

VO0301

Antenna Test Report

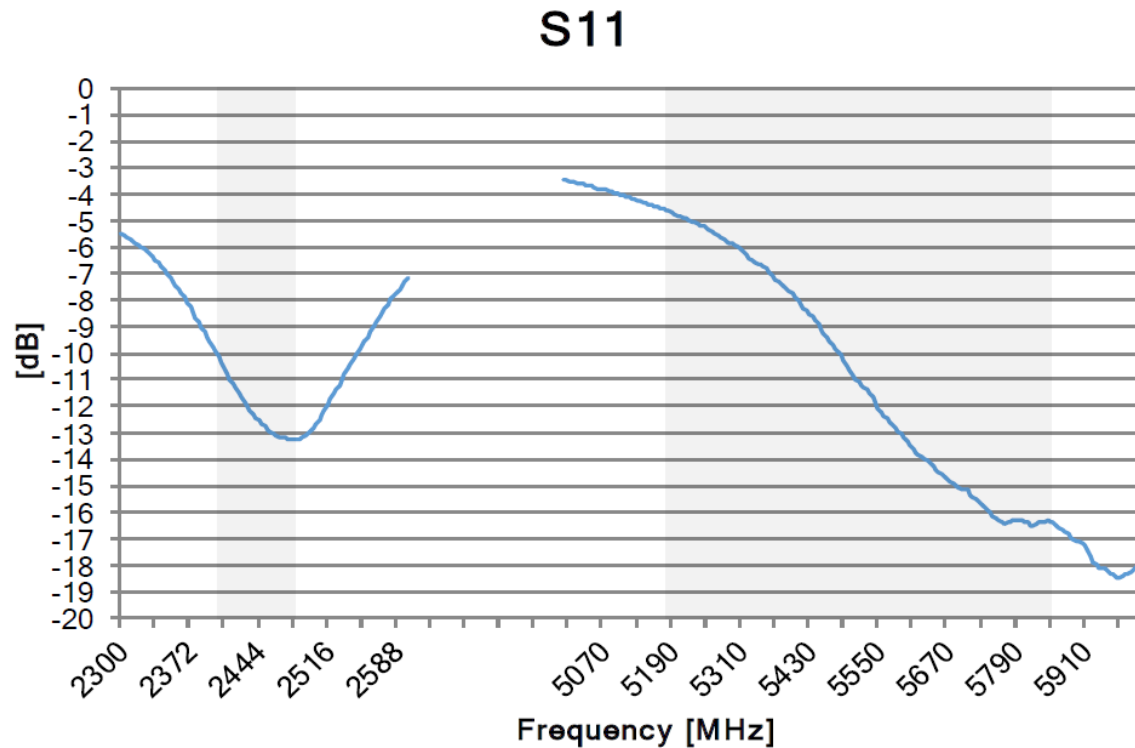
Specification

Antenna	Brand Name	Model Name	Ant. Type	Connector	Support Frequency	Max Peak Gain	Antenna Gain to Cable Loss
Wi-Fi	INPAQ	RFMTA220300NNLB001	PIFA	Antenna Spring contact	2.45G +5G+BT	2.4G: 0.88dBi UNII-1: 4.01dBi UNII-2A: 4.56dBi UNII-2C: 4.50dBi UNII-3: 4.40dBi BT: 0.88dBi	ANT Without Cable
GPS	INPAQ	RFMTA310300NNGB001	Internal Monopole	Antenna Spring contact	GPS L1	1560-1610MHz: -2.21dBi	ANT Without Cable

