



Bluetooth & Wi-Fi antennas

Specification & Test report

Applicable to Set top boxes

Platform: UZW4060TCH

**Models derived from platform (and not limited to)
UIW4060TVO – UIW4060MDC**

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Document revision

Version	Owner	Status	Description
0.1	I. Ben Trad	Draft	Creation
1.0	I. Ben Trad P. Will	Draft	Add radiation patterns Cosmetic updates
1.1	P. Will	Draft	Add antenna gain summary table Move to final document release
1.2	I. Ben Trad	Proposed	Update §1.7

1.1 Introduction

Document does provide antenna technical data for Jade 21 platform also known as UZW4060TCH and data are also applicable for any associated models (like but not limited to UIW4060TVO, UIW4060MDC).

1.2 Test equipment

- List of used equipment:
 - Network Analyzer: R&S ZNB 20



Figure 1 : Used network analyzer

- StarLab



Figure 2 : Used StarLab.

Test Company	Vantiva (formerly known as Technicolor)
Test Address	975 Avenue des Champs Blancs. 35576 Cesson-Sévigné Cédex, France
Test Date	04-19-2021
Test Instruments	Network Analyzer: R&S ZNB 20, StarLab

1.3 D.U.T

The UZW4060TCH contains:

- One on-board metallic dual-band WiFi antenna: DB1
- One off-board dual-band WiFi antenna: DB2
- One on-board printed 2.4G antenna: BT

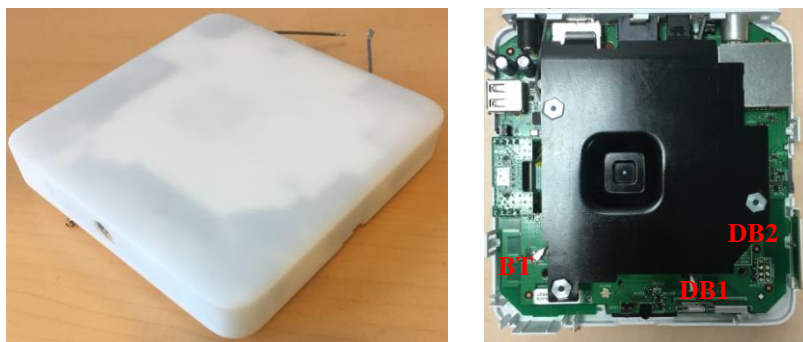


Figure 3: View of the UZW4060TCH device.

1.4 Antenna gain summary table

(maximum values)

Frequency band	2400-2483,5 MHz	5150-5350 MHz	5470-5725 MHz	5725-5850 MHz
WiFi frequency channels	CH1-13	CH36-64	CH100-140	CH149-165
ANT1=DB1	3,00	3,09	3,87	4,14
ANT2=DB2	4,06	4,97	5,01	4,94
Correlated directional gain	4,89	5,26	4,63	4,77
Uncorrelated directional gain	2,46	2,83	2,19	2,05
BT	2,97	-	-	-

1.5 Peak Gain & efficiency

DB1		
Frequency (MHz)	Efficiency (%)	Gain (dBi)
2400	62	1.96
2412	62	2.13
2417	63	2.20
2422	63	2.31
2427	64	2.37
2432	63	2.46
2437	63	2.62
2442	64	2.62
2447	64	2.64
2452	64	2.76
2457	63	2.63
2462	64	2.74
2467	66	2.98
2472	65	2.77
2477	65	2.9
2483.5	65	3.00
2484	65	2.99
2490	63	2.83
2500	64	2.87

DB2		
Frequency (MHz)	Efficiency (%)	Gain (dBi)
2400	72	3.52
2412	73	3.59
2417	74	3.68
2422	75	3.91
2427	76	3.88
2432	76	3.93
2437	76	3.93
2442	77	3.99
2447	77	4.04
2452	77	4.06
2457	76	4.05
2462	77	3.99
2467	78	3.95
2472	77	4.00
2477	77	4.02
2483.5	77	3.94
2484	77	3.96
2490	74	3.86
2500	76	3.89

