

MEASUREMENT REPORT of *Portable Navigation Device*

Applicant : ASUSTek Computer Inc.
EUT : Portable Navigation Device
Model No. : R300
FCC ID : MSQR300
Report No. : A5415070055

Tested by :

Training Research Co., Ltd.

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No. 255, Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C.

CERTIFICATION

We here by verify that:

The test data, data evaluation, test procedures and equipment configurations shown in this report were made mainly in accordance with the procedures given in ANSI C63.4 (2003) as a reference. All test were conducted by *Training Research Co., Ltd.*, 255 Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C. Also, we attest to the accuracy of each.

We further submit that the energy emitted by the sample EUT tested as described in the report is **in compliance with** the technical requirements set forth in the FCC Rules Part 15 Subpart C Section 15.239.

Applicant : ASUSTek Computer Inc.
Applicant address : 4Fl., No. 150, Li-Te Rd., Peitou, Taipei, Taiwan
Product Name : Portable Navigation Device
Model Name : R300
FCC ID : MSQR300
Report No. : A5415070055
Test Date : September 11, 2007

Prepared by: Jack Tsai Approved by: Frank Tsai
Jack Tsai Frank Tsai

Conditions of issue :

- (1) **This test report shall not be reproduced except in full, without written approval of TRC. And the test result contained within this report only relate to the sample submitted for testing.**
- (2) **This report must not be used by the client to claim product endorsement by NVLAP or any agency of U.S. Government.**
- (3) **This test report, measurements made by TRC are traceable to the NIST only Conducted and Radiated Method.**



Tables of Contents

I. GENERAL	4
1.1 Introduction	4
1.2 Description of EUT	4
1.3 Test method	5
1.4 Description of Support Equipment	6
1.5 Configuration of System Under Test	8
1.6 Test Procedure	11
1.7 Location of the Test Site	11
1.8 General Test Condition	11
II. Section 15.207 : Power Line Conducted Emissions for AC Powered Units	12
2.1 Test Condition & Setup	12
2.2 List of Test Instruments	13
2.3 Test Result	14
III. Section 15.239(a): Occupied Bandwidth	17
3.1 Test Condition & Setup	17
3.2 Test Configuration	17
3.3 Test Procedure	17
3.4 List of Test Instruments	18
3.5 Test Result	18
IV. Transmitter Duty Cycle Measurements	21
4.1 Test Condition & Setup	21
4.2 List of Test Instruments	21
4.3 Test Instruments Configuration	22
4.4 Test Result	22
V. Section 15.239(b): Field strength of fundamental frequency and Section 15.239 (C): Spurious Emissions (Radiated)	23
5.1 Test Condition & Setup	23
5.2 List of Test Instruments	25
5.3 Test Result	26

I . GENERAL

1.1 Introduction

The following measurement report is submitted on behalf of applicant in support that the certification in accordance with Part 2 Subpart J and Part 15 Subpart A and C of the Commission's Rules and Regulations.

1.2 Description of EUT

FCC ID	:	MSQR300
Product Name	:	Portable Navigation Device
Model Name	:	R300
Frequency Range	:	88.1MHz to 107.9MHz
Support Channel	:	199 Channels
Channel Spacing	:	100 kHz
Modulation Skill	:	FM
Power Type	:	(1) Battery-powered by the client's device, or (2) Power adapter Manufacture: TPT Model: JSP050090UU I/P: 100-240VAC, 50-60Hz, 0.3A ; O/P: 5VDC, 0.9A 4.5W Power cable: 158cm length, Shielded, without ferrite core (3) Car charger by vehicle battery 210cm length, non-shielded, without ferrite core
Data Cable	:	USB cable: (USB to mini USB) 69cm length, Shielded, ferrite core

1.3 Test method

A) EUT connected to PC by USB cable:

- (1) The POWER jack (Mini USB) of EUT is connected with the AC power source via a power adaptor.
- (2) The Mini-USB jack of EUT is connected with the USB cable to USB port of PC.

B) EUT connected to Vehicle Battery by Car charger:

- (1) The POWER jack (Mini USB) of EUT is connected with Vehicle Battery via a Car charger.

C) EUT with AC Adaptor (EUT Stand on three orthogonal planes respectively, record worst-case in report):

- (1) The POWER jack (Mini USB) of EUT is connected with the AC power source via a power adaptor.

Notes: A, B and C modes were pre-tested, the C mode worst case one, was chosen for final test.

Test setting:

:

- (1) The EUT could not use any audio device (ipod or MP3 player...etc), therefore test software provide by manufacture let EUT played the typical music file, and audio volume was adjusted to the worst case during the test.
- (2) The tuning range has been manually verified and the device can work only within 88~108 MHz band.
- (3) Using software provided by the applicant to linking EUT. The software is operated under the Windows to control the EUT in the unintentional and intentional test.
- (4) Set different channel (88.1MHz/98.0MHz/107.9MHz) being tested and repeat the procedures above.
 - (a) Conducted and radiated for intentional test:
making EUT to the mode of continuous TX.

1.4 Description of Support Equipment

In order to construct the minimum testing, following equipment were used as the support units.

