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FCC PART 22 AND PART 24 TEST REPORT

FCC Part 22 Subpart H / Part 24 Subpart E

Report Reference No......: CTL120814793-WU

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Date of issue.....: August 22, 2012

Representative Laboratory Name : Shenzhen CTL Electromagnetic Technology Co., Ltd.

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Test Firm.....: Bontek Compliance Testing Laboratory Ltd

Address.....: 1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China

Applicant's name.....: New Telecom Holdings Limited

Address.....: 2/F, Eton Tower, 8 Hysan Avenue, Causeway, Hong Kong.

Test specification:

Standard: FCC CFR Title 47 Part 2, Part 22H and Part 24E

EIA/TIA 603-C: 2004

Master TRF.....: Dated 2011-01

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Test item description : Tablet

FCC ID.....: PE4VOLGO70TABN

Trade Mark: 3Q

Model/Type reference.....: QS0715C

Uplink: 2G:GSM 850: 824~849MHz, PCS 1900: 1850~1910MHz

3G:WCDMA Band V: 824~849MHz

Downlink: 2G:GSM 850: 869~894MHz, PCS 1900: 1930~1990MHz

3G:WCDMA Band V: 869~894MHz

Release Version: 2G:R99

3G:UMTS FDD: Rel-5

Type of modulation	2G:GMSK for GSM/GPRS; 8PSK for EDGE 3G:QPSK
GPRS Type	Class B
GPRS Class	Class 12
Antenna Gain	-1.5dBi for GSM850 0dBi for PCS1900 -1.5dBi for WCDMA Band V
Result.....	Positive

TEST REPORT

Test Report No. :	CTL120814793-WU	August 22, 2012 Date of issue
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Equipment under Test : Tablet

Model /Type : QS0715C

Applicant : **New Telecom Holdings Limited**

Address : 2/F, Eton Tower, 8 Hysan Avenue, Causeway, Hong Kong.

Manufacturer **New Telecom Holdings Limited**

Address 2/F, Eton Tower, 8 Hysan Avenue, Causeway, Hong Kong.

Test Result according to the standards on page 5:	Positive
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The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1. TEST STANDARDS	5
2. SUMMARY	6
2.1. General Remarks	6
2.2. Equipment Under Test	6
2.3. Short description of the Equipment under Test (EUT)	6
2.4. EUT operation mode	6
2.5. EUT configuration	7
2.6. Related Submittal(s) / Grant (s)	7
2.7. Modifications	7
3. TEST ENVIRONMENT	8
3.1. Address of the test laboratory	8
3.2. Test Facility	8
3.3. Environmental conditions	8
3.4. Configuration of Tested System	8
3.5. EUT Exercise Software	9
3.6. Statement of the measurement uncertainty	9
3.7. Equipments Used during the Test	10
3.8. Summary of Test Result	11
4. TEST CONDITIONS AND RESULTS	12
4.1. Peak Output Power	12
4.2. Modulation Characteristic	20
4.3. Occupied Bandwidth	21
4.4. Spurious Emission At Antenna Terminals (+/- 1MHz)	34
4.5. Spurious Emission	41
4.6. Frequency Stability under Temperature & Voltage Variations	67
5. TEST SETUP PHOTOS OF THE EUT	74
6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT	75

1. TEST STANDARDS

The tests were performed according to following standards:

[FCC Part 22 Subpart H:](#) Public Mobile Services

[FCC Part 24 Subpart E:](#) Personal Communications Services

[EIA/TIA 603-C: 2004](#)

[FCC CFR Title 47 Part 2](#)

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample : August 10, 2012

Testing commenced on : August 11, 2012

Testing concluded on : August 15, 2012

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage : ● 120V / 60 Hz o 115V / 60Hz
 o 12 V DC o 24 V DC
 ● Other (specified in blank below)

DC 3.7V from battery

2.3. Short description of the Equipment under Test (EUT)

A Tablet (QS0715C) with UMTS/GSM, Bluetooth and wifi function.

For more details, refer to the user's manual of the EUT.

Serial number: Prototype

2.4. EUT operation mode

VITE has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: GPRS850
Mode 2: GPRS1900
Mode 3: EDGE850
Mode 4: EDGE1900
Mode 5: WCDMA Band V
Mode 6: HSDPA Band v

Note:

1. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.
2. For the ERP/EIRP and radiated emission test, every axis (X, Y, Z) was verified, and show the worst result on this report.
3. Radiated power output working at GSM link was higher than that working at GPRS link, so all of test items were done working at GSM mode. Refer to peak power output for more details.
4. This device is a composite device in accordance with Part 15 Subpart B regulations. The report number is CTL120814793-WD.

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- o - supplied by the manufacturer

- o - supplied by the lab

- o
Manufacturer :
Model No. :

- o
Manufacturer :
Model No. :

2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **PE4VOLGO70TABN** filing to comply with of the FCC Part 22 and Part 24 Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Bontek Compliance Testing Laboratory Ltd
1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2003) and CISPR Publication 22.

3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

IC Registration No.: 7631A

The 3m alternate test site of Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7631A on March, 2011.

FCC-Registration No.: 338263

Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 338263, March 24, 2008.

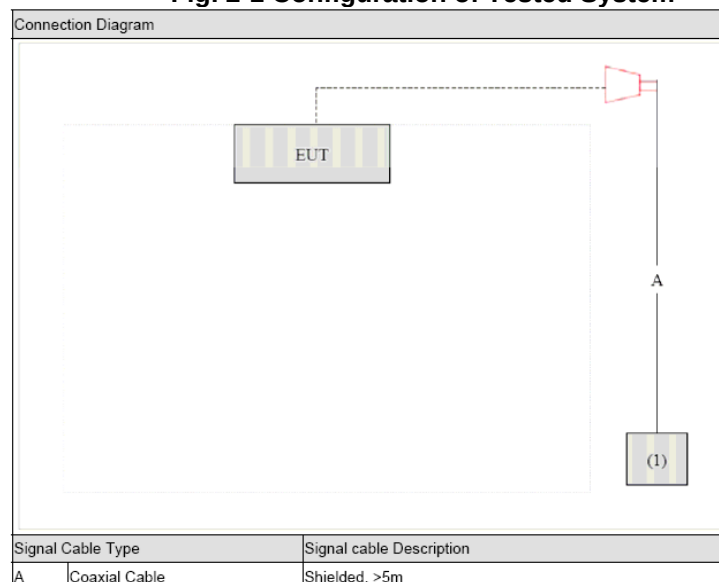
3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	<u>15-35 ° C</u>
Humidity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

3.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System



3.5. EUT Exercise Software

1. Setup the EUT and simulators as shown on above.
2. Turn on the power of all equipment.
3. EUT Communicate with CMU200, then select channel to test.

3.6. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Bontek Compliance Testing Laboratory Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Bontek laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	1~12.75GHz	4.32dB	(1)
Conducted Disturbance	0.15~30MHz	3.20dB	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.7. Equipments Used during the Test

Item	Test Equipment	Manufacturer	Model No.	Last Cal.	Due. Date
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	2012/04/14	2013/04/13
2	Radio Communication Tester	ROHDE & SCHWARZ	CMU200	2012/04/14	2013/04/13
3	Dual Directional Coupler	Agilent	778D	2012/04/14	2013/04/13
4	10dB attenuator	SCHWARZBECK	MTAIMP-136	2012/04/14	2013/04/13
5	Tunable Bandreject filter	K&L	3TNF-800	2012/04/14	2013/04/13
6	Tunable Bandreject filter	K&L	5TNF-1700	2012/04/14	2013/04/13
7	High-Pass Filter	K&L	9SH10-2700/X12750-O/O	2012/04/14	2013/04/13
8	High-Pass Filter	K&L	41H10-1375/U12750-O/O	2012/04/14	2013/04/13
9	Coaxial Cable	Huber+Suhner	AC4-RF-H	2012/04/14	2013/04/13
10	AC Power Supply	IDRC	CF-500TP	2012/04/14	2013/04/13
11	DC Power Supply	IDRC	CD-035-020PR	2012/04/14	2013/04/13
12	RF Current Probe	FCC	F-33-4	2012/04/14	2013/04/13
13	Temperature /Humidity Meter	zhicheng	ZC1-2	2012/04/14	2013/04/13
14	MICROWAVE AMPLIFIER	HP	8349B	2012/04/14	2013/04/13
15	Amplifier	HP	8447D	2012/04/14	2013/04/13
16	SIGNAL GENERATOR	HP	8647A	2012/04/14	2013/04/13
17	Log Periodic Antenna	ELECTRO-METRICS	EM-6950	2012/04/14	2013/04/13
18	Horn Antenna	Schwarzbeck	BBHA9120A	2012/04/14	2013/04/13
19	EMI Test Receiver	R&S	ESPI	2012/04/14	2013/04/13
20	Loop Antenna	ZHINAN	ZN30900A	2012/04/14	2013/04/13
21	Horn Antenna	Schwarzbeck	BBHA9120D	2012/04/14	2013/04/13
22	Horn Antenna	Schwarzbeck	BBHA9170	2012/04/14	2013/04/13
23	Spectrum Analyzer	Agilent	E4446A	2012/04/14	2013/04/13
24	Wideband Peak Power Meter	Anritsu	ML2495A	2012/04/14	2013/04/13
25	Power Sensor	Anritsu	MA2411B	2012/04/14	2013/04/13

3.8. Summary of Test Result

No deviations from the test standards

For GSM 850/WCDMA Band V (FCC Part 22H & Part 2)

Emission			
Performed Item	Normative References	Test Performed	Deviation
Peak Output Power	FCC Part 22.913(a)(2) and Part 2.1046 EIA/TIA 603-C	Yes	No
Modulation Characteristic	FCC Part 2.1047(d)	Yes	No
Occupied Bandwidth	FCC Part 2.1049	Yes	No
Spurious Emission At Antenna Terminals (+/- 1MHz)	FCC Part 22.917(a) and Part 2.1049	Yes	No
Spurious Emission	FCC Part 22.917(b) and Part 2.1051, 2.1053 EIA/TIA 603-C	Yes	No
Frequency Stability Under Temperature & Voltage Variations	FCC Part 22.355 and 2.1055 EIA/TIA 603-C	Yes	No

For PCS 1900 (FCC Part 24E & Part 2)

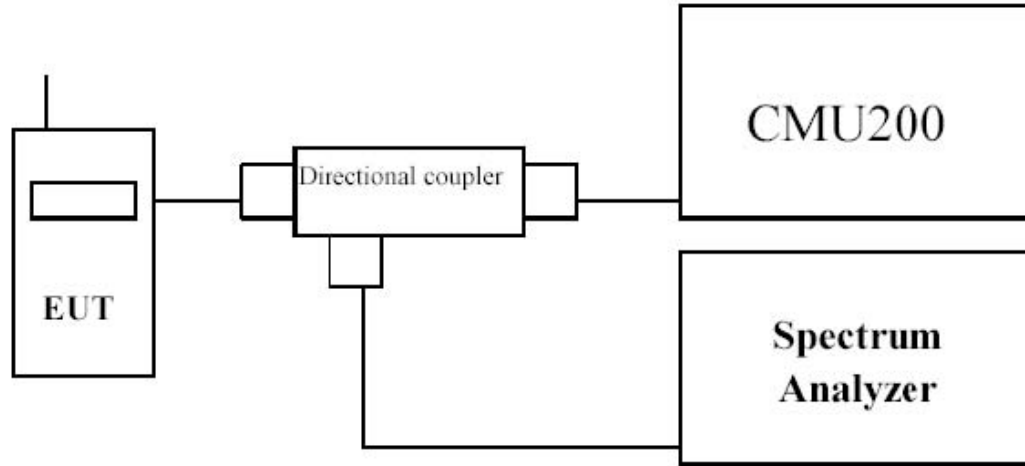
Emission			
Performed Item	Normative References	Test Performed	Deviation
Peak Output Power	FCC Part 24.232(b) and Part 2.1046 EIA/TIA 603-C	Yes	No
Modulation Characteristic	FCC Part 2.1047(d)	Yes	No
Occupied Bandwidth	FCC Part 24.238(b) and Part 2.1049	Yes	No
Spurious Emission At Antenna Terminals (+/- 1MHz)	FCC Part 24.238(a) and Part 2.1049	Yes	No
Spurious Emission	FCC Part 24.238(b) and Part 2.1051, 2.1053 EIA/TIA 603-C	Yes	No
Frequency Stability Under Temperature & Voltage Variations	FCC Part 24.235 and 2.1055 EIA/TIA 603-C	Yes	No

4. TEST CONDITIONS AND RESULTS

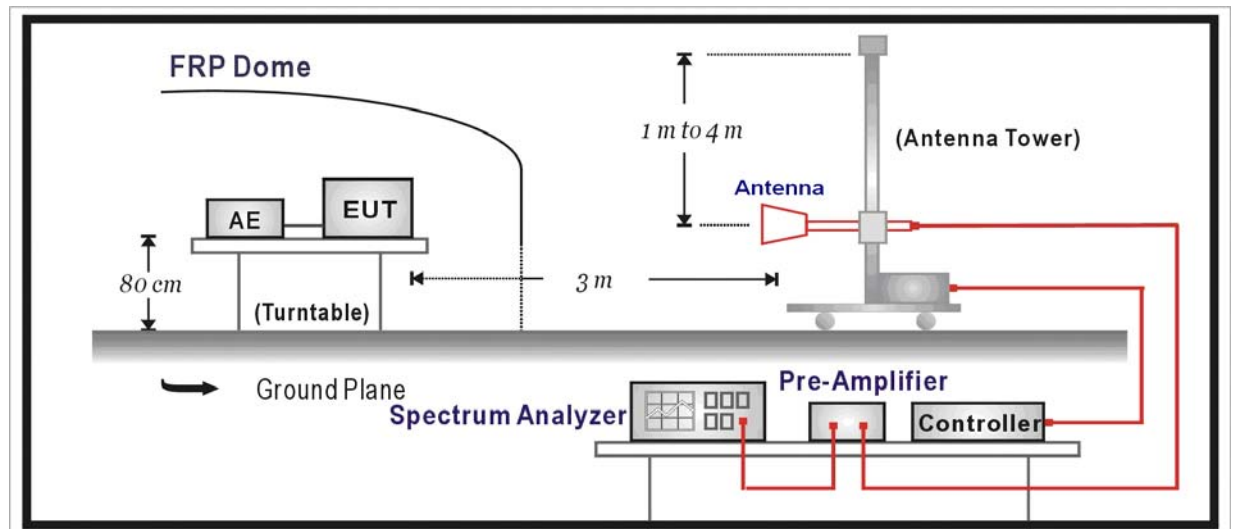
4.1. Peak Output Power

TEST CONFIGURATION

Conducted Power Measurement:



Radiated Power Measurement:



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603C

Conducted Power Measurement:

- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.
- EUT Communicate with CMU200, then select a channel for testing.
- Add a correction factor to the display of spectrum, and then test.

Radiated Power Measurement:

- a) The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
- b) The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
- c) The output of the test antenna shall be connected to the measuring receiver.
- d) The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- e) The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- f) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- g) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- h) The maximum signal level detected by the measuring receiver shall be noted.
- i) The transmitter shall be replaced by a substitution antenna.
- j) The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- k) The substitution antenna shall be connected to a calibrated signal generator.
- l) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- m) The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- n) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- o) The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- p) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
- q) Test site anechoic chamber refer to ANSI C63.4: 2009.

Base station simulator settings for each test mode:

1. For GSM/GPRS/EDGE
Configure R&S CMU200 to support GMSK and 8PSK call respectively, and set one timeslot transmission for GMSK GSM/GPRS and 8PSK EDGE.
Measure and record power outputs for both modulations.
2. For WCDMA
Configure the CMU-200 to support all WCDMA tests in respect to the 3GPP 34.121.
Measure the EUT output power at 826.4MHz, 836.6MHz and 846.6MHz for WCDMA Band V and 1852.4MHz, 1880MHz and 1907.6MHz for WCDMA Band II.

For Rel 99

- Set a Test Mode 1 loop back with a 12.2kbps Reference Measurement Channel (RMC)
- Set and send continuously Up power control commands to the Gobi2000
- Measure the power at the Gobi2000 Module antenna connector by using CMU-200.

LIMIT

For FCC Part 22.913(a)(2):

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

For FCC Part 24.232(b):

The EIRP of mobile transmitters and auxiliary test transmitters must not exceed 2 Watts.

TEST RESULTS**Conducted Measurement****GSM 850**

Channel No.	Frequency (MHz)	Modulation	Conducted Output Power (dBm)	ERP (dBm)	Limit (dBm)
128	824.2	GPRS	32.27	29.69	38.50
189	836.4	GPRS	32.58	30.22	38.50
251	848.8	GPRS	32.32	30.45	38.50

PCS 1900

Channel No.	Frequency (MHz)	Modulation	Conducted Output Power (dBm)	EIRP (dBm)	Limit (dBm)
512	1850.2	GPRS	29.27	29.09	33.00
661	1880.0	GPRS	29.58	29.45	33.00
810	1909.8	GPRS	29.32	29.34	33.00

GPRS 850

Channel No.	Frequency (MHz)	Modulation	Conducted Output Power (dBm)	ERP (dBm)	Limit (dBm)
128	824.2	GPRS	32.25	29.58	38.50
189	836.4	GPRS	32.55	29.65	38.50
251	848.8	GPRS	32.30	30.25	38.50

GPRS 1900

Channel No.	Frequency (MHz)	Modulation	Conducted Output Power (dBm)	EIRP (dBm)	Limit (dBm)
512	1850.2	GPRS	29.25	28.67	33.00
661	1880.0	GPRS	29.55	29.01	33.00
810	1909.8	GPRS	29.30	29.10	33.00

EDGE 850

Channel No.	Frequency (MHz)	Modulation	Conducted Output Power (dBm)	ERP (dBm)	Limit (dBm)
128	824.2	8PSK	26.87	24.99	38.50
189	836.4	8PSK	26.66	23.76	38.50
251	848.8	8PSK	26.50	23.41	38.50

EDGE 1900

Channel No.	Frequency (MHz)	Modulation	Conducted Output Power (dBm)	EIRP (dBm)	Limit (dBm)
512	1850.2	8PSK	26.64	23.99	33.00
661	1880.0	8PSK	25.69	24.62	33.00
810	1909.8	8PSK	25.58	24.25	33.00

Note: All conducted measurements are based on a peak detector.

WCDMA

Mode	Band V (850MHz) Channel					
	Conducted Power (dBm)			ERP (dBm)		
	4132	4182	4233	4132	4182	4233
WCDMA R99	23.81	23.80	23.92	19.11	19.20	19.93

Mode		Band V (850MHz) Channel					
		Conducted Power (dBm)			ERP (dBm)		
		4132	4182	4233	4132	4182	4233
Rel5 HSDPA	1	23.54	23.51	23.69	18.98	19.10	19.88
	2	23.56	23.59	23.60	--	--	--
	3	22.98	22.99	23.02	--	--	--
	4	22.95	22.97	23.00	--	--	--

Note: All conducted measurements are based on an RMS detector.

Radiated Measurement

GSM850

Frequency (MHz)	SA Reading (dBm)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 128 (824.20MHz)								
824.2	-9.93	H	23.76	1.76	-0.02	21.98	38.50	-16.52
824.2	-2.96	V	31.47	1.76	-0.02	29.69	38.50	-8.81
Middle Channel 189 (836.40MHz)								
836.4	-9.64	H	24.15	1.75	0.10	22.50	38.50	-16.00
836.4	-2.79	V	31.87	1.75	0.10	30.22	38.50	-8.28
High Channel 251 (848.80MHz)								
848.8	-7.99	H	26.00	1.78	0.13	24.35	38.50	-14.15
848.8	-2.49	V	32.10	1.78	0.13	30.45	38.50	-8.05

PCS1900

Frequency (MHz)	SA Reading (dBm)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 512 (1850.20MHz)								
1850.2	22.98	H	21.05	2.68	10.40	28.77	33.00	-4.23
1850.2	23.49	V	21.37	2.68	10.40	29.09	33.00	-3.91
Middle Channel 661 (1880.00MHz)								
1880.0	22.32	H	20.37	2.68	10.43	28.12	33.00	-4.88
1880.0	23.99	V	21.70	2.68	10.43	29.45	33.00	-3.55
High Channel 810 (1909.80MHz)								
1909.8	22.82	H	21.05	2.70	10.44	28.79	33.00	-4.21
1909.8	23.81	V	21.60	2.70	10.44	29.34	33.00	-3.66

GPRS 850

Frequency (MHz)	SA Reading (dBm)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 128 (824.20MHz)								
824.2	-9.98	H	23.79	1.76	-0.02	21.93	38.50	-16.57
824.2	-3.07	V	31.50	1.76	-0.02	29.58	38.50	-8.92
Middle Channel 189 (836.40MHz)								
836.4	-9.64	H	24.14	1.75	0.10	22.49	38.50	-16.01
836.4	-3.00	V	31.30	1.75	0.10	29.65	38.50	-8.85
High Channel 251 (848.80MHz)								
848.8	-7.60	H	25.96	1.78	0.13	24.31	38.50	-14.19
848.8	-2.40	V	31.90	1.78	0.13	30.25	38.50	-8.25

GPRS1900

Frequency (MHz)	SA Reading (dBm)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 512 (1850.20MHz)								
1850.2	22.69	H	20.76	2.68	10.40	28.48	33.00	-4.52
1850.2	23.07	V	20.95	2.68	10.40	28.67	33.00	-4.33
Middle Channel 661 (1880.00MHz)								
1880.0	21.99	H	20.04	2.68	10.43	27.79	33.00	-5.21
1880.0	23.55	V	21.26	2.68	10.43	29.01	33.00	-3.99
High Channel 810 (1909.80MHz)								
1909.8	22.50	H	20.73	2.70	10.44	28.47	33.00	-4.53
1909.8	23.57	V	21.36	2.70	10.44	29.10	33.00	-3.90

EDGE 850

Frequency (MHz)	SA Reading (dBm)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 128 (824.20MHz)								
824.2	-12.94	H	21.18	1.76	-0.02	19.40	38.50	-19.10
824.2	-7.95	V	26.77	1.76	-0.02	24.99	38.50	-13.51
Middle Channel 189 (836.40MHz)								
836.4	-14.59	H	19.20	1.75	0.10	17.55	38.50	-20.95
836.4	-9.25	V	25.41	1.75	0.10	23.76	38.50	-14.74
High Channel 251 (848.80MHz)								
848.8	-12.22	H	21.34	1.78	0.13	19.69	38.50	-18.81
848.8	-9.24	V	25.06	1.78	0.13	23.41	38.50	-15.09

EDGE1900

Frequency (MHz)	SA Reading (dBm)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 512 (1850.20MHz)								
1850.2	-12.94	H	11.68	2.68	10.40	19.40	33.00	-13.60
1850.2	-8.95	V	16.27	2.68	10.40	23.99	33.00	-9.01
Middle Channel 661 (1880.00MHz)								
1880.0	18.38	H	16.43	2.68	10.43	24.18	33.00	-8.82
1880.0	19.16	V	16.87	2.68	10.43	24.62	33.00	-8.38
High Channel 810 (1909.80MHz)								
1909.8	18.05	H	16.28	2.70	10.44	24.02	33.00	-8.98
1909.8	18.72	V	16.51	2.70	10.44	24.25	33.00	-8.75

WCDMA Band V

Frequency (MHz)	SA Reading (dBm)	Ant .Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 4132 (826.40MHz)								
826.4	-26.97	H	28.53	2.56	-0.02	4.93	38.50	-33.57
826.4	-13.63	V	32.32	2.56	-0.02	19.11	38.50	-19.39
Middle Channel 4182 (836.40MHz)								
836.4	-27.98	H	25.03	2.59	0.10	4.27	38.50	-34.23
836.4	-13.74	V	30.92	2.59	0.10	19.20	38.50	-19.30
High Channel 4233 (846.60MHz)								
846.6	-27.79	H	26.12	2.54	0.13	4.47	38.50	-34.03
846.6	-13.01	V	32.02	2.54	0.13	19.93	38.50	-18.57

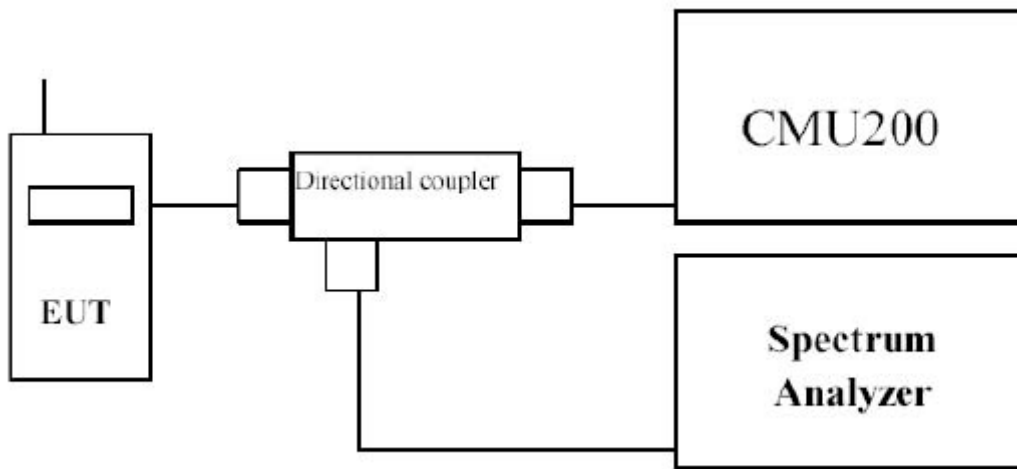
HSDPA Band V

Frequency (MHz)	SA Reading (dBm)	Ant .Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 4132 (826.40MHz)								
826.4	-26.56	H	27.83	2.56	-0.02	5.34	38.50	-33.16
826.4	-13.69	V	29.89	2.56	-0.02	18.98	38.50	-19.52
Middle Channel 4182 (836.40MHz)								
836.4	-27.97	H	24.94	2.59	0.10	4.24	38.50	-34.26
836.4	-13.35	V	30.28	2.59	0.10	19.10	38.50	-19.40
High Channel 4233 (846.60MHz)								
846.6	-26.46	H	27.53	2.54	0.13	5.79	38.50	-32.71
846.6	-13.06	V	30.42	2.54	0.13	19.88	38.50	-18.62

Note: All conducted measurements are based on an RMS detector.

4.2. Modulation Characteristic

TEST CONFIGURATION



LIMIT

N/A

TEST PROCEDURE

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 GSM is a 60 MHz 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.

