DAT-P-174/04-00

CNAS L0447

Registration No.910917

TEST REPORT

Report No.: SRMC2009-H024-E0018

Product Name: Broadband Wireless Desktop Terminal

Product Model: SkyWay-Mobile CPE

Applicant: Solectek Corporation

Manufacture: Solectek Corporation

Specification: FCC Part 27, Part 2

(October 1, 2008 edition)

FCC ID: KA370MOB2

The State Radio Monitoring Center

State Radio Spectrum Monitoring and Testing Center

No.80 Beilishi Road Xicheng District Beijing, China

Tel: 86-10-68009202 Fax: 86-10-68009205

CONTENTS

1. General information

1.1 Notes of the test report

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The test results relate only to individual items of the samples which have been tested.

1.2 Information about the testing laboratory

Company: The State Radio Monitoring Center
State Radio Spectrum Monitoring and Testing Center
Address: No.80 Beilishi Road, Xicheng District, Beijing China
City: Beijing
Country or Region: China
Contacted person: Wang Junfeng
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Email: Wangjf@srrc.org.cn

1.3 Applicant's details

Company: Solectek Corporation
Address: 6370 Nancy Ridge Drive, Suite 109, San Diego, CA 92121, USA
City: San Diego
Country or Region: USA
Grantee Code: KA3
Contacted person: David Gell
Tel: +1-858-450-1220-3020
Fax: +1-858-457-2681
Email: dgell@solectek.com

1.4 Manufacturer's details

Company: Solectek Corporation
Address: 6370 Nancy Ridge Drive, Suite 109, San Diego, CA 92121, USA
City: San Diego
Country or Region: USA
Grantee Code: KA3
Contacted person: David Gell
Tel: +1-858-450-1220-3020
Fax: +1-858-457-2681
Email: dgell@solectek.com

1.5 Application details

Date of reception of test sample: 20th July. 2008
Date of test: 20th July. 2008 to 5th Aug. 2008

1.6 Reference specification

FCC Part 27, Part 2 (October 1, 2008 edition)

1.7 Information of EUT

1.7.1 General information

Name of EUT	Broadband Wireless Desktop Terminal
FCC ID	KA370MOB2
Frequency Range	698MHz ~ 746MHz
Rated Output Power	21.71dBm (ERP)
Access Method	CS-OFDMA
Modulation Type	QPSK, 8PSK, 16QAM, 64QAM
Emission Designator	1M00W9W
Duplex Mode	TDD
Channel Bandwidth	1MHz
Antenna Type	External
Antenna Gain	2.5dBi
Power Supply	External power supply
Rated Power Supply Voltage	5V
Extreme Temperature	Lowest: 0°C Highest: +50°C
Extreme Voltage	Minimum: 4.25V Maximum: 5.75V
HW Version	CPE_M.PCB 72.20.00.00
SW Version	CPE.om.1.4.5.9

1.7.2 EUT details

Name	Model	Serial Number
Broadband Wireless Desktop Terminal	SkyWay-Mobile CPE	C5C0810011360A

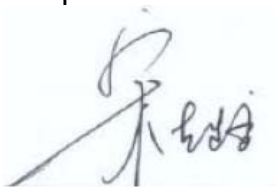
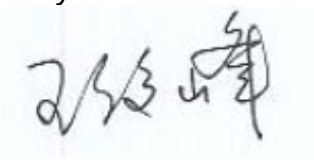
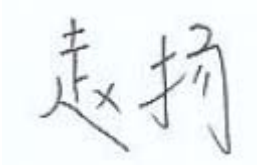
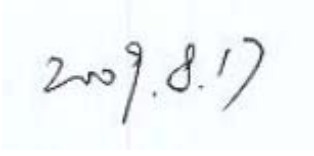
1.7.3 Auxiliary equipment details

Equipment	Power supply
Manufacturer	Shi Jiazhuang Guoyao Electronic
Model Number	UE15W1-050200SPAU
Serial Number	------

2. Test information

2.1 Summary of the test results

No.	Test case	FCC reference	Verdict
1	RF Power Output	2.1046/27.50(c)(9)	Pass
2	Occupied Bandwidth,	2.1049/27.53(f)	Pass
3	Conducted Spurious Emissions	2.1051/27.53(f)	Pass
4	Band Edges Compliance	2.1051/27.53(f)	Pass
5	Frequency Stability	2.1055/27.54	Pass
6	Radiated Spurious Emissions	2.1053/27.53(f)	Pass

This Test Report Is Issued by:	Checked by:
	
Tested by: 	Issued date: 

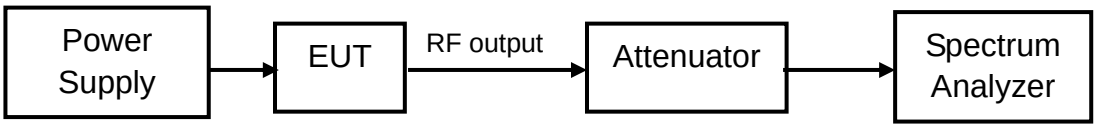
2.2 Test result

2.2.1 RF Power Output - FCC Part 2.1046/Part 27.50(C)(9)

Ambient condition:

Temperature	Relative humidity	Pressure
24°C	45%	101.5kPa

Test Setup:



Test procedure:

The EUT was connected to a spectrum analyzer via the main RF connector, and through an appropriate attenuator. The EUT was controlled to transmit its maximum power. Then the maximum channel power of the EUT can be measured by the spectrum analyzer. The loss between the main RF connector of the EUT and the input port of the spectrum analyzer will be taken into consideration.
The measurement will be conducted at three channels, Bottom channel (699MHz), Middle channel (721MHz) and Top channel (745MHz)

Test result:
All test modes were considered for this test. All typical frequency points were considered for this test.

Test Mode	Transmitter Output Power Level(ERP) (dBm)		
	CH Bottom (699MHz)	CH Middle (721MHz)	CH Top (745MHz)
QPSK	18.91	20.53	21.38
8PSK	20.08	19.76	21.54
16QAM	18.26	21.07	21.71
64QAM	8.42	13.47	8.32
Limit	30W(44.8dBm)(ERP)		
Conclusion	Complies		

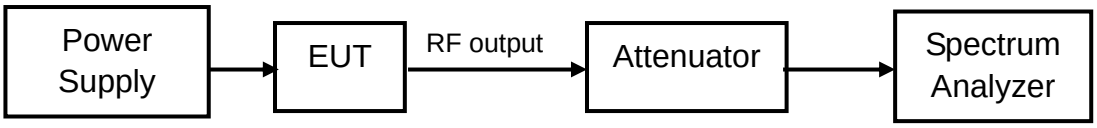
Note: P(ERP)=P(Channel)+Antenna Gain(dBi)-2.15

2.2.2 Occupied Bandwidth - FCC Part 2.1049/Part 27.53(f)

Ambient condition:

Temperature	Relative humidity	Pressure
21°C	44%	101.5kPa

Test Setup:



Test procedure:

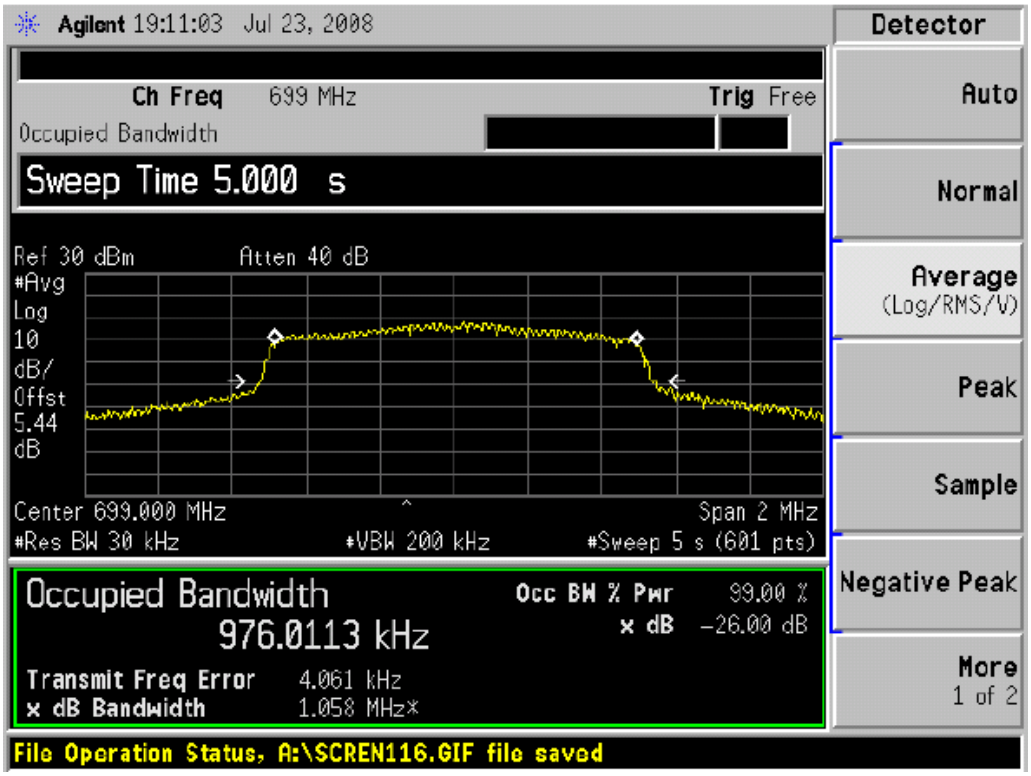
The EUT was connected to a spectrum analyzer via the main RF connector, and through an appropriate attenuator. The EUT was controlled to transmit its maximum power. Then the bandwidth of 99% power can be measured by the spectrum analyzer.
The measurement will be conducted at three channels, Bottom channel (699MHz), Middle channel (721MHz) and Top channel (745MHz)

Test result:

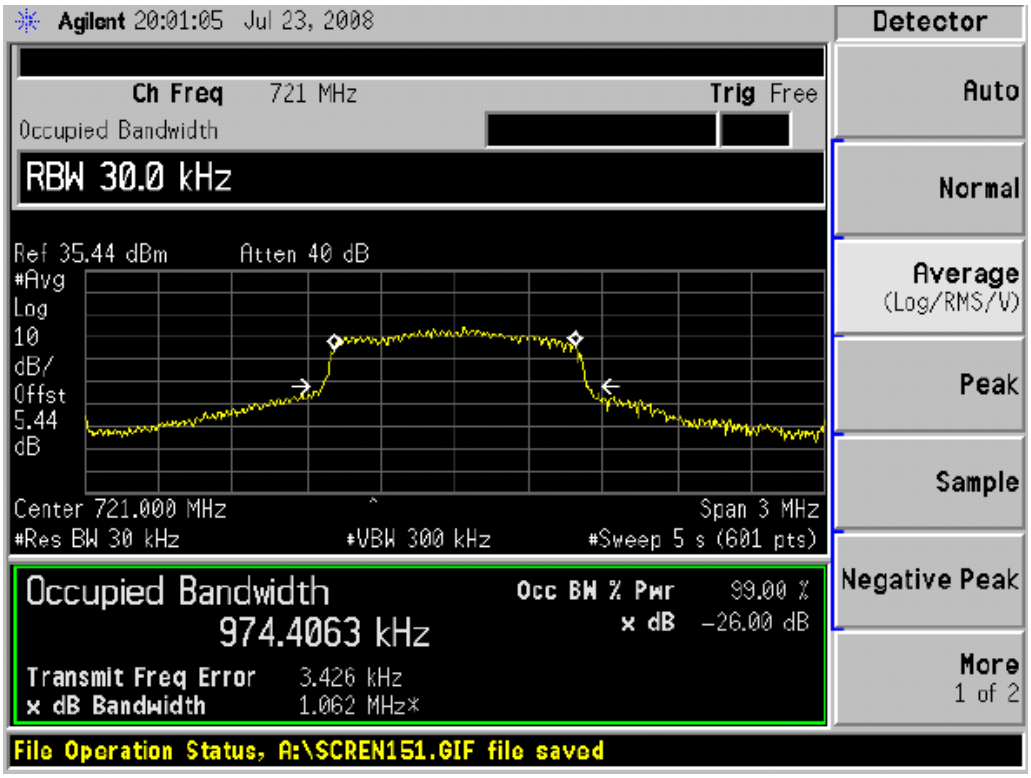
All test modes were considered for this test. All typical frequency points were considered for this test.

Test Mode	Occupied Bandwidth (99% Power Bandwidth) (kHz)		
	CH Bottom (699MHz)	CH Middle (721MHz)	CH Top (745MHz)
QPSK	976.01	974.41	977.23
8PSK	978.01	980.24	978.88
16QAM	974.12	984.74	980.64
64QAM	980.61	970.55	972.23
Limit	1MHz		
Conclusion	Complies		

