



FCC / IC Test Report

STANDARD : 47 CFR Part 15 Subpart C
RSS-210

EQUIPMENT : Smartphone

BRAND NAME : Palm

MODEL NO. : T850UNA

FCC ID : O8F-SKYG

IC ID : 3905A-SKYG

FILING TYPE : Certification

EQUIPMENT CLASS : Digital Transmission System (DTS)

FREQUENCY RANGE : 2400 ~ 2483.5 MHz

MAX OUTPUT POWER : 0.132 W

TEST DATE(S) : March 27, 2008 ~ July 09, 2008

APPLICANT : Palm, Inc.
950 W. Maude Ave. Sunnyvale, CA 94085

MANUFACTURER : Palm, Inc.
950 W. Maude Ave. Sunnyvale, CA 94085

- The equipment has been tested in accordance with the measurement methods specified in ANSI C63.4-2003 and shown compliance with the applicable technical standards.
- The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.
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Roy Wu / Manager



SPORTON International Inc.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

List of Measurements and Examinations

DTS for WLAN					
REPORT SECTION	FCC RULE	DESCRIPTION	LIMIT	RESULT	REMARK
	RSS-210				
3.1	15.247(a)(2)	6dB Bandwidth	> 0.5MHz	PASS	-
	A8.2(a)				
3.2	15.247(b)	Peak Output Power	< 30dBm	PASS	-
	A8.4(4)				
3.3	15.247(d)	Frequency Band Edges	< 20dBc	PASS	-
	A8.5				
3.4	15.247(d)	Spurious Emission	< 20dBc	PASS	-
	A8.5				
3.5	15.247(e)	Power Spectral Density	< 8dBm/3kHz	PASS	-
	A8.2(b)				
3.6	15.207	AC Conducted Emission	15.207(a)	PASS	Under limit -8.68 dB at 0.1844 MHz
	Gen 7.2.2				
3.7	15.247(d)	Transmitter Radiated Emission	15.209(a)	PASS	Under limit -0.48 dB at 2483.47 MHz
	A8.5				
3.8	RSP-100	99% Bandwidth	-	-	-
3.17	15.203 15.247(b)(4)	Antenna Requirement	-	PASS	-
	A8.4(6)				



Hybrid System for BT					
REPORT SECTION	FCC RULE	DESCRIPTION	LIMIT	RESULT	REMARK
	RSS-210				
3.9	15.247(f)	Dwell Time of Each Channel	< 0.4sec in 31.6sec period	PASS	-
	A8.3(1)				
3.10	15.247(b)	Peak Output Power	< 30dBm	PASS	-
	A8.4(4)				
3.11	15.247(d)	Frequency Band Edges	< 20dBc	PASS	-
	A8.5				
3.12	15.247(d)	Spurious Emission	< 20dBc	PASS	-
	A8.5				
3.13	15.247(f)	Power Spectral Density	< 8dBm/3kHz	PASS	-
	A8.3(2)				
3.14	15.207	AC Conducted Emission	15.207(a)	PASS	Under limit -8.68 dB at 0.1844 MHz
	Gen 7.2.2				
3.15	15.247(d)	Transmitter Radiated Emission	15.209(a)	PASS	Under limit -4.00 dB at 2483.47 MHz
	A8.5				
3.16	RSP-100	99% Bandwidth	-	-	-
3.17	15.203	Antenna Requirement	-	PASS	-
	15.247(b)(4)				
	A8.4(6)				



Receiver for WLAN and BT					
REPORT SECTION	RSS-210	DESCRIPTION	LIMIT	RESULT	REMARK
3.18	Gen 7.2.2	Conducted Powerline (Rx)	RSS-210 table 2 limits	PASS	Under limit -8.93 dB at 2.120 MHz
3.19	7.3 Gen 7.2.2	Radiated Emission (Rx)	RSS-210 table 3 limits	PASS	Under limit -4.52 dB at 83.73 MHz



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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR811107-02	Rev.01	Initial creation of document	June 25, 2008
FR811107-02	Rev.02	Update report for 99% Bandwidth of BT	July 10, 2008
FR811107-02	Rev.03	Update report for antenna gain of BT	July 29, 2008



1. General Description

1.1 Feature of Equipment Under Test

PRODUCT FEATURE & SPECIFICATION	
Equipment	Smartphone
Brand Name	Palm
Model No.	T850UNA
Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11 for WLAN 79 for BT
Channel Spacing	5 MHz for WLAN 1 MHz for BT
Maximum Output Power to Antenna	802.11b: 19.84 dBm 802.11g: 21.22 dBm GFSK: 1.11 dBm EDR: 1.42 dBm
Antenna Type	PIFA antenna with gain 1 dBi
Antenna Connector Type	NA
Power Supply	DC 3.7V / AC 100~240V
Type of Modulation :	DSSS / OFDM / GFSK(1Mbps) / $\pi/4$ -DQPSK(EDR 2Mbps) / 8-DPSK(EDR 3Mbps)
DUT Stage :	Identical Prototype

Remark:

1. Two test samples (EUT) with different LCD Panel and Photo Camera are provided to this test.
2. The Bluetooth on this report is hybrid systems that employ a combination of both frequency hopping and digital modulation techniques.
3. For WWAN features of this EUT, test report will be issued separately.



1.2 Basic Description of Equipment under Test

Smartphone 1		LCD Panel 1 + Photo Camera 1
Smartphone 2		LCD Panel 2 + Photo Camera 2
AC/DC Adapter	Brand Name / Model No.	Palm / 3387WW(PMG0501000P)
	Type No.	157-10107-00
	Power Rating	I/P: 100-240Vac, 47-63Hz; O/P: 5 Vdc,1000mA
Battery 1	Brand Name	Palm
	Model No.	157-10105-00
	P/N	35H00114-00M
	Power Rating	3.7Vdc, 1500mAh
	Type	Li-ion
Battery 2	Brand Name	Palm
	Model No.	157-10105-00
	P/N	35H00114-01M
	Power Rating	3.7Vdc, 1500mAh
	Type	Li-ion
Battery 3	Brand Name	Palm
	Model No.	157-10105-00
	P/N	35H00114-02M
	Power Rating	3.7Vdc, 1500mAh
	Type	Li-ion
Earphone	Brand Name / Model No.	Palm / 3363WW, P/N: 180-10611-00
	Signal Line Type	0.9 meter non-shielded cable without ferrite core
USB Cable	Brand Name / Model No.	Palm / 3403WW, P/N: 163-10274-00
	Signal Line Type	1.8 meter non-shielded cable without ferrite core



1.3 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

FCC 47 CFR Part 15, Subpart C 15.247

ANSI C63.4-2003

RSS-210

KDB 453039

Note:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B (DoC) which is recorded in a separate test report.

1.4 Testing Facility

Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C TEL: +886-3-3273456 / FAX: +886-3-3284978	
Test Site No.	Sporton Site No.	
	CO04-HY	03CH06-HY
FCC Designation No.	TW1022	
IC Registration No.	4086B-1	

2. Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

For Modulation of DSSS / OFDM			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	11	2462
06	2437		

For Modulation of GFSK / EDR			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	40	2442
01	2403	:	:
02	2404	76	2478
:	:	77	2479
38	2440	78	2480
39	2441		

2.2 Pre-Scanned RF Power

- a. Preliminary tests were performed in different data rate and recorded the RF power output in the following tables.
- b. The 802.11b/g data rate were set in 1Mbps and 6Mbps; and for Bluetooth, the data rate at 2Mbps; were chosen to be tested, due to the highest RF output power.

Channel	Frequency (MHz)	RF Power (dBm)			
		At 802.11b DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
01	2412	19.32	19.38	19.34	19.34
06	2437	19.67	19.65	19.68	19.74
11	2462	19.84	19.76	19.81	19.76

Channel	Frequency (MHz)	RF Power (dBm)							
		At 802.11g OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
01	2412	20.94	20.87	20.35	20.32	19.62	19.37	18.14	17.33
06	2437	21.17	21.11	20.77	20.56	19.99	19.64	18.78	17.88
11	2462	21.22	21.17	20.84	20.67	20.02	19.68	18.47	18.20

Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	$\pi/4$ -DQPSK	8-DPSK
		1Mbps	2Mbps	3Mbps
00	2402	-0.71	-0.25	-2.2
39	2441	0.62	1.07	-0.76
78	2480	1.11	1.42	-0.17

- c. The EUT is programmed to transmit signal continuously for all testings.

2.3 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: conduction 150 kHz to 30 MHz, radiation 30 MHz to 25000MHz.

Pre-scanned tests were conducted to determine the final configuration from all possible combinations. The following tables are showing the test modes as the worst cases and recorded in this report.

RF Conducted Test / Radiated Emission			
Frequency	Modulation	Data Rate	Channel
Below 1GHz	DSSS	1Mbps	01, 06, 11
	OFDM	6Mbps	01, 06 , 11
Above 1GHz	DSSS	1Mbps	01, 06, 11
	OFDM	6Mbps	01, 06, 11

Therefore spurious below 1GHz, only the data of Ch11 for DSSS , and Ch06 for OFDM are shown, and above 1GHz, three channels are shown.

RF Conducted Test / Radiated Emission			
	Modulation	Data Rate	Channel
Below 1GHz	$\pi/4$ -DQPSK	2Mbps	00, 39 , 78
Above 1GHz	$\pi/4$ -DQPSK	2Mbps	00, 39, 78

Therefore spurious below 1GHz, only data of Ch39 is shown for FHSS.

Transmitter Conducted Emission	
Mode	Configuration
1	Sample A : BT Link + WLAN Link + GPS Rx + Adapter + Camera + Battery 1 + Earphone
2	Sample B : BT Link + WLAN Link + GPS Rx + Adapter + Camera + Battery 2 + Earphone
3	Sample B : BT Link + WLAN Link + GPS Rx + Adapter + Camera + Battery 3 + Earphone

Remark: Two test samples with different LCD Panel and Photo Camera are provided to the test.

Receiver Conducted Emission	
Mode	Configuration
1	Sample A : GSM850 Idle+ BT Idle + WLAN Idle + GPS Rx + Adapter + Photo Camera 1 + Battery 1 + Earphone
2	Sample A : PCS1900 Idle + BT Idle + WLAN Idle + GPS Rx + Adapter + MPEG 4 + Battery 2 + Earphone
3	Sample A : EDGE1900 Idle + BT Idle + WLAN Idle + GPS Rx + USB Link + MPEG 4 + Batter 3 + Earphone
4	Sample A : WCDMA1900 Idle + BT Idle + WLAN Idle + GPS Rx + Adapter + MPEG 4 + Battery 2 + Earphone
5	Sample A : HSDPA1900 Idle + BT Idle + WLAN Idle + GPS Rx + Adapter + MPEG 4 + Battery 2 + Earphone
6	Sample B : PCS1900 Idle + BT Idle + WLAN Idle + GPS Rx + Adapter + MPEG 4 + Battery 2 + Earphone

Receiver Radiated Emission	
Mode	Configuration
1	Sample A : GSM850 Idle + BT Idle + WLAN Idle + GPS Rx + Adapter + Photo Camera 1 + Battery 1 + Earphone
2	Sample A : PCS1900 Idle + BT Idle + WLAN Idle + GPS Rx + Adapter + MPEG 4 + Battery 1 + Earphone
3	Sample A : EDGE850 Idle + BT Idle + WLAN Idle + GPS Rx + USB Link + Photo Camera 1 + Battery 1 + Earphone
4	Sample A : WCDMA850 Idle + BT Idle + WLAN Idle + GPS Rx + USB Link + Photo Camera 1 + Battery 1 + Earphone
5	Sample A : HSDPA850 Idle + BT Idle + WLAN Idle + GPS Rx + USB Link + Photo Camera 1 + Battery 1 + Earphone
6	Sample B : HSDPA850 Idle + BT Idle + WLAN Idle + GPS Rx + USB Link + Photo Camera 2 + Battery 2 + Earphone
7	Sample B : HSDPA850 Idle + BT Idle + WLAN Idle + GPS Rx + USB Link + Photo Camera 2 + Battery 3 + Earphone

Remark: Two test samples with different LCD Panel and Photo Camera are provided to the test.



2.4 Ancillary Equipment List

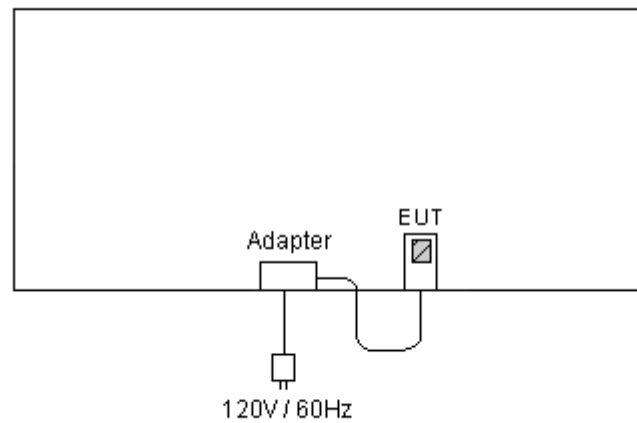
Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable / Power Cord
1	Base Station	R&S	CMU 200	N/A	Unshielded, 1.8m
2	BT Base Station	Anritus	8852A	N/A	Unshielded, 1.8m
3	GPS Station	T&E	GP-50	N/A	Unshielded, 1.8m
4	Bluetooth Earphone	Engotech	ET-BH111	PQY471087	N/A
5	Notebook	DELL	D400	E2K24GBRL	AC I/P: Unshielded, 1.2m DC O/P: Shielded, 1.8m
6	(RS-232)Mouse	State	MS-303	FCC DoC	Unshielded, 1.2m
7	iPod	Apple	A1199	DoC	Shielded, 1.2m
8	Mobile Phone	Sony Ericsson	W810i	PY7AF052051	N/A

2.5 RF Utility

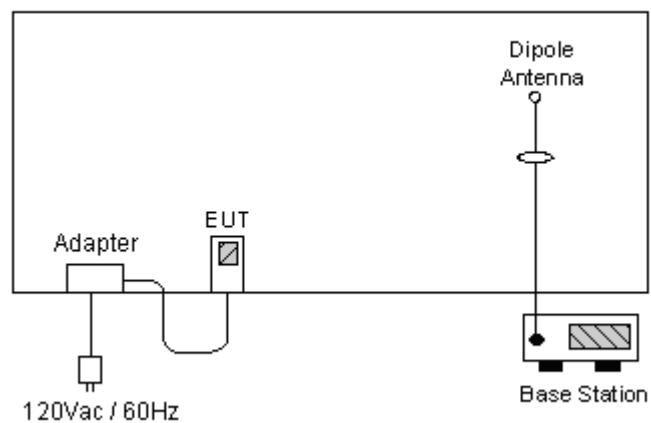
The programmed RF Utility “BT Test” and “WLAN Router” is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing.

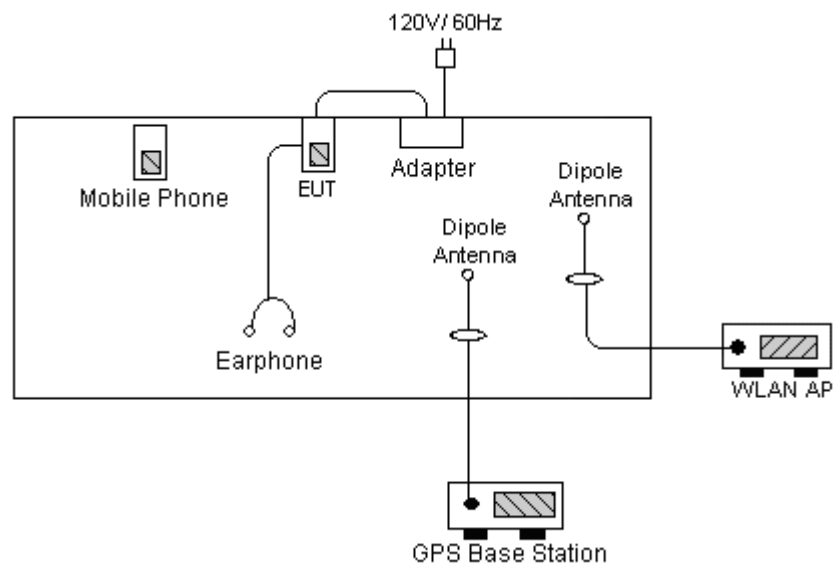
2.6 Connection Diagram of Test System

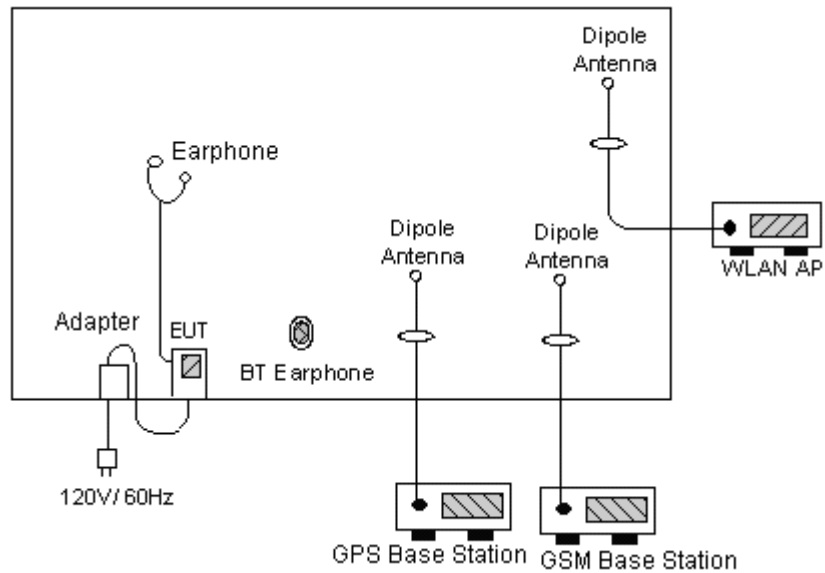
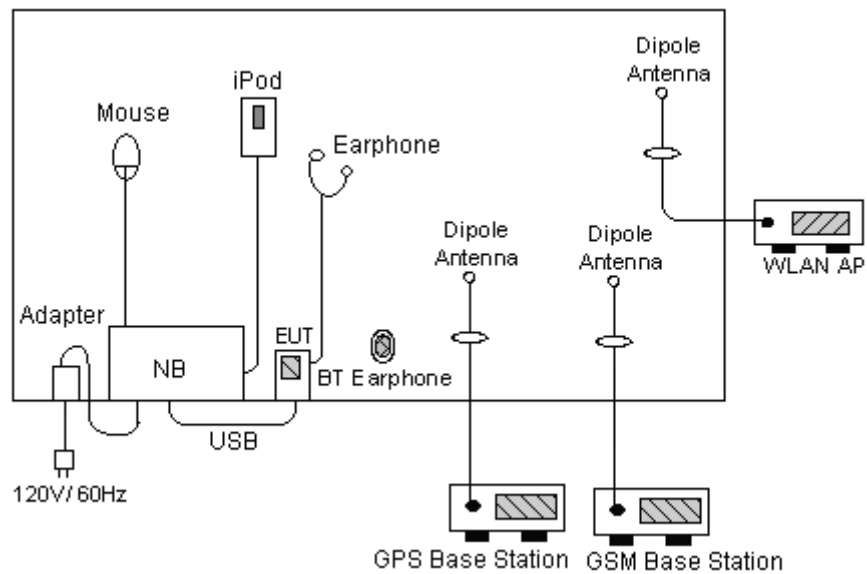
<Tx Radiated Emission> for DSSS / OFDM



<Tx Radiated Emission > for GFSK / EDR



<Tx Conducted Emission> Mode 1~2


<Rx Phone with Adapter Mode>

<Rx Phone with USB Mode>


3. Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limits of 6dB Bandwidth Measurement

The minimum 6 dB bandwidth shall be at least 500 kHz.

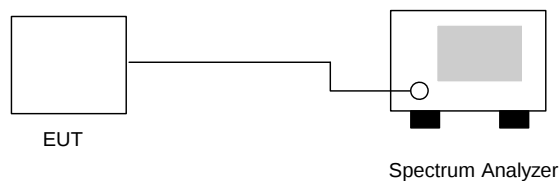
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 100kHz and VBW to 100kHz.
3. The 6 dB bandwidth is defined as the frequency range where the power is higher than the peak power minus 6dB.

3.1.4 Test Setup



3.1.5 Test Result

Modulation Type : DSSS

Temperature : 28~29

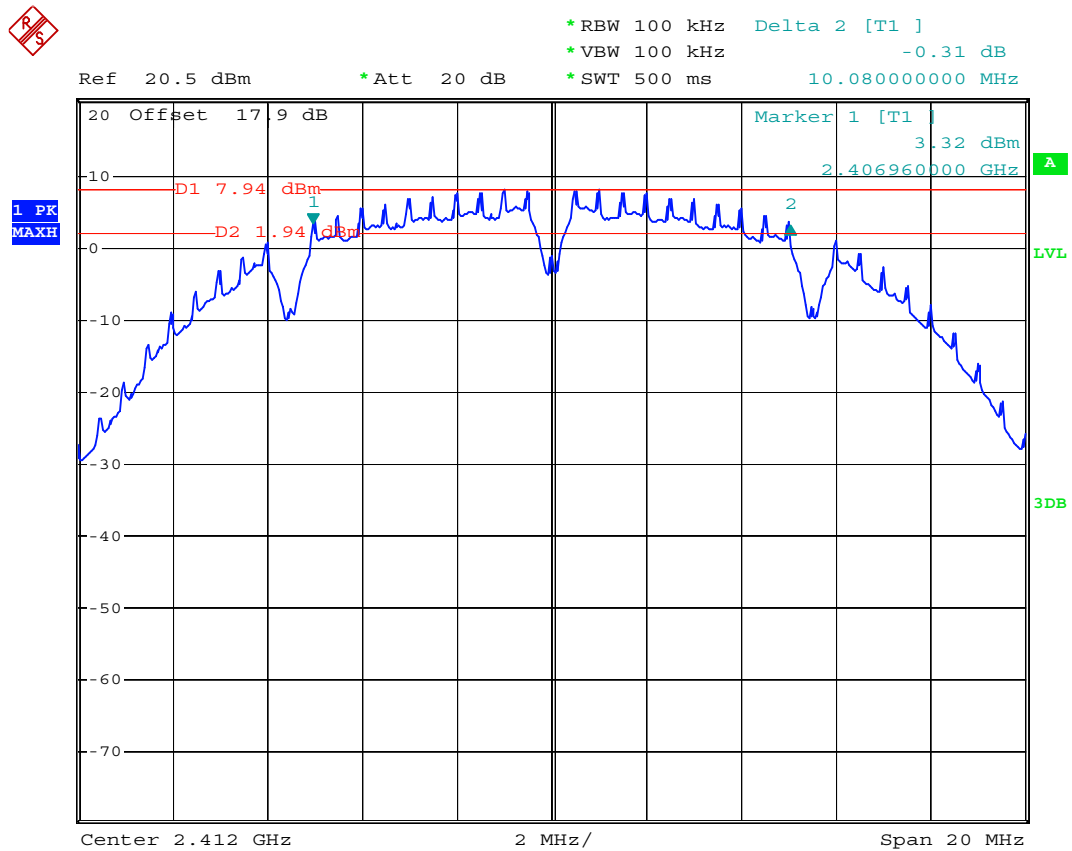
Test Engineer : Darren Lin

Relative Humidity : 47~48%

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Min. Limits (MHz)	Pass/Fail
01	2412	10.08	0.5	Pass
06	2437	10.08	0.5	Pass
11	2462	10.08	0.5	Pass



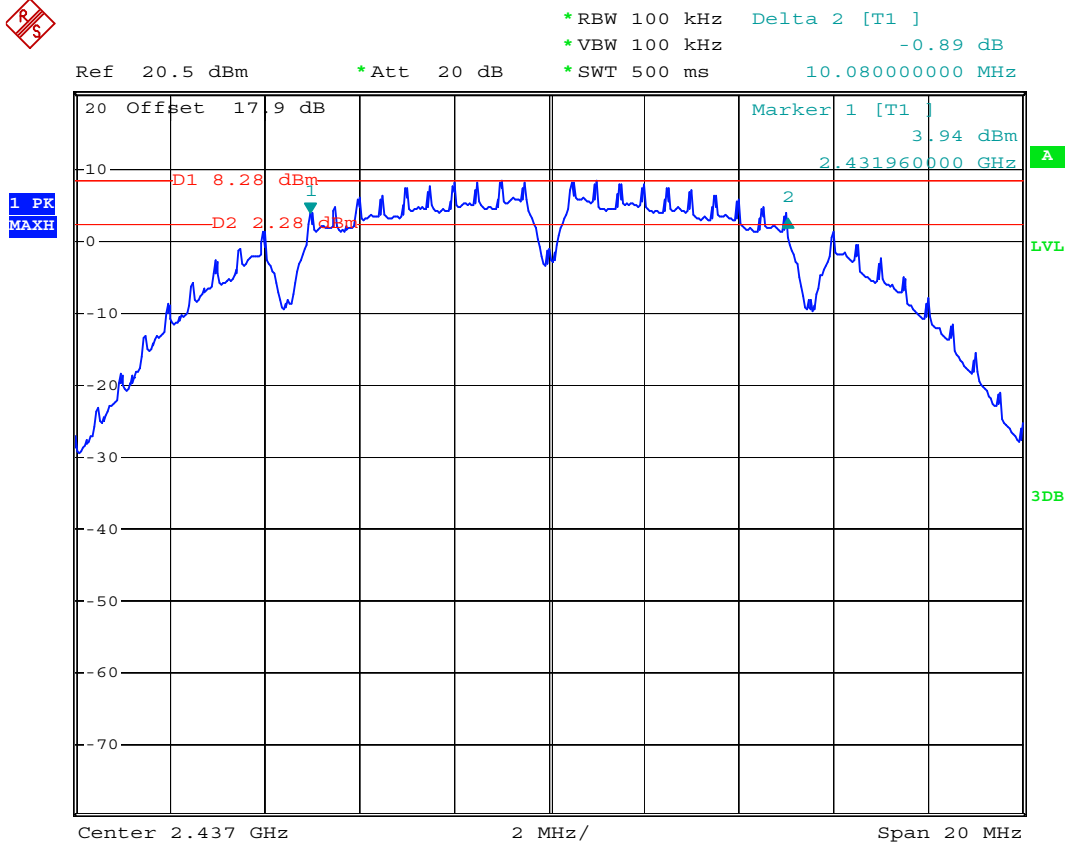
DSSS_CH01



Date: 27.MAR.2008 14:43:11



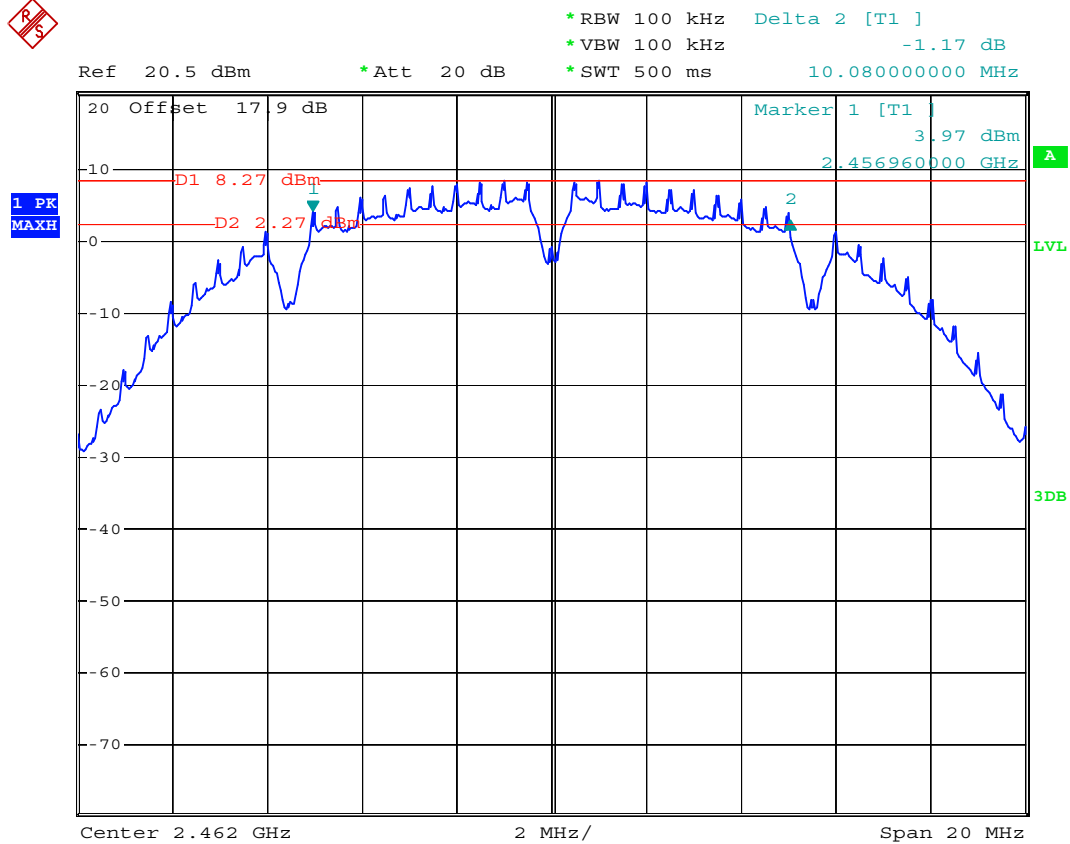
DSSS_CH06



Date: 27.MAR.2008 14:44:13



DSSS_CH11



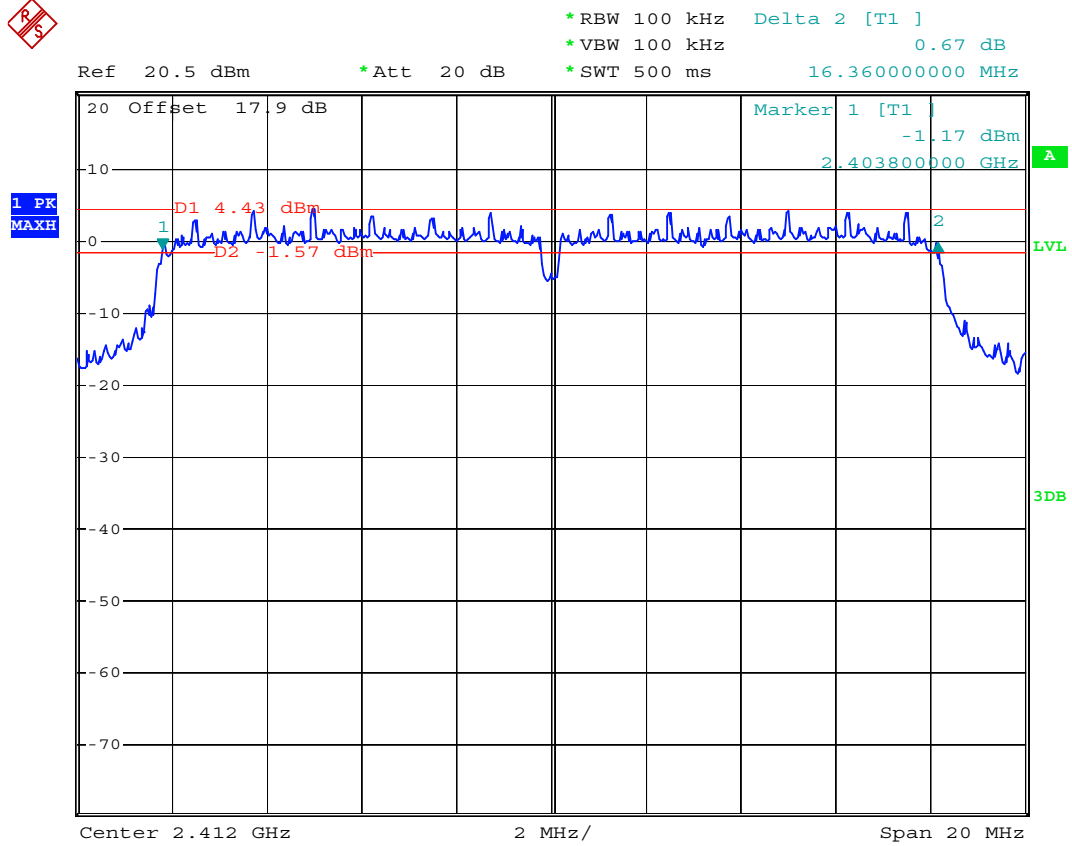
Date: 27.MAR.2008 14:45:04

**Modulation Type :** OFDM**Temperature :** 28~29**Test Engineer :** Darren Lin**Relative Humidity :** 47~48%

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Min. Limits (MHz)	Pass/Fail
01	2412	16.36	0.5	Pass
06	2437	16.36	0.5	Pass
11	2462	16.36	0.5	Pass



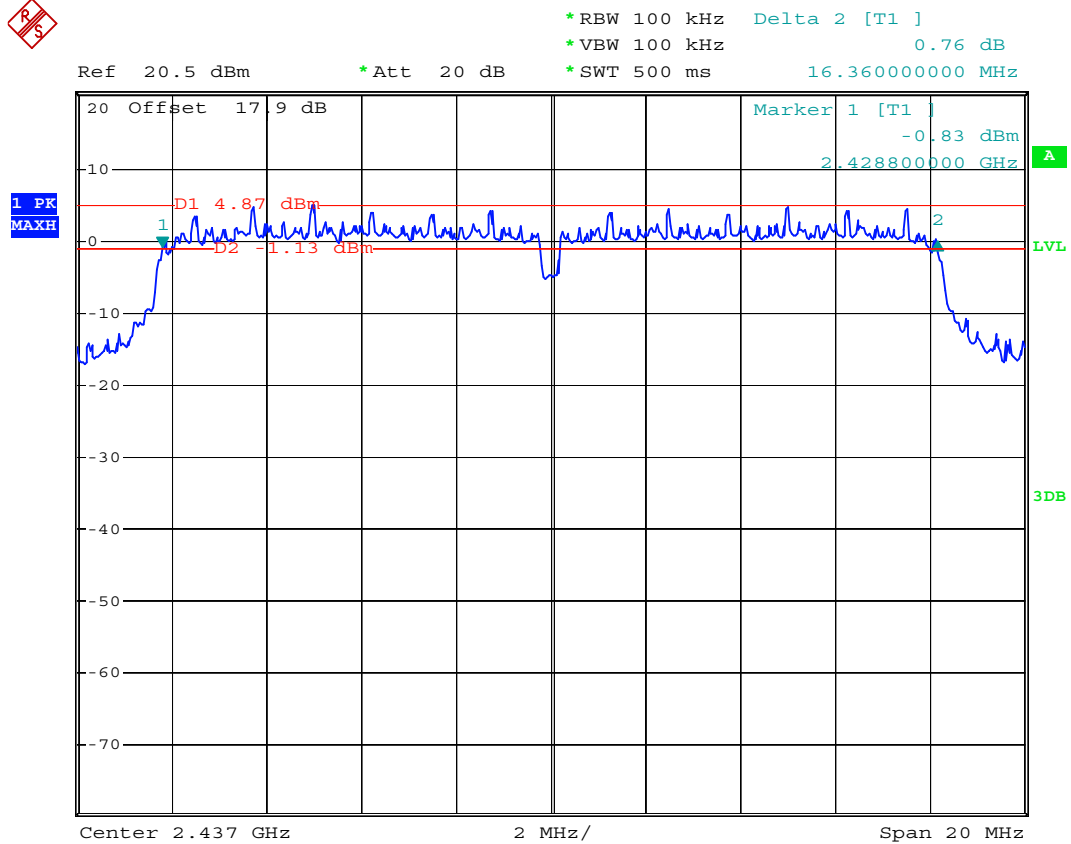
OFDM_CH01



Date: 27.MAR.2008 15:58:21



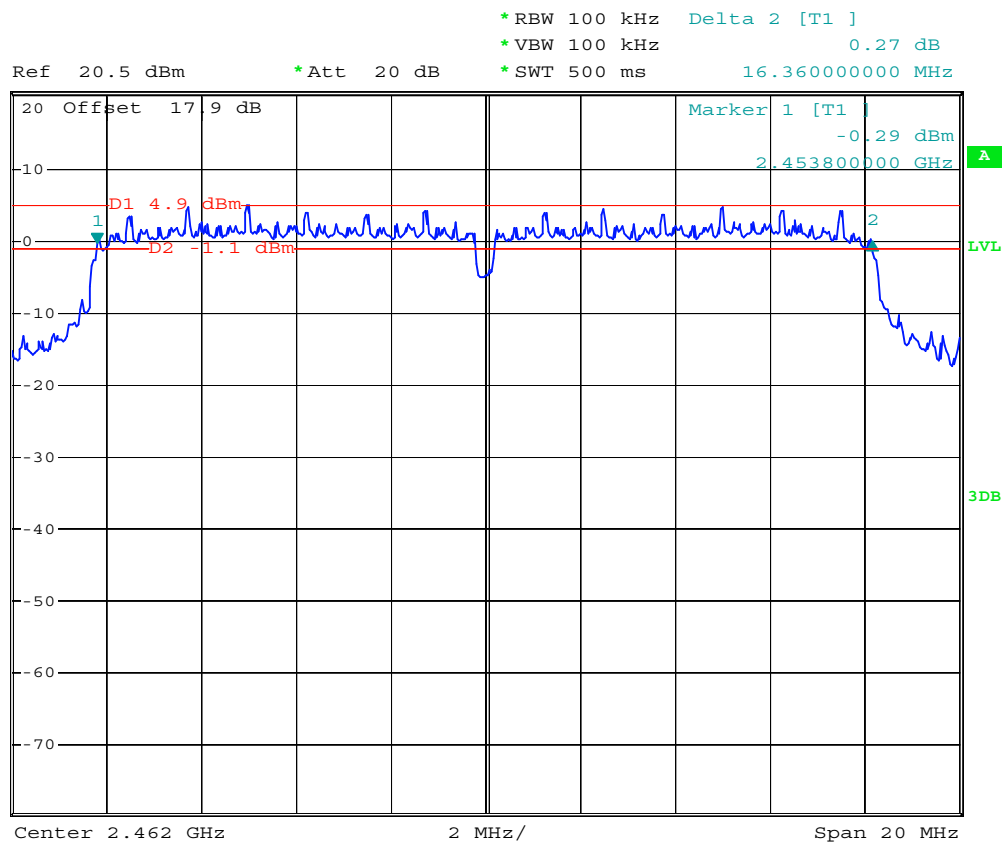
OFDM_CH06



Date: 27.MAR.2008 15:49:46



OFDM_CH11



Date: 27.MAR.2008 15:51:55

3.2 Peak Output Power Measurement

3.2.1 Limit of Peak Output Power Measurement

The maximum peak output power of the intentional radiator shall not exceed 30 dBm.

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

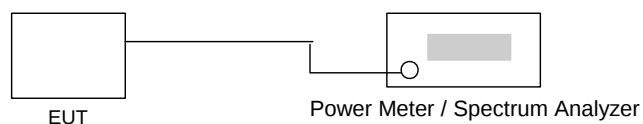
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedure

The antenna port of the EUT was connected to a peak power meter for WLAN measurement, according to the Measurement of Digital Transmission Systems Operating under Section 15.247 March 23, 2005. The power is equal to the reading level on power meter plus cable loss at the EUT antenna terminal.

3.2.4 Test Setup



**3.2.5 Test Result****Modulation Type :** DSSS**Temperature :** 28~29**Test Engineer :** Darren Lin**Relative Humidity :** 47~48%

Channel	Frequency (MHz)	Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.32	30	Pass
06	2437	19.67	30	Pass
11	2462	19.84	30	Pass

Modulation Type : OFDM**Temperature :** 28~29**Test Engineer :** Darren Lin**Relative Humidity :** 47~48%

Channel	Frequency (MHz)	Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	20.94	30	Pass
06	2437	21.17	30	Pass
11	2462	21.22	30	Pass

3.3 Band Edges Measurement

3.3.1 Limit of Band Edges Measurement

In any 100 kHz 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.

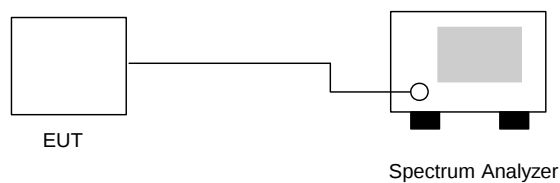
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100 kHz bandwidth from band edge.
3. The band edges were measured and recorded.

