

ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR LOW-POWER, NON-LICENSED TRANSMITTER

Test Report No. : E077R-076
AGR No. : A078A-016
Applicant : Wintelecom INC.
Address : 143-1, SangDaeWon-dong, JungWon-gu, SeongNam-si, GyeongGi-do, Korea
Manufacturer : Wintelecom INC.
Address : 143-1, SangDaeWon-dong, JungWon-gu, SeongNam-si, GyeongGi-do, Korea
Type of Equipment : Wireless Bridge
FCC ID. : VIMWA500SU
Model Name : WA500-SU
Multiple Model Name : ASCEND AIRLINK 510
Serial number : N/A
Total page of Report : 54 pages (including this page)
Date of Incoming : June 22, 2007
Date of issue : July 30, 2007

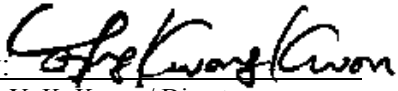
SUMMARY

The equipment complies with the regulation; **FCC Part 15 Subpart C Section 15.247.**

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

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1. VERIFICATION OF COMPLIANCE

APPLICANT : Wintelecom INC.
ADDRESS : 143-1, SangDaeWon-dong, JungWon-gu, SeongNam-si, GyeongGi-do, Korea
CONTACT PERSON : Mr. Soon-Beom, Kwon / Assistant Manager
TELEPHONE NO : +82-31-744-0631
FCC ID : VIMWA500SU
MODEL NAME : WA500-SU
SERIAL NUMBER : N/A
DATE : July 30, 2007

EQUIPMENT CLASS	<i>DTS – DIGITAL TRNSMISSION SYSTEM</i>
KIND OF EQUIPMENT	Wireless Bridge
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4: 2003
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	CERTIFICATION
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SUBPART C Section 15.247
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	None
FINAL TEST WAS CONDUCTED ON	3 METER(S) OPEN AREA TEST SITE

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

2. TEST SUMMARY

2.1 Test items and results

SECTION	TEST ITEMS	RESULTS
15.247 (a) (2)	Minimum 6dB Bandwidth	Met the Limit / PASS
15.247 (b) (3)	Maximum Peak Conducted Output Power	Met the Limit / PASS
15.247 (b) (5)	Radio Frequency Exposure Level	Met the Limit / PASS
15.247 (c)	100 kHz Bandwidth Outside the Frequency Band	Met the Limit / PASS
15.247 (c)	Radiated Emission which fall in the Restricted Band	Met the Limit / PASS
15.247 (d)	Peak Power Spectral Density	Met the Limit / PASS
15.209 and 15.109	Radiated Emission Limits	Met the Limit / PASS
15.207 and 15.107	Conducted Emission Limits	Met the Limit / PASS
15.203	Antenna Requirement	Met requirement / PASS

2.2 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

2.3 Related Submittal(s) / Grant(s)

Original submittal only

2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in section 2.1.

2.5 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4: 2003. Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

2.6 Test Facility

The Electromagnetic compatibility measurement facilities are located on at 307-51 Daessangryung-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-080 Korea. Description details of test facilities were submitted to the Federal Communications Commission on August 30, 2005 (Registration Number: 92819 and 340658), accredited by KOLAS (Korea Laboratory Accreditation Scheme, No: 85) and approved by TUV, DNV and MIC (Ministry of Information and Communications in Korea) according to the requirement of ISO17025.

3. GENERAL INFORMATION

3.1 Product Description

The Wintelecom INC., Model WA500-SU (referred to as the EUT in this report) is a Wireless Bridge that has out door unit, AC/DC adaptor and console cable. The product specification described herein was obtained from product data sheet or user's manual.

DEVICE TYPE		Wireless Bridge (Fixed Point to Point Operation)
OPERATING FREQUENCY		5725 – 5825 MHz
TEMPERATURE RANGE		-20°C ~ +70°C
RF OUTPUT POWER		22.3 dBm
DATA TRANSFER RATE		Max. 54 Mbps
MODULATION TYPE		OFDM
USED ANTENNA	Internal Antenna	Gain: 19dBi, Model No: PA-5800-20 MFR: Wintelecom
	External Antenna	Gain: 15dBi, Model No: ST-5800-20-H MFR: Gamma Nu, Inc
ANTENNA CONNECTOR TYPE		SMA-M for Internal and N-Type for External
USED WLAN MODULE		MFR: Wistron NeWeb Corporation FCC ID: NKRCM9
LIST OF EACH OSC. OR CRYSTAL. FREQ.(FREQ.>=1MHz)		25 MHz and 33 MHz on the Main Board 40 MHz on the RF Board
NUMBER OF LAYER		6 Layers: Main Board, 2 Layers: RF Board
EXTERNAL CONNECTOR		DC In, Ethernet, RS232, Antenna Cable Connector
POWER REQUIREMENT		DC 12~48V, 2A from an AC/DC adaptor

3.2 Model Differences

The difference(s) compared to the EUT is as follows:

	Model	Model Differences
Basic Model	WA500-SU	-
Multiple Model	ASCEND AIRLINK 510	Only type designation according to the buyer's request.

4. EUT MODIFICATIONS

None

5. SYSTEM TEST CONFIGURATION

5.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
Main Board	Wintelecom INC.	WA500-rev1.3s	N/A
RF Board	N/A	CM9	NKRCM9
Adaptor	Dream Electronic	HASU11FB	N/A

5.2 Peripheral equipment

Defined as equipment needed for correct operation of the EUT, but not considered as tested:

Model	Manufacturer	FCC ID	Description	Connected to
WA500-SU	Wintelecom INC.	VIMWA500SU	Wireless Bridge (EUT)	PC
PP05LC	Dell Computer	DoC	PC	-
GTM-2424P4	Garnet System	N/A	Modem	PC
UP-DP10	Sony	DoC	Printer	PC
N/A	N/A	N/A	HUB	PC

5.3 Mode of operation during the test

For the testing, software used to control the EUT for staying in continuous transmitting and receiving mode is programmed. For final testing, WLAN was set at Low Channel (5745MHz), Middle Channel (5785MHz), and High Channel (5805MHz) with 6, 9, 12, 18, 24, 36, 48, and 54Mbps data rate. To get a maximum emission levels from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes. The EUT was tested with internal and external antenna.

5.4 Configuration of Test System

Line Conducted Test: The EUT was connected to adaptor and the power line of adaptor was connected to LISN. All supporting equipments were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.4: 2003 7.2.3 to determine the worse operating conditions.

Radiated Emission Test: Preliminary radiated emissions test were conducted using the procedure in ANSI C63.4: 2003 8.3.1.1 and 13.1.4.1 to determine the worse operating conditions. Final radiated emission tests were conducted at 3meter open area test site.

The turntable was rotated through 360 degrees and the EUT was tested by positioned three orthogonal planes to obtain the highest reading on the field strength meter. Once maximum reading was determined, the search antenna was raised and lowered in both vertical and horizontal polarization.

5.5 Antenna Requirement

For intentional device, according to section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna Construction:

The transmitter antenna of the EUT does not meet the unique antenna connector requirement, but the antenna must be professionally installed to meet above antenna requirement according to the installation guide, so the EUT complies with the 15.203.

6. PRELIMINARY TEST

6.1 AC Power line Conducted Emissions Tests

During Preliminary Tests, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
TX mode	X

6.2 General Radiated Emissions Tests

During Preliminary Tests, the following operating modes were investigated

Operation Mode	The Worse operating condition (Please check one only)
TX mode	X

7. MINIMUM 6dB BANDWIDTH

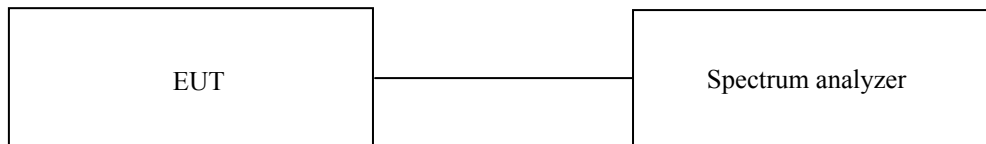
7.1 Operating environment

Temperature : 27 °C

Relative humidity : 38 %

7.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz, and peak detection was used. The 6dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 6 dB.



7.3 Test equipment used

Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ - 8564E	HP	Spectrum Analyzer	3650A00756	June 19, 2007

All test equipment used is calibrated on a regular basis.

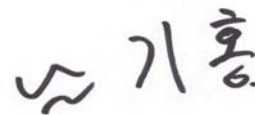
7.4 Test data

-. Test Date : July 18, 2007

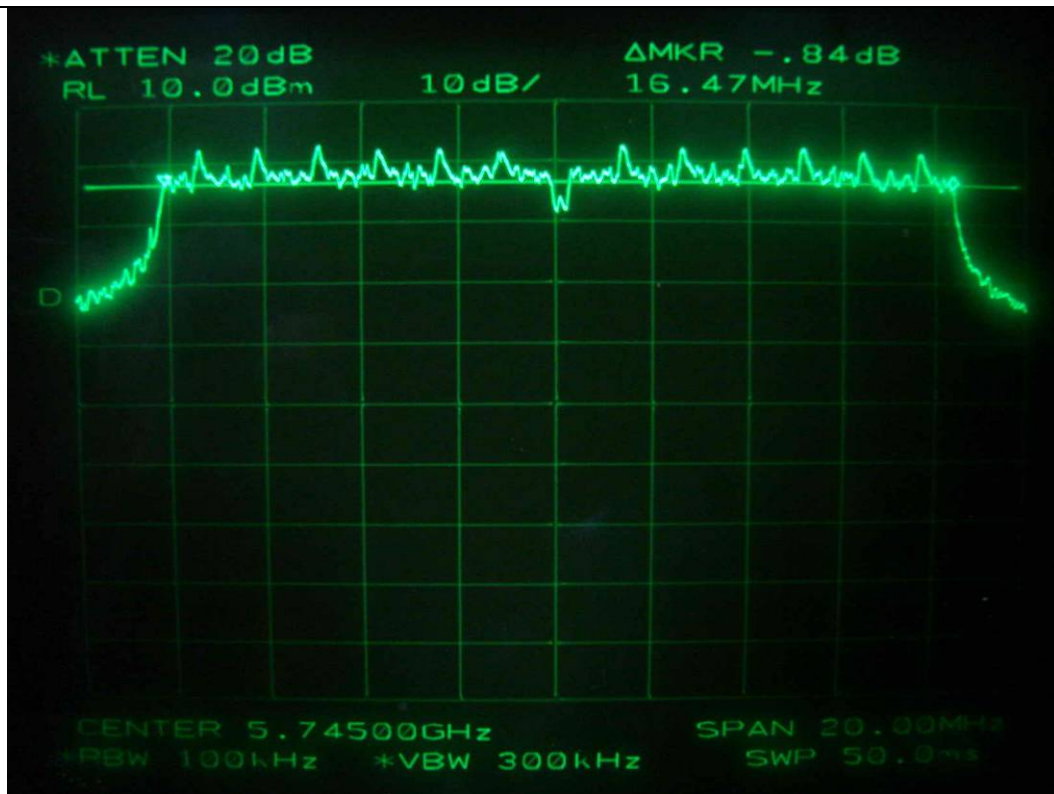
-. Test Result : Pass

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (kHz)	LIMIT (kHz)	MARGIN (kHz)
Low	5745	16470	500	-15970
Middle	5785	16500	500	-16000
High	5805	16530	500	-16030

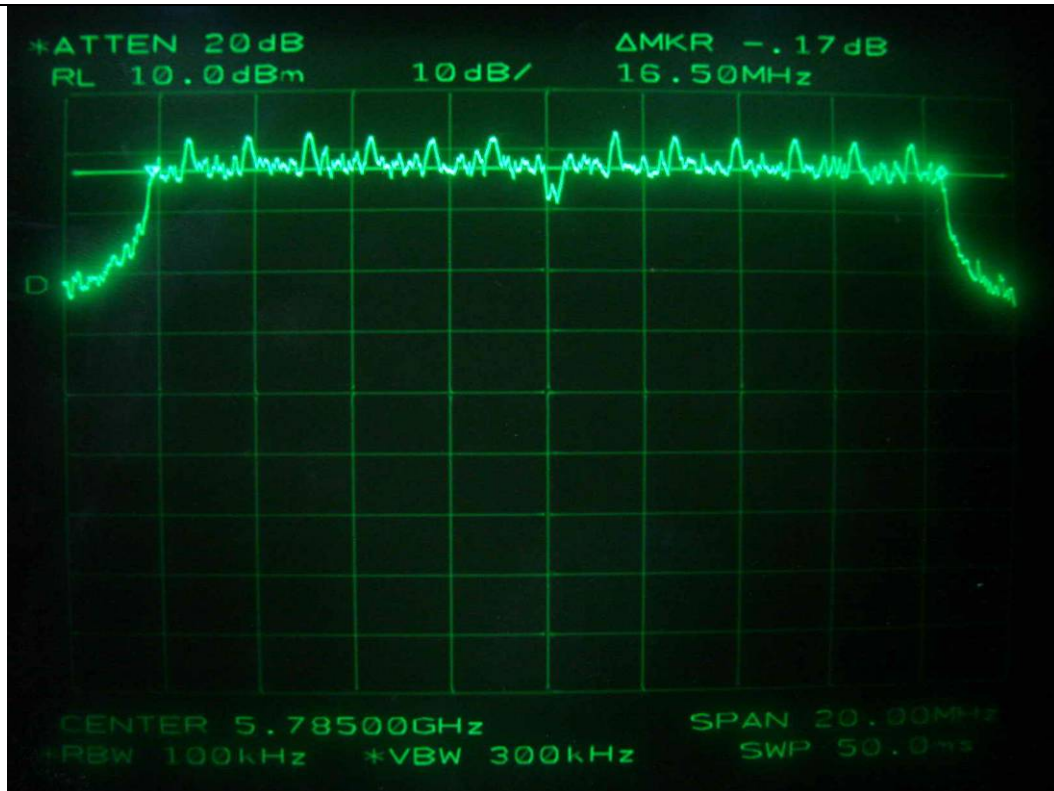
Remark: See next page for an overview sweep performed with peak detector.



