

Tune Up Procedures

FCC ID: 2AYD5-I25M02

Use software to control the output power level as following forms, this software is not open to users.

Tune-up procedure

GSM/ WCDMA /LTE TEST

Measurement Procedure:

GSM/ WCDMA /LTE TEST

1.Connect EUT with CMU200(E5515C)/CMW500, through RF cable. Make a call from CMU200(E5515C)/CMW500;

2.Measure the Output Power Average value;

3.Remarks: All Output Power are tested in Average Value specification.

For 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

Bluetooth

GFSK (AV)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	5.0	5.0	6.5
Tolerance $\pm$ (dB)	1.0	1.0	1.0
$\pi/4$ DQPSK (AV)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	4.0	4.0	4.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
8DPSK (AV)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	4.0	5.0	5.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
GFSK BT LE (AV)			
Channel	Channel 0	Channel 19	Channel 39
Target (dBm)	-6.0	-5.0	-4.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0

Tune Up Procedures

2.4GWLAN

Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1g	Duty Cycle	Duty Cycle Scaling Factor	Conducted Power (dBm)	Tune up Limit (dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Body 0mm									
Back side	802.11b	11/2462	0.010	97.14%	1.029	10.90	11.00	1.023	0.011
Left side	802.11b	11/2462	0.008	97.14%	1.029	10.90	11.00	1.023	0.008
Right side	802.11b	11/2462	0.049	97.14%	1.029	10.90	11.00	1.023	0.052
Top side	802.11b	11/2462	0.004	97.14%	1.029	10.90	11.00	1.023	0.004
Bottom side	802.11b	11/2462	0.002	97.14%	1.029	10.90	11.00	1.023	0.002
Right side	802.11b	1/2412	0.011	97.14%	1.029	9.02	11.00	1.578	0.018
Right side	802.11b	6/2437	0.016	97.14%	1.029	9.89	11.00	1.291	0.021
ANT2 Test Results									
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1g	Duty Cycle	Duty Cycle Scaling Factor	Conducted Power (dBm)	Tune up Limit (dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Body 0mm									
Back side	802.11b	6/2437	0.010	97.14%	1.029	12.47	13.00	1.130	0.012
Left side	802.11b	6/2437	0.001	97.14%	1.029	12.47	13.00	1.130	0.001
Right side	802.11b	6/2437	0.017	97.14%	1.029	12.47	13.00	1.130	0.020
Top side	802.11b	6/2437	0.002	97.14%	1.029	12.47	13.00	1.130	0.002
Bottom side	802.11b	6/2437	0.001	97.14%	1.029	12.47	13.00	1.130	0.001
Right side	802.11b	1/2412	0.015	97.14%	1.029	12.23	13.00	1.194	0.018
Right side	802.11b	11/2462	0.021	97.14%	1.029	12.05	13.00	1.245	0.027
MIMO Test Results									
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1g	Duty Cycle	Duty Cycle Scaling Factor	Conducted Power (dBm)	Tune up Limit (dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Body 0mm									
Back side	802.11n 20M	11/2462	0.011	98.35%	1.017	16.02	16.50	1.117	0.012
Left side	802.11n 20M	11/2462	0.007	98.35%	1.017	16.02	16.50	1.117	0.008
Right side	802.11n 20M	11/2462	0.061	98.35%	1.017	16.02	16.50	1.117	0.069
Top side	802.11n 20M	11/2462	0.005	98.35%	1.017	16.02	16.50	1.117	0.006
Bottom side	802.11n 20M	11/2462	0.002	98.35%	1.017	16.02	16.50	1.117	0.002
Right side	802.11n 20M	1/2412	0.021	98.35%	1.017	14.67	16.50	1.524	0.033
Right side	802.11n 20M	6/2437	0.027	98.35%	1.017	15.19	16.50	1.352	0.037

