

Datasheet

DEKA Custom Antenna(s)

Neo Dual Band Antenna DKNE-50376-001

TC40002175-01 PCBA Rev: 1.0

Version 1-0

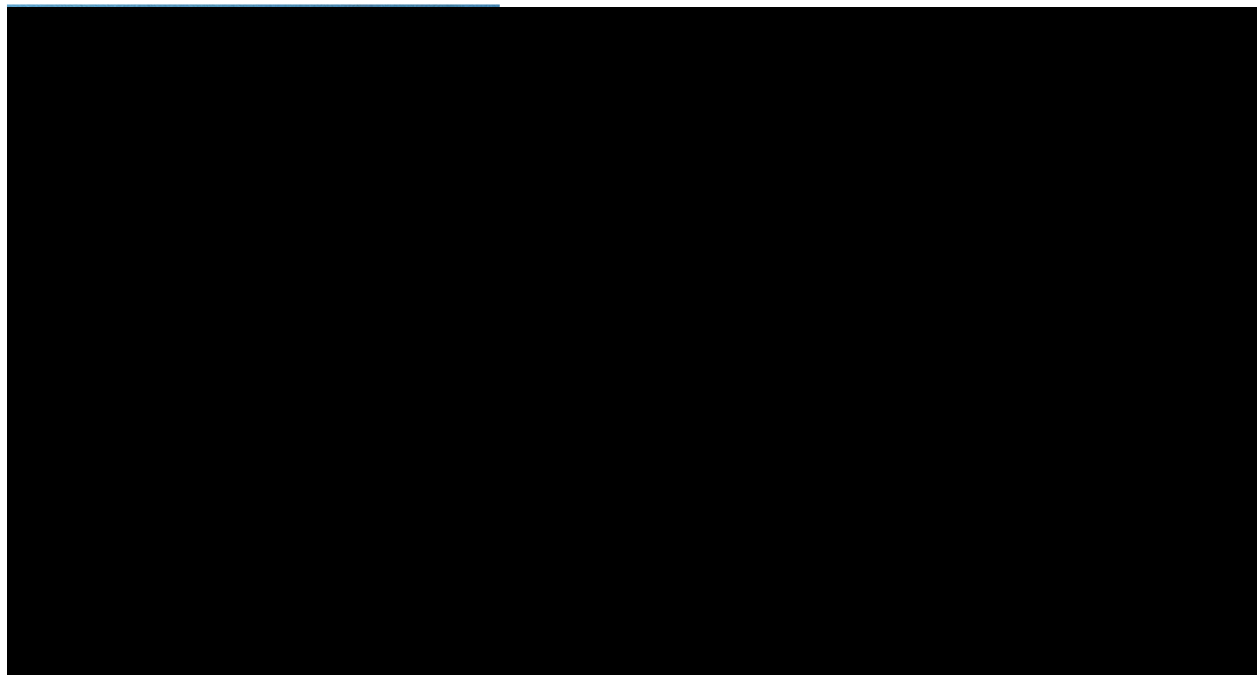
Revision History

Version	Date	Notes	Contributors	Approver
1-0	Jun 9, 2025		Robert Gosewehr	

Contents

1	Specifications	4
2	Test Setup	5
3	Antenna Measurements.....	6
3.1	Return Loss	7
4	Antenna Radiation Performance	8
4.1.1	2.4GHz Band	8
4.1.2	5GHz Band	12
5	Performance Summary	16
6	Appendix	17
6.1.1	2.4GHz Software Test Settings	17
6.1.2	5GHz Software Test Settings.....	18
7	Additional Information	19

1 Specifications



Ant0 Position (Behind LCD Screen/PCB)

Ant1 Position (Behind LCD Screen)

Figure 1: Ant0 (WiFi) Position & Ant1 (WiFi/BT) Position

ELECTRICAL SPECIFICATIONS		
Frequency (MHz)	2400-2480	4900-5900
Peak Gain (dBi)	Ant0 (+1.63) / Ant1 (-0.33)	Ant0 (+2.50) / Ant1 (+5.23)
Average Gain (dB)	Ant0 (-7) / Ant1(-6)	Ant0 (-6) / Ant1(-6.5)
VSWR (MHz)	3.0:1	3.0:1
Isolation (dB) – min.	30	
Impedance (Ω)	50	
Antenna Type	PCB	
Polarization	Linear	

MECHANICAL SPECIFICATIONS	
Dimensions – mm	38.06 x 17.88 x 1.76
Color	PCB (Green)
Cable Dia. (mm)	1.37
Connector Mating Height (max) - mm	MHF1 (U.FL) 2.5
Cable Type	MHF1 to MHF1
Cable Length(s) - mm	Ant0 (WiFi) = ~50 Ant1 (WiFi/BT) = ~225

****Note:** All electrical specifications are based on the current design of Ant0 and Ant1 antennas, MHF1 connector to MHF1 connector 1.37 dia. Coax cable: 50 and 225mm lengths, and current antenna placement(s). Any variation to the antenna design, cable lengths, antenna placements, or any variations of the actual device itself could cause variations to these antenna specifications.**

2 Test Setup

Antenna measurements such as VSWR were measured with a Copper Mountain Planar 804/1 vector network analyzer. Active radiation patterns were measured with a Rohde Schwarz NRX power meter and NRP8S power sensors in a Howland Company 3100 chamber equivalent. Phase center is eight inches above the Phi positioner.

