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Dates of Tests: June 13 ~ July 18, 2007

Test Report S/N: LR500190707C

Test Site : LTA CO., LTD.

## CERTIFICATION OF COMPLIANCE

FCC ID.

**VHTEVERUN**

APPLICANT

**RAON Digital Co., Ltd.**

<b>FCC Classification</b>	:	<b>FHSS Sequence Spread Spectrum (FHSS)</b>
<b>Manufacturing Description</b>	:	<b>Ultra Mobile Personal Computer (UMPC)</b>
<b>Manufacturer</b>	:	<b>RAON Digital Co., Ltd.</b>
<b>Model name</b>	:	<b>S66HS / S60H / S6S / S36HS / S46HS / S40 / L30H / L6S-E</b>
<b>Test Device Serial No.:</b>	:	<b>Identical prototype</b>
<b>Rule Part(s)</b>	:	<b>FCC Part 15.247 Subpart C; ANSI C-63.4-2003 RSS-210, Issue 5: 2001/A1:2002/A2:2003</b>
<b>Frequency Range</b>	:	<b>2402 ~ 2480MHz</b>
<b>RF power Class</b>	:	<b>2 (-6dBm ~ +4dBm)</b>
<b>Data of issue</b>	:	<b>July 20, 2007</b>

This test report is issued under the authority of:

The test was supervised by:

Dong -Min JUNG, Technical Manager

Kyung-Taek LEE, Test Engineer

This test result only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the test laboratory. This report must not be used by the applicant to claim product endorsement by any agency.



NVLAP LAB Code.: 200723-0

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## 1. General information's

### **1-1 Test Performed**

Company name : LTA Co., Ltd.  
 Address : 243, Jubug-ri, Yangji-Myeon, Youngin-Si, Kyunggi-Do, Korea. 449-822  
 Web site : <http://www.ltalab.com>  
 E-mail : [chahn@ltalab.com](mailto:chahn@ltalab.com)  
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 Facsimile : +82-31-323-6010

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”.

### **1-2 Accredited agencies**

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

Agency	Country	Accreditation No.	Validity	Reference
NVLAP	U.S.A	200723-0	2007-09-30	ECT accredited Lab.
RRL	KOREA	KR0049	2009-06-20	EMC accredited Lab.
FCC	U.S.A	610755	2008-03-28	FCC filing
VCCI	JAPAN	R2133, C2307	2008-06-22	VCCI registration
IC	CANADA	IC5799	2008-04-23	IC filing

## 2. Information's about test item

### 2-1 Applicant & Manufacturer

Company name : RAON Digital Co., Ltd.  
 Address : 18th Floor. KINS Tower, 25-1 Jeongja-Dong, Bundang-Gu,  
 Seongnam-City, Gyeonggi-Do, 463-811, KOREA  
 Tel / Fax : +82-31-782-3800 / +82-31-782-3810

### 2-2 Equipment Under Test (EUT)

Trade name : Ultra Mobile Personal Computer (UMPC)  
 FCC ID : VHTEVERUN  
 Model name : S66HS / S60H / S6S / S36HS / S46HS / S40H / L30H / L6S-E  
 : → Refer to the Model Description  
 Serial number : Identical prototype  
 Date of receipt : June 11, 2007  
 EUT condition : Pre-production, not damaged  
 Antenna type : Chip antenna  
 Frequency Range : 2402 ~ 2480MHz  
 RF output power Range : -6dBm~+4dBm (Class 2)  
 Number of channels : 79  
 Channel spacing : 1MHz  
 Channel Access Protocol : Frequency Hopping  
 Type of Modulation : GFSK  
 Power Source for Batt. : Battery Pack: 11.1V (LITHIUM ION RECHARGEABLE BATTERY)  
 Power Source for Adaptor. : Input: 100-240VAC, 1.2A      Output: 16VDC, 2.6A

### 2-3 Tested frequency

	LOW	MID	HIGH
Frequency (MHz)	2402	2441	2480

**2-4 Ancillary Equipment**

Equipment	Model No.	Serial No.	Manufacturer
PC	dx2200Microtower	CNG6500RX9	HP
Monitor	VS11353	E060T4021/1-1	View Sonic
Keyboard	SK-8115	641-OEWW	DELL
Mouse	MO56UO	510022473	DELL
Print	Deskjet 600K	SG7631B1XX	HP
USB Memory stick	memorette	N/A	FM

**2-5 Model Description**

Model	CPU	RAM	Data Storage	SSD Option
S66HS	600MHz	512M	60G HDD	6G SSD
S60H	600MHz	512M	60G HDD	-
S6S	600MHz	512M	-	6G SSD
S36HS	600MHz	512M	30G HDD	6G SSD
S46HS	600MHz	512M	40G HDD	6G SSD
S40H	600MHz	512M	30G HDD	-
L30H	500MHz	512M	30G HDD	-
L6S-E	500MHz	256M	-	6G SSD

### 3. Test Report

#### 3.1 Summary of tests

FCC Part Section(s)	RSS-210 Section	Parameter	Limit	Test Condition	Status (note 1)
15.247(a)	6.2.2(o)(a1)	Carrier Frequency Separation	> 25 kHz	Conducted	C
15.247(a)	6.2.2(o)(a3)	Number of Hopping Frequencies	> 75 hops		C
15.247(a)	6.2.2(o)(a3)	20 dB Bandwidth	< 1 MHz		C
15.247	6.2.2(o)(a3)	Dwell Time	< 0.4 seconds		C
15.247(b)	6.2.2(o)(a3) 6.2.2(o)(b)	Transmitter Output Power	< 1Watt		C
15.247(d)	6.2.2(o)(e1)	Conducted Spurious emission	> 20 dBc		C
15.247(d)	6.2.2(o)(e1)	Band Edge	> 20 dBc		C
15.249 / 15.209	6.2.2(o)(e1)	Field Strength of Harmonics	< 54 dBuV (at 3m)	Radiated	C
15.109	-	Field Strength	-		C
15.207 /15.107	-	AC Conducted Emissions	EN 55022	Line Conducted	C
15.203	-	Antenna requirement	-	-	C

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

#### → Antenna Requirement

The RAON Digital. FCC ID: VHTEVERUN unit complies with the requirement of §15.203. The antenna is connected to inside of EUT.

The sample was tested according to the following specification:

FCC Parts 15.247; ANSI C-63.4-2003

RSS-210, Issue 5:2001

## 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:

Test Results	
Carrier Frequency Separation (MHz)	Result
1.020	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

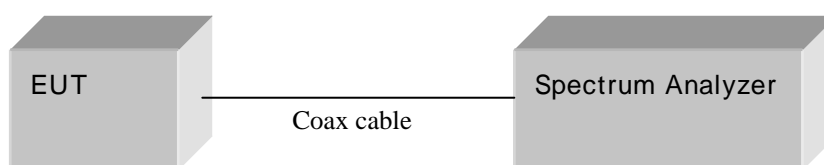
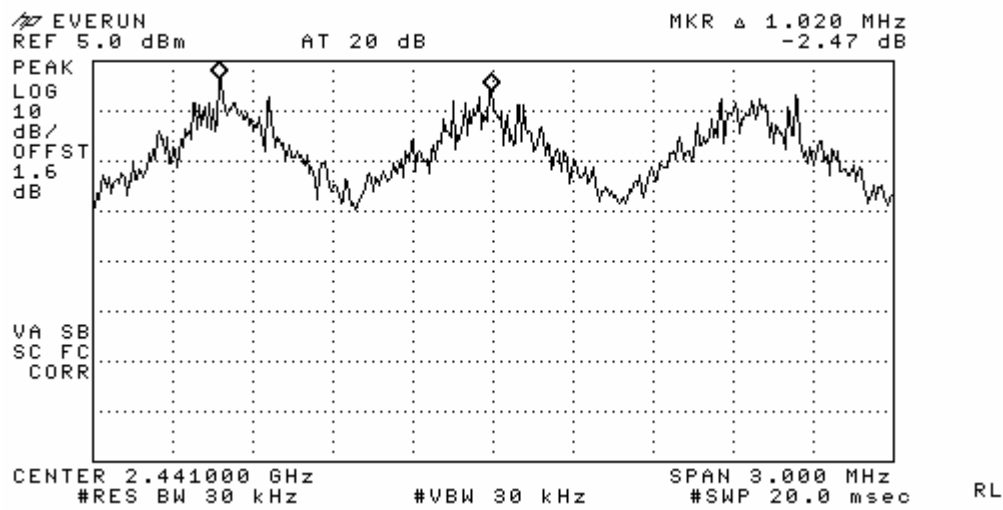


Figure 1: Measurement setup for the carrier frequency separation

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 RBW)
- Detector function = peak
- Trace = max hold
- Span = 25MHz

Measurement Data: Complies

Total number of Hopping Channels	79
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- See next pages for actual measured spectrum plots.

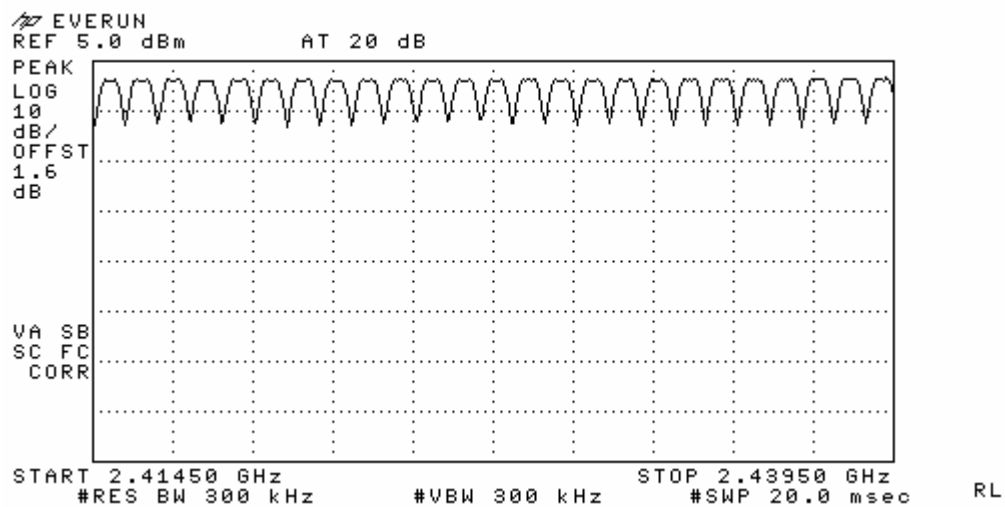
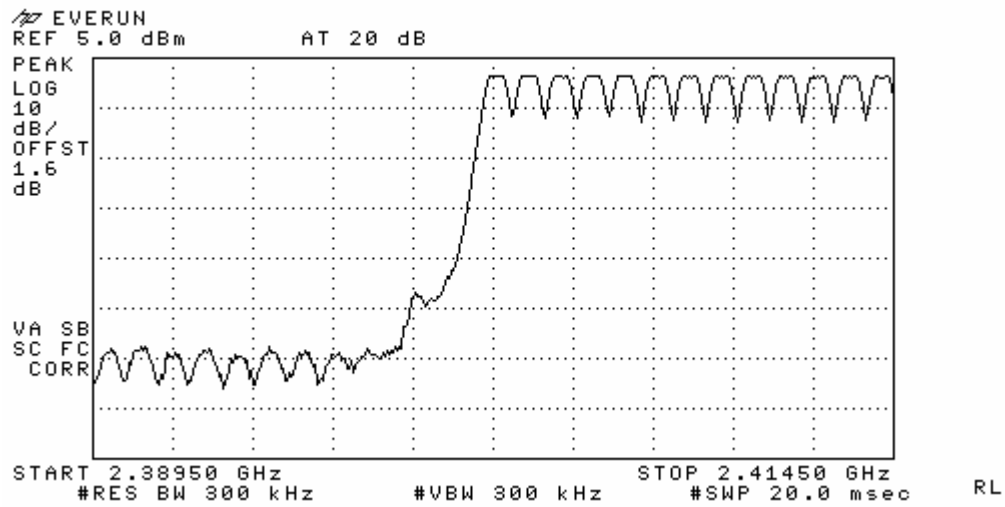
Minimum Standard:

At least 15 hopes
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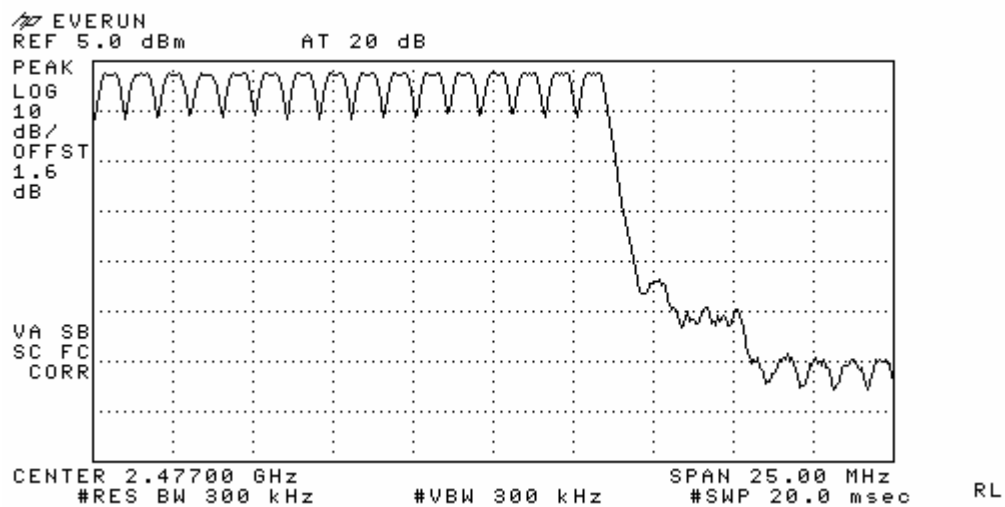
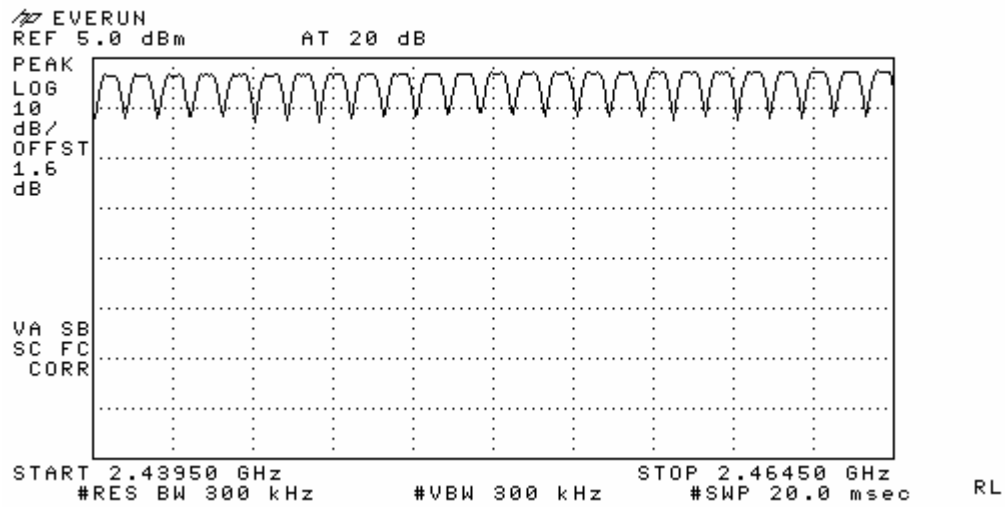
Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

## 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 = 30 kHz

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	0	0.935	Complies
2441	39	0.925	Complies
2480	78	0.925	Complies

- See next pages for actual measured spectrum plots.

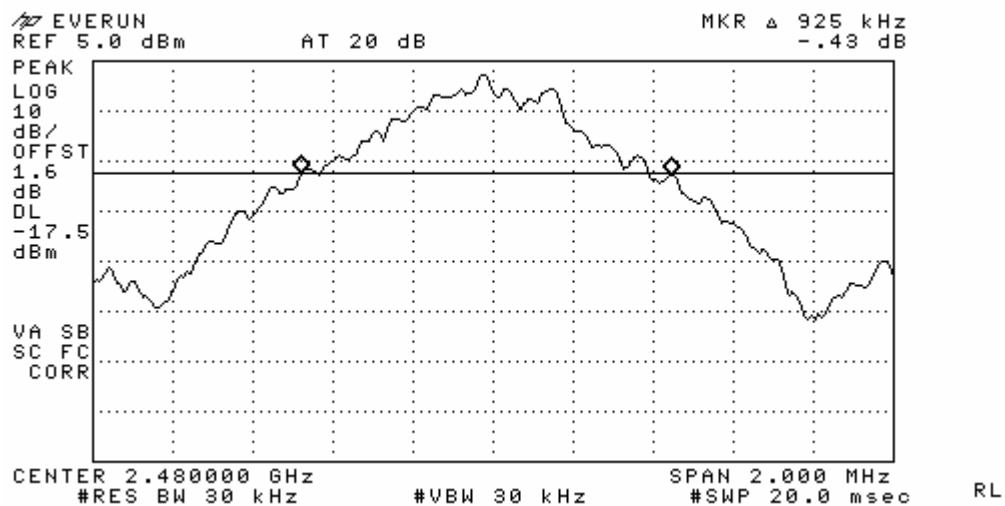
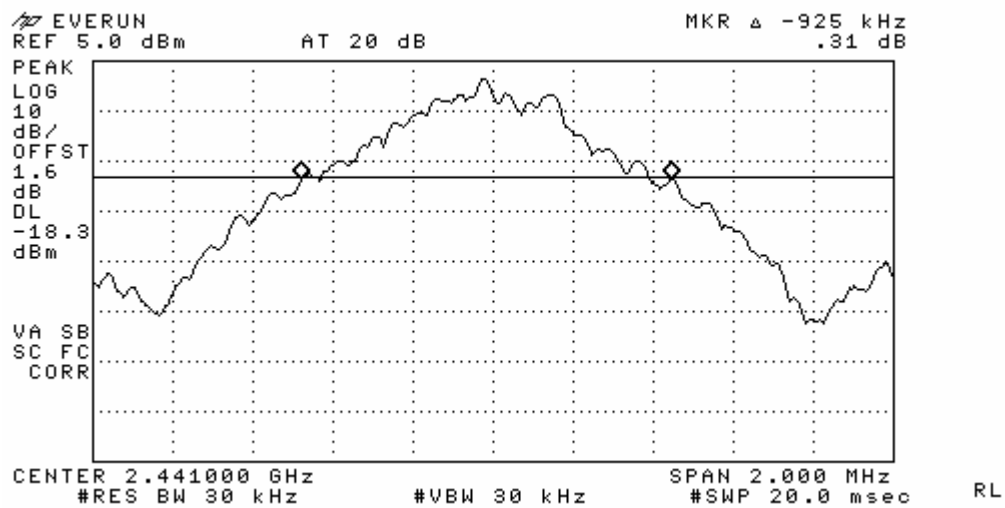
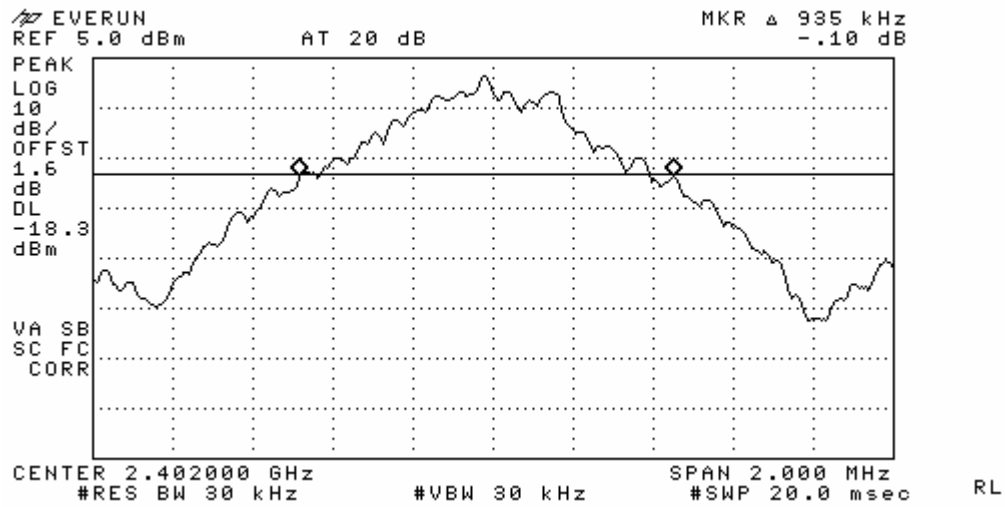
#### Minimum Standard:

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

#### Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

## 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 RBW)

Trace = max hold

Detector function = peak

#### Measurement Data:

Channel Number	Channel Frequency (MHz)	Packet Type	Test Results	
			Dwell Time (ms)	Result
39	2441	DH 1	140.05	Complies
		DH 3	271.96	Complies
		DH 5	314.15	Complies

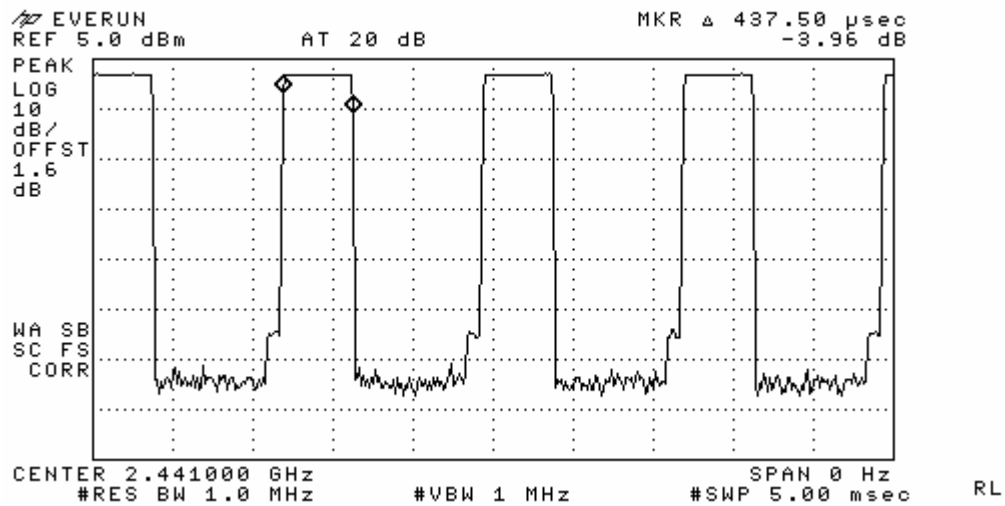
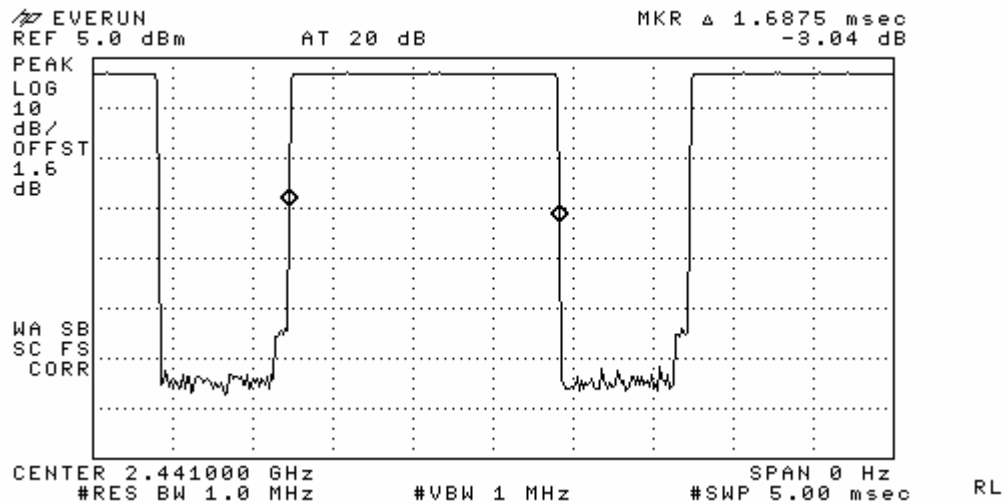
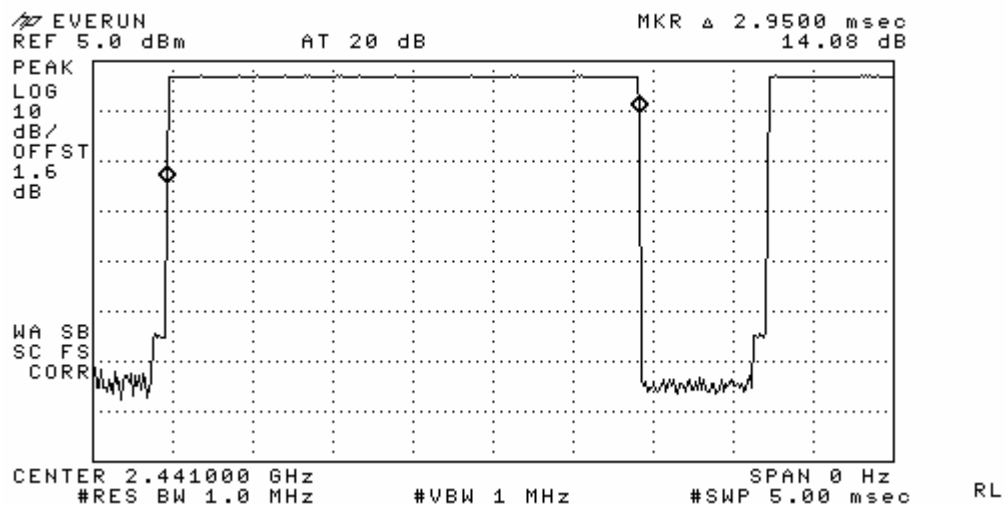
- See next pages for actual measured spectrum plots.

