APPLICATION FOR CERTIFICATION
On Behalf of
Dynamco Pty. Ltd.

Remote Relay (Transmitter)

Model : TX12

FCC ID：PJ9TX12

Prepared for : Dynamco Pty. Ltd.
10 Brown Street, East Perth,
Western Australia 6004 Australia

Prepared by : Audix Corporation
No. 53-11, Tin-Fu Tsun, Lin-Kou,
Taipei Hsien, Taiwan, R.O.C.

Tel : (02) 2609-9301, 2609-2133
Fax: (02) 2609-9303

File Number	:	ATM-G920154
Report Number	:	TTEMC-F92032
Date of Test	:	Feb. 14 ~ 19, 2003
Date of Report	:	Feb. 20, 2003

TABLE OF CONTENTS

TEST REPORT CERTIFICATION

Applicant	:	Dynamco Pty. Ltd.
Manufacturer	:	Tesor Plus Corp.
EUT Description	:	Remote Relay (Transmitter)
FCC ID	:	PJ9TX12
		(A) MODEL NO. : TX12
		(B) SERIAL NO. : N/A
		(C) POWER SUPPLY : DC 12V

Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C, MAY 2002
AND ANSI C63.4/1992
(FCC CFR 47 Part 15C, §15.207 and §15.231)

The device described above was tested by AUDIX COPORATION. to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart C limits both radiated and conducted emissions.

The measurement results are contained in this test report and AUDIX CORPORATION. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Corporation.

Date of Test : Feb. 14 ~ 19, 2003

Prepared by : _____ Feb 21, 2003
(Shelene Hou/Assistant Manager)

Test Engineer : Ben Cheng Feb 24 2003
(Ben Cheng/Assistant Manager)

Approve & Authorized Signer : Leon Liu Feb 24 2003
(Leon Liu/Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Remote Relay (Transmitter)
Model Number	:	TX12
FCC ID	:	PJ9TX12
Applicant	:	Dynamco Pty. Ltd. 10 Brown Street, East Perth, Western Australia 6004 Australia
Manufacturer	:	Tesor Plus Corp. 37, Lane 136, Chung-Hsing N.St., San-Chung, Taipei Hsien, Taiwan
Fundamental Frequency	:	433MHz
Power Supply	:	DC 12V
Date of Receipt of Sample	:	Feb. 14, 2003
Date of Test	:	Feb. 14 ~ 19, 2003

Remote Relay (Receiver)
Model No.: (1)NSR15 (2)NSRG47
FCC ID : By DoC (Report No. TTEMC-F01038)

Remark:

Antenna requirement: This EUT's transmitter antenna is design in soldered to a printed circuit board, comply with §15.203 and inform to user that any change and modify is prohibited.

1.2. Description of Test Facility

Semi-Anechoic Chamber Description	:	May 16, 2000 Re-file on Federal Communication Commission Registration Number: 90993
Name of Firm	:	Audix Corporation
Site Location #1	:	No. 53-11, Tin-Fu Tsun, Lin-Kou, Taipei Hsien, Taiwan, R.O.C.
Site Location #2	:	No. 67-4, Tin-Fu Tsun, Lin-Kou, Taipei Hsien, Taiwan, R.O.C.
NVLAP Lab Code	:	200077-0

1.3. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conduction Test	150KHz~30MHz	±2.66dB
Radiation Test (Distance: 3m)	30MHz~300MHz	+4.26dB / –4.22dB
	300MHz~1000MHz	+5.28dB / –4.0dB

Remark：Uncertainty = Kμc(y)

2. POWERLINE CONDUCTED TEST

【The EUT only employ battery power for operation, no conductive emissions limits are required according to FCC Part 15 Section §15.207】

3. RADIATED EMISSION TEST

3.1. Test Equipment

The following test equipment are used during the radiated emission tests：

3.1.1. For 30MHz~1000MHz Frequency (at Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	HP	8593EM	3826A00248	Sep. 23, 02’	1 Year
2.	Test Receiver	Rohde&Schwarz	ESVP	879691/036	Jun.09, 02’	1 Year
3.	Pre-Amplifier	HP	8447D	2944A06305	Mar.05, 02’	1 Year
4.	Broadband Antenna	Schwarzbeck	BBA 9106	A3L	Feb. 24, 02‘	1 Year
5.	Broadband Antenna	Schwarzbeck	UHALP9108-A	0138	Feb. 24, 02‘	1 Year

