



Antenna Gain Report
Jabra Speak2 75
Model: PHS060W
August 25, 2022

Author(s)	Revision	Comments
Alexander Riisberg	1.0	Initial Release



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1 Document Purpose

This document is intended for TA instances employed by GN Audio A/S, and presents some relevant data with respect to the provided DUT(s) such as antenna gain, implemented SW version, conducted output power measurements etc, as well as serving as a supplement to the enclosed measurement reports carried out in GN Audio A/S' own labs.

1.1 Document abbreviations

Table 1 presents a complete list of abbreviations used throughout this document.

Acronym	Definition
BT	Blue Tooth
BLE	Blue Tooth Low Energy
BDR	Basic Data Rate
DUT	Device Under Test
EDR	Enhanced Data Rate
GN	Great Northern
R&D	Research & Development
RF	Radio Frequency
SW	Software
TA	Type Approval
TRP	Total Radiated Power

Table 1: Document abbreviations.

1.2 References

Table 2 list external documents referred to throughout this document.

Ref. No.	Released	Type	Document Title	Revision
1	20220825	Test Instruction	Jabra Speak2 75 Test Instruction	1.0
2	20220825	Product Description	Product Description, Jabra Speak2 75	1.0

Table 2: Reference Documents

1.2.2 Test standard:

Antenna performance	Radiation efficiency	IEEE Standard Test Procedures for Antennas	ANSI/IEEE Std 149-2021
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2 Conducted Output Power

2.1 SW Version

The DUT(s) for TA have all had the SW version given by Table 3 installed, which may be an internal release by GN Audio A/S. In some cases, this is due to the need for enabling the DUT(s) for RF Test Mode, which will not be available to the end-user in a final commercialized version of the product.

SW Version	Comment(s)
0.0.25	R&D TA Release (RF-testmode included)

Table 3: Software Revision Overview

2.2 Power Table

Please refer to Table 2, Reference 1 for the Power Table installed in the DUT.

2.3 Conducted Output Power

Table 4 lists Output Power values measured on *conducted samples* for Channels 0, 39 & 78 respectively. These values are representative for any *radiated* sample(s) measured in Section 3 below, as all samples have been fitted with the same Power Table and SW as stated in subsection 2.2 above.

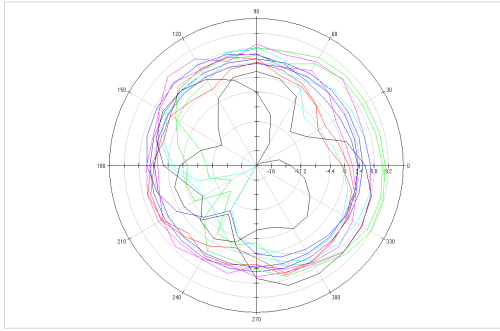
Channel		0	39	78	Unit
Frequency		2402	2441	2480	[MHz]
Sample ID #	[BT Address]	Output Power			dBm
1	08C8C26C46F6	+11.30	+11.39	+11.48	
2	08C8C26C4587	+11.06	+11.15	+11.20	
3	08C8C26C404E	+11.85	+11.95	+11.98	
4	08C8C26C79F9	+10.98	+11.07	+11.18	
Average Output Power		+11.30	+11.39	+11.46	

Table 4: Conducted Output Power

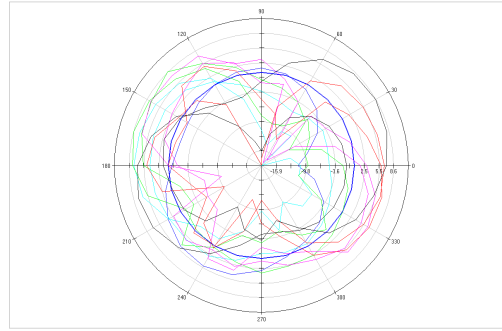
3 Total Radiated Power

3.1 2D Radiation Patterns (Free Space)

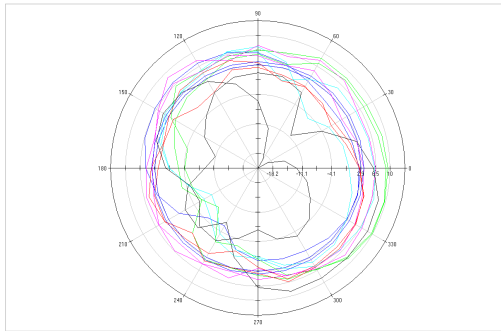
The following figures are extracted in order to present a convenient overview of the DUT's Free Space Radiation Pattern. Values for any individual points measured, can be accessed in the enclosed reports.



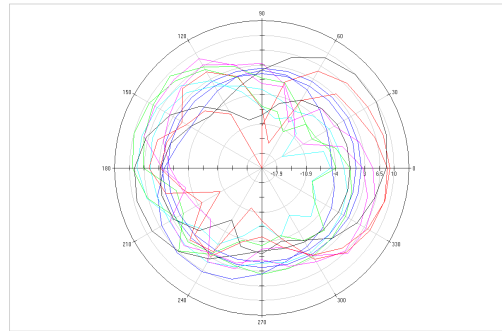
Horizontal Polarization @ CH0



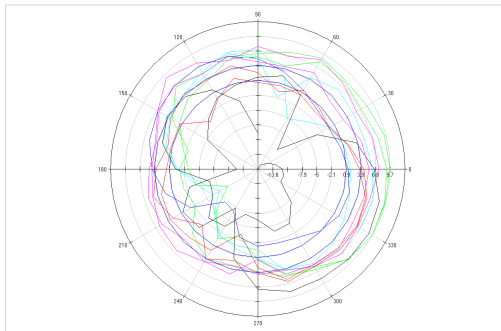
Vertical Polarization @ CH0



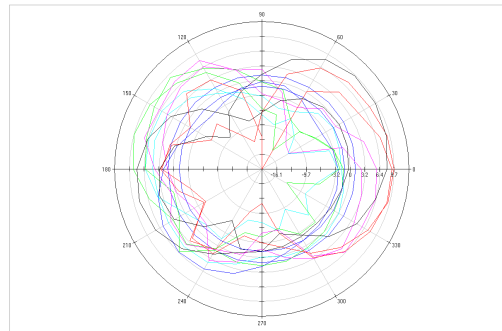
Horizontal Polarization @ CH39



Vertical Polarization @ CH39



Horizontal Polarization @ CH78



Vertical Polarization @ CH78

3.2 Antenna Gains

Table 5 presents the resulting antenna gains for a *radiated* Jabra Speak2 75 sample using the average *conducted* output power for the channels given in Table 4 in subsection 2.3 above. The Antenna Gain is defined by:

$$\text{Peak EIRP} - \text{Conducted Output Power} = \text{Antenna Gain}$$

Channel Number		0	39	78
Frequency	[MHz]	2402	2441	2480
Peak EIRP	[dBm]	+17.12	+16.53	+14.97
Avg. Conducted Output Power	[dBm]	+11.30	+11.39	+11.46
Antenna Gain	[dBi]	+5.82	+5.14	+3.51

Table 5: Resulting Antenna Gains in free space.

3.3 GN Test Reports

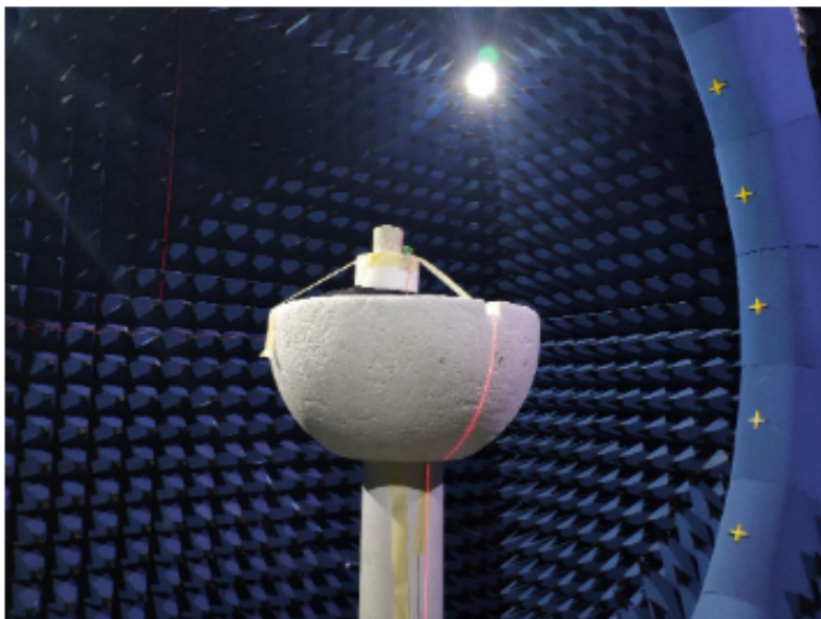
Table 6 presents links to the TRP measurement reports carried out by GN Audio A/S.

IMPORTANT NOTE: The test setup in GN laboratory assumes any measured DUT has 0 dBm Conducted Output Power (which is not necessarily the case). Therefore, the reports will produce an equal number for Peak Gain and Peak EIRP (where the latter is an absolute measured value). Please refer to Table 5 in subsection 3.2, stating the correct Antenna (Peak) Gains.

Channel	Link to test report
0	TRP Measurement Report for CH0
39	TRP Measurement Report for CH39
78	TRP Measurement Report for CH78

Table 6: TRP Measurement Reports by GN Audio A/S.

