



Test Report

Product Name : Notebook
Model No : TCM380
FCC ID : FKGTCM380

Applicant : Twinhead International Corp.
Address : 10F, 550 Rueiguang Road Neihu,
Taipei, Taiwan 114, R.O.C.

Date of Receipt : 2008/04/21
Issued Date : 2008/06/03
Report No. : 084331R-HPUSP07V01
Version : V1.0

The test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of Quietek Corporation.
This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Test Report Certification

Issued Date : 2008/06/03

Report No.: 084331R-HPUSP07V01



Accredited by NIST (NVLAP)

NVLAP Lab Code: 200533-0

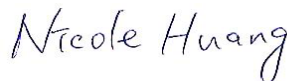
Product Name : Notebook
Applicant : Twinhead International Corp.
Address : 10F, 550 Rueiguang Road Neihu, Taipei, Taiwan 114, R.O.C.
Manufacturer : Twinhead International Corp.
Trade Name : NEC
Model No. : TCM380
Rated Voltage : AC 120V/60Hz
3G Module : MFR: Sierra Wireless, M/N: MC8775
Measurement Standard : FCC CFR Title 47 Part 2 22 24
Measurement Reference : TIA/EIA 603-C
Test Result : Complied

Test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of Quie Tek Corporation.

This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Documented By :



(Engineering Adm.
Assistant / Nicole
Huang)

Tested By :



(Engineer / Paddy Chen)

Approved By :



(Deputy Manager
/ Vincent Lin)

TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION	4
1.1. EUT Description	4
1.2. Configuration of tested System	5
1.3. EUT Setup Procedures	5
1.4. Test Facility	6
1.5. Type of Emission	7
2. Peak Power Output	8
2.1. Test Equipment.....	8
2.2. Test Setup	8
2.3. Limits	9
2.4. Test Procedure.....	9
2.5. Test Specification	9
2.6. Test Result of Peak Power Output	10
3. Modulation Characteristics	26
3.1. Test Equipment.....	26
3.2. Test Setup	26
3.3. Modulation Description.....	26
3.4. Test Specification	27
3.5. Test Result of Modulation	28
4. Occupied Bandwidth.....	32
4.1. Test Equipment.....	32
4.2. Test Setup	32
4.3. Test Procedure.....	32
4.4. Test Specification	33
4.5. Test Result of Occupied Bandwidth	34
5. Spurious Emission At Antenna Terminals (+/-1MHz)	50
5.1. Test Equipment.....	50
5.2. Setup	50
5.3. Limits	51
5.4. Test Procedure.....	51
5.5. Test Specification	51
5.6. Test Result of Spurious Emission At Antenna Terminals (+/-1MHz).....	52
6. Spurious Emission	60
6.1. Test Equipment.....	60
6.2. Test Setup	61
6.3. Limits	61
6.4. Test Procedure.....	62
6.5. Test Specification	62
6.6. Test Result of Spurious Emission	63
7. Frequency Stability Under Temperature & Voltage Variations	95
7.1. Test Equipment.....	95
7.2. Test Setup	95
7.3. Limits	95
7.4. Test Procedure.....	96
7.5. Test Specification	96
7.6. Test Result of Frequency Stability Under Temperature Variations	97
8. EMI Reduction Method During Compliance Testing	105
Attachment 1: EUT Test Photographs	
Attachment 2: EUT Detailed Photographs	

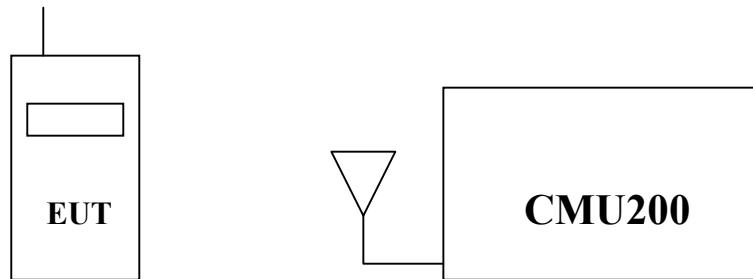
1. GENERAL INFORMATION

1.1. EUT Description

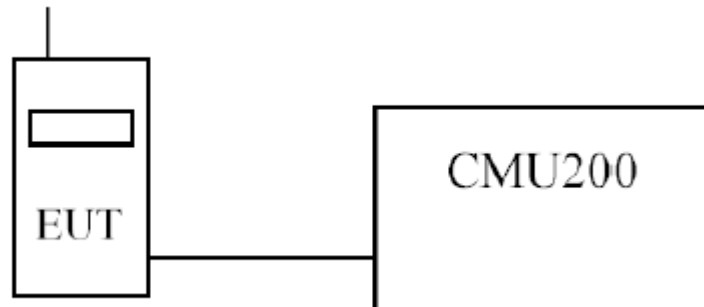
Product Name	Notebook
Model No.	TCM380
Trade Name	NEC
IMEI No.	352678013322992
FCC ID.	FKGTTCM380
Antenna Type	Internal
TX Frequency	824MHz~849MHz(GSM 850/WCDMA Band V) 1850MHz ~ 1910MHz(PCS 1900/WCDMA Band II)
Rx Frequency	869MHz~894MHz(GSM 850/WCDMA Band V) 1930MHz ~ 1990MHz(PCS 1900/WCDMA Band II)
Function	GPRS/EGPRS/WCDMA/HSDPA
3G Module	MFR: Sierra Wireless, M/N: MC8775
Battery Pack	DC 11.1V, 4.8Ah

1.2. Configuration of tested System

(a) Configuration of Radiated measurement



(b) Configuration of Conducted measurement



1.3. EUT Setup Procedures

- (1) Setup the EUT and simulators as shown on 1.3
- (2) Turn on the power of all equipments.
- (3) The EUT was set to communicate with CMU200.
- (4) Repeat the above procedure (3).

1.4. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description: File on
 Federal Communications Commission
 FCC Engineering Laboratory
 7435 Oakland Mills Road
 Columbia, MD 21046
 FCC Registration Number :92195



July 03, 2001 Accreditation on NVLAP
 NVLAP Lab Code: 200533-0



Site Name: Quietek Corporation

LinKou Testing Laboratory:
 No. 5, Ruei-Shu Valley, Ruei-Ping Tsuen,
 Lin-Kou Shiang, Taipei,
 Taiwan, R.O.C.
 TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789
 E-Mail : service@quietek.com

FCC Accreditation Number: TW1014



1.5. Type of Emission

GPRS/EGPRS: 300KG7W
WCDMA/HSDPA:5M00 F9W

2. Peak Power Output

2.1. Test Equipment

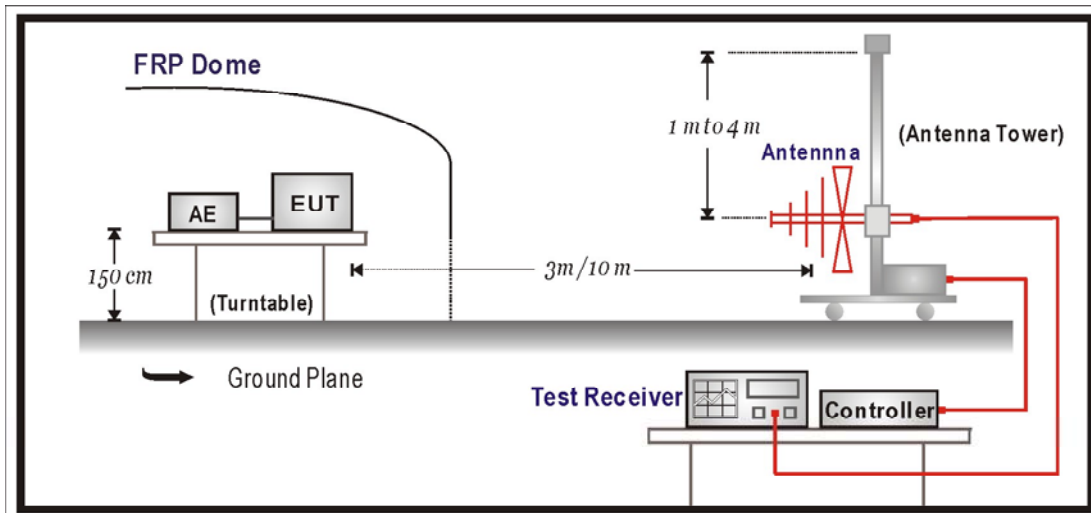
The following test equipments are used during the radiated emission test:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒OATS 3	Test Receiver	R & S	ESCS 30 / 100122	Feb., 2008
	Universal Radio Communication Tester	R & S	CMU200 / 104846	Apr., 2008
	Spectrum Analyzer	Advantest	R3162 / 120300652	Feb., 2008
	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May., 2008
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May., 2008
	Horn Antenna	ETS	3115 / 0005-6160	Jul., 2007
	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	Jul., 2007

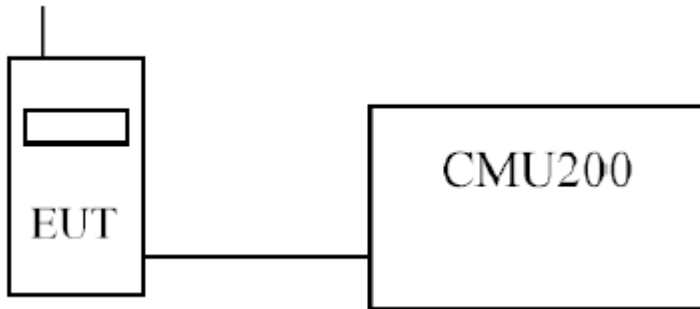
- Note: 1. All equipments that need to be calibrated are with calibration period of 1 year.
 2. Mark "X" test instruments are used to measure the final test results.

2.2. Test Setup

Radiated Power Measurement



Conducted Power Measurement



2.3. Limits

GSM850	<7W
PCS1900	<2W or +33dBm

2.4. Test Procedure

➤RF Out Power (Radiated)

The Spectrum Analyzer was tuned to the test frequency. The device was put into Transmit mode then rotated through 360 degrees until the highest power level was observed in both horizontal and vertical polarization. The device was then replaced with a substitution antenna, which input signal was adjusted until the received level matched that of the previously detected emission.

The EUT is tested with maximum rated TX power via the Base Station simulator.

➤RF Out Power (Conducted)

The EUT is tested with maximum rated TX power via the Base Station simulator, and the output power was measured at the antenna terminals of the EUT.

2.5. Test Specification

According to Part 2.1046, 22.913,24.232.

2.6. Test Result of Peak Power Output

Product	Notebook		
Test Mode	RF Output Power (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	GSM 850 GPRS		

Maximum Power-GSM 850 GPRS

Frequency (MHz)	Output Power (dBm)	Path Loss (dB)	Result (dBm)	Result (W)
824.2	31.10	0.4	31.50	1.41
836.4	31.03	0.4	31.43	1.39
848.8	31.00	0.4	31.40	1.38

Note:

1. EUT complies with CFR 47.2.1046 and 22.913(a). The EUT does not exceed 7W at the measured frequencies.

Product	Notebook		
Test Mode	RF Output Power (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	PCS1900 GPRS		

Maximum Power-PCS 1900 GPRS

Frequency (MHz)	Output Power (dBm)	Path Loss (dB)	Result (dBm)	Result (W)
1850.2	27.82	0.6	28.42	0.70
1880	27.58	0.6	28.18	0.66
1909.8	27.48	0.6	28.08	0.64

Note:

1. EUT complies with CFR 47.2.1046 and 24.232(b). The EUT does not exceed 2W or +33dBm at the measured frequencies.

Product	Notebook		
Test Mode	RF Output Power (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	GSM 850 EGPRS		

Maximum Power-GSM 850 EGPRS

Frequency (MHz)	Output Power (dBm)	Path Loss (dB)	Result (dBm)	Result (W)
824.2	26.38	0.4	26.78	0.48
836.4	26.30	0.4	26.70	0.47
848.8	26.30	0.4	26.70	0.47

Note:

1. EUT complies with CFR 47.2.1046 and 22.913(a). The EUT does not exceed 7W at the measured frequencies.

Product	Notebook		
Test Mode	RF Output Power (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	PCS1900 EGPRS		

Maximum Power-PCS 1900 EGPRS

Frequency (MHz)	Output Power (dBm)	Path Loss (dB)	Result (dBm)	Result (W)
1850.2	25.24	0.6	25.84	0.38
1880	25.02	0.6	25.62	0.36
1909.8	25.03	0.6	25.63	0.37

Note:

1. EUT complies with CFR 47.2.1046 and 24.232(b). The EUT does not exceed 2W or +33dBm at the measured frequencies.

Product	Notebook		
Test Mode	RF Output Power (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND V		

Maximum Power- WCDMA BAND V

Frequency (MHz)	Output Power (dBm)	Path Loss (dB)	Result (dBm)	Result (W)
826.4	22.95	0.4	23.35	0.22
836.6	22.93	0.4	23.33	0.22
846.6	22.77	0.4	23.17	0.21

Note:

1. EUT complies with CFR 47.2.1046 and 24.232(b). The EUT does not exceed 2W or +33dBm at the measured frequencies.

Product	Notebook		
Test Mode	RF Output Power (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND V HSDPA		

Maximum Power- WCDMA BAND V HSDPA

Frequency (MHz)	Output Power (dBm)	Path Loss (dB)	Result (dBm)	Result (W)
826.4	22.69	0.4	23.09	0.20
836.6	22.83	0.4	23.23	0.21
846.6	22.80	0.4	23.20	0.21

Note:

1. EUT complies with CFR 47.2.1046 and 24.232(b). The EUT does not exceed 2W or +33dBm at the measured frequencies.

Product	Notebook		
Test Mode	RF Output Power (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND II		

Maximum Power- WCDMA BAND II

Frequency (MHz)	Output Power (dBm)	Path Loss (dB)	Result (dBm)	Result (W)
1852.4	23.25	0.6	23.85	0.24
1880	22.78	0.6	23.38	0.22
1907.6	22.45	0.6	23.05	0.20

Note:

1. EUT complies with CFR 47.2.1046 and 24.232(b). The EUT does not exceed 2W or +33dBm at the measured frequencies.

Product	Notebook		
Test Mode	RF Output Power (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND II HSDPA		

Maximum Power- WCDMA BAND II HSDPA

Frequency (MHz)	Output Power (dBm)	Path Loss (dB)	Result (dBm)	Result (W)
1852.4	22.80	0.6	23.40	0.22
1880	22.23	0.6	22.83	0.19
1907.6	22.01	0.6	22.61	0.18

Note:

1. EUT complies with CFR 47.2.1046 and 24.232(b). The EUT does not exceed 2W or +33dBm at the measured frequencies.

Product	Notebook		
Test Mode	RF Output Power (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	GSM 850 GPRS		

Maximum Power-GSM 850 GPRS

Frequency (MHz)	Reading Level (dBm)	Substitution Level (dBm)	Substitution Antenna Gain (dBd)	Cable Loss (dB)	Result ERP (dBm)	Result ERP (W)
824.2	16.82	19.67	4.45	0.51	23.61	0.23
836.4	16.24	19.08	4.45	0.51	23.02	0.20
848.8	16.14	18.98	4.45	0.51	22.92	0.20

Note:

1. The EUT meets the requirements of FCC CFR 47: Part 22, Section 22.913(a) for Effective Radiated Power.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
3. Result EIRP = Substitution Level + Substitution Antenna Gain - Cable Loss

Product	Notebook		
Test Mode	RF Output Power (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	PCS 1900 GPRS		

Maximum Power-PCS 1900 GPRS

Frequency (MHz)	Reading Level (dBm)	Substitution Level (dBm)	Substitution Antenna Gain (dBi)	Cable Loss (dB)	Result EIRP (dBm)	Result EIRP (W)
1850.2	15.74	17.38	10.4	1.02	26.76	0.47
1880.0	15.47	17.10	10.4	1.02	26.48	0.44
1909.8	14.4	15.99	10.4	1.02	25.37	0.34

Note:

1. The EUT meets the requirements of FCC CFR 47: Part 24, Section 24.232(b) for Effective Radiated Power.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
3. Result EIRP = Substitution Level + Substitution Antenna Gain - Cable Loss

Product	Notebook		
Test Mode	RF Output Power (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	GSM 850 EGPRS		

Maximum Power-GSM 850 EGPRS

Frequency (MHz)	Reading Level (dBm)	Substitution Level (dBm)	Substitution Antenna Gain (dBd)	Cable Loss (dB)	Result ERP (dBm)	Result ERP (W)
824.2	14.89	17.73	4.45	0.51	21.67	0.15
836.4	14.25	17.09	4.45	0.51	21.03	0.13
848.8	14.39	17.23	4.45	0.51	21.17	0.13

Note:

1. The EUT meets the requirements of FCC CFR 47: Part 22, Section 22.913(a) for Effective Radiated Power.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
3. Result EIRP = Substitution Level + Substitution Antenna Gain - Cable Loss

Product	Notebook		
Test Mode	RF Output Power (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	PCS 1900 EGPRS		

Maximum Power-PCS 1900 EGPRS

Frequency (MHz)	Reading Level (dBm)	Substitution Level (dBm)	Substitution Antenna Gain (dBi)	Cable Loss (dB)	Result EIRP (dBm)	Result EIRP (W)
1850.2	13.66	15.23	10.4	1.02	24.61	0.29
1880.0	13.45	15.01	10.4	1.02	24.39	0.27
1909.8	13.59	15.15	10.4	1.02	24.53	0.28

Note:

1. The EUT meets the requirements of FCC CFR 47: Part 24, Section 24.232(b) for Effective Radiated Power.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
3. Result EIRP = Substitution Level + Substitution Antenna Gain - Cable Loss

Product	Notebook		
Test Mode	RF Output Power (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	WCDMA BAND V		

Maximum Power- WCDMA BAND V

Frequency (MHz)	Reading Level (dBm)	Substitution Level (dBm)	Substitution Antenna Gain (dBi)	Cable Loss (dB)	Result EIRP (dBm)	Result EIRP (W)
826.4	10.01	12.87	4.45	0.51	16.81	0.05
836.6	10.57	13.42	4.45	0.51	17.36	0.05
846.6	9.23	12.10	4.45	0.51	16.04	0.04

Note:

1. The EUT meets the requirements of FCC CFR 47: Part 24, Section 24.232(b) for Effective Radiated Power.
2. Receiver setting (Peak Detector) : RBW:3MHz; VBW:3MHz
3. Result EIRP = Substitution Level + Substitution Antenna Gain - Cable Loss

Product	Notebook		
Test Mode	RF Output Power (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	WCDMA BAND V HSDPA		

Maximum Power- WCDMA BAND V HSDPA

Frequency (MHz)	Reading Level (dBm)	Substitution Level (dBm)	Substitution Antenna Gain (dBi)	Cable Loss (dB)	Result EIRP (dBm)	Result EIRP (W)
826.4	10.65	13.50	4.45	0.51	17.44	0.06
836.6	11.27	14.11	4.45	0.51	18.05	0.06
846.6	10.19	13.05	4.45	0.51	16.99	0.05

Note:

1. The EUT meets the requirements of FCC CFR 47: Part 24, Section 24.232(b) for Effective Radiated Power.
2. Receiver setting (Peak Detector) : RBW:3MHz; VBW:3MHz
3. Result EIRP = Substitution Level + Substitution Antenna Gain - Cable Loss

Product	Notebook		
Test Mode	RF Output Power (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	WCDMA BAND II		

Maximum Power- WCDMA BAND II

Frequency (MHz)	Reading Level (dBm)	Substitution Level (dBm)	Substitution Antenna Gain (dBi)	Cable Loss (dB)	Result EIRP (dBm)	Result EIRP (W)
1852.4	9.36	10.81	10.4	1.02	20.19	0.10
1880	7.45	10.00	10.4	1.02	19.38	0.09
1907.6	5.44	10.00	10.4	1.02	19.38	0.09

Note:

1. The EUT meets the requirements of FCC CFR 47: Part 24, Section 24.232(b) for Effective Radiated Power.
2. Receiver setting (Peak Detector) : RBW:3MHz; VBW:3MHz
3. Result EIRP = Substitution Level + Substitution Antenna Gain - Cable Loss

Product	Notebook		
Test Mode	RF Output Power (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	WCDMA BAND II HSDPA		

Maximum Power- WCDMA BAND II HSDPA

Frequency (MHz)	Reading Level (dBm)	Substitution Level (dBm)	Substitution Antenna Gain (dBi)	Cable Loss (dB)	Result EIRP (dBm)	Result EIRP (W)
1852.4	10.66	12.14	10.4	1.02	21.52	0.14
1880	8.40	10.00	10.4	1.02	19.38	0.09
1907.6	6.61	10.00	10.4	1.02	19.38	0.09

Note:

1. The EUT meets the requirements of FCC CFR 47: Part 24, Section 24.232(b) for Effective Radiated Power.
2. Receiver setting (Peak Detector) : RBW:3MHz; VBW:3MHz
3. Result EIRP = Substitution Level + Substitution Antenna Gain - Cable Loss

3. Modulation Characteristics

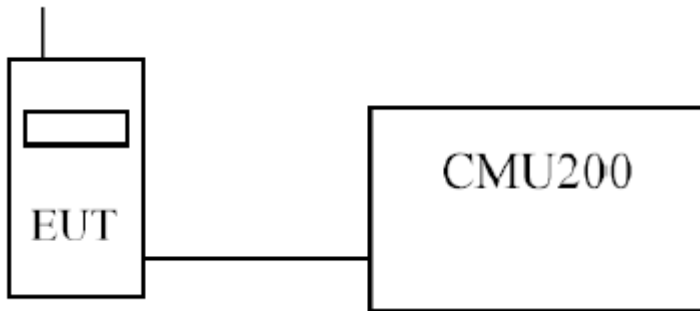
3.1. Test Equipment

The following test equipment are used during the modulation characteristics test:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	Advantest	R3182 / 100803470	May, 2008
Universal Radio Communication Tester	R & S	CMU200 / 104846	Apr., 2008
Directional couple	Agilent	87300C / 3239A01864	N/A

Note: All equipments that need to be calibrated are with calibration period of 1 year.

3.2. Test Setup



3.3. Modulation Description

GMSK is a form of binary signaling schemes which represent digital states as a shift between discrete sinusoidal frequencies called Frequency Shift Keying (FSK). Minimum Shift Keying (MSK) is continuous phase FSK with the smallest possible modulation index h . Modulation index is defined as:

$$h = 2 \cdot F \cdot T_b$$

where F = Peak frequency deviation in Hz and T_b = Bit period in seconds

Two discrete frequencies, representing two distinct digital states, with equal phases at switch time $t = 0$ requires a minimum value of $h = 0.5$. The Gaussian part of GMSK describes the fact that the digital pulses are filtered in the time domain. This results in bits which are sinusoidal rather than square. The effective spectrum is then compressed with the average carrier frequency in the center of the passband. This is a great advantage because of the significantly reduced bandwidth. GMSK is utilized because of these bandwidth conservation properties.

The bandwidth for GSM850 is a 25MHz up-link at 824-849Mhz and down-link at 869-894MHz. The PCS1900 is a 60MHz up-link at 1850-1910 MHz and down-link at 1930-1990 MHz. The 65 MHz is divided into 299 channels, each of which is 200 kHz wide. Slight spectral spillage is allowed into neighboring channels (which is minimized by GMSK). This separated transmit/receive frequencies scheme under GSM enables easier duplex filtering.

Within the bandwidth, individual channels are subdivided into multiframes (made of 26 frames), frames (made of 8 time slots), and time slots (made of 8 fields). The time slots are 0.57 ms long allowing 156.25 bits of information including overhead.

The modulation used in GPRS is the same used in GSM. The modulation of EGPRS is 8PSK. A GSM channel contains eight timeslots, each timeslot is dedicated to one circuit switched call. For GPRS/EGPRS the timeslots are assigned on an as needed basis, and more than one timeslot can be assigned for a particular transmission depending on the network and the device.

The modulation of WCDMA is QPSK. HSDPA provides QPSK for uplink, and 16QAM & QPSK for downlink.

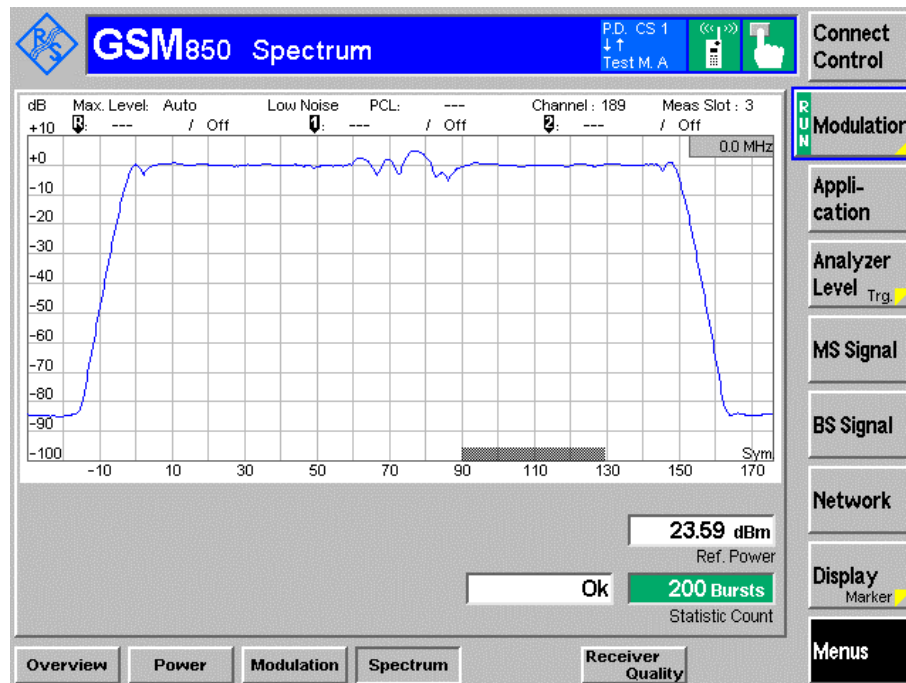
3.4. Test Specification

According to Part 2.1047(d)

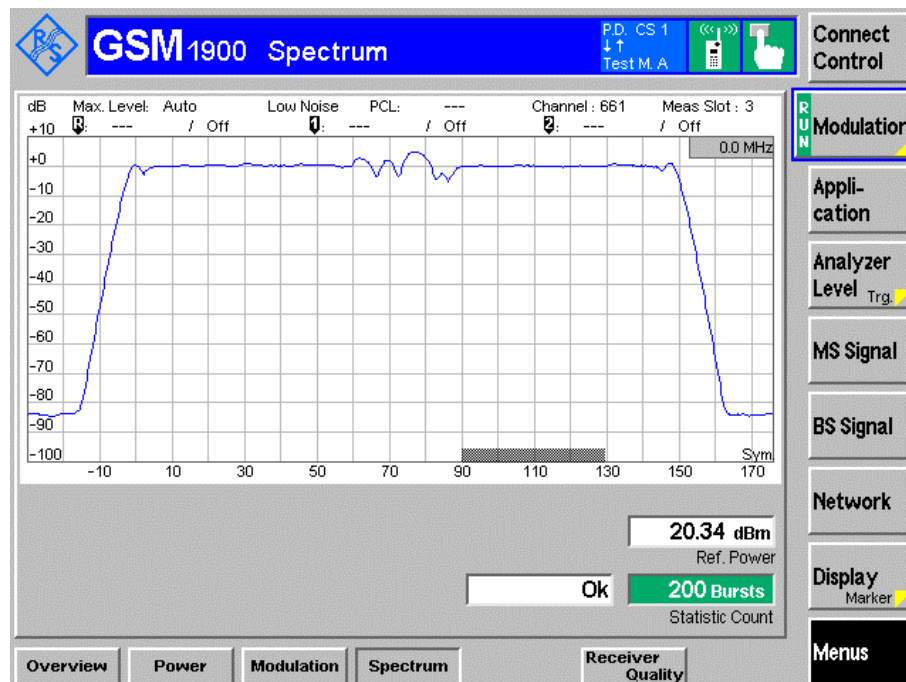
3.5. Test Result of Modulation

Product	Notebook		
Test Mode	Modulation		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	GSM 850 GPRS PCS1900 GPRS		

Packet Switched (GSM 850 GPRS)

