

Test Report of FCC Part 15 C for FCC Certificate

On Behalf of

VCOM TECHNOLOGIES LIMITED.

Product Description: GPS-AV8OR
Model No.: 066-01207-0099
Brand Name: BendixKing
FCC ID: WE4-BSC32150

Prepared for: VCOM TECHNOLOGIES LIMITED.

22/F., World Wide House, Central, Hong Kong

Prepared by: Bontek Compliance Testing Laboratory Ltd

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

Tel: 86-755-86337020

Fax: 86-755-86337028

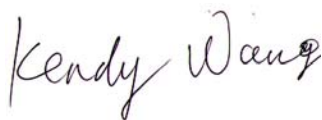
Report No.: BCT08FR-478E

Issue Date: June 27, 2008

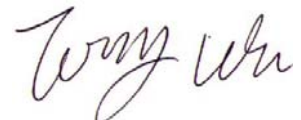
Test Date: June 18~27, 2008

Test by:

Reviewed By:



Kendy Wang



Tony Wu

TABLE OF CONTENTS

1. GENERAL INFORMATION	4
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
1.2 RELATED SUBMITTAL(S) / GRANT (S)	5
1.3 TEST METHODOLOGY	5
1.4 TEST FACILITY	5
2. SYSTEM TEST CONFIGURATION	6
2.1 EUT CONFIGURATION	6
2.2 EUT EXERCISE	6
2.3 GENERAL TEST PROCEDURES	6
2.4 LIST OF MEASURING EQUIPMENTS USED	7
3. SUMMARY OF TEST RESULTS.....	8
4. ANTENNA REQUIREMENT.....	9
4.1 STANDARD APPLICABLE	9
4.2 ANTENNA CONNECTED CONSTRUCTION.....	9
5. TEST OF CONDUCTED EMISSION.....	10
5.1 APPLICABLE STANDARD	10
5.2 TEST SETUP DIAGRAM	10
5.3 TEST RESULT	10
6. TEST OF HOPPING CHANNEL BANDWIDTH	15
6.1 APPLICABLE STANDARD	15
6.2 EUT SETUP	15
6.3 TEST EQUIPMENT LIST AND DETAILS.....	15
6.4 TEST PROCEDURE.....	15
6.5 TEST RESULT	15
7. TEST OF HOPPING CHANNEL SEPARATION.....	19
7.1 APPLICABLE STANDARD	19
7.2 EUT SETUP	19
7.3 TEST EQUIPMENT LIST AND DETAILS.....	19
7.4 TEST PROCEDURE.....	19
7.5 TEST RESULT	19
8. TEST OF NUMBER OF HOPPING FREQUENCY	23
8.1 APPLICABLE STANDARD	23
8.2 EUT SETUP	23
8.3 TEST EQUIPMENT LIST AND DETAILS.....	23
8.4 TEST PROCEDURE.....	23
8.5 TEST RESULT	23
9. TEST OF DWELL TIME OF EACH FREQUENCY	25
9.1 APPLICABLE STANDARD	25
9.2 EUT SETUP	25
9.3 TEST EQUIPMENT LIST AND DETAILS.....	25
9.4 TEST PROCEDURE.....	25
9.5 TEST RESULT	25
10. TEST OF MAXIMUM PEAK OUTPUT POWER	30
10.1 APPLICABLE STANDARD	30
10.2 EUT SETUP	30
10.3 TEST EQUIPMENT LIST AND DETAILS.....	30
10.4 TEST PROCEDURE	30
10.5 TEST RESULT	30
11. TEST OF BAND EDGES EMISSION.....	34

11.1 APPLICABLE STANDARD	34
11.2 EUT SETUP.....	34
11.3 TEST EQUIPMENT LIST AND DETAILS.....	35
11.4 TEST PROCEDURE	35
11.5 TEST RESULT	35
12. TEST OF SPURIOUS RADIATED EMISSION.....	38
12.1 APPLICABLE STANDARD	38
12.2 EUT SETUP.....	38
12.3 TEST EQUIPMENT LIST AND DETAILS.....	39
12.4 TEST PROCEDURE	39
12.5 TEST RESULT	40
HARMONICS.....	42

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Applicant: **VCOM TECHNOLOGIES LIMITED.**
Address of applicant: 22/F., World Wide House, Central, Hong Kong
Manufacturer: **Beijing Tianyuan Siwei Technology Inc.**
Address of manufacturer: Rm.1812, Xuezhixuan Business Building, No.16 Xueqing Road, Haidian District, Beijing, P.R.China

Equipment Under Test: GPS-AV8OR
Model No.: 066-01207-0099
Type of Modulation: FHSS
Frequency Band: 2402 MHz ~ 2481 MHz
Number of Channels: 79
Channel Bandwidth: 1 MHz
Antenna Type: Built-in Antenna
Output Power Class: Class 2
Power Supply: 3.7 V from inner rechargeable battery,
AC/DC Adapter and car charger are attached.
Adapter/Charger Specification: AC/DC Adapter:
1.Brand: SENWIN, M/N: GFP121-0520BX
Input: AC 100-240V 50/60Hz 0.3A,
Output: DC 5V 1.5A
LENGTH: 1.8M
2.Brand: DVE M/N: DAS-10P-5 050090
Input: AC 100-240V 50/60Hz 0.3A,
Output: DC 5V 1.5A
LENGTH: 1.8M
DC Adapter:
Brand: ATER M/N: SW-87180500150A
Input: DC 10-30V,
Output: DC 5V 1.5A
LENGTH: 1.4M

Remark: * The test data gathered are from the production sample provided by the manufacturer.

1.2 Related Submittal(s) / Grant (s)

This submittal(s) is a test report based on the Electromagnetic Interference (EMI) tests performed on the EUT. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 - 2003.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.207, and 15.247 rules.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 - 2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz. Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Test Facility

All measurement required was performed at laboratory of Bontek Compliance Testing Laboratory Ltd at 1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China and SGS-CSTC Standards Technical Services Co., Ltd ShenZhen Branch EMC Lab at No.1 Workshop, M-10, Middle Section, Science&Technology Park, Shenzhen 518057, Cina

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

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.

FCC – Registration No.: 556682

SGS-CSTC Standards Technical Services Co., Ltd ShenZhen Branch EMC Lab, 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 556682.

2. SYSTEM TEST CONFIGURATION

The tests documented in this report were performed in accordance with ANSI C63.4-2003 and FCC CFR 47 Part 15 Subpart C.

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

2.3 General Test Procedures

Conducted Emissions The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 7.1 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak detector mode.

Radiated Emissions The EUT is placed on a turntable, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4-2003.

2.4 List of Measuring Equipments Used

For Radiated Spurious Emission (30~25GHz) test: SGS-CSTC Shenzhen Branch:

Items	Equipment	Manufacturer	Model No.	Last Cal	Calibration Period
1	EMI Test Receiver	R&S	ESI 26	2008/6	1 year
2	Horn Antenna	R/S	CH14-H052	2008/6	1 year
3	3m Semi- Anechoic Chamber	ETS	N/A	2008/6	1 year
4	Horn Antenna	R/S	HF906	2008/6	1 year
5	Spectrum Analyzer	HP	8594EM	2008/6	1 year

For other test: Bontek Compliance Testing Laboratory Ltd

Items	Equipment	Manufacturer	Model No.	Serial No.	Last Cal	Calibration Period
1	EMI Test Receiver	R&S	ESCI	100687	2007/11/17	1 Year
2	EMI Test Receiver	R&S	ESPI7	100097	2007/11/17	1 Year
3	Amplifier	HP	8447D	1937A024 92	2007/11/17	1 Year
4	3 phase Artificial Mains (L.I.S.N)	SCHWARZBECK	NSLK 8128	8128247	2007/11/17	1 Year
5	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9163	9163-324	2007/11/17	1 Year
6	Horn Antenna	SCHWARZBECK	BBHA9120A	D69250	2007/11/17	1 Year
7	High Field Biconical Antenna	ELECTRO-METRICS	EM-6913	166	2007/11/17	1 Year
8	Log Periodic Antenna	ELECTRO-METRICS	EM-6950	811	2007/11/17	1 Year
9	Remote Active Vertical Antenna	ELECTRO-METRICS	EM-6892	304	2007/11/17	1 Year
10	Power Clamp	SCHWARZBECK	MDS-21	3812	2007/11/17	1 Year

3. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
15.203/15.247(b)/(c)	Antenna Requirement	Pass
15.207	AC Power Line Conducted Emission	Pass
15.247(a)(1)	Hopping Channel Bandwidth	Pass
15.247(a)(1)	Hopping Channel Separation	Pass
15.247(a)(1)	Number of Hopping Frequency Used	Pass
15.247(a)(1)(iii)	Dwell Time of Each Frequency	Pass
15.247(b)(1)	Maximum Peak Output Power	Pass
15.247(d)	Band Edges Emission	Pass
15.247(d)	Spurious Radiated Emission	Pass

4. ANTENNA REQUIREMENT

4.1 Standard Applicable

Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Section 15.247(b)/(c):

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

If the intentional radiator is used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

4.2 Antenna Connected Construction

The antenna connector is designed with permanent attachment and no consideration of replacement.

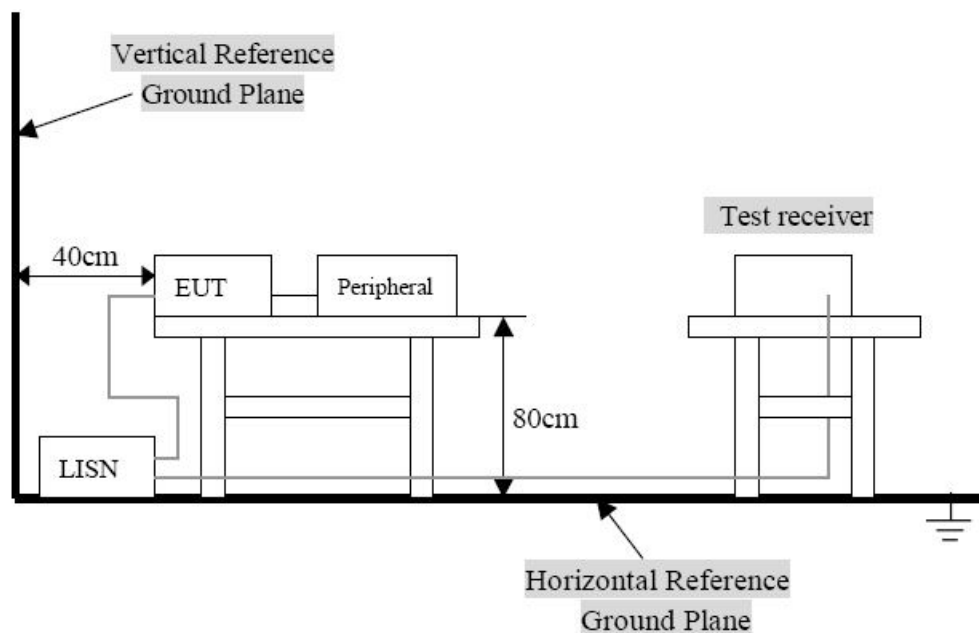
5. TEST OF CONDUCTED EMISSION

5.1 Applicable Standard

Section 15.207: For a Low-power Radio-frequency Device is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150~0.500	66~56	56~46
0.500~5.000	56	46
5.000~30.00	60	50

5.2 Test Setup Diagram



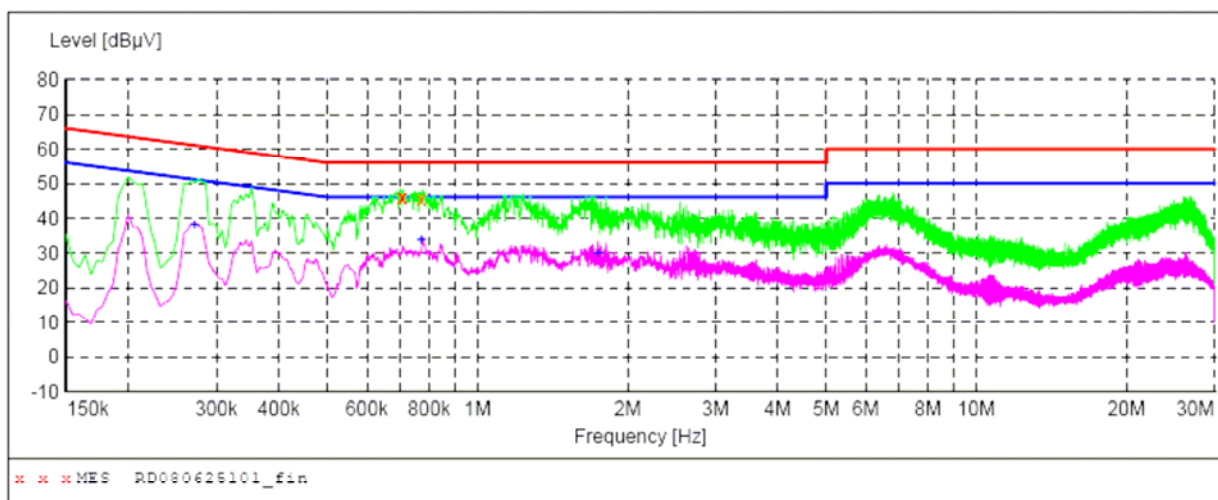
Remark: 1. The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC 15.207 limits.