3.3.4 Test Setup



**3.3.5 Test Result****Modulation Type :** DSSS**Temperature :** 28~29**Channel :** 01**Relative Humidity :** 47~48%**Test Engineer :** Darren Lin

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	61.96	-12.04	74.00	61.86	31.86	3.92	35.68	100	0	Peak
2389.99	52.43	-1.57	54.00	52.33	31.86	3.92	35.68	129	12	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	56.17	-17.83	74.00	56.07	31.86	3.92	35.68	100	0	Peak
2389.99	45.81	-8.19	54.00	45.71	31.86	3.92	35.68	124	178	Average

Modulation Type : DSSS**Temperature :** 28~29**Channel :** 11**Relative Humidity :** 47~48%**Test Engineer :** Darren Lin

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2487.65	59.80	-14.20	74.00	59.47	31.98	4.05	35.70	100	0	Peak
2487.65	52.81	-1.20	54.00	52.45	32.00	4.05	35.70	156	26	Average

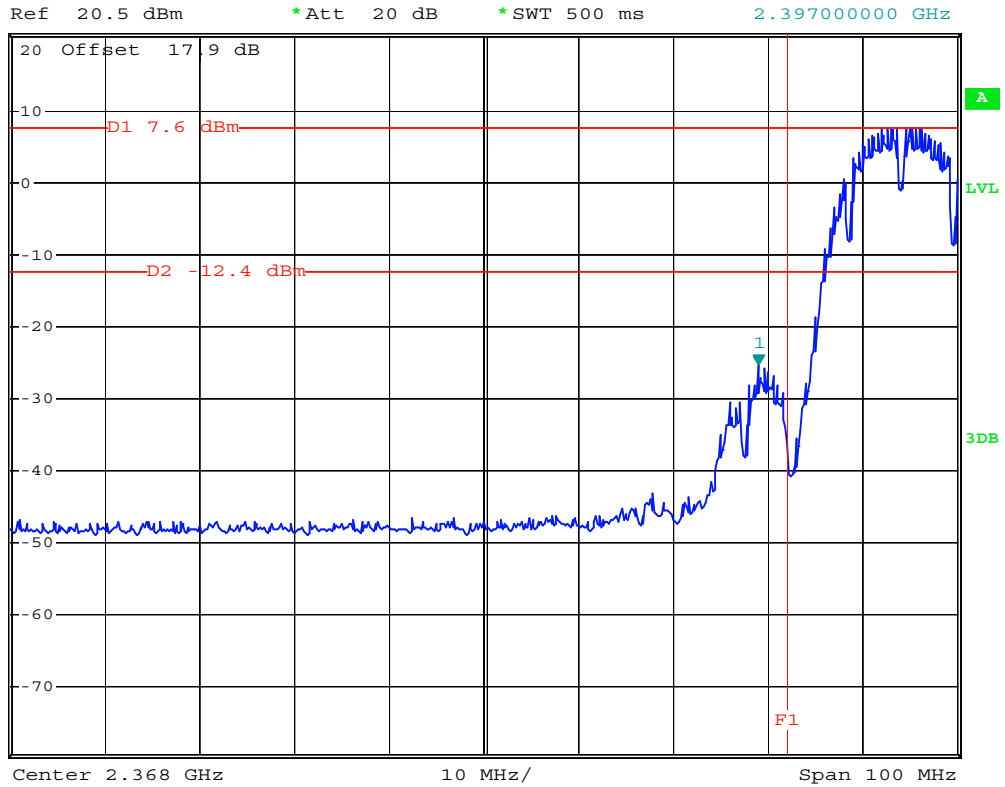
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2488.22	51.56	-22.44	74.00	51.23	31.98	4.05	35.70	100	0	Peak
2488.22	43.50	-10.51	54.00	43.14	32.00	4.05	35.70	100	179	Average



DSSS_CH01



*RBW 100 kHz Marker 1 [T1]
*VBW 100 kHz -25.39 dBm
*SWT 500 ms 2.397000000 GHz



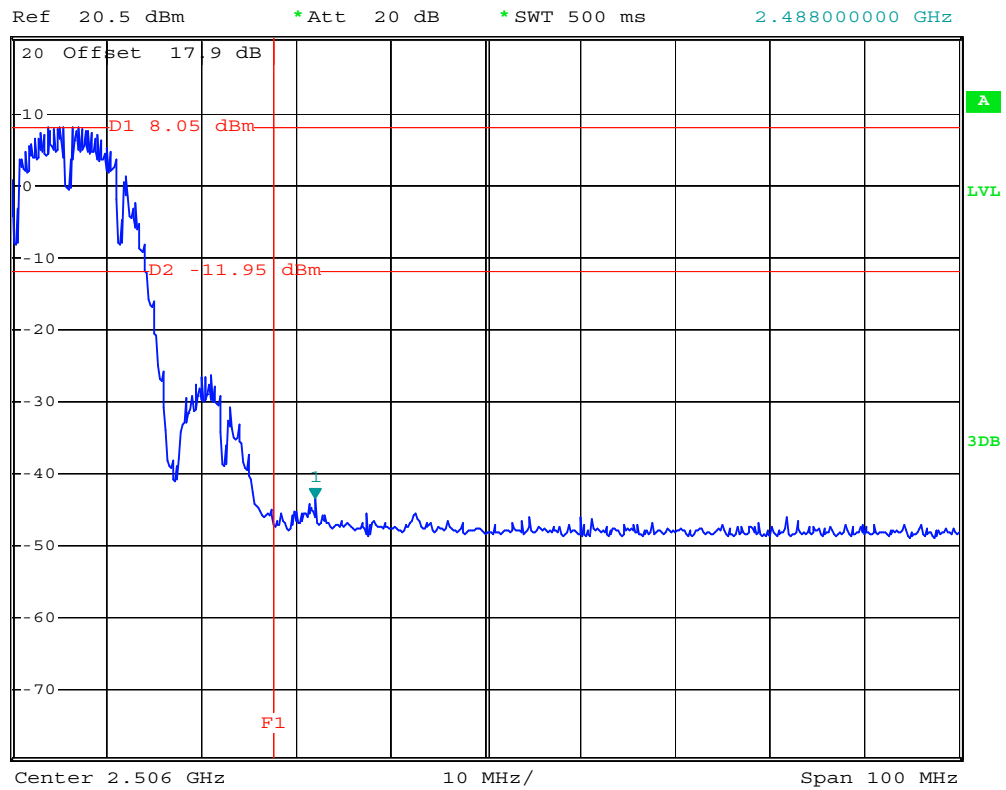
Date: 27.MAR.2008 14:47:27



DSSS_CH11



*RBW 100 kHz Marker 1 [T1]
*VBW 100 kHz -43.46 dBm
*SWT 500 ms 2.488000000 GHz



Date: 27.MAR.2008 14:46:14

**Modulation Type :** OFDM**Temperature :** 28~29**Channel :** 01**Relative Humidity :** 47~48%**Test Engineer :** Darren Lin

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390.00	72.44	-1.56	74.00	72.34	31.86	3.92	35.68	100	0	Peak
2390.00	47.84	-6.16	54.00	47.74	31.86	3.92	35.68	100	17	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390.00	68.93	-5.07	74.00	68.83	31.86	3.92	35.68	100	0	Peak
2390.00	44.35	-9.65	54.00	44.25	31.86	3.92	35.68	107	233	Average

Modulation Type : OFDM**Temperature :** 28~29**Channel :** 11**Relative Humidity :** 47~48%**Test Engineer :** Darren Lin

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.47	73.29	-0.71	74.00	72.96	31.98	4.05	35.70	100	0	Peak
2483.47	53.52	-0.48	54.00	53.19	31.98	4.05	35.70	144	51	Average

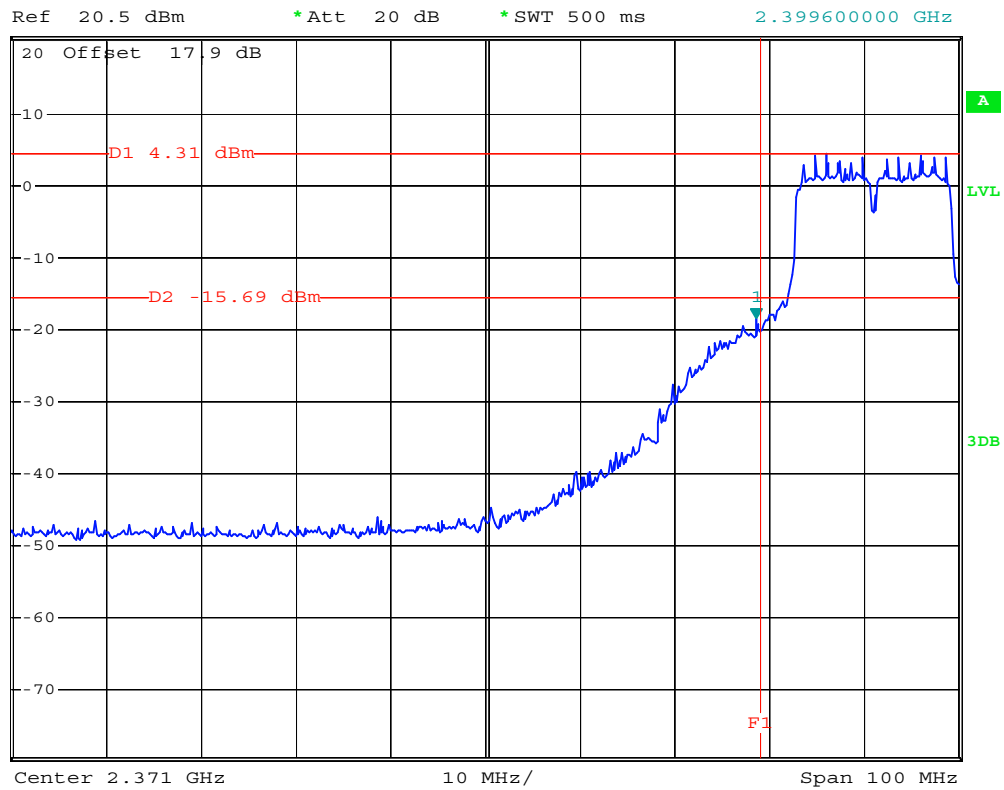
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.66	70.47	-3.53	74.00	70.14	31.98	4.05	35.70	100	0	Peak
2483.66	48.74	-5.26	54.00	48.41	31.98	4.05	35.70	100	224	Average



OFDM_CH01



*RBW 100 kHz Marker 1 [T1]
*VBW 100 kHz -18.38 dBm
*SWT 500 ms 2.399600000 GHz



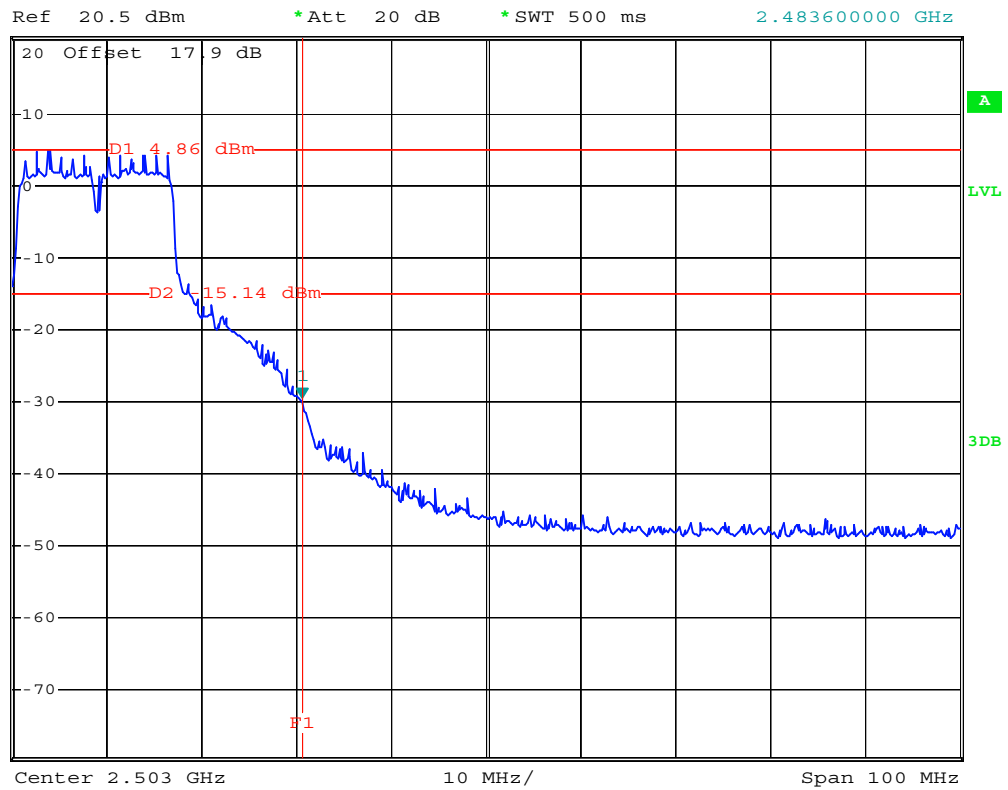
Date: 27.MAR.2008 15:54:04



OFDM_CH11



*RBW 100 kHz Marker 1 [T1]
*VBW 100 kHz -29.59 dBm
*SWT 500 ms 2.483600000 GHz



Date: 27.MAR.2008 15:52:55

3.4 Spurious Emission Measurement

3.4.1 Limit of Spurious Emission Measurement

All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band.

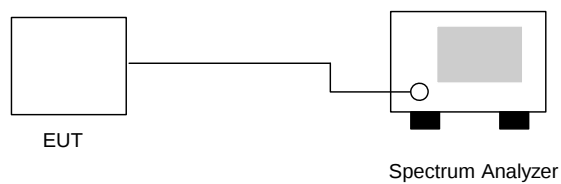
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set the RBW of spectrum analyzer to 100kHz, VBW $\geq$ RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

3.4.4 Test Setup





3.4.5 Test Result

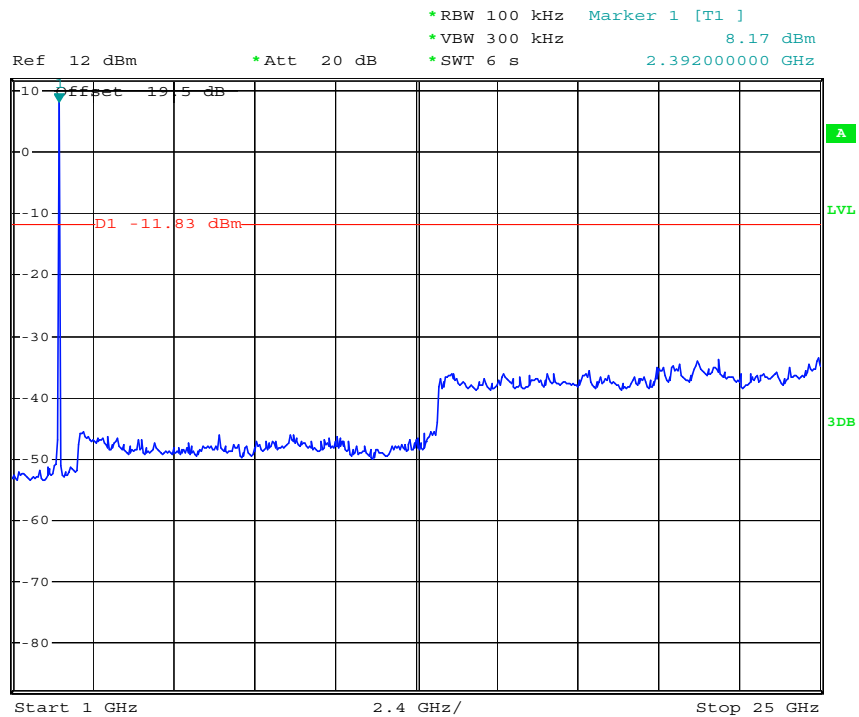
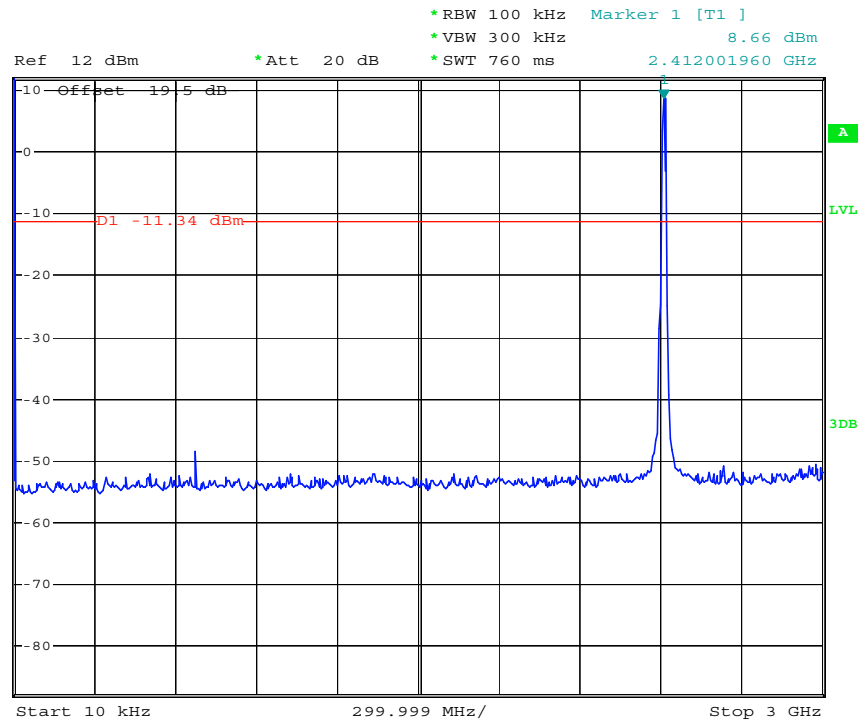
Modulation Type : DSSS

Temperature : 28~29

Channel : 01

Relative Humidity : 47~48%

Test Engineer : Darren Lin





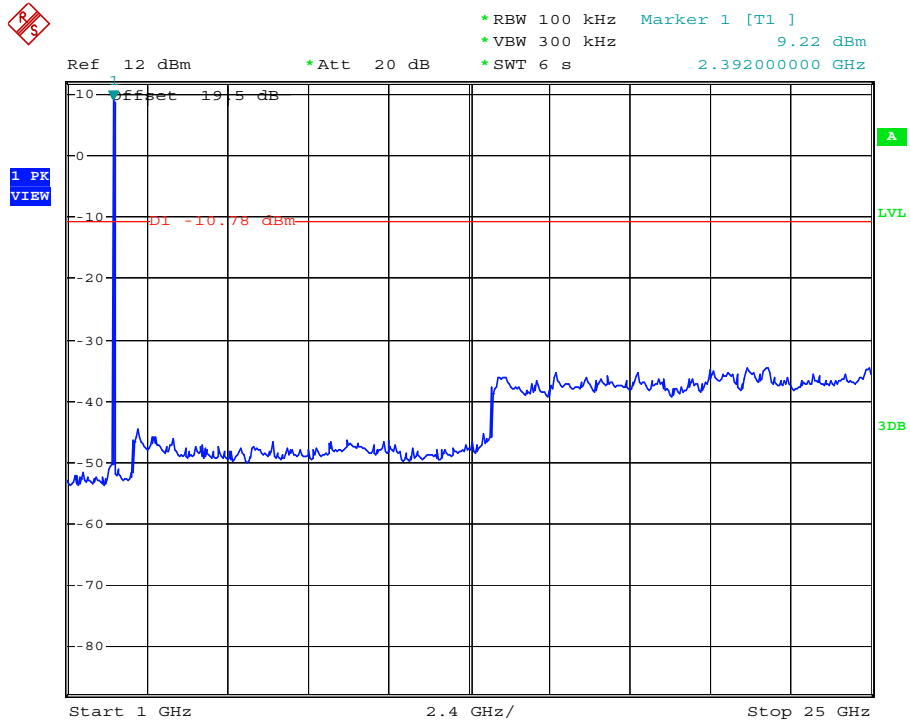
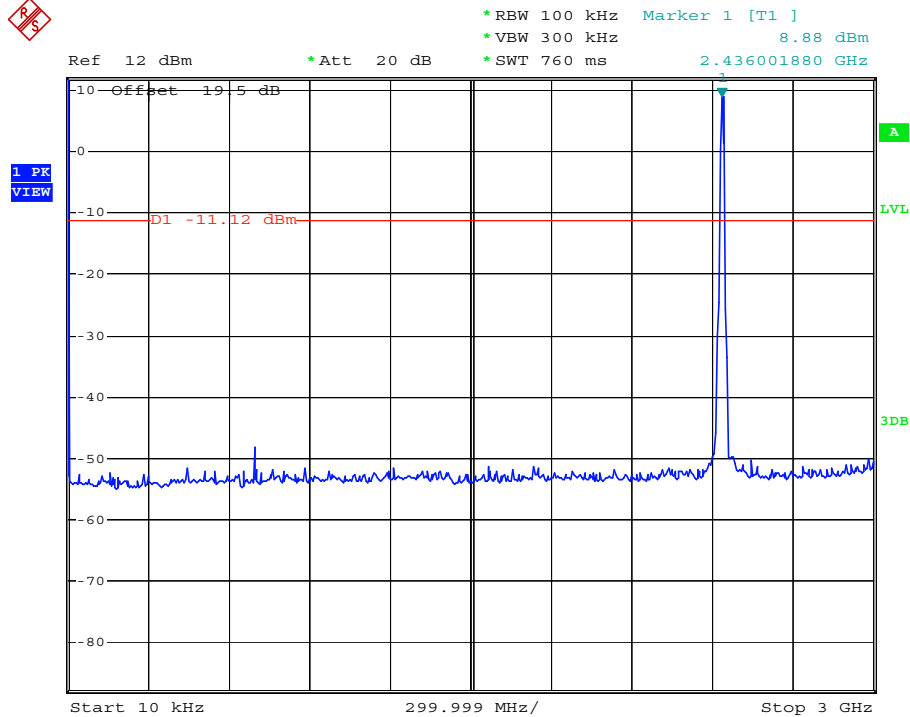
Modulation Type : DSSS

Temperature : 28~29

Channel : 06

Relative Humidity : 47~48%

Test Engineer : Darren Lin





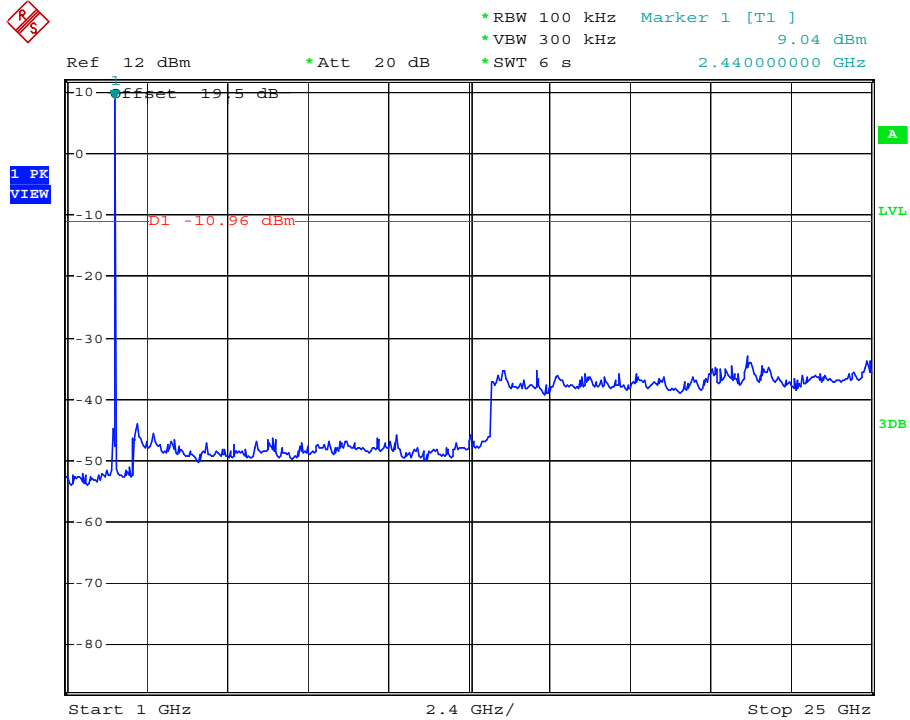
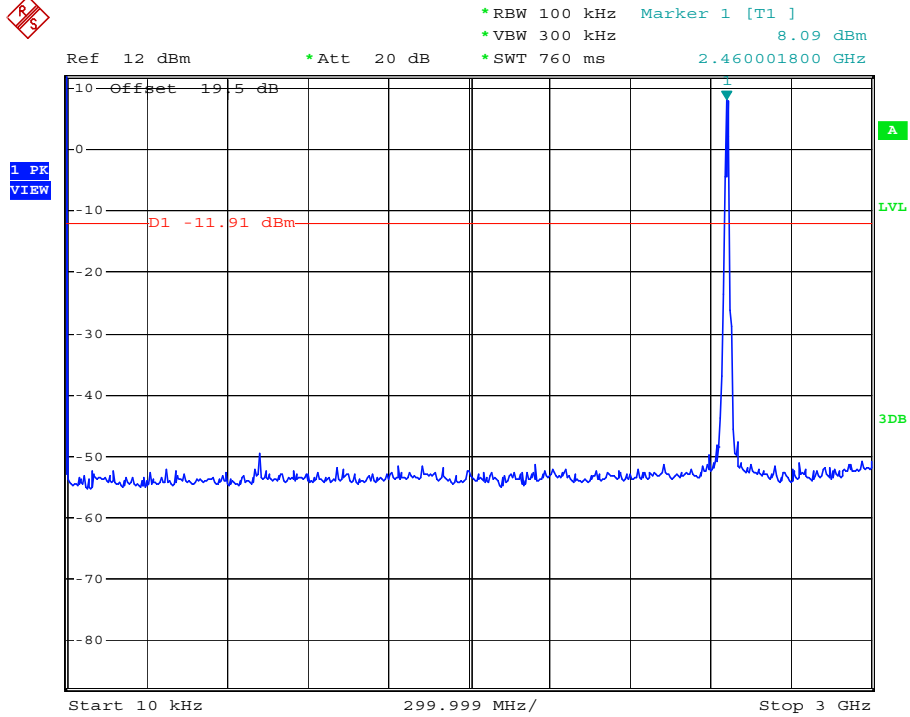
Modulation Type : DSSS

Temperature : 28~29

Channel : 11

Relative Humidity : 47~48%

Test Engineer : Darren Lin





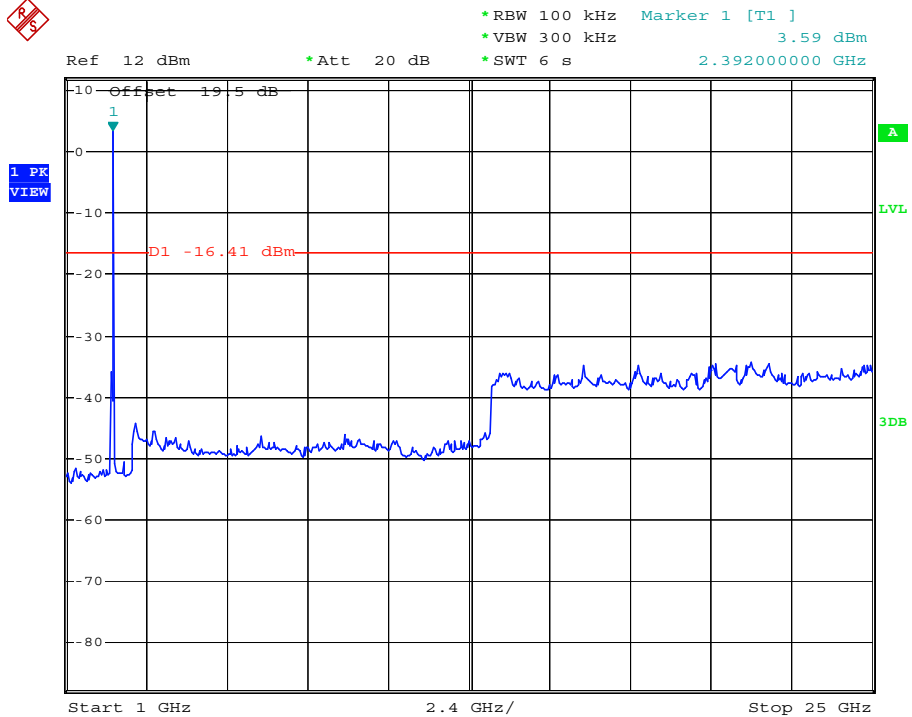
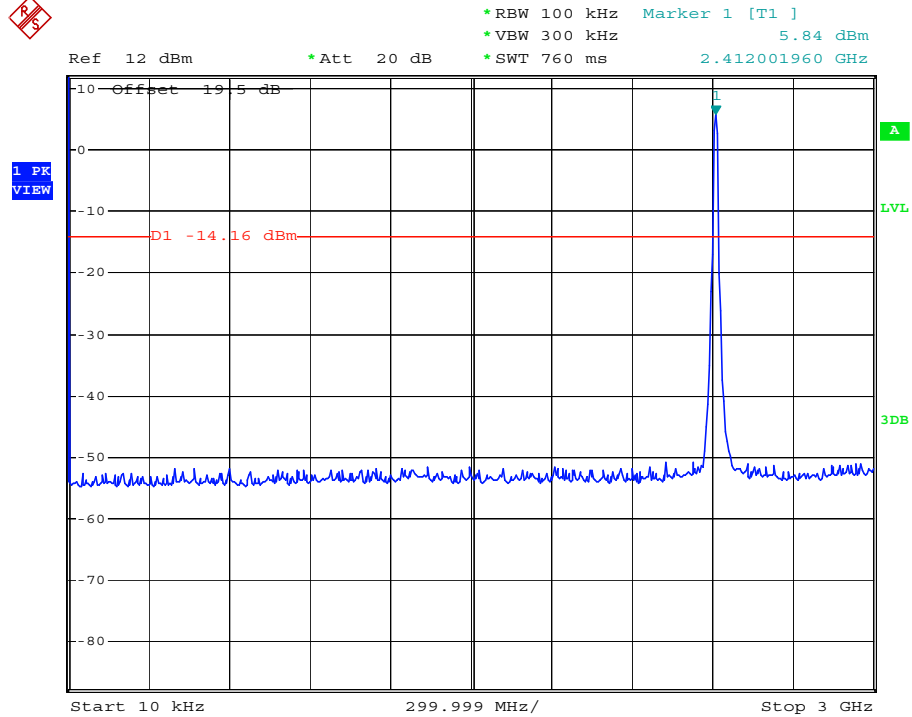
Modulation Type : OFDM

Temperature : 28~29

Channel : 01

Relative Humidity : 47~48%

Test Engineer : Darren Lin





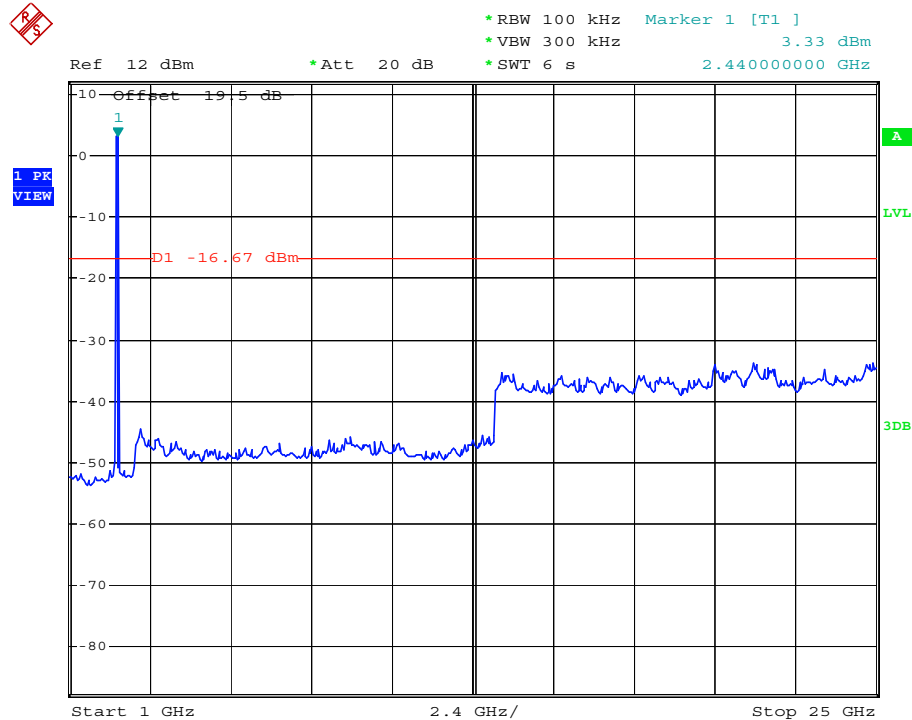
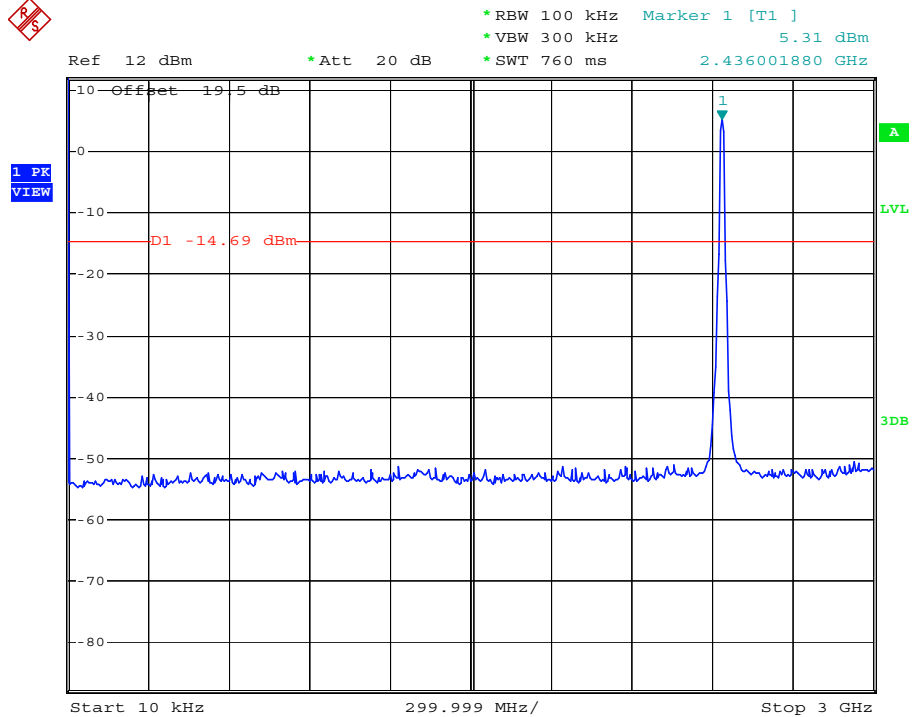
Modulation Type : OFDM

Temperature : 28~29

Channel : 06

Relative Humidity : 47~48%

Test Engineer : Darren Lin





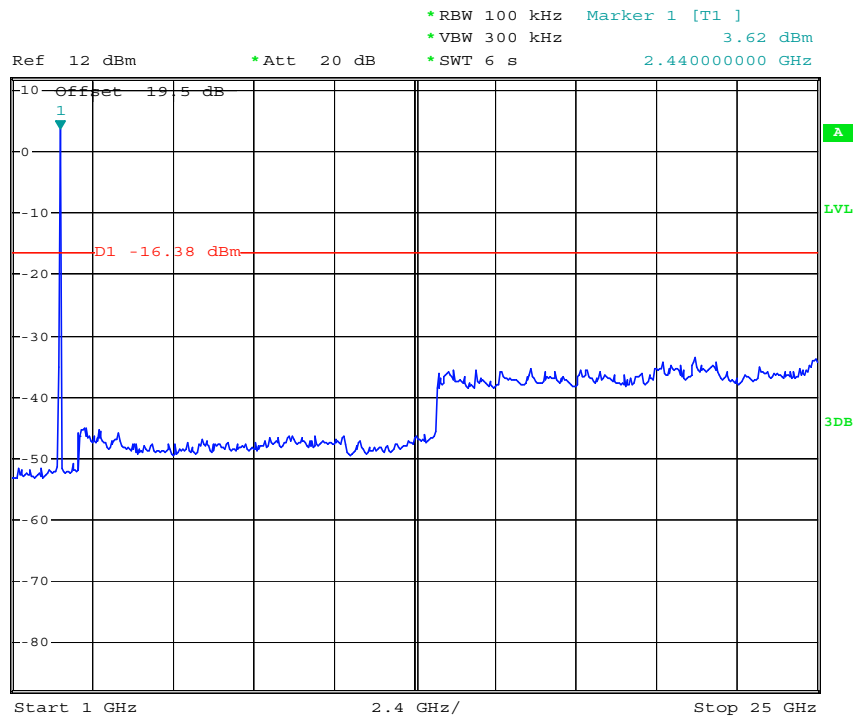
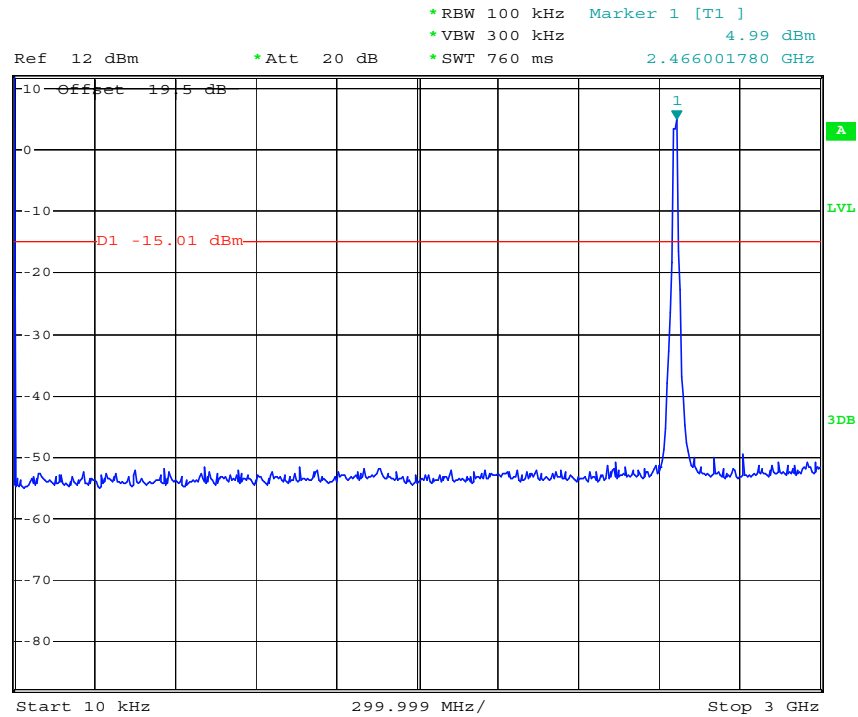
Modulation Type : OFDM

Temperature : 28~29

Channel : 11

Relative Humidity : 47~48%

Test Engineer : Darren Lin



3.5 Power Spectral Density Measurement

3.5.1 Limit of Power Spectral Density Measurement

The peak power spectral density shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

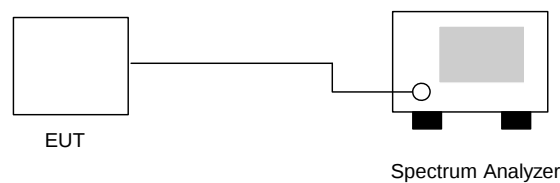
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedure

1. The transmitter output was connected to spectrum analyzer directly.
2. The spectrum analyzer's resolution bandwidth was set RBW at 3kHz and VBW at 30kHz of the fundamental frequency. Set the sweep time=span/3kHz.
3. The power spectral density was measured and recorded.
4. The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

3.5.4 Test Setup



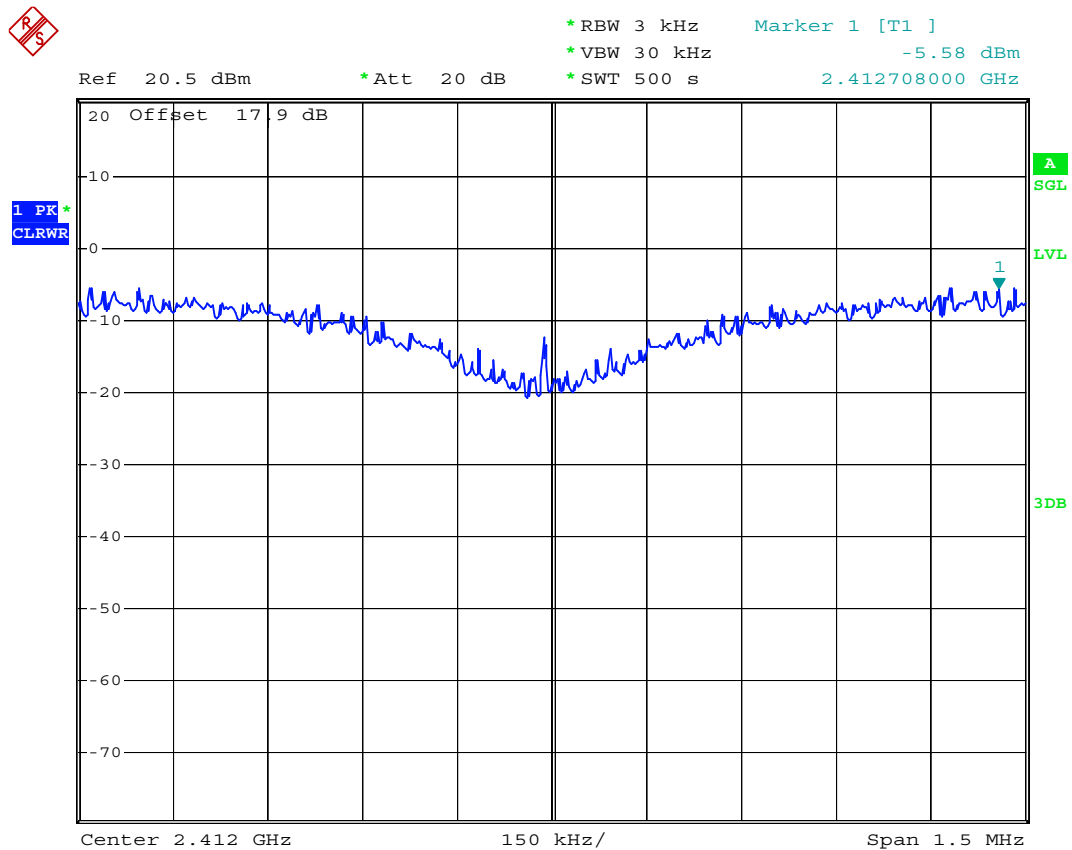


3.5.5 Test Result

Modulation Type : DSSS Temperature : 28~29
Test Engineer : Darren Lin Relative Humidity : 47~48%

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-5.58	8	Pass
06	2437	-5.23	8	Pass
11	2462	-5.24	8	Pass

