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<http://www.digitalemc.com>

CERTIFICATE OF COMPLIANCE
FCC Part 15C Certification

Dates of Tests: June 2 ~ 8, 2004
 Test Report S/N:DR50110405C
 Test Site : DIGITAL EMC CO., LTD.

FCC ID.

R58RIF-BT10

APPLICANT

KOREA PRINTING SYSTEMS CO.,LTD.

FCC Classification : FHSS Sequence Spread Spectrum (FHSS)

Device name : Bluetooth Interface

Manufacturer : KOREA PRINTING SYSTEMS CO.,LTD.

Brand :

Model name : RIF-BT10

Test Device Serial number : Identical prototype

FCC Rule Part(s) : FCC Part 15.247 Subpart C; ANSI C-63.4-2001

Frequency Range : 2402 ~ 2480 MHz

Max. Output power : 45.8mW Conducted

Data of issue : June 9, 2004

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.



NVLAP LAB CODE 200559-0

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1. General information's

This report contains the result of tests performed by:

DIGITAL EMC CO., LTD.

Address : 683-3, Yubang-Dong, Yongin-Si, Kyunggi-Do, Korea. 449-080

<http://www.digitalemc.com> E-mail : demc@unitel.co.kr

Tel: +82-31-321-2664 Fax: +82-31-321-1664

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the
“General requirements for the competents of calibration and testing laboratory”.

This laboratory is accredited by NVLAP for NVLAP Lab. Code : 200559-0.

Test operator: engineer



June 9, 2004	Won -Jong LEE
Data	Name

Signature

Report Reviewed By: manager



June 9, 2004	Dong -Min JUNG
Data	Name

Signature

Ordering party:

Company name	:	KOREA PRINTING SYSTEMS CO.,LTD.
Address	:	FactoryWorld 706, 332-2,Wonchon Dong, Yeongtong Gu,
City/town	:	Suwon City, Kyunggi Do
Country	:	Korea
Zip code	:	443-822
Date of order	:	May 12, 2004

2. Information's about test item

R58RIF-BT10

2.1 Equipment information

Equipment model name	RIF-BT10		
Type of equipment	Bluetooth Interface		
Frequency band	2402 ~ 2480 MHz		
Type of Modulation	GFSK		
Channel Spacing	1.0 MHz		
Type of antenna	Chip Antenna		
Power	1. USB mode: DC 5 V (By USB port of PC)		
	2. Serial mode: Using the adaptor		
	SUNNY_M/N: SYS1089-1005-T3	LEI_M/N: NS10-050100-31	
	Input: 100-240VAC, 50-60Hz	Input: 100-240VAC, 50-60Hz	Output: 5VDC, 1.7A
	Output: 5VDC, 2.0A		

2.2 Tested frequency

Frequency	TX	RX
Low frequency	2402MHz	2402MHz
Middle frequency	2441MHz	2441MHz
High frequency	2480MHz	2480MHz

2.3 Tested environment

Temperature	15 ~ 35 (°C)
Relative humidity content	20 ~ 75 %
Air pressure	86 ~ 103 kPa
Details of power supply	5.0 V (powered by power supply)

2.4 Ancillary Equipment

Equipment	Model No.	Serial No.	Manufacturer
Notebook	PP02X	8K493A01	DELL
Printer	SRP-350	N/A	KPS
Adaptor 1(For Serial mode)	SYS1089-1005-T3	CH0067168-2001	SUNNY
Adaptor 2(For Serial mode)	NS10-050100-31	N/A	LEADER

2.5 EMI Suppression Device(s)/Modifications

EMI suppression device(s) added and/or modifications made during testing

-> 1. USB Cable : added the Core

3. Test Report

3.1 Summary of tests

FCC Part Section(s)	Parameter	Limit	Test Condition	Status (note 1)
I. Transmit mode(Tx)				
15.247(a)	Carrier Frequency Separation	> 25 kHz	Conducted	C
	Number of Hopping Frequencies	> 75 hops		C
	20 dB Bandwidth	< 1 MHz		C
	Dwell Time	0.4 seconds within a 30 second period per any frequency		C
15.247(b)	Transmitter Output Power	< 1Watt	Conducted	C
15.247(c)	Band-edge (or Occupied BW for IC)	2400 < f < 2483.5 MHz		C
	Out of Band Emissions (Bandwidth at 20 dB blow)	The radiated emission to any 100 kHz of outband shall be at least 20dB below the highest inband spectral density.		C
15.205 15.209	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	< FCC 15.209 limits	Radiated	C
15.207	AC Conducted Emissions	EN 55022	Line Conducted	C
II. Receive mode(Rx)				
15.107 / 15.207	AC Conducted Emissions	EN 55022	Line Conducted	C
15.109 / 15.209	Radiated Emission Out-of-Band Emissions (Band Width at 20dB below)	< FCC 15.209 limits	Radiated	C
Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable				

The sample was tested according to the following specification:

FCC Parts 15.247; ANSI C-63.4-2001

3.2 Transmitter requirements

3.2.1 Carrier Frequency Separation

Procedure:

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

After the trace being stable, the reading value between the peaks of the adjacent channels using the marker-delta function was recorded as the measurement results.

The spectrum analyzer is set to:

Span = 3 MHz (wide enough to capture the peaks of two adjacent channels)

RBW = 30 kHz (1% of the span or more) Sweep = auto

VBW = 30 kHz Detector function = peak

Trace = max hold

Measurement Data:

Frequency of marker #1 (MHz)	Frequency of marker #2 (MHz)	Test Results	
		Carrier Frequency Separation (MHz)	Result
2440.985	2441.945	0.96	Complies

- See next pages for actual measured spectrum plots.

Minimum Standard:

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

Measurement Setup

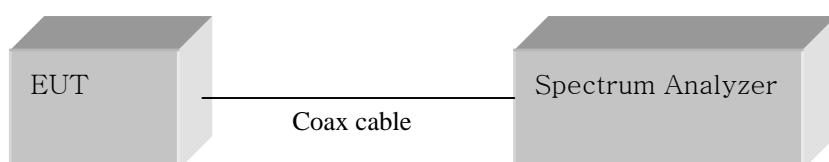
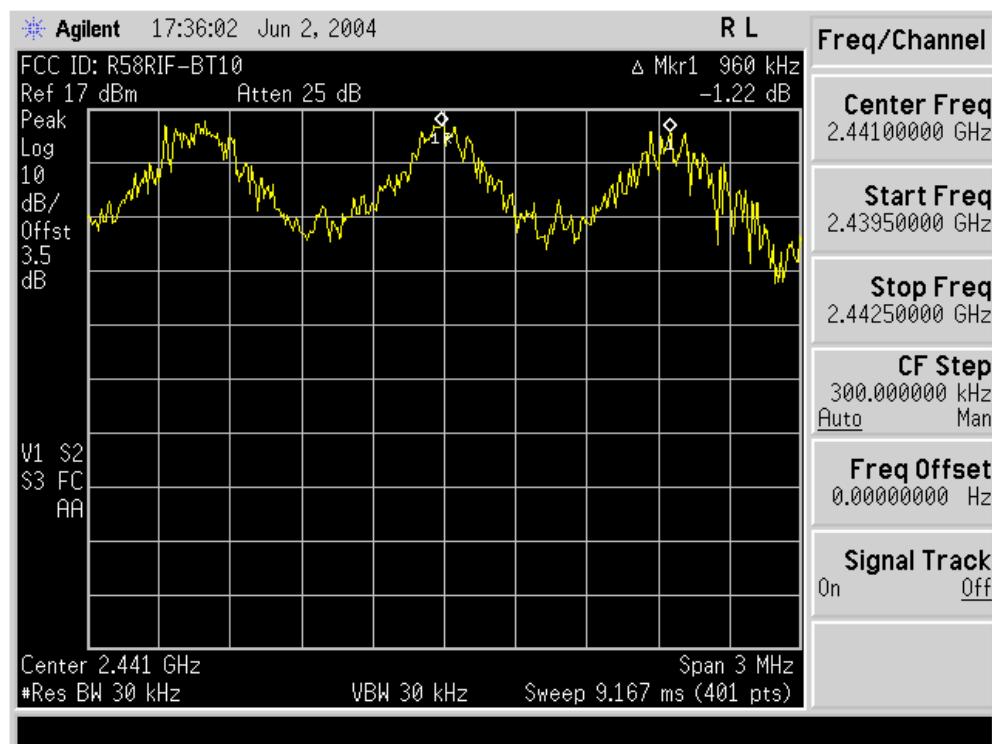


Figure 1: Measurement setup for the carrier frequency separation

TEST EQUIPMENT USED: 01, 19, 50

Carrier Frequency Separation



3.2.2 Number of Hopping Frequencies

Procedure:

The number of hopping frequencies was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

To get higher resolution, four frequency ranges within the 2400 ~ 2483.5 MHz FH band were examined.

The spectrum analyzer is set to:

Frequency range 1: Start = 2389.5MHz, Stop = 2414.5 MHz

2: Start = 2414.5MHz, Stop = 2439.5 MHz

3: Start = 2439.5MHz, Stop = 2464.5 MHz

4: Start = 2464.5MHz, Stop = 2489.5 MHz

RBW = 300 kHz (1% of the span or more) Sweep = auto

VBW = 300 kHz (VBW \geq RBW) Detector function = peak

Trace = max hold Span = 25MHz

Measurement Data: Complies

Total number of Hopping Channels	79
---	----

- See next pages for actual measured spectrum plots.

Minimum Standard:

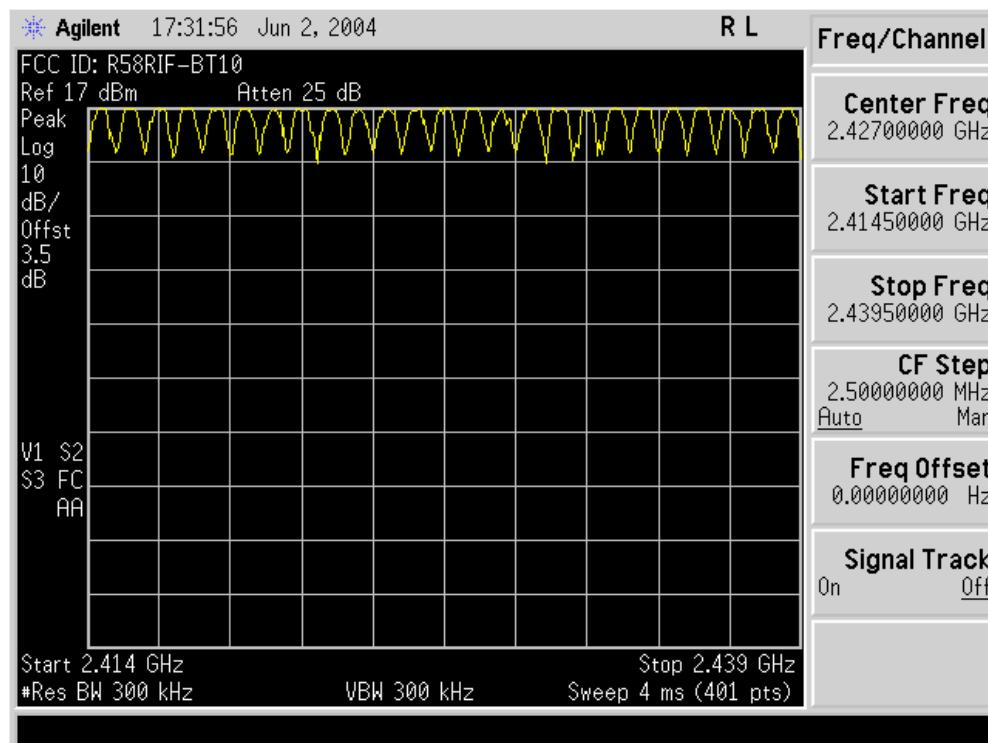
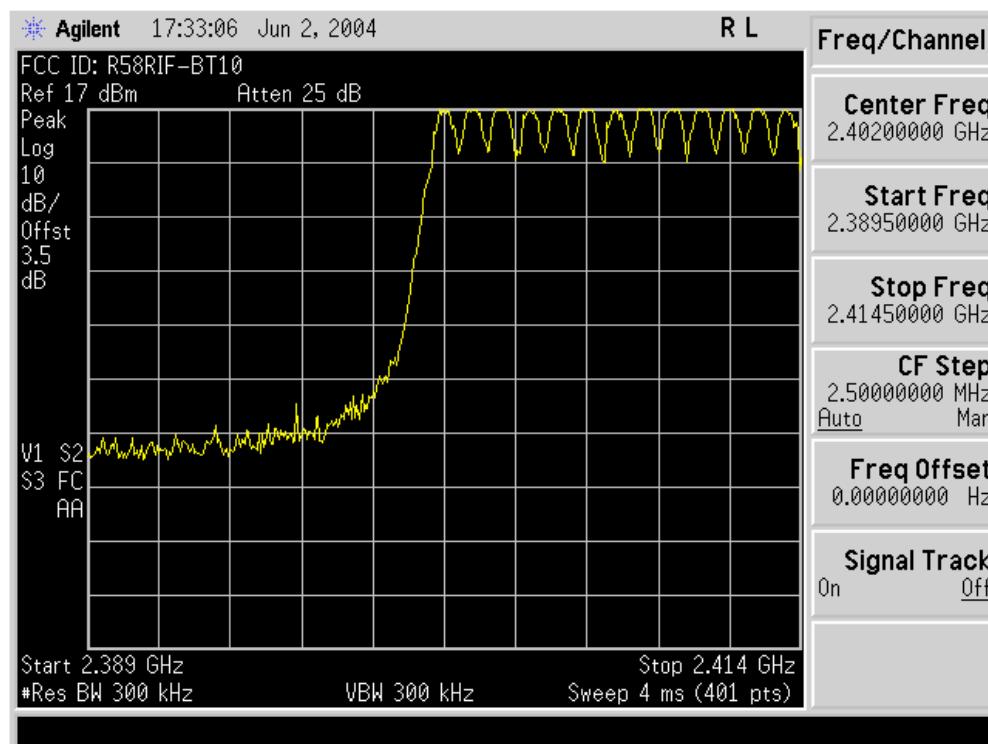
At least 75 hopes

