DAYTON T. BROWN, INC.
Founded 1950
ENGINEERING AND TEST DIVISION
CHURCH STREET, BOHEMIA, LONG ISLAND, NEW YORK 11716 (516) 589-6300

TEST REPORT NO.: DTB01R98-0853

DAYTON T. BROWN, INC. JOB NO.: 400267-00-000

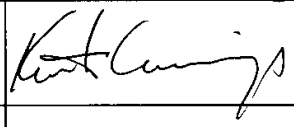
CUSTOMER: P-Q CONTROLS, INC.
95 DOLPHIN ROAD
BRISTOL, CT 06010

SUBJECT: FCC CODE OF FEDERAL REGULATIONS, 47 CFR, PART 15, SUB-PART C TESTING PERFORMED ON ONE 418 MHz PISTOL GRIP TRANSMITTER, DTB SERIAL NO. 1

PURCHASE ORDER NO.: 24905B

ATTENTION: MR. DAVID SCHUMANN

THIS REPORT CONTAINS: SIX PAGES AND FIVE ENCLOSURES

TEST ENGINEER		R. MONTICELLO
DEPARTMENT SUPERVISOR		K. CUMMINGS
OPERATIONS MANAGER		D. MELORE
DATE	3 DECEMBER 1998	

THE DATA CONTAINED IN THIS REPORT WAS OBTAINED BY TESTING IN COMPLIANCE WITH THE APPLICABLE TEST SPECIFICATION AS NOTED

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TABLE OF CONTENTS

1.0 ABSTRACT

This report details the results of the FCC Code of Federal Regulations, 47 CFR, Part 15, Sub-Part C testing performed on one 418 MHz Pistol Grip Transmitter, DTB Serial No. 1, manufactured by P-Q Controls, Inc.

The 418 MHz Pistol Grip Transmitter was found to be in compliance with the radiated portions of the FCC Code of Federal Regulations, 47 CFR, Part 15, Sub-Part C, specification limits.

Detailed test results can be observed in Enclosures 2 and 3 of this report.

The test results recorded in this report relate only to those items tested.

2.0 REFERENCES

(a)	Customer Purchase Order No.:	24905B
(b)	Dayton T. Brown, Inc. Job No.:	400267-00-000
(c)	Test Specification:	Code of Federal Regulations, 47 CFR, Part 15, Sub-Part C
(d)	Test Procedure:	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz, ANSI C63.4-1992, dated 17 July 1992

3.0 ADMINISTRATIVE INFORMATION

Customer:	P-Q Controls, Inc. 95 Dolphin Road Bristol, CT 06010
Manufacturer:	P-Q Controls, Inc.
Test Item:	418 MHz Pistol Grip Transmitter
Quantity Received:	One
DTB Serial No.:	1
Test Start Date:	5 August 1998
Test Completion Date:	14 October 1998
Disposition of Test Item:	The test sample was returned to P-Q Controls, Inc. on 14 October 1998.

4.0 TEST PROGRAM OUTLINE

Description of Test Method	Results
Radiated Emission, Intentional Radiator, 30 MHz to 5 GHz	Met the specification requirements.
Occupied Bandwidth	Met the specification requirements

5.0 GENERAL TEST INFORMATION

Setup

For the radiated emission test in the frequency range of 30 to 1000 MHz, the test sample was set up in a climate controlled open field site that measures 44 feet long by 24 feet wide by 24 feet high.

For the radiated emission test in the frequency range of 1 to 5 GHz, the test sample was set up in an anechoic chamber that measures 30 feet wide by 32 feet long by 12 feet high.

Unit Operation:

Operational Mode Tested - Transmit Mode - The test sample was transmitting at 418.0 MHz.

Enclosure 1

Test Equipment List

Test equipment utilized for the program reported herein was within its assigned interval of calibration.
Details are on file at Dayton T. Brown, Inc. and will be made available upon request.

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TEST	ITEM	MANUFACTURER	DTB NO.	EQUIPMENT CHARACTERISTIC	MODEL	SERIAL NO.	CALIBRATION DUE DATE
Radiated Emission	BiLog Antenna	Chase-York	27-1	30 - 2000 MHz	CBL 6112	2055	4/4/99
Occupied Bandwidth	Double Ridge Waveguide Antenna	Electro-Mechanics Co.	27-40	200 - 2000 MHz	3106	2035	11/28/99
Radiated Emission	Double Ridge Waveguide Antenna	Electro-Mechanics Co.	27-55	1.0 - 18 GHz	3115	2072	10/18/98
Radiated Emission	Metering Module	Electro-Metrics	65-142-1	10 kHz - 1.0 GHz	CRM 25	136	7/12/99
Radiated Emission	Analyzer, Interference	Electro-Metrics	65-143	10 kHz - 1.0 GHz	EMC 25 Mk III	656	7/5/99
Occupied Bandwidth	Plotter A & B Size	Hewlett-Packard	65-205-1	HPIB & Serial Interface	7550A	2848A-22163	-
Rad. Emiss., Occupied Bandwidth	Spectrum Analyzer	Hewlett-Packard	65-247	10 kHz - 26.5 GHz	8563A	3220A 01924	11/8/98
Radiated Emission	Preamplifier	Hewlett-Packard	71-11	1 - 26.5 GHz 30 dB Gain	8449B	3008A-00284	12/13/98
Rad. Emiss., Occupied Bandwidth	Anechoic Facility	Dayton T. Brown, Inc.	-	30 ft x 32 ft 12 ft High	-	Anechoic Room	-
Radiated Emission	FCC Facility	Dayton T. Brown, Inc.	-	44 ft x 24 ft 24 ft High	-	FCC Site	-

Enclosure 2

Radiated Emission,
Intentional Radiator, 30 MHz to 5 GHz

DAYTON T. BROWN INC.
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RADIATED EMISSION, INTENTIONAL RADIATOR, 30 MHz to 5 GHz

Test Procedure

A radiated emission test, in the frequency range of 30 to 1000 MHz, was performed on the 418 MHz Pistol Grip Transmitter while it was mounted on a wooden table that was standing on a conductive turntable.

For the frequency range of 30 to 1000 MHz, measurements were made utilizing a manually tuned interference measurement receiver which was located in the instrumentation room below the ground plane.

The interference measurement receiver was connected to the measurement antenna which was located 3 meters from the turntable for the frequency range of 30 to 1000 MHz.

A linear polarized antenna was utilized for the measurements. The antenna height was varied between 1 and 4 meters and the test sample was rotated 360° to ensure maximum pickup from the test sample.

A radiated emission test, in the frequency range of 1 to 5 GHz, was performed on the 418 MHz Pistol Grip Transmitter while it was mounted on a wooden table in an anechoic chamber.

For the frequency range of 1 to 5 GHz, measurements were made utilizing a spectrum analyzer located in a shielded enclosure which was attached to the anechoic enclosure.

The spectrum analyzer was connected to the measurement antenna, which was located 3 meters from the table for the frequency range of 1 to 5 GHz, with a length of 50Ω coaxial cable.

The 418 MHz Pistol Grip Transmitter utilizes pulse modulation with a 50% duty cycle.

Any emissions not reported were at least 20 dB below the specification limits.

Measurements were made utilizing the following bandwidth and detector function:

Frequency Range	CISPR Bandwidth	Detector Function
30 to 1000 MHz	120 kHz	Quasi-Peak
1 to 5 GHz	100 kHz	Peak

The antenna per meter factors of the antennas utilized are depicted in the figures contained in this enclosure.

RADIATED EMISSION,
INTENTIONAL RADIATOR, 30 MHz to 5 GHz
(Continued)

Initial Test Results

Emission levels above the FCC Code of Federal Regulations, 47 CFR, Part 15, Sub-Part C, specification limits were observed as follows:

Mode	Frequency	Antenna Polarization	Level and Freq. above Spec.
Transmitting	388 MHz	Vertical	3.77 dB at 388 MHz
	422 MHz		14.66 dB at 422 MHz
	422 MHz	Horizontal	3.86 dB at 422 MHz

Detailed initial test results for the radiated emission test for intentional radiators can be observed on pages 3 through 6 of this enclosure.

A network consisting of a 45.3Ω resistor in series with another 45.3Ω resistor, with a 5Ω resistor to ground from the junction of the two 45.3Ω resistors, was wired between the RF module and the antenna.

The radiated emission test was then repeated on the 418 MHz Pistol Grip Transmitter.

The test setup employed is depicted in the photographs contained in this enclosure.

Retest Results

No emission levels above the FCC Code of Federal Regulations, 47 CFR, Part 15, Sub-Part C, specification limits were observed when the above mentioned network was installed in the 418 MHz Pistol Grip Transmitter.

Detailed retest results for the radiated emission test for intentional radiators can be observed on pages 7 through 10 of this enclosure.