DSSS_CH01



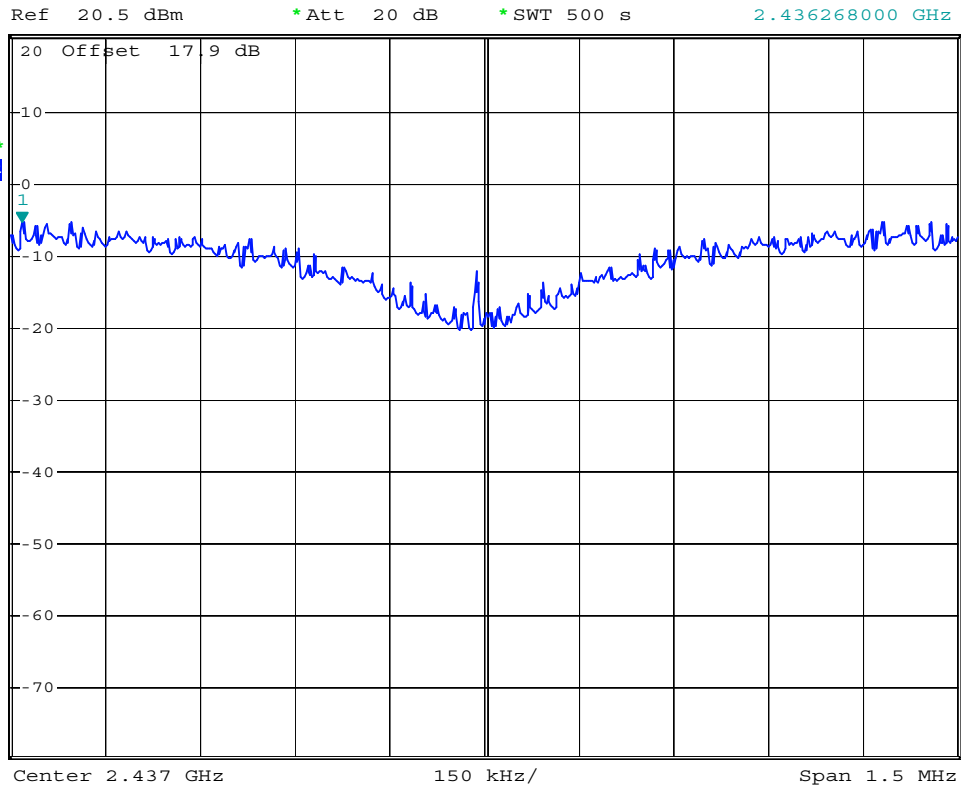
Date: 27.MAR.2008 14:57:27



DSSS_CH06



*RBW 3 kHz Marker 1 [T1]
*VBW 30 kHz -5.23 dBm
*SWT 500 s 2.436268000 GHz



Date: 27.MAR.2008 15:06:32



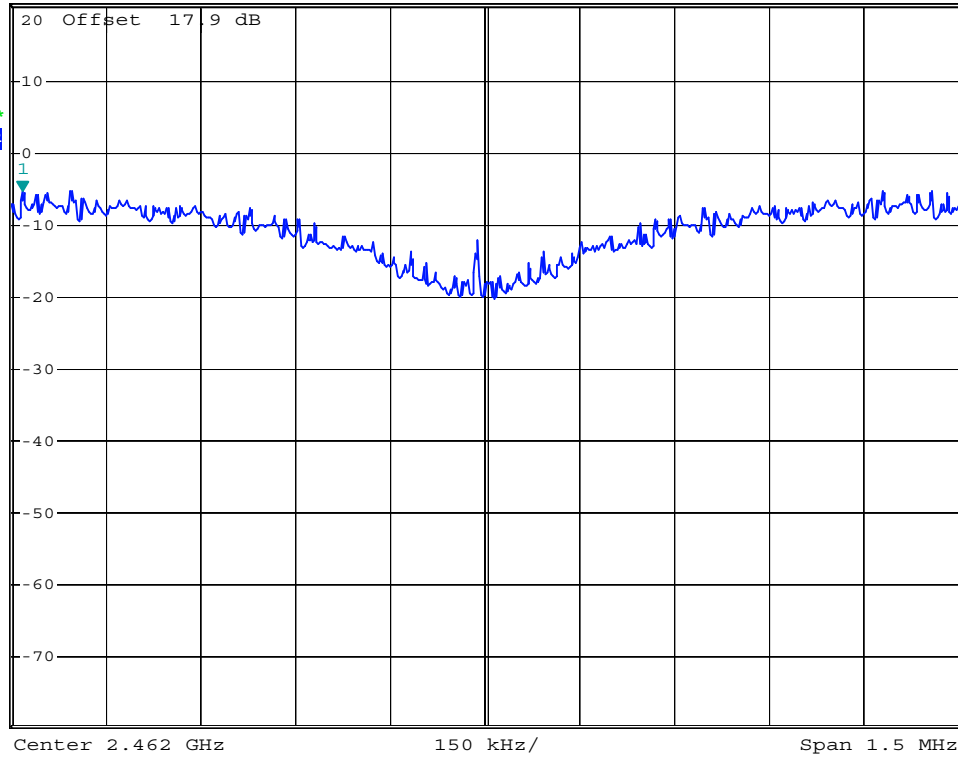
DSSS_CH11



*RBW 3 kHz Marker 1 [T1]
*VBW 30 kHz -5.24 dBm
*SWT 500 s 2.461268000 GHz

Ref 20.5 dBm

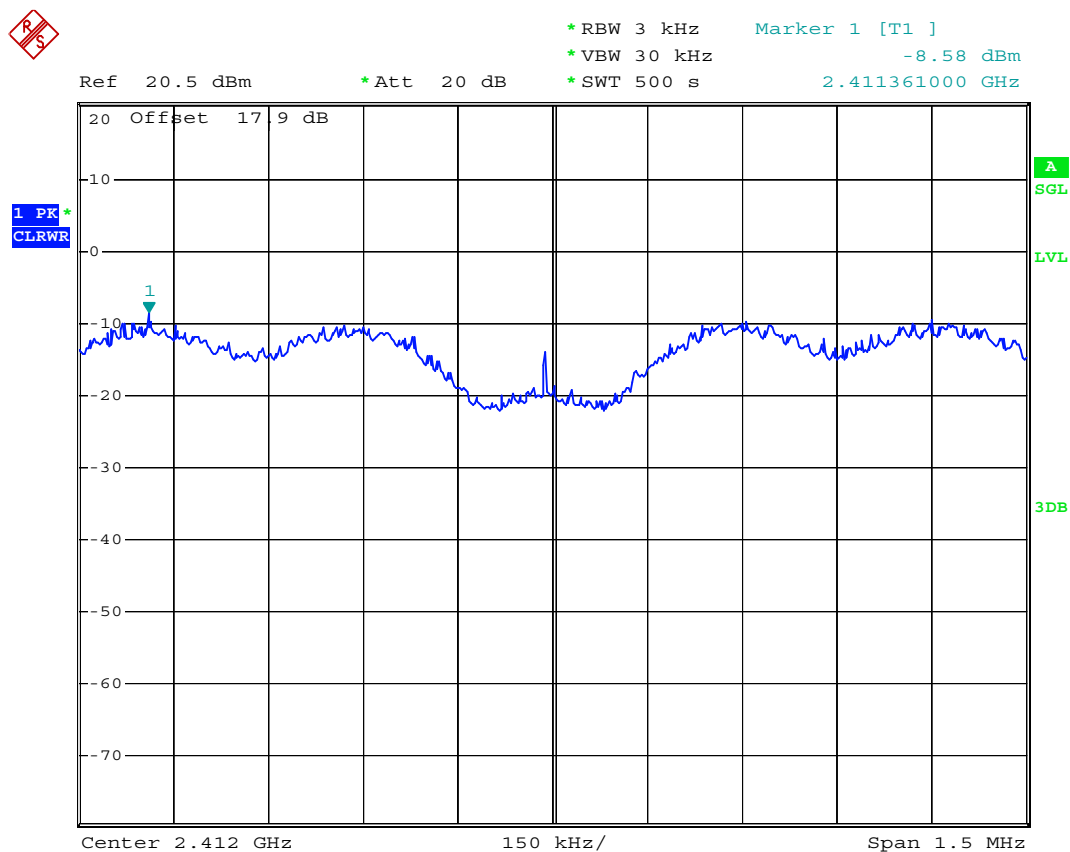
*Att 20 dB



Date: 27.MAR.2008 15:15:57

**Modulation Type :** OFDM**Temperature :** 28~29**Test Engineer :** Darren Lin**Relative Humidity :** 47~48%

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-8.58	8	Pass
06	2437	-8.39	8	Pass
11	2462	-8.15	8	Pass

OFDM_CH01

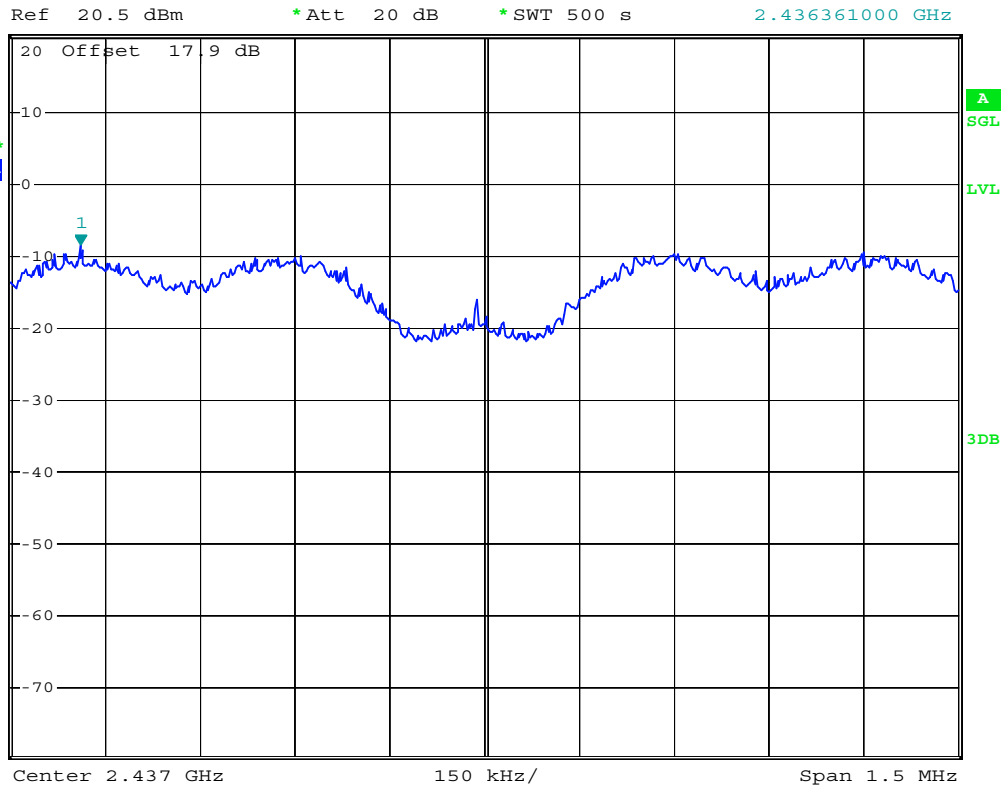
Date: 27.MAR.2008 15:46:30



OFDM_CH06



*RBW 3 kHz Marker 1 [T1]
*VBW 30 kHz -8.39 dBm
*SWT 500 s 2.436361000 GHz



Date: 27.MAR.2008 15:34:30



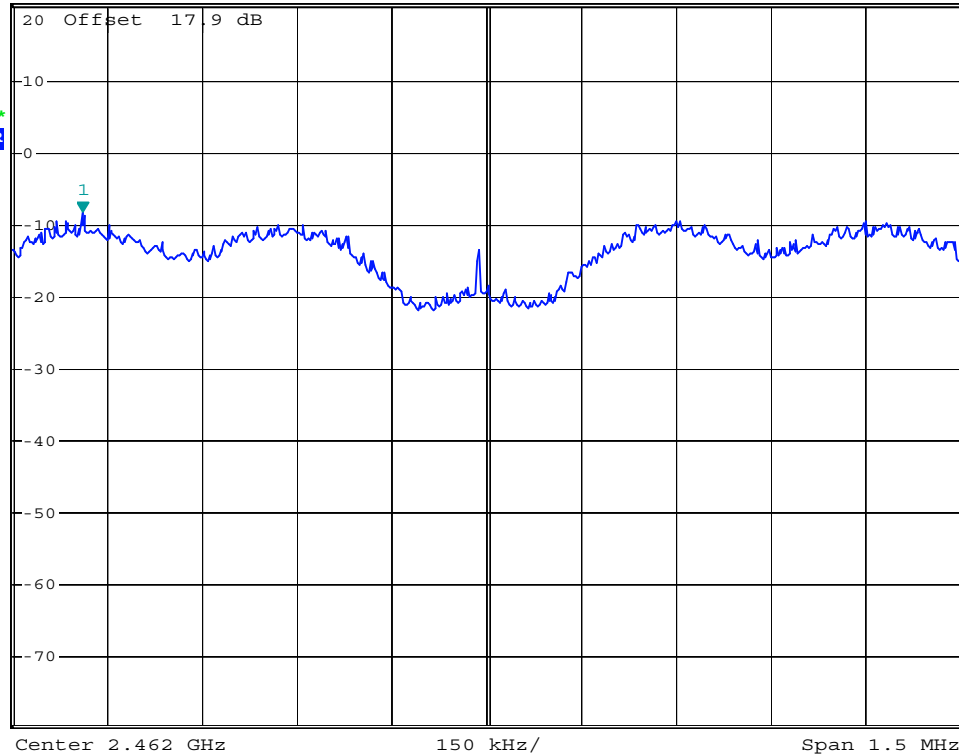
OFDM_CH11



*RBW 3 kHz Marker 1 [T1]
*VBW 30 kHz -8.15 dBm
*SWT 500 s 2.461361000 GHz

Ref 20.5 dBm

*Att 20 dB



Date: 27.MAR.2008 15:24:58

3.6 Conducted Emission Measurement

3.6.1 Limit of Conducted Emission

For equipment that is designed to be connected to the public utility (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 the limits in the following table

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

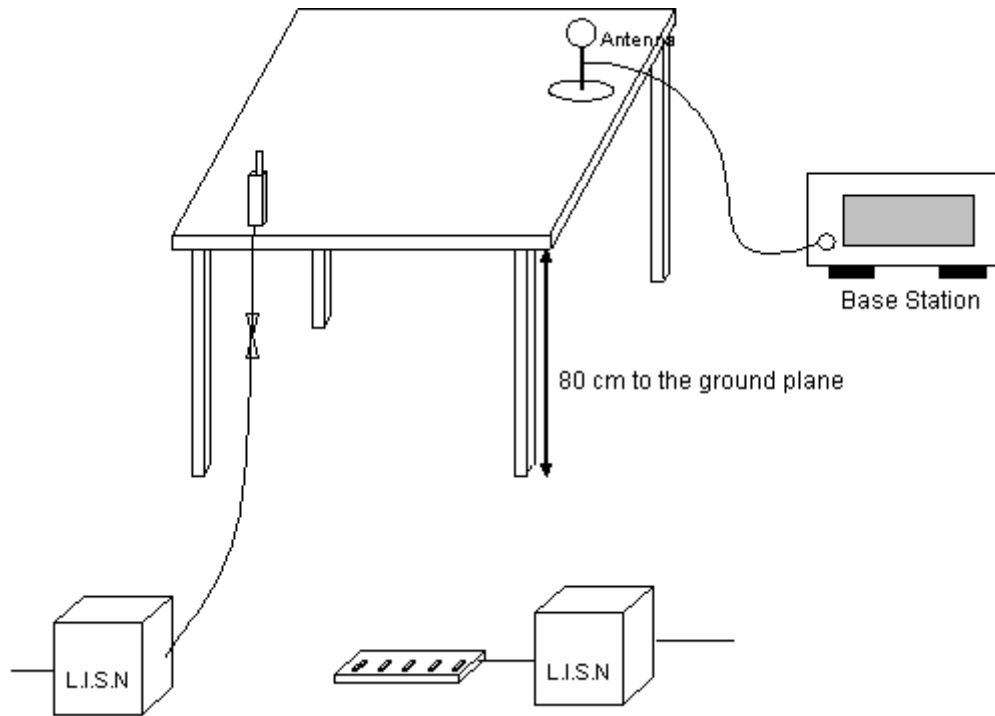
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

- The EUT was placed 0.4 meters away from the conducting wall of the shielding room and kept at least 0.8 meters from any other metal surface or ground plane.
- The main power cable of EUT was connect to a line impedance stabilization network (LISN) which met the requirement of 50 ohm/ 50 microhenry coupling impedance.
- All the support units were connected to the other LISN.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center, forming a bundle 30 to 40 cm long.
- Both phase and neutral lead of AC line were measured for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was scanned with a specified bandwidth 9kHz.
- The emission level of the EUT must meet the limits above in table, including the quasi-peak limit and the average limit, and then reported.

3.6.4 Typical Test Setup of Conducted Emission

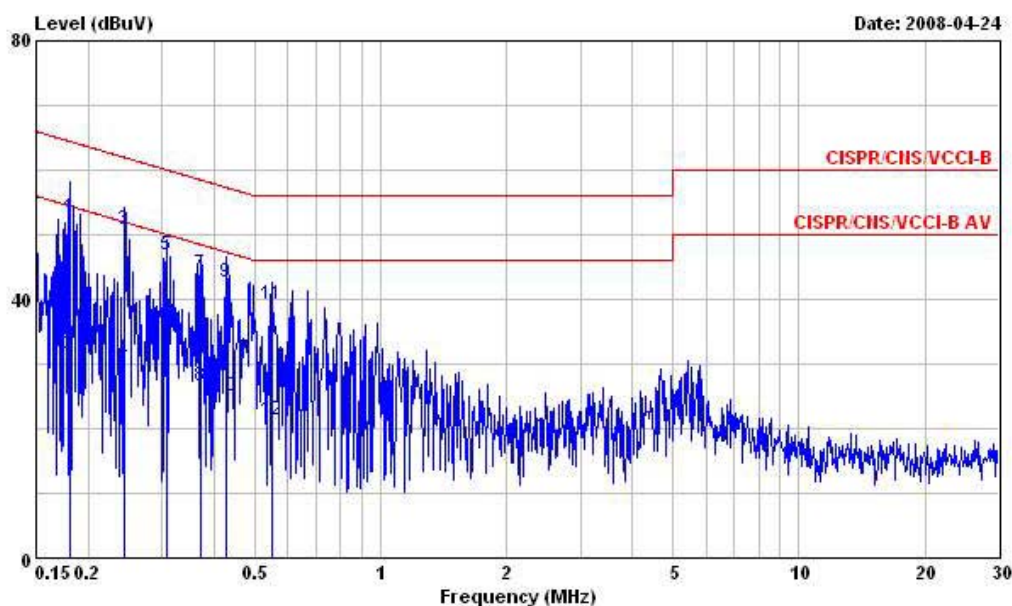


3.6.5 Test Result

Test Mode : 1
Phase : Line
Test Engineer : Andrew Hsiao

Temperature : 28~29

Relative Humidity : 47~48%



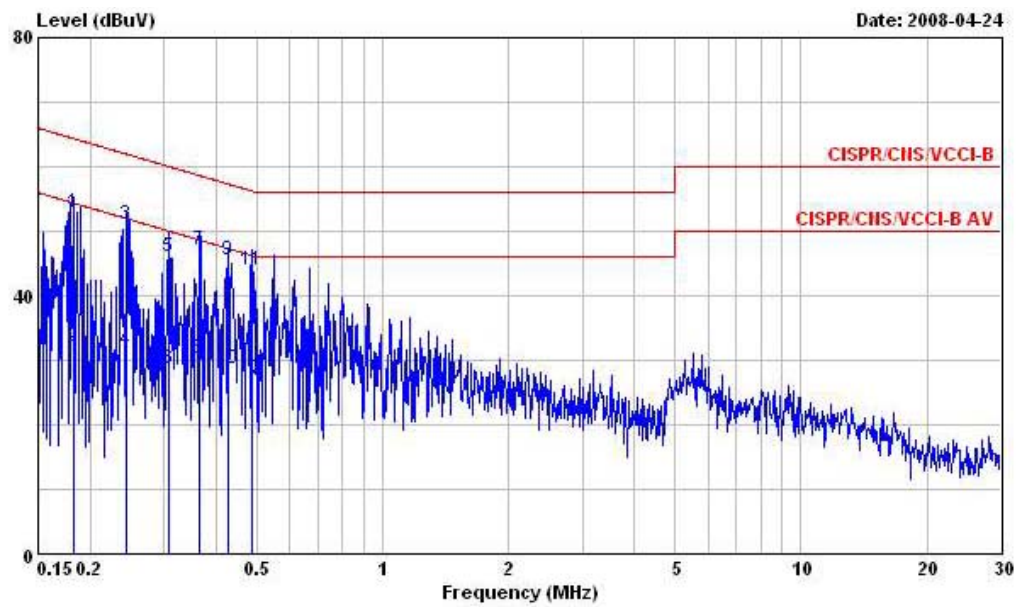
Site : CO04-HY
Condition : CISPR/CNS/VCCL-B LISN 200704 99041 LINE
EUT : Smart Phone
POWER: 120V/60Hz
Model : FR 811107-01
Memo : BT Link + WLAN Link + GPS Rx + Adaptor
 + Battery1 + Earphone
IMEI :
SAMPLE : A

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1815220	52.58	-11.84	64.42	52.34	0.10	0.14	QP
2	0.1815220	31.49	-22.93	54.42	31.25	0.10	0.14	Average
3	0.2429320	50.69	-11.31	62.00	50.29	0.10	0.30	QP
4	0.2429320	30.50	-21.50	52.00	30.10	0.10	0.30	Average
5	0.3067120	46.84	-13.22	60.06	46.24	0.10	0.50	QP
6	0.3067120	28.40	-21.66	50.06	27.80	0.10	0.50	Average
7	0.3711650	44.03	-14.44	58.47	43.26	0.10	0.67	QP
8	0.3711650	26.53	-21.94	48.47	25.76	0.10	0.67	Average
9	0.4282480	42.75	-14.54	57.29	41.94	0.10	0.71	QP
10	0.4282480	24.93	-22.36	47.29	24.12	0.10	0.71	Average
11	0.5493430	39.12	-16.88	56.00	38.39	0.10	0.63	QP
12	0.5493430	21.38	-24.62	46.00	20.65	0.10	0.63	Average



Test Mode : 1
Phase : Neutral
Test Engineer : Andrew Hsiao

Temperature : 28~29
Relative Humidity : 47~48%



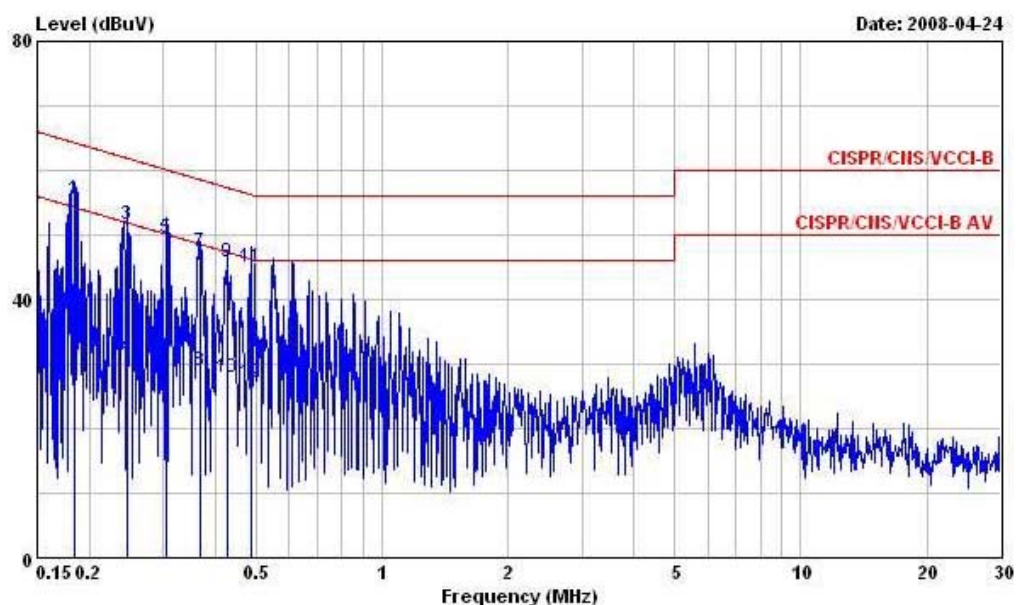
Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200704 99041 NEUTRAL
EUT : Smart Phone
POWER: 120V/60Hz
Model : FR 811107-01
Memo : BT Link + WLAN Link + GPS Rx + Adaptor
 + Battery1 + Earphone
IMEI :
SAMPLE : A

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1824860	52.78	-11.59	64.37	52.54	0.10	0.14	QP
2	0.1824860	32.09	-22.28	54.37	31.85	0.10	0.14	Average
3	0.2442230	51.13	-10.82	61.95	50.72	0.10	0.31	QP
4	0.2442230	31.56	-20.39	51.95	31.15	0.10	0.31	Average
5	0.3067120	46.12	-13.94	60.06	45.52	0.10	0.50	QP
6	0.3067120	28.66	-21.40	50.06	28.06	0.10	0.50	Average
7	0.3633820	47.03	-11.62	58.65	46.28	0.10	0.65	QP
8	0.3633820	30.17	-18.48	48.65	29.42	0.10	0.65	Average
9	0.4282480	45.51	-11.78	57.29	44.70	0.10	0.71	QP
10	0.4282480	28.67	-18.62	47.29	27.86	0.10	0.71	Average
11	0.4863180	43.82	-12.41	56.23	43.05	0.10	0.67	QP
12	0.4863180	27.23	-19.00	46.23	26.46	0.10	0.67	Average



Test Mode : 2
Phase : Line
Test Engineer : Andrew Hsiao

Temperature : 28~29
Relative Humidity : 47~48%



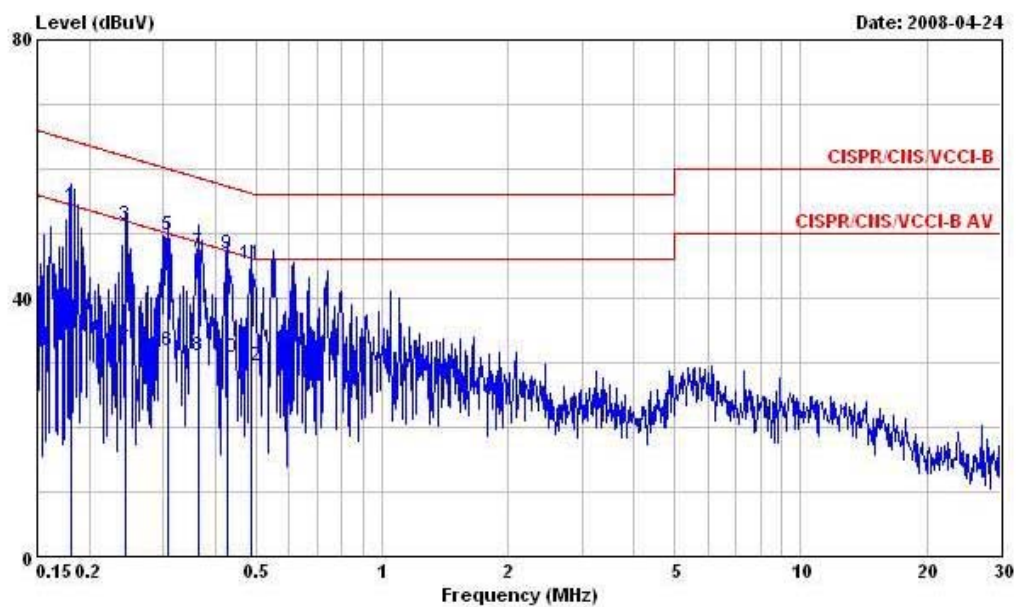
Site : CO04-HY
Condition : CISPR/CNS/VCCL-B LISN 200704 99041 LINE
EUT : Smart Phone
POWER: 120V/60Hz
Model : FR 811107-01
Memo : BT Link + WLAN Link + GPS Rx + Adaptor
 + Battery2 + Earphone
IMEI :
SAMPLE : B

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1844300	55.60	-8.68	64.28	55.36	0.10	0.14	QP
2	0.1844300	33.72	-20.56	54.28	33.48	0.10	0.14	Average
3	0.2455200	51.65	-10.26	61.91	51.23	0.10	0.32	QP
4	0.2455200	31.13	-20.78	51.91	30.71	0.10	0.32	Average
5	0.3050910	49.59	-10.51	60.10	48.99	0.10	0.50	QP
6	0.3050910	30.28	-19.82	50.10	29.68	0.10	0.50	Average
7	0.3692040	47.28	-11.24	58.52	46.52	0.10	0.66	QP
8	0.3692040	29.01	-19.51	48.52	28.25	0.10	0.66	Average
9	0.4282480	45.78	-11.51	57.29	44.97	0.10	0.71	QP
10	0.4282480	27.85	-19.44	47.29	27.04	0.10	0.71	Average
11	0.4889010	45.12	-11.07	56.19	44.35	0.10	0.67	QP
12	0.4889010	27.14	-19.05	46.19	26.37	0.10	0.67	Average



Test Mode : 2
Phase : Neutral
Test Engineer : Andrew Hsiao

Temperature : 28~29
Relative Humidity : 47~48%



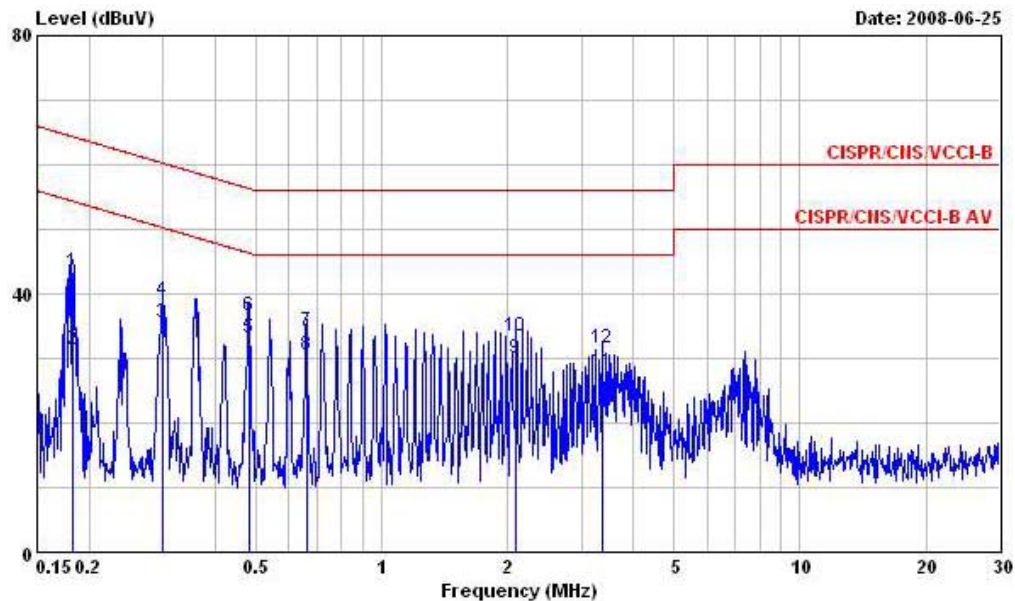
Site : CO04-HY
Condition : CISPR/CIS/VCCI-B LISN 200704 99041 NEUTRAL
EUT : Smart Phone
POWER: 120V/60Hz
Model : FR 811107-01
Memo : BT Link + WLAN Link + GPS Rx + Adaptor
 : + Battery2 + Earphone
IMEI :
SAMPLE : B

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.1815220	54.30	-10.12	64.42	54.06	0.10	0.14	QP
2	0.1815220	34.48	-19.94	54.42	34.24	0.10	0.14	Average
3	0.2429320	51.44	-10.56	62.00	51.04	0.10	0.30	QP
4	0.2429320	33.52	-18.48	52.00	33.12	0.10	0.30	Average
5	0.3067120	49.73	-10.33	60.06	49.13	0.10	0.50	QP
6	0.3067120	31.82	-18.24	50.06	31.22	0.10	0.50	Average
7	0.3633820	47.03	-11.62	58.65	46.28	0.10	0.65	QP
8	0.3633820	30.95	-17.70	48.65	30.20	0.10	0.65	Average
9	0.4282480	46.81	-10.48	57.29	46.00	0.10	0.71	QP
10	0.4282480	30.81	-16.48	47.29	30.00	0.10	0.71	Average
11	0.4863180	45.35	-10.88	56.23	44.58	0.10	0.67	QP
12	0.4863180	29.39	-16.84	46.23	28.62	0.10	0.67	Average



Test Mode : 3
Phase : Line
Test Engineer : Andrew Hsiao

Temperature : 28~29
Relative Humidity : 47~48%



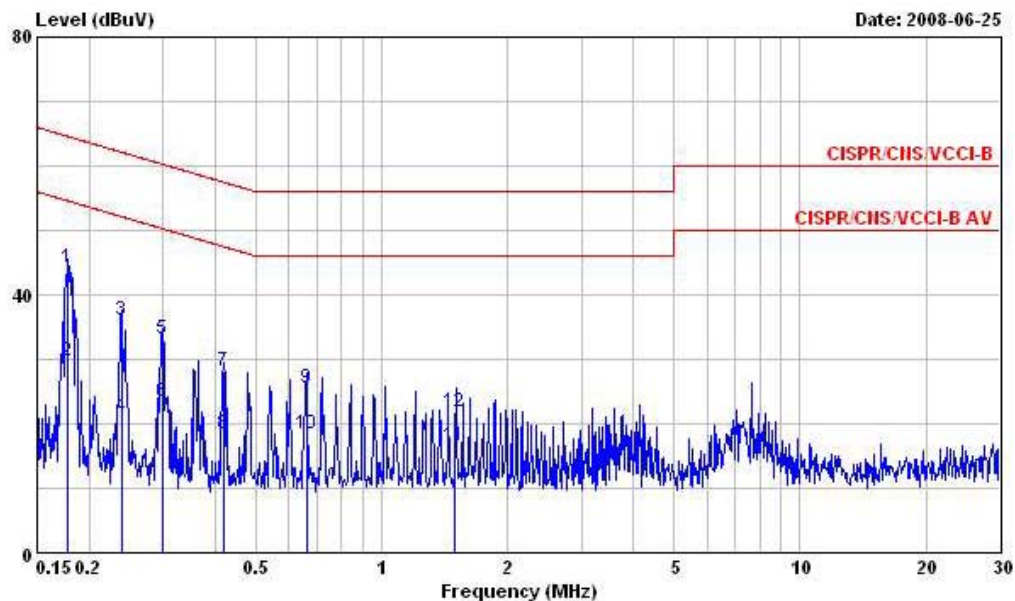
Site : CO04-HY
Condition : CISPR/CIS/VCCI-B LISN 2008 0416 99041 LINE
EUT : Smart Phone
POWER: 120Vac/60Hz
Model : FR811107-02
Memo : BT Link+WLAN Link+GPS Rx+Adaptor
 : +Battery3+Earphone
IMEI : 00440145066646201
SAMPLE : B

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1824860	43.42	-20.95	64.37	43.31	0.09	0.02	QP
2	0.1824860	31.42	-22.95	54.37	31.31	0.09	0.02	Average
3	0.2986930	35.46	-14.82	50.28	35.32	0.10	0.04	Average
4	0.2986930	38.89	-21.39	60.28	38.75	0.10	0.04	QP
5	0.4813590	33.08	-13.24	46.32	32.93	0.10	0.05	Average
6	0.4813590	36.47	-19.85	56.32	36.32	0.10	0.05	QP
7	0.6612710	34.20	-21.80	56.00	34.05	0.11	0.04	QP
8	0.6612710	30.59	-15.41	46.00	30.44	0.11	0.04	Average
9	2.100	29.89	-16.11	46.00	29.72	0.13	0.04	Average
10	2.100	33.42	-22.58	56.00	33.25	0.13	0.04	QP
11	3.360	27.79	-18.21	46.00	27.57	0.16	0.06	Average
12	3.360	31.45	-24.55	56.00	31.23	0.16	0.06	QP



Test Mode : 3
Phase : Neutral
Test Engineer : Andrew Hsiao

Temperature : 28~29
Relative Humidity : 47~48%



Site : CO04-HY
Condition : CISPR/CIS/VCCI-B LISN 2008 0416 99041 NEUTRAL
EUT : Smart Phone
POWER: 120Vac/60Hz
Model : FR811107-02
Memo : BT Link+WLAN Link+GPS Rx+Adaptor
 : +Battery3+Earphone
IMEI : 00440145066646201
SAMPLE : B

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	@0.1777150	44.13	-20.46	64.59	44.03	0.08	0.02	QP
2	0.1777150	29.61	-24.98	54.59	29.51	0.08	0.02	Average
3	0.2391010	35.96	-26.17	62.13	35.85	0.08	0.03	QP
4	0.2391010	20.96	-31.17	52.13	20.85	0.08	0.03	Average
5	0.2986930	33.11	-27.17	60.28	32.98	0.09	0.04	QP
6	0.2986930	23.30	-26.98	50.28	23.17	0.09	0.04	Average
7	0.4192670	28.12	-29.34	57.46	27.97	0.09	0.06	QP
8	0.4192670	18.53	-28.93	47.46	18.38	0.09	0.06	Average
9	0.6612710	25.52	-30.48	56.00	25.38	0.10	0.04	QP
10	0.6612710	18.31	-27.69	46.00	18.17	0.10	0.04	Average
11	1.500	16.63	-29.37	46.00	16.48	0.12	0.03	Average
12	1.500	21.89	-34.11	56.00	21.74	0.12	0.03	QP

3.7 Radiated Emission Measurement

3.7.1 Limit of Radiated Emission Measurement

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.7.2 Measuring Instruments

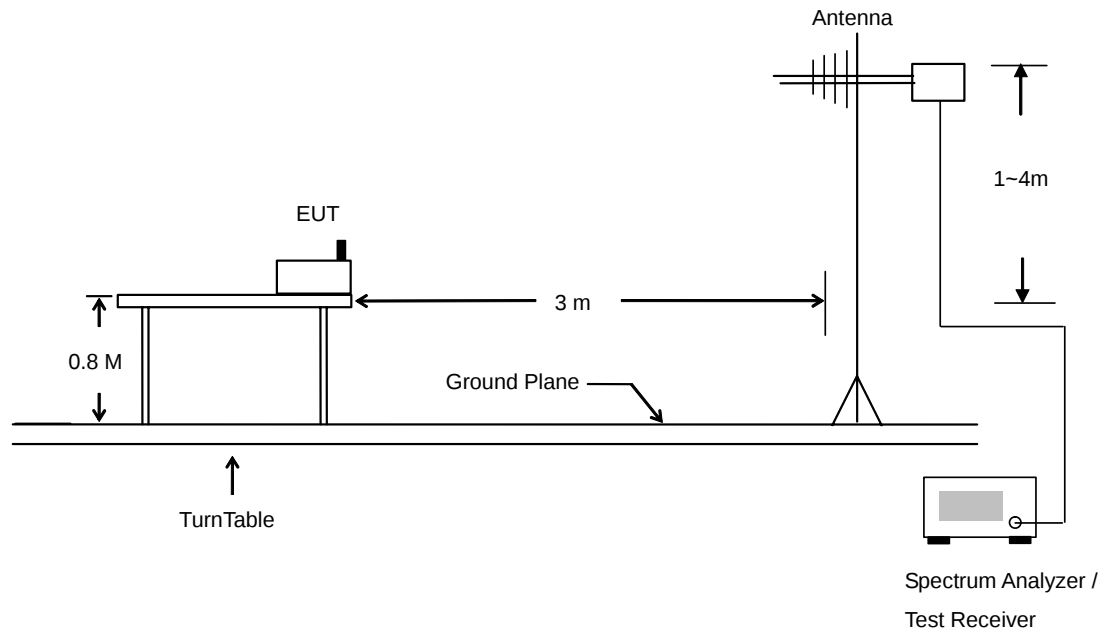
See list of measuring instruments of this test report.