PC : HP Compaq dx5750 Microtower

Model No. : dx5750 MT

Serial No. : SGH72200QD

FCC ID : Doc Approved

BSMI : R33001

Power type : 100 ~ 127VAC/200 ~ 240VAC, 8A/4A, 50 ~ 60Hz, Switching

Power cord : Non-shielded, 1.8m long, Plastic hood, No ferrite core

17' LCD Monitor : HP

Model No. : L1760

Serial No. : CND71008CV

FCC ID : Doc Approved

檢磁 : R43346

Data cable : Shielded, 1.80 m length, Plastic hood, two ferrite cores

Power type : 100 ~ 240VAC, 1.5A, 50/60Hz, Switching

Power cord : Non-shielded, 1.80 m length, Plastic hood, without ferrite core

PS2 Keyboard :HP

Model No. : KB-0316

Serial No. : BC3520BVBUJ039

FCC ID : Doc Approved

BSMI : R33001

Power type : By PC

Data cable : Shielded, 1.80m length, Plastic hood, No ferrite core

USB Mouse : HP

Model No. : M-UAE86

Serial No. : F93A90A5BU10G7P

FCC ID : Doc Approved

BSMI : T41126

Power type : By PC

Power cord : Shielded, 1.83m length, Plastic hood, No ferrite core

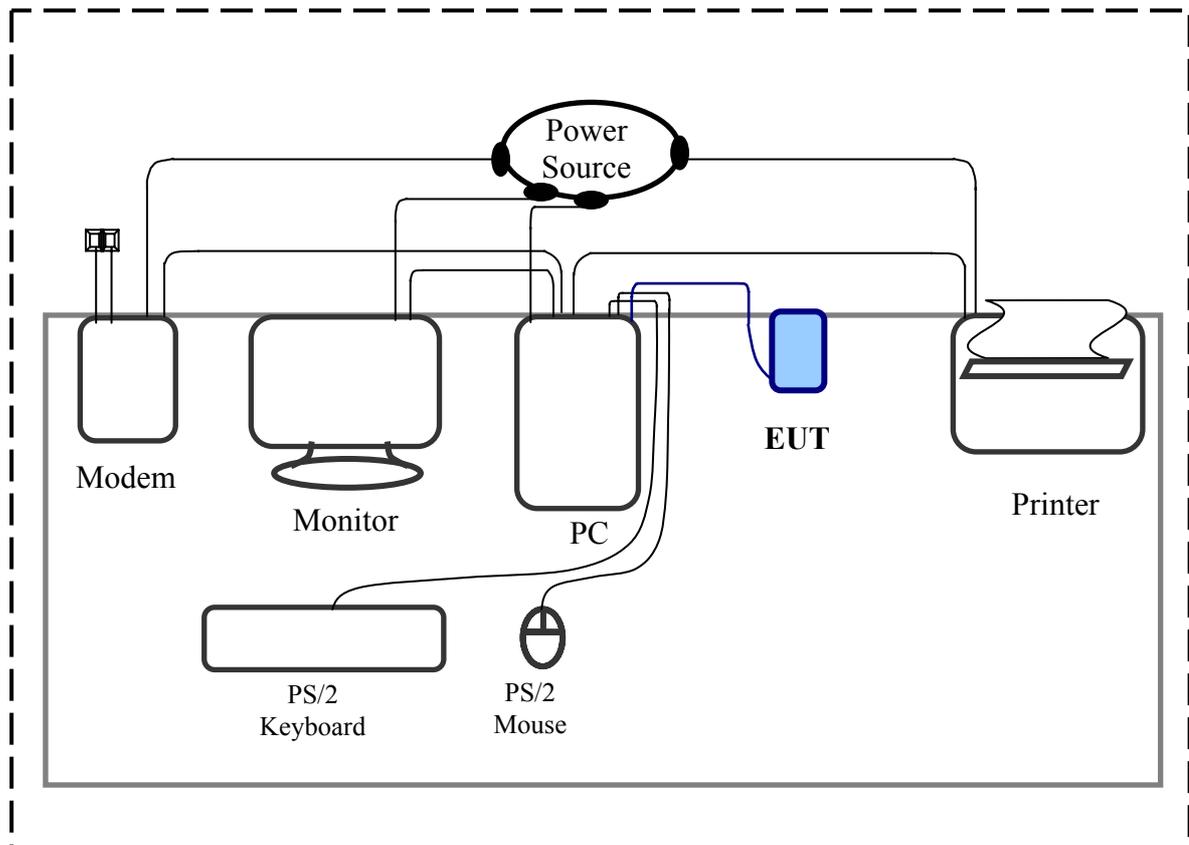
Fax/Modem : Aceex
Model No. : DM-1414
Serial No. : 9010582
FCC ID : IFAXDM1414
Power type : 110 VAC / 50 ~ 60 Hz, Switching
Power Cord : Non-shielded, 1.90m long, Plastic hoods, and no ferrite bead
Data Cable : RS-232→Shielded, 1.30m long, Metal hoods , No bead
RJ-11Cx2→Non-shielded, 7' long, Plastic hoods, No bead

Printer : HP
Model No. : C6464A
Serial No. : TH16LEB5PK
FCC ID : N/A, DoC Approved
檢磁 : 3892H381
Power type : Switching adaptor
Power cord : Non-shielded, 173cm long, No ferrite core
(between adaptor and AC source)
Non-shielded, 180cm long, with ferrite core
(between printer and adaptor)
Data cable : Shielded, 1.70m long, No ferrite core

Mini SD card: Transcend
Model No. : TS512MUSD-2
Serial No. : 169856-2734
FCC ID : Doc Approved
BSMI : D33193
Power type : By EUT

