Report 11225
September 1998

PERFORMANCE VERICATION TEST REPORT METSAT AMSU-A2 RECEIVER ASSEMBLY FOR INTEGRATED ADVANCED MICROWAVE SOUNDING UNIT-A (AMSU-A)

CONTRACT NO. NAS5-32314
CDRL PAR 3.3.2.1

SEPTEMBER 1998

SUBMITTED TO

NATIONAL AERONAUTICS AND SPACE ADMINISTERATION
GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND 20771

SUBMITTED BY

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Report 11225
September 1998

AMSU-A RECEIVER VERIFICATION TEST REPORT

LEVEL OF ASSEMBLY:	**SUBASSEMBLY**
TEST ITEM:	**AMSU-A2 RECEIVER ASSEMBLY** **P/N: 1356441-1, S/N: F03**
TYPE OF HARDWARE:	**METSAT FLIGHT MODEL (FM)**
TYPE OF TEST:	**FUNCTIONAL PERFORMANCE**
VERIFICATION TEST PROCEDURE:	**AE-26002/6A**
TEST FACILITY LOCATION:	**AESP** **AZUSA, CALIFORNIA**

SIGNATURE:

TEST ENGINEER: [signature] **DATE:** 9/21/'98

TABLE OF CONTENTS

1.0 INTRODUCTION

The AMSU-A receiver subsystem comprises two separated receiver assemblies; AMSU-A1 and AMSU-A2 (P/N 1356441-1). The AMSU-A1 receiver contains 13 channels and the AMSU-A2 receiver 2 channels. The AMSU-A1 receiver assembly is further divided into two parts; AMSU-A1-1 (P/N 1356429-1) and AMSU-A1-2 (P/N 1356409-1), which contain 9 and 4 channels, respectively. Figures 1 and 2 illustrate the functional block diagrams of the AMSU-A1 and AMSU-A2 receivers.

The AMSU-A receiver subsystem stands in between the antenna and signal processing subsystems of the AMSU-A instrument and comprises the RF and IF components from isolators to attenuators as shown in Figures 1 and 2. It receives the RF signals from the antenna subsystem, down-converts the RF signals to IF signals, amplifies and defines the IF signals to proper power level and frequency bandwidth as specified for each channel, and inputs the IF signals to the signal processing subsystem.

The test reports for the METSAT AMSU-A receiver subsystem are prepared separately for the A1 and A2 receivers so that each receiver stands alone during integration of instruments into the spacecraft. This test report presents the test data of the METSAT AMSU-A2 Flight Model No. 3 (FM-3) receiver. The tests are performed per the Acceptance Test Procedure for the AMSU-A Receiver Subsystem, AE-26002/6A. The functional performance tests are conducted either at the component or subsystem level. While the component-level tests are performed over the entire operating temperature range predicted by thermal analysis, the subsystem-level tests are conducted at ambient temperature only.

2.0 REASON FOR TEST

The Acceptance Test Procedure for the AMSU-A Receiver Subsystem, AE-26002/6A, is prepared to describe in detail the configuration of the test setups and how the tests are to be conducted to verify that the receiver subsystem meets the specifications as required either in the AMSU-A Instrument Performance and Operation Specification, S-480-80, or in AMSU-A Receiver Subsystem Specification, AE-26608, derived by the Aerojet System Engineering. Test results that verify the conformance to the specifications demonstrates the acceptability of that particular receiver.

3.0 ACCEPTANCE TEST

The acceptance tests for the AMSU-A receiver subsystem are performed either at the component or subsystem level. The component-level tests are conducted per the Acceptance Test Procedure of each component at supplier's facilities. The subsystem-level tests are conducted per the Acceptance Test Procedure (ATP), AE-26002/6A at Aerojet Azusa facility.

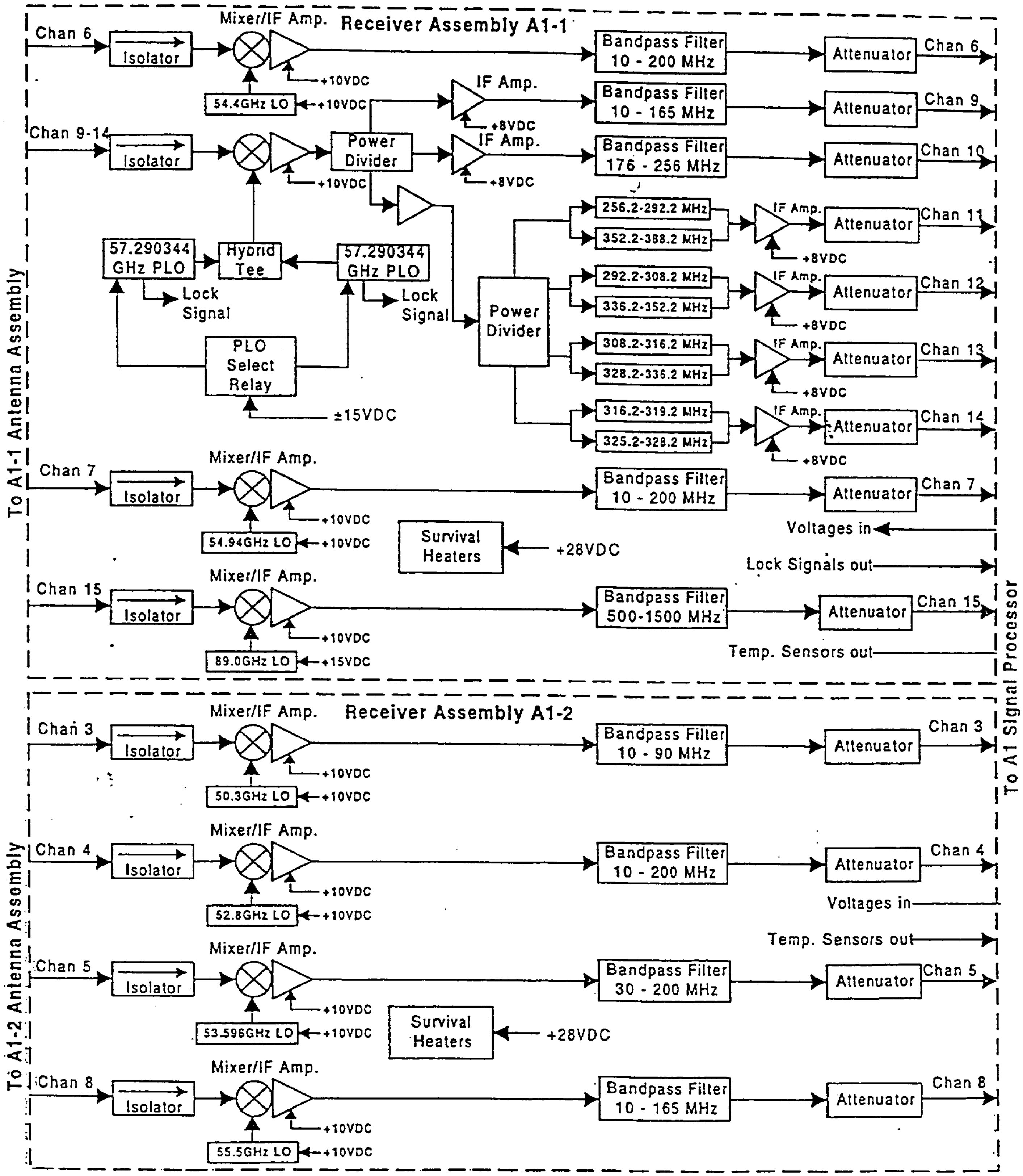


Figure 1. AMSU-A1 Receiver Functional Block Diagram

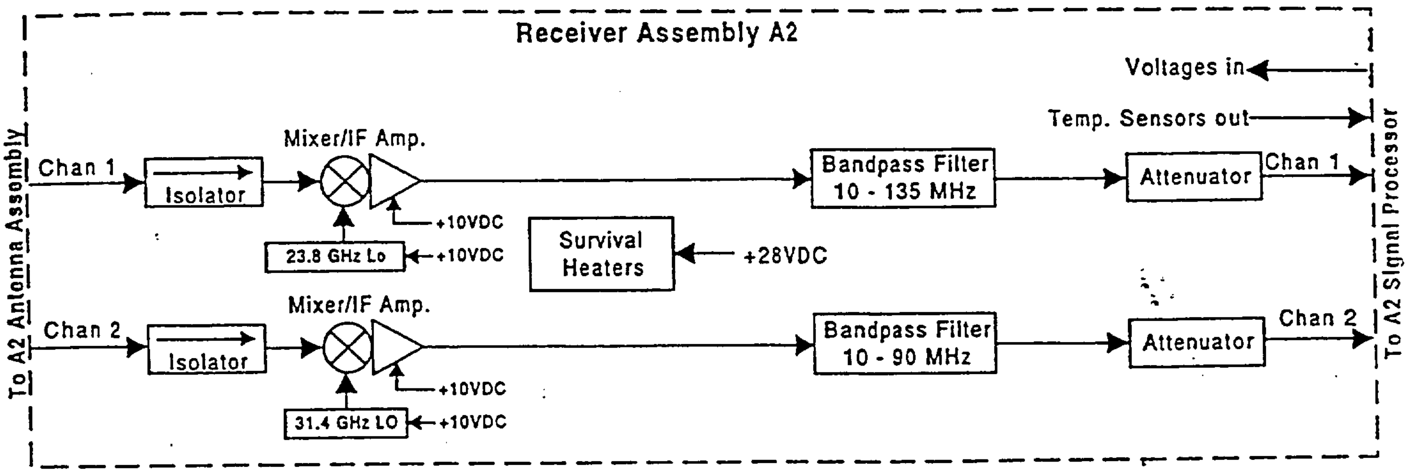


Figure 2. AMSU-A2 Receiver Functional Block Diagram

The component-level tests include the center frequency, center frequency stability, bandpass characteristics, gain stability, and gain compression. Although the bandpass characteristics can change slightly in subsystem level, these performance are mainly dependent on the component characteristics. The subsystem-level tests include the center frequency, IF output power, bandpass characteristics, noise figure, noise power stability, and the tunable short test (for Protoflight Model only).

