FCC Test Report

According to

47 CFR Part 15 Subpart C

Equipment	:	**PDA Phone**
Trade Name	:	**ASUS**
Model No.	:	**ZX1 / P560**
FCC ID	:	**MSQGALAXY3**
Filing Type	:	**Certification**
Applicant	:	**ASUSTek COMPUTER INC.** 4F., No. 150, Li-Te Rd., Peitou, Taipei, Taiwan

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- The data shown in this test report were carried out on Mar. 28, 2008 at **Sporton International Inc. LAB.**
- Report No.: FR830315A, Report Version: Rev.01

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.

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History of This Test Report

Report Issue Date: Mar. 31, 2008

Report No.	Description

1. General Description of Equipment under Test

1.1 Applicant

ASUSTek COMPUTER INC.
4F., No. 150, Li-Te Rd., Peitou, Taipei, Taiwan

1.2 Manufacturer

1. **Pegatron Corporation Taoyuan Mfg.**
   No. 5, Shing Yeh Street, 333 Kwei Shan Hsiang, Taoyuan Hsien, Taiwan
2. **ProTek (Shanghai) Ltd.**
   No.3768, Xiu Yan Road, Nanhui District, 201315 Shanghai, People's Republic of China
3. **MainTek Computer (Suzhou) Co., Ltd.**
   No. 233 Jing Feng Road, 215011 Suzhou New District, Jiangsu, People＇s Republic of China

1.3 Basic Description of Equipment under Test

Equipment		PDA Phone
Trade Name		ASUS
Model No.		ZX1 / P560
FCC ID		MSQGALAXY3
AC Adapter 1	**Brand Name**	TAMURA
	Model Name	JSP050090UU
	Power Rating	I/P: AC 100-240V, 50-60Hz, 0.3A; O/P: DC 5V, 0.9A, 4.5 W
	AC Power Cord Type	1.5 meter shielded cable without ferrite core
AC Adapter 2	**Brand Name**	DELTA
	Model Name	EADP-5HB B
	Power Rating	I/P: AC 100-240V, 50-60Hz, 0.4A; O/P: DC 5V, 0.8A
	AC Power Cord Type	1.8 meter non-shielded cable without ferrite core
Car Charger	**Brand Name**	L&K
	Part Number	04G267011910
	Power Rating	I/P: DC 12V/24V; O/P: DC 5V, 900mA
	Power Cord Type	1.6 meter shielded cable without ferrite core
Battery 1	**Brand Name**	ASUS
	Model Name	SBP-15
	Part Number	07G0166J3450
	Power Rating	DC 3.7V, 1100mAh
	Type	Li-ion
Battery 2	**Brand Name**	ASUS
	Model Name	SBP-15
	Part Number	07G0166Y3450
	Power Rating	DC 3.7V, 1150mAh
	Type	Li-ion
Earphone	**Brand Name**	ASUS
	Part Number	04G171301270
	Signal Line Type	1.5 meter non-shielded cable without ferrite core
USB Cable	**Brand Name**	ACON
	Part Number	14G000511900
	Signal Line Type	1.2 meter non-shielded cable without ferrite core

Remark: Above EUT's information was declared by manufacturer. Please refer to the specifications of manufacturer or User's Manual for more detailed features description.

1.4 Feature of Equipment under Test

Product Feature & Specification				
DUT Type :	PDA Phone			
Trade Name :	ASUS			
Model No. :	ZX1 / P560			
FCC ID :	MSQGALAXY3			
Tx Frequency :	Bluetooth : 2400 MHz ~ 2483.5 MHz			
Rx Frequency :	Bluetooth : 2400 MHz ~ 2483.5 MHz			
Maximum Output Power to Antenna :	Bluetooth : 4.44 dBm (1Mbps) Bluetooth EDR : 2.42 dBm (2Mbps) / 2.66 dBm (3Mbps)			
Antenna Type :	Bluetooth : Chip Antenna			
Antenna Gain :	Bluetooth : -3 dBi			
HW Version :	SR2			
SW Version :	ROM version : V3.8.3_WWE Radio version : V2.1.4-G3			
Type of Modulation :	Bluetooth (1Mbps) : GFSK Bluetooth EDR (2Mbps) : π/4-DQPSK Bluetooth EDR (3Mbps) : 8-DPSK			
Function Type :	Transmitter		Transceiver	V
DUT Stage :	Identical Prototype			

Remark:

1 P560 is the serial model of ZX1. They have the same RF chipset, the same block diagram and main board PCB. The differences between them are ID design, keypad PCB, antenna and antenna matching.

2 GSM/WCDMA FCC Part 22/24 report can be refered to Sporton report number: FG830315.

3 WLAN Part 15C report can be refered to Sporton report number: FR830315B.

2. Test Configuration of Equipment under Test

2.1 Test Manner

a. 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.

b. The data rate, 1Mbps, was chosen to being tested, due to the highest RF output power.

Channel	Frequency	Data Rate / Modulation		
		GFSK	π/4-DQPSK	8-DPSK
		1Mbps	2Mbps	3Mbps
Ch00	2400MHz	4.44 dBm	2.42 dBm	2.66 dBm
Ch39	2441MHz	4.26 dBm	2.11 dBm	2.37 dBm
Ch78	2480MHz	3.72 dBm	1.41 dBm	1.65 dBm

Bluetooth uses frequency hopping spread spectrum (FHSS) operation which also facilities Bluetooth multiple access and coexistence among other types of wireless systems. The basic frequency-hopping pattern is a pseudo-random ordering of 79 channel frequencies in the ISM band and the hopping rate is nominally 1600 hops per second. The EDR modulation format uses one of two types of DPSK (Pi/4-DQPSK or 8-DPSK) in the payload section of the packet. As shown in figure, the EDR packet begins using GFSK modulation during the access code and header portions of the packet but changes to DPSK modulation after the guard time. Changing to a DPSK format allows increased data rates of 2 Mb/s or 3 Mb/s.

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

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

2.2 Test Mode

Application	
Radiated Emission	**BT Tx (1Mbps)**
	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz
Conducted Emission	Mode 1 : GSM850 Idle + BT Link + WLAN Link + Camera + Battery 1 + Adapter 1 + GPS Rx Mode 2 : GSM1900 Idle + BT Link + WLAN Link + MPEG4 + Battery 1 + Adapter 1 + GPS Rx Mode 3 : EDGE Idle + BT Link + WLAN Link + Camera + Battery 2 + Adpater 1 + GPS Rx Mode 4 : WCDMA Idle + BT Link + WLAN Link + MPEG4 + Battery 2 + Adpater 1 + GPS Rx Mode 5 : HSDPA Idle + BT Link + WLAN Link + Camera + Battery 2 + USB Link + GPS Rx Mode 6 : GSM850 Idle + BT Link + WLAN Link + Camera + Battery 1 + Adapter 2 + GPS Rx

Remark : All the test cases were tested on model ZX1, and band edges and radiated emission were tested on P560.

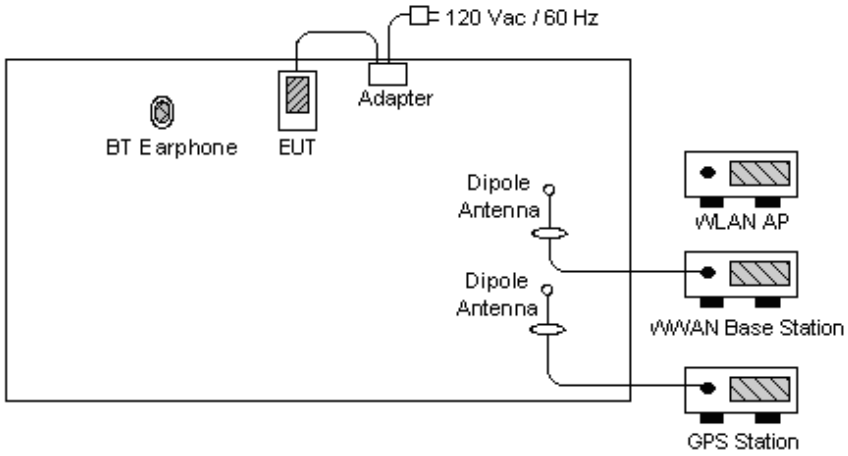
2.3 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Base Station	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	D400	E2K24GBRL	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Engotech	ET-BH111	PQY471087	N/A	N/A
5.	RS-232 Mouse	State	MS-303	DoC	Unshielded, 1.2 m	N/A
6.	i-pod	Apple	A1199	N/A	Unshielded, 1.2 m	N/A

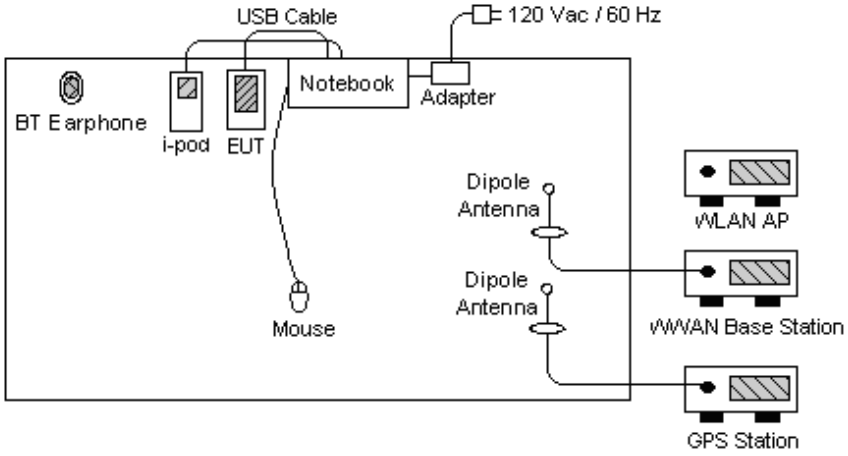
2.4 Connection Diagram of Test System

<Conducted Emission>

EUT with Adapter Mode



EUT with USB Link Mode



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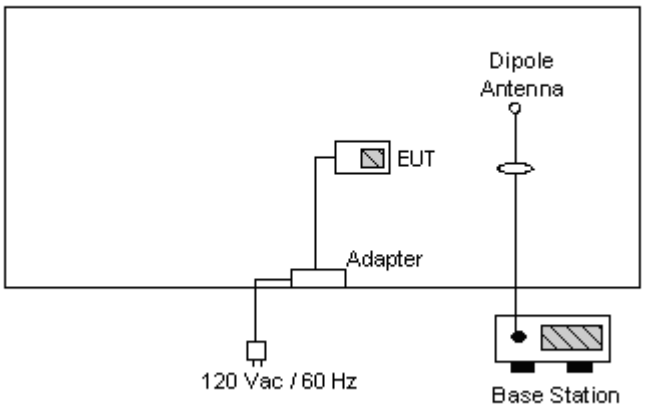
Bluetooth



3. RF Utility

The programmed RF Utility is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testings.

4. General Information of Test

Test Site Location	:	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-328-4978
Test Site No	:	CO04-HY, 03CH06-HY
FCC Designation No	:	TW1022

4.1 Test Voltage

AC 120V / 60Hz

4.2 Standard for Methods of Measurement

ANSI C63.4-2003

4.3 Test Compliance

47 CFR Part 15 Subpart C

4.4 Frequency Range

a. Conduction: from 150 KHz to 30 MHz
b. Radiation: from 30 MHz to 25000 MHz

4.5 Test Distance

The test distance of radiated emission from antenna to EUT is 3 m.

5. Test Data and Test Result

5.1 List of Measurements and Examinations

The Emission Mode: Bluetooth

FCC Rule	Description of Test	Result
15.207	Conducted Emission	Pass
15.247(a)(1)(iii)	Hopping Channel Bandwidth	Pass
15.247(a)(1)	Hopping Channel Separation	Pass
15.247(a)(1)(iii)	Number of Hopping Frequency	Pass
15.247(a)(1)(iii)	Dwell Time of Each Frequency	Pass
15.247(b)(1)	Output Power	Pass
15.247(d)	100 KHz Bandwidth of Frequency Band Edges	Pass
15.209(a) 15.247(d)	Radiated Emission	Pass
15.203 15.247(b)(4)	Antenna Requirement	Pass

5.2 Band Edges Measurement

5.2.1 Measuring Instruments

As described in chapter 6 of this test report.

5.2.2 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 100 KHz with suitable frequency span including 100 KHz bandwidth from band edge.
3. The band edges was measured and recorded.

5.2.3 Test Result

- **Model : ZX1**
- Application Type : Bluetooth
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer

Test Result in BT lower band	:	**PASS**
Test Result in BT higher band	:	**PASS**
Test Result in BT EDR(2Mbps) lower band	:	**PASS**
Test Result in BT EDR(2Mbps) higher band	:	**PASS**
Test Result in BT EDR(3Mbps) lower band	:	**PASS**
Test Result in BT EDR(3Mbps) higher band	:	**PASS**

- **Model : P560**
- Application Type : Bluetooth
- Temperature : 21~26℃
- Relative Humidity : 50~55%
- Test Engineer : CKC

Test Result in BT lower band	:	**PASS**
Test Result in BT higher band	:	**PASS**
Test Result in BT EDR(2Mbps) lower band	:	**PASS**
Test Result in BT EDR(2Mbps) higher band	:	**PASS**
Test Result in BT EDR(3Mbps) lower band	:	**PASS**
Test Result in BT EDR(3Mbps) higher band	:	**PASS**

5.2.4 Note on Band Edge Emission

<Model : ZX1>

➢ **BT(1Mbps)**

CH00 (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
2389.61	34.04	-19.96	54.00	33.94	31.86	3.92	35.68	137	47	Average
2389.61	46.62	-27.38	74.00	46.52	31.86	3.92	35.68	100	0	Peak

CH00 (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	34.75	-19.25	54.00	34.65	31.86	3.92	35.68	161	31	Average
2390.00	46.12	-27.88	74.00	46.02	31.86	3.92	35.68	100	0	Peak

CH78 (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
2483.50	52.86	-1.14	54.00	52.53	31.98	4.05	35.70	127	358	Average
2483.50	64.37	-9.63	74.00	64.04	31.98	4.05	35.70	100	0	Peak

CH78 (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
2483.50	49.82	-4.18	54.00	49.49	31.98	4.05	35.70	186	7	Average
2483.50	60.80	-13.20	74.00	60.47	31.98	4.05	35.70	100	0	Peak

<Model : P560>

➢ **BT(1Mbps)**

CH00 (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
2351.61	44.68	-29.32	74.00	44.64	31.83	3.89	35.68	100	0	Peak
2351.61	31.16	-22.84	54.00	31.17	31.81	3.86	35.67	109	311	Average

CH00 (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
2312.85	43.90	-30.10	74.00	43.88	31.81	3.89	35.67	100	0	Peak
2312.85	30.73	-23.27	54.00	30.83	31.73	3.82	35.66	131	190	Average

CH78 (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	56.56	-17.44	74.00	56.23	31.98	4.05	35.70	100	0	Peak
2483.47	46.45	-7.55	54.00	46.12	31.98	4.05	35.70	156	319	Average

CH78 (Vertical)

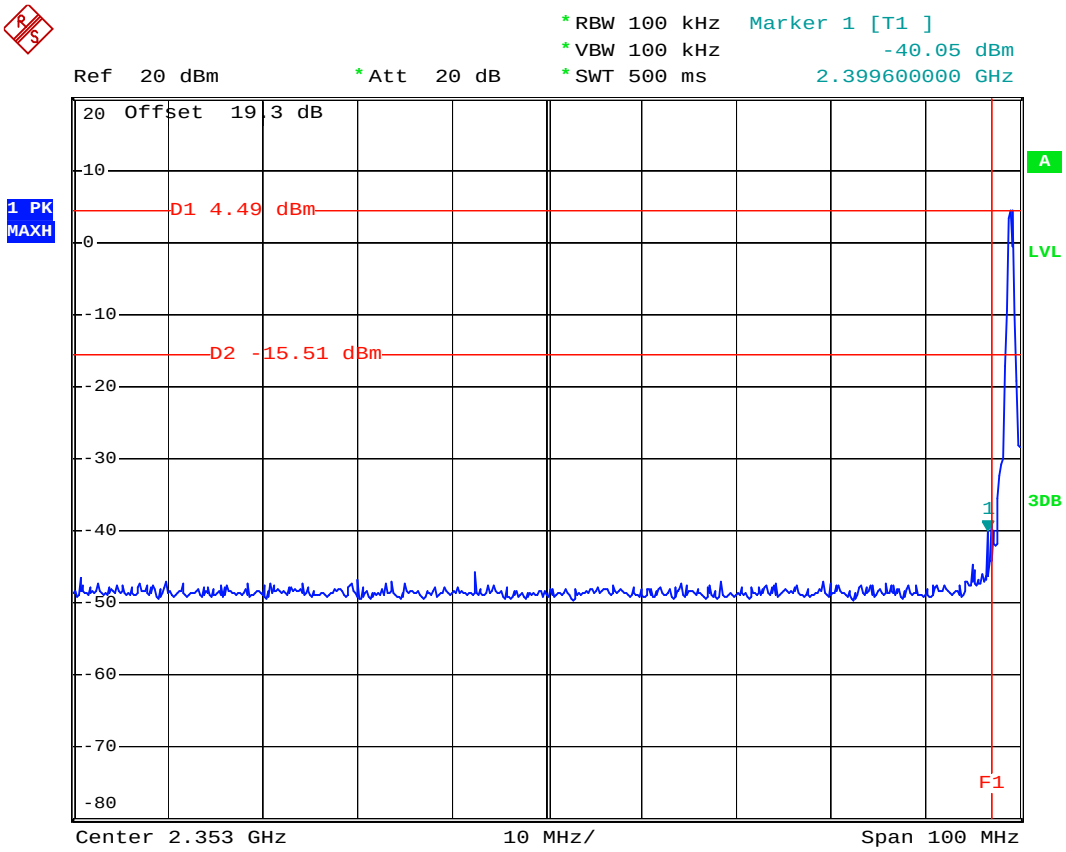
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.47	51.80	-22.20	74.00	51.47	31.98	4.05	35.70	100	0	Peak
2483.47	42.60	-11.40	54.00	42.27	31.98	4.05	35.70	198	194	Average

5.2.5 20dB Band Edge

<Model : ZX1>

BT

CH00



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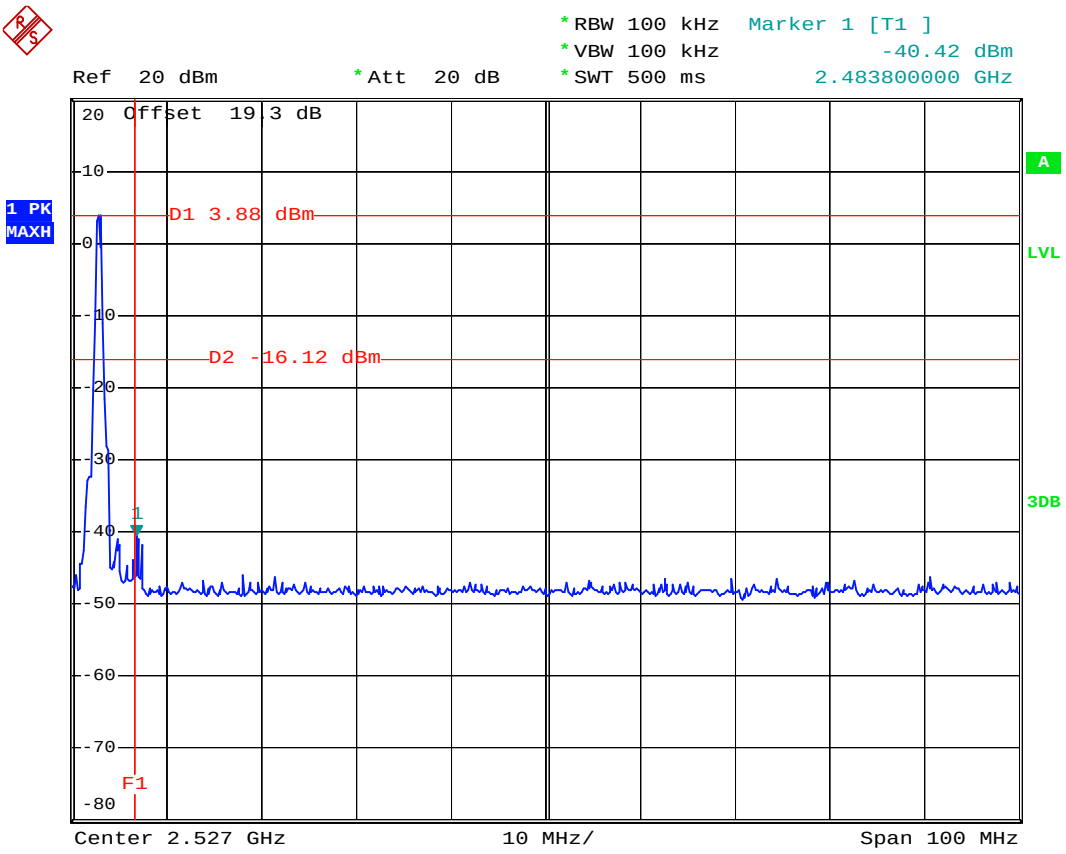
CH78



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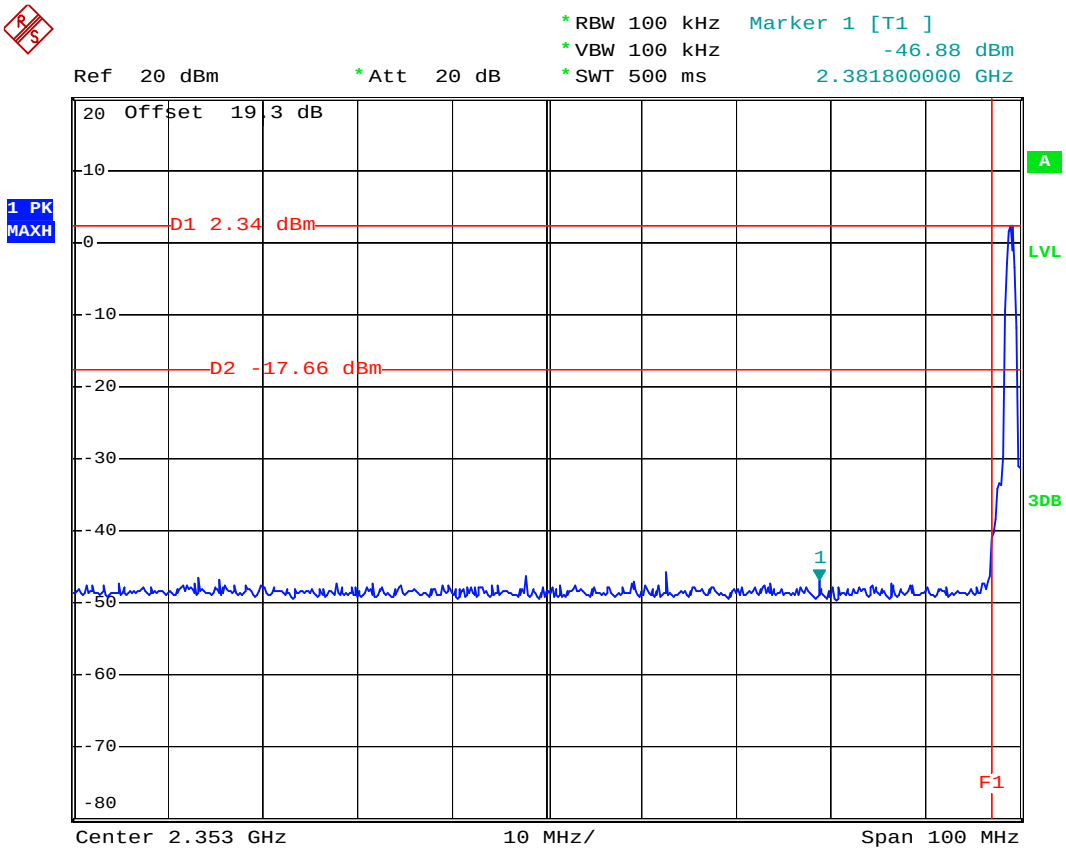
<Model : ZX1>

BT EDR(2Mbps)

CH00



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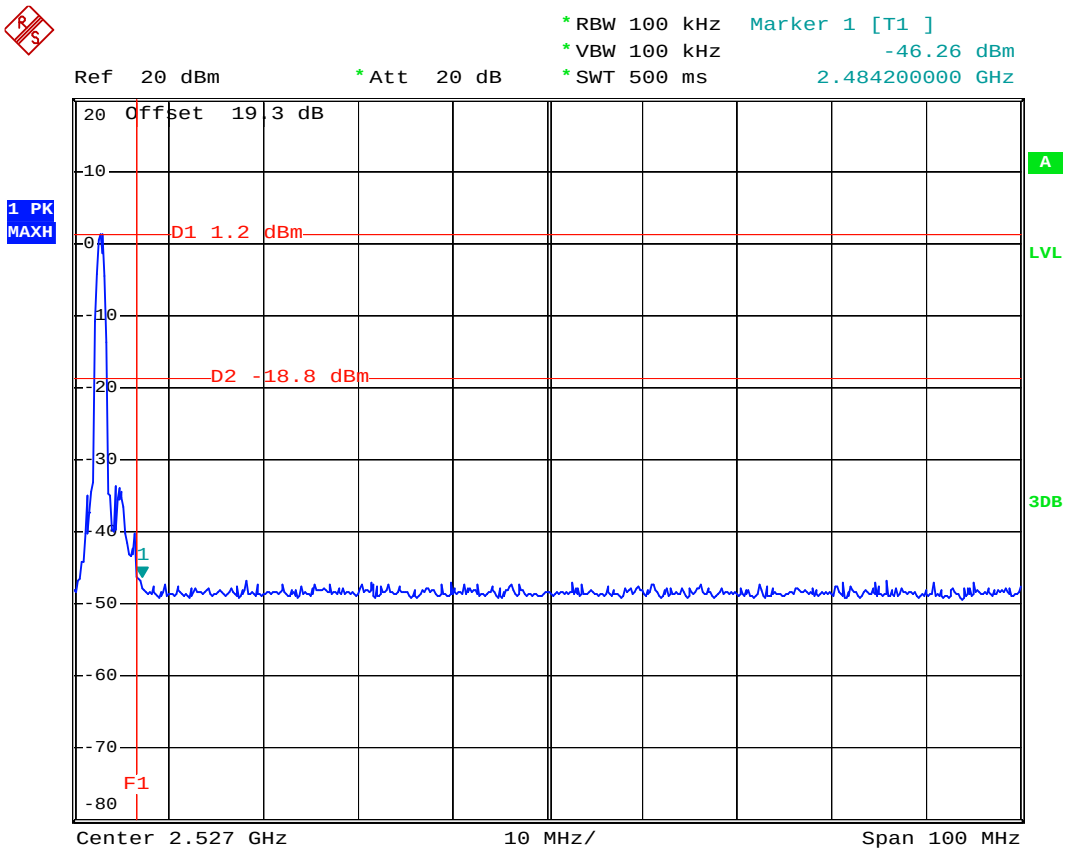

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<Model : ZX1>

BT EDR(3Mbps)

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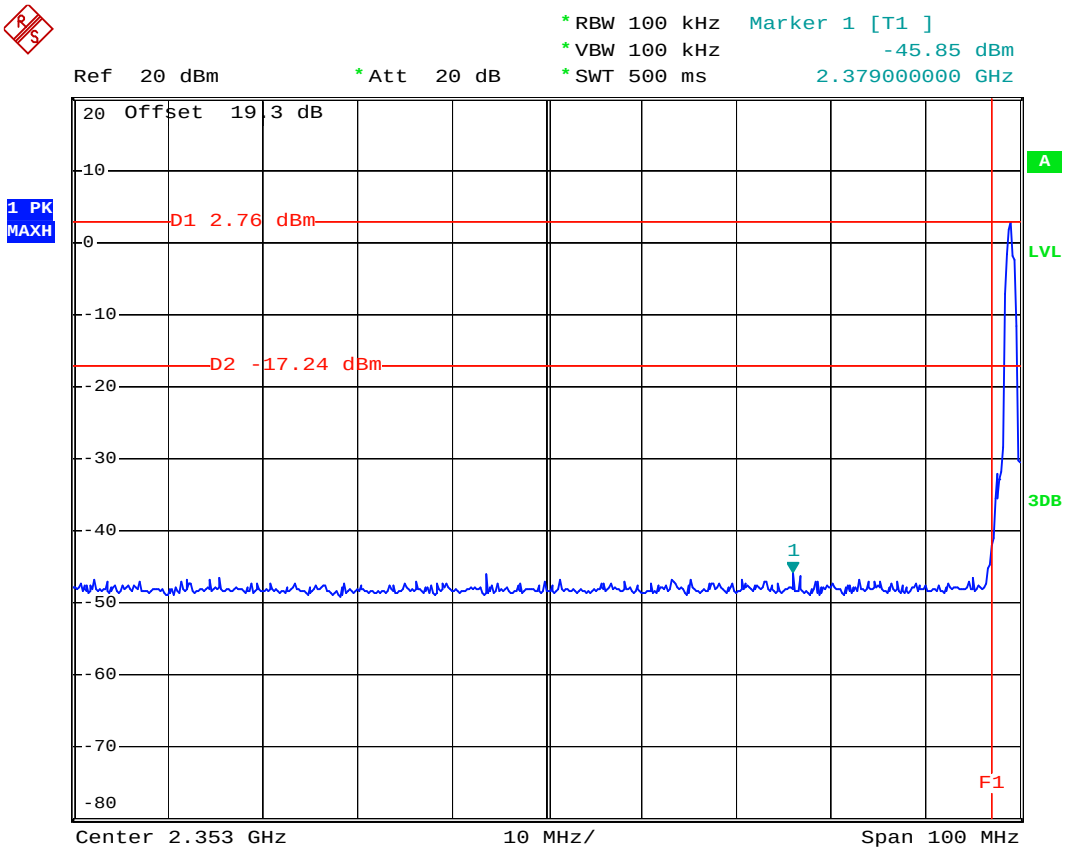

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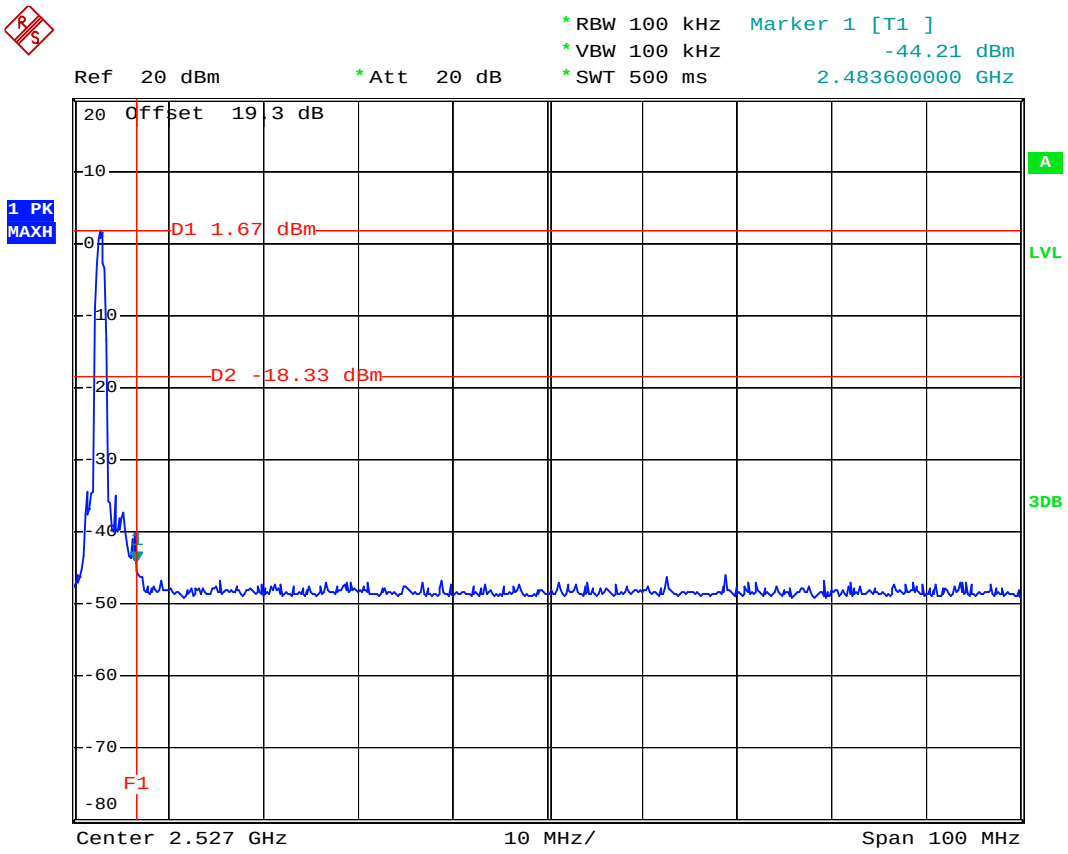

