

# **WirelessHD TX/RX Module**

## **User's Manual**

## FCC Statement

### Federal Communication 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 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.

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.

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.

#### IMPORTANT NOTE:

##### FCC 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.

#### IMPORTANT NOTE:

This module is intended for OEM integrator. The OEM integrator is still responsible for the FCC compliance requirement of the end product, which integrates this module.

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the FCC radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

#### USERS MANUAL OF THE END PRODUCT:

In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. If the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the users manual: This device complies with Part 15 of 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.

#### LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following " Contains TX FCC ID: TLZ-WH029T". If the size of the end product is larger than 8x10cm, then the following FCC part 15.19 statement has to also be available on the label: This device complies with Part 15 of 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.

## IC Statement

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B conforme à la norme NMB-003 du Canada.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This Module may not be integrated into host devices that are addressed for operation inside airplanes/satellites..

**IMPORTANT NOTE:****IC Radiation Exposure Statement:**

This equipment complies with IC RSS-102 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.

**IMPORTANT NOTE:**

This module is intended for OEM integrator. The OEM integrator is still responsible for the IC compliance requirement of the end product, which integrates this module.

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the IC RSS-102 radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

**USERS MANUAL OF THE END PRODUCT:**

In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the IC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. IC statement is required to be available in the users manual: This Class B digital apparatus complies with Canadian ICES-003. 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.

**LABEL OF THE END PRODUCT:**

The final end product must be labeled in a visible area with the following " Contains TX IC : 6100A -AWWH029T".

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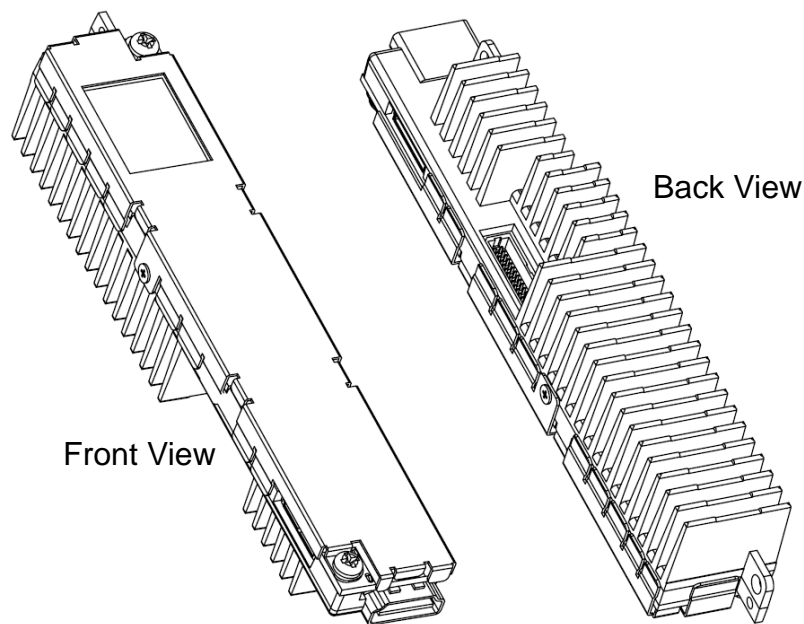
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## 1 Introduction

AW-WH029T and AW-WH029R is a whole set of WirelessHD products. They can stream uncompressed audio and video up Full HD (FHD) resolution. It works at 60GHz band which is available on an unlicensed basis in many regulatory domains with a typical range of 10 meter.

AW-WH029T and AW-WH029R replaces the HDMI cable and simplifies home theater system installation. The source devices, such as BD player or Set Top Box, don't need to be located near to the TV.