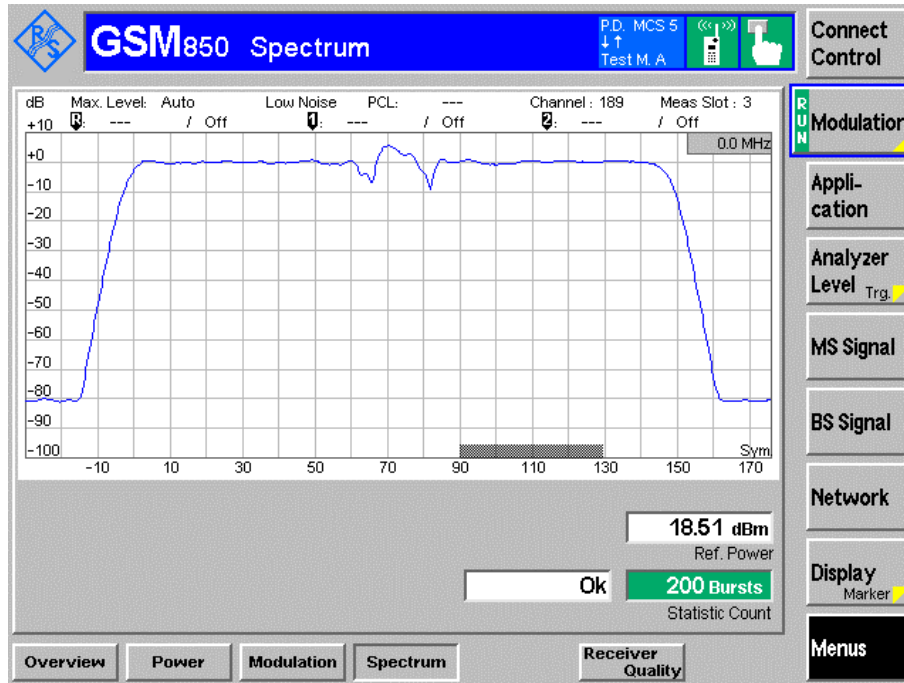


Packet Switched (PCS 1900 GPRS)

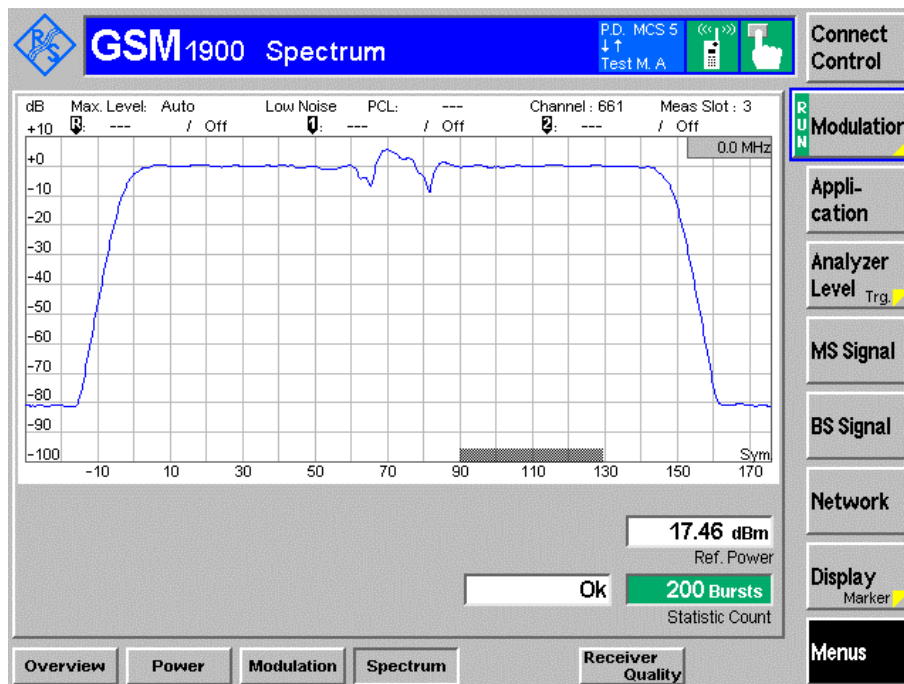


Product	Notebook		
Test Mode	Modulation		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	GSM 850 EGPRS PCS1900 EGPRS		

Packet Switched (GSM 850 EGPRS)

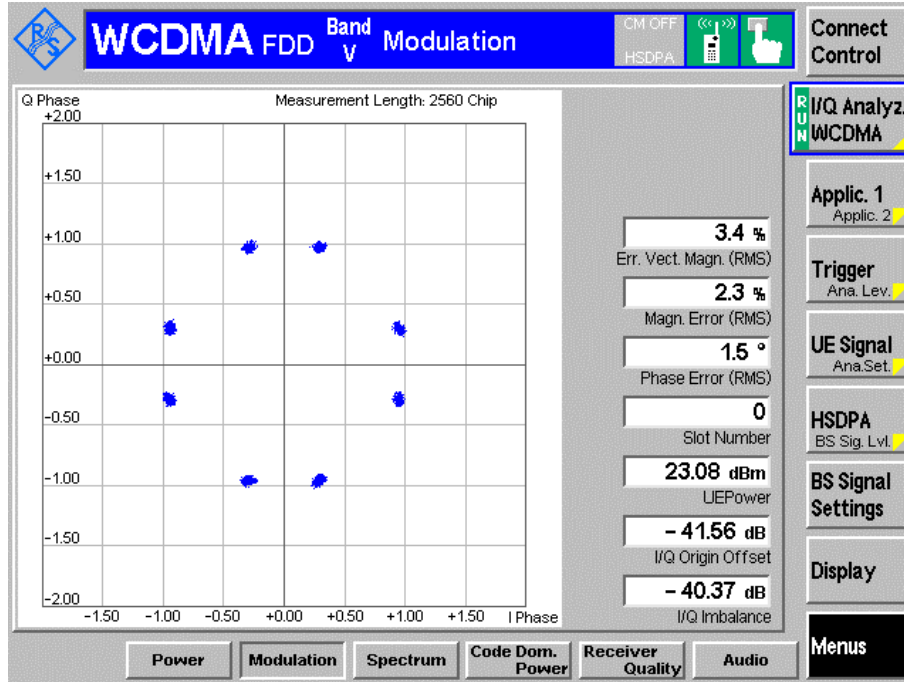


Packet Switched (PCS 1900 EGPRS)

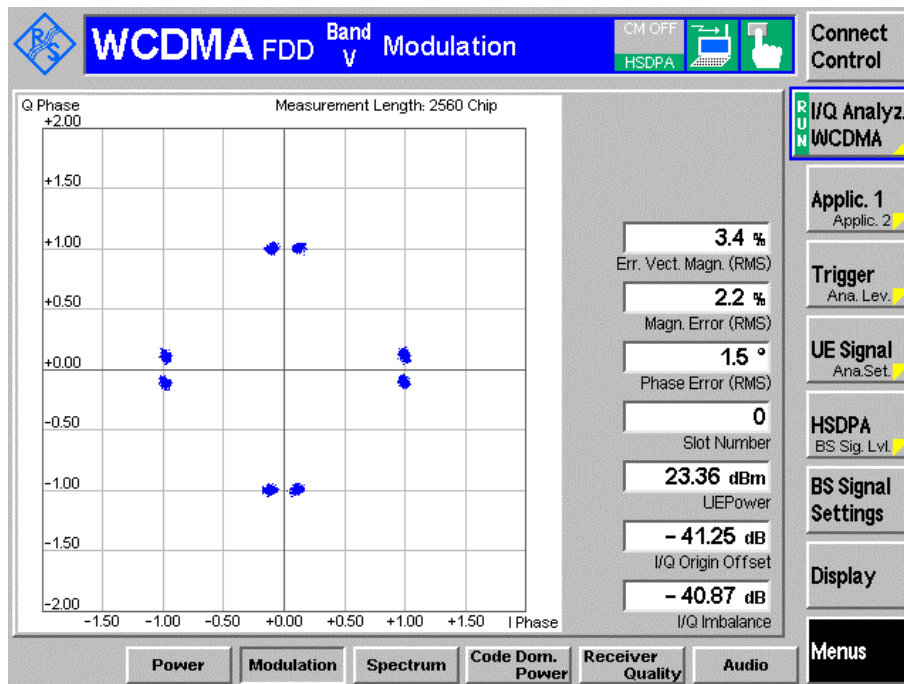


Product	Notebook		
Test Mode	Modulation		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND V WCDMA BAND V HSDPA		

Packet Switched (WCDMA BAND V)

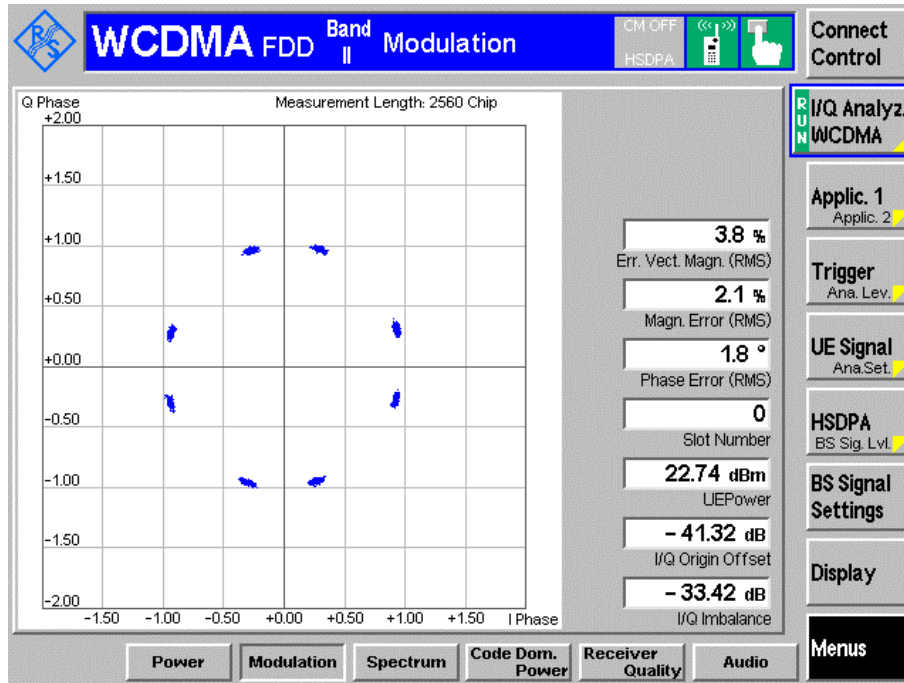


Packet Switched (WCDMA BAND V HSDPA)

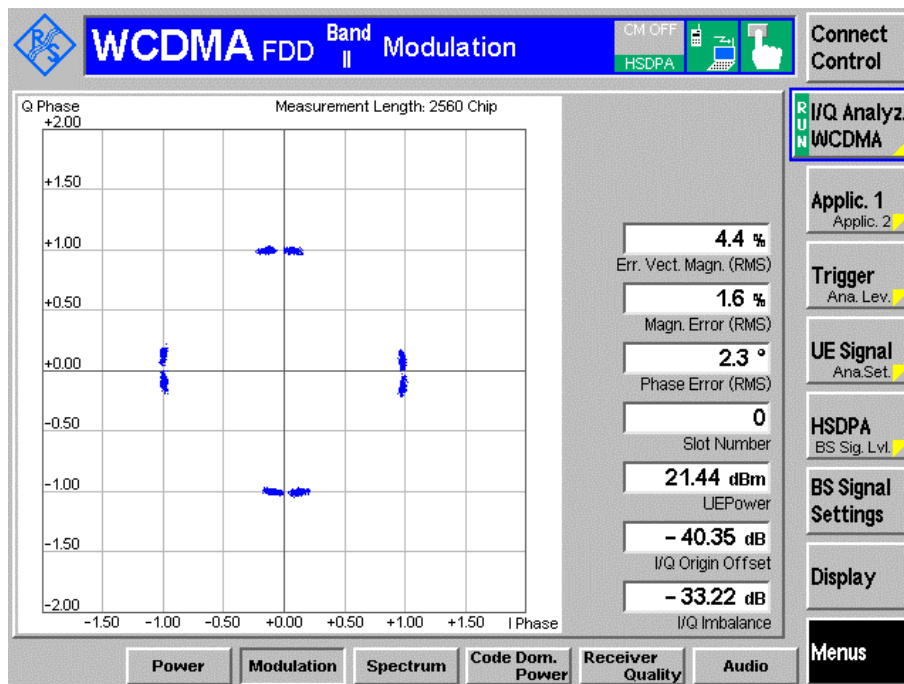


Product	Notebook		
Test Mode	Modulation		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND II WCDMA BAND II HSDPA		

Packet Switched (WCDMA BAND II)



Packet Switched (WCDMA BAND II HSDPA)



4. Occupied Bandwidth

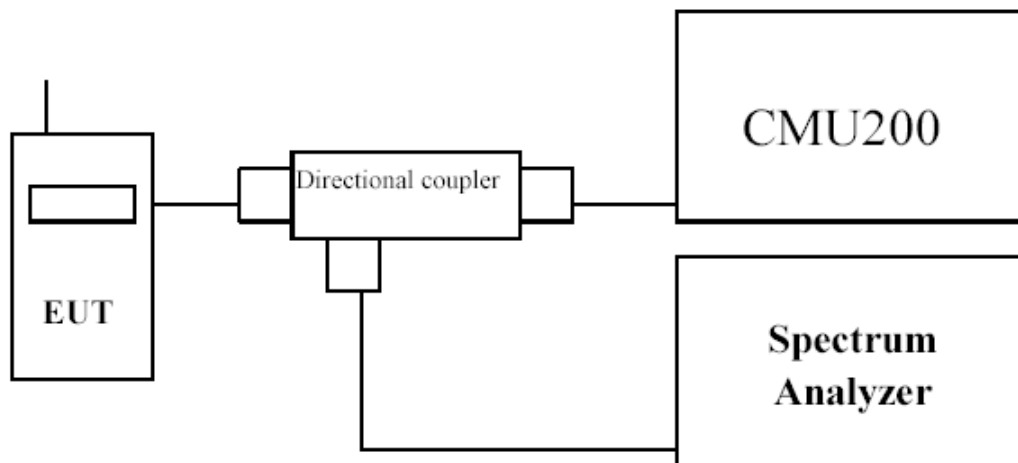
4.1. Test Equipment

The following test equipments are used during the occupied bandwidth tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	Advantest	R3182 / 100803470	May, 2008
Universal Radio Communication Tester	R & S	CMU200 / 104846	Apr., 2008
Directional coupler	Agilent	87300C / 3239A01864	N/A

Note: All equipments upon which need to be calibrated are with calibration period of 1 year.

4.2. Test Setup



4.3. Test Procedure

The EUT is tested with maximum rated TX power via the Base Station simulator, and the occupied bandwidth was measured at the antenna terminals of the EUT.

The Resolution BW of the analyzer is set to 1 % of the emission bandwidth. The EUT's occupied bandwidth is measured as the width of the signal between two points, one below the carrier center frequency and one above the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The plots below show the resultant display from the Spectrum Analyzer.

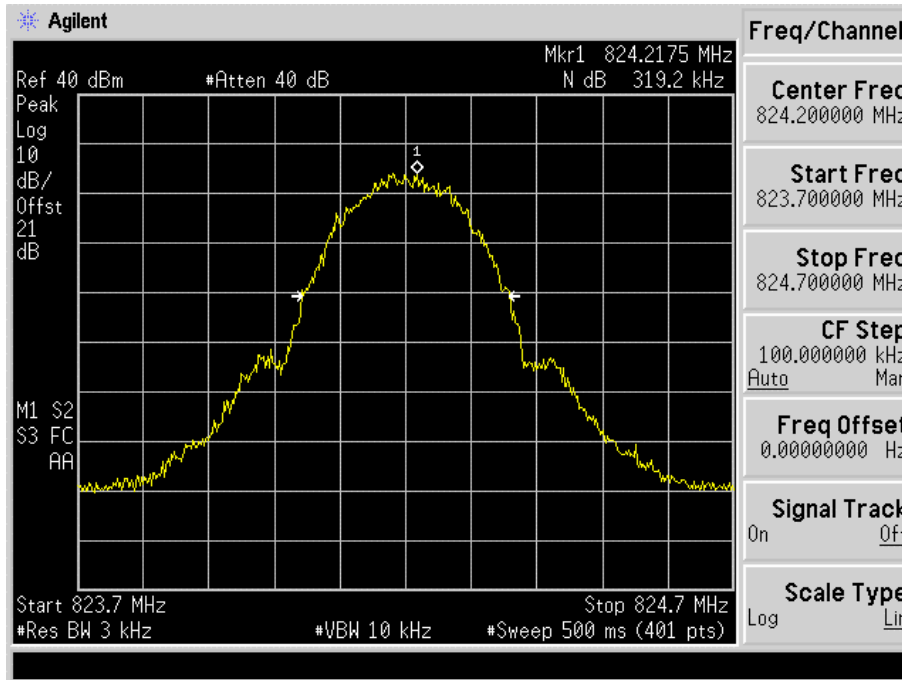
4.4. Test Specification

According to Part 2.1049, 22.917(b), 24.238(b).

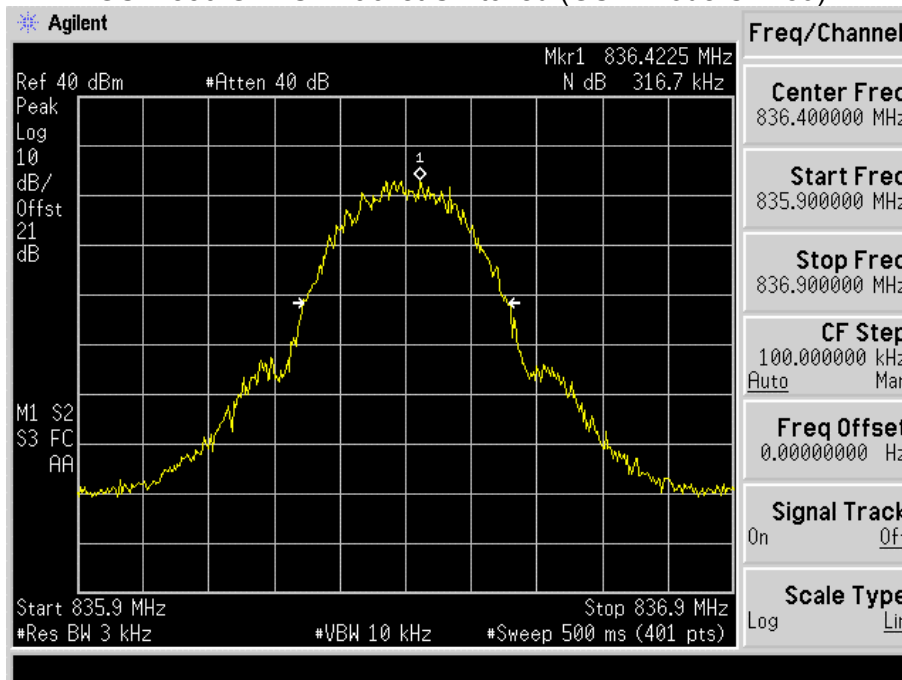
4.5. Test Result of Occupied Bandwidth

Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	GSM 850 GPRS		

GSM 850 GPRS - Packet Switched (GSM Mode CH 128)

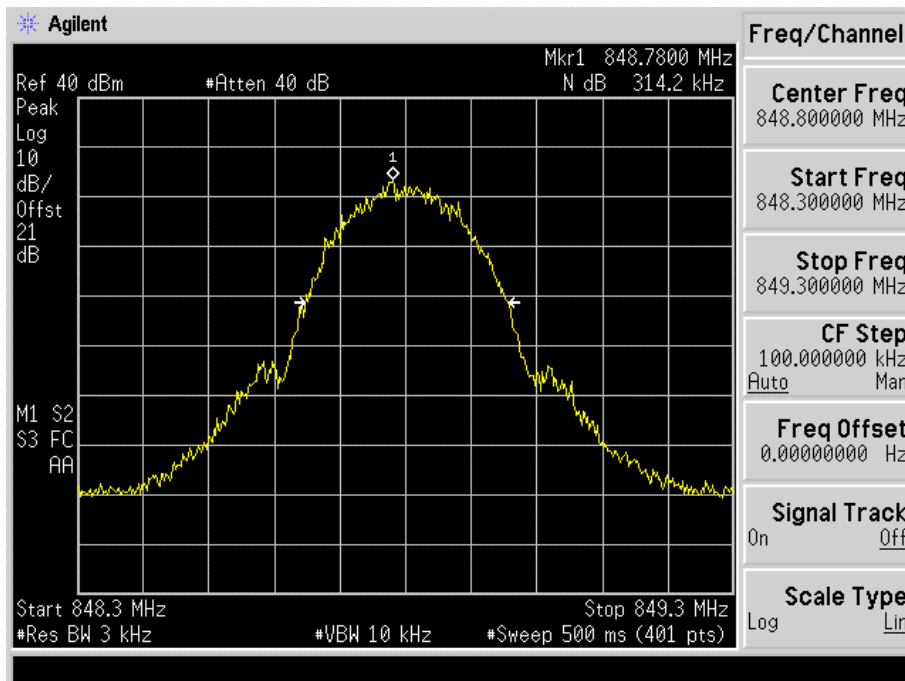


GSM 850 GPRS - Packet Switched (GSM Mode CH189)



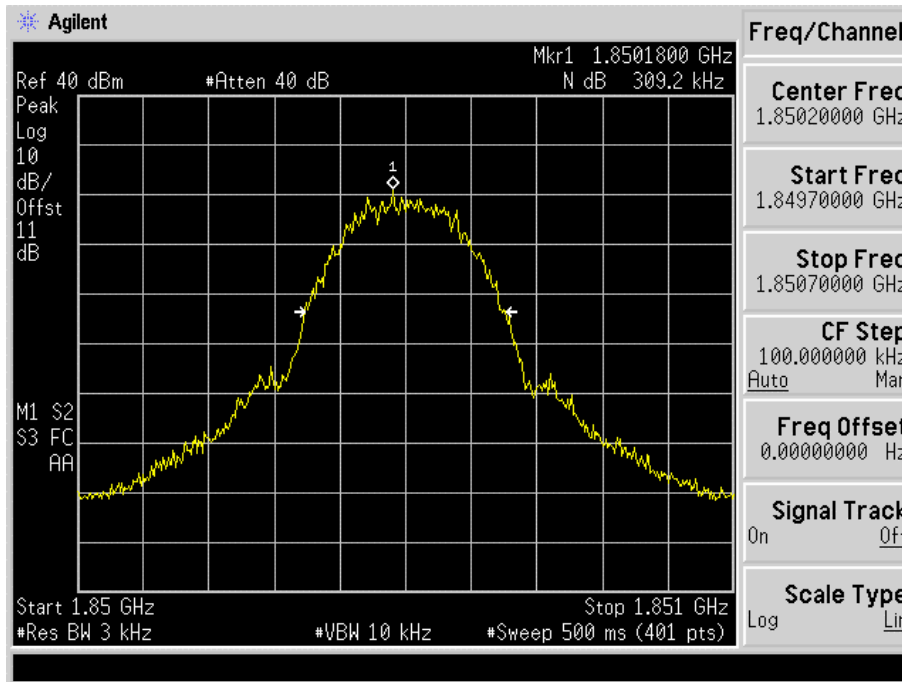
Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	GSM 850 GPRS		

GSM 850 GPRS - Packet Switched (GSM Mode CH 251)

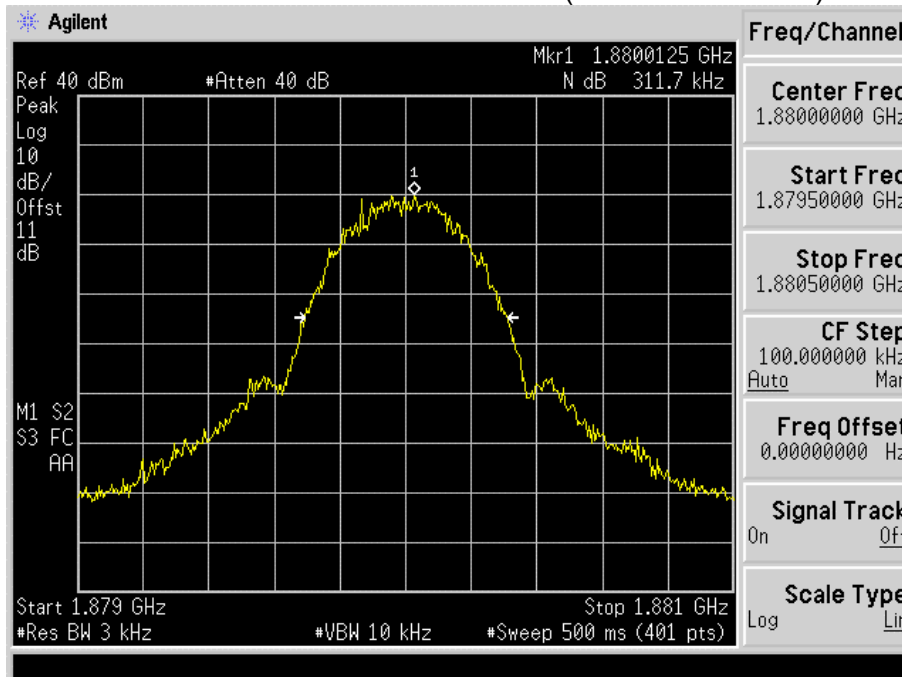


Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	PCS1900 GPRS		

PCS1900 GPRS - Packet Switched (PCS Mode CH 512)

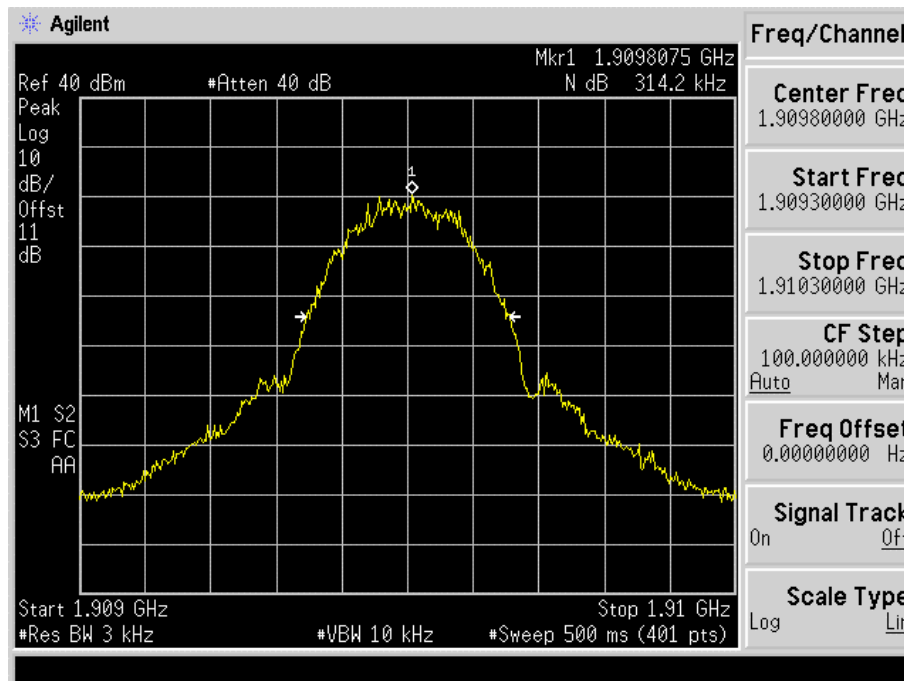


PCS1900 GPRS - Packet Switched (PCS Mode CH661)



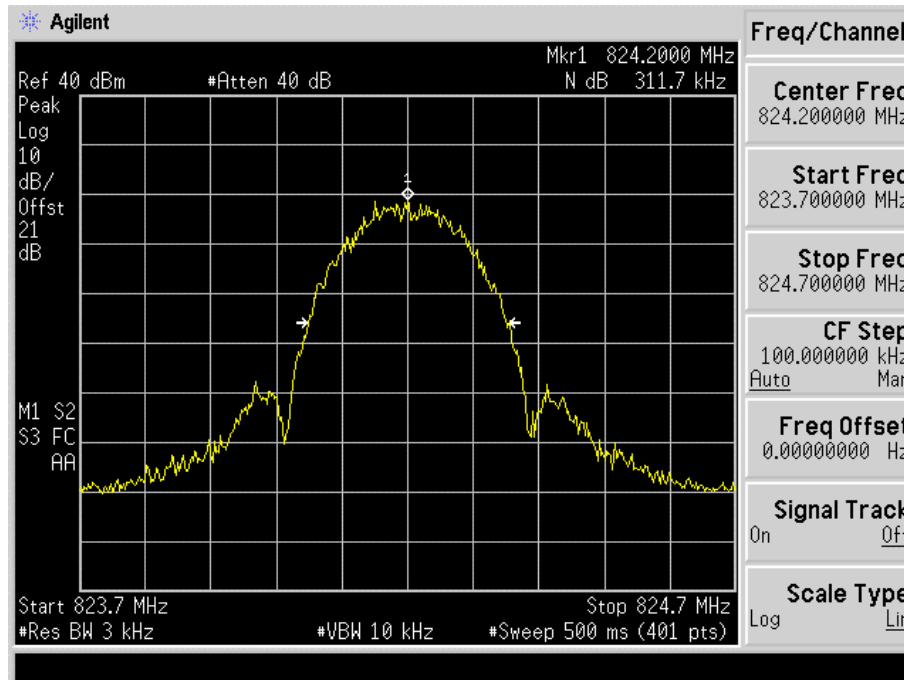
Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	PCS1900 GPRS		

PCS1900 GPRS - Packet Switched (PCS Mode CH 810)