#### Minimum Standard:

0.4 seconds within a 30 second period per any frequency

#### Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

DH 1DH 3DH 5

### 3.2.5 Transmitter 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 = 3 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	mW	Result
2402	0	<b>1.70</b>	<b>1.479</b>	Complies
2441	39	<b>1.80</b>	<b>1.514</b>	Complies
2480	78	<b>2.82</b>	<b>1.914</b>	Complies

- See next pages for actual measured spectrum plots.

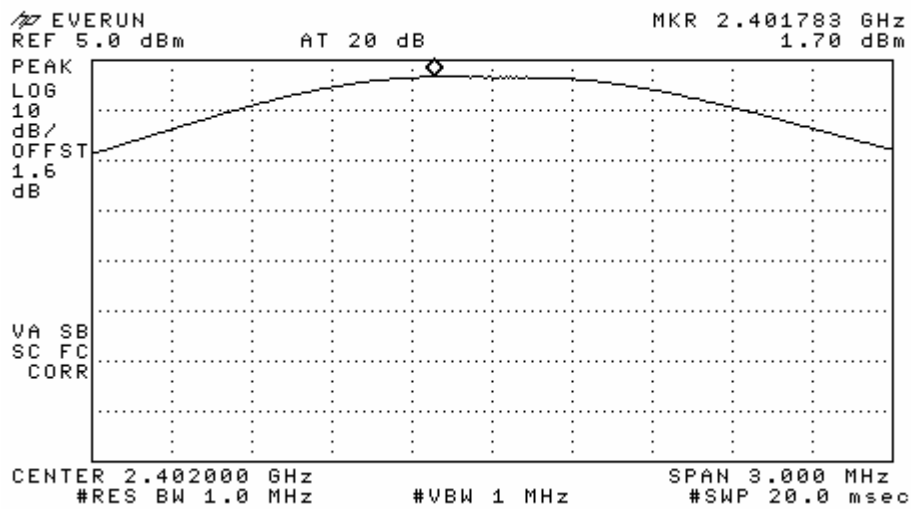
<b>Minimum Standard:</b>	< 1W
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#### Measurement Setup

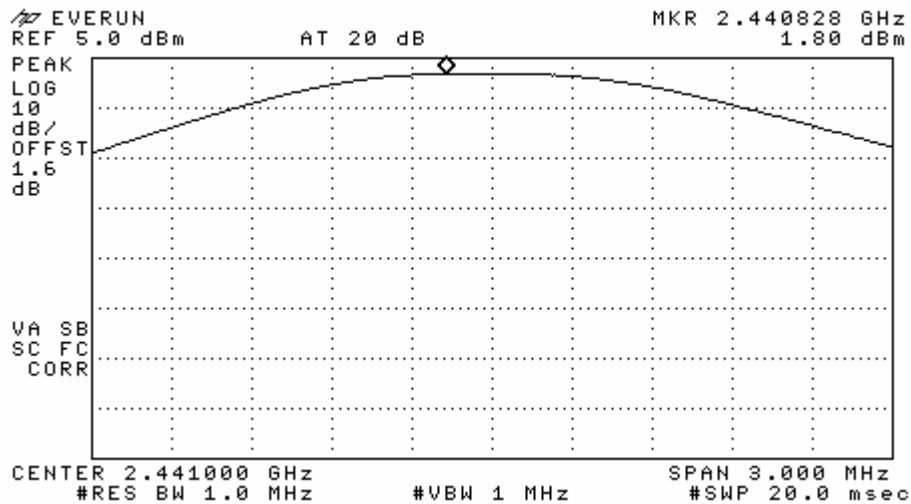
Same as the Chapter 3.2.1 (Figure 1)



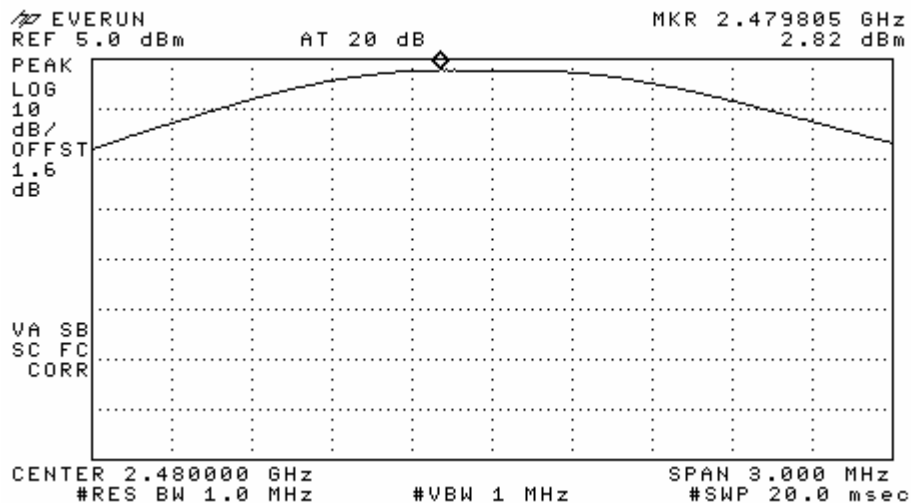
## Peak Output Power



RL



RL



RL

### 3.2.6 Band Edge

#### 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

RBW = 100 kHz

VBW = 100 kHz

Span = 10 MHz

Detector function = peak

Trace = max hold

Sweep = auto

#### Measurement Data: Complies

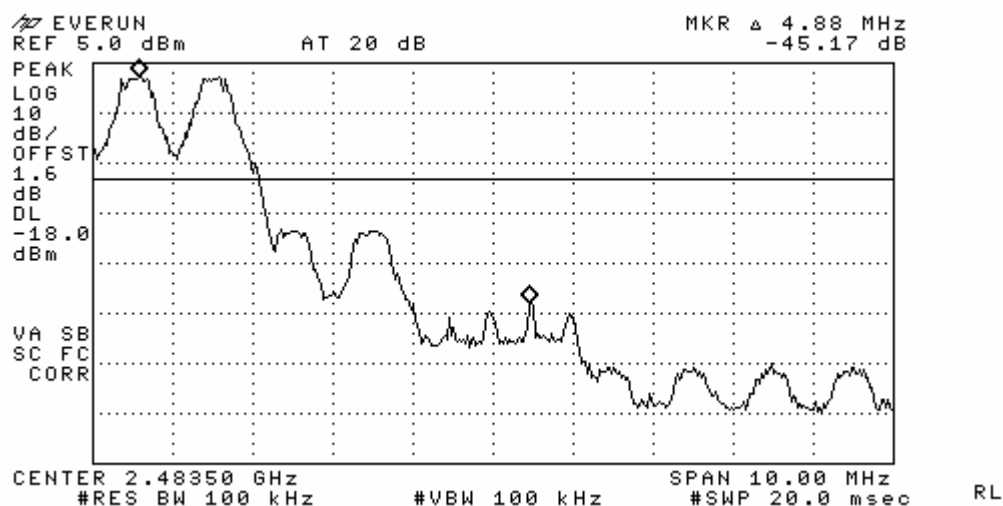
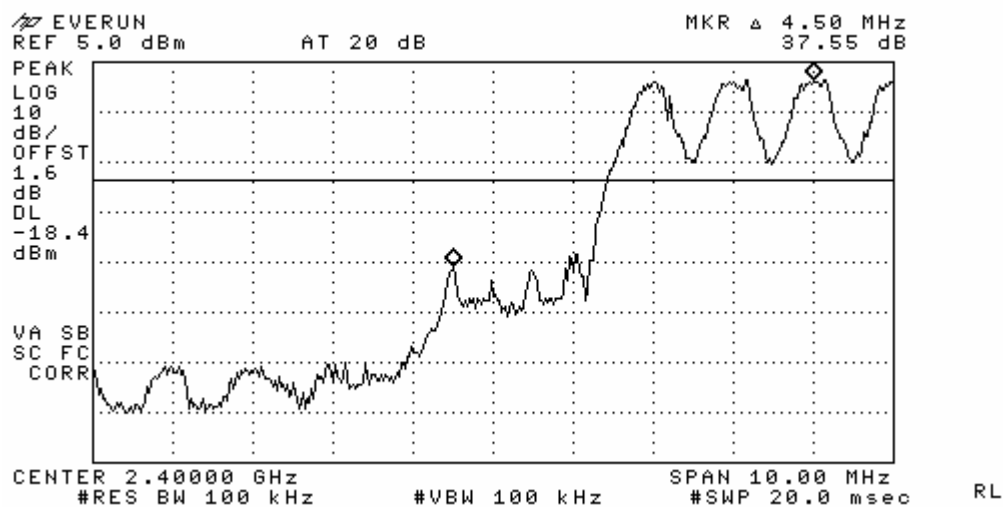
- All conducted emission in any 100kHz bandwidth outside of the spread spectrum band was at least 20dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.
- See next pages for actual measured spectrum plots.

<b>Minimum Standard:</b>	> 20 dBc
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#### Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

### Band - edge (with Hopping)



### Band-edges in the restricted band 2483.5 ~ 2500 MHz measurement

#### - Document DA 00-705 Marker Delta Method

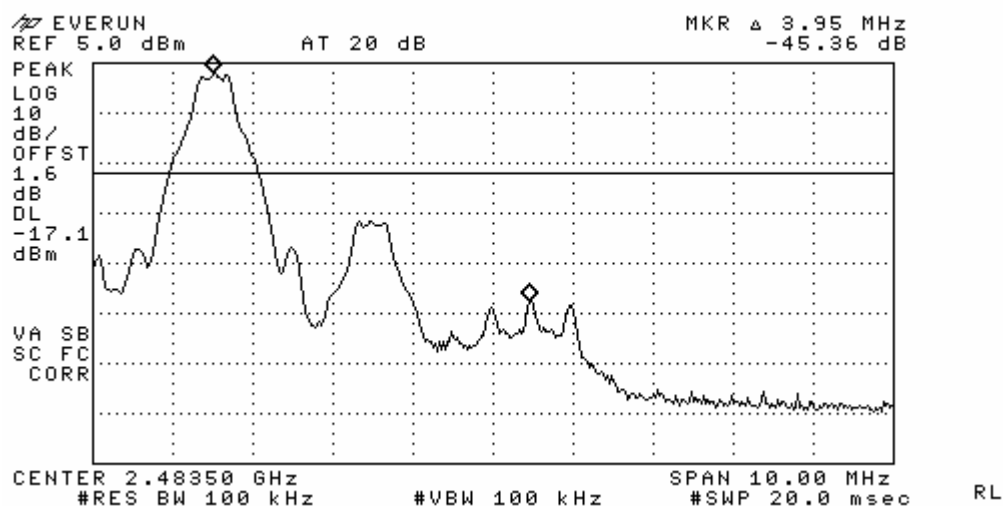
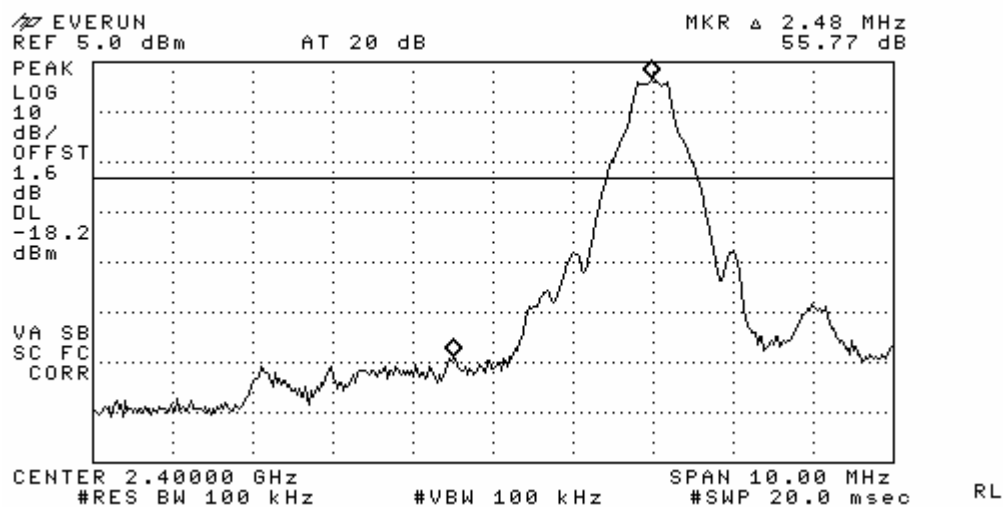
Frequency (MHz)	Detect mode	Pol.	Reading (dBuV/m)	T.F (dB)	Step 1 Data	delta	Step 3 Data	Limit
2480	PK	H	64.8	34.6	99.4	45.17	54.23	74
	AV	H	59.1	34.6	93.7	45.17	48.53	54

