

Quick Setup Guide

AMG Skywave III AMG8870F series Wireless Radios

Products

The guide is applicable for the following AMG Wireless IP radios:AMG8870F-066km 500Mbps (Remote End)AMG8870F-06-26km 500Mbps (Pair)AMG8870F-03-903km 500Mbps (Base Collector)AMG8870F-M-EExternal Antenna 500Mbps (Base Collector)

Installation Guidelines

1. Line Of Sight – IMPORTANT: radios require clear line-of-sight.

If the radios do not have line-of-sight, then the signal strength will be too weak for continuous, reliable operation. Avoid obstructions along and around the line of sight, especially metal structures, with particular consideration for obstructions such as trees which could compromise the signal over time.



- 2. Alignment: If the radios are not aligned correctly, the signal quality and bandwidth of the radios will be reduced. Access web GUI of the radios (mainly base unit). The web GUI provide more detail about link performance.
- 3. Cable: External grade Shielded CAT5e Cable is highly recommended to avoid extraneous interference.

Pre-Installation Checklist

- 1. Do not connect the wireless radio to a live network before assigning an unique IP address, completing radio configuration and bench testing the product.
- 2. It is highly recommended that each link is configured and tested in a controlled environment to ensure correct configurations and operation prior to on site installation.
- 3. Confirm that you have two AMG8870 units and two passive PoE sources to create a point-to-point link.
- 4. Confirm that you have four Ethernet (Cat5 as minimum) patch cables for connecting radios to power and PC/laptop for bench configuration and testing.
- 5. ESD (Electrostatic discharge) can cause failure, permanent degradation, or temporary erratic behaviour or electronic devices or system due to I.E. direct lightning. Therefore, it is recommended to follow best ground practices when installing the unit in an outdoor environment I.E. to a metal pole and use the recommended cable type with ground shielding.



Configuration and Setup

Login Prompt - The default login credentials of the AMG8870F radio are:

Username: *admin* Password: *password*

4	admin	
ø	******	
9	English	

You will be presented with the page below. Tick agreement, choose country, set gain and press Change.

Antenna Gain

- AMG8870F-06
- AMG8870F-03-90
- AMG8870F-M-E

20dBi 18dBi depends on external antenna

ober agreement	
The correct country code must be selected bel requirements for authorized channels, channe and Automatic Transmit Power Control (ATPC	fore using the equipment to meet the regulatory I width, output power, Dynamic Frequency Selection (DFS)).
Installer or equipment owner takes all respons rules.	ibility for proper product usage according to the regulatory
Vendor or distributor/reseller is not responsible	e for illegal wireless equipment operation.
Operating country:	United States
5 GHz Antenna gain, dBi:	20
Due to FCC rules regarding the maximum EIR	P please choose device usage scenario.

The radios with external antenna require gain setting. The gain depends on the type of the external antenna. The radios with internal antennas have got gain set up from the default and it is not possible to change it. They will use always the same antenna.

With different gain then an external antenna requires, the wireless radios could work incorrect.

The 5Ghz Antenna gain could be also changed in section *Settings->Wireless configuration->Operating country*.



You will be presented with the Information page.

WAYE	C.		Uptme 19 min, 32 sec.		CPU load (14 %)	
				005aseT/full	🛜 1 stations	
l	INFORMATION					¢
Y.	Product name: Device serial No.: Network mode:	AMG8870F-M-E 0F2A182000000881 Bridge	Operating co Friendly device n Device loc	intry: GB ame: AMG8870F-M-E		
1	Wireless mode: Radio	Access point (iPoll 3)	Latitude/Long	tude: 0/0		
	Channel: Channel width, MHz: Tx power, dBm: Noise level, dBm:	149 (5745 MHz) 80 3 -105	Pro Radio n Antenna gain	ocol: iPoll 3 ode: MIMO 2x2 dBi: 15		
	Wireless Access point (iPo	oll 3)				
	Network SSID	Security	Broadcast \$\$ID	VLAN	Stations	
	AMGlink	WPA2 Personal	Yes	5 2	1	
	Network					
	IP method: IP address: Subnet mask:	Static 192.188.0.228 255.255.255.0	IPv6 me	thod: Disabled		

Press Simple mode



This will give you Wireless Configuration. Change setting, example below.

