

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 ANSIC63.4-2003. 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

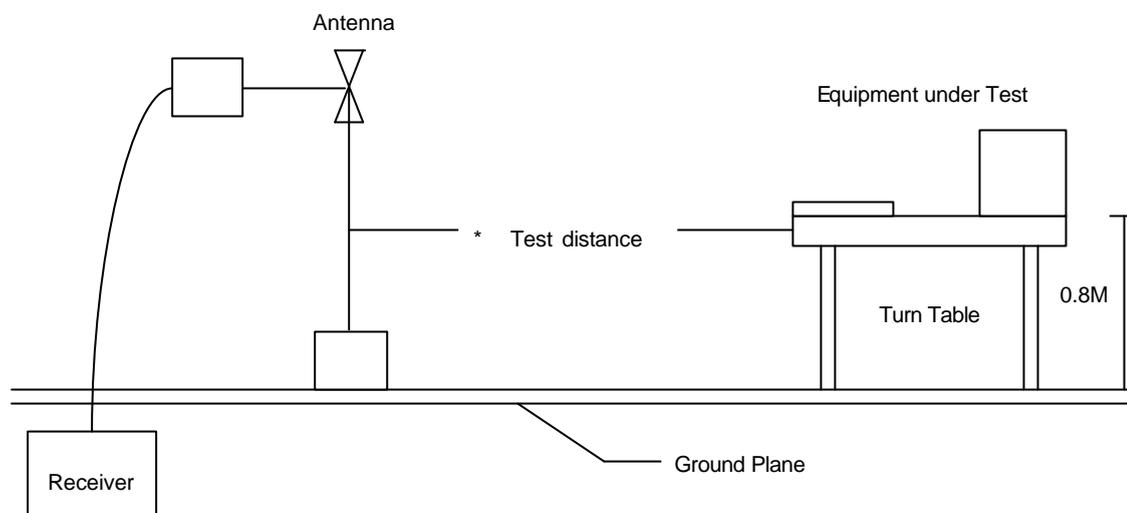
For unintentional device, according to CISPR PUB.22, for Class B digital devices, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 10 meters shall not exceed the above table.

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



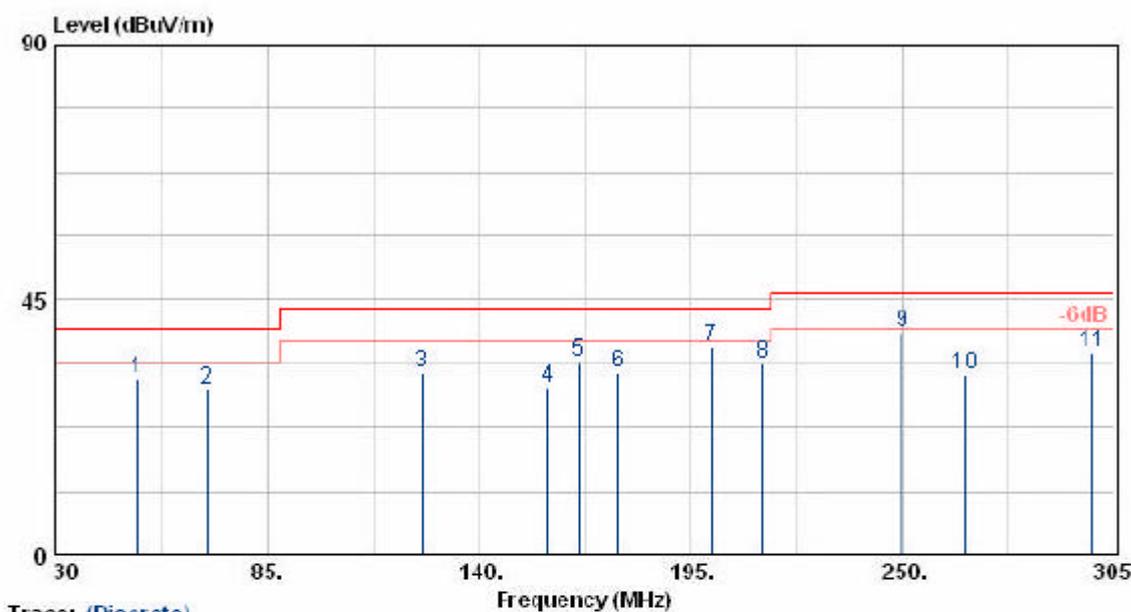
5.4. Measurement equipment

Instrument/Ancillary	Type	Manufacturer	Valid Date
EMI Receiver	8546A	HP	2006/04/13
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	2006/04/12
Amplifier	8447D	Agilent	2006/02/14
Amplifier	8447D	Agilent	2006/02/22