1.5 Configuration of System Under Test

1.5.1 Conducted and Radiated of Intentional



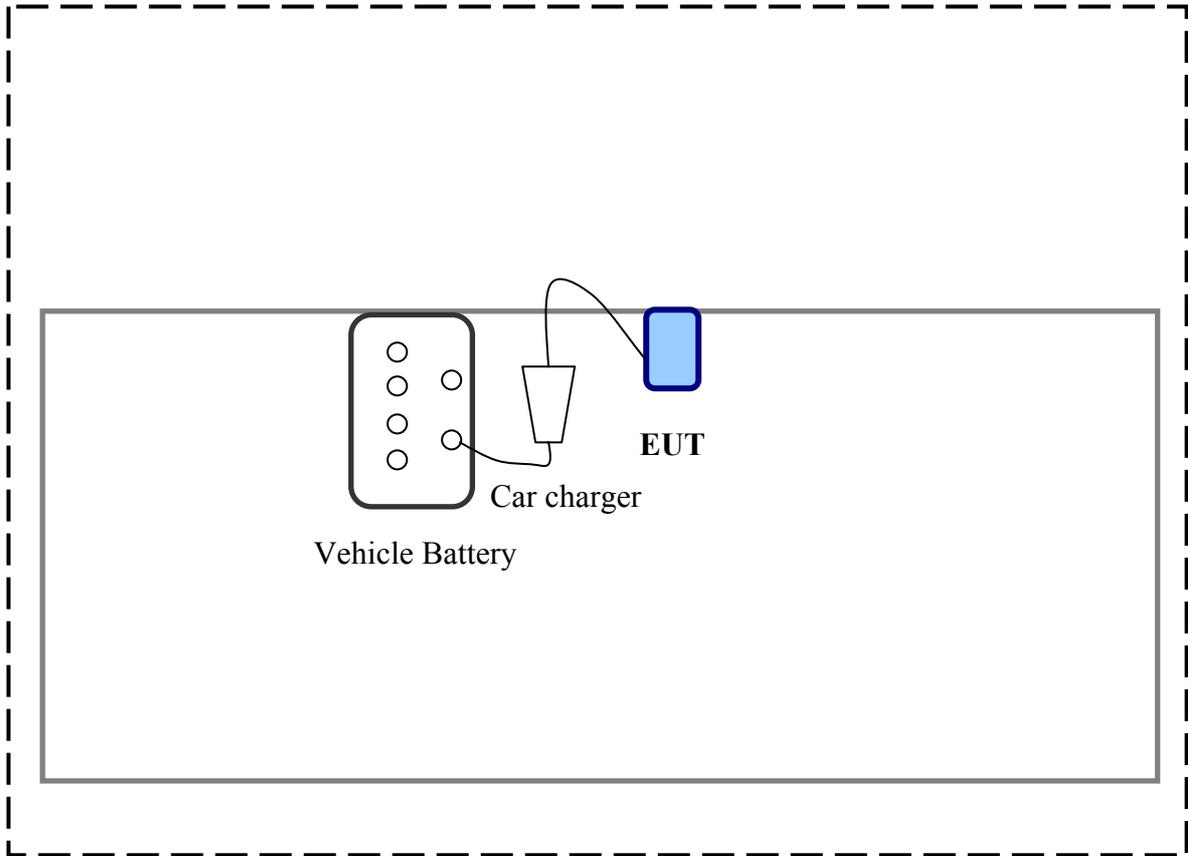
Connections of Equipment

- PC:**
- *VGA Port --- a monitor
 - *Serial A-Port --- an external modem
 - *Parallel Port --- a printer
 - *PS/2 Ports --- a PS/2 keyboard and PS/2 mouse
 - *USB B-Port --- EUT

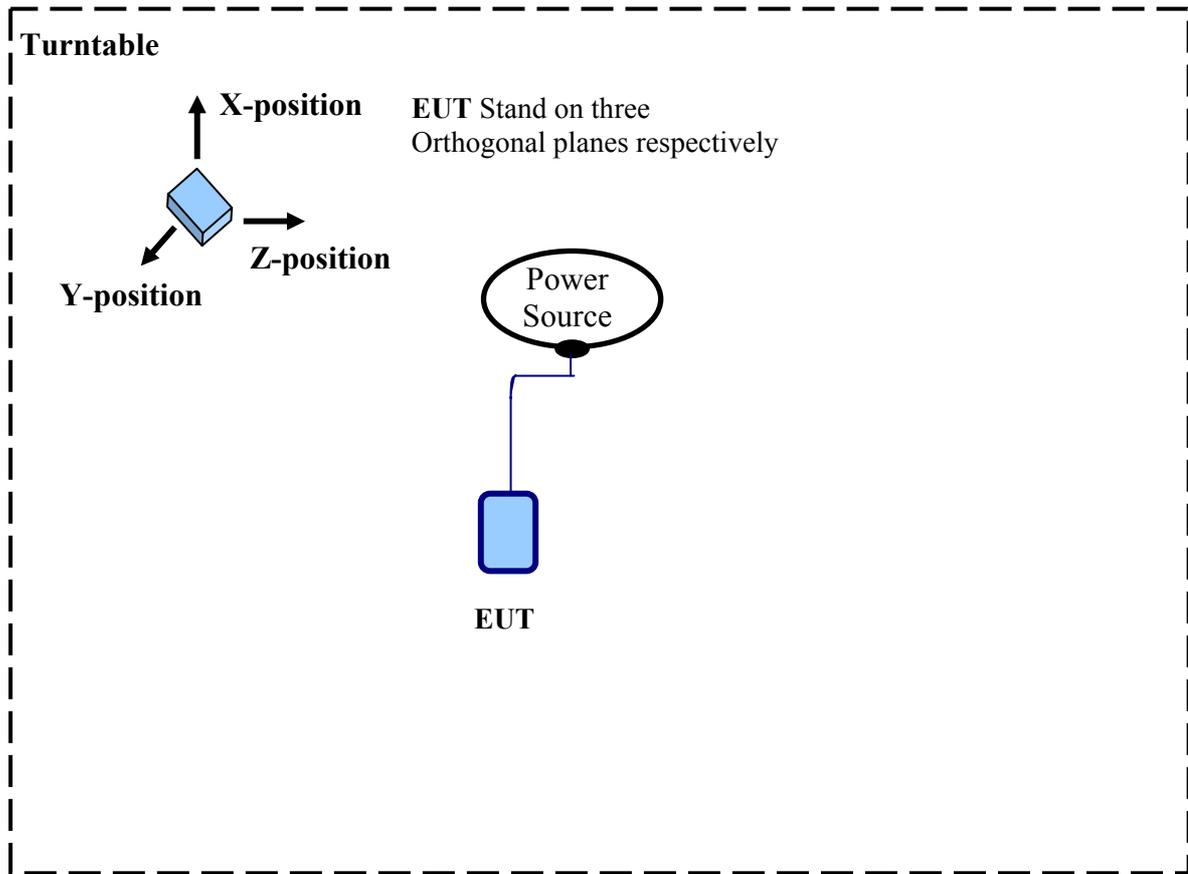
EUT:

- Mini SD socket:** *Mini SD Card

1.5.2 Radiated of Intentional



1.5.3 Conducted and Radiated of Intentional



1.6 Test Procedure

All measurements contained in this report were performed mainly according to the techniques described in ANSI C63.4 (2003) and the pre-setup was written on 1.3 test method, the detail setup was written on each test item.

1.7 Location of the Test Site

The radiated emissions measurements required by the rules were performed on the **three-meter, Anechoic Chamber (FCC Registration Number: 93906)** maintained by *Training Research Co., Ltd.* 1F, No. 255 Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C. Complete description and measurement data have been placed on file with the commission. The conducted power line emissions tests and other test items were performed in a anechoic chamber also located at Training Research Co., Ltd.

No. 255 Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C. *Training Research Co., Ltd.* is listed by the FCC as a facility available to do measurement work for others on a contract basis.

1.8 General Test Condition

The conditions under which the EUT operates were varied to determine their effect on the equipment's emission characteristics. The final configuration of the test system and the mode of operation used during these tests were chosen as that which produced the highest emission levels. However, only those conditions, which the EUT was considered likely to encounter in normal use were investigated.

In test, they were set in high power and continuously transmitting mode that controlled by computer. The Lowest, Middle and Highest frequency of EUT were all tested. The setting up procedure is recorded on 1.3 test method.