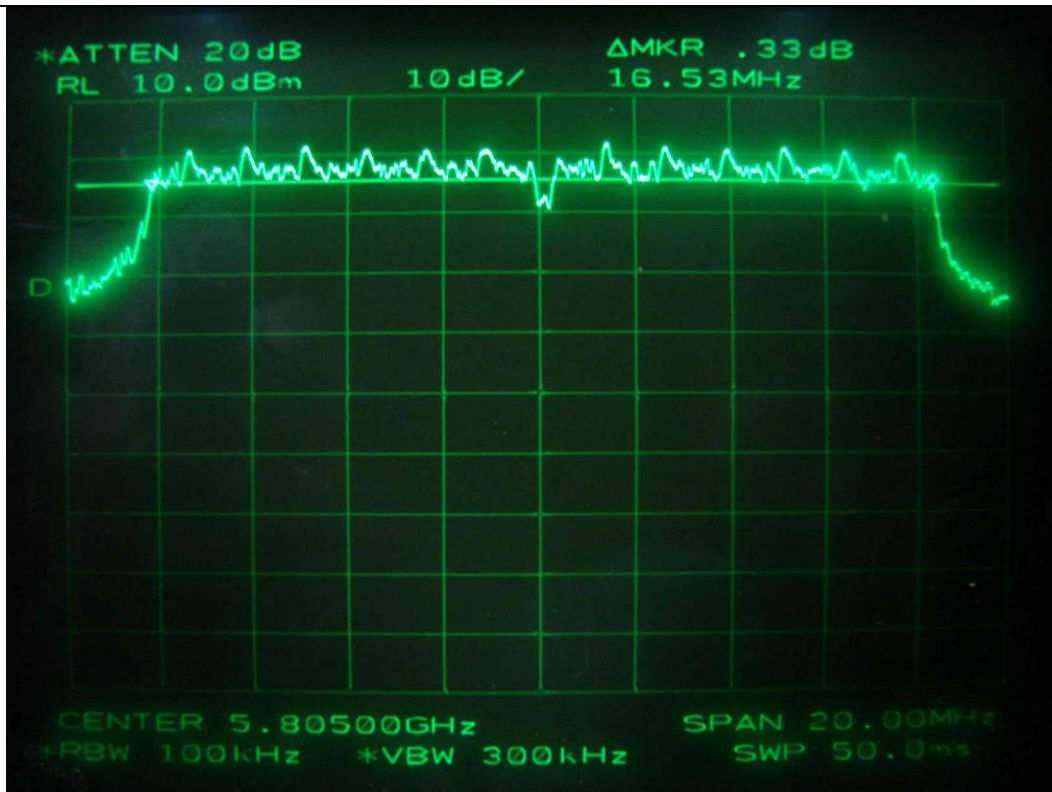
Tested by: Ki-Hong, Nam / Test Engineer



Low Channel



Middle Channel



High Channel

8. MAXIMUM PEAK OUTPUT POWER

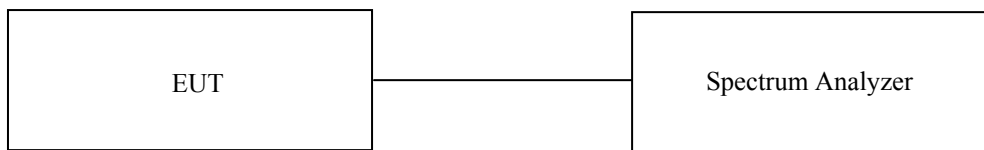
8.1 Operating environment

Temperature : 27 °C

Relative humidity : 38 %

8.2 Test set-up

The maximum peak output power was measured with the spectrum analyzer connected to the antenna output of the EUT. The spectrum analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth. The EUT was operating in transmit mode at the appropriate center frequency.



8.3 Test equipment used

Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ - 8564E	HP	Spectrum Analyzer	3650A00756	June 19, 2007

All test equipment used is calibrated on a regular basis.

8.4 Test data

-. Test Date : July 18, 2007

-. Test Result : Pass

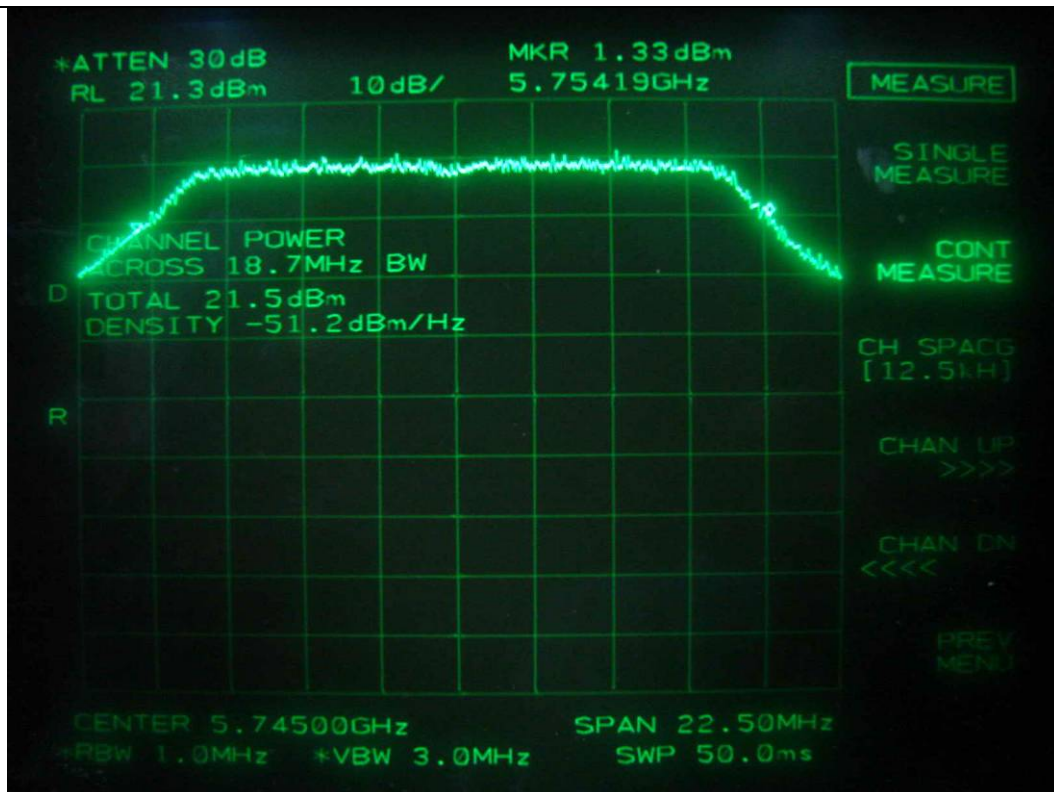
CHANNEL	FREQUENCY (MHz)	99% Occupied Bandwidth (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	5745	18.68	21.50	30.00	-8.50
Middle	5785	18.68	22.30	30.00	-7.70
High	5805	18.71	21.10	30.00	-8.90

Remark: The EUT was tested with internal antenna has 19dBi antenna gain, but the limit does not reduction in transmitter conducted output power acc. to 15.247(c)(1)(ii).

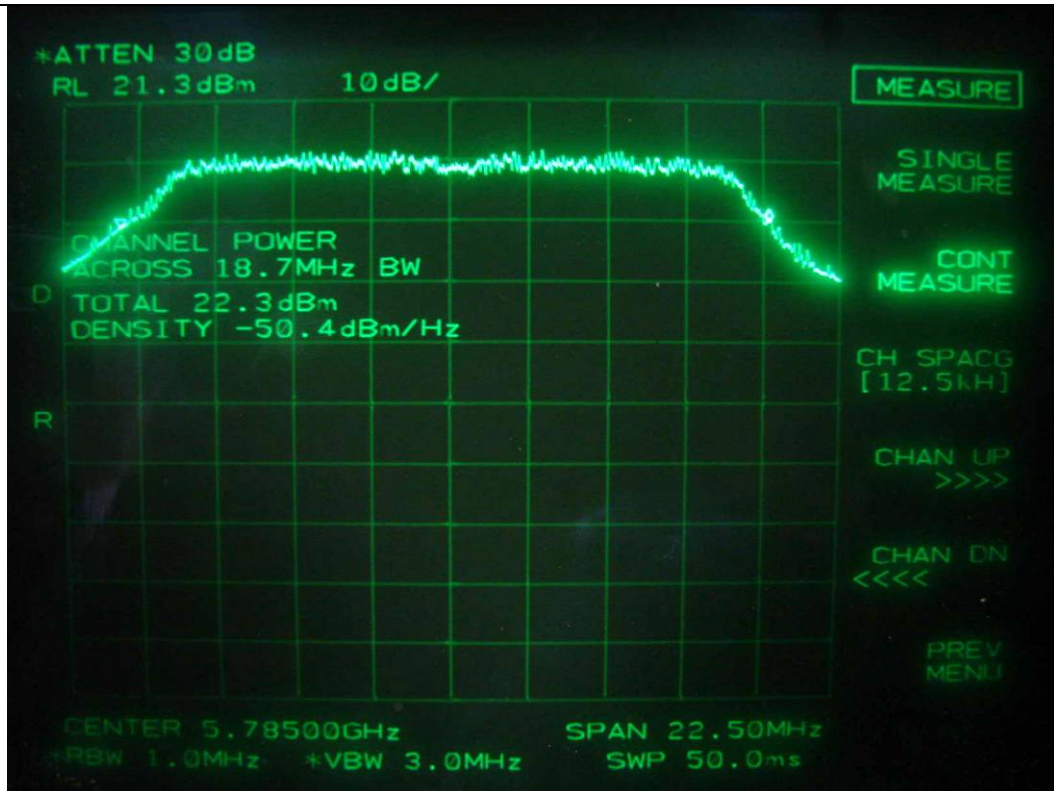
See next page for an overview sweep performed with peak detector.



