

EXHIBIT B

Test Report

Report No.	W1115558
Specifications	FCC Part 90 – Type Acceptance
Test Method	ANSI C63.4 1992
Applicant Address	No. 7, Ming Lee St., Chung Ho City, Taipei Hsien, Taiwan.
Applicant Items tested	Wintelectronics Ltd. Family Radio Service, Radio Transceiver
Model No.	FRS-110 (Sample #W11558)
Results	As detailed within this report
Sample received date	04 / 27 /1998 (month / day / year)
Prepared by	<u>Stephen Chen</u> project engineer
Authorized by	<u>Jacob Lin</u> Vice General Manager (Jacob Lin)
Issue date	<u>Aug 18</u> (month / day / year)
Modifications	None
Tested by	Training Research Co., Ltd.
Office at	2F, No. 571, Chung Hsiao E. Road, Sec.7, Taipei, Taiwan
Open site at	No. 5-3, Lane 21, Yen Chiu Yuan Rd., Sec.4, Taipei Taiwan

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 nay agency of U.S. Government.**

★ FCC ID : NJQFRS110

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Chapter 0 Application for Type Acceptance

- 2.983 (a) : Wintecronics Ltd. –applicant and manufacturer
- 2.983 (b) : The equipment is a FRS radio transceiver
Model : FRS-110
- 2.983 (c) : Quantity production is planned
- 2.983 (d) (1) : Type of emission – F3E- FM Modulation
- 2.983 (d) (2) : 462.56 Hz – 467.71 MHz
- 2.983 (d) (3) : 41.04 mW
- 2.983 (d) (4) : No recommendations as to standardized output power levels are made.
- 2.983 (d) (5) : Final RF amplifier stage current : 300mA, 4.5VDC
- 2.983 (d) (6) : Description in the Block Diagram
- 2.983 (d) (7) : Complete circuit diagrams are included . No modification was made.
- 2.983 (d) (8) : Instruction sheet to user included.
- 2.983 (d) (9) : Tune up procedure follows
- 2.983 (d) (10) : With 12.8 MHz crystal resonator .
- 2.983 (d) (11) : Description in the Block Diagram

Chapter 1 GENERAL

1.1 Introduction :

The following measurement report is submitted on behalf of Wintecronics Ltd. in support of a FRS radio transceiver certification in accordance with FCC Rules . 2.981 through 2.999 .

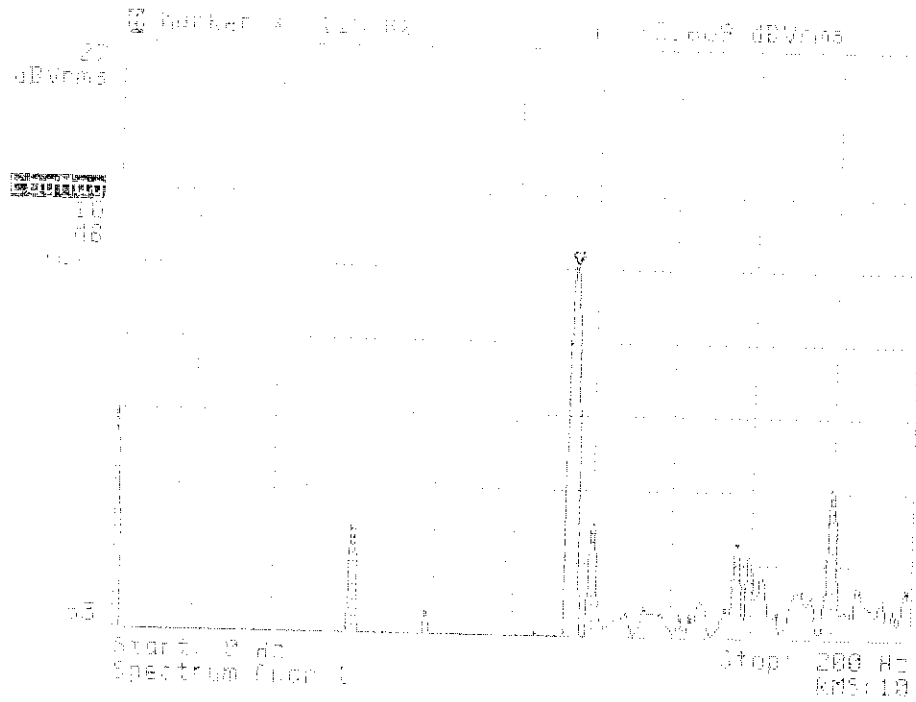
Description of EUT :

EUT	:	FRS radio transceiver
Model	:	FRS-110
Carrier Frequency Range	:	462.56-467.71 MHz
RF Power Output	:	41.04mW
Supply Voltage	:	DC 4.5V
Supply Current	:	300 mA
Frequency Response	:	100 Hz- 2.5 KHz
Frequency Stability	:	0.00025%
Operating Temperature	:	-30 to +50 degree centigrade

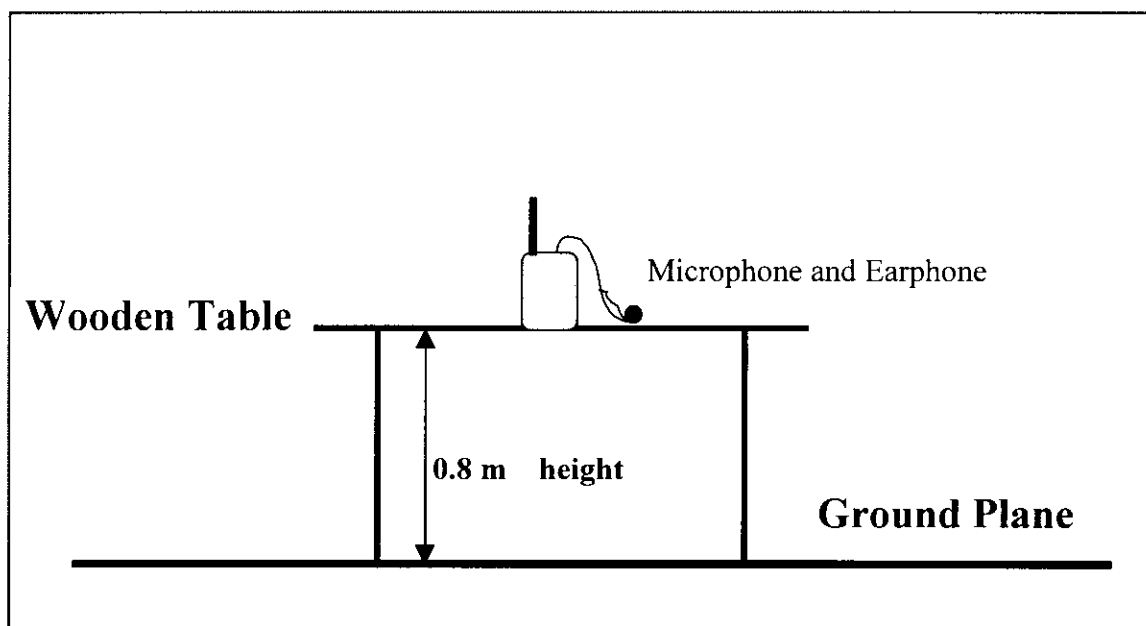
FRS radio transceiver is a transmitter which operates in the frequency range of 462.56-467.71 MHz (462.56 and 467.71 MHz tested). It has CTCSS mode and frequency of tone is 115 Hz that shown in the follow page with no page number .This transceiver is worn by a performer and other participants in a program, filming , reportingetc.

Number: 10
Overlap: 50

Acquire Rate: 10



1.3 Configuration of test setup



1.4 Location of the Measurement Site :

The radiated emissions measurements required by the Rules were performed on the Three-meter, open-field test site maintained by Training Research CO., Ltd., No. 5-3, Lane 21, Yen-Chiu-Yuan Rk., Sec. 4, Taipei, Taiwan, R.O.C. . Complete description and measurement data have been placed on file with the Commission. The conducted power line Emissions tests were performed in a shielded enclosure also located at the above facility. Training Research Co., Ltd. is listed by the FCC as a facility available to do measurement work for others on a contract basis.

1.5 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 was 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.

Chapter 2 Frequencies and Channels

Verify the Frequency :

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	462.5625	8	467.5643
2	462.5880	9	467.5892
3	462.6134	10	467.6138
4	462.6373	11	467.6387
5	462.6635	12	467.6645
6	462.6884	13	467.6882
7	462.7135	14	467.7125

Chapter 3 Power Output Measurement

3.1 Rules and Specification Limits

The manufacturer shall specify the carrier output power rating and it shall not be higher than 500 mW that for which the equipment has been type accepted by the FCC .

No recommendations as to standardized output power levels are made .

3.2 Test condition and setup :

1. Measurement was made on open-field test site. The EUT system was placed on non-conductive turntable which is 0.8 meters height, top surface 1.0 X 1.5 meter. The EUT was placed in three direction of the space in order to obtain maximum emission.
2. A biconical antenna and log antenna with horizontal and vertical polarization was raised from 1 – 4 meter as well as the turntable was rotate from 0 to 360 degree to search for the maximum Field Strength Spectrum where the spectrum analyzer was operated in the quasi-peak detection mode . Recorded all the values which measured under horizontal and vertical position for the biconical antenna .
3. The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in Watt.
 - (1) The actual field intensity in decibels referenced to 1 micro volt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) at the appropriate frequency.

