Shanghai Fudan Microelectronics Group Company Limited

复旦微电子

FM13DT160 Demo

Smart Phone APP User Guide

2020.05

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1 FM13DT160 Demonstration PCB

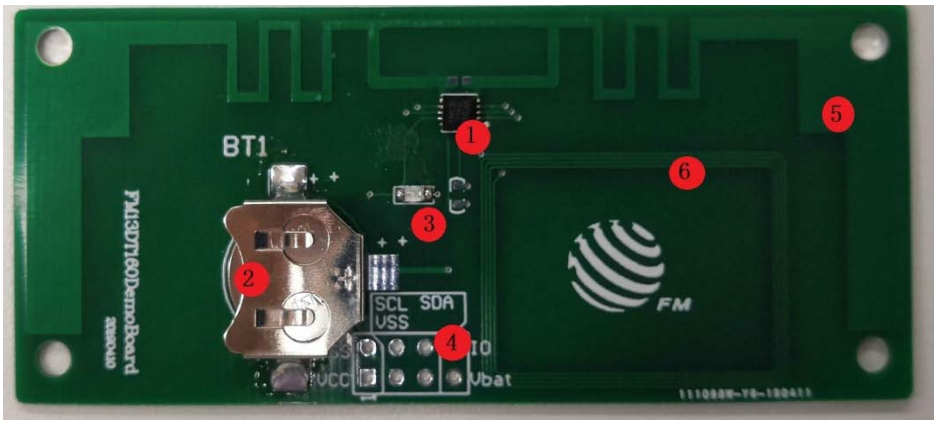


Figure 1: Top view of the demo PCB

This demonstrator circuit board consists of the following:

1、FM13DT160 IC in COB package.

2、Coin cell Battery for stand-alone operations [1]

3、LED

4、All PINs of the IC (for I2C interface with External MCU)

5、Antenna coil connections IN+ and IN-, connected with the UHF antenna

6、Antenna coil connections IN1 and IN2, connected with the HF antenna

Note [1]: Coin cell Battery Recommended info

Japan			IEC	China	Voltage (V)	Diameter*Thickness (mm)
AG10	LR54	389	SR1130	189	**1.5**	11.6*3.1

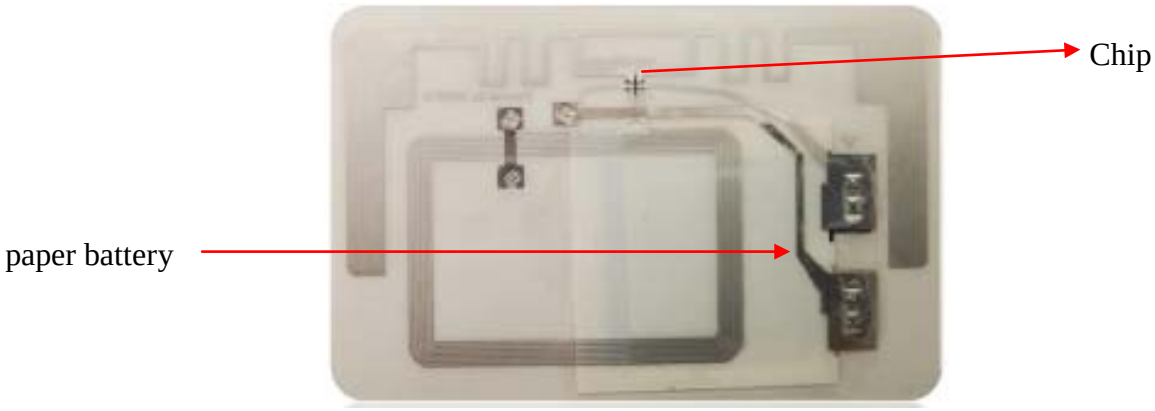
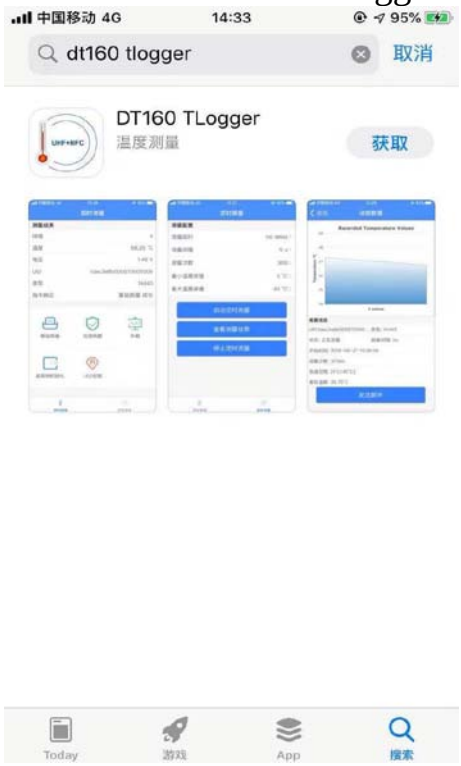


Figure 2: Top view of the Inlay Demo

2 Phone APP Download

Android：
(The APP APK contact with FMSH)

IOS：
（version：IOS13）
APP Store: DT160 TLogger



Note: APP supports English, and the phone system language is set to English and APP will automatically switch

