

BumpRecorder User's Manual



2015.5.18
BumpReocrder Co., Ltd.
<http://www.bumprecorder.com/>

Attentions



For your safety

- Smartphone might be placed tightly on the vehicle, and don't fly away when a vehicle is running and stopping.
- Please don't operate smartphone when you drive a vehicle.
- Please don't watch smartphone display long time when you drive a vehicle.

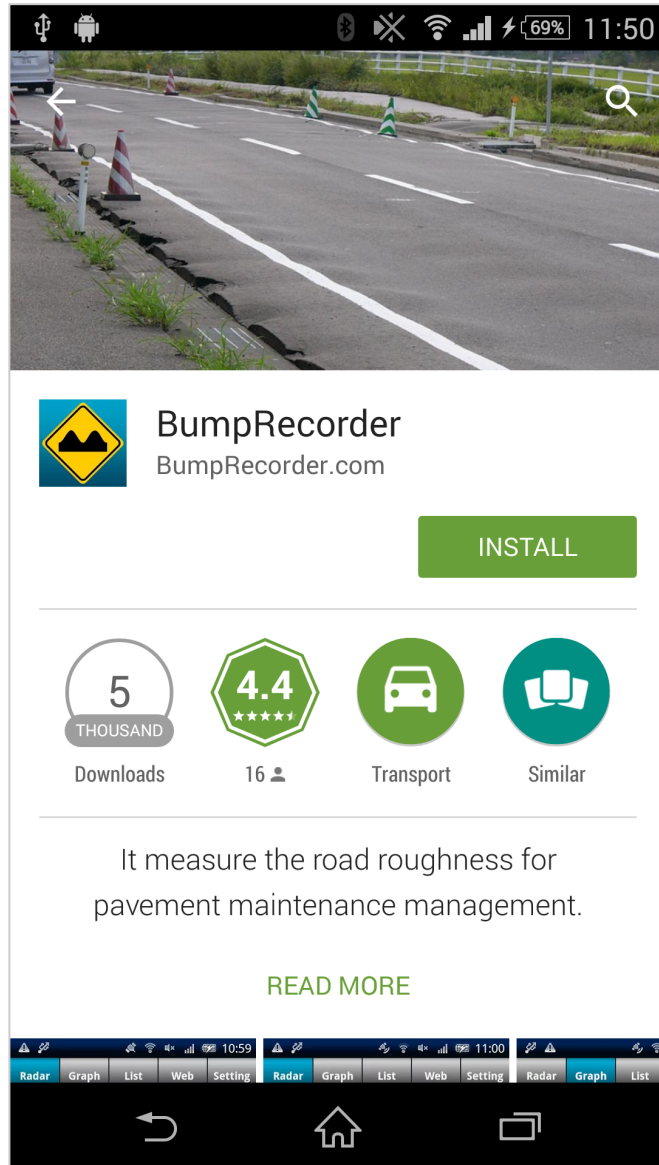
For recording accuracy

- Smartphone might be placed tightly on the vehicle.
- It is recommended that it is included 2 km or longer driving distance in one recording d.
- It is recommended that it is included two times or more for start, stop, right turn, left turn.
- Smartphone is placed where it can see the sky to receive GPS satellite radio signal.

Available device

- Android Smartphone OS version 2.3 or later. It is recommended 4.4 or later.
- Smartphone has built-in GPS and 3 dimensional accelerometer.
It is recommended built-in gyroscope and barometer too.
- Accelerometer sampling cycle must be over 50Hz. It is recommended over 100Hz.
You can check sampling cycle on BumpRecorder [Graph] tab.

Install BumpRecorder on your Smartphone



BumpRecorder is installed from Google Play. It can search **BumpRecorder** or Bump Navi.

Smartphone placement

It can be placed any directions, but it should be placed tightly on the vehicle.

Example : Good placement



Not only fixed at left and right, but also bottom side.