- (2) The field intensity in Volt can then be determined by the following equation:

$$FI(\text{Volt}) = 10^{FI(\text{dBuV/m})/20} \times 10^{-6}$$

The field intensity in Watt can then be determined by the following equation :

$$P(\text{watt}) = FI^2(\text{Volt}) \times d^2(\text{meter}) / 49.2$$

P : Power in Watt

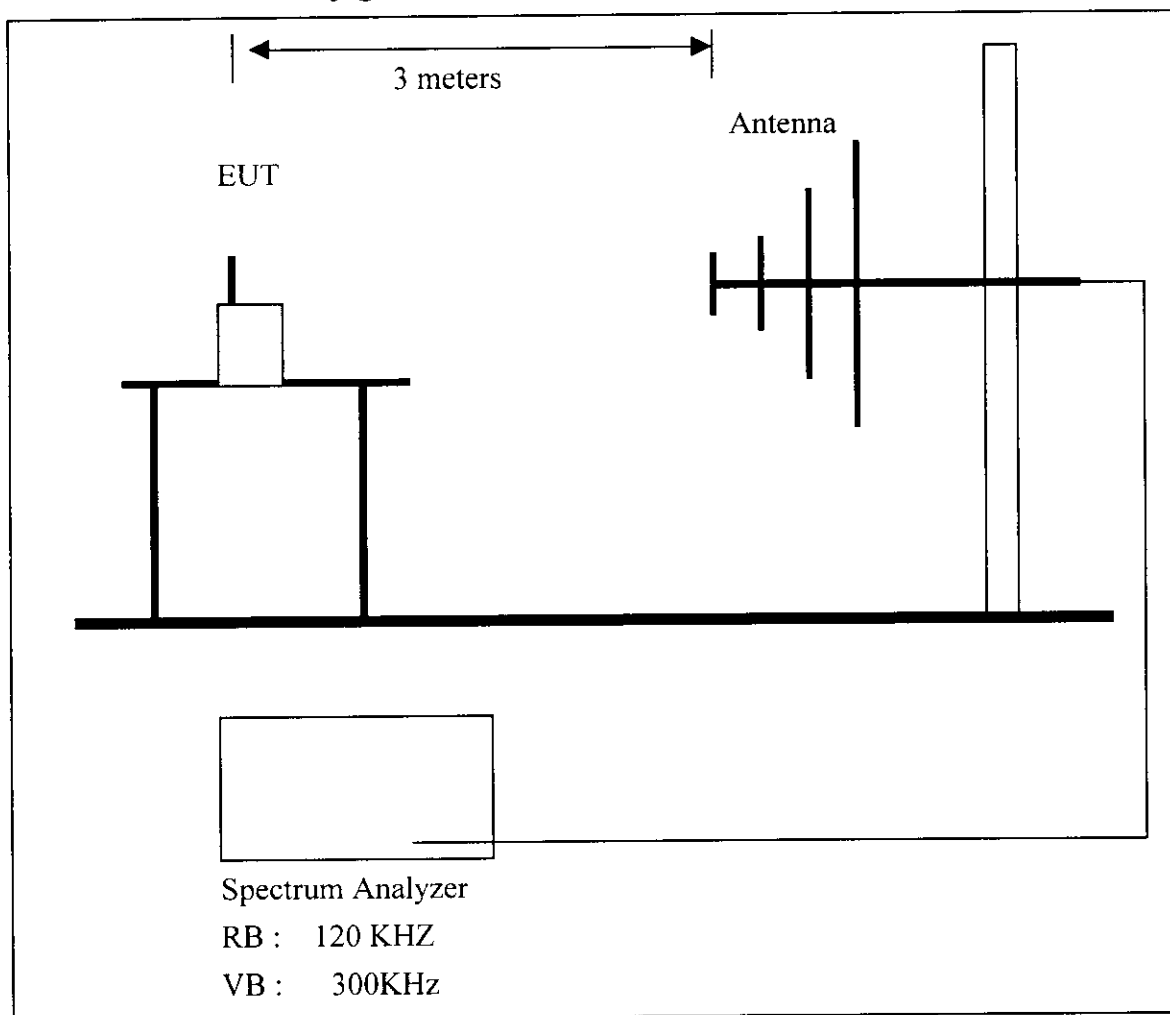
D : Measurement Distance (3 M)

3.3 List of test Instrument :

Instrument name	Model No.	Brand	Serial No.	<u>Calibration Date</u>	
				Last	Next
Spectrum analyzer	8568B	H P	3004A18617	05/15/97	05/15/98
Quasi-peak Adapter	85650A	H P	2521A00984	05/15/97	05/15/98
RF Pre-selector	85685A	H P	2947A01011	05/15/97	05/15/98
Spectrum analyzer	8594EM	H P	3619A00198	08/07/96	08/07/97
Antenna(30M-2G Hz)	3142	EMCO	9610-1094	10/30/96	10/30/97
Open test side (Antenna ,Amplify, cable calibrated together)				05/15/97	05/15/98

The level of confidence of 95% ,the uncertainty of measurement of radiated emission is ± 4.96 dB .

3.4 Measurement Configuration



3.5 Measurement Result

Channel	Frequency (MHz)	A. P. (H/V)	Amplitude (dB/UV)	E.R.P. (mW)
01	462.56	H	98.55	1.30
		V	112.36	31.49
14	467.71	H	101.80	2.76
		V	113.51	41.04

The maximum field measured is 113.51 dBuV/m .

$$FI \text{ (Volt)} = 10^{113.51/20} \times 10^{-6} = 0.47369V$$

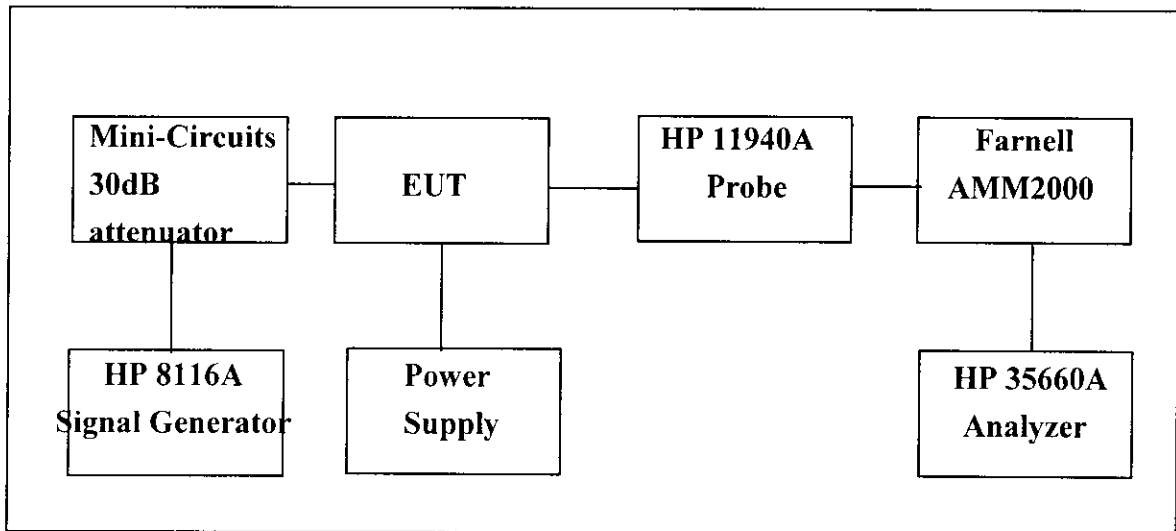
$$FI \text{ (mW)} = (0.47369 \times 3)^2 / 49.2 = 41.04 \text{ mW}$$

Chapter 4 Modulation Characteristics Measurement

4.1 Rules and Specification Limits

- 2.987(a) Voice modulated communication equipment
- 2.987(b) Equipment which employs modulation limiting

4.2 Test Configuration & List of Test Instruments



List of test instrument :

Manufacturer	Device	Model	Input Impedance
HP	Dynamic Signal Analyzer	HP35660A	50
HP	Signal Generator 50 MHz	HP8116A	50
Farnell	Modulation Meter	AMM2000	----
HP	Close-Field Probe 30M~1GHz	11940A	----

4.3 Frequency Response of Audio Modulation Circuit Measurement

Condition & Setup

2.987 (a)

1. The EUT and test equipment were set up as shown on the Section 4.2 . .
2. The Plus/Function generator was connected to the audio input circuit/microphone of the EUT .
3. The audio signal input was adjusted to obtain 50% modulation at 1 KHz .
4. With input levels held constant and below limiting at all frequencies , the generator was varied from 100 Hz to 50 kHz .
5. The response in dBVrms relative to 1kHz was then measured, using the HP 35660A Dynamic Signal Analyzer as follow two pages that have no page number .

