x2

**[ set extclk off ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	28	L"set extclk off"
Size(Byte)	4	4	4	14x2

**[ set extclk on ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	26	L"set extclk on"
Size(Byte)	4	4	4	13x2

**[ get extclk ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	20	L"get extclk"
Size(Byte)	4	4	4	10x2

**[ get trigger\_in ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	28	L"get trigger_in"
Size(Byte)	4	4	4	14x2

**[ set trigger\_in off ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	36	L"set trigger_in off"
Size(Byte)	4	4	4	18x2

**[ set trigger\_in on ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	34	L"set trigger_in on"
Size(Byte)	4	4	4	17x2

**[ set current\_directory d:\ ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	50	L"set current_directory d:\"
Size(Byte)	4	4	4	25x2

**[ set current\_directory d:\WeiverData ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	70	L"set current_directory d:\WeiverData"
Size(Byte)	4	4	4	35x2

**[ get current\_directory ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	42	L"get current_directory"
Size(Byte)	4	4	4	21x2

**[ get file\_count ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	28	L"get file_count"
Size(Byte)	4	4	4	14x2

**[ get filename 0 ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	28	L"get filename 0"
Size(Byte)	4	4	4	14x2

**[ get folder\_count ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	32	L"get folder_count"
Size(Byte)	4	4	4	16x2

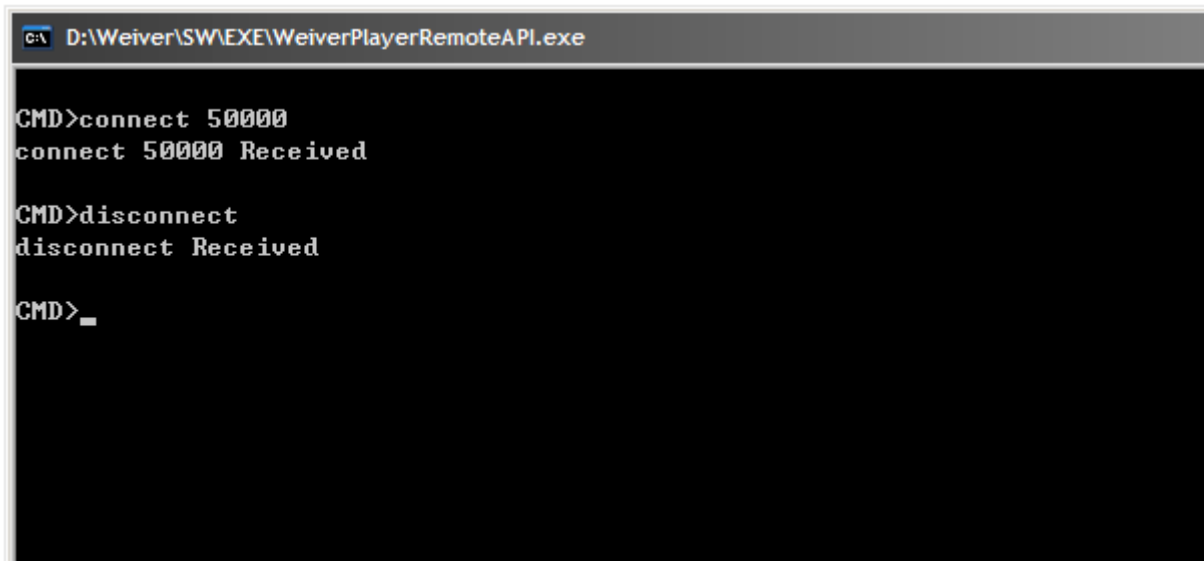
**[ get foldername 0 ]**

Type	ID	Reserved	Data Size	Data
Data	0x057b50b7	0	32	L"get foldername 0"
Size(Byte)	4	4	4	16x2

## 5.4 / Command List

- Connect, disconnect command,

Example) 1. connect 50000,  
2. disconnect



```
C:\ D:\Weiver\SW\EXE\WeiverPlayerRemoteAPI.exe

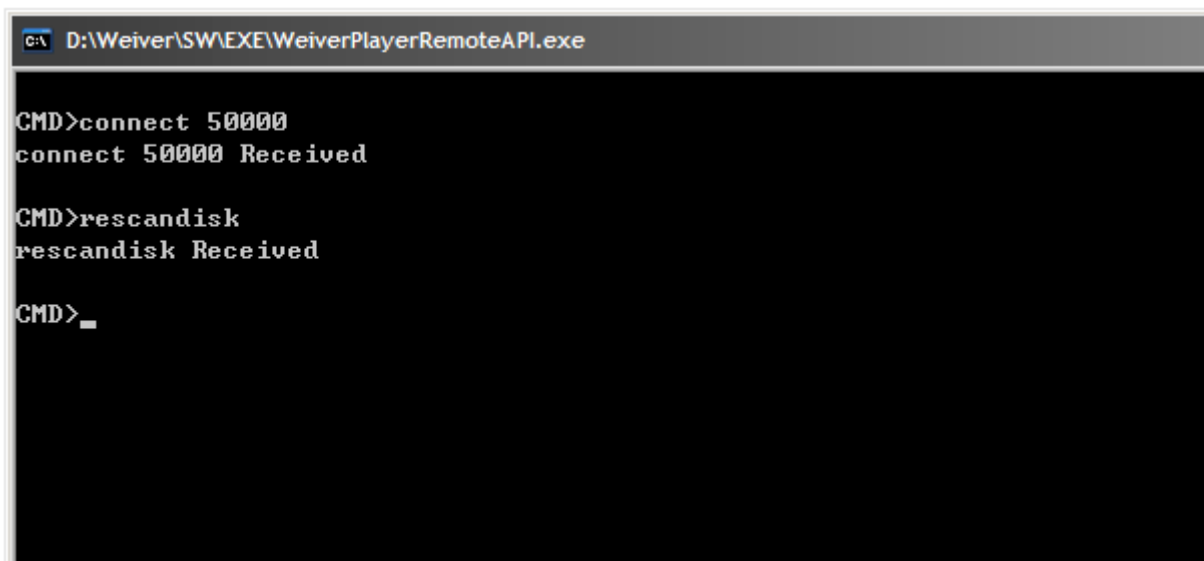
CMD>connect 50000
connect 50000 Received

CMD>disconnect
disconnect Received

CMD>_
```

- rescandisk command,

Example) 1. rescandisk



```
C:\ D:\Weiver\SW\EXE\WeiverPlayerRemoteAPI.exe

CMD>connect 50000
connect 50000 Received

CMD>rescandisk
rescandisk Received

CMD>_
```

- set current\_directory, get current\_directory command  
get file\_count, get filename, get folder\_count, get foldername command  
openfile, get openfile command

Example) 1. set current\_directory f:\  
2. get current\_directory  
3. get file\_count  
4. get filename 0  
5. get filename 1  
6. get folder\_count  
7. get foldername 0  
8. get foldername 1  
9. openfile testrecordtest.wpj  
10. get openfile

```
C:\ D:\Weiver\SW\EXE\WeiverPlayerRemoteAPI.exe
CMD>connect 50000
connect 50000 Received

CMD>rescandisk
rescandisk Received

CMD>set current_directory f:\
set current_directory f:\ Received

CMD>get current_directory
get current_directory f:\

CMD>get file_count
get file_count 2

CMD>get filename 0
get filename 0 testrecordtest.wpj

CMD>get filename 1
get filename 1 Trigger.wpj

CMD>get folder_count
get folder_count 2

CMD>get foldername 0
get foldername 0 WeiverData

CMD>get foldername 1
get foldername 1 x86

CMD>openfile testrecordtest.wpj
openfile testrecordtest.wpj Received

CMD>get openfile
get openfile testrecordtest.wpj

CMD>_
```

- play start, play stop, play pause, play resume, get play\_status command

Example) 1. play start  
2. get play\_status  
3. play pause  
4. play resume  
5. play stop

```
C:\> D:\Weiver\SW\EXE\WeiverPlayerRemoteAPI.exe

CMD>get foldername 1
get foldername 1 x86

CMD>openfile testrecordtest.wpj
openfile testrecordtest.wpj Received

CMD>get openfile
get openfile testrecordtest.wpj

CMD>play start
play start Received

CMD>get play_status
get play_status play

CMD>play pause
play pause Received

CMD>play resume
play resume Received

CMD>play stop
play stop Received

CMD>
```