		SKYWAVE R AMGSS70F-08			
STATUS					
Radio status:	Scanning 🧿		Ethernet status:	eth0: 1000Bas	eT/full
Signal level, dBm:	-100				
Wireless Station					
Network SSID Security	Peer MAC	Tx/Rx rate, Mbps	Tx/Rx CCQ, %	Protocol	Link uptime
Wireless Open		-1-	-/-		
Operating mode:	Access point		Operating country:	GB	
Operating mode:	Access point	v (==	Operating country:	GB	
Operating mode: Channel:	Access point Auto / 80 MHz		Operating country: Friendly name:	GB AMG8870F-M-E	
Operating mode: Channel: SSID:	Access point Auto / 80 MHz AMGlink		Operating country: Friendly name: Location:	GB AMG8870F-M-E Device location	
Operating mode: Channel: SSID: Password:	Access point Auto / 80 MHz AMGlink		Operating country: Friendly name: Location:	GB AMG8870F-M-E Device location	
Operating mode: Channel: SSID: Password: IP method:	Access point Auto / 80 MHz AMGlink Static		Operating country: Friendly name: Location: DNS server 1:	GB AMG8870F-M-E Device location	
Operating mode: Channel: SSID: Password: IP method: IP address:	Access point Auto / 80 MHz AMGlink Static 192.188.0.228		Operating country: Friendly name: Location: DNS server 1: DNS server 2:	GB AMG8870F-M-E Device location	
Operating mode: Channel: SSID: Password: IP method: IP address: Subnet mask:	Access point Auto / 80 MHz AMGlink Static 192.168.0.228 255.255.265.0		Operating country: Friendly name: Location: DNS server 1: DNS server 2: Secondary IP:	GB AMG8870F-M-E Device location	
Operating mode: Channel: SSID: Password: IP method: IP address: Subnet mask: Default gateway:	Access point Auto / 80 MHz AMGlink Static 192.168.0.228 255.255.255.0 192.168.0.254		Operating country: Friendly name: Location: DNS server 1: DNS server 2: Secondary IP:	GB AMG8870F-M-E Device location	
Operating mode: Channel: SSID: Password: IP method: IP address: Subnet mask: Default gateway: Advanced settings	Access point Auto / 80 MHz AMGlink Static 192.168.0.228 192.168.0.254		Operating country: Friendly name: Location: DNS server 1: DNS server 2: Secondary IP:	GB AMG8870F-M-E Device location	
Operating mode: Channel: SSID: Password: IP method: IP address: Subnet mask: Default gateway: Advanced settings Enable Cloud Controller:	Access point Auto / 80 MHz AMGlink Static 192.168.0.228 192.168.0.254		Operating country: Friendly name: Location: DNS server 1: DNS server 2: Secondary IP: Firmware update:	GB AMG8870F-M-E Device location	

Example configuration:

Set Operating mode – Station. Set Channel Width – 20 (150Mbs). Set SSID – Test. Set IP method – Static. Set IP address – 192.168.10.10. Set Subnet mask – 255.255.255.0. Set Default Gateway – 192.168.10.1. Set Friendly name – Control.



Press Save Changes

Save changes 🝷

You will be presented with

CHANGES

SYSTEM		
Simple mode	Enabled	
Friendly name	Control	
WIRELESS / 5 GHz		
Channel width (MHz)	20	
WIRELESS / 5 GHz / STA: Test		
SSID	Test	
NETWORK		
Bridge IP address	192.168.10.10	
Bridge gateway	192.168.10.1	
Bridge IP method	Static	
		Save Cancel

Press Save

You will see.



Click on the IP address.

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Log back in, then connect second radio and repeat with the following steps. The second radios should have unique IP address. For example 192.168.10.11 as shown below.

SETTINGS			
Operating mode:	Access point 🔹	Operating country:	GB
Channel:	Auto / 20 MHz	Friendly name:	Camera
SSID:	Test	Location:	Device location
Security:	Open 🕜		
IP method:	Static •	DNS server 1:	
IP address:	192.168.10.11	DNS server 2:	
Subnet mask:	255.255.255.0	Secondary IP:	
Default gateway:	192 168 10.1		

When you save this and log back in, you should see.

