ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
CERTIFICATION TO FCC PART 15 REQUIREMENTS

for

INTENTIONAL RADIATOR

434 MHz CAR ALARM TRANSMITTER

MODEL NO: AC300-T

FCC ID NO: PEW-AC300-T

REPORT NO: 00E9156

ISSUE DATE: DECEMBER 19, 2000

Prepared for
MOLTEN CORP.
5 - 8, 1 CHOME, NAKAHIRO-CHO, NISHI-KU,
HIROSHIMA, JAPAN

Prepared by
COMPLIANCE ENGINEERING SERVICES, INC.
No. 199, CHUNG SHENG ROAD
HSIN TIEN CITY, TAIPEI, TAIWAN R.O.C.
TEL: (02) 2217-0894
FAX: (02) 2217-1254

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- Emission Bandwidth Plot
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1. VERIFICATION OF COMPLIANCE

COMPANY NAME:	MOLTEN CORP. 5 - 8, 1 CHOME, NAKAHIRO-CHO, NISHI-KU, HIROSHIMA, JAPAN
CONTACT PERSON:	MR. Y. NAGAO / G. MANAGER
TELEPHONE NO.:	81-82-232-5627
EUT DESCRIPTION:	434 MHz CAR ALARM TRANSMITTER
MODEL NAME/NUMBER:	AC300-T
FCC ID:	PEW-AC300-T
DATE TESTED:	NOVEMBER 30, 2000 ~ DECEMBER 04, 2000
REPORT NUMBER:	00E9156

TYPE OF EQUIPMENT	SECURITY EQUIPMENT (INTENTIONAL RADIATOR)
EQUIPMENT TYPE	434 MHz CAR ALARM TRANSMITTER
MEASUREMENT PROCEDURE	ANSI C63.4 / 1992
LIMIT TYPE	CERTIFICATION
FCC RULE	CFR 47, PART 15

The above equipment was tested by Compliance Certification Services 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 and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification will constitute fraud and shall nullify the document.

Rick Yeo

RICK YEO / EMC MANAGER
COMPLIANCE ENGINEERING SERVICES, INC.

COMPLIANCE ENGINEERING SERVICES, INC. DOCUMENT NO:CCSTP4006
NO.199, CHUNG SHENG ROAD, HSIN TIEN, TAIPEI, TAIWAN R.O.C. TEL:(02)2217-0894/FAX:2217-1254

2. Product Description

Fundamental Frequency	**434 MHz**
Power Source	**12V Battery**
Transmitting Time	**Periodic ≤ 5 seconds**
Associated Receiver	**FCC ID: PEW-AC300-R**

3. Test Facility

The open area test sites and conducted measurement facilities used to collect the radiated data are located at 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 C63.4/1992.

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

Manufacturer	**Model Number**	**Description**	**Cal Due Date**
H.P.	8566B	Spectrum Analyzer (100Hz – 22GHz)	12/00
R & S	ESBI-RF/1005.4300.52	EMI Test Receiver (20Hz-5GHz)	11/01
EMCO	3115	Antenna (1-18GHz)	09/01
EMCO	3142	Antenna (30-2000MHz)	06/01
T.E.C.	PA-102	Amplifier(30-2000MHz)	05/01
MITEQ	NSP2600-44	Amplifier(1-26GHz)	12/00

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

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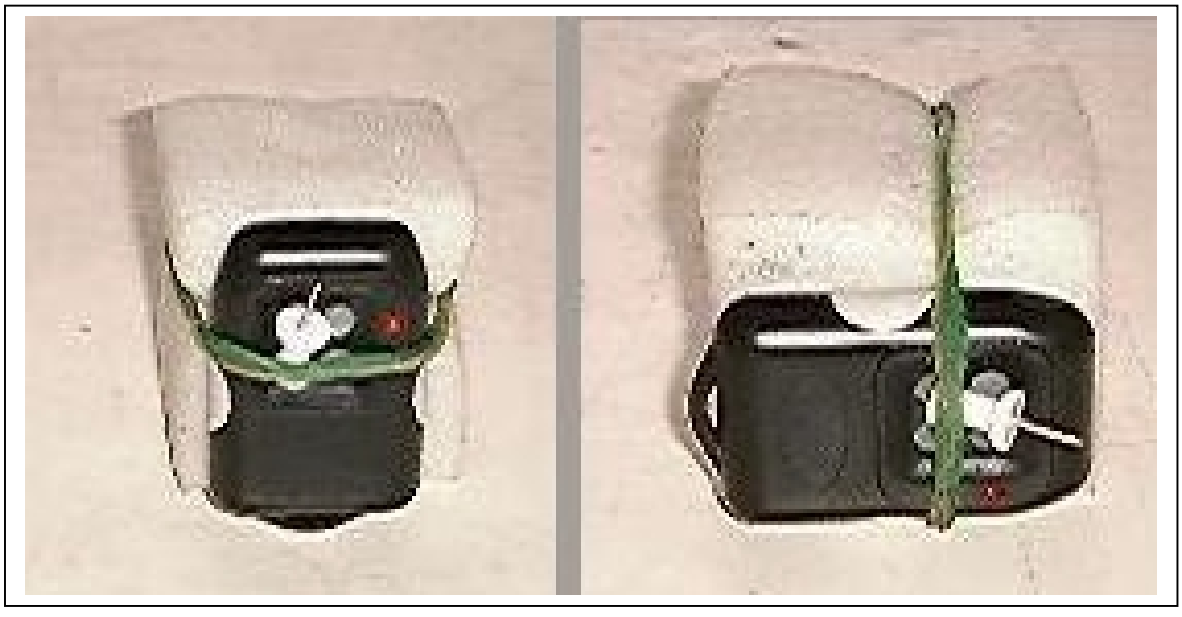
9. SYSTEM TEST CONFIGURATION

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.