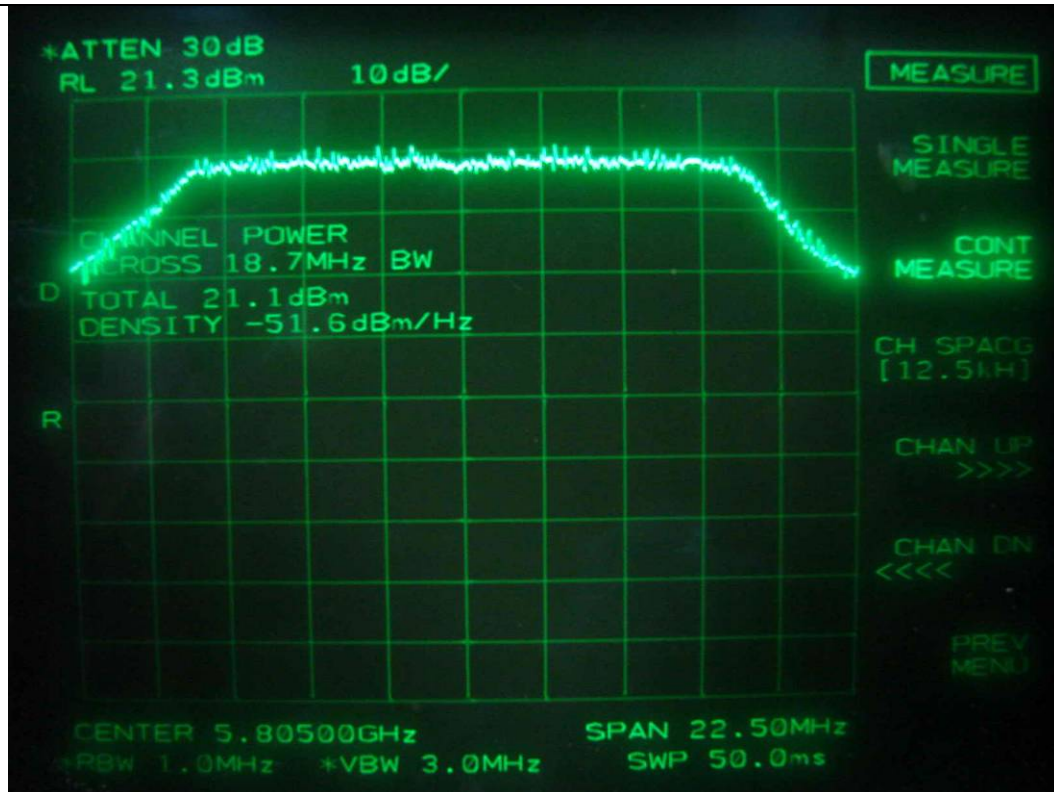
Tested by: Ki-Hong, Nam / Test Engineer



Low Channel



Middle Channel



High Channel

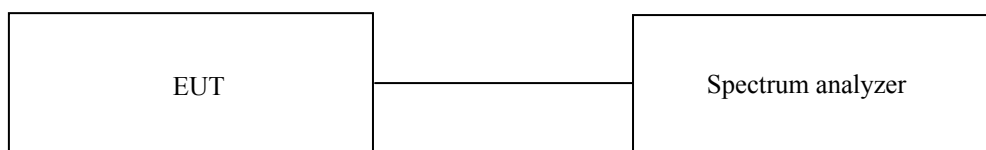
9. 100 kHz BANDWIDTH OUTSIDE THE FREQUENCY BAND

9.1 Operating environment

Temperature : 29 °C
Relative humidity : 43 %

9.2 Test set-up for conducted measurement

The antenna output of the EUT was connected to the spectrum analyzer. The resolution and video bandwidth is set to 100 kHz, and peak detection was used.



9.3 Test set-up for radiated measurement

The radiated emissions measurements were performed on the 3meters, open-field test site. The EUT was placed on a non-conductive turntable approximately 0.8 meters above the ground plane.

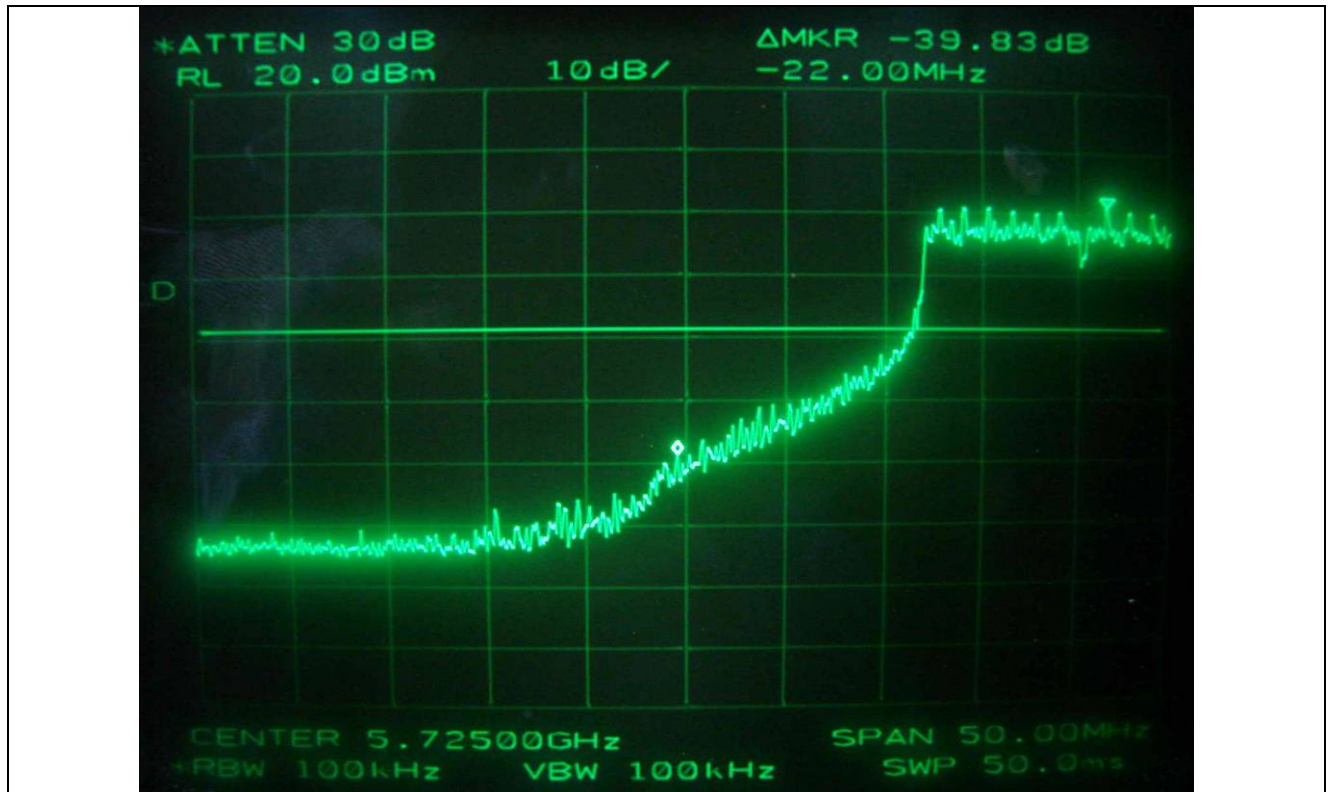
The frequency spectrum from 30MHz to 25GHz was scanned and maximum emission levels at each frequency recorded. The system was rotated 360°, and the antenna was varied in the height between 1.0 and 4.0 meters in order to determine the maximum emission levels. This procedure was performed for horizontal and vertical polarization of the receiving antenna.

9.4 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	8564E	Hewlett-Packard	Spectrum Analyzer	3650A00756	June 19, 2007
■ -	8447D	Hewlett-Packard	Amplifier	2727A04987	June 19, 2007
□ -	83051A	Agilent	Preamplifier	3950M00201	June 20, 2007
■ -	F-40-5000-RF	RLC Electronics	Highpass Filter	0425	July 15, 2006
■ -	MA220	HD	Turn Table	N/A	N/A
■ -	HD240	HD	Antenna Mast	N/A	N/A
■ -	BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D294	July 03, 2006(2Y)
■ -	YSE 500B	YoungShin Eng.	Frequency Converter	950413001	N/A
■ -	ETCR-10	DaeHa	Automatic Voltage Com.	N/A	N/A

All test equipment used is calibrated on a regular basis.

9.5. Test data for conducted emission



Low Channel



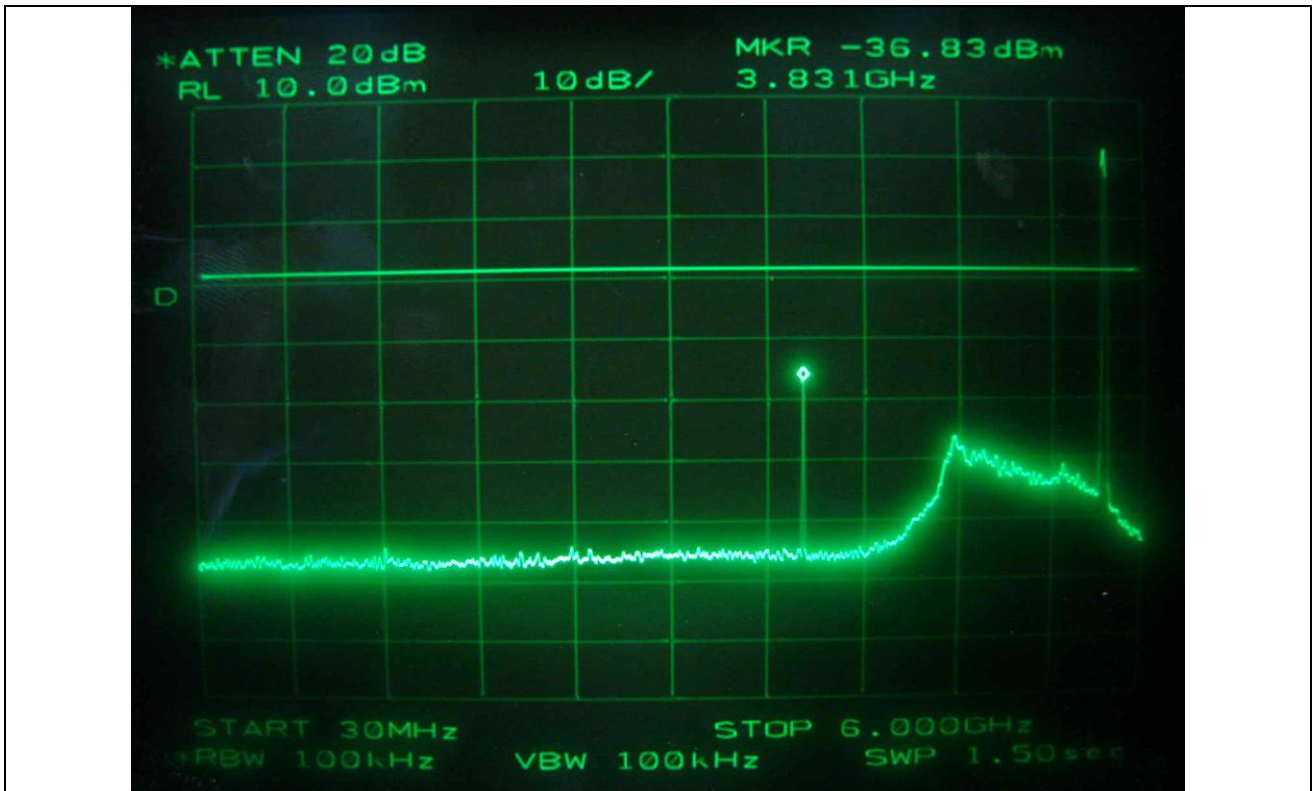
High Channel

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EMC-003 (Rev.0)

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(TEL: +82-31-746-8500, FAX: +82-31-746-8700)

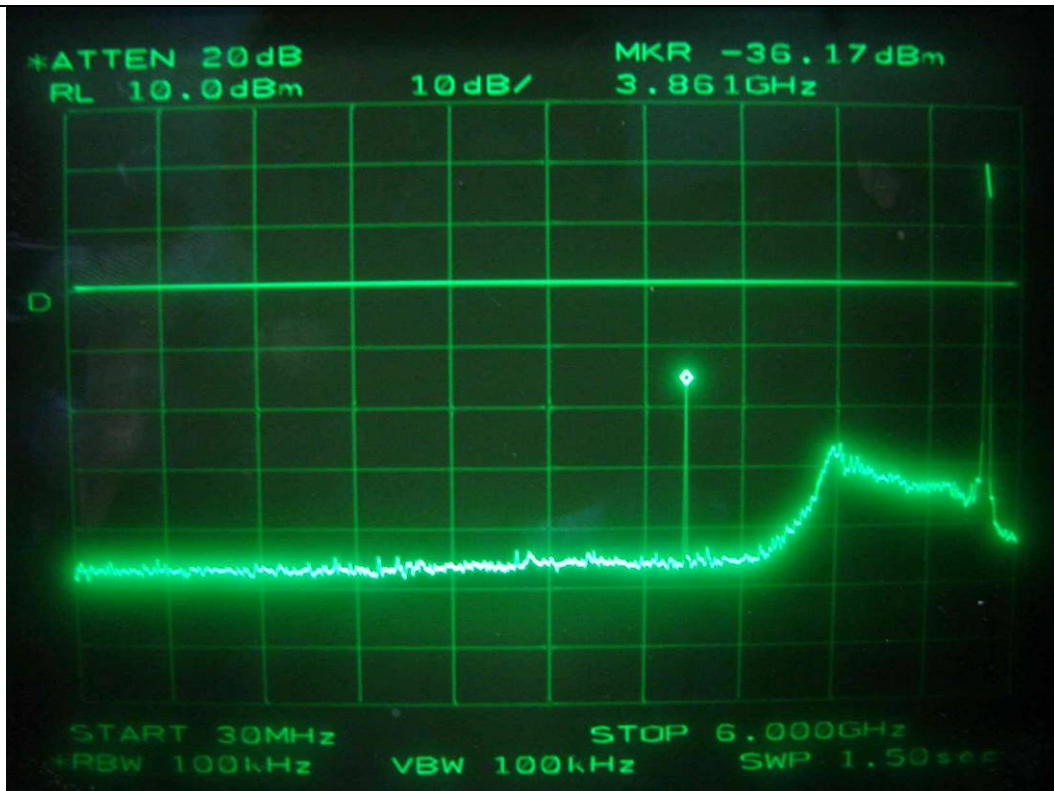
EMC Testing Dept : 307-51 Daessangryung-ri, Chowol-eup, Gwangju-si, Gyeonggi-do, 464-860, Korea. (TEL: +82-31-765-8289, FAX: +82-31-766-2904)