Measurement Setup

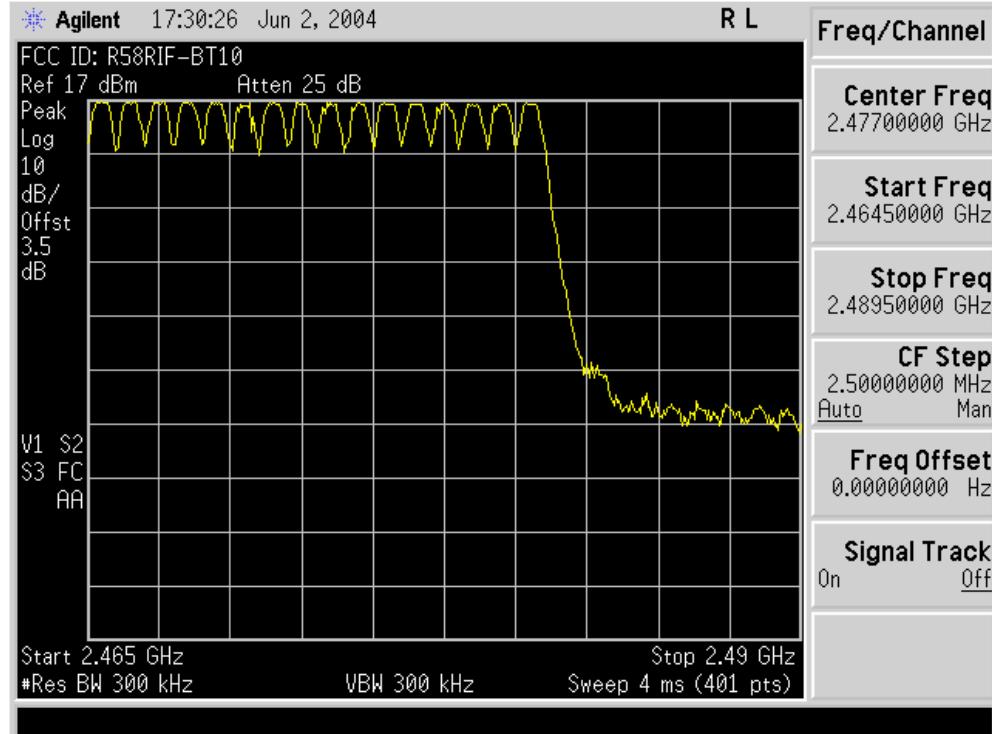
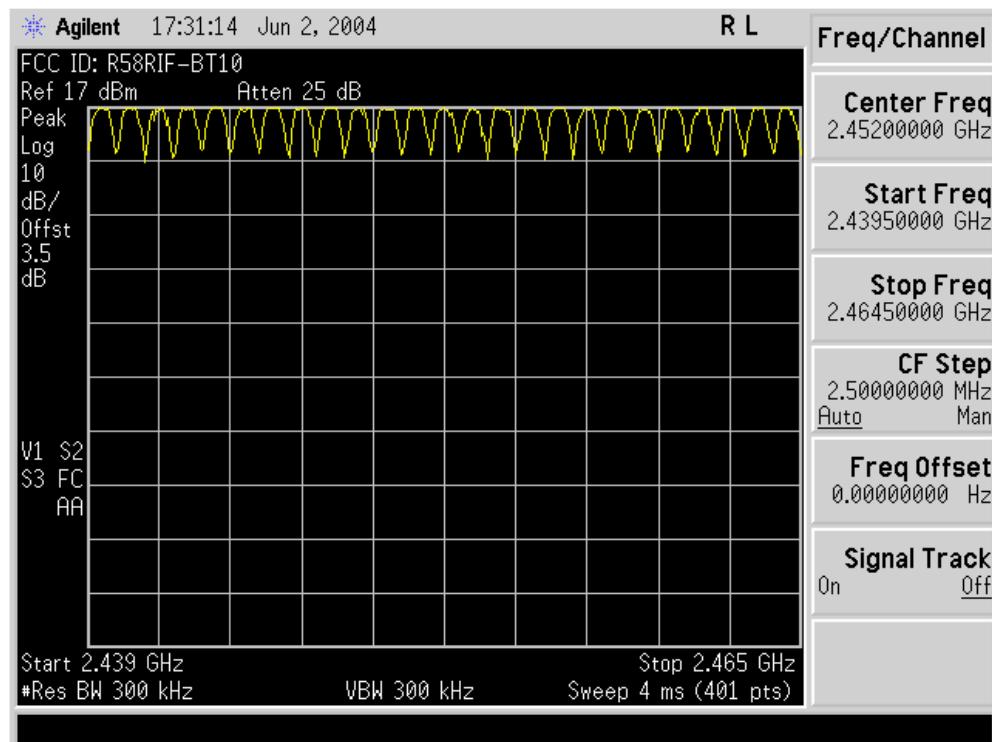
Same as the Chapter 3.2.1 (Figure 1)

TEST EQUIPMENT USED: 02, 19, 50

Number of Hopping Frequencies



Number of Hopping Frequencies



3.2.3 20 dB Bandwidth

Procedure:

The bandwidth at 20 dB below the highest inband spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels..

After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

Span = 2 MHz (approximately 2 or 3 times of the 20 dB bandwidth)

RBW = 10 kHz (1% of the 20dB bandwidth or more) Sweep = auto

VBW = 30 kHz (VBW \geq RBW) Detector function = peak

Trace = max hold

Measurement Data:

Frequency (MHz)	Channel No.	Test Results	
		Measured Bandwidth (MHz)	Result
2402	1	0.91	Complies
2441	40	0.96	Complies
2480	79	0.97	Complies

- See next pages for actual measured spectrum plots.

Minimum Standard:

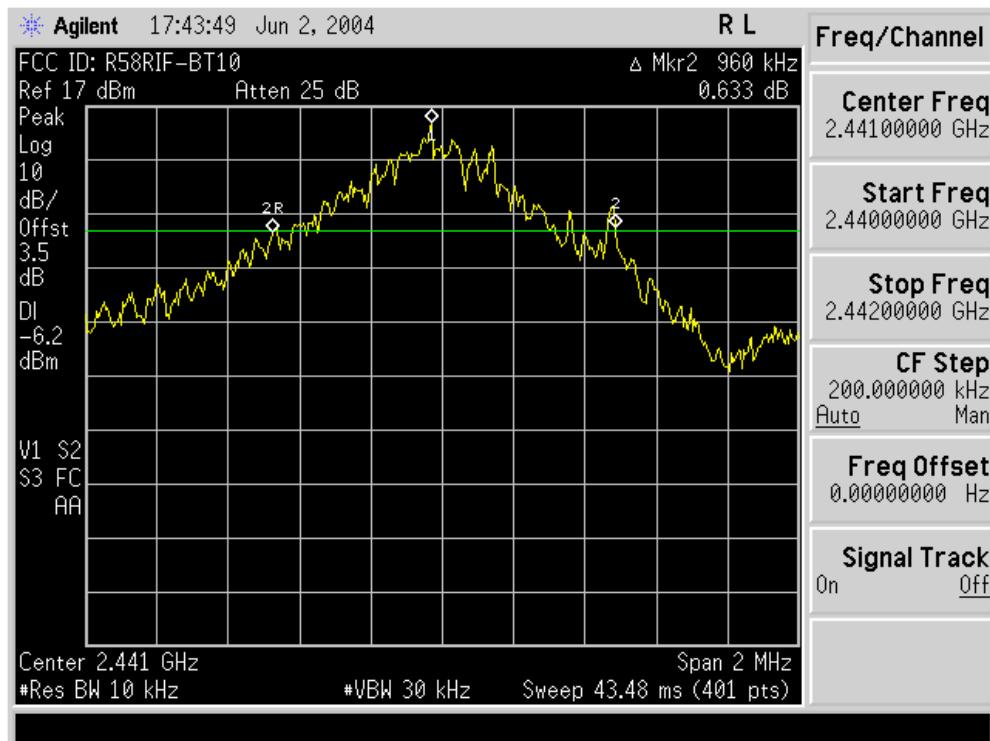
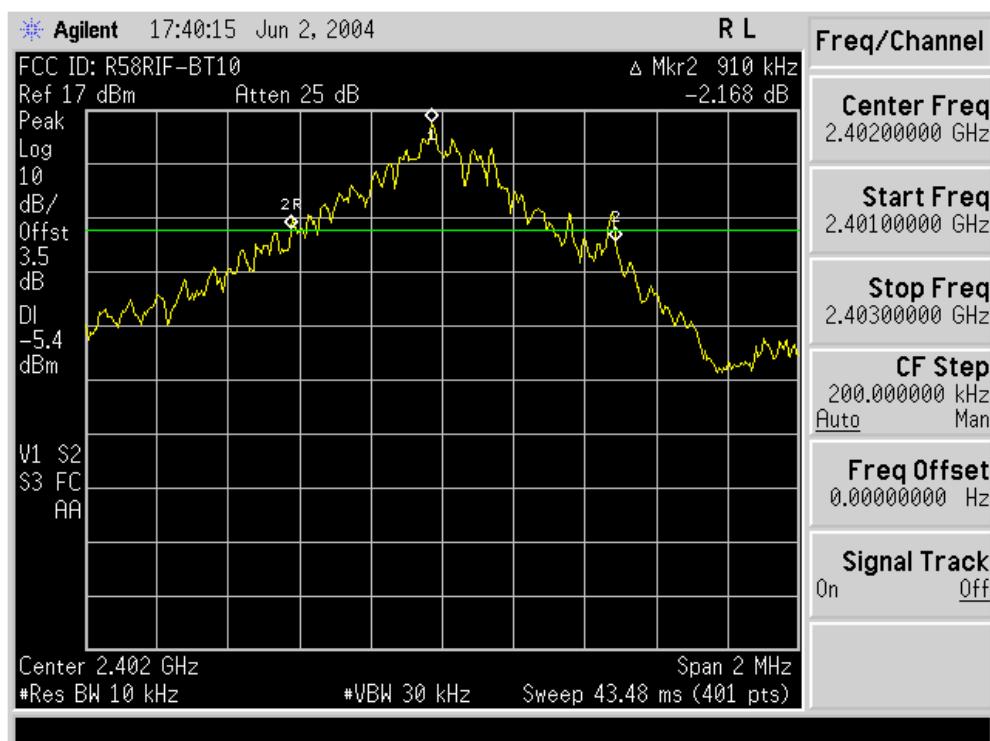
The transmitter shall have a maximum 20dB bandwidth of 1 MHz.

Measurement Setup

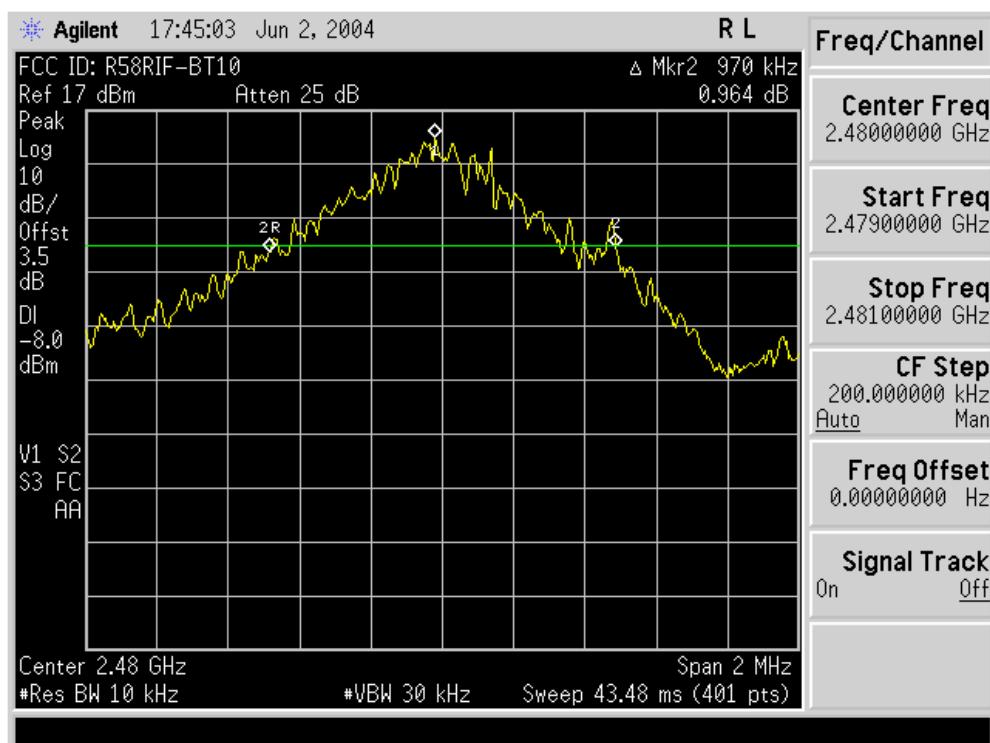
Same as the Chapter 3.2.1 (Figure 1)

TEST EQUIPMENT USED: 01, 19, 50

20 dB Bandwidth



20 dB Bandwidth



3.2.4 Time of Occupancy (Dwell Time)

Procedure:

The dwell time was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

The spectrum analyzer is set to:

Center frequency = 2441 MHz

Span = zero

RBW = 1 MHz

VBW = 1 MHz (VBW \geq RBW)

Trace = max hold

Detector function = peak

Measurement Data:

Packet Type	Burst duration in one hop (us)	Test Results	
		Dwell Time (ms)	Result
DH 1	570	182.463	Complies
DH 3	1669	268.976	Complies
DH 5	3153	334.846	Complies

- See next pages for actual measured spectrum plots.

Minimum Standard:

0.4 seconds within a 30 second period per any frequency

Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

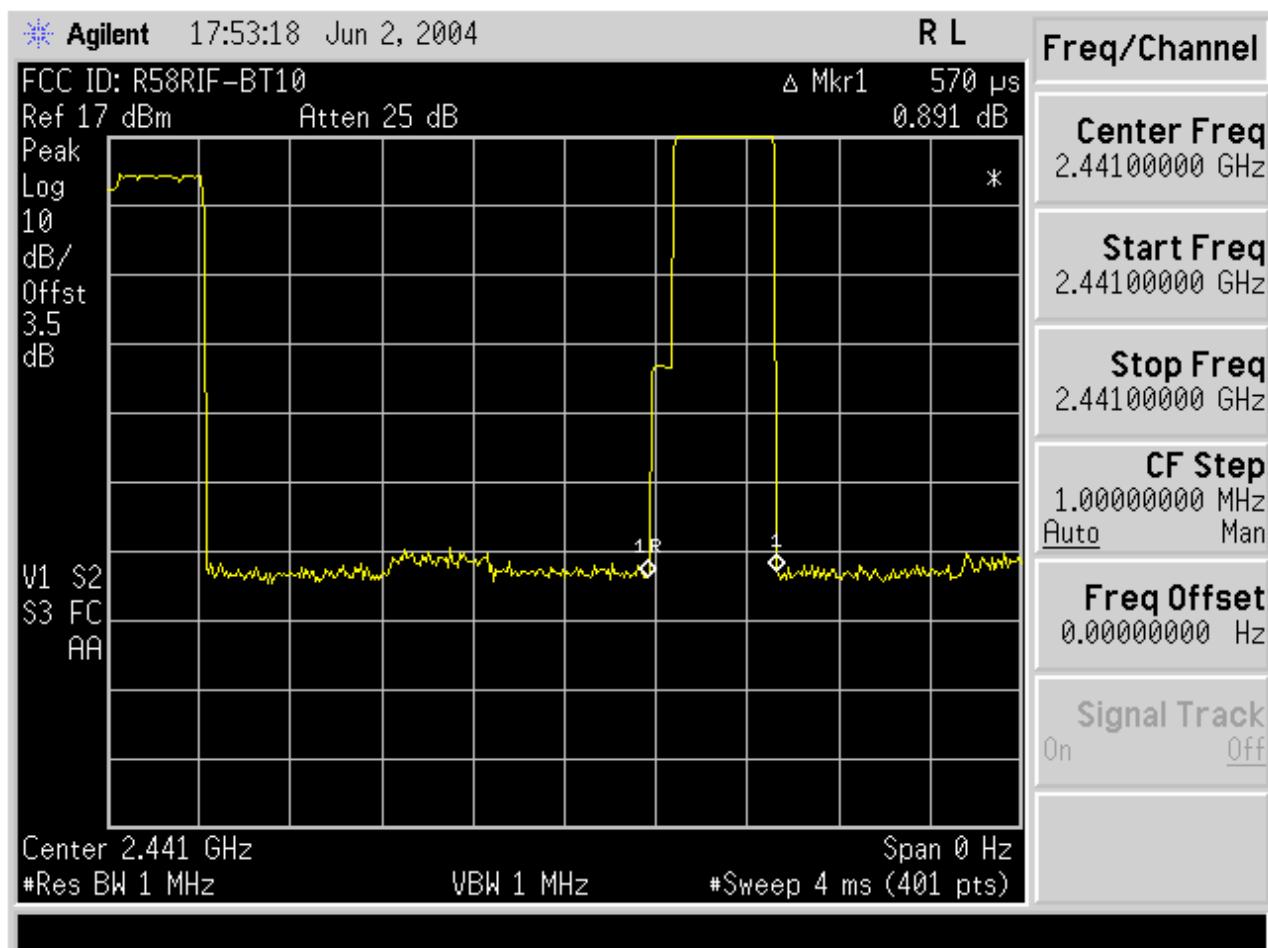
TEST EQUIPMENT USED: 01, 19, 50

Time of Occupancy for PACKET Type DH 1

The system makes worst case 1600 hops per second or 1 time slot has a length of 625 us with 79 channels. A DH 1 Packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case $1600/2 = 800$ hops per second with 79 channels. So you have each channel $800/79 = 10.13$ times per second and so for a period of $0.4 \times 79 = 31.6$ seconds you have $10.13 \times 31.6 = 320.11$ times of appearance.

