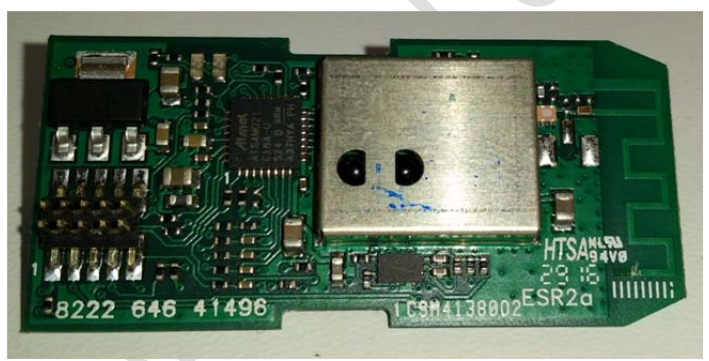




<b>Machine &amp; Product Documentation Lighting</b>	(Product family) <b>LED Module</b>	(Document type) <b>PRODUCT SPECIFICATION</b>
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### Changing Content List

Updated Date	Change Request No.	Remarks
2016/09/12		Initial version



The LED module is a general purpose Zigbee certified building block for SMART TLED lighting applications e.g. SMART TLED and luminaires. It does not work stand-alone but is meant to be connected by socket on a application specific motherboard that contains the proper interfacing for stand-alone usage (i.e. connectors, supply voltage, ...)

<i>Signature</i>	<b>Technical Project Leader</b>	<b>Quality Project Leader</b>	<b>Product Manager</b>
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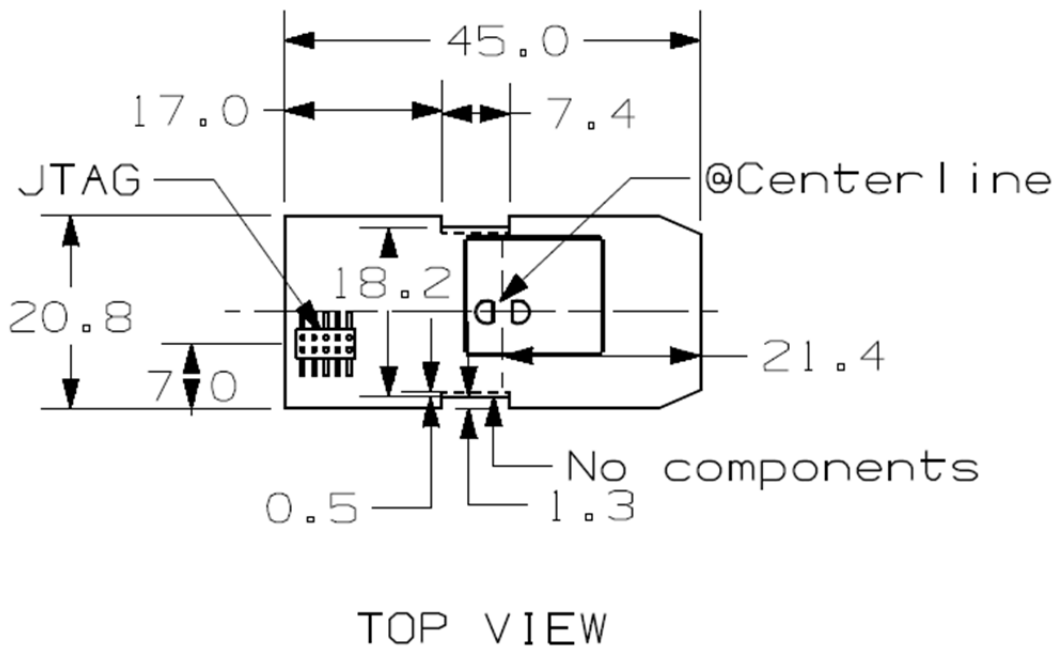
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**1. Module layout and drawings**

Name	Value	Tolerance	Remarks
Width (mm)	20.8	±0.2	
Length (mm)	45	±0.2	
Height (mm)	12	±1	

Drawings:

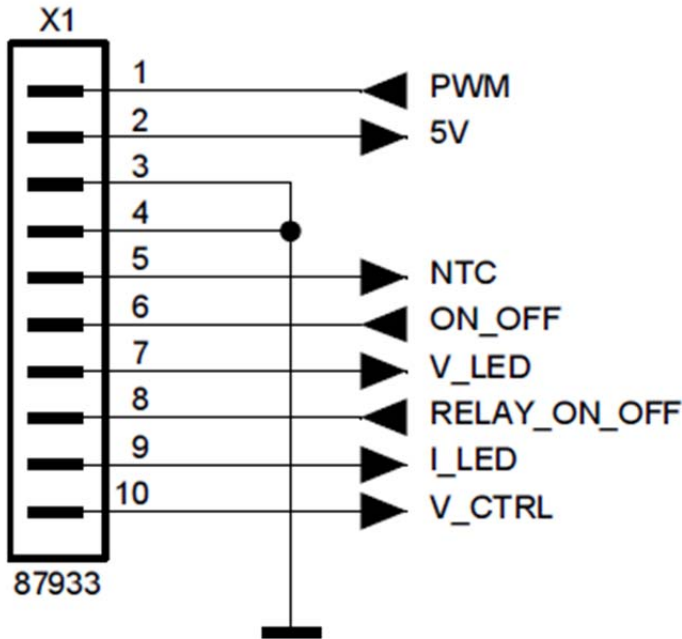


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I/O definition:



Pad Number	Function
1	PWM PWM output
2	5V DC input
3	GND Ground
4	GND Ground
5	NTC NTC input
6	ON/OFF ON/OFF output
7	V_LED V_LED input
8	Relay_ON_OFF Relay control output
9	I_LED I_LED output
10	V_CTRL V_CTRL output

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Machine &  
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(Product family)  
**LED Module**

(Document type)  
**PRODUCT  
SPECIFICATION**

**2. ELECTRICAL SPECIFICATION**

Name	Value	Tolerance	Remarks
Vcc voltage (V)	5V	±5%	
Current (normal, mA)	35		

**3. RF PERFORMANCE SPECIFICATION**

Item	Conditions	Spec		
		Min	Typical	Max
Frequency tolerances (ppm)	Continuous single tone		+/-40	
Output power (dBm)	Measured at antenna feed point		4	
Spurious emissions* (dBm)	30 – 1000MHz		-36	
	1 – 12.75GHz		-30	
	1.8 – 1.9GHz		-47	
	5.15 – 5.3GHz		-47	
EVM (%rms)			<10	
Receiver Sensitivity (dBm)	PER < 1%		-99	
TRP	when connected to motherboard (i.e. SMART TLED)	-2dBm		