3.7.3 Test Procedures

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
- e. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
- f. For testing below 1GHz, set the test-receiver system to peak detector function and specified bandwidth,120KHz. When the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported,otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.
- g. For testing above 1GHz, set the test-receiver system to peak detector function and specified bandwidth,1MHz. When the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again by setting the measurement bandwidth of test-receiver system to 1MHz with 10Hz video resolution bandwidth,then reported. The highest frequency range was investigated up to the tenth harmonic of the highest fundamental frequency,and the amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

3.7.4 Typical Test Setup of Radiated Emission





3.7.5 Test Result

Frequency Range Below 1 GHz

Modulation Type : DSSS

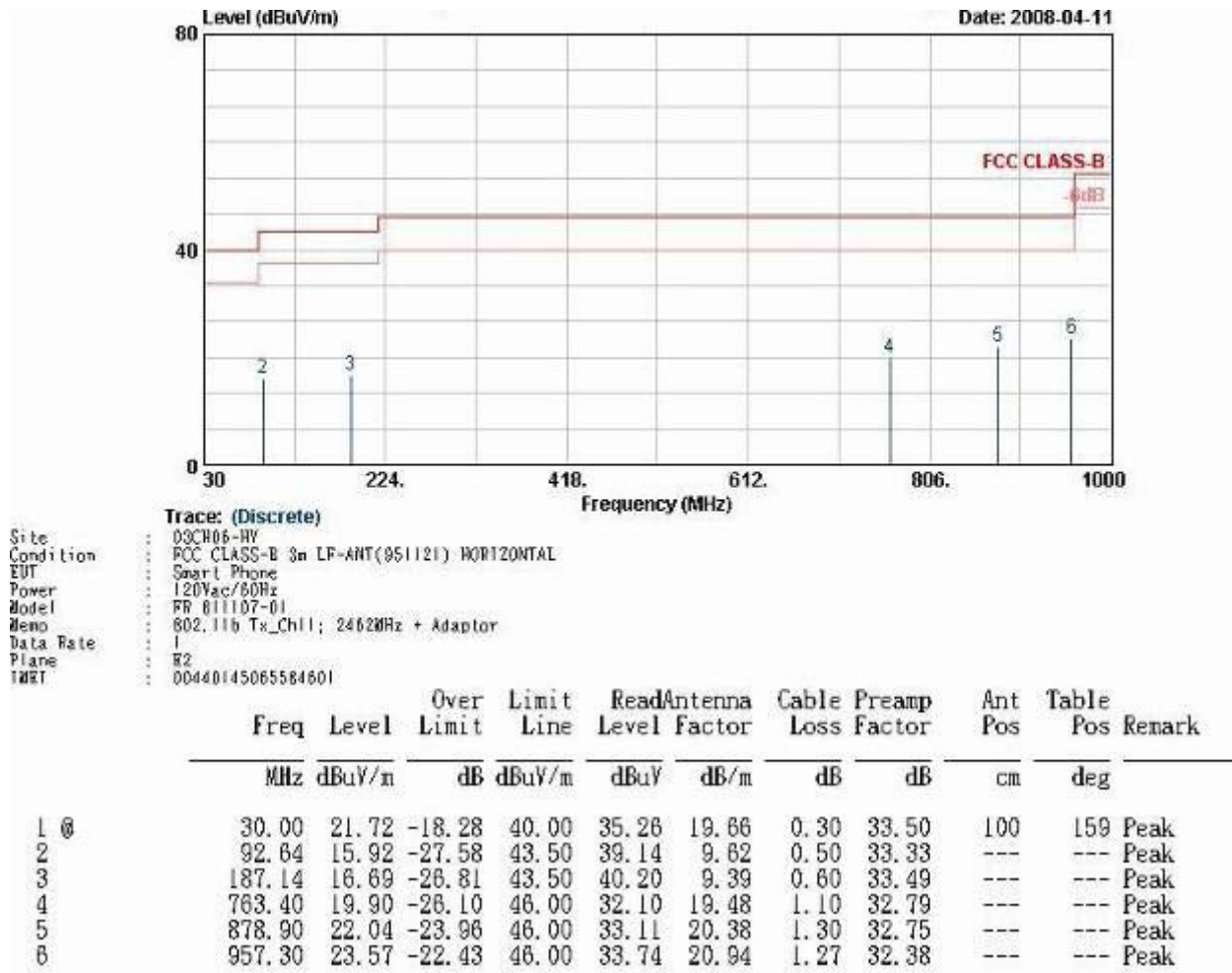
Temperature : 21~26

Channel : 11

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Horizontal





Frequency Range Below 1 GHz

Modulation Type : DSSS

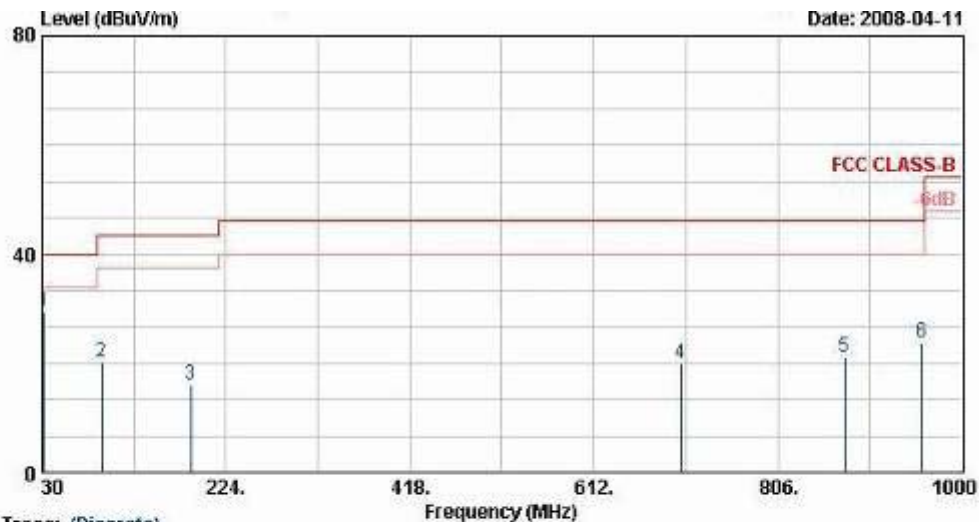
Temperature : 21~26

Channel : 11

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Vertical



Trace: (Discrete)

Site: 03CH06-RV
 Condition: FCC CLASS-B 3m LF-ANT(951121) VERTICAL
 EUT: Smart Phone
 Power: 120Vac/60Hz
 Model: FR 811107-01
 Memo: 602.11b Tx_Ch11; 2462MHz + Adaptor
 Data Rate: 1
 Plane: B2
 TWT: 00440145065584601

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	31.89	29.46	-10.54	40.00	44.33	18.25	0.30	33.42	100	162	Peak
2	92.64	20.23	-23.27	43.50	43.45	9.62	0.50	33.33	---	---	Peak
3	187.14	16.16	-27.34	43.50	39.67	9.39	0.60	33.49	---	---	Peak
4	703.90	19.80	-26.20	46.00	32.88	18.93	1.14	33.15	---	---	Peak
5	876.80	21.21	-24.79	46.00	32.29	20.36	1.30	32.74	---	---	Peak
6	957.30	23.92	-22.08	46.00	34.09	20.94	1.27	32.38	---	---	Peak



Frequency Range Below 1 GHz

Modulation Type : OFDM

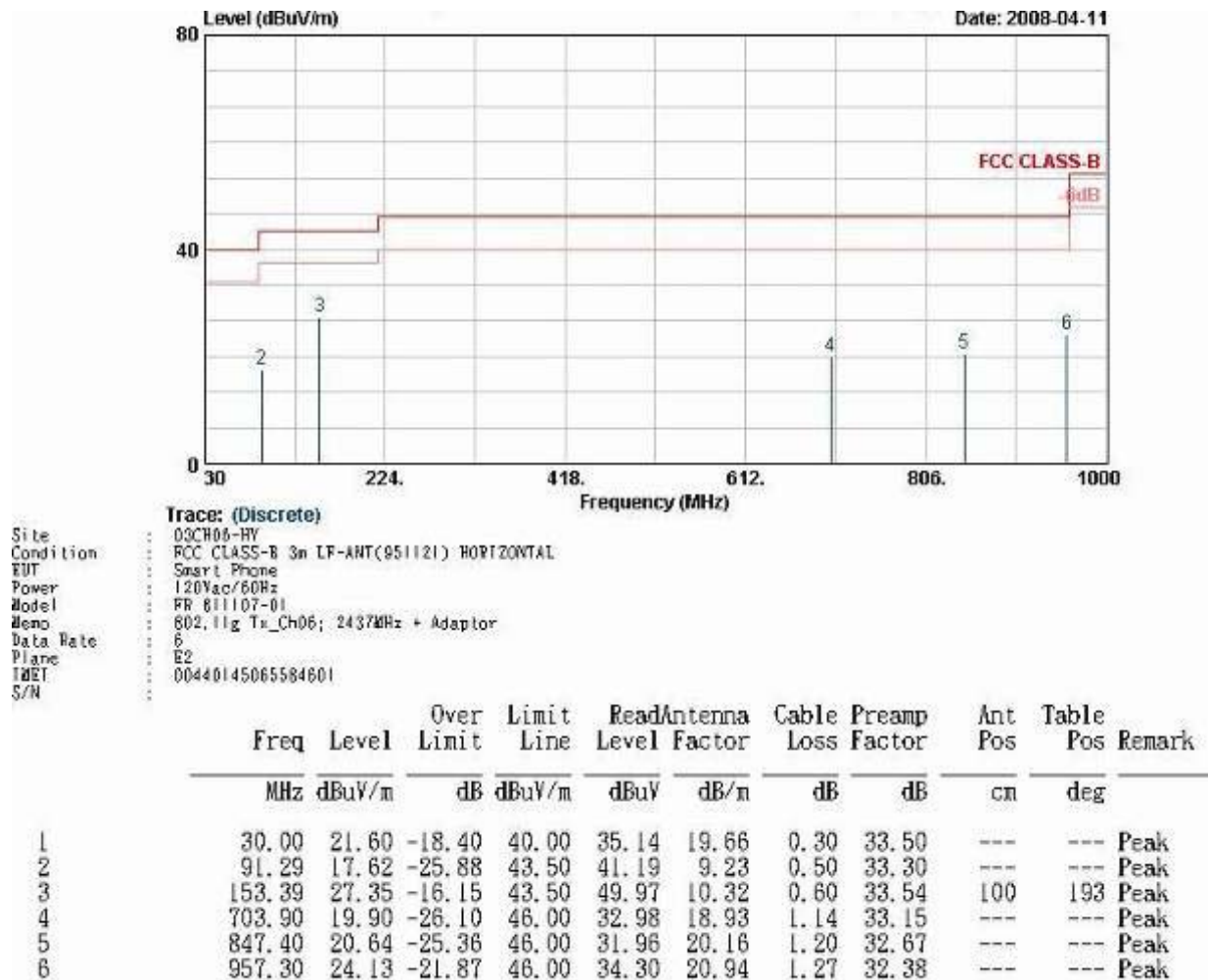
Temperature : 21~26

Channel : 06

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Horizontal





Frequency Range Below 1 GHz

Modulation Type : OFDM

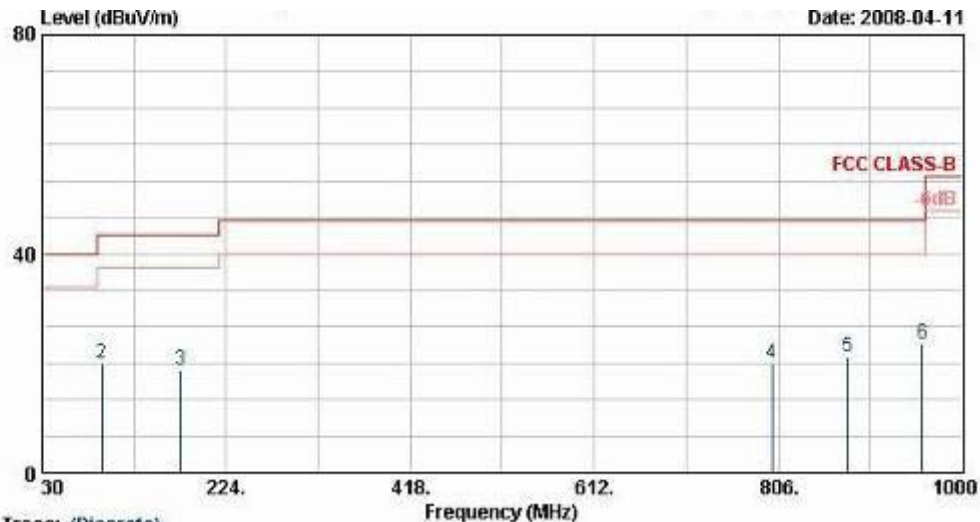
Temperature : 21~26

Channel : 06

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Vertical



Trace: (Discrete)

Site: 03CH06-HY
Condition: FCC CLASS-B 3m LF-ANT(951121) VERTICAL
EUT: Smart Phone
Power: 120Vac/60Hz
Model: FR 811107-01
Memo: 802.11g Tx_Ch06; 2437MHz + Adaptor
Data Rate: 6
Plane: E2
IMEI: 00440145065584601
S/N:

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	30.00	20.74	-19.26	40.00	34.28	19.66	0.30	33.50	100	147 Peak
2	92.64	19.90	-23.60	43.50	43.12	9.62	0.50	33.33	---	---
3	175.53	18.64	-24.86	43.50	41.64	9.76	0.60	33.35	---	---
4	799.80	20.00	-26.00	46.00	31.54	19.82	1.20	32.56	---	---
5	878.90	21.25	-24.75	46.00	32.32	20.38	1.30	32.75	---	---
6	957.30	23.57	-22.43	46.00	33.74	20.94	1.27	32.38	---	---



Frequency Range : 1 GHz ~ 25GHz

Modulation Type : DSSS

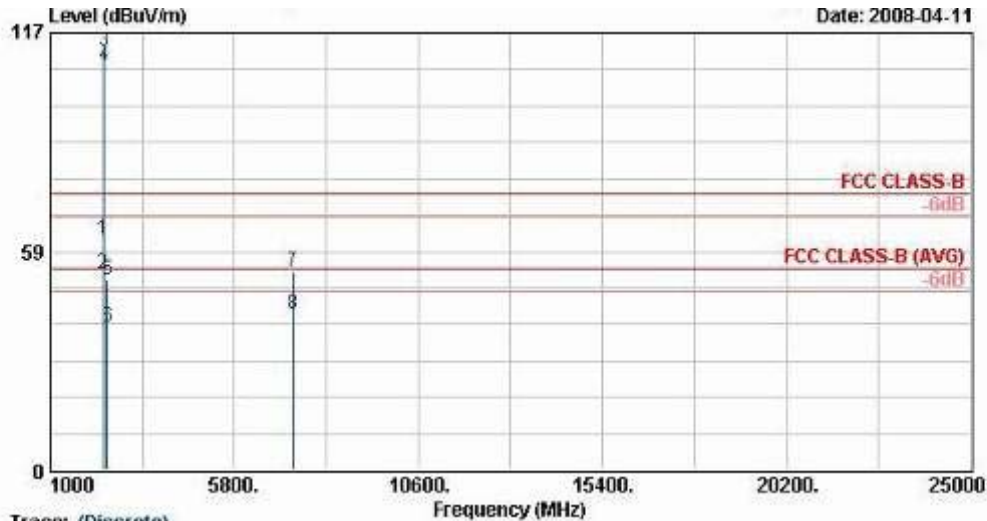
Temperature : 21~26

Channel : 01

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Horizontal



Trace: (Discrete)

Site: 03CH06-RV
 Condition: FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 EUT: Smart Phone
 Power: 120Vac/60Hz
 Model: FR 811107-01
 Memo: 602.11b Tx_Ch01; 2412MHz + Adaptor
 Data Rate: 1
 Plane: E2
 IMET: 00440145065584601

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/n	dB	dB	cn	deg
1 @	2389.99	61.96	-12.04	74.00	61.86	31.86	3.92	35.68	100	0 Peak
2 @	2389.99	52.43	-1.57	54.00	52.33	31.86	3.92	35.68	129	12 Average
3 @	2412.00	112.32			112.16	31.88	3.95	35.68	100	0 Peak
4 @	2412.00	108.22			108.07	31.88	3.95	35.68	129	12 Average
5	2484.00	50.93	-23.07	74.00	50.60	31.98	4.05	35.70	100	0 Peak
6 @	2484.00	38.23	-15.77	54.00	37.90	31.98	4.05	35.70	129	12 Average
7	7332.00	52.93	-21.07	74.00	46.18	35.67	7.21	36.13	100	0 Peak
8 @	7332.00	41.83	-12.17	54.00	35.08	35.67	7.21	36.13	100	193 Average

Remark: #3 and #4 are Fundamental Signals



Frequency Range : 1 GHz ~ 25GHz

Modulation Type : DSSS

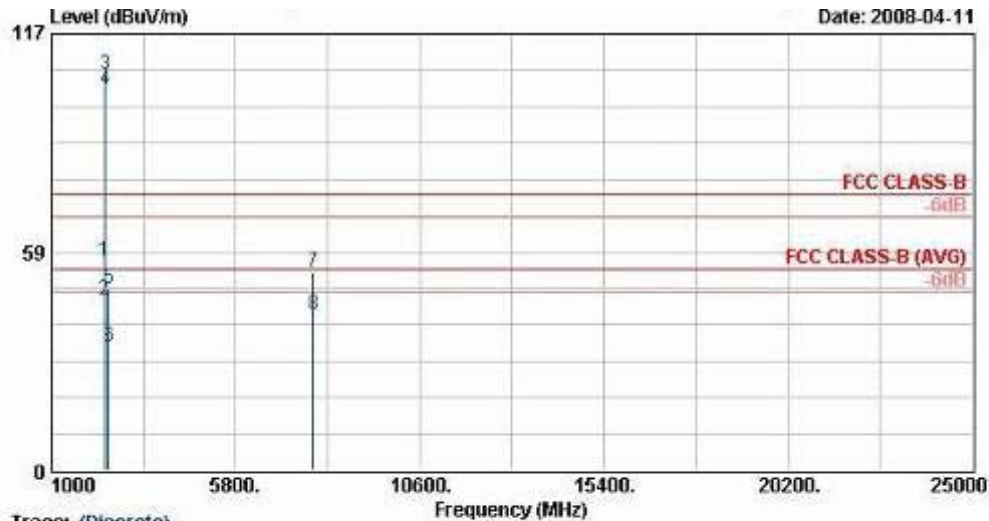
Temperature : 21~26

Channel : 01

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Vertical



Site
Condition
EUT
Power
Model
Memo
Data Rate
Plane
IDET

Trace: (Discrete)
09CH05-HV
FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Smart Phone
120Vac/60Hz
FR 811107-01
802.11b Tx_Ch01; 2412MHz + Adaptor
1
E2
00440145065584601

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/n	dB	dB	cn	deg
1 @	2389.99	56.17	-17.83	74.00	56.07	31.86	3.92	35.68	100	0 Peak
2 @	2389.99	45.81	-8.19	54.00	45.71	31.86	3.92	35.68	124	178 Average
3 @	2412.00	106.22			106.07	31.88	3.95	35.68	100	0 Peak
4 @	2412.00	102.05			101.90	31.88	3.95	35.68	124	178 Average
5	2484.00	48.68	-25.32	74.00	48.34	31.98	4.05	35.70	100	0 Peak
6	2484.00	32.86	-21.14	54.00	32.53	31.98	4.05	35.70	124	178 Average
7	7821.00	53.14	-20.86	74.00	46.31	35.66	7.42	36.26	100	0 Peak
8 @	7821.00	41.95	-12.05	54.00	35.12	35.66	7.42	36.26	100	206 Average

Remark: #3 and #4 are Fundamental Signals



Frequency Range : 1 GHz ~ 25GHz

Modulation Type : DSSS

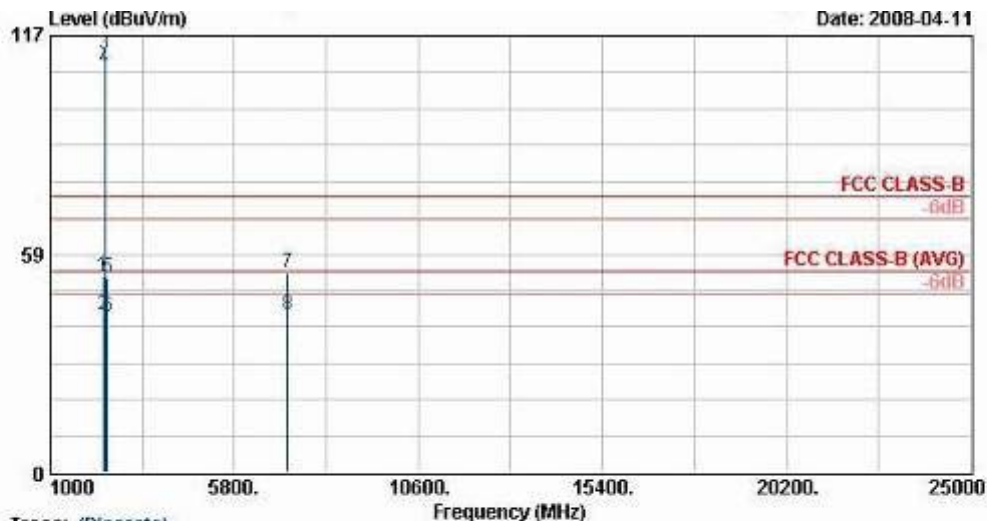
Temperature : 21~26

Channel : 06

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Horizontal



	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cn	deg	
1	2390.00	52.81	-21.19	74.00	52.71	31.86	3.92	35.68	100	0	Peak
2	2390.00	42.00	-12.00	54.00	41.90	31.86	3.92	35.68	100	14	Average
3 X	2437.00	112.05			111.82	31.93	3.99	35.69	100	0	Peak
4 @	2437.00	108.21			107.98	31.93	3.99	35.69	100	14	Average
5	2484.00	52.24	-21.76	74.00	51.91	31.98	4.05	35.70	100	0	Peak
6	2484.00	41.88	-12.12	54.00	41.55	31.98	4.05	35.70	100	14	Average
7	7182.00	53.67	-20.33	74.00	46.86	35.72	7.16	36.07	100	0	Peak
8	7182.00	42.30	-11.70	54.00	35.49	35.72	7.16	36.07	100	305	Average

Remark: #3 and #4 are Fundamental Signals



Frequency Range : 1 GHz ~ 25GHz

Modulation Type : DSSS

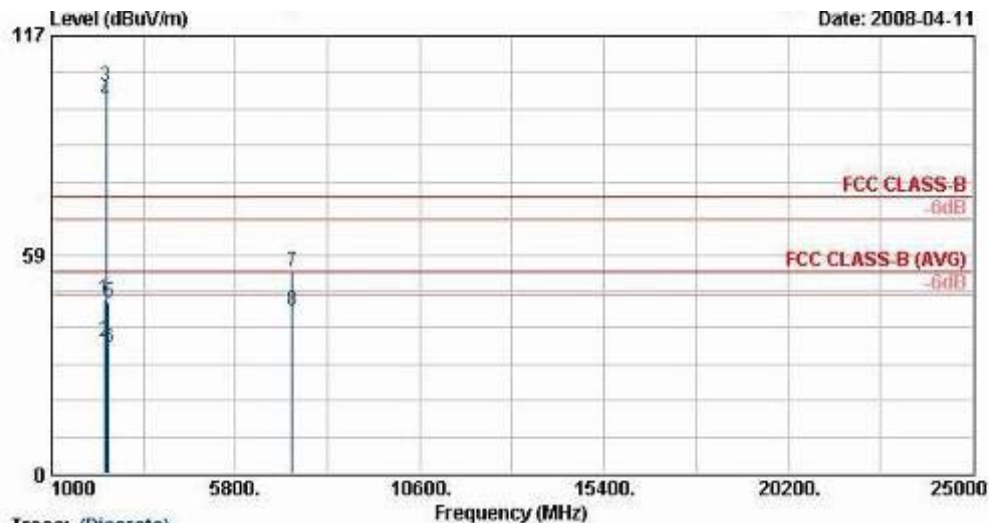
Temperature : 21~26

Channel : 06

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Vertical



	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/n	dB	dB	cn	deg
1	2390.00	46.76	-27.25	74.00	46.66	31.86	3.92	35.68	100	0 Peak
2	2390.00	35.45	-18.55	54.00	35.35	31.86	3.92	35.68	100	179 Average
3 X	2437.00	103.47			103.27	31.90	3.99	35.69	100	0 Peak
4 @	2437.00	99.68			99.45	31.93	3.99	35.69	100	179 Average
5	2484.00	45.58	-28.42	74.00	45.24	31.98	4.05	35.70	100	0 Peak
6	2484.00	33.59	-20.41	54.00	33.26	31.98	4.05	35.70	100	179 Average
7	7281.00	53.93	-20.07	74.00	47.15	35.69	7.19	36.11	100	0 Peak
8	7281.00	43.62	-10.38	54.00	36.85	35.69	7.19	36.11	100	253 Average

Remark: #3 and #4 are Fundamental Signals



Frequency Range : 1 GHz ~ 25GHz

Modulation Type : DSSS

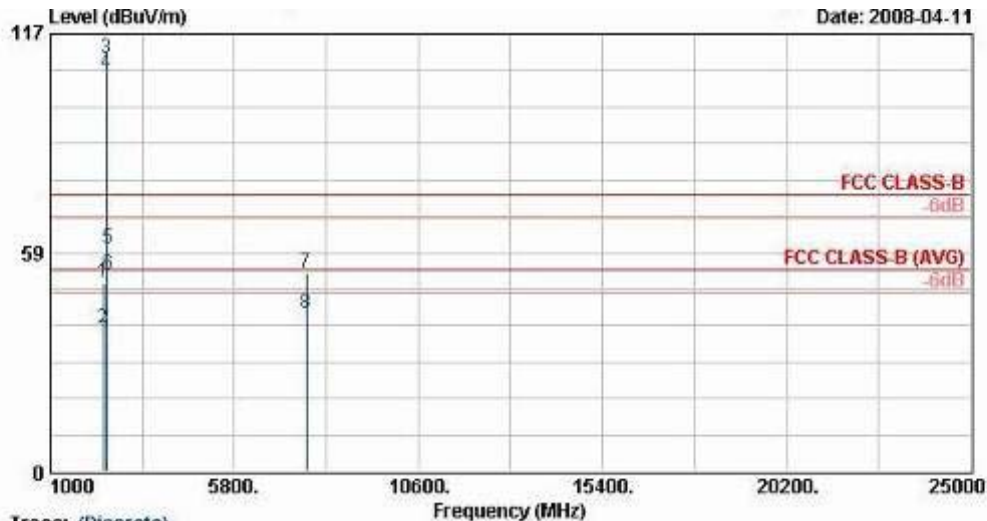
Temperature : 21~26

Channel : 11

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Horizontal



Trace: (Discrete)

Site: D3CH06-HY
Condition: FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
EUT: Smart Phone
Power: 120Vac/60Hz
Model: FR 811107-01
Memo: 602.11b Tx_Ch11; 2462MHz + Adaptor
Data Rate: 1
Plane: E2
IMEI: 00440145065584601

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/n	dB	dB	cm	deg	
1	2388.00	50.49	-23.51	74.00	50.39	31.86	3.92	35.68	100	0	Peak
2 @	2388.00	38.46	-15.54	54.00	38.36	31.86	3.92	35.68	156	26	Average
3 @	2462.00	110.51			110.23	31.95	4.02	35.69	100	0	Peak
4 @	2462.00	106.63			106.35	31.95	4.02	35.69	156	26	Average
5 @	2487.65	59.80	-14.20	74.00	59.47	31.98	4.05	35.70	100	0	Peak
6 @	2487.65	52.81	-1.20	54.00	52.45	32.00	4.05	35.70	156	26	Average
7	7686.00	53.20	-20.80	74.00	46.43	35.64	7.37	36.24	100	0	Peak
8 @	7686.00	42.06	-11.94	54.00	35.29	35.64	7.37	36.24	100	182	Average

Remark: #3 and #4 are Fundamental Signals



Frequency Range : 1 GHz ~ 25GHz

Modulation Type : DSSS

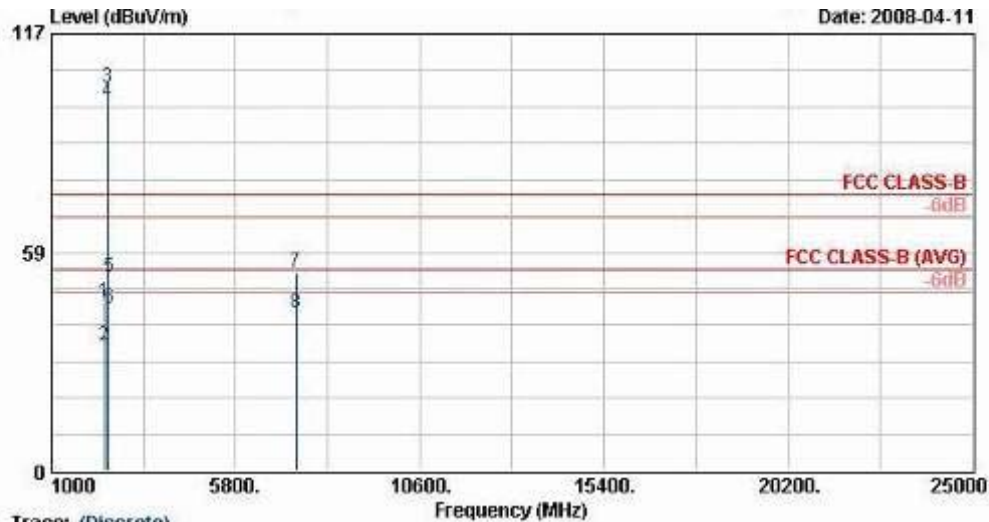
Temperature : 21~26

Channel : 11

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Vertical



Site
Condition
EUT
Power
Model
Memo
Data Rate
Plane
IDET

Trace: (Discrete)
03CH06-HV
FCC CLASS-B 3m SHF-ZHF HORN VERTICAL
Smart Phone
120Vac/60Hz
FR 811107-01
802.11b Tx_Ch11; 2462MHz + Adaptor
1
E2
00440145065584601

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/n	dB	dB	cn	deg	
1	2388.00	45.41	-28.59	74.00	45.31	31.86	3.92	35.68	100	0	Peak
2	2388.00	33.43	-20.57	54.00	33.33	31.86	3.92	35.68	100	179	Average
3 @	2462.00	102.77			102.49	31.95	4.02	35.69	100	0	Peak
4 @	2462.00	98.89			98.61	31.95	4.02	35.69	100	179	Average
5	2488.22	51.56	-22.44	74.00	51.23	31.98	4.05	35.70	100	0	Peak
6 @	2488.22	43.50	-10.51	54.00	43.14	32.00	4.05	35.70	100	179	Average
7	7377.00	53.27	-20.73	74.00	46.54	35.65	7.23	36.15	100	0	Peak
8 @	7377.00	42.01	-11.99	54.00	35.28	35.65	7.23	36.15	100	278	Average

Remark: #3 and #4 are Fundamental Signals



Frequency Range : 1 GHz ~ 25GHz

Modulation Type : OFDM

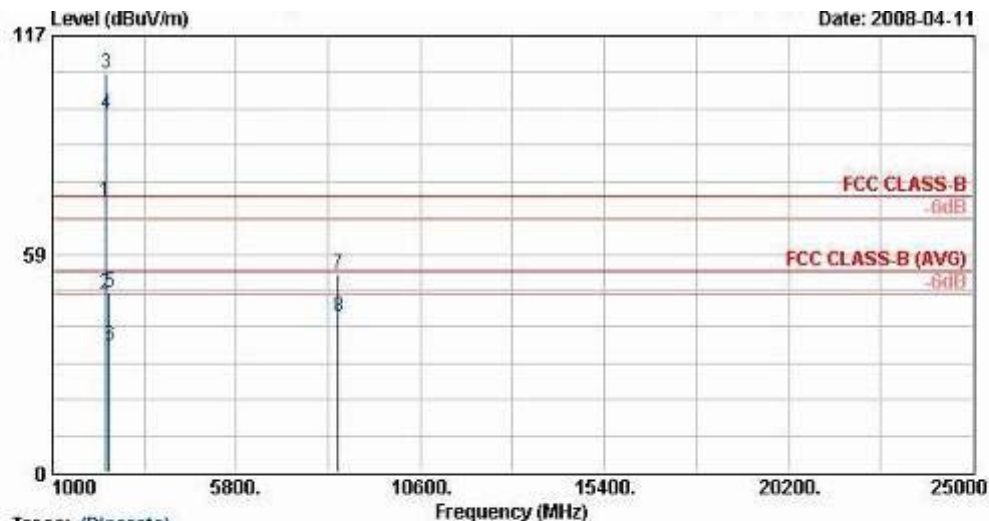
Temperature : 21~26

Channel : 01

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Horizontal



Site
Condition
EUT
Power
Model
Memo
Data Rate
Plane
IDET

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/n	dB	dB	cn	deg	
1 !	2390.00	72.44	-1.56	74.00	72.34	31.86	3.92	35.68	100	0	Peak
2	2390.00	47.84	-6.16	54.00	47.74	31.86	3.92	35.68	110	17	Average
3 X	2412.00	106.90			106.75	31.88	3.95	35.68	100	0	Peak
4 @	2412.00	96.29			96.14	31.88	3.95	35.68	110	17	Average
5	2484.00	48.34	-25.66	74.00	48.01	31.98	4.05	35.70	100	0	Peak
6	2484.00	34.12	-19.88	54.00	33.79	31.98	4.05	35.70	110	17	Average
7	8466.00	53.14	-20.86	74.00	46.45	35.79	7.20	36.30	100	0	Peak
8	8466.00	41.97	-12.03	54.00	35.28	35.79	7.20	36.30	100	216	Average

Remark: #3 and #4 are Fundamental Signals



Frequency Range : 1 GHz ~ 25GHz

Modulation Type : OFDM

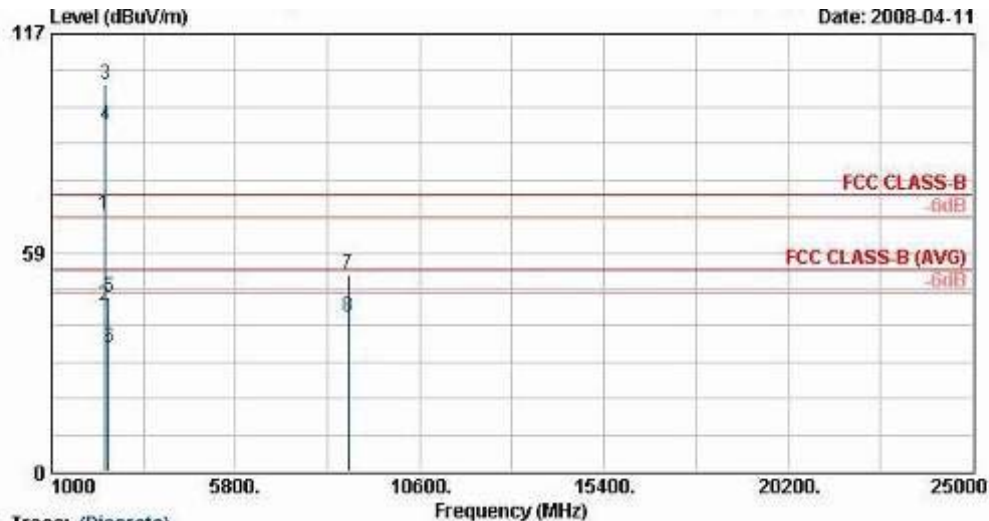
Temperature : 21~26

Channel : 01

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Vertical



Trace: (Discrete)

Site: 03CH06-HV
 Condition: FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 EUT: Smart Phone
 Power: 120Vac/60Hz
 Model: FR 811107-01
 Memo: 802.11g Tx_Ch01; 2412MHz + Adaptor
 Data Rate: 6
 Plane: E2
 IDET: 00440145065584601

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/n	dB	dB	cn	deg	
1 !	2390.00	68.93	-5.07	74.00	68.83	31.86	3.92	35.68	100	0	Peak
2	2390.00	44.35	-9.65	54.00	44.25	31.86	3.92	35.68	107	233	Average
3 X	2412.00	103.40			103.25	31.88	3.95	35.68	100	0	Peak
4 @	2412.00	92.85			92.70	31.88	3.95	35.68	107	233	Average
5	2484.00	46.43	-27.57	74.00	46.10	31.98	4.05	35.70	100	0	Peak
6	2484.00	32.90	-21.10	54.00	32.57	31.98	4.05	35.70	107	233	Average
7	8736.00	52.76	-21.24	74.00	45.60	36.13	7.48	36.44	100	0	Peak
8	8736.00	41.42	-12.58	54.00	34.25	36.13	7.48	36.44	100	113	Average

Remark: #3 and #4 are Fundamental Signals



Frequency Range : 1 GHz ~ 25GHz

Modulation Type : OFDM

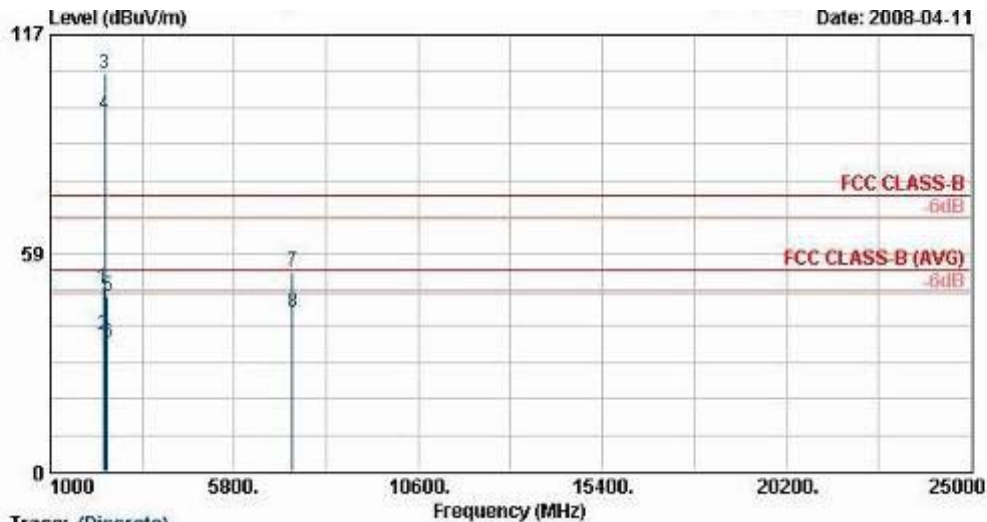
Temperature : 21~26

Channel : 06

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Horizontal



Site
Condition
EUT
Power
Model
Memo
Data Rate
Plane
TWT
S/N

03CH06-RV
FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Smart Phone
120Vac/60Hz
FR 811107-01
602.11g Tx_Ch06; 2437MHz + Adaptor
8
E2
00440145065584601

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV		dB	dB	cn	deg
1	2388.00	48.97	-25.03	74.00	48.87	31.86	3.92	35.68	100	0 Peak
2	2388.00	36.41	-17.59	54.00	36.31	31.86	3.92	35.68	159	11 Average
3 X	2437.00	106.53			106.33	31.90	3.99	35.69	100	0 Peak
4 @	2437.00	95.87			95.64	31.93	3.99	35.69	159	11 Average
5	2484.00	47.07	-26.93	74.00	46.74	31.98	4.05	35.70	100	0 Peak
6	2484.00	34.41	-19.59	54.00	34.08	31.98	4.05	35.70	159	11 Average
7	7326.00	53.70	-20.30	74.00	46.95	35.67	7.21	36.13	100	0 Peak
8	7326.00	42.57	-11.43	54.00	35.82	35.67	7.21	36.13	100	117 Average

Remark: #3 and #4 are Fundamental Signals



Frequency Range : 1 GHz ~ 25GHz

Modulation Type : OFDM

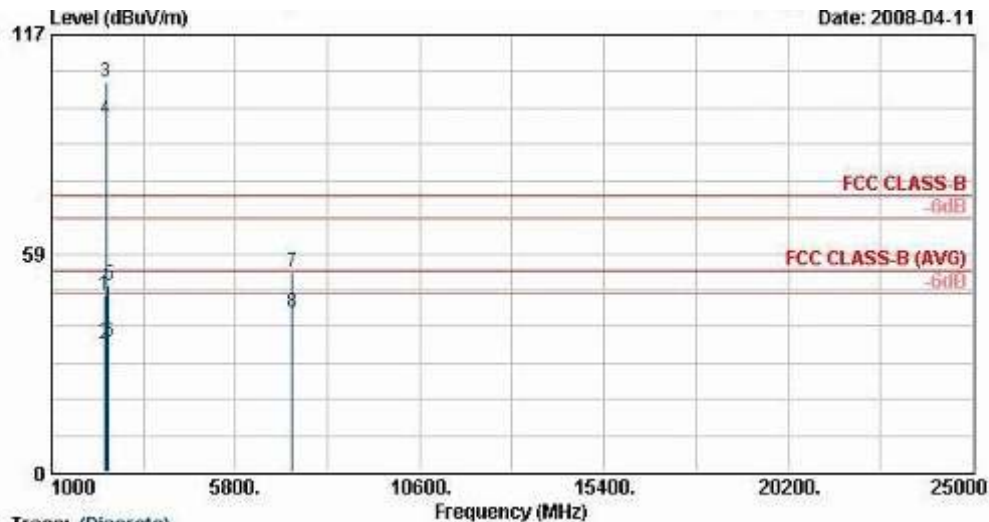
Temperature : 21~26

Channel : 06

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Vertical



Site
Condition
EUT
Power
Model
Memo
Data Rate
Plane
INRT
S/N

Trace: (Discrete)
03CH05-HV
FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Smart Phone
120Vac/60Hz
FR 811107-01
802.11g Tx_Ch06; 2437MHz + Adaptor
0
R2
00440145065584601

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/n	dB	dB	cn	deg
1	2390.00	47.61	-26.39	74.00	47.51	31.86	3.92	35.68	100	0 Peak
2	2390.00	34.20	-19.80	54.00	34.10	31.86	3.92	35.68	133	306 Average
3 X	2437.00	104.22			103.99	31.93	3.99	35.69	100	0 Peak
4 @	2437.00	94.35			94.12	31.93	3.99	35.69	133	306 Average
5	2484.00	49.98	-24.02	74.00	49.65	31.98	4.05	35.70	100	0 Peak
6	2484.00	34.58	-19.42	54.00	34.25	31.98	4.05	35.70	133	306 Average
7	7272.00	53.59	-20.41	74.00	46.83	35.69	7.18	36.11	100	0 Peak
8	7272.00	42.54	-11.46	54.00	35.78	35.69	7.18	36.11	100	133 Average

Remark: #3 and #4 are Fundamental Signals



Frequency Range : 1 GHz ~ 25GHz

Modulation Type : OFDM

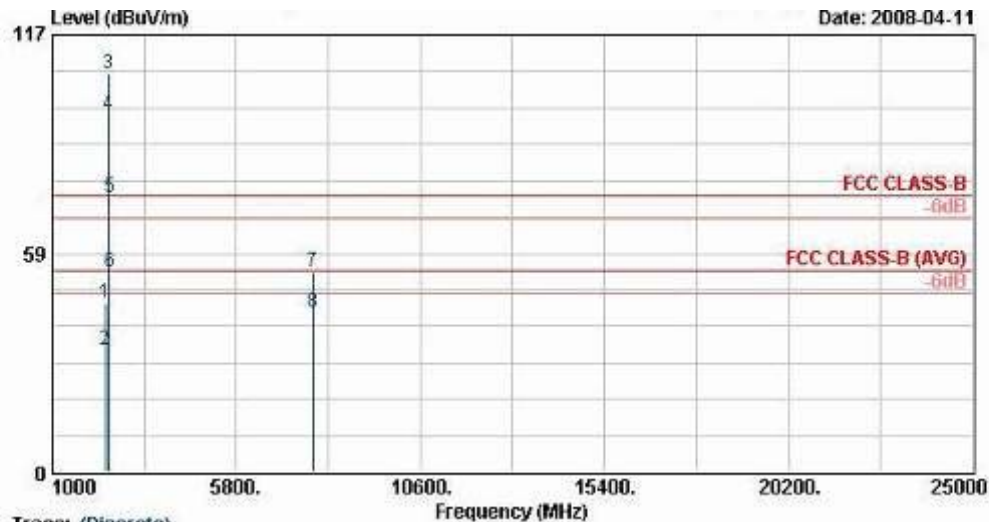
Temperature : 21~26

Channel : 11

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Horizontal



Trace: (Discrete)

Site: 09CH05-WY
Condition: FCC CLASS-B 3m SHF-EHF NORM HORIZONTAL
EUT: Smart Phone
Power: 120Vac/60Hz
Model: FR 811107-01
Memo: 602.11g Tx_Ch11; 2462MHz + Adaptor
Data Rate: 6
Plane: R2
TWT: 00440145065584601
S/N:

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/n	dB	dB	cn	deg
1	2390.00	45.12	-28.88	74.00	45.03	31.88	3.92	35.68	100	0 Peak
2	2390.00	32.76	-21.24	54.00	32.66	31.88	3.92	35.68	144	51 Average
3 X	2462.00	106.39			106.11	31.95	4.02	35.70	100	0 Peak
4 @	2462.00	95.58			95.30	31.95	4.02	35.69	144	51 Average
5 !	2483.47	73.29	-0.71	74.00	72.96	31.98	4.05	35.70	100	0 Peak
6 !	2483.47	53.52	-0.48	54.00	53.19	31.98	4.05	35.70	144	51 Average
7	7806.00	53.56	-20.44	74.00	46.73	35.66	7.42	36.26	100	0 Peak
8	7806.00	42.44	-11.56	54.00	35.62	35.66	7.42	36.26	100	118 Average

Remark: #3 and #4 are Fundamental Signals



Frequency Range : 1 GHz ~ 25GHz

Modulation Type : OFDM

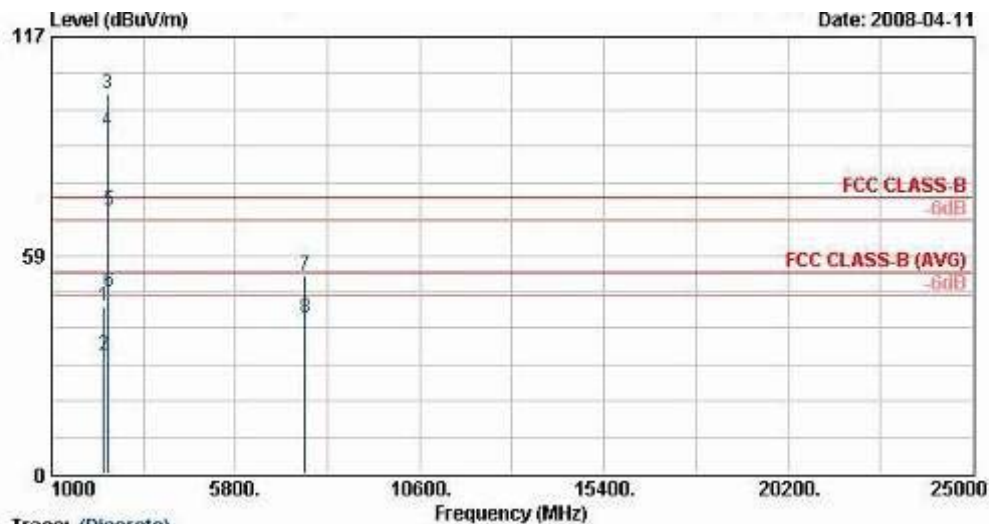
Temperature : 21~26

Channel : 11

Relative Humidity : 49~51%

Test Engineer : Sun Wang

Polarization : Vertical



Site: 00CH06-RV
Condition: FCC CLASS-B 3m SHF-EHF HORN VERTICAL
EUT: Smart Phone
Power: 120Vac/60Hz
Model: FR 811107-01
Memo: 802.11g Tx_Ch11; 2482MHz + Adaptor
Data Rate: 6
Plane: E2
ID#1: 00440145065584601
S/N:

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/n	dB	dB	cn	deg	
1	2366.00	45.01	-28.99	74.00	44.99	31.81	3.89	35.68	100	0	Peak
2	2366.00	31.89	-22.11	54.00	31.87	31.81	3.89	35.68	100	224	Average
3 X	2462.00	101.95			101.67	31.95	4.02	35.69	100	0	Peak
4 @	2462.00	91.97			91.69	31.95	4.02	35.69	100	224	Average
5 !	2483.66	70.47	-3.53	74.00	70.14	31.98	4.05	35.70	100	0	Peak
6 !	2483.66	48.74	-5.26	54.00	48.41	31.98	4.05	35.70	100	224	Average
7	7617.00	52.99	-21.01	74.00	46.26	35.62	7.33	36.22	100	0	Peak
8	7617.00	41.75	-12.25	54.00	35.02	35.62	7.33	36.22	100	193	Average

Remark: #3 and #4 are Fundamental Signals

3.8 99% Bandwidth Measurement (WLAN)

3.8.1 Limits of 99% Bandwidth Measurement

None.