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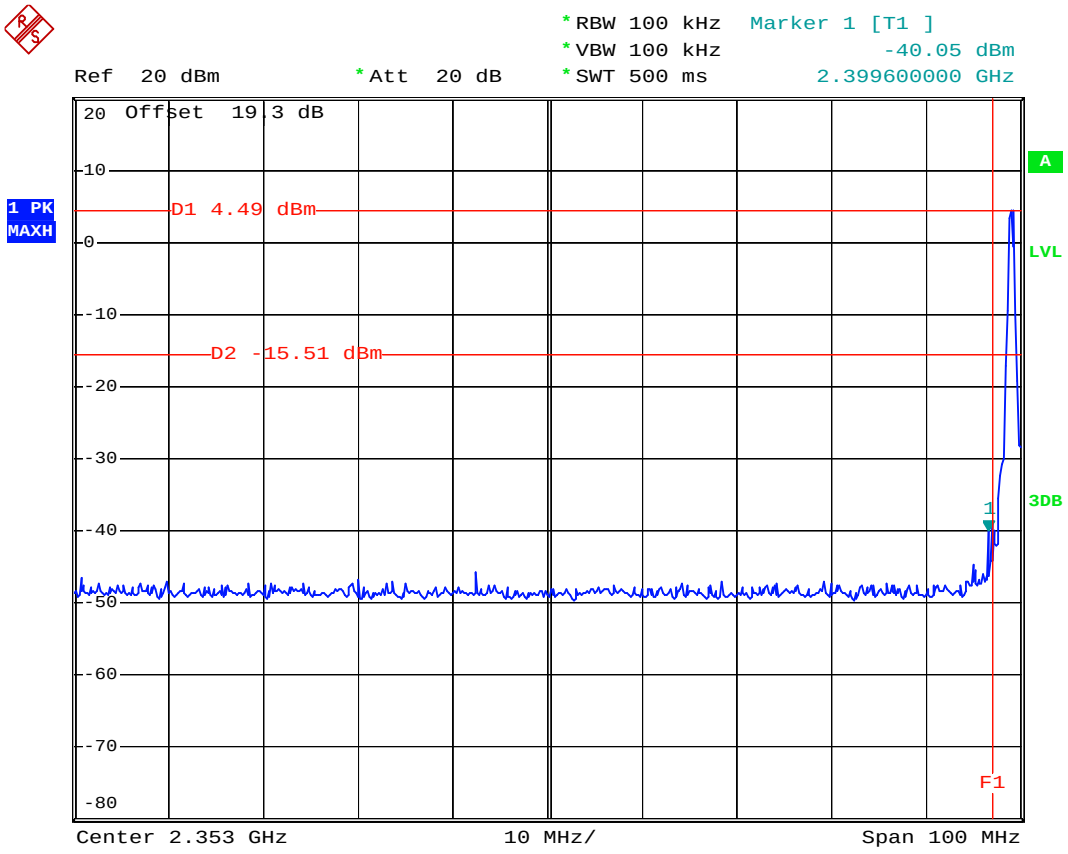
<Model : P560>

BT

CH00



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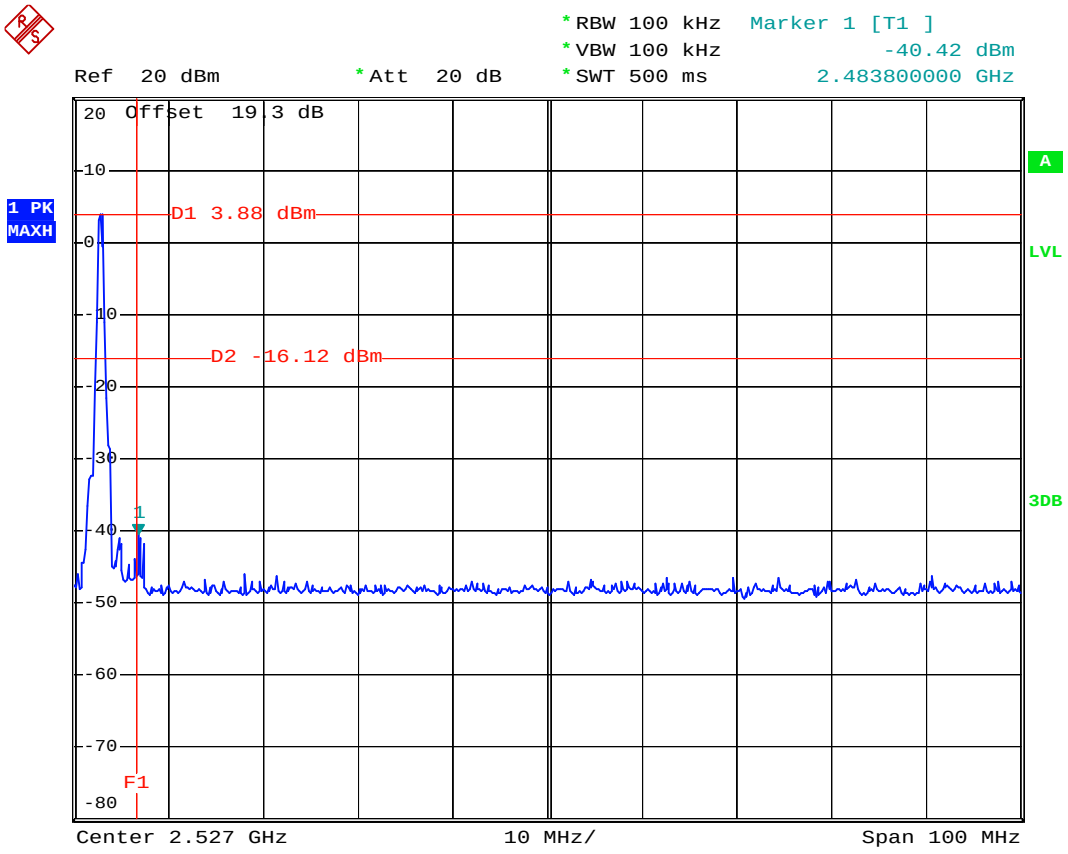

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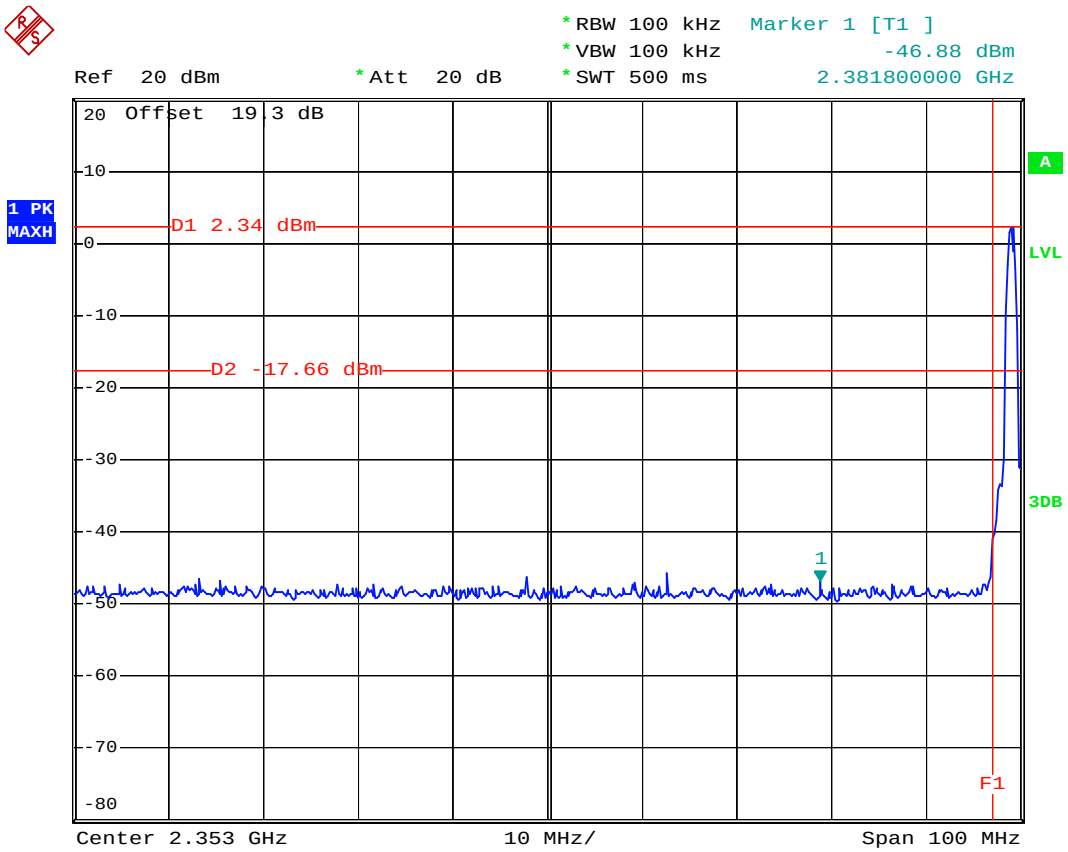
<Model : P560>

BT EDR(2Mbps)

CH00



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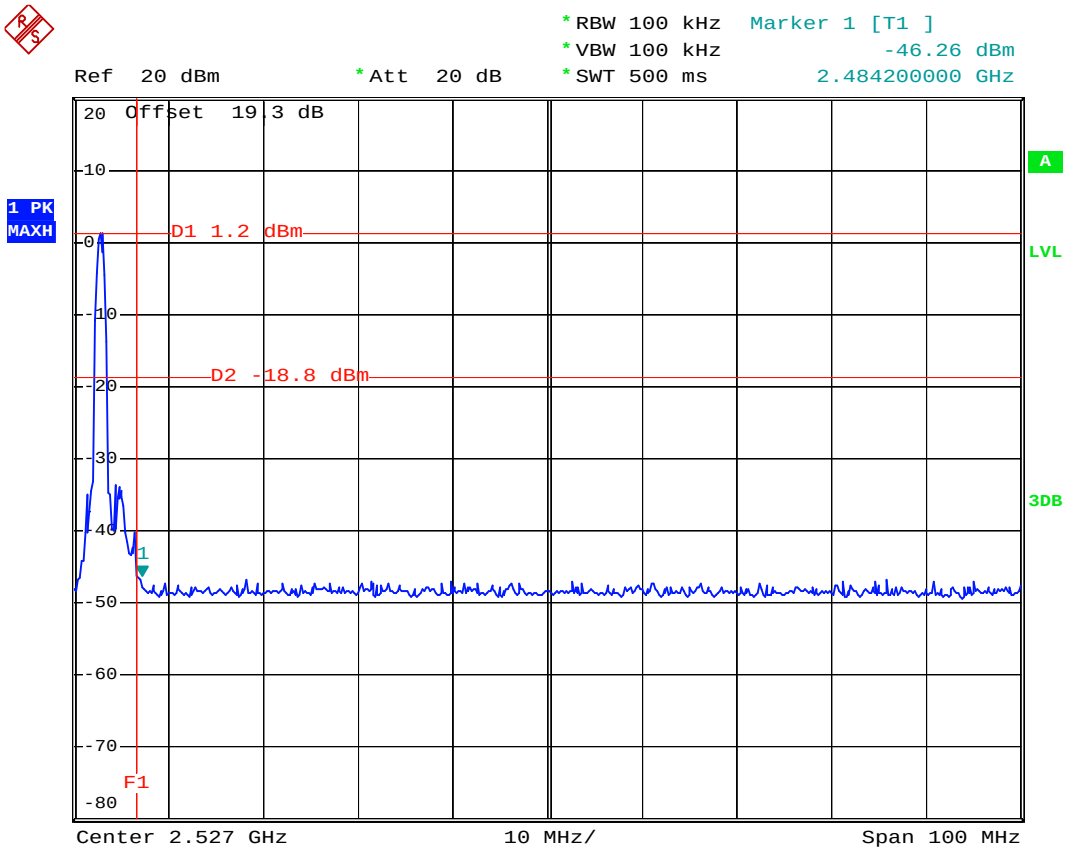

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<Model : P560>

BT EDR(3Mbps)

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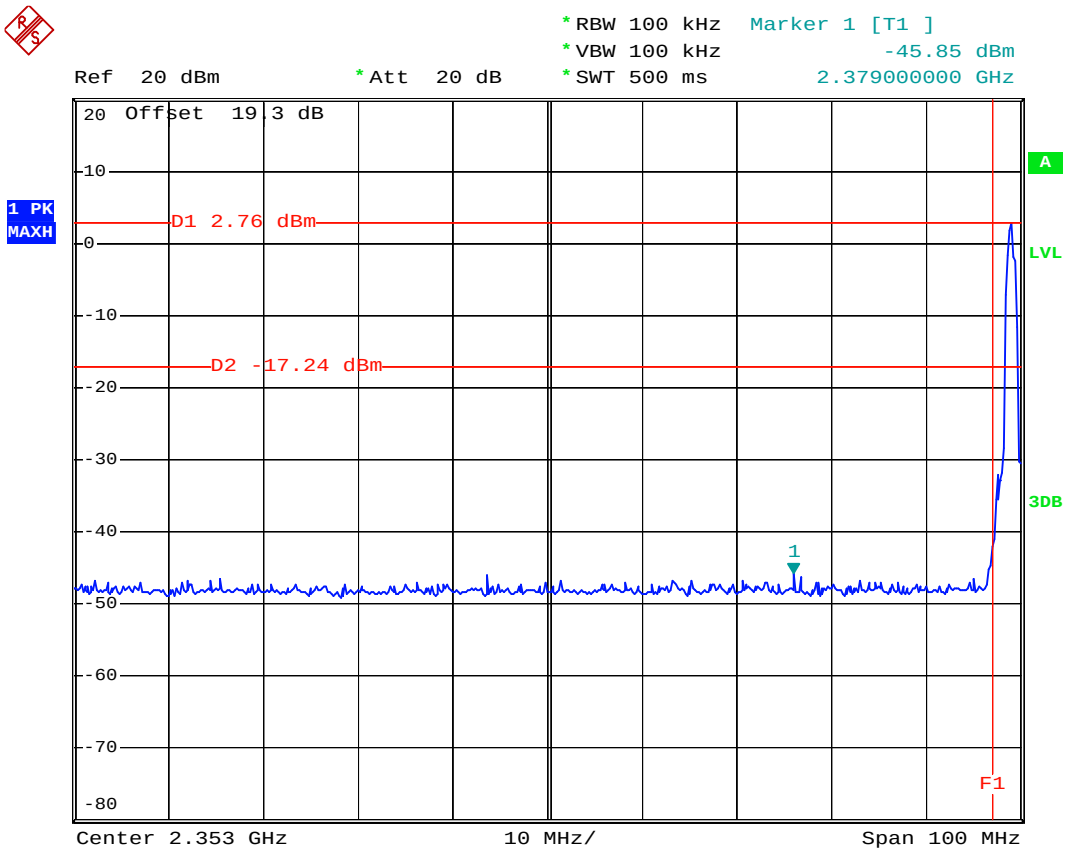

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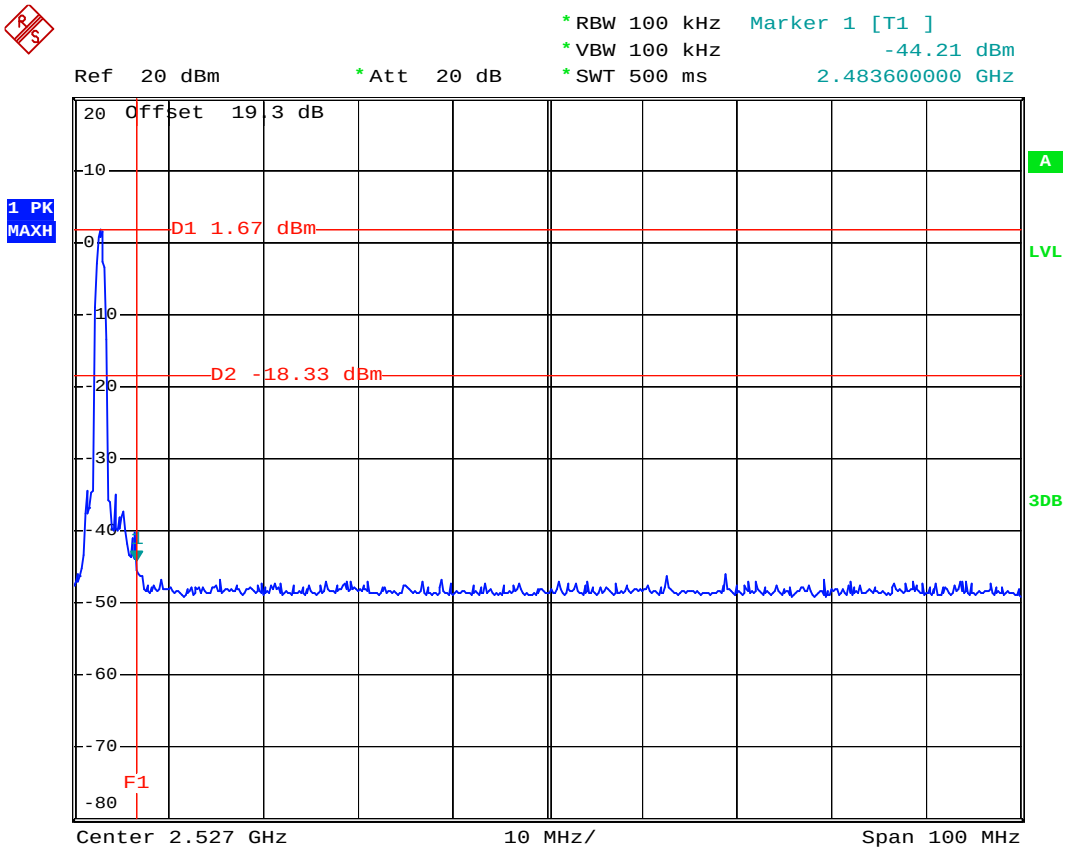

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5.3 Hopping Channel Separation

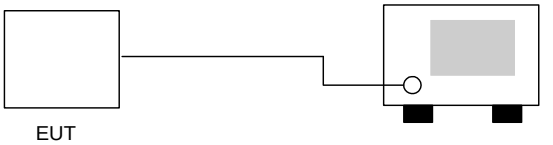
5.3.1 Measuring Instruments

As described in chapter 9 of this test report.

5.3.2 Test Procedure

1. The output of EUT was connected to the spectrum analyzer by a low loss cable..
2. Set RBW of spectrum analyzer to 30 KHz and VBW to 100 KHz.
3. The Hopping Channel Separation is defined as the channel is separated with the next channel.

5.3.3 Test Setup Layout



5.3.4 Test Result：The spectrum analyzer plots are attached as below

- **Model : ZX1**
- Application Type : BT
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer

Channel	Frequency (MHz)	Carrier Frequency Separation (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	1.004	0.578	Mode 1
39	2441	1.000	0.580	Mode 2
78	2480	1.004	0.582	Mode 3

Remark: Hopping Channel Separation shall be greater 2/3 of 20dB bandwidth.

- **Model : ZX1**
- Application Type : BT EDR(2Mbps)
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer

Channel	Frequency (MHz)	Carrier Frequency Separation (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	1.008	0.805	Mode 4
39	2441	1.002	0.816	Mode 5
78	2480	1.002	0.819	Mode 6

Remark: Hopping Channel Separation shall be greater 2/3 of 20dB bandwidth.

- **Model : ZX1**
- Application Type : BT EDR(3Mbps)
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer

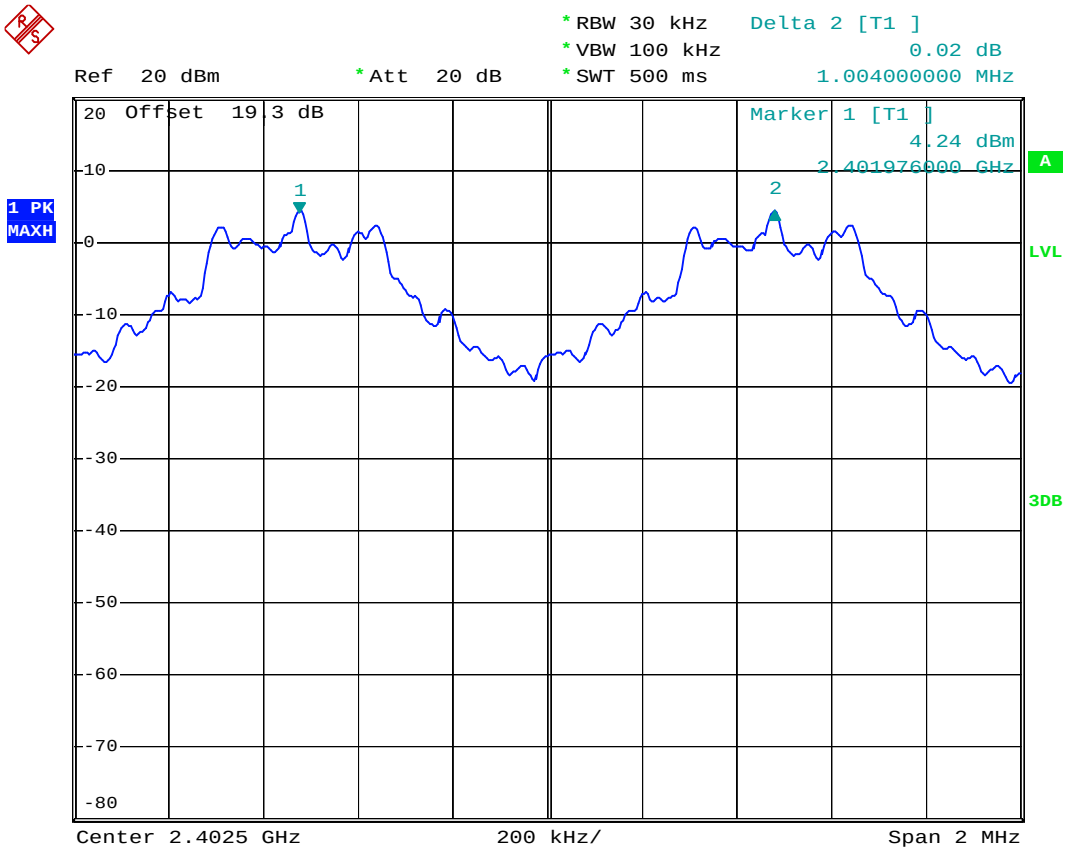
Channel	Frequency (MHz)	Carrier Frequency Separation (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	1.002	0.803	Mode 7
39	2441	1.002	0.809	Mode 8
78	2480	1.002	0.803	Mode 9

Remark: Hopping Channel Separation shall be greater 2/3 of 20dB bandwidth.

5.3.5 Hopping Channel Seperation

<Model : ZX1>

Mode 1



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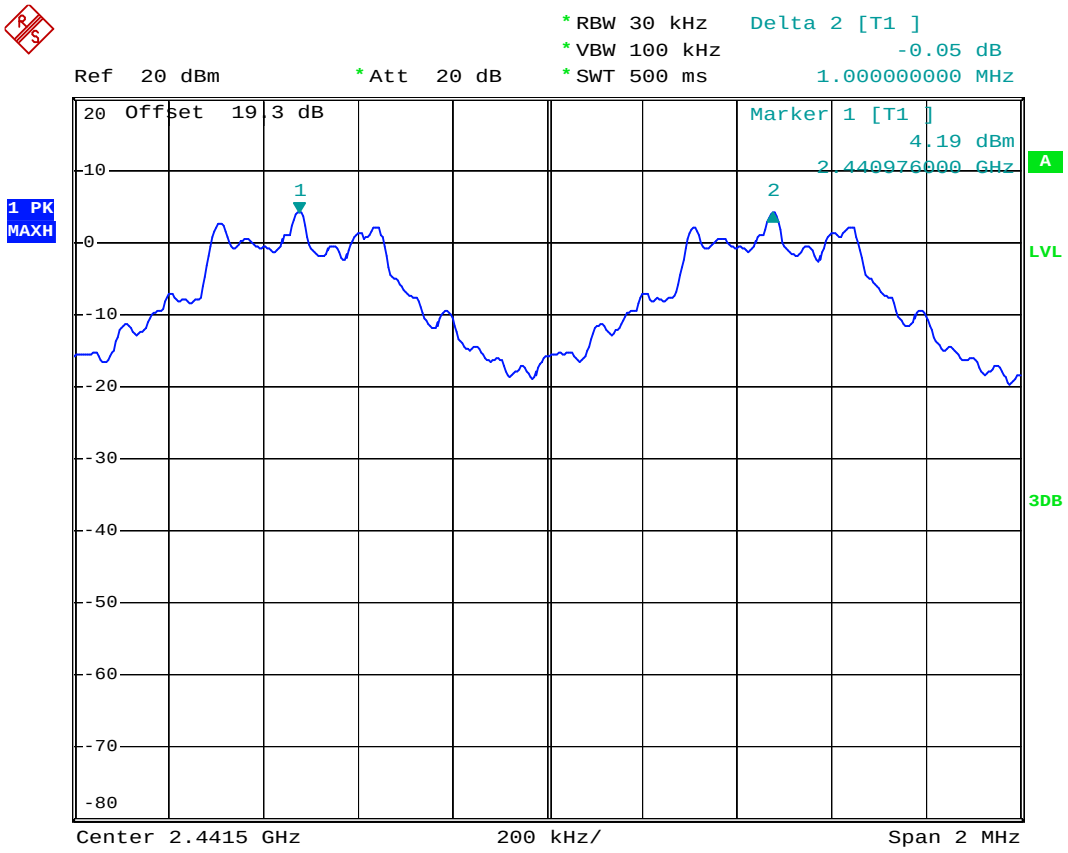
Mode 2



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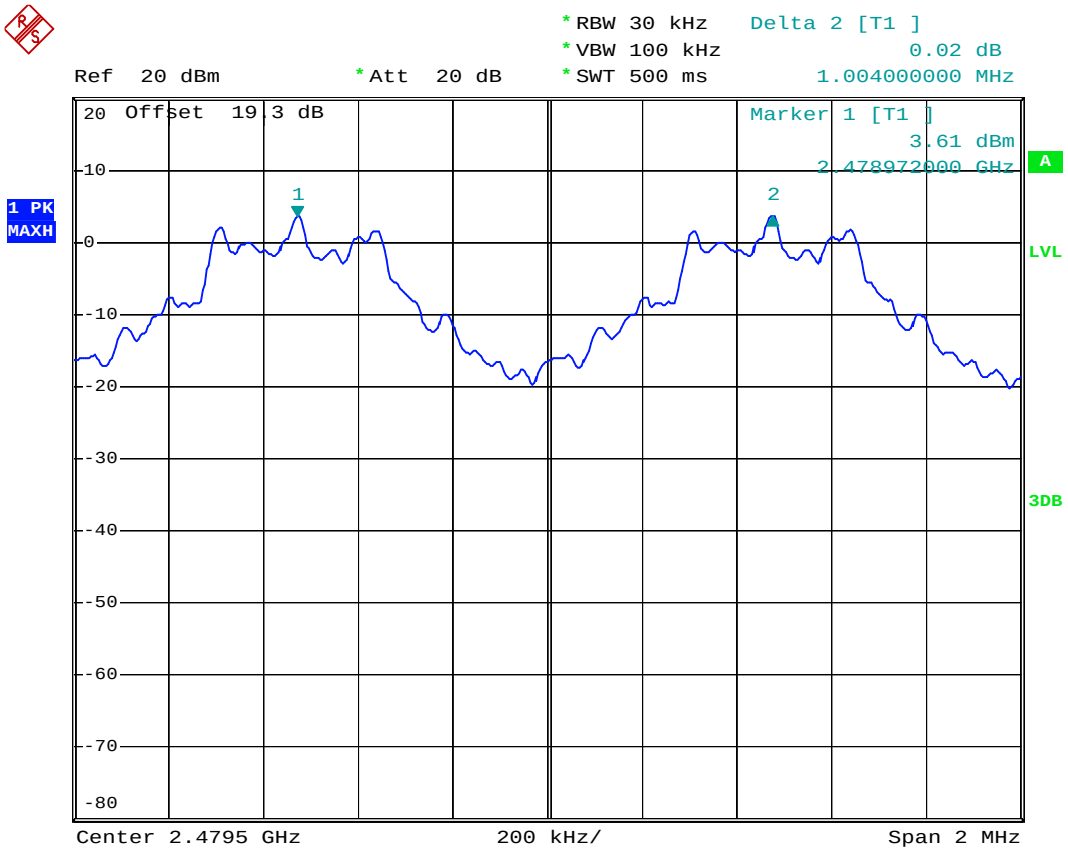
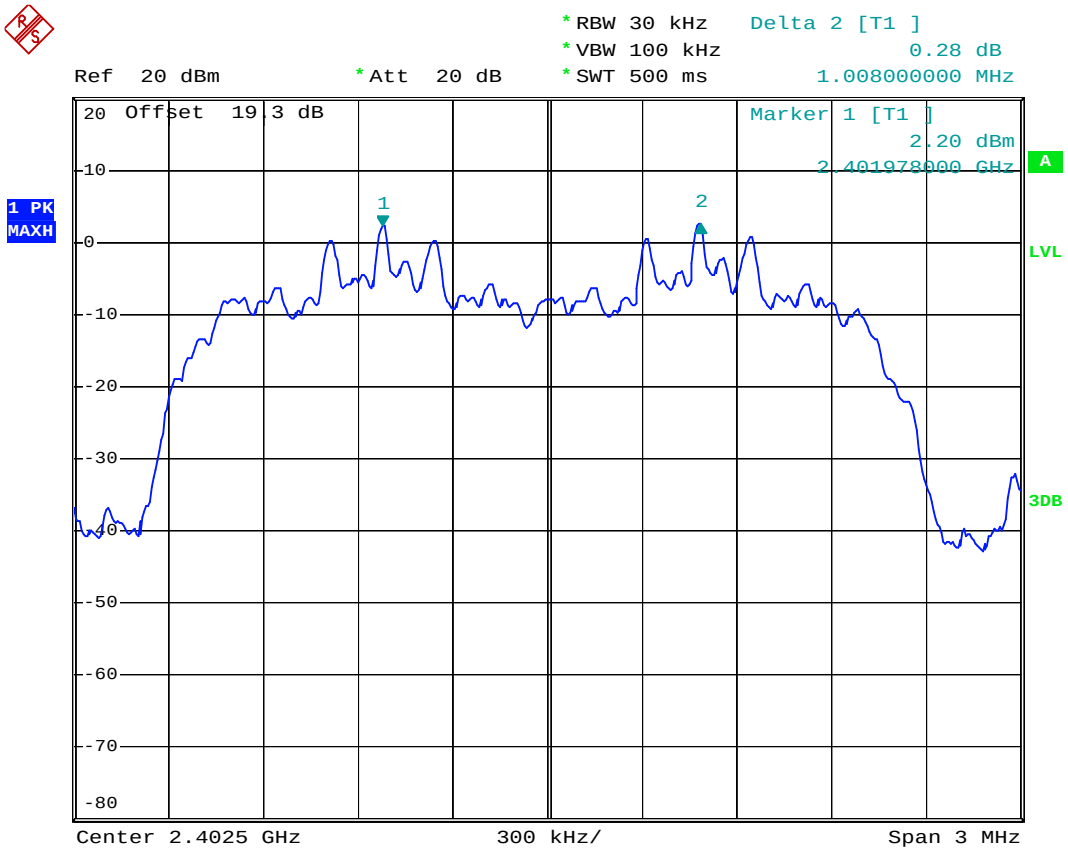
Mode 3



