Korea Technology Institute Co., Ltd.

Test Report

Test Report No.:	**KTI07EF07002**		
Registration No.:	**99058**		
Applicant:	**HANA MICRON Inc.**		
Applicant Address:	**#902 Ssangyong IT Twin-Tower 1,442-17 Sangdaewon1-Dong, Joongwon-Gu, Seongnam-City, Gyeonggi-Do, 462-807, Korea**		
Product:	**Bluetooth VoIP Dongle**		
FCC ID:	**QH7HMVD-01GB**	**Model No.**	**HMVD-01GB**
Receipt No.:	**07-07101**	**Date of receipt:**	**July 10, 2007**
Date of Issue:	**July 30, 2007**		
Testing location	**Korea Technology Institute Co., Ltd. 51-19, Sanglim3-Ri, Docheok-Myeun, Gwangju-Shi, Gyeungki-Do, Korea**		
Test Standards:	**FCC/ANSI. C63.4: 2001**		
Rule Parts: FCC	**Part 15.247 Subpart C, ANSI C 63.4-2001**		
Equipment Class:	**DSS- Spread Spectrum Transmitter**		
Test Result:	**The above-mentioned product has been tested with compliance.**		

Tested by: T. W. Lee
/ Engineer

Signature Date

Approved by: G. C. Min
/President

Signature Date

Other Aspects:	
Abbreviations:	**∗ OK, Pass=passed ∗ Fail=failed ∗ N/A=not applicable**

☞ **- This test report is not permitted to copy partly without our permission.**

- This test result is dependent on only equipment to be used.

- This test result is based on a single evaluation of one sample of the above mentioned.

- This test report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S Government.

- We certify this test report has been based on the measurement standards that is traceable to the national or international standards.

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1. General

This equipment has been shown to be capable of compliance with the applicable technical standards and was tested in accordance with the measurement procedures as indicated in this report.

We attest to the accuracy of data. Korea Technology Institute Co., Ltd. performed all measurements reported herein. And were made under Chief Engineer's supervisor.
We assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

2. Test Site

Korea Technology Institute Co., Ltd.

2.1 Location

51-19, Sanglim3-Ri, Docheok-Myeun, Gwangju-Shi, Gyeungki-Do, Korea

The Test Site is in compliance with ANSI C63.4/2001 for measurement of radio Interference.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

− Conducted Emissions

Kind of Equipment	Type	S/N	Calibrated until
Spectrum Analyzer	8564E	3745A01024	02.2008
Field Strength Meter	ESIB40	100093	05.2008
LISN	KNW407	8-1157-2	01.2008
LISN	EM-7823	115019	05.2008
Conducted Cable	N/A	N/A	11.2007

- Radiated Emissions

Kind of Equipment	Type	S/N	Calibrated until
Field Strength Meter	ESIB40	100093	05.2008
Spectrum Analyzer	8564E	3745A01024	02.2008
Pre Amplifier	8447D	2944A06874	11.2007
Bilog Antenna	VULB9163	9163-281	09.2008
Horn Antenna	3115	6443	06.2008
Open Site Cable	N/A	N/A	11.2007
Antenna Mast	DETT-03	N/A	N/A
Antenna & Turntable controller	DETT-04	91X519	N/A

2.3 Test Date

Date of Application: July 10, 2007

Date of Test: July 20, 2007

2.4 Test Environment

See each test item's description.

3. Description of the tested samples

The EUT is a Bluetooth VoIP Dongle.

3.1. Rating and Physical Characteristics

-. Oscillation type : PLL(phase local loop)

-. Type of Communication : FHSS Sequence Spread Spectrum

-. Operating frequency Range : 2400~2485MHz

-. Number of hopping Channel : 79Ch

-. Modulation Method : FSK

-. Data transfer Rate : 732.2Kbps(Max.)

-. Type of Antenna &Gain : Patch Type, -2.01dBi

-. Mode of operation : Duplex

-. Nominal Voltage : 5Vdc

-. Clock Freq. : 12MHz

3.2 Submitted Documents

- User's Guide

- Block Diagram

4. Measurement Conditions

Testing Input Voltage: AC 220V

4.1 Modes of Operation

The EUT was in the following operation mode during all testing;

1) File transfer each disk.

4.2 Additional Equipment

DEVICE TYPE	Manufacturer	M/N	S/N	FCC ID
PC	Compaq	DC7100CMT	N / A	DOC
Monitor	HEWLETT PACKARD	Pavilion vf17	CNC5040351	DOC
Keyboard	COMPAQ COMPUTER CORPORATION	SDM4700P	B58A20CLPNLOLZ	DOC
Mouse	logitech	M-S69	3892D101	DOC
Mouse	SEJIN ELECTRON INC.	SMB-400	0CIM004047	GJJS965M3
Printer	HEWLETT PACKARD	C4569A	SG6A7160PJ	DOC

4.3 Uncertainty

1) Radiated disturbance

Uc (Combined standard Uncertainty) = ± 1.8dB

Expanded uncertainty U=KUc

K = 2

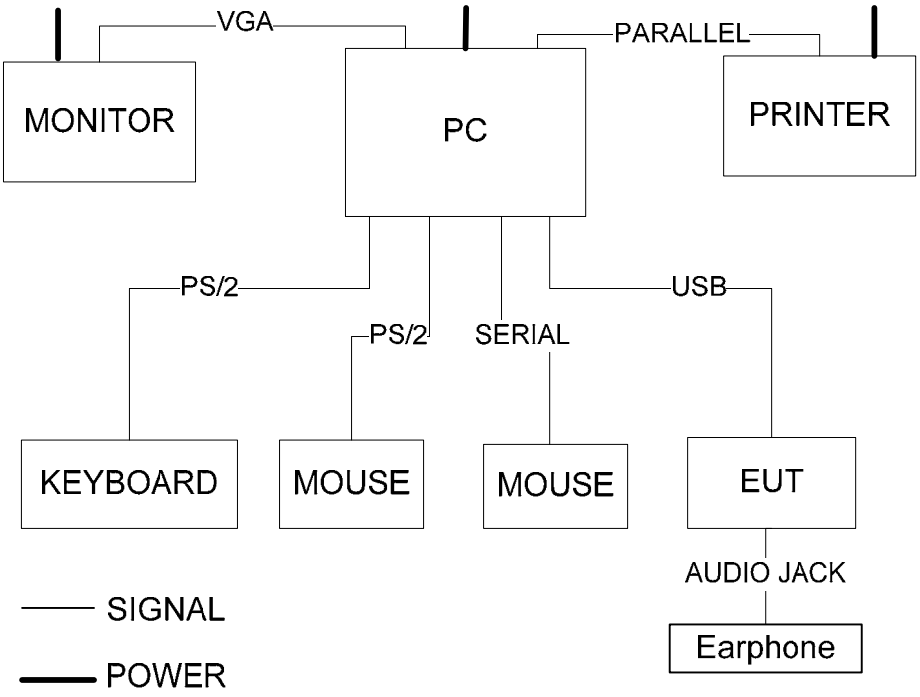
∴ U = ± 3.6dB

2) Conducted disturbance

Uc = ± 0.88dB

U = KUc=2 x Uc = ± 1.8dB

4.4 Test Setup



5. EMISSION Test

5.1.Conducted Emissions

Result: Pass

The line-conducted facility is located inside a 2.3M x 3.5M x 5.5M shielded closure.

The shielding effectiveness of the shielded room is in accordance with MIL-Std-285 or NSA 605-05. A 1m x 1.5m wooden table 80cm high is placed 80cm away from the conducting ground plane and 40cm away from the sidewall of the shielded room. Electro-Metroics Model EM-7823 (9kHz-30MHz)50ohm/50 uH Line-Impedance Stabilization Networks (LISN) are bonded to the shielded room.

The EUT is powered from the Electro-Metroics LISN and the support equipment is powered from the Kyoritsu LISN. Power to the LISN are filtered by a high-current high-insertion loss shield enclosures power line filters (100dB 14kHz-1GHz).

The purpose of the filter is to attenuate ambient signal interference and this filter is also bonded to the shielded enclosure.

All electrical cables are shielded by copper pipe with inner diameter of 1".

If the EUT is a DC-Powered device, power will be derived from the source power supply it normally will be powered from and this supply lines will be connected to the Rohde & Schwarz LISN.

All interconnecting cables more than 1 meter were shortened by non-inductive bundling (serpentine fashion) to a 1-meter length.

Sufficient time for the EUT, Support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer to determine the frequency producing the maximum EME from the EUT. The frequency producing the maximum level was reexamined using EMI field Intensity meter (ESIB40). The detector function was set to CISPR quasi-peak mode.

The bandwidth of the receiver was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was maximized by: switching power lines; varying the mode of operation or resolution; clock or data exchange speed; if applicable; whichever determined the worst-case emission.

Photographs of the worst-case emission can be seen in photograph of conducted test.

Each EME reported was calibrated using self-calibrating mode.

