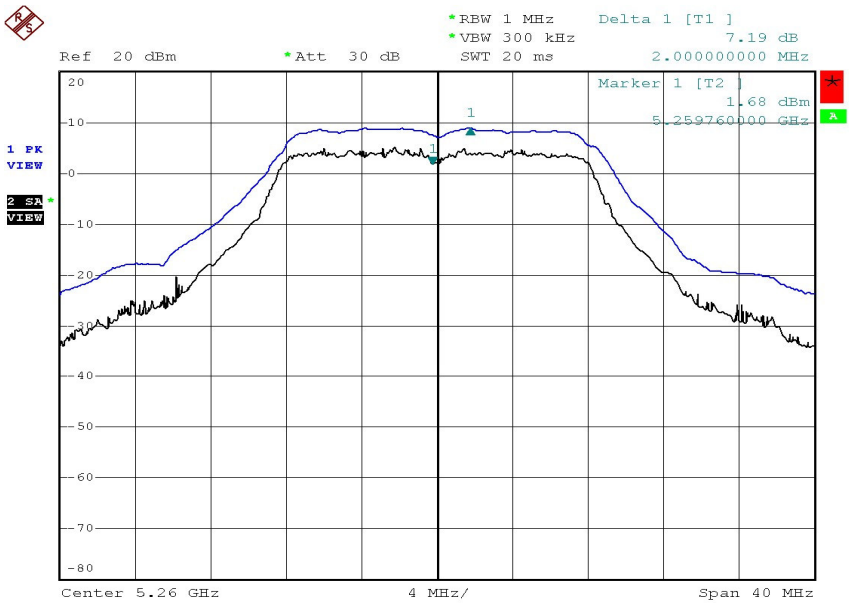

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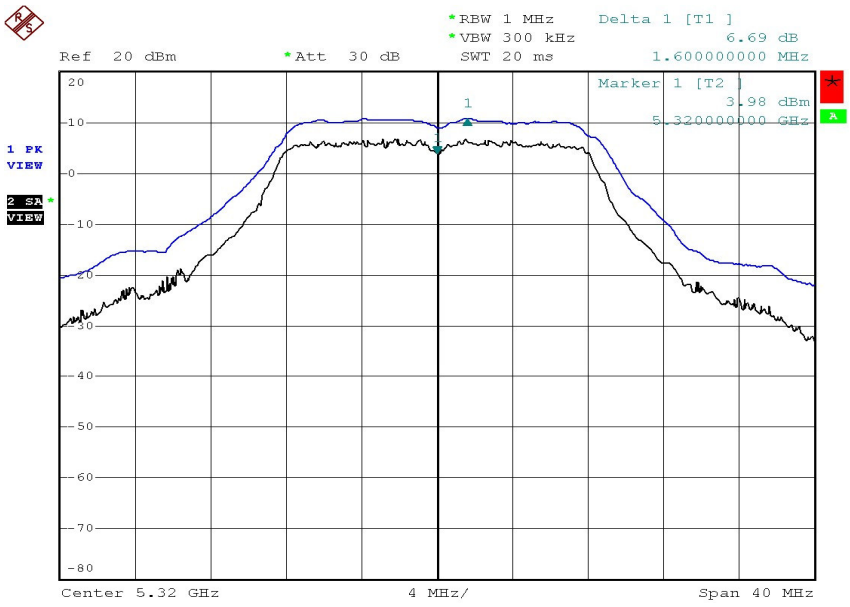

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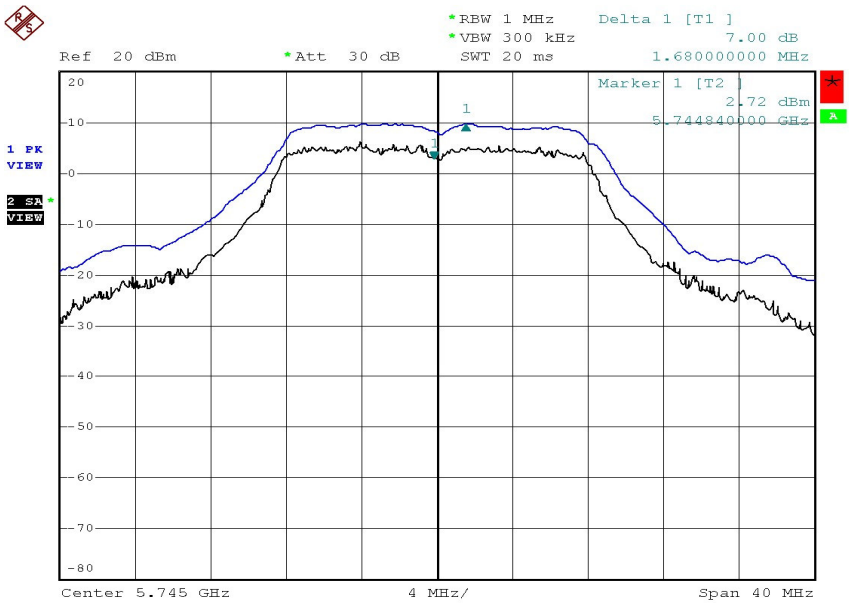
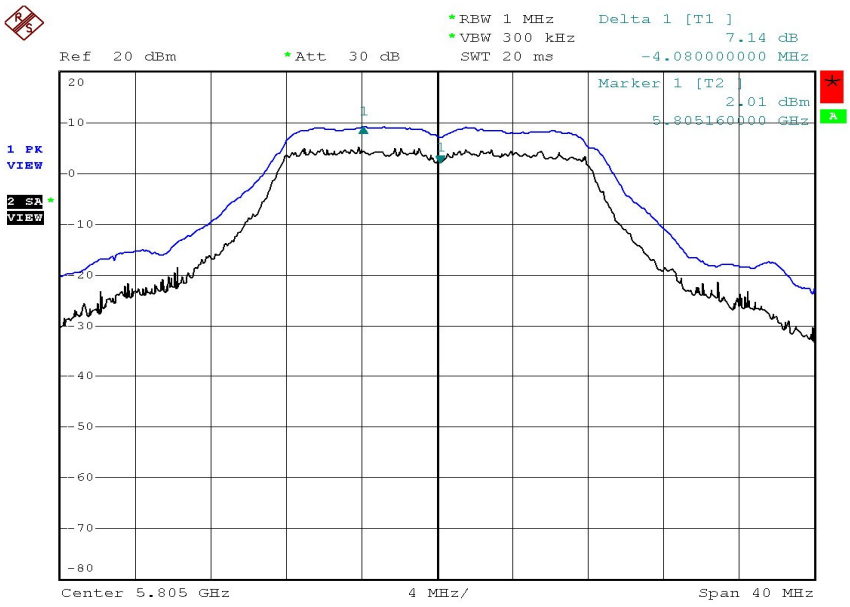


Date: 15.FEB.2005 18:28:35



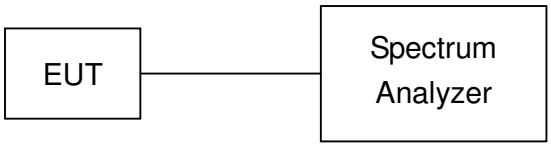
Date: 15.FEB.2005 18:24:28

9. Peak Power Spectral Density

9.1. Test Procedure

1. The transmitter output was connected to spectrum analyzer.
2. Set RBW of spectrum analyzer to 1 MHz and VBW to 3 MHz.
3. The Peak Power Spectral Density is the highest level found across the emission in any 1MHz Band.

