

Test Report

Product	R10000 Apple Dongle
Name and address of the applicant	GRUNDFOS Management A/S Poul Due Jensens Vej 7 DK-8850 Bjerringbo, Denmark
Name and address of the manufacturer	Same as applicant.
Model	MI204M01
Rating	/
Trademark	/
Serial number	00032
Additional information	2.4GHz Transceiver
Tested according to	Parts of FCC Part 15.247 Digital Transmission Systems Parts of Industry Canada RSS-210, Issue 8 Low Power Licence-Exempt Radiocommunications Devices
Order number	237880
Tested in period	2013.06.04
Issue date	2013.07.24
Name and address of the testing laboratory	 FCC No: 994405 IC OATS: 2040D-1 Instituttveien 6 Kjeller, Norway TEL: (+47) 64 84 57 00 FAX: (+47) 64 84 57 05 IC: 10447A-MI204M01 FCC ID: OG3MI204M01
 Prepared by Bjørn Nordset  Approved by Frode Sveinsen	
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1 INFORMATION

1.1 Test Item

Name :	R10000 Apple Dongle
Model/version :	MI204M01
FCC ID:	OG3MI204M01
IC :	10447A-MI204M01
Serial number :	00032
Hardware identity and/or version:	/
Software identity and/or version :	/
Frequency Range :	2405 – 2480 MHz
Number of Channels :	16
Type of Modulation :	DSSS (QPSK)
Rated output power:	-0.55 dBm(0.79mW)
Data rate:	250kbps
User Frequency Adjustment :	None
Type of Power Supply :	Power from Ipad
Antenna Connector :	PCB antenna
Antenna Diversity Supported :	No
Desktop Charger :	/

Contact Information

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Description of Test Item

The tested EUT is a 2.4GHz remote control for pumps.

The EUT is identical to the model MI202M01 (FCC ID: OG3MI202M01), except that the interface has been changed to fit new Iphone interface. Therefore this test report covers only radiated emissions below 1 GHz, all other tests are covered by Nemko test report no. 204001-5.

Exposure Evaluation

See Nemko test report no. 204001-5.

1.2 Test Environment

1.2.1 *Normal test condition*

Temperature:	21.6 °C
Relative humidity:	40.4 %
Normal test voltage:	3.7 V DC (Powered from host Ipad)

The radiated emissions tests were performed with the EUT powered from an Ipad. The Ipad was fully charged during all tests.

The values are the limits registered during the test period.

2 TEST REPORT SUMMARY

2.1 General

All measurements are traceable to national standards.

The tests were conducted for the purpose of demonstrating compliance with FCC CFR 47 Part 15, paragraph 15.247 and Industry Canada RSS-210 Issue 8.

Radiated tests were conducted in accordance with ANSI C63.4-2003. The radiated tests were made in a semi-anechoic chamber at measuring distances of 3m and 10m.

☒ New Submission

☒ Production Unit

☐ Class II Permissive Change

☐ Pre-production Unit

DTS Equipment Code

☐ Family Listing



THIS TEST REPORT APPLIES ONLY TO THE ITEM(S) AND CONFIGURATIONS TESTED.

Deviations from, additions to, or exclusions from the test specifications are described in "Summary of Test Data".

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2.2 Test Summary

Name of test	FCC Part 15 reference	RSS-210 Issue 8 reference	Result
Antenna Requirement	15.203	7.1.4 (RSS-GEN)	Pass*
Power Line Conducted Emission	15.107(a) 15.207(a)	7.2.2 (RSS-GEN)	Pass*
Minimum 6 dB Bandwidth	15.247(a)(2)	A8.2	Pass*
Peak Power Output	15.247(b)	A8.4	Pass*
Power Spectral Density	15.247(d)	A8.2	Pass*
Spurious Emissions (Antenna Conducted)	15.247(c)	A8.5	Pass*
Spurious Emissions (Radiated)	15.247(c) 15.109(a) 15.209(a)	A8.5	Pass

*See Nemko test report no. 204001-5

2.3 Description of modification for Modification Filing

Not applicable.

2.4 Comments

All ports were populated during spurious emission measurements.

2.5 Family List Rational

Not Applicable.