Figure 1: Spectral Diagram, LINE-PE

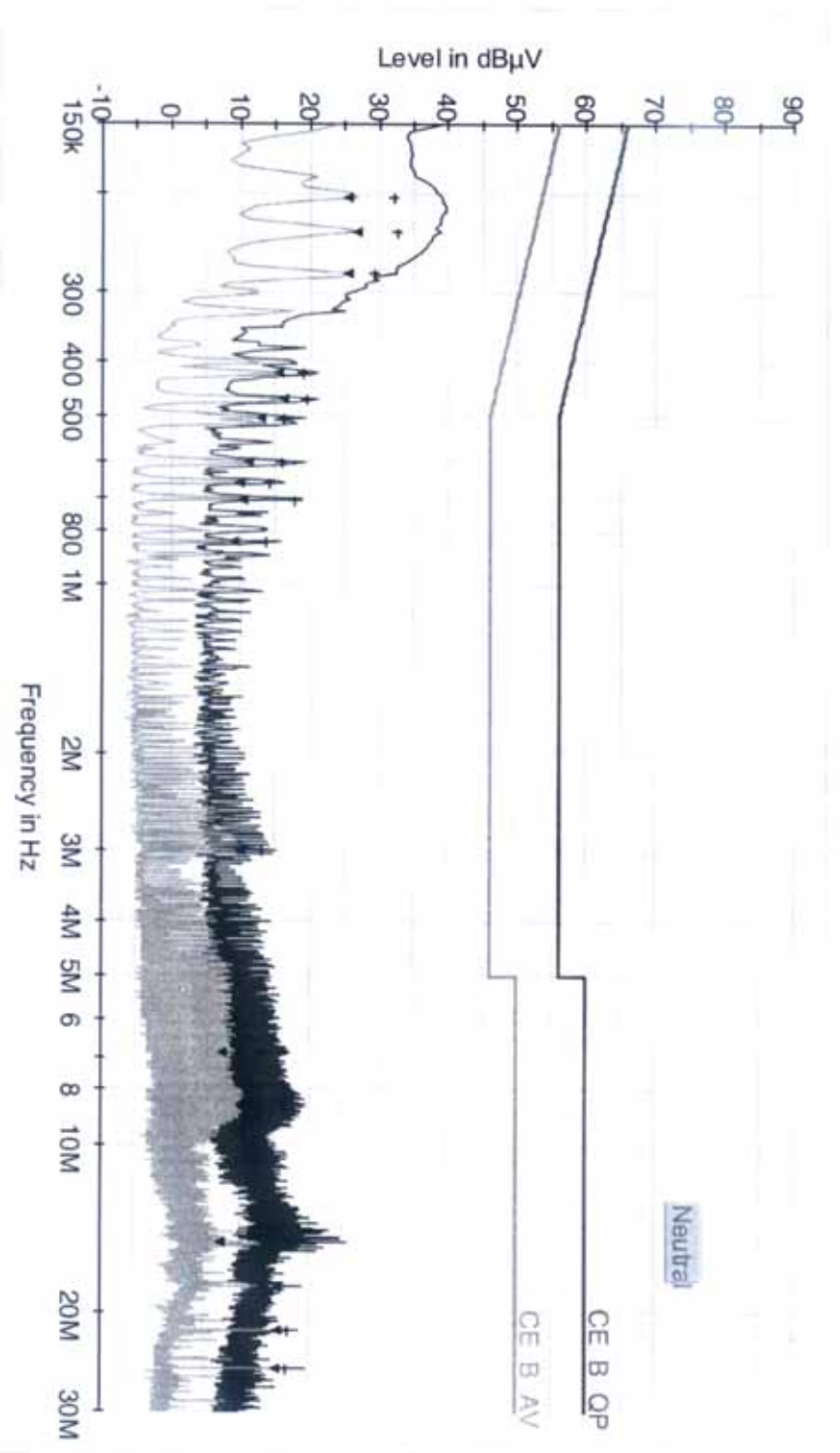


Figure 2: Spectral Diagram, NEUTRAL-PE

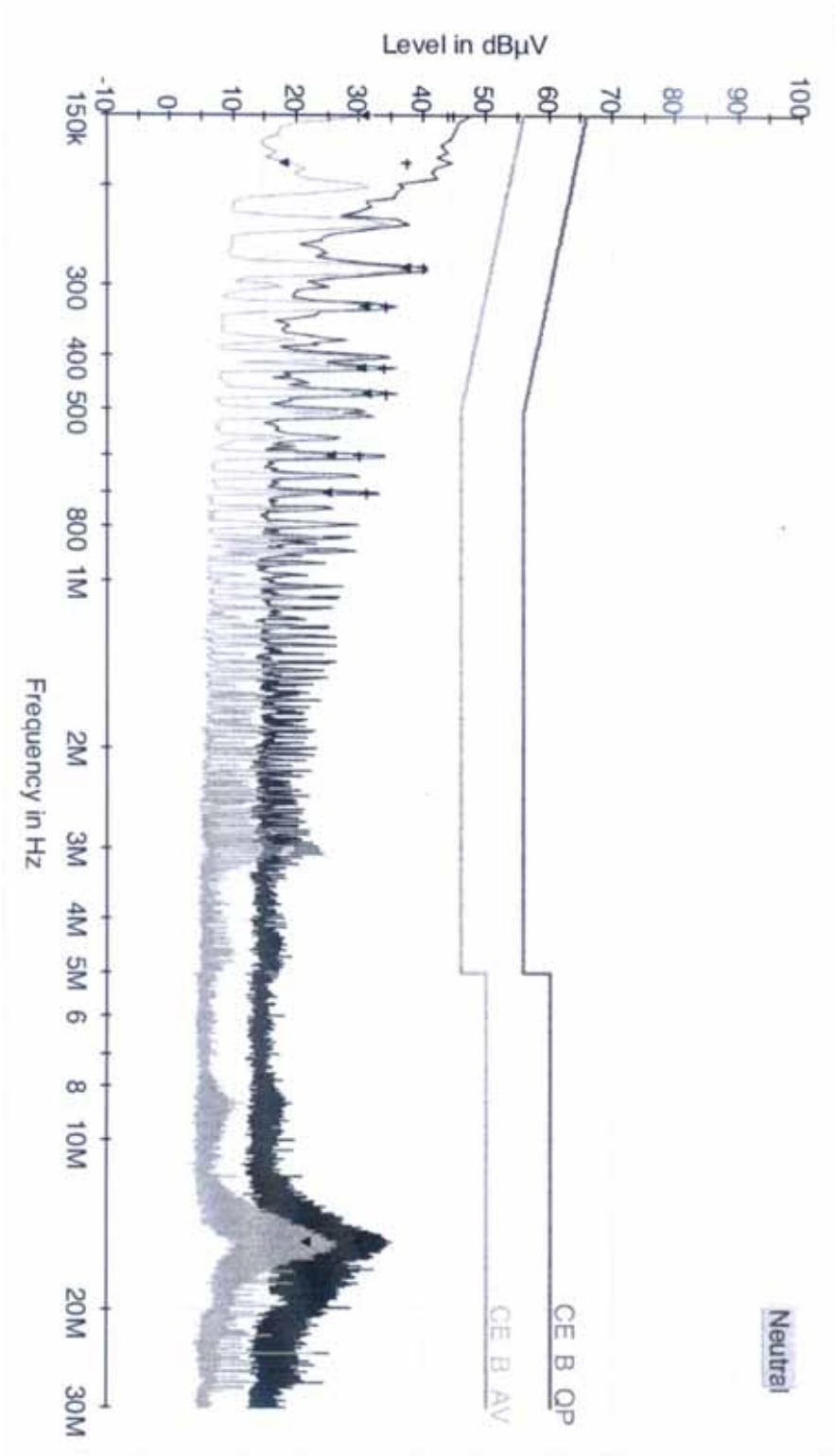


Table 2: Test Data, Conducted Emissions

Frequency (MHz)	(1) Reading (dBμV)	Line	(2)C/F (dB)	(3)Actual (dBμV)	(4) Limit (dBμV)	(5) Margin (dB)
0.15	45.65	L1	0.19	45.84	66.00	20.16
0.19	40.79	L1	0.19	40.98	64.04	23.06
0.23	41.48	L1	0.19	41.67	62.45	20.76
0.28	39.79	L2	0.18	39.97	60.82	20.85
0.33	34.12	L2	0.14	34.26	59.45	25.19
14.67	35.53	L1	0.60	36.13	60.00	23.87

NOTES:

1. All modes of operation were investigated
   And the worst-case emissions are reported.
2. All other emissions are non-significant.
3. All readings are calibrated by self-mode in receiver.
4. Measurements using CISPR Quasi-peak mode.
5. L1 = LINE-PE, L2 = NEUTRAL-PE
6. C/F = Correction Factor(LISN factor + Cable loss)
7. The limit for Class B digital device is 66dBuV to 56dBuV from 150KHz to 500KHz, 56dBuV from 500KHz to 5MHz, 60dBuV Above 5MHz.

♠ Margin Calculation

(5) Margin = (4) Limit – (3) Actual

[(3) Actual = (1) Reading + (2) C/F]

5.2 Radiated Emissions

Result: Pass

Preliminary measurements were made indoors at 1 meter using broadband antennas, broadband Amplifier, and spectrum analyzer to determine the frequency producing the maximum EME.
Appropriate precaution was taken to ensure that all EME from the EUT were maximized and Investigated. The system configurations, clock speed, mode of operation or video resolution, turntable azimuth with respect to the antenna were noted for each frequency found. The spectrum was scanned from 30MHz to 1GHz using Biconical Antenna and LogPeriodic Antenna. Above 1GHz, Double ridged horn Antenna was used.
Final measurements were made outdoors at 3-meter test range using Schwarzbeck antennas. The test equipment was placed on a wooden table situated on a 4x4 meter area adjacent to the measurement area. Turntable was to protect from weather in the dome that made with Polyethylene film. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. Each frequency found during pre-scan measurements was re-examined and investigated using EMI/Field Intensity Meter (ESIB40). The detector function was set to CISPR quasi-peak or peak mode as appropriate and the bandwidth of the receiver was set to 120kHz or 1 MHz depending on the frequency or type or signal.
The EUT, support equipment and interconnecting cables were re-configured to the set-up producing the maximum emission for the frequency and were placed on top of a 0.8meter high non-metallic 1 x 1.5 meter table.
The EUT, support equipment, and interconnecting cables were re-arranged and manipulated to maximize each EME emission. The turntable containing the system was rotated; the antenna height was varied 1 to 4 meters and stopped at the azimuth or height producing the maximum emission. Each emission was maximized by: varying the mode of operation or resolution; clock or data exchange speed, and/or support equipment, if applicable; and changing the polarity of the antenna and rotating the EUT in turns with three orthogonal axes for portable devices, whichever determined the worst-case emission.
Photographs of the worst-case emission can be seen in photograph of radiated emission test.
Each EME reported was calibrated using self-calibrating mode.