9.2. Test Setup Layout

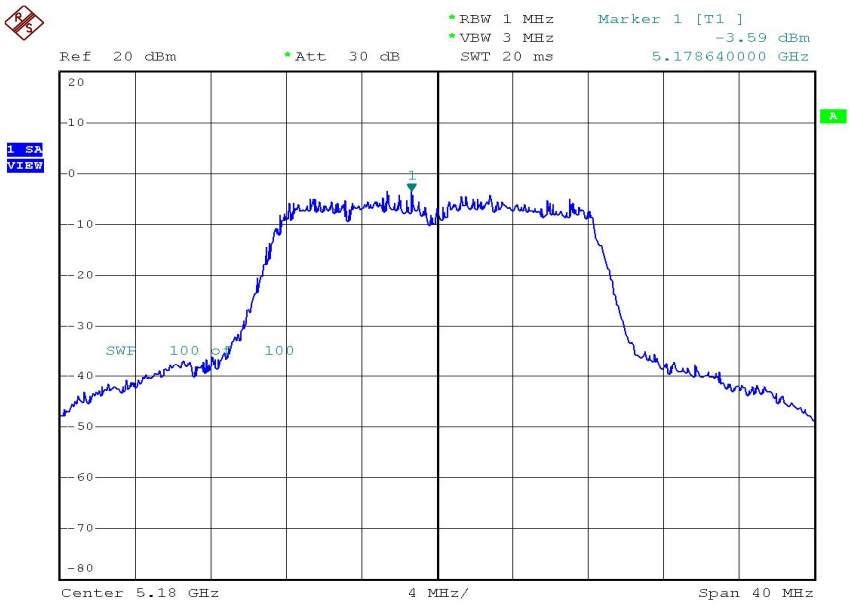


9.3. Test Result and Data

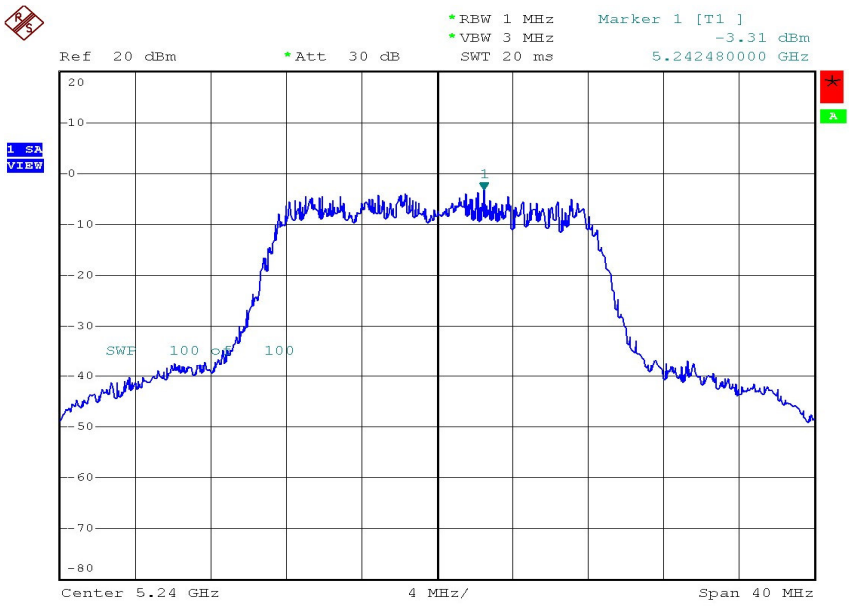
Test Mode: Normal, Transmit Rate: 6Mbps

Test Date: Feb. 16, 2005 Temperature: 26℃ Humidity: 64% Atmospheric pressure: 1031mmHg

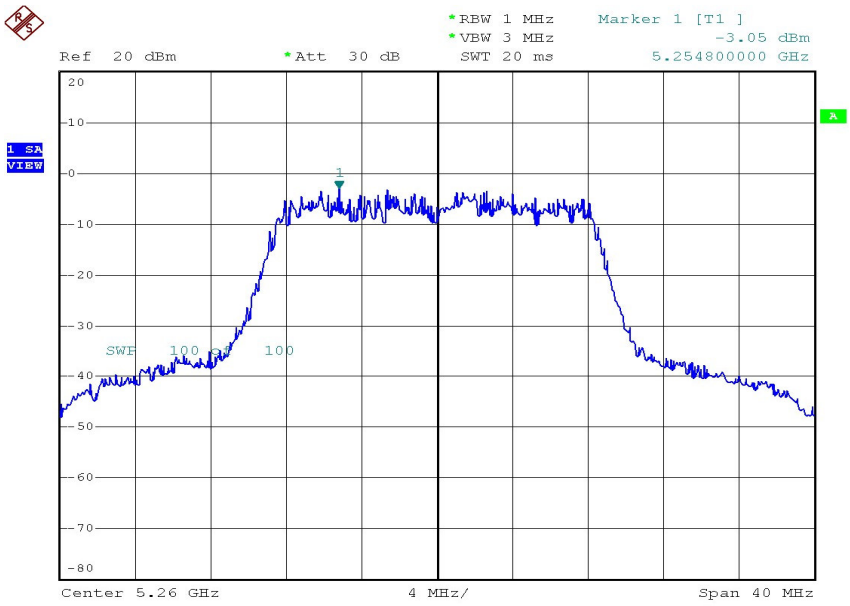
Channel	Frequency (MHz)	PF Power Level In 1MHz BW (dBm)
1	5180	-3.59
4	5240	-3.31
5	5260	-3.05
8	5320	-3.99
9	5745	-3.91
12	5805	-4.34



