5. Test of Radiated Emission

5.1. Test Limit

Radiated emissions from 30 MHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2001. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance Meters	Radiated (μ V / M)	Radiated (dB μ V/ M)
30-88	3	100	40.0
88-216	3	150	43.5
216-960	3	200	46.0
Above 960	3	500	54.0

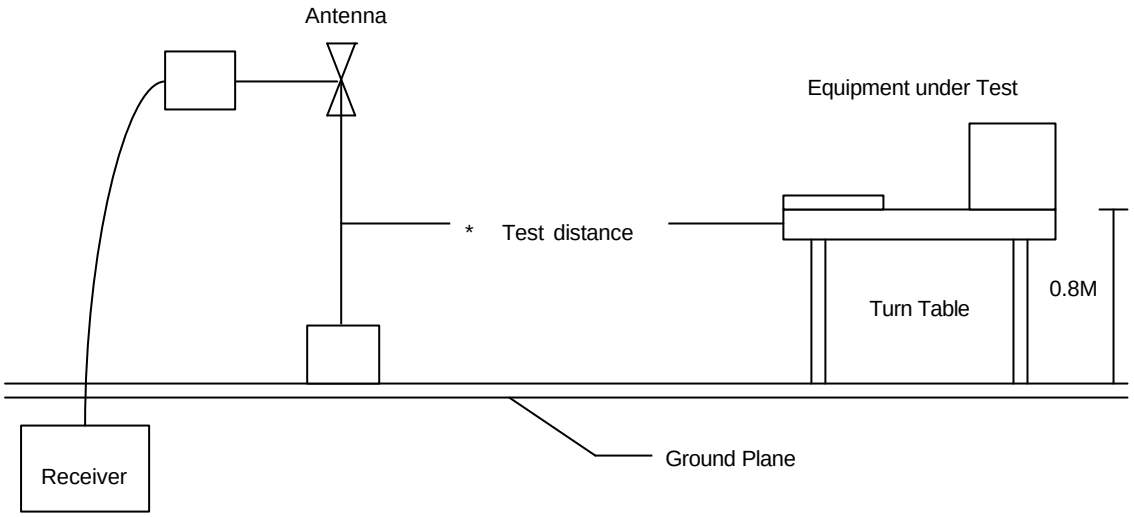
For unintentional device, according to CISPR PUB.22, for Class B digital devices, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 10 meters shall not exceed the above table.

Frequency (MHz)	Distance Meters	Radiated (dB μ V/ M)
30-230	10	30
230-1000	10	37

5.2. Test Procedures

1. The EUT was placed on a rotatable table top 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
5. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
8. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

5.3. Typical Test Setup

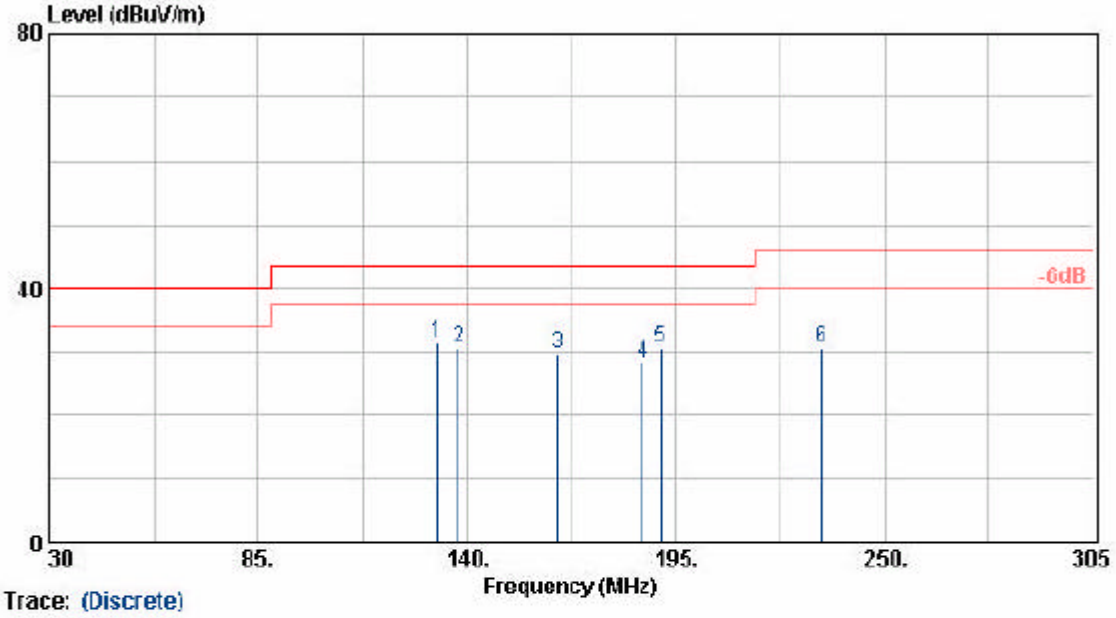


5.4. Measurement equipment

Instrument/Ancillary	Type	Manufacturer	Valid Date
EMI Receiver	8546A	HP	2006/0413
Spectrum Analyzer	FSP40	R&S	2005/12/28
Horn Antenna	3115	EMCO	2006/02/21
Horn Antenna	3116	EMCO	2006/02/21
Bilog Antenna	CBL6112B	Schaffner	2006/04/11
Amplifier	8447D	Agilent	2006/02/22
Amplifier	8449B	Agilent	2005/12/27

