

TEST REPORT.

Reference Number : T93165A

Date : 16 November 1993

EQUIPMENT MAKE : TAIT

EQUIPMENT MODEL : T2010-613

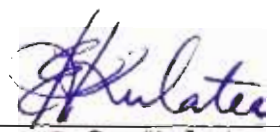
SERIAL NUMBER : 385527

COUNTRY OF ORIGIN : NEW ZEALAND

SUBMITTER :

TAIT ELECTRONICS LTD
558 WAIRAKEI RD
PO BOX 1645
CHRISTCHURCH
NEW ZEALAND

Technical Officer


E.S. Kulatea

Chief Technical Officer


W.C. Zwart

The results in this report relate only to the item tested.

This Report Contains: 14 pages of Preamble/Results
1 page of Appendix

If reproduced, all pages must be reproduced in full.

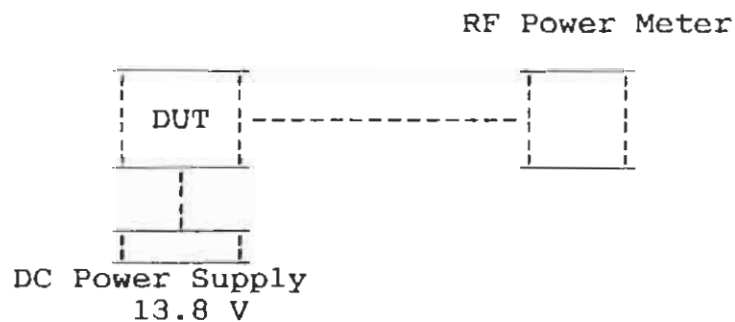
Code of Federal Regulation 47

Part 90

PRIVATE LAND-MOBILE RADIO SERVICES

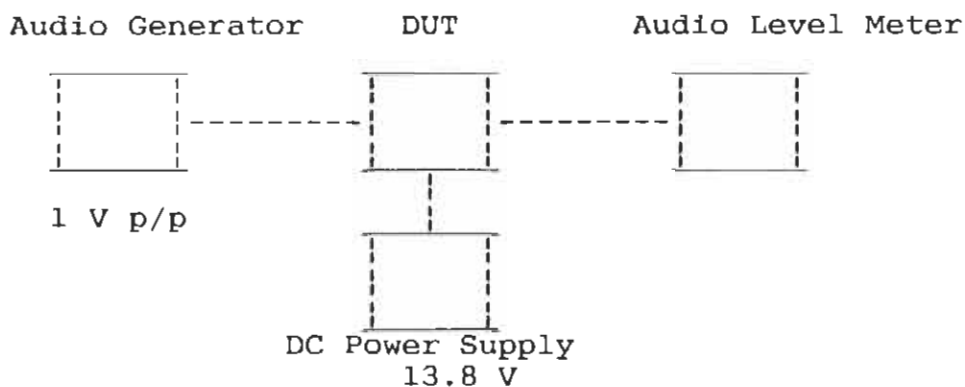
SUMMARY OF TEST RESULTS

2.985	RF Power Output	Complies
2.987	Modulation Characteristic	
	a) Low Pass Filter	Complies
	b) Limiting	Complies
2.989	Occupied Bandwidth	
	a) Analogue Modulation	Complies
	b) Digital	Complies
2.991	Conducted Spurious Emissions	Complies
2.993	Radiated Spurious Emissions	
2.995	Frequency Stability	Complies
2.997	Frequency Spectrum	Complies

TEST RESULTS.**2.985 RF Power Output.****Results:**

	470.1 MHz	470.9 MHz
STV/SAT	22.6 W	22.7 W
STV/SAT	4.5 W	4.5 W

90.205 Limits :	<u>Freq. Band</u>	<u>Maximum</u>
	25 MHz - 100 MHz	300 watts
	100 MHz - 216 MHz	350 watts
	450 MHz - 470 MHz	75 watts
	470 MHz - 512 MHz	350 watts

2.987 Modulation Characteristics. Low Pass Filter Response

Remarks: The input to and the output from the radio was made available through the 9 pin connector at rear.

