



SAR Exclusion Report

FOR:

Manufacturer: Apple Inc.
Model Number: A1644
FCC ID: BCGA1644

Test Report #: SAR_APPLE-166-15001_FCC_Rev2

Date of Report: August 13, 2015



CETECOM Inc.

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TABLE OF CONTENTS

1. Assessment	3
2. Administrative Data	4
2.1. Identification of the Testing Laboratory Issuing the SAR Test Report	4
2.2. Identification of the Client	4
2.3. Identification of the Manufacturer	4
3. Equipment under Test (EUT)	5
3.1. General Specification of the Equipment under Test	5
3.1. Antenna Information	5
3.2. Technical Specification of Supported Radios	5
4. Subject of Investigation	6
4.1. The FCC Exposure Criteria	6
5. Stand-Alone SAR Evaluation Exclusion	6
6. Report History	6

1. Assessment

The following device was evaluated against the limits for general population uncontrolled exposure specified in FCC 2.1093 according to SAR evaluation exclusion requirements specified in FCC regulation as listed in KDB 447498 and no deviations were ascertained during the course of the assessment.

Manufacturer	Description	Model #
Apple Inc.	Bluetooth Device with BDR, EDR, and LE support	A1644

Responsible for Testing Laboratory:

August 13, 2015 Compliance Franz Engert
(Compliance Manager)

Digitally signed by Franz Engert
DN: cn=Franz Engert, c=US, o=CETECOM, ou=Compliance, email=franz.engert@cetecom.com

Date	Section	Name	Signature
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Responsible for the Report:

August 13, 2015 Compliance Josie Sabado
(Test Lab Manager)



Date	Section	Name	Signature
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The test results of this test report relate exclusively to the test item specified in Section 3. CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

2. Administrative Data

2.1. Identification of the Testing Laboratory Issuing the SAR Test Report

Company Name	CETECOM Inc.
Department	Compliance
Address	411 Dixon Landing Road Milpitas, CA 95035 U.S.A.
Telephone	+1 (408) 586 6200
Fax	+1 (408) 586 6299
Industry Canada Company Number	3462B
Test Lab Manager	Josie Sabado
Responsible Project Manager	Josie Sabado

2.2. Identification of the Client

Applicant's Name	Apple Inc.
Street Address	1 Infinite Loop
City/Zip Code	Cupertino, CA 95014
Country	USA

2.3. Identification of the Manufacturer

Same as above client.

3. Equipment under Test (EUT)

3.1. General Specification of the Equipment under Test

Model No:	A1644
FCC ID:	BCGA1644
Product Type:	Portable
RF Exposure Environment:	General / Uncontrolled
Exposure Conditions:	Body Supported
Supported Radios:	Bluetooth v2.1 + EDR Bluetooth LE (v4.2)

3.1. Antenna Information

Antenna	Type	Frequency (MHz)	Manufacturer Stated Max Peak Gain (dBi)
Bluetooth	Slot Antenna	2400 – 2483.5	6

3.2. Technical Specification of Supported Radios

Signal Type	Duty Cycle	Type(s) of Modulation	Uplink Transmit Frequency Range (MHz)	Declared Maximum Conducted Output Power (dBm)
Bluetooth 2.1 + EDR	46%	GFSK, $\pi/4$ DQPSK, 8DPSK	2400 – 2483.5	6.9
Bluetooth 4.2	63%	GFSK	2400 – 2483.5	4

4. Subject of Investigation

The objective of the evaluation done by CETECOM Inc. was to assess the applicability of SAR evaluation exclusion according to methods described in applicable standards.

4.1. The FCC Exposure Criteria

The FCC SAR test exclusions are set by FCC KDB 447498 section 4.3.

5. Stand-Alone SAR Evaluation Exclusion

According to KDB 447498, SAR evaluation can be excluded if the following equation is satisfied:

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$$

The maximum power of channel is 4.9 mW (6.9 dBm). A minimum test separation distance of 5 mm is used for this calculation because the minimum test separation distance is less than 5 mm. Using the above equation:

$$[(4.9 \text{ mW})/(5 \text{ mm})] \cdot [\sqrt{2.480}] = 1.5$$

SAR testing is excluded because the exclusion threshold of 1.5 is less than 3.0

6. Report History

Date	Report Name – Changes to Report	Report prepared by
July 15, 2015	SAR_APPLE-166-15001_FCC 1. First Version	J. Donnellan
August 4, 2015	SAR_APPLE-166-15001_FCC_Rev1 1. Updated model number 2. Updated device description 3. Updated antenna type 4. Replaces previous test report number	J. Sabado
August 13, 2015	SAR_APPLE-166-15001_FCC_Rev2 1. Updated section 3.1, 3.2 2. Replaces previous test report number	J. Sabado