The subsystem-level tests are performed on the AMSU-A2 receiver. However, since the diplexer of the AMSU-A2 system is inseparably integrated to the receiver, the acceptance tests are conducted with the feedhorn directly connected to the diplexer that precedes the receiver. These tests are performed at room ambient temperature only.

Wire connections between the D-sub connectors and platinum resistance temperature (PRT) sensors and thermistors, and D-sub connector and survival heaters through the thermal switches are verified by measuring either the resistances between the respective two pins or the voltages across the two respective pins. The component bias voltages are verified by measuring the voltages across the two respective banana jacks of the breakout box that are connected to corresponding pins of the D-sub connector.

During the acceptance tests of the receiver per ATP, AE-26002/6A, we have encountered two failures and an anomaly. These problems were properly addressed and corrected resulting in satisfactory performances that met the specifications. The first failure was the noise figure of the channel 1 that read 5.26dB against the specification of 4.5dB. The noise figure of the mixer/IF amplifier (S/N: 7A31) used in channel 1 was in out-of-specification condition (SDAR No. 98-124) at component-level tests. The noise figure of the channel could be improved by optimizing the LO power of the mixer/IF amplifier and replacing the isolator (from S/N: 05 to S/N: 11) for better impedance matching, but was still marginal (4.56dB) at higher end (+40°C) of the operating temperature. The mixer/IF amplifier was consequently returned to the vendor (Spacek Labs.) and retuned to improve the noise figure. The unit was installed back to the receiver successfully meeting the specifications. The test data with the retuned mixer/IF amplifier were included in the test report. The second failure was a faulty PRT sensor (RT 17) that read higher value than the specification. The PRT was replaced and the correct reading was verified as addressed in F/AR No. 130. The anomaly was associated with the channel 2. A sudden increase in IF power was noticed during the noise figure test on the channel 2 and no power change was observed with warm and cold loads. Strong spurious signals were observed at that time over the passband on the spectrum analyzer. Investigation on the receiver components revealed no anomalies and the same anomaly could not be repeated there after. We suspected some kind of electromagnetic interference but have not been able to identify the source. The channel was subjected to thermal cycling test from -5°C to +40°C three times while monitoring the bandpass characteristics on the spectrum analyzer but still revealed no anomaly. This anomaly is addressed in F/AR No. 131.

The tunable short tests were not performed as they were performed on previous EOS AMSU-A2 receiver.

4.0 ORGANIZATION OF TEST DATA

The test data are organized in the following formats. The test data obtained at the component level are first summarized for each category for all applicable receiver channels. The bandpass characteristics of the filters are summarized only for the data measured at mid-temperature. Supporting component test data over the operating temperature range then follows the summaries. The subsystem-level test data then follows the component test data. Test data recorded in the test sheet as prepared in the Acceptance Test Procedure and related data plots are included in this test report.

5.0 SUMMARY AND RECOMMENDATIONS

The METSAT AMSU-A2 FM-3 receiver subsystem successfully passed all performance requirements and was delivered to the System Engineering for system integration and test. The test data indicated adequate margins for all performance specifications.

We have again encountered a noise figure failure on the channel 1 of the receiver. Although the noise figure of the mixer/IF amplifier (S/N: 7A31) used in channel 1 was out of specification (SDAR No. 98-124) at component-level tests, it became obvious that the mixer performances change depending on the LO power level and the impedance matching at the RF port. A set of the receiver front-end components (an isolator, a diplexer, and a feedhorn) were sent to Spacek to test the noise figure of the remaining Channel 1 mixer/IF amplifiers as in the AMSU-A receiver. Also an ECN was generated on the ATP for the mixer/IF amplifiers to find the optimum LO power level for each unit and to conduct the functional tests at this optimum power level instead of the nominal +10dBm.

6.0 TEST DATA

In the following, the component and subsystem-level test data are organized as delineated in Paragraph 4.0.

COMPONENT-LEVEL TEST DATA

CENTER FREQUENCY AND FREQUENCY STABILITY

FOR

LOCAL OSCILLATORS (LOs)
(DROs)

CENTER FREQUENCY OF LOs

Channel No.	1	2
Specification (GHz) Setting Accuracy (+/-GHz)	23.8 0.002	31.4 0.002
Measured (GHz)	23.80040	31.40115

FREQUENCY STABILITY OF LOs

Channel No.	1	2
Short-Term Specification (+/-MHz)	8	8
Setting Accuracy (+/-MHz)	2	2
W/ Temp. & Voltage (+/-MHz)	6	6
Measured (MHz) Total	+1.27, -0.12	+4.32, -1.88
Long-Term Specification (+/-MHz)	2	2
By Design or Analysis * (+/-MHz)	0.1	0.1

* Based on accelerated life-test data of DROs.

Channel 1 LO

DRO (P/N: 1336610-1, S/N: 87060)

TEST DATA SHEET 7.2
FUNCTIONAL PERFORMANCE TESTS
INITIAL DATA SET N/A FINAL DATA SET ✓

LITTON TYPE LS K 9604CF — AESD 1336610- 1
SERIAL NUMBER: 87060 — QUAL TEST N/A — ACCEPT TEST ✓

Basic Electrical Test; Ref. Test Para. 5.2.2

SPECIFICATION	MEASUREMENT AT Tnom ±1°C	LIMIT
Measurement at Vop=10 VDC		
Temperature	18 °C	Table IIIB
Input Voltage	10 VDC	10.0 ± 0.2 VDC
Input Current	68.6 mA	Table IIIB
Input Power, P_{diss}	0.686 W DC	P_{diss} max
Frequency, f_{Tnom}	23.80040 GHz	Table IIIB
RF Output Power, P_{Tnom}	14.0 dBm	12 to 17 dBm
Frequency Setting Accuracy, Δf_S (= f_{Tnom}-F_o)	0.4 MHz	

Frequency and RF Output Power Variation With Voltage, Ref. Test Para 5.2.3

Measurement at 9.5 VDC or at 9.5 VDC		
Temperature	18 °C	Table IIIB
Input Voltage	9.5 VDC	9.5 VDC or Para. 5.2.3.2
Input Current	68.6 mA	Table IIIB
Frequency, f_{meas}	23.80041 GHz	Table IIIB
RF Output Power, P_{meas}	14.0 dBm	12 to 17 dBm

Measurement at 10.5 VDC or at 10.5 VDC		
Temperature	18 °C	Table IIIB
Input Voltage	10.5 VDC	10.5 VDC or Para. 5.2.3.3
Input Current	68.6 mA	Table IIIB
Frequency, f_{meas}	23.80042 GHz	Table IIIB
RF Output Power, P_{meas}	14.0 dBm	12 to 17 dBm

Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{Tnom}$,

Δf_V at 9.5 VDC or at 9.5 VDC = 0.01 MHz
Δf_V at 10.5 VDC or at 10.5 VDC = 0.02 MHz

Calculate RF Output Power Variation, $\Delta P_V = P_{meas} - P_{Tnom}$,

ΔP_V at 9.5 VDC or at 9.5 VDC = ∅ dB
ΔP_V at 10.5 VDC or at 10.5 VDC = ∅ dB

Accept ✓ Reject ____

Test Performed by VN — Date 5-22-98
Litton QA 091 — Date MAY 28 1998

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 38 OF 68
56348	A	1300823	B3	

TEST DATA SHEET 7.3
FUNCTIONAL PERFORMANCE TESTS
INITIAL DATA SET N/A FINAL DATA SET ✓

LITTON TYPE LS K 9604 CF
SERIAL NUMBER: 87060
QUAL TEST N/A
AESD 1336610- 1
ACCEPT TEST ✓

Temperature Testing at T=10°C, Ref. Test Para. 5.2.5.1

SPECIFICATION	MEASUREMENT AT T=10° ±1°C		LIMIT
Measurement at Vop=10 VDC			
Temperature	10	°C	10° ± 1°C
Input Voltage	10	VDC	10.0 ± 0.2 VDC
Input Current	68.2	mA	Table IIIB
Input Power, P_{diss}	0.682	W DC	Pdiss max
Frequency, $f_{10°C}$	23.80020	GHz	Table IIIB
RF Output Power, $P_{10°C}$	14.0	dBm	12 to 17 dBm

Frequency and RF Output Power Variation With Voltage, Ref. Test Para 5.2.5.1
Measurement at 9.5 VDC or at 9.5 VDC

Temperature	10	°C	Table IIIB
Input Voltage	9.5	VDC	9.5 VDC or Para. 5.2.3.2
Input Current	68.2	mA	Table IIIB
Frequency, f_{meas}	23.80020	GHz	Table IIIB
RF Output Power, P_{meas}	14.0	dBm	12 to 17 dBm