5.5. Test Result and Data

EUT	: CB801AS	Pol/Phase	: HORIZONTAL
Power	: 110V	Temperature	: 24 ℃
Test Mode	: Transmit/Receive	Humidity	: 68 %
Operation Channel	: 1	Atmospheric Pressure	: 1030 mmHg
Modulation Type	: 802.11b/g	Memo	:
Rate	: 11/54 Mbps		



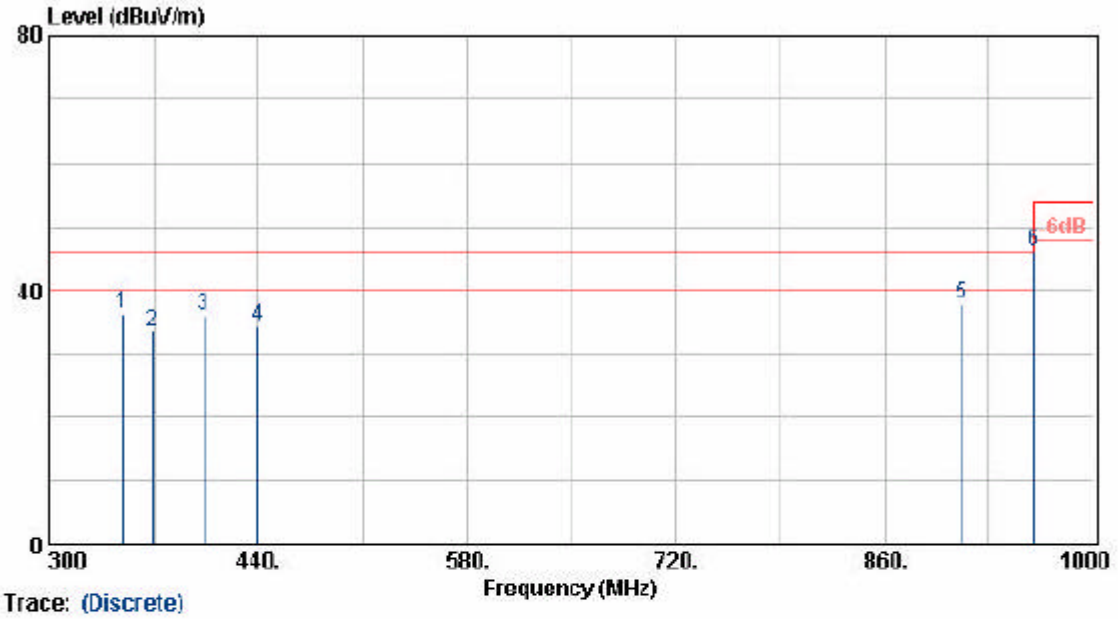
Trace: (Discrete)

Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
132.30	46.29	-15.00	31.29	43.50	-12.21	Peak	180	100
137.74	45.08	-14.61	30.47	43.50	-13.03	Peak	150	100
163.88	45.80	-16.02	29.78	43.50	-13.72	Peak	150	100
186.18	45.36	-17.14	28.22	43.50	-15.28	Peak	140	100
190.84	47.49	-16.99	30.50	43.50	-13.00	Peak	140	100
233.24	46.29	-15.78	30.51	46.00	-15.49	Peak	175	100

Notes:

1. Result = Meter Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 120KHz and video bandwidth is 300kHz for Peak detection and Quasi-peak detection at frequency below 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
6. The other emissions is too below to be measured.

EUT	: CB801AS		
Power	: 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Transmit/Receive	Temperature	: 24 ℃
Operation Channel	: 1	Humidity	: 68 %
Modulation Type	: 802.11b/g	Atmospheric Pressure	: 1030 mmHg
Rate	: 11/54 Mbps	Memo	:

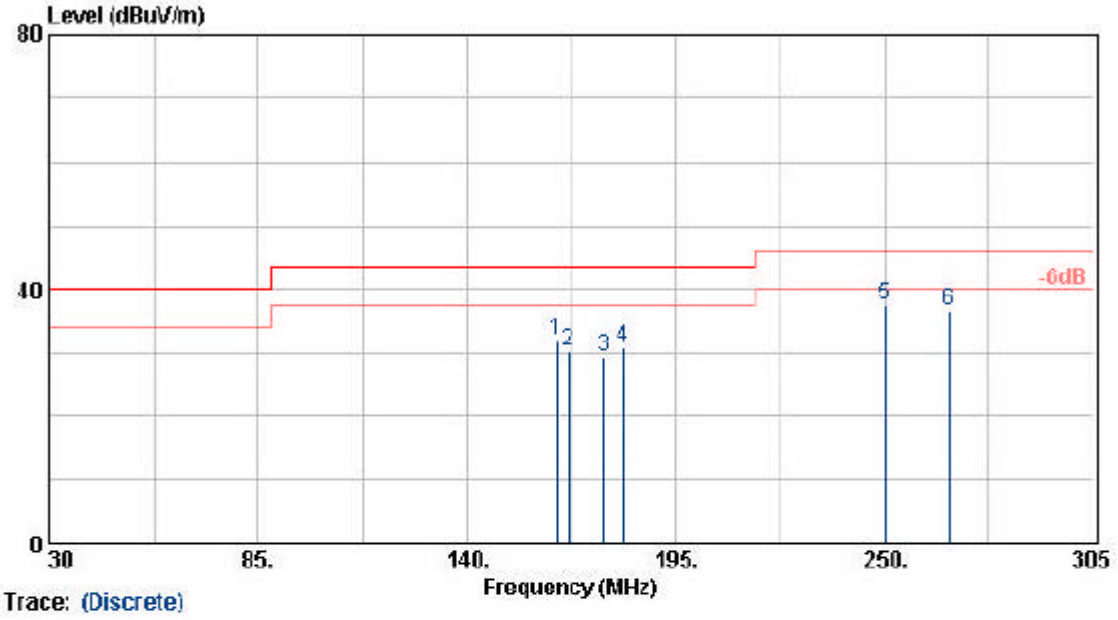


Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
349.28	46.52	-10.20	36.32	46.00	-9.68	Peak	120	100
368.65	43.18	-9.58	33.60	46.00	-12.40	Peak	120	100
403.29	44.53	-8.55	35.98	46.00	-10.02	Peak	180	100
440.04	42.76	-8.46	34.30	46.00	-11.70	Peak	225	100
912.18	36.66	1.29	37.95	46.00	-8.05	Peak	225	100
960.20	43.14	3.00	46.14	54.00	-7.86	Peak	150	100

Notes:

1. Result = Meter Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 120KHz and video bandwidth is 300kHz for Peak detection and Quasi-peak detection at frequency below 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
6. The other emissions is too below to be measured.

EUT	: CB801AS		
Power	: 110V	Pol/Phase	: VERTICAL
Test Mode	: Transmit/Receive	Temperature	: 24 ℃
Operation Channel	: 1	Humidity	: 68 %
Modulation Type	: 802.11b/g	Atmospheric Pressure	: 1030 mmHg
Rate	: 11/54 Mbps	Memo	:

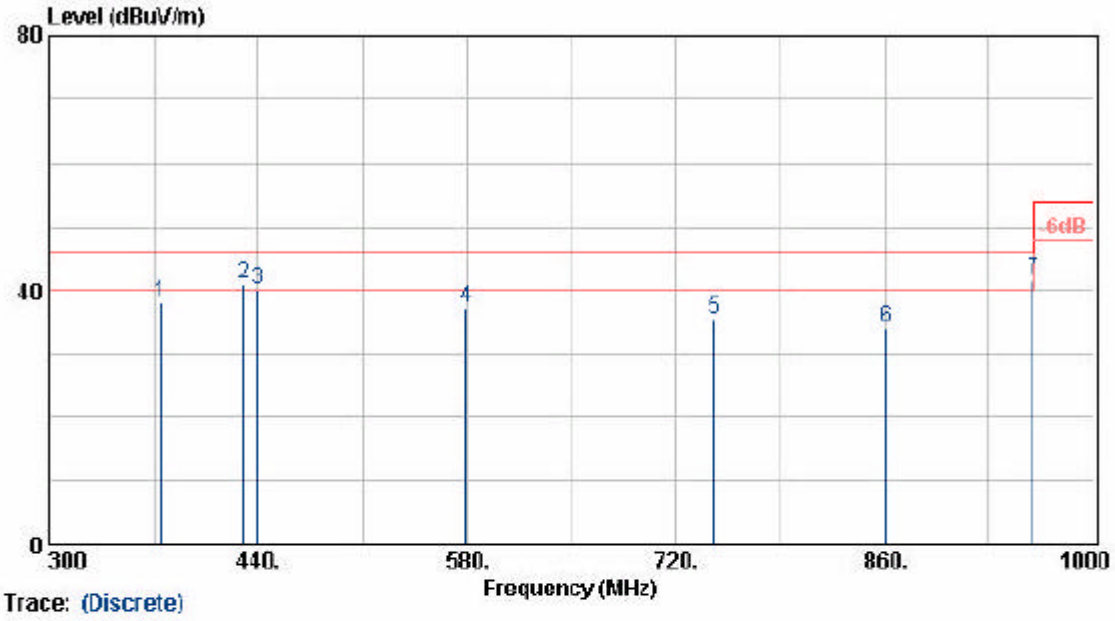


Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
163.68	47.96	-16.00	31.96	43.50	-11.54	Peak	200	100
166.59	46.45	-16.31	30.14	43.50	-13.36	Peak	180	100
176.08	46.57	-17.16	29.41	43.50	-14.09	Peak	200	100
181.26	48.20	-17.33	30.87	43.50	-12.63	Peak	220	100
250.01	50.75	-13.17	37.58	46.00	-8.42	Peak	180	100
256.96	48.64	-11.99	36.65	46.00	-9.35	Peak	180	100