2. The EUT was connected to a 120 VAC/ 60Hz power source.

5.3 Test Result

Temperature (°C) : 22~23	EUT: GPS-AV8OR
Humidity (%RH) : 50~54	M/N: 066-01207-0099
Barometric Pressure (mbar) : 950~1000	Operation Condition: Charging Mode

Conducted Emission from AC/Car Charger:



MEASUREMENT RESULT: "RD080625101_fin"

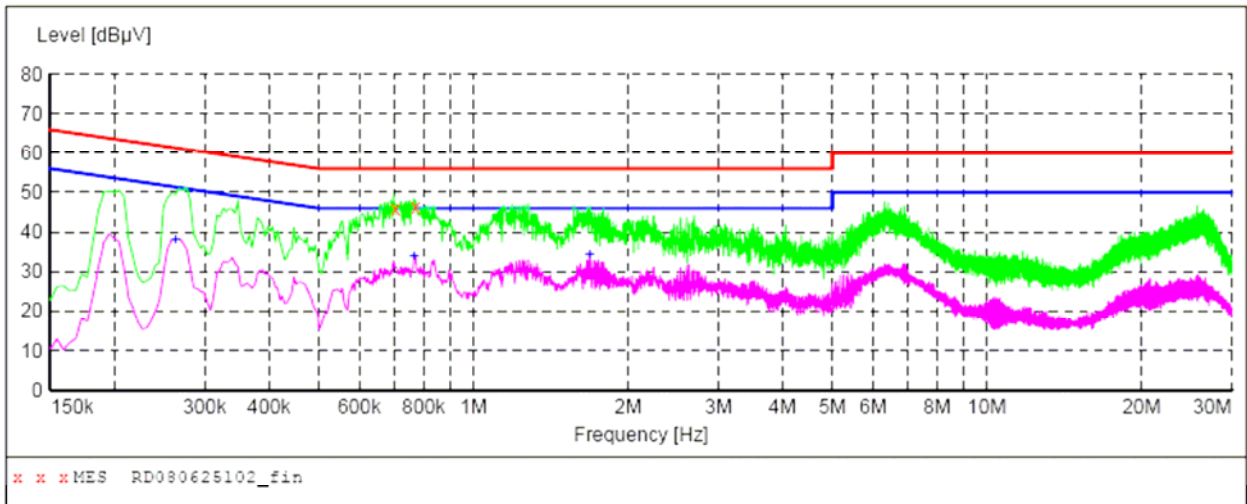
6/25/2008 10:33

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.703500	45.80	10.2	56	10.2	QP	N	GND
0.708000	45.70	10.2	56	10.3	QP	N	GND
0.771000	45.50	10.2	56	10.5	QP	N	GND

MEASUREMENT RESULT: "RD080625101_fin2"

6/25/2008 10:33

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.271500	38.20	10.6	51	12.9	AV	N	GND
0.771000	33.60	10.2	46	12.4	AV	N	GND
1.743000	30.20	10.2	46	15.8	AV	N	GND



MEASUREMENT RESULT: "RD080625102_fin"

6/25/2008 10:35

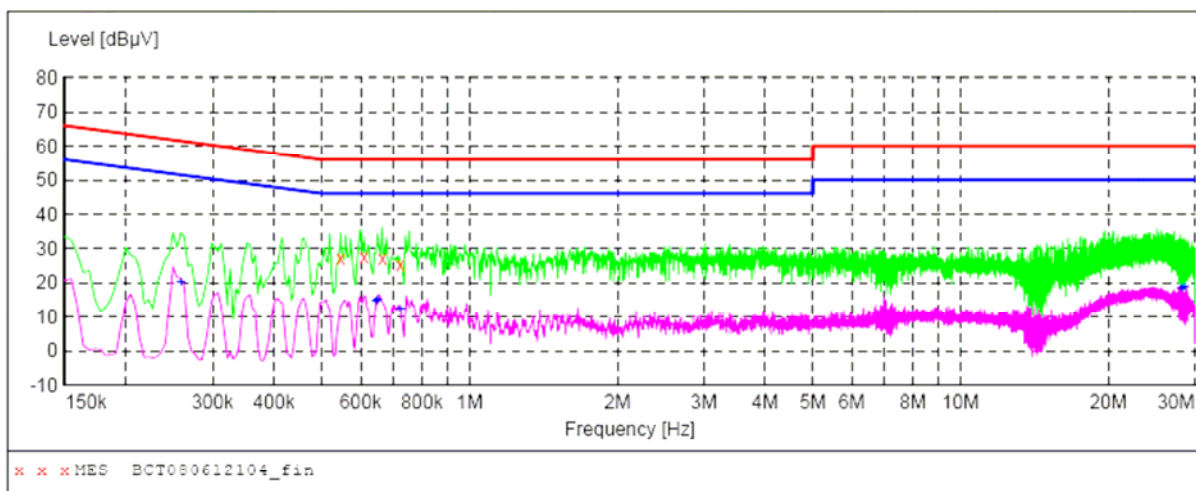
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.703500	46.10	10.2	56	9.9	QP	L1	GND
0.771000	46.30	10.2	56	9.7	QP	L1	GND

MEASUREMENT RESULT: "RD080625102_fin2"

6/25/2008 10:35

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.262500	38.00	10.6	51	13.4	AV	L1	GND
0.766500	33.80	10.2	46	12.2	AV	L1	GND
1.684500	34.40	10.2	46	11.6	AV	L1	GND

Conducted Emission from AC/DC Adapter:



MEASUREMENT RESULT: "BCT080612104_fin"

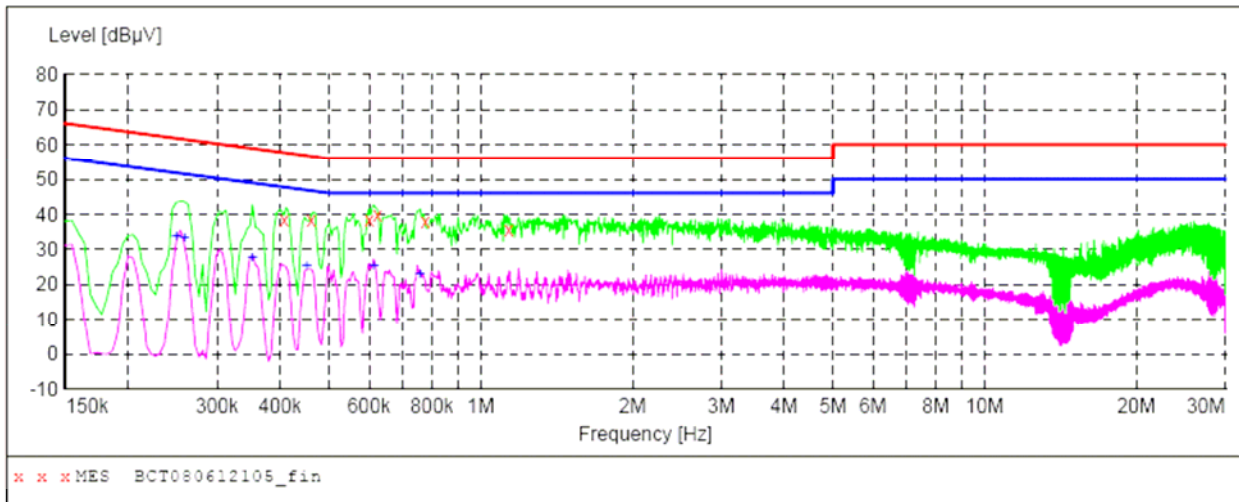
6/12/2008 09:53

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.546000	27.00	10.2	56	29.0	QP	N	GND
0.609000	27.90	10.2	56	28.1	QP	N	GND
0.663000	27.40	10.2	56	28.6	QP	N	GND
0.721500	25.50	10.2	56	30.5	QP	N	GND

MEASUREMENT RESULT: "BCT080612104_fin2"

6/12/2008 09:53

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.258000	20.10	10.7	52	31.4	AV	N	GND
0.645000	14.40	10.2	46	31.6	AV	N	GND
0.649500	14.80	10.2	46	31.2	AV	N	GND
0.721500	12.40	10.2	46	33.6	AV	N	GND
28.153500	18.20	11.0	50	31.8	AV	N	GND
28.509000	18.60	11.1	50	31.4	AV	N	GND



MEASUREMENT RESULT: "BCT080612105_fin"

6/12/2008 09:57

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	FE
0.406500	38.20	10.4	58	19.5	QP	L1	GND
0.460500	38.30	10.3	57	18.4	QP	L1	GND
0.600000	38.60	10.2	56	17.4	QP	L1	GND
0.622500	39.60	10.2	56	16.4	QP	L1	GND
0.775500	37.90	10.2	56	18.1	QP	L1	GND
1.135500	35.60	10.3	56	20.4	QP	L1	GND

MEASUREMENT RESULT: "BCT080612105_fin2"

6/12/2008 09:57

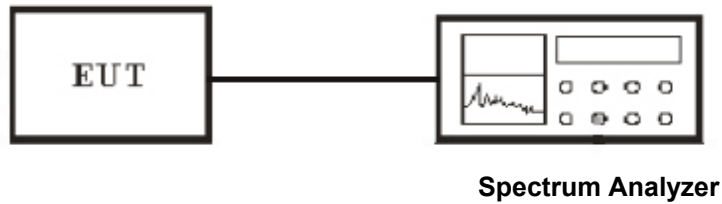
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	FE
0.249000	33.70	10.7	52	18.1	AV	L1	GND
0.258000	33.10	10.7	52	18.4	AV	L1	GND
0.352500	27.60	10.5	49	21.3	AV	L1	GND
0.451500	25.30	10.3	47	21.5	AV	L1	GND
0.613500	25.40	10.2	46	20.6	AV	L1	GND
0.757500	23.10	10.2	46	22.9	AV	L1	GND

6. Test of Hopping Channel Bandwidth

6.1 Applicable Standard

Section 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

6.2 EUT Setup



6.3 Test Equipment List and Details

See section 2.4.

6.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 30KHz and VBW to 100KHz.
3. Set Detector to Peak, Trace to Max Hold and Sweep Time is Auto.
4. The spectrum width with level higher than 20dB below the peak level.
5. Repeat above 1~3 points for the middle and highest channel of the EUT.

6.5 Test Result

Temperature (°C) : 22~23	EUT: GPS-AV8OR
Humidity (%RH) : 50~54	M/N: 066-01207-0099
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode

Modulation Type	Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	Min. Limit (kHz)
FHSS	Low	2419.90	276	>25
FHSS	Middle	2440.00	274	>25
FHSS	High	2480.00	278	>25

Channel Low :