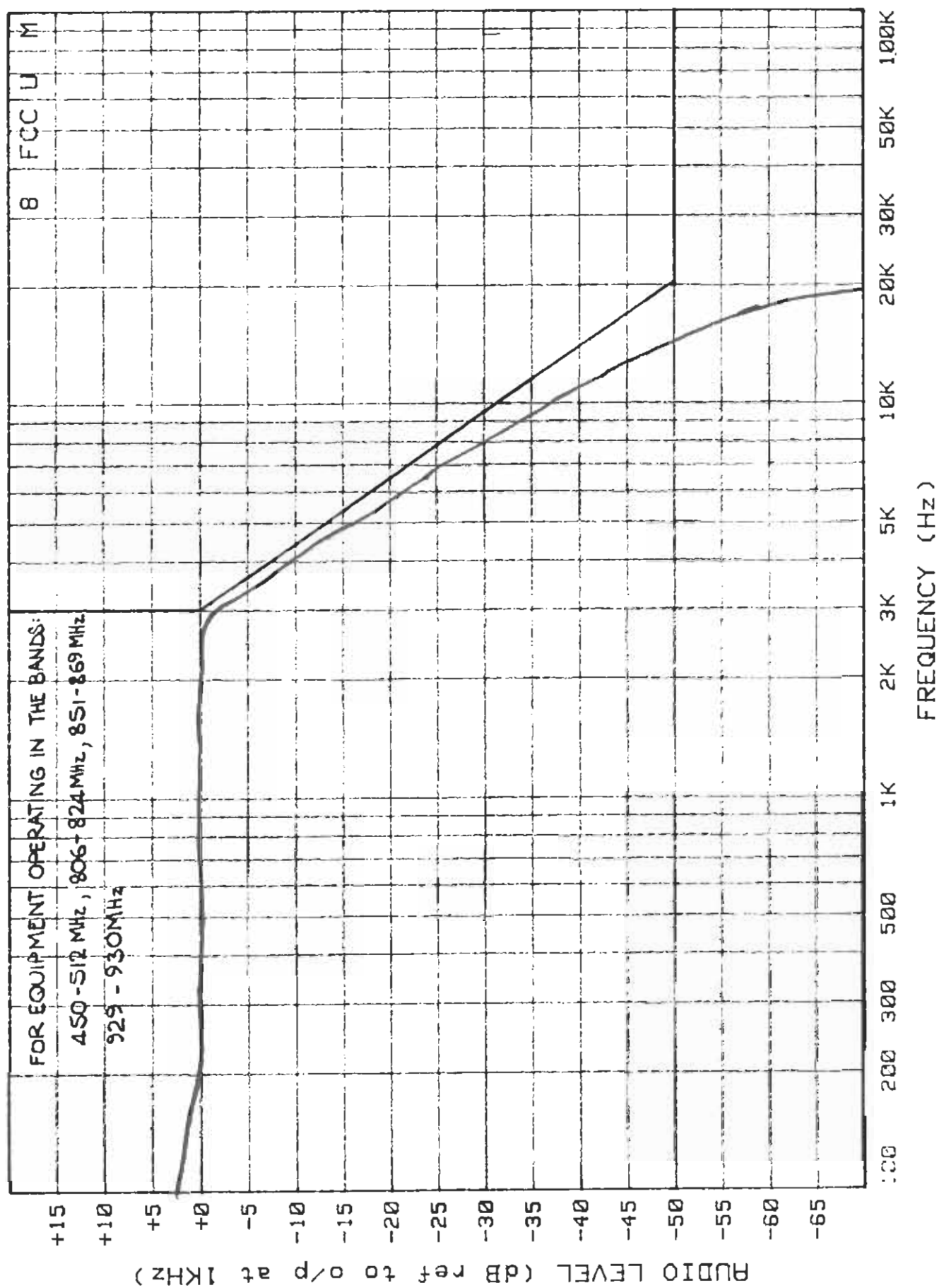
Results.