3 Android phone Quick Start

3.1 Single time measurement

1. Launch the Android App, initial interface shown in Figure 2 as below.

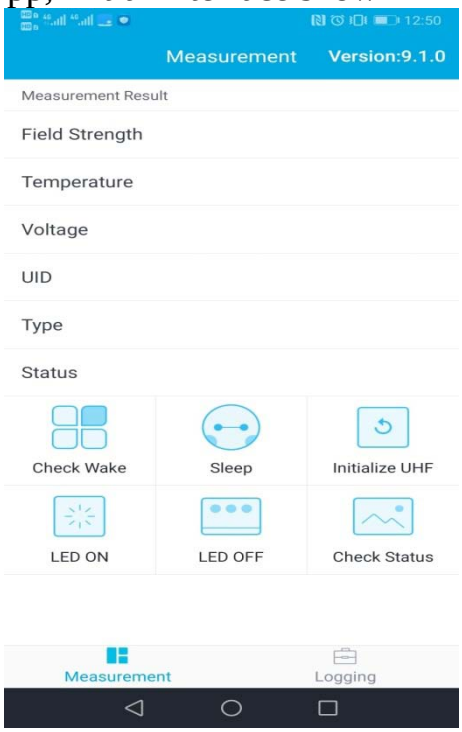


Figure 3: Initial screen after launching the Android app.

2. Hold the FM13DT160 demonstrator close to your smart phone. The Tag UID,Tempperature,Batery Voltage eg will be displayed as below once a tag is found.

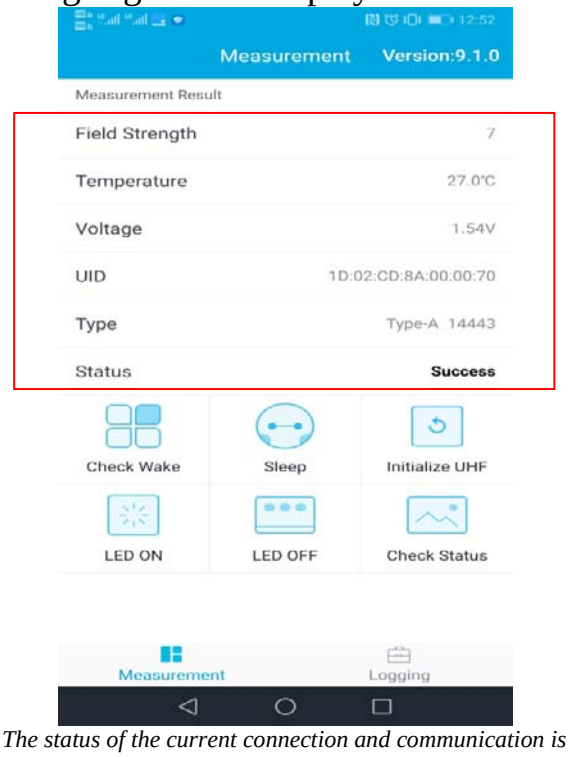


Figure 4: The status of the current connection and communication is displayed

3.2 Logging Test

1. Logging Setting

1) After click the Logging button and setting the relevant parameters,turn on the Start Logging button.

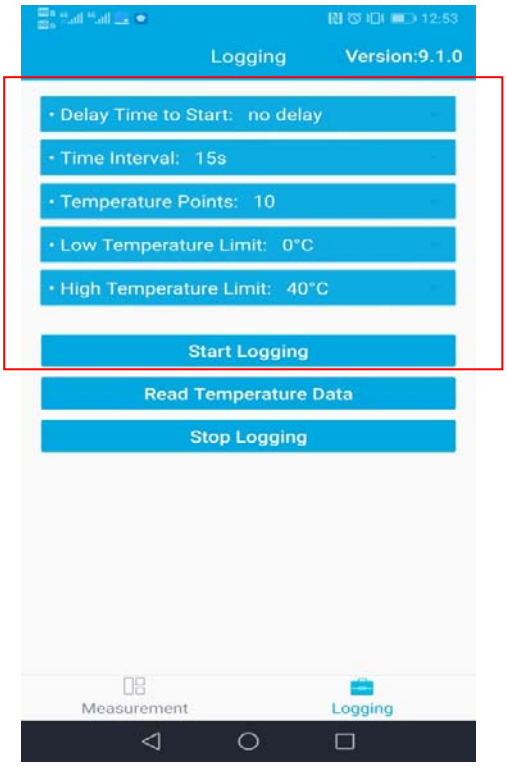


Figure 5 Logging setting and start logging process for logger temp testing

2) Approach the Tag,and The tag is starting logging process

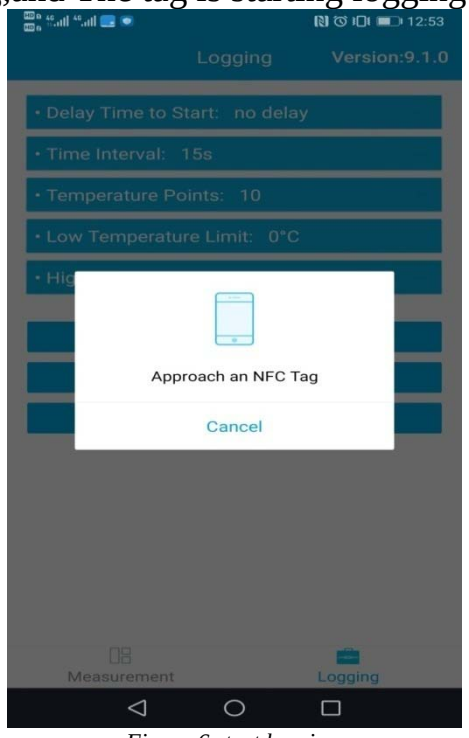


Figure 6 start logging

2. Logging data read

1) Wait for demo automatic test temperature 10 times (LED flicker 10 times the labe has no LED). Switch APP to the record read interface and let it close the demo board.