5GWLAN

ANT1 Test Results									
Test position	Mode	Ch./Freq.(MHz)	SAR (W/kg) 1g	Duty Cycle	Duty Cycle Scaling Factor	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
U-NII-1 Body 0mm									
Back side	802.11ax 40M	46/5230	0.056	99.04%	1.010	12.53	13.0	1.114	0.063
Left side	802.11ax 40M	46/5230	0.047	99.04%	1.010	12.53	13.0	1.114	0.053
Right side	802.11ax 40M	46/5230	0.127	99.04%	1.010	12.53	13.0	1.114	0.143
Top side	802.11ax 40M	46/5230	0.058	99.04%	1.010	12.53	13.0	1.114	0.065
Bottom side	802.11ax 40M	46/5230	0.004	99.04%	1.010	12.53	13.0	1.114	0.005
Right side	802.11ax 40M	38/5190	0.082	99.04%	1.010	11.82	12.5	1.169	0.097
U-NII-2C Body 0mm									
Back side	802.11ac 160M	114/5570	0.037	100.00%	1.000	10.31	10.5	1.045	0.039
Left side	802.11ac 160M	114/5570	0.012	100.00%	1.000	10.31	10.5	1.045	0.013
Right side	802.11ac 160M	114/5570	0.048	100.00%	1.000	10.31	10.5	1.045	0.050
Top side	802.11ac 160M	114/5570	0.035	100.00%	1.000	10.31	10.5	1.045	0.037
Bottom side	802.11ac 160M	114/5570	0.001	100.00%	1.000	10.31	10.5	1.045	0.001
U-NII-3 Body 0mm									
Back side	802.11a	157/5785	0.051	99.04%	1.010	9.33	9.5	1.040	0.054
Left side	802.11a	157/5785	0.016	99.04%	1.010	9.33	9.5	1.040	0.017
Right side	802.11a	157/5785	0.069	99.04%	1.010	9.33	9.5	1.040	0.072
Top side	802.11a	157/5785	0.043	99.04%	1.010	9.33	9.5	1.040	0.045
Bottom side	802.11a	157/5785	0.002	99.04%	1.010	9.33	9.5	1.040	0.002
Right side	802.11a	149/5745	0.071	99.04%	1.010	9.10	9.5	1.096	0.079
Right side	802.11a	165/5825	0.072	99.04%	1.010	8.45	9.5	1.274	0.093