Offset: OFF
X Ref: 51.2 kHz

Y Ref: -40 dBVrms

OVERVIEW IN PROGRESS

Meas

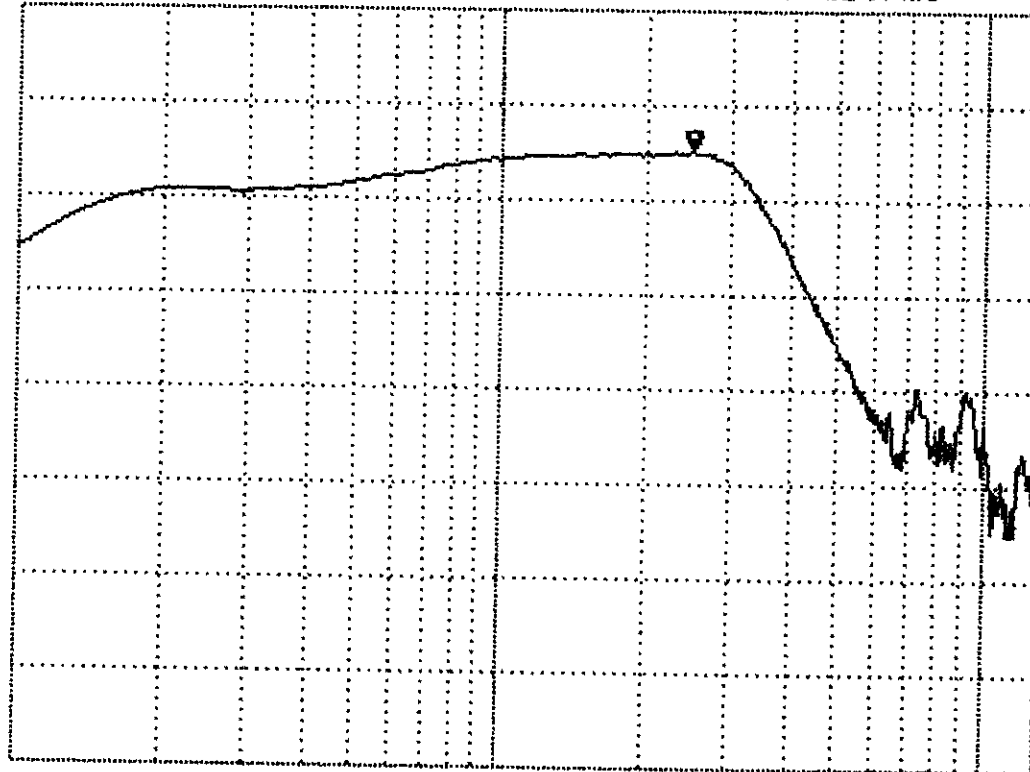
Marker X: 2.5 kHz

Y: -3.911 dBVrms

11
dBVrms

10
dB
/div

-69



Start: 100 Hz
Spectrum Chan 1

Stop: 12.9 kHz
PEAK: 1535

20 kHz -50.87

30 kHz -53.47

50 kHz -62.71

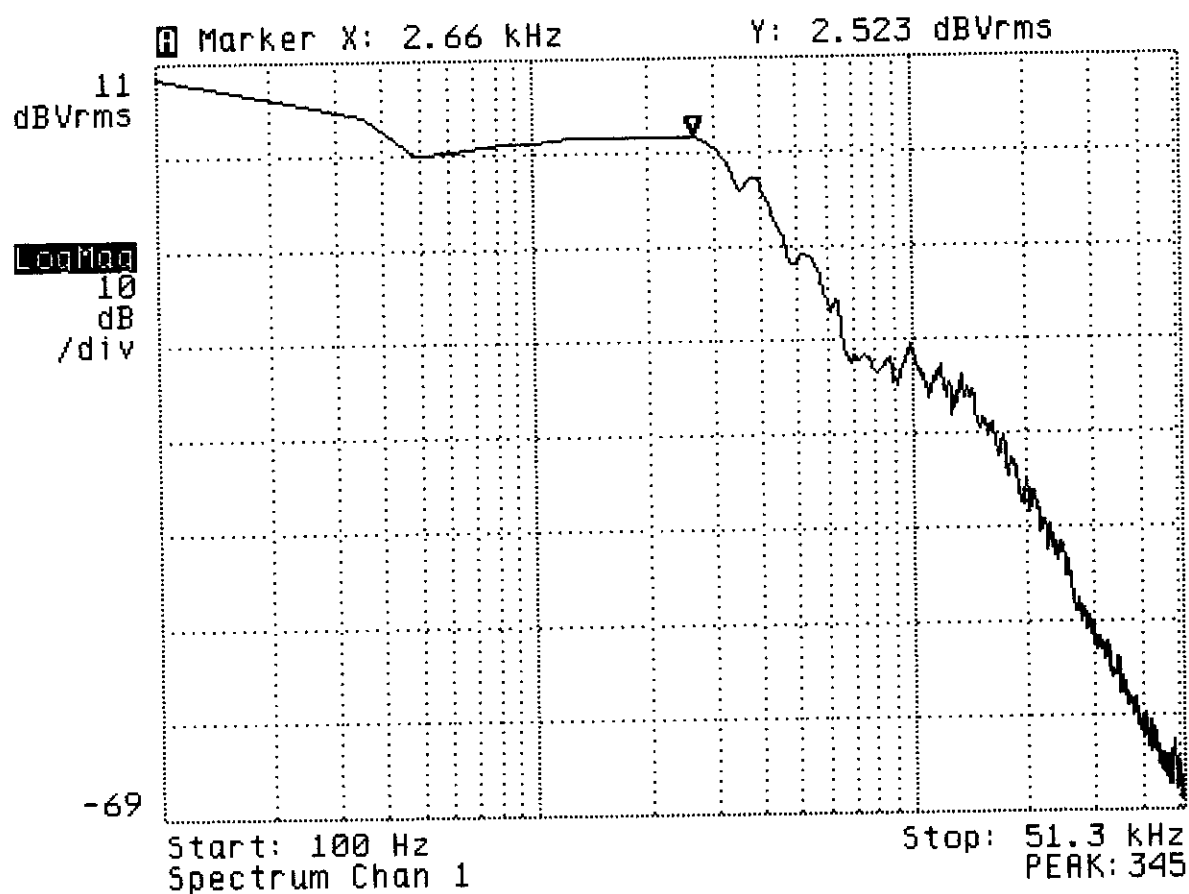
Frequency Response of Audio Modulation Circuit Measurement.

Number: 10
Overlap: 0%

Update Rate: 5

AVERAGE IN PROGRESS

Meas



Ch 14

Frequency Response of Audio Modulation Circuit Measurement

4.4 Frequency Response of Audio Low Pass Filter Measurement Condition & Setup

1. The measurement condition and setup as Section 4.3 .
2. With input levels held constant and below limiting at all frequencies , the generator was varied from 1kHz to 100 kHz .
3. The response in dBVrms relative to 1kHz was then measured, using the HP 35660A Dynamic Signal Analyzer as follow two pages that have no page number .
4. The ch01 and ch 14 are tested .

4.5 Modulation Limiting Measurement Condition & Setup

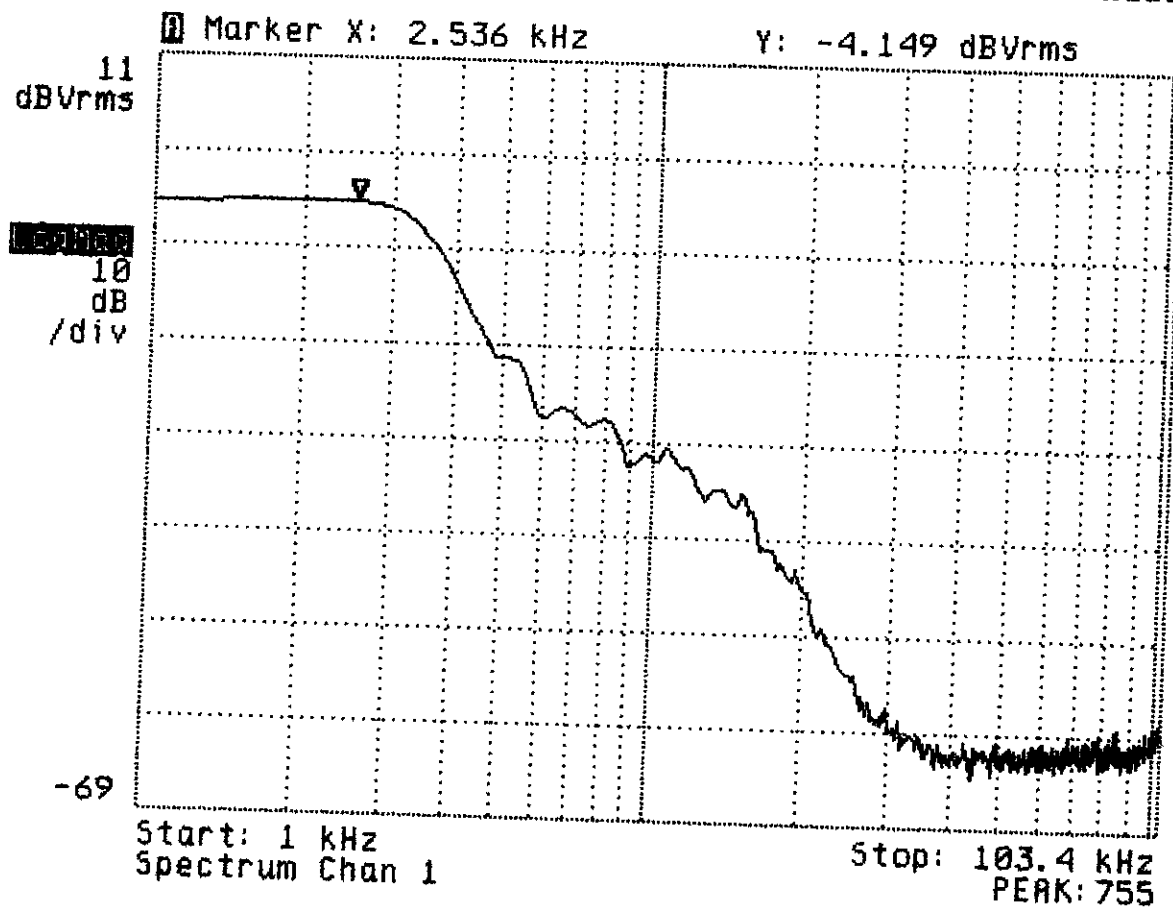
1. The signal generator was connected to the input of the EUT as for “Frequency Response of the Modulating Circuit”.
2. The modulation response was measured for each of three frequencies : 100Hz, 1KHz and 2.5KHz .
3. The input level was varied from 30% modulation to at least 20 dB higher than the saturation point .
4. Measurements were performed for both negative and positive modulation and the respective results were recorded .
5. Measurement results as Chart 4.1 to 4.4