DAYTON T. BROWN, INC.
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Date : 6 Aug 1998

Test Item : Pistol Grip Transmitter
Serial No. : None

Customer : PQ Controls
Job No. : 400267-00-000

Test Condition : Transmitting
Antenna Pol.: Vertical

Specification : FCC Rules & Reg., Part 15, Sub-Part C
Units : dBμV/m

Test: Radiated Field Strength Measurements

Met Requirement Yes ☐ No ☑

Freq. (MHz)	Meter Indicated dBμV	Antenna Factor dB	Cable Loss dB	Pre-Amp Gain dB	Total Indicated dBμV/m	Spec. Limit dBμV/m		Level Above Spec. Limit		
30	-7	18.2	0.29	0	11.49	40.0				
110	9	13.1	0.60	0	22.7	43.5				
281	17	13.2	0.97	0	31.17	46.0				
317	-1	14.2	1.05	0	14.25	46.0				
388	33	15.6	1.17	0	49.77	46.0		3.77		
420	18	17.1	1.28	0	36.38	46.0				
422	77	17.2	1.36	0	95.56	80.9		14.66		
1000	-2	20.3	2.19	0	20.49	54.0				

Remarks : **INITIAL TEST**

Data Reviewed By: R. Smith Test Performed By: Lawrence Williams

98-0853 Enc 2 Pg 4

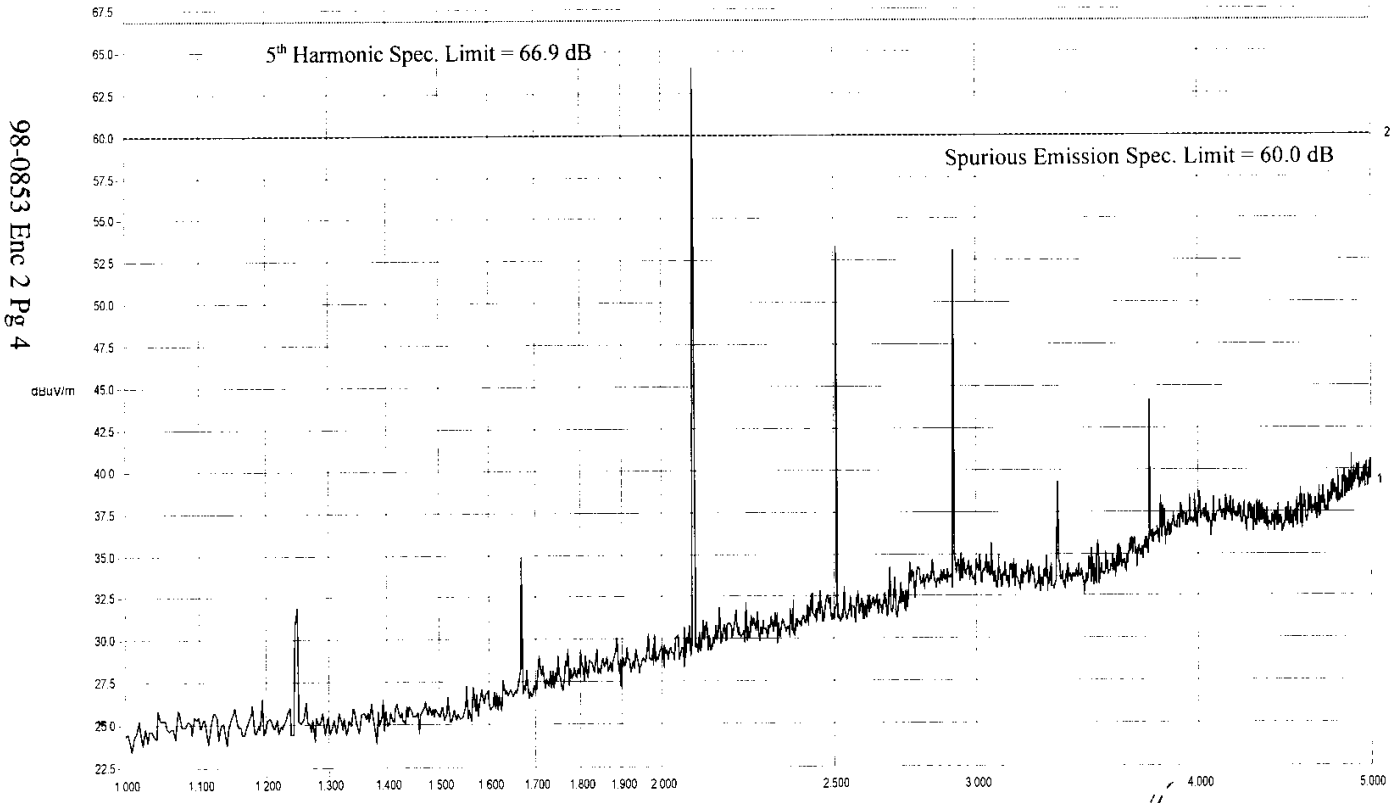
Test Title:	**Radiated Emissions**
Test Procedure:	FCC Part 15, Sub -Part C
Customer:	P Q Controls
Test Item:	Pistol Grip Transmitter
Model Num.:	N/A
Part Num.:	N/A
Serial Num.:	DTB # 1
Mode of Op.:	Normal Operation
Comment:	Limit Relaxed by 6 dB

Date:	8/7/98	Time:	2:57 PM
Tested By:	Lawrence Williams		
Project Eng.:	R. Monticello		
Job Num.:	400272-00-000		
Test Num.:	001		
Sensor Loc.:	3 meter distance		
Sensor Pol.:	Vertical		

1. RE Data
2. 400267_xmtr.rel (spec limit)
3. 400272_harmonic.rel (spec limit)

File Name: 0272001.red

INITIAL TEST



BW Table

Frequency	BW
1.00 GHz	1.00E6 Hz
5.00 GHz	

Factor Files

27-55.rea (1.00 GHz)

Correction Files

- sma11cc.rec (1.00 GHz) (cable)
- sma11b.rec (1.00 GHz) (2nd cable)
- sma111.rec (1.00 GHz) (3rd cable)
- zero.ret (1.00 GHz) (attenuator)
- 8449b.rep (1.00 GHz) (pre-amp)

Engineer: _____

Technician: _____

DAYTON T. BROWN, Inc.
Founded 1950

Date : 6 Aug 1998

Test Item : Pistol Grip Transmitter **Serial No. :** None

Customer : PQ Controls **Job No. :** 400267-00-000

Test Condition : Transmitting **Antenna Pol.:** Horizontal

Specification : FCC Rules & Reg., Part 15, Sub-Part C **Units :** dBμV/m

Test: Radiated Field Strength Measurements

Met Requirement Yes ☐ No ☑

Freq. (MHz)	Meter Indicated dBμV	Antenna Factor dB	Cable Loss dB	Pre-Amp Gain dB	Total Indicated dBμV/m	Spec. Limit dBμV/m		Level Above Spec. Limit		
30	-11	19.6	0.29	0	8.89	40.0				
280	6	13.5	0.97	0	20.47	46.0				
388	13	16.2	1.17	0	30.37	46.0				
422	66	17.4	1.36	0	84.76	80.9		3.86		
836	18	21.6	1.97	0	41.57	60.9				
1000	-1	22.0	2.19	0	23.19	54.0				