See the frequency response plot.

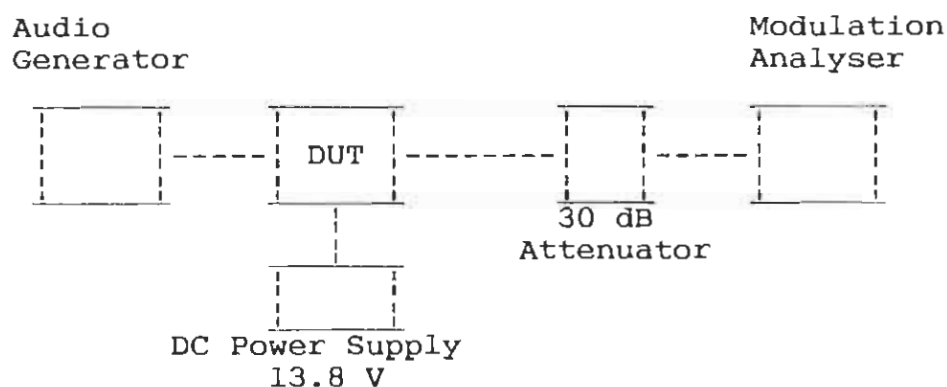
90.211 Limits.

The limits are drawn on the graph.

CFR 47 - PART 90 TRANSMITTER AF CIRCUIT RESPONSE



2.987 Modulation Characteristics. Modulation Limiting

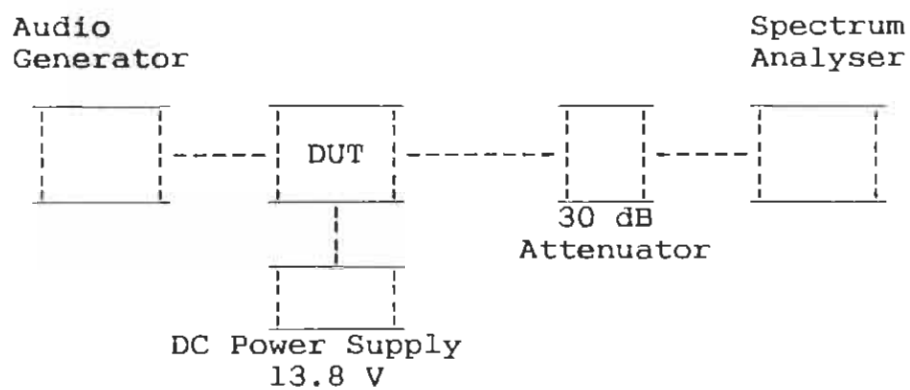


Results.

Input Level (dBm)	Deviation (kHz)				
	200 Hz	500 Hz	1.0 kHz	2.0 kHz	3.0 kHz
-40.0	-	-	-	-	-
-35.0	0.1	0.1	0.1	0.1	0.1
-30.0	0.2	0.2	0.2	0.2	0.2
-25.0	0.3	0.3	0.3	0.4	0.3
-20.0	0.6	0.6	0.6	0.6	0.4
-15.0	1.0	1.0	1.0	1.0	0.8
-10.0	1.7	1.7	1.7	1.8	1.3
- 5.0	3.0	3.0	2.9	3.1	2.3
0.0	3.7	3.7	3.9	4.3	3.2
+ 5.0	3.8	3.9	4.2	4.5	3.4
+10.0	4.1	4.2	4.3	4.5	3.5
+15.0	4.4	4.4	4.3	4.5	3.5

90.209 Limits.

Frequencies below 947 MHz 5.0 kHz max deviation.

