

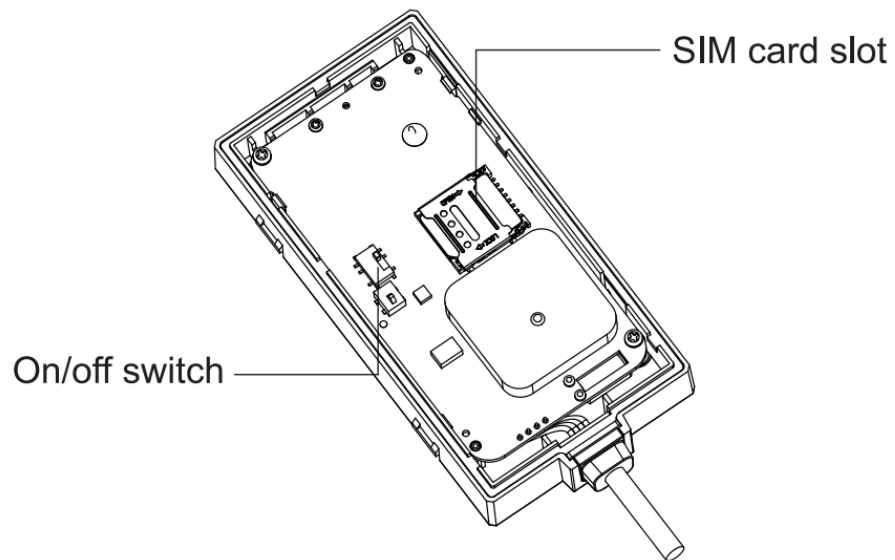
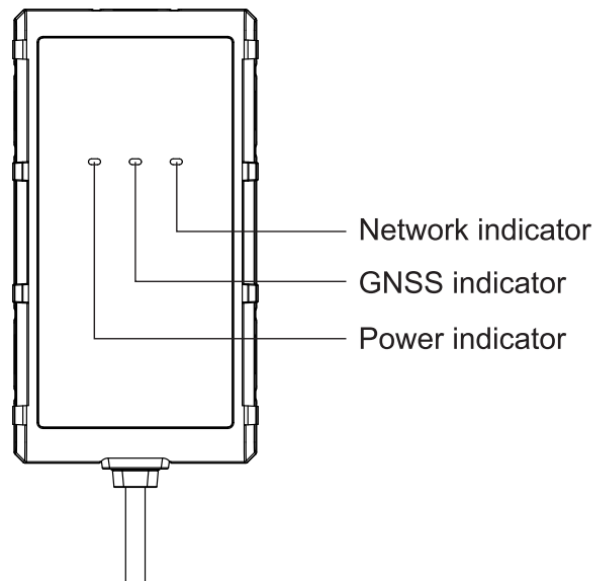
VL106

GNSS VEHICLE TERMINAL

USER MANUAL

V1.0

Product overview



Features

INS(Inertial Navigation System)

INS can be used as a fallback in weak or unavailable GPS signal area, e.g. underpass,tunnel,downtown.

Driver behavior monitoring

- Harsh acceleration alert
- Harsh brake alert
- Sharp turn alert
- Harsh lane change alert
- Crash alert
- Drifting alert
- Rolling alert
- Vehicle angle abnormality

Real-time tracking

Over-speed alert

SOS alert

Tamper alert

Removal alert

Power-supply-cut alert

Low power alert

Vibration alert

Geo-fence

Standard Parts List

Item	Quantity
JM-VL106	1
Power cable (Length: 1 m)	1
Relay	Optional
Panic button	Optional