- set freq, get freq command

Example) 1. set freq 400000000 (400MHz setting)  
2. get freq  
3. set freq 400 MHz (400MHz setting)  
4. set freq 400000 KHz (400MHz setting)  
5. set freq 400000000 Hz (400MHz setting)

```
C:\> D:\Weiver\SW\EXE\WeiverPlayerRemoteAPI.exe

CMD>get freq
get freq 400000000 <hz>

CMD>set freq 400000000
set freq 400000000 Received

CMD>set freq 400000000 hz
set freq 400000000 hz Received

CMD>set freq 400.000 mhz
set freq 400.000 mhz Received

CMD>set freq 400000 khz
set freq 400000 khz Received

CMD>get freq
get freq 400000000 <hz>

CMD>set freq 400.124 mhz
set freq 400.124 mhz Received

CMD>get freq
get freq 400124000 <hz>

CMD>
```

- get gain\_min, get gain\_max, get rf\_out\_level 0, get gain, set gain command

Example) 1. get gain\_min  
2. get gain\_max  
3. get rf\_out\_level 0  
4. set gain 100  
5. get rf\_out\_level 0  
6. get gain

```
C:\> D:\Weiver\SW\EXE\WeiverPlayerRemoteAPI.exe
set freq 400.124 mhz Received

CMD>get freq
get freq 400124000 (hz)

CMD>get gain_min
get gain_min -300 (x 0.1dB)

CMD>get gain_max
get gain_max 300 (x 0.1dB)

CMD>get rf_out_level 0
get rf_out_level 0 -448 (x 0.1dBm)

CMD>set gain 100
set gain 100 Received

CMD>get rf_out_level 0
get rf_out_level 0 -348 (x 0.1dBm)

CMD>get gain
get gain 100 (x 0.1dB)

CMD>
```

- get play\_time\_total, get play\_time\_current, set play\_time\_current, get play\_section, set play\_section command

Example) 1. get play\_time\_total  
2. get play\_time\_current  
3. set play\_time\_current 5  
4. set play\_section 6 10  
5. get play\_section

```
C:\ D:\Weiver\SW\EXE\WeiverPlayerRemoteAPI.exe

CMD>get play_time_total
get play_time_total 125 <sec>

CMD>play start
play start Received

CMD>get play_time_current
get play_time_current 20 <sec>

CMD>set play_time_current 5
set play_time_current 5 Received

CMD>set play_section 6 10
set play_section 6 10 Received

CMD>get play_section
get play_section 6 10 <sec>

CMD>
```

- set spec\_inv off/on, get spec\_inv command

Example) 1. set spec\_inv off  
2. set spec\_inv on

```
C:\ D:\Weiver\SW\EXE\WeiverPlayerRemoteAPI.exe

CMD>set play_time_current 5
set play_time_current 5 Received

CMD>set play_section 6 10
set play_section 6 10 Received

CMD>get play_section
get play_section 6 10 <sec>

CMD>set spec_inv off
set spec_inv off Received

CMD>set spec_inv on
set spec_inv on Received

CMD>get spec_inv
get spec_inv on

CMD>
```

- set sample\_rate, get sample\_rate command

Example) 1. set sample\_rate 12000000, set sample\_rate 12 mhz, set sample\_rate 12000 khz  
2. get sample\_rate

```
C:\> D:\Weiver\SW\EXE\WeiverPlayerRemoteAPI.exe

CMD>set spec_inv off
set spec_inv off Received

CMD>set spec_inv on
set spec_inv on Received

CMD>get spec_inv
get spec_inv on

CMD>get sample_rate
get sample_rate 30000000 (hz)

CMD>set sample_rate 12 mhz
set sample_rate 12 mhz Received

CMD>get sample_rate
get sample_rate 12000000 (hz)

CMD>
```

- set trigger\_out\_level, get trigger\_out\_level command

Example) 1. set trigger\_out\_level low  
2. set trigger\_out\_level high

```
C:\> D:\Weiver\SW\EXE\WeiverPlayerRemoteAPI.exe

CMD>get sample_rate
get sample_rate 30000000 (hz)

CMD>set sample_rate 12 mhz
set sample_rate 12 mhz Received

CMD>get sample_rate
get sample_rate 12000000 (hz)

CMD>set trigger_out_level low
set trigger_out_level low Received

CMD>set trigger_out_level high
set trigger_out_level high Received

CMD>get trigger_out_level
get trigger_out_level high

CMD>
```

- set extclk, get extclk command

Example) 1. set extclk off  
2. set extclk on  
3. get extclk

```
C:\ D:\Weiver\SW\EXE\WeiverPlayerRemoteAPI.exe

CMD>set trigger_out_level low
set trigger_out_level low Received

CMD>set trigger_out_level high
set trigger_out_level high Received

CMD>get trigger_out_level
get trigger_out_level high

CMD>set extclk off
set extclk off Received

CMD>set extclk on
set extclk on Received

CMD>get extclk
get extclk on

CMD>
```

- set trigger\_in, get trigger\_in command

Example) 1. set trigger\_in off  
2. set trigger\_in on  
3. get trigger\_in

```
C:\ D:\Weiver\SW\EXE\WeiverPlayerRemoteAPI.exe

CMD>set extclk off
set extclk off Received

CMD>set extclk on
set extclk on Received

CMD>get extclk
get extclk on

CMD>set trigger_in off
set trigger_in off Received

CMD>set trigger_in on
set trigger_in on Received

CMD>get trigger_in
get trigger_in on

CMD>
```

## 5.5 / WeiverPlayer Remote API source

```
CWinApp theApp;
using namespace std;
const unsigned short u2_WeiverPlayerPort = WEIVER_PLAYER_API_RX_PORT;
const unsigned short u2_RecvPortFromWeiverPlayer = 50000;
const char s1a_WeiverPlayerIP[] = "192.168.100.1";
//const char s1a_WeiverPlayerIP[] = "127.0.0.1";
//const char s1a_WeiverPlayerIP[] = "192.168.10.15";

int _tmain(int argc, TCHAR* argv[], TCHAR* envp[])
{
    int nRetCode = 0;

    if (!AfxWinInit(::GetModuleHandle(NULL), NULL, ::GetCommandLine(), 0))
    {
        _tprintf(_T("AfxWinInit failed.\n"));
        nRetCode = 1;
    }
    else
    {
        wchar_t wCmdLine[1000];
        wchar_t wSendCmd[1000];

        WSADATA wsaData;
        WSASStartup(MAKEWORD(2,2), &wsaData);

        while(nRetCode == 0)
        {
            memset(wCmdLine, 0, 1000);
            memset(wSendCmd, 0, 1000);

            wprintf(_T("\nCMD>"));

            _getws_s(wCmdLine, 1000);
```

```
        if(wcsncmp(wCmdLine, _T("exit"), wcslen(_T("exit"))) == 0)
        {
            nRetCode = 1;
        }
        else
        {
            SendToStringCMD((char*)wCmdLine, 2*wcslen(wCmdLine));
        }
        wprintf(_T("\n"));
    }

    WSACleanup();

}

return nRetCode;
}

void SendToStringCMD(char *s1p_Data, unsigned int u4_Size)
{
    SOCKET h_Socket;
    SOCKADDR_IN Addr;

    int SentBytes;

    WvPlayerRemotePacket_t t_Packet;
    WvPlayerRemotePacket_tp tp_Packet;

    char *pSendData = (char *)&t_Packet;

    char message[2000];
    memset(message, 0, 2000);

    int clntAddrSize = sizeof(Addr);
```

```
h_Socket = socket(PF_INET, SOCK_DGRAM, IPPROTO_UDP);
```

```
memset(&Addr, 0, sizeof(Addr));
```

```
Addr.sin_family = AF_INET;
```

```
Addr.sin_port = htons(u2_RecvPortFromWeiverPlayer);
```

```
Addr.sin_addr.s_addr = htonl(INADDR_ANY);
```

```
struct timeval timeout;
```

```
timeout.tv_sec = 2; //2 seconds
```

```
timeout.tv_usec = 0;
```

```
int optlen = sizeof(timeout);
```

```
setsockopt(h_Socket, SOL_SOCKET, SO_RCVTIMEO, (const char *)&timeout, optlen);
```

```
if(bind(h_Socket, (SOCKADDR*)&Addr, sizeof(Addr)) == SOCKET_ERROR)
```

```
{
```

```
    wprintf(_T("bind() Error"));
```

```
    closesocket(h_Socket);
```

```
    return;
```

```
}
```

```
t_Packet.u4_ID = WEIVER_PLAYER_ID;
```

```
t_Packet.u4_Reserved = WV_PLAYER_REMOTE_CMD_SET_STRING;
```

```
t_Packet.u4_DataSize = u4_Size;
```

```
memset(t_Packet.u1a_Data, 0, 1000);
```

```
memcpy(t_Packet.u1a_Data, s1p_Data, u4_Size);
```

```
memset(&Addr, 0, sizeof(Addr));
```

```
Addr.sin_family = AF_INET;
```

```
Addr.sin_port = htons(u2_WeiverPlayerPort);
```

```
Addr.sin_addr.s_addr = inet_addr(s1a_WeiverPlayerIP);
```



```

SentBytes = sendto(h_Socket
                    ,pSendData
                    ,4/*sizeof(t_Packet.u4_ID)*/
                    + 4/*sizeof(t_Packet.u4_Reserved)*/
                    + 4/*sizeof(t_Packet.u4_DataSize)*/ + u4_Size
                    ,0, (SOCKADDR*)&Addr, sizeof(SOCKADDR_IN));

if(SentBytes == SOCKET_ERROR)
{
    wprintf(_T("\nSend Fail"));
}
else
{
    memset(&Addr, 0, sizeof(Addr));

    int length = recvfrom(h_Socket
, message, 2000, 0, (SOCKADDR*)&Addr, &clntAddrSize);

    if(length == -1)
    {
        wprintf(_T("Time Out"));
    }
    else
    {
        tp_Packet = (WvPlayerRemotePacket_tp)(message);

        wprintf(_T("%s"), tp_Packet->u1a_Data);
    }
}

closesocket(h_Socket);
}