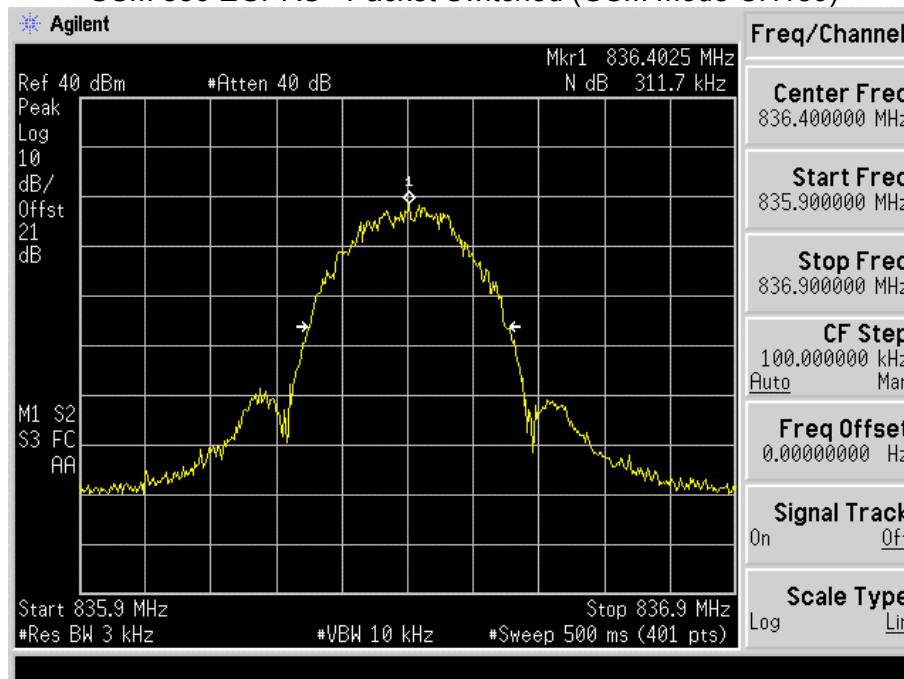


Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	GSM 850 EGPRS		

GSM 850 EGPRS - Packet Switched (GSM Mode CH 128)

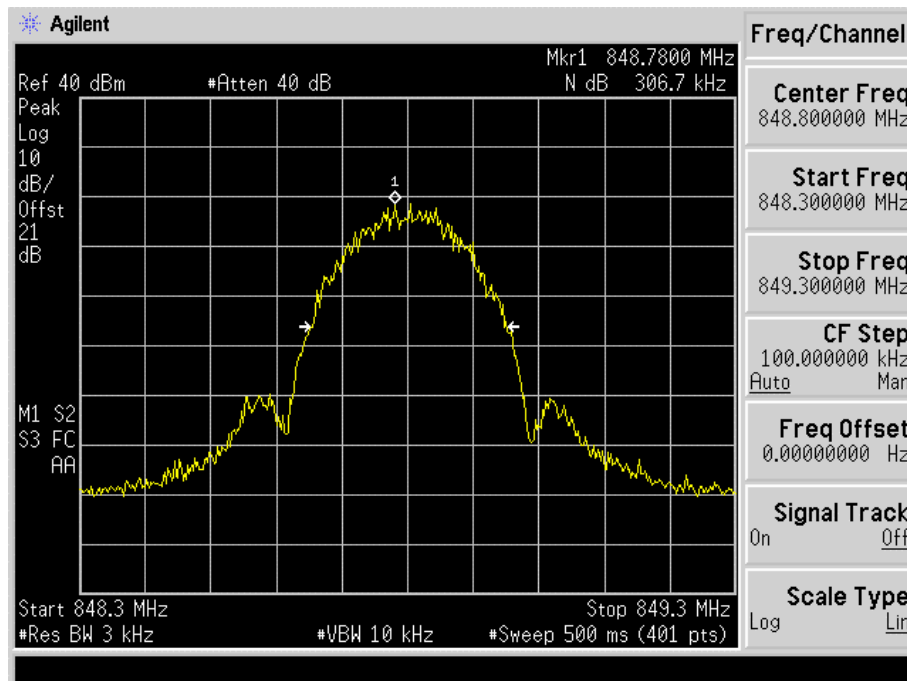


GSM 850 EGPRS - Packet Switched (GSM Mode CH189)



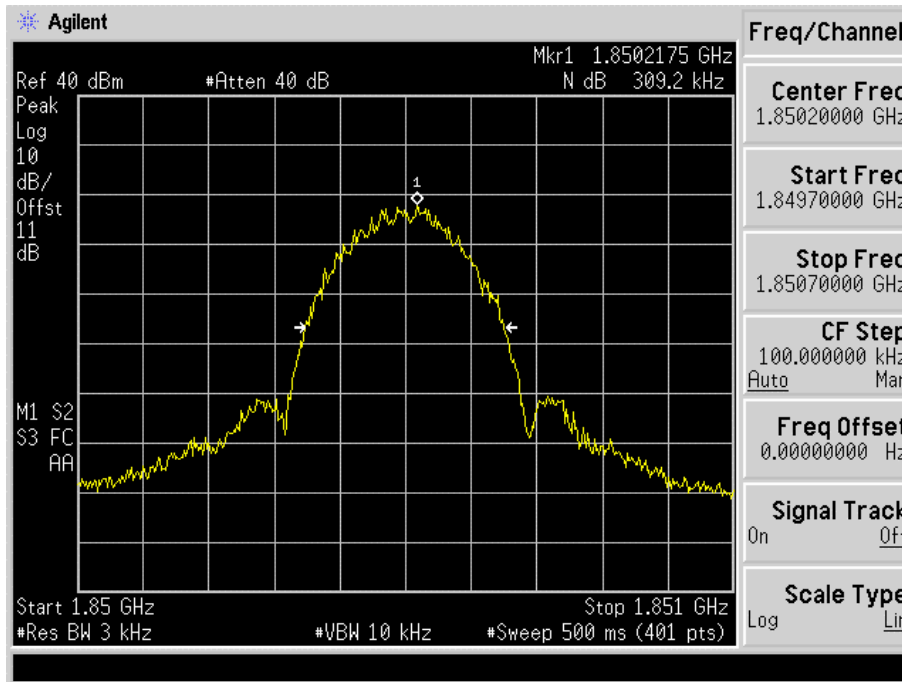
Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	GSM 850 EGPRS		

GSM 850 EGPRS - Packet Switched (GSM Mode CH 251)

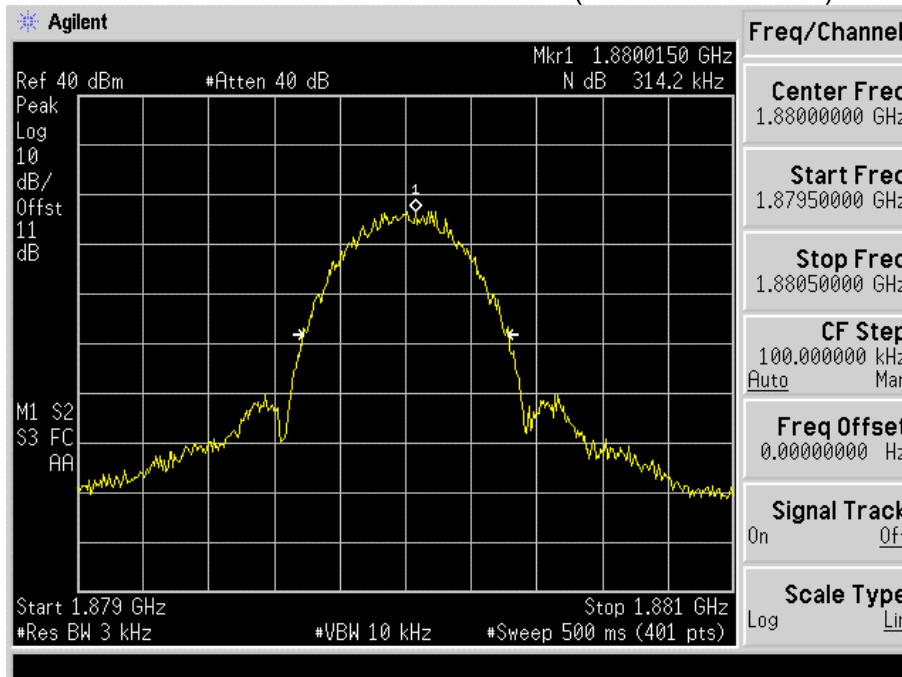


Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	PCS1900 EGPRS		

PCS1900 EGPRS - Packet Switched (PCS Mode CH 512)

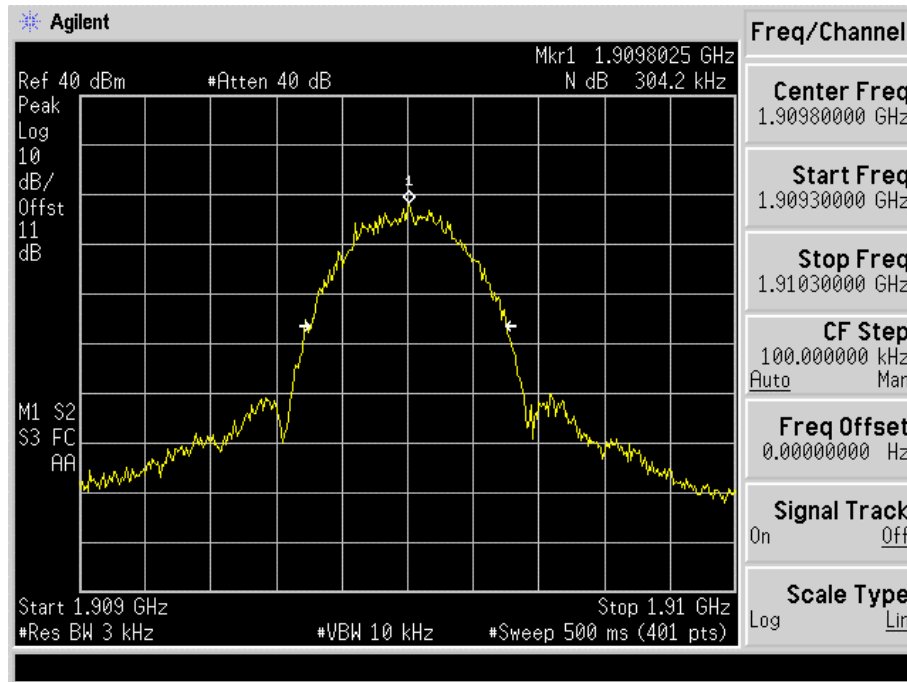


PCS1900 EGPRS - Packet Switched (PCS Mode CH661)



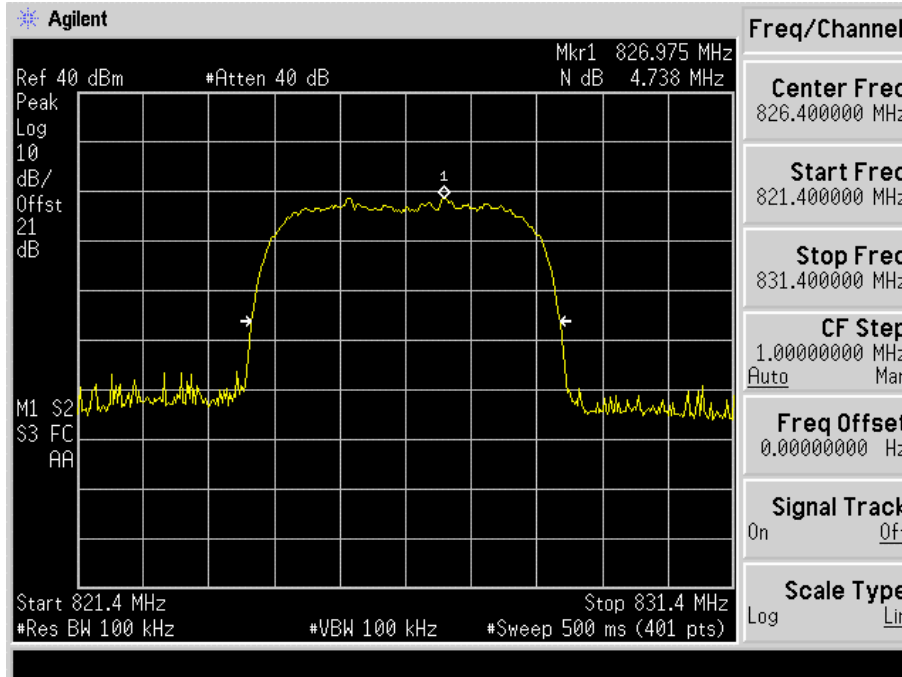
Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	PCS1900 EGPRS		

PCS1900 EGPRS - Packet Switched (PCS Mode CH 810)

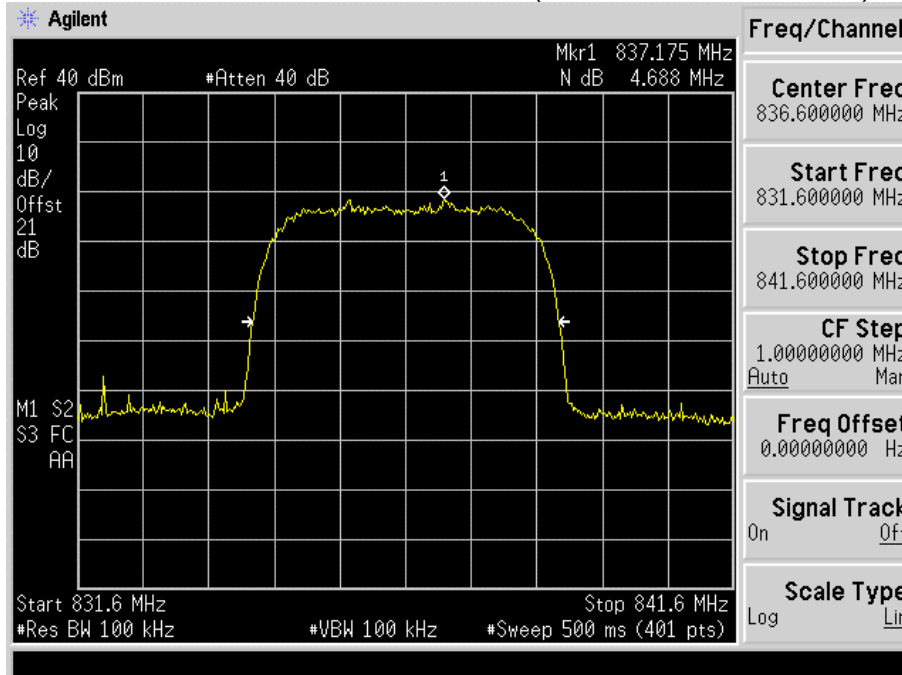


Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND V		

WCDMA BAND V - Packet Switched (WCDMA Mode CH 4132)

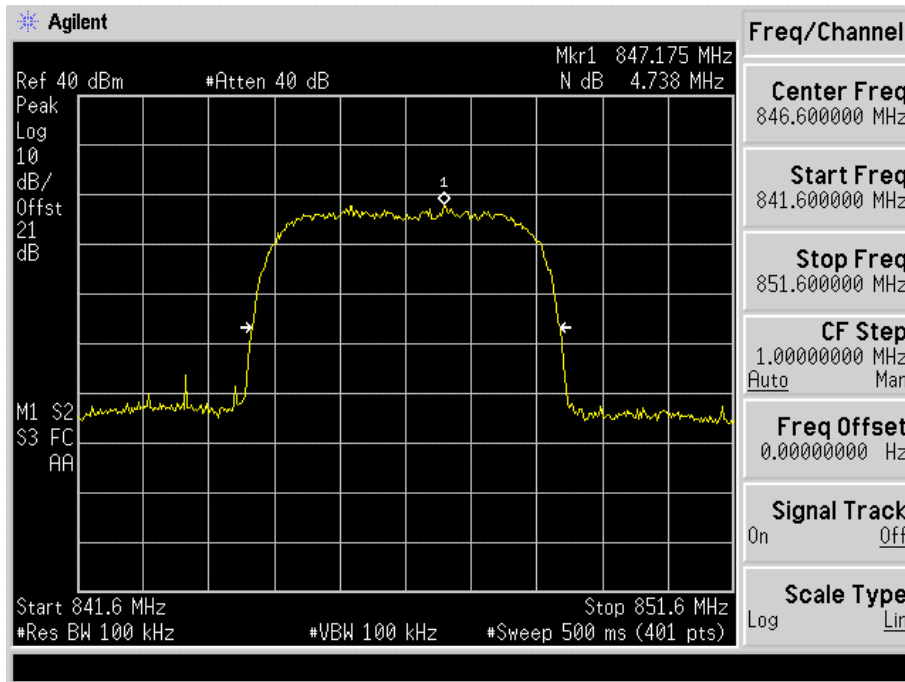


WCDMA BAND V - Packet Switched (WCDMA Mode CH 4183)



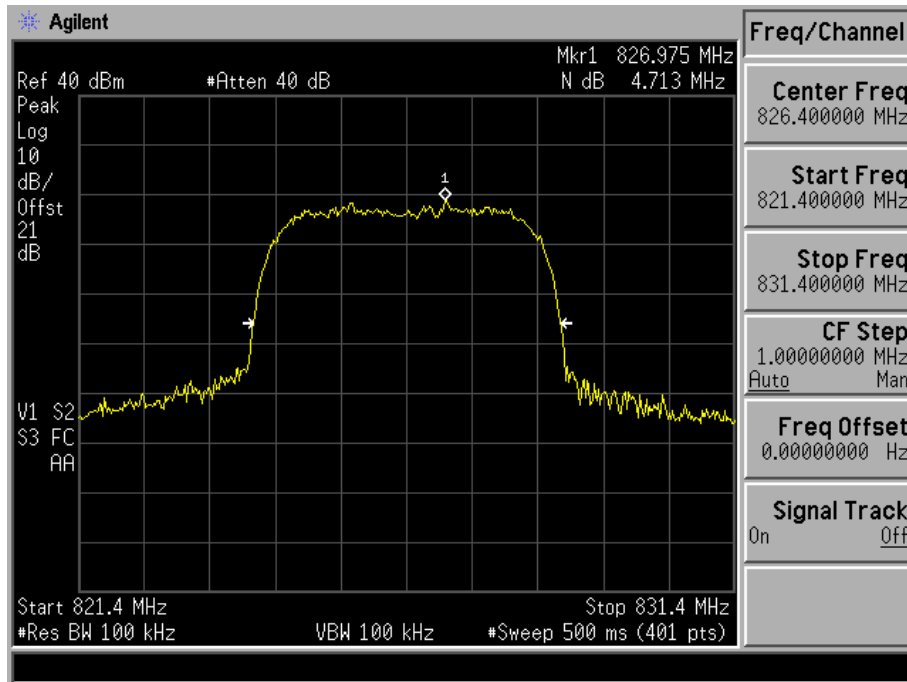
Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND V		

WCDMA BAND V - Packet Switched (WCDMA Mode CH 4233)

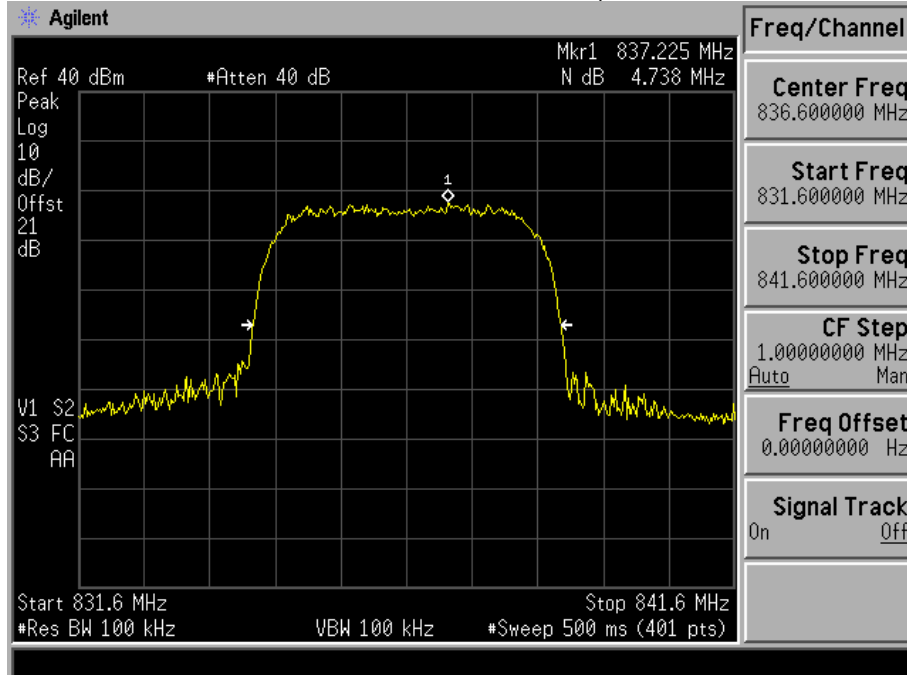


Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND V HSDPA		

WCDMA BAND V HSDPA - Packet Switched (HSDPA Mode CH 4132)

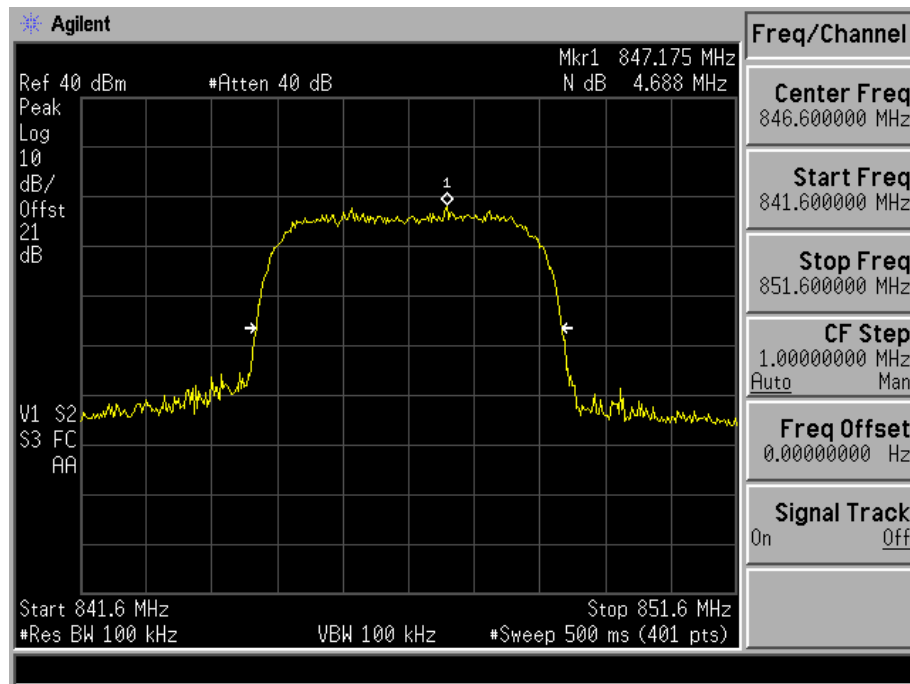


WCDMA BAND V HSDPA - Packet Switched (HSDPA Mode CH 4183)



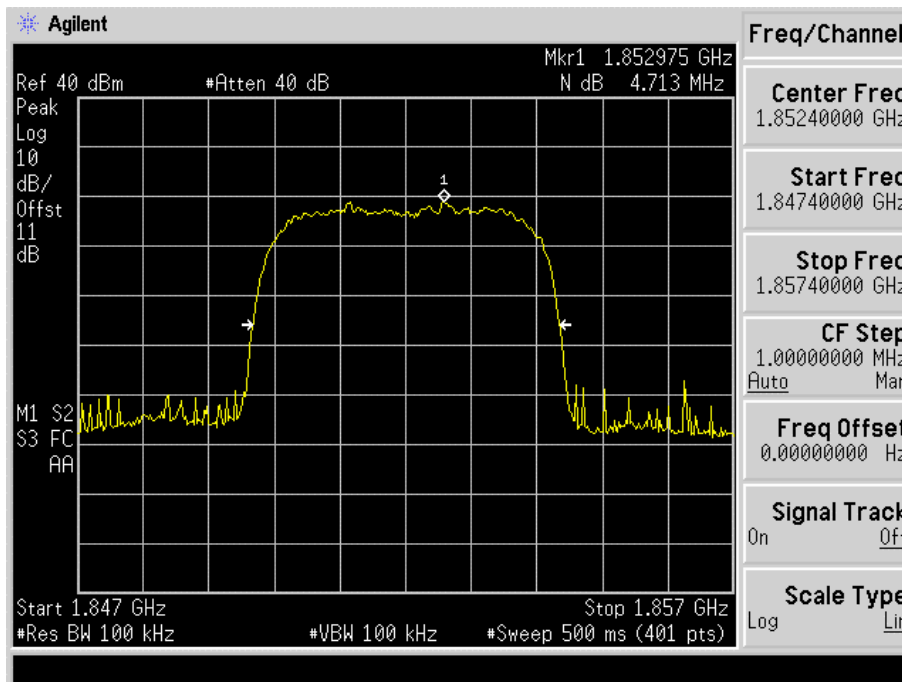
Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND V HSDPA		

WCDMA BAND V HSDPA - Packet Switched (HSDPA Mode CH 4233)

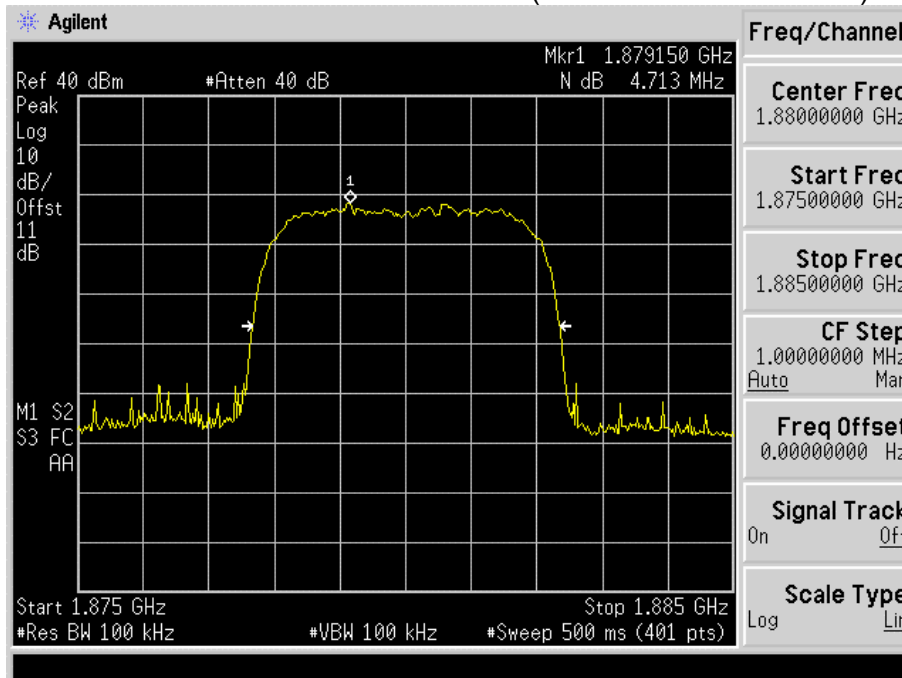


Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND II		

WCDMA BAND II - Packet Switched (WCDMA Mode CH 9262)

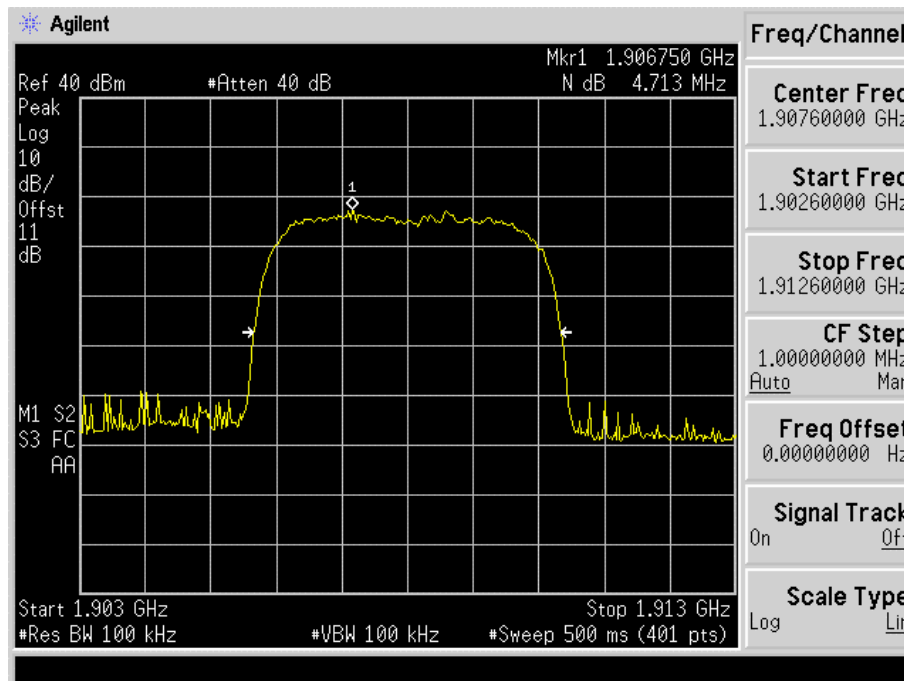


WCDMA BAND II - Packet Switched (WCDMA Mode CH 9400)