TATUS						
Radio status: Signal level, dBm:	Connected 🛇		Ethernet status:	eth0: 10	000BaseT/full	
Wireless Access point						
etwork SSID	Security	Broadcast SSID	N	/LAN	Stations	

Click Advanced Mode

Advanced mode 🕫



You will see.

WWAVE II		\bigcirc		UI 11	ptime min. 51 sec.	CPU Ioa	d (15 %)
				<u> </u>	eth0: Disconnected	? -47/	47 dBm
i	INFORMATION						10
N	Product Device ser	name: AMG8870F-06 ial No.: 0F2A1847000000D		Ope Friendly	rating country: GB y device name: AMG8870	F-06	
	Network Wireless Radio	mode: Bridge mode: Station (WDS/SSCF	3)	D Latitu	levice location: Device loc ide/Longitude: 0/0	ation	
	Ch Channel width Tx power Noise level	nannel: 149 (5745 MHz) h, MHz: 80 r, dBm: 3 I, dBm: -103		Ant	Protocol: 802.11a/n Radio mode: MIMO 2x2 eenna gain, dBi: 20	ac/SSCF3	
	Wireless Station (W	/DS/SSCF3)					
	Network SSID	Security	Peer MAC	Tx/Rx rate, Mbps	Tx/Rx CCQ, %	Protocol	Link uptime



For Encryption click on the configuration symbol

VPCPE QA-2	U/ 52.65794 AMG (Update) Simple mod	e O				Logout
SEYWAVE				Uptime 37 min. 47 sec.	CPU load (42 %)	
AMILLEETUF				etho: 1000BaseT/full	🛜 1 stations	
((t-	WIRELESS CONFIGURATION					
Å	Enable rac	fio: 🖌 📗		Operating country: GB		
≓	Operating mo	de: Access point (iPoll 3)				
Q ₀ ⁰	Radio settings Tx power, dE	3m: 🕕 🖂 🕬	3	Channel: Aut	o / 80 MHz	
101	Enable ATF	PC:				
	Advanced radio settings					
	Network \$\$ID	Security	Management	Broadcast \$\$ID	VLAN	
	AMGlink	WPA2 Personal	Enabled	Yes		0

Then click to the Network SSID AMGlink.



You will see.

Q Lock AP by MAC address: 00:00:00:00:00:00 Image: Comparison of the comparison of	Primary SSID	Failover SSID					
2 Personal •		SSID:	Test	Q	Lock AP by MAC address:	00:00:00:00:00	
2 Personal •	ecurity settir	ngs					
44444		Security:	WPA/WPA2 Personal	×			
		Passphrase:	444444444444444				
		Passphrase:	44444444444444				
	3andwidth lin	nitation					

Change Security – WPA/WPA2 Personal and type a password (minimum 8 characters). Press done and save changes.

DO THIS FOR BOTH RADIOS.

The same encryption password must be used at both ends.



for Spectrum Analyser, Antenna Alignment, Link Test and Ping.

You now have an encrypted link.



Wireless Link Performance

Base unit.

Link Performance you can find in section *Status->Wireless network*. You will see wireless performance for both local and remote radios.