3 TEST RESULTS

3.1 Spurious Emissions (Radiated)

Para. No.: 15.247 (c)

Test Results: Complies

Radiated Emissions 30 – 1000 MHz

Detector: Peak

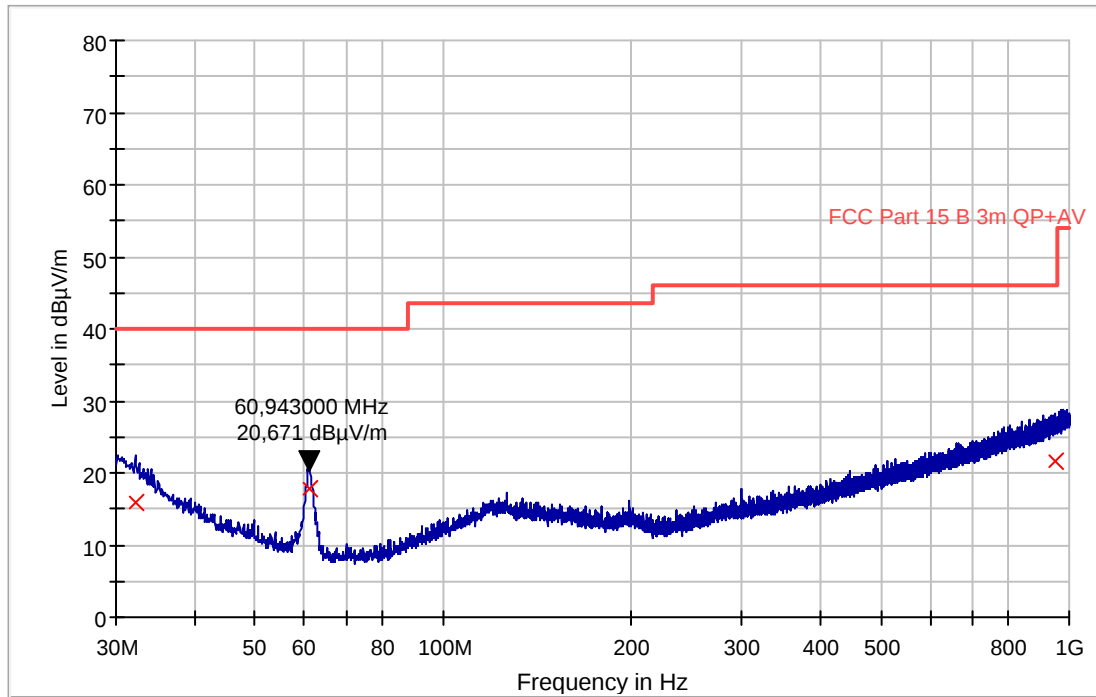
Measuring distance 3m.

All values are below the limit even when measured with Peak Detector.

Instruments used: 1, 2 and 3

Radiated Emissions, Channel 11, 30 – 1000 MHz, VP and HP, @3m

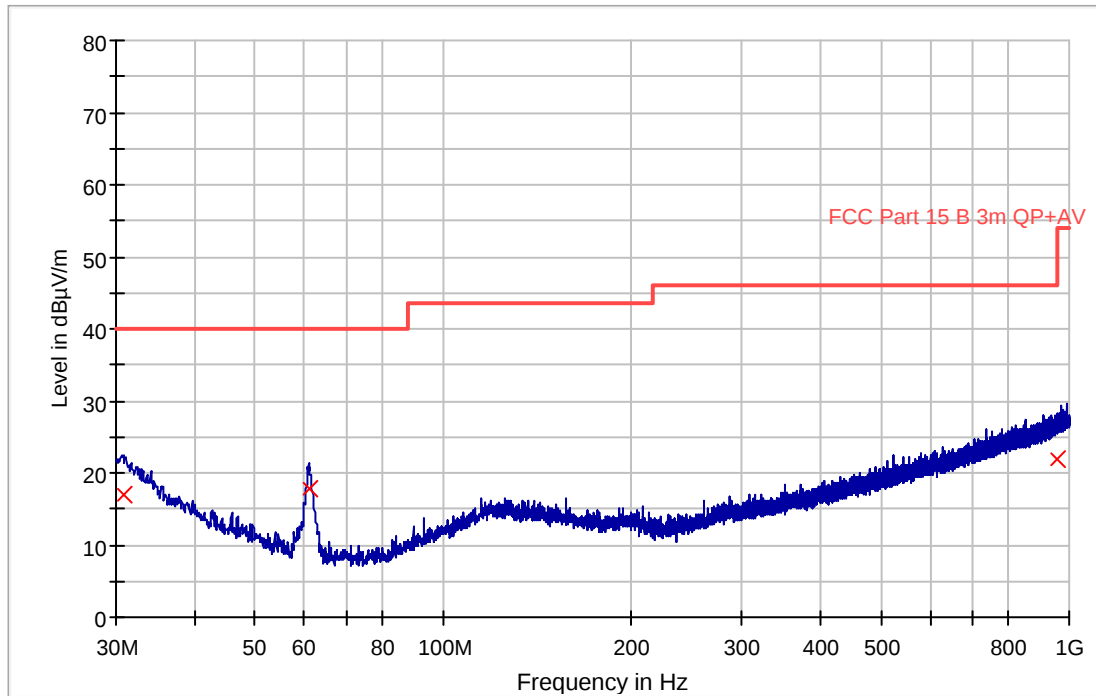
NTC FCC Pt15 Class B 30-1000M 3m



Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
32.204432	16.0	1000.0	120.000	100.0	V	102.0	-3.7	24.0	40.0	
61.052177	17.7	1000.0	120.000	100.0	V	45.0	-15.7	22.3	40.0	
950.532664	21.7	1000.0	120.000	100.0	H	271.0	2.2	24.3	46.0	

