

**Table 8: Radiated Emission Test Data (Restricted Bands), Transmit @2402MHz  
(In MT2070 Scanner with 1.88dBi Monopole antenna)**

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)
Peak								
4804.00	V	270.00	1.98	47.01	2.9	314.4	5000.0	-24.0
7206.00	V	270.00	1.92	43.97	8.8	434.7	5000.0	-21.2
9608.00	V	270.00	1.90	45.42	11.3	686.0	5000.0	-17.3
12010.00	V	270.00	1.90	43.55	13.4	704.6	5000.0	-17.0
AVG								
4804.00	V	270.00	1.74	36.89	2.9	98.0	500.0	-14.2
7206.00	V	270.00	1.92	33.83	8.8	135.3	500.0	-11.4
12010.00	V	270.00	1.90	33.66	13.4	225.6	500.0	-6.9
Peak								
4804.00	H	165.00	3.36	50.01	2.9	444.0	5000.0	-21.0
AVG								
4804.00	H	165.00	3.36	45.92	2.9	277.3	500	-5.1
Non Harmonic								
74.96	V	325.00	1.65	21.10	9.9	35.5	100.0	-9.0
120.02	V	190.00	1.00	9.10	15.4	16.8	150.0	-19.0
132.02	V	180.00	1.00	11.60	15.3	22.1	150.0	-16.6
74.96	H	180.00	2.40	23.30	9.9	45.7	100.0	-6.8
108.14	H	170.00	2.98	16.50	13.7	32.5	150.0	-13.3
120.02	H	135.00	2.28	16.50	15.4	39.4	150.0	-11.6

**Table 9: Radiated Emission Test Data (Restricted Bands), Transmit @2441MHz  
(In MT2070 Scanner with 1.88dBi Monopole antenna)**

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)
Peak								
4882.00	V	270.00	2.38	48.33	3.1	373.9	5000.0	-22.5
7323.00	V	270.00	2.18	46.67	9.1	611.1	5000.0	-18.3
AVG								
4882.00	V	270.00	2.38	42.17	3.1	184.0	500.0	-8.7
7323.00	V	270.00	2.18	39.50	9.1	267.7	500.0	-5.4
Peak								
4882.00	H	275.00	2.44	43.33	3.1	210.2	5000.0	-27.5
7323.00	H	280.00	2.52	35.50	9.1	168.9	5000.0	-29.4
AVG								
4882.00	H	275.00	2.44	41.67	3.1	173.7	500.0	-9.2
7323.00	H	280.00	2.52	31.50	9.1	106.6	500.0	-13.4
Non Harmonic								
74.96	V	325.00	1.65	21.10	9.9	35.5	100.0	-9.0
120.02	V	190.00	1.00	9.10	15.4	16.8	150.0	-19.0
132.02	V	180.00	1.00	11.60	15.3	22.1	150.0	-16.6
74.96	H	180.00	2.40	23.30	9.9	45.7	100.0	-6.8
108.14	H	170.00	2.98	16.50	13.7	32.5	150.0	-13.3
120.02	H	135.00	2.28	16.50	15.4	39.4	150.0	-11.6

**Table 10: Radiated Emission Test Data (Restricted Bands), Transmit @2480MHz  
(In MT2070 Scanner with 1.88dBi Monopole antenna)**

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)
Peak								
4960.00	V	45.00	2.87	49.00	3.3	412.4	5000.0	-21.7
7440.00	V	45.00	2.97	47.83	9.3	719.1	5000.0	-16.8
AVG								
4960.00	V	45.00	2.87	44.00	3.3	231.9	500.0	-6.7
7440.00	V	45.00	2.97	35.67	9.3	177.3	500.0	-9.0
Peak								
4960.00	H	140.00	2.03	50.50	3.3	490.2	5000.0	-20.2
7440.00	H	140.00	3.73	40.67	9.3	315.4	5000.0	-24.0
AVG								
4960.00	H	140.00	2.03	45.67	3.3	281.1	500.0	-5.0
7440.00	H	140.00	3.73	36.33	9.3	191.3	500.0	-8.3
Non Harmonic								
74.96	V	325.00	1.65	21.10	9.9	35.5	100.0	-9.0
120.02	V	190.00	1.00	9.10	15.4	16.8	150.0	-19.0
132.02	V	180.00	1.00	11.60	15.3	22.1	150.0	-16.6
74.96	H	180.00	2.40	23.30	9.9	45.7	100.0	-6.8
108.14	H	170.00	2.98	16.50	13.7	32.5	150.0	-13.3
120.02	H	135.00	2.28	16.50	15.4	39.4	150.0	-11.6