Low Channel



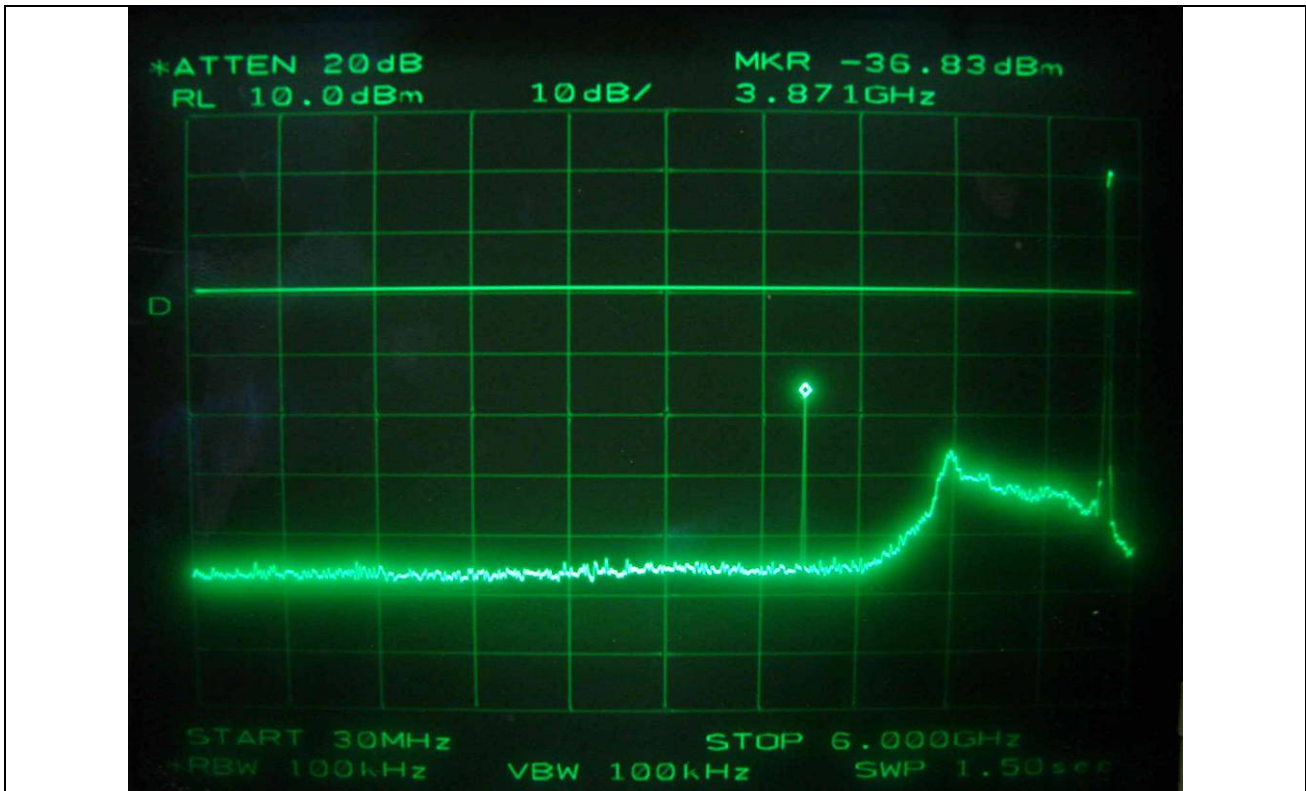
Low Channel



Middle Channel



Middle Channel



High Channel



High Channel

9.6. Test data for radiated emission

9.6.1 Used Antenna: Internal Antenna

9.6.1.1 Spurious & Harmonic Radiated Emission

- Test Date : July 19, 2007
- Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band
- Video bandwidth : 1 MHz for Peak Mode, 10Hz for Average Mode
- Frequency range : 1 GHz ~ 25 GHz
- Measurement distance : 3m
- Result : PASSED BY -13.75 dB at Low Channel

Frequency (MHz)	Reading (dBuV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Dist. Factor	Total (dBuV/m)	Limits (dBuV/m)	Margin (dB)
Test Data for Low Channel (6 Mbps)										
5745.00	60.50	Peak	H	32.90	6.59			99.99	-	
	70.17	Peak	V					109.66	-	
3830.00	38.83	Peak	H	30.00	5.17	29.18		44.82	74.00	-29.18
	29.50	Average	H					35.49	54.00	-18.51
	40.17	Peak	V					46.16	74.00	-27.84
	30.50	Average	V					36.49	54.00	-17.51
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.83	Average	H					39.08	54.00	-14.92
	40.83	Peak	V					50.08	74.00	-23.92
	31.00	Average	V					40.25	54.00	-13.75
Test Data for Low Channel (9 Mbps)										
5745.00	60.38	Peak	H	32.90	6.59			99.87	-	
	70.10	Peak	V					109.59	-	
3830.00	38.67	Peak	H	30.00	5.17	29.18		44.66	74.00	-29.34
	29.33	Average	H					35.32	54.00	-18.68
	40.44	Peak	V					46.43	74.00	-27.57
	30.33	Average	V					36.32	54.00	-17.68
4766.00	39.33	Peak	H	31.52	6.52	28.78		48.58	74.00	-25.42
	29.67	Average	H					38.92	54.00	-15.08
	40.50	Peak	V					49.75	74.00	-24.25
	30.83	Average	V					40.08	54.00	-13.92

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Test Data for Low Channel (12 Mbps)										
5745.00	60.27	Peak	H	32.90	6.59			99.76	-	
	70.00	Peak	V					109.49	-	
3830.00	38.92	Peak	H	30.00	5.17	29.18		44.91	74.00	-29.09
	29.67	Average	H					35.66	54.00	-18.34
	40.00	Peak	V					45.99	74.00	-28.01
	30.33	Average	V					36.32	54.00	-17.68
4766.00	39.50	Peak	H	31.52	6.52	28.78		48.75	74.00	-25.25
	29.83	Average	H					39.08	54.00	-14.92
	40.44	Peak	V					49.69	74.00	-24.31
	30.67	Average	V					39.92	54.00	-14.08
Test Data for Low Channel (18 Mbps)										
5745.00	20.27	Peak	H	32.90	6.59			99.76	-	
	69.92	Peak	V					109.41	-	
3830.00	38.67	Peak	H	30.00	5.17	29.18		44.66	74.00	-29.34
	29.33	Average	H					35.32	54.00	-18.68
	40.00	Peak	V					45.99	74.00	-28.01
	30.00	Average	V					35.99	54.00	-18.01
4766.00	39.83	Peak	H	31.52	6.52	28.78		49.08	74.00	-24.92
	29.67	Average	H					38.92	54.00	-15.08
	40.10	Peak	V					49.35	74.00	-24.65
	30.83	Average	V					40.08	54.00	-13.92
Test Data for Low Channel (24 Mbps)										
5745.00	60.15	Peak	H	32.90	6.59			99.64	-	
	69.95	Peak	V					109.44	-	
3830.00	38.83	Peak	H	30.00	5.17	29.18		44.82	74.00	-29.18
	29.33	Average	H					35.32	54.00	-18.68
	40.44	Peak	V					46.43	74.00	-27.57
	31.00	Average	V					36.99	54.00	-17.01
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.50	Average	H					38.75	54.00	-15.25
	40.00	Peak	V					49.25	74.00	-24.75
	30.67	Average	V					39.92	54.00	-14.08

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Test Data for Low Channel (36 Mbps)										
5745.00	60.33	Peak	H	32.90	6.59			99.82	-	
	70.00	Peak	V					109.49	-	
3830.00	38.67	Peak	H	30.00	5.17	29.18		44.66	74.00	-29.34
	29.00	Average	H					34.99	54.00	-19.01
	40.00	Peak	V					45.99	74.00	-28.01
	30.50	Average	V					36.49	54.00	-17.51
4766.00	39.83	Peak	H	31.52	6.52	28.78		49.08	74.00	-24.92
	29.50	Average	H					38.75	54.00	-15.25
	40.00	Peak	V					49.25	74.00	-24.75
	30.50	Average	V					39.75	54.00	-14.25
Test Data for Low Channel (48 Mbps)										
5745.00	60.17	Peak	H	32.90	6.59			99.66	-	
	69.83	Peak	V					109.32	-	
3830.00	38.50	Peak	H	30.00	5.17	29.18		44.49	74.00	-29.51
	29.33	Average	H					35.32	54.00	-18.68
	40.10	Peak	V					46.09	74.00	-27.91
	30.33	Average	V					36.32	54.00	-17.68
4766.00	39.92	Peak	H	31.52	6.52	28.78		49.17	74.00	-24.83
	30.10	Average	H					39.35	54.00	-14.65
	40.33	Peak	V					49.58	74.00	-24.42
	30.33	Average	V					39.58	54.00	-14.42
Test Data for Low Channel (54 Mbps)										
5745.00	60.10	Peak	H	32.90	6.59			99.59	-	
	69.83	Peak	V					109.32	-	
3830.00	38.83	Peak	H	30.00	5.17	29.18		44.82	74.00	-29.18
	29.10	Average	H					35.09	54.00	-18.91
	40.33	Peak	V					46.32	74.00	-27.68
	30.10	Average	V					36.09	54.00	-17.91
4766.00	39.83	Peak	H	31.52	6.52	28.78		49.08	74.00	-24.92
	29.92	Average	H					39.17	54.00	-14.83
	40.10	Peak	V					49.35	74.00	-24.65
	30.17	Average	V					39.42	54.00	-14.58

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Test Data for Middle Channel (6 Mbps)										
5785.00	61.67	Peak	H	32.96	6.57			101.20	-	
	71.00	Peak	V					110.53	-	
3857.00	38.67	Peak	H	30.03	5.17	29.22		44.65	74.00	-29.35
	29.33	Average	H					35.31	54.00	-18.69
	40.00	Peak	V					45.98	74.00	-28.02
	29.67	Average	V					35.65	54.00	-18.35
4766.00	39.83	Peak	H	31.52	6.52	28.78		49.08	74.00	-24.92
	29.17	Average	H					38.42	54.00	-15.58
	40.50	Peak	V					49.75	74.00	-24.25
	30.83	Average	V					40.08	54.00	-13.92
Test Data for Middle Channel (9 Mbps)										
5785.00	61.50	Peak	H	32.96	6.57			101.03	-	
	71.00	Peak	V					110.53	-	
3857.00	38.50	Peak	H	30.03	5.17	29.22		44.48	74.00	-29.52
	29.10	Average	H					35.08	54.00	-18.92
	40.50	Peak	V					46.48	74.00	-27.52
	30.10	Average	V					36.08	54.00	-17.92
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.50	Average	H					38.75	54.00	-15.25
	40.00	Peak	V					49.25	74.00	-24.75
	30.50	Average	V					39.75	54.00	-14.25
Test Data for Middle Channel (12 Mbps)										
5785.00	61.45	Peak	H	32.96	6.57			100.98	-	
	70.96	Peak	V					110.49	-	
3857.00	38.83	Peak	H	30.03	5.17	29.22		44.81	74.00	-29.19
	29.50	Average	H					35.48	54.00	-18.52
	39.83	Peak	V					45.81	74.00	-28.19
	30.00	Average	V					35.98	54.00	-18.02
4766.00	39.33	Peak	H	31.52	6.52	28.78		48.58	74.00	-25.42
	29.67	Average	H					38.92	54.00	-15.08
	40.10	Peak	V					49.35	74.00	-24.65
	30.83	Average	V					40.08	54.00	-13.92

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Test Data for Middle Channel (18 Mbps)										
5785.00	61.33	Peak	H	32.96	6.57			100.86	-	
	70.83	Peak	V					110.36	-	
3857.00	38.50	Peak	H	30.03	5.17	29.22		44.48	74.00	-29.52
	29.00	Average	H					34.98	54.00	-19.02
	39.83	Peak	V					45.81	74.00	-28.19
	29.50	Average	V					35.48	54.00	-18.52
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.50	Average	H					38.75	54.00	-15.25
	40.00	Peak	V					49.25	74.00	-24.75
	30.67	Average	V					39.92	54.00	-14.08
Test Data for Middle Channel (24 Mbps)										
5785.00	61.17	Peak	H	32.96	6.57			100.70	-	
	70.83	Peak	V					110.36	-	
3857.00	38.92	Peak	H	30.03	5.17	29.22		44.90	74.00	-29.10
	29.33	Average	H					35.31	54.00	-18.69
	40.00	Peak	V					45.98	74.00	-28.02
	30.83	Average	V					36.81	54.00	-17.19
4766.00	39.83	Peak	H	31.52	6.52	28.78		49.08	74.00	-24.92
	29.33	Average	H					38.58	54.00	-15.42
	40.00	Peak	V					49.25	74.00	-24.75
	30.50	Average	V					39.75	54.00	-14.25
Test Data for Middle Channel (36 Mbps)										
5785.00	61.10	Peak	H	32.96	6.57			100.63	-	
	70.67	Peak	V					110.20	-	
3857.00	38.50	Peak	H	30.03	5.17	29.22		44.48	74.00	-29.52
	29.10	Average	H					35.08	54.00	-18.92
	40.10	Peak	V					46.08	74.00	-27.92
	30.33	Average	V					36.31	54.00	-17.69
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.33	Average	H					38.58	54.00	-15.42
	40.10	Peak	V					49.35	74.00	-24.65
	30.33	Average	V					39.58	54.00	-14.42