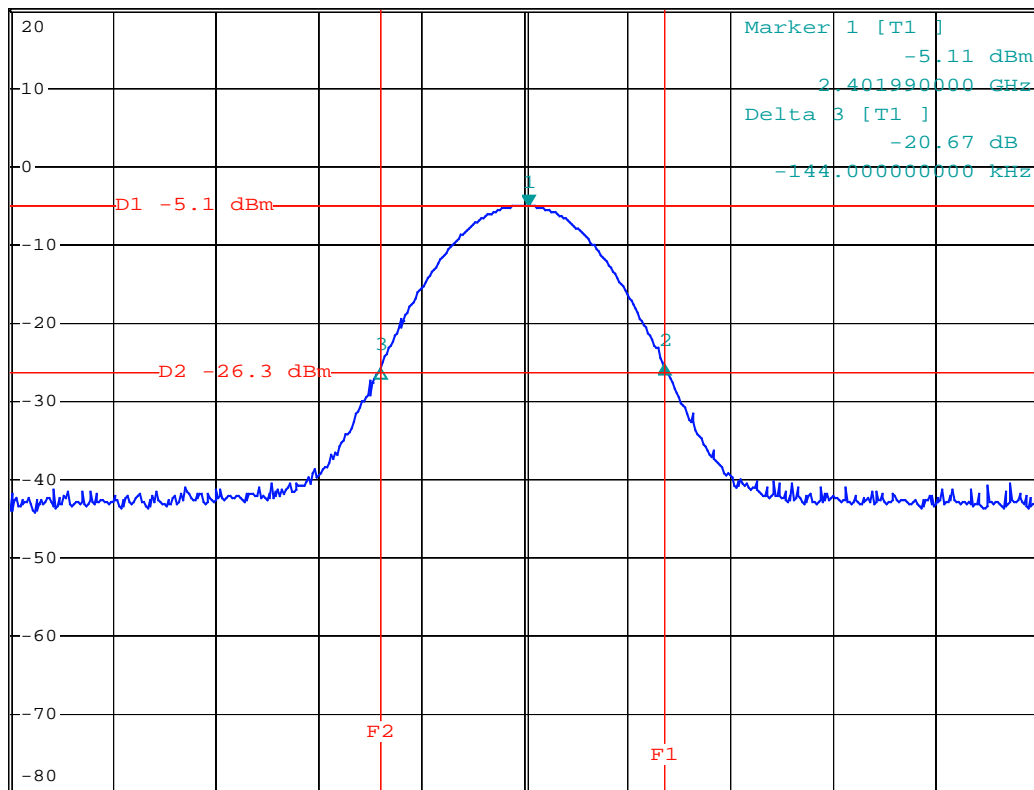


FREQUENCY LINE 2
2.401846 GHz

Ref 20 dBm Att 50 dB

*RBW 100 kHz Delta 2 [T1]
VBW 300 kHz -20.26 dB
*SWT 500 ms 132.000000000 kHz

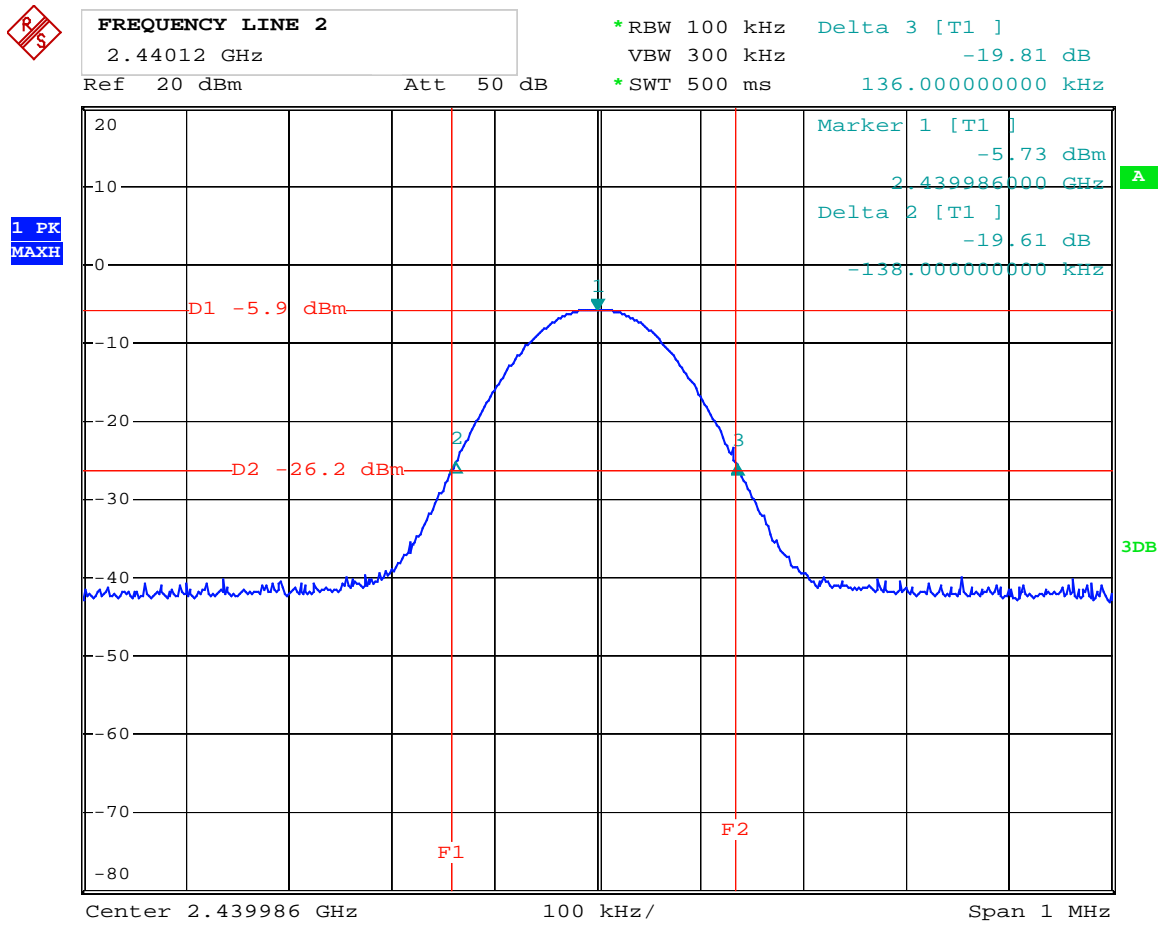
1 PK
VIEW



Center 2.401986 GHz 100 kHz/ Span 1 MHz

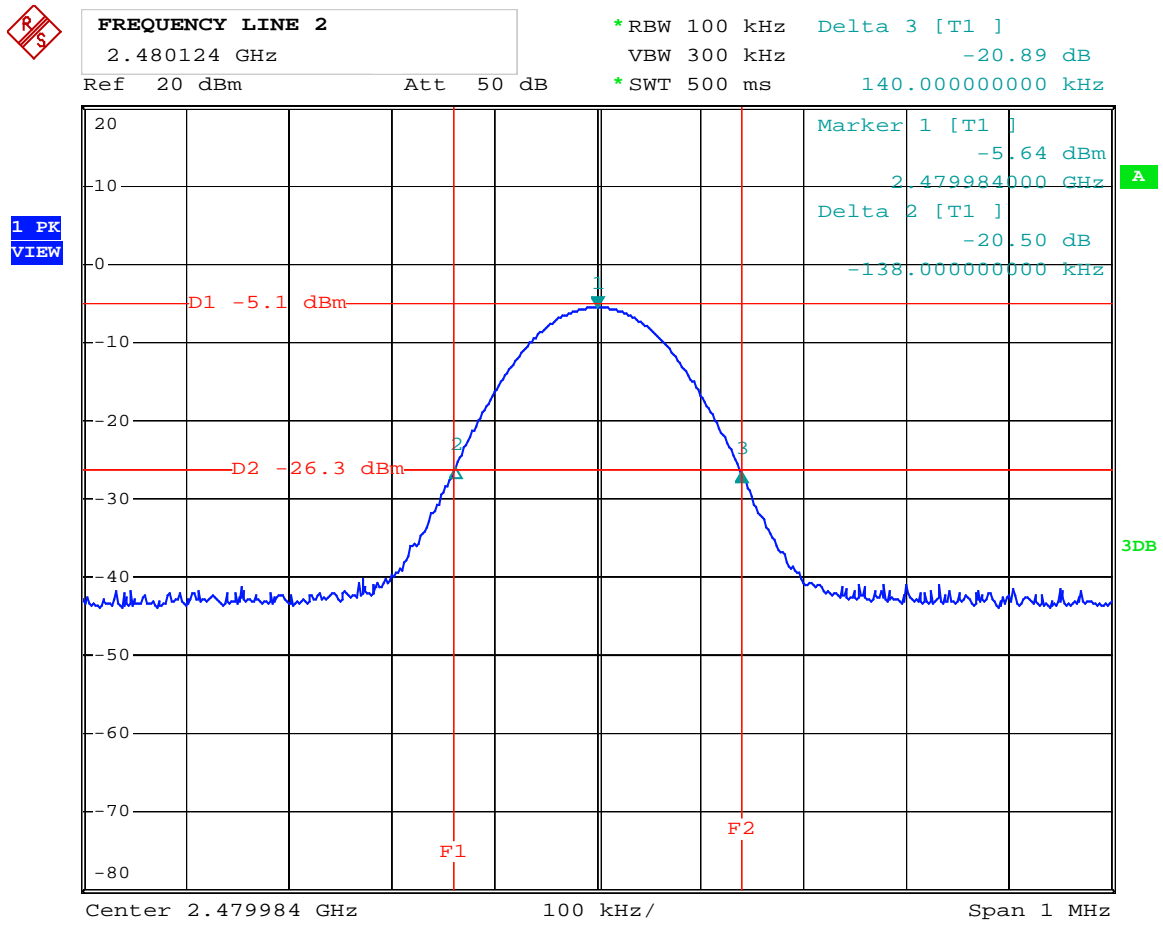
Date: 27.JUN.2008 21:58:27

Channel Middle :



Date: 27.JUN.2008 21:56:18

Channel High :



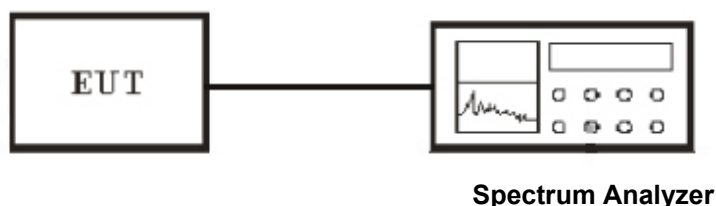
Date: 27.JUN.2008 22:00:43

7. Test of Hopping Channel Separation

7.1 Applicable Standard

Section 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

7.2 EUT Setup



7.3 Test Equipment List and Details

See section 2.4.

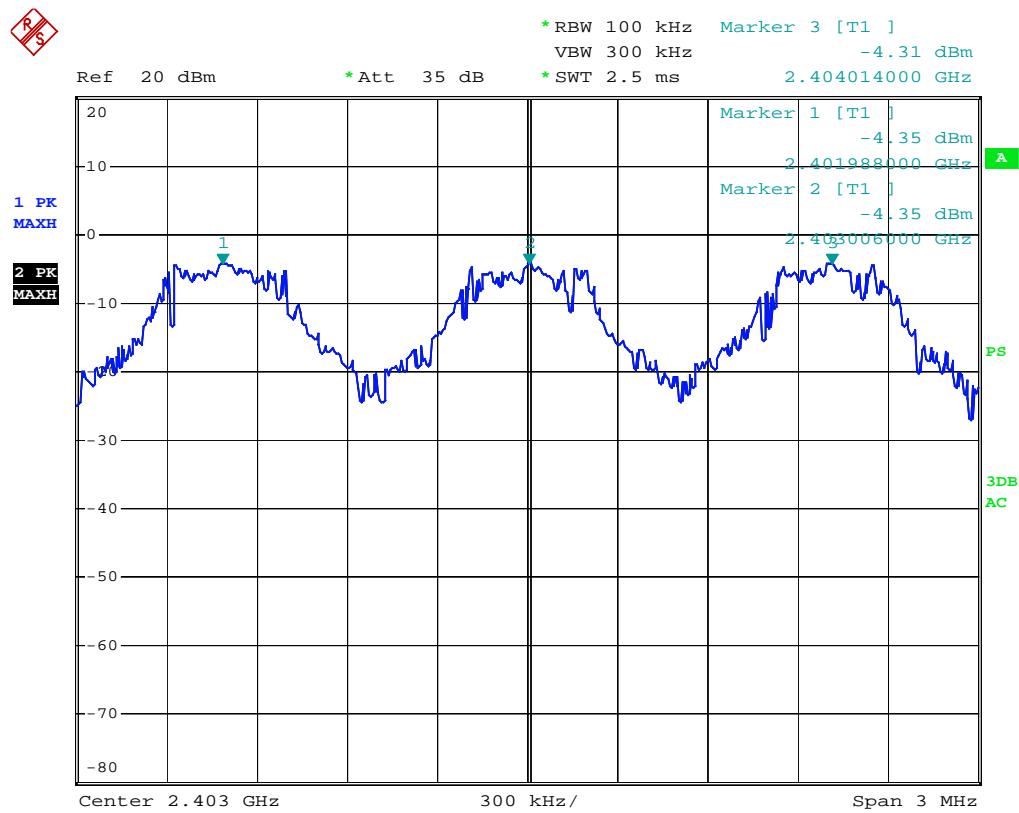
7.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 100KHz and VBW to 100KHz.
3. Set Detector to Peak, Trace to Max Hold and Sweep Time is Auto.
4. The Hopping Channel Separation is defined as the separation between 2 neighboring hopping frequencies.
5. Repeat above 1~3 points for the middle and highest channel of the EUT.

7.5 Test Result

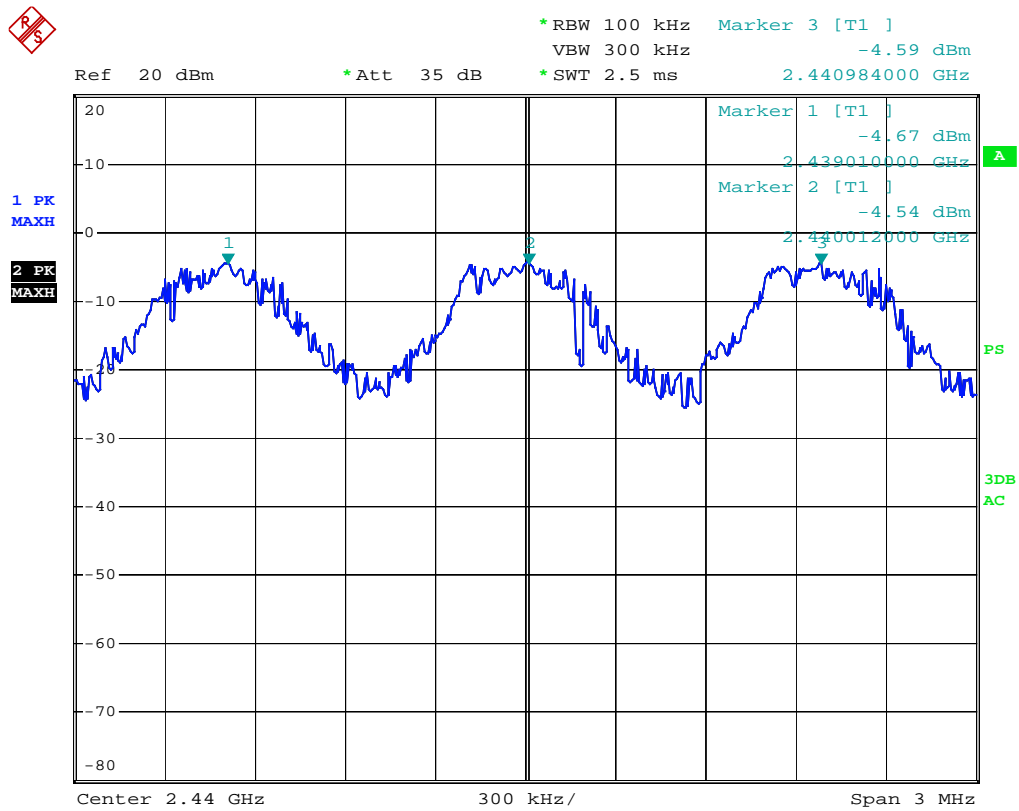
Temperature (°C) : 22~23	EUT: GPS-AV8OR
Humidity (%RH) : 50~54	M/N: 066-01207-0099
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode

Channel Low :



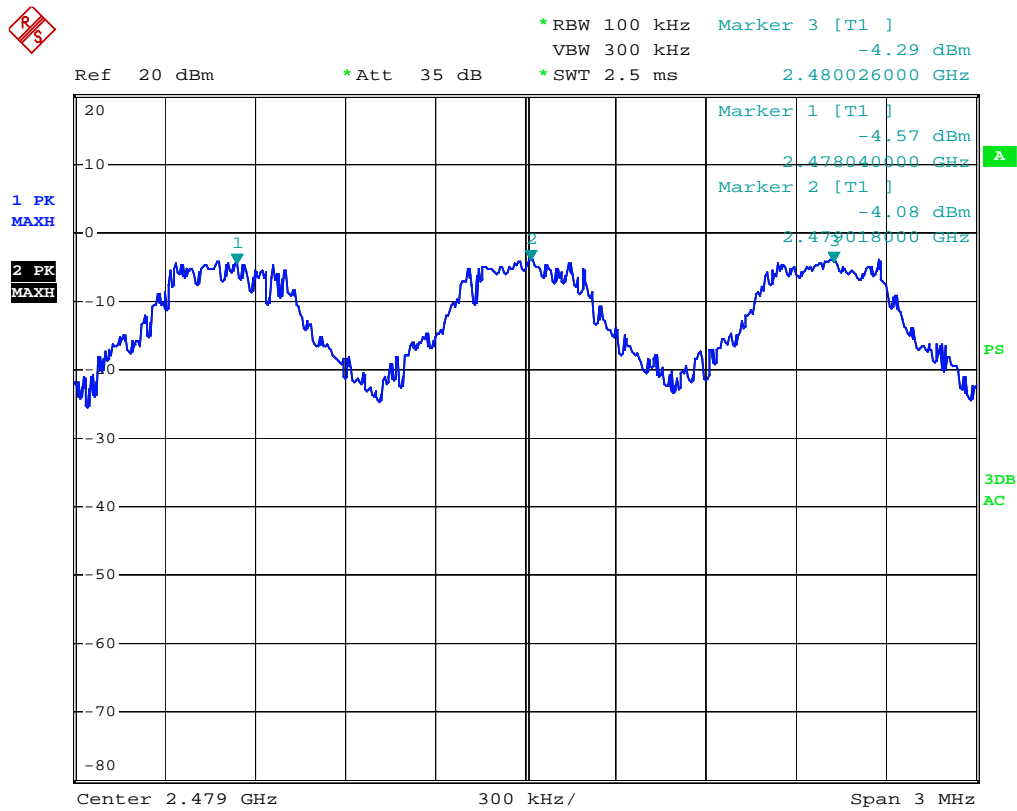
Date: 24.JUN.2008 22:17:28

Channel Middle :



Date: 24.JUN.2008 22:19:44

Channel High :



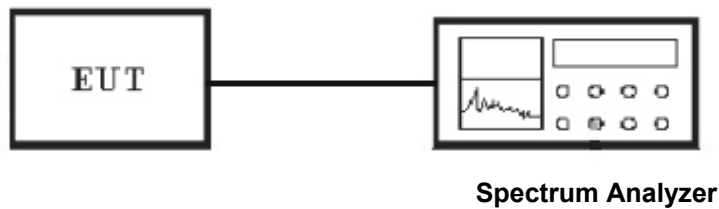
Date: 24.JUN.2008 22:22:17

8. Test of Number of Hopping Frequency

8.1 Applicable Standard

Section 15.247(a)(1)(iii): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 15 non-overlapping hopping channels. Frequency hopping system which use fewer than 75 hopping frequencies may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping system may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

8.2 EUT Setup



8.3 Test Equipment List and Details

See section 2.4.

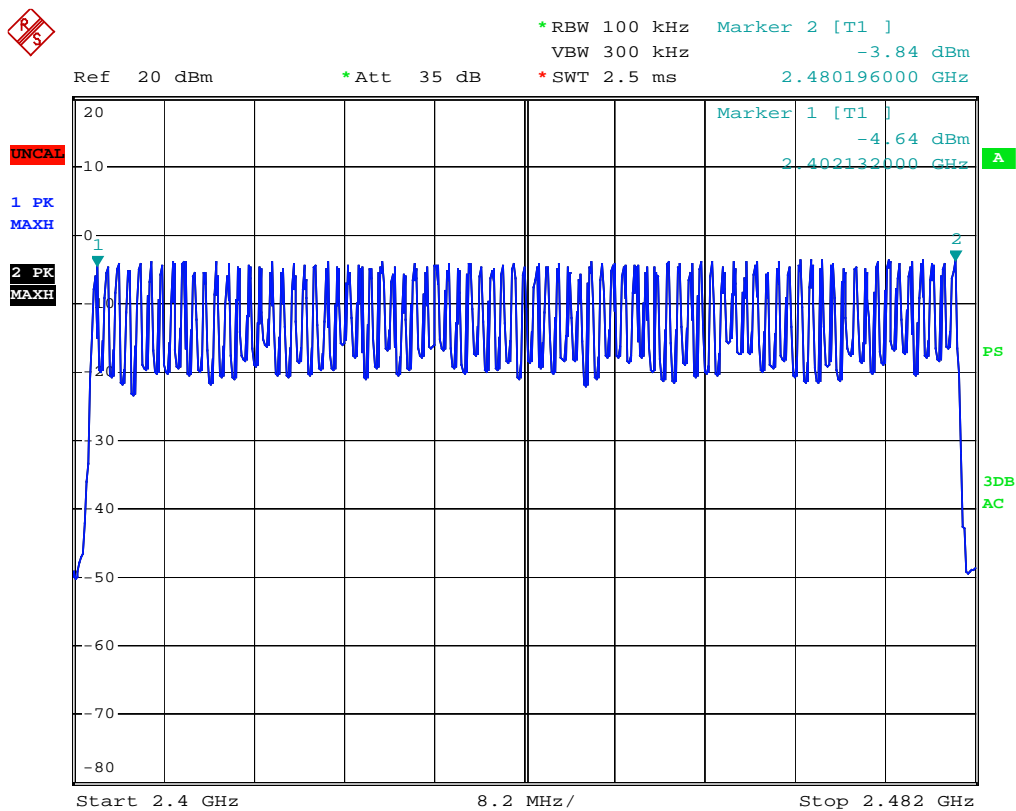
8.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 100KHz and VBW to 100KHz.
3. Set Detector to Peak, Trace to Max Hold and Sweep Time is Auto.
4. Observe frequency hopping in 2400MHz~2483.5MHz, there are at least 32 non-overlapping channels.
5. Repeat above 1~3 points for the middle and highest channel of the EUT.

8.5 Test Result

Temperature (°C) : 22~23	EUT: GPS-AV8OR
Humidity (%RH) : 50~54	M/N: 066-01207-0099
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode

Modulation Type	Frequency (MHz)	Number of Hopping Channels	Min. Limit (kHz)
FHSS	2402.0~2480.0	79	>15



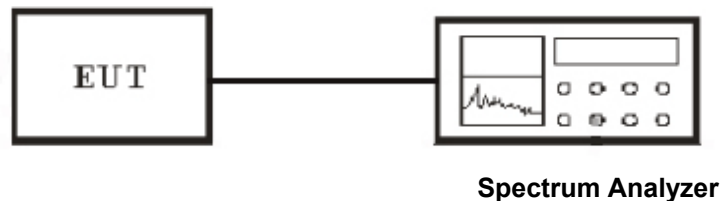
Date: 24.JUN.2008 22:13:31

9. Test of Dwell Time of Each Frequency

9.1 Applicable Standard

Section 15.247(a)(1)(iii): For frequency hopping systems operating in the 2400-2483.5 MHz band
The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4seconds multiplied by the number of hopping channels employed.

9.2 EUT Setup



9.3 Test Equipment List and Details

See section 2.4.

9.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 1000kHz and VBW to 1000kHz.
3. Set Detector to Peak, Trace to Max Hold and Sweep Time is more than once pulse time.
4. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
5. Measure the maximum time duration of one single pulse.

9.5 Test Result

Temperature (°C) : 22~23	EUT: GPS-AV8OR
Humidity (%RH) : 50~54	M/N: 066-01207-0099
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode

Modulation Type	Channel No.	Frequency (MHz)	Dwell Time (ms)	Limit (ms)
FHSS	Low	2402.00	147.2	400
FHSS	Middle	2440.00	147.2	400
FHSS	High	2480.00	147.2	400

A period time = $0.4 \text{ (ms)} * 79 = 31.6 \text{ (s)}$

CH Low:

DH1 time slot = $0.460 \text{ (ms)} * (1600/(2*79)) * 31.6 = 147.2 \text{ (ms)}$

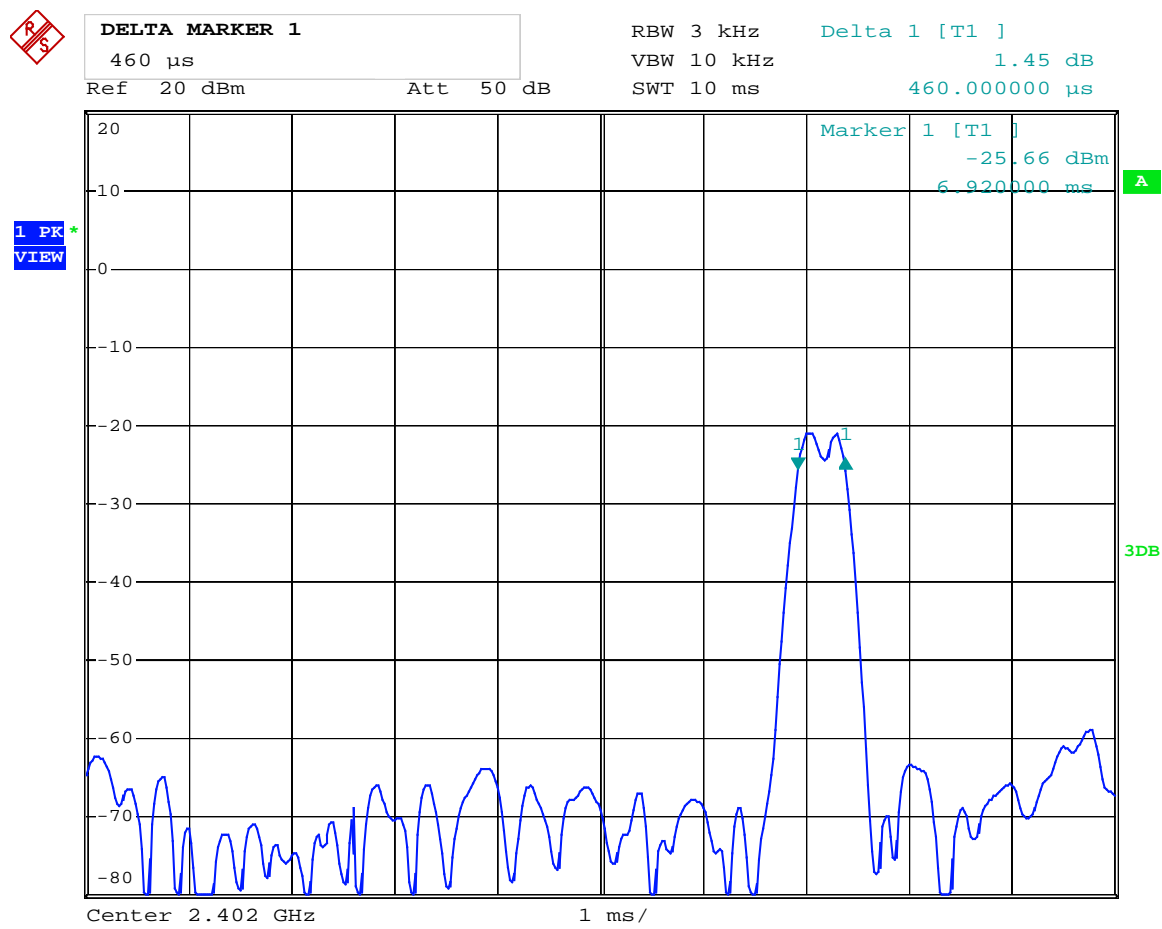
CH Mid:

DH1 time slot = $0.460 \text{ (ms)} * (1600/(2*79)) * 31.6 = 147.2 \text{ (ms)}$

CH High:

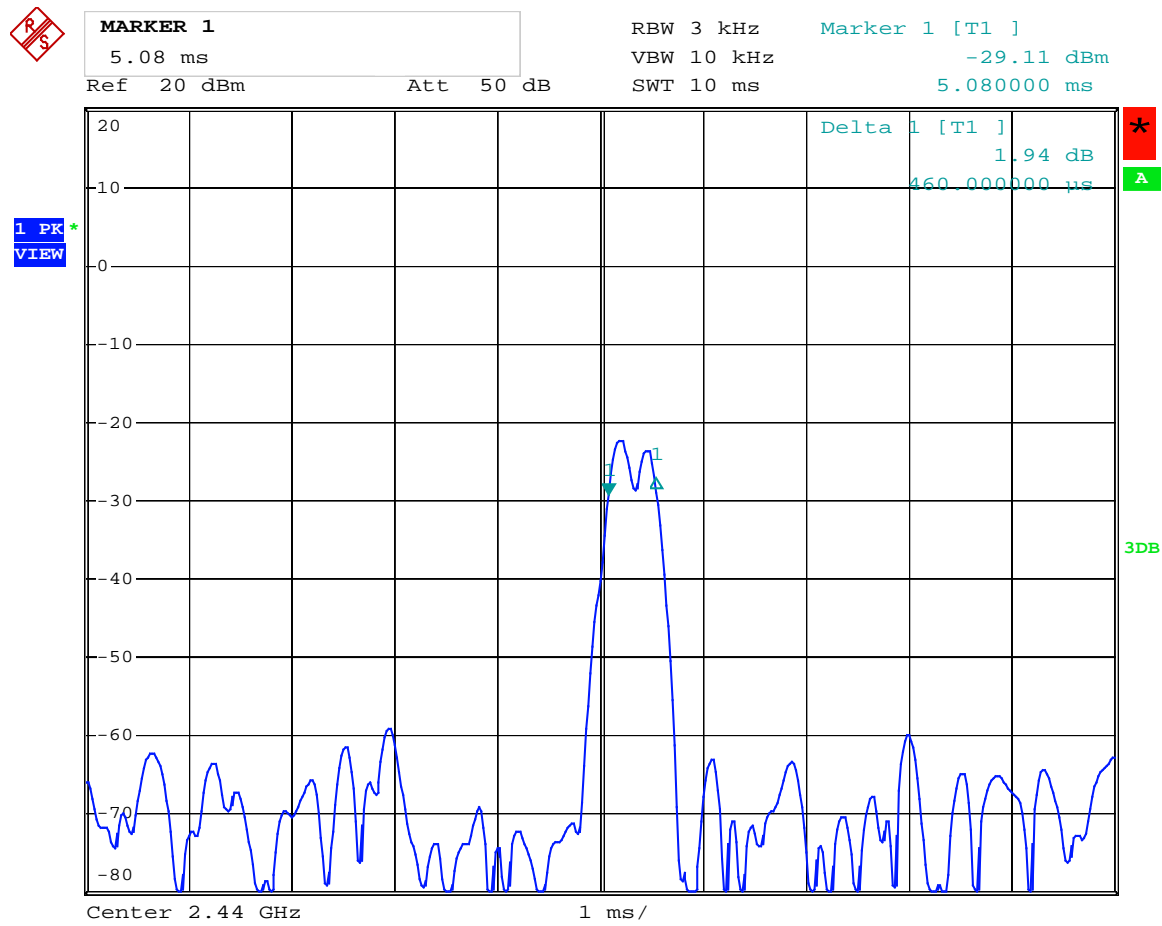
DH1 time slot = $0.460 \text{ (ms)} * (1600/(2*79)) * 31.6 = 147.2 \text{ (ms)}$

Channel Low :



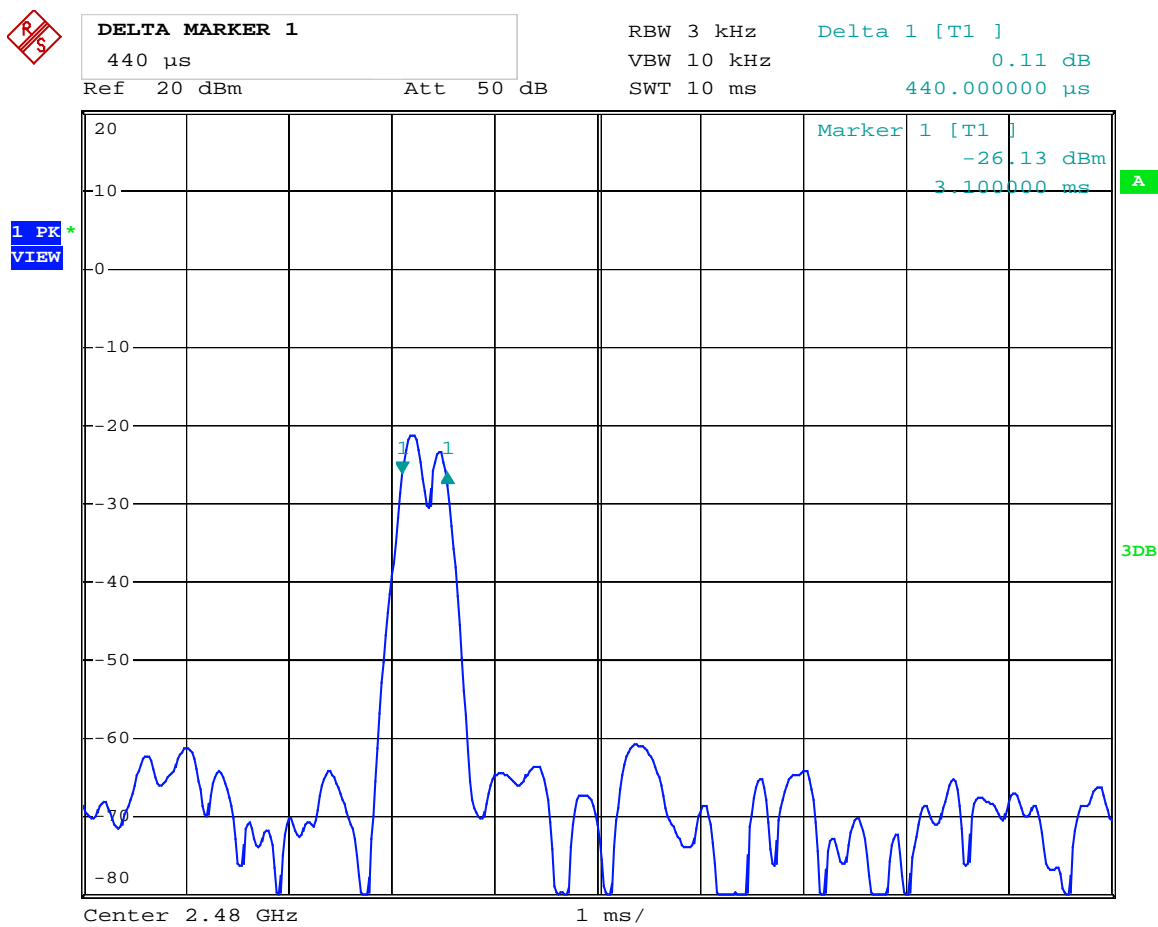
Date: 27.JUN.2008 22:23:52

Channel Middle :



Date: 27.JUN.2008 22:26:18

Channel High :



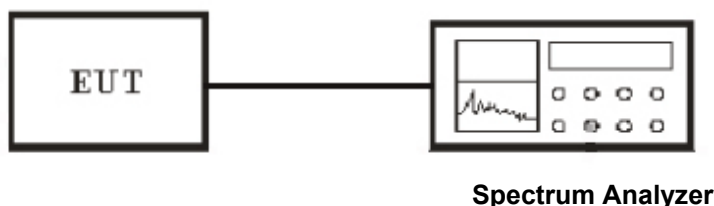
Date: 27.JUN.2008 22:21:57

10. Test of Maximum Peak Output Power

10.1 Applicable Standard

Section 15.247(b)(1): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels and The maximum peak output power shall not exceed 1 watt. For all other frequency hopping systems in this frequency band, The maximum peak output power shall not exceed 0.125 watt.

10.2 EUT Setup



10.3 Test Equipment List and Details

See section 2.4.

10.4 Test Procedure

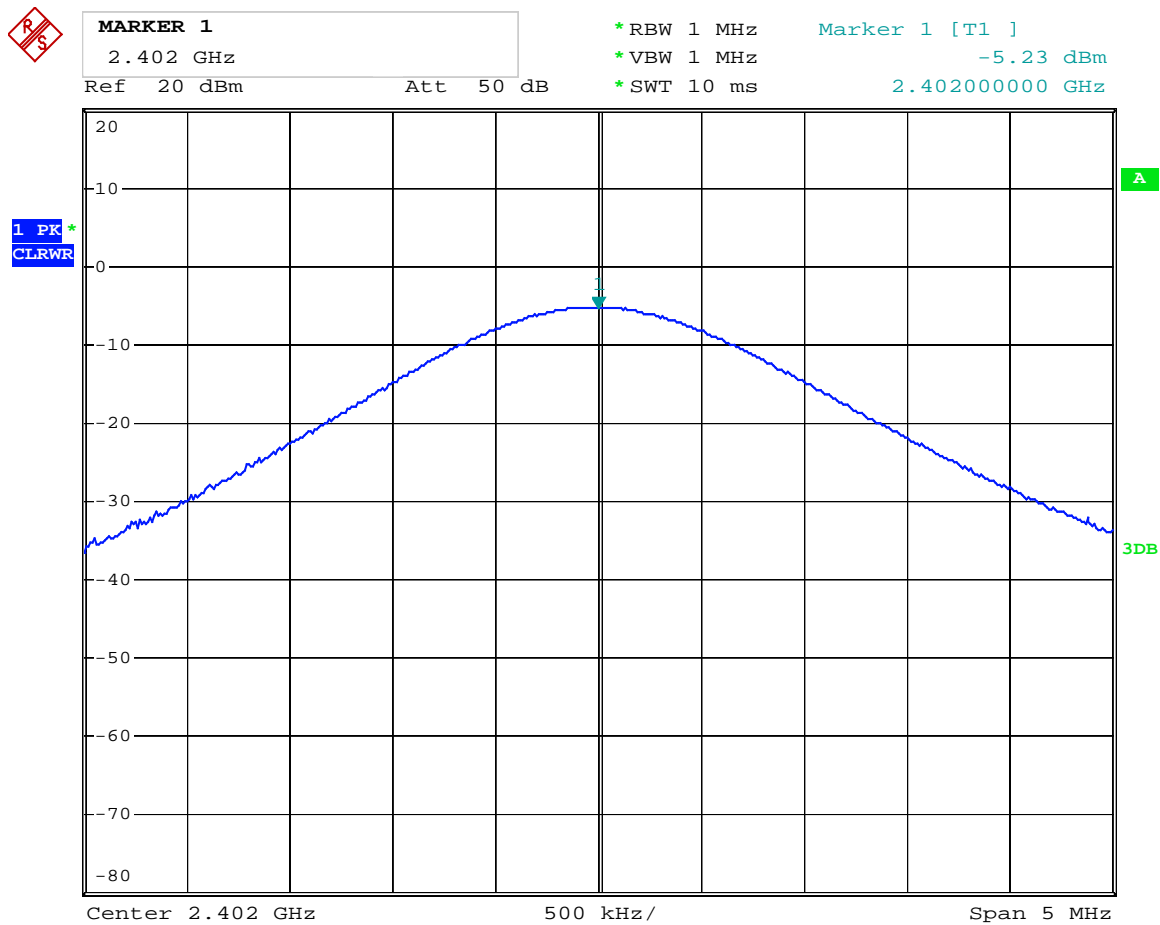
1. The transmitter output was connected to the peak power meter and recorded the peak value.
2. Peak power meter parameter set to auto attenuator and filter is the same as.
3. Repeated the 1 for the middle and highest channel of the EUT.

10.5 Test Result

Temperature (°C) : 22~23	EUT: GPS-AV8OR
Humidity (%RH) : 50~54	M/N: 066-01207-0099
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode

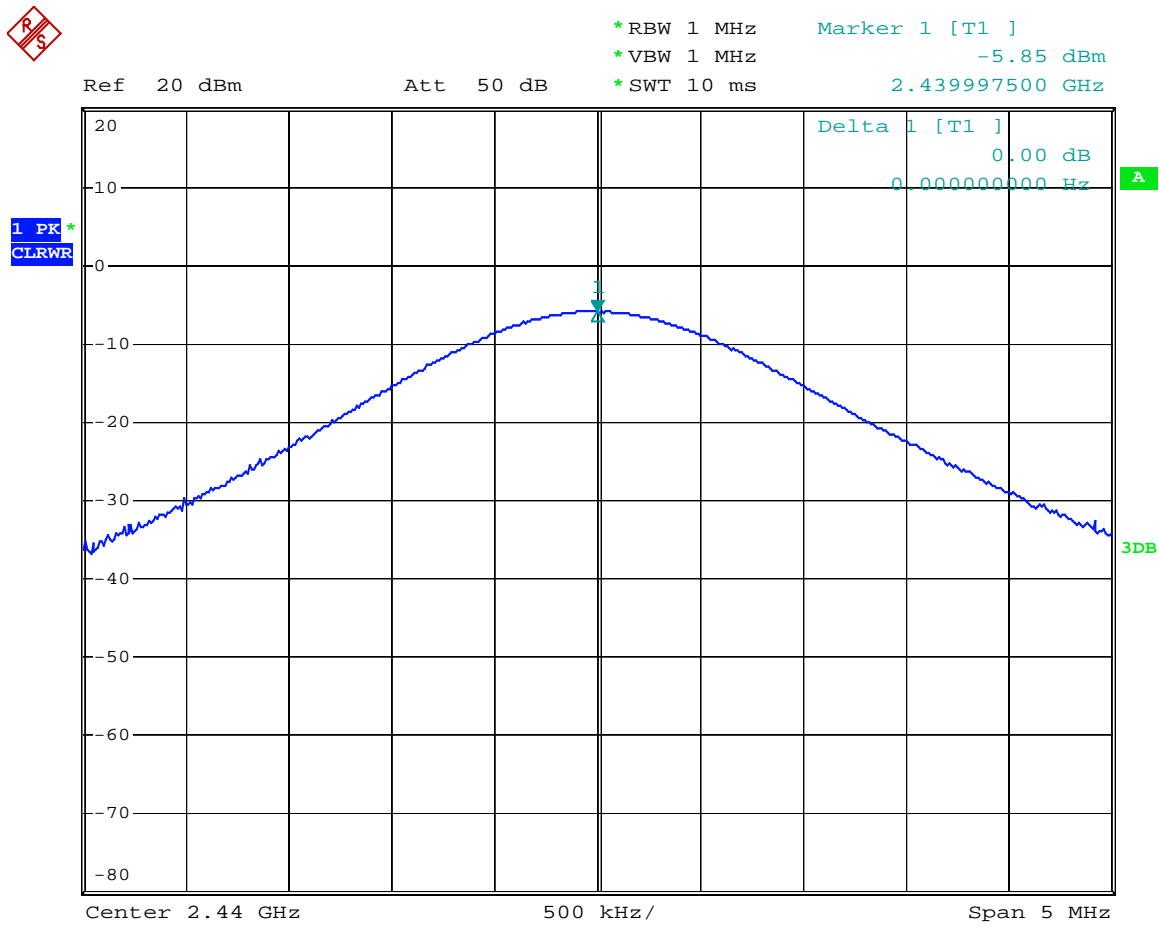
Modulation Type	Channel No.	Frequency (MHz)	Output Power (dBm)	Limits (dBm)	Margin (dB)
FHSS	Low	2402.00	-5.23	20.9	26.13
FHSS	Middle	2440.00	-5.85	20.9	26.75
FHSS	High	2480.00	-6.24	20.9	27.14

