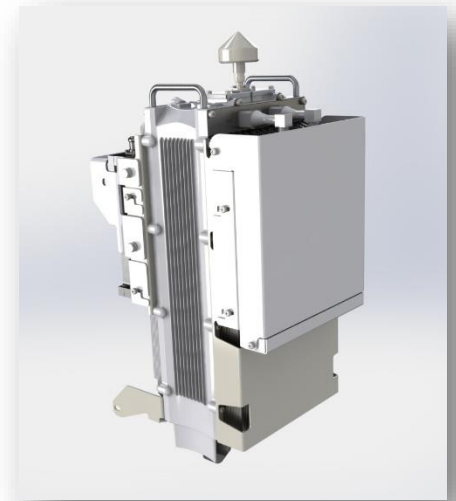


High Capacity Outdoor LTE-Advanced eNodeB

AirHarmony 4400 is part of Airspan's carrier-class LTE Advanced small cell eNodeB family. AirHarmony 4400 is a Macro-class product that supports 3GPP's Long Term Evolution (LTE) eNodeB specifications, providing high-speed data, mobility, Voice over LTE, and broadcast/multicast services in order to meet the demands of the LTE Mobile Carriers.

AirHarmony 4400 is a compact, easy to install Macro-class eNodeB, allowing an operator to deploy LTE broadband services using existing infrastructure or Street Furniture. AirHarmony 4400 has two 20W (43dBm) transmit channels and four receive channels. AirHarmony 4400 supports single or dual carrier up to 2x 20MHz.



Release 10 LTE-Advanced

AirHarmony 4400 supports 3GPP LTE Broadband access technologies; Airspan's 3GPP LTE implementation is compliant with the 3GPP standards and has interoperable S1 and X2 interfaces and supports commercial GCF tested UE devices, including Smartphones, Dongles and Tablet computers.

The Power of HETNETS

As operators struggle to cope with growing customer demand for higher throughput, they are discovering that layering small base stations into a macro cell coverage area, enables a significant increase in network capacity by filling in coverage gaps and addressing actual traffic distribution where demand is highest. AirHarmony 4400 is ideal for these networks, delivering high data rates where needed most, whether at the macro cell edge or closer to the user base, maximizing coverage and customer satisfaction.

Broadband Access

AirHarmony-4400 supports 3GPP LTE Broadband access technologies; Airspan's 3GPP LTE implementation is compliant with the 3GPP standards and has interoperable S1 and X2 interfaces and supports commercial GCF tested UE devices, including Smartphones, Dongles and Tablet computers.

Integrated Backhaul

AirHarmony also supports tight integration with iBridge or iRelay, Airspan's small cell backhaul product. AirHarmony plus iRelay creates a single install process for LTE Access and Backhaul, and enables "Just add Power" plug and play deployment method saving deployment CAPEX and OPEX.

Physical

Dimensions

Variant	Dimensions ¹ (H x W x D)
Main Unit w/o filters	509 x 262 x 210 mm / 20.0 x 10.3 x 8.3 inch
Main Unit with external filters	509 x 262 x 305 mm / 20.0 x 10.3 x 12.0 inch
Cavity Filter Set (4 filters in 2 sets of 2 filters each)	229 x 120 x 39.0 / 9.01 x 4.72 x 1.53 inch (2 units)

Weight

Variant	Weight
Main Unit w/o filters	19 Kg / 41.89 Lbs.
Main Unit with filter set	27.5Kg/60.62 Lbs.
Universal mounting bracket	3 Kg / 6.6 Lbs.
Quadruple Filter Set (B41, B38)	8.5 Kg / 18.74 Lbs.