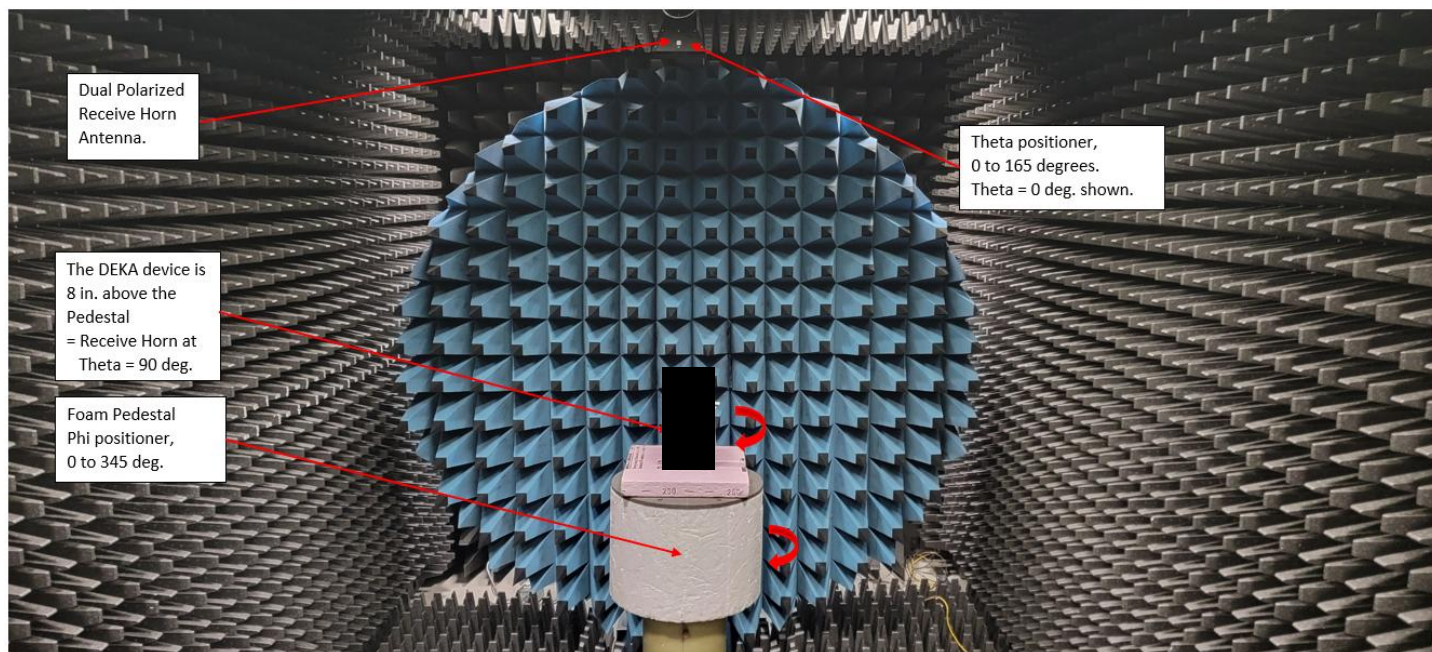
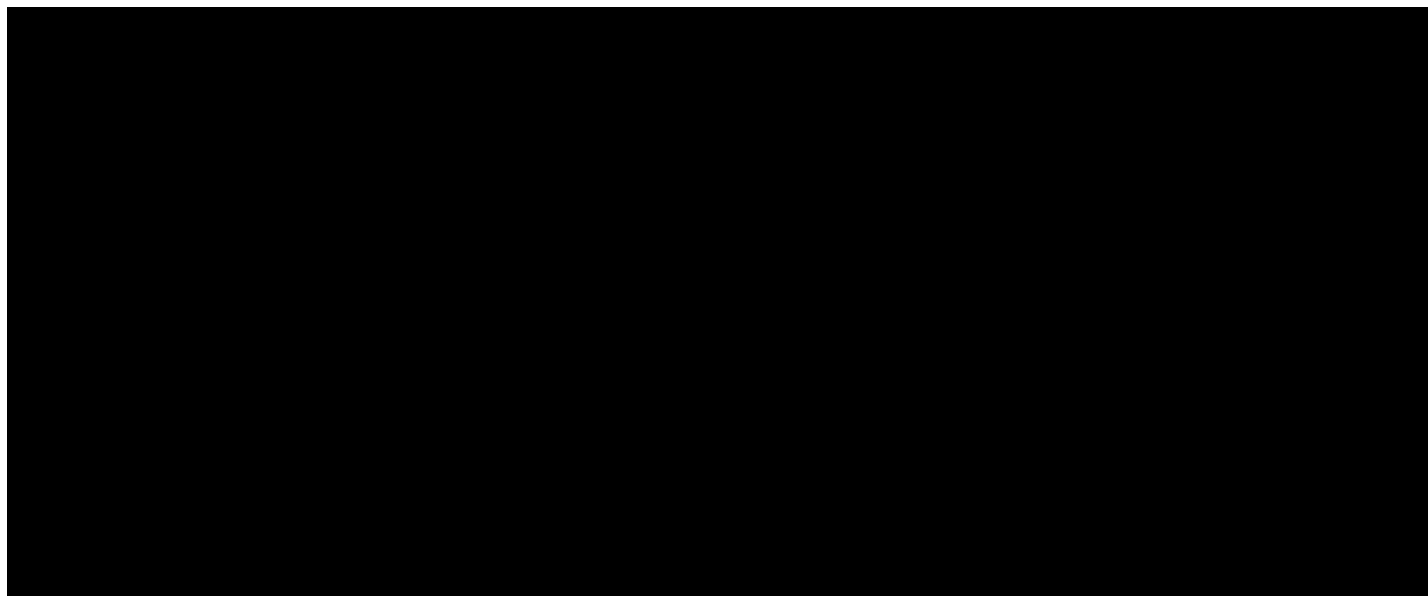


Figure 2: Antenna Chamber

3 Antenna Measurements



3.1 Return Loss

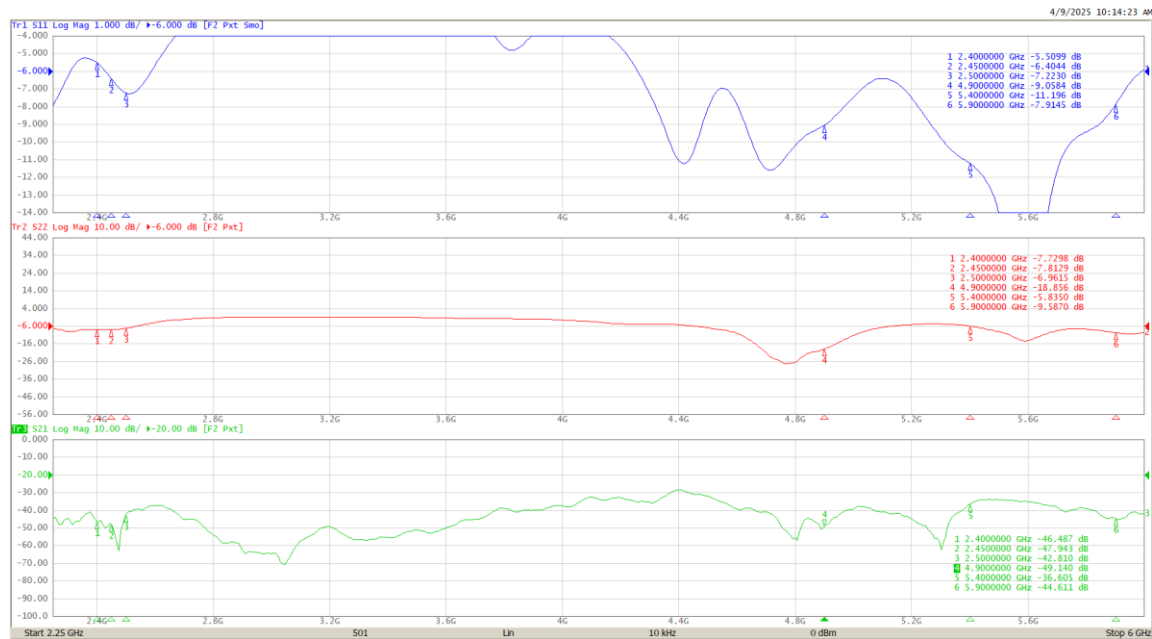


Figure 3: Return Loss Closed Device (TR1 = Ant1 / TR2 = Ant0)