Number: 10
Overlap: 0%

Update Rate: 5

AVERAGE IN PROGRESS

Meas



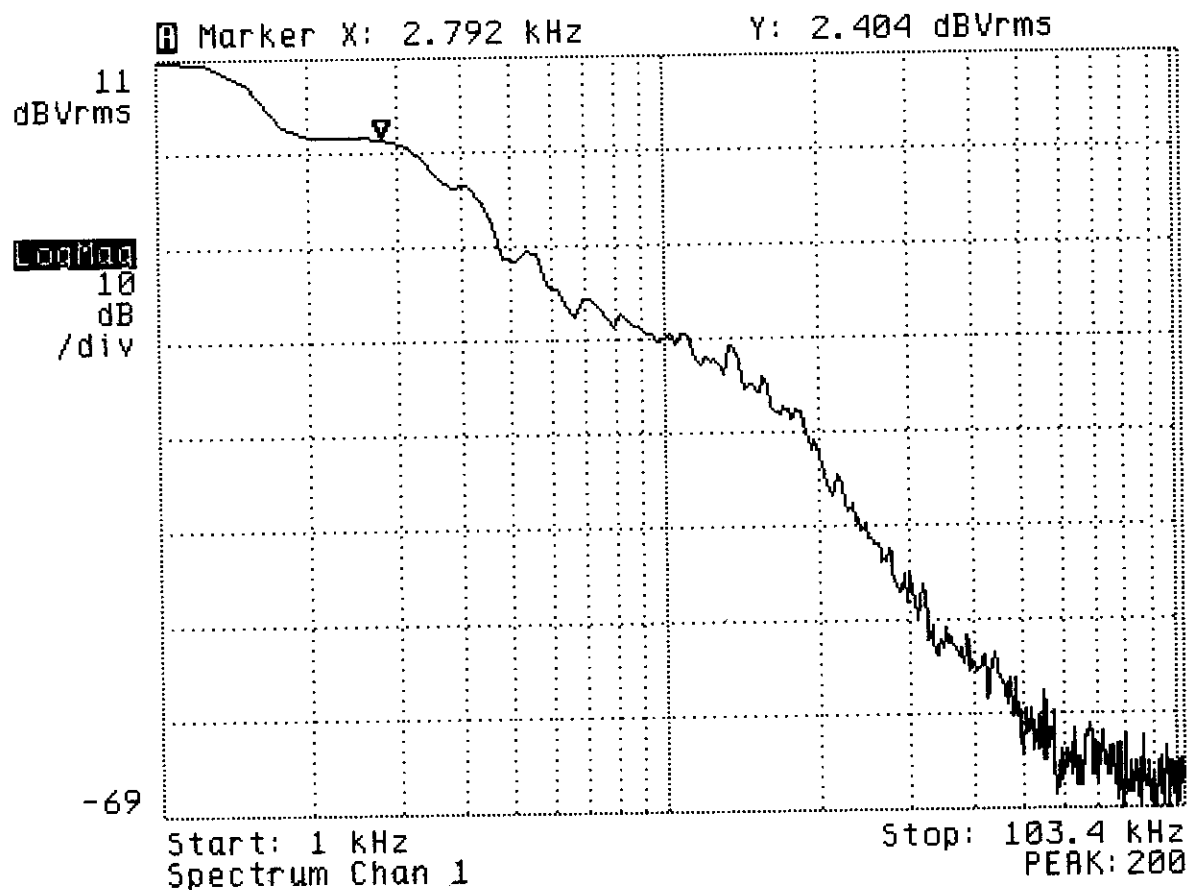
Frequency Response of Audio Low pass Filter Measurement