Notes:

1. Result = Meter Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 120KHz and video bandwidth is 300kHz for Peak detection and Quasi-peak detection at frequency below 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
6. The other emissions is too below to be measured.

EUT	: CB801AS		
Power	: 110V	Pol/Phase	: VERTICAL
Test Mode	: Transmit/Receive	Temperature	: 24 ℃
Operation Channel	: 1	Humidity	: 68 %
Modulation Type	: 802.11b/g	Atmospheric Pressure	: 1030 mmHg
Rate	: 11/54 Mbps	Memo	:



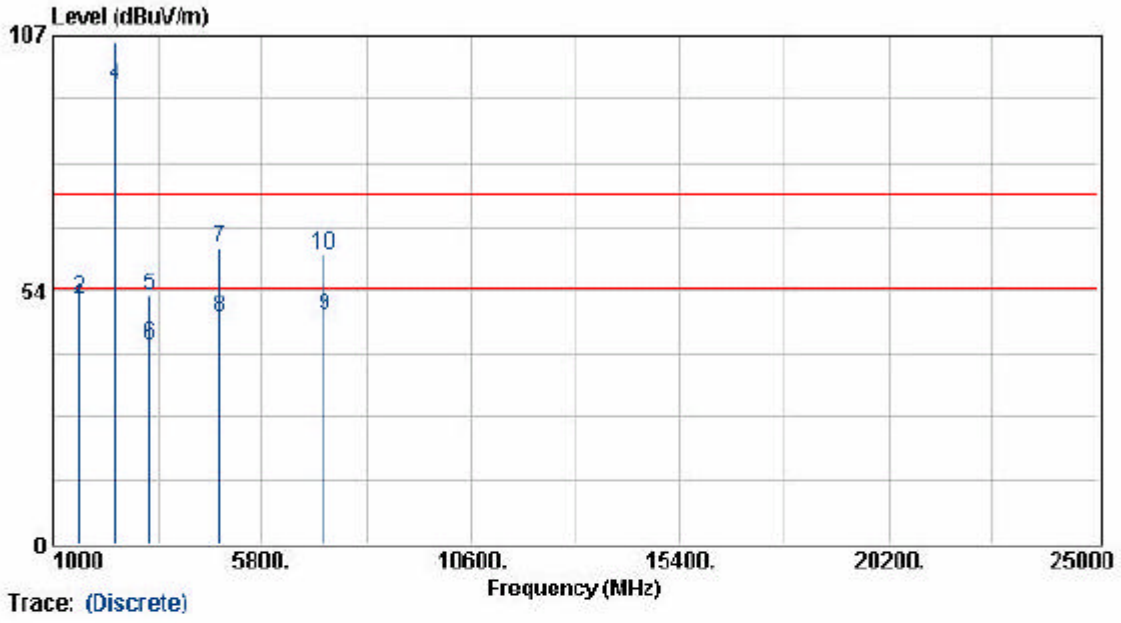
Trace: (Discrete)

Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
374.90	47.51	-9.29	38.22	46.00	-7.78	Peak	180	100
429.87	49.46	-8.47	40.99	46.00	-5.01	QP	200	100
439.73	48.61	-8.46	40.15	46.00	-5.85	QP	200	100
579.30	41.71	-4.61	37.10	46.00	-8.90	Peak	200	100
746.20	36.61	-1.20	35.41	46.00	-10.59	Peak	250	100
860.70	33.54	0.55	34.09	46.00	-11.91	Peak	250	100
959.62	38.53	3.02	41.55	46.00	-4.45	QP	220	100

Notes:

1. Result = Meter Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 120KHz and video bandwidth is 300kHz for Peak detection and Quasi-peak detection at frequency below 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
6. The other emissions is too below to be measured.