Operational Tolerances

Type	Details	Standard Compliance
Operating temperature	-40°C to 55°C / -40°F to 131°F	ETSI 300 019 1-4
Operating humidity	5% - 100% non-condensing	ETSI 300 019 1-4
Storage temperature	-40°C to 70° C / -40°F to 158°F	N/A
Storage humidity	5% - 100% non-condensing	ETSI 300 019 1-4
Rain and dust ingress protection	IP66	N/A
Operational altitude	70-106 kPa as well as: From -60m to 1800m @ 40°C From 1800m to 4000m @ 30°C	ETSI 300 019 1-4
Solar radiation	1120 W/m ²	ETSI 300 019 1-4

¹ Dimensions excludes connectors height and protruding screws

Voltages and Amperage Draws

AirHarmony-4400 AC variants supports direct connection to AC power source

- Operational Voltage Range: 90VAC~240VAC, 47Hz~63Hz

Duplex	Tx Power at RF Port (dBm)	Band	Power Source	Nominal Power Consumption (W)	Max Power Consumption with PoE (Instantaneous) (W)	Max Current with PoE (Instantaneous) (A)	PoE Maximum Power Consumption (W)	Power Supply Requirements (W)
TDD	2 x 43	B41, B38	AC	290	405	4.50	60	N/A

Transmitter Radio Performance

Product Variants

Band	Variant	Downlink Freq. (MHz)	Uplink Freq. (MHz)	Dup. Mode	Max Channel BW (MHz)	Dual Carrier	Tx / Rx Conf.	Tx Power (dBm)	Power Source	External Duplexers / filters
41,38	HAR44-EF-U41-B06AP	2496-2690 2570-2620	2496-2690 2570,2620	TDD	20	Yes	2x4	43*	AC	Per Freq. Range

* Product can support either single carrier at 2x20W per carrier or dual carrier at 2x10W per carrier

Filters - AirHarmony 4000 (Manufacturers Specifications)

Product Code	Band 41, 38 – Cavity Filters		
	HAR44-FLTR-KIT-U41L (B41 – Only)	HAR44-FLTR-KIT-U41H	HAR44-FLTR-KIT-U41F
Freq. range (MHz)	2496-2568	2618-2690	2496-2690
Bandwidth	72MHz	72MHz	194MHz
Insertion Loss	≤1.0dB (Over Temp.)	≤1.0dB (Over Temp.)	≤1.0dB (Over Temp.)
Passband Ripple	≤0.75dB	≤0.75dB	≤0.75dB
Return Loss	≥18dB	≥18dB	≥18dB
Rejection	≥20dB@1---2473MHz ≥100dB@1550---1600MHz ≥20dB@2710---12750MHz ≥74dB@824---2025MHz ≥54dB@2400---2473MHz ≥45dB@2618---2690MHz ≥38dB@4992---5380MHz ≥38dB@7488---8070MHz ≥38dB@9984---10760MHz ≥38dB@12480---13450MHz ≥38dB@14976---16140MHz ≥38dB@17472---18830MHz ≥38dB@19968---21520MHz	≥20dB@1---2473MHz ≥100dB@1550---1600MHz ≥20dB@2710---12750MHz ≥74dB@824---2025MHz ≥54dB@2400---2473MHz ≥45dB@2496---2568MHz ≥38dB@4992---5380MHz ≥38dB@7488---8070MHz ≥38dB@9984---10760MHz ≥38dB@12480---13450MHz ≥38dB@14976---16140MHz ≥38dB@17472---18830MHz ≥38dB@19968---21520MHz	≥20dB@1---2473MHz ≥100dB@1550---1600MHz ≥20dB@2710---12750MHz ≥74dB@824---2025MHz ≥54dB@2400---2473MHz ≥38dB@4992---5380MHz ≥38dB@7488---8070MHz ≥38dB@9984---10760MHz ≥38dB@12480---13450MHz ≥38dB@14976---16140MHz ≥38dB@17472---18830MHz ≥38dB@19968---21520MHz
Group Delay Variation In Passband	≤40ns	≤40ns	≤40ns
PIM	≤-146dBc@2*43dBm	≤-146dBc@2*43dBm	≤-146dBc@2*43dBm
Power		OFDM RMS power of 50W and	OFDM RMS power of 50W and