Test plots:
Modulation Mode: QPSK



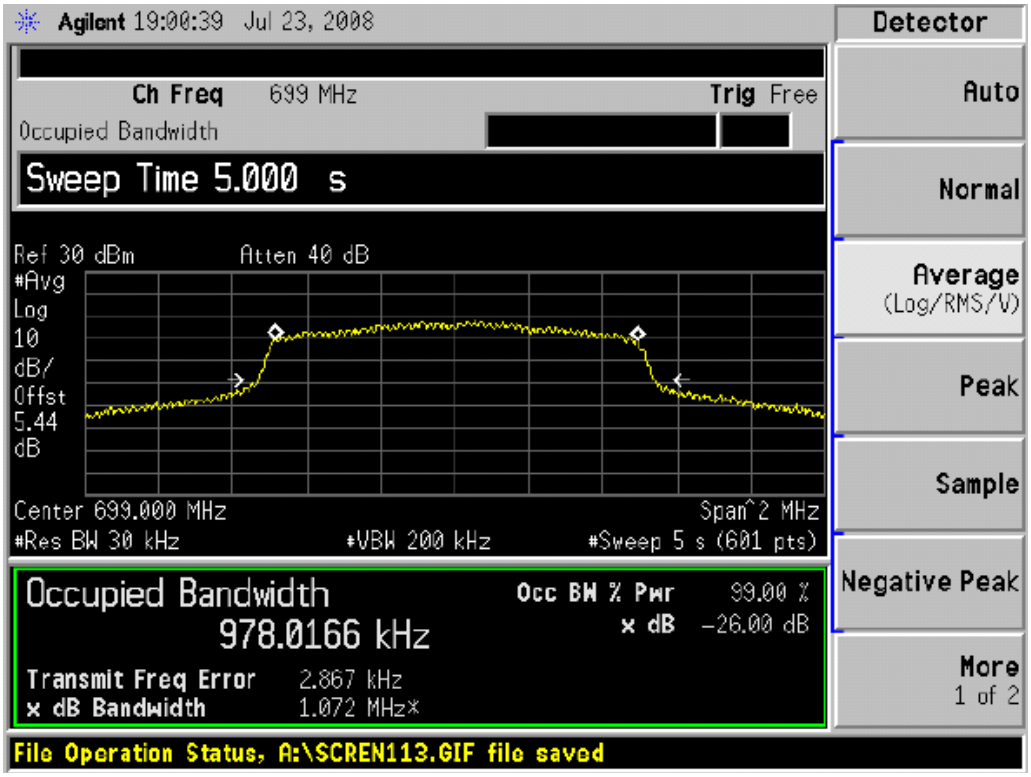
Occupied Bandwidth on CH Bottom



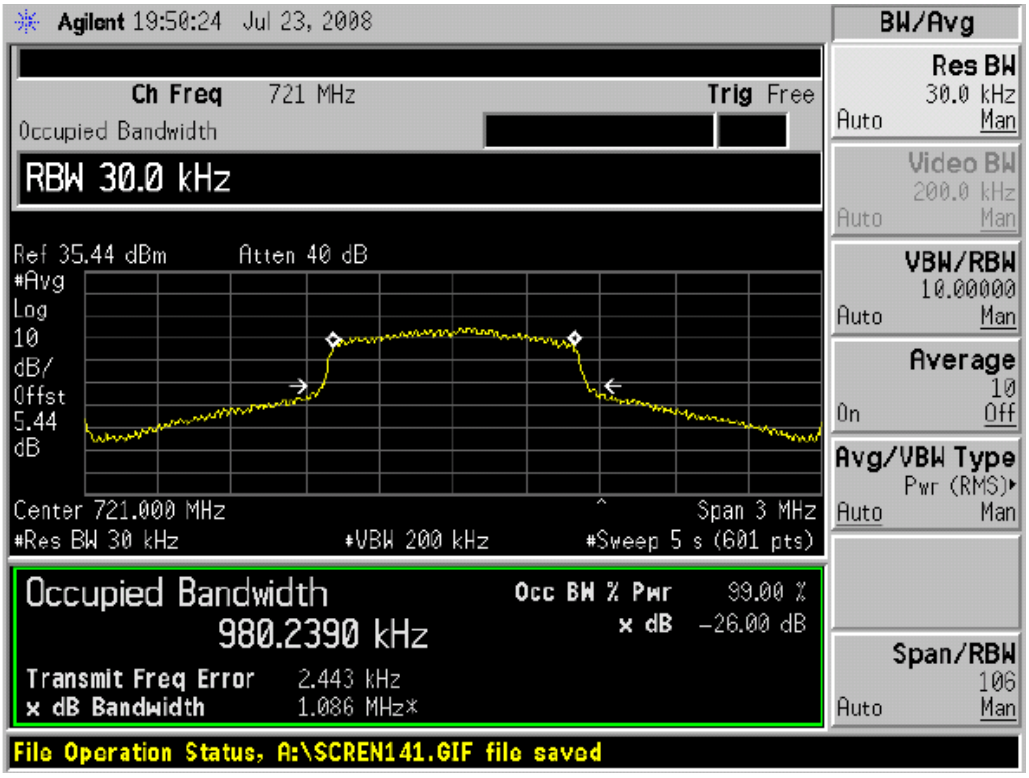
Occupied Bandwidth on CH Middle

Occupied Bandwidth on CH Top

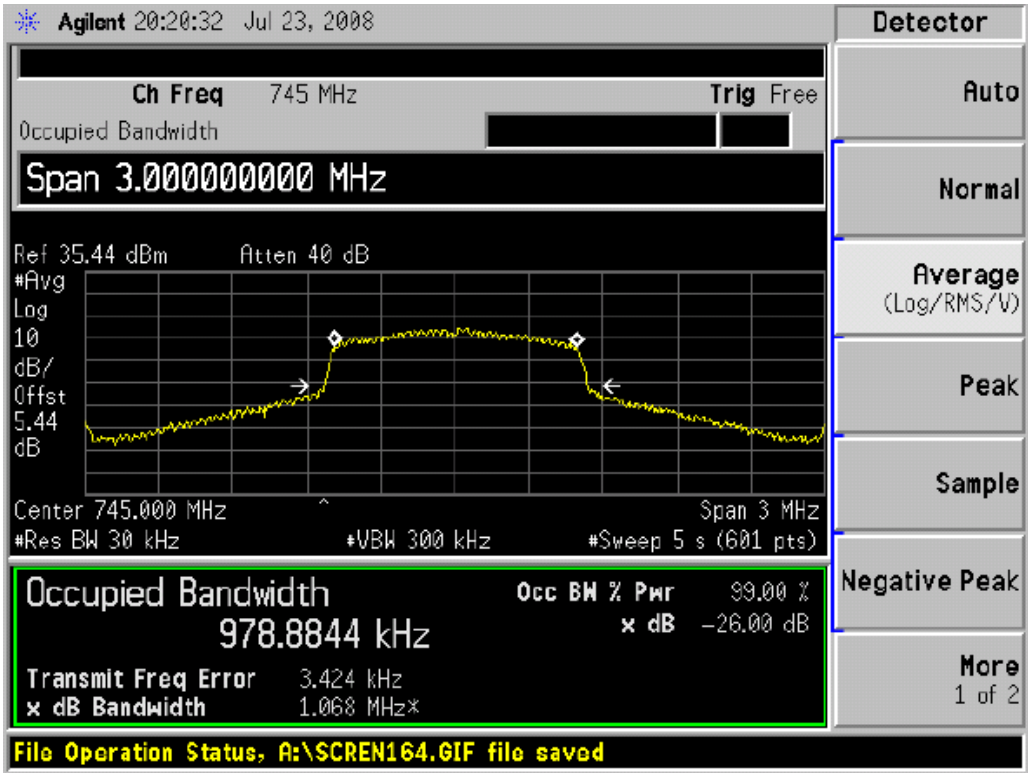
Modulation Mode: 8PSK



Occupied Bandwidth on CH Bottom

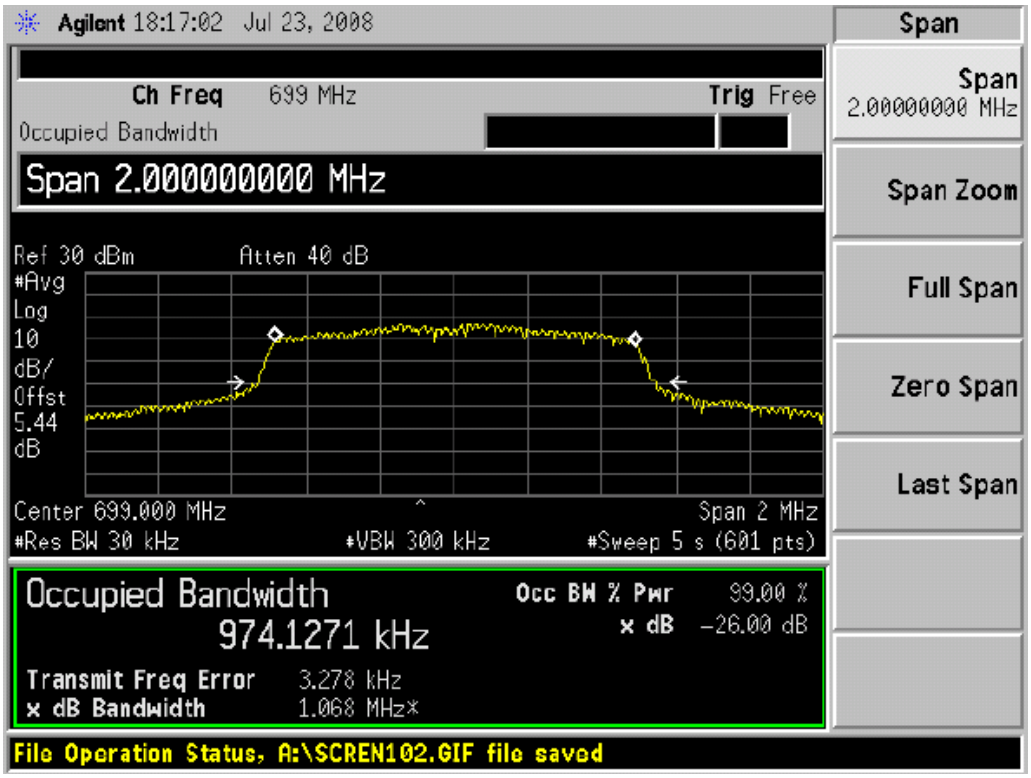


Occupied Bandwidth on CH Middle

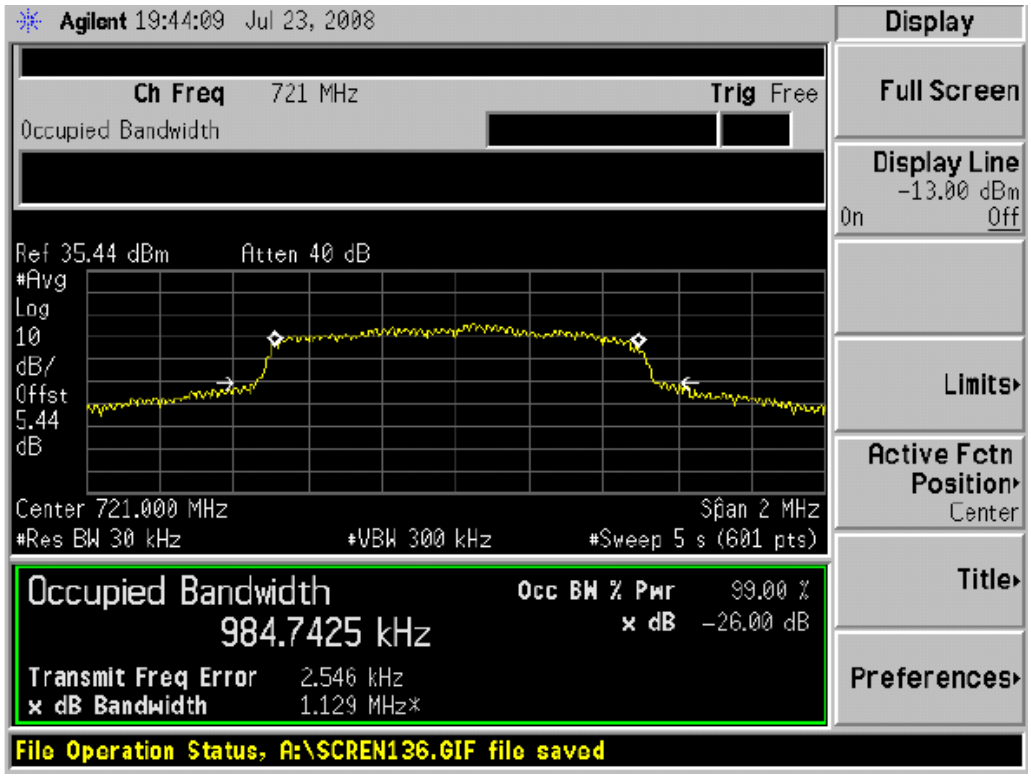


Occupied Bandwidth on CH Top

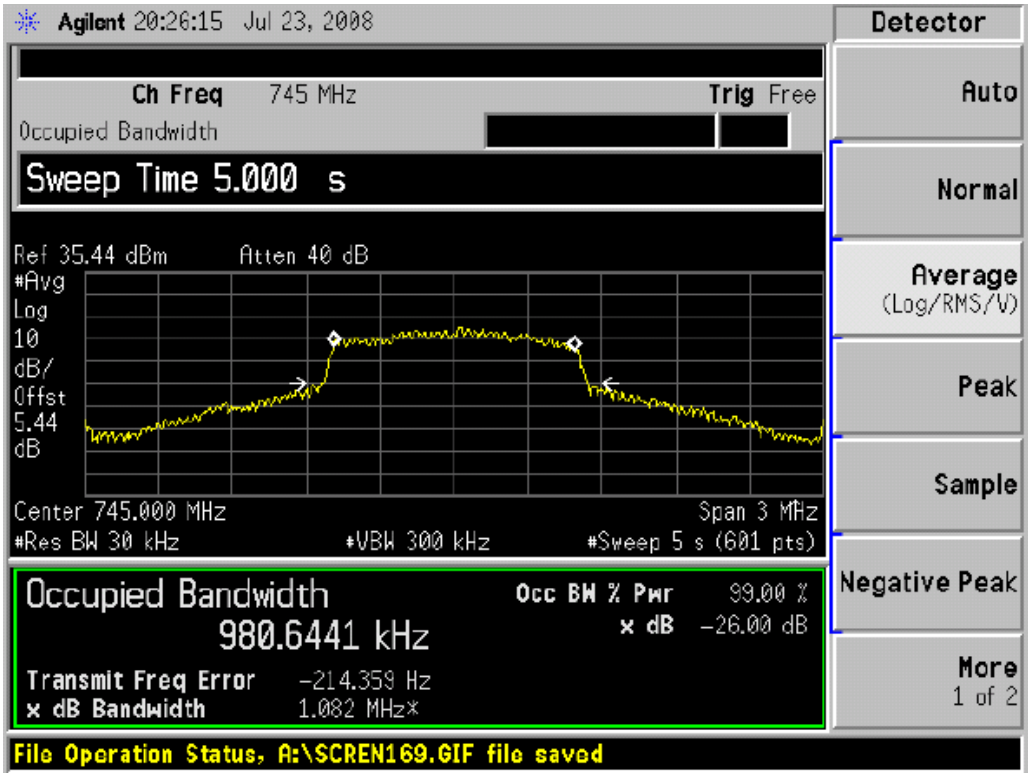
Modulation Mode: 16QAM



Occupied Bandwidth on CH Bottom

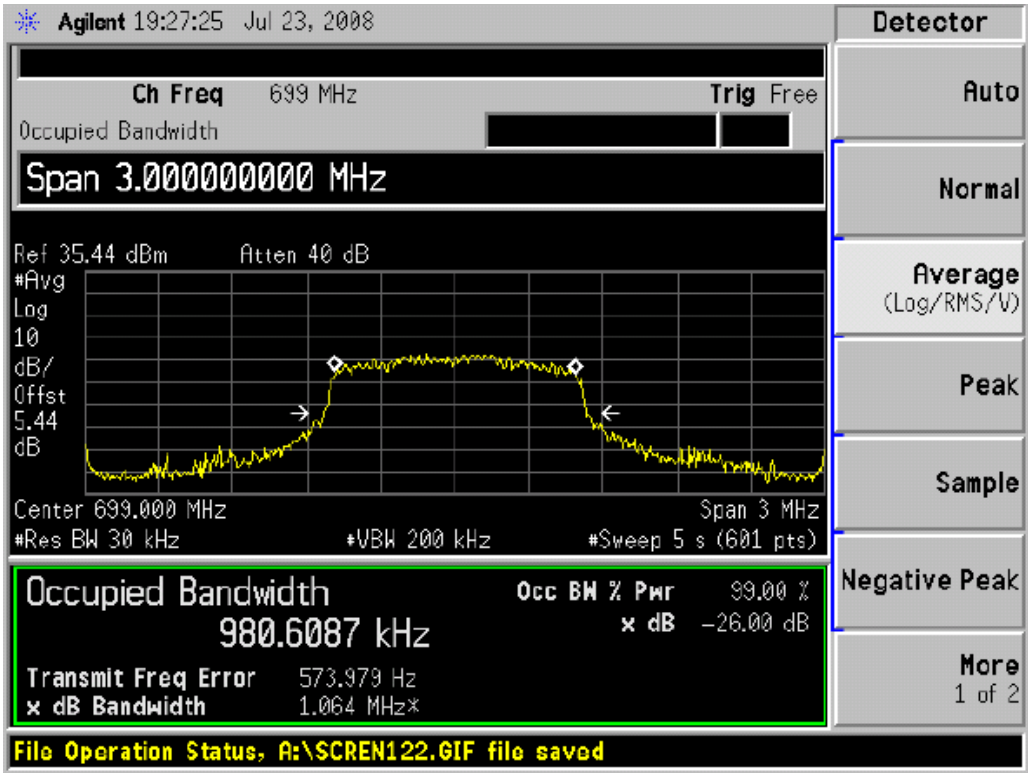


Occupied Bandwidth on CH Middle

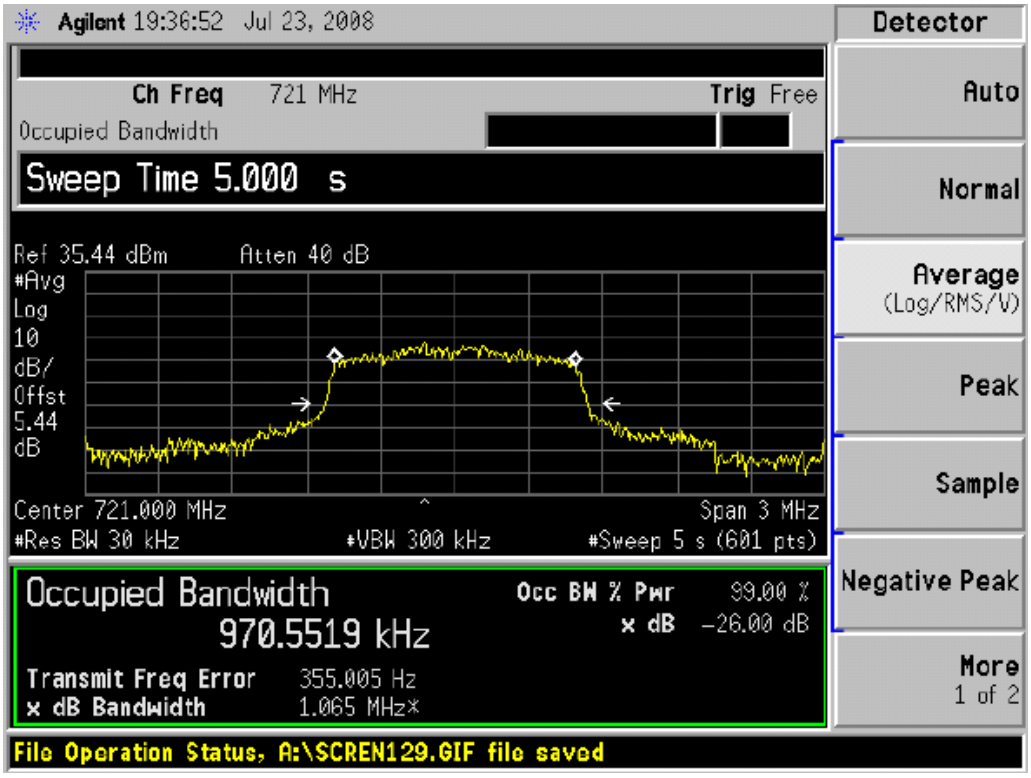


Occupied Bandwidth on CH Top

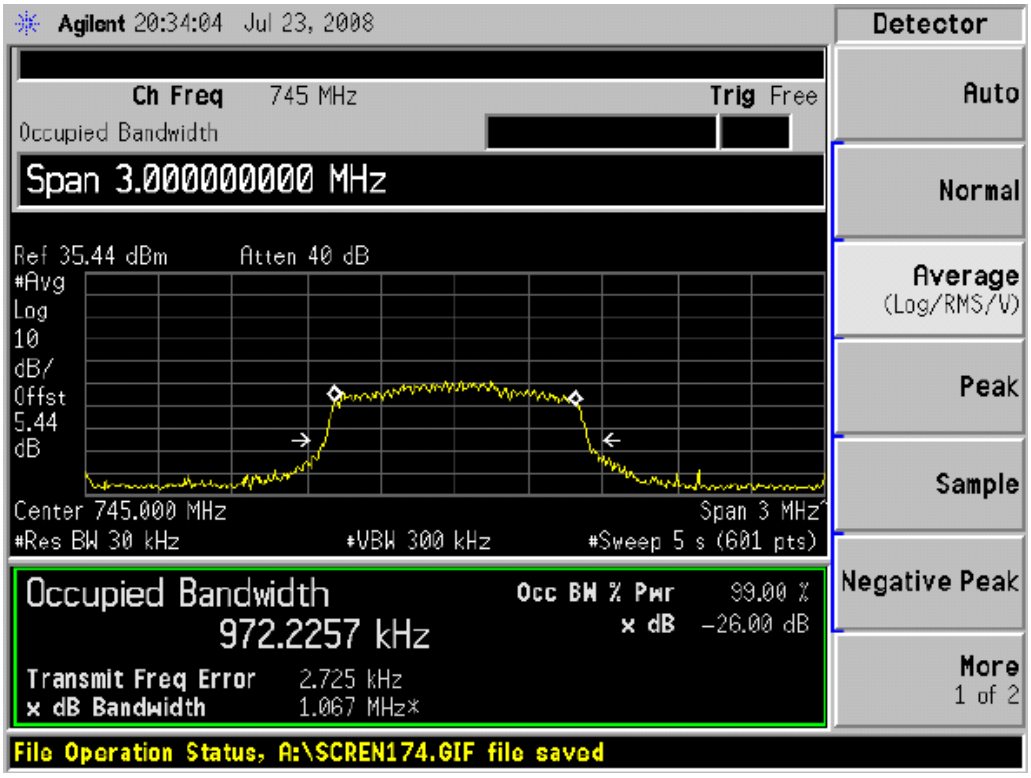
Modulation Mode: 64QAM



Occupied Bandwidth on CH Bottom



Occupied Bandwidth on CH Middle



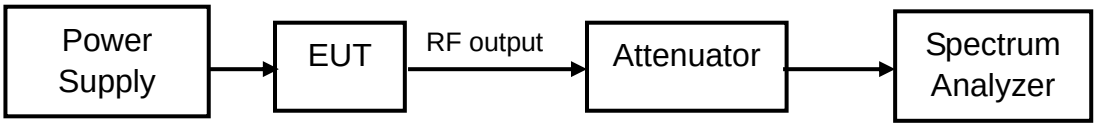
Occupied Bandwidth on CH Top

2.2.3 Conducted Spurious Emissions - FCC Part 2.1051/Part 27.53(f)

Ambient condition:

Temperature	Relative humidity	Pressure
22°C	43%	101.3kPa

Test Setup:



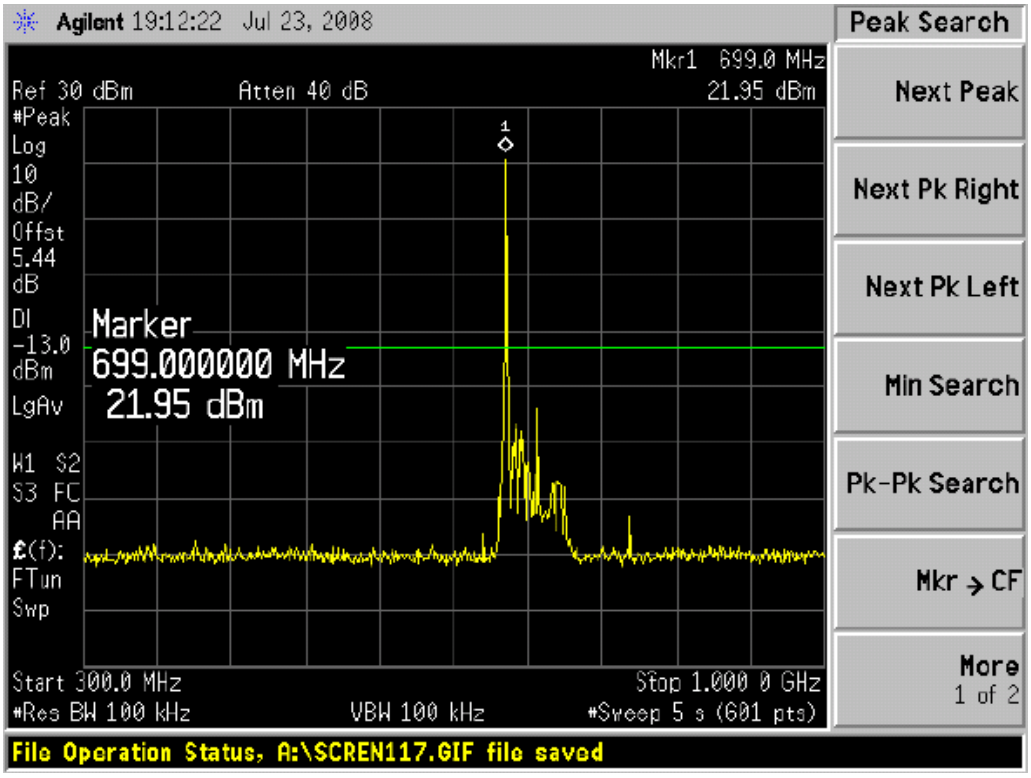
Test procedure:
The EUT was connected to a spectrum analyzer via the main RF connector, and through an appropriate attenuator. The EUT was controlled to transmit its maximum power. Then the maximum unwanted emissions of the EUT can be measured by the spectrum analyzer.
The measurement will be conducted at three channels, Bottom channel (699MHz), Middle channel (721MHz) and Top channel (745MHz)

Test result:
All test modes were considered for this test. All typical frequency points were considered for this test.