4.0 Test setup



GN OTA Test Report

Common Information

Test Description: GN OTA Test
 Operating Conditions: Samwise ALPHA 2, Sample#R1, Factory Build, BTADDR 08C8C2910C37
 Operator Name: Alexander Riisberg
 Comment: Antenna Gain Measurement, Free Space for TA Report

Test Location: GN Research Lab RF-Anechoic, Ballerup, Denmark

Equipment List - OTA Test

MgnNo.	Description	Vendor	Model	Calibration Status
031	Vector Network Analyzer	R&S	ZVRE	OK
092	Spectrum Analyzer	R&S	FSU8	OK
218	Turntable/ mast controller	ETS	2090	OK
414	Comparison Noise Emitter	York EMC	CNEIII	OK
602	BT/Comm. Tester	R&S	CMU 200	OK
752	Dipole Antenna	ETS	3126-1880	OK
753	Dipole Antenna	ETS	3126-2450	OK
765	Switch Driver	HP/Agilent	11713A	OK
791	Laptop PC	Lenovo	W540	OK
793	Switch Driver	HP/Agilent	11713A	OK
794	Antenna Horn	ETS	3164-04	OK
956	Spectrum Analyzer	R&S	FPL1007	OK

OTA Auto Test Template: GN RF-An Peak 500ms-TRP DH5 BT-3chn 15deg Auto Test

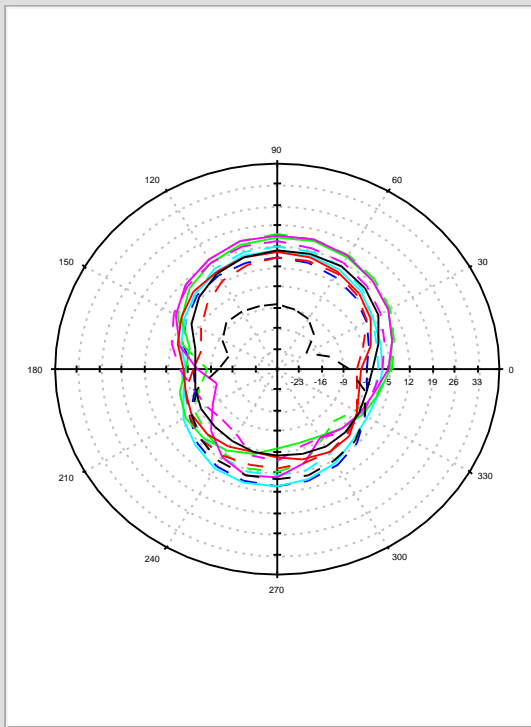
OTA Test Method: Radiated Power Mobile Phone
 Hardware Setup: OTA Measurements\GN RfAn OTA BT RF-Anechoic
 Mobile Phone Network: Bluetooth

TX: Zero-Span Max Peak, Resolution Bandwidth = 1 MHz
 Polarization = Hor,Ver; Azimuth = 0 - (15) - 345 deg; Elevation = 0 - (15) - 180 deg
 Radio Channel: Bluetooth (0-78)

No measurements defined

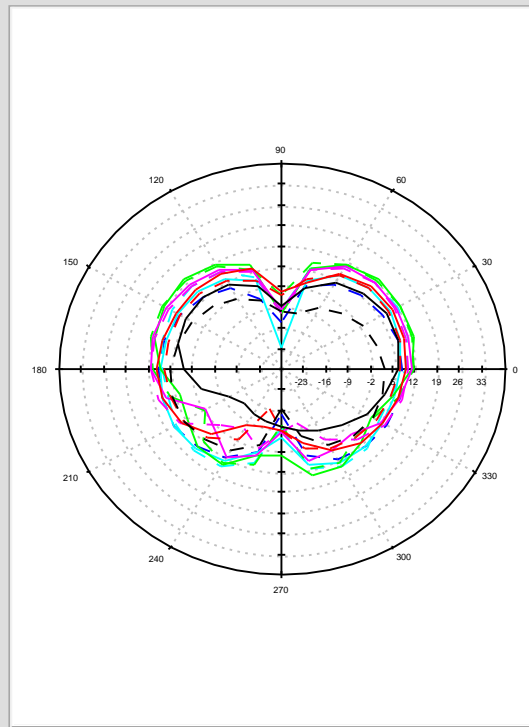
RP_Bluetooth_ch39_hor

RP_Bluetooth_ch39_hor



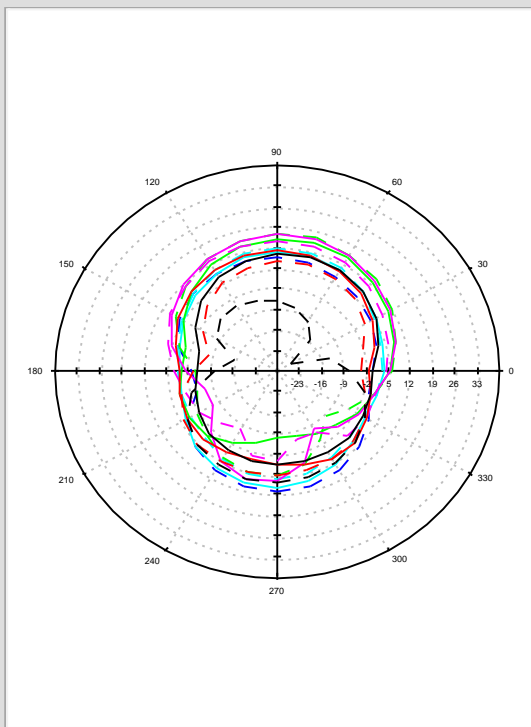
RP_Bluetooth_ch39_ver

RP_Bluetooth_ch39_ver



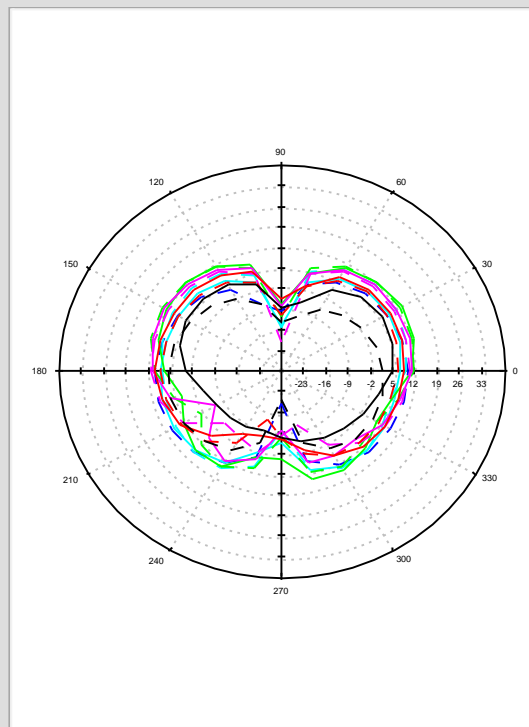
RP_Bluetooth_ch0_hor

RP_Bluetooth_ch0_hor

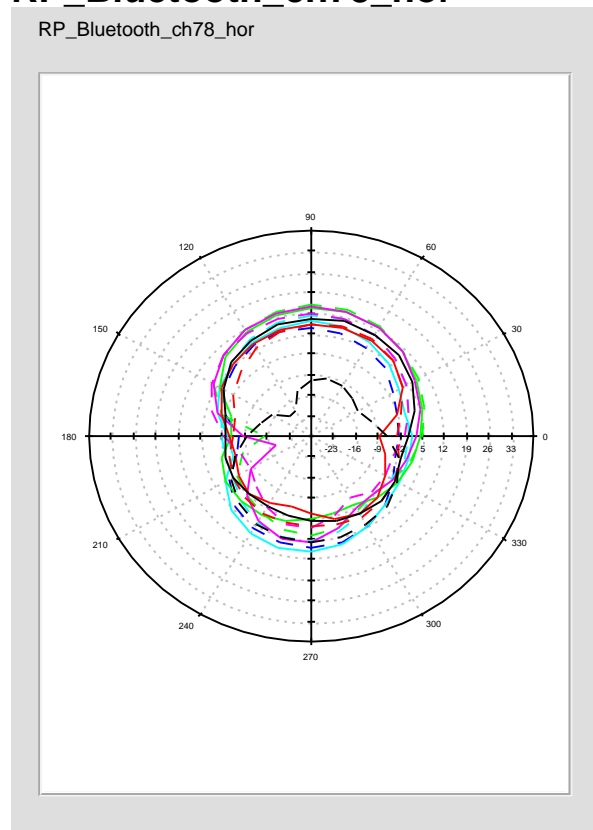


RP_Bluetooth_ch0_ver

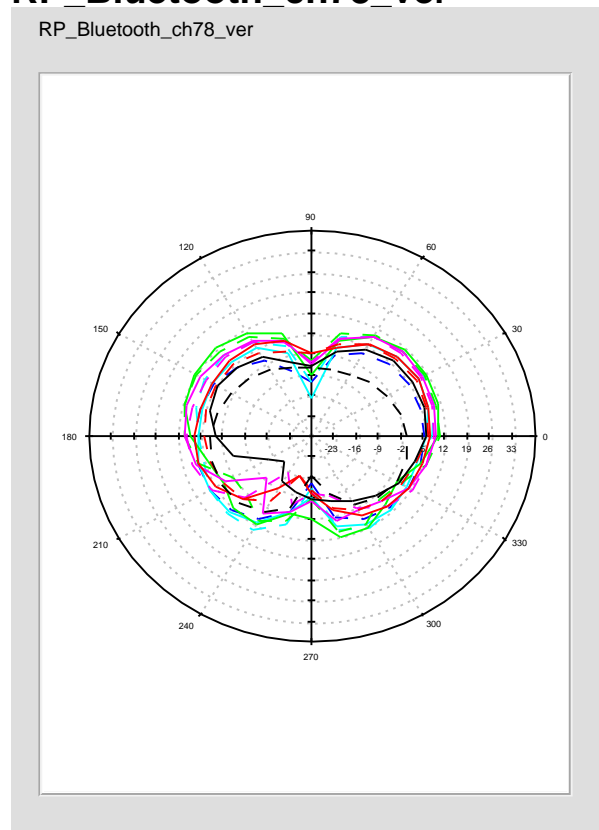
RP_Bluetooth_ch0_ver



RP_Bluetooth_ch78_hor



RP_Bluetooth_ch78_ver



CTIA TRP Report (RP_Bluetooth_ch0_tot)