Each Tx-time per appearance is 570 us

So we have $320.11 \times 570 \text{ us} = 182.463 \text{ ms}$ per 31.6 seconds.

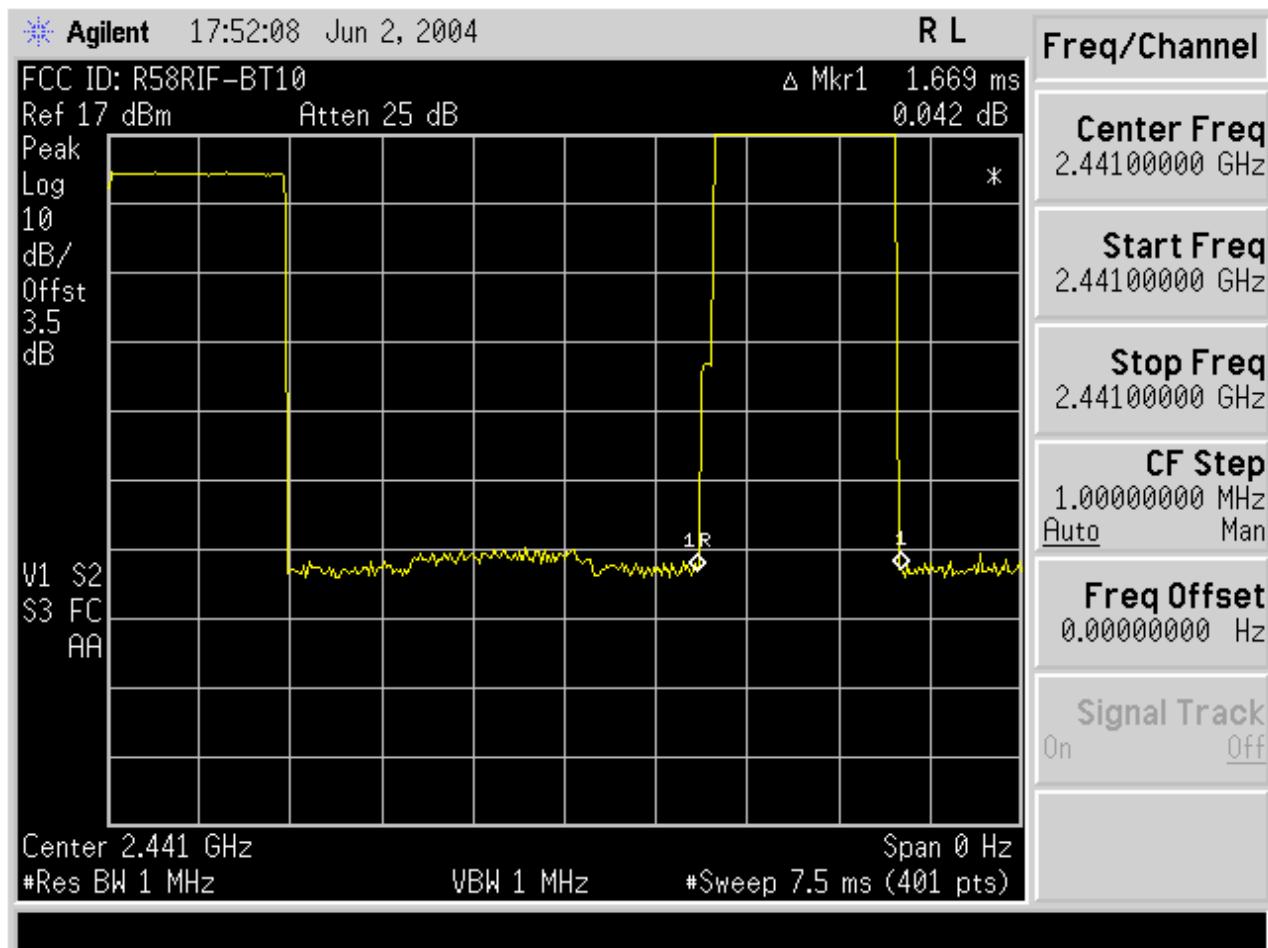


Time of Occupancy for PACKET Type DH 3

The system makes worst case 1600 hops per second or 1 time slot has a length of 625 us with 79 channels. A DH 3 Packet need 3 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case $1600/4 = 400$ hops per second with 79 channels. So you have each channel $400/79 = 5.1$ times per second and so for a period of $0.4 \times 79 = 31.6$ seconds you have $5.1 \times 31.6 = 161.16$ times of appearance.

Each Tx-time per appearance is 1.669 ms

So we have $161.16 \times 1.669 \text{ ms} = 268.976 \text{ ms}$ per 31.6 seconds.

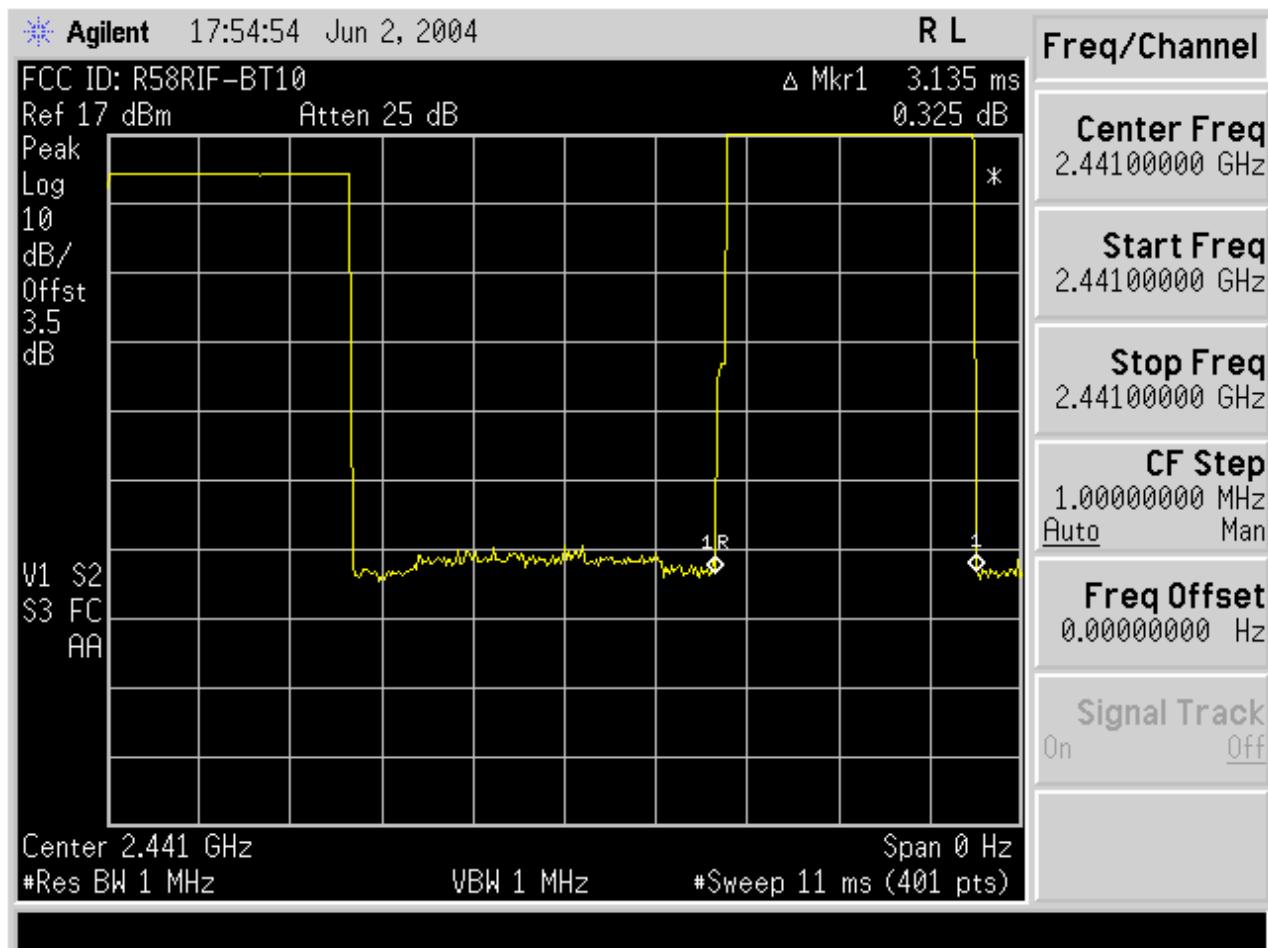


Time of Occupancy for PACKET Type DH 5

The system makes worst case 1600 hops per second or 1 time slot has a length of 625 us with 79 channels. A DH 5 Packet need 5 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case $1600/6 = 266.67$ hops per second with 79 channels. So you have each channel $266.67/79 = 3.37$ times per second and so for a period of $0.4 \times 79 = 31.6$ seconds you have $3.37 \times 31.6 = 106.49$ times of appearance.

Each Tx-time per appearance is 3.135 ms

So we have $106.49 \times 3.135 \text{ ms} = 333.846 \text{ ms}$ per 31.6 seconds.



3.2.5 Peak Output Power

Procedure:

The peak output power was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels..

After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

Span = 5 MHz (approximately 5 times of the 20 dB bandwidth)

RBW = 1 MHz (greater than the 20dB bandwidth of the emission being measured)

VBW = 1 MHz (VBW \geq RBW)

Detector function = peak

Trace = max hold

Sweep = auto

Measurement Data:

Frequency (MHz)	Ch.	Test Results		
		dBm	W	Result
2402	1	16.54	45.08	Complies
2441	40	16.61	45.81	Complies
2480	79	15.55	35.89	Complies

- See next pages for actual measured spectrum plots.

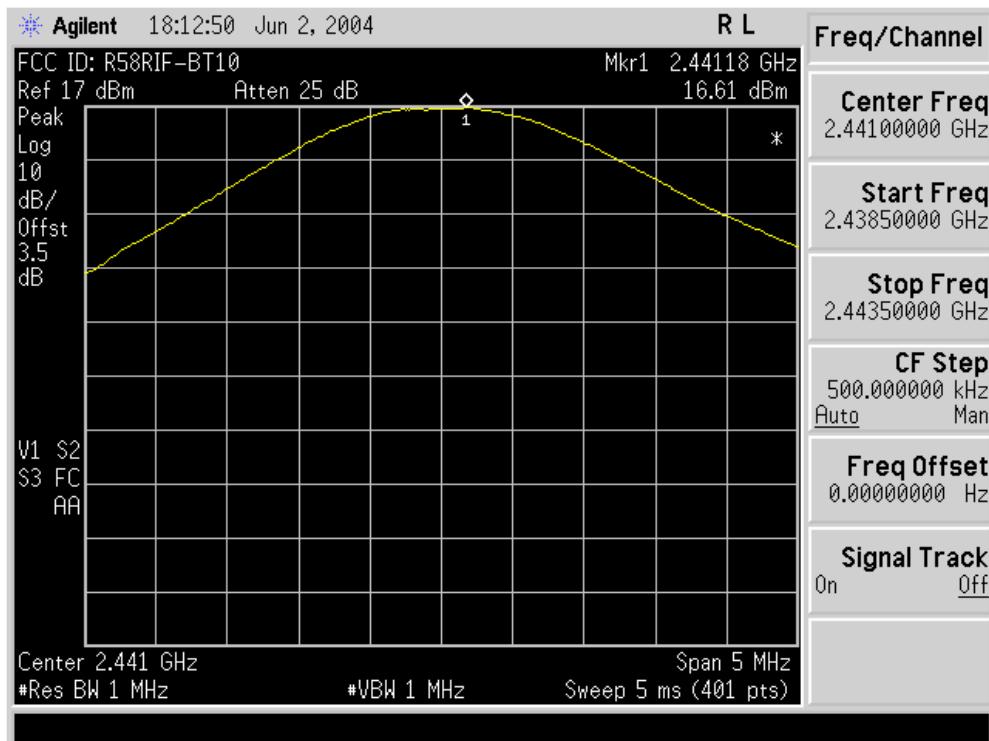
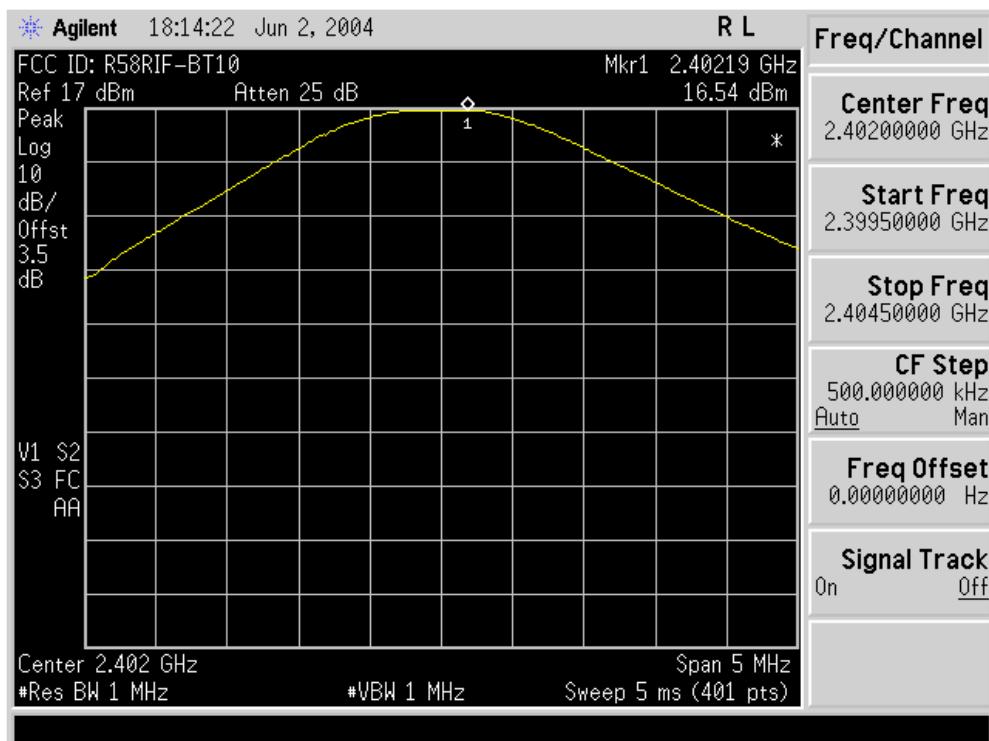
Minimum Standard: < 1W

Measurement Setup

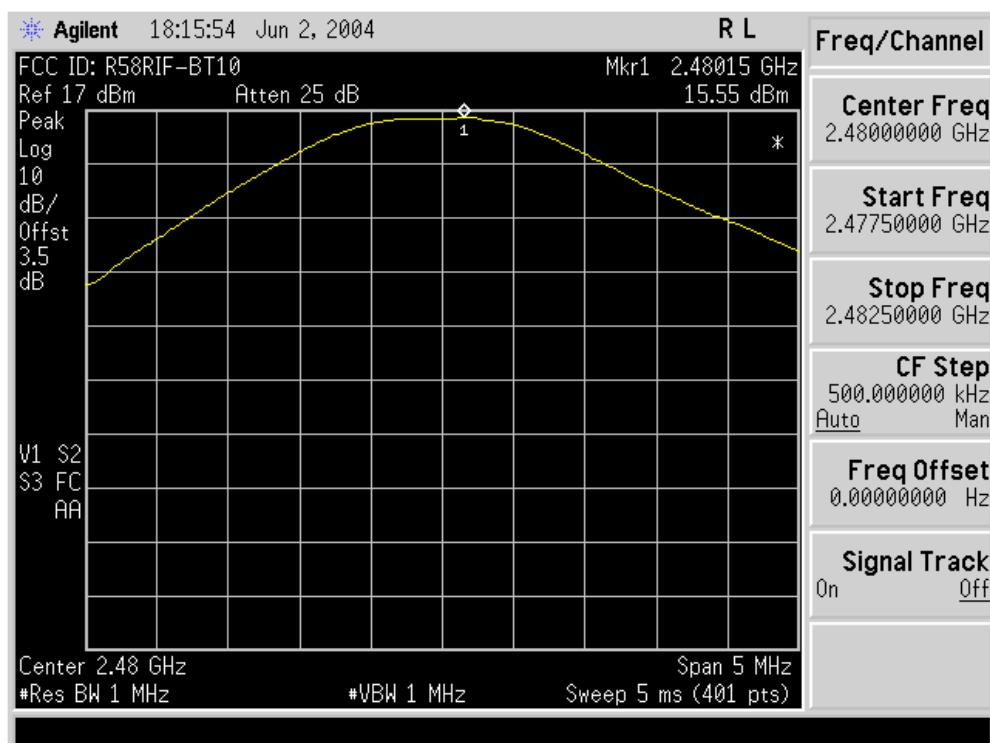
Same as the Chapter 3.2.1 (Figure 1)

TEST EQUIPMENT USED: 01, 19, 50

Peak Output Power



Peak Output Power



3.2.6 Band - edge (at 20 dB blow)

Procedure:

The bandwidth at 20dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels.