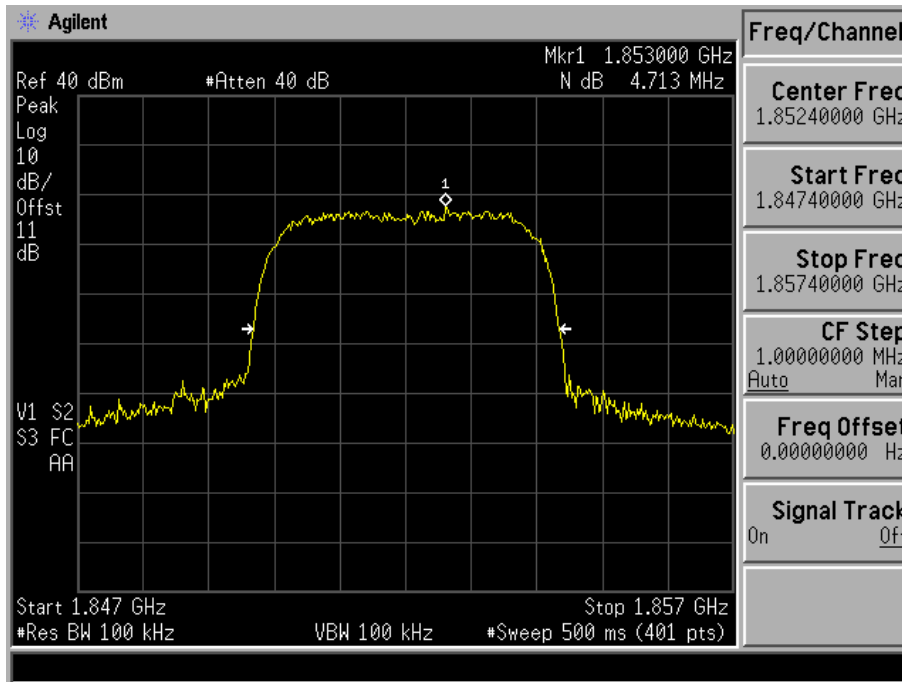
Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND II		

WCDMA BAND II - Packet Switched (WCDMA Mode CH 9538)

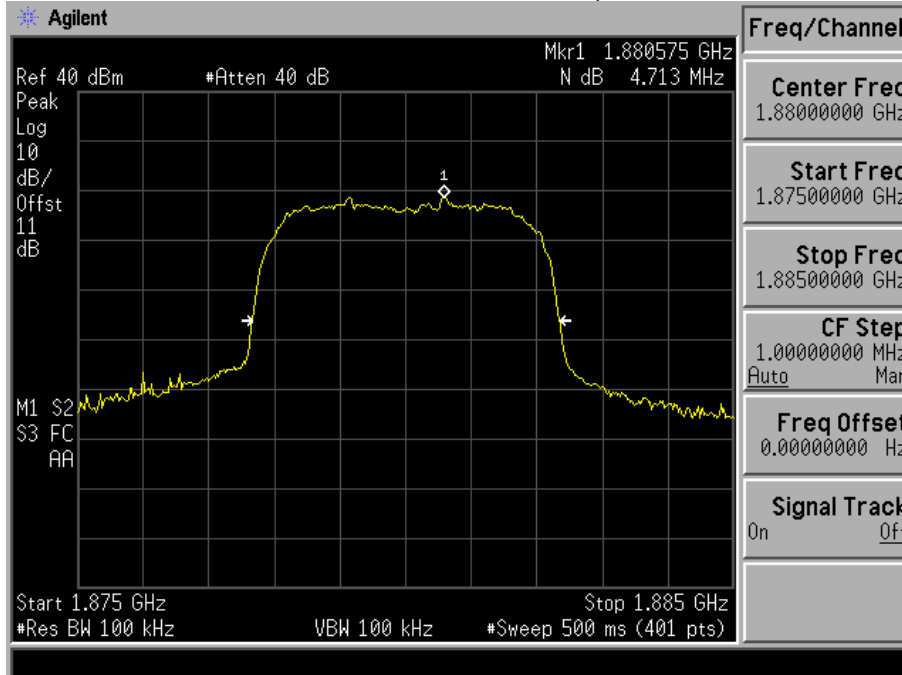


Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND II HSDPA		

WCDMA BAND II HSDPA - Packet Switched (HSDPA Mode CH 9262)

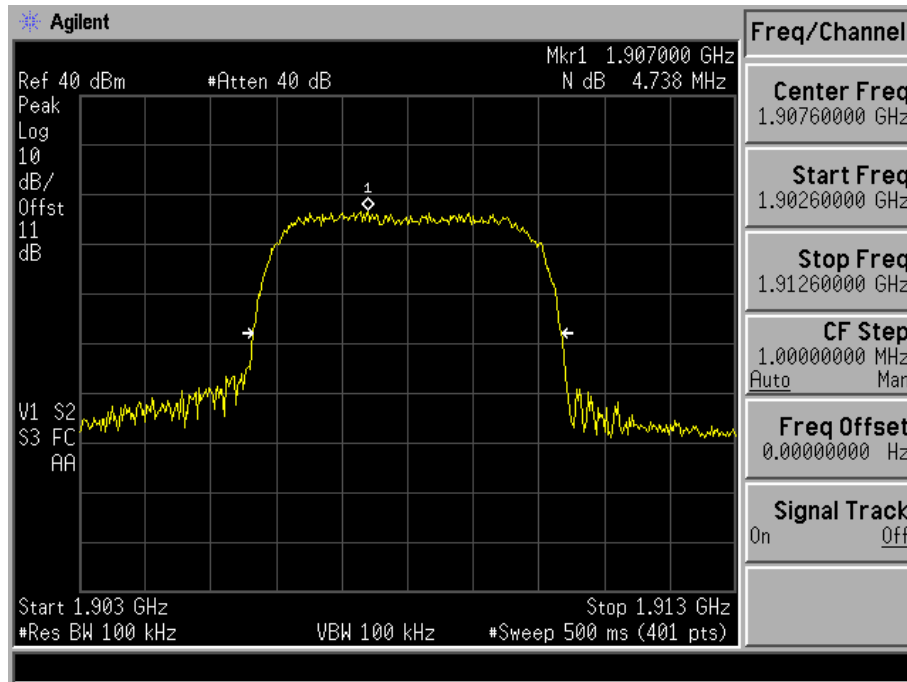


WCDMA BAND II HSDPA - Packet Switched (HSDPA Mode CH 9400)



Product	Notebook		
Test Mode	Occupied Bandwidth		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND II HSDPA		

WCDMA BAND II HSDPA - Packet Switched (HSDPA Mode CH 9538)



5. Spurious Emission At Antenna Terminals (+/-1MHz)

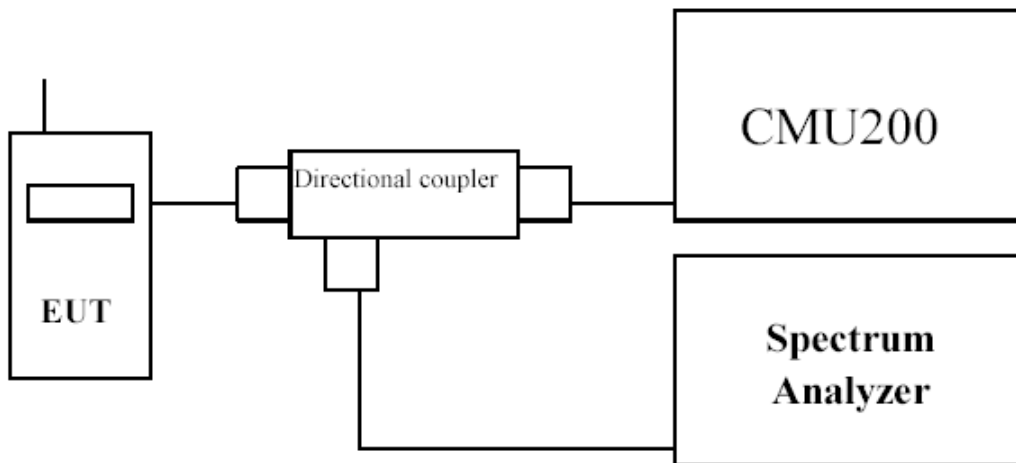
5.1. Test Equipment

The following test equipments are used during the spurious emission test

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	Advantest	R3182 / 100803470	May, 2008
Universal Radio Communication Tester	R & S	CMU200 / 104846	Apr., 2008
Directional coupler	Agilent	87300C / 3239A01864	N/A

Note: All equipments upon which need to be calibrated are with calibration period of 1 year.

5.2. Setup



5.3. Limits

Cellular Band Transmitter limits for narrowband spurious emission

Lower Block Edge Test Frequencies	Upper Block Edge Test Frequencies
Block A Channel : 128 Frequency : 824.2 MHz	Block B Channel : 251 Frequency : 848.8 MHz

PCS Band Transmitter limits for narrowband spurious emission

Lower Block Edge Test Channels/Frequencies	Upper Block Edge Test Channels/Frequencies
Block A Channel : 512 Frequency : 1850.2 MHz	Block C Channel : 810 Frequency : 1909.8 MHz

5.4. Test Procedure

In accordance with Part 22.917 and 24.238, at least 1% of the emission bandwidth was used for the resolution and video bandwidths up to 1MHz away from the Block Edge. At greater than 1MHz, the resolution and video bandwidth were increased to 1MHz.

The reference power and path losses of all channels used for testing in each frequency block were measured.

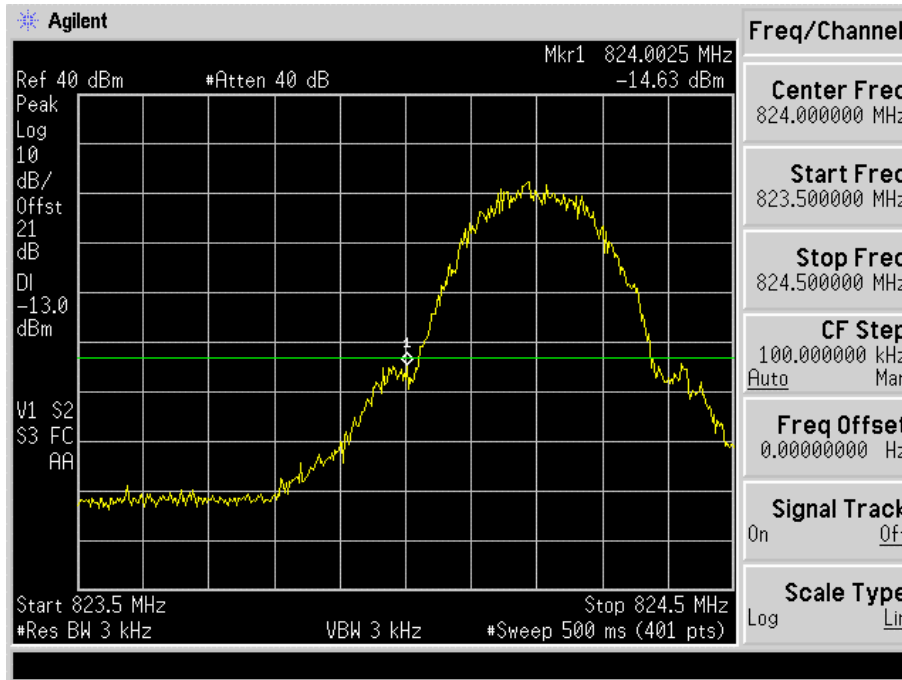
5.5. Test Specification

According to Part 2.1049, 22.917,24.238.

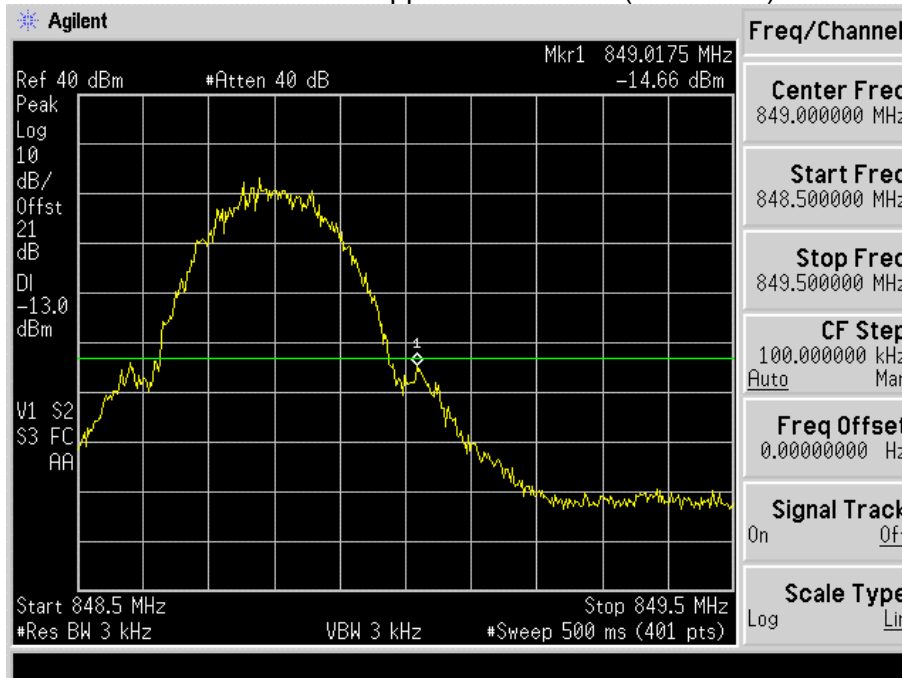
5.6. Test Result of Spurious Emission At Antenna Terminals (+/-1MHz)

Product	Notebook		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	Block Edge Test (GSM 850 GPRS)		

GSM 850 GPRS Lower Channel 128 (824.2MHz)

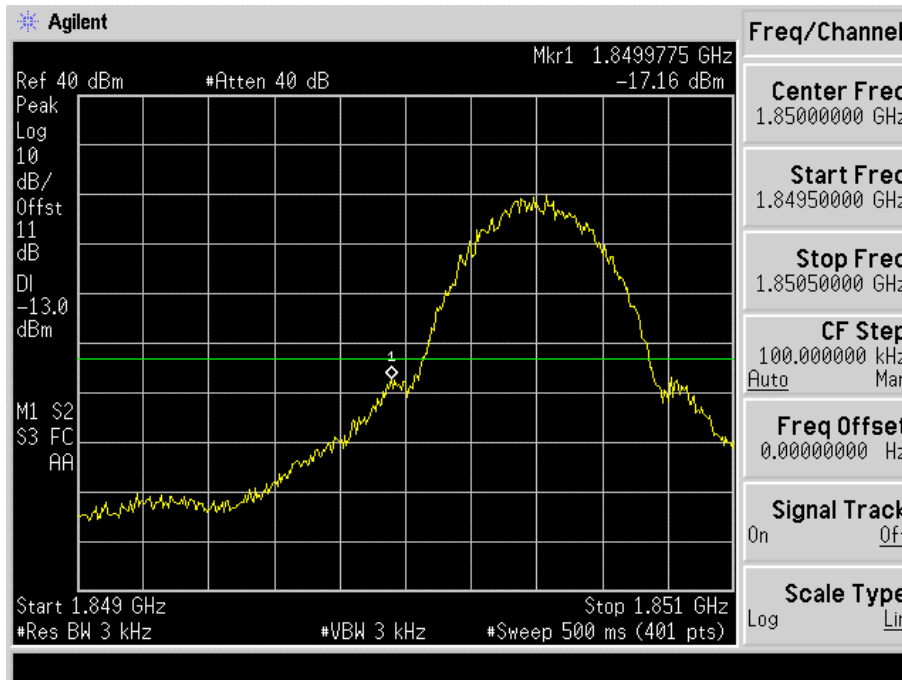


GSM 850 GPRS Upper Channel 251(848.8MHz)

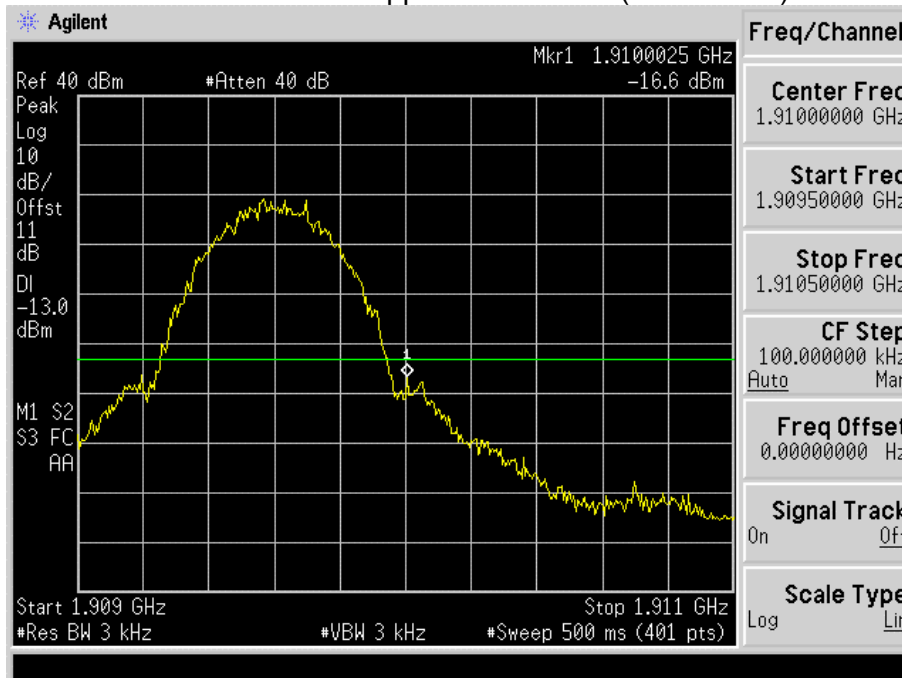


Product	Notebook		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	Block Edge Test (PCS 1900 GPRS)		

PCS 1900 GPRS Lower Channel 512 (1850.2MHz)

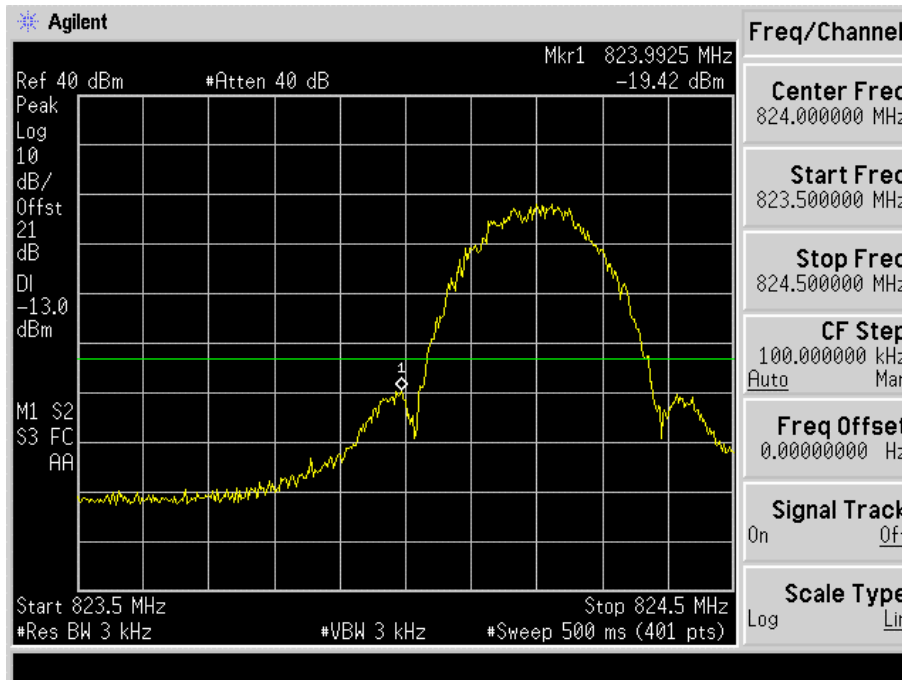


PCS 1900 GPRS Upper Channel 810(1910.0MHz)

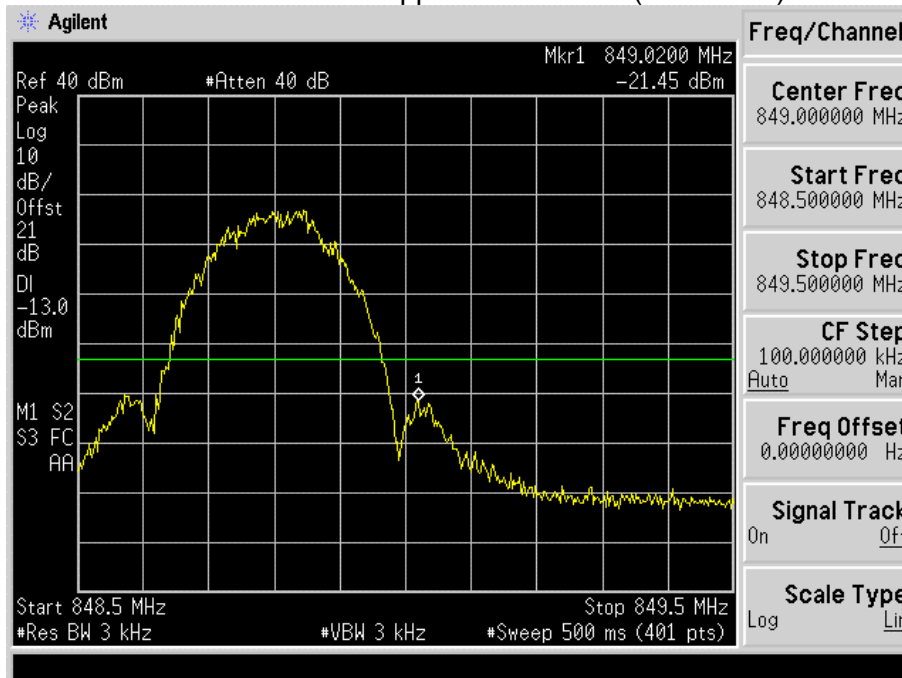


Product	Notebook		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	Block Edge Test (GSM 850 EGPRS)		

GSM 850 EGPRS Lower Channel 128 (824.2MHz)

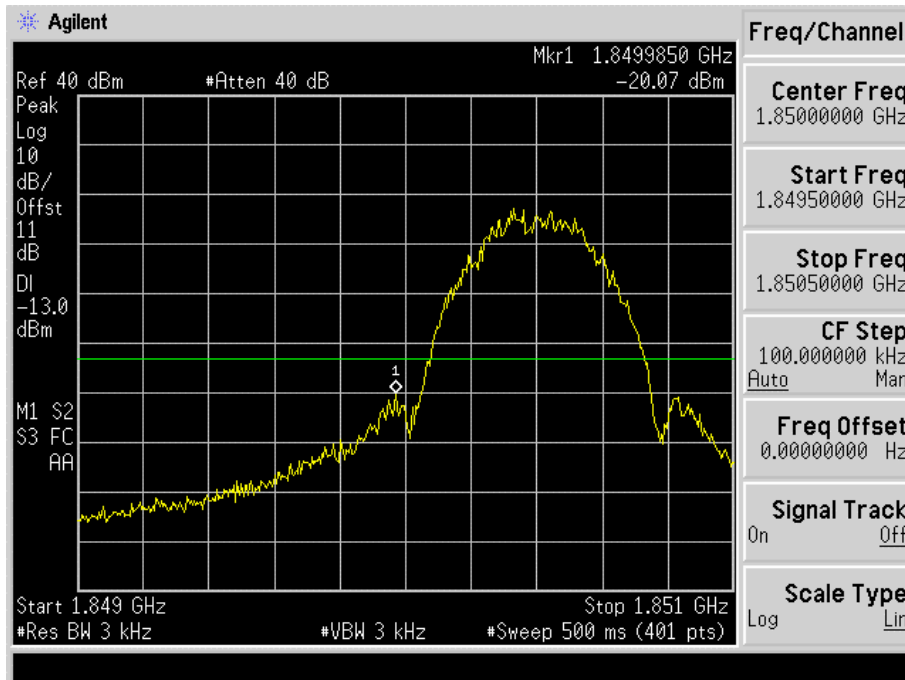


GSM 850 EGPRS Upper Channel 251(848.8MHz)

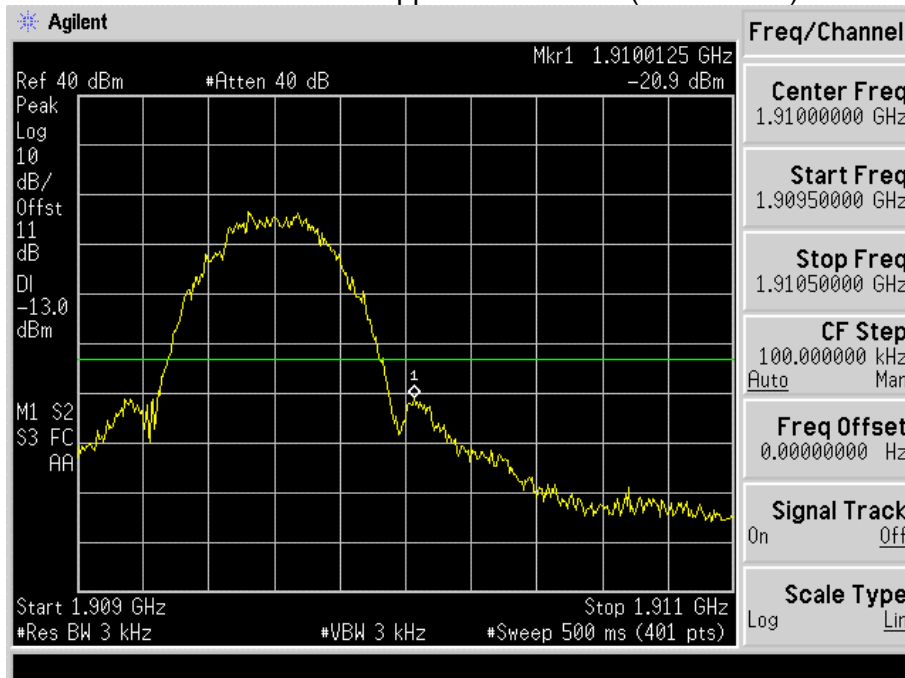


Product	Notebook		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	Block Edge Test (PCS 1900 EGPRS)		

PCS 1900 EGPRS Lower Channel 512 (1850.2MHz)

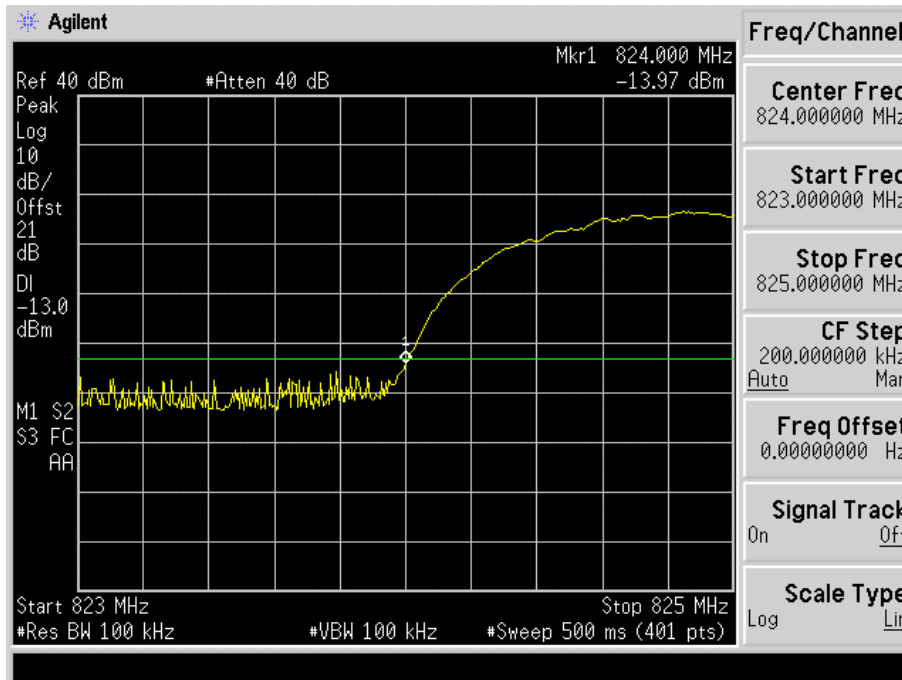


PCS 1900 EGPRS Upper Channel 810(1910.0MHz)