II. Section 15.207: Power Line Conducted Emissions for AC Powered Units

2.1 Test Condition & Setup

The power line conducted emission measurements were performed in an anechoic chamber. The EUT was assembled on a wooden table, which is 80 centimeters high, was placed 40 centimeters from the backwall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and Line Impedance Stabilization Networks (LISNs). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer (or EMI receiver) was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPR quasi-peak and average detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150KHz to 30MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 4.3.

There is a test condition apply in this test item, the test procedure description as <1.3>. Three channels were tested, one in the lowest, one in the middle and the other in highest frequency.

2.2 List of Test Instruments

Instrument Name	Model No.	Brand	Serial No.	Calibration Date
				Next time
EMI Receiver	8546A	HP	3520A00242	12/06/07
RF Filter Section	85460A	HP	3448A00217	12/06/07
LISN (EUT)	LISN-01	TRC	99-05	05/10/08
LISN (Support E.)	LISN-01	TRC	9912-03, 04	06/22/08
Pre-amplifier	15542 ZFL-500	Mini – Circuits	0 0117	04/10/08
6dB Attenuator	MCL BW-S6W2	Mini – Circuits	9915 – Conducted	04/10/08
10dB Attenuator	A5542 VAT010	Mini – Circuits	0215 – Conducted	04/10/08
Coaxial Cable (2 meter)	A30A30-0058-50FS-2M	Jyebao	SMA-08	04/10/08
Coaxial Cable (1.1 meter)	A30A30-0058-50FS-1M	Jyebao	SMA-09	04/10/08
Coaxial Cable (20 meter)	RG-214/U	Jyebao	NP-01	04/10/08
Coaxial Cable (20 meter)	RG-214/U	Jyebao	NP-02	04/10/08
Auto Switch Box (< 30MHz)	ASB-01	TRC	9904-01	04/10/08

2.3 Test Result

The following table shows a summary of the highest emissions of power line conducted emissions on the LIVE and NETURAL conductors of the EUT power cord. Show as follows.

Test Conditions: Temperature : 25 °C Humidity : 73 % RH

Test Mode: 88.1MHz

<i>Power Connected Emissions</i>					<i>FCC Class B</i>		
<i>Conductor</i>	<i>Frequency (KHz)</i>	<i>Peak (dBµV)</i>	<i>QP (dBµV)</i>	<i>Average (dBµV)</i>	<i>QP-limit (dBµV)</i>	<i>AVG-limit (dBµV)</i>	<i>Margin (dB)</i>
Line 1	175.000	50.96	---	---	65.29	55.29	-4.33
	292.350	51.98	48.69	38.68	61.97	51.97	-13.28
	351.825	53.18	51.89	41.38	60.34	50.34	-8.45
	407.205	50.31	45.88	35.01	58.71	48.71	-12.83
	527.050	47.19	45.20	33.69	56.00	46.00	-10.80
	585.275	47.00	45.83	35.45	56.00	46.00	-10.17
	644.490	48.39	46.56	36.52	56.00	46.00	-9.44
	876.000	46.77	42.11	29.51	56.00	46.00	-13.89
	995.750	47.81	45.35	34.14	56.00	46.00	-10.65
	1053.725	47.58	45.86	34.82	56.00	46.00	-10.14
Line 2	174.000	52.28	---	---	65.31	55.31	-3.03
	233.000	46.62	---	---	63.63	53.63	-7.01
	291.000	45.04	---	---	61.97	51.97	-6.93
	345.000	47.16	---	---	60.43	50.43	-3.27
	405.000	43.65	---	---	58.71	48.71	-5.06
	523.000	42.86	---	---	56.00	46.00	-3.14
	581.000	41.85	---	---	56.00	46.00	-4.15
	645.000	41.88	---	---	56.00	46.00	-4.12
	703.000	40.44	---	---	56.00	46.00	-5.56
	928.000	40.77	---	---	56.00	46.00	-5.23

NOTE:

- (1)Margin = Peak Amplitude – Limit, *The reading amplitudes are all under limit.*
- (2)A "+" sign in the margin column means the emission is OVER the Class B Limit and "-" sign of means UNDER the Class B limit

Test Mode: 98.0MHz

<i>Power Connected Emissions</i>					<i>FCC Class B</i>		
<i>Conductor</i>	<i>Frequency (KHz)</i>	<i>Peak (dBμV)</i>	<i>QP (dBμV)</i>	<i>Average (dBμV)</i>	<i>QP-limit (dBμV)</i>	<i>AVG-limit (dBμV)</i>	<i>Margin (dB)</i>
Line 1	174.680	54.31	48.00	37.17	65.31	55.31	-17.31
	351.850	53.20	51.78	41.23	60.14	50.14	-8.36
	526.965	47.23	45.41	33.86	56.00	46.00	-10.59
	585.230	47.09	45.93	35.64	56.00	46.00	-10.07
	643.545	48.35	46.63	36.90	56.00	46.00	-9.10
	933.220	46.49	42.98	32.21	56.00	46.00	-13.02
	995.075	47.81	45.75	34.48	56.00	46.00	-10.25
	1053.455	47.56	45.76	35.01	56.00	46.00	-10.24
	1341.235	45.53	41.02	28.84	56.00	46.00	-14.98
	1682.725	42.59	33.19	17.24	56.00	46.00	-22.81
Line 2	173.740	52.17	46.89	34.97	65.29	55.29	-18.40
	233.000	46.64	---	---	63.63	53.63	-6.99
	294.000	46.11	---	---	61.89	51.89	-5.78
	348.000	46.82	---	---	60.34	50.34	-3.52
	409.000	43.98	---	---	58.60	48.60	-4.62
	584.420	43.65	40.40	33.51	56.00	46.00	-12.49
	703.190	44.54	40.98	33.30	56.00	46.00	-12.70
	928.000	42.19	---	---	56.00	46.00	-3.81
	989.000	41.20	---	---	56.00	46.00	-4.80
	1385.000	41.73	---	---	56.00	46.00	-4.27