Note) Step 1 = Reading + T.F

T.F = Ant.F + Cable loss

Step 3 = Step 1 – Delta Value

### Band - edge (without Hopping)



### Band-edges in the restricted band 2483.5 ~ 2500 MHz measurement

#### - Document DA 00-705 Marker Delta Method

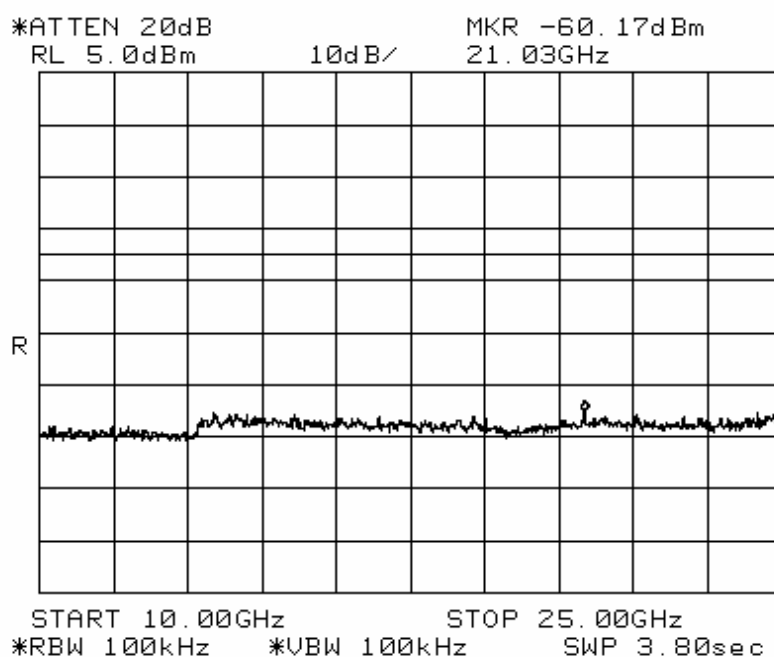
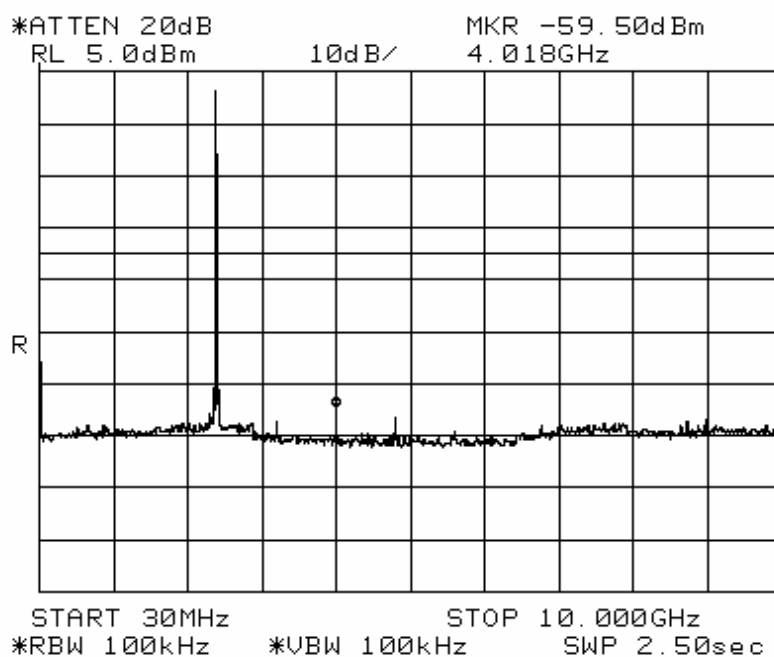
Frequency (MHz)	Detect mode	Pol.	Reading (dBuV/m)	T.F (dB)	Step 1 Data	delta	Step 3 Data	Limit
2480	PK	H	65.6	34.6	100.2	45.36	54.84	74
	AV	H	59.5	34.6	94.1	45.36	48.74	54

Note) Step 1 = Reading + T.F

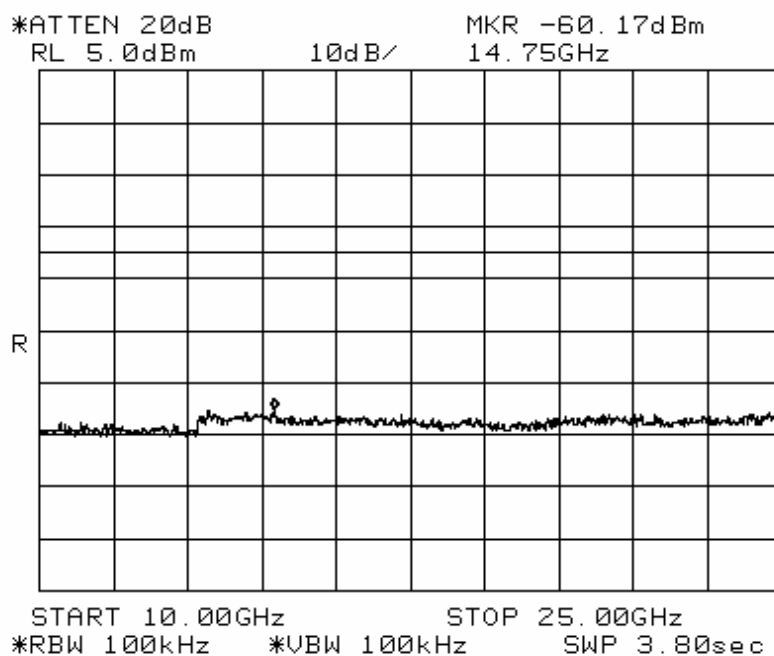
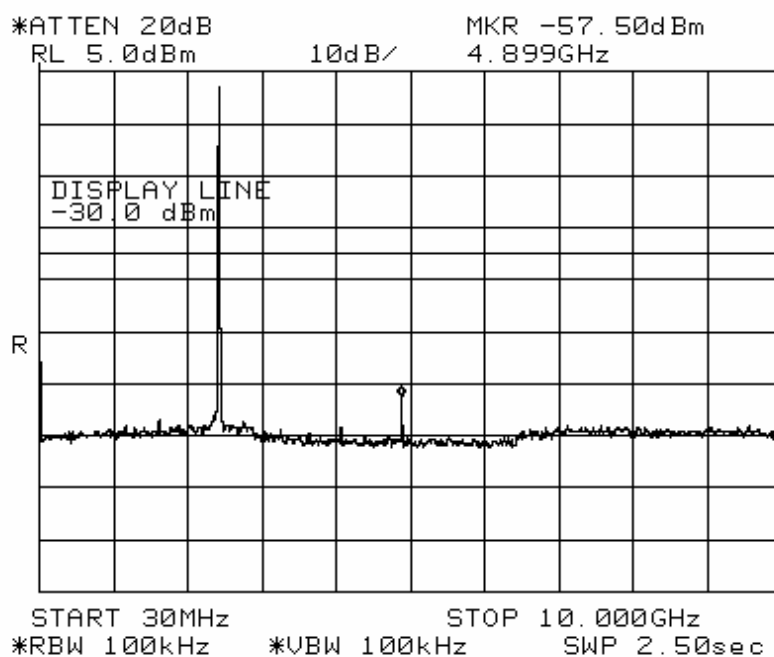
T.F = Ant.F + Cable loss

Step 3 = Step 1 – Delta Value

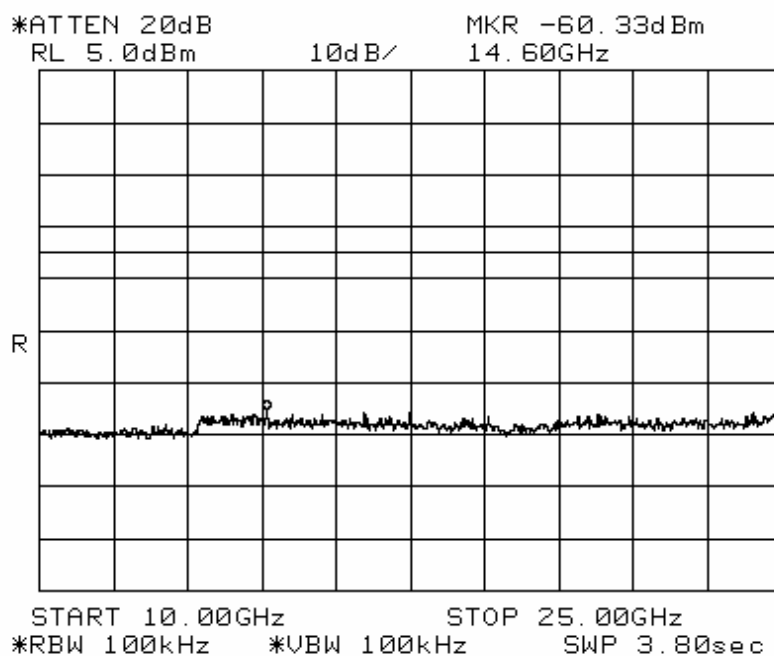
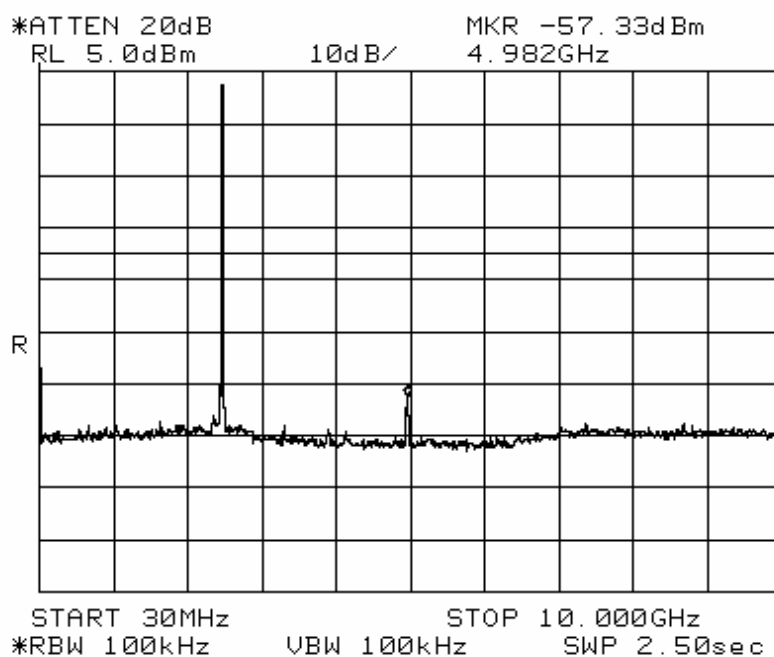
**Band - edge (at 20 dB blow) – Low channel**  
**Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic.**



**Band - edge (at 20 dB blow) – Mid channel**  
**Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic.**



**Band - edge (at 20 dB blow) – High channel**  
**Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic.**



### 3.2.7 Field Strength of Harmonics

#### 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 ~ 10<sup>th</sup> harmonic.

RBW = 100 kHz ( 30MHz ~ 1 GHz)

VBW      RBW

= 1 MHz (1 GHz ~ 10<sup>th</sup> harmonic )