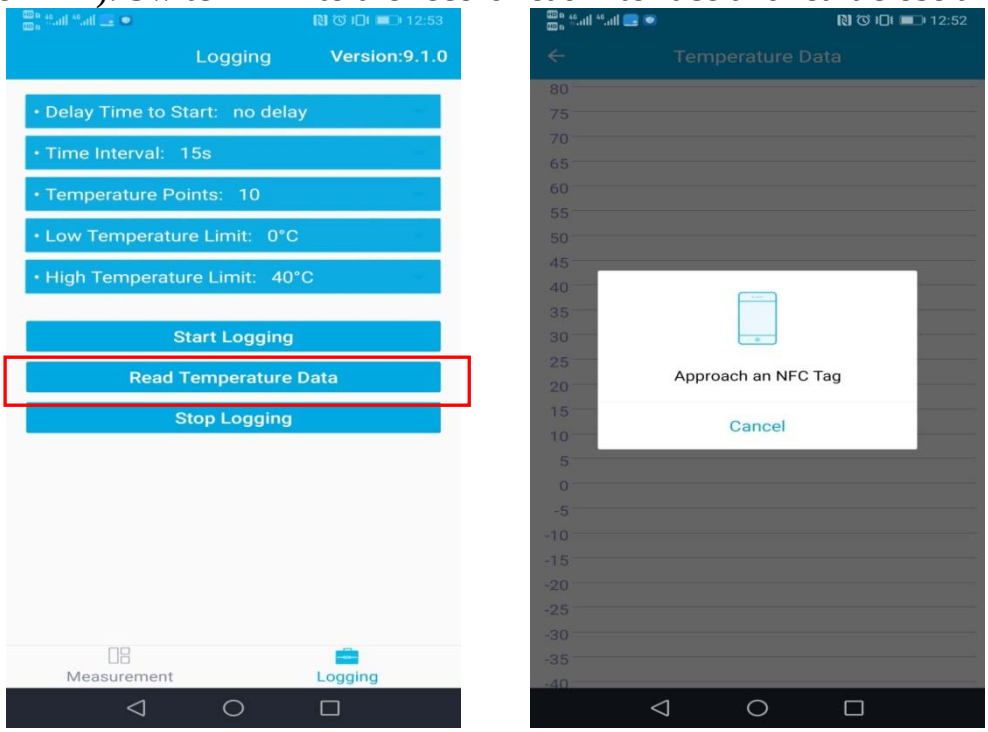


Figure 7 start read logging temperature data curves after finished measurement

2)APP will display the logging temperature data curves and hints automatically.

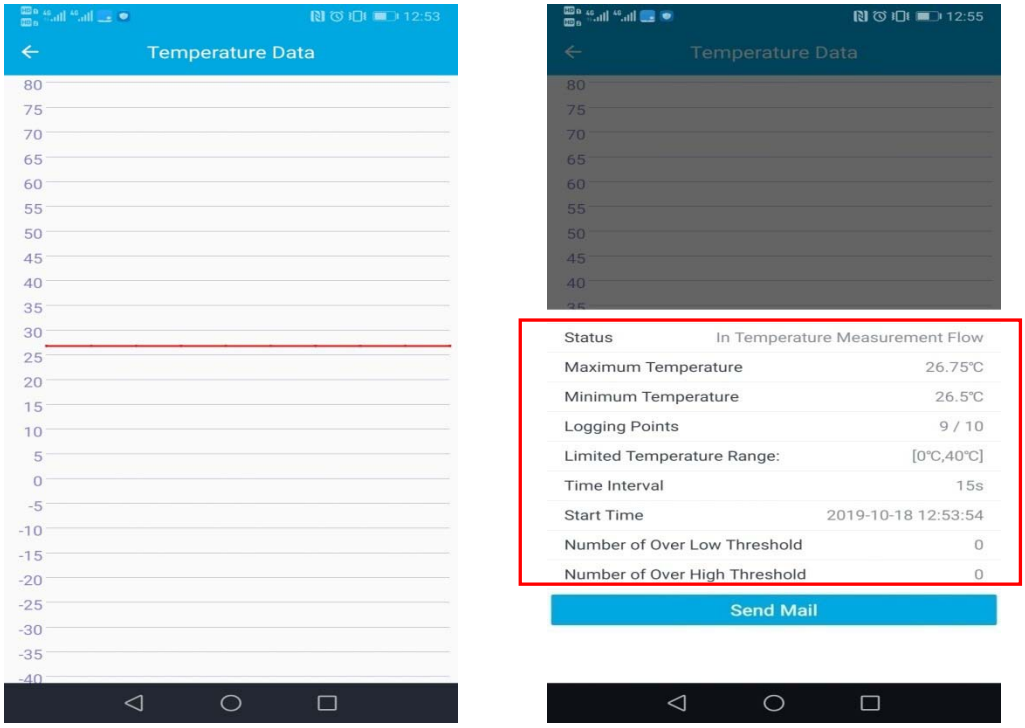


Figure 8 logging temperature data curves after finished measurement

3.Mail report

The data mail report generates the TemperatureData.xls file and sends the temperature data information