```

## Appendix. A

### A-1. Recorded Output File [FileName.iqw, FileName.log]

#### ● FileName.iqw

	Data Point	Data Point	Data Point	Data Point	Data Point					
Hex	ff ff 06 00	00 00 fd ff	03 00 00 00	02 00 0c 00	fb ff 04 00...					
Decimal	I Data -1	Q Data 6	I Data 0	Q Data -3	I Data 3	Q Data 0	I Data 2	Q Data 12	I Data -5	Q Data 4

#### ● FileName.wpj

Line 1: \$Ver,1,IQ FileName,Cap\_20110510\_090927.iqw,IQ Rate,30000000,Center,474000000,Tracking, 1,AGC,0  
 Line 2: \$GAIN,22.3,POWER,-42.1,,,TIME,1  
 Line 3: \$GPRMC,214614.036,V,,,,,0.00,0.00,060180,,,N\*43  
 Line 4: \$GAIN,22.3,POWER,-42.1,,,TIME,2 Line 5: \$GPRMC,214615.036,V,,,,,0.00,0.00,060180,,,N\*42

Line 1: File Info. Ver: 1  
 IQ FileName:Cap\_20110510\_090927.iqw  
 IQ Rate:30000000(30MHz : BW 24M)  
 Center:474000000(474MHz)  
 Tracking:1(0:Disable, 1:Enable)  
 AGC:0(0:Off, 1:On)

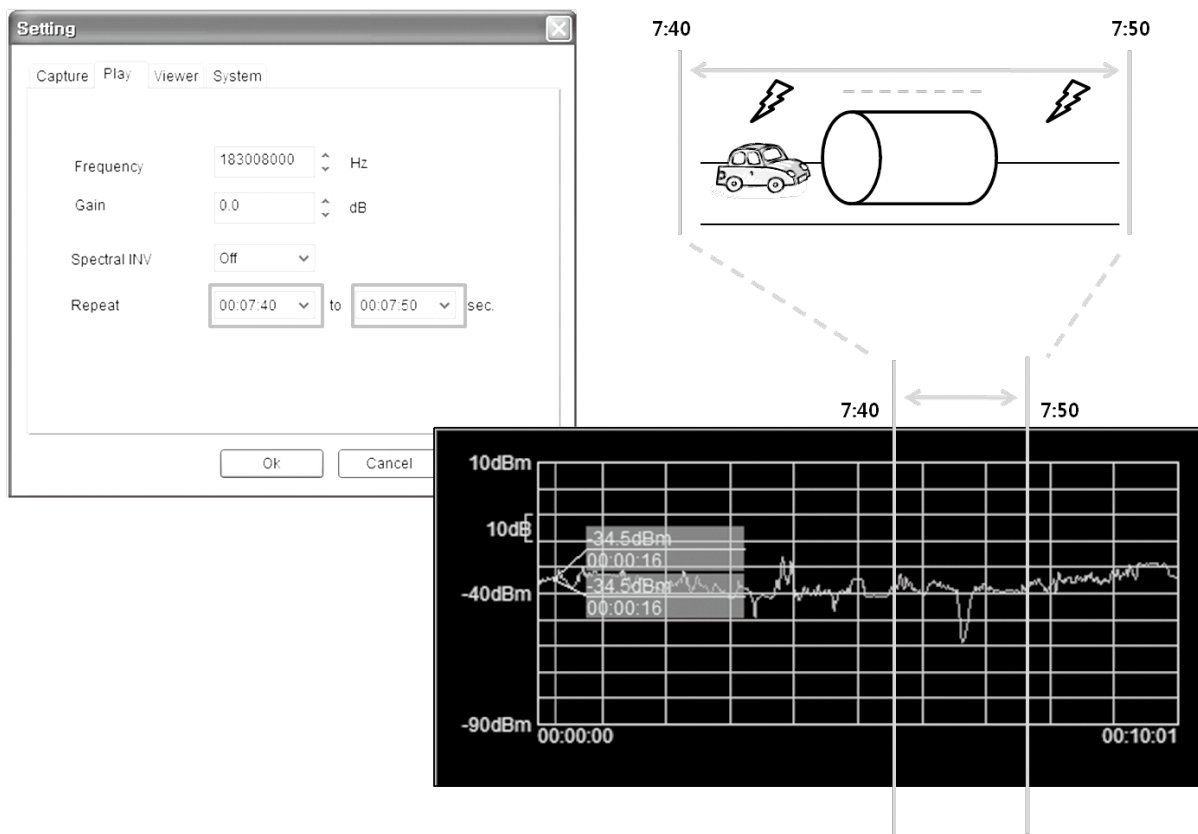
Line 2: Gain Info.  
 Line 3: GPS Info.

Line 1: \$Ver,1,IQ FileName,Cap\_20110510\_090924.iqw,IQ Rate,10000000,Center,474000000,Tracking,  
 1,AGC,0  
 Line 2: \$GAIN,22.3,POWER,-52.2,,,TIME,1  
 Line 3: \$GPRMC,214605.036,V,,,,,0.00,0.00,060180,,,N\*43  
 Line 4: \$GAIN,22.3,POWER,-52.2,,,TIME,2 Line 5: \$GPRMC,214606.036,V,,,,,0.00,0.00,060180,,,N\*40

...  
 Line 1: File Info. Ver: 1  
 IQ FileName: Cap\_20110510\_090924.iqw  
 IQ Rate:10000000(10MHz : BW 8M)  
 Center:474000000(474MHz)  
 Tracking:1(0:Disable, 1:Enable)  
 AGC:0(0:Off, 1:On)

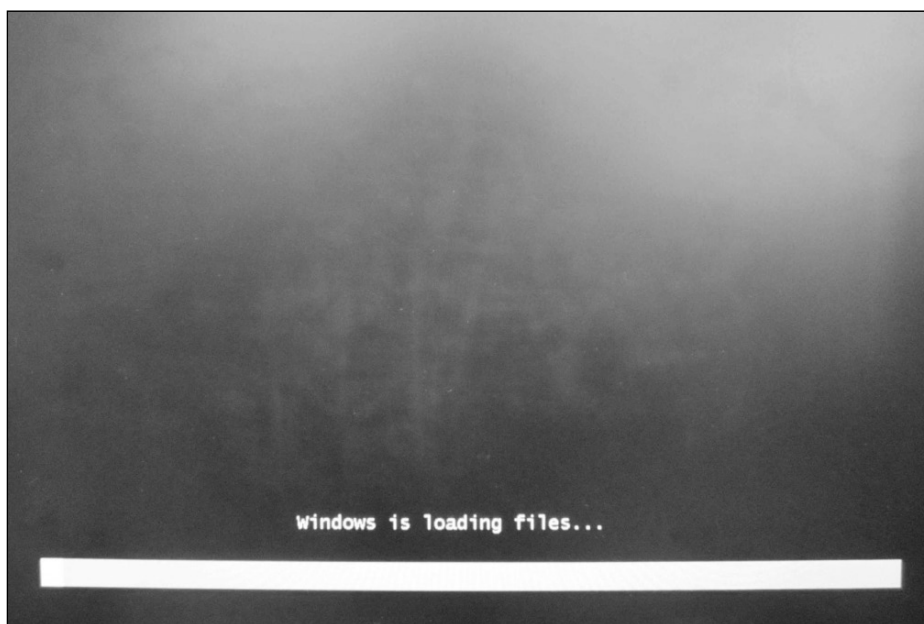
Line 2: Gain Info.  
 Line 3: GPS Info.