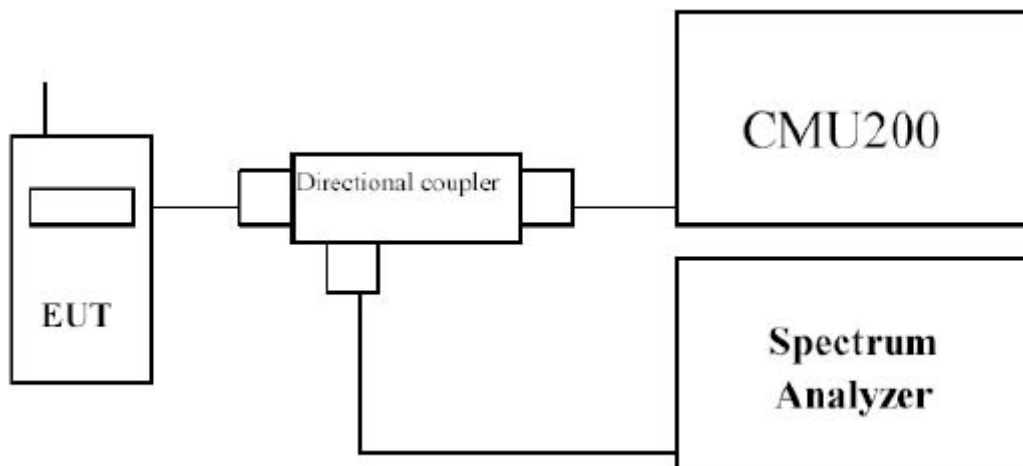
Within the bandwidth, individual channels are subdivided into multiframes (made of 26 frames), frames (made of 8 time slots), and time slots (made of 8 fields). The time slots are 0.57 ms long allowing 156.25 bits of information including overhead.

TEST RESULTS

The modulation of GSM/WCDMA was verified and confirmed compliance with requirement.

4.3. Occupied Bandwidth

TEST CONFIGURATION



TEST PROCEDURE

Using Occupied Bandwidth measurement function of spectrum analyzer, and setting as follows:

For GPRS/EDGE 850/1900 test --- RBW = 3 kHz and VBW = 10 kHz

For WCDMA FDD Band II/V test --- RBW = 50 kHz and VBW = 200 kHz

LIMIT

N/A

TEST RESULTS

Product	Tablet		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: GSM850 GPRS Link		
Date of Test	2012/08/13	Test Site	AC-6

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
128	824.20	315.315	247.233
189	836.40	313.861	244.542
251	848.80	311.780	244.636

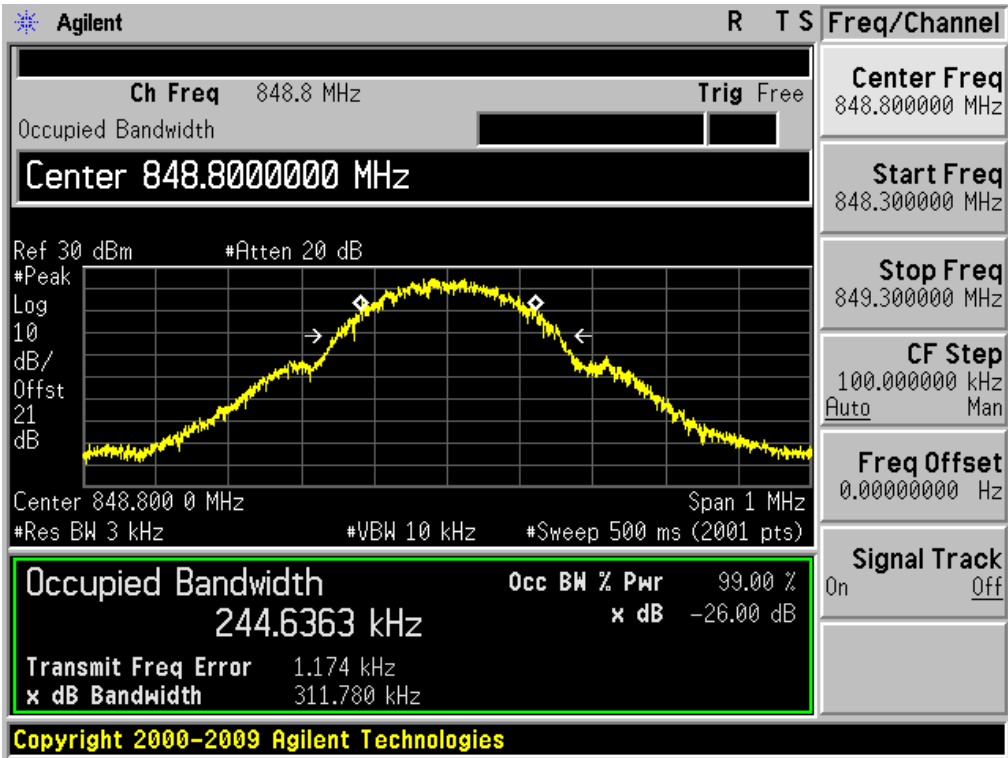
Figure Channel 128 (824.20MHz)



Figure Channel 189 (836.40MHz)



Figure Channel 251 (848.80MHz)



Product	Tablet		
Test Item	Occupied Bandwidth		
Test Mode	Mode 2: PCS1900 GPRS Link		
Date of Test	2012/08/13	Test Site	AC-6

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
512	1850.20	315.172	245.297
661	1880.00	315.783	246.043
810	1909.80	311.053	246.051

Figure Channel 512 (1850.20MHz)

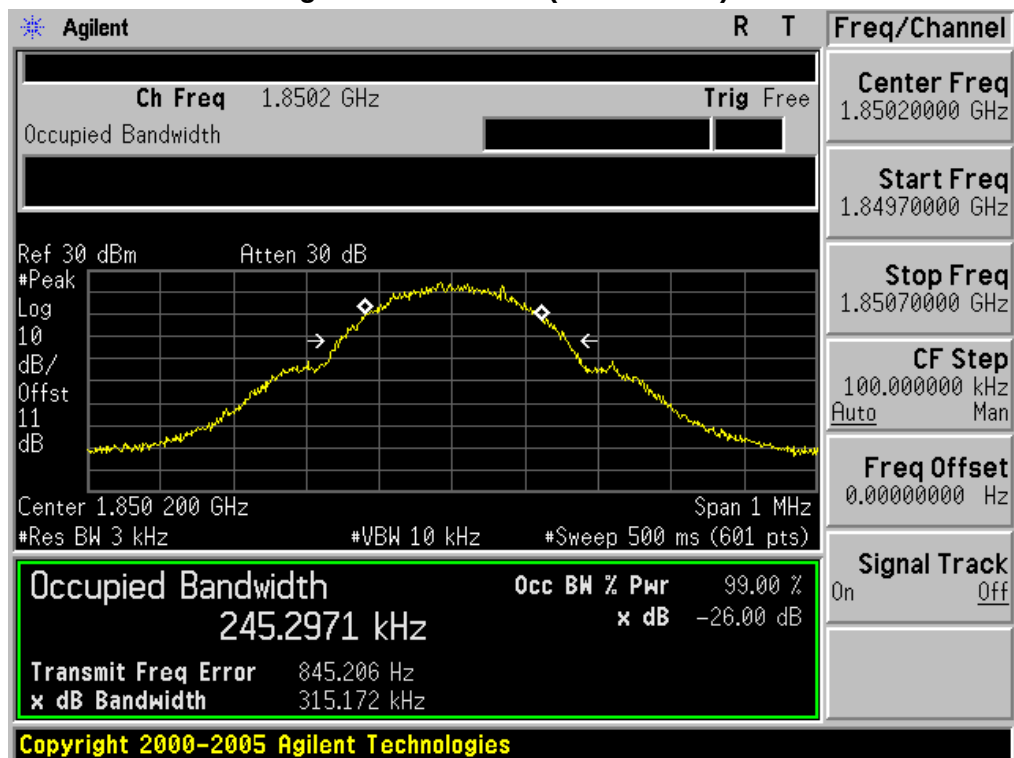


Figure Channel 661 (1880.00MHz)

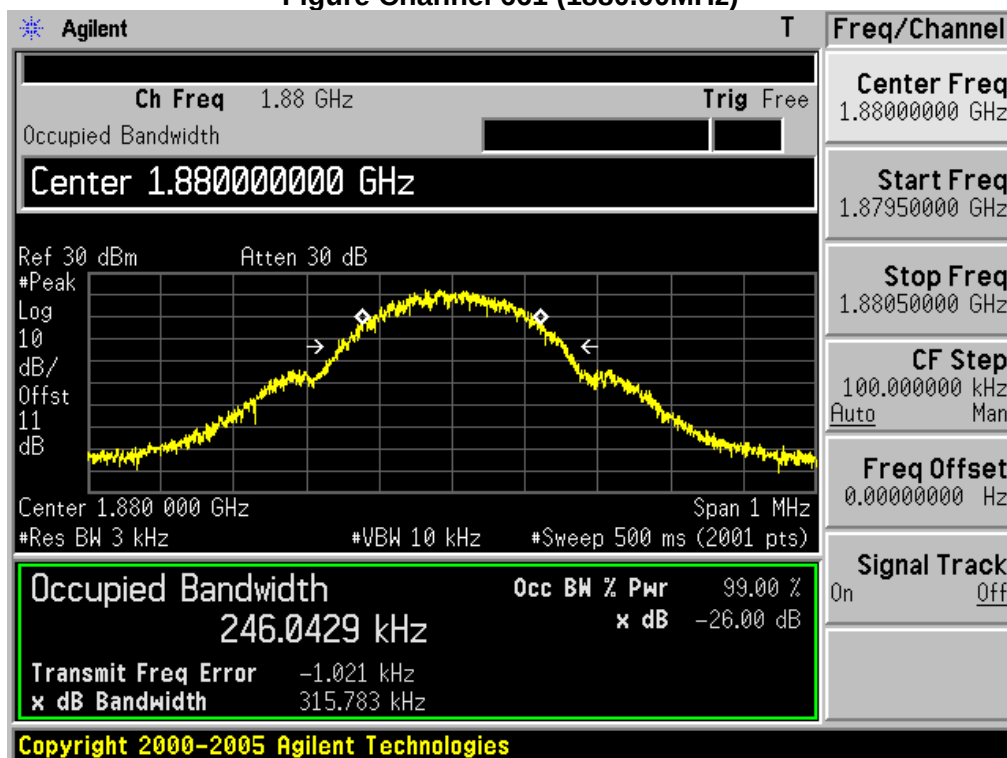


Figure Channel 810 (1909.80MHz)



Product	Tablet		
Test Item	Occupied Bandwidth		
Test Mode	Mode 3: GSM850 EDGE Link		
Date of Test	2012/08/13	Test Site	AC-6

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
128	824.20	302.966	239.642
189	836.40	306.240	237.957
251	848.80	308.620	241.064

Figure Channel 128 (824.20MHz)

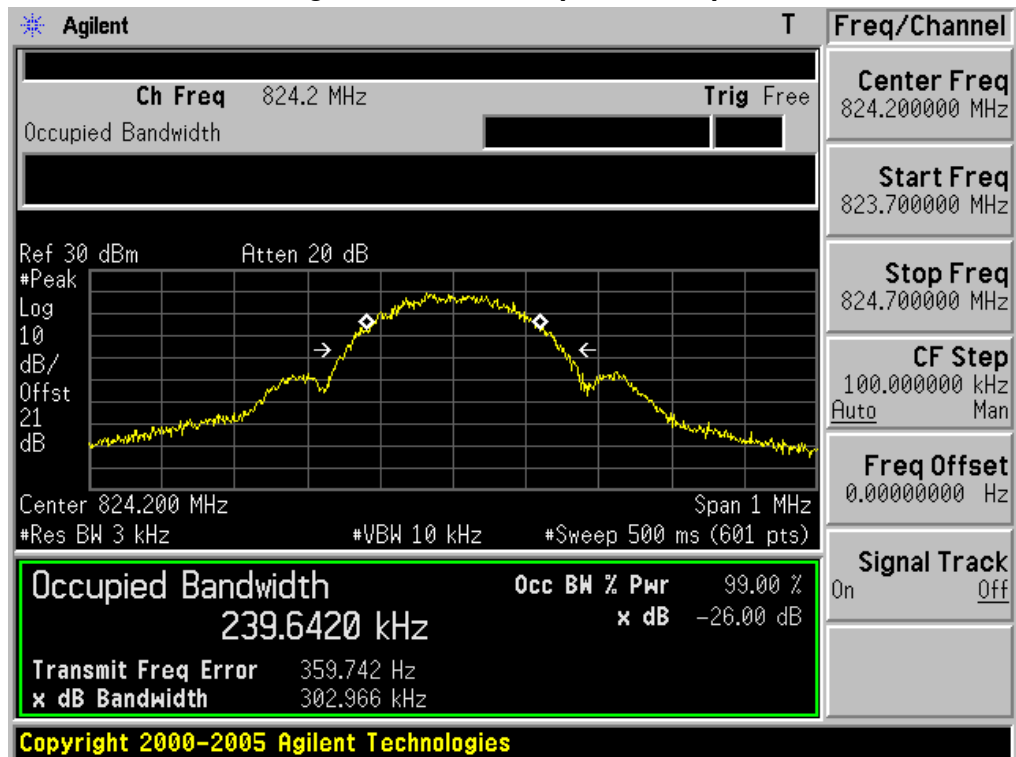


Figure Channel 189 (836.40MHz)

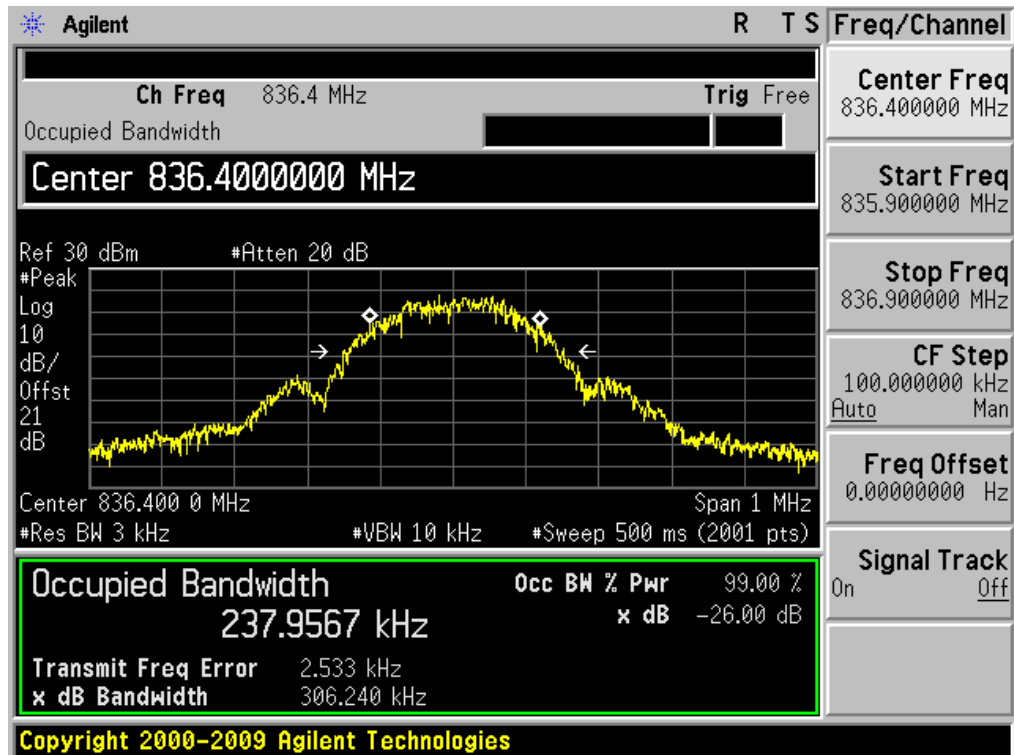
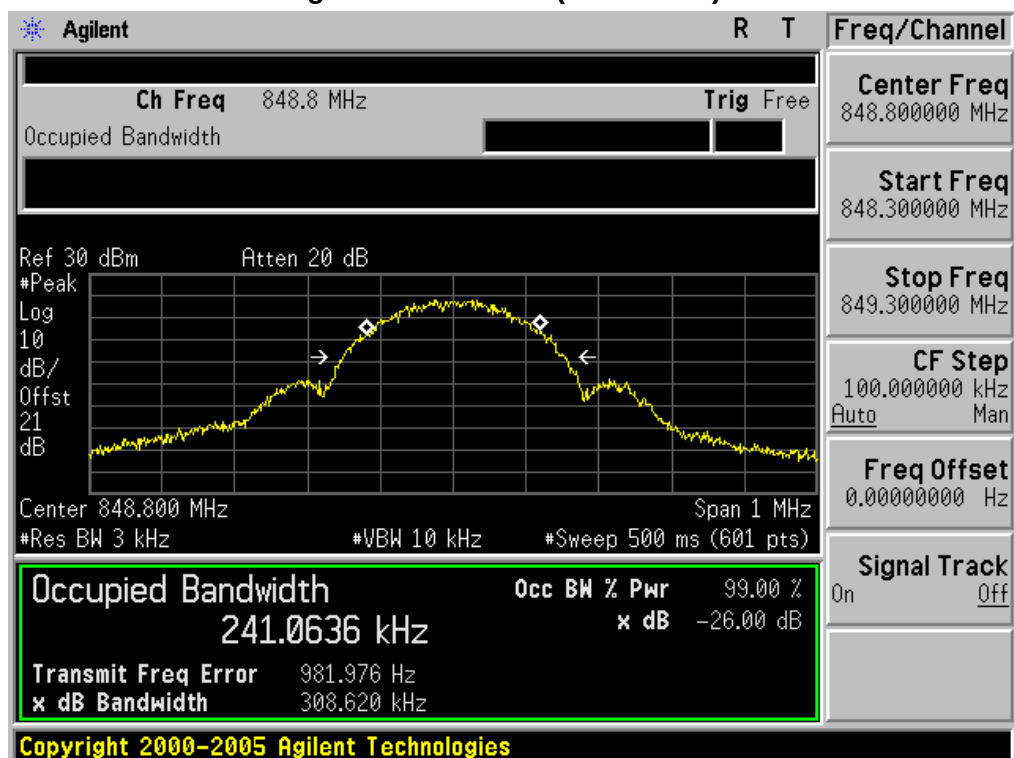


Figure Channel 251 (848.80MHz)



Product	Tablet		
Test Item	Occupied Bandwidth		
Test Mode	Mode 4: PCS1900 EDGE Link		
Date of Test	2012/08/13	Test Site	AC-6

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
512	1850.20	306.174	247.382
661	1880.00	305.367	245.153
810	1909.80	303.901	244.862

Figure Channel 512 (1850.20MHz)

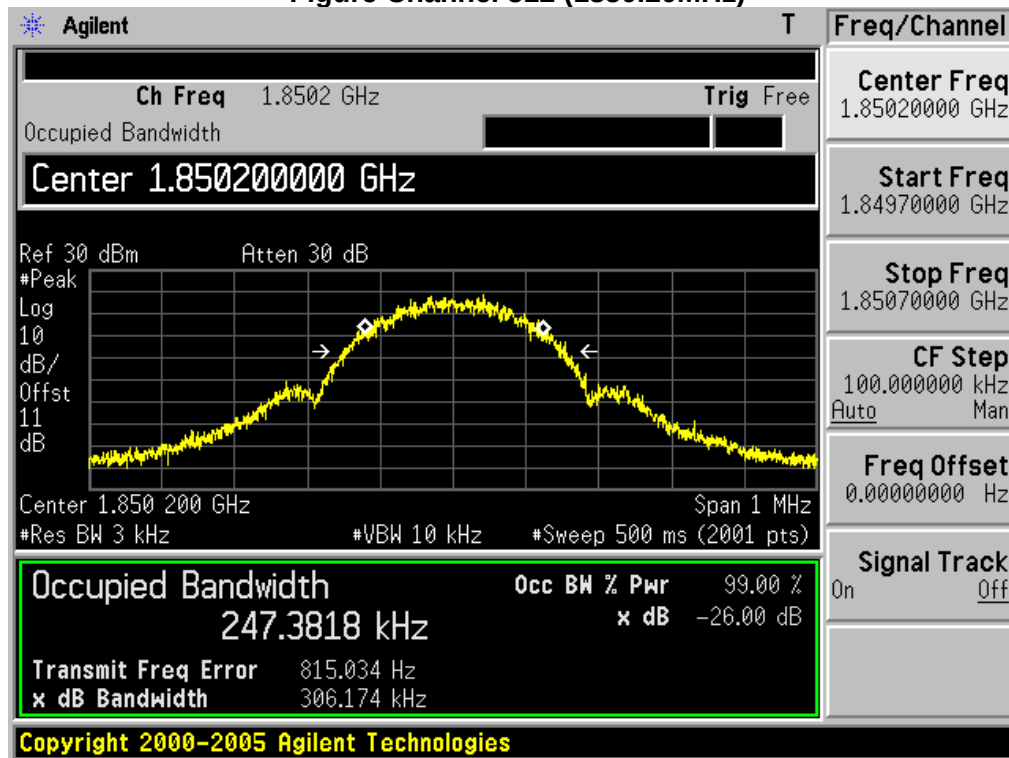


Figure Channel 661 (1880.00MHz)

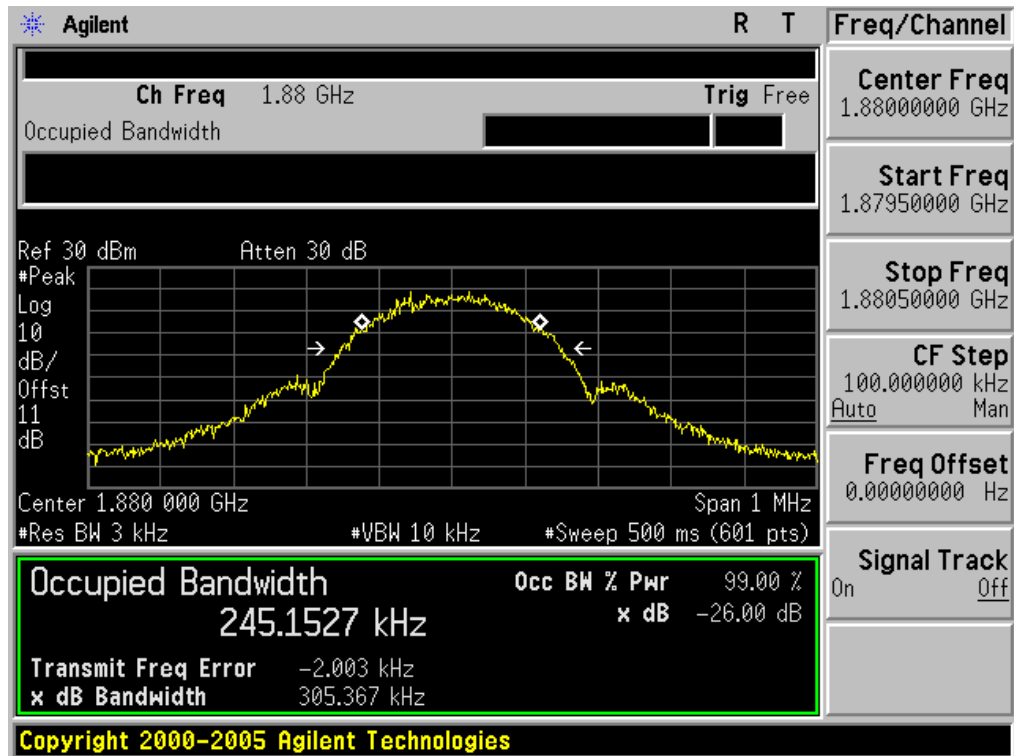
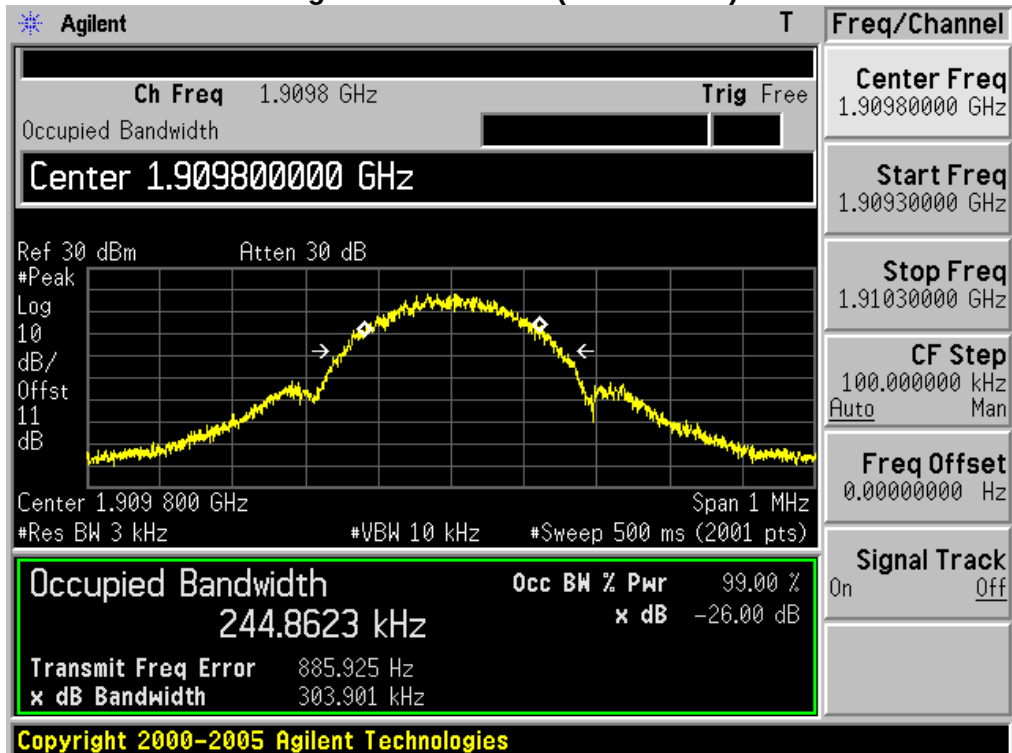


Figure Channel 810 (1909.80MHz)



Product	Tablet		
Test Item	Occupied Bandwidth		
Test Mode	Mode 5: WCDMA Band V Link		
Date of Test	2012/08/13	Test Site	AC-6

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
4132	826.4	4.627	4.153
4182	836.4	4.655	4.161
4233	846.6	4.627	4.159

Figure Channel 4132 (826.4MHz)

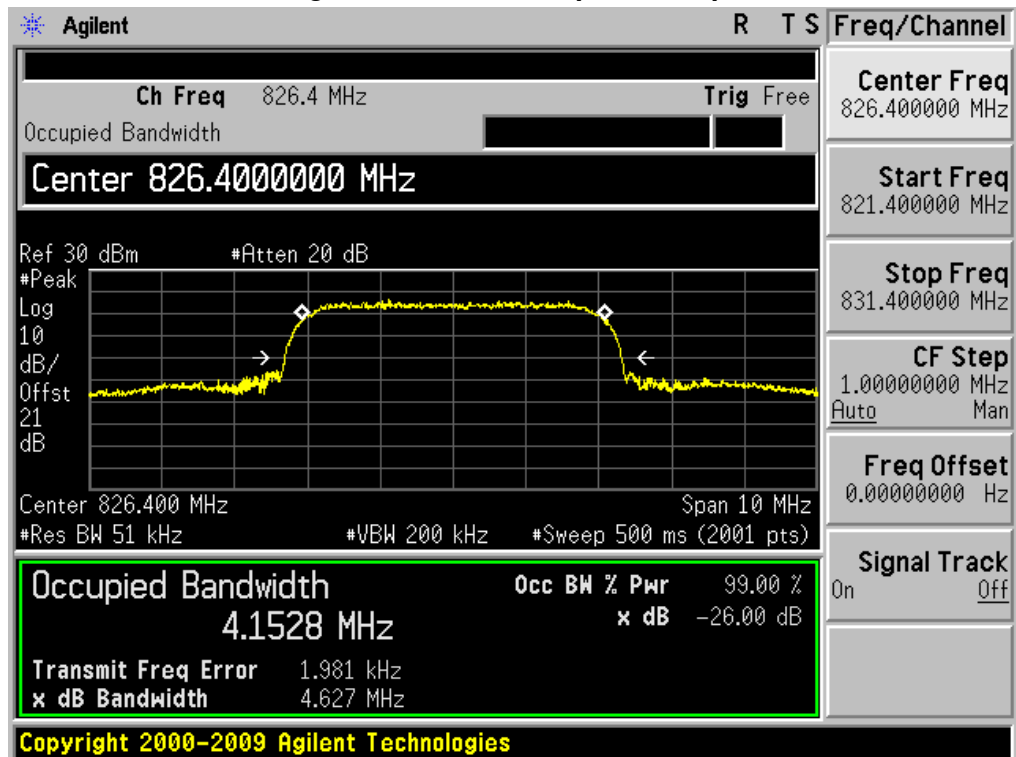


Figure Channel 4182 (836.40MHz)