2.989 Occupied Bandwidth. Analogue (F3E)**Results.**

See the spectrum analyser plots.

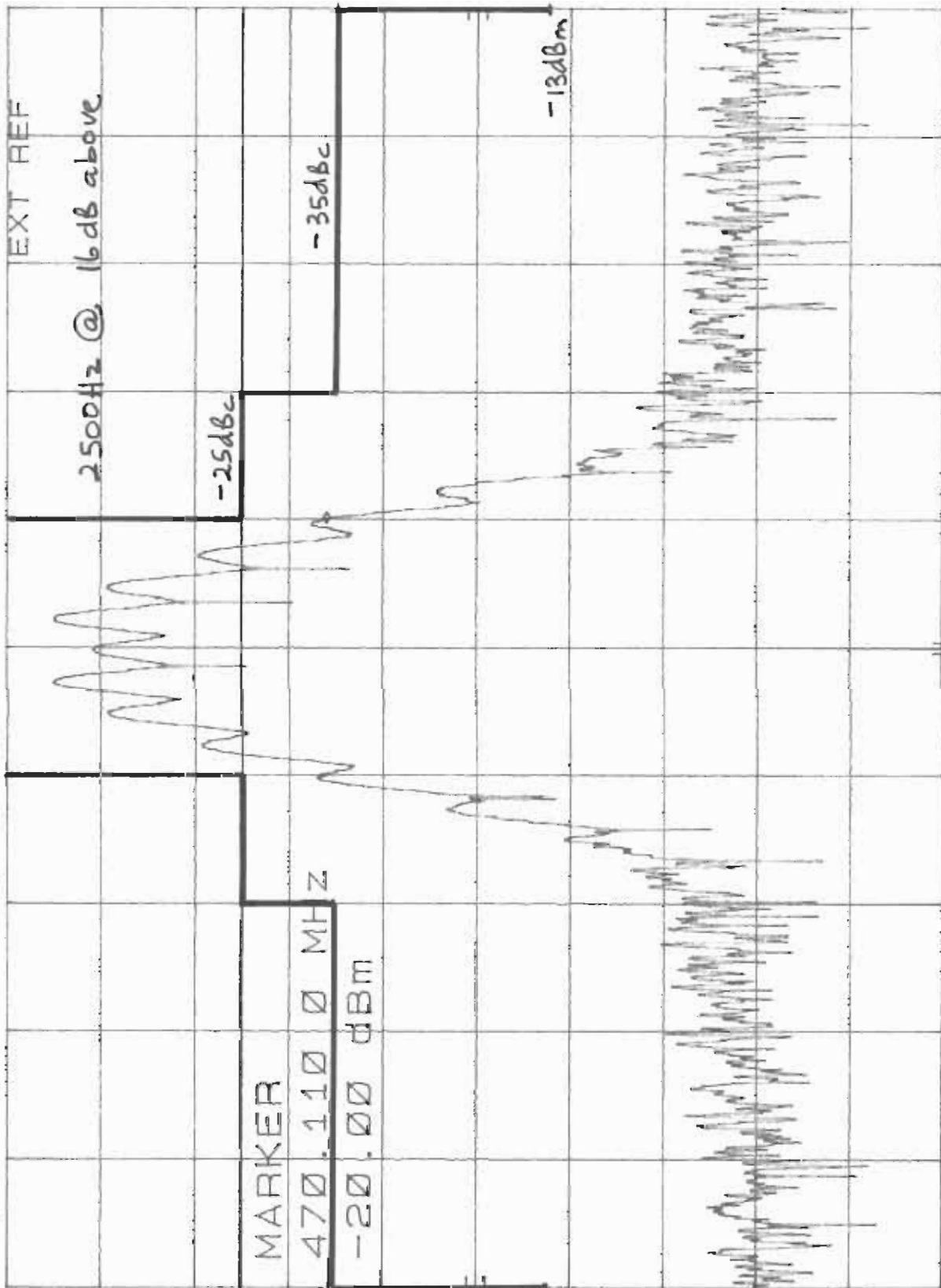
90.209 Limits.

