FCC ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT CERTIFICATION TO FCC PART 15 REQUIREMENTS

for

INTENTIONAL RADIATOR

of

RF PROGRAMMER

FCC ID Number : ELVATDA
Trade Name : N/A
Model Number : 1027424(RF Programmer)
Agency Series : N/A
Report Number : 40517403-RP
Date : November 11, 2004

Prepared for：

NUTEK CORPORATION

5F, NO. 3, Alley 6, Lane 45, Pao-Hsing Rd.,
Hsing-Tien City, Taipei, TAIWAN, R.O.C.

Prepared by：

Compliance Certification Services Inc.
No. 165, Chung Sheng Road, Hsin Tien City,
Taipei, Taiwan, R. O. C.
TEL: (02)2217-0894
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1. VERIFICATION OF COMPLIANCE

COMPANY NAME	: NUTEK CORPORATION 5F, No. 3, Alley 6, Lane 45, Pao-Hsing Rd., Hsing-Tien City, Taipei, TAIWAN, R.O.C.
CONTACT PERSON	: RUBY HSIEH / MARKETING DEPT.
TELEPHONE NO.	: (886-2) 2918-9478
EUT DESCRIPTION	: RF PROGRAMMER
MODEL NAME/NUMBER	: 1027424(RF Programmer)
FCC ID	: ELVATDA
DATE TESTED	: May 18、20 & June 25, 2004
REPORT NUMBER	: 40517403-RP

TYPE OF EQUIPMENT	SECURITY EQUIPMENT (INTENTIONAL RADIATOR)
EQUIPMENT TYPE	434 MHz RF PROGRAMMER
MEASUREMENT PROCEDURE	ANSI 63.4 / 2000
LIMIT TYPE	CERTIFICATION
FCC RULE	CFR 47, PART 15

The above equipment was tested by Compliance Certification Services Inc. for compliance with the requirements set forth in the FCC CFR 47, PART 15. The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties. **Warning**: This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services Inc. will constitute fraud and shall nullify the document.

Approved by:

David Wang
Manager
Compliance Certification Services Inc.

Reviewed by:

Rick Yeo
Manager
Compliance Certification Services Inc.

2. PRODUCT DESCRIPTION

Fundamental Frequency	**434 MHz**
Power Source	**Powered by AA batteries (Rating: 6 × 1.5Vdc)**
Transmitting Time	**Periodic ≤ 5 seconds**
Associated Receiver	**Model: 1027424 (DoC)**
Support Equipment: AC Adaptor Model No.: N4120-1330-DC	**Input: AC 120V, 60Hz** **Output: DC 13V, 300mA**

Notes: EUT is not intended to be sold with AC adaptor under test in this report.

3. TEST FACILITY

The open area test sites and conducted measurement facilities used to collect the radiated data are located at No. 165 & No. 199, Chung Sheng Road, Hsin Tien City, Taipei, Taiwan R.O.C. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

4. MEASUREMENT STANDARDS

The site is constructed and calibrated in conformance with the requirements of ANSI C63.4/2001.

5. TEST METHODOLOGY

For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 KHz, up to at least the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. (CFR 47 Section 15.33)

6. MEASUREMENT EQUIPMENT USED

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	CAL. DUE
SITE NSA	CCS	E Site	N/A	09/13/2004
EMI TEST RECEIVER	R&S	DSAI-D / ESBI-RF	827832/001 82706/003	03/08/2005
ANTENNA	SCHAFFNER	CBL 6112B	2802	09/27/2004
AMPLIFIER	H.P.	8447D A	2727A05764	04/30/2005
CABLE	BELDEN	9913	N-TYPE#E2&E3	03/05/2005
THERMO-HYGRO METER	TFA	N/A	NO.6	11/23/2004

EQUIPMENTTYPE	MFR	MODEL NUMBER	SERIAL NUMBER	CAL. DUE
EMC ANALYZER (100Hz-22GHz)	HP	8566B	2937A06102	06/25/2004
ANTENNA (1-18GHz)	EMCO	3115	5761	02/02/2005
AMPLIFIER (1-26.5GHz)	HP	8449B	3008A01266	02/15/2005
CABLE (1-18GHz)	JYEBAO HUBER+SUHNER	LL142 SUCOFLEX 104	SMA-RS1&2 SMA-RS3	02/15/2005

EQUIPMENTTYPE	MFR	MODEL NUMBER	SERIAL NUMBER	CAL. DUE
TEST RECEIVER	R&S	ESHS20	840455/006	03/07/2005
LISN (EUT)	SCHWARZBECK	NSLK 8127	8127382	01/05/2005
LISN	SOLAR	8012-50-R-24-BNC	8305114	02/10/2005
BNC CABLE	MIYAZAKI	5D-FB	BNC A1	01/30/2005

7. POWERLINE RFI LIMIT

CONNECTED TO AC POWER LINE	SECTION 15.207
CARRIER CURRENT SYSTEM IN THE FREQUENCY RANGE OF 450 KHz TO 30 MHz	SECTION 15.205 AND SECTION 15.209, 15.221, 15.223, 15.225 OR 15.227, AS APPROPRIATE.
BATTERY POWER	NO REQUIRED.

8. RADIATED EMISSION LIMITS

GENERAL REQUIREMENTS	SECTION 15.209
RESTRICTED BANDS OF OPERATION	SECTION 15.205
PERIODIC OPERATION IN THE BAND 40.66 -40.70 MHz AND ABOVE 70 MHz.	SECTION 15.231
RECEIVER MODE	SECTION 15.109

DECISION OF FINAL TEST MODE

1. The following test mode(s) were scanned during the preliminary test:

Mode(s)	Radiated	Mode(s)	Conducted
1	Standby W/ AC Adaptor	1	Standby W/ AC Adaptor
2	Tx W/ AC Adaptor	2	Tx W/ AC Adaptor
3	Tx W/ Battery		

2. After the preliminary scan, the following test mode was found to produce the highest emission level.

Mode 2

Then, the EUT configuration and cable configuration of the above highest emission mode was recorded for all final test items.

9. SYSTEM TEST CONFIGURATION

Use a block of foam and combined it with EUT wrapping rubber band around it. This way it can test X.Y, and Z axis. To activate continuous transmission, place a small plastic block between rubber band and EUT push button.

Radiated Open Site Test Set-up

Conducted Test Set-up

10. TEST PROCEDURE

Conducted Emissions, 15.207

1. The EUT was placed on a table, which is 0.8m above ground plane.

2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

3. Repeat above procedures until all frequency measured were complete.

Radiated Emissions, 15.231(4)(b)