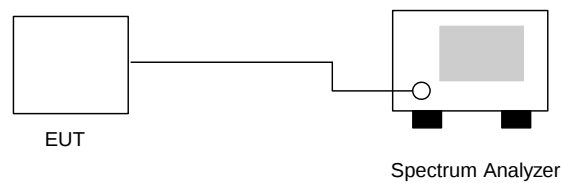
3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

3.8.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 300kHz and VBW to 300kHz.
3. Set the 99% bandwidth function of spectrum analyzer, then measured and recorded.

3.8.4 Test Setup



3.8.5 Test Result

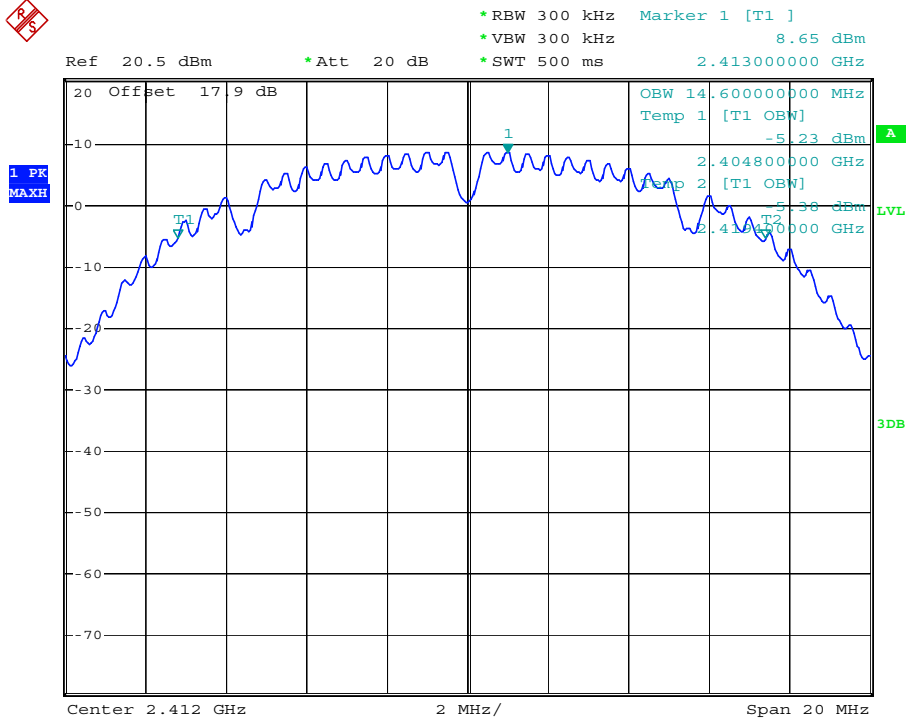
Modulation Type : DSSS

Temperature : 28~29

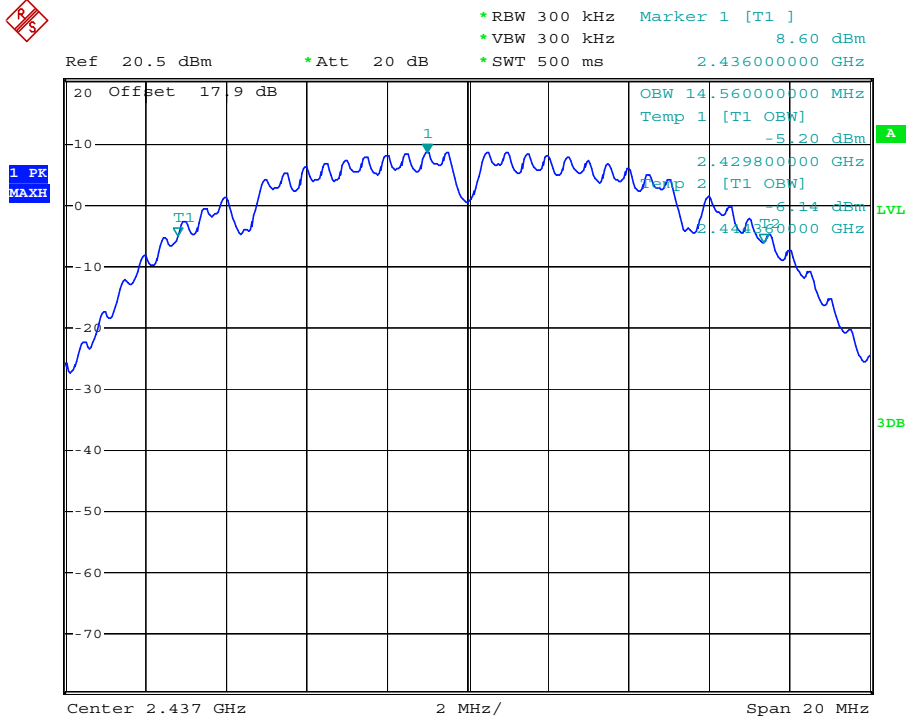
Test Engineer : Darren Lin

Relative Humidity : 47~48%

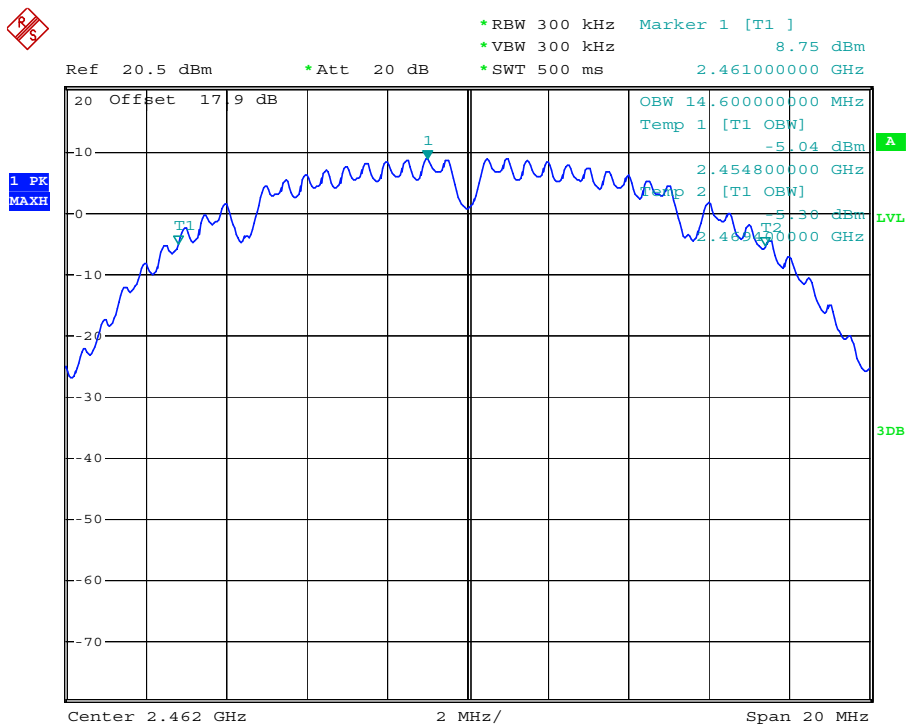
Channel	Frequency (MHz)	99% Emission bandwidth (MHz)
01	2412	14.60
06	2437	14.56
11	2462	14.60



Date: 23.APR.2008 18:50:50



Date: 23.APR.2008 18:52:30



Date: 23.APR.2008 18:52:47

3.8.6 Test Result

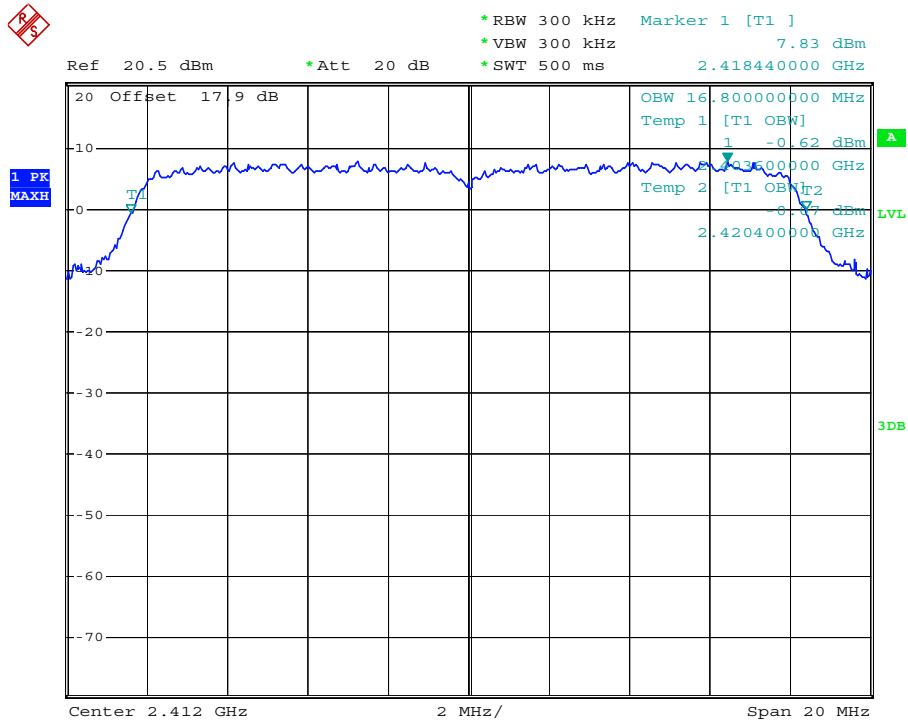
Modulation Type : OFDM

Temperature : 27~29

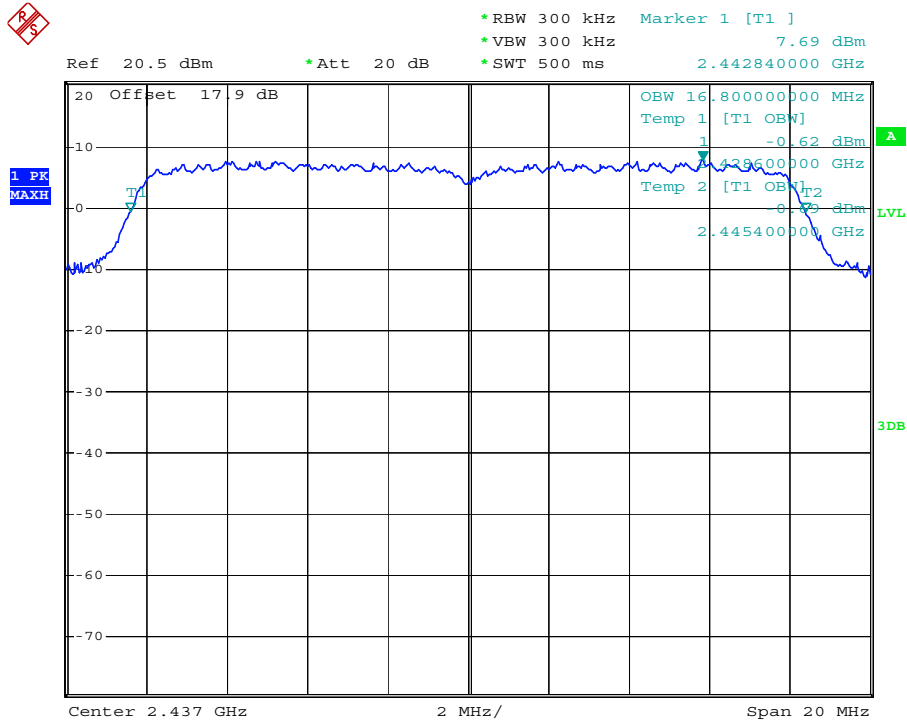
Test Engineer : Darren Lin

Relative Humidity : 47~48%

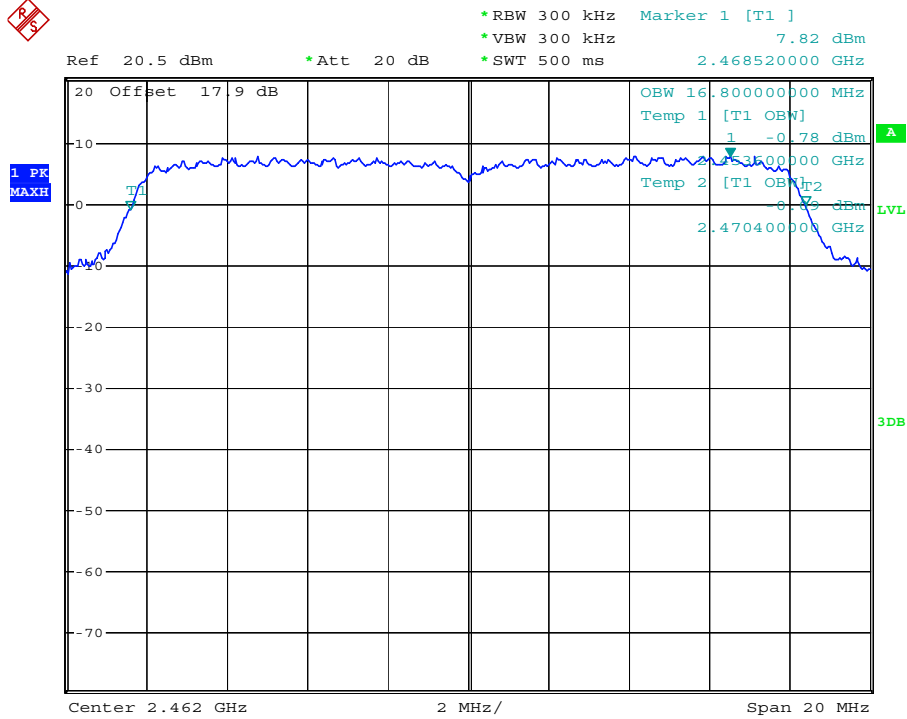
Channel	Frequency (MHz)	99% Emission bandwidth (MHz)
01	2412	16.80
06	2437	16.80
11	2462	16.80



Date: 23.APR.2008 18:51:23



Date: 23.APR.2008 18:52:09



Date: 23.APR.2008 18:53:25

3.9 Dwell Time of Each Channel

3.9.1 Limit of Dwell Time

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

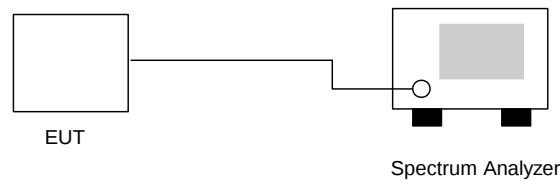
3.9.2 Measuring Instruments

See list of measuring instruments of this test report.

3.9.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer by a low loss cable.
2. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
3. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
4. The calculate $= 79 * 0.4 * (1600/79) * t$ (t = the time duration of one single pulse)

3.9.4 Test Setup



**3.9.5 Test Result****Modulation Type :** GFSK (1Mbps)**Temperature :** 28~29**Channel :** 39**Relative Humidity :** 47~48%**Test Engineer :** CKC

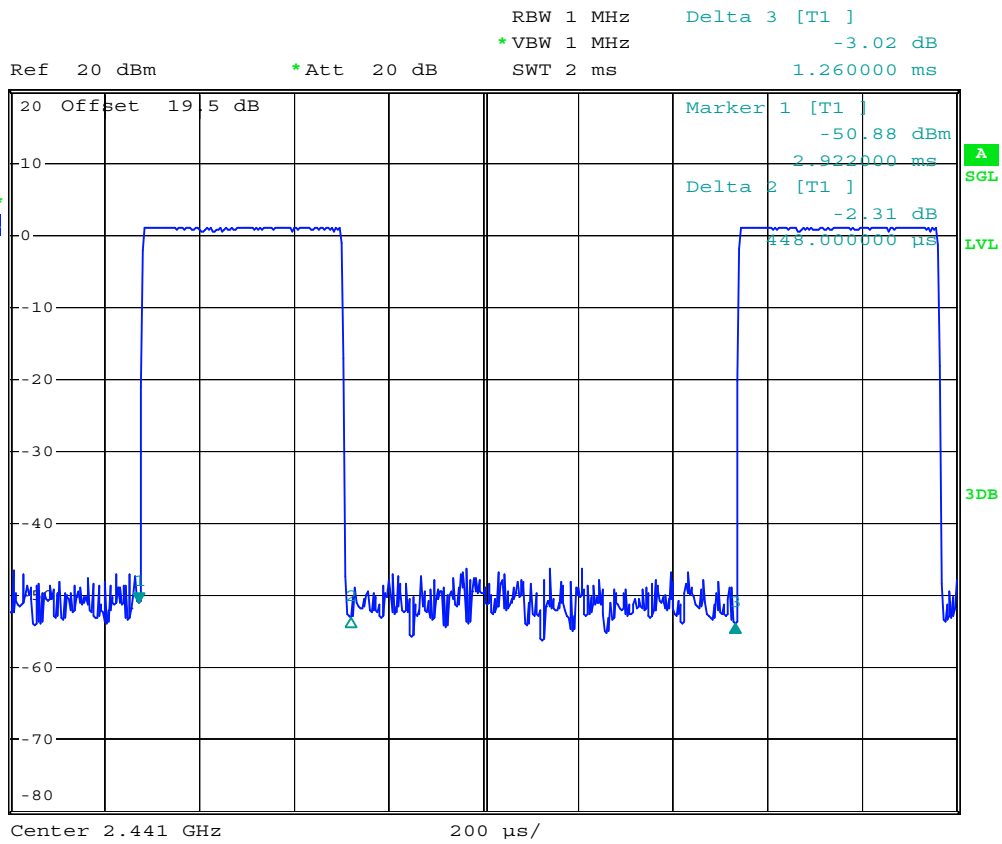
Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
DH1	9.6	448	0.1359	0.4	Pass
DH3	5.3	1730	0.2897	0.4	Pass
DH5	3.6	3060	0.3481	0.4	Pass

Remark:

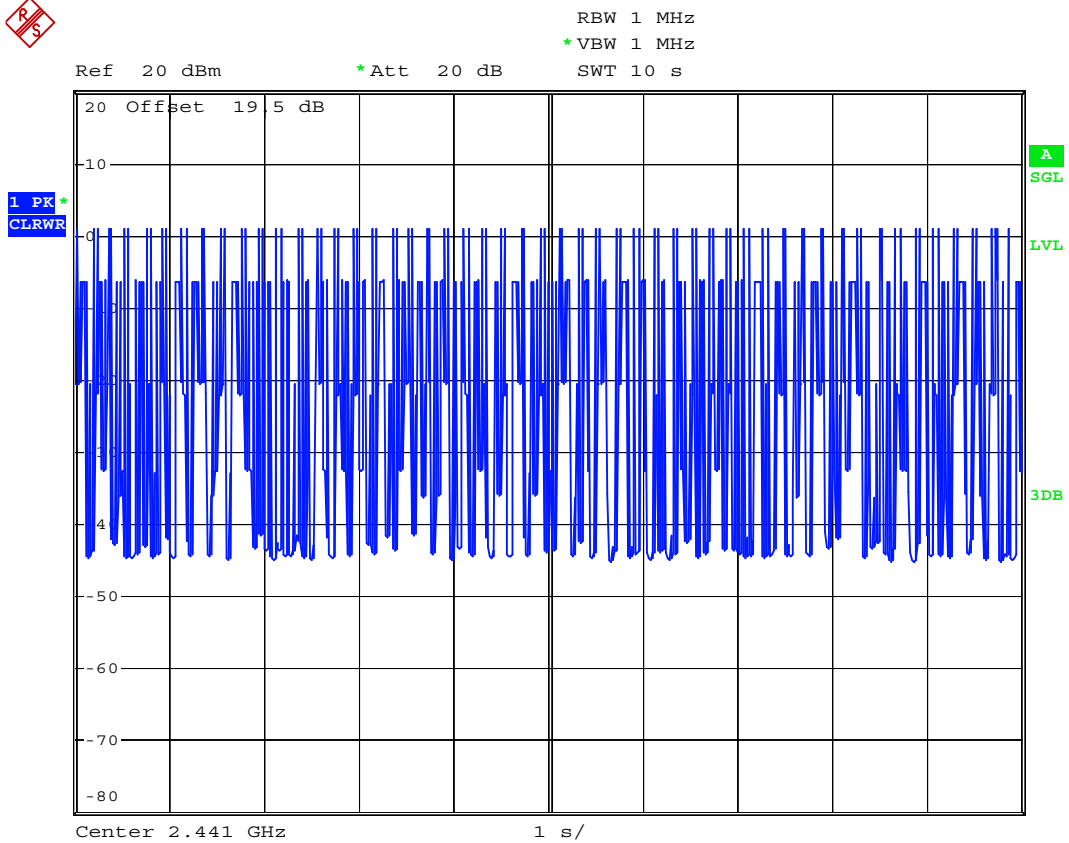
1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time
2. 79 channels come from the Hopping Channel number.
3. Average Hopping Channel = hops/sweep time
4. t: Package Transfer Time(us)



GFSK_DH1



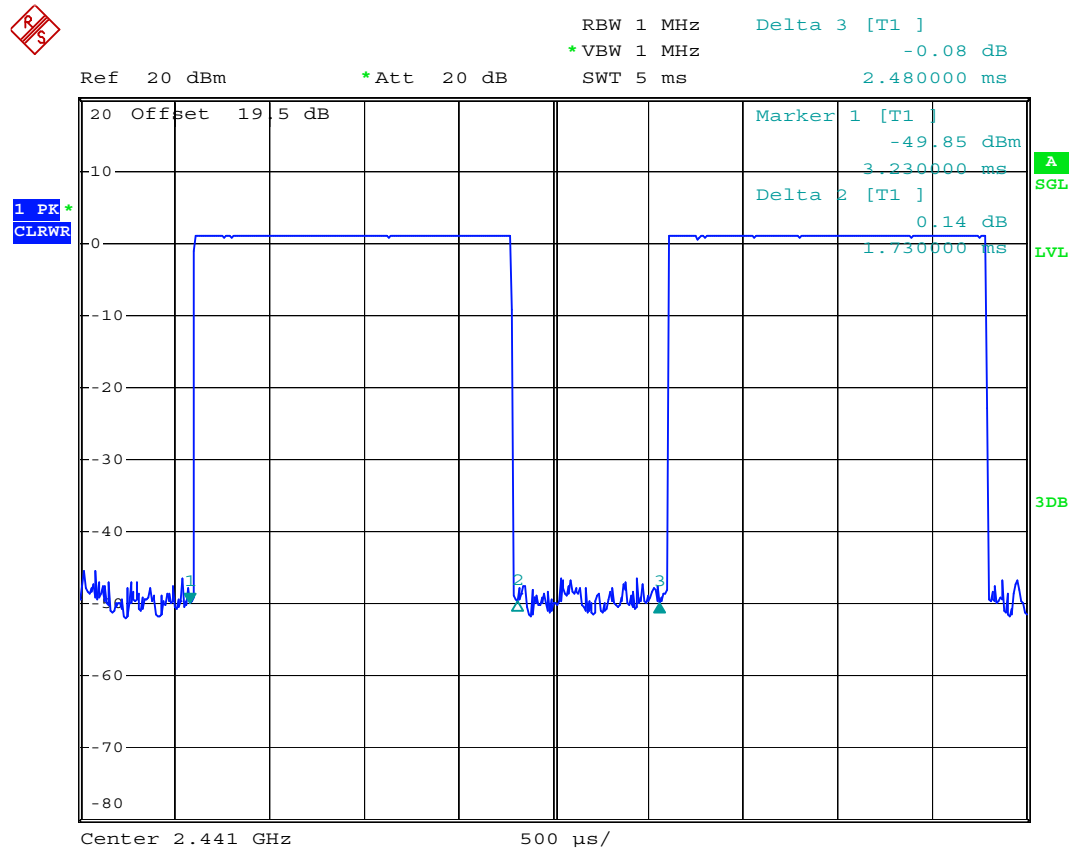
Date: 11.APR.2008 23:48:54



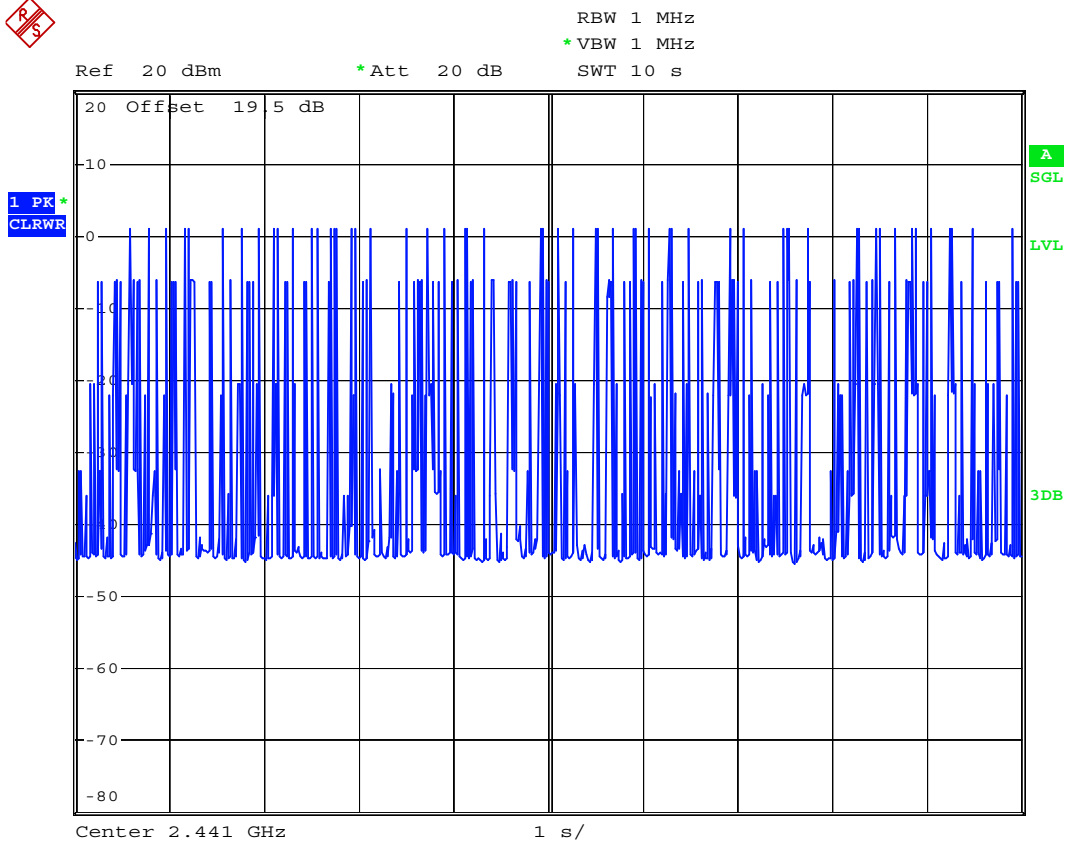
Date: 11.APR.2008 23:51:26



GFSK_DH3



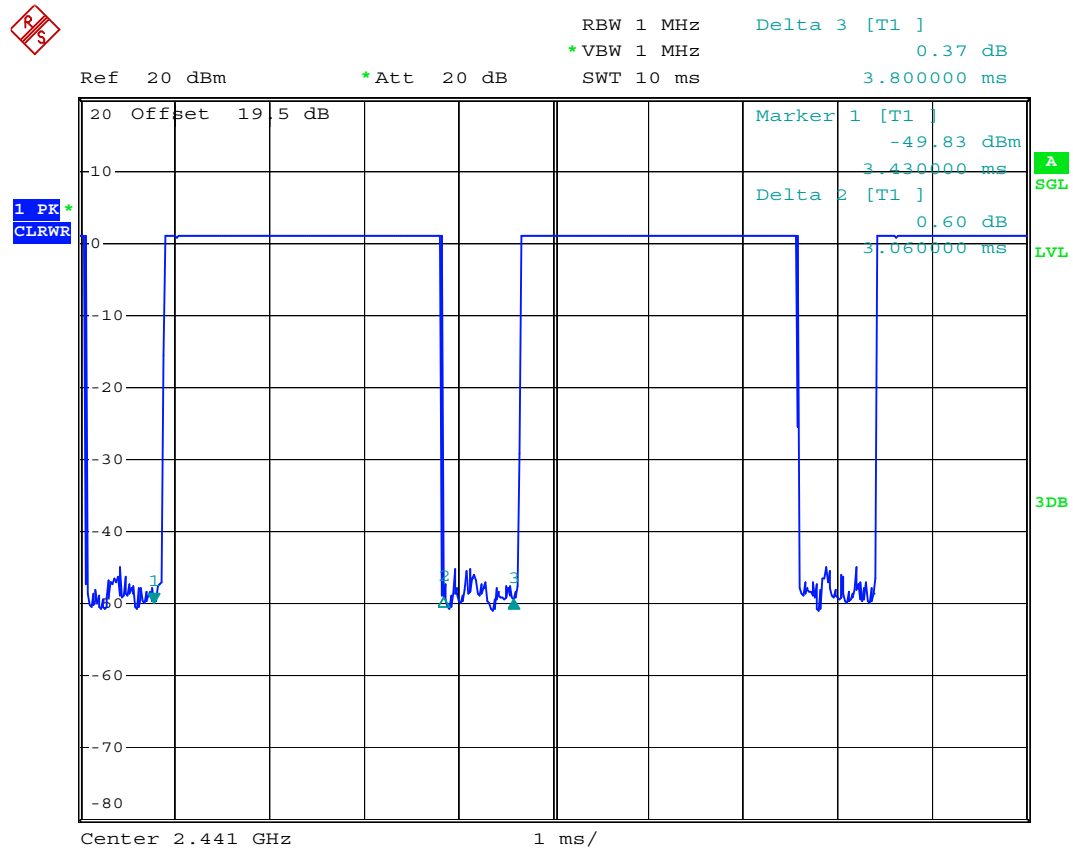
Date: 11.APR.2008 23:49:34



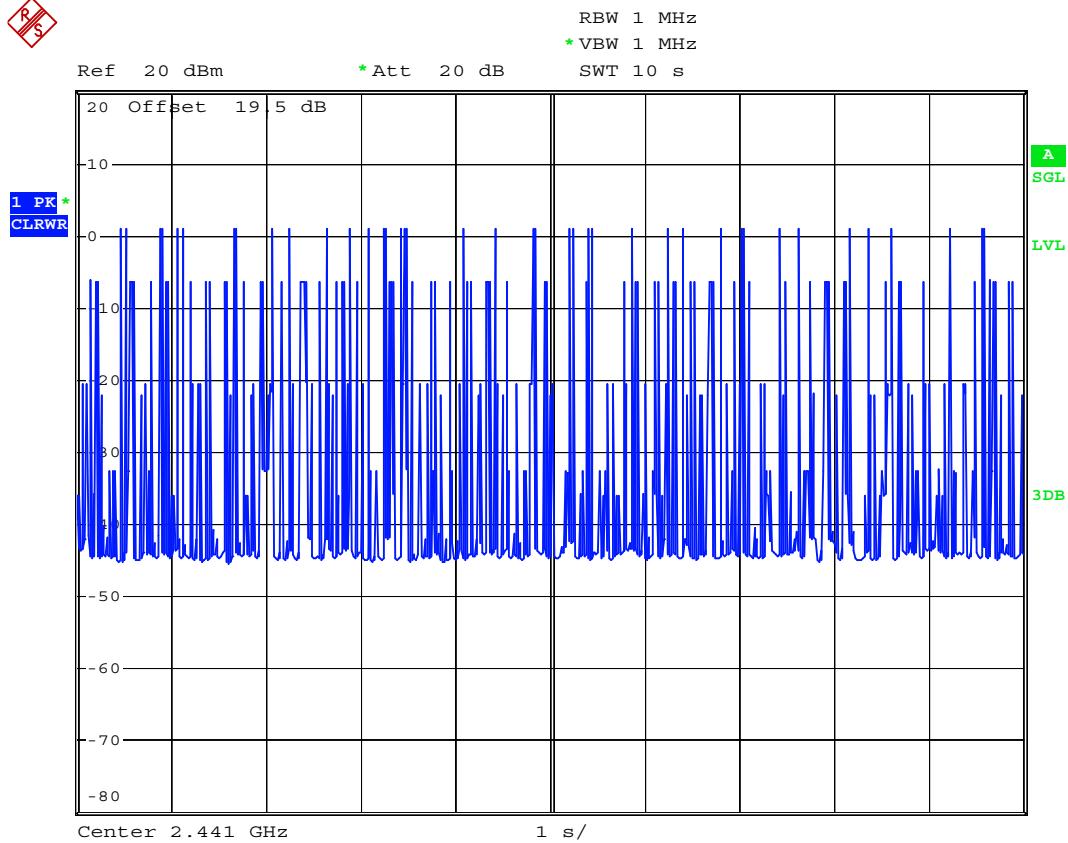
Date: 11.APR.2008 23:51:47



GFSK_DH5



Date: 11.APR.2008 23:50:02



Date: 11.APR.2008 23:51:02

**Modulation Type :** $\pi/4$ -DQPSK (EDR 2Mbps)**Temperature :** 28~29**Channel :** 39**Relative Humidity :** 47~48%**Test Engineer :** CKC

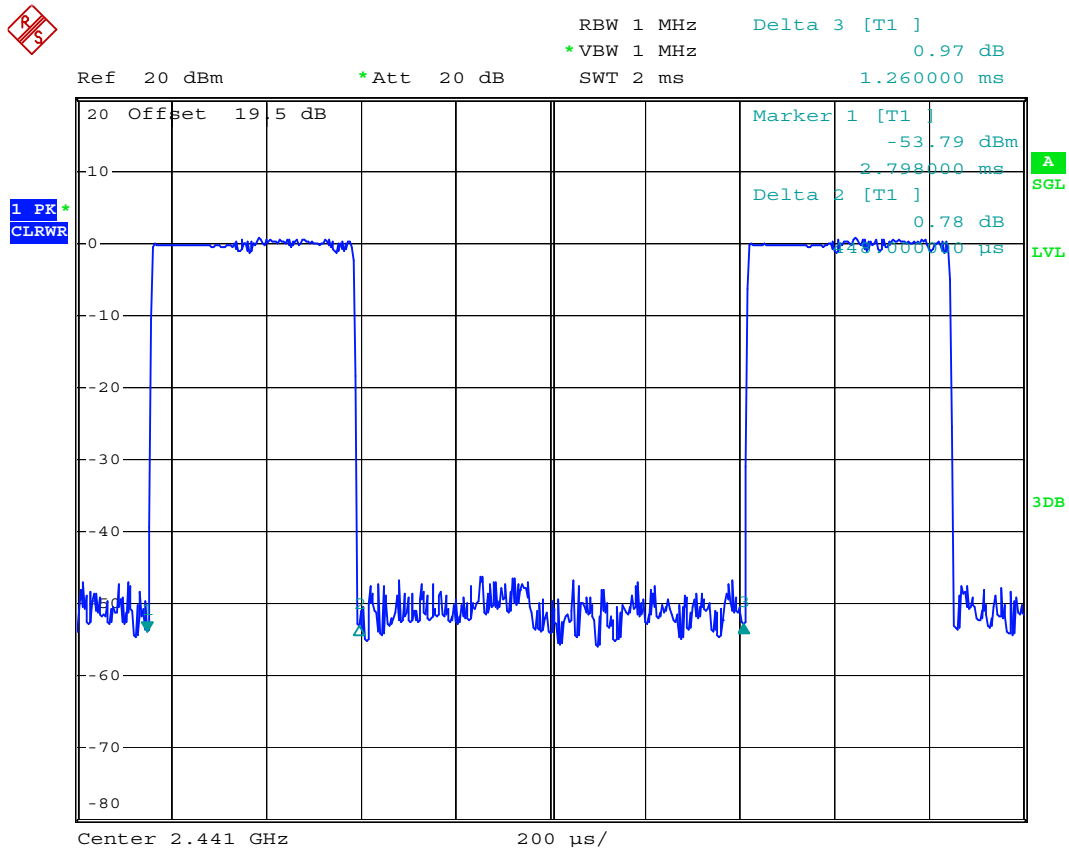
Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
DH1	9.1	448	0.1288	0.4	Pass
DH3	5.1	1720	0.2772	0.4	Pass
DH5	3.1	2980	0.2919	0.4	Pass

Remark:

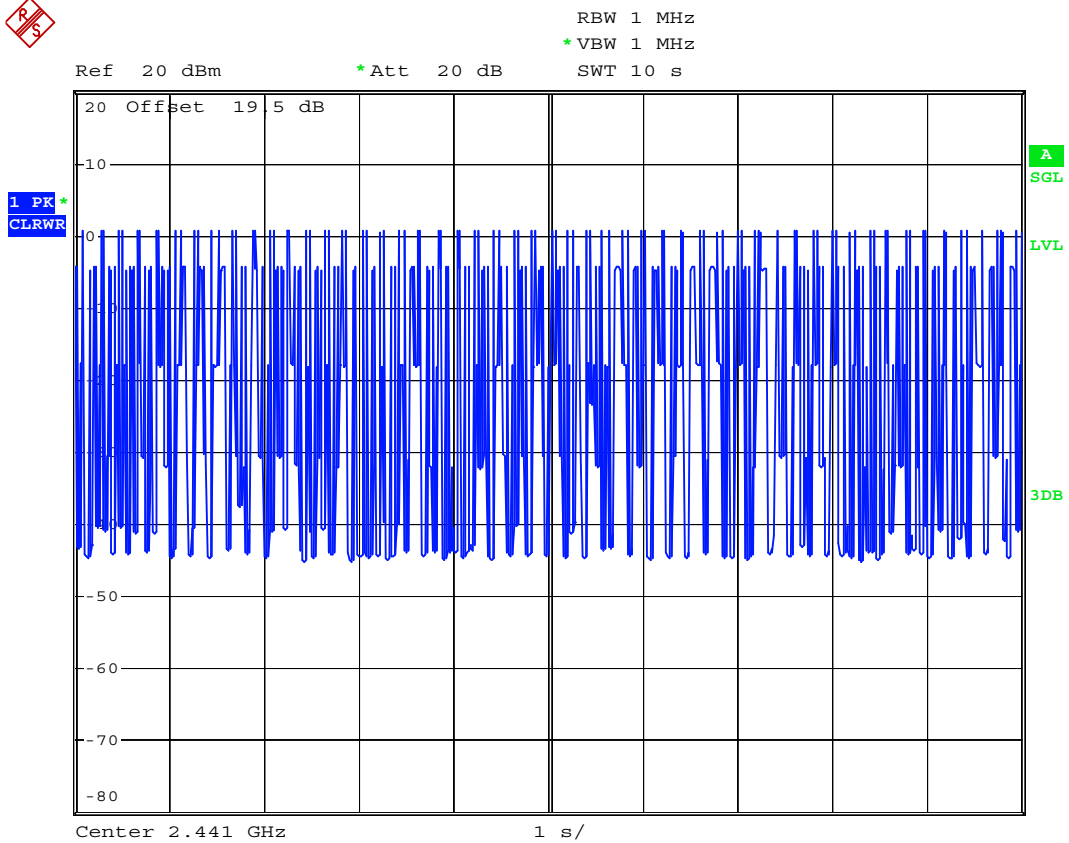
1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time
2. 79 channels come from the Hopping Channel number.
3. Average Hopping Channel = hops/sweep time
4. t: Package Transfer Time(us)



