

# MIMO *WiTDM*<sup>®</sup> Series KW50-O8500 User's Manual

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### About this manual

The purpose to use this manual is for install the wireless Bridge. This manual is including disposing course and method and helping the customer to solve the unpredictable problem.

The following typographical conventions are used in this purpose:

• This indicates an important Note.



• This indicates a warning or caution

Bold Type : Indicates the function, important words, and so on.







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# **Chapter 1 Introduction**

# Introduction

Thank you for choosing the Formosa's KW50-O8500 Wireless Outdoor MIMO WiTDM Bridge. It is a PoE power supply, waterproof, and dust-proof wireless bridge that is specially designed for connecting among multiple network location. The KW50-O8500 work on 5GHz, and it based on powerful TDMA technology that provides higher channel bandwidth for long distance connect.

# **Appearance of Product**





KW50-08500

### • Features and Benefits

- Support Power over Ethernet (PoE)
- IP68 class of enclosure
- Support TDMA mechanism, to ensure quality for multi-media application
- Easy to install and friendly to user, just plug and play.
- Provides Web-based configuration utility.

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# **Chapter 2 Hardware Installation**

# System Requirement

Installation of MIMO WiTDM® outdoor unit of KW50-O8500 system requirement:

Two PCs with automatic speed control NIC support the transfer rate of 10/100/1000 Mbps data.

- The IP address of NIC should be the same subnet with the AP, the default IP address of AP is 192.168.1.1
- Microsoft Internet Explorer 6 or above.

# **Produce Kit**

- KW50-O8500 x 1
- Injector-GT3 (48V, 0.65A) x 1
- Mounting Kit x 1
- User's Manual CD x1



# **Hardware Installation**

The following steps will help you while installing MIMO WiTDM®.

# **LED Descriptions**

LED	Status	Description
Power	Green	Power ON
STATUS	Green	Power on Flash 1 Sec , then OFF
Remote RSSI	Green	CPE : Go around while surveying (not connect yet), Represent strength of RSSI after connected. Low (1 LED) $\rightarrow$ High (5 LEDs)
RST		Push 5 seconds then release to reset device to default

### LED Definition







# **Chapter 3 System Setup**

# **Factory Default Settings**

We'll elaborate the KW50-O8500 factory default settings. You can re-acquire these parameters by default. If necessary, please refer to the "Restore Factory Default Settings".

Item	Factory Default	
Login Information	·	
User Name	admin	
Password	password	
Basic Settings		
Device Name	DEVICExxxxxx (xxxxxx Represent the last 6	
Device Manie	digitals of the MAC address)	
Ethernet Data Rate	Automatic	
Spanning Tree Protocol	Enable	
VLAN (802.1Q)	Disable	
	IP Type : Manual	
	IP Address : 192.168.1.1	
	IP Subnet Mask : 255.255.255.0	
IP Settings	Default Gateway : 0.0.0.0	
	Primary DNS Server : 0.0.0.0	
	Secondary DNS Server: 0.0.0.0	
	Time Server: None	
Time Settings	Time Sever Port: 123	
Time Settings	Time Zone: (GMT-08:00)Pacific Time(US &	
	Canada);Tijuana	
Wireless Setup		
Radio Frequency (RF)	Enable	
Operation Mode	Base Station	
Network ID	Wireless	
Time Slot	10ms	
RF Bandwidth	20MHz	
Channel / Frequency	5730~5840MHz	
Data Data	SS BPSK 1/2 – SS 64QAM 5/6 , SS BPSK 1/2 – DS	
	64QAM 5/6	
Output Power	Full	

**Default Settings** 

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# Using the Web Management

The KW50-O8500 provides you with user-friendly Web-based management tool. Open IE and enter the default IP address (Default: 192.168.1.1) and Login as below :

	Wireless Bridge	
Name		l i
Password		
	Login Reset	

**Login Interface** 

Enter the username (Default: admin) and password (Default: password) and click "Login"

# 🖉 Caution :

IP address of your PC must be the same subnet of device

After login, you can check basic information of device, such as MAC address off device, Firmware version, etc.

