



how wireless **should** be™



DWAM80 Digital Wireless Audio Module

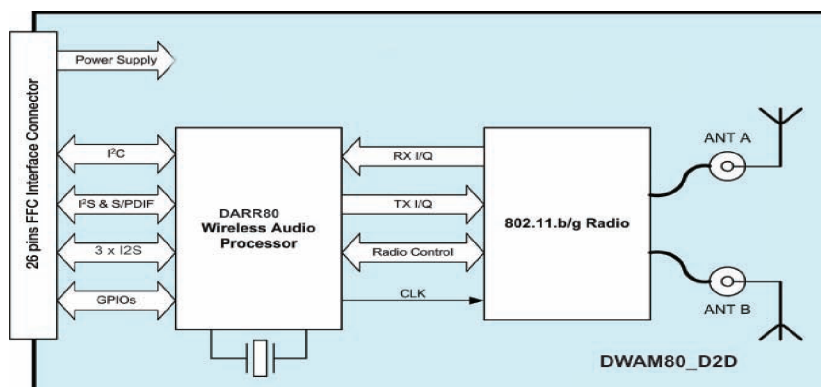
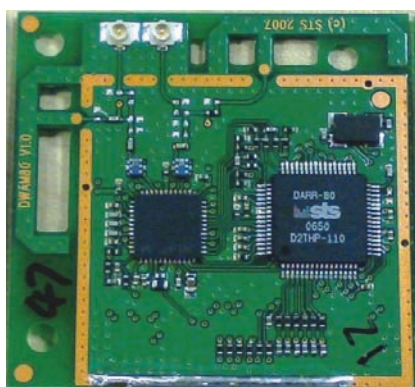
Product Description

The **DWAM80_D2D** is an OEM module (42 x 42mm) based on the STS DARR80. It is an uncompressed wireless digital audio transceiver operating in the 2.4GHz ISM band. It implements 8 channels with I2S interface or 4 channels with S/PDIF. The wireless audio link supports up to 4 uncompressed high quality and low latency stereo audio channels in various network topologies.

A unique set of protocols and algorithms provides extreme wireless robustness, capable of dealing with multiple interference sources as present in the 2.4GHz band. In addition, a wireless bi-directional data channel is available

The module integrates all functionality for a wireless digital audio connection, comprising;

- Wireless Audio Processor, DARR 80
- 2.4 GHz radio
- Embedded antennas (Inverted F)
- Dual antenna connector
- Digital audio interfaces
- I2C control interface
- 26 pins interface connector (FFC) for power, digital audio and control interface and GPIOs



The DWAM80 D2D is used for both Central Unit (CU, transmitter) and Mobile Unit (MU, receiver). The module is configured either through the I2C interface, optional EEPROM or microcontroller.

The microcontroller can run application software for more advanced applications. This yields full application flexibility in terms of data message transfer, configuration, GPIO management and link control.

The microcontroller and the EEPROM can be programmed through the FFC interface connector.

Compliance with applicable European and US American laws, especially EN 300 328 and FCC Part 15.247

System Specifications					
ID	Parameter	Value	Unit	Remarks	
RF Characteristics	RF frequency range	2400-2483.5	MHz		
	Number of RF channels	3			
Air framing	Addressing	12	Bit	Hybrid	
	Data message size	16 or 8	Byte		
	CRC	16, 24 and 32	Bit		
Control	Control interface	I ² C		Compliant with the I ² C protocol (slave), 0...400kbps. Base address 0x80, can be offset by A0 and A1 HW pins.	
	Data Bandwidth	20	Kbps		Bi-directional
	Data latency	15	ms		Maximum
Link budget	Range indoor	> 50	m	Same room, no drop-outs from multi-path guaranteed	
	Range line of sight	>100	m	Open Field	
	Output power	16	dBm	Typical Value	
Interference Robustness					
	Fixed frequency devices (e.g. WLAN, microwave oven)			Fully coexistent ¹	
	Frequency hopping devices (e.g. Bluetooth, 2.4GHz cordless phones)			Fully coexistent ¹	
Current Consumption/ Power Supply (example application)					
	Supply voltage Typical	4...10	V	Supply voltage (on board regulator)	
	Average current Mobile Unit	45/55	mA	Compressed/uncompressed audio, stereo audio, 48ksps ²	
	Average current Central Unit	80/110	mA	Compressed/uncompressed audio, stereo audio, 48ksps ²	
Audio Interface	Available Interface Types	I ² S, S/PDIF, LRJ			
	Number of audio output channels on Mobile Unit	1, 2, 3 or 4		One RF Channel, I ² S interface	
	Number of audio input channels on Central Unit	1, 2, 3 or 4		One RF Channel, I ² S interface	
Operating Conditions	Min operating temp.	-10	°C		
	Max operating temp.	70	°C		
Audio Quality	Sample rate	44.1 or 48	ksps	24-bit is also supported on interface level (truncated)	
	Sample width	16	bit		
	Latency	16.0	ms	Configurable from 5 to 17ms	
	SINAD	99.7	dB	A-weighted, measured at S/PDIF interface, uncompressed audio	
	THD (uncompressed audio)	0.003	%	Measured at S/PDIF interface	
	THD (compressed audio)	0.3	%	Measured at S/PDIF interface	
	Frequency response	0	dB	20Hz...22kHz (measured at S/PDIF interface)	
Dimensions					
	Board dimensions	42mm x 42mm			

¹ Laboratory tests have verified coexistence with interference sources collocated. Exact ranges are scenario dependent (function of latency, output power, audio compression, etc.). A mix of interference sources is allowed. Interference of fixed frequency devices may result in the loss of one useable RF channel.

² Wireless headphone application

RF Connections

The DWAM79 module has provisions (manufacturing options) for the use of the embedded PCB track antennas or external antennas through the use of 2 Murata MM7329-2700B connectors (for TX and RX diversity).

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ABOUT STS

The STS platform delivers streaming uncompressed CD quality audio in the worldwide license-exempt 2.4 Ghz ISM band. A one stop investment in a true wide-platform technology: multi channel for surround, tight end-to-end delay and multi channel synchronization for stereo, low power for headphones, mobile applications and extended indoor range for multiroom applications. All with low latency and industry leading QoS- robustness and co-existence. A bi directional data channel is available for implementing user controls and intelligence to the system.

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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.

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 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 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 transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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,

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:RFAARW51”.

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.