Common Information

Test Description: GN OTA Test
 Operating Conditions: Samwise ALPHA 2, Sample#R1, Factory Build, BTADDR 08C8C2910C37
 Operator Name: Alexander Riisberg
 Comment: Antenna Gain Measurement, Free Space for TA Report

Test Information

Test Method: Radiated Power Mobile Phone
 Test Condition: FS: Free Space
 EUT Condition: Normal
 EUT Identification: Device Name: , BT address: 08C8C2910C37
 Radio Link: Bluetooth; Channel 0 (2402.000 MHz)
 Test Time: Start: 24-08-2022 11:04:01; Stop: 24-08-2022 11:24:51
 CMU200 Connectors: In: RF2 (25.0 dB), Out: RF2 (25.0 dB)
 Cal Data Hor: 50.23 dB (RfAn_OTA_RadPwr_2300-2600MHz-Horizontal-Att)
 Cal Data Ver: 50.50 dB (RfAn_OTA_RadPwr_2300-2600MHz-Vertical-Att)
 No. of Points not measured: 47

OTA Evaluation Results

Total Radiated Power	11,07 dBm
Peak EIRP	17,12 dBm
Directivity	6,05 dBi
Peak Gain	17,12 dBi
NHPRP 45°	10,24 dBm
NHPRP 45° / TRP	-0,83 dB
NHPRP 45° / TRP	82,63 %
NHPRP 30°	9,20 dBm
NHPRP 30° / TRP	-1,88 dB
NHPRP 30° / TRP	64,93 %
NHPRP 22.5°	8,13 dBm
NHPRP 22.5° / TRP	-2,95 dB
NHPRP 22.5° / TRP	50,73 %
UHRP	8,94 dBm
UHRP / TRP	-2,14 dB
UHRP / TRP	61,14 %
LHRP	6,97 dBm
LHRP / TRP	-4,11 dB
LHRP / TRP	38,86 %
PGRP (0-120°)	10,55 dBm
PGRP / TRP	-0,53 dB
PGRP / TRP	88,56 %
Front/Back Ratio	14,76
PhiBW	135,9 deg
PhiBW Up	74,5 deg
PhiBW Down	61,4 deg
ThetaBW	53,0 deg
ThetaBW Up	31,3 deg
ThetaBW Down	21,7 deg
Boresight Phi	75 deg
Boresight Theta	75 deg
Maximum Power	17,12 dBm
Minimum Power	-6,17 dBm
Average Power	10,25 dBm
Max/Min Ratio	23,29 dB

Max/Avg Ratio	6,87 dB
Min/Avg Ratio	-16,42 dB
Worst Single Value	-25,25 dBm
Worst Position	Azi = 30 deg; Elev = 165 deg; Pol = Hor
Best Single Value	16,85 dBm
Best Position	Azi = 90 deg; Elev = 75 deg; Pol = Hor

RP Bluetooth ch0 tot

Azimuth (deg)	Elevation 0 deg (dBm)	Elevation 15 deg (dBm)	Elevation 30 deg (dBm)	Elevation 45 deg (dBm)	Elevation 60 deg (dBm)	Elevation 75 deg (dBm)	Elevation 90 deg (dBm)	Elevation 105 deg (dBm)
0.00	10.64	10.16	8.99	10.13	12.09	12.83	12.15	11.21
15.00	---	9.95	10.05	11.69	14.19	14.25	13.46	11.94
30.00	---	9.74	10.91	12.95	15.38	15.49	14.63	12.95
45.00	---	9.47	11.23	13.31	15.88	16.37	15.72	13.84
60.00	---	9.14	11.22	13.03	15.88	16.94	16.46	14.31
75.00	---	8.88	11.00	12.36	15.55	17.12	16.78	14.42
90.00	---	8.74	10.72	11.80	15.12	16.85	16.70	14.51
105.00	---	8.80	10.56	11.79	14.79	16.32	16.26	14.60
120.00	---	9.00	10.30	11.99	14.52	15.69	15.52	14.39
135.00	---	9.31	9.77	11.83	13.96	15.00	14.70	13.85
150.00	---	9.62	9.09	10.99	12.79	14.09	13.91	13.20
165.00	---	9.87	8.54	9.72	10.70	12.66	12.83	12.54
180.00	---	10.15	8.62	8.42	7.56	10.23	10.84	11.65
195.00	---	10.47	9.30	8.23	5.05	5.72	6.54	9.87
210.00	---	10.74	10.12	9.32	7.22	2.22	-3.46	6.14
225.00	---	10.91	10.51	10.26	9.24	7.18	4.11	-1.95
240.00	---	10.94	10.37	9.93	8.30	9.26	8.38	-2.16
255.00	---	10.89	10.00	8.20	1.88	7.90	8.76	2.36
270.00	---	10.87	9.98	7.09	0.71	5.80	7.37	1.51
285.00	---	10.96	10.31	8.69	7.99	7.51	5.44	-4.66
300.00	---	11.00	10.40	9.87	9.28	8.02	3.51	0.40
315.00	---	10.92	9.85	9.32	7.40	5.59	4.02	6.28
330.00	---	10.70	8.90	7.74	5.57	5.02	7.47	8.88
345.00	---	10.40	8.42	7.51	7.78	9.12	9.70	10.15
360.00	---	10.16	8.99	10.13	12.09	12.83	12.15	11.21

(continuation of the "RP_Bluetooth_ch0_tot" table from column 9 ...)

Azimuth (deg)	Elevation 120 deg (dBm)	Elevation 135 deg (dBm)	Elevation 150 deg (dBm)	Elevation 165 deg (dBm)	Elevation 180 deg (dBm)
0.00	9.25	7.34	6.33	2.47	2.47
15.00	10.13	8.22	7.96	1.16	---
30.00	10.98	9.18	9.23	-0.62	---
45.00	11.43	9.54	10.02	-2.45	---
60.00	11.23	9.10	10.33	-4.54	---
75.00	10.88	8.06	10.30	-6.17	---
90.00	11.16	7.27	9.98	-5.50	---
105.00	11.84	7.37	9.45	-2.65	---
120.00	12.02	7.72	8.66	0.06	---
135.00	11.60	7.83	7.58	2.15	---
150.00	10.97	7.78	5.90	3.58	---
165.00	10.53	7.87	3.65	4.82	---
180.00	10.28	8.20	1.10	5.87	---
195.00	9.63	8.51	-0.63	6.71	---
210.00	8.11	8.35	-0.25	7.42	---
225.00	5.32	7.60	0.81	7.93	---
240.00	2.40	6.50	1.63	8.22	---
255.00	1.80	5.58	2.03	8.27	---
270.00	2.56	5.57	2.40	8.22	---
285.00	4.47	6.24	2.78	7.97	---
300.00	6.92	7.03	3.11	7.49	---
315.00	8.47	7.38	3.12	6.77	---
330.00	8.91	7.08	3.43	5.78	---
345.00	8.87	6.66	4.17	4.48	---
360.00	9.25	7.34	6.33	2.47	---

RP Bluetooth ch0 hor

Azimuth (deg)	Elevation 0 deg (dBm)	Elevation 15 deg (dBm)	Elevation 30 deg (dBm)	Elevation 45 deg (dBm)	Elevation 60 deg (dBm)	Elevation 75 deg (dBm)	Elevation 90 deg (dBm)	Elevation 105 deg (dBm)
0.0	-12.65	0.21	3.63	3.35	5.45	6.50	5.66	4.14
15.0	---	2.20	4.51	3.85	8.01	8.92	8.61	6.15
30.0	---	4.20	5.94	5.56	10.55	11.62	11.26	8.64
45.0	---	5.88	7.83	8.04	12.78	13.92	13.62	10.83

Azimuth (deg)	Elevation 0 deg (dBm)	Elevation 15 deg (dBm)	Elevation 30 deg (dBm)	Elevation 45 deg (dBm)	Elevation 60 deg (dBm)	Elevation 75 deg (dBm)	Elevation 90 deg (dBm)	Elevation 105 deg (dBm)
60.0	---	7.21	9.50	10.21	14.39	15.69	15.43	12.66
75.0	---	8.19	10.55	11.53	15.21	16.76	16.53	13.96
90.0	---	8.68	10.71	11.79	15.09	16.85	16.69	14.51
105.0	---	8.66	10.07	11.07	13.96	15.86	15.83	14.18
120.0	---	8.12	8.57	9.48	11.79	13.84	14.08	13.01
135.0	---	7.11	6.51	7.16	8.53	10.93	11.52	11.20
150.0	---	5.39	4.21	4.45	4.19	7.00	8.28	8.76
165.0	---	2.40	1.99	2.42	-0.04	1.77	4.21	5.77
180.0	---	-2.93	0.59	1.61	0.00	-4.39	-0.92	2.45
195.0	---	-4.13	1.04	1.40	1.66	-3.95	-6.47	-0.36
210.0	---	2.58	3.49	1.41	2.03	-0.97	-6.76	-1.79
225.0	---	6.73	6.27	2.47	0.92	1.37	-0.27	-4.72
240.0	---	9.17	8.44	4.59	-1.57	3.83	5.24	-7.22
255.0	---	10.47	9.66	6.42	-4.73	5.62	7.87	-0.20
270.0	---	10.87	9.85	7.00	-7.28	5.59	7.29	0.97
285.0	---	10.43	8.91	6.21	-6.97	2.94	2.65	-5.80
300.0	---	9.03	6.90	4.24	-5.35	-3.22	-6.97	-5.69
315.0	---	6.74	3.99	1.90	-3.77	-8.48	-2.97	1.26
330.0	---	3.46	2.20	1.49	-0.71	-3.79	-0.10	2.27
345.0	---	0.14	2.51	2.55	1.90	1.58	1.75	2.06
360.0	---	0.21	3.63	3.35	5.45	6.50	5.66	4.14

(continuation of the "RP_Bluetooth_ch0_hor" table from column 9 ...)

