



Tune Up Procedure

Tune-up procedure

WIFI/BT

- 1: Connect to Power meter (NRVD) through RF cable and let the EUT Continuously transmit
- 2: Measure the Output Power Average value

Manufacturing tolerance

WiFi 2.4G Ant0

802.11b (Average)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	14.0	15.0	15.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11g (Average)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	13.0	14.0	15.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11n HT20 (Average)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	13.0	14.0	16.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11n HT40 (Average)			
Channel	Channel 3	Channel 6	Channel 9
Target (dBm)	13.0	14.0	14.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0

WiFi 2.4G Ant1

802.11b (Average)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	15.0	15.0	15.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11g (Average)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	15.0	15.0	15.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11n HT20 (Average)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	13.0	13.0	15.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11n HT40 (Average)			
Channel	Channel 3	Channel 6	Channel 9



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Target (dBm)	12.0	12.0	12.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0

WiFi 5.2G Ant0

802.11a (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	11.0	12.0	11.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11n HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	10.0	10.0	10.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11n HT40 (Average)			
Channel	Channel 38	Channel 46	
Target (dBm)	10.0	10.0	
Tolerance $\pm$ (dB)	1.0	1.0	
802.11ac HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	10.0	10.0	10.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ac HT40 (Average)			
Channel	Channel 38	Channel 46	
Target (dBm)	10.0	10.0	
Tolerance $\pm$ (dB)	1.0	1.0	
802.11ac HT80 (Average)			
Channel	Channel 42		
Target (dBm)	10.0		
Tolerance $\pm$ (dB)	1.0		
802.11ax HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	10.0	10.0	10.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ax HT40 (Average)			
Channel	Channel 38	Channel 46	
Target (dBm)	10.0	10.0	
Tolerance $\pm$ (dB)	1.0	1.0	
802.11ax HT80 (Average)			
Channel	Channel 42		
Target (dBm)	10.0		
Tolerance $\pm$ (dB)	1.0		



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**WiFi 5.2G Ant1**

802.11a (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	11.0	12.0	11.0
Tolerance ±(dB)	1.0	1.0	1.0
802.11n HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	10.0	10.0	10.0
Tolerance ±(dB)	1.0	1.0	1.0
802.11n HT40 (Average)			
Channel	Channel 38	Channel 46	
Target (dBm)	10.0	10.0	
Tolerance ±(dB)	1.0	1.0	
802.11ac HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	10.0	10.0	10.0
Tolerance ±(dB)	1.0	1.0	1.0
802.11ac HT40 (Average)			
Channel	Channel 38	Channel 46	
Target (dBm)	10.0	10.0	
Tolerance ±(dB)	1.0	1.0	
802.11ac HT80 (Average)			
Channel	Channel 42		
Target (dBm)	10.0		
Tolerance ±(dB)	1.0		
802.11ax HT20 (Average)			
Channel	Channel 36	Channel 40	Channel 48
Target (dBm)	10.0	10.0	10.0
Tolerance ±(dB)	1.0	1.0	1.0
802.11ax HT40 (Average)			
Channel	Channel 38	Channel 46	
Target (dBm)	10.0	10.0	
Tolerance ±(dB)	1.0	1.0	
802.11ax HT80 (Average)			
Channel	Channel 42		
Target (dBm)	10.0		
Tolerance ±(dB)	1.0		



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**WiFi 5.3G Ant0**

802.11a (Average)			
Channel	Channel 52	Channel 60	Channel 64
Target (dBm)	12.0	13.0	13.0
Tolerance ±(dB)	1.0	1.0	1.0
802.11n HT20 (Average)			
Channel	Channel 52	Channel 60	Channel 64
Target (dBm)	11.0	11.0	11.0
Tolerance ±(dB)	1.0	1.0	1.0
802.11n HT40 (Average)			
Channel	Channel 54	Channel 62	
Target (dBm)	11.0	12.0	
Tolerance ±(dB)	1.0	1.0	
802.11ac HT20 (Average)			
Channel	Channel 52	Channel 60	Channel 64
Target (dBm)	11.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
802.11ac HT40 (Average)			
Channel	Channel 54	Channel 62	
Target (dBm)	11.0	12.0	
Tolerance ±(dB)	1.0	1.0	
802.11ac HT80 (Average)			
Channel	Channel 58		
Target (dBm)	11.0		
Tolerance ±(dB)	1.0		
802.11ax HT20 (Average)			
Channel	Channel 52	Channel 60	Channel 64
Target (dBm)	11.0	12.0	12.0
Tolerance ±(dB)	1.0	1.0	1.0
802.11ax HT40 (Average)			
Channel	Channel 54	Channel 62	
Target (dBm)	11.0	12.0	
Tolerance ±(dB)	1.0	1.0	
802.11ax HT80 (Average)			
Channel	Channel 58		
Target (dBm)	11.0		
Tolerance ±(dB)	1.0		