The limits are drawn on the plots.

TAIT T2010-613 SN385527 11/11/93 T93165A MKR 470.110 0 MHz
REF 14.0 dBm ATTN 50 dB

hp

10 dB/

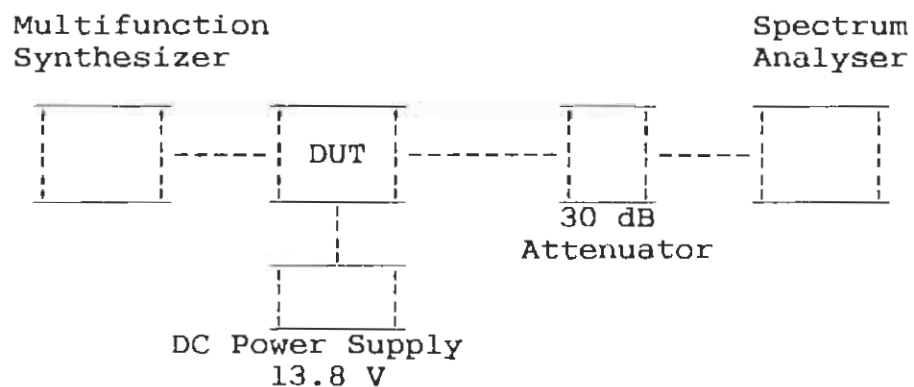


DL
-11.0
dBm

CORR'D

CENTER 470.100 MHz
RES BW 1 KHz
SPAN 100 KHz
SWP 300 msec

OK