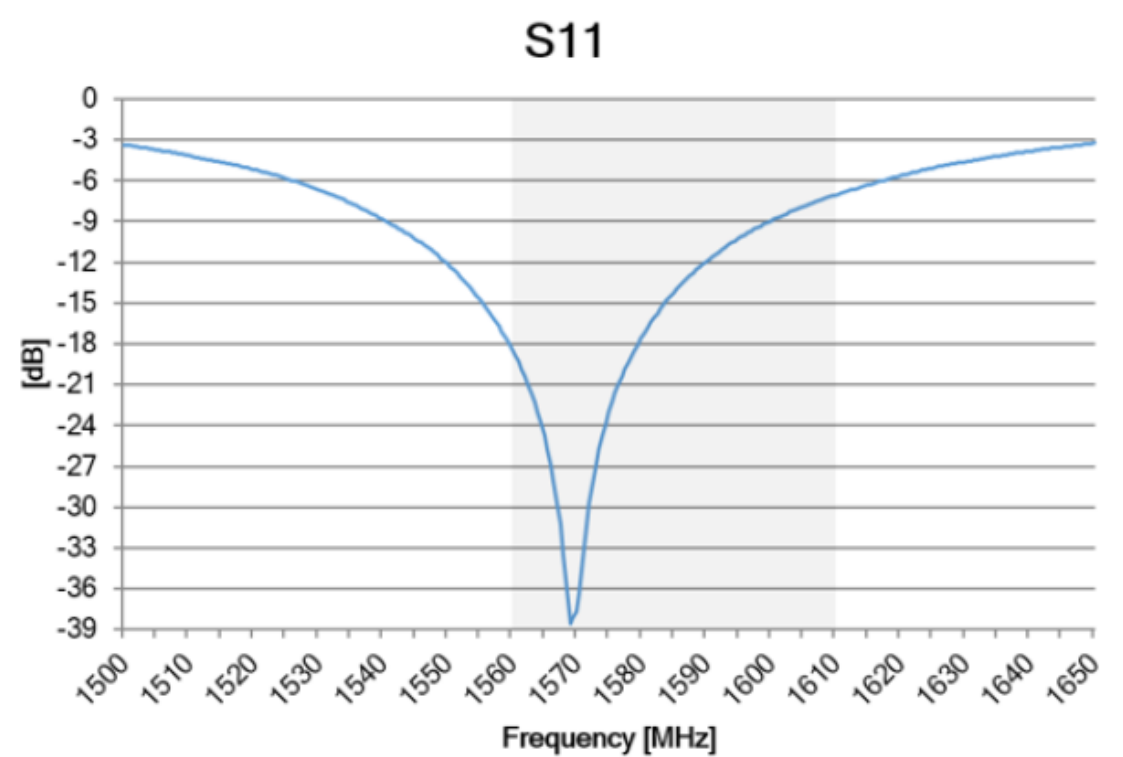
- Manufacturer: INPAQ Technology Co., Ltd.
- Wi-Fi: RFMTA220300NNLB001
- GPS: RFMTA310300NNGB001
- Address : No. 90, Keyi St., Zhunan Township, Miaoli County 350402, Taiwan