Tune Up Procedures

ANT2 Test Results									
Test position	Mode	Ch./Freq.(MHz)	SAR (W/kg) 1g	Duty Cycle	Duty Cycle Scaling Factor	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
U-NII-2A Body 0mm									
Back side	802.11ax 40M	54/5270	0.019	99.51%	1.005	12.15	12.5	1.084	0.021
Left side	802.11ax 40M	54/5270	0.057	99.51%	1.005	12.15	12.5	1.084	0.062
Right side	802.11ax 40M	54/5270	0.129	99.51%	1.005	12.15	12.5	1.084	0.141
Top side	802.11ax 40M	54/5270	0.054	99.51%	1.005	12.15	12.5	1.084	0.059
Bottom side	802.11ax 40M	54/5270	0.004	99.51%	1.005	12.15	12.5	1.084	0.004
Right side	802.11ax 40M	62/5310	0.092	99.51%	1.005	12.13	12.5	1.089	0.101
U-NII-2C Body 0mm									
Back side	802.11a	140/5700	0.033	99.05%	1.010	13.01	13.5	1.119	0.037
Left side	802.11a	140/5700	0.025	99.05%	1.010	13.01	13.5	1.119	0.028
Right side	802.11a	140/5700	0.080	99.05%	1.010	13.01	13.5	1.119	0.090
Top side	802.11a	140/5700	0.054	99.05%	1.010	13.01	13.5	1.119	0.061
Bottom side	802.11a	140/5700	0.003	99.05%	1.010	13.01	13.5	1.119	0.003
Right side	802.11a	100/5500	0.091	99.05%	1.010	9.92	11.0	1.282	0.118
Right side	802.11a	120/5600	0.075	99.05%	1.010	10.14	11.0	1.219	0.092
U-NII-3 Body 0mm									
Back side	802.11a	149/5745	0.014	99.05%	1.010	10.74	11.0	1.062	0.015
Left side	802.11a	149/5745	0.031	99.05%	1.010	10.74	11.0	1.062	0.033
Right side	802.11a	149/5745	0.090	99.05%	1.010	10.74	11.0	1.062	0.097
Top side	802.11a	149/5745	0.042	99.05%	1.010	10.74	11.0	1.062	0.045
Bottom side	802.11a	149/5745	0.003	99.05%	1.010	10.74	11.0	1.062	0.003
Right side	802.11a	157/5785	0.065	99.05%	1.010	9.93	11.0	1.279	0.084
Right side	802.11a	165/5825	0.052	99.05%	1.010	8.97	10.5	1.422	0.075
MIMO Test Results									
Test position	Mode	Ch./Freq.(MHz)	SAR (W/kg) 1g	Duty Cycle	Duty Cycle Scaling Factor	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
U-NII-1 Body 0mm									
Back side	802.11ac 40M	46/5230	0.059	99.05%	1.010	14.65	15.0	1.084	0.065
Left side	802.11ac 40M	46/5230	0.023	99.05%	1.010	14.65	15.0	1.084	0.025
Right side	802.11ac 40M	46/5230	0.130	99.05%	1.010	14.65	15.0	1.084	0.142
Top side	802.11ac 40M	46/5230	0.065	99.05%	1.010	14.65	15.0	1.084	0.071
Bottom side	802.11ac 40M	46/5230	0.004	99.05%	1.010	14.65	15.0	1.084	0.004
Right side	802.11ac 40M	38/5190	0.111	99.05%	1.010	14.12	15.0	1.225	0.137
U-NII-2C Body 0mm									
Back side	802.11ax 20M	140/5700	0.032	99.63%	1.004	15.02	15.5	1.117	0.036
Left side	802.11ax 20M	140/5700	0.010	99.63%	1.004	15.02	15.5	1.117	0.011
Right side	802.11ax 20M	140/5700	0.049	99.63%	1.004	15.02	15.5	1.117	0.055
Top side	802.11ax 20M	140/5700	0.025	99.63%	1.004	15.02	15.5	1.117	0.028
Bottom side	802.11ax 20M	140/5700	0.003	99.63%	1.004	15.02	15.5	1.117	0.003
Right side	802.11ax 20M	100/5500	0.068	99.63%	1.004	12.35	13.0	1.161	0.079
Right side	802.11ax 20M	120/5600	0.061	99.63%	1.004	12.91	13.0	1.021	0.063
U-NII-3 Body 0mm									
Back side	802.11n 40M	151/5755	0.047	99.62%	1.004	12.53	13.0	1.114	0.053
Left side	802.11n 40M	151/5755	0.015	99.62%	1.004	12.53	13.0	1.114	0.017
Right side	802.11n 40M	151/5755	0.086	99.62%	1.004	12.53	13.0	1.114	0.096
Top side	802.11n 40M	151/5755	0.028	99.62%	1.004	12.53	13.0	1.114	0.031
Bottom side	802.11n 40M	151/5755	0.002	99.62%	1.004	12.53	13.0	1.114	0.002
Right side	802.11n 40M	159/5795	0.053	99.62%	1.004	12.23	13.0	1.194	0.064