5.5. Test Result and Data

Test Adaptor 1: ADS6818-1812W

EUT	: MBR814X	Pol/Phase	: HORIZONTAL
Power	: AC 120V	Temperature	: 30 °C
Test Mode	: Transmit/Receive	Humidity	: 70 %
Operation Channel	: 6	Atmospheric Pressure	: 1018 mmHg
Modulation Type	: 802.11b/g		
Rate	: 11/54 Mbps		
Memo	: ADS6818-1812W		



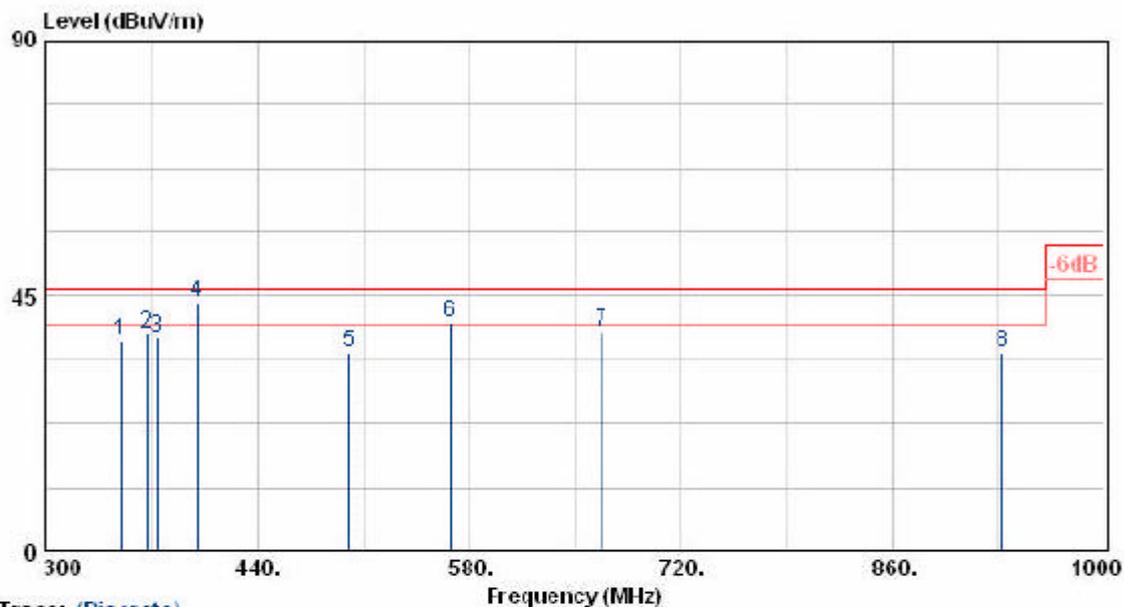
Trace: (Discrete)

Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
51.73	47.01	-15.93	31.08	40.00	-8.92	Peak	60	100
69.05	49.30	-20.15	29.15	40.00	-10.85	Peak	90	100
125.00	48.10	-15.94	32.16	43.50	-11.34	Peak	300	100
157.73	44.98	-15.40	29.58	43.50	-13.92	Peak	300	100
165.56	50.19	-16.19	34.00	43.50	-9.50	Peak	50	100
176.14	49.27	-17.17	32.10	43.50	-11.40	Peak	250	100
200.01	53.69	-17.02	36.67	43.50	-6.83	Peak	80	100
213.43	50.95	-17.40	33.55	43.50	-9.95	Peak	80	100
249.73	52.33	-13.22	39.11	46.00	-6.89	Peak	210	100
266.23	43.92	-12.04	31.88	46.00	-14.12	Peak	250	100
299.23	46.85	-11.10	35.75	46.00	-10.25	Peak	30	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	: MBR814X	Pol/Phase	: HORIZONTAL
Power	: AC 120V	Temperature	: 30 °C
Test Mode	: Transmit/Receive	Humidity	: 70 %
Operation Channel	: 6	Atmospheric Pressure	: 1018 mmHg
Modulation Type	: 802.11b/g		
Rate	: 11/54 Mbps		
Memo	: ADS6818-1812W		