Remarks : **INITIAL TEST**

Data Reviewed By: R. Tuttle **Test Performed By:** Lawrence Williams

98-0853 Enc 2 Pg 6

Test Title: Radiated Emissions

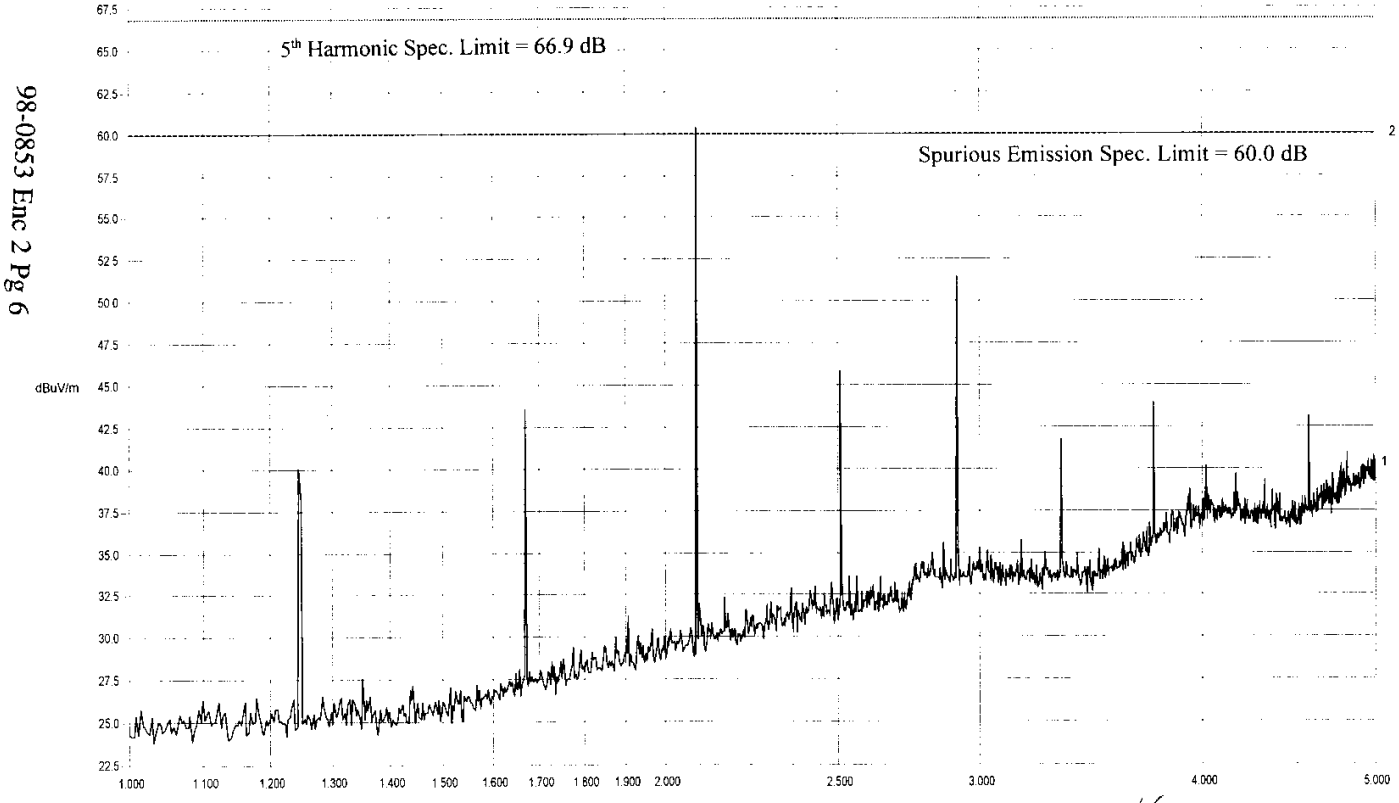
Test Procedure:	FCC Part 15, Sub -Part C
Customer:	P Q Controls
Test Item:	Pistol Grip Transmitter
Model Num.:	N/A
Part Num.:	N/A
Serial Num.:	DTB # 1
Mode of Op.:	Normal Operation
Comment:	Limit Relaxed by 6 dB

Date:	8/7/98	Time:	3:16 PM
Tested By:	Lawrence Williams		
Project Eng.:	R. Monticello		
Job Num.:	400272-00-000		
Test Num.:	002		
Sensor Loc.:	3 meter distance		
Sensor Pol.:	Horizontal		

1. RE Data
2. 400267_xmtr.rel (spec limit)
3. 400272_harmonic.rel (spec limit)

File Name: 0272002.red

INITIAL TEST



BW Table

Frequency	BW
1.00 GHz	1.00E5 Hz
5.00 GHz	

Factor Files

27-55.rea (1.00 GHz)

Correction Files

- sma11cc.rec (1.00 GHz) (cable)
- sma11b.rec (1.00 GHz) (2nd cable)
- sma111.rec (1.00 GHz) (3rd cable)
- zero.ret (1.00 GHz) (attenuator)
- 8449b.rep (1.00 GHz) (pre-amp)

Engineer: R. Monticello

Technician:

DAYTON T. BROWN INC.
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Date : 14 Oct 1998

Test Item : Pistrol Grip Transmitter **Serial No.:**

Customer : PQ Controls **Job No. :** 400267-00-000

Test Condition : Transmitting **Distance :** 3 Meter

Specification : FCC Rules & Reg, part 15, Sub-Part C **Antenna Polarization:** Vertical

Detector Function : Quasi-Peak **Units :** dBuV/m **Bandwidth:** 120 kHz (CISPR)

Radiated Field Strength Measurements **RETEST** **Met Requirement** Yes ☑ No ☐

Freq. (MHz)	Meter Indicated dBuV	Antenna Factor dB	Cable Loss dB	Pre-Amp Gain dB	Total Indicated dBuV/m	Spec. Limit dBuV/m		Level Above Spec. Limit	Notes	
30	6	19.6	.29	0	25.89	40				
67.37	10	7.1	.38	0	17.48	43.5				
418.07	61	17.7	1.28	0	79.98	80.9				
478.52	9	17.7	1.28	0	27.98	46				
835.98	16	21.7	1.97	0	39.67	60.9				
1000	8	22	2.19	0	32.19	54				

Remarks : * Indicates above Specification Limit; A - Indicates Ambient; Total Indicated = Meter Indicated + Antenna Factor + Cable Loss - Pre-Amp Gain
(Using BiLog Antenna DTB No. 27-1; Calibration Due : 12 April 1998)

Engineer : _____ **Technician :** _____

Test Title:	**Radiated Emissions**
Test Procedure:	FCC Part 15, Sub -Part C
Customer:	P Q Controls
Test Item:	Pistol Grip Transmitter
Model Num.:	N/A
Part Num.:	N/A
Serial Num.:	DTB # 1
Mode of Op.:	Normal Operation
Comment:	Limit Relaxed by 6 dB

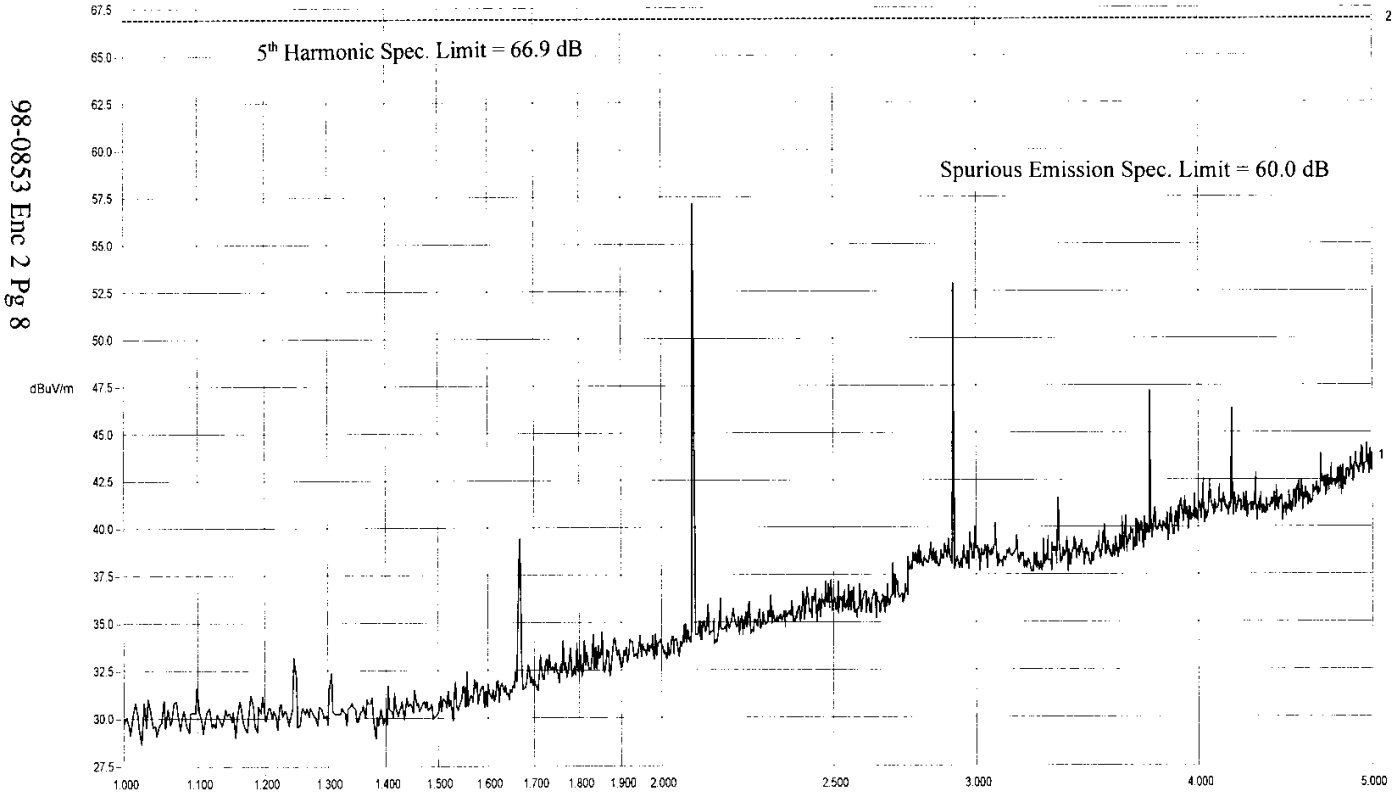
Date:	10/14/98	Time:	11:13 AM
Tested By:	MING N. MOY		
Project Eng.:	R. Monticello		
Job Num.:	400267-00-000		
Test Num.:	0272014		
Sensor Loc.:	3 meter distance		
Sensor Pol.:	Vertical Pol.		