Date: 5.MAR.2008 15:50:49

<Model : ZX1>

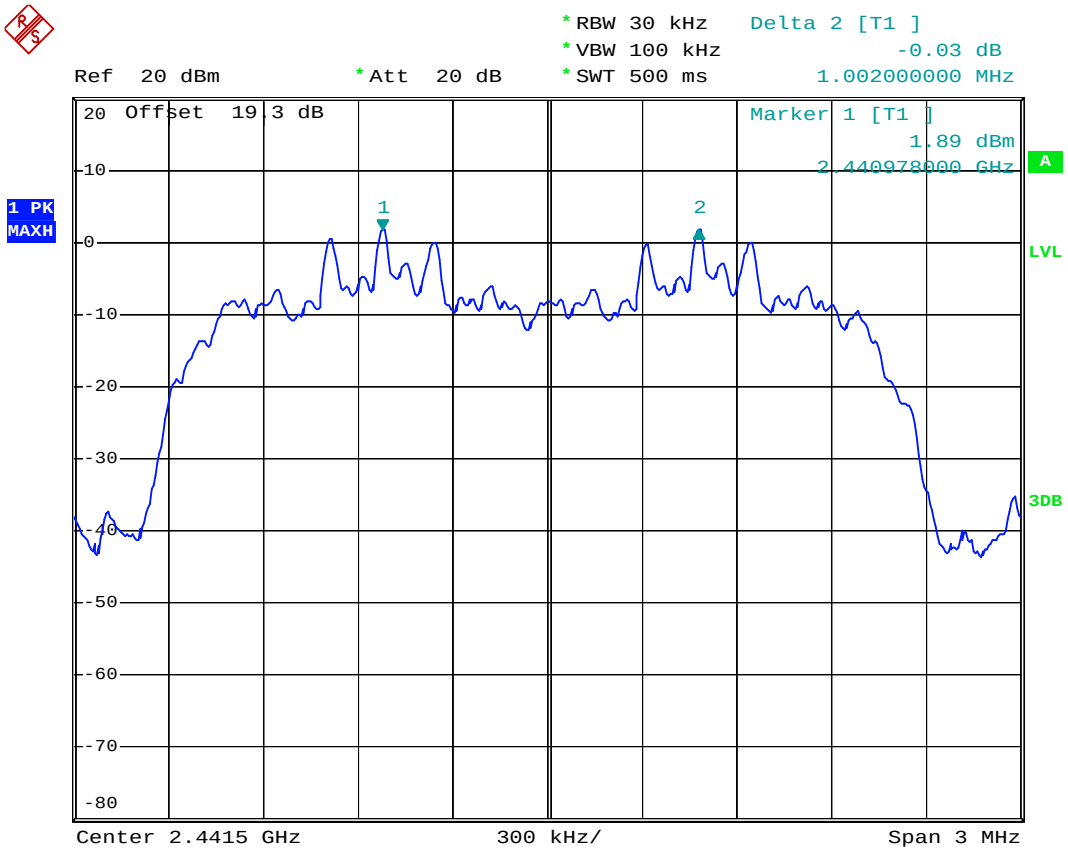
Mode 4



Date: 10.MAR.2008 11:21:31

<Model : ZX1>

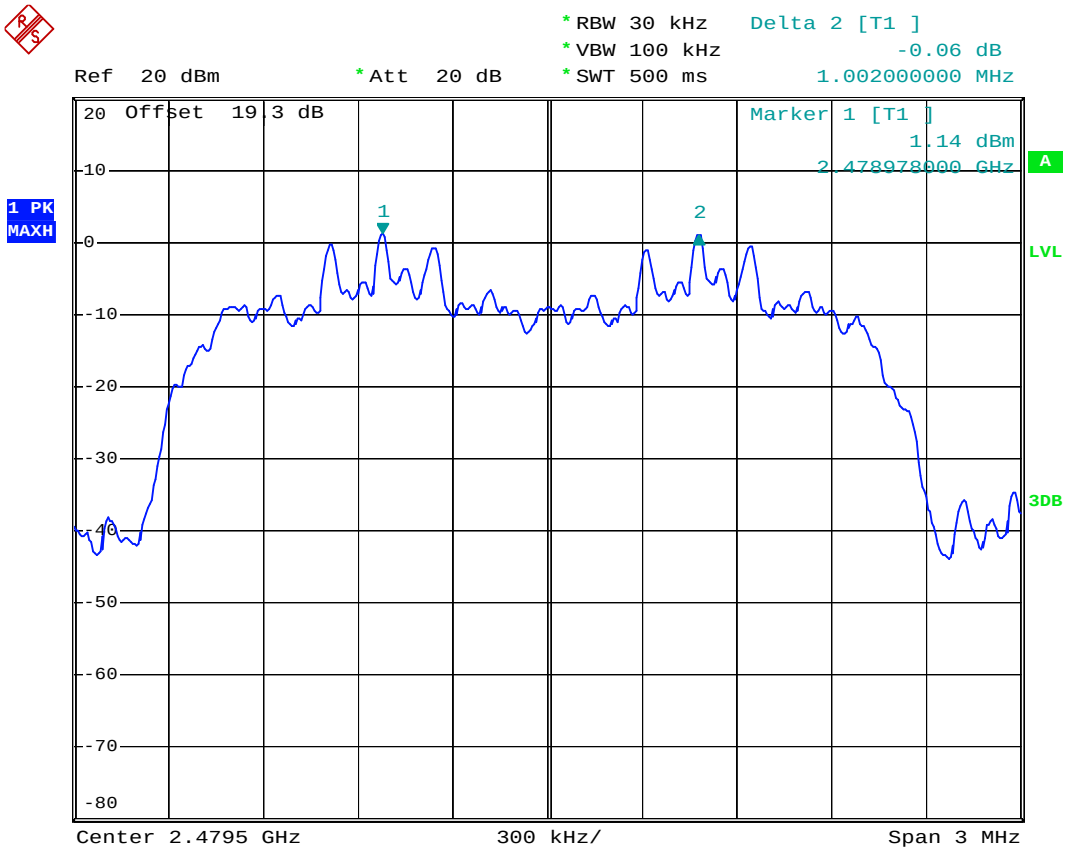
Mode 5



Date: 10.MAR.2008 11:22:11

<Model : ZX1>

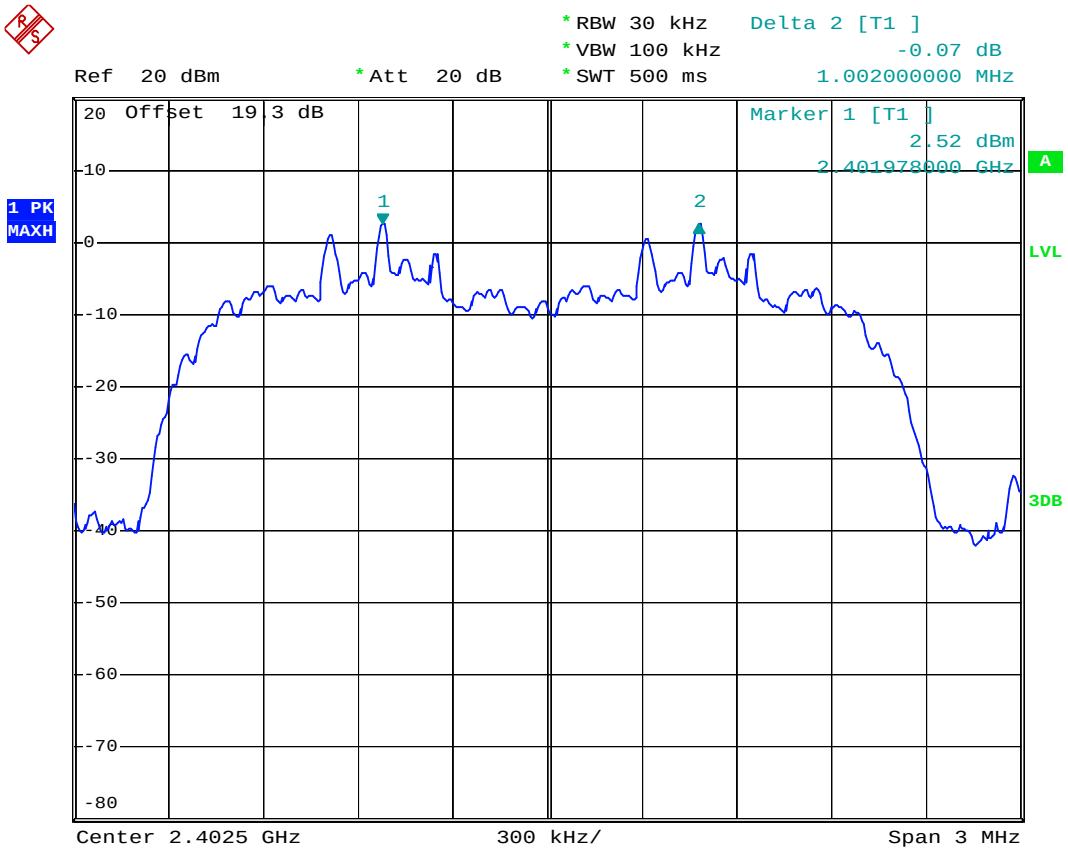
Mode 6



Date: 10.MAR.2008 11:23:25

<Model : ZX1>

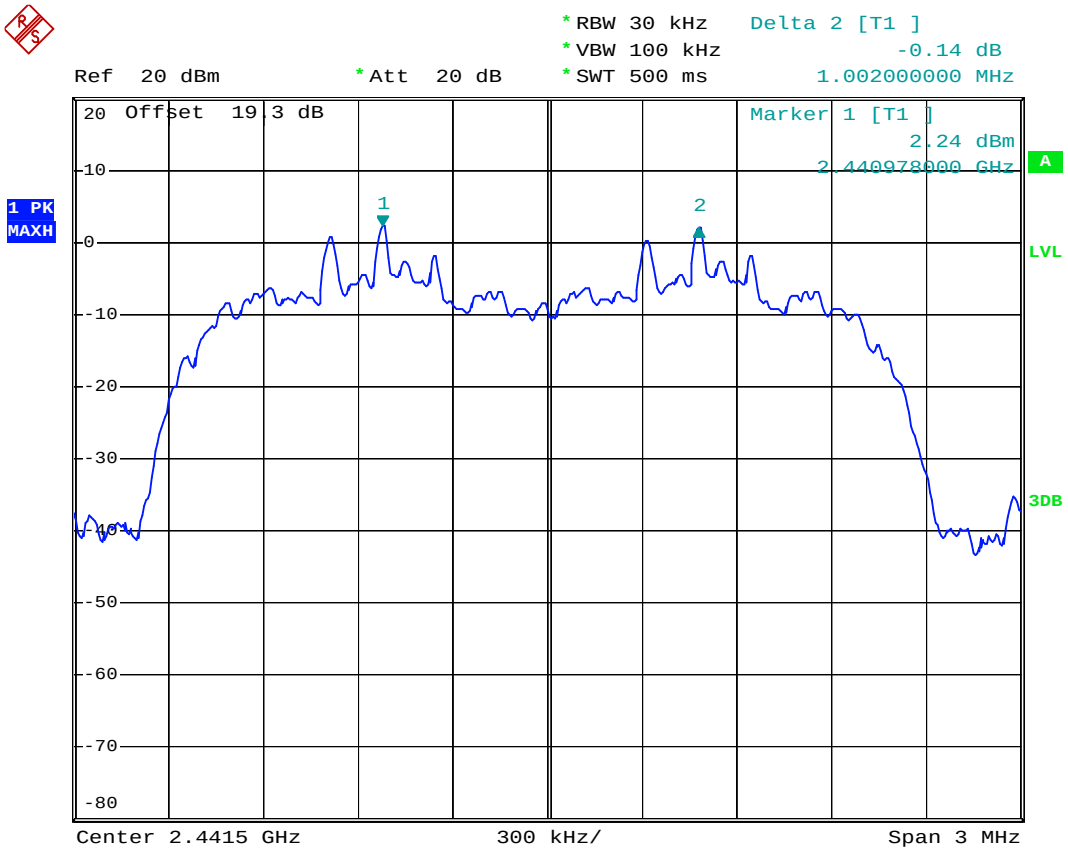
Mode 7



Date: 10.MAR.2008 13:26:54

<Model : ZX1>

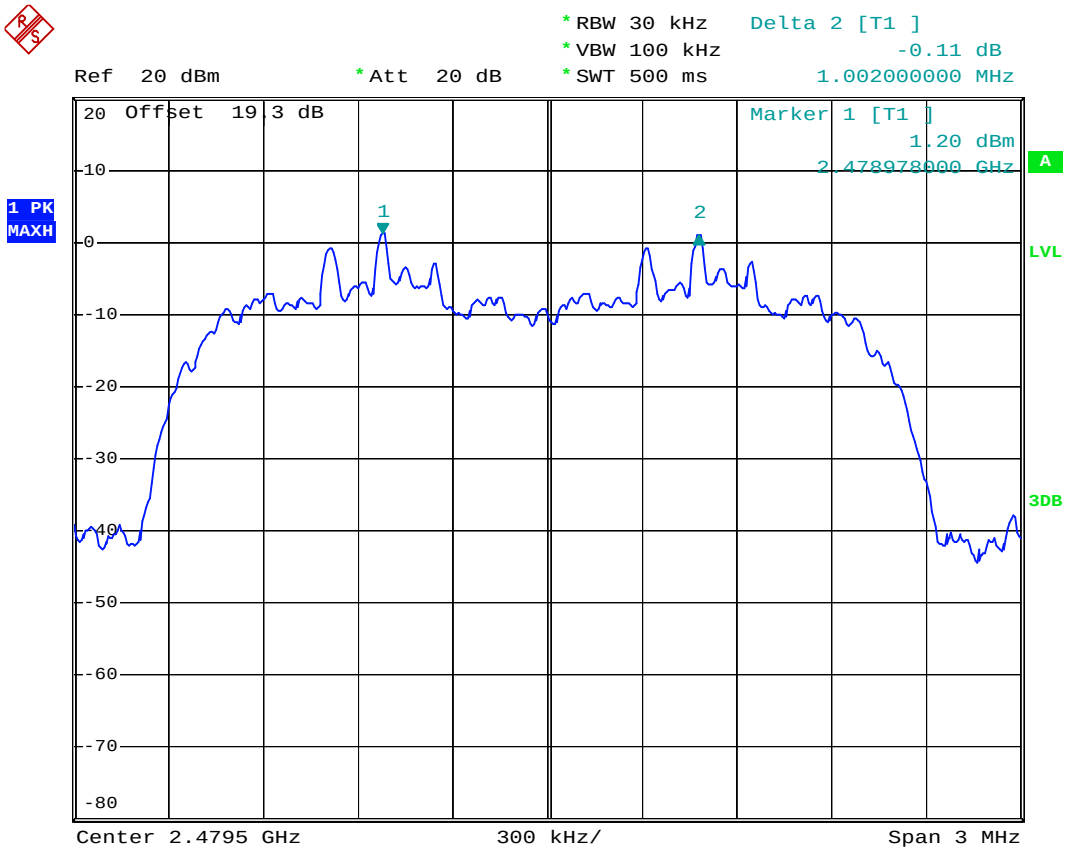
Mode 8



Date: 10.MAR.2008 13:28:50

<Model : ZX1>

Mode 9



Date: 10.MAR.2008 13:30:03

5.4 Number of Hopping Frequency

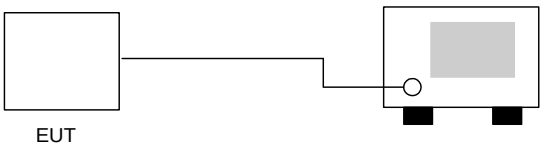
5.4.1 Measuring Instruments

As described in chapter 9 of this test report.

5.4.2 Test Procedure

1. The output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Set RBW of spectrum analyzer to 100 KHz and VBW to 100 KHz.
3. The number of hopping frequency used is defined as the device has the numbers of total channel.

5.4.3 Test Setup Layout



5.4.4 Test Result：See spectrum analyzer plots below

- **Model : ZX1**
- Application Type : BT
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer

Number of Hopping Frequency (Channel)	Limits (Channel)
79	15

- **Model : ZX1**
- Application Type : BT EDR(2Mbps)
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer

Number of Hopping Frequency (Channel)	Limits (Channel)
79	15

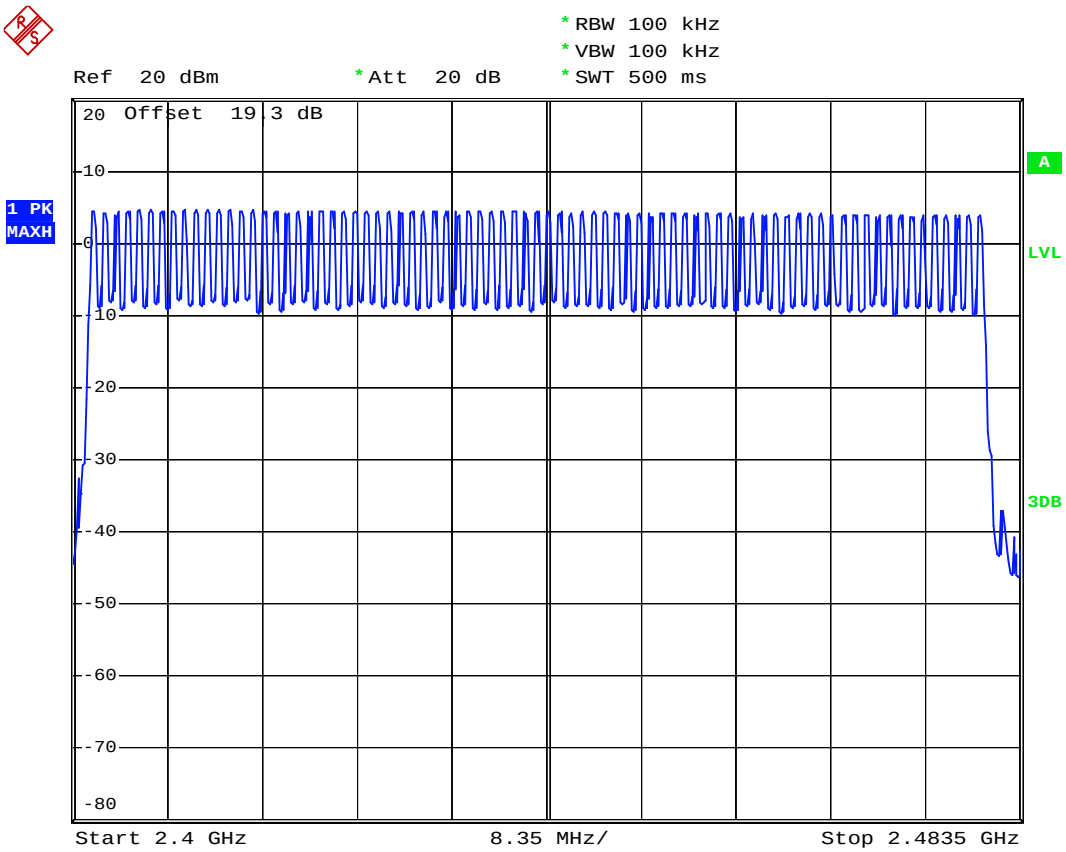
- **Model : ZX1**
- Application Type : BT EDR(3Mbps)
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer

Number of Hopping Frequency (Channel)	Limits (Channel)
79	15

5.4.5 Number of Hopping Frequency

<Model : ZX1>

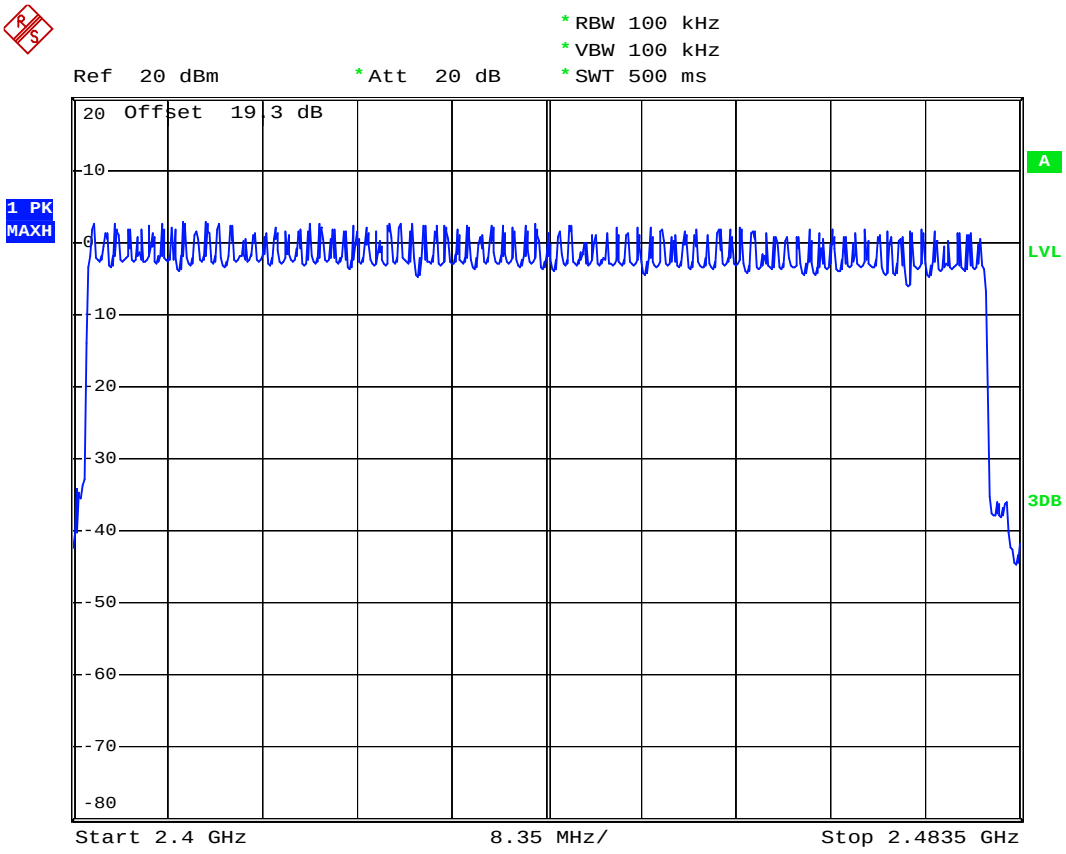
BT



Date: 5.MAR.2008 16:28:30

<Model : ZX1>

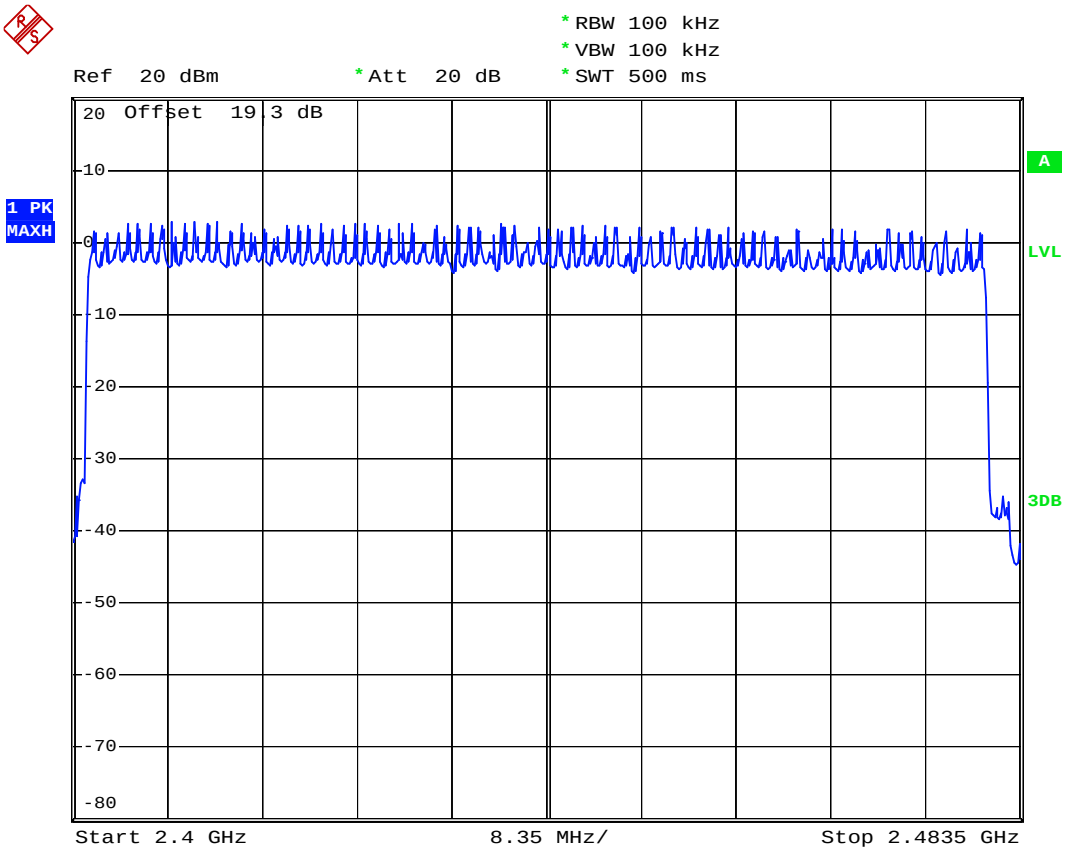
BT EDR(2Mbps)



Date: 10.MAR.2008 13:06:08

<Model : ZX1>

BT EDR(3Mbps)



Date: 10.MAR.2008 13:40:20

5.5 Hopping Channel Bandwidth

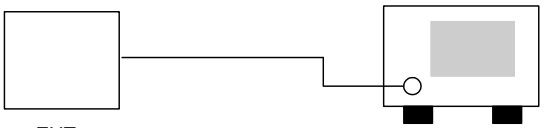
5.5.1 Measuring Instruments

As described in chapter 9 of this test report.

5.5.2 Test Procedure

1. The transmitter output was connected to the spectrum analyzer by a low loss cable.
2. Set RBW of spectrum analyzer to 30 KHz and VBW to 300 KHz.
3. The Hopping Channel bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20 dB.

5.5.3 Test Setup Layout



5.5.4 Test Result：See spectrum analyzer plots below

- **Model : ZX1**
- Application Type : BT
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer

Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Plot Ref. No.
00	2402	0.867	Mode 1
39	2441	0.870	Mode 2
78	2480	0.873	Mode 3

- **Model : ZX1**
- Application Type : BT EDR(2Mbps)
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer

Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Plot Ref. No.
00	2402	1.208	Mode 4
39	2441	1.224	Mode 5
78	2480	1.228	Mode 6

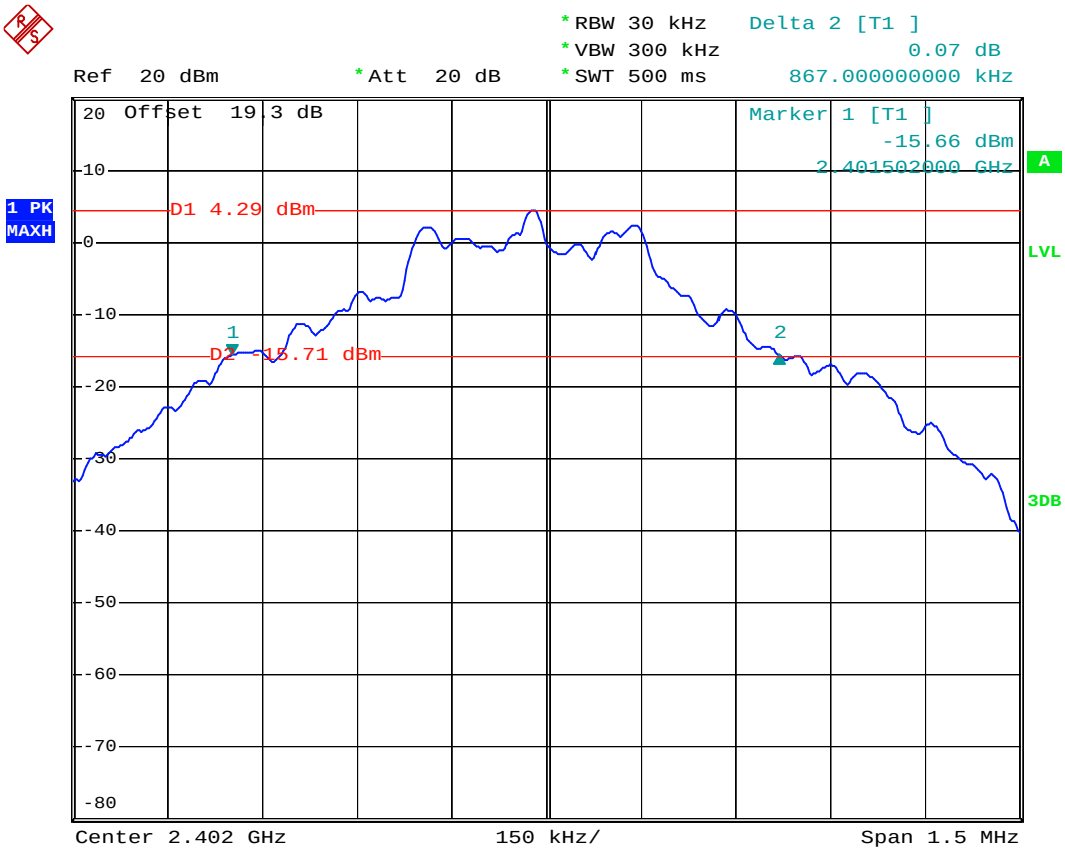
- **Model : ZX1**
- Application Type : BT EDR(3Mbps)
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer

Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Plot Ref. No.
00	2402	1.204	Mode 7
39	2441	1.214	Mode 8
78	2480	1.204	Mode 9