3.1.2. For 1GHz~5GHz frequency (at Semi-Anechoic Chamber)

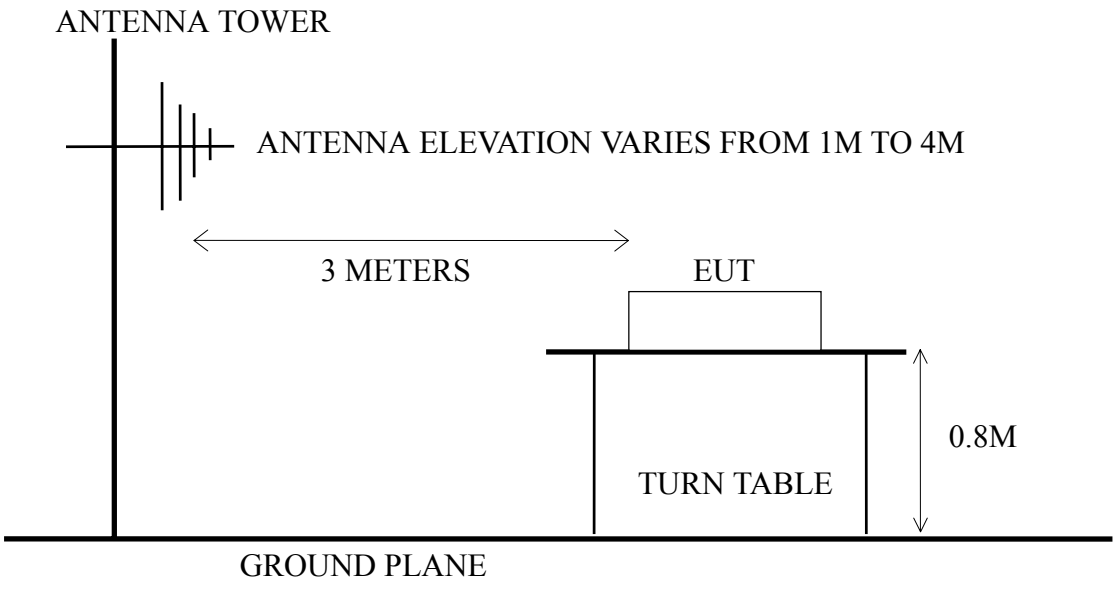
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	HP	8593EM	3826A00248	Sep.23, 02’	1 Year
2.	Amplifier	HP	8449B	3008A00529	Jan.07, 03’	1 Year
3.	Horn Antenna	EMCO	3115	9112-3775	Apr.16, 02’	1 Year

3.2. Test Setup

3.2.1. Block Diagram of connection between EUT and simulators

REMOTE RELAY (TRANSMITTER)
(EUT)

3.2.2. Semi-Anechoic Chamber (3M) Setup Diagram



3.3. Radiation Limit (§15.231)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS	
		μV/m	dBμV/m
Fundamental Freq.	3	11000.0	80.8 (Quasi-Peak)
Spurious Emission	3	1100.0	60.8 (Quasi-Peak)
Above 1GHz *(4)	3	---	74 (Peak)
Above 1GHz *(4)	3	---	54 (Average)

Remark： (1) Emission level (dBμV/m) = 20 log Emission level (μV/m)
(2) The tighter limit applies at the band edges.
(3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
(4) The over 1GHz limit, FCC limit is used based on CFR 47 Part 15.35 (b) and Part 15.205(b) & Part 15.109 (g).

3.4. EUT's Configuration during Compliance Measurement

The following equipment were installed on radiated measurement to meet the commission requirement and operating in a manner which tended to maximize its emission characteristics in a normal application.

3.4.1. Remote Relay (Transmitter) (EUT)

Model Number	:	TX12
Serial Number	:	N/A
Manufacturer	:	Tesor Plus Corp.
FCC ID.	:	PJ9TX12
Fundamental Frequency	:	433MHz

3.5. Operating Condition of EUT

3.5.1. Setup the EUT and simulator as shown on 3.2.

3.5.2. Turned on the power of all equipment.

3.5.3. The EUT [Remote Relay (Transmitter)] was emitted the fundamental frequency at the stand, side and lie conditions.

3.5.4. The EUT was at worked on maximum transmitting status during all testing.

3.6. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. For 30MHz to 5GHz frequency range, EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower. The antenna moved up and down between 1 to 4 meters for 30MHz to 5GHz frequency range to find out the maximum emission level. Broadband antenna such as calibrated biconical and log- periodical antenna or horn antenna were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to FCC ANSI C63.4-1992 regulation.