WRELESS NETWORKS Image: CPU load (1 %) Image: CPU load (1 %) Image: CPU load (1 %)	Logout							v7.62.65794.AMG (Update) Simple mode O	APCPE.QA-2.v7.6
MARGENERAL Image: Construction of the second o		d (1 %)	CPU loa	sec.	Uptime 3 hours 17 r			\bigcirc	
i WIRELESS NETWORKS i Free keyword to filter results i Free keyword to filter results imfo C SSID: AMGlink Total stations/limit: 1/128 iiiiiiii: 1/128 iiiiiii: 1/128 iiiiii: 1/128 iiiiii: 1/128 iiiiii: 00:19:38:18:95:90 AMG8870F-06 192:168:0.228 -23/-32 -25/-29 83/74 173/173 3 hours 10		ations	? 1 st	nnected	eth0				AMG8870F-06
Image: SSID: AMGlink Info C SSID: AMGlink Total stations/limit: 1 / 128 Image: Station	0							WIRELESSNETWORKS	i V
SSID: AMGlink Total stations/limit: 1 / 128 Output: I P address I Local Signal, dBm Remote Signal, dBm I SNR, dB Tx/Rx rate, Mbps Link up 0:19:3B:18:95:90 AM/G8870F-06 192:168:0.228 -23 / -32 -25 / -29 83 / 74 173 / 173 3 hours 10	nters Other	Info Cou						Ever keyword to filter results	W
Total stations/limit: 1 / 128 Total stations/limit: 1 / 128 Station IP address Local Signal, dBm Remote Signal, dBm \$ SNR, dB Tx/Rx rate, Mbps Link up 00:19:38:18:95:90 AM/G8870F-06 192:168:0.228 -23 / -32 -25 / -29 83 / 74 173 / 173 3 hours 10								SSID: AMGlink	© S
Image: Station Image: Pladdress Image: Local Signal, dBm Image: Remote Signal, dBm Image: SNR, dB Tx/Rx rate, Mbps Image: Plank upper state Image: Doi:19.38.18.95:90 AM/G8870F-06 192.168.0.228 -23 / -32 -25 / -29 83 / 74 173 / 173 3 hours 10						(m		Total stations/limit: 1 / 128	Te
00:19:38:18:95:90 AMG8870F-06 192:168:0.228 -23 /-32 -25 /-29 83 / 74 173 / 173 3 hours 10	e	Link upting	/Rx rate, Mbps	SNR, dB Tx/Rx	Remote Signal, dBm	Local Signal, dBm	IP address	Station	
	in. 35 sec.	3 hours 16 m	3/173	3/74 173/	-25 / -29	-23 / -32	192.168.D.228	00:19:38:18:95:90 AMG8870F-06	
Kink salenteri							2	Kirk selected	

Satellite unit

Link performance of the station you can find in right top corner of the web GUI.



When you point at the field with link performance, it will show the link performance status.

See possible performances below:

• Too strong

	Uptime 28 min. 26 sec.	CPU load (16 %)	
	eth0: Disconnected	o strong 🔪 🛜 - 19/-22 dBm	
cellent			
cellent	1. v		
cellent	Uptime 30 min. 6 sec.	CPU load (15 %)	
cellent	Uptime 30 min. 6 sec.	CPU load (15 %)	

•



Good • Uptime CPU load (5 %) 3 hours 25 min, 2 sec. eth0: 1000BaseT/full Good 🛜 -49/-56 dBm Fair • Uptime CPU load (5 %) 3 hours 26 min. 27 sec. Fair eth0: 1000BaseT/full 🛜 -63/-67 dBm

As you can see the Excellent RSSI is around -35/-35.



Throughput

Wireless radios AMG8870F can deliver throughput up to 500Mbps of compressed video with frequency channel width 80 MHz.

The default configuration of the channel width is 20 Mhz which provide throughput up to 90 Mbps of compressed video.

To change channel width.

Access Base unit web GUI and go to section *Settings->Wireless configuration->Channel*.

APCPE.QA-	2.v7.62.65794.AMG (Update) Simple mode	•				Logout	
SKYWAVE I	i			Uptime 3 hours 33 min. 10 sec.	CPU load (1 %) r		
(î:	WIRELESS CONFIGURATION	1					
å	Foable radio			Operating country: GB			
11	Operating mode	Access point (CCCE3)	Y				
	Radio settings						
¢ĉ	Tx power, dBm: 16		16	Channel: Auto / 20 MHz			
010 101	Enable ATPC:						
	Advanced radio settings						
	Network SSID	Security	Management	Broadcast SSID	VLAN		
	AMGlink	WPA2 Personal	Enabled	Yes	10	٥	

You will see.

	Cha	annel width, MHz:	20 🔻		
	Hide	indoor channels:	11 1		
	Non-st	andard channels:	11 34		
y se	lecting more than one i	channel autochannel fe	ature is enabled automatic	cally.	
•	Channel	TX limit, dBm	EIRP limit, dBm	DFS/ATPC required	
•	36 (5180 MHz)	3	23	No	
•	40 (5200 MHz)	3	23	No	
•	44 (5220 MHz)	3	23	No	
•	48 (5240 MHz)	3	23	No	
•	52 (5260 MHz)	3	23	Yes	
•	56 (5280 MHz)	3	23	Yes	
•	60 (5300 MHz)	3	23	Yes	
•	64 (5320 MHz)	3	23	Yes	
•	100 (5500 MHz)	10	30	Yes	
•	104 (5520 MHz)	10	30	Yes	•



Select required channel width.