4 Antenna Radiation Performance

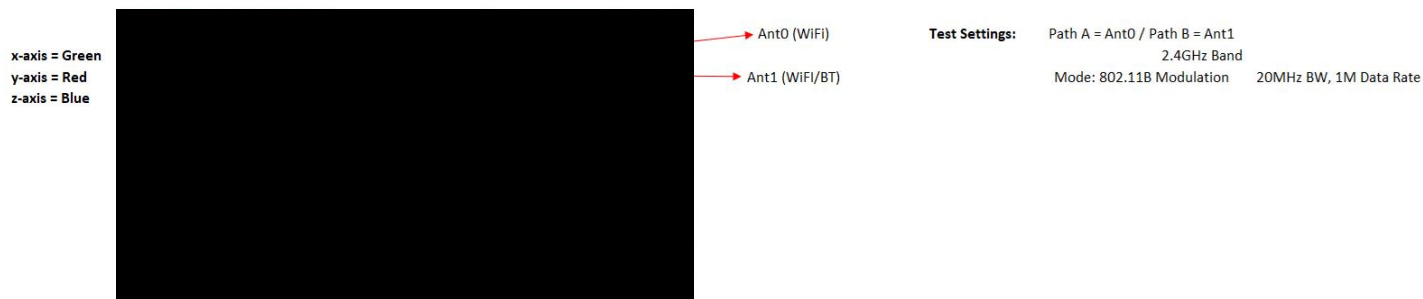


Figure 4: 2.4GHz Radiation Pattern Setup

4.1.1 2.4GHz Band

4.1.1.1 Azimuthal Conical Cuts at 2412MHz

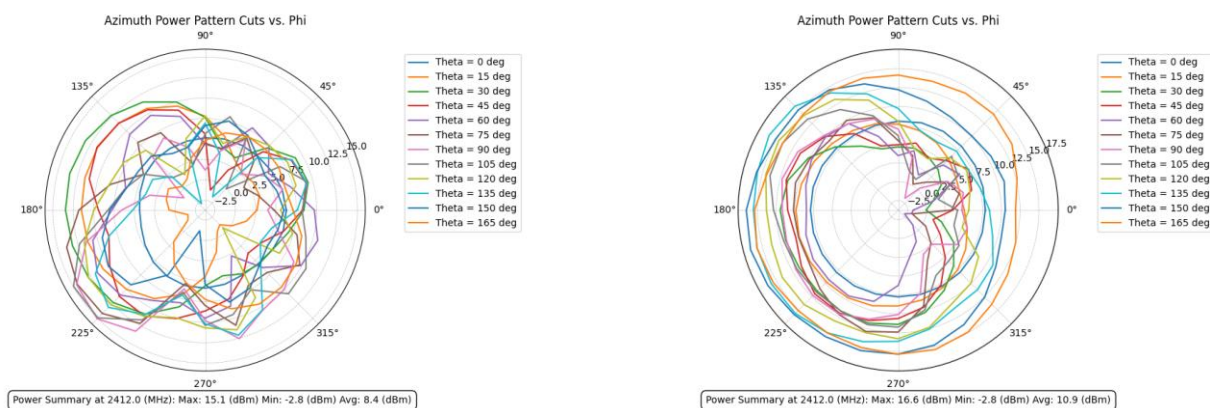
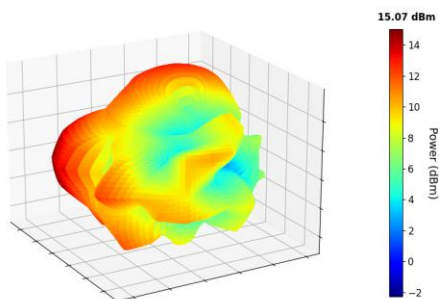


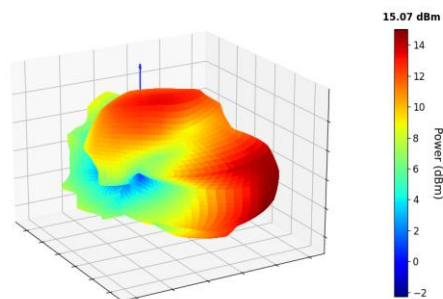
Figure 5: Ant0 (Left) & Ant1 (Right)

4.1.1.2 3D Plots at 2412MHz

Total Radiated Power at 2412.0 MHz, TRP = 8.78 dBm, Max EIRP = 15.07 dBm



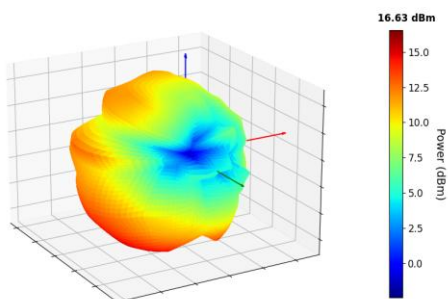
Total Radiated Power at 2412.0 MHz, TRP = 8.78 dBm, Max EIRP = 15.07 dBm



