

Jabra END080W(Wukong-C) Antenna report

Revision: 1

Author: Luisa Gong

Date: 2023-09-19

Revision History:

Revision	Date	Change by	Description
1	2023.09.19	Luisa Gong	First Revision

Table of Contents

1	Introduction	3
2	Specification	4
2.1	Electrical Properties	4
2.2	Physical Properties	4
3	Anechoic Chamber	5
4	Results	6
4.1	Conducted power	6
4.2	Total radiated power.....	6
4.3	Antenna patterns	6
5	Conclusion	13

This document is the property of GN Audio A/S and is to be treated as confidential by the party to whom it has been submitted by GN Audio A/S and is not to be disclosed to any third party without the specific prior written permission of GN Audio A/S.
© 2016 GN Audio A/S. All rights reserved.

1 Introduction

This document describes the radiation performance measurements made on a Jabra Wukong-C. The measurement results provided in this report are: the total radiated power at three frequencies and the antenna radiation patterns at three frequencies in free space (the measurement contains computer, the dongle need to be connected to computer to power on).

The measurements have been performed by:

Luisa Gong

RF Engineer

GN Audio A/S

2 Specification

2.1 Electrical Properties

Frequency Range:	2.402GHz ~2.480GHz
Impedance:	50 Ω nominal
Radiation:	omni-directional

2.2 Physical Properties

Type: PCB antenna

Operating temp: -20 ~ +60 °C

3 Anechoic Chamber



This document is the property of GN Audio A/S and is to be treated as confidential by the party to whom it has been submitted by GN Audio A/S and is not to be disclosed to any third party without the specific prior written permission of GN Audio A/S.
© 2016 GN Audio A/S. All rights reserved.

4 Results

4.1 Conducted power

Results:

a conducted output power of 10dBm on each channel.

4.2 Total radiated power

Channel	0	39	78
Frequency[MHz]	2402	2441	2480
Peak Equivalent isotropic radiated power (EIRP)	14.44 dBm	13.69 dBm	13.32 dBm
Total radiated power	7.29 dBm	6.73 dBm	6.24 dBm

4.3 Antenna patterns

2.402 GHz**CTIA TRP Report (RP_Bluetooth_ch0_tot)****Common Information**

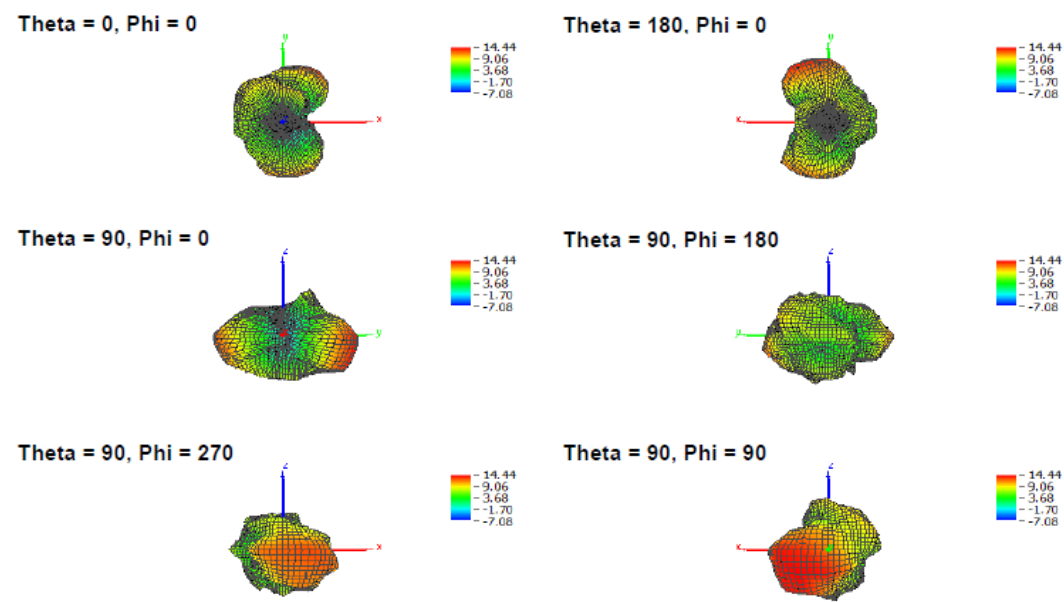
Test Description:	GN OTA Test Report
Operating Conditions:	Wukong-C_TA_X270L_TRP_#5
Operator Name:	Luisa
Comment:	