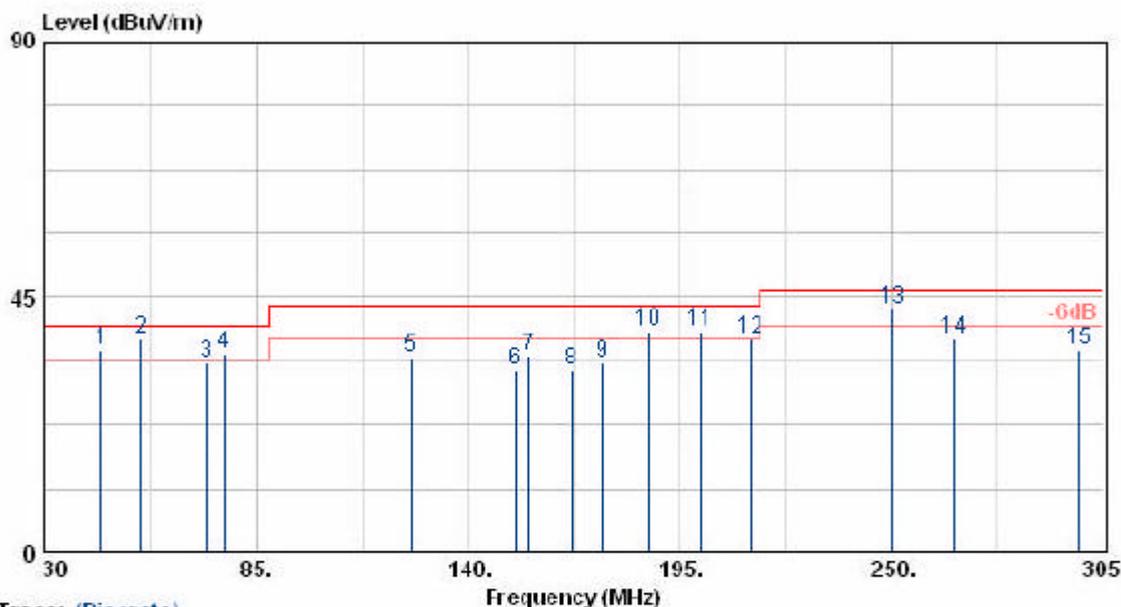
Trace: (Discrete)

Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
350.40	47.18	-10.18	37.00	46.00	-9.00	Peak	0	100
367.90	47.97	-9.60	38.37	46.00	-7.63	Peak	50	100
374.90	47.08	-9.29	37.79	46.00	-8.21	Peak	50	100
399.40	52.58	-8.61	43.97	46.00	-2.03	QP	90	100
500.04	41.74	-6.75	34.99	46.00	-11.01	Peak	320	100
567.40	45.10	-4.88	40.22	46.00	-5.78	QP	320	100
666.74	42.09	-3.43	38.66	46.00	-7.34	Peak	60	100
932.10	32.82	2.36	35.18	46.00	-10.82	Peak	60	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 : MBR814X
 Power : AC 120V
 Test Mode : Transmit/Receive
 Operation Channel : 6
 Modulation Type : 802.11b/g
 Rate : 11/54 Mbps
 Memo : ADS6818-1812W
 Pol/Phase : VERTICAL
 Temperature : 30 °C
 Humidity : 70 %
 Atmospheric Pressure : 1018 mmHg



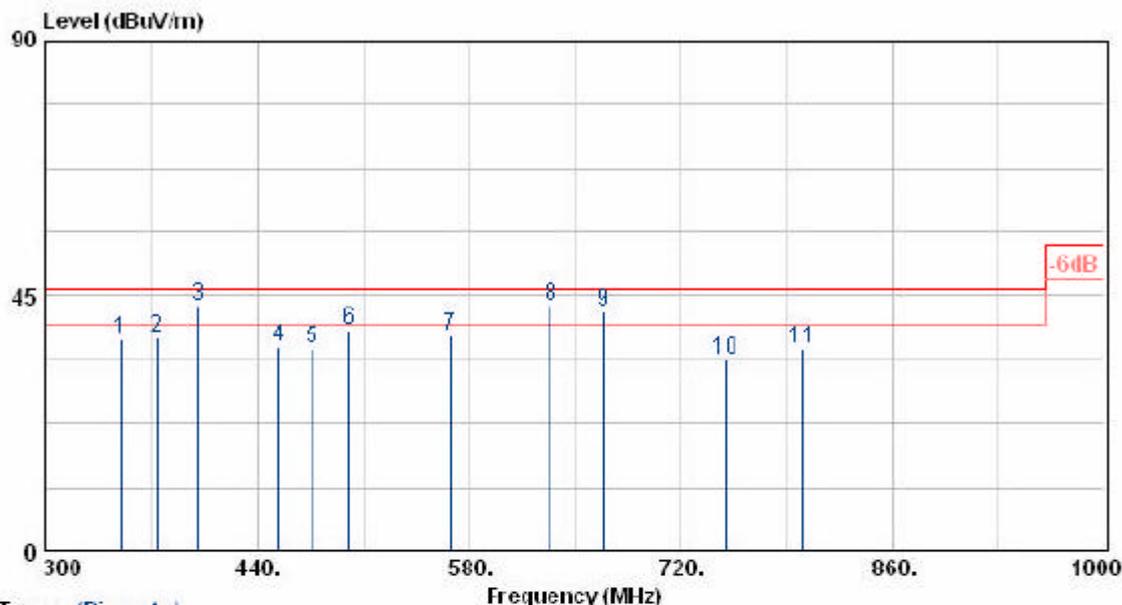
Trace: (Discrete)

Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
45.19	48.32	-12.52	35.80	40.00	-4.20	QP	50	100
55.29	55.91	-18.42	37.49	40.00	-2.51	QP	50	100
71.99	52.98	-19.51	33.47	40.00	-6.53	Peak	60	100
76.56	53.44	-18.46	34.98	40.00	-5.02	QP	20	100
125.00	50.44	-15.94	34.50	43.50	-9.00	Peak	200	100
152.16	46.89	-14.70	32.19	43.50	-11.31	Peak	200	100
155.65	49.76	-15.16	34.60	43.50	-8.90	Peak	150	100
166.68	48.52	-16.33	32.19	43.50	-11.31	Peak	150	100
174.99	50.51	-17.10	33.41	43.50	-10.09	Peak	80	100
186.73	56.11	-17.11	39.00	43.50	-4.50	QP	220	100
200.01	56.07	-17.02	39.05	43.50	-4.45	QP	200	100
213.36	54.95	-17.40	37.55	43.50	-5.95	QP	140	100
250.04	56.06	-13.17	42.89	46.00	-3.11	QP	140	100
266.23	49.78	-12.04	37.74	46.00	-8.26	Peak	140	100
298.68	46.78	-11.10	35.68	46.00	-10.32	Peak	50	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	: MBR814X	Pol/Phase	: VERTICAL
Power	: AC 120V	Temperature	: 30 °C
Test Mode	: Transmit/Receive	Humidity	: 70 %
Operation Channel	: 6	Atmospheric Pressure	: 1018 mmHg
Modulation Type	: 802.11b/g		
Rate	: 11/54 Mbps		
Memo	: ADS6818-1812W		



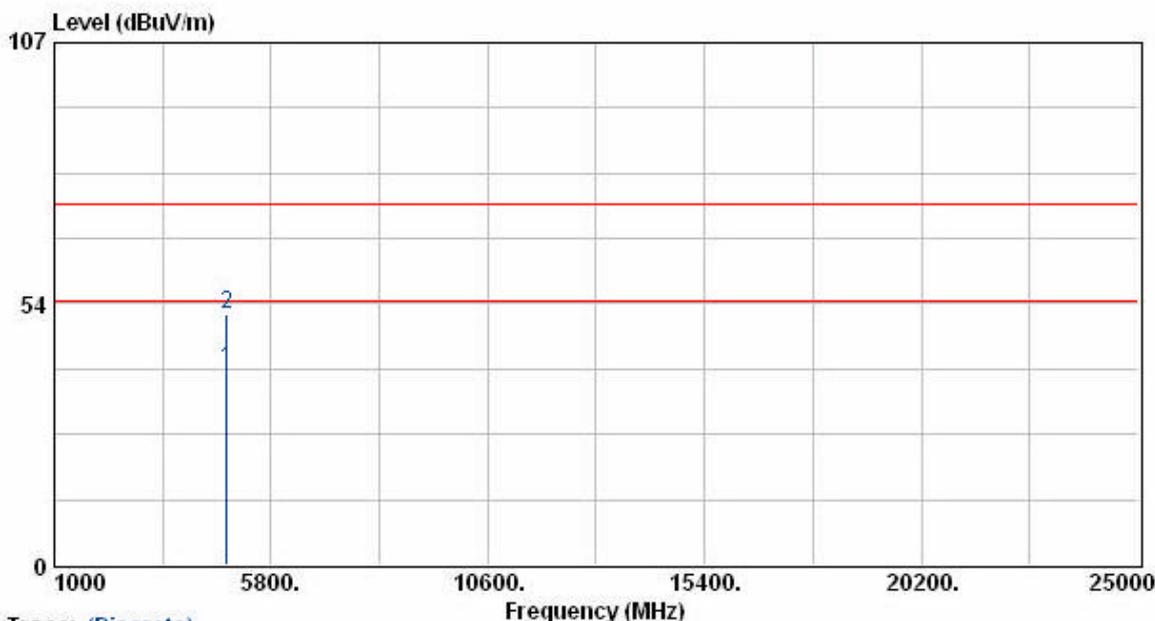
Trace: (Discrete)

Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
350.40	47.65	-10.18	37.47	46.00	-8.53	Peak	90	100
374.90	46.79	-9.29	37.50	46.00	-8.50	Peak	90	100
400.04	51.73	-8.59	43.14	46.00	-2.86	QP	300	100
453.43	44.28	-8.40	35.88	46.00	-10.12	Peak	270	100
476.40	43.17	-7.66	35.51	46.00	-10.49	Peak	250	100
500.04	45.68	-6.75	38.93	46.00	-7.07	Peak	250	100
567.40	42.94	-4.88	38.06	46.00	-7.94	Peak	310	100
633.34	47.14	-3.93	43.21	46.00	-2.79	QP	240	100
668.90	45.68	-3.46	42.22	46.00	-3.78	QP	70	100
749.40	34.73	-1.07	33.66	46.00	-12.34	Peak	70	100
799.80	36.56	-0.86	35.70	46.00	-10.30	Peak	10	100

Notes:

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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	: MBR814X	Pol/Phase	: HORIZONTAL
Power	: AC 120V	Temperature	: 30 °C
Test Mode	: Transmit/Receive	Humidity	: 70 %
Operation Channel	: 1	Atmospheric Pressure	: 1018 mmHg
Modulation Type	: 802.11b		
Rate	: 11 Mbps		
Memo	: ADS-6818-1812-W		



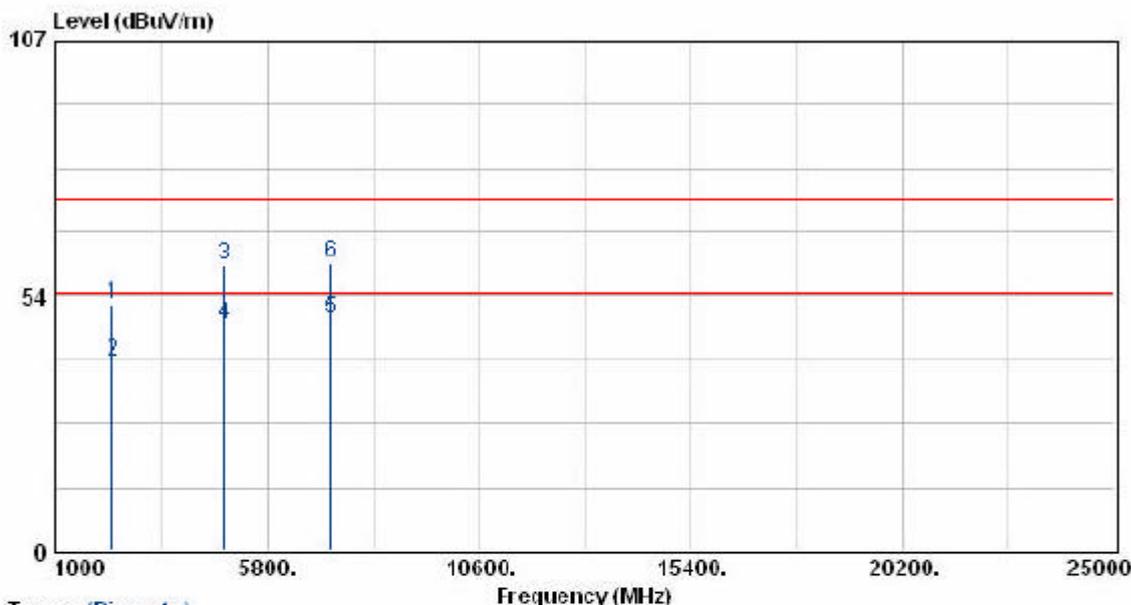
Trace: (Discrete)

Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
4825.13	31.97	8.13	40.10	54.00	-13.90	Average	293	100
4825.13	43.37	8.13	51.49	74.00	-22.51	Peak	293	100

Notes:

1. Result = Meter Reading + Corrected Factor
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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	: MBR814X	Pol/Phase	: VERTICAL
Power	: AC 120V	Temperature	: 30 °C
Test Mode	: Transmit/Receive	Humidity	: 70 %
Operation Channel	: 1	Atmospheric Pressure	: 1018 mmHg
Modulation Type	: 802.11b		
Rate	: 11 Mbps		
Memo	: ADS-6818-1812-W		



Trace: (Discrete)