Number: 10
Overlap: 0%

Update Rate: 5

AVERAGE IN PROGRESS

Meas



ch14

Frequency Response of Audio Low Pass Filter Measurement

Chart 4.1 Modulation Limiting Measurement Ch01 Positive

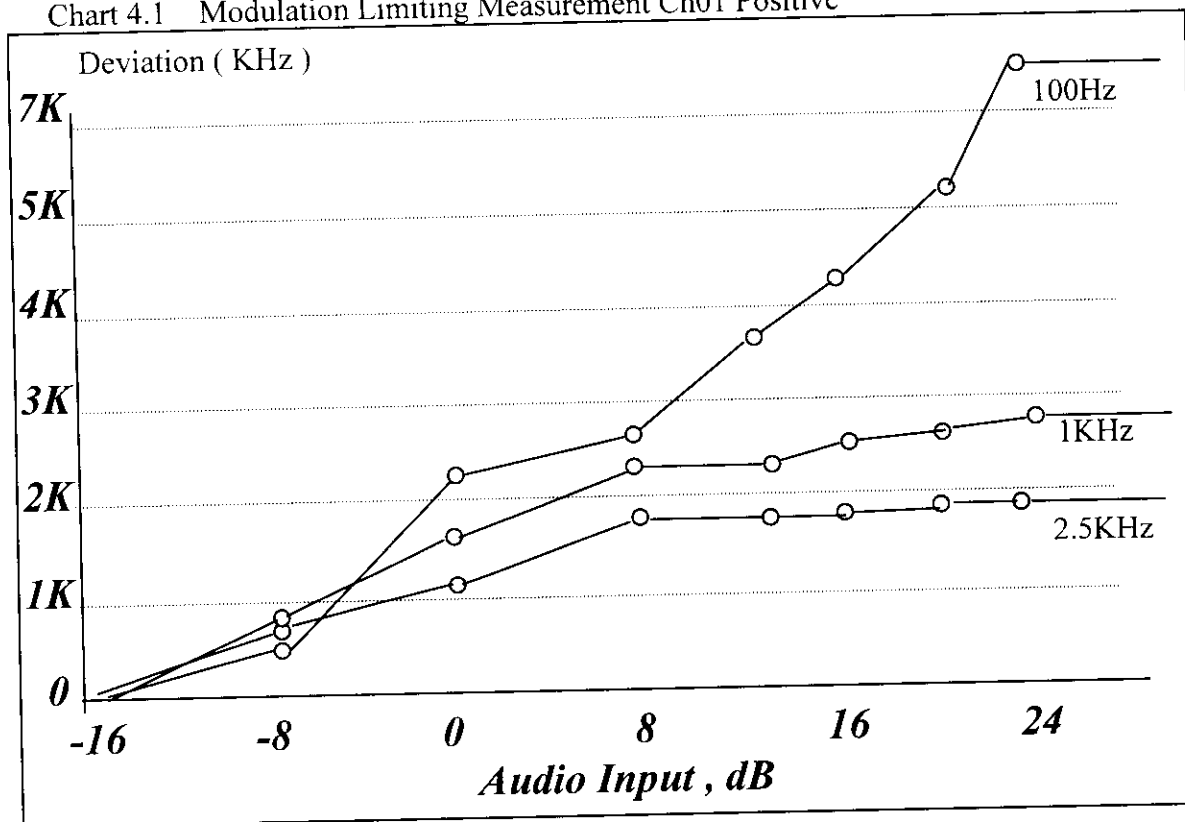


Chart 4.2 Modulation Limiting Measurement Ch01 Negative

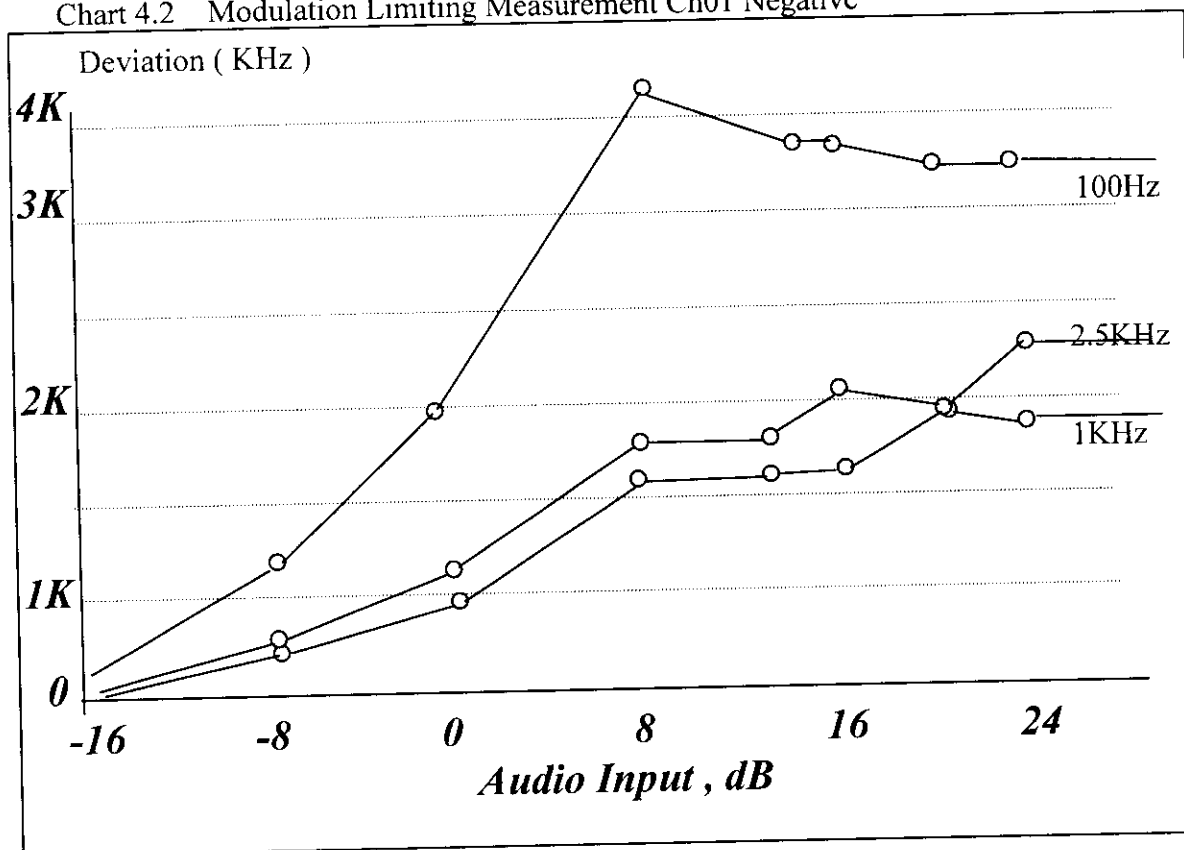


Chart 4.3 Modulation Limiting Measurement Ch14 Positive

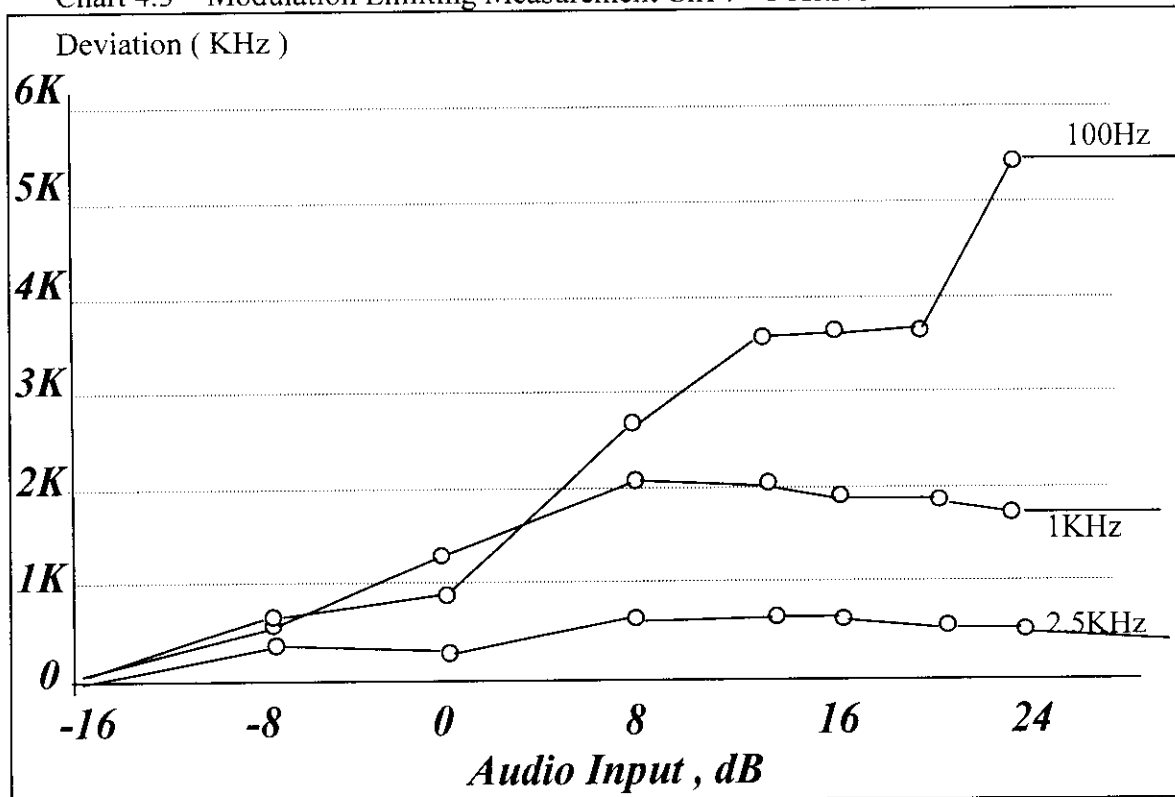


Chart 4-4 Modulation Limiting Measurement Ch14 Negative

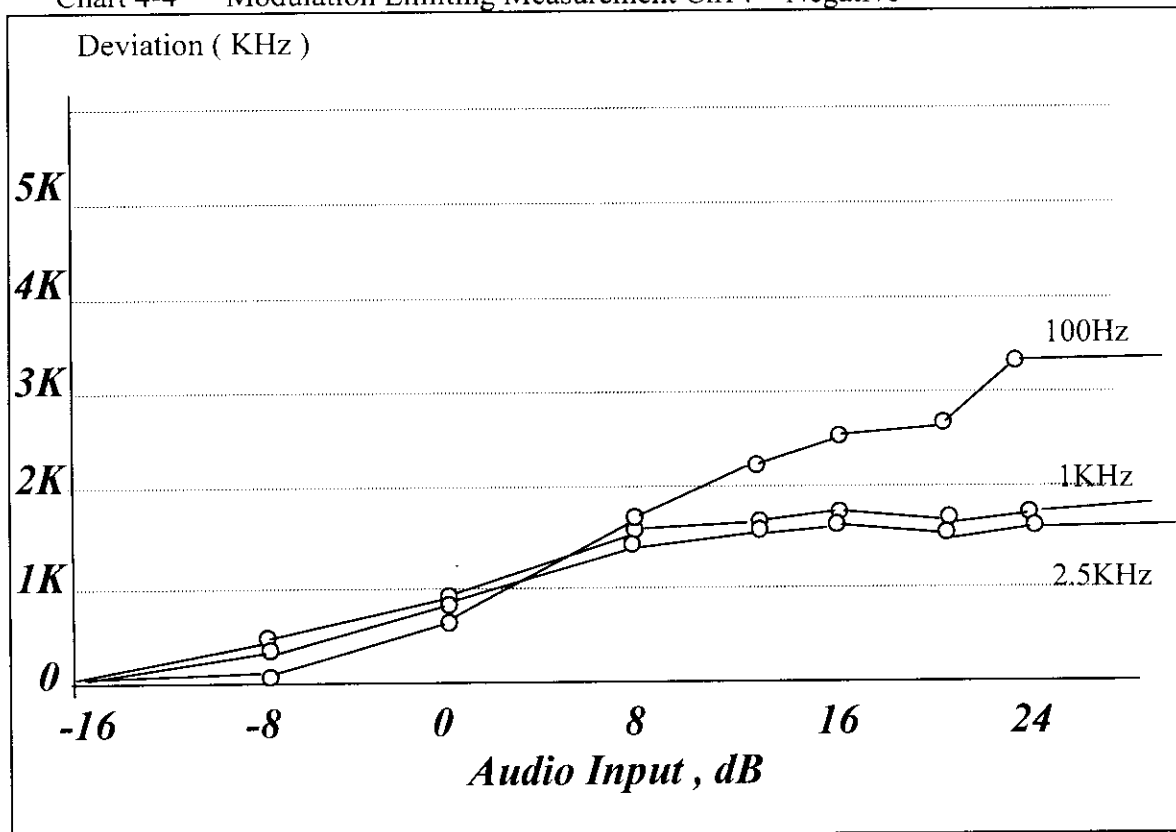


Chart 5 Occupied Bandwidth Measurement

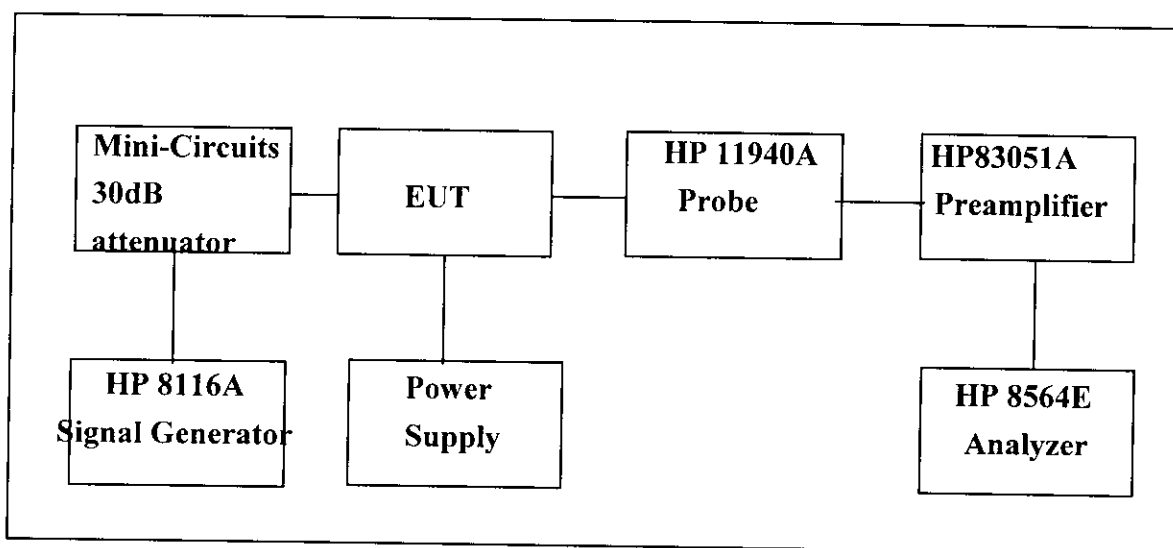
5.1 Rules and Specification Limits

90.210(d)(1) : On any frequency from the center of the authorized bandwidth f_0 to 5.625 KHz removed from f_0 : Zero dB.

90.210(d)(2): On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.625kHz but no more than 12.5 kHz : At least $7.27(f_d - 2.88 \text{ kHz})$ dB.

90.210(d)(3) : On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz : At least $50 + 10 \log(P)$ dB or 70 dB , whichever is the lesser attenuation .

5.2 Test Configuration & List of Test Instruments



List of test Instrument :

Instrument name	Model No.	Brand	Serial No.
Spectrum analyzer(9K~40GHz)	8564E	H P	
Preamplifier(45M~50GHz)	83051A	HP	VS36433002
Close-Field Probe 30M~1GHz	11940A	HP	----

5.3 Measurement Procedure

1. For EUT's supporting audio modulation, the audio signal generator was adjusted to the frequency of maximum response and with output level set for +/- 2.5 KHz (or 50% modulation) . With level constant , the signal level was increased 16 dB
2. For EUT's supporting digital modulation, the digital modulation mode was operated to its maximum extent
3. The occupied Bandwidth was measured as follow four pages with no page number ..

5.4 Calculation of Necessary Bandwidth (Bn)

$$B_n = 2M + 2D$$

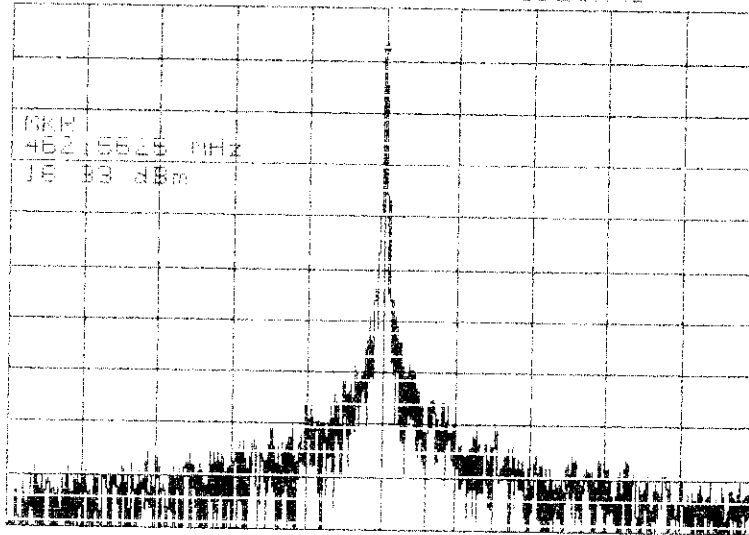
$$M = \text{Max. Modulation Frequency} = 2.5 \text{ KHz}$$

$$D = \text{Peak Frequency Deviation} = 7.28 \text{ KHz} \quad (\text{Chart 4-1})$$