The bandwidth of test receiver was set at 120KHz and resolution bandwidth of spectrum analyzer was set at 1MHz.

EUT with three kinds of position (on Stand、Side、Lie) were done during radiated measurement and all the test results are listed in section 3.7.

3.7. Radiated Emission Noise Measurement Results

3.7.1. 30MHz to 1GHz Frequency Range Measurement Results : **PASSED.**

The frequency spectrum from 30 MHz to 1GHz was investigated. All the emissions not reported below are too low against the FCC part 15 subpart C limit.

Date of Test： Feb. 14, 2003 Temperature： 22℃

EUT： Remote Relay (Transmitter) Humidity： 70%

Fundamental Freq.： 433MHz

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Stand Mode						
433.010	17.20	5.30	50.19	72.69	80.8	8.11
866.030	22.78	7.20	18.49	48.47	60.8	12.33
Side Mode						
433.010	17.20	5.30	45.08	67.58	80.8	13.22
866.030	22.78	7.20	11.98	41.96	60.8	18.84
Lie Mode						
433.010	17.20	5.30	45.99	68.49	80.8	12.31
866.030	22.78	7.20	10.58	40.56	60.8	20.24

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Stand Mode						
433.010	16.60	5.30	37.14	59.04	80.8	21.76
866.030	21.70	7.20	9.45	38.35	60.8	22.45
Side Mode						
433.010	16.60	5.30	48.92	70.82	80.8	9.98
866.030	21.70	7.20	14.76	43.66	60.8	17.14
Lie Mode						
433.010	16.60	5.30	50.70	72.60	80.8	8.20
866.030	21.70	7.20	13.28	42.18	60.8	18.62

Remark ： 1. All readings are Quasi-peak values.
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading.

3.7.2. 1GHz to 5GHz Frequency Range Measurement Results : **PASSED.**

The frequency spectrum from 1GHz to 5GHz (up to 10th harmonics) was investigated, All the emissions not reported below are too low against the FCC part 15 subpart C limit.

Date of Test： Feb. 19, 2003 Temperature： 21℃

EUT： Remote Relay (Transmitter) Humidity： 68%

Fundamental Freq.： 433MHz

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
Harmonic/ Spurious (Peak Value)						
Stand Mode						
1299.660	25.33	4.83	2.06	32.22	74.00	41.78
1732.850	26.61	7.06	2.18	35.85	74.00	38.15
2165.090	28.16	6.07	1.73	35.96	74.00	38.04
2598.120	29.23	6.63	0.35	36.21	74.00	37.79
3031.240	30.87	7.25	0.23	38.35	74.00	35.65
3464.550	31.65	7.71	1.39	40.75	74.00	33.25
3897.630	32.67	8.38	- 1.68	39.37	74.00	34.63
4330.720	32.83	8.62	- 1.30	40.15	74.00	33.85
Side Mode						
1299.660	25.33	4.83	1.01	31.17	74.00	42.83
1732.850	26.61	7.06	1.18	34.85	74.00	39.15
2165.090	28.16	6.07	2.10	36.33	74.00	37.67
2598.120	29.23	6.63	- 0.23	35.63	74.00	38.37
3031.240	30.87	7.25	0.45	38.57	74.00	35.43
3464.550	31.65	7.71	0.00	39.36	74.00	34.64
3897.630	32.67	8.38	- 0.30	40.75	74.00	33.25
4330.720	32.83	8.62	- 1.99	39.46	74.00	34.54
Lie Mode						
1299.660	25.33	4.83	1.43	31.59	74.00	42.41
1732.850	26.61	7.06	1.65	35.32	74.00	38.68
2165.090	28.16	6.07	2.03	36.26	74.00	37.74
2598.120	29.23	6.63	- 0.30	35.56	74.00	38.44
3031.240	30.87	7.25	- 0.79	37.33	74.00	36.67
3464.550	31.65	7.71	0.05	39.41	74.00	34.59
3897.630	32.67	8.38	- 2.37	38.68	74.00	35.32
4330.720	32.83	8.62	- 0.68	40.77	74.00	33.23

Remark ： 1. All readings are Peak values.
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading.