BT		
Frequency (MHz)	Efficiency (%)	Gain (dBi)
2400	80	2.96
2412	81	2.88
2417	82	2.93
2422	81	2.79
2427	82	2.97
2432	82	2.84
2437	80	2.62
2442	81	2.68
2447	79	2.49
2452	79	2.39
2457	78	2.40
2462	79	2.46
2467	80	2.45
2472	78	2.34
2477	78	2.22
2483.5	79	2.33
2484	79	2.31
2490	76	2.11
2500	75	1.98

Figure 4 : Efficiency and peak gain of DB1, DB2 and BT in 2.4GHz band

DB1		
Frequency (MHz)	Efficiency (%)	Gain (dBi)
5150	72	2.63
5180	72	2.71
5190	73	2.84
5200	73	2.93
5210	73	2.94
5220	74	3.05
5230	74	3.03
5240	74	2.99
5250	75	3.09
5260	74	2.95
5270	74	2.93
5280	75	2.93
5290	75	2.87
5300	75	2.85
5310	75	2.87
5320	75	2.85
5350	74	2.88
5400	74	2.79
5450	72	2.72
5470	71	2.74
5500	70	2.80
5510	70	2.88
5520	69	2.82
5530	70	2.92
5540	70	2.98
5550	69	2.95
5560	71	3.10
5570	69	3.04
5580	68	2.99
5590	70	3.16
5600	68	3.09
5610	68	3.14
5620	70	3.31
5630	69	3.27
5640	71	3.36
5660	70	3.40
5670	72	3.56
5680	71	3.60
5690	71	3.66
5700	73	3.79
5710	72	3.76
5720	73	3.87
5725	71	3.78
5745	74	4.04
5755	72	4.01
5765	70	3.86
5775	71	3.96

DB2		
Frequency (MHz)	Efficiency (%)	Gain (dBi)
5150	80	4.30
5180	79	4.44
5190	80	4.52
5200	80	4.57
5210	79	4.58
5220	80	4.61
5230	80	4.63
5240	79	4.67
5250	80	4.75
5260	79	4.78
5270	79	4.80
5280	79	4.86
5290	79	4.88
5300	78	4.89
5310	79	4.97
5320	79	4.96
5350	78	4.97
5400	78	4.92
5450	78	4.96
5470	77	4.90
5500	78	4.93
5510	78	4.97
5520	77	4.93
5530	79	5.01
5540	79	5.00
5550	78	4.96
5560	80	5.04
5570	78	4.96
5580	78	4.92
5590	79	4.99
5600	77	4.90
5610	78	4.91
5620	80	4.96
5630	79	4.91
5640	80	4.98
5660	79	4.92
5670	81	4.96
5680	80	4.93
5690	80	4.91
5700	81	4.94
5710	80	4.91
5720	81	4.92
5725	79	4.85
5745	81	4.94
5755	79	4.84
5765	78	4.79
5775	79	4.84

5785	72	4.14	5785	81	4.92
5795	71	4.06	5795	79	4.88
5800	70	4.05	5800	79	4.88
5805	69	3.86	5805	77	4.82
5825	70	4.14	5825	79	4.88
5850	68	4.01	5850	78	4.77