Span = 100 MHz

Detector function = peak

Trace = max hold

Sweep = auto

#### Measurement Data: Complies

Low channel		Mid channel		High channel	
Frequency (MHz)	Level (dBuV)	Frequency (MHz)	Level (dBuV)	Frequency (MHz)	Level (dBuV)
4804	43.6	4884	44.7	4960	43.5
-	-	-	-	-	-
Measurement uncertainty		± 6 dB			

#### 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.

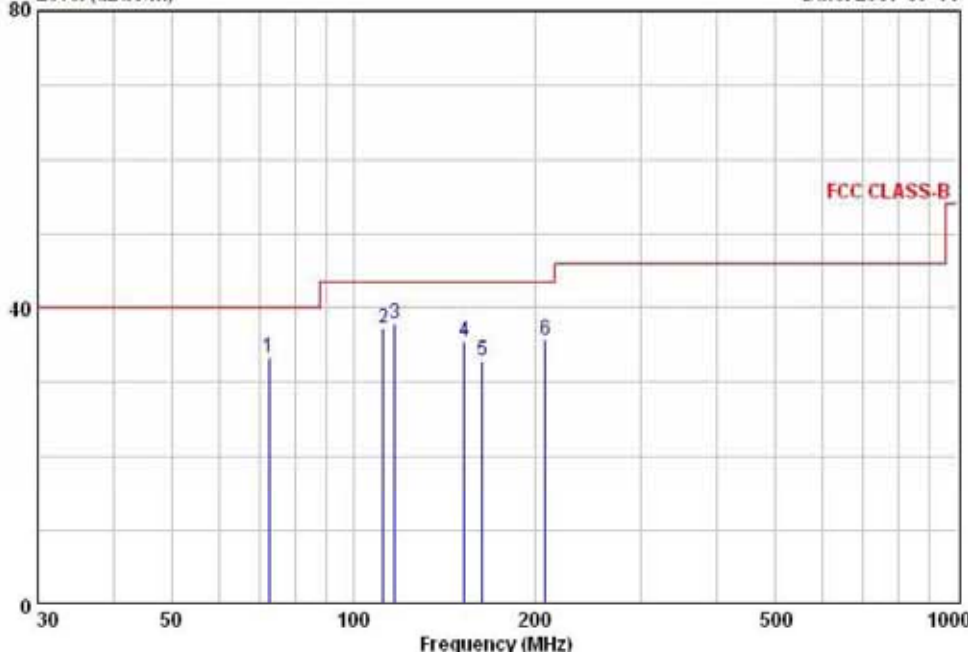




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EUT/Model No.: EVERUN  
TEST MODE: BLUETOOTH mode  
Temp Humi : 29 / 60  
Tested by: B. S. KIM

Data: 200  
Level (dBuV/m)  
Date: 2007-07-14



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QK dBuV/m	dBuV/m	dB	cm	deg	
1	72.51	48.20	-14.78	33.42	40.00	6.58	100	214 VERTICAL
2	112.25	50.70	-13.41	37.29	43.50	6.21	100	304 VERTICAL
3	117.24	50.70	-12.86	37.84	43.50	5.66	100	306 VERTICAL
4	152.81	45.70	-10.23	35.47	43.50	8.03	100	192 VERTICAL
5	163.81	43.20	-10.33	32.87	43.50	10.63	100	207 VERTICAL
6	208.24	48.70	-12.96	35.74	43.50	7.76	282	111 HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain



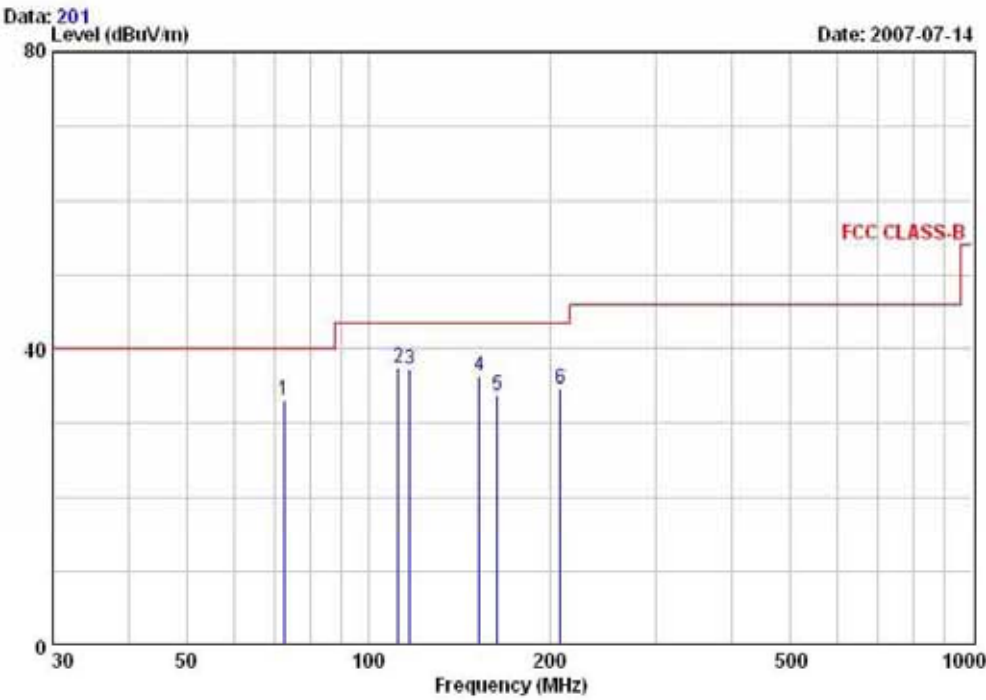
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Gyeonggi-do 449-822 Korea  
Tel :+82-31-3236008,9  
Fax:+82-31-3236010

EUT/Model No.: EVERUN

TEST MODE: BLUETOOTH +WLAN 802.11b mode

Temp Humi : 29 / 60

Tested by: B. S. KIM



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QK dBuV/m	dBuV/m	dB	cm	deg	
1	72.51	47.90	-14.78	33.12	40.00	6.88	100	214 VERTICAL
2	112.25	50.80	-13.41	37.39	43.50	6.11	100	304 VERTICAL
3	117.24	50.10	-12.86	37.24	43.50	6.26	100	306 VERTICAL
4	152.81	46.70	-10.23	36.47	43.50	7.03	100	192 VERTICAL
5	163.81	44.20	-10.33	33.87	43.50	9.63	100	207 VERTICAL
6	208.24	47.60	-12.96	34.64	43.50	8.86	282	111 HORIZONTAL

Remarks: C.F {Correction Factor} = Antenna factor + Cable loss - Preamp gain



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EUT/Model No.: EVERUN

TEST MODE: BLUETOOTH + WLAN 802.11g mode

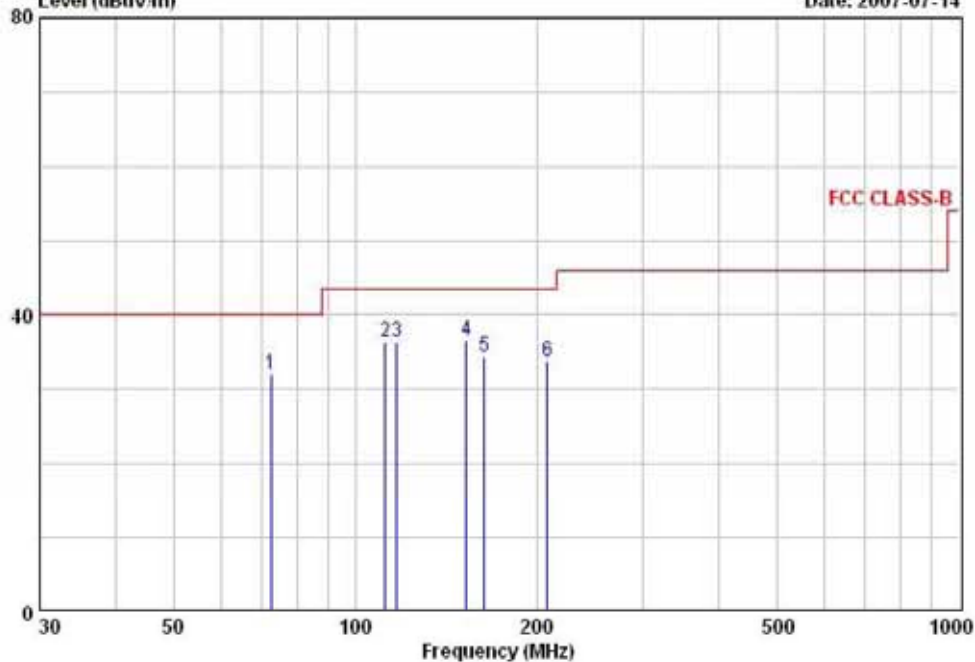
Temp Humi : 29 / 60

Tested by: B. S. KIM

Data: 202

Level (dBuV/m)

Date: 2007-07-14



Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
MHz	dBuV	dB	QK dBuV/m	dBuV/m	dB	cm	deg	
1	72.51	-14.78	32.02	40.00	7.98	100	214	VERTICAL
2	112.25	-13.41	36.49	43.50	7.01	100	304	VERTICAL
3	117.24	-12.86	36.34	43.50	7.16	100	306	VERTICAL
4	152.81	-10.23	36.57	43.50	6.93	100	192	VERTICAL
5	163.81	-10.33	34.47	43.50	9.03	100	207	VERTICAL
6	208.24	-12.96	33.74	43.50	9.76	282	111	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain



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EUT/Model No.: EVERUN

TEST MODE: 'H'+Movie+File up / down mode

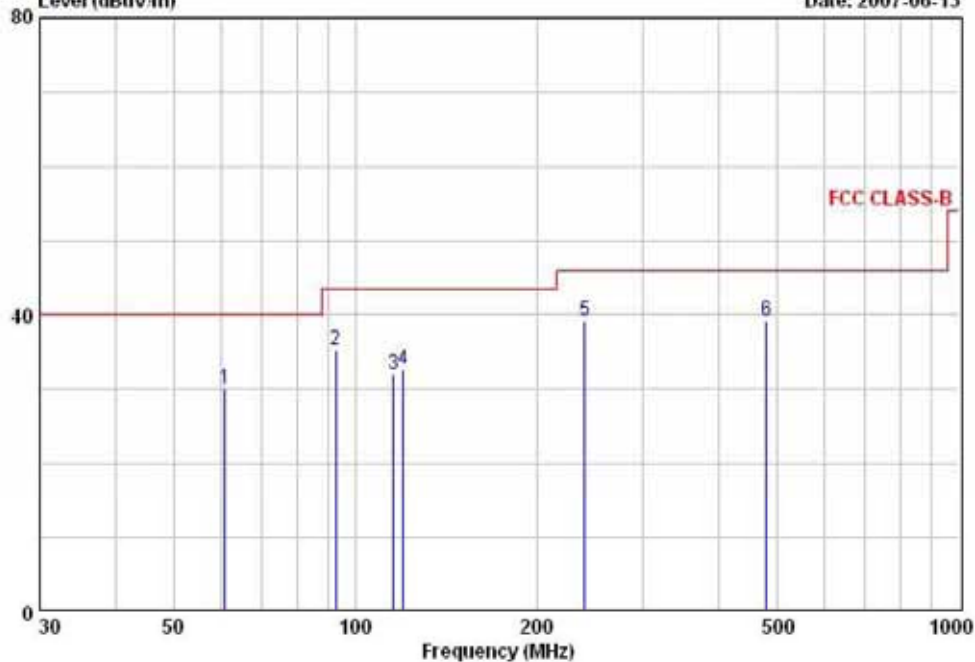
Temp Humi : 34 / 42

Tested by: B. S. KIM

Data: 52

Level (dBuV/m)

Date: 2007-06-13



	Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
	MHz	dBuV	dB	QK dBuV/m	dBuV/m	dB	cm	deg	
1	60.81	42.80	-12.69	30.11	40.00	9.89	100	214	VERTICAL
2	92.78	50.80	-15.48	35.32	43.50	8.18	100	271	VERTICAL
3	115.52	45.00	-13.05	31.95	43.50	11.55	400	259	HORIZONTAL
4	120.24	45.20	-12.55	32.65	43.50	10.85	100	308	VERTICAL
5	240.03	50.60	-11.43	39.17	46.00	6.83	354	11	HORIZONTAL
6	480.20	45.00	-5.83	39.17	46.00	6.83	381	119	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain



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EUT/Model No.: EVERUN

TEST MODE: PC mode

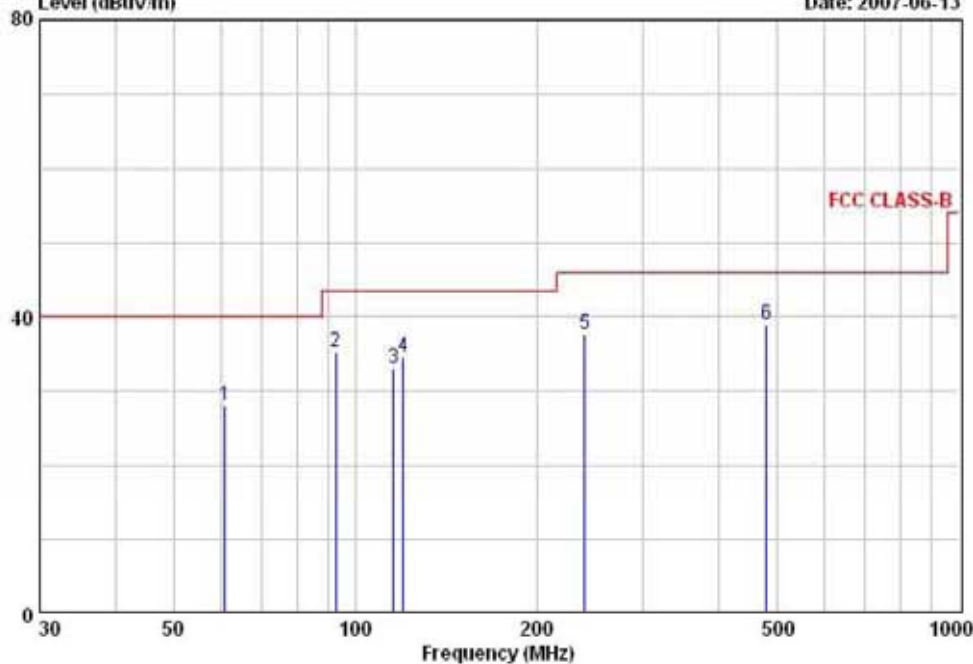
Temp Humi : 34 / 42

Tested by: B. S. KIM

Data: 199

Level (dBuV/m)

Date: 2007-06-13



	Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
	MHz	dBuV	dB	QK dBuV/m	dBuV/m	dB	cm	deg	
1	60.81	40.80	-12.69	28.11	40.00	11.89	100	214	VERTICAL
2	92.78	50.70	-15.48	35.22	43.50	8.28	100	271	VERTICAL
3	115.52	46.20	-13.05	33.15	43.50	10.35	400	259	HORIZONTAL
4	120.24	47.20	-12.55	34.65	43.50	8.85	100	308	VERTICAL
5	240.03	49.10	-11.43	37.67	46.00	8.33	354	11	HORIZONTAL
6	480.20	44.80	-5.83	38.97	46.00	7.03	381	119	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

### 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

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

#### 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

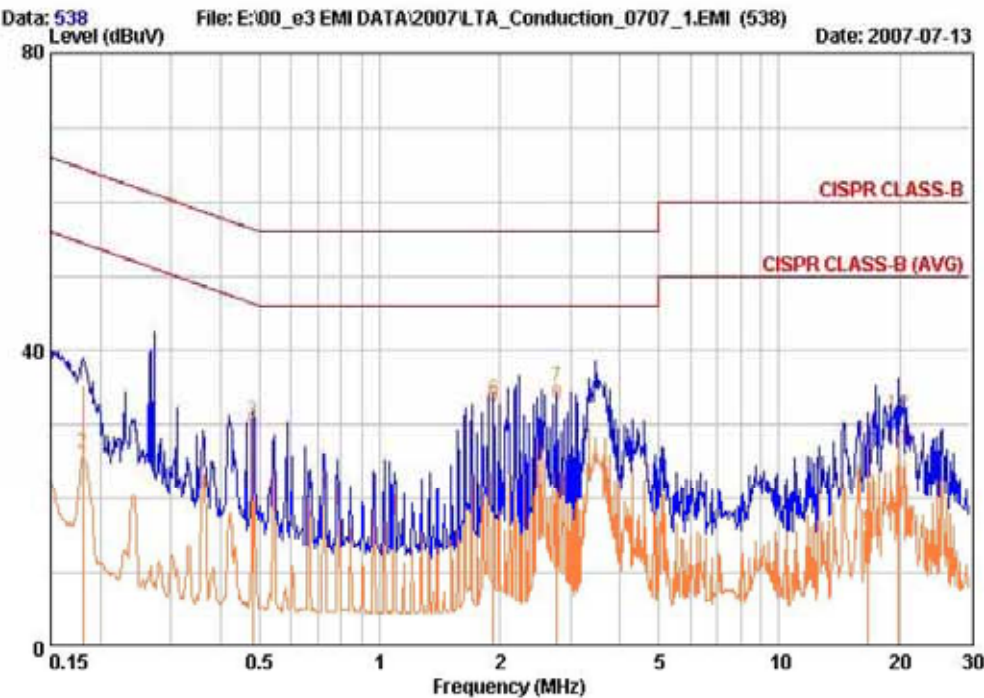
\* Decreases with the logarithm of the frequency

AC Conducted Emissions – BT - Line



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EUT / Model No. : EVERUN	Phase : LINE
Test Mode : BlueTooth mode	Test Power : 120 / 60
Temp./Humi. : 25 / 49	Test Engineer : B.S.KIM



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
	dBuV	dBuV		dBuV	dBuV	dBuV	dBuV	dB	dB
0.180	35.00	25.80	0.34	35.34	26.14	64.49	54.49	29.14	28.34
0.481	30.30	29.10	0.31	30.61	29.41	56.32	46.32	25.71	16.91
1.931	33.00	32.00	0.42	33.42	32.42	56.00	46.00	22.58	13.58
2.778	34.40	32.00	0.62	35.02	32.62	56.00	46.00	20.98	13.38
16.661	26.60	14.40	1.32	27.92	15.72	60.00	50.00	32.08	34.28
19.931	29.90	25.30	1.52	31.42	26.82	60.00	50.00	28.58	23.18

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss



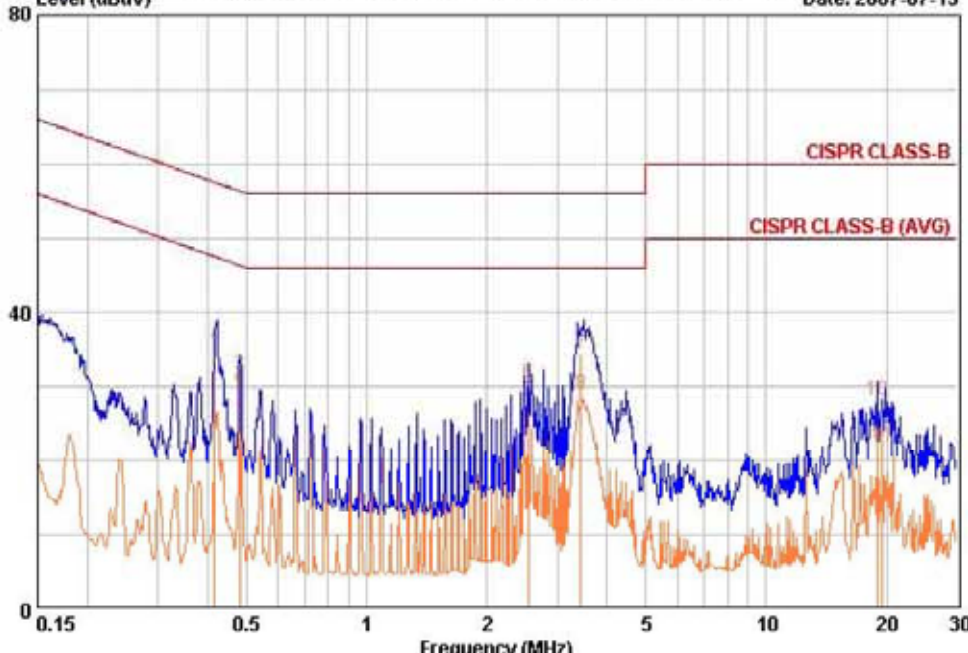
AC Conducted Emissions – BT - Neutral



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Fax:+82-31-323-6010

EUT / Model No. : EVERUN	Phase : NEUTRAL
Test Mode : BlueTooth mode	Test Power : 120 / 60
Temp./Humi. : 25 / 49	Test Engineer : B.S.KIM

Data: 536 File: E:\00\_e3 EMI DATA\2007\LTA\_Conduction\_0707\_1.EMI (536) Date: 2007-07-13



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
0.416	34.30	23.30	0.36	34.66	23.66	57.53	47.53	22.86	23.86
0.481	31.40	29.60	0.30	31.70	29.90	56.32	46.32	24.62	16.42
2.535	30.00	27.60	0.53	30.53	28.13	56.00	46.00	25.47	17.87
3.439	34.00	28.40	0.52	34.52	28.92	56.00	46.00	21.48	17.08
19.016	27.00	21.20	1.20	28.20	22.40	60.00	50.00	31.80	27.60
19.436	23.20	20.80	1.26	24.46	22.06	60.00	50.00	35.54	27.94

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss



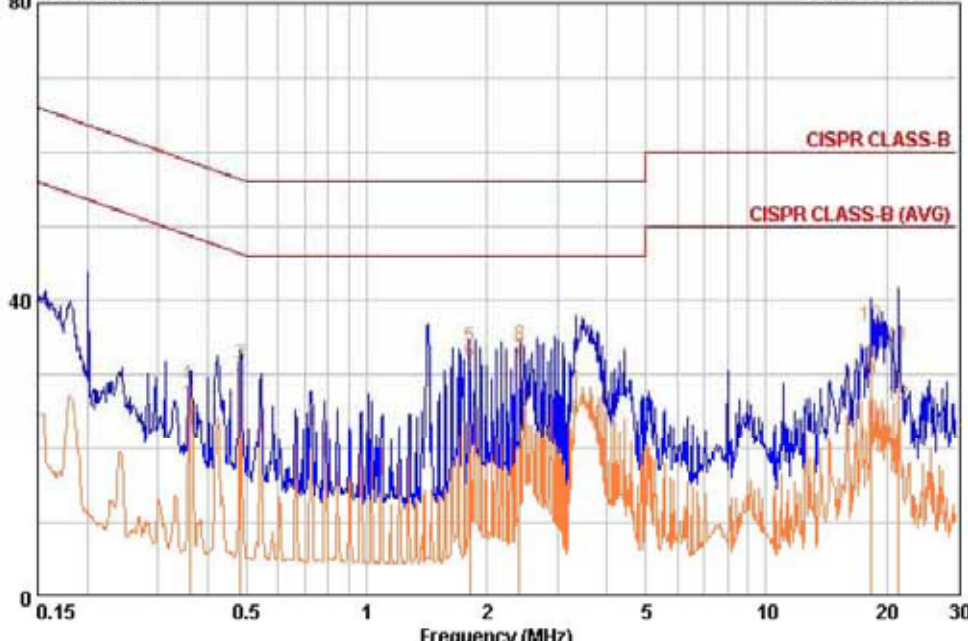
AC Conducted Emissions – BT+WLAN(802.11b) – Line



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EUT / Model No. : EVERUN	Phase : LINE
Test Mode : BlueTooth+WLAN802.11b mode	Test Power : 120 / 60
Temp./Humi. : 25 / 49	Test Engineer : B.S.KIM

Data: 540      File: E:\00\_e3 EMI DATA\2007\LTA\_Conduction\_0707\_1.EMI (540)      Date: 2007-07-13  
Level (dBuV)



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
	dBuV	dBuV		dBuV	dBuV	dBuV	dBuV	dB	dB
0.361	28.20	27.10	0.35	28.55	27.45	58.71	48.71	30.16	21.26
0.483	31.00	28.90	0.31	31.31	29.21	56.29	46.29	24.98	17.08
1.811	33.30	31.30	0.41	33.71	31.71	56.00	46.00	22.29	14.29
2.415	33.40	31.60	0.53	33.93	32.13	56.00	46.00	22.07	13.87
18.309	35.20	27.80	1.34	36.54	29.14	60.00	50.00	23.46	20.86
21.459	32.30	24.40	1.57	33.87	25.97	60.00	50.00	26.13	24.03