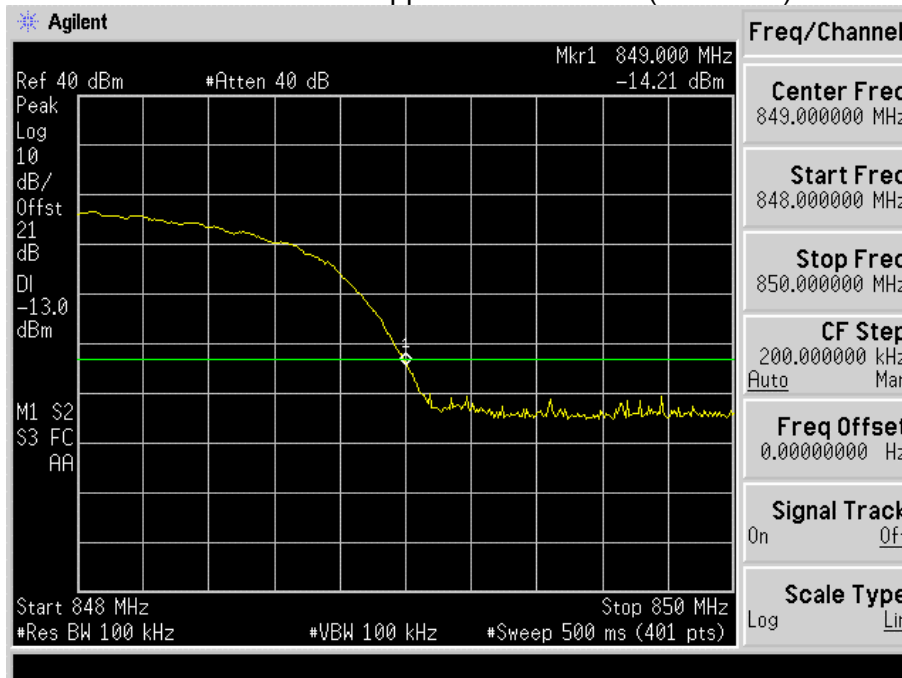


Product	Notebook		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	Block Edge Test (WCDMA BAND V)		

WCDMA BAND V Lower Channel 4132 (826.4MHz)

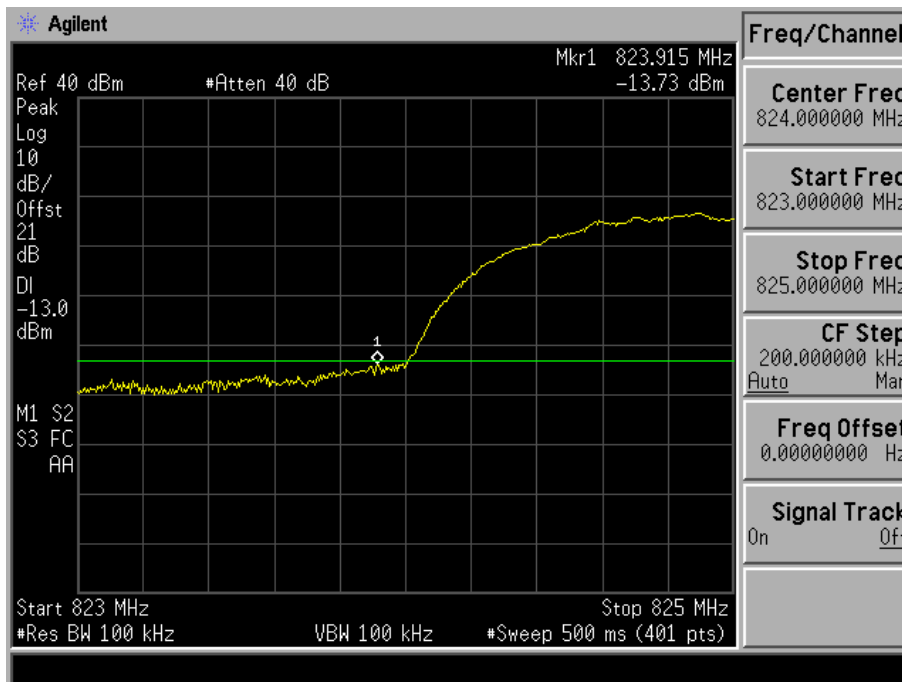


WCDMA BAND V Upper Channel 4233 (4233MHz)

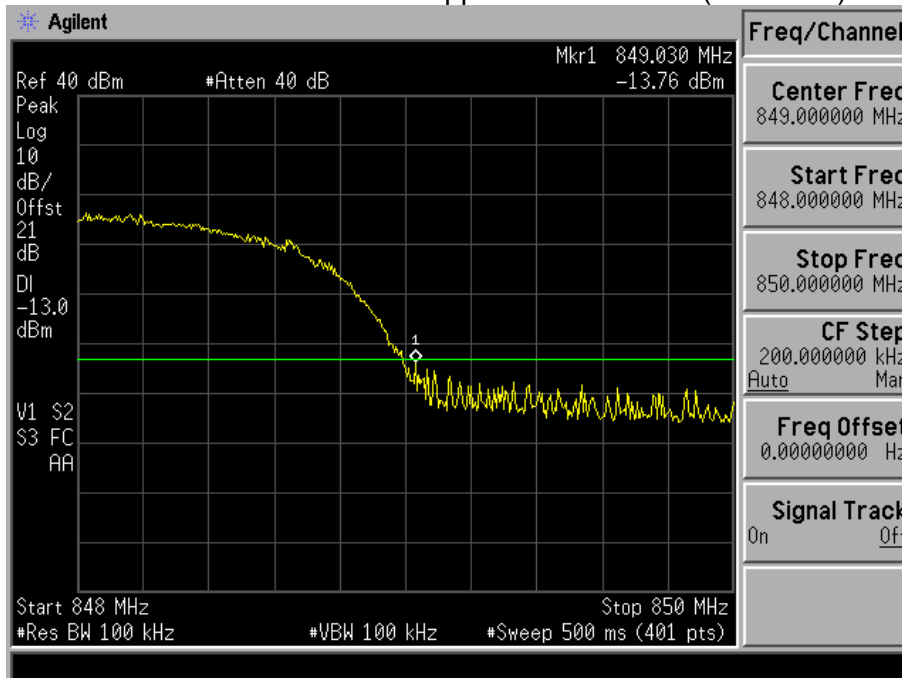


Product	Notebook		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	Block Edge Test (WCDMA BAND V HSDPA)		

WCDMA BAND V HSDPA Lower Channel 4132 (826.4MHz)

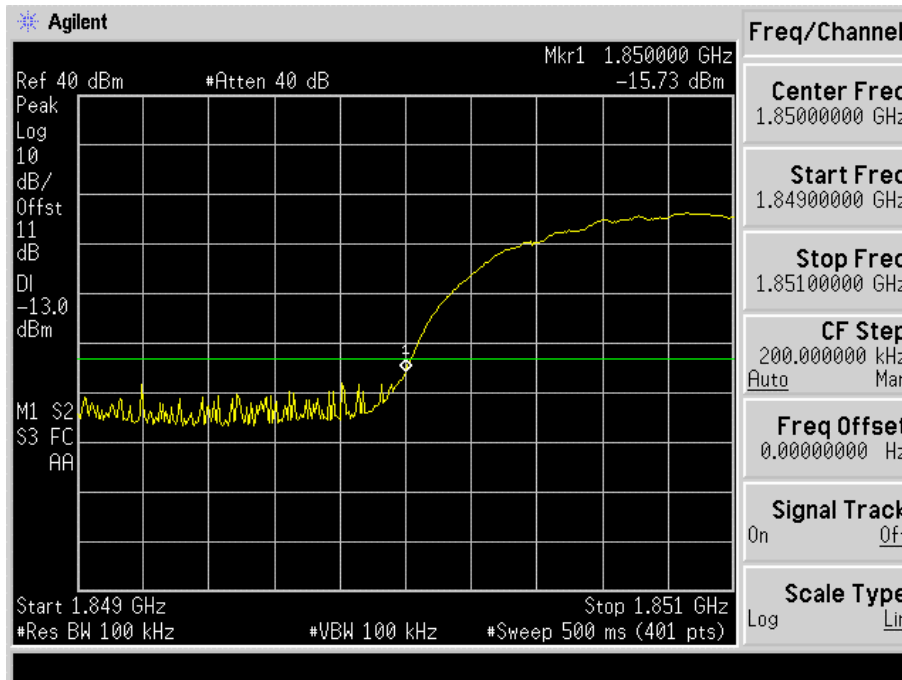


WCDMA BAND V HSDPA Upper Channel 4233 (4233MHz)

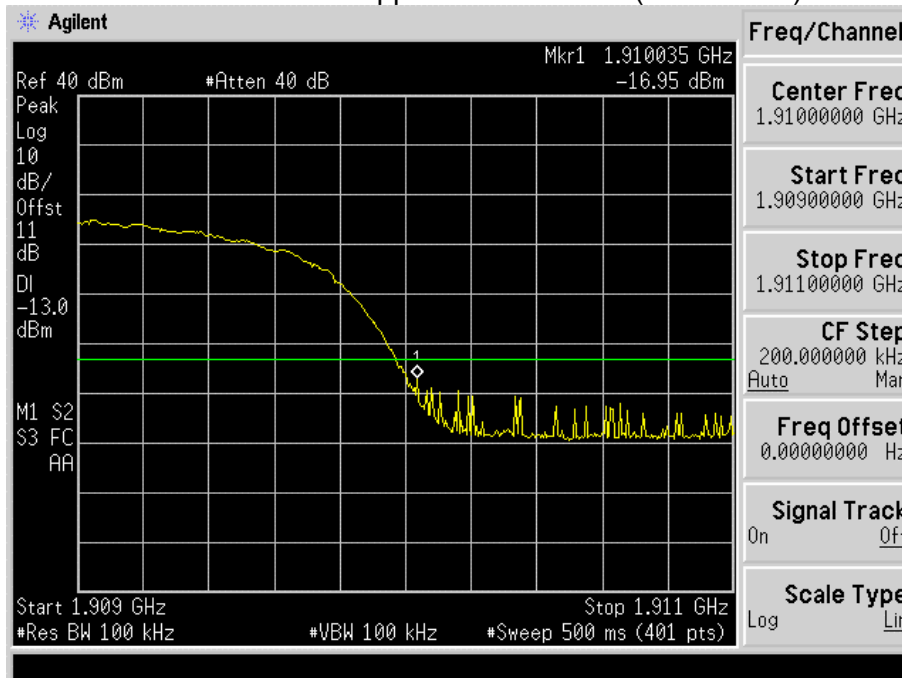


Product	Notebook		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	Block Edge Test (WCDMA BAND II)		

WCDMA BAND II Lower Channel 9262 (1.8524GHz)

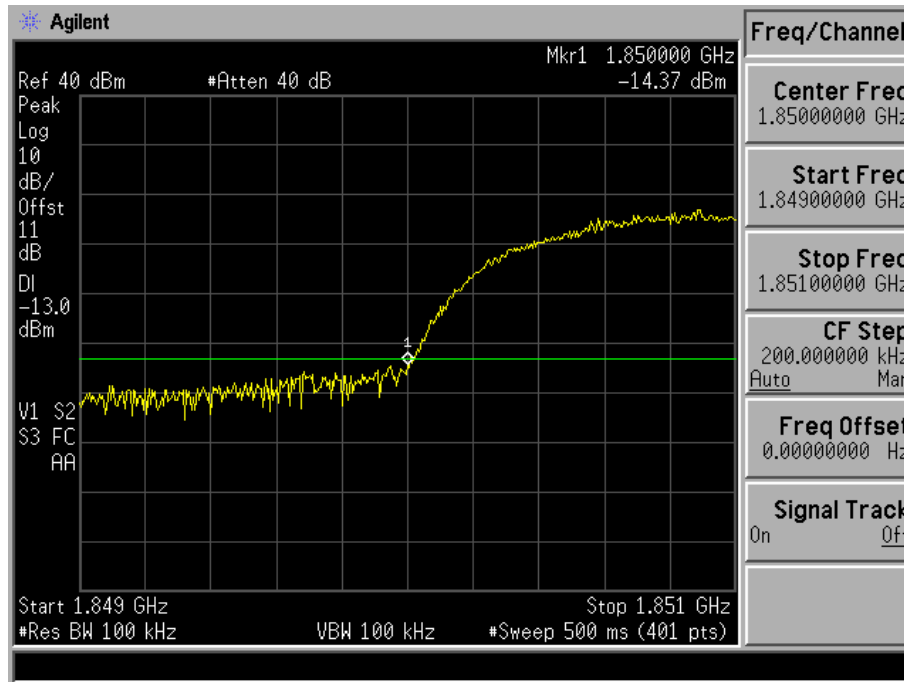


WCDMA BAND II Upper Channel 9538 (1.9076GHz)

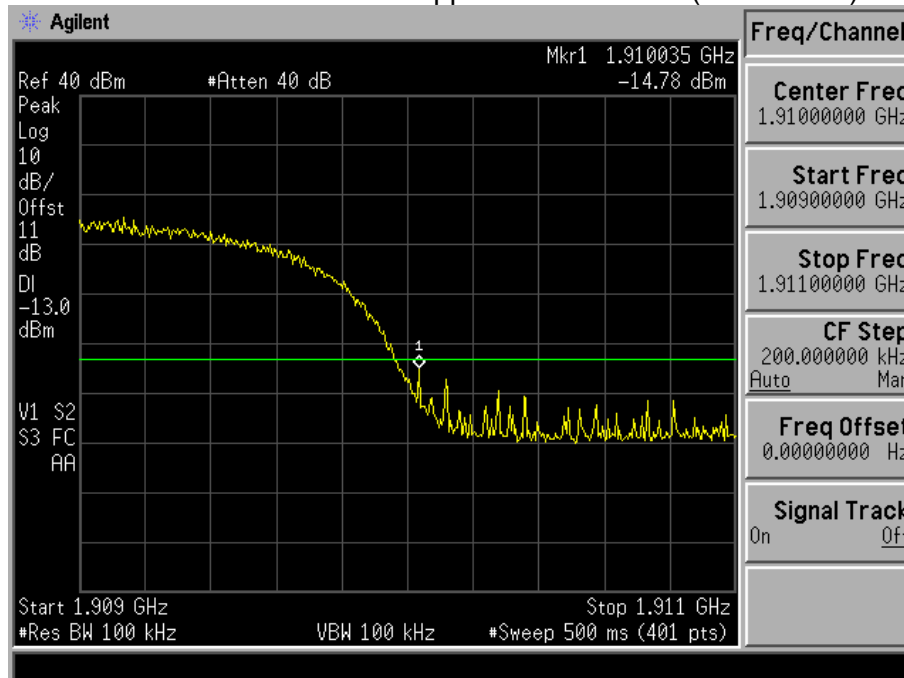


Product	Notebook		
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	Block Edge Test (WCDMA BAND II HSDPA)		

WCDMA BAND II HSDPA Lower Channel 9262 (1.8524GHz)



WCDMA BAND II HSDPA Upper Channel 9538 (1.9076GHz)



6. Spurious Emission

6.1. Test Equipment

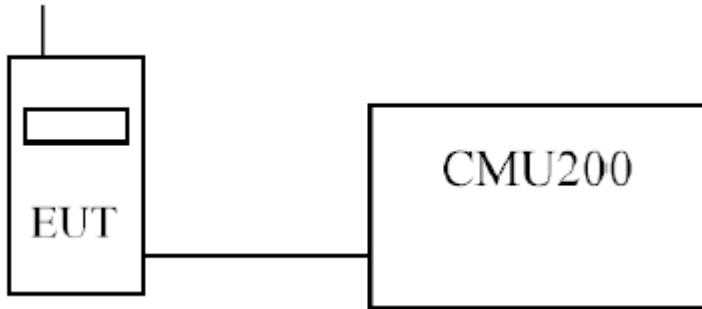
The following test equipments are used during the radiated emission test:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒CB5	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun ., 2008
	Dual Directional couple	Agilent	778D-012/50550	Aug , 2007
	Directional coupler	Agilent	87300C/ MY44300353	Aug ., 2007
	Bilog Antenna	Schaffner Chase	CBL6112B/2921	Aug ., 2007
	Broadband Horn Antenna	Schwarzbeck	BBHA9170/497	Sep ., 2007
	EMI Test Receiver	R&S	ESCS 30/100123	May , 2008
	Horn Antenna	Schwarzbeck	BBHA9120D/ 305	Sep ., 2007
	Pre-Amplifier	QTK	N/A	N/A
	Microwave Amplifier (0.5GHZ-26.5GHZ)	Agilent	83017A/ MY39500682	Aug ., 2007
	Spectrum Analyzer	Advantest	R3162/01700040	Nov ., 2007
	Spectrum Analyzer (9K-40GHz)	R&S	FSP40/100339	Nov ., 2007
	Universal Radio Communication Tester	R & S	CMU200 / 104846	Apr ., 2008

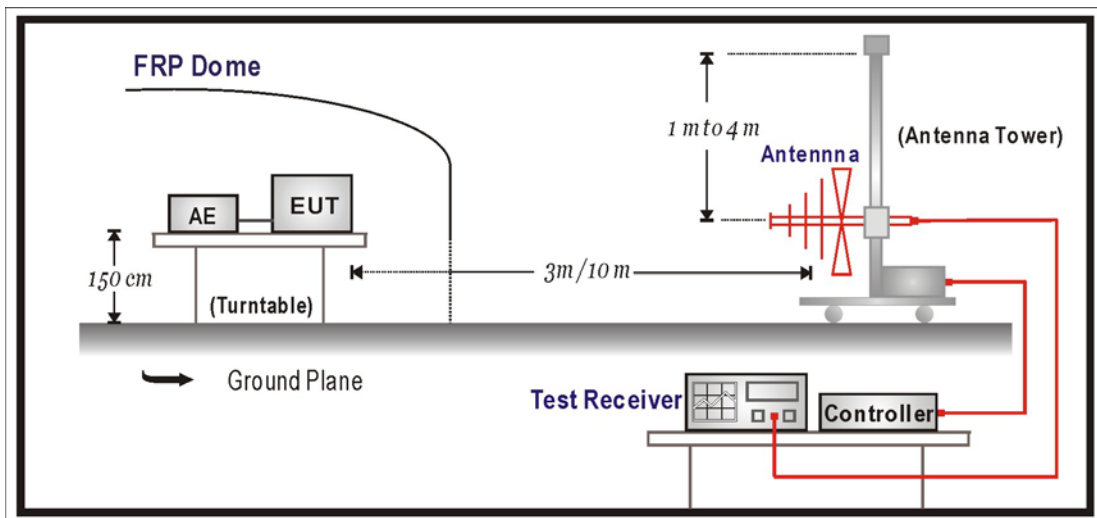
- Note:
1. All equipments that need to be calibrated are with calibration period of 1 year.
 2. Mark "X" test instruments are used to measure the final test results.

6.2. Test Setup

6.2.1.1 Spurious emissions at antenna terminals.



6.2.1.2 Field strength of spurious radiation.



6.3. Limits

Limit	<-13dBm
-------	---------

43 + 10Log(P) down on the carrier where P is the power in Watts.

6.4. Test Procedure

In accordance with Part 2.1051, the spurious emissions from the antenna terminal were measured. The transmitter output power was attenuated using a combination of filters and attenuators and the frequency spectrum investigated from 9kHz to 20GHz. The EUT was set to transmit on full power. The EUT was tested on bottom, middle and top channels for both power levels. The resolution and video bandwidth was set to 1MHz in accordance with Part 24.238. The spectrum analyzer detector was set to Max Hold.

In addition, measurements were made up to the 10th harmonic of the fundamental.

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to TIA/EIA 603-C on radiated measurement.

6.5. Test Specification

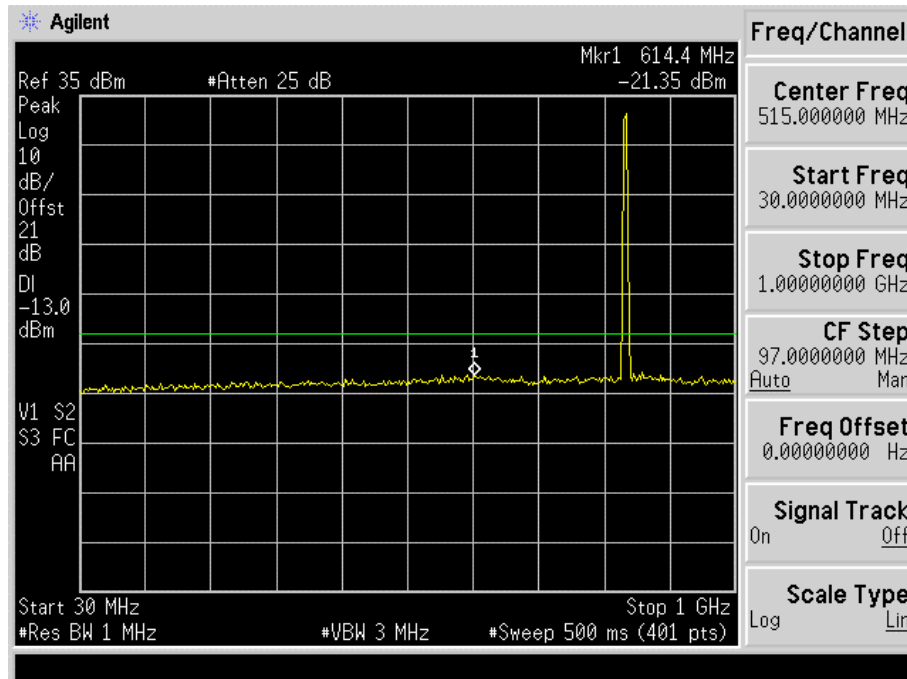
According to Part 2.1051, 2.1053, 22.917(a), 24.238(b).

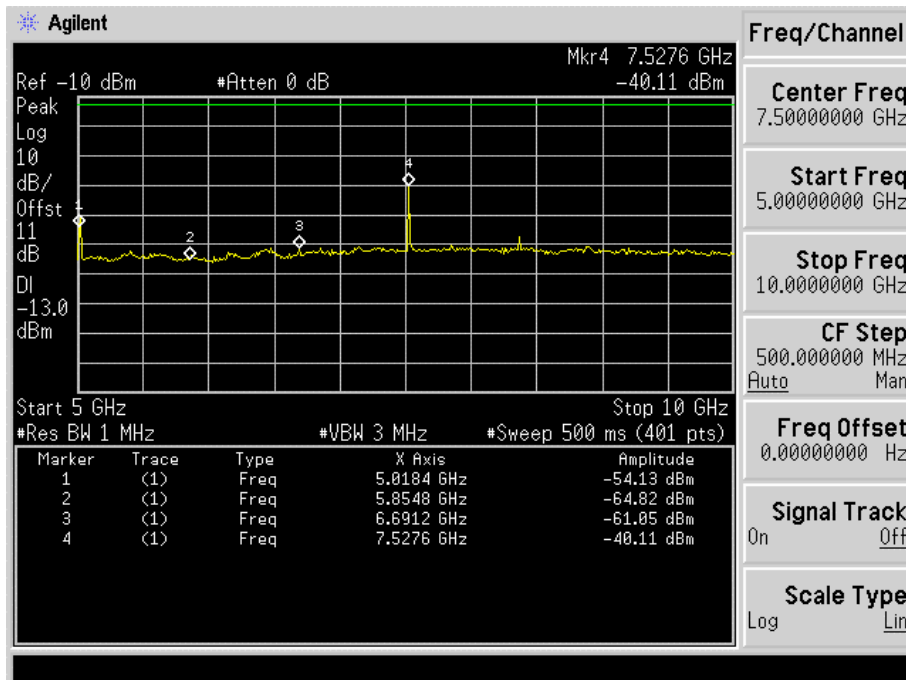
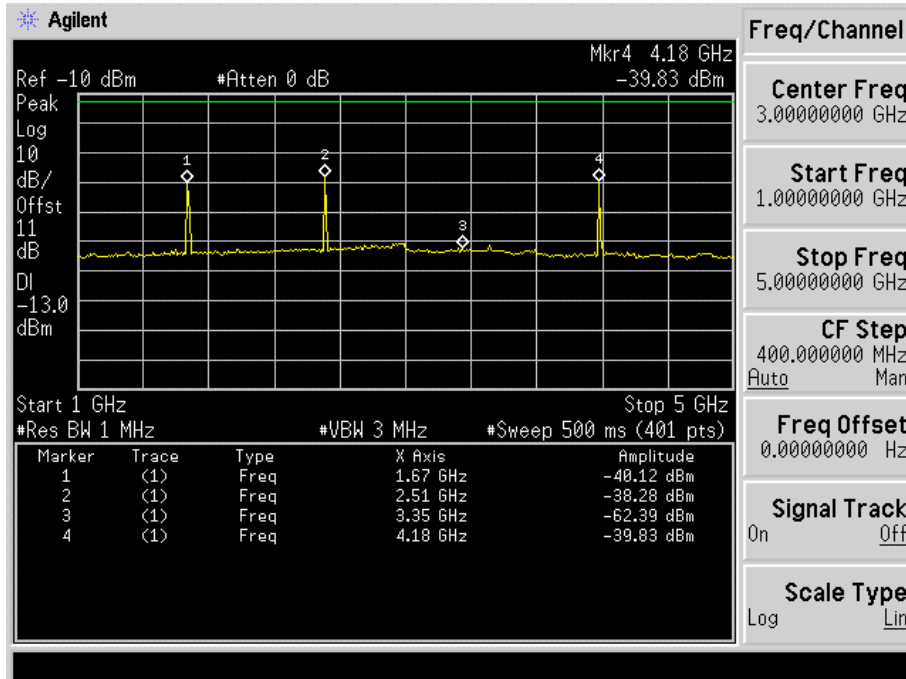
6.6. Test Result of Spurious Emission

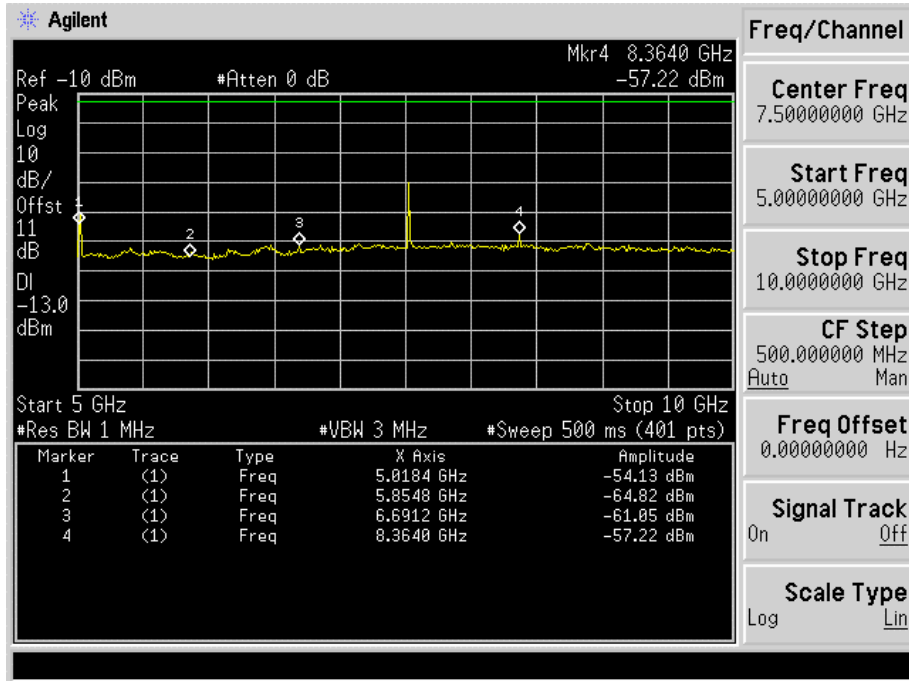
Product	Notebook		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	GSM 850 GPRS	Test Range	9KHz~10GHz

GSM 850 GPRS Middle-Channel 189

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
1670	-40.12	0.58	-39.54	-13
2509.2	-38.28	0.7	-37.58	-13
3345.6	-62.39	1.01	-61.38	-13
4182	-39.83	1.18	-38.65	-13
5018.4	-54.13	1.23	-52.90	-13
5854.8	-64.82	1.45	-63.37	-13
6691.2	-61.05	1.56	-59.49	-13
7527.6	-40.11	1.59	-38.52	-13
8364	-57.22	1.82	-55.40	-13