2.989 Occupied Bandwidth. Digital (F1D)**Results.**

See the spectrum analyser plots.

90.209 Limits.

The limits are drawn on the plots.

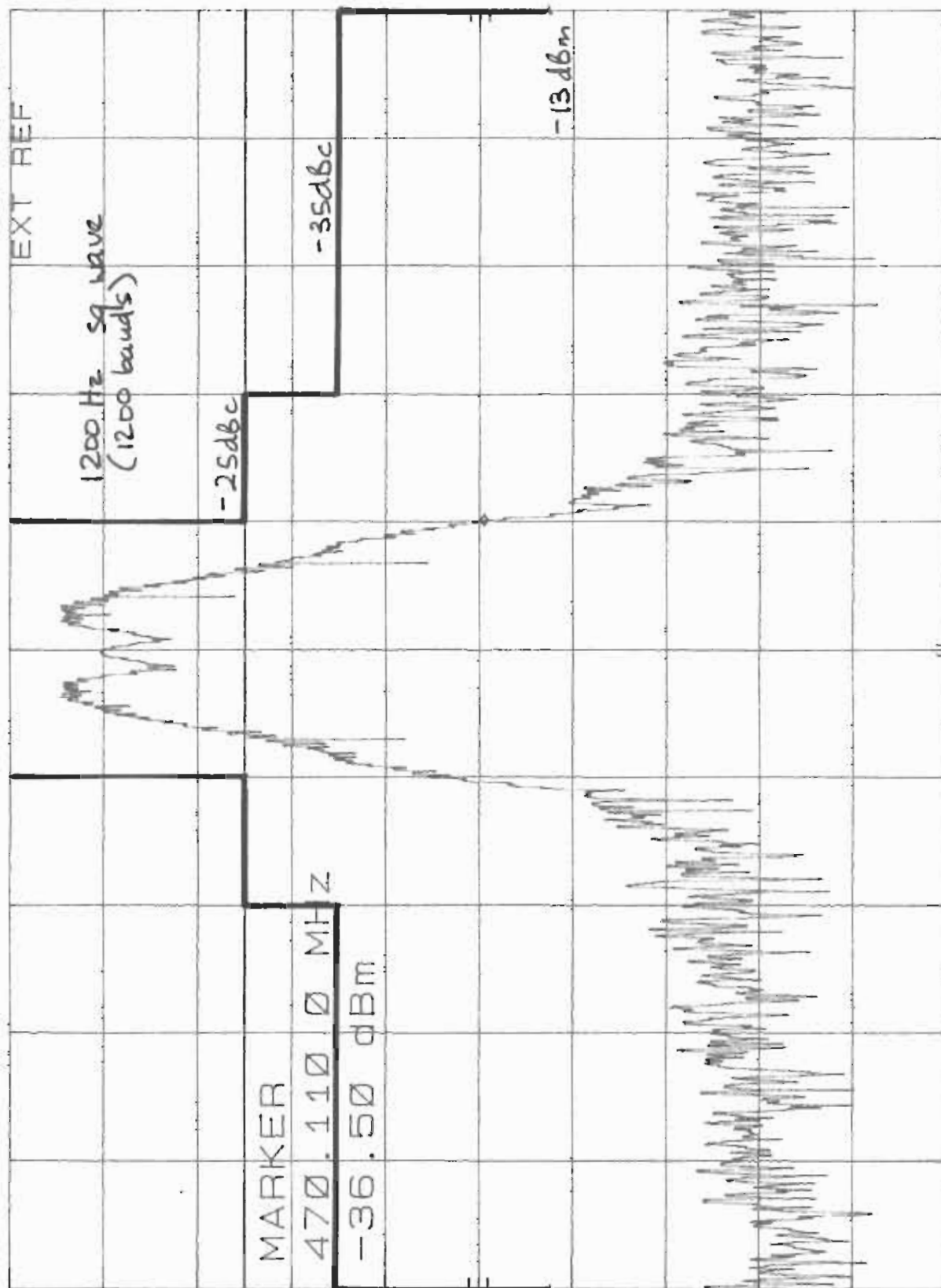
TAIT T2010-613 SN385527 11/11/93 T93165A MKR 470.110 0 MHz
REF 14.0 dBm ATTN 50 dB

