

Supporting information

Measurement data used in Section 4.2 are listed as follows:

Distance (m)	Propagation loss		
	2.2 GHz	5.2 GHz	26.4 GHz
100	81.942	88.521	109.6
110	91.393	95.281	115.06
120	94.046	96.09	113.59
130	99.199	103.13	120.66
140	102.19	105.19	122.59
150	104.65	107.03	122.21
160	97.098	102.2	120.65
170	100.96	107.69	123.84
180	102.11	109.38	125.6
190	102.15	106.06	123.5
200	103.62	108.61	127.37
210	101.38	109.19	125.59
220	98.748	105.16	124.12
230	99.428	105.65	124.05
240	99.243	105.1	122.8
250	97.412	103	122.98
260	97.622	104.48	122.95
270	104.61	110.15	129.69
280	106.65	113.58	131
290	111.75	119.65	136.16
300	116.45	123.36	139.7
310	116.04	123.32	141.27
320	121.82	126.52	145.6
330	121.79	127.41	143.47
340	120.33	127.58	143.33
350	117.58	125.08	140.93
360	114.46	122.76	138.4
370	118.06	124.78	141.56
380	116.07	121.82	140.51
390	113.09	118.11	136.08
400	109.66	117.31	134.04
410	121.78	128.96	146.75
420	117.13	120.47	137.48

430	120.69	124.21	140.64
440	119.8	122.28	138.77
450	117.69	123.9	140.57
460	120.76	125.33	143.32
470	118.92	119.19	138.8
480	119.7	119.23	137.6
490	119.34	122.53	140.05
500	115.95	122.13	139.06
510	120.14	125.57	142.84
520	118.93	124.57	142.5
530	119.1	128.02	143.32
540	119.47	126.81	142.58
550	118.71	123.17	141.75
560	117.5	121.47	139.69
570	118.55	123.68	140.55
580	120.07	124.96	141.45
590	120.57	126.64	142.6
600	117.23	122.86	140.93
610	115.97	122.24	140.28
620	121.39	126.42	143.31
630	120.36	125.79	141.88
640	123.52	125.12	142.98
650	122.05	125.26	144.6
660	119.3	125.04	143.21
670	118.72	124.54	143.51
680	123.62	128.1	149
690	124.82	128.92	147.72
700	123.25	129.14	147.02
710	125.66	129.79	147.82
720	124	129.68	147.32
730	119.79	126.59	143.81
740	120.2	127.78	144.35
750	127.45	130.62	148.95
760	127.87	131.93	150.72
770	120.78	128.28	145.31
780	125.32	131.55	149.16
790	126.92	131.09	149.26
800	127.91	132.12	150.37
810	128.81	132.59	150.71

820	129.59	132.71	151.22
830	128.24	131.09	148.46
840	126.21	132.12	150.41
850	121.49	126.54	145.15
860	128.32	133.52	151.93
870	130.19	134.09	152.48
880	130.04	135.73	153.54
890	130.39	135.7	153.75
900	127.29	133.63	151.57
910	125.69	132.96	144.72
920	124.48	130.52	149.66
930	122.82	129.4	150.49
940	118.94	129.38	150.62
950	120.14	130.61	151.24
960	124.91	129.71	149.61
970	126.84	133.88	153.51
980	129.08	133.85	153.55
990	128.35	134.1	153.59
1000	125.18	130.18	148.11
1010	122.02	129.31	147
1020	124.2	130.72	143.9
1030	124.84	130.13	148.58
1040	123.47	129.61	149.08
1050	124.74	130.7	147.95
1060	127.55	131.93	149.77
1070	122.1	125.78	148.38
1080	126.2	131.96	151.07
1090	126.93	129.83	149.2
1100	126.86	130.75	149.33
1110	127.25	131.76	151.58
1120	126.24	131.48	150.65
1130	125.51	131.51	150.37
1140	119.74	129.49	149.25
1150	120.06	127.58	144.94
1160	121.61	129.08	147.89
1170	121.03	128.82	147.82
1180	120.65	127.19	147.21
1190	122.93	129.59	147.5
1200	123.59	129.51	146.37

1210	125.18	129.4	146.04
1220	118.52	126.58	145.64
1230	123.96	129.87	149.35
1240	129.39	135	150.76
1250	121.72	129.77	148.58
1260	121.82	130.76	147.72
1270	121.8	128.39	146.81
1280	114.95	127.05	145.81
1290	121.12	129.52	147.93
1300	120.1	124.51	145.48
1310	119.89	126.28	145.23
1320	122.34	130.75	147.94
1330	123.01	127.85	147.15
1340	122.58	127.25	145.95
1350	120.08	126.21	144.73
1360	120.87	127.7	145.98
1370	122.56	127.64	145.19
1380	119.72	125.47	144.73