Date: 16.FEB.2005 10:55:12



Date: 16.FEB.2005 10:57:12



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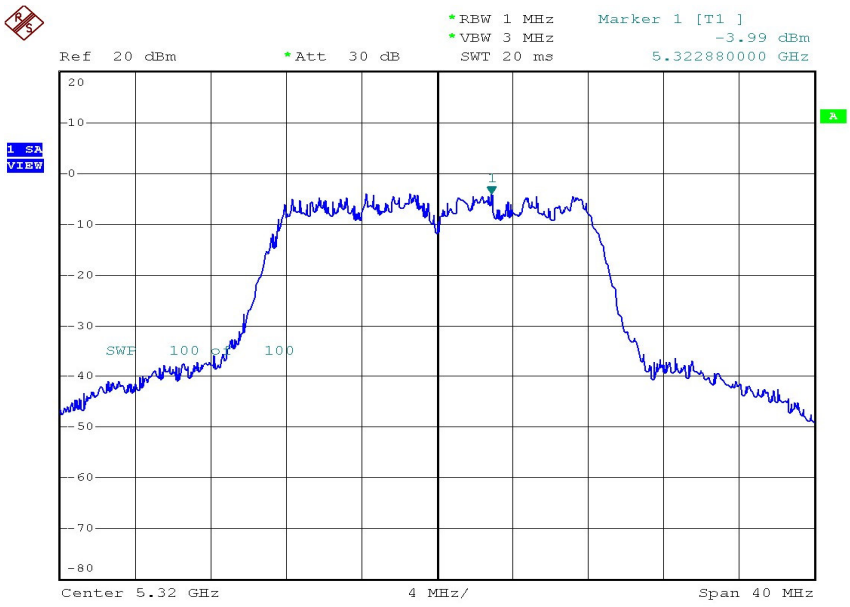

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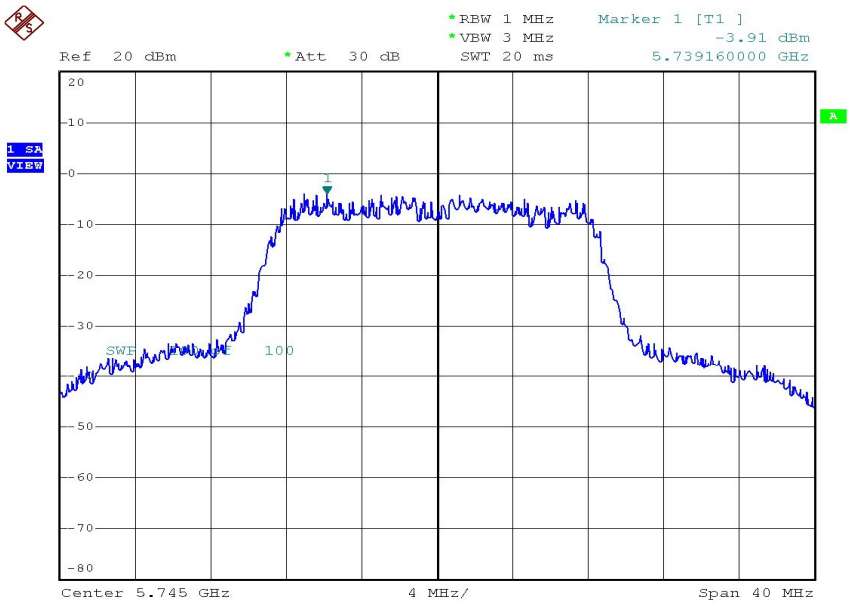
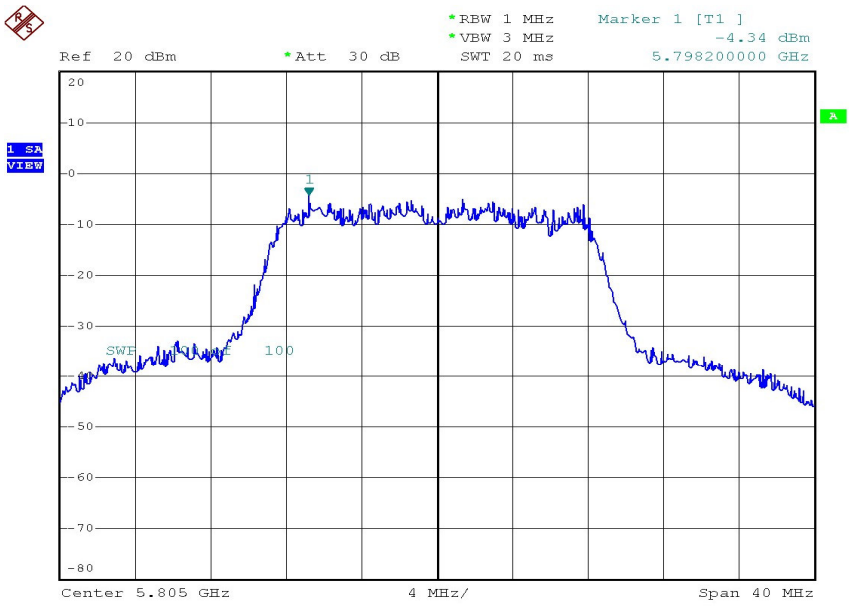


Date: 16.FEB.2005 10:59:19



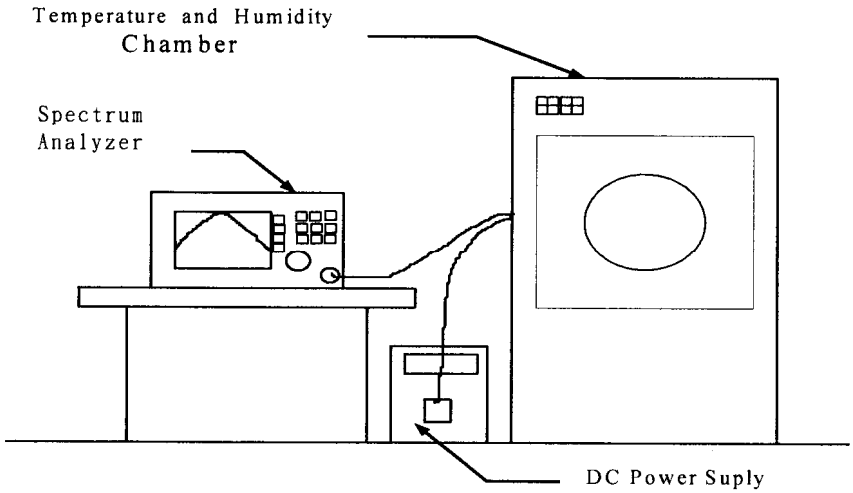
Date: 16.FEB.2005 11:00:23

10. Frequency Stability

10.1. Test Procedure

1. The EUT was placed inside the Temperature and Humidity chamber.
2. The transmitter output was connected to spectrum analyzer.
3. Turn the EUT on and couple its output to a spectrum analyzer.
4. Turn the EUT off and set the chamber to the highest temperature specified.
5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
6. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
7. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