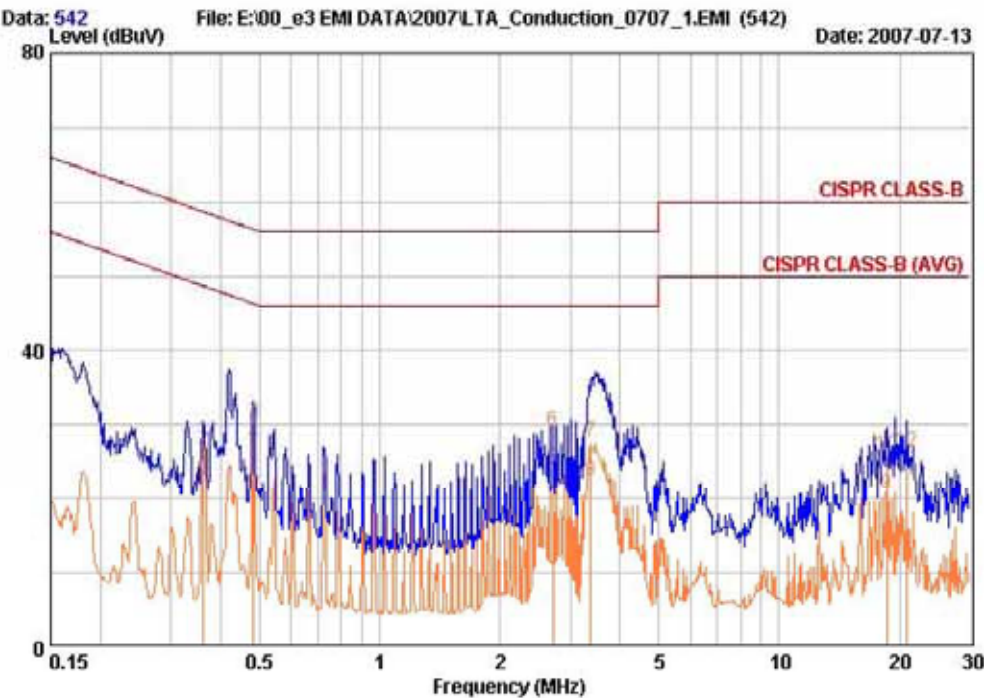
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss

AC Conducted Emissions – BT+WLAN(802.11b) – Neutral



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EUT / Model No. : EVERUN	Phase : NEUTRAL
Test Mode : BlueTooth+WLAN802.11b mode	Test Power : 120 / 60
Temp./Humi. : 25 / 49	Test Engineer : B.S.KIM



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
	dBuV	dBuV		dBuV	dBuV	dBuV	dBuV	dB	dB
0.362	27.50	26.30	0.34	27.84	26.64	58.68	48.68	30.84	22.04
0.483	29.90	27.20	0.30	30.20	27.50	56.29	46.29	26.09	18.79
2.716	28.60	23.60	0.57	29.17	24.17	56.00	46.00	26.83	21.83
3.383	27.10	21.90	0.54	27.64	22.44	56.00	46.00	28.36	23.56
18.545	24.80	19.50	1.19	25.99	20.69	60.00	50.00	34.01	29.31
20.843	25.00	21.00	1.35	26.35	22.35	60.00	50.00	33.65	27.65

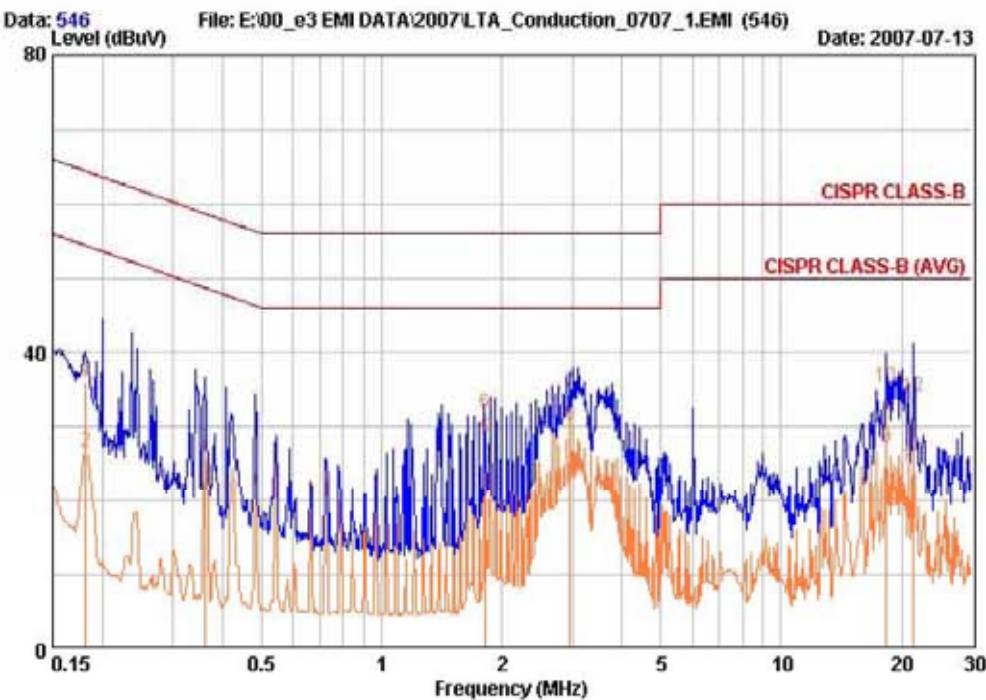
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss

AC Conducted Emissions – BT+WLAN(802.11g) – Line



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EUT / Model No. : EVERUN	Phase : LINE
Test Mode : BlueTooth+WLAN802.11g mode	Test Power : 120 / 60
Temp./Humi. : 25 / 49	Test Engineer : B.S.KIM



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV		QP	AV	QP	AV	QP	AV
	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB
0.181	35.60	26.30	0.33	35.93	26.63	64.44	54.44	28.51	27.81
0.361	26.60	25.10	0.35	26.95	25.45	58.71	48.71	31.76	23.26
1.812	31.40	28.00	0.41	31.81	28.41	56.00	46.00	24.19	17.59
2.958	34.00	29.70	0.66	34.66	30.36	56.00	46.00	21.34	15.64
18.308	34.00	26.00	1.34	35.34	27.34	60.00	50.00	24.66	22.66
21.461	32.40	23.00	1.57	33.97	24.57	60.00	50.00	26.03	25.43

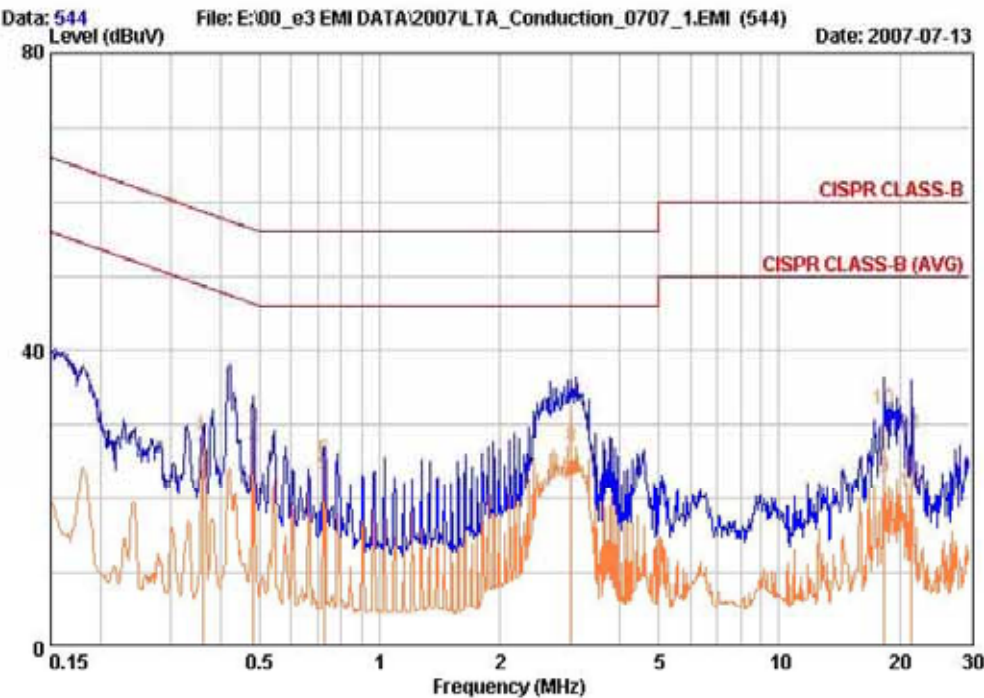
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss

AC Conducted Emissions – BT+WLAN(802.11g) – Neutral



243 Jibug-ni, yangji-Myeon, Youngin-si,  
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EUT / Model No. : EVERUN	Phase : NEUTRAL
Test Mode : BlueTooth+WLAN802.11g mode	Test Power : 120 / 60
Temp./Humi. : 25 / 49	Test Engineer : B.S.KIM



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
	dBuV	dBuV		dBuV	dBuV	dBuV	dBuV	dB	dB
0.361	28.00	26.60	0.34	28.34	26.94	58.71	48.71	30.36	21.76
0.483	29.30	26.60	0.30	29.60	26.90	56.29	46.29	26.69	19.39
0.725	24.90	23.10	0.32	25.22	23.42	56.00	46.00	30.78	22.58
3.022	31.50	26.30	0.63	32.13	26.93	56.00	46.00	23.87	19.07
18.311	30.90	21.80	1.19	32.09	22.99	60.00	50.00	27.91	27.01
21.459	27.30	19.50	1.37	28.67	20.87	60.00	50.00	31.33	29.13

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss



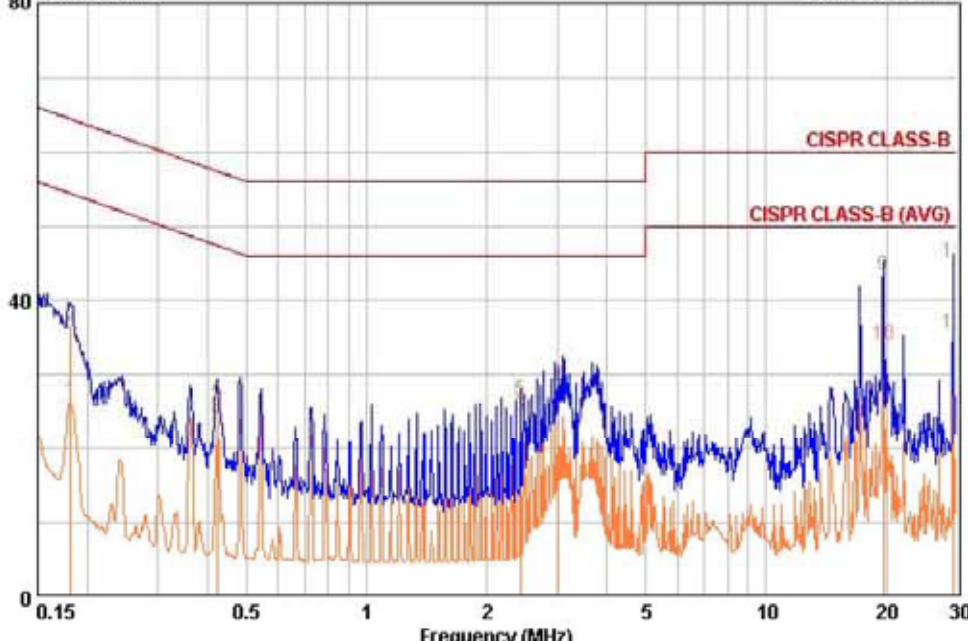
AC Conducted Emissions – Line



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EUT / Model No. : EVERUN	Phase : LINE
Test Mode : 'H' + Movie File up/down mode	Test Power : 120 / 60
Temp./Humi. : 25 / 49	Test Engineer : B.S.KIM

Data: 556 Level (dBuV) File: E:\00\_e3 EMI DATA\2007\LTA\_Conduction\_0707\_1.EMI (562) Date: 2007-07-13



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV		QP	AV	QP	AV	QP	AV
0.182	36.20	25.96	0.33	36.53	26.29	64.42	54.42	27.89	28.13
0.421	26.40	23.91	0.37	26.77	24.28	57.42	47.42	30.65	23.14
2.422	26.00	23.80	0.53	26.53	24.33	56.00	46.00	29.47	21.67
3.025	28.00	24.34	0.66	28.66	25.00	56.00	46.00	27.34	21.00
19.635	41.80	32.61	1.47	43.27	34.08	60.00	50.00	16.73	15.92
29.371	43.20	33.69	1.81	45.01	35.50	60.00	50.00	14.99	14.50