S-Parameters

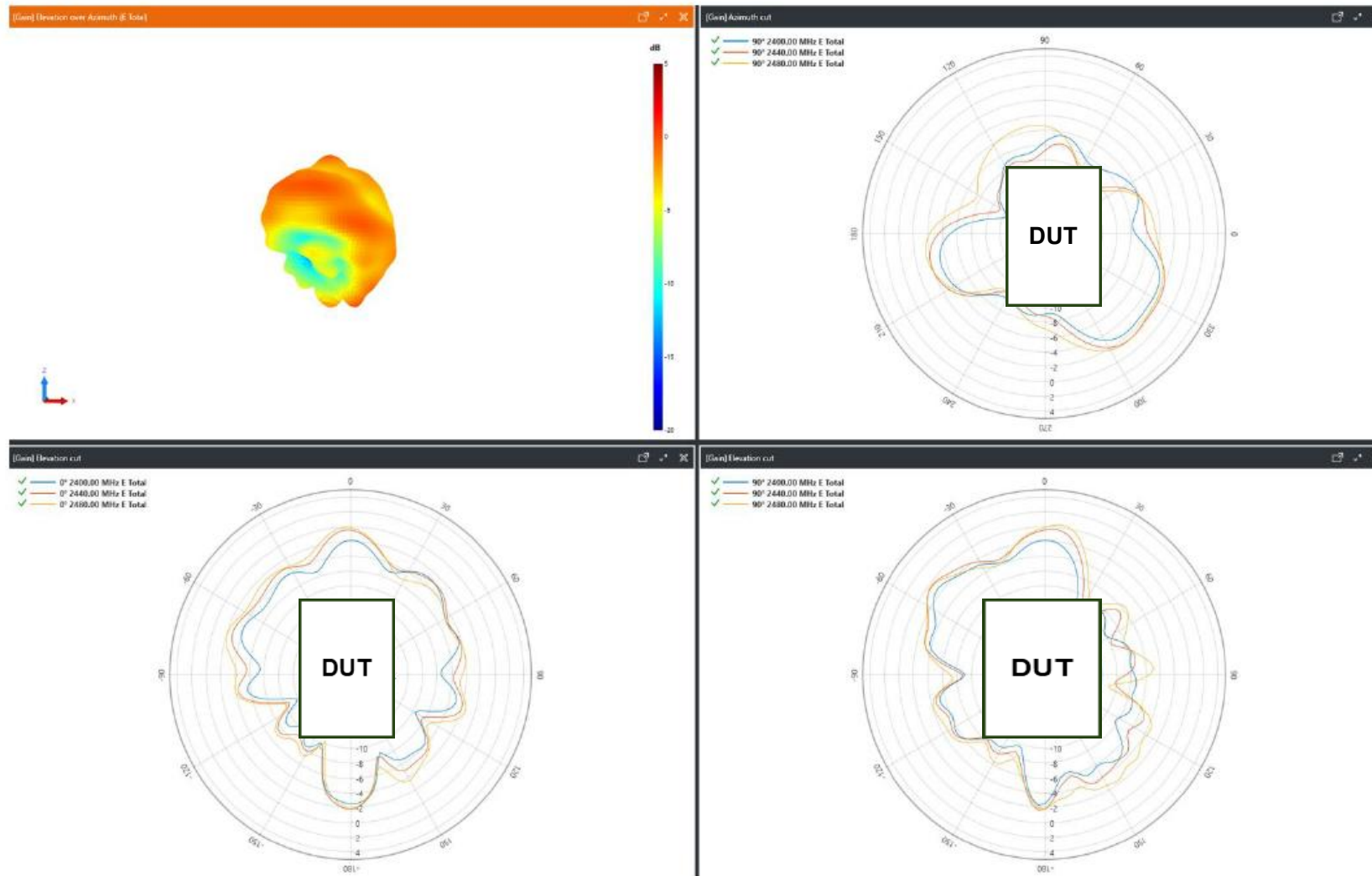
Wi-Fi Return Loss



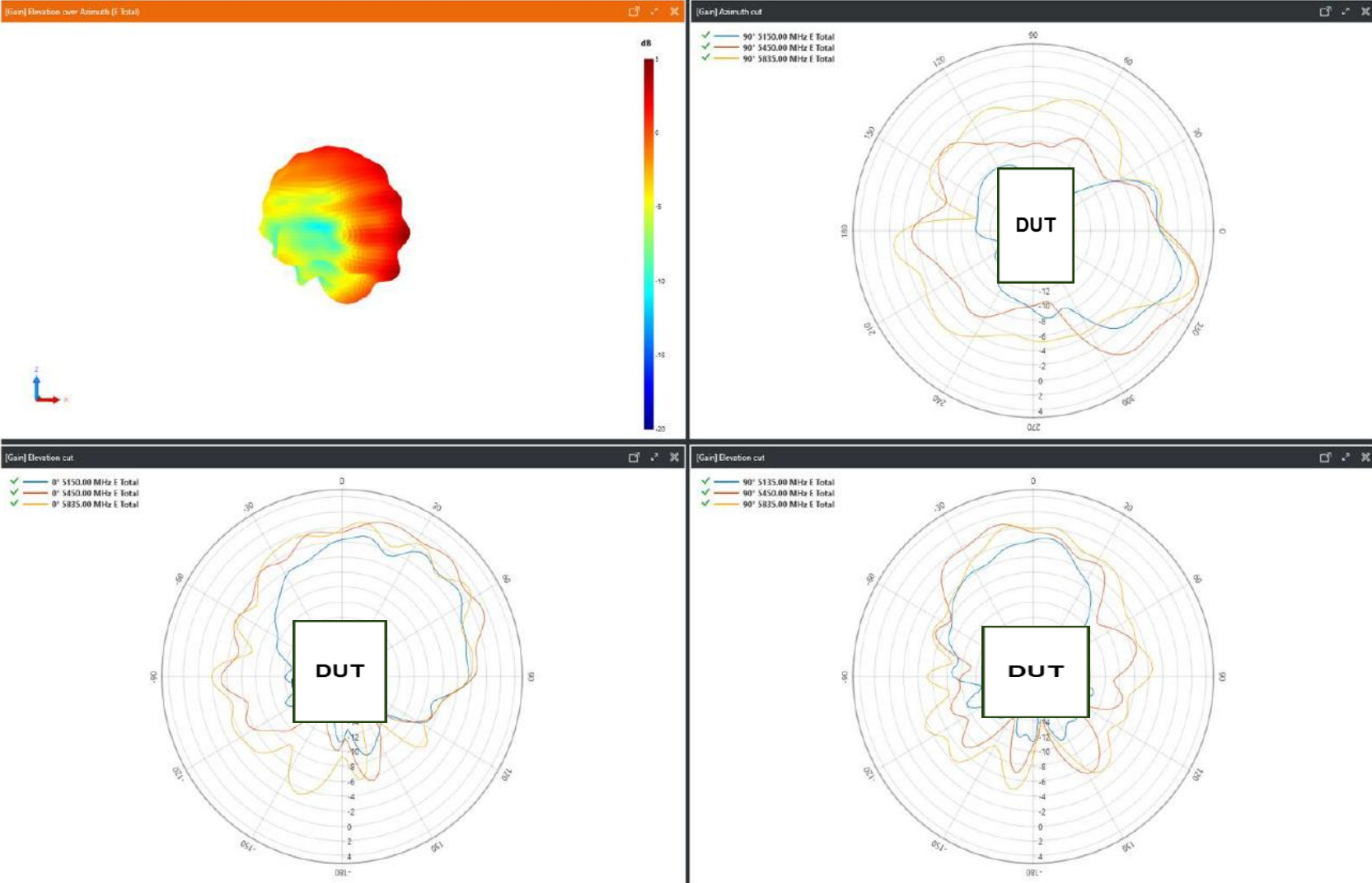
GPS Return Loss



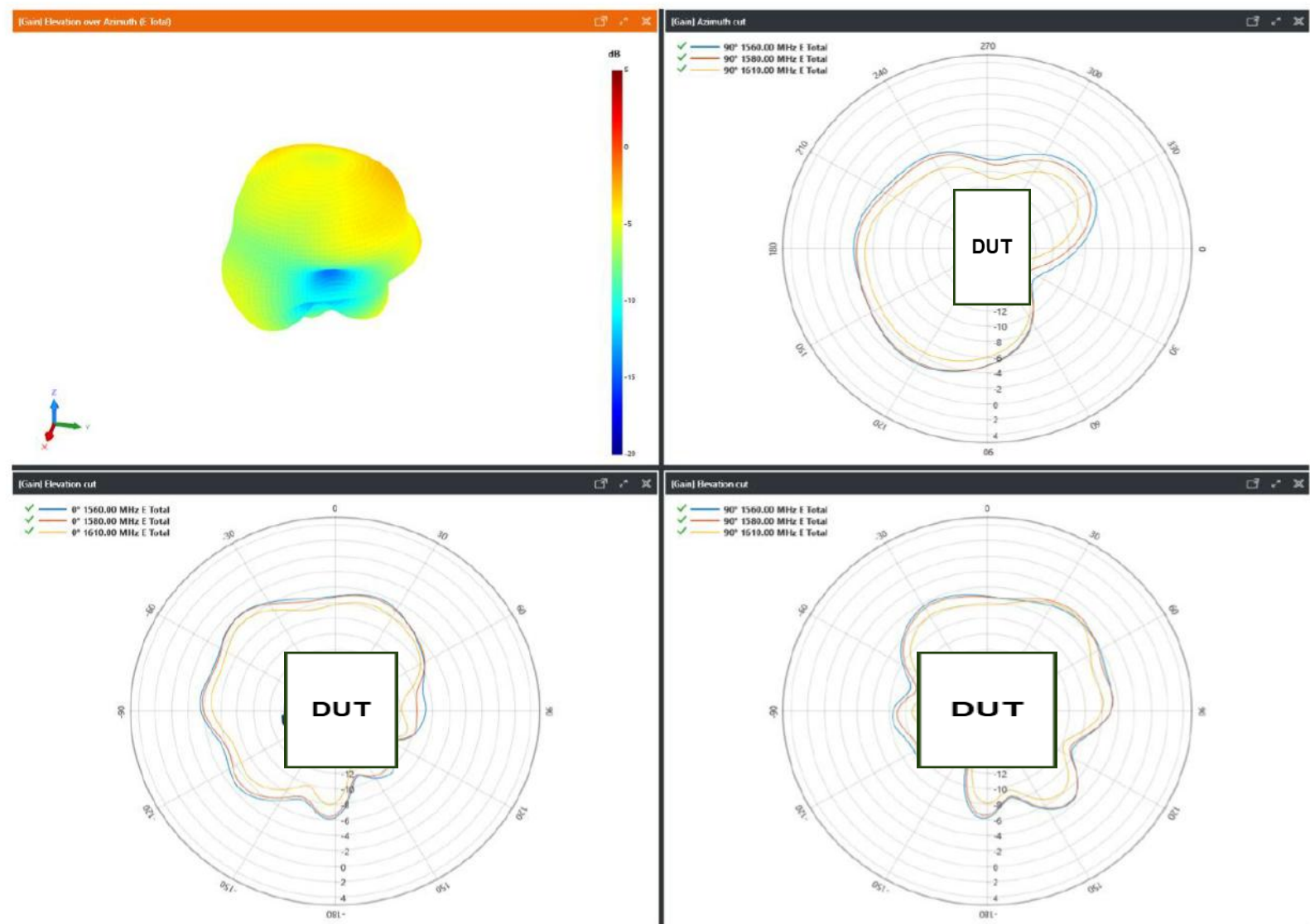
Wi-Fi 2.4GHz Radiation



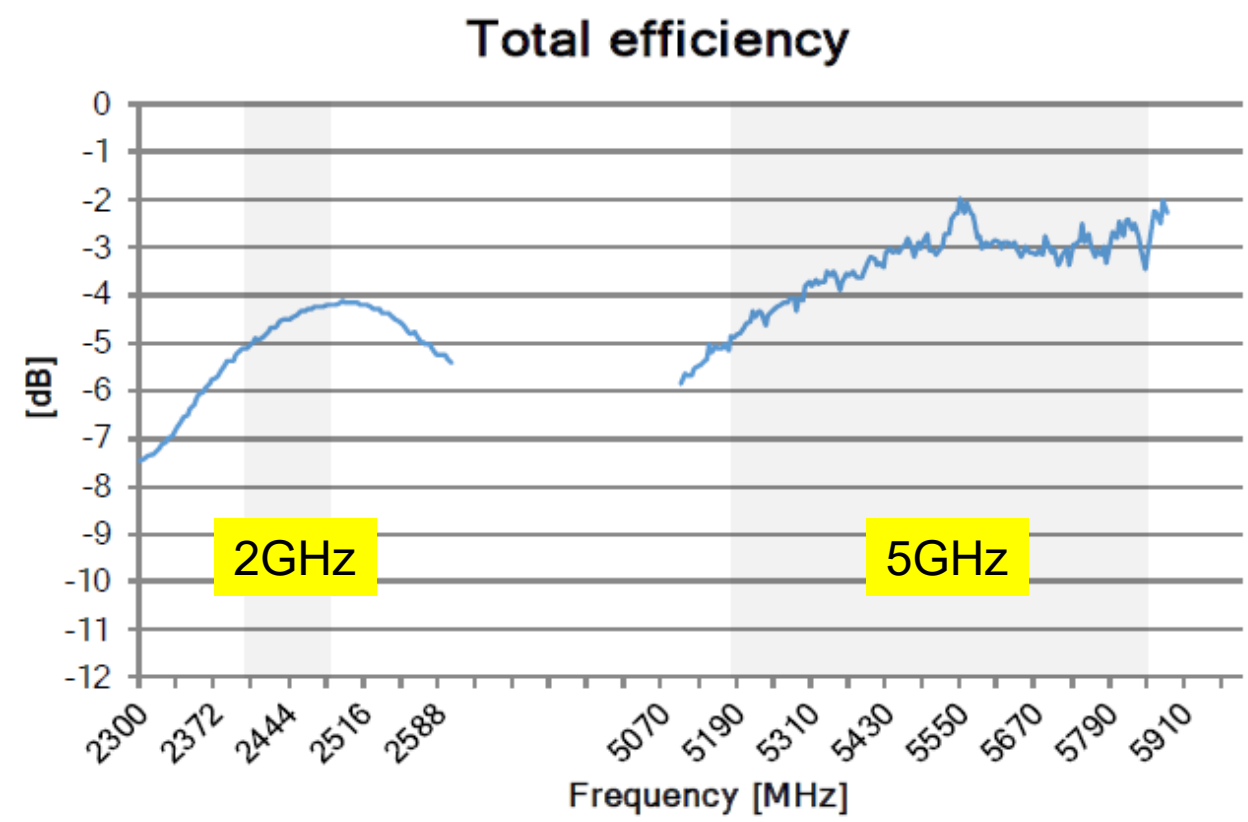
Wi-Fi 5GHz Radiation



GNSS Radiation



Wi-Fi 2/5GHz Efficiency



2GHz Efficiency 2GHz Peak Gain

Frequencies (MHz)	Total Efficiency (dB)	Gain (dBi)
2400	-5.13	-0.64
2405	-5.09	-0.56
2410	-4.9	-0.29
2415	-4.93	-0.31
2420	-4.85	-0.14
2425	-4.68	0.01
2430	-4.71	0.05
2435	-4.57	0.25
2440	-4.5	0.26
2445	-4.53	0.38
2450	-4.43	0.49
2455	-4.36	0.59
2460	-4.34	0.07
2465	-4.28	0.74
2470	-4.25	0.79
2475	-4.27	0.79
2480	-4.2	0.88