Table 3: Test Data, Radiated Emissions

Frequency (MHz)	Pol.	Height [m]	Angle [°]	(1) Reading (dBμV)	(2) AFCL (dB/m)	(3) Actual (dBμV/m)	(4) Limit (dBμV/m)	(5) Margin (dB)
52.44	V	1.05	27	9.3	13.40	22.70	40.00	17.30
78.64	V	1.06	167	13.1	9.09	22.19	40.00	17.81
117.96	V	1.13	160	12.3	11.53	23.83	43.50	19.67
144.20	V	1.22	99	15.1	9.78	24.88	43.50	18.62
340.76	V	1.52	155	4.9	18.84	23.74	46.00	22.26
720.04	H	1.43	201	4.2	26.46	30.66	46.00	15.34

Table. Radiated Measurements at 3-meters

Notes: 1.All modes of operation were investigated.
And the worst-case emission are reported.

2.All other emission is non-significant.

3.All readings are calibrated by self-mode in receiver.

4.Measurements using CISPR quasi-peak mode.

5.AFCL = Antenna factor and cable loss

6.H = Horizontal, V = Vertical Polarization

7. The limit for Class B digital device is 100uV(40dBuV) from 30MHz to 88MHz, 150 uV (43.5dBuV) from 88MHz to 216MHz, 200uV(46dBuV) from 216MHz to 960MHz and 500 uV (54dBuV) from above 960MHz.

♠ Margin Calculation

(5) Margin = (4) Limit – (3) Actual

[(3) Actual = (1) Reading + (2) AFCL]

6. Information about test item

HMVD-01GB

6.1 Equipment information

Equipment model name	HMVD-01GB
Type of equipment	Bluetooth Interface
Frequency band	2400 ~ 2485 MHz
Type of Modulation	FSK
Channel Spacing	1.0 MHz
Type of antenna	Chip Antenna
Power	1. USB mode : DC5 V (By USB port of PC)

6.2 Tested frequency

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

6.3 Tested environment

Temperature	: 15 ~ 35 (℃)
Relative humidity content	: 20 ~75 %
Air pressure	: 86 ~ 103 kPa
Details of power supply:	N/A

6.4 Ancillary Equipment

Equipment	Model No.	Serial No.	Manufacturer
Notebook : COMPAQ type EvoD5M	SV20	-	SAMSUNG

6.5 EMI Suppression Device(s)/Modifications

N/A

7. Test Report

7.1 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	< 1MHz		C
	Dwell Time	0.4 seconds within a 30 second period per any frequency		C
15.247(b)	Transmitter Output Power	< 1Watt		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 below)	The radiated emission to any 100kHz of outband hall be at least 20dB below the highest inband spectral density.		C
15.205 15.209	General Field Strength Limits (Restricted Band and Radiated	< FCC 15.209 limits	Radiated	C
15.207	AC Conducted Emissions	EN 55022	Line Conducted	C
Ⅱ. **Receive more(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

7.2 Transmitter requirements

7.2.1 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:

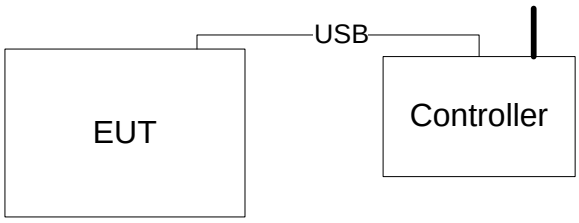
Frequency of marker #1 (MHz)	Frequency of marker #2 (MHz)	Test Results	
		Carrier Frequency Separation (MHz)	Results
2441.000	**2442.045**	**1.04**	Complies

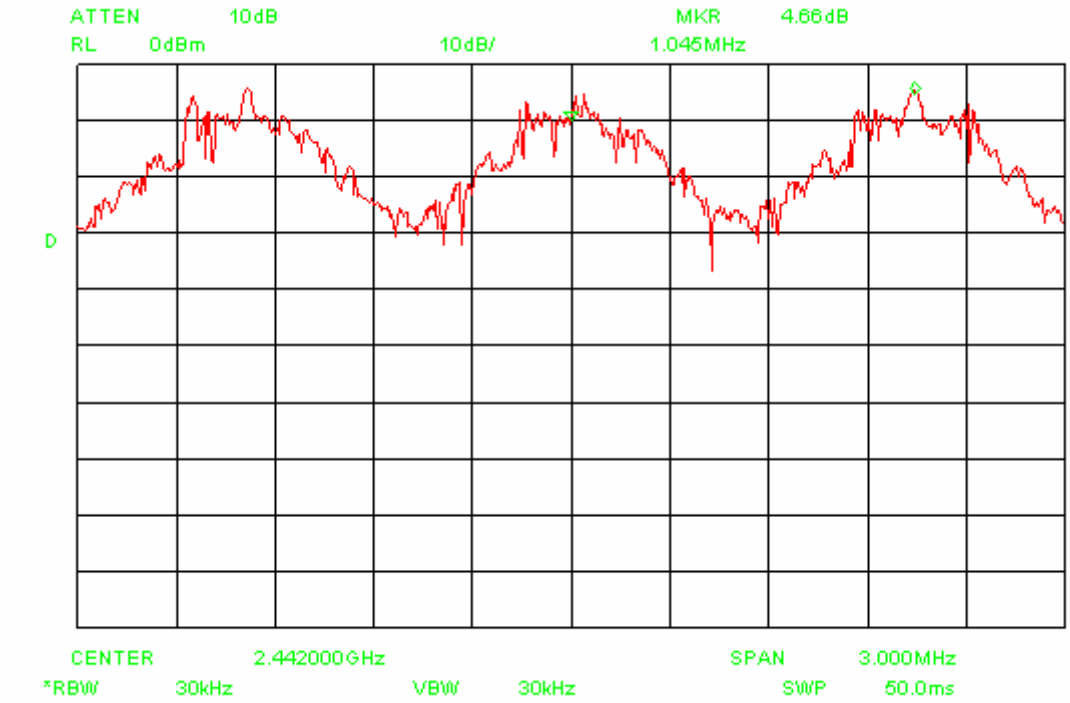
- See next pages for actual measured spectrum plots.

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




ATTEN 10dB
MKR 4.66dB
RL 0dBm
10dB/
1.045MHz
D
CENTER 2.442000GHz
SPAN 3.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms

[Figure 1.]

7.2.2 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 ~ 2484 MHz FH band were examined.

The spectrum analyzer is set to:

Frequency range 1: Start = 2400MHz, Stop = 2460MHz

2: Start = 2460MHz, Stop = 2484MHz

RBW = 100 kHz (1% of the span or more) Sweep = auto

VBW = 100 kHz (VBW ≥ RBW) Detector function = peak

Trace = max hold Span = 60MHz, 24MHz

Measurement Data: Complies

Total number of Hopping Channels	79

-See next pages of actual measured spectrum plots.

Minimum Standard:

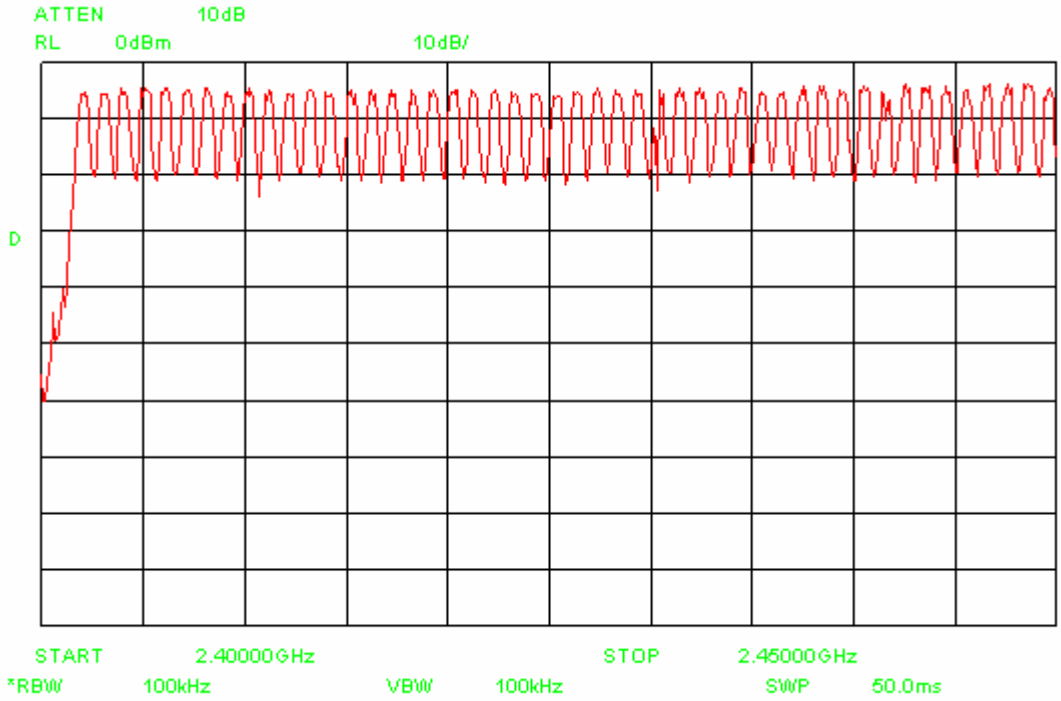
At least 75 hopes

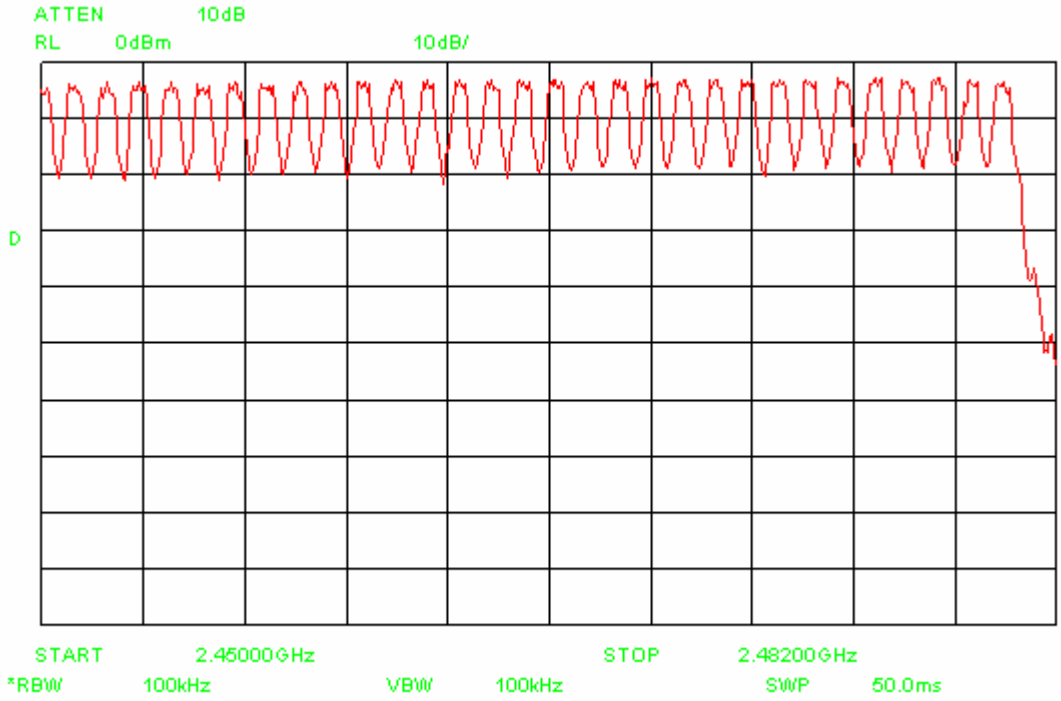
Measurement Setup

Same as the Chapter 7.2.1 (Figure 1)

TEST EQUIPMENT USED

Equipment Name	Manufacturer	Model No.	Serial No.	Valid of Calibration
Spectrum Analyzer	HP	HP8564E	3745A01024	Jan' 21. 2008
Oscilloscope	TETRONIX	TDS3052	B014099	July' 25. 2008
Power meter	HP	EPM-442A	GB37170416	Oct' 20. 2007
Power Sensor	HP	8481A	3318A94877	Jun' 29. 2008
Power supply	DIGITAL ECTRONIC	DRP5030D	3030090	Dec'27. 2007


ATTEN 10dB
RL 0dBm 10dB/
D
START 2.40000GHz STOP 2.45000GHz
*RBW 100kHz VBW 100kHz SWP 50.0ms


ATTEN 10dB
RL 0dBm 10dB/
D
START 2.45000GHz STOP 2.48200GHz
*RBW 100kHz VBW 100kHz SWP 50.0ms

7.2.3. 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 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 ≥ RBW) Detector function = peak

Trace = max hold

Measurement Data:

Frequency (MHz)	Channel No.	Test Results	
		Measured Bandwidth (MHz)	Result
2402	**1**	**0.78**	Complies
2441	**40**	**0.78**	Complies
2480	**79**	**0.78**	Complies

- See next pages for actual measured spectrum plots.

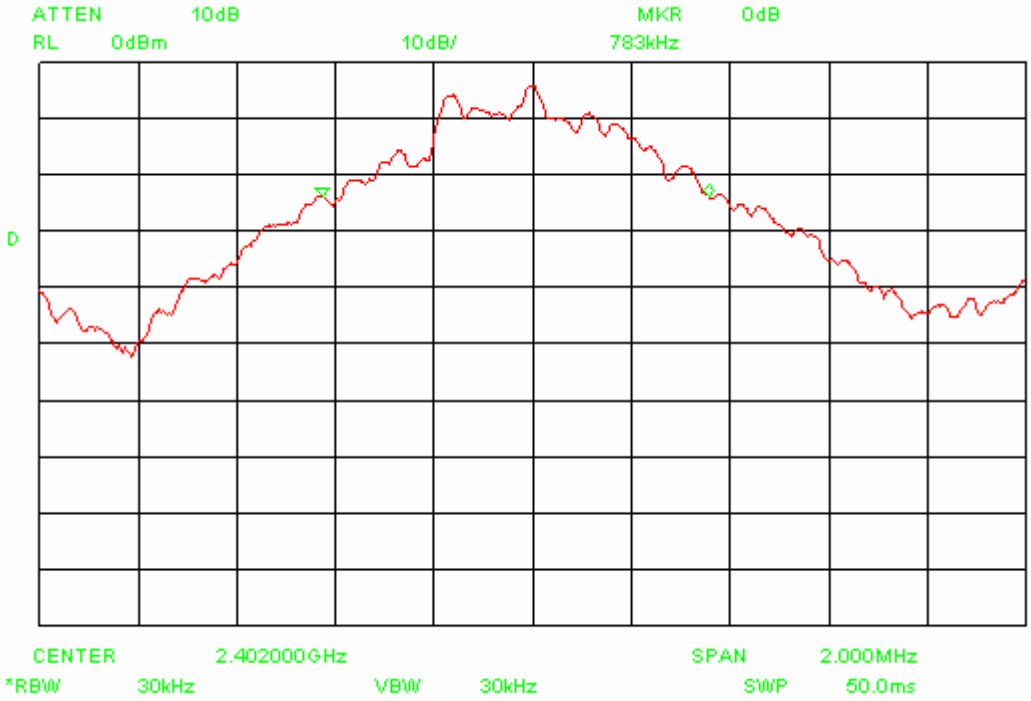
Minimum Standard:

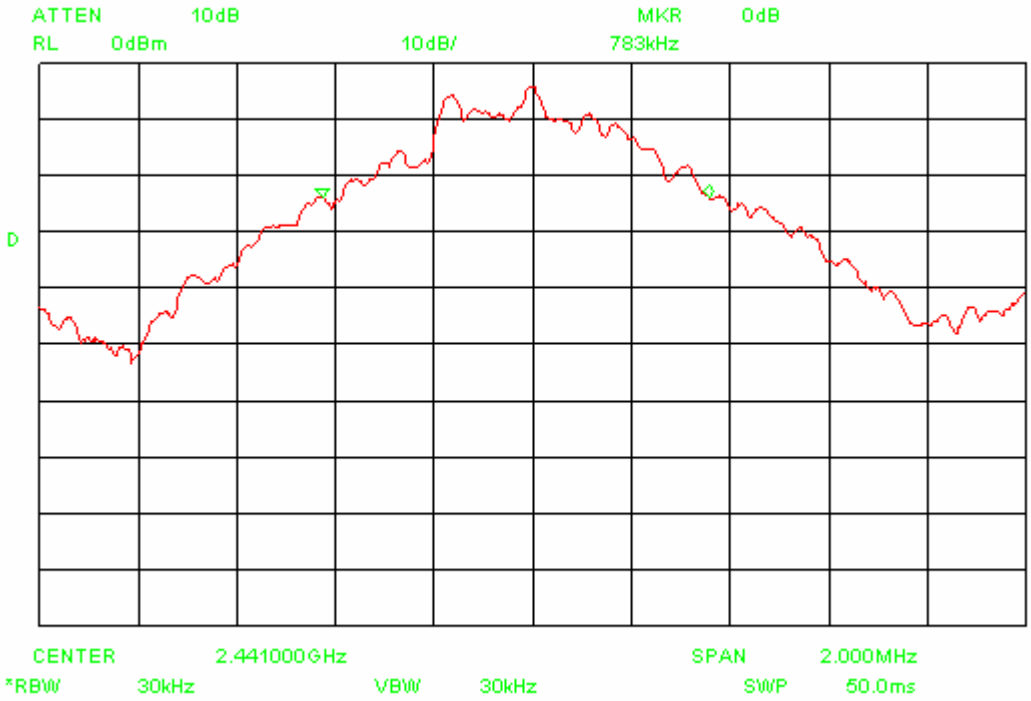
The transmitter shall have a maximum 20dB bandwidth of 1 MHz.

