

# CFR 47 FCC Part 15.247

## TEST REPORT

Product : **NoteBook PC**

Trade Name : MTC; Getac

Model Number : 9213XY (X=0~9, Y=A~Z)

FCC ID : MAU9213H

Prepared for

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**Remark :**

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The test results in the report only to the tested sample.

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# Statement of Compliance

**Applicant:** MiTAC Technology Corp.  
**Manufacturer:** Getac Technology (Kunshan) Co., Ltd.  
**EUT Description:** NoteBook PC  
**Model No.:** 9213XY (X=0~9, Y=A~Z)  
**Tested Power Supply:** 120Vac, 60Hz  
**Date of Final Test:** Sep. 19, 2008

**Configuration of Measurements and Standards Used :**

FCC Rules and Regulations Part 15 Subpart C

I HEREBY CERTIFY THAT: The data shown in this report were made in accordance with the procedures given in ANSI C63.4, and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

**Note:**

1. The result of the testing report relate only to the item tested.
2. The testing report shall not be reproduced except in full, without the written approval of IETC

Report Issued: 2008/09/25

Project Engineer: Anya Lee Approved: Jerry Liu  
Anya Lee Jerry Liu

## 1 General Information

### 1.1 Description of Equipment Under Test

<b>Product</b>	: NoteBook PC				
<b>Model Number</b>	: 9213XY (X=0~9, Y=A~Z)				
<b>Applicant</b>	: <b>MiTAC Technology Corp.</b> 4F, No.1, R&D Road 2, Hsinchu Science-Based Industrial Park, Hsinchu, Taiwan, R.O.C.				
<b>Manufacturer</b>	: <b>Getac Technology (Kunshan) Co., Ltd.</b> Kunshan Export Processing Zone, 215300 Jiangsu, P.R.China				
<b>Power Supply</b>	: Manufacturer: Delta, M/N: SADP-65KB BBVF Input: 100-240Vac, 50-60Hz, 1.5A Power cord: <input checked="" type="checkbox"/> Non-shielded <input type="checkbox"/> Detachable, 1.8 m <input checked="" type="checkbox"/> w/o core Output: 19Vdc, 3.42A Power cable: <input checked="" type="checkbox"/> Non-shielded <input type="checkbox"/> Un-detachable, 1.8m <input checked="" type="checkbox"/> with core				
<b>Operating Frequency</b>	: 2402MHz ~ 2480MHz				
<b>Channel Number</b>	: 79 channels				
<b>Type of Modulation</b>	: GFSK ; $\pi/4$ DQPSK ; 8DPSK				
<b>Antenna description</b>	: This device uses PIFA antenna. <table border="1"><tr><td>Antenna Gain</td><td>: 1.85dBi</td></tr><tr><td>Connector type</td><td>: U.FL</td></tr></table>	Antenna Gain	: 1.85dBi	Connector type	: U.FL
Antenna Gain	: 1.85dBi				
Connector type	: U.FL				
<b>Sample Receive date</b>	: Aug. 28, 2008				
<b>Date of Test</b>	: Aug. 28 ~ Sep. 19, 2008				
<b>Additional Description</b>	: 1) The EUT is <b>NoteBook PC</b> . 2) All model included in this report, the difference is for different market; the rest parts are identical. 3) The Model Number “ <b>9213XY</b> ” is representative selected in the test and included in this report.				

## 1.2 Technical Specifications

Key parts	SKU A
CPU	Intel, U9400, 1.4G
Memory	QIMONDA, HYS64T256020EDL-2.5-C2, 2GB
DDR2 on Board	Hynix, HYSPS1G831C FP-S6*8, 1G
LCD Monitor	Toshiba, PI-LTD133EWDA (LED)-V02
HDD	SATA, Fujitsu, MHZ2160BH, 160GB
ODD	Panasonic, Ultra light, UJ-862A
Bluetooth	AW-BT252, 2.1VERSION
Wireless LAN	Intel® Wi-Fi Link 5300 Minicard 533AN MMW
3G	Sierra 8790
Webcam	Azurewave w/z Mic Arry
AC/DC Adapter	Delta, SADP-65KB BBVF
Battery	6 cell

### Bluetooth Module Information (Manufacturer: Azurewave, Model No.: AW-BT252)

Bluetooth Standard	Bluetooth v2.1 Standard
Host Interface	8 pin connector
Major Chipset	Broadcom BCM2046
Dimension	30.61*14.02 mm
Antenna Interface connector	U.FL-IPEX (FOXCONN 20279-001E-01)
Integrated Antenna	SMA Connector
Frequency Range	2402MHz~2480MHz
Modulation	Header GFSK, Payload 2M: $\pi/4$ DQPSK, Payload 3M: 8DPSK
Output Power	Typical 2.5 $\pm$ 1dBm on antenna port
Receive Sensitivity	-80dBm
Power Consumption	Tx continue mode: 46~49mA Idle: 10~13mA suspend: 0~3A
Operating Range	10m~20m (depending on environment and NB model)

### 1.3 Table for Carrier Frequencies

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402 MHz	31	2432 MHz	61	2462 MHz
2	2403 MHz	32	2433 MHz	62	2463 MHz
3	2404 MHz	33	2434 MHz	63	2464 MHz
4	2405 MHz	34	2435 MHz	64	2465 MHz
5	2406 MHz	35	2436 MHz	65	2466 MHz
6	2407 MHz	36	2437 MHz	66	2467 MHz
7	2408 MHz	37	2438 MHz	67	2468 MHz
8	2409 MHz	38	2439 MHz	68	2469 MHz
9	2410 MHz	39	2440 MHz	69	2470 MHz
10	2411 MHz	40	2441 MHz	70	2471 MHz
11	2412 MHz	41	2442 MHz	71	2472 MHz
12	2413 MHz	42	2443 MHz	72	2473 MHz
13	2414 MHz	43	2444 MHz	73	2474 MHz
14	2415 MHz	44	2445 MHz	74	2475 MHz
15	2416 MHz	45	2446 MHz	75	2476 MHz
16	2417 MHz	46	2447 MHz	76	2477 MHz
17	2418 MHz	47	2448 MHz	77	2478 MHz
18	2419 MHz	48	2449 MHz	78	2479 MHz
19	2420 MHz	49	2450 MHz	79	2480 MHz
20	2421 MHz	50	2451 MHz		
21	2422 MHz	51	2452 MHz		
22	2423 MHz	52	2453 MHz		
23	2424 MHz	53	2454 MHz		
24	2425 MHz	54	2455 MHz		
25	2426 MHz	55	2456 MHz		
26	2427 MHz	56	2457 MHz		
27	2428 MHz	57	2458 MHz		
28	2429 MHz	58	2459 MHz		
29	2430 MHz	59	2460 MHz		
30	2431 MHz	60	2461 MHz		

## 1.4 Test Facility

<b>Site Description</b>	:	<input checked="" type="checkbox"/> RF Test Room <input checked="" type="checkbox"/> OATS 2
<b>Name of Firm</b>	:	Intercean EMC Technology Corp.
<b>Company web</b>	:	<a href="http://www.ietc.com.tw">http://www.ietc.com.tw</a>
<b>Site 1, 2 Location</b>	:	No.5-2, Lin 1, Tin-Fu Tsun, Lin-Kou Hsiang, Taipei County, Taiwan, R.O.C.
<b>Site 3, 4 Location</b>	:	No. 12, Ruei-Shu Valley, Ruei-Ping Tsun, Lin-Kou Hsiang, Taipei County, Taiwan, R.O.C.
<b>Site Filing</b>	:	<ul style="list-style-type: none"><li>● Federal Communication Commissions – USA Registration No.: 96399 (OATS 1 &amp; 2) Registration No.: 518958 (OATS 3 &amp; 4)</li><li>● Voluntary Control Council for Interference by Information Technology Equipment (VCCI) – Japan Registration No. (Conducted Room): C-1094 Registration No. (Conducted Room): T-271 Registration No. (OATS 1): R-1040 Registration No. (OATS 2): R-1041</li><li>● Industry Canada (IC) Submission: 113543</li><li>● Japan Electrical Safety &amp; Environment Technology Laboratories (JET) Registration No.: 04S03-01</li></ul>
<b>Site Accreditation</b>	:	<ul style="list-style-type: none"><li>● Bureau of Standards and Metrology and Inspection (BSMI) – Taiwan, R.O.C. Accreditation No.: SL2-IN-E-0026 for CNS13438 / CISPR22 SL2-R1-E-0026 for CNS13439 / CISPR13 SL2-R2-E-0026 for CNS13439 / CISPR13 SL2-A1-E-0026 for CNS13783-1 / CISPR14-1</li><li>● TÜV NORD Certificate No: TNTW0801R</li><li>● Taiwan Accreditation Foundation (TAF) Accreditation No.: 1113</li></ul>



## 1.5 Test Equipment

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
Spectrum Analyzer	R&S	FSP30	100002	2008/12/14
Spectrum Analyzer	Agilent	8564EC	4046A00331	2009/04/11
Preamplifier	Agilent	8449B	3008A01434	2009/03/31
Preamplifier	SCHAFFNER	CA30100	2	2008/10/21
Horn Antenna	COM-POWER	AH-118	10081	2010/05/12
Horn Antenna	Schwarzbeck	BBHA 9120	9120D-583	2008/12/17
Horn Antenna	Schwarzbeck	BBHA 9170	213	2010/06/08
Wide Bandwidth Sensor	Anritsu	MA2491A	728133	2008/10/18
Power Meter	Anritsu	ML2495A	736010	2008/10/28
Temp & Humidity chamber	GIAN FORCE	GTH-150-40-2P-U	MAA0305-012	2009/05/14
Signal Generator	Agilent	E8254A	US41140164	2009/05/21

Note: The above equipments are within the valid calibration period.

## 1.6 Summary of Measurement

Report Clause	Test Parameter	Reference Document CFR47 Part15	Results
2	20dB Bandwidth test	§15.247(a)(1)	Pass
3	Carrier Frequency Separation test	§15.247(a)(1)	Pass
4	Number of hopping frequencies test	§15.247(a)(1)	Pass
5	Time of Occupancy (dwell time) test	§15.247(a)(1)	Pass
6	Maximum Peak output power test	§15.247(b)	Pass
7	RF Conducted spurious emission	§15.247(c)	Pass
8	RF Radiated spurious emission test	§15.205, 15.209	Pass
9	Emission on the Band Edge test	§15.247(d)	Pass
10	AC Power Line Conducted Emission test	§15.247(b)	Pass

## 1.7 Justification

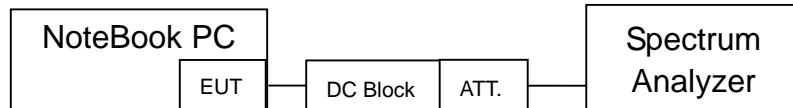
The test of radiated measurements according to FCC Part15 Section 15.33(a) had been conducted and the field strength of the frequency band were all arrive limit requirement, thus we evaluate the EUT pass the specified test.

## 2 20dB Bandwidth test

### 2.1 Limit

No regulation limit, for reference purpose.

### 2.2 Configuration of Measurement



### 2.3 Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

The 20dB bandwidth per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at 100 kHz, the video bandwidth  $\geq$  RBW, and the SPAN may equal to approximately 2 to 3 time the 20dB bandwidth.

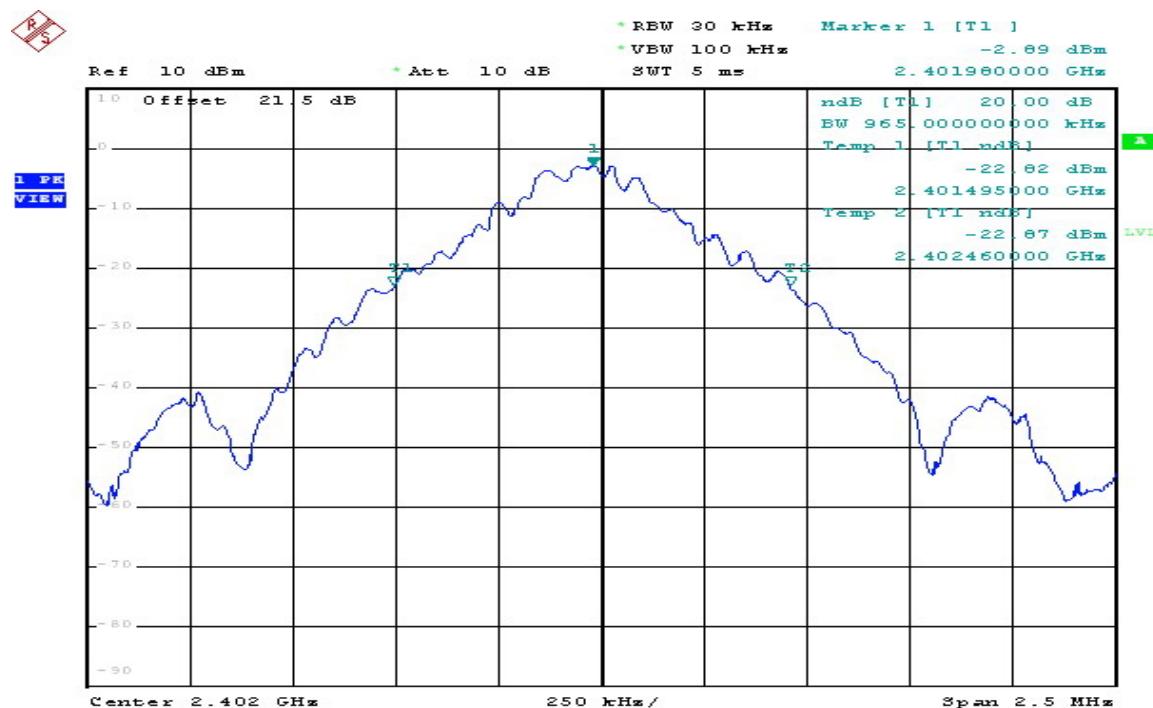
### 2.4 Test Result

**PASS.**

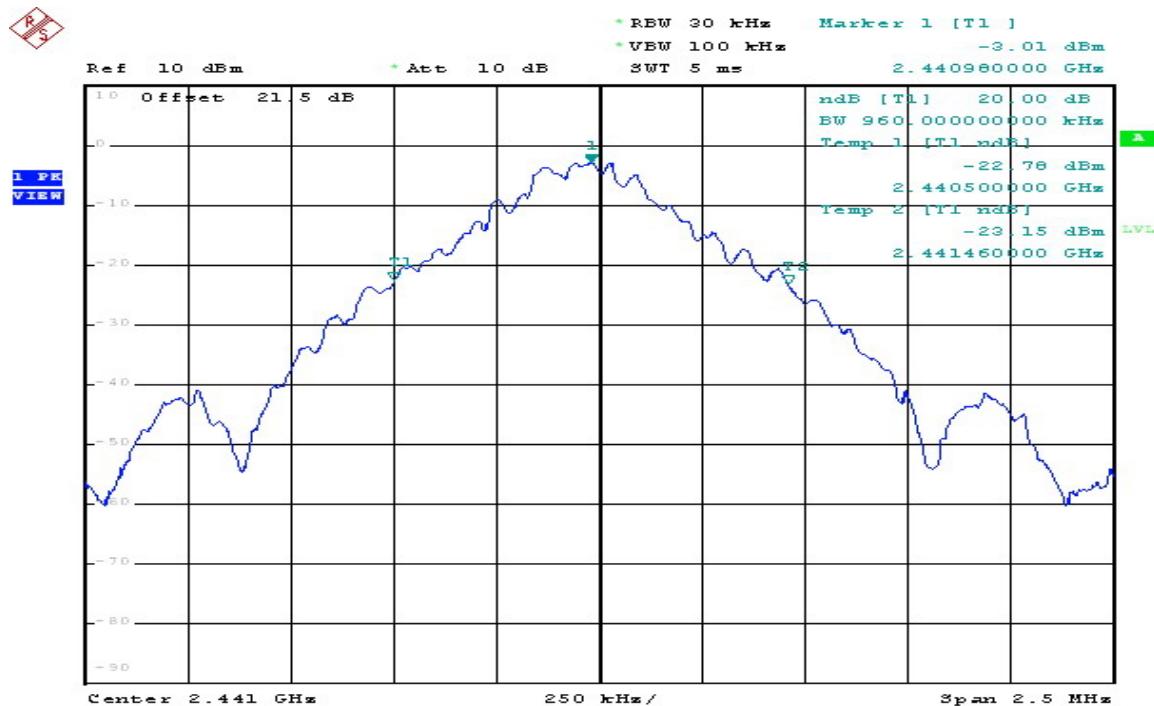
The final test data is shown on as following pages.

<b>Test Mode : GFSK ; <math>\pi/4</math> DQPSK ; 8DPSK</b>			
<b>Test CH</b>		<b>20dB Bandwidth (MHz)</b>	<b>Limit (kHz)</b>
<b>Modulation</b>	<b>Frq. (MHz)</b>		
GFSK	2402	0.97	>500
	2441	0.96	>500
	2480	0.96	>500
$\pi/4$ DQPSK	2402	1.37	>500
	2441	1.37	>500
	2480	1.37	>500
8DPSK	2402	1.35	>500
	2441	1.35	>500
	2480	1.36	>500