Test Mode	Frequency by plot range	Conducted Spurious Emissions		
		CH Bottom (699MHz)	CH Middle (721MHz)	CH Top (745MHz)
QPSK	30MHz ~ 1GHz	Refer to test plots	Refer to test plots	Refer to test plots
	1GHz ~ 5GHz			
	5GHz ~ 8GHz			
8PSK	30MHz ~ 1GHz	Refer to test plots	Refer to test plots	Refer to test plots
	1GHz ~ 5GHz			
	5GHz ~ 8GHz			
16QAM	30MHz ~ 1GHz	Refer to test plots	Refer to test plots	Refer to test plots
	1GHz ~ 5GHz			
	5GHz ~ 8GHz			
64QAM	30MHz ~ 1GHz	Refer to test plots	Refer to test plots	Refer to test plots
	1GHz ~ 5GHz			
	5GHz ~ 8GHz			
Limit		-13dBm		
Conclusion		Complies		

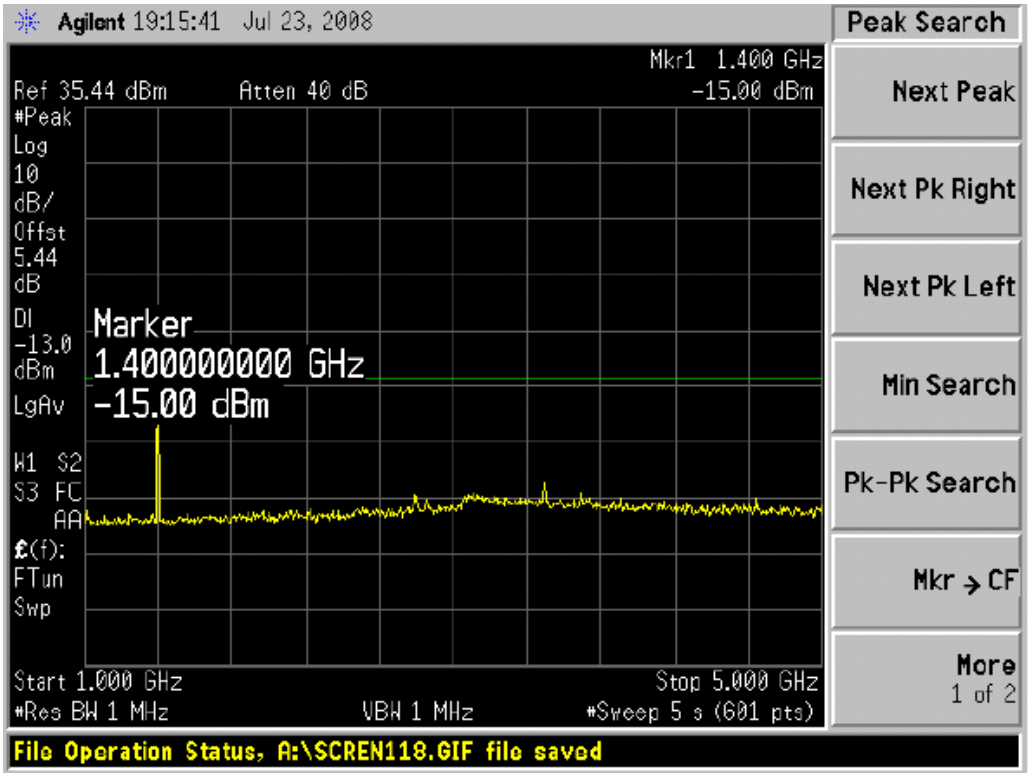
Test plots:

Modulation Mode: QPSK

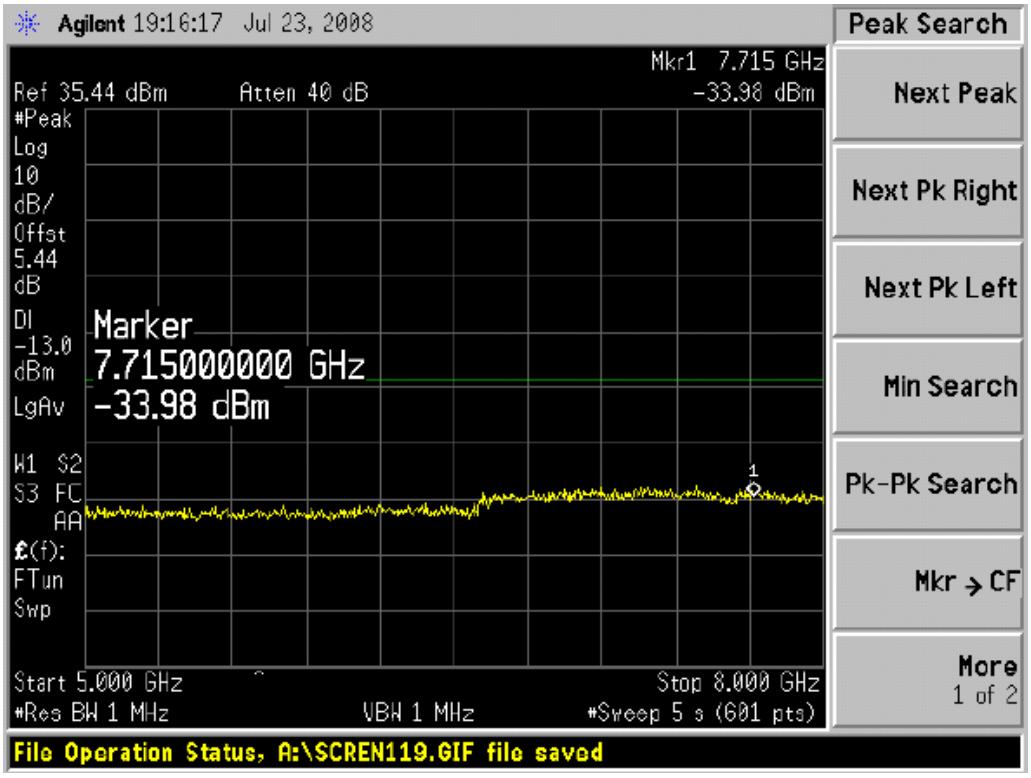


30MHz ~ 1GHz Conducted Spurious Emissions on CH Bottom

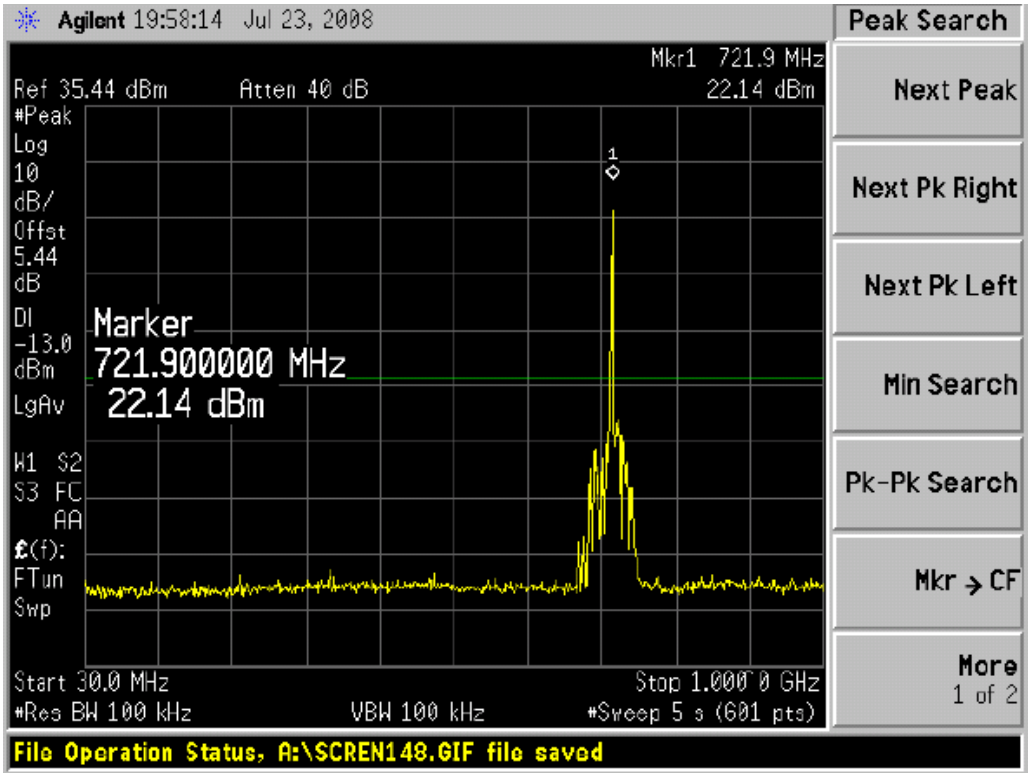
Note: The signal beyond the limit is carrier.



1GHz ~ 5GHz Conducted Spurious Emissions on CH Bottom

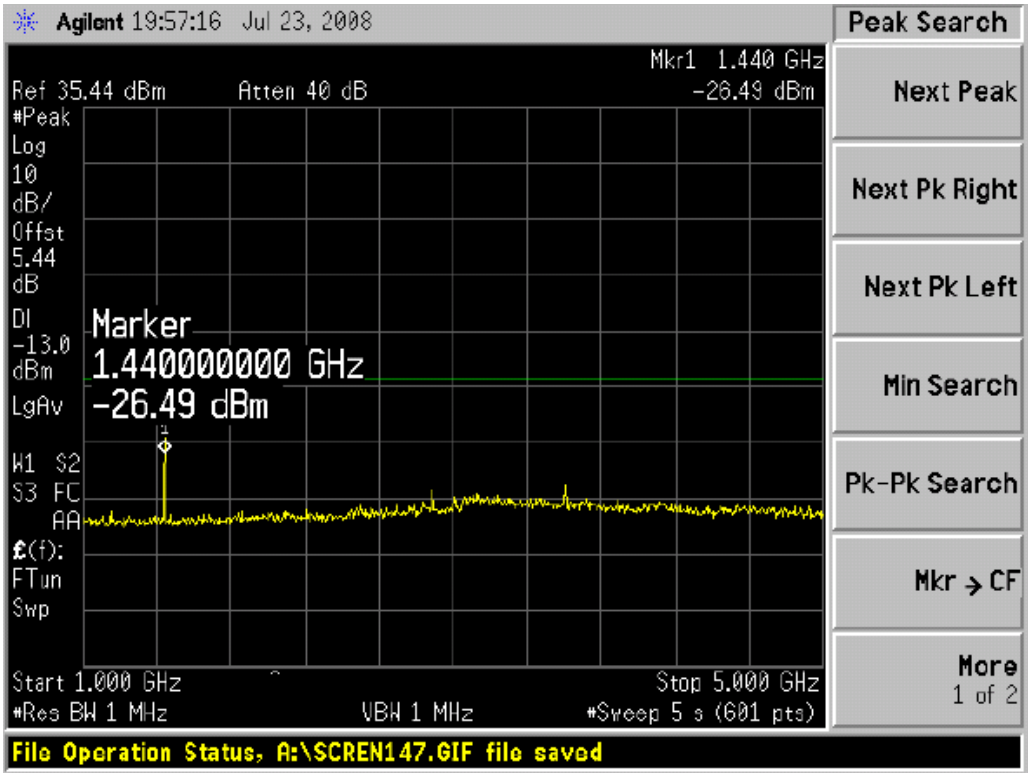


5GHz ~ 8GHz Conducted Spurious Emissions on CH Bottom

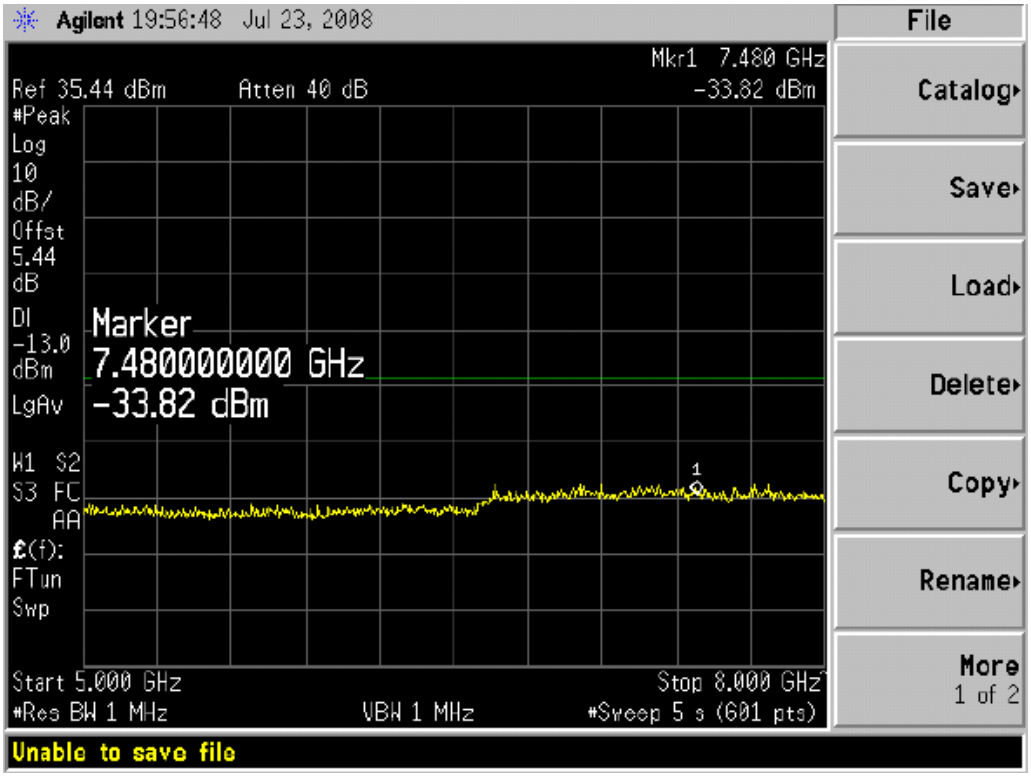


30MHz ~ 1GHz Conducted Spurious Emissions on CH Middle

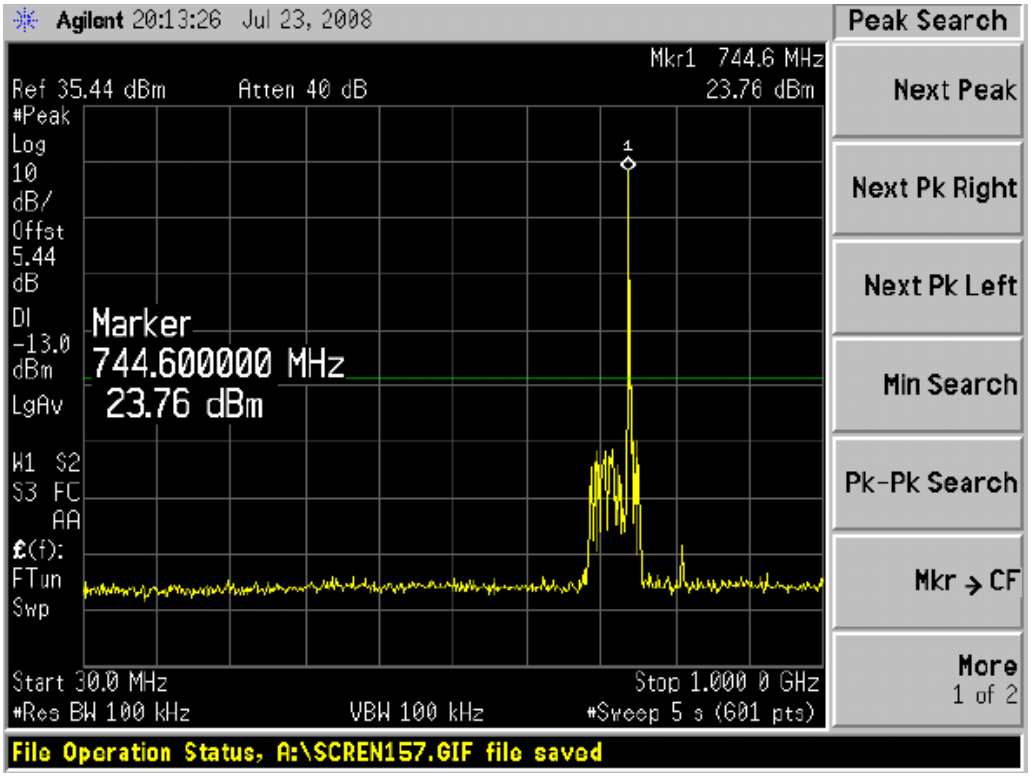
Note: The signal beyond the limit is carrier.



1GHz ~ 5GHz Conducted Spurious Emissions on CH Middle

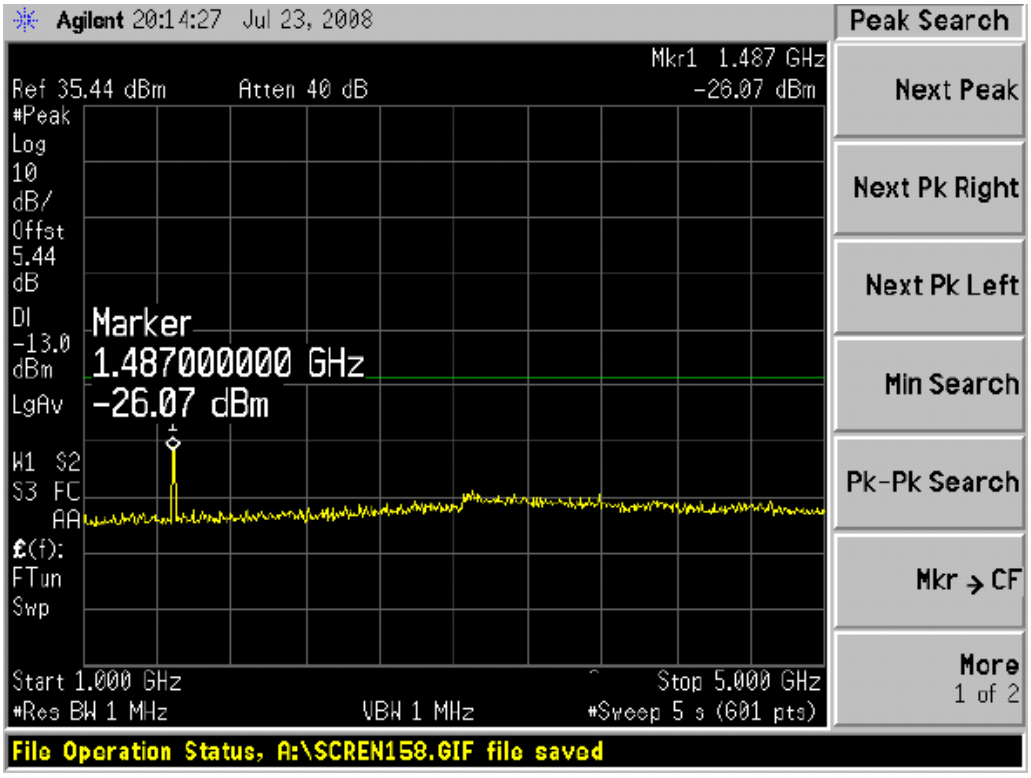


5GHz ~ 8GHz Conducted Spurious Emissions on CH Middle

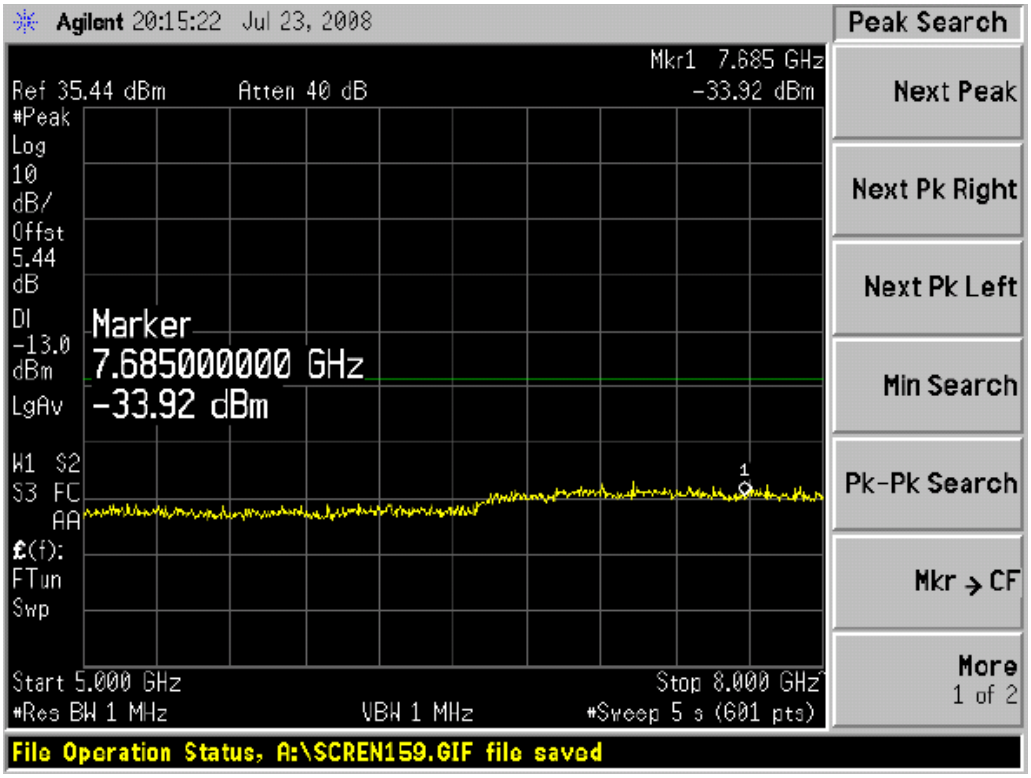


30MHz ~ 1GHz Conducted Spurious Emissions on CH Top

Note: The signal beyond the limit is carrier.