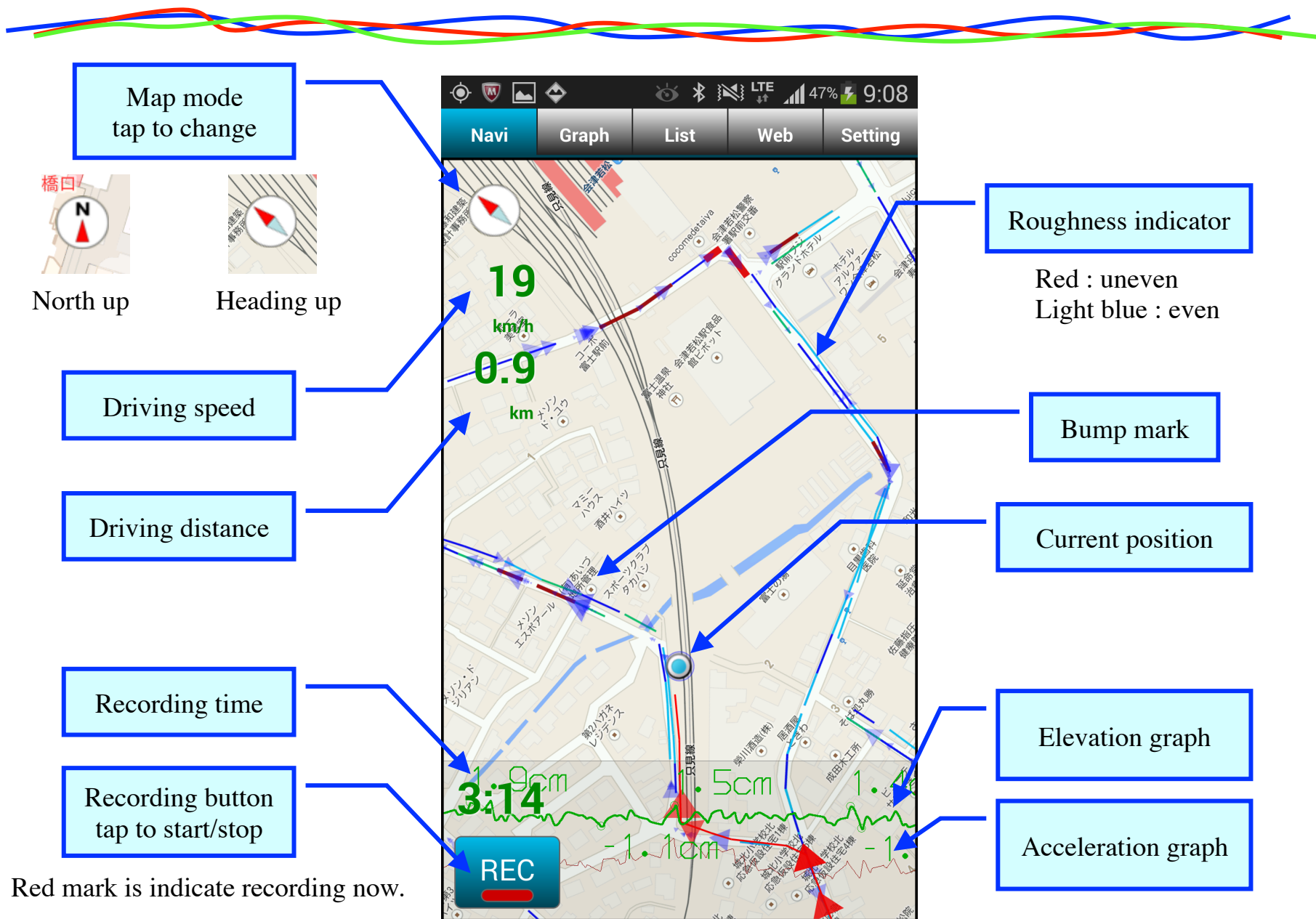
It use sticky sheet on the bottom side.