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**WiFi 5.3G Ant1**

802.11a (Average)			
Channel	Channel 52	Channel 60	Channel 64
Target (dBm)	11.0	11.0	11.0
Tolerance ±(dB)	1.0	1.0	1.0
802.11n HT20 (Average)			
Channel	Channel 52	Channel 60	Channel 64
Target (dBm)	10.5	10.0	10.0
Tolerance ±(dB)	1.0	1.0	1.0
802.11n HT40 (Average)			
Channel	Channel 54	Channel 62	
Target (dBm)	10.0	10.0	
Tolerance ±(dB)	1.0	1.0	
802.11ac HT20 (Average)			
Channel	Channel 52	Channel 60	Channel 64
Target (dBm)	10.0	10.0	10.0
Tolerance ±(dB)	1.0	1.0	1.0
802.11ac HT40 (Average)			
Channel	Channel 54	Channel 62	
Target (dBm)	10.0	10.0	
Tolerance ±(dB)	1.0	1.0	
802.11ac HT80 (Average)			
Channel	Channel 58		
Target (dBm)	10.0		
Tolerance ±(dB)	1.0		
802.11ax HT20 (Average)			
Channel	Channel 52	Channel 60	Channel 64
Target (dBm)	10.5	10.0	10.0
Tolerance ±(dB)	1.0	1.0	1.0
802.11ax HT40 (Average)			
Channel	Channel 54	Channel 62	
Target (dBm)	10.0	10.5	
Tolerance ±(dB)	1.0	1.0	
802.11ax HT80 (Average)			
Channel	Channel 58		
Target (dBm)	10.0		
Tolerance ±(dB)	1.0		



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**WiFi 5.5G Ant0**

802.11a (Average)			
Channel	Channel 100	Channel 116	Channel 140
Target (dBm)	11.0	11.0	13.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11n HT20 (Average)			
Channel	Channel 100	Channel 116	Channel 140
Target (dBm)	10.0	12.0	11.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11n HT40 (Average)			
Channel	Channel 102	Channel 110	Channel 134
Target (dBm)	10.0	11.0	11.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ac HT20 (Average)			
Channel	Channel 100	Channel 116	Channel 140
Target (dBm)	10.0	12.5	11.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ac HT40 (Average)			
Channel	Channel 102	Channel 110	Channel 134
Target (dBm)	10.0	11.0	11.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ac HT80 (Average)			
Channel	Channel 106	Channel 122	
Target (dBm)	10.0	12.0	
Tolerance $\pm$ (dB)	1.0	1.0	
802.11ax HT20 (Average)			
Channel	Channel 100	Channel 116	Channel 140
Target (dBm)	10.0	12.5	11.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ax HT40 (Average)			
Channel	Channel 102	Channel 110	Channel 134
Target (dBm)	10.0	11.0	11.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ax HT80 (Average)			
Channel	Channel 106	Channel 122	
Target (dBm)	10.0	12.0	
Tolerance $\pm$ (dB)	1.0	1.0	