5.5.5 Hopping Channel Bandwidth

<Model : ZX1>

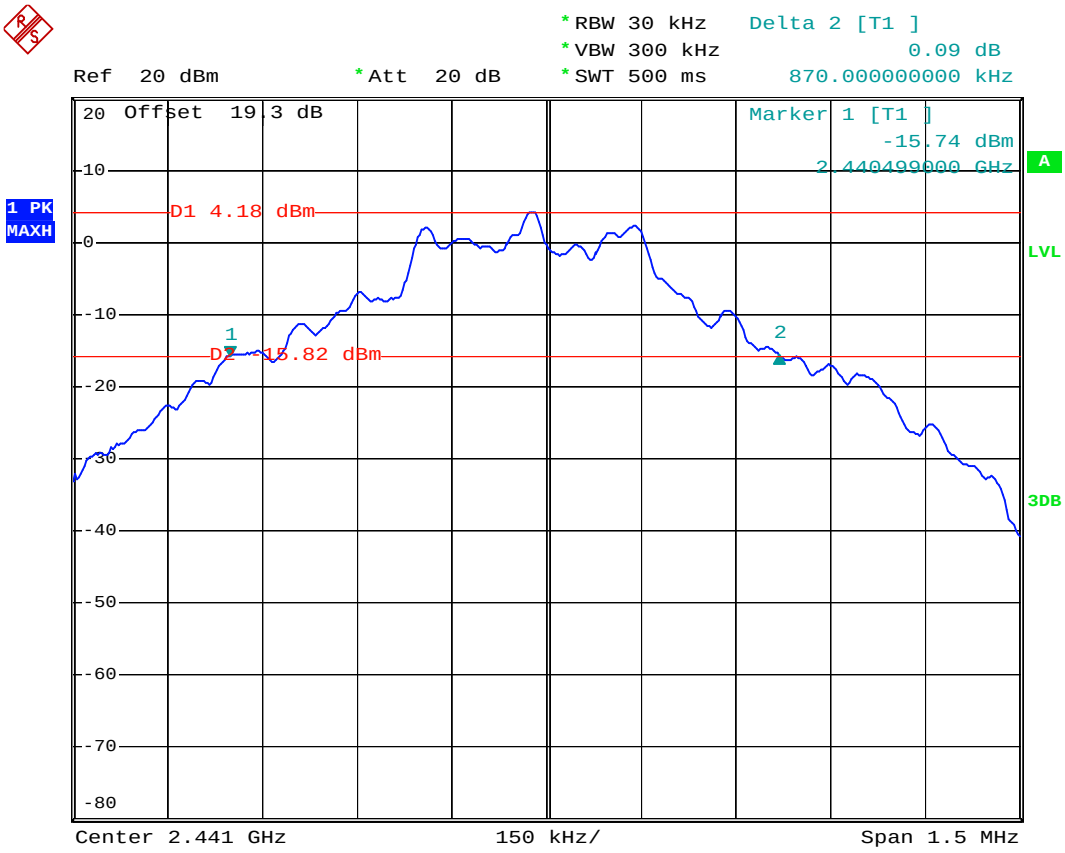
Mode 1



Date: 5.MAR.2008 15:38:43

<Model : ZX1>

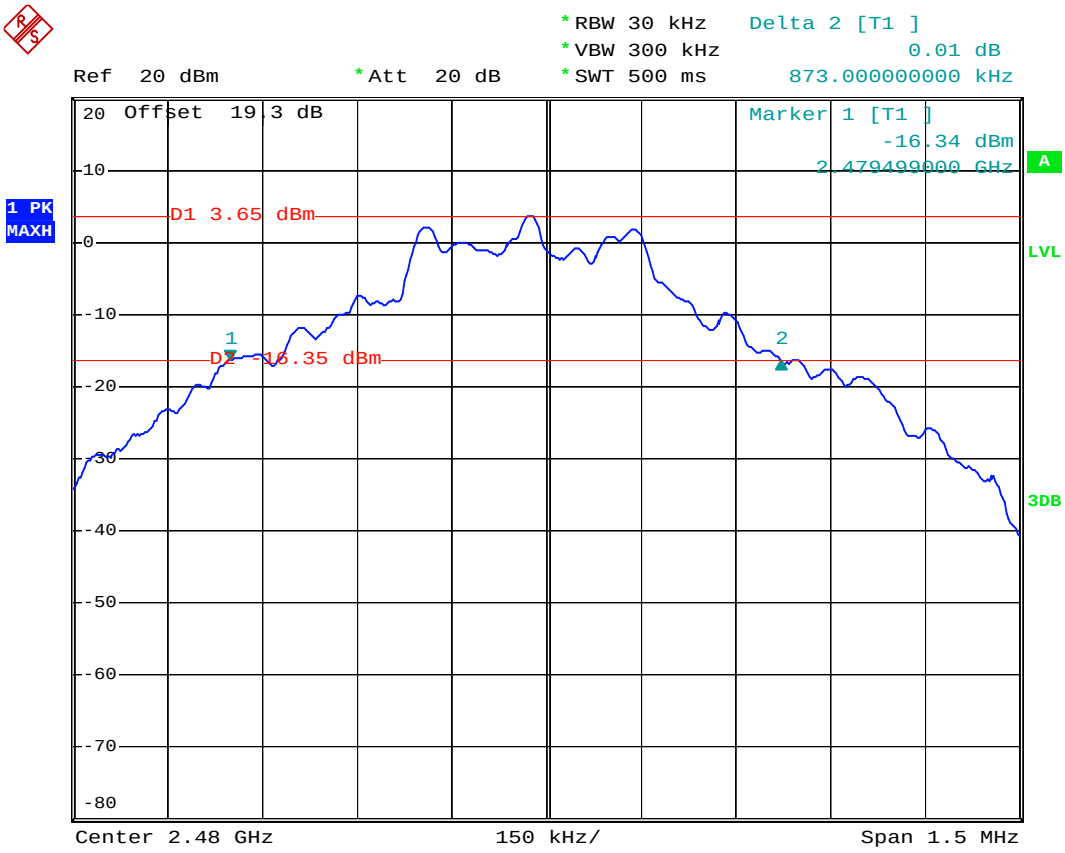
Mode 2



Date: 5.MAR.2008 15:39:55

<Model : ZX1>

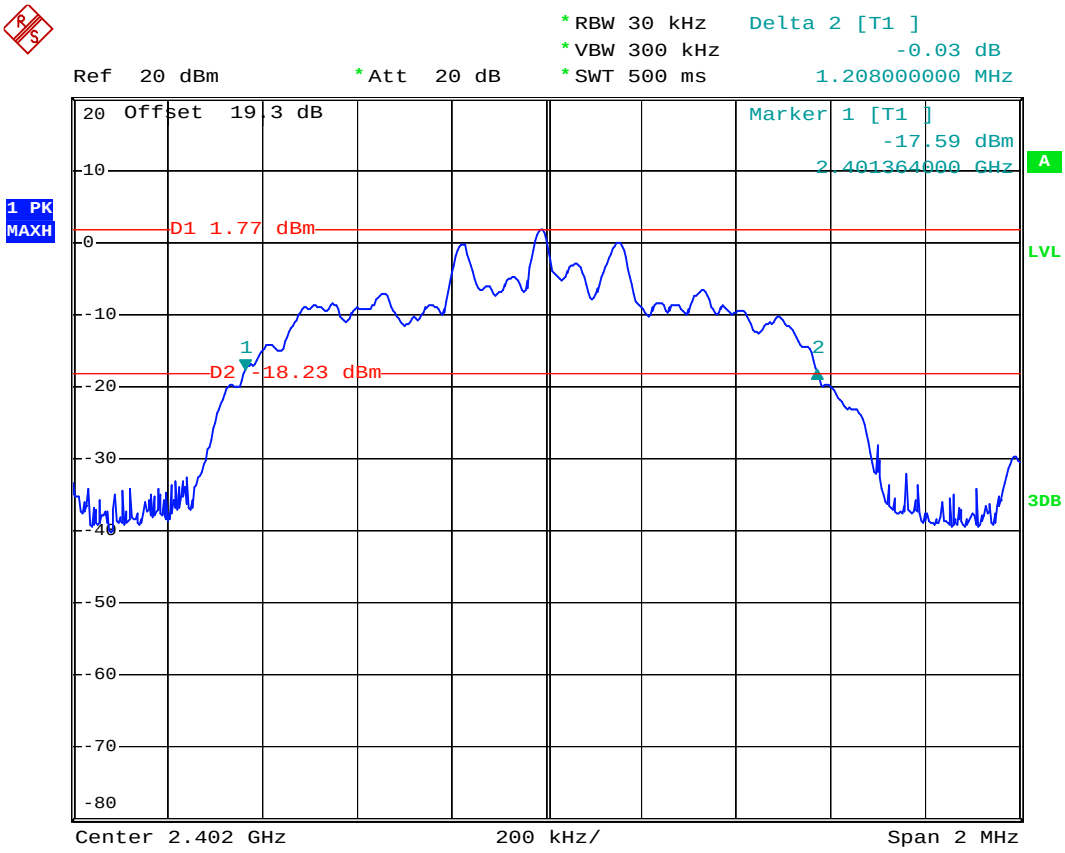
Mode 3



Date: 5.MAR.2008 15:44:08

<Model : ZX1>

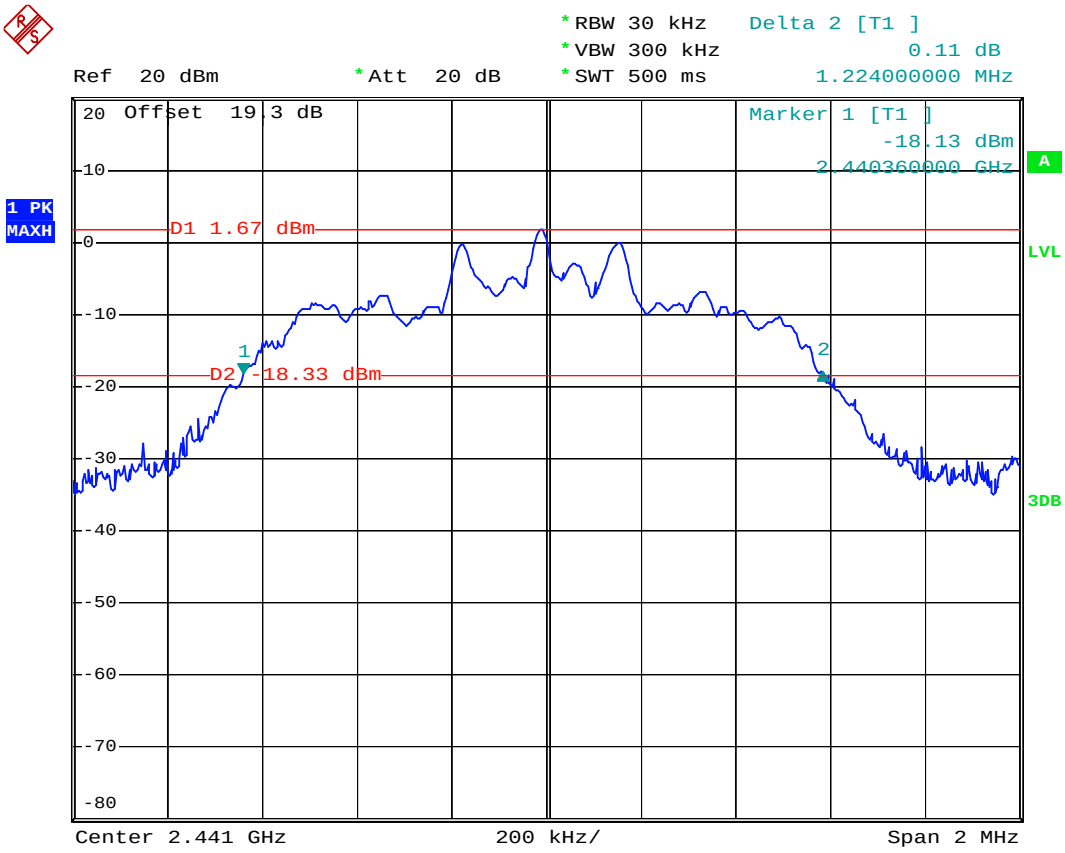
Mode 4



Date: 5.MAR.2008 19:13:49

<Model : ZX1>

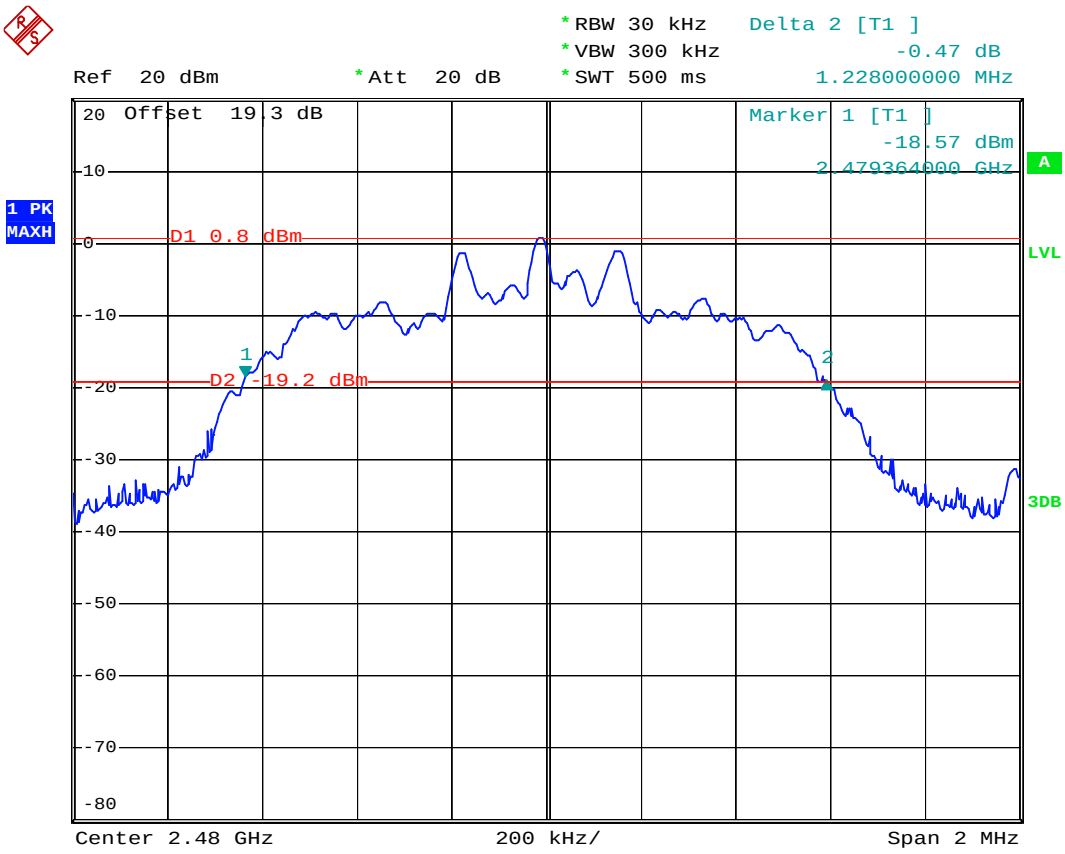
Mode 5



Date: 5.MAR.2008 19:15:05

<Model : ZX1>

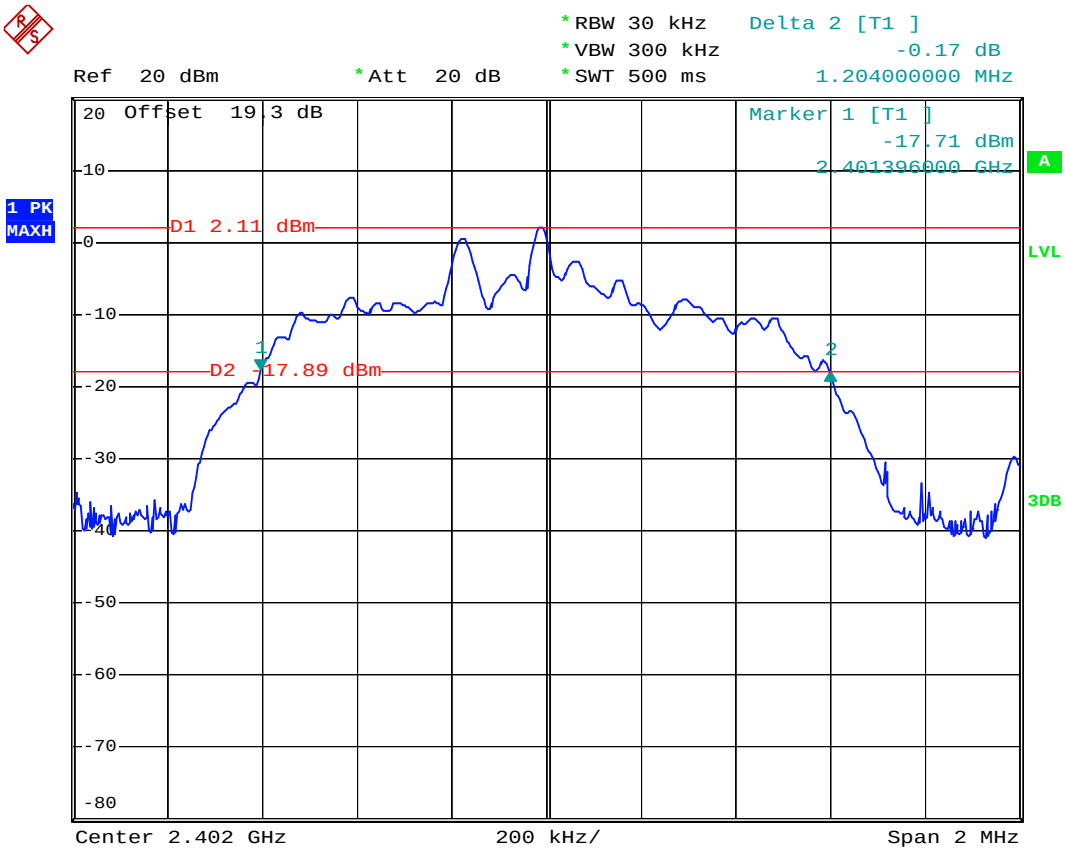
Mode 6



Date: 5.MAR.2008 19:16:25

<Model : ZX1>

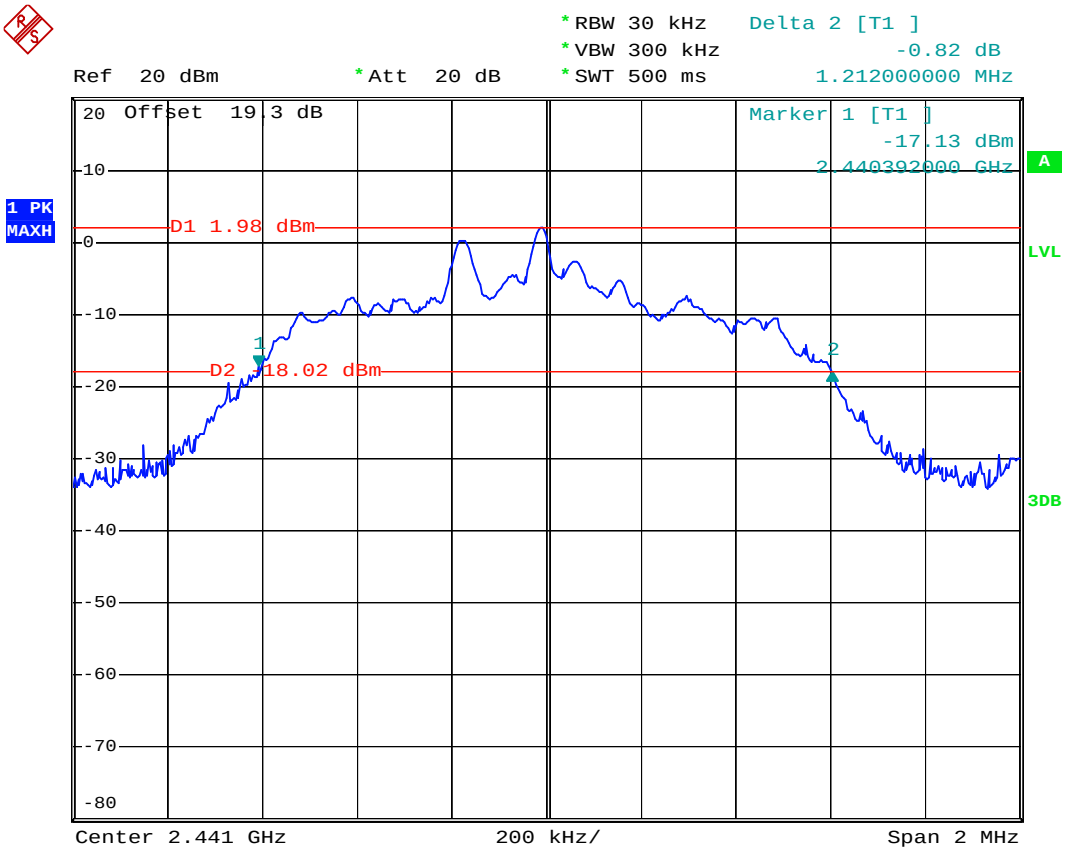
Mode 7



Date: 5.MAR.2008 19:19:58

<Model : ZX1>

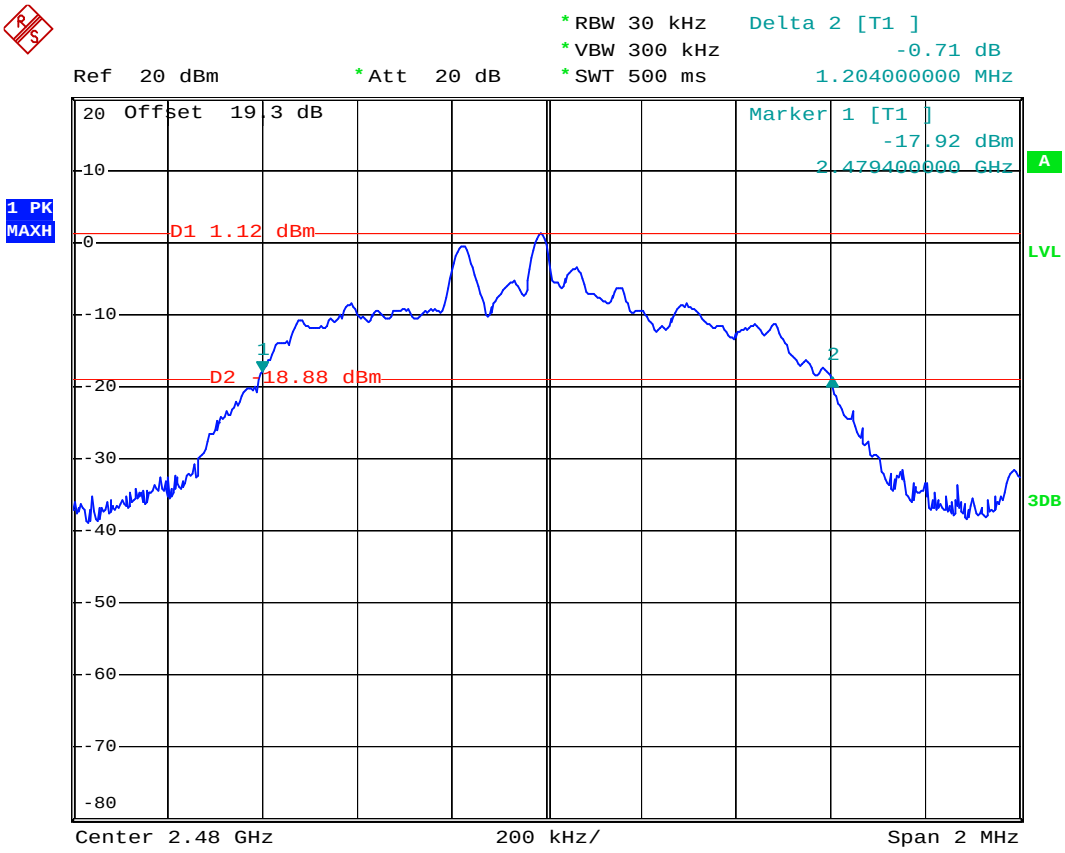
Mode 8



Date: 5.MAR.2008 19:18:45

<Model : ZX1>

Mode 9



Date: 5.MAR.2008 19:17:14

5.6 Dwell Time of Each Frequency

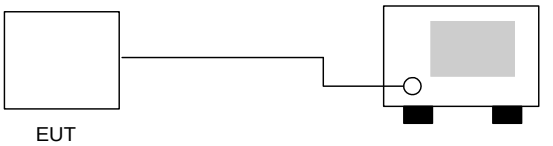
5.6.1 Measuring Instruments

As described in chapter 9 of this test report.

5.6.2 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)

5.6.3 Test Setup Layout



5.6.4 Test Result：See spectrum analyzer plots below

- **Model : ZX1**
- Application Type : BT
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer

CH39

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	8.2	436	0.113	0.4
DH3	5.2	1710	0.281	0.4
DH5	3.2	3040	0.307	0.4

- **Model : ZX1**
- Application Type : BT EDR(2Mbps)
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer

CH39

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.5	456	0.137	0.4
DH3	4.9	1720	0.266	0.4
DH5	3.5	3000	0.332	0.4

- **Model : ZX1**
- Application Type : BT EDR(3Mbps)
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer

CH39

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.2	460	0.134	0.4
DH3	5.2	1750	0.288	0.4
DH5	3.6	3050	0.347	0.4

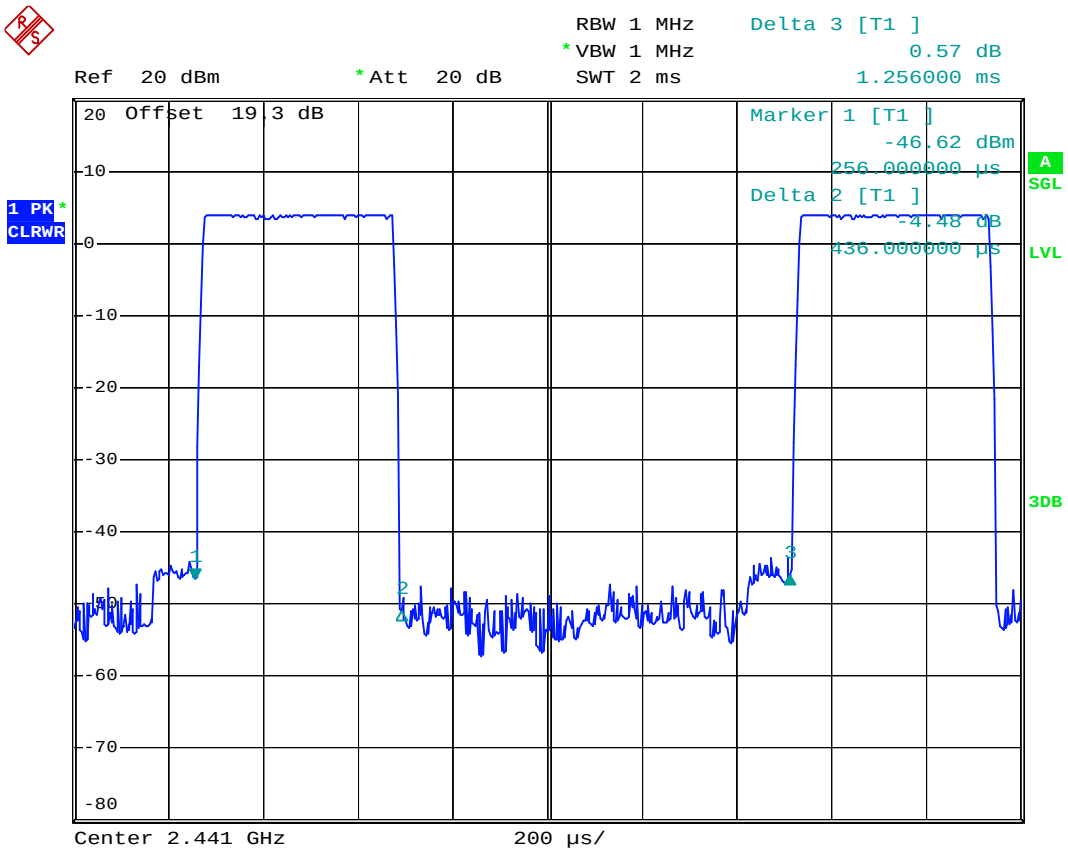
※ Remark:

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)

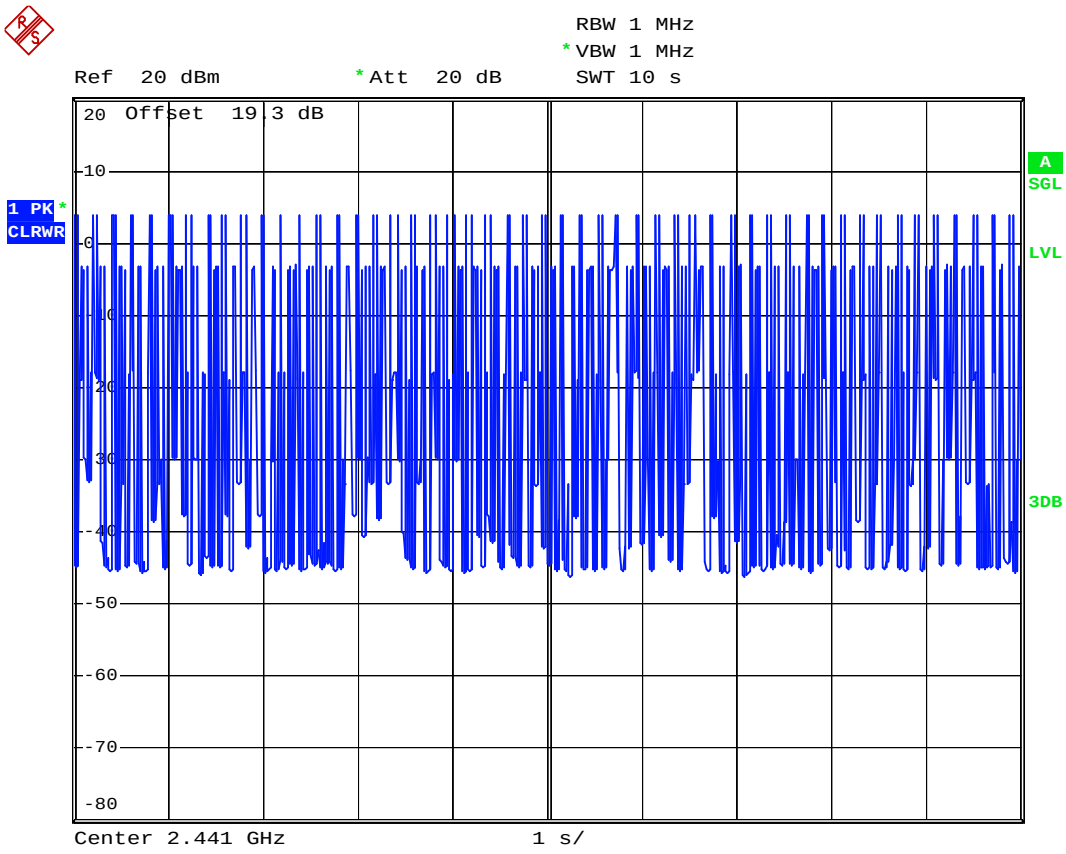
5.6.5 Dwell Time

<Model : ZX1>

DH1 (CH39)



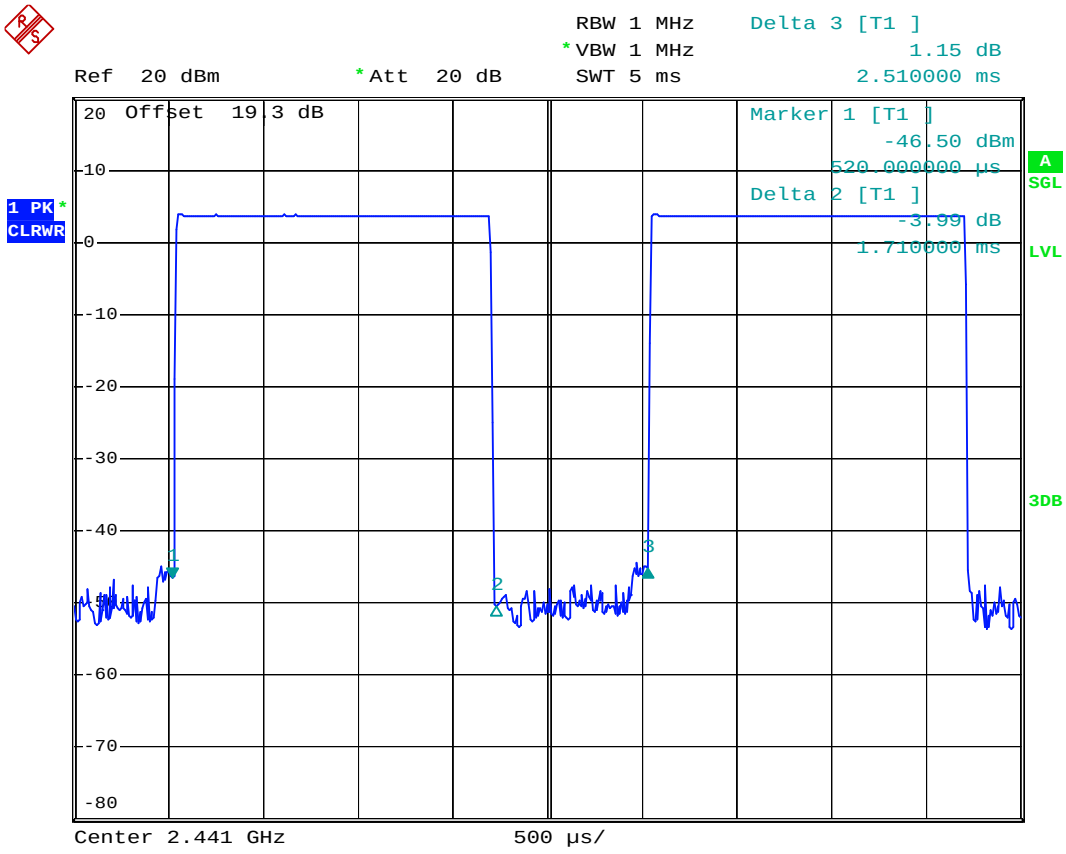
Date: 5.MAR.2008 15:59:09



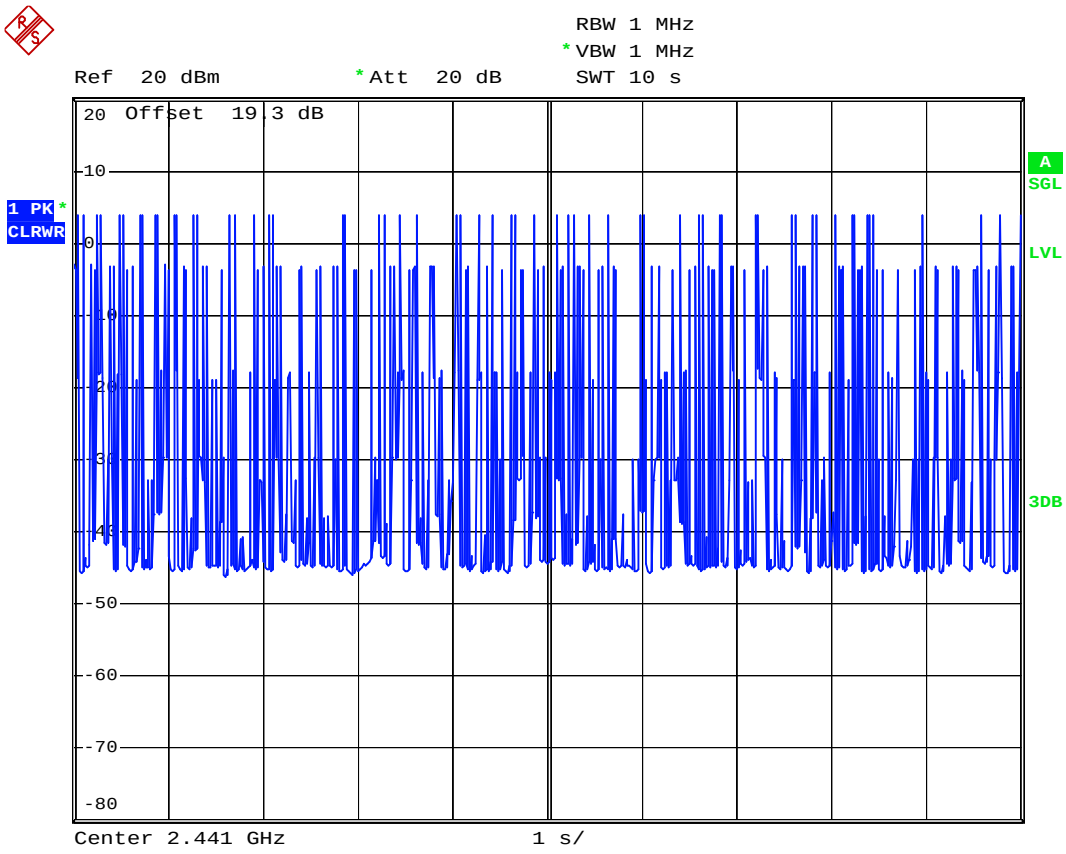
Date: 5.MAR.2008 16:18:05

<Model : ZX1>

DH3 (CH39)