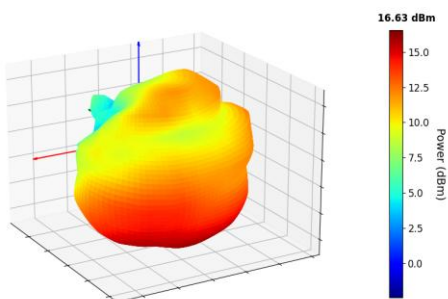
Rotated Around +Z Axis

Figure 6: Ant0 2412MHz 3D Plots

Total Radiated Power at 2412.0 MHz, TRP = 10.59 dBm, Max EIRP = 16.63 dBm



Total Radiated Power at 2412.0 MHz, TRP = 10.59 dBm, Max EIRP = 16.63 dBm



Rotated Around +Z Axis

Figure 7: Ant1 2412MHz 3D Plots

4.1.1.3 Azimuthal Conical Cuts at 2437MHz

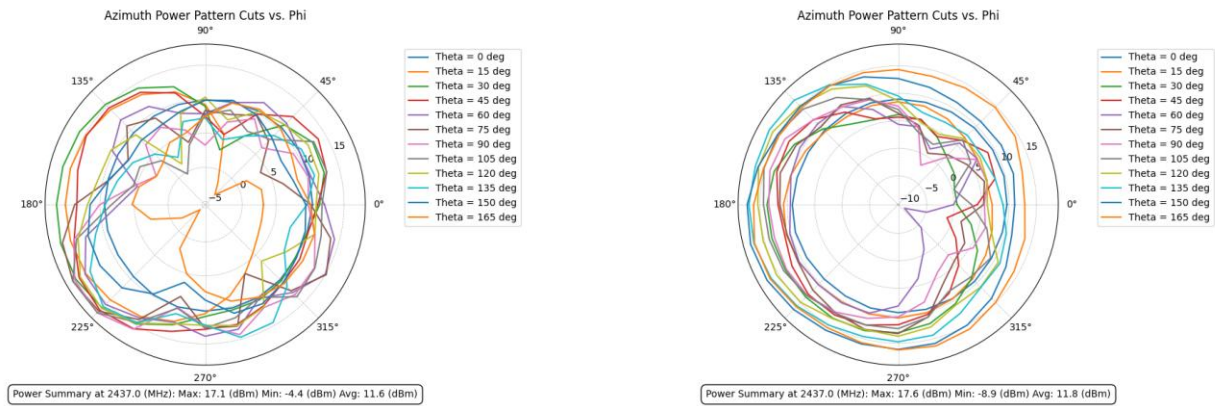
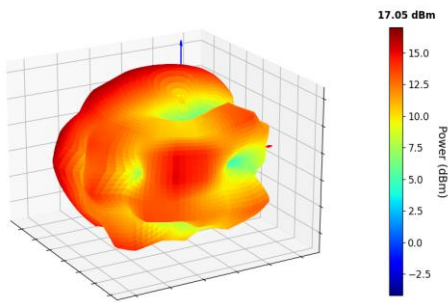


Figure 8: Ant0 (Left) & Ant1 (Right)

4.1.1.4 3D Plots at 2437MHz

Total Radiated Power at 2437.0 MHz, TRP = 11.91 dBm, Max EIRP = 17.05 dBm



Total Radiated Power at 2437.0 MHz, TRP = 11.91 dBm, Max EIRP = 17.05 dBm

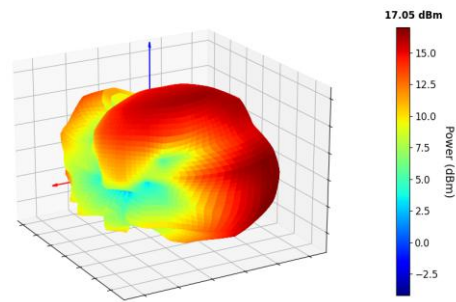
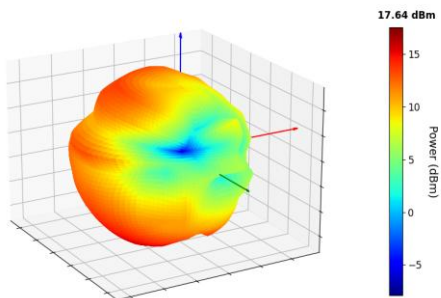


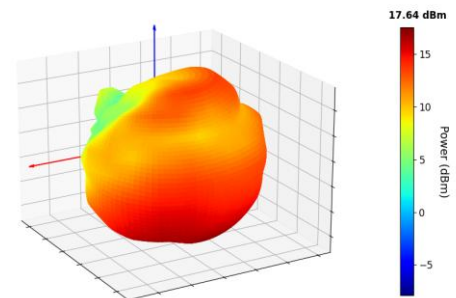
Figure 9: Ant0 2437MHz 3D Plots

Rotated Around +Z Axis

Total Radiated Power at 2437.0 MHz, TRP = 11.55 dBm, Max EIRP = 17.64 dBm



Total Radiated Power at 2437.0 MHz, TRP = 11.55 dBm, Max EIRP = 17.64 dBm



Rotated Around +Z Axis

Figure 10: Ant1 2437MHz 3D Plots

4.1.1.5 Azimuthal Conical Cuts at 2462MHz

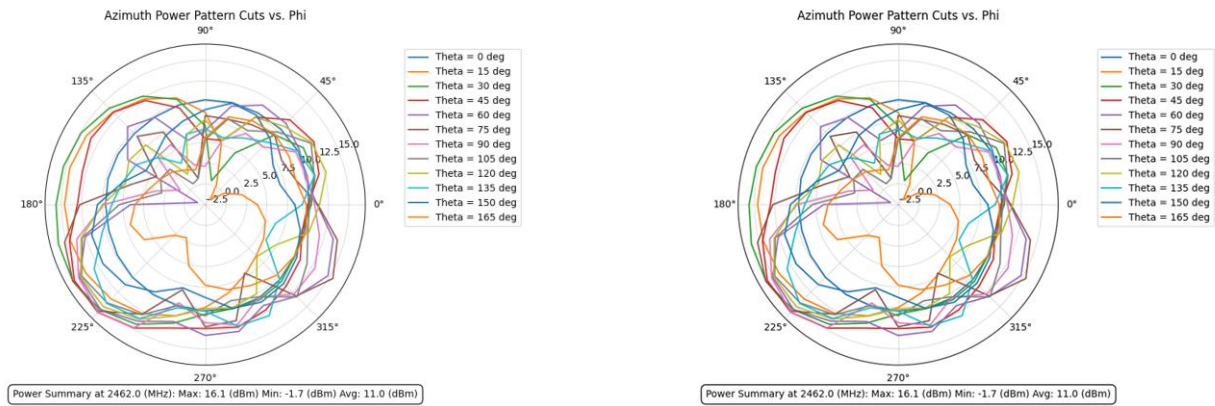
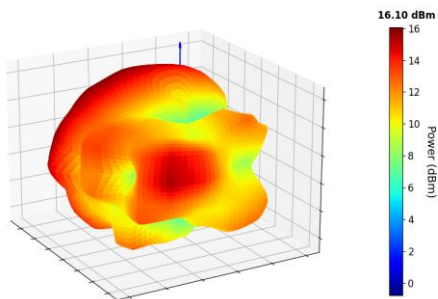


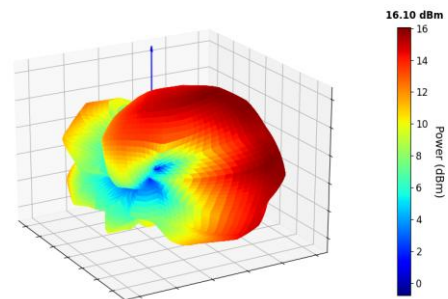
Figure 11: Ant0 (Left) & Ant1 (Right)