$\pi/4$ -DQPSK_DH1



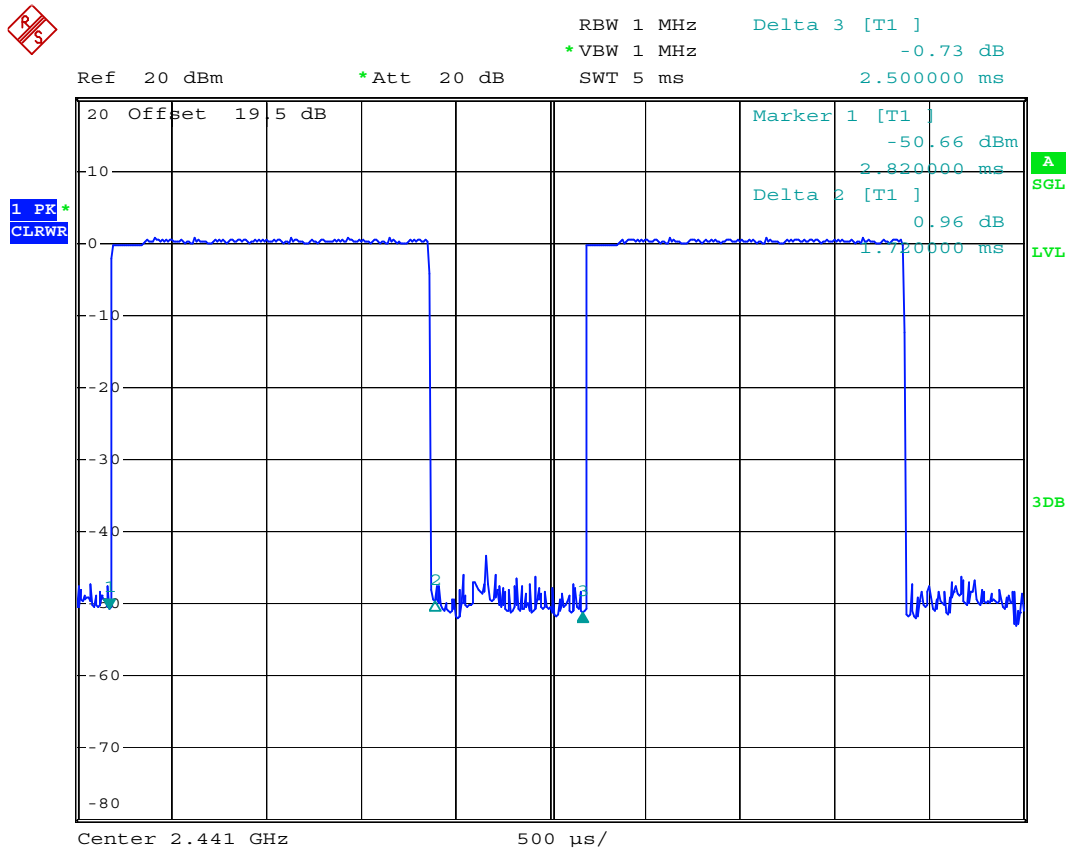
Date: 12.APR.2008 00:06:40



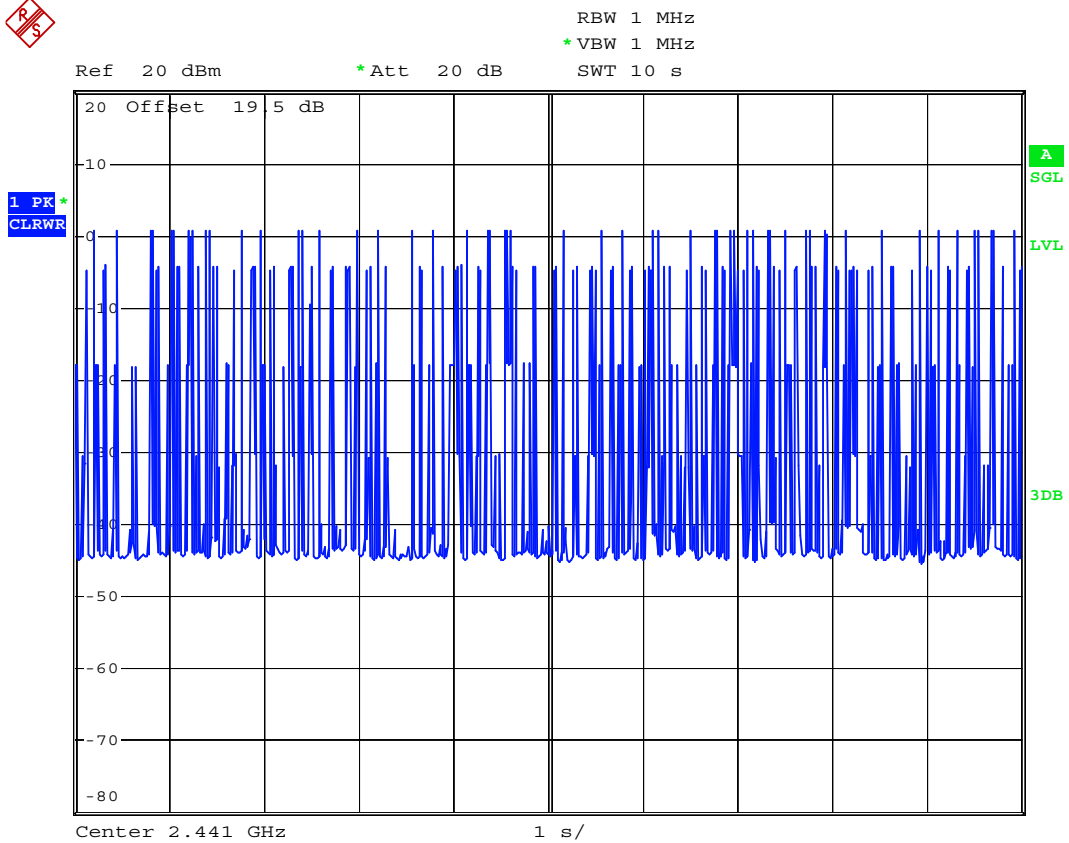
Date: 12.APR.2008 00:09:02



$\pi/4$ -DQPSK_DH3



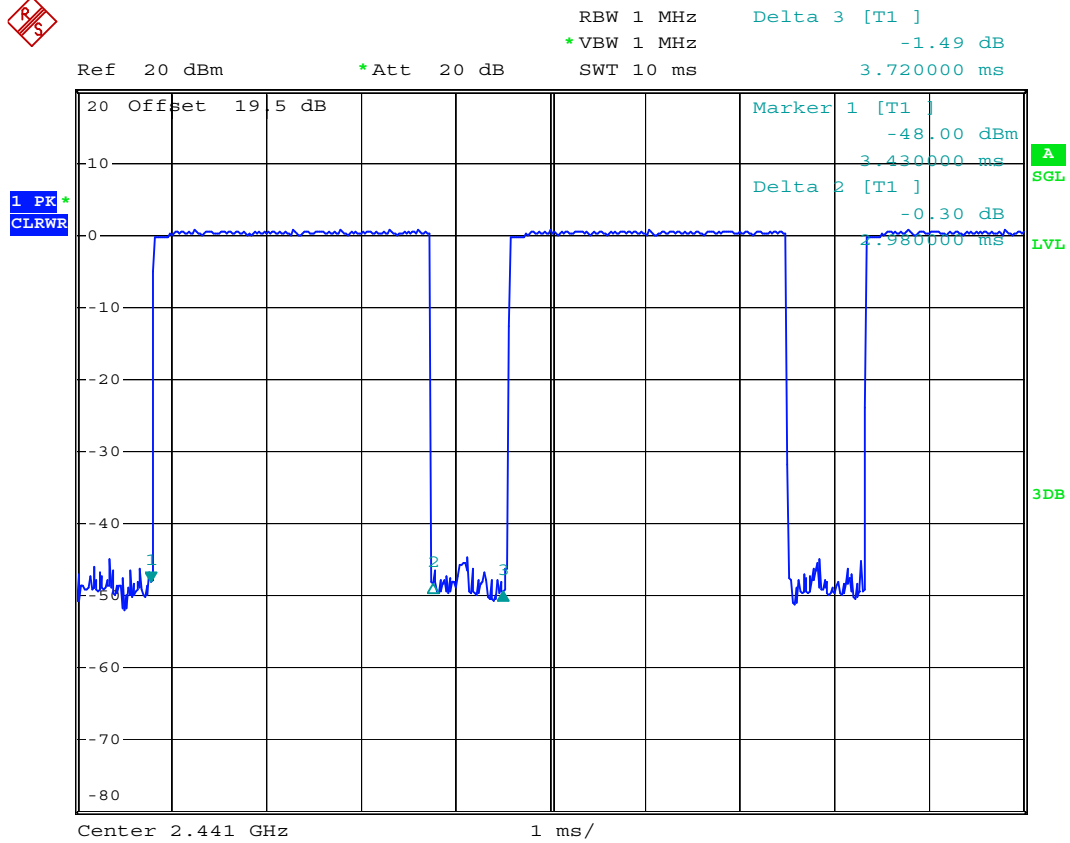
Date: 12.APR.2008 00:07:13



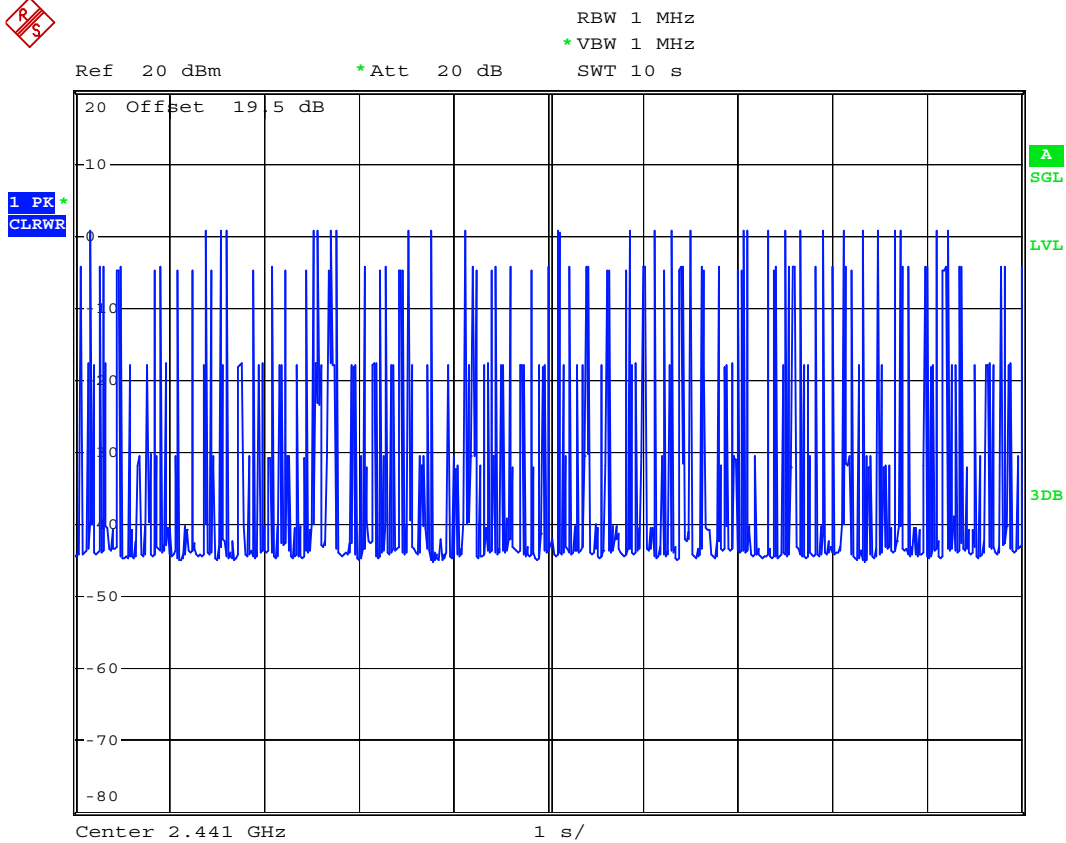
Date: 12.APR.2008 00:09:24



$\pi/4$ -DQPSK_DH5



Date: 12.APR.2008 00:08:11



Date: 12.APR.2008 00:08:39

**Modulation Type :** 8-DPSK (EDR 3Mbps)**Temperature :** 28~29**Channel :** 39**Relative Humidity :** 47~48%**Test Engineer :** CKC

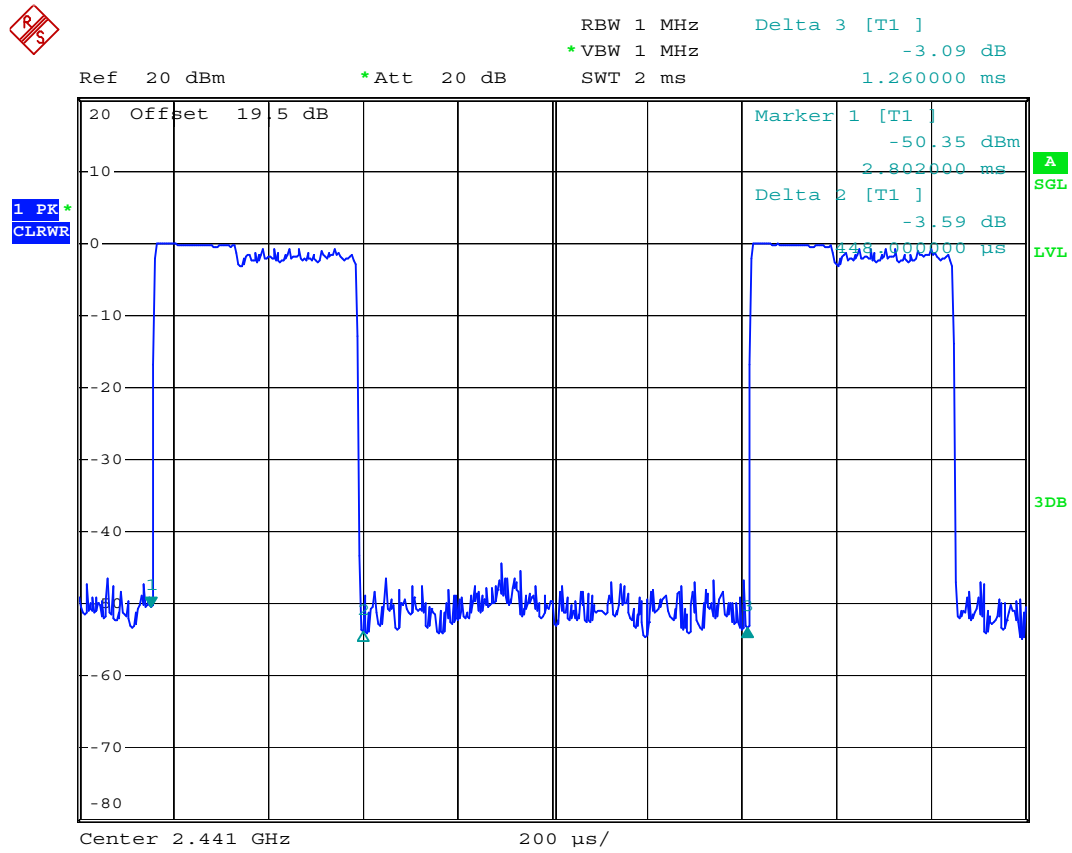
Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
DH1	8.4	448	0.1189	0.4	Pass
DH3	5.1	1720	0.2772	0.4	Pass
DH5	3.3	3020	0.3149	0.4	Pass

Remark:

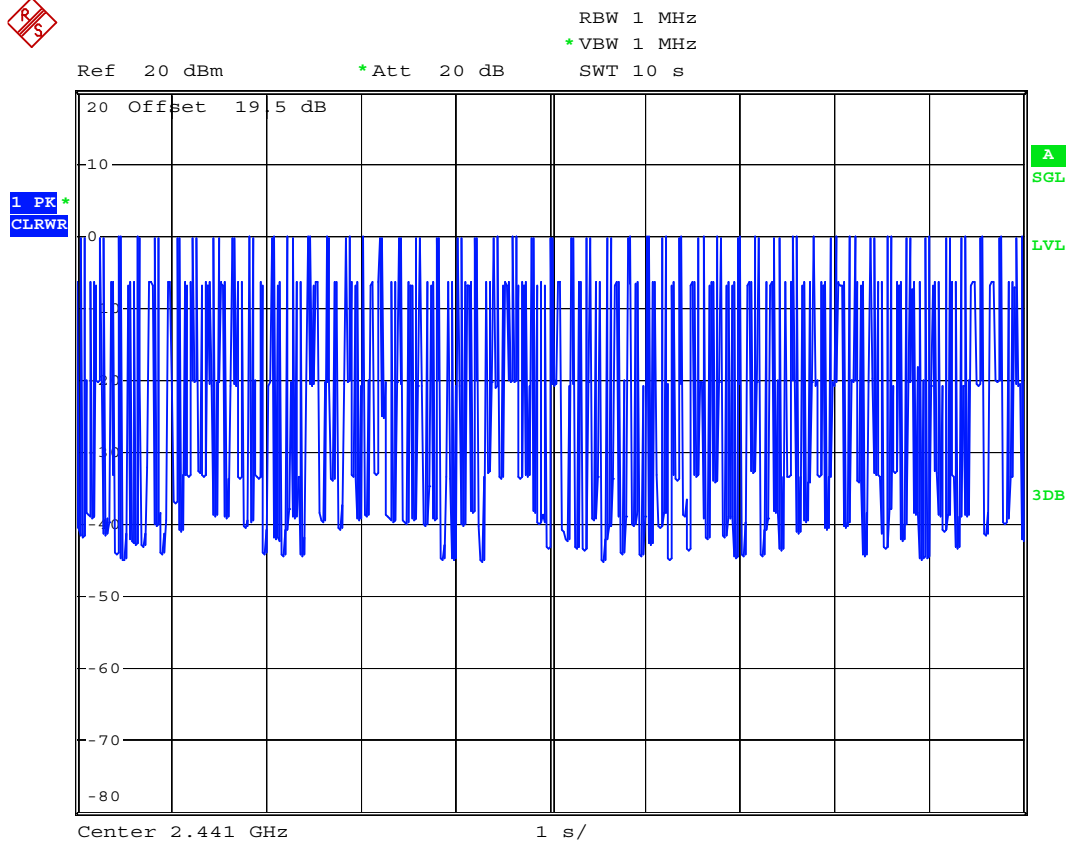
1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time
2. 79 channels come from the Hopping Channel number.
3. Average Hopping Channel = hops/sweep time
4. t: Package Transfer Time(us)



8-DPSK_DH1



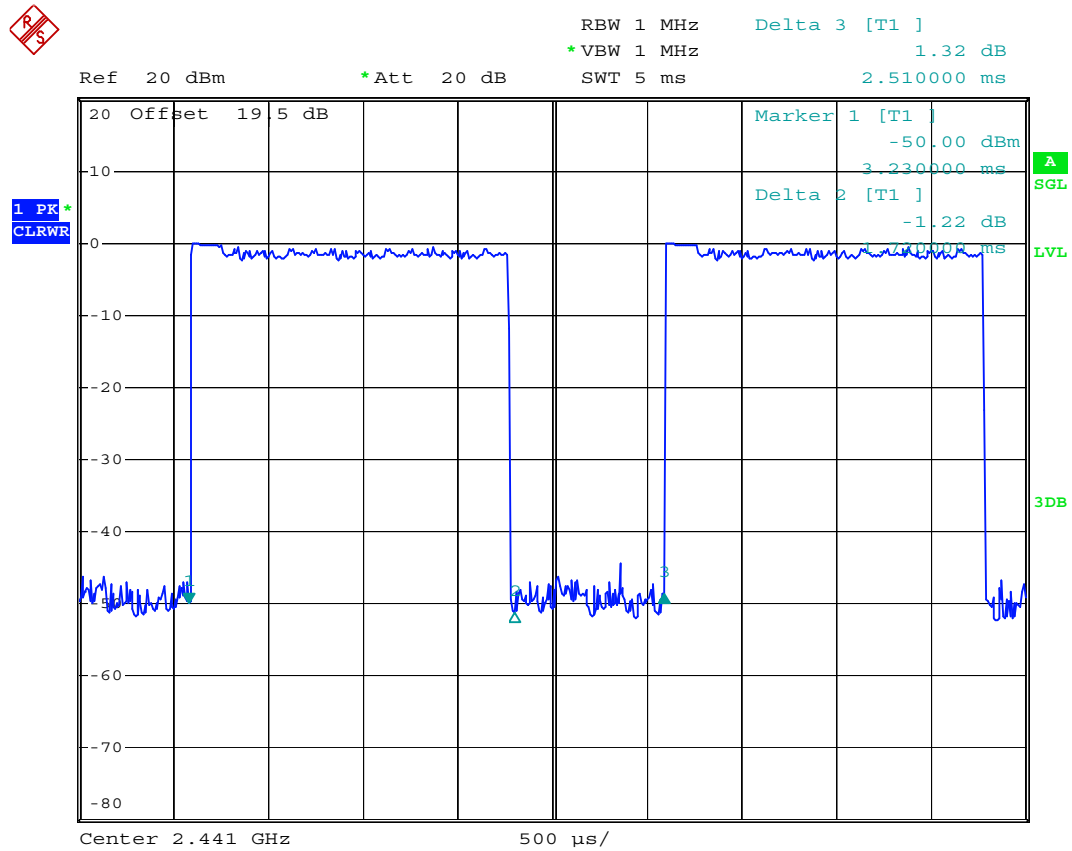
Date: 12.APR.2008 00:31:57



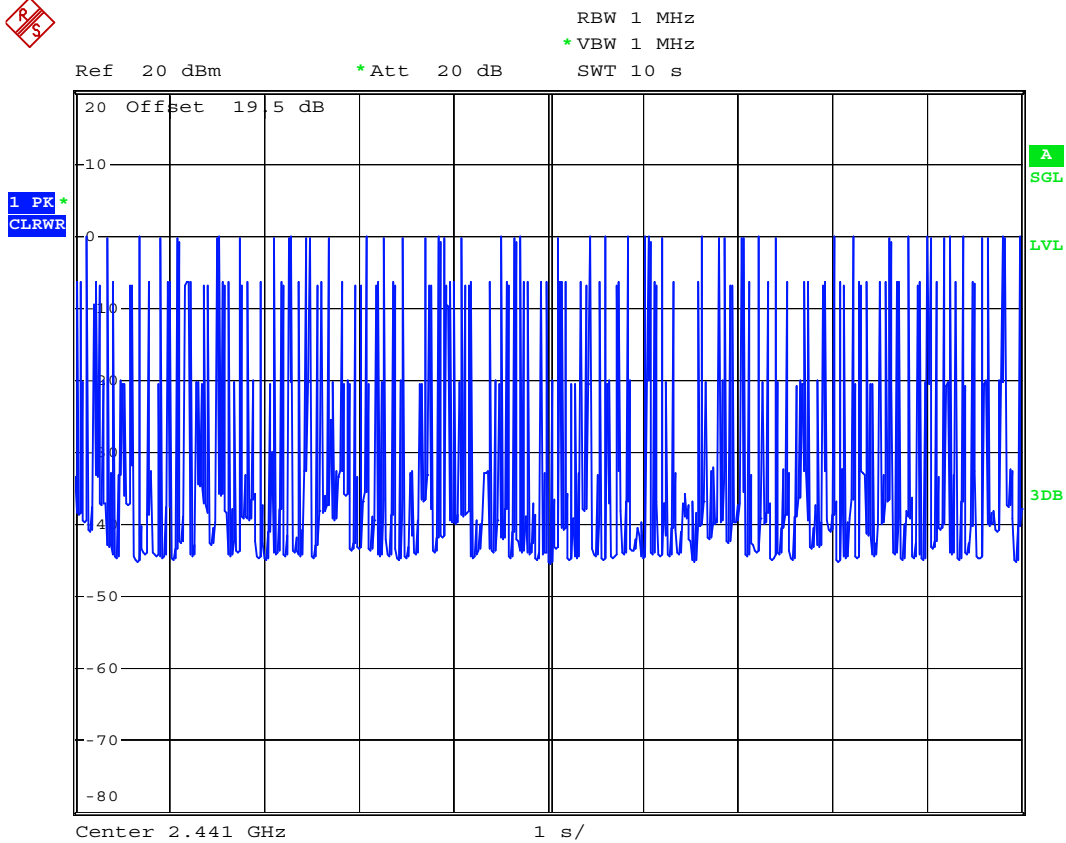
Date: 12.APR.2008 00:34:03



8-DPSK_DH3



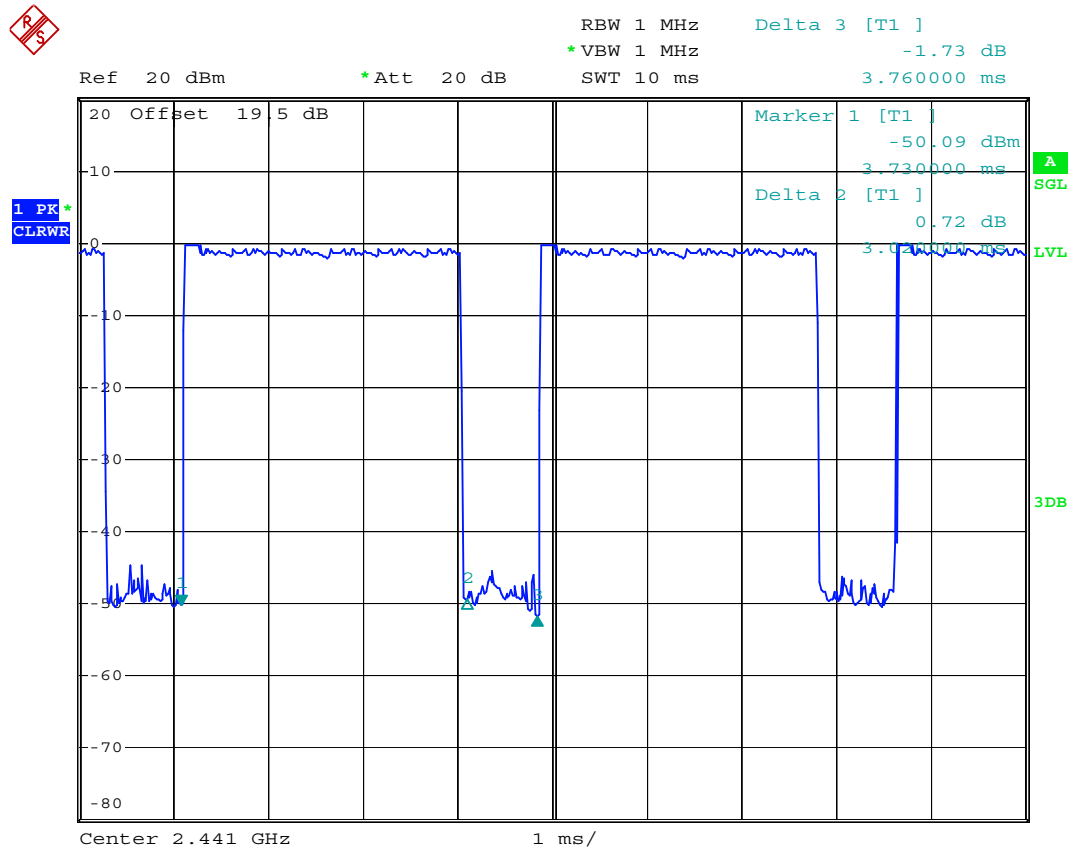
Date: 12.APR.2008 00:32:32



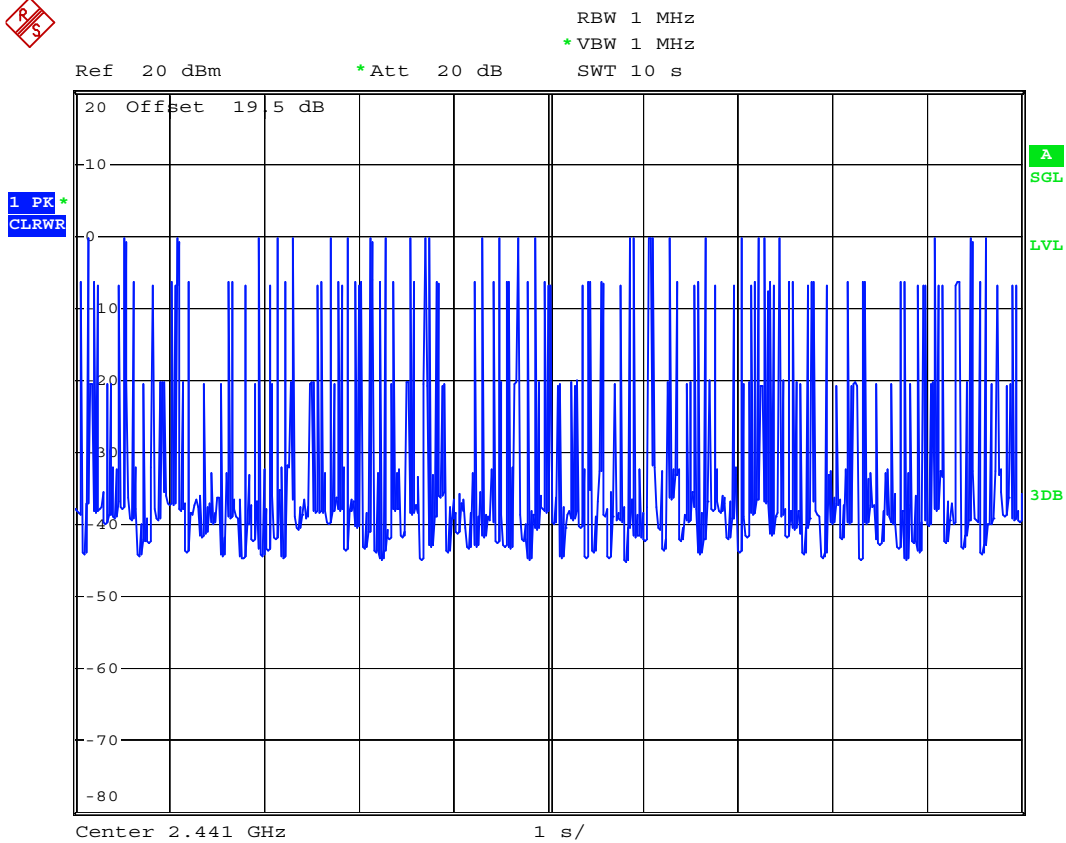
Date: 12.APR.2008 00:34:21



8-DPSK_DH5



Date: 12.APR.2008 00:33:14



Date: 12.APR.2008 00:33:40

3.10 Peak Output Power Measurement

3.10.1 Limit of Peak Output Power Measurement

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

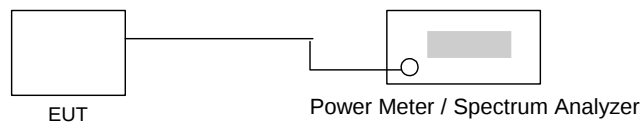
3.10.2 Measuring Instruments

See list of measuring instruments of this test report.

3.10.3 Test Procedure

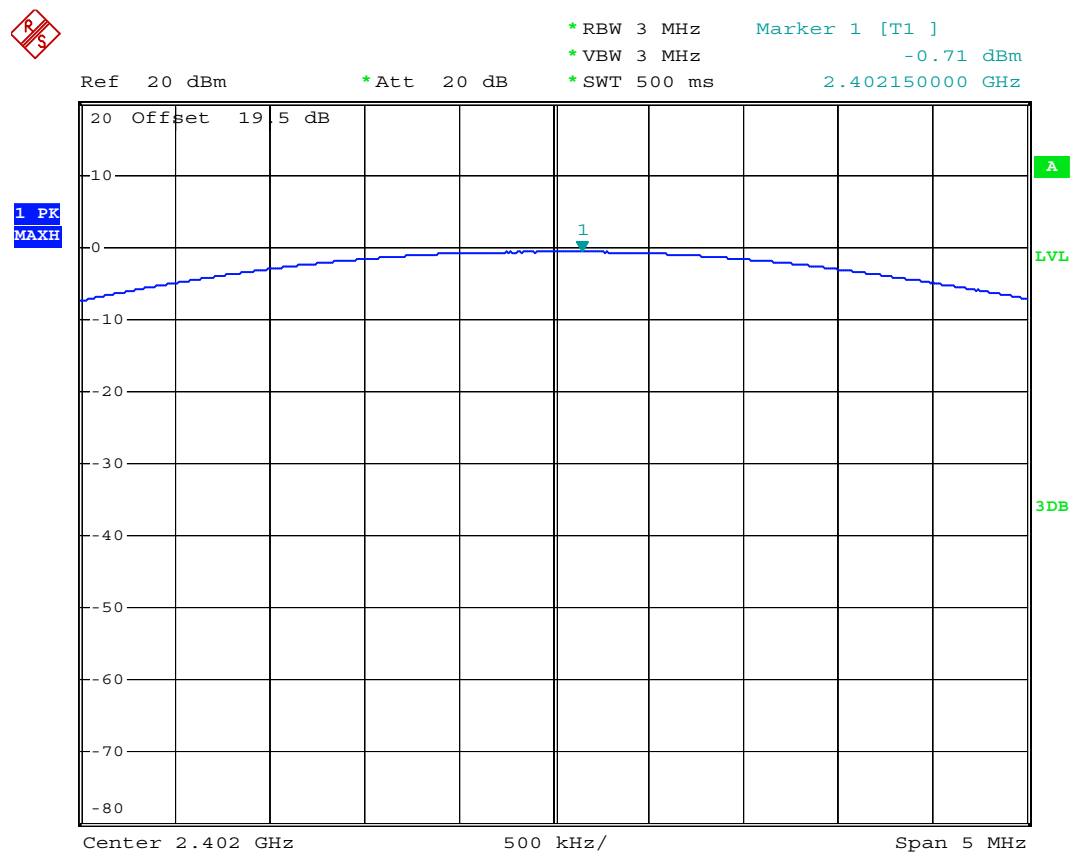
The antenna port of the EUT was connected to the input of a spectrum analyzer for BT measurement. The RBW and VBW are set to 3MHz. The cable loss has been offset before testing.

3.10.4 Test Setup



**3.10.5 Test Result****Modulation Type :** GFSK (1Mbps)**Temperature :** 28~29**Test Engineer :** CKC**Relative Humidity :** 47~48%

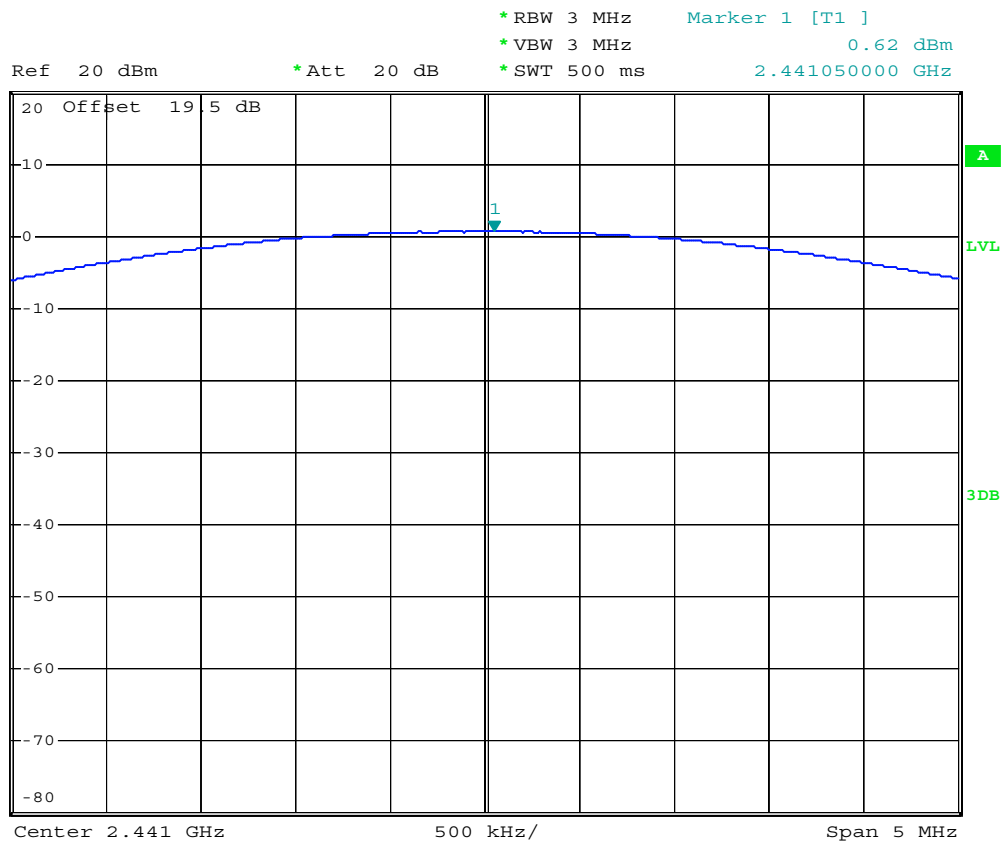
Channel	Frequency (MHz)	Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
00	2402	-0.71	30	Pass
39	2441	0.62	30	Pass
78	2480	1.11	30	Pass

GFSK_CH00

Date: 11.APR.2008 20:26:13



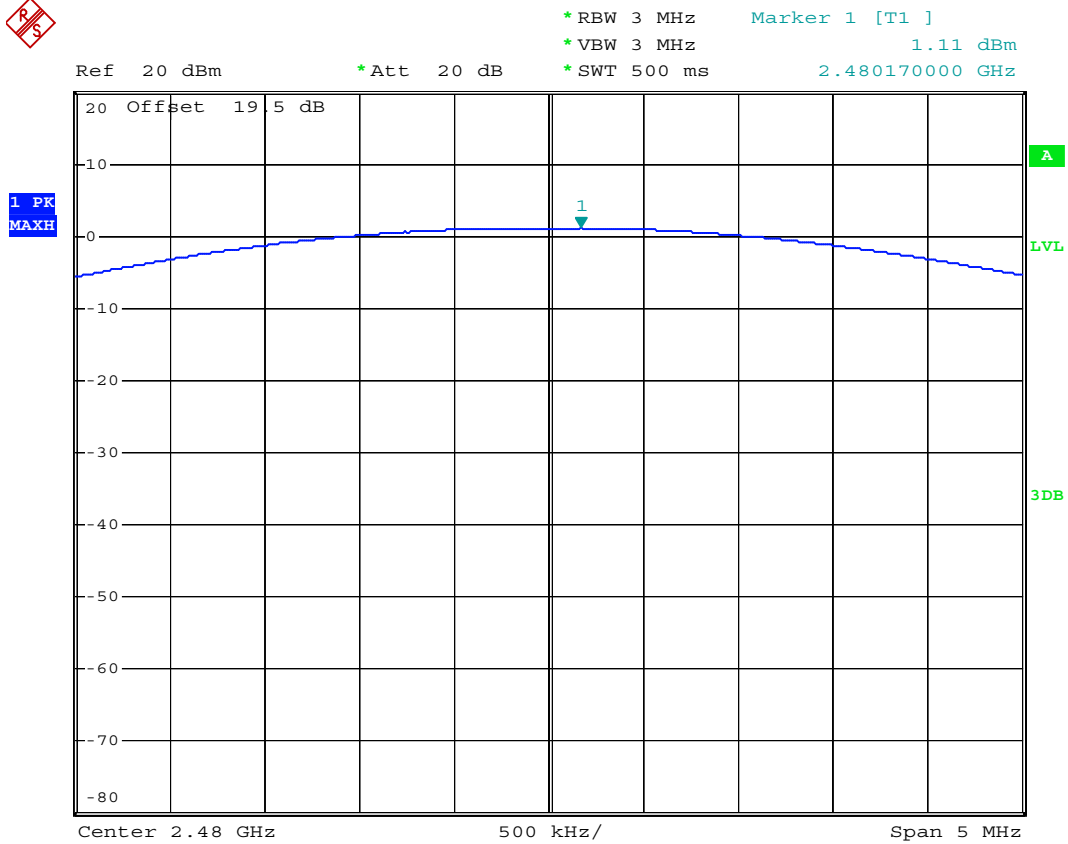
GFSK_CH39



Date: 11.APR.2008 20:30:21



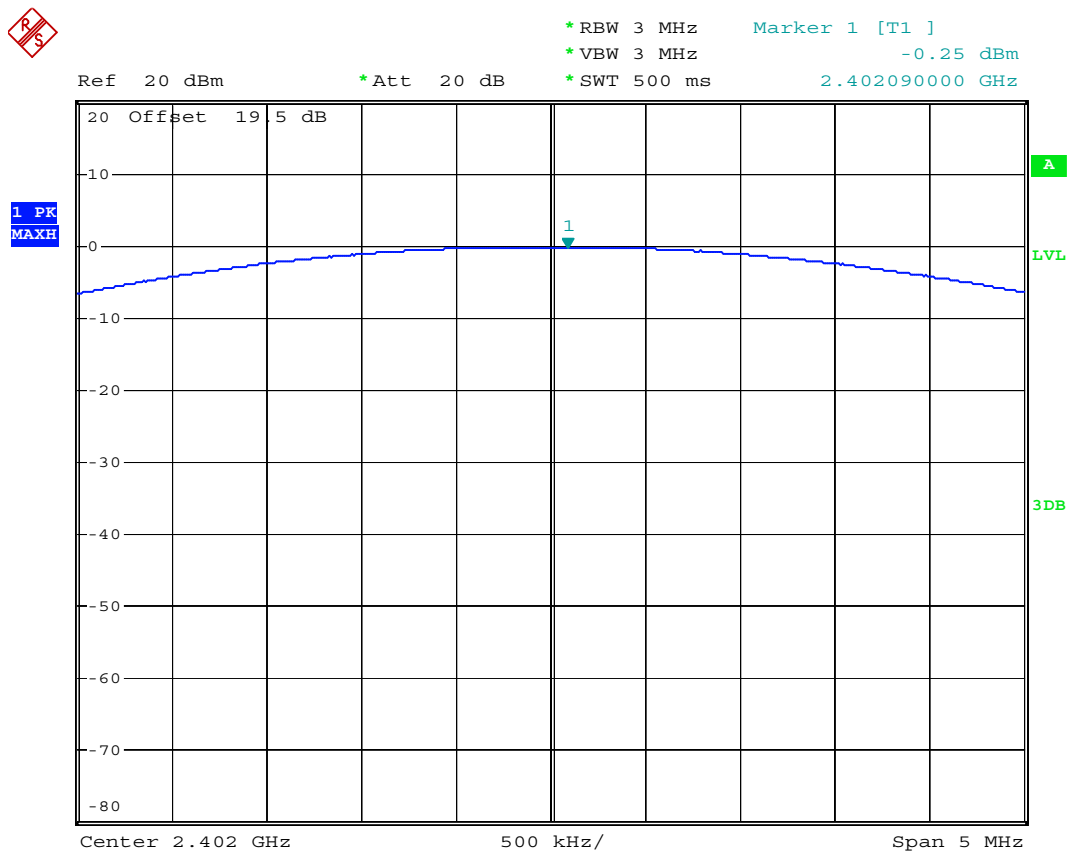
GFSK_CH78



Date: 11.APR.2008 20:30:38

**Modulation Type :** $\pi/4$ -DQPSK (EDR 2Mbps)**Temperature :** 28~29**Test Engineer :** CKC**Relative Humidity :** 47~48%