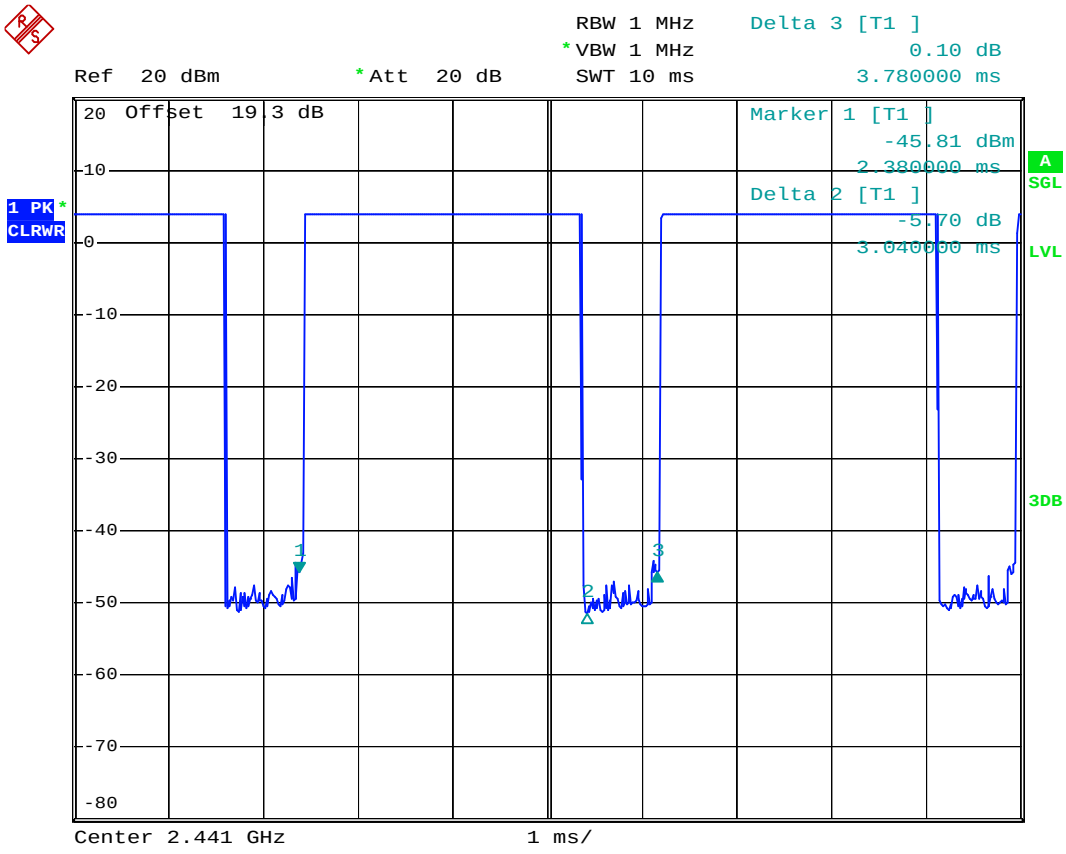
Date: 5.MAR.2008 16:16:31



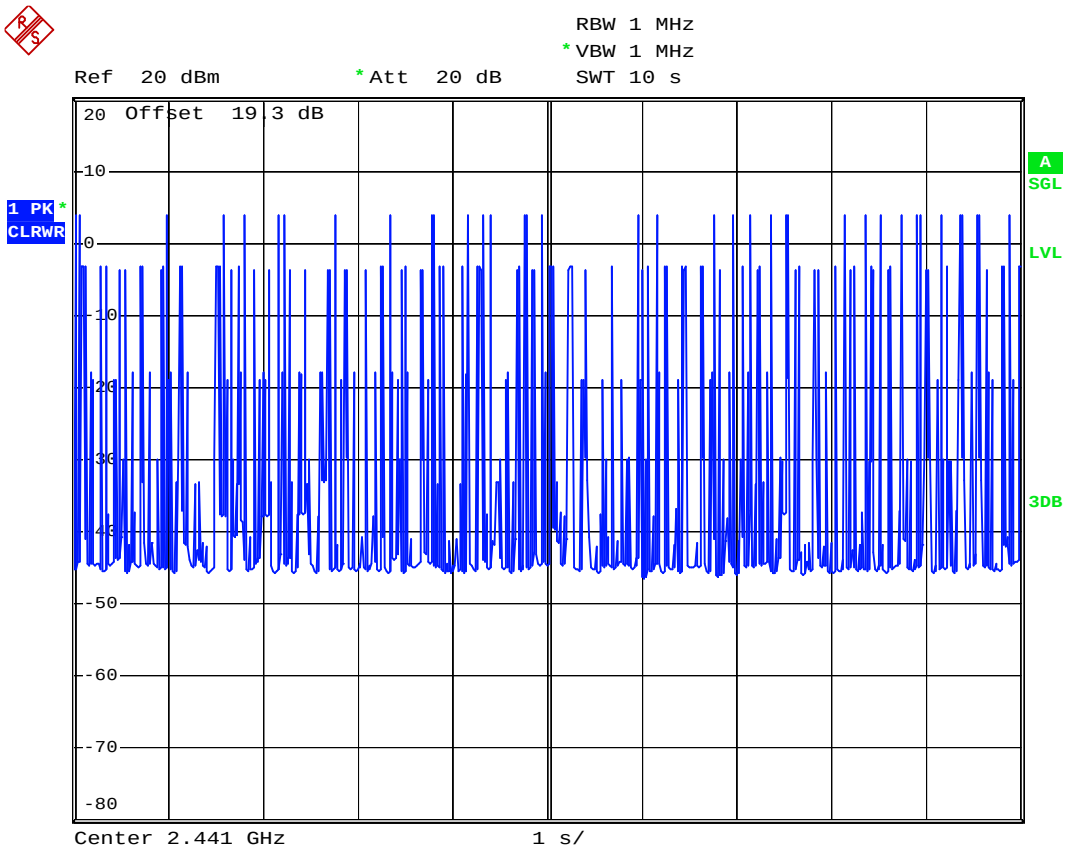
Date: 5.MAR.2008 16:18:44

<Model : ZX1>

DH5 (CH39)



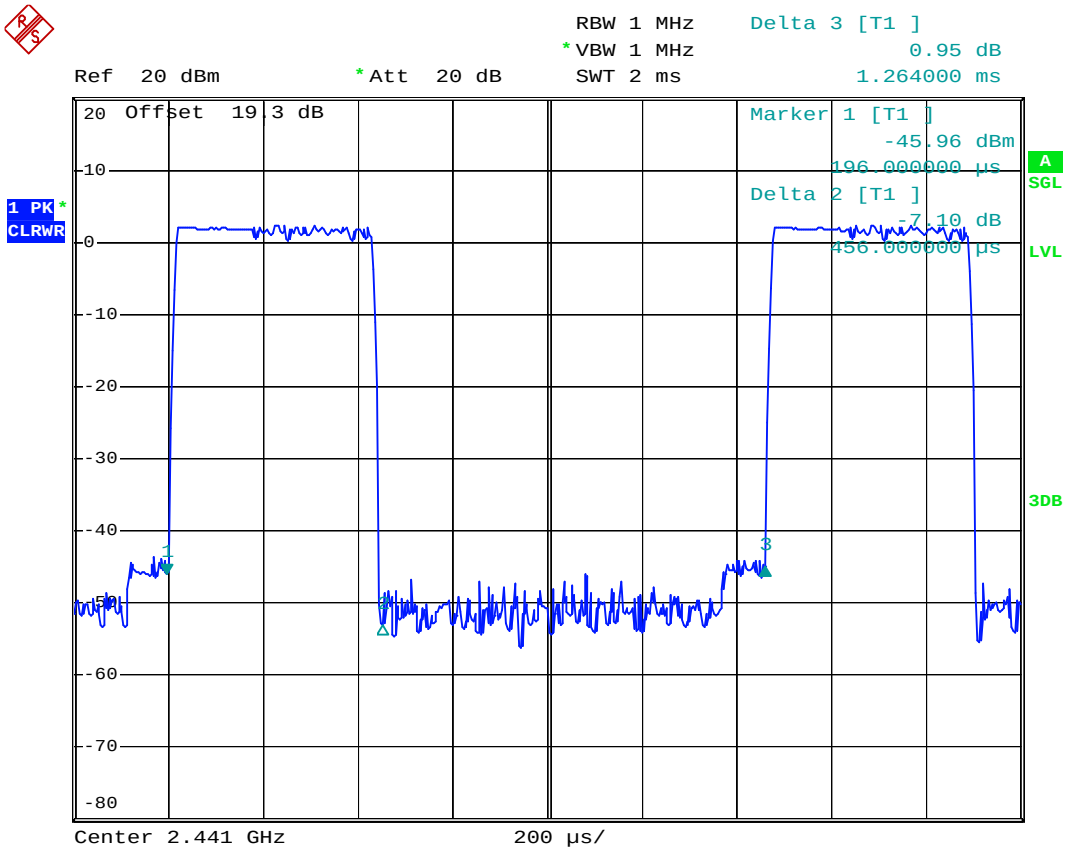
Date: 5.MAR.2008 16:17:09



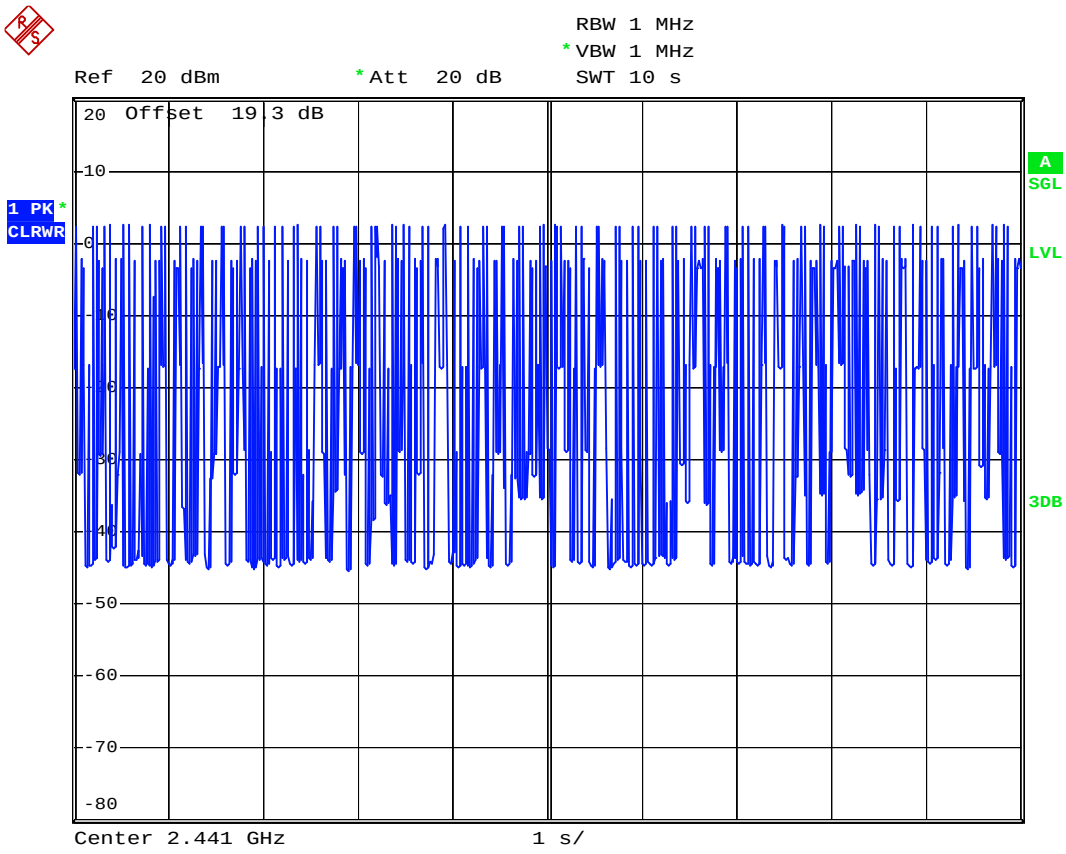
Date: 5.MAR.2008 16:17:38

<Model : ZX1>

2DH1 (CH39)



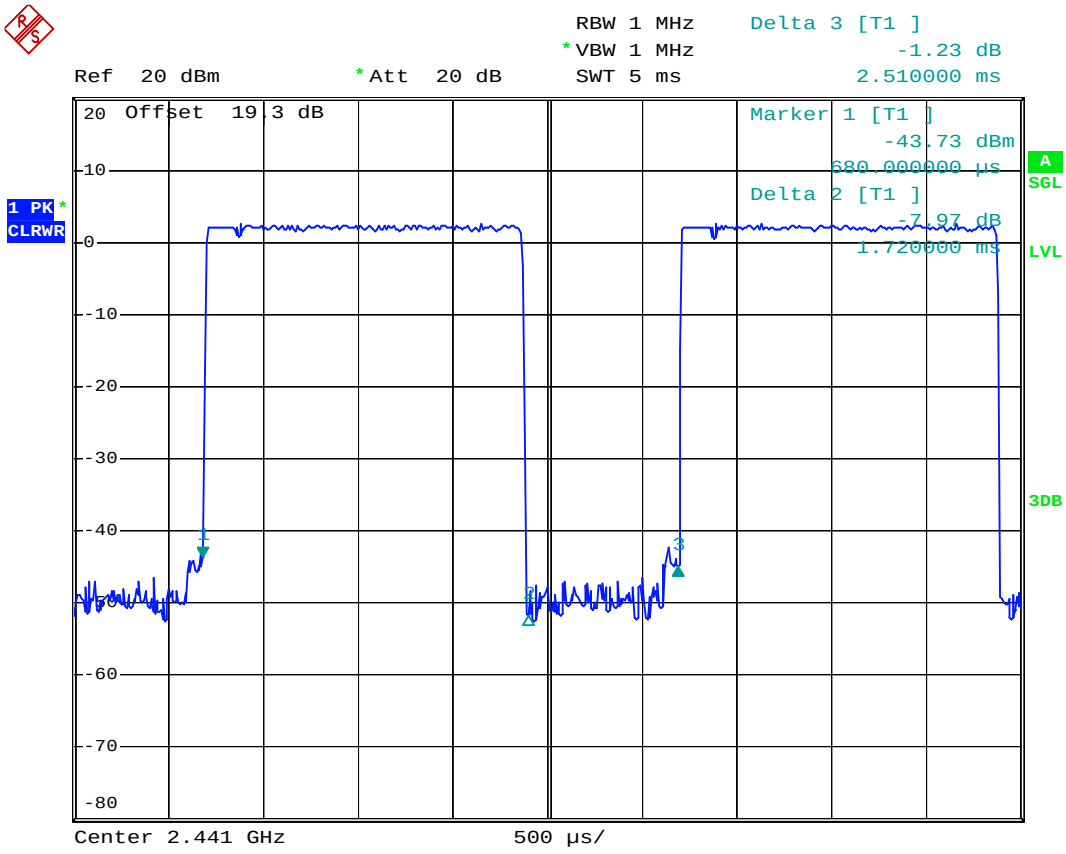
Date: 10.MAR.2008 11:33:23



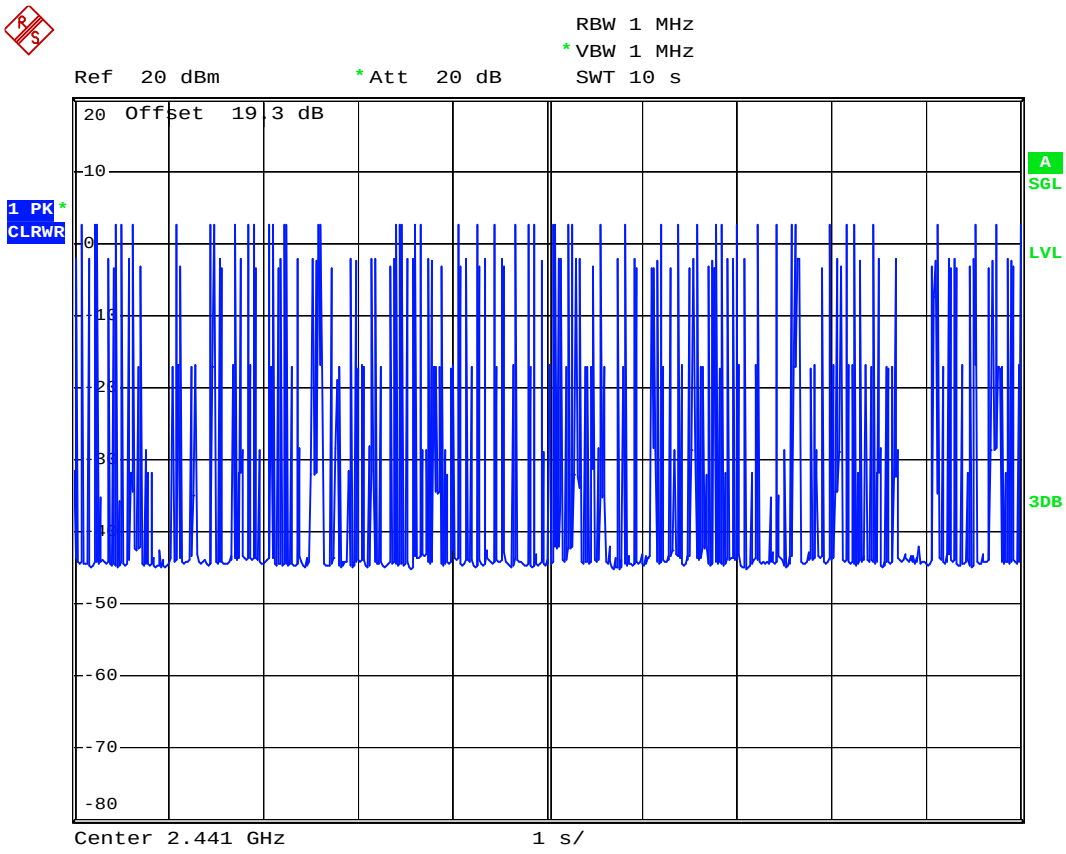
Date: 10.MAR.2008 13:01:26

<Model : ZX1>

2DH3 (CH39)



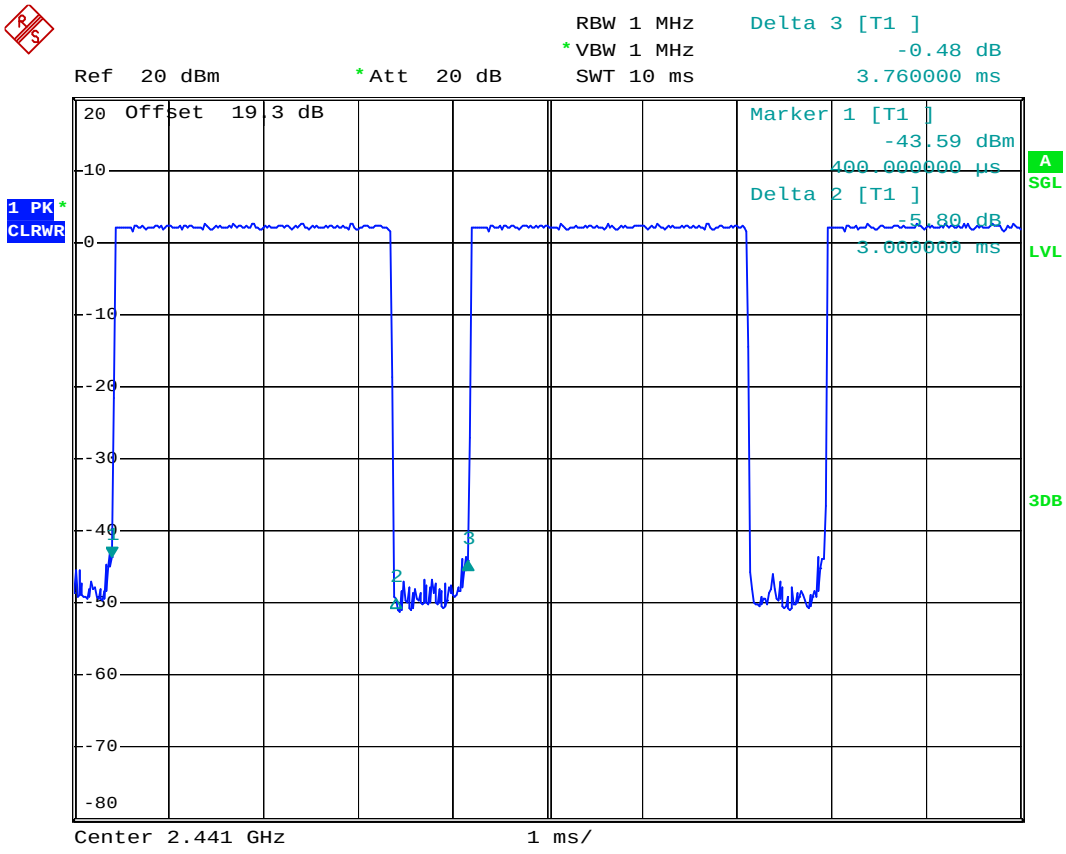
Date: 10.MAR.2008 12:58:42



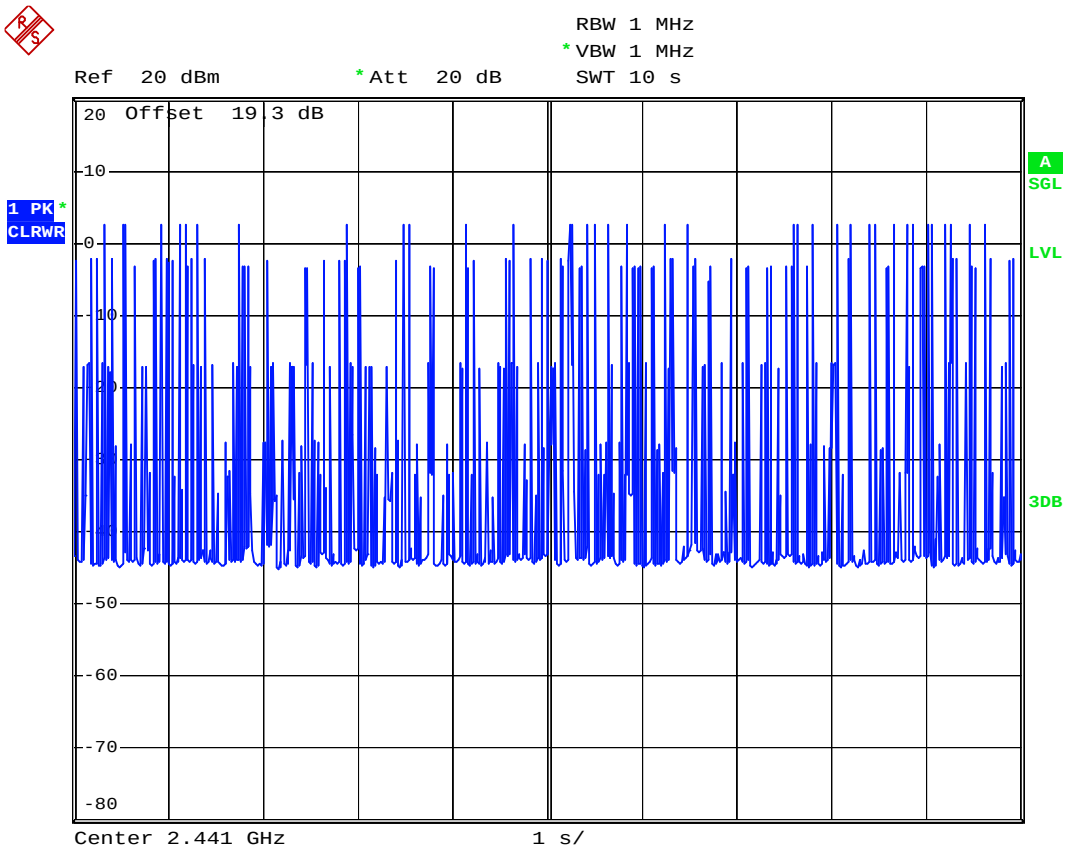
Date: 10.MAR.2008 13:01:52

<Model : ZX1>

2DH5 (CH39)



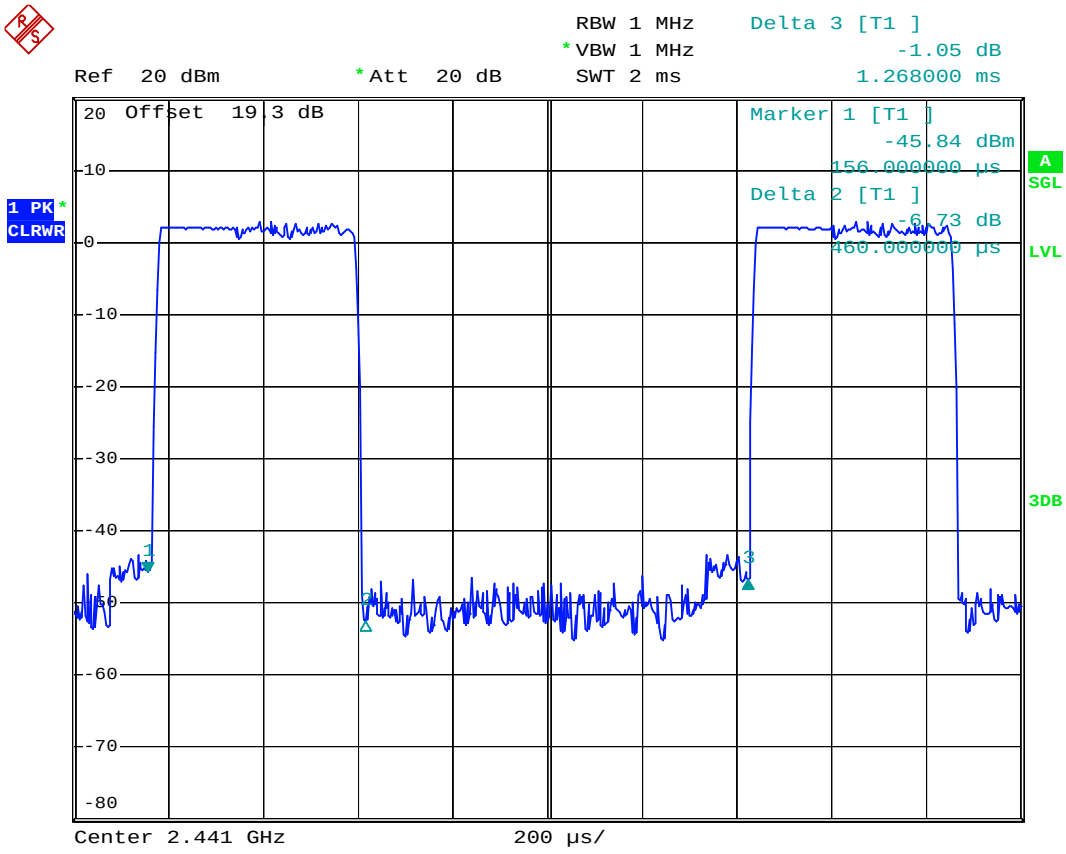
Date: 10.MAR.2008 12:59:40



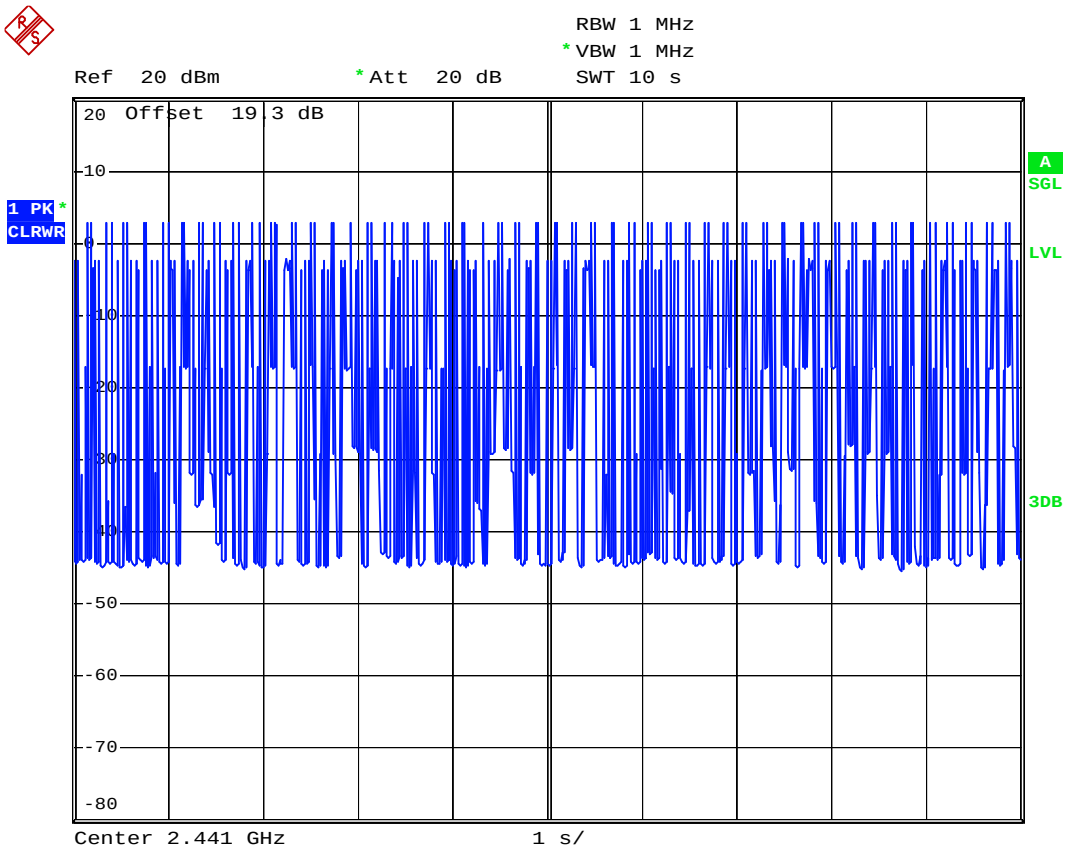
Date: 10.MAR.2008 13:00:40

<Model : ZX1>

3DH1 (CH39)