Test Information

Test Method:	Radiated Power Mobile Phone
Test Condition:	FS: Free Space
EUT Identification:	Device Name: Bluetooth DU, BT address: 000046676101
Radio Link:	Bluetooth; Channel 0 (2402.000 MHz)
Test Time:	Start: 8/4/2023 3:54:17 PM; Stop: 8/4/2023 4:13:42 PM
CMU200 Connectors:	In: RF2 (45.0 dB), Out: RF2 (45.0 dB)
Cal Data Hor:	18.71 dB (X-OTA_OTA_RadPwr_2205-2695MHz-Horizontal-Att)
Cal Data Ver:	19.74 dB (X-OTA_OTA_RadPwr_2205-2695MHz-Vertical-Att)

OTA Evaluation Results

Total Radiated Power	7.29 dBm
Peak EIRP	14.44 dBm
Directivity	7.14 dBi
Peak Gain	14.44 dBi
NHPRP 45j ã	6.34 dBm
NHPRP 45j ã / TRP	-0.95 dB
NHPRP 45j ã / TRP	80.37 %
NHPRP 30j ã	5.27 dBm
NHPRP 30j ã / TRP	-2.02 dB
NHPRP 30j ã / TRP	62.86 %
NHPRP 22.5j ã	4.35 dBm
NHPRP 22.5j ã / TRP	-2.94 dB
NHPRP 22.5j ã / TRP	50.82 %
UHRP	3.38 dBm
UHRP / TRP	-3.91 dB
UHRP / TRP	40.66 %
LHRP	5.02 dBm
LHRP / TRP	-2.27 dB
LHRP / TRP	59.34 %
PGRP (0-120j ã)	6.17 dBm
PGRP / TRP	-1.12 dB
PGRP / TRP	77.33 %
Front/Back Ratio	7.09
PhiBW	59.7 deg
PhiBW Up	29.5 deg
PhiBW Down	30.2 deg
ThetaBW	51.9 deg
ThetaBW Up	24.6 deg
ThetaBW Down	27.4 deg
Boresight Phi	75 deg
Boresight Theta	105 deg
Maximum Power	14.44 dBm
Minimum Power	-7.08 dBm
Average Power	6.72 dBm
Max/Min Ratio	21.51 dB
Max/Avg Ratio	7.72 dB
Min/Avg Ratio	-13.79 dB
Worst Single Value	-22.96 dBm



This document is the property of GN Audio A/S and is to be treated as confidential by the party to whom it has been submitted by GN Audio A/S and is not to be disclosed to any third party without the specific prior written permission of GN Audio A/S.
© 2016 GN Audio A/S. All rights reserved.

2.441GHZ**CTIA TRP Report (RP_Bluetooth_ch39_tot)****Common Information**

Test Description:	GN OTA Test Report
Operating Conditions:	Wukong-C_TA_X270L_TRP_#5
Operator Name:	Luisa
Comment:	