Pridao		
ige		
Information		
Caparal Informati	ion .	
Device Name	DEVICEO16000	
Device Instine	00:31:17	
Eirmware Version	MiniTDMA v1.3 0RC11	
Firmware Build Tin	ne Jul 15 2016 13:26:29	
Product Key	9EAHE-XABAR-H4AMD-TABOB	
License	Level 2	
t		
Network Informat	ion	
IP Address	192.168.1.1	
Subnet Mask	255.255.255.0	
Gateway Address	0.0.0.0	
Wireless Network	(	
MAC Address	00:1c:24:01:69:00	
Frequency Band	4900 MHz ~ 6060 MHz	
Operation Mode	Bridge (Point-to-point)	
Remote MAC Add	tress 00:1c:24:03:69:10	
Multiple Access F	Protocol TDMA	
Channel Bandwid	th 40MHz(20MHz+20MHz)	
Channel Frequent	cy 5210.000MHz	
TX Data Rate(SS	) SS BPSK 1/2 ~ SS 64QAM 5/6	
TX Data Rate(DS	) SS BPSK 1/2 ~ DS 64QAM 5/6	

**Device Information** 







### Status

Select Status, you will get the information as below,



Status

System: This field identifies the current time and Coordinates.

GPS: GPS Satellites Information (Only for GPS Model)

Wireless:

MAC Address: MAC of Remote MIMO WiTDM Bridge.

IP Address: IP of Remote MIMO WiTDM Bridge.

Local RSSI: RSSI of Local Bridge.

Remote RSSI: RSSI of Remote Bridge.

Tx/Rx Rate: Current Data Rate of Tx/Rx.

Tx/Rx Modulation: Current Modulation of Tx/Rx.

### How to Setup MIMO WiTDM Bridge

Get Position, Longitude and Latitude

Get Direction and Azimuth

Signal Status, In Status page, it can show remote bridge Signal Strength for local bridge (Local RSSI) and local bridge Signal Strength for remote bridge (Remote RSSI). We can decide the best direction of antenna from following steps:

- 1. We check the Local RSSI only in one side. (We call it local side.)
- 2. Fix remote side antenna, and adjust local side antenna. In local side, check the "Local RSSI" first, to find a best Local RSSI and then fix the local antenna.

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- 3. Adjust the Remote antenna, to find the Best Remote RSSI, and then fix the remote antenna.
- 4. If "Local RSSI" is changed, and worse than before, adjust local antenna again to get a best one and fix local antenna.
- 5. If "Remote RSSI" is changed and worse, adjust remote antenna again.
- 6. Follow the same ways to get a better Local RSSI and Remote RSSI value. And Fix both side antennas.

### **Port Statistic:**

Display Wireless and Ethernet statistics of packets including transmitted and received packets, Unicast, Broadcast, Multicast and total Packets. Click "Refresh" can get instant information.







# MAP

### Global Positioning System, GPS (Only for GPS Model)

Select GPS, Can obtain current position from GPS receiver.



# Topology

Select Topology, Can enable topology discovery protocol to establish the structure of connections.









### System

檔案 (E) 編輯 (E) 檢視 (⊻) http://192.168.1.2/start.htm	歴史( <u>S</u> ) 書籤(B) 工具(T) 説明(H 1 × +	)
( 192.168.1.2/start	htm	♂ 役 搜尋
Wireless Bridge		
Information	System > Basic Settin	ng
Status	Device Settings	
MAP	Device Name	DEVICE036910
System	Ethernet	
Basic Settings	Data Rate	10/100/1000M Auto Negotiation 👻
IP Settings	VLAN(802.1Q)	🔿 Enable 💿 Disable
STP Settings	Management VLAN ID	0
Time Settings	CDS Countration	
Wireless	Obtain current position	from GPS receiver
Management	Latitude:	N - 0 0 0.00
	Basic Settings	

#### **Device Name**

Specify the device name, which is composed of no more than 15 characters with (0-9), (A-Z), (a-z) or (-).

Due to support WINS, You can use "Device Name" instead of IP address to access device via WEB interface. For instance, device named as DEVICE0000FF, you can enter "DEVICE0000FF" in the IE, then click "ENTER" and WEB page; or use "ping" command to check settings is active or not, such as ping DEVEICE0000FF.

### **Ethernet Data Rate**

Specify the transmission rate of data, default is Automatic.

Automatic 10/100/1000Mbps / T-base10Mbps / T-Base100Mbps

### VLAN

Virtual local network can promote network security. By default, the function is disabled.

