



Customer : KEF  
Product Description : GPE Subwoofer Transmitter Module  
Issue Date : 29 Aug, 2013

UXD13002  
Model Number: GPE Sub TX

Version: A  
Date: 29 August, 2013



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## 2. Revision History

Version	Date	Sections	Pages	Revisions
A	29 <sup>th</sup> August 2013	1 - 5	12	New Issue



### 3. Federal Communication Commission Interference Statement

FCC NOTE (for U.S.A):

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.

#### Radiation Exposure Statement

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. This device should be installed and operated with minimum distance 20cm between the radiator & your body and must not be co-located in conjunction with any other antenna or transmitter.

The host device itself and with integrated RF module needs to comply with the FCC regulations.

The OEM integrator is still responsible for the FCC compliance requirement of the end product, which integrates this module. Appropriate measurements (e.g. 15 B compliance) and if applicable additional equipment authorizations (e.g. Verification , Doc) of the host device to be addressed by the integrator / manufacturer."

#### Labelling Information

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.

Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.



### 4. Electrical Characteristics



*Caution!*

*ESD sensitive device. Precaution should be used when handling the device in order to prevent permanent damage.*

#### 4.1 DC Supply

- DC Voltage Supply: 5 VDC
- Current Consumption: ≤ 150mA

#### 4.2 Audio Specifications

- Input: 0.7 Vrms
- Sample Depth: 16-bit
- Sampling Rate: 32 / 44.1 / 48 kHz
- Firmware: Factory installed (not request the user update)

#### 4.3 Pairing Mechanism

Pairing mechanism is proximity coupling. Dedicated receiver will send the pairing signal request to GPE Sub TX module for wireless link establishment once a person press the pairing button on the receiver. All pairing setup will be done in the manufacturer.

#### 4.4 RF Specifications

Table II lists the detailed RF specifications of the GPE Sub TX module.

	Specification Details	Value	Unit
1	Spread Spectrum Communication	AFHSS	
2	Operating Frequency Range	2404 ~ 2476	MHz
3	Non-Overlap Channel	18	
4	Channel Spacing	4	MHz
5	Modulation	shaped-8FSK modulation at a 2 MHz symbol rate using a rate-5/6 4D trellis coded modulation scheme	
6	Maximum RF Data Rate	5	Mbps
7	EIRP	≤ 20	dBm
8	Conducted RF Power	14 – 16	dBm
9	Sensitivity PER @ Attenuation -40dB <sup>2</sup>	≤ 1%	%
10	RF Bandwidth @20dB below Peak Power <sup>1</sup>	3.7 – 4.5	MHz



Span = 5MHz and RBW / VBW = 300kHz / 1MHz

11	Maximum Carrier Tolerance @ 25°C		kHz
	a) 2,406 MHz	± 37	
	b) 2,474 MHz	± 38	
12	Conducted Spurious Measurement of Transmitting Mode from 30MHz to 12,750MHz	≤ -42	dBm
13	PIFA Antenna Gain with PCB (1726-125A+000A)	1.3	dBi
14	Crystal Frequency	48	MHz
15	Radio Transmission (Typical living room environment Line-of-Sight without blockage)	≥ 10	m
16	TX Latency	11 ~ 20	ms

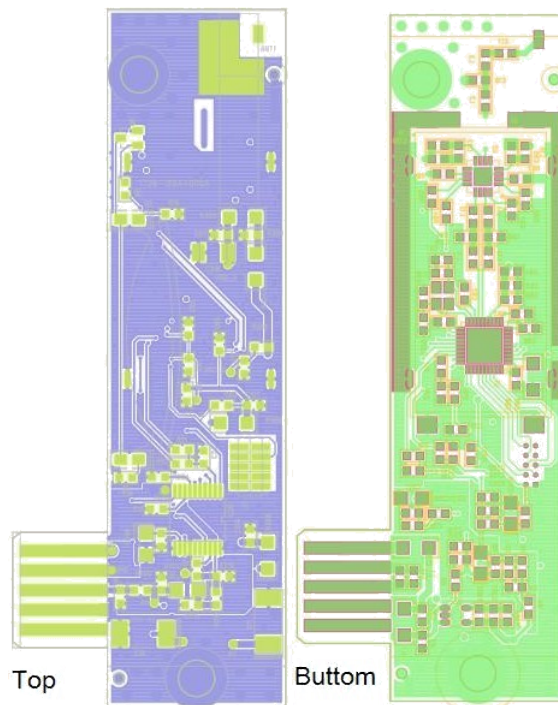
Table II RF specifications of the GPE Sub TX module.

## 4.4 LED Indication

LED status:

- Amber blinking (1Hz) = Pairing or Disconnect;
- OFF = Bonded; Power On

## 4.5 PCB Layout





### **5. Final Product Installation**

The module requests the dedicated connector of the KEF video powered speaker products.

Final product is installed for fixed location operation, and means that the device is physically secured at one location and is not able to be easily moved to another location.

Normal range of GPE Sub TX with receiver is around 3m to 5m. Distance between audience and wireless pair is typically 4m to 7m.

#### **5.1 GPE Sub TX Application**

The GPE Sub TX module is a wireless audio transmitter. User has to plug the TX module into the dedicated KEF speaker product which provides 5VDC and feed the subwoofer signal to TX module for wireless transmission.

#### **5.2 No Software Request**

The software of GPE Sub TX module will be installed in the manufacturer. User doesn't request any software installation.

GPE Sub TX module will automatically search the dedicated receiver once turn on the host.