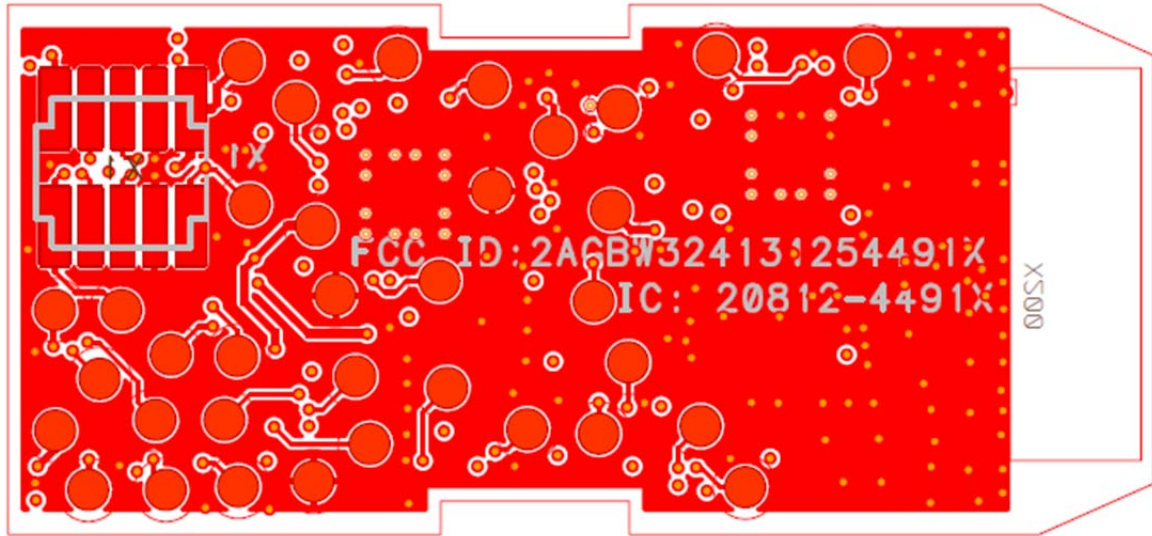
**4. Approbation**

PMN(product marketing name): SMART RF Module

<i>Signature</i>	<b>Technical Project Leader</b>	<b>Quality Project Leader</b>	<b>Product Manager</b>
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**FCC Labelling Requirements**

When integrating HUE Engine V1.0 into a product it must be ensured that the FCC labelling requirements are met. This includes a clearly visible label on the outside of the finished product specifying the FCC identifier (FCCID:2AGBW324131254491X). This exterior label can use wording such as "Contains Transmitter Module FCC ID:2AGBW324131254491X" although any similar wording that expresses the same meaning may be used.

Note: Changes or modifications made to this device that are not expressly approved by Philips Lighting North America Corporation ("Philips") may void the user's authority to operate the device.

The advance interface module complies with FCC radiation exposure limits set forth for an uncontrolled environment.

The module and associated antenna must be installed to provide a separation distance of at least 20cm from all persons and must not transmit simultaneously with any other antenna or transmitter.

FCC Approvals  
FCC statement:

	Technical Project Leader	Quality Project Leader	Product Manager		
Signature					
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Machine &  
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(Product family)  
**LED Module**

(Document type)  
**PRODUCT  
SPECIFICATION**

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 notice:

This device 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 device 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 device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna

Increase the separation between the device and receiver

Connect the device into an outlet on a circuit different from that to which the receiver is connected

Consult the dealer or an experienced radio/television technician for help .

#### IC (Industry Canada) Approvals

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.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and

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its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication

This module complies with FCC and Industry Canada RF radiation exposure limits set forth for general population. To maintain compliance, this module must not be co-located or operating in conjunction with any other antenna or transmitter

Immediately following the above notice, the manufacturer shall provide a list of all antenna types approved for use with the transmitter, indicating the maximum permissible antenna gain (in dBi) and required impedance for each.

The labelling requirements for Industry Canada are similar to those of the FCC. Again a clearly visibly label must be placed on the outside of the finished product stating something like "Contains Transmitter Module, IC-ID: 20812-4491X", although any similar wording that expresses the same meaning may be used.

En vertu de la réglementation d'Industrie Canada, cet émetteur radio risquera uniquement à l'aide d'une antenne de type et de gain maximum (ou moins) pour l'émetteur a approuvé par Industrie Canada. Pour réduire les interférences radio potentielles à d'autres utilisateurs, le type d'antenne et son gain doivent être choisies que la puissance isotrope rayonnée équivalente (p.i.r.e.) n'est pas plus que celle autorisée pour une communication réussie

Ce module est conforme à la FCC et Industrie Canada RF limites d'exposition aux rayonnements définies pour l'ensemble de la population. Pour maintenir la conformité, ce module ne doit pas être co-implanté ou fonctionner en conjonction avec toute autre antenne ou émetteur

À la suite de l'avis ci-dessus, le fabricant doit fournir une liste de tous les types d'antenne approuvés pour une utilisation avec l'émetteur, indiquant au maximum gain d'antenne (en dBi) et impédance requise pour chacun.

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Les exigences d'étiquetage pour Industrie Canada sont semblables à celles de la FCC. Encore une fois un clairement visiblement étiquette doit être placée à l'extérieur du produit fini indiquant quelque chose comme "Module émetteur de Contains, IC ID: 20812-2630 X", bien que tout même libellé qui exprime que le même sens peuvent être utilisé.

**IC notice:**

This Class B complies with Canadian ICES-005.---  
 Cet appareil numérique de la classe B est conforme à la norme NMB 005 du Canada

*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;*
- (2) *l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

Signature	Technical Project Leader	Quality Project Leader	Product Manager
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