Test Set-up for frequency range 30 – 1000 MHz

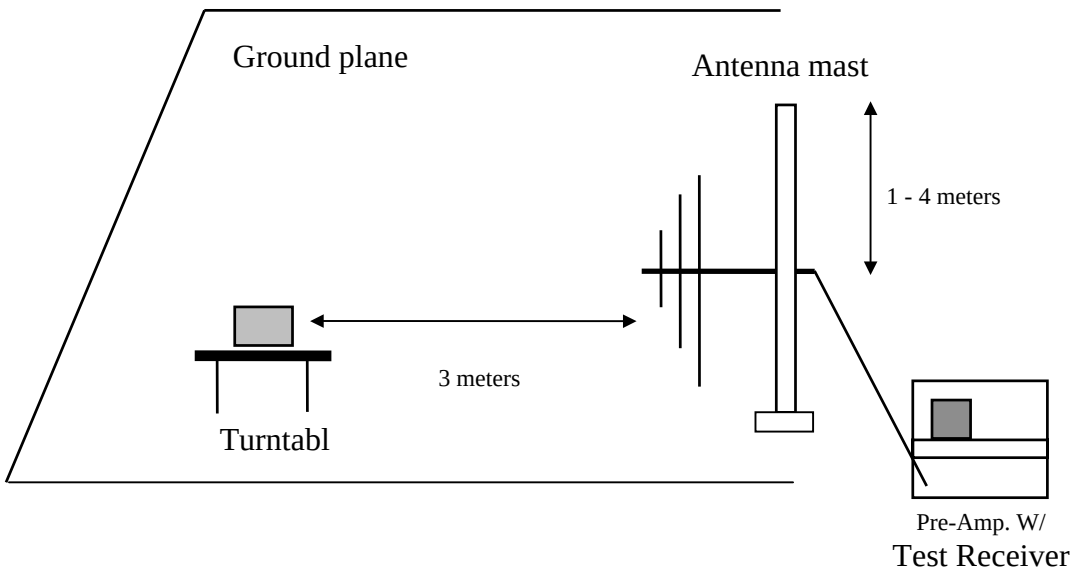


Fig. 1

1. The EUT was placed on a wooden table on the outdoor ground plane. The search antenna was placed 3-meters from the EUT.

2. The turntable was slowly rotated to locate the direction of maximum emission at each emission falling in the restricted bands of 15.205. The EUT was moved throughout the XY, XZ, and YZ planes to maximize emissions received by the search antenna.

3. Once maximum direction was determined, the search antenna was raised and lowered in both vertical and horizontal polarizations. The maximum readings so obtained are recorded in the data listed below.

Test set-up for measurements above 1GHz

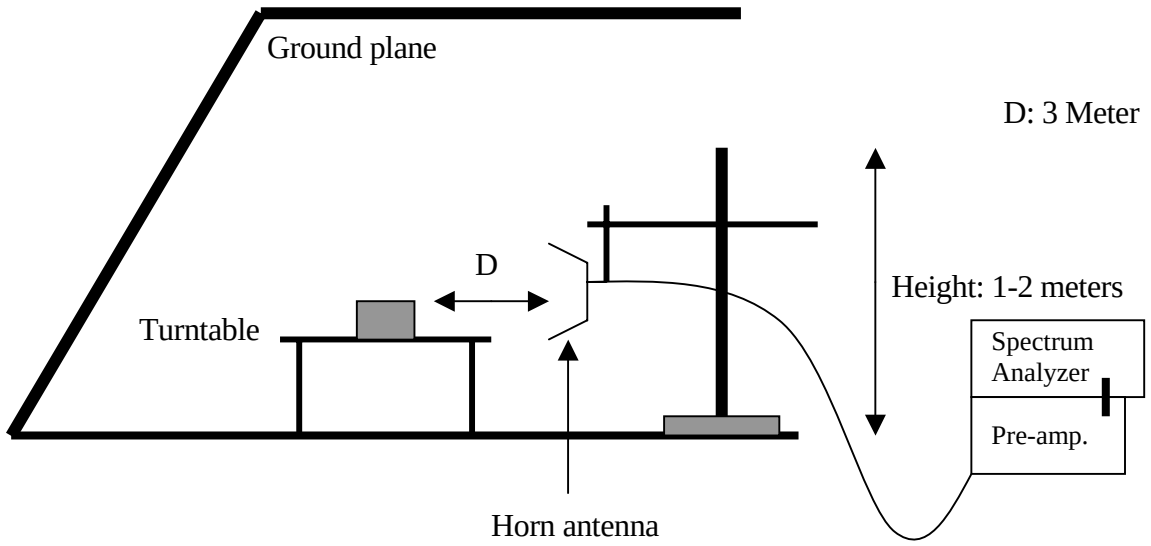


Fig. 2

1. The EUT was placed on a wooden table on the outdoor ground plane. The search antenna was placed 1-meters from the EUT. The EUT antenna was mounted vertically as per normal installation.

2. The turntable was slowly rotated to locate the direction of maximum emission at each emission falling in the restricted bands of 15.205. The EUT was moved throughout the XY, XZ, and YZ planes to maximize emissions received by the search antenna.

3. Once maximum direction was determined, the search antenna was raised and lowered in both vertical and horizontal polarizations. The maximum readings so obtained are recorded in the data listed below.

11. Equipment Modifications

To achieve compliance to FCC Section 15.231 technical limits, the following change(s) were made during compliance testing:

NONE

12. TEST RESULT

Powerline RFI Class B	Eut	Radiated Emission Limits	Eut
SECTION 15.207	X	SECTION 15.209	X
SECTION 15.205, 15.209, 15.221, 15.223, x 15.225 OR 15.227		SECTION 15.205	X
BATTERY POWER		SECTION 15.231 (b)	X
		SECTION 15.231 (e)	
		SECTION 15.109	

12.1 Maximum Modulation Percentage (M%)

CALCULATION:

Average Reading = Peak Reading (dBuV/m)+ 20log (Duty Cycle)

In order to determine possible Maximum Modulation percentage, alternations are made to the EUT. We measured:

WHERE 1 Period = 97.5 mS
Long pulse = 0.75 mS
Short pulse = 0.34 mS
No of Long pulse = 45
No of Short pulse = 33

Duty Cycle = (N1L1+N2L2+…+Nn-1Ln-1+NnLn)/100 or T
Duty Cycle = [(33x0.34)+(45x0.75)]/100 = 0.2375 = 44.97 % or –6.9415dB

12.2 The Emissions Bandwidth

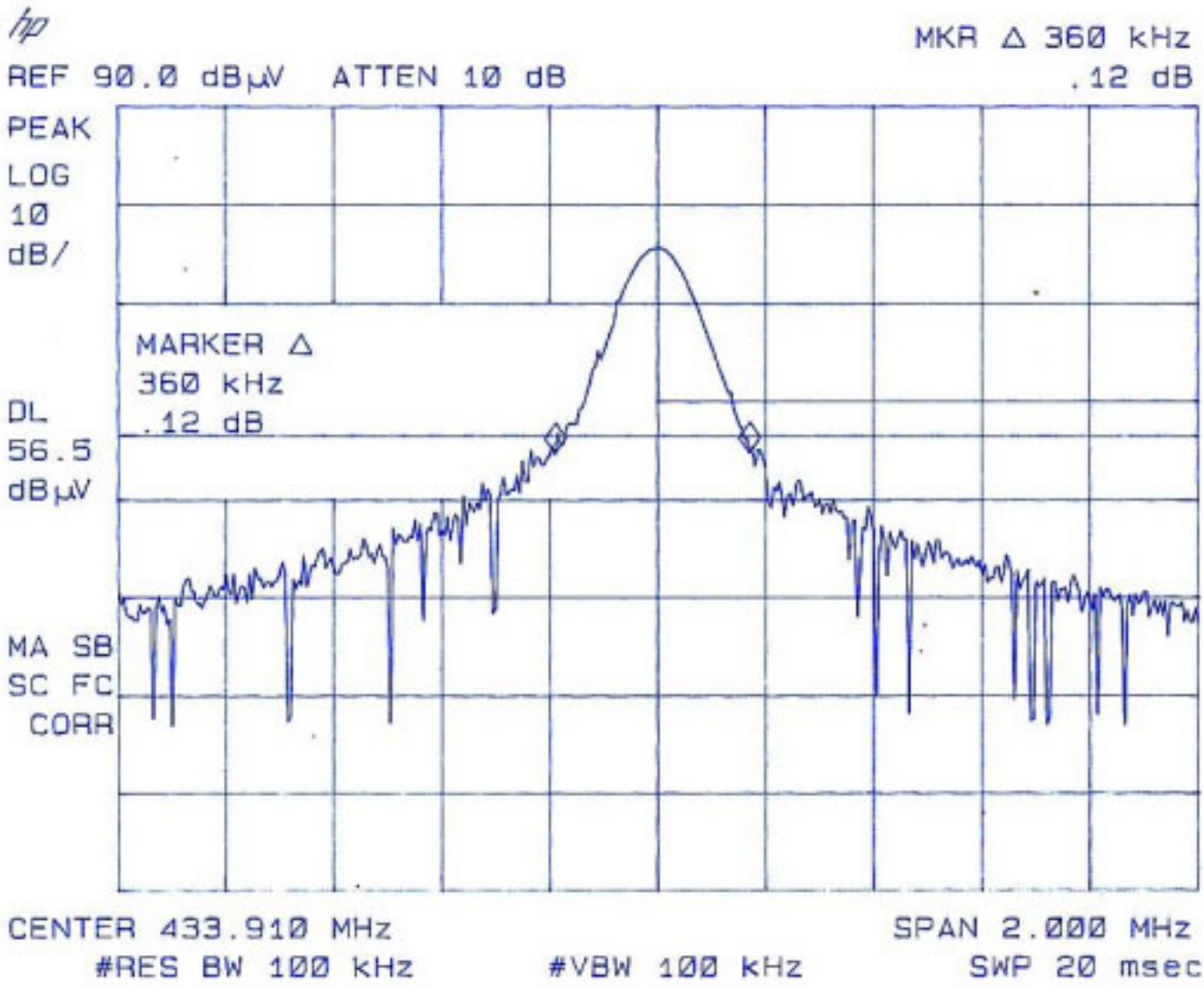
The bandwidth of the emissions were investigated per 15.231(c)