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Test Data for Middle Channel (48 Mbps)										
5785.00	61.00	Peak	H	32.96	6.57			100.53	-	
	70.67	Peak	V					110.20	-	
3857.00	38.67	Peak	H	30.03	5.17	29.22		44.65	74.00	-29.35
	29.10	Average	H					35.08	54.00	-18.92
	40.00	Peak	V					45.98	74.00	-28.02
	30.17	Average	V					36.15	54.00	-17.85
4766.00	39.83	Peak	H	31.52	6.52	28.78		49.08	74.00	-24.92
	29.67	Average	H					38.92	54.00	-15.08
	40.00	Peak	V					49.25	74.00	-24.75
	30.10	Average	V					39.35	54.00	-14.65
Test Data for Middle Channel (54 Mbps)										
5785.00	61.00	Peak	H	32.96	6.57			100.53	-	
	70.50	Peak	V					110.03	-	
3857.00	38.90	Peak	H	30.03	5.17	29.22		44.88	74.00	-29.12
	29.50	Average	H					35.48	54.00	-18.52
	40.17	Peak	V					46.15	74.00	-27.85
	30.00	Average	V					35.98	54.00	-18.02
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.50	Average	H					38.75	54.00	-15.25
	40.43	Peak	V					49.68	74.00	-24.32
	30.10	Average	V					39.35	54.00	-14.65

Test Data for High Channel (6 Mbps)										
5805.00	60.33	Peak	H	32.98	6.57			99.88	-	
	70.00	Peak	V					109.55	-	
3870.00	39.00	Peak	H	30.04	5.17	29.24		44.98	74.00	-29.02
	29.67	Average	H					35.65	54.00	-18.35
	40.00	Peak	V					45.98	74.00	-28.02
	30.10	Average	V					36.08	54.00	-17.92
4766.00	39.83	Peak	H	31.52	6.52	28.78		49.08	74.00	-24.92
	29.50	Average	H					38.75	54.00	-15.25
	40.50	Peak	V					49.75	74.00	-24.25
	30.83	Average	V					40.08	54.00	-13.92
Test Data for High Channel (9 Mbps)										
5805.00	60.17	Peak	H	32.98	6.57			99.72	-	
	69.92	Peak	V					109.47	-	
3870.00	39.17	Peak	H	30.04	5.17	29.24		45.15	74.00	-28.85
	29.50	Average	H					35.48	54.00	-18.52
	40.33	Peak	V					46.31	74.00	-27.69
	30.00	Average	V					35.98	54.00	-18.02
4766.00	39.17	Peak	H	31.52	6.52	28.78		48.42	74.00	-25.58
	29.50	Average	H					38.75	54.00	-15.25
	40.33	Peak	V					49.58	74.00	-24.42
	30.10	Average	V					39.35	54.00	-14.65
Test Data for High Channel (12 Mbps)										
5805.00	60.10	Peak	H	32.98	6.57			99.65	-	
	69.83	Peak	V					109.38	-	
3870.00	39.00	Peak	H	30.04	5.17	29.24		44.98	74.00	-29.02
	29.50	Average	H					35.48	54.00	-18.52
	39.83	Peak	V					45.81	74.00	-28.19
	30.10	Average	V					36.08	54.00	-17.92
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.67	Average	H					38.92	54.00	-15.08
	40.33	Peak	V					49.58	74.00	-24.42
	30.50	Average	V					39.75	54.00	-14.25

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Test Data for High Channel (18 Mbps)										
5805.00	60.10	Peak	H	32.98	6.57			99.65	-	
	69.83	Peak	V					109.38	-	
3870.00	38.92	Peak	H	30.04	5.17	29.24		44.90	74.00	-29.10
	29.17	Average	H					35.15	54.00	-18.85
	40.00	Peak	V					45.98	74.00	-28.02
	29.83	Average	V					35.81	54.00	-18.19
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.50	Average	H					38.75	54.00	-15.25
	40.00	Peak	V					49.25	74.00	-24.75
	30.92	Average	V					40.17	54.00	-13.83
Test Data for High Channel (24 Mbps)										
5805.00	60.00	Peak	H	32.98	6.57			99.55	-	
	69.72	Peak	V					109.27	-	
3870.00	38.92	Peak	H	30.04	5.17	29.24		44.90	74.00	-29.10
	29.10	Average	H					35.08	54.00	-18.92
	40.10	Peak	V					46.08	74.00	-27.92
	30.50	Average	V					36.48	54.00	-17.52
4766.00	39.50	Peak	H	31.52	6.52	28.78		48.75	74.00	-25.25
	29.33	Average	H					38.58	54.00	-15.42
	39.83	Peak	V					49.08	74.00	-24.92
	30.50	Average	V					39.75	54.00	-14.25
Test Data for High Channel (36 Mbps)										
5805.00	59.95	Peak	H	32.98	6.57			99.50	-	
	69.67	Peak	V					109.22	-	
3870.00	38.83	Peak	H	30.04	5.17	29.24		44.81	74.00	-29.19
	29.17	Average	H					35.15	54.00	-18.85
	49.83	Peak	V					55.81	74.00	-18.19
	30.33	Average	V					36.31	54.00	-17.69
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.33	Average	H					38.58	54.00	-15.42
	40.10	Peak	V					49.35	74.00	-24.65
	30.33	Average	V					39.58	54.00	-14.42

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Test Data for High Channel (48 Mbps)										
5805.00	59.83	Peak	H	32.98	6.57			99.38	-	
	69.67	Peak	V					109.22	-	
3870.00	38.67	Peak	H	30.04	5.17	29.24		44.65	74.00	-29.35
	29.10	Average	H					35.08	54.00	-18.92
	40.00	Peak	V					45.98	74.00	-28.02
	30.10	Average	V					36.08	54.00	-17.92
4766.00	39.97	Peak	H	31.52	6.52	28.78		49.22	74.00	-24.78
	30.00	Average	H					39.25	54.00	-14.75
	40.10	Peak	V					49.35	74.00	-24.65
	30.17	Average	V					39.42	54.00	-14.58
Test Data for High Channel (54 Mbps)										
5805.00	59.67	Peak	H	32.98	6.57			99.22	-	
	69.50	Peak	V					109.05	-	
3870.00	38.92	Peak	H	30.04	5.17	29.24		44.90	74.00	-29.10
	29.33	Average	H					35.31	54.00	-18.69
	40.17	Peak	V					46.15	74.00	-27.85
	30.33	Average	V					36.31	54.00	-17.69
4766.00	39.92	Peak	H	31.52	6.52	28.78		49.17	74.00	-24.83
	29.67	Average	H					38.92	54.00	-15.08
	40.33	Peak	V					49.58	74.00	-24.42
	30.10	Average	V					39.35	54.00	-14.65

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical

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Tested by: Ki-Hong, Nam / Test Engineer

9.6.1.2 Radiated Emission which fall in the Restricted Band

- . Test Date : July 19, 2007
- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10Hz for Average Mode
- . Operating Frequency : 5725 – 5850MHz
- . Measurement distance : 3m
- . Result : PASSED

Frequency (MHz)	Reading (dBuV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Dist. Factor	Total (dBuV/m)	Limits (dBuV/m)	Margin (dB)
It was not observed any emissions from the EUT.										

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical



Tested by: Ki-Hong, Nam / Test Engineer

9.6.2 Used Antenna: External Antenna

9.6.2.1 Spurious & Harmonic Radiated Emission

- Test Date : August 23, 2007
- Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band
- Video bandwidth : 1 MHz for Peak Mode, 10Hz for Average Mode
- Frequency range : 1 GHz ~ 25 GHz
- Measurement distance : 3m
- Result : PASSED BY -14.25 dB at Low and Middle Channels

Frequency (MHz)	Reading (dBuV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Dist. Factor	Total (dBuV/m)	Limits (dBuV/m)	Margin (dB)
Test Data for Low Channel (6 Mbps)										
5745.00	55.92	Peak	H	32.90	6.59			95.41	-	
	66.33	Peak	V					105.82	-	
3830.00	37.67	Peak	H	30.00	5.17	29.18		43.66	74.00	-30.34
	29.33	Average	H					35.32	54.00	-18.68
	39.00	Peak	V					44.99	74.00	-29.01
	29.50	Average	V					35.49	54.00	-18.51
4766.00	39.50	Peak	H	31.52	6.52	28.78		48.75	74.00	-25.25
	30.00	Average	H					39.25	54.00	-14.75
	39.83	Peak	V					49.08	74.00	-24.92
	30.00	Average	V					39.25	54.00	-14.75
Test Data for Low Channel (9 Mbps)										
5745.00	55.83	Peak	H	32.90	6.59			95.32	-	
	66.25	Peak	V					105.74	-	
3830.00	38.50	Peak	H	30.00	5.17	29.18		44.49	74.00	-29.51
	29.50	Average	H					35.49	54.00	-18.51
	40.50	Peak	V					46.49	74.00	-27.51
	29.17	Average	V					35.16	54.00	-18.84
4766.00	39.50	Peak	H	31.52	6.52	28.78		48.75	74.00	-25.25
	29.83	Average	H					39.08	54.00	-14.92
	39.92	Peak	V					49.17	74.00	-24.83
	30.50	Average	V					39.75	54.00	-14.25

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Test Data for Low Channel (12 Mbps)										
5745.00	55.83	Peak	H	32.90	6.59			95.32	-	
	66.10	Peak	V					105.59	-	
3830.00	37.00	Peak	H	30.00	5.17	29.18		42.99	74.00	-31.01
	29.50	Average	H					35.49	54.00	-18.51
	39.83	Peak	V					45.82	74.00	-28.18
	30.50	Average	V					36.49	54.00	-17.51
4766.00	39.33	Peak	H	31.52	6.52	28.78		48.58	74.00	-25.42
	29.67	Average	H					38.92	54.00	-15.08
	39.83	Peak	V					49.08	74.00	-24.92
	30.50	Average	V					39.75	54.00	-14.25
Test Data for Low Channel (18 Mbps)										
5745.00	55.67	Peak	H	32.90	6.59			95.16	-	
	66.15	Peak	V					105.64	-	
3830.00	39.00	Peak	H	30.00	5.17	29.18		44.99	74.00	-29.01
	29.50	Average	H					35.49	54.00	-18.51
	39.83	Peak	V					45.82	74.00	-28.18
	29.83	Average	V					35.82	54.00	-18.18
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.50	Average	H					38.75	54.00	-15.25
	39.83	Peak	V					49.08	74.00	-24.92
	29.50	Average	V					38.75	54.00	-15.25
Test Data for Low Channel (24 Mbps)										
5745.00	55.60	Peak	H	32.90	6.59			95.09	-	
	66.20	Peak	V					105.69	-	
3830.00	38.50	Peak	H	30.00	5.17	29.18		44.49	74.00	-29.51
	29.67	Average	H					35.66	54.00	-18.34
	40.00	Peak	V					45.99	74.00	-28.01
	30.83	Average	V					36.82	54.00	-17.18
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.33	Average	H					38.58	54.00	-15.42
	39.00	Peak	V					48.25	74.00	-25.75
	30.50	Average	V					39.75	54.00	-14.25