Tune Up Procedures

6GWLAN

Ant1 Test Results												
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1g	Duty Cycle	Duty Cycle Scaling Factor	Conducted Power (dBm)	Tune up Limit (dBm)	Scaling Factor	Reported 1g SAR (W/kg)	Measured APD (W/m^2)	Reported APD (W/m^2)	
Body 0mm												
Back side	802.11ac 160M	111/6505	0.010	99.07%	1.009	9.32	10.00	1.169	0.012	0.018	0.021	
Left side	802.11ac 160M	111/6505	0.008	99.07%	1.009	9.32	10.00	1.169	0.009	0.008	0.009	
Right side	802.11ac 160M	111/6505	0.179	99.07%	1.009	9.32	10.00	1.169	0.211	0.727	0.858	
Top side	802.11ac 160M	111/6505	0.004	99.07%	1.009	9.32	10.00	1.169	0.005	0.009	0.011	
Bottom side	802.11ac 160M	111/6505	0.002	99.07%	1.009	9.32	10.00	1.169	0.002	0.006	0.007	
Right side	802.11ac 160M	15/6025	0.025	99.07%	1.009	7.85	8.50	1.161	0.029	0.052	0.061	
Right side	802.11ac 160M	79/6345	0.072	99.07%	1.009	8.22	8.50	1.067	0.077	0.136	0.146	
Right side	802.11ac 160M	143/6665	0.144	99.07%	1.009	7.72	8.00	1.067	0.155	0.472	0.508	
Right side	802.11ac 160M	207/6985	0.045	99.07%	1.009	7.63	8.00	1.089	0.049	0.071	0.078	
Ant2 Test Results												
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1g	Duty Cycle	Duty Cycle Scaling Factor	Conducted Power (dBm)	Tune up Limit (dBm)	Scaling Factor	Reported 1g SAR (W/kg)	Measured APD (W/m^2)	Reported APD (W/m^2)	
Body 0mm												
Back side	802.11ac 160M	111/6505	0.021	99.07%	1.009	9.67	10.00	1.079	0.023	0.028	0.030	
Left side	802.11ac 160M	111/6505	0.006	99.07%	1.009	9.67	10.00	1.079	0.007	0.007	0.008	
Right side	802.11ac 160M	111/6505	0.178	99.07%	1.009	9.67	10.00	1.079	0.194	0.751	0.818	
Top side	802.11ac 160M	111/6505	0.001	99.07%	1.009	9.67	10.00	1.079	0.001	0.002	0.002	
Bottom side	802.11ac 160M	111/6505	0.013	99.07%	1.009	9.67	10.00	1.079	0.014	0.009	0.010	
Right side	802.11ac 160M	15/6025	0.019	99.07%	1.009	7.09	7.50	1.099	0.021	0.015	0.017	
Right side	802.11ac 160M	79/6345	0.079	99.07%	1.009	7.14	7.50	1.086	0.087	0.181	0.198	
Right side	802.11ac 160M	143/6665	0.132	99.07%	1.009	8.05	9.50	1.396	0.186	0.577	0.813	
Right side	802.11ac 160M	207/6985	0.042	99.07%	1.009	7.52	8.00	1.117	0.047	0.048	0.054	
MIMO Test Results												
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1g	Duty Cycle	Duty Cycle Scaling Factor	Conducted Power (dBm)	Tune up Limit (dBm)	Scaling Factor	Reported 1g SAR (W/kg)	Measured APD (W/m^2)	Reported APD (W/m^2)	
Body 0mm												
Back side	802.11ac 160M	111/6505	0.026	99.07%	1.009	12.51	13.00	1.119	0.029	0.021	0.024	
Left side	802.11ac 160M	111/6505	0.009	99.07%	1.009	12.51	13.00	1.119	0.010	0.010	0.011	
Right side	802.11ac 160M	111/6505	0.184	99.07%	1.009	12.51	13.00	1.119	0.208	0.814	0.919	
Top side	802.11ac 160M	111/6505	0.004	99.07%	1.009	12.51	13.00	1.119	0.005	0.008	0.009	
Bottom side	802.11ac 160M	111/6505	0.012	99.07%	1.009	12.51	13.00	1.119	0.014	0.011	0.012	
Right side	802.11ac 160M	15/6025	0.019	99.07%	1.009	10.50	11.00	1.122	0.022	0.020	0.023	
Right side	802.11ac 160M	79/6345	0.051	99.07%	1.009	10.72	11.00	1.067	0.055	0.040	0.043	
Right side	802.11ac 160M	143/6665	0.129	99.07%	1.009	10.90	11.80	1.230	0.160	0.366	0.454	
Right side	802.11ac 160M	207/6985	0.035	99.07%	1.009	10.59	11.00	1.099	0.039	0.028	0.031	
Test position		Mode	Ch./Freq. (MHz)	Gap (mm)	Grid Step (Δ)	Conducted Power(dBm)	Tune up Limit(dBm)	iPDn	iPD ratio (≥ -1)			
Right side		802.11ac 160M	111/6505	2.000	0.0625	9.67	10.00	2.24	0.301			
Right side		802.11ac 160M	111/6505	9.200	0.125	9.67	10.00	2.09				