10. Test Procedure
Radiated Emissions, 15.231(4)(b)

Test Set-up for frequency range 30 – 1000 MHz

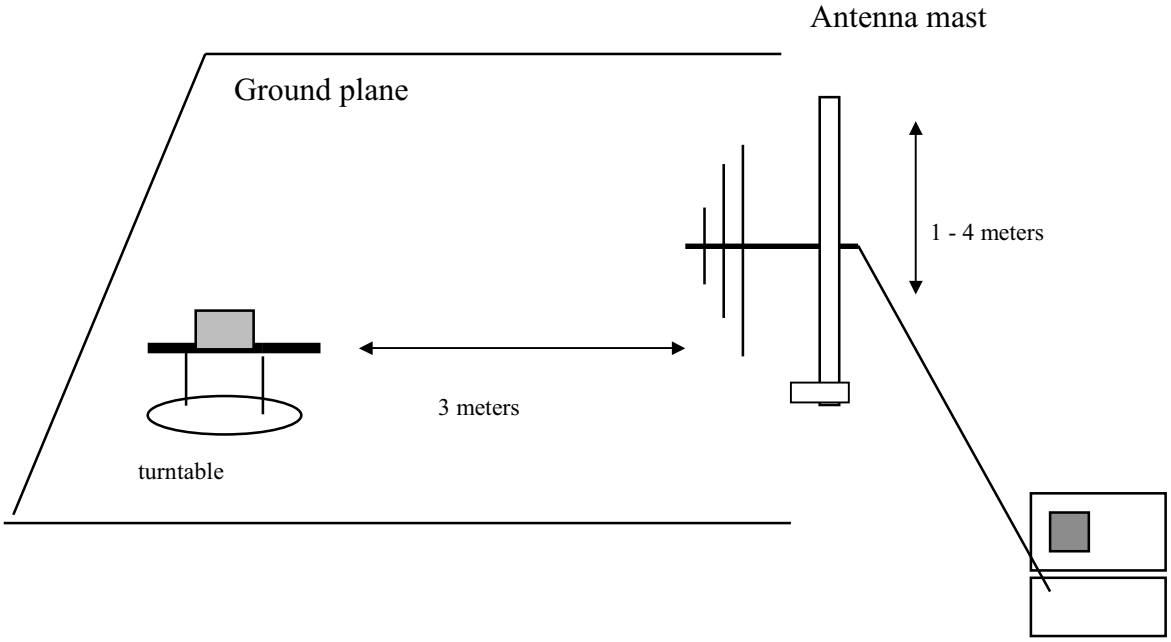


Fig. 1

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

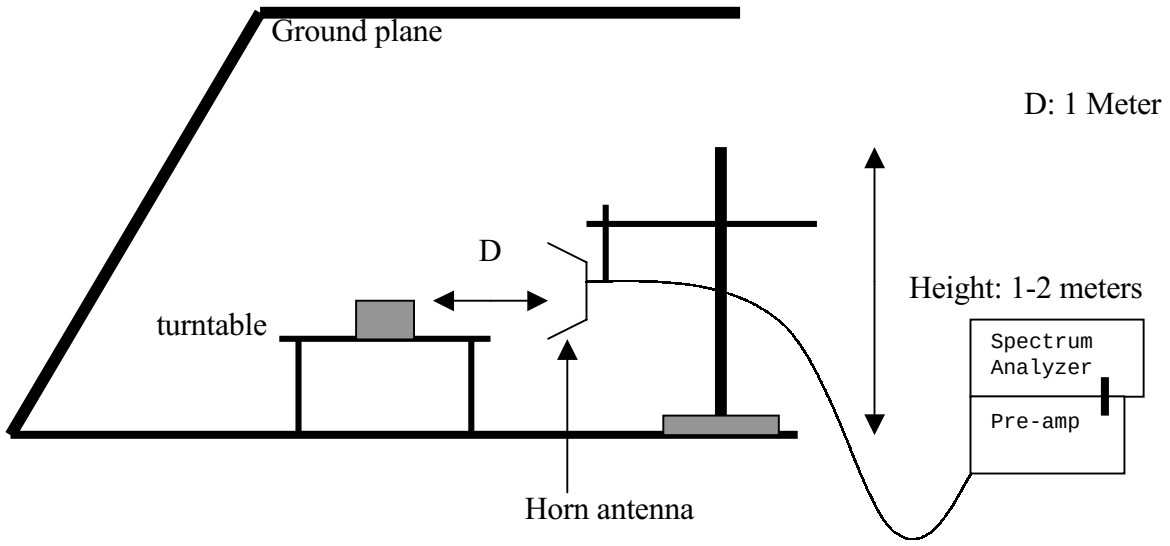


FIG. 2

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		SECTION 15.209	X
SECTION 15.205, 15.209, 15.221, 15.223, x 15.225 OR 15.227		SECTION 15.205	
BATTERY POWER	X	SECTION 15.231 (b)	X
		SECTION 15.231 (e)	

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	=33.155 mS.
	Long pulse	=0.522 mS
	Short pulse	=0.211 mS
	No of Long pulse	=20
	No of Short pulse	=9