Azimuth (deg)	Elevation 120 deg (dBm)	Elevation 135 deg (dBm)	Elevation 150 deg (dBm)	Elevation 165 deg (dBm)	Elevation 180 deg (dBm)
0.0	-1.11	-3.77	0.38	-7.11	-7.11
15.0	1.75	-2.03	2.80	-12.61	---
30.0	4.80	1.63	5.81	-25.25	---
45.0	7.35	4.57	8.19	-14.98	---
60.0	9.25	6.45	9.61	-10.51	---
75.0	10.54	7.30	10.18	-7.87	---
90.0	11.06	7.21	9.92	-6.26	---
105.0	10.83	6.25	8.88	-5.11	---
120.0	9.90	4.43	6.99	-4.59	---
135.0	8.35	1.58	4.08	-5.13	---
150.0	6.11	-2.83	-0.20	-7.92	---
165.0	3.18	-7.73	-4.75	-16.14	---
180.0	0.91	-3.57	-5.03	-10.35	---
195.0	1.54	0.95	-3.09	-2.00	---
210.0	2.95	3.73	-1.37	2.62	---
225.0	2.92	5.27	0.02	5.48	---
240.0	1.60	5.74	1.10	7.20	---
255.0	1.18	5.52	1.66	8.02	---
270.0	2.05	5.32	1.93	8.21	---
285.0	3.37	5.23	2.03	7.71	---
300.0	4.50	4.84	2.06	6.51	---
315.0	4.39	3.81	1.70	4.70	---
330.0	2.52	1.72	0.99	2.15	---
345.0	0.23	-1.30	0.23	-1.28	---
360.0	-1.11	-3.77	0.38	-7.11	---

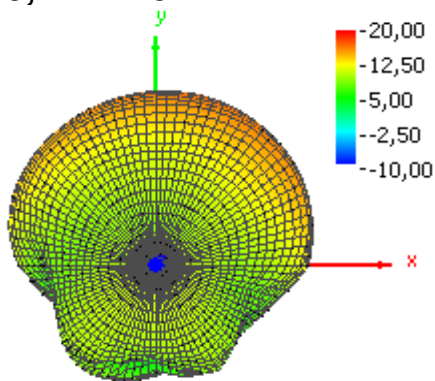
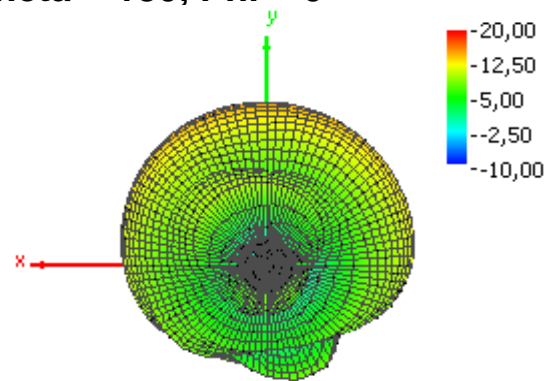
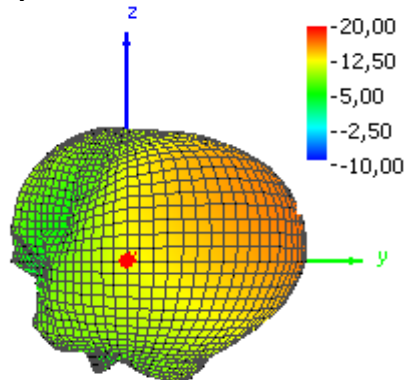
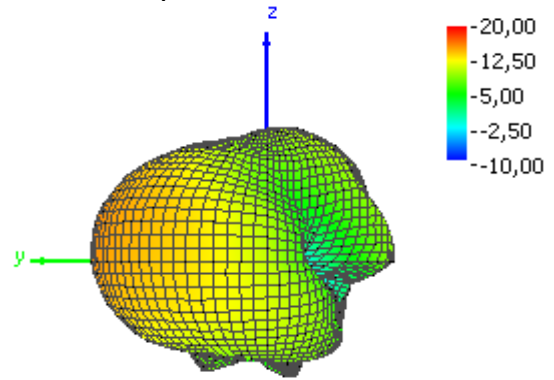
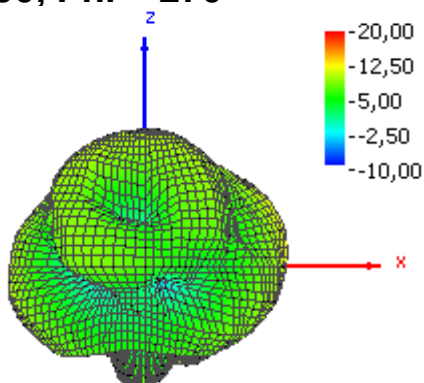
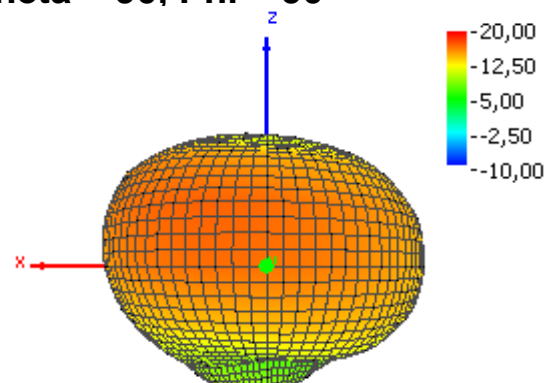
RP Bluetooth ch0 ver

Azimuth (deg)	Elevation 0 deg (dBm)	Elevation 15 deg (dBm)	Elevation 30 deg (dBm)	Elevation 45 deg (dBm)	Elevation 60 deg (dBm)	Elevation 75 deg (dBm)	Elevation 90 deg (dBm)	Elevation 105 deg (dBm)
0.0	10.62	9.70	7.50	9.11	11.02	11.68	11.05	10.26
15.0	---	9.16	8.62	10.92	12.99	12.74	11.75	10.61
30.0	---	8.32	9.24	12.07	13.65	13.20	11.94	10.94
45.0	---	6.98	8.58	11.78	12.95	12.73	11.55	10.82
60.0	---	4.70	6.36	9.81	10.52	10.91	9.71	9.31
75.0	---	0.52	0.92	4.77	4.33	6.14	4.23	4.48
90.0	---	-9.60	-14.92	-15.38	-7.41	-11.49	-7.82	-20.03
105.0	---	-6.22	0.86	3.63	7.21	6.34	6.02	4.27
120.0	---	1.63	5.45	8.41	11.22	11.09	10.05	8.73
135.0	---	5.31	7.00	10.02	12.50	12.83	11.86	10.45

Azimuth (deg)	Elevation 0 deg (dBm)	Elevation 15 deg (dBm)	Elevation 30 deg (dBm)	Elevation 45 deg (dBm)	Elevation 60 deg (dBm)	Elevation 75 deg (dBm)	Elevation 90 deg (dBm)	Elevation 105 deg (dBm)
150.0	---	7.55	7.38	9.90	12.14	13.15	12.52	11.26
165.0	---	9.02	7.46	8.82	10.32	12.29	12.19	11.51
180.0	---	9.93	7.87	7.40	6.72	10.08	10.54	11.10
195.0	---	10.32	8.60	7.22	2.39	5.22	6.32	9.44
210.0	---	10.02	9.06	8.55	5.65	-0.62	-6.20	5.38
225.0	---	8.82	8.45	9.47	8.55	5.86	2.15	-5.22
240.0	---	6.19	5.93	8.43	7.83	7.79	5.49	-3.79
255.0	---	0.48	-1.25	3.49	0.81	4.02	1.43	-1.15
270.0	---	-18.89	-5.28	-9.43	-0.04	-7.47	-9.72	-7.81
285.0	---	1.62	4.71	5.09	7.85	5.65	2.19	-11.01
300.0	---	6.61	7.83	8.48	9.13	7.68	3.11	-0.83
315.0	---	8.84	8.54	8.45	7.05	5.41	3.05	4.63
330.0	---	9.79	7.86	6.56	4.41	4.41	6.64	7.81
345.0	---	9.97	7.13	5.85	6.49	8.28	8.94	9.41
360.0	---	9.70	7.50	9.11	11.02	11.68	11.05	10.26

(continuation of the "RP_Bluetooth_ch0_ver" table from column 9 ...)

Azimuth (deg)	Elevation 120 deg (dBm)	Elevation 135 deg (dBm)	Elevation 150 deg (dBm)	Elevation 165 deg (dBm)	Elevation 180 deg (dBm)
0.0	8.83	6.99	5.06	1.96	1.96
15.0	9.44	7.79	6.38	0.97	---
30.0	9.79	8.34	6.59	-0.64	---
45.0	9.28	7.87	5.40	-2.70	---
60.0	6.86	5.69	2.19	-5.80	---
75.0	-0.37	0.08	-5.54	-11.06	---
90.0	-5.17	-10.92	-8.64	-13.44	---
105.0	5.02	0.95	0.38	-6.30	---
120.0	7.89	4.98	3.71	-1.76	---
135.0	8.82	6.65	5.01	1.26	---
150.0	9.25	7.39	4.67	3.26	---
165.0	9.65	7.75	2.97	4.79	---
180.0	9.75	7.91	-0.11	5.76	---
195.0	8.90	7.67	-4.28	6.08	---
210.0	6.52	6.51	-6.69	5.67	---
225.0	1.60	3.78	-6.99	4.29	---
240.0	-5.35	-1.44	-7.77	1.43	---
255.0	-6.97	-13.06	-8.81	-4.29	---
270.0	-6.93	-7.10	-7.50	-20.36	---
285.0	-2.03	-0.61	-5.21	-4.45	---
300.0	3.22	3.01	-3.58	0.52	---
315.0	6.32	4.86	-2.40	2.56	---
330.0	7.77	5.59	-0.23	3.31	---
345.0	8.24	5.90	1.92	3.14	---
360.0	8.83	6.99	5.06	1.96	---