Date of Test： Feb. 19, 2003 Temperature： 21℃

EUT： Remote Relay (Transmitter) Humidity： 68%

Fundamental Freq.： 433MHz

Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Limits dBμV/m	Margin dB
Harmonic/ Spurious (Peak Value)						
Stand Mode						
1299.660	25.33	4.83	7.48	37.64	74.00	36.36
1732.850	26.61	7.06	9.03	42.70	74.00	31.30
2165.090	28.16	6.07	1.35	35.58	74.00	38.42
2598.120	29.23	6.63	0.64	36.50	74.00	37.50
3031.240	30.87	7.25	- 0.88	37.24	74.00	36.76
3464.550	31.65	7.71	- 0.68	38.68	74.00	35.32
3897.630	32.67	8.38	- 0.49	40.56	74.00	33.44
4330.720	32.83	8.62	- 0.53	40.92	74.00	33.08
Side Mode						
1299.660	25.33	4.83	4.70	34.86	74.00	39.14
1732.850	26.61	7.06	6.21	39.88	74.00	34.12
2165.090	28.16	6.07	1.25	35.48	74.00	38.52
2598.120	29.23	6.63	- 0.06	35.80	74.00	38.20
3031.240	30.87	7.25	0.40	38.52	74.00	35.48
3464.550	31.65	7.71	- 1.48	37.88	74.00	36.12
3897.630	32.67	8.38	- 1.34	39.71	74.00	34.29
4330.720	32.83	8.62	- 1.19	40.26	74.00	33.74
Lie Mode						
1299.660	25.33	4.83	4.32	34.48	74.00	39.52
1732.850	26.61	7.06	7.28	40.95	74.00	33.05
2165.090	28.16	6.07	1.65	35.88	74.00	38.12
2598.120	29.23	6.63	0.46	36.32	74.00	37.68
3031.240	30.87	7.25	0.42	38.54	74.00	35.46
3464.550	31.65	7.71	0.31	39.67	74.00	34.33
3897.630	32.67	8.38	- 3.25	37.80	74.00	36.20
4330.720	32.83	8.62	- 1.51	39.94	74.00	34.06

Remark ： 1. All readings are Peak values.
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading.

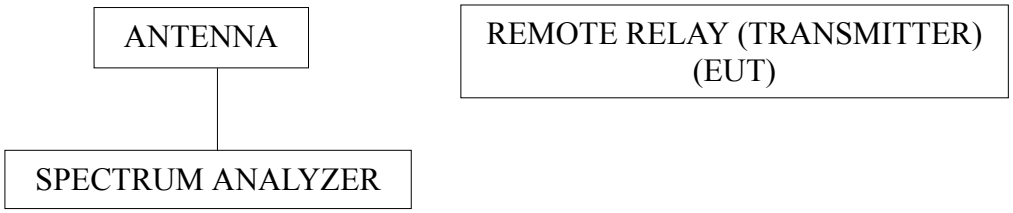
4. EMISSION BANDWIDTH TEST

4.1. Test Equipment

The following test equipment were used during the Emission Bandwidth Test：

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	HP	8564EC	3946A00249	Aug. 09, 02'	1 Year
2.	Wide Band Antenna	Diamond	RH799	N/A	N/A	N/A

4.2. Block Diagram of Test Setup



4.3. Specification Limits (§15.231-(c))

The bandwidth of emission shall be no wider than 0.25% of the center frequency for device operating above 70MHz and below 900MHz. Bandwidth is determined at the points 20dB down from the modulated carrier.

4.4. EUT's Configuration during Compliance Measurement

The configuration of EUT were same as section 3.4.

4.5. Emission Bandwidth Measurement Results

PASSED.