10.2. Test Setup Layout



10.3. Test Result and Data

Operating frequency: 5320 MHz							
Temp (°C)	Power supply (V)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	110	5320.0198	0.000372	5320.0206	0.000387	5320.0196	0.000368
	126.5	5320.0172	0.000323	5320.0178	0.000335	5320.0185	0.000348
	93.5	5320.0166	0.000312	5320.0182	0.000342	5320.0174	0.000327
40	110	5320.0188	0.000353	5320.0192	0.000361	5320.0198	0.000372
	126.5	5320.0143	0.000269	5320.0149	0.000280	5320.0157	0.000295
	93.5	5320.0162	0.000305	5320.0168	0.000316	5320.0158	0.000297
30	110	5320.0152	0.000286	5320.0172	0.000323	5320.0194	0.000365
	126.5	5320.0132	0.000248	5320.0130	0.000244	5320.0125	0.000235
	93.5	5320.0122	0.000229	5320.0128	0.000241	5320.0118	0.000222
20	110	5320.0032	0.000060	5320.0038	0.000071	5320.0047	0.000088
	126.5	5320.0025	0.000047	5320.0018	0.000034	5320.0029	0.000055
	93.5	5320.0011	0.000021	5320.0004	0.000008	5320.0018	0.000034
10	110	5319.9786	-0.000402	5319.9756	-0.000459	5319.9796	-0.000383
	126.5	5319.9778	-0.000417	5319.9788	-0.000398	5319.9762	-0.000447
	93.5	5319.9784	-0.000406	5319.9802	-0.000372	5319.981	-0.000357
0	110	5319.9804	-0.000368	5319.9838	-0.000305	5319.9818	-0.000342
	126.5	5319.9798	-0.000380	5319.9820	-0.000338	5319.9824	-0.000331
	93.5	5319.9808	-0.000361	5319.9804	-0.000368	5319.9832	-0.000316
-10	110	5319.9968	-0.000060	5319.9976	-0.000045	5319.9986	-0.000026
	126.5	5319.9992	-0.000015	5319.9962	-0.000071	5319.999	-0.000019
	93.5	5320.0024	0.000045	5320.0014	0.000026	5320.0022	0.000041
-20	110	5319.9958	-0.000079	5320.0006	0.000011	5319.9966	-0.000064
	126.5	5319.9996	-0.000008	5319.9976	-0.000045	5319.9984	-0.000030
	93.5	5319.9998	-0.000004	5320.0022	0.000041	5320.0018	0.000034
-30	110	5320.0186	0.000350	5320.0002	0.000004	5320.0178	0.000335
	126.5	5320.0162	0.000305	5320.0172	0.000323	5320.0166	0.000312
	93.5	5320.0138	0.000259	5320.0140	0.000263	5320.016	0.000301

Limit :

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

11. Band Edges Measurement

11.1. Test Procedure

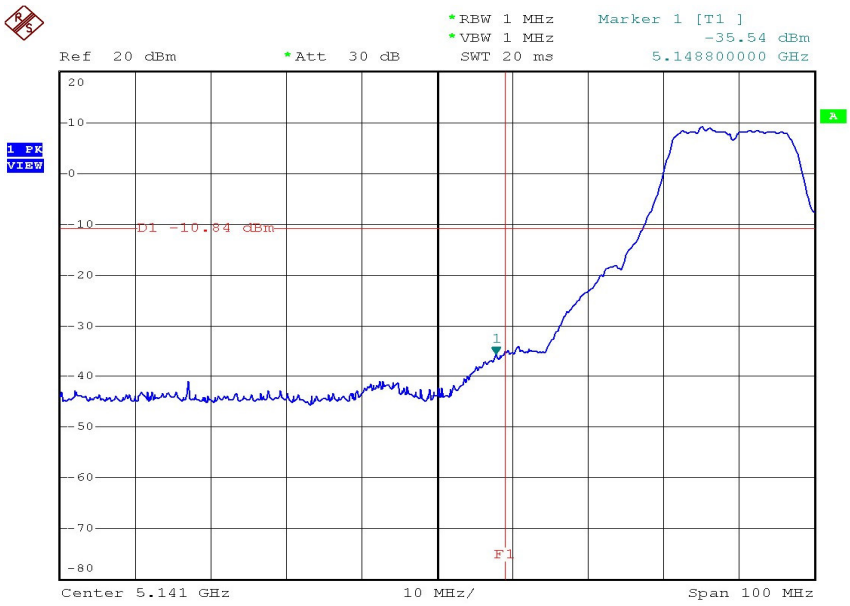
1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set both RBW and VBW of spectrum analyzer to 100 KHz with convenient frequency span including 100 MHz bandwidth from band edge.
3. The band edges was measured and recorded.

11.2. Test Result and Data

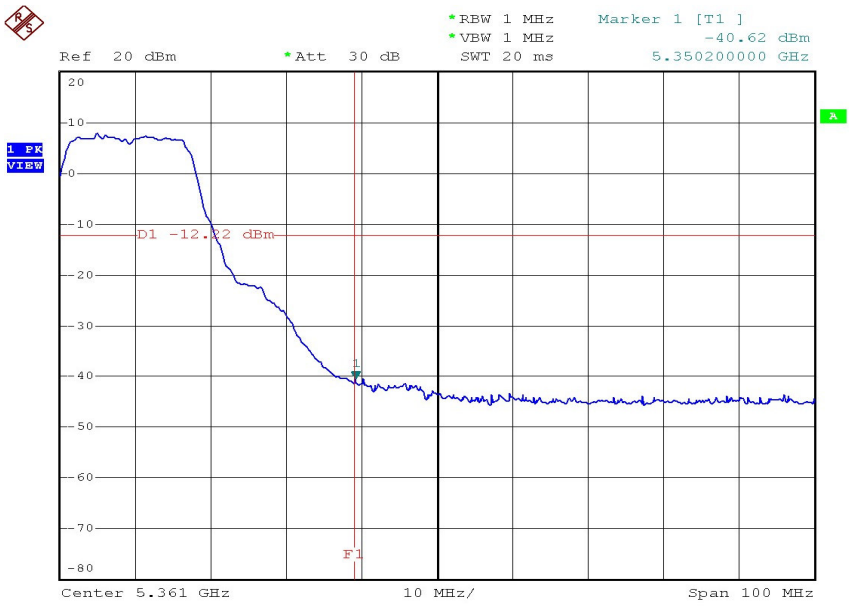
Test Mode: Normal, Transmit Rate: 6Mbps

Test Date: Feb. 15, 2005 Temperature: 27℃ Humidity: 62% Atmospheric pressure: 1031mmHg

Channel	Frequency (MHz)	Maximum Value In Frequency (MHz)	Maximum Value (dBm)
1	5180	5148.8	-35.54
8	5320	5350.2	-40.62



Date: 15.FEB.2005 20:01:39



Date: 15.FEB.2005 20:05:14

11.3. Restrict Band Emission Measurement Data

Test Mode: Normal, Transmit Rate: 6Mbps

Test Date: Feb. 15, 2005 Temperature: 27℃ Humidity: 62% Atmospheric pressure: 1031mmHg

Channel 01, Fundamental Frequency: 5180 MHz

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)		Corrected Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Deg.	Ant High (m)
		Peak	Ave		Peak	Ave	Peak	Ave			
5117.60	H	46.12	32.06	7.45	53.57	39.51	74	54	-14.49	212	1.2
5149.80	V	53.02	34.39	8.38	61.40	42.77	74	54	-11.23	214	1.1

Channel 08, Fundamental Frequency: 5320 MHz

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)		Corrected Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Deg.	Ant High (m)
		Peak	Ave		Peak	Ave	Peak	Ave			
5395.60	H	46.05	31.96	8.37	54.42	40.33	74	54	-13.67	208	1.2
5400.00	V	52.22	34.37	9.26	61.48	43.63	74	54	-10.37	214	1.1

Notes:

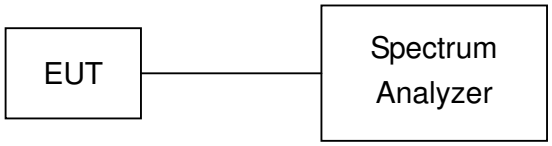
1. Result = Meter Reading + Factor
2. Factor = Antenna Factor + Cable Loss – Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3 MHz for Peak detection at frequency above 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10 MHz for Average detection at frequency above 1GHz.