1. RE Data
2. 400267_xmtr.rel (spec limit)

File Name: 0272014.red

RETEST

98-0853 Enc 2 Pg 8



BW Table

Frequency	BW
1.00 GHz	3.00E5 Hz
5.00 GHz	

Factor Files

27-55.rea (1.00 GHz)

Correction Files

- sma11cc.rec (1.00 GHz) (cable)
- sma11b.rec (1.00 GHz) (2nd cable)
- sma11d.rec (1.00 GHz) (3rd cable)
- zero.ret (1.00 GHz) (attenuator)
- 8449b.rep (1.00 GHz) (pre-amp)

Engineer: R. Monticello

Technician: Ming S. Moy

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Date : 14 Oct 1998

Test Item : Pistrol Grip Transmitter **Serial No.:**

Customer : PQ Controls **Job No. :** 400267-00-000

Test Condition : Transmitting **Distance :** 3 Meter

Specification : FCC Rules & Reg, part 15, Sub-Part C **Antenna Polarization:** Horizontal

Detector Function : Quasi-Peak **Units :** dBuV/m **Bandwidth:** 120 kHz (CISPR)

Radiated Field Strength Measurements **RETEST** **Met Requirement** Yes ☑ No ☐

Freq. (MHz)	Meter Indicated dBuV	Antenna Factor dB	Cable Loss dB	Pre-Amp Gain dB	Total Indicated dBuV/m	Spec. Limit dBuV/m		Level Above Spec. Limit	Notes	
30	2	19.6	.29	0	21.89	40				
67.37	12	7.1	.38	0	19.48	43.5				
248	2	12.5	1.28	0	15.78	46				
385	2	15.5	1.28	0	18.78	46				
418.09	49	17.7	1.28	0	67.98	80.9				
835.99	20	21.7	1.97	0	43.67	60.9				
1000	8	22	2.19	0	32.19	54				

Remarks : * Indicates above Specification Limit; A - Indicates Ambient; Total Indicated = Meter Indicated + Antenna Factor + Cable Loss - Pre-Amp Gain
(Using BiLog Antenna DTB No. 27-1; Calibration Due : 12 April 1998)

Engineer : _____ **Technician :** _____

Test Title:	**Radiated Emissions**
Test Procedure:	FCC Part 15, Sub -Part C
Customer:	P Q Controls
Test Item:	Pistol Grip Transmitter
Model Num.:	N/A
Part Num.:	N/A
Serial Num.:	DTB # 1
Mode of Op.:	Normal Operation
Comment:	Limit Relaxed by 6 dB

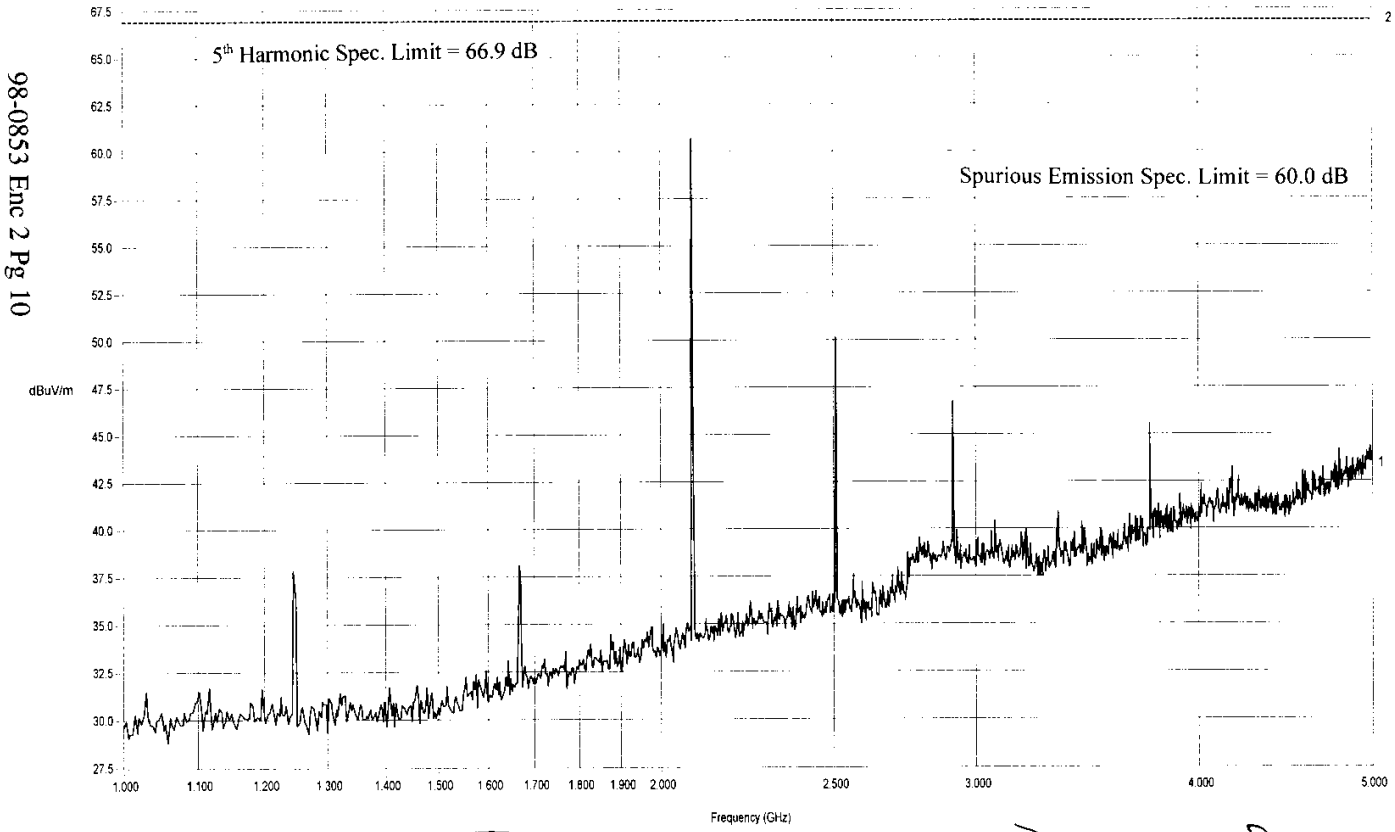
Date:	10/14/98	Time:	11:10 AM
Tested By:	MING N. MOY		
Project Eng.:	R. Monticello		
Job Num.:	400267-00-000		
Test Num.:	0272013		
Sensor Loc.:	3 meter distance		
Sensor Pol.:	Horizontal Pol.		

1. RE Data
2. 400267_xmtr.rel (spec limit)

File Name: 0272013.red

RETEST

98-0853 Enc 2 Pg 10



BW Table

Frequency	BW
1.00 GHz	3.00E5 Hz
5.00 GHz	

Factor Files

27-55 rea (1.00 GHz)

Correction Files

- sma11cc.rec (1.00 GHz) (cable)
- sma11b.rec (1.00 GHz) (2nd cable)
- sma11d.rec (1.00 GHz) (3rd cable)
- zero.ret (1.00 GHz) (attenuator)
- 8449b.rep (1.00 GHz) (pre-amp)

Engineer: R. Monticello

Technician: Ming N. Moy

10 Meter Antenna Factor VERTICAL Polarization

For The Chase EMC, Inc. BiLog Antenna

Model Number: CBL6112, DTB Number: 27-1

DAYTON T. BROWN INC.