Duty Cycle = (N1L1+N2L2+…+Nn-1Ln-1+NnLn)/100 or T

Duty Cycle = ((20X0.522)+(9x0.211))/33.155=0.3722=37.22% or –8.58dB

12.2 The Emissions Bandwidth

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

Center Frequency	Measured	Limits
434 MHz	**344.4 kHz < (refer to plot)**	**434X0.25%=1085 kHz**

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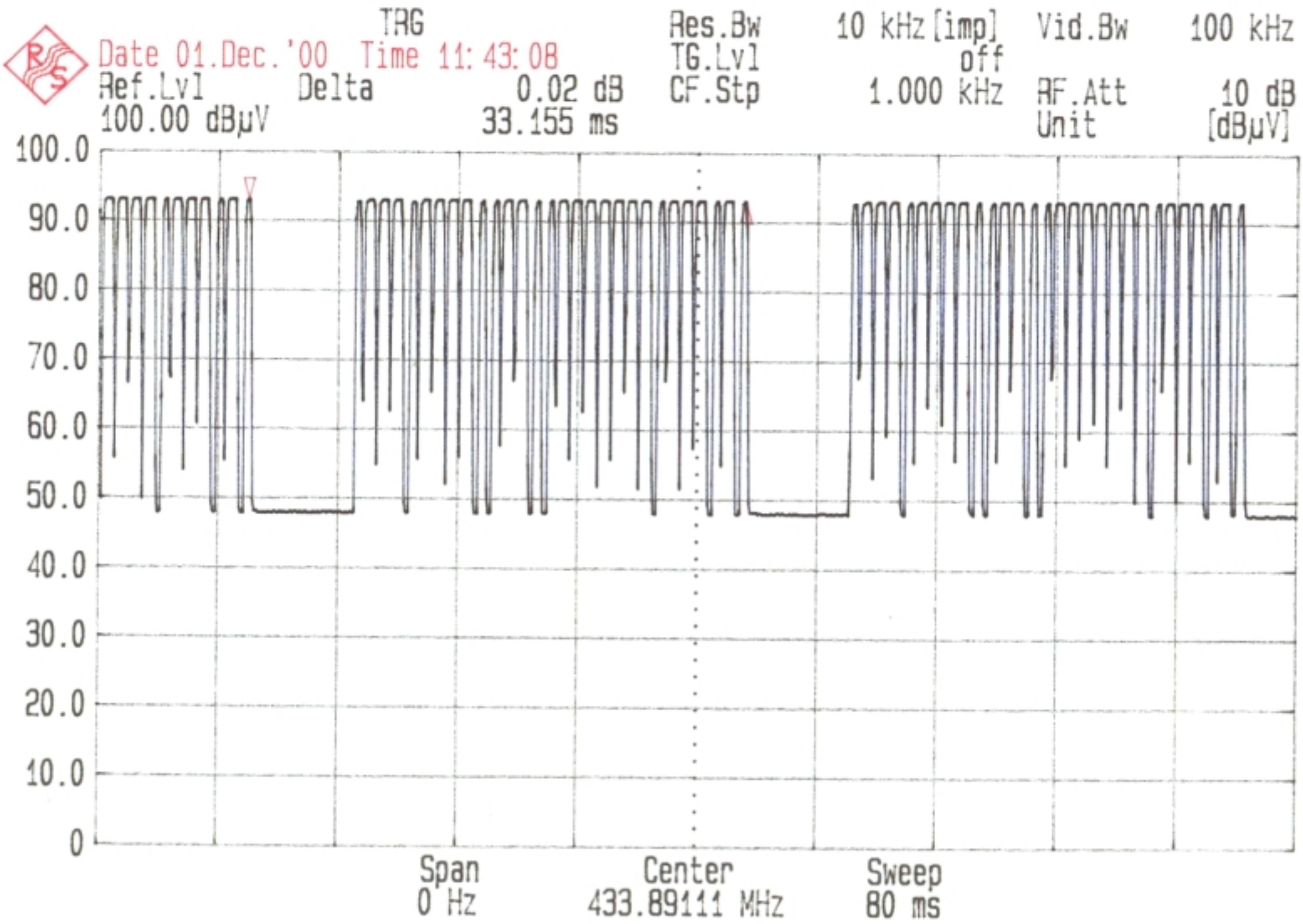