12. 6dB Bandwidth

12.1. Test Procedure

1. The transmitter output was connected to the spectrum analyzer.
2. Set RBW of spectrum analyzer to 100 KHz and VBW to 100 KHz.
3. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

12.2. Test Setup Layout

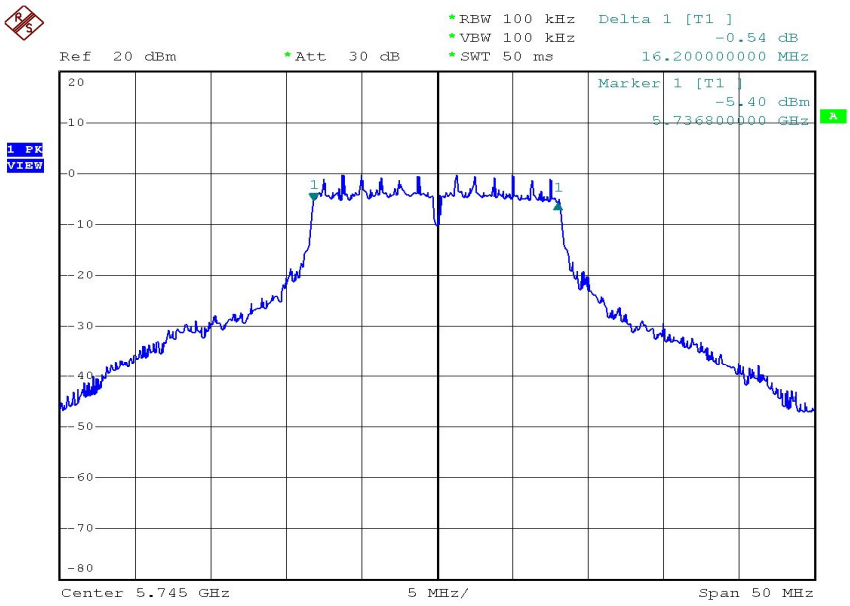


12.3. Test Result and Data

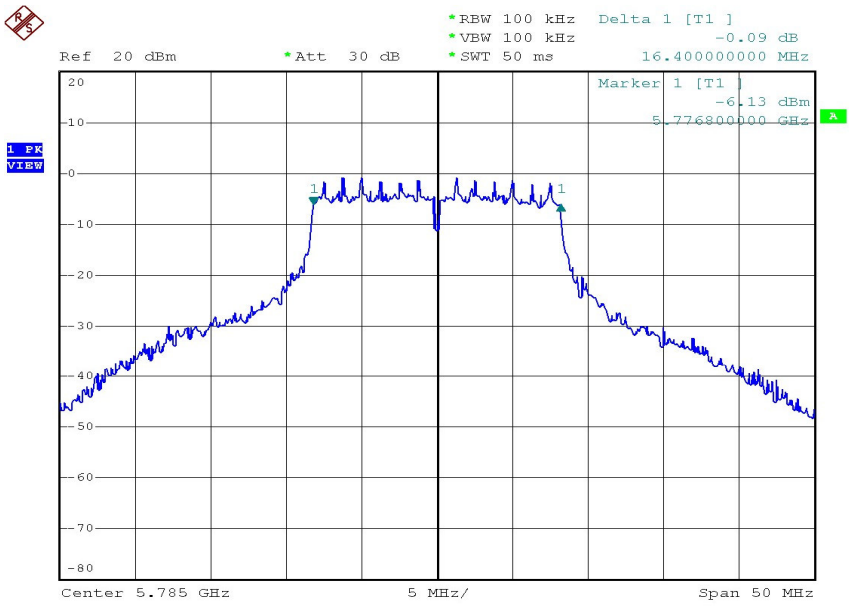
Test Mode: Normal, Transmit Rate: 6Mbps

Test Date: Feb. 16, 2005 Temperature: 26℃ Humidity: 64% Atmospheric pressure: 1030mmHg

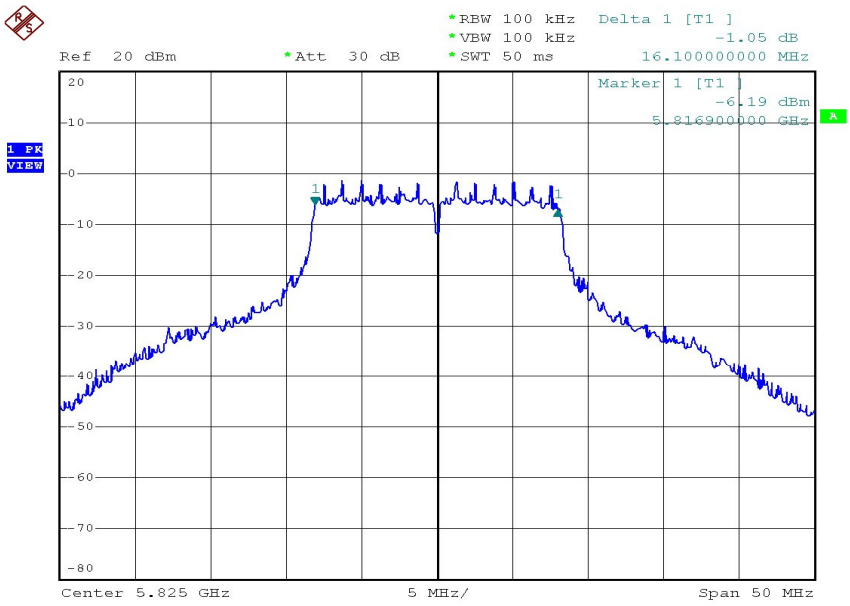
Channel	Frequency (MHz)	6dB Bandwidth
9	5745	16.2
11	5785	16.4
13	5825	16.1



Date: 16.FEB.2005 11:08:44



Date: 16.FEB.2005 11:12:32



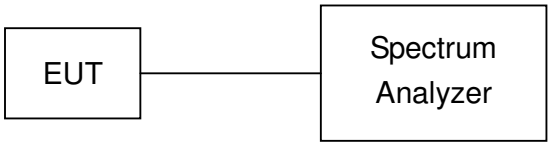
Date: 16.FEB.2005 11:14:24

13. Maximum Peak Output Power

13.1. Test Procedure

The antenna port（RF output）of the EUT was connected to the input（RF input）of a spectrum analyzer. Power was read directly from the spectrum analyzer and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.