After the trace being stable, Use the marker-to-peak function to measure 20 dB down both sides of the intentional emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

VBW = 100 kHz

Span = 100 MHz

Detector function = peak

Measurement Data: Complies

- All conducted emission in any 100kHz bandwidth outside of the spread spectrum band was at least 20dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.
- See next pages for actual measured spectrum plots.

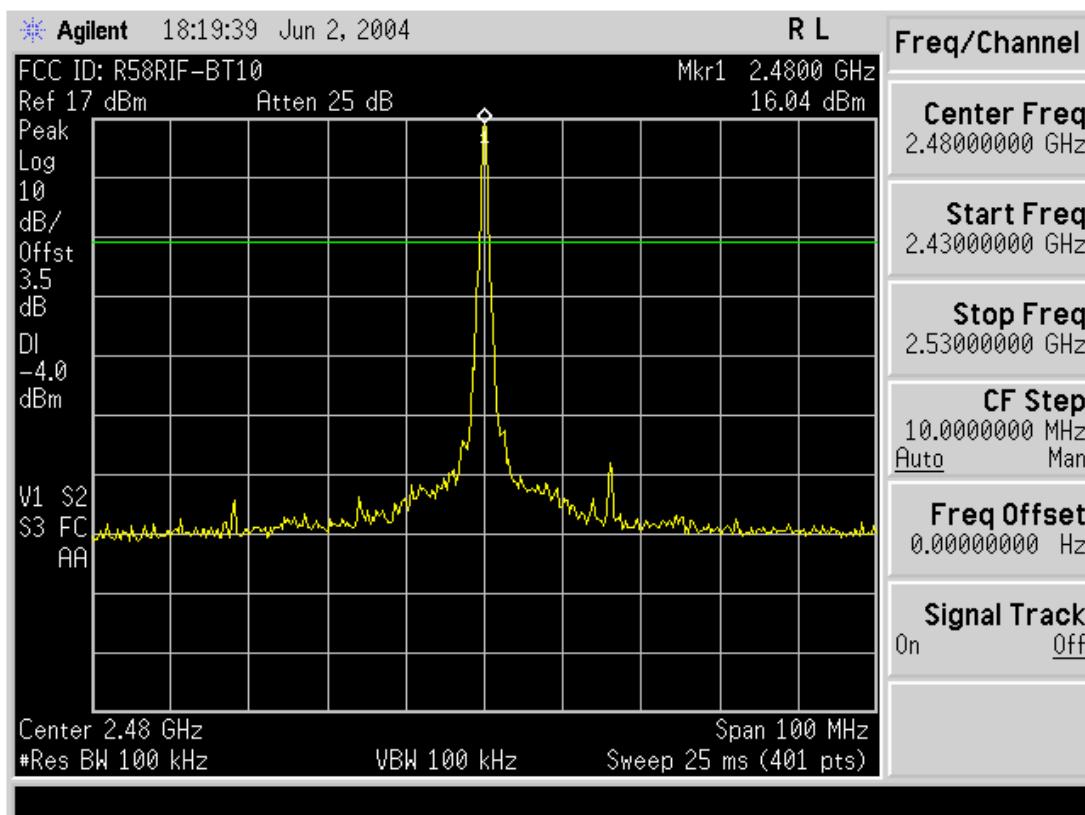
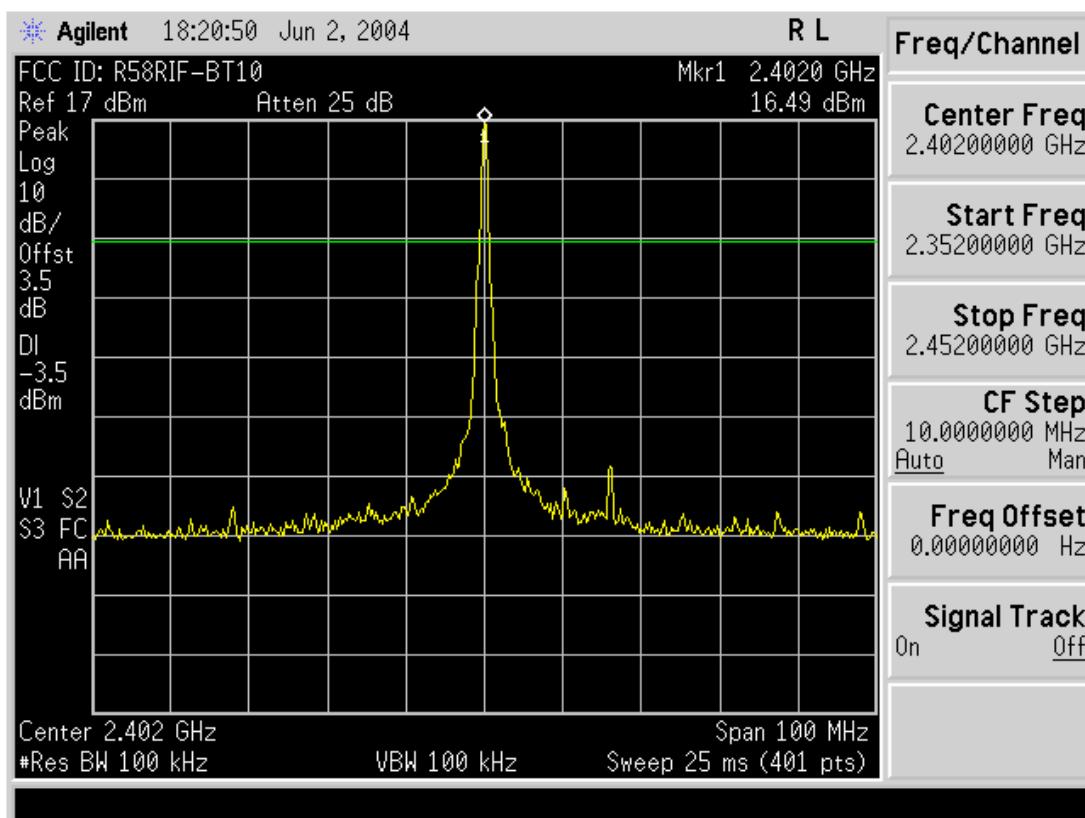
Minimum Standard:	> 20 dBc
--------------------------	----------

Measurement Setup

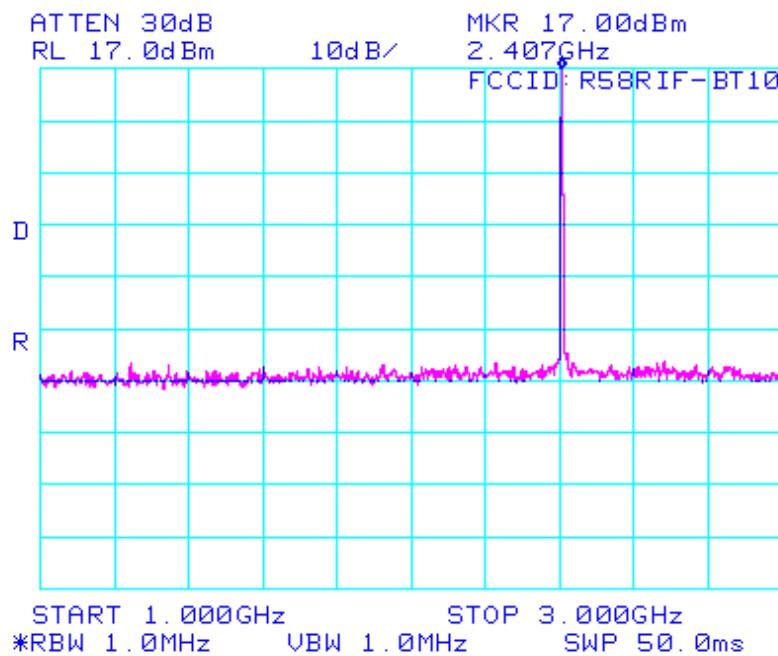
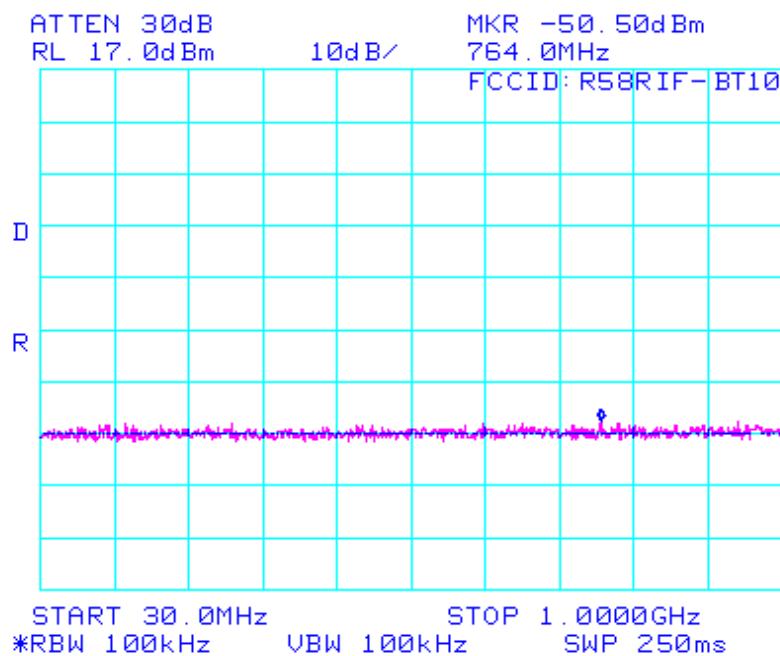
Same as the Chapter 3.2.1 (Figure 1)

TEST EQUIPMENT USED: 01, 02, 19, 50

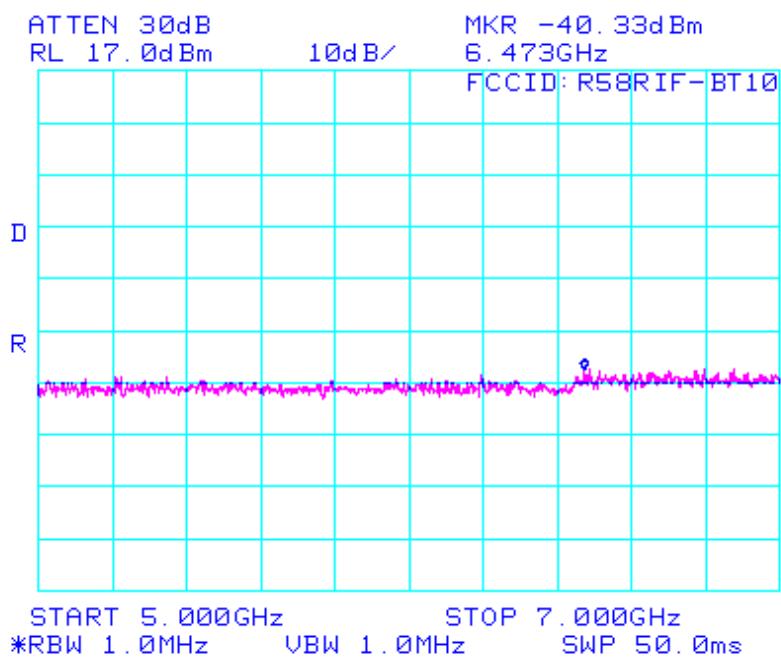
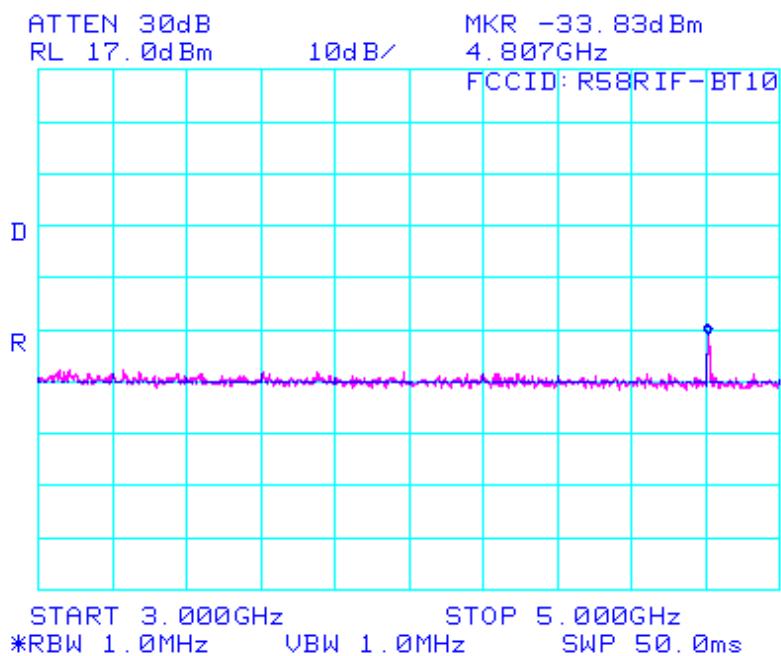
Band - edge (at 20 dB blow)



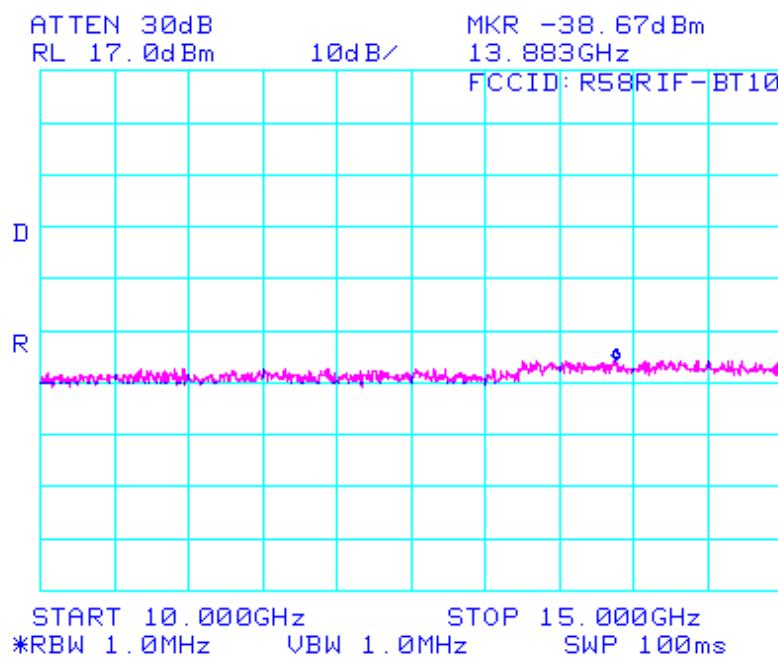
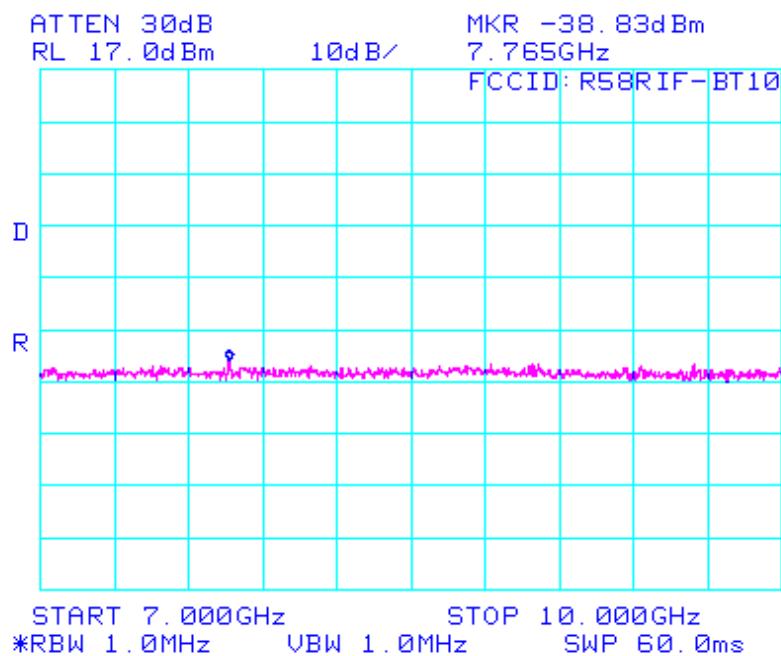
Band - edge (at 20 dB blow)
Frequency Range = 30 MHz ~ 10th harmonic.



