

DC to 4 GHz RF Fixed Attenuator VNA Tests B.VERNOUX 05 May 2020

1 DC to 4 GHz RF Fixed Attenuator details

Link:

https://www.banggood.com/DC-4_0GHz-RF-Fixed-Attenuator-Radio-Frequency-Fixed-p-1119478.html?cur_warehouse=CN

Product performance indicators:

Frequency range: DC - 4.0GHz

Maximum power: 23dBm (200mW)

Standing wave ratio: ≤ 1.20

System impedance: 50 Ω

RF interface: SMA double female head (Outer screw inner hole)

Attenuation:

Direct: 0dB (reference)

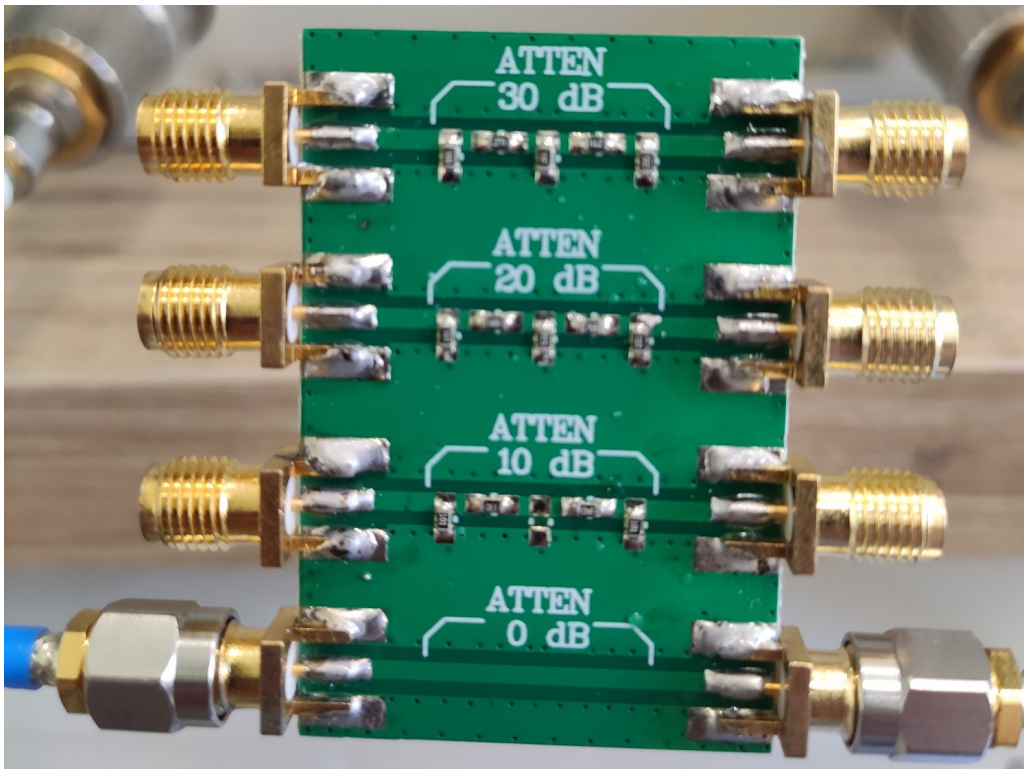
Level 1: 10 \pm 0.8 dB

Level 2: 20 \pm 1.1 dB

Level 3: 30 \pm 1.5dB

Package included:

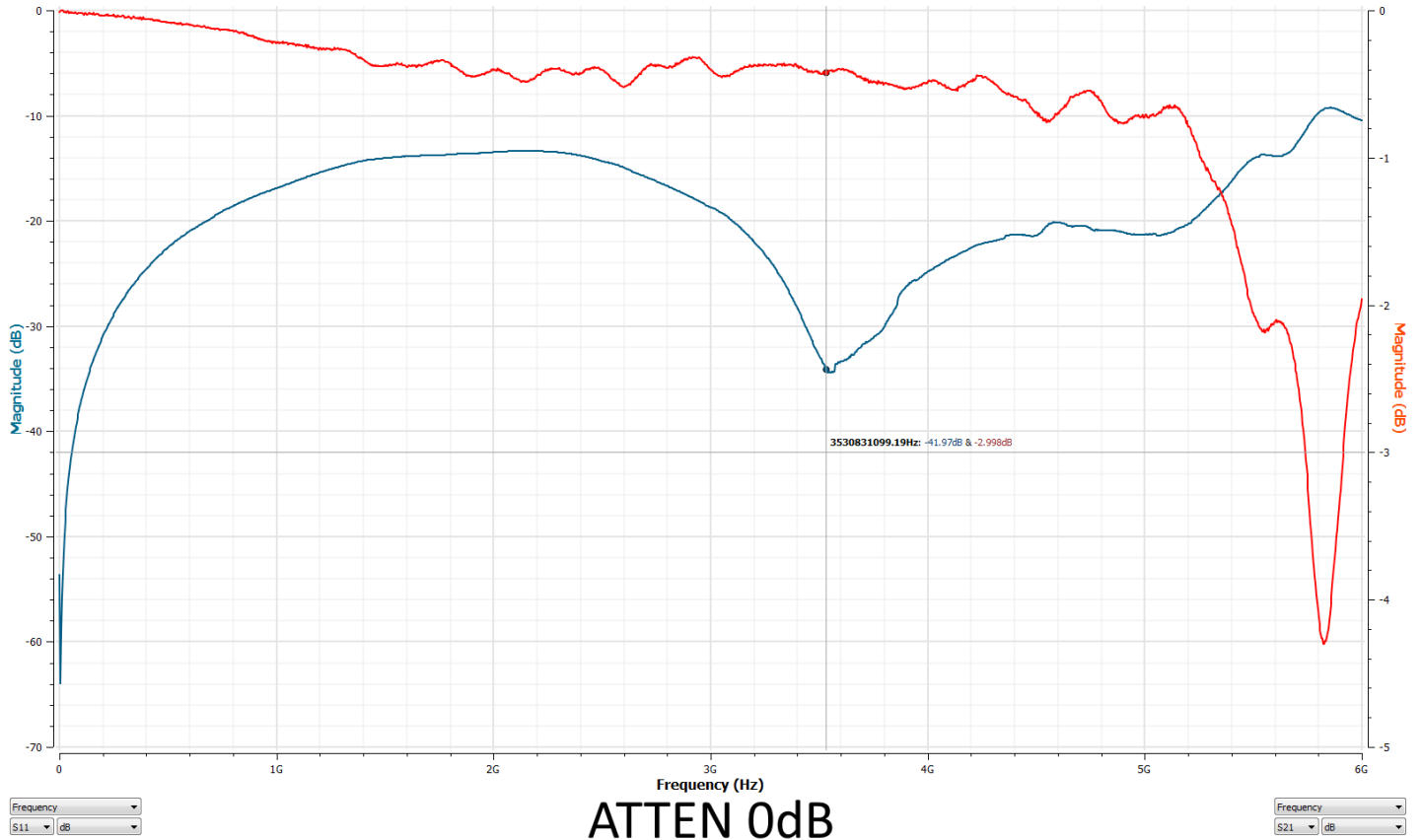
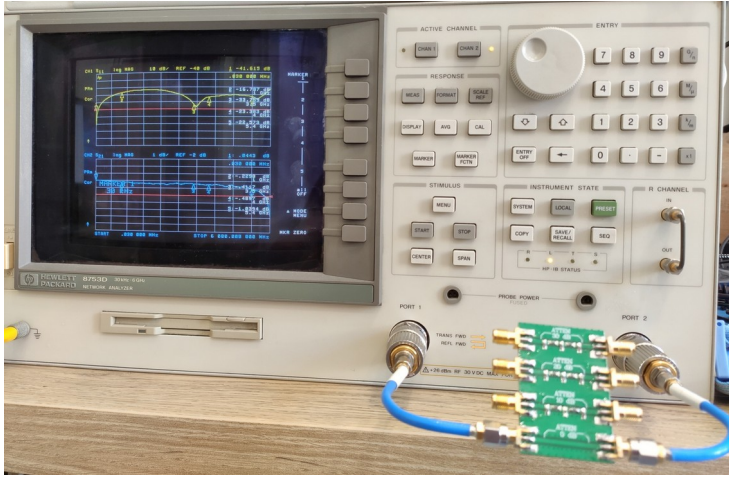
1 x DC-4.0GHz RF Fixed Attenuator