Bad placement

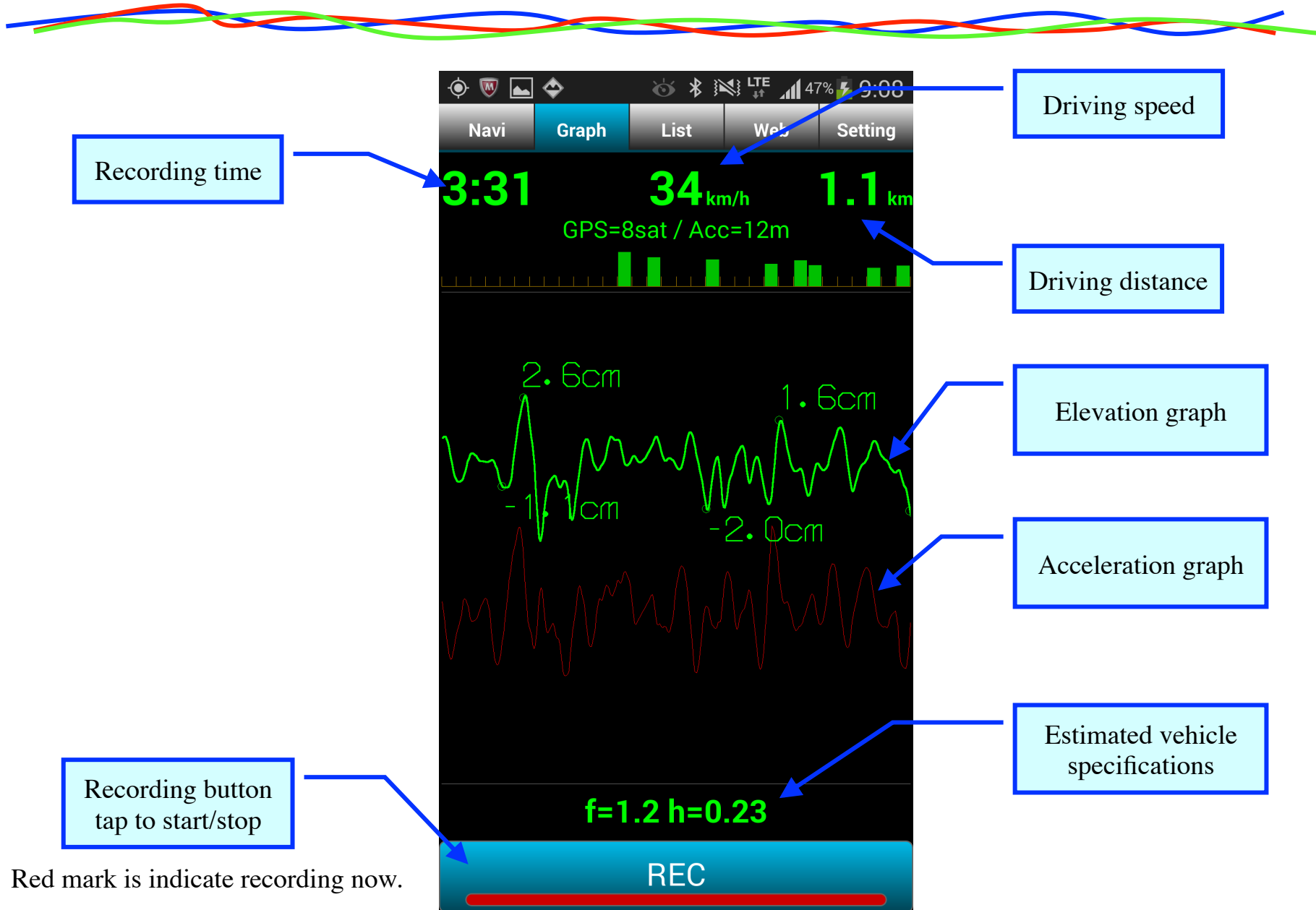


Only fixed at left and right side, but not fixed bottom side. It will occurs unexpected vibrations.

App Screen : [Navi] tab



App Screen : [Graph] tab



App Screen : [List] tab - data list of your smartphone -



The screenshot shows the [List] tab of the BumpRecorder app. The list contains several driving records, each with a checkbox, a timestamp, a distance, a comment, and a status (Unupload or Uploaded). Annotations point to various UI elements:

- Selecting checkbox:** Points to the checkbox for the first record (2015/05/15 17:47:16).
- Recording date time:** Points to the timestamp of the second record (2015/05/15 15:09:50).
- Driving distance:** Points to the distance of the second record (4.9[km]).
- User comment tap to input:** Points to the comment field of the fourth record (新千歳～羽田 B737 25H).
- tap to display on the map:** Points to the map icon on the right side of the fourth record.
- Data delete:** Points to the trash icon at the bottom right of the screen.
- Data upload:** Points to the upload icon at the bottom right of the screen.