Test Mode: 107.9MHz

<i>Power Connected Emissions</i>					<i>FCC Class B</i>		
<i>Conductor</i>	<i>Frequency (KHz)</i>	<i>Peak (dBμV)</i>	<i>QP (dBμV)</i>	<i>Average (dBμV)</i>	<i>QP-limit (dBμV)</i>	<i>AVG-limit (dBμV)</i>	<i>Margin (dB)</i>
Line 1	174.680	57.12	52.75	39.95	65.31	55.31	-12.56
	236.000	49.77	---	---	63.54	53.54	-3.77
	352.045	52.61	50.17	40.56	60.23	50.23	-9.67
	407.385	50.26	45.31	34.86	58.71	48.71	-13.40
	584.330	45.60	44.22	35.18	56.00	46.00	-10.82
	644.490	46.92	45.47	35.98	56.00	46.00	-10.02
	993.140	46.92	45.11	34.48	56.00	46.00	-10.89
	1054.670	46.30	43.71	33.16	56.00	46.00	-12.29
	2630.880	46.45	41.86	28.26	56.00	46.00	-14.14
	4092.000	42.33	---	---	56.00	46.00	-3.67
Line 2	174.770	54.56	50.52	38.29	65.31	55.31	-14.79
	233.000	48.98	---	---	63.63	53.63	-4.65
	348.000	46.36	---	---	60.34	50.34	-3.98
	405.000	44.75	---	---	58.71	48.71	-3.96
	471.000	43.02	---	---	56.83	46.83	-3.81
	645.000	41.53	---	---	56.00	46.00	-4.47
	998.000	41.62	---	---	56.00	46.00	-4.38
	2558.000	39.09	---	---	56.00	46.00	-6.91
	4131.000	41.35	---	---	56.00	46.00	-4.65
	23350.000	42.83	---	---	60.00	50.00	-7.17

III. Section 15.239(a): Occupied Bandwidth

3.1 Test Condition & Setup

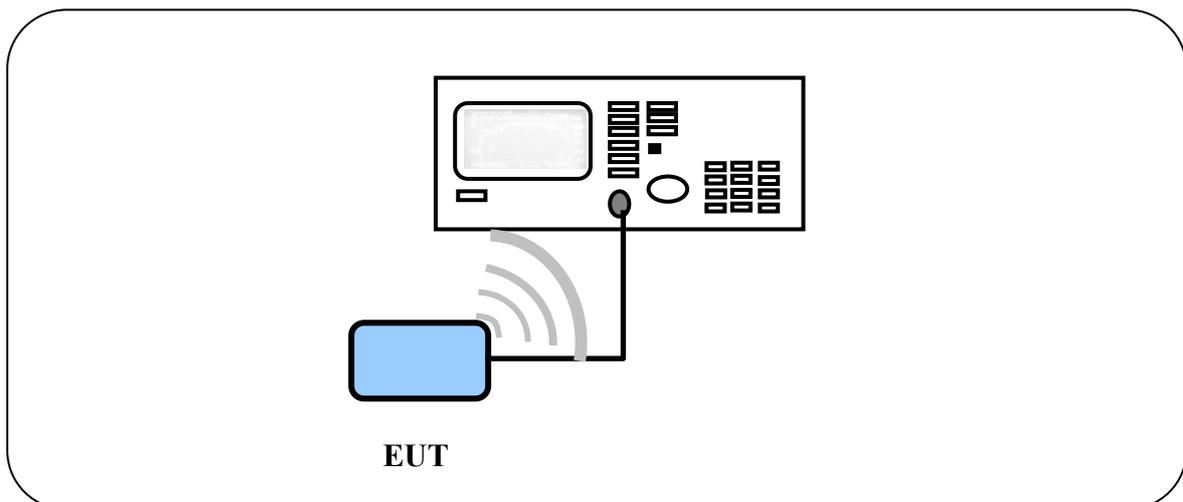
According to the requirement of FCC 15.239(a), the emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operation frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

During the test, the EUT was adjusted to work at the lowest, middle and the highest channel and output power of the device adjusted for maximum output.

After verifying, the tuning range of EUT was between 88.1 - 107.9 MHz

The EUT could not use any audio device (ipod or MP3 player...etc), therefore test software provide by manufacture let EUT played the typical music file, and audio volume was adjusted to the worst case during the test.

3.2 Test Configuration



3.3 Test Procedure

1. Place the EUT on the table and set it in the transmitting mode.
(Note: The EUT is playing rock song and the EUT is adjusted to maximum volume.)
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 10kHz, VBW = 30kHz, Span = 500kHz, Sweep = auto.
4. Mark the peak frequency and 26dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

3.4 List of Test Instruments

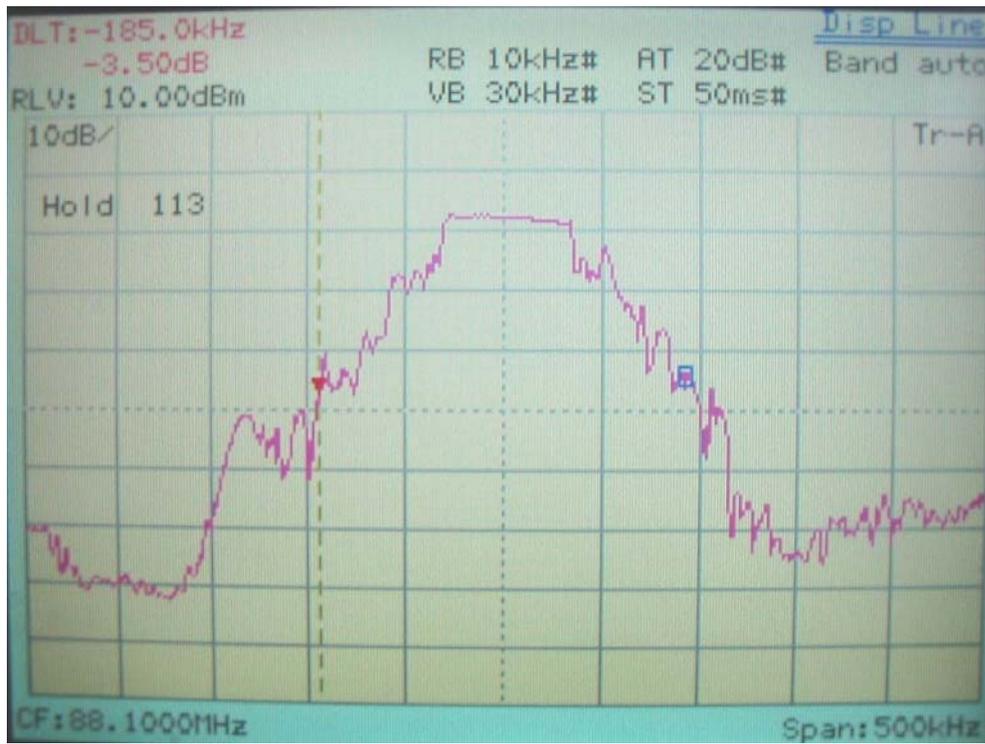
<u>Instrument Name</u>	<u>Model No.</u>	<u>Brand</u>	<u>Serial No.</u>	<u>Next time</u>
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	12/11/07

3.5 Test Result

Channel	FM	Limit
Lowest 88.1MHz	185 kHz	200 kHz
Middle 98.0MHz	184 kHz	200 kHz
Highest 107.9MHz	186 kHz	200 kHz

- Note:
1. The data in the above table are summarizing the following attachment spectrum analyzer hard copy.
 2. The attachments show these on the following pages.