	Cha Hide	annel width, MHz: indoor channels:	20 ▼ 5 10 20 40 80		
ly se	electing more than one	channel autochannel fe	ature is enabled automatik	DFS/ATPC required	
	36 (5180 MHz)	13	23	No	
•	40 (5200 MHz)	3	23	No	
•	44 (5220 MHz)	3	23	No	
•	48 (5240 MHz)	3	23	No	
	52 (5260 MHz)	3	23	Yes	
•	56 (5280 MHz)	3	23	Yes	
•	60 (5300 MHz)	13	23	Yes	
•	64 (5320 MHz)	3	23	Yes	
•	100 (5500 MHz)	10	30	Yes	
•	104 (5520 MHz)	10	30	Yes	

Channel selection

Auto channel selection is in the factory default. You can select specific channel in the same section as you select channel width.

	Cha	annel width, MHz:	20 🔻		
	Hide	indoor channels:	11 18		
	Non-st	andard channels:	11 24		
ly se	lecting more than one Channel	channel autochannel fe TX limit, dBm	ature is enabled automati EIRP limit, dBm	DFS/ATPC required	
0	36 (5180 MHz)	3	23	No	
	40 (5200 MHz)	3	23	No	
	44 (5220 MHz)	3	23	No	_
•	48 (5240 MHz)	3	23	No	
	52 (5260 MHz)	3	23	Yes	
	56 (5280 MHz)	3	23	Yes	
	60 (5300 MHz)	3	23	Yes	
	64 (5320 MHz)	3	23	Yes	
	100 (5500 MHz)	10	30	Yes	
	104 (5520 MHz)	10	30	Yes	

The fixed channel is required when there is more wireless links on the site or if there is a local interference.



Save configuration changes

When you do any change, you have to save the configuration. The button Save changes you can find in the right top corner in the web GUI.



After factory default reboot the radios will have IP address 192.168.0.1 (mask 255.255.255). With "admin" as username and "password" as password.



Configuration summary

SSID – The SSID should be the same in all radios that directly communicate. When using multiple links, make sure that each link has its own unique SSID. This can be checked with our Network Monitoring Software – Default SSID is 'AMGlink'.

Security Key – The security key should be the same in all radios that directly communicate. If anyone tries to connect to the equipment wirelessly then they will be asked for this security key.

IP Addresses – Default IP addresses are **192.168.0.228** (Base) and **229** (Client). Change the IP address of each radio to suit the site. A factory reset will default the radios to 192.168.0.1

Login & Password – The default is set to **admin** and **password**. For security reasons, this must be changed for all radios. Following a Factory Reset this will change to **admin** and **password**.

Config files – When configured, save the config files for each radio (e.g. onto a USB drive, under a folder with the date and job number). It can be helpful to rename the saved config files to match the IP address of the radios. Saved settings can be easily uploaded to each of the radios.

Troubleshooting

No power at the antenna – the radio links use passive PoE for their power.

- Test the cat5 cable and re-terminate it if required.
- Make sure the downlink cable is made as a straight through cable.
- Please also check that the PSU is plugged in, turned on and that the green LED is on.

Interference – AMG radios use auto-channel select and will avoid channels with interference. Rebooting the radios will allow a re-scan. If further problems persist with interference, then manually select channels while checking signal quality via web GUI.

LEDs – The LEDs on the radios show basic information at a glance about the status of the link:

- Power LED
 - o Off unit is not powered
 - On (green) unit is powered by passive PoE
- Ethernet
 - Off No Ethernet device (IP Camera, NVR, etc) connected
 - On (green) Ethernet device connected
 - o Flashing Ethernet traffic detected on port
- Signal
 - Off No wireless link
 - On (orange) shows strength of the signal



For support and assistance during normal working hours, please contact AMG Systems Ltd on +44 (0)1767 600 777 or email: technical@amgsystems.com



Configuration Record

Please keep this information about your devices in a safe place.

Site/radio link name:

	Factory Default	<u>This site</u>
Wireless SSID	AMGlink	
IP Address of radio 1 :	192.168.0.228	
IP Address of radio 2 :	192.168.0.229	
Wireless Encryption key:	wireless	
Wireless Encryption type:	AES	
Subnet Mask of Devices :	255.255.255.0	
Admin Username :	admin	
Admin Password :	password	