### GPS Coordinates (Only for GPS Model)

Obtain current position from GPS receiver.







👼 🗋 192.168.1.1/start.htm	× 192.168.1.2/start.htm ×		
← → C ① 192.168.1.1/sta			
Wireless Bridge			
Information	System > IP Settings		
Status		August 0.0000	
MAP	IP Address	192.168.1.1	
System	IP Subnet Mask	255.255.255.0	
Basic Settings	Default Gateway	0.0.0.0	
IP Settings	Primary DNS Server	0.0.0.0	
STP Settings Time Settings	Secondary DNS Server	0.0.0.0	
Wireless		Apply Cancel	
Management			
Logout			

#### **IP Settings**

### **IP Address**

This IP in your network must be unique ,default is 192.168.1.1. **IP Subnet Mask** 

Use subnet mask to ensure two devices in the same network, default is 255.255.255.0

#### **Default Gateway**

Default gateway and DNS server for your local area network which connects to LAN port.

#### **Primary DNS Sever**

First choice of domain name server

### Secondary DNS Sever

Second choice of domain name server







#### **STP Settings**

Enabling spanning tree can prevent undesirable loops in the network, ensuring a smooth-running network. By default, the function is disabled.

System > STP Settings		-
Bridge Function		
Ageing Time (2-300)	15 seconds	
Spanning Tree Protocol (STP)	Enable Disable	
Bridge Priority (0-65535)	32768	
Hello Time (1-10)	2 seconds	
Max Age (6-40)	20 seconds	
Forward Delay (4-30)	15 seconds	
	Analy Canaal	
	Apply Cancer	
		_
		_
		_
		_
		_
		_
		_

### **STP Settings**

Bridge priority : 0 – 65535 Hello Time : 0 – 10 seconds Max Age : 6 – 40 seconds

**Forward Delay** : 4 - 30 seconds

Wireless Node Aging : 2– 300 seconds







**Time Settings** 

Wireless Bridae	
nformation	System > Time Settings
Statuc	The setup has been applied.
MAD	Current Time
	Current Time Fri 2016/07/15 22:50:49
System	Time Zone (GMT+08:00) Talpei
Basic Settings	Adjust for Daylight Saving Time
STP Settings	GPS Time Setting
Time Settings	Synchronize time with GPS
Wireless	Internet Time Setting
Management	Synchronize with an Internet time server
Logout	Time Server 0.0.0.0 *
Logour	Time Server Port 123
	Apply Cancel

**Time Settings** 

### **Current Time**

This field identifies the current time in your specific time zone.

### Time Zone

Select the time zone location for your setting.

### GPS Time Setting (Only for GPS Model)

Synchronize time with GPS

#### **Internet Time Setting**

Synchronize time with an Internet Time Server

### **Time Server Port**

This field identifies the time server port like 123.







# **Chapter 4 Wireless Settings**

# **Basic Wireless Settings**



**Radio Settings** 

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**Radio Frequency (RF)** RF-Wireless, default is enable.

**Operating Mode** Bridge point to mulit-point

**Remote MAC Address** Input the MAC address of Remote Bridge.

**RF Bandwidth** Decide bandwidth of Radio Frequency. Including 5 / 10 / 20 / 40 MHz, default is 20MHz.

Channel / Frequency Using different frequency

**TX Power** Setting power of TX, default is max.

TX Rate Range Normally choice transmission rate as "Best", system will adapt best rate for real environment. Including Single Stream Model, SS 64QAM 5/6, SS 64QAM 3/4, SS 64QAM 2/3, SS 16QAM 3/4, SS 16QAM 1/2, SS QPSK 3/4, SS QPSK 1/2, SS BPSK 1/2 Dual Stream Model, DS 64QAM 5/6, DS 64QAM 3/4, DS 64QAM 2/3, DS 16QAM 3/4, DS 16QAM 1/2, DS QPSK 3/4, DS QPSK 1/2, DS BPSK 1/2

### **Advanced Parameters**

Coverage Range: Based on Channel Bandwidth, default is 1Km 40MHz, 20MHz, 10MHz, 5MHz,







# **Differential Tx Rates**

Setup different Tx modulation for different Clients.