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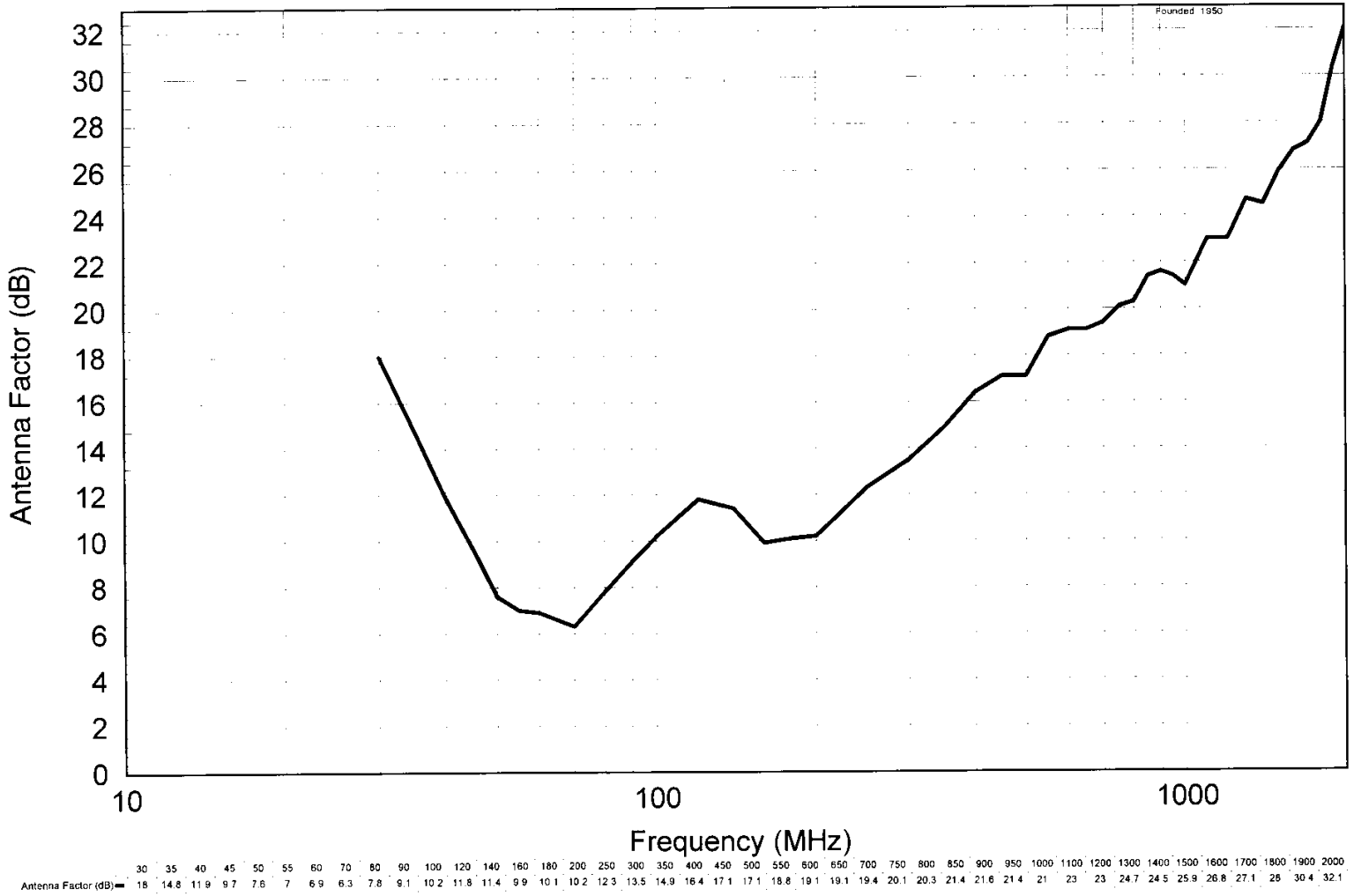

	30	35	40	45	50	55	60	70	80	90	100	120	140	160	180	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
Antenna Factor (dB)	18	14.8	11.9	9.7	7.6	7	6.9	6.3	7.8	9.1	10.2	11.8	11.4	9.9	10.1	10.2	12.3	13.5	14.9	16.4	17.1	17.1	18.8	19.1	19.1	19.4	20.1	20.3	21.4	21.6	21.4	21	23	23	24.7	24.5	25.9	26.8	27.1	28	30.4	32.1

Cal Date: 10 April 1998

Due Date: 4 April 1999

Add Factors Shown Here in dB to Meter Indicated in dBuV to Convert to Field Intensity in dBµV/m

98-0853 Enc 2 Pg 12

Antenna Factor For The
EMCO Model 3115
Double Ridge Waveguide Antenna DTB No 27-55

DAYTON T. BROWN INC.
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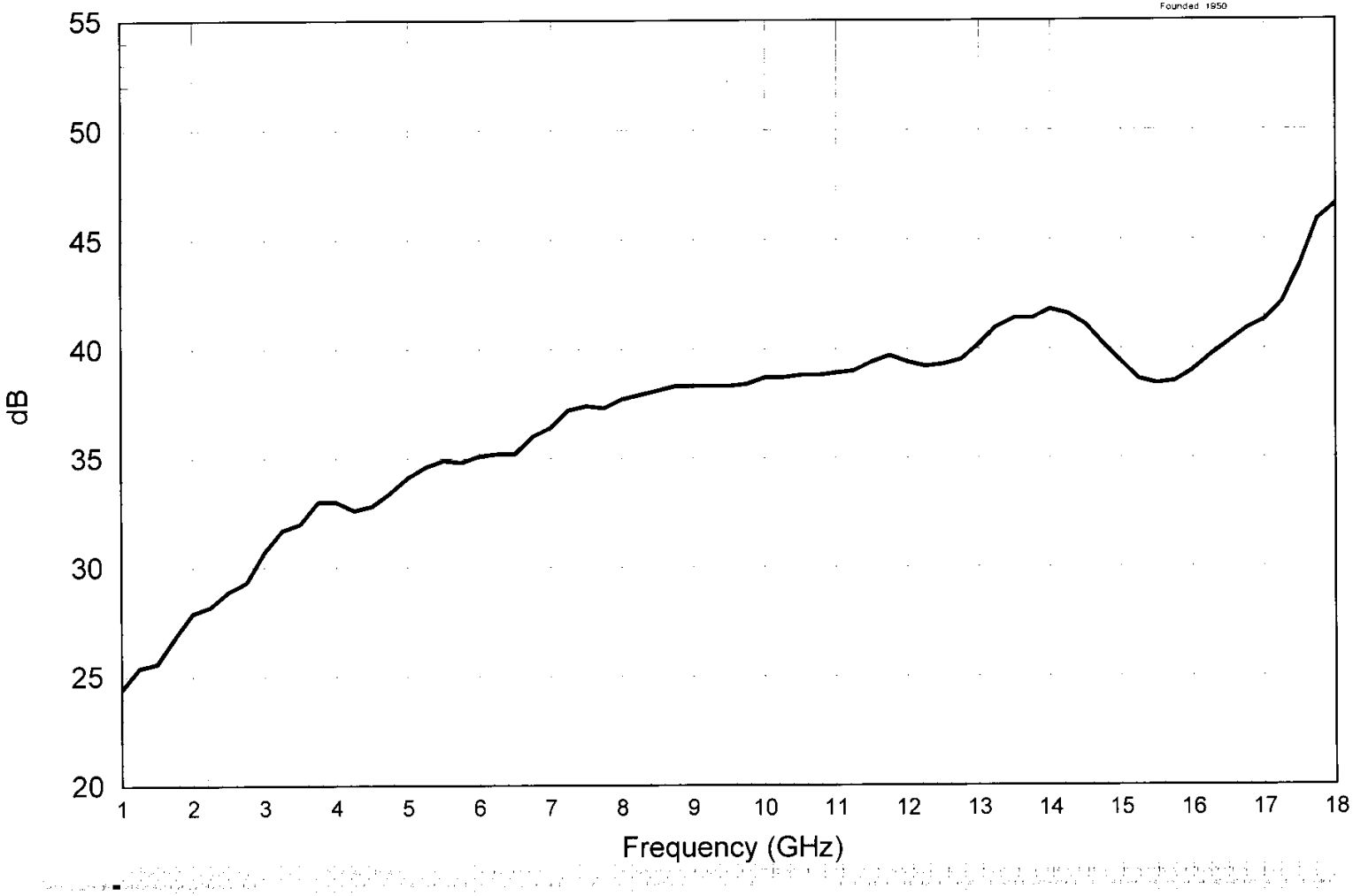


CAL DATE 23 OCT 1996
DUE DATE 18 OCT 1998

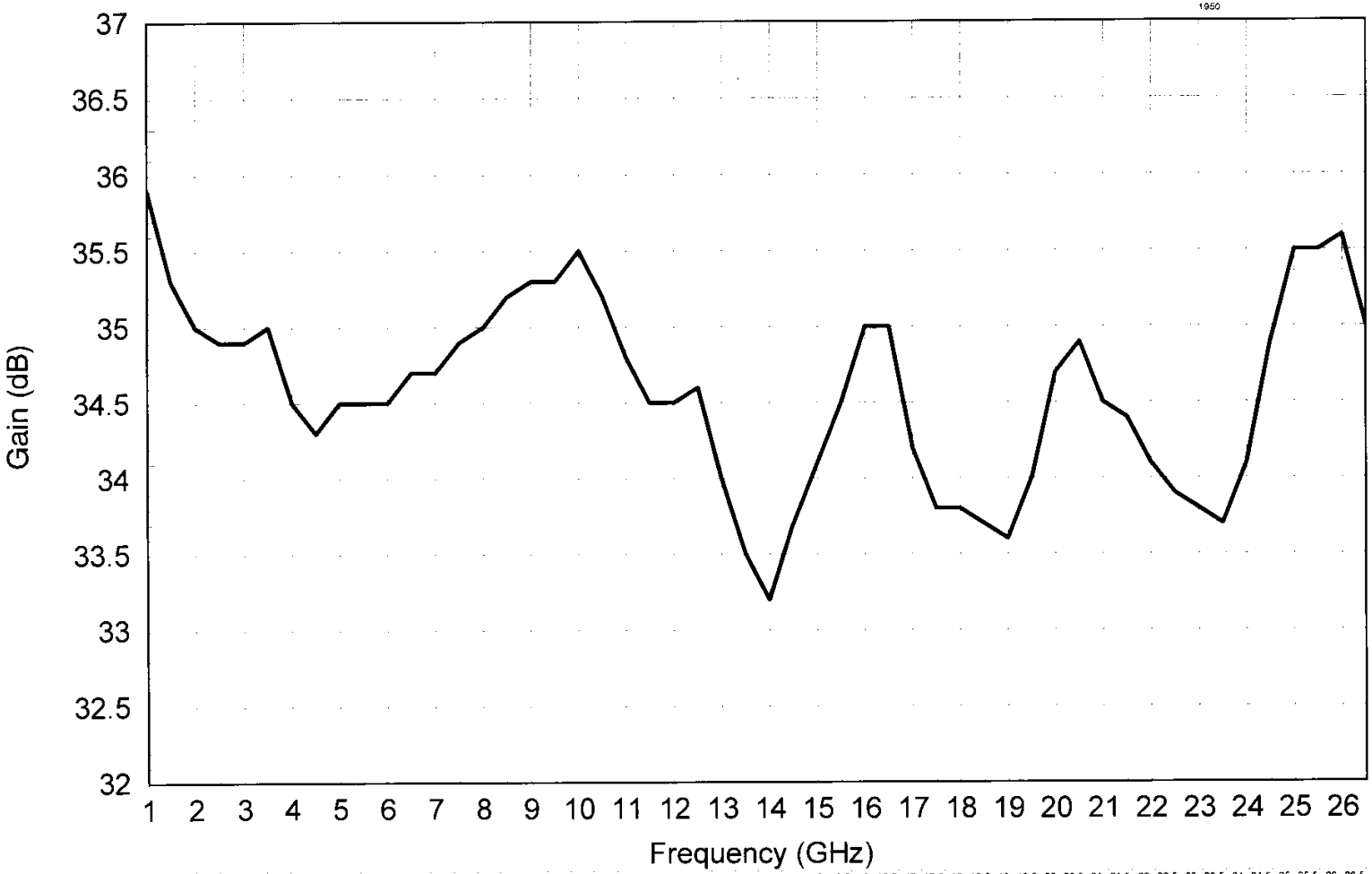
Add Factors Shown Here in dB to
Meter Indicated in dBuV
to Convert to Field Intensity in dBuV/m