### A-2. Configurable Repeat Play

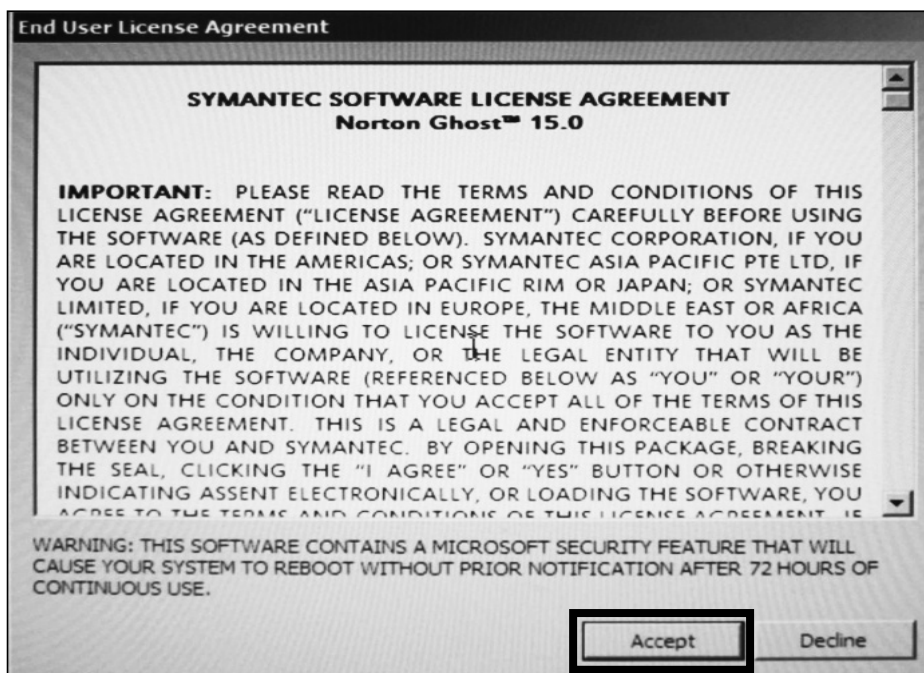


## Appendix. B Ghost 15.0 Restoration

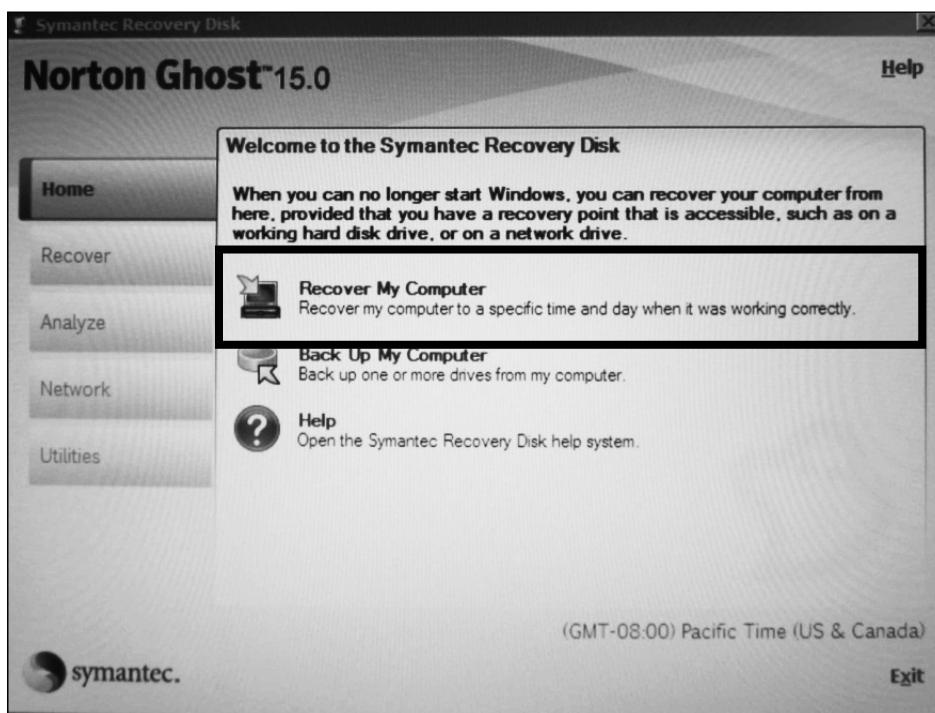
- Please insert the USB Recovery Disk into USB port of WEIVER 2.0 Player system. Before the Recovery process, WEIVER 2.0 Player system must be set to use Boot from USB CD-ROM at BIOS configuration.



- Once the License Agreement screen pops up, please click the Accept button.



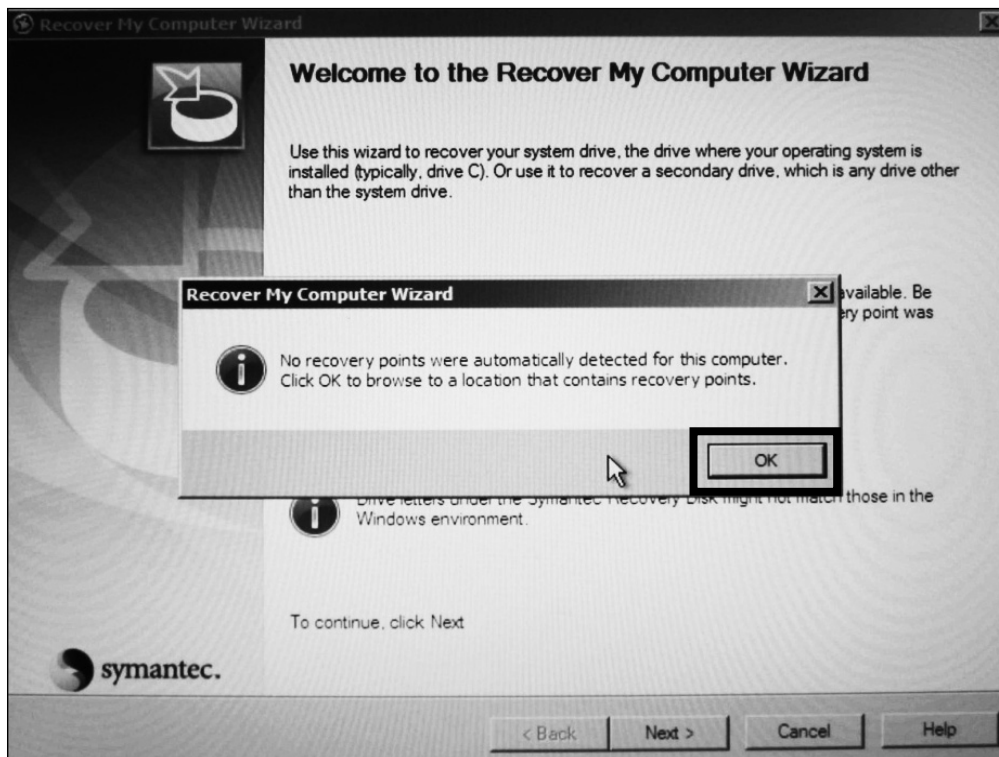
- Please click the Recover My Computer button on Home tap