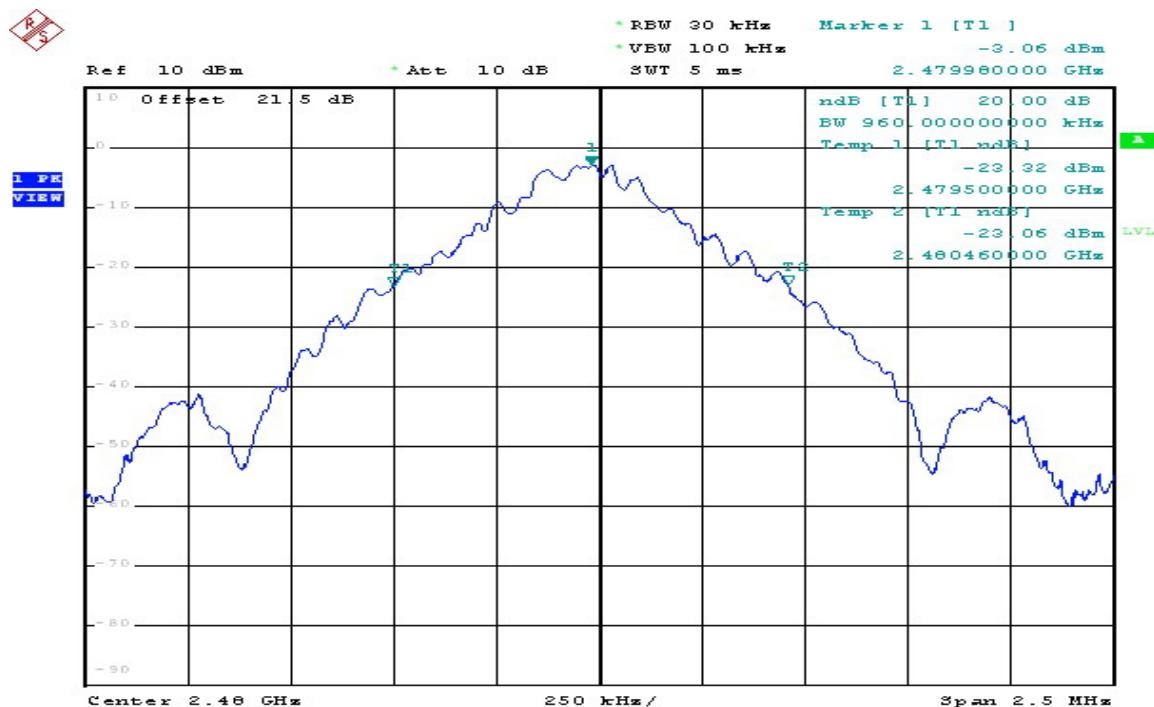
### 2402MHz GFSK 20dB



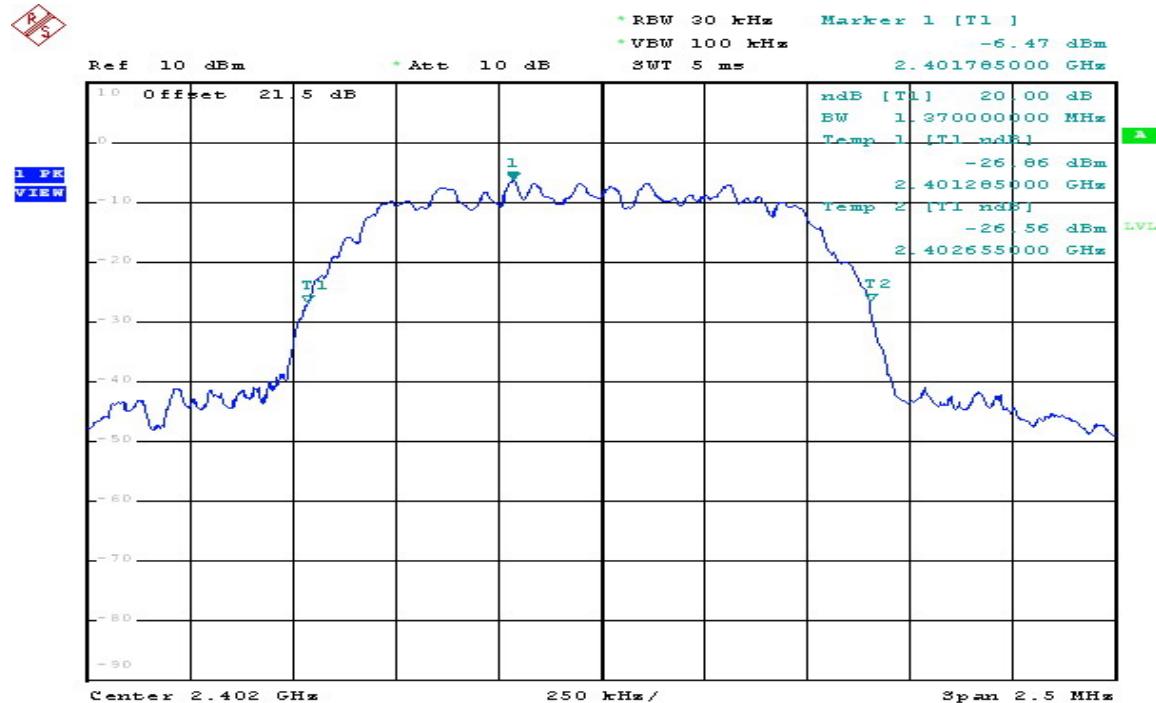
## 2441MHz GFSK 20dB



## 2480MHz GFSK 20dB

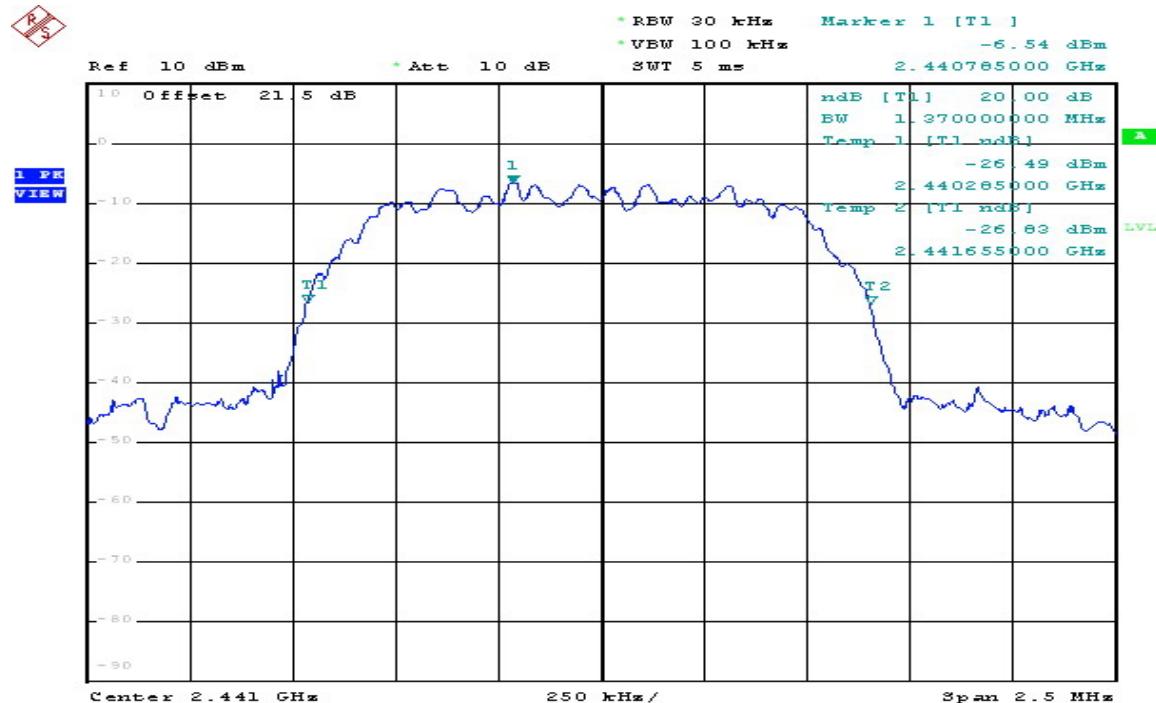


## 2402MHz $\pi/4$ DQPSK 20dB



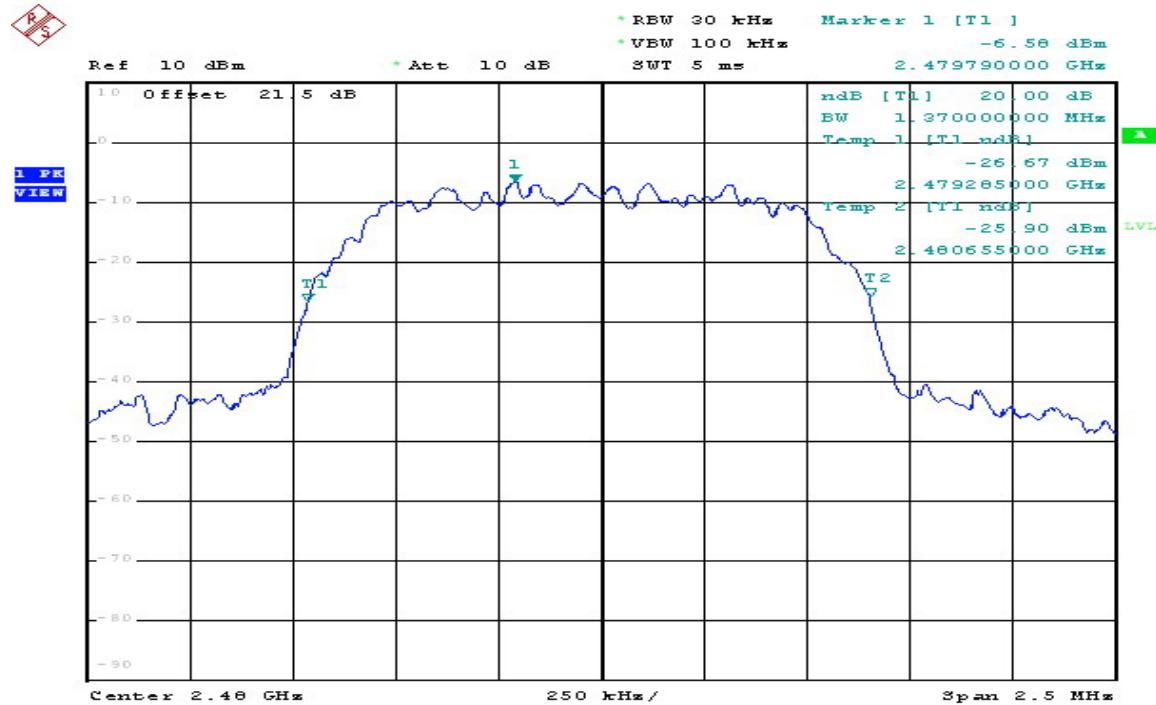
Comment: pi/4 DQPSK 20dB Bandwidth CH1  
Date: 4.SEP.2008 15:59:06

## 2441MHz $\pi/4$ DQPSK 20dB



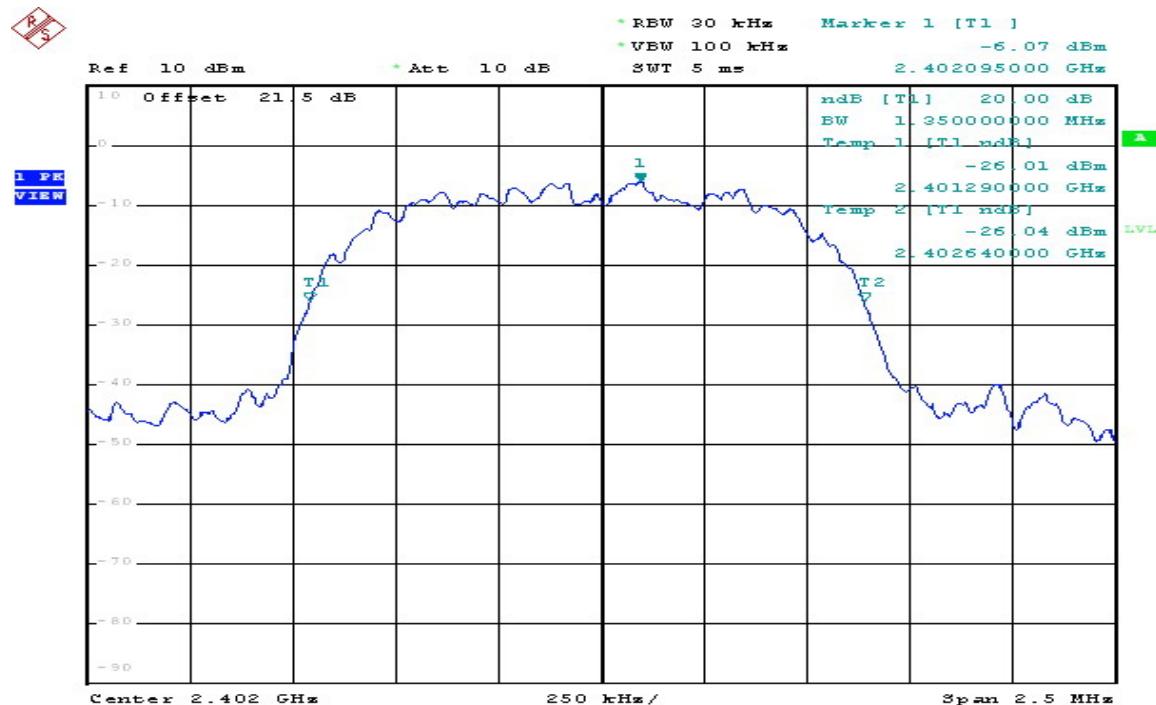
Comment: pi/4 DQPSK 20dB Bandwidth CH40  
Date: 4.SEP.2008 15:58:31

## 2480MHz $\pi/4$ DQPSK 20dB



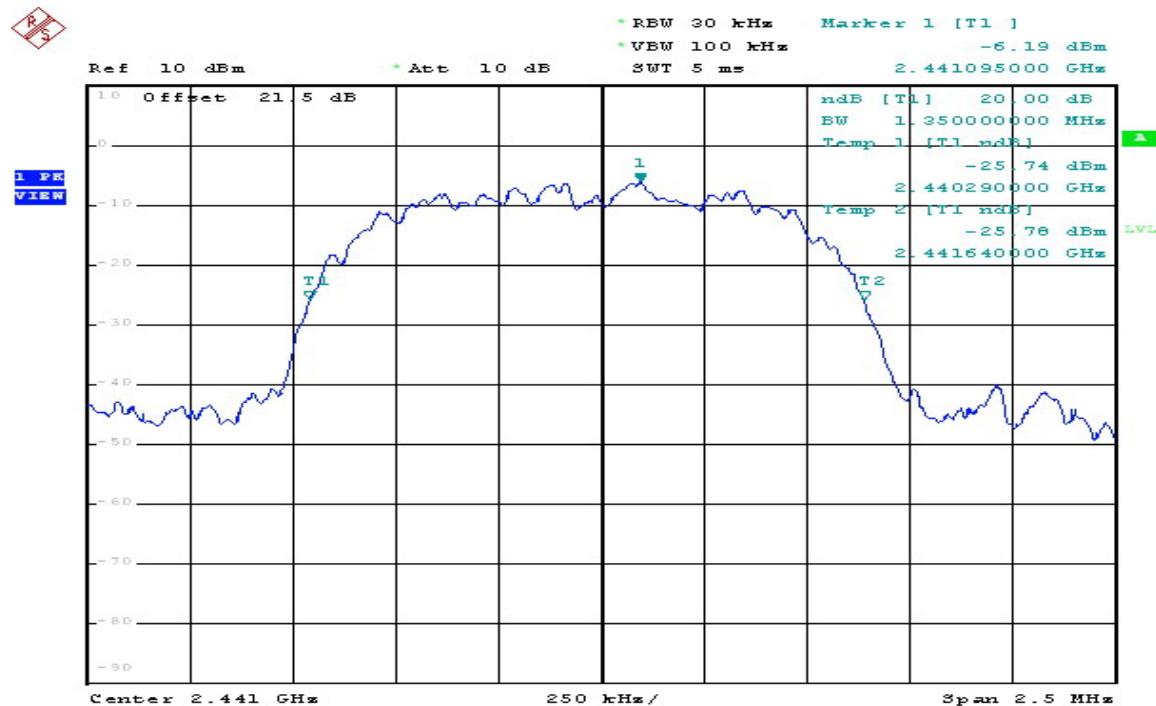
Comment:  $\pi/4$  DQPSK 20dB Bandwidth CH79  
Date: 4.SEP.2008 15:57:47

## 2402MHz 8DPSK 20dB



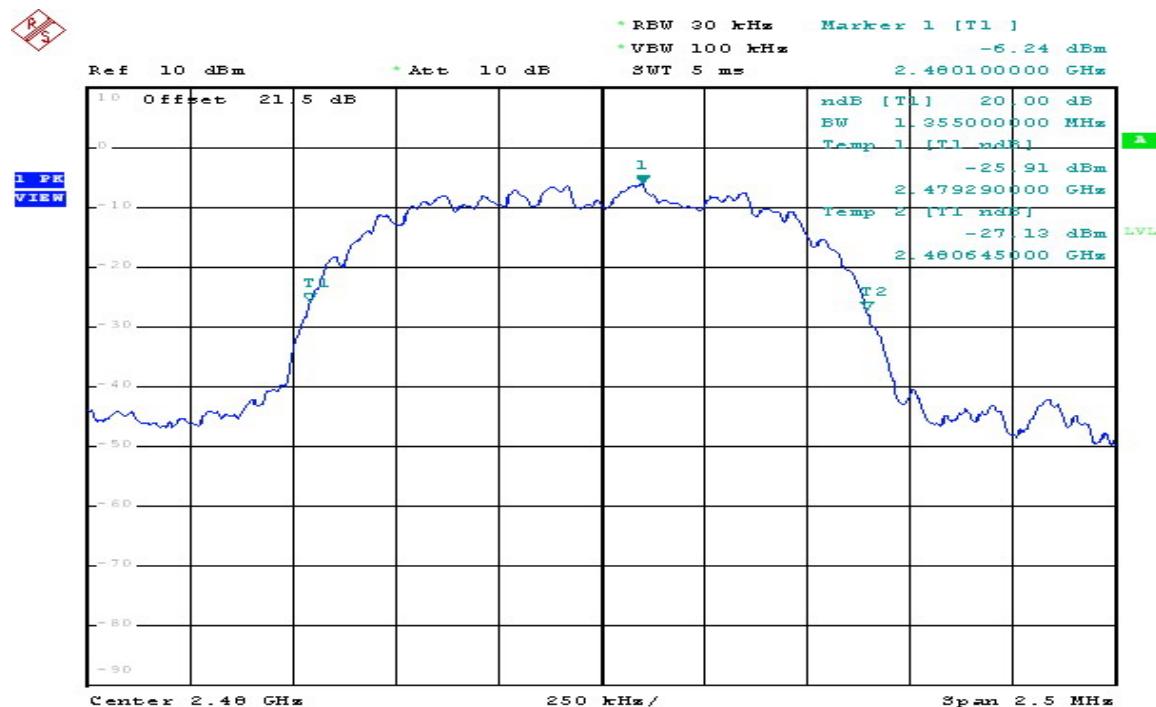
Comment: 8PSK 20dB Bandwidth CH1  
Date: 4.SEP.2008 15:54:17

## 2441MHz 8DPSK 20dB



Comment: 8PSK 20dB Bandwidth CH40  
Date: 4.SEP.2008 15:55:22

## 2480MHz 8DPSK 20dB



Comment: 8PSK 20dB Bandwidth CH79  
Date: 4.SEP.2008 15:56:35

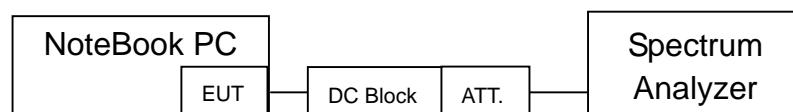
### 3 Carrier Frequency Separation test

#### 3.1 Limit

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

Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125mW.

#### 3.2 Configuration of Measurement



#### 3.3 Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

The carrier frequency separation per FCC Part15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at  $\geq 1\%$  of the span, the video bandwidth  $\geq$  RBW, and the SPAN was wide enough to capture the peaks of two adjacent channels.

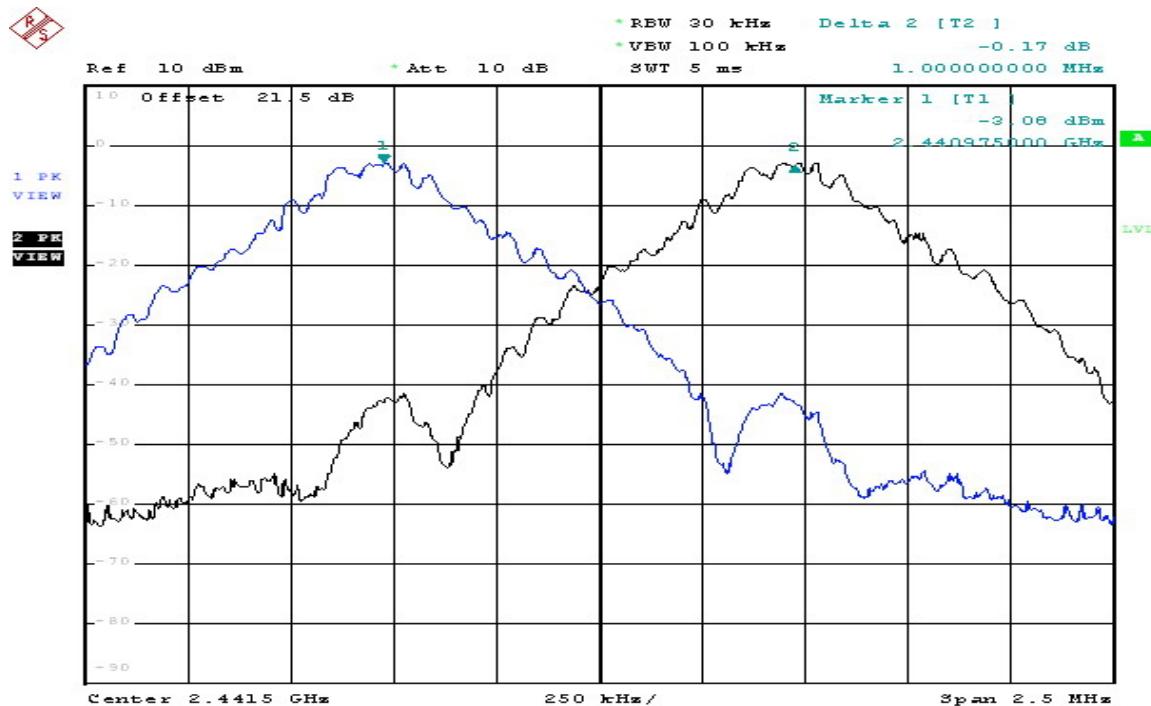
#### 3.4 Test Result

**PASS.**

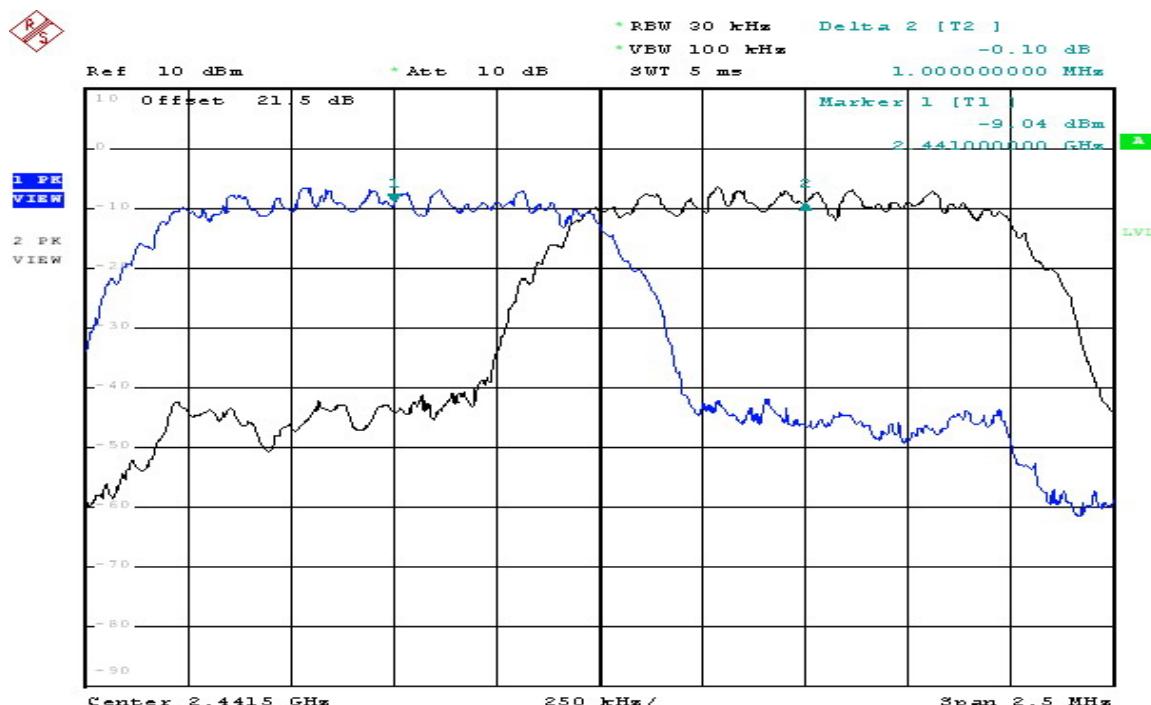
The final test data is shown on as following pages.