Lowest 88.1MHz



Middle 98.0MHz



Highest 107.9MHz



IV. Transmitter Duty Cycle Measurements

4.1 Test Condition & Setup

The duty cycle measurements were performed in a shielded enclosure. The EUT was placed on a wooded table which is 0.8 meters height and a bi-log periodic antenna was used distance about 3 meters for receiving. While testing EUT was set to transmit continuously. Various key configurations were also investigated to find the maximum duty cycle.

The resolution bandwidth and video bandwidth of the spectrum analyzer was all set to 1MHz to encompass all significant spectral components during the test. The analyzer operated in linear scale and zero span mode after tuning to the transmitter carrier frequency. The spectrum analyzer measured pules width. The pulse width was determined by the difference between the two half voltage points on a pulse.

The duty cycle was determined by the following equation:

$$\text{Duty Cycle (\%)} = \frac{\text{Total on interval in a complete pulse train}}{\text{Length of a complete pulse train}} \times 100\%$$

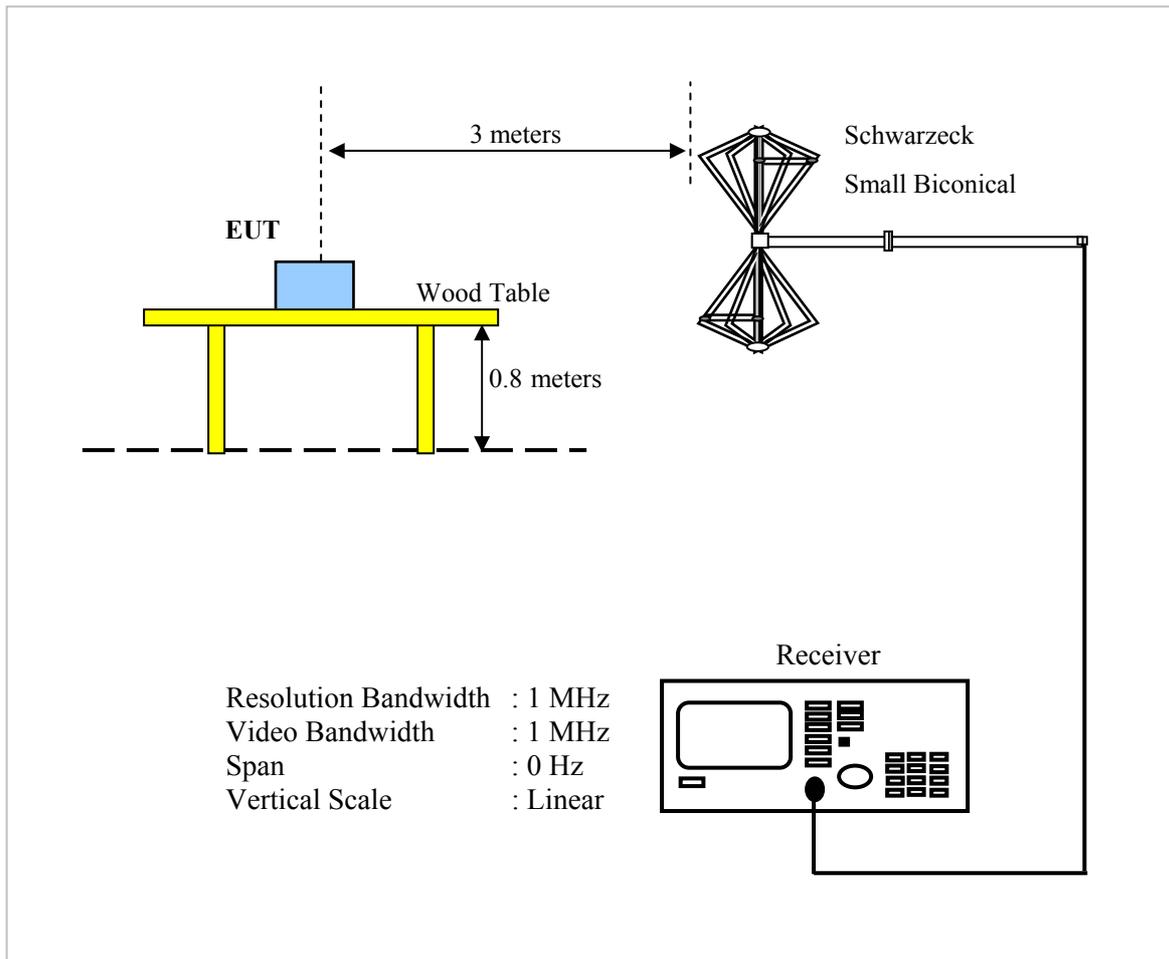
To calculate the actual field intensity, the duty cycle correction factor in decibel is needed for later use and be obtained from following conversion:

$$\text{Duty Cycle Correction Factor (dB)} = 20 \times \text{Log}_{10} \text{Duty Cycle}$$

4.2 List of Test Instruments

<u>Instrument Name</u>	<u>Model No.</u>	<u>Brand</u>	<u>Serial No.</u>	<u>Calibration Date</u> Next time
EMI Receiver	8546A	H P	3520A00242	12/06/07
RF Filter Section	85460A	H P	3448A00217	12/06/07
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	12/11/07
Spectrum Analyzer	8564E	HP	3720A00840	12/11/07
Microwave Preamplifier	84125C	HP	US36433002	11/18/07
Small Biconical Antenna	UBAA9114 & BBVU9135	SCHWARZECK	127	12/07/07

4.3 Test Instruments Configuration



4.4 Test Result

Following is the test result, which produce maximum duty cycle:

Duty Cycle (%) = 100%

Duty Cycle Correction Factor (dB) = $20 * \text{Log}(1) = 0$

Maximum duty cycle according to FCC part 15.35(b): -20dB

A plot is attached on the following page.

