

. RADIATED EMISSION MEASUREMENT (Section 18.307)

1. Test Procedure

1.1 Preliminary Testing for Reference

Preliminary testing was performed in a KTL absorber-lined room to determine the emission characteristics of the EUT. The EUT was placed on the wooden table which has dimensions of 0.8 meters in height, 1 meter in length and 1.5 meters in width. The EUT was installed with fluorescent lamp in accordance with the manufacturer's instruction and operated in a manner that is the representative of the typical usage for equipment.

Receiving antenna(Biconical antenna : 30~300MHz or Log-periodic antenna : 200~1000MHz was placed at the distance of 1 meter from the EUT.

An attempt was made to maximize the emission level with the various configurations of the EUT. The position of connecting power cable was changed to find the worst case configuration while rotating the table and varying antenna height.

Emissions level from the EUT with various configurations were examined on a Spectrum Analyzer connected with a RF amplifier and graphed by a plotter.

1.2 Final Radiated Emission Test at a Absorber-Lined Room

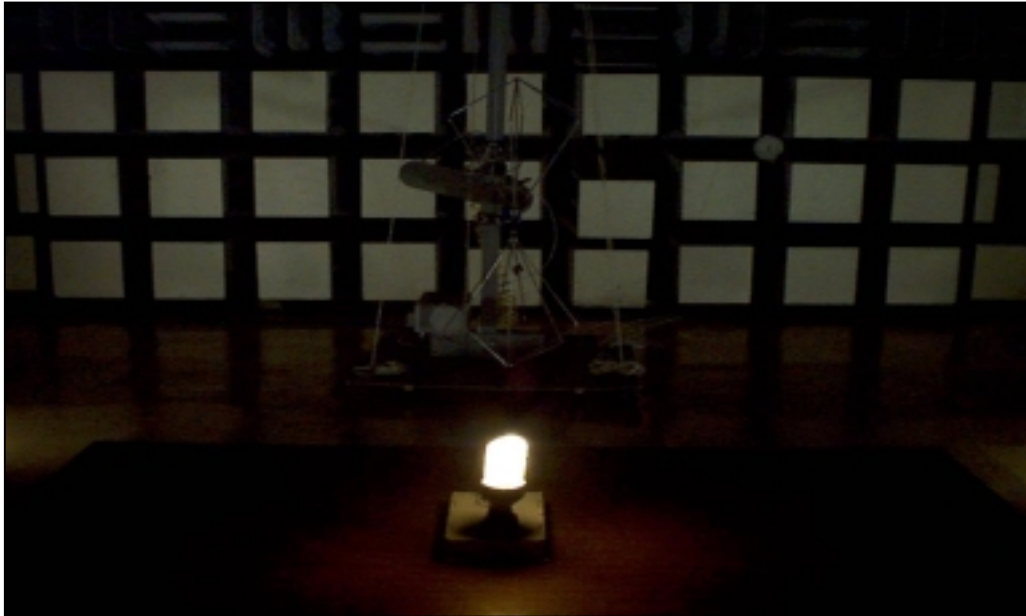
The final measurement of radiated field strength was carried out in a KTL Absorber-Lined Room that was listed up at FCC.

Based on the test results in preliminary test, measurement was made in same test set up and configuration which produced maximum emission level. Receiving antenna was installed at 3-meter distance from the EUT, and was connected to an EMI receiver or spectrum analyzer(for above 1GHz) with a RF amplifier.

Turntable was rotated through 360 degrees and receiving antenna height was varied from 1 to 4 meters above the ground plane to read maximum emission level. The frequency range 30MHz to 1000MHz was searched. The values within 20dB of the limits were measured and recorded for the report unless otherwise stated.

The maximum emission level from the EUT occurred in such configuration as shown in the following photograph.

2. Photograph for the worst case configuration



3. Sample Calculation

The emission level measured in decibels above one microvolt (dB μ V/m) was converted into microvolt per meter (μ V/m) as shown in following sample calculation.