Measurement at 10.5 VDC or at 10.5 VDC

Temperature	10	°C	Table IIIB
Input Voltage	10.5	VDC	10.5 VDC or Para. 5.2.3.3
Input Current	68.2	mA	Table IIIB
Frequency, f_{meas}	23.80020	GHz	Table IIIB
RF Output Power, P_{meas}	14.0	dBm	12 to 17 dBm

Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{10°C}$:
Δf_V at 9.5 VDC or at 9.5 VDC = ϕ MHz
Δf_V at 10.5 VDC or at 10.5 VDC = ϕ MHz
Δf_T at 10.0 VDC ($=f_{10°C} - f_{Tnom}$) = – 0.2 MHz

Calculate RF Output Power Variation, $\Delta P_V = P_{meas} - P_{10°C}$:
ΔP_V at 9.5 VDC or at 9.5 VDC = ϕ dB
ΔP_V at 10.5 VDC or at 10.5 VDC = ϕ dB
ΔP_T at 10.0 VDC ($=P_{10°C} - P_{Tnom}$) = ϕ dB

Accept ✓ Reject ________

Test Performed by VN Date 5-22-98
Litton Q.A. LITTON 160 Date MAY 2 ~ 1998

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 39 OF 68
56348	A	1300823	B3	

LITTON
Solid State

TEST DATA SHEET 7.4
FUNCTIONAL PERFORMANCE TESTS
INITIAL DATA SET N/A FINAL DATA SET ✓

LITTON TYPE LS K 9604CF
SERIAL NUMBER: 87060
QUAL TEST N/A
AESD 1336610- 1
ACCEPT TEST ✓

Temperature Extreme Testing at Tmin, Ref. Test Para. 5.2.5.2

SPECIFICATION	MEASUREMENT AT Tmin ±1°C		LIMIT
Measurement at Vop=10 VDC			
Temperature	-5	°C	Table IIIB
Input Voltage	10	VDC	10.0 ± 0.2 VDC
Input Current	67.9	mA	Table IIIB
Input Power, P_{diss}	0.679	W DC	Pdiss max
Frequency, f_{Tmin}	23.79965	GHz	Table IIIB
RF Output Power, P_{Tmin}	13.8	dBm	12 to 17 dBm

Frequency and RF Output Power Variation With Voltage, Ref. Test Para 5.2.5.2

Measurement at 9.5 VDC or at 9.5 VDC			
Temperature	-5	°C	Table IIIB
Input Voltage	9.5	VDC	9.5 VDC or Para 5.2.3.2
Input Current	67.8	mA	Table IIIB
Frequency, f_{meas}	23.79965	GHz	Table IIIB
RF Output Power, P_{meas}	13.8	dBm	12 to 17 dBm

Measurement at 10.5 VDC or at 10.5 VDC			
Temperature	-5	°C	Table IIIB
Input Voltage	10.5	VDC	10.5 VDC or Para 5.2.3.3
Input Current	67.8	mA	Table IIIB
Frequency, f_{meas}	23.79965	GHz	Table IIIB
RF Output Power, P_{meas}	13.8	dBm	12 to 17 dBm

Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{Tmin}$:

Δf_V at 9.5 VDC or at 9.5 VDC = ø MHz
Δf_V at 10.5 VDC or at 10.5 VDC = ø MHz
Δf_T at 10.0 VDC ($=f_{Tmin} - f_{Tnom}$) 0.75 MHz

Calculate RF Output Power Variation, $\Delta P_V = P_{meas} - P_{Tmin}$:

ΔP_V at 9.5 VDC or at 9.5 VDC = ø dB
ΔP_V at 10.5 VDC or at 10.5 VDC = ø dB
ΔP_T at 10.0 VDC ($=P_{Tmin} - P_{Tnom}$) = -0.2 dB

Accept ✓ Reject ____

Test Performed by VN Date 5-22-98
Litton Q.A. LITTON 160 Date MAY 28 1998

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 40 OF 68
56348	A	1300823	B3	

LITTON / SOLID STATE DIVISION / 3251 OLCOTT ST / SANTA CLARA, CA 95054

LITTON
Solid State

TEST DATA SHEET 7.5
FUNCTIONAL PERFORMANCE TESTS
INITIAL DATA SET N/A FINAL DATA SET ✓

LITTON TYPE LS K 9604 CF
SERIAL NUMBER: 87060 QUAL TEST N/A

AESD 1336610- 1
ACCEPT TEST ✓

Temperature Testing at T=30°C, Ref. Test Para. 5.2.5.3

SPECIFICATION	MEASUREMENT AT T=30° ±1°C	LIMIT
Measurement at Vop=10 VDC		
Temperature	30 °C	30° ± 1°C
Input Voltage	10 VDC	10.0 ± 0.2 VDC
Input Current	68.6 mA	Table IIIB
Input Power, P_{diss}	0.686 W DC	Pdiss max
Frequency, $f_{30°C}$	23.80057 GHz	Table IIIB
RF Output Power, $P_{30°C}$	14.2 dBm	12 to 17 dBm

Frequency and RF Output Power Variation With Voltage, Ref. Test Para 5.2.5.3

Measurement at 9.5 VDC or at 9.5 VDC		
Temperature	30 °C	Table IIIB
Input Voltage	9.5 VDC	9.5 VDC or Para. 5.2.3.2
Input Current	68.6 mA	Table IIIB
Frequency, f_{meas}	23.80059 GHz	Table IIIB
RF Output Power, P_{meas}	14.2 dBm	12 to 17 dBm

Measurement at 10.5 VDC or at 10.5 VDC		
Temperature	30 °C	Table IIIB
Input Voltage	10.5 VDC	10.5 VDC or Para. 5.2.3.3
Input Current	68.7 mA	Table IIIB
Frequency, f_{meas}	23.80060 GHz	Table IIIB
RF Output Power, P_{meas}	14.2 dBm	12 to 17 dBm

Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{30°C}$:

Δf_V at 9.5 VDC or at 9.5 VDC = 0.02 MHz
Δf_V at 10.5 VDC or at 10.5 VDC = 0.03 MHz
Δf_T at 10.0 VDC ($=f_{30°C} - f_{Tnom}$) = 0.17 MHz

Calculate RF Output Power Variation, $\Delta P_V = P_{meas} - P_{30°C}$:

ΔP_V at 9.5 VDC or at 9.5 VDC = 0.2 dB
ΔP_V at 10.5 VDC or at 10.5 VDC = 0.2 dB
ΔP_T at 10.0 VDC ($=P_{30°C} - P_{Tnom}$) = 0.2 dB

Accept ✓ Reject ______

Test Performed by VA Date 5-22-98
Litton Q.A. LITTON M60 Date MAY 28 1998

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 41 OF 68
56348	A	1300823	B3	

LITTON
Solid State

TEST DATA SHEET 7.6
FUNCTIONAL PERFORMANCE TESTS
INITIAL DATA SET N/A FINAL DATA SET ✓

LITTON TYPE LS K 9604 CF
SERIAL NUMBER: 87060 QUAL TEST N/A
AESD 1336610- 1
ACCEPT TEST ✓

Temperature Extreme Testing at Tmax, Ref. Test Para. 5.2.5.4

SPECIFICATION	MEASUREMENT AT Tmax ±1°C		LIMIT
Measurement at Vop=10 VDC			
Temperature	40	°C	Table IIIB
Input Voltage	10	VDC	10.0 ± 0.2 VDC
Input Current	68.8	mA	Table IIIB
Input Power, P_{diss}	0.688	W DC	Pdiss max
Frequency, f_{Tmax}	23.80079	GHz	Table IIIB
RF Output Power, P_{Tmax}	14.2	dBm	12 to 17 dBm

Frequency and RF Output Power Variation With Voltage, Ref. Test Para 5.2.5.4
Measurement at 9.5 VDC or at 9.5 VDC

Temperature	40	°C	Table IIIB
Input Voltage	9.5	VDC	9.5 VDC or Para 5.2.3.2
Input Current	68.8	mA	Table IIIB
Frequency, f_{meas}	23.80080	GHz	Table IIIB
RF Output Power, P_{meas}	14.2	dBm	12 to 17 dBm

Measurement at 10.5 VDC or at 10.5 VDC

Temperature	40	°C	Table IIIB
Input Voltage	10.5	VDC	10.5 VDC or Para 5.2.3.3
Input Current	68.8	mA	Table IIIB
Frequency, f_{meas}	23.80080	GHz	Table IIIB
RF Output Power, P_{meas}	14.2	dBm	12 to 17 dBm

Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{Tmax}$:
Δf_V at 9.5 VDC or at 9.5 VDC = 0.01 MHz
Δf_V at 10.5 VDC or at 10.5 VDC = 0.01 MHz
Δf_T at 10.0V ($=f_{Tmax} - f_{Tnom}$) = 0.39 MHz

Calculate RF Output Power Variation, $\Delta P_V = P_{meas} - P_{Tnom}$:
ΔP_V at 9.5 VDC or at 9.5 VDC = 0.2 dB
ΔP_V at 10.5 VDC or at 10.5 VDC = 0.2 dB
ΔP_T at 10.0 VDC ($=P_{Tmax} - P_{Tnom}$) = 0.2 dB

Accept ✓ Reject

Test Performed by VN Date 5-22-98
Litton Q.A. Date MAY 28 1998

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 42 OF 68
56348	A	1300823	B3	