👼 🗋 192.168.1.1/start.htm	× [] 192.168.1.2/sourt.htm ×	- 🗗 ×
$\leftrightarrow$ $\rightarrow$ C (192.168.1.1/start		<b>☆</b> :
Wireless Bridge		
Information	Wireless > Differential TX Rates	
Status	Differential TV Pates (DTD)	
MAP	Diserentiaa IX Nates (Disk). Enable Disable	
System Virrelass Pado Settings Differential TX Rates Security Settings Access Control Management Logout	Insc. Address         If A Reis (diright Stream Indox)         If Reis (Dout Stream Indox)         Diffee           IMAC Address         IS SPSK 12         IS SS AddAM 56 *         IS Rate: (SS Mode): (SS BPSK 12         IS SS AddAM 56 *           Add         Add         Addam 50         IS SS AddAM 56 *         IS AddAM 56 *	

### **Differential Tx Rates**

# **Security Settings**

👼 📋 192.168.1.1/start.htm	× 192.168.1.2/start.htm	×		- @ ×
$\leftrightarrow$ $\rightarrow$ C (1) 192.168.1.1/state				
Wireless Bridge				
, in the second s				
		0. IF		
Information	Wireless > Security	Settings		
Status	Network Authentication	Open System •		
Evistom	Data Encryption	None *		
Mirologe		Apply Cancel		
Radio Settings			1	
Differential TX Rates				
Access Control				
Management				
Logout				

**Security Settings** 

### **Network Authentication**

There are Open System/ WPA2 PSK to set, default is Open System.

### **Data Encryption**

None/AES.







### **Access Control**

<ul> <li>➡ 192.168.1.1/start.htm</li> <li>← → C ③ 192.168.1.1/start</li> </ul>	× C 192.183.120mr.htm × -	a × ☆ :
Wireless Bridge		
Information	■ Wireless > Access Control	
Status	Access Control Mode: Turn Off	
MAP	Available Devices Allow Listed Devices	
System Wireless Radio Settings Differential TX Rates Security Settings Access Control Management Logout	MAC. Address       MAC. Address       Other Devices       Add	
	Apply Cancel	

### **Access Control**

### **Access Control Mode**

Turn off/Allow/Deny

Select "Allow", the listing clients are allowed to access the base station. Other clients are blocked. Select "Deny", the listing clients are blocked to access the base station. Other clients are allowed.







# **Chapter 5 Management**

# **Change Password**

Wireless Bridge	
1-6	Management > Change Password
Information	
Status	Current Password
MAP	New Password
System	Repeat New Password
Wireless	Parters Default Paraward
Management	Ves No
Change Password	Apply Cancel
Remote Management	
Upgrade Firmware	
Backup/Restore	
Event Log	
Reboot	
Logout	

**Change Password** 

You can use the Change Password page to change the Bridge administrator's password for accessing the Settings pages.

To change the password, Type the old password. The default password for the Bridge is: password. Type a new password and type it again in the Repeat New Password box to confirm it. Click Apply to have the password changed or click Cancel to keep the current password.

### **Remote Management**

Wireless Bridge			
Information	Management > Remote	Management	
Status	Remote Console		
MAP	Secure Shell (SSH)	Enable      Disable	
System	SNMP		
Wireless	SNMP	Enable      Disable	
Management	Read Community	public	
Change Password	Write Community	private	
Remote Management	System Contact		
Upgrade Firmware	System Location		
Backup/Restore	IP Address to Receive Traps	0.0.0.0	
Event Log	Download Enterprise MIB File	Download	
Reboot			
Logout		Apply Cancel	
			1

### **Remote Management**

Bridge supports SNMP. If you use SNMP to control bridge. At first you should set SNMP settings The KW50-O8500 supports CLI too, which could be accessed by Secure Shell (SSH). It is recommended PuTTY be used to login.

Once the program is downloaded, open up by double-clicking. Note that before using PuTTY, be sure you are able to connect to the MIMO WiTDM bridge.