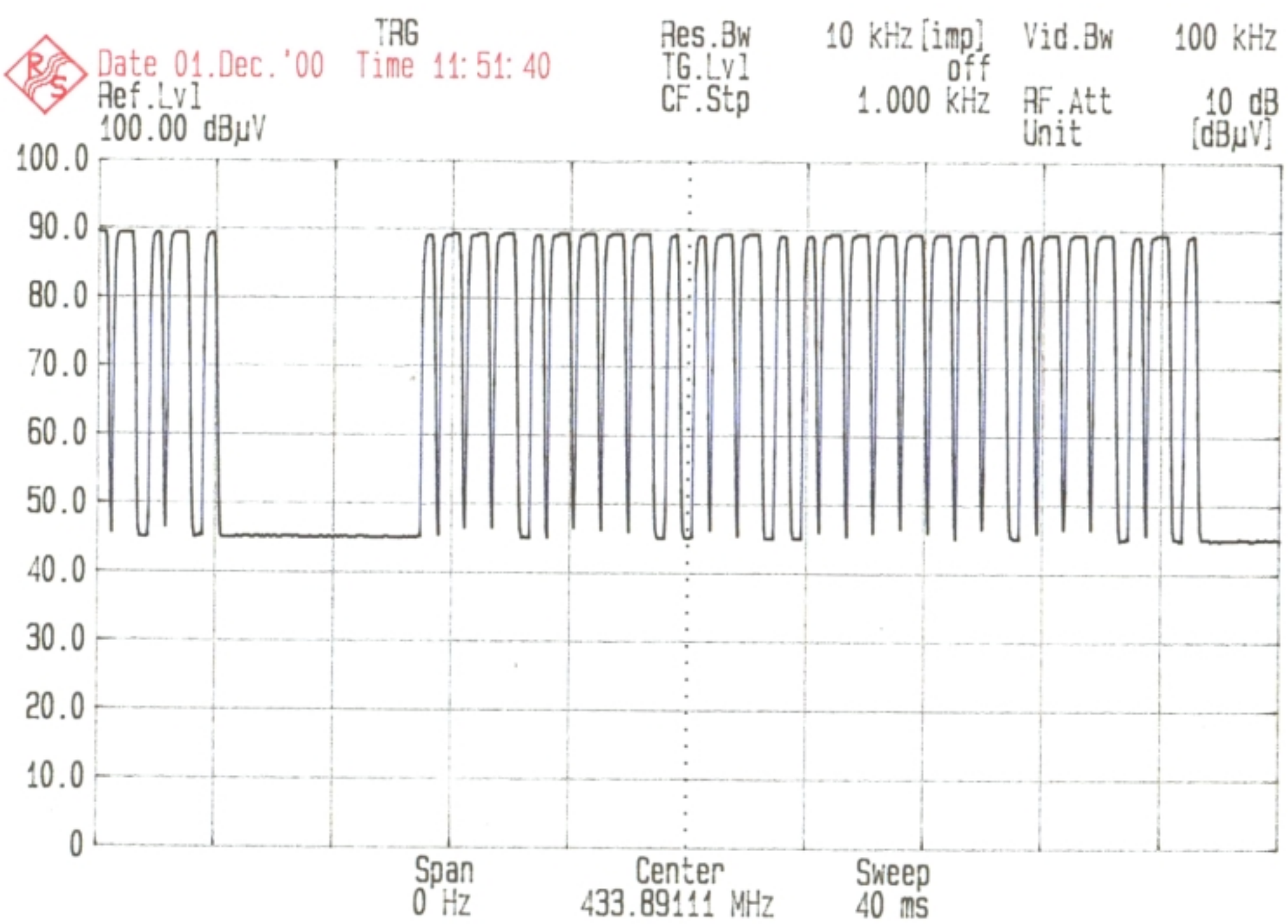
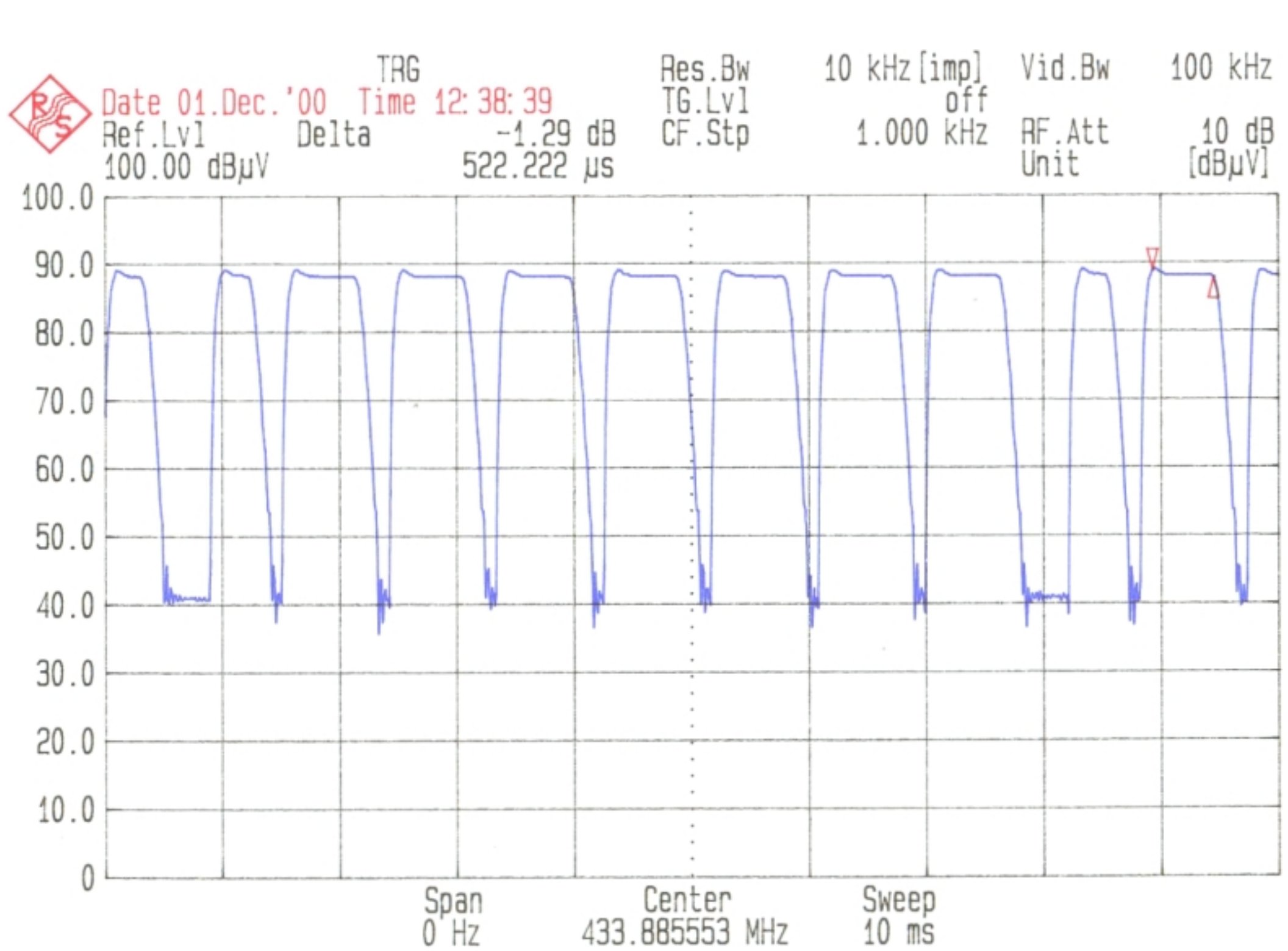
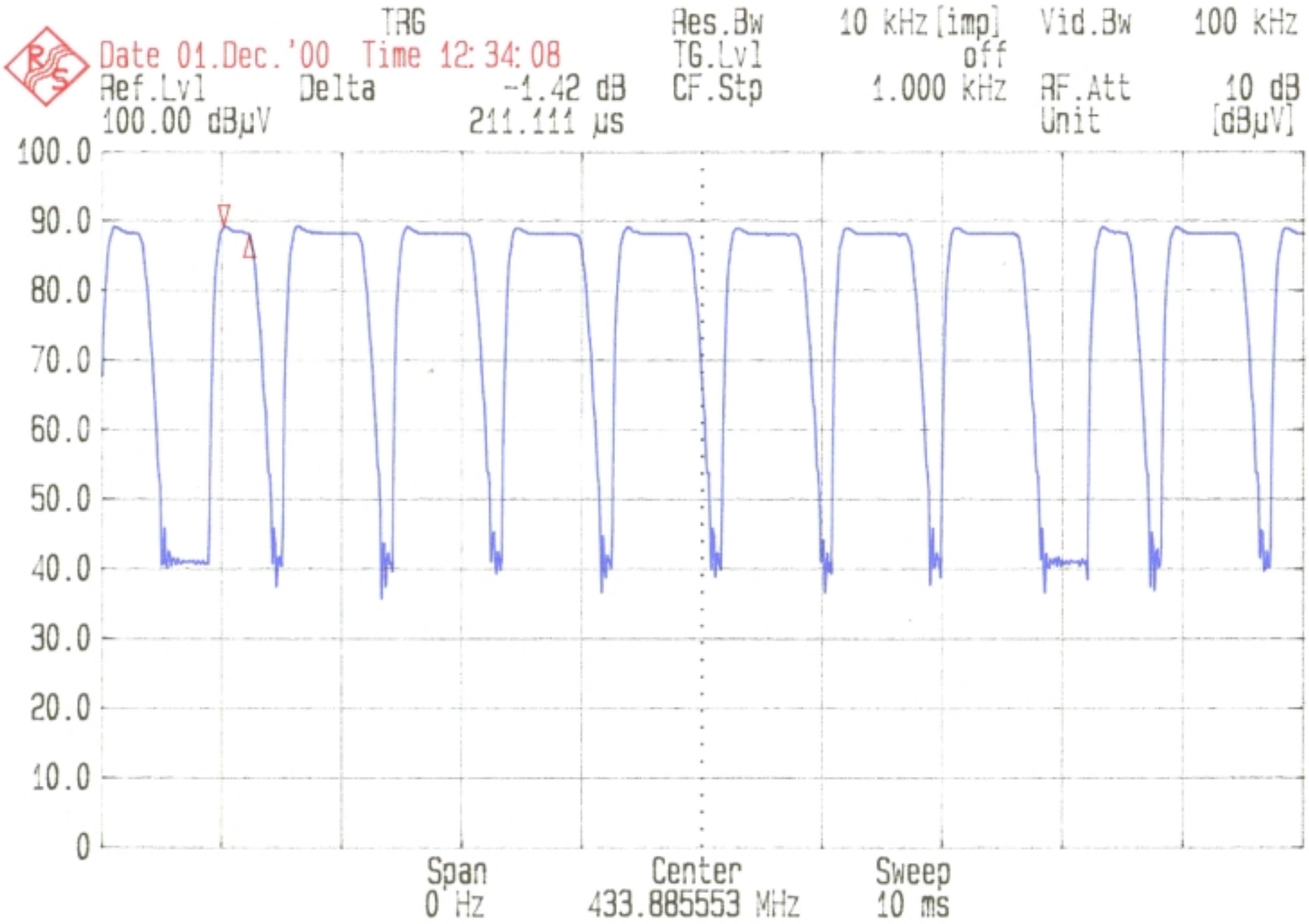
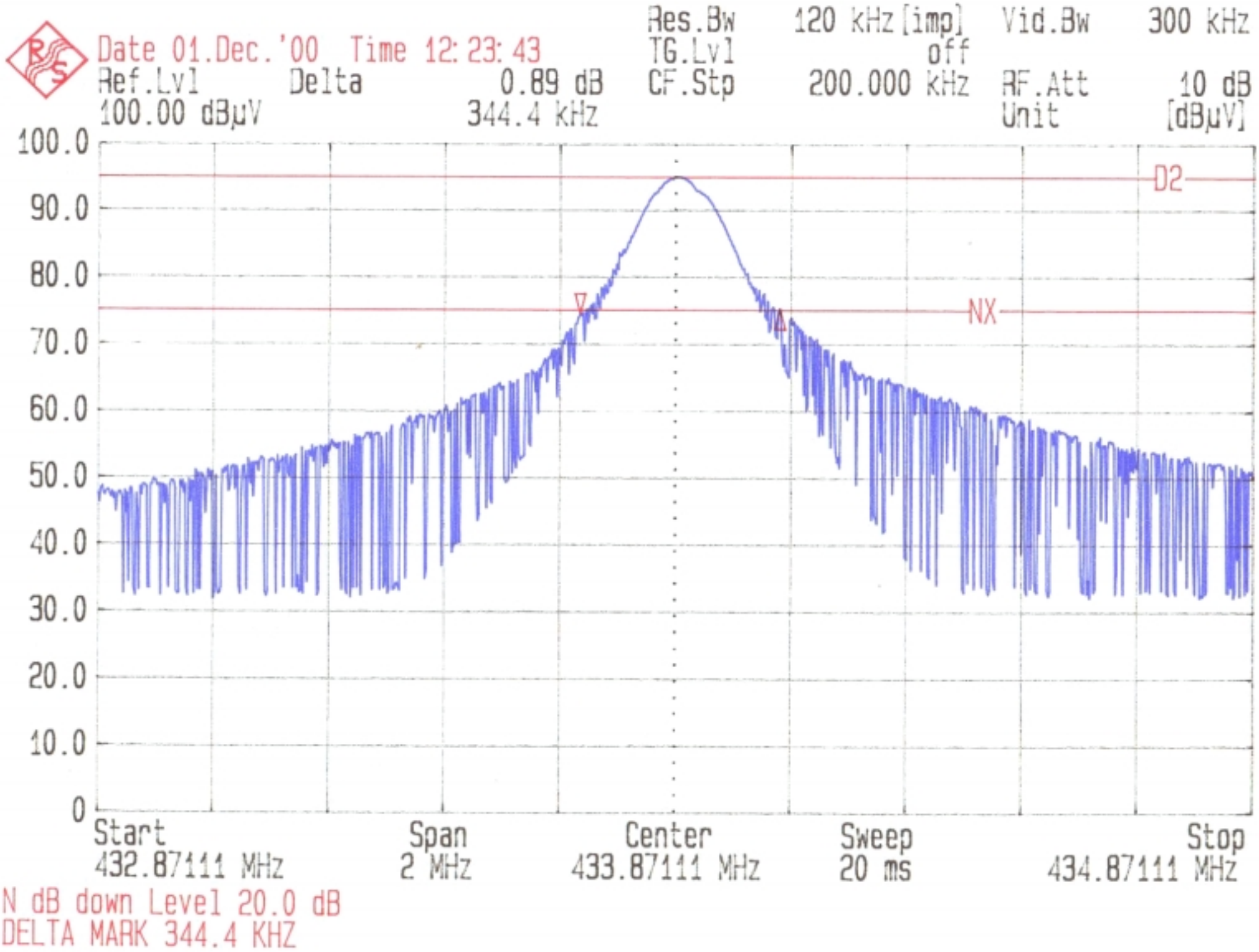

