

# **AW-WD089**

## **Miracast WiFi Display HDMI module Operating SOP**

**V01**

## Federal Communication Commission Interference Statement

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.

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 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.

**FCC Caution:** Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Operations in the 5.15-5.25GHz band are restricted to indoor usage only.

### Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or

antenna.

As long as 2 conditions above are met, further transmitter test will not be required.

However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed

**IMPORTANT NOTE:**

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

**End Product Labeling**

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users.

The final end product must be labeled in a visible area with the following: “Contains **FCC ID: ARS-AWWD089**”. The grantee's FCC ID can be used only when all FCC compliance requirements are met.

**Manual Information To the End User**

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

**Declaration for no non-US channel operation**

We, Top Victory Electronics (Taiwan) Co Ltd. declare that the device does not support any non-US channels in all the operational mode(s) .

## **Industry Canada statement:**

This device complies with RSS-210 of the Industry Canada 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.

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

**Radiation Exposure Statement:**

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

**Déclaration d'exposition aux radiations:**

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

AZUREWAVE CONFIDENTIAL

**This device is intended only for OEM integrators under the following conditions: (For module device use)**

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

**Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes: (Pour utilisation de dispositif module)**

- 1) L'antenne doit être installée de telle sorte qu'une distance de 20 cm est respectée entre l'antenne et les utilisateurs, et
- 2) Le module émetteur peut ne pas être coimplanté avec un autre émetteur ou antenne.

Tant que les 2 conditions ci-dessus sont remplies, des essais supplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM est toujours responsable des essais sur son produit final pour toutes exigences de conformité supplémentaires requis pour ce module installé.

AZUREWAVE CONFIDENTIAL

**IMPORTANT NOTE:**

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the Canada authorization is no longer considered valid and the IC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate Canada authorization.

**NOTE IMPORTANTE:**

Dans le cas où ces conditions ne peuvent être satisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autre émetteur), l'autorisation du Canada n'est plus considéré comme valide et l'ID IC ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y compris l'émetteur) et l'obtention d'une autorisation distincte au Canada.

**End Product Labeling**

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains IC: 9190A-AW/WD089".

**Plaque signalétique du produit final**

Ce module émetteur est autorisé uniquement pour une utilisation dans un dispositif où l'antenne peut être installée de telle sorte qu'une distance de 20cm peut être maintenue entre l'antenne et les utilisateurs. Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: 9190A-AWWD089".

**Manual Information To the End User**

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

## Manuel d'information à l'utilisateur final

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module.

Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.

### Caution :

(i) the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

### Avertissement:

(i) les dispositifs fonctionnant dans la bande 5 150-5 250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

### 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。

1. 本模組於取得認證後將依規定於模組本體標示審驗合格標籤。
2. 系統廠商應於平台上標示「本產品內含射頻模組：XXXyyyLPDzzzz-x」字樣。

## Index

1. Introduction .....	8
2. Block Diagram .....	10
3. General Specifications .....	10
4. Miracast (All steps below is intended to be used on Samsung Galaxy S4/ Note 8.0) .....	11

## 1. Introduction

AW-WD089 is a low power WiFi display HDMI module with simplified connectivity. It is compliant with Wi-Fi Alliance's Miracast™ specification to simplify the discovery and setup. It can support up to 30 fps Full HD 1080p H.264 HP video decode, which brings wireless display to high definition TV and Monitor for real-time streaming of video from mobile devices to the big screen.

### Key Features

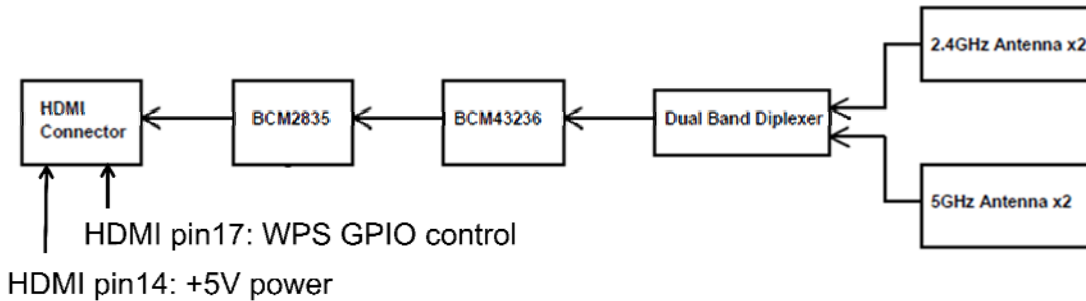
- Wi-Fi Alliance's Miracast™ compliant



- IEEE 802.11n 2x2 compliant
- Full IEEE 802.11a/b/g legacy compatibility with enhanced performance
- 2.4G/ 5GHz dual band selectable
- Comprehensive wireless network security support for WPA, WPA2-PSK
- HDMI AV Output Interface
- Up to 1080p Video Resolution
- HDMI 1.3a with HDCP with secure key storage
- Support HDCP 2.1
- Ultra low power operation
- Support WiDi 3.5/ 4.1
- DLNA compliant, support following format
  - Video Codecs – H.264, VC1, MPEG-2, DivX (MPEG-4 part 2), WMV9
  - Containers – MP4, MOV, MKV, ASF, TS
  - Audio Codecs – MP3, AAC, AC3, DTS
  - Image – JPEG, PNG

