

4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within +/- 0.02% of the operating frequency over a temperature variation of -30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 15, 2007

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

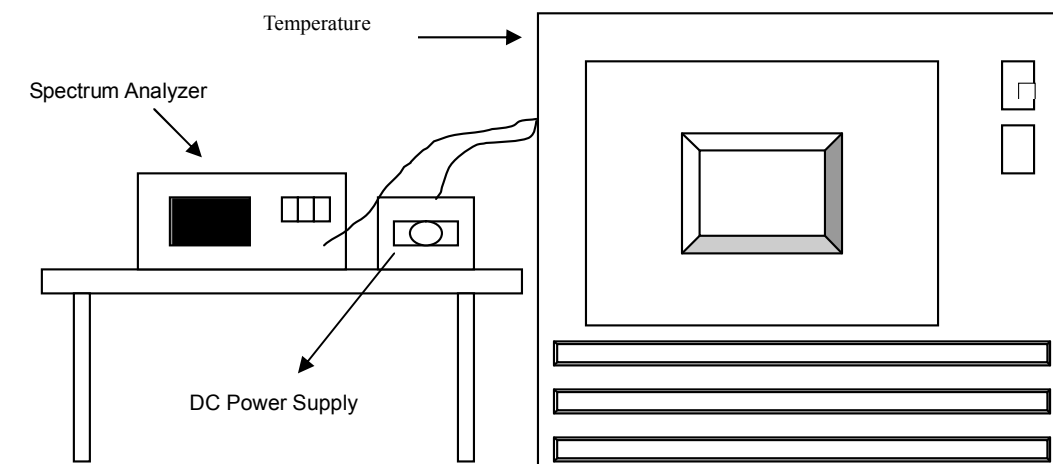
4.6.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. 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.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. 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.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.6.7 TEST RESULTS

Operating frequency: 5180MHz				Limit : $\pm 0.01\%$			
Temp. (°C)	Power supply (VAC)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5320.035	0.000658	5320.035	0.000658	5320.0359	0.000675
	110	5320.035	0.000658	5320.0349	0.000656	5320.0359	0.000675
	93.5	5320.0352	0.000662	5320.0347	0.000652	5320.0359	0.000675
40	126.5	5320.0286	0.000538	5320.0233	0.000438	5320.0201	0.000378
	110	5320.0286	0.000538	5320.0263	0.000494	5320.0231	0.000434
	93.5	5320.0286	0.000538	5320.0223	0.000419	5320.0211	0.000397
30	126.5	5319.9908	0.000173	5319.9902	0.000184	5319.9908	0.000173
	110	5319.9908	0.000173	5319.9904	0.000180	5319.9909	0.000171
	93.5	5319.9908	0.000173	5319.9902	0.000184	5319.9907	0.000175
20	126.5	5320.0292	0.000549	5320.0273	0.000513	5320.0261	0.000491
	110	5320.029	0.000545	5320.0293	0.000551	5320.0281	0.000528
	93.5	5320.029	0.000545	5320.0263	0.000494	5320.0261	0.000491
10	126.5	5320.011	0.000207	5320.0105	0.000197	5320.0110	0.000207
	110	5320.011	0.000207	5320.0105	0.000197	5320.0112	0.000211
	93.5	5320.011	0.000207	5320.0104	0.000195	5320.0109	0.000205
0	126.5	5319.9867	0.000250	5319.9959	0.000077	5319.9964	0.000068
	110	5319.9868	0.000248	5319.9959	0.000077	5319.9966	0.000064
	93.5	5319.9967	0.000062	5319.9962	0.000071	5319.9963	0.000070
-10	126.5	5320.0057	0.000107	5320.0051	0.000096	5320.0056	0.000105
	110	5320.0058	0.000109	5320.0055	0.000103	5320.0060	0.000113
	93.5	5320.0057	0.000107	5320.0051	0.000096	5320.0056	0.000105
-20	126.5	5320.0102	0.000192	5320.0094	0.000177	5320.0099	0.000186
	110	5320.0102	0.000192	5320.0096	0.000180	5320.0102	0.000192
	93.5	5320.0102	0.000192	5320.0094	0.000177	5320.0099	0.000186

4.7 BAND EDGES MEASUREMENT

4.7.1 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 15, 2007

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.7.2 TEST PROCEDURE

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

4.7.3 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

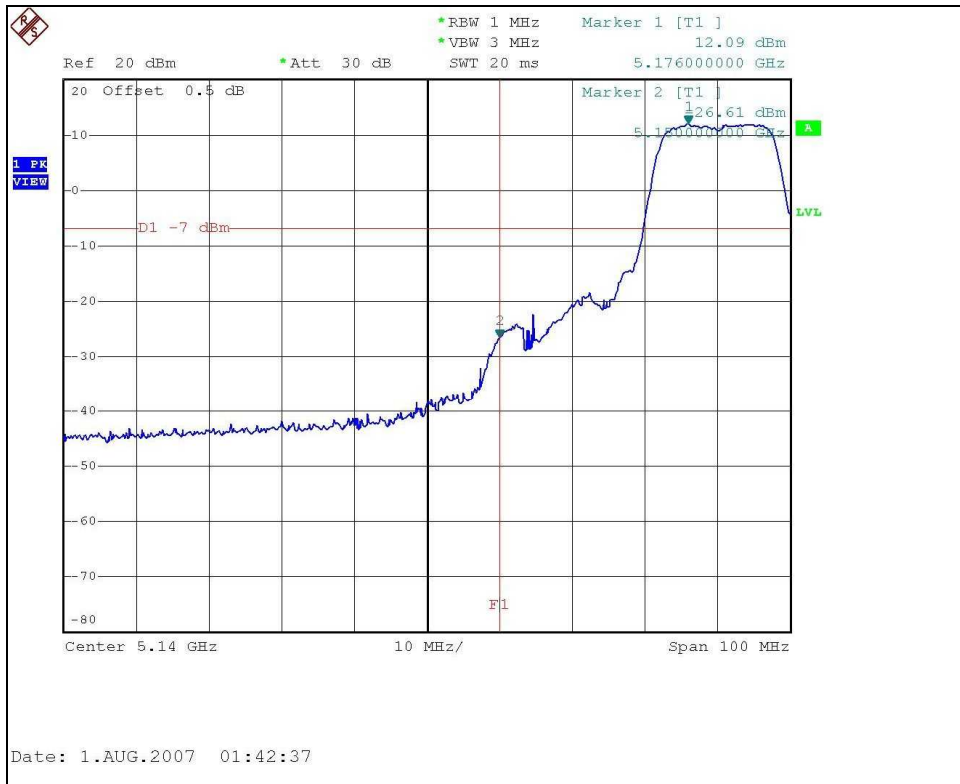
4.7.4 TEST RESULTS

For signals in the restricted bands above and below the 5.15 to 5.35GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak field strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

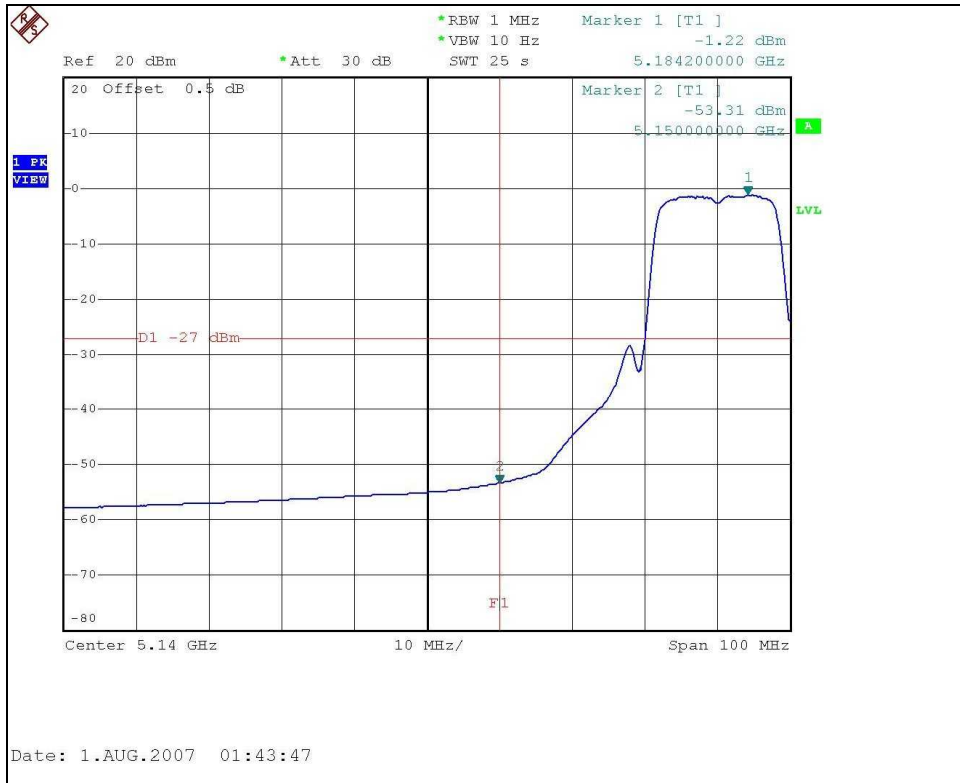
The spectrum plots (Peak RBW=1MHz, VBW=3MHz; Average RBW=1MHz, VBW=10Hz) are attached on the following pages.