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ANT1 Test Results														
Test position	Mode	Ch./Freq. (MHz)	Gap (mm)	Grid Step (A)	Normal psPD (W/m ²)	Total psPD (W/m ²)	Duty Cycle	Duty Cycle Scaling Factor	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Scaling Factor for Measurement Uncertainty	Reported Normal psPD (W/m ²)	Reported Total psPD (W/m ²)
Back side	802.11ac 160M	111/6505	2.000	0.0625	0.082	0.168	99.07%	1.009	9.32	10.00	1.169	1.5493	0.150	0.307
Left side	802.11ac 160M	111/6505	2.000	0.0625	0.016	0.034	99.07%	1.009	9.32	10.00	1.169	1.5493	0.029	0.062
Right side	802.11ac 160M	111/6505	2.000	0.0625	0.156	0.337	99.07%	1.009	9.32	10.00	1.169	1.5493	0.285	0.616
Top side	802.11ac 160M	111/6505	2.000	0.0625	0.011	0.024	99.07%	1.009	9.32	10.00	1.169	1.5493	0.020	0.044
Bottom side	802.11ac 160M	111/6505	2.000	0.0625	0.010	0.022	99.07%	1.009	9.32	10.00	1.169	1.5493	0.018	0.040
Right side	802.11ac 160M	15/6025	2.000	0.0625	0.101	0.211	99.07%	1.009	7.85	8.50	1.161	1.5493	0.183	0.383
Right side	802.11ac 160M	79/6345	2.000	0.0625	0.113	0.236	99.07%	1.009	8.22	8.50	1.067	1.5493	0.188	0.393
Right side	802.11ac 160M	143/6665	2.000	0.0625	0.124	0.255	99.07%	1.009	7.72	8.00	1.067	1.5493	0.207	0.425
Right side	802.11ac 160M	207/6985	2.000	0.0625	0.108	0.223	99.07%	1.009	7.63	8.00	1.089	1.5493	0.184	0.380
ANT2 Test Results														
Test position	Mode	Ch./Freq. (MHz)	Gap (mm)	Grid Step (A)	Normal psPD (W/m ²)	Total psPD (W/m ²)	Duty Cycle	Duty Cycle Scaling Factor	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Scaling Factor for Measurement Uncertainty	Reported Normal psPD (W/m ²)	Reported Total psPD (W/m ²)
Back side	802.11ac 160M	111/6505	2.000	0.0625	0.278	0.621	99.07%	1.009	9.67	10.00	1.079	1.5493	0.469	1.047
Left side	802.11ac 160M	111/6505	2.000	0.0625	0.015	0.034	99.07%	1.009	9.67	10.00	1.079	1.5493	0.025	0.057
Right side	802.11ac 160M	111/6505	2.000	0.0625	0.268	0.719	99.07%	1.009	9.67	10.00	1.079	1.5493	0.452	1.213
Top side	802.11ac 160M	111/6505	2.000	0.0625	0.011	0.025	99.07%	1.009	9.67	10.00	1.079	1.5493	0.019	0.042
Bottom side	802.11ac 160M	111/6505	2.000	0.0625	0.014	0.029	99.07%	1.009	9.67	10.00	1.079	1.5493	0.024	0.049
Right side	802.11ac 160M	15/6025	2.000	0.0625	0.126	0.302	99.07%	1.009	7.09	7.50	1.099	1.5493	0.216	0.519
Right side	802.11ac 160M	79/6345	2.000	0.0625	0.189	0.442	99.07%	1.009	7.14	7.50	1.086	1.5493	0.321	0.751
Right side	802.11ac 160M	143/6665	2.000	0.0625	0.201	0.528	99.07%	1.009	8.05	9.50	1.396	1.5493	0.439	1.153
Right side	802.11ac 160M	207/6985	2.000	0.0625	0.153	0.366	99.07%	1.009	7.52	8.00	1.117	1.5493	0.267	0.639
MIMO Test Results														
Test position	Mode	Ch./Freq. (MHz)	Gap (mm)	Grid Step (A)	Normal psPD (W/m ²)	Total psPD (W/m ²)	Duty Cycle	Duty Cycle Scaling Factor	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Scaling Factor for Measurement Uncertainty	Reported Normal psPD (W/m ²)	Reported Total psPD (W/m ²)
Back side	802.11ac 160M	111/6505	2.000	0.0625	0.288	0.593	99.07%	1.009	12.51	13.00	1.119	1.5493	0.504	1.038
Left side	802.11ac 160M	111/6505	2.000	0.0625	0.016	0.038	99.07%	1.009	12.51	13.00	1.119	1.5493	0.028	0.066
Right side	802.11ac 160M	111/6505	2.000	0.0625	0.528	0.982	99.07%	1.009	12.51	13.00	1.119	1.5493	0.924	1.718
Top side	802.11ac 160M	111/6505	2.000	0.0625	0.123	0.243	99.07%	1.009	12.51	13.00	1.119	1.5493	0.215	0.425
Bottom side	802.11ac 160M	111/6505	2.000	0.0625	0.013	0.027	99.07%	1.009	12.51	13.00	1.119	1.5493	0.023	0.047
Right side	802.11ac 160M	15/6025	2.000	0.0625	0.301	0.598	99.07%	1.009	10.50	11.00	1.122	1.5493	0.528	1.049
Right side	802.11ac 160M	79/6345	2.000	0.0625	0.386	0.768	99.07%	1.009	10.72	11.00	1.067	1.5493	0.644	1.281
Right side	802.11ac 160M	143/6665	2.000	0.0625	0.448	0.887	99.07%	1.009	10.90	11.80	1.230	1.5493	0.862	1.706
Right side	802.11ac 160M	207/6985	2.000	0.0625	0.334	0.659	99.07%	1.009	10.59	11.00	1.099	1.5493	0.574	1.132