Channel Low :



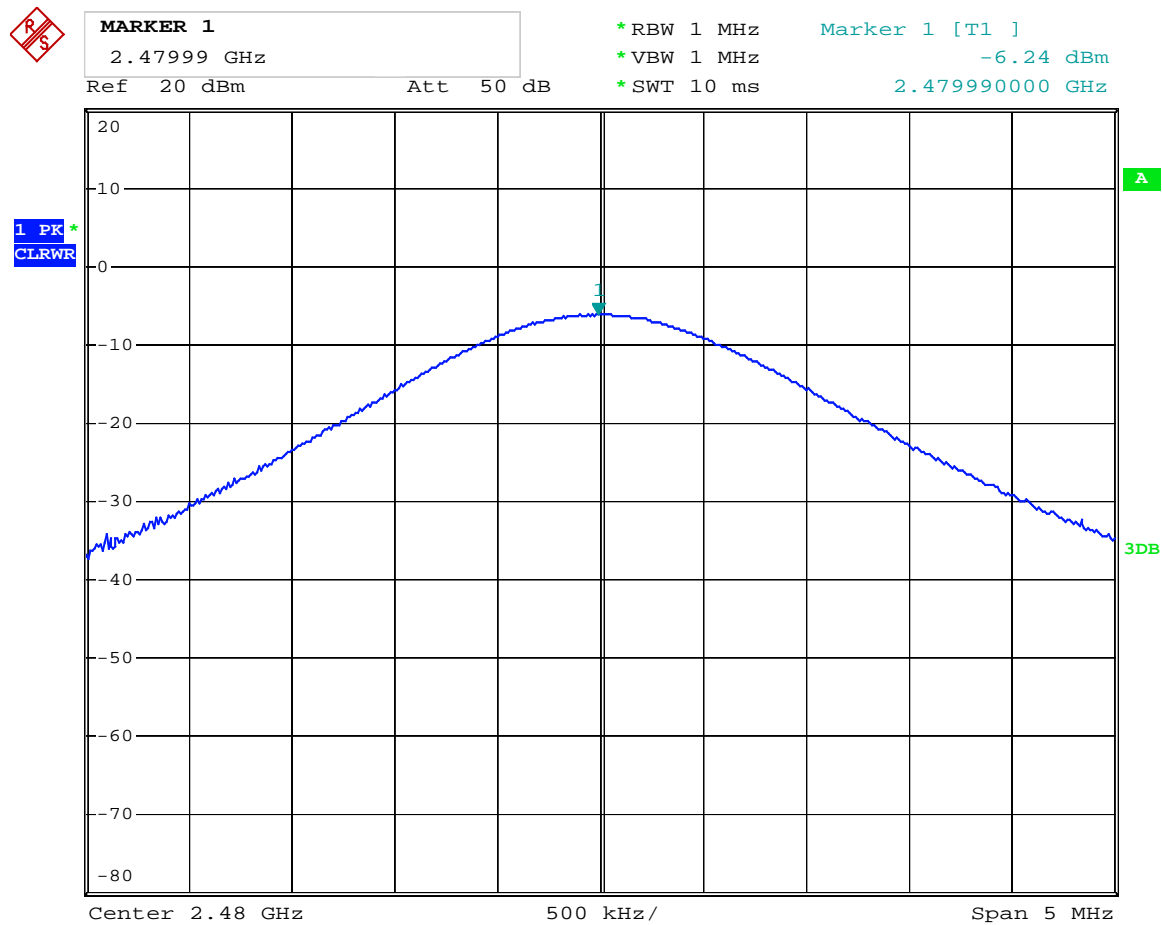
Date: 27.JUN.2008 22:36:46

Channel Middle :



Date: 27.JUN.2008 22:35:40

Channel High :



Date: 27.JUN.2008 22:37:52

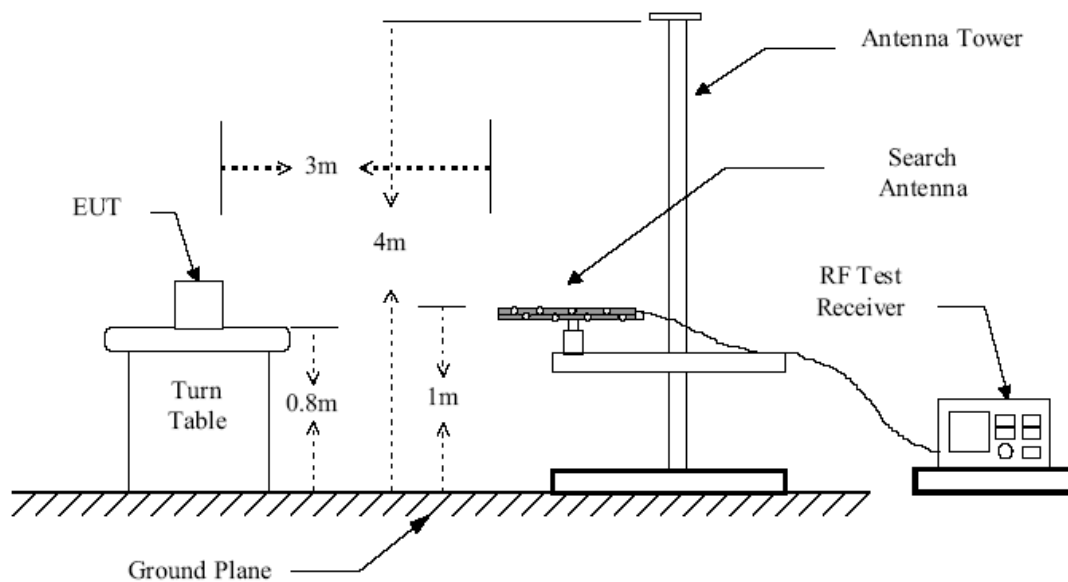
11. Test of Band Edges Emission

11.1 Applicable Standard

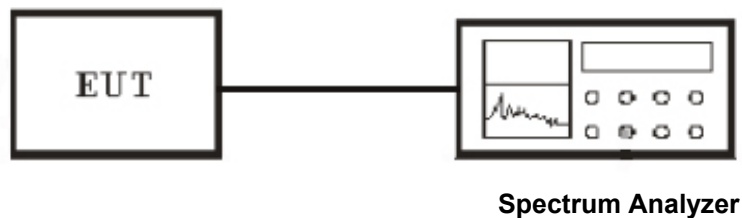
Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions that fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209.

11.2 EUT Setup

Radiated Measurement Setup



Conducted Measurement Setup



11.3 Test Equipment List and Details

See section 2.4.

11.4 Test Procedure

Conducted Measurement

1. The transmitter is set to the lowest channel.
2. The transmitter output was connected to the spectrum analyzer via a cable and cable loss is used as the offset of the spectrum analyzer.
3. Set both RBW and VBW of spectrum analyzer to 100KHz with convenient frequency span including 100MHz bandwidth from lower band edge. Then detector set to peak and max hold this trace.
4. The lowest band edges emission was measured and recorded.
5. The transmitter set to the highest channel and repeated 2~4.

Radiated Measurement

1. Configure the EUT according to ANSI C63.4.
2. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization.
4. For band edge emission, the antenna tower was scan (from 1 M to 4 M) and then the turn table was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. For band edge emission, use 10Hz VBW and 1MHz RBW for reading under AV and use 1MHz VBW and 1MHz RBW for reading under PK.

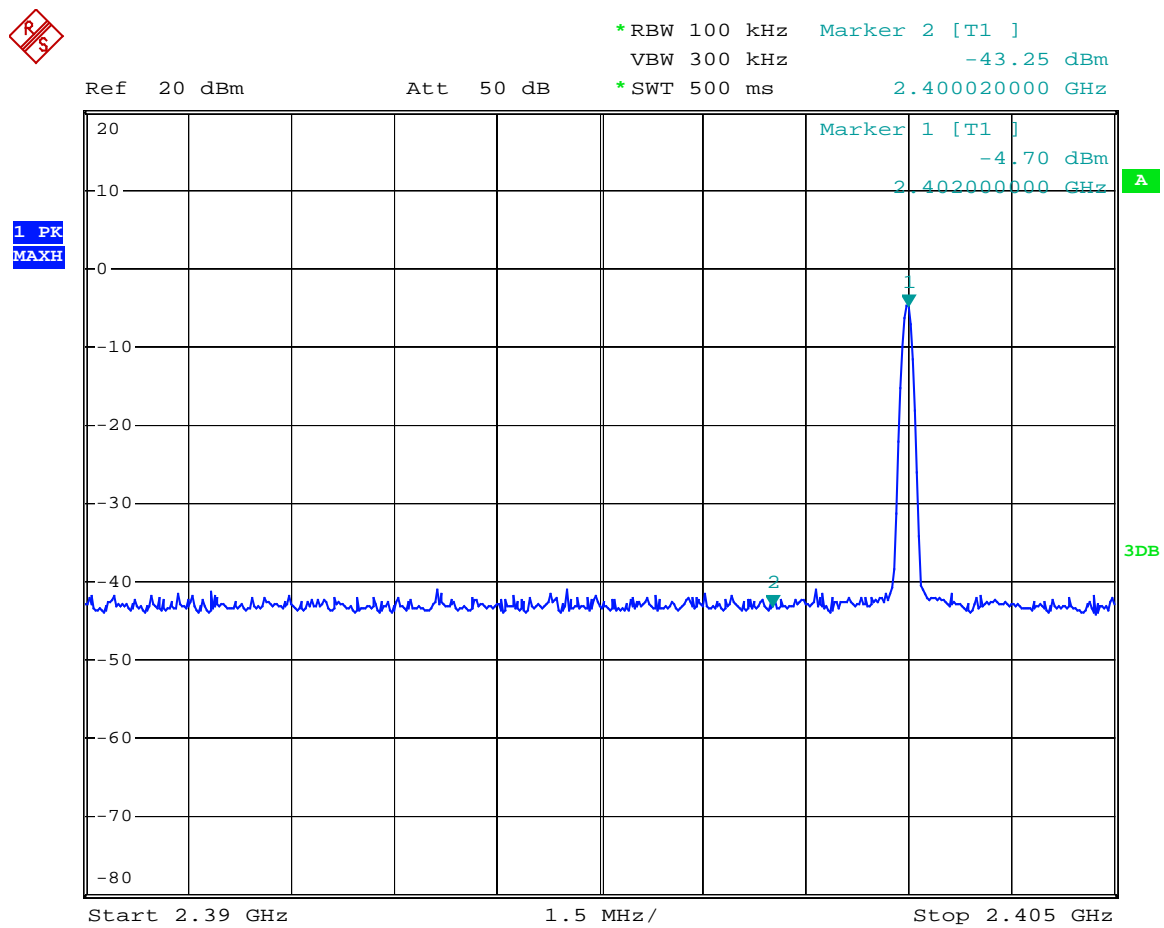
11.5 Test Result

Temperature (°C) : 22~23	EUT: GPS-AV8OR
Humidity (%RH) : 50~54	M/N: 066-01207-0099
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode

Radiated Test Result

Frequency (MHz)	Antenna Polarization	Emission Read Value (dB μ V/m)	Limits (dB μ V/m)
<2400	H	26.98	54
>2483.5	H	27.51	54