Radiated Emissions, Channel 18, 30 – 1000 MHz, VP and HP, @3m

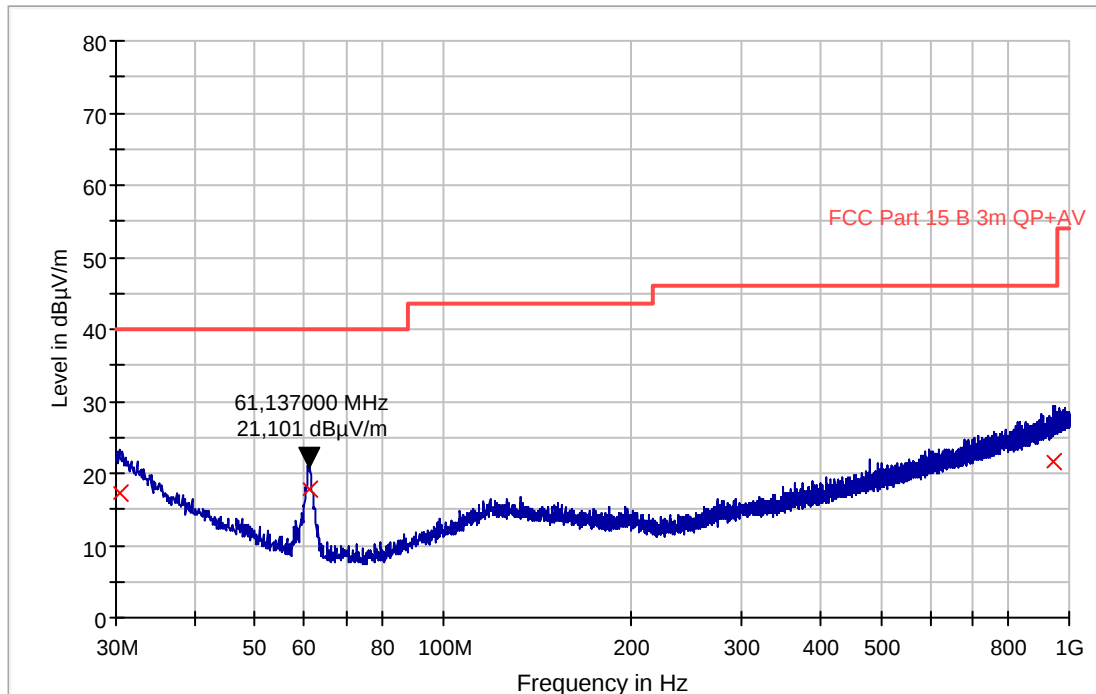
NTC FCC Pt15 Class B 30-1000M 3m



Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
30.802352	17.0	1000.0	120.000	100.0	V	176.0	-2.5	23.0	40.0	
60.928105	17.9	1000.0	120.000	100.0	V	356.0	-15.7	22.1	40.0	
956.925556	21.8	1000.0	120.000	135.0	H	60.0	2.3	24.2	46.0	

Radiated Emissions, Channel 26, 30 – 1000 MHz, VP and HP, @3m

NTC FCC Pt15 Class B 30-1000M 3m



Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
30.361306	17.3	1000.0	120.000	138.0	H	311.0	-2.1	22.7	40.0	
61.161570	17.7	1000.0	120.000	100.0	V	32.0	-15.7	22.3	40.0	
941.552335	21.7	1000.0	120.000	100.0	V	230.0	2.1	24.3	46.0	

4 LIST OF TEST EQUIPMENT

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the test laboratory.

No.	Instrument/ ancillary	Type of instrument/ ancillary	Manufacturer	Ref. no.	Cal. Date	Cal. Due
1	ESU40	EMI Test Receiver	Rohde & Schwarz	LR 1639	2012-06-05	2014-06-05
2	JB3	Antenna Log Periodic	Sunol Sciences Corp.	N-4525	2012-10-11	2015-10-11
3	LNA6900	Pre-amplifier	Teseq	LR 1593	2011-11	2013-11

5 BLOCK DIAGRAM

5.1 Test Site Radiated Emission