4.1.1.6 3D Plots at 2462MHz

Total Radiated Power at 2462.0 MHz, TRP = 11.18 dBm, Max EIRP = 16.10 dBm



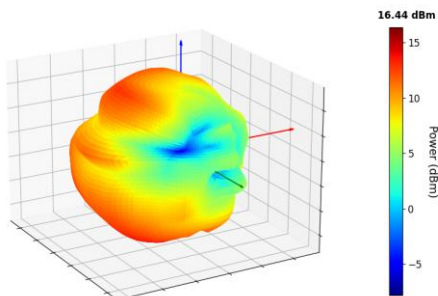
Total Radiated Power at 2462.0 MHz, TRP = 11.18 dBm, Max EIRP = 16.10 dBm



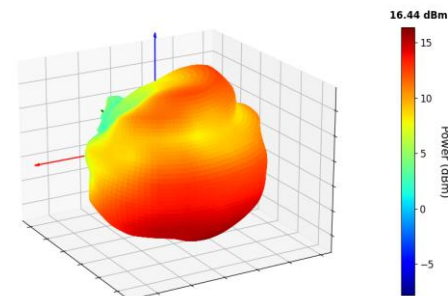
Rotated Around +Z Axis

Figure 12: Ant0 2462MHz 3D Plots

Total Radiated Power at 2462.0 MHz, TRP = 10.26 dBm, Max EIRP = 16.44 dBm



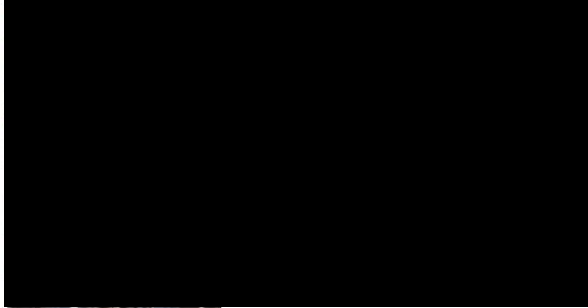
Total Radiated Power at 2462.0 MHz, TRP = 10.26 dBm, Max EIRP = 16.44 dBm



Rotated Around +Z Axis

Figure 13: Ant1 2462MHz 3D Plots

x-axis = Green
y-axis = Red
z-axis = Blue



Ant0 (WiFi)

Ant1 (WiFi/BT)

Test Settings: Path A = Ant0 / Path B = Ant1
5 GHz Band

Mode: 802.11A Modulation 20MHz BW, 6M Data Rate

Figure 14: 5GHz Radiation Pattern Setup

4.1.2 5GHz Band

4.1.2.1 Azimuthal Conical Cuts at 5180MHz

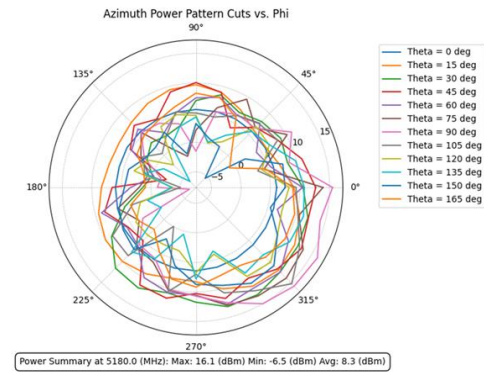
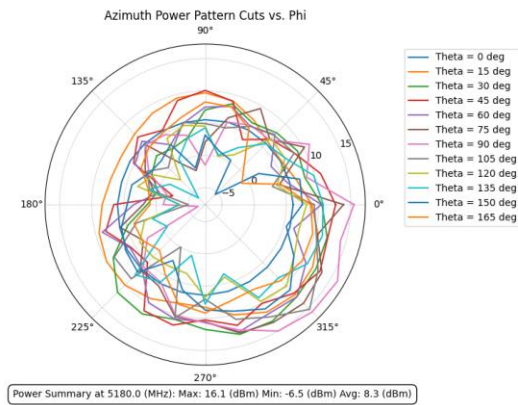
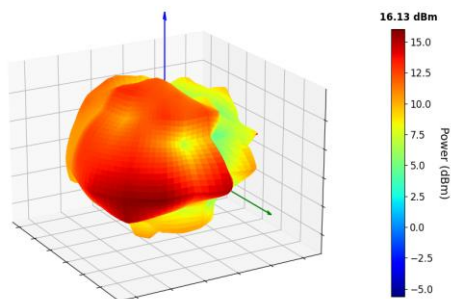


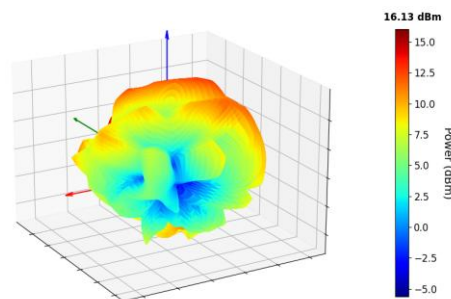
Figure 15: Ant0 (Left) & Ant1 (Right)

4.1.2.2 3D Plots at 5180MHz

Total Radiated Power at 5180.0 MHz, TRP = 8.58 dBm, Max EIRP = 16.13 dBm



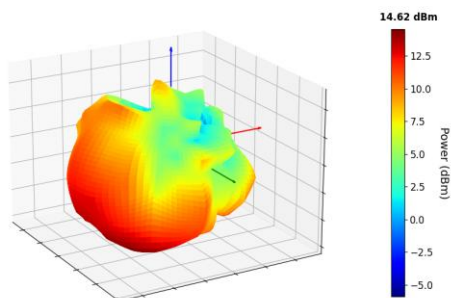
Total Radiated Power at 5180.0 MHz, TRP = 8.58 dBm, Max EIRP = 16.13 dBm