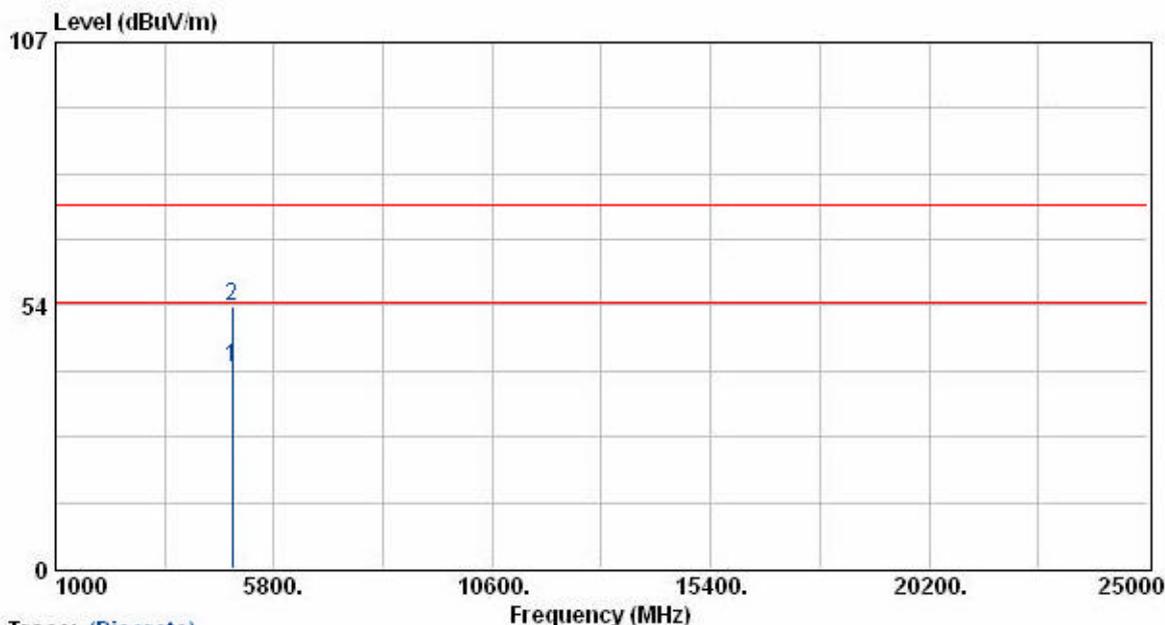
Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
2320.88	51.48	0.31	51.79	74.00	-22.21	Peak	235	100
2320.88	39.40	0.31	39.71	54.00	-14.29	Average	235	100
4825.00	52.43	7.36	59.79	74.00	-14.21	Peak	237	100
4825.00	40.13	7.36	47.49	54.00	-6.51	Average	237	100
7236.25	37.42	11.05	48.47	54.00	-5.53	Average	237	100
7236.25	49.37	11.05	60.42	74.00	-13.58	Peak	237	100

Notes:

1. Result = Meter Reading + Corrected Factor
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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 : MBR814X
 Power : AC 120V
 Test Mode : Transmit/Receive
 Operation Channel : 6
 Modulation Type : 802.11b
 Rate : 11 Mbps
 Memo : ADS-6818-1812-W

Pol/Phase : HORIZONTAL
 Temperature : 30 °C
 Humidity : 70 %
 Atmospheric Pressure : 1018 mmHg