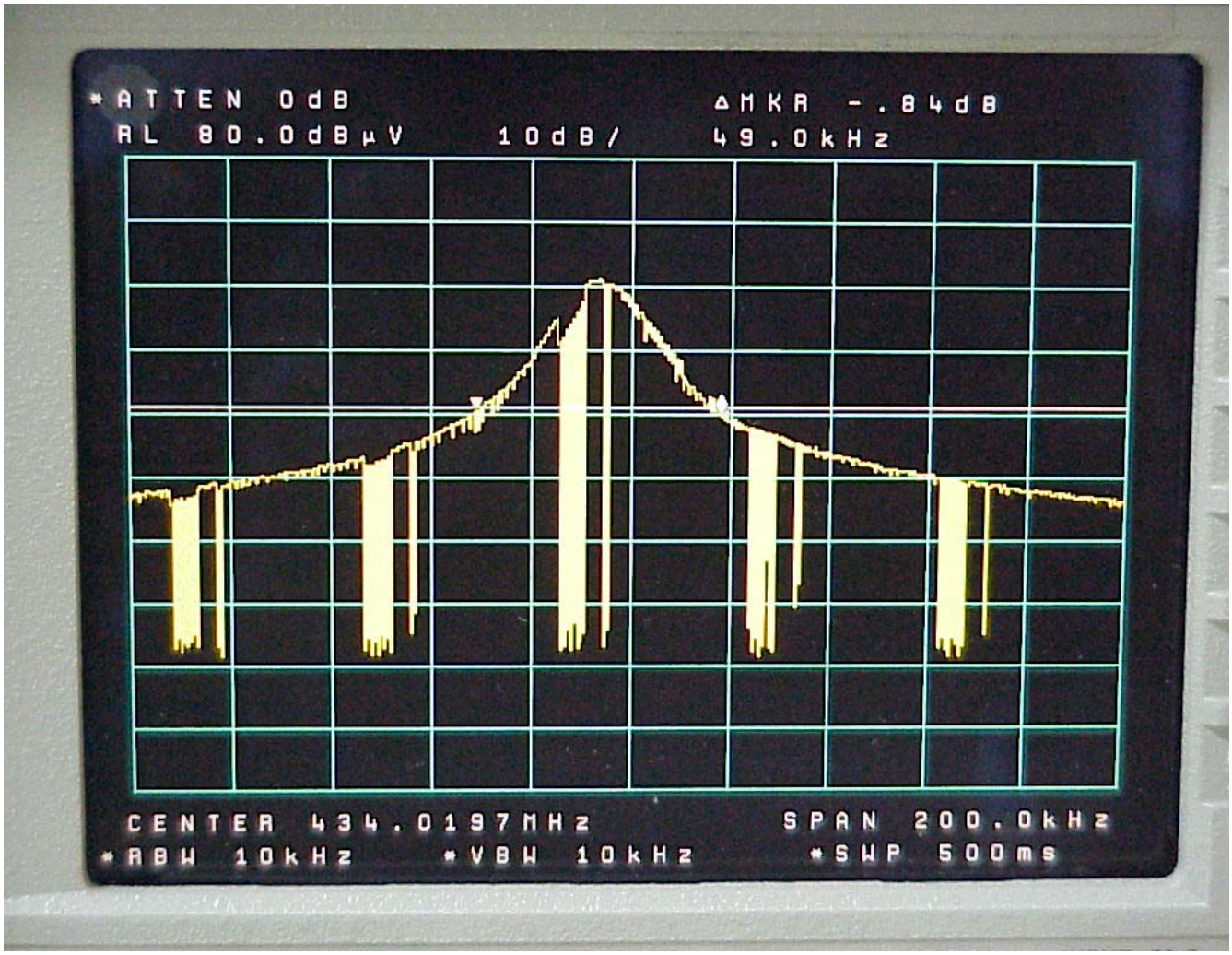
Fundamental Frequency: 433MHz

(Test Date : Feb. 17, 2003, Temperature : 20℃, Humidity : 58%)

No.	Center Frequency	**Bandwidth**	**Tolerance (%)**
1.	433MHz	**49kHz**	**0.0113%**

The graph of bandwidth measured is attached in next page.

(Graph of Bandwidth Measurement)



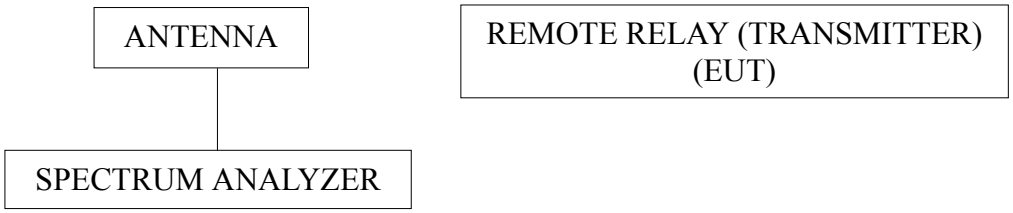
5. PERIODIC OPERATED TEST

5.1. Test Equipment

The following test equipment were used during the periodic operated test：

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
3.	Spectrum Analyzer	HP	8564EC	3946A00249	Aug. 09, 02’	1 Year
4.	Wide Band Antenna	Diamond	RH799	N/A	N/A	N/A

5.2. Block Diagram of Test Setup



5.3. Specification Limits [§15.231-(a)-(1)]

The operation of this device is manually operated transmitter that is automatically deactivated the transmitter within not more than 5 seconds of being released, Compliance with §15.231 (a)- (1).