For example :

Measured Value at <u>59.700MHz</u>	51.9 dB
+ Antenna Factor	7.8 dB
+ Cable Loss	1.3 dB
- Preamplifier	30.0 dB
- Distance Correction Factor *	20.0 dB

= Radiated Emission	11.0 dB μ V/m
(=3.6 μ V/m)	

- Extrapolated from the measured distance to the specified distance by an inverse linear distance extrapolation.

4. Measurement Data

- Resolution Bandwidth : x CISPR Quasi-Peak (6dB Bandwidth : 120KHz)
 Peak (3dB Bandwidth : 1MHz for 1GHz above)
- Measurement Distance : 3 Meter

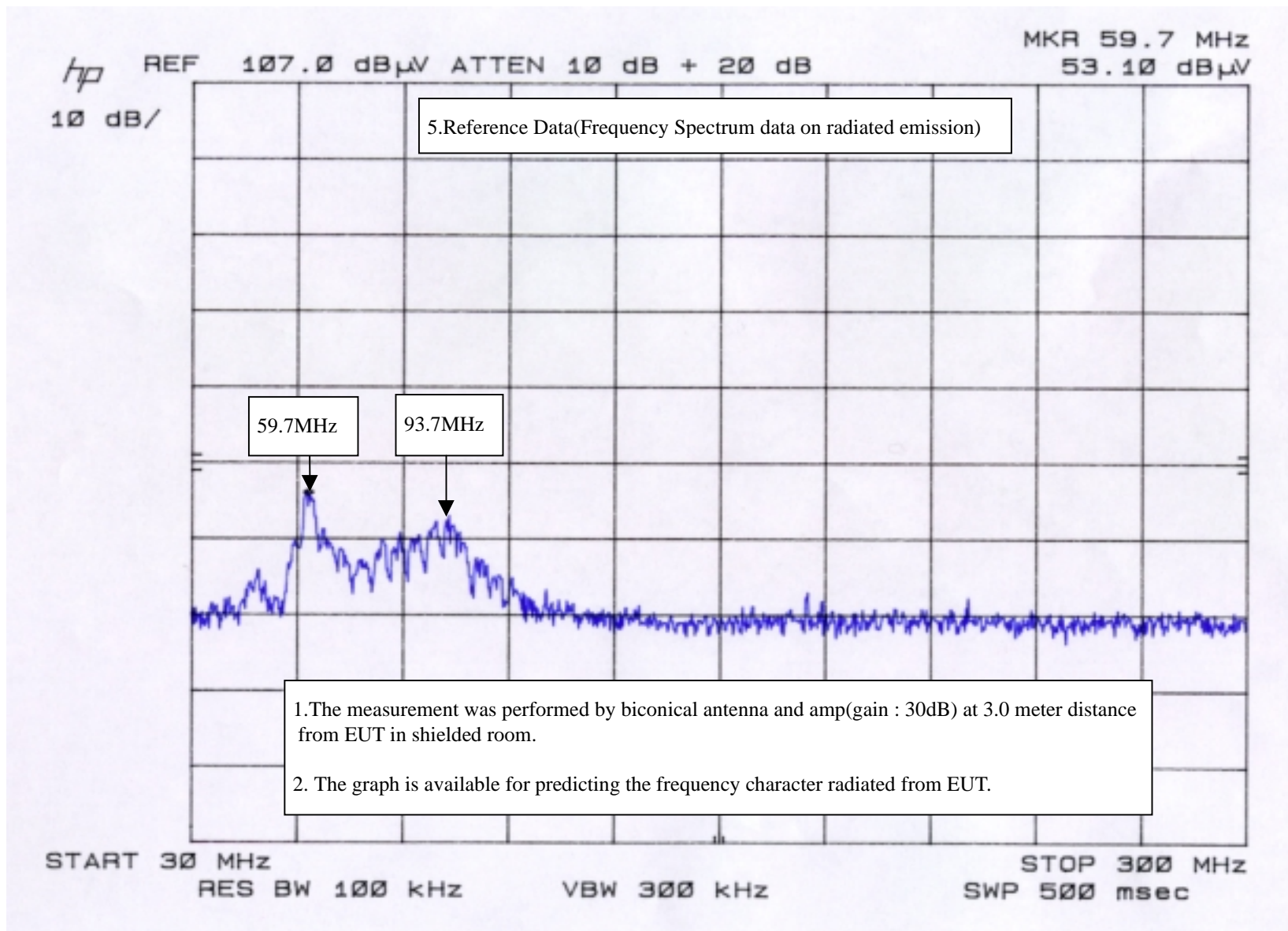
Frequency (MHz)	* D.M.	* A.P.	Measured Value (dB)	* A.F. + C.L. (dB)	* A.G. (dB)	* D.C.F. (dB)	Emission Level		Limit (/m)	** Margin (dB)
							(dB /m)	(/m)		
59.7	Q	V	51.9	9.1	-30.0	-20.0	11.0	3.6	10	-9.0
93.7	Q	V	45.4	10.1	-30.0	-20.0	5.5	1.9	15	-18.0
-	-	-	-	-	-	-	-	-	-	-