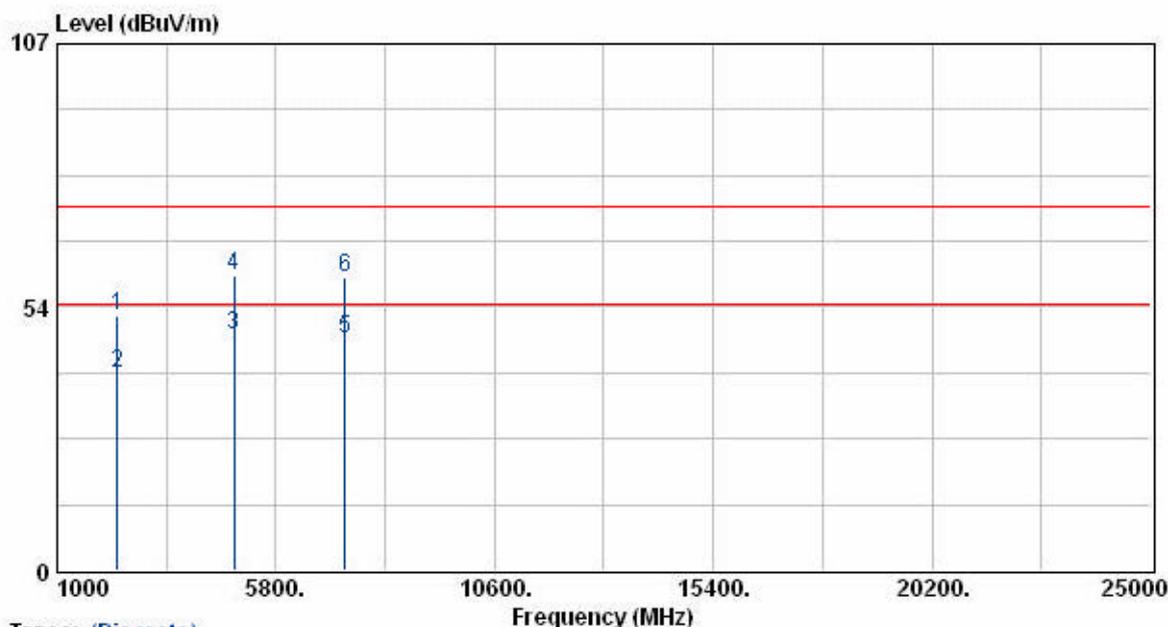
Trace: (Discrete)

Frequency (MHz)	Meter Reading (dBUV)	Corrected Factor (dBUV/m)	Result (dBUV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
4874.88	32.69	8.32	41.01	54.00	-12.99	Average	293	100
4874.88	44.99	8.32	53.31	74.00	-20.69	Peak	293	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	: MBR814X	Pol/Phase	: VERTICAL
Power	: AC 120V	Temperature	: 30 °C
Test Mode	: Transmit/Receive	Humidity	: 70 %
Operation Channel	: 6	Atmospheric Pressure	: 1018 mmHg
Modulation Type	: 802.11b		
Rate	: 11 Mbps		
Memo	: ADS-6818-1812-W		



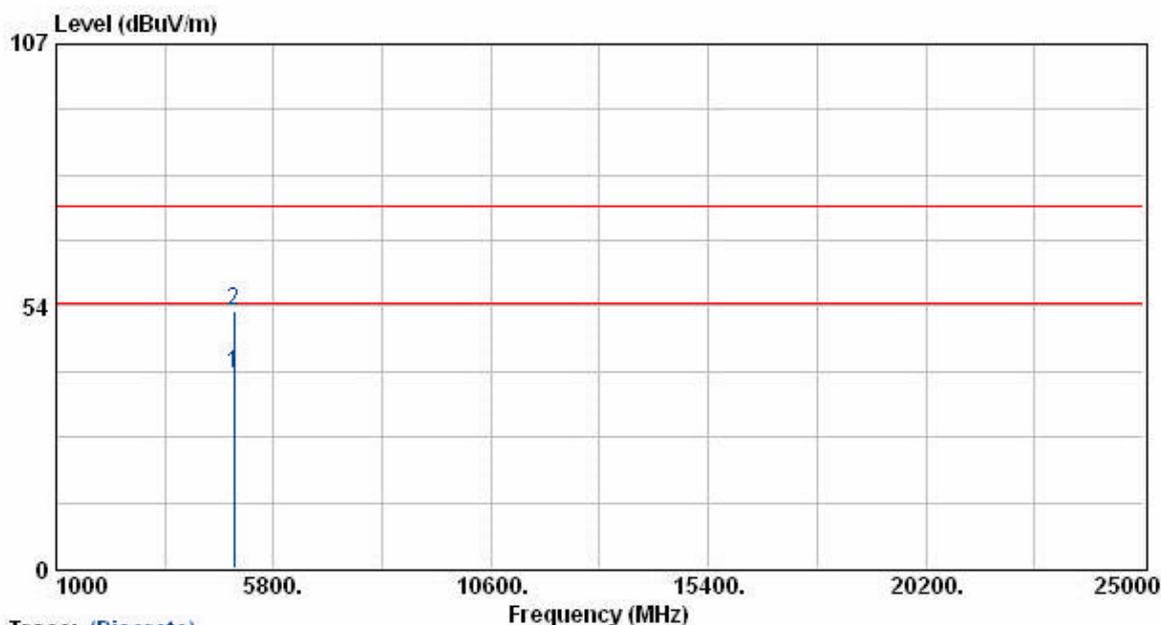
Trace: (Discrete)

Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
2320.88	51.30	0.31	51.61	74.00	-22.39	Peak	235	100
2320.88	39.74	0.31	40.05	54.00	-13.95	Average	235	100
4874.75	40.27	7.54	47.81	54.00	-6.19	Average	237	100
4874.75	52.40	7.54	59.94	74.00	-14.06	Peak	237	100
7310.88	36.11	11.14	47.25	54.00	-6.75	Average	237	100
7310.88	48.42	11.14	59.56	74.00	-14.44	Peak	237	100

Notes:

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4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
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6. The other emissions is too below to be measured.

