



# FlexModule Mini User Guide

## For Balance 20X / 380X / 580X

Jan 2023

### Important Notes

1. Please handle the connectors with care as to not damage them.
2. LTE-A (CAT-6) and LTE-A Pro (CAT-12) FlexModule Minis have 2x cellular antenna connectors while LTE-A Pro (CAT-18) and 5G have 4x cellular antenna connectors. So if you are upgrading from LTE-A (CAT-6) or LTE-A Pro (CAT-12) to either LTE-A Pro (CAT-18) or 5G, you will require additional antennas.
3. FlexModule Minis are fully interchangeable with other FlexModule Minis, e.g. Ethernet, and cellular.

## Procedure for changing the FlexModule Mini on the B380X/B580X

**Step 1:** Power off the router. The router **MUST** be disconnected from power before starting the upgrade.

**Step 2:** Disconnect all antennas.

**Step 3:** Loosen the screws on the cover or the installed FlexModule Mini.



**Step 4:** Remove the cover or module by pulling them out directly.

**Step 5:** Loosen the screws of the new FlexModule Mini in order to remove the module cover which is for the Balance 20X.



**Step 6:** Install the 380X/580X module cover and tighten the screws.



**Step 7:** Install the new module. Make sure it is correctly aligned before pressing the module firmly into place. The FlexModule Mini should sit flush with the router chassis.

**Step 8:** Tighten the screws until the FlexModule Mini sits flush and tight with the collar.



**Step 9:** Reconnect the antennas.

**Step 10:** Reconnect the power.

## Procedures for changing the FlexModule Mini on the B20X



**Step 1:** Power off the router. The router MUST be disconnected from power before starting the upgrade.

**Step 2:** Disconnect all antennas.

**Step 3:** Loosen the screws on the cover or the installed FlexModule Mini.



**Step 4:** Remove the cover or module by pulling it out directly.

**Step 5:** Install the new module. Make sure it is correctly aligned before pressing the module firmly into place. The FlexModule Mini should sit flush with the router chassis.



**Step 6:** Tighten the screws until the FlexModule Mini sits flush and tight with the collar.



**Step 7:** Reconnect the antennas.

**Step 8:** Reconnect the power.

## **FCC Requirements for Operation in the United States**

### **Federal Communications Commission (FCC) Compliance Notice:**

#### **For FlexModule Mini**

##### **Federal Communication Commission Interference Statement**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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

##### **Radiation Exposure Statement**

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

##### **Industry Canada Statement**

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

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

Le present 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



### **Radiation Exposure Statement**

This device complies with the ISED radiation exposure limit set forth for an uncontrolled environment. This device should be installed and operated with minimum distance 20cm between the radiator & your body.

Cet équipement est conforme avec l'exposition aux radiations ISED définies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à une distance minimum de 20 cm entre le radiateur et votre corps.

## CE Statement for Pepwave Routers ( FlexModule Mini for MV31-W)

# DECLARATION OF CONFORMITY

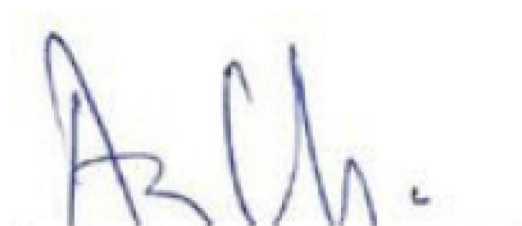
We affirm the electrical equipment manufactured by us fulfils the requirements of the Radio Equipment Directive 2014/53/EU.