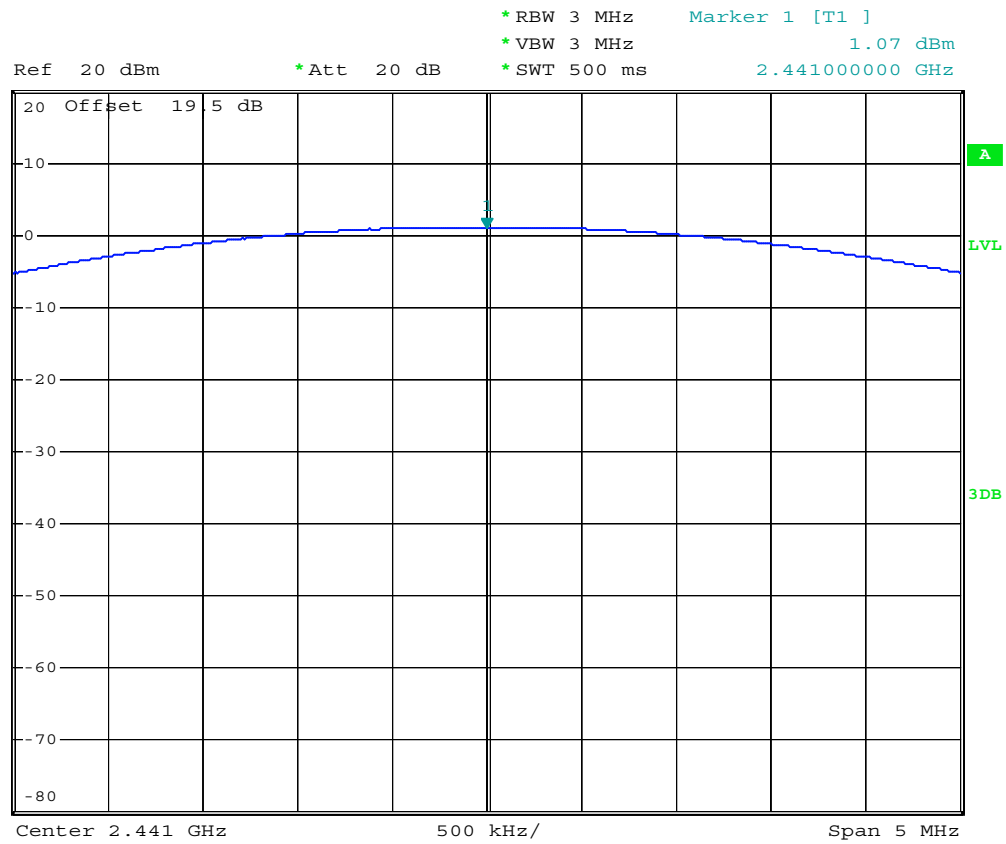
Channel	Frequency (MHz)	Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
00	2402	-0.25	30	Pass
39	2441	1.07	30	Pass
78	2480	1.42	30	Pass

 $\pi/4$ -DQPSK_CH00

Date: 11.APR.2008 20:20:57



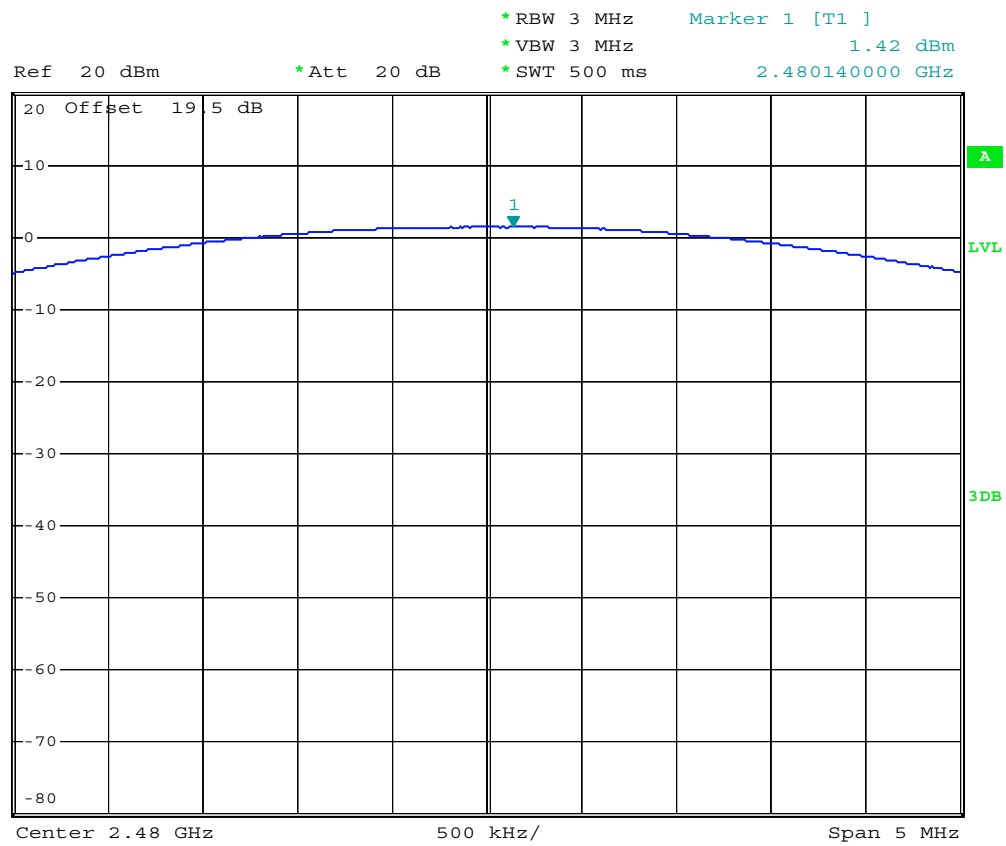
$\pi/4$ -DQPSK_CH39



Date: 11.APR.2008 20:21:12



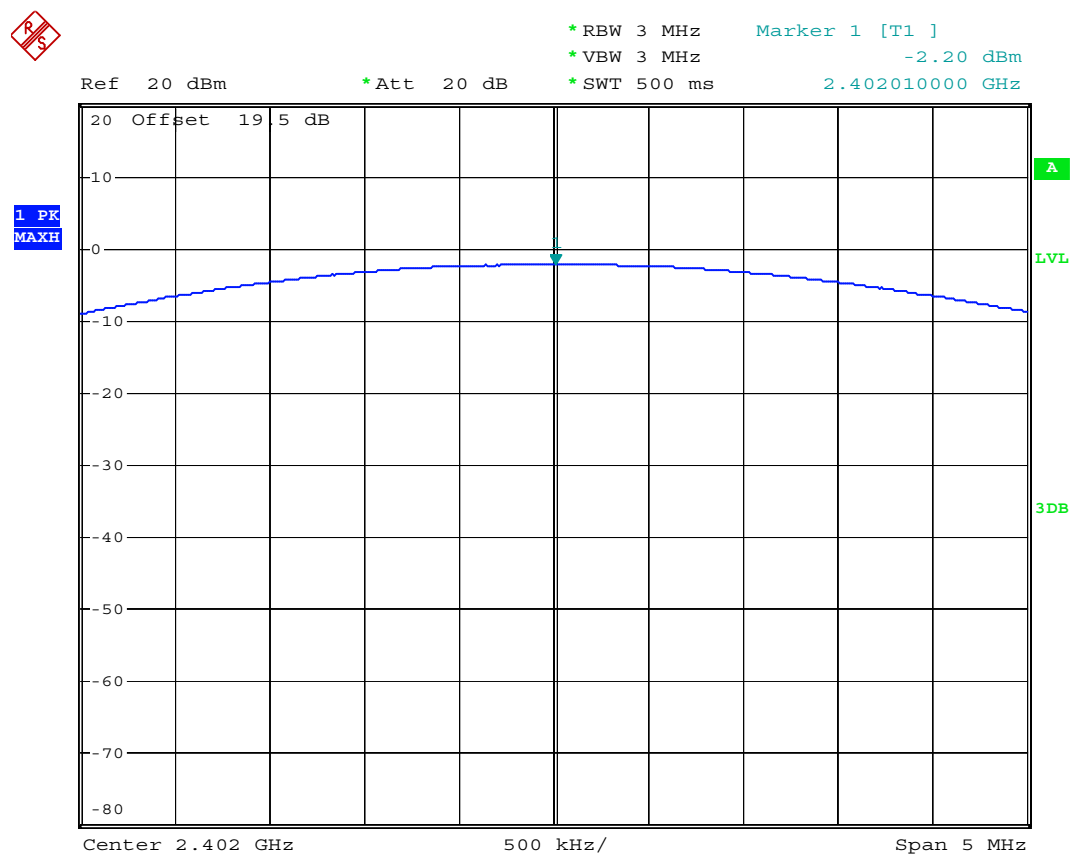
$\pi/4$ -DQPSK_CH78



Date: 11.APR.2008 20:21:27

**Modulation Type :** 8-DPSK (EDR 3Mbps)**Temperature :** 28~29**Test Engineer :** CKC**Relative Humidity :** 47~48%

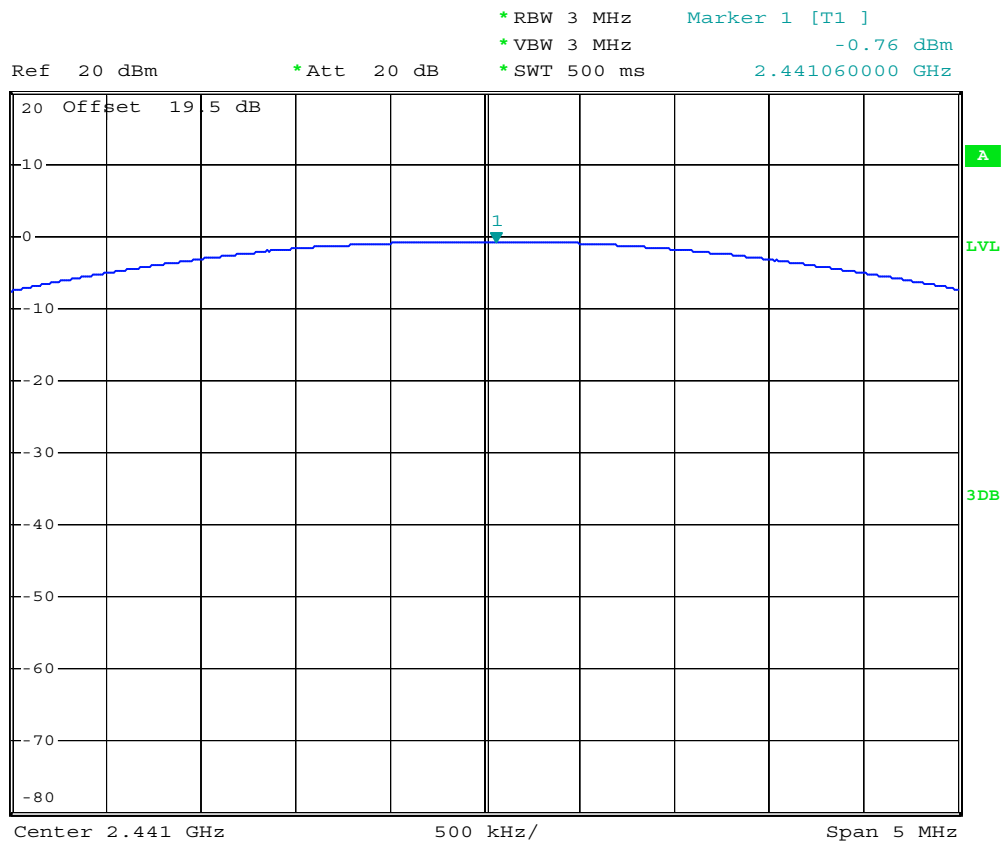
Channel	Frequency (MHz)	Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
00	2402	-2.2	30	Pass
39	2441	-0.76	30	Pass
78	2480	-0.17	30	Pass

8-DPSK_CH00

Date: 11.APR.2008 20:23:56



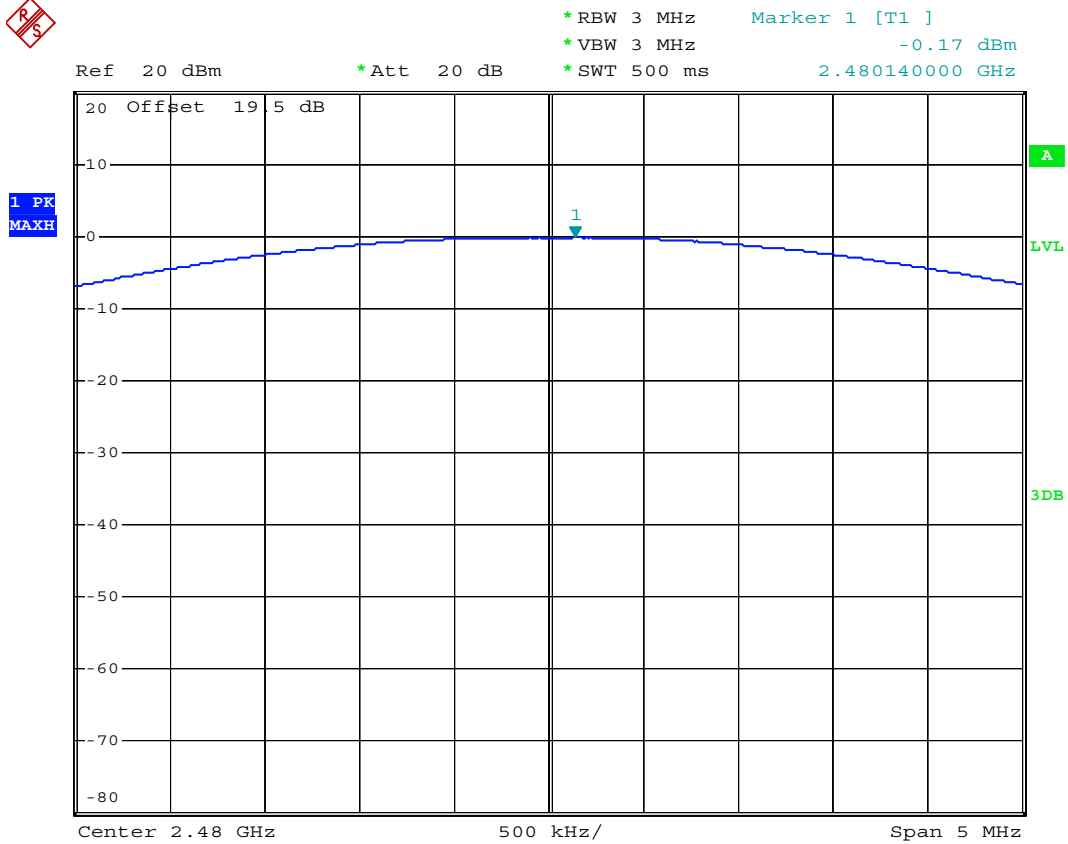
8-DPSK_CH39



Date: 11.APR.2008 20:24:22



8-DPSK_CH78



Date: 11.APR.2008 20:25:01

3.11 Band Edges Measurement

3.11.1 Limit of Band Edges Measurement

In any 100 kHz 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.

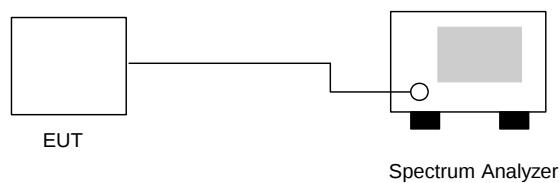
3.11.2 Measuring Instruments

See list of measuring instruments of this test report.

3.11.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100 kHz bandwidth from band edge.
3. The band edges were measured and recorded.

3.11.4 Test Setup



**3.11.5 Test Result****Modulation Type :** $\pi/4$ -DQPSK (EDR 2Mbps)**Temperature :** 28~29**Channel :** 00**Relative Humidity :** 47~48%**Test Engineer :** CKC

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	49.38	-24.62	74.00	49.28	31.86	3.92	35.68	100	0	Peak
2389.99	36.91	-17.09	54.00	36.81	31.86	3.92	35.68	108	100	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	46.68	-27.32	74.00	46.58	31.86	3.92	35.68	100	0	Peak
2389.99	33.10	-20.90	54.00	33.00	31.86	3.92	35.68	102	309	Average

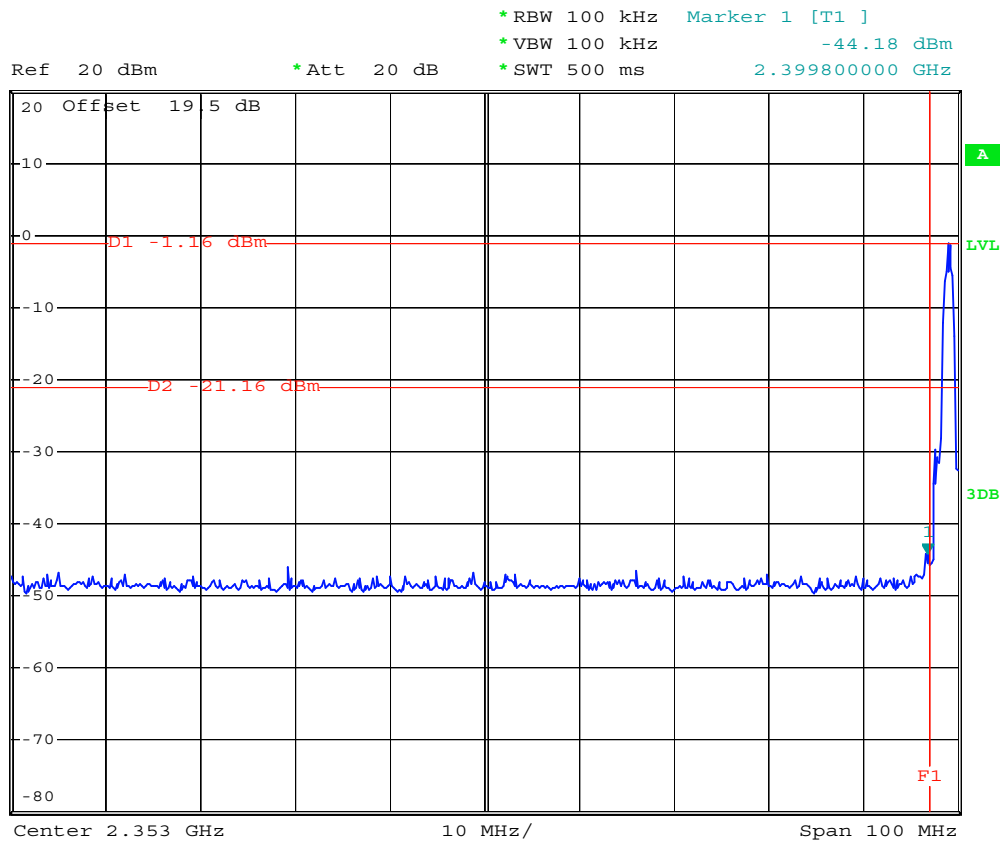
Modulation Type : $\pi/4$ -DQPSK (EDR 2Mbps)**Temperature :** 28~29**Channel :** 78**Relative Humidity :** 47~48%**Test Engineer :** CKC

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.47	61.90	-12.10	74.00	61.57	31.98	4.05	35.70	100	0	Peak
2483.47	50.00	-4.00	54.00	49.67	31.98	4.05	35.70	103	315	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.47	60.14	-13.86	74.00	59.81	31.98	4.05	35.70	100	0	Peak
2483.47	48.36	-5.64	54.00	48.03	31.98	4.05	35.70	100	264	Average



$\pi/4$ -DQPSK_CH00



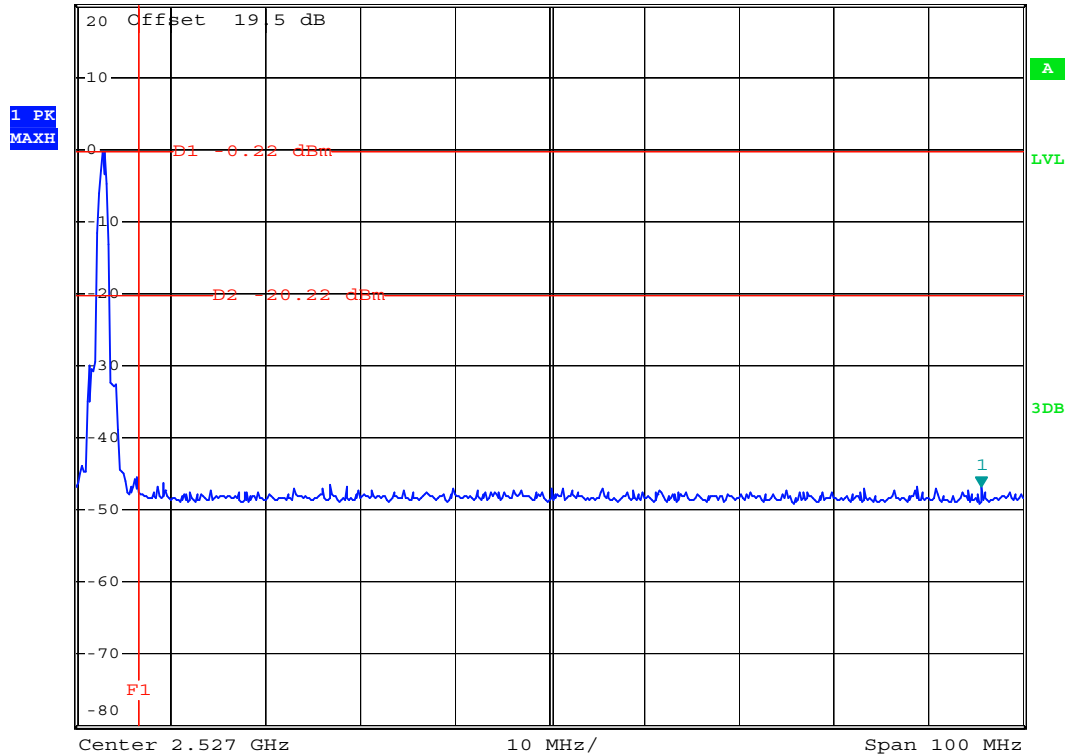
Date: 12.APR.2008 00:03:35



$\pi/4$ -DQPSK_CH78



Ref 20 dBm * Att 20 dB * RBW 100 kHz Marker 1 [T1] -46.83 dBm
* VBW 100 kHz * SWT 500 ms 2.572600000 GHz



Date: 12.APR.2008 00:02:58

3.12 Spurious Emission Measurement

3.12.1 Limit of Spurious Emission Measurement

All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band.

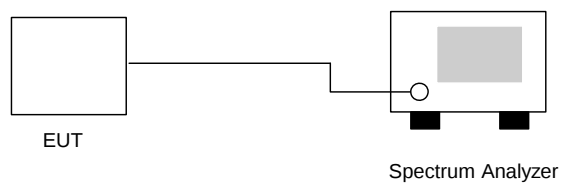
3.12.2 Measuring Instruments

See list of measuring instruments of this test report.

3.12.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set the RBW of spectrum analyzer to 100kHz, VBW $\geq$ RBW, peak detector.
3. Meausre the peak level of the in-band emission and all spurious emissions from the lowest frequency generated in the EUT up through the 10th harmonic.

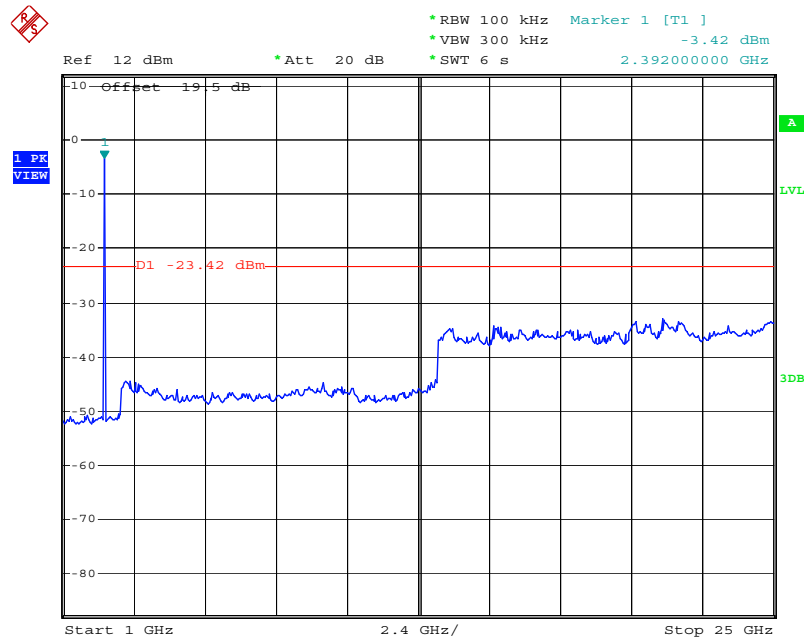
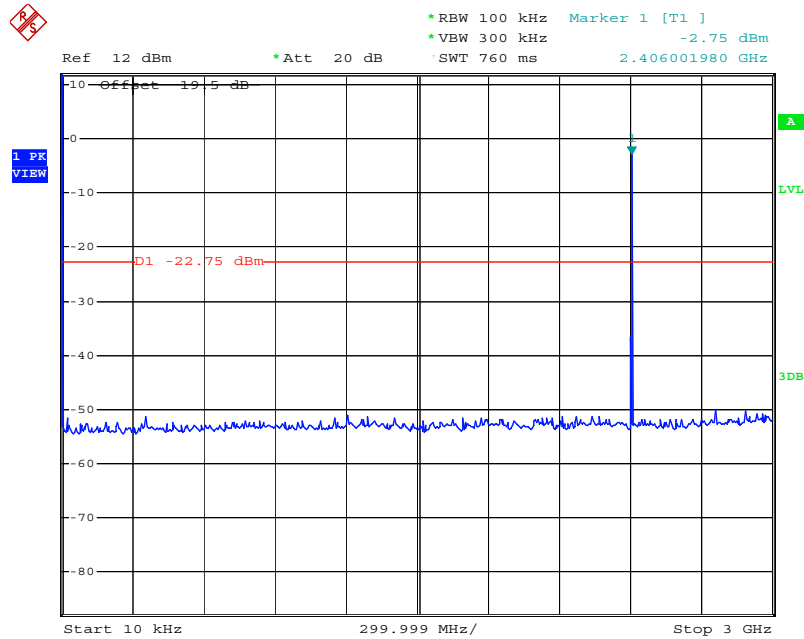
3.12.4 Test Setup





3.12.5 Test Result

Modulation Type : $\pi/4$ -DQPSK (EDR 2Mbps) Temperature : 28~29
Channel : 00 Relative Humidity : 47~48%
Test Engineer : CKC



Date: 17.APR.2008 11:33:29



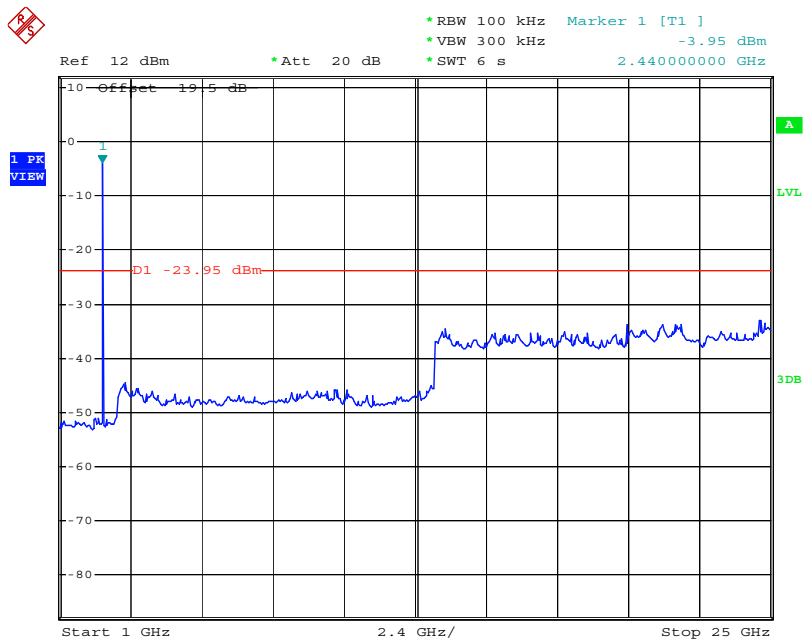
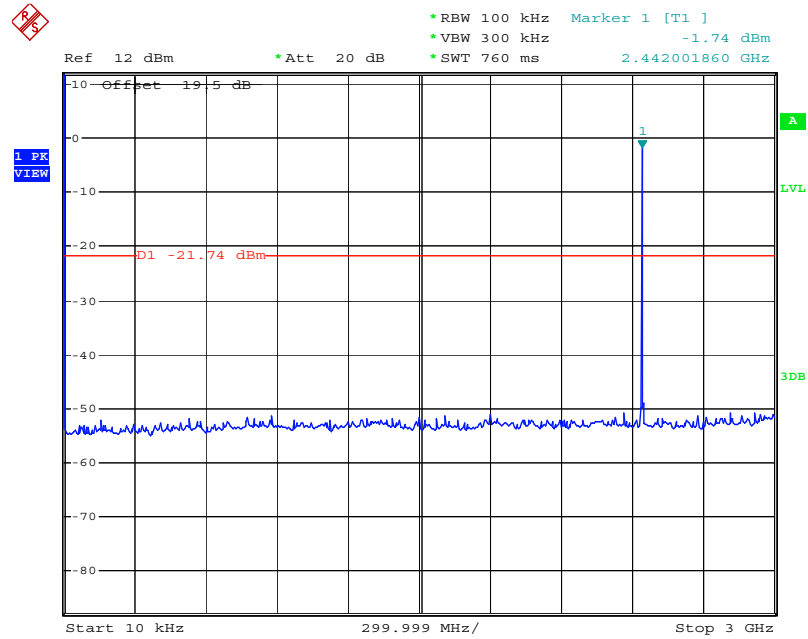
Modulation Type : $\pi/4$ -DQPSK (EDR 2Mbps)

Temperature : 28~29

Channel : 39

Relative Humidity : 47~48%

Test Engineer : CKC



Date: 17.APR.2008 11:15:13



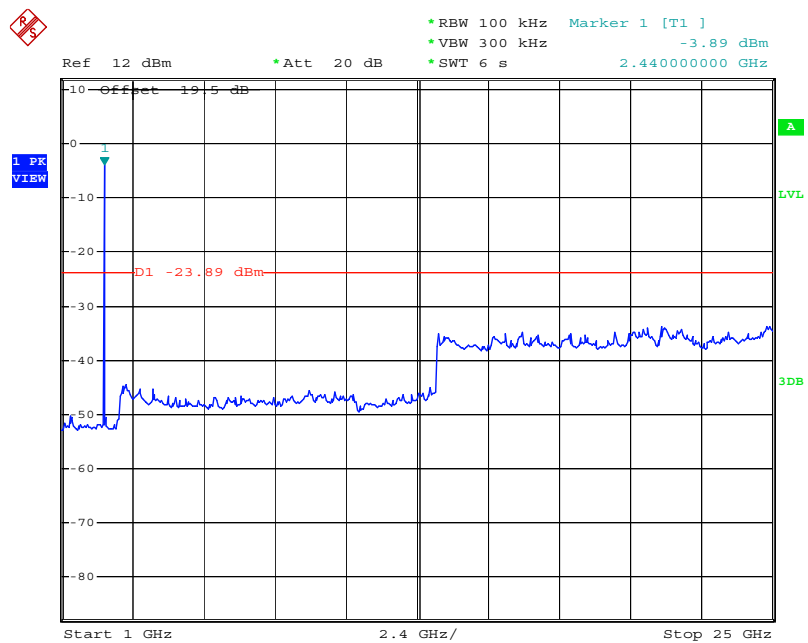
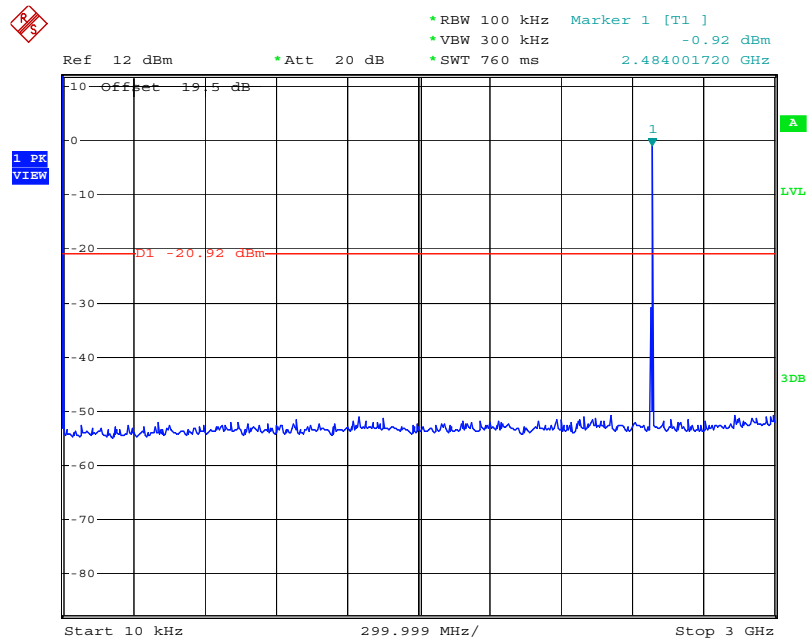
Modulation Type : $\pi/4$ -DQPSK (EDR 2Mbps)

Temperature : 28~29

Channel : 78

Relative Humidity : 47~48%

Test Engineer : CKC



Date: 17.APR.2008 11:13:05

3.13 Power Spectral Density Measurement

3.13.1 Limit of Power Spectral Density Measurement

The peak power spectral density shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

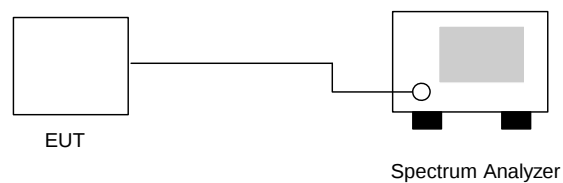
3.13.2 Measuring Instruments

See list of measuring instruments of this test report.

3.13.3 Test Procedure

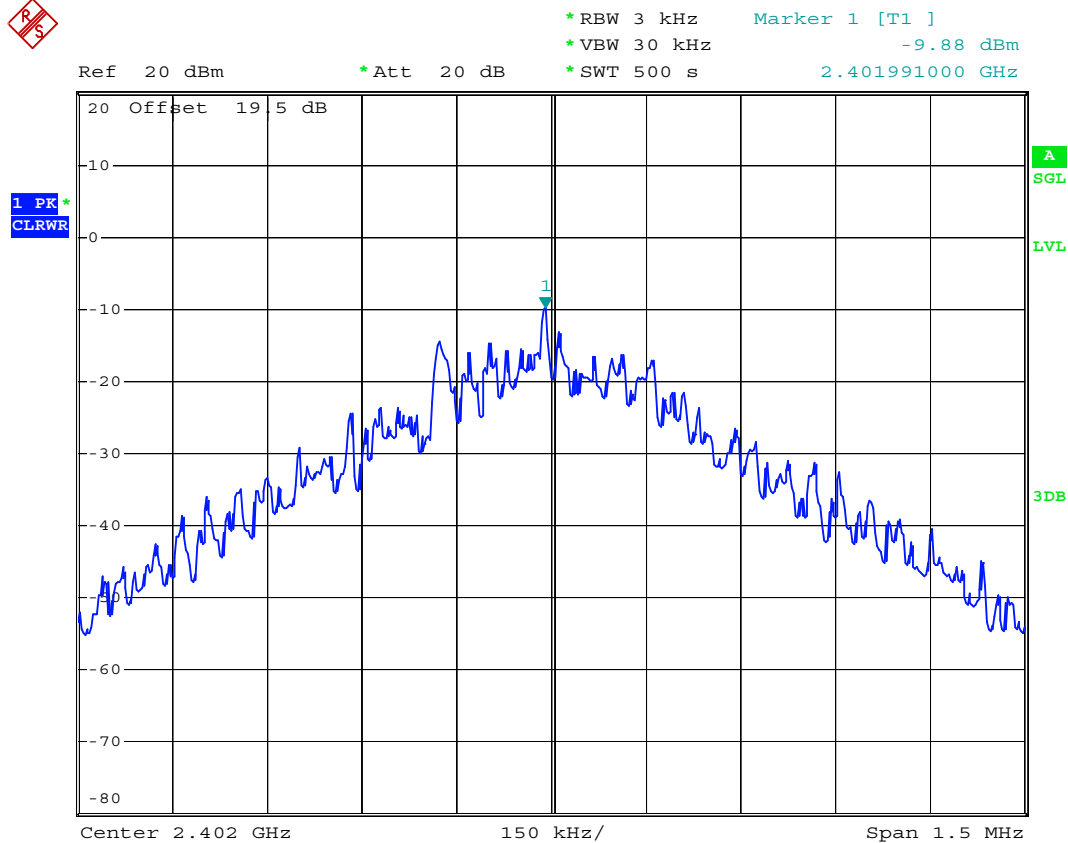
1. The transmitter output was connected to spectrum analyzer directly.
2. The spectrum analyzer's resolution bandwidth was set RBW at 3kHz and VBW at 30kHz of the fundamental frequency. Set the sweep time=span/3kHz.
3. The power spectral density was measured and recorded.
4. The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

3.13.4 Test Setup



**3.13.5 Test Result****Modulation Type :** GFSK (1Mbps)**Temperature :** 28~29**Test Engineer :** CKC**Relative Humidity :** 47~48%

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Max. Limits (dBm)	Pass/Fail
00	2402	-9.88	8	Pass
39	2441	-8.49	8	Pass
78	2480	-8.04	8	Pass

GFSK_CH00

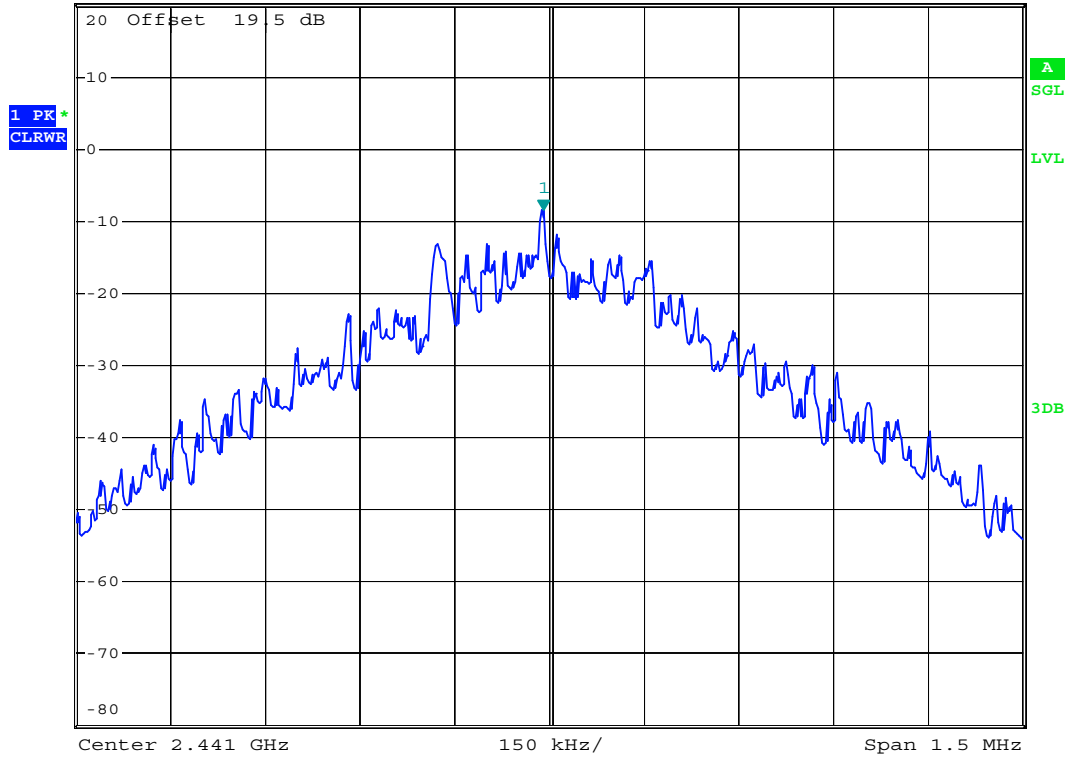
Date: 15.APR.2008 17:13:19



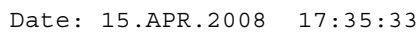
GFSK_CH39



Ref 20 dBm * Att 20 dB * RBW 3 kHz * VBW 30 kHz * SWT 500 s Marker 1 [T1] -8.49 dBm 2.440991000 GHz