V. Section 15.239(b): Field strength of fundamental frequency and Section 15.239 (C): Spurious Emissions (Radiated)

5.1 Test Condition & Setup

We'd performed the test by the *radiated emission* skill: The EUT was placed in an anechoic chamber, and set the EUT transmitting continuously and scanned at 3-meter distance to determine its emission characteristics. The physical arrangement of the EUT was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude, directivity, and frequency. The exact system configuration, which produced the highest emissions was noted so it could be reproduced later during the final tests. For the measurement above 1GHz, according to the guidance we'd set the spectrum analyzer's 6dB bandwidth RBW to 1MHz.

This was done to ensure that the final measurements would demonstrate the worst-case interference potential of the EUT.

Final radiation measurements were made on a three-meter, anechoic chamber. The EUT system was placed on a nonconductive turntable, which is 0.8 meters height, top surface 1.0 x 1.5 meter.

The spectrum was examined from 30 MHz to 1000 MHz using an Hewlett Packard 85460A EMI Receiver, SCHWARZECK whole range Small Biconical Antenna (Model No.: UBAA9114 & BBVU9135) is used to measure frequency from 30 MHz to 1GHz. The final test is used the HP 85460A spectrum and 8564E spectrum was examined from 1GHz to 25GHz using an Hewlett Packard Spectrum Analyzer, EMCO/HP Horn Antenna (Model 3115 / 84125-80008) for 1G - 25GHz.

At each frequency, the EUT was rotated 360 degrees, stand on three orthogonal planes respectively and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. There are two spectrum analyzers use on this testing, HP 85460A for frequency 30MHz to 1000MHz, and 8564E for frequency 1GHz to 25GHz. No post-detector video filters were used in the test. The spectrum analyzer's 6dB bandwidth was set to 120KHz (spectrum was examined from 30 MHz to 1000 MHz), the spectrum analyzer's 6 dB bandwidth was set to 1 MHz (spectrum was examined from 1GHz to 25GHz) and the analyzer was operated in the maximum hold mode. There is a test condition applies in this test item, the test procedure description as the following:

Three channels were tested, one in the lowest, one in the middle and the other in highest. The setting up procedure is recorded on <1.3>

With the transmitter operating from a AC source and using the internal of EUT, radiates spurious emissions falling within the restricted bands of 15.209 were measured at operating frequencies corresponding to upper, middle and bottom channels in the 2400 ~ 2483.5 MHz band.

The actual field intensity in decibels referenced to 1 microvolt per meter (dB μ V/m) is determined by algebraically adding the measured reading in dB μ V, the antenna factor (dB), and cable loss (dB) at the appropriate frequency. Since the EUT was set to transmit continuously, no *duty cycle* is present.

For frequency between 30MHz to 1000MHz

$$F_{Ia} \text{ (dB}\mu\text{V/m)} = F_{Ir} \text{ (dB}\mu\text{V)} + \text{Correction Factors}$$

F_{Ia} : Actual Field Intensity

F_{Ir} : Reading of the Field Intensity

Correction Factors = Antenna Factor + Cable Loss – Amplifier Gain

For frequency between 1GHz to 25GHz

$$F_{Ia} \text{ (dB}\mu\text{V/m)} = F_{Ir} \text{ (dB}\mu\text{V)} + \text{Correction Factor}$$

F_{Ia} : Actual Field Intensity

F_{Ir} : Reading of the Field Intensity

Correction Factors = Antenna Factor + Cable Loss – Amplifier Gain

5.2 List of Test Instruments

Instrument Name	Model No.	Brand	Serial No.	Calibration Date
				Next time
EMI Receiver	8546A	HP	3520A00242	12/06/07
RF Filter Section	85460A	HP	3448A00217	12/06/07
Small Biconical Antenna	UBAA9114 & BBVU9135	SCHWARZECK	127	12/17/07
Pre-amplifier	PA1F	TRC	1FAC	04/10/08
Auto Switch Box (>30MHz)	ASB-01	TRC	9904-01	04/10/08
Coaxial Cable (Double shielded, 15 meter)	A30A30-0058-50FS-15M	JYEBAO	SMA-01	04/10/08
Coaxial Cable (1.1 meter)	A30A30-0058-50FS-1M	JYEBAO	SMA-02	04/10/08
Spectrum Analyzer	8564E	HP	3720A00840	12/11/07
Microwave Preamplifier	84125C	HP	US36433002	11/07/08
Horn Antenna	3115	EMCO	9104-3668	02/05/08
Standard Guide Horn Antenna	84125-80008	HP	18-26.5GHz	12/12/07
Standard Guide Horn Antenna	84125-80001	HP	26.5-40GHz	12/12/07
Horn Antenna	1196E (3115)	HP (EMCO)	9704-5178	02/12/08
Pre-amplifier	PA2F	TRC	2F1GZ	04/10/08
Coaxial Cable (3 miter)	A30A30-0058-50FS T118	JYEBAO	MSA-05	04/10/08
Coaxial Cable (1 meter)	A30A30-0058-50FS T118	JYEBAO	MSA-04	04/10/08

5.3 Test Result

The peak values of fundamental emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following.

Testing room : Temperature : 25 ° C Humidity : 73 % RH

Fundamental Emissions

Channel	Frequency (MHz)	A. P. (H/V)	A.H. (m)	Table (degree)	Peak (dBµV/m)	Duty Cycle	True Value (dBµV/m)	Limit (dBµV)	Margin (dBµV)
Lowest	88.1	H	1.00	222	37.99	0.00	37.99	48.00	-10.01
		V	1.00	132	40.86	0.00	40.86	48.00	-7.14
Middle	98.0	H	1.00	97	32.43	0.00	32.43	48.00	-15.57
		V	1.00	122	41.56	0.00	41.56	48.00	-6.44
Highest	107.9	H	1.00	201	37.50	0.00	37.50	48.00	-10.50
		V	1.00	103	39.63	0.00	39.63	48.00	-8.37

Note:

- 1.A. P. means antenna polarization, horizontal and vertical.
- 2.A. H. means antenna height.
- 3.Table means turntable turning position.
- 4.Peak amplitude means the fundamental emission measured.
- 5.True Value = Peak Value + Duty Cycle
- 6.Margin = True Value – Limit

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following.