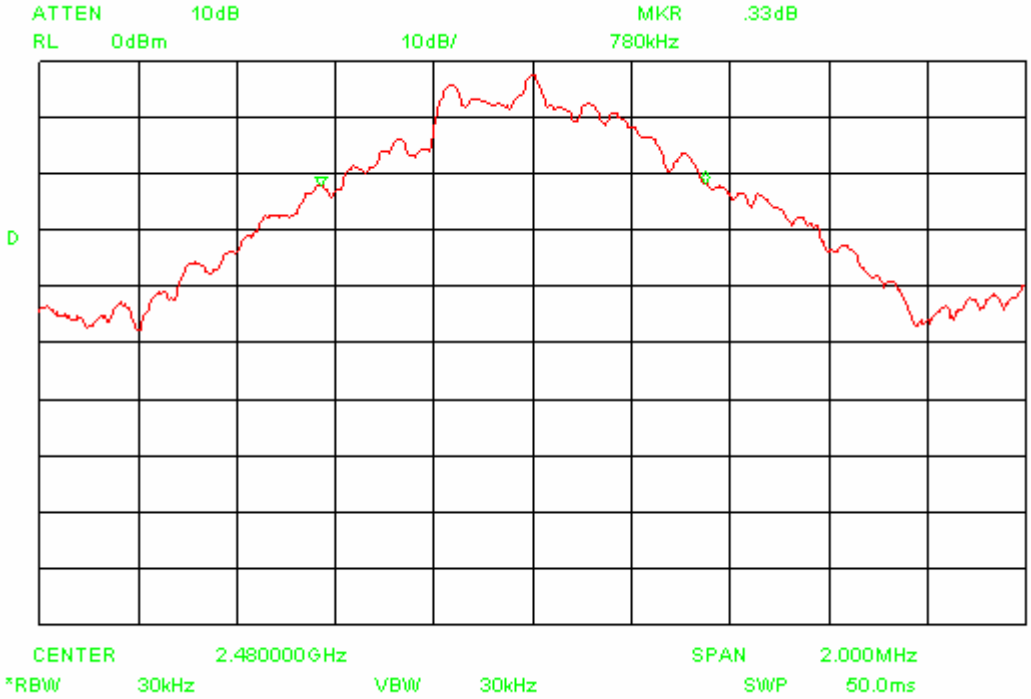
Measurement Setup

Same as the Chapter 7.2.1 (Figure 1)

TEST EQUIPMENT USED: See 7.2.2


ATTEN 10dB
MKR 0dB
RL 0dBm
10dB/
783kHz
D
CENTER 2.402000GHz
SPAN 2.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms


ATTEN 10dB
MKR 0dB
RL 0dBm
10dB/
783kHz
D
CENTER 2.441000GHz
SPAN 2.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms


ATTEN 10dB
MKR .33dB
RL 0dBm
10dB/
780kHz
D
CENTER 2.480000GHz
SPAN 2.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms

7.2.4 Time of Occupancy (Dwell Time)

Procedure:

The dwell time was measured with a spectrum analyzer connected to the 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 ≥ RBW)

Trace = max hold Detector function = peak

Measurement Data:

Packet Type	**Burst duration in one hop (us)**	**Test Results**	
		Dwell Time (ms)	Result
DH1	**426**	**182.463**	Complies

- See next pages of actual measured spectrum plots.

Minimum Standard:

0.4 seconds within a 30 second period per any frequency

Measurement Setup

Same as the Chapter 7.2.1 (Figure 1)

TEST EQUIPMENT USED: See 7.2.2


ATTEN 10dB
RL 0dBm
10dB/
SWEEP
SWP TIME
AUTO MAN
SWEEPTIME
SWEEP
CONT SGL
GATE
ON OFF
GATED
VIDEO
DLY SWP
DLY SWP
ON OFF
CENTER 2.445000000GHz
SPAN 0Hz
#RBW 100kHz
VBW 100kHz
#SWP 425µs
VOLUME
1ST LO
IF
CAL
PROBE
INPUT

7.2.5 Peak Output Power

Procedure:

The peak output power was measured with a spectrum analyzer connected to the terminal, while EUT had its hopping function disable 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 ≥ RBW) Detector function = peak

Trace = max hold Sweep = auto

Measurement Data:

Frequency (MHz)	**Ch.**	**Test Results**		
		dBm	**W**	**Result**
2402	1	**-4.17**	**0.348**	Complies
2441	40	**-4.00**	**0.267**	Complies
2480	79	**-2.67**	**0.358**	Complies

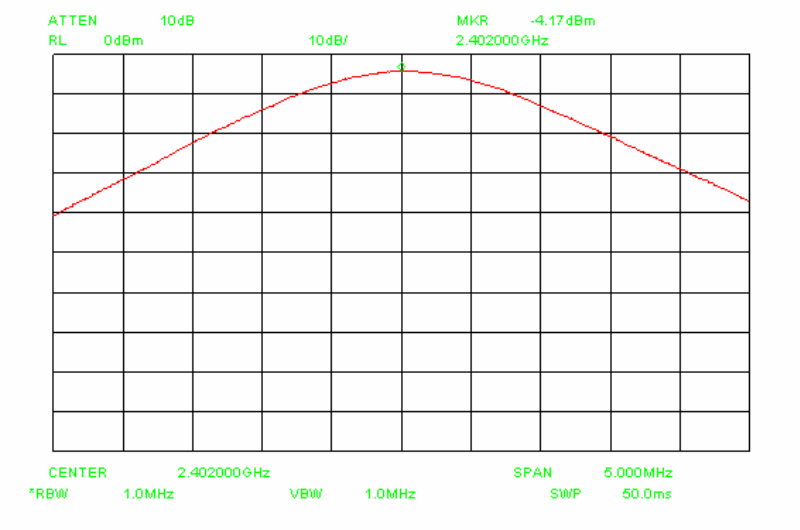
- See next pages of actual measured spectrum plots.

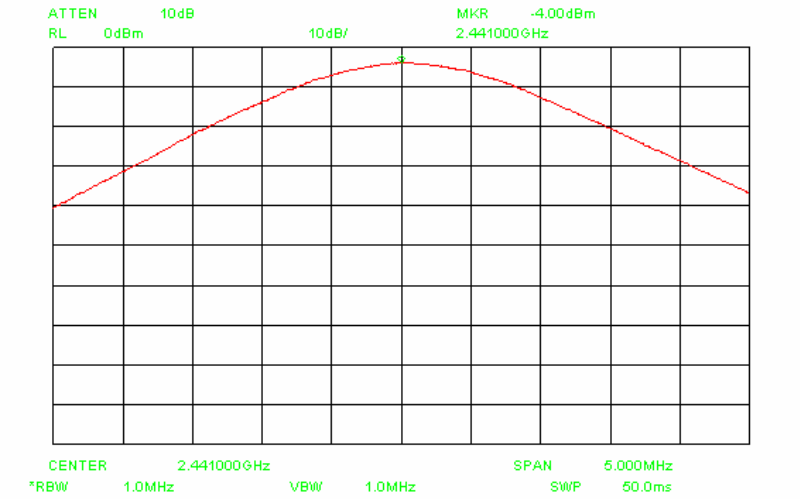
Minimum Standard:	< 1W

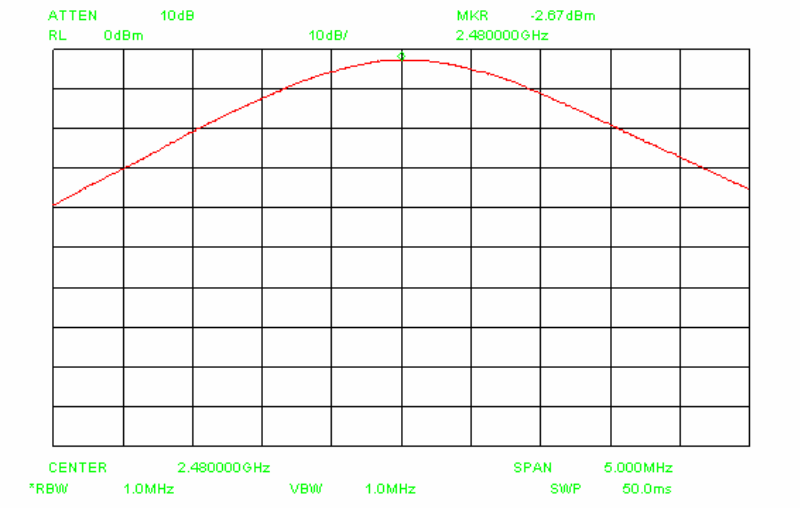
Measurement Setup

Same as the Chapter 7.2.1 (Figure 1)

TEST EQUIPMENT USED: See 7.2.2


ATTEN 10dB
MKR -4.17dBm
RL 0dBm
10dB/
2.402000GHz
CENTER 2.402000GHz
SPAN 5.000MHz
*RBW 1.0MHz
VBW 1.0MHz
SWP 50.0ms


ATTEN 10dB
MKR -4.00dBm
RL 0dBm
10dB/
2.441000GHz
CENTER 2.441000GHz
SPAN 5.000MHz
*RBW 1.0MHz
VBW 1.0MHz
SWP 50.0ms


ATTEN 10dB
MKR -2.67dBm
RL 0dBm
10dB/
2.480000GHz
CENTER 2.480000GHz
SPAN 5.000MHz
*RBW 1.0MHz
VBW 1.0MHz
SWP 50.0ms

7.2.6 Band – edge (at 20 dB blow)

Procedure:

The bandwidth at 20 dB 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

RBW = 100 kHz VBW = 1 kHz

Span = 100 MHz Detector function = peak

Trace = max hold Sweep = auto

Measurement Data: Complies

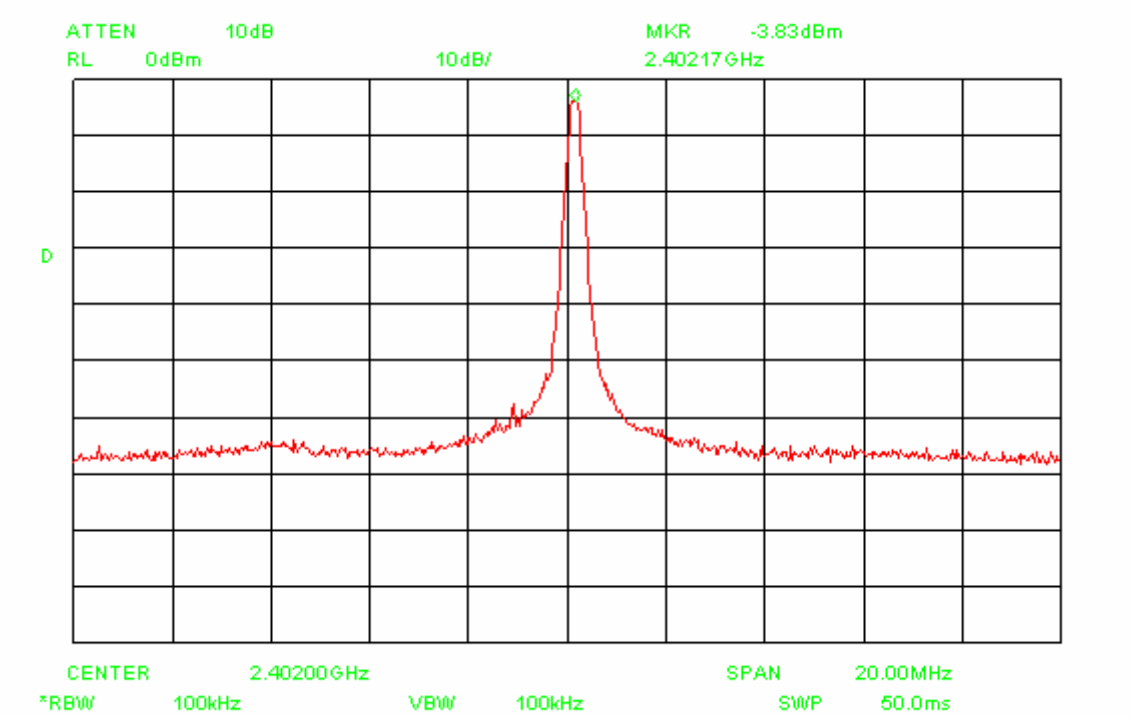
- All conducted emission in any 100kHz bandwidth outside of the spread spectrum band was at least 20dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.
- See next pages of actual measured spectrum plots.
-

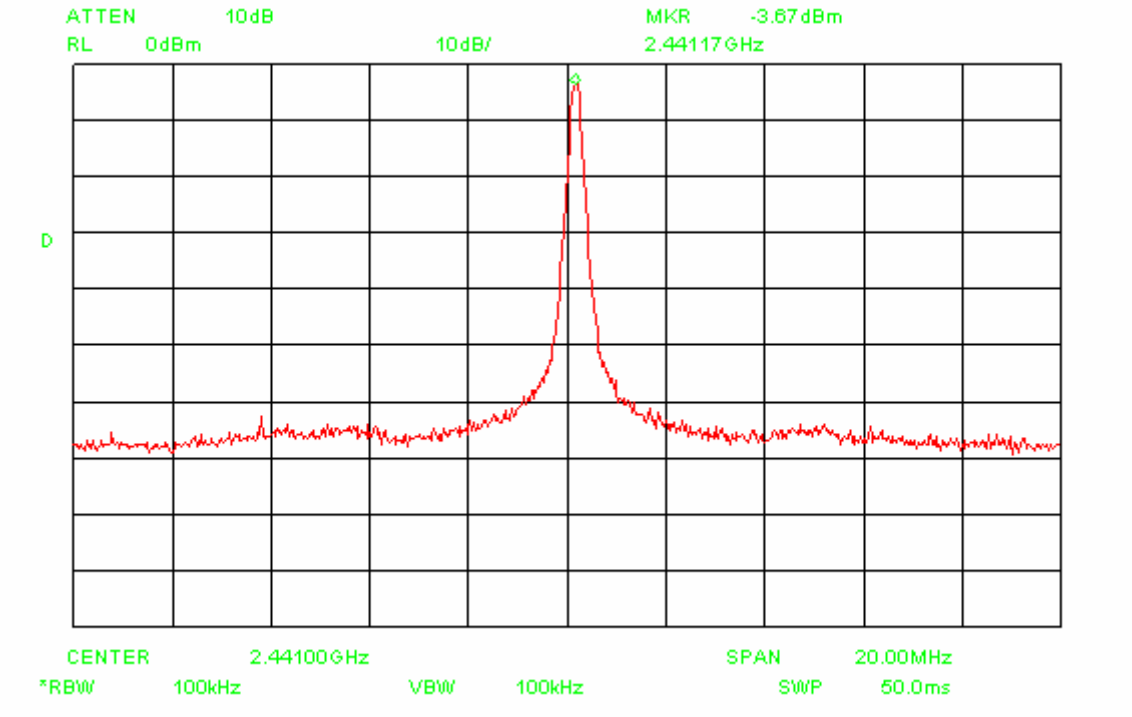
Minimum Standard:	> 20 dBc

Measurement Setup

Same as the Chapter 7.2.1 (Figure 1)

TEST EQUIPMENT USED: See 7.2.2


ATTEN 10dB
MKR -3.83dBm
RL 0dBm
10dB/
2.40217GHz
D
CENTER 2.40200GHz
SPAN 20.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 10dB
MKR -3.67dBm
RL 0dBm
10dB/
2.44117GHz
D
CENTER 2.44100GHz
SPAN 20.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms

7.2.7 Spurious Radiated Emission(1GHz ~ 25GHz)

Above 1 GHz Electric Field strength was measured in accordance with ANSI C 63.4 (2003). The test setup was made according to ANSI C 63.4 (2001) on an Anechoic chamber, which allows a 3m distance measurement. The EUT was placed in the center of wooden turntable. The height of this table was 0.8m. The measurement was conducted with both horizontal and vertical antenna polarization. The turntable has fully rotated.

7.2.7.1 Measurement equipments

Kind of Equipment	Type	S/N	Calibrated until
Spectrum Analyzer	ESIB40	100093	05.2008
Pre Amplifier	8449B	3008A00833	11.2007
Horn Antenna	3115	6443	06.2008
Horn Antenna	BBHA9170	BBHA9170268	03.2008

7.2.7.2 Test Result

Channel Frequency: 2402MHz

Frequency (MHz)	Pol. (H/V)	Height [m]	Corr Factor(dB)	(1) Reading (dBμV)	(2) AFCL (dB/m)	(3) Actual (dBμV/m)	(4) Limit (dBμV/m)	(5) Margin (dB)
No emissions were found that were greater than 20dB bellow the limit								

Channel Frequency: 2441MHz

Frequency (MHz)	Pol. (H/V)	Height [m]	Corr Factor(dB)	(1) Reading (dBμV)	(2) AFCL (dB/m)	(3) Actual (dBμV/m)	(4) Limit (dBμV/m)	(5) Margin (dB)
No emissions were found that were greater than 20dB bellow the limit								

Channel Frequency: 2480MHz

Frequency (MHz)	Pol. (H/V)	Height [m]	Corr Factor(dB)	(1) Reading (dBμV)	(2) AFCL (dB/m)	(3) Actual (dBμV/m)	(4) Limit (dBμV/m)	(5) Margin (dB)
No emissions were found that were greater than 20dB bellow the limit								

Notes: 1.All modes of operation were investigated.
And the worst-case emission are reported.
2.All other emission is non-significant.
3.All readings are calibrated by self-mode in receiver.
4.Measurements using CISPR peak mode.
5. Correction Factor(dB)= Cable Factor(dB) + Amp. Factor (dB)
6. H = Horizontal, V = Vertical Polarization
7. The limit is 500 uV (54dBuV) from above 1GHz.

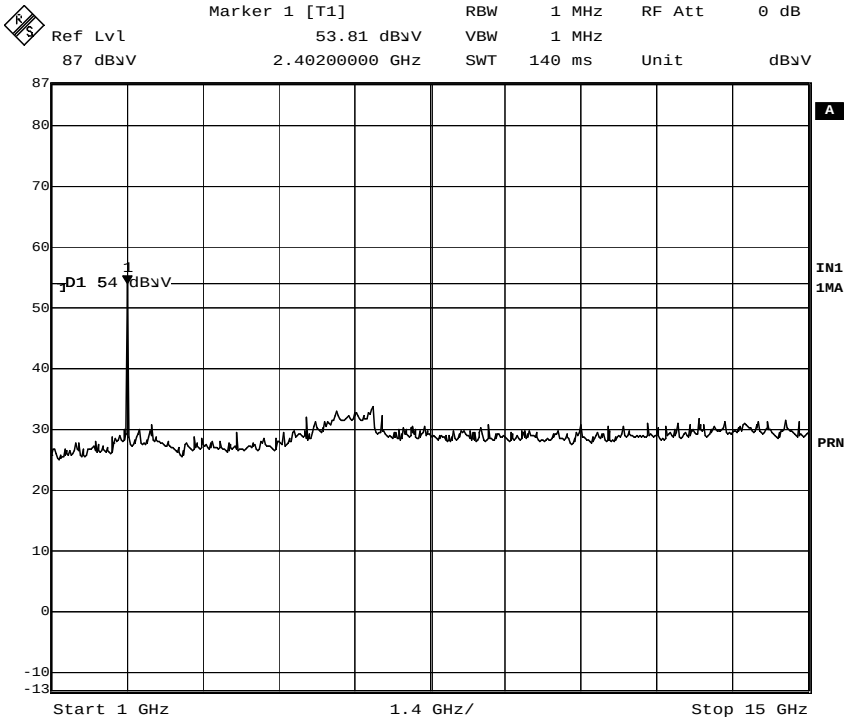
♠ Margin Calculation

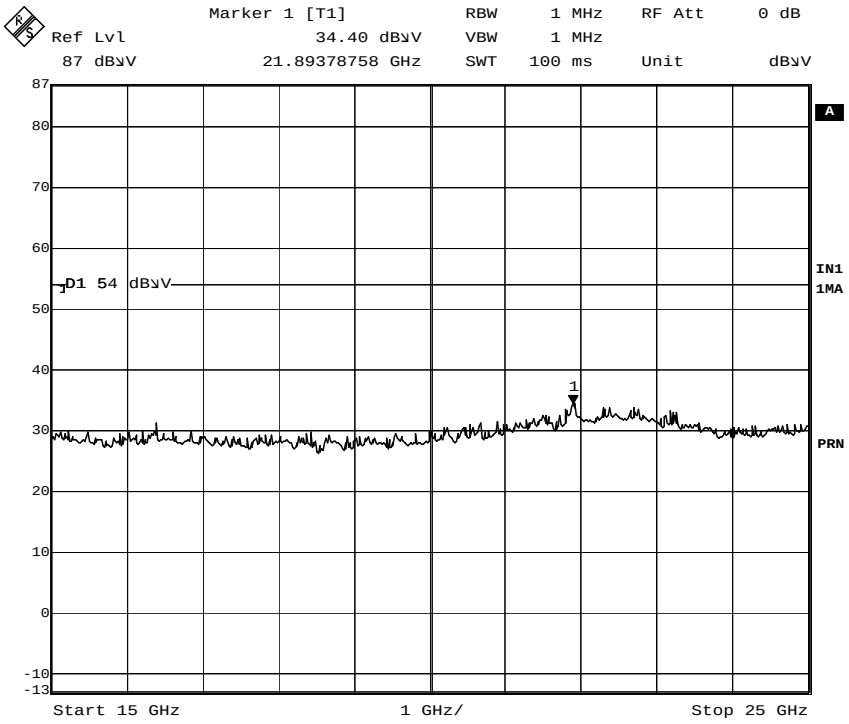
(5) Margin = (4) Limit – (3) Actual

[(3) Actual = (1) Reading + (2) AFCL]