Wi-Fi 2/5GHz Efficiency

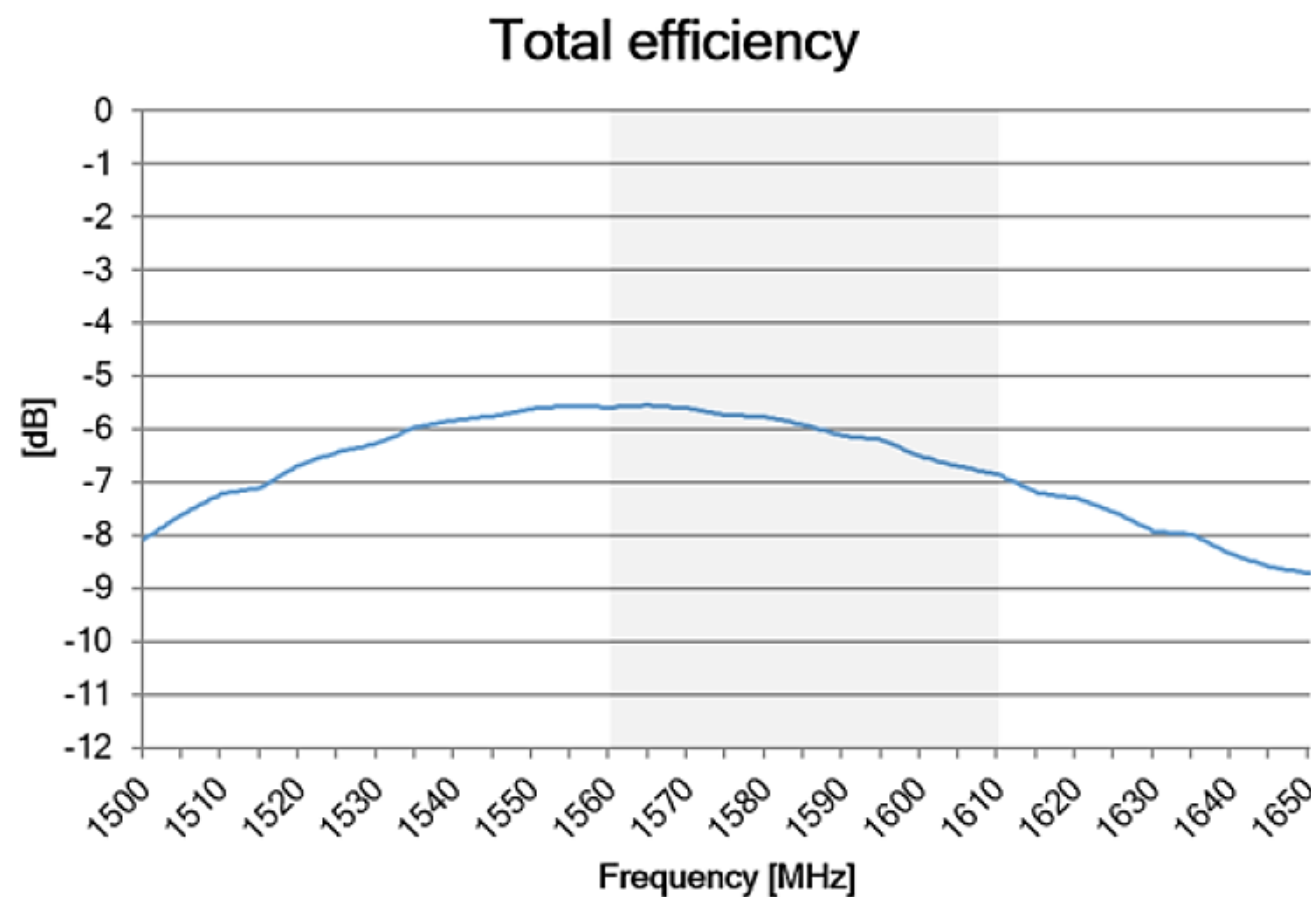
Wi-Fi 5GHz Efficiency

U-NII-1		U-NII-2C		U-NII-2A		U-NII-2C		U-NII-3	
Frequencies (MHz)	Total Efficiency (dB)	Frequencies (MHz)	Total Efficiency (dB)	Frequencies (MHz)	Total Efficiency (dB)	Frequencies (MHz)	Total Efficiency (dB)	Frequencies (MHz)	Total Efficiency (dB)
5150	-5.21	5380	-3.61	5610	-2.9	5380	-3.61	5610	-2.9
5155	-5.1	5385	-3.63	5615	-3.01	5385	-3.63	5615	-3.01
5160	-5.12	5390	-3.62	5620	-2.91	5390	-3.62	5620	-2.91
5165	-5.13	5395	-3.49	5625	-2.92	5395	-3.49	5625	-2.92
5170	-5.02	5400	-3.3	5630	-3	5400	-3.3	5630	-3
5175	-5.17	5405	-3.19	5635	-2.91	5405	-3.19	5635	-2.91
5180	-4.88	5410	-3.25	5640	-3.03	5410	-3.25	5640	-3.03
5185	-4.91	5415	-3.4	5645	-3.2	5415	-3.4	5645	-3.2
5190	-4.81	5420	-3.33	5650	-3.12	5420	-3.33	5650	-3.12
5195	-4.83	5425	-3.4	5655	-2.98	5425	-3.4	5655	-2.98
5200	-4.7	5430	-3.11	5660	-3.12	5430	-3.11	5660	-3.12
5205	-4.62	5435	-3.02	5665	-3.12	5435	-3.02	5665	-3.12
5210	-4.55	5440	-3.13	5670	-3.17	5440	-3.13	5670	-3.17
5215	-4.33	5445	-3.09	5675	-3.08	5445	-3.09	5675	-3.08
5220	-4.46	5450	-3.13	5680	-3.17	5450	-3.13	5680	-3.17
5225	-4.32	5455	-3.04	5685	-2.76	5455	-3.04	5685	-2.76
5230	-4.37	5460	-2.92	5690	-2.92	5460	-2.92	5690	-2.92
5235	-4.63	5465	-2.82	5695	-3.13	5465	-2.82	5695	-3.13
5240	-4.43	5470	-3.01	5700	-3.01	5470	-3.01	5700	-3.01
5245	-4.34	5475	-3.21	5705	-3.36	5475	-3.21	5705	-3.36
