



Miele@home
Manual for
EK038
USA/CDN Market
Version 1.5

Revision History

Date	Version	Description	Author	Department
03.09.2015	1.0 Draft	Initial manual for FCC/IC	F. Laube	GTE/SKT
10.06.2016	1.1	Changes	F. Laube	GTE/DPS
20.06.2016	1.2	Label changed, Block Diagram crystal added	F. Laube	GTE/DPS
14.09.2016	1.3	Changes 3.1 RSS210, Antenna gain added	L. Merkel	GTE/DPS
15.09.2016	1.4	Final Changes	Chr. Bömke	GTE/DPS
20.09.2016	1.5	Integration Changes	L. Merkel	GTE/DPS

Reviewed By

Date	Version	Name	Department
09.09.2014	1.0 Draft	G. Borgelt	GTE/TL
15.09.2016	1.4	G. Borgelt L. Merkel	GTE/TL GTE/DPS
20.09.2016	1.5	G. Borgelt	GTE/TL

Approvals

Date	Version	Name	Department

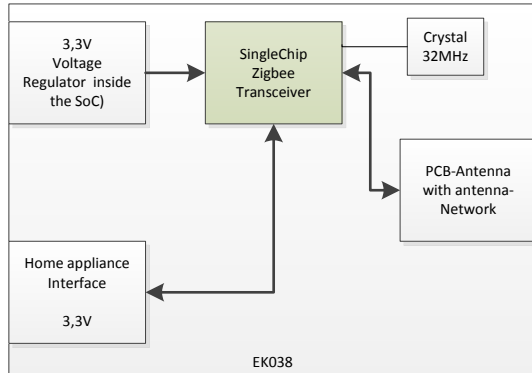
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1. General

The EK038 is a wireless network interface module for Miele domestic appliances like hoods, hobs, cooling devices or washing machines. The module supports the IEEE 802.15.2 ZigBee ® standard. The EK038 module is designed to solder on PCB during manufacturing. The Module will only be used in Miele domestic appliances.

Block Schematic



Operational Description

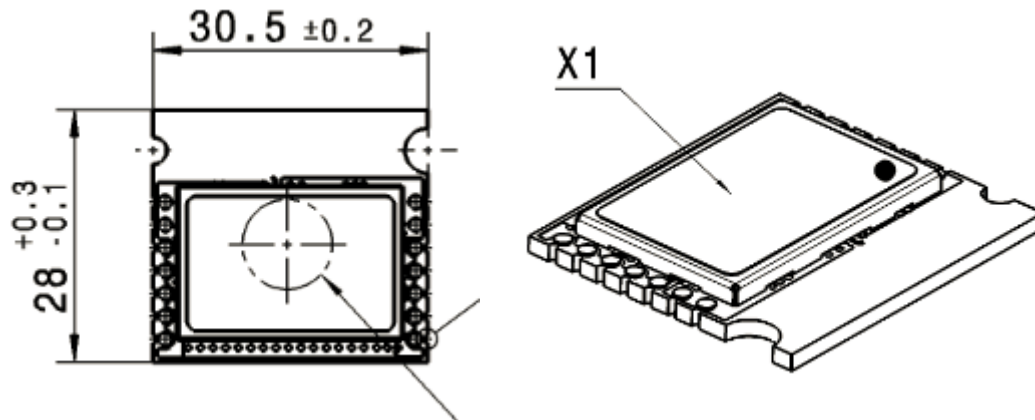
The EK038 is based on CC2538 ZigBee SOC Controller and has a board design in stamp form factor. The Chip controls the IEEE 802.15.4 RF and handles the ZigBee stack. The Chip also handles the connection to the domestic appliance via a serial link and Miele protocol.