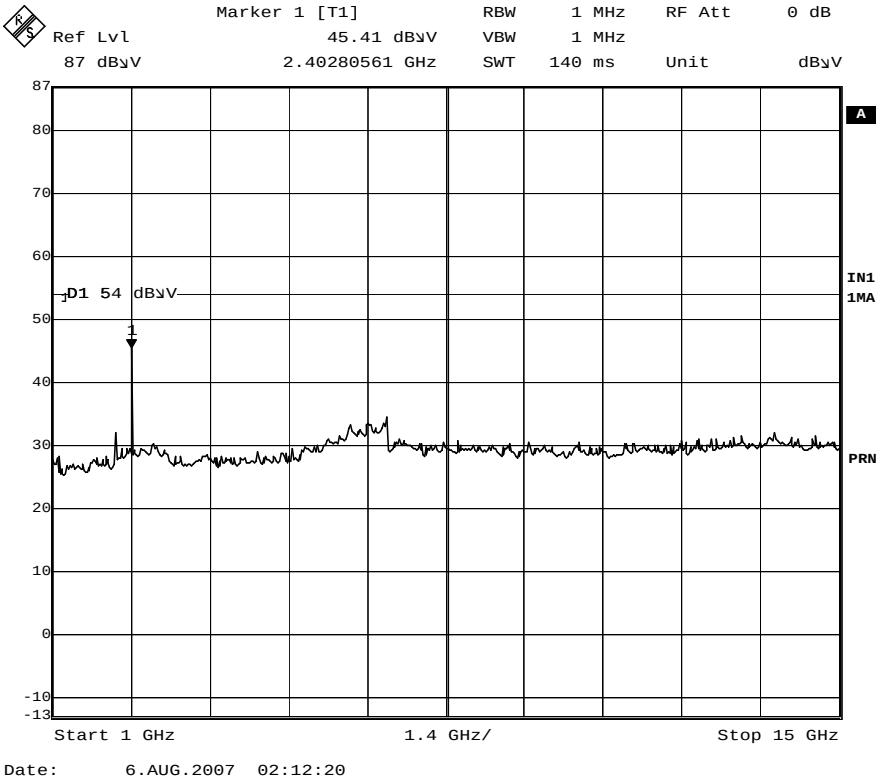
7.2.7.3 Test Graph

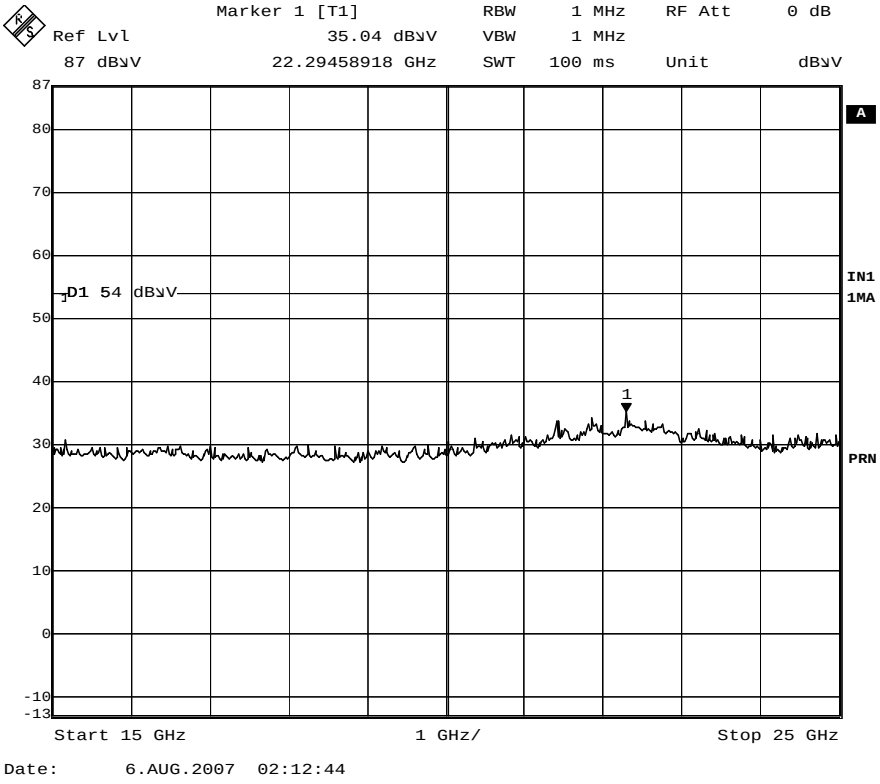
Channel Frequency: 2402MHz(Horizontal)



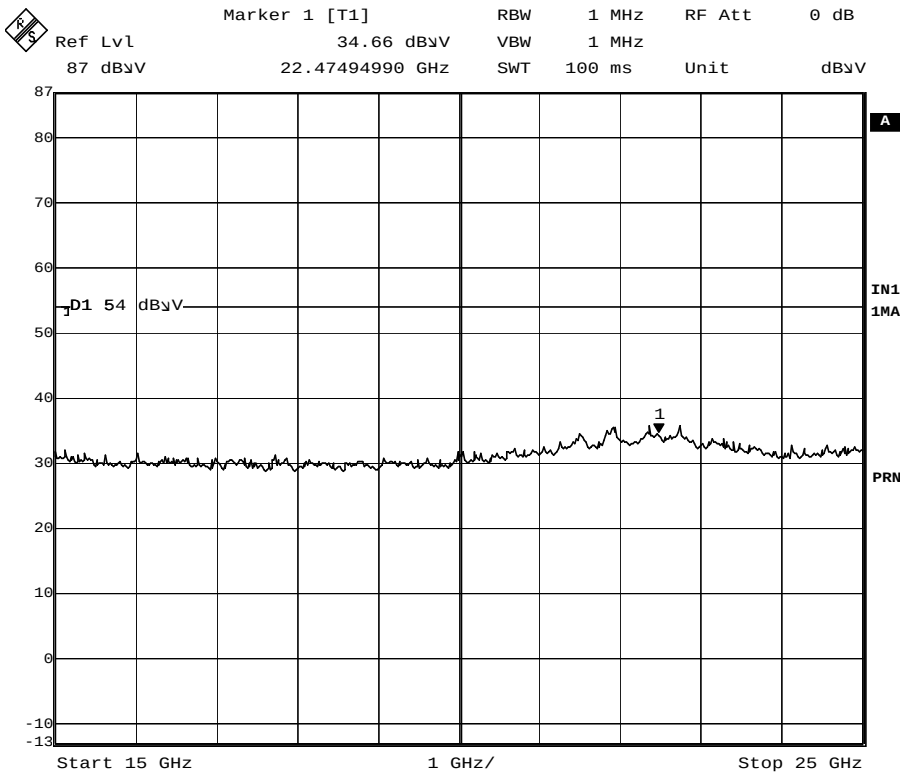


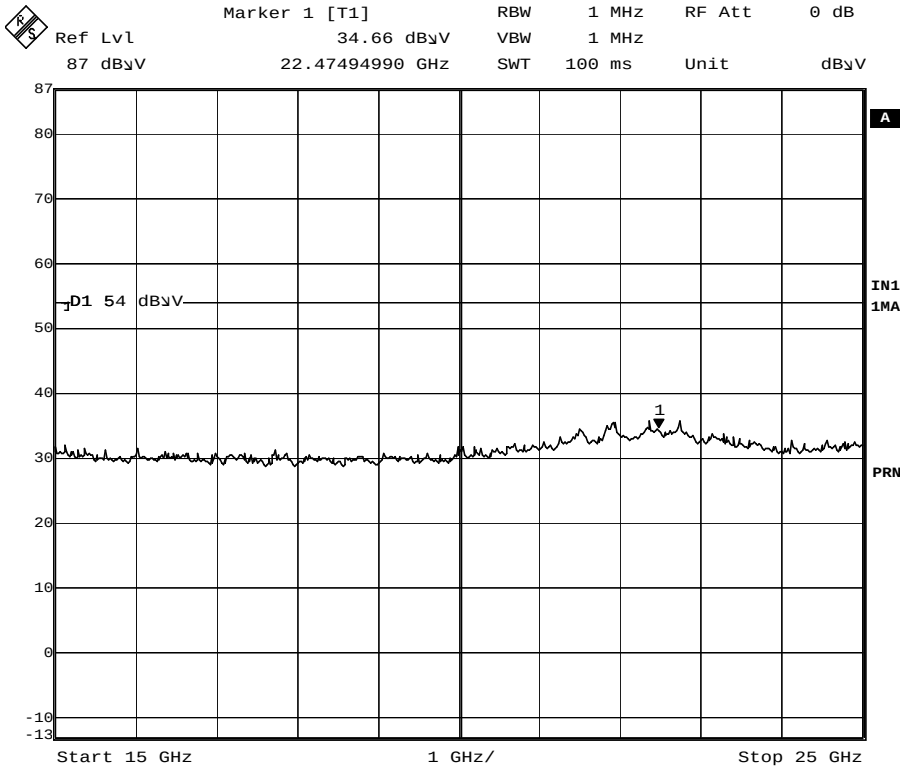
Channel Frequency: 2402MHz(Vertical)