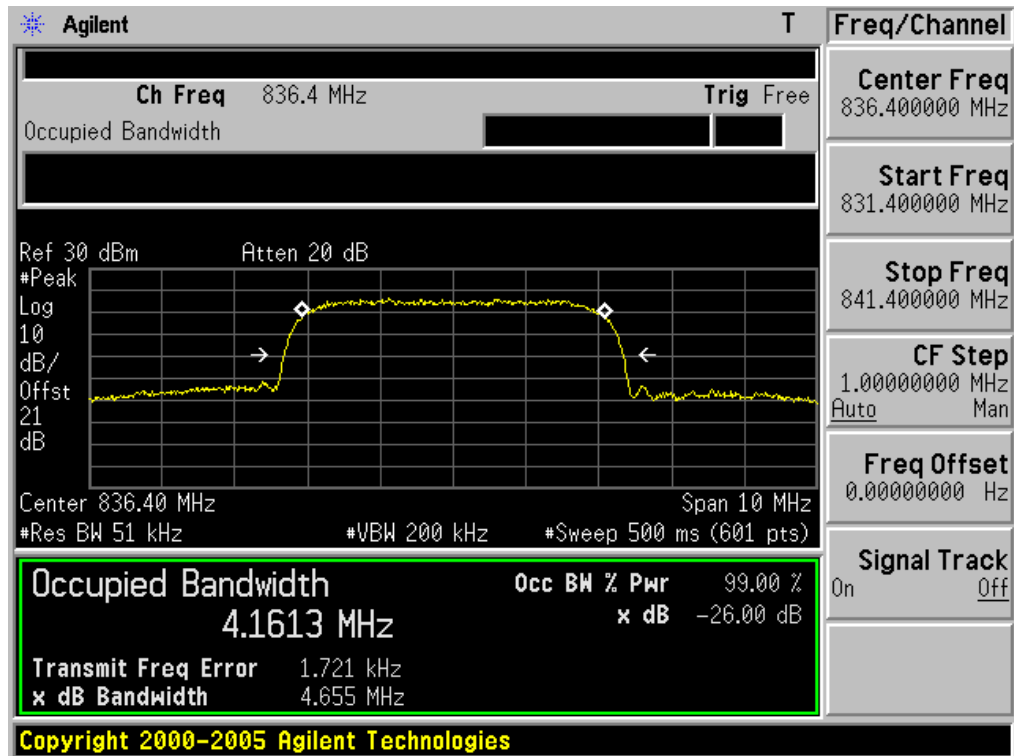
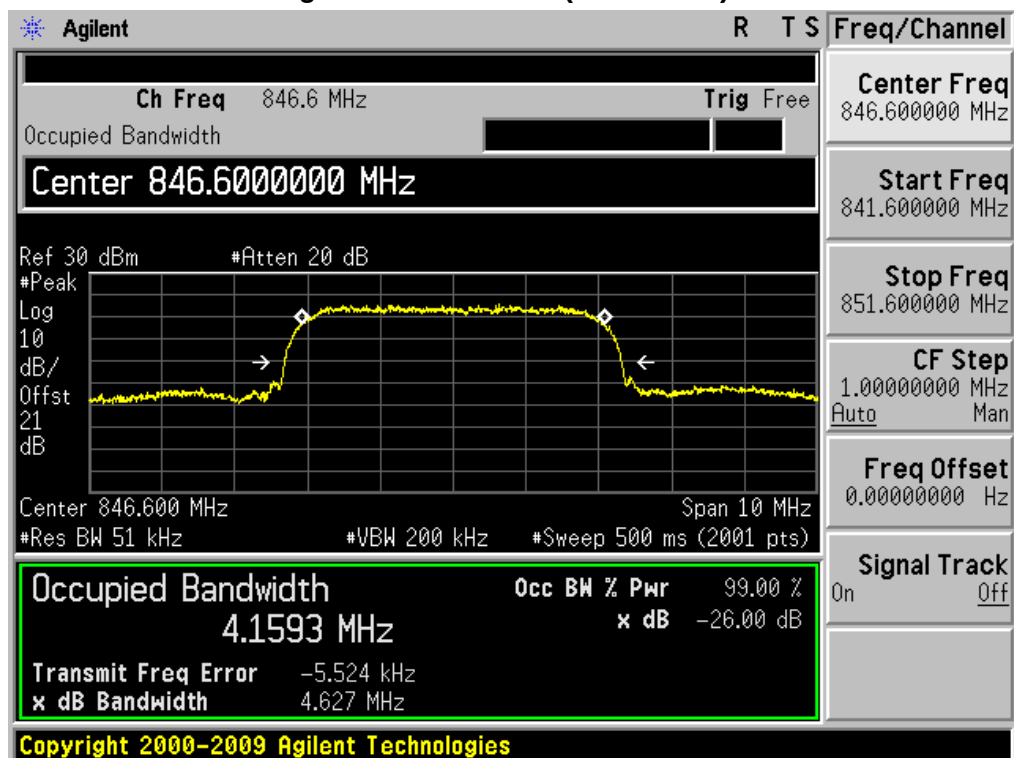


Figure Channel 4233 (846.60MHz)



Product	Tablet		
Test Item	Occupied Bandwidth		
Test Mode	Mode 6: HSDPA Band V Link		
Date of Test	2012/08/13	Test Site	AC-6

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
4132	826.4	4.641	4.157
4182	836.4	4.632	4.159
4233	846.6	4.638	4.181

Figure Channel 4132 (826.4MHz)

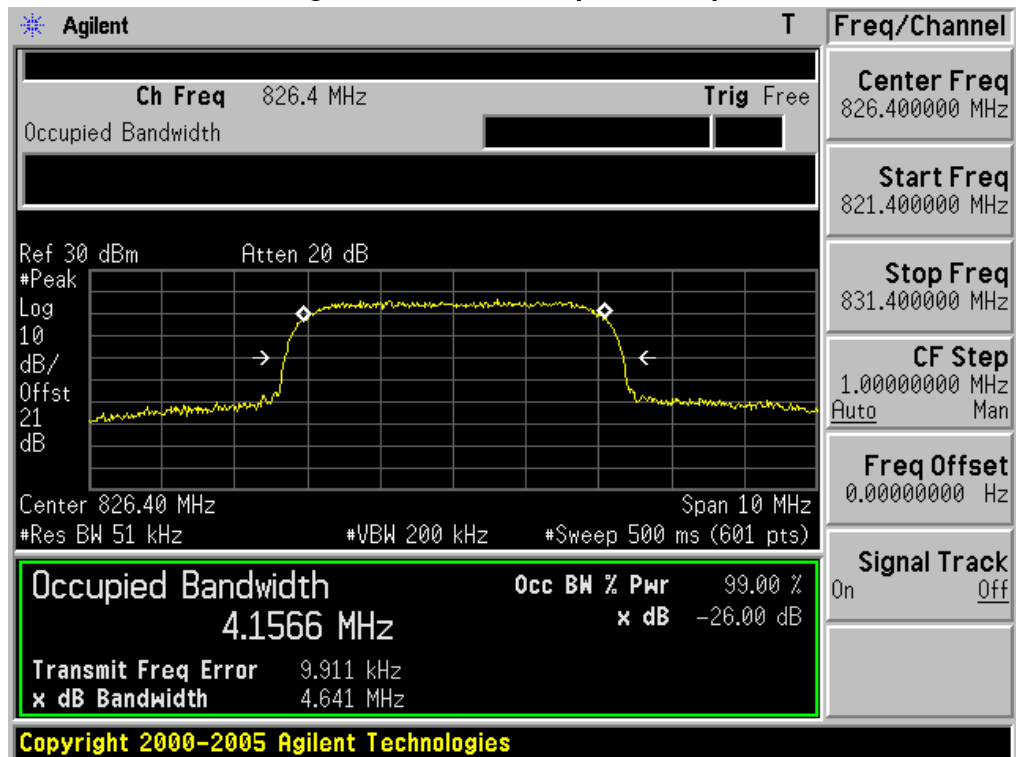


Figure Channel 4182 (836.40MHz)

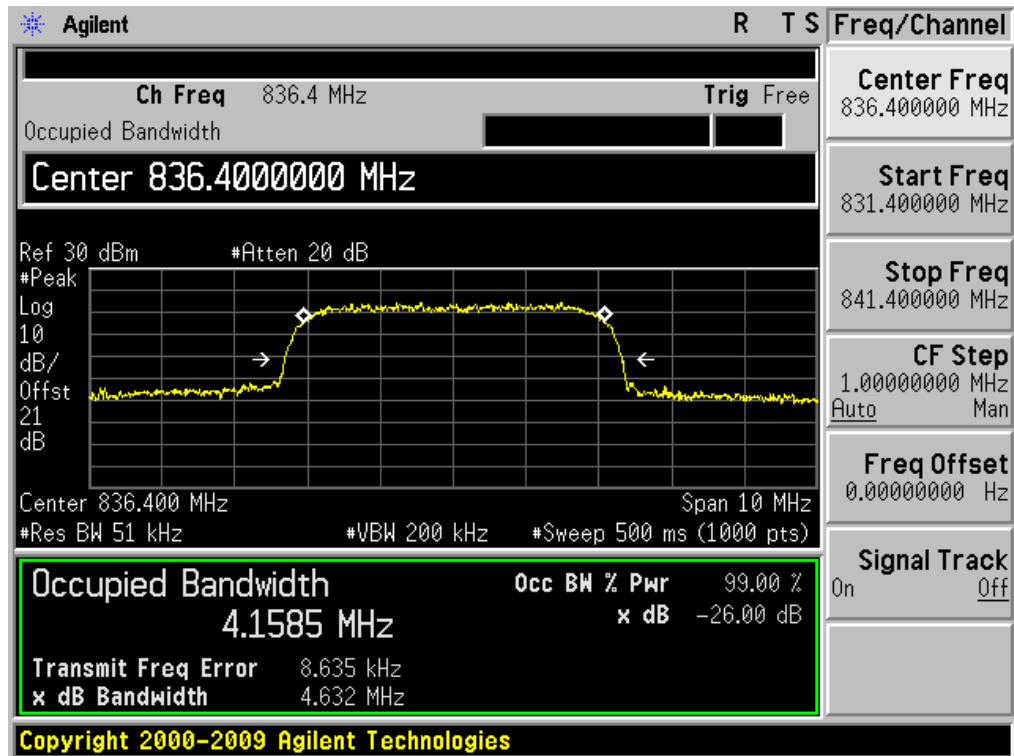
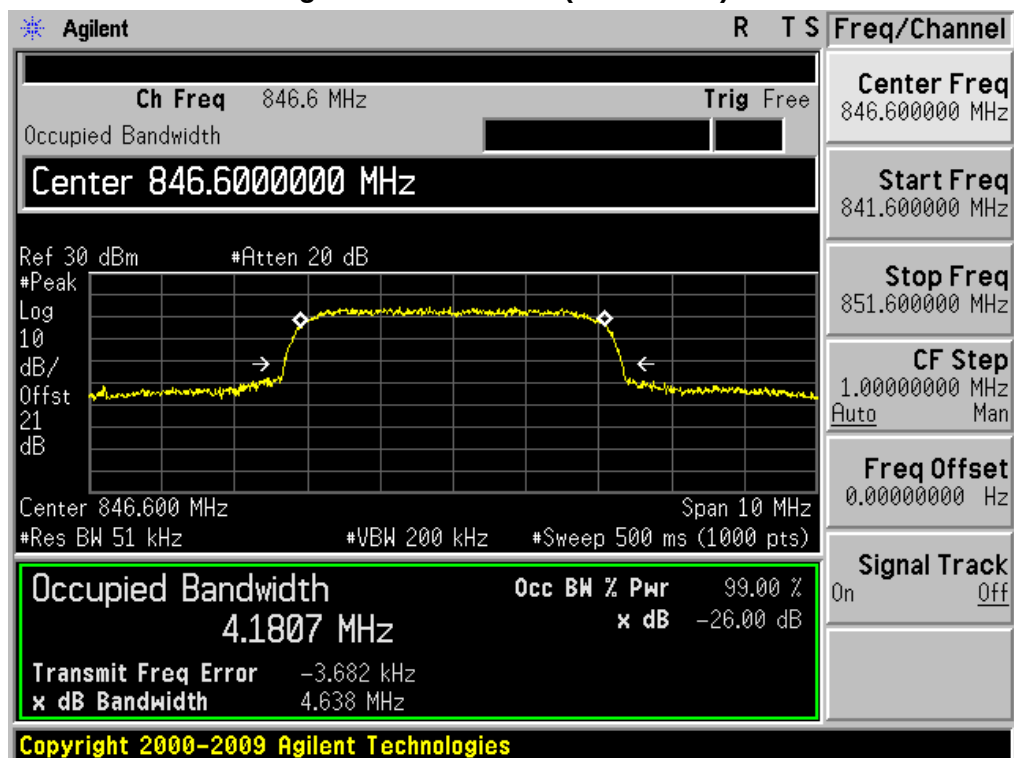
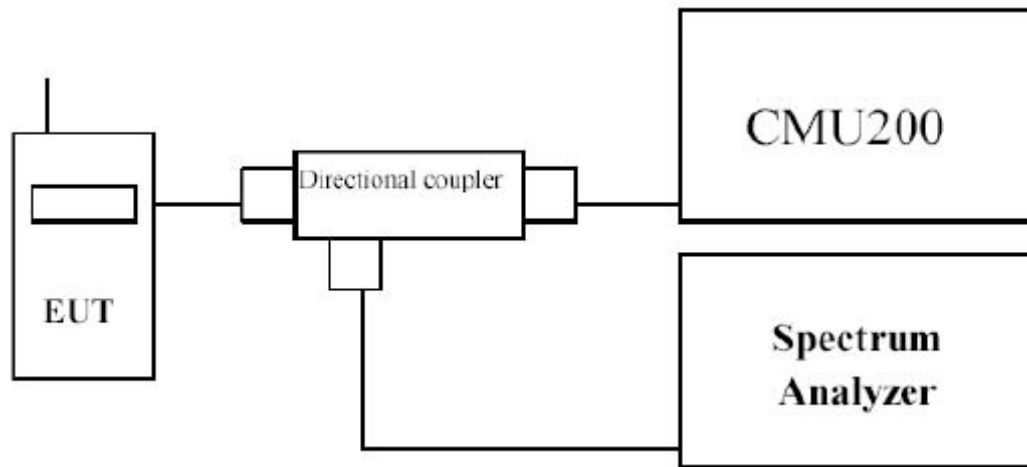


Figure Channel 4233 (846.60MHz)



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

TEST CONFIGURATION



TEST PROCEDURE

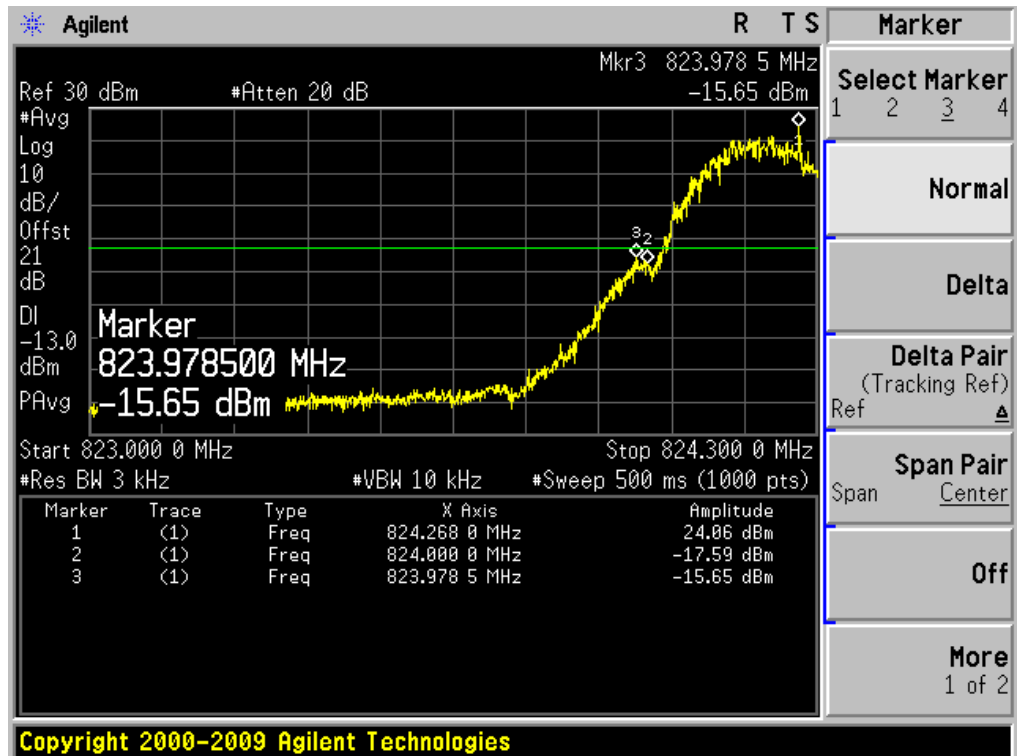
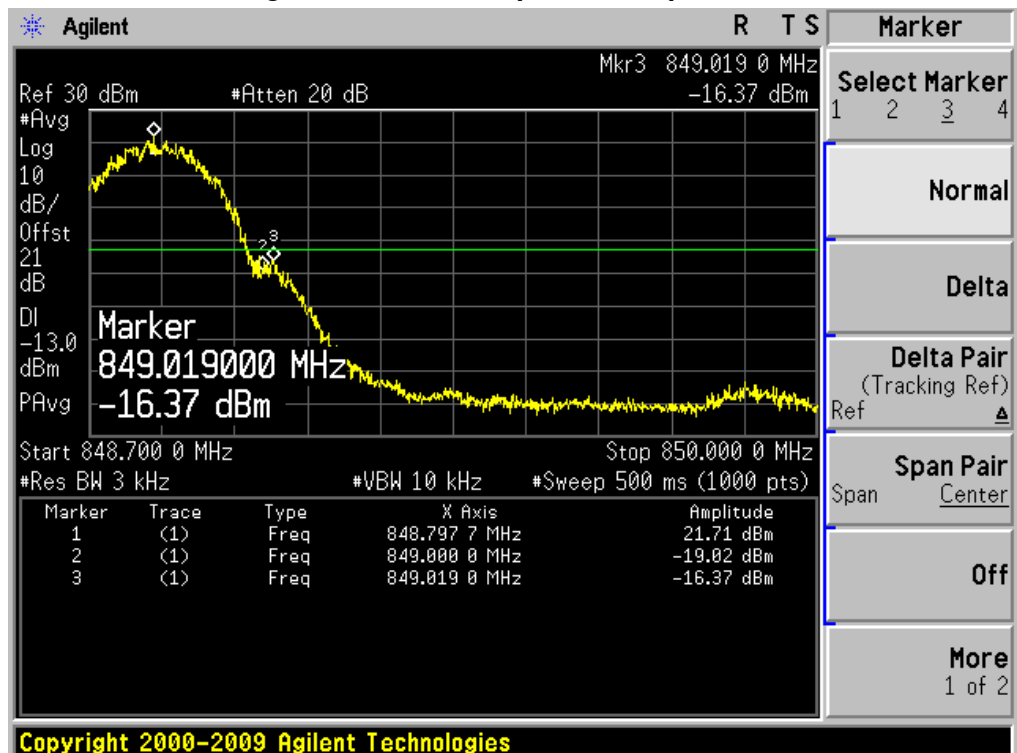
In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.

LIMIT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

TEST RESULTS

Product	Tablet		
Test Item	Spurious Emission At Antenna Terminals (+/- 1MHz)		
Test Mode	Mode 1: GSM850 GPRS Link		
Date of Test	2012/08/13	Test Site	AC-6

Figure Channel 128 (824.20MHz)**Figure Channel 251 (848.80MHz)**

Product	Tablet		
Test Item	Spurious Emission At Antenna Terminals (+/- 1MHz)		
Test Mode	Mode 2: PCS1900 GPRS Link		
Date of Test	2012/08/13	Test Site	AC-6

Figure Channel 512 (1850.20MHz)

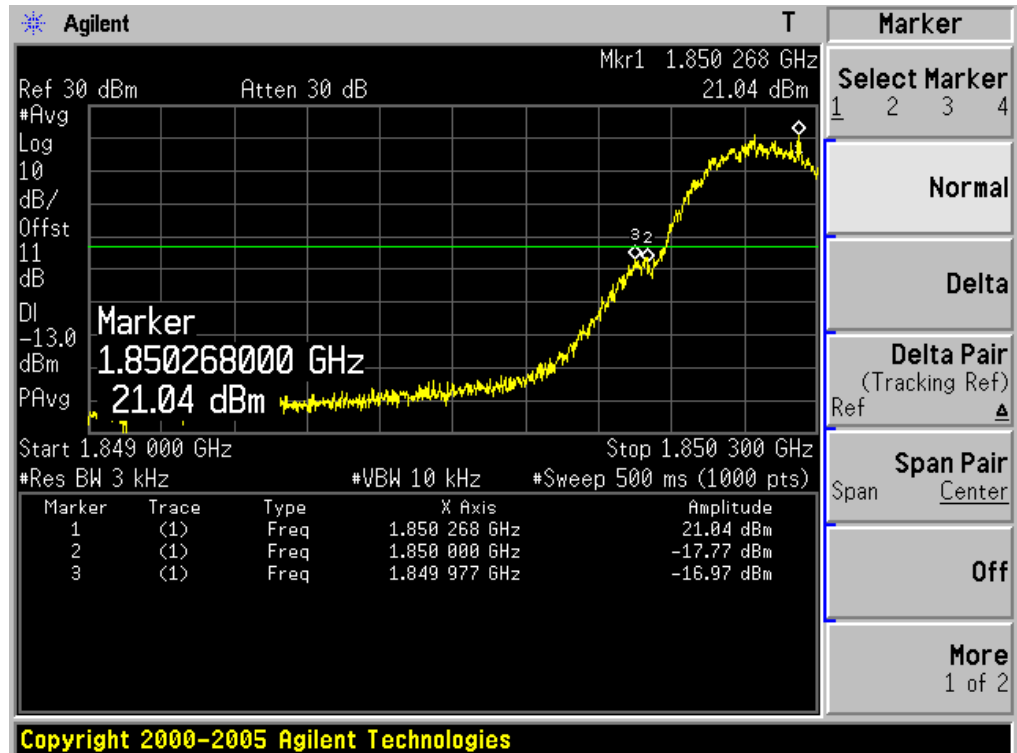
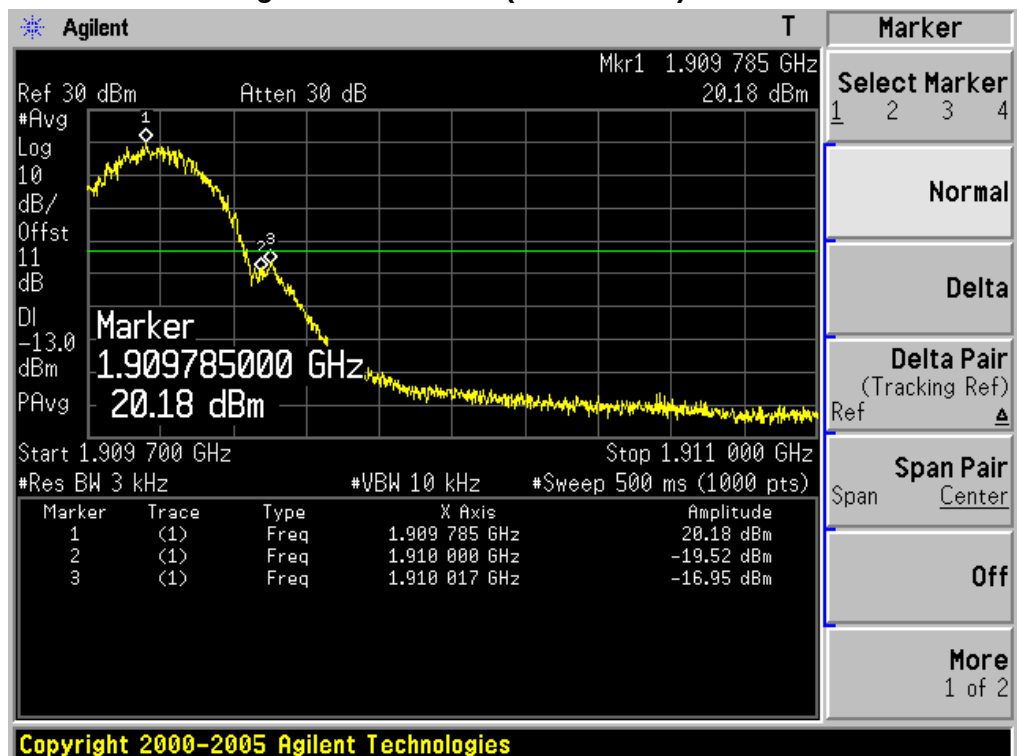


Figure Channel 810 (1909.80MHz)



Product	Tablet		
Test Item	Spurious Emission At Antenna Terminals (+/- 1MHz)		
Test Mode	Mode 3: GSM850 EDGE Link		
Date of Test	2012/08/13	Test Site	AC-6

Figure Channel 128 (824.20MHz)