Theta = 0, Phi = 0**Theta = 180, Phi = 0****Theta = 90, Phi = 0****Theta = 90, Phi = 180****Theta = 90, Phi = 270****Theta = 90, Phi = 90**

CTIA TRP Report (RP_Bluetooth_ch39_tot)

Common Information

Test Description: GN OTA Test
 Operating Conditions: Samwise ALPHA 2, Sample#R1, Factory Build, BTADDR 08C8C2910C37
 Operator Name: Alexander Riisberg
 Comment: Antenna Gain Measurement, Free Space for TA Report

Test Information

Test Method: Radiated Power Mobile Phone
 Test Condition: FS: Free Space
 EUT Condition: Normal
 EUT Identification: Device Name: , BT address: 08C8C2910C37
 Radio Link: Bluetooth; Channel 39 (2441.000 MHz)
 Test Time: Start: 24-08-2022 11:04:01; Stop: 24-08-2022 11:24:51
 CMU200 Connectors: In: RF2 (25.0 dB), Out: RF2 (25.0 dB)
 Cal Data Hor: 50.16 dB (RfAn_OTA_RadPwr_2300-2600MHz-Horizontal-Att)
 Cal Data Ver: 52.47 dB (RfAn_OTA_RadPwr_2300-2600MHz-Vertical-Att)
 No. of Points not measured: 47

OTA Evaluation Results

Total Radiated Power	10,72 dBm
Peak EIRP	16,53 dBm
Directivity	5,82 dBi
Peak Gain	16,53 dBi
NHPRP 45°	9,86 dBm
NHPRP 45° / TRP	-0,86 dB
NHPRP 45° / TRP	82,01 %
NHPRP 30°	8,75 dBm
NHPRP 30° / TRP	-1,97 dB
NHPRP 30° / TRP	63,55 %
NHPRP 22.5°	7,65 dBm
NHPRP 22.5° / TRP	-3,07 dB
NHPRP 22.5° / TRP	49,31 %
UHRP	8,65 dBm
UHRP / TRP	-2,07 dB
UHRP / TRP	62,08 %
LHRP	6,51 dBm
LHRP / TRP	-4,21 dB
LHRP / TRP	37,92 %
PGRP (0-120°)	10,18 dBm
PGRP / TRP	-0,54 dB
PGRP / TRP	88,23 %
Front/Back Ratio	14,25
PhiBW	145,7 deg
PhiBW Up	80,3 deg
PhiBW Down	65,3 deg
ThetaBW	55,0 deg
ThetaBW Up	29,8 deg
ThetaBW Down	25,2 deg
Boresight Phi	75 deg
Boresight Theta	75 deg
Maximum Power	16,53 dBm
Minimum Power	-6,55 dBm
Average Power	9,83 dBm
Max/Min Ratio	23,09 dB

Max/Avg Ratio	6,71 dB
Min/Avg Ratio	-16,38 dB
Worst Single Value	-22,82 dBm
Worst Position	Azi = 90 deg; Elev = 30 deg; Pol = Ver
Best Single Value	16,15 dBm
Best Position	Azi = 90 deg; Elev = 75 deg; Pol = Hor

RP Bluetooth ch39 tot

Azimuth (deg)	Elevation 0 deg (dBm)	Elevation 15 deg (dBm)	Elevation 30 deg (dBm)	Elevation 45 deg (dBm)	Elevation 60 deg (dBm)	Elevation 75 deg (dBm)	Elevation 90 deg (dBm)	Elevation 105 deg (dBm)
0.00	9.17	8.72	9.01	10.09	12.17	12.75	11.92	10.99
15.00	---	8.53	10.14	11.69	14.09	13.97	13.13	11.77
30.00	---	8.35	10.88	13.00	15.20	15.09	14.27	12.82
45.00	---	8.19	11.11	13.49	15.70	15.92	15.26	13.56
60.00	---	8.14	11.09	13.37	15.79	16.48	15.86	13.82
75.00	---	8.01	10.79	12.63	15.43	16.53	15.92	13.51
90.00	---	7.98	10.59	11.88	15.00	16.19	15.73	13.45
105.00	---	8.00	10.53	11.69	14.84	15.69	15.32	13.68
120.00	---	8.03	10.36	11.80	14.73	15.14	14.54	13.60
135.00	---	8.19	9.92	11.69	14.44	14.70	13.79	13.14
150.00	---	8.37	9.18	10.84	13.47	13.95	13.18	12.48
165.00	---	8.69	8.51	9.54	11.56	12.78	12.52	12.09
180.00	---	8.97	8.46	8.18	8.59	10.73	11.11	11.60
195.00	---	9.31	9.20	7.96	5.33	6.64	7.68	10.28
210.00	---	9.62	10.11	9.11	6.68	1.77	-1.02	7.06
225.00	---	9.78	10.65	10.16	9.02	6.16	2.61	-1.09
240.00	---	9.85	10.69	9.89	8.45	8.70	7.77	-2.50
255.00	---	9.71	10.33	7.89	3.11	7.42	8.22	2.28
270.00	---	9.65	10.04	6.41	1.33	5.22	6.99	1.72
285.00	---	9.69	9.99	8.05	7.70	7.14	5.75	-1.97
300.00	---	9.57	9.75	9.26	8.67	7.31	3.29	0.21
315.00	---	9.53	9.05	8.61	6.42	4.04	3.15	5.51
330.00	---	9.28	8.20	6.93	5.14	4.27	7.24	8.33
345.00	---	9.01	8.13	6.99	7.93	9.17	9.63	9.79
360.00	---	8.72	9.01	10.09	12.17	12.75	11.92	10.99

(continuation of the "RP_Bluetooth_ch39_tot" table from column 9 ...)

Azimuth (deg)	Elevation 120 deg (dBm)	Elevation 135 deg (dBm)	Elevation 150 deg (dBm)	Elevation 165 deg (dBm)	Elevation 180 deg (dBm)
0.00	9.27	7.83	7.55	2.81	2.81
15.00	10.37	9.01	9.19	1.55	---
30.00	11.26	10.12	10.38	-0.26	---
45.00	11.50	10.56	11.02	-2.55	---
60.00	10.92	10.24	11.25	-4.70	---
75.00	9.91	9.14	11.03	-6.55	---
90.00	9.99	8.07	10.55	-6.06	---
105.00	10.90	7.72	9.93	-3.50	---
120.00	11.20	7.72	9.03	-0.96	---
135.00	10.82	7.68	8.00	1.11	---
150.00	10.15	7.38	6.43	2.54	---
165.00	9.79	7.03	4.33	3.99	---
180.00	9.70	6.97	1.92	5.11	---
195.00	9.15	7.13	-0.60	5.99	---
210.00	7.46	6.96	-2.00	6.76	---
225.00	4.19	6.10	-1.98	7.22	---
240.00	0.77	4.95	-1.23	7.59	---
255.00	-0.28	3.93	-0.53	7.66	---
270.00	0.50	3.79	-0.03	7.62	---
285.00	2.68	4.38	0.44	7.40	---
300.00	5.27	5.05	1.09	6.88	---
315.00	7.13	5.53	1.90	6.37	---
330.00	7.85	5.61	3.35	5.59	---
345.00	8.27	6.13	5.01	4.58	---
360.00	9.27	7.83	7.55	2.81	---

RP Bluetooth ch39 hor

Azimuth (deg)	Elevation 0 deg (dBm)	Elevation 15 deg (dBm)	Elevation 30 deg (dBm)	Elevation 45 deg (dBm)	Elevation 60 deg (dBm)	Elevation 75 deg (dBm)	Elevation 90 deg (dBm)	Elevation 105 deg (dBm)
0.0	-15.54	-1.46	3.42	1.92	5.54	6.28	5.21	3.14
15.0	---	0.14	3.73	2.51	7.60	8.41	7.80	5.04
30.0	---	2.27	5.02	4.96	10.11	10.88	10.40	7.48
45.0	---	4.40	7.10	7.97	12.35	13.05	12.62	9.68

Azimuth (deg)	Elevation 0 deg (dBm)	Elevation 15 deg (dBm)	Elevation 30 deg (dBm)	Elevation 45 deg (dBm)	Elevation 60 deg (dBm)	Elevation 75 deg (dBm)	Elevation 90 deg (dBm)	Elevation 105 deg (dBm)
60.0	---	6.25	9.11	10.32	14.10	14.86	14.44	11.57
75.0	---	7.43	10.27	11.62	14.99	15.97	15.54	12.85
90.0	---	7.95	10.59	11.85	14.99	16.15	15.71	13.43
105.0	---	7.78	10.02	11.12	14.03	15.28	14.88	13.13
120.0	---	6.92	8.56	9.37	12.02	13.30	13.08	12.00
135.0	---	5.47	6.44	6.88	8.93	10.48	10.41	10.23
150.0	---	3.28	3.74	3.60	4.42	6.24	6.75	7.59
165.0	---	0.37	0.85	1.08	-1.10	0.46	1.99	4.39
180.0	---	-3.84	-0.98	0.21	-1.30	-8.16	-4.61	0.54
195.0	---	-3.34	0.59	0.57	1.70	-4.27	-10.34	-2.73
210.0	---	1.95	4.03	1.37	3.14	-0.48	-6.65	-4.44
225.0	---	5.74	6.89	2.86	3.09	1.54	-0.37	-5.82
240.0	---	8.11	8.98	4.65	1.80	3.51	4.97	-4.44
255.0	---	9.32	9.98	6.02	-0.36	5.07	7.42	0.30
270.0	---	9.63	9.94	6.31	-2.78	5.11	6.85	1.28
285.0	---	9.12	8.82	5.29	-4.00	2.81	2.86	-2.53
300.0	---	7.54	6.70	3.13	-3.51	-2.30	-2.74	-3.13
315.0	---	5.31	4.12	0.77	-1.65	-4.67	-1.61	0.44
330.0	---	2.10	2.78	0.55	1.21	-1.80	0.11	0.91
345.0	---	-0.92	2.92	1.47	3.04	2.17	1.68	0.85
360.0	---	-1.46	3.42	1.92	5.54	6.28	5.21	3.14

(continuation of the "RP_Bluetooth_ch39_hor" table from column 9 ...)