**Table 11: Radiated Emission Test Data (Restricted Bands), Transmit @2402MHz  
(In STB2078 Cradle with 2.5dBi Omni antenna)**

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)
Peak								
4804.00	V	165.00	1.90	45.00	1.7	217.1	5000.0	-27.2
12010.00	V	180.00	2.00	35.50	10.6	200.7	5000.0	-27.9
AVG								
4804.00	V	165.00	1.90	45.00	1.7	217.1	500.0	-7.2
12010.00	V	180.00	2.00	35.50	10.6	200.7	500.0	-7.9
Peak								
4804.00	H	90.00	2.25	46.00	1.7	243.5	5000.0	-26.2
12010.00	H	180.00	2.25	34.17	10.6	172.2	5000.0	-29.3
AVG								
4804.00	H	90.00	2.25	46.00	1.7	243.5	500.0	-6.2
12010.00	H	180.00	2.25	34.17	10.6	172.2	500.0	-9.3
Non Harmonic								
109.85	V	315.00	2.53	13.80	12.6	20.9	150.0	-17.1
227.15	V	45.00	2.30	5.30	13.6	8.8	200.0	-27.2
332.80	V	135.00	1.68	8.30	17.6	19.8	200.0	-20.1
450.21	V	165.00	1.21	11.30	20.2	37.8	200.0	-14.5
456.77	V	180.00	1.16	10.20	20.3	33.4	200.0	-15.6
466.19	V	180.00	1.00	9.70	20.6	32.9	200.0	-15.7
729.49	V	190.00	1.47	5.50	24.9	32.9	200.0	-15.7
2339.57	V	270.00	2.43	49.33	-2.9	209.8	500.0	-7.5
3341.04	V	90.00	2.48	47.83	-0.6	229.2	500.0	-6.8
109.85	H	45.00	3.00	18.00	12.6	34.0	150.0	-12.9
227.15	H	200.00	1.60	22.70	13.6	65.0	200.0	-9.8
327.73	H	180.00	1.51	5.50	17.5	14.1	200.0	-23.1
450.21	H	180.00	1.00	6.10	20.2	20.8	200.0	-19.7
456.77	H	90.00	1.00	5.70	20.3	19.9	200.0	-20.1
466.19	H	270.00	1.08	7.20	20.6	24.7	200.0	-18.2
729.49	H	135.00	1.43	6.90	24.9	38.7	200.0	-14.3
2340.03	H	15.00	3.53	51.67	-2.9	274.7	500.0	-5.2
3341.02	H	165.00	3.52	44.33	-0.6	153.2	500.0	-10.3

**Table 12: Radiated Emission Test Data (Restricted Bands), Transmit @2441MHz  
(In STB2078 Cradle with 2.5dBi Omni antenna)**