Modulation	Carrier Frequency Separation (kHz)
GFSK	1000
$\pi/4$ DQPSK	1000
8 DQPSK	1000

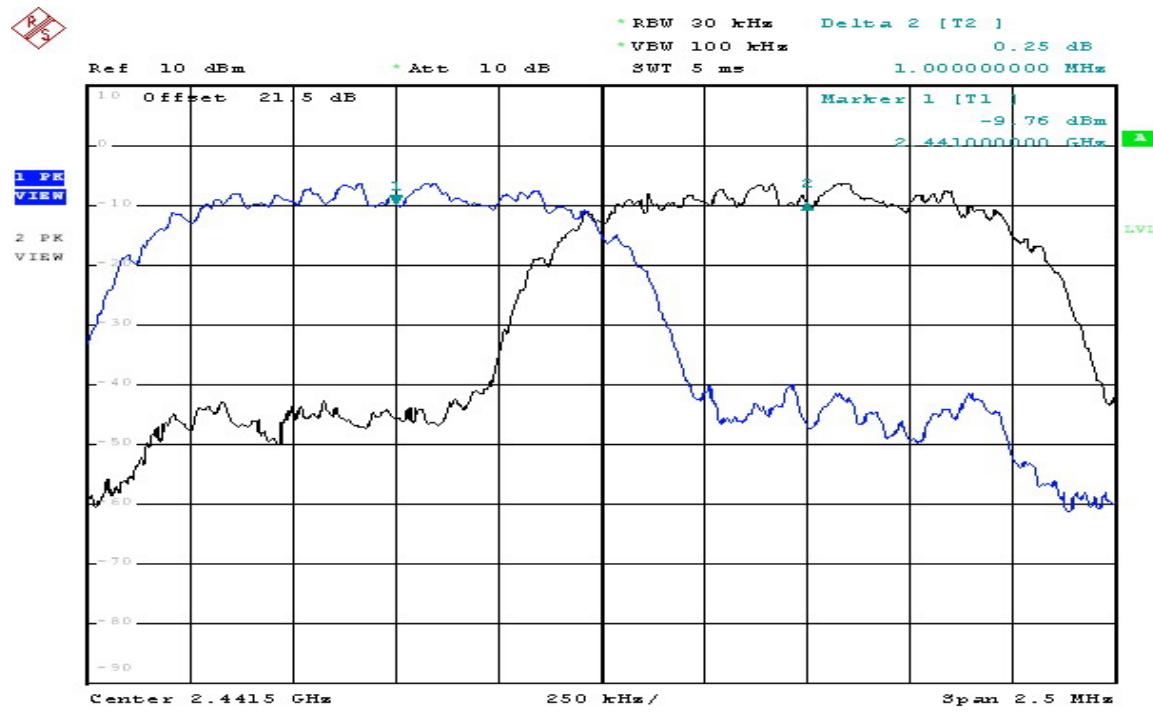
## GFSK Separation



## $\pi/4$ DQPSK Separation



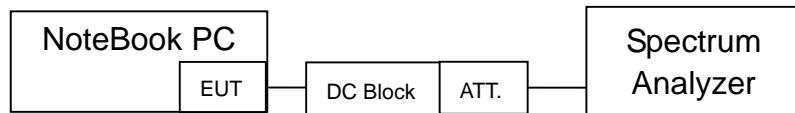
## 8DPSK Separation



Comment: 8PSK Channel Separation CH40-41  
Date: 4.SEP.2008 15:52:37

## 4 Number of hopping frequencies test

### 4.1 Configuration of Measurement



### 4.2 Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

The number of hopping frequencies per FCC Part15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at  $\geq 1\%$  of the span, the video bandwidth  $\geq$  RBW, and the SPAN was the frequency band of operation.

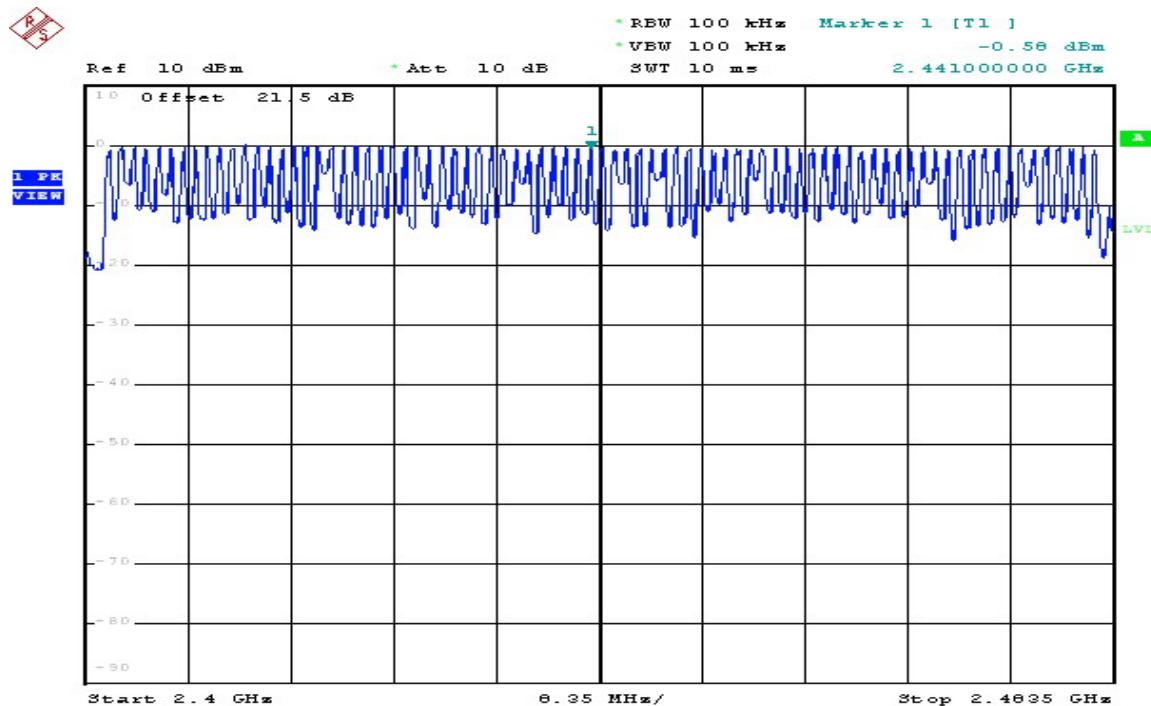
### 4.3 Test Result

**PASS.**

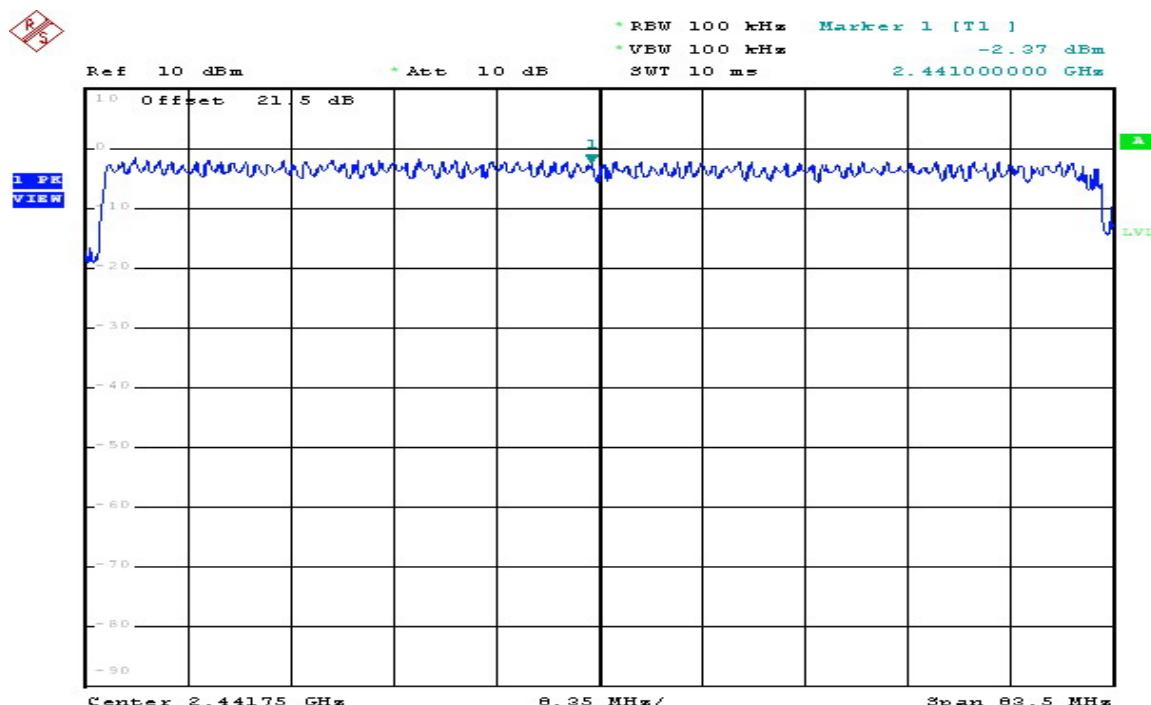
The final test data is shown on as following pages.

Modulation	No. of Hopping CH.
GFSK	79
$\pi/4$ DQPSK	79
8DPSK	79

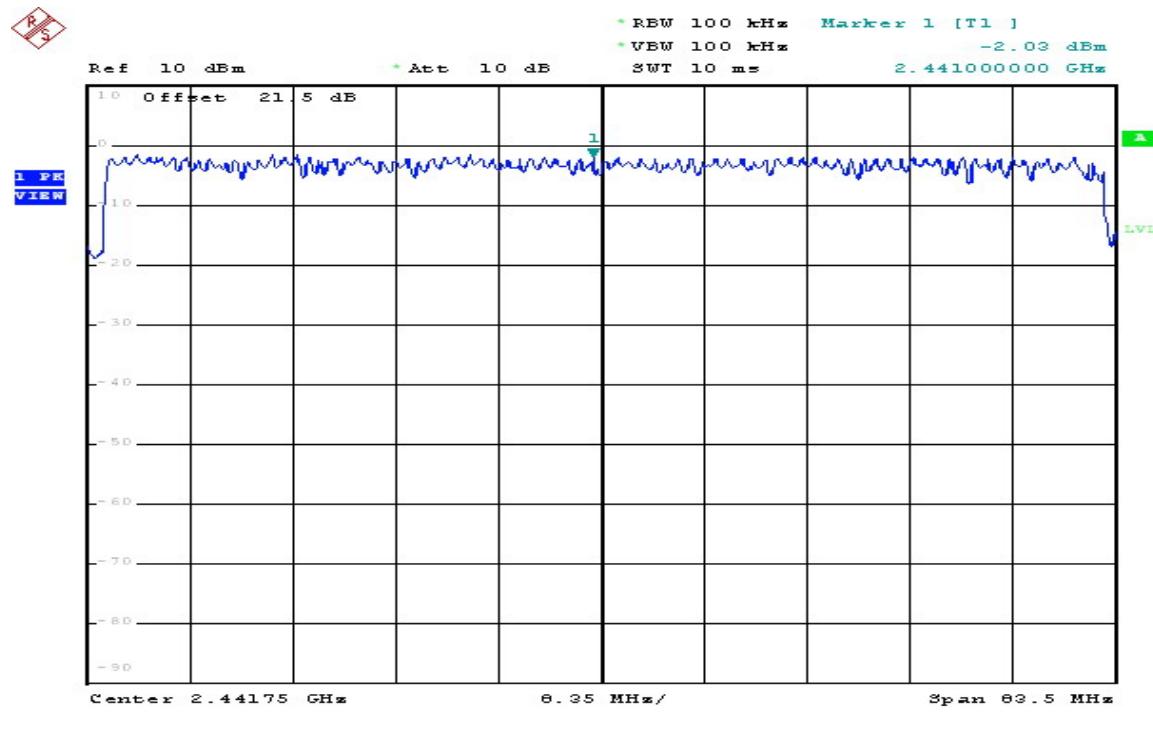
## GFSK channel number



## $\pi/4$ DQPSK channel number



## 8DPSK channel number



Comment: 8PSK Channel Number  
Date: 4.SEP.2008 15:08:33

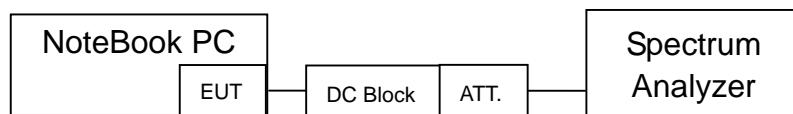
## 5 Time of Occupancy (dwell time) test

### 5.1 Limit

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

The average time of occupancy on any channel shall not be greater than 0.4 second within a period of 0.4 second multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

### 5.2 Configuration of Measurement



### 5.3 Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

According to FCC Part15.247(a)(1) the time of occupancy (dwell time) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at 1MHz, the video bandwidth  $\geq$  RBW and the zero span function of spectrum analyzer was enable. The EUT has its hopping function enable.

Formula for Dwell time calculation:

Dwell time = time slot \* hop rate \* 1/s / 79 \*31.6s

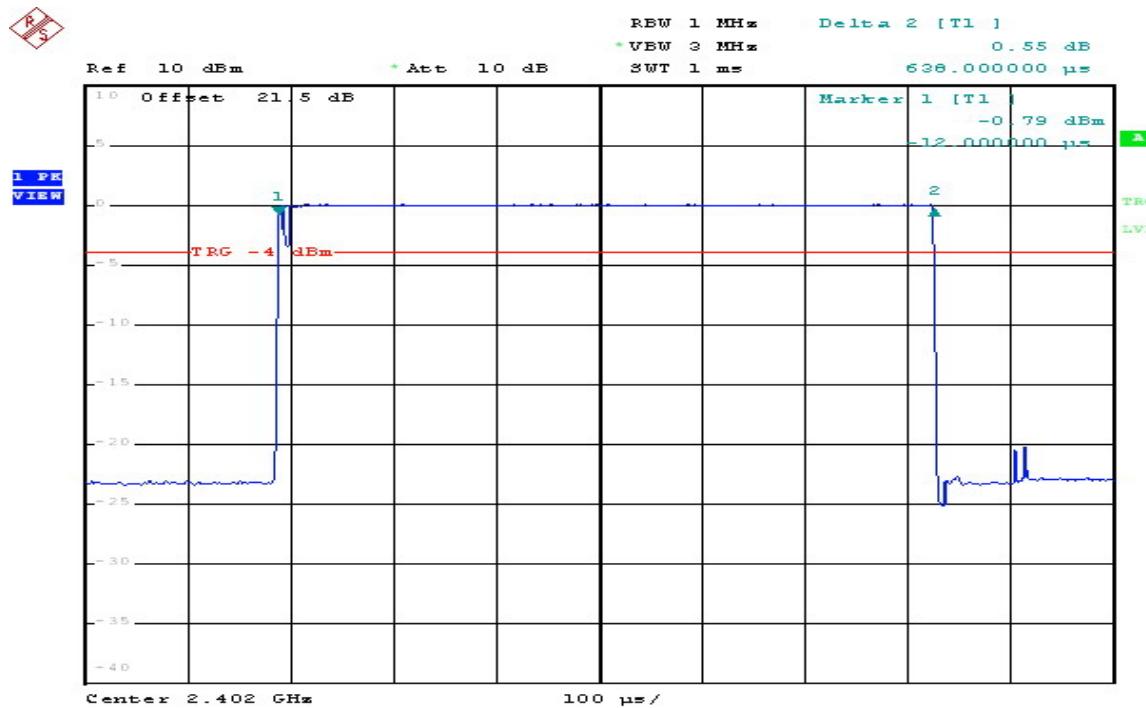
### 5.4 Test Result

**PASS.**

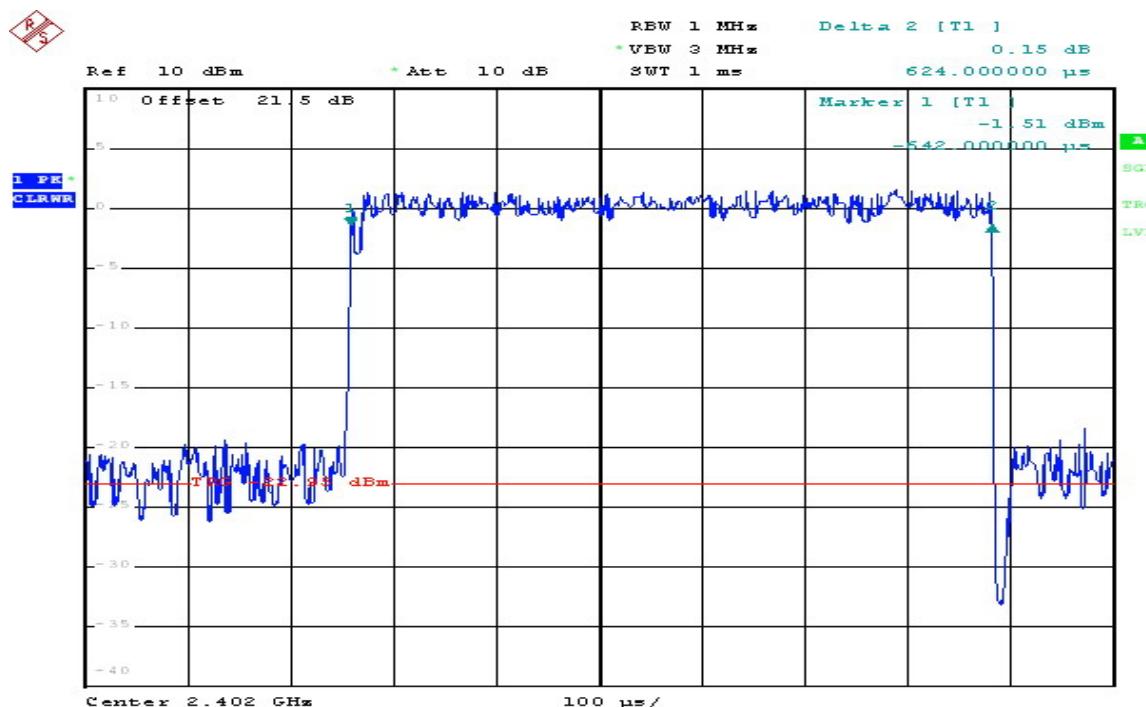
The final test data is shown on as following pages.