13.2. Test Setup Layout

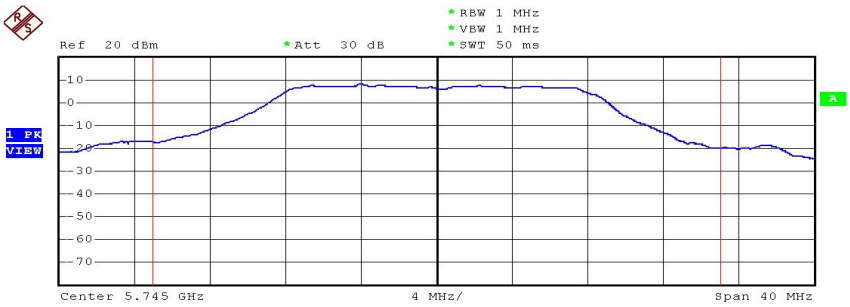


13.3. Test Result and Data

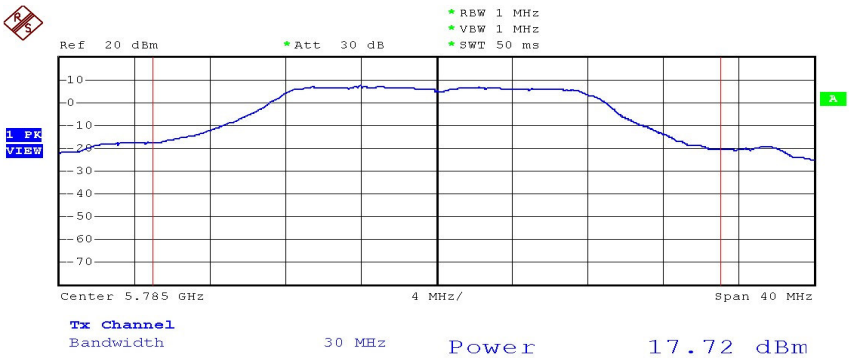
Test Mode: Normal, Transmit Rate: 6Mbps

Test Date: Feb. 15, 2005 Temperature: 27℃ Humidity: 62% Atmospheric pressure: 1031mmHg

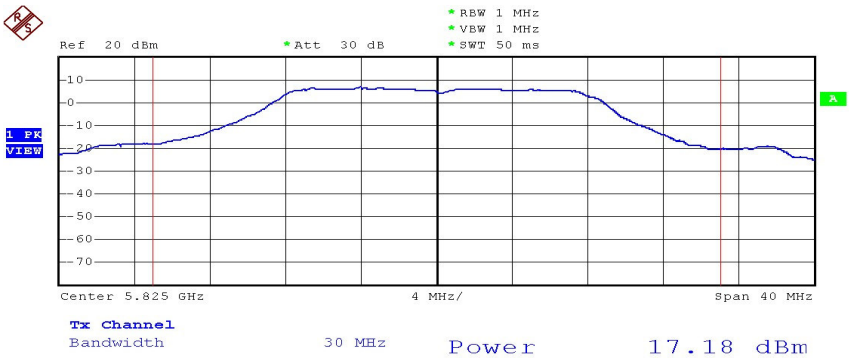
Channel	Frequency (MHz)	Peak Power Output (dBm)	Peak Power Output (dW)
9	5745	18.45	70.01
11	5785	17.72	59.18
13	5825	17.18	52.29



Date: 16.FEB.2005 12:08:05



Date: 16.FEB.2005 12:10:12



Date: 16.FEB.2005 12:11:20

14. Band Edges Measurement

14.1. Test Procedure

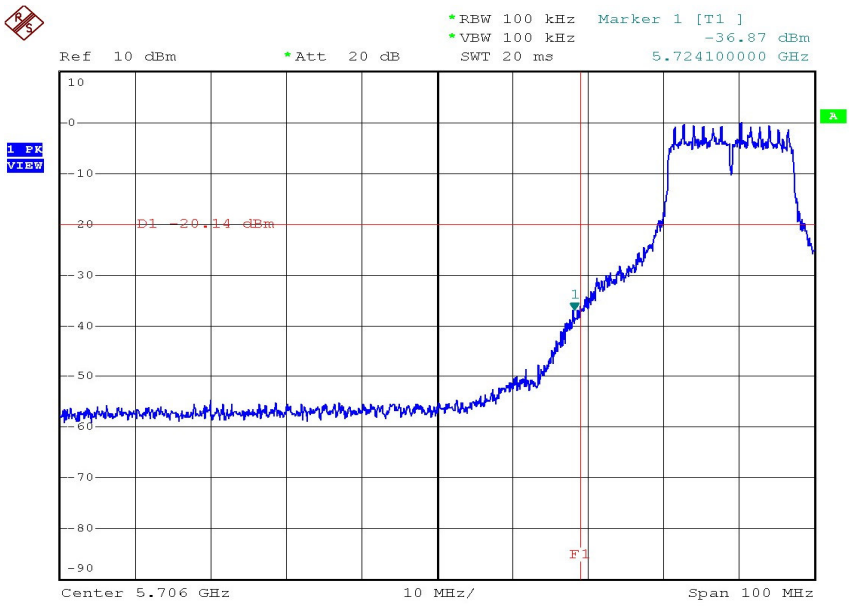
1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set both RBW and VBW of spectrum analyzer to 100 KHz with convenient frequency span including 100 MHz bandwidth from band edge.
3. The band edges was measured and recorded.

14.2. Test Result and Data

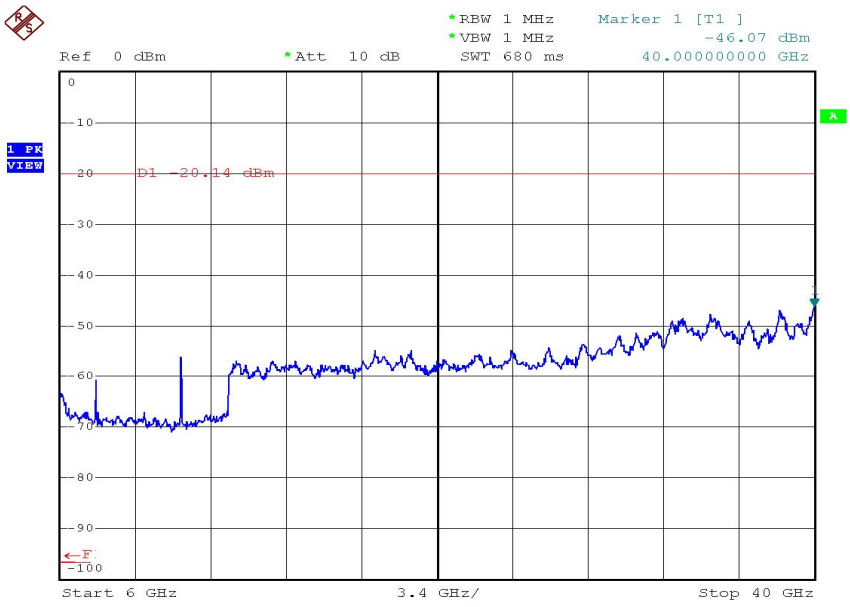
Test Mode: Normal, Transmit Rate: 6Mbps

Test Date: Feb. 16, 2005 Temperature: 26℃ Humidity: 64% Atmospheric pressure: 1030mmHg