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)
Peak								
4882.00	V	90.00	2.88	44.33	1.9	204.6	5000.0	-27.8
7323.00	V	90.00	2.88	34.50	8.6	143.3	5000.0	-30.9
12205.00	V	90.00	3.00	33.83	11.3	181.0	5000.0	-28.8
AVG								
4882.00	V	90.00	2.88	44.33	1.9	204.6	500.0	-7.8
7323.00	V	90.00	2.88	34.50	8.6	143.3	500.0	-10.9
12205.00	V	90.00	3.00	33.83	11.3	181.0	500.0	-8.8
Peak								
4882.00	H	180.00	2.44	46.00	1.9	247.9	5000.0	-26.1
7323.00	H	180.00	2.75	35.00	8.6	151.8	5000.0	-30.4
12205.00	H	180.00	2.75	32.50	11.3	155.3	5000.0	-30.2
Non Harmonic								
109.85	V	315.00	2.53	13.80	12.6	20.9	150.0	-17.1
227.15	V	45.00	2.30	5.30	13.6	8.8	200.0	-27.2
332.80	V	135.00	1.68	8.30	17.6	19.8	200.0	-20.1
450.21	V	165.00	1.21	11.30	20.2	37.8	200.0	-14.5
456.77	V	180.00	1.16	10.20	20.3	33.4	200.0	-15.6
466.19	V	180.00	1.00	9.70	20.6	32.9	200.0	-15.7
729.49	V	190.00	1.47	5.50	24.9	32.9	200.0	-15.7
2339.57	V	270.00	2.43	49.33	-2.9	209.8	500.0	-7.5
3341.04	V	90.00	2.48	47.83	-0.6	229.2	500.0	-6.8
109.85	H	45.00	3.00	18.00	12.6	34.0	150.0	-12.9
227.15	H	200.00	1.60	22.70	13.6	65.0	200.0	-9.8
327.73	H	180.00	1.51	5.50	17.5	14.1	200.0	-23.1
450.21	H	180.00	1.00	6.10	20.2	20.8	200.0	-19.7
456.77	H	90.00	1.00	5.70	20.3	19.9	200.0	-20.1
466.19	H	270.00	1.08	7.20	20.6	24.7	200.0	-18.2
729.49	H	135.00	1.43	6.90	24.9	38.7	200.0	-14.3
2340.03	H	15.00	3.53	51.67	-2.9	274.7	500.0	-5.2
3341.02	H	165.00	3.52	44.33	-0.6	153.2	500.0	-10.3

**Table 13: Radiated Emission Test Data (Restricted Bands), Transmit @2480MHz  
(In STB2078 Cradle with 2.5dBi Omni antenna)**

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)
Peak								
4960.00	V	180.00	1.80	48.00	2.0	317.7	5000.0	-23.9
7440.00	V	180.00	2.22	35.17	8.8	158.2	5000.0	-30.0
12400.00	V	180.00	2.22	32.50	12.1	169.5	5000.0	-29.4
AVG								
4960.00	V	180.00	1.80	48.00	2.0	317.7	500.0	-3.9
7440.00	V	180.00	2.22	35.17	8.8	158.2	500.0	-10.0
12400.00	V	180.00	2.22	32.50	12.1	169.5	500.0	-9.4
Peak								
4960.00	H	180.00	2.15	46.17	2.0	257.3	5000.0	-25.8
7440.00	H	180.00	2.75	35.33	8.8	161.1	5000.0	-29.8
12400.00	H	180.00	2.75	33.17	12.1	183.1	5000.0	-28.7
AVG								
4960.00	H	180.00	2.15	46.17	2.0	257.3	500.0	-5.8
7440.00	H	180.00	2.75	35.33	8.8	161.1	500.0	-9.8
12400.00	H	180.00	2.75	33.17	12.1	183.1	500.0	-8.7
Non Harmonic								
109.85	V	315.00	2.53	13.80	12.6	20.9	150.0	-17.1
227.15	V	45.00	2.30	5.30	13.6	8.8	200.0	-27.2
332.80	V	135.00	1.68	8.30	17.6	19.8	200.0	-20.1
450.21	V	165.00	1.21	11.30	20.2	37.8	200.0	-14.5
456.77	V	180.00	1.16	10.20	20.3	33.4	200.0	-15.6
466.19	V	180.00	1.00	9.70	20.6	32.9	200.0	-15.7
729.49	V	190.00	1.47	5.50	24.9	32.9	200.0	-15.7
2339.57	V	270.00	2.43	49.33	-2.9	209.8	500.0	-7.5
3341.04	V	90.00	2.48	47.83	-0.6	229.2	500.0	-6.8
109.85	H	45.00	3.00	18.00	12.6	34.0	150.0	-12.9
227.15	H	200.00	1.60	22.70	13.6	65.0	200.0	-9.8
327.73	H	180.00	1.51	5.50	17.5	14.1	200.0	-23.1
450.21	H	180.00	1.00	6.10	20.2	20.8	200.0	-19.7
456.77	H	90.00	1.00	5.70	20.3	19.9	200.0	-20.1
466.19	H	270.00	1.08	7.20	20.6	24.7	200.0	-18.2
729.49	H	135.00	1.43	6.90	24.9	38.7	200.0	-14.3
2340.03	H	15.00	3.53	51.67	-2.9	274.7	500.0	-5.2
3341.02	H	165.00	3.52	44.33	-0.6	153.2	500.0	-10.3

## 5.7 Receiver Radiated Spurious Emissions: (RSS-Gen [7.2.3.2])

The EUT must comply with the requirements for radiated spurious emissions from the receiver. These emissions must meet the limits specified in RSS-Gen.