All tests and results S2P files are available in

[https://hydrabus.com/DC to 4GHz RF Fixed Attenuator VNA Tests BVERNOUX 05May2020 S2P.7z](https://hydrabus.com/DC%20to%204GHz%20RF%20Fixed%20Attenuator%20VNA%20Tests%20BVERNOUX%2005May2020%20S2P.7z)

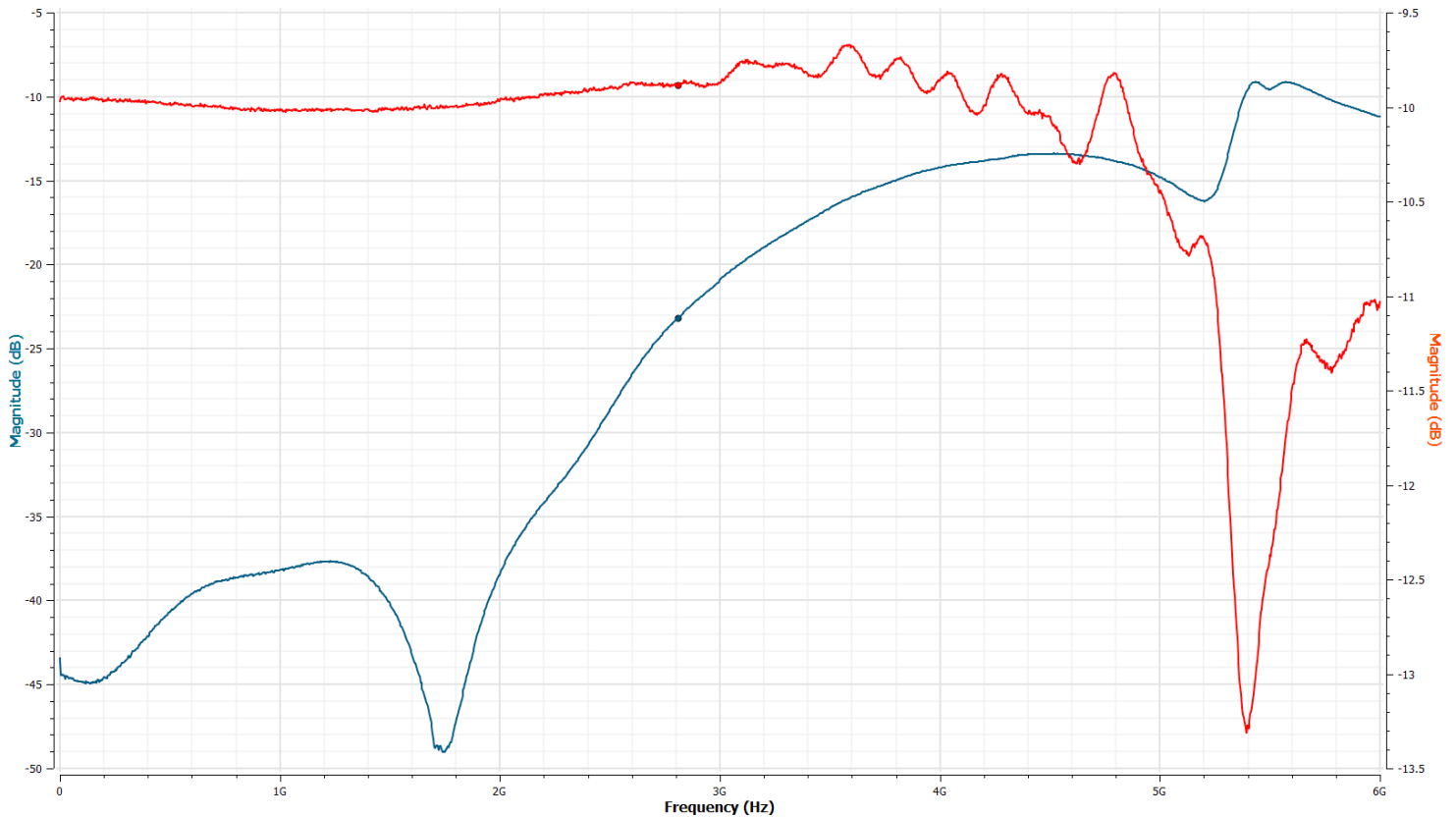
2 ATTEN 0 dB VNA test



Attenuation 0 dB => S21 From 30 kHz to 6GHz: S21 Gain **Lowest Value 5.84 GHz -4.3 dB**, **Highest Value 30 kHz 0 dB**