98-0853 Enc 2 Pg 13

Gain Correction Factor

For The Hewlett Packard Pre-Amplifier

Model Number: HP8449B, DTB Number: 71-11



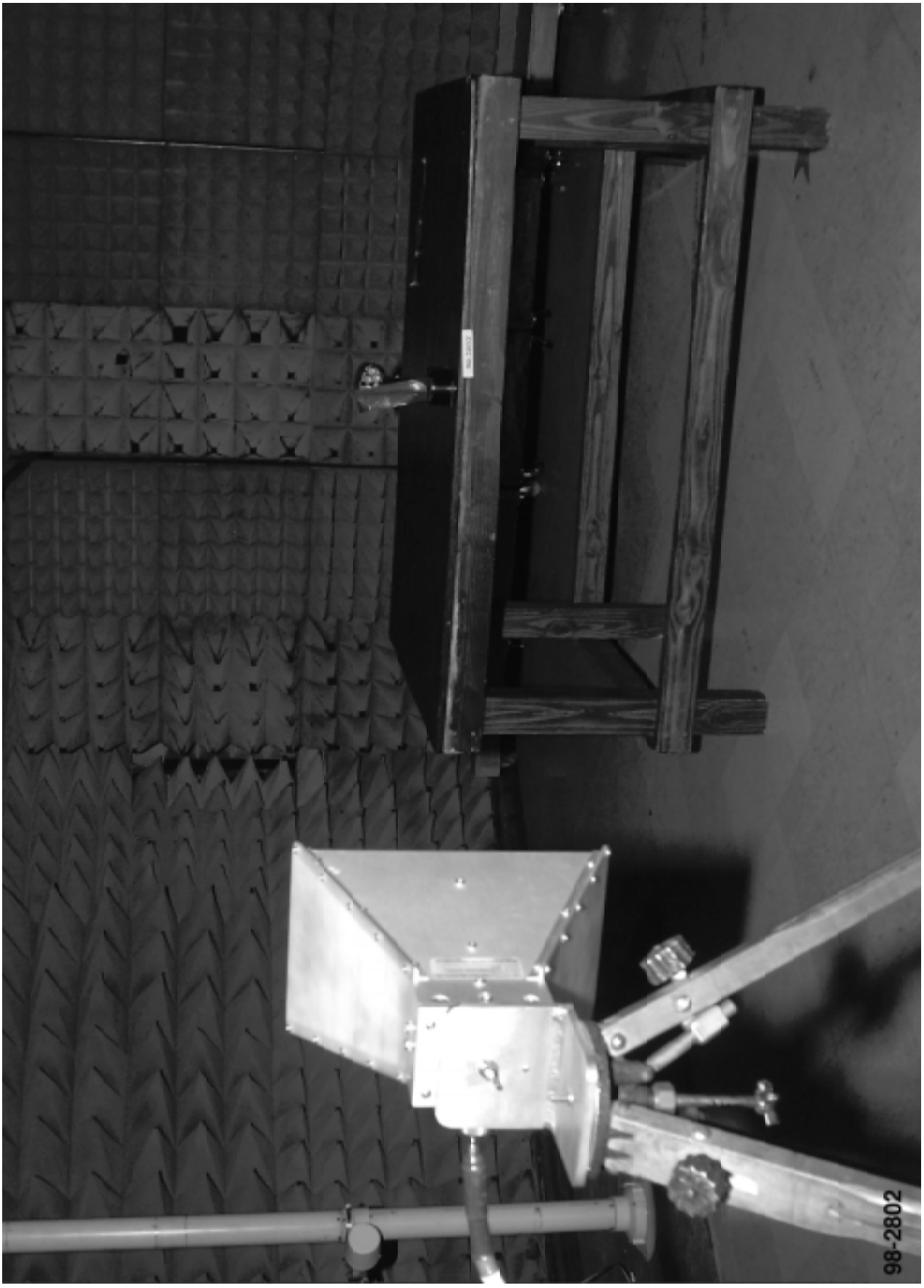
Gain (dB)	35.9	35.3	35	34.9	34.9	35	34.5	34.3	34.5	34.5	34.5	34.7	34.7	34.9	35	35.2	35.3	35.3	35.5	35.2	34.8	34.5	34.5	34.6	34	33.5	33.2	33.7	34.1	34.5	35	35	34.2	33.8	33.8	33.7	33.6	34	34.7	34.9	34.5	34.4	34.1	33.9	33.8	33.7	34.1	34.9	35.5	35.5	35.6	35
Frequency (GHz)	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	15.5	16	16.5	17	17.5	18	18.5	19	19.5	20	20.5	21	21.5	22	22.5	23	23.5	24	24.5	25	25.5	26	26.5

Cal Date: 19 Dec 1996

Due Date: 13 Dec 1998

TESTED FOR P-Q CONTROLS, INC. S/N DTB-1
ITEM: 418 MHz PISTOL GRIP TRANSMITTER
RADIATED EMISSION, 30 TO 1000 MHz
JOB NO. 400267-00-000 FILE NO. 98-2842 6 AUGUST 1998
DTB01R98-0853 ENCLOSURE 2 PHOTO 1

DAYTON T. BROWN INC.
Founded 1950



TESTED FOR P-Q CONTROLS, INC. S/N DTB-1
ITEM: 418 MHz PISTOL GRIP TRANSMITTER
RADIATED EMISSION, 1 TO 2 GHz
JOB NO. 400267-00-000 FILE NO. 98-2802 10 AUGUST 1998
DTB01R98-0853 ENCLOSURE 2 PHOTO 2

DAYTON T. BROWN INC.
Founded 1950

Enclosure 3

Occupied Bandwidth

DAYTON T. BROWN INC.
Founded 1950

OCCUPIED BANDWIDTH

Test Procedure

The occupied bandwidth of the 418 MHz Pistol Grip Transmitter was measured using a spectrum analyzer with a bandwidth setting of 100 kHz. The spectrum analyzer was operated in the "Max Hold" mode.

The test sample has an operating frequency of 418.0 MHz. The maximum allowed bandwidth for devices operating above 70 MHz and below 900 MHz is 0.25% of the center frequency.

The maximum allowed bandwidth is calculated as follows:

418.0 MHz X 0.0025 = 1.0450 MHz

The occupied bandwidth was determined at the points 20 dB down from the carrier.

The test setup employed is depicted in the photograph contained in this enclosure.

Test Results

The test sample met the occupied bandwidth test. The measured occupied bandwidth for the 418 MHz Pistol Grip Transmitter was 363.0 kHz at the 20-dB down point.