LITTON
Solid State

TEST DATA SHEET 7.7
FUNCTIONAL PERFORMANCE TESTS
INITIAL DATA SET N/A FINAL DATA SET ✓

LITTON TYPE LS K 9604 CF AESD 1336610- 1
SERIAL NUMBER: 87060 QUAL TEST N/A ACCEPT TEST ✓

Power Supply Immunity, Ref. Test Para. 5.2.4

SPECIFICATION	MEASUREMENT AT Tnom ±1°C	LIMIT
Initial Measurement		
Temperature	18 °C	Table IIIB
Input Voltage	10 VDC	10.0 ± 0.2 VDC
Input Current	68.6 mA	Table IIIB
Input Power	0.686 W DC	Pdiss max
Frequency (f_{Tnom})	23.80036 GHz	Table IIIB
RF Output Power	14.1 dBm	12 to 17 dBm
Frequency Setting Accuracy, Δf_S (= f_{Tnom}-F_o)	0.36 MHz	

Performance After Short Circuit on Power Supply: Ref Test Para 5.2.4.2

Input Voltage	10 VDC	10.0 ± 0.2 VDC
Input Current	68.6 mA	Table IIIB
Input Power	0.686 W DC	Pdiss max
Frequency	23.80037 GHz	Table IIIB
RF Output Power	14.1 dBm	12 to 17 dBm

Over Voltage: Ref Test Para 5.2.4.3

Overvoltage Input Voltage	28 VDC	+28V

Performance After Input Overvoltage

Input Voltage	10 VDC	10.0 ± 0.2 VDC
Input Current	68.6 mA	Table IIIB
Input Power	0.686 W DC	Pdiss max
Frequency	23.80035 GHz	Table IIIB
RF Output Power	14.1 dBm	12 to 17 dBm

Reverse Polarity: Ref Test Para 5.2.4.4

Reverse Input Voltage	-10 VDC	-10.0 ± 0.2 VDC

Performance After Reverse Input Voltage

Input Voltage	10 VDC	10.0 ± 0.2 VDC
Input Current	68.6 mA	Table IIIB
Input Power	0.686 W DC	Pdiss max
Frequency, f_{Tnom}	23.80034 GHz	Table IIIB
RF Output Power	14.1 dBm	12 to 17 dBm
Frequency Setting Accuracy, Δf_S (= f_{Tnom}-F_o)	0.34 MHz	

Accept ✓ Reject ______

Test Performed by VA Date 5-22-98
Litton Q.A. 08 Date MAY 20 1998

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 43 OF 68
56348	A	1300823	B3	

LITTON / SOLID STATE DIVISION / 3251 OLCOTT ST / SANTA CLARA, CA 95054

TEST DATA SHEET 7.23B
FUNCTIONAL PERFORMANCE TESTS
INITIAL DATA SET N/A FINAL DATA SET ✓

LITTON TYPE LS K 9604 CF
SERIAL NUMBER: 87060 QUAL TEST N/A
AESD 1336610- 1
ACCEPT TEST ✓

Frequency Pulling and Load VSWR 2.5:1 max. all phases. Ref Test Para. 5.9

TEST DESCRIPTION			LIMITS
Output Open and Short. Ref. Test Para. 5.9.5			
Temperature	24	°C	24°C ± 5°C
Frequency:	23.80046	GHz	Table IIIB
RF Output Power:	14.0	dBm	12 to 17 dBm
Input Voltage	10	VDC	10 ± 0.2 VDC
Input Current:	68.6	mA	Table IIIB
Results:	✓	Acceptable	No Damage or Degradation

Calculate maximum Frequency Accuracy (both positive and negative),
$\Delta f_{acc} = \Delta f_S$ (Use worst-case Δf_S from 7.2, 7.7, and 7.22A) + Δf_H (from 7.22A) + Δf_L (from 7.23A):

Maximum Δf_{acc} =	0.49	MHz (Positive)	Table IIIB
	− 0.10	MHz (Negative)	Table IIIB

Calculate maximum Short-term Frequency Stability (both positive and negative),
$\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use worst-case Δf_V and Δf_T from 7.2 thru 7.6):

Maximum Δf_{V+T} =	0.78	MHz (Positive)	Table IIIB
	− 0.02	MHz (Negative)	Table IIIB

Calculate maximum overall RF Output Power Stability (both positive and negative),
$\Delta P_{OV} = \Delta P_V + \Delta P_T$ (Use worst-case ΔP_V and ΔP_T from 7.2 thru 7.6) + ΔP_H (from 7.22A) + ΔP_L (from 7.23A):

Maximum ΔP_{OV} =	0.61	dB (Positive)	1.0 dB
	− 0.90	dB (Negative)	-1.0 dB

Accept ✓ Reject ________

Test Performed by VN Date 5-26-98

Litton Q.A. LITTON 160 Date MAY 28 1998

Channel 2 LO

DRO (P/N: 1336610-2, S/N: 87053)

LITTON
Solid State

TEST DATA SHEET 7.2
FUNCTIONAL PERFORMANCE TESTS
INITIAL DATA SET N/A FINAL DATA SET ✓

LITTON TYPE LS A 9635 CF
SERIAL NUMBER: 87053 QUAL TEST N/A
AESD 1336610- 2
ACCEPT TEST ✓

Basic Electrical Test; Ref. Test Para. 5.2.2

SPECIFICATION	MEASUREMENT AT Tnom ±1°C	LIMIT
Measurement at Vop=10 VDC		
Temperature	18 °C	Table IIIB
Input Voltage	10 VDC	10.0 ± 0.2 VDC
Input Current	121 mA	Table IIIB
Input Power, P_{diss}	1.21 W DC	P_{diss} max
Frequency, f_{Tnom}	3140115 GHz	Table IIIB
RF Output Power, P_{Tnom}	16.0 dBm	12 to 17 dBm
Frequency Setting Accuracy, Δf_S (= f_{Tnom}-F_o)	1.15 MHz	

Frequency and RF Output Power Variation With Voltage, Ref. Test Para 5.2.3

Measurement at 9.5 VDC or at 9.5 VDC		
Temperature	18 °C	Table IIIB
Input Voltage	9.5 VDC	9.5 VDC or Para. 5.2.3.2
Input Current	121 mA	Table IIIB
Frequency, f_{meas}	3140115 GHz	Table IIIB
RF Output Power, P_{meas}	16.0 dBm	12 to 17 dBm
Measurement at 10.5 VDC or at 10.5 VDC		
Temperature	18 °C	Table IIIB
Input Voltage	10.5 VDC	10.5 VDC or Para. 5.2.3.3
Input Current	121 mA	Table IIIB
Frequency, f_{meas}	3140116 GHz	Table IIIB
RF Output Power, P_{meas}	16.0 dBm	12 to 17 dBm

Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{Tnom}$,

Δf_V at 9.5 VDC or at 9.5 VDC = ∅ MHz
Δf_V at 10.5 VDC or at 10.5 VDC = 0.01 MHz

Calculate RF Output Power Variation, $\Delta P_V = P_{meas} - P_{Tnom}$,

ΔP_V at 9.5 VDC or at 9.5 VDC = ∅ dB
ΔP_V at 10.5 VDC or at 10.5 VDC = ∅ dB

Accept ✓ Reject ____

Test Performed by JED Date 4-28-98
Litton QA LITTON 60 Date MAY 0 1 1998

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 38 OF 68
56348	A	1300823	B3	

LITTON
Solid State

TEST DATA SHEET 7.3
FUNCTIONAL PERFORMANCE TESTS
INITIAL DATA SET N/A FINAL DATA SET ✓

LITTON TYPE LS A 9635CF
SERIAL NUMBER: 87053 QUAL TEST N/A
AESD 1336610- 2
ACCEPT TEST ✓

Temperature Testing at T=10°C, Ref. Test Para. 5.2.5.1

SPECIFICATION	MEASUREMENT AT T=10° ±1°C		LIMIT
Measurement at Vop=10 VDC			
Temperature	10	°C	10° ± 1°C
Input Voltage	10	VDC	10.0 ± 0.2 VDC
Input Current	121	mA	Table IIIB
Input Power, P_{diss}	1.21	W DC	Pdiss max
Frequency, $f_{10°C}$	3140193	GHz	Table IIIB
RF Output Power, $P_{10°C}$	16.0	dBm	12 to 17 dBm

Frequency and RF Output Power Variation With Voltage, Ref. Test Para 5.2.5.1

Measurement at 9.5 VDC or at 9.5 VDC

Temperature	10	°C	Table IIIB
Input Voltage	9.5	VDC	9.5 VDC or Para. 5.2.3.2
Input Current	121	mA	Table IIIB
Frequency, f_{meas}	3140194	GHz	Table IIIB
RF Output Power, P_{meas}	16.0	dBm	12 to 17 dBm

Measurement at 10.5 VDC or at 10.5 VDC

Temperature	10	°C	Table IIIB
Input Voltage	10.5	VDC	10.5 VDC or Para. 5.2.3.3
Input Current	121	mA	Table IIIB
Frequency, f_{meas}	3140195	GHz	Table IIIB
RF Output Power, P_{meas}	16.0	dBm	12 to 17 dBm

Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{10°C}$:

Δf_V at 9.5 VDC or at 9.5 VDC = 0.01 MHz
Δf_V at 10.5 VDC or at 10.5 VDC = 0.02 MHz
Δf_T at 10.0 VDC ($=f_{10°C} - f_{Tnom}$) = + 0.78 MHz

Calculate RF Output Power Variation, $\Delta P_V = P_{meas} - P_{10°C}$:

ΔP_V at 9.5 VDC or at 9.5 VDC = ∅ dB
ΔP_V at 10.5 VDC or at 10.5 VDC = ∅ dB
ΔP_T at 10.0 VDC ($=P_{10°C} - P_{Tnom}$) = ∅ dB

Accept ✓ Reject ______

Test Performed by JED Date 4-28-98
Litton Q.A. LITTON 160 Date MAY 0 1 1998

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 39 OF 68
56348	A	1300823	B3	

TEST DATA SHEET 7.4
FUNCTIONAL PERFORMANCE TESTS
INITIAL DATA SET N/A FINAL DATA SET ✓

LITTON TYPE LS A 9635 CF AESD 1336610- 2
SERIAL NUMBER: 87053 QUAL TEST N/A ACCEPT TEST ✓

Temperature Extreme Testing at Tmin, Ref. Test Para. 5.2.5.2

SPECIFICATION	MEASUREMENT AT Tmin ±1°C		LIMIT
Measurement at Vop=10 VDC			
Temperature	-5	°C	Table IIIB
Input Voltage	10	VDC	10.0 ± 0.2 VDC
Input Current	120	mA	Table IIIB
Input Power, P_{diss}	1.20	W DC	Pdiss max
Frequency, f_{Tmin}	3140288	GHz	Table IIIB
RF Output Power, P_{Tmin}	16.0	dBm	12 to 17 dBm

Frequency and RF Output Power Variation With Voltage, Ref. Test Para 5.2.5.2

Measurement at 9.5 VDC or at 9.5 VDC			
Temperature	-5	°C	Table IIIB
Input Voltage	9.5	VDC	9.5 VDC or Para 5.2.3.2
Input Current	120	mA	Table IIIB
Frequency, f_{meas}	3140289	GHz	Table IIIB
RF Output Power, P_{meas}	16.0	dBm	12 to 17 dBm

Measurement at 10.5 VDC or at 10.5 VDC			
Temperature	-5	°C	Table IIIB
Input Voltage	10.5	VDC	10.5 VDC or Para 5.2.3.3
Input Current	120	mA	Table IIIB
Frequency, f_{meas}	3140290	GHz	Table IIIB
RF Output Power, P_{meas}	16.0	dBm	12 to 17 dBm

Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{Tmin}$:

Δf_V at 9.5 VDC or at 9.5 VDC = 0.01 MHz
Δf_V at 10.5 VDC or at 10.5 VDC = 0.02 MHz
Δf_T at 10.0 VDC ($=f_{Tmin} - f_{Tnom}$) 1.73 MHz

Calculate RF Output Power Variation, $\Delta P_V = P_{meas} - P_{Tmin}$:

ΔP_V at 9.5 VDC or at 9.5 VDC = ∅ dB
ΔP_V at 10.5 VDC or at 10.5 VDC = ∅ dB
ΔP_T at 10.0 VDC ($=P_{Tmin} - P_{Tnom}$) = ∅ dB

Accept ✓ Reject ______

Test Performed by JCD Date 4-28-98
Litton Q.A. LITTON 150 Date MAY 01 1998

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 40 OF 68
56348	A	1300823	B3	

TEST DATA SHEET 7.5
FUNCTIONAL PERFORMANCE TESTS
INITIAL DATA SET N/A FINAL DATA SET ✓

LITTON TYPE LS A 9635 CF
AESD 1336610- 2
SERIAL NUMBER: 87053 QUAL TEST N/A ACCEPT TEST ✓

Temperature Testing at T=30°C, Ref. Test Para. 5.2.5.3

SPECIFICATION	MEASUREMENT AT T=30° ±1°C		LIMIT
Measurement at Vop=10 VDC			
Temperature	30	°C	30° ± 1°C
Input Voltage	10	VDC	10.0 ± 0.2 VDC
Input Current	123	mA	Table IIIB
Input Power, P_{diss}	1.23	W DC	Pdiss max
Frequency, $f_{30°C}$	31.39956	GHz	Table IIIB
RF Output Power, $P_{30°C}$	16.0	dBm	12 to 17 dBm

Frequency and RF Output Power Variation With Voltage, Ref. Test Para 5.2.5.3

Measurement at 9.5 VDC or at 9.5 VDC

Temperature	30	°C	Table IIIB
Input Voltage	9.5	VDC	9.5 VDC or Para. 5.2.3.2
Input Current	123	mA	Table IIIB
Frequency, f_{meas}	31.39951	GHz	Table IIIB
RF Output Power, P_{meas}	16.0	dBm	12 to 17 dBm

Measurement at 10.5 VDC or at 10.5 VDC

Temperature	30	°C	Table IIIB
Input Voltage	10.5	VDC	10.5 VDC or Para. 5.2.3.3
Input Current	123	mA	Table IIIB
Frequency, f_{meas}	31.39946	GHz	Table IIIB
RF Output Power, P_{meas}	16.0	dBm	12 to 17 dBm

Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{30°C}$:

Δf_V at 9.5 VDC or at 9.5 VDC = -0.05 MHz
Δf_V at 10.5 VDC or at 10.5 VDC = -0.10 MHz
Δf_T at 10.0 VDC ($=f_{30°C} - f_{Tnom}$) = -1.59 MHz

Calculate RF Output Power Variation, $\Delta P_V = P_{meas} - P_{30°C}$:

ΔP_V at 9.5 VDC or at 9.5 VDC = ∅ dB
ΔP_V at 10.5 VDC or at 10.5 VDC = ∅ dB
ΔP_T at 10.0 VDC ($=P_{30°C} - P_{Tnom}$) = ∅ dB

Accept ✓ Reject

Test Performed by JED Date 4-28-98
Litton Q.A. LITTON M 60 Date MAY 0 1 1998

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 41 OF 68
56348	A	1300823	B3	

LITTON
Solid State

TEST DATA SHEET 7.6
FUNCTIONAL PERFORMANCE TESTS
INITIAL DATA SET N/A FINAL DATA SET ✓

LITTON TYPE LS A 9635 CF
SERIAL NUMBER: 87053 QUAL TEST N/A
AESD 1336610- 2
ACCEPT TEST ✓

Temperature Extreme Testing at Tmax, Ref. Test Para. 5.2.5.4

SPECIFICATION	MEASUREMENT AT Tmax ±1°C		LIMIT
Measurement at Vop=10 VDC			
Temperature	40	°C	Table IIIB
Input Voltage	10	VDC	10.0 ± 0.2 VDC
Input Current	123	mA	Table IIIB
Input Power, P_{diss}	1.23	W DC	Pdiss max
Frequency, f_{Tmax}	3139824	GHz	Table IIIB
RF Output Power, P_{Tmax}	16.0	dBm	12 to 17 dBm

Frequency and RF Output Power Variation With Voltage, Ref. Test Para 5.2.5.4

Measurement at 9.5 VDC or at 9.5 VDC			
Temperature	40	°C	Table IIIB
Input Voltage	9.5	VDC	9.5 VDC or Para 5.2.3.2
Input Current	124	mA	Table IIIB
Frequency, f_{meas}	3139818	GHz	Table IIIB
RF Output Power, P_{meas}	16.0	dBm	12 to 17 dBm

Measurement at 10.5 VDC or at 10.5 VDC			
Temperature	40	°C	Table IIIB
Input Voltage	10.5	VDC	10.5 VDC or Para 5.2.3.3
Input Current	124	mA	Table IIIB
Frequency, f_{meas}	3139812	GHz	Table IIIB
RF Output Power, P_{meas}	16.0	dBm	12 to 17 dBm

Calculate Frequency Variation, $\Delta f_V = f_{meas} - f_{Tmax}$:

Δf_V at 9.5 VDC or at 9.5 VDC = − 0.06 MHz
Δf_V at 10.5 VDC or at 10.5 VDC = − 0.12 MHz
Δf_T at 10.0V ($=f_{Tmax} - f_{Tnom}$) = 2.91 MHz

Calculate RF Output Power Variation, $\Delta P_V = P_{meas} - P_{Tnom}$:

ΔP_V at 9.5 VDC or at 9.5 VDC = ϕ dB
ΔP_V at 10.5 VDC or at 10.5 VDC = ϕ dB
ΔP_T at 10.0 VDC ($=P_{Tmax} - P_{Tnom}$) = ϕ dB

Accept ✓ Reject

Test Performed by JED Date 4-28-98
Litton Q.A. LITTON 160 Date MAY 01 1998

CODE IDENT NO.	SIZE	NUMBER	REV	SHEET 42 OF 68
56348	A	1300823	B3	

TEST DATA SHEET 7.7
FUNCTIONAL PERFORMANCE TESTS
INITIAL DATA SET N/A FINAL DATA SET ✓

LITTON TYPE LSA 9635 CF AESD 1336610- 2
SERIAL NUMBER: 87053 QUAL TEST N/A ACCEPT TEST ✓

Power Supply Immunity, Ref. Test Para. 5.2.4

SPECIFICATION	MEASUREMENT AT Tnom ±1°C		LIMIT
Initial Measurement			
Temperature	18	°C	Table IIIB
Input Voltage	10	VDC	10.0 ± 0.2 VDC
Input Current	122	mA	Table IIIB
Input Power	1.22	W DC	Pdiss max
Frequency (f_{Tnom})	31.40110	GHz	Table IIIB
RF Output Power	16.0	dBm	12 to 17 dBm
Frequency Setting Accuracy, Δf_S (= f_{Tnom}-F_o)	1.1	MHz	