Azimuth (deg)	Elevation 120 deg (dBm)	Elevation 135 deg (dBm)	Elevation 150 deg (dBm)	Elevation 165 deg (dBm)	Elevation 180 deg (dBm)
0.0	-3.41	-5.09	0.20	-7.22	-7.22
15.0	0.42	-2.01	3.35	-12.58	---
30.0	3.97	2.62	6.69	-19.06	---
45.0	6.54	5.79	8.95	-13.52	---
60.0	8.38	7.64	10.32	-10.18	---
75.0	9.41	8.26	10.79	-8.76	---
90.0	9.78	7.85	10.50	-8.10	---
105.0	9.48	6.59	9.53	-7.67	---
120.0	8.58	4.45	7.71	-7.28	---
135.0	7.19	1.66	5.03	-7.51	---
150.0	5.08	-2.10	1.01	-9.83	---
165.0	2.35	-5.34	-3.40	-14.07	---
180.0	-0.31	-3.46	-4.33	-11.50	---
195.0	-0.33	-0.36	-3.12	-3.84	---
210.0	1.14	2.09	-2.57	1.14	---
225.0	1.37	3.55	-2.28	4.27	---
240.0	0.15	4.08	-1.59	6.25	---
255.0	-0.81	3.89	-0.89	7.27	---
270.0	-0.02	3.55	-0.46	7.60	---
285.0	1.54	3.33	-0.16	7.22	---
300.0	2.61	2.72	0.18	6.01	---
315.0	2.03	1.50	0.10	4.34	---
330.0	-0.74	-0.79	-0.39	1.87	---
345.0	-3.58	-3.62	-0.98	-1.37	---
360.0	-3.41	-5.09	0.20	-7.22	---

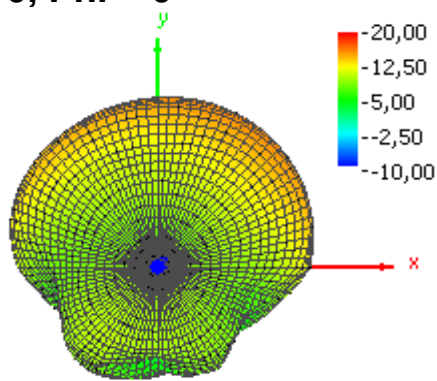
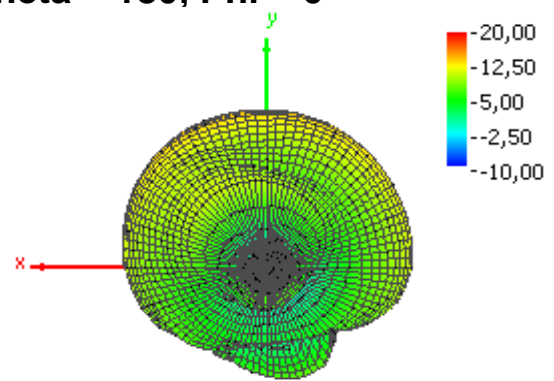
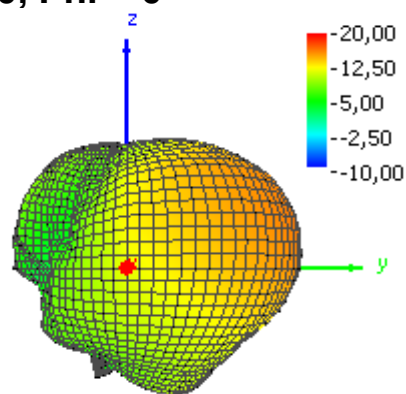
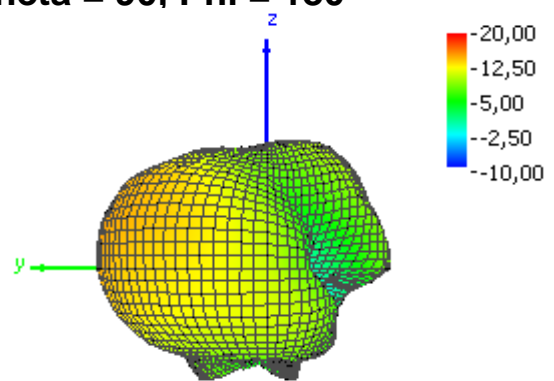
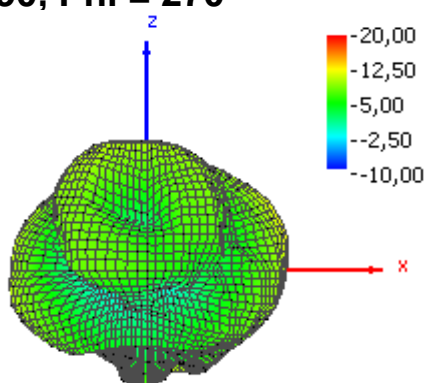
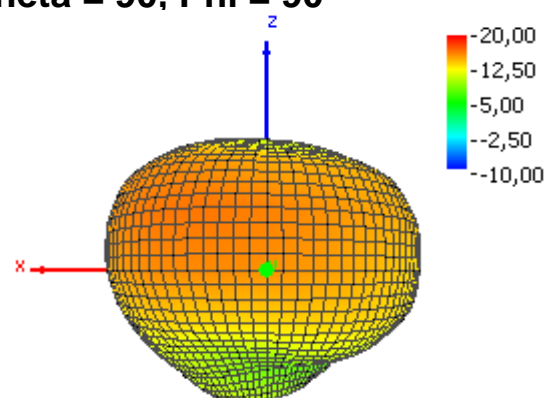
RP Bluetooth ch39 ver

Azimuth (deg)	Elevation 0 deg (dBm)	Elevation 15 deg (dBm)	Elevation 30 deg (dBm)	Elevation 45 deg (dBm)	Elevation 60 deg (dBm)	Elevation 75 deg (dBm)	Elevation 90 deg (dBm)	Elevation 105 deg (dBm)
0.0	9.16	8.28	7.61	9.37	11.11	11.64	10.88	10.22
15.0	---	7.85	9.02	11.13	12.98	12.56	11.62	10.73
30.0	---	7.12	9.57	12.26	13.59	13.02	11.98	11.32
45.0	---	5.84	8.91	12.06	13.00	12.76	11.85	11.27
60.0	---	3.62	6.72	10.39	10.86	11.42	10.30	9.88
75.0	---	-1.04	1.26	5.82	5.29	7.38	5.18	4.94
90.0	---	-13.80	-22.82	-9.54	-11.24	-4.87	-9.60	-10.95
105.0	---	-5.02	0.96	2.63	7.10	5.22	5.12	4.43
120.0	---	1.56	5.68	8.11	11.39	10.54	9.09	8.51
135.0	---	4.87	7.34	9.95	13.00	12.63	11.12	10.01

Azimuth (deg)	Elevation 0 deg (dBm)	Elevation 15 deg (dBm)	Elevation 30 deg (dBm)	Elevation 45 deg (dBm)	Elevation 60 deg (dBm)	Elevation 75 deg (dBm)	Elevation 90 deg (dBm)	Elevation 105 deg (dBm)
150.0	---	6.75	7.72	9.93	12.89	13.14	12.06	10.78
165.0	---	8.00	7.69	8.88	11.31	12.52	12.12	11.29
180.0	---	8.74	7.93	7.43	8.13	10.68	11.00	11.25
195.0	---	9.06	8.55	7.09	2.86	6.28	7.62	10.05
210.0	---	8.81	8.88	8.31	4.14	-2.15	-2.41	6.74
225.0	---	7.61	8.28	9.26	7.74	4.32	-0.43	-2.87
240.0	---	5.02	5.83	8.34	7.39	7.14	4.53	-6.94
255.0	---	-0.92	-0.78	3.34	0.51	3.61	0.44	-2.08
270.0	---	-14.50	-6.43	-10.03	-0.81	-10.72	-8.29	-8.47
285.0	---	0.55	3.73	4.77	7.40	5.14	2.61	-11.18
300.0	---	5.29	6.78	8.05	8.40	6.80	2.04	-2.49
315.0	---	7.46	7.37	7.83	5.68	3.41	1.38	3.89
330.0	---	8.35	6.74	5.80	2.89	3.03	6.30	7.47
345.0	---	8.54	6.58	5.56	6.23	8.21	8.87	9.20
360.0	---	8.28	7.61	9.37	11.11	11.64	10.88	10.22

(continuation of the "RP_Bluetooth_ch39_ver" table from column 9 ...)