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Test Data for Low Channel (36 Mbps)										
5745.00	55.55	Peak	H	32.90	6.59			95.04	-	
	66.17	Peak	V					105.66	-	
3830.00	38.67	Peak	H	30.00	5.17	29.18		44.66	74.00	-29.34
	29.00	Average	H					34.99	54.00	-19.01
	39.83	Peak	V					45.82	74.00	-28.18
	30.33	Average	V					36.32	54.00	-17.68
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.33	Average	H					38.58	54.00	-15.42
	39.83	Peak	V					49.08	74.00	-24.92
	30.33	Average	V					39.58	54.00	-14.42
Test Data for Low Channel (48 Mbps)										
5745.00	55.52	Peak	H	32.90	6.59			95.01	-	
	66.10	Peak	V					105.59	-	
3830.00	38.92	Peak	H	30.00	5.17	29.18		44.91	74.00	-29.09
	29.50	Average	H					35.49	54.00	-18.51
	39.83	Peak	V					45.82	74.00	-28.18
	30.00	Average	V					35.99	54.00	-18.01
4766.00	39.50	Peak	H	31.52	6.52	28.78		48.75	74.00	-25.25
	30.00	Average	H					39.25	54.00	-14.75
	40.17	Peak	V					49.42	74.00	-24.58
	30.00	Average	V					39.25	54.00	-14.75
Test Data for Low Channel (54 Mbps)										
5745.00	55.50	Peak	H	32.90	6.59			94.99	-	
	65.98	Peak	V					105.47	-	
3830.00	38.92	Peak	H	30.00	5.17	29.18		44.91	74.00	-29.09
	29.50	Average	H					35.49	54.00	-18.51
	39.83	Peak	V					45.82	74.00	-28.18
	29.92	Average	V					35.91	54.00	-18.09
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	30.00	Average	H					39.25	54.00	-14.75
	39.50	Peak	V					48.75	74.00	-25.25
	30.33	Average	V					39.58	54.00	-14.42

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Test Data for Middle Channel (6 Mbps)										
5785.00	58.33	Peak	H	32.96	6.57			97.86	-	
	68.10	Peak	V					107.63	-	
3857.00	38.50	Peak	H	30.03	5.17	29.22		44.48	74.00	-29.52
	29.50	Average	H					35.48	54.00	-18.52
	39.67	Peak	V					45.65	74.00	-28.35
	29.33	Average	V					35.31	54.00	-18.69
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.33	Average	H					38.58	54.00	-15.42
	40.00	Peak	V					49.25	74.00	-24.75
	30.50	Average	V					39.75	54.00	-14.25
Test Data for Middle Channel (9 Mbps)										
5785.00	58.17	Peak	H	32.96	6.57			97.70	-	
	68.00	Peak	V					107.53	-	
3857.00	38.83	Peak	H	30.03	5.17	29.22		44.81	74.00	-29.19
	29.33	Average	H					35.31	54.00	-18.69
	39.83	Peak	V					45.81	74.00	-28.19
	29.50	Average	V					35.48	54.00	-18.52
4766.00	39.83	Peak	H	31.52	6.52	28.78		49.08	74.00	-24.92
	29.33	Average	H					38.58	54.00	-15.42
	40.00	Peak	V					49.25	74.00	-24.75
	30.33	Average	V					39.58	54.00	-14.42
Test Data for Middle Channel (12 Mbps)										
5785.00	58.10	Peak	H	32.96	6.57			97.63	-	
	67.92	Peak	V					107.45	-	
3857.00	38.50	Peak	H	30.03	5.17	29.22		44.48	74.00	-29.52
	29.33	Average	H					35.31	54.00	-18.69
	39.67	Peak	V					45.65	74.00	-28.35
	29.50	Average	V					35.48	54.00	-18.52
4766.00	39.50	Peak	H	31.52	6.52	28.78		48.75	74.00	-25.25
	29.50	Average	H					38.75	54.00	-15.25
	40.00	Peak	V					49.25	74.00	-24.75
	30.50	Average	V					39.75	54.00	-14.25

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Test Data for Middle Channel (18 Mbps)										
5785.00	58.10	Peak	H	32.96	6.57			97.63	-	
	67.90	Peak	V					107.43	-	
3857.00	38.33	Peak	H	30.03	5.17	29.22		44.31	74.00	-29.69
	29.33	Average	H					35.31	54.00	-18.69
	39.67	Peak	V					45.65	74.00	-28.35
	29.17	Average	V					35.15	54.00	-18.85
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.33	Average	H					38.58	54.00	-15.42
	39.83	Peak	V					49.08	74.00	-24.92
	30.50	Average	V					39.75	54.00	-14.25
Test Data for Middle Channel (24 Mbps)										
5785.00	58.00	Peak	H	32.96	6.57			97.53	-	
	67.83	Peak	V					107.36	-	
3857.00	38.50	Peak	H	30.03	5.17	29.22		44.48	74.00	-29.52
	29.50	Average	H					35.48	54.00	-18.52
	39.92	Peak	V					45.90	74.00	-28.10
	30.67	Average	V					36.65	54.00	-17.35
4766.00	39.33	Peak	H	31.52	6.52	28.78		48.58	74.00	-25.42
	29.50	Average	H					38.75	54.00	-15.25
	40.00	Peak	V					49.25	74.00	-24.75
	30.33	Average	V					39.58	54.00	-14.42
Test Data for Middle Channel (36 Mbps)										
5785.00	57.98	Peak	H	32.96	6.57			97.51	-	
	67.67	Peak	V					107.20	-	
3857.00	38.33	Peak	H	30.03	5.17	29.22		44.31	74.00	-29.69
	29.50	Average	H					35.48	54.00	-18.52
	39.92	Peak	V					45.90	74.00	-28.10
	30.00	Average	V					35.98	54.00	-18.02
4766.00	39.50	Peak	H	31.52	6.52	28.78		48.75	74.00	-25.25
	29.50	Average	H					38.75	54.00	-15.25
	40.33	Peak	V					49.58	74.00	-24.42
	30.00	Average	V					39.25	54.00	-14.75

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Test Data for Middle Channel (48 Mbps)										
5785.00	57.83	Peak	H	32.96	6.57			97.36	-	
	67.60	Peak	V					107.13	-	
3857.00	38.50	Peak	H	30.03	5.17	29.22		44.48	74.00	-29.52
	29.00	Average	H					34.98	54.00	-19.02
	39.92	Peak	V					45.90	74.00	-28.10
	30.33	Average	V					36.31	54.00	-17.69
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	30.00	Average	H					39.25	54.00	-14.75
	39.83	Peak	V					49.08	74.00	-24.92
	30.00	Average	V					39.25	54.00	-14.75
Test Data for Middle Channel (54 Mbps)										
5785.00	57.67	Peak	H	32.96	6.57			97.20	-	
	67.50	Peak	V					107.03	-	
3857.00	38.50	Peak	H	30.03	5.17	29.22		44.48	74.00	-29.52
	29.33	Average	H					35.31	54.00	-18.69
	39.83	Peak	V					45.81	74.00	-28.19
	30.00	Average	V					35.98	54.00	-18.02
4766.00	39.50	Peak	H	31.52	6.52	28.78		48.75	74.00	-25.25
	29.33	Average	H					38.58	54.00	-15.42
	39.83	Peak	V					49.08	74.00	-24.92
	30.33	Average	V					39.58	54.00	-14.42

Test Data for High Channel (6 Mbps)										
5805.00	55.17	Peak	H	32.98	6.57			94.72	-	
	65.33	Peak	V					104.88	-	
3870.00	39.50	Peak	H	30.04	5.17	29.24		45.48	74.00	-28.52
	29.83	Average	H					35.81	54.00	-18.19
	39.50	Peak	V					45.48	74.00	-28.52
	30.17	Average	V					36.15	54.00	-17.85
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.33	Average	H					38.58	54.00	-15.42
	40.33	Peak	V					49.58	74.00	-24.42
	30.00	Average	V					39.25	54.00	-14.75
Test Data for High Channel (9 Mbps)										
5805.00	55.33	Peak	H	32.98	6.57			94.88	-	
	65.33	Peak	V					104.88	-	
3870.00	39.83	Peak	H	30.04	5.17	29.24		45.81	74.00	-28.19
	29.33	Average	H					35.31	54.00	-18.69
	40.17	Peak	V					46.15	74.00	-27.85
	29.83	Average	V					35.81	54.00	-18.19
4766.00	39.33	Peak	H	31.52	6.52	28.78		48.58	74.00	-25.42
	29.33	Average	H					38.58	54.00	-15.42
	39.50	Peak	V					48.75	74.00	-25.25
	30.00	Average	V					39.25	54.00	-14.75
Test Data for High Channel (12 Mbps)										
5805.00	55.00	Peak	H	32.98	6.57			94.55	-	
	65.17	Peak	V					104.72	-	
3870.00	40.00	Peak	H	30.04	5.17	29.24		45.98	74.00	-28.02
	29.33	Average	H					35.31	54.00	-18.69
	39.67	Peak	V					45.65	74.00	-28.35
	30.00	Average	V					35.98	54.00	-18.02
4766.00	39.50	Peak	H	31.52	6.52	28.78		48.75	74.00	-25.25
	30.00	Average	H					39.25	54.00	-14.75
	39.83	Peak	V					49.08	74.00	-24.92
	29.83	Average	V					39.08	54.00	-14.92

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Test Data for High Channel (18 Mbps)										
5805.00	54.83	Peak	H	32.98	6.57			94.38	-	
	65.00	Peak	V					104.55	-	
3870.00	39.50	Peak	H	30.04	5.17	29.24		45.48	74.00	-28.52
	30.00	Average	H					35.98	54.00	-18.02
	39.67	Peak	V					45.65	74.00	-28.35
	29.83	Average	V					35.81	54.00	-18.19
4766.00	39.50	Peak	H	31.52	6.52	28.78		48.75	74.00	-25.25
	29.33	Average	H					38.58	54.00	-15.42
	39.00	Peak	V					48.25	74.00	-25.75
	29.50	Average	V					38.75	54.00	-15.25
Test Data for High Channel (24 Mbps)										
5805.00	54.67	Peak	H	32.98	6.57			94.22	-	
	65.00	Peak	V					104.55	-	
3870.00	39.17	Peak	H	30.04	5.17	29.24		45.15	74.00	-28.85
	29.00	Average	H					34.98	54.00	-19.02
	39.83	Peak	V					45.81	74.00	-28.19
	30.00	Average	V					35.98	54.00	-18.02
4766.00	39.33	Peak	H	31.52	6.52	28.78		48.58	74.00	-25.42
	29.50	Average	H					38.75	54.00	-15.25
	39.67	Peak	V					48.92	74.00	-25.08
	30.00	Average	V					39.25	54.00	-14.75
Test Data for High Channel (36 Mbps)										
5805.00	54.83	Peak	H	32.98	6.57			94.38	-	
	65.17	Peak	V					104.72	-	
3870.00	38.72	Peak	H	30.04	5.17	29.24		44.70	74.00	-29.30
	29.33	Average	H					35.31	54.00	-18.69
	39.67	Peak	V					45.65	74.00	-28.35
	30.17	Average	V					36.15	54.00	-17.85
4766.00	39.50	Peak	H	31.52	6.52	28.78		48.75	74.00	-25.25
	29.17	Average	H					38.42	54.00	-15.58
	39.83	Peak	V					49.08	74.00	-24.92
	30.00	Average	V					39.25	54.00	-14.75

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Test Data for High Channel (48 Mbps)										
5805.00	54.67	Peak	H	32.98	6.57			94.22	-	
	65.00	Peak	V					104.55	-	
3870.00	38.83	Peak	H	30.04	5.17	29.24		44.81	74.00	-29.19
	30.00	Average	H					35.98	54.00	-18.02
	39.50	Peak	V					45.48	74.00	-28.52
	29.83	Average	V					35.81	54.00	-18.19
4766.00	39.67	Peak	H	31.52	6.52	28.78		48.92	74.00	-25.08
	29.83	Average	H					39.08	54.00	-14.92
	39.50	Peak	V					48.75	74.00	-25.25
	30.00	Average	V					39.25	54.00	-14.75
Test Data for High Channel (54 Mbps)										
5805.00	54.50	Peak	H	32.98	6.57			94.05	-	
	65.00	Peak	V					104.55	-	
3870.00	38.33	Peak	H	30.04	5.17	29.24		44.31	74.00	-29.69
	29.50	Average	H					35.48	54.00	-18.52
	39.67	Peak	V					45.65	74.00	-28.35
	30.00	Average	V					35.98	54.00	-18.02
4766.00	39.83	Peak	H	31.52	6.52	28.78		49.08	74.00	-24.92
	29.50	Average	H					38.75	54.00	-15.25
	39.50	Peak	V					48.75	74.00	-25.25
	29.50	Average	V					38.75	54.00	-15.25

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical

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Tested by: Ki-Hong, Nam / Test Engineer

9.6.2.2 Radiated Emission which fall in the Restricted Band

- . Test Date : August 23, 2007
- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10Hz for Average Mode
- . Operating Frequency : 5725 – 5850MHz
- . Measurement distance : 3m
- . Result : PASSED

Frequency (MHz)	Reading (dBuV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Dist. Factor	Total (dBuV/m)	Limits (dBuV/m)	Margin (dB)
It was not observed any emissions from the EUT.										