DPS01614 AirHarmony-4400 Datasheet

	OFDM RMS power of 50W and peak power of 400W due to PAPR of 10dB	peak power of 400W due to PAPR of 10dB	peak power of 400W due to PAPR of 10dB
Input & Output Impedance	50Ω	50Ω	50Ω
Operating Temperature	-40 to +85°	-40 to +85°	-40 to +85°
Lightening Surge	Max 6kV Pulsed	Max 6kV Pulsed	Max 6kV Pulsed
Connectors	DIN 4.1/9.5 Female (4 holes)	DIN 4.1/9.5 Female (4 holes)	DIN 4.1/9.5 Female (4 holes)
Color	RAL9002	RAL9002	RAL9002

Channel Frequency Resolution

The center frequency is tunable with a 100 KHz resolution

Frequency Stability

The AirHarmony-4400 reference frequency accuracy is better than ±0.05ppm

Modulation & FEC

AirHarmony-4400 supports QPSK, 16QAM and 64QAM modulations on both Downlink and Uplink with all Modulation and Coding Schemes defined in 3GPP TS 36.211

Power

Maximum Configurable Tx Power (per RF port) Per carrier / Single Carrier	43 dBm (20W)
Maximum Configurable Tx Power (per RF port) Per carrier / Dual Carrier	40 dBm (10W)
Transmit Power Accuracy	±1dB in normal conditions
Control Step	1dB

Transmitter Dynamic Range

The transmitter supports a monotonic power control of 40dB with step size of 1dB

Transmitter Spurious Emissions

AirHarmony-4400 complies with the “Category B” transmitter spurious emissions, as they are defined in TS 36.104

Transmitter Error Vector Magnitude

The AirHarmony 4400 transmitter EVM/RCE³ is no more than -28dB for all power levels

Receiver Radio Performance

Rx Noise Figure

AirHarmony-4000 receiver noise figure is 2.9 dB

Receiver Sensitivity Level¹

The values in the table below are defined for QPSK ½ with allocation BW as indicated by TS 36.104

Channel Bandwidth (MHz)	Allocation Size (RB)	Reference Sensitivity Level (dBm)
5	25	-104.5
10	25	-104.5
15	25	-104.5
20	25	-104.5

In Channel Selectivity²

AirHarmony-4400 complies with ICS as defined by TS 36.104 for “Wide Area BS”

Adjacent Channel Selectivity³

AirHarmony-4400 ACS complies with ACS requirements as defined in TS 36.104 for “Wide Area BS”

Receive Dynamic Range

AirHarmony-4400's receiver has a dynamic range of 54dB

Maximum Input Signal

The AirHarmony-4400 receiver can receive a maximum on-channel signal of -30dBm

Maximum Input Signal without Damage

The AirHarmony-4400 receiver can tolerate a maximum signal of -10dBm without damage

Receiver Spurious Emission⁴

AirHarmony-4400 complies with the receiver spurious emission as defined by TS 36.104 as well as ETSI EN 301 893

Mobility

AirHarmony-4400 can support Intra and Inter frequency handovers.

¹The receiver sensitivity power level is the minimum mean power received at the antenna connector at which a throughput requirement is being met for a specified reference measurement channel. The AirHarmony 4400 meets the requirements defined for in TS 36.104 for Wide Area Base Stations

²In-channel selectivity (ICS) is a measure of the receiver ability to receive a wanted QPSK½ signal at its assigned resource block locations in the presence of an interfering signal received at a larger power spectral density.

³Adjacent Channel Selectivity (ACS) is defined as the measure of the receiver's ability to receive a wanted signal at its assigned channel frequency in the presence of an adjacent channel signal with a specified center frequency offset of the interfering signal to the band edge of a victim system

⁴The spurious emissions are the power of emissions generated or amplified in a receiver that appear at the receiver antenna connector

Physical Interfaces

This following defines all external Network and Maintenance equipment interfaces as well as System LED. All interfaces are Weatherproof, supporting IP66 Ingress Protection Rating.