5250	-4.3	5480	-2.92	5710	-3.29	5480	-2.92	5710	-3.29
5255	-4.25	5485	-3.04	5715	-3.15	5485	-3.04	5715	-3.15
5260	-4.2	5490	-2.89	5720	-3.03	5490	-2.89	5720	-3.03
5265	-4.17	5495	-2.73	5725	-3.39	5495	-2.73	5725	-3.39
5270	-4.15	5500	-3.05	5730	-2.95	5500	-3.05	5730	-2.95
5275	-4.07	5505	-3.06	5735	-2.92	5505	-3.06	5735	-2.92
5280	-4.08	5510	-3.16	5740	-2.85	5510	-3.16	5740	-2.85
5285	-4.32	5515	-3.02	5745	-2.51	5515	-3.02	5745	-2.51
5290	-4.07	5520	-2.98	5750	-2.91	5520	-2.98	5750	-2.91
5295	-4.14	5525	-2.72	5755	-2.74	5525	-2.72	5755	-2.74
5300	-3.81	5530	-2.71	5760	-2.99	5530	-2.71	5760	-2.99
5305	-3.74	5535	-2.41	5765	-3.19	5535	-2.41	5765	-3.19
5310	-3.8	5540	-2.28	5770	-3.09	5540	-2.28	5770	-3.09
5315	-3.69	5545	-2.29	5775	-3.18	5545	-2.29	5775	-3.18
5320	-3.77	5550	-2	5780	-3	5550	-2	5780	-3
5325	-3.73	5555	-2.31	5785	-3.32	5555	-2.31	5785	-3.32
5330	-3.72	5560	-2.08	5790	-2.88	5560	-2.08	5790	-2.88
5335	-3.5	5565	-2.27	5795	-2.69	5565	-2.27	5795	-2.69
5340	-3.61	5570	-2.33	5800	-2.8	5570	-2.33	5800	-2.8
5345	-3.5	5575	-2.79	5805	-2.47	5575	-2.79	5805	-2.47
5350	-3.58	5580	-2.79	5810	-2.78	5580	-2.79	5810	-2.78
5355	-3.92	5585	-3.02	5815	-2.44	5585	-3.02	5815	-2.44
5360	-3.71	5590	-2.91	5820	-2.4	5590	-2.91	5820	-2.4
5365	-3.56	5595	-2.98	5825	-2.63	5595	-2.98	5825	-2.63
5370	-3.59	5600	-2.9	5830	-2.51	5600	-2.9	5830	-2.51
5375	-3.53	5605	-2.84	5835	-2.81	5605	-2.84	5835	-2.81