Azimuth (deg)	Elevation 120 deg (dBm)	Elevation 135 deg (dBm)	Elevation 150 deg (dBm)	Elevation 165 deg (dBm)	Elevation 180 deg (dBm)
0.0	9.03	7.60	6.67	2.36	2.36
15.0	9.91	8.65	7.87	1.38	---
30.0	10.36	9.27	7.96	-0.31	---
45.0	9.83	8.81	6.82	-2.91	---
60.0	7.38	6.78	4.11	-6.15	---
75.0	0.26	1.76	-1.66	-10.56	---
90.0	-3.41	-5.04	-8.81	-10.32	---
105.0	5.37	1.35	-0.64	-5.59	---
120.0	7.77	4.95	3.22	-2.11	---
135.0	8.35	6.43	4.96	0.47	---
150.0	8.53	6.86	4.96	2.28	---
165.0	8.93	6.77	3.53	3.92	---
180.0	9.25	6.56	0.74	5.02	---
195.0	8.63	6.27	-4.16	5.52	---
210.0	6.31	5.25	-11.08	5.37	---
225.0	0.98	2.57	-13.68	4.14	---
240.0	-7.98	-2.49	-12.22	1.81	---
255.0	-9.65	-16.05	-11.44	-3.00	---
270.0	-8.98	-8.93	-10.30	-16.23	---
285.0	-3.68	-2.33	-8.39	-6.51	---
300.0	1.87	1.25	-6.10	-0.55	---
315.0	5.52	3.35	-2.82	2.08	---
330.0	7.21	4.48	0.97	3.19	---
345.0	7.97	5.64	3.75	3.31	---
360.0	9.03	7.60	6.67	2.36	---

Theta = 0, Phi = 0**Theta = 180, Phi = 0****Theta = 90, Phi = 0****Theta = 90, Phi = 180****Theta = 90, Phi = 270****Theta = 90, Phi = 90**

CTIA TRP Report (RP_Bluetooth_ch78_tot)

Common Information

Test Description: GN OTA Test
 Operating Conditions: Samwise ALPHA 2, Sample#R1, Factory Build, BTADDR 08C8C2910C37
 Operator Name: Alexander Riisberg
 Comment: Antenna Gain Measurement, Free Space for TA Report

Test Information

Test Method: Radiated Power Mobile Phone
 Test Condition: FS: Free Space
 EUT Condition: Normal
 EUT Identification: Device Name: , BT address: 08C8C2910C37
 Radio Link: Bluetooth; Channel 78 (2480.000 MHz)
 Test Time: Start: 24-08-2022 11:04:01; Stop: 24-08-2022 11:24:51
 CMU200 Connectors: In: RF2 (25.0 dB), Out: RF2 (25.0 dB)
 Cal Data Hor: 50.69 dB (RfAn_OTA_RadPwr_2300-2600MHz-Horizontal-Att)
 Cal Data Ver: 50.49 dB (RfAn_OTA_RadPwr_2300-2600MHz-Vertical-Att)
 No. of Points not measured: 47

OTA Evaluation Results

Total Radiated Power	9,31 dBm
Peak EIRP	14,97 dBm
Directivity	5,67 dBi
Peak Gain	14,97 dBi
NHPRP 45°	8,40 dBm
NHPRP 45° / TRP	-0,91 dB
NHPRP 45° / TRP	81,13 %
NHPRP 30°	7,24 dBm
NHPRP 30° / TRP	-2,07 dB
NHPRP 30° / TRP	62,13 %
NHPRP 22.5°	6,13 dBm
NHPRP 22.5° / TRP	-3,18 dB
NHPRP 22.5° / TRP	48,06 %
UHRP	7,26 dBm
UHRP / TRP	-2,05 dB
UHRP / TRP	62,34 %
LHRP	5,07 dBm
LHRP / TRP	-4,24 dB
LHRP / TRP	37,66 %
PGRP (0-120°)	8,72 dBm
PGRP / TRP	-0,59 dB
PGRP / TRP	87,32 %
Front/Back Ratio	13,31
PhiBW	154,7 deg
PhiBW Up	88,3 deg
PhiBW Down	66,4 deg
ThetaBW	60,9 deg
ThetaBW Up	30,5 deg
ThetaBW Down	30,4 deg
Boresight Phi	75 deg
Boresight Theta	75 deg
Maximum Power	14,97 dBm
Minimum Power	-5,45 dBm
Average Power	8,35 dBm
Max/Min Ratio	20,42 dB

Max/Avg Ratio	6,62 dB
Min/Avg Ratio	-13,80 dB
Worst Single Value	-20,51 dBm
Worst Position	Azi = 135 deg; Elev = 165 deg; Pol = Hor
Best Single Value	14,52 dBm
Best Position	Azi = 90 deg; Elev = 75 deg; Pol = Hor

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Azimuth (deg)	Elevation 0 deg (dBm)	Elevation 15 deg (dBm)	Elevation 30 deg (dBm)	Elevation 45 deg (dBm)	Elevation 60 deg (dBm)	Elevation 75 deg (dBm)	Elevation 90 deg (dBm)	Elevation 105 deg (dBm)
0.00	6.69	6.07	7.57	8.86	11.13	11.43	10.35	9.05
15.00	---	6.10	8.72	10.52	12.67	12.38	11.36	9.90
30.00	---	6.29	9.49	11.90	13.64	13.31	12.50	11.10
45.00	---	6.59	9.75	12.56	14.22	14.22	13.64	12.08
60.00	---	6.88	9.66	12.58	14.39	14.86	14.24	12.40
75.00	---	7.06	9.30	12.04	14.15	14.97	14.26	12.08
90.00	---	7.11	9.01	11.25	13.76	14.57	13.96	11.75
105.00	---	7.06	8.95	10.82	13.60	14.09	13.61	11.94
120.00	---	6.90	8.98	10.77	13.68	13.70	12.92	11.93
135.00	---	6.77	8.60	10.49	13.53	13.32	12.09	11.31
150.00	---	6.69	7.83	9.51	12.78	12.80	11.49	10.44
165.00	---	6.75	6.79	7.95	11.19	11.86	11.04	9.91
180.00	---	6.87	6.26	6.21	8.51	10.18	10.16	9.79
195.00	---	7.12	6.87	5.87	4.96	6.86	7.68	9.05
210.00	---	7.41	8.08	7.24	4.43	0.82	1.48	6.44
225.00	---	7.70	9.08	8.47	6.54	1.94	-0.73	0.52
240.00	---	7.96	9.55	8.44	6.27	5.36	5.35	-1.90
255.00	---	8.06	9.54	6.96	1.88	4.58	6.67	1.67
270.00	---	8.00	9.27	5.66	1.25	3.91	6.16	1.59
285.00	---	7.78	8.79	6.60	6.13	6.02	4.55	-1.42
300.00	---	7.37	8.09	7.40	6.71	5.67	1.66	-0.11
315.00	---	6.98	7.15	6.40	4.24	2.49	2.76	4.61
330.00	---	6.60	6.35	4.61	4.34	4.37	6.67	7.00
345.00	---	6.26	6.37	5.39	7.51	8.65	8.61	8.05
360.00	---	6.07	7.57	8.86	11.13	11.43	10.35	9.05

(continuation of the "RP_Bluetooth_ch78_tot" table from column 9 ...)

Azimuth (deg)	Elevation 120 deg (dBm)	Elevation 135 deg (dBm)	Elevation 150 deg (dBm)	Elevation 165 deg (dBm)	Elevation 180 deg (dBm)
0.00	7.48	7.01	7.19	1.02	1.02
15.00	8.79	8.15	8.71	-0.38	---
30.00	9.91	9.36	9.94	-2.14	---
45.00	10.47	10.12	10.73	-3.57	---
60.00	10.16	10.22	10.99	-4.32	---
75.00	9.18	9.67	10.81	-5.00	---
90.00	8.64	8.66	10.25	-5.45	---
105.00	9.00	7.60	9.43	-5.04	---
120.00	9.22	6.82	8.45	-3.62	---
135.00	8.70	6.29	7.37	-1.87	---
150.00	7.72	5.68	5.99	-0.52	---
165.00	7.05	4.92	4.09	0.98	---
180.00	7.10	4.29	1.93	2.25	---
195.00	6.87	4.03	-0.20	3.32	---
210.00	5.37	3.70	-1.73	4.29	---
225.00	2.01	2.89	-2.34	5.07	---
240.00	-2.63	1.74	-2.14	5.66	---
255.00	-4.82	0.82	-1.47	5.97	---
270.00	-2.56	1.15	-0.48	6.09	---
285.00	0.84	2.36	0.61	5.95	---
300.00	3.81	3.60	1.89	5.48	---
315.00	5.58	4.39	2.86	4.96	---
330.00	6.16	4.70	4.00	4.15	---
345.00	6.36	5.36	5.09	2.97	---
360.00	7.48	7.01	7.19	1.02	---

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Azimuth (deg)	Elevation 0 deg (dBm)	Elevation 15 deg (dBm)	Elevation 30 deg (dBm)	Elevation 45 deg (dBm)	Elevation 60 deg (dBm)	Elevation 75 deg (dBm)	Elevation 90 deg (dBm)	Elevation 105 deg (dBm)
0.0	-10.58	-2.60	1.65	0.85	4.26	5.25	3.37	-0.44
15.0	---	-2.00	0.79	1.55	5.96	6.80	5.45	1.69
30.0	---	-0.04	1.56	4.47	8.45	8.92	7.90	4.78
45.0	---	2.65	4.48	7.72	10.97	11.19	10.50	7.75

Azimuth (deg)	Elevation 0 deg (dBm)	Elevation 15 deg (dBm)	Elevation 30 deg (dBm)	Elevation 45 deg (dBm)	Elevation 60 deg (dBm)	Elevation 75 deg (dBm)	Elevation 90 deg (dBm)	Elevation 105 deg (dBm)
60.0	---	4.92	7.07	9.98	12.81	13.15	12.55	9.98
75.0	---	6.42	8.56	11.16	13.75	14.37	13.77	11.29
90.0	---	7.06	9.00	11.23	13.74	14.52	13.91	11.65
105.0	---	6.89	8.46	10.28	12.76	13.63	13.14	11.32
120.0	---	5.91	7.09	8.40	10.88	11.79	11.53	10.35
135.0	---	4.17	5.14	5.59	7.88	9.14	9.13	8.68
150.0	---	1.58	2.99	2.07	3.27	5.29	5.63	6.11
165.0	---	-2.15	0.39	-0.79	-3.79	-0.77	0.39	2.29
180.0	---	-7.36	-3.31	-1.57	-5.11	-15.22	-8.35	-2.58
195.0	---	-5.94	-4.73	-1.86	-0.66	-7.78	-18.54	-7.14
210.0	---	-0.04	1.02	-1.66	1.27	-2.87	-7.71	-7.96
225.0	---	4.00	5.48	0.96	1.66	-1.12	-1.23	-5.43
240.0	---	6.49	8.14	3.93	1.14	0.80	3.65	-2.08
255.0	---	7.74	9.30	5.59	0.09	2.84	6.21	0.85
270.0	---	7.98	9.20	5.59	-1.58	3.65	5.99	1.28
285.0	---	7.24	7.83	3.97	-2.86	2.28	2.72	-2.23
300.0	---	5.44	5.38	0.96	-2.77	-1.09	-1.84	-5.92
315.0	---	2.82	2.61	-2.04	-0.89	-2.27	-1.83	-3.48
330.0	---	-0.26	1.58	-1.06	1.44	-0.23	-0.45	-3.41
345.0	---	-2.41	1.85	0.51	2.76	2.48	0.89	-3.31
360.0	---	-2.60	1.65	0.85	4.26	5.25	3.37	-0.44

(continuation of the "RP_Bluetooth_ch78_hor" table from column 9 ...)