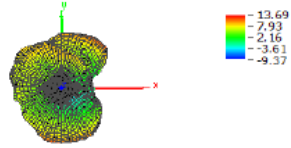
Test Information

Test Method:	Radiated Power Mobile Phone
Test Condition:	FS: Free Space
EUT Identification:	Device Name: Bluetooth DU, BT address: 000046676101
Radio Link:	Bluetooth; Channel 39 (2441.000 MHz)
Test Time:	Start: 8/4/2023 3:54:17 PM; Stop: 8/4/2023 4:13:42 PM
CMU200 Connectors:	In: RF2 (45.0 dB), Out: RF2 (45.0 dB)
Cal Data Hor:	18.60 dB (X-OTA_OTA_RadPwr_2205-2695MHz-Horizontal-Att)
Cal Data Ver:	19.59 dB (X-OTA_OTA_RadPwr_2205-2695MHz-Vertical-Att)

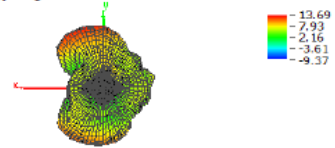
OTA Evaluation Results

Total Radiated Power	6.73 dBm
Peak EIRP	13.69 dBm
Directivity	6.97 dBi
Peak Gain	13.69 dBi
NHPRP 45j ã	5.78 dBm
NHPRP 45j ã / TRP	-0.95 dB
NHPRP 45j ã / TRP	80.36 %
NHPRP 30j ã	4.71 dBm
NHPRP 30j ã / TRP	-2.01 dB
NHPRP 30j ã / TRP	62.88 %
NHPRP 22.5j ã	3.79 dBm
NHPRP 22.5j ã / TRP	-2.94 dB
NHPRP 22.5j ã / TRP	50.85 %
UHRP	2.97 dBm
UHRP / TRP	-3.76 dB
UHRP / TRP	42.06 %
LHRP	4.36 dBm
LHRP / TRP	-2.37 dB
LHRP / TRP	57.94 %
PGRP (0-120j ã)	5.66 dBm
PGRP / TRP	-1.07 dB
PGRP / TRP	78.18 %
Front/Back Ratio	6.57
PhiBW	59.7 deg
PhiBW Up	28.8 deg
PhiBW Down	30.8 deg
ThetaBW	50.8 deg
ThetaBW Up	23.0 deg
ThetaBW Down	27.8 deg
Boresight Phi	75 deg
Boresight Theta	105 deg
Maximum Power	13.69 dBm
Minimum Power	-9.37 dBm
Average Power	6.08 dBm
Max/Min Ratio	23.07 dB
Max/Avg Ratio	7.61 dB
Min/Avg Ratio	-15.46 dB
Worst Single Value	-22.24 dBm

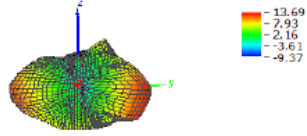
Theta = 0, Phi = 0



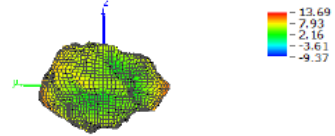
Theta = 180, Phi = 0



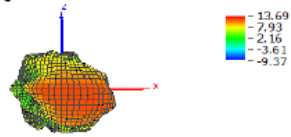
Theta = 90, Phi = 0



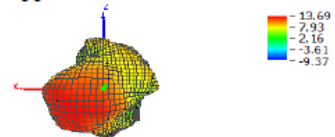
Theta = 90, Phi = 180



Theta = 90, Phi = 270



Theta = 90, Phi = 90



2.480GHZ**CTIA TRP Report (RP_Bluetooth_ch78_tot)****Common Information**

Test Description:	GN OTA Test Report
Operating Conditions:	Wukong-C_TA_X270L_TRP_#5
Operator Name:	Luisa
Comment:	