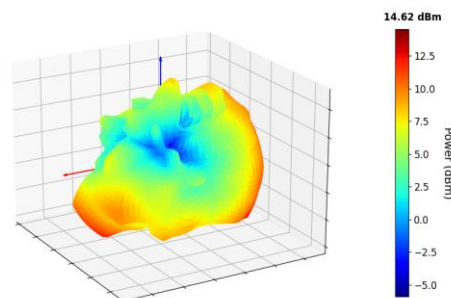
Rotated Around +Z Axis

Figure 16: Ant0 5180MHz 3D Plots

Total Radiated Power at 5180.0 MHz, TRP = 7.57 dBm, Max EIRP = 14.62 dBm



Total Radiated Power at 5180.0 MHz, TRP = 7.57 dBm, Max EIRP = 14.62 dBm



Rotated Around +Z Axis

Figure 17: Ant1 5180MHz 3D Plots

4.1.2.3 Azimuthal Conical Cuts at 5500MHz

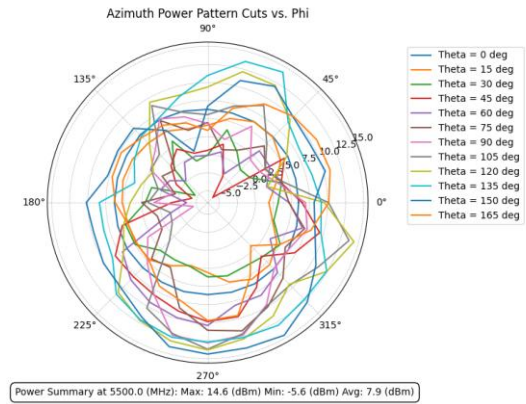
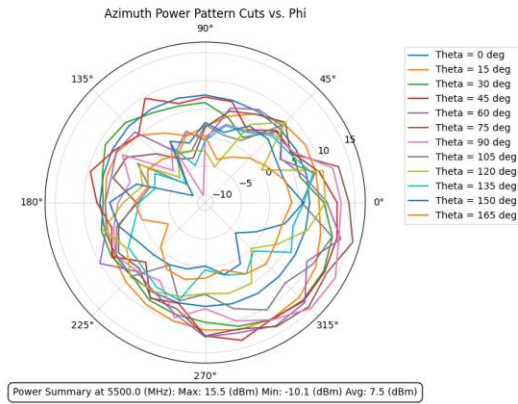
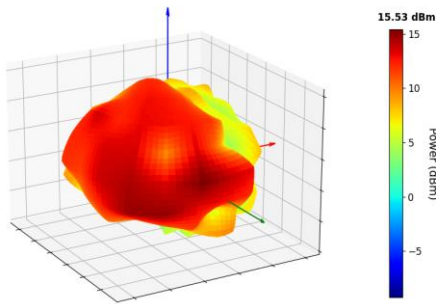


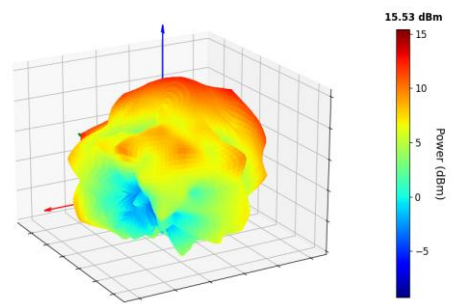
Figure 18: Ant0 (Left) & Ant1 (Right)

4.1.2.4 3D Plots at 5500MHz

Total Radiated Power at 5500.0 MHz, TRP = 7.84 dBm, Max EIRP = 15.53 dBm



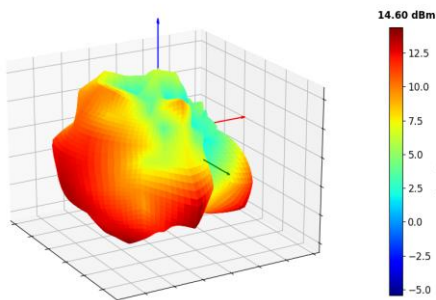
Total Radiated Power at 5500.0 MHz, TRP = 7.84 dBm, Max EIRP = 15.53 dBm



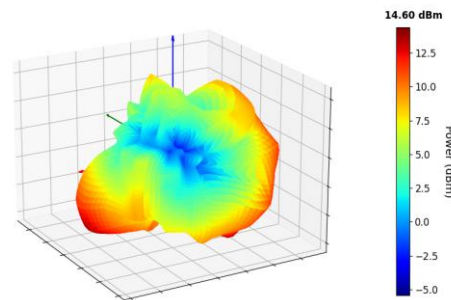
Rotated Around +Z Axis

Figure 19: Ant0 5500MHz 3D Plots

Total Radiated Power at 5500.0 MHz, TRP = 8.06 dBm, Max EIRP = 14.60 dBm



Total Radiated Power at 5500.0 MHz, TRP = 8.06 dBm, Max EIRP = 14.60 dBm



Rotated Around +Z Axis

Figure 20: Ant1 5500MHz 3D Plots

4.1.2.5 Azimuthal Conical Cuts at 5825MHz

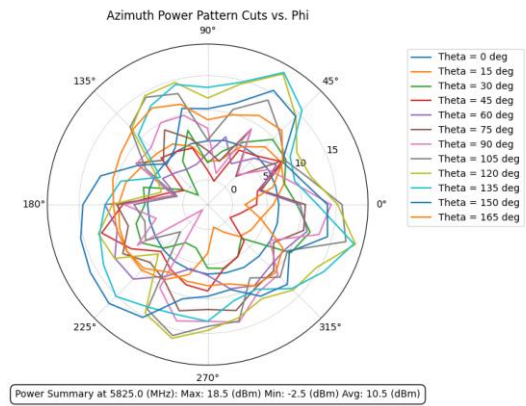
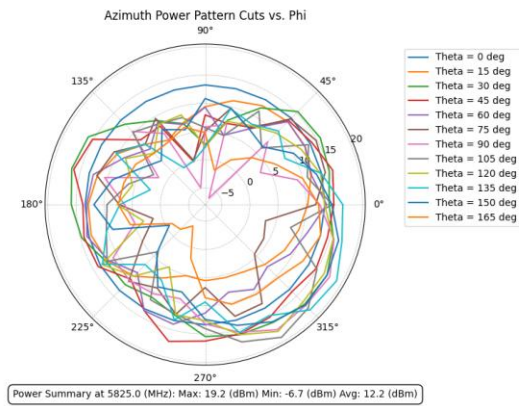
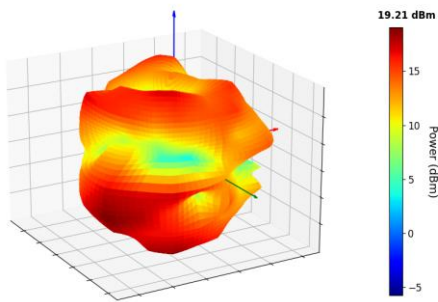


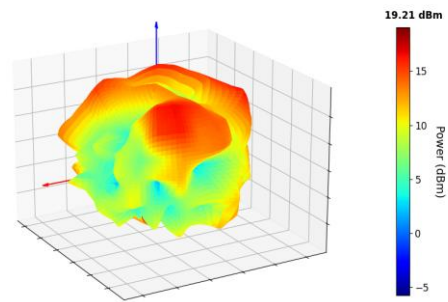
Figure 21: Ant0 (Left) & Ant1 (Right)