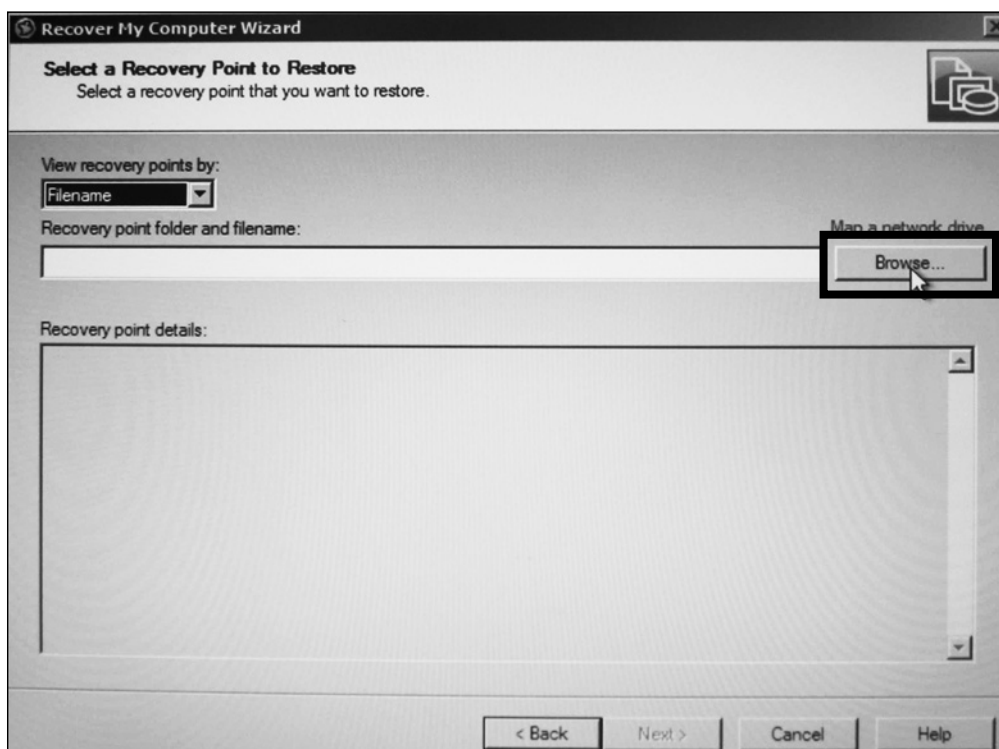
- Please click the Next button.



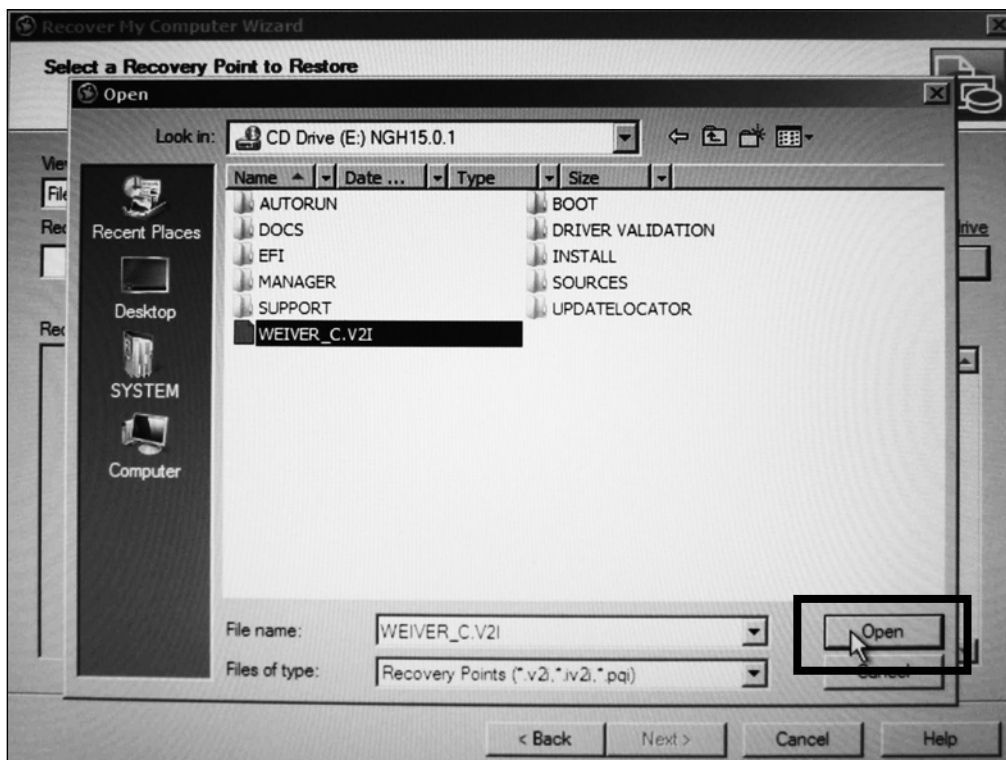
- Please click the OK button.



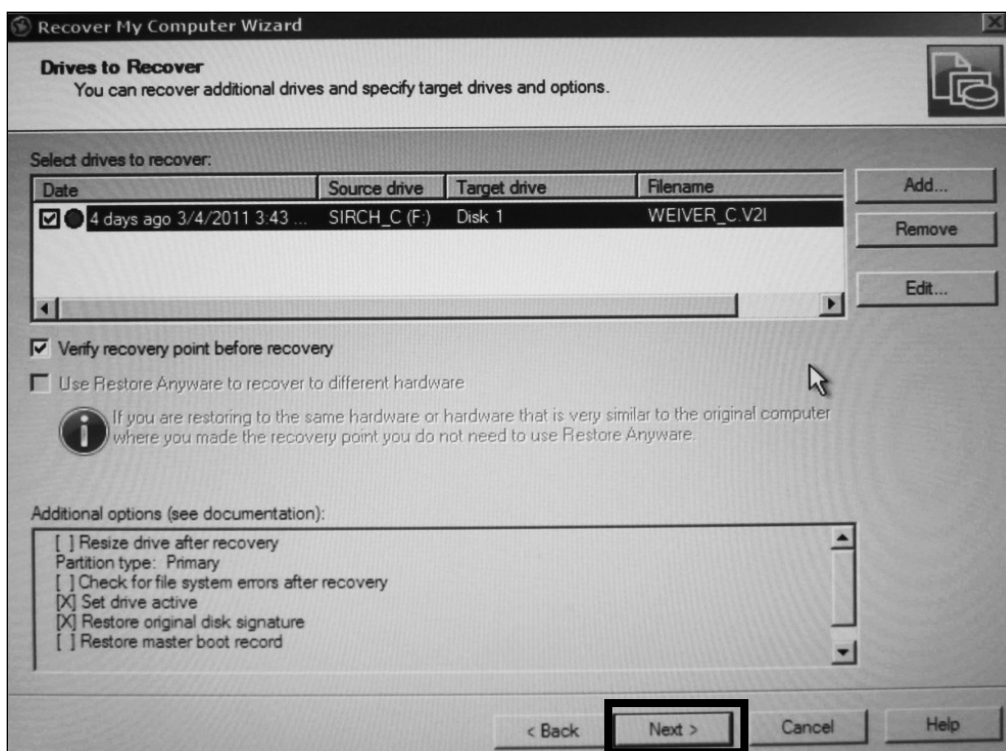
- Please click the Browse button.