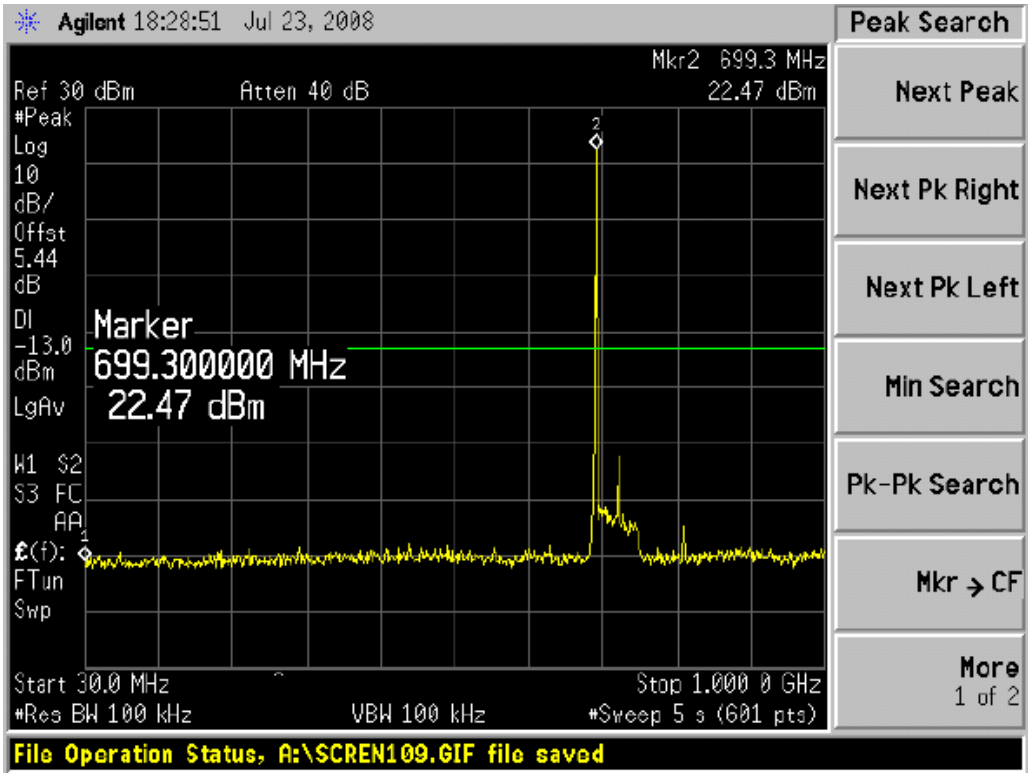


1GHz ~ 5GHz Conducted Spurious Emissions on CH Top



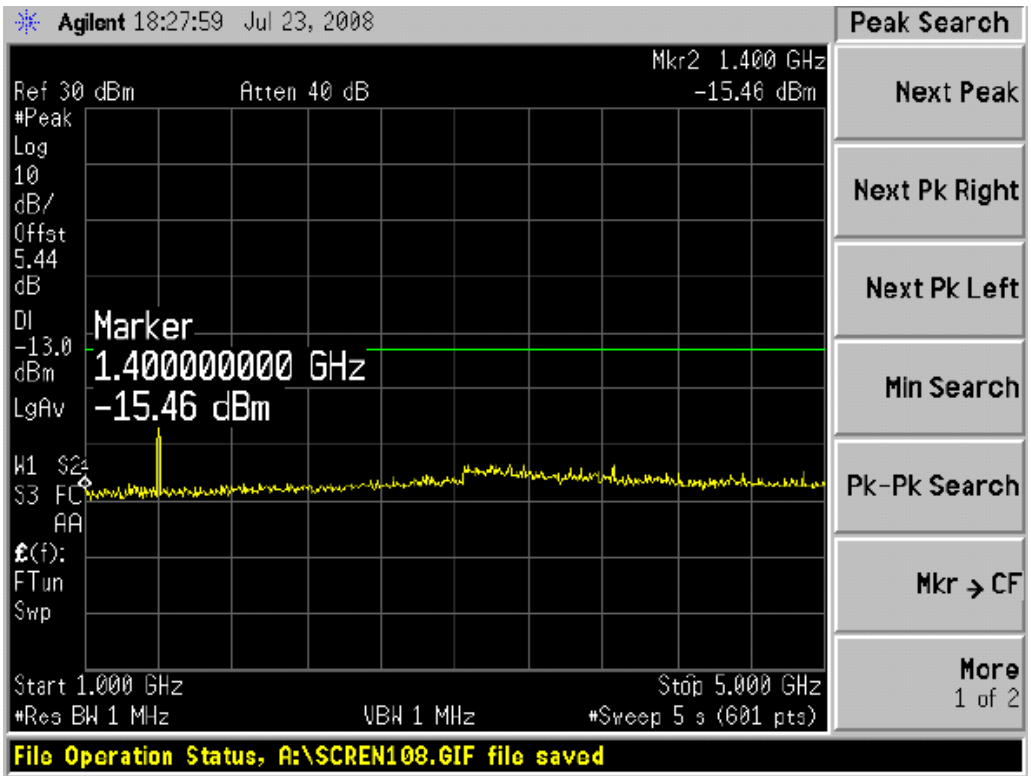
5GHz ~ 8GHz Conducted Spurious Emissions on CH Top

Modulation Mode: 8PSK

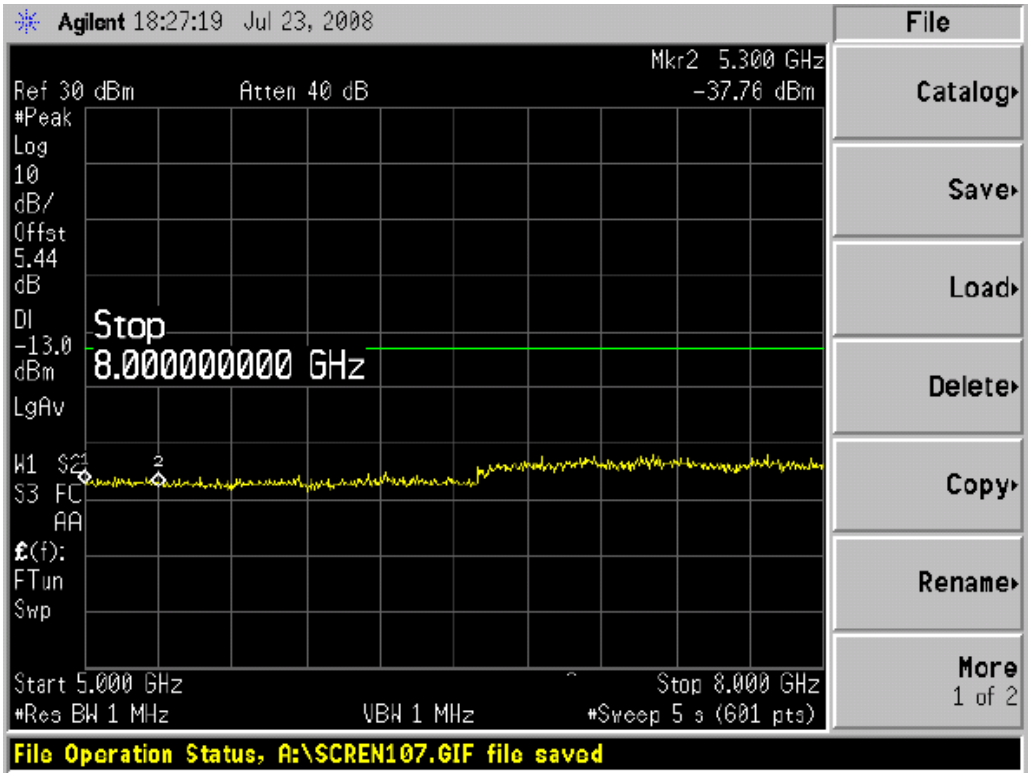


30MHz ~ 1GHz Conducted Spurious Emissions on CH Bottom

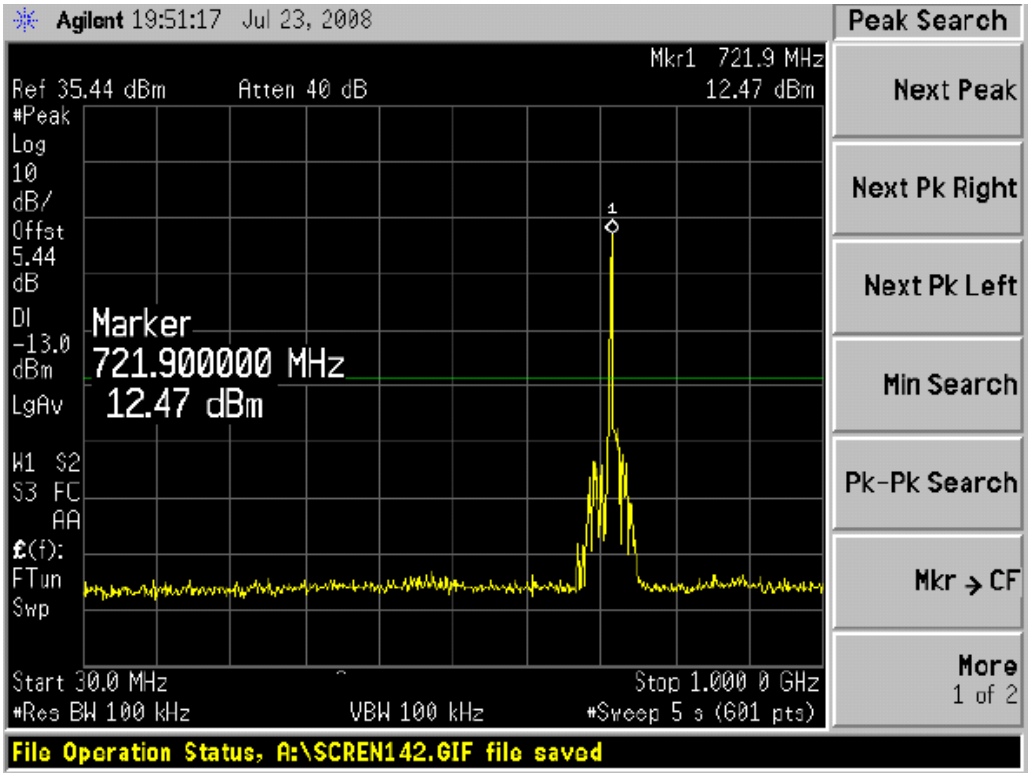
Note: The signal beyond the limit is carrier.



1GHz ~ 5GHz Conducted Spurious Emissions on CH Bottom

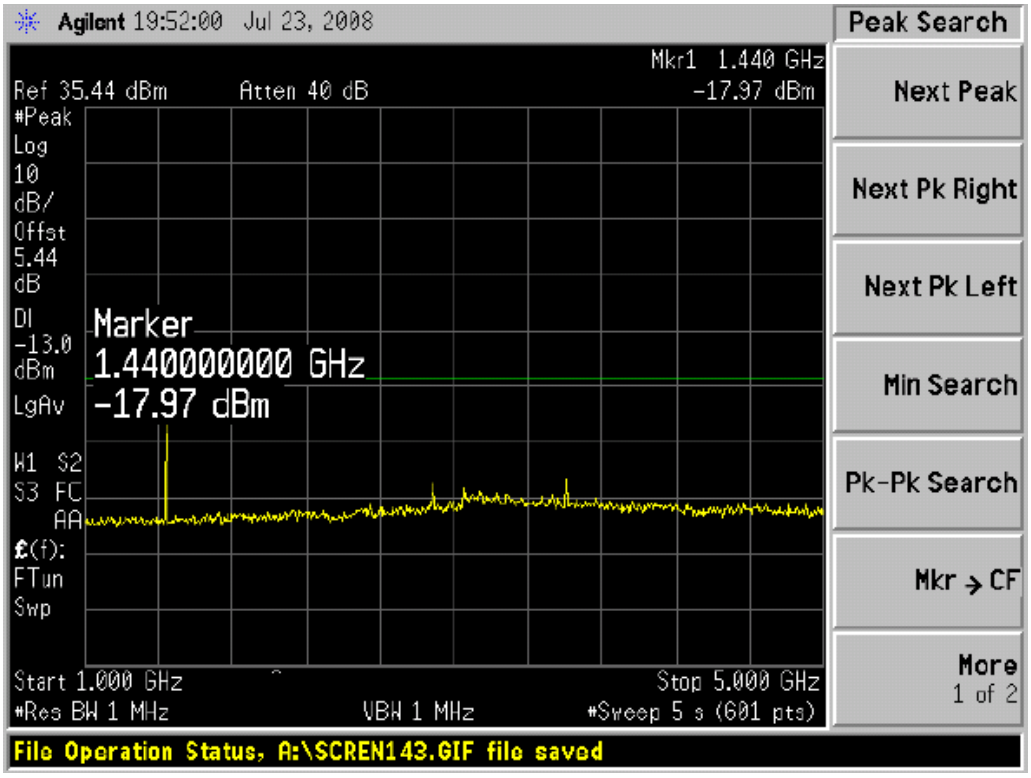


5GHz ~ 8GHz Conducted Spurious Emissions on CH Bottom

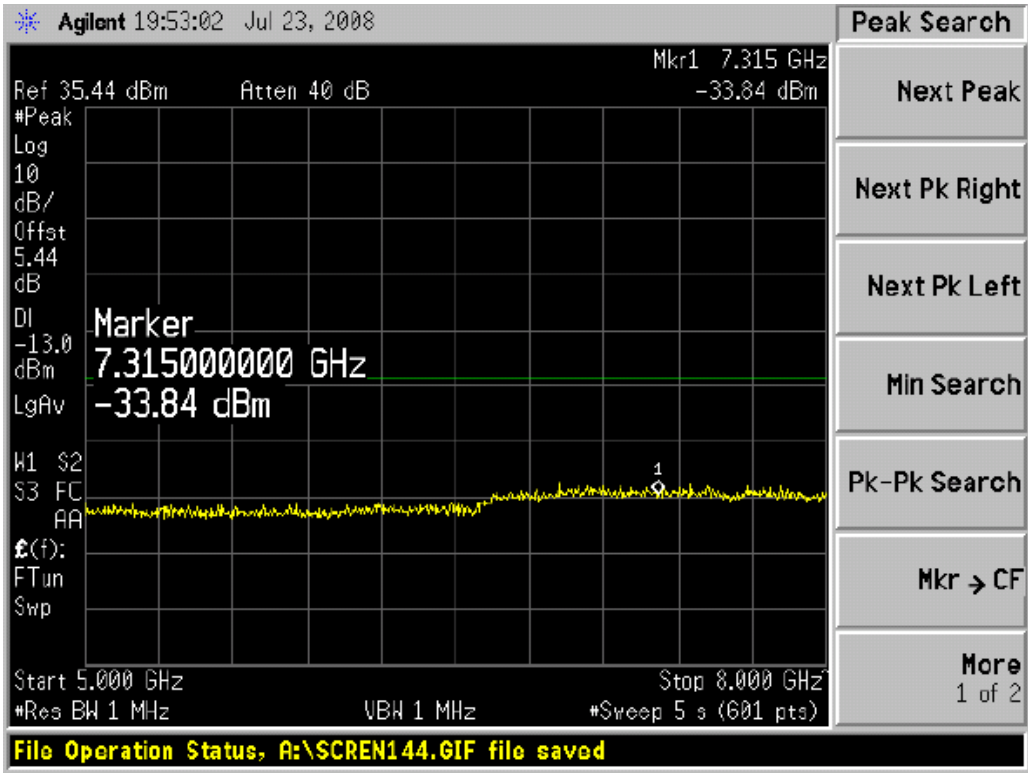


30MHz ~ 1GHz Conducted Spurious Emissions on CH Middle

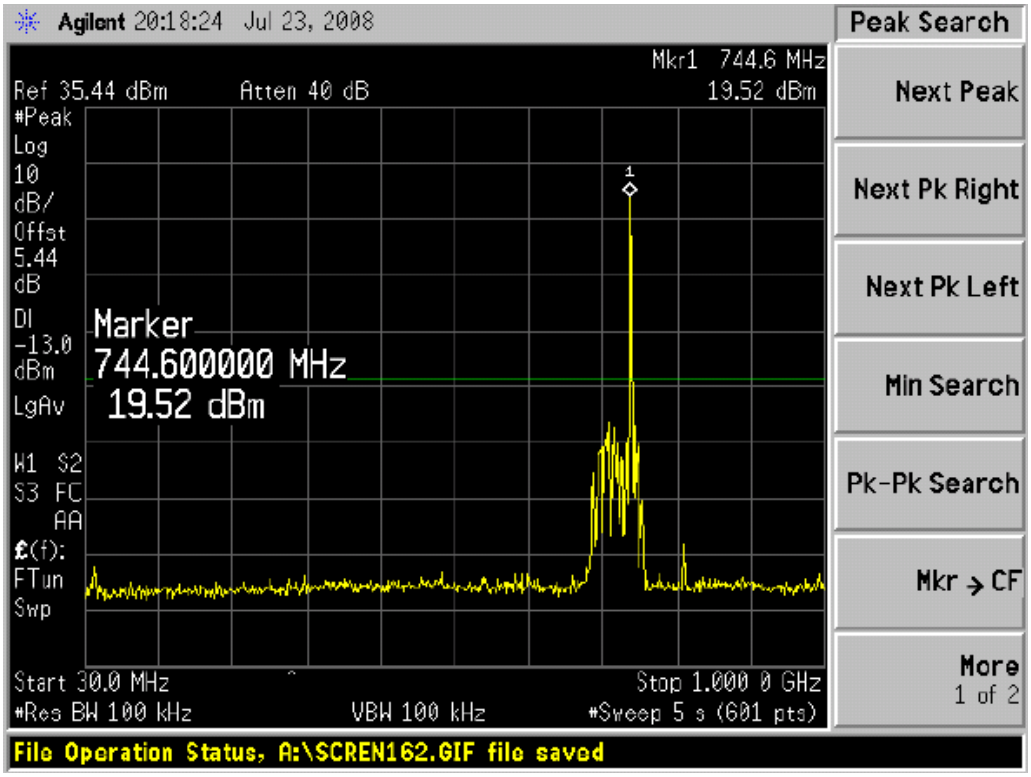
Note: The signal beyond the limit is carrier.



1GHz ~ 5GHz Conducted Spurious Emissions on CH Middle

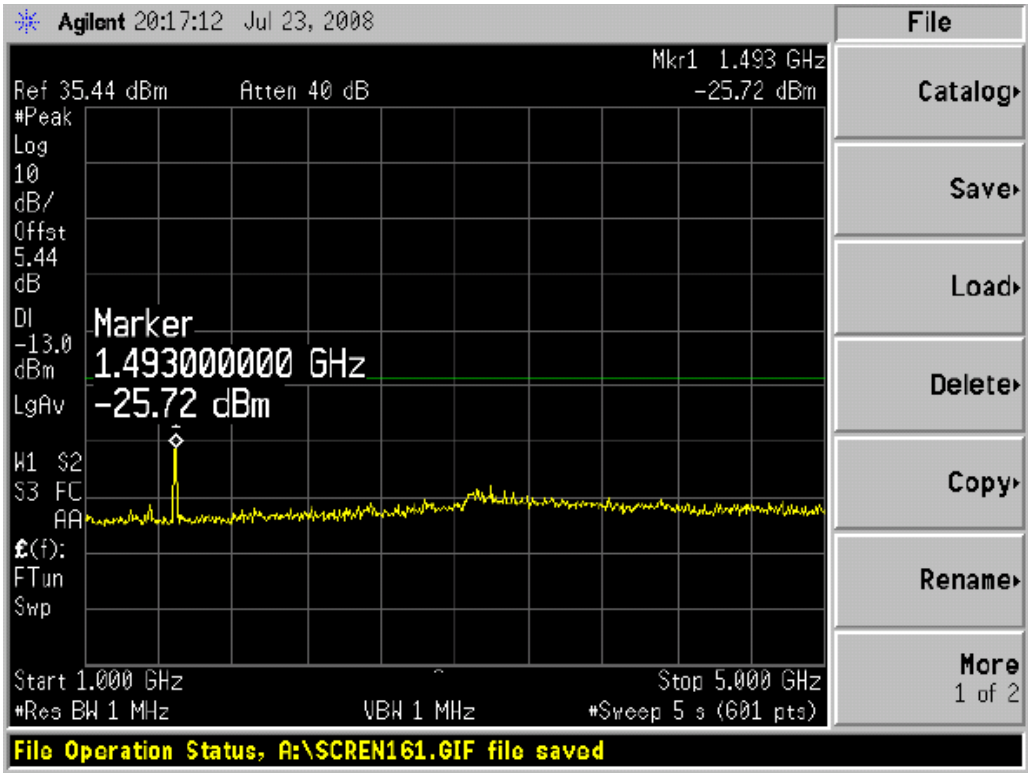


5GHz ~ 8GHz Conducted Spurious Emissions on CH Middle

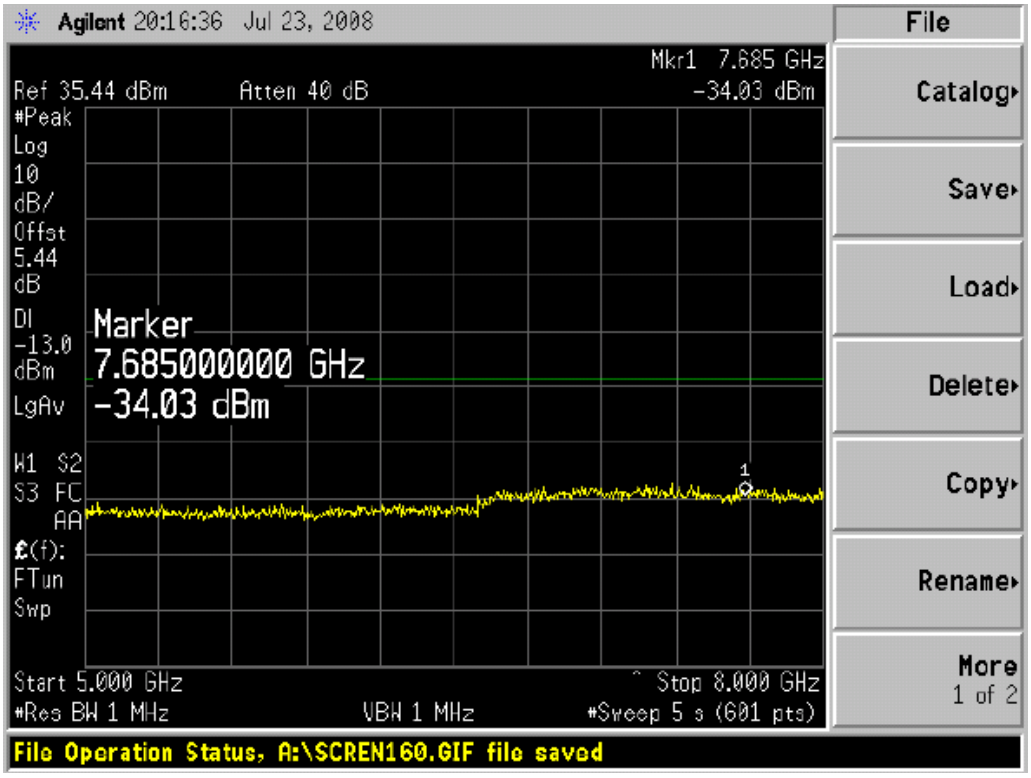


30MHz ~ 1GHz Conducted Spurious Emissions on CH Top

Note: The signal beyond the limit is carrier.