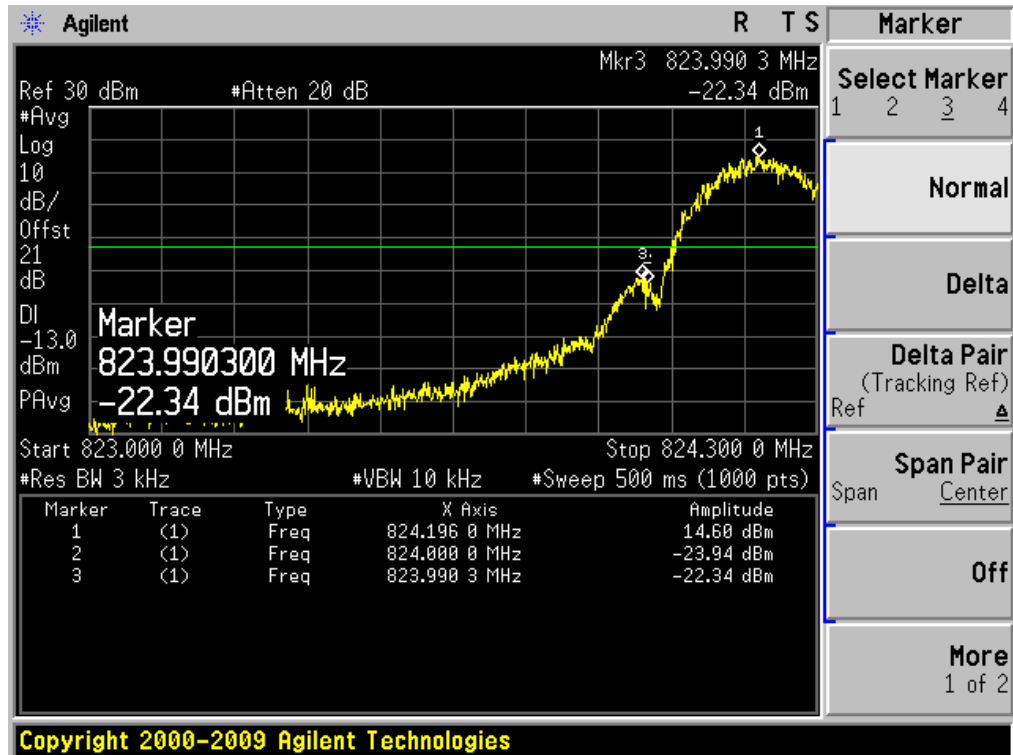
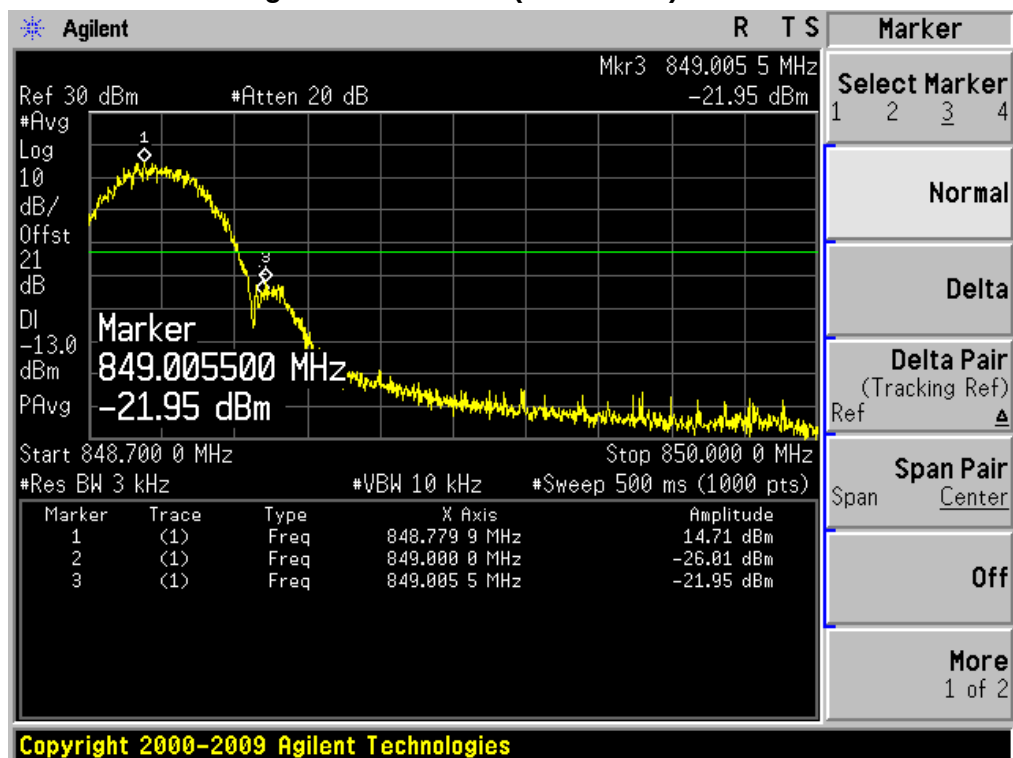


Figure Channel 251 (848.80MHz)



Product	Tablet		
Test Item	Spurious Emission At Antenna Terminals (+/- 1MHz)		
Test Mode	Mode 4: PCS1900 EDGE Link		
Date of Test	2012/08/13	Test Site	AC-6

Figure Channel 512 (1850.20MHz)

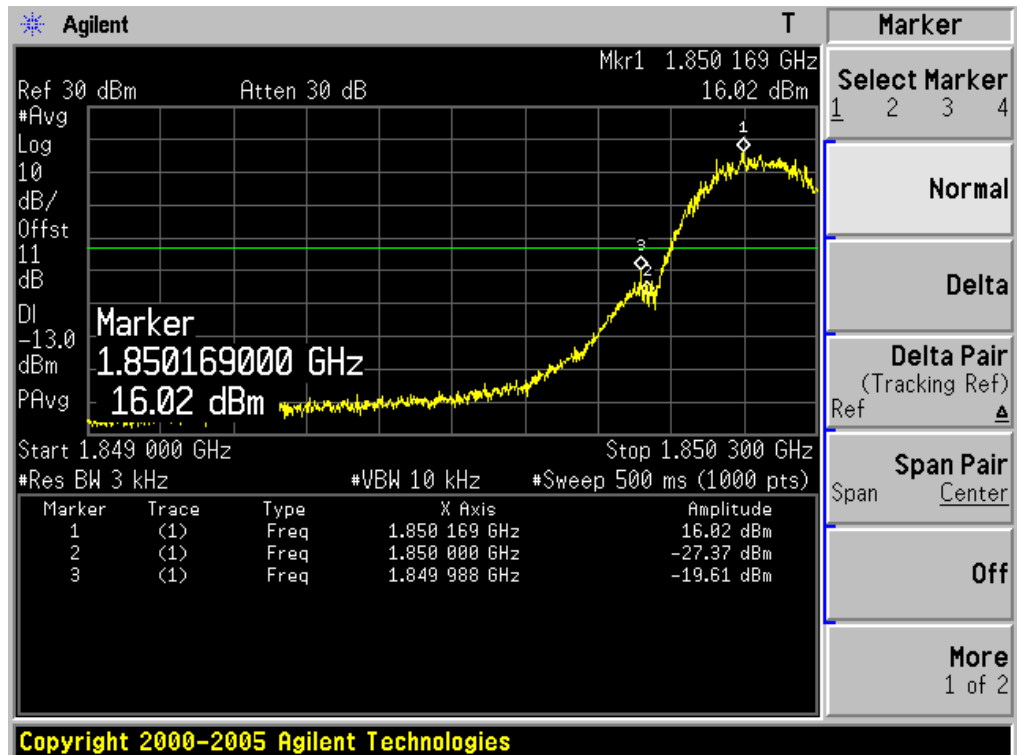
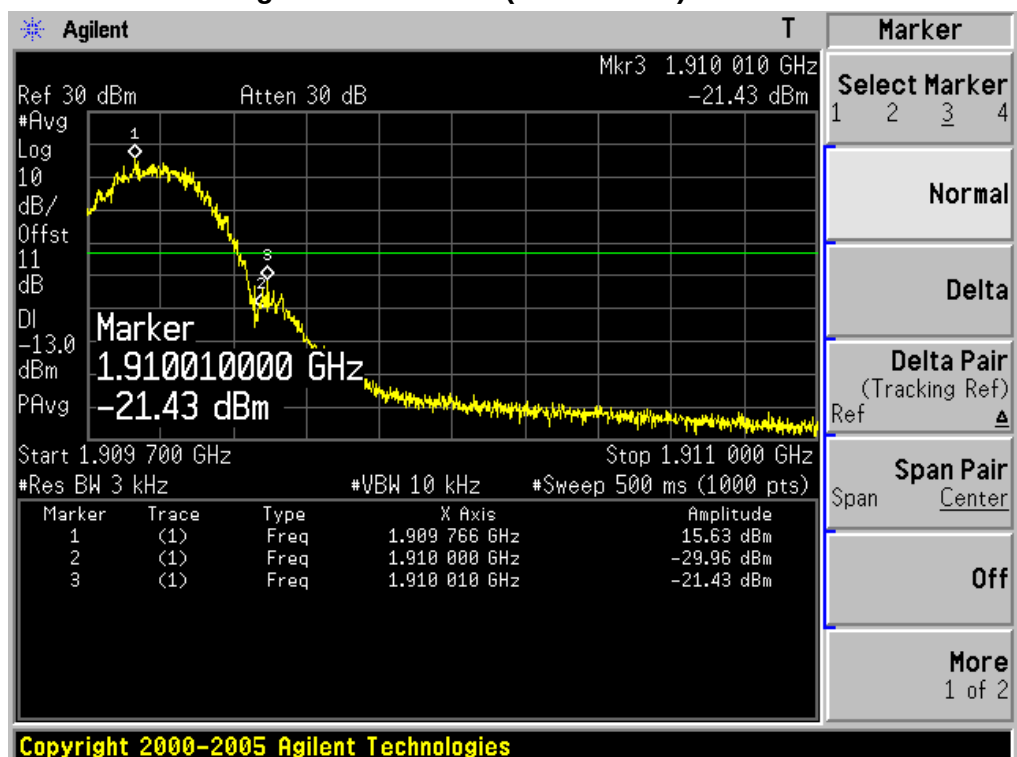


Figure Channel 810 (1909.80MHz)



Product	Tablet		
Test Item	Spurious Emission At Antenna Terminals (+/- 1MHz)		
Test Mode	Mode 5: WCDMA Band V Link		
Date of Test	2012/08/13	Test Site	AC-6

Figure Channel 9262 (1852.4MHz)

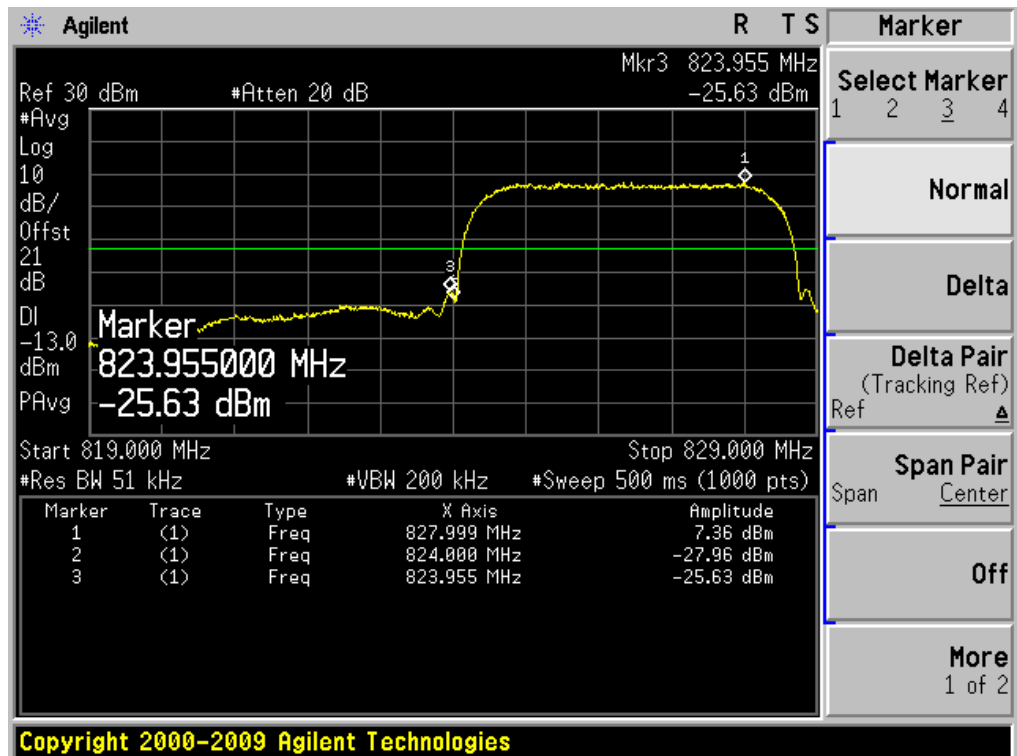
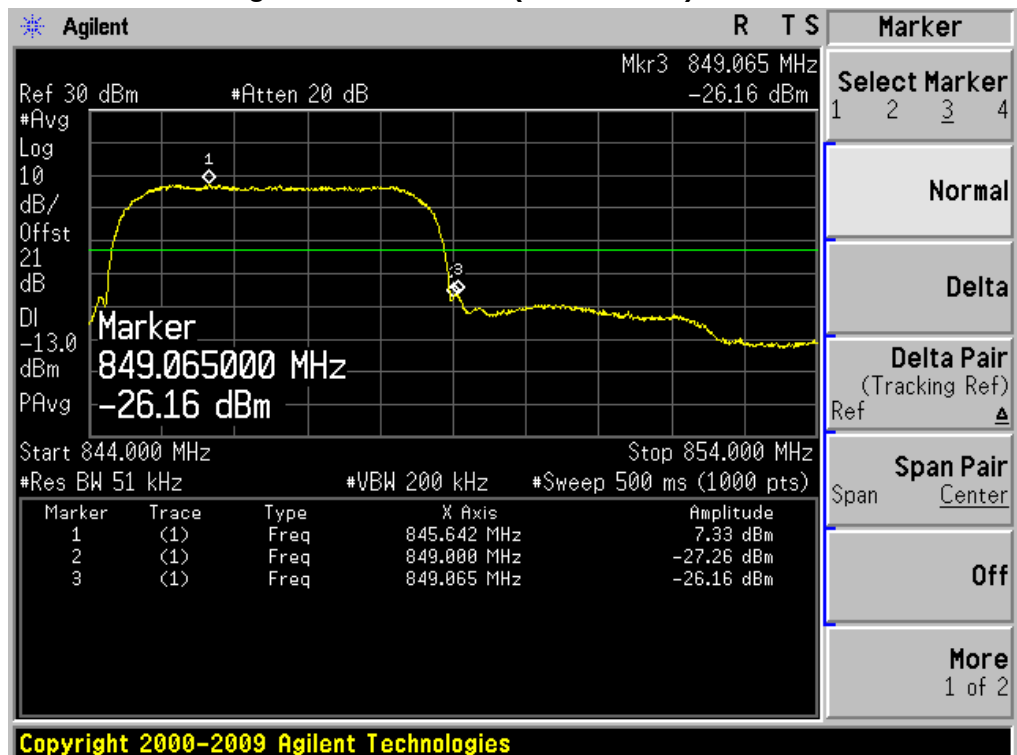


Figure Channel 9538 (1907.60MHz)



Product	Tablet		
Test Item	Spurious Emission At Antenna Terminals (+/- 1MHz)		
Test Mode	Mode 6: HSDPA Band V Link		
Date of Test	2012/08/13	Test Site	AC-6

Figure Channel 4132 (826.4MHz)

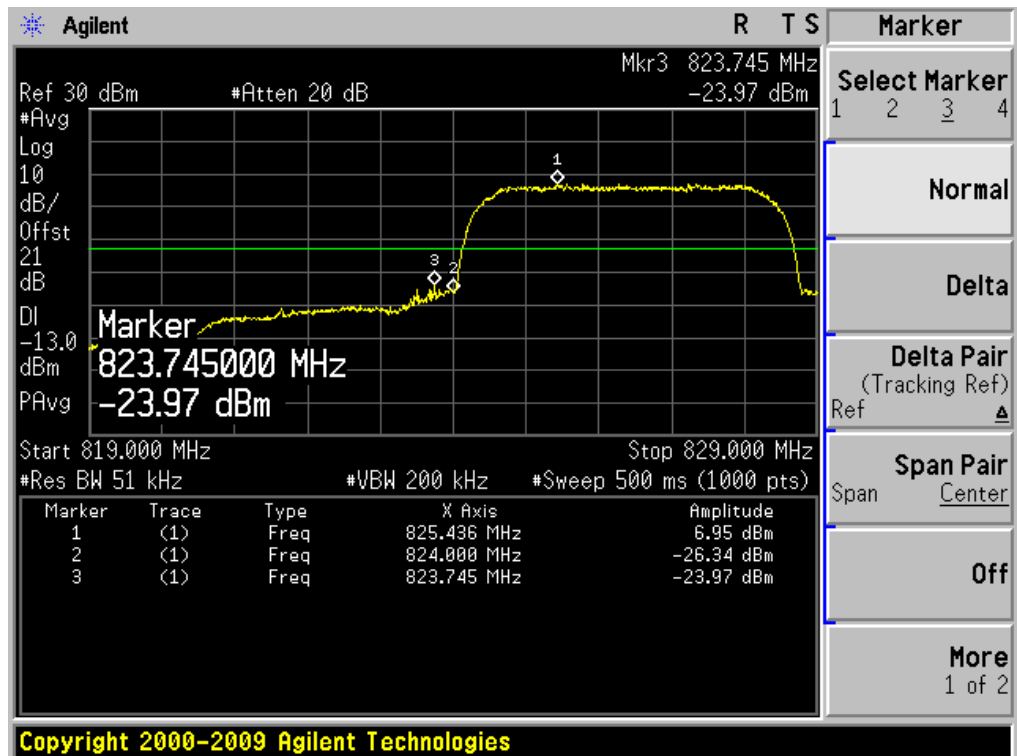
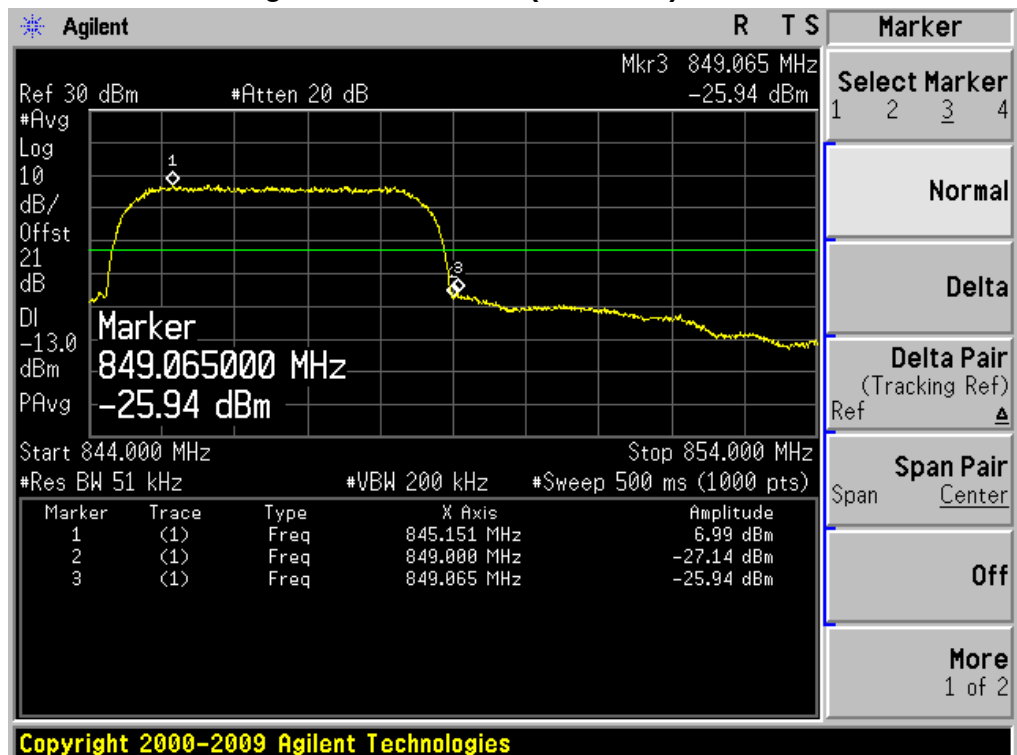


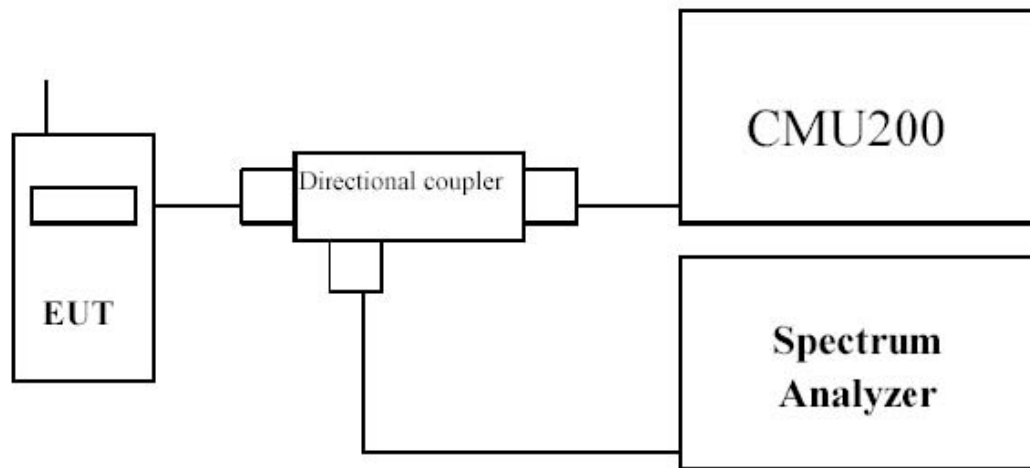
Figure Channel 4233 (846.6MHz)



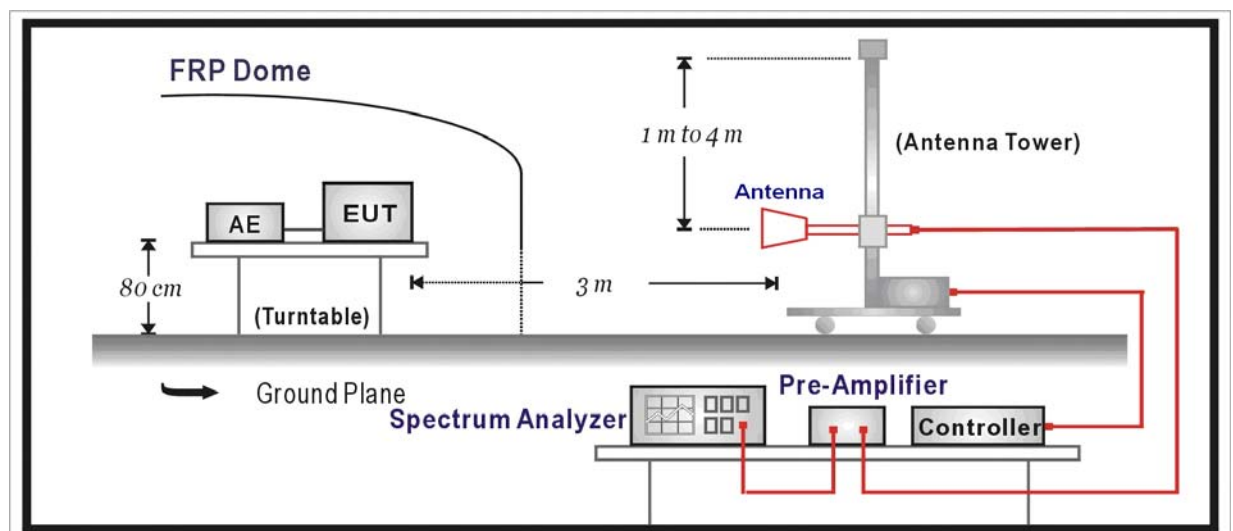
4.5. Spurious Emission

TEST CONFIGURATION

Conducted Spurious Measurement:



Radiated Spurious Measurement:



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603C

Conducted Spurious Measurement:

- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.
- EUT Communicate with CMU200, then select a channel for testing.
- Add a correction factor to the display of spectrum, and then test.
- The resolution bandwidth of the spectrum analyzer was set at 100 kHz for Part 22 and 1MHz for Part 24, sufficient scans were taken to show the out of band Emission if any up to 10th harmonic.