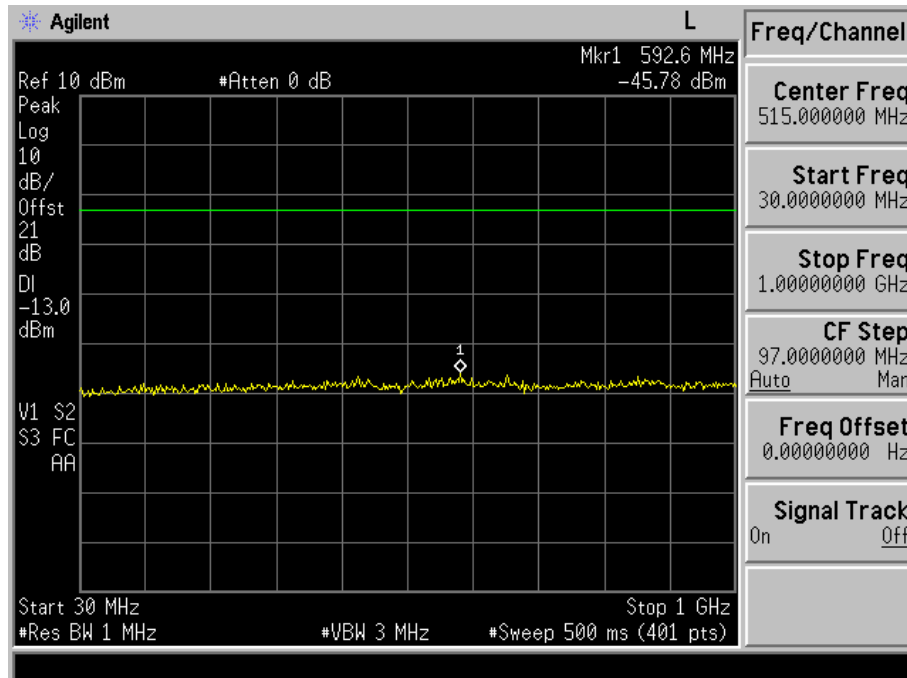


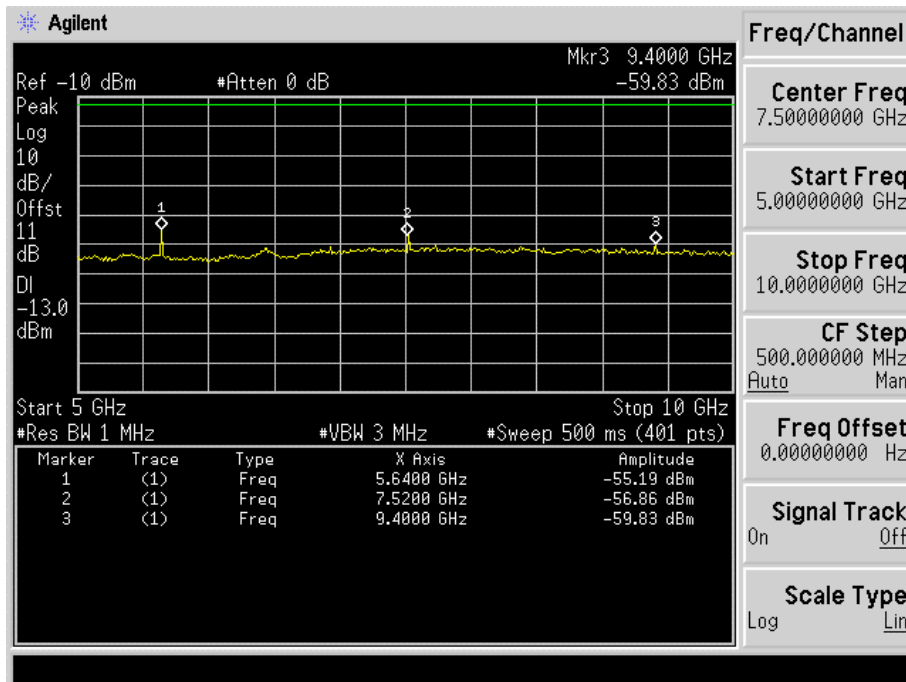
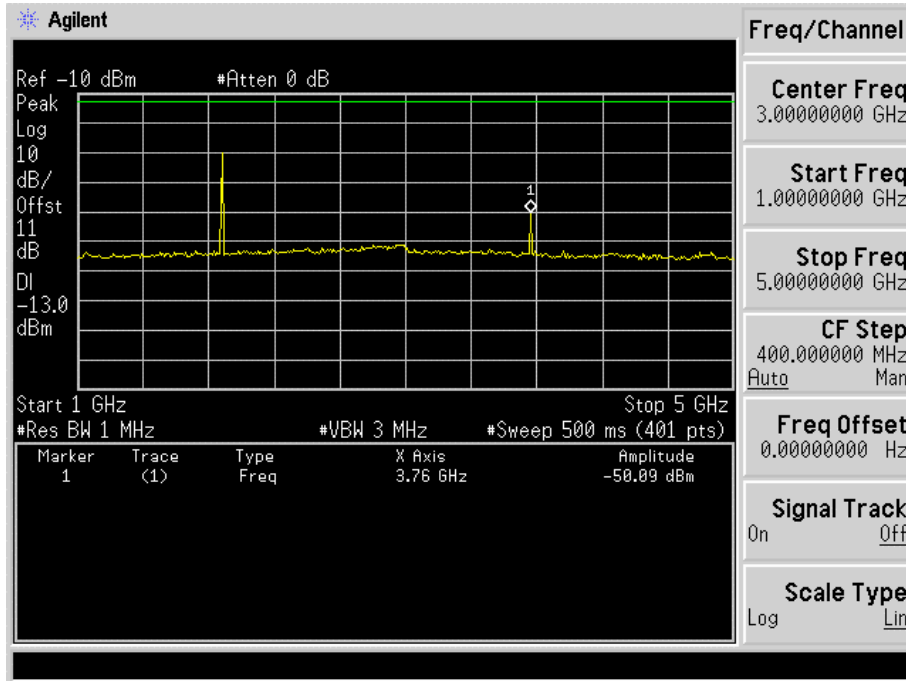


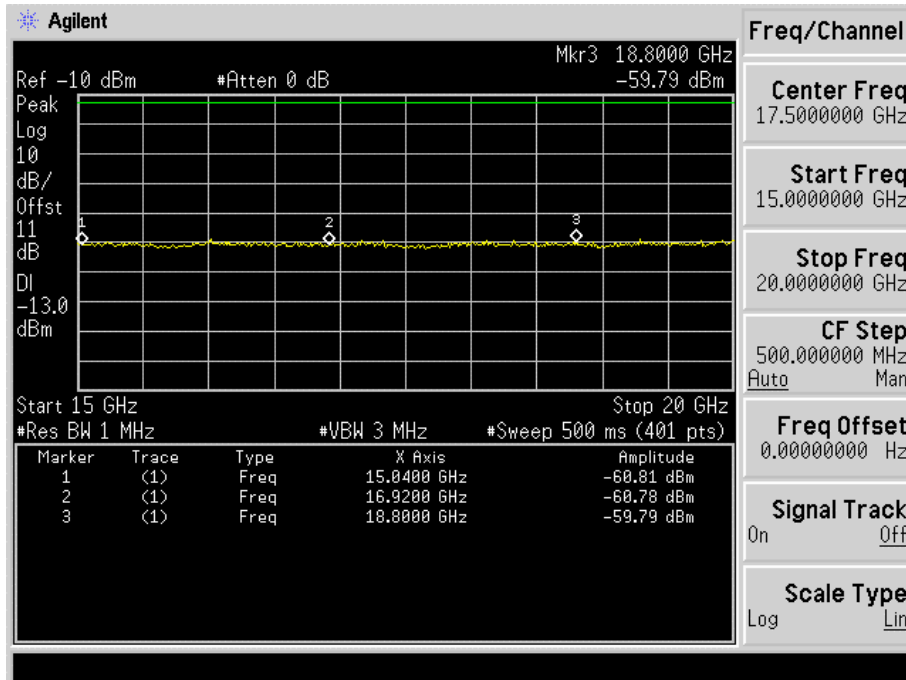
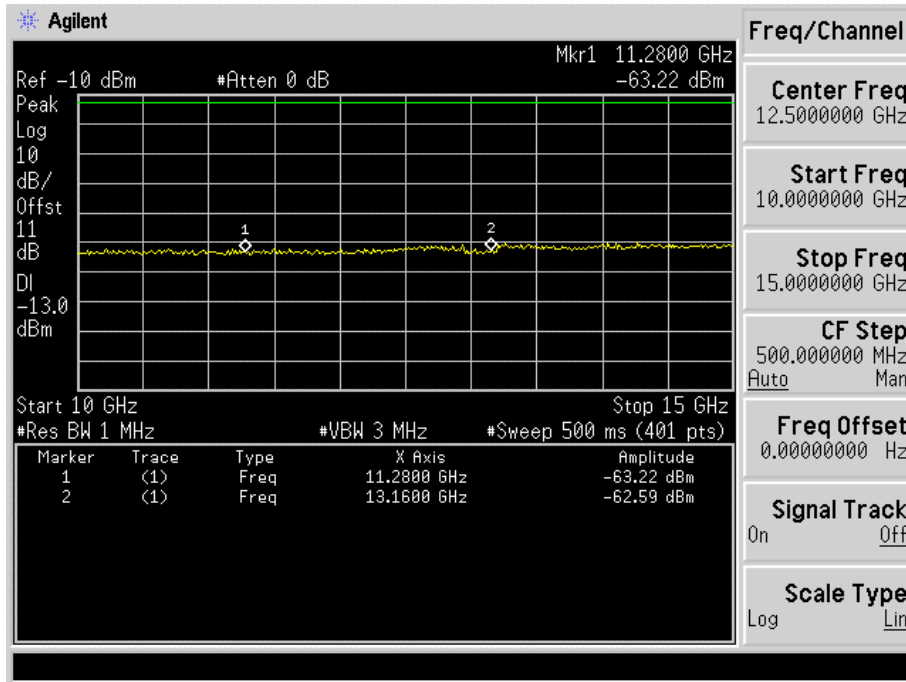
Product	Notebook		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	PCS 1900 GPRS	Test Range	9KHz~20GHz

PCS 1900 GPRS Mid-Channel 661

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3760	-50.09	1.1	-48.99	-13
5640	-55.19	1.23	-53.96	-13
7520	-56.86	1.59	-55.27	-13
9400	-59.83	1.89	-57.94	-13
11280	-63.22	2.07	-61.15	-13
13160	-62.59	2.26	-60.33	-13
15040	-60.81	2.64	-58.17	-13
16920	-60.78	3.5	-57.28	-13
18800	-59.79	3.7	-56.09	-13



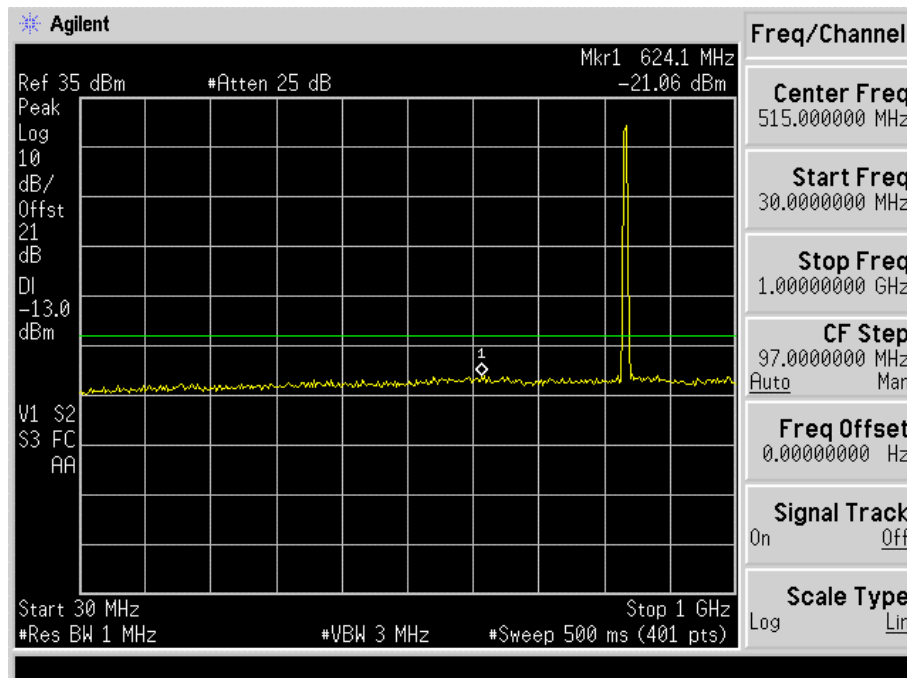


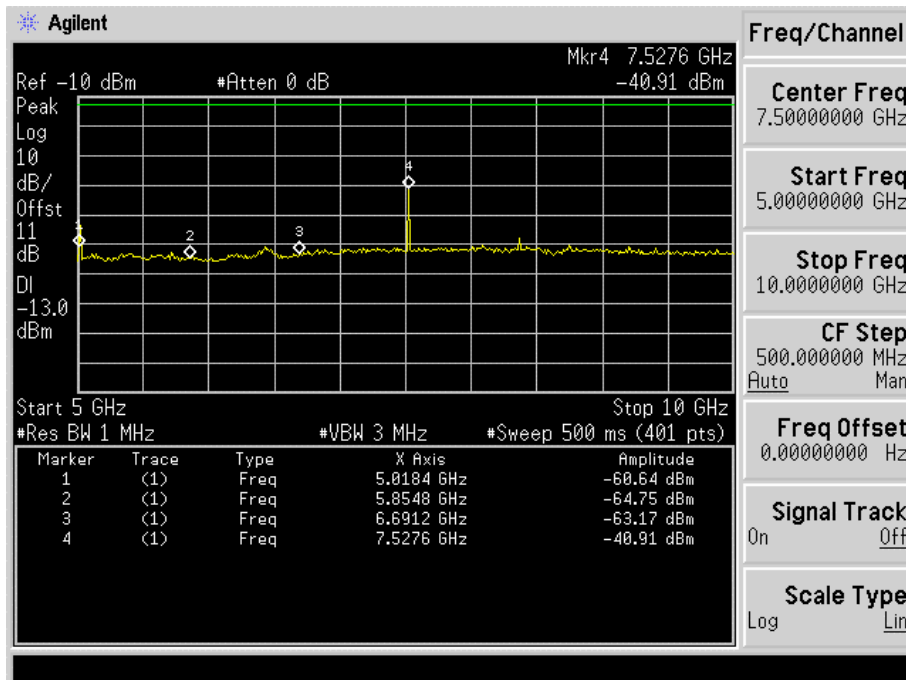
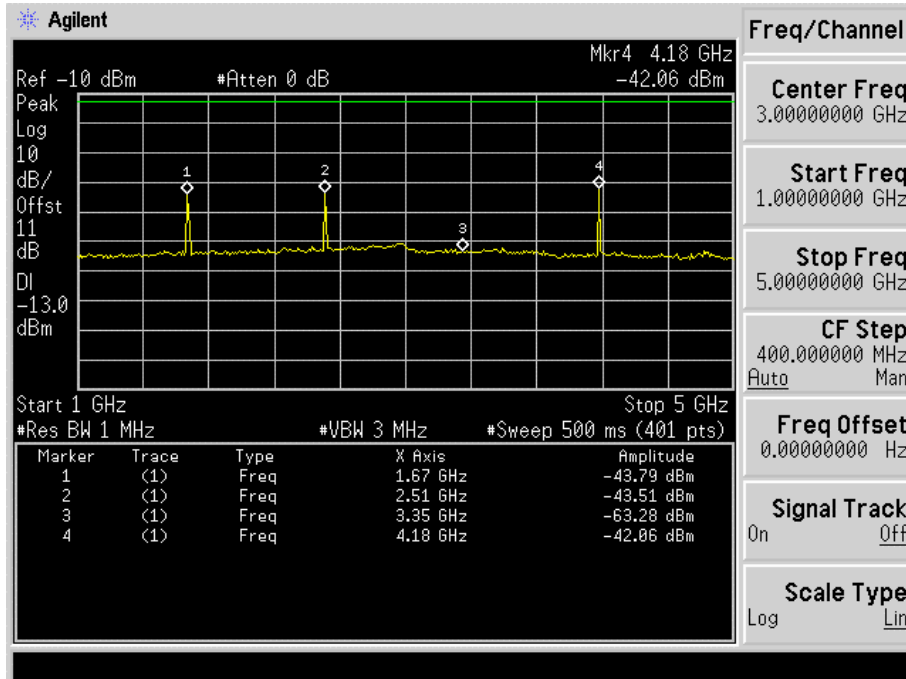


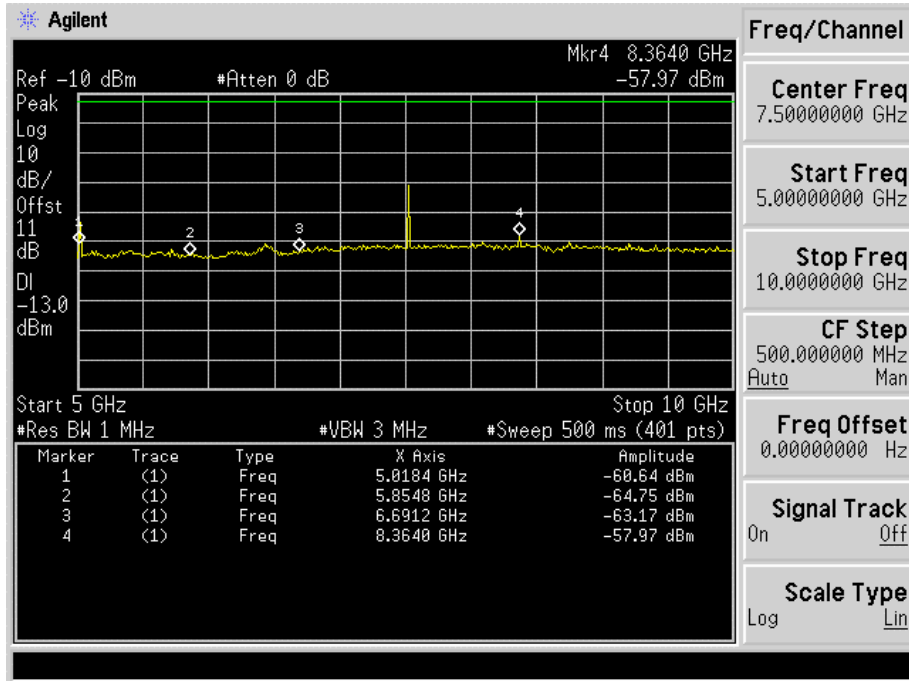
Product	Notebook		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	GSM 850 EGPRS	Test Range	9KHz~10GHz

GSM 850 EGPRS Mid-Channel 189

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
1670	-43.79	0.58	-43.21	-13
2509.2	-43.51	0.7	-42.81	-13
3345.6	-63.28	1.01	-62.27	-13
4182	-42.06	1.18	-40.88	-13
5018.4	-60.64	1.23	-59.41	-13
5854.8	-64.75	1.45	-63.30	-13
6691.2	-63.17	1.56	-61.61	-13
7527.6	-40.19	1.59	-38.60	-13
8364	-57.97	1.82	-56.15	-13



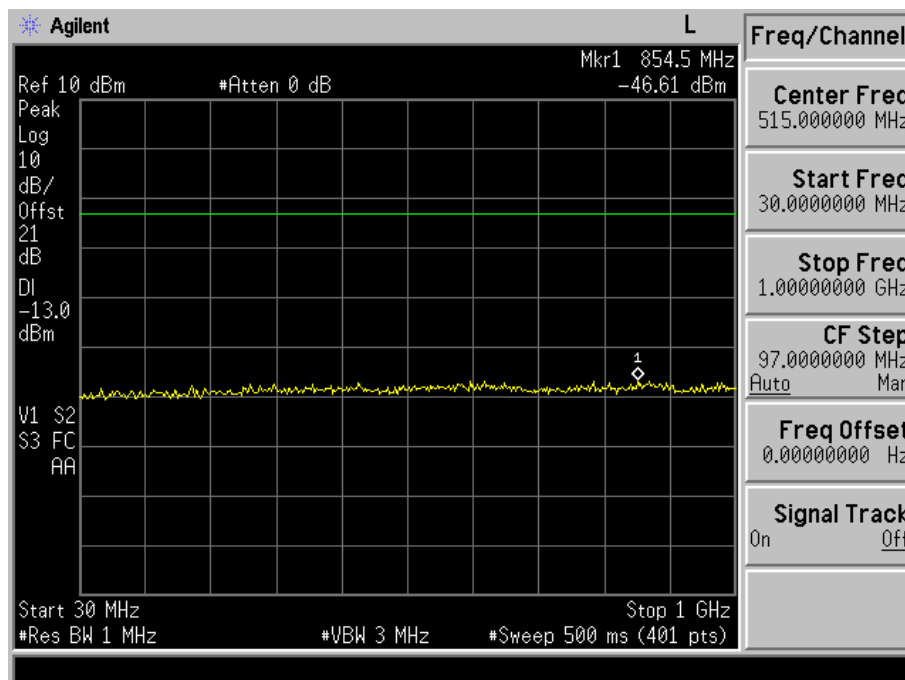


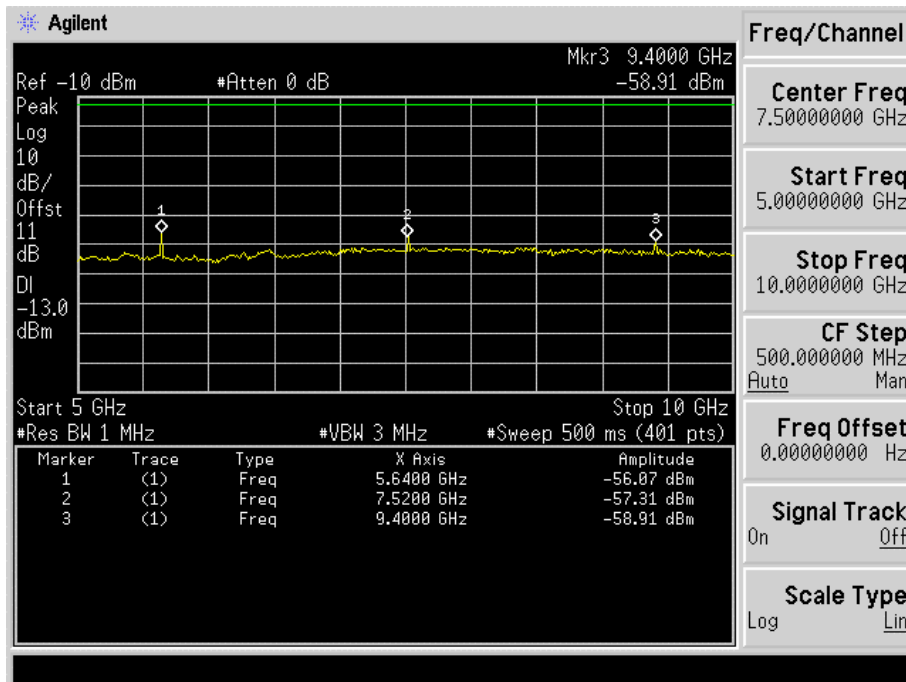
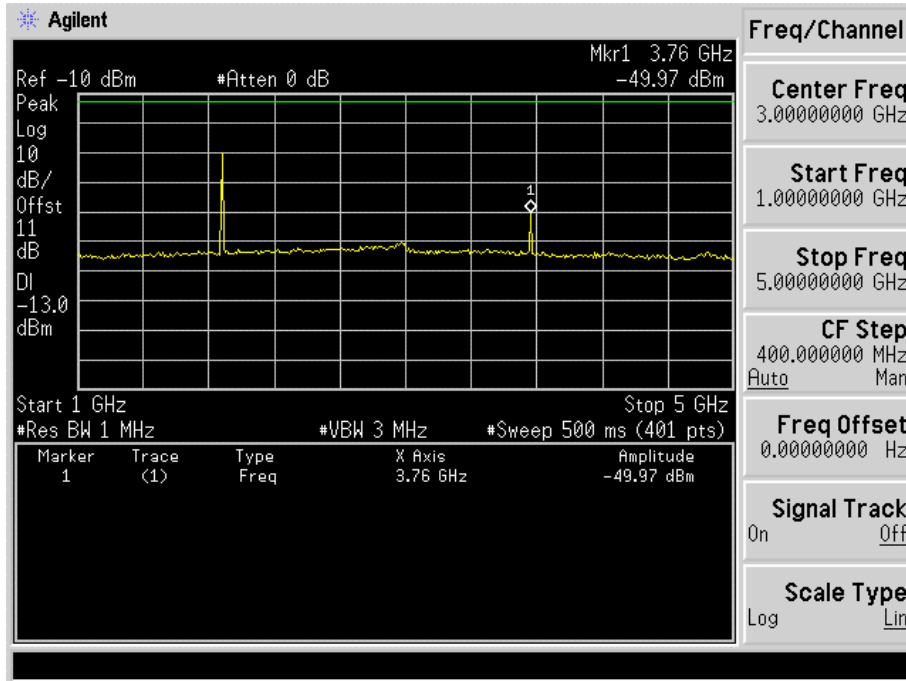


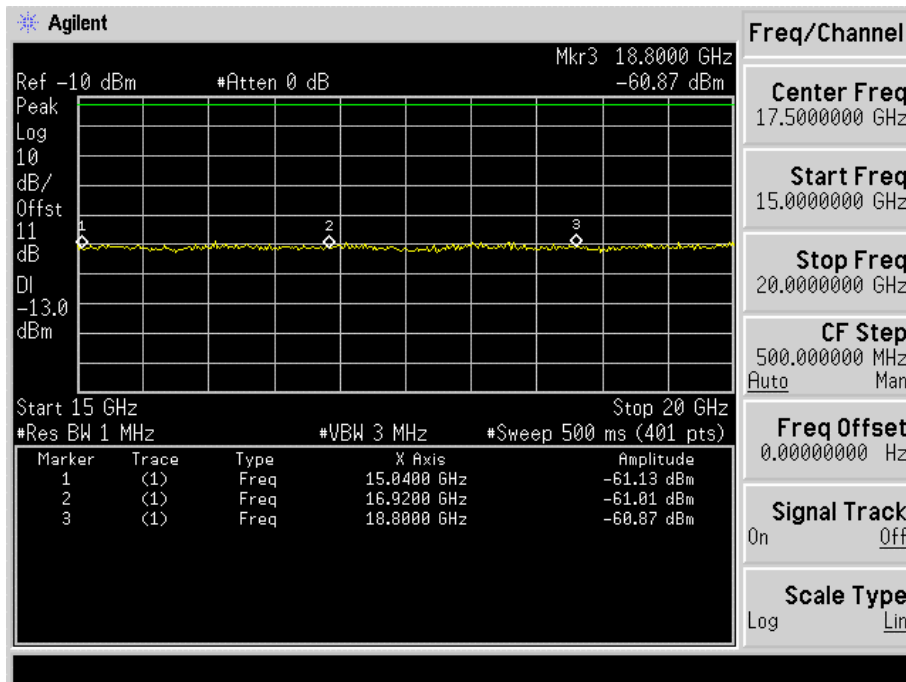
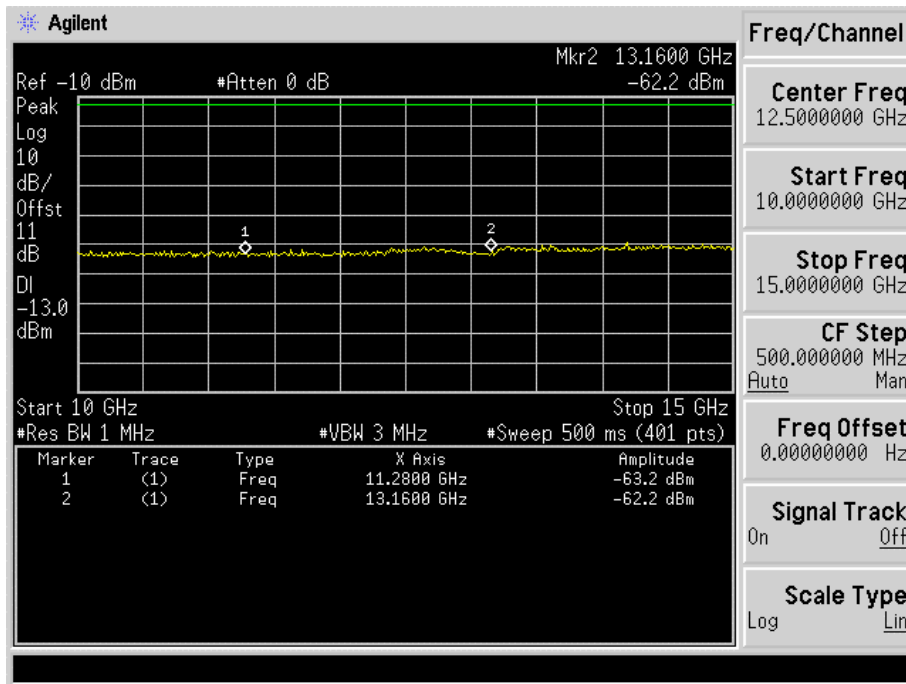
Product	Notebook		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	PCS 1900 EGPRS	Test Range	9KHz~20GHz

PCS 1900 EGPRS Mid-Channel 661

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3760	-49.97	1.1	-48.87	-13
5640	-56.07	1.23	-54.84	-13
7520	-57.31	1.59	-55.72	-13
9400	-58.91	1.89	-57.02	-13
11280	-63.20	2.07	-61.13	-13
13160	-62.20	2.26	-59.94	-13
15040	-61.13	2.64	-58.49	-13
16920	-61.01	3.5	-57.51	-13
18800	-60.87	3.7	-57.17	-13