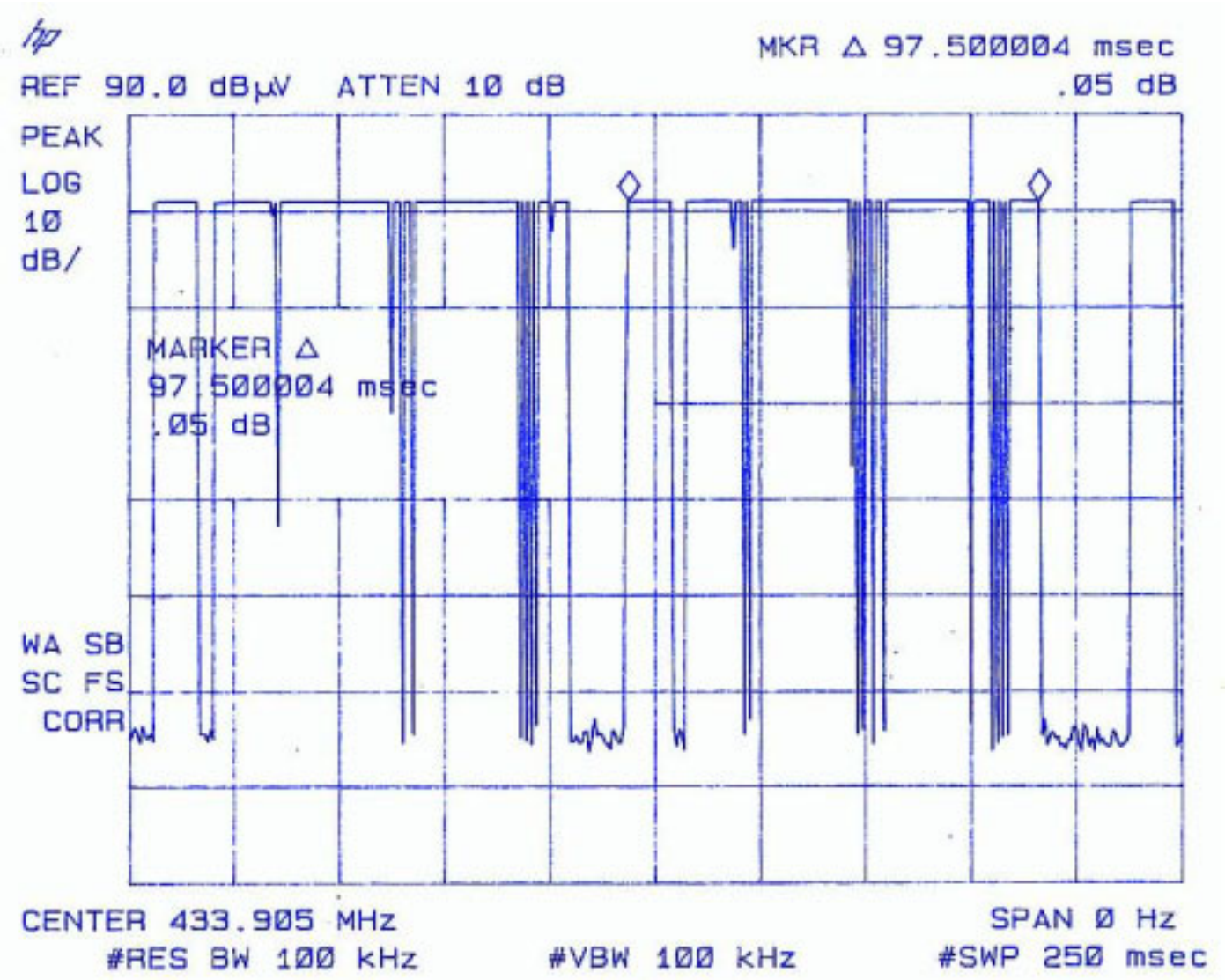
Center Frequency	Measured	Limits
434 MHz	**360.0 kHz < (refer to plot)**	**434 MHz X 0.25% = 1085 kHz**

