

# Appendix H: Dynamic Antenna Tuner Testing

GSM 1900		WCDMA 2		WCDMA 5		LTE Band 12 (B17)		LTE Band 13	
Test position	Edge Top	Test position	Edge Top	Test position	Edge Top	Test position	Back	Test position	Back
Spacing	0	Spacing	0	Spacing	0	Spacing	0	Spacing	0
Frequency(MHz)	1880.0	Frequency(MHz)	1852.4	Frequency(MHz)	836.6	Frequency(MHz)	707.5	Frequency(MHz)	782.0
Channel	661	Channel	9262	Channel	4183	Channel	23095	Channel	23230
Measured 1g SAR(W/kg)	0.440	Measured 1g SAR(W/kg)	1.110	Measured 1g SAR(W/kg)	0.570	Measured 1g SAR(W/kg)	0.349	Measured 1g SAR(W/kg)	0.343
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune code (State 47)	0.437	Auto-tune code (State 42)	<b>1.100</b>	Auto-tune code (State 33)	<b>0.568</b>	Auto-tune code (State 66 )	<b>0.350</b>	Auto-tune code (State 67)	<b>0.342</b>
State		State		State		State		State	
2	0.428	136	0.325	0	0.283	84	0.226	1	0.207
19	0.094	9	0.935	6	0.160	7	0.045	17	0.025
28	0.067	20	0.255	12	0.463	16	0.046	27	0.270
33	0.029	56	0.317	26	0.145	32	0.186	37	0.194
38	<b>0.438</b>	64	0.214	36	0.141	42	0.053	47	0.235
43	0.433	69	0.129	46	0.256	52	0.022	53	0.015
47	0.370	75	0.879	62	0.131	67	0.311	63	0.171
48	0.353	81	1.080	73	0.151	79	0.009	79	0.009
55	0.113	98	0.091	78	0.108	91	0.283	87	0.033
92	0.140	103	0.276	95	0.406	96	0.022	101	0.222
122	0.359	109	0.660	100	0.188	107	0.005	112	0.232
129	0.168	113	0.740	111	0.226	116	0.002	126	0.070
133	0.058	117	1.000	119	0.134	120	0.131	128	0.178
138	0.111	140	0.332	125	0.013	132	0.011	139	0.203

LTE Band 26 (B5)		LTE Band 66 (B4)		NR Band n5		NR Band n66	
Test position	Edge Top	Test position	Edge Top	Test position	Edge Top	Test position	Edge Top
Spacing	0	Spacing	0	Spacing	0	Spacing	0
Frequency(MHz)	831.5	Frequency(MHz)	1770.0	Frequency(MHz)	836.5	Frequency(MHz)	1760
Channel	26865	Channel	132572	Channel	167300	Channel	352000
Measured 1g SAR(W/kg)	0.485	Measured 1g SAR(W/kg)	0.973	Measured 1g SAR(W/kg)	0.489	Measured 1g SAR(W/kg)	1.03
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune code (State 33)	<b>0.455</b>	Auto-tune code (State 4)	0.957	Auto-tune code (State 23)	<b>0.488</b>	Auto-tune code (State 4)	1.030
State		State		State		State	
85	0.271	4	<b>0.965</b>	86	0.281	5	<b>1.040</b>
5	0.267	23	0.203	0	0.142	25	0.082
8	0.034	26	0.044	11	0.227	31	0.187
10	0.367	30	0.174	15	0.135	35	0.029
13	0.402	40	0.913	24	0.280	41	1.010
18	0.416	50	0.802	45	0.085	51	0.689
54	0.205	59	0.268	60	0.326	61	0.109
68	0.412	66	0.218	65	0.186	72	0.730
74	0.144	70	0.066	71	0.130	83	0.932
80	0.013	89	0.352	77	0.287	90	0.456
97	0.140	105	0.151	92	0.092	94	0.443
102	0.182	114	0.742	106	0.118	115	0.807
108	0.042	135	0.292	142	0.072	124	0.425
121	0.043	141	0.161	143	0.042	131	0.410