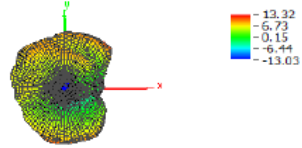
Test Information

Test Method:	Radiated Power Mobile Phone
Test Condition:	FS: Free Space
EUT Identification:	Device Name: Bluetooth DU, BT address: 000046676101
Radio Link:	Bluetooth; Channel 78 (2480.000 MHz)
Test Time:	Start: 8/4/2023 3:54:17 PM; Stop: 8/4/2023 4:13:42 PM
CMU200 Connectors:	In: RF2 (45.0 dB), Out: RF2 (45.0 dB)
Cal Data Hor:	18.58 dB (X-OTA_OTA_RadPwr_2205-2695MHz-Horizontal-Att)
Cal Data Ver:	19.25 dB (X-OTA_OTA_RadPwr_2205-2695MHz-Vertical-Att)

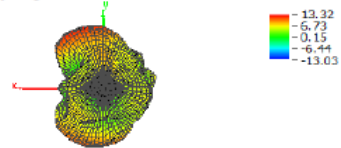
OTA Evaluation Results

Total Radiated Power	6.24 dBm
Peak EIRP	13.32 dBm
Directivity	7.08 dBi
Peak Gain	13.32 dBi
NHPRP 45j ã	5.28 dBm
NHPRP 45j ã / TRP	-0.97 dB
NHPRP 45j ã / TRP	80.07 %
NHPRP 30j ã	4.22 dBm
NHPRP 30j ã / TRP	-2.02 dB
NHPRP 30j ã / TRP	62.82 %
NHPRP 22.5j ã	3.29 dBm
NHPRP 22.5j ã / TRP	-2.95 dB
NHPRP 22.5j ã / TRP	50.74 %
UHRP	2.53 dBm
UHRP / TRP	-3.71 dB
UHRP / TRP	42.52 %
LHRP	3.84 dBm
LHRP / TRP	-2.41 dB
LHRP / TRP	57.48 %
PGRP (0-120j ã)	5.20 dBm
PGRP / TRP	-1.04 dB
PGRP / TRP	78.62 %
Front/Back Ratio	7.15
PhiBW	56.7 deg
PhiBW Up	25.5 deg
PhiBW Down	31.2 deg
ThetaBW	49.1 deg
ThetaBW Up	21.2 deg
ThetaBW Down	28.0 deg
Boresight Phi	75 deg
Boresight Theta	105 deg
Maximum Power	13.32 dBm
Minimum Power	-13.03 dBm
Average Power	5.59 dBm
Max/Min Ratio	26.35 dB
Max/Avg Ratio	7.74 dB
Min/Avg Ratio	-18.62 dB
Worst Single Value	-21.04 dBm

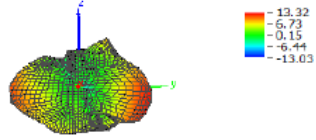
Theta = 0, Phi = 0



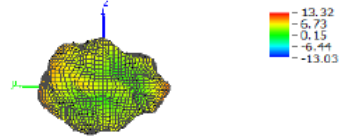
Theta = 180, Phi = 0



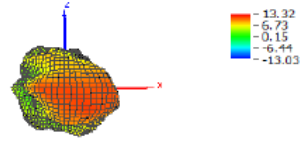
Theta = 90, Phi = 0



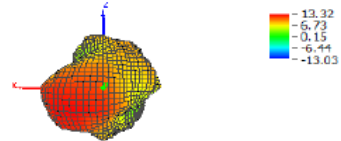
Theta = 90, Phi = 180



Theta = 90, Phi = 270



Theta = 90, Phi = 90



5 Conclusion

The total radiated power from the Jabra Wukong-C varies from 6.24 dBm to 7.29 dBm in free space depending on the frequency. The conducted power is 10 dBm. These figures yield an antenna gain(peak) in the range of 3.32 dBi and 4.44 dBi.

	2402 MHz	2440 MHz	2480 MHz
Conducted power	10 dBm	10 dBm	10 dBm
Peak Equivalent isotropic radiated power (EIRP)	14.44 dBm	13.69 dBm	13.32 dBm

	2402 MHz	2440 MHz	2480 MHz
Antenna gain (Peak)	4.44 dBi	3.69 dBi	3.32 dBi