Tune Up Procedures

WCDMA

BAND 2

Test position	Mode	Ch./Freq.(MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Body 0mm							
Back side	RMC	9400/1880	0.157	23.59	24.00	1.099	0.173
Left side	RMC	9400/1880	0.004	23.59	24.00	1.099	0.004
Right side	RMC	9400/1880	0.125	23.59	24.00	1.099	0.137
Top side	RMC	9400/1880	0.002	23.59	24.00	1.099	0.002
Bottom Side	RMC	9400/1880	0.713	23.59	24.00	1.099	0.784
Bottom Side	RMC	9262/1852.4	0.834	23.51	24.00	1.119	0.934
Bottom Side Repeat	RMC	9262/1852.4	0.817	23.51	24.00	1.119	0.915
Bottom Side	RMC	9538/1907.6	0.653	23.59	24.00	1.099	0.718

BAND 4

Test position	Mode	Ch./Freq.(MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Body 0mm							
Back side	RMC	1513/1752.6	0.040	23.49	24.00	1.125	0.045
Left side	RMC	1513/1752.6	0.006	23.49	24.00	1.125	0.007
Right side	RMC	1513/1752.6	0.008	23.49	24.00	1.125	0.009
Top side	RMC	1513/1752.6	0.002	23.49	24.00	1.125	0.002
Bottom Side	RMC	1513/1752.6	0.017	23.49	24.00	1.125	0.019
Bottom Side	RMC	1312/1712.4	0.024	23.46	24.00	1.132	0.027
Bottom Side	RMC	1412/1732.4	0.089	23.45	24.00	1.135	0.101

BAND 5

Test position	Mode	Ch./Freq.(MHz)	SAR (W/kg) 10-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Body 0mm							
Back side	RMC	4233/846.6	0.583	23.65	24.00	1.084	0.632
Left side	RMC	4233/846.6	0.060	23.65	24.00	1.084	0.065
Right side	RMC	4233/846.6	0.638	23.65	24.00	1.084	0.692
Top side	RMC	4233/846.6	0.049	23.65	24.00	1.084	0.053
Bottom Side	RMC	4233/846.6	0.928	23.65	24.00	1.084	1.006
Bottom Side	RMC	4132/826.4	0.875	23.59	24.00	1.099	0.962
Bottom Side	RMC	4182/836.4	0.987	23.53	24.00	1.114	1.100
Bottom Side Repeat	RMC	4182/836.4	0.942	23.53	24.00	1.114	1.050

Tune Up Procedures

LTE

BAND 2

Test position	BW. (MHz)	Mode	Ch./Freq.(MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Body 0mm 1RB								
Back side	20	QPSK 1_50	18900/1880	0.159	22.47	23.00	1.130	0.180
Left side	20	QPSK 1_50	18900/1880	0.008	22.47	23.00	1.130	0.009
Right side	20	QPSK 1_50	18900/1880	0.122	22.47	23.00	1.130	0.138
Top side	20	QPSK 1_50	18900/1880	0.002	22.47	23.00	1.130	0.002
Bottom side	20	QPSK 1_50	18900/1880	0.683	22.47	23.00	1.130	0.772
Bottom side	20	QPSK 1_50	18700/1860	0.639	22.26	23.00	1.186	0.758
Bottom side	20	QPSK 1_50	19100/1900	0.714	22.33	23.00	1.167	0.833
Body 0mm 50%RB								
Back side	20	QPSK 50_50	19100/1900	0.137	21.27	22.00	1.183	0.162
Left side	20	QPSK 50_50	19100/1900	0.006	21.27	22.00	1.183	0.007
Right side	20	QPSK 50_50	19100/1900	0.112	21.27	22.00	1.183	0.133
Top side	20	QPSK 50_50	19100/1900	0.002	21.27	22.00	1.183	0.002
Bottom side	20	QPSK 50_50	19100/1900	0.529	21.27	22.00	1.183	0.626
Body 0mm 100%RB								
Bottom side	20	QPSK 100_0	18900/1880	0.564	21.01	22.00	1.256	0.708