Specification

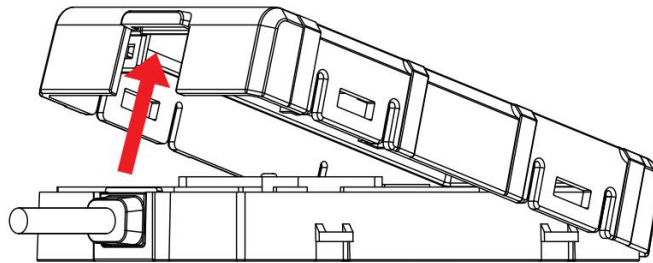
Network	4G&2G
	JM-VL106E: FDD: B1/B3/B7/B8/B20 /B28 TDD: B34/B38/B39/B40/B41
Frequency	GSM: 850/900/1800/1900 MHz
	JM-VL106L LTE: B1/B2/B3/B4/B5/B7/B8/B28 GSM: 850/900/1800/1900 MHz
Positioning system	GPS/BDS/GLONASS/Galileo+INS
Location accuracy	<2.0 meters CEP
Relay	Optional
TTF (open sky)	Avg. hot starts 1 sec Avg. cold starts 25sec
Indication	GPS (Blue), Cellular (Green), Power (Red)
Battery	100mAh, 3.7V Li-Polymer battery
Operating voltage	9–36VDC
Operating temperature	–20°C to +70°C
Device weight	69g
Device dimension	94.3mm*50.4mm*15.0mm

Product Setup

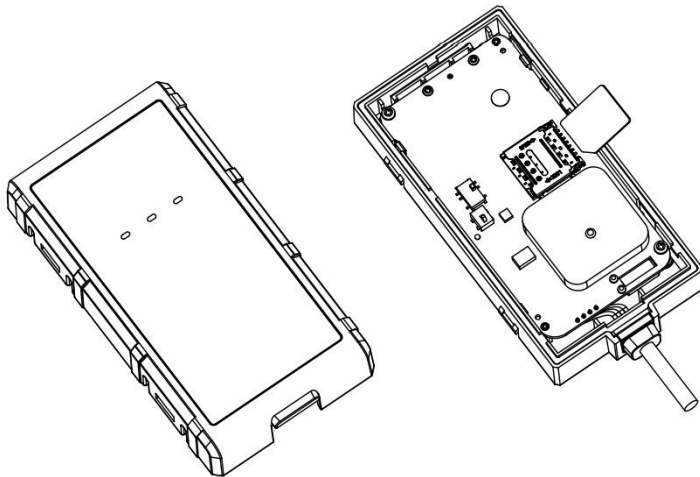
1. Prepare a micro SIM card that supports the same network with this device.



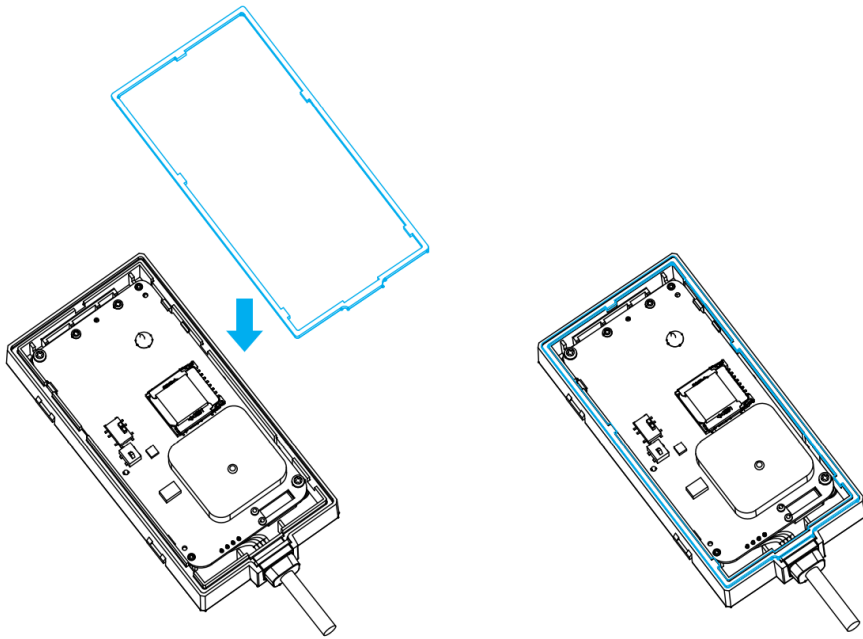
2. Remove the upper cover of device.



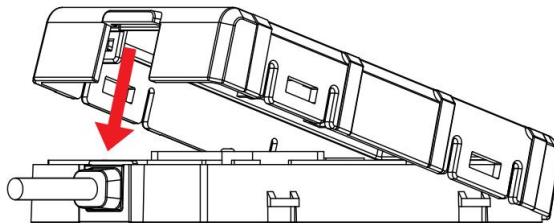
3. Insert SIM card into the slot and toggle the switch to **ON**.