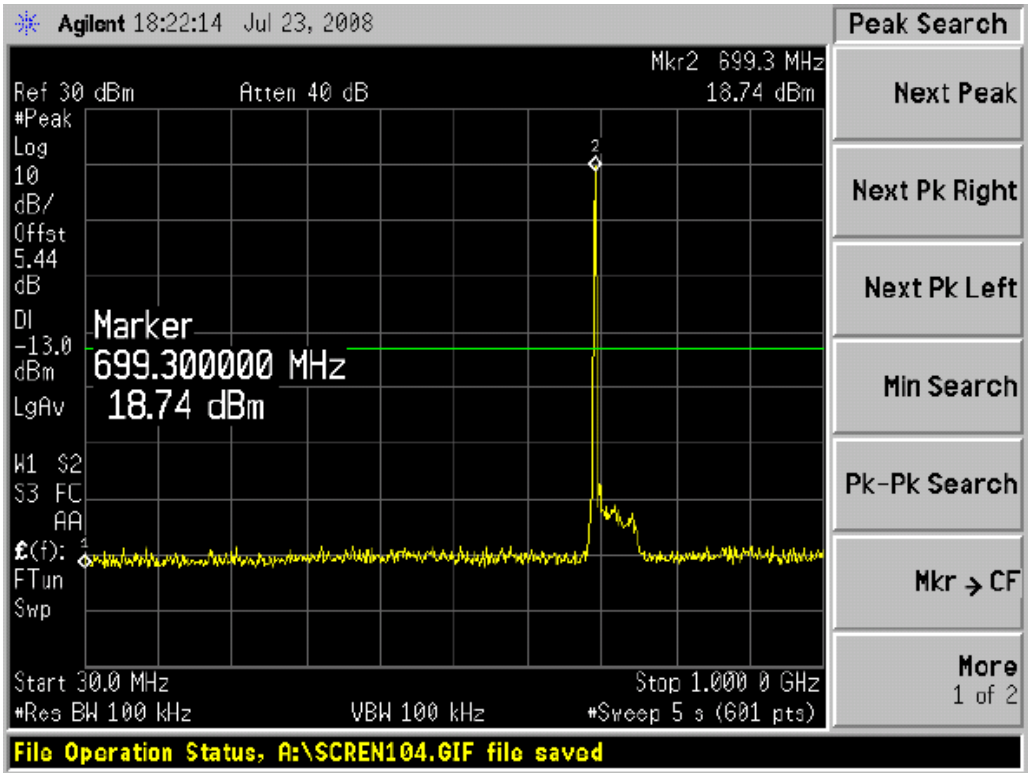


1GHz ~ 5GHz Conducted Spurious Emissions on CH Top



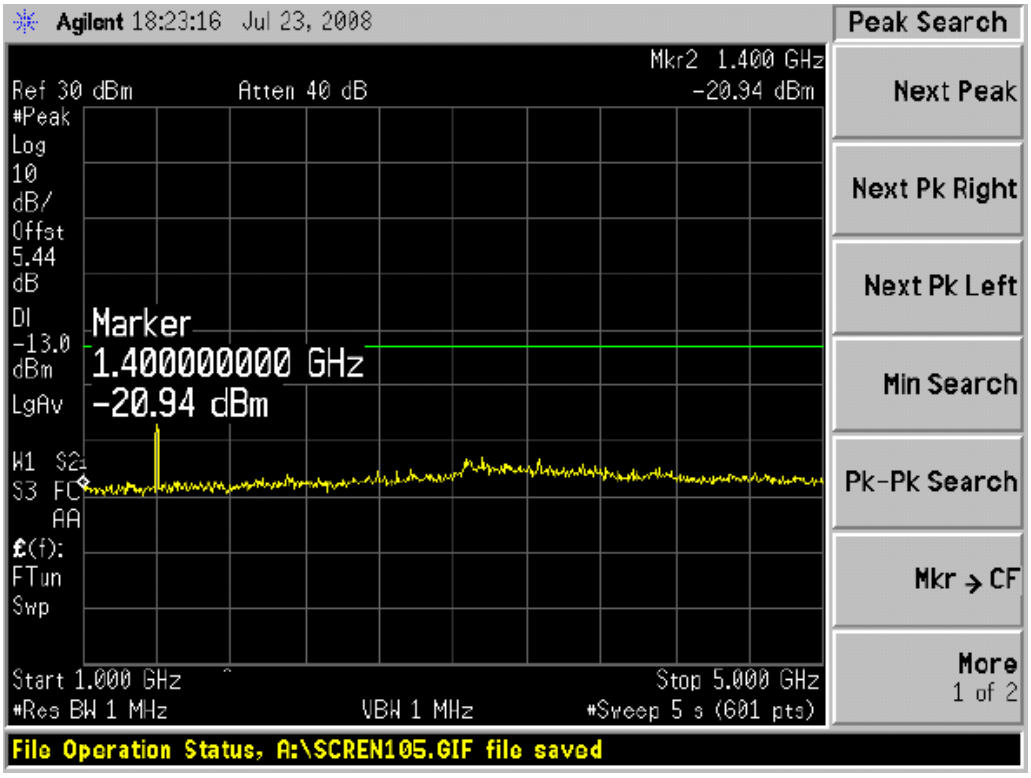
5GHz ~ 8GHz Conducted Spurious Emissions on CH Top

Modulation Mode: 16QAM

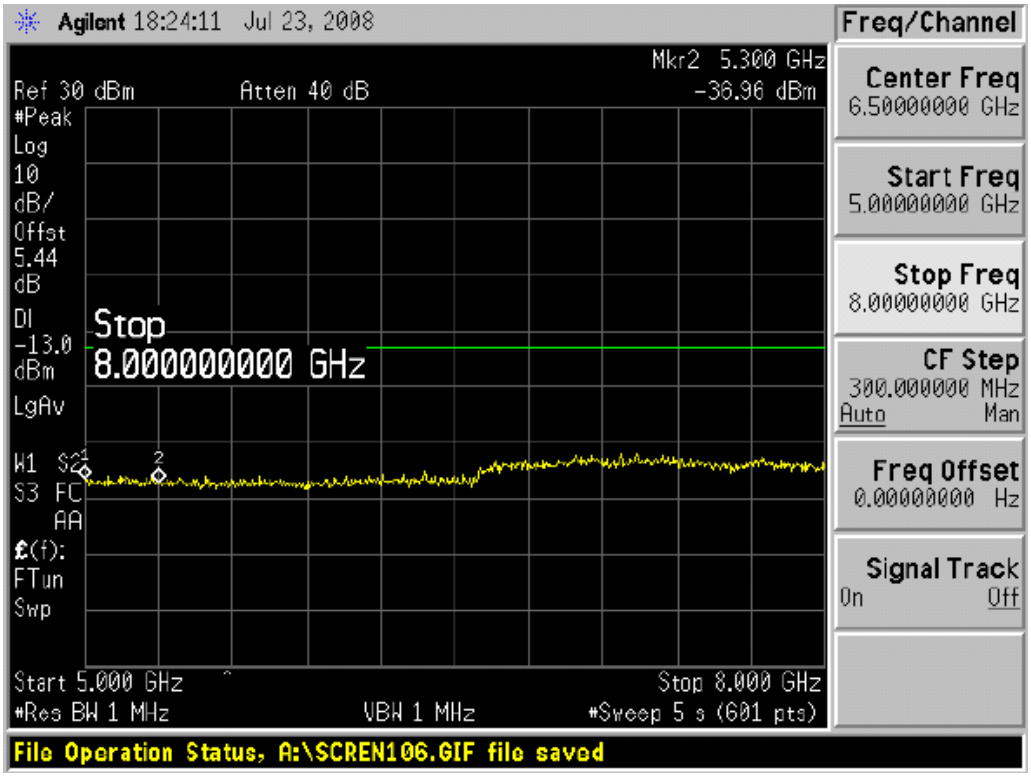


30MHz ~ 1GHz Conducted Spurious Emissions on CH Bottom

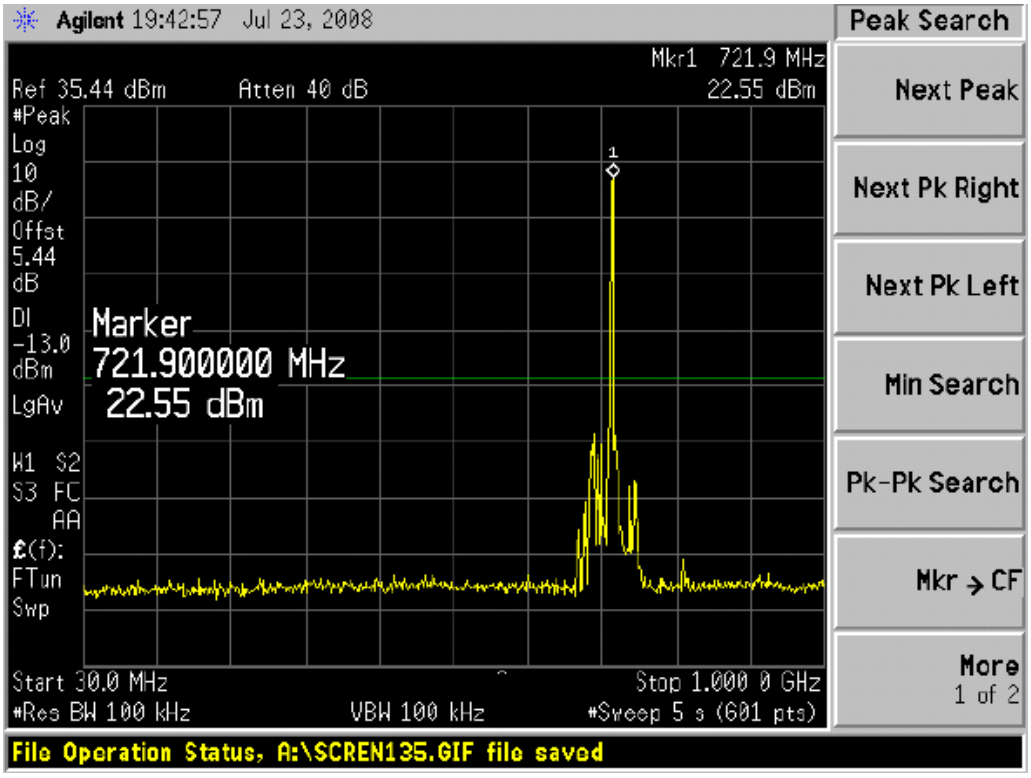
Note: The signal beyond the limit is carrier.



1GHz ~ 5GHz Conducted Spurious Emissions on CH Bottom

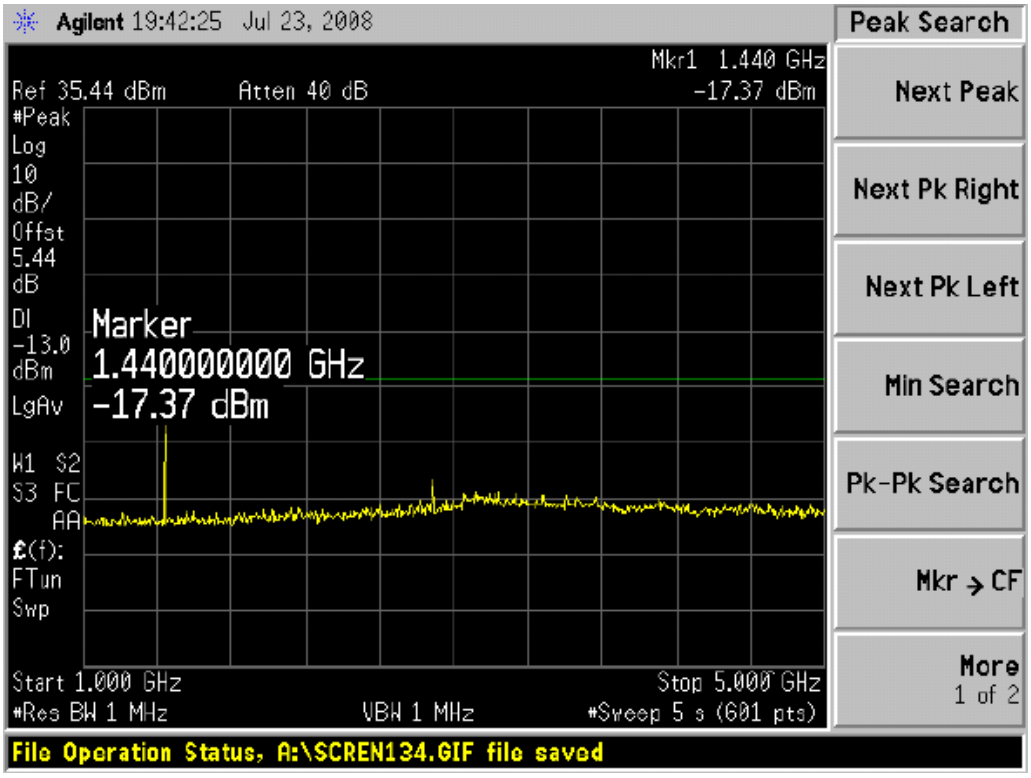


5GHz ~ 8GHz Conducted Spurious Emissions on CH Bottom

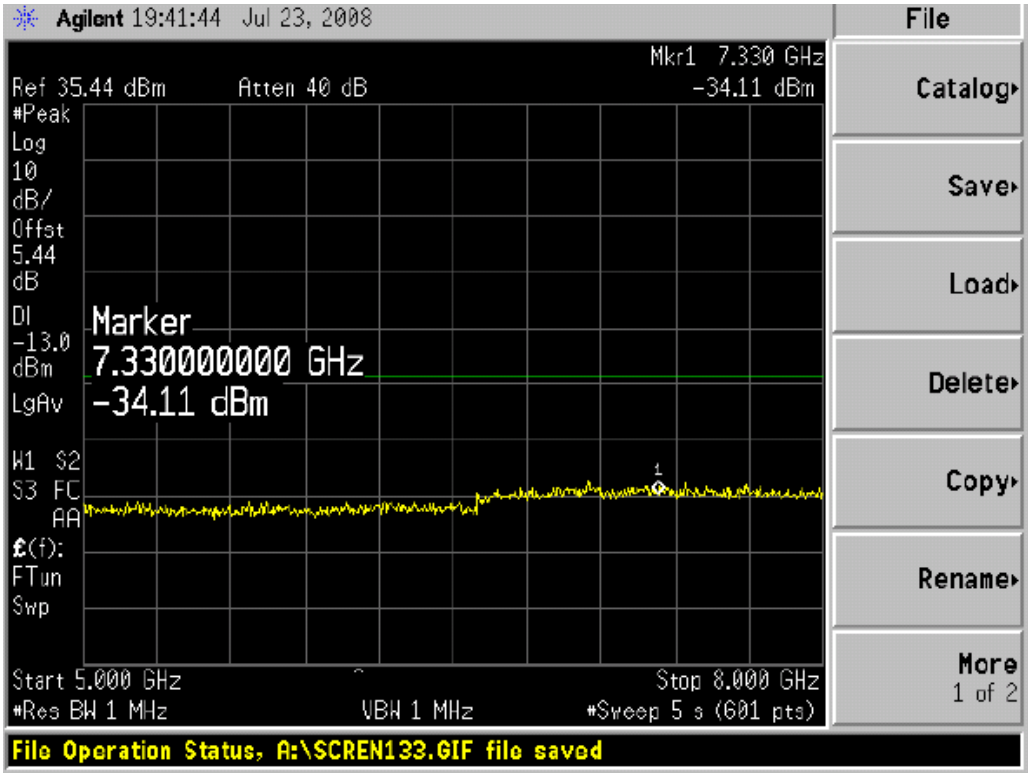


30MHz ~ 1GHz Conducted Spurious Emissions on CH Middle

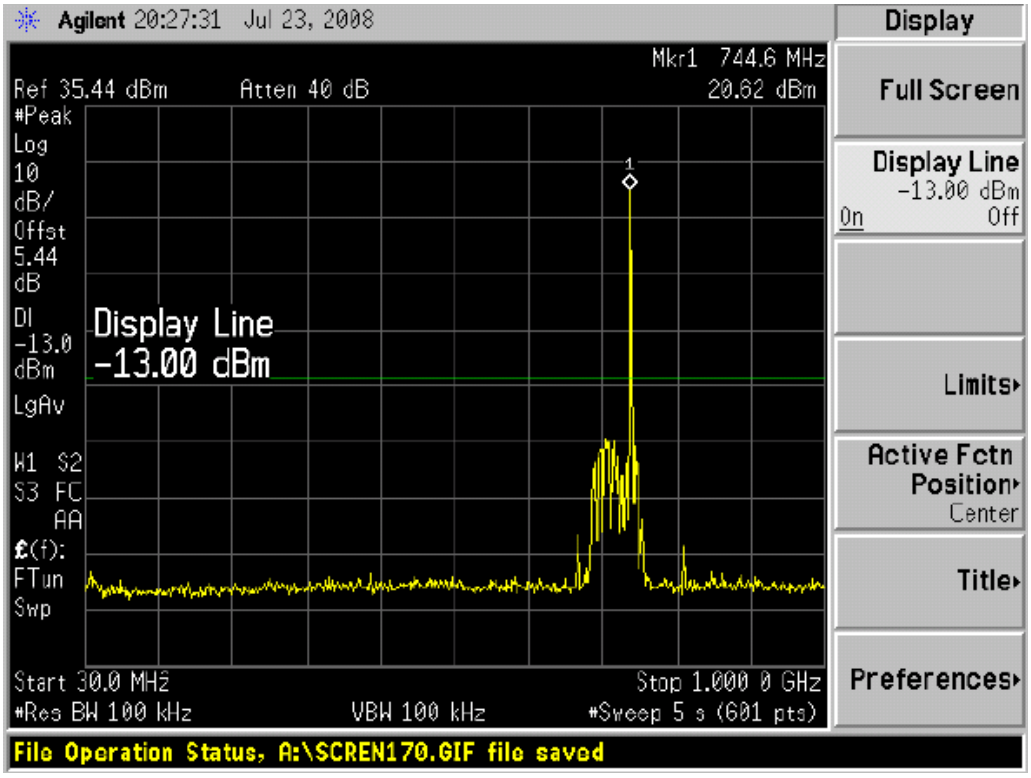
Note: The signal beyond the limit is carrier.