Radiated Spurious Measurement:

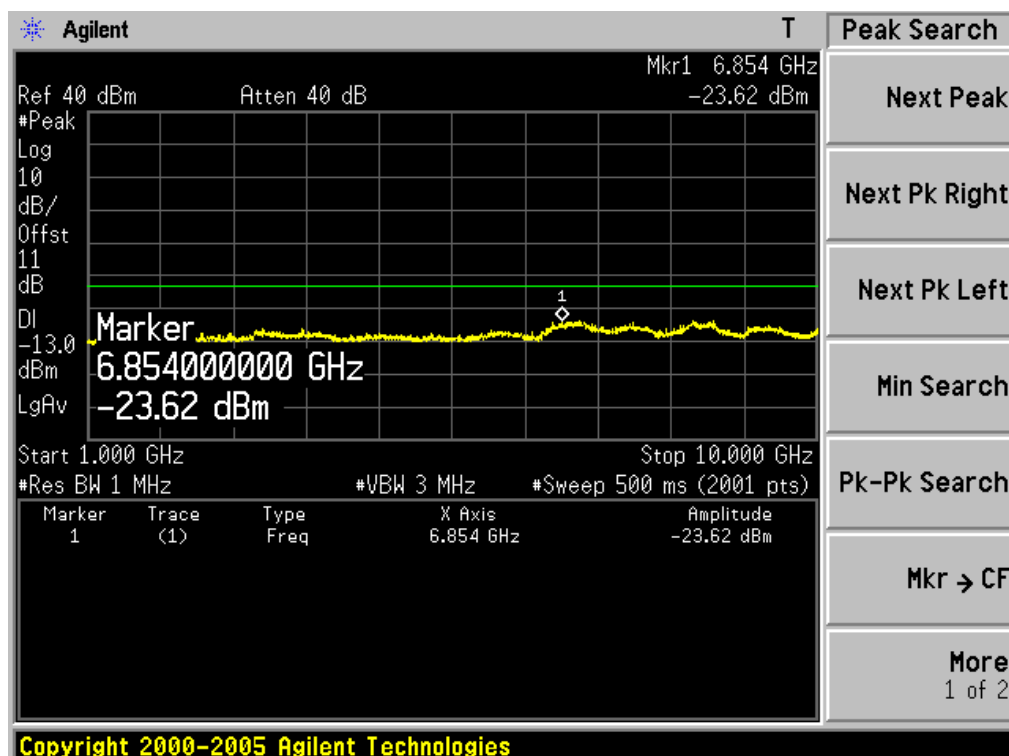
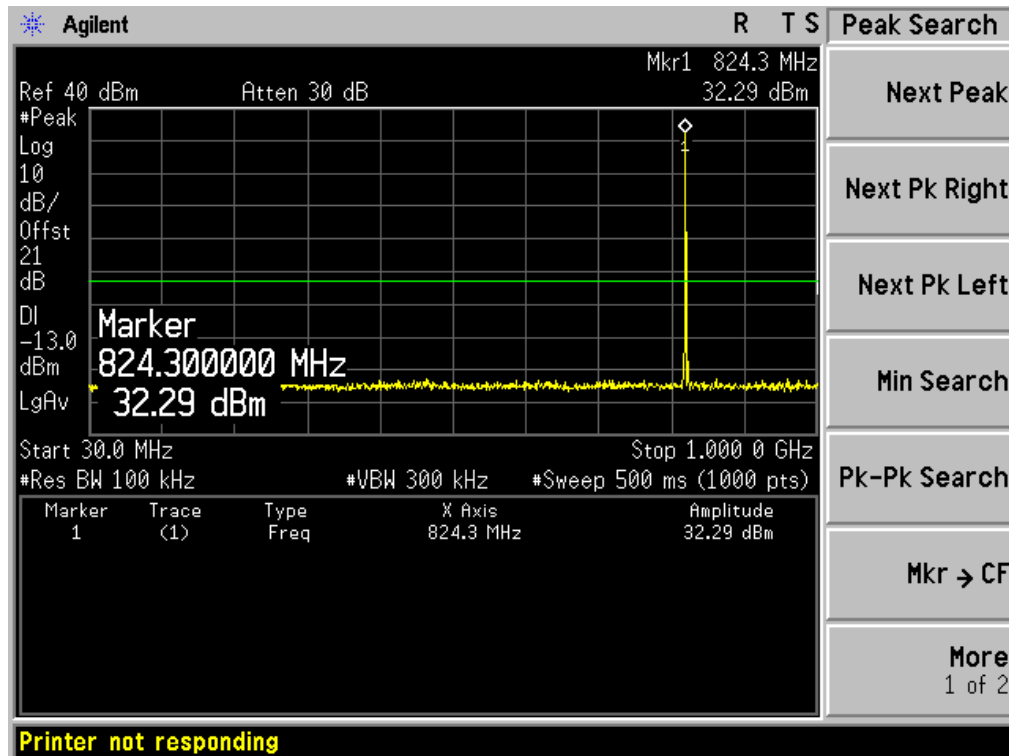
- a) The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
- b) The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
- c) The output of the test antenna shall be connected to the measuring receiver.
- d) The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- e) The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- f) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- g) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- q) The maximum signal level detected by the measuring receiver shall be noted.
- h) The transmitter shall be replaced by a substitution antenna.
- i) The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- j) The substitution antenna shall be connected to a calibrated signal generator.
- k) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- l) The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- m) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- n) The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- o) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
- p) The resolution bandwidth of the spectrum analyzer was set at 100 kHz for Part 22 and 1MHz for Part 24. The frequency range was checked up to 10th harmonic.
- q) Test site anechoic chamber refer to ANSI C63.4: 2009

LIMIT

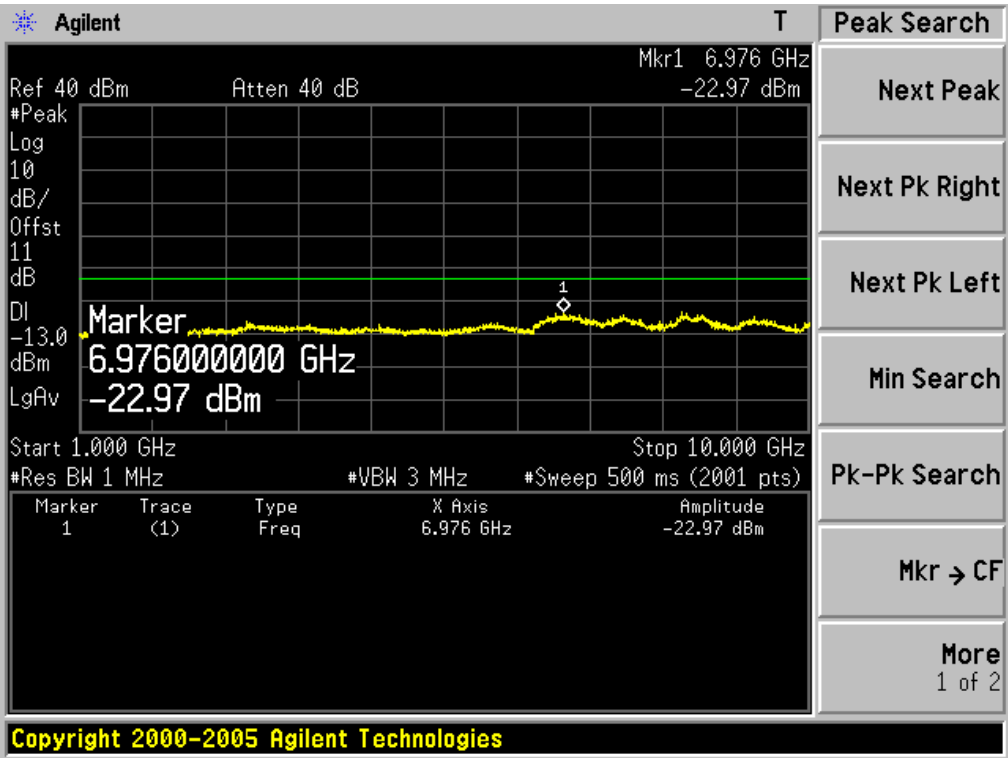
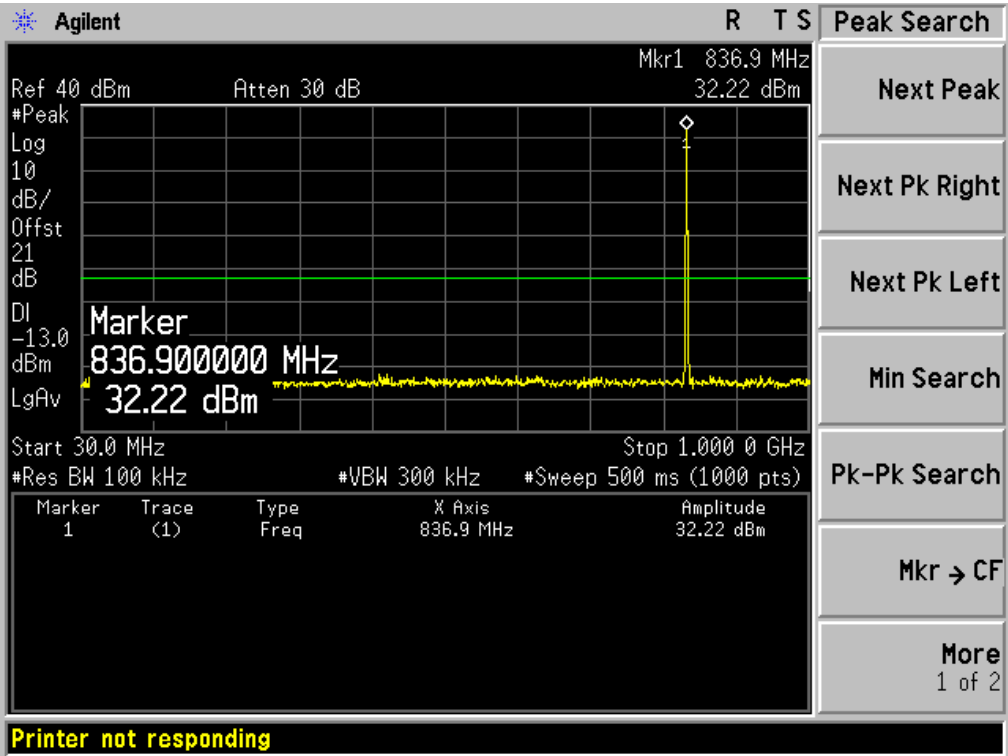
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

TEST RESULTS**Conducted Measurement**

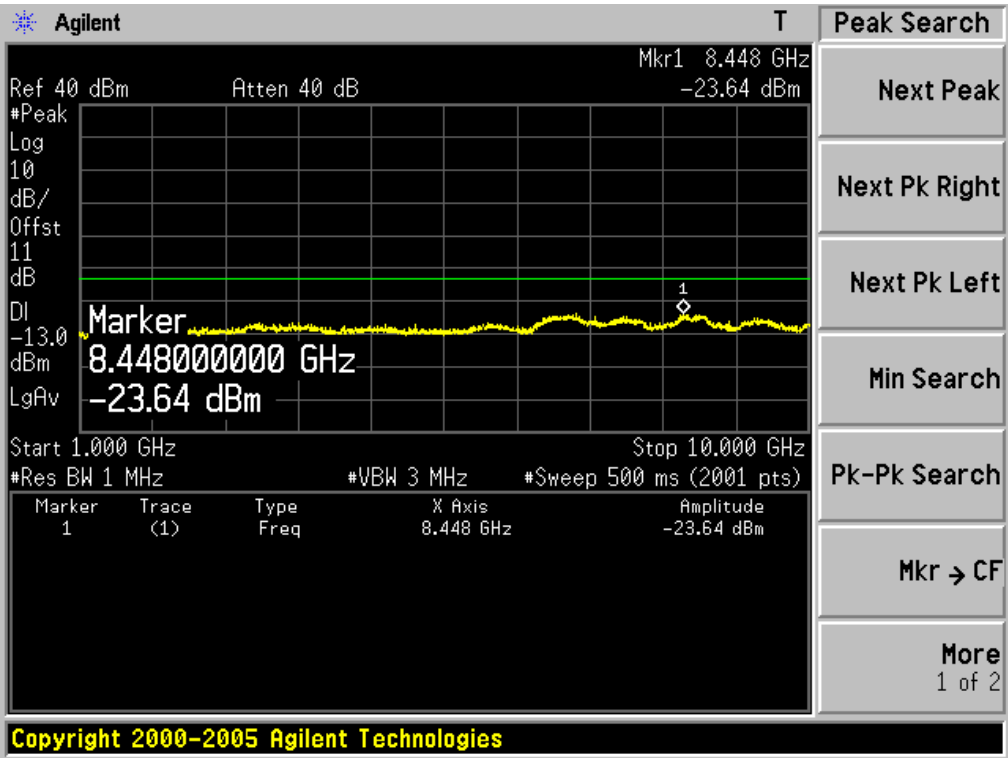
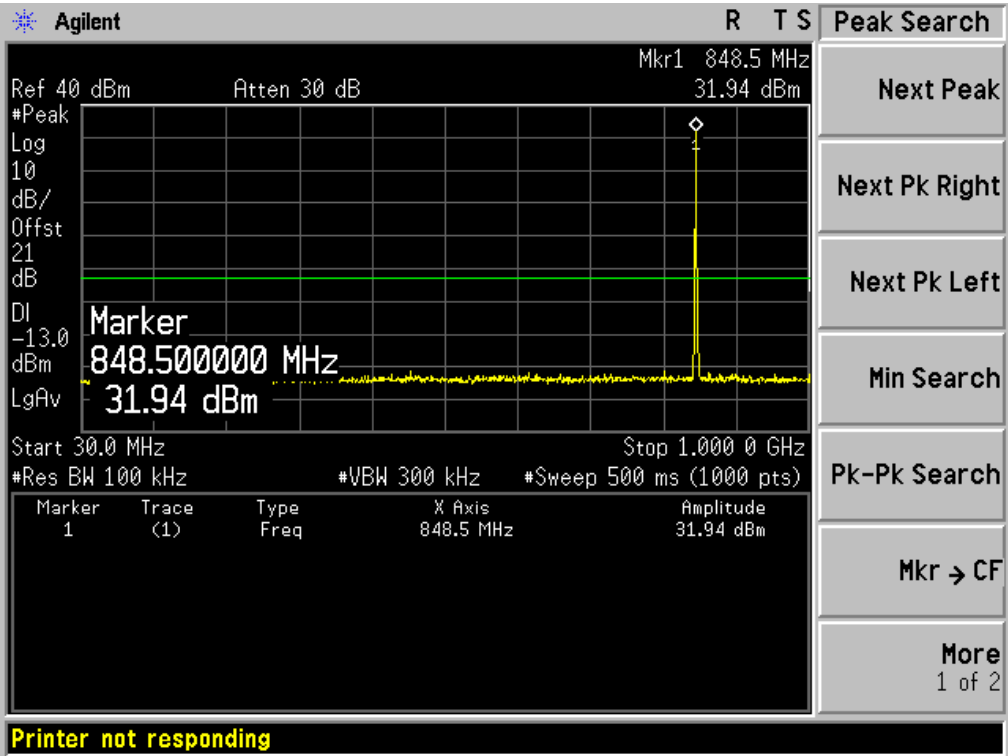
Product	Tablet		
Test Item	Spurious Emission		
Test Mode	GSM850 Traffic		
Date of Test	2012/08/13	Test Site	AC-5

Low Channel 128(824.2MHz)

Mid Channel 189(836.4MHz)

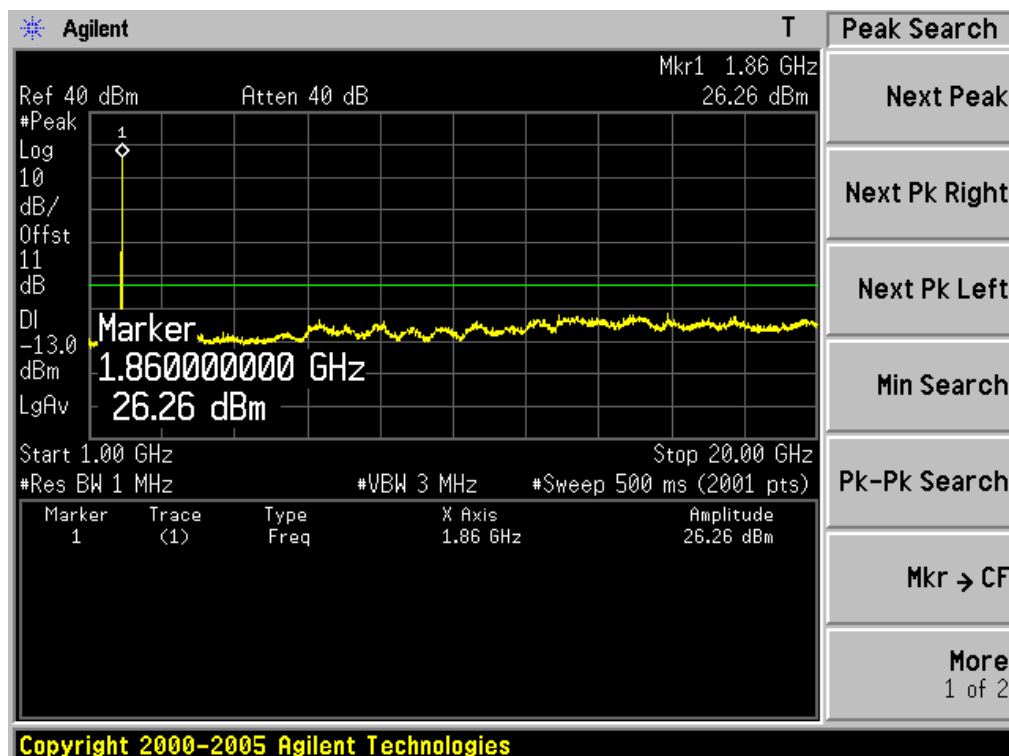
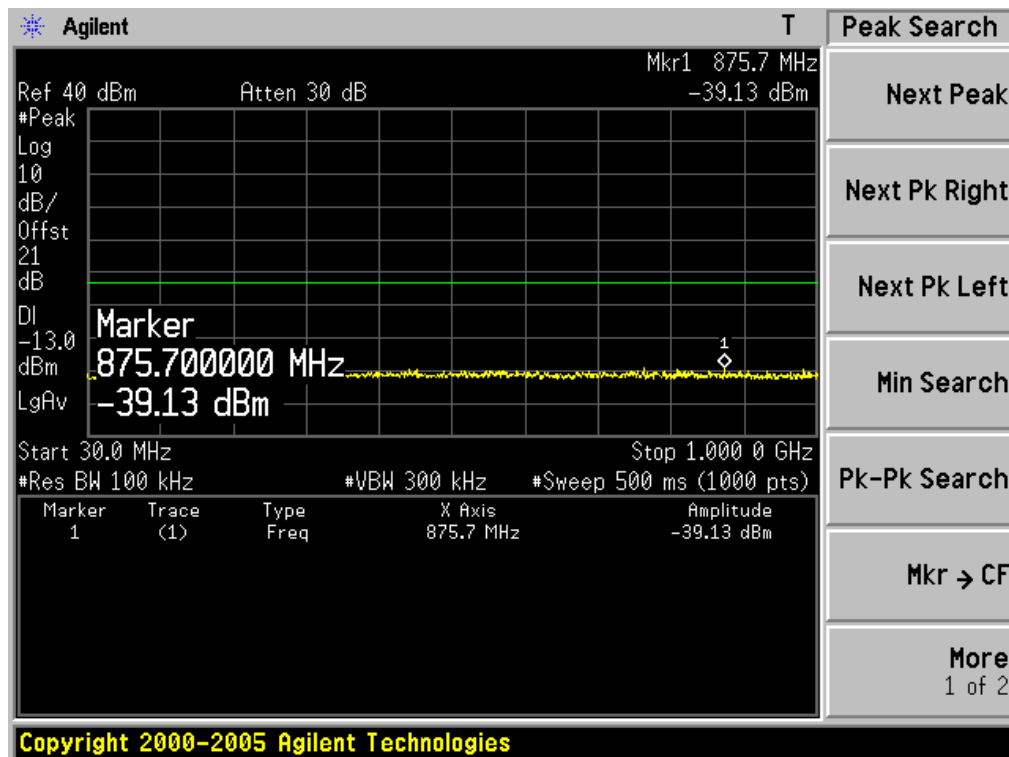


High Channel 251(848.8MHz)

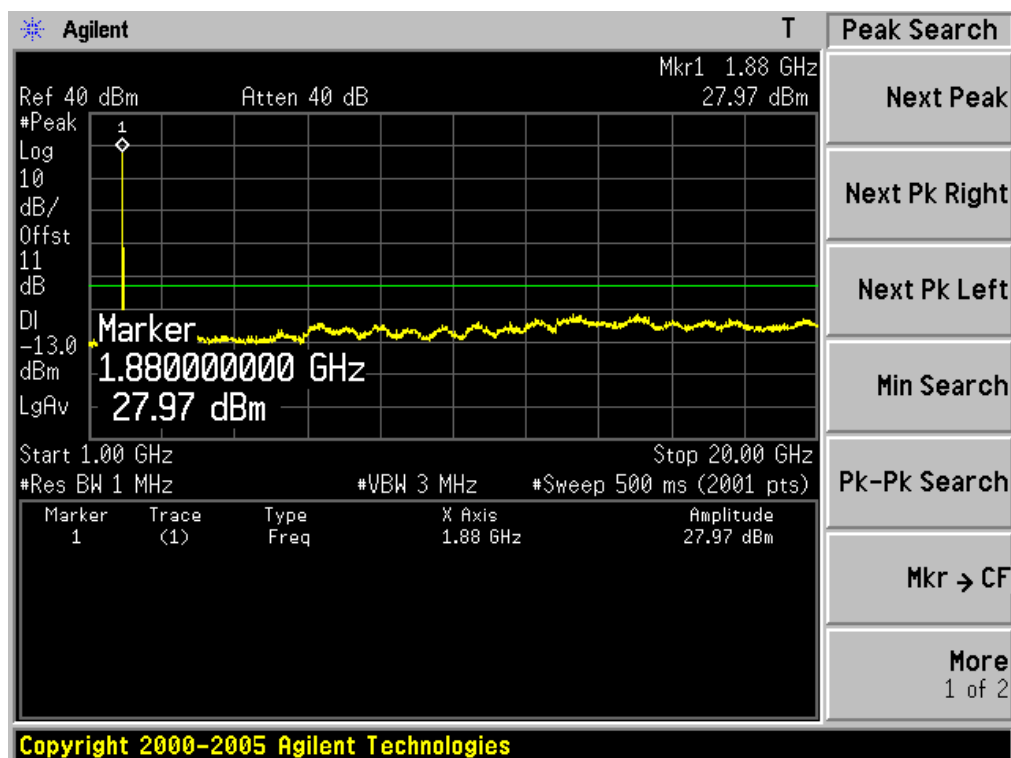
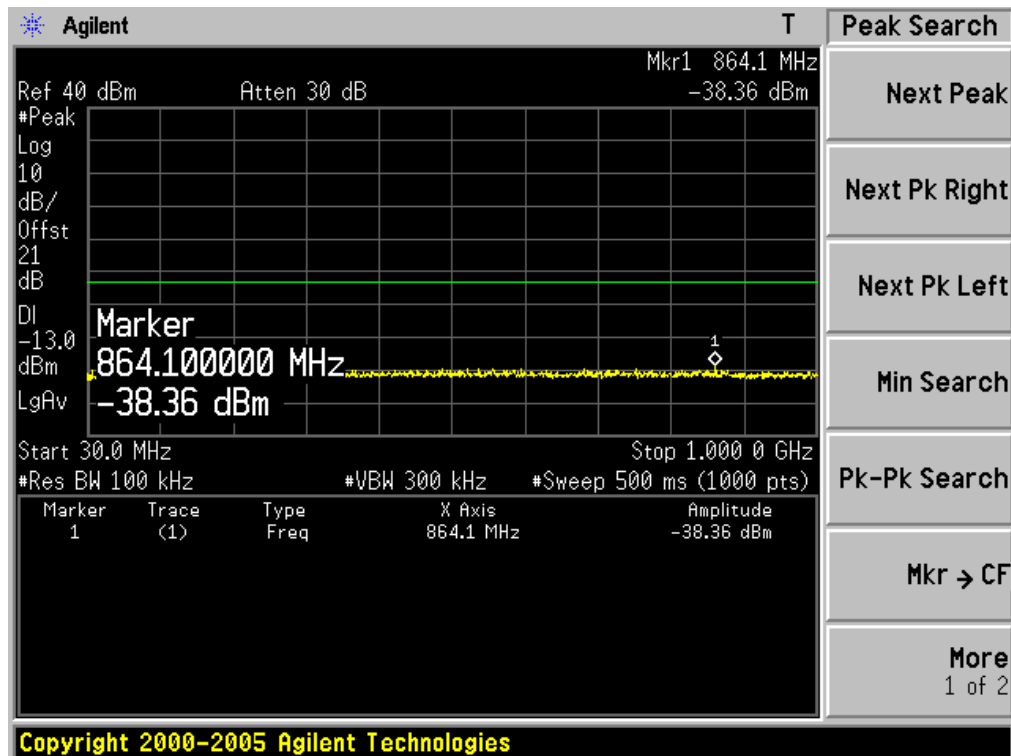


Product	Tablet		
Test Item	Spurious Emission		
Test Mode	PCS1900 Traffic		
Date of Test	2012/08/13	Test Site	AC-5

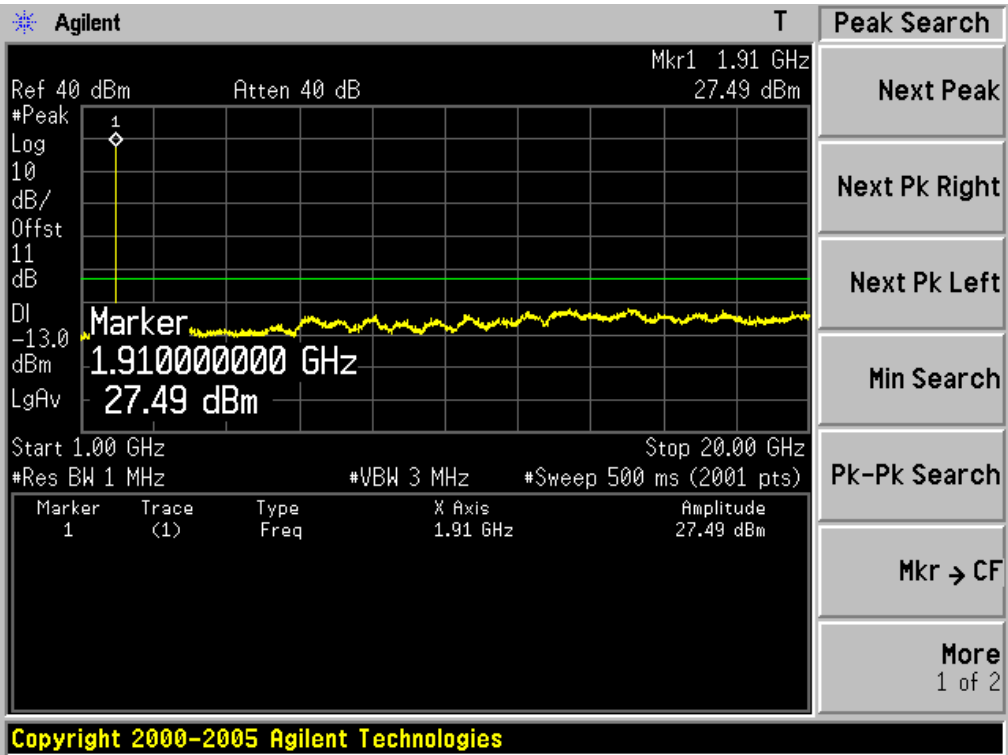
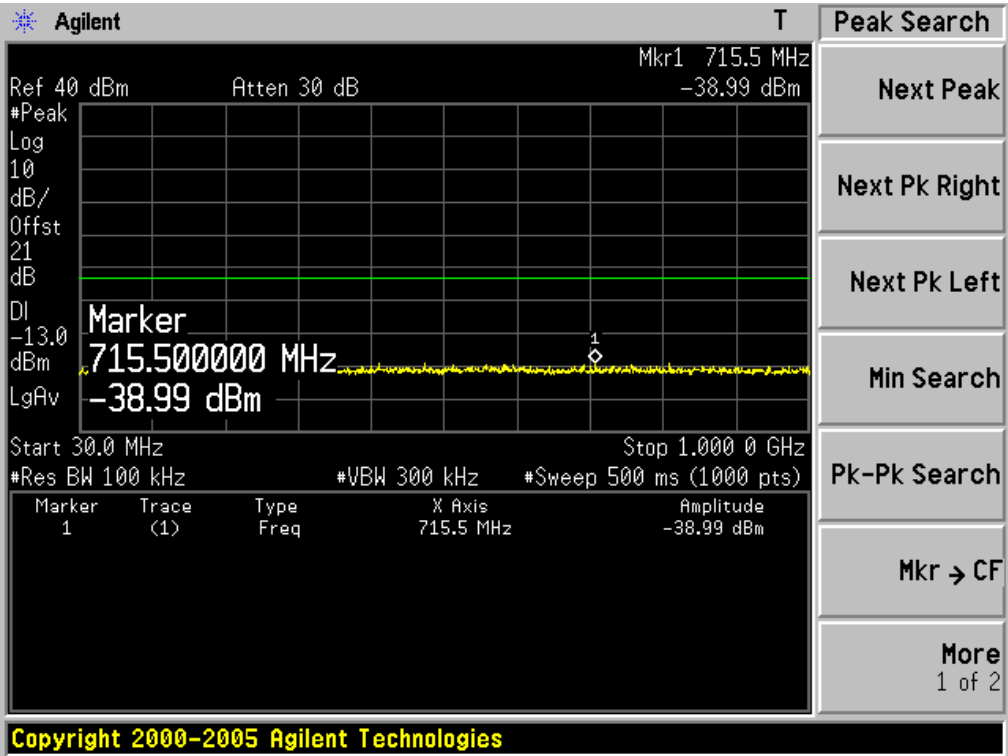
Low Channel 512(1850.2MHz)



Mid Channel 661(1880.0MHz)