BAND 5

Test position	BW. (MHz)	Mode	Ch./Freq.(MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Body 0mm 1RB								
Back side	10	QPSK 1_25	20450/829	0.462	22.79	23.00	1.050	0.485
Left side	10	QPSK 1_25	20450/829	0.048	22.79	23.00	1.050	0.050
Right side	10	QPSK 1_25	20450/829	0.468	22.79	23.00	1.050	0.491
Top side	10	QPSK 1_25	20450/829	0.004	22.79	23.00	1.050	0.004
Bottom side	10	QPSK 1_25	20450/829	0.725	22.79	23.00	1.050	0.761
Bottom side	10	QPSK 1_49	20525/836.5	0.694	22.61	23.00	1.094	0.759
Bottom side	10	QPSK 1_49	20600/844	0.726	22.65	23.00	1.084	0.787
Body 0mm 50%RB								
Back side	10	QPSK 25_25	20450/829	0.360	21.84	22.00	1.038	0.374
Left side	10	QPSK 25_25	20450/829	0.018	21.84	22.00	1.038	0.019
Right side	10	QPSK 25_25	20450/829	0.444	21.84	22.00	1.038	0.461
Top side	10	QPSK 25_25	20450/829	0.003	21.84	22.00	1.038	0.003
Bottom side	10	QPSK 25_25	20450/829	0.559	21.84	22.00	1.038	0.580

BAND 12

Test position	BW. (MHz)	Mode	Ch./Freq.(MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Body 0mm 1RB								
Back side	10	QPSK 1_49	23130/711	0.166	22.67	23.00	1.079	0.179
Left side	10	QPSK 1_49	23130/711	0.008	22.67	23.00	1.079	0.009
Right side	10	QPSK 1_49	23130/711	0.335	22.67	23.00	1.079	0.361
Top side	10	QPSK 1_49	23130/711	0.003	22.67	23.00	1.079	0.003
Bottom side	10	QPSK 1_49	23130/711	0.209	22.67	23.00	1.079	0.225
Right side	10	QPSK 1_25	23060/704	0.524	22.64	23.00	1.086	0.569
Right side	10	QPSK 1_25	23095/707.5	0.386	22.50	23.00	1.122	0.433
Body 0mm 50%RB								
Back side	10	QPSK 25_25	23130/711	0.130	21.84	22.00	1.038	0.135
Left side	10	QPSK 25_25	23130/711	0.006	21.84	22.00	1.038	0.006
Right side	10	QPSK 25_25	23130/711	0.228	21.84	22.00	1.038	0.237
Top side	10	QPSK 25_25	23130/711	0.002	21.84	22.00	1.038	0.002
Bottom side	10	QPSK 25_25	23130/711	0.199	21.84	22.00	1.038	0.206

Tune Up Procedures

BAND 13

Test position	BW. (MHz)	Mode	Ch./Freq.(MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Body 0mm 1RB								
Back side	10	QPSK 1_25	23230/782	0.273	22.99	23.50	1.125	0.307
Left side	10	QPSK 1_25	23230/782	0.009	22.99	23.50	1.125	0.010
Right side	10	QPSK 1_25	23230/782	0.777	22.99	23.50	1.125	0.874
Top side	10	QPSK 1_25	23230/782	0.003	22.99	23.50	1.125	0.003
Bottom side	10	QPSK 1_25	23230/782	0.456	22.99	23.50	1.125	0.513
Body 0mm 50%RB								
Back side	10	QPSK 25_0	23230/782	0.230	21.84	22.50	1.164	0.268
Left side	10	QPSK 25_0	23230/782	0.004	21.84	22.50	1.164	0.005
Right side	10	QPSK 25_0	23230/782	0.481	21.84	22.50	1.164	0.560
Top side	10	QPSK 25_0	23230/782	0.002	21.84	22.50	1.164	0.002
Bottom side	10	QPSK 25_0	23230/782	0.371	21.84	22.50	1.164	0.432
Body 0mm 100%RB								
Right side	10	QPSK 25_0	23230/782	0.447	21.91	22.50	1.146	0.512