802.11a OFDM modulation

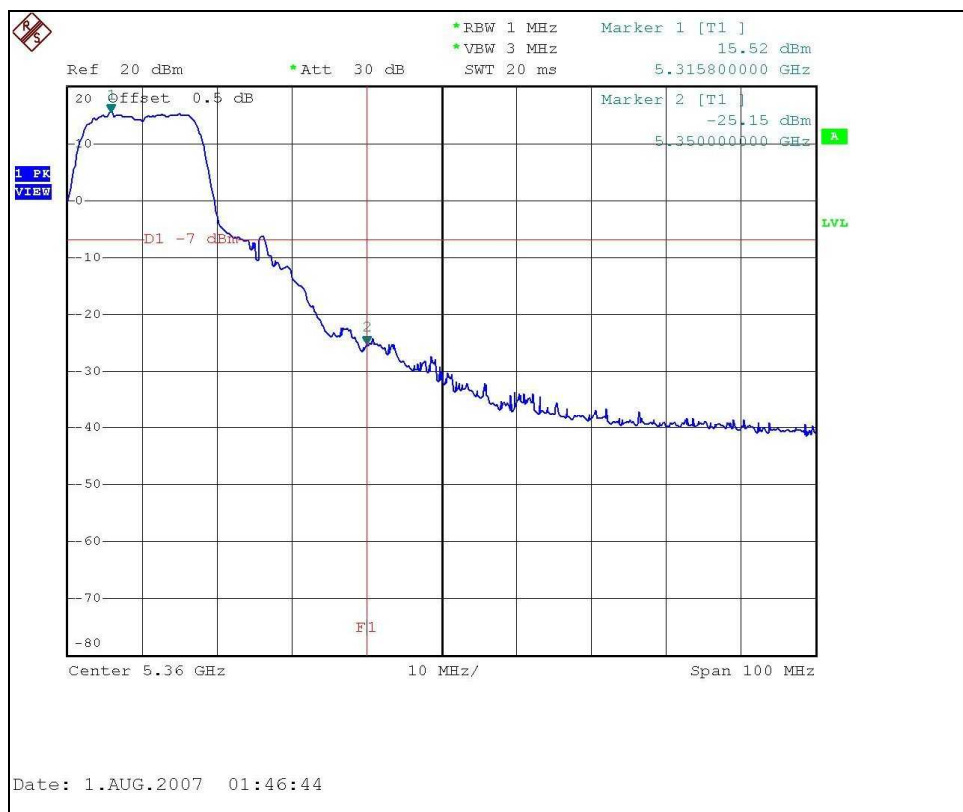
CH 1



CH 1



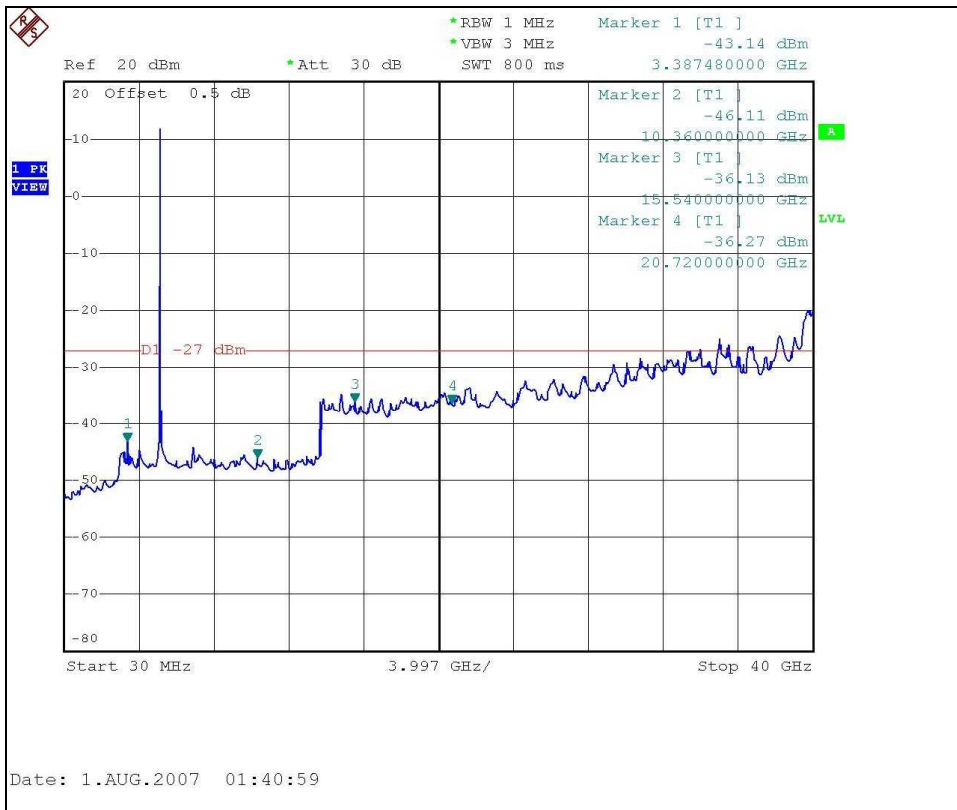
CH 8



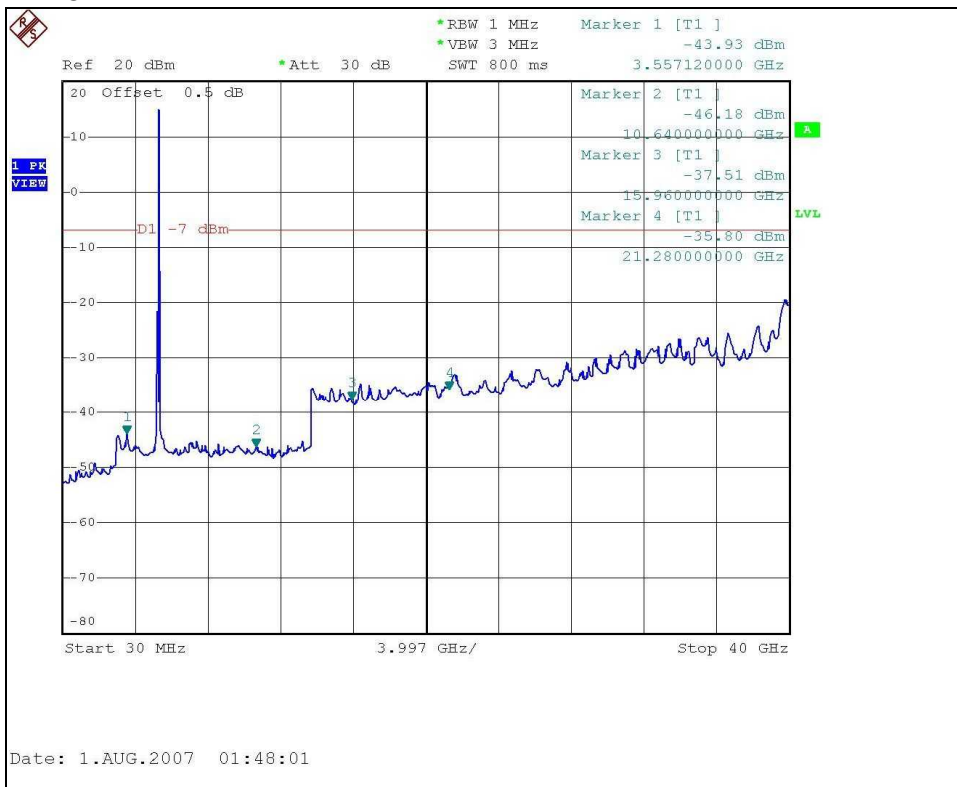
CH 8



CH 1



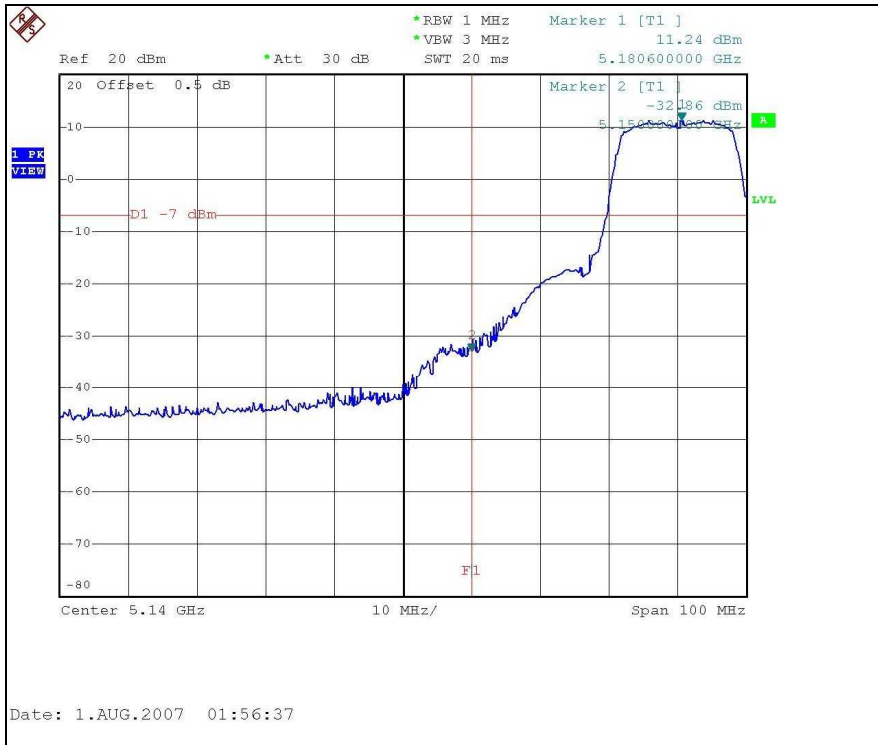
CH 8



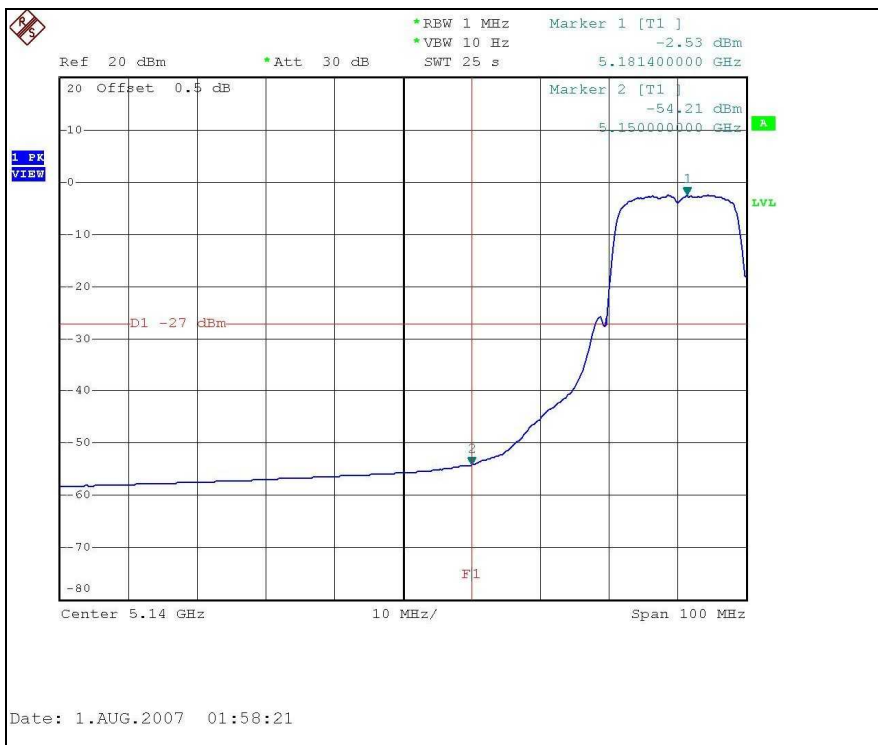
DRAFT 802.11n (20MHz) OFDM MODULATION:

For chain (0):