1. Active Secure Shell(SSH). By SSH instruction setting the bridge.







- Double-clicking Putty.
- SSH. Enter IP Address of devices, check Protocol as SSH type

🔀 PuTTY Configurat	ion	
Category:		
<ul> <li>Session</li> <li>Logging</li> <li>Terminal</li> <li>Keyboard</li> <li>Bell</li> <li>Features</li> <li>Window</li> <li>Appearance</li> <li>Behaviour</li> <li>Translation</li> <li>Selection</li> <li>Colours</li> <li>Connection</li> <li>Data</li> <li>Proxy</li> <li>Tehet</li> <li>Rlogin</li> <li>SSH</li> <li>Serial</li> </ul>	Basic options for your PuTTY session         Specify the destination you want to connect to         Host Name (or IP address)       Port         192.168.1.1       22         Connection type:       Baw         Baw       Lehet       Rlogin         Load, save or delete a stored session         Saved Sessions         Default Settings       1         Close window on exit:       Only on clean exit	Serial
About	<u>Open</u>	ancel

### **PuTTY Configuration**

• From "Connection" in the lift menu bar, click "SSH", select"2"as "Preferred SSH protocol version", make "3DES" the top position in "Encryption cipher selection policy".

🔀 PuTTY Configuration 🛛 🛛 🗙					
Category:					
<ul> <li>Session         <ul> <li>Logging</li> <li>Terminal</li> <li>Keyboard</li> <li>Bell</li> <li>Features</li> </ul> </li> <li>Window         <ul> <li>Appearance</li> <li>Behaviour</li> <li>Translation</li> <li>Selection</li> <li>Colours</li> </ul> </li> <li>Connection         <ul> <li>Data</li> <li>Proxy</li> <li>Tehet</li> <li>Rlogin</li> <li>SSH</li> <li>Serial</li> </ul> </li> </ul>	Options controlling SSH connections         Data to send to the server         Bemote command:         Protocol options         Dog't start a shell or command at all         Enable compression         Preferred SSH protocol version:         1 only       1         Encryption options         Encryption options         Encryption cipher selection policy:         30ES         AES (SSH-2 only)         Blowfish				
About	<u>O</u> pen <u>C</u> ancel				

Figure 16 PuTTY Configuration 2

Click "Open", a window as below will popup:







SSH

2. Active SNMP, and control bridge by SNMP network system.

- Set Read Community password ; Default is public
- Set Write Community password ; Default is private
- Setting Trap Sever IP address

When bridge under abnormal condition, like bridge power failure or reset is usual.

Administrator can easy control device by exception log in Trap Server.

# **Upgrade Firmware**

Via WEB interface to upgrade firmware :

Wireless Bridge				
Information	Management > Upgrade Firmware			
Status	Browse to locate the firmware file			
МАР	選擇檔案 未選擇任何檔案			
System	Upload			
Wireless				
Management				
Change Password				
Remote Management				
Upgrade Firmware				
Backup/Restore				
Event Log				
Reboot				
Logout				
Upgrade Firmware				

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- 1. Open Upgrade Firmware page
- 2. Click browser button and select the firmware file in local hard disk.
- 3. Click Upload button.
- 4. After upgrade, login again and check the software version.

### **Backup/Restore**

📅 🗋 192.168.1.2/start.htm	× <b>土</b> 下枕 ×		- @ ×
← → C ① 不安全   192.1			
Wireless Bridge	_		
Information	Management > Backup/Restore		
Status	Back up a copy of the current settings to a file		
MAP		Backup	
System	Retrieve backed up settings from a file		
Wireless	File 選擇檔案 未選擇任何檔案	Retrieve	
Management Change Password Remote Management Upgrade Firmware Backup/Restore Event Log Reboot Logout	Restore factory default settings	Restore	

#### **Backup / Restore**

It would be better to backup settings of device after it work fine, so that you can recover settings quickly when something go wrong.

- Open"Backup/Restore" page, click "Backup", it will pop up a dialog for input path and filename such as F:\device.cfg, and it will save "device.cfg" in the local disk after that.
- Open "Backup/Restore" page, click "Browser", It will pop up a dialog to choice what file you want to
  restore, such as "F:\device.cfg", then click "Retrieve, the settings of the file will be restored back to device,
  and it will active for the device after auto reboot.