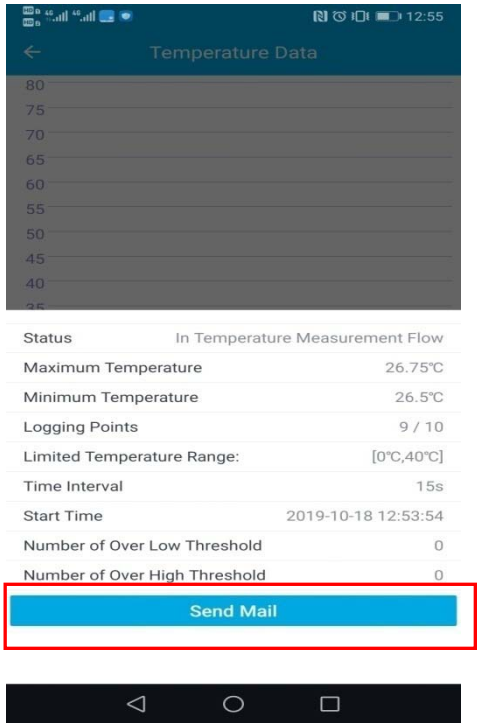


Figure 9 Send Mail control

Status	Logging Completed
Maximum Temperature	28.75℃
Minimum Temperature	27.5℃
Logging Points	10 / 10
Limited Temperature Range:	[0℃,40℃]
Time Interval	15s
Start Time	2019-10-18 17:24:48
Number of Over Low Threshold	0
Number of Over High Threshold	0
2019-10-18 17:24:48	28.75℃
2019-10-18 17:25:03	27.75℃
2019-10-18 17:25:18	27.5℃
2019-10-18 17:25:33	27.5℃
2019-10-18 17:25:48	27.5℃
2019-10-18 17:26:03	27.5℃
2019-10-18 17:26:18	28.25℃
2019-10-18 17:26:33	27.5℃
2019-10-18 17:26:48	27.5℃
2019-10-18 17:27:03	27.5℃

Figure 10:TemperatureData.xls report

3.3 LED control function

1. Turn on the LED ON button then show Approach an NFC tag interface . Let Demo close to the NFC area of the mobile phone

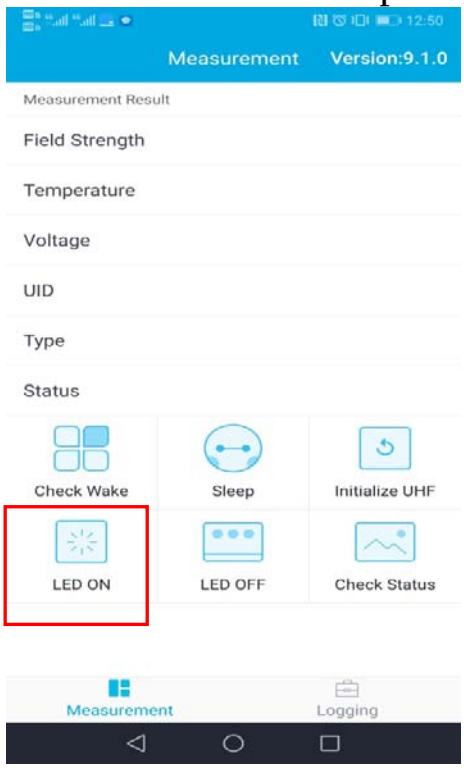


Figure 10: LED ON control

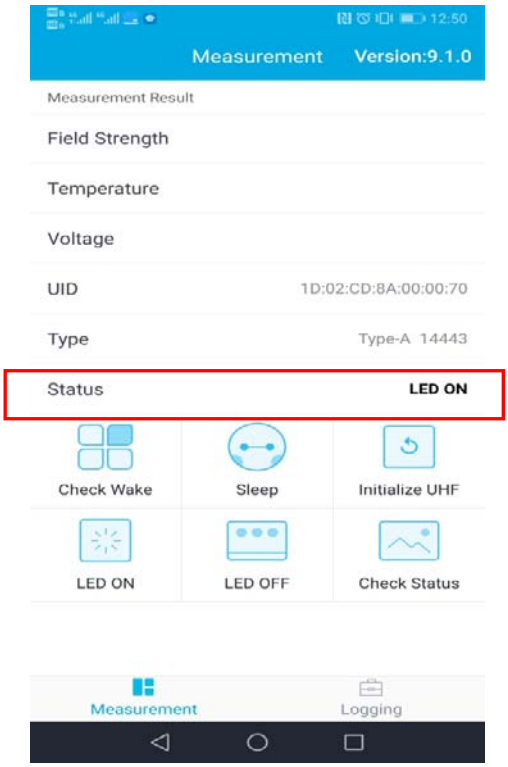


Figure 12:LED ON status

2. Turn off the LED ON button then show Approach an NFC tag interface . Let Demo close to the NFC area of the mobile phone