Conducted Test Result



Date: 27.JUN.2008 22:06:33

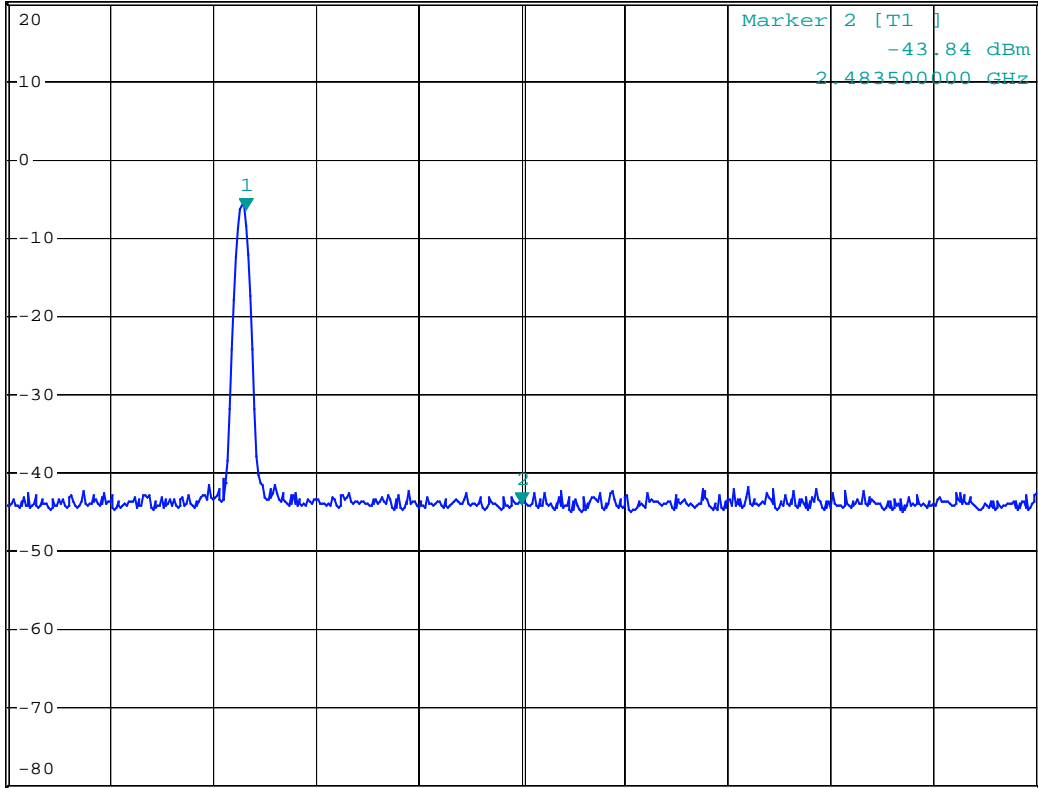


MARKER 1
2.480016 GHz

Ref 20 dBm Att 50 dB

*RBW 100 kHz Marker 1 [T1]
VBW 300 kHz -6.41 dBm
*SWT 500 ms 2.480016000 GHz

1 PK
VIEW



Start 2.477 GHz 1.3 MHz/ Stop 2.49 GHz

Date: 27.JUN.2008 22:08:07

12. Test of Spurious Radiated Emission

12.1 Applicable Standard

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions that fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209.

12.2 EUT Setup

Radiated Measurement Setup

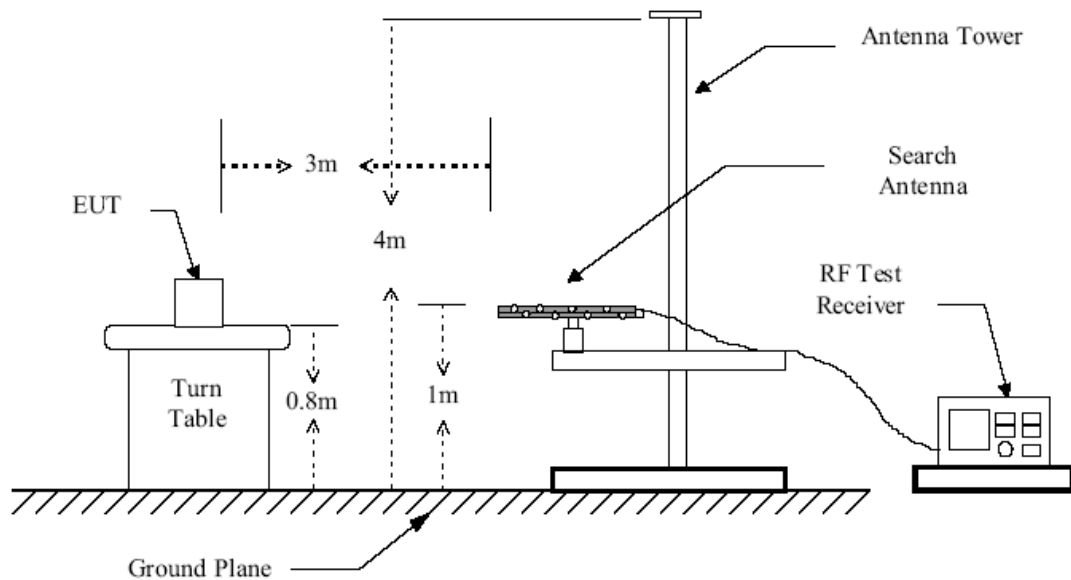


Figure 1 : Frequencies measured below 1 GHz configuration

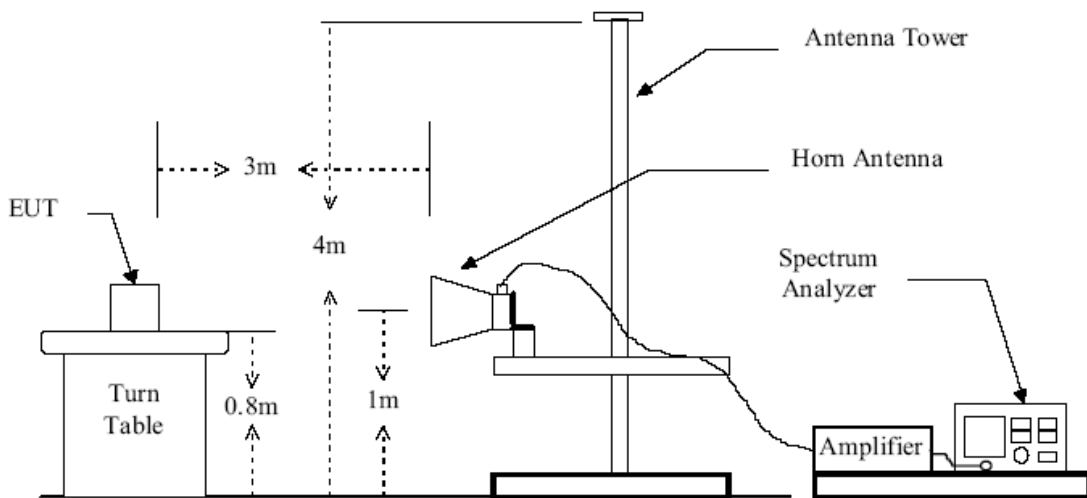
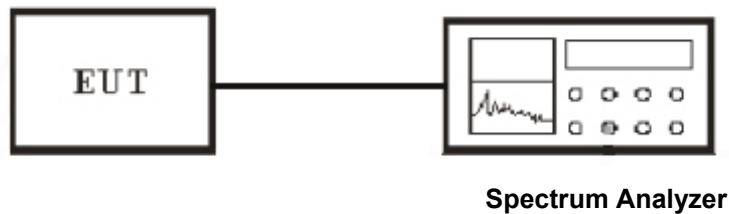


Figure 2 : Frequencies measured above 1 GHz configuration

Conducted Measurement Setup



12.3 Test Equipment List and Details

See section 2.4.

12.4 Test Procedure

Radiated Measurement

1. Configure the EUT according to ANSI C63.4.
2. The EUT was placed on the top of the turntable 0.8 meter above ground.
3. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
4. Power on the EUT and all the supporting units.
5. The turntable was rotated by 360 degrees to determine the position of the highest radiation.

6. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization.
7. For each suspected emission, the antenna tower was scanned (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
8. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.

Conducted Measurement

1. For emission above 1GHz,conducted measurement method is used.
2. The transmitter is set to the lowest channel.
3. The transmitter output was connected to the spectrum analyzer via a cable and cable loss is used as the offset of the spectrum analyzer.
4. Set RBW to 1 MHz and VBW to 3 MHz, Then detector set to peak and max hold this trace.
5. The lowest band edges emission was measured and recorded.
6. The transmitter set to the highest channel and repeated 2~4.

12.5 Test Result

Temperature (°C) : 22~23	EUT: GPS-AV8OR
Humidity (%RH) : 50~54	M/N: 066-01207-0099
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx & Rx & Charging & MP3 playing & SD card reading

Spurious Emission (30~1000MHz)

Remark: (1) The EUT was respectively set to Transmitting, Receiving, Charging, MP3 playing and SD card reading modes and measured in these modes.
 (2) In above test modes, the charging mode used car charger is the worst. Only the measured data in the worst test mode was showed below.

Maximum Frequency (MHz)	Polarity and Level				Limit	Margin
	Polarity	Value dBμV/m	Transd	Result dBμV/m	dBμV/m	dBμV/m
90.14	V	47.41	15.29	32.12	43.50	11.38
151.69	V	45.00	16.43	28.57	43.50	14.93
328.76	V	38.54	12.56	25.98	46.00	20.02
401.51	V	42.60	10.83	31.77	46.00	14.23
500.45	V	38.50	9.76	28.74	46.00	17.26
882.63	V	36.58	3.91	32.67	46.00	13.33
104.69	H	45.93	14.74	31.19	43.50	12.31
214.30	H	41.87	16.02	25.85	43.50	17.65
350.10	H	36.71	11.98	24.73	46.00	21.27
401.51	H	48.25	10.83	37.42	46.00	8.58
447.10	H	40.67	10.44	30.23	46.00	15.77
622.67	H	40.94	7.97	32.97	46.00	13.03
Remark: Transd.=Antenna Factor+Cable Loss-Pre-amplifier						

Harmonics

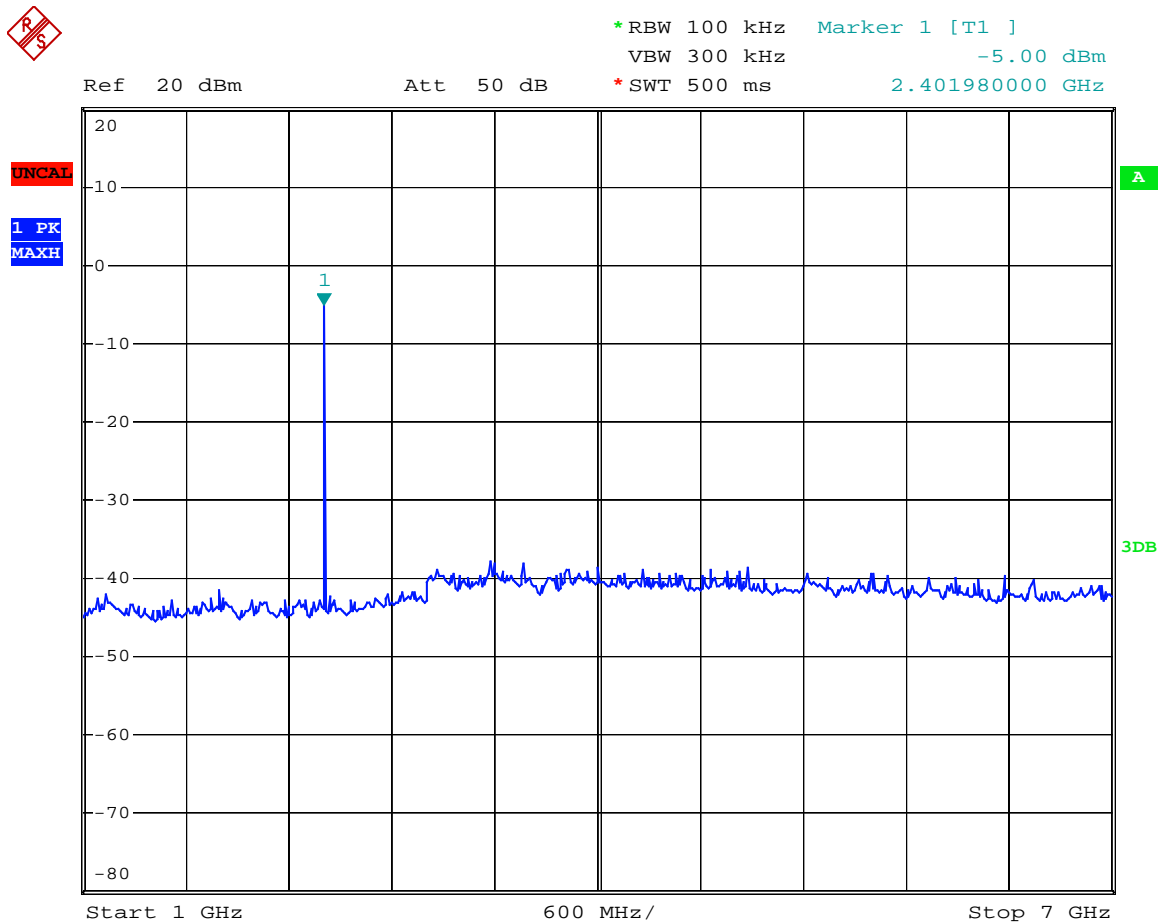
Channel Low								
Maximum Frequency (MHz)	Polarity and Level				Limit (dBµV/m)		Margin (dBµV/m)	
	Polarity	Value dBµV/m	Transd	Result dBµV/m	Peak	AV	Peak	AV
4804.0	H	48.0	24.2	23.8	74.0	54.0	50.2	30.2
4804.0	V	49.5	24.4	25.1	74.0	54.0	48.9	28.9
7206.0	H	48.6	24.6	24.0	74.0	54.0	50	30
7206.0	V	50.0	24.8	25.2	74.0	54.0	48.8	28.8
9608.0	---	---	---	---	---	---	---	---
9608.0	---	---	---	---	---	---	---	---
12010.0	---	---	---	---	---	---	---	---
14412.0	---	---	---	---	---	---	---	---
16814.0	---	---	---	---	---	---	---	---
19216.0	---	---	---	---	---	---	---	---
21618.0	---	---	---	---	---	---	---	---
24020.0	---	---	---	---	---	---	---	---
Remark: 1. Transd.=Antenna Factor+Cable Loss-Pre-amplifier 2. Datas of measurement within this frequency range shown “-” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.								