Tolerance not defined

Frequency	S21 Gain(dB)	Delta dB
30 kHz	0	0.0
500 MHz	-0.1	-0.1
1 GHz	-0.1	-0.1
2 GHz	-0.4	-0.4
3 GHz	-0.4	-0.4
4 GHz	-0.5	-0.5
4.5 GHz	-0.7	-0.7
5 GHz	-0.7	-0.7
5.84 GHz	-4.3	-4.3
6 GHz	-2	-2

3 ATTEN 10 dB VNA test

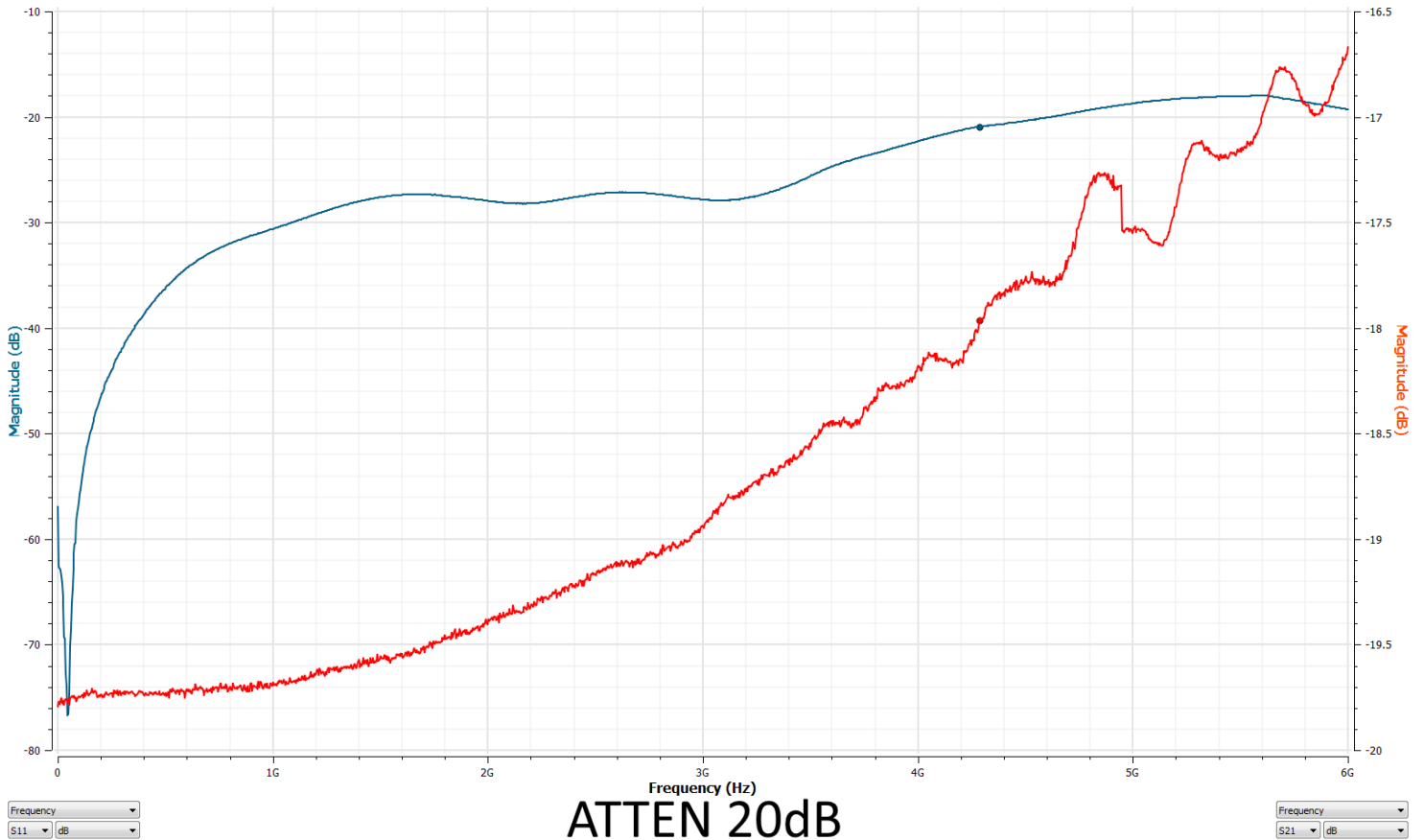
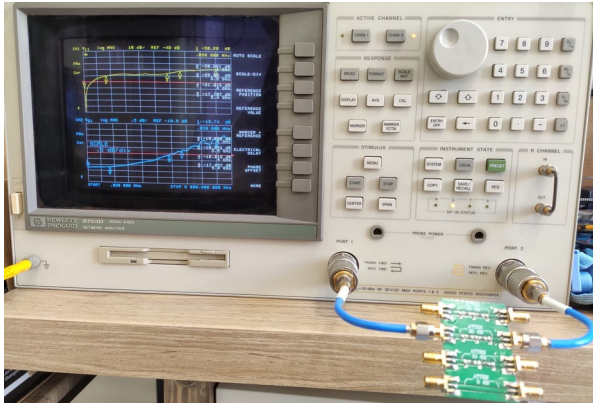