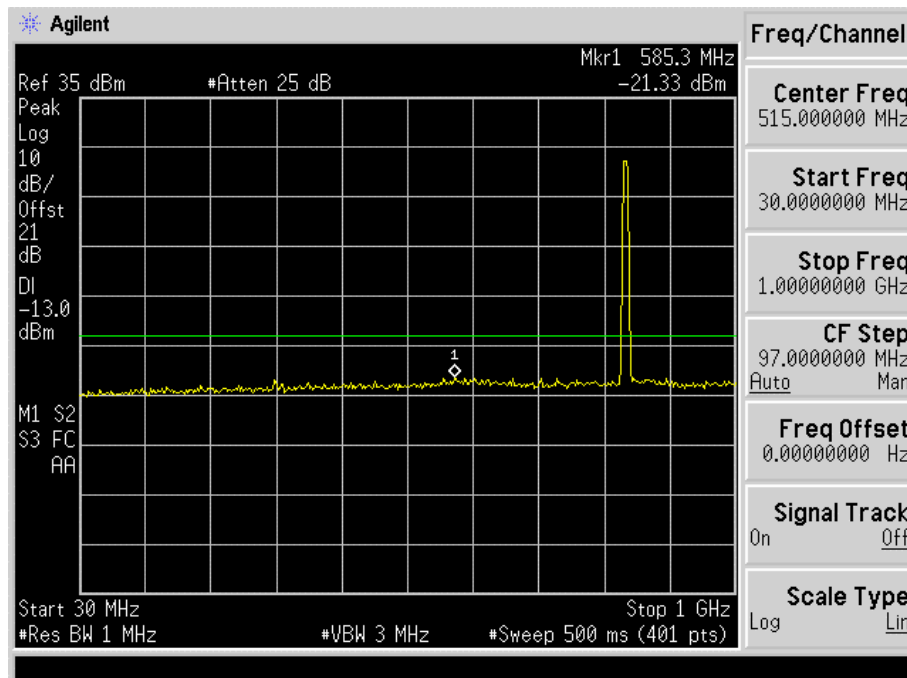


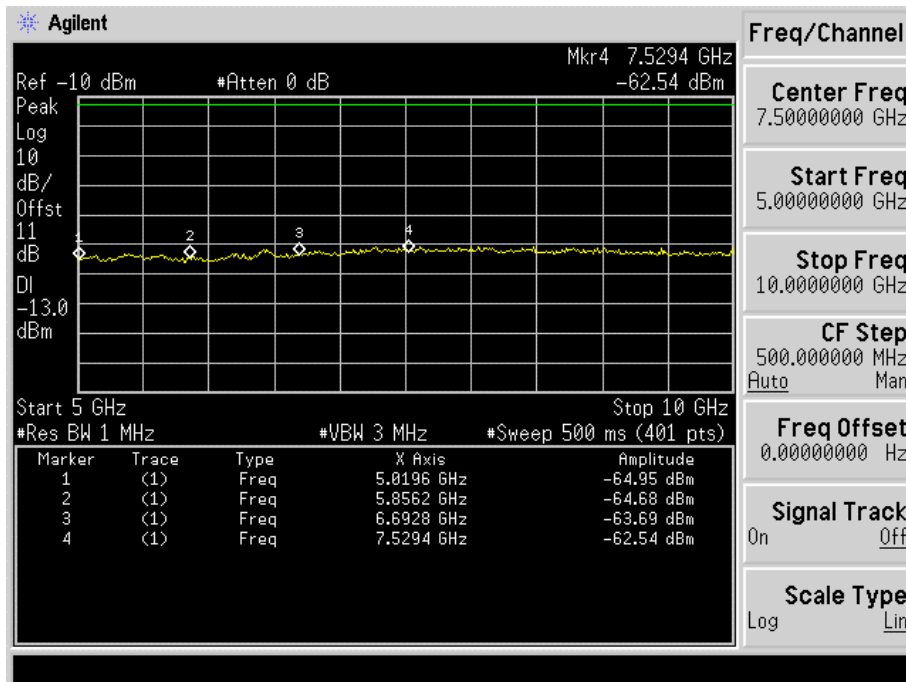
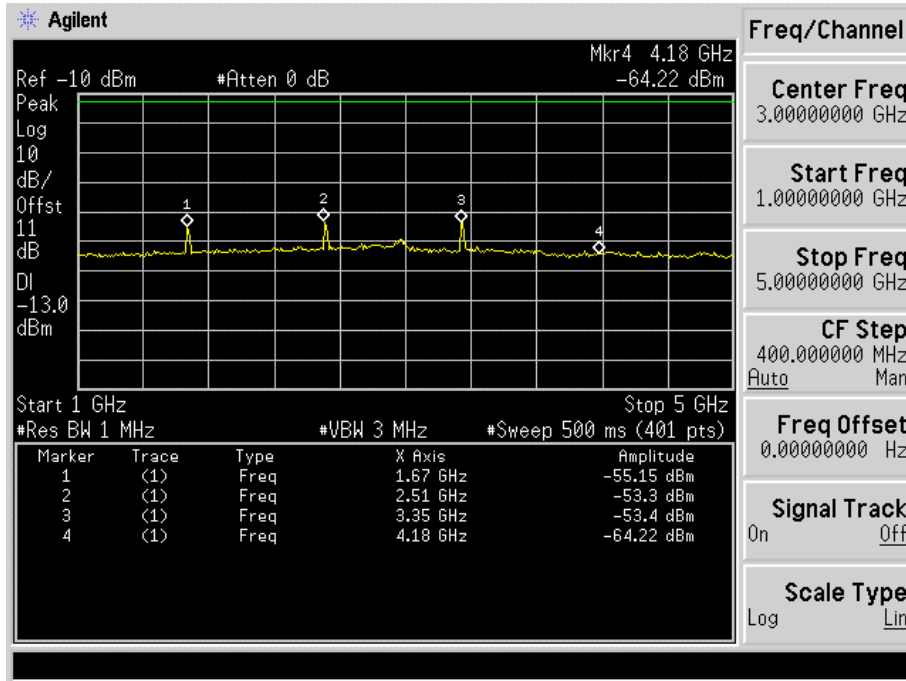


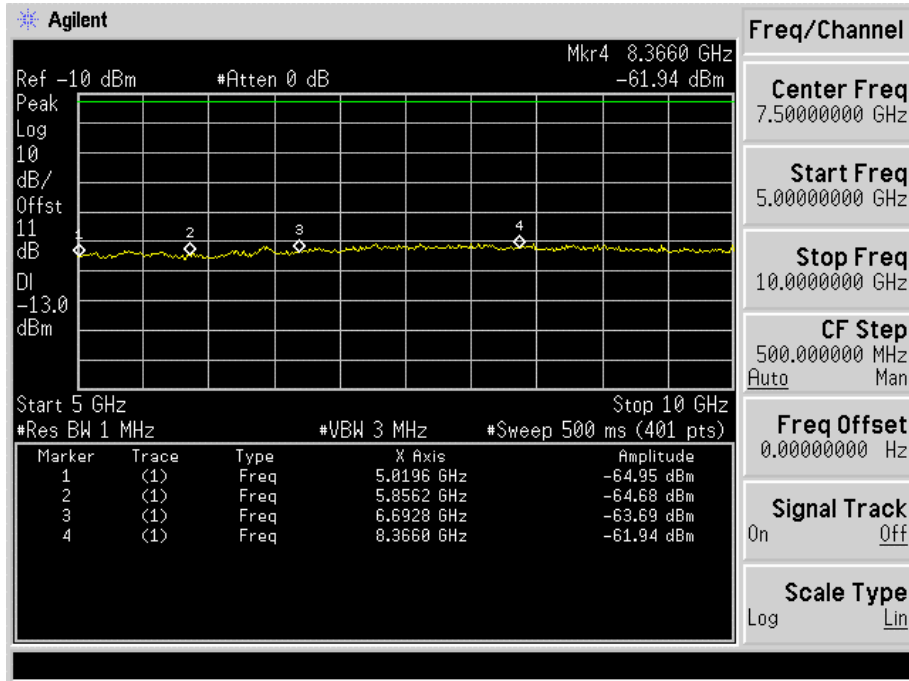
Product	Notebook		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND V	Test Range	9KHz~10GHz

WCDMA BAND V Mid-Channel 4183

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
1673.2	-55.15	0.58	-54.57	-13
2509.8	-53.30	0.7	-52.6	-13
3346.4	-53.40	1.01	-52.39	-13
4183	-64.22	1.18	-63.04	-13
5019.6	-64.95	1.23	-63.72	-13
5856.2	-64.68	1.45	-63.23	-13
6692.8	-63.69	1.56	-62.13	-13
7529.4	-62.54	1.59	-60.95	-13
8366	-61.94	1.82	-60.12	-13



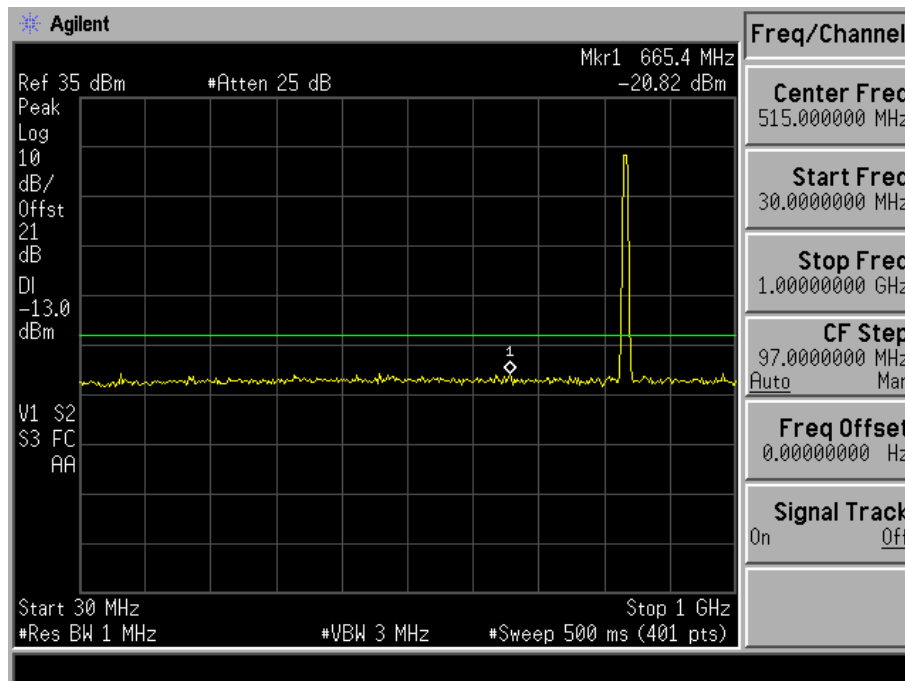


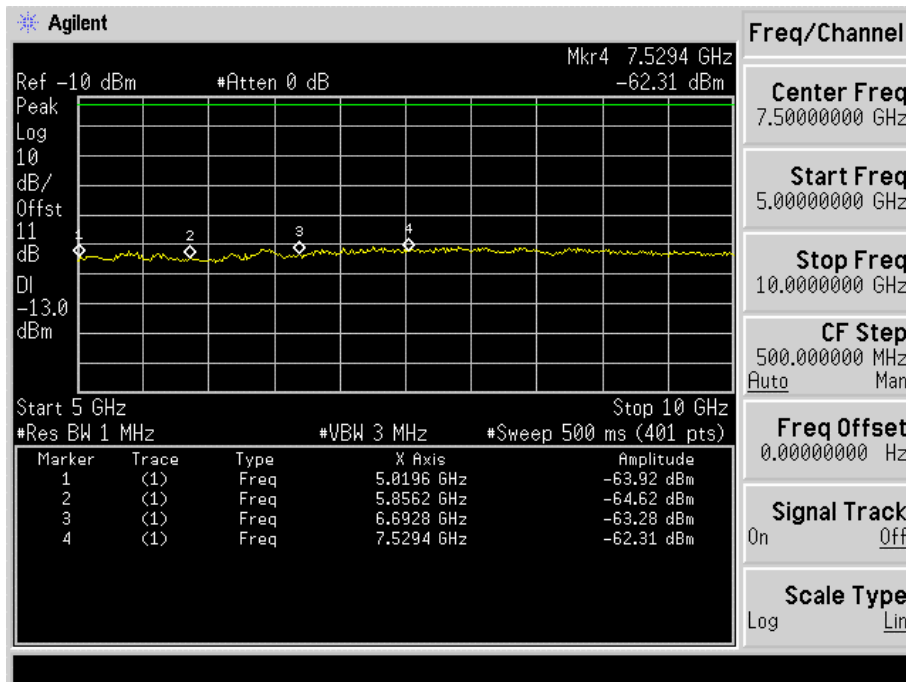
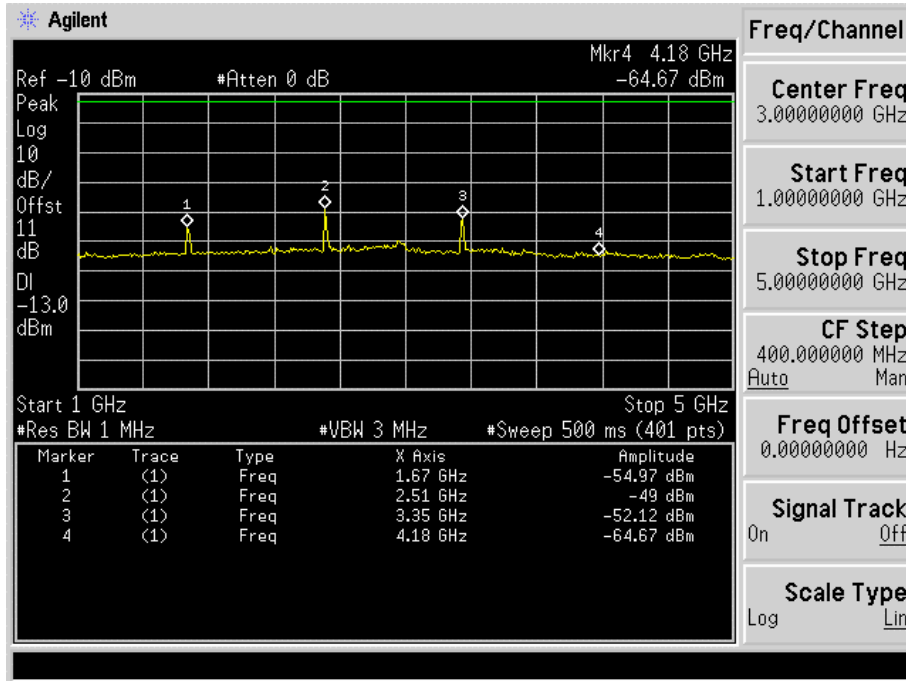


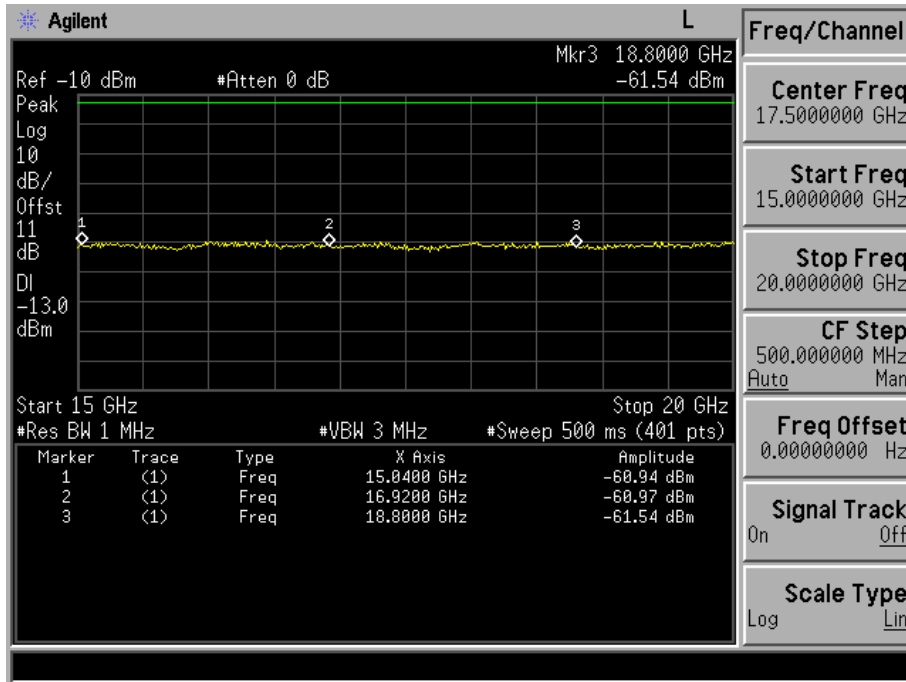
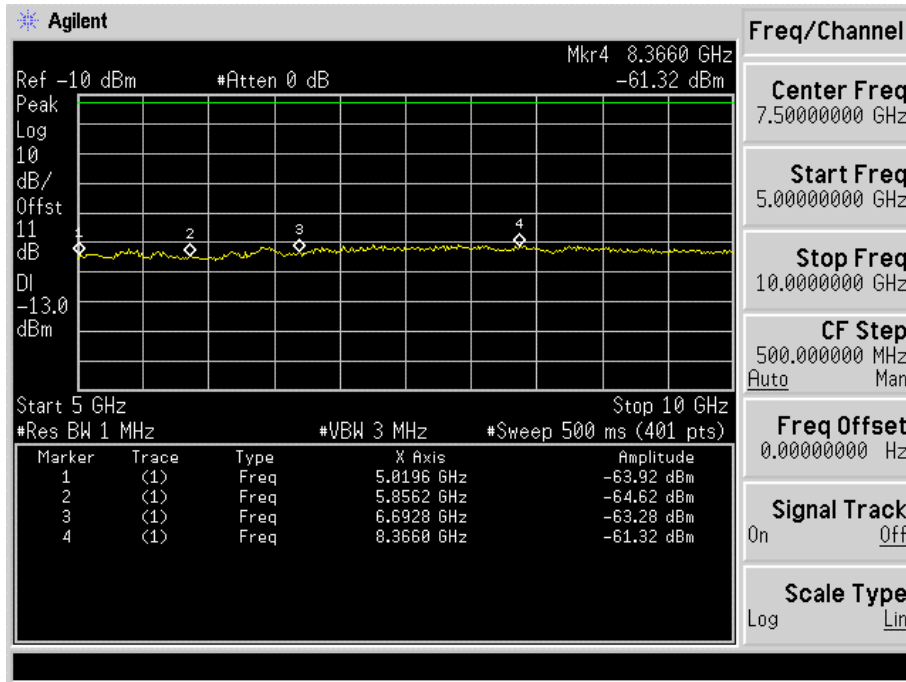
Product	Notebook		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND V HSDPA	Test Range	9KHz~20GHz

WCDMA BAND V HSDPA Mid-Channel 4183

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
1673.2	-54.97	0.58	-54.39	-13
2509.8	-49.00	0.7	-48.30	-13
3346.4	-52.12	1.01	-51.11	-13
4183	-64.67	1.18	-63.49	-13
5019.6	-63.92	1.23	-62.69	-13
5856.2	-64.62	1.45	-63.17	-13
6692.8	-63.28	1.56	-61.72	-13
7529.4	-62.31	1.59	-60.72	-13
8366	-61.32	1.82	-59.50	-13



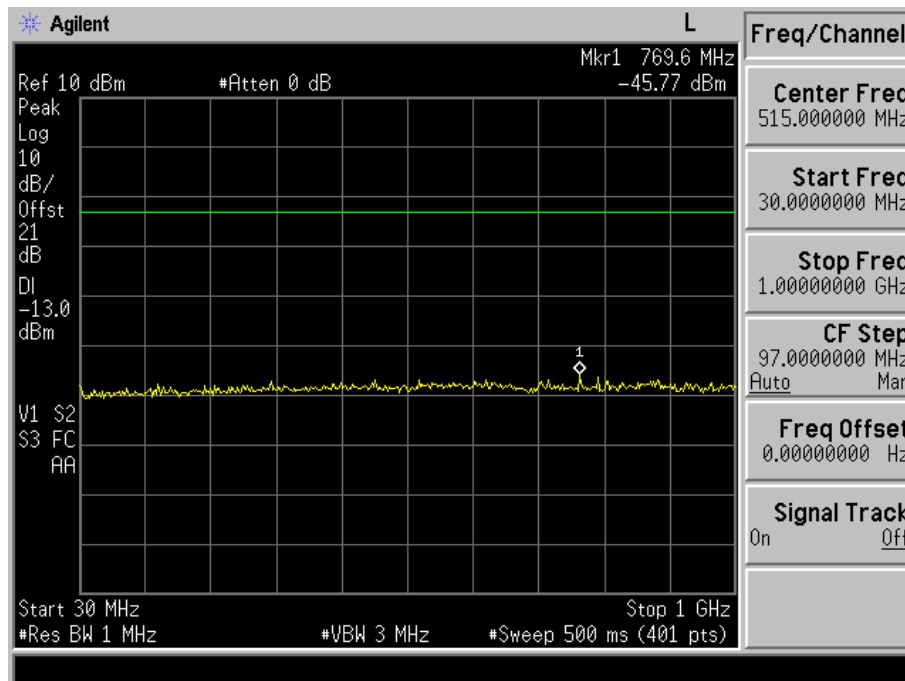


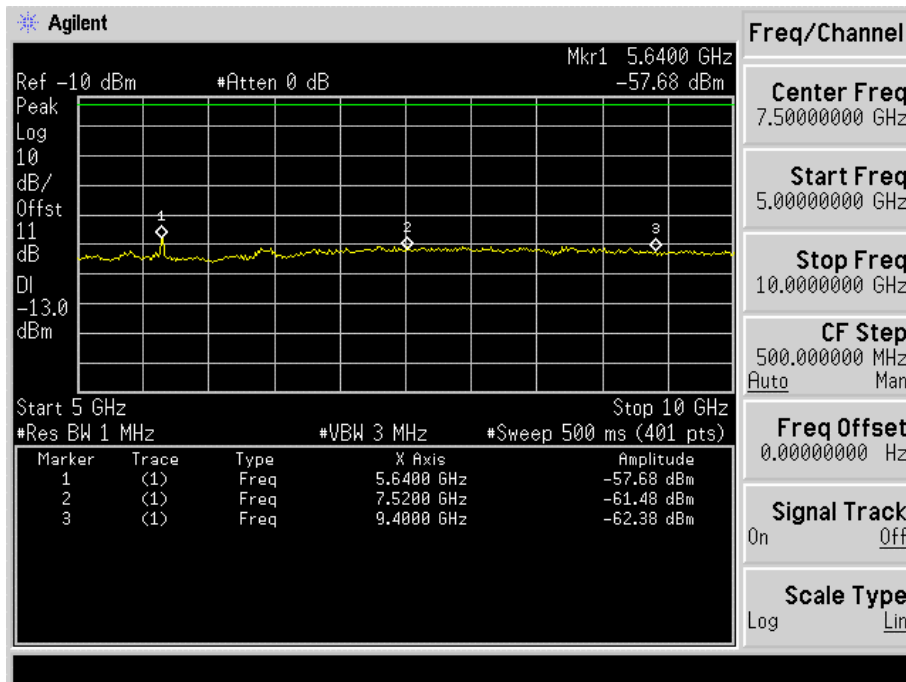
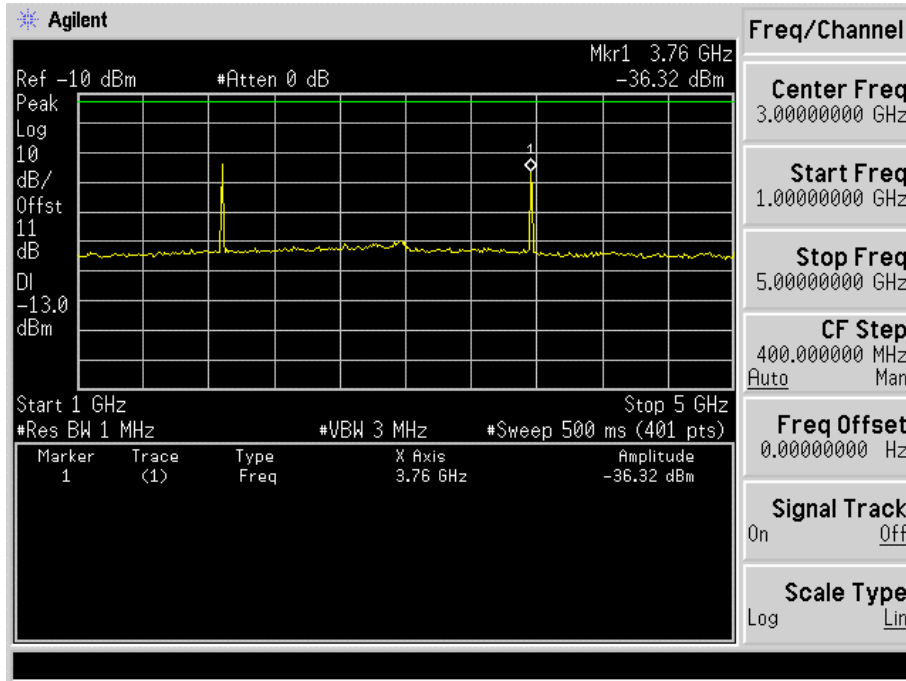


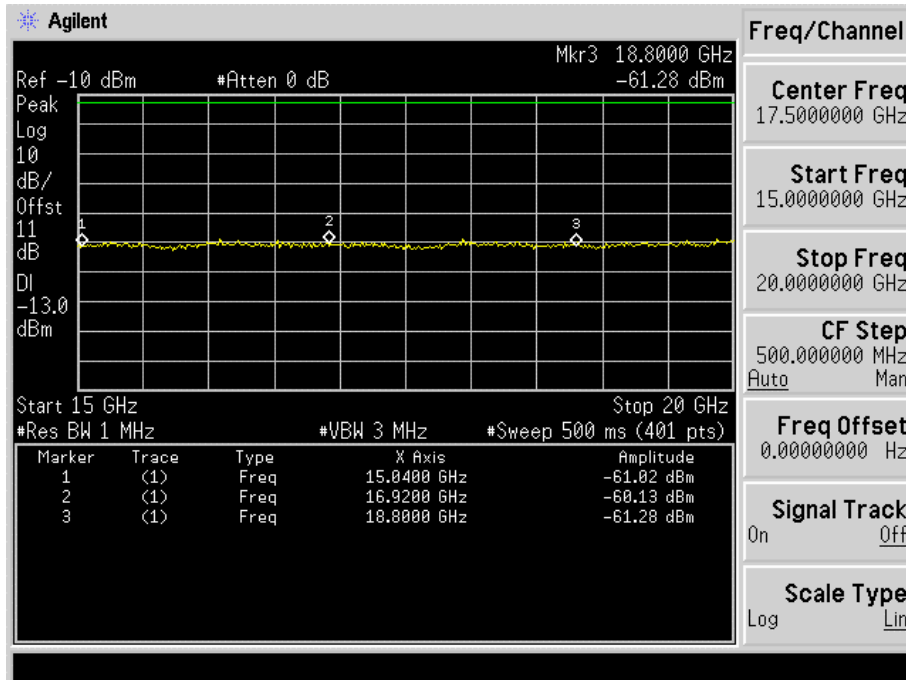
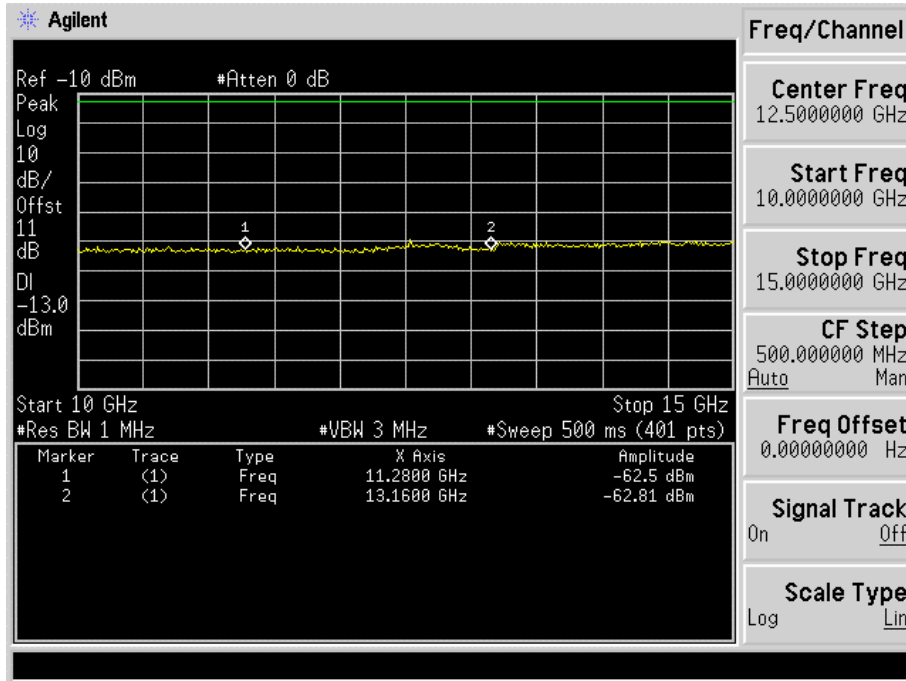
Product	Notebook		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND II	Test Range	9KHz~10GHz

WCDMA BAND II Mid-Channel 9400

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3760	-36.32	1.1	-35.22	-13
5640	-57.68	1.23	-56.45	-13
7520	-61.48	1.59	-59.89	-13
9400	-62.38	1.89	-60.49	-13
11280	-62.50	2.07	-60.43	-13
13160	-62.81	2.26	-60.55	-13
15040	-61.02	2.64	-58.38	-13
16920	-60.13	3.5	-56.63	-13
18800	-61.28	3.7	-57.58	-13