EUT	: MBR814X	Pol/Phase	: HORIZONTAL
Power	: AC 120V	Temperature	: 30 °C
Test Mode	: Transmit/Receive	Humidity	: 70 %
Operation Channel	: 11	Atmospheric Pressure	: 1018 mmHg
Modulation Type	: 802.11b		
Rate	: 11 Mbps		
Memo	: ADS-6818-1812-W		

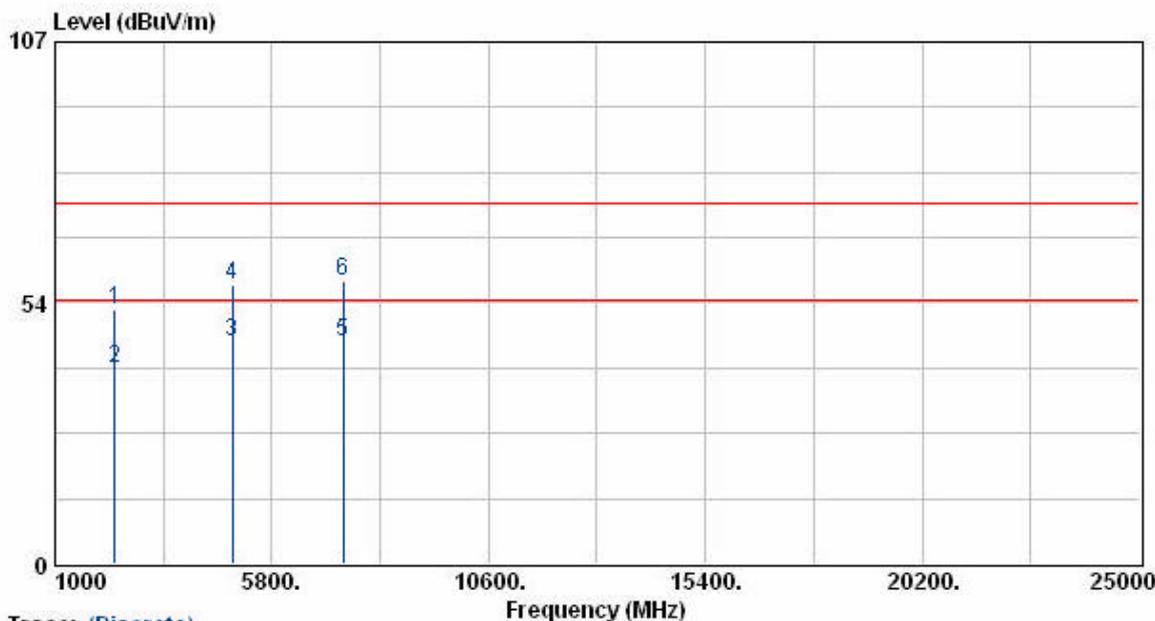


Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
4924.88	31.05	8.51	39.56	54.00	-14.44	Average	293	100
4924.88	43.93	8.51	52.44	74.00	-21.56	Peak	293	100

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	: MBR814X	Pol/Phase	: VERTICAL
Power	: AC 120V	Temperature	: 30 °C
Test Mode	: Transmit/Receive	Humidity	: 70 %
Operation Channel	: 11	Atmospheric Pressure	: 1018 mmHg
Modulation Type	: 802.11b		
Rate	: 11 Mbps		
Memo	: ADS-6818-1812-W		



Trace: (Discrete)

Frequency (MHz)	Meter Reading (dBuV)	Corrected Factor (dBuV/m)	Result (dBuV/m)	Limit (dB)	Margin (dB)	Remark	Table Deg.	Ant High (cm)
2320.88	51.74	0.31	52.05	74.00	-21.95	Peak	235	100
2320.88	39.70	0.31	40.01	54.00	-13.99	Average	235	100
4925.13	37.70	7.73	45.43	54.00	-8.57	Average	237	100
4925.13	49.60	7.73	57.33	74.00	-16.67	Peak	237	100
7388.00	34.28	11.22	45.50	54.00	-8.50	Average	237	100
7388.00	46.66	11.22	57.89	74.00	-16.11	Peak	237	100

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4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
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6. The other emissions is too below to be measured.