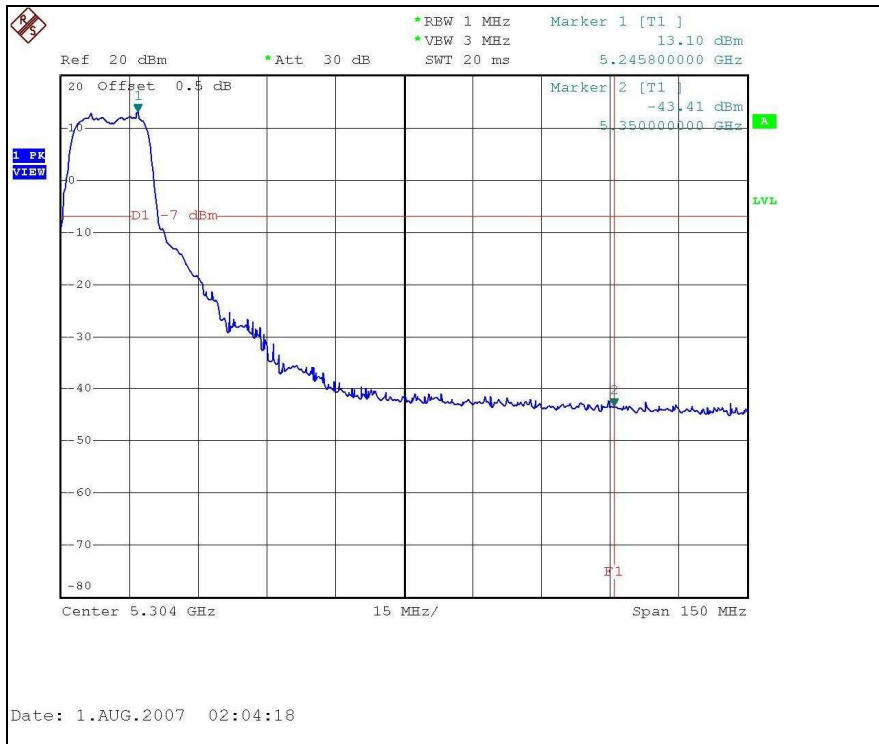
CH1



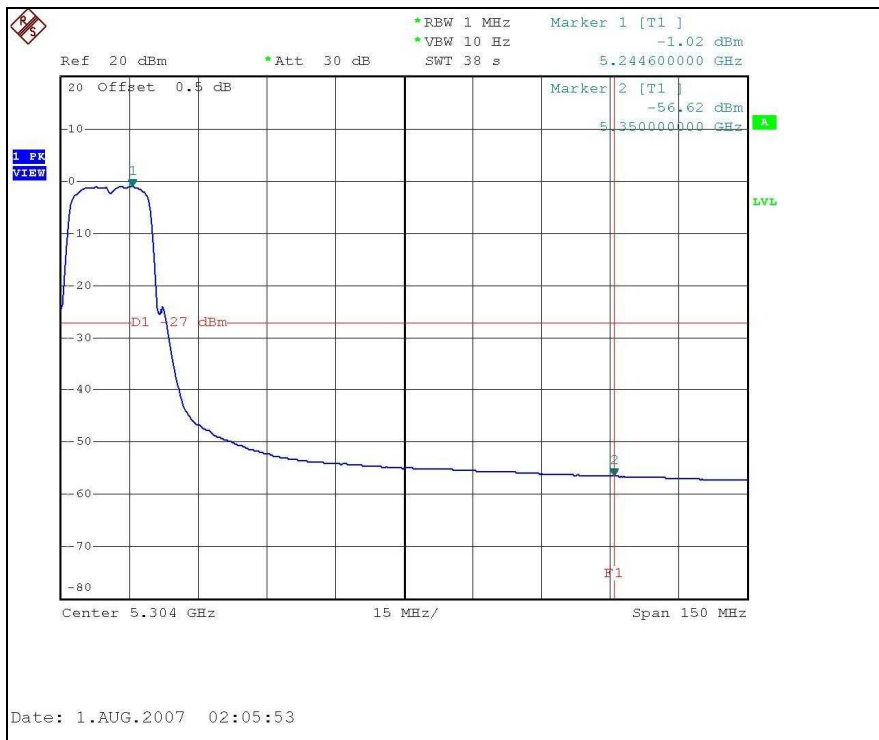
CH1



CH4

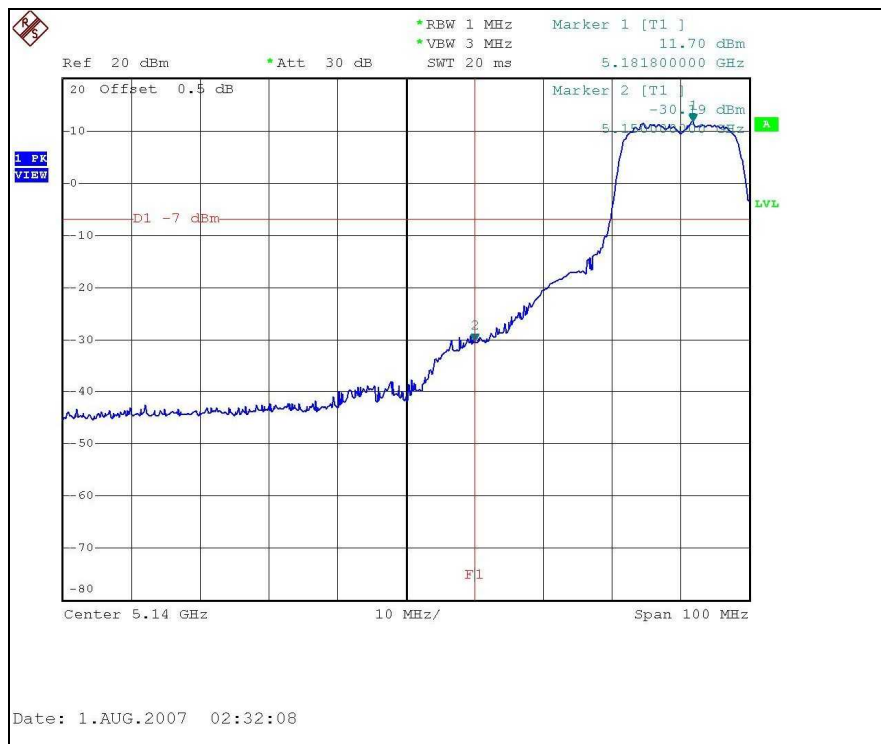


CH4

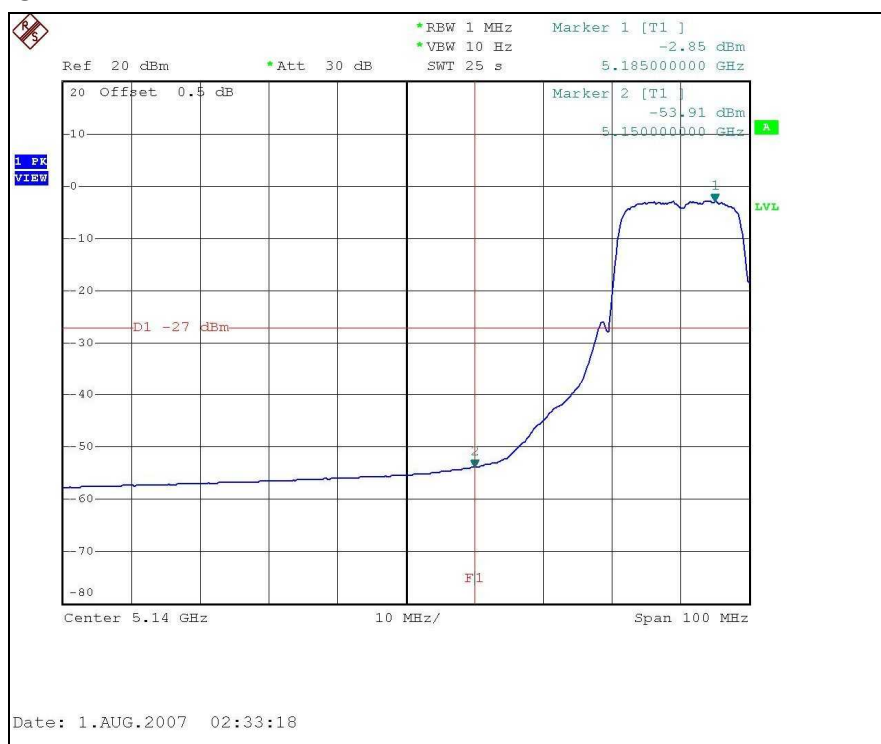


For chain (1):