### 1.1 Product Layout



### 1.2 Features

- Standard: WirelessHD 1.0
- Frequency: 60GHz
- Data Rate: 4Gbps
- Distance: 10m (In Room)
- No Video Compression

- Latency: <1ms
- Video Resolution:
- Up to 1920 X 1080 Progressive (1080P)
- ~ 8 Channels Audio (32 ~ 192KHz)
- Array Antenna
- HDMI 1.3 Compatible
- DTCP (Digital Transmission Content Protection):AES-128 CTR mode
- HDCP 2.0 Support

### 1.3 Package Content

The package include the below package content:

- One set of AW-WH029T and AW-WH029R
- Power Adapter
- User’s Manual

### 1.4 Specification Table

<b>Model Name</b>	<b>AW-WH029T &amp; R</b>
<b>Product Description</b>	<b>HDMI (type-A ) wireless module</b>
<b>WirelessHD Standard</b>	<b>WirelessHD V1.0</b>
<b>HDMI Standard</b>	<b>HDMI 1.3a</b>
<b>Interface</b>	<b>HDMI (type-A )</b>
<b>Major Chipset</b>	<b>Tx:</b> <b>SB9210A HRTX RF Transceiver</b> <b>SB9220A HRTX Network Processor</b> <b>AT91SAM7S256 Microcontroller</b> <b>Rx:</b> <b>SB9221A HRRX Network Processor</b> <b>SB9211A HRRX RF Transceiver</b> <b>AT91SAM7S256 Microcontroller</b>
<b>Dimension</b>	<b>139.9 x 23.6 x 11.08 mm(exclude heat sinks)</b>
<b>Antenna</b>	<b>32 Antenna Array support Beam-forming</b>
<b>Operating Conditions</b>	
<b>Voltage</b>	<b>5V</b>
<b>Currency</b>	<b>2A</b>
<b>Operating Temperature</b>	<b>0~40°C</b>

<b>Connector</b>	Micro USB Connector
<b>Display</b>	
<b>Resolution</b>	Support 480p/60Hz to 1080p/60Hz
<b>Video Format</b>	RGB: 4:4:4 YCbCr: 4:4:4
<b>Audio</b>	
<b>Channel</b>	2~8
<b>Sample Rate</b>	32-192kHz
<b>RF Specifications</b>	
<b>Frequency Range</b>	57~66GHz
<b>Modulation</b>	HRP: OFDM with QPSK , 16-QAM LRP: OFDM with BPSK
<b>Occupied Bandwidth</b>	HRP:1.76Ghz LRP: 92Mhz
<b>Output Power</b>	HRP: TBD LRP: TBD
<b>Receive Sensitivity</b>	HRP: TBD LRP: TBD
<b>Data Rates</b>	HRP: Up to 3.807 Gb/s LRP: Omni-directional mode Up to 10.168 Mb/s
<b>Operating Range</b>	Indoor: 10 m (The transmission speed may vary according to the environment)
<b>Security</b>	DTCP: AES-128 CTR mode HDCP 2.0
<b>Operation &amp; Storage Environment</b>	
<b>Temperature</b>	Operating temperature: 0 ~ 45°C Storage temperature: -10 ~ 60°C
<b>Humidity</b>	Operating Humidity: 20 ~ 80 %RH Storage Humidity: 10 ~ 90 %RH
<b>Air pressure</b>	Operating Altitude: ~7500ft (2286m) (760hpa) Storage Altitude: ~20000ft (6096m) (468hpa)

## 2 Installation Steps

1. Remove the WirelessHD products and accessories from package



2. Connect the power adapter to the WirelessHD product and power outlet.
3. Connect HDMI connector on AW-WH029T to media source such as BD Player and connect HDMI connector on AW-WH029R to flat panel display such as LCD TV by HDMI cable.
4. Turn on power switch.
5. After 10 ~ 30 seconds, it will do auto-connection. If LCD TV shows display, that means that the products begin working.

### **3 Important Notice**

- The Power adapter must be 5A / 2A.
- The WirelessHD products are only for indoor use, the transmitting distance is suggested to be less than 10 meters and no blocks between TX and RX.