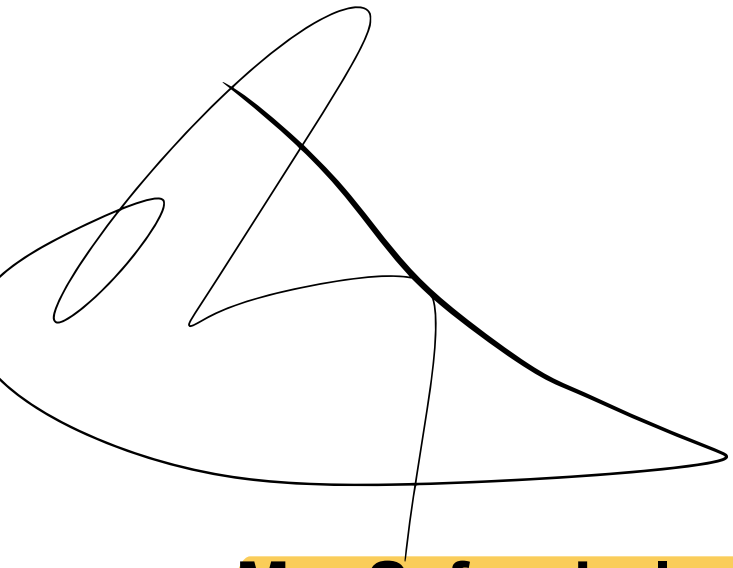

TEST PLAN

MagSafe wireless charger test plan for the IPhone

(FORMAT IEEE 829)

TEST PLAN

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1) Test Plan ID

Unique identifier: TP - MagSafe wireless charger test plan for the IPhone - 008

Testing team:

- Alex, TestLead, alex@email.net, +375(123)111-11-11
- Aksana, Tester, aksana@email.net, +375(123)111-11-22
- Vlad, Business analyst, …@...com, +1(999)444-555-55

2) References:

- International standard for wireless charging: - Qi
- How to Charge iPhone Wirelessly
- Where to Buy

3) Introduction

Purpose: This test plan describes the basic test steps and approach for testing the MagSafe wireless charger for the iPhone 14, iPhone 14 Pro, iPhone 13, iPhone 13 Pro, iPhone 12, and iPhone 12 Pro

Objectives: To test the functionality, compatibility, performance and security of the MagSafe wireless charger for your iPhone

Scope: Testing will cover the hardware and software of the wireless charger, as well as the interaction with various devices.

4) Elements of testing

- Packaging
- Documentation
- Power supply
- Cable
- MagSafe device module for IPhone phone

5) Risk issues for the software

- Probability that the phone will not stop charging after it reaches 100% charge
- Probability that the phone will erroneously display the charging process in the user interface
- The possibility that the phone will ignore the charging process
- The possibility that your phone will be damaged by excessive voltage
- Possible failure of components under test
- Lack of compatibility with planned equipment
- Risk of delayed delivery of test equipment due to sanctions and force majeure
- Probability of appearance of electronic interferences for outer equipment during the wireless charger operation or inactivity
- Risks associated with deadlines and test team

6) Functions to be tested

- Compatible with various phone models
- Wireless charging functionality
- Wireless charging efficiency under different usage conditions
- Correct recognition of charging devices
- Quality and reliability of the charging connection.
- Influence of external factors on the wireless charger (e.g. magnetic fields, electromagnetic interference).

7) Functions not to be tested

- Environmental impact of device waste after disposal
- Testing the ability to transfer data using the device's technology
- Other explicitly unspecified functions of the device

8) Approach

Levels of testing:

- Modular testing for individual components of the wireless charger;
- Integration testing to verify the interaction of the charger and various devices;
- System testing to evaluate overall performance and functionality.

Testing techniques:

- Functional testing;
- Compatibility testing;
- Performance testing;
- Security testing.

Test Environment:

- Hardware: Compatible phones.
- Software: Operating systems and drivers required for compatibility testing.

Weekly creation of test cases

9. Pass/fail criteria for the product

- The product must operate in accordance with the requirements of the technical documentation
- The device must not contain any external defects.
- The device must charge your phone
- The device must operate according to the requirements of the technical documentation
- The device must be free of external and internal defects after testing. If there are any defects, replace the device with a new one, identify the cause of the fault, fix it and continue testing.

List of tests to be carried out:

- Functional tests: All test cases must complete without critical failures.
- Compatibility tests: All units should connect and charge correctly, with no compatibility issues.
- Performance tests: Charging time and power consumption must meet specified requirements.
- Security tests: The device must meet security standards and have no security vulnerabilities

10) Suspension criteria and resume requirements

- Testing can be suspended when critical defects or safety issues, such as battery overheating, are detected;
- Resumption requires fixing bugs, fixing security issues, and retesting affected features;
- Violation of established project timelines and deadlines; Lack of necessary resources to continue testing;
- the need to carry out activities to fix and/or refine the device functionality based on the critical findings identified during testing.

11) Materials to be tested

- Test results are regularly, at least once a week on Wednesdays, documented in detail by the tester, also described by him:
- Test cases and scenarios.
- Test data sets.
- Test logs and reports.
- Defects reports with detailed information.

12) Remaining testing tasks

- Execution of test cases according to the test plan.
- Registration and tracking of defects, retesting of eliminated defects.
- Creation of test reports and summaries.