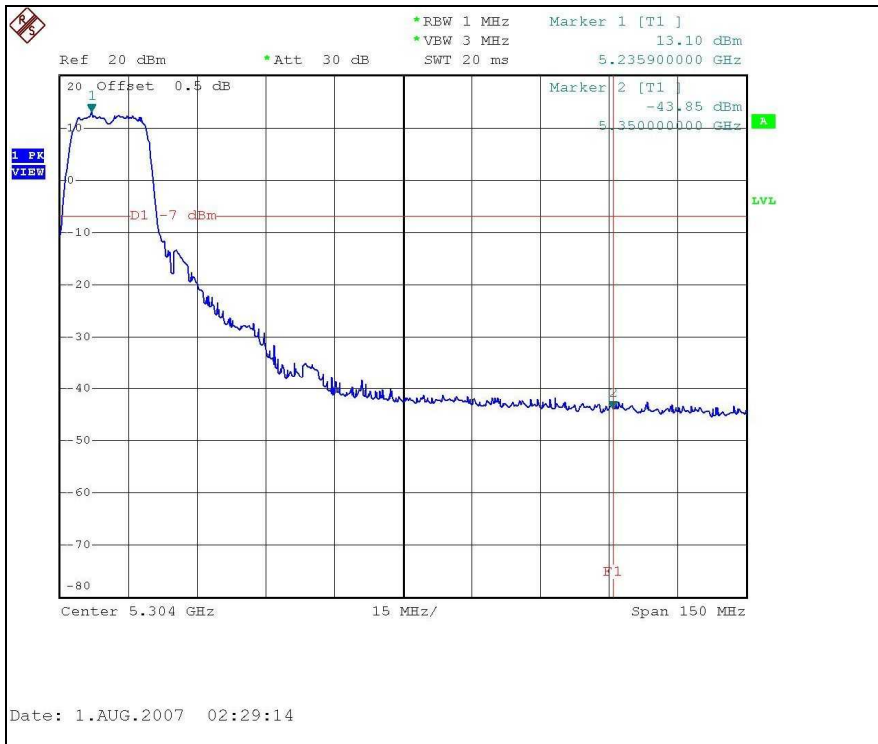
CH1



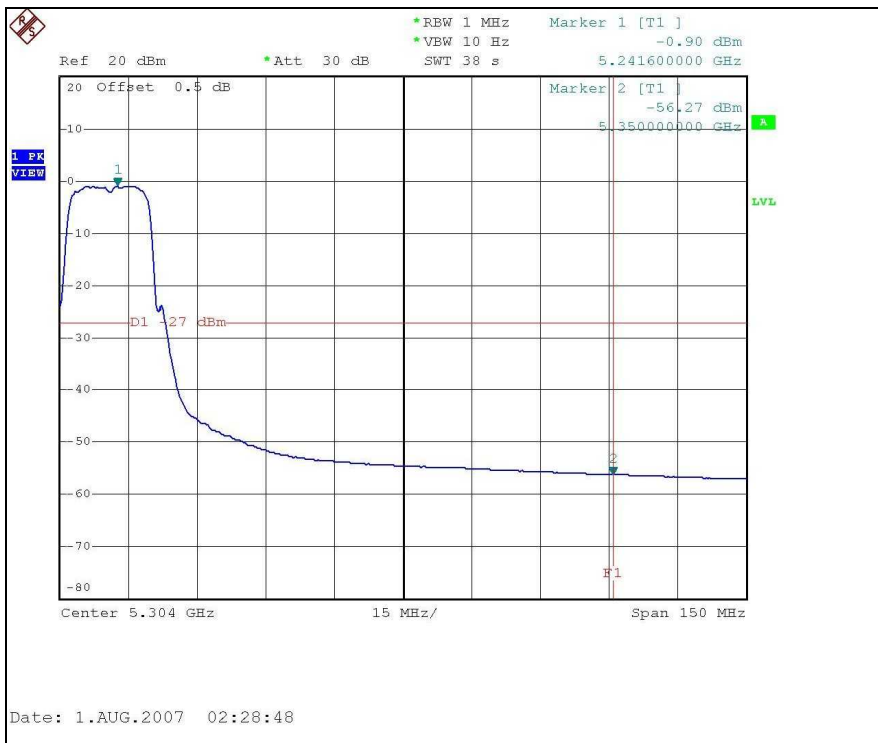
CH1



CH4

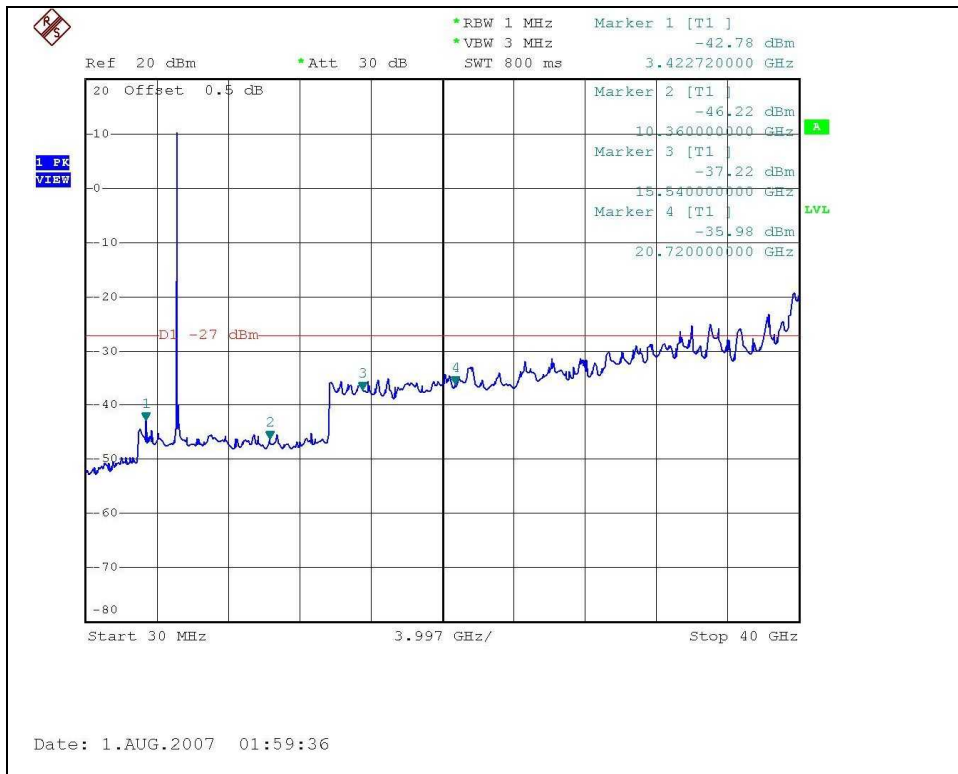


CH4

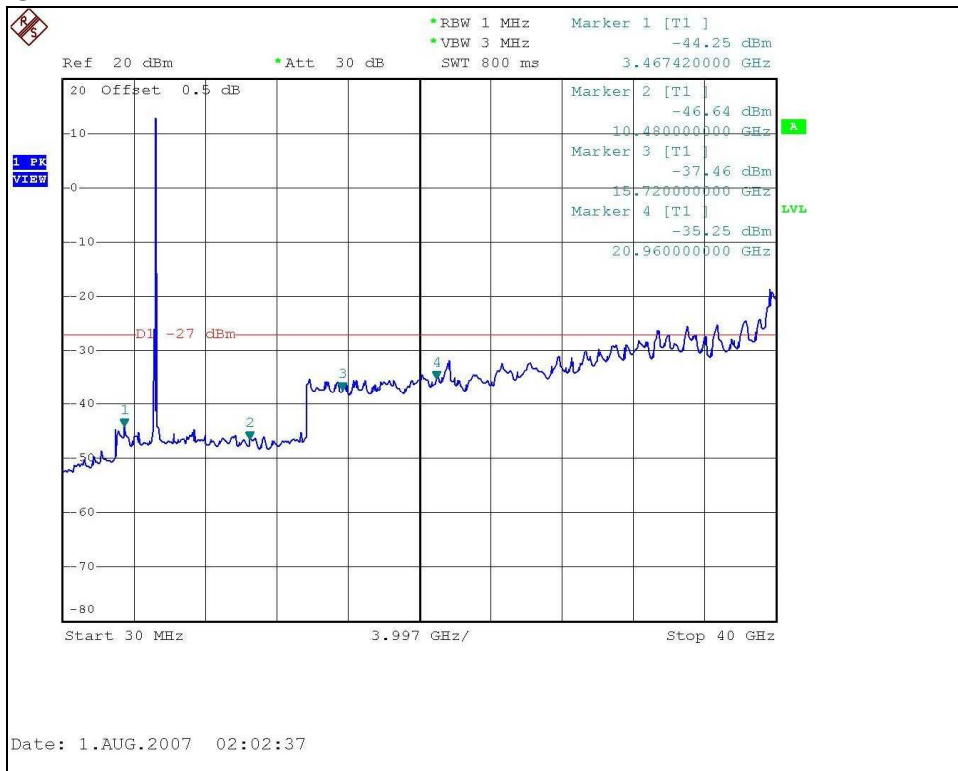


For chain (0):

CH1

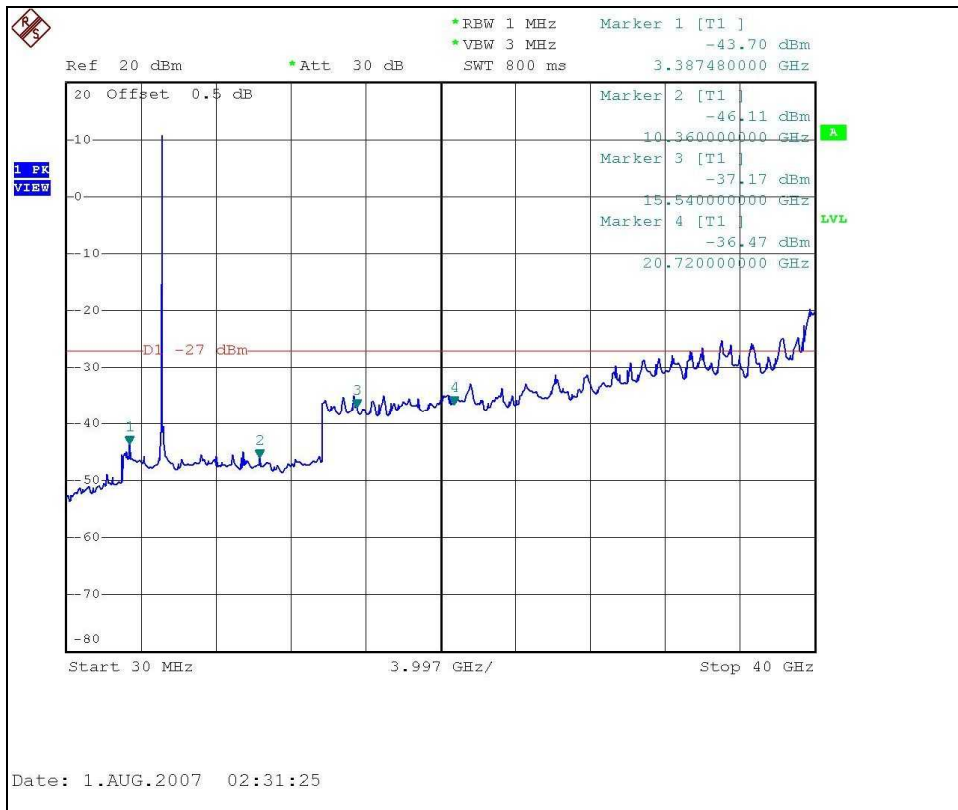


CH4

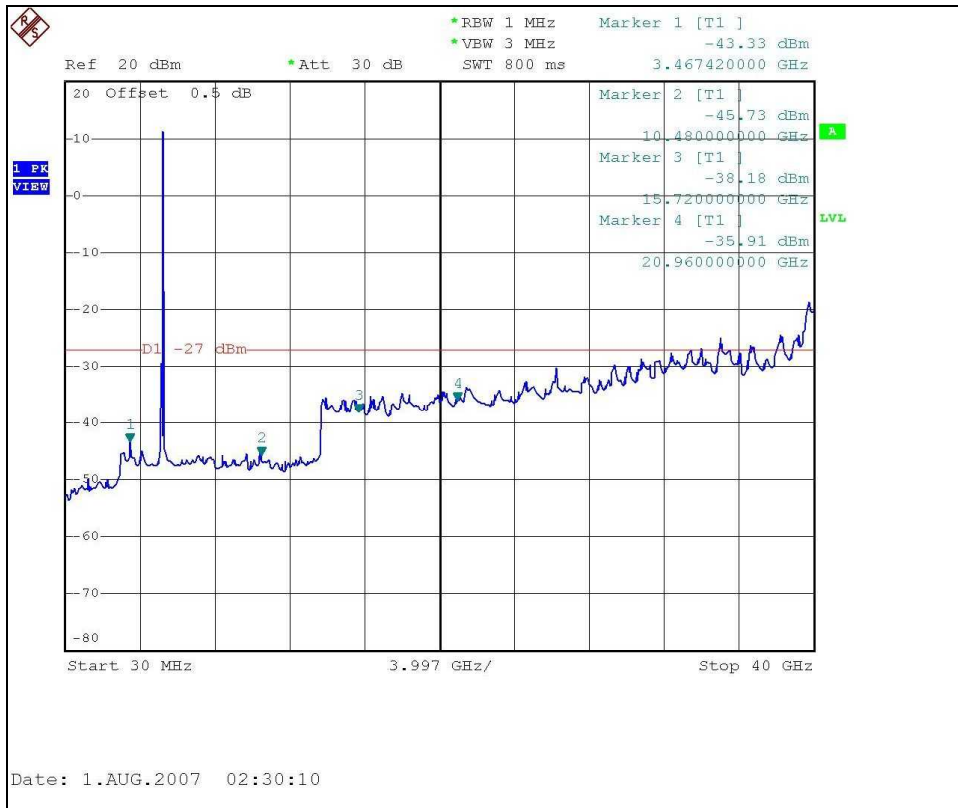


For chain (1):