TRG
Res.Bw 10 kHz [imp]
Vid.Bw 100 kHz
Date 01.Dec.'00 Time 11:43:08
TG.Lvl off
Ref.Lvl Delta 0.02 dB
CF.Stp 1.000 kHz
RF.Att 10 dB
100.00 dBµV 33.155 ms
Unit [dBµV]
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
Span 0 Hz
Center 433.89111 MHz
Sweep 80 ms


TRG
Date 01.Dec.'00 Time 11:51:40
Res.Bw 10 kHz [imp]
TG.Lvl off
CF.Stp 1.000 kHz
Vid.Bw 100 kHz
RF.Att 10 dB
Unit [dBµV]
Ref.Lvl
100.00 dBµV
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
Span
0 Hz
Center
433.89111 MHz
Sweep
40 ms


TRG
Res.Bw 10 kHz [imp]
Vid.Bw 100 kHz
Date 01.Dec.'00 Time 12:38:39
TG.Lvl off
Ref.Lvl Delta -1.29 dB
CF.Stp 1.000 kHz
RF.Att 10 dB
100.00 dBµV 522.222 µs
Unit [dBµV]
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
Span 0 Hz
Center 433.885553 MHz
Sweep 10 ms


TRG
Res.Bw 10 kHz [imp]
Vid.Bw 100 kHz
Date 01.Dec.'00 Time 12:34:08
TG.Lvl off
Ref.Lvl Delta -1.42 dB
CF.Stp 1.000 kHz
RF.Att 10 dB
100.00 dBµV 211.111 µs
Unit [dBµV]
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
Span 0 Hz
Center 433.885553 MHz
Sweep 10 ms


Date 01.Dec.'00 Time 12:23:43
Res.Bw 120 kHz [imp]
Vid.Bw 300 kHz
TG.Lvl off
Ref.Lvl 100.00 dBµV
Delta 0.89 dB
344.4 kHz
CF.Stp 200.000 kHz
RF.Att 10 dB
Unit [dBµV]
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
D2
NX
Start 432.87111 MHz
Span 2 MHz
Center 433.87111 MHz
Sweep 20 ms
Stop 434.87111 MHz
N dB down Level 20.0 dB
DELTA MARK 344.4 KHZ