Performance After Short Circuit on Power Supply: Ref Test Para 5.2.4.2

Input Voltage	10	VDC	10.0 ± 0.2 VDC
Input Current	122	mA	Table IIIB
Input Power	1.22	W DC	Pdiss max
Frequency	31.40110	GHz	Table IIIB
RF Output Power	16.0	dBm	12 to 17 dBm

Over Voltage: Ref Test Para 5.2.4.3

Overvoltage Input Voltage	28	VDC	+28V

Performance After Input Overvoltage

Input Voltage	10	VDC	10.0 ± 0.2 VDC
Input Current	122	mA	Table IIIB
Input Power	1.22	W DC	Pdiss max
Frequency	31.40111	GHz	Table IIIB
RF Output Power	16.0	dBm	12 to 17 dBm

Reverse Polarity: Ref Test Para 5.2.4.4

Reverse Input Voltage	-10	VDC	-10.0 ± 0.2 VDC

Performance After Reverse Input Voltage -

Input Voltage	10	VDC	10.0 ± 0.2 VDC
Input Current	122	mA	Table IIIB
Input Power	1.22	W DC	Pdiss max
Frequency, f_{Tnom}	31.40110	GHz	Table IIIB
RF Output Power	16.0	dBm	12 to 17 dBm
Frequency Setting Accuracy, Δf_S (= f_{Tnom}-F_o)	1.1	MHz	

Accept ✓ Reject
Test Performed by VN Date 4-28-98
Litton Q.A. LITTON 160 Date MAY 01 1998

TEST DATA SHEET 7.23B
FUNCTIONAL PERFORMANCE TESTS
INITIAL DATA SET N/A FINAL DATA SET ✓

LITTON TYPE LSA 9635 CF — AESD 1336610- 2
SERIAL NUMBER: 87053 — QUAL TEST N/A — ACCEPT TEST ✓

Frequency Pulling and Load VSWR 2.5:1 max. all phases. Ref Test Para. 5.9

TEST DESCRIPTION		LIMITS
Output Open and Short. Ref. Test Para. 5.9.5		
Temperature	24 °C	24°C ± 5°C
Frequency:	31.40065 GHz	Table IIIB
RF Output Power:	15.6 dBm	12 to 17 dBm
Input Voltage	10 VDC	10 ± 0.2 VDC
Input Current:	122 mA	Table IIIB
Results:	✓ Acceptable	No Damage or Degradation

Calculate maximum Frequency Accuracy (both positive and negative),
$\Delta f_{acc} = \Delta f_S$ (Use worst-case Δf_S from 7.2, 7.7, and 7.22A) + Δf_H (from 7.22A) + Δf_L (from 7.23A):

Maximum Δf_{acc} =	1.39 MHz (Positive)	Table IIIB
	-0.28 MHz (Negative)	Table IIIB

Calculate maximum Short-term Frequency Stability (both positive and negative),
$\Delta f_{V+T} = \Delta f_V + \Delta f_T$ (Use worst-case Δf_V and Δf_T from 7.2 thru 7.6):

Maximum Δf_{V+T} =	2.93 MHz (Positive)	Table IIIB
	-1.60 MHz (Negative)	Table IIIB

Calculate maximum overall RF Output Power Stability (both positive and negative),
$\Delta P_{OV} = \Delta P_V + \Delta P_T$ (Use worst-case ΔP_V and ΔP_T from 7.2 thru 7.6) + ΔP_H (from 7.22A) + ΔP_L (from 7.23A):

Maximum ΔP_{OV} =	0.42 dB (Positive)	1.0 dB
	- 0.30 dB (Negative)	-1.0 dB

Accept ✓ Reject ________

Test Performed by VN Date 4-30-98

MAY 01 1998

Litton Q.A. LITTON M 60 Date ________

BANDPASS CHARACTERISTICS

FOR

IF FILTERS

3 dB BANDWIDTH OF IF FILTERS

Channel No.	1	2
Specification (MHz)	135	90
3 dB bandwidth (MHz) *	127	82
f_L - f_H (MHz)	8-135	8-90
Measured (MHz)		
3 dB bandwidth (MHz)	125.64	80.22
f_L - f_H (MHz)	8.52-134.16	9.16-89.38

* Actual specifications for IF filters.

Channel 1 Bandpass Filter

IF Filter (S/N: 1331559-6, S/N: P232-005)

ACCEPTANCE TEST REPORT

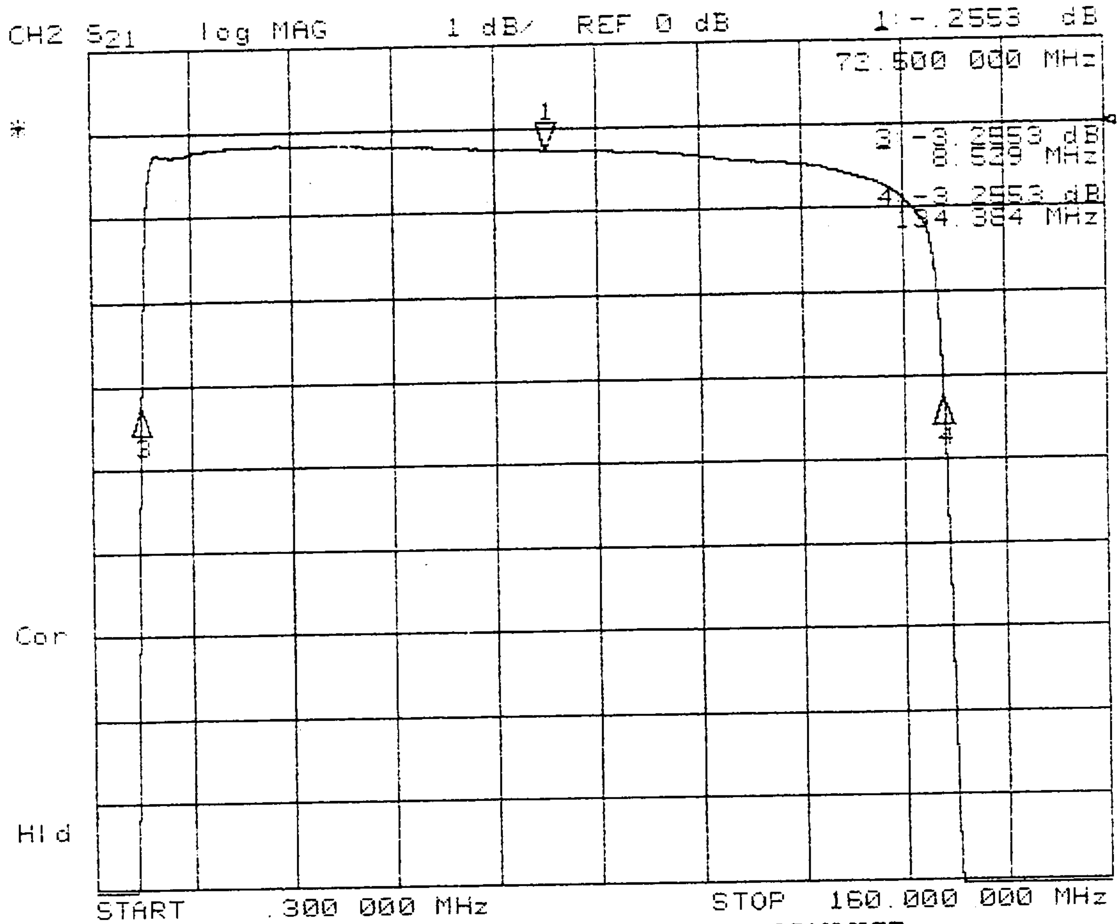
BANDPASS FILTER MODEL HL72.5-125-10SS1 S/N P232-005
AEROJET 1331559-6 REV. E

3.0 dB BANDWIDTH

ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.5.3	-10°C	+15°C	+40°C
{7} UPPER 3.0 dB BANDEDGE	134.38 MHz (133.0-135.0)	134.16 Mhz (133.0-135.0)	133.93 MHz (133.0-135.0)
{8} LOWER 3.0 dB BANDEDGE	8.53 MHz (8.0-10.0)	8.52 Mhz (8.0-10.0)	8.50 MHz (8.0-10.0)
{9} 3.0 dB RELATIVE BANDWIDTH	125.85 MHz (123.0-127.0)	125.64 Mhz (123.0-127.0)	125.43 MHz (123.0-127.0)
{10} ADD {7} AND {8} ÷ 2 =	71.46 MHz (72.5 NOM)	71.34 MHz (72.5 NOM)	71.22 Mhz (72.5 NOM)
{10a} RECORD MEASURED TEMPERATURE	-13.2 °C (-15.0 TO -10.0)	+14.0 °C (12.5 TO 17.5)	+42.0 °C (40.0 TO 45.0)
{6} ATTACH TRANSMISSION LOSS PERFORMANCE X-Y PLOT	✓ (√)	✓ (√)	✓ (√)