Testing room : Temperature : 25 °C Humidity : 73% RH

Test mode: 88.1MHz for 30MHz to 2GHz [Horizontal] - X

Radiated Emission				CF	Peak Value	Duty Cycle	True Value	FCC Class B	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Angle	(dB)	(dBμV/m)	(dB)	(dBμV/m)	Limit (Avg.) (dBμV/m)	Margin (dB)
177.92	19.78	1.00	318	-4.00	15.78	---	15.78	43.50	-27.72
203.39	23.47	1.00	298	-3.44	20.03	---	20.03	43.50	-23.47
340.40	45.76	1.00	69	-2.39	43.37	---	43.37	46.00	-2.63
359.80	37.02	1.00	107	-2.04	34.98	---	34.98	46.00	-11.02
555.01	20.46	1.00	272	5.20	25.66	---	25.66	46.00	-20.34
1233.33	31.91	1.00	154	1.00	32.91	0.00	32.91	53.96	-21.05
1497.50	33.57	1.00	186	0.01	33.58	0.00	33.58	53.96	-20.38
1762.50	34.24	1.00	103	0.90	35.14	0.00	35.14	53.96	-18.82

Test mode: 88.1MHz for 30MHz to 2GHz [Vertical] - Y

Radiated Emission				CF	Peak Value	Duty Cycle	True Value	FCC Class B	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Angle	(dB)	(dBμV/m)	(dB)	(dBμV/m)	Limit (Avg.) (dBμV/m)	Margin (dB)
125.79	21.70	1.00	156	-2.76	18.94	---	18.94	43.50	-24.56
202.17	24.06	1.00	80	-3.39	20.67	---	20.67	43.50	-22.83
288.26	26.30	1.00	45	-3.42	22.88	---	22.88	46.00	-23.12
333.12	34.13	1.00	256	-2.48	31.65	---	31.65	46.00	-14.35
339.19	34.17	1.00	284	-2.41	31.76	---	31.76	46.00	-14.24
1233.33	31.57	1.00	113	1.00	32.57	0.00	32.57	53.96	-21.39
1497.50	33.91	1.00	339	0.01	33.92	0.00	33.92	53.96	-20.04
1762.50	33.07	1.00	256	0.90	33.97	0.00	33.97	53.96	-19.99

Test mode: 98.0MHz for 30MHz to 2GHz [Horizontal] - X

Radiated Emission				CF	Peak Value	Duty Cycle	True Value	FCC Class B	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Angle	(dB)	(dBμV/m)	(dB)	(dBμV/m)	Limit (Avg.) (dBμV/m)	Margin (dB)
204.60	23.58	1.00	80	-3.49	20.09	---	20.09	43.50	-23.41
293.11	34.55	1.00	62	-3.22	31.33	---	31.33	46.00	-14.67
325.85	38.76	1.00	339	-2.57	36.19	---	36.19	46.00	-9.81
352.52	43.32	1.00	73	-2.21	41.11	---	41.11	46.00	-4.89
479.84	23.63	1.00	246	1.52	25.15	---	25.15	46.00	-20.85
1274.17	32.58	1.00	357	0.90	33.48	0.00	33.48	53.96	-20.48
1568.33	34.57	1.00	106	0.22	34.79	0.00	34.79	53.96	-19.17
1862.50	33.57	1.00	241	2.50	36.07	0.00	36.07	53.96	-17.89

Test mode: 98.0MHz for 30MHz to 2GHz [Vertical] - Y

Radiated Emission				CF	Peak Value	Duty Cycle	True Value	FCC Class B	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Angle	(dB)	(dBμV/m)	(dB)	(dBμV/m)	Limit (Avg.) (dBμV/m)	Margin (dB)
131.85	22.68	1.00	139	-3.11	19.57	---	19.57	43.50	-23.93
299.17	27.12	1.00	194	-2.94	24.18	---	24.18	46.00	-21.82
333.12	31.60	1.00	282	-2.48	29.12	---	29.12	46.00	-16.88
339.19	32.74	1.00	292	-2.41	30.33	---	30.33	46.00	-15.67
407.09	23.86	1.00	262	-0.76	23.10	---	23.10	46.00	-22.90
1274.17	33.41	1.00	257	0.90	34.31	---	34.31	53.96	-19.65
1568.33	33.24	1.00	257	0.22	33.46	---	33.46	53.96	-20.50
1862.50	31.74	1.00	160	2.50	34.24	---	34.24	53.96	-19.72

Test mode: 107.9MHz for 30MHz to 2GHz [Horizontal] - X

Radiated Emission				CF	Peak Value	Duty Cycle	True Value	FCC Class B	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Angle	(dB)	(dBμV/m)	(dB)	(dBμV/m)	Limit (Avg.) (dBμV/m)	Margin (dB)
103.96	27.31	1.00	311	-1.06	26.25	---	26.25	43.50	-17.25
108.81	35.87	1.00	67	-1.70	34.17	---	34.17	43.50	-9.33
299.17	35.71	1.00	14	-2.94	32.77	---	32.77	46.00	-13.23
353.74	42.39	1.00	25	-2.18	40.21	---	40.21	46.00	-5.79
371.92	37.55	1.00	64	-1.75	35.80	---	35.80	46.00	-10.20
1079.17	32.40	1.00	205	0.93	33.33	---	33.33	53.96	-20.63
1510.42	33.74	1.00	358	0.03	33.77	---	33.77	53.96	-20.19
1834.58	33.41	1.00	134	2.05	35.46	---	35.46	53.96	-18.50

Test mode: 107.9MHz for 30MHz to 2GHz [Vertical] - Y

Radiated Emission				CF	Peak Value	Duty Cycle	True Value	FCC Class B	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Angle	(dB)	(dBμV/m)	(dB)	(dBμV/m)	Limit (Avg.) (dBμV/m)	Margin (dB)
202.17	22.81	1.00	141	-3.39	19.42	---	19.42	43.50	-24.08
288.26	25.45	1.00	267	-3.42	22.03	---	22.03	46.00	-23.97
340.40	26.93	1.00	154	-2.39	24.54	---	24.54	46.00	-21.46
353.74	27.54	1.00	298	-2.18	25.36	---	25.36	46.00	-20.64
393.75	23.44	1.00	230	-1.23	22.21	---	22.21	46.00	-23.79
1079.17	32.07	1.00	273	0.93	33.00	---	33.00	53.96	-20.96
1510.83	33.41	1.00	215	0.03	33.44	---	33.44	53.96	-20.52
1834.17	32.57	1.00	261	2.05	34.62	---	34.62	53.96	-19.34

Note:

1. Margin = Amplitude – limit, if margin is minus means under limit.
2. Correction factor = Antenna factor + (Cable Loss – Amplitude gain)
3. Peak Value = Reading Amplitude + Correction Factors
4. True Value = Peak Value + Duty Cycle