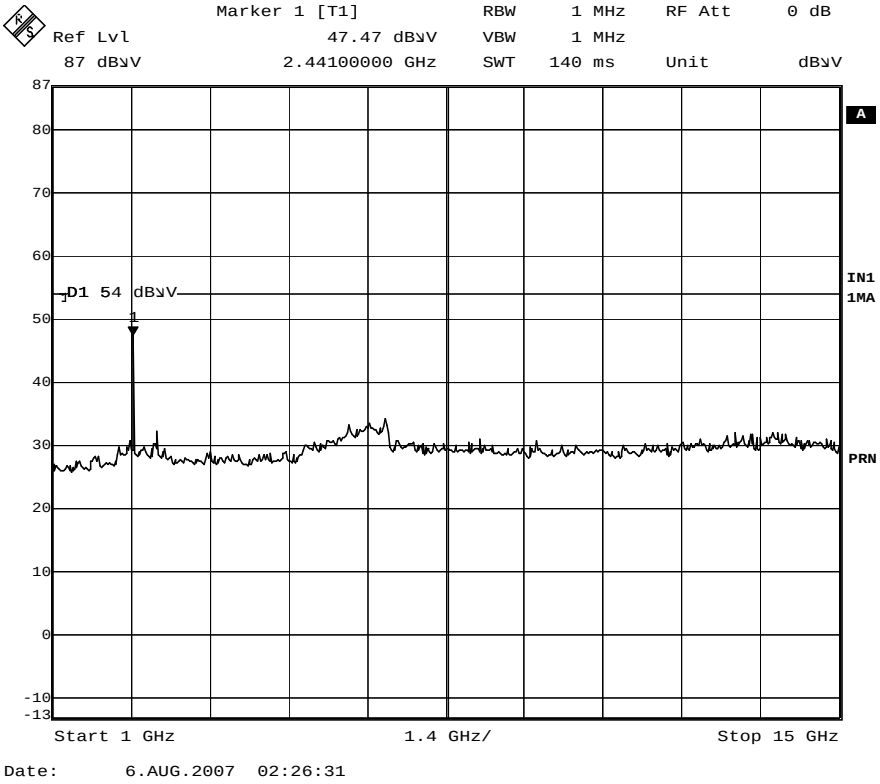


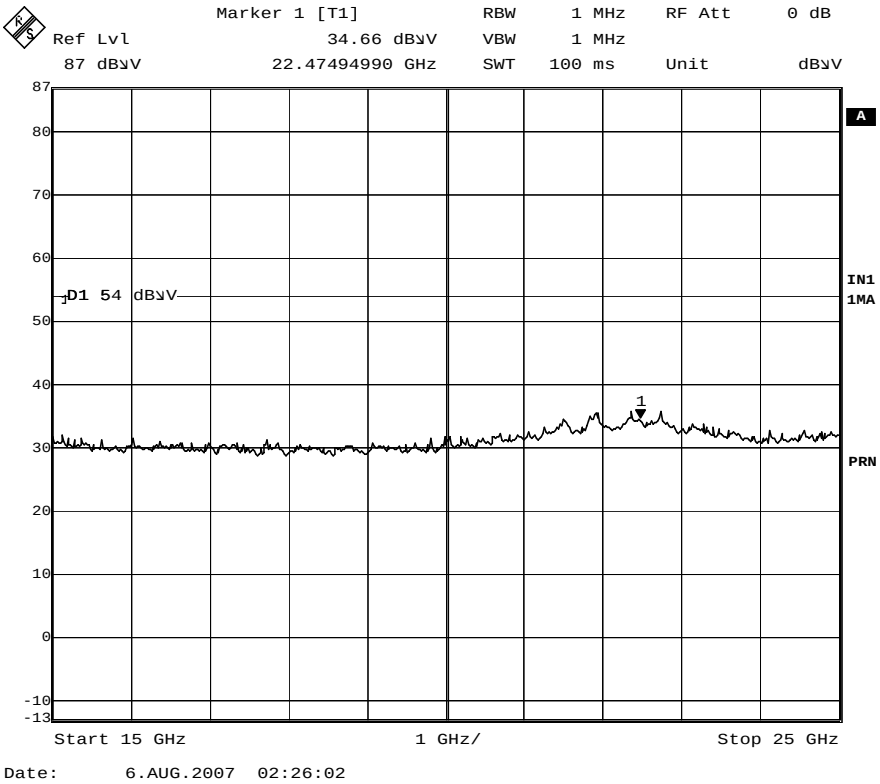
Channel Frequency: 2441MHz(Horizontal)



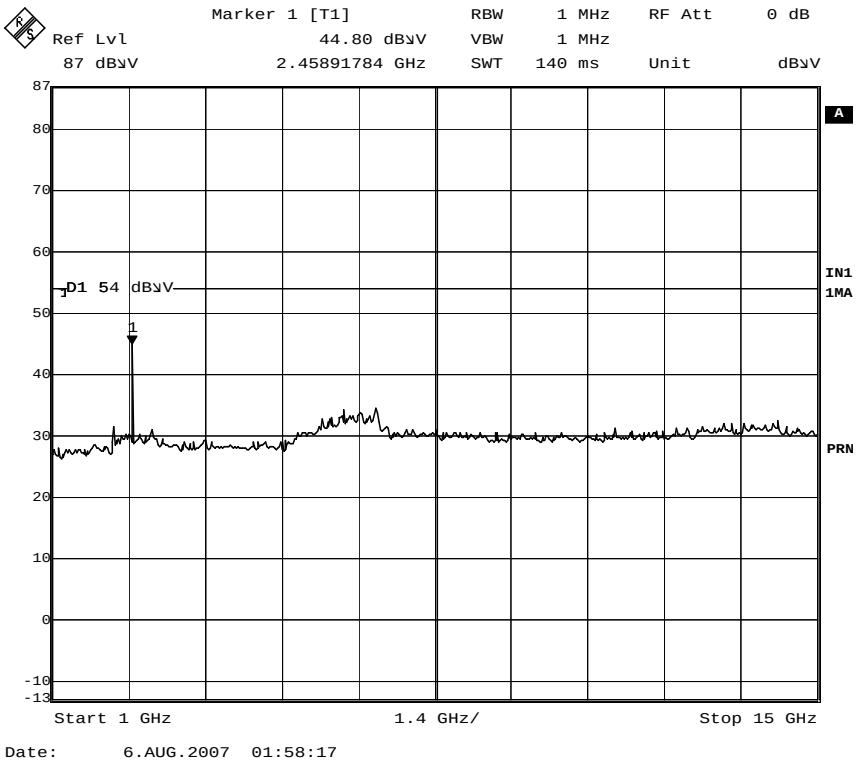


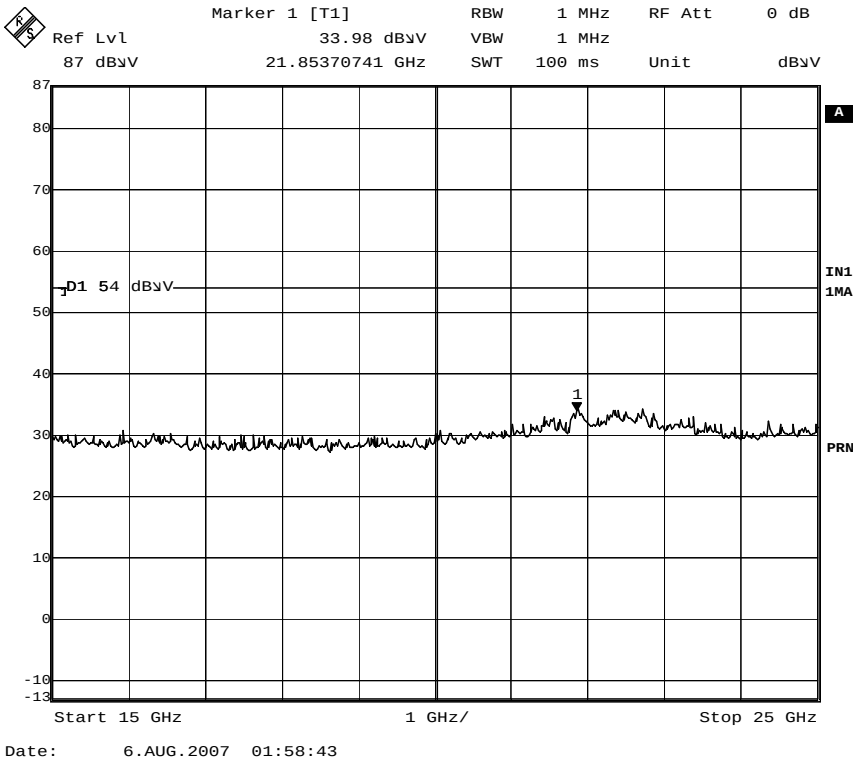
Channel Frequency: 2441MHz(Vertical)





Channel Frequency: 2480MHz(Horizontal)





Channel Frequency: 2480MHz(Vertical)