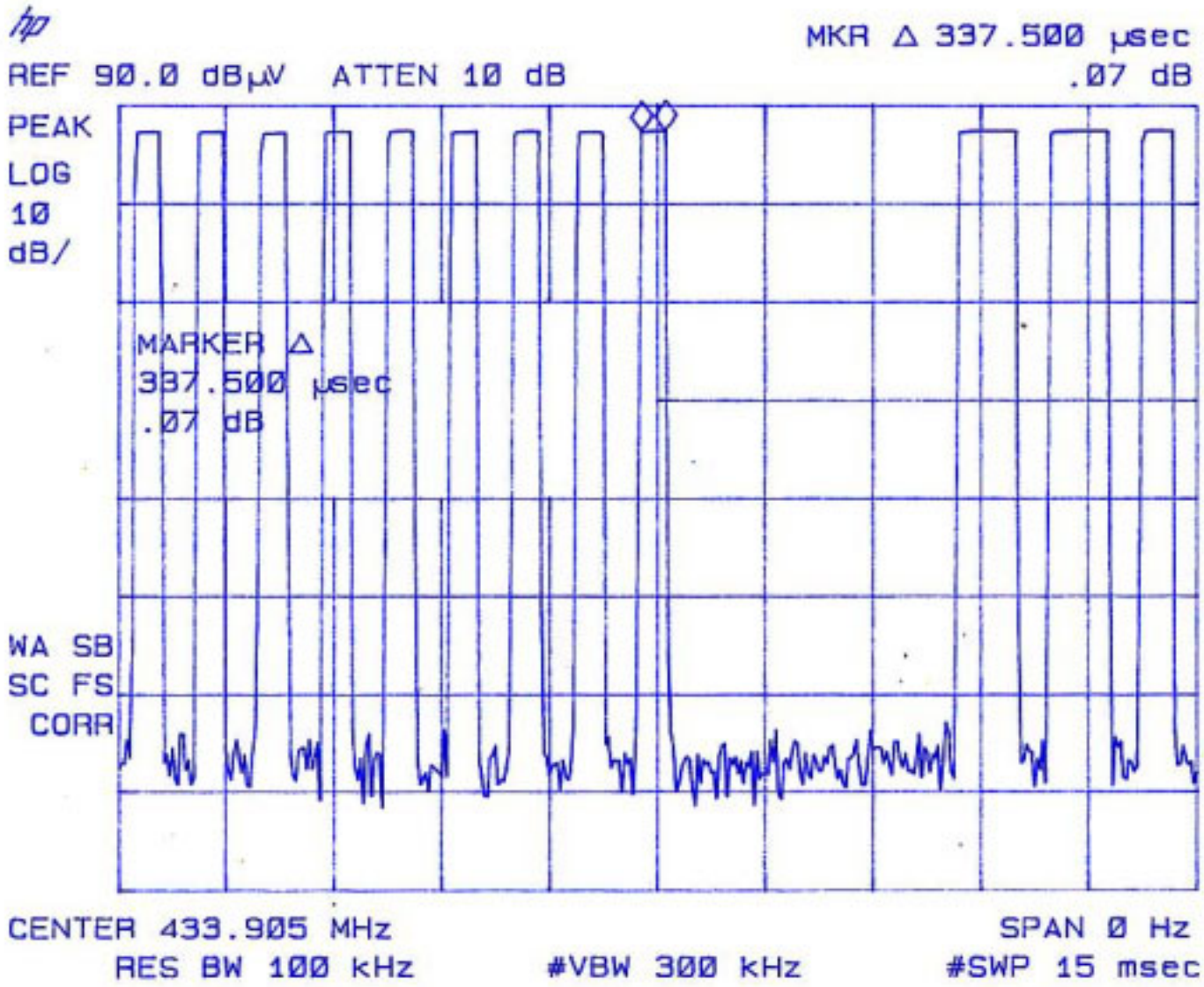
APPENDIX

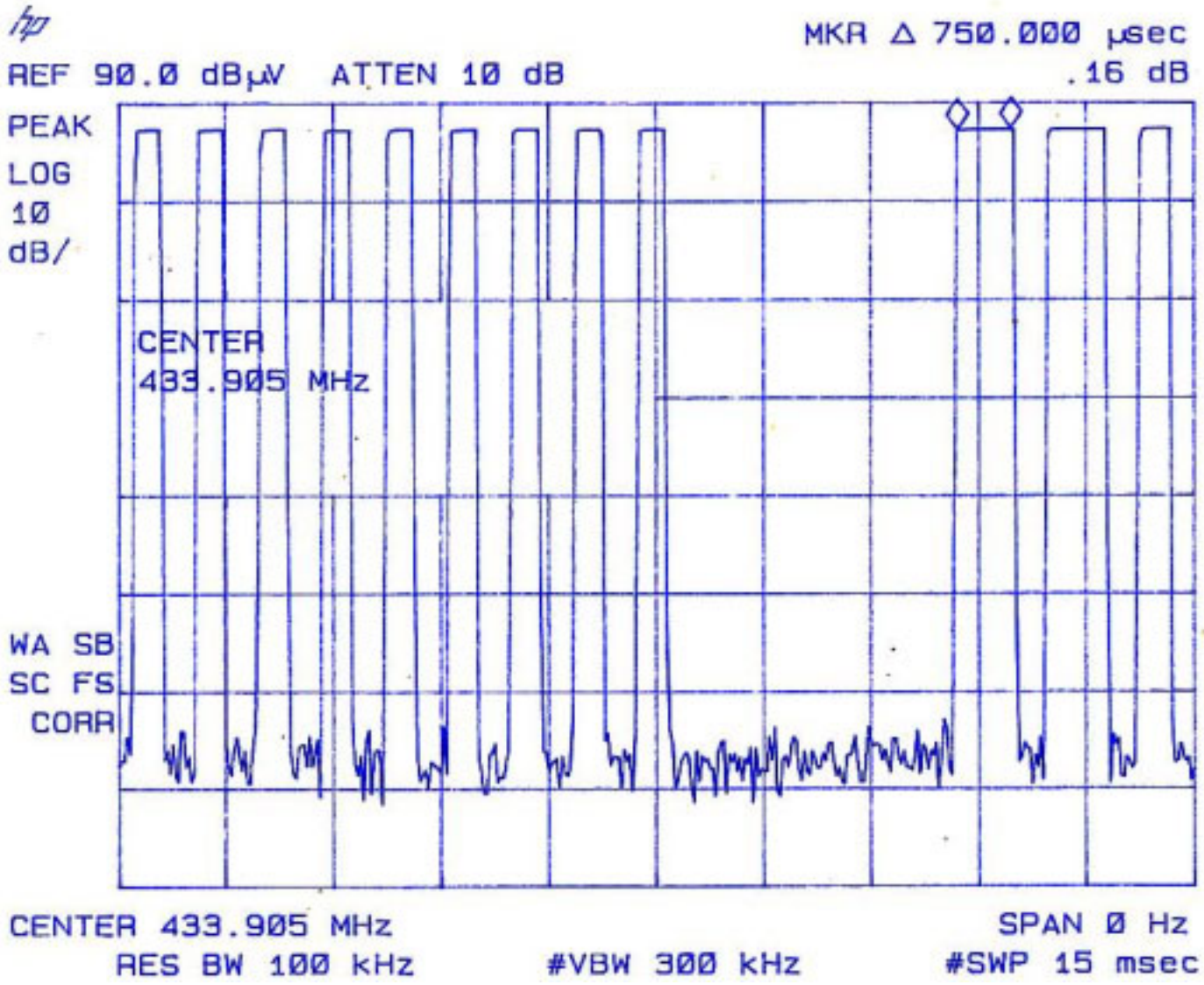
TEST DATA

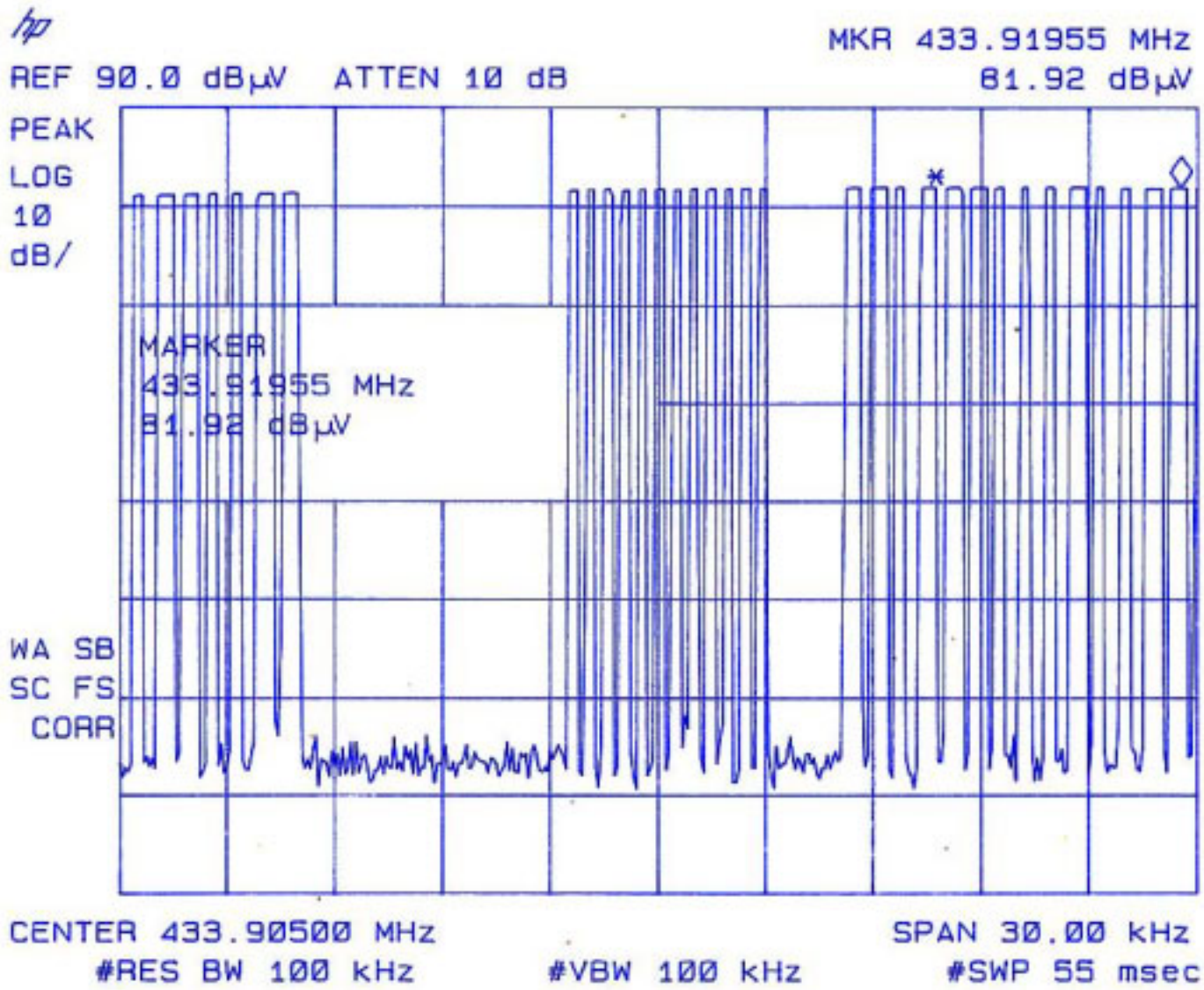
PHOTOGRAPHS OF EUT

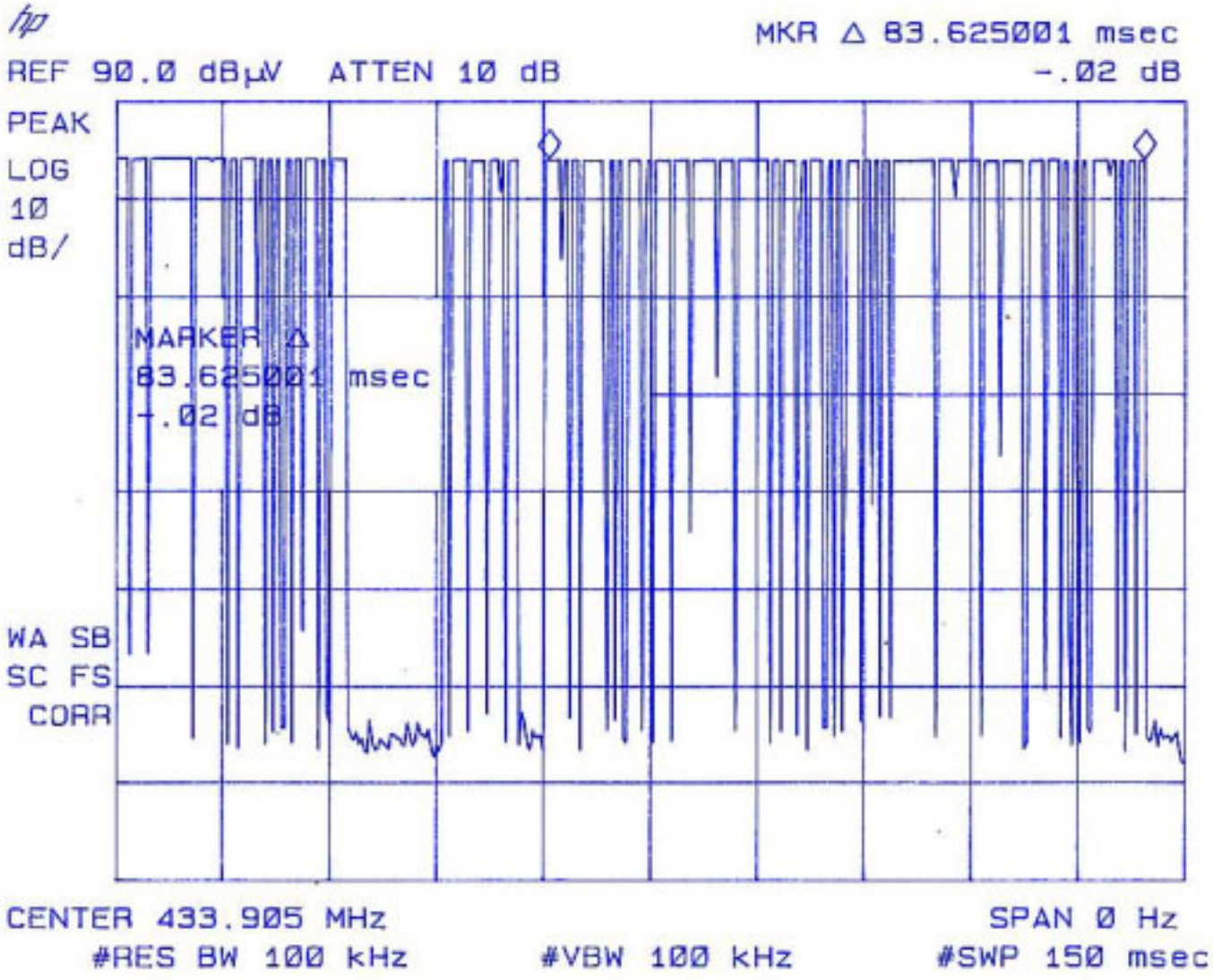

MKR Δ 360 kHz
.12 dB
REF 90.0 dBμV
ATTEN 10 dB
PEAK
LOG
10
dB/
MARKER Δ
360 kHz
.12 dB
DL
56.5
dBμV
MA SB
SC FC
CORR
CENTER 433.910 MHz
SPAN 2.000 MHz
#RES BW 100 kHz
#VBW 100 kHz
SWP 20 msec