hp

10 dB/

DL
-11.0
dBm

CORR'D



CENTER 470.100 MHz

RES BW 1 KHZ

VBW 3 KHZ

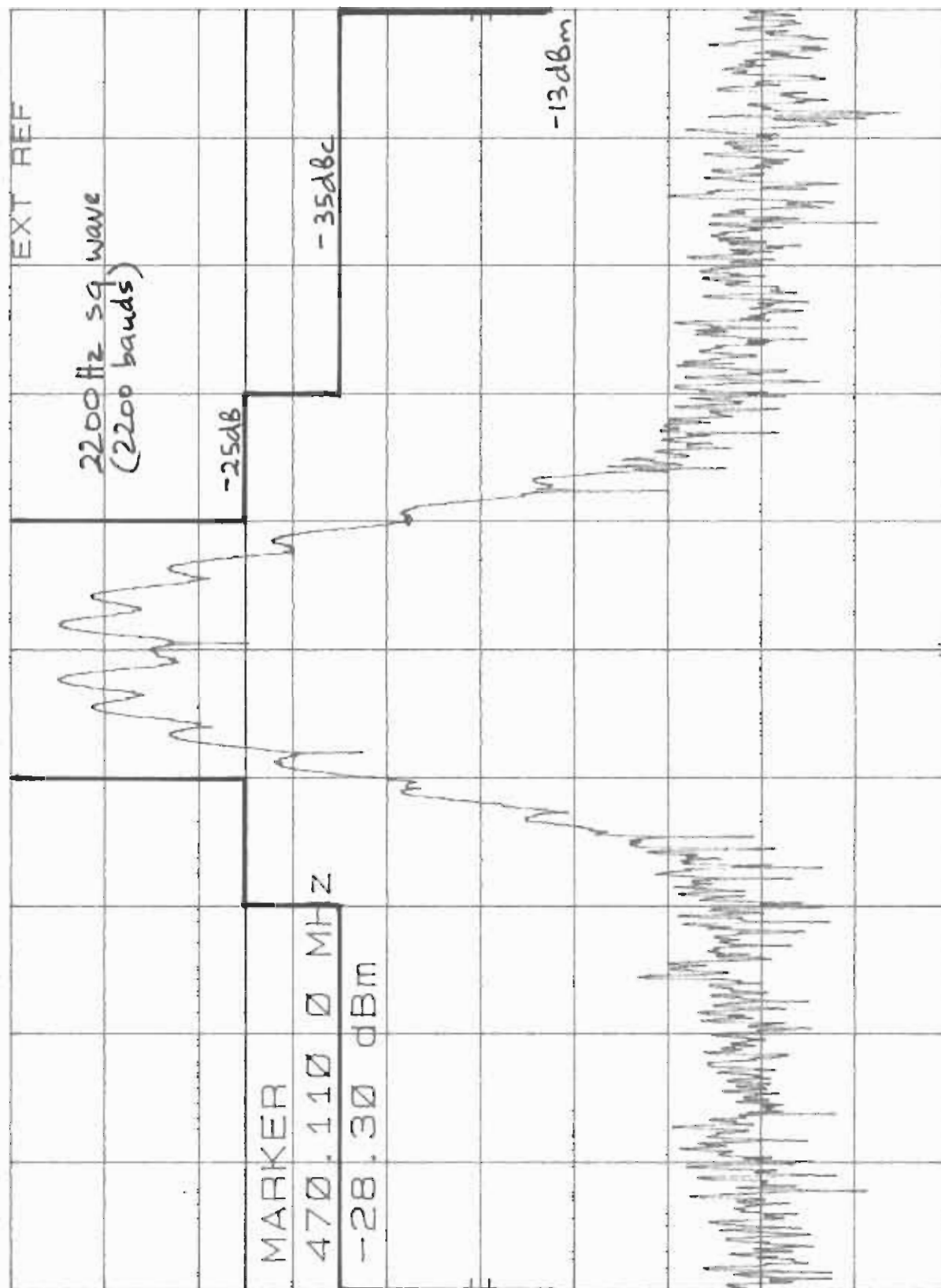
SPAN 100 KHZ
SWP 300 msec

ESK

TAIT T2010-613 SN385527 11/11/93 T93165A MKR 470.110 0 MHz
REF 14.0 dBm ATTN 50 dB

hp

10 dB/

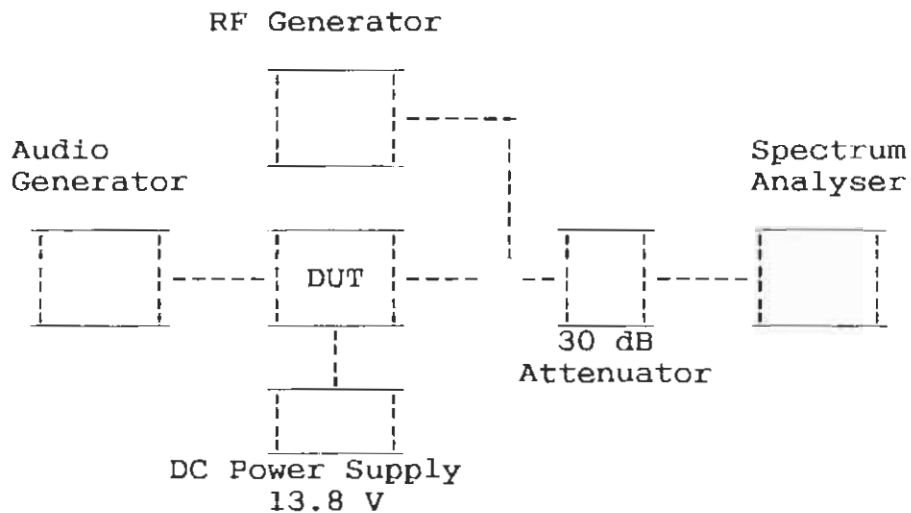


DL
-11.0
dBm

CORR'D

CENTER 470.100 MHz RES BW 1 KHZ VBW 3 KHZ SPAN 100 KHZ SWP 300 msec

280

2.991 and 2.997 Conducted Spurious Emissions.**Results.**

470.1 MHz		470.9 MHz	
Emission Freq.(MHz)	Level dBm	Emission Freq.(MHz)	Level dBm
431.7	-39.0	458.095	-43.6
508.5	-43.5	483.095	-43.2

Remarks:

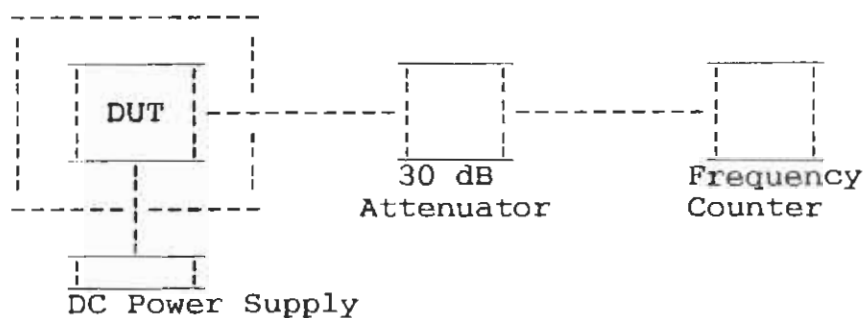
The harmonics to 10 fc are well below the limit. (lower than the levels given in the table above).

90.209 Limits:

for frequencies below 947 MHz -13 dBm

2.995 Frequency Stability.

Environmental Chamber

**Results:**

470.1 MHz

Temperature C	Frequency Error (kHz)		
	11.7 V	13.8 V	15.9 V
+ 50	-0.96	-0.96	-0.96
+ 40	-0.82	-0.84	-0.84
+ 30	-0.64	-0.65	-0.65
+ 20	-0.11	-0.11	-0.12
+ 10	+0.49	+0.47	+0.48
+ 00	+0.91	+0.91	+0.90
- 10	+1.02	+1.02	+1.02
- 20	+0.78	+0.79	+0.79