COMPLIANCE Certification Services
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No. 199 Chung Sheng Road
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PHONE: 02-2217-0894 FAX: 02-2217-1254

Project #:	00E9156
Report #:	9156D1
Date& Time:	11/30/00
Test Engr:	BILL HUANG

Company:	MOLTEN CORP.
EUT Description:	AC300-T (Alarm TX / 434MHz)
Test Configuration :	EUT ONLY
Type of Test:	FCC CLASS B
Mode of Operation:	NORMAL MODE

(●) D-Site ( ) E-Site

M% = ((t1+t2+t3+…)/T) * 100% = **37.22 %**

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

20*log(M%) = **-8.5845**

	Freq.	Pk Rdg	Av Rdg	AF	Closs	Pre-amp	Level	Limit	Margin	Pol	Az	Height
	(MHz)	(dBuV)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	FCC_B	(dB)	(H/V)	(Deg)	(Meter)
	Button #1:											
X	433.92	76.64	68.06	17.50	2.58	21.28	66.86	80.83	-13.97	3mV	180	1.20
	867.83	44.55	35.97	23.37	4.47	20.69	43.12	60.83	-17.71	3mV	180	1.30
Y	433.91	79.79	71.21	17.50	2.58	21.28	70.01	80.83	-10.82	3mV	90	1.10
	867.84	39.72	31.14	23.37	4.47	20.69	38.29	60.83	-22.54	3mV	0	1.30
Z	433.91	86.47	77.89	17.50	2.58	21.28	76.69	80.83	-4.14	3mV	0	1.25
	867.84	38.25	29.67	23.37	4.47	20.69	36.82	60.83	-24.01	3mV	180	1.40
X	433.92	88.12	79.54	17.50	2.58	21.28	78.34	80.83	-2.49	3mH	90	1.25
	867.86	44.27	35.69	23.37	4.47	20.69	42.84	60.83	-17.99	3mH	90	1.30
Y	433.92	84.29	75.71	17.50	2.58	21.28	74.51	80.83	-6.32	3mH	180	1.40
	867.84	47.24	38.66	23.37	4.47	20.69	45.81	60.83	-15.02	3mH	180	1.25
Z	433.91	81.98	73.40	17.50	2.58	21.28	72.20	80.83	-8.63	3mH	0	1.20
	867.84	45.36	36.78	23.37	4.47	20.69	43.93	60.83	-16.90	3mH	0	1.15
	Button #2:											
X	433.92	72.73	64.15	17.50	2.58	21.28	62.95	80.83	-17.88	3mV	90	1.30
	867.87	44.27	35.69	23.37	4.47	20.69	42.84	60.83	-17.99	3mV	90	1.30
Y	433.91	79.89	71.31	17.50	2.58	21.28	70.11	80.83	-10.72	3mV	0	1.20
	867.84	41.90	33.32	23.37	4.47	20.69	40.47	60.83	-20.36	3mV	0	1.20
Z	433.91	89.37	80.79	17.50	2.58	21.28	79.59	80.83	-1.24	3mV	90	1.30
	867.80	48.66	40.08	23.37	4.47	20.69	47.23	60.83	-13.60	3mV	90	1.35
X	433.92	76.85	68.27	17.50	2.58	21.28	67.07	80.83	-13.76	3mH	0	1.30
	867.83	49.12	40.54	23.37	4.47	20.69	47.69	60.83	-13.14	3mH	0	1.20
Y	433.92	84.46	75.88	17.50	2.58	21.28	74.68	80.83	-6.15	3mH	180	1.30
	867.82	44.16	35.58	23.37	4.47	20.69	42.73	60.83	-18.10	3mH	180	1.10
Z	433.90	84.18	75.60	17.50	2.58	21.28	74.40	80.83	-6.43	3mH	0	1.20
	867.84	47.19	38.61	23.37	4.47	20.69	45.76	60.83	-15.07	3mH	0	1.25
	Total data #: 24											

COMPLIANCE Certification Services
FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP
No. 199 Chung Sheng Road
Hsin Tien City, Taipei, Taiwan, R.O.C.
PHONE: 02-2217-0894 FAX: 02-2217-1254

Project #:	00E9156
Report #:	9156D2
Date& Time:	11/30/00
Test Engr:	BILL HUANG

Company:	MOLTEN CORP.
EUT Description:	AC300-T (Alarm TX / 434MHz)
Test Configuration :	EUT ONLY
Type of Test:	FCC CLASS B
Mode of Operation:	NORMAL MODE