4.1.2.6 3D Plots at 5825MHz

Total Radiated Power at 5825.0 MHz, TRP = 12.21 dBm, Max EIRP = 19.21 dBm



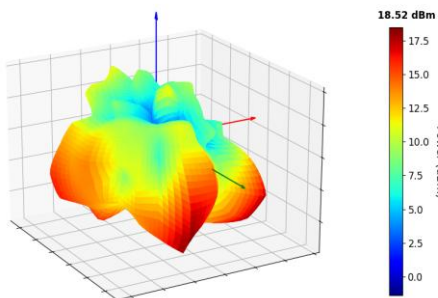
Total Radiated Power at 5825.0 MHz, TRP = 12.21 dBm, Max EIRP = 19.21 dBm



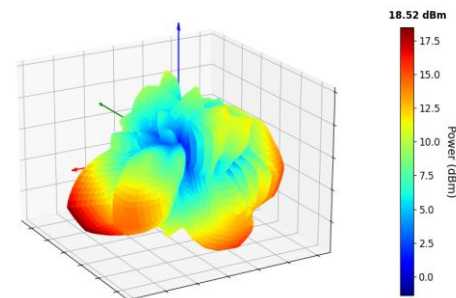
Rotated Around +Z Axis

Figure 22: Ant0 5825MHz 3D Plots

Total Radiated Power at 5825.0 MHz, TRP = 10.96 dBm, Max EIRP = 18.52 dBm



Total Radiated Power at 5825.0 MHz, TRP = 10.96 dBm, Max EIRP = 18.52 dBm



Rotated Around +Z Axis

Figure 23: Ant1 5825MHz 3D Plots

5 Performance Summary

Freq.	Power Setting	Antenna Port TRP		Antenna Port Measured (Compliance)		Efficiency (Ant1)	Efficiency Percentage (Ant1)	Efficiency (Ant0)	Efficiency Percentage (Ant0)	Gain (Ant1)	Gain (Ant0)	Max EIRP (Ant1)	Max EIRP (Ant0)
		Ant1 (WiFi/BT)	Ant0 (WiFi)	Ant1 (WiFi/BT)	Ant0 (WiFi)								
2412	16	10.59	8.78	15.00	15.40	-4.41	36.22	-6.62	21.78	1.63	-0.33	16.63	15.07
2437	18	11.55	11.91	17.00	17.20	-5.45	28.51	-5.29	29.58	0.64	-0.15	17.64	17.05
2462	17	10.26	11.18	16.00	16.20	-5.74	26.67	-5.02	31.48	0.44	-0.10	16.44	16.10
5180	14	7.57	8.58	13.80	14.10	-6.23	23.82	-5.52	28.05	0.82	2.03	14.62	16.13
5500	13	8.06	7.84	12.10	10.30	-4.04	39.45	-2.46	56.75	2.50	5.23	14.60	15.53
5825	18	10.96	12.21	16.40	16.90	-5.44	28.58	-4.69	33.96	2.12	2.31	18.52	19.21

TRP = Total Radiated Power

EIRP = Equivalent Isotropic (Ideal) Radiated Power

Efficiency (dB) = TRP - Antenna Input Power

Gain (dBi) = Maximum EIRP - Antenna Input Power

6 Appendix

6.1.1 2.4GHz Software Test Settings

(Yellow Highlighted Used Above for Measurements)

Nominal Bandwidth	Channel	Mode	Data Rate	Frequency (MHz)	Measured Output Power (dBm) Chain 0	Measured Output Power (dBm) Chain 1	Total Power (mW)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
20	1 11b	1M		2412	15.4	15	66.3	18.2	30	11.8	16
20	2 11b	1M		2417	15.3	15	65.5	18.2	30	11.8	16
20	3 11b	1M		2422	17.2	17	102.6	20.1	30	9.9	18
20	6 11b	1M		2437	17.2	17	102.6	20.1	30	9.9	18
20	9 11b	1M		2452	17.2	17.1	103.8	20.2	30	9.8	18
20	10 11b	1M		2457	16.1	16	80.5	19.1	30	10.9	17
20	11 11b	1M		2462	16.2	16	81.5	19.1	30	10.9	17
20	1 11g	6M		2412	13.3	12.9	40.9	16.1	30	13.9	14
20	2 11g	6M		2417	15.2	14.8	63.3	18	30	12	16
20	3 11g	6M		2422	17.1	16.8	99.1	20	30	10	18
20	6 11g	6M		2437	17.1	16.9	100.3	20	30	10	18
20	9 11g	6M		2452	17.1	16.9	100.3	20	30	10	18
20	10 11g	6M		2457	15.1	15	64	18.1	30	11.9	16
20	11 11g	6M		2462	13.1	13.1	40.8	16.1	30	13.9	14
20	1 11n	HT20		2412	12.5	12	33.6	15.3	30	14.7	13
20	2 11n	HT20		2417	15.4	15	66.3	18.2	30	11.8	16
20	3 11n	HT20		2422	17.3	17	103.8	20.2	30	9.8	18
20	6 11n	HT20		2437	17.2	17.1	103.8	20.2	30	9.8	18
20	9 11n	HT20		2452	17.2	17.1	103.8	20.2	30	9.8	18
20	10 11n	HT20		2457	15.3	15.1	66.2	18.2	30	11.8	16
20	11 11n	HT20		2462	11.3	11.3	27	14.3	30	15.7	12
40	3 11n	HT40		2422	14.3	14	52	17.2	30	12.8	15
40	6 11n	HT40		2437	14.3	13.2	47.8	16.8	30	13.2	14
40	9 11n	HT40		2452	14.2	14.1	52	17.2	30	12.8	15

6.1.2 5GHz Software Test Settings

(Yellow Highlighted Used Above for Measurements)