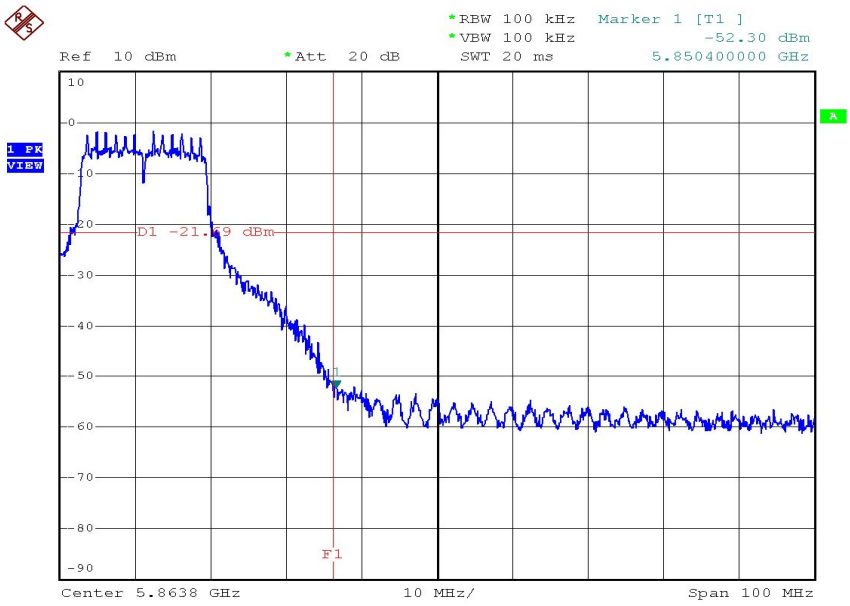
Channel	Frequency (MHz)	Maximum Value In Frequency (MHz)	Maximum Value (dBm)
9	5745	5724.1	-36.87
13	5825	5850.4	-52.30



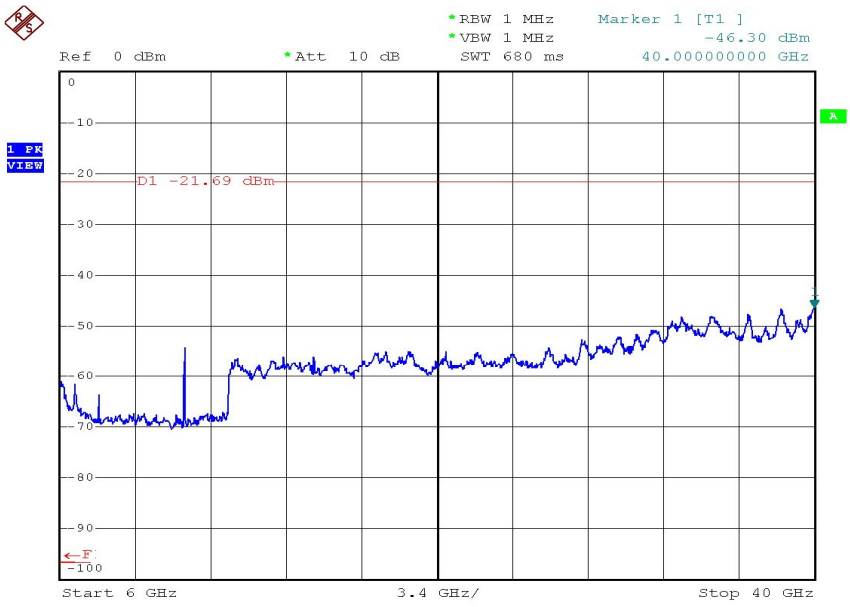
Date: 16.FEB.2005 12:38:41



Date: 16.FEB.2005 12:39:42



Date: 16.FEB.2005 12:20:44



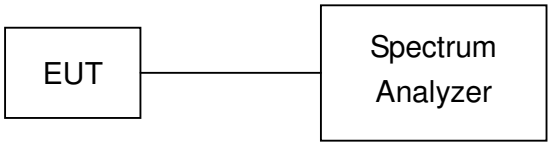
Date: 16.FEB.2005 12:33:55

15. Power Spectral Density

15.1. Test Procedure

1. The transmitter output was connected to spectrum analyzer.
2. The spectrum analyzer's resolution bandwidth were set at 3KHz RBW and 30KHz VBW as that of the fundamental frequency. Set the sweep time=span/3KHz.
3. The power spectral density was measured and recorded.
4. The Sweep time is allowed to be longer than span/3KHz for a full response of the mixer in the spectrum analyzer.