4. To ensure waterproof take effect, make sure the silicon rubber ring is installed in place.



5. Press the upper case down and make sure all 5 clips are completely in place.



LED Indication

Power Status (Red)

On for 0.3s and off for 0.3s	Low power
On for 1s and off for 3s	Fully charged
On for 0.1 s and off for 3s	Working normally
Solid on	Charging (Higher priority than the status of low power)
Off	Battery is exhausted/Internal failure

GNSS Status (Blue)

On for 0.3s and off for 0.3s	Searching GNSS signal
Solid on	Positioned successfully
Off	GNSS module is in sleep mode or not working

Cellular Status (Green)

On for 0.3s and off for 0.3s	Network initializing
On for 1 s and off for 3s	Receiving signal normally
On for 0.1 s and off for 3s	Network connected
Solid on	Network online
Off	No signal received/No SIM card detected

Interfaces

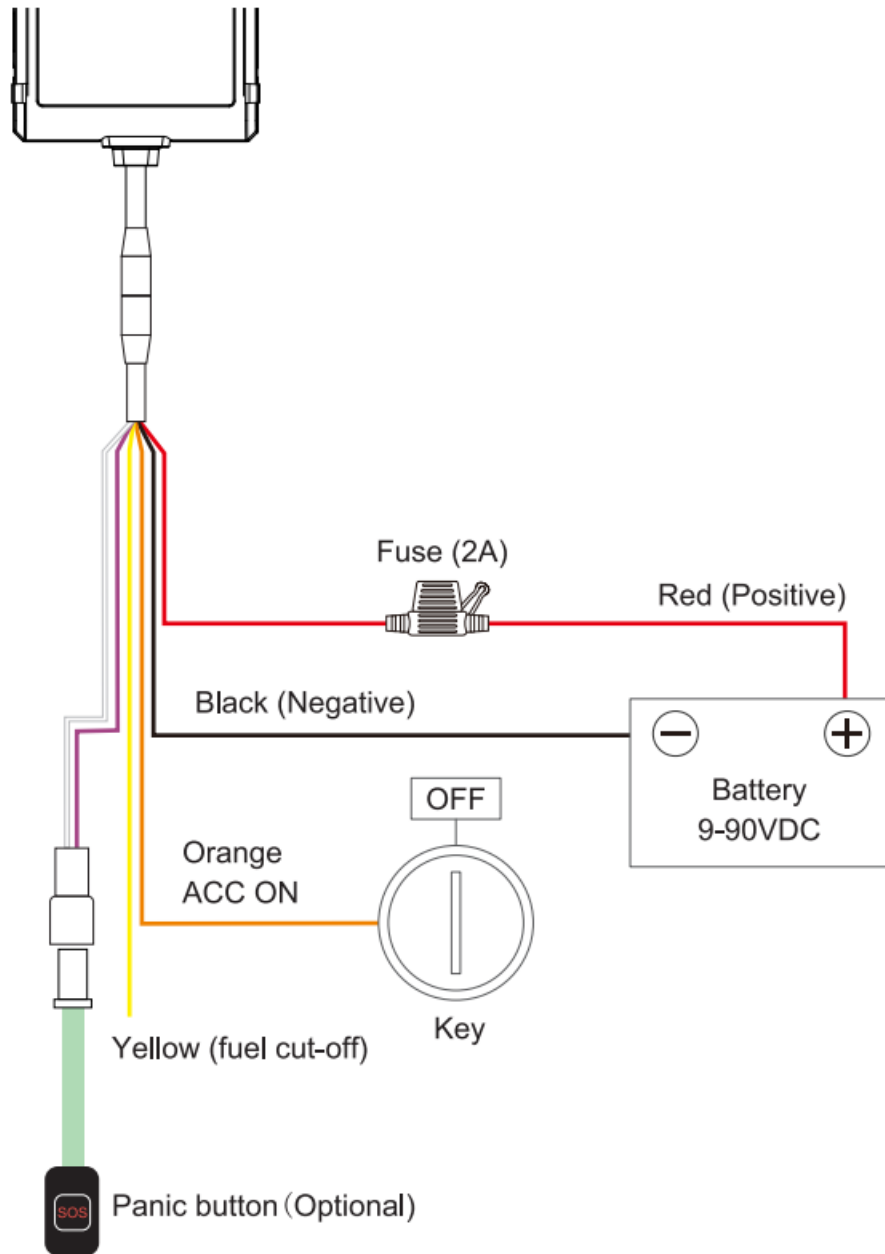
6 Pin Standard Version

Interface	Color	Description
V+	Red	Power + (9-36V)
V-	Black	Power – ground pin
ACC	Orange	Vehicle ignition detection
Relay	Yellow	Cut-off vehicle fuel supply
SOS+	Purple	SOS trigger pin
SOS-	White	SOS ground pin