CH1



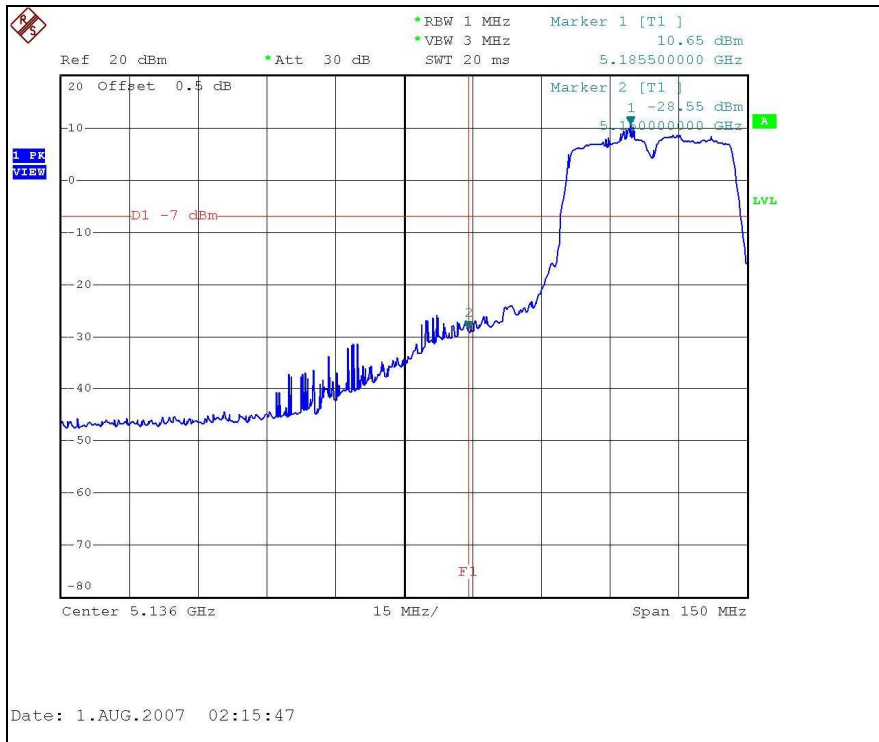
CH4



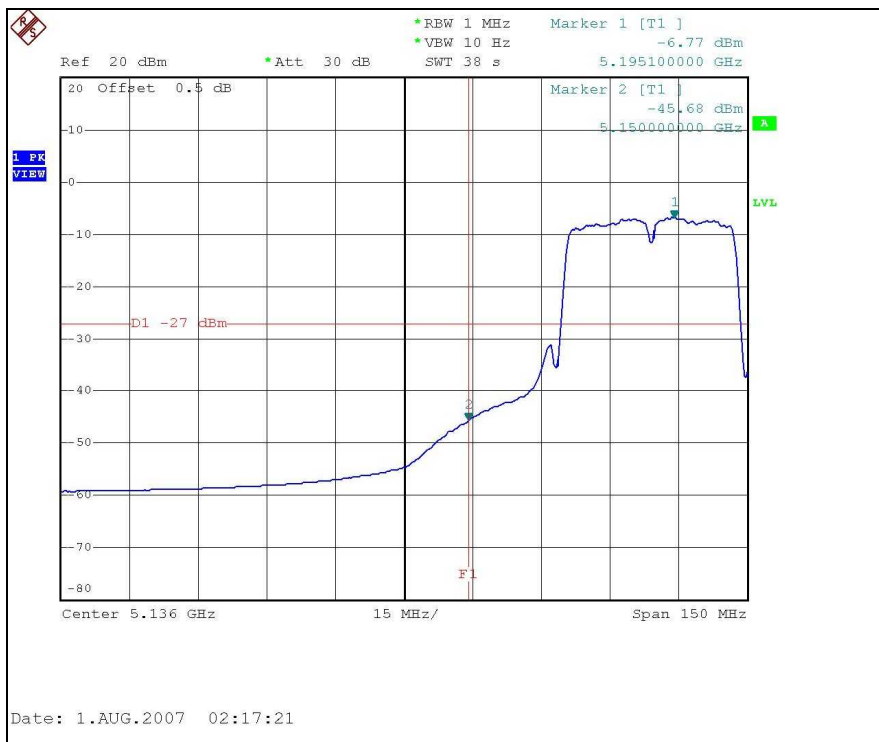
DRAFT 802.11n (40MHz) OFDM MODULATION:

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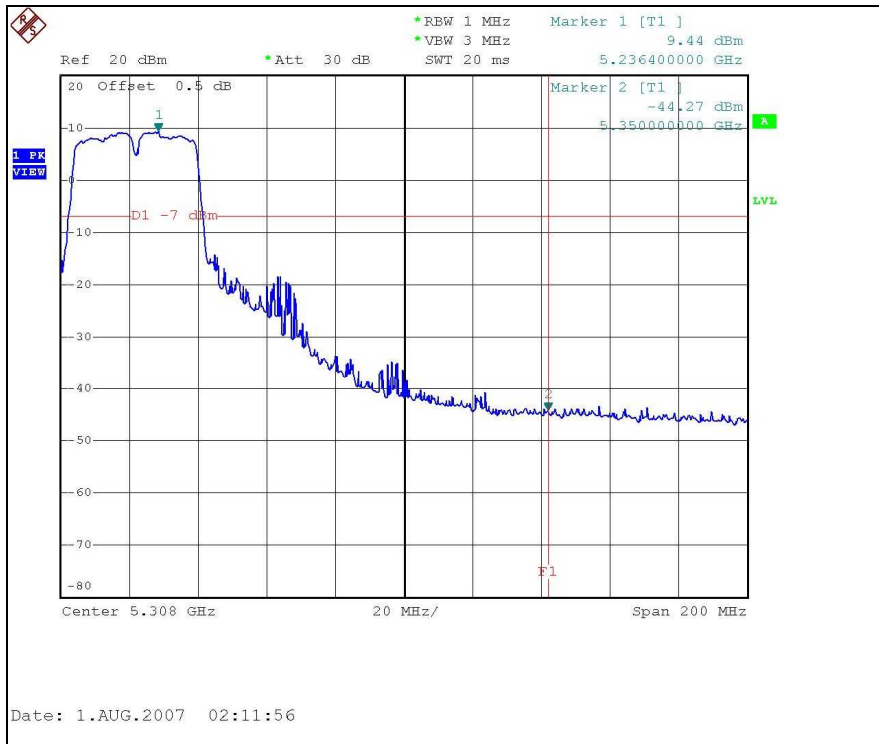
CH1