EUT	: CB801AS		
Power	: 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Transmit/Receive	Temperature	: 27 ℃
Operation Channel	: 1	Humidity	: 60 %
Modulation Type	: 802.11b	Atmospheric Pressure	: 1030 mmHg
Rate	: 11 Mbps	Memo	:

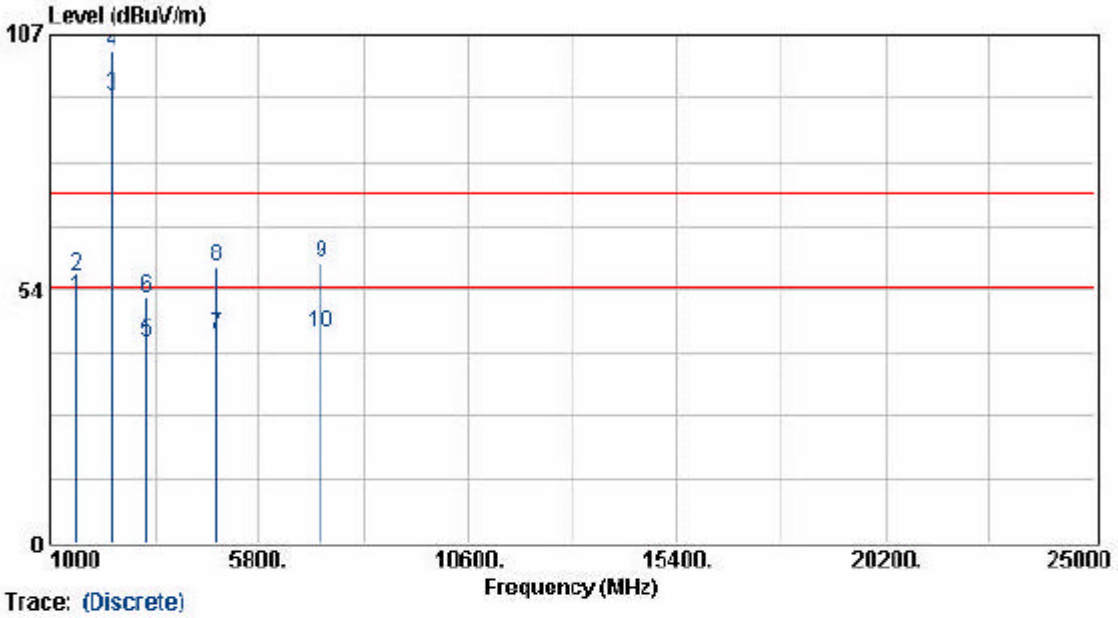


Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
1608.00	52.54	-2.37	50.17	54.00	-3.83	Average	133	100
1608.00	54.30	-2.37	51.93	74.00	-22.07	Peak	133	100
2412.70	104.53	1.33	105.86	74.00	31.86	Peak	99	100
2412.70	95.33	1.33	96.66	54.00	42.66	Average	99	100
3216.00	48.39	4.09	52.48	74.00	-21.52	Peak	97	100
3216.00	37.78	4.09	41.87	54.00	-12.13	Average	97	100
4824.70	54.53	8.13	62.66	74.00	-11.34	Peak	99	100
4824.70	39.64	8.13	47.77	54.00	-6.23	Average	99	100
7237.70	36.28	11.89	48.17	54.00	-5.83	Average	99	100
7237.70	49.06	11.89	60.95	74.00	-13.05	Peak	99	100

Notes:

1. Result = Meter Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 120KHz and video bandwidth is 300kHz for Peak detection and Quasi-peak detection at frequency below 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
6. The other emissions is too below to be measured.
7. 2412,2437,2462 MHz is fundamental frequency.

EUT	: CB801AS		
Power	: 110V	Pol/Phase	: VERTICAL
Test Mode	: Transmit/Receive	Temperature	: 27 ℃
Operation Channel	: 1	Humidity	: 60 %
Modulation Type	: 802.11b	Atmospheric Pressure	: 1030 mmHg
Rate	: 11 Mbps	Memo	:

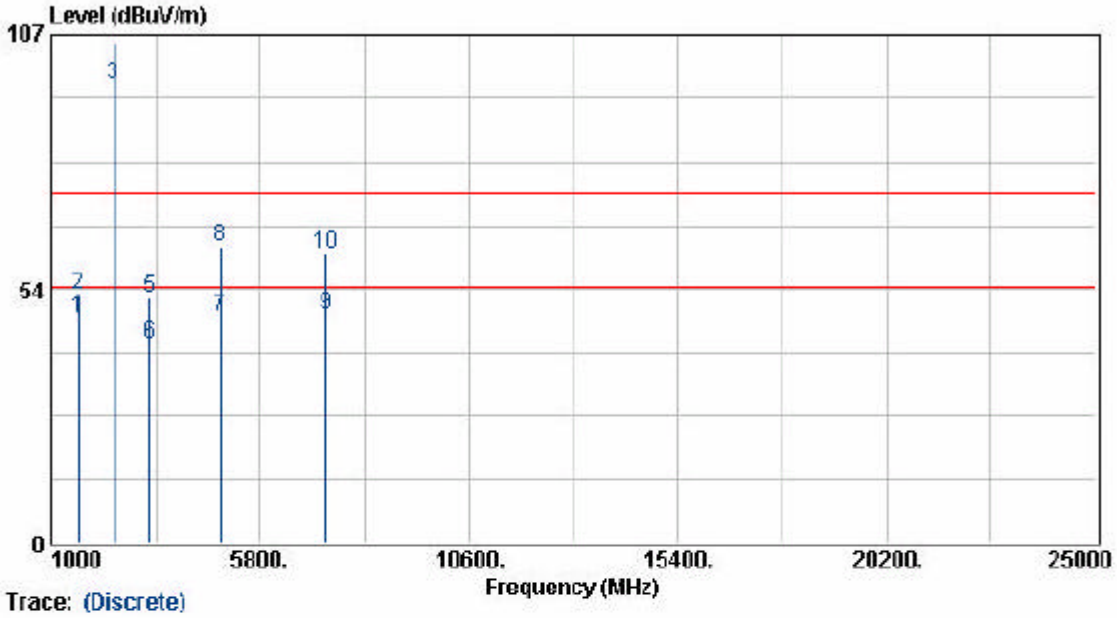


Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
1608.00	54.59	-2.92	51.67	54.00	-2.33	Average	313	100
1608.00	59.35	-2.92	56.43	74.00	-17.57	Peak	313	100
2410.70	93.64	0.62	94.26	54.00	40.26	Average	343	100
2410.70	102.87	0.62	103.49	74.00	29.49	Peak	343	100
3216.00	39.00	3.29	42.29	54.00	-11.71	Average	12	100
3216.00	48.64	3.29	51.93	74.00	-22.07	Peak	12	100
4824.50	36.58	7.36	43.94	54.00	-10.06	Average	343	100
4824.50	50.98	7.36	58.34	74.00	-15.66	Peak	343	100
7234.60	48.11	11.05	59.16	74.00	-14.84	Peak	343	100
7234.60	33.38	11.05	44.43	54.00	-9.57	Average	343	100

Notes:

1. Result = Meter Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 120KHz and video bandwidth is 300kHz for Peak detection and Quasi-peak detection at frequency below 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
6. The other emissions is too below to be measured.
7. 2412,2437,2462 MHz is fundamental frequency.

EUT	: CB801AS		
Power	: 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Transmit/Receive	Temperature	: 27 ℃
Operation Channel	: 6	Humidity	: 60 %
Modulation Type	: 802.11b	Atmospheric Pressure	: 1030 mmHg
Rate	: 11 Mbps	Memo	:

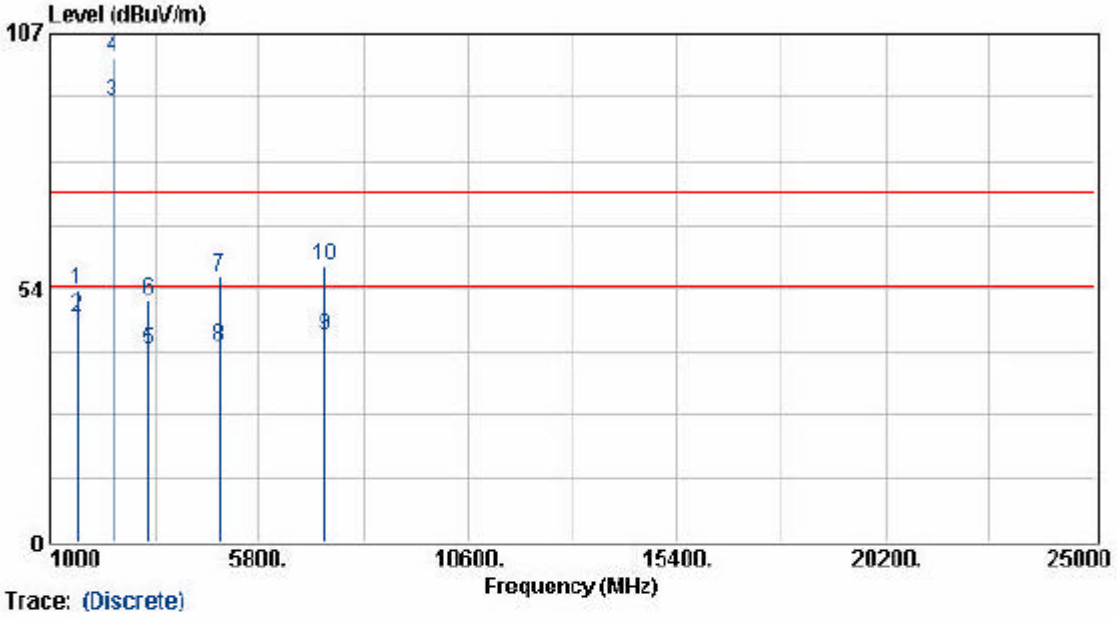


Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
1624.70	49.70	-2.28	47.42	54.00	-6.58	Average	133	100
1624.70	54.95	-2.28	52.67	74.00	-21.33	Peak	133	100
2434.80	95.19	1.40	96.59	54.00	42.59	Average	97	100
2434.80	104.05	1.40	105.46	74.00	31.46	Peak	99	100
3249.20	47.62	4.19	51.81	74.00	-22.19	Peak	97	100
3249.20	37.87	4.19	42.06	54.00	-11.94	Average	97	100
4873.20	39.54	8.31	47.85	54.00	-6.15	Average	97	100
4873.20	54.37	8.31	62.69	74.00	-11.31	Peak	97	100
7309.10	36.11	12.05	48.16	54.00	-5.84	Average	97	100
7309.10	49.15	12.05	61.20	74.00	-12.80	Peak	97	100