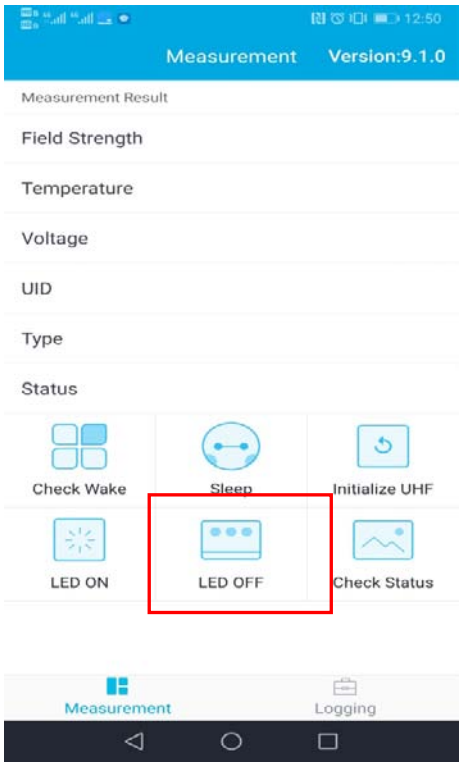


Figure 13: LED OFF control

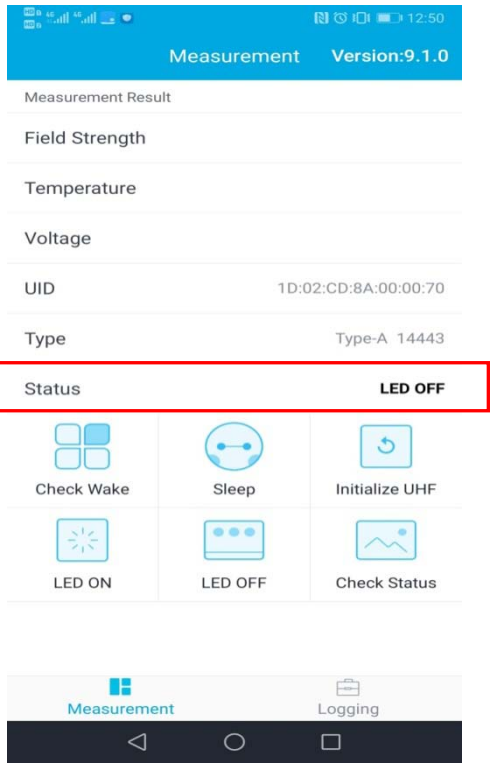


Figure 14: LED OFF control status

3.4 EPC Init REG

During the test, if the battery is re-energized after removal, the EPC parameters need to be reloaded. The control button is Initialize UHF.