(●) D-Site ( ) E-Site

M% = ((t1+t2+t3+…)/T) * 100% = **37.22 %**

Av Reading = Pk Reading + 20*log(M%)
20*log(M%) = **-8.5845**

	Freq.	Pk Rdg	Av Rdg	AF	Closs	Pre-amp	Level	Limit	Margin	Pol	Az	Height
	(MHz)	(dBuV)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	FCC_B	(dB)	(H/V)	(Deg)	(Meter)
	Button #3:											
X	433.92	76.14	67.56	17.50	2.58	21.28	66.36	80.83	-14.47	3mV	0	1.10
	867.84	42.36	33.78	23.37	4.47	20.69	40.93	60.83	-19.90	3mV	0	1.50
Y	433.91	84.26	75.68	17.50	2.58	21.28	74.48	80.83	-6.35	3mV	180	1.10
	867.83	45.28	36.70	23.37	4.47	20.69	43.85	60.83	-16.98	3mV	180	1.25
Z	433.90	82.33	73.75	17.50	2.58	21.28	72.55	80.83	-8.28	3mV	0	1.25
	867.80	48.10	39.52	23.37	4.47	20.69	46.67	60.83	-14.16	3mV	0	1.35
X	433.92	76.77	68.19	17.50	2.58	21.28	66.99	80.83	-13.84	3mH	90	1.30
	867.84	48.18	39.60	23.37	4.47	20.69	46.75	60.83	-14.08	3mH	90	1.35
Y	433.92	84.29	75.71	17.50	2.58	21.28	74.51	80.83	-6.32	3mH	180	1.20
	867.86	42.72	34.14	23.37	4.47	20.69	41.29	60.83	-19.54	3mH	180	1.35
Z	433.92	81.65	73.07	17.50	2.58	21.28	71.87	80.83	-8.96	3mH	0	1.25
	867.84	45.33	36.75	23.37	4.47	20.69	43.90	60.83	-16.93	3mH	0	1.35
	Button #4:											
X	433.91	66.66	58.08	17.50	2.58	21.28	56.88	80.83	-23.95	3mV	180	1.20
	867.86	42.89	34.31	23.37	4.47	20.69	41.46	60.83	-19.37	3mV	180	1.20
Y	433.92	87.13	78.55	17.50	2.58	21.28	77.35	80.83	-3.48	3mV	0	1.10
	867.85	50.36	41.78	23.37	4.47	20.69	48.93	60.83	-11.90	3mV	0	1.10
Z	433.89	87.64	79.06	17.50	2.58	21.28	77.86	80.83	-2.97	3mV	90	1.30
	867.79	49.65	41.07	23.37	4.47	20.69	48.22	60.83	-12.61	3mV	90	1.35
X	433.92	88.88	80.30	17.50	2.58	21.28	79.10	80.83	-1.73	3mH	0	1.30
	867.85	48.86	40.28	23.37	4.47	20.69	47.43	60.83	-13.40	3mH	0	1.20
Y	433.92	82.13	73.55	17.50	2.58	21.28	72.35	80.83	-8.48	3mH	180	1.10
	867.86	44.80	36.22	23.37	4.47	20.69	43.37	60.83	-17.46	3mH	180	1.10
Z	433.91	84.01	75.43	17.50	2.58	21.28	74.23	80.83	-6.60	3mH	90	1.25
	867.85	48.35	39.77	23.37	4.47	20.69	46.92	60.83	-13.91	3mH	90	1.25
	Total data #: 24											

COMPLIANCE Certification Services

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

1366 BORDEAUX DRIVE, SUNNYVALE, CA 94089
PHONE: (408) 752-8166 FAX: (408) 752-8168

Project #:	00E9156
Report #:	9156D3
Date& Time:	12/04/00
Test Engr:	BILL HUANG

Company:	MOLTEN CORP
EUT Description:	AC300-T (Alarm TX / 434MHz)
Test Configuration :	EUT ONLY
Type of Test:	FCC 15.231(b)/FCC 15.209
Mode of Operation:	NORMAL MODE

(•) D-Site ( ) E-Site | 6 Worst | Descendin

Freq. (MHz)	Pk Rdg (dBuV)	Av Rdg (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Dist dB	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter	Mark (P/Q/A)
1302	60.92	52.34	25.1	2.8	43.27	-9.5	27.52	54.0	-26.48	1mV	0	1.2	P
3905	48.1	39.50	32.8	5.1	42.06	-9.5	25.86	54.0	-28.14	1mV	0	1.2	P
1736	53.83	45.25	26.1	3.3	43.04	-9.5	22.13	60.8	-38.67	1mV	0	1.2	A
2170	59.46	50.88	27.8	3.7	42.82	-9.5	29.99	60.8	-30.81	1mV	0	1.2	A
2604	42.90	34.32	29.2	3.9	42.59	-9.5	15.35	60.8	-45.45	1mV	0	1.2	A
3037	49.50	40.92	30.9	4.2	42.37	-9.5	24.10	60.8	-36.70	1mV	0	1.2	A
3471	50.29	41.71	32.8	4.6	42.22	-9.5	27.42	60.8	-33.38	1mV	0	1.2	A
1302	64.66	56.08	25.1	2.8	43.27	-9.5	31.26	54.0	-22.74	1mH	180	1.0	P
1736	58.63	50.05	26.1	3.3	43.04	-9.5	26.93	60.8	-33.90	1mH	270	1.0	A
2170	63.03	54.45	27.8	3.7	42.82	-9.5	33.58	60.8	-27.25	1mH	90	1.1	A
2603	48.54	39.96	29.2	3.9	42.59	-9.5	20.99	60.8	-39.84	1mH	90	1.2	A
3037	51.52	42.94	30.9	4.2	42.37	-9.5	26.12	60.8	-34.71	1mH	180	1.1	A
3471	40.32	31.74	32.8	4.6	42.22	-9.5	17.45	60.8	-43.38	1mH	180	1.1	A

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

Total data #:13 V.2d

P(Peak): RBW=VBW=1MHz
A(Average): Pk Reading-8.5845dB

Distance = 20log(1/3)= -9.5dB