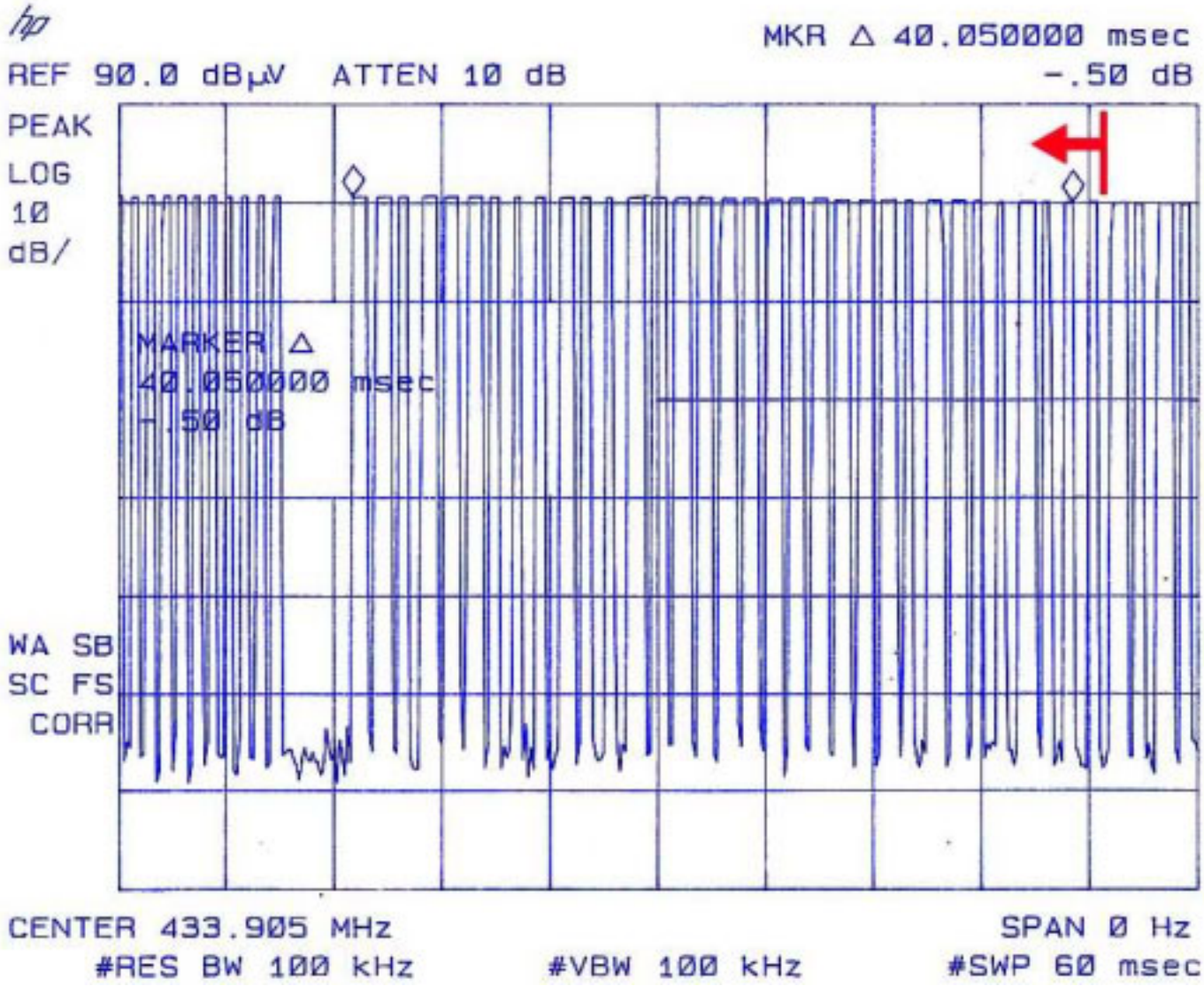

MKR Δ 97.500004 msec
REF 90.0 dBμV ATTEN 10 dB
.05 dB
PEAK
LOG
10
dB/
MARKER Δ
97.500004 msec
.05 dB
WA SB
SC FS
CORR
CENTER 433.905 MHz
SPAN 0 Hz
#RES BW 100 kHz
#VBW 100 kHz
#SWP 250 msec

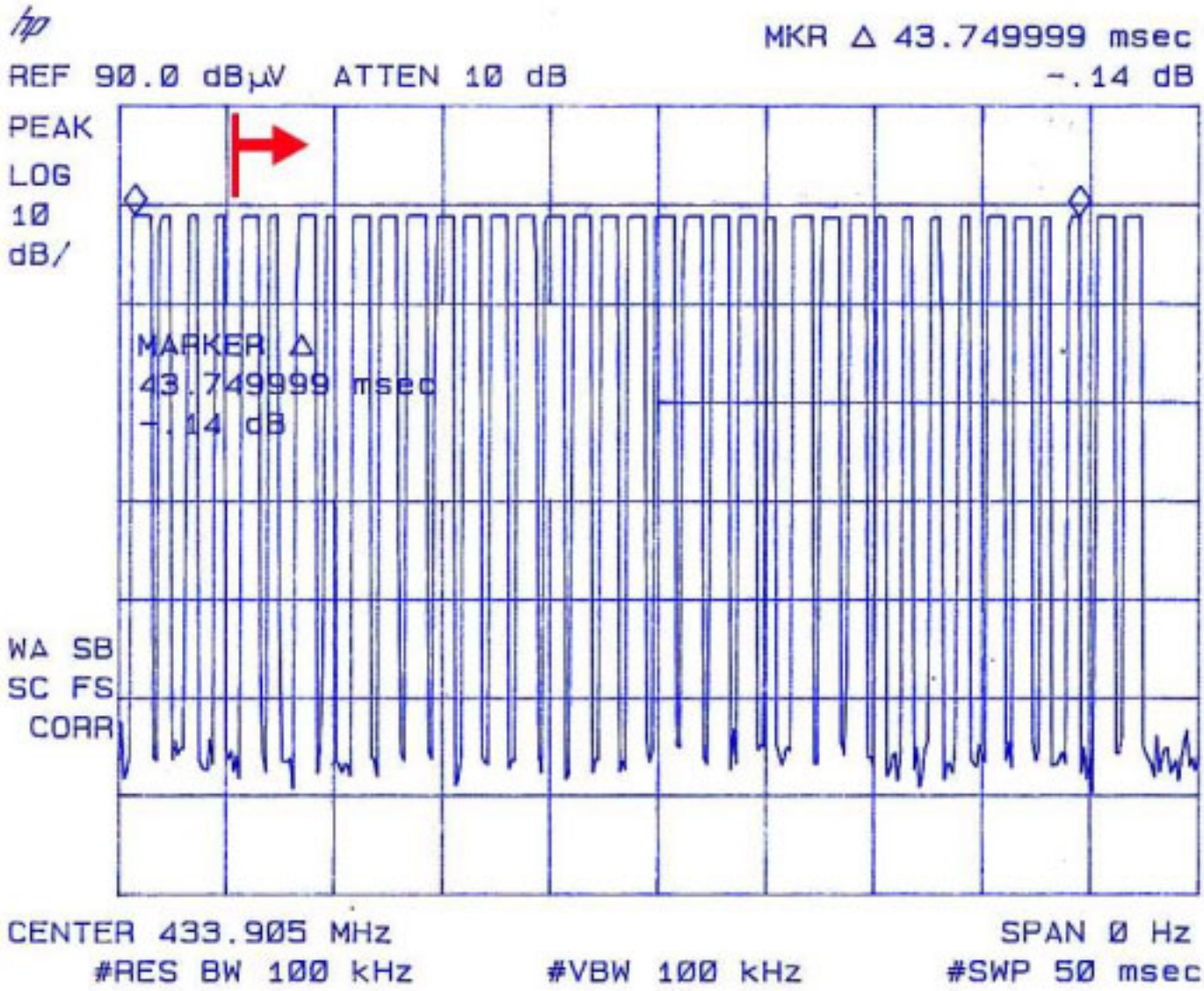

MKR Δ 337.500 µsec
REF 90.0 dBµV ATTEN 10 dB
.07 dB
PEAK
LOG
10
dB/
MARKER Δ
337.500 µsec
.07 dB
WA SB
SC FS
CORR
CENTER 433.905 MHz
SPAN 0 Hz
RES BW 100 kHz
#VBW 300 kHz
#SWP 15 msec


MKR Δ 750.000 µsec
REF 90.0 dBµV ATTEN 10 dB
.16 dB
PEAK
LOG
10
dB/
CENTER
433.905 MHz
WA SB
SC FS
CORR
CENTER 433.905 MHz
SPAN 0 Hz
RES BW 100 kHz
#VBW 300 kHz
#SWP 15 msec