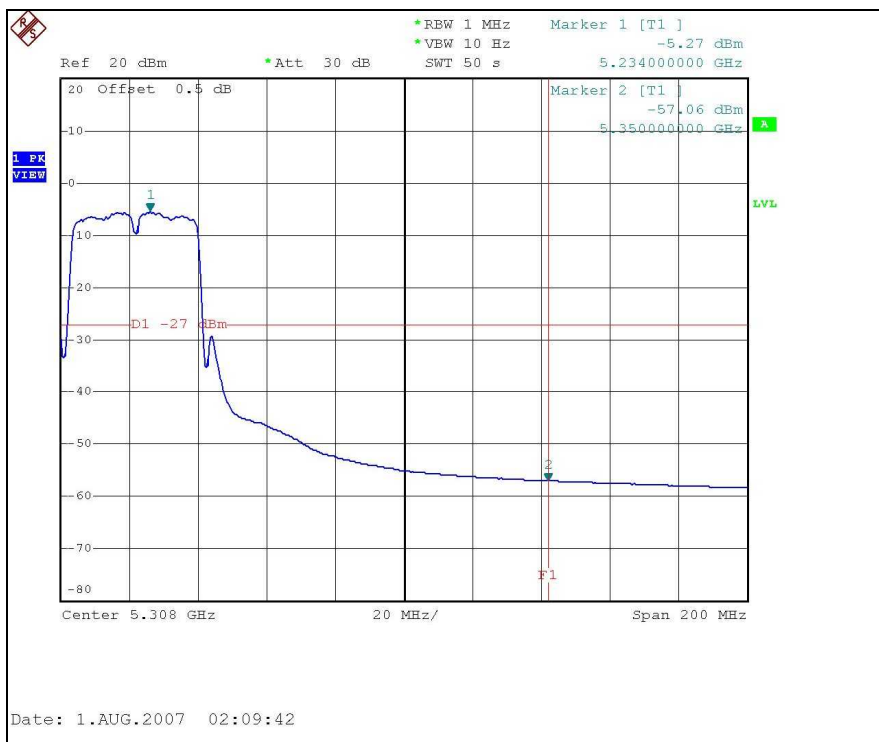
CH1



CH3

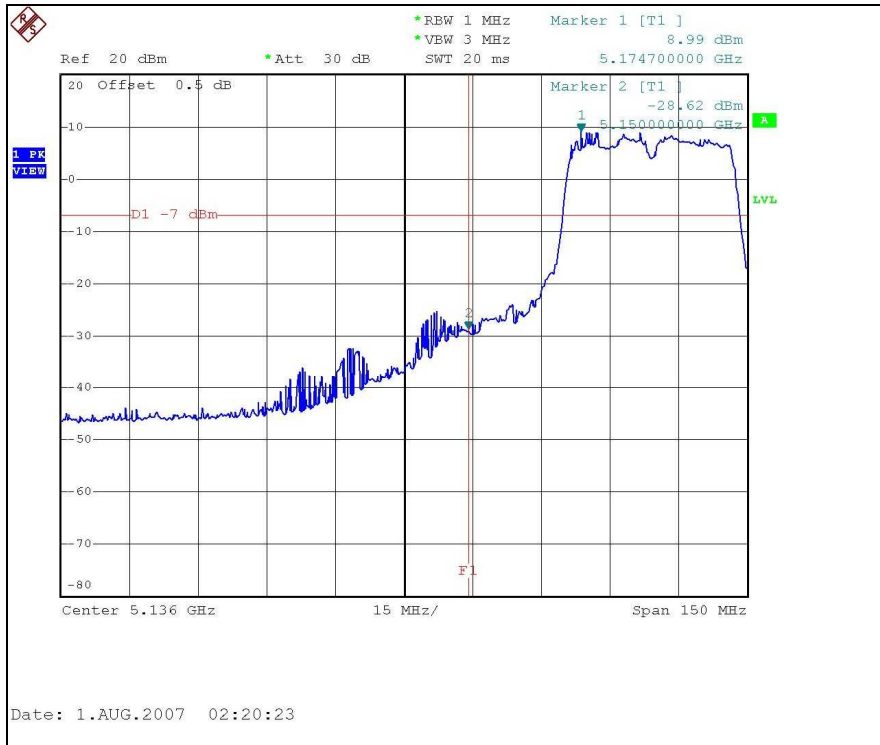


CH3

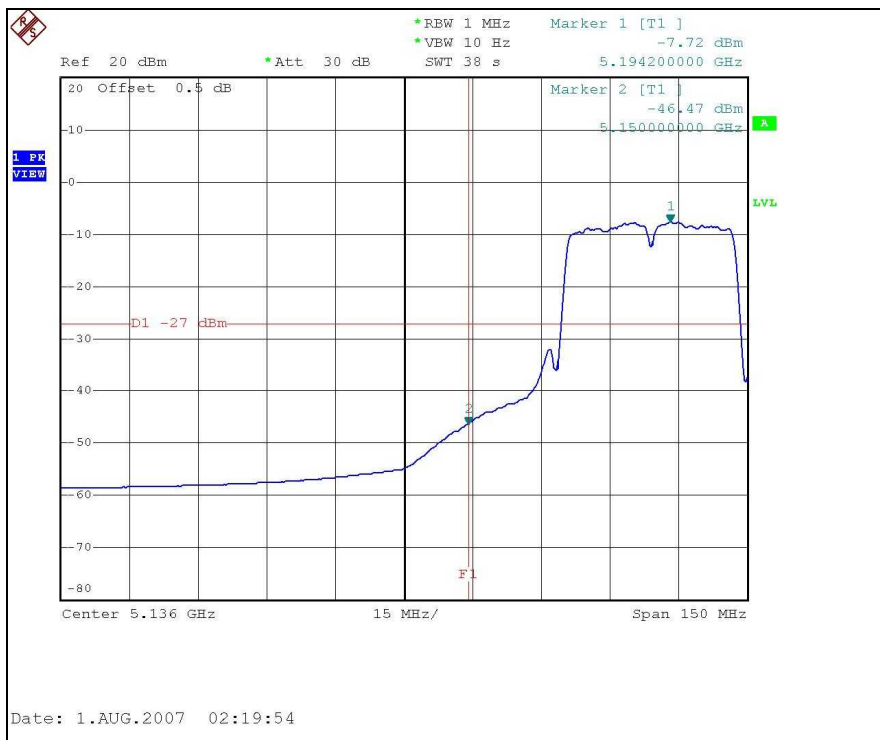


For chain (1):

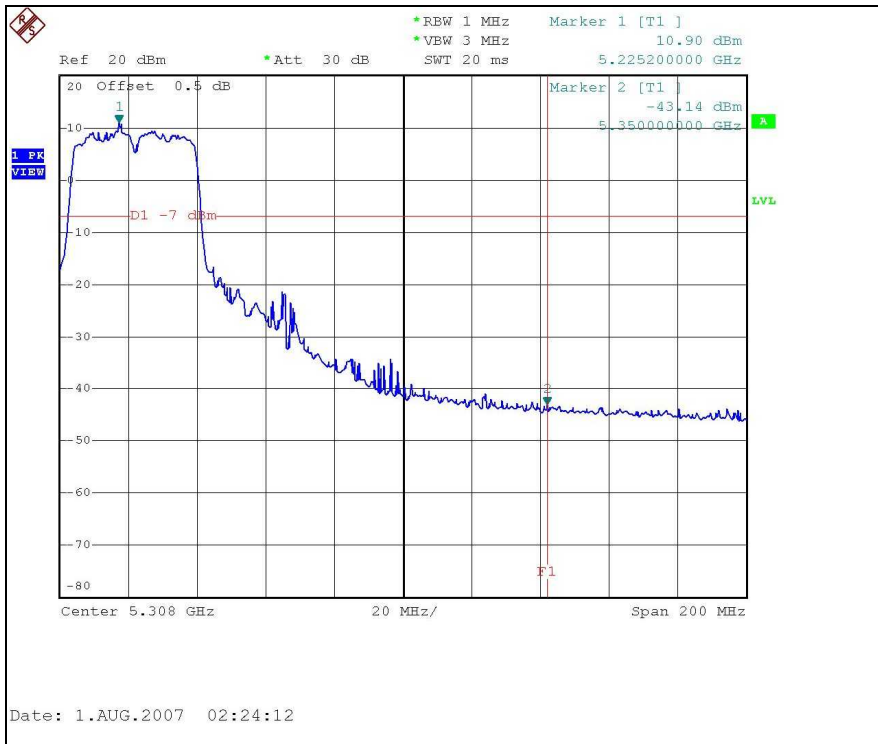
CH1



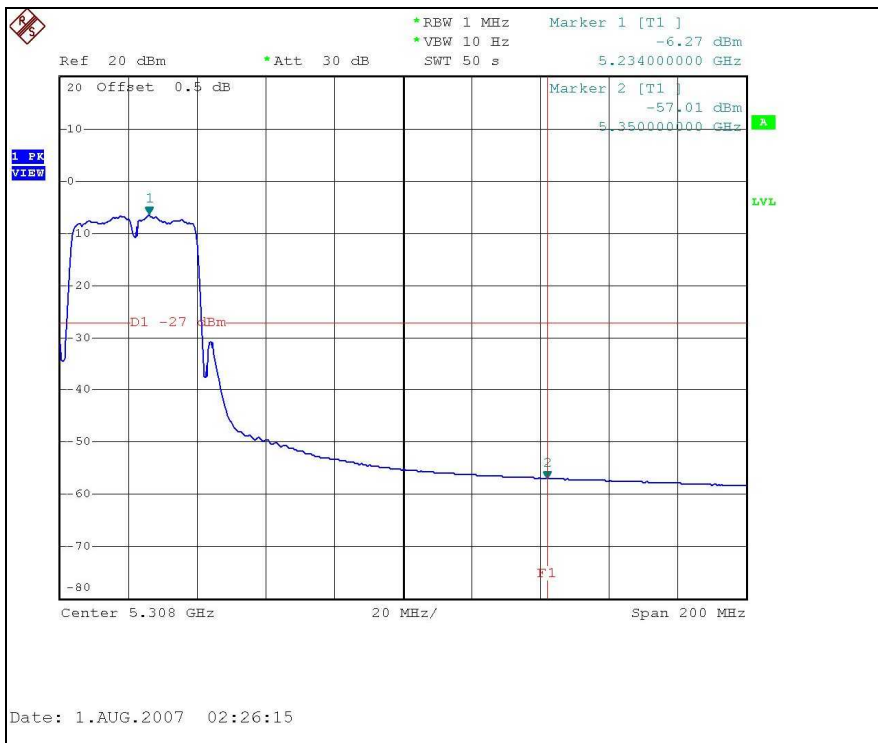
CH1



CH3

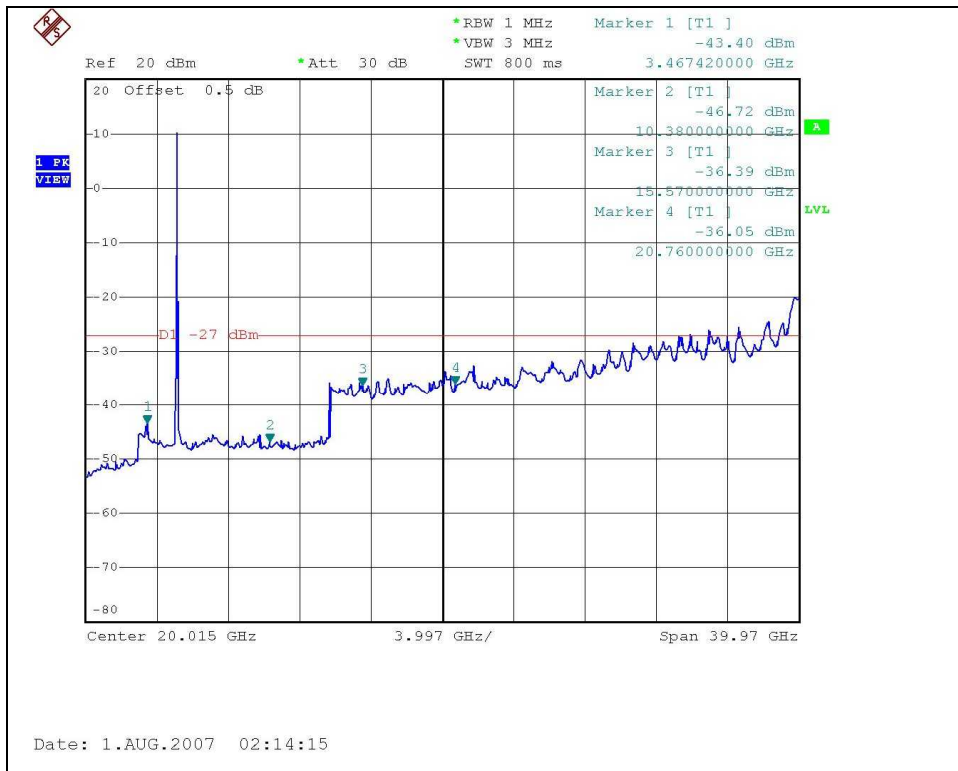


CH3

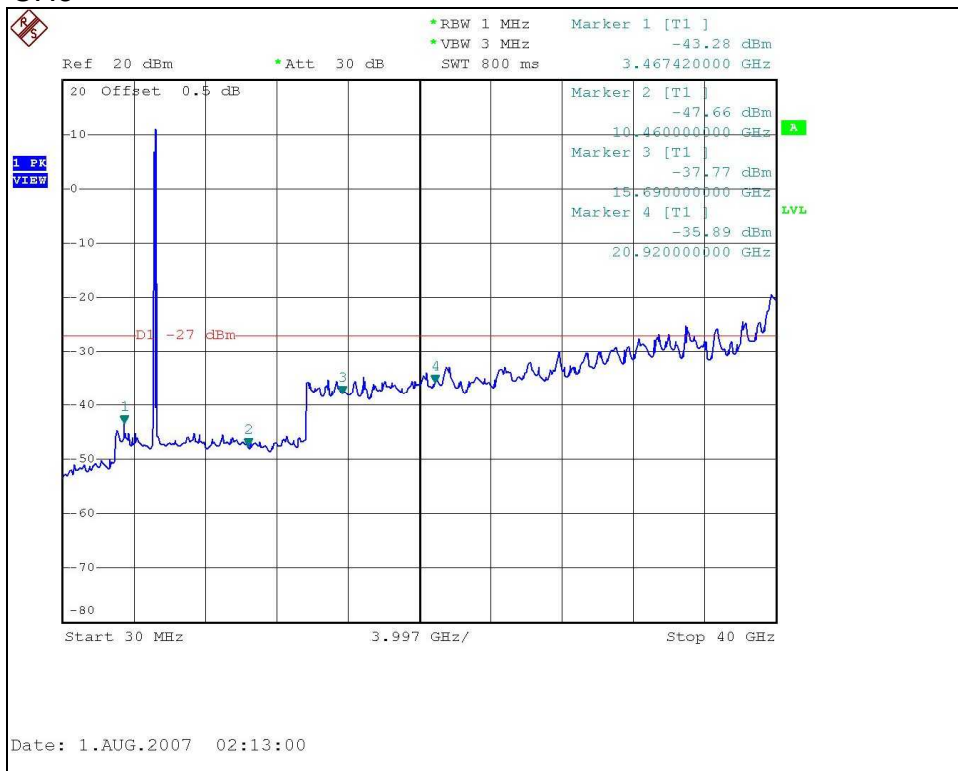


For chain (0):