Name of manufacturer	PISMO LABS TECHNOLOGY LIMITED
Contact information of the manufacturer	A8, 5/F, HK Spinners Industrial. Building., Phase 6, 481 Castle Peak Road, Cheung Sha Wan, Kowloon, Hong Kong tel. (852) 2990 7600, fax. (852) 3007 0588 e-mail: cs@peplink.com
Description of the appliance	PEPWAVE / PEPLINK Wireless Product
Model name of the appliance	EXM-MINI-15GD FlexModule Mini 1x 5G Module
Trade name of the appliance	PEPWAVE / PEPLINK

The construction of the appliance is in accordance with the following standards:

EN 301 908-1 V13.1.1  
EN 62311: 2008  
EN 301 489-1 V2.2.3  
Draft EN 301 489-52 V1.1.2  
EN 55032: 2015 + A11:2020  
EN 55035: 2017 + A11:2020  
EN 61000-3-2: 2014  
EN 61000-3-3: 2013  
EN 62368-1:2014 + A11:2017

Yours sincerely,



Antony Chong  
Director of Hardware Engineering  
Peplink International Limited

	AT	BE	BG	HR	CY	CZ	DK	EE	FI	FR	DE	EL	HU	IE
	IT	LV	LT	LU	MT	NL	PL	PT	RO	SK	SI	ES	SE	UK(NI)

#### WWAN : Refer 3GPP TS 36.521 -1 ( UE Power class )

5G	Bands	FR1 (Sub 6G): FDD: n1, n3, n28 TDD: n78
	Band combinations	For supported E-UTRAN New Radio Dual Connectivity (EN-DC) see [2]
	4x4 MIMO	n1, n3, n78
	DSS	n1, n3, n28
	Category	3GPP Rel 15 256 QAM UL/DL
	Output Power	FR1 (Sub 6G): n78: 25.5dBm +1.5/-1dB (HPUE) All other bands: 23dBm ±1dB
4G	Bands	FDD: B1, B8, B20
	Band combinations	For supported carrier aggregations (CA) see [2]
	4x4 MIMO	B1
	RX Diversity	All LTE bands
	Category	UE Cat. 13 (UL: 150Mbps) + UE Cat. 20 (DL: 2Gbps); 7xDL CA, 3xUL CA (Intra-band), 5xDL CA+4X4 MIMO (Up to UE Cat20) 256 QAM UL/DL
	Output Power	B1: 23dBm ±1dBm B8, B20: 23.5dBm ±1dBm

This equipment complies with CE radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body.

contact as: <https://www.peplink.com/>

**UK Statement for Pepwave Routers ( FlexModule Mini for MV31-W)**

## UK DECLARATION OF CONFORMITY

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Model name of the appliance	EXM-MINI-15GD FlexModule Mini 1x 5G Module
Trade name of the appliance	PEPWAVE / PEPLINK

We declare under sole responsibilities that the above product conforms to the applicable requirements of following relevant UK legislation and designed standards.

#### **UK legislation**

Radio Equipment Regulations 2017

#### **UK Designed Standard**

EN 301 908-1 V13.1.1

#### **Other Standards Applied**

EN 62311: 2008  
EN 301 489-1 V2.2.3  
Draft EN 301 489-52 V1.1.2  
EN 55032: 2015 + A11:2020  
EN 55035: 2017 + A11:2020  
EN 61000-3-2: 2014  
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EN 62368-1:2014 + A11:2017

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Director of Hardware Engineering  
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## CE Statement for Pepwave Routers ( FlexModule Mini for MC7455 )

### DECLARATION OF CONFORMITY

We affirm the electrical equipment manufactured by us fulfils the requirements of the Radio Equipment Directive 2014/53/EU.

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Contact information of the manufacturer	A8, 5/F, HK Spinners Industrial Building Phase 6, 481 Castle Peak Road Cheung Sha Wan Hong Kong tel. (852) 2990 7600, fax. (852) 3007 0588 e-mail: cs@peplink.com
Description of the appliance	PEPWAVE / PEPLINK Wireless Product
Model name of the appliance	EXM-MINI-1LTEA-W
Trade name of the appliance	PEPWAVE / PEPLINK

The construction of the appliance is in accordance with the following standards:

EN 301908-1 V11.1.1  
Draft EN 301 489-1 V2.2.1  
Draft EN 301 489-52 V1.1.0  
EN 55032: 2015 + AC:2016-07  
EN 61000-3-2: 2014  
EN 61000-3-3: 2013  
EN 55035: 2017  
EN 62311 : 2008  
EN 62368-1:2014/A11:2017

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**WWAN : Refer 3GPP TS 36.521 -1 ( UE Power class )**

**Table 4-6: Conducted Tx (Transmit) Power Tolerances**

Parameter	Conducted transmit power	Notes
<b>LTE</b>		
LTE Band 1,3,8,20	+23 dBm $\pm$ 1 dB	
LTE Band 7	+22 dBm $\pm$ 1 dB	
<b>UMTS</b>		
Band 1 (IMT 2100 12.2 kbps) Band 3 (UMTS 1800 12.2 kbps) Band 8 (UMTS 900 12.2 kbps)	+23 dBm $\pm$ 1 dB	Connectorized (Class 3)

This equipment complies with CE radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body.

**contact as:** <https://www.peplink.com/>

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EN 55032: 2015 + AC:2016-07  
EN 55035: 2017  
EN 61000-3-2: 2014  
EN 61000-3-3: 2013  
EN 62368-1:2014 + A11:2017

Yours sincerely,



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Peplink International Limited

**CE Statement for Pepwave Routers ( FlexModule Mini for EM7690 & EM7565 )**

## DECLARATION OF CONFORMITY

We affirm the electrical equipment manufactured by us fulfils the requirements of the Radio Equipment Directive 2014/53/EU.

Name of manufacturer	PISMO LABS TECHNOLOGY LIMITED
Contact information of the manufacturer	A8, 5/F, HK Spinners Industrial Building Phase 6, 481 Castle Peak Road Cheung Sha Wan Hong Kong tel. (852) 2990 7600, fax. (852) 3007 0588 e-mail: cs@peplink.com
Description of the appliance	PEPWAVE / PEPLINK Wireless Product
Model name of the appliance	FlexModule Mini LTEA (CAT-12) EXM-MINI-1LTEA-K FlexModule Mini 1x LTEA Module EXM-MINI-GLTE-S FlexModule Mini LTEA (CAT-20)
Trade name of the appliance	PEPWAVE / PEPLINK

The construction of the appliance is in accordance with the following standards:

EN 301908-1 V13.1.1  
EN 301 489-1 V2.2.3  
Draft EN 301 489-52 V1.1.2  
EN 55032: 2015 / A11:2020  
EN 61000-3-2: 2014  
EN 61000-3-3: 2013/A1:2019  
EN 55035: 2017 / A11:2020  
EN 62311:2020  
EN 62368-1:2020+A11:2020

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### **EM7690: WWAN : Refer 3GPP TS 36.521 -1 ( UE Power class )**

**Table 4-11: Conducted Maximum Tx (Transmit) Power<sup>a</sup> Tolerances**

Bands	Conducted Tx Power	Notes
LTE		
LTE B7	+23 dBm +1.8 dB/-1.0 dB	Power Class 3
LTE all other bands	+23 dBm ± 1 dB	
UMTS		
All bands (12.2 kbps)	+23.5 dBm ± 1 dB	Connectorized (Power Class 3)

### **EM7565: WWAN : Refer 3GPP TS 36.521 -1 ( UE Power class )**

**Table 3-6: Conducted Tx (Transmit) Power Tolerances**

Bands	Conducted Tx power	Notes
LTE		
LTE bands 1,3,8,20,28	+23 dBm ± 1 dB	0.8 dB offset for UL CA hardcoded by chipset manufacturer
LTE bands 7	Single cell: +22 dBm ± 1 dB UL CA: +22.8 dBm ± 1 dB	
UMTS		
Band 1 (IMT 2100 12.2 kbps) Band 8 (UMTS 900 12.2 kbps)	+23 dBm ± 1 dB	Connectorized (Class 3)

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Trade name of the appliance	PEPWAVE / PEPLINK

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**UK Designed Standard**

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