### 5.7.1 Test Procedure

The BCM2046 Bluetooth Module was tested radiated emissions in a host MT2070 Scanner unit with an internal 1.88 dBi Monopole Antenna. The BCM2046 Bluetooth Module was also tested for radiated emissions in a STB2078 scanner cradle unit with an integral 2.5dBi Omni antenna.

The EUT was placed on motorized turntable for radiated testing on a 3-meter open field test site. The emissions from the EUT were measured continuously at every azimuth by rotating the turntable. Receiving antennas were mounted on an antenna mast to determine the height of maximum emissions. The height of the antenna was varied between 1 and 4 meters. Additionally, as the device is portable, the emissions were checked in three orthogonal with the worst case being reported. The emissions were measured using the following resolution bandwidths:

Frequency Range	Resolution Bandwidth	Video Bandwidth
30MHz-1000 MHz	100kHz	>100 kHz
>1000 MHz	1 MHz	10 Hz (Avg.)

5.7.2 Test Summary

The EUT complied with the requirements for receiver radiated emissions IC RSS-Gen.

**Table 14: Radiated Emission Test Data (Receiver)  
(In MT2070 scanner with 1.88dBi Omni antenna)**

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)
36.13	V	90.00	1.00	8.20	18.0	20.5	100.0	-13.8
41.43	V	135.00	1.00	14.20	14.3	26.5	100.0	-11.5
60.03	V	135.00	1.00	20.80	8.8	30.2	100.0	-10.4
74.96	V	325.00	1.65	21.10	9.9	35.5	100.0	-9.0
120.02	V	190.00	1.00	9.10	15.4	16.8	150.0	-19.0
132.02	V	180.00	1.00	11.60	15.3	22.1	150.0	-16.6
144.02	V	175.00	1.00	4.70	14.3	8.9	150.0	-24.5
36.14	H	180.00	3.00	11.10	18.0	28.6	100.0	-10.9
41.43	H	180.00	2.50	20.70	14.3	55.9	100.0	-5.0
48.13	H	190.00	4.00	24.00	10.0	50.3	100.0	-6.0
60.06	H	15.00	3.00	22.50	8.8	36.8	100.0	-8.7
74.96	H	180.00	2.40	23.30	9.9	45.7	100.0	-6.8
108.14	H	170.00	2.98	16.50	13.7	32.5	150.0	-13.3
120.02	H	135.00	2.28	16.50	15.4	39.4	150.0	-11.6
132.02	H	140.00	2.51	14.60	15.3	31.2	150.0	-13.6
144.02	H	125.00	2.06	0.00	14.3	5.2	150.0	-29.2



**Table 15: Radiated Emission Test Data (Receiver)  
(In STB2078 Cradle with 2.5dBi Omni antenna)**

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)
47.65	V	0.00	4.00	9.60	10.1	9.6	100.0	-20.3
114.41	V	180.00	1.00	6.10	13.1	9.1	150.0	-24.3
193.25	V	180.00	1.00	5.70	13.0	8.6	150.0	-24.8
295.57	V	180.00	1.48	6.40	16.3	13.7	200.0	-23.3
573.24	V	90.00	1.47	10.70	22.4	45.2	200.0	-12.9
747.24	V	45.00	1.37	13.60	25.9	94.4	200.0	-6.5
751.74	V	180.00	1.70	4.90	25.9	34.8	200.0	-15.2
952.39	V	45.00	1.56	10.90	28.3	91.2	200.0	-6.8
47.65	H	0.00	2.30	10.80	10.1	11.1	100.0	-19.1
114.41	H	180.00	1.43	2.40	13.1	6.0	150.0	-28.0
193.25	H	325.00	1.22	8.50	13.0	11.9	150.0	-22.0
295.57	H	125.00	1.88	3.90	16.3	10.2	200.0	-25.8
573.24	H	180.00	3.51	15.30	22.4	76.8	200.0	-8.3
747.24	H	180.00	2.40	17.10	25.9	141.2	200.0	-3.0
751.74	H	180.00	1.40	4.60	25.9	33.6	200.0	-15.5
952.39	H	90.00	1.88	15.60	28.3	156.7	200.0	-2.1