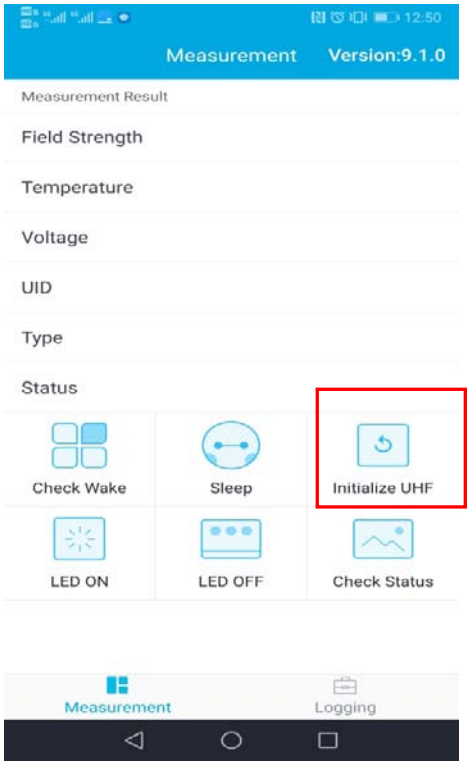


Figure 15: Initial regfile once the battery is re-energized for EPC reloading

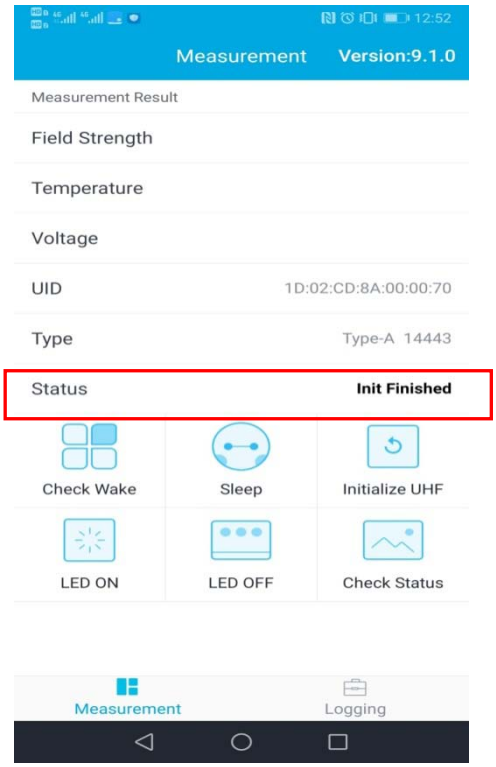


Figure 16: Initialize UHF control state

3.5 Check Status

1. Turn on the check status button.

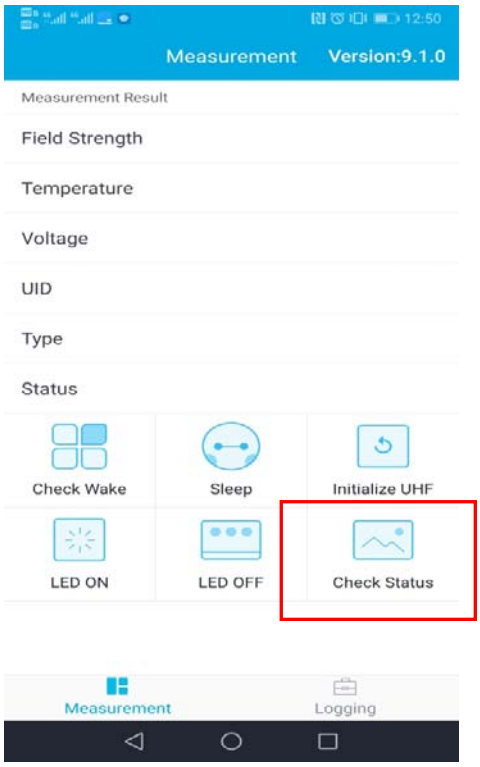


Figure 17: check status command interface

2.APP will display the tag status

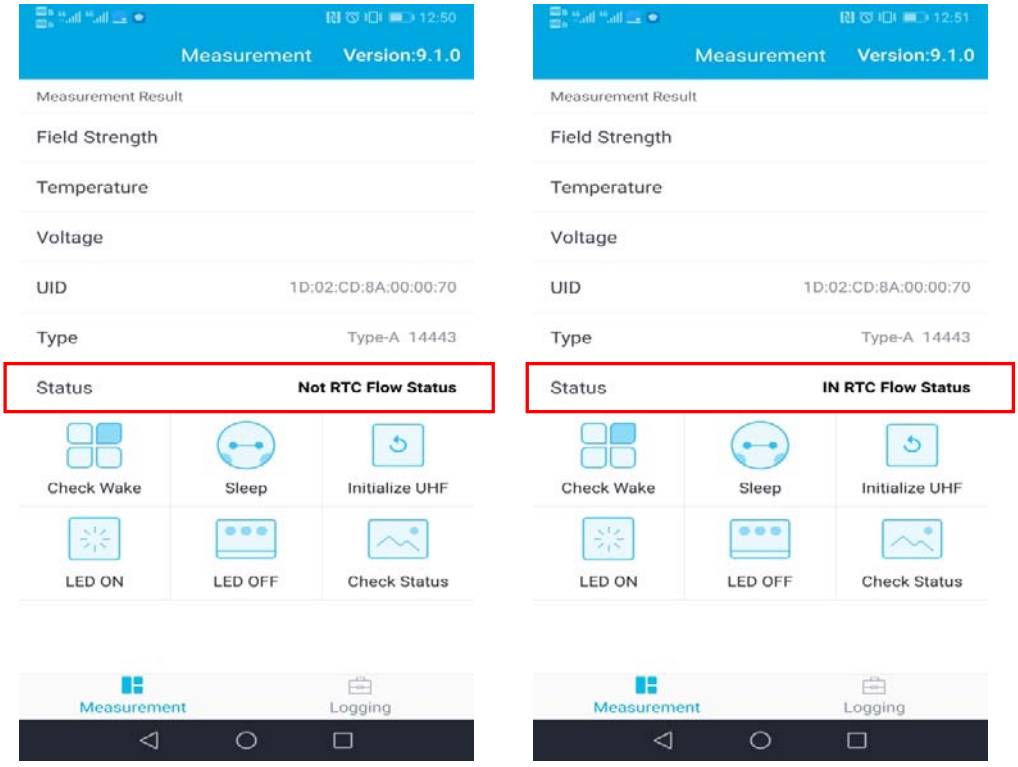


Figure 18: check status

3.6 Check Wake Status

1. Turn on the check wake button.

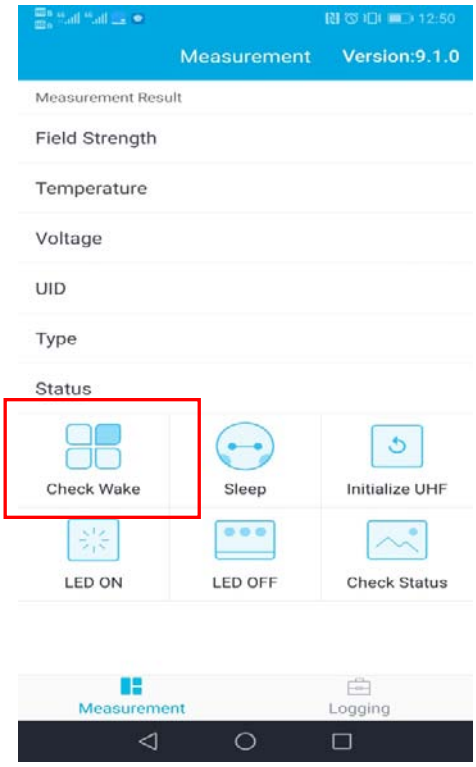