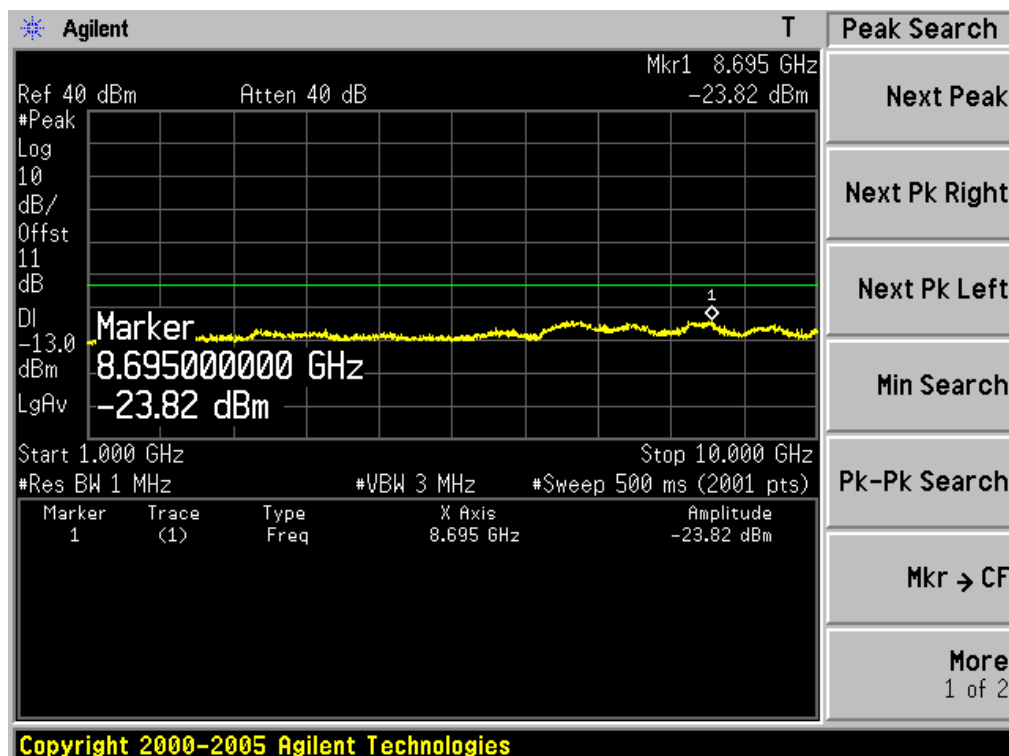
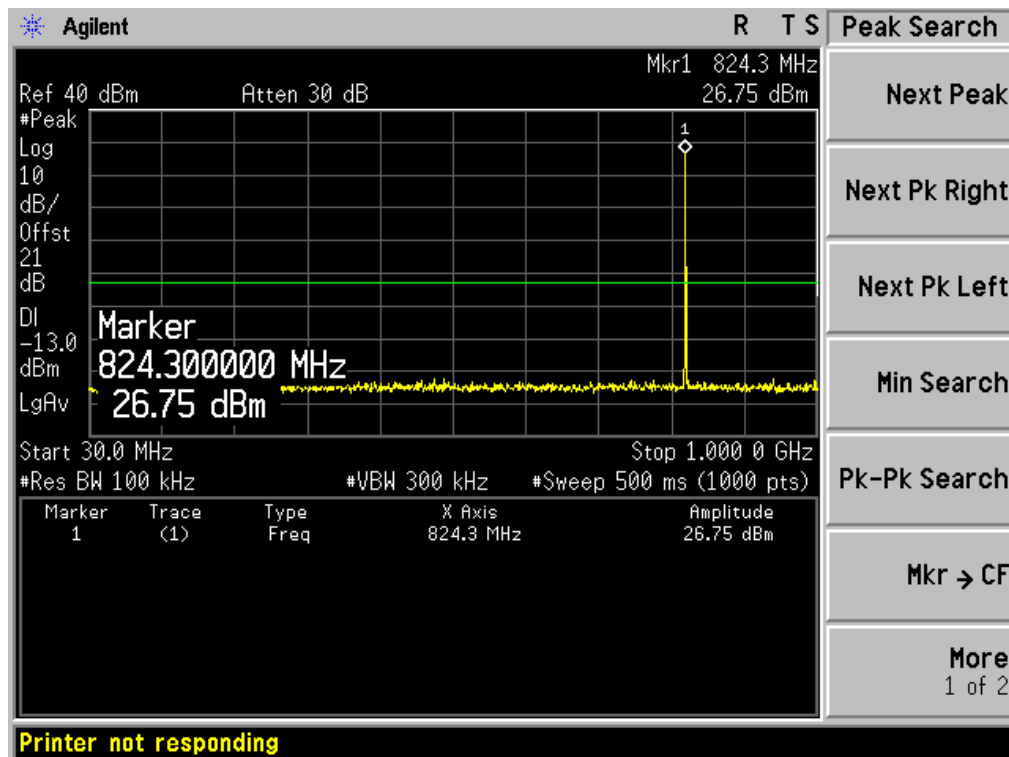


High Channel 810(1909.8MHz)

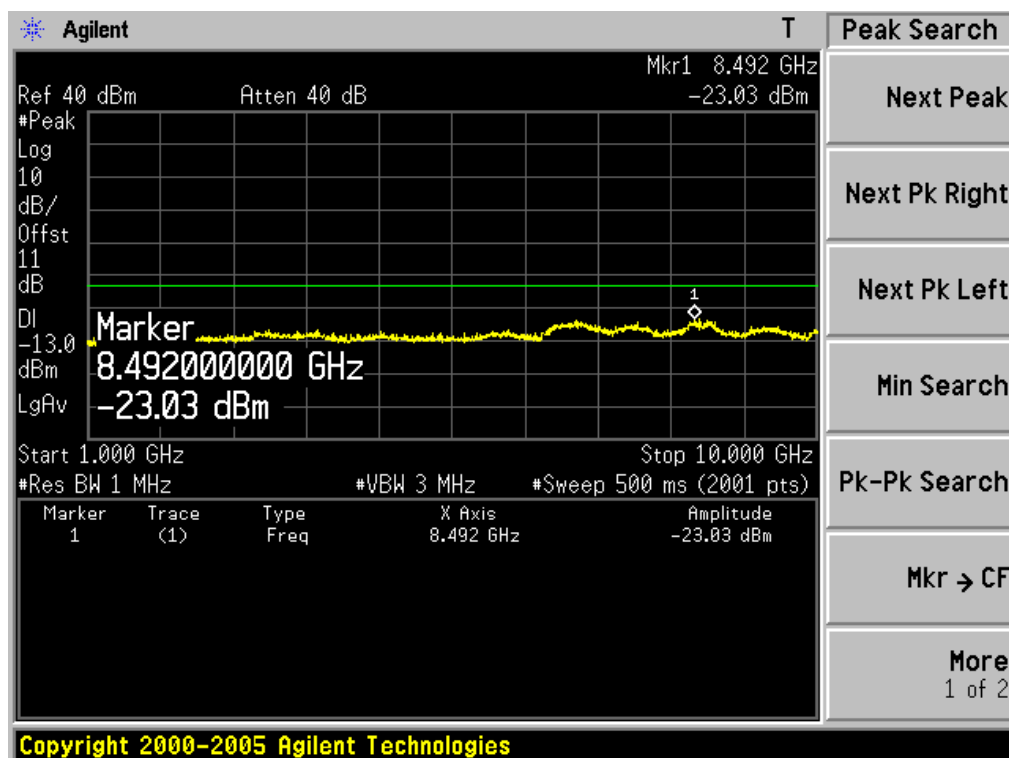
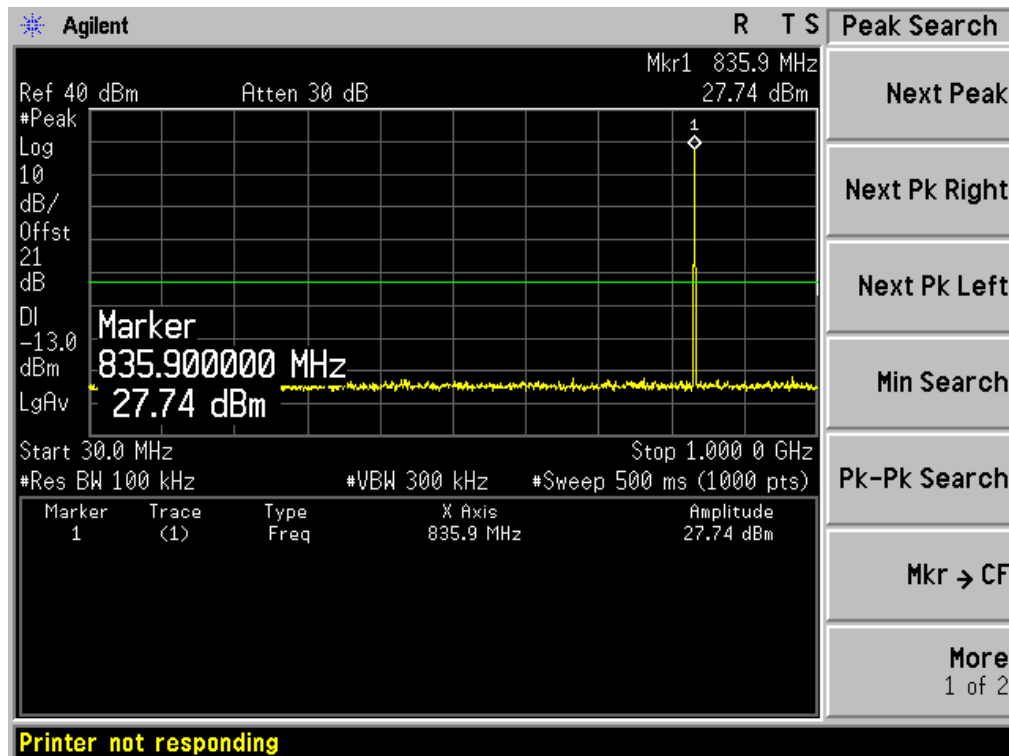


Product	Tablet		
Test Item	Spurious Emission		
Test Mode	EDGE 850 Link		
Date of Test	2012/08/13	Test Site	AC-5

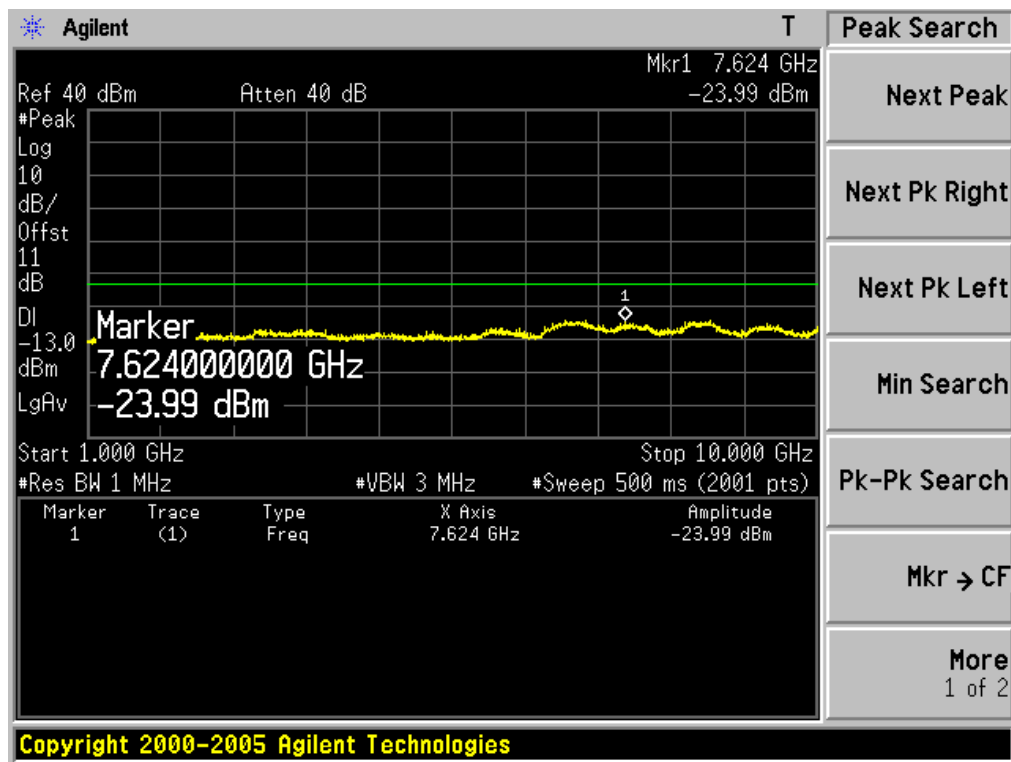
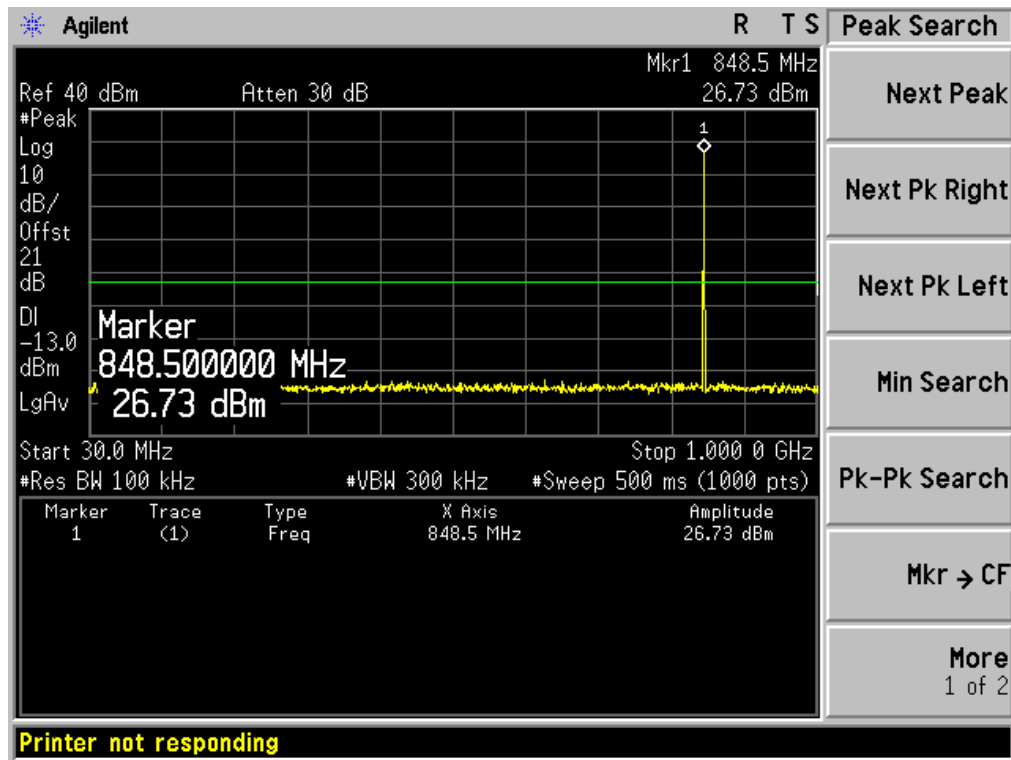
Low Channel 128(824.2MHz)



Mid Channel 189(836.4MHz)

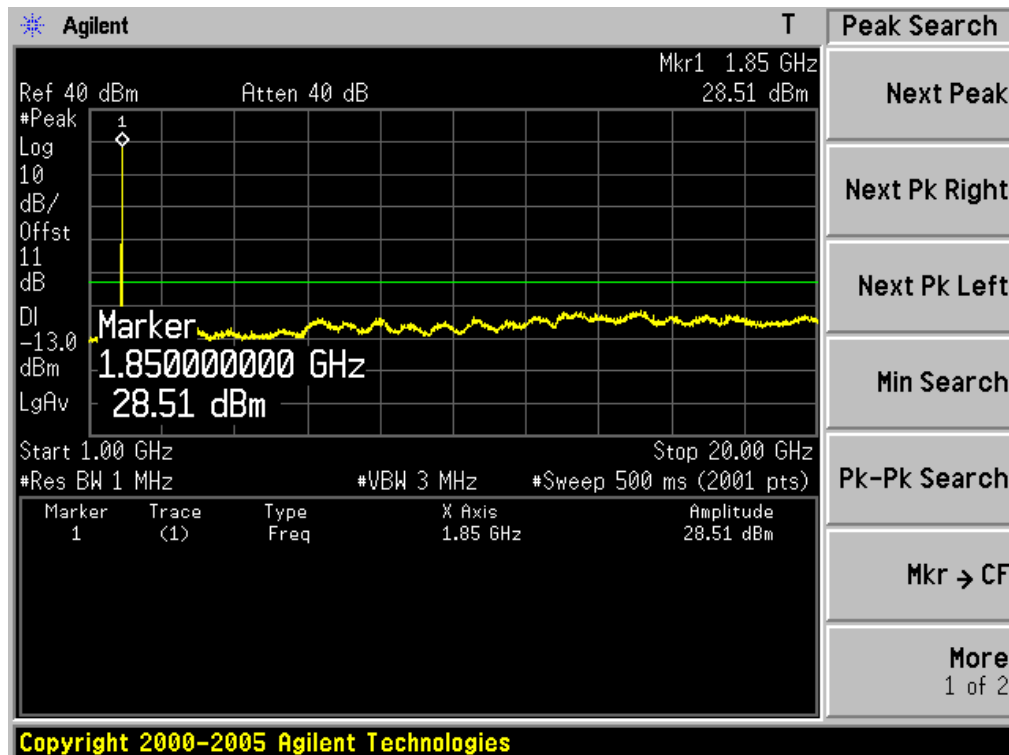
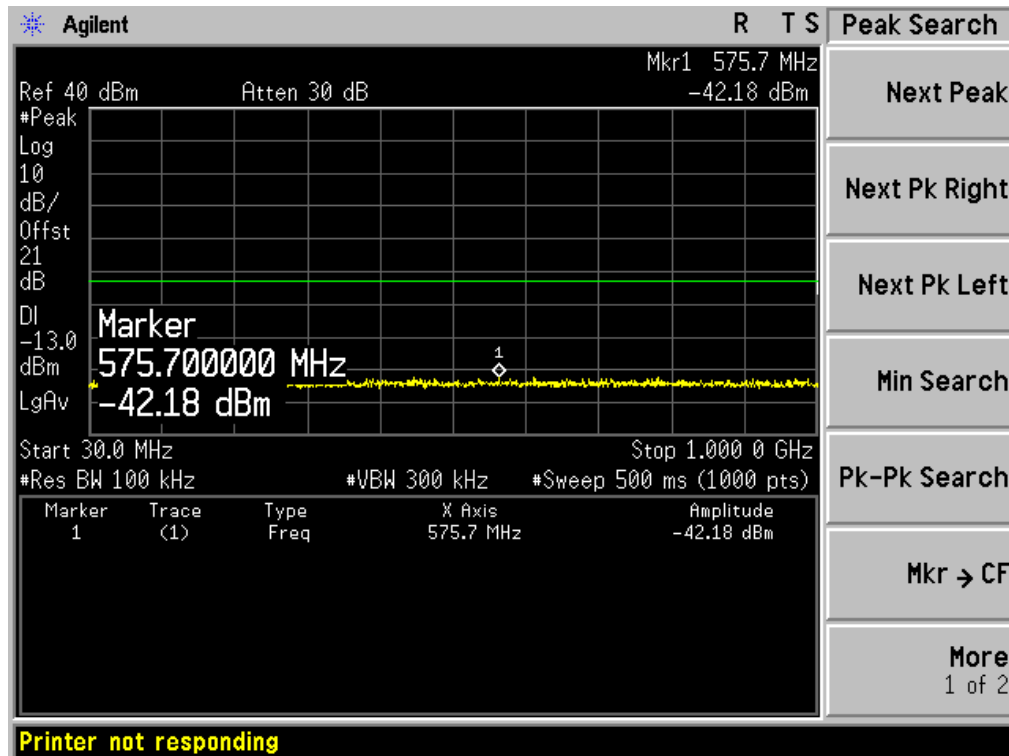


High Channel 251(848.8MHz)

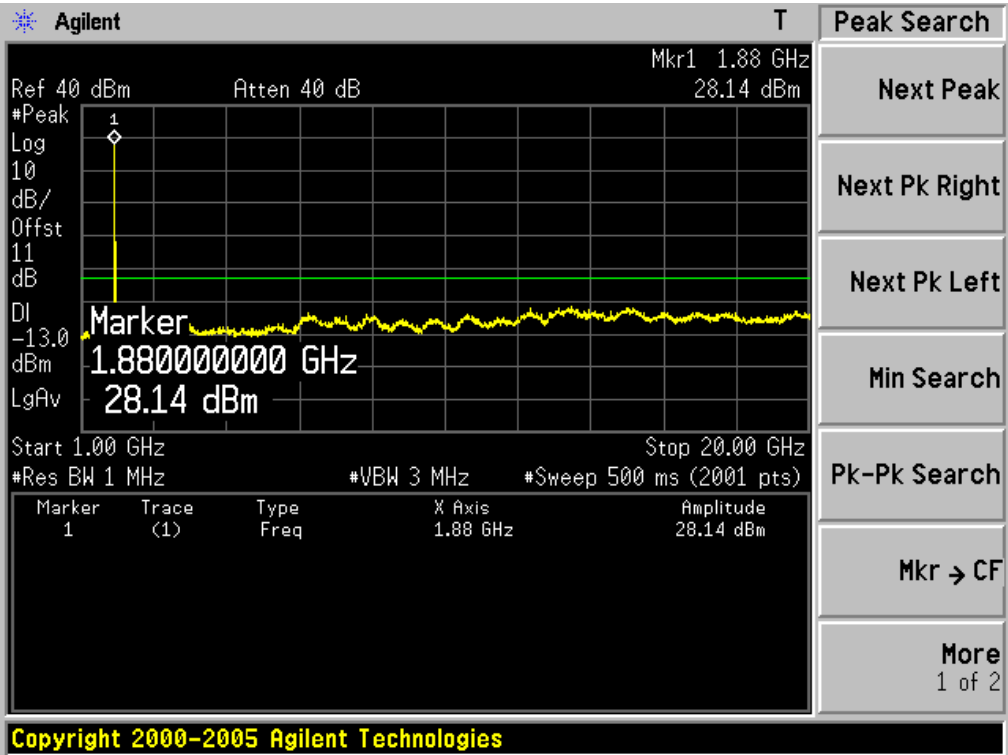
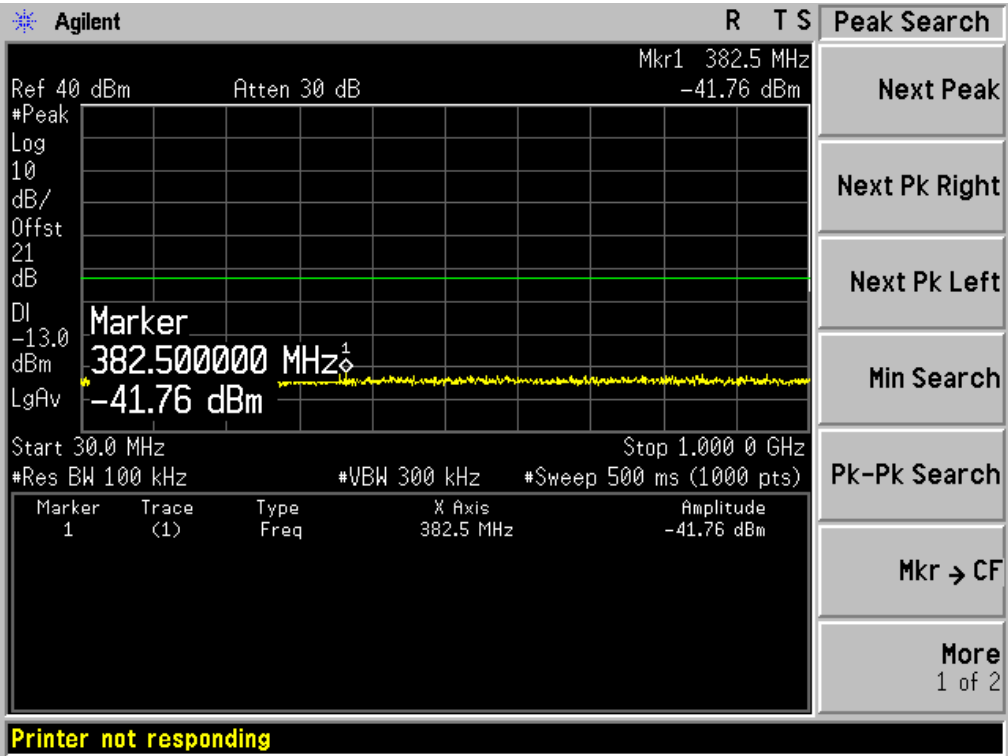


Product	Tablet		
Test Item	Spurious Emission		
Test Mode	EDGE1900 Traffic		
Date of Test	2012/08/13	Test Site	AC-5

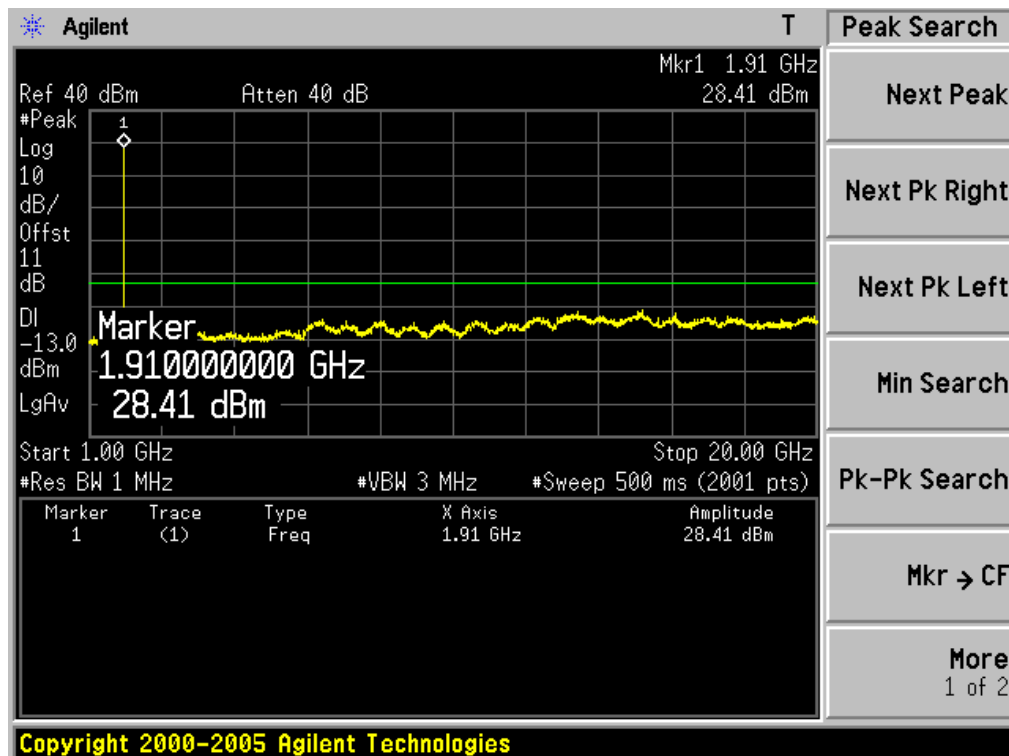
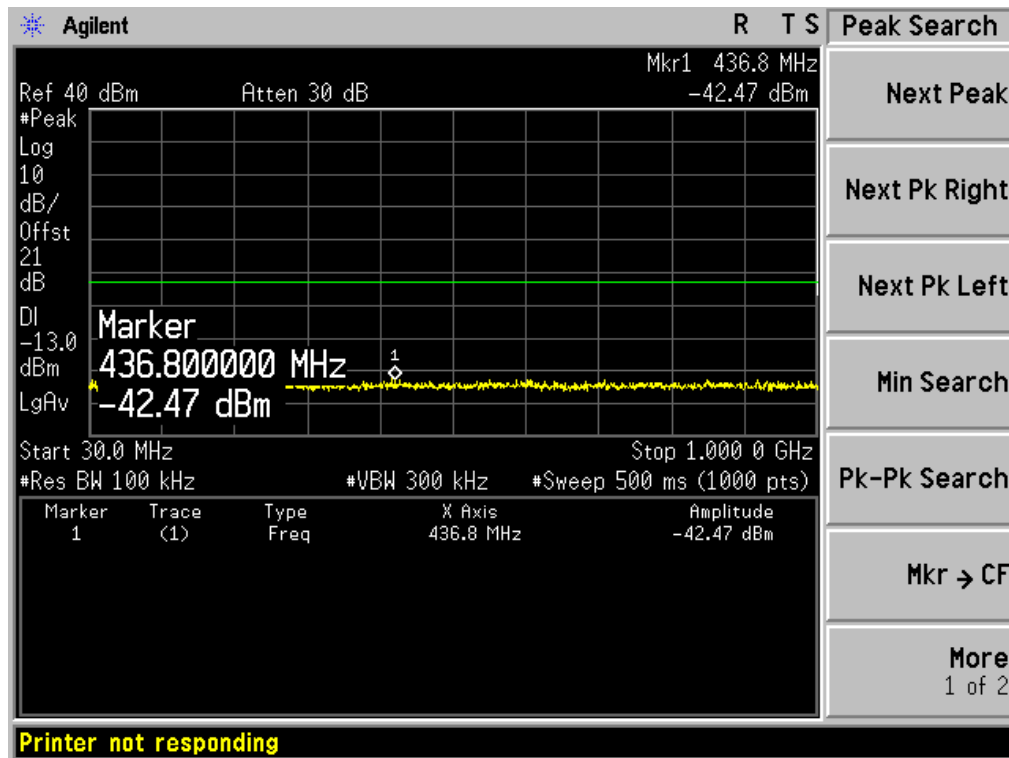
Low Channel 512(1850.2MHz)