# **Event Log**

👼 🗋 192.168.1.2/start.htm 🔅	x <u>+</u> 下载 x	_ @ ×
← → C ① 不安全   192.16		
Wireless Bridge		
Information	Management > Event Log	
Status MAP	Enable SysLog Syslog Server IP Address 0.0.0.0	
System Wireless	Syslog Server Port Number 514 Apply Cancel	
Management	Event Log Window	
Change Password Remote Management Upgrade Firmware Backup/Restore Event Log Reboot	Fri 2016/09/02 22190+42   WES bathorized user "damin" from 192.168.1.112. Fri 2016/09/02 22190:91   WES Unauthorized user "ADMIN" from 192.168.1.112. Fri 2016/09/02 22127153   WLAN service start, ifnamewethd, opmode-STA	
Logout	Refresh Save As	

**Event Log** 

Event log can show you the event of device, for example, connect, disconnect, reboot of Base station, or something change about settings. If you need long time observational notes, you can active Syslog. Enter Log Sever IP address, the port number configured in the SysLog server on your network. By default, it is514

### SysLog Server IP address

The Bridge will send all the SysLog to the specified IP address if SysLog option is enabled. Default: 0.0.0.0

### Port

The port number configured in the SysLog server on your network. By default, it is514

### Reboot

When you need to reboot the device, you can click the "yes" button and the click "Apply" it will reboot.

- 売 □ 192.168.1.26m.1.2im ← → C ◎ 承援全   192.1	x ± T#t x &1.2/warbin	_ ⊕  ×_ ☆ :	
Wireless Bridge			
Information Status MAP System Vireless Management Charge Passond Rante Maagement Upgede Immane Bashy Restore Ever Log Rebot	Reboot         Reboot This Weekess Bridge       Ves         ApplyCancel		
	Reboot		23
TOUCH AND CO	DNNECT!	WON	et
		Green Netwo	ork <sup>™</sup>



# **Chapter 6 Troubleshooting**

# FAQ

# Q1 : How to know the MAC address of the Bridge?

- The MAC address is written in a label which is in the bottom of Bridge.
- From the General page of WEB configuration, you also can get the MAC address of the Bridge.

### Q2: Why two Bridges can not build connection after setting?

- 1. Check "Operating Mode", one of bridges is Base Station, another one is CPE.
- 2. Check "Channel / Frequency" whether is same.
- 3. Check "Date Encryption" and "Key" whether is same.

### Q3 : How to adjust output power?

In the Wireless Settings page, you can do it.

### Q4 : The wireless becomes unstable such as ping timed out and lose pack after a period of well work?

# This situation may the wireless network is disturbed by something, what you can so is following steps:

1. Check whether every joint point of network is well (such as Ethernet port, antenna connection.)

2. Change the channel if the Link Test value is not high, excluding other wireless equipment disturb the Bridge.

- 3. Restart the Bridge.
- 4. Default the Bridge and restore last settings.
- 5. Check the wireless port and Ethernet port environment and virus exist or not.
- 6. Please call the sales if can not solve problem after all.

### Q5 : Why can not open WEB page of remote wireless device in local network?

Because this kind of settings will slow the response of remote AP WEB Server, just waiting for several minutes or restarting remote wireless bridge is a way to solve problem. We suggest you set the Bridge in local wired Ethernet network. 24

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# **Service Support**

You can download the latest firmware version from web site if you need. If you have any questions, please contact us.

Website : http://www.tw-wireless.com/

Support : <u>service@tw-wireless.com</u>

### FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### CAUTION:

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference and

(2) This device must accept any interference received, including interference that may cause undesired operation.

RF exposure warning

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.







FCC NOTICE: To comply with FCC part 15 rules in the United States, the system must be professionally installed to ensure compliance with the Part 15 certification. It is the responsibility of the operator and professional installer to ensure that only certified systems are deployed in the United States. T Only the antennas listed below are allowed to be used with the EUT output power.

Brand⊬	Manufacturer.	Part No.ℯ	Peak Gain.
FWS.	Formosa Wireless 🐭		
	System Corp. 🕫	ANT 50-DU702AP	7.00DI₽

### 根據低功率電波輻射性電機管理辦法:

第十二條經型式認證合格之低功率射頻電機,非經許可,公司、商號或使用者均不得擅自變更頻率、加 大功

率或變更原設計之特性及功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信;經發現有干擾現象時,應立即停 用,並

改善至無干擾時方得繼續使用。前項合法通信,指依電信法規定作業之無線電通信。低功率射頻電機須 忍受合

法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

2. 根據低功率射頻電機技術規範:

4.7.9.1 應避免影響附近雷達系統之操作。

4.7.9.2 高增益指向性天線只得應用於固定式點對點系統。