MKR 433.91955 MHz
81.92 dBµV
REF 90.0 dBµV
ATTEN 10 dB
PEAK
LOG
10
dB/
MARKER
433.91955 MHz
81.92 dBµV
WA SB
SC FS
CORR
CENTER 433.90500 MHz
SPAN 30.00 kHz
#RES BW 100 kHz
#VBW 100 kHz
#SWP 55 msec


MKR Δ 83.625001 msec
-.02 dB
REF 90.0 dBμV ATTEN 10 dB
PEAK
LOG
10
dB/
MARKER Δ
83.625001 msec
-.02 dB
WA SB
SC FS
CORR
CENTER 433.905 MHz
SPAN 0 Hz
#RES BW 100 kHz
#VBW 100 kHz
#SWP 150 msec


MKR Δ 40.050000 msec
REF 90.0 dBμV ATTEN 10 dB
-.50 dB
PEAK
LOG
10
dB/
MARKER Δ
40.050000 msec
-.50 dB
WA SB
SC FS
CORR
CENTER 433.905 MHz
SPAN 0 Hz
#RES BW 100 kHz
#VBW 100 kHz
#SWP 60 msec


MKR Δ 43.749999 msec
REF 90.0 dBμV ATTEN 10 dB
-.14 dB
PEAK
LOG
10
dB/
MARKER Δ
43.749999 msec
-.14 dB
WA SB
SC FS
CORR
CENTER 433.905 MHz
SPAN 0 Hz
#RES BW 100 kHz
#VBW 100 kHz
#SWP 50 msec

Compliance Certification Services Inc.

FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP

No. 165, Chung Sheng Road,
Hsin Tien City, Taipei, Taiwan, R.O.C.
TEL: 02-2217-0894 FAX: 02-2217-1029

Project #:	40517403
Report #:	40517403-RP
Date:	2004/05/18
Test Engr:	JASON LEE

Company:	NUTEK CORPORATION
EUT Description:	1027424(RF Programmer), Tx 433.92MHz
Test Configuration :	EUT ONLY
Type of Test:	FCC 15.231(b)/FCC 15.209
Mode of Operation:	Tx W/ AC Adaptor Mode (Worst)

E-Site

M% = ((t1+t2+t3+…)/T) * 100% = **44.97 %**

Av Reading = Pk Reading + 20*log(M%)

20*log(M%) = **-6.9415**

	Freq. (MHz)	Pk Rdg (dBuV)	Av Rdg (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)
X	433.88	77.39	70.45	15.15	3.84	27.06	62.38	80.82	-18.45	3mV	90	1.10
	867.80	57.25	50.31	19.73	5.85	27.15	48.74	60.82	-12.08	3mV	270	1.00
Y	433.88	85.14	78.20	15.15	3.84	27.06	70.13	80.82	-10.69	3mV	90	1.50
	867.81	57.41	50.47	19.73	5.85	27.15	48.90	60.82	-11.92	3mV	180	1.10
Z	433.87	89.10	82.16	15.15	3.84	27.06	74.09	80.82	-6.73	3mV	0	1.20
	867.81	57.13	50.19	19.73	5.85	27.15	48.62	60.82	-12.20	3mV	90	1.10
X	433.89	92.97	86.03	15.15	3.84	27.06	77.96	80.82	-2.86	3mH	180	1.00
	867.80	59.87	52.93	19.73	5.85	27.15	51.36	60.82	-9.46	3mH	180	1.20
Y	433.88	83.91	76.97	15.15	3.84	27.06	68.90	80.82	-11.92	3mH	90	1.30
	867.80	53.60	46.66	19.73	5.85	27.15	45.09	60.82	-15.73	3mH	270	1.10
Z	433.89	82.43	75.49	15.15	3.84	27.06	67.42	80.82	-13.40	3mH	0	1.00
	867.80	54.73	47.79	19.73	5.85	27.15	46.22	60.82	-14.60	3mH	360	1.50

AF/AT=AF+10dB(ATTENUATOR)
Peak: RBW= 100KHz
VBW= 300KHz
A(Average): Pk Reading - 6.9415dB

Total Data #12

Compliance Certification Services Inc.

FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP

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Project #:	40517403
Report #:	40517403-RP
Date:	2004/05/20
Test Engr:	JASON LEE

Company:	NUTEK CORPORATION
EUT Description:	1027424(RF Programmer), Tx 433.92MHz
Test Configuration :	EUT ONLY
Type of Test:	FCC 15.231(b)/FCC 15.209
Mode of Operation:	Tx W/ AC Adaptor Mode (Worst)

K-Site

Freq.	Pk Rdg	Av Rdg	AF	Closs	Pre-amp	Level	Limit	Margin	Pol	Az	Height	Mark
(MHz)	(dBuV)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	FCC_B	(dB)	(H/V)	(Deg)	(Meter)	(P/Q/A)
1302	**57.40**	**50.46**	**24.38**	**4.45**	**37.58**	**41.71**	**54.00**	**-12.29**	**3mV**	**90**	**1.2**	**A**
1736	**56.61**	**49.67**	**25.67**	**5.19**	**37.25**	**43.28**	**60.82**	**-17.54**	**3mV**	**180**	**1.0**	**A**
2170	**52.01**	**45.07**	**27.47**	**5.91**	**37.17**	**41.28**	**60.82**	**-19.54**	**3mV**	**270**	**1.0**	**A**
2603	**52.90**	**45.96**	**29.12**	**6.58**	**37.24**	**44.42**	**60.82**	**-16.40**	**3mV**	**90**	**1.1**	**A**
1302	**57.00**	**50.06**	**24.38**	**4.45**	**37.58**	**41.31**	**54.00**	**-12.69**	**3mH**	**90**	**1.1**	**A**
1736	**56.60**	**49.66**	**25.67**	**5.19**	**37.25**	**43.27**	**60.82**	**-17.55**	**3mH**	**0**	**1.0**	**A**
2603	**52.00**	**45.06**	**29.12**	**6.58**	**37.24**	**43.52**	**60.82**	**-17.30**	**3mH**	**270**	**1.0**	**A**

* No other emission were found within 20dB under the limits upto 4.5 GHz.

Total data # 7
V.2d

P(Peak): RBW=VBW=1MHz
A(Average): Pk Reading - 6.9415dB(For FCC 15.231(b))