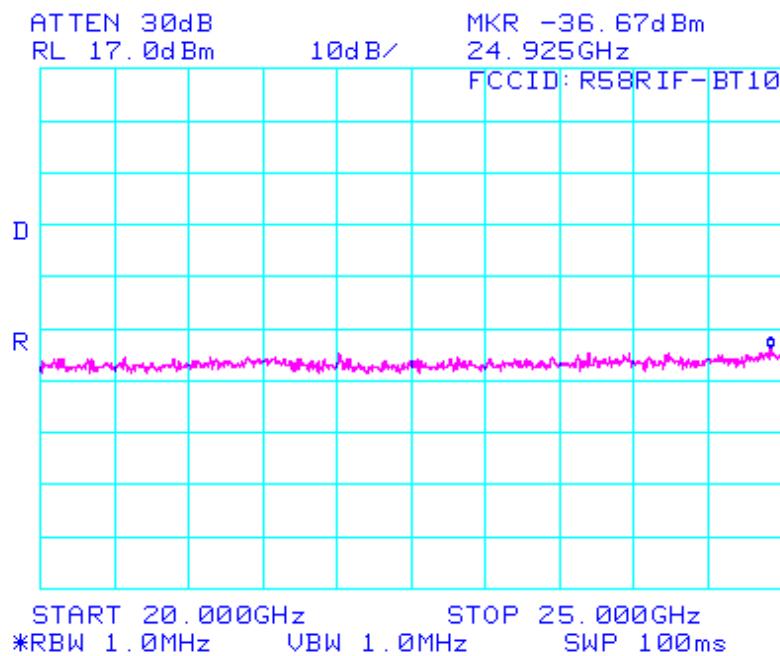
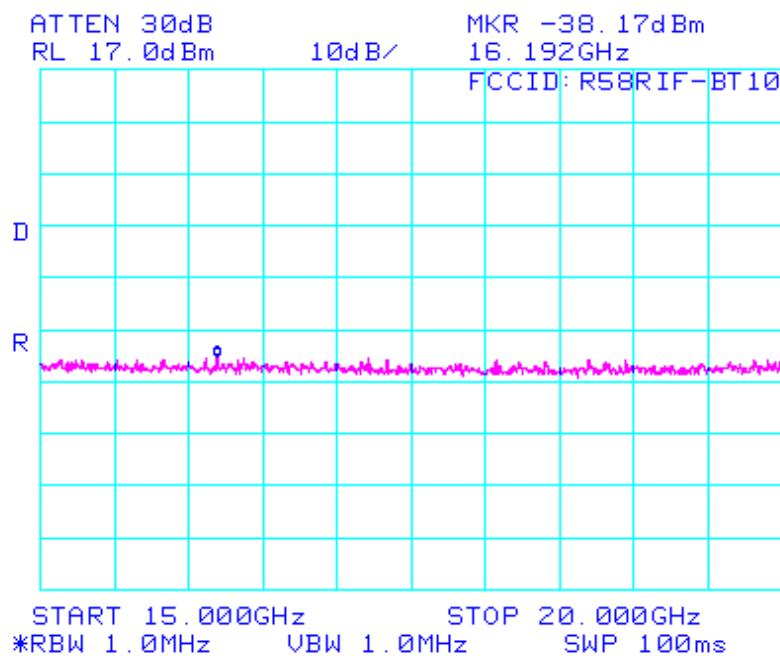
Band - edge (at 20 dB blow)

Frequency Range = 30 MHz ~ 10th harmonic.

Band - edge (at 20 dB blow)
Frequency Range = 30 MHz ~ 10th harmonic.



Band - edge (at 20 dB blow)

Frequency Range = 30 MHz ~ 10th harmonic.

3.2.7 Out of band Emission - Radiated

Procedure:

The EUT was placed on a 0.8m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

The spectrum analyzer is set to:

Center frequency = the worst channel

Frequency Range = 30 MHz ~ 10th harmonic.

RBW = 120 kHz (30MHz ~ 1 GHz)

$$\mathbf{VBW} \geq \mathbf{RBW}$$

$\equiv 1$ MHz (1 GHz \sim 10th harmonic)

Detector function = peak

Span = 100 MHz

Trace = max hold

Measurement Data: Complies

- No other emissions were detected at a level greater than 10dB below limit.
- Refer to the next page.

Minimum Standard: FCC Part 15.209(a)

Frequency (MHz)	Limit (uV/m) @ 3m
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

TEST EQUIPMENT USED: 02, 22, 30, 31, 33, 34, 39, 40, 41, 47, 49

Out of Band Emissions (TX)_USB mode

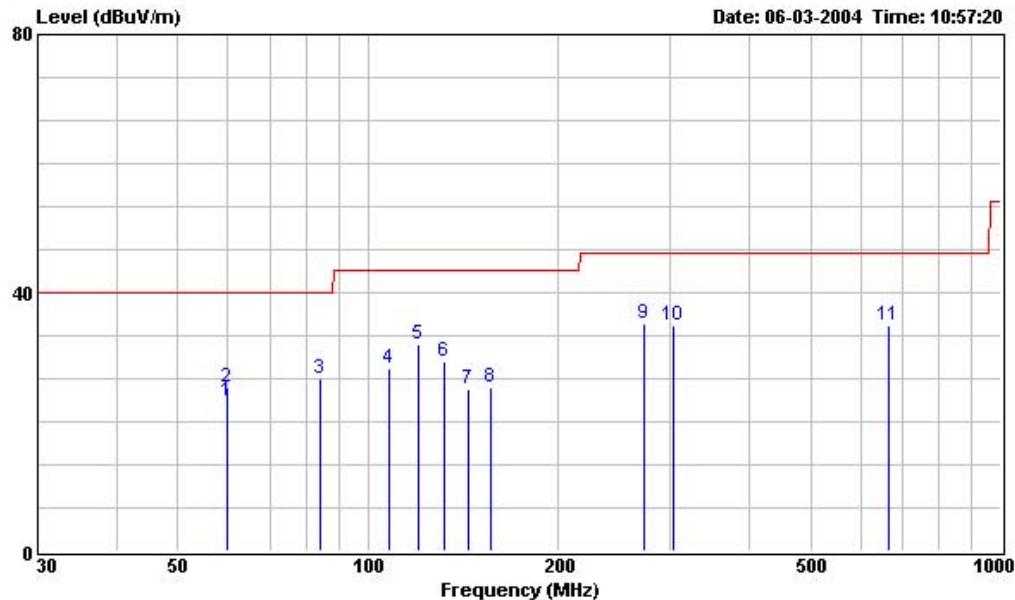


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demc@unitel.co.kr, www.digitalemc.com

Tested by Mr. 

Data#: 86

File#: C:\Program Files\el3\DEMC-KHS.EMI



Site : DIGITAL EMC Co., Ltd.
Condition : FCC CLASS-B 3m DEMC NEW 3(2003)
EUT : RIF-BT10
Power :
Memo : USB MODE

Freq	Remark	Read	Probe	Cable	Preamp	Limit	Line	Over
		Level	Factor	Loss	Factor			
MHz		dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB
1	59.980 H	43.00	7.17	1.50	28.36	-19.69	23.31	40.00 -16.69
2	59.980 V	45.00	7.17	1.50	28.36	-19.69	25.31	40.00 -14.69
3	84.020 H	46.50	6.95	1.50	28.39	-19.94	26.56	40.00 -13.44
4	108.000 H	44.00	10.76	1.90	28.34	-15.68	28.32	43.50 -15.18
5	120.000 H	46.00	12.30	2.00	28.27	-13.97	32.03	43.50 -11.47
6	132.000 H	42.00	13.44	2.00	28.20	-12.76	29.24	43.50 -14.26
7	144.000 H	37.00	14.30	2.00	28.14	-11.84	25.16	43.50 -18.34
8	156.000 H	36.50	14.99	2.00	28.08	-11.09	25.41	43.50 -18.09
9	272.500 H	42.00	18.33	2.68	27.90	-6.89	35.11	46.00 -10.89
10	304.030 V	46.50	13.78	2.60	27.93	-11.55	34.95	46.00 -11.05
11	665.350 H	40.50	19.39	4.36	29.30	-5.55	34.95	46.00 -11.05

Out of Band Emissions (TX)_Serial mode

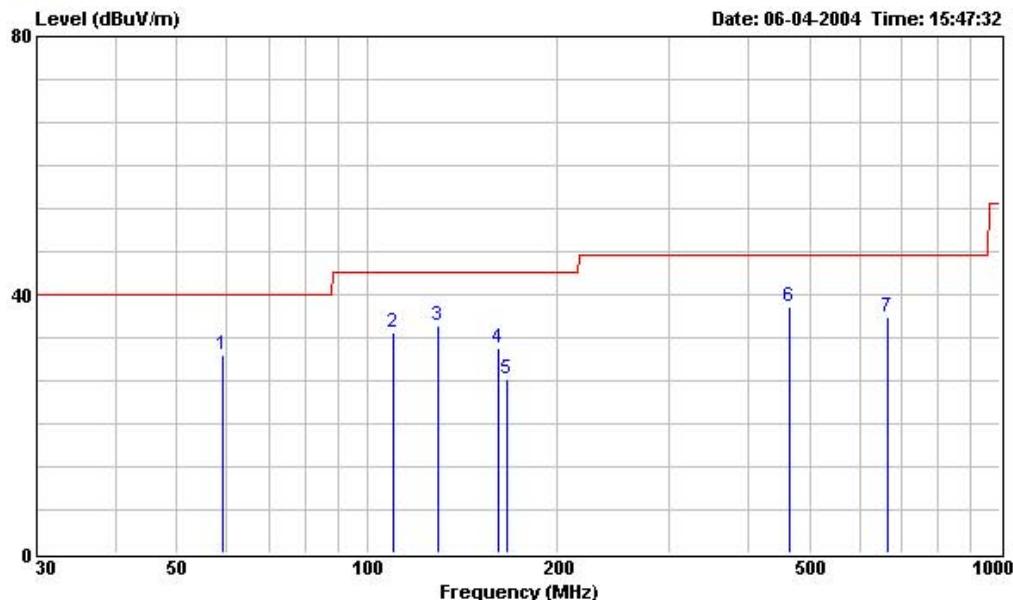


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demc@unitel.co.kr , www.digitalemc.com

Tested by Mr. 

Data#: 685

File#: C:\Program Files\el3\rokmc.EMI



Site : DIGITAL EMC Co., Ltd.
Condition : FCC CLASS-B 3m DEMC NEW 3(2003)
MODEL NO : RIF-BT10
MEMO : Serial mode (Tx)

Freq	Remark	Read	Probe	Cable	Preamp	Limit	Over		
		Level	Factor	Loss	Factor				
MHz		dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB	
1	59.100 V	50.01	7.49	1.46	28.36	-19.41	30.60	40.00	-9.40
2	110.025 V	49.51	11.02	2.00	28.33	-15.31	34.20	43.50	-9.30
3	129.430 V	48.05	13.26	2.00	28.21	-12.95	35.10	43.50	-8.40
4	160.950 H	42.45	15.21	2.00	28.06	-10.85	31.60	43.50	-11.90
5	165.800 V	37.41	15.43	2.00	28.04	-10.61	26.80	43.50	-16.70
6	466.500 V	46.20	17.14	3.50	28.84	-8.20	38.00	46.00	-8.00
7	665.350 H	41.95	19.39	4.36	29.30	-5.55	36.40	46.00	-9.60

3.2.8 AC Conducted Emissions

Procedure:

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its hopping function disabled at the middle channels in line with Section 15.31(m). Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

Measurement Data: Complies

- No other emissions were detected at a level greater than 10dB below limit.
- See next pages for actual measured spectrum plots.