$$K = 1$$

$$B_n = 19.56 \text{ KHz}$$

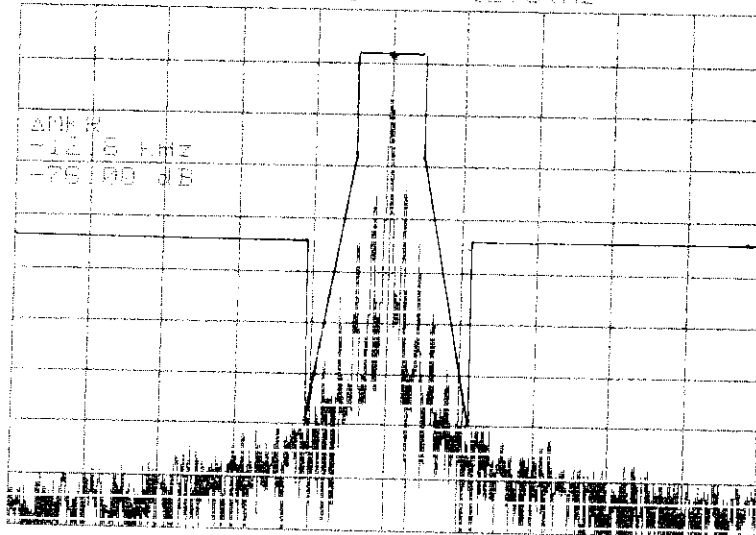
ATTEN 40dB MKR 15.32dBm
 RL 25.0dBm 10dB 462.5625MHz



ch01

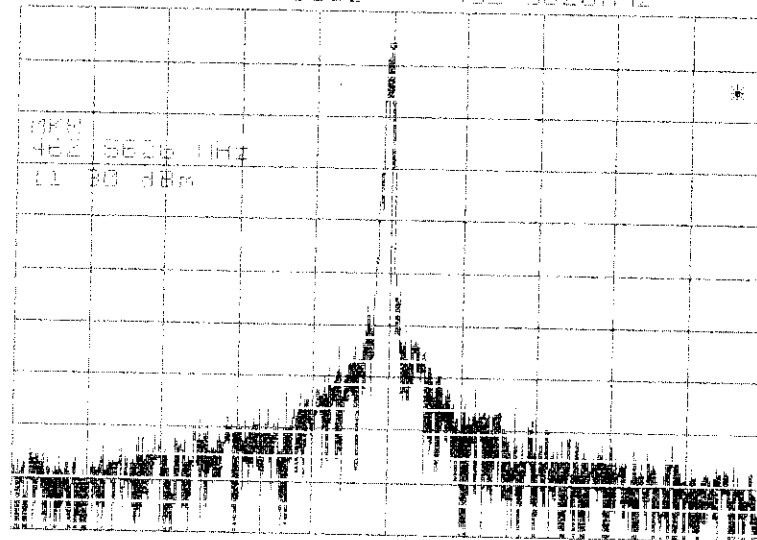
CENTER 462.5625MHz SPAN 120.0kHz
 *RBW 100Hz VBW 100Hz SWP 9.60sec

ATTEN 40dB ΔMKR -75.00dB
 RL 25.0dBm 10dB -12.6kHz



CENTER 462.5625MHz SPAN 120.0kHz
 *RBW 100Hz VBW 100Hz SWP 9.60sec

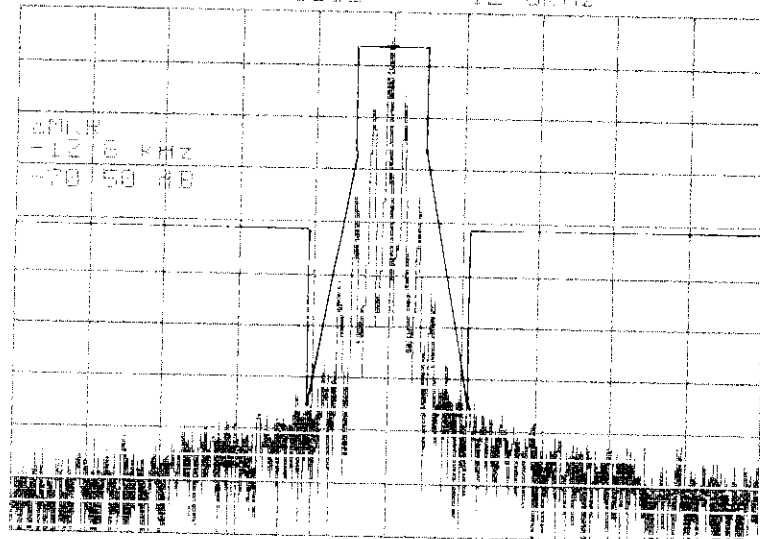
ATTEN 30dB
RL 13 8dBm 10dB/
MKR 11 30dBm
452 5528MHz



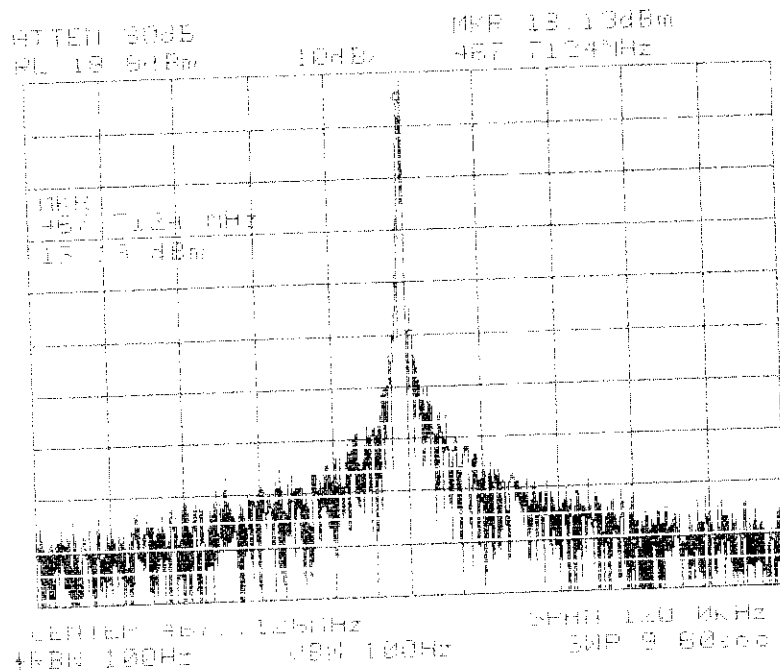
CENTER 452 5528MHz
*RBW 100Hz USB 100Hz
SPAN 2.20 VHz
SWP 3 60sec

Ch1
in CTS Mode

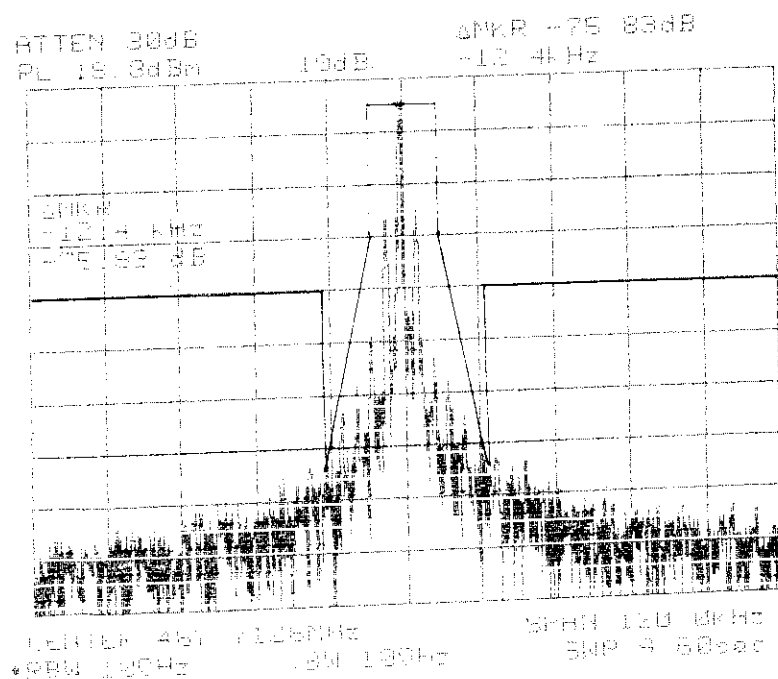
ATTEN 30dB
RL 13 8dBm 10dB/
MKR -70.50dB
-12.5kHz

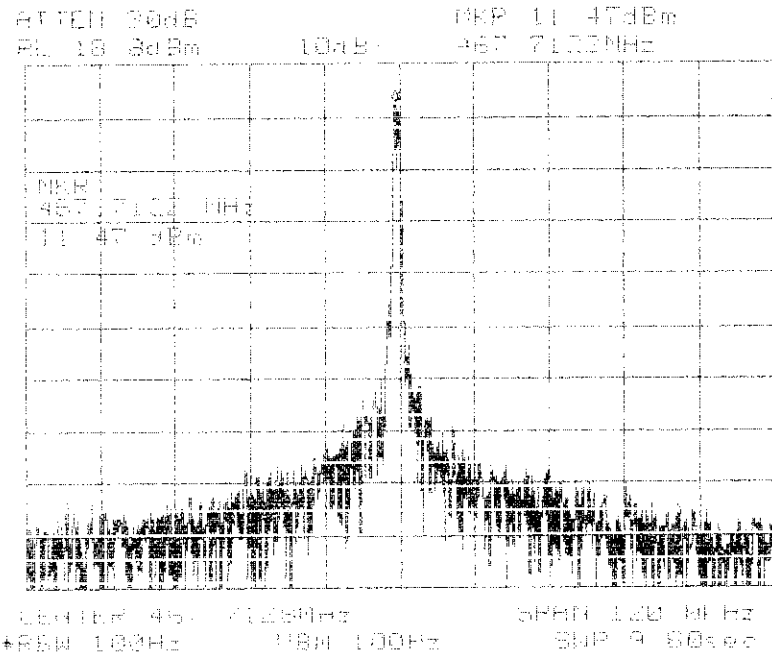


CENTER 452 5528MHz
*RBW 100Hz USB 100Hz
SPAN 1.0 VHz
SWP 3 60sec



CH1





3014
 in COTS Mode

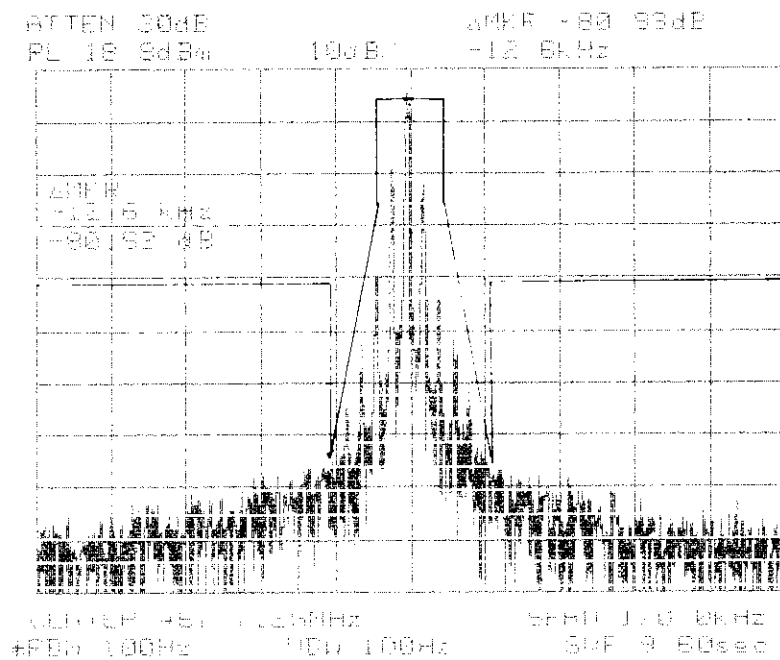


Chart 6 . Field Strength of Spurious Radiation Measurement

6.1 Rules and Specification Limits

2.993 (a) : Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits,. Power leads, or intermediate circuit elements under normal conditions of installation and operation.