Figure 5 : Efficiency and peak gain of DB1 and DB2 in 5GHz band

1.6 BT antenna: 2D radiation pattern

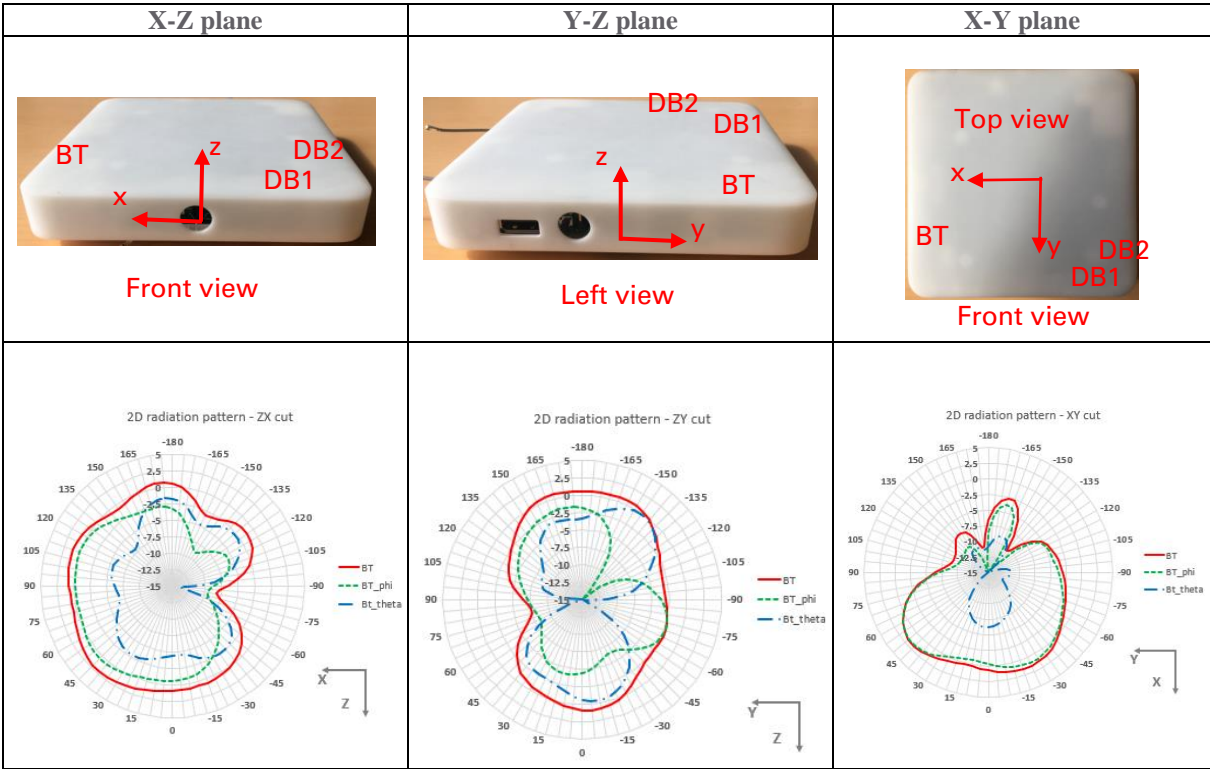


Figure 6 : 2D cuts of peak gain for BT antenna @2.45GHz.

1.7 Directional gain

Frequency (MHz)	Peak directional gain 1S2T (DB1+DB2) (dBi)	Peak directional gain 2S2T (DB1, DB2) (dBi)
2400	4.17	1.50
2412	4.09	1.54
2417	4.11	1.63
2422	4.23	1.80
2427	4.31	1.85
2432	4.41	1.94
2437	4.51	2.00
2442	4.59	2.10
2447	4.66	2.18
2452	4.72	2.22
2457	4.74	2.26
2462	4.77	2.30
2467	4.89	2.42
2472	4.78	2.39
2477	4.81	2.46
2483.5	4.81	2.46
2484	4.80	2.46
2490	4.66	2.41
2500	4.69	2.51

Figure 7 : Directional gain for correlated signals of Wi-Fi antennas @2G.