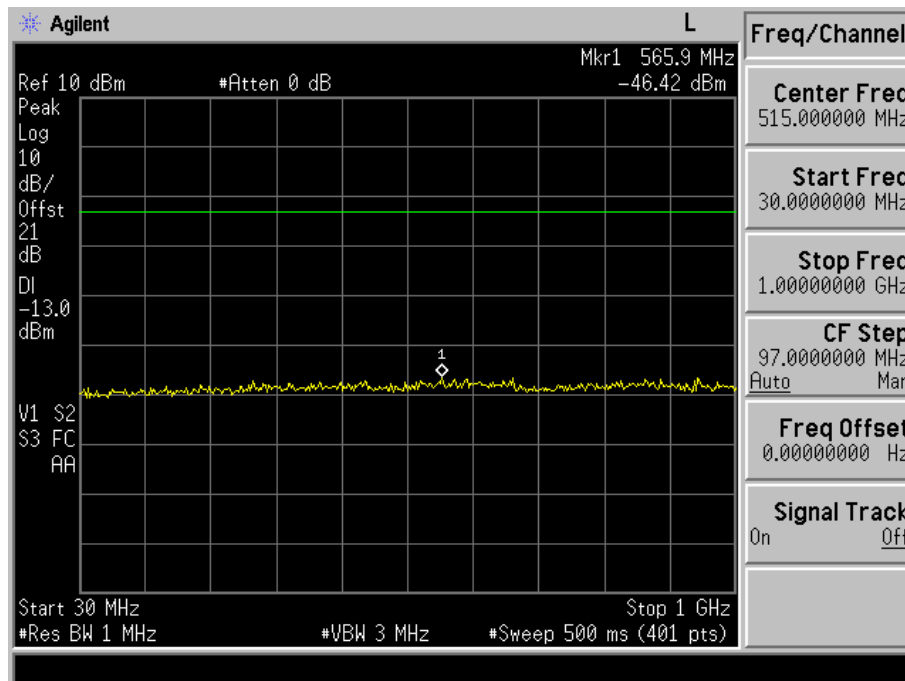


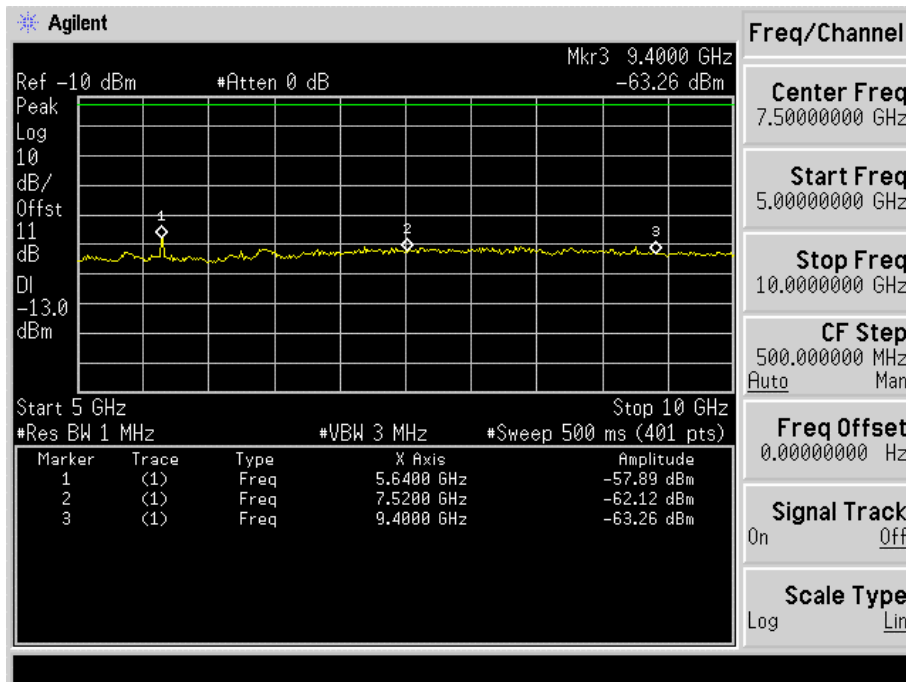
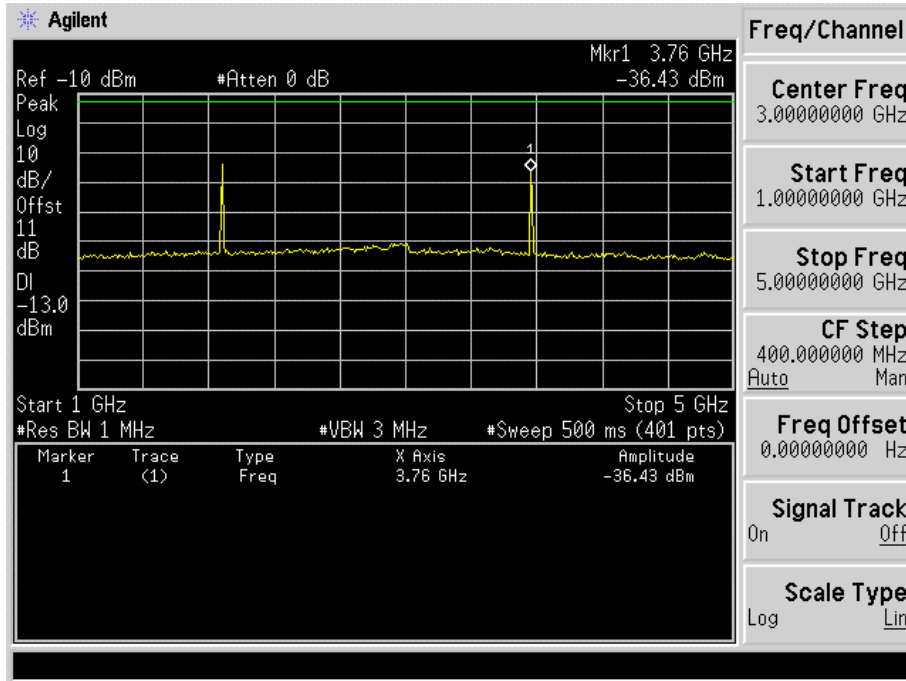


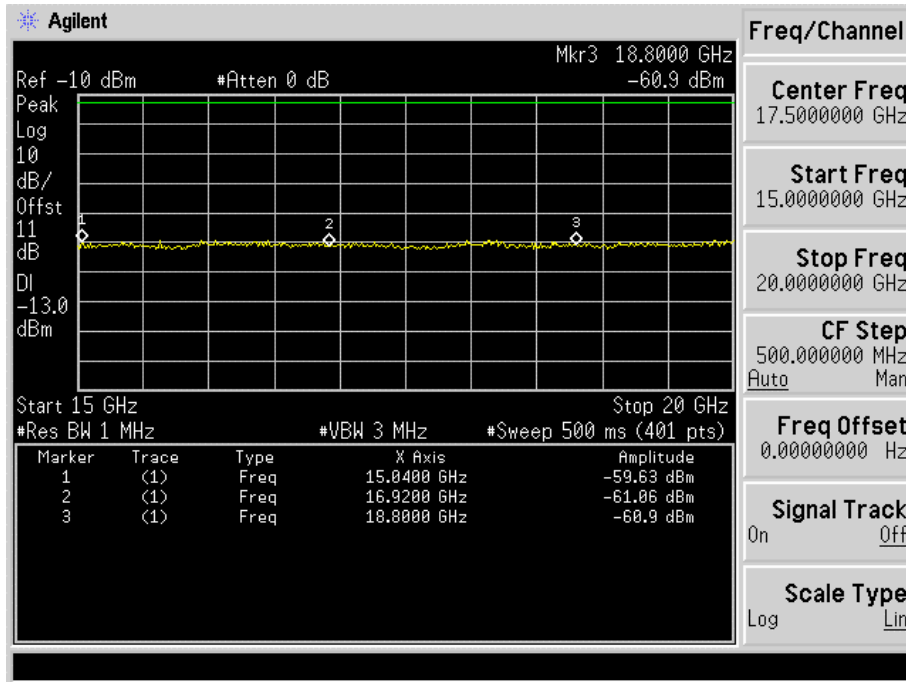
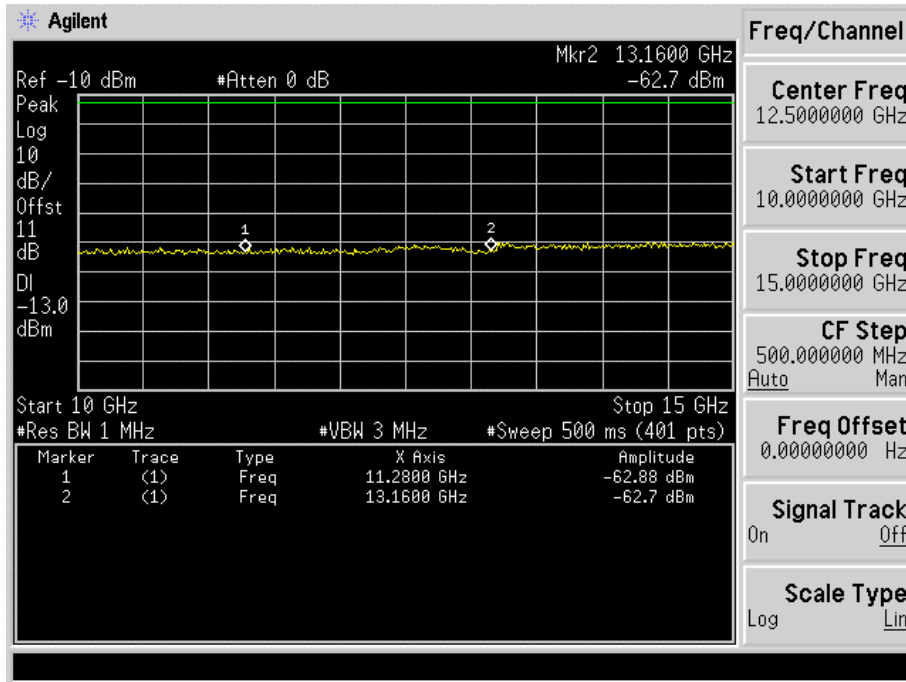
Product	Notebook		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2008/05/28	Test Site	CB5
Test Condition	WCDMA BAND II HSDPA	Test Range	9KHz~20GHz

WCDMA BAND II HSDPA Mid-Channel 9400

Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3760	-36.43	1.1	-35.33	-13
5640	-57.89	1.23	-56.66	-13
7520	-62.12	1.59	-60.53	-13
9400	-63.26	1.89	-61.37	-13
11280	-62.88	2.07	-60.81	-13
13160	-62.70	2.26	-60.44	-13
15040	-59.63	2.64	-56.99	-13
16920	-61.06	3.5	-57.56	-13
18800	-60.90	3.7	-57.20	-13







Product	Notebook		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	Channel 189 (GSM 850 GPRS)	Test Range	9KHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions

1672.8	-52.67	-55.12	1.41	9.8	-46.73	-13
2509.2	-66.02	-63.99	1.56	10.6	-54.95	-13
3345.6	-65.04	-64.23	2.01	12.3	-53.94	-13
4182	-59.67	-57.78	2.74	12.6	-47.92	-13
5018.4	-65.17	-64.59	2.64	12.7	-54.53	-13
5854.8	-64.98	-64.76	2.36	13	-54.12	-13
6691.2	-65.35	-64.70	3.16	12.1	-55.76	-13
7527.6	-64.25	-60.34	3.3	11.5	-52.14	-13
8364	-64.05	-54.79	3.16	11.5	-46.45	-13

Vertical Emissions

1672.8	-53.94	-56.96	1.41	9.8	-48.57	-13
2509.2	-65.21	-64.33	1.56	10.6	-55.29	-13
3345.6	-65.26	-64.29	2.01	12.3	-54.00	-13
4182	-61.99	-61.81	2.74	12.6	-51.95	-13
5018.4	-65.54	-64.87	2.64	12.7	-54.81	-13
5854.8	-65.13	-64.35	2.36	13	-53.71	-13
6691.2	-64.82	-64.14	3.16	12.1	-55.20	-13
7527.6	-63.19	-60.82	3.3	11.5	-52.62	-13
8364	-64.66	-62.67	3.16	11.5	-54.33	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. ERP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 6 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	Notebook		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	Channel 661 (PCS1900 GPRS)	Test Range	9KHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions

3760	-63.54	-65.00	1.41	9.8	-53.81	-13
5640	-64.83	-65.00	1.56	10.6	-53.46	-13
7520	-63.74	-58.62	2.01	12.3	-49.13	-13
9400	-63.98	-61.11	2.74	12.6	-51.85	-13
11280	-64.04	-60.56	2.64	12.7	-51.20	-13
13160	-63.46	-56.35	2.36	13	-45.41	-13
15040	-61.24	-44.08	3.16	12.1	-33.54	-13
16920	-61.82	-45.41	3.3	11.5	-33.41	-13
18800	-61.12	-23.85	3.16	11.5	-18.11	-13

Vertical Emissions

3760	-65.24	-64.81	1.41	9.8	-53.62	-13
5640	-64.26	-62.09	1.56	10.6	-50.55	-13
7520	-64.16	-59.80	2.01	12.3	-50.31	-13
9400	-63.93	-58.35	2.74	12.6	-49.09	-13
11280	-64.15	-58.31	2.64	12.7	-48.95	-13
13160	-63.42	-55.94	2.36	13	-45.00	-13
15040	-60.93	-42.04	3.16	12.1	-31.50	-13
16920	-61.81	-46.13	3.3	11.5	-34.13	-13
18800	-61.17	-27.13	3.16	11.5	-21.39	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 12GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	Notebook		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	Channel 189 (GSM 850 EGPRS)	Test Range	9KHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions

1672.8	-51.97	-54.06	1.41	9.8	-45.67	-13
2509.2	-65.86	-64.72	1.56	10.6	-55.68	-13
3345.6	-65.35	-64.37	2.01	12.3	-54.08	-13
4182	-61.03	-60.51	2.74	12.6	-50.65	-13
5018.4	-66.27	-64.09	2.64	12.7	-54.03	-13
5854.8	-64.46	-63.61	2.36	13	-52.97	-13
6691.2	-65.09	-64.46	3.16	12.1	-55.52	-13
7527.6	-64.37	-60.86	3.3	11.5	-52.66	-13
8364	-62.98	-53.07	3.16	11.5	-44.73	-13

Vertical Emissions

1672.8	-55.22	-58.99	1.41	9.8	-50.60	-13
2509.2	-65.30	-64.71	1.56	10.6	-55.67	-13
3345.6	-65.02	-64.26	2.01	12.3	-53.97	-13
4182	-60.39	-59.53	2.74	12.6	-49.67	-13
5018.4	-64.59	-63.83	2.64	12.7	-53.77	-13
5854.8	-64.83	-63.83	2.36	13	-53.19	-13
6691.2	-65.18	-64.63	3.16	12.1	-55.69	-13
7527.6	-62.55	-57.14	3.3	11.5	-48.94	-13
8364	-64.00	-60.44	3.16	11.5	-52.10	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. ERP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 6 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	Notebook		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	Channel 661 (PCS1900 EGPRS)	Test Range	9KHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions

3760	-64.75	-64.32	1.41	9.8	-53.13	-13
5640	-65.28	-64.65	1.56	10.6	-53.11	-13
7520	-64.03	-59.33	2.01	12.3	-49.84	-13
9400	-64.51	-63.07	2.74	12.6	-53.81	-13
11280	-64.95	-63.74	2.64	12.7	-54.38	-13
13160	-62.89	-52.79	2.36	13	-41.85	-13
15040	-61.59	-44.83	3.16	12.1	-34.29	-13
16920	-62.01	-46.97	3.3	11.5	-34.97	-13
18800	-60.76	-23.05	3.16	11.5	-17.31	-13

Vertical Emissions

3760	-65.27	-64.32	1.41	9.8	-53.13	-13
5640	-64.95	-64.71	1.56	10.6	-53.17	-13
7520	-64.23	-59.99	2.01	12.3	-50.50	-13
9400	-64.31	-59.31	2.74	12.6	-50.05	-13
11280	-65.22	-63.53	2.64	12.7	-54.17	-13
13160	-63.73	-56.52	2.36	13	-45.58	-13
15040	-62.13	-50.27	3.16	12.1	-39.73	-13
16920	-61.65	-44.88	3.3	11.5	-32.88	-13
18800	-61.18	-27.15	3.16	11.5	-21.41	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 12GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	Notebook		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	Channel 4183 (WCDMA BAND V)	Test Range	9KHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions

1673.2	-59.99	-64.13	1.41	9.8	-55.74	-13
2509.8	-65.76	-63.98	1.56	10.6	-54.94	-13
3346.4	-64.30	-64.26	2.01	12.3	-53.97	-13
4183	-64.45	-64.65	2.74	12.6	-54.79	-13
5019.6	-65.21	-64.54	2.64	12.7	-54.48	-13
5856.2	-64.39	-63.45	2.36	13	-52.81	-13
6692.8	-63.78	-61.58	3.16	12.1	-52.64	-13
7529.4	-63.50	-55.35	3.3	11.5	-47.15	-13
8366	-63.16	-53.36	3.16	11.5	-45.02	-13

Vertical Emissions

1673.2	-60.87	-64.42	1.41	9.8	-56.03	-13
2509.8	-64.49	-64.37	1.56	10.6	-55.33	-13
3346.4	-62.91	-64.32	2.01	12.3	-54.03	-13
4183	-64.31	-64.92	2.74	12.6	-55.06	-13
5019.6	-64.39	-63.52	2.64	12.7	-53.46	-13
5856.2	-64.19	-62.71	2.36	13	-52.07	-13
6692.8	-62.49	-60.94	3.16	12.1	-52.00	-13
7529.4	-63.56	-61.78	3.3	11.5	-53.58	-13
8366	-63.80	-59.81	3.16	11.5	-51.47	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 12GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	Notebook		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	Channel 4183 (WCDMA BAND V HSDPA)	Test Range	9KHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions

1673.2	-59.75	-64.32	1.41	9.8	-55.93	-13
2509.8	-65.35	-64.66	1.56	10.6	-55.62	-13
3346.4	-64.22	-64.21	2.01	12.3	-53.92	-13
4183	-64.90	-64.38	2.74	12.6	-54.52	-13
5019.6	-65.33	-64.29	2.64	12.7	-54.23	-13
5856.2	-64.63	-63.98	2.36	13	-53.34	-13
6692.8	-64.14	-62.55	3.16	12.1	-53.61	-13
7529.4	-63.57	-55.83	3.3	11.5	-47.63	-13
8366	-64.08	-54.84	3.16	11.5	-46.50	-13

Vertical Emissions

1673.2	-61.48	-64.13	1.41	9.8	-55.74	-13
2509.8	-65.88	-64.25	1.56	10.6	-55.21	-13
3346.4	-65.25	-64.71	2.01	12.3	-54.42	-13
4183	-65.12	-64.54	2.74	12.6	-54.68	-13
5019.6	-65.40	-64.31	2.64	12.7	-54.25	-13
5856.2	-64.90	-63.95	2.36	13	-53.31	-13
6692.8	-64.40	-63.56	3.16	12.1	-54.62	-13
7529.4	-64.19	-63.40	3.3	11.5	-55.20	-13
8366	-63.11	-57.99	3.16	11.5	-49.65	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. ERP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 6 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	Notebook		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	Channel 9400 (WCDMA BAND II)	Test Range	9KHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions

3760	-64.02	-64.35	1.41	9.8	-53.16	-13
5640	-65.95	-64.66	1.56	10.6	-53.12	-13
7520	-65.02	-64.28	2.01	12.3	-54.79	-13
9400	-64.47	-62.93	2.74	12.6	-53.67	-13
11280	-64.32	-61.54	2.64	12.7	-52.18	-13
13160	-64.03	-58.33	2.36	13	-47.39	-13
15040	-61.28	-44.17	3.16	12.1	-33.63	-13
16920	-62.41	-50.17	3.3	11.5	-38.17	-13
18800	-61.09	-23.79	3.16	11.5	-18.05	-13

Vertical Emissions

3760	-63.18	-64.95	1.41	9.8	-53.76	-13
5640	-66.06	-63.99	1.56	10.6	-52.45	-13
7520	-65.26	-64.65	2.01	12.3	-55.16	-13
9400	-63.75	-57.89	2.74	12.6	-48.63	-13
11280	-64.35	-58.82	2.64	12.7	-49.46	-13
13160	-63.76	-56.57	2.36	13	-45.63	-13
15040	-61.32	-43.23	3.16	12.1	-32.69	-13
16920	-60.94	-42.77	3.3	11.5	-30.77	-13
18800	-60.93	-26.67	3.16	11.5	-20.93	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 12GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	Notebook		
Test Mode	Spurious Emission (Radiated)		
Date of Test	2008/05/28	Test Site	OATS 3
Test Condition	Channel 9400 (WCDMA BAND II HSDPA)	Test Range	9KHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions

3760	-63.08	-64.36	1.41	9.8	-53.17	-13
5640	-64.53	-64.26	1.56	10.6	-52.72	-13
7520	-64.45	-61.35	2.01	12.3	-51.86	-13
9400	-63.58	-59.75	2.74	12.6	-50.49	-13
11280	-64.33	-61.57	2.64	12.7	-52.21	-13
13160	-63.83	-57.64	2.36	13	-46.70	-13
15040	-61.67	-45.00	3.16	12.1	-34.46	-13
16920	-62.17	-48.28	3.3	11.5	-36.28	-13
18800	-61.35	-24.36	3.16	11.5	-18.62	-13

Vertical Emissions

3760	-64.72	-64.33	1.41	9.8	-53.14	-13
5640	-64.75	-64.68	1.56	10.6	-53.14	-13
7520	-65.13	-64.94	2.01	12.3	-55.45	-13
9400	-64.40	-59.54	2.74	12.6	-50.28	-13
11280	-64.55	-59.33	2.64	12.7	-49.97	-13
13160	-63.98	-56.99	2.36	13	-46.05	-13
15040	-61.33	-43.26	3.16	12.1	-32.72	-13
16920	-62.53	-51.80	3.3	11.5	-39.80	-13
18800	-60.39	-25.64	3.16	11.5	-19.90	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 12GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

7 Frequency Stability Under Temperature & Voltage Variations

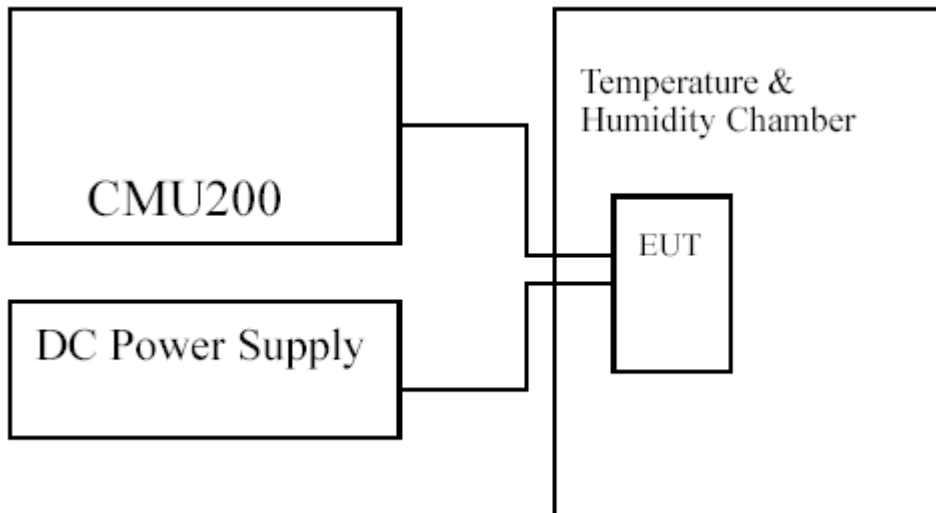
7.1 Test Equipment

The following test equipments are used during the frequency stability test:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Universal Radio Communication Tester	R & S	CMU200 / 104846	Apr., 2008
Standard Temperature & Humidity Chamber	WIT	TH-1S-B / 108210	Aug., 2007
DC Power Supply	Topward	6303D / 670302	N/A

Note: All equipments upon which need to be calibrated are with calibration period of 1 year

7.2 Test Setup



7.3 Limits

Limit	$\pm 2.5\text{ppm}$
-------	--------------------------------

7.4 Test Procedure

The frequency stability of transmitter is measured by:

- (a) Temperature: The temperature is varied from -30°C to 50°C in 10°C increment using a standard temperature & Humidity chamber.
- (b) Primary Supply Voltage: The primary supply voltage is varied 85% to 115% of the nominal value for non hand-carried equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating endpoint which shall be specified by the manufacturer.

The EUT was connected via the base station simulator. Universal Radio Communication Tester, (CMU200), was used to measure The Frequency Error. The maximum result of measurements was recorded.

7.5 Test Specification

According to Part 2.1055, 24.235

7.6 Test Result of Frequency Stability Under Temperature Variations

Product	Notebook		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2008/05/28	Test Site	CB4
Test Condition	GSM 850 GPRS / Channel 189	Test Range	-30°C ~+50°C

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (Hz)	Limit (KHz)
-30	0.836	-26	±2.09
-20	0.836	22	±2.09
-10	0.836	32	±2.09
0	0.836	10	±2.09
10	0.836	33	±2.09
20	0.836	17	±2.09
30	0.836	-29	±2.09
40	0.836	-37	±2.09
50	0.836	-40	±2.09

.Product	Notebook		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2008/05/28	Test Site	CB4
Test Condition	PCS 1900 GPRS / Channel 661	Test Range	-30°C ~+50°C

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (Hz)	Limit (KHz)
-30	1.88	-33	±4.7
-20	1.88	-40	±4.7
-10	1.88	34	±4.7
0	1.88	38	±4.7
10	1.88	-39	±4.7
20	1.88	21	±4.7
30	1.88	-33	±4.7
40	1.88	-43	±4.7
50	1.88	26	±4.7

Product	Notebook		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2008/05/28	Test Site	CB4
Test Condition	GSM 850 EGPRS / Channel 189	Test Range	-30°C ~+50°C

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (Hz)	Limit (KHz)
-30	0.836	-18	±2.09
-20	0.836	-19	±2.09
-10	0.836	26	±2.09
0	0.836	12	±2.09
10	0.836	25	±2.09
20	0.836	-16	±2.09
30	0.836	-21	±2.09
40	0.836	24	±2.09
50	0.836	32	±2.09

.Product	Notebook		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2008/05/28	Test Site	CB4
Test Condition	PCS 1900 EGPRS / Channel 661	Test Range	-30°C ~+50°C

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (Hz)	Limit (KHz)
-30	1.88	-25	±4.7
-20	1.88	16	±4.7
-10	1.88	21	±4.7
0	1.88	-29	±4.7
10	1.88	18	±4.7
20	1.88	25	±4.7
30	1.88	14	±4.7
40	1.88	21	±4.7
50	1.88	24	±4.7

Product	Notebook		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2008/05/28	Test Site	CB4
Test Condition	WCDMA BAND V / Channel 4183	Test Range	-30°C ~+50°C

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (Hz)	Limit (KHz)
-30	0.836	16	±2.09
-20	0.836	16	±2.09
-10	0.836	17	±2.09
0	0.836	15	±2.09
10	0.836	-14	±2.09
20	0.836	14	±2.09
30	0.836	-15	±2.09
40	0.836	-19	±2.09
50	0.836	-13	±2.09

.Product	Notebook		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2008/05/28	Test Site	CB4
Test Condition	WCDMA BAND V HSDPA / Channel 4183	Test Range	-30°C ~+50°C

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (Hz)	Limit (KHz)
-30	1.88	20	±4.7
-20	1.88	21	±4.7
-10	1.88	18	±4.7
0	1.88	17	±4.7
10	1.88	17	±4.7
20	1.88	21	±4.7
30	1.88	-29	±4.7
40	1.88	23	±4.7
50	1.88	25	±4.7

Product	Notebook		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2008/05/28	Test Site	CB4
Test Condition	WCDMA BAND II / Channel 9400	Test Range	-30°C ~+50°C

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (Hz)	Limit (KHz)
-30	0.836	-26	±2.09
-20	0.836	38	±2.09
-10	0.836	23	±2.09
0	0.836	-29	±2.09
10	0.836	-22	±2.09
20	0.836	31	±2.09
30	0.836	25	±2.09
40	0.836	-28	±2.09
50	0.836	-30	±2.09

.Product	Notebook		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2008/05/28	Test Site	CB4
Test Condition	WCDMA BAND II HSDPA / Channel 9400	Test Range	-30°C ~+50°C

Temperature Interval(°C)	Test Frequency (GHz)	Deviation (Hz)	Limit (KHz)
-30	1.88	25	±4.7
-20	1.88	-34	±4.7
-10	1.88	-31	±4.7
0	1.88	-26	±4.7
10	1.88	-33	±4.7
20	1.88	-18	±4.7
30	1.88	-24	±4.7
40	1.88	32	±4.7
50	1.88	27	±4.7

8. EMI Reduction Method During Compliance Testing

No modification was made during testing.