90.210(d)(3) : On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz : At least $50+10 \log (P)$ dB or 70 dB , whichever is the lesser attenuation .

2.997 : In all measurements set forth , the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency.

6.2 Measurement Condition & Setup

Prior to open-field testing, the EUT was placed in a shielded enclosure and scanned at a close 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 open-field tests. 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, open-field test site. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter.

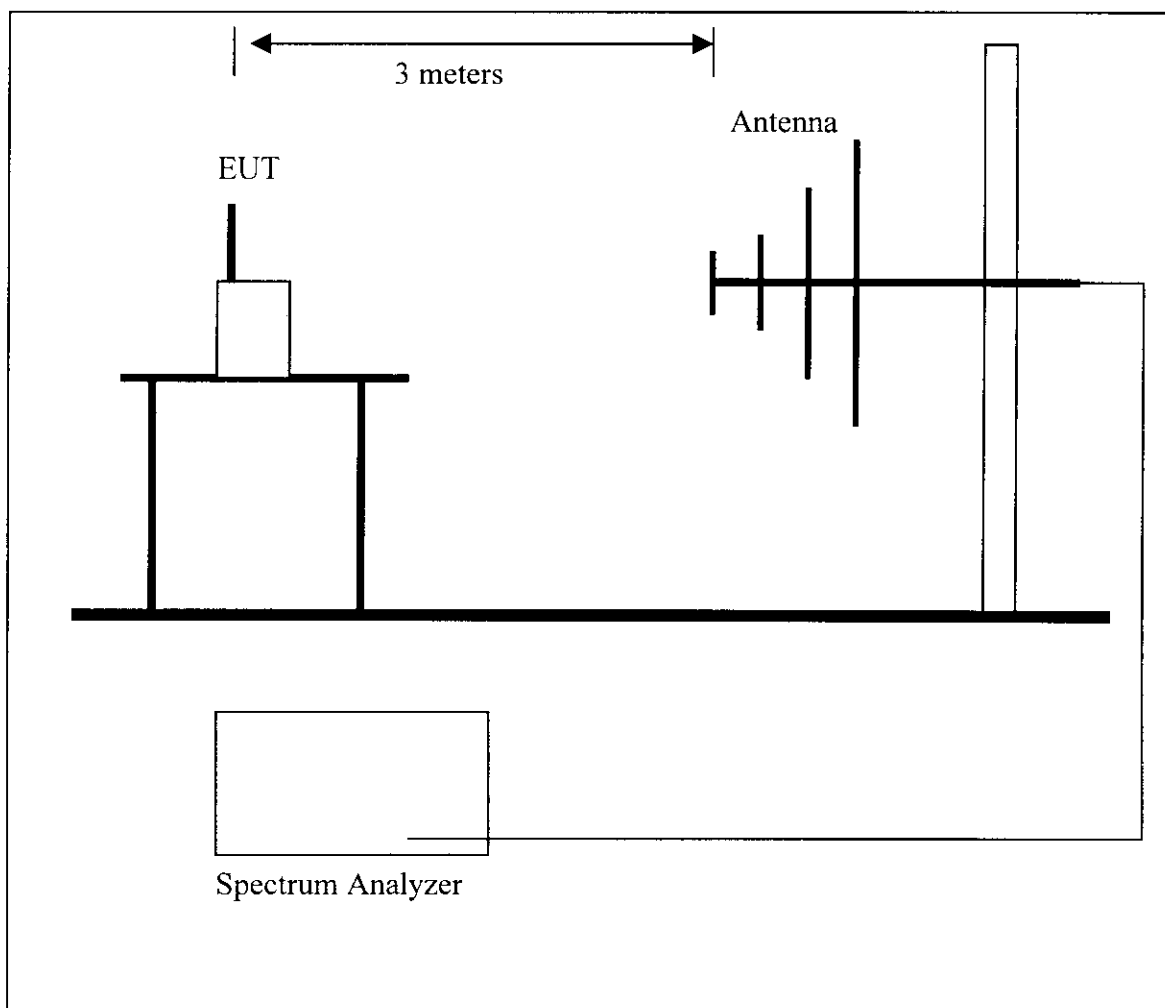
The spectrum was examined from 30 MHz to 1000 MHz using an Hewlett Packard 8591A Spectrum Analyzer, EMCO Biconical Antenna (Model 3110) for 30 - 200 MHz, EMCO Log-Periodic Antenna (Model 3146) for 200 - 1000 MHz and spectrum was examined from 1 GHz to 22GHz using an Hewlett Packard 8564E Spectrum Analyzer, EMCO Horn Antenna (Model 3115) for 1 G - 18 GMHz.

At each frequency, the EUT was rotated 360 degrees, 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 ,HP8568b for frequency 30MHz to 1000MHz, and HP8564E for frequency 1 GHz to 22 GHz. No post-detector video filters were used in the test. The spectrum analyzer's 6 dB bandwidth was set to 120 KHz (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 1 GHz to 22GHz) and the analyzer was operated in the maximum hold mode.

6.3 List of Measurement Instruments

Manufacturer	Device	Model	Input Impedance
Hewlett Packard	9KHz-2.9 GHz Spectrum Analyze	HP8594EM	50.00
Hewlett Packard	9kHz-40GHz Spectrum Analyzer	HP8564E	50.00
Hewlett Packard	10KHz-1GHz Quasi-peak Adapter	HP85650A	50.00
Hewlett Packard	20Hz-2GHz RF Preselector	HP85685A	50.00
Hewlett Packard	45MHz-50GHz Preamplifier	HP83051A	50.00
Anritsu	0.1-1200MHz Preamplifier	MH648A	50.00
EMCO	20-300MHz Biconical Antenna	3110.00	50.00
EMCO	200-1000MHz Log-Periodic Antenna	3146.00	50.00
EMCO	1G-18GMHz Double Ridge Antenna	3115.00	50.00
TRC	Open Field Test Site	TRC-OFTS1	N/A
TRC	Notch Filter	N/A	50.00
TRC	Horn Antenna with Amplifier	TRC1	50.00

6.4 Measurement Configuration



6.5 Measurement Result :(30M-1GHz , Ch01 Horizontal)

Test Conditions:

Testing room : Temperature : 22° C Humidity : 54% RH
 Testing site : Temperature : 23 ° C Humidity : 70 % RH

Frequency	Reading	Ant.	Table	Correction	Corrected	limit	Margin
	Amplitude	Height		Factors	Amplitude		
MHz	dBuV	m	degree	dB/m	dBuV/m	dBuV/m	dB
925.12	65.94	1	246	-5.59	60.35	77.39	-17.04

Radiated Emission Test Result :(30M-1GHz , Ch01 Vertical)

Frequency	Reading	Ant.	Table	Correction	Corrected	limit	Margin
	Amplitude	Height		Factors	Amplitude		
MHz	dBuV	m	degree	dB/m	dBuV/m	dBuV/m	dB
925.12	70.15	1	49	-5.59	64.56	77.39	-12.83

Note:

- 1.Margin = Amplitude - limit, *if margin is minus means under limit.*
- 2.Corrected Amplitude = Reading Amplitude - Correction Factors
- 3.Correction factor = Antenna factor + (Cable Loss - Amplitude gain)
 (For example : 30MHz correction factor = 15.5 + (-15.26) = 0.24 dB/m)
4. Attenuation required = $50 + 10 \log (41.04 \text{ mW}) = 36.12$
 Limit = $113.51 - 36.12 = 77.39$
- 5.All emissions are less than 20 dB .

(30M-1GHz , Ch14 Horizontal)

Frequency	Reading	Ant.	Table	Correction	Corrected	limit	Margin
	Amplitude	Height		Factors	Amplitude		
MHz	dBuV	m	degree	dB/m	dBuV/m	dBuV/m	dB
935.42	63.58	1	193	-5.57	58.28	77.39	-19.11

Radiated Emission Test Result :(30M-1GHz , Ch14 Vertical)

Frequency	Reading	Ant.	Table	Correction	Corrected		Margin
	Amplitude	Height		Factors	Amplitude	limit	
MHz	dBuV	m	degree	dB/m	dBuV/m	dBuV/m	dB
935.42	69.04	1	207	-5.57	63.47	77.39	-13.92

Note:

4.Margin = Amplitude - limit, *if margin is minus means under limit.*

5.Corrected Amplitude = Reading Amplitude - Correction Factors

6.Correction factor = Antenna factor + (Cable Loss - Amplitude gain)

(For example : 30MHz correction factor = 15.5 + (-15.26) = 0.24 dB/m)

4. Attenuation required = 50 + 10 log (41.04 mW) =36.12

Limit =113.51-36.12 =77.46

5.All emissions are less than 20 dB .