WCDMA 4					
Test position	Edge Top				
Spacing	0				
Frequency(MHz)	1732.6				
Channel	1413				
Measured 1g SAR(W/kg)	0.880				
Average Value of Time Sweep (W/kg)					
Auto-tune code (State 43)	0.545				
State					
0	0.915	48	0.866	96	0.243
1	0.928	49	0.856	97	0.135
2	0.935	50	0.798	98	0.083
3	0.946	51	0.660	99	0.301
4	0.950	52	0.660	100	0.347
5	<b>0.955</b>	53	0.383	101	0.342
6	0.937	54	0.397	102	0.329
7	0.827	55	0.402	103	0.336
8	0.682	56	0.390	104	0.288
9	0.862	57	0.365	105	0.174
10	0.826	58	0.365	106	0.091
11	0.811	59	0.308	107	0.052
12	0.778	60	0.209	108	0.505
13	0.767	61	0.124	109	0.522
14	0.703	62	0.078	110	0.535
15	0.566	63	0.256	111	0.559
16	0.424	64	0.269	112	0.562
17	0.318	65	0.261	113	0.606
18	0.337	66	0.245	114	0.683
19	0.323	67	0.249	115	0.692
20	0.308	68	0.214	116	0.613
21	0.281	69	0.141	117	0.762
22	0.279	70	0.081	118	0.736
23	0.231	71	0.049	119	0.731
24	0.153	72	0.647	120	0.713
25	0.091	73	0.666	121	0.713
26	0.058	74	0.680	122	0.652
27	0.229	75	0.702	123	0.521
28	0.223	76	0.707	124	0.384
29	0.213	77	0.748	125	0.282
30	0.194	78	0.814	126	0.538
31	0.193	79	0.803	127	0.586
32	0.158	80	0.710	128	0.572
33	0.102	81	0.868	129	0.534
34	0.058	82	0.842	130	0.525
35	0.036	83	0.836	131	0.423
36	0.820	84	0.816	132	0.230
37	0.843	85	0.801	133	0.121
38	0.856	86	0.751	134	0.072
39	0.874	87	0.614	135	0.339
40	0.879	88	0.463	136	0.420
41	0.905	89	0.346	137	0.419
42	0.938	90	0.473	138	0.408
43	0.889	91	0.504	139	0.415
44	0.766	92	0.490	140	0.339
45	0.926	93	0.461	141	0.173
46	0.899	94	0.462	142	0.084
47	0.893	95	0.391	143	0.047

LTE Band 25 (B2)					
Test position	Edge Top				
Spacing	0				
Frequency(MHz)	1860.0				
Channel	26140				
Measured 1g SAR(W/kg)	0.964				
Average Value of Time Sweep (W/kg)					
Auto-tune code (State 3)	0.905				
State					
0	0.935	48	0.875	96	0.198
1	0.944	49	0.870	97	0.107
2	0.949	50	0.801	98	0.061
3	0.958	51	0.650	99	0.196
4	0.961	52	0.484	100	0.240
5	0.966	53	0.360	101	0.238
6	0.938	54	0.279	102	0.233
7	0.846	55	0.296	103	0.246
8	0.711	56	0.287	104	0.220
9	0.858	57	0.271	105	0.141
10	0.821	58	0.278	106	0.054
11	0.807	59	0.239	107	0.030
12	0.766	60	0.163	108	0.426
13	0.760	61	0.094	109	0.433
14	0.689	62	0.056	110	0.440
15	0.546	63	0.179	111	0.455
16	0.399	64	0.198	112	0.454
17	0.295	65	0.193	113	0.483
18	0.248	66	0.182	114	0.524
19	0.248	67	0.187	115	0.532
20	0.235	68	0.163	116	0.473
21	0.214	69	0.110	117	0.638
22	0.218	70	0.061	118	0.613
23	0.179	71	0.034	119	0.604
24	0.116	72	0.723	120	0.582
25	0.066	73	0.736	121	0.570
26	0.038	74	0.750	122	0.521
27	0.165	75	0.776	123	0.404
28	0.168	76	0.776	124	0.285
29	0.161	77	0.818	125	0.204
30	0.145	78	0.887	126	0.416
31	0.149	79	0.897	127	0.319
32	0.122	80	0.819	128	0.319
33	0.077	81	<b>0.985</b>	129	0.308
34	0.042	82	0.951	130	0.453
35	0.023	83	0.939	131	0.387
36	0.870	84	0.906	132	0.219
37	0.885	85	0.977	133	0.107
38	0.894	86	0.817	134	0.059
39	0.903	87	0.649	135	0.221
40	0.915	88	0.476	136	0.290
41	0.935	89	0.347	137	0.295
42	0.965	90	0.328	138	0.302
43	0.906	91	0.373	139	0.319
44	0.795	92	0.364	140	0.290
45	0.950	93	0.348	141	0.164
46	0.920	94	0.360	142	0.073
47	0.905	95	0.310	143	0.038