BAND 14

Test position	BW. (MHz)	Mode	Ch./Freq.(MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Body 0mm 1RB								
Back side	10	QPSK 1_25	23330/793	0.369	23.23	23.50	1.064	0.393
Left side	10	QPSK 1_25	23330/793	0.009	23.23	23.50	1.064	0.010
Right side	10	QPSK 1_25	23330/793	0.969	23.23	23.50	1.064	1.031
Right side Repeat	10	QPSK 1_25	23330/793	0.948	23.23	23.50	1.064	1.009
Top side	10	QPSK 1_25	23330/793	0.004	23.23	23.50	1.064	0.004
Bottom side	10	QPSK 1_25	23330/793	0.411	23.23	23.50	1.064	0.437
Body 0mm 50%RB								
Back side	10	QPSK 25_0	23330/793	0.286	21.84	22.50	1.164	0.333
Left side	10	QPSK 25_0	23330/793	0.007	21.84	22.50	1.164	0.008
Right side	10	QPSK 25_0	23330/793	0.520	21.84	22.50	1.164	0.605
Top side	10	QPSK 25_0	23330/793	0.003	21.84	22.50	1.164	0.003
Bottom side	10	QPSK 25_0	23330/793	0.330	21.84	22.50	1.164	0.384
Body 0mm 100%RB								
Right side	10	QPSK 50_0	23330/793	0.601	21.73	22.50	1.194	0.718

BAND 66

Test position	BW. (MHz)	Mode	Ch./Freq.(MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Body 0mm 1RB								
Back side	20	QPSK 1_50	132572/1770	0.066	21.73	22.50	1.194	0.079
Left side	20	QPSK 1_50	132572/1770	0.006	21.73	22.50	1.194	0.007
Right side	20	QPSK 1_50	132572/1770	0.011	21.73	22.50	1.194	0.013
Top side	20	QPSK 1_50	132572/1770	0.003	21.73	22.50	1.194	0.004
Bottom side	20	QPSK 1_50	132572/1770	0.261	21.73	22.50	1.194	0.312
Bottom side	20	QPSK 1_50	132072/1720	0.165	21.67	22.50	1.211	0.200
Bottom side	20	QPSK 1_0	132322/1745	0.090	21.67	22.50	1.211	0.109
Body 0mm 50%RB								
Back side	20	QPSK 50_0	132572/1770	0.059	20.55	21.50	1.245	0.073
Left side	20	QPSK 50_0	132572/1770	0.005	20.55	21.50	1.245	0.006
Right side	20	QPSK 50_0	132572/1770	0.008	20.55	21.50	1.245	0.010
Top side	20	QPSK 50_0	132572/1770	0.002	20.55	21.50	1.245	0.002
Bottom side	20	QPSK 50_0	132572/1770	0.250	20.55	21.50	1.245	0.311

Tune Up Procedures

BAND 71

Test position	BW. (MHz)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Body 0mm 1RB								
Back side	20	QPSK 1_50	133372/688	0.204	22.88	23.50	1.153	0.235
Left side	20	QPSK 1_50	133372/688	0.008	22.88	23.50	1.153	0.009
Right side	20	QPSK 1_50	133372/688	0.456	22.88	23.50	1.153	0.526
Top side	20	QPSK 1_50	133372/688	0.003	22.88	23.50	1.153	0.003
Bottom side	20	QPSK 1_50	133372/688	0.341	22.88	23.50	1.153	0.393
Right side	20	QPSK 1_50	133222/673	0.638	22.51	23.50	1.256	0.801
Right side	20	QPSK 1_50	133322/683	0.464	22.78	23.50	1.180	0.548
Body 0mm 50%RB								
Back side	20	QPSK 50_50	133372/688	0.153	21.62	22.50	1.225	0.187
Left side	20	QPSK 50_50	133372/688	0.006	21.62	22.50	1.225	0.007
Right side	20	QPSK 50_50	133372/688	0.446	21.62	22.50	1.225	0.546
Top side	20	QPSK 50_50	133372/688	0.002	21.62	22.50	1.225	0.002
Bottom side	20	QPSK 50_50	133372/688	0.251	21.62	22.50	1.225	0.307
Body 0mm 100%RB								
Right side	20	QPSK 100_0	133372/688	0.367	21.57	22.50	1.239	0.455

Tune Up Procedures

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