Note : The noise floor level of the EMI Receiver(ESVS30) was 5.0dB . And all other emissions not reported on data were more than 20dB below the permitted level

* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)
 A.P. : Antenna Polarization (H : Horizontal, V : Vertical)
 A.F. : Antenna Factor
 C.L. : Cable Loss
 A.G. : Amplifier Gain
 D.C.F. : Distance Correction Factor

** Margin (dB) = Emission Level (dB) - Limit (dB)

*** Refer to graph for radiated emission character from EUT on next page.



TEST EQUIPMENT USED FOR MEASUREMENTS

<u>Equipment</u>	<u>Model No.</u>	<u>Manufacturer</u>	<u>Serial No.</u>	<u>Effective Cal. Duration</u>
[x] EMI Receiver (20MHz-1GHz)	ESVS30	R & S	830516/002	06/29/99-06/29/00
[x] Spectrum Analyzer (9kHz-26.5GHz)	8563A	H. P.	3222A02069	02/10/99-02/10/00
[x] Spectrum Analyzer (100Hz-22GHz)	8566B	H. P.	3014A07057	05/29/99-05/29/00
[x] Quasi-Peak Adapter (10kHz-1GHz)	85650A	H. P.	3107A01511	05/29/99-05/29/00
[x] RF-Preselector (20Hz-2GHz)	85685A	H. P.	3010A01181	05/29/99-05/29/00
[x] Test Receiver (9kHz-30MHz)	ESH3	R & S	860905/001	06/29/99-06/29/00
[x] Pre-Amplifier (0.1-3000MHz, 30dB)	8347A	H. P.	2834A00543	05/29/99-05/29/00
[x] Pre-Amplifier (1-26.5GHz, 35dB)	8449B	H. P.	3008A00302	06/29/99-06/29/00
[x] LISN(50 , 50 H) (10kHz-100MHz)	3825/2	EMCO	9010-1710	-
[x] LISN(50 , 50 H) (10kHz-100MHz)	3825/2	EMCO	9011-1720	-
[x] Plotter	7470A	H. P.	3104A21292	-
[x] Tuned Dipole Ant. (30MHz-300MHz)	VHA 9103	Schwarzbeck	-	*
[x] Tuned Dipole Ant. (300MHz-1GHz)	UHA 9105	Schwarzbeck	-	*
[x] Biconical Ant. (30MHz-300MHz)	BBA 9106	Schwarzbeck	-	*
[x] Log Periodic Ant. (200MHz-1GHz)	3146	EMCO	-	*
[x] Horn Ant. (1GHz-18GHz)	3115	EMCO	-	*
[] DC Power Supply	6260B	H.P.	1145A04822	-
[] Audio Generator	LAV-190	LEADER	5020297	06/29/99-06/29/00
[] Volt Meter	3438A	H.P.	1717A-00613	06/16/99-06/16/00
[x] Shielded Room (5.0m x 4.5m)	-	SIN-MYUNG	-	-

* Each set of antennas has been calibrated to ensure correlation with ANSI C63.5 standard. The calibration of antennas is traceable to Korea Standard Research Institute(KSRI).