Wiring & Installation

Tips for finding right wires:

1. Use the multimeter to find out the positive and negative sides of your vehicle battery.
Note: No matter the ignition key is switched to ON or OFF, current battery voltage can be shown in the multimeter.
2. The way to find ACC wire: Connect the multimeter's black probe to negative side, and connect the red probe to a random wire, at this moment, the voltage shown in multimeter is 0V; turn the key to ON, if the supply voltage is shown, that's the correct ACC wire.
3. Connect the two connectors together, if the vehicle has no connector, please connect device's wires to corresponding vehicle wires.



Power connection

The standard power supply ranges from 9V to 36VDC.

During installation, negative side should connect to the ground.

Do not connect with other ground wires simultaneously.

Ignition wire

ACC line(orange) connects to vehicle's ACC, detecting ignition.

Be sure to check if it's a real ignition wire i.e. power does not disappear after starting the engine.

Relay wiring

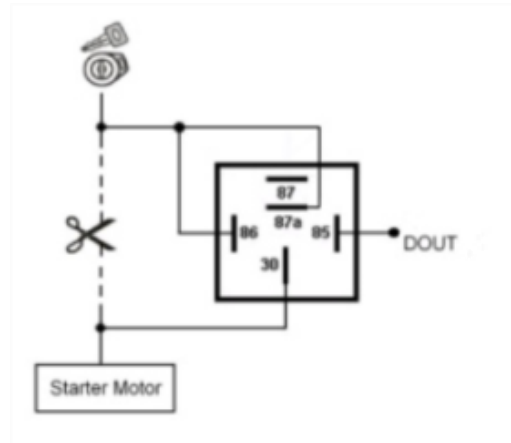
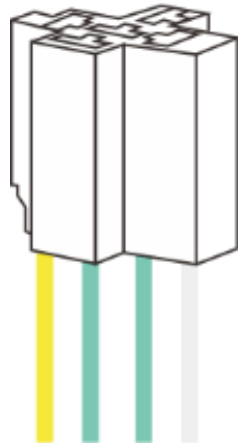
Relay's white line connects to the positive side of battery(12V)

while the yellow line connects to the device's relay control

(yellow line on power cord).

Find the fuel pump of the vehicle and cutoff its positive power line.

The positive side of fuel pump connects to the green line(87a) while the side closing to starter motor connects to green line(30), as the below chart. Switch of the two green lines have the same effect.



12V relay is standard. The device is suitable for vehicles with 12V supply. If the vehicle power supply is 24V, use 24V relay.

Device installation

. Important notes:

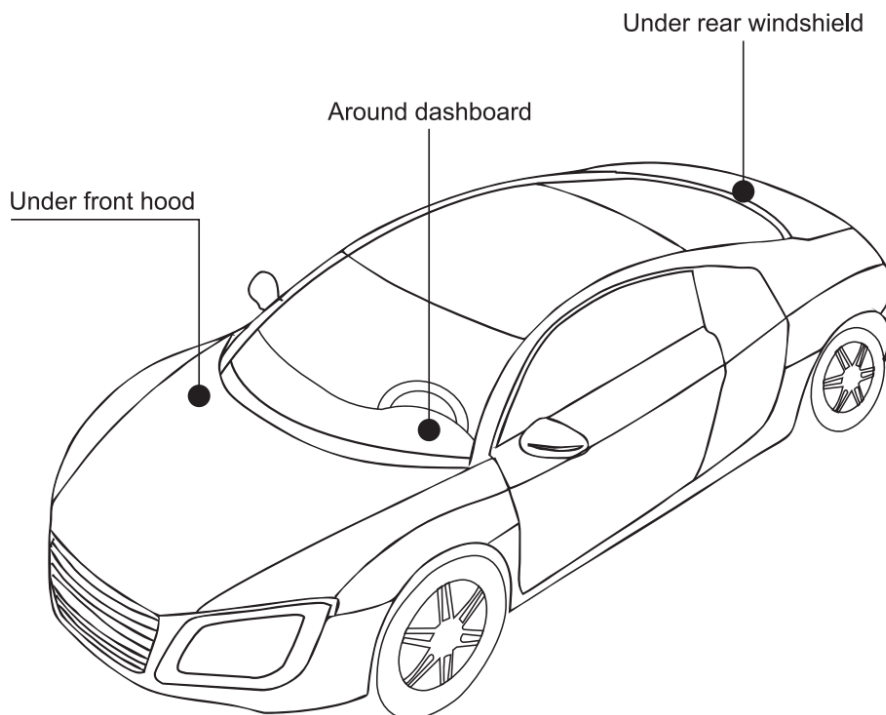
- The GPS tracker is equipped with the inertial navigation system (INS) , which can be used as a short-term fallback while GPS signals are unavailable, for example when a vehicle passes through a tunnel. To