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

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Tested by: Ki-Hong, Nam / Test Engineer

10. PEAK POWER SPECTRUL DENSITY

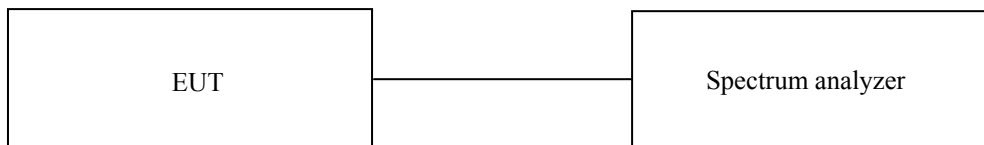
10.1 Operating environment

Temperature : 27 °C
Relative humidity : 38 %

10.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 3 kHz, the video bandwidth is set to 3 times the resolution bandwidth, and sweep time was set to span / 3 kHz. The sweep time was allowed to be longer than span / 3 kHz for a full response of the mixer in the spectrum analyzer.

The maximum level from the EUT in a 3 kHz bandwidth was measured with above condition.



10.3 Test equipment used

Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ - 8564E	HP	Spectrum Analyzer	3650A00756	June 19, 2007

All test equipment used is calibrated on a regular basis.

10.4 Test data

-. Test Date : July 18, 2007

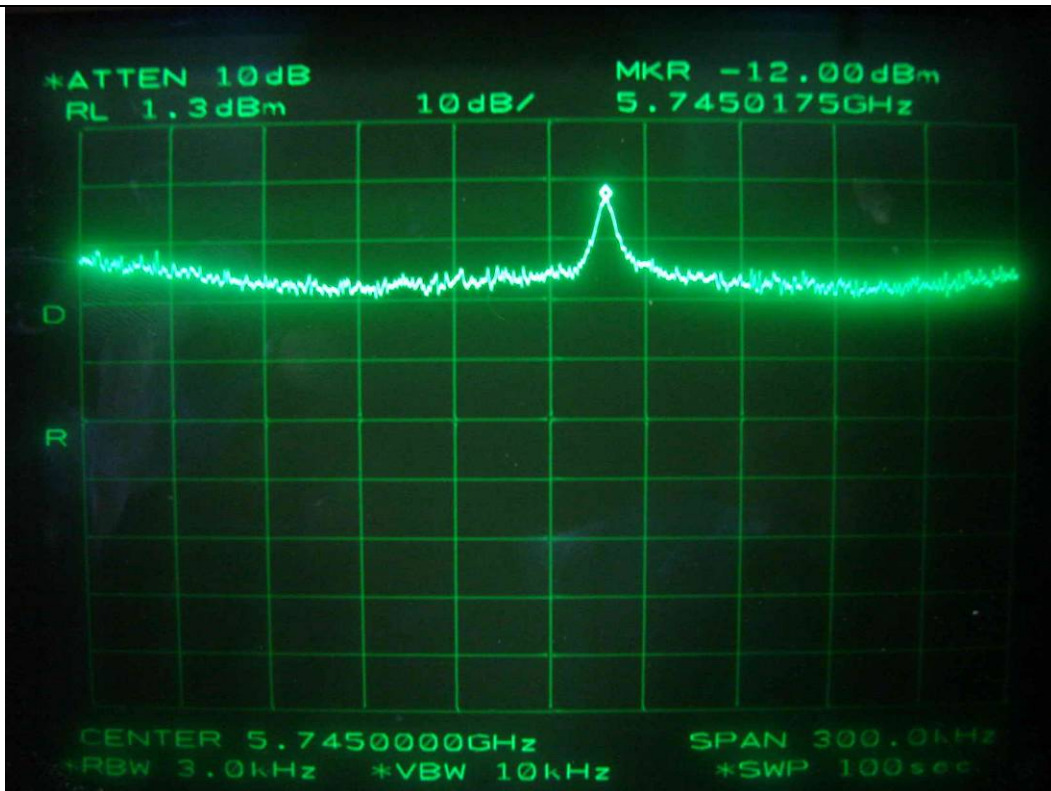
-. Test Result : Pass

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	5745	-12.00	8.00	-20.00
Middle	5785	-11.34	8.00	-19.34
High	5805	-12.67	8.00	-20.67

Remark: See next page for measurement data.



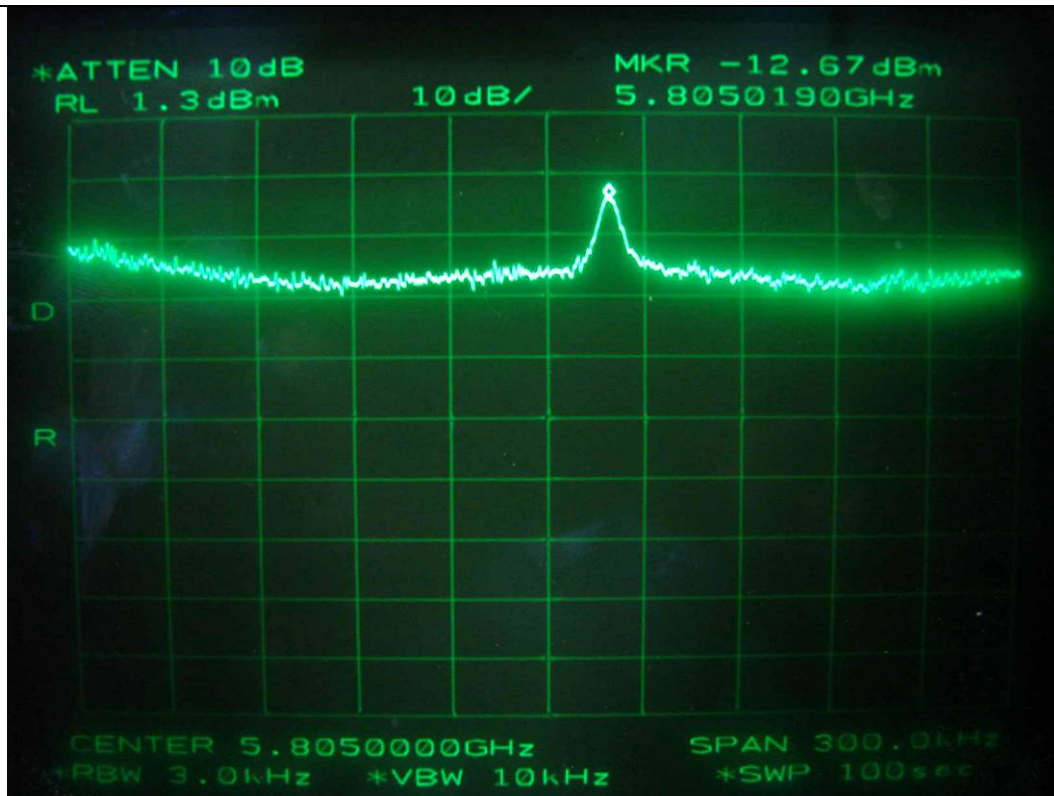
Tested by: Ki-Hong, Nam / Test Engineer



Low Channel



Middle Channel



High Channel

11. MAXIMUM PERMISSIBLE EXPOSURE

11.1 RF Exposure Calculation

According to the FCC rule 1.1310 table 1B, the limit for the maximum permissible RF exposure for an uncontrolled environment is 1mW/cm².

The electric field generated for a 1mW/cm² exposure is calculated as follows:

$$E = \sqrt{(30 * P * G) / d}, \text{ and } S = E^2 / Z = E^2 / 377\Omega, \text{ because } 1\text{mW/cm}^2 = 10\text{W/m}^2$$

Where

S = Power density in mW/cm², Z = Impedance of free space, 377Ω

E = Electric field strength in Volts/m, G = Numeric antenna gain, and d = distance in meter

Combining equations and rearranging the terms to express the distance as a function of the remaining variable

$$S = (30 * P * G) / 3770d^2$$

Changing to units of mW and cm, using P (mW) = P (W) / 1000, d (cm) = d (m)/100,

$$S = 30 * (P/1000) * G / (3770 * (d/100)^2) = 0.0796 * P * G / d^2$$

Where

d = distance in cm, P = Power in mW, G = Numeric antenna gain, and S = Power density in mW/cm²

11.2 Calculated MPE Safe Distance

According to above equation, the following result was obtained and the limit for maximum value of power density,

S is 1.0 mW/cm² according to the rule 1.1310 Table 1 B.

Peak Output Power		Antenna Gain		Minimum Separation Distance	Power Density @ 20 cm	Power Density Limit
(dBm)	(mW)	dBi	Numeric	(cm)	(mW/cm ²)	(mW/cm ²)
22.30	169.82	19	79.43	40	0.67	1.0

According to the User's guide, the separation between the EUT and a person shall be at least 40cm, so the EUT meets the MPE requirement.

Following Caution on the manual will be described.

“CAUTION: Exposure to Radio Frequency Radiation.

Antenna shall be mounted in such a manner to minimize the potential for human contact during normal operation. The antenna should not be contacted during operation to avoid the possibility of exceeding the FCC radio frequency exposure limit.”

12. RADIATED EMISSION TEST FOR DIGITAL DEVICE PART

12.1 Operating environment

Temperature : 28 °C
Relative humidity : 45 %

12.2 Test set-up

The radiated emissions measurements were on the 3 meters, open-field test site. The EUT and other support equipment were placed on a non-conductive turntable above the ground plane. The interconnecting cables from outside test site were inserted into ferrite clamps at the point where the cables reach the turntable.

The frequency spectrum from 30MHz to 1000MHz was scanned and emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 and 4.0 meters in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

The test set-up photos are included in appendix VI.

12.3 Test equipment used

Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ - ESVS10	Rohde & Schwarz	EMI Test Receiver	827864/005	Dec. 21, 2006
■ - MA240	HD GmbH	Antenna Master	N/A	N/A
■ - HD100	HD GmbH	Position Controller	N/A	N/A
■ - DS420S	HD GmbH	Turn Table	N/A	N/A
■ - VHA9103	Schwarzbeck	Biconical Antenna	91031852	Feb. 08, 2007
■ - 9108-A(494)	Schwarzbeck	Log Periodic Antenna	62281001	Feb. 08, 2007

All test equipment used is calibrated on a regular basis.

12.4 Test data

- Test Date : July 25, 2007
- Resolution bandwidth : 120 kHz
- Frequency range : 30MHz ~ 1000MHz
- Measurement distance : 3m
- Test result : Passed by -5.58 dB at 335.20 MHz at Middle Channel

Frequency (MHz)	Reading (dBuV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBuV/m)	Limits (dBuV/m)	Margin (dB)
Test Data for Low Channel							
45.00	19.05	V	12.81	1.60	33.46	40.00	-6.54
65.00	25.80	V	6.60	1.80	34.20	40.00	-5.80
145.33	16.83	V	14.66	2.92	34.41	43.52	-9.11
225.67	15.00	H	17.36	3.59	35.95	46.02	-10.07
335.20	20.00	V	15.45	4.16	39.61	46.02	-6.41
395.00	16.50	V	17.41	4.67	38.58	46.02	-7.44
Test Data for Middle Channel							
45.00	18.67	V	12.81	1.60	33.08	40.00	-6.92
65.00	25.50	V	6.60	1.80	33.90	40.00	-6.10
145.33	16.92	V	14.66	2.92	34.50	43.52	-9.02
225.67	15.50	H	17.36	3.59	36.45	46.02	-9.57
335.20	20.83	V	15.45	4.16	40.44	46.02	-5.58
395.00	16.33	V	17.41	4.67	38.41	46.02	-7.61

Test Data for High Channel							
45.00	19.17	V	12.81	1.60	33.58	40.00	-6.42
65.00	25.00	V	6.60	1.80	33.40	40.00	-6.60
145.33	16.33	V	14.66	2.92	33.91	43.52	-9.61
225.67	15.17	H	17.36	3.59	36.12	46.02	-9.90
335.20	19.83	V	15.45	4.16	39.44	46.02	-6.58
395.00	16.33	V	17.41	4.67	38.41	46.02	-7.61

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical



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13. CONDUCTED EMISSION TEST

13.1 Operating environment

Temperature : 25 °C
Relative humidity : 50 %

13.2 Test set-up

The conducted emission measurements of power line were performed in a shielded room. The EUT was placed on a wooden table, 0.8 meters height above the floor. Power was fed to the EUT through a 50 ohm/ 50 uH (micro-Henry) + 5 ohm Line Impedance Stabilization Network (LISN). The ground plane was electrically bonded to the shield room ground system and all power lines entering the shield room were filtered.

13.3 Measurement uncertainty

Conducted emission, quasi-peak detection : ± 2.93 dB
Conducted emission, average detection : ± 2.93 dB

Measurement uncertainty is calculated in accordance with WECC 19-1990. The measurement uncertainty is given with a confidence of 95% with the coverage factor, $k=2$.

13.4 Test equipment used

Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ - ESHS10	Rohde & Schwarz	EMI Test Receiver	834467/007	May 11, 2007
■ - NSLK 8126	Schwarzbeck	AMN	8126-404	July 04, 2007
■ - 3825/2	EMCO	AMN	9109-1867	June 21, 2007

All test equipment used is calibrated on a regular basis.