TASK	Assigned To	Status
Create Acceptance Test Plan	TM, PM, Client	
Create System/Integration Test Plan	TM, PM, Dev.	
Define Unit Test rules and Procedures	TM, PM, Dev.	
Define Turnover procedures for each level	TM, Dev	
Verify prototypes of Reports	Dev, Client, TM	

13) Environmental needs

Hardware:

- Compatible and incompatible mobile devices - iPhone 8 and later models and at least 10 devices of different models from different manufacturers with Android wireless charging capability;
- Incompatible devices with hardware-enhanced functionality (phones with stickers on the back cover with coils for charging);
- At least 20 units of test equipment to conduct various tests, including simultaneously, with the possibility of damage and rapid replacement of devices;
- Equipment with a sufficient number of power supplies to conduct tests;
- Compatible USB-C power adapter designed to transfer maximum power up to 9V and 3A;
- Incompatible power adapters that deliver too little or too much power for the device under test;

- Measuring Equipment:
  - voltmeter
  - ammeter
  - stopwatch
  - IR thermometer
  - Data logging camera

Software: Operating systems, drivers and compatibility testing tools

14) Personnel and training needs

Testers with knowledge of wireless charging technology and testing methodologies.

15) Responsibilities

Position	Name	Responsibilities
TestLead	Alex	Overall planning, coordination and reporting of testing.
Tester	Aksana	Test case design, execution, fault recording and documentation.
Project Sponsor	…	Providing the testing and development team with everything they need to conduct prompt, high-quality, comprehensive product testing.
Development team		Co-operation with testers, bug fixes and troubleshooting.

16) Schedule

Ver.	Date	Description
1.0	2023-06-21	plan creation
2.0	2023-06-22 to 2023-06-23	equipment testing
3.0	2023-06-24	adding and correcting plan data, based on intermediate results of product testing
3.3	2023-06-25	final edition

17) Risk and contingency planning

The following risks may arise when testing a wireless charger for your phone during development:

Incomplete or incorrect charging: There may be a risk of incorrect or incomplete charging of the device when using wireless charging. This may lead to user dissatisfaction and negative experiences with the product.
Response: Careful testing of the charger with different phone models and types should be carried out to ensure its reliability and compatibility. It is also important to check that the product conforms to wireless charging standards such as Qi.

Overheating: Wireless charging may cause overheating of the device or the charger, especially if used for extended periods of time or if it is improperly designed.
Response: Testing for overheating should be carried out, including checking temperature limits, thermal management and safety. If overheating problems are identified, modifications should be made to the design or materials to improve ventilation and heat dissipation.

Security breach: Use of wireless charging may create potential security risks, such as the possibility of electric shock or data compromise.
Response: When testing, special attention must be paid to checking electrical and data security. Using strong ciphers and authentication mechanisms, as well as performing penetration tests and vulnerability checks, will help reduce the risk of a security breach.

Incompatibility: Different phone models and manufacturers may have different standards and specifications for wireless charging, which may cause compatibility problems.
Response: Conduct compatibility testing with different phone models and types to ensure that the charger works properly with all supported devices. If compatibility problems are found, additional adjustments or modifications to the product may be necessary.

Sickness and absence: Sickness and absence of key team members can lead to reduced productivity and delays in completing tasks.
Response: A plan for reserving resources and reallocating tasks should be in place to cope with possible staff absence. It is also advisable to maintain a healthy work regime, including the provision of holidays and sick days for staff.

Risk of sanctions and restrictions: The importation of essential components or equipment may be at risk of sanctions or restrictions by national or international bodies.
Response: A thorough risk analysis must be undertaken and compliance with all applicable legal and regulatory requirements must be ensured. If there is a risk of sanctions, alternative suppliers or materials should be sought and legal advice sought.

Financial risks: Delays in testing, non-compliance or unexpected problems may require additional investment to resolve problems and meet project requirements.
Responses: Back-up financial resources or contingency plans should be in place to deal with possible financial risks. Regular updating of the project budget and conducting a risk analysis will help to identify potential financial problems in advance.

Risks of testing delays: Technical problems, unexpected complexities or inadequate team organisation may lead to test delays and missed deadlines.
Responses: Careful project planning should be undertaken, defining realistic timelines and taking into account possible problems. Regular updates of the project plan, constant communication with the team and prompt response to problems will help minimise the risk of deadline delays.

18) Approvals

Approval of the test plan:

Position	Name	Date	Signature
TestLead	Alex	2023-06-21	+
Tester	Aksana		+
Business analyst	Vlad		
PM	…		

19) Glossary

Qi - (pronounced /tʃiː/ *CHEE*;[1] from the Chinese word 气 qi; traditional Chinese: 氣) is an interface standard for wireless power transfer using inductive charging. The standard allows compatible devices, such as smartphones, to charge their batteries when placed on a Qi charging pad, which can be effective over distances up to four cm (1.6 in).[2]

The Qi standard is developed by the Wireless Power Consortium.[1] As a universal, open standard Qi-enabled devices are able to connect to Qi chargers from any manufacturer.

Qi was first released in 2008, and by 2017 was incorporated into more than 200 smartphones, tablets and other devices.[3] As of February 2020, there are 488 manufacturers working with the standard including Apple, Asus, Google, Huawei, LG Electronics, Samsung, Xiaomi and Sony.[4]

In January 2023, the consortium announced Qi2, which will update the existing standard and include a magnetic connection based on Apple's MagSafe technology.[5]

*19.1) **Glossary*** by ChatGPT

TM - typically stands for "Test Manager." A test manager is responsible for planning, coordinating, and managing the software testing process.
PM - is an abbreviation for "Project Manager." A project manager is responsible for planning, coordinating, and managing a project, including defining goals, allocating resources, setting deadlines, and overall team collaboration.
Dev - is short for "Developer." A developer is usually responsible for creating software or websites, writing code, and implementing functionality according to project requirements.