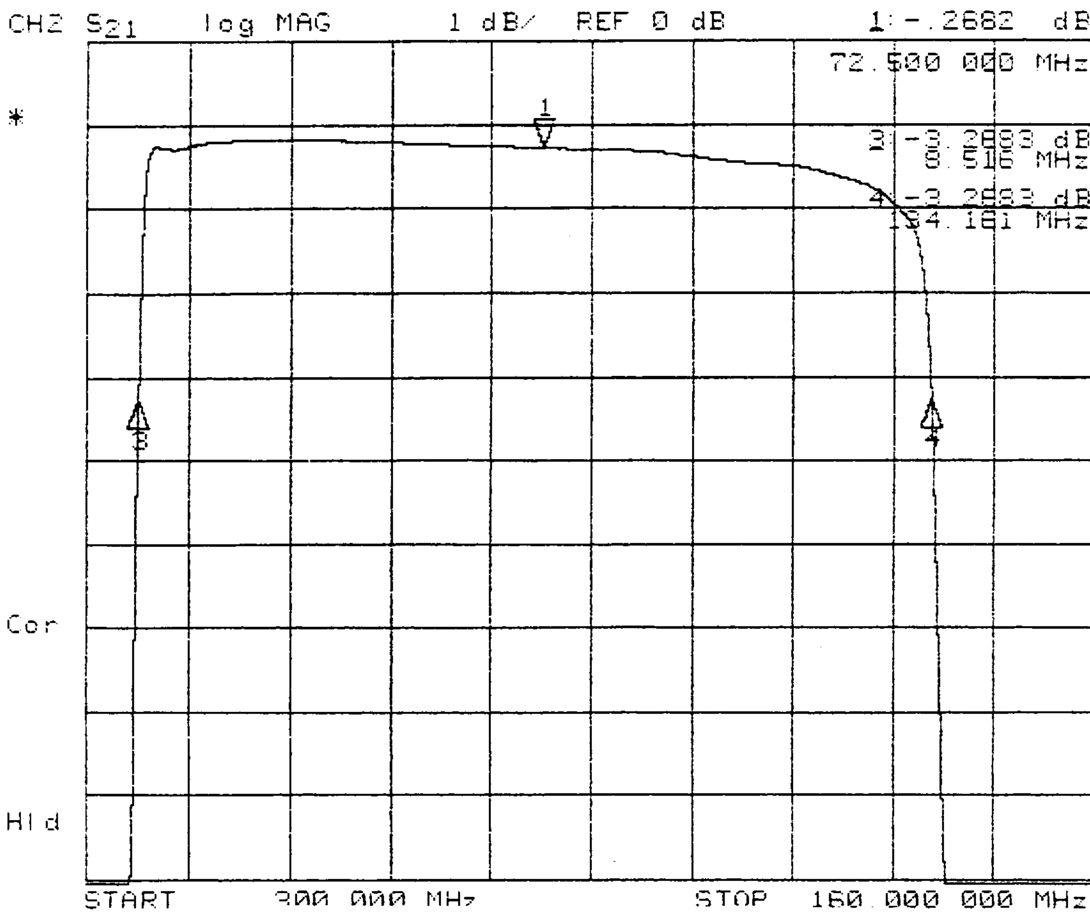
PASSBAND RIPPLE

ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.5.4	-10°C	+15°C	+40°C
{11a} MIN INSERTION LOSS FREQ	30.24 MHz	30.24 Mhz	29.45 MHz
MIN INSERTION LOSS PERFORMANCE	-0.16 dB	-0.16 dB	-0.17 dB
{11b} 75% BW LOWER BANDEDGE FREQ	10.13 MHz	10.05 Mhz	10.00 MHz
75% BW LOWER BANDEDGE I.L. PERF	-0.42 dB	-0.44 dB	-0.46 dB
{11c} 75% BW UPPER BANDEDGE FREQ	103.88 MHz	103.80 Mhz	103.75 MHz
75% BW UPPER BANDEDGE I.L. PERF	-0.42 dB	-0.44 dB	-0.46 dB
{11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})	0.26 dB	0.28 dB	0.29 dB
{11e} PERFORMANCE DELTA (I.L. @ {11c} - I.L. @ {11a})	0.26 dB	0.28 dB	0.29 dB



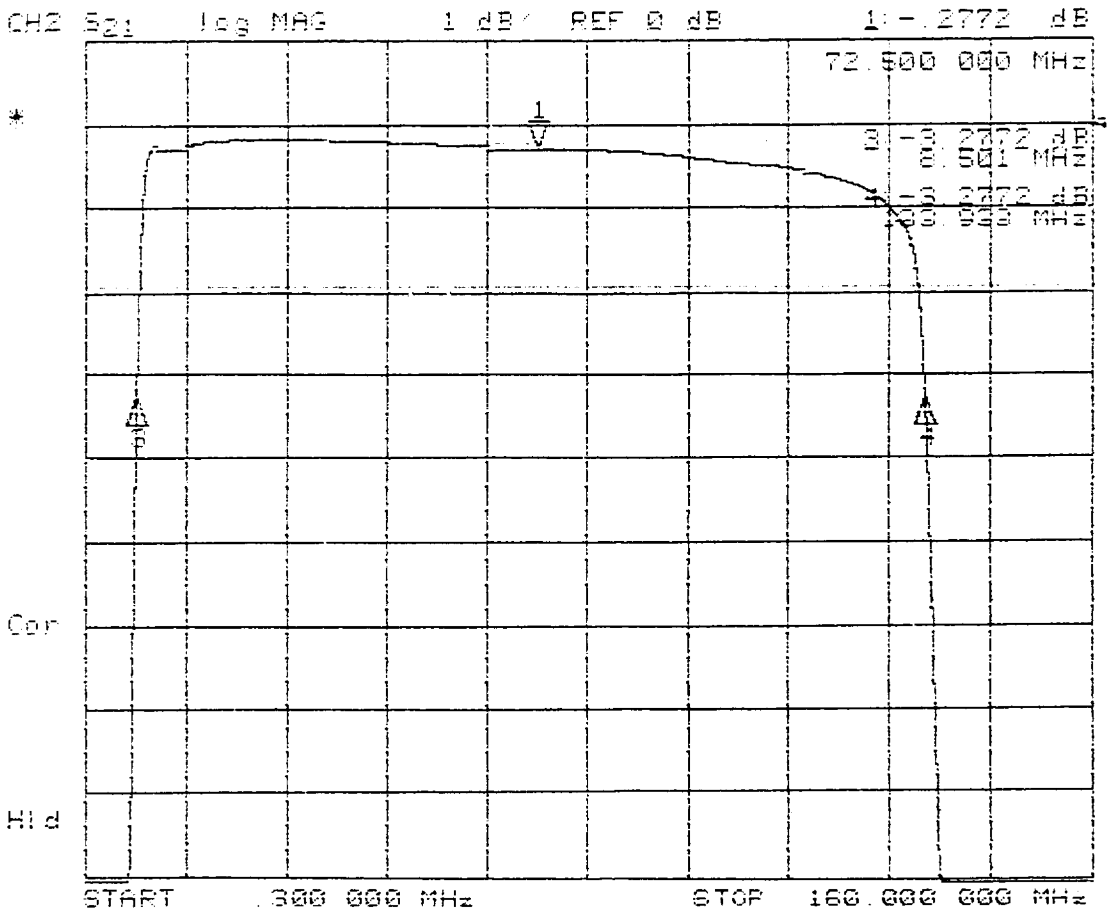
FINAL FUNCTIONAL PERFORMANCE
TRANSMISSION LOSS
SERIAL NO. P232-005
-10C DATA
OPR: R. HOGGATT DATE 12/11/96

MARKER PARAME....	...	...nel 2
MARKER 1	16.250000 MHz OFF	72.500000 MHz -.2553 dB
MARKER 2	128.750000 MHz OFF	71.456911 MHz OFF
MARKER 3	25.625000 MHz OFF	8.529639 MHz -3.2553 dB
MARKER 4	119.375000 MHz OFF	134.384183 MHz -3.2553 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER	OFF	OFF
PLACEMENT	CONTINUOUS	CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE	-14 dB	-3 dB
MARKER WIDTH VALUE	-3 dB	-3 dB
	OFF	OFF
MARKER TRACKING	OFF	OFF



FINAL FUNCTIONAL PERFORMANCE
TRANSMISSION LOSS
SERIAL NO. P232-005
+15C DATA
OPR: R. HOGGATT DATE 12/11/96

MARKER PARAMETERS	Channel 1	Channel 2
MARKER 1	16.250000 MHz OFF	72.500000 MHz -.2682 dB
MARKER 2	128.750000 MHz OFF	71.338889 MHz OFF
MARKER 3	25.625000 MHz OFF	8.516631 MHz -3.2683 dB
MARKER 4	119.375000 MHz OFF	134.161148 MHz -3.2683 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER	OFF	OFF
PLACEMENT	CONTINUOUS	CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE	-14 dB	-3 dB
MARKER WIDTH VALUE	-3 dB OFF	-3 dB OFF
MARKER TRACKING	OFF	OFF