Notes:

1. Result = Meter Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 120KHz and video bandwidth is 300kHz for Peak detection and Quasi-peak detection at frequency below 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
6. The other emissions is too below to be measured.
7. 2412,2437,2462 MHz is fundamental frequency.

EUT	: CB801AS		
Power	: 110V	Pol/Phase	: VERTICAL
Test Mode	: Transmit/Receive	Temperature	: 27 ℃
Operation Channel	: 6	Humidity	: 60 %
Modulation Type	: 802.11b	Atmospheric Pressure	: 1030 mmHg
Rate	: 11 Mbps	Memo	:

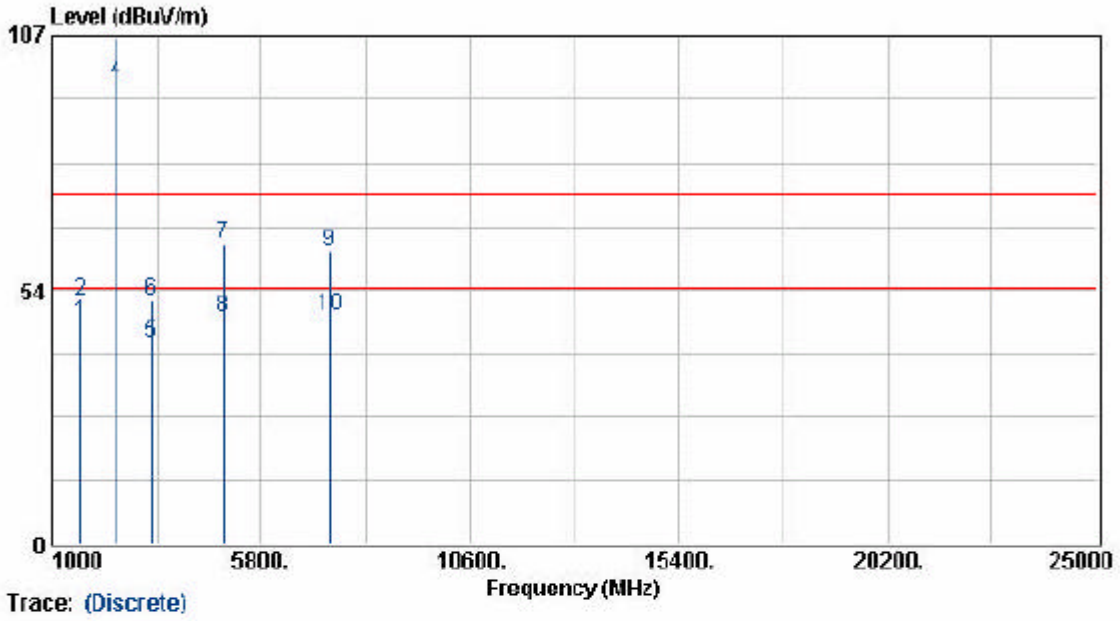


Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
1624.70	56.23	-2.83	53.40	74.00	-20.60	Peak	313	100
1624.70	50.19	-2.83	47.36	54.00	-6.64	Average	313	100
2436.30	91.93	0.71	92.64	54.00	38.64	Average	343	100
2436.30	101.32	0.71	102.03	74.00	28.03	Peak	343	100
3249.40	37.21	3.39	40.60	54.00	-13.40	Average	12	100
3249.40	47.48	3.39	50.87	74.00	-23.13	Peak	12	100
4874.20	48.46	7.54	56.00	74.00	-18.00	Peak	343	100
4874.20	33.78	7.54	41.32	54.00	-12.68	Average	343	100
7309.10	32.58	11.14	43.72	54.00	-10.28	Average	343	100
7309.10	47.04	11.14	58.18	74.00	-15.82	Peak	343	100

Notes:

1. Result = Meter Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 120KHz and video bandwidth is 300kHz for Peak detection and Quasi-peak detection at frequency below 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
6. The other emissions is too below to be measured.
7. 2412,2437,2462 MHz is fundamental frequency.