## 5.8 AC Conducted Emissions

### 5.8.1 Requirements

Test Arrangement: Table Top

Compliance Standard: FCC Part 15 (7/2008), Class B

FCC Compliance Limits		
Frequency	Quasi-peak	Average
0.15-0.5MHz	66 to 56dB $\mu$ V	56 to 46dB $\mu$ V
0.5 to 5MHz	56dB $\mu$ V	46dB $\mu$ V
0.5-30MHz	60dB $\mu$ V	50dB $\mu$ V

### 5.8.2 Test Procedure

The Scanner is battery operated and the battery is charged via an AC/DC adapter connected to the Cradle. When in the charging mode, normal operation is halted until the charging adapter is removed from the Cradle. AC conducted testing was performed on the EUT by connecting the charging port of the Cradle to an AC/DC adapter. The AC/DC adapter was then connected to the LISN and measurements were taken at the AC input of the AC/DC adapter.

The 50  $\Omega$  output of the LISN was connected to the input of the spectrum analyzer and the emissions in the frequency range of 150 kHz to 30 MHz were measured. The detector function was set to quasi-peak, peak, or average as appropriate, and the resolution bandwidth during testing was at least 9 kHz, with all post-detector filtering no less than 10 times the resolution bandwidth. For average measurements the post-detector filter was set to 10 Hz.

At frequencies where quasi-peak or peak measurements comply with the average limit, no average measurements need be performed.

### 5.8.3 Conducted Data Reduction and Reporting

At frequencies where quasi-peak or peak measurements comply with the average limit, no average measurements need be performed. The Conducted emissions level to be compared to the FCC limit is calculated as shown in the following example.

Example:

Spectrum Analyzer Voltage: VdB $\mu$ V

LISN Correction Factor: LISN dB

Cable Correction Factor: CF dB

Electric Field: EdB $\mu$ V = V dB $\mu$ V + LISN dB + CF dB

5.8.4 Test Data

The EUT complied with the Class B Conducted Emissions requirements. Table 16 provides the test results for phase and neutral line power line conducted emissions.

**Table 16 AC Power line Conducted Emissions**

NEUTRAL

Frequency (MHz)	Level QP (dBµV)	Level AVG (dBµV)	Cable Loss (dB)	LISN Corr (dB)	Level QP Corr (dBµV)	Level Corr Avg (dBµV)	Limit QP (dBµV)	Limit AVG (dBµV)	Margin QP (dB)	Margin AVG (dB)
0.203	36.8	29.3	10.2	0.5	47.4	39.9	63.5	53.5	-16.0	-13.5
0.306	29.3	21.7	10.2	0.4	39.9	32.3	60.1	50.1	-20.2	-17.8
5.218	19.8	14.4	10.8	0.5	31.1	25.7	60.0	50.0	-28.9	-24.3
19.849	20.3	17.9	11.5	1.5	33.3	30.9	60.0	50.0	-26.7	-19.1
24.149	22.1	19.6	11.7	1.5	35.3	32.8	60.0	50.0	-24.7	-17.2

PHASE

Frequency (MHz)	Level QP (dBµV)	Level AVG (dBµV)	Cable Loss (dB)	LISN Corr (dB)	Level QP Corr (dBµV)	Level Corr Avg (dBµV)	Limit QP (dBµV)	Limit AVG (dBµV)	Margin QP (dB)	Margin AVG (dB)
0.204	36.5	29.1	10.2	0.5	47.1	39.7	63.5	53.5	-16.3	-13.7
0.306	28.8	22.5	10.2	0.4	39.4	33.1	60.1	50.1	-20.7	-17.0
6.347	20.7	18.4	10.9	0.7	32.3	30.0	60.0	50.0	-27.7	-20.0
24.267	20.2	17.0	11.7	1.5	33.4	30.2	60.0	50.0	-26.6	-19.8
25.393	20.9	18.4	11.7	1.5	34.1	31.6	60.0	50.0	-25.9	-18.4