Figure 19: check status command interface

2.APP will display the tag status

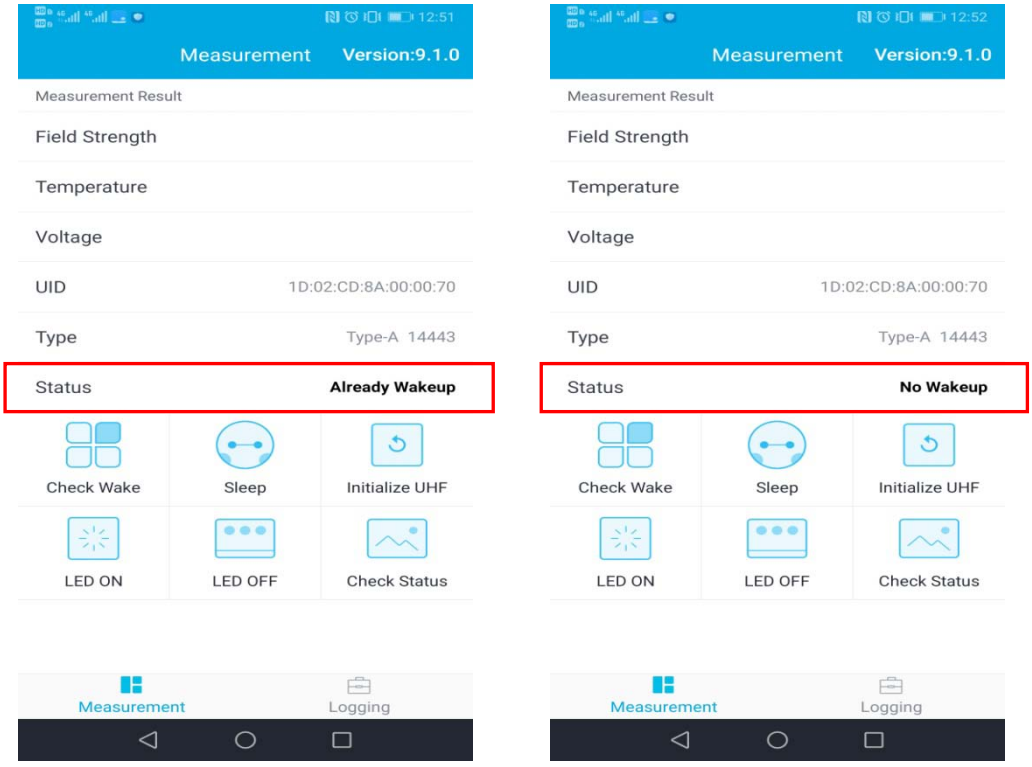
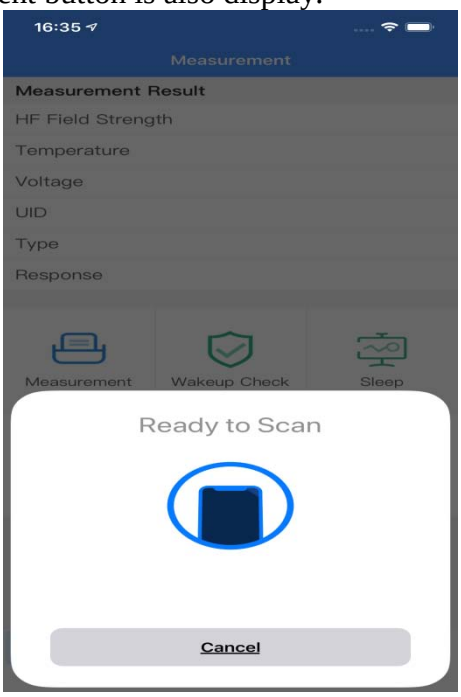


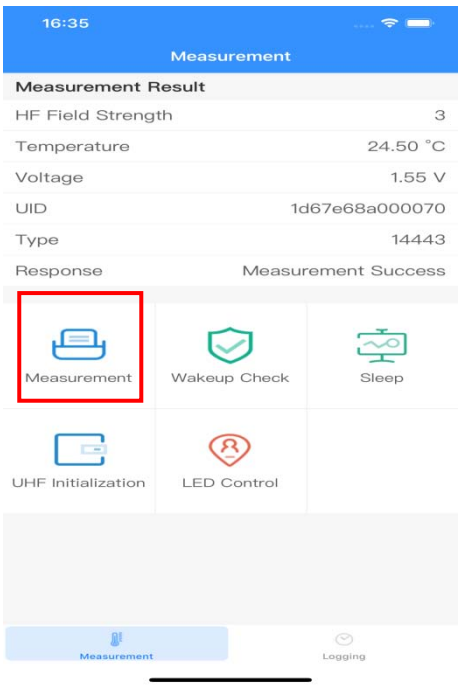
Figure 18: check status

4 IOS phone Quick Start

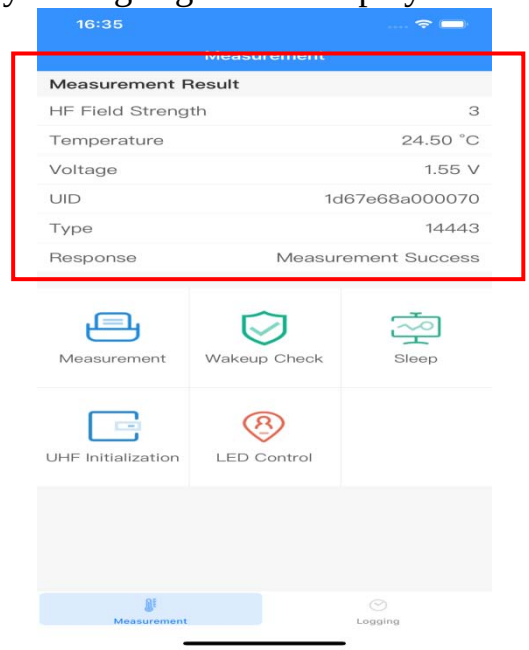
4.1 Single time measurement

1. Launch the Android App, initial interface shown as below.
Click measurement button is also display.





2. Hold the FM13DT160 demonstrator close to your smart phone. The Tag UID,Tempperature,Batery Voltage eg will be displayed as below once a tag is found.