Minimum Standard: FCC Part 15.207(a)/EN 55022

Frequency Range (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

Measurement Setup

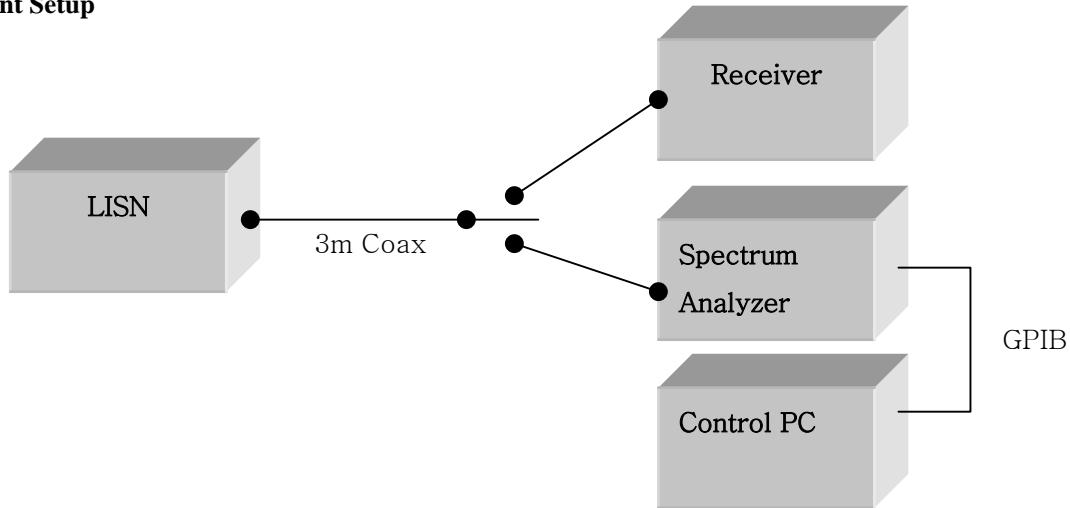
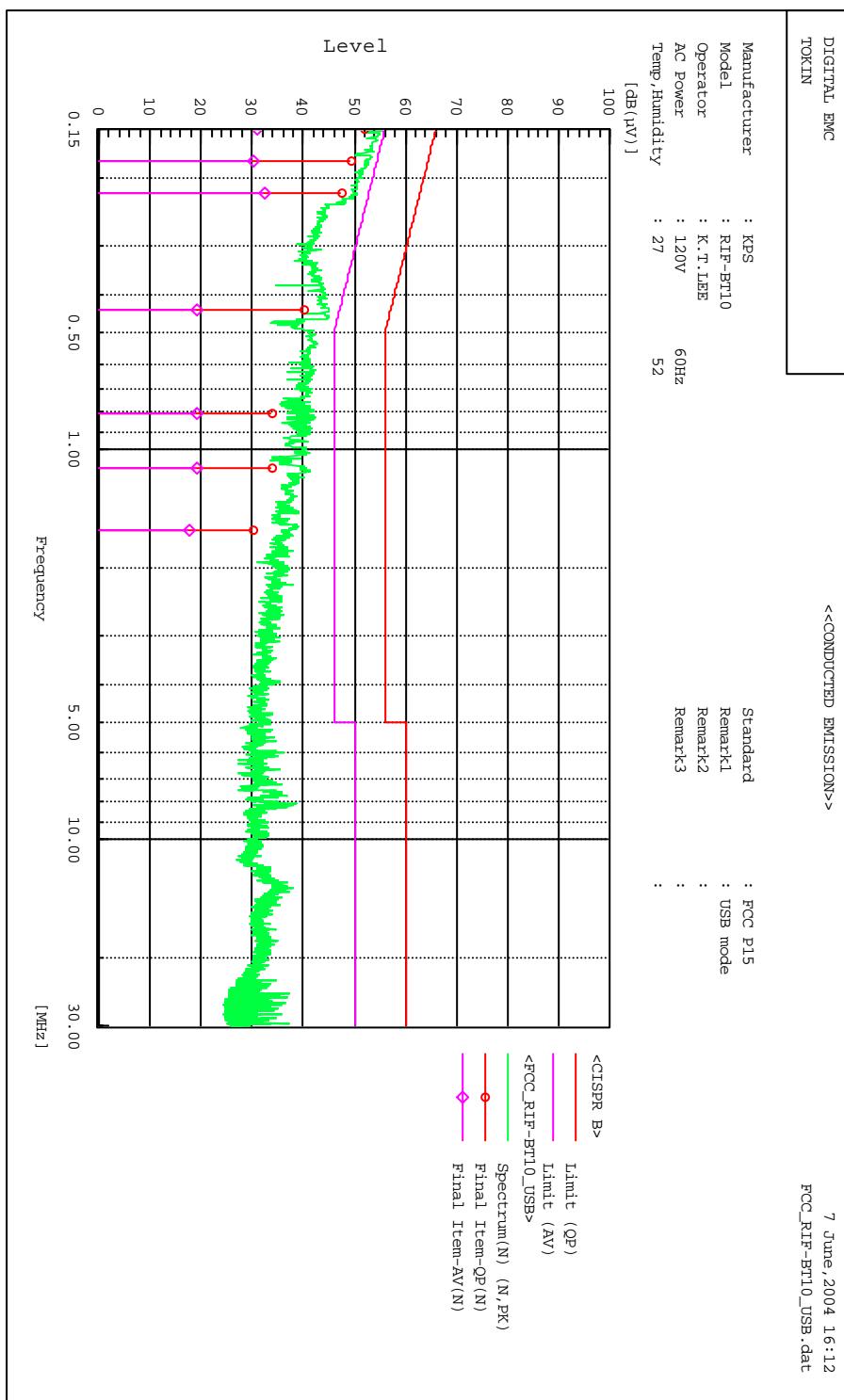


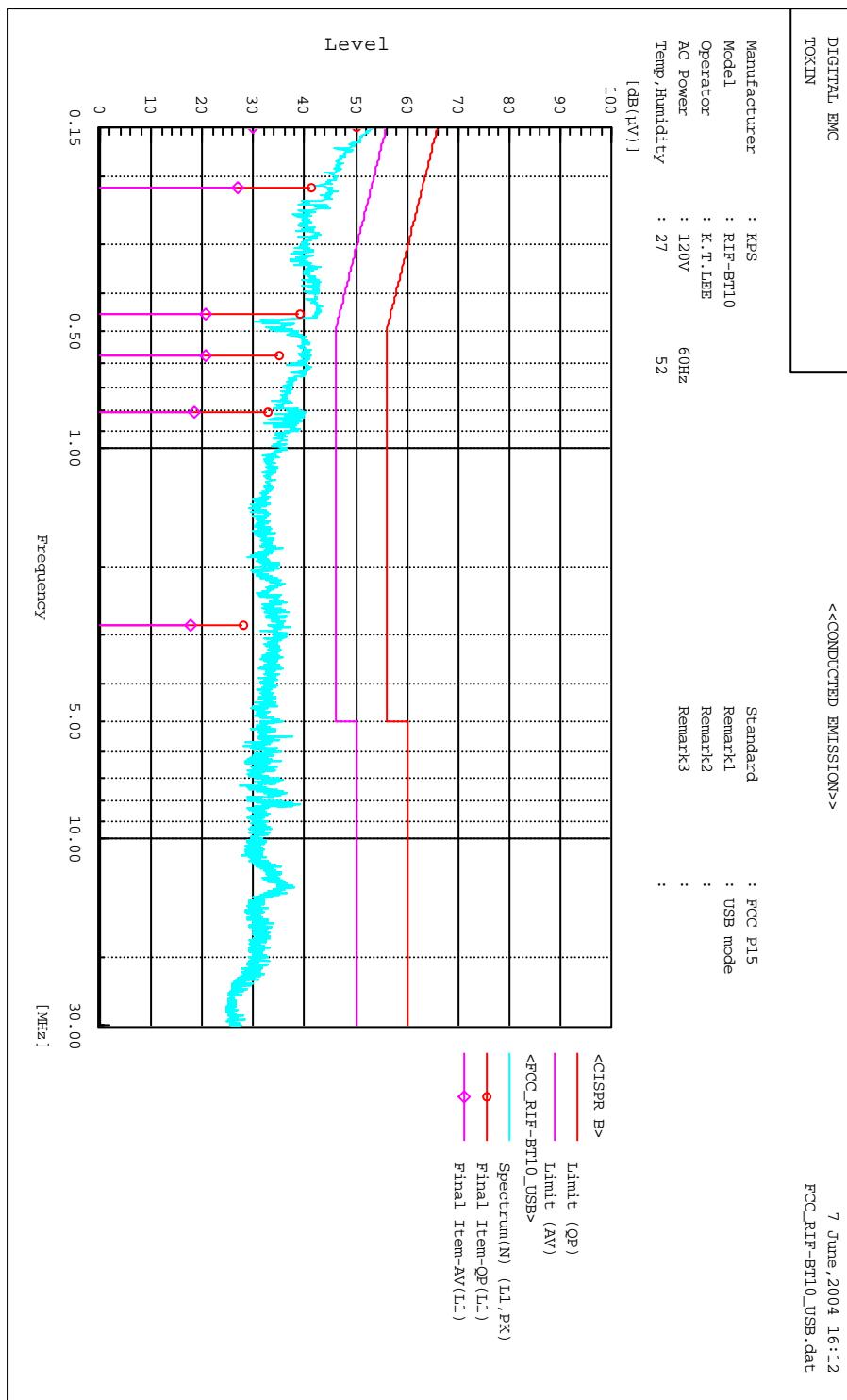
Figure 2: Measurement setup for AC Conducted Emission

TEST EQUIPMENT USED: 42, 43, 44, 45, 46, 48

USB Mode _ Neutral Graph



USB Mode _ Line Graph

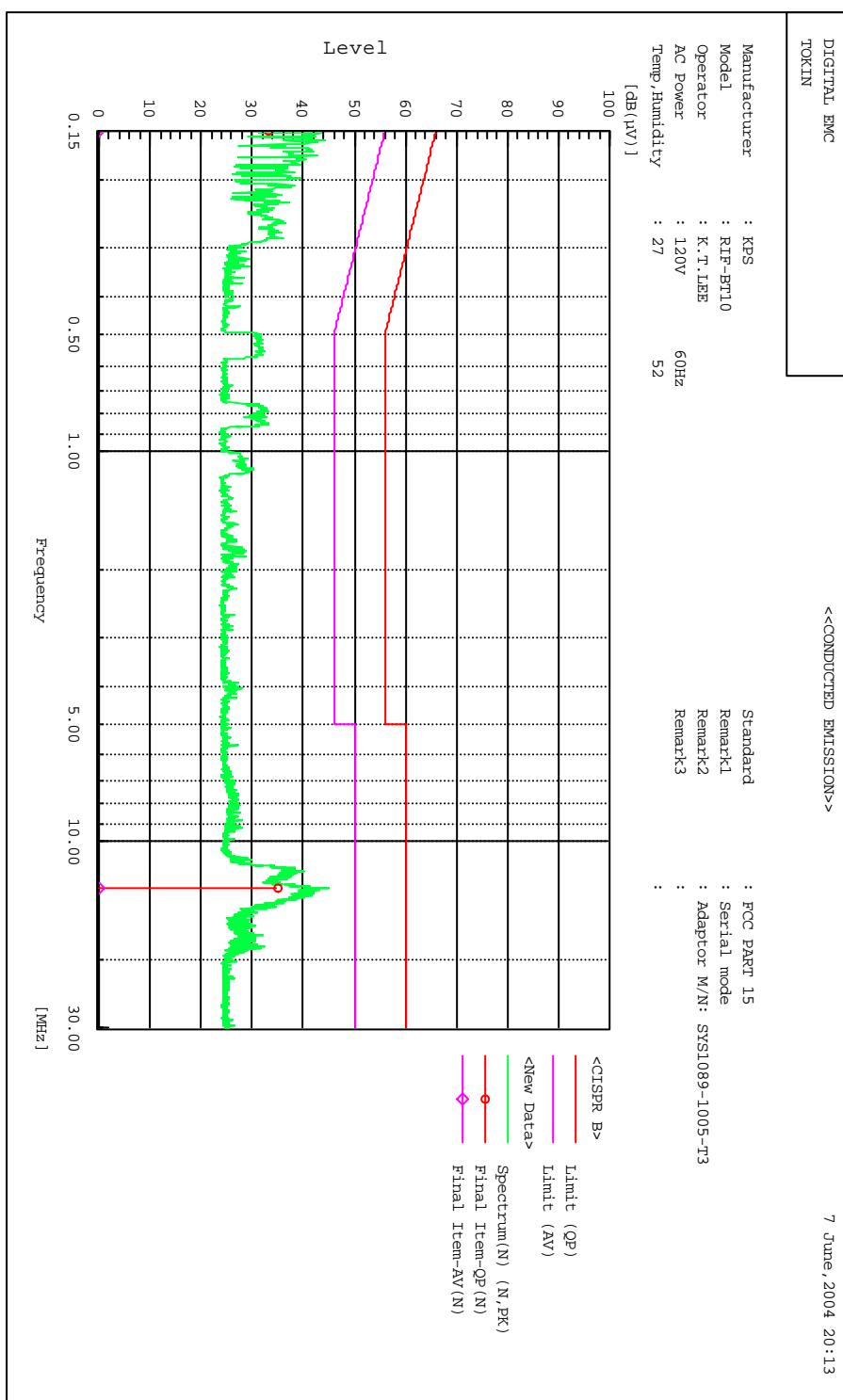


USB Mode _ List

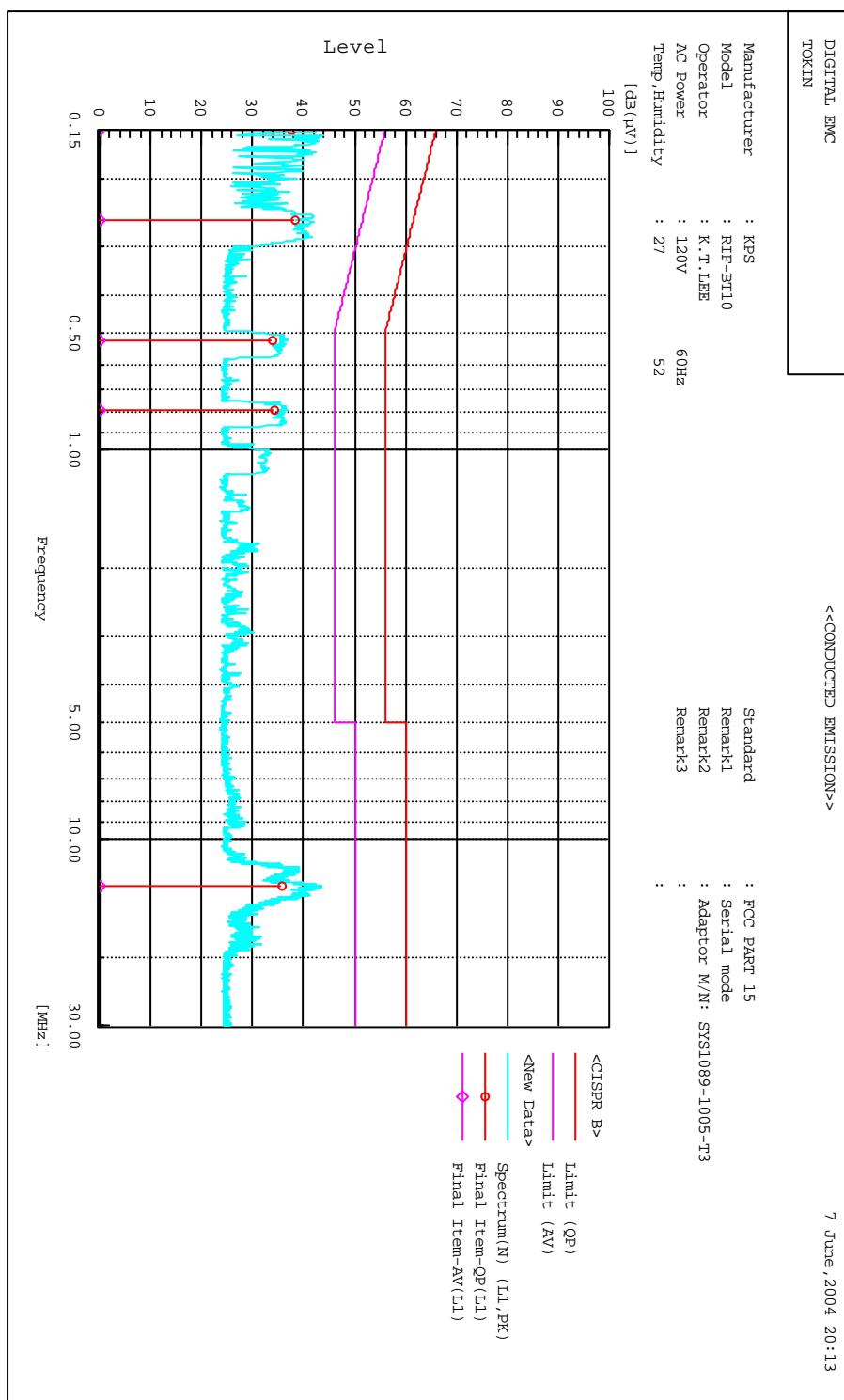
***** <<CONDUCTED EMISSION>> *****											
***** DIGITAL EMC *****											
Standard	:	FCC P15									
Manufacturer	:	KPS									
Model	:	RIF-BT10									
Operator	:	K.T.LEE									
AC Power	:	120V									
Temp, Humidity	:	27									
Temp, Humidity	:	60HZ									
Temp, Humidity	:	52									
Remark1	:	USB mode									
Remark2	:										
Remark3	:										
Final Result											
--- N Phase ---			Reading	Reading	c.f.	Result	Result	Limit	Limit	Margin	Margin
No.	Frequency	QP	QP	AV	QP	QP	AV	QP	AV	QP	AV
	[MHz]	[dB(µV)]	[dB(µV)]	[dB]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB]	[dB]
1	0.150	50.2	29.3	1.8	52.0	31.1	66.0	56.0	14.0	24.9	
2	0.181	48.1	29.0	1.3	49.4	30.3	64.4	54.4	15.0	24.1	
3	0.220	46.0	31.4	1.0	47.6	32.4	62.8	52.8	15.2	20.4	
4	0.436	40.6	18.9	0.4	40.4	19.3	57.1	47.1	16.7	27.8	
5	0.805	33.8	18.9	0.3	34.1	19.2	56.0	46.0	21.9	26.8	
6	1.117	33.8	18.9	0.2	34.0	19.1	56.0	46.0	22.0	26.9	
7	1.598	30.2	17.6	0.2	30.4	17.8	56.0	46.0	25.6	28.2	
--- I1 Phase ---											
No.	Frequency	Reading	Reading	c.f.	Result	Result	Limit	Limit	Margin	Margin	Margin
	QP	QP	AV	QP	QP	AV	QP	AV	QP	AV	QP
	[MHz]	[dB(µV)]	[dB(µV)]	[dB]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB]	[dB]	[dB]
1	0.150	48.2	28.2	1.8	50.0	30.0	66.0	56.0	16.0	26.0	
2	0.214	40.4	25.8	1.0	41.4	26.8	63.0	53.0	21.6	26.2	
3	0.450	38.6	20.1	0.4	39.0	20.5	56.9	46.9	17.9	26.4	
4	0.576	34.7	20.3	0.3	35.0	20.6	56.0	46.0	21.0	25.4	
5	0.809	32.7	18.2	0.3	33.0	18.5	56.0	46.0	23.0	27.5	
6	2.837	27.4	17.2	0.5	27.9	17.7	56.0	46.0	28.1	28.3	