- 30	+0.44	+0.43	+0.43

Remarks:

Results recorded 30 minutes after the temperature reached the set point.

90.213 Limits:

450 MHz - 470 MHz 5 ppm.

A P P E N D I X 1.

EQUIPMENT LIST FOR BAY 1 (E1154)

Test equipment used to check the performance of the radio product is listed below.

Lab No	Model	Description
E1209	HP 436A	RF Power Meter
E1083	HP 8482A	Power Sensor
E1042	HP 6034A	DC Power Supply
E1208	HP 8566B	Spectrum Analyser
E1090	HP 8901B	Modulation Analyser
E1067	HP 8642B	Signal Generator
E1100	HP 59306A	Relay Actuator
E1002	HP 8904A	Multi-function Synthesizer
E1329	HP 8491A	10dB Attenuator
E1308	WEINSCHEL 49-20-43	20dB Attenuator
E1062	ANRITSU ML422C	Audio Level Meter
E1143	ANRITSU MG443B	Audio Generator
	DYNATECH D2-116A20	Coaxial Switch (Sw 1)
	HP 8761B	Coaxial Switches (Sw 2 - 8)
	RG214/U 430mm	Coax Cable (CC1)
	RG214/U 700mm	Coax Cable (CC2)
	RG214/U 430mm	Coax Cable (CC3)
	RG214/U 430mm	Coax Cable (CC4)
	RG214/U 1500mm	Coax Cable (CC5)
	RG214/U 430mm	Coax Cable (CC6)

NOTE:

- (a) Full details of Equipment calibration are available from the Laboratory on request.