1GHz ~ 5GHz Conducted Spurious Emissions on CH Middle

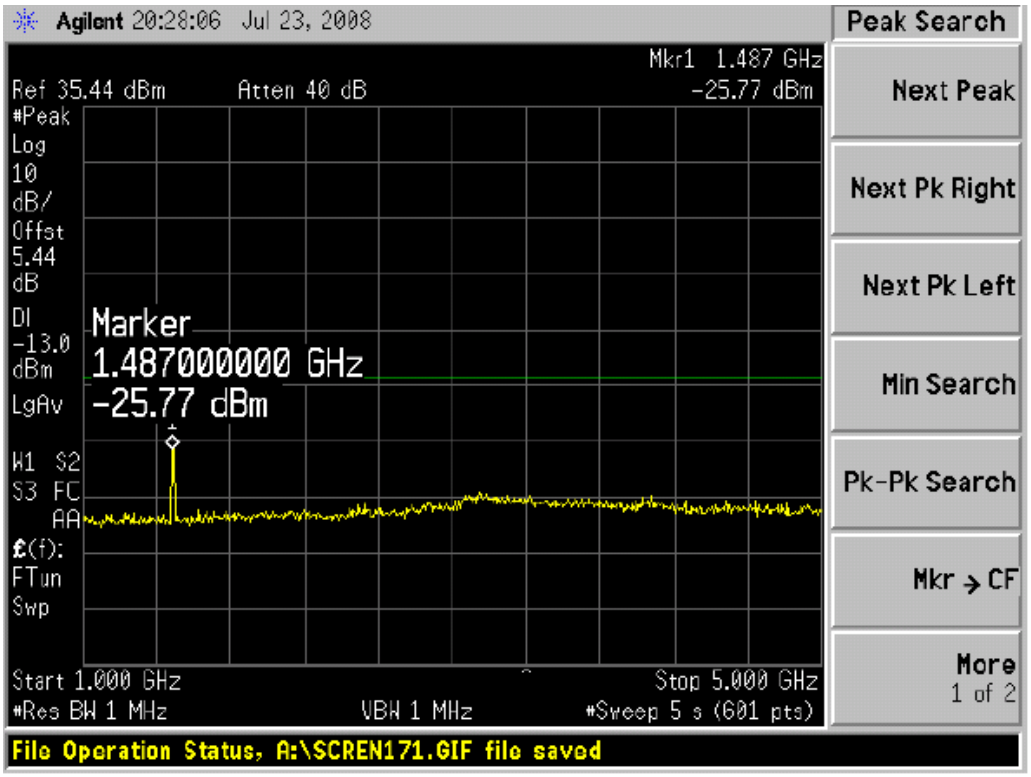


5GHz ~ 8GHz Conducted Spurious Emissions on CH Middle

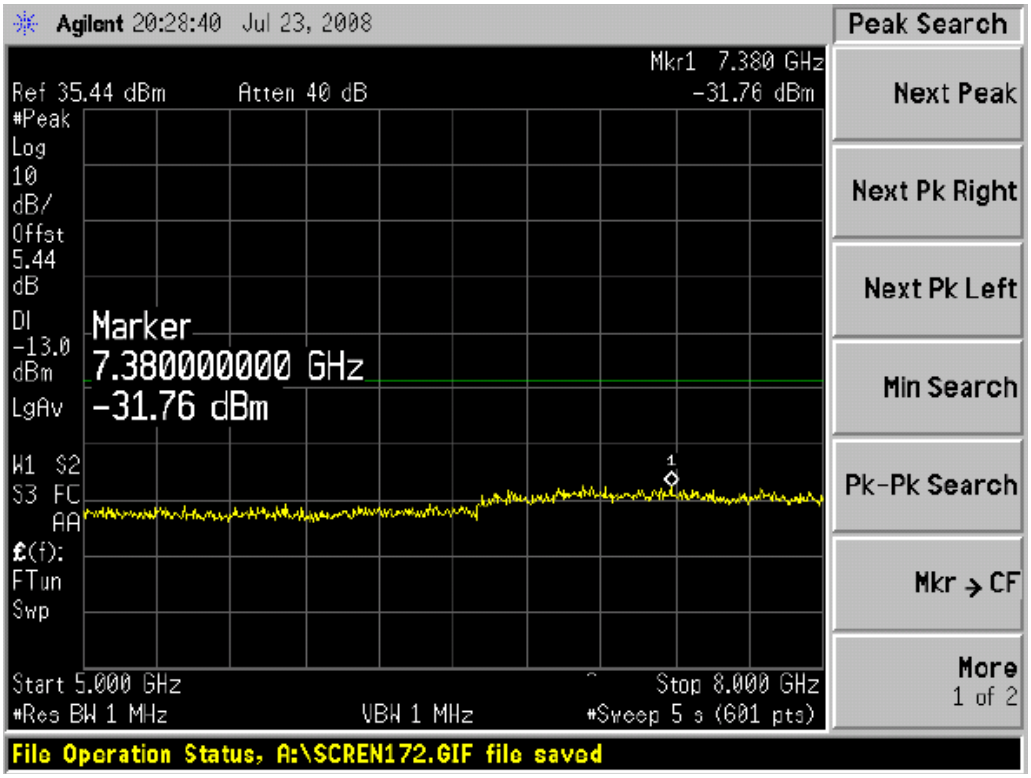


30MHz ~ 1GHz Conducted Spurious Emissions on CH Top

Note: The signal beyond the limit is carrier.

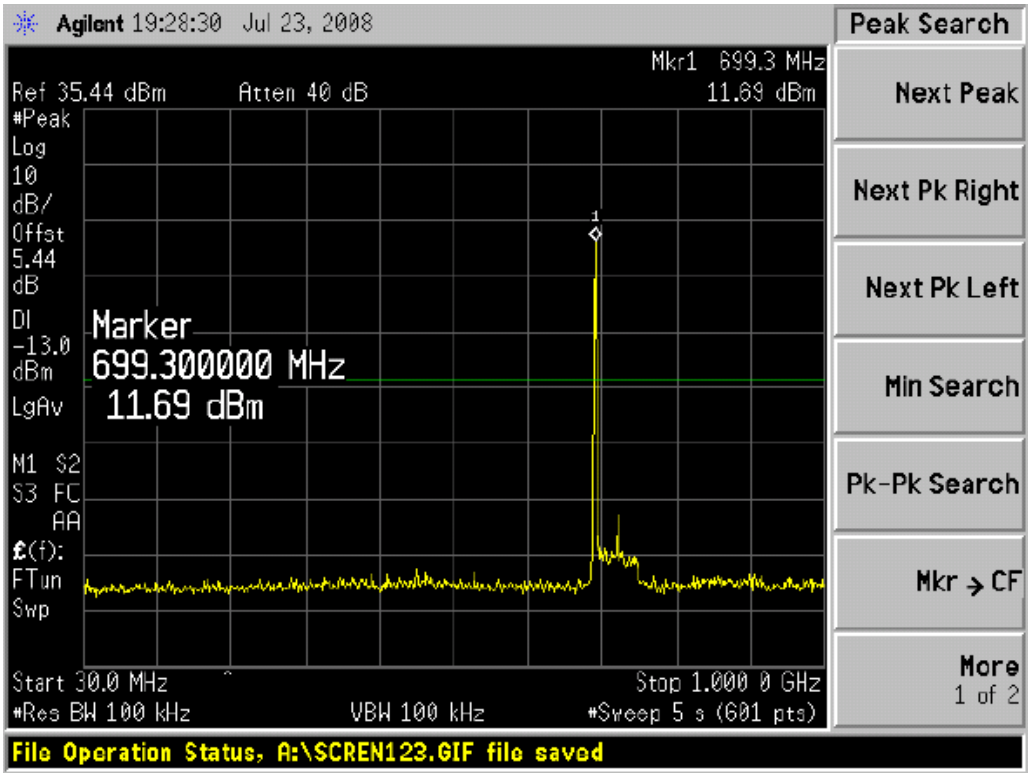


1GHz ~ 5GHz Conducted Spurious Emissions on CH Top



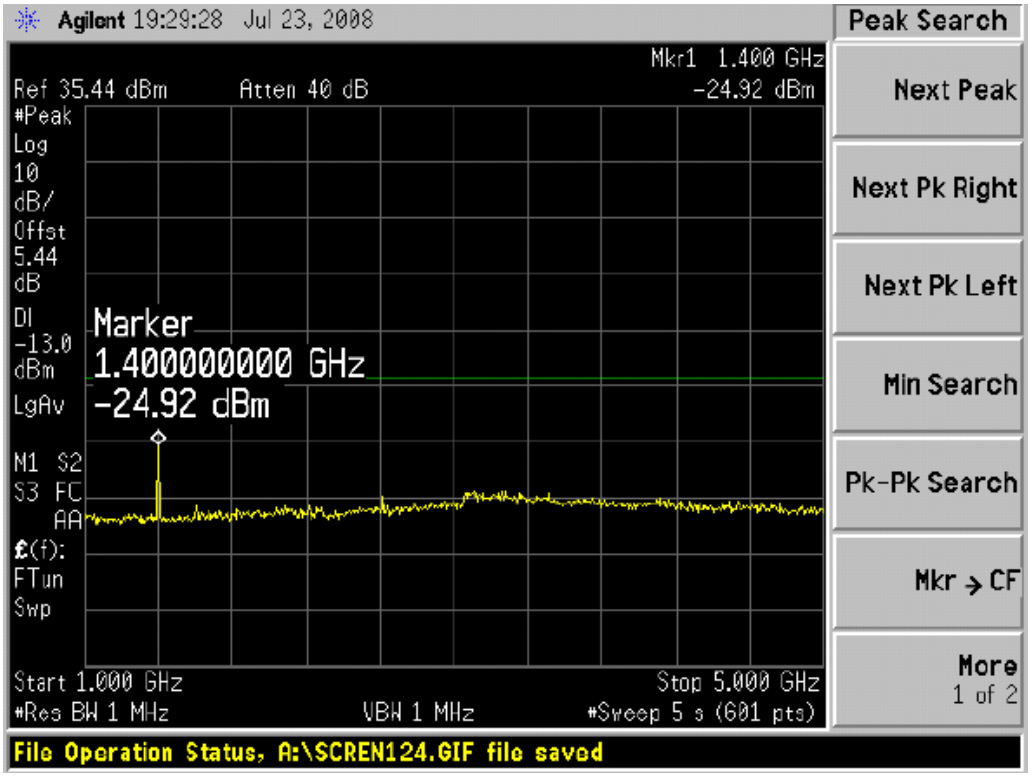
5GHz ~ 8GHz Conducted Spurious Emissions on CH Top

Modulation Mode: 64QAM

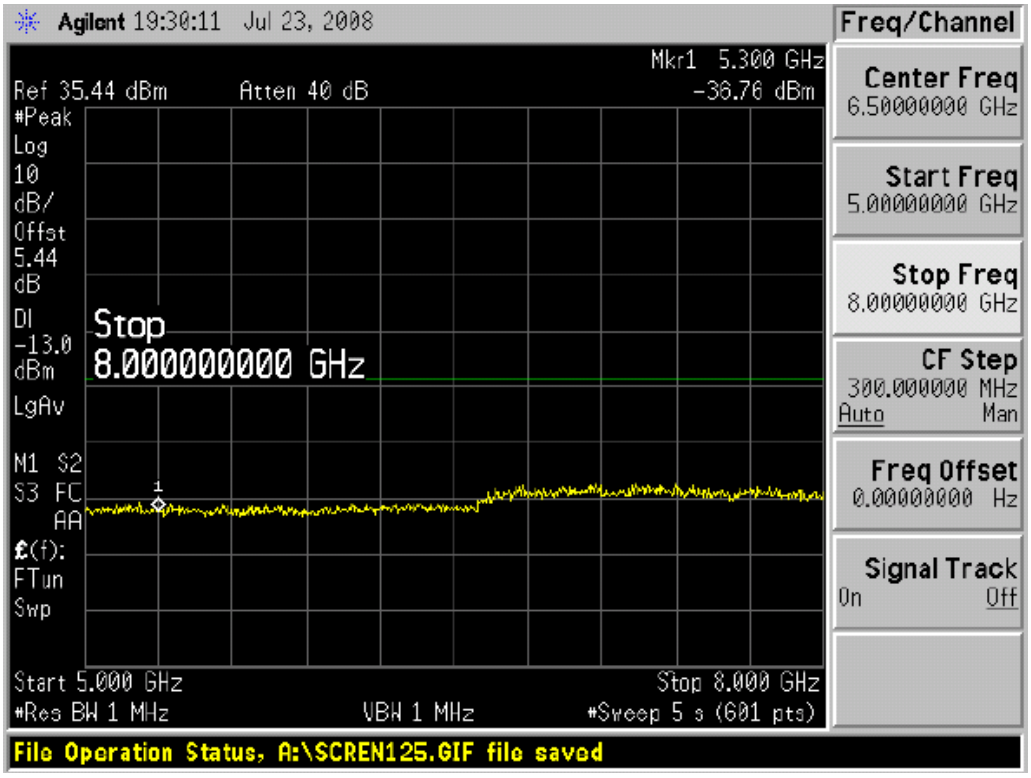


30MHz ~ 1GHz Conducted Spurious Emissions on CH Bottom

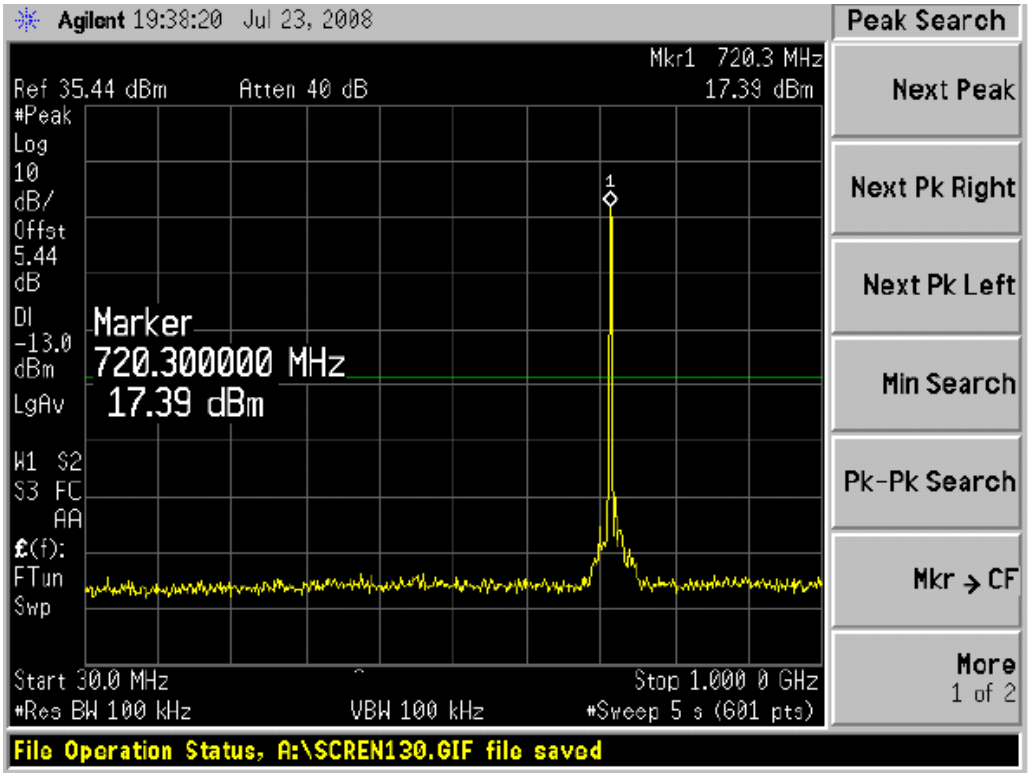
Note: The signal beyond the limit is carrier.



1GHz ~ 5GHz Conducted Spurious Emissions on CH Bottom

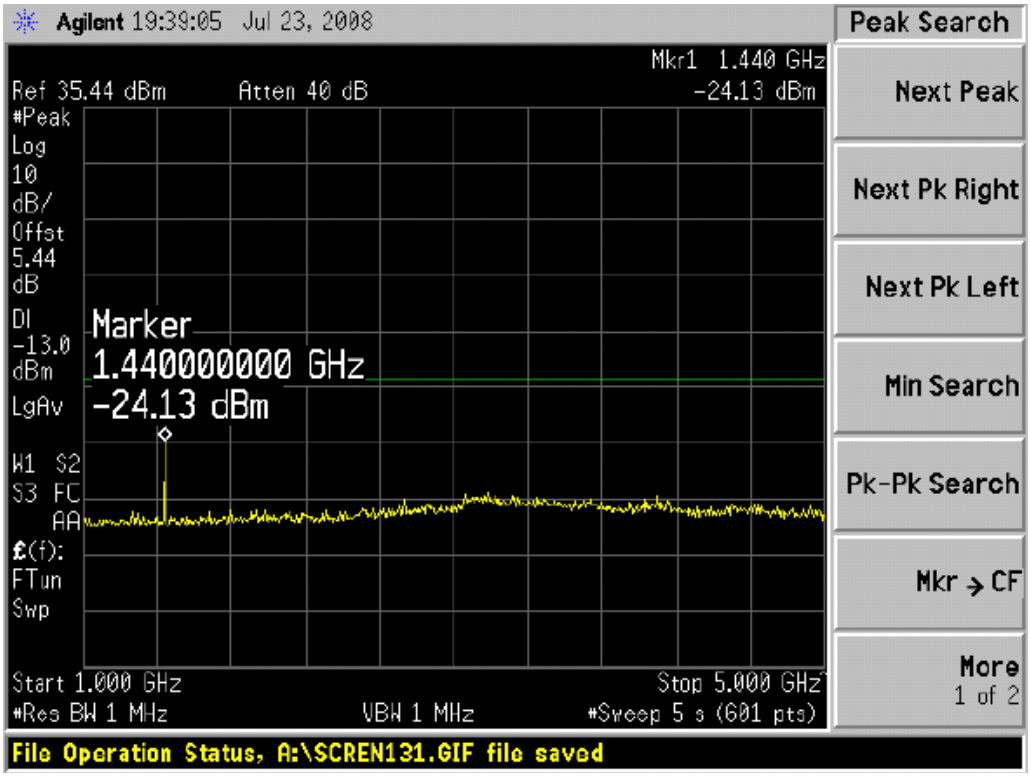


5GHz ~ 8GHz Conducted Spurious Emissions on CH Bottom

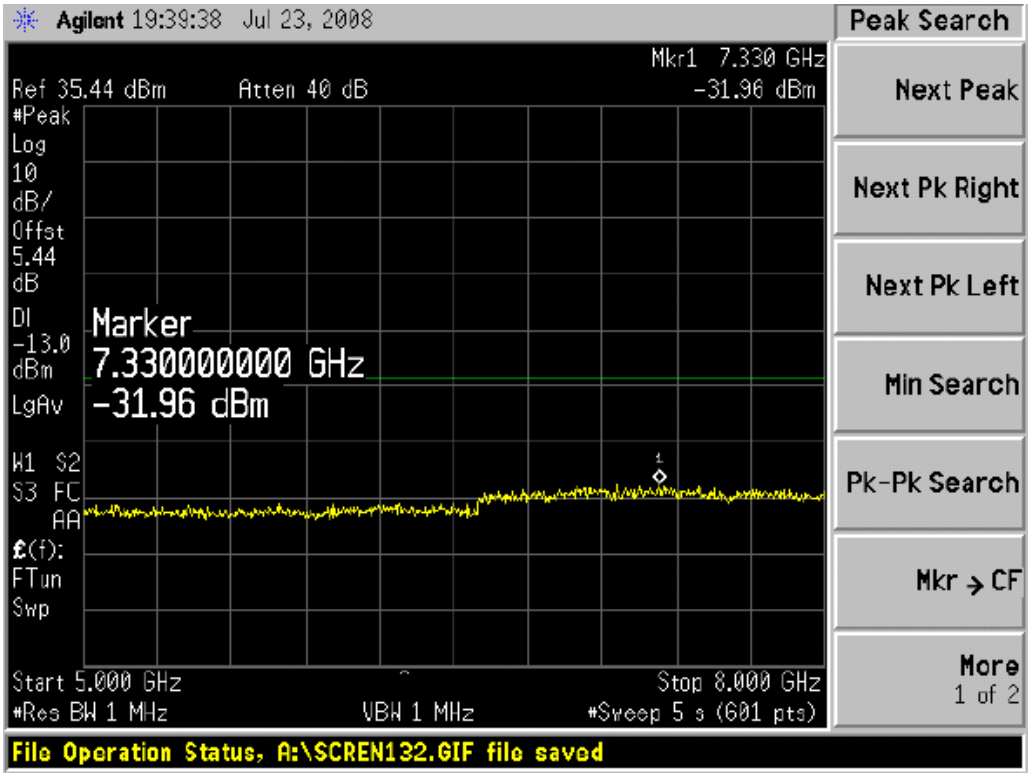


30MHz ~ 1GHz Conducted Spurious Emissions on CH Middle

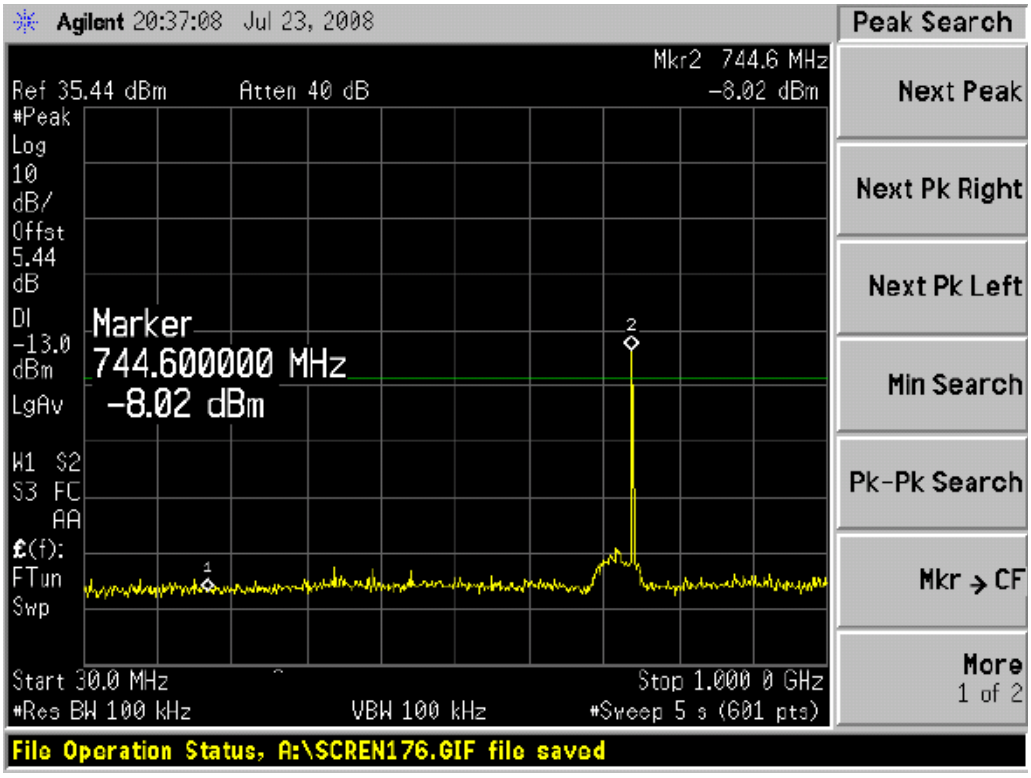
Note: The signal beyond the limit is carrier.