Mid Channel 661(1880.0MHz)

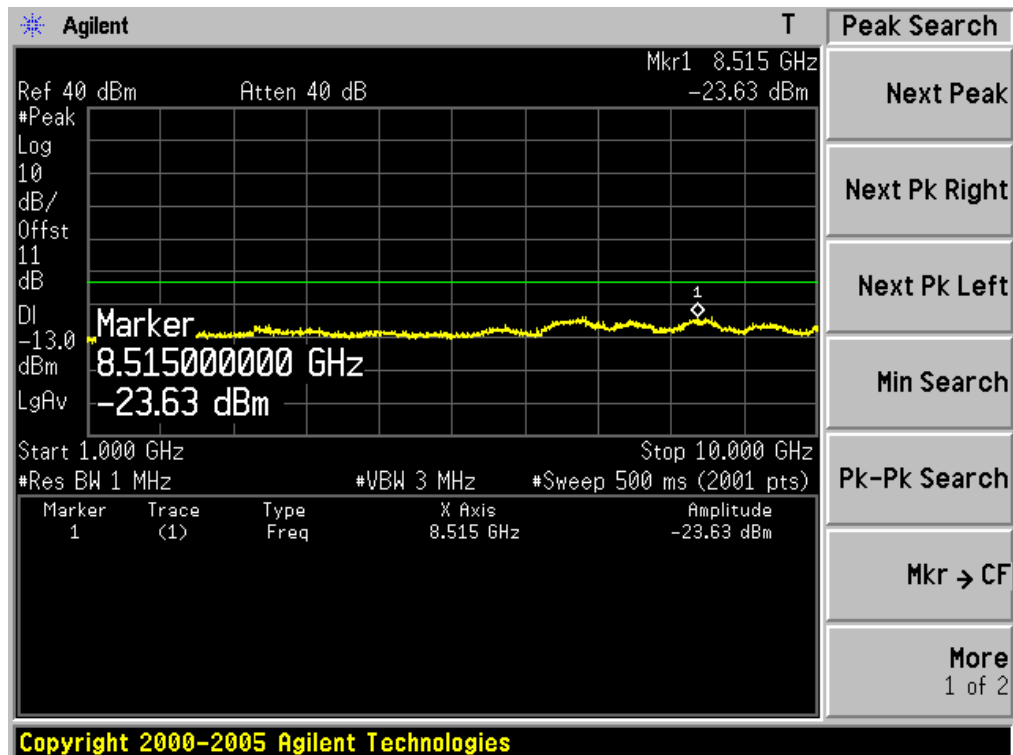
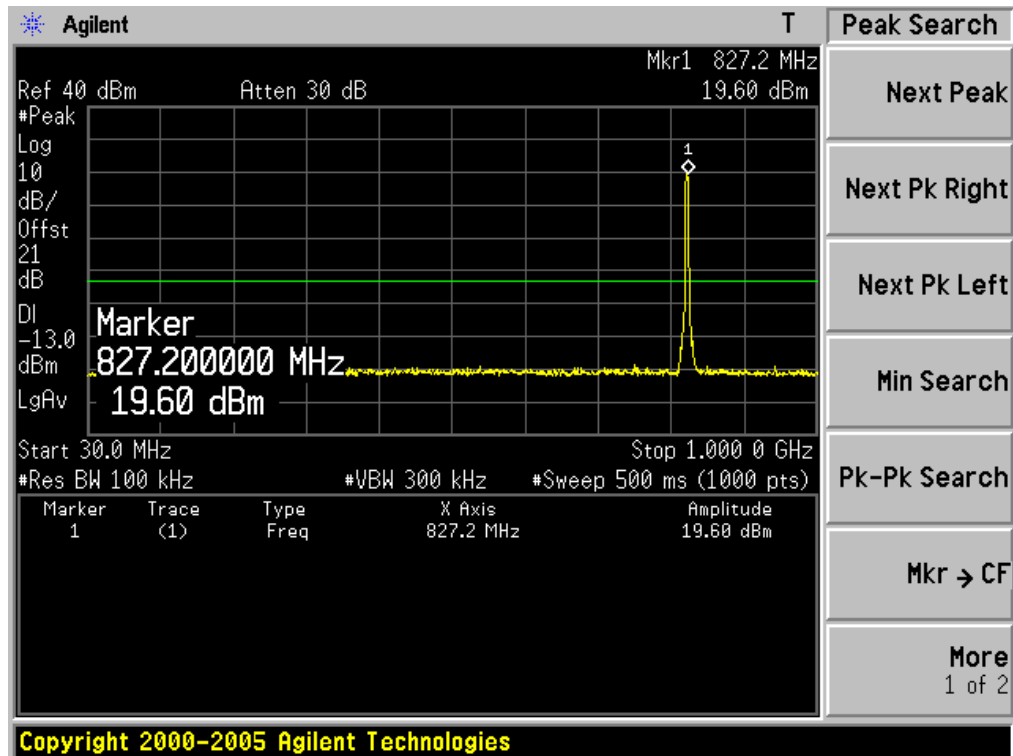


High Channel 810(1909.8MHz)

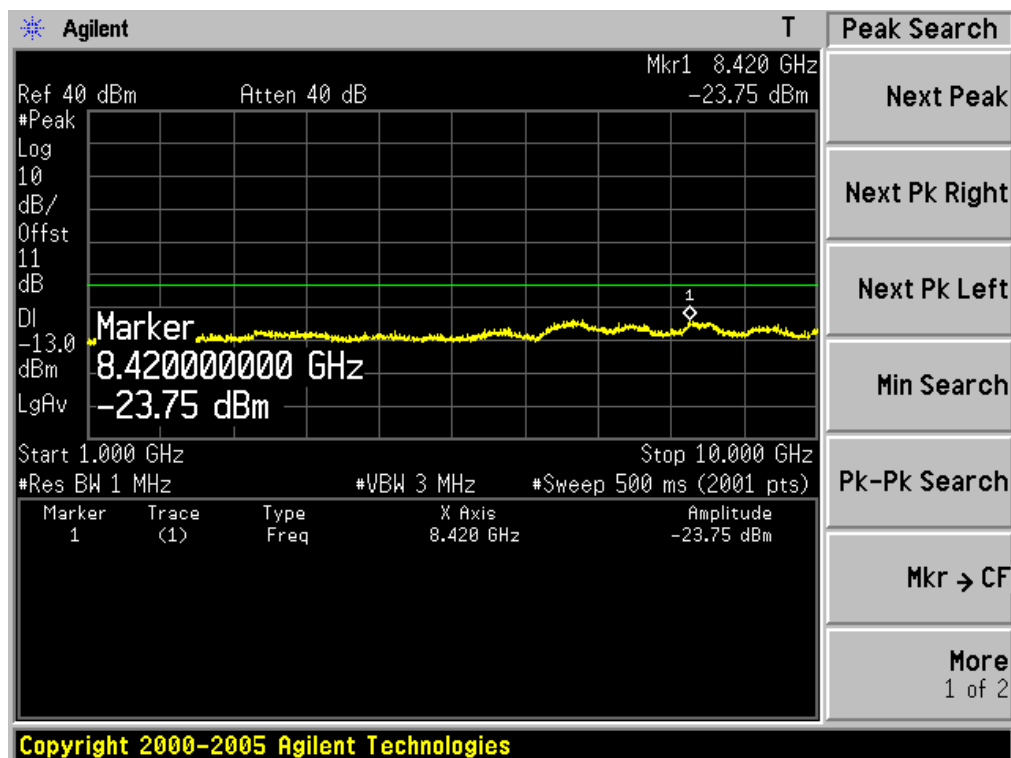
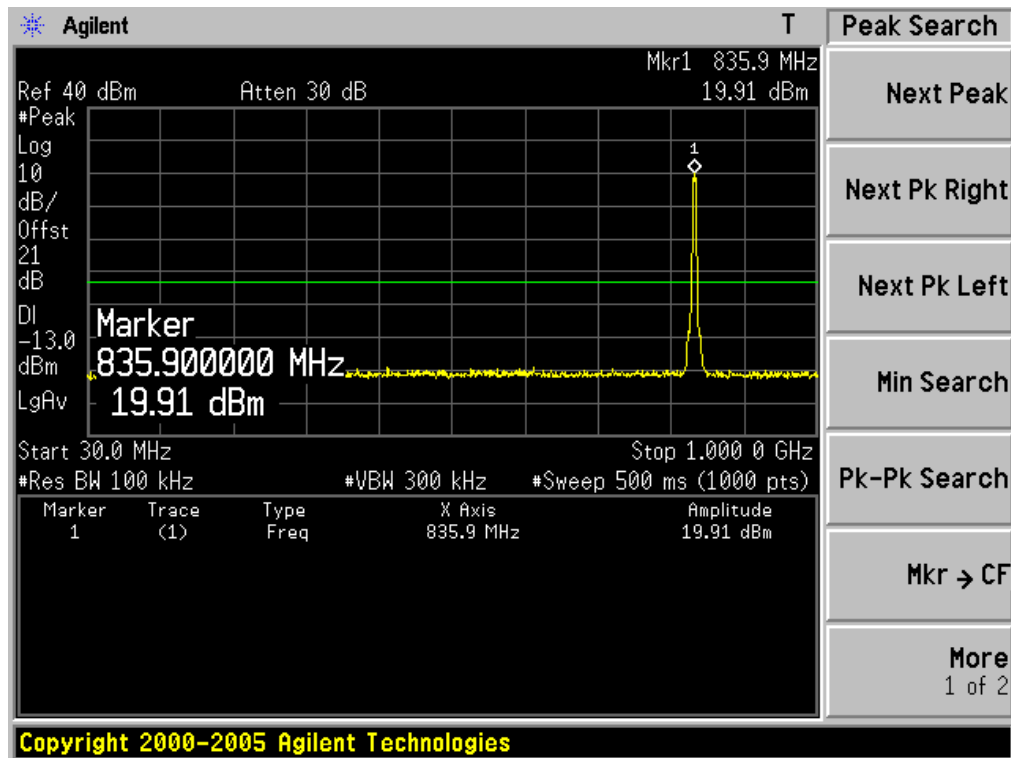


Product	Tablet		
Test Item	Spurious Emission		
Test Mode	WCDMA Band V Traffic		
Date of Test	2012/08/13	Test Site	AC-5

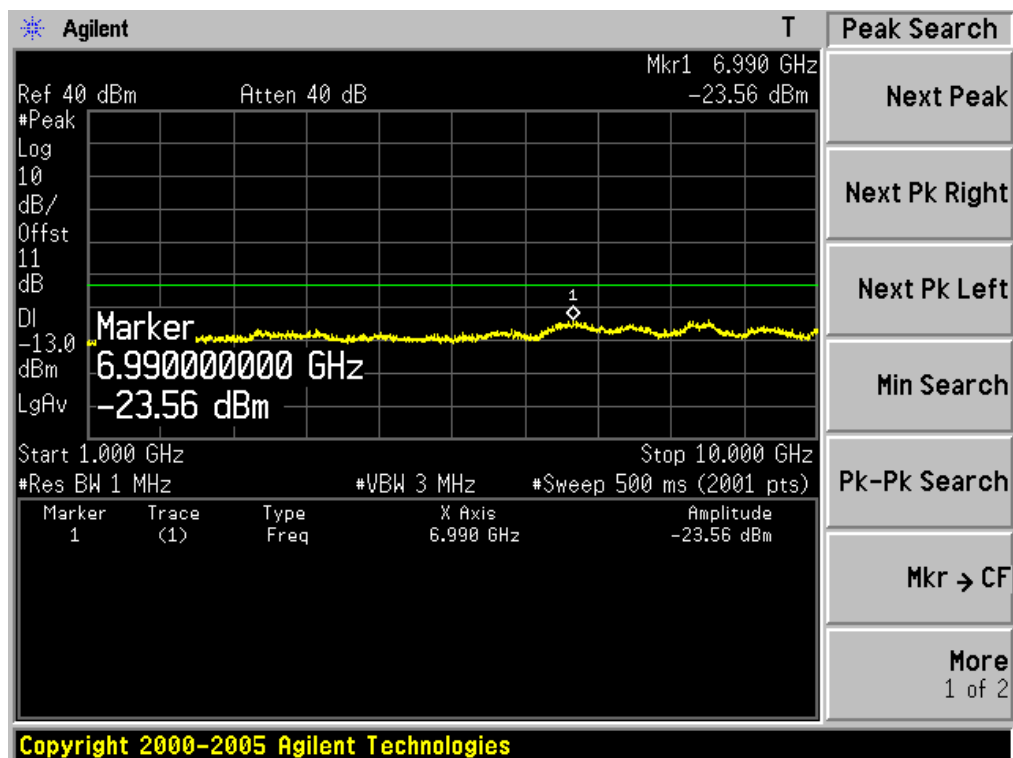
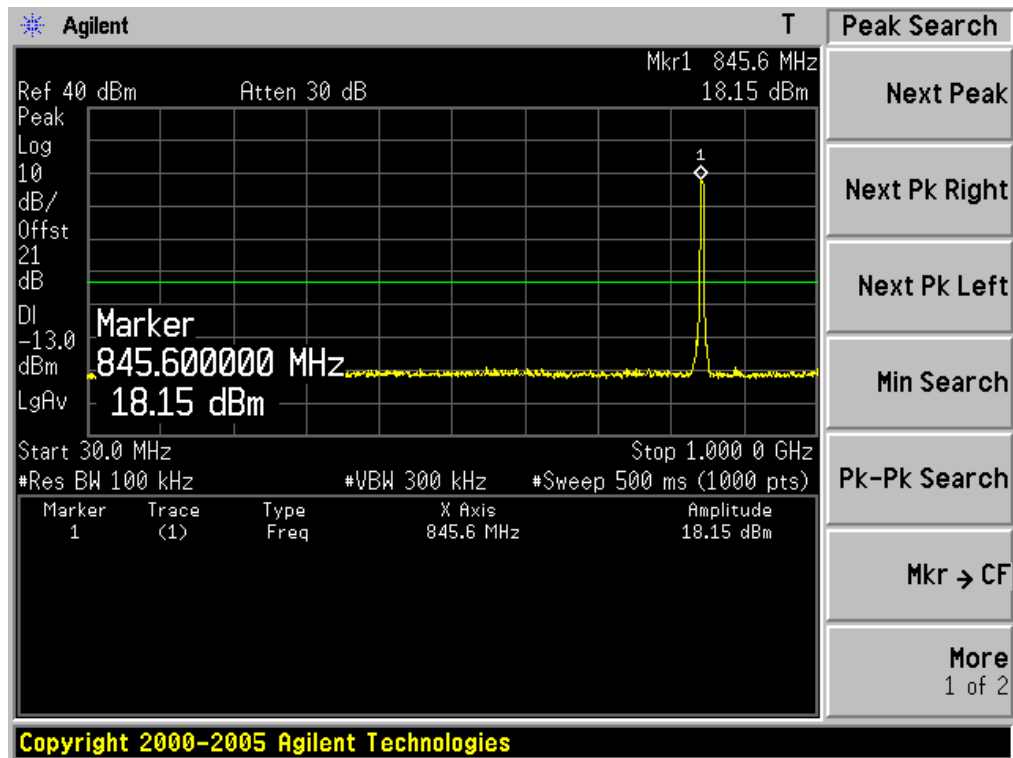
Low Channel 4132(826.4MHz)



Mid Channel 4182(836.4MHz)

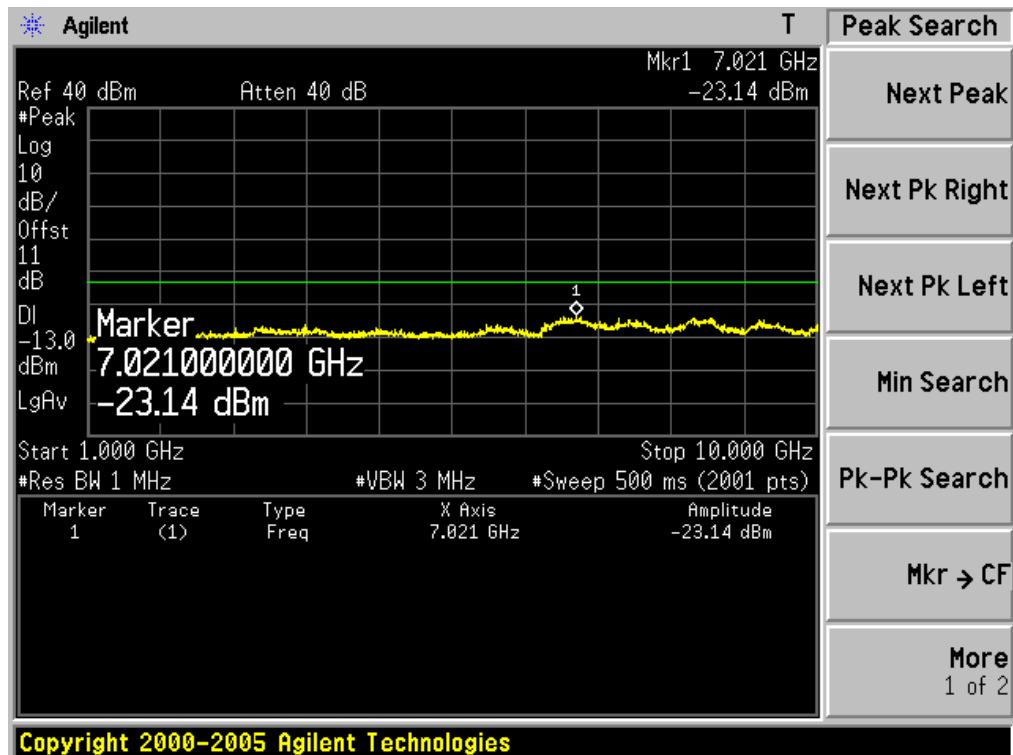
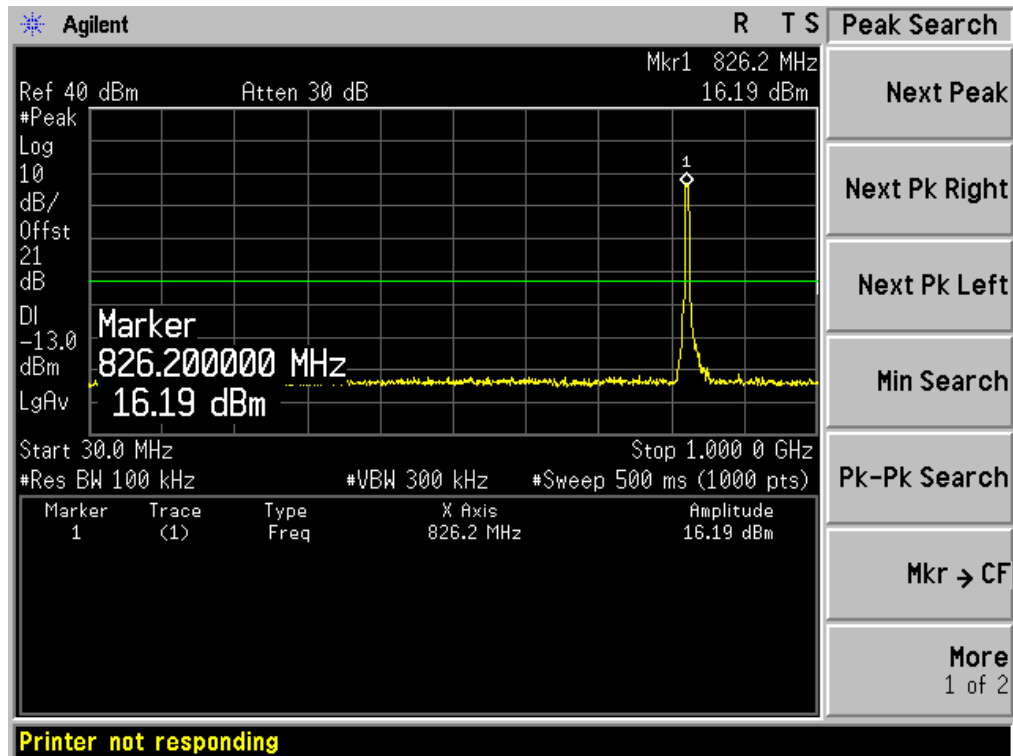


High Channel 4233(846.6MHz)

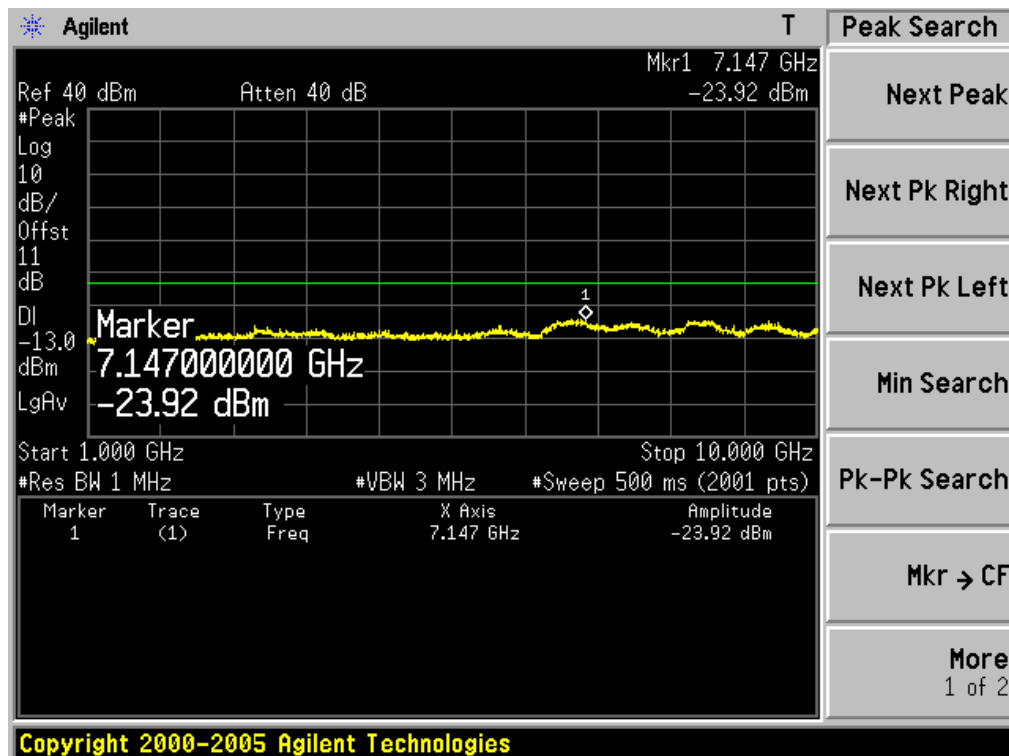
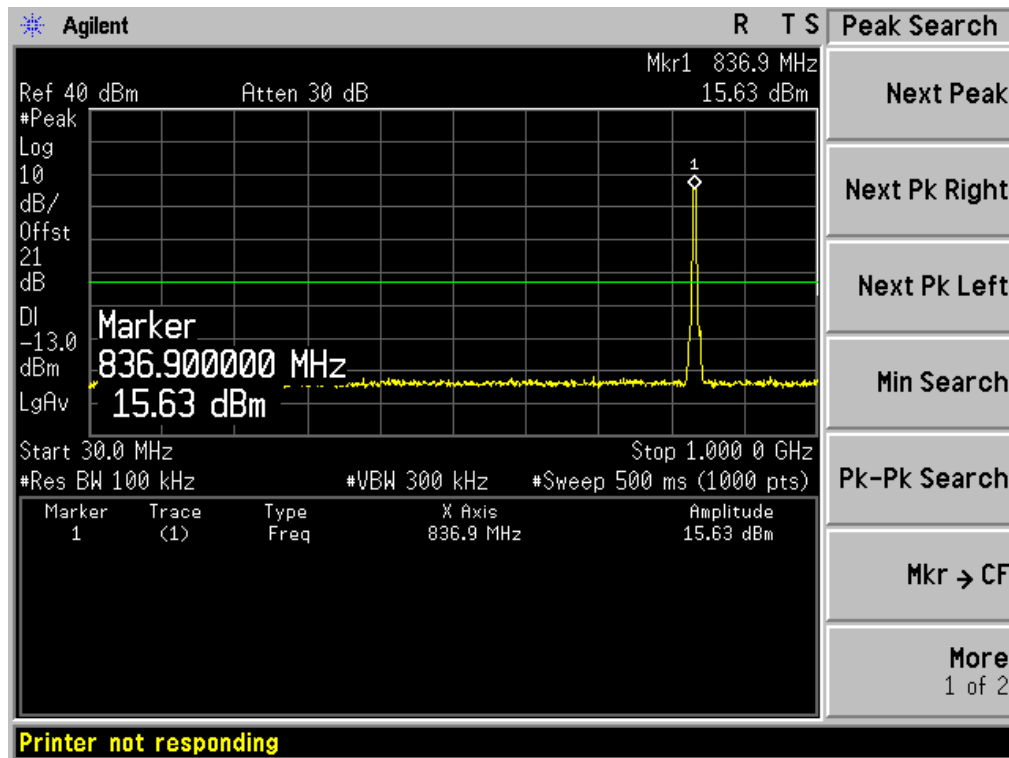