5.4. EUT’s Configuration during Compliance Measurement

The configuration of EUT were same as section 3.4.

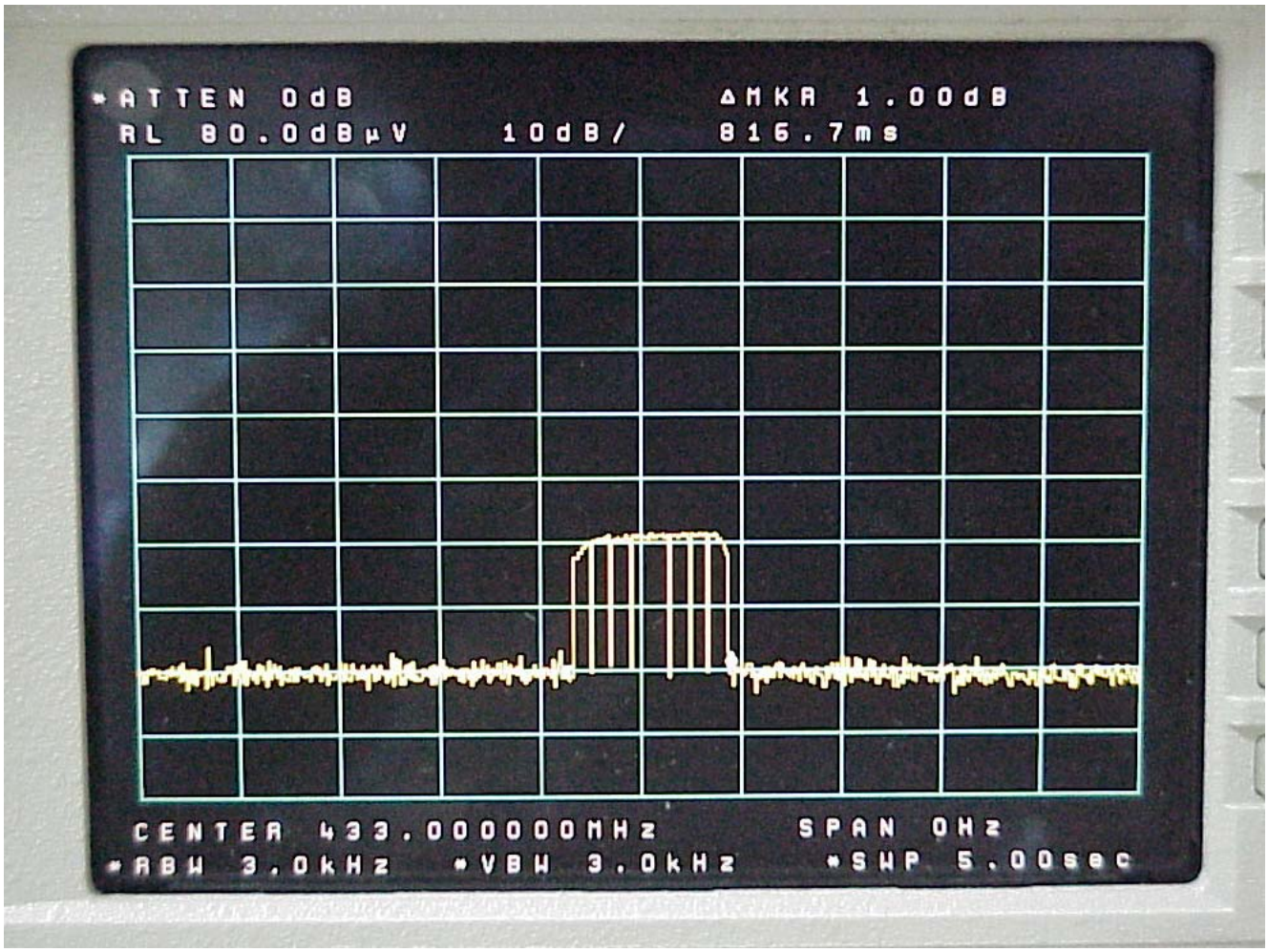
5.5. Periodic Operated Measurement Results

PASS. T = 0.8167sec. (< 5sec.)

(Test Date : Feb. 17, 2003, Temperature : 21℃, Humidity : 59%)

The graph of testing is attached in next page.

Graph of Periodic Operated Measurement



6. DEVIATION TO TEST SPECIFICATIONS

【NONE】