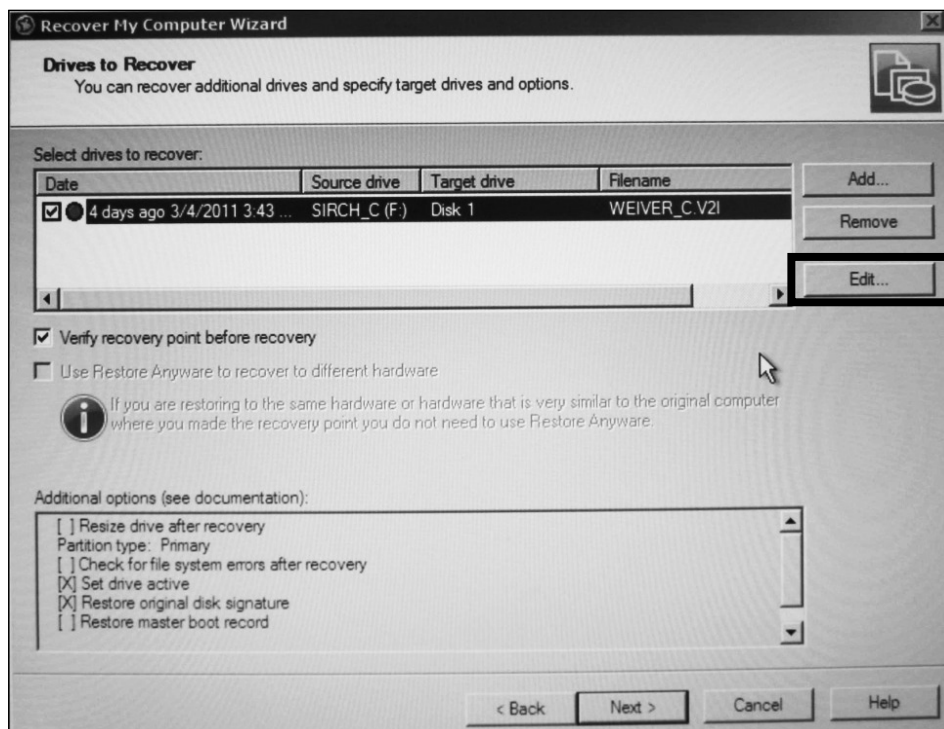
- Please select the Weiver\_Player\_C.V2I file in CD(USB-CD) Drive



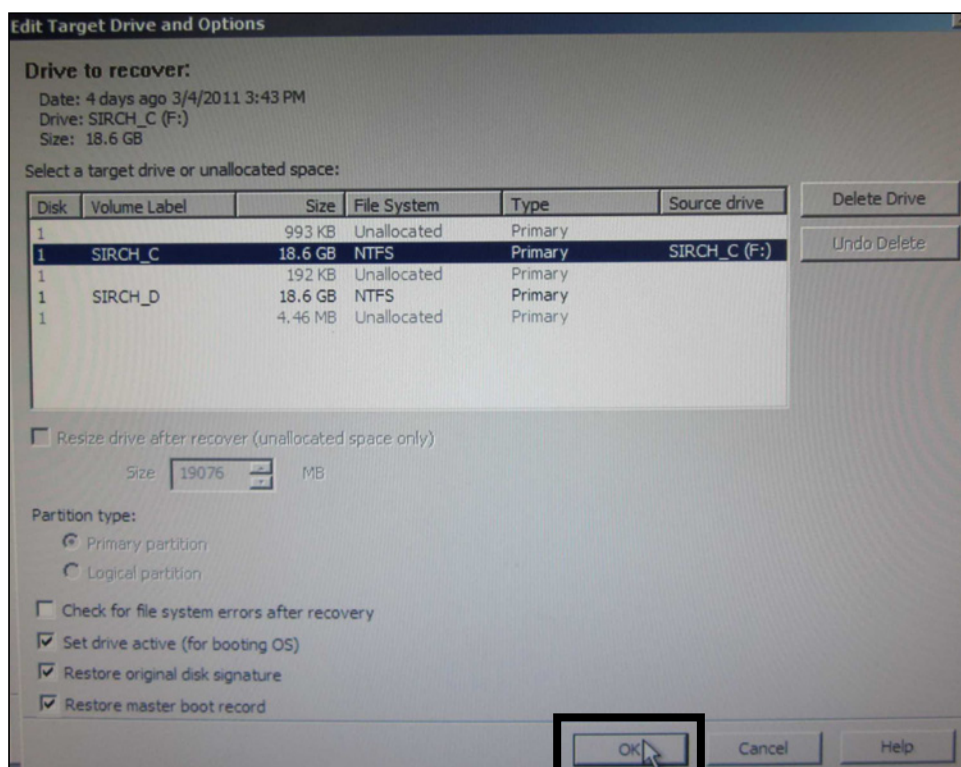
- Please click the Next button.



- Please click the Edit button.