GPS Antenna Port

Connector Type	TNC Male
Characteristic Impedance	50 Ω
Quantity	1

RF Antenna Ports

RF ports:

- 4 ports located on the top panel and connected directly to the external filters.
- Filters are sold separately
- 4xRF ports to the antenna located on the top of the filters

Connector Type	4.1-9.5 DIN Female
Characteristic Impedance	50 Ω
Quantity	4

Antenna Connections – Ports labeled

Tx/Rx	Ant 1
Tx/Rx	Ant 2
Rx	Ant 3
Rx	Ant 4

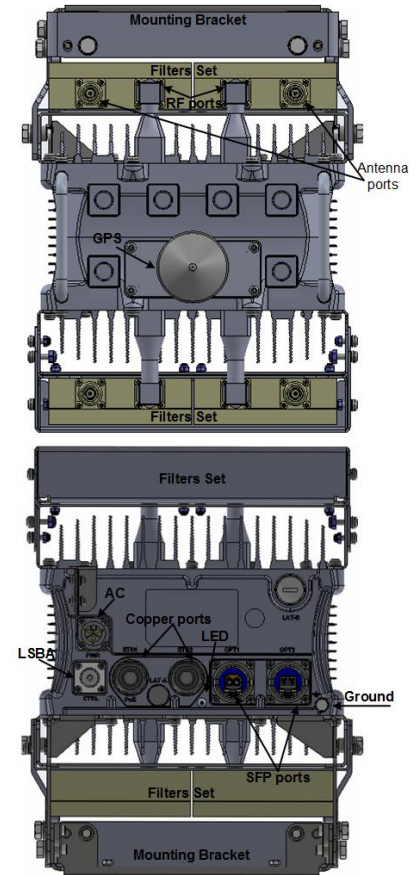
Connector Type	SFP Socket with Full AXS sealing connector
Quantity	2

Copper Ethernet Port

Connector Type	RJ45
Standard	IEEE802.3
Cable Type	STP Category 5E
Interface Speed	100/1000 Base-T
Communication Mode	Full/Half Duplex with Auto Negotiation
PoE Output	2 ports supports PoE out
Quantity	2

PoE Port Specification¹

Power available at powered device	25.5 W
Maximum power delivered	30 W ²
Voltage range delivered	50.0–57.0 V
Voltage range (at powered device)	42.0–57.0 V
Maximum current	600 mA
Maximum cable resistance	12.5 Ω (Category 5 cable)
Power management	Four power class levels negotiated at initial connection or 0.1 W steps negotiated continuously
Supported cabling	Category 3 and Category 5



² Each port can supply up to 30W. Total power from the 2 ports can't exceed 45W

SBA Control

Connector Type AISG
 Standard RS485
 Controls the SBA direction when mounted remotely
 Can also control specific RET antennas control by the AISG protocol. Contact Airspan sales for further details.

Power Connection AC Variant

Connector Type Proprietary
 Standard 90VAC~240VAC, 47Hz~63Hz
 Cable Length Various

LED Display

A single tri-color LED (Green/Red/Orange) appears at the bottom of the unit, providing unit status indication

Mounting

AirHarmony-4400 includes a pole mounting kit with the following attributes:

Attribute	Values
Mechanical tilting range	0°
Supported pole diameters	48.3 to 406.4 mm / 1.9 to 16 inch
Supported wind load	200 km/h / 125 mph

Standard Compliances

	Standard
EMC	EN 301 489-1 V1.9.2 (2011-09) Class B
	EN 301 489-4 V2.2.1 (2015-05)
	FCC 47 CFR Part 15:2014 Subpart B Class B
	ICES-003: 2012 issue 5 class B
Safety	IEC 60950-1:2005 + A1:2009 + A2:2013
	IEC 60950 22:2005 (1st Edition) + A11:2008
	EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013
	EN 60950-22:2006 + A11:2008
	UL 60950-1
	UL 60950-22
ROHS	EU ROHS directive - 2002/95/EC (ROHS) - ROHS6
WEEE	Per the requirements of European directive 2002/96/EC
FCC	Title 47, Part 90 - Band 26
	Title 47, Part 27 - Band 41
Environmental	IEC 60529
	IEC 60068
	ETSI EN 300-019-2-4 Operational (non-weather protected equipment)
	ETSI EN 300-019-2-1 Storage (weather protected, not temperature controlled locations)
	ETSI EN 300-019-2-2 Transportation (Public Transportation)
	GR-63, Issue 4
IP Rating	IP66



Color – RAL9002

Export Control Classification Number – ECCN 5A002