1GHz ~ 5GHz Conducted Spurious Emissions on CH Middle

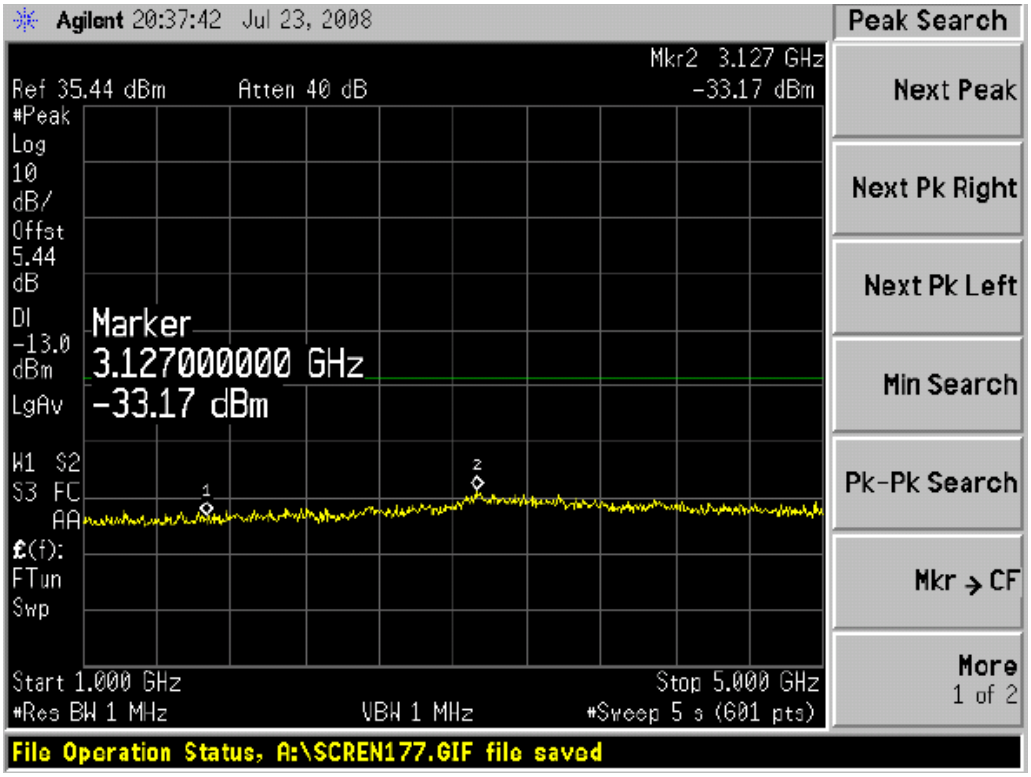


5GHz ~ 8GHz Conducted Spurious Emissions on CH Middle

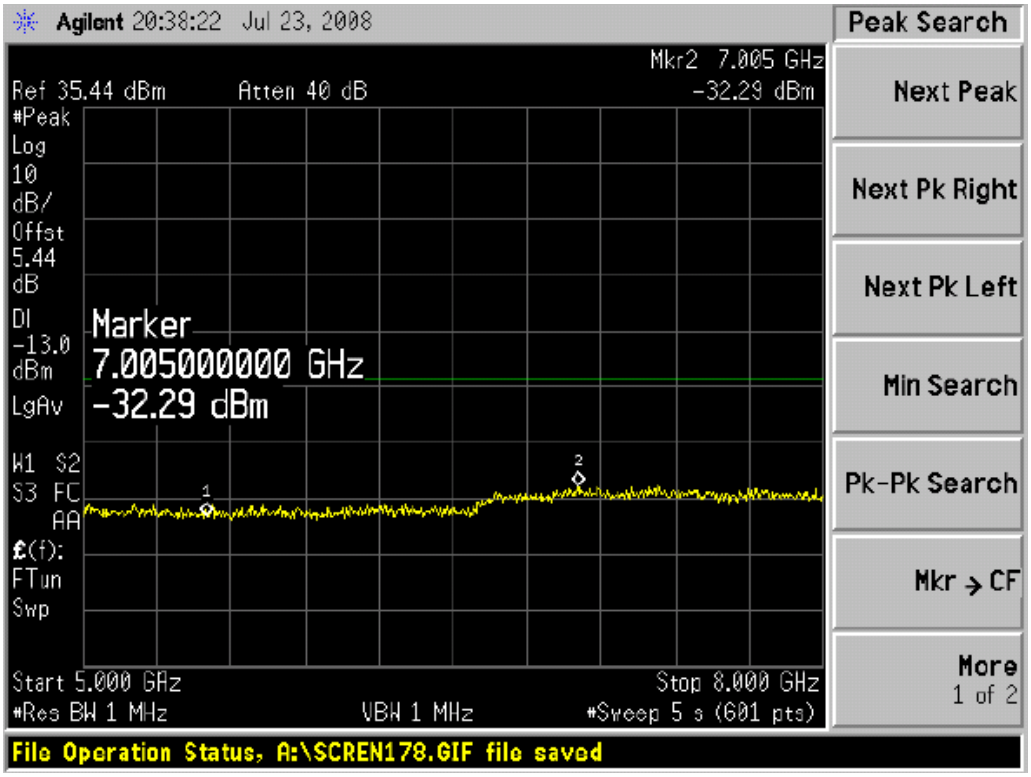


30MHz ~ 1GHz Conducted Spurious Emissions on CH Top

Note: The signal beyond the limit is carrier.



1GHz ~ 5GHz Conducted Spurious Emissions on CH Top



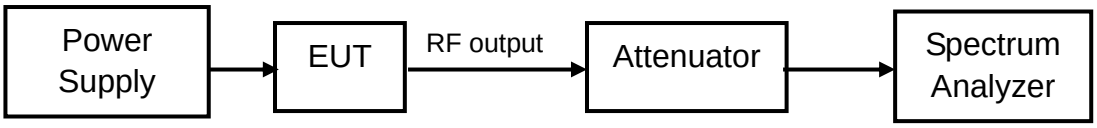
5GHz ~ 8GHz Conducted Spurious Emissions on CH Top

2.2.4 Band Edges Compliance - FCC Part 2.1051/Part 27.53(f)

Ambient condition:

Temperature	Relative humidity	Pressure
22°C	43%	101.4kPa

Test Setup:



Test procedure:

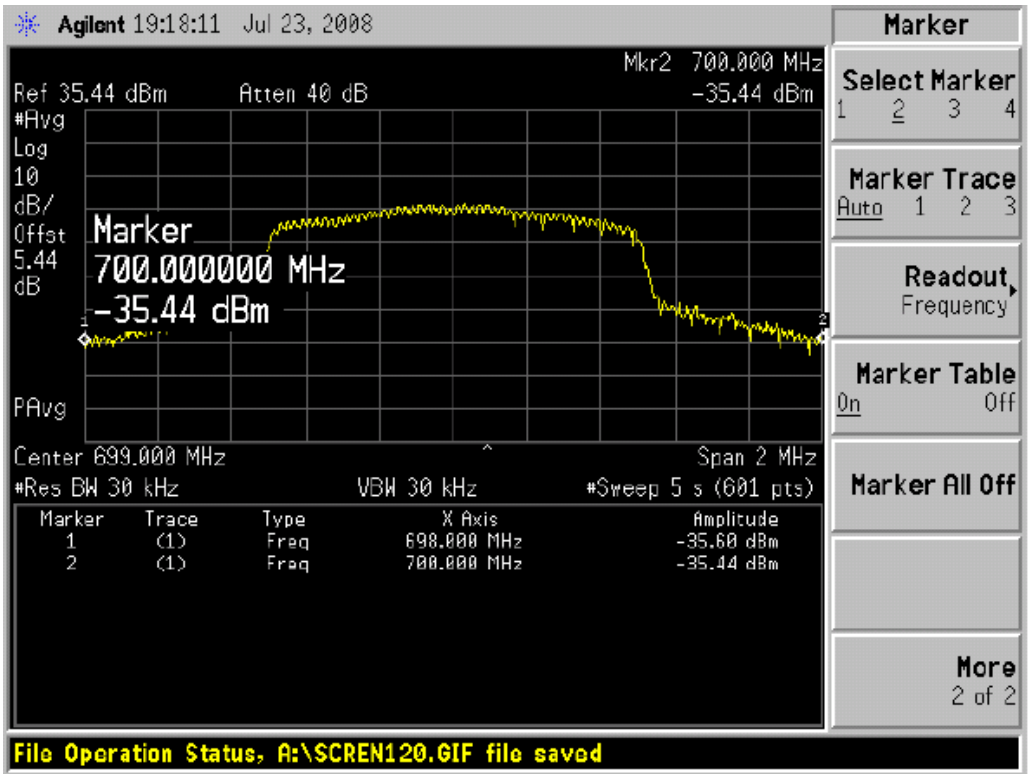
The EUT was connected to a spectrum analyzer via the main RF connector, and through an appropriate attenuator. The EUT was controlled to transmit its maximum power. Then the maximum band edge emissions of the EUT can be measured by the spectrum analyzer. The peak detector is used and RBW is set to 3KHz on spectrum analyzer.
The measurement will be conducted at two channels, Bottom channel (699MHz) and Top channel (745MHz).

Test result:

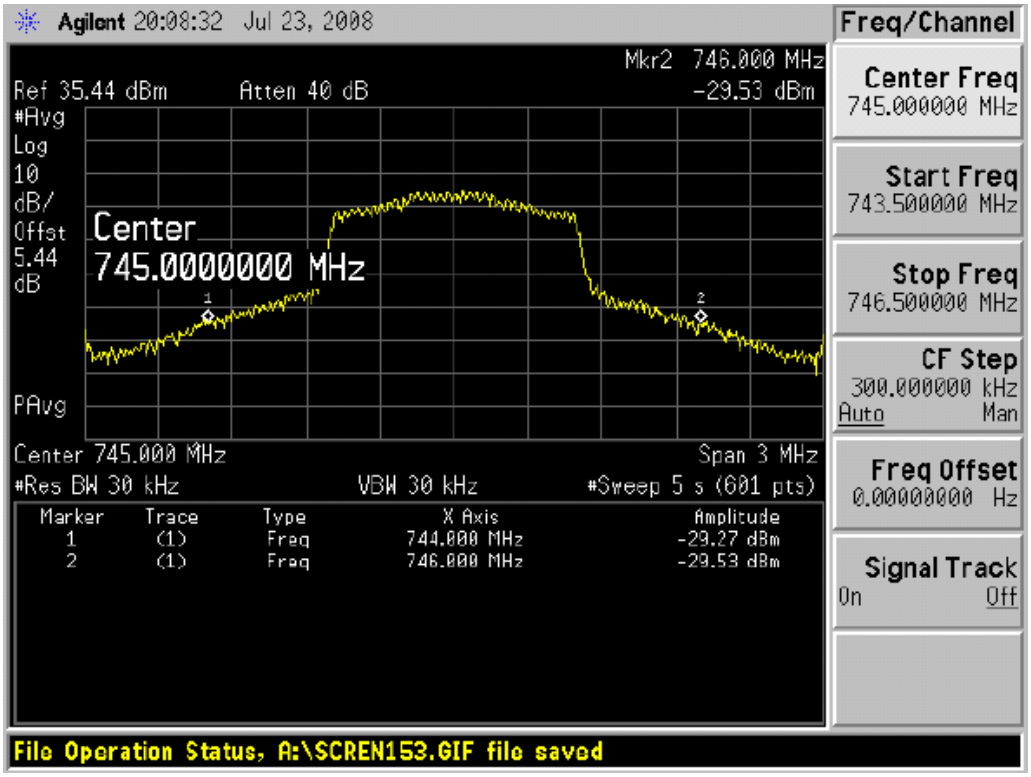
All test modes were considered for this test. Only channel bottom and channel top operating frequency points were considered for this test.

Test Mode	Band Edge Power－P(W) (dBm)	
	CH Bottom (699MHz)	CH Top (745MHz)
QPSK	Refer to test plots	Refer to test plots
8PSK	Refer to test plots	Refer to test plots
16QAM	Refer to test plots	Refer to test plots
64QAM	Refer to test plots	Refer to test plots
Limit	-13dBm	
Conclusion	Complies	