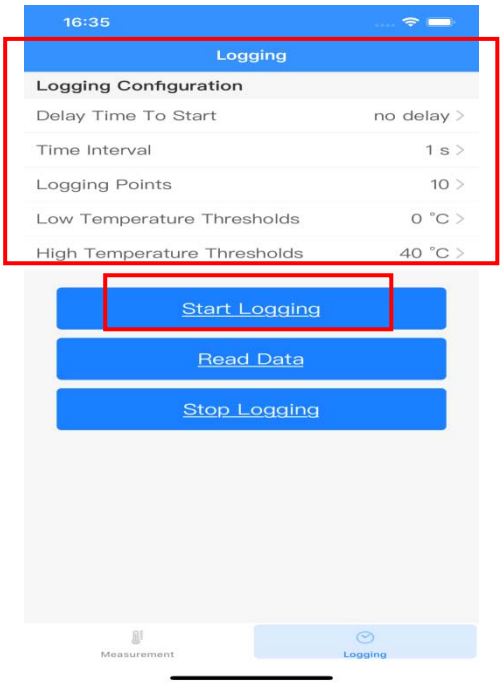


Notes: 1) The single temperature measurement is greatly affected by the field strength of the mobile phone, the height of the distance label of the mobile phone is different, and the temperature change is relatively large

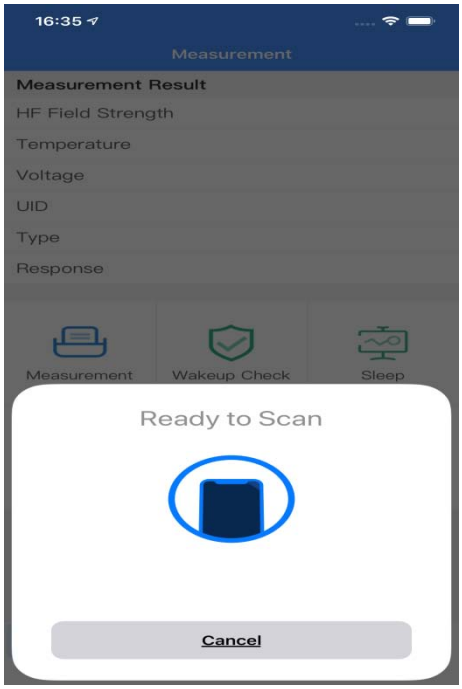
4.2 Logging Test

1. Logging Setting

1) After click the Logging button and setting the relevant parameters,turn on the Start Logging button.

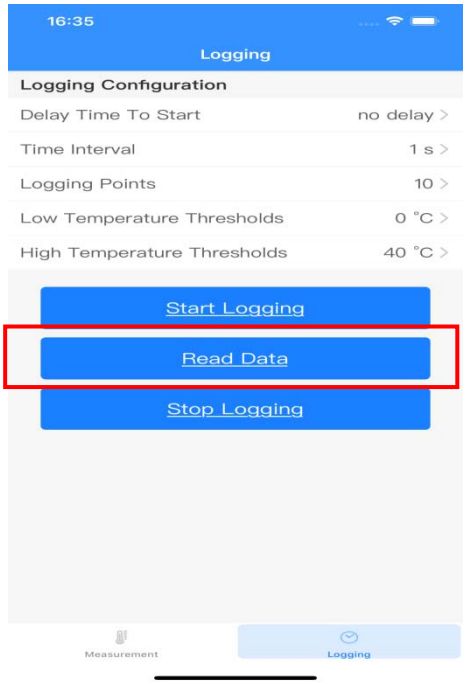


2) Approach the Tag,and The tag is starting logging process

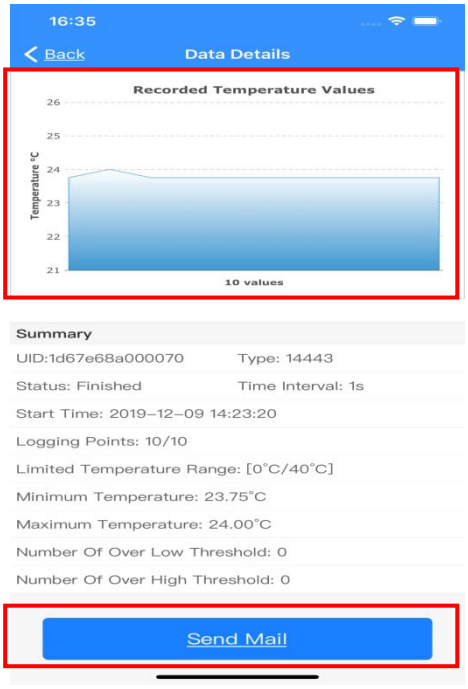


2. Logging data read

1) Wait for demo automatic test temperature setting times (LED flicker setting times the labe has no LED). Switch APP to the record read interface and let it close the demo board.



2) APP automatically generates temperature data curves and prompts for testing, and clicks the send mail button to enter the receive mail information



5 Version information

Rev	Release Data	Pages	Chapter or chart	Modifications
0.1	2018.12	13		Initial release
0.2	2019.3	14		Add IOS-iphone app quick start, updated testing screenshot, Smart Phone APP User Guide.
1.0	2019.10	16		updated APP version9.1.0
1.5	2019.12	19		Add IOS operation
1.6	2020.5	19		1.Delete Android Download link 2.Update lable image

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