ensure GPS & INS tracking and driver behavior monitoring and to avoid GPS drift, **please fix the device with the Velcro provided!**

The device should be fixed on the vehicle stably, it's very important!

- You can install the device at any direction as the relative installation angle will be automatically calculated after the vehicle moves for a while.
- The device should face up to sky.
- Metal thermal barrier or heating layer, which are always installed on windshield, may affect the signal, please avoid installing the device under these objects.

Installation places recommended



Installation recommendation

Tracked by mobile phone

Send the command [URL#](#) by SMS to the device's SIM card number.

The device will reply with a map link. Click the link to have the location displayed on Google Maps on your mobile phone.

If device in somewhere not positioned, device will reply "Positioning, please wait for a moment" or "Positioning fail".

Monitored by tracking platform

APN & Server setting

To ensure normal network operation, please confirm your APN and server setting before you login. In most countries, APN could be automatically adapted to local mobile operators. If not, please send SMS to set the APN

If user name and password are required for APN, please add it into the command.

[APN, apnname#](#)

E.g. APN, internet#

[APN, apnname, user, pwd#](#)

E.g. APN, internet, CLENTE, AMENA#

Confirm the server address and setting with distributors. If server is incorrect, please send SMS to change.

[SERVER, mode, domain name/IP, port,0#](#)

E.g: SERVER,1, www.ydpat.com,8011,0#

SERVER,0,211.154.135.113.8011,0#

mode=1 means set with domain name

mode=0 means set with IP address

Please login the designated service platform and enjoy your monitoring experience.

GPS upload interval setting

By time interval(Default Valid)

[TIMER,T1,T2#](#)

T1 means upload interval when ACC ON

T2 means upload interval when ACC OFF

Range:5~18000 or 0(second);0 means no upload

Default valid setting: TIMER,10,10#

Query current TIMER setting: [TIMER#](#)

By distance interval(Default OFF)

[DISTANCE,D#](#)

D ranges 50~10000 or 0(meters)

Note: When user enable uploading by DISTANCE, the preset TIME uploading turns invalid.

SOS emergency call (with 6-pin power cable)

In case of emergency case, press SOS for 3 seconds to activate SOS alert. The device will send SMS alert to preset SOS numbers and dial the numbers in a loop for three times until the call is picked up. Alarm message will also be sent to the tracking platform.

To add SOS number: [SOS,A, number1, number2, number3#](#)

To delete the SOS number: [SOS,D, phone number#](#)

Query SOS number: SOS#

Remote power/fuel cut-off(with 6-pin power cable)

When vehicle is stolen, fuel/power command can be sent by platform, APP or SMS.

Notice:

1. Make sure ACC is correctly connected.
2. When ACC is OFF, command will be executed immediately.
3. When ACC is ON but GPS is not fixed, command will defer.
4. When ACC is ON and GPS is fixed, command will be executed when vehicle speed is less than 20km/h.

To cut-of/restore the fuel by SMS command, you have to authorize a center number.

Set the center number: [CENTER,A, mobile number#](#)

Delete the center number: [CENTER,D#](#)

Notice:

Only the preset SOS number can set/delete the center number.

Only one center number can be set.