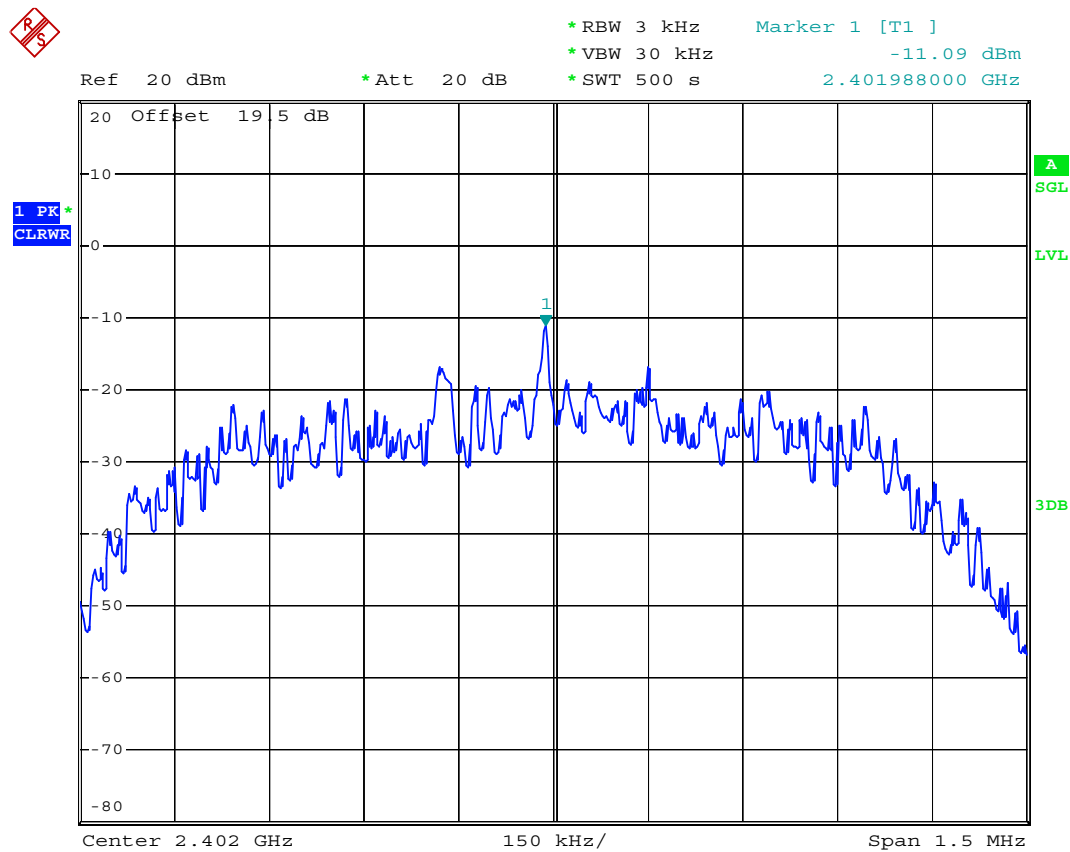


Date: 15.APR.2008 17:24:53



**Modulation Type :** $\pi/4$ -DQPSK (EDR 2Mbps)**Temperature :** 28~29**Test Engineer :** CKC**Relative Humidity :** 47~48%

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Max. Limits (dBm)	Pass/Fail
00	2402	-11.09	8	Pass
39	2441	-9.66	8	Pass
78	2480	-9.12	8	Pass

 $\pi/4$ -DQPSK_CH00

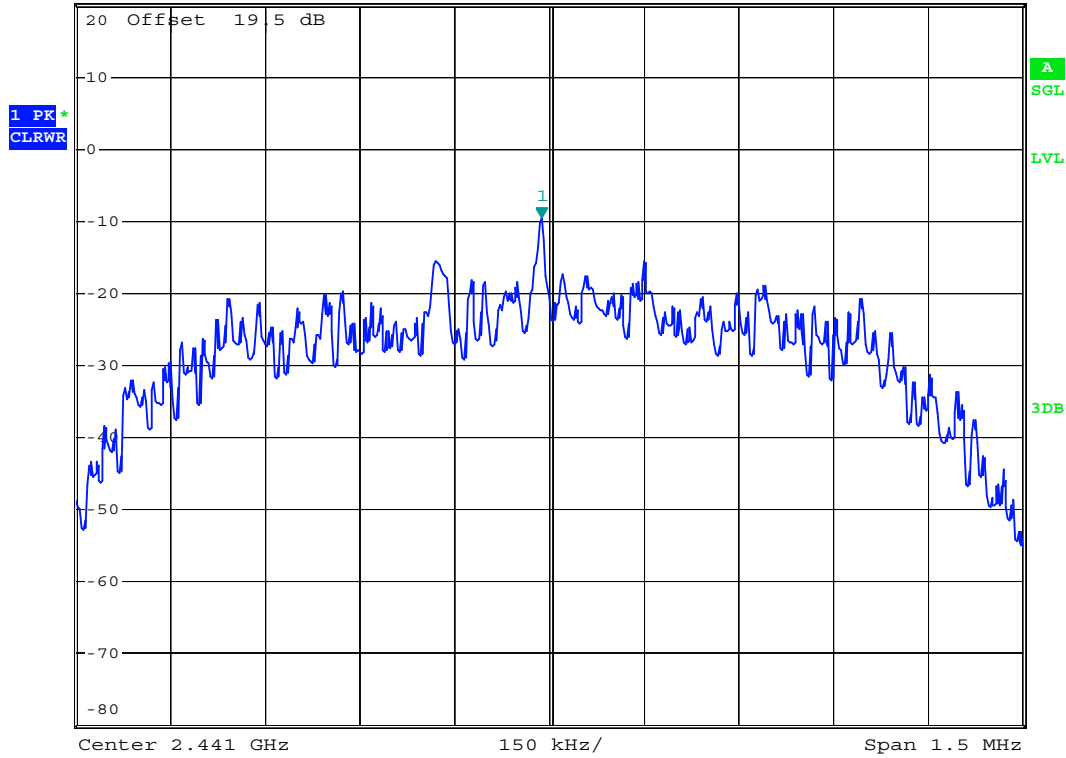
Date: 15.APR.2008 17:50:02



$\pi/4$ -DQPSK_CH39



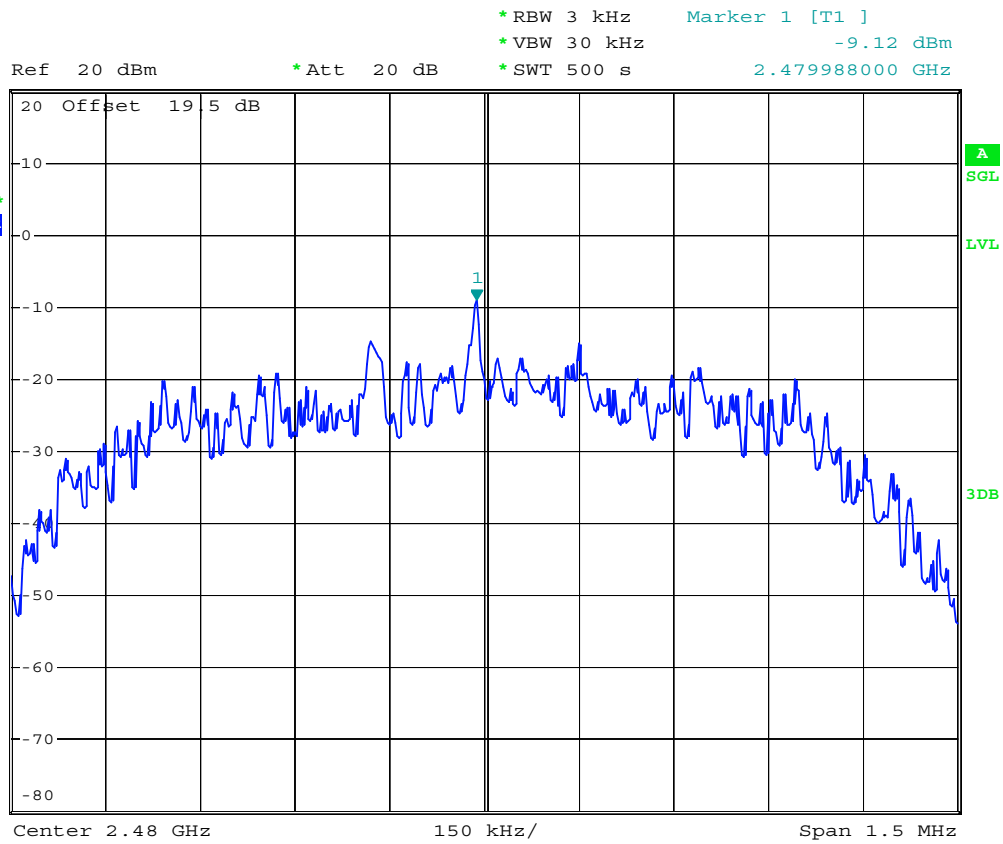
Ref 20 dBm * Att 20 dB * RBW 3 kHz * VBW 30 kHz * SWT 500 s Marker 1 [T1] -9.66 dBm 2.440988000 GHz



Date: 15.APR.2008 18:00:04



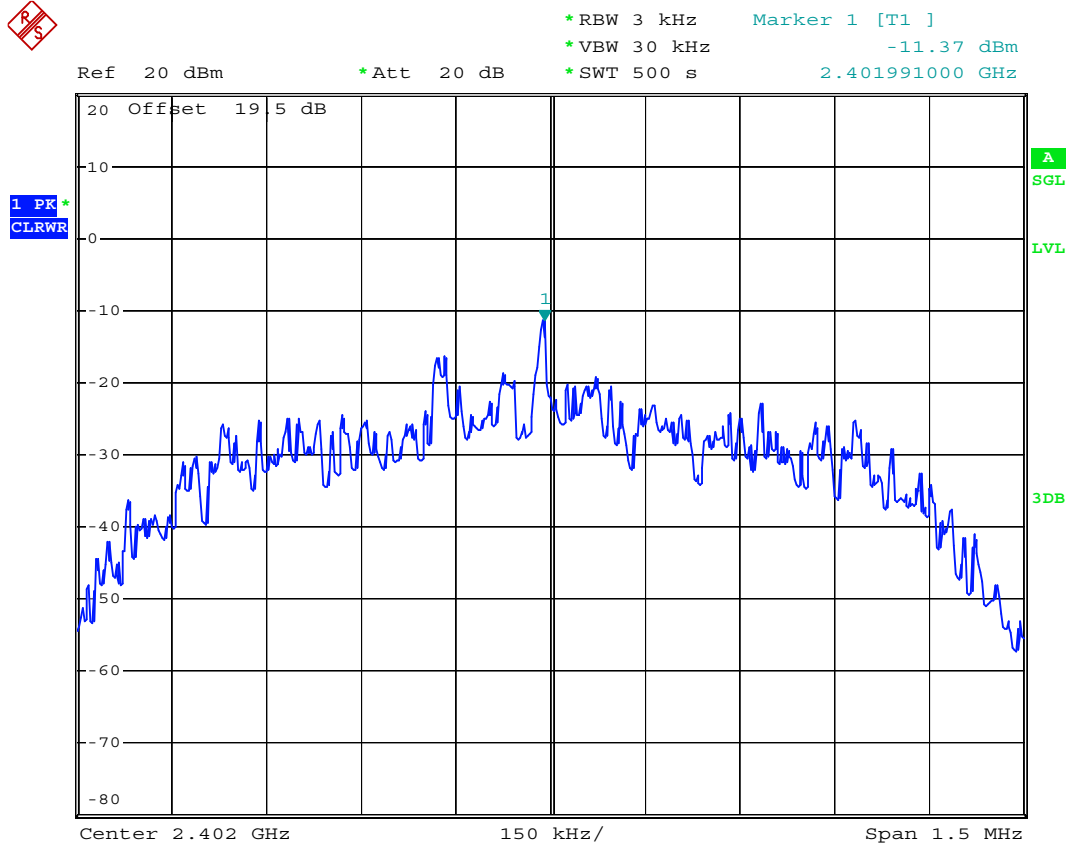
$\pi/4$ -DQPSK_CH78



Date: 15.APR.2008 18:09:57

**Modulation Type :** 8-DPSK (EDR 3Mbps)**Temperature :** 28~29**Test Engineer :** CKC**Relative Humidity :** 47~48%

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Max. Limits (dBm)	Pass/Fail
00	2402	-11.37	8	Pass
39	2441	-9.97	8	Pass
78	2480	-9.31	8	Pass

8-DPSK_CH00

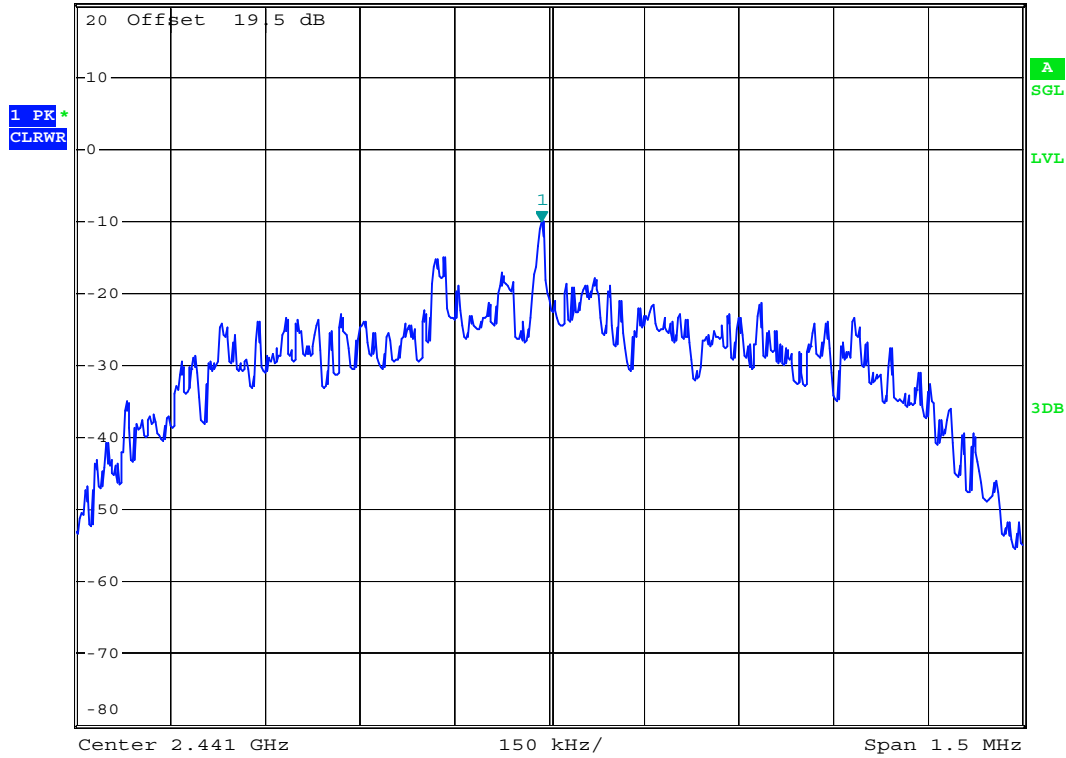
Date: 15.APR.2008 18:22:34



8-DPSK_CH39



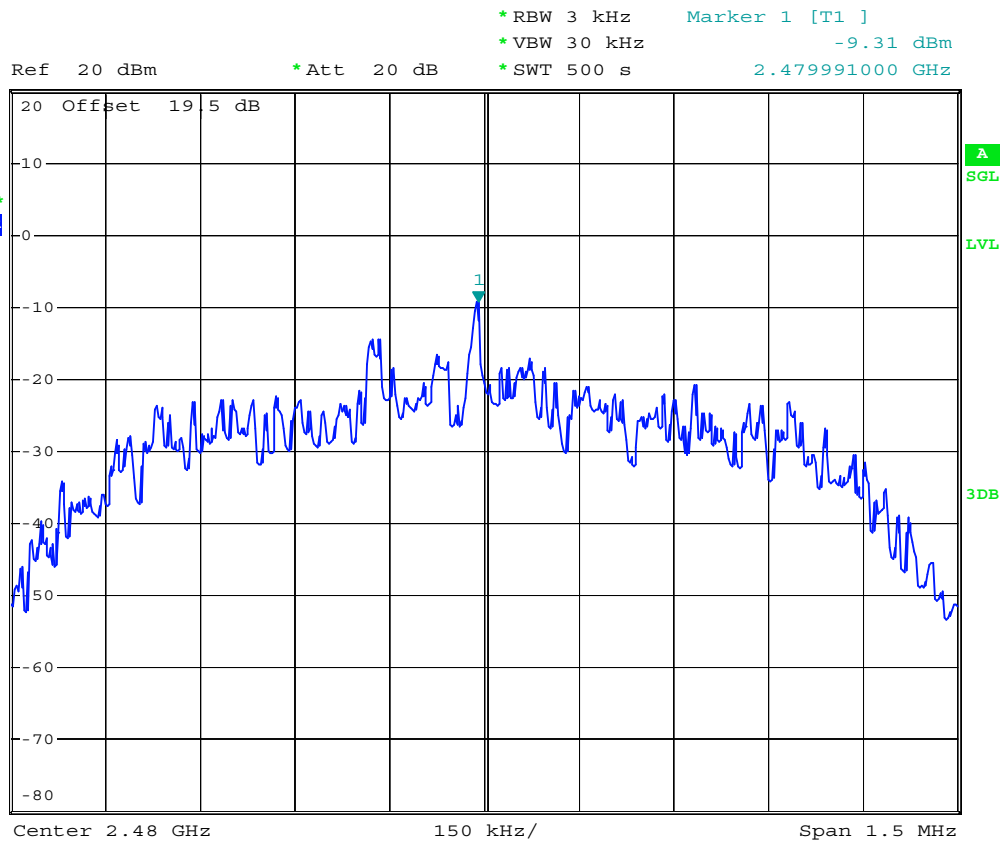
Ref 20 dBm * Att 20 dB * RBW 3 kHz * VBW 30 kHz * SWT 500 s Marker 1 [T1] -9.97 dBm 2.440988000 GHz



Date: 15.APR.2008 18:32:52



8-DPSK_CH78



Date: 15.APR.2008 18:41:39

3.14 Conducted Emission Measurement

3.14.1 Limit of Conducted Emission

For equipment that is designed to be connected to the public utility (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 the limits in the following table

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

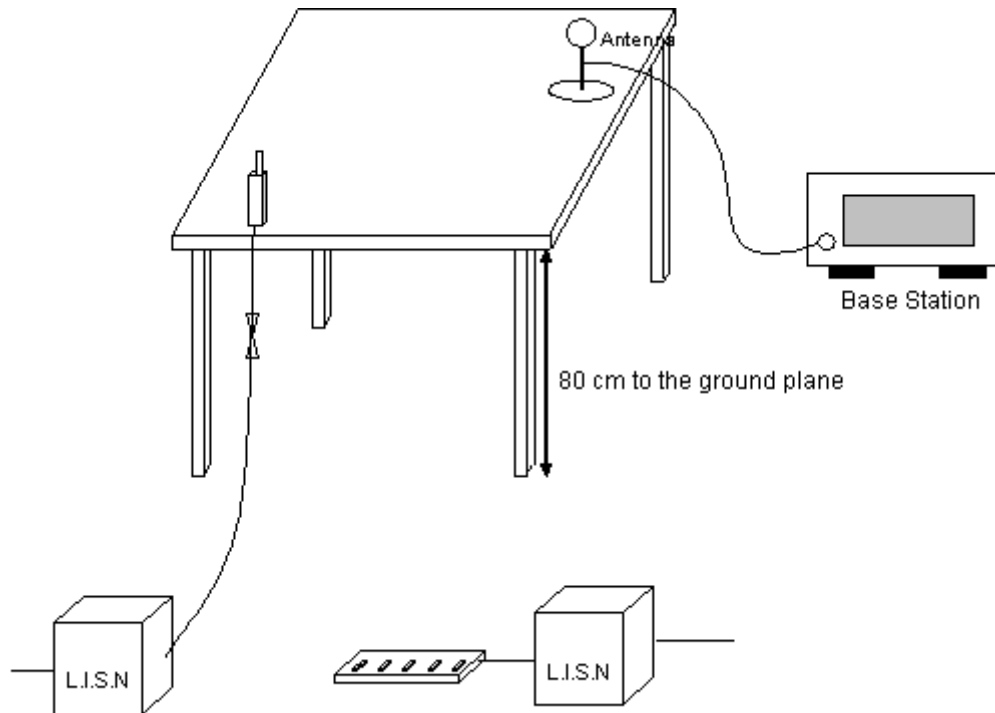
3.14.2 Measuring Instruments

See list of measuring instruments of this test report.

3.14.3 Test Procedures

- The EUT was placed 0.4 meters away from the conducting wall of the shielding room and kept at least 0.8 meters from any other metal surface or ground plane.
- The main power cable of EUT was connect to a line impedance stabilization network (LISN) which met the requirement of 50 ohm/ 50 microhenry coupling impedance.
- All the support units were connected to the other LISN.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center, forming a bundle 30 to 40 cm long.
- Both phase and neutral lead of AC line were measured for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was scanned with a specified bandwidth 9kHz.
- The emission level of the EUT must meet the limits above in table, including the quasi-peak limit and the average limit, and then reported.

3.14.4 Typical Test Setup of Conducted Emission

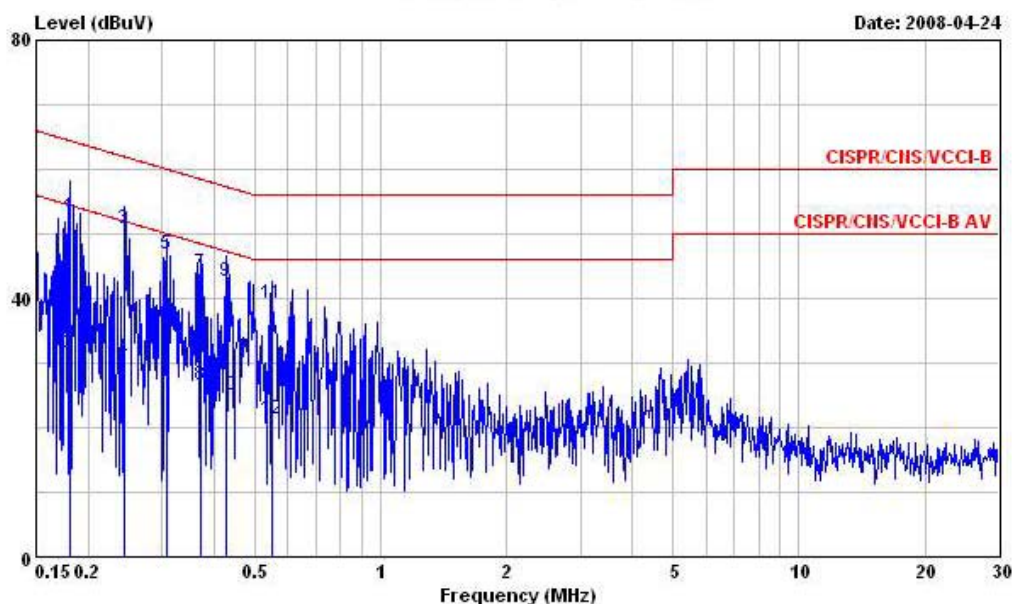


3.14.5 Test Result

Test Mode : 1
Phase : Line
Test Engineer : Andrew Hsiao

Temperature : 28~29

Relative Humidity : 47~48%



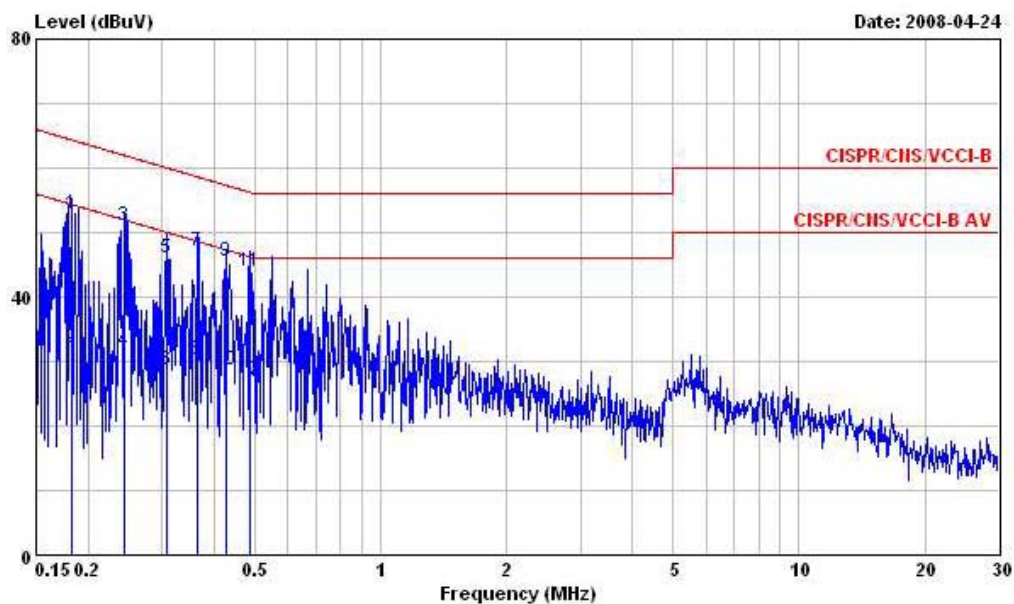
Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200704 99041 LINE
EUT : Smart Phone
POWER: 120V/60Hz
Model : FR 811107-01
Memo : BT Link + WLAN Link + GPS Rx + Adaptor
 + Battery1 + Earphone
IMEI :
SAMPLE : A

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1815220	52.58	-11.84	64.42	52.34	0.10	0.14	QP
2	0.1815220	31.49	-22.93	54.42	31.25	0.10	0.14	Average
3	0.2429320	50.69	-11.31	62.00	50.29	0.10	0.30	QP
4	0.2429320	30.50	-21.50	52.00	30.10	0.10	0.30	Average
5	0.3067120	46.84	-13.22	60.06	46.24	0.10	0.50	QP
6	0.3067120	28.40	-21.66	50.06	27.80	0.10	0.50	Average
7	0.3711650	44.03	-14.44	58.47	43.26	0.10	0.67	QP
8	0.3711650	26.53	-21.94	48.47	25.76	0.10	0.67	Average
9	0.4282480	42.75	-14.54	57.29	41.94	0.10	0.71	QP
10	0.4282480	24.93	-22.36	47.29	24.12	0.10	0.71	Average
11	0.5493430	39.12	-16.88	56.00	38.39	0.10	0.63	QP
12	0.5493430	21.38	-24.62	46.00	20.65	0.10	0.63	Average



Test Mode : 1
Phase : Neutral
Test Engineer : Andrew Hsiao

Temperature : 28~29
Relative Humidity : 47~48%



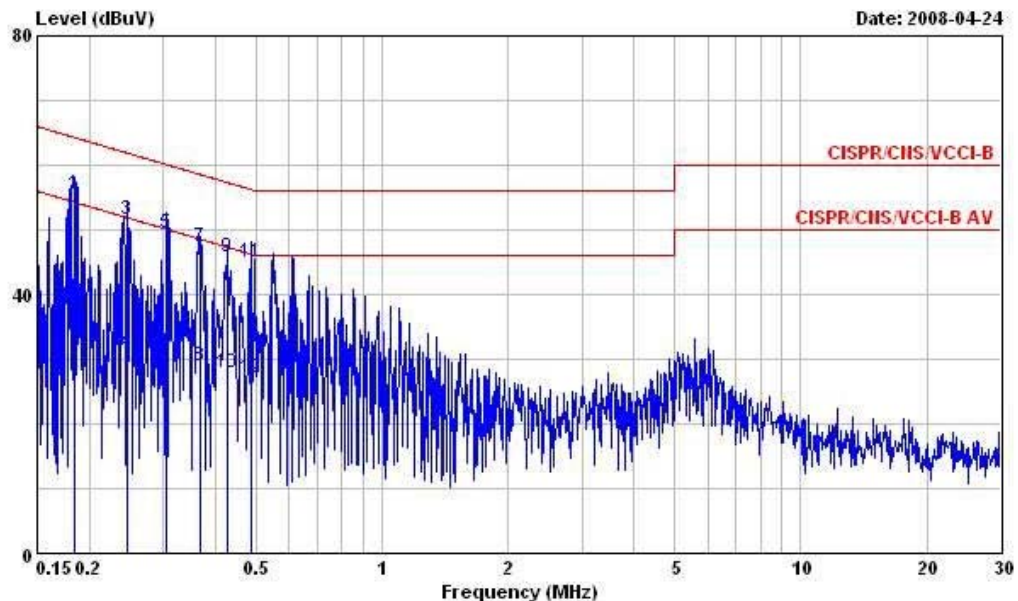
Site : CO04-HY
Condition : CISPR/CIS/VCCI-B LISN 200704 99041 NEUTRAL
EUT : Smart Phone
POWER: 120V/60Hz
Model : FR 811107-01
Memo : BT Link + WLAN Link + GPS Rx + Adaptor
 : + Battery1 + Earphone
IMEI :
SAMPLE : A

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1824860	52.78	-11.59	64.37	52.54	0.10	0.14	QP
2	0.1824860	32.09	-22.28	54.37	31.85	0.10	0.14	Average
3	0.2442230	51.13	-10.82	61.95	50.72	0.10	0.31	QP
4	0.2442230	31.56	-20.39	51.95	31.15	0.10	0.31	Average
5	0.3067120	46.12	-13.94	60.06	45.52	0.10	0.50	QP
6	0.3067120	28.66	-21.40	50.06	28.06	0.10	0.50	Average
7	0.3633820	47.03	-11.62	58.65	46.28	0.10	0.65	QP
8	0.3633820	30.17	-18.48	48.65	29.42	0.10	0.65	Average
9	0.4282480	45.51	-11.78	57.29	44.70	0.10	0.71	QP
10	0.4282480	28.67	-18.62	47.29	27.86	0.10	0.71	Average
11	0.4863180	43.82	-12.41	56.23	43.05	0.10	0.67	QP
12	0.4863180	27.23	-19.00	46.23	26.46	0.10	0.67	Average



Test Mode : 2
Phase : Line
Test Engineer : Andrew Hsiao

Temperature : 28~29
Relative Humidity : 47~48%



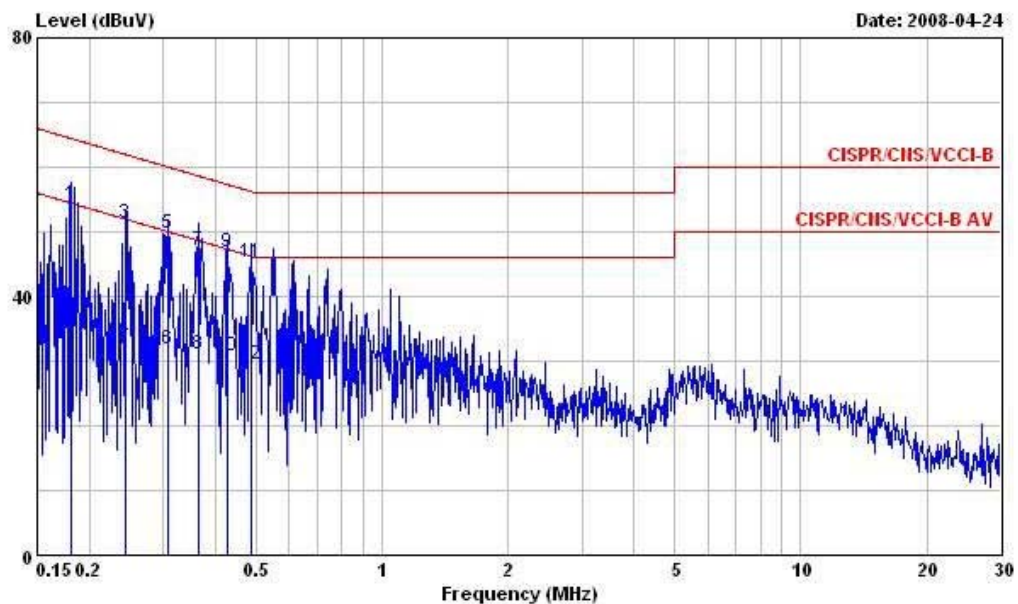
Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200704 99041 LINE
EUT : Smart Phone
POWER: 120V/60Hz
Model : FR 811107-01
Memo : BT Link + WLAN Link + GPS Rx + Adaptor
 : + Battery2 + Earphone
IMEI :
SAMPLE : B

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	@0.1844300	55.60	-8.68	64.28	55.36	0.10	0.14	QP
2	0.1844300	33.72	-20.56	54.28	33.48	0.10	0.14	Average
3	0.2455200	51.65	-10.26	61.91	51.23	0.10	0.32	QP
4	0.2455200	31.13	-20.78	51.91	30.71	0.10	0.32	Average
5	0.3050910	49.59	-10.51	60.10	48.99	0.10	0.50	QP
6	0.3050910	30.28	-19.82	50.10	29.68	0.10	0.50	Average
7	0.3692040	47.28	-11.24	58.52	46.52	0.10	0.66	QP
8	0.3692040	29.01	-19.51	48.52	28.25	0.10	0.66	Average
9	0.4282480	45.78	-11.51	57.29	44.97	0.10	0.71	QP
10	0.4282480	27.85	-19.44	47.29	27.04	0.10	0.71	Average
11	0.4889010	45.12	-11.07	56.19	44.35	0.10	0.67	QP
12	0.4889010	27.14	-19.05	46.19	26.37	0.10	0.67	Average



Test Mode : 2
Phase : Neutral
Test Engineer : Andrew Hsiao

Temperature : 28~29
Relative Humidity : 47~48%



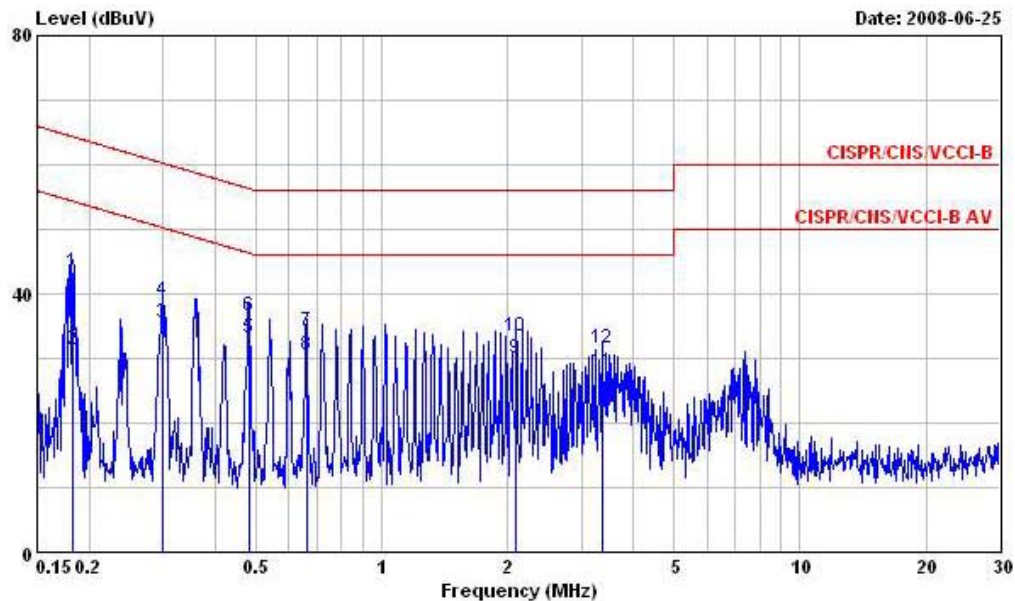
Site : CO04-HY
Condition : CISPR/CIS/VCCI-B LISN 200704 99041 NEUTRAL
EUT : Smart Phone
POWER: 120V/60Hz
Model : FR 811107-01
Memo : BT Link + WLAN Link + GPS Rx + Adaptor
 : + Battery2 + Earphone
IMEI :
SAMPLE : B

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.1815220	54.30	-10.12	64.42	54.06	0.10	0.14	QP
2	0.1815220	34.48	-19.94	54.42	34.24	0.10	0.14	Average
3	0.2429320	51.44	-10.56	62.00	51.04	0.10	0.30	QP
4	0.2429320	33.52	-18.48	52.00	33.12	0.10	0.30	Average
5	0.3067120	49.73	-10.33	60.06	49.13	0.10	0.50	QP
6	0.3067120	31.82	-18.24	50.06	31.22	0.10	0.50	Average
7	0.3633820	47.03	-11.62	58.65	46.28	0.10	0.65	QP
8	0.3633820	30.95	-17.70	48.65	30.20	0.10	0.65	Average
9	0.4282480	46.81	-10.48	57.29	46.00	0.10	0.71	QP
10	0.4282480	30.81	-16.48	47.29	30.00	0.10	0.71	Average
11	0.4863180	45.35	-10.88	56.23	44.58	0.10	0.67	QP
12	0.4863180	29.39	-16.84	46.23	28.62	0.10	0.67	Average



Test Mode : 3
Phase : Line
Test Engineer : Andrew Hsiao

Temperature : 28~29
Relative Humidity : 47~48%



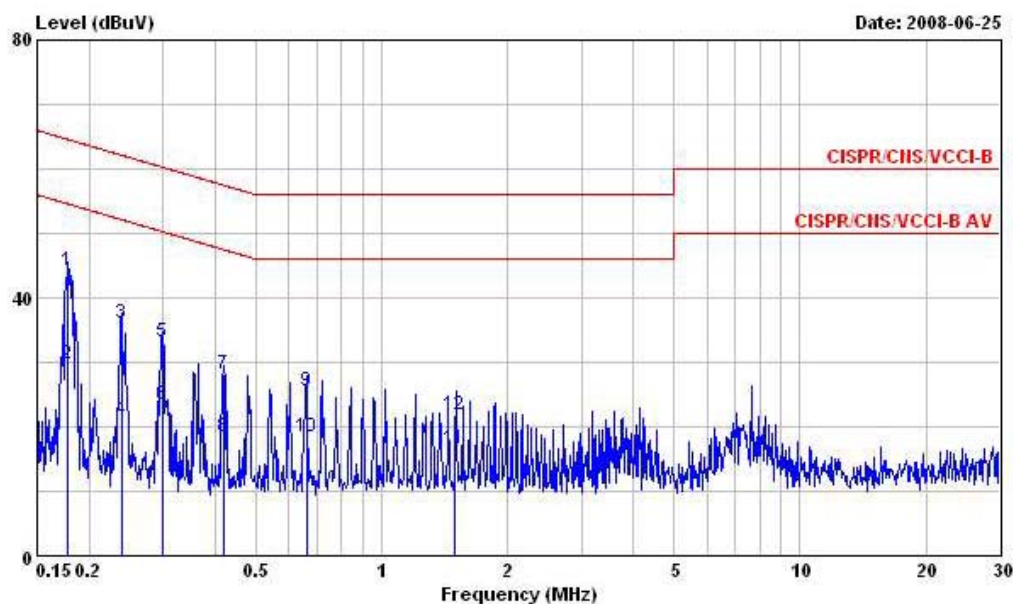
Site : CO04-HY
Condition : CISPR/CIS/VCCI-B LISN 2008 0416 99041 LINE
EUT : Smart Phone
POWER: 120Vac/60Hz
Model : FR811107-02
Memo : BT Link+WLAN Link+GPS Rx+Adaptor
 : +Battery3+Earphone
IMEI : 00440145066646201
SAMPLE : B

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1824860	43.42	-20.95	64.37	43.31	0.09	0.02	QP
2	0.1824860	31.42	-22.95	54.37	31.31	0.09	0.02	Average
3	0.2986930	35.46	-14.82	50.28	35.32	0.10	0.04	Average
4	0.2986930	38.89	-21.39	60.28	38.75	0.10	0.04	QP
5	0.4813590	33.08	-13.24	46.32	32.93	0.10	0.05	Average
6	0.4813590	36.47	-19.85	56.32	36.32	0.10	0.05	QP
7	0.6612710	34.20	-21.80	56.00	34.05	0.11	0.04	QP
8	0.6612710	30.59	-15.41	46.00	30.44	0.11	0.04	Average
9	2.100	29.89	-16.11	46.00	29.72	0.13	0.04	Average
10	2.100	33.42	-22.58	56.00	33.25	0.13	0.04	QP
11	3.360	27.79	-18.21	46.00	27.57	0.16	0.06	Average
12	3.360	31.45	-24.55	56.00	31.23	0.16	0.06	QP



Test Mode : 3
Phase : Neutral
Test Engineer : Andrew Hsiao

Temperature : 28~29
Relative Humidity : 47~48%



Site : CO04-HY
Condition : CISPR/CIS/VCCI-B LISN 2008 0416 99041 NEUTRAL
EUT : Smart Phone
POWER: 120Vac/60Hz
Model : FR811107-02
Memo : BT Link+WLAN Link+GPS Rx+Adaptor
 : +Battery3+Earphone
IMEI : 00440145066646201
SAMPLE : B

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	@0.1777150	44.13	-20.46	64.59	44.03	0.08	0.02	QP
2	0.1777150	29.61	-24.98	54.59	29.51	0.08	0.02	Average
3	0.2391010	35.96	-26.17	62.13	35.85	0.08	0.03	QP
4	0.2391010	20.96	-31.17	52.13	20.85	0.08	0.03	Average
5	0.2986930	33.11	-27.17	60.28	32.98	0.09	0.04	QP
6	0.2986930	23.30	-26.98	50.28	23.17	0.09	0.04	Average
7	0.4192670	28.12	-29.34	57.46	27.97	0.09	0.06	QP
8	0.4192670	18.53	-28.93	47.46	18.38	0.09	0.06	Average
9	0.6612710	25.52	-30.48	56.00	25.38	0.10	0.04	QP
10	0.6612710	18.31	-27.69	46.00	18.17	0.10	0.04	Average
11	1.500	16.63	-29.37	46.00	16.48	0.12	0.03	Average
12	1.500	21.89	-34.11	56.00	21.74	0.12	0.03	QP