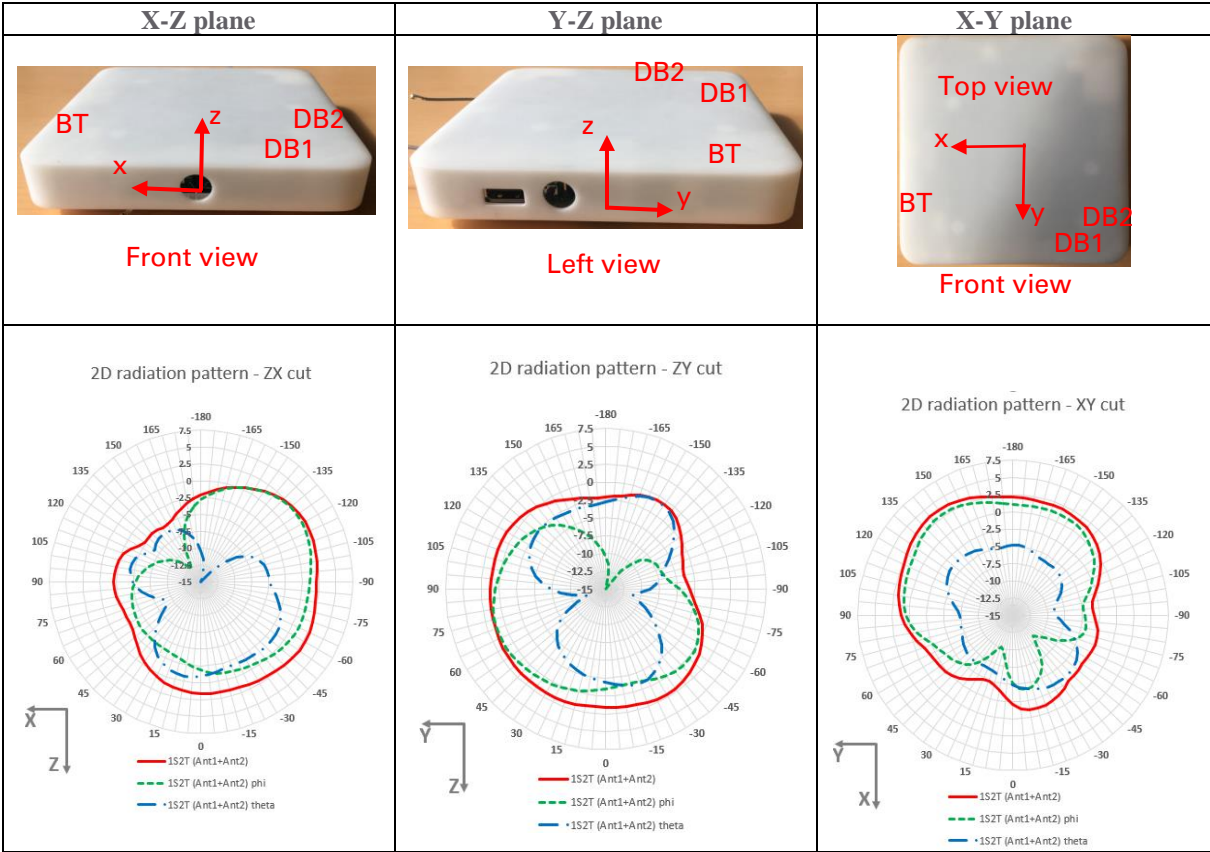


Figure 8 : 2D cuts of the directional gain for correlated signals of Wi-Fi antennas @ 2.45GHz.

Frequency (MHz)	Peak directional gain 1S2T (DB1+DB2) (dBi)	Peak directional gain 2S2T (DB1, DB2) (dBi)
5150	5.22	2.77
5180	5.17	2.76
5190	5.24	2.82
5200	5.26	2.83
5210	5.23	2.80
5220	5.24	2.81
5230	5.20	2.77
5240	5.14	2.72
5250	5.11	2.73
5260	5.02	2.65
5270	4.94	2.59
5280	4.90	2.58
5290	4.81	2.51
5300	4.83	2.47
5310	4.91	2.52
5320	4.92	2.50
5350	4.90	2.46
5400	4.59	2.29
5450	4.51	2.26

5470	4.44	2.19
5500	4.39	2.16
5510	4.39	2.17
5520	4.29	2.11
5530	4.32	2.18
5540	4.29	2.16
5550	4.21	2.11
5560	4.27	2.18
5570	4.13	2.08
5580	4.04	2.03
5590	4.08	2.10
5600	4.02	2.00
5610	4.08	2.01
5620	4.22	2.09
5630	4.20	2.04
5640	4.31	2.10
5660	4.37	2.04
5670	4.50	2.07
5680	4.49	2.04
5690	4.51	2.02
5700	4.61	2.05
5710	4.57	2.02
5720	4.63	2.03
5725	4.59	1.96
5745	4.77	2.05
5755	4.61	1.95
5765	4.60	1.90
5775	4.66	1.95
5785	4.63	2.03
5795	4.59	1.99
5800	4.61	1.99
5805	4.60	1.94
5825	4.59	2.04
5850	4.41	2.02

Figure 9 : Directional gain for correlated signals of Wi-Fi antennas @5G.