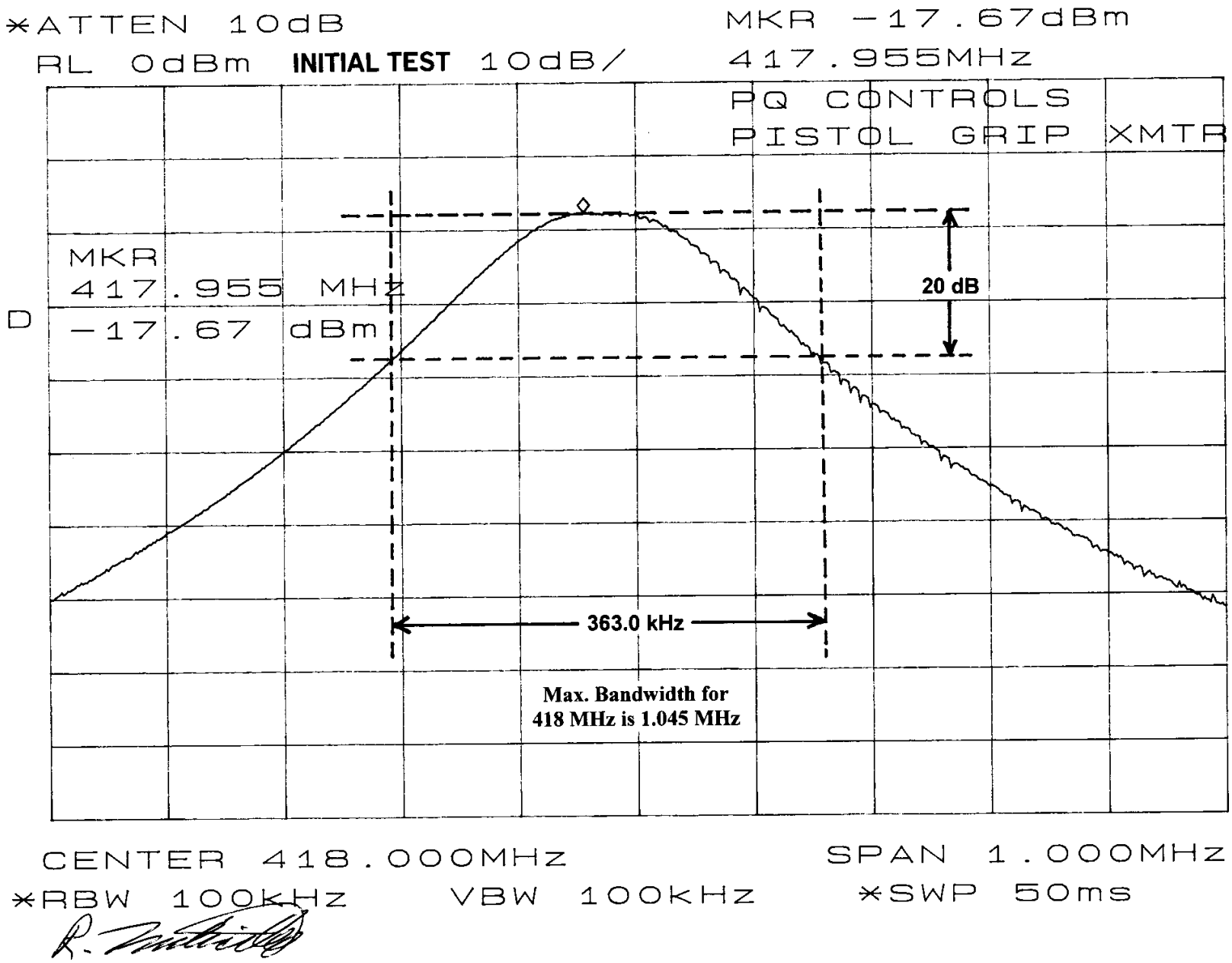
Detailed test results for the initial occupied bandwidth test can be observed on page 2 of this enclosure.

To reduce the radiated emissions from the 418-MHz Pistol Grip Transmitter, a network consisting of a 45.3Ω resistor in series with another 45.3Ω resistor, with a 5Ω resistor to ground from the junction of the two 45.3Ω resistors, was wired between the RF module and the antenna.

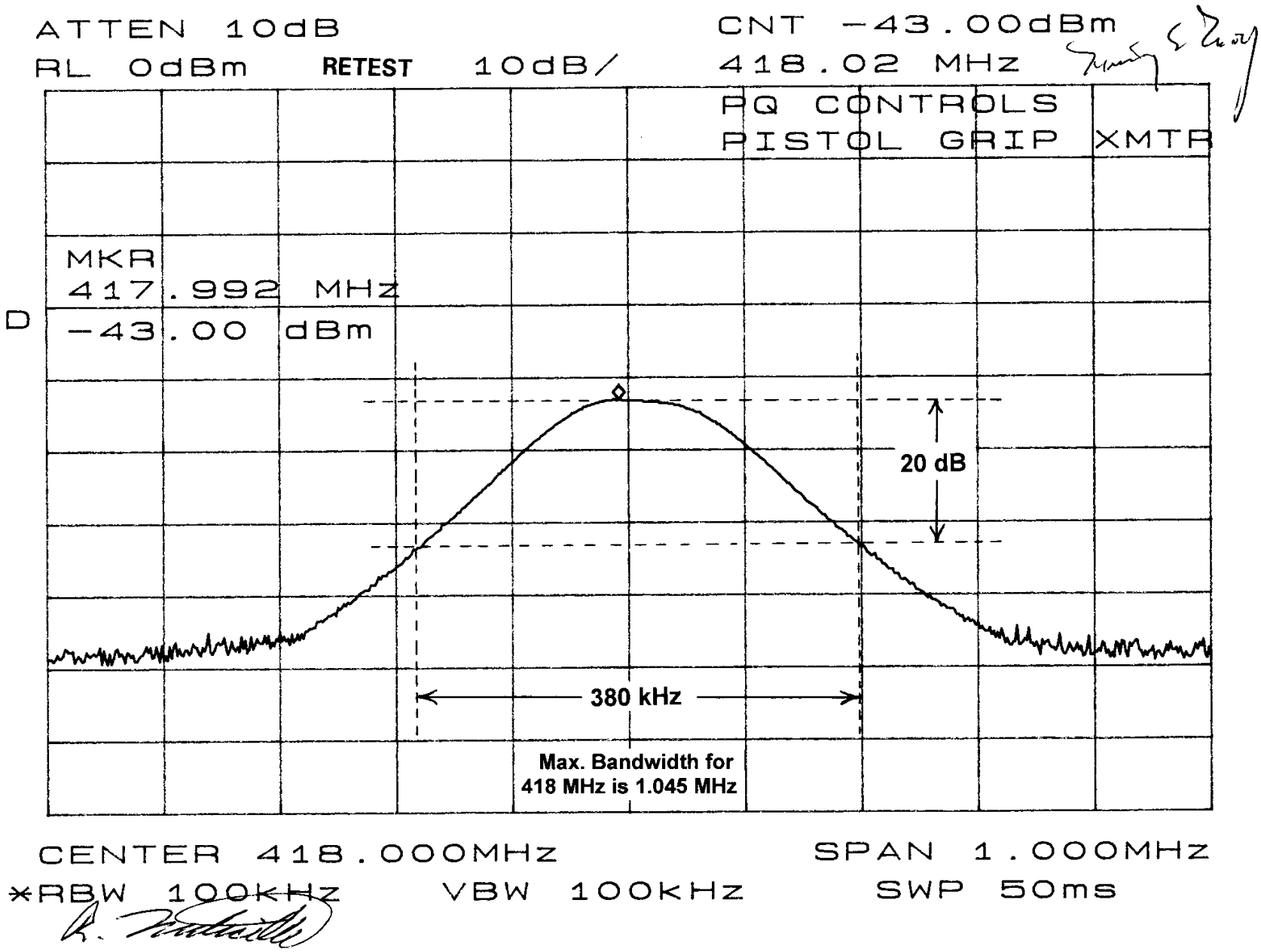
The occupied bandwidth test was performed again due to the above mentioned change to the test sample.

The test sample met the occupied bandwidth test. The measured occupied bandwidth for the 418 MHz Pistol Grip Transmitter was 380.0 kHz at the 20-dB down point.

Detailed test results for the retest of the occupied bandwidth test can be observed on page 3 of this enclosure.