7 June, 2004 16:12
FCC_RIF-BT10_USB.dat

Serial Mode (SUNNY adaptor)_ Neutral Graph



Serial Mode (SUNNY adaptor) _ Line Graph



Serial Mode (SUNNY adaptor) _ List

***** DIGITAL EMC *****

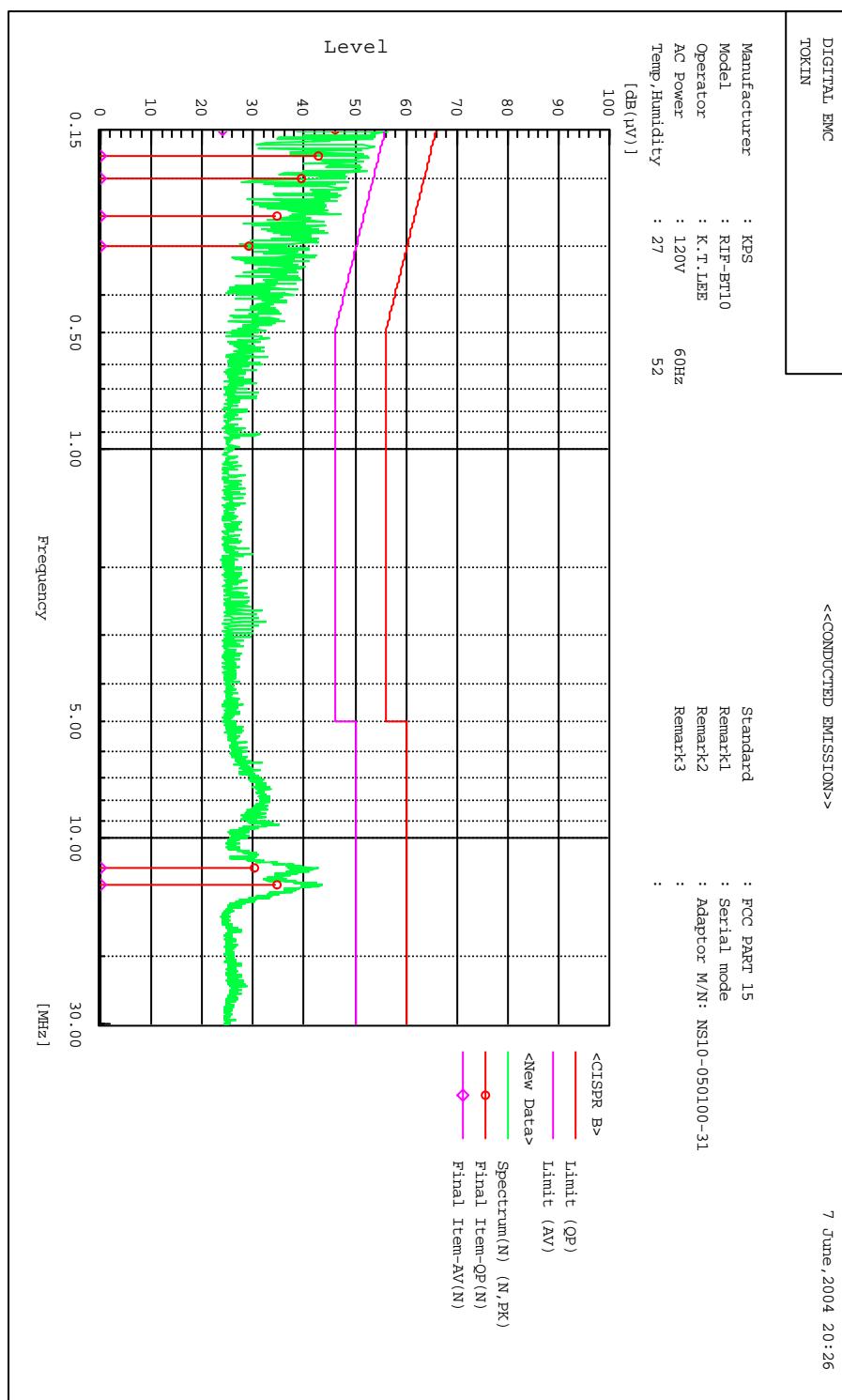
7 June, 2004 20:13:34
***** DIGITAL EMC *****
=><<CONDUCTED EMISSION>>

7 June, 2004 20:13

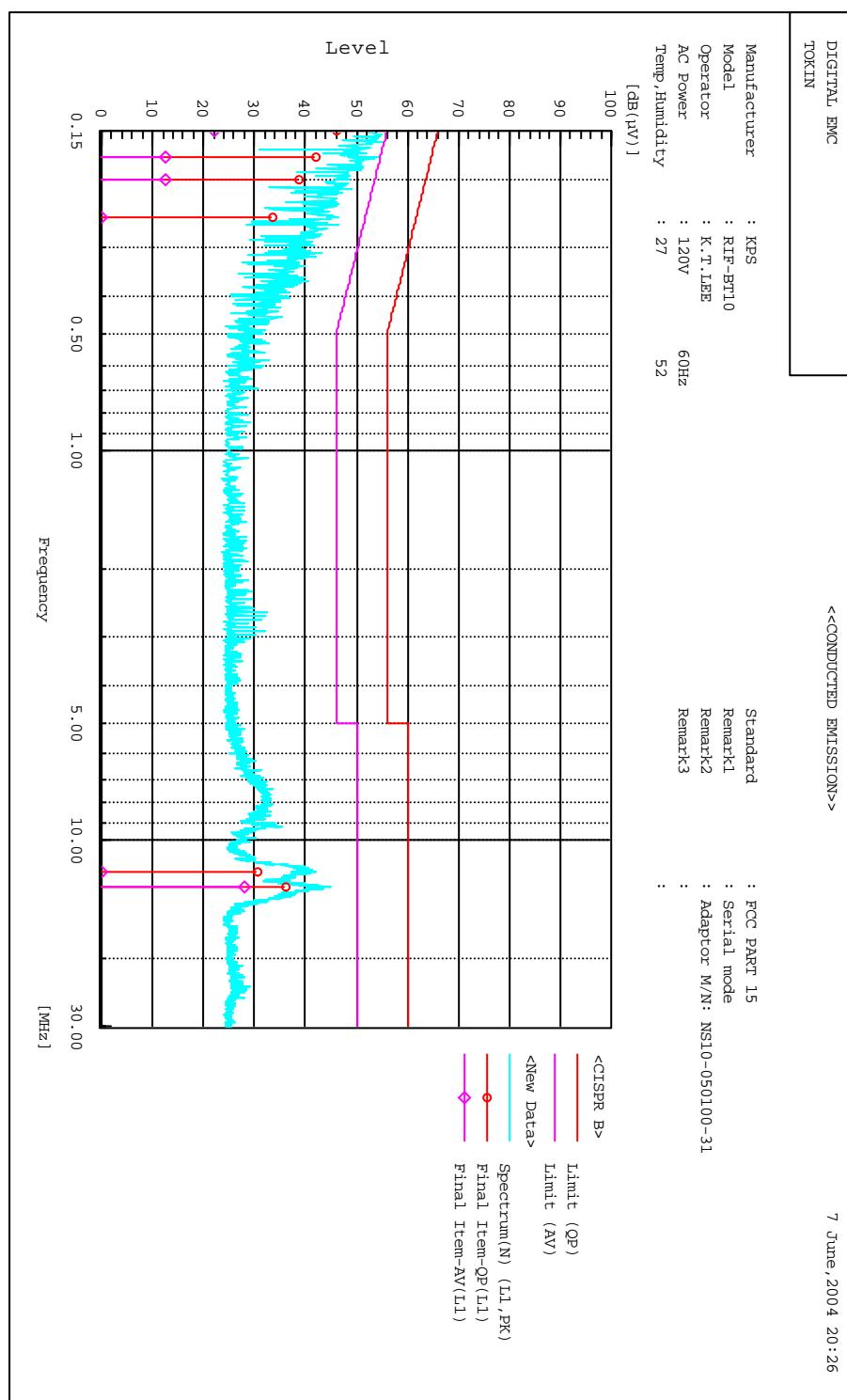
Standard	: FCC PART 15	
Manufacturer	: KPS	
Model	: KIF-BT10	
Operator	: K.T.LEE	
AC Power	120V	60Hz
Temp, Humidity	27	52
Remark1	: Serial mode	
Remark2	: Adaptor M/N: SYS1089-1005-T3	
Remark3		

--- N Phase ---									
No.	Frequency	Reading	Reading	c-f	Result	Result	Limit	Limit	Margin
	QP	AV	AV	QP	AV	QP	AV	AV	QP
	[MHz]	[dB(µV)]	[dB(µV)]	[dB]	[dB(µV)]	[dB(µV)]	[dB]	[dB]	[dB]
1	0.150	31.3	0.0	1.8	33.1	0.0	66.0	56.0	32.9
2	13.155	34.7	0.0	0.5	35.2	0.0	60.0	50.0	24.8
--- L1 Phase ---									
No.	Frequency	Reading	Reading	c.f.	Result	Result	Limit	Limit	Margin
	QP	AV	AV	QP	AV	QP	AV	AV	QP
	[MHz]	[dB(µV)]	[dB(µV)]	[dB]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB]
1	0.150	35.9	0.0	1.8	37.7	0.0	66.0	56.0	28.3
2	0.257	37.3	0.0	0.9	38.2	0.0	61.5	51.5	23.3
3	0.520	33.5	0.0	0.3	33.8	0.0	56.0	46.0	22.2
4	0.784	33.9	0.0	0.3	34.2	0.0	56.0	46.0	21.8
5	13.148	35.1	0.0	0.6	35.7	0.0	60.0	50.0	24.3

Serial Mode (LEI adaptor)_ Neutral Graph



Serial Mode (LEI adaptor) _ Line Graph



Serial Mode (LEI adaptor) – List

***** DIGITAL EMC <<CONDUCTED EMISSION

7 June, 2004 20:26

Standard	: FCC PART 15									
Manufacturer	: KRS									
Model	: RIF-BT10									
Operator	: K.T.I.FE									
AC Power	: 120V 60HZ									
Temp. Humidity	: 27 52									
Remark1	: Serial mode									
Remark2	: Adaptor M/N: NS10-050100-311									
Remark3	: ;									

Final Result										

--- N Phase ---										
No.	Frequency	Reading QP	Reading AV	c.f.	R					
	[MHz]	[dB(µW)]	[dB(µW)]	[dB]	[d]					
1	0.150	44.4	22.2	1.8						
2	0.175	41.4	0.0	1.4						
3	0.200	38.1	0.0	1.2						
4	0.250	33.8	0.0	0.9						
5	0.300	28.4	0.0	0.8						
6	13.164	34.2	0.0	0.5						
7	11.895	29.6	0.0	0.6						

--- L1 Phase ---										
No.	Frequency	Reading QP	Reading AV	c.f.	R					
	[MHz]	[dB(µW)]	[dB(µW)]	[dB]	[d]					
1	0.150	44.3	20.5	1.8						
2	0.175	40.6	11.2	1.3						
3	0.200	37.7	11.5	1.1						
4	0.250	32.6	0.0	1.0						
5	0.300	28.2	0.0	9.7						
6	13.113	35.5	27.4	0.6						
7	12.020	30.0	0.0	0.7						

Result	Result	Limit	Limit	Margin	Margin	Remark	
QP	AV	QP	AV	QP	AV	AV	
dB(mV)	[dB(mV)]	dB(mV)	[dB(mV)]	dB	[dB]	[dB]	
45.2	24.0	55.0	56.0	19.8	32.0	0.0	
42.8	0.0	64.7	54.7	21.9	0.0	0.0	
39.3	0.0	63.6	53.6	24.3	0.0	0.0	
34.7	0.0	61.8	51.8	27.1	0.0	0.0	
29.2	0.0	60.2	50.2	31.0	0.0	0.0	
34.7	0.0	60.0	50.0	25.3	0.0	0.0	
30.2	0.0	60.0	50.0	29.8	0.0	0.0	
Result	Result	Limit	Limit	Margin	Margin	Margin	Remark
QP	AV	QP	AV	QP	AV	AV	
dB(mV)	[dB(mV)]	dB(mV)	[dB(mV)]	dB	[dB]	[dB]	
46.1	22.3	65.0	56.0	19.9	33.7	0.0	
41.9	12.5	64.7	54.7	22.8	42.2	0.0	
38.8	12.6	63.6	53.6	24.8	41.0	0.0	
33.6	0.0	61.8	51.8	28.2	0.0	0.0	
37.9	0.0	0.0	0.0	-37.9	0.0	0.0	
36.1	28.0	60.0	50.0	23.9	22.0	0.0	
30.7	0.0	60.0	50.0	29.3	0.0	0.0	

3.3 Receiver requirements

3.3.1 AC Conducted Emissions

Procedure:

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its receiving function. Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

Measurement Data: Complies

- See next pages for actual measured spectrum plots.