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**WiFi 5.5G Ant1**

802.11a (Average)			
Channel	Channel 100	Channel 116	Channel 140
Target (dBm)	11.5	11.5	10.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11n HT20 (Average)			
Channel	Channel 100	Channel 116	Channel 140
Target (dBm)	9.0	11.0	9.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11n HT40 (Average)			
Channel	Channel 102	Channel 110	Channel 134
Target (dBm)	10.0	11.0	10.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ac HT20 (Average)			
Channel	Channel 100	Channel 116	Channel 140
Target (dBm)	9.0	11.0	11.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ac HT40 (Average)			
Channel	Channel 102	Channel 110	Channel 134
Target (dBm)	10.0	11.0	10.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ac HT80 (Average)			
Channel	Channel 106	Channel 122	
Target (dBm)	11.0	9.0	
Tolerance $\pm$ (dB)	1.0	1.0	
802.11ax HT20 (Average)			
Channel	Channel 100	Channel 116	Channel 140
Target (dBm)	9.0	11.0	10.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ax HT40 (Average)			
Channel	Channel 102	Channel 110	Channel 134
Target (dBm)	9.0	10.0	9.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ax HT80 (Average)			
Channel	Channel 106	Channel 122	
Target (dBm)	10.0	11.0	
Tolerance $\pm$ (dB)	1.0	1.0	



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**WiFi 5.8G Ant0**

802.11a (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	11.0	10.0	10.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11n HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	9.0	9.0	9.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11n HT40 (Average)			
Channel	Channel 151	Channel 159	
Target (dBm)	10.0	9.0	
Tolerance $\pm$ (dB)	1.0	1.0	
802.11ac HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	9.0	9.0	9.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ac HT40 (Average)			
Channel	Channel 151	Channel 159	
Target (dBm)	10.0	9.0	
Tolerance $\pm$ (dB)	1.0	1.0	
802.11ac HT80 (Average)			
Channel	Channel 155		
Target (dBm)	9.0		
Tolerance $\pm$ (dB)	1.0		
802.11ax HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	10.0	9.0	9.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ax HT40 (Average)			
Channel	Channel 151	Channel 159	
Target (dBm)	10.0	9.0	
Tolerance $\pm$ (dB)	1.0	1.0	
802.11ax HT80 (Average)			
Channel	Channel 155		
Target (dBm)	9.0		
Tolerance $\pm$ (dB)	1.0		



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**WiFi 5.8G Ant1**

802.11a (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	11.0	10.0	10.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11n HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	9.0	9.0	9.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11n HT40 (Average)			
Channel	Channel 151	Channel 159	
Target (dBm)	9.0	9.0	
Tolerance $\pm$ (dB)	1.0	1.0	
802.11ac HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	9.0	9.0	9.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ac HT40 (Average)			
Channel	Channel 151	Channel 159	
Target (dBm)	9.0	9.0	
Tolerance $\pm$ (dB)	1.0	1.0	
802.11ac HT80 (Average)			
Channel	Channel 155		
Target (dBm)	9.0		
Tolerance $\pm$ (dB)	1.0		
802.11ax HT20 (Average)			
Channel	Channel 149	Channel 157	Channel 165
Target (dBm)	9.0	9.0	9.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
802.11ax HT40 (Average)			
Channel	Channel 151	Channel 159	
Target (dBm)	9.0	9.0	
Tolerance $\pm$ (dB)	1.0	1.0	
802.11ax HT80 (Average)			
Channel	Channel 155		
Target (dBm)	9.0		
Tolerance $\pm$ (dB)	1.0		



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**Bluetooth V5.2**

BLE-1M(Average)			
Channel	Channel 0	Channel 19	Channel 39
Target (dBm)	-3.0	-4.0	-4.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
BLE-2M(Average)			
Channel	Channel 0	Channel 19	Channel 39
Target (dBm)	-4.0	-4.0	-5.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
GFSK (Average)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	-2.0	0.0	0.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
π/4DQPSK (Average)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	-2.0	-2.0	-2.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
8PSK (Average)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	-2.0	0.0	-2.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0

Tune Up Procedure

1. RX Gain Calibration
 - a. Put DUT in test mode
 - b. Put DUT in BCH mode
 - c. Put DUT in selected channel band
 - d. Total gain chain calibration at center ARFCN
 - e. Frequency Ripple calibration
 - f. Complete RX_AGC Gain table
2. TX Power Calibration
 - a. Put DUT in test mode
 - b. Put DUT in BCH mode
 - c. Put DUT in selected channel band
 - d. Total gain chain calibration at center ARFCN
 - e. Frequency Ripple calibration
 - f. Complete TX_APC Gain table





3. AFC calibration
 - a. Put DUT in test mode
 - b. Put DUT in selected channel mode
 - c. Calibration AFC at center ARFCN
 - d. Complete AFC result table