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss

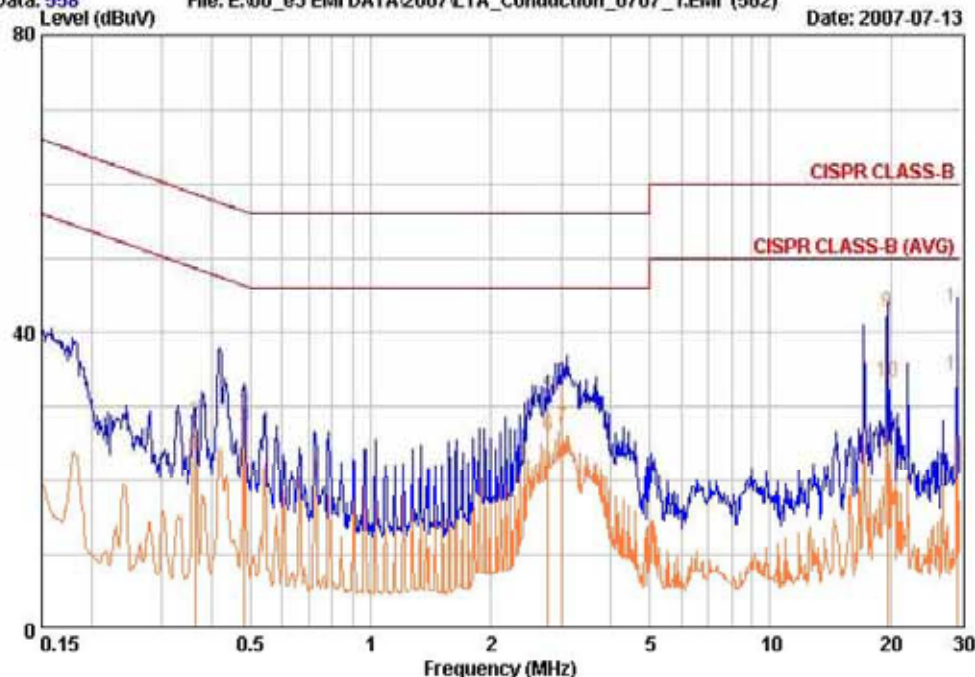
## AC Conducted Emissions –Neutral



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EUT / Model No. : EVERUN	Phase : NEUTRAL
Test Mode : 'H' + Movie+File up/down mode	Test Power : 120 / 60
Temp./Humi. : 25 / 49	Test Engineer : B.S.KIM

Data: 558 File: E:\00\_e3 EMI DATA\2007\LTA\_Conduction\_0707\_1.EMI (562) Date: 2007-07-13



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV		QP	AV	QP	AV	QP	AV
	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB
0.363	27.60	26.14	0.34	27.94	26.48	58.65	48.65	30.71	22.17
0.484	29.80	26.92	0.30	30.10	27.22	56.27	46.27	26.18	19.06
2.779	30.90	25.55	0.59	31.49	26.14	56.00	46.00	24.51	19.86
3.025	32.50	26.59	0.63	33.13	27.22	56.00	46.00	22.87	18.78
19.635	41.40	31.96	1.28	42.68	33.24	60.00	50.00	17.32	16.76
29.371	41.80	32.56	1.64	43.44	34.20	60.00	50.00	16.56	15.80

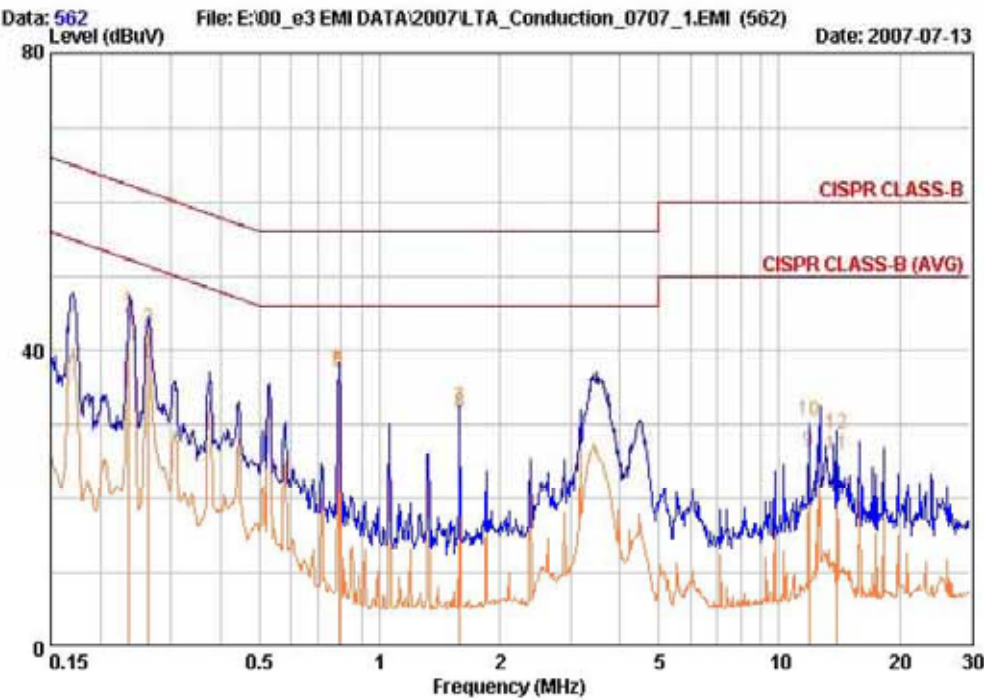
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss

AC Conducted Emissions –PC Mode - Line



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EUT / Model No. : EVERUN	Phase : LINE
Test Mode : PC mode	Test Power : 120 / 60
Temp./Humi. : 25 / 49	Test Engineer : B.S.KIM



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV		QP	AV	QP	AV	QP	AV
	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB
0.236	45.10	44.30	0.22	45.32	44.52	62.24	52.24	16.92	7.72
0.264	42.70	41.60	0.25	42.95	41.85	61.30	51.30	18.36	9.46
0.791	37.10	36.60	0.39	37.49	36.99	56.00	46.00	18.51	9.01
1.583	31.80	31.20	0.38	32.18	31.58	56.00	46.00	23.82	14.42
11.868	29.50	25.30	1.00	30.50	26.30	60.00	50.00	29.50	23.70
13.979	27.60	24.80	1.12	28.72	25.92	60.00	50.00	31.28	24.08

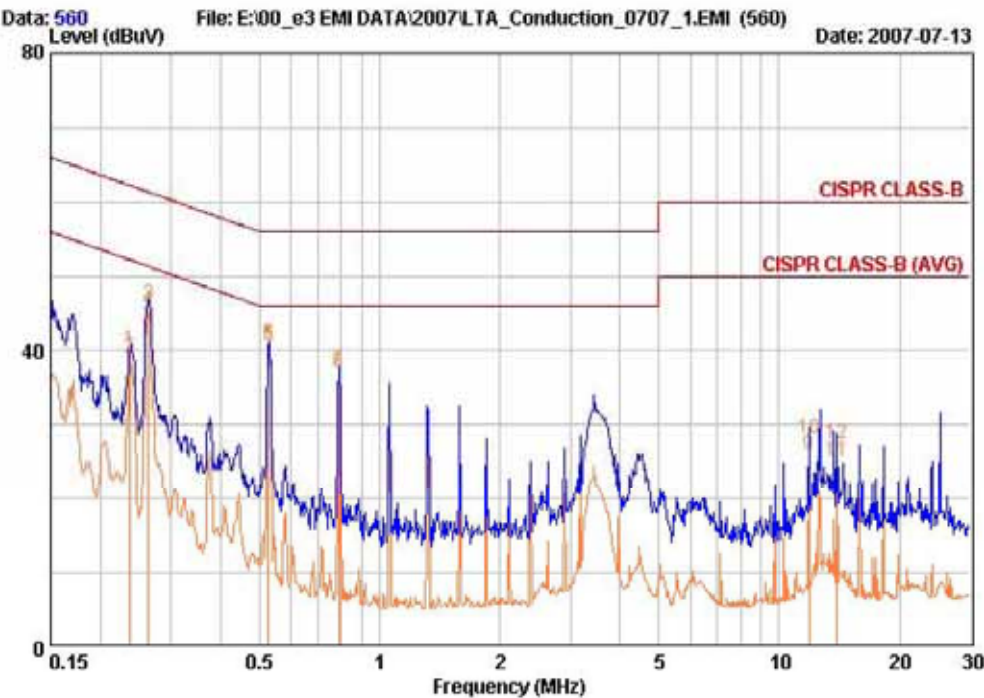
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss

AC Conducted Emissions – PC Mode - Neutral



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EUT / Model No. : EVERUN	Phase : NEUTRAL
Test Mode : PC mode	Test Power : 120 / 60
Temp./Humi. : 25 / 49	Test Engineer : B.S.KIM



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
0.237	39.90	38.90	0.22	40.12	39.12	62.20	52.20	22.08	13.08
0.264	46.00	45.20	0.24	46.24	45.44	61.30	51.30	15.06	5.86
0.527	40.60	40.20	0.28	40.88	40.48	56.00	46.00	15.12	5.52
0.790	37.10	36.60	0.38	37.48	36.98	56.00	46.00	18.52	9.02
11.867	27.10	25.00	0.96	28.06	25.96	60.00	50.00	31.94	24.04
13.978	26.40	24.00	1.06	27.46	25.06	60.00	50.00	32.54	24.94

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss



**APPENDIX**

**TEST EQUIPMENT USED FOR TESTS**

	Description	Model No.	Serial No.	Manufacturer	Next Cal. Date
1	Spectrum Analyzer	8594E	3649A03649	HP	Apr-08
2	Signal Generater	8648C	3623A02597	HP	Apr-08
3	Attenuator (3dB)	8491A	37822	HP	Nov-07
4	Attenuator (10dB)	8491A	63196	HP	Nov-07
5	EMI Test Receiver	ESVD	843748/001	R&S	Jan-08
6	LISN	KNW-407	8-1430-1	Kyoritsu	Jan-08
7	Two-Line V-Network	ESH3-Z5	893045/017	R&S	Jan-08
8	RF Amplifier	8447D	2949A02670	HP	Jan-08
9	RF Amplifier	8447D	2439A09058	HP	Jan-08
10	RF Amplifier	8449B	3008A02126	HP	Apr-09
11	Test Receiver	ESHS10	828404009	R&S	Jan-08
12	TRILOG Antenna	VULB 9160	9160-3212	SCHWARZBECK	Jul-07
13	Log.-Per. Antenna	VULP 9118	9118 A 401	SCHWARZBECK	Apr-09
14	Biconical Antenna	BBA 9106	VHA 9103-2315	SCHWARZBECK	Apr-09
15	Horn Antenna	3115	00055005	ETS LINDGREN	Mar-09
16	Dipole Antenna	VHA9103	2116	Schwarzbeck	Nov-07
17	Dipole Antenna	VHA9103	2117	Schwarzbeck	Nov-07
18	Dipole Antenna	UHA9105	2261	Schwarzbeck	Nov-07
19	Dipole Antenna	UHA9105	2262	Schwarzbeck	Nov-07
20	Spectrum Analyzer	8591E	3649A05888	HP	Jan-08
21	Spectrum Analyzer	8563E	3425A02505	HP	Apr-08
22	Hygro-Thermograph	THB-36	0041557-01	ISUZU	Feb-08
23	Splitter (SMA)	ZFSC-2-2500	SF617800326	Mini-Circuits	Jun-08
24	RF Switch	MP59B	6200414971	ANRITSU	Jun-08
25	RF Switch	MP59B	6200438565	ANRITSU	Jun-08
26	Power Divider	11636A	6243	HP	Nov-07
27	DC Power Supply	6622A	3448A03079	HP	Oct-07
28	Attenuator (30dB)	11636A	6243	HP	Nov-07
29	Frequency Counter	5342A	2826A12411	HP	Apr-08
30	Power Meter	EPM-441A	GB32481702	HP	Apr-08
31	Power Sensor	8481A	2702A64048	HP	Apr-08
32	Audio Analyzer	8903B	3729A18901	HP	Nov-07
33	Modulation Analyzer	8901B	3749A05878	HP	Nov-07
34	TEMP & HUMIDITY Chamber	YJ-500	L05022	JinYoung Tech	Oct-07
35	LOOP-ANTENNA	FMZB 1516	151602/94	SCHWARZBECK	Mar-09