CH1

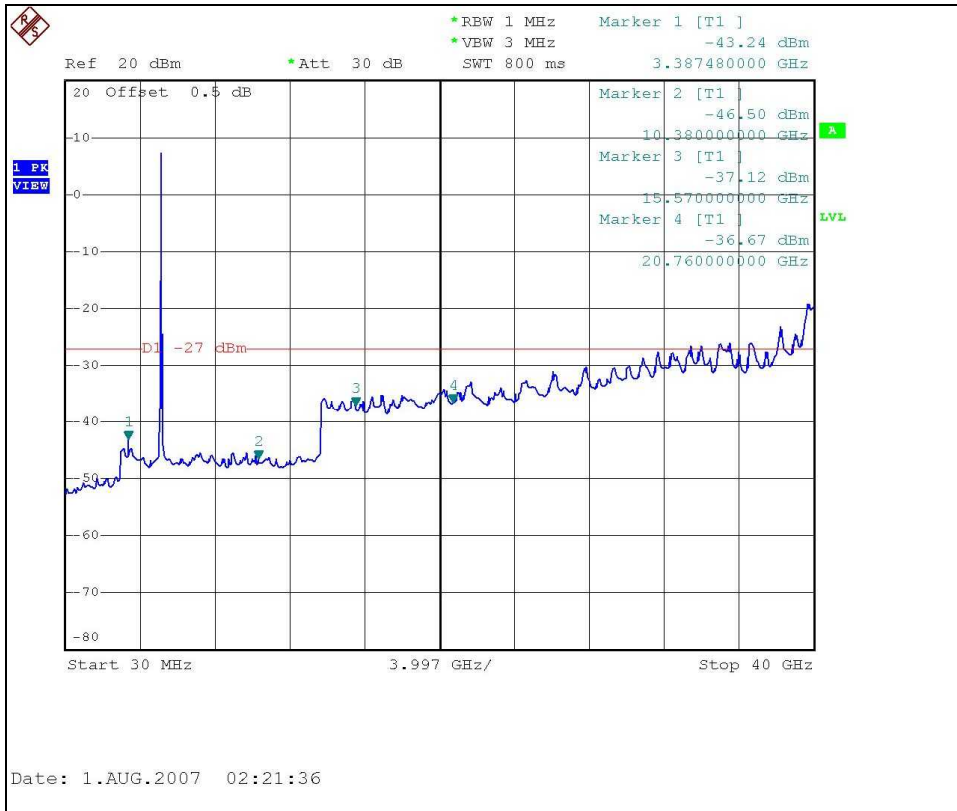


CH3

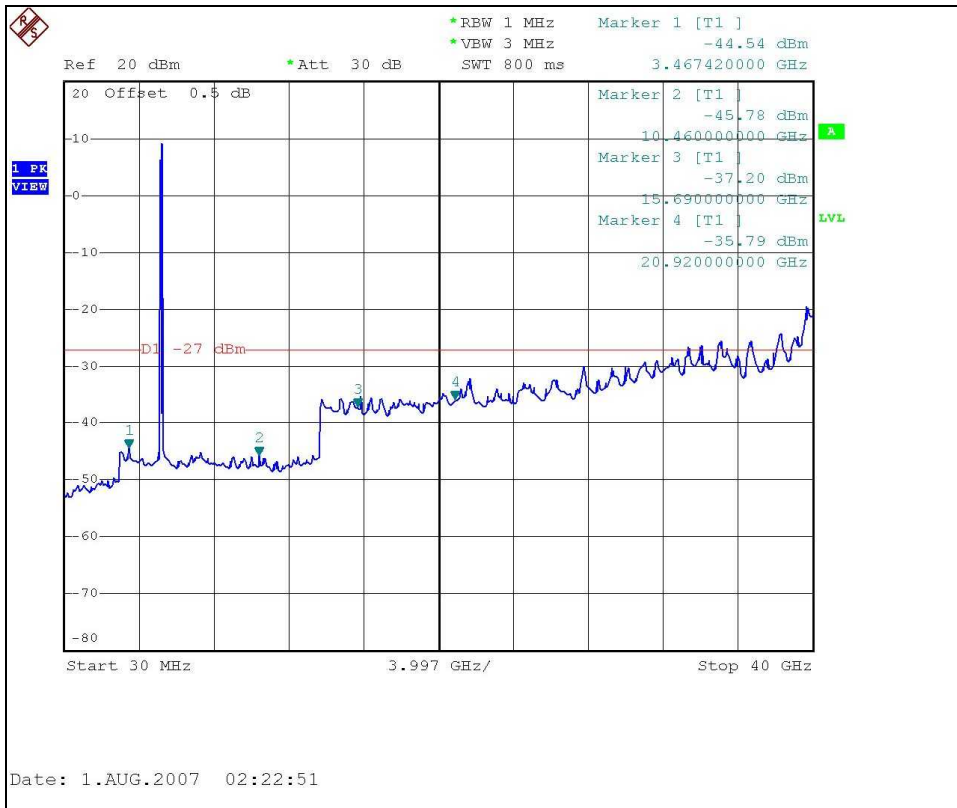


For chain (1):

CH1



CH3

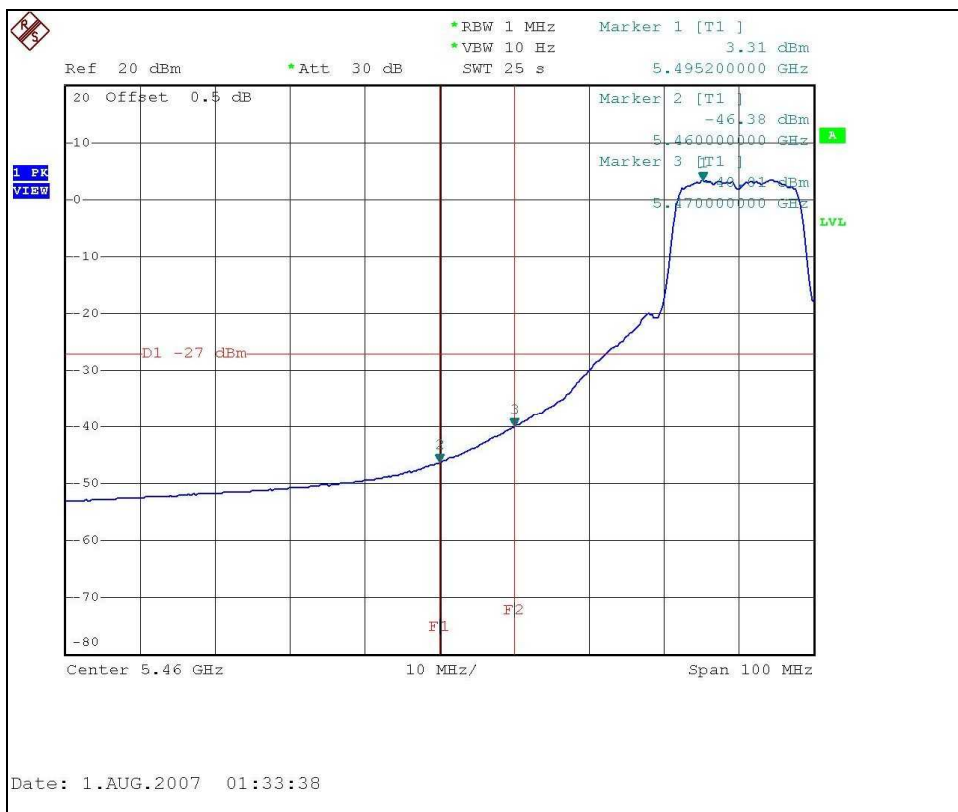
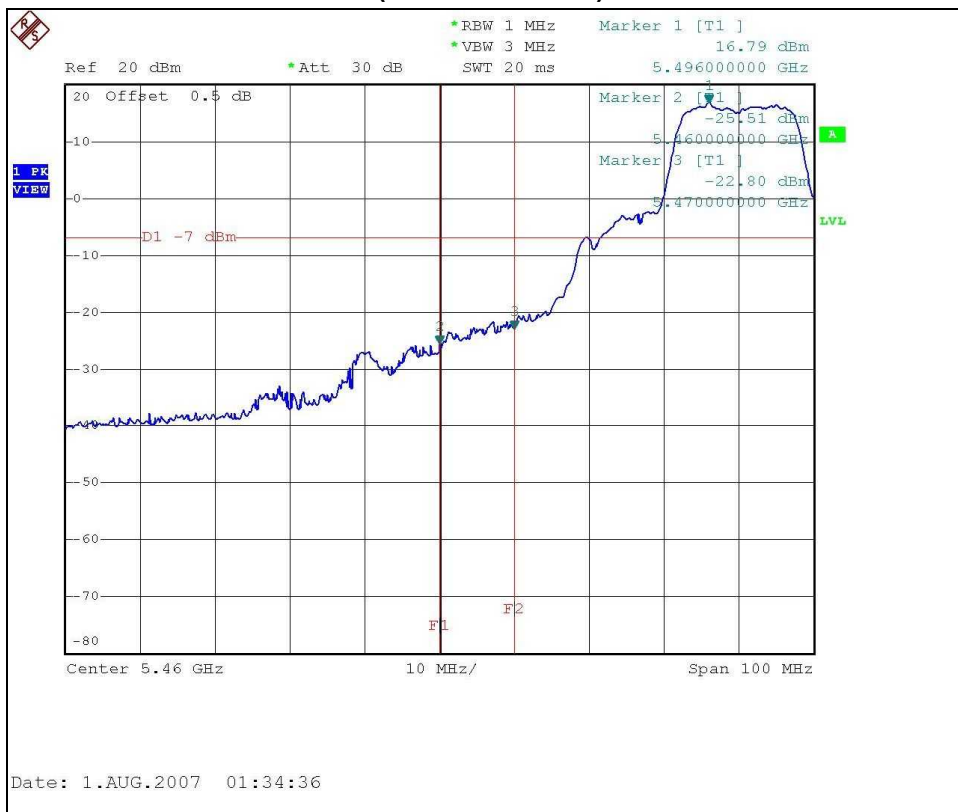




