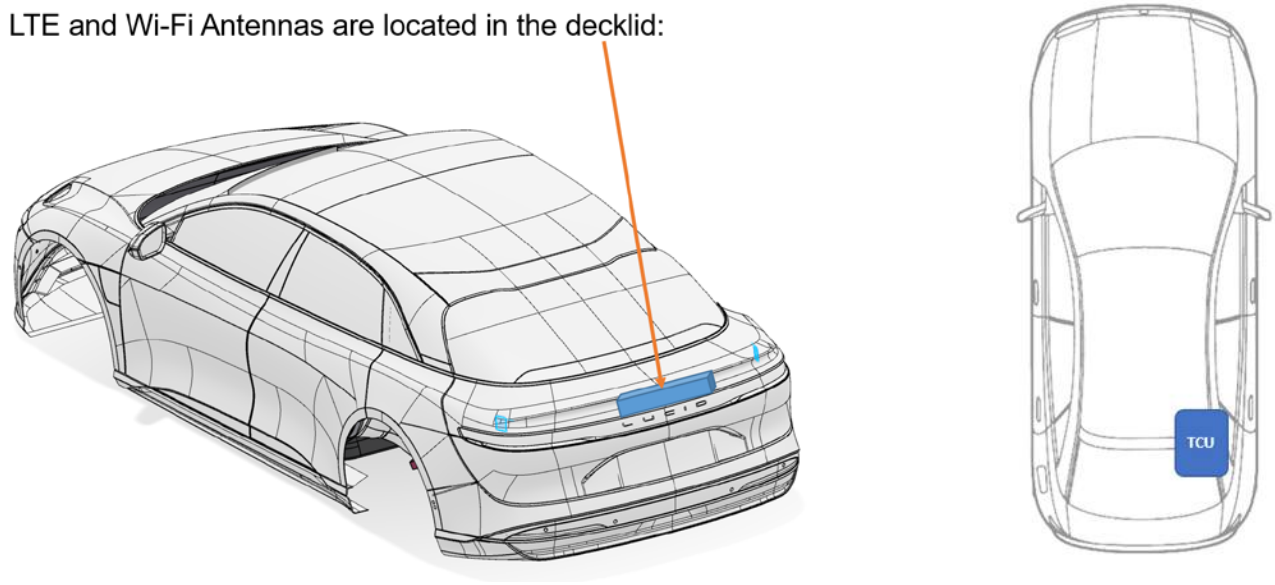
TCU User Manual

TCU (Telematics Control Unit) **P11-K290G0-02** is manufactured by **ASKEY Corp**. for **Lucid USA, Inc** (aka Lucid Motors) and provides wireless connectivity to LTE/UMTS and Wi-Fi networks for vehicle's Infotainment and Telematics systems. The device also provides location-based services and is capable to download OTA software updates for different functional units of the vehicle.

TCU is installed in the vehicle during manufacturing as a fully pre-configured device, which starts working as soon as power the power is turned on. The device is completely hidden from the vehicle user and does not require any additional configuration.

TCU is mounted in the rear right location of the vehicle and is connected to the vehicle's wiring harness (an assembly of electric cables used for transmission of electric signals and electric power in a vehicle).
The device can be accessed for repair and maintenance purposes only by qualified technical service personnel.

TCU location in the vehicle is shown on the drawing below.



FCC 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 or more 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.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

IMPORTANT NOTE:

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.

For Outdoor access point operating in the band 5.15-5.25 GHz

Professional Installation instruction

1. **Professional installer:** this product is designed for specific application and needs to be installed by trained personnel. The general user shall not attempt to install or change the setting.
2. **External Antenna:** use only the antenna(s) that have been approved by the manufacturer. The non-approved antenna(s) may produce unwanted spurious or excessive RF transmitting power that may lead to the violation of FCC limit and is prohibited.

Waring: Please carefully select the installation position and ensure that the final output power does not exceed the limit set forth in relevant rules.

This radio transmitter FCC ID: 2AXZJ-CTX0710W3 has been approved by FCC to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Ant.	Brand	Model Name	Antenna Type	Connector
1	Amphenol	P11-J67E00-02	FPC	FARKA
2	Amphenol	P11-J67200-02	FPC	FARKA
3	nextium	P11-J44000-00	FPC	FARKA
4	nextium	P11-J44100-00	FPC	FARKA

Ant.	Port	2.4G Gain (dBi)						
		2400	2420	2440	2460	2480	2500	Remark (Note. 1)
1	1	3.1	3.0	2.8	2.9	3.0	3.5	w/o cable
		0.6	0.5	0.3	0.4	0.5	1.0	with cable

Ant.	Port	5G Gain (dBi)				
		5150	5250	5750	5850	Remark (Note. 2)
1	1	1.5	2.2	4.1	4.3	w/o cable
		-1.8	-1.1	0.7	0.9	with cable
2	2	1.7	2.3	3.9	4.1	w/o cable
		-1.6	-1.0	0.5	0.7	with cable

Ant.	Port	WWAN 2G/3G Gain (dBi)					
		GSM 850	PCS 1900	WCDMA Band 2	WCDMA Band 4	WCDMA Band 5	Remark (Note. 3)
3~4	1~2	1.0	4.5	4.5	4.5	1.0	w/o cable
		-0.2	2.7	2.7	2.7	-0.2	with cable

Ant.	Port	WWAN 4G Gain (dBi)						
		LTE Band 2	LTE Band 4/66	LTE Band 5	LTE Band 7	LTE Band 12	LTE Band 13	Remark (Note. 3)
3~4	1~2	4.5	4.5	1.0	5.7	1.0	1.0	w/o cable
		2.7	2.7	-0.2	2.7	-0.2	-0.2	with cable

Note 1: WLAN 2.4G cable loss = 2.5 dB.