To cut-off fuel/power connection: [RELAY,A#](#)

A=0/1(0=restore fuel;1=cut-off fuel) Default value:0

E.g. RELAY,1#

Over-speed alert(Default OFF)

[SPEED,A,M,C,B#](#)

A=ON/OFF; default: OFF

M=0/1; alarm report method; 0: GPRS, 1: SMS+GPRS;Default: M=1

C=1–255 km/h; speeding threshold; default: 50

B=5–600 seconds; detection time range; default: 20;

E.g. SPEED, ON,1,100,10#

When vehicle speed is over 100km/h for 10 seconds, you will receive SMS alert and GPRS alert on server.

Note: [SPEED, OFF#](#) Disable over-speed alert

Set ACC detecting mode

[ACC,A,M#](#)

A=ON/OFF ON: detecting; OFF: no acc detecting, acc state keeps OFF。

M means ACC detecting mode

M=0:ACC line detect ignition/flameout

M=4 :soft ACC, no ACC line connected (default)

E.g. [ACC,ON,0#](#) ACC line connected

[ACC,ON,4#](#) no ACC line connected

Driver behavior monitoring

①Harsh acceleration alert

The device defines harsh acceleration as occurring when the vehicle's speed increases sharply. And alert will be sent to the platform.

E.g: The vehicle's speed increase from 0KM/H to 50KM/H after 2 seconds of engine start.

②Harsh brake alert

The device defines harsh braking as occurring when the vehicle's speed decreases sharply. And alert will be sent to the platform.

E.g: The vehicle's speed drops from 50KM/H to 10KM/H after 2 seconds of emergency braking.

③Sharp turn alert

The device defines sharp turn as occurring when the vehicle makes high-speed turn. And alert will be sent to the platform.

E.g: The driving speed is greater than 30KM/H, and the angle change is greater than 90 degrees.

④Harsh lane change alert

The device defines harsh lane change as occurring when the vehicle suddenly change lanes at high speed. And alert will be sent to the platform.

E.g: The driving speed is greater than 60KM/H, and the angle change is less than 20 degrees.

⑤Crash alert

If collision occurs, the device will send alert to the platform.

Slight impact and scratch will not trigger the alert.

⑥Rolling alert

When the vehicle rolling angle exceeds 70°, the device will send alert to the platform.

⑦Vehicle drift alert

When the vehicle changes the course angle for more than 3 seconds at an angular velocity greater than 20° / s, the device will sent a alert to the platform.

⑧Vehicle angle abnormality

When the vehicle rolling angle is greater than 20° and less than 70°, the device will send alert to the platform.

Collision alarm uploading IMU data

Setting the BEFORUBI switch to OFF, when a collision alarm occurs, the device will pack and upload 20Hz IMU data to the platform, 10 seconds before the collision and 10 seconds after the collision , which users can use to reconstruct the accident process.

Troubleshooting

Type	Use
Unable to connect to tracking platform	<p>Check the APN and IP settings.</p> <p>Check whether the data service of SIM card is enabled.</p> <p>Check the balance of SIM card.</p>
Tracker shows offline	<p>Check whether external power is still connected.</p> <p>Check if the vehicle entered network blind area.</p> <p>Check the balance of SIM card.</p>
Unable to locate	<p>Make sure the top side facing upward without metallic things shielded.</p> <p>Make sure it's not in area with no satellite coverage.</p>
Location drift	<p>In area with poor GNSS signal (tall building around or basement), drifting may happen.</p> <p>Check whether vibration happens around to trigger the accelerator.</p>
No command reply	<p>Make sure command format is correct.</p> <p>Vehicle may be in network blind area.</p> <p>Make sure SIM card is well inserted and has SMS service.</p>

Warranty instructions

1. The warranty is valid only when the warranty card is properly completed, and upon presentation of the proof of purchase consisting of original invoice indicating the date of purchase, model and serial No. of the product. We reserve the right to refuse warranty if this information has been removed or changed after the original purchase of the product from the dealer.
2. Our obligations are limited to repair of the defect or replacement of the defective part or at its discretion replacement of the product itself.
3. Warranty repairs must be carried out by our Authorized Service Centre. Warranty cover will be void, even if a repair has been attempted by any unauthorized service centre.
4. Repair or replacement under the terms of this warranty does not provide right to extension or renewal of the warranty period.
5. The warranty is not applicable to cases other than defects in material, design and workmanship.

Maintenance Record

Date		Serviced by	
Product Model			
IMEI Number			
Failure Description			
Comments			