13.5 Test data

13.5.1 Used Antenna: Internal Antenna

- Test Date : July 20, 2007
- Resolution bandwidth : 9 kHz
- Frequency range : 0.15MHz ~ 30MHz
- Test Result : PASSED BY -13.86 dB at 23.13 MHz under Average Detector Mode

Frequency (MHz)	Line	Peak (dBuV)			Margin (dB)	Average (dBuV)		Margin (dB)
		Emission level	Detect Mode	Limits		Emission level	Limits	
0.15	N	47.66	Peak	65.73	-18.07	33.28	55.73	-22.45
0.42	H	36.61	Peak	57.35	-20.74	30.22	47.35	-17.13
3.99	H	31.00	Peak	56.00	-25.00	25.48	46.00	-20.52
12.21	N	40.00	Peak	60.00	-20.00	29.63	50.00	-20.37
23.13	N	39.70	Peak	60.00	-20.30	36.14	50.00	-13.86
26.61	N	38.65	Peak	60.00	-21.35	33.71	50.00	-16.29

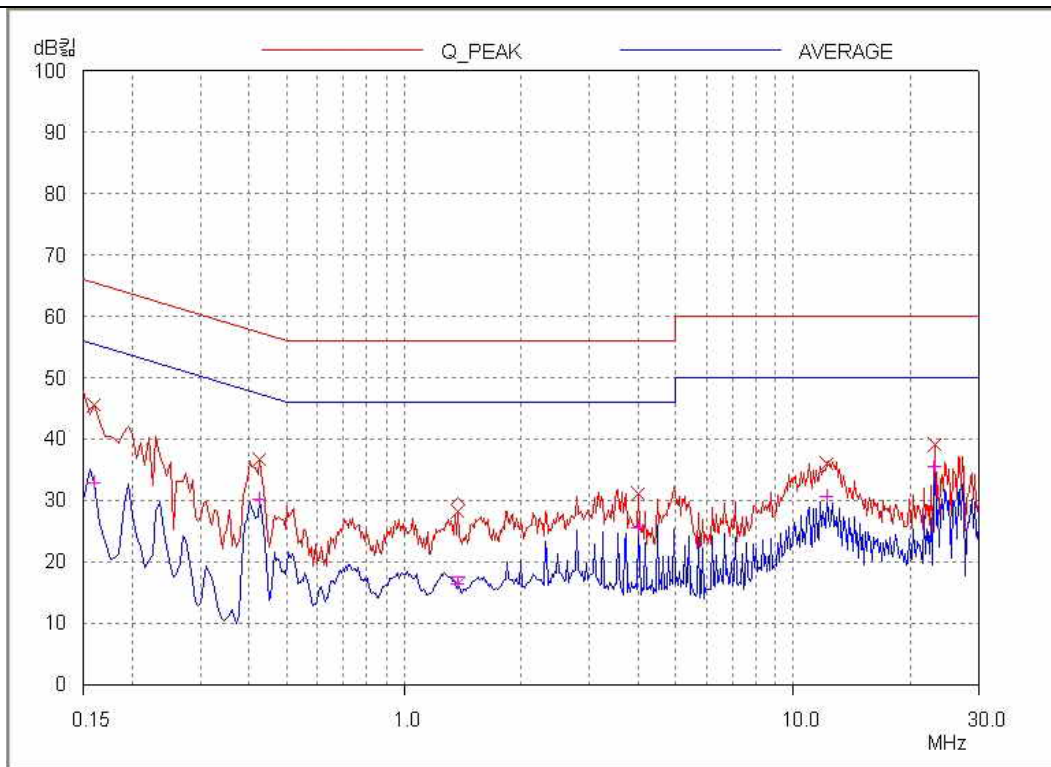
Line Conducted Emissions Tabulated Data

Remark : "H": Hot Line, "N": Neutral line, "P": Peak detect.

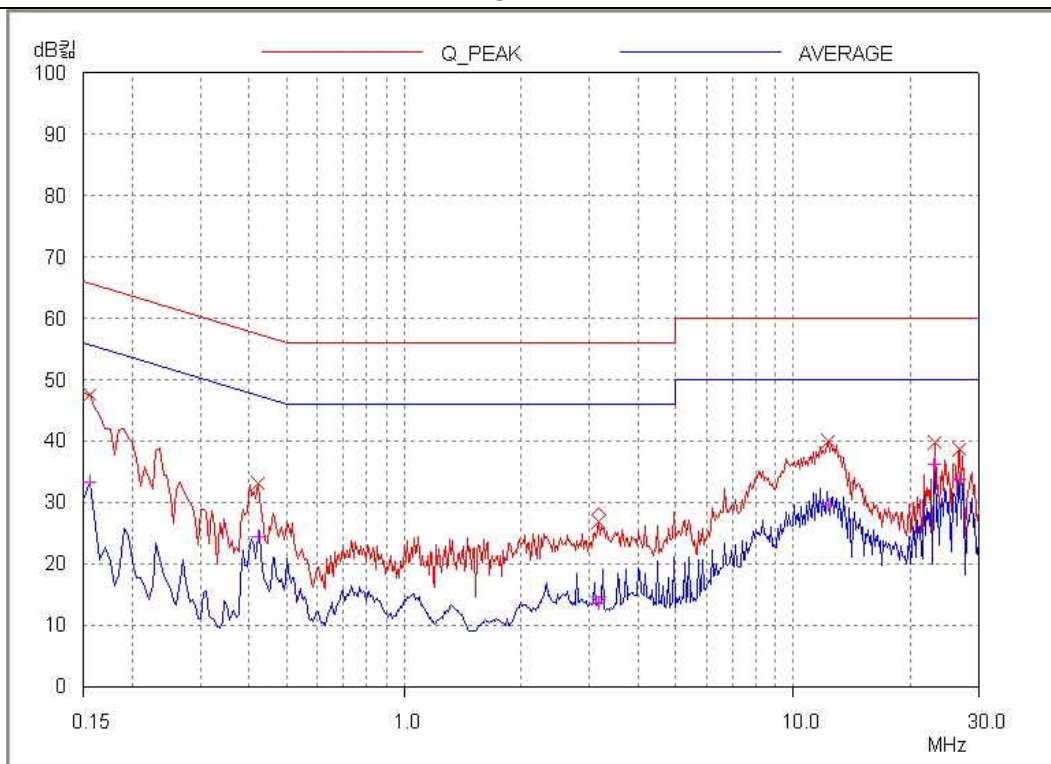
See next page for an overview sweep performed with peak and average detector.

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HOT LINE



NEUTRAL LINE

13.5.2 Used Antenna: External Antenna

- Test Date : August 24, 2007
- Resolution bandwidth : 9 kHz
- Frequency range : 0.15MHz ~ 30MHz
- Test Result : PASSED BY -17.25 dB at 0.41 MHz under Average Detector Mode

Frequency (MHz)	Line	Peak (dBuV)			Margin (dB)	Average (dBuV)		Margin (dB)
		Emission level	Detect Mode	Limits		Emission level	Limits	
0.41	H	36.97	P	57.55	-20.58	30.30	47.55	-17.25
3.66	N	37.78	P	56.00	-18.22	19.78	46.00	-26.22
3.69	H	36.06	P	56.00	-19.94	20.23	46.00	-25.77
3.85	N	36.16	P	56.00	-19.84	20.61	46.00	-25.39
11.95	N	40.03	P	60.00	-19.97	30.24	50.00	-19.76
12.14	H	39.65	P	60.00	-20.35	30.37	50.00	-19.63

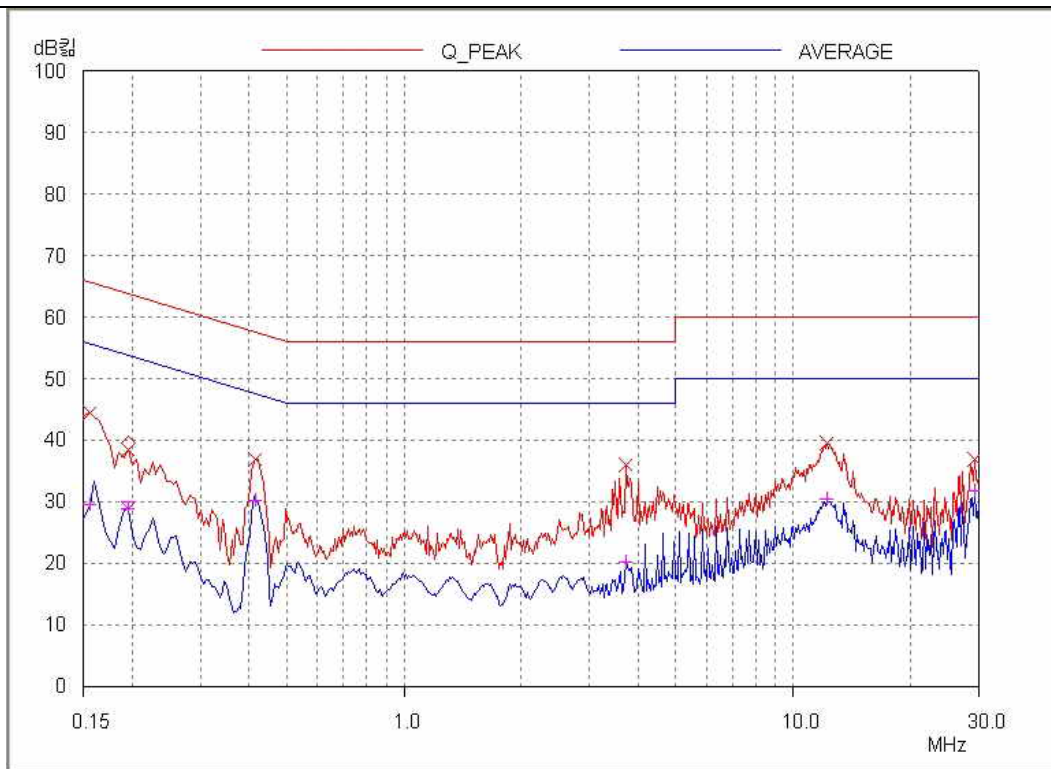
Line Conducted Emissions Tabulated Data

Remark : "H": Hot Line, "N": Neutral line, "P": Peak detect.

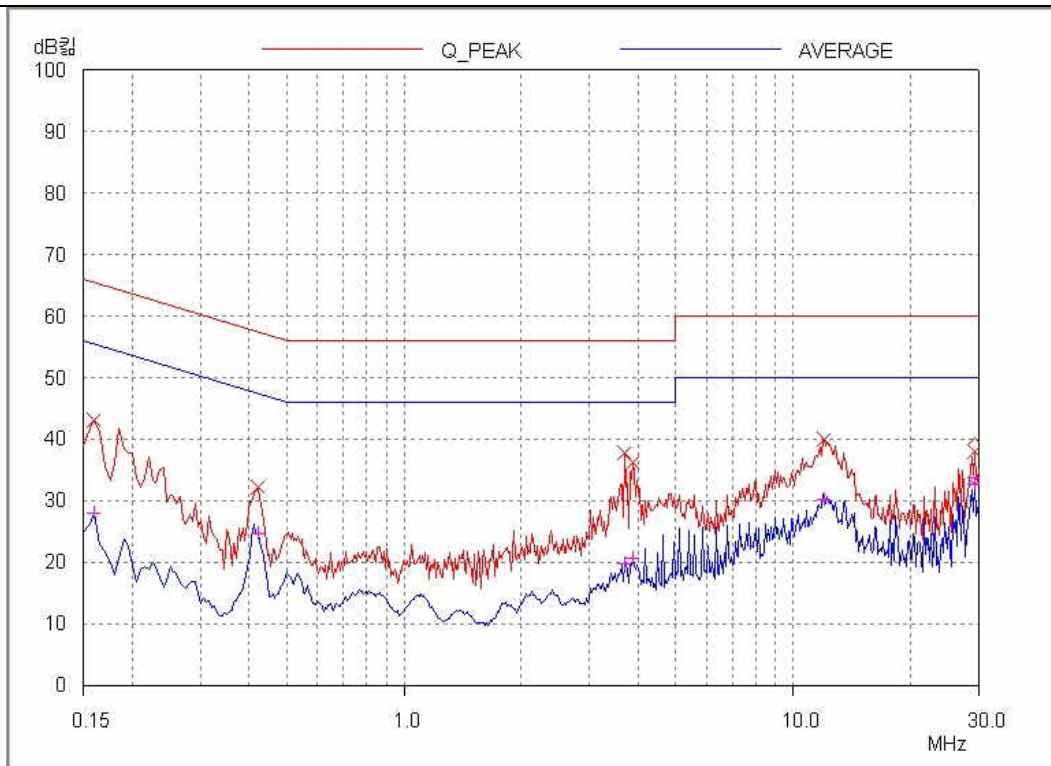
See next page for an overview sweep performed with peak and average detector.



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HOT LINE



NEUTRAL LINE