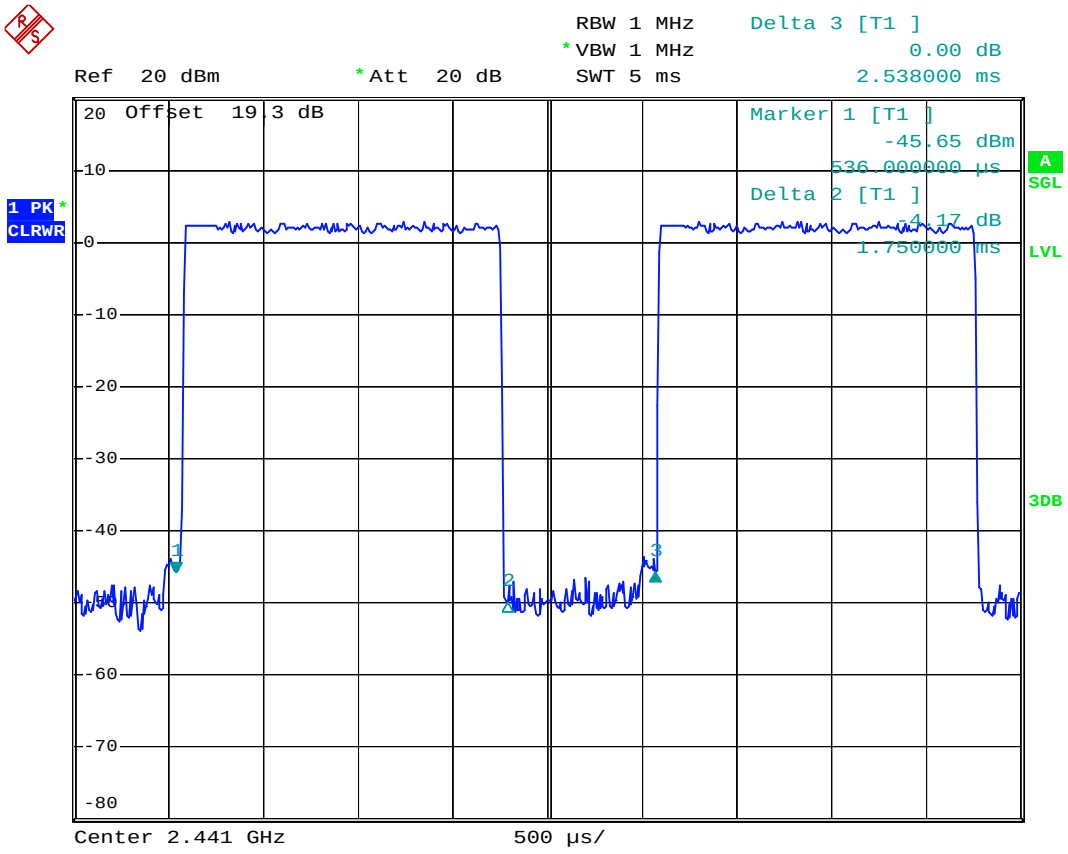
Date: 10.MAR.2008 13:31:43



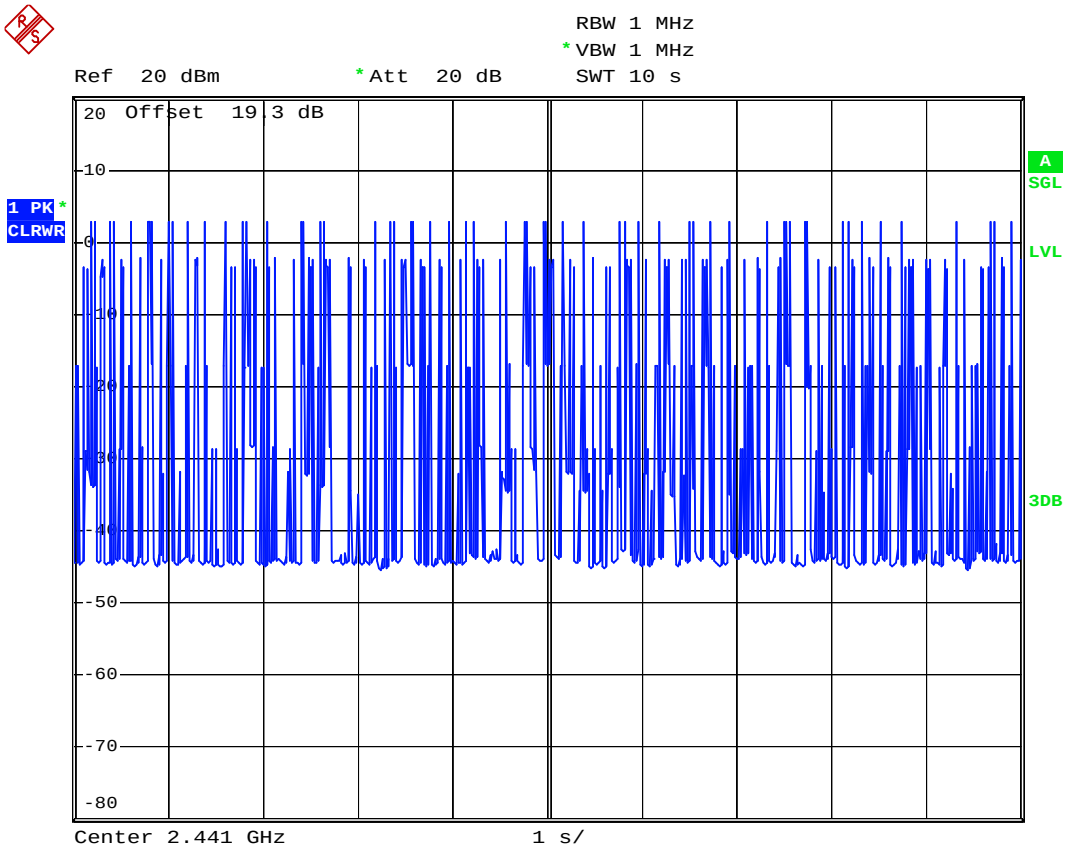
Date: 10.MAR.2008 13:34:47

<Model : ZX1>

3DH3 (CH39)



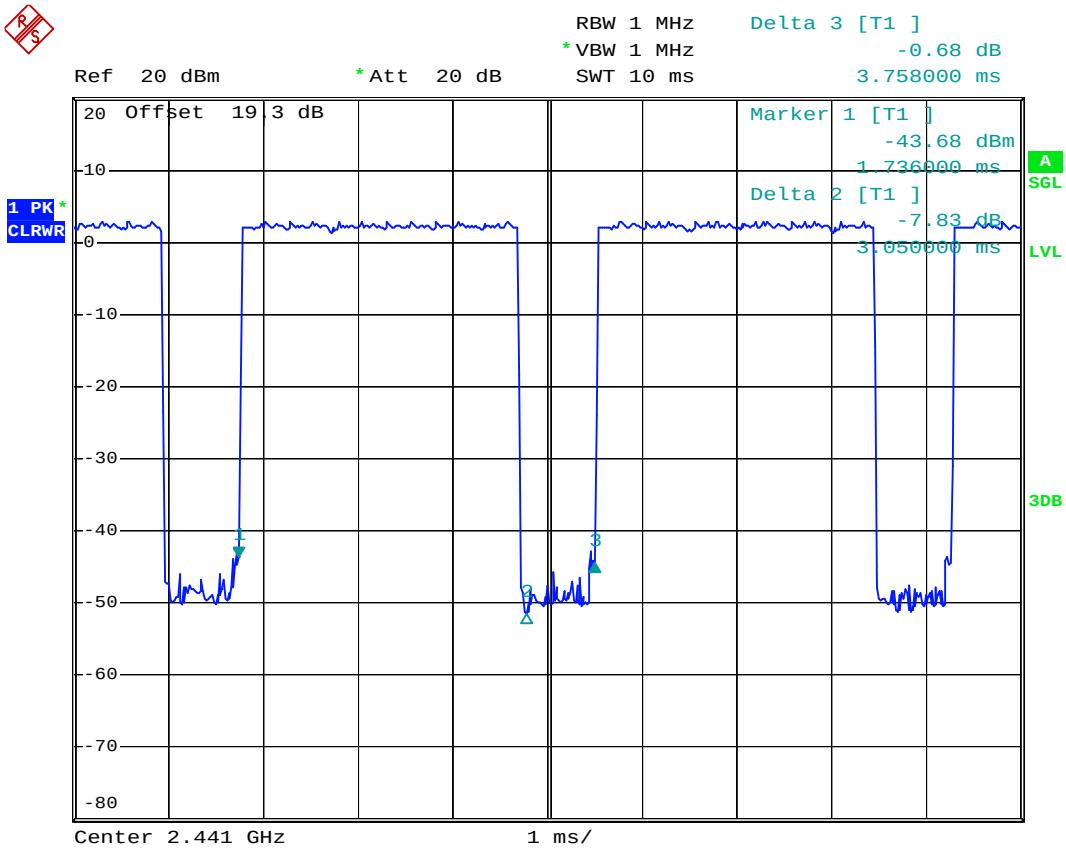
Date: 10.MAR.2008 13:32:48



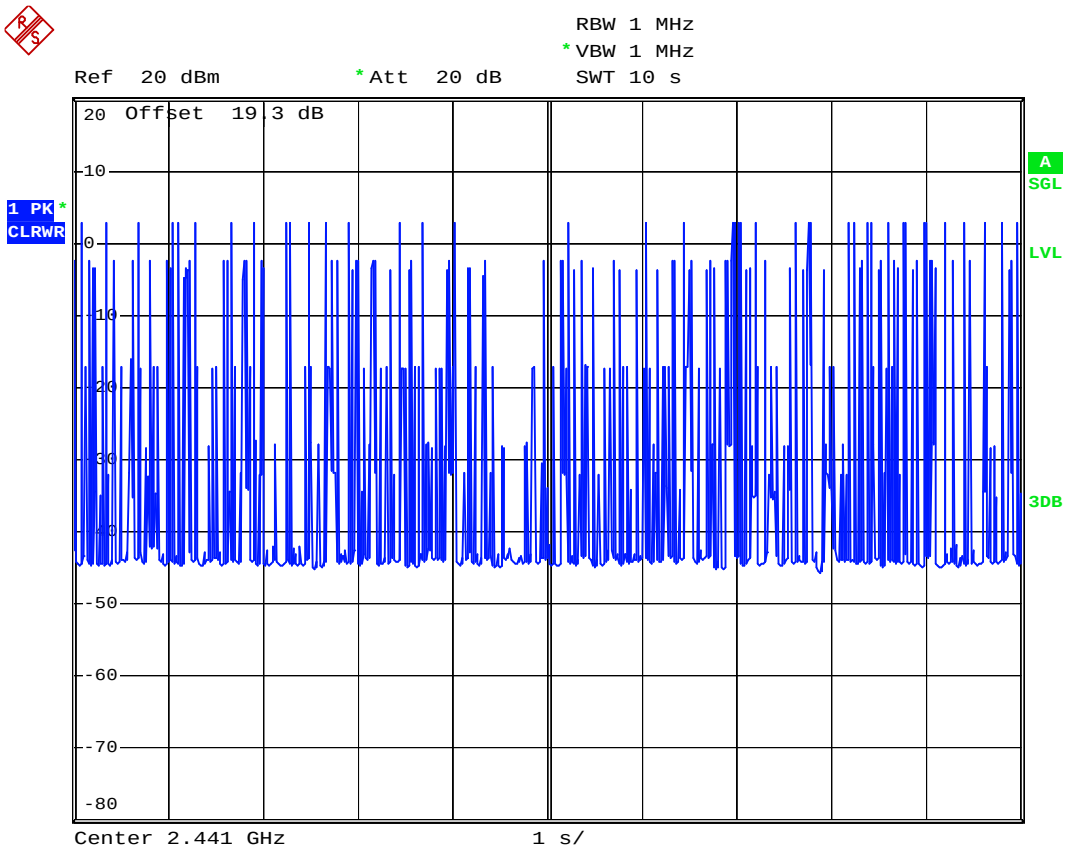
Date: 10.MAR.2008 13:35:31

<Model : ZX1>

3DH5 (CH39)



Date: 10.MAR.2008 13:33:33



Date: 10.MAR.2008 13:34:12

5.7 Peak Output Power Measurement

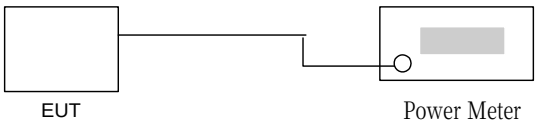
5.7.1 Measuring Instruments

As described in chapter 6 of this test report.

5.7.2 Test Procedure

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

5.7.3 Test Setup Layout



5.7.4 Test Result

- **Model : ZX1**
- Application Type : BT
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer

BT(1Mbps)

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
00	2402	4.44	1W/30 dBm
39	2441	4.26	1W/30 dBm
78	2480	3.72	1W/30 dBm

BT EDR(2Mbps)

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
00	2402	2.42	1W/30 dBm
39	2441	2.11	1W/30 dBm
78	2480	1.41	1W/30 dBm

BT EDR(3Mbps)

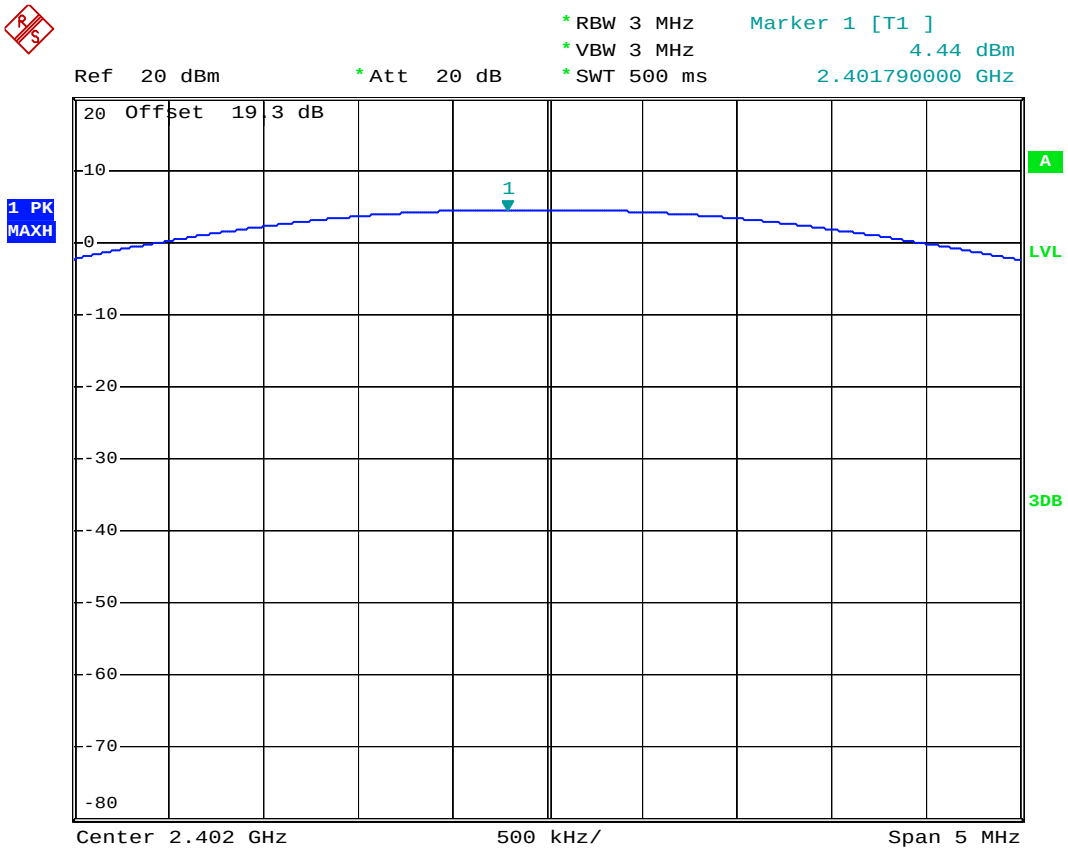
Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
00	2402	2.66	1W/30 dBm
39	2441	2.37	1W/30 dBm
78	2480	1.65	1W/30 dBm

5.7.5 Output Power

<Model : ZX1>

BT(1Mbps)

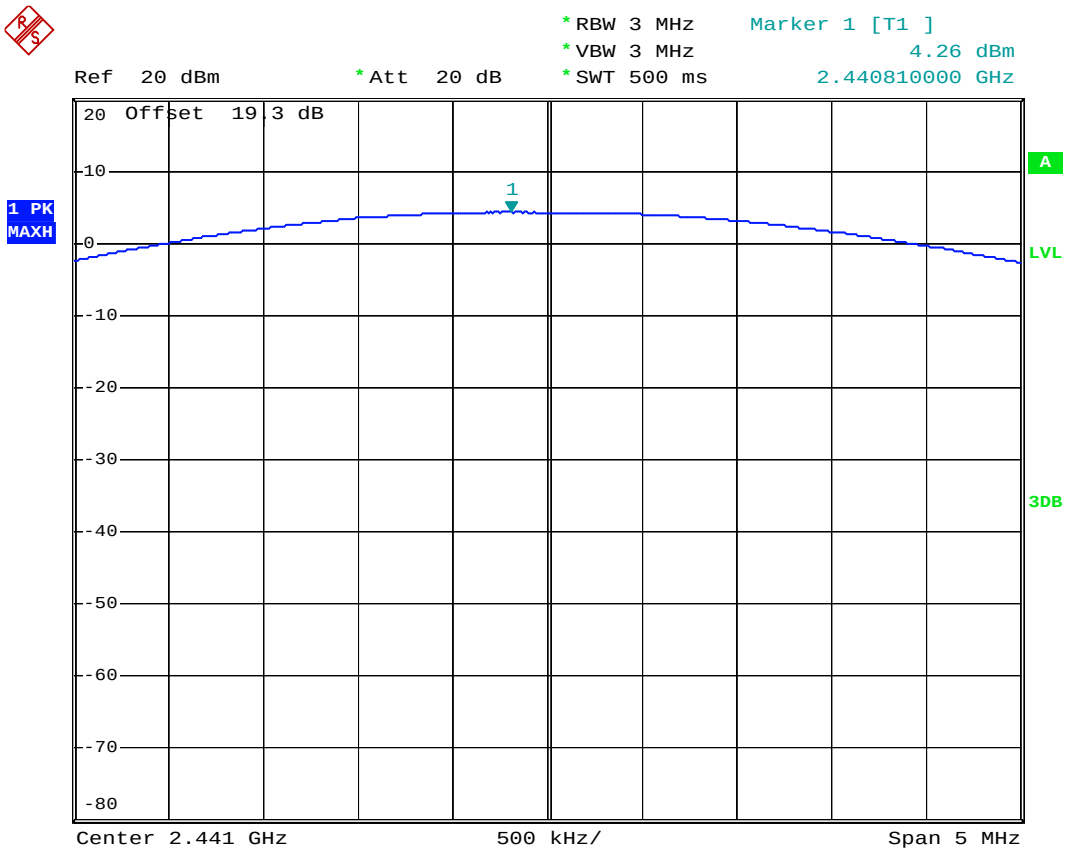
Mode : CH00 (2402MHz)



Date: 5.MAR.2008 11:23:09

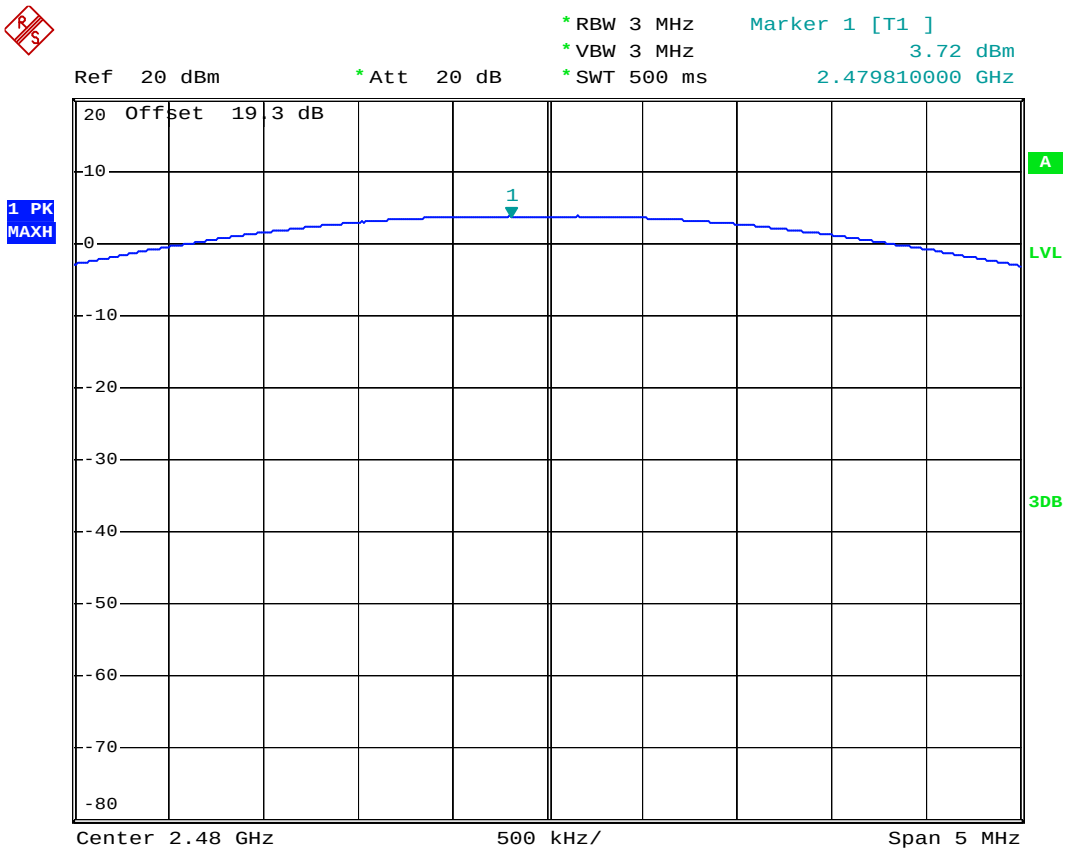
BT(1Mbps)

Mode : CH39 (2441MHz)



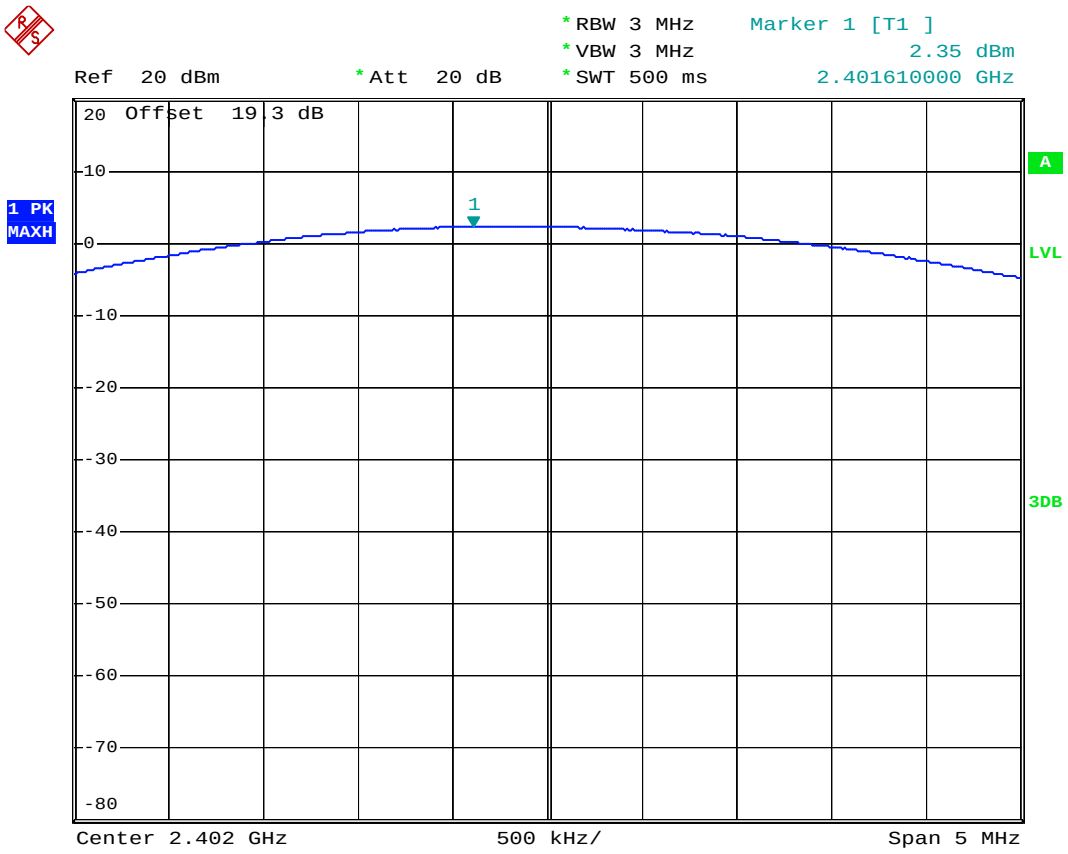
Bluetooth(1Mbps)

Mode : CH78 (2480MHz)



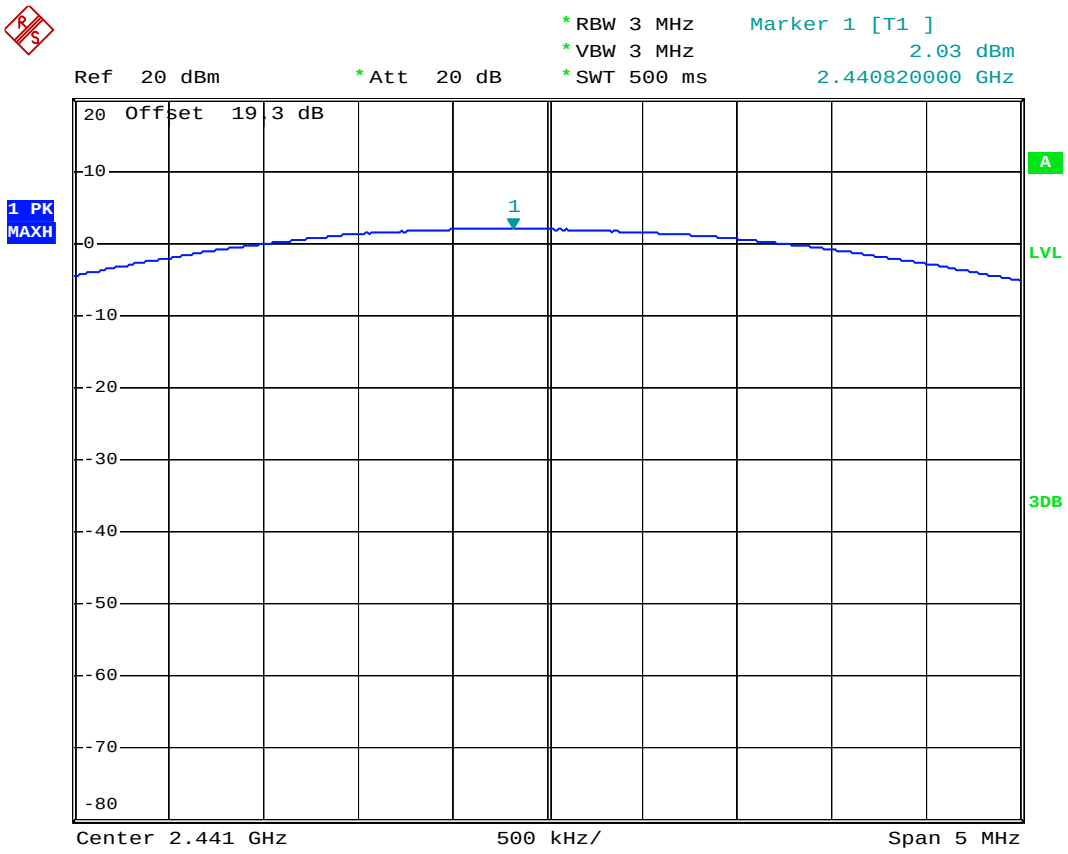
Bluetooth(2Mbps)

Mode : CH00 (2402MHz)



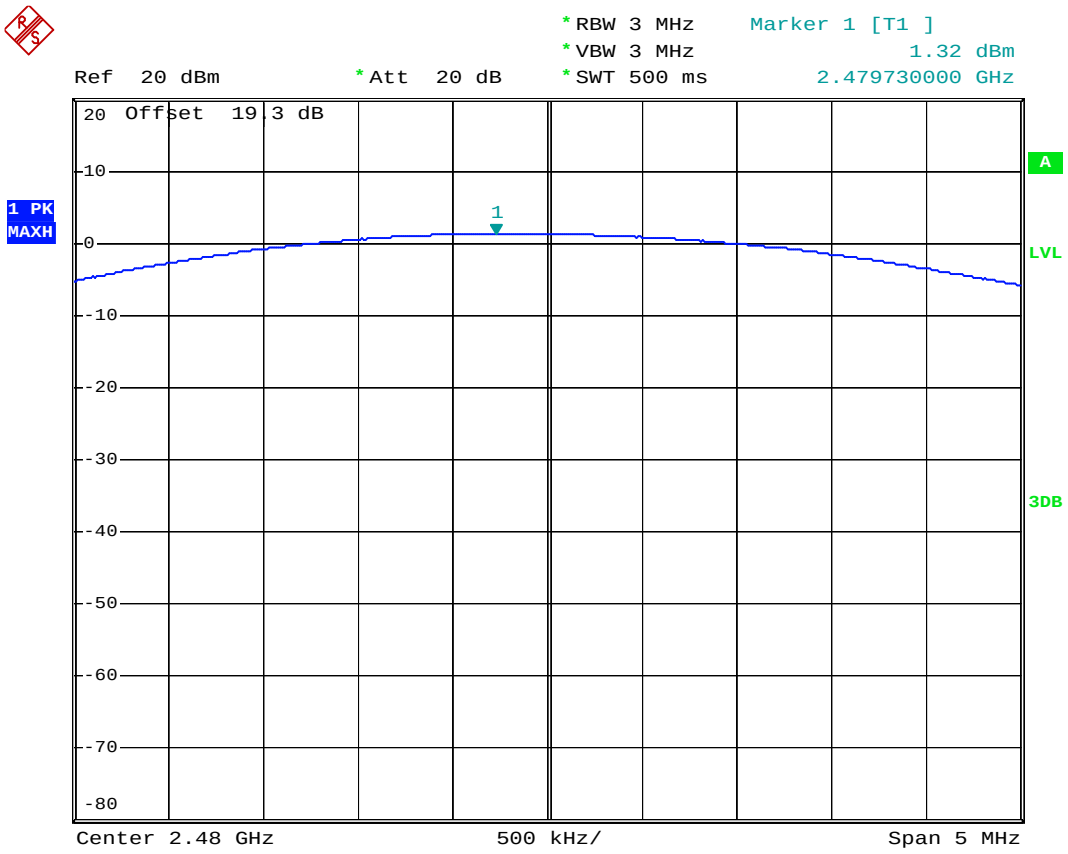
Bluetooth(2Mbps)

Mode : CH39 (2441MHz)



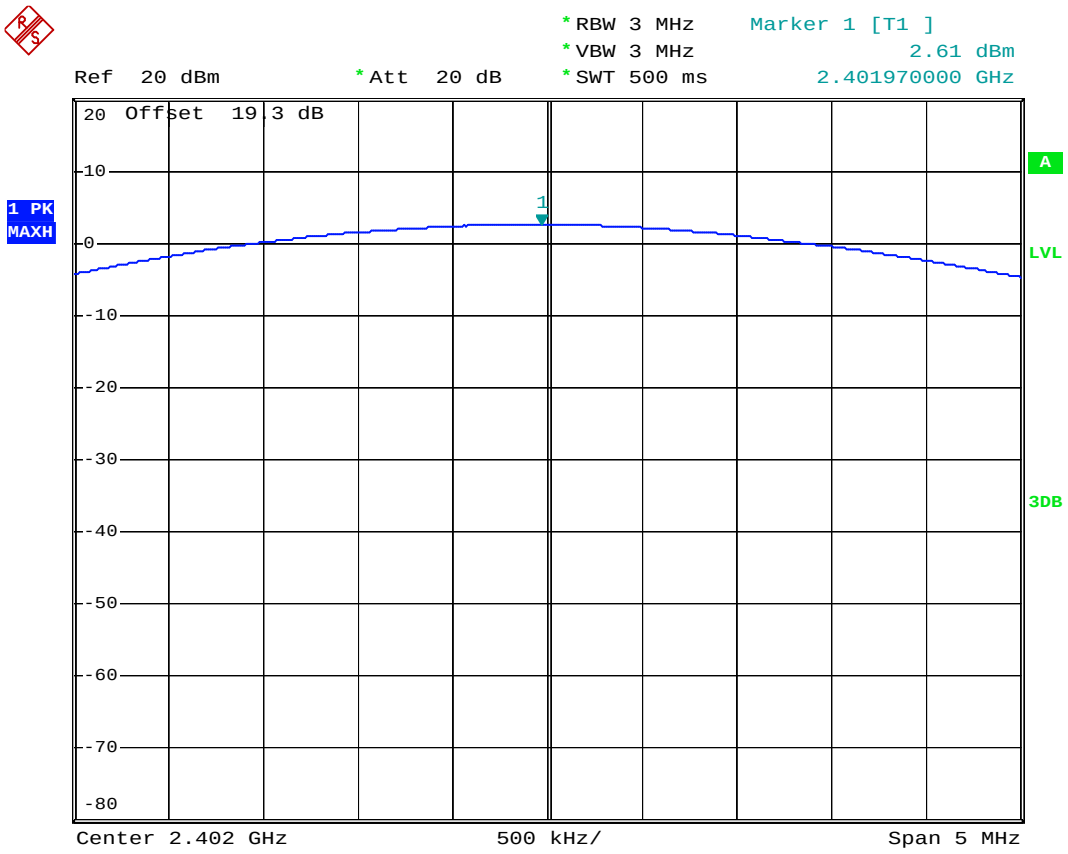
Bluetooth(2Mbps)

Mode : CH78 (2480MHz)



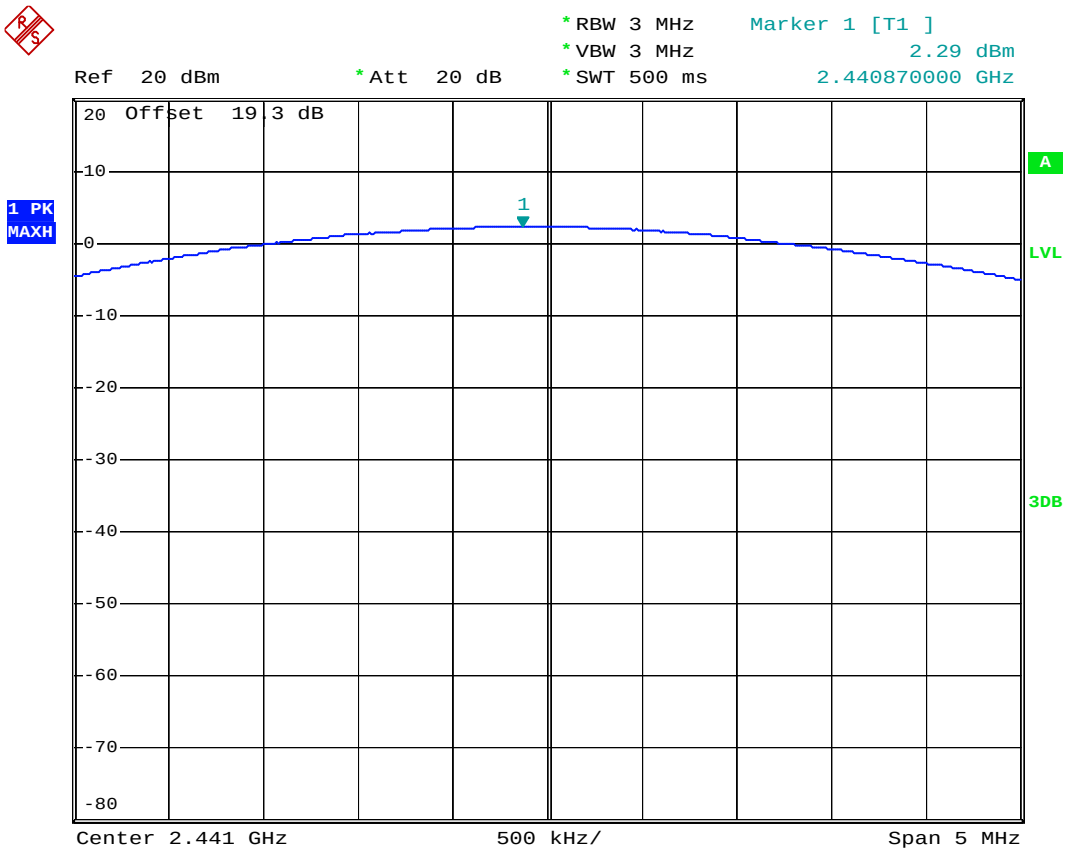
Bluetooth(3Mbps)

Mode : CH00 (2402MHz)



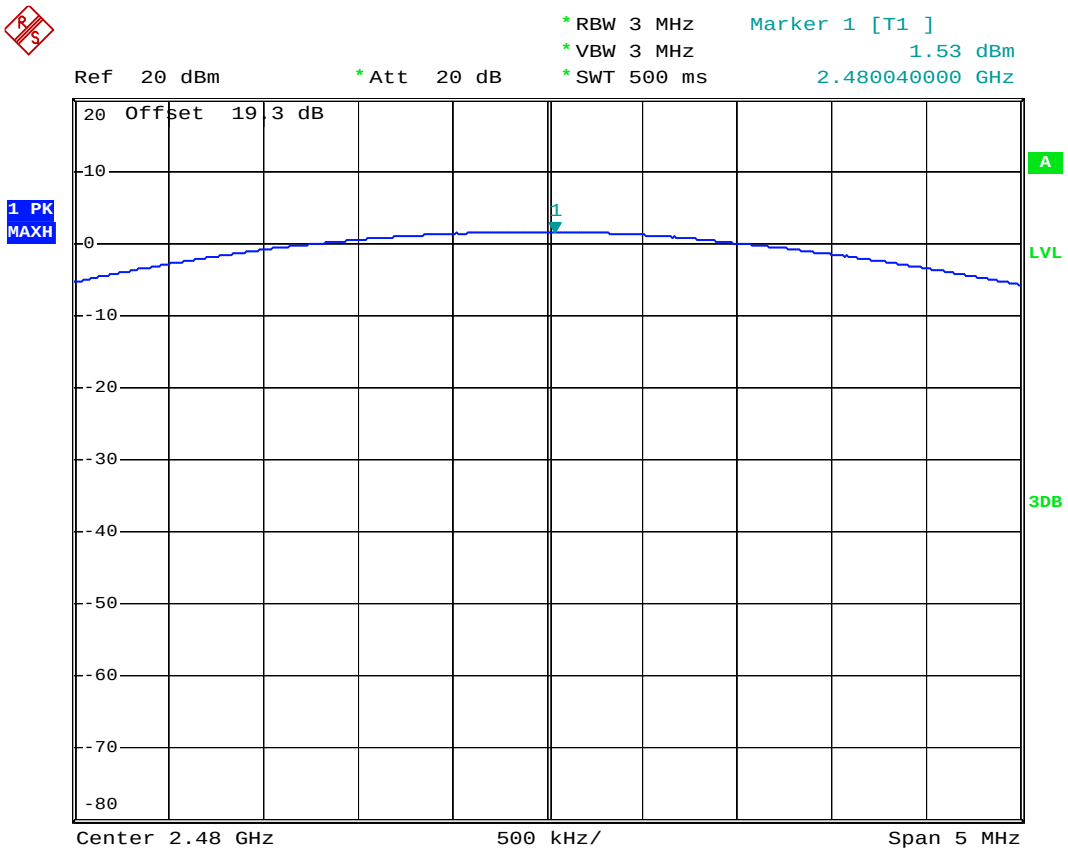
Bluetooth(3Mbps)

Mode : CH39 (2441MHz)



Bluetooth(3Mbps)

Mode : CH78 (2480MHz)



Date: 5.MAR.2008 13:11:19

5.8 Conducted Emission

5.8.1 Measuring Instruments

As described in chapter 6 of this test Report.