Note 2: WLAN 5GHz Band 1 cable loss = 3.3 dB, and 5GHz Band 4 cable loss = 3.4 dB.

Note 3: WWAN cable loss = 1.2 dB (GSM 850, FDD V, LTE Band 5, 12, 13)
WWAN cable loss = 1.8 dB (PCS 1900, FDD II, FDD IV, LTE Band 2, 4/66)
WWAN cable loss = 3.0 dB (LTE Band 7)

Note 4: The EUT has four antennas.

For 2.4GHz function:
For IEEE 802.11 b/g/n/VHT/ax mode (1TX/1RX)
Ant. 1 (port 1) could transmit/receive.

For 5GHz function:
For IEEE 802.11 a mode (1TX/1RX)
Support diversity function and pre-tested on each single chain, the worst case was Ant. 2 (port 2) and it was recorded in this report.
For IEEE 802.11 n/ac/ax mode (2TX/2RX)
Ant. 1 (port 1) and Ant. 2 (port 2) could transmit/receive simultaneously.

For WWAN 2G function (1TX/1RX):
Ant. 3 (port 1) could transmit/receive.

For WWAN 3G/ 4G function (1TX/2RX):
Ant. 3 (port 1) could transmit, and Ant. 3 (port 1) and Ant. 4 (port 2) could receive simultaneously.

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.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

ISED Radiation Exposure Statement:

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 27cm between the radiator & your body.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 27cm de distance entre la source de rayonnement et votre corps.

The transmitter module may not be co-located with any other transmitter or antenna.

Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.
Pour les produits disponibles aux États-Unis / Canada du marché, seul le canal 1 à 11 peuvent être exploités. Sélection d'autres canaux n'est pas possible.
CAN ICES-003(B)/NMB-003(B)

This radio transmitter [IC: 27970-CTX0710W3] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited.

Le présent émetteur radio [IC: 27970-CTX0710W3] a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué pour tout type figurant sur la liste, sont strictement interdits pour l'exploitation de l'émetteur.

Ant.	Brand	Model Name	Antenna Type	Connector
1	Amphenol	P11-J67E00-02	FPC	FARKA
2	Amphenol	P11-J67200-02	FPC	FARKA
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Ant.	Port	2.4G Gain (dBi)						
		2400	2420	2440	2460	2480	2500	Remark (Note. 1)
1	1	3.1	3.0	2.8	2.9	3.0	3.5	w/o cable
		0.6	0.5	0.3	0.4	0.5	1.0	with cable

Ant.	Port	5G Gain (dBi)				
		5150	5250	5750	5850	Remark (Note. 2)
1	1	1.5	2.2	4.1	4.3	w/o cable
		-1.8	-1.1	0.7	0.9	with cable
2	2	1.7	2.3	3.9	4.1	w/o cable
		-1.6	-1.0	0.5	0.7	with cable

Ant.	Port	WWAN 2G/3G Gain (dBi)					
		GSM 850	PCS 1900	WCDMA Band 2	WCDMA Band 4	WCDMA Band 5	Remark (Note. 3)
3~4	1~2	1.0	4.5	4.5	4.5	1.0	w/o cable
		-0.2	2.7	2.7	2.7	-0.2	with cable

Ant.	Port	WWAN 4G Gain (dBi)						
		LTE Band 2	LTE Band 4/66	LTE Band 5	LTE Band 7	LTE Band 12	LTE Band 13	Remark (Note. 3)
3~4	1~2	4.5	4.5	1.0	5.7	1.0	1.0	w/o cable
		2.7	2.7	-0.2	2.7	-0.2	-0.2	with cable

Note 1: WLAN 2.4G cable loss = 2.5 dB.

Note 2: WLAN 5GHz Band 1 cable loss = 3.3 dB, and 5GHz Band 4 cable loss = 3.4 dB.

Note 3: WWAN cable loss = 1.2 dB (GSM 850, FDD V, LTE Band 5, 12, 13)
WWAN cable loss = 1.8 dB (PCS 1900, FDD II, FDD IV, LTE Band 2, 4/66)
WWAN cable loss = 3.0 dB (LTE Band 7)

Note 4: The EUT has four antennas.

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For IEEE 802.11 n/ac/ax mode (2TX/2RX)
Ant. 1 (port 1) and Ant. 2 (port 2) could transmit/receive simultaneously.

For WWAN 2G function (1TX/1RX):
Ant. 3 (port 1) could transmit/receive.

For WWAN 3G/ 4G function (1TX/2RX):
Ant. 3 (port 1) could transmit, and Ant. 3 (port 1) and Ant. 4 (port 2) could receive simultaneously.