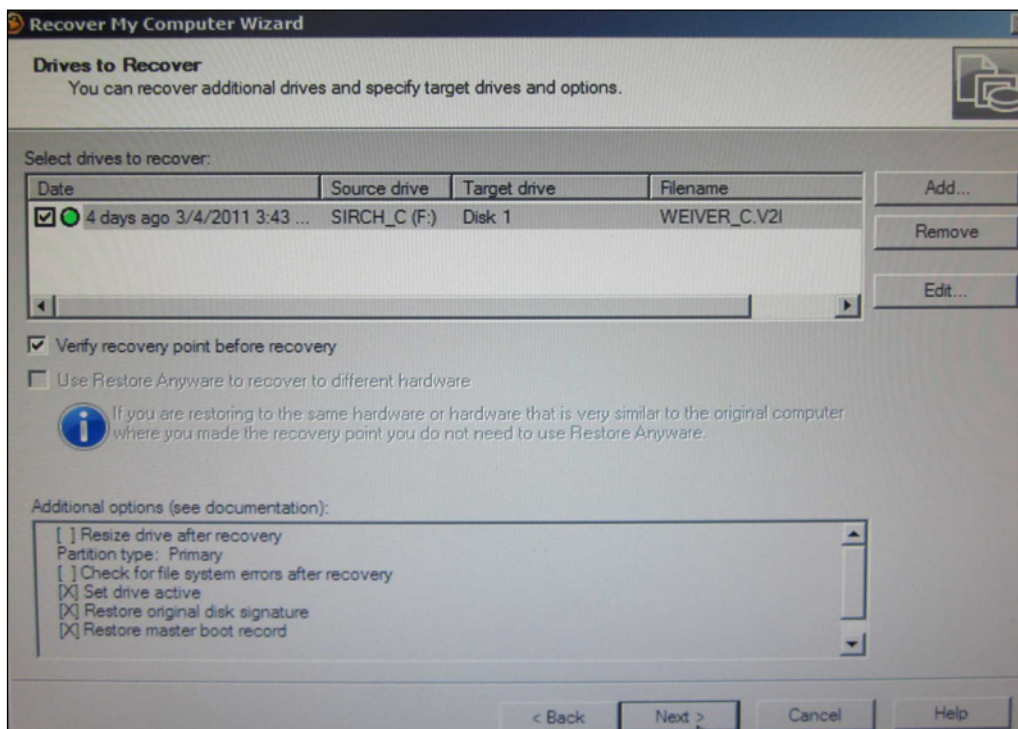


- Please select target to C drive

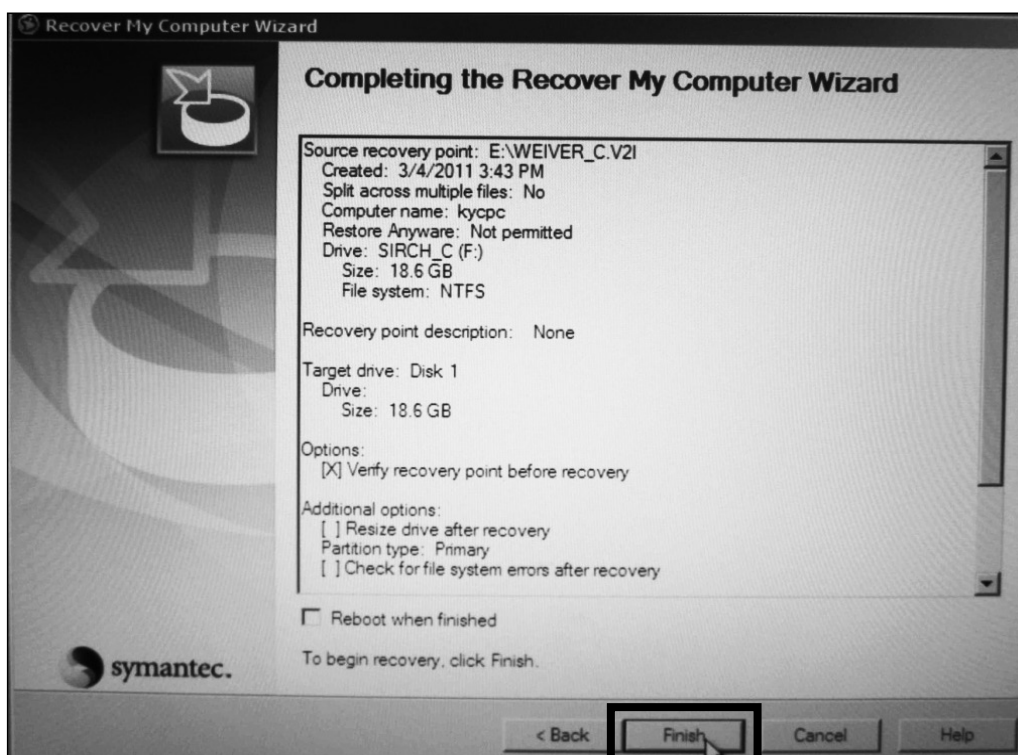




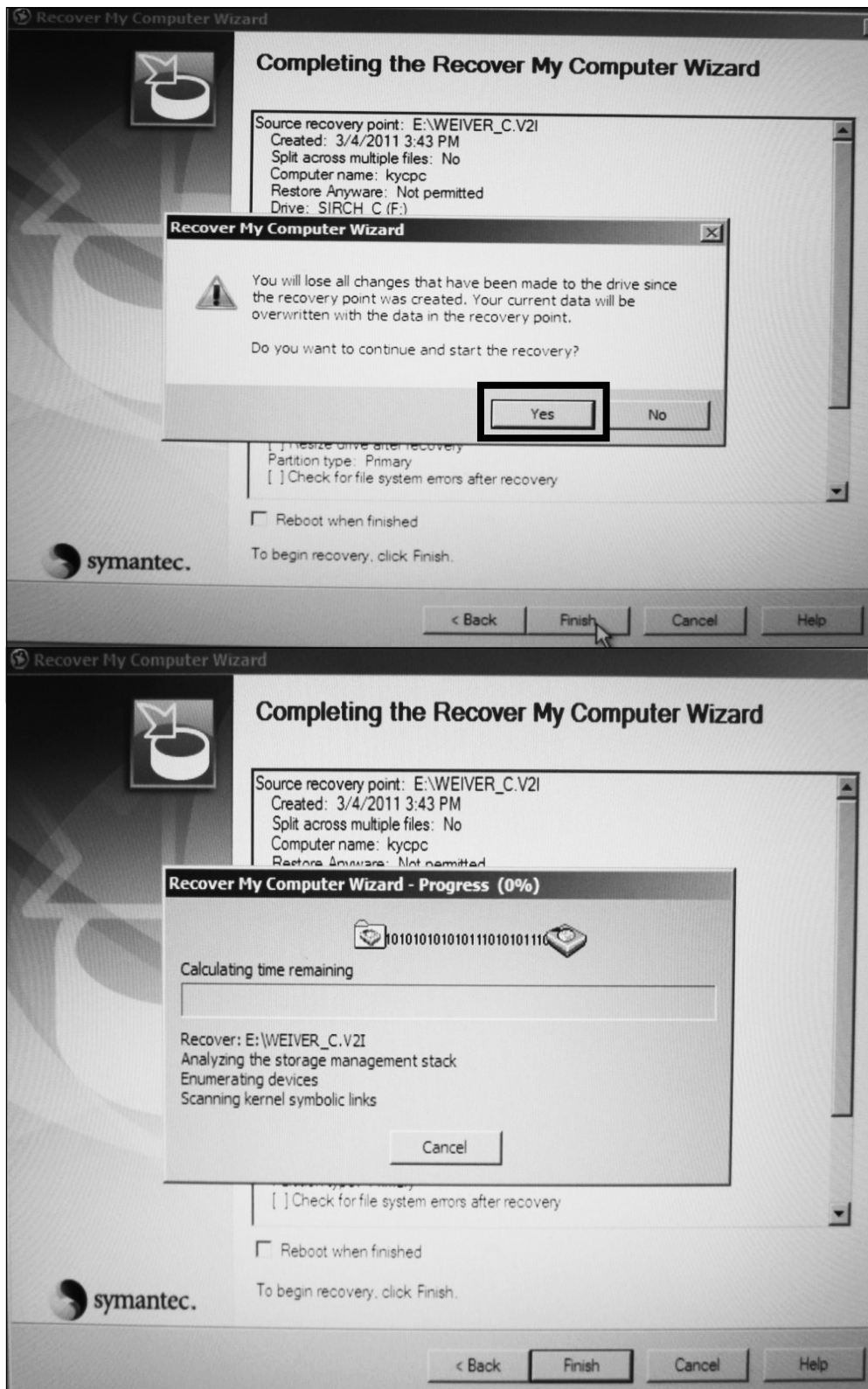
- Please click the Next button.



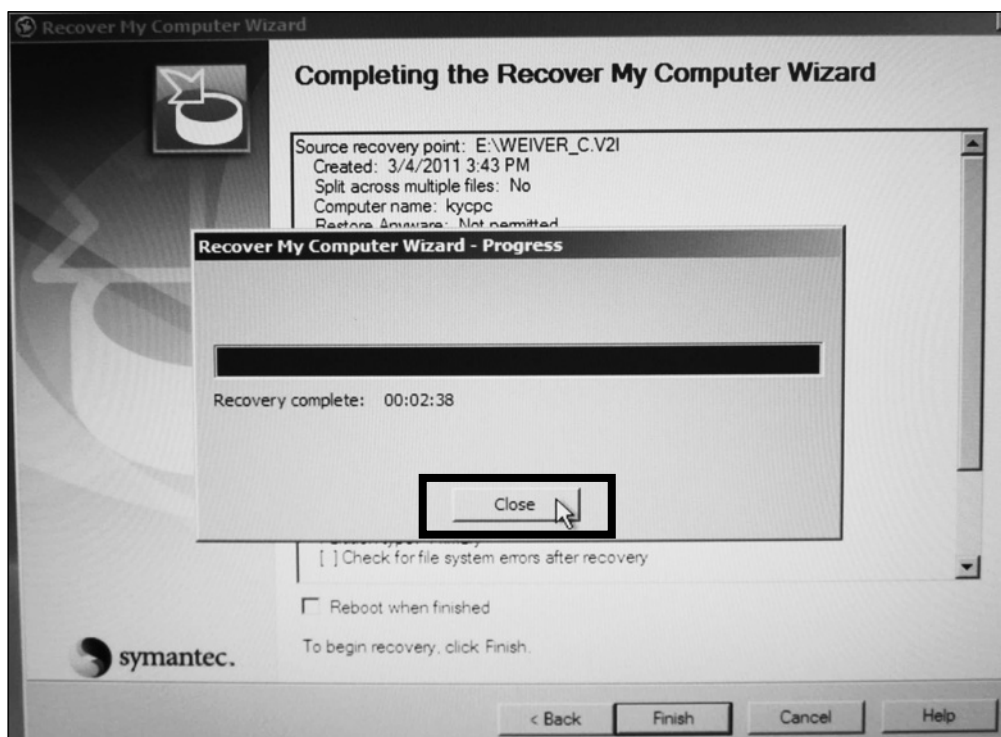
- Please click the Finish button.