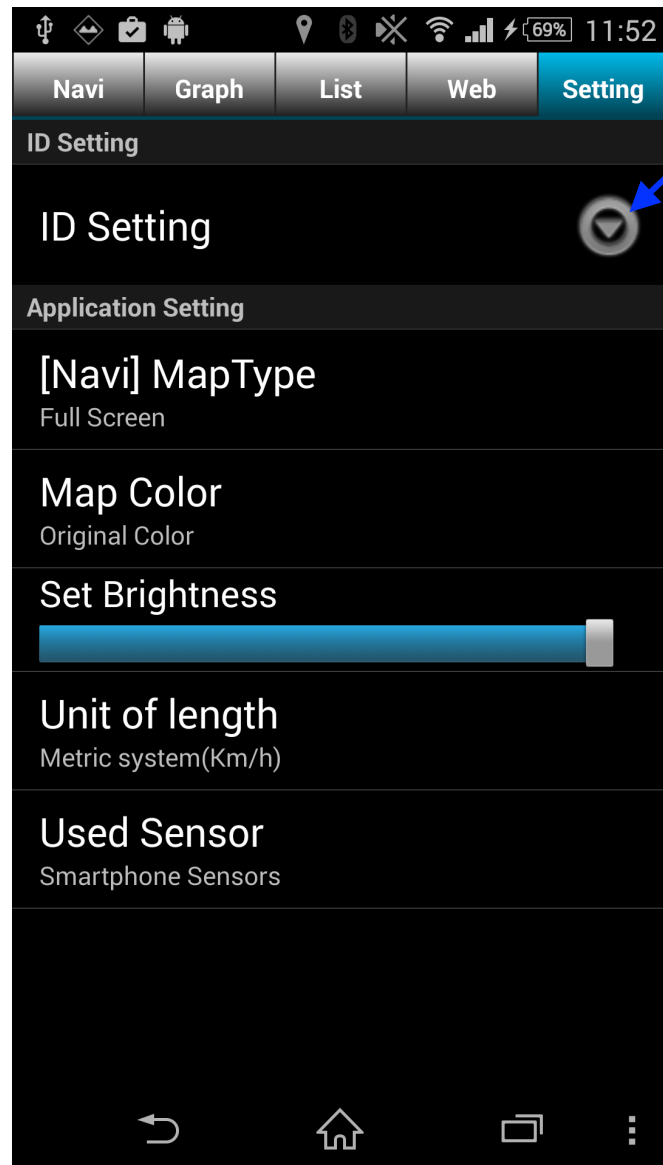
Checkbox	Recording date time	Driving distance	User comment	Status
<input checked="" type="checkbox"/>	2015/05/15 17:47:16	5.3[km]		Unupload
<input type="checkbox"/>	2015/05/15 15:09:50	4.9[km]		Unupload
<input type="checkbox"/>	2015/05/13 09:14:51	2.1[km]	バス右前少し後ろ	Uploaded
<input type="checkbox"/>	2015/05/12 19:19:09	883.0[km]	新千歳～羽田 B737 25H	Unupload
<input type="checkbox"/>	2015/05/12 18:25:36	4.4[km]	バス左後ろ	Uploaded
<input type="checkbox"/>	2015/05/12 17:03:25	93.1[km]	アクシオ ダッシュボード中央	Uploaded
<input type="checkbox"/>	2015/05/12 16:26:33	0.4[km]	アクシオ ダッシュボード中央	Uploaded
<input type="checkbox"/>	2015/05/12 12:42:47	6.9[km]		

App Screen : [Web] tab - data list on the server side -



Date Time		Distance	Country
Lat	Lon	City	
2015/05/18 10:03:56	36.09 140.09	1.1km 茨城県つくば市	Japan
2015/05/18 08:32:57	42.93 143.45	2.6km 北海道十勝支庁中川郡池田町	Japan
2015/05/18 08:26:53	42.93 143.42	1.5km 北海道十勝支庁中川郡池田町	Japan
2015/05/17 11:48:48	43.13 141.28	31.3km 北海道石狩支庁札幌市北区	Japan
2015/05/17 09:17:46	36.72 139.69	199.2km 栃木県日光市	Japan
2015/05/17 07:28:08	36.69 139.89	415.0km 栃木県宇都宮市	Japan
2015/05/16 16:10:01	39.70 140.11	31.8km 秋田県秋田市	Japan
2015/05/16 14:55:54		203.7km	Japan

App Screen : [Setting] tab



ID setting

Get free ID from
<http://map.bumprecorder.com/Users/registerFree>

When you use paid service, please contact us from
<http://www.bumprecorder.com/contact>

Data File Format of BumpRecorder

Data file will record on /data/BumpRecorder/ folder for recording date and time.

Data file will record for each recording and each sensors.

Acceleration, gyro, magnetic field, air pressure, light will record when smartphone has these sensors.

Data sample

DeviceTime	HardTime	X	Y	Z	
1416963906970	117915340330000				Header line
0	0	-119	1002	7	Basis lines : It has 1 line for each 10 sec.
3	84	-166	972	-2	
4	146	-112	1007	38	Data lines : It has 1 line for each records.
5	273	-104	951	-86	
5	348	-98	1021	36	
6	448	-113	945	-15	

Basis line

DeviceTime time : epoch seconds [ms]

HardTime time : hard wear time [ns]

Data line

DeviceTime time : Interval time from previous basis line DeviceTime. [ms]

HardTime time : Interval time from previous basis line HardTime. 1=0.1[ms]

X, Y, Z Recording value

It is quantization value by using following rate.

Unit for each sensors

Acceleration [m/s²]

Gyroscope [rad/s]

Magnetic [μT]

Pressure [hP]

Light [lux]

Quantization rate for each sensors

Acceleration 1024 / 9.8

Gyroscope 1024

Magnetic 10

Pressure 100

Litht 1

Attentions : Pressure and light has only X value.