Azimuth (deg)	Elevation 120 deg (dBm)	Elevation 135 deg (dBm)	Elevation 150 deg (dBm)	Elevation 165 deg (dBm)	Elevation 180 deg (dBm)
0.0	-8.39	-3.14	0.46	-6.19	-6.19
15.0	-1.98	-0.73	3.66	-9.99	---
30.0	2.98	3.55	6.71	-12.70	---
45.0	6.15	6.56	8.82	-11.47	---
60.0	7.87	8.22	10.01	-10.00	---
75.0	8.45	8.75	10.43	-9.91	---
90.0	8.25	8.23	10.15	-11.13	---
105.0	7.47	6.79	9.21	-14.21	---
120.0	6.32	4.57	7.60	-19.84	---
135.0	4.77	1.66	5.18	-20.51	---
150.0	2.55	-1.96	1.83	-15.65	---
165.0	-0.58	-5.35	-1.87	-13.45	---
180.0	-4.09	-5.31	-2.98	-9.77	---
195.0	-5.25	-3.53	-2.13	-5.05	---
210.0	-3.47	-1.72	-1.99	-0.88	---
225.0	-2.52	-0.23	-2.46	2.27	---
240.0	-3.66	0.64	-2.62	4.39	---
255.0	-5.17	0.74	-2.12	5.57	---
270.0	-3.41	0.91	-1.21	6.06	---
285.0	-0.97	1.37	-0.20	5.84	---
300.0	0.19	1.63	0.78	4.85	---
315.0	-0.34	1.44	0.96	3.44	---
330.0	-2.90	0.36	0.30	1.40	---
345.0	-6.13	-1.56	-0.48	-1.51	---
360.0	-8.39	-3.14	0.46	-6.19	---

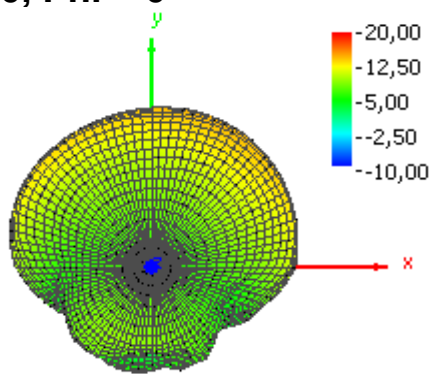
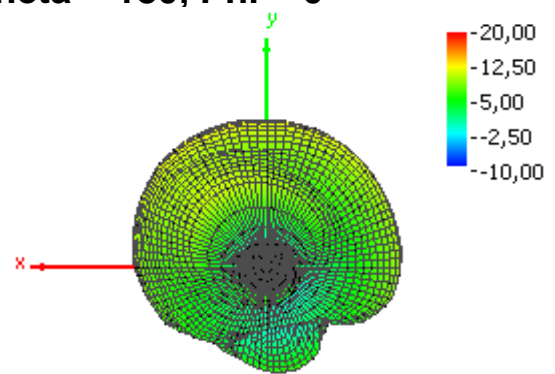
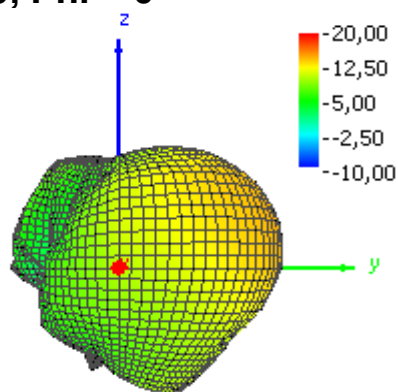
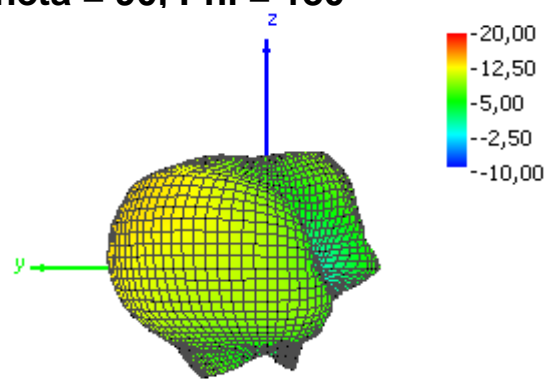
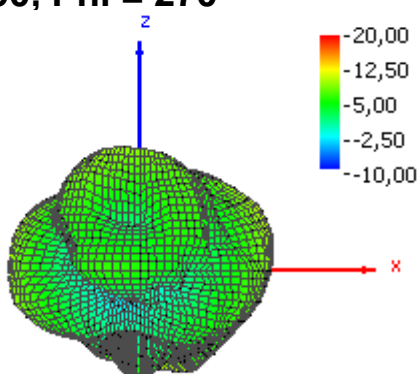
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Azimuth (deg)	Elevation 0 deg (dBm)	Elevation 15 deg (dBm)	Elevation 30 deg (dBm)	Elevation 45 deg (dBm)	Elevation 60 deg (dBm)	Elevation 75 deg (dBm)	Elevation 90 deg (dBm)	Elevation 105 deg (dBm)
0.0	6.61	5.43	6.29	8.11	10.13	10.23	9.38	8.54
15.0	---	5.37	7.95	9.93	11.63	10.98	10.07	9.19
30.0	---	5.14	8.72	11.04	12.07	11.35	10.65	9.95
45.0	---	4.34	8.21	10.83	11.44	11.24	10.76	10.08
60.0	---	2.49	6.19	9.11	9.24	9.98	9.33	8.71
75.0	---	-1.55	1.23	4.66	3.55	6.14	4.48	4.28
90.0	---	-11.84	-17.21	-11.59	-9.05	-4.42	-5.37	-4.57
105.0	---	-7.22	-0.71	1.49	6.06	4.13	3.75	3.18
120.0	---	0.03	4.46	7.01	10.45	9.20	7.29	6.77
135.0	---	3.31	6.00	8.80	12.15	11.23	9.03	7.88

Azimuth (deg)	Elevation 0 deg (dBm)	Elevation 15 deg (dBm)	Elevation 30 deg (dBm)	Elevation 45 deg (dBm)	Elevation 60 deg (dBm)	Elevation 75 deg (dBm)	Elevation 90 deg (dBm)	Elevation 105 deg (dBm)
150.0	---	5.10	6.11	8.64	12.27	11.96	10.19	8.44
165.0	---	6.16	5.66	7.32	11.05	11.62	10.65	9.08
180.0	---	6.70	5.75	5.42	8.31	10.17	10.10	9.53
195.0	---	6.90	6.56	5.07	3.57	6.70	7.67	8.95
210.0	---	6.55	7.13	6.64	1.56	-1.61	0.93	6.27
225.0	---	5.28	6.59	7.62	4.83	-1.02	-10.29	-0.76
240.0	---	2.55	3.98	6.54	4.67	3.49	0.45	-15.82
255.0	---	-3.40	-3.10	1.29	-2.84	-0.23	-3.25	-5.98
270.0	---	-14.09	-8.82	-12.41	-1.95	-8.42	-8.07	-10.07
285.0	---	-1.58	1.77	3.18	5.55	3.64	-0.07	-9.08
300.0	---	2.91	4.76	6.28	6.20	4.64	-0.91	-1.44
315.0	---	4.88	5.26	5.72	2.64	0.72	0.91	3.88
330.0	---	5.60	4.59	3.24	1.21	2.52	5.73	6.59
345.0	---	5.63	4.47	3.69	5.73	7.45	7.81	7.72
360.0	---	5.43	6.29	8.11	10.13	10.23	9.38	8.54

(continuation of the "RP_Bluetooth_ch78_ver" table from column 9 ...)

Azimuth (deg)	Elevation 120 deg (dBm)	Elevation 135 deg (dBm)	Elevation 150 deg (dBm)	Elevation 165 deg (dBm)	Elevation 180 deg (dBm)
0.0	7.37	6.57	6.15	0.10	0.10
15.0	8.41	7.55	7.08	-0.88	---
30.0	8.93	8.04	7.15	-2.54	---
45.0	8.46	7.60	6.25	-4.34	---
60.0	6.28	5.89	4.05	-5.69	---
75.0	1.07	2.51	0.07	-6.69	---
90.0	-1.95	-1.64	-6.03	-6.82	---
105.0	3.75	-0.14	-3.77	-5.60	---
120.0	6.10	2.90	0.90	-3.72	---
135.0	6.46	4.45	3.35	-1.93	---
150.0	6.14	4.86	3.88	-0.65	---
165.0	6.23	4.49	2.82	0.82	---
180.0	6.76	3.78	0.24	1.96	---
195.0	6.60	3.20	-4.66	2.64	---
210.0	4.76	2.23	-14.09	2.71	---
225.0	0.12	-0.01	-17.91	1.83	---
240.0	-9.38	-4.74	-12.00	-0.30	---
255.0	-15.92	-16.23	-10.05	-4.60	---
270.0	-10.06	-11.62	-8.61	-16.29	---
285.0	-3.83	-4.55	-7.07	-9.77	---
300.0	1.34	-0.78	-4.61	-3.17	---
315.0	4.30	1.33	-1.64	-0.34	---
330.0	5.58	2.71	1.58	0.87	---
345.0	6.11	4.37	3.67	1.05	---
360.0	7.37	6.57	6.15	0.10	---

Theta = 0, Phi = 0**Theta = 180, Phi = 0****Theta = 90, Phi = 0****Theta = 90, Phi = 180****Theta = 90, Phi = 270****Theta = 90, Phi = 90**