AZUREWAVE CONFIDENTIAL

## 2. Block Diagram



## 3. General Specifications

<b>Model Name</b>	<b>AW-WD089</b>
<b>Product Description</b>	<b>Miracast HDMI module</b>
<b>AP</b>	<b>Broadcom BCM2835</b>
<b>RF SOC</b>	<b>Broadcom BCM43236</b>
<b>PCB Dimension</b>	<b>65 x 20 x 1.6 mm</b>
<b>Power Adaptor</b>	
<b>Voltage</b>	<b>5V</b>
<b>Current</b>	<b>0.5A</b>
<b>Video decode</b>	
<b>Format</b>	<b>H.264 HP, MPEG-2, MPEG-4(SP and ASP), VC-1 (H.264 HP can be up to 30 fps Full HD 1080p)</b>
<b>Audio decode</b>	
<b>Format</b>	<b>MP3, HE-AAC</b>
<b>Interfaces</b>	
<b>HDMI</b>	<b>Support HDMI 1.3a with HDCP with secure key storage HDMI (type-A) Male</b>
<b>WLAN</b>	
<b>Standard</b>	<b>IEEE 802.11a/b/g/n</b>
<b>Modulation</b>	<b>802.11a/g/n: OFDM 802.11b: CCK(11, 5.5Mbps), DQPSK(2Mbps), BPSK(1Mbps)</b>
<b>Frequency</b>	<b>2.4 GHz ISM radio band (2400 ~ 2500 MHz)</b>

	<b>5GHz ISM radio band (4900 ~ 5845MHz)</b>				
<b>Signal Strength</b>	281.9mW for 2412 ~ 2462MHz 304.6mW for 5745 ~ 5825MHz 27.0mW for 5180 ~ 5240MHz				
<b>Antenna</b>	<b>Type</b>	<b>Connector</b>	<b>Gain (dBi)</b>		
			<b>2.4G</b>	<b>5.0G (Band 4)</b>	<b>5.0G (Band 1)</b>
	PIFA	I-PEX	4.13	4.23	6.45
<b>Current Version</b>					
<b>H/W PCBA</b>	<b>02</b>				
<b>F/W</b>	<b>Broadcom Build 2.2RC1 (Miracast/ DLNA/ WiDi)</b>				
<b>Operation condition</b>					
<b>Working Environment Temperature</b>	<b>0~ 40°C</b>				
<b>Storage Environment</b>	<b>-20~ 60°C</b>				
<b>Part number</b>					
<b>Philips</b>	<b>2-30890-0BH</b>				
<b>AOC</b>	<b>2-30890-B1H</b>				

#### 4. Miracast (All steps below is intended to be used on Samsung Galaxy S4/ Note 8.0)

**Step 1: Power on the AW-WD089.**

- a. Below picture shows how to connect power adapter for Philips 239C4QHWA.



- b. Touch the power icon on panel to switch on the monitor and AW-WD089.



c. After about 1 minute, it shows the following screen and ready for Miracast video streaming.



Step 2: Touch the setting icon on the screen of S4/ Note 8.0.



Picture for Samsung S4/ Note 8.0 desktop.