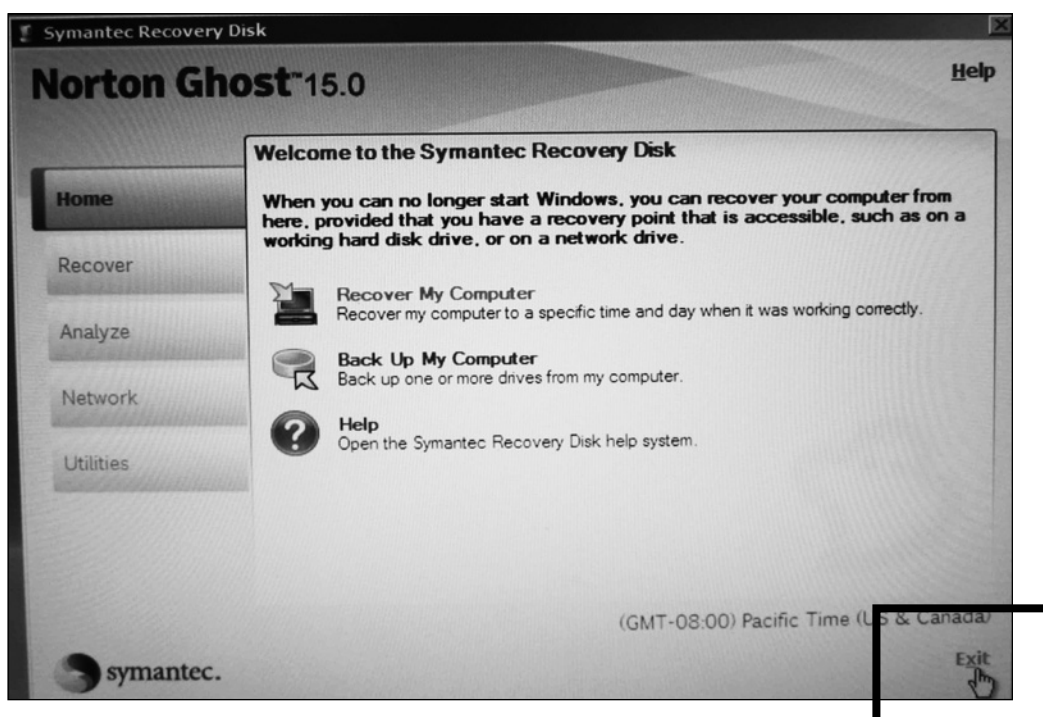
- When you click the Yes button, recovery process will be start.



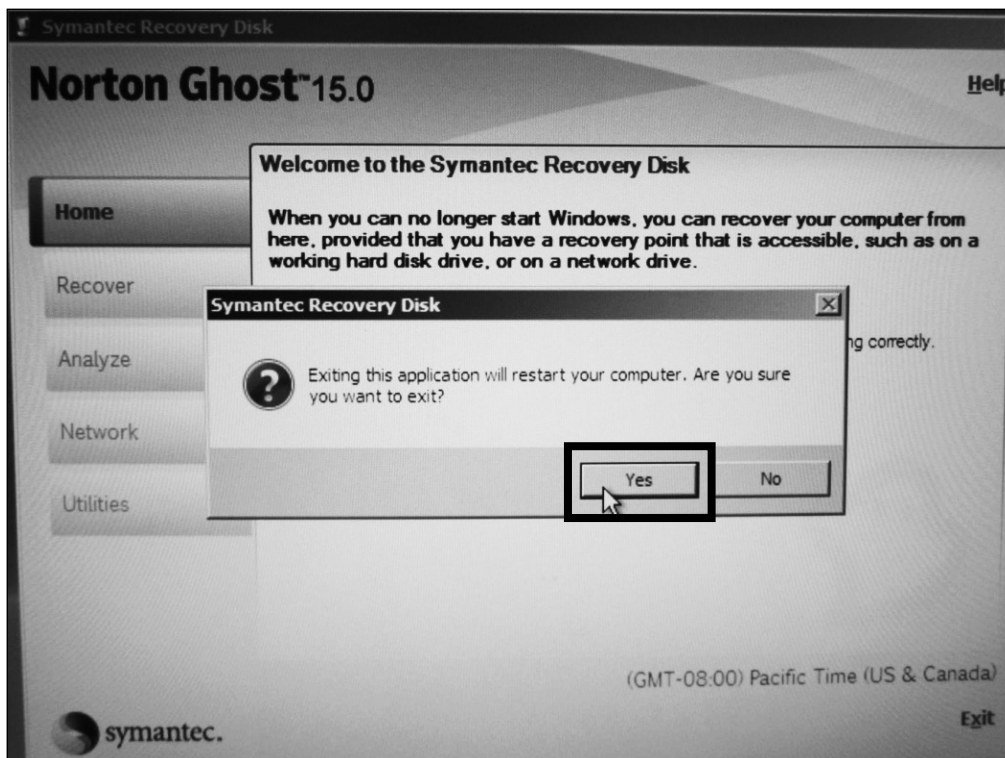
-When recovery process finished, please click the Close button.



- Please click the Exit button.



- Please click the Yes button. After this process, WEIVER 2.0 Player system must be reboot.

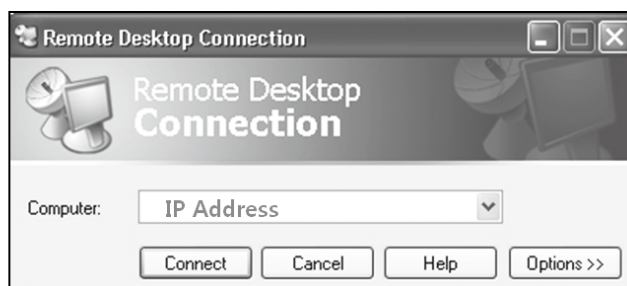
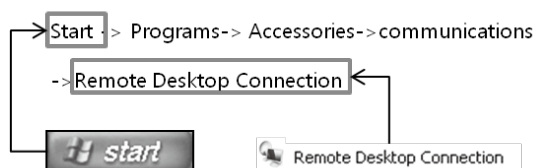


## Appendix. C

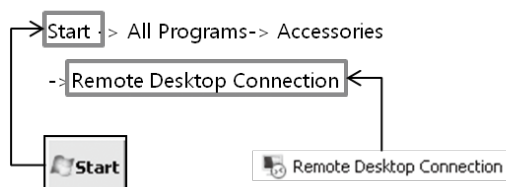
### C-1. Remote Desktop Connection method

Factory Default Value for Remote Desktop Connection (ID : Weiver / Password : Lumantek) \* Case Sensitive

#### Windows XP OS



#### Windows 7 OS



### C-2. Weiver EWF (Enhanced Write Filter) Control[Disable/Enable/State]

Please run ewf\_off file on Weiver's desktop for the EWF disablement.

\* Note : Before the WEIVER 2.0 Player installation or upgrade, EWF must be a disable state. Also, EWF Function must be Working on Weiver's desktop screen

```

C:\Windows\system32\cmd.exe

C:\Users\Weiver\Desktop>ewfmgr c: -commitanddisable -live
*** Committing data and disabling overlay <live>

Protected Volume Configuration
Type                RAM <REG>
State               DISABLED
Boot Command       NO_CMD
  Param1            0
  Param2            0
Volume ID           BD A9 6D 00 00 00 10 00 00 00 00 00 00 00 00
Volume Name        "\\?\GLOBALROOT\Device\HarddiskVolume1" [C:]
Max Levels          1
Clump Size          512
Current Level       N/A

Memory used for data 0 bytes
Memory used for mapping 0 bytes

C:\Users\Weiver\Desktop>pause
Press any key to continue . . . _
    
```



ewf\_off

After the WEIVER 2.0 Player Installation or Upgrade, Please run ewf\_on file on Weiver's desktop for the EWF enablement.

Please reboot the Weiver's system for applying EWF enablement.

```

C:\Windows\system32\cmd.exe

C:\Users\Weiver\Desktop>ewfmgr c: -enable
*** Enabling overlay

Protected Volume Configuration
Type                RAM <REG>
State               DISABLED
Boot Command       ENABLE
  Param1            0
  Param2            0
Volume ID          BD A9 6D 00 00 00 10 00 00 00 00 00 00 00 00
Volume Name        "\\?\GLOBALROOT\Device\HarddiskVolume1" [C:]
Max Levels         1
Clump Size         512
Current Level      N/A

Memory used for data 0 bytes
Memory used for mapping 0 bytes

Please reboot!!!

C:\Users\Weiver\Desktop>pause
Press any key to continue . . . _
    
```



ewf\_on

Please run ewf\_state file on Weiver's desktop for the EWF state.

```

C:\Windows\system32\cmd.exe

C:\Users\Weiver\Desktop>ewfmgr c:
Protected Volume Configuration
Type                RAM <REG>
State               ENABLED
Boot Command       NO_CMD
  Param1            0
  Param2            0
Volume ID          BD A9 6D 00 00 00 10 00 00 00 00 00 00 00 00
Volume Name        "\\?\GLOBALROOT\Device\HarddiskVolume1" [C:]
Max Levels         1
Clump Size         512
Current Level      1

Memory used for data 28328448 bytes
Memory used for mapping 16384 bytes

C:\Users\Weiver\Desktop>pause
Press any key to continue . . . _
    
```



ewf\_state

END



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