ATTEN 10dB

Attenuation 10 dB => S21 From 30 kHz to 6GHz: S21 Gain **Lowest Value 5.4 GHz -13.3 dB**, **Highest Value 3.6 GHz -9.7 dB**
 Tolerance +/- 0.8 dB from DC to 4 GHz

Frequency	S21 Gain(dB)	Delta dB
30 kHz	-10	0.0
500 MHz	-10	0.0
1 GHz	-10	0.0
2 GHz	-10	0.0
3 GHz	-9.9	0.1
3.6 GHz	-9.7	0.3
4 GHz	-9.9	0.1
4.5 GHz	-10	0.0
5 GHz	-10.5	-0.5
5.4 GHz	-13.3	-3.3
6 GHz	-11	-1.0

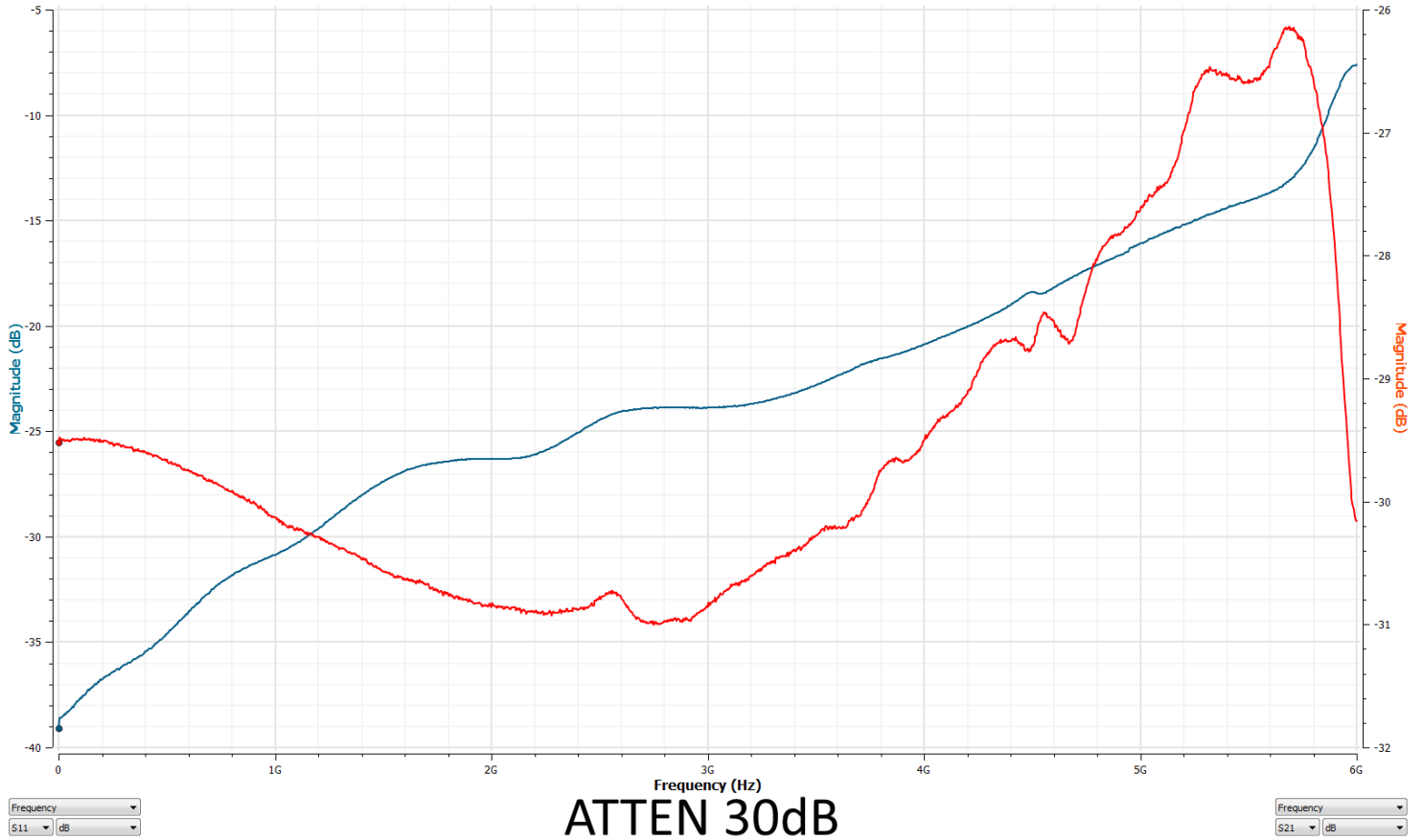
4 ATTEN 20 dB VNA test



Attenuation (S21) => From 30 kHz to 6GHz: S21 Gain **Lowest Value 30 kHz -19.8 dB**, **Highest Value 6 GHz -16.7 dB**
 Tolerance +/- 1.1 dB from DC to 4 GHz

Frequency	S21 Gain(dB)	Delta dB	Comment
30 kHz	-19.8	0.2	
1 GHz	-19.7	0.3	