Nominal Bandwidth	Channel	Mode	Data Rate	Frequency (MHz)	Measured Output Power (dBm) Chain 0	Measured Output Power (dBm) Chain 1	Total Power (mW)	Total Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
20	36	11a	6M	5180	14.1	13.8	49.7	17	24	7	14
20	40	11a	6M	5200	17.8	17.5	116.5	20.7	24	3.3	18
20	48	11a	6M	5240	17.3	17.3	107.4	20.3	24	3.7	18
20	36	HT20	MCS0	5180	14.1	13.9	50.3	17	24	7	14
20	40	HT20	MCS0	5200	17.9	17.8	121.9	20.9	24	3.1	18
20	48	HT20	MCS0	5240	17.5	17.5	112.5	20.5	24	3.5	18
20	36	VHT20	MCS0	5180	14.3	13.8	50.9	17.1	24	6.9	14
20	40	VHT20	MCS0	5200	18	17.6	120.6	20.8	24	3.2	18
20	48	VHT20	MCS0	5240	17.5	17.4	111.2	20.5	24	3.5	18
20	52	11a	6M	5260	15.1	15.6	68.7	18.4	23.9	5.5	16
20	60	11a	6M	5300	14.6	15.1	61.2	17.9	24	6.1	16
20	64	11a	6M	5320	12.5	13.1	38.2	15.8	24	8.2	14
20	52	HT20	MCS0	5260	15.3	15.5	69.4	18.4	24	5.6	16
20	60	HT20	MCS0	5300	14.7	15.2	62.6	18	24	6	16
20	64	HT20	MCS0	5320	12.6	13.2	39.1	15.9	24	8.1	14
20	52	VHT20	MCS0	5260	15.3	15.4	68.6	18.4	24	5.6	16
20	60	VHT20	MCS0	5300	14.7	15.2	62.6	18	24	6	16
20	64	VHT20	MCS0	5320	12.6	13.1	38.6	15.9	24	8.1	14
20	100	11a	6M	5500	10.3	12.1	26.9	14.3	24	9.7	13
20	116	11a	6M	5580	16.1	17.2	93.2	19.7	24	4.3	18
20	140	11a	6M	5700	11	11	25.2	14	23.8	9.8	12
20	100	HT20	MCS0	5500	11.4	13.2	34.7	15.4	24	8.6	14
20	116	HT20	MCS0	5580	16.3	17.4	97.6	19.9	24	4.1	18
20	140	HT20	MCS0	5700	12.1	12.1	32.4	15.1	24	8.9	13
20	100	VHT20	MCS0	5500	11.5	13.2	35	15.4	24	8.6	14
20	116	VHT20	MCS0	5580	16.3	17.4	97.6	19.9	24	4.1	18
20	140	VHT20	MCS0	5700	12.1	12.1	32.4	15.1	24	8.9	13
20	144	11a	6M	5720	16.8	16.7	94.6	19.8	24	4.2	18
20	144	HT20	MCS0	5720	16.8	16.8	95.7	19.8	24	4.2	18
20	144	VHT20	MCS0	5720	16.8	16.8	95.7	19.8	24	4.2	18
20	149	11a	6M	5745	17.1	16.5	96	19.8	30	10.2	18
20	157	11a	6M	5785	17.1	16.5	96	19.8	30	10.2	18
20	165	11a	6M	5825	16.9	16.4	92.6	19.7	30	10.3	18
20	149	HT20	MCS0	5745	17.3	16.7	100.5	20	30	10	18
20	157	HT20	MCS0	5785	17.3	16.7	100.5	20	30	10	18
20	165	HT20	MCS0	5825	17.1	16.6	97	19.9	30	10.1	18
20	149	VHT20	MCS0	5745	17.3	16.7	100.5	20	30	10	18
20	157	VHT20	MCS0	5785	17.2	16.7	99.3	20	30	10	18
20	165	VHT20	MCS0	5825	17.1	16.6	97	19.9	30	10.1	18
40	38	HT40	MCS0	5190	13	12.7	38.6	15.9	24	8.1	13
40	46	HT40	MCS0	5230	15.7	15.5	72.6	18.6	24	5.4	16
40	38	VHT40	MCS0	5190	13	12.7	38.6	15.9	24	8.1	13
40	46	VHT40	MCS0	5230	15.7	15.4	71.8	18.6	24	5.4	16
40	54	HT40	MCS0	5270	14.2	14.3	53.2	17.3	30	12.7	15
40	62	HT40	MCS0	5310	10.7	11.2	24.9	14	30	16	12
40	54	VHT40	MCS0	5270	14.3	14.4	54.5	17.4	30	12.6	15
40	62	VHT40	MCS0	5310	10.7	11.2	24.9	14	30	16	12
40	102	HT40	MCS0	5510	10.7	12.3	28.7	14.6	30	15.4	13
40	110	HT40	MCS0	5550	14.2	15.5	61.8	17.9	30	12.1	16
40	134	HT40	MCS0	5670	13.4	13.5	44.3	16.5	30	13.5	14
40	102	VHT40	MCS0	5510	10.7	12.3	28.7	14.6	30	15.4	13
40	110	VHT40	MCS0	5550	14.1	15.5	61.2	17.9	30	12.1	16
40	134	VHT40	MCS0	5670	13.4	13.6	44.8	16.5	30	13.5	14
40	142	HT40	MCS0	5710	15.3	15.5	69.4	18.4	30	11.6	16
40	142	VHT40	MCS0	5710	15.3	15.4	68.6	18.4	30	11.6	16
40	151	HT40	MCS0	5755	15.6	14.8	66.5	18.2	30	11.8	16
40	159	HT40	MCS0	5795	15.5	14.9	66.4	18.2	30	11.8	16
40	151	VHT40	MCS0	5755	15.6	14.9	67.2	18.3	30	11.7	16
40	159	VHT40	MCS0	5795	15.5	14.9	66.4	18.2	30	11.8	16
80	42	VHT80	MCS0	5210	10.6	10.5	22.7	13.6	24	10.4	10
80	58	VHT80	MCS0	5290	10.8	11	24.6	13.9	30	16.1	11
80	106	VHT80	MCS0	5530	9.5	11	21.5	13.3	30	16.7	11
80	122	VHT80	MCS0	5610	13.4	14.4	49.4	16.9	30	13.1	14
80	138	VHT80	MCS0	5690	14.2	14.2	52.6	17.2	30	12.8	14
80	155	VHT80	MCS0	5775	14.5	13.7	51.6	17.1	30	12.9	14

7 Additional Information

Please contact your local sales representative or our support team for further assistance:

Headquarters	Ezurio 50 S. Main St. Suite 1100 Akron, OH 44308 USA
Website	http://www.ezurio.com
Technical Support	http://www.ezurio.com/resources/support
Sales Contact	http://www.ezurio.com/contact

Note: Information contained in this document is subject to change.

Ezurio's products are subject to standard [Terms & Conditions](#).

© Copyright 2024 Ezurio All Rights Reserved. Any information furnished by Ezurio and its agents is believed to be accurate but cannot be guaranteed. All specifications are subject to change without notice. Responsibility for the use and application of Ezurio materials or products rests with the end user since Ezurio and its agents cannot be aware of all potential uses. Ezurio makes no warranties as to non-infringement nor as to the fitness, merchantability, or sustainability of any Ezurio materials or products for any specific or general uses. Ezurio or any of its affiliates or agents shall not be liable for incidental or consequential damages of any kind. All Ezurio products are sold pursuant to the Ezurio Terms and Conditions of Sale in effect from time to time, a copy of which will be furnished upon request. Nothing herein provides a license under any Ezurio or any third-party intellectual property right. Ezurio and its associated logos are trademarks owned by Ezurio and/or its affiliates.