Minimum Standard: FCC Part 15.207(a)/EN 55022

Frequency Range (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

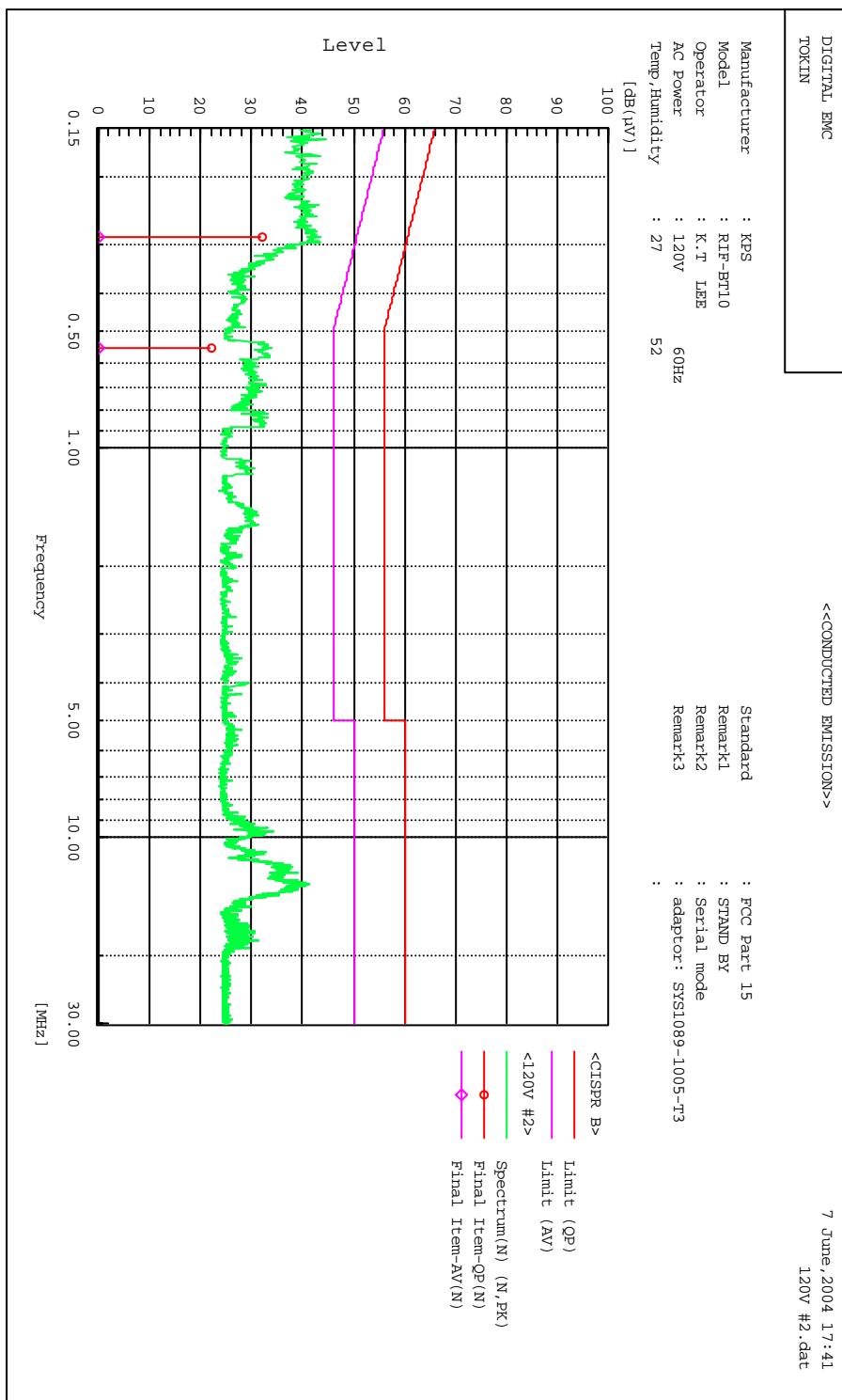
* Decreases with the logarithm of the frequency

Measurement Setup

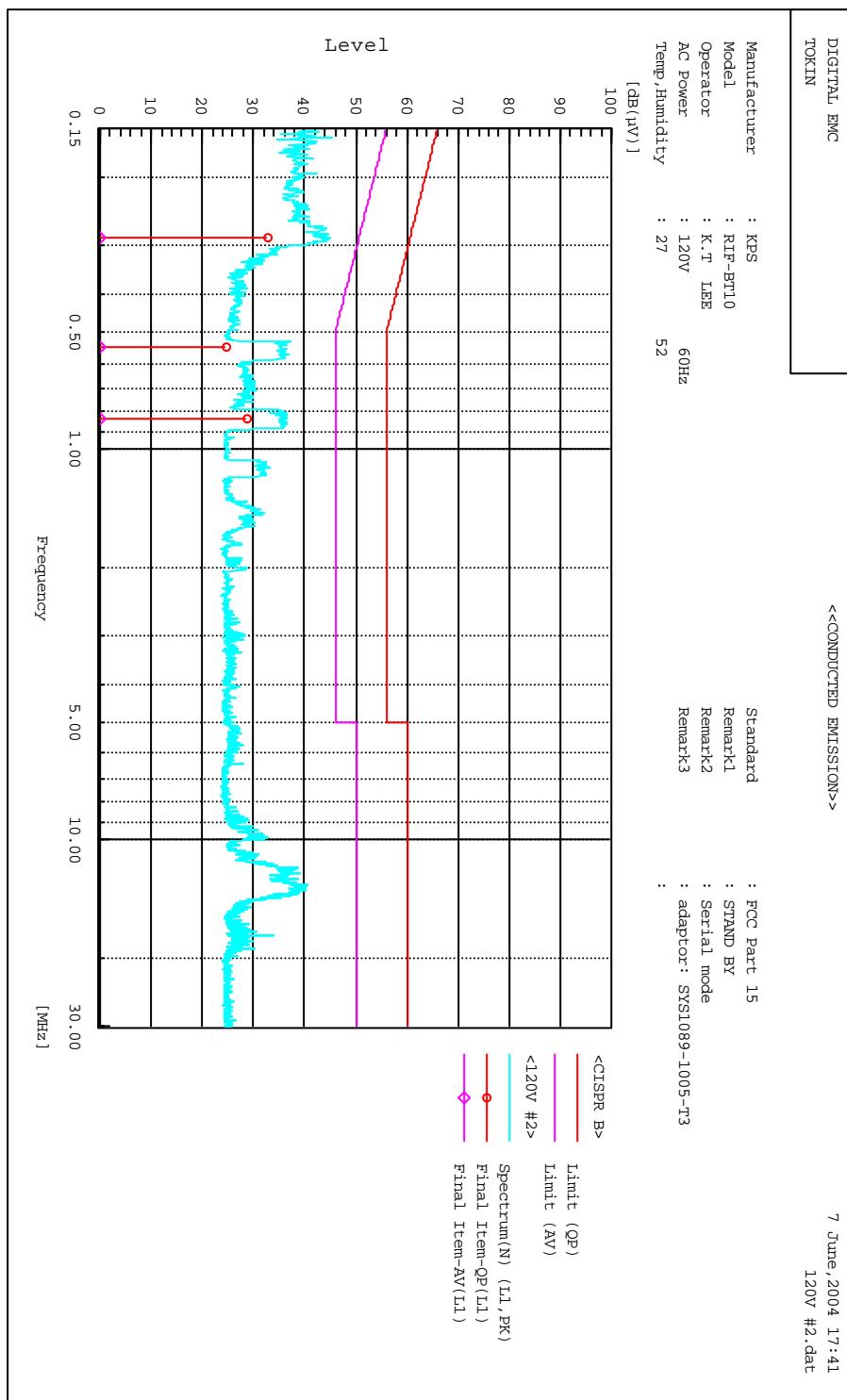
Same as the Chapter 3.2.9 (Figure 2)

TEST EQUIPMENT USED: 42, 43, 44, 45, 46, 48

Standby mode_Neutral Graph



Standby mode_Line Graph



Standby mode_List

7 June, 2004 17:41
 120V #2.dat
 <<CONDUCTED EMISSION>>

 Standard : FCC Part 15
 Manufacturer : KPS
 Model : RIF-BT10
 Operator : K.T LEE
 AC Power : 120V 60Hz
 Temp, Humidity : 27 52
 Remark1 : STAND BY
 Remark2 : Serial mode
 Remark3 : adaptor: SYS1089-1005-T3
 :

7 June, 2004 17:41
120V #2.dat

3.3.2 Radiated Emission

Procedure:

The EUT was placed on a 0.8m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in a OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

The spectrum analyzer is set to:

Frequency Range = 30 MHz ~ 10th harmonic.

RBW = 120 kHz (30MHz ~ 1 GHz)

$$\text{VBW} \geq \text{RBW}$$

$\equiv 1$ MHz (1 GHz $\sim 10^{\text{th}}$ harmonic)

Trace = max hold

Detector function = peak

Sweep = auto

Measurement Data: Complies

- Remark: the other emission is less than 10dB.
- Refer to the next page

Minimum Standard: FCC Part 15.209(a)

Frequency (MHz)	Limit (uV/m) @ 3m
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

TEST EQUIPMENT USED: 02, 22, 30, 31, 33, 34, 39, 40, 41, 47, 49

Standby mode_Out of Band Emissions

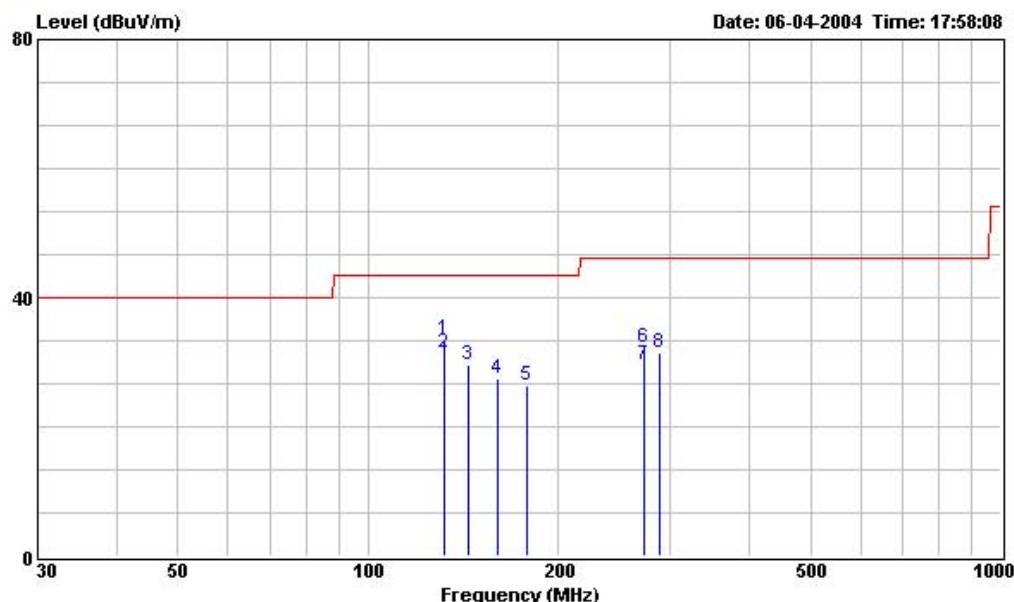


DIGITAL EMC Co., Ltd.
683-2, Yubang-Dong, Yongin-Si,
Kyunggi-Do, Korea. 463-080
Tel: +82-31-321-2664 Fax: +82-31-321-1664
demc@unitel.co.kr, www.digitalemc.com

Tested by Mr. 

Data#: 87

File#: C:\Program Files\le3\DEMC-KHS.EMI



Site : DIGITAL EMC Co., Ltd.
Condition : FCC CLASS-B 3m DEMC NEW 3(2003)
EUT : RIF-BT10
Power :
Memo : Stand-by mode

Freq	Remark	Read	Probe	Cable	Preamp	Limit	Over	
		Level	Factor	Loss	Factor			
MHz		dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB
1	132.100 V	46.25	13.45	2.00	28.20	-12.75	33.50	43.50 -10.00
2	132.100 H	44.25	13.45	2.00	28.20	-12.75	31.50	43.50 -12.00
3	144.270 H	41.32	14.32	2.00	28.14	-11.82	29.50	43.50 -14.00
4	160.370 H	38.37	15.19	2.00	28.06	-10.87	27.50	43.50 -16.00
5	177.950 H	36.60	15.88	2.00	27.98	-10.10	26.50	43.50 -17.00
6	272.500 V	39.19	18.33	2.68	27.90	-6.89	32.30	46.00 -13.70
7	272.500 H	36.49	18.33	2.68	27.90	-6.89	29.60	46.00 -16.40
8	289.470 V	37.90	19.00	2.50	27.90	-6.40	31.50	46.00 -14.50

APPENDIX

TEST EQUIPMENT USED FOR TESTS

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment.

	Type	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	S/N
01	Spectrum Analyzer	Agilent	E4404B	22/11/04	US41061134
02	Spectrum Analyzer	H.P	8563E	25/09/04	3551A04634
03	Power Meter	H.P	EPM-442A	16/07/04	GB37170413
04	Power Sensor	H.P	8481A	16/07/04	3318A96332
05	Frequency Counter	H.P	5342A	26/09/04	2119A04450
06	Multifunction Synthesizer	H.P	8904A	15/10/04	3633A08404
07	Signal Generator	H.P	8673D	26/09/04	2844A00753
08	Signal Generator	H.P	E4421A	29/04/05	US37230529
09	Signal Generator	H.P	8657A	05/06/05	3430U02049
10	Audio Analyzer	H.P	8903B	18/04/05	3011A0944B
11	Modulation Analyzer	H.P	8901B	21/04/05	3028A03029
12	Sensor Module	H.P	11722A	21/04/05	3111A04665
13	Oscilloscope	LeCroy	9314A	27/08/04	93144390
14	CDMA Mobile Station Test Set	H.P	8924C	09/09/04	US35360688
15	Power Splitter	WEINSCHEL	1593	23/04/05	332
16	BAND Reject Filter	Microwave circuits INC.	NO308372	22/12/04	3125-01DC0312
17	BAND Reject Filter	Wainwright	WRG1750	19/08/04	SN2
18	AC Power supply	DAEKWANG	5KVA	03/04/05	N/A
19	DC Power Supply	H.P	6622A	24/03/05	465487
20	Attenuator (30dB)	H.P	8498A	23/05/05	50101
21	Attenuator (10dB)	WEINSCHEL	23-10-34	15/10/04	BP4387
22	HORN ANT	EMCO	3115	04/04/05	6419
23	HORN ANT	EMCO	3115	10/01/05	21097
24	HORN ANT	A.H.Systems	SAS-574	27/11/04	154
25	HORN ANT	A.H.Systems	SAS-574	14/11/04	155
26	Dipole Antenna	Schwarzbeck	VHA9103	04/10/04	2116

	Type	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	S/N
27	Dipole Antenna	Schwarzbeck	VHA9103	04/10/04	2117
28	Dipole Antenna	Schwarzbeck	UHA9105	04/10/04	2261
29	Dipole Antenna	Schwarzbeck	UHA9105	04/10/04	2262
30	RFI/FIELD Intensity Meter	Kyorits	KNM-504D	25/07/04	SN-161-4
31	Frequency Converter	Kyorits	KCV-604C	25/07/04	4-230-3
32	TEMP & HUMIDITY Chamber	JISCO	J-RHC2	14/09/04	021031
33	Log Periodic Antenna	Schwarzbeck	UHALP9108A1	23/10/04	1098
34	Biconical Antenna	Schwarzbeck	VHA9103	23/10/04	VHA91031946
35	Digital Multimeter	H.P	34401A	07/04/05	3146A13475
36	Attenuator (10dB)	WEINSCHEL	23-10-34	15/10/04	BP4386
37	High-Pass Filter	ANRITSU	MP526	12/05/05	M27756
38	Attenuator (3dB)	Agilent	8491B	15/10/04	58177
39	Amplifier (25dB)	Agilent	8447D	24/06/04	2944A10144
40	Position Controller	TOKIN	5901T	N/A	14173
41	Driver	TOKIN	5902T2	N/A	14174
42	Spectrum Analyzer	H.P	8591E	23/05/05	3649A05889
43	RFI/FIELD Intensity Meter	Kyorits	KNW-2402	25/07/04	4N-170-3
44	LISN	Kyorits	KNW-407	29/08/04	8-317-8
45	LISN	Kyorits	KNW-242	22/08/04	8-654-15
46	CVCF	NF Electronic	4400	N/A	344536 4420064
47	Software	ToYo EMI	EP5/RE	N/A	Ver 2.0.800
48	Software	ToYo EMI	EP5/CE	N/A	Ver 2.0.801
49	Software	AUDIX	e3	N/A	Ver 3.0
50	Software	Agilent	Benchlink	N/A	A.01.09 021211