Product	Tablet		
Test Item	Spurious Emission		
Test Mode	HSDPA Band V Traffic		
Date of Test	2012/08/13	Test Site	AC-5

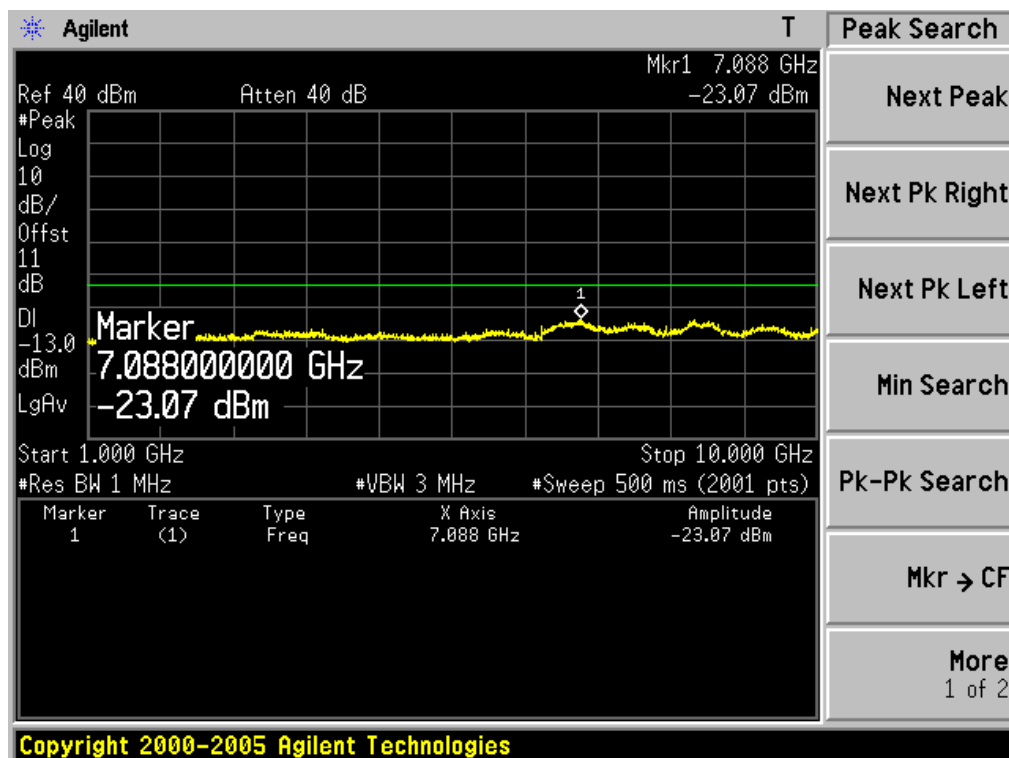
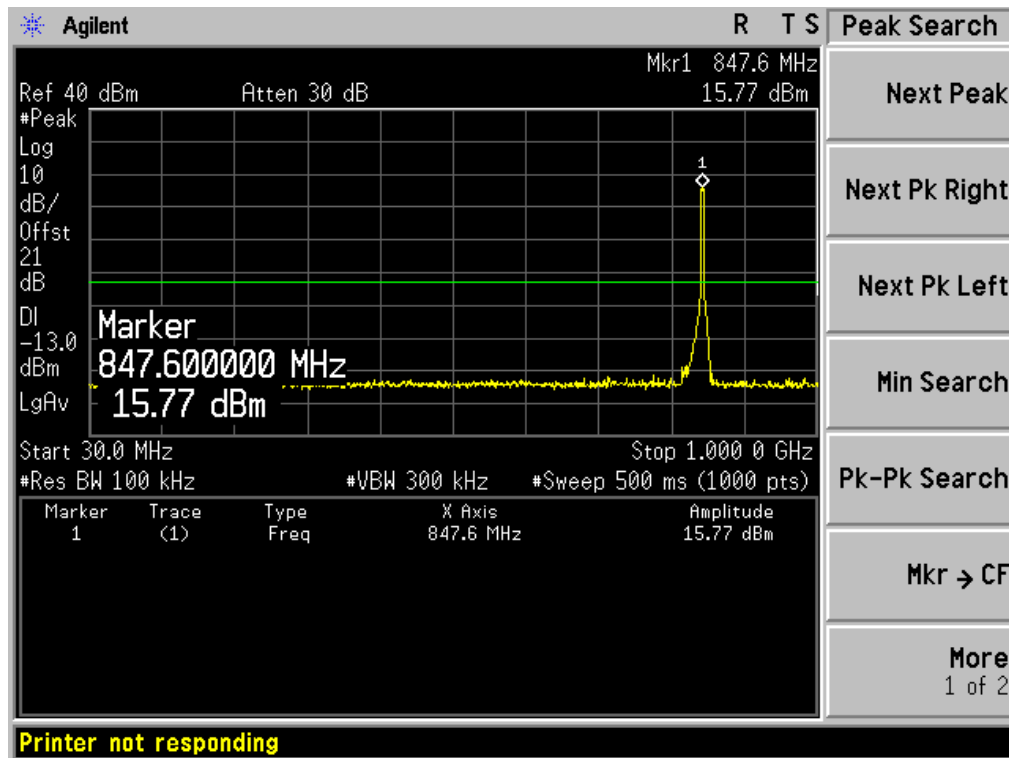
Low Channel 4132(826.4MHz)



Mid Channel 4182(836.4MHz)



High Channel 4233(846.6MHz)



Radiated Measurement

Product	Tablet		
Test Item	Spurious Emission		
Test Mode	GSM850 Traffic		
Date of Test	2012/08/13	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 128 (824.20MHz)								
1646.00	-50.00	V	-54.72	2.50	9.75	-47.47	-13.00	-34.47
2470.50	-61.72	V	-62.94	3.12	10.48	-55.58	-13.00	-42.58
1646.00	-49.81	H	-54.62	2.50	9.75	-47.37	-13.00	-34.37
2470.50	-63.21	H	-64.27	3.12	10.48	-56.91	-13.00	-43.91
Middle Channel 189 (836.40MHz)								
1671.50	-49.71	V	-54.52	2.52	9.95	-47.09	-13.00	-34.09
2513.00	-50.93	V	-51.95	3.18	10.62	-44.51	-13.00	-31.51
1671.50	-50.03	H	-54.60	2.52	9.95	-47.17	-13.00	-34.17
2513.00	-60.38	H	-61.46	3.18	10.62	-54.02	-13.00	-41.02
High Channel 251 (848.80MHz)								
1697.00	-47.07	V	-51.95	2.54	10.06	-44.43	-13.00	-31.43
2547.00	-46.06	V	-50.97	3.14	10.68	-43.42	-13.00	-30.42
1697.00	-46.89	H	-51.04	2.54	10.06	-43.52	-13.00	-30.52
2547.00	-47.90	H	-52.10	3.14	10.68	-44.57	-13.00	-31.57

Product	Tablet		
Test Item	Spurious Emission		
Test Mode	PCS1900 Traffic		
Date of Test	2012/08/13	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 512 (1850.20MHz)								
3703.00	-49.82	V	-58.67	3.84	12.69	-49.82	-13.00	-36.82
5547.50	-41.67	V	-50.00	4.82	13.15	-41.67	-13.00	-28.67
3703.00	-50.42	H	-59.27	3.84	12.69	-50.42	-13.00	-37.42
5547.50	-44.17	H	-52.50	4.82	13.15	-44.17	-13.00	-31.17
Middle Channel 661 (1880.00MHz)								
3762.50	-61.21	V	-60.06	3.73	12.72	-51.07	-13.00	-38.07
5641.00	-61.05	V	-55.59	4.93	13.14	-47.38	-13.00	-34.38
3762.50	-60.75	H	-59.60	3.73	12.72	-50.61	-13.00	-37.61
5641.00	-61.95	H	-56.49	4.93	13.14	-48.28	-13.00	-35.28
High Channel 810 (1909.80MHz)								
3822.00	-60.55	V	-58.99	4.02	12.73	-50.28	-13.00	-37.28
5726.00	-63.89	V	-57.43	4.87	13.11	-49.19	-13.00	-36.19
3822.00	-60.80	H	-59.09	4.02	12.73	-50.38	-13.00	-37.38
5726.00	-61.14	H	-55.04	4.87	13.11	-46.80	-13.00	-33.80

Product	Tablet		
Test Item	Spurious Emission		
Test Mode	EDGE 850 Link		
Date of Test	2012/08/13	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 128 (824.20MHz)								
1646.00	-56.49	V	-61.21	2.50	9.75	-53.96	-13.00	-40.96
2470.50	-61.69	V	-62.71	3.12	10.48	-55.35	-13.00	-42.35
1646.00	-54.14	H	-58.95	2.50	9.75	-51.70	-13.00	-38.70
2470.50	-60.71	H	-61.67	3.12	10.48	-54.31	-13.00	-41.31
Middle Channel 189 (836.40MHz)								
1671.50	-57.27	V	-62.08	2.52	9.95	-54.65	-13.00	-41.65
2513.00	-54.51	V	-55.60	3.18	10.62	-48.16	-13.00	-35.16
1671.50	-58.10	H	-62.67	2.52	9.95	-55.24	-13.00	-42.24
2513.00	-56.71	H	-57.75	3.18	10.62	-50.31	-13.00	-37.31
High Channel 251 (848.80MHz)								
1697.00	-56.22	V	-61.11	2.54	10.06	-53.59	-13.00	-40.59
2547.00	-61.19	V	-62.24	3.14	10.68	-54.70	-13.00	-41.70
1697.00	-57.15	H	-61.30	2.54	10.06	-53.78	-13.00	-40.78
2547.00	-56.07	H	-57.21	3.14	10.68	-49.67	-13.00	-36.67

Product	Tablet		
Test Item	Spurious Emission		
Test Mode	EDGE1900 Traffic		
Date of Test	2012/08/13	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 512 (1850.20MHz)								
3703.00	-63.92	V	-62.61	3.84	12.69	-53.76	-13.00	-40.76
5547.50	-59.61	V	-53.26	4.82	13.15	-44.93	-13.00	-31.93
3703.00	-60.93	H	-59.70	3.84	12.69	-50.85	-13.00	-37.85
5547.50	-60.84	H	-55.10	4.82	13.15	-46.77	-13.00	-33.77
Middle Channel 661 (1880.00MHz)								
3762.50	-60.93	V	-59.84	3.73	12.72	-50.85	-13.00	-37.85
5641.00	-60.84	V	-54.98	4.93	13.14	-46.77	-13.00	-33.77
3762.50	-62.44	H	-61.29	3.73	12.72	-52.30	-13.00	-39.30
5641.00	-62.07	H	-56.62	4.93	13.14	-48.41	-13.00	-35.41
High Channel 810 (1909.80MHz)								
3822.00	-64.71	V	-63.26	4.02	12.73	-54.55	-13.00	-41.55
5726.00	-62.62	V	-56.15	4.87	13.11	-47.91	-13.00	-34.91
3822.00	-60.75	H	-59.03	4.02	12.73	-50.32	-13.00	-37.32
5726.00	-64.36	H	-58.27	4.87	13.11	-50.03	-13.00	-37.03

Product	Tablet		
Test Item	Spurious Emission		
Test Mode	WCDMA Band V Traffic		
Date of Test	2012/08/13	Test Site	AC-5

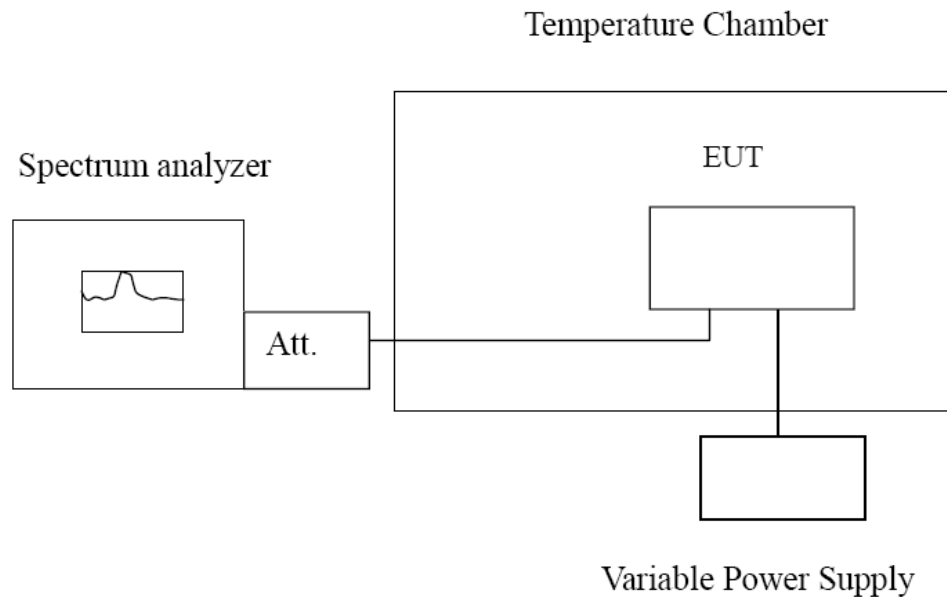
Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 4132 (826.40MHz)								
1652.80	-46.48	V	-50.38	3.28	9.75	-43.91	-13.00	-30.91
2479.20	-46.33	V	-46.29	4.10	10.48	-39.91	-13.00	-26.91
1652.80	-46.33	H	-50.23	3.28	9.75	-43.76	-13.00	-30.76
2479.20	-47.43	H	-47.41	4.10	10.48	-41.03	-13.00	-28.03
Middle Channel 4182 (836.40MHz)								
1672.80	-49.21	V	-53.23	3.32	9.95	-46.60	-13.00	-33.60
2509.20	-45.05	V	-45.51	3.81	10.62	-38.70	-13.00	-25.70
1672.80	-49.94	H	-53.71	3.32	9.95	-47.08	-13.00	-34.08
2509.20	-46.65	H	-47.06	3.81	10.62	-40.25	-13.00	-27.25
High Channel 4233 (846.60MHz)								
1693.20	-45.79	V	-49.87	3.35	10.06	-43.16	-13.00	-30.16
2539.80	-47.09	V	-47.23	4.19	10.68	-40.74	-13.00	-27.74
1693.20	-45.79	H	-49.87	3.35	10.06	-43.16	-13.00	-30.16
2539.80	-47.09	H	-47.23	4.19	10.68	-40.74	-13.00	-27.74

Product	Tablet		
Test Item	Spurious Emission		
Test Mode	HSDPA Band V Traffic		
Date of Test	2012/08/13	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 4132 (826.40MHz)								
1652.80	-46.80	V	-50.70	3.28	9.75	-44.23	-13.00	-31.23
2479.20	-47.12	V	-47.15	4.10	10.48	-40.77	-13.00	-27.77
1652.80	-46.55	H	-50.46	3.28	9.75	-43.99	-13.00	-30.99
2479.20	-49.02	H	-49.00	4.10	10.48	-42.62	-13.00	-29.62
Middle Channel 4182 (836.40MHz)								
1672.80	-50.60	V	-54.61	3.32	9.95	-47.98	-13.00	-34.98
2509.20	-46.82	V	-47.28	3.81	10.62	-40.47	-13.00	-27.47
1672.80	-50.84	H	-54.61	3.32	9.95	-47.98	-13.00	-34.98
2509.20	-49.56	H	-50.05	3.81	10.62	-43.24	-13.00	-30.24
High Channel 4233 (846.60MHz)								
1693.20	-46.27	V	-49.78	3.35	10.06	-43.07	-13.00	-30.07
2539.80	-46.74	V	-46.91	4.19	10.68	-40.42	-13.00	-27.42
1693.20	-47.69	H	-51.20	3.35	10.06	-44.49	-13.00	-31.49
2539.80	-47.64	H	-47.73	4.19	10.68	-41.24	-13.00	-28.24

4.6. Frequency Stability under Temperature & Voltage Variations

TEST CONFIGURATION



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603C

Frequency Stability Under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.

LIMIT

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Limit < ± 2.5 ppm

TEST RESULTS

Product	Tablet		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 1: GSM850 GPRS Link		
Date of Test	2012/08/13	Test Site	Shielding Room

Frequency Stability Under Temperature

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	836.40	54	± 2091
-20	836.40	-15	± 2091
-10	836.40	64	± 2091
0	836.40	56	± 2091
10	836.40	32	± 2091
20	836.40	26	± 2091
30	836.40	19	± 2091
40	836.40	65	± 2091
50	836.40	33	± 2091

Frequency Stability Under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (KHz)
4.200	836.40	-24	± 2091
3.700	836.40	-26	± 2091
3.400	836.40	34	± 2091

Product	Tablet		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 2: GSM850 EDGE Link		
Date of Test	2012/08/13	Test Site	Shielding Room

Frequency Stability Under Temperature

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)	Limit (kHz)
-30	836.40	53	± 2091
-20	836.40	44	± 2091
-10	836.40	52	± 2091
0	836.40	31	± 2091
10	836.40	36	± 2091
20	836.40	26	± 2091
30	836.40	23	± 2091
40	836.40	18	± 2091
50	836.40	33	± 2091

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (KHz)
4.200	836.40	-36	± 2091
3.700	836.40	35	± 2091
3.400	836.40	-51	± 2091

Product	Tablet		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 3: PCS1900 GPRS Link		
Date of Test	2012/08/13	Test Site	Shielding Room

Frequency Stability under Temperature

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	1880.00	43	± 4700
-20	1880.00	54	± 4700
-10	1880.00	61	± 4700
0	1880.00	17	± 4700
10	1880.00	26	± 4700
20	1880.00	33	± 4700
30	1880.00	31	± 4700
40	1880.00	45	± 4700
50	1880.00	42	± 4700

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (KHz)
4.200	1880.00	29	± 4700
3.700	1880.00	31	± 4700
3.400	1880.00	51	± 4700

Product	Tablet		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 4: PCS1900 EDGE Link		
Date of Test	2012/08/13	Test Site	Shielding Room

Frequency Stability under Temperature

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	1880.00	36	± 4700
-20	1880.00	14	± 4700
-10	1880.00	52	± 4700
0	1880.00	51	± 4700
10	1880.00	55	± 4700
20	1880.00	35	± 4700
30	1880.00	42	± 4700
40	1880.00	48	± 4700
50	1880.00	66	± 4700

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (KHz)
4.200	1880.00	31	± 4700
3.700	1880.00	23	± 4700
3.400	1880.00	56	± 4700

Product	Tablet		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 5: WCDMA Band V Link		
Date of Test	2012/08/13	Test Site	Shielding Room

Frequency Stability under Temperature

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	836.40	-37	± 2091
-20	836.40	-38	± 2091
-10	836.40	-42	± 2091
0	836.40	-27	± 2091
10	836.40	-17	± 2091
20	836.40	-25	± 2091
30	836.40	-32	± 2091
40	836.40	-35	± 2091
50	836.40	-46	± 2091

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (KHz)
4.200	836.40	-41	± 2091
3.700	836.40	-26	± 2091
3.400	836.40	-59	± 2091

Product	Tablet		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 6: HSDPA Band V Link		
Date of Test	2012/08/13	Test Site	Shielding Room

Frequency Stability under Temperature

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)	Limit (kHz)
-30	836.40	-31	± 2091
-20	836.40	-32	± 2091
-10	836.40	-39	± 2091
0	836.40	-22	± 2091
10	836.40	-16	± 2091
20	836.40	-25	± 2091
30	836.40	-42	± 2091
40	836.40	-32	± 2091
50	836.40	-55	± 2091

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (KHz)
4.200	836.40	-62	± 2091
3.700	836.40	-25	± 2091
3.400	836.40	-57	± 2091

Note:

1. Normal Voltage: 3.7V
2. Battery End Point(BEP) = 3.4V

5. Test Setup Photos of the EUT



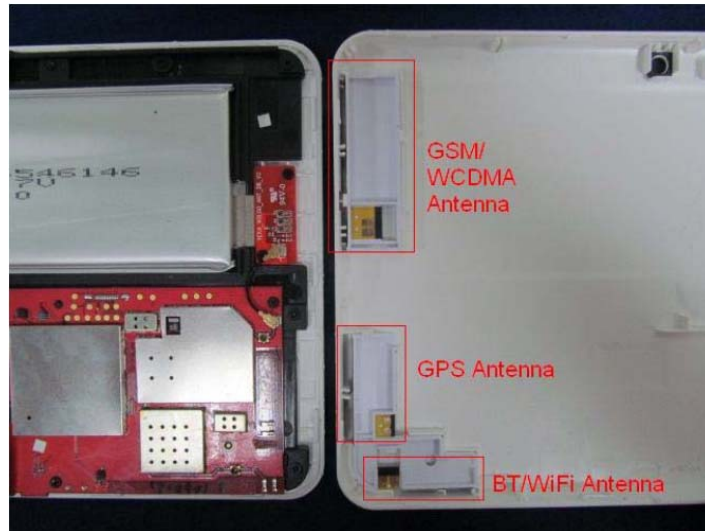
6. External and Internal Photos of the EUT

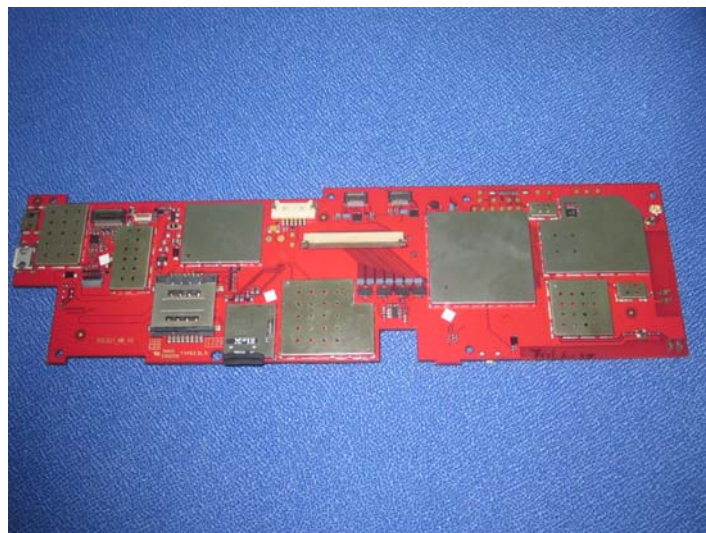
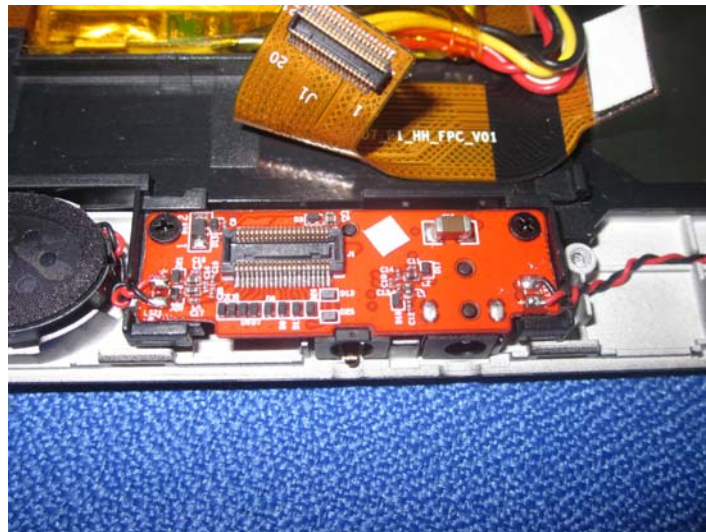
External Photos of EUT

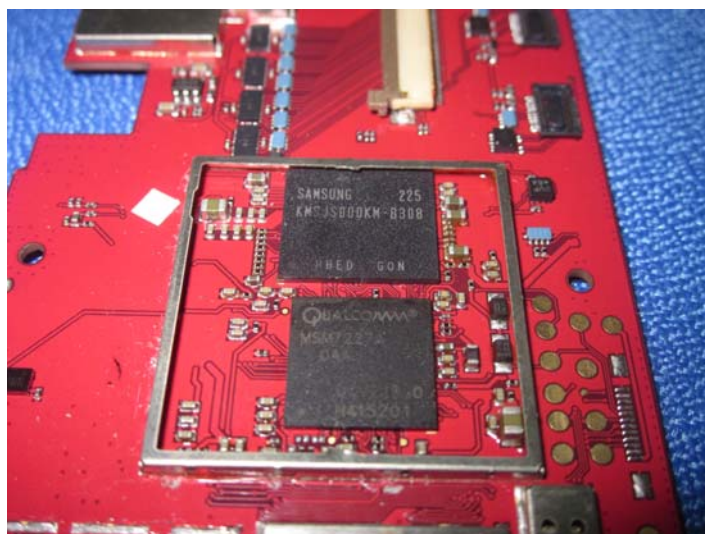


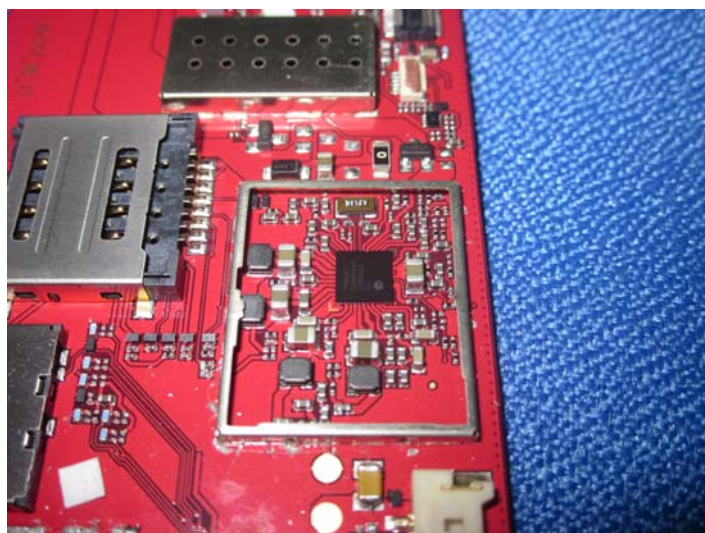
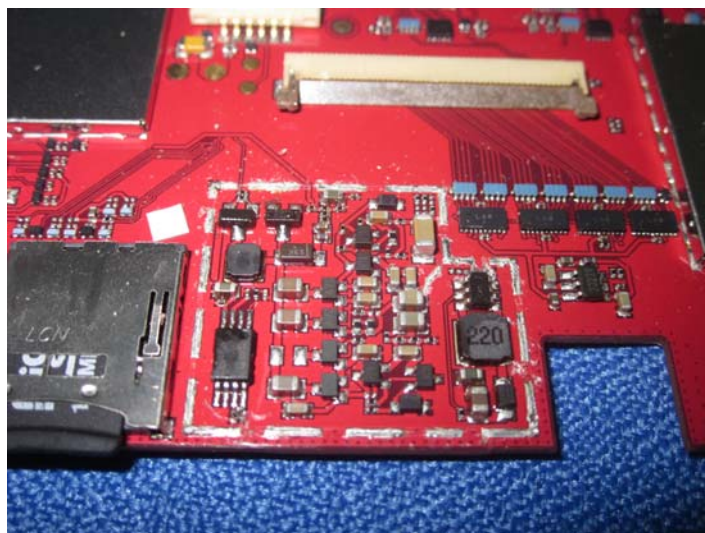




Internal Photos of EUT









.....End of Report.....