Channel Middle								
Maximum Frequency (MHz)	Polarity and Level				Limit (dB μ V/m)		Margin (dB μ V/m)	
	Polarity	Value dB μ V/m	Transd	Result dB μ V/m	Peak	AV	Peak	AV
4880.0	H	48.3	24.1	24.2	74.0	54.0	49.8	29.8
4880.0	V	49.2	24.6	24.6	74.0	54.0	49.4	29.4
7320.0	H	50.7	24.9	25.8	74.0	54.0	48.2	28.2
7320.0	V	51.0	24.7	26.3	74.0	54.0	47.7	27.7
9760.0	---	---	---	---	---	---	---	---
9760.0	---	---	---	---	---	---	---	---
12200.0	---	---	---	---	---	---	---	---
14640.0	---	---	---	---	---	---	---	---
17080.0	---	---	---	---	---	---	---	---
19520.0	---	---	---	---	---	---	---	---
21960.0	---	---	---	---	---	---	---	---
24410.0	---	---	---	---	---	---	---	---
Remark: 1. Transd.=Antenna Factor+Cable Loss-Pre-amplifier 2. Datas of measurement within this frequency range shown “-” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.								

Channel High								
Maximum Frequency (MHz)	Polarity and Level				Limit (dB μ V/m)		Margin (dB μ V/m)	
	Polarity	Value dB μ V/m	Transd	Result dB μ V/m	Peak	AV	Peak	AV
4960.0	H	49.3	24.1	25.2	74.0	54.0	48.8	28.8
4960.0	V	50.2	24.5	25.7	74.0	54.0	48.8	28.3
7440.0	H	49.8	24.6	25.2	74.0	54.0	48.8	28.8
7440.0	V	52.4	24.8	27.6	74.0	54.0	46.4	26.4
9920.0	---	---	---	---	---	---	---	---
9920.0	---	---	---	---	---	---	---	---
12400.0	---	---	---	---	---	---	---	---
14880.0	---	---	---	---	---	---	---	---
17360.0	---	---	---	---	---	---	---	---
19840.0	---	---	---	---	---	---	---	---
22320.0	---	---	---	---	---	---	---	---
24800.0	---	---	---	---	---	---	---	---
Remark: 1. Transd.=Antenna Factor+Cable Loss-Pre-amplifier 2. Datas of measurement within this frequency range shown “-” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.								

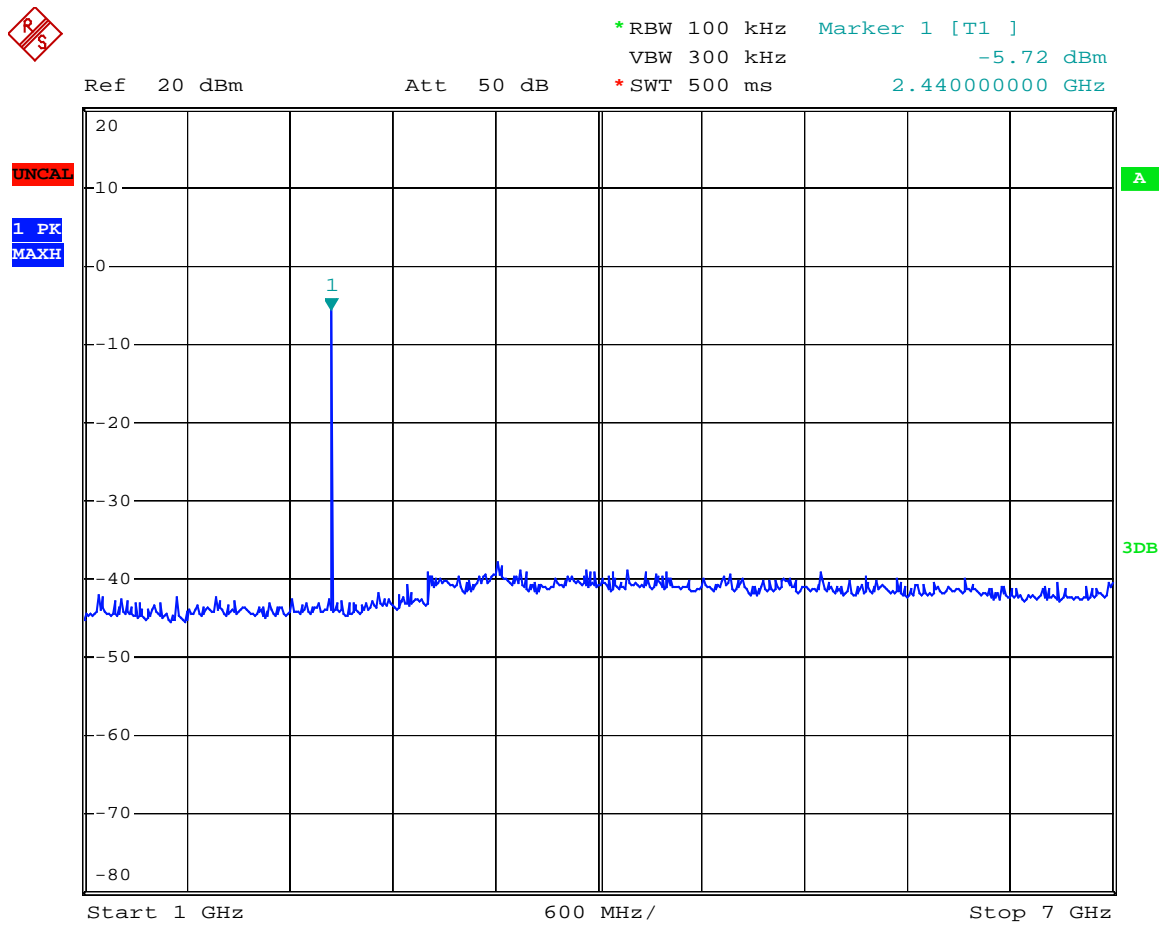
CONDUCTED TEST RESULT(1~7GHz)

Channel Low :



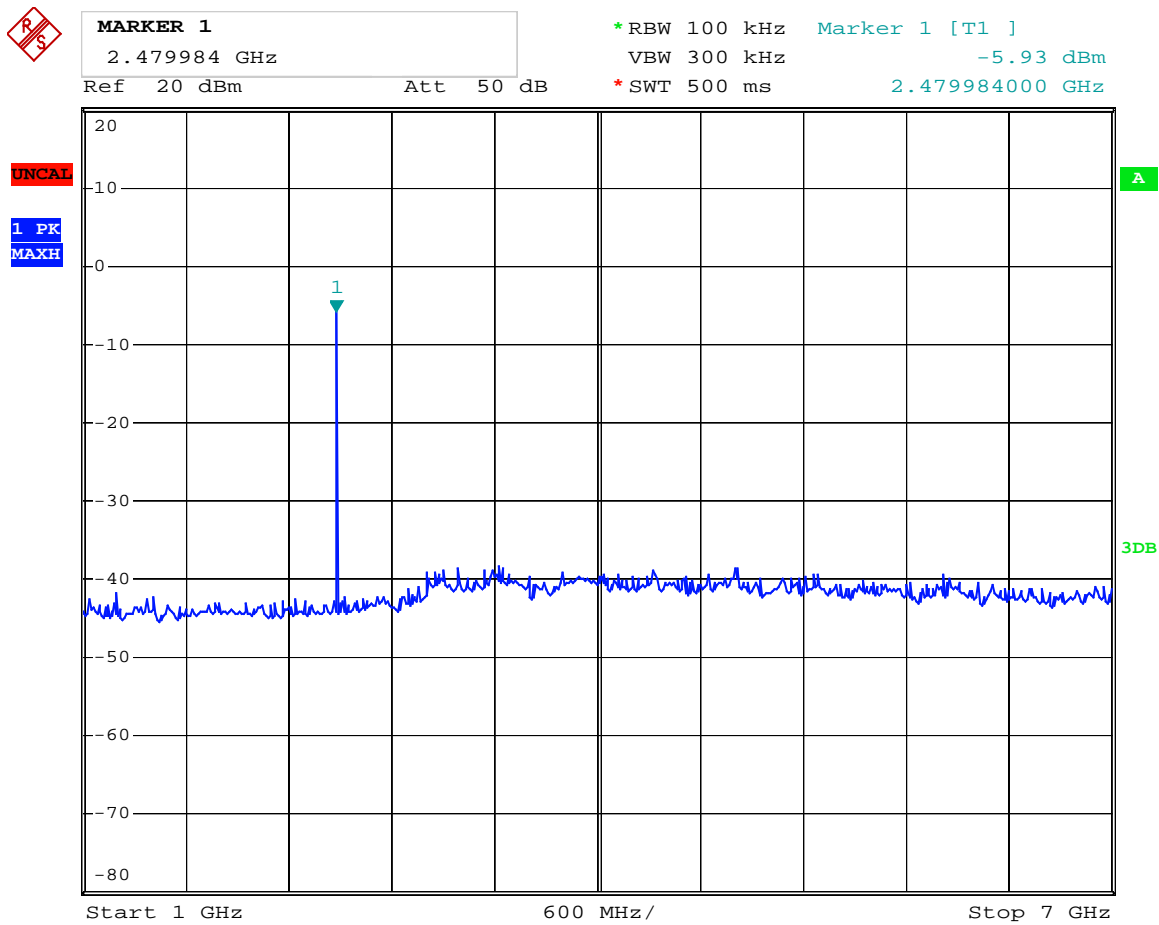
Date: 27.JUN.2008 22:04:23

Channel Middle :



Date: 27.JUN.2008 22:04:54

Channel High :



Date: 27.JUN.2008 22:02:10

CONDUCTED TEST RESULT (7~26GHz)



REN 100 kHz

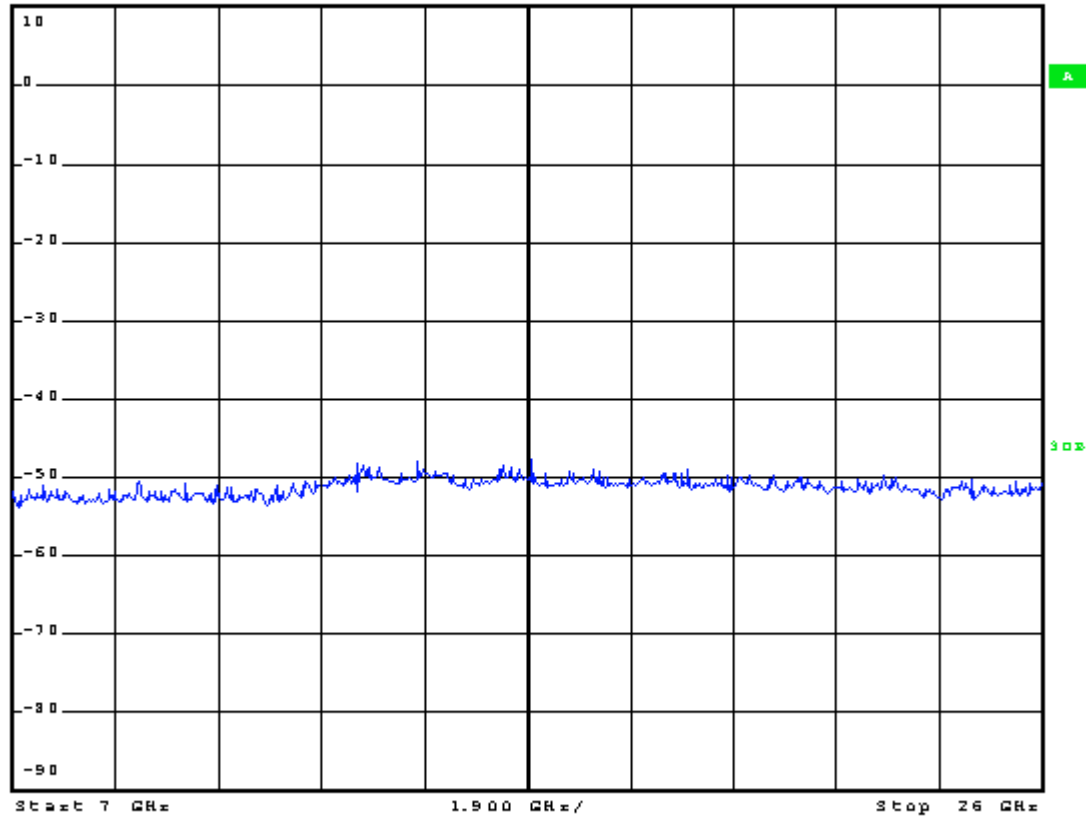
VEN 300 kHz

SWT 600 ms

Ref 10 dBm

Att 40 dB

100
VIEW



Date: 26 JUN 2008 9:42:39