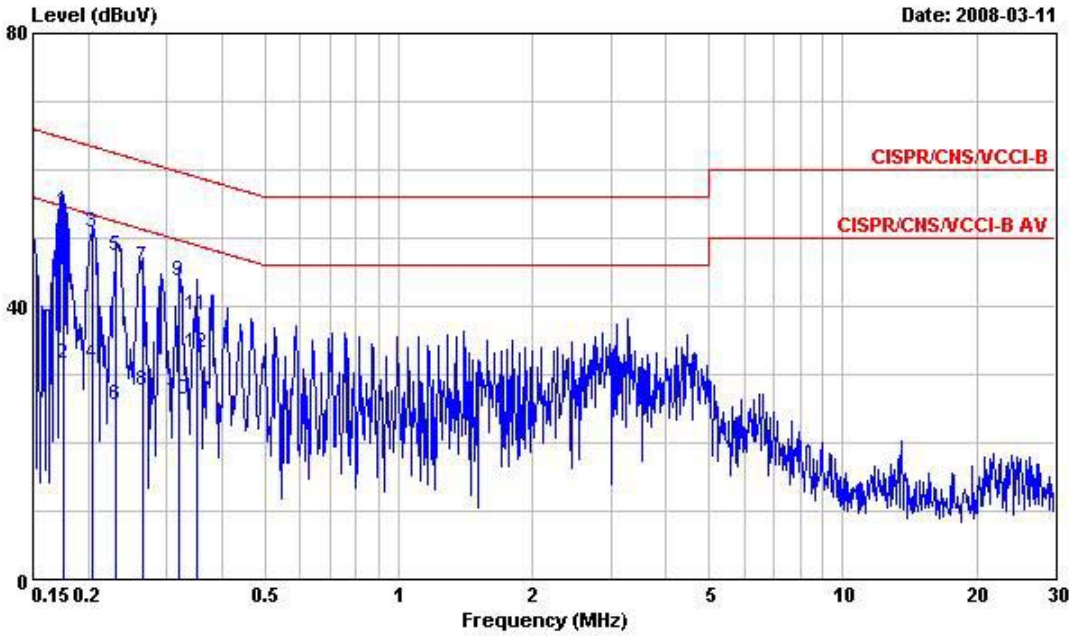
5.8.2 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power port of a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 KHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

5.8.3 Test Data

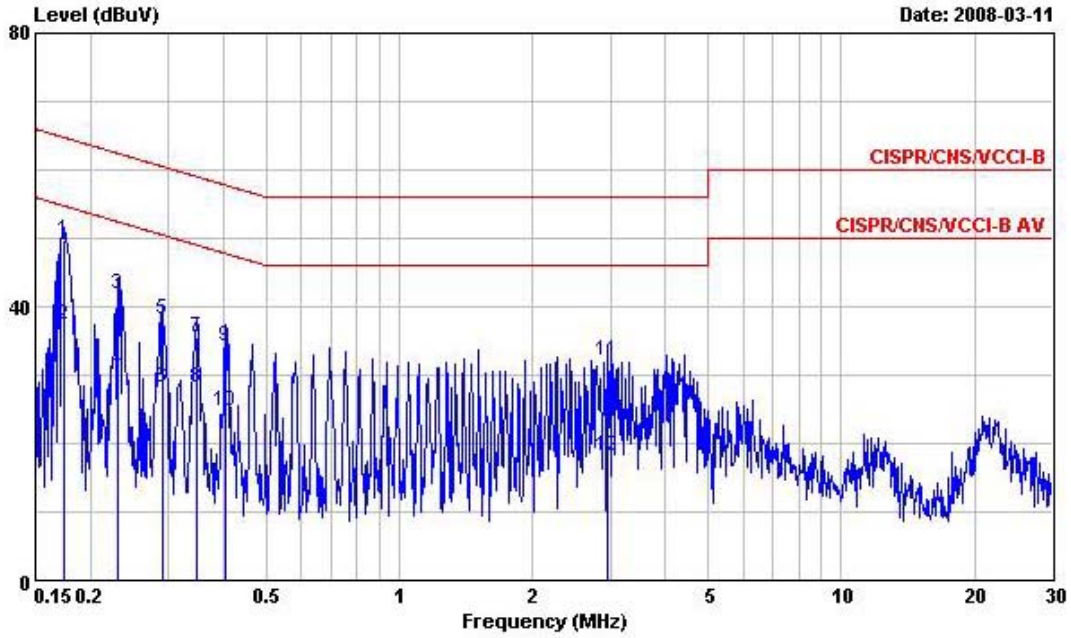
- **Model : ZX1**
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer
- Test Mode : Mode 1

■ The test that passed at minimum margin was marked by the frame in the following table.



Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200704 99041 LINE
EUT : GSM/EDGE(Class10) 850/900/1800/1900
: WCDMA/HSDPA 850/1900/2100 PDA phone
POWER: 120Vac/60Hz
Model : FR830315
Memo : GSM850 Idle + BT Link + WLAN Link+Camera
: +Battery 1+Adaptor + GPS Rx

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	@0.1758420	53.92	-10.76	64.68	53.68	0.10	0.14	QP
2	0.1758420	31.61	-23.07	54.68	31.37	0.10	0.14	Average
3	@0.2050460	50.70	-12.70	63.40	50.44	0.10	0.16	QP
4	0.2050460	31.57	-21.83	53.40	31.31	0.10	0.16	Average
5	0.2316200	47.38	-15.01	62.39	47.02	0.10	0.26	QP
6	0.2316200	25.58	-26.81	52.39	25.22	0.10	0.26	Average
7	0.2644240	45.84	-15.45	61.29	45.36	0.10	0.38	QP
8	0.2644240	27.68	-23.61	51.29	27.20	0.10	0.38	Average
9	0.3199920	43.64	-16.07	59.71	43.00	0.10	0.54	QP
10	0.3199920	26.39	-23.32	49.71	25.75	0.10	0.54	Average
11	0.3501520	38.71	-20.25	58.96	38.00	0.10	0.61	QP
12	0.3501520	33.16	-15.80	48.96	32.45	0.10	0.61	Average

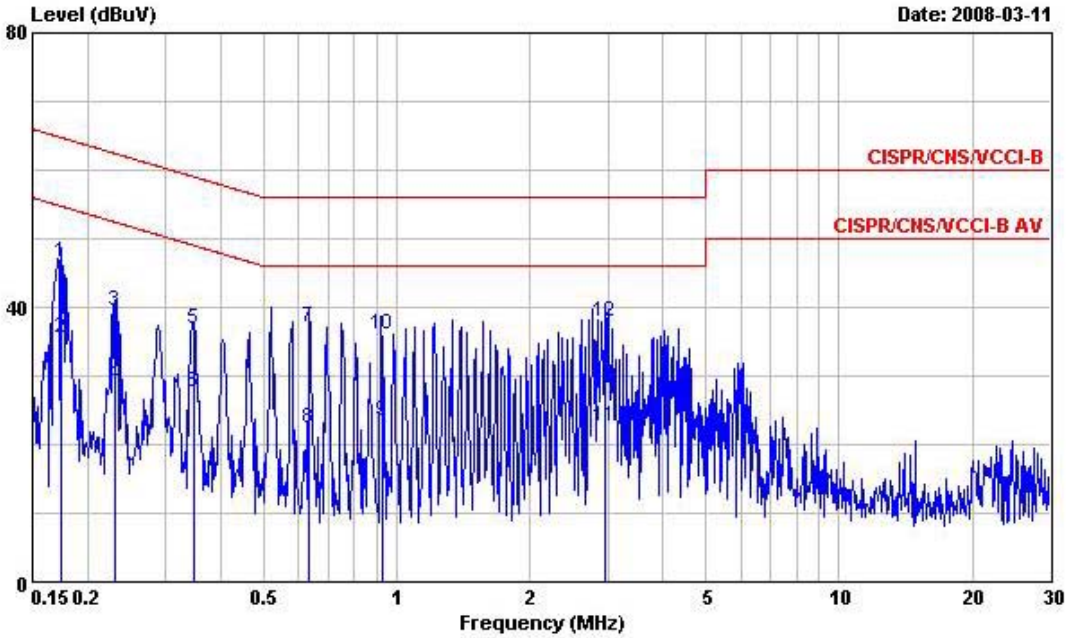


Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200704 99041 NEUTRAL
EUT : GSM/EDGE(Class10) 850/900/1800/1900
: WCDMA/HSDPA 850/1900/2100 PDA phone
POWER: 120Vac/60Hz
Model : FR830315
Memo : GSM850 Idle + BT Link + WLAN Link+Camera
: +Battery 1+Adaptor +GPS Rx

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1749130	49.80	-14.92	64.72	49.56	0.10	0.14	QP
2	0.1749130	37.38	-17.34	54.72	37.14	0.10	0.14	Average
3	0.2316200	41.90	-20.49	62.39	41.54	0.10	0.26	QP
4	0.2316200	30.70	-21.69	52.39	30.34	0.10	0.26	Average
5	0.2908840	38.26	-22.24	60.50	37.70	0.10	0.46	QP
6	0.2908840	28.28	-22.22	50.50	27.72	0.10	0.46	Average
7	0.3464610	35.55	-23.50	59.05	34.84	0.10	0.61	QP
8	0.3464610	28.15	-20.90	49.05	27.44	0.10	0.61	Average
9	0.4040020	34.09	-23.68	57.77	33.26	0.10	0.73	QP
10	0.4040020	24.87	-22.90	47.77	24.04	0.10	0.73	Average
11	2.960	32.19	-23.81	56.00	31.66	0.16	0.37	QP
12	2.960	18.24	-27.76	46.00	17.71	0.16	0.37	Average

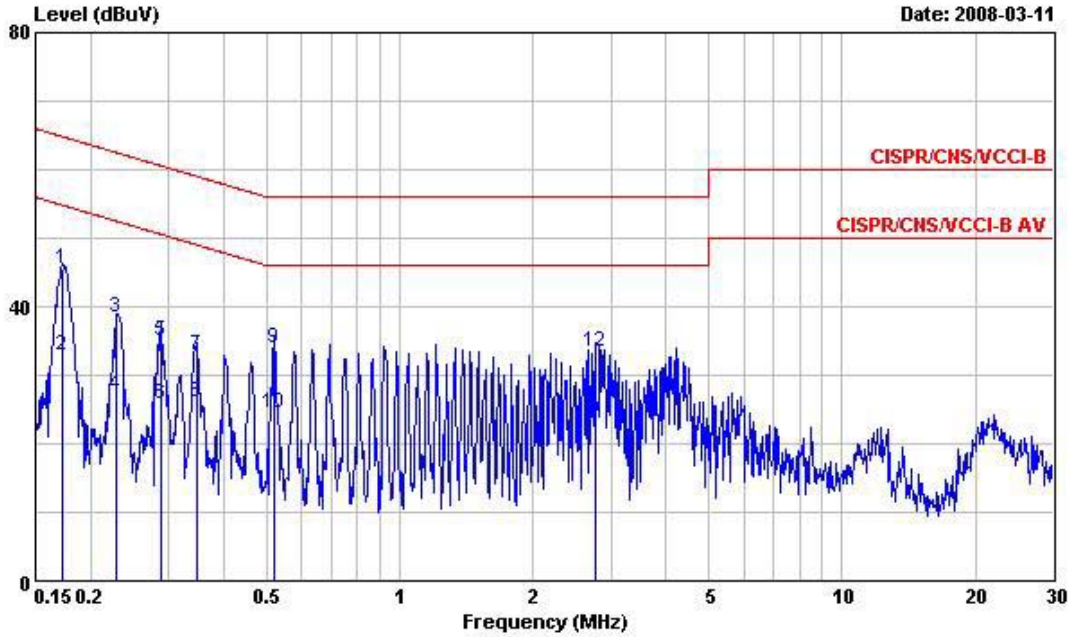
- **Model : ZX1**
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer
- Test Mode : Mode 2

■ **The test that passed at minimum margin was marked by the frame in the following table.**



Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200704 99041 LINE
EUT : GSM/EDGE(Class10) 850/900/1800/1900
: WCDMA/HSDPA 850/1900/2100 PDA phone
POWER: 120Vac/60Hz
Model : FR830315
Memo : GSM1900 Idle +BT Link + WLAN Link+MPEG4
: +Battery 1+Adaptor +GPS Rx

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1739880	46.54	-18.23	64.77	46.30	0.10	0.14	QP
2	0.1739880	35.58	-19.19	54.77	35.34	0.10	0.14	Average
3	0.2303960	39.38	-23.06	62.44	39.02	0.10	0.26	QP
4	0.2303960	28.62	-23.82	52.44	28.26	0.10	0.26	Average
5	0.3483010	36.79	-22.21	59.00	36.08	0.10	0.61	QP
6	0.3483010	27.66	-21.34	49.00	26.95	0.10	0.61	Average
7	0.6338280	37.05	-18.95	56.00	36.36	0.10	0.59	QP
8	0.6338280	22.39	-23.61	46.00	21.70	0.10	0.59	Average
9	0.9244540	23.48	-22.52	46.00	22.91	0.10	0.47	Average
10	0.9244540	36.09	-19.91	56.00	35.52	0.10	0.47	QP
11	2.950	22.61	-23.39	46.00	22.14	0.10	0.37	Average
12	2.950	37.97	-18.03	56.00	37.50	0.10	0.37	QP

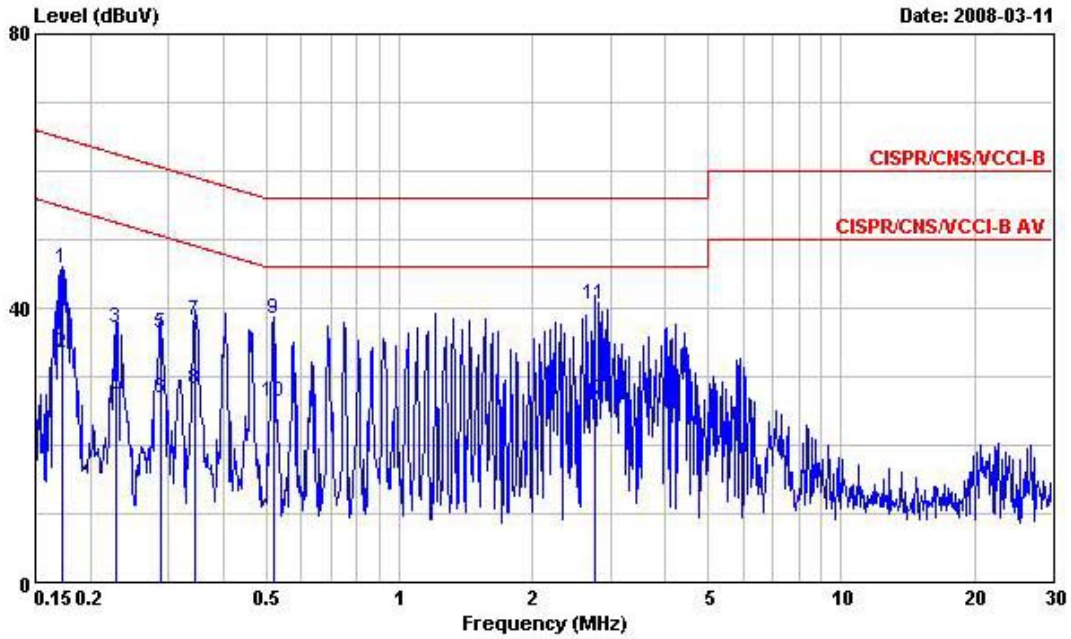


Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200704 99041 NEUTRAL
EUT : GSM/EDGE(Class10) 850/900/1800/1900
: WCDMA/HSDPA 850/1900/2100 PDA phone
POWER: 120Vac/60Hz
Model : FR830315
Memo : GSM1900 Idle +BT Link + WLAN Link+MPEG4
: +Battery 1+Adaptor +GPS Rx

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1721540	45.56	-19.30	64.86	45.32	0.10	0.14	QP
2	0.1721540	33.01	-21.85	54.86	32.77	0.10	0.14	Average
3	0.2291780	38.30	-24.18	62.48	37.94	0.10	0.26	QP
4	0.2291780	27.00	-25.48	52.48	26.64	0.10	0.26	Average
5	0.2893470	35.02	-25.52	60.54	34.46	0.10	0.46	QP
6	0.2893470	25.91	-24.63	50.54	25.35	0.10	0.46	Average
7	0.3464610	32.93	-26.12	59.05	32.22	0.10	0.61	QP
8	0.3464610	26.12	-22.93	49.05	25.41	0.10	0.61	Average
9	0.5182420	33.97	-22.03	56.00	33.22	0.10	0.65	QP
10	0.5182420	24.57	-21.43	46.00	23.82	0.10	0.65	Average
11	2.768	22.81	-23.19	46.00	22.28	0.15	0.38	Average
12	2.768	33.51	-22.49	56.00	32.98	0.15	0.38	QP

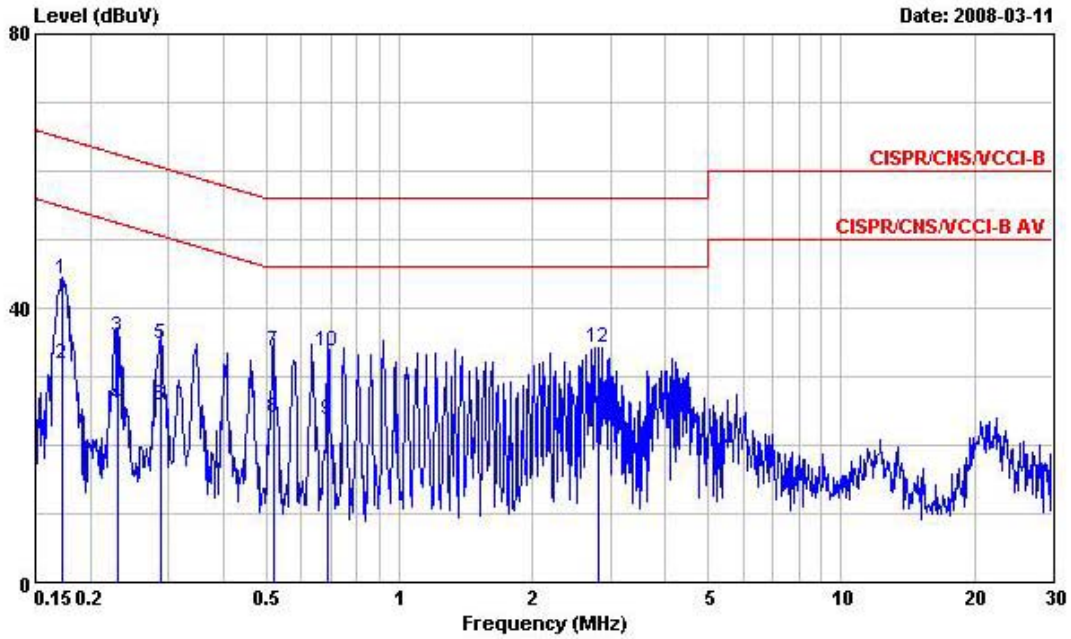
- **Model : ZX1**
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer
- Test Mode : Mode 3

■ The test that passed at minimum margin was marked by the frame in the following table.



Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200704 99041 LINE
EUT : GSM/EDGE(Class10) 850/900/1800/1900
: WCDMA/HSDPA 850/1900/2100 PDA phone
POWER: 120Vac/60Hz
Model : FR830315
Memo : EDGE Idle +BT Link + WLAN Link+ Camera
: +Battery 2+Adaptor +GPS Rx

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1721540	45.78	-19.08	64.86	45.54	0.10	0.14	QP
2	0.1721540	33.41	-21.45	54.86	33.17	0.10	0.14	Average
3	0.2291780	37.14	-25.34	62.48	36.78	0.10	0.26	QP
4	0.2291780	26.84	-25.64	52.48	26.48	0.10	0.26	Average
5	0.2895680	36.30	-24.24	60.54	35.74	0.10	0.46	QP
6	0.2895680	26.88	-23.66	50.54	26.32	0.10	0.46	Average
7	0.3446300	38.12	-20.97	59.09	37.42	0.10	0.60	QP
8	0.3446300	28.28	-20.81	49.09	27.58	0.10	0.60	Average
9	0.5182920	38.55	-17.45	56.00	37.80	0.10	0.65	QP
10	0.5182920	26.34	-19.66	46.00	25.59	0.10	0.65	Average
11	2.760	40.60	-15.40	56.00	40.12	0.10	0.38	QP
12	2.760	26.52	-19.48	46.00	26.04	0.10	0.38	Average

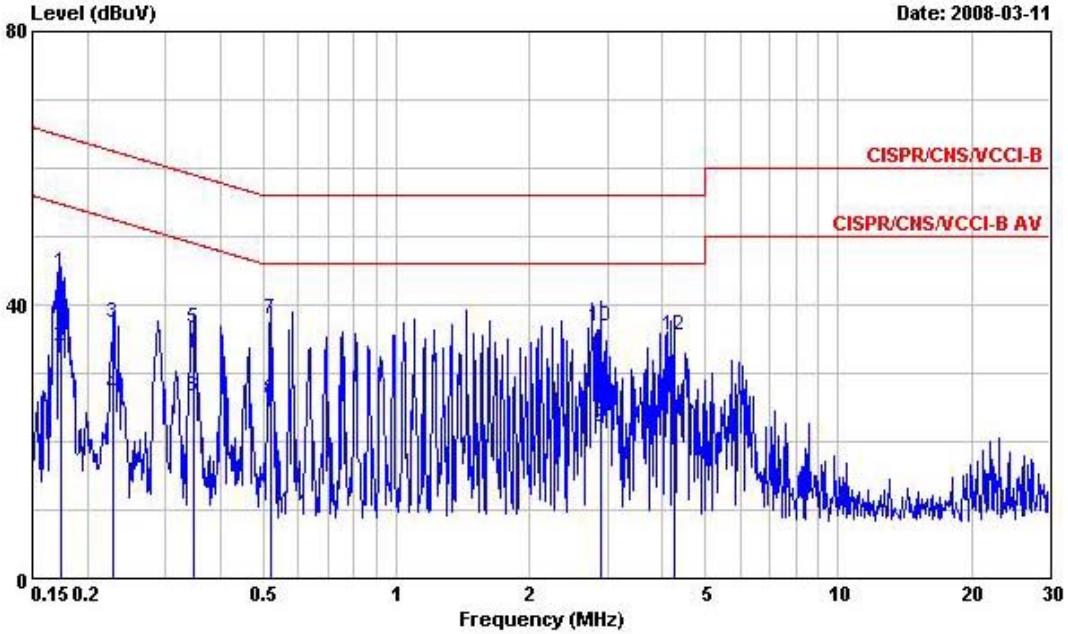


Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200704 99041 NEUTRAL
EUT : GSM/EDGE(Class10) 850/900/1800/1900
: WCDMA/HSDPA 850/1900/2100 PDA phone
POWER: 120Vac/60Hz
Model : FR830315
Memo : EDGE Idle +BT Link + WLAN Link+ Camera
: +Battery 2+Adaptor +GPS Rx

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1721540	44.14	-20.72	64.86	43.90	0.10	0.14	QP
2	0.1721540	31.79	-23.07	54.86	31.55	0.10	0.14	Average
3	0.2303960	35.86	-26.58	62.44	35.50	0.10	0.26	QP
4	0.2303960	25.83	-26.61	52.44	25.47	0.10	0.26	Average
5	0.2878180	34.65	-25.94	60.59	34.10	0.10	0.45	QP
6	0.2878180	25.84	-24.75	50.59	25.29	0.10	0.45	Average
7	0.5182420	33.77	-22.23	56.00	33.02	0.10	0.65	QP
8	0.5182420	23.90	-22.10	46.00	23.15	0.10	0.65	Average
9	0.6899030	23.73	-22.27	46.00	23.07	0.10	0.56	Average
10	0.6899030	33.58	-22.42	56.00	32.92	0.10	0.56	QP
11	2.820	21.81	-24.19	46.00	21.28	0.15	0.38	Average
12	2.820	34.33	-21.67	56.00	33.80	0.15	0.38	QP

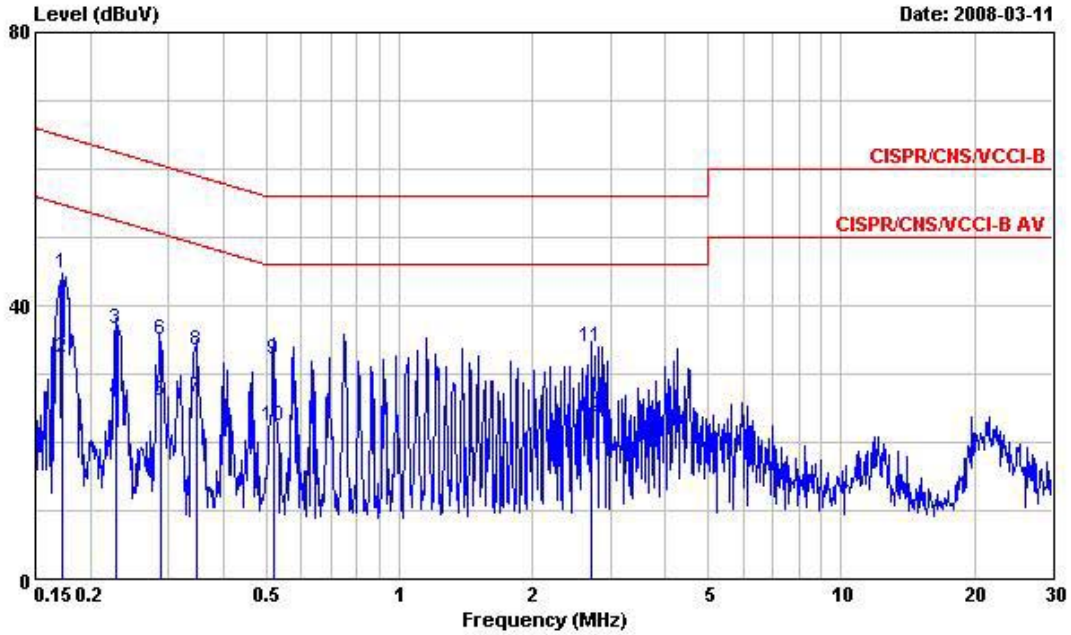
- **Model : ZX1**
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer
- Test Mode : Mode 4

■ The test that passed at minimum margin was marked by the frame in the following table.



Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200704 99041 LINE
EUT : GSM/EDGE(Class10) 850/900/1800/1900
: WCDMA/HSDPA 850/1900/2100 PDA phone
POWER: 120Vac/60Hz
Model : FR830315
Memo : WCDMA Idle +BT Link + WLAN Link+MPEG4
: +Battery 2+Adaptor +GPS Rx

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1749690	44.72	-20.00	64.72	44.48	0.10	0.14	QP
2	0.1749690	33.89	-20.83	54.72	33.65	0.10	0.14	Average
3	0.2291780	37.38	-25.10	62.48	37.02	0.10	0.26	QP
4	0.2291780	26.90	-25.58	52.48	26.54	0.10	0.26	Average
5	0.3488510	36.53	-22.46	58.99	35.82	0.10	0.61	QP
6	0.3488510	26.70	-22.29	48.99	25.99	0.10	0.61	Average
7	0.5209950	37.95	-18.05	56.00	37.20	0.10	0.65	QP
8	0.5209950	25.97	-20.03	46.00	25.22	0.10	0.65	Average
9	2.900	22.11	-23.89	46.00	21.64	0.10	0.37	Average
10	2.900	36.71	-19.29	56.00	36.24	0.10	0.37	QP
11	4.270	23.17	-22.83	46.00	22.75	0.11	0.31	Average
12	4.270	35.52	-20.48	56.00	35.10	0.11	0.31	QP

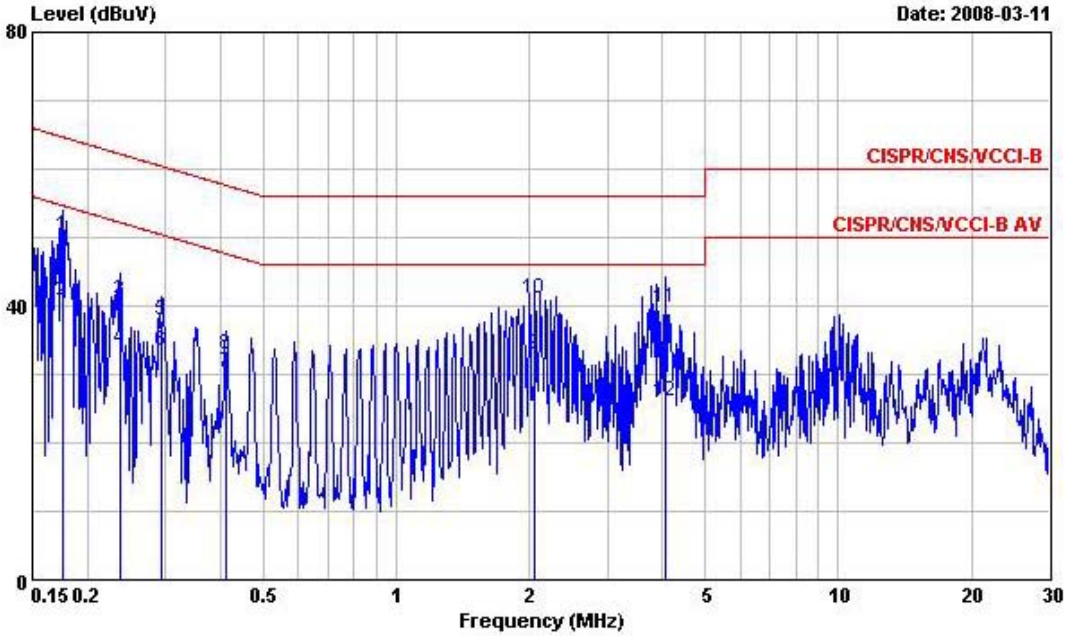


Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200704 99041 NEUTRAL
EUT : GSM/EDGE(Class10) 850/900/1800/1900
: WCDMA/HSDPA 850/1900/2100 PDA phone
POWER: 120Vac/60Hz
Model : FR830315
Memo : WCDMA Idle +BT Link + WLAN Link+MPEG4
: +Battery 2+Adaptor +GPS Rx

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1721540	44.70	-20.16	64.86	44.46	0.10	0.14	QP
2	0.1721540	32.31	-22.55	54.86	32.07	0.10	0.14	Average
3	0.2291780	36.48	-26.00	62.48	36.12	0.10	0.26	QP
4	0.2291780	26.12	-26.36	52.48	25.76	0.10	0.26	Average
5	0.2875470	26.14	-24.45	50.59	25.59	0.10	0.45	Average
6	0.2875470	35.07	-25.52	60.59	34.52	0.10	0.45	QP
7	0.3464610	26.53	-22.52	49.05	25.82	0.10	0.61	Average
8	0.3464610	33.55	-25.50	59.05	32.84	0.10	0.61	QP
9	0.5215420	32.07	-23.93	56.00	31.32	0.10	0.65	QP
10	0.5215420	22.36	-23.64	46.00	21.61	0.10	0.65	Average
11	2.710	34.03	-21.97	56.00	33.51	0.14	0.38	QP
12	2.710	23.75	-22.25	46.00	23.23	0.14	0.38	Average

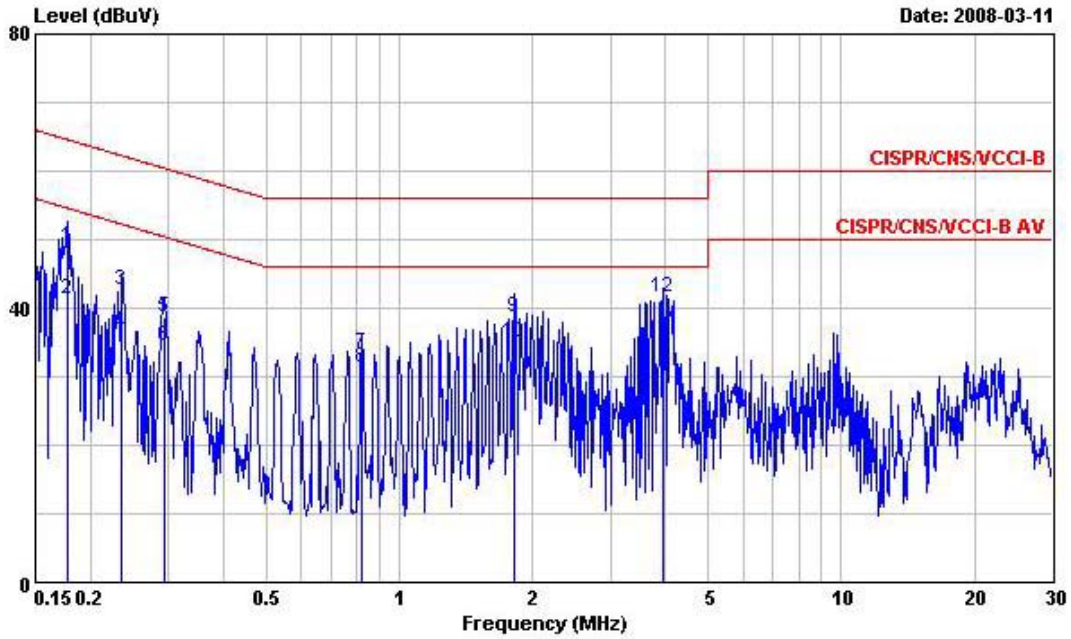
- **Model : ZX1**
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer
- Test Mode : Mode 5

■ The test that passed at minimum margin was marked by the frame in the following table.



Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200704 99041 LINE
EUT : GSM/EDGE(Class10) 850/900/1800/1900
: WCDMA/HSDPA 850/1900/2100 PDA phone
POWER: From NoteBook
Model : FR830315
Memo : HSDPA Idle+BT Link+WLAN Link+MPEG4
: +Battery1+USB Link+GPS Rx

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.1758420	50.16	-14.52	64.68	49.92	0.10	0.14	QP
2		0.1758420	40.80	-13.88	54.68	40.56	0.10	0.14	Average
3		0.2365810	40.86	-21.36	62.22	40.48	0.10	0.28	QP
4		0.2365810	33.75	-18.47	52.22	33.37	0.10	0.28	Average
5		0.2939830	37.99	-22.42	60.41	37.42	0.10	0.47	QP
6		0.2939830	33.49	-16.92	50.41	32.92	0.10	0.47	Average
7		0.4126560	30.29	-17.30	47.59	29.47	0.10	0.72	Average
8		0.4126560	32.86	-24.73	57.59	32.04	0.10	0.72	QP
9	@	2.050	32.82	-13.18	46.00	32.29	0.10	0.43	Average
10		2.050	41.09	-14.91	56.00	40.56	0.10	0.43	QP
11		4.070	39.68	-16.32	56.00	39.26	0.10	0.32	QP
12		4.070	25.97	-20.03	46.00	25.55	0.10	0.32	Average

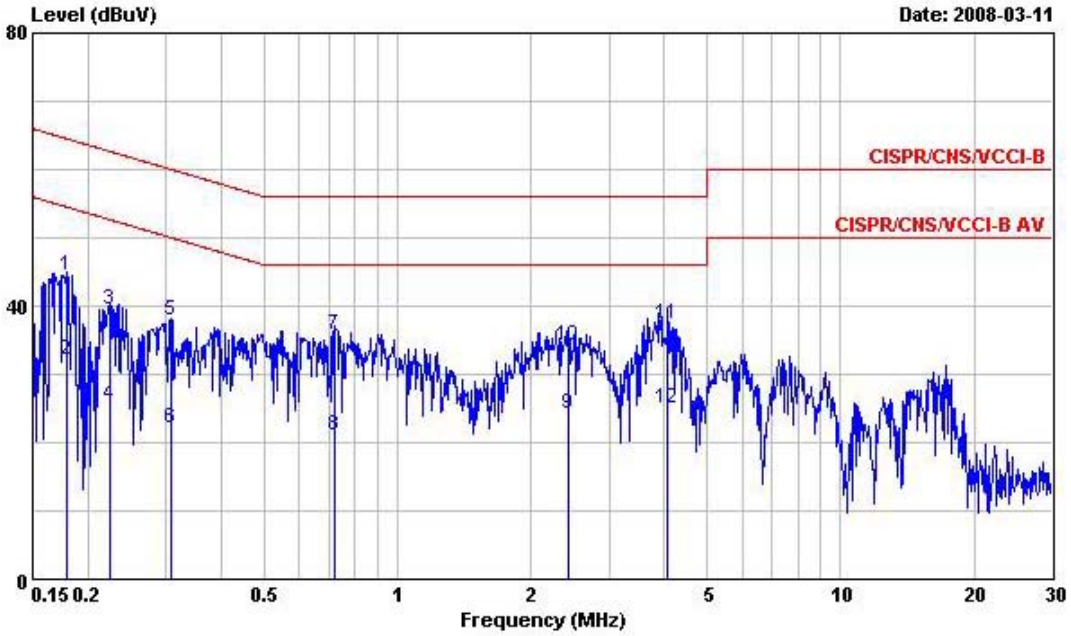


Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200704 99041 NEUTRAL
EUT : GSM/EDGE(Class10) 850/900/1800/1900
: WCDMA/HSDPA 850/1900/2100 PDA phone
POWER: From NoteBook
Model : FR830315
Memo : HSDPA Idle+BT Link+WLAN Link+MPEG4
: +Battery1+USB Link+GPS Rx

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1767760	48.86	-15.78	64.64	48.62	0.10	0.14	QP
2	0.1767760	41.21	-13.43	54.64	40.97	0.10	0.14	Average
3	0.2353310	42.72	-19.54	62.26	42.34	0.10	0.28	QP
4	0.2353310	36.24	-16.02	52.26	35.86	0.10	0.28	Average
5	0.2939830	38.61	-21.80	60.41	38.04	0.10	0.47	QP
6	0.2939830	34.50	-15.91	50.41	33.93	0.10	0.47	Average
7	0.8217160	33.50	-22.50	56.00	32.90	0.10	0.50	QP
8	0.8217160	31.34	-14.66	46.00	30.74	0.10	0.50	Average
9	1.820	38.73	-17.27	56.00	38.20	0.10	0.43	QP
10 @	1.820	34.90	-11.10	46.00	34.37	0.10	0.43	Average
11	3.940	28.88	-17.12	46.00	28.36	0.20	0.32	Average
12	3.940	41.60	-14.40	56.00	41.08	0.20	0.32	QP

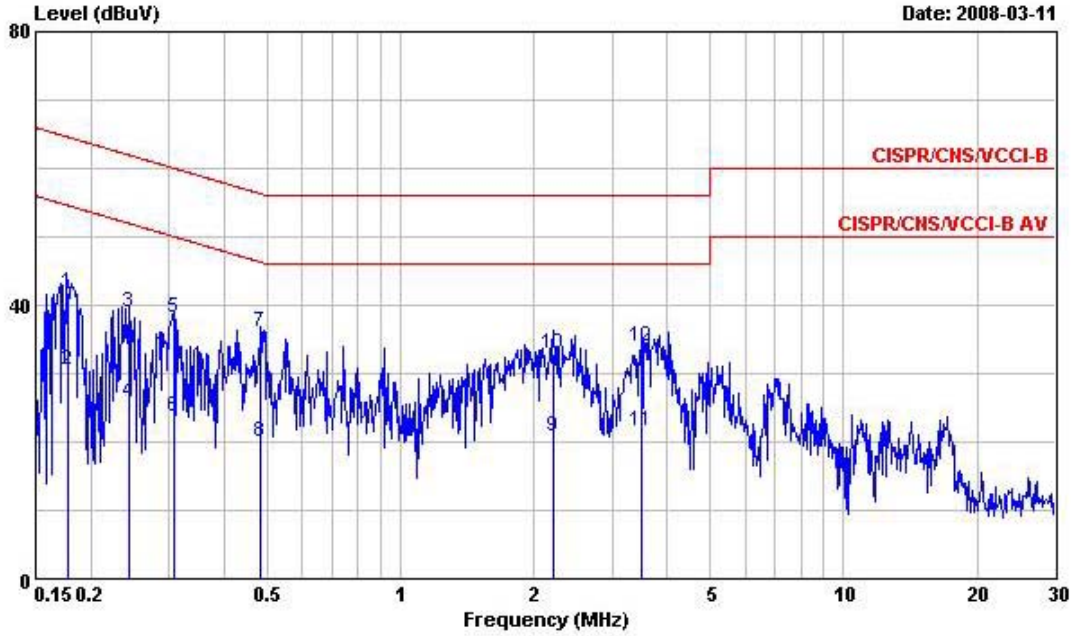
- **Model : ZX1**
- Temperature : 27~28℃
- Relative Humidity : 43~44%
- Test Engineer : Happyer
- Test Mode : Mode 6

■ The test that passed at minimum margin was marked by the frame in the following table.



Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200704 99041 LINE
EUT : GSM/EDGE(Class10) 850/900/1800/1900
: WCDMA/HSDPA 850/1900/2100 PDA phone
POWER: 120V/ 60Hz
Model : FR830315
Memo : GSM850 Idle+BT Link+WLAN Link+Camera
: +Battery1+Adaptor2+GPS Rx

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1786590	44.44	-20.11	64.55	44.20	0.10	0.14	QP
2	0.1786590	32.14	-22.41	54.55	31.90	0.10	0.14	Average
3	0.2231870	39.50	-23.20	62.70	39.16	0.10	0.24	QP
4	0.2231870	25.50	-27.20	52.70	25.16	0.10	0.24	Average
5	0.3067120	37.88	-22.18	60.06	37.28	0.10	0.50	QP
6	0.3067120	22.12	-27.94	50.06	21.52	0.10	0.50	Average
7	0.7197740	35.67	-20.33	56.00	35.02	0.10	0.55	QP
8	0.7197740	21.06	-24.94	46.00	20.41	0.10	0.55	Average
9	2.420	24.25	-21.75	46.00	23.75	0.10	0.40	Average
10	2.420	34.32	-21.68	56.00	33.82	0.10	0.40	QP
11	4.070	37.26	-18.74	56.00	36.84	0.10	0.32	QP
12	4.070	25.01	-20.99	46.00	24.59	0.10	0.32	Average



Site : CO04-HY
Condition : CISPR/CNS/VCCI-B LISN 200704 99041 NEUTRAL
EUT : GSM/EDGE(Class10) 850/900/1800/1900
: WCDMA/HSDPA 850/1900/2100 PDA phone
POWER: 120V/ 60Hz
Model : FR830315
Memo : GSM850 Idle+BT Link+WLAN Link+Camera
: +Battery1+Adaptor2+GPS Rx

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1777150	41.80	-22.79	64.59	41.56	0.10	0.14	QP
2	0.1777150	30.64	-23.95	54.59	30.40	0.10	0.14	Average
3	0.2429320	38.98	-23.02	62.00	38.58	0.10	0.30	QP
4	0.2429320	25.69	-26.31	52.00	25.29	0.10	0.30	Average
5	0.3067120	38.16	-21.90	60.06	37.56	0.10	0.50	QP
6	0.3067120	23.75	-26.31	50.06	23.15	0.10	0.50	Average
7	0.4837480	35.97	-20.30	56.27	35.20	0.10	0.67	QP
8	0.4837480	20.10	-26.17	46.27	19.33	0.10	0.67	Average
9	2.210	20.89	-25.11	46.00	20.37	0.11	0.41	Average
10	2.210	32.97	-23.03	56.00	32.45	0.11	0.41	QP
11	3.510	21.45	-24.55	46.00	20.93	0.18	0.34	Average
12	3.510	33.90	-22.10	56.00	33.38	0.18	0.34	QP

5.9 Radiated Emission Measurement

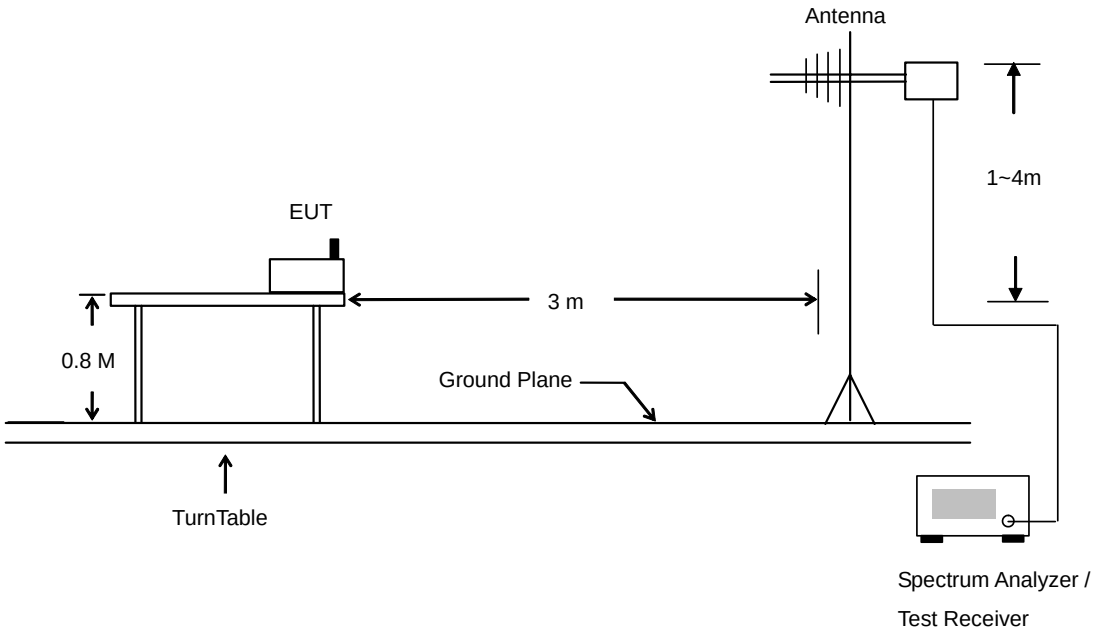
5.9.1 Measuring Instruments

As described in chapter 6 of this Report.

5.9.2 Test Procedures

1. The EUT was placed on a rotatable table top 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. 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.
5. 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.
6. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. For testing below 1GHz, If 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.
8. For testing above 1GHz, 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 and reported.

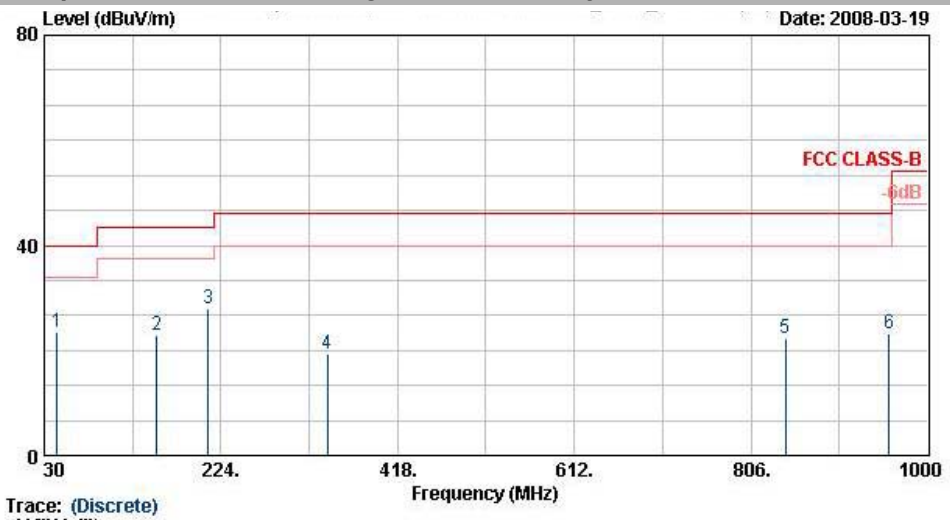
5.9.3 Typical Test Setup Layout of Radiated Emission



5.9.4 Test Data

- **Model : ZX1**
- Temperature : 21~26℃
- Relating Humidity : 49~51%
- Test Engineer : Sun
- Test Mode : Mode 1
- Polarization : Horizontal (30MHz-1GHz)

■ The test that passed at minimum margin was marked by the boldface in the following table.

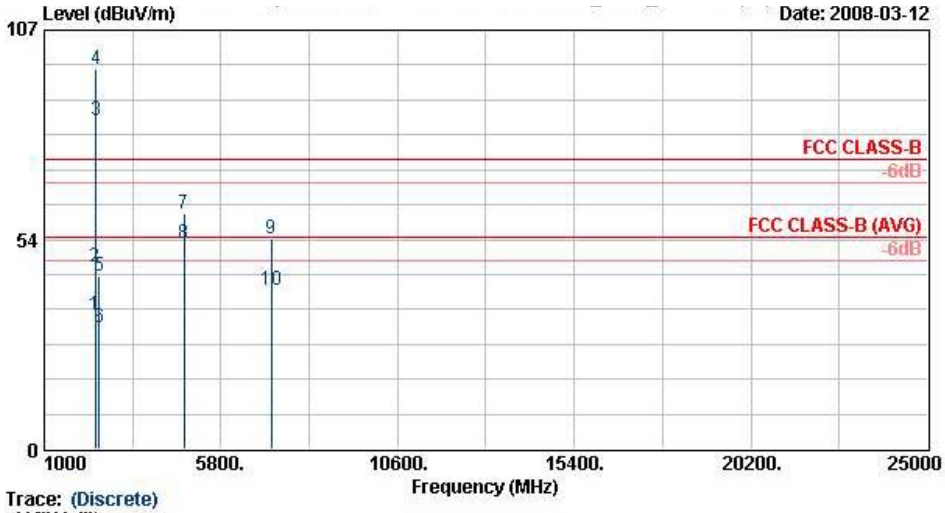


Site : 03CH06-HY
Condition : FCC CLASS-B 3m LF-ANT(951121) HORIZONTAL
EUT : GSM/EDGE(Class10)850/900/1800/1900
: WCDMA/HSDPA850/1900/2100 PDA phone
Power : 120Vac/60Hz
Model : FR 830315
Memo : BT Tx_Ch00;2402MHz + Adaptor
Data Rate : DH5
Plane : E2
IMEI : 353020020000098
: TPT NO Function

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	44.04	23.39	-16.61	40.00	44.70	11.52	0.30	33.13	---	---	Peak
2	153.93	23.03	-20.47	43.50	45.67	10.29	0.60	33.53	---	---	Peak
3	210.09	28.09	-15.41	43.50	51.07	9.93	0.60	33.51	100	106	Peak
4	341.30	19.33	-26.67	46.00	37.47	14.27	0.80	33.22	---	---	Peak
5	843.90	22.26	-23.74	46.00	33.60	20.13	1.20	32.66	---	---	Peak
6	957.30	23.17	-22.83	46.00	33.34	20.94	1.27	32.38	---	---	Peak

- Polarization : Horizontal (1GHz-25GHz)

■ The test that passed at minimum margin was marked by the boldface in the following table.



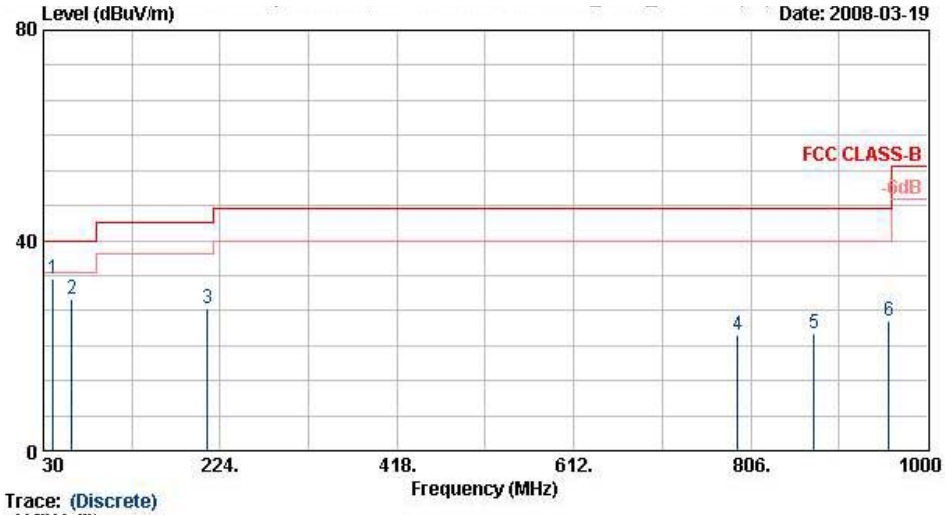
Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHR-EHF HORN HORIZONTAL
EUT : GSM/EDGE(Class10)850/900/1800/1900
: WCDMA/HSDPA850/1900/2100 PDA phone
Power : 120Vac/60Hz
Model : FR 830315
Memo : BT Tx_Ch00;2402MHz + Adaptor
Data Rate : DH5
Plane : E2
TMET : 353020020000096

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2389.61	34.04	-19.96	54.00	33.94	31.86	3.92	35.68	137	47	Average
2	2389.61	46.62	-27.38	74.00	46.52	31.86	3.92	35.68	100	0	Peak
3 @	2402.00	84.08			83.98	31.86	3.92	35.68	137	47	Average
4 X	2402.00	97.15			97.05	31.86	3.92	35.68	100	0	Peak
5	2500.00	44.18	-29.82	74.00	43.83	32.00	4.05	35.70	100	0	Peak
6	2500.00	30.98	-23.02	54.00	30.63	32.00	4.05	35.70	137	47	Average
7	4806.00	59.87	-14.13	74.00	55.66	34.12	5.77	35.68	100	0	Peak
8 !	4806.00	52.42	-1.58	54.00	48.21	34.12	5.77	35.68	174	140	Average
9	7167.00	53.81	-20.19	74.00	47.00	35.73	7.15	36.07	100	0	Peak
10	7167.00	40.47	-13.53	54.00	33.66	35.73	7.15	36.07	100	155	Average

Remark: #3 and #4 are Fundamental Signals

- Polarization : Vertical (30MHz-1GHz)

■ The test that passed at minimum margin was marked by the boldface in the following table.



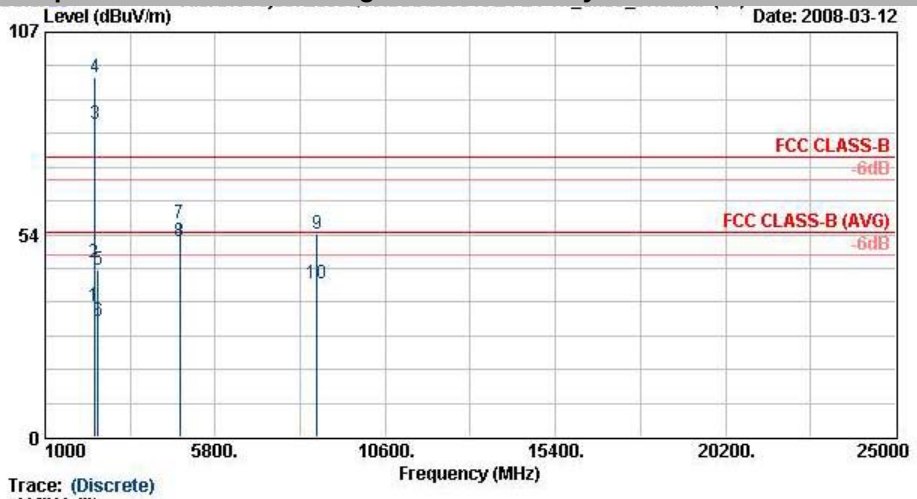
Trace: (Discrete)

Site	:	03CH06-HY
Condition	:	FCC CLASS-B 3m LF-ANT(9511121) VERTICAL
EUT	:	GSM/EDGE(Class10)850/900/1800/1900
	:	WCDMA/HSDPA850/1900/2100 PDA phone
Power	:	120Vac/60Hz
Model	:	FR 830315
Memo	:	BT Tx_Ch00;2402MHz + Adaptor
Data Rate	:	DH5
Plane	:	E2
IMEI	:	353020020000098
	:	TPT NO Function

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	40.53	32.58	-7.42	40.00	52.45	13.01	0.30	33.18	100	213	Peak
2	61.59	28.94	-11.06	40.00	55.32	6.67	0.40	33.45	---	---	Peak
3	210.09	27.12	-16.38	43.50	50.10	9.93	0.60	33.51	---	---	Peak
4	791.40	22.13	-23.87	46.00	33.81	19.74	1.20	32.61	---	---	Peak
5	875.40	22.42	-23.58	46.00	33.51	20.36	1.30	32.74	---	---	Peak
6	957.30	24.66	-21.34	46.00	34.83	20.94	1.27	32.38	---	---	Peak

- Polarization : Vertical (1GHz-25GHz)

■ The test that passed at minimum margin was marked by the boldface in the following table.



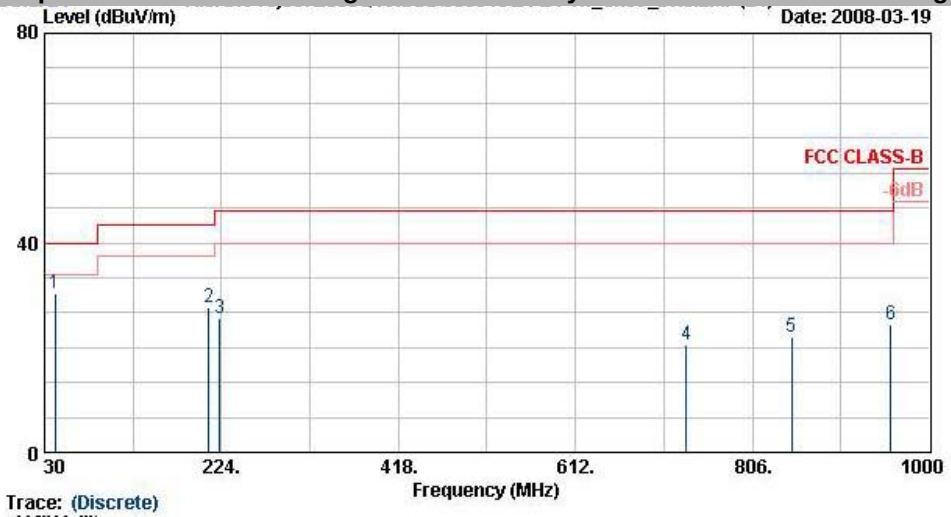
Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
EUT : GSM/EDGE(Class10)850/900/1800/1900
: WCDMA/HSDPA850/1900/2100 PDA phone
Power : 120Vac/60Hz
Model : FR 830315
Memo : BT Tx_Ch00;2402MHz + Adaptor
Data Rate : DH5
Plane : E2
IMEI : 353020020000098

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2390.00	34.75	-19.25	54.00	34.65	31.86	3.92	35.68	161	31	Average
2	2390.00	46.12	-27.88	74.00	46.02	31.86	3.92	35.68	100	0	Peak
3 @	2402.00	82.82			82.72	31.86	3.92	35.68	161	31	Average
4 X	2402.00	95.14			95.05	31.86	3.92	35.68	100	0	Peak
5	2492.00	44.31	-29.69	74.00	43.96	32.00	4.05	35.70	100	0	Peak
6	2492.00	30.54	-23.46	54.00	30.19	32.00	4.05	35.70	161	31	Average
7	4806.00	56.47	-17.53	74.00	52.26	34.12	5.77	35.68	100	0	Peak
8 !	4806.00	51.87	-2.13	54.00	47.66	34.12	5.77	35.68	145	187	Average
9	8667.00	53.82	-20.18	74.00	46.81	36.03	7.39	36.41	100	0	Peak
10	8667.00	40.68	-13.32	54.00	33.67	36.03	7.39	36.41	100	187	Average

Remark: #3 and #4 are Fundamental Signals

- **Model : ZX1**
- Test Mode : Mode 2
- Polarization : Horizontal (30MHz-1GHz)

■ The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)

Site	:	03CH06-HY
Condition	:	FCC CLASS-B 3m LF-ANT(95112I) HORTZONTAL
EUT	:	GSM/EDGE(Class10)850/900/1800/1900
	:	WCDMA/HSDPA850/1900/2100 PDA phone
Power	:	120Vac/60Hz
Model	:	FR 830315
Memo	:	BT Tx_Ch39;2441MHz + Adaptor
Data Rate	:	DH5
Plane	:	E2
TMET	:	3530200200000098

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	41.88	30.43	-9.57	40.00	50.78	12.51	0.30	33.16	100	113	Peak
2	210.09	27.80	-15.70	43.50	50.78	9.93	0.60	33.51	---	---	Peak
3	222.24	25.64	-20.36	46.00	47.81	10.61	0.70	33.49	---	---	Peak
4	733.30	20.37	-25.63	46.00	33.04	19.20	1.10	32.97	---	---	Peak
5	848.80	22.01	-23.99	46.00	33.32	20.16	1.20	32.68	---	---	Peak
6	957.30	24.50	-21.50	46.00	34.67	20.94	1.27	32.38	---	---	Peak