FINAL FUNCTIONAL PERFORMANCE
TRANSMISSION LOSS
SERIAL NO. P232-005
+40C DATA
OPR: R. HOGGATT DATE 12/11/96

MARKER PARAMETERS	Channel 1	Channel 2
MARKER 1	18.250000 MHz OFF	72.500000 MHz -.2772 dB
MARKER 2	128.750000 MHz OFF	71.217370 MHz OFF
MARKER 3	35.625000 MHz OFF	8.501220 MHz -3.2772 dB
MARKER 4	119.375000 MHz OFF	133.933520 MHz -3.2772 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER	OFF	OFF
PLACEMENT	CONTINUOUS	CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE	-14 dB	-3 dB
MARKER WIDTH VALUE	-3 dB	-3 dB
	OFF	OFF
MARKER TRACKING	OFF	OFF

APPENDIX F **ACCEPTANCE TEST REPORT**

BANDPASS FILTER MODEL HL72.5-125-10SS1 S/N P232-005
AEROJET 1331559-6 REV. E

PASSBAND RIPPLE (CON'T)

{11f} RECORD PASS/FAIL (0.5 dB MAX)	PASS/FAIL	PASS/FAIL	PASS/FAIL
{11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S)	✓ (√)	✓ (√)	✓ (√)

OUT-OF-BAND REJECTION

ACCEPTANCE TEST PROCEDURE 63-0005-02 PARA 4.5.5 Fc=72.5 MHz. REF {5A} FOR INSERTION LOSS @ Fc	-10°C	+15°C	+40°C
{12} WORST CASE REJECTION FROM 0.300 MHz TO 1.0 MHz	>100 dB (40.0 dB MIN)	>100 dB (40.0 dB MIN)	>100 dB (40.0 dB MIN)
{13a} WORST CASE REJECTION FROM 153.75 MHz TO 1000.0 MHz	-69.7 dB (40.0 dB MIN)	-69.7 dB (40.0 dB MIN)	-69.8 dB (40.0 dB MIN)
{13c} RECORD MEASURED TEMPERATURE	-13.1 °C (-15.0 TO -10.0)	+14.0 °C (12.5 TO 17.5)	+42.0 °C (40.0 TO 45.0)
{14} ATTACH REJECTION PERFORMANCE X-Y PLOT(S)	✓ (√) ✓ (√)	✓ (√) ✓ (√)	✓ (√) ✓ (√)

DA 6

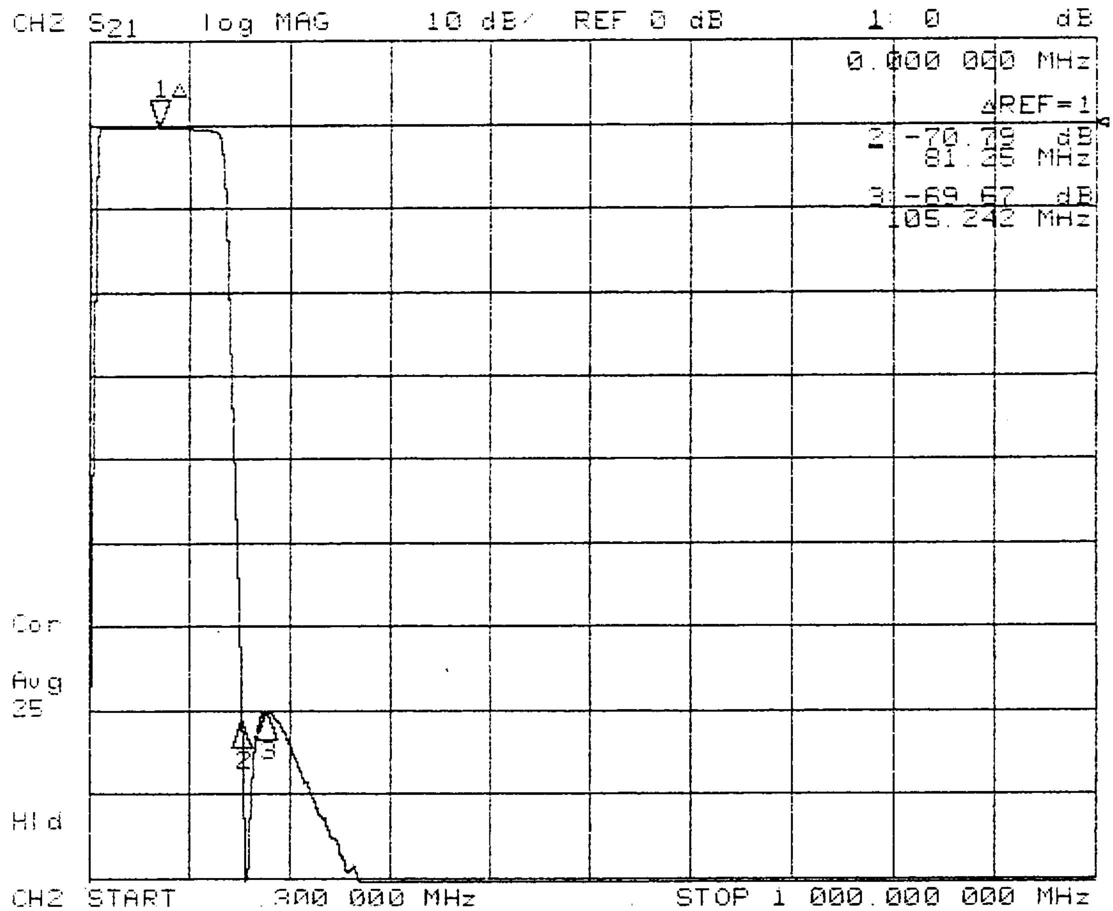
TEST PERFORMED BY R. Hoggatt DATE 12/11/96

NOTE IF TEST WITNESSED BY AESD: ________ GSI: Not witnessed this time. DLD

***** END OF FUNCTIONAL PERFORMANCE TEST ****

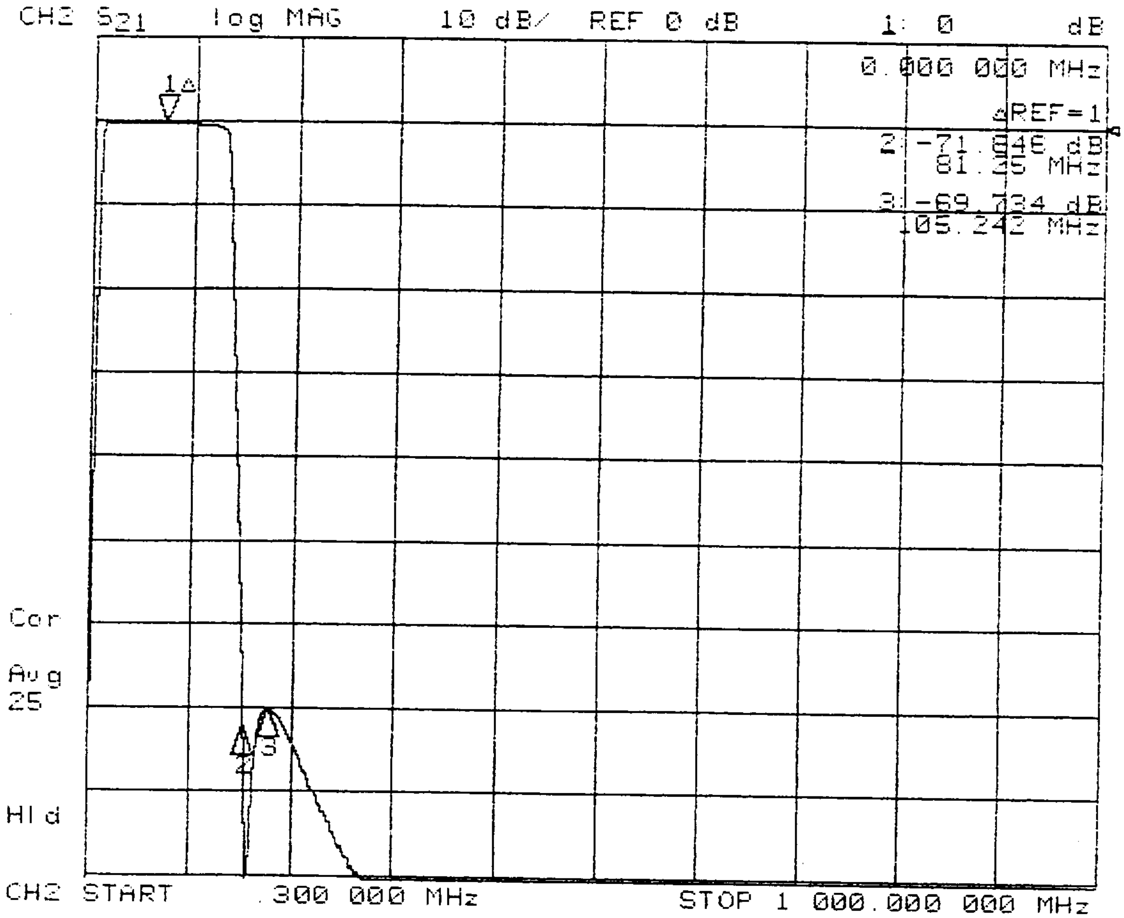
OUTLINE AND MOUNTING DIMENSIONS VERIFICATION
{16} REFERENCE CUSTOMER DRAWING 1331559

DESCRIPTION OF MEASUREMENT	DIMENSION AND TOLERANCE	ACTUAL MEASUREMENT
OVER ALL LENGTH	3.50 ± .03	3.501
MOUNTING HOLE CENTER	0.125 ± .010	0.127
BETWEEN UPPER MOUNTING HOLES	3.250	3.250
BETWEEN LOWER MOUNTING HOLES	3.250	3.249