2 GHz	-19.4	0.6	
3 GHz	-18.9	1.1	
3.1 GHz	-18.8	1.2	Out of tolerance +1.2 dB => Expected +/-1.1 dB
4 GHz	-18.2	1.8	Out of tolerance +1.8 dB => Expected +/-1.1 dB
4.9 GHz	-17.3	2.7	
5 GHz	-17.5	2.5	
5.4 GHz	-13.3	6.7	
5.7 GHz	-16.8	3.2	
6 GHz	-16.7	3.3	

5 ATTEN 30 dB VNA test



Attenuation (S21) => From 30 kHz to 6GHz: S21 Gain **Lowest Value 2.8 GHz -31 dB**, **Highest Value 5.7 GHz -26.2 dB**
 Tolerance +/- 1.5 dB from DC to 4 GHz

Frequency	S21 Gain(dB)	Delta dB
30 kHz	-29.5	0.5
500 MHz	-29.7	0.3
1 GHz	-30.1	-0.1
2 GHz	-30.9	-0.9
2.5 GHz	-30.8	-0.8
2.8 GHz	-31	-1.0
3 GHz	-30.9	-0.9
4 GHz	-29.5	0.5
4.5 GHz	-28.7	1.3
5 GHz	-27.6	2.4
5.7 GHz	-26.2	3.8
6 GHz	-30.1	-0.1