98-0853 Enc 3 Pg 2


ATTEN 10dB
RL 0dBm
RETEST
10dB/
CNT -43.00dBm
418.02 MHz
PQ CONTROLS
PISTOL GRIP XMTR
MKR
417.992 MHz
-43.00 dBm
D
20 dB
380 kHz
Max. Bandwidth for
418 MHz is 1.045 MHz
CENTER 418.000MHz
SPAN 1.000MHz
*RBW 100kHz
VBW 100kHz
SWP 50ms

TESTED FOR P-Q CONTROLS, INC. S/N DTB-1
ITEM: 418 MHz PISTOL GRIP TRANSMITTER
OCCUPIED BANDWIDTH
JOB NO. 400267-00-000 FILE NO. 98-2761 4 AUGUST 1998
DTB01R98-0853 ENCLOSURE 3 PHOTO 1

DAYTON T. BROWN INC.
Founded 1950

Enclosure 4

Physical Inspection Forms

DAYTON T. BROWN INC.
Founded 1950

PHYSICAL INSPECTION FORM

JOB NUMBER 400267-00-000 DATE 8-5-98

CUSTOMER: P-Q Controls, Inc. ENGINEER R. Monticello

TEST FCC SPECIFICATION 47 CFR, Part 15

ITEM Pistol Grip Transmitter SERIAL NO. DTB 1

A PRE TEST INSPECTION REVEALED :

√ NO ANOMALIES

NO ANOMALIES DUE TO TESTING

THE FOLLOWING

Photograph Taken ?? NO If Yes, Photo Number N/A

Technician Lawrence Williams

Engineer R. Monticello

DAYTON T. BROWN INC.
Founded 1950

PHYSICAL INSPECTION FORM

JOB NUMBER 400267-00-000 DATE 10-14-98

CUSTOMER: P-Q Controls, Inc. ENGINEER R. Monticello

TEST FCC SPECIFICATION 47 CFR, Part 15

ITEM Pistol Grip Transmitter SERIAL NO. DTB 1

A POST TEST INSPECTION REVEALED :

√ NO ANOMALIES

NO ANOMALIES DUE TO TESTING

THE FOLLOWING

Photograph Taken ?? NO If Yes, Photo Number N/A

Technician

Engineer R. Monticello

LAB FORM NO. 40 REV 03/94

Enclosure 5

A2LA Scope of Accreditation

American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 25-1990

DAYTON T. BROWN, INC.
Church Street
Bohemia, NY 11716
Charles Gortakowski Phone: 516 589 6300

ACOUSTICS & VIBRATION

Valid To: December 31, 1998 Certificate Number: 0767-01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following acoustics & vibration tests:

Vibration (Sine, Random, Gunfire, Shipboard)

Buzz, Squeak and Rattle

Combined Environments and Reliability (Temperature, Humidity and Vibration)

Pyroshock

Sound Power and Measurements

Airborne and Structureborne Noise Measurement

On the following types of materials and products:
Aircraft Components & Systems; Automotive Components & Systems; Shipboard Components & Systems; Railroad & Industrial Vehicle Components & Systems; Information Technology & Telecommunication Equipment & Systems; Electronic Components & Systems; Medical Electronic Equipment; Military Equipment & Hardware.

Using the following standards:
Military: MIL-STD-810, MIL-STD-167-1, MIL-S-901, MIL-STD-202, MIL-STD-781, MIL-E-16400, MIL-STD-108, MIL-STD-2036, MIL-T-28800, MIL-STD-740-1, MIL-STD-740-2, NAVMAT P-9492
Commercial: RTCA/DO-160
ANSI: S1.2, S1.35
GM: 9103P, 9104P, 9110P, 9125P, 9128P, 9140P, 9144P, 9154P, 9163P, 9175P
FORD: DVT1.12.00.007-AC, ES-F5VB-54043B13-AA
Chrysler: PF-9007, PF-9531, PF-6897, PF-8243, PF-9164
Telephony: Bellcore GR-1089

Roxanne M. Robinson

American Association for Laboratory Accreditation

SUPPLEMENT TO THE SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 25-1990 AND EN 45001

DAYTON T. BROWN, INC.
Church Street
Bohemia, NY 11716
Charles Gortakowski Phone: 516 589 6300

ELECTRICAL (EMC)

Valid as of: November 18, 1997 Certificate Number: 0767-02
Valid until: December 31, 1998

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following electrical tests:

AS/NZS 3548
Code of Federal Regulations (CFR) 47, FCC Method Part 15 using ANSI C63.4
Code of Federal Regulations (CFR) 47, FCC Method Part 68
CISPR 22
EN: 50081-1, 50081-2, 50082-1, 50082-2, 50091-1, 50091-2, 55011, 55013, 55014, 55015, 55022, 60555-2, 60555-3, 60601-1-2, 61000-4-1, 61000-4-2, 61000-4-4, 61000-4-5, 61000-4-7, 61000-4-8, 61000-4-11
ENV: 50140, 50141, 50142, 50204
IEC: 601, 601-1-2, 801-1 (1000-4-1), 801-2 (1000-4-2), 801-3 (1000-4-3), 801-4 (1000-4-4), 801-5 (1000-4-5) 801-6 (1000-4-6), 1000-4-7, 1000-4-8, 1000-4-11, 1000-3-2, 1000-3-3
Commercial Aviation: RTCA/DO-160, FAA Advisory Circular 20-136, Boeing D200Z001, Boeing WZZ7300
Military: MIL-STD-461 (A,B,C,&D), MIL-STD-462, MIL-STD-1399, MIL-STD-704, MIL-E-16400, MIL-STD-2036, MIL-STD-1275A(AT), MIL-STD-202
GM: 9100P, 9105P, 9109P, 9110P, 9112P, 9113P, 9114P, 9115P, 9116P, 9117P, 9119P, 9120P, 9103P, 9104P, 9125P, 9128P, 9140P, 9144P, 9154P, 9163P, 9175P
Chrysler PF9164
Telephony Bellcore GR-1089
ANSI/IEEE: IEEE-587-1980, IEEE-C62.41, IEEE-C62.32
TEMPEST: NST ISSAM Tempest/1-92, NACSEM 5100, NACSIM 5100A, NACSEM 5112, KAG-30A/TSEC
VCCI

Peter Mongan

American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 25-1990 AND EN 45001

DAYTON T. BROWN, INC.
Church Street
Bohemia, NY 11716
Charles Gortakowski Phone: 516 589 6300

ELECTRICAL (EMC)

Valid To: December 31, 1998 Certificate Number: 0767-02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following electrical tests:

Capacitance	Impedance
AC Capacitance	Inductance
AC Loss Characteristics	Lightning
Permittivity	Magnetism
(Dielectric Loss Constant)	Power Transmission
Conductivity	Resistivity
Current (AC/DC)	AC/DC
Electrostatic (ESD)	Insulation Resistance
EMP	Voltage (AC/DC)
EMI/RFI	
Conducted Emissions	Lightning
Conducted Transient Susceptibility	Input Power Variations
Conducted Susceptibility (Immunity)	Magnetic Field Emission
Radiated Emissions (O.A.T.S. Method)	Magnetic Field Susceptibility
Radiated Emissions	Harmonics
Shielded Room Method	RF Power Handling
Radiated Susceptibility (Immunity)	Shielding Effectiveness
Radiated Transient Susceptibility	Stirred Mode
Electrostatic Discharge (ESD)	Transmissibility
Electromagnetic Pulse (EMP)	Site Survey
Electrical Fast Transient (EFT)	TEMPEST

On the following types of materials and products:
Aerospace Components & Systems; Automotive Components & Systems; Shipboard Components & Systems; Railroad & Industrial Vehicle Components & Systems; Information Technology & Telecommunication Equipment & Systems; Electrical & Electronic Components & Systems; Medical Electronic Equipment; Military Equipment & Hardware.

Using the following sources of standards:
ANSI, AS/NZS, CFR, CISPR, EN, ENV, FCC, IEC, Commercial Aviation, Military, GM, Chrysler, Telephony, ANSI/IEEE, TEMPEST, VCCI

A supplemental scope, identifying the full range of tests and types of tests, is available from A2LA or the laboratory.

Peter Mongan

American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 25-1990

DAYTON T. BROWN, INC.
Church Street
Bohemia, NY 11716
Charles Gortakowski Phone: 516 589 6300

MECHANICAL

Valid To: December 31, 1998 Certificate Number: 0767-03

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following mechanical tests:

Compression	Stress	Fracture
Fatigue	Metallography	Torsion
Shear	Hardness	

Tensile (Room, High & Low Temperatures)
NDT (Dye Penetrant & Magnetic Particle)

Environmental Simulation		
Acceleration	Altitude	Fungus
Explosion	Dust	Sun/Solar Radiation
Temperature/Altitude	Wind & Rain	Combined Environments
Salt Fog/Salt Spray	Humidity	Water Immersion
Temperature/Shock	Drop/Impact	Sand

Durability (Horn Life Actuation/Horn Blow Mechanism)
High/Low Temperature/Humidity/Vibration
High Pressure Burst (Air & Hydraulic)
Shock (1/2 Sine, Sawtooth, Trapezoid)

On the following types of materials and products:
Aerospace Components & Systems; Automotive Components & Systems; Shipboard Components & Systems; Railroad & Industrial Components & Systems; Information Technology & Telecommunication Equipment & Systems; Electrical & Electronic Components & Systems; Medical Electronic Equipment; Military Equipment & Hardware; Packaging & Containers; Pipes, Hoses, Fittings, and Valves.

Using the following standards:
Military: MIL-STD-810, MIL-STD-167-1, MIL-S-901, MIL-STD-202, MIL-STD-781, MIL-E-16400, MIL-STD-108, MIL-STD-2036, MIL-T-28800, NAVMAT P-9492, MIL-STD-6866, MIL-T-7743, MIL-STD-410
Commercial: RTCA/DO-160
ASTM: B117, D1141, G23, E18, D2240, B557, E8, E1444
GM: 9110P,9103P, 9104P, 9125P, 9128P, 9140P, 9144P, 9154P, 9163P, 9175P
FORD: DVT1.12.00-007-AC, ES-F5VB-54043B13-AA
Chrysler: PF-9007, PF-9531, PF-6897, PF-8243, PF-9164
Telephony: Bellcore GR-1089

Roxanne M. Robinson