Wi-Fi 5GHz Peak Gain

U-NII-1		U-NII-2C		U-NII-2A		U-NII-2C		U-NII-3	
Frequencies (MHz)	Gain (dBi)	Frequencies (MHz)	Gain (dBi)	Frequencies (MHz)	Gain (dBi)	Frequencies (MHz)	Gain (dBi)	Frequencies (MHz)	Gain (dBi)
5150	2.77	5380	4.01	5610	4.31	5380	4.01	5610	4.31
5155	3.25	5385	4.05	5615	3.97	5385	4.05	5615	3.97
5160	2.82	5390	4.26	5620	4.12	5390	4.26	5620	4.12
5165	2.97	5395	4.05	5625	4.16	5395	4.05	5625	4.16
5170	2.86	5400	4.65	5630	3.8	5400	4.65	5630	3.8
5175	2.92	5405	4.4	5635	4.12	5405	4.4	5635	4.12
5180	3.24	5410	4.53	5640	3.56	5410	4.53	5640	3.56
5185	2.96	5415	4.34	5645	3.77	5415	4.34	5645	3.77
5190	3.68	5420	4.4	5650	3.31	5420	4.4	5650	3.31
5195	3.04	5425	4.33	5655	4	5425	4.33	5655	4
5200	3.68	5430	4.58	5660	3.75	5430	4.58	5660	3.75
5205	3.57	5435	4.72	5665	3.74	5435	4.72	5665	3.74
5210	3.7	5440	4.48	5670	3.68	5440	4.48	5670	3.68
5215	4.01	5445	4.62	5675	3.68	5445	4.62	5675	3.68
5220	3.55	5450	4.61	5680	4	5450	4.61	5680	4
5225	4.05	5455	4.39	5685	3.53	5455	4.39	5685	3.53
5230	3.44	5460	4.9	5690	4.4	5460	4.9	5690	4.4
5235	3.59	5465	4.71	5695	3.48	5465	4.71	5695	3.48
5240	3.51	5470	4.5	5700	3.84	5470	4.5	5700	3.84
5245	3.76	5475	4.4	5705	3.59	5475	4.4	5705	3.59
5250	3.91	5480	4.5	5710	3.47	5480	4.5	5710	3.47
5255	3.87	5485	4.5	5715	3.3	5485	4.5	5715	3.3
5260	3.76	5490	3.81	5720	3.91	5490	3.81	5720	3.91
5265	3.92	5495	4.5	5725	3.55	5495	4.5	5725	3.55
5270	3.87	5500	3.57	5730	3.45	5500	3.57	5730	3.45
5275	4.02	5505	4.29	5735	4.4	5505	4.29	5735	4.4
5280	3.73	5510	3.61	5740	4.36	5510	3.61	5740	4.36
5285	3.34	5515	4.23	5745	4.02	5515	4.23	5745	4.02
5290	4.11	5520	3.96	5750	4.4	5520	3.96	5750	4.4
5295	3.08	5525	4.44	5755	3.58	5525	4.44	5755	3.58
5300	4.56	5530	4.5	5760	4.4	5530	4.5	5760	4.4
5305	4.03	5535	4.24	5765	3.84	5535	4.24	5765	3.84
5310	4.27	5540	4.5	5770	3.71	5540	4.5	5770	3.71
5315	4.4	5545	3.75	5775	4.25	5545	3.75	5775	4.25
5320	4.28	5550	4.5	5780	3.3	5550	4.5	5780	3.3
5325	4.38	5555	4.25	5785	4.4	5555	4.25	5785	4.4
5330	4.18	5560	4.5	5790	4.08	5560	4.5	5790	4.08
5335	4.44	5565	4.5	5795	4.25	5565	4.5	5795	4.25
5340	4.24	5570	4.48	5800	4.4	5570	4.48	5800	4.4
5345	4.53	5575	4.48	5805	3.9	5575	4.48	5805	3.9
5350	3.98	5580	3.62	5810	4.4	5580	3.62	5810	4.4
5355	4.07	5585	4.15	5815	3.98	5585	4.15	5815	3.98
5360	3.72	5590	3.38	5820	3.75	5590	3.38	5820	3.75
5365	4.2	5595	4.29	5825	4.4	5595	4.29	5825	4.4
5370	4.23	5600	3.89	5830	2.85	5600	3.89	5830	2.85
5375	4.33	5605	4.33	5835	4.4	5605	4.33	5835	4.4

GPS Efficiency



GPS

Frequencies (MHz)	Total Efficiency (dB)	Gain (dBi)
1560	-5.59	-2.24
1565	-5.55	-2.21
1570	-5.60	-2.24
1575	-5.73	-2.37
1580	-5.76	-2.39
1585	-5.92	-2.51
1590	-6.12	-2.56
1595	-6.20	-2.50
1600	-6.52	-2.72
1605	-6.71	-2.79
1610	-6.85	-2.84

NFC

Measurement test in free space, NFC
13.56MHz tags with 3 different casings.

1. Free Space
2. Smart Mount, 8mm spacer
3. Smart Mount, 10mm spacer
4. Smart Mount on back cover