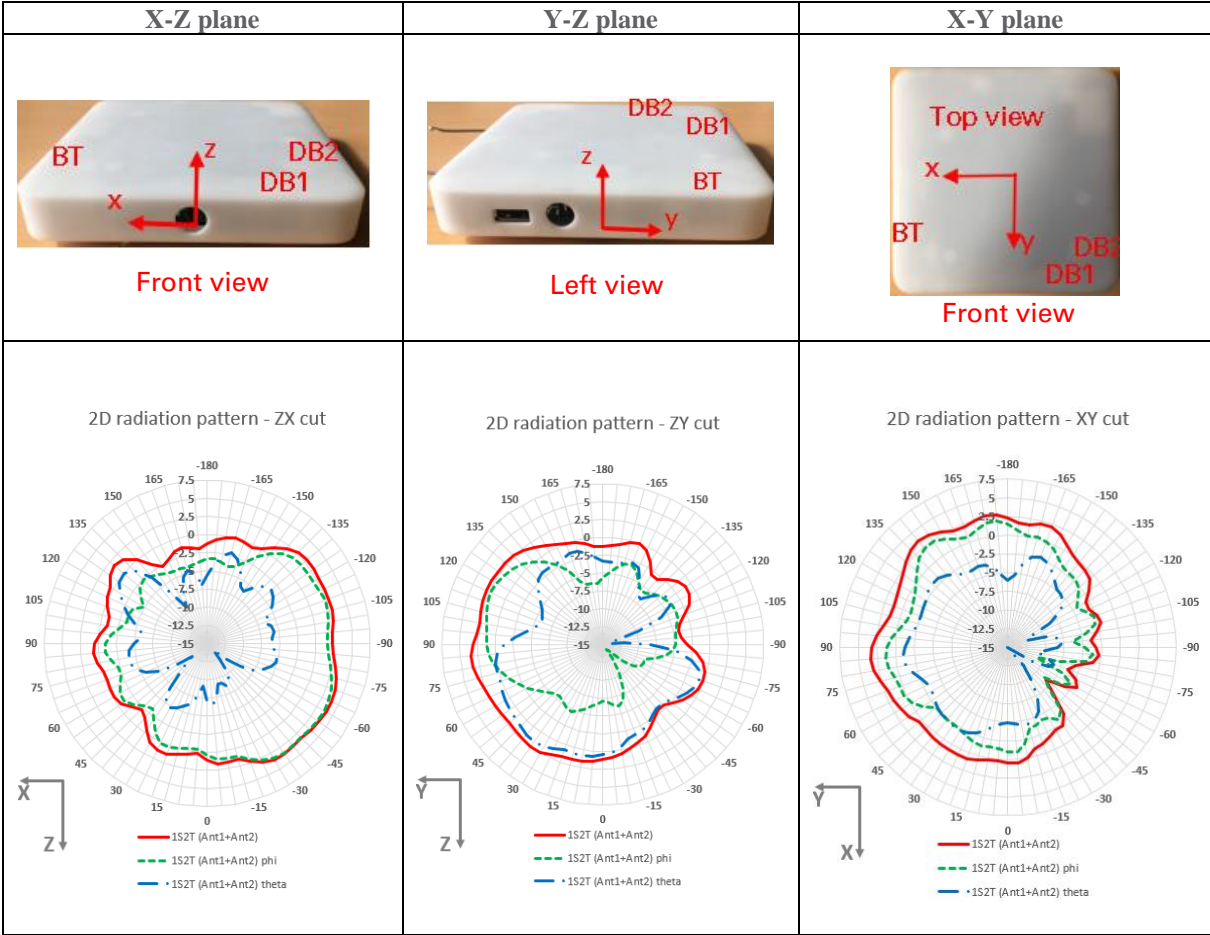


Figure 10 : 2D cuts of the directional gain for correlated signals of Wi-Fi antennas @5.5GHz.

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