Test plots:
Modulation Mode: QPSK

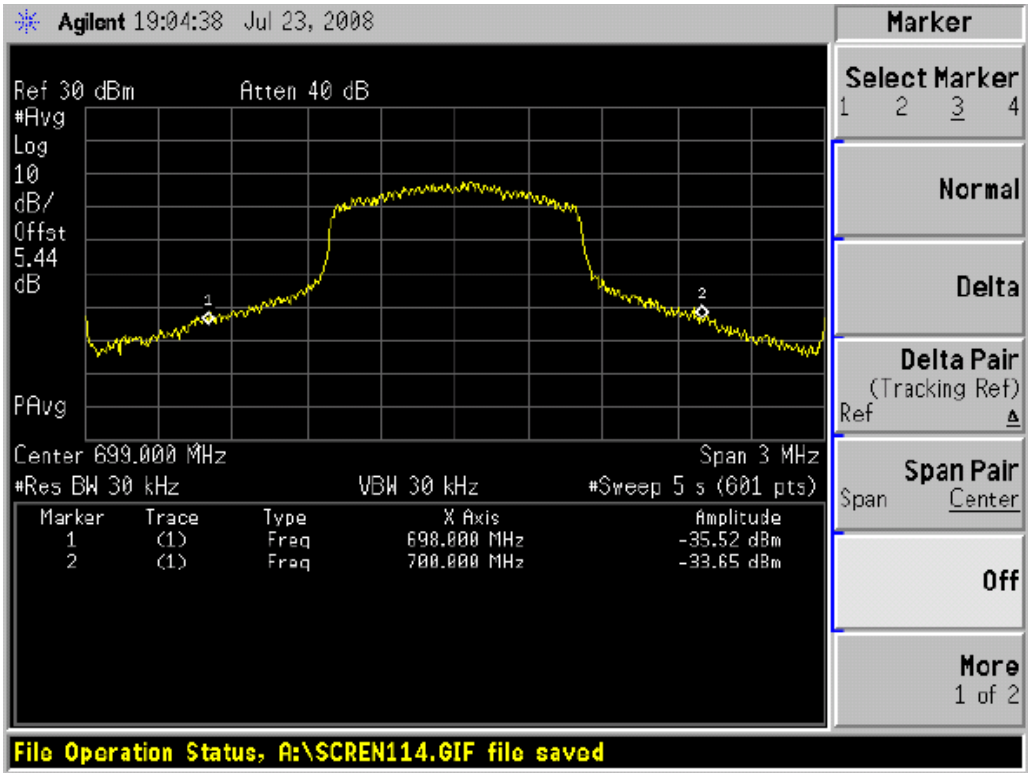


Band Edge Compliance on CH Bottom

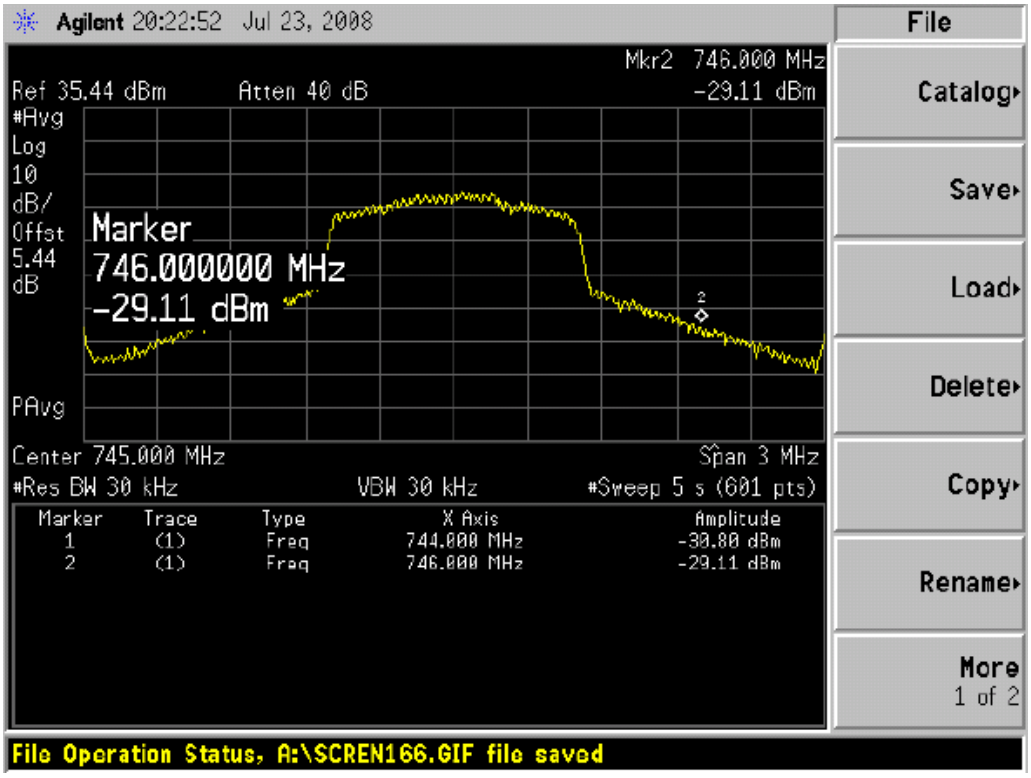


Band Edge Compliance on CH Top

Modulation Mode: 8PSK

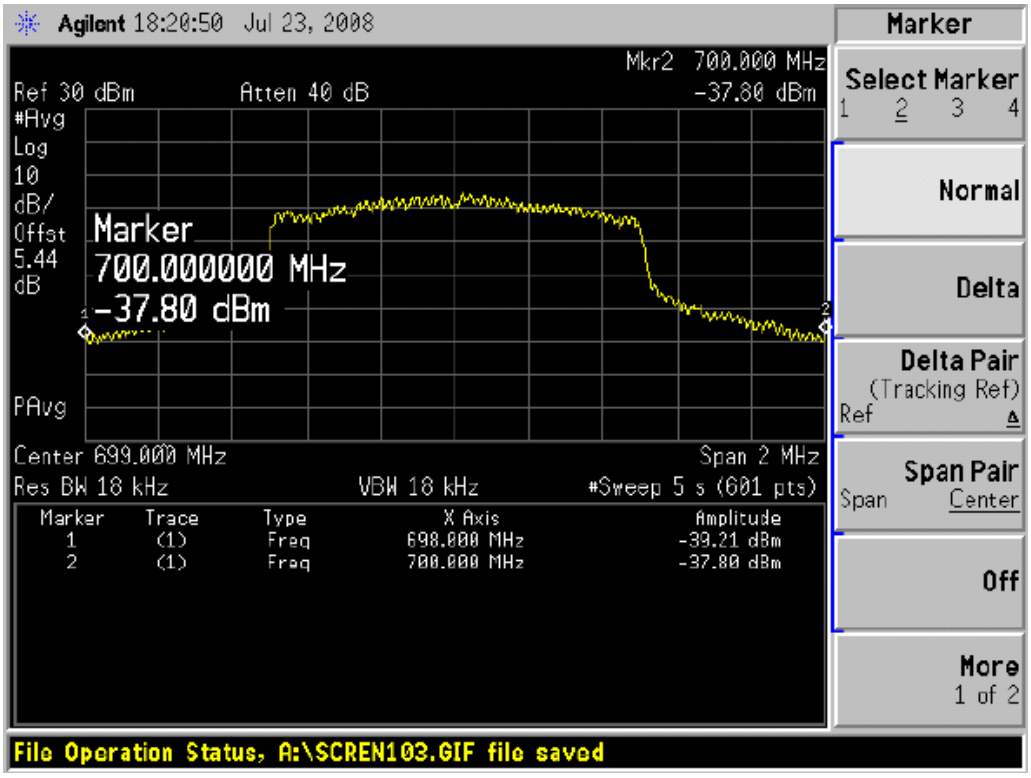


Band Edge Compliance on CH Bottom

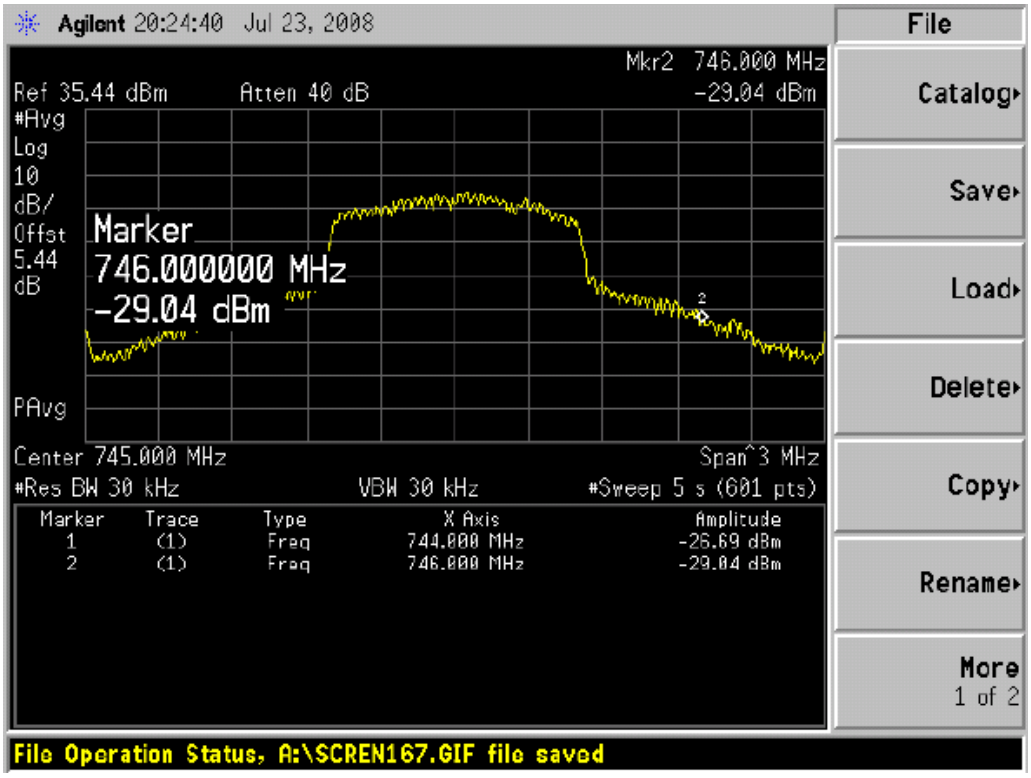


Band Edge Compliance on CH Top

Modulation Mode: 16QAM

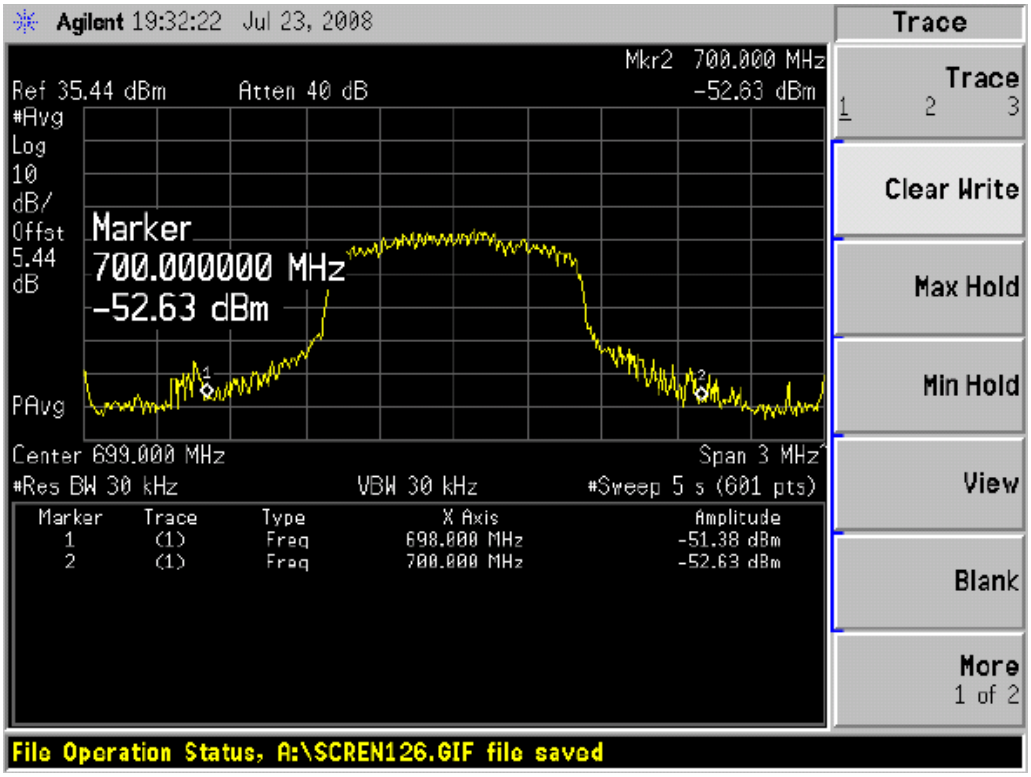


Band Edge Compliance on CH Bottom

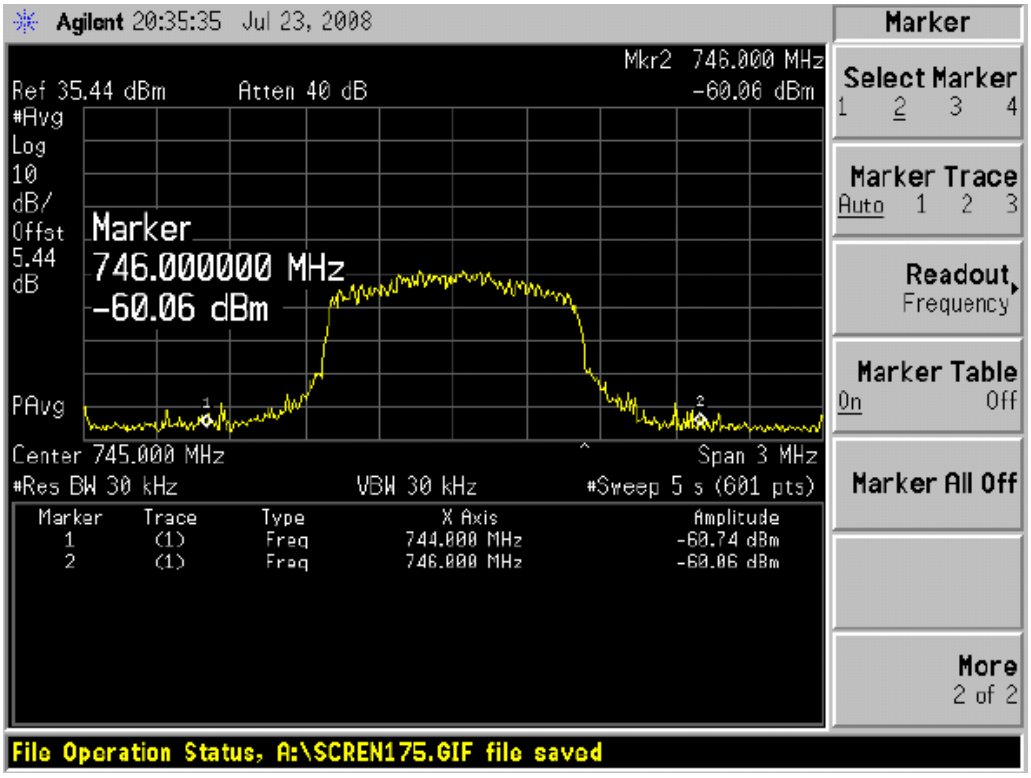


Band Edge Compliance on CH Top

Modulation Mode: 64QAM



Band Edge Compliance on CH Bottom



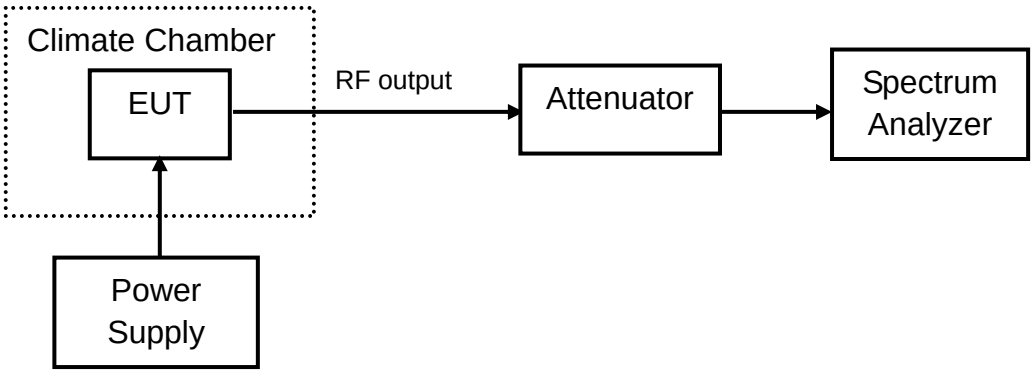
Band Edge Compliance on CH Top

2.2.5 Frequency Stability - FCC Part 2.1055/Part 27.54

Ambient condition:

Temperature	Relative humidity	Pressure
24°C	45%	101.5kPa

Test Setup:



Test Procedure:

The EUT was connected to a spectrum analyzer via the main RF connector, and through an appropriate attenuator. The EUT was controlled to transmit carrier signal. Then the frequency error of the EUT can be measured by the spectrum analyzer. The temperature inside the climate chamber is varied from 0° C to +50° C in 10° C step size. And also the power supply voltage to the EUT is varied from 85 to 115 percent of the nominal value.

The measurement will be conducted at three channels, Bottom channel (699MHz), Middle channel (721MHz) and Top channel (745MHz)

Test result:

All typical frequency points were considered for this test.

Test conditions		Frequency error (ppm)		
Voltage(V)	Temp(℃)	CH Bottom (699MHz)	CH Middle (721MHz)	CH Top (745MHz)
5	0	-0.22	-0.29	-0.14
	10	0.05	-0.08	0.06
	20	0.07	0.10	0.15
	30	-0.06	-0.07	-0.09
	40	-0.03	-0.06	0.08
	50	0.04	0.12	0.10
4.25 (85% Rated)	20	0.07	-0.09	-0.07
5.75 (115% Rated)	20	-0.07	-0.04	-0.05
Limit		0.5 ppm		
Conclusion		Complies		

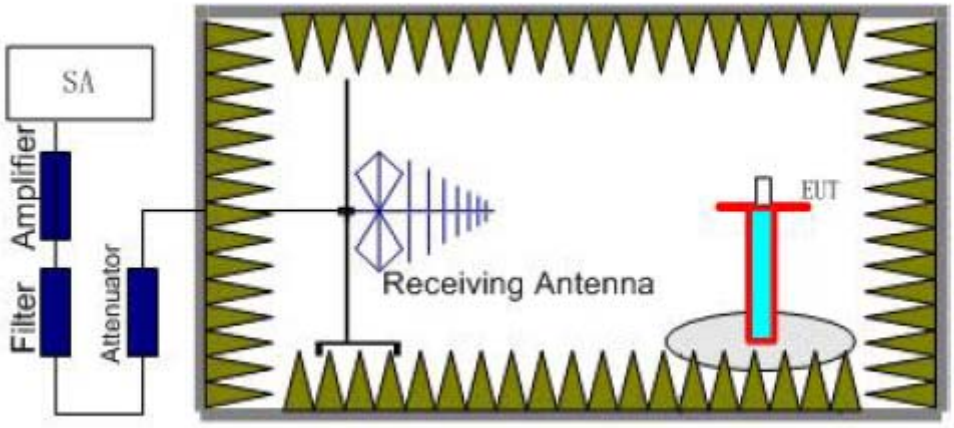
Note: The EUT can't operate normally below 0 ℃

2.2.6 Radiated Spurious Emissions - FCC Part 2.1053/Part 27.53(f)

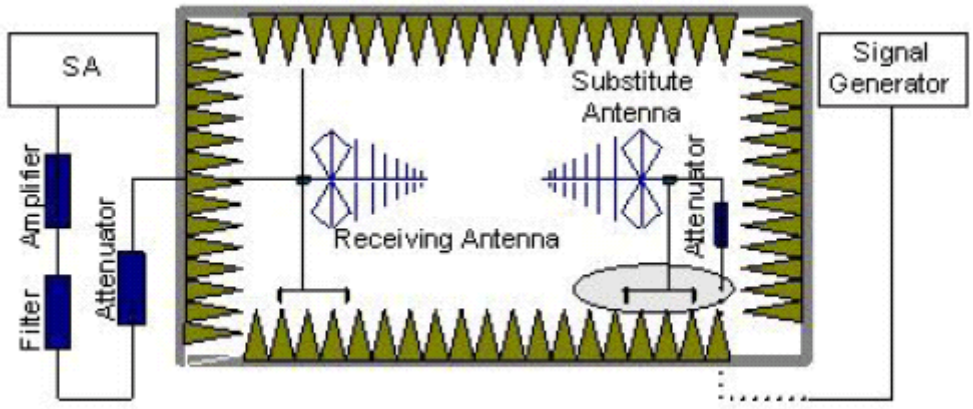
Ambient condition

Temperature	Relative humidity	Pressure
22°C	43%	101.1kPa

Test Setup:



Step 1



Step 2

Test procedure:

Step 1:

The measurement is carried out in the fully anechoic chamber. EUT was placed on a 2.4 meter high non-conductive table at a 3 meter test distance from the test receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. The height of receiving antenna is 2.4m and varies in certain range to find the maximum power value. The EUT shall be set to continuous transmitting mode under maximum output power. The

measurement is carried out using a spectrum analyzer or receiver. Then the antenna height and turn table rotation is adjusted till the maximum power value is founded on spectrum analyzer or receiver. A notch filter is necessary in the band near to the carrier frequency. A high pass filter is needed to avoid the distortion of the testing equipment in the band above the carrier frequency.

Step 2:
A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.

Calculation procedure:
The data of cable loss, antenna gain and air loss has been calibrated in full testing frequency range before the testing.

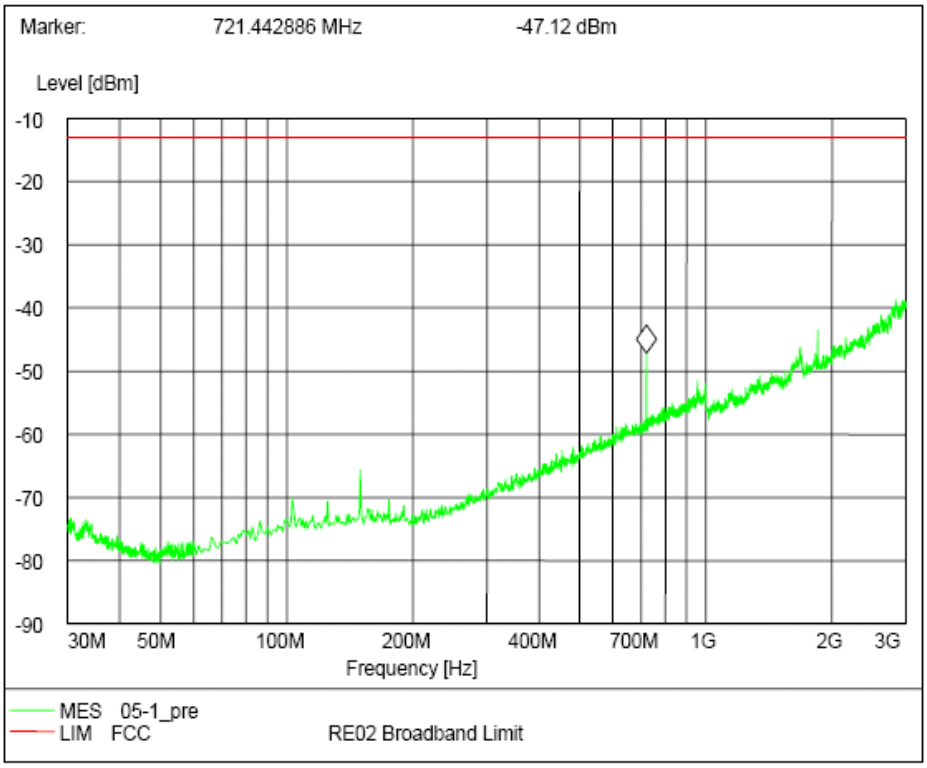
The power of the Radiated Spurious Emissions is calculated by adding the cable loss, antenna gain and air loss. The basic equation with a sample calculation is as followed:
$P=P_R+L_C+L_A-G$
Where
P: Power of the Radiated Spurious Emissions (dBm)
P_R: reading of the receiver (dBm)
L_C: Cable Lose (dB)
L_A: Air loss (dB)
G: Antenna Gain (dBi)
Assumed the reading of the receiver is -60dBm. A cable lose of 10dB, an air lose of 30dB and an antenna gain of 11dBi are added.
$P=P_R+L_C+L_A-G=-60+10+30-11=-31dBm$

The measurement will be conducted at Middle channel (721MHz)

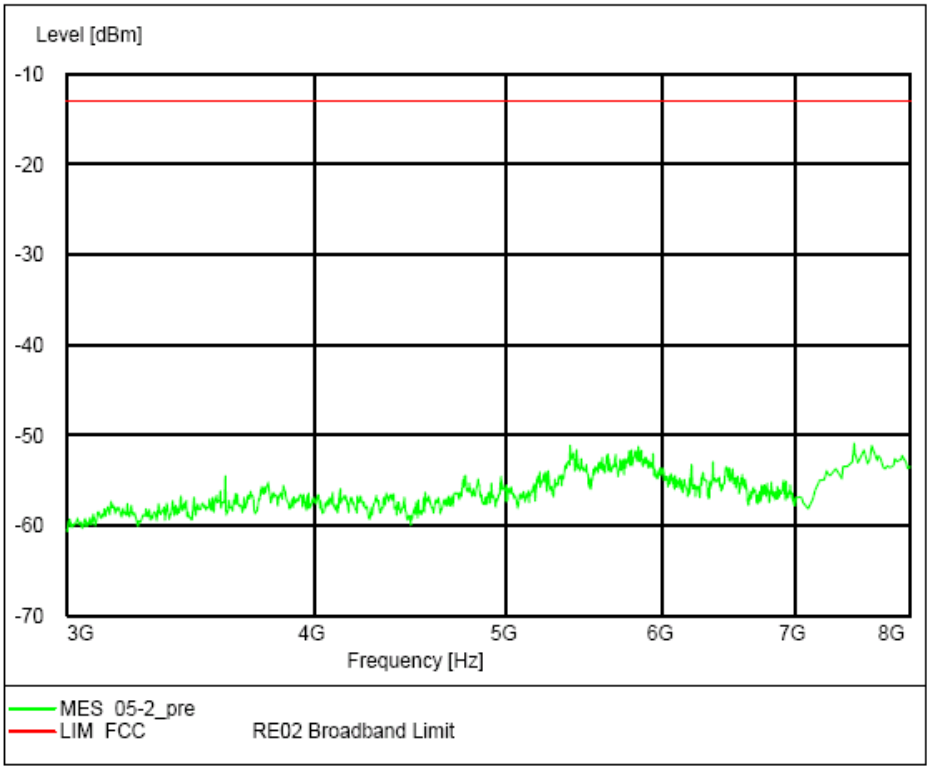
Test result:
Only the results for worst case were recorded for this test. Only channel middle operating frequency points were considered for this test.

Test Mode	Frequency by plot range	CH Middle (721MHz)
QPSK	30MHz ~ 3GHz	Refer to test plots
	3GHz ~ 8GHz	
Limit		-13dBm
Conclusion		Complies

Test plots:
Modulation Mode: QPSK



30MHz ~ 3GHz Radiated Spurious Emissions on CH Middle



3GHz ~ 8GHz Radiated Spurious Emissions on CH Middle

2.3. List of test equipments

No.	Name/Model	Manufacturer	S/N	Calibration Start Date	Calibration Due Date
1	PSA E4440A Spectrum Analyzer	Agilent	MY41000183	Mar. 2009	Mar. 2010
2	66-30-33 Power Attenuator	Aeroflex / Weinschel	BV7049	Sep. 2008	Sep. 2009
3	SEWTH-Z-08 Climatic Chamber	ESPEC	7020030020	Aug. 2008	Aug. 2009
4	9.080m×5.255m×3.525m Shielding room	FRANKONIA	-----	Aug. 2008	Aug. 2009
5	ESI 40 EMI test receiver	R&S	100015	Aug. 2008	Aug. 2009
6	SMR 20 Signal generator	R&S	100086	Aug. 2008	Aug. 2009
7	12.65m*8.03m*7.50m Fully-Anechoic Chamber	FRANKONIA	-----	Aug. 2008	Aug. 2009
8	HL562 Ultra log test antenna	R&S	100016	Aug. 2008	Aug. 2009
9	ESH3-Z2 Pulse limiter	R&S	10002	Aug. 2008	Aug. 2009
10	ESH3-Z5 Attenuator	R&S	100020	Aug. 2008	Aug. 2009
11	HF 906 Double-Ridged Waveguide Horn Antenna	R&S	100030	Aug. 2008	Aug. 2009
12	MA260 Antenna Master	FRANKONIA	-----	Aug. 2008	Aug. 2009

Appendix

Appendix1 Test Setup