Integration instruction

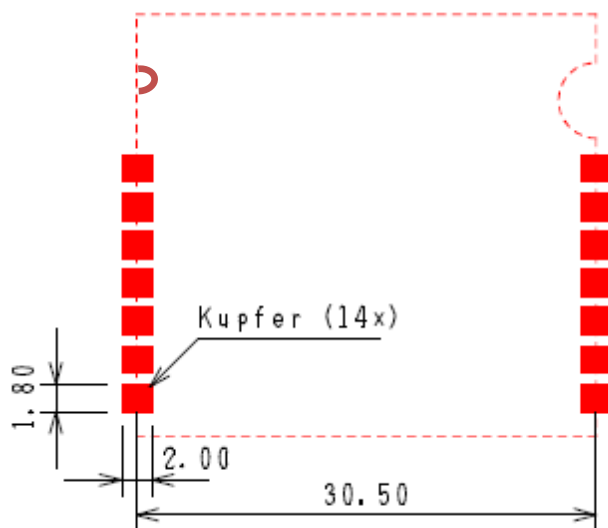
The EK038 must be integrated under consideration of the technical data. It is not allowed to make any changes on the module or to use another antenna. The module should be placed in an area with good RF performance.

2. Technical data EK038

VCC in V	3,15 min. 3,3 typical 3,45 max.
Current in mA	38 typical 60 max.
Ambient temperature in °C	0 – 105
Humidity max	90% non condensation
Dimension in mm	30/27
wireless	
MCU/RF IC	CC2538
Input	double buffered interface (CC2538)
Antenna type	PCB inverted F
Antenna gain	2 dB
Crystal Input Clock	32 MHz
RF Frequency	2.45 GHz
Channels	11 to 26
Channel Frequencies	2,405 GHz – 2,480 GHz
Transmission Power in mW	<10



Footprint



3. Norms / Standards

3.1 FCC / IC

FCC Regulation Part 15.109, Part 15.209 and Part 15.247
IC regulations RSS-Gen Issue 4 and RSS-247 Issue 1

3.2 Safety

UL 60730-1A, CAN/CSA E60730-1:02+A1:2007
CSA Certificate 70009686

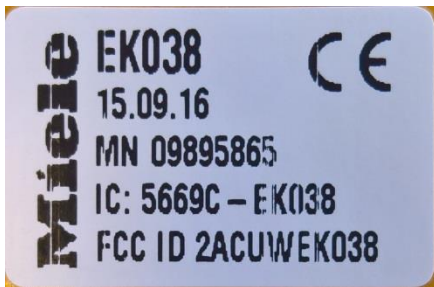
3.3 RF-Standard

The modules use the RF standard IEEE 802.15.4 ZigBee

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3.4 Photos and Labels

24 mm x 14 mm



EK038 Top View



4. Regulatory Notice and Integration

4.1 United States (FCC Notice)

FCC ID: 2ACUWEK038

In accordance with FCC Part 15, the 2ACUWEK038 is listed as a Modular Transmitter Device.

FCC CAUTION:

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

This device complies with Part 15 of FCC Rules. Operation is Subject to following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received including interference that cause undesired operation.


FCC STATEMENT:

This equipment has been tested and found to comply within 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 or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver

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- Connect the equipment into an outlet on a different circuit from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

USERS MANUAL OF THE END PRODUCT:

The end user has to 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 user's 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 **FCC ID: 2ACUWEK038** ". 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.

4.2 Canada (IC Notice)

IC: 5669C-EK038

The term "IC" before the radio certification number only signifies that Industry Canada technical specifications were met. 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.

LABEL OF THE END PRODUCT

The final end product must be labeled in a visible area with the following " Contains **IC : 5669C-EK038**".

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). 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.

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.

4.3 Integration

This EK038 Module will only be integrated on our responsibility into Miele appliances/endproducts. The final products, including the integrated radio module, have to show compliance to the FCC /IC requirements.

Appropriate measurements (e.g. 15 B compliance) and if applicable additional equipment authorizations (e.g. Verification, Doc) of the final endproducts will be addressed by Miele & Cie. KG.