AZUREWAVE CONFIDENTIAL



**Step 3: Select “more settings”-> “AllShare Cast”**



**It shows all settings as following.**



**Step 4: On S4/ Note8.0, it shows the available device for Miracast receiver.**

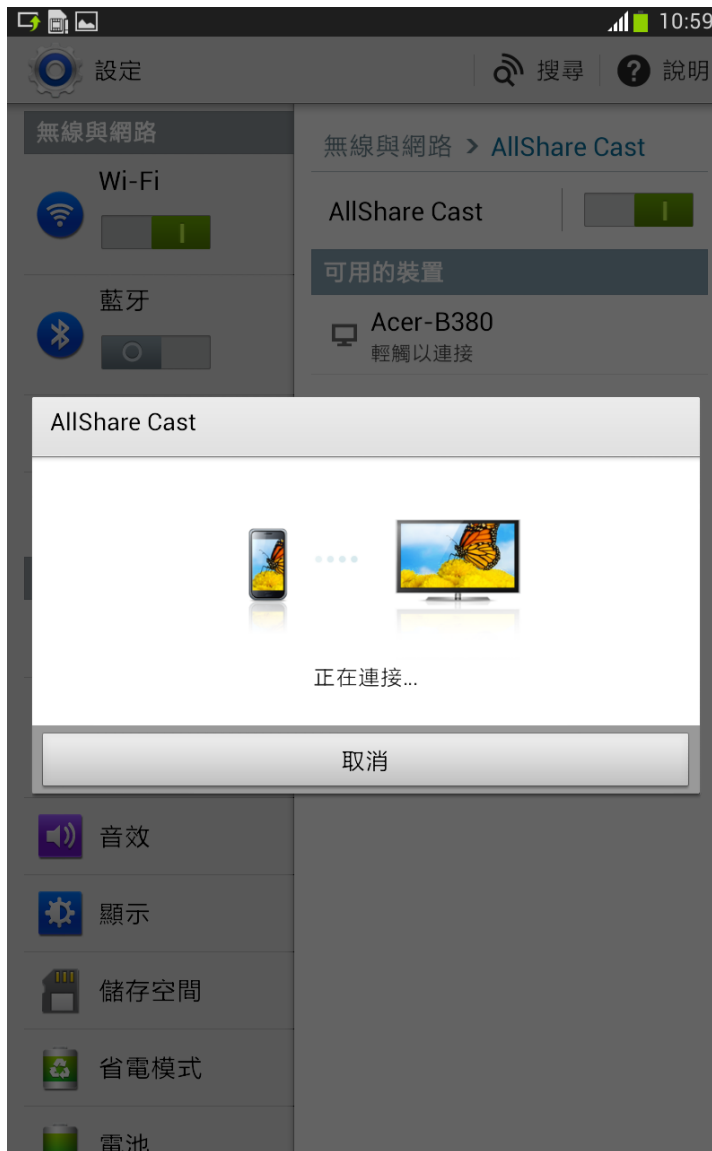
**Note: The naming rule for the Miracast receiver is the combination of monitor EDID and last two bytes of module MAC address.  
E.g. Acer-B380 is only for example. If the EDID is Philips, the name should be Philips-B380 for this module.**



AZUREWA

DENTIAL

**Step 5: Touch the available Miracast receiver device and S4/ Note 8.0 is connecting to it as following picture.**

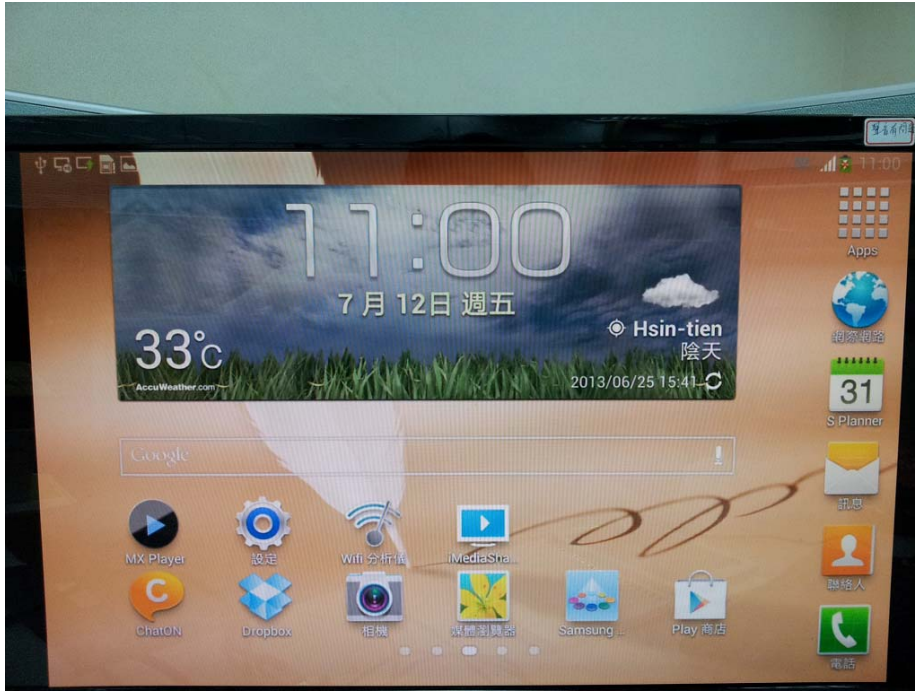


AZUREWAVE

DENTIAL



**Step 6: After few seconds, the S4/ Note 8.0 screen will be mirroring to the monitor as follows.**



CONFIDENTIAL

AZUREWAVE CONFIDENTIAL