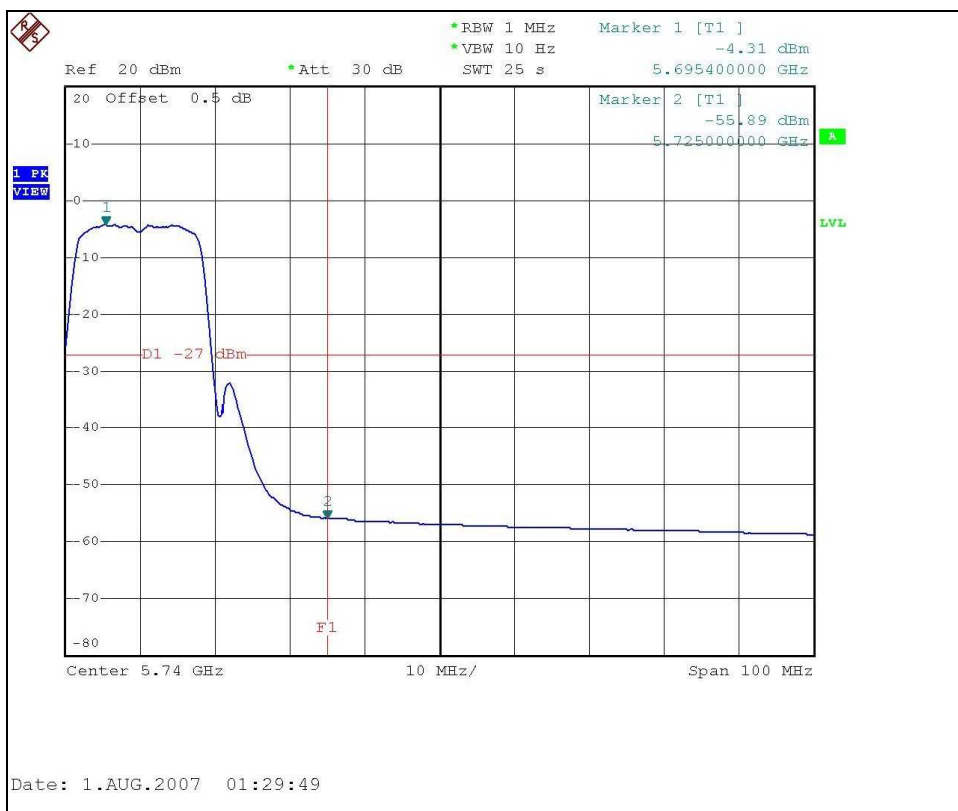
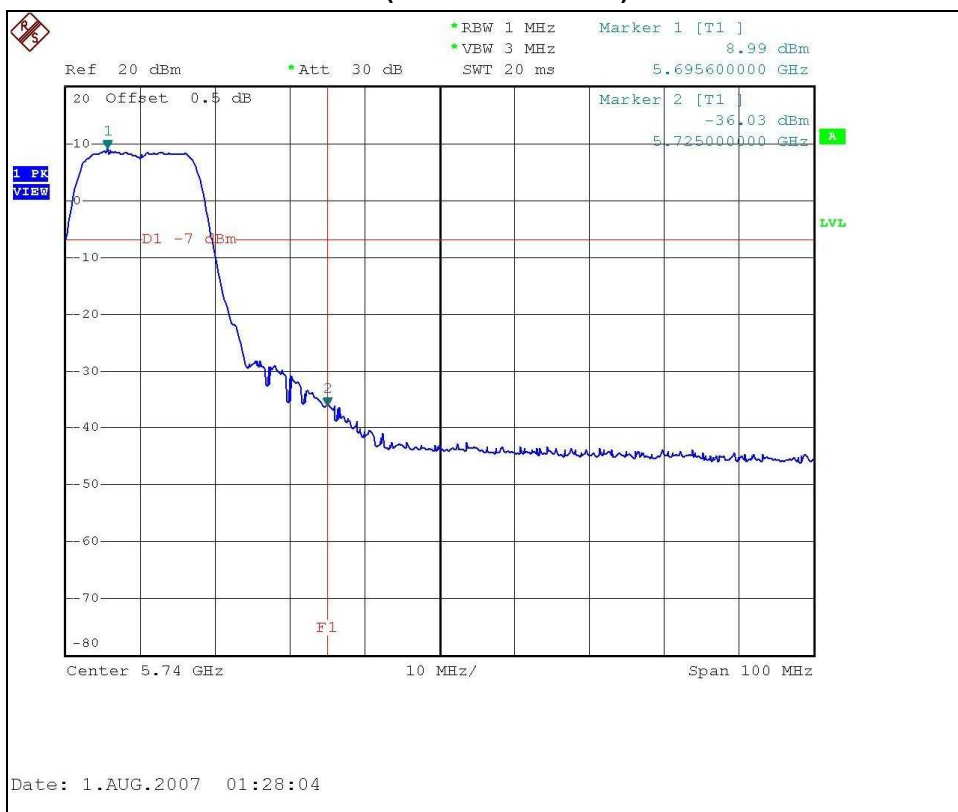
For signals in the restricted bands above and below the 5.47 to 5.725GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak field strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

The spectrum plots (Peak RBW=1MHz, VBW=3MHz; Average RBW=1MHz, VBW=10Hz) are attached on the following pages.

802.11a OFDM modulation(CH 9: 5500MHz)

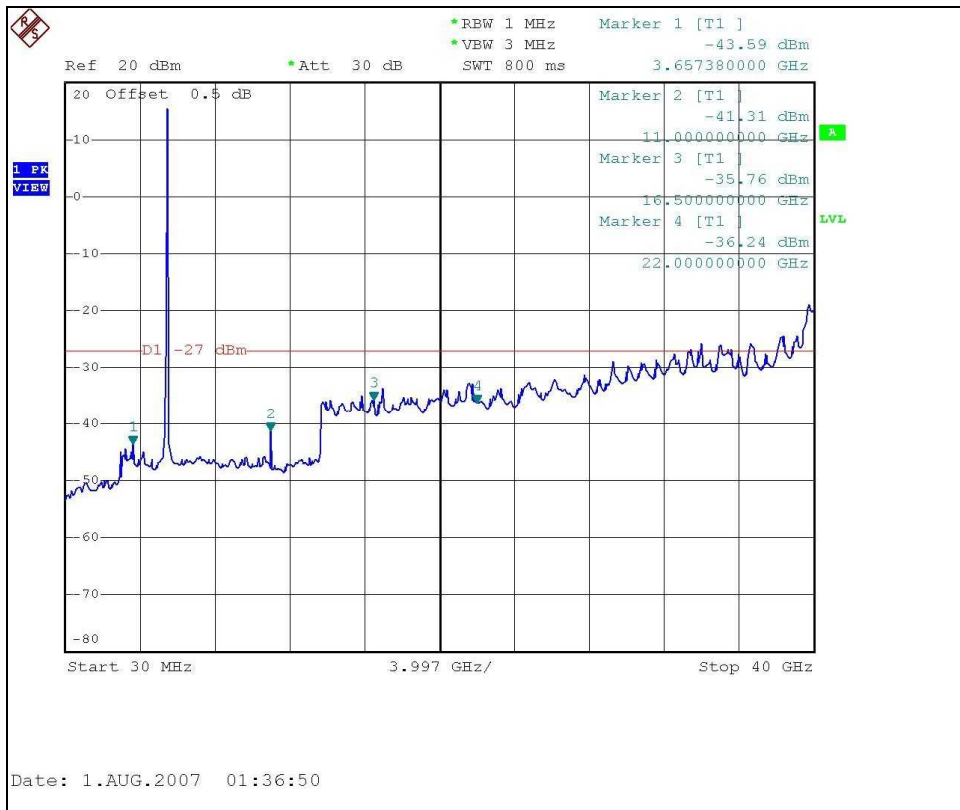


802.11a OFDM modulation (CH 19: 5700MHz)

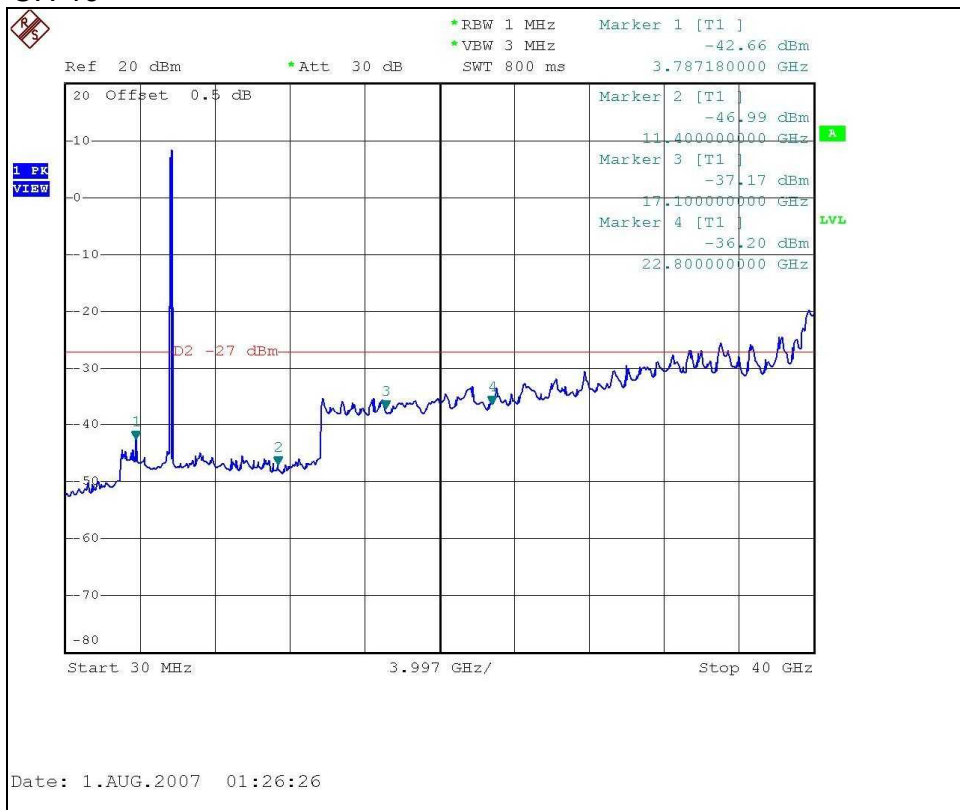


802.11a 10th conducted Harmonic

CH 9



CH 19



4.8 ANTENNA REQUIREMENT

4.8.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.407(a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.8.2 ANTENNA CONNECTED CONSTRUCTION

There are two antennas provided to this EUT, please refer to the following table:

No.	Antenna Type	For 5GHz / Gain (dBi)	Antenna Connector
1	Chip	1	NA
2	Chip	1	NA



5. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025:

USA	FCC, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	TAF, BSMI, NCC
Netherlands	Telefication
Singapore	PSB , GOST-ASIA(MOU)
Russia	CERTIS(MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site:

www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also



6. APPENDIX-A- MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.