COMPLIANCE Engineering Service, Inc.
FCC,VCCI,CISPR,CE
UL,CSA,TUV

No. 199, Chung Sheng Road,
Hsin Tien City, Taipei,
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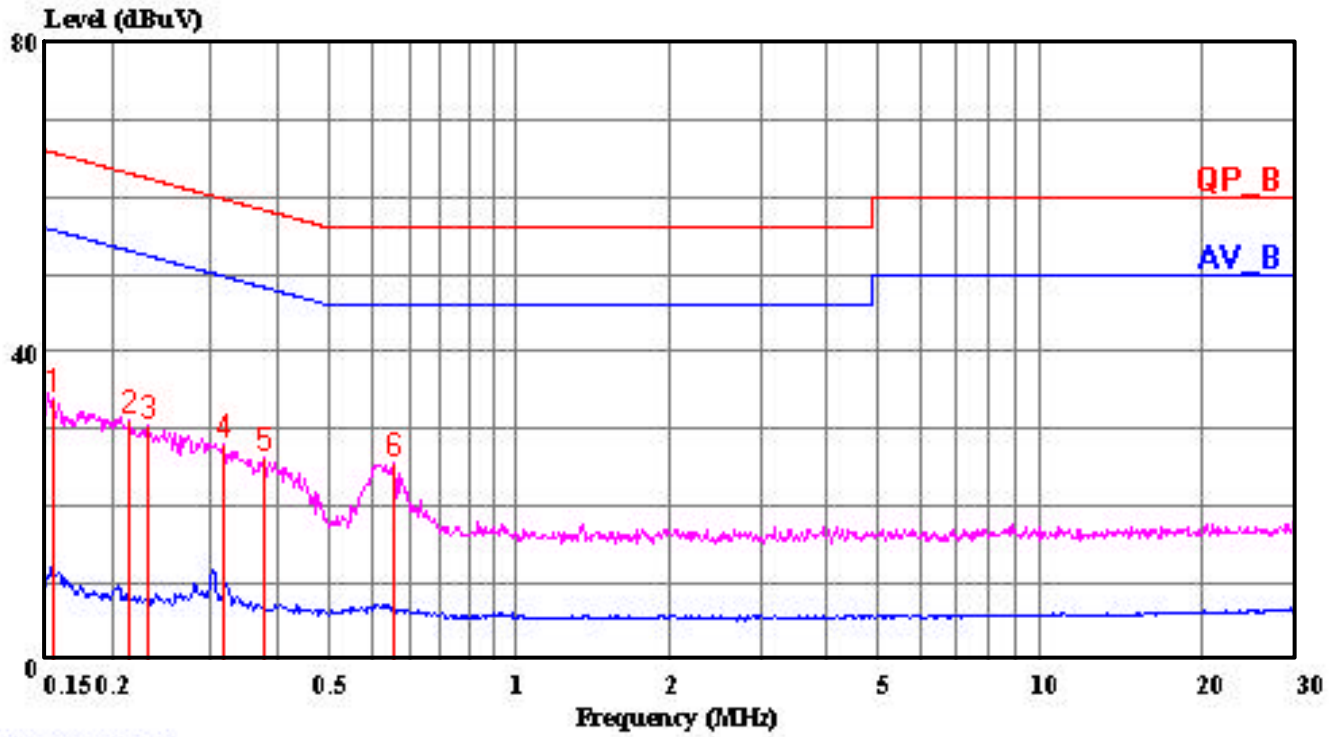
Tel:02-2217-0894 Fax:02-2217-1029

Data#: 3 File#: 40517403.emi Date: 2004-06-25 Time: 10:45:30



(Conduction A)

Trace: 2 1 Ref Trace:

Condition: LINE
Report No. : 40517403
Test Engr. : JASON LEE
Company : NUTEK CORPORATION
EUT : 1027424
Test Config : EUT ONLY
Type of Test: FCC 15.207
Mode of Op. : Tx W/ AC Adaptor Mode (Worst)

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.155	33.71	0.11	33.82	65.74	-31.92	Peak
2	0.214	30.91	0.11	31.02	63.05	-32.03	Peak
3	0.230	30.23	0.11	30.34	62.44	-32.09	Peak
4	0.320	27.81	0.12	27.93	59.71	-31.78	Peak
5	0.377	26.17	0.12	26.29	58.34	-32.05	Peak
6	0.654	25.51	0.13	25.64	56.00	-30.36	Peak

COMPLIANCE Engineering Service, Inc.
FCC,VCCI,CISPR,CE
UL,CSA,TUV

No. 199, Chung Sheng Road,
Hsin Tien City, Taipei,
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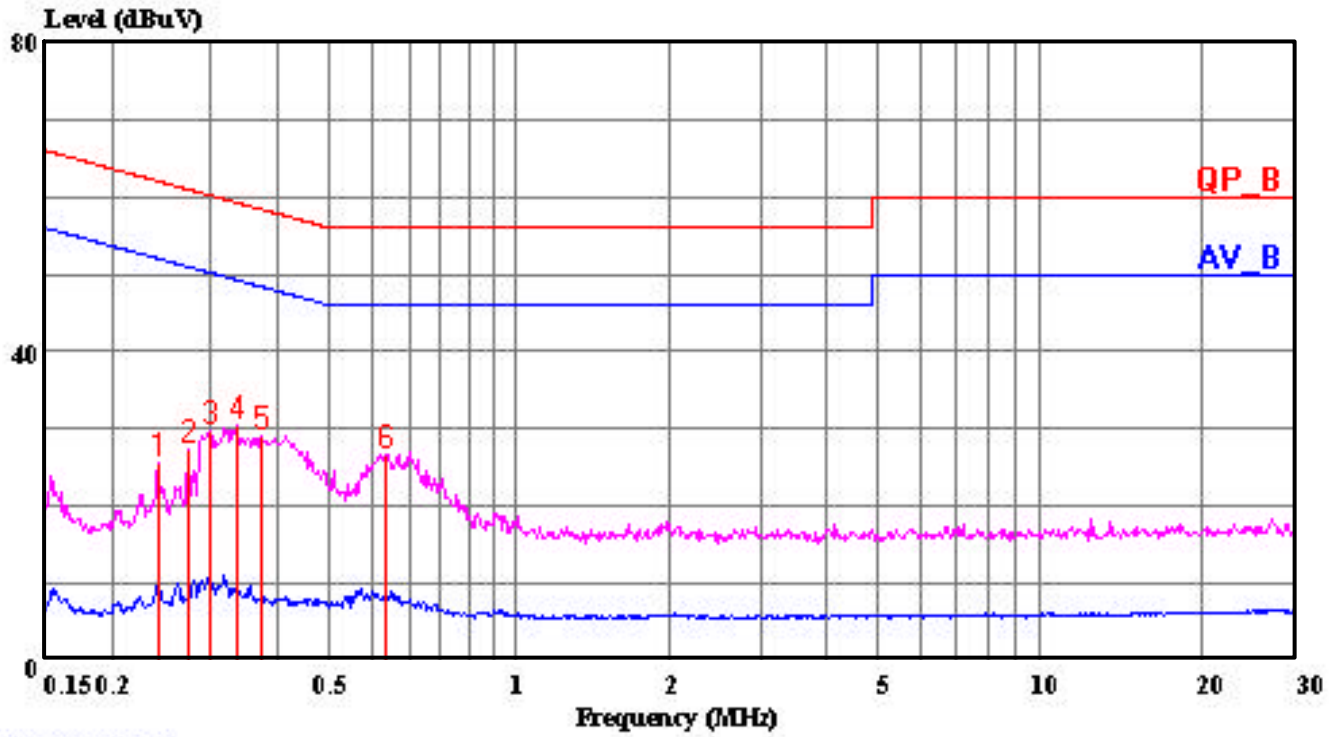
Tel:02-2217-0894 Fax:02-2217-1029

Data#: 6 File#: 40517403.emi Date: 2004-06-25 Time: 10:50:44



(Conduction A)

Trace: 5 4 Ref Trace:

Condition: NEUTRAL
Report No. : 40517403
Test Engr. : JASON LEE
Company : NUTEK CORPORATION
EUT : 1027424
Test Config : EUT ONLY
Type of Test: FCC 15.207
Mode of Op. : Tx W/ AC Adaptor Mode (Worst)

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.242	25.65	0.11	25.76	62.04	-36.27	Peak
2	0.274	27.09	0.12	27.21	60.98	-33.78	Peak
3	0.302	29.71	0.12	29.83	60.19	-30.36	Peak
4	0.337	30.41	0.12	30.53	59.27	-28.74	Peak
5	0.375	29.05	0.12	29.17	58.39	-29.22	Peak
6	0.637	26.63	0.13	26.76	56.00	-29.24	Peak