15.2. Test Setup Layout

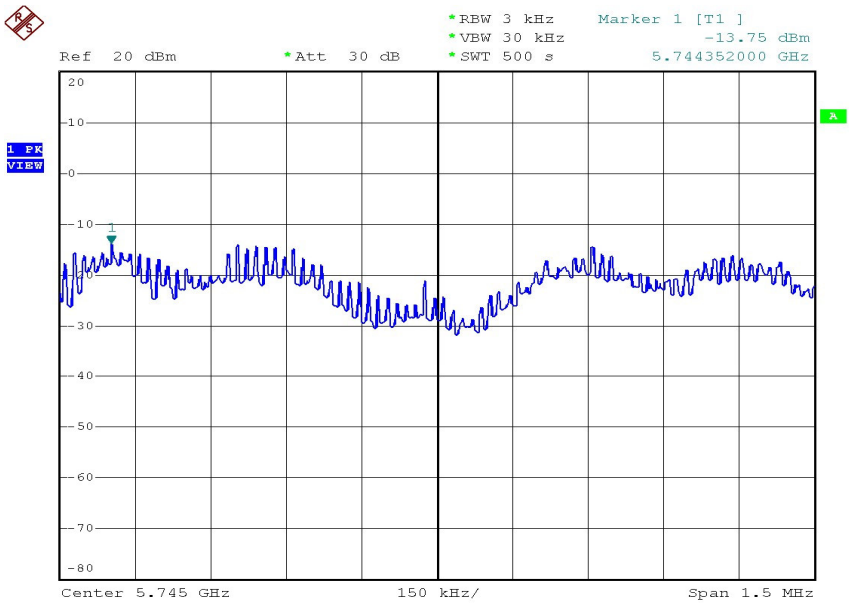


15.3. Test Result and Data

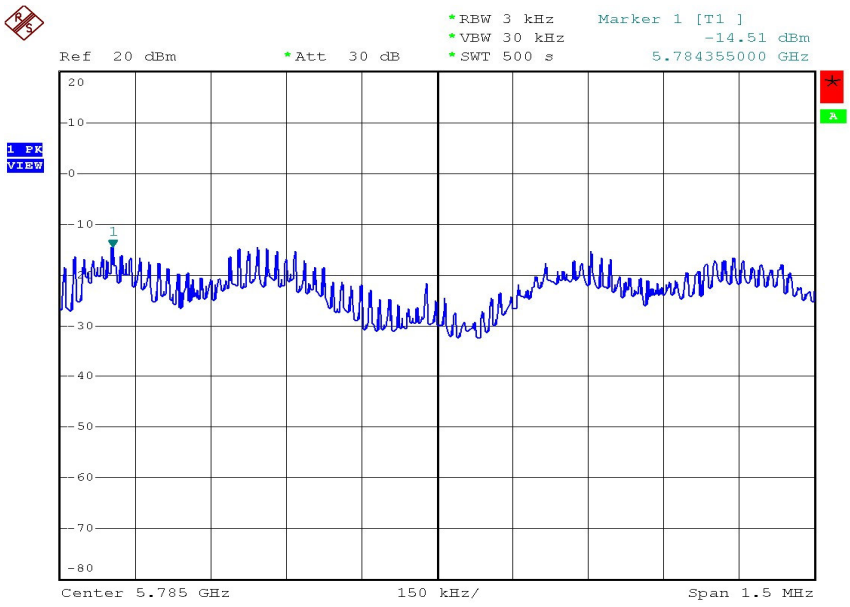
Test Mode: Normal, Transmit Rate: 6Mbps

Test Date: Feb. 16, 2005 Temperature: 26℃ Humidity: 64% Atmospheric pressure: 1030mmHg

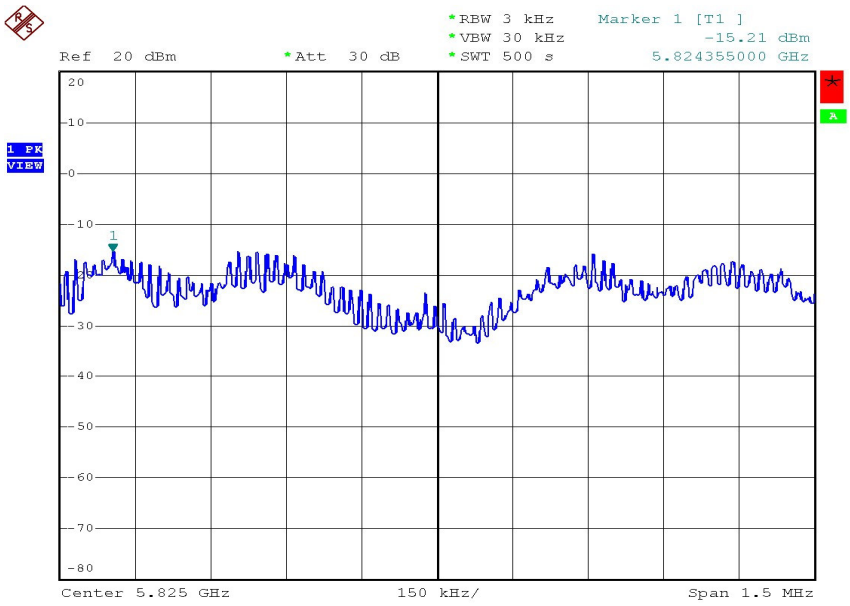
Channel	Frequency (MHz)	Maximum Power Density of 3kHz BW (dBm)
9	5745	-13.75
11	5785	-14.51
13	5825	-15.21



Date: 16.FEB.2005 12:05:28



Date: 16.FEB.2005 11:44:56



Date: 16.FEB.2005 11:34:35

16. Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

**: Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

16.1. Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

17. RF Exposure

FCC Rules and Regulations Part 1.1307, 1.1310, 2.1091, 2.1093:
RF Exposure Compliance

17.1. Limit For Maximum Permissible Exposure (MPE)

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time |E|²,|H|² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm²)	Averaging Time |E|²,|H|² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

F=frequency in MHz *Plane-wave equivalent power density

17.2. MPE Calculations

$$E\ (V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density:} \quad Pd\ (mW/cm^2) = \frac{E^2}{3770}$$

E = Electric field (V/m)

P = Peak output power (W)

G = Antenna numeric gain (numeric)

d = Separation distance (m)

Because the EUT is belong to General Population/ Uncontrolled Exposure. So the Limit of Power Density is 10 W/m². We can change the formula to:

$$d = \sqrt{\frac{30 \times P \times G}{3770}}$$

17.3. FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation. Proposed RF exposure safety information to include in User's Manual.

18. List of Measuring Equipment Used

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Valid Date.
1	Bilog Antenna	CBL6112B	Schaffner	2762	2005/04/08
2	Preamplifier	RFP4002	Schaffner	010	2005/11/03
3	Receiver	SCR3501	Schaffner	437	2005/11/03
4	Signal Generator	8648B	HP	3629U00612	2006/02/08
5	Amplifier	8447D	Agilent	2443A04650	2006/02/14
6	Amplifier	8447D	Agilent	2944A10531	2005/06/30
7	Series Power Meter	E4416A	Agilent	GB41292146	2005/10/11
8	Power Sensor	E9327A	Agilent	US40441392	2005/10/11
9	Dipole Antenna	AD-100	COM-Power	721011	2005/12/02
10	Dipole Antenna	AD-100	COM-Power	721010	2005/12/02
11	Spectrum Analyzer	FSP40	R&S	100047	2005/12/28
12	Preamplifier	8449B	Agilent	3008A01954	2005/12/27
13	Horn Antenna	3115	EMCO	31601	2006/02/21
14	Horn Antenna	3115	EMCO	31589	2006/01/13
15	Horn Antenna	3116	EMCO	31970	2006/01/30
16	Horn Antenna	3116	EMCO	31974	2006/02/21
17	EMI Receiver	8546A	HP	3807A00454	2006/02/25
18	RF Filter Section	85460A	HP	3704A00386	2006/02/25
19	Signal Generator	83640A	HP	2927A00107	2006/03/16
20	Attenuator	8491B	Agilent	50703	2005/12/27
21	Attenuator	8491B	Agilent	50705	2005/12/27
22	Temperature Chamber	TMJ-9712	T Machine	T-12-040111	2006/02/21
23	High Pass Filter	84300-80038	HP	002	N/A
24	High Pass Filter	84300-80038	HP	006	N/A
25	DC Power Supply	GPD-3030	GM	7020936	N/A
26	AC Power Converter	AFC-11005	APC	F103120008	N/A