6.6 Measurement Result :(1GHz-18GHz , Ch01 Horizontal)

Frequency (GHz)	Amplitude (dBuV)	Limit (dBuV/m)	Margin Db
1.3873	50.63	54	-3.37
1.8504	50.13	54	-3.87
2.3123	45.13	54	-8.87
2.7748	47.63	54	-6.37
3.2377	44.43	54	-9.57
3.7002	46.97	54	-7.03
4.1633	43.97	54	-10.03
4.6258	46.63	54	-7.37
5.0883	46.47	54	-7.53
5.5513	45.30	54	-8.70
6.0134	47.30	54	-6.70

(1GHz-18GHz , Ch01 Vertical)

Frequency (GHz)	Amplitude (dBuV)	Limit (dBuV/m)	Margin Db
1.3873	52.97	54	-1.03
1.8504	52.13	54	-1.87
2.3123	51.80	54	-2.20
2.7748	47.13	54	-6.87
3.2377	46.47	54	-7.53
3.7002	43.97	54	-10.03
4.1633	43.30	54	-10.70
4.6258	47.47	54	-6.53
5.0883	45.63	54	-8.37
5.5513	47.63	54	-6.37
6.0134	48.13	54	-5.87

(1GHz-18GHz , Ch14 Horizontal)

Frequency (GHz)	Amplitude (dBuV)	Limit (dBuV/m)	Margin Db
1.4031	51.80	54	-2.20
1.8707	50.13	54	-3.87
2.3383	46.97	54	-7.03
2.8058	49.63	54	-4.37
3.2737	43.30	54	-10.70
3.7417	43.47	54	-10.53
4.2095	50.13	54	-3.87
4.6770	46.97	54	-7.03
5.1446	46.30	54	-7.70
5.6122	50.97	54	-3.03
6.0807	47.80	54	-6.20

(1GHz-18GHz , Ch14 Vertical)

Frequency (GHz)	Amplitude (dBuV)	Limit (dBuV/m)	Margin Db
1.4031	52.97	54	-1.03
1.8707	48.30	54	-5.70
2.3383	50.97	54	-3.03
2.8058	50.30	54	-3.70
3.2737	46.63	54	-7.37
3.7417	46.30	54	-7.70
4.2095	48.13	54	-5.87
4.6770	45.63	54	-8.37
5.1446	50.30	54	-3.70
5.6122	51.63	54	-2.37
6.0807	49.30	54	-4.70

Chart 7 Frequency Stability Tolerance Measurement

7.1 Rules and Specification Limits

95.627(b) : Each FRS unit must be maintained within a frequency tolerance of 0.00025%.

7.2 Measurement Condition & Setup with Temperature Variation

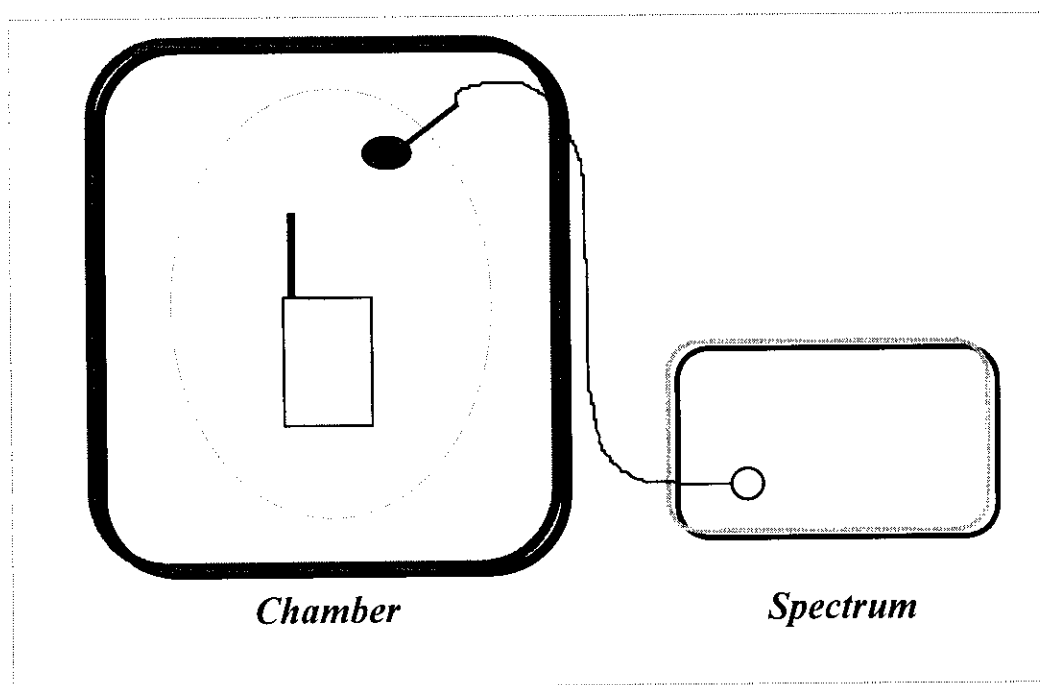
1. Place the EUT in the chamber, powered in its normal operation .
2. Set the temperature of the chamber –30 degree Centigrade. Allow the equipment to stabilize at that temperature .
3. Measured the carrier frequency using preamplifier and frequency counter.
4. Repeated procedures 1 to 3 from –20 to 50 degree Centigrade at internals of 10 degree.

7.3 List of Measurement Instruments with Temperature Variation

List of test Instrument :

<u>Instrument name</u>	<u>Model No.</u>	<u>Brand</u>	<u>Remark</u>
Spectrum Analyzer	8591A	H P	1.8GHz
Temperature Chamber	THS-MV2	King Son	
Near field Probe	7405-901	EMCO	
Power Supply			
Auto Transformer	Powerstat	Supprior Elec. Co.	

7.4 Measurement Configuration of Temperature variation test :



7.5 Measurement Result with Temperature Variation

A plot and table is presented which illustrates compliance with the rule where the center frequency is CH01 :462.56 MHz and CH14 :467.71MHz .

Temperature Variation Table (CH 01)

Temperature (Centigrade)	Frequency (MHz)	Tolerance (MHz)
-30	462.5625	462.5614~462.5636
-20	462.5630	462.5614~462.5636
-10	462.5630	462.5614~462.5636
0	462.5625	462.5614~462.5636
10	462.5625	462.5614~462.5636
20	462.5632	462.5614~462.5636
30	462.5625	462.5614~462.5636
40	462.5630	462.5614~462.5636
50	462.5625	462.5614~462.5636

Temperature Variation (CH 14)

Temperature (Centigrade)	Frequency (MHz)	Tolerance (MHz)
-30	467.7132	467.7114~467.7136
-20	467.7130	467.7114~467.7136
-10	467.7130	467.7114~467.7136
0	467.7125	467.7114~467.7136
10	467.7130	467.7114~467.7136
20	467.7130	467.7114~467.7136
30	467.7130	467.7114~467.7136
40	467.7125	467.7114~467.7136
50	467.7125	467.7114~467.7136

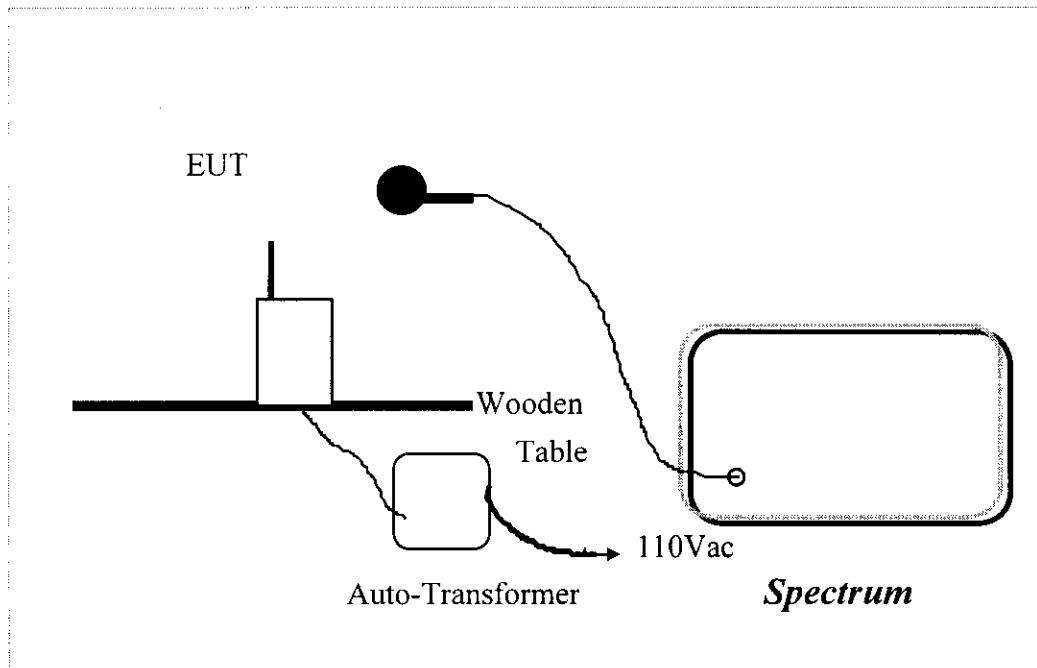
7.6 Measurement Condition & Setup with Voltage Variation

1. Attached the power line of the power supply to the battery position of the EUT.
2. Tuned the output power level to battery end point , 85 % , 100%, 115% of the normal operation power of EUT.
3. Recorded the frequency with a frequency counter .

7.7 List of test Instrument :

Instrument name	Model No.	Brand	Remark
Spectrum Analyzer	8591A	H P	1.8GHz
Temperature Chamber	THS-MV2	King Son	
Near field Probe	7405-901	EMCO	
Power Supply			
Auto Transformer	Powerstat	Supprior Elec. Co.	

7.8 Configuration of Voltage variation test :



7.9 Measurement Result with Voltage Variation

Frequency Stability of Voltage Variation Measurement Table (CH 01)

Supply Voltage (Volt)	Frequency (MHz 0	Tolerance (MHz)
3.825 (85%)	462.5625	462.5614~462.5636
4.5 (100%)	426.5625	462.5614~462.5636
5.175 (115%)	426.5625	462.5614~462.5636

Voltage Variation (CH 14)

Supply Voltage (Volt)	Frequency (MHz 0	Tolerance (MHz)
3.825 (85%)	467.7130	467.7114~467.7136
4.5 (100%)	467.7125	467.7114~467.7136
5.175 (115%)	467.7125	467.7114~467.7136