EUT	: CB801AS		
Power	: 110V	Pol/Phase	: HORIZONTAL
Test Mode	: Transmit/Receive	Temperature	: 27 ℃
Operation Channel	: 11	Humidity	: 60 %
Modulation Type	: 802.11b	Atmospheric Pressure	: 1030 mmHg
Rate	: 11 Mbps	Memo	:

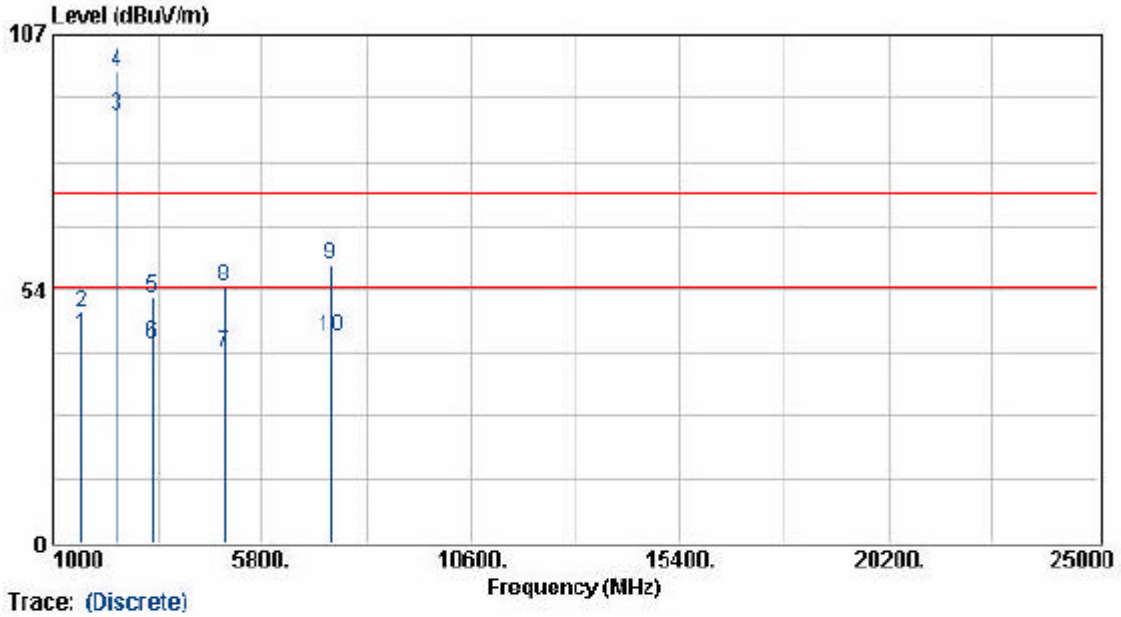


Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
1641.30	48.75	-2.18	46.57	54.00	-7.43	Average	97	100
1641.30	53.46	-2.18	51.28	74.00	-22.72	Peak	97	100
2464.10	105.01	1.51	106.52	74.00	32.52	Peak	99	100
2464.10	95.88	1.51	97.39	54.00	43.39	Average	99	100
3282.70	38.15	4.29	42.44	54.00	-11.56	Average	97	100
3282.70	46.94	4.29	51.23	74.00	-22.77	Peak	97	100
4924.90	54.72	8.51	63.23	74.00	-10.77	Peak	99	100
4924.90	39.32	8.51	47.83	54.00	-6.17	Average	99	100
7386.80	49.62	12.21	61.83	74.00	-12.17	Peak	99	100
7386.80	35.90	12.21	48.11	54.00	-5.89	Average	99	100

Notes:

1. Result = Meter Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 120KHz and video bandwidth is 300kHz for Peak detection and Quasi-peak detection at frequency below 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
6. The other emissions is too below to be measured.
7. 2412,2437,2462 MHz is fundamental frequency.

EUT	: CB801AS		
Power	: 110V	Pol/Phase	: VERTICAL
Test Mode	: Transmit/Receive	Temperature	: 27 ℃
Operation Channel	: 11	Humidity	: 60 %
Modulation Type	: 802.11b	Atmospheric Pressure	: 1030 mmHg
Rate	: 11 Mbps	Memo	:



Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
1641.40	46.56	-2.74	43.82	54.00	-10.18	Average	313	100
1641.40	51.29	-2.74	48.55	74.00	-25.45	Peak	313	100
2462.70	89.22	0.80	90.02	54.00	36.02	Average	343	100
2462.70	98.34	0.80	99.14	74.00	25.14	Peak	343	100
3282.70	48.09	3.49	51.58	74.00	-22.42	Peak	12	100
3282.70	38.59	3.49	42.08	54.00	-11.92	Average	12	100
4924.00	32.28	7.72	40.00	54.00	-14.00	Average	343	100
4924.00	46.34	7.72	54.06	74.00	-19.94	Peak	343	100
7383.90	47.42	11.22	58.64	74.00	-15.36	Peak	343	100
7383.90	32.53	11.22	43.75	54.00	-10.25	Average	343	100

Notes:

1. Result = Meter Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 120KHz and video bandwidth is 300kHz for Peak detection and Quasi-peak detection at frequency below 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
6. The other emissions is too below to be measured.
7. 2412,2437,2462 MHz is fundamental frequency.