Dwell Time Test						
Modulation Type	Packet Type	Time Slot Length (ms)	Hop Rate (Hz)	Dwell Time (s)	Limit (s)	Test Result
GFSK	DH1	0.638	800	0.204	<0.4	PASS
	DH3	1.890	400	0.302	<0.4	PASS
	DH5	3.142	266	0.335	<0.4	PASS
$\pi/4$ DQPSK	DH1	0.624	800	0.200	<0.4	PASS
	DH3	1.884	400	0.301	<0.4	PASS
	DH5	3.134	266	0.334	<0.4	PASS
8DPSK	DH1	0.626	800	0.200	<0.4	PASS
	DH3	1.884	400	0.301	<0.4	PASS
	DH5	3.126	266	0.333	<0.4	PASS

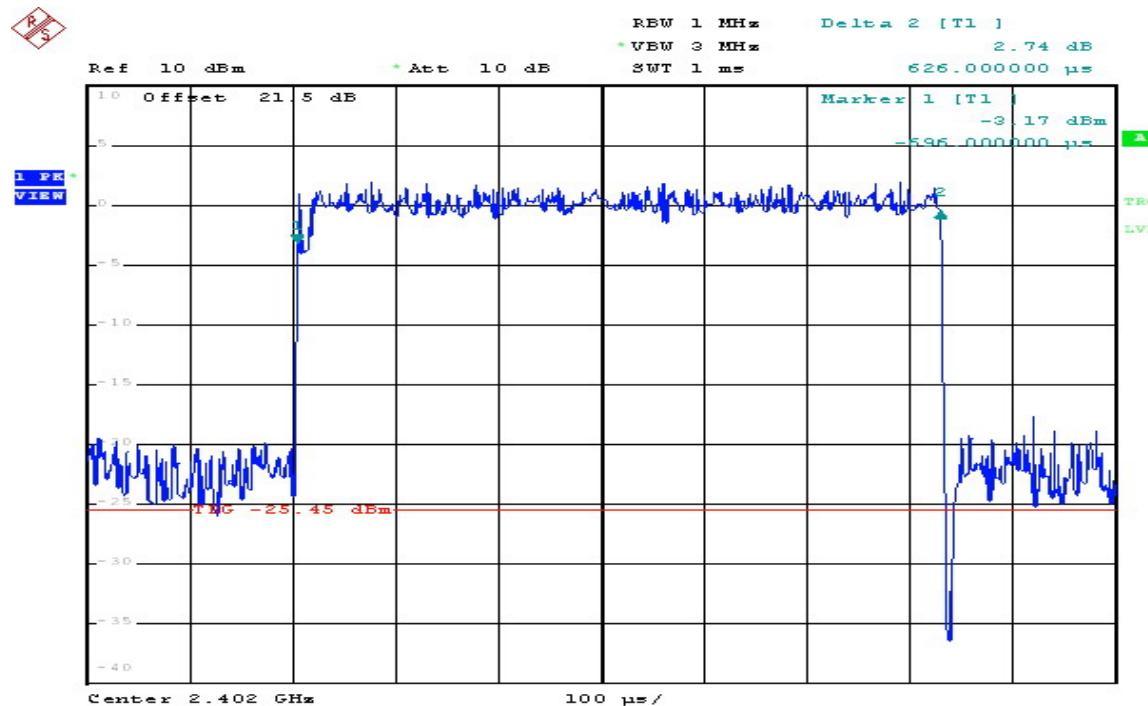
## GFSK DH1 Dwell time



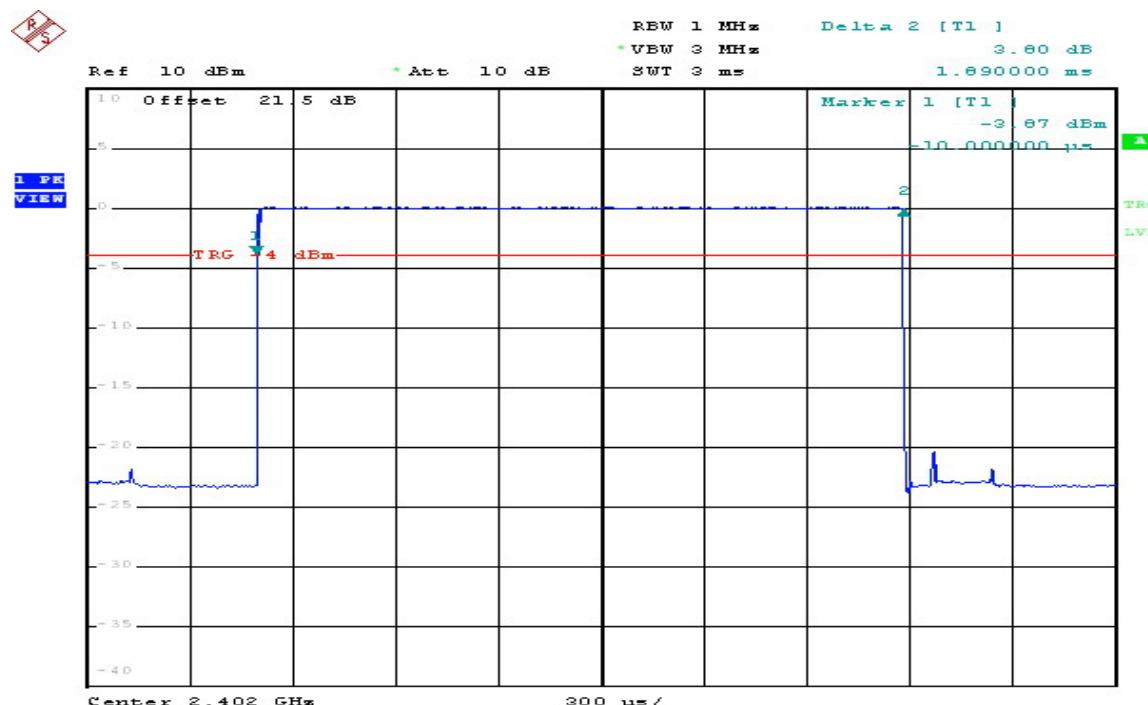
## $\pi/4$ DQPSK DH1 Dwell time



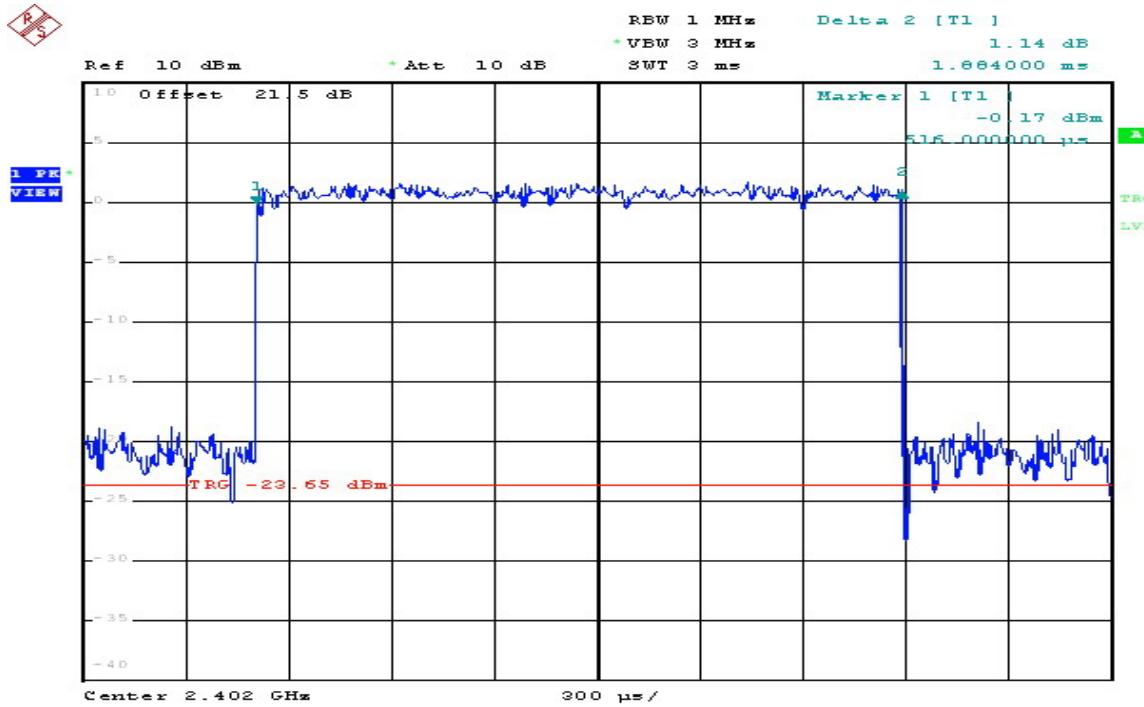
## 8DPSK DH1 Dwell time



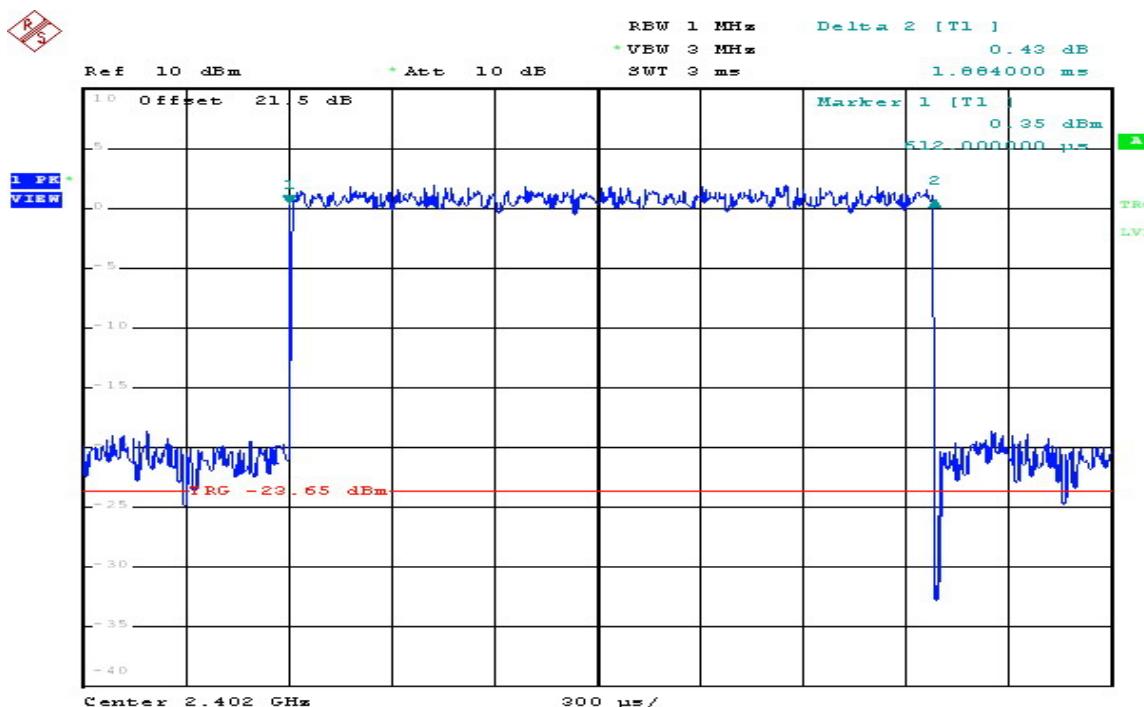
## GFSK DH3 Dwell time



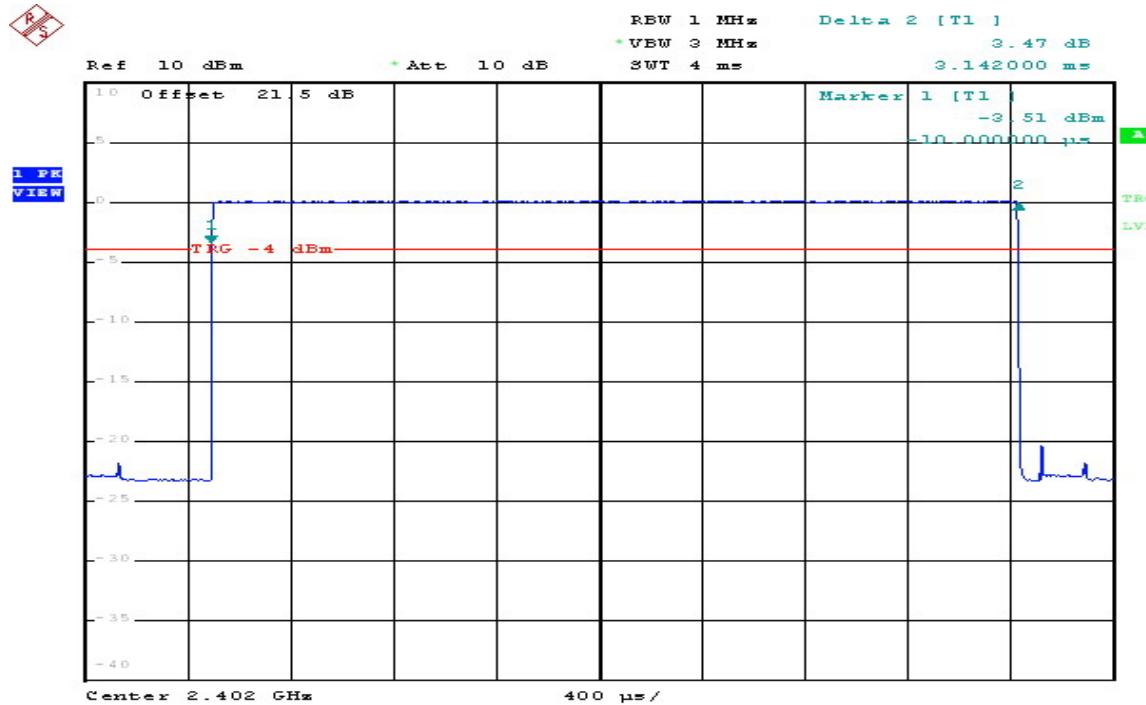
### $\pi/4$ DQPSK DH3 Dwell time



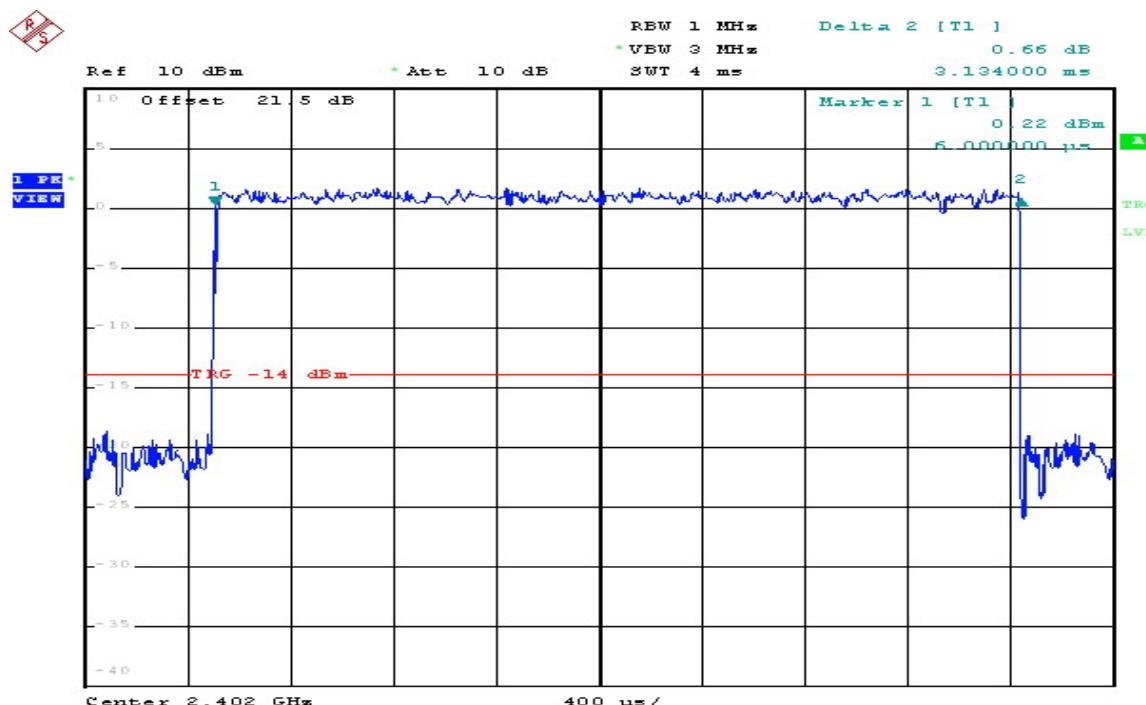
### 8DPSK DH3 Dwell time



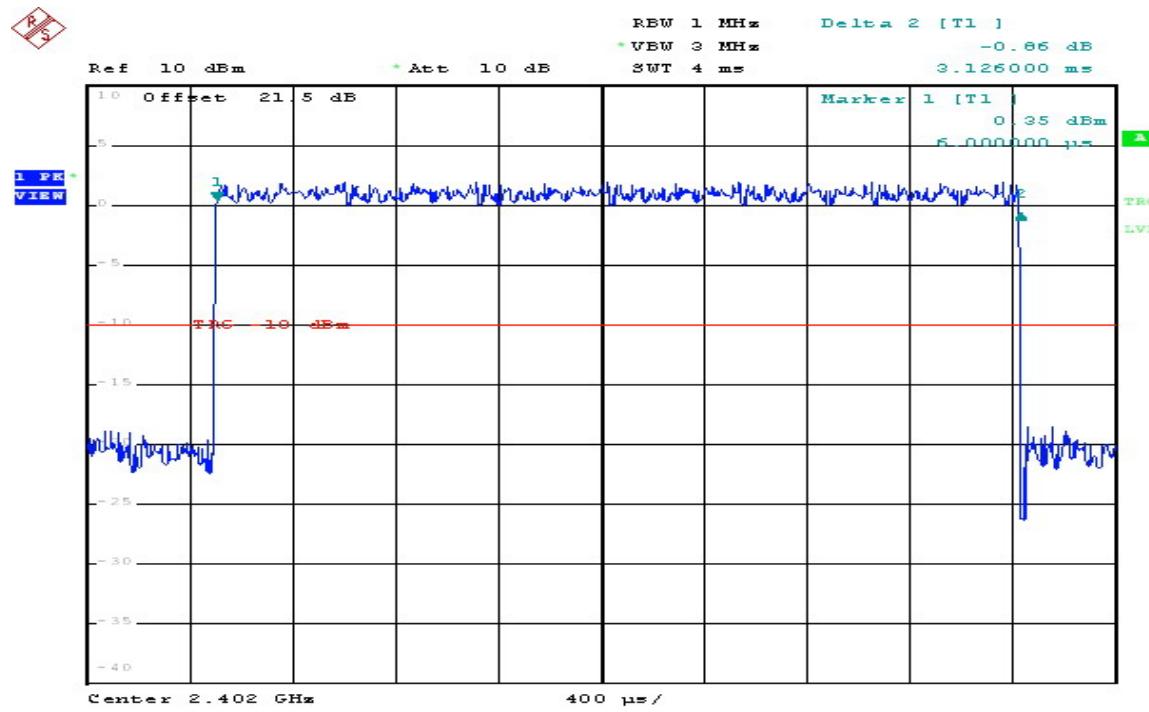
## GFSK DH5 Dwell time



## $\pi/4$ DQPSK DH5 Dwell time



## 8DPSK DH5 Dwell time



Comment: 8PSK Dwell Time DHS  
Date: 4.SEP.2008 16:24:46

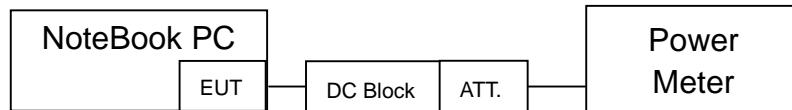
## 6 Maximum Output Power test

### 6.1 Limit

For frequency hopping systems operating in the 2400-2483.5MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850MHz band: 1 watt.

For all other frequency hopping systems in the 2400-2483.5MHz band: 0.125 watts.

### 6.2 Configuration of Measurement



### 6.3 Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

For FCC Part 15.247(b) the power output per was measured on the EUT using a 50 ohm SMA cable connected to peak power meter via power sensor. Peak output power was read directly from power meter. The test was performed at 3 channels (lowest, middle and highest).

### 6.4 Test Result

**PASS.**

The final test data is shown on as following pages.

<b>Mode : GFSK DH5</b>					
<b>CH</b>	<b>Temp. (°C)</b>	<b>Test Voltage (Vac)</b>	<b>Maximum transmit power (dBm)</b>	<b>Limit (dBm)</b>	<b>Margin (dB)</b>
1	28	120	1.09	30	-28.91
40	28	120	1.16	30	-28.84
79	28	120	1.06	30	-28.94

<b>Mode : <math>\pi/4</math> DQPSK</b>					
<b>CH</b>	<b>Temp. (°C)</b>	<b>Test Voltage (Vac)</b>	<b>Maximum transmit power (dBm)</b>	<b>Limit (dBm)</b>	<b>Margin (dB)</b>
1	25	120	2.56	21	-18.44
40	25	120	2.59	21	-18.41
79	25	120	2.45	21	-18.55

<b>Mode : 8DPSK</b>					
<b>CH</b>	<b>Temp. (°C)</b>	<b>Test Voltage (Vac)</b>	<b>Maximum transmit power (dBm)</b>	<b>Limit (dBm)</b>	<b>Margin (dB)</b>
1	25	120	2.77	21	-18.23
40	25	120	2.80	21	-18.20
79	25	120	2.71	21	-18.29

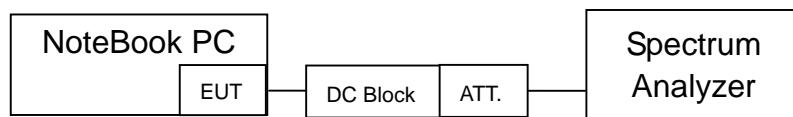
## 7 RF Conducted spurious emission

### 7.1 Limit

According to FCC Part 15.247(d) requirement :

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, provided the transmitter demonstrates compliance with the peak conducted power limits.

### 7.2 Configuration of Measurement



### 7.3 Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

RF antenna conducted spurious emissions was measured from the EUT antenna port using a 50ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 100 kHz.

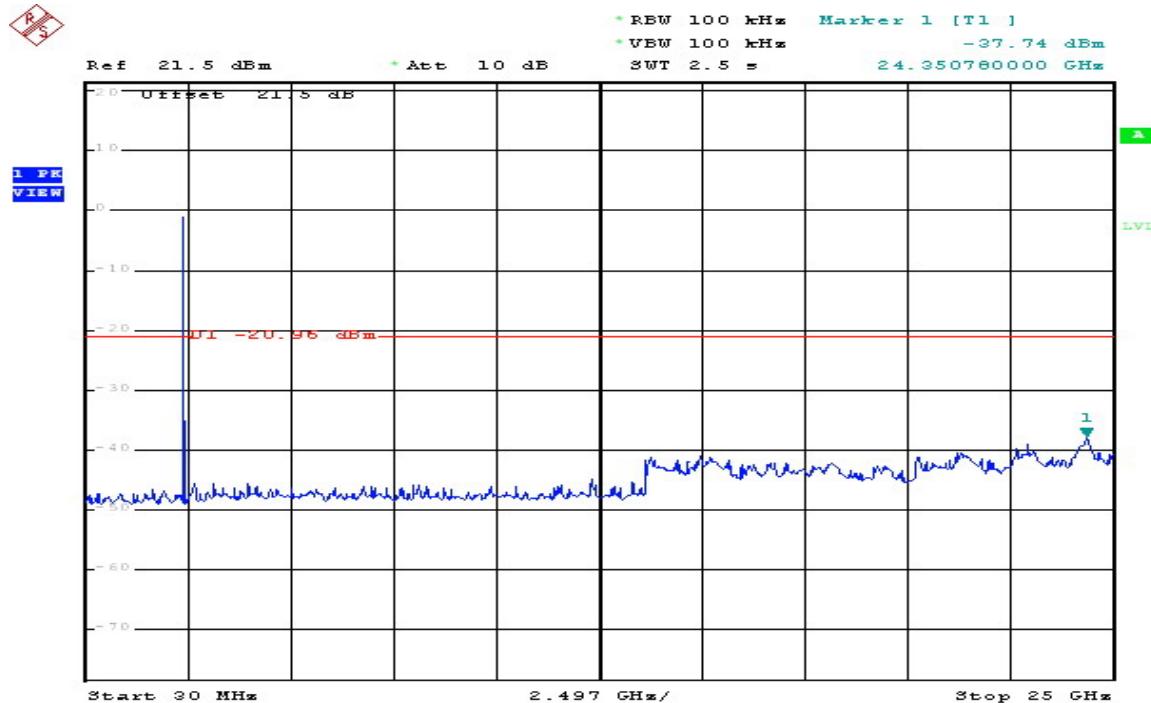
The measurements were performed from 30MHz to 25GHz.

### 7.4 Test Result

**PASS.**

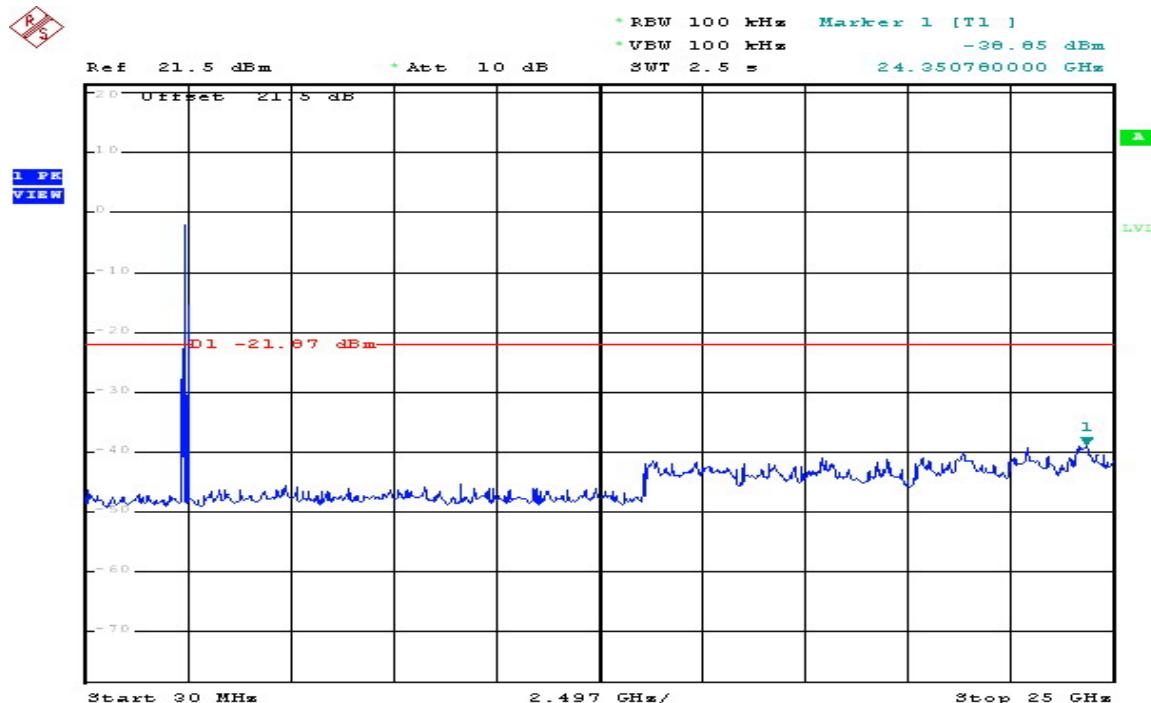
The final test data is shown on as following pages.

## GFSK 2402MHz Conducted spurious



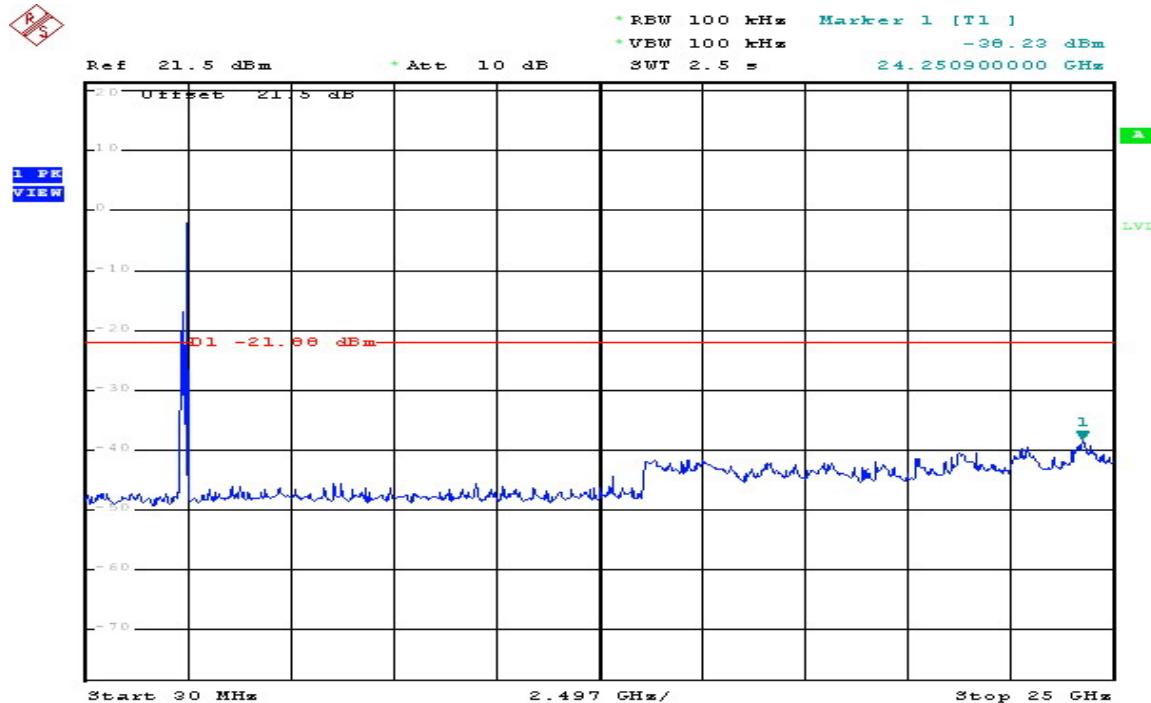
Comment: GFSK CH1 Conducted spurious  
Date: 4.SEP.2008 14:15:15

## GFSK 2441MHz Conducted spurious



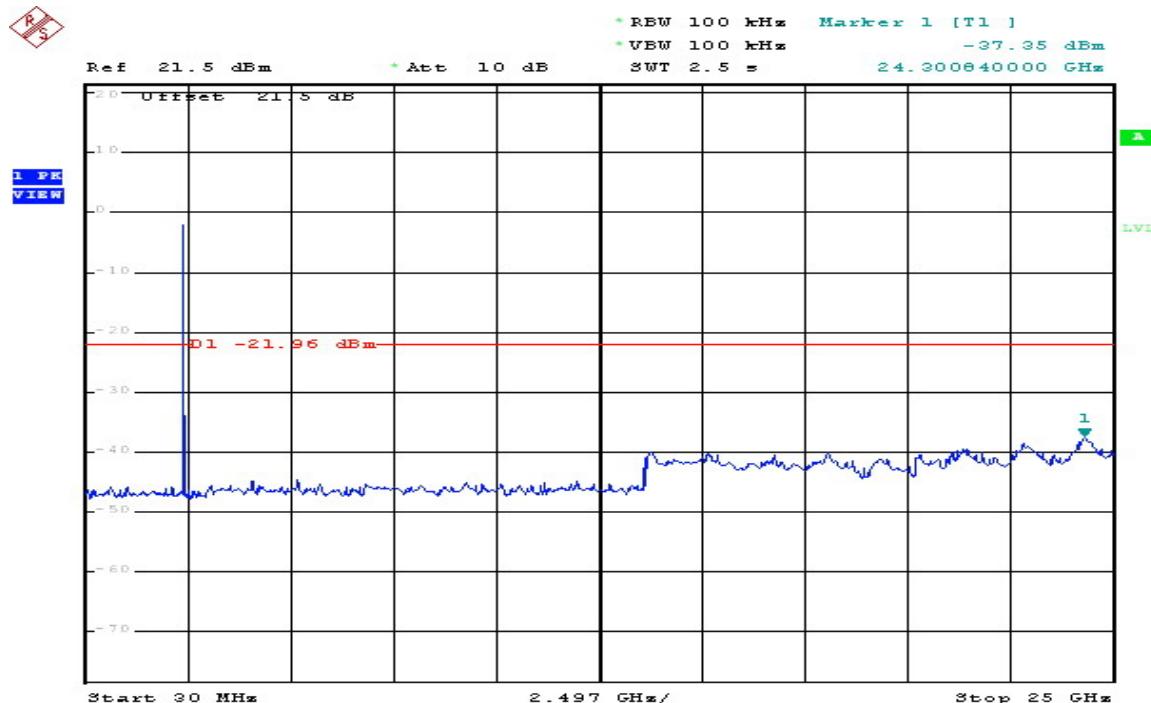
Comment: GFSK CH40 Conducted spurious  
Date: 4.SEP.2008 14:21:42

## GFSK 2480MHz Conducted spurious



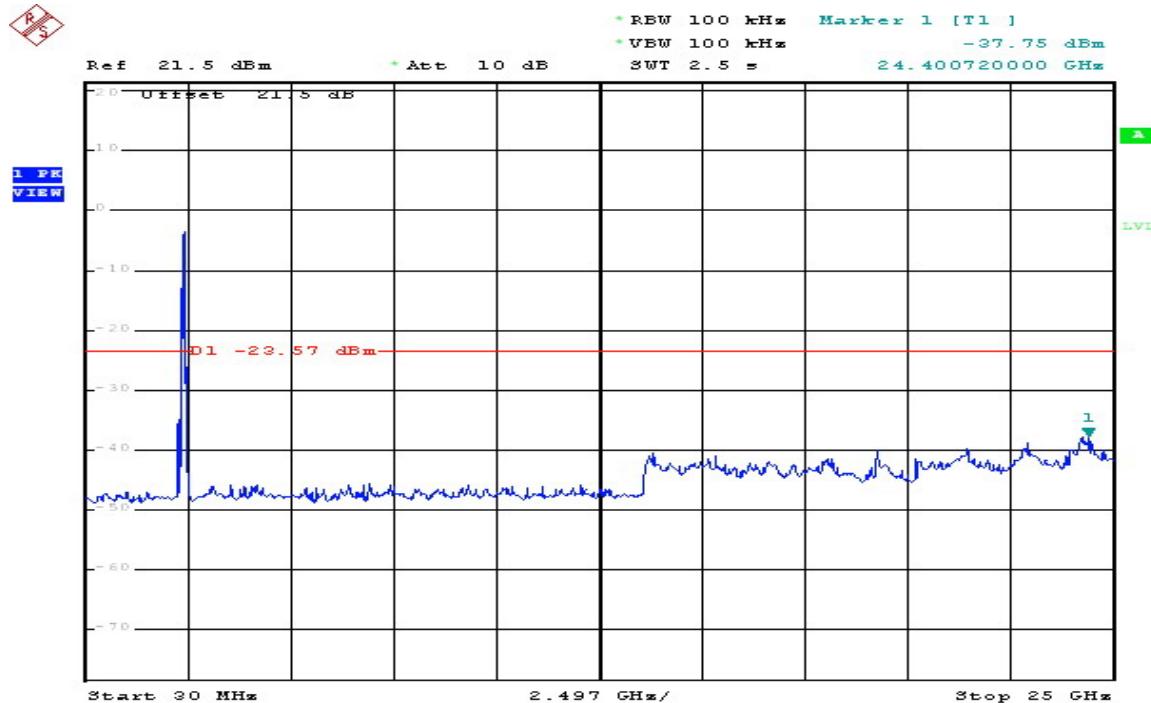
Comment: GFSK CH79 Conducted spurious  
Date: 4.SEP.2008 14:20:26

## $\pi/4$ DQPSK 2402MHz Conducted spurious



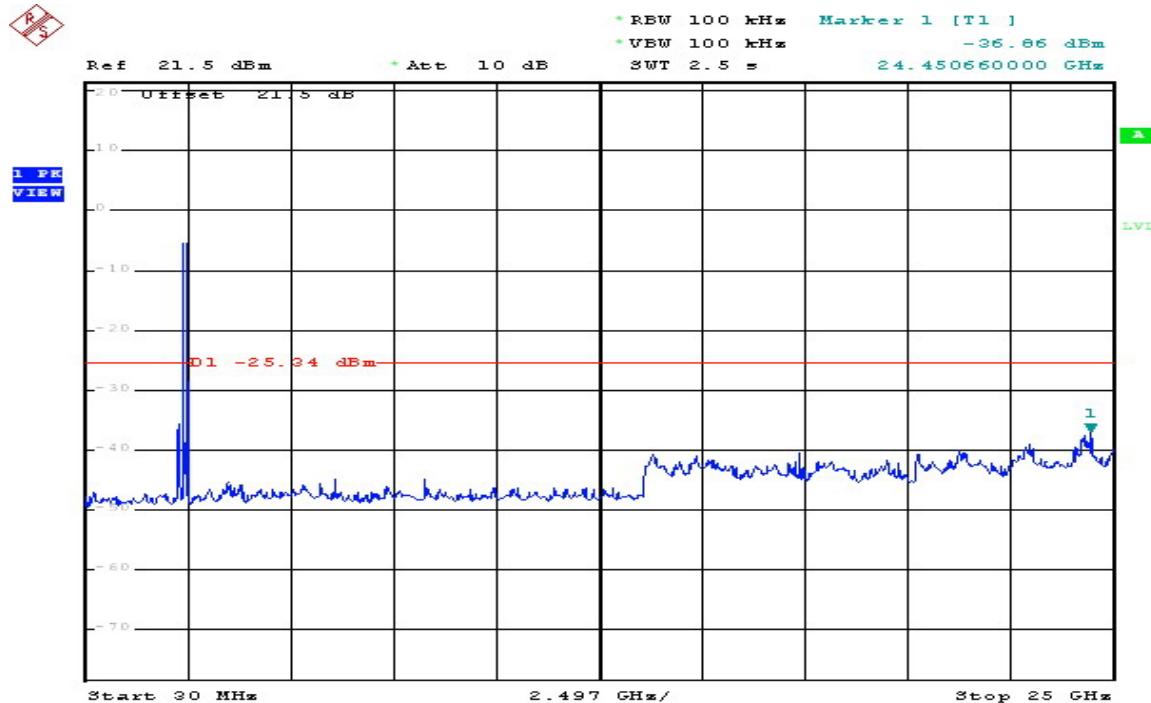
Comment:  $\pi/4$  DQPSK CH1 Conducted spurious  
Date: 4.SEP.2008 14:26:26

### $\pi/4$ DQPSK 2441MHz Conducted spurious



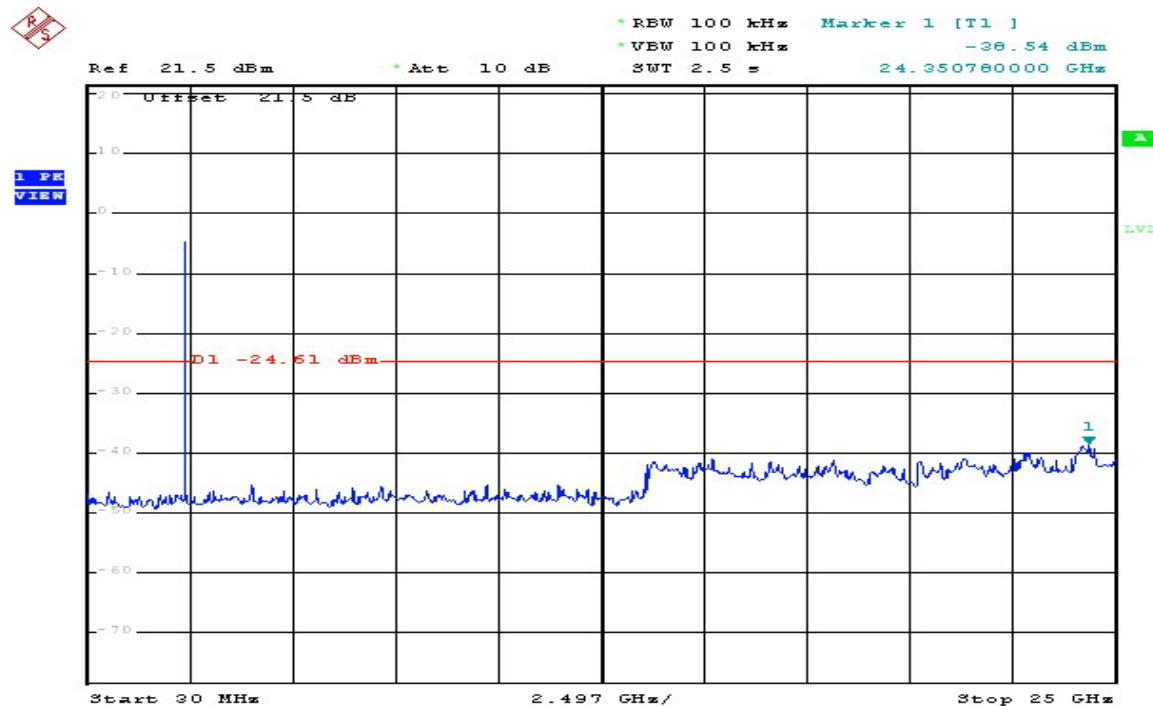
Comment:  $\pi/4$  DQPSK CH40 Conducted spurious  
Date: 4.SEP.2008 14:29:57

### $\pi/4$ DQPSK 2480MHz Conducted spurious



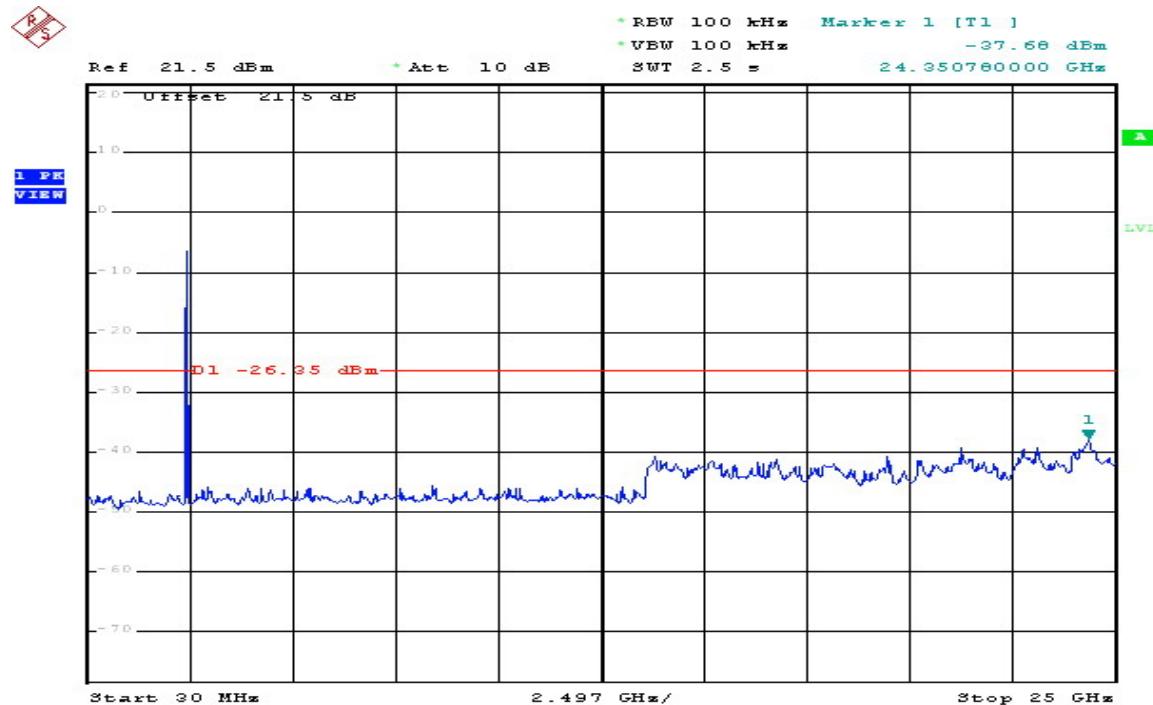
Comment:  $\pi/4$  DQPSK CH79 Conducted spurious  
Date: 4.SEP.2008 14:30:54

## 8DPSK 2402MHz Conducted spurious



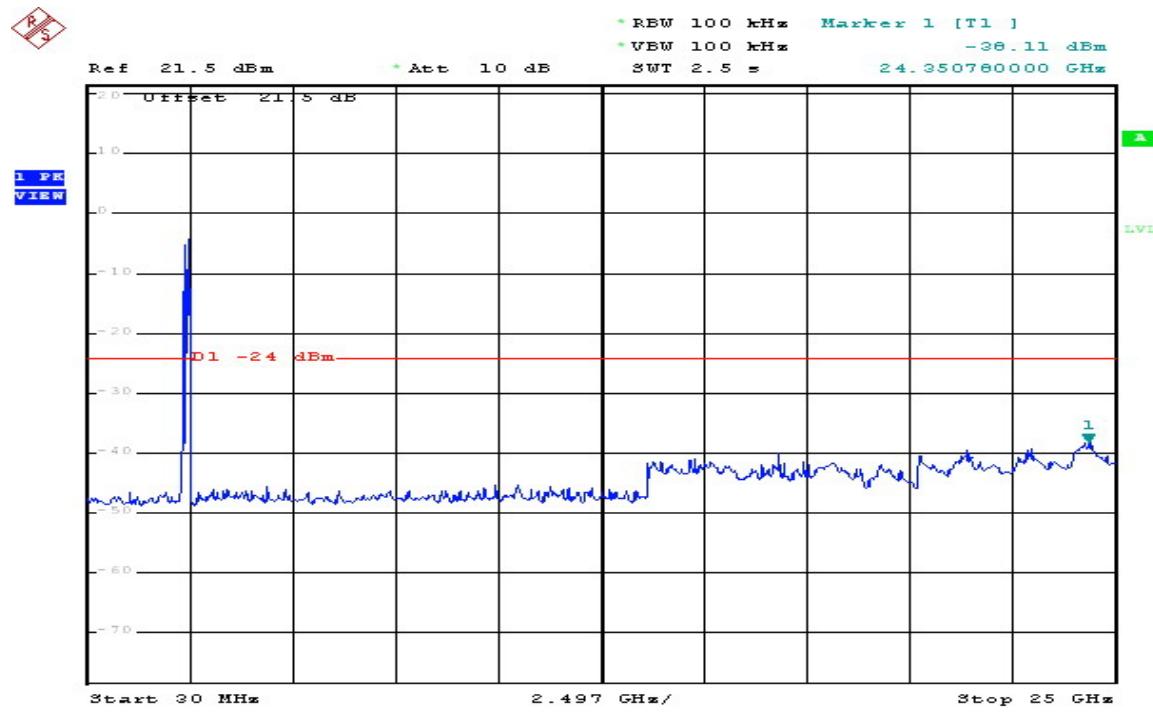
Comment: 8PSK CH1 Conducted spurious  
Date: 4.SEP.2008 14:34:02

## 8DPSK 2441MHz Conducted spurious



Comment: 8PSK CH40 Conducted spurious  
Date: 4.SEP.2008 14:33:21

## 8DPSK 2480MHz Conducted spurious



Comment: 8PSK CH79 Conducted spurious  
Date: 4.SEP.2008 14:32:20

## 8 RF Radiated spurious emission test

### 8.1 Limit

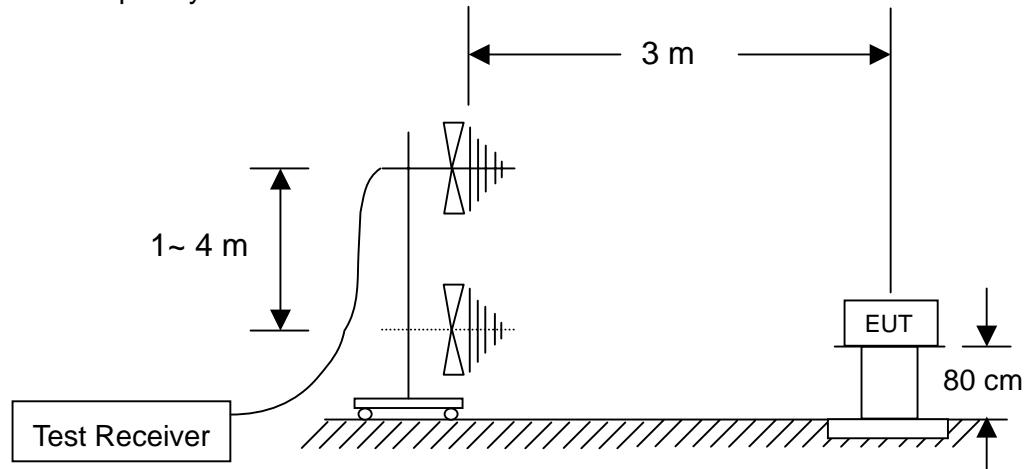
For intentional radiator, the radiated emission shall comply with FCC Part 15.209(a).

For intentional radiators, according to FCC Part 15.247 (a), operation under this provision is limited to frequency hopping and direct sequence spread spectrum, and the out band emission shall be comply with FCC Part 15.247 (c)

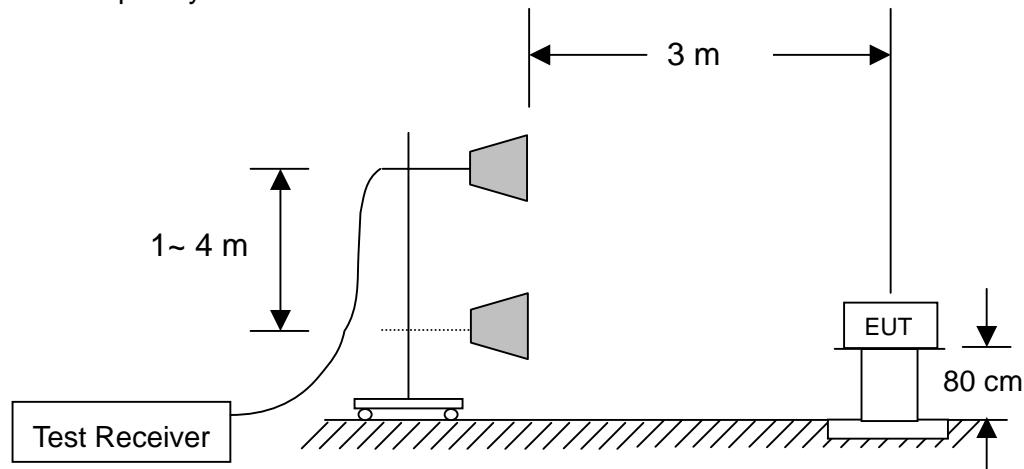
Frequency (MHz)	Field strength dB( $\mu$ V/m)	Measurement distance (meters)
1.705~30.0	29.5	30
30 ~ 88	40	3
88~216	43.5	3
216~960	46	3
Above 960	54	3

### 8.2 Configuration of Measurement

Measurement Frequency under 1GHz



Measurement Frequency above 1GHz



### 8.3 Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

Radiated emission measurements were performed from 30MHz to 25GHz. Spectrum Analyzer Resolution Bandwidth is 100kHz or greater for frequencies 30MHz to 1GHz, set 1MHz for frequencies above 1GHz.

The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and whole system. During the test, all cables were arranged to present worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meter and down to 1 meter.

### 8.4 Test Result

**PASS.**

The final test data is shown on as following pages.

**Remark :** After verifying GFSK,  $\pi/4$  DQPSK and 8DPSK modulation mode, the worst case was caused at 8DPSK mode. The worst case was record in this report.

## Radiated Emission below 1GHz

Frequency (MHz)	Antenna Polarization	Reading (dB $\mu$ V)	Preamp (dB)	Correction Factor (dB/m)	Corrected Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Det. Mode
240.000	H	39.30	28.84	14.64	25.10	46.00	-20.90	QP
600.120	H	29.60	28.52	25.49	26.57	46.00	-19.43	QP
720.150	H	28.64	28.25	29.22	29.61	46.00	-16.39	QP
960.200	H	24.50	28.36	33.15	29.29	46.00	-16.71	QP
240.000	V	34.60	28.84	14.79	20.55	46.00	-25.45	QP
720.153	V	25.80	28.25	28.85	26.40	46.00	-19.60	QP
747.760	V	26.80	28.13	29.43	28.10	46.00	-17.90	QP
763.630	V	26.50	28.03	29.52	27.99	46.00	-18.01	QP

Remark : Corrected Level = Reading + Correction Factor – Preamp

Correction Factor = Antenna Factor + Cable Loss

## Radiated Emission above 1GHz

8DPSK 2402MHz								
Frequency (MHz)	Antenna Polarization	Reading (dB $\mu$ V)	Preamp (dB)	Correction Factor (dB/m)	Corrected Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Det. Mode
4804.00	H	54.20	36.50	36.94	54.64	74	-19.36	PK
4804.00	H	42.53	36.50	36.94	42.97	54	-11.03	AV
4804.00	V	54.70	36.50	36.94	55.14	74	-18.86	PK
4804.00	V	47.20	36.50	36.94	47.64	54	-6.36	AV

8DPSK 2441MHz								
Frequency (MHz)	Antenna Polarization	Reading (dB $\mu$ V)	Preamp (dB)	Correction Factor (dB/m)	Corrected Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Det. Mode
4884.00	H	52.37	36.50	37.12	52.99	74	-21.01	PK
4884.00	H	44.70	36.50	37.12	45.32	54	-8.68	AV
4884.00	V	53.87	36.50	37.12	54.49	74	-19.51	PK
4884.00	V	45.87	36.50	37.12	46.49	54	-7.51	AV

8DPSK 2480MHz								
Frequency (MHz)	Antenna Polarization	Reading (dB $\mu$ V)	Preamp (dB)	Correction Factor (dB/m)	Corrected Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Det. Mode
4960.00	H	49.37	36.50	37.29	50.16	74	-23.84	PK
4960.00	H	41.37	36.50	37.29	42.16	54	-11.84	AV
4960.00	V	53.03	36.50	37.29	53.82	74	-20.18	PK
4960.00	V	46.03	36.50	37.29	46.82	54	-7.18	AV

Remark : Corrected Level = Reading + Correction Factor – Preamp

Correction Factor = Antenna Factor + Cable Loss

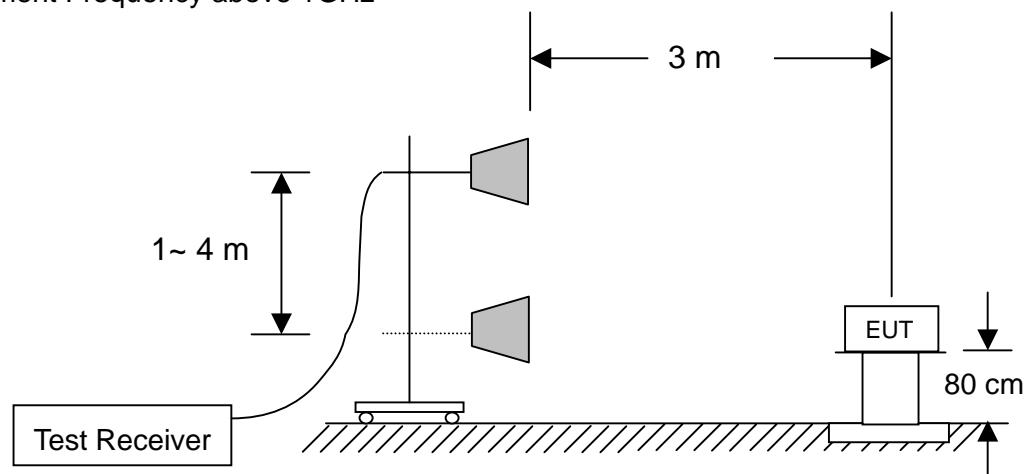
## 9 Emission on the Band Edge test

### 9.1 Limit

In any 100kHz bandwidth outside the frequency band in which the spread spectrum 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.

### 9.2 Configuration of Measurement

Measurement Frequency above 1GHz



### 9.3 Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

Radiated emission measurements were performed from 30MHz to 25GHz. Spectrum Analyzer Resolution Bandwidth is 100kHz or greater for frequencies 30MHz to 1GHz, set 1MHz for frequencies above 1GHz.

The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and whole system. During the test, all cables were arranged to present worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meter and down to 1 meter.

### 9.4 Test Result

**PASS.**

The final test data is shown on as following pages.

**Mode : GFSK**

CH	Restrict Freq. Band (MHz)	Detector Mode	Reading (dBuV)	Correction Factor (dB/m)	Correction level (dBuV/m)	Limit (dBm)	Magin (dB)
1	2310~2390	PK	37.00	15.00	52.00	74	-22.00
		AV	24.67	15.00	39.67	54	-14.33
79	2483.5~2500	PK	37.67	15.00	52.67	74	-21.33
		AV	33.34	15.00	48.34	54	-5.66

**Mode :  $\pi/4$  DQPSK**

CH	Restrict Freq. Band (MHz)	Detector Mode	Reading (dBuV)	Correction Factor (dB/m)	Correction level (dBuV/m)	Limit (dBm)	Magin (dB)
1	2310~2390	PK	36.00	15.00	51.00	74	-23.00
		AV	24.50	15.00	39.50	54	-14.50
79	2483.5~2500	PK	40.17	15.00	55.17	74	-18.83
		AV	34.67	15.00	49.67	54	-4.33

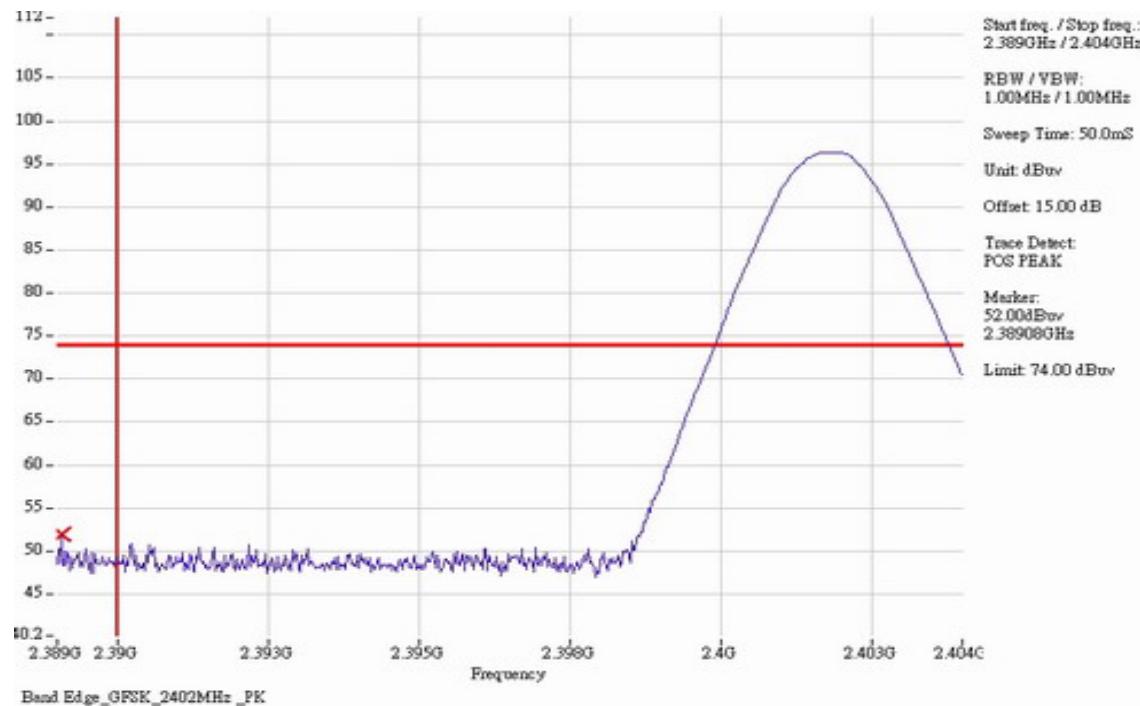
**Mode : 8DPSK**

CH	Restrict Freq. Band (MHz)	Detector Mode	Reading (dBuV)	Correction Factor (dB/m)	Correction level (dBuV/m)	Limit (dBm)	Magin (dB)
1	2310~2390	PK	35.67	15.00	50.67	74	-23.33
		AV	24.50	15.00	39.50	54	-14.50
79	2483.5~2500	PK	40.00	15.00	55.00	74	-19.00
		AV	34.67	15.00	49.67	54	-4.33

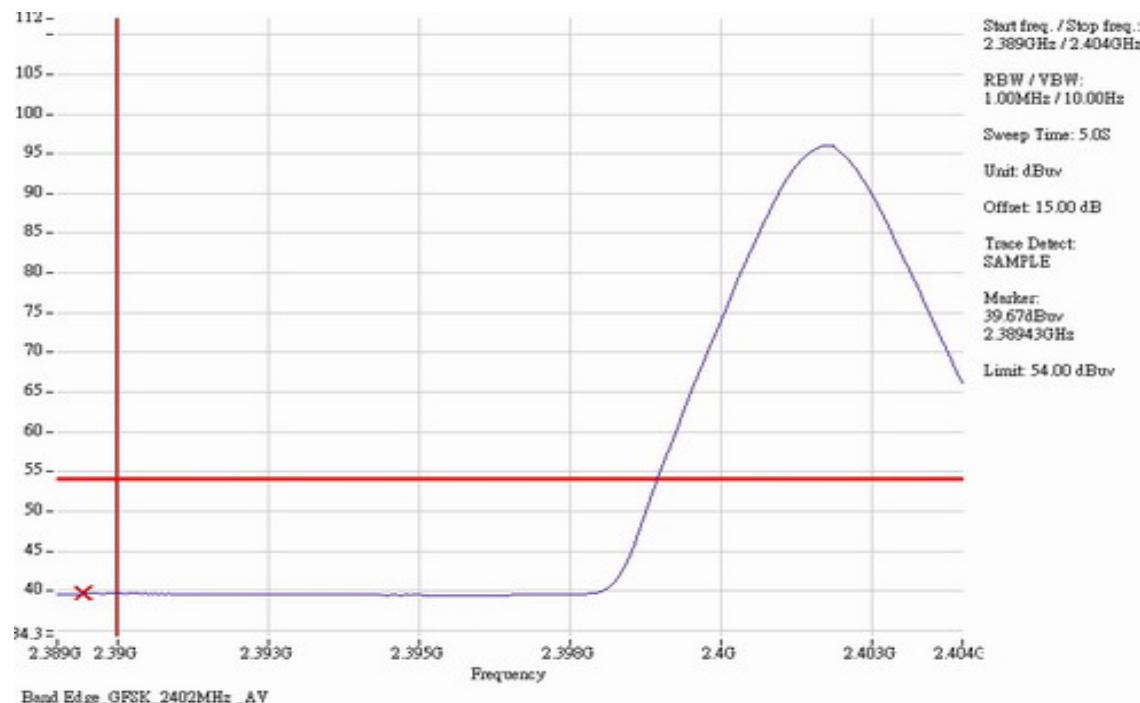
Remark : Correction Level = Reading + Correction Factor

Correction Factor = Cable loss + Ant. Factor - Amp Gain

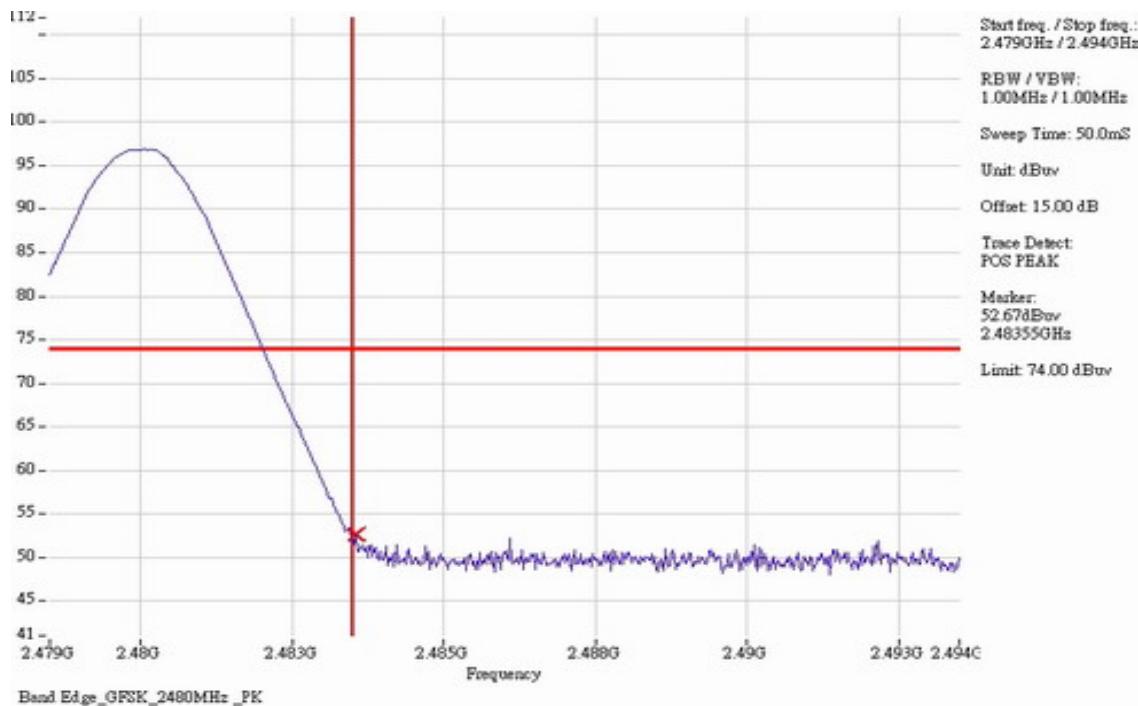
### GFSK CH1 PK



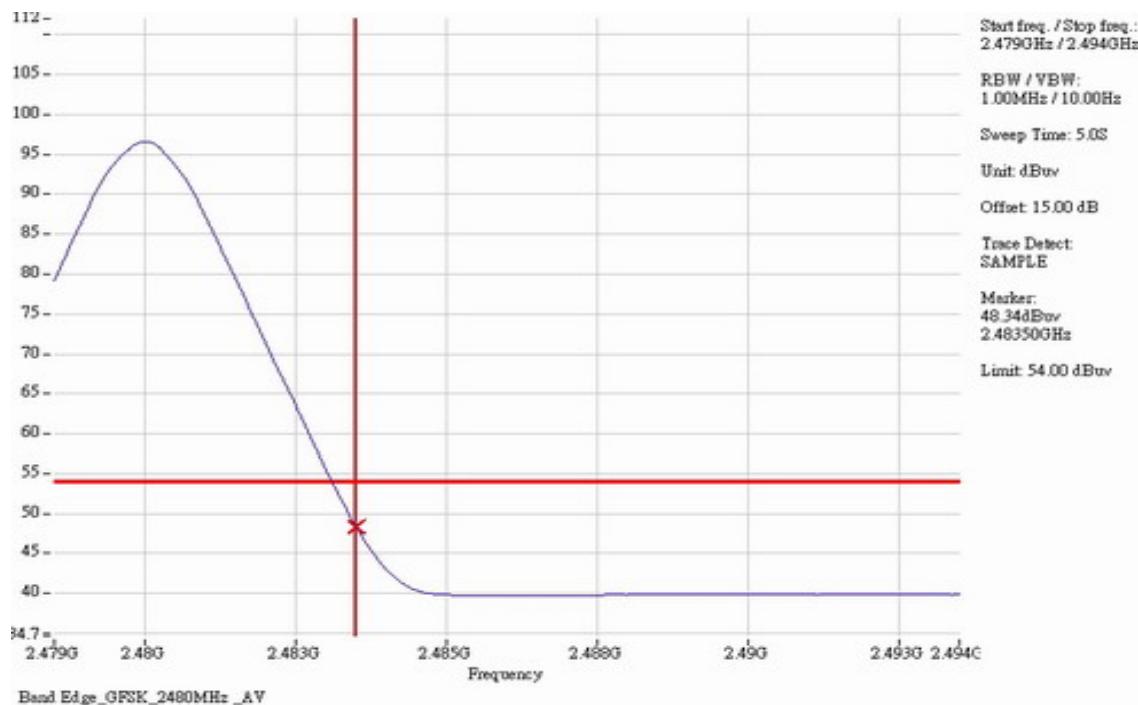
### GFSK CH1 AV



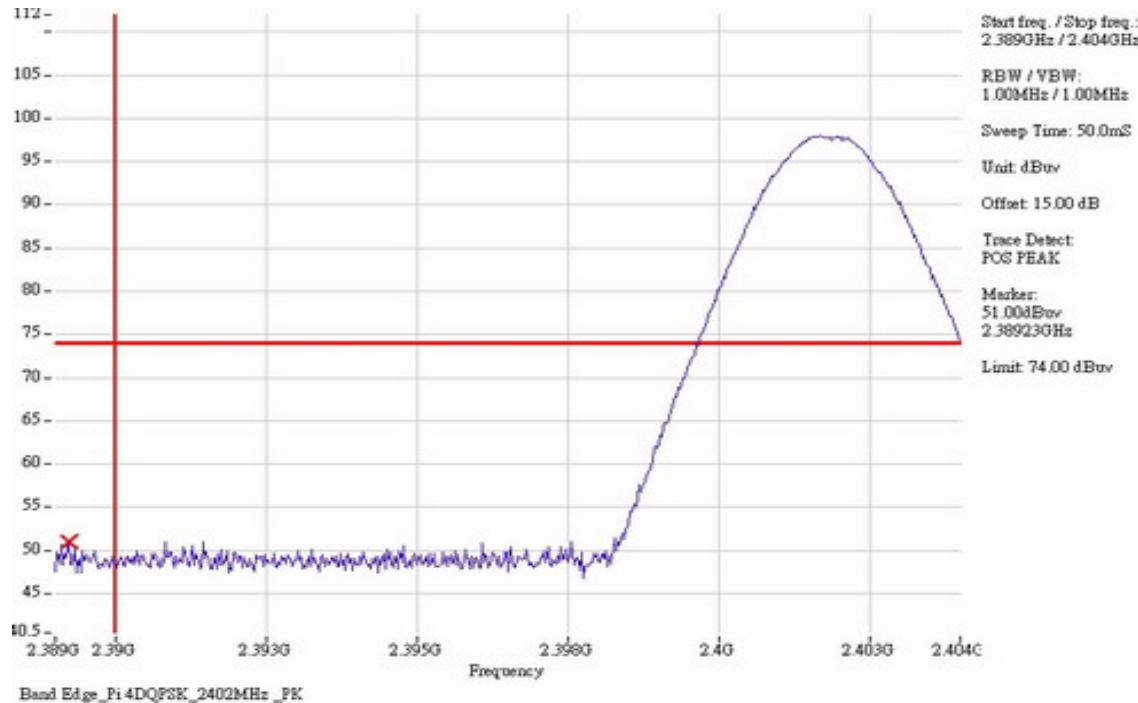
## GFSK CH79 PK



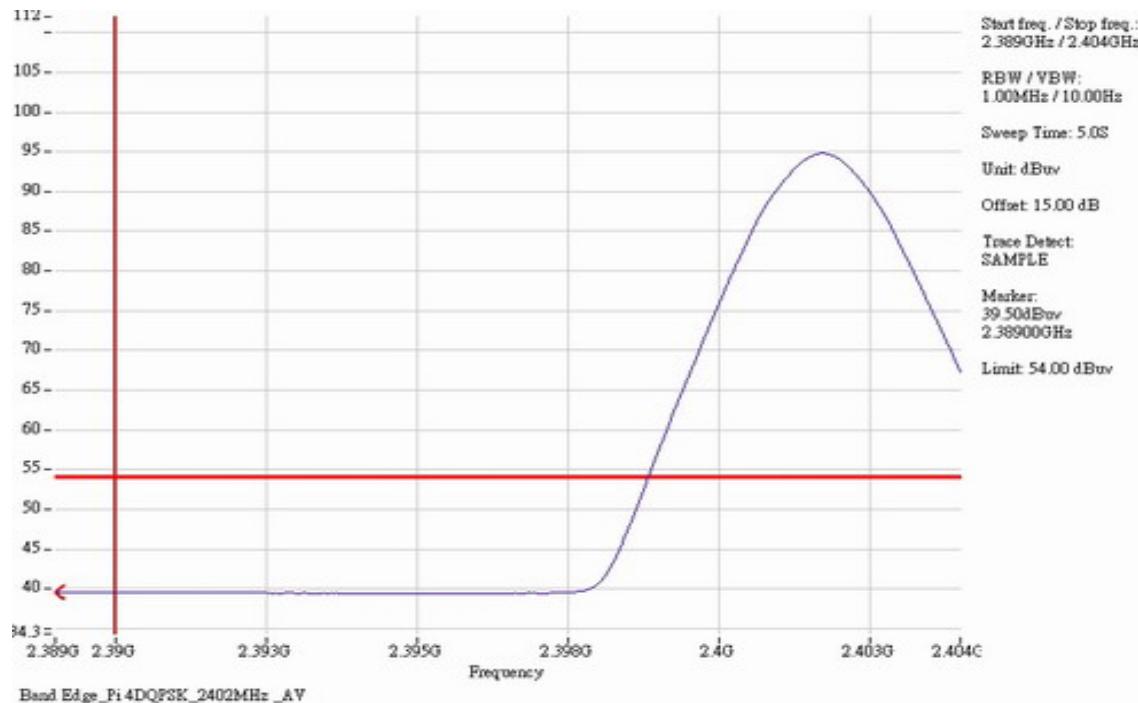
## GFSK CH79 AV



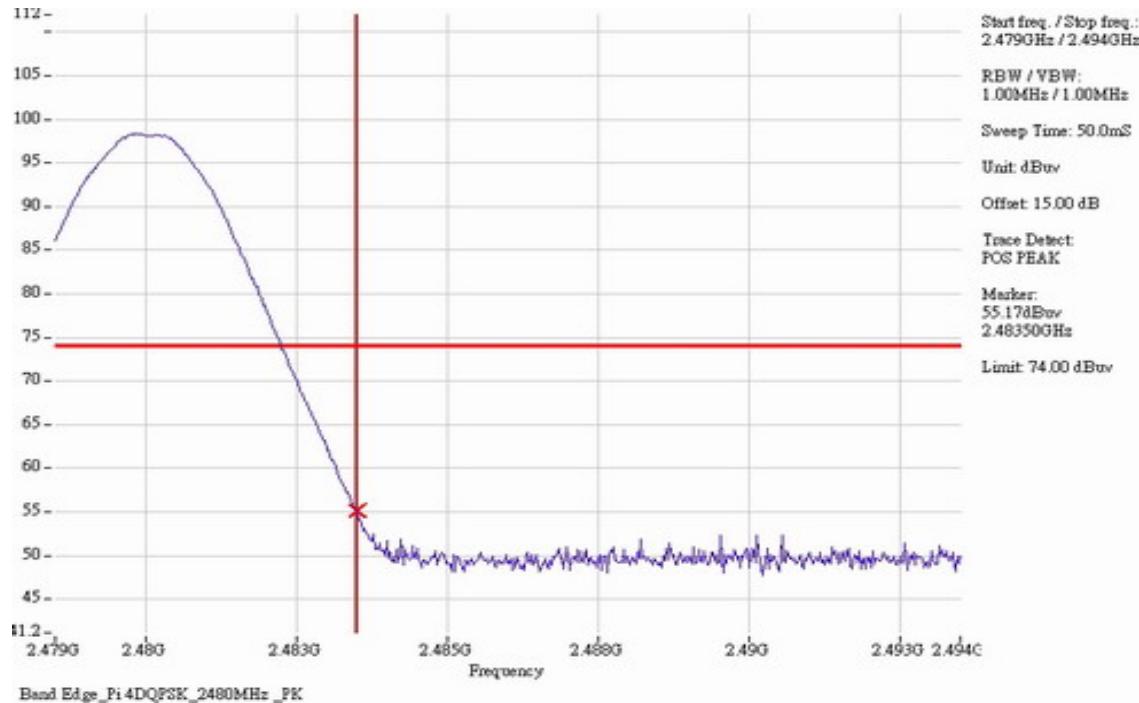
### $\pi/4$ DQPSK CH1 PK



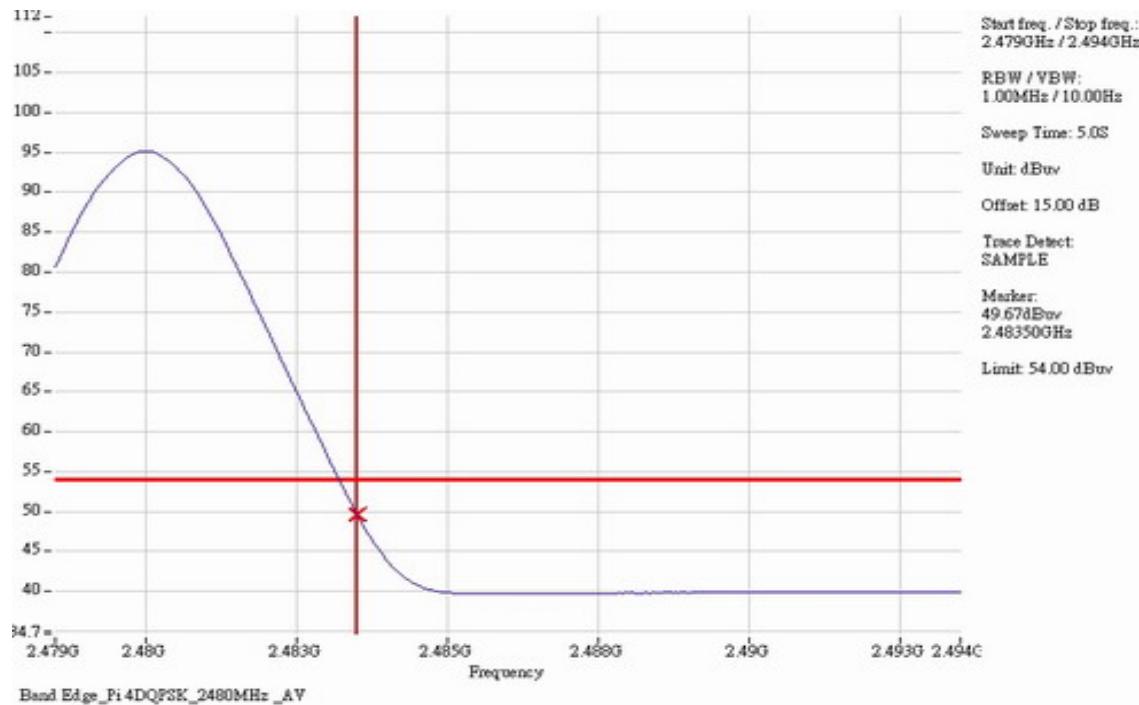
### $\pi/4$ DQPSK CH1 AV



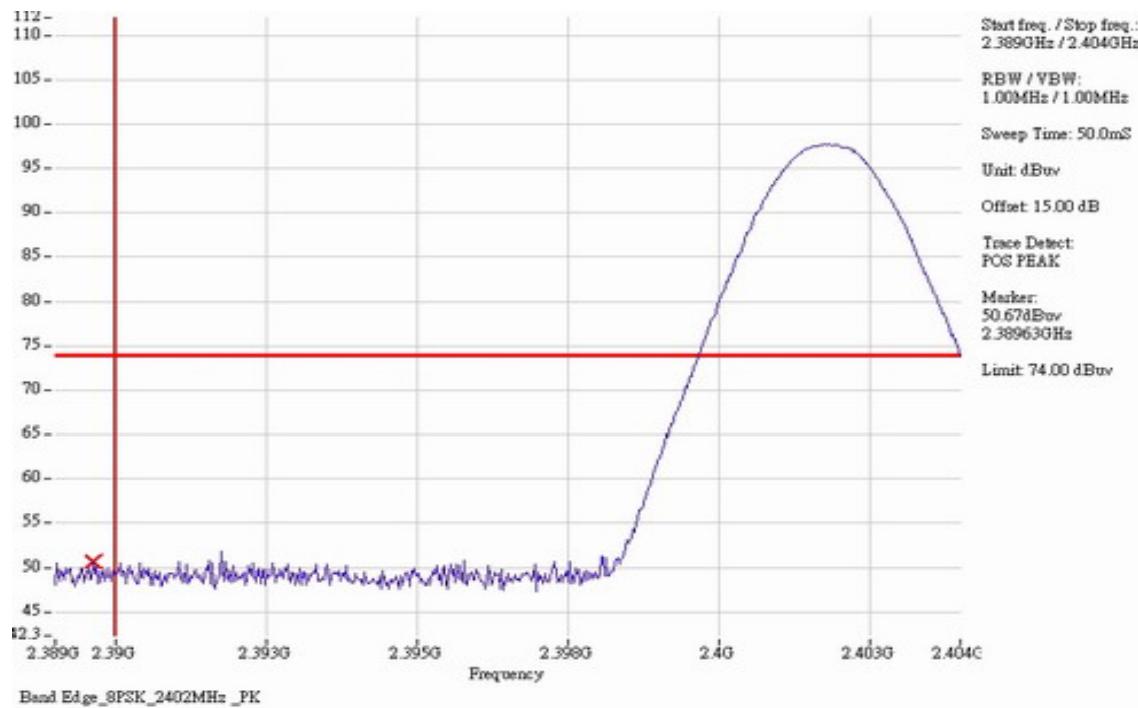
### $\pi/4$ DQPSK CH79 PK



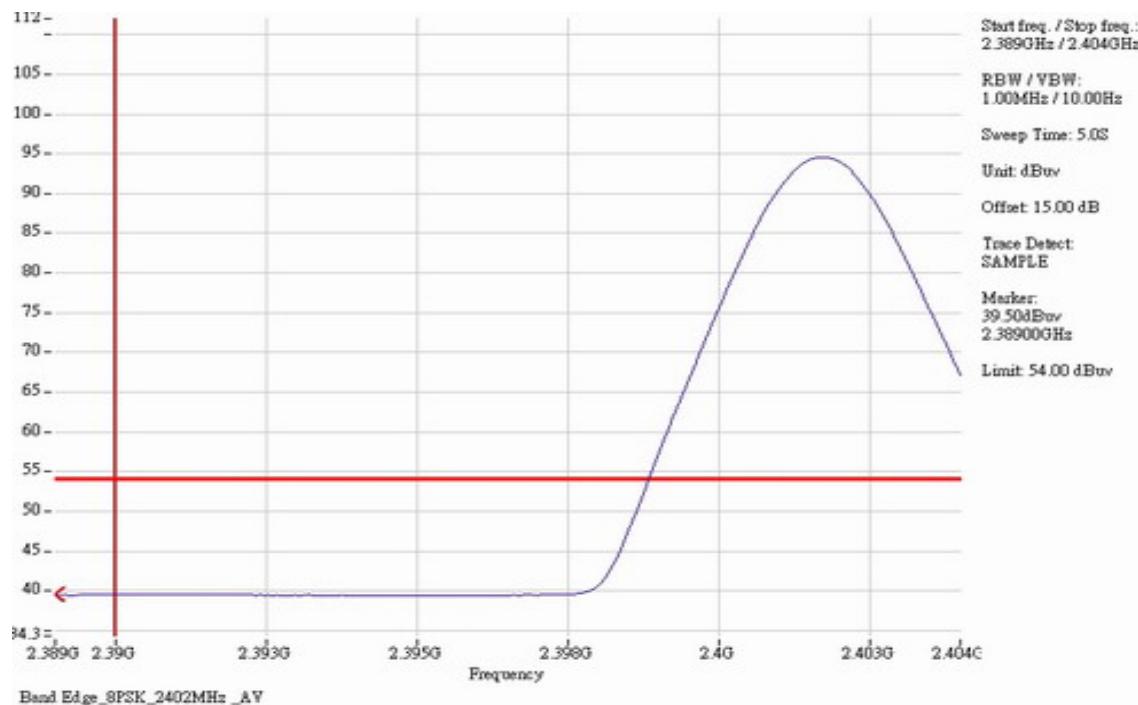
### $\pi/4$ DQPSK CH79 PK



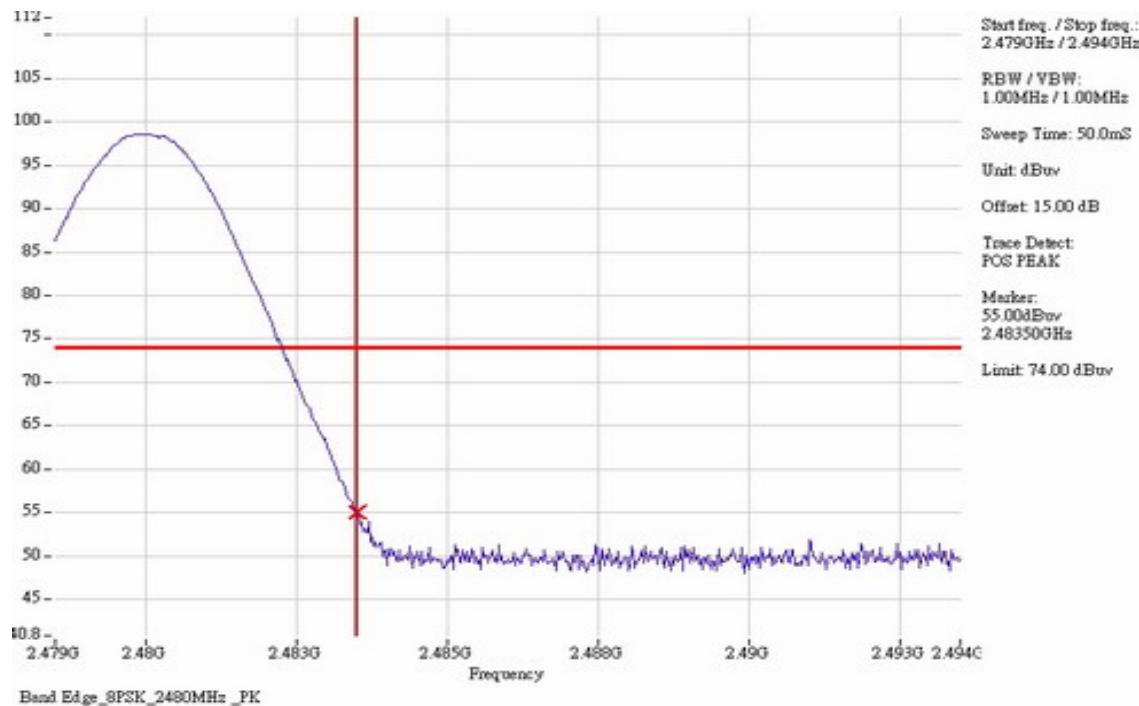
### 8DPSK CH1 PK



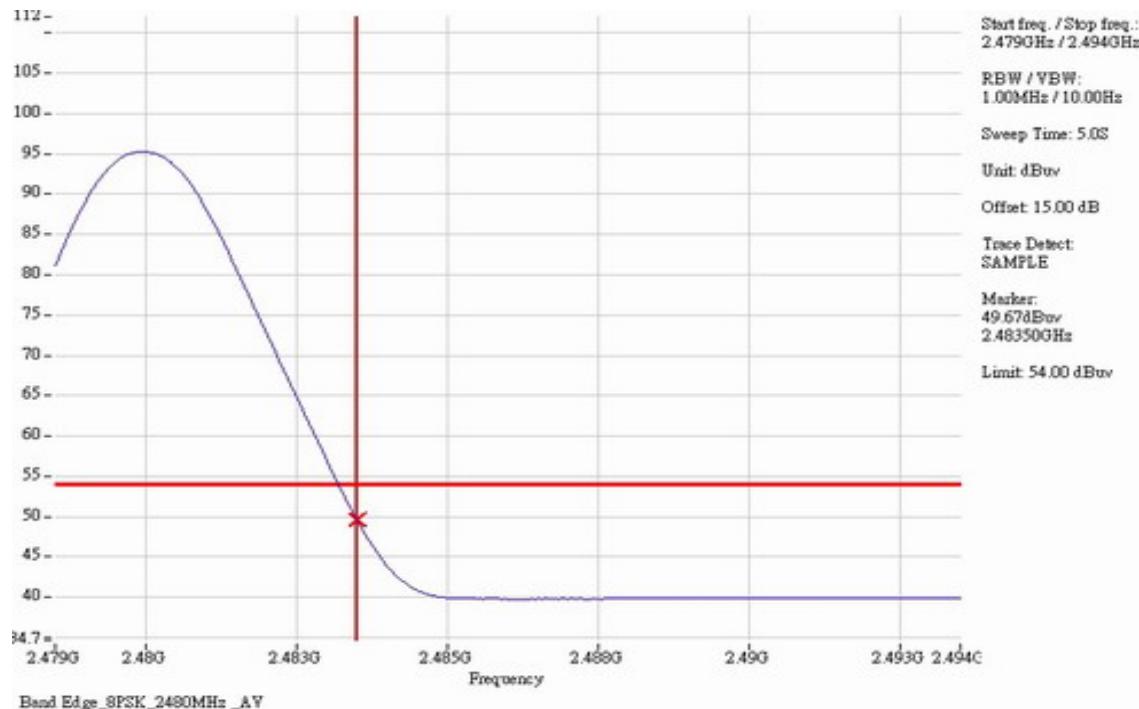
### 8DPSK CH1 AV



## 8DPSK CH79 PK



## 8DPSK CH79 AV



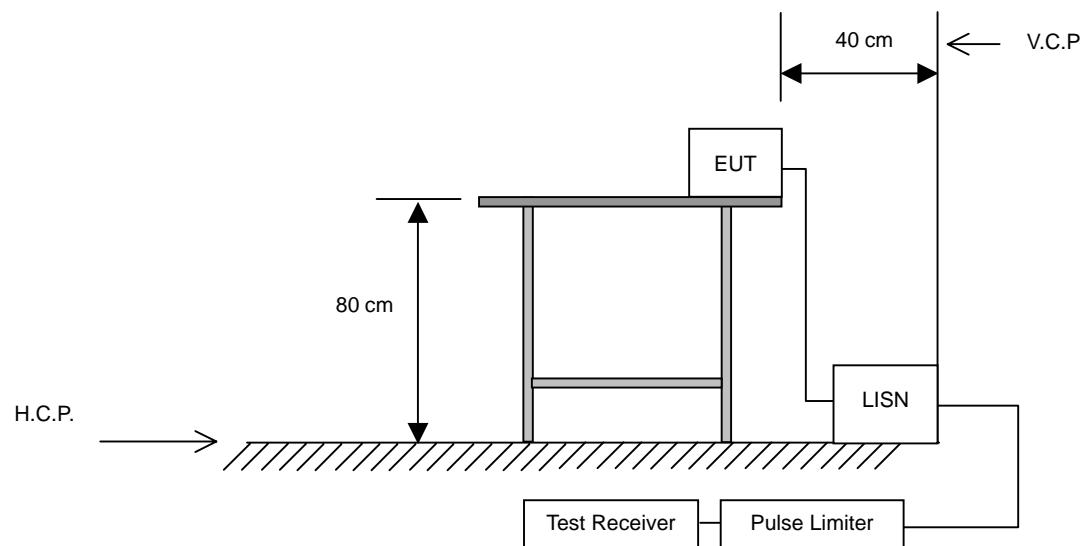
## 10 AC Power Line Conducted Emission test

### 10.1 Limit

Frequency (MHz)	Quasi-Peak (dB $\mu$ V)	Average (dB $\mu$ V)
0.15 to 0.5	66 to 56	56 to 46
> 0.5 to 5	56	46
> 5 to 30	60	50

Note : The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

### 10.2 Configuration of Measurement



### 10.3 Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

- 1) The EUT was placed 80cm height above ground on a non-conductive table and vertical conducting plane located 40cm to the rear of the EUT.
- 2) The EUT was connected to the main power through Line Impedance Stabilization Networks (LISN). This setup provided a 50ohm/50mH coupling impedance for the measuring equipment. The auxiliary equipment will place in secondary LISN.
- 3) Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4/2003 on conducted measurement.
- 4) The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9kHz.

### 10.4 Test Result

**PASS.**

The final test data is shown on as following pages.

## Power Line Conducted Test Data

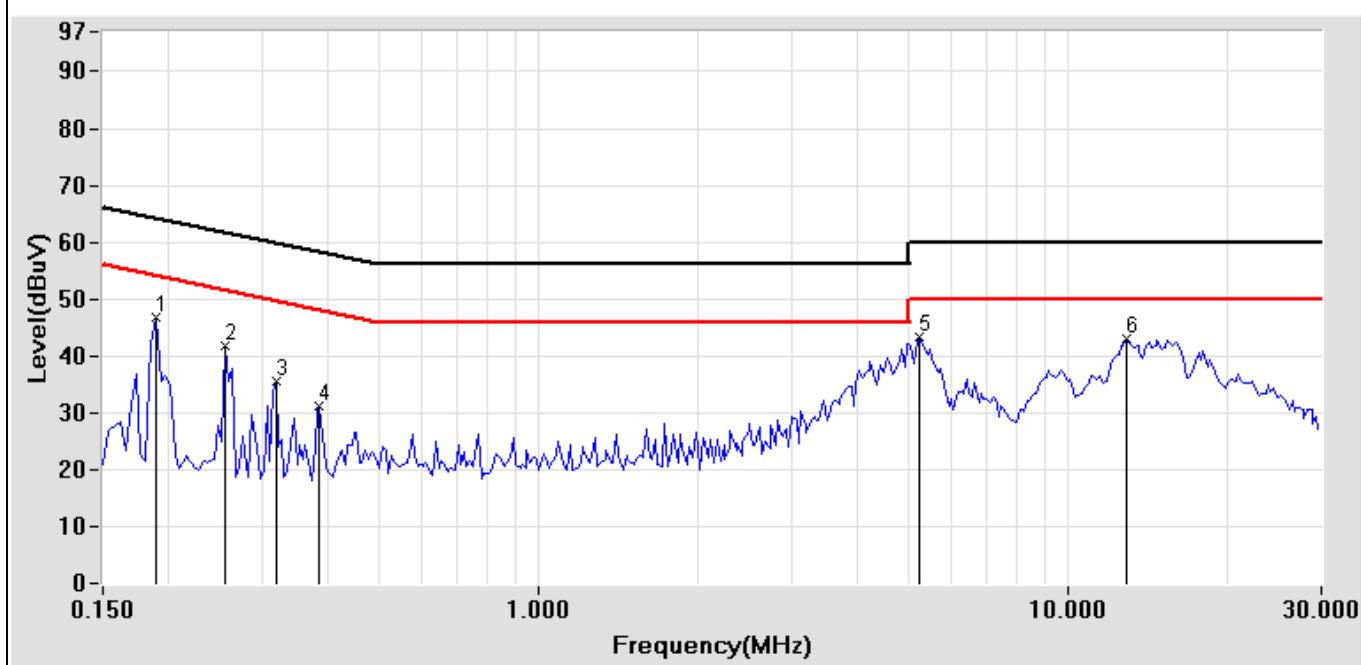
EUT: NoteBook PC	POLARITY: Line
CLIENT: MiTAC	DISTANCE:
MODEL: 9213XY	Serial No.:
RATING: 120V/60Hz	FILE/DATA#: MiTAC.emi/339
Temperature: 25.0 °C	OPERATOR: VICTOR
Humidity: 64 %	TEST SITE: Conduction1

Frequency (MHz)	Factor (dB)	Meter Reading (dB $\mu$ V)		Emission Level (dB $\mu$ V)		Limits (dB $\mu$ V)		Margin (dB)	
		Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.189	0.13	46.95	37.25	47.08	37.38	64.08	54.08	-17.00	-16.70
0.255	0.13	40.08	30.74	40.21	30.87	61.59	51.59	-21.38	-20.72
0.318	0.13	34.56	27.20	34.69	27.33	59.76	49.76	-25.07	-22.43
0.384	0.14	29.41	21.05	29.55	21.19	58.19	48.19	-28.64	-27.00
5.236	0.34	39.79	34.59	40.13	34.93	60.00	50.00	-19.87	-15.07
12.896	0.67	39.74	34.76	40.41	35.43	60.00	50.00	-19.59	-14.57

Remark:

1. All readings are Quasi-Peak and Average values.

2. Factor = Insertion Loss + Cable Loss.



Test Mode: LCD (1280\*800, 60Hz) + DVI (1280\*800, 60Hz) (SKU A)

## Power Line Conducted Test Data

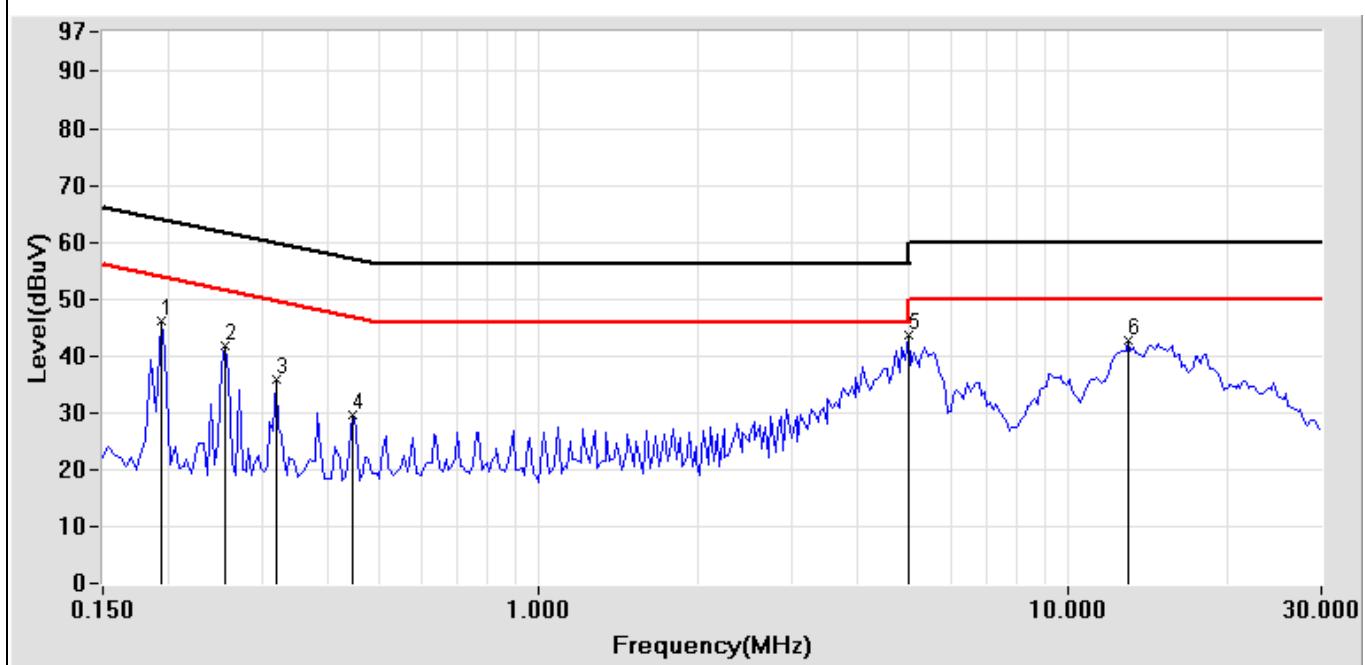
EUT: NoteBook PC	POLARITY: Neutral
CLIENT: MiTAC	DISTANCE:
MODEL: 9213XY	Serial No.:
RATING: 120V/60Hz	FILE/DATA#: MiTAC.emi/340
Temperature: 25.0 °C	OPERATOR: VICTOR
Humidity: 64 %	TEST SITE: Conduction1

Frequency (MHz)	Factor (dB)	Meter Reading (dB $\mu$ V)		Emission Level (dB $\mu$ V)		Limits (dB $\mu$ V)		Margin (dB)	
		Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
0.193	0.13	45.03	36.09	45.16	36.22	63.91	53.91	-18.75	-17.69
0.255	0.13	40.37	31.21	40.50	31.34	61.59	51.59	-21.09	-20.25
0.318	0.13	35.27	27.97	35.40	28.10	59.76	49.76	-24.36	-21.66
0.443	0.14	29.96	26.85	30.10	26.99	57.01	47.01	-26.91	-20.02
4.978	0.23	40.49	34.74	40.72	34.97	56.00	46.00	-15.28	-11.03
12.959	0.57	39.05	34.06	39.62	34.63	60.00	50.00	-20.38	-15.37

Remark:

1. All readings are Quasi-Peak and Average values.

2. Factor = Insertion Loss + Cable Loss.



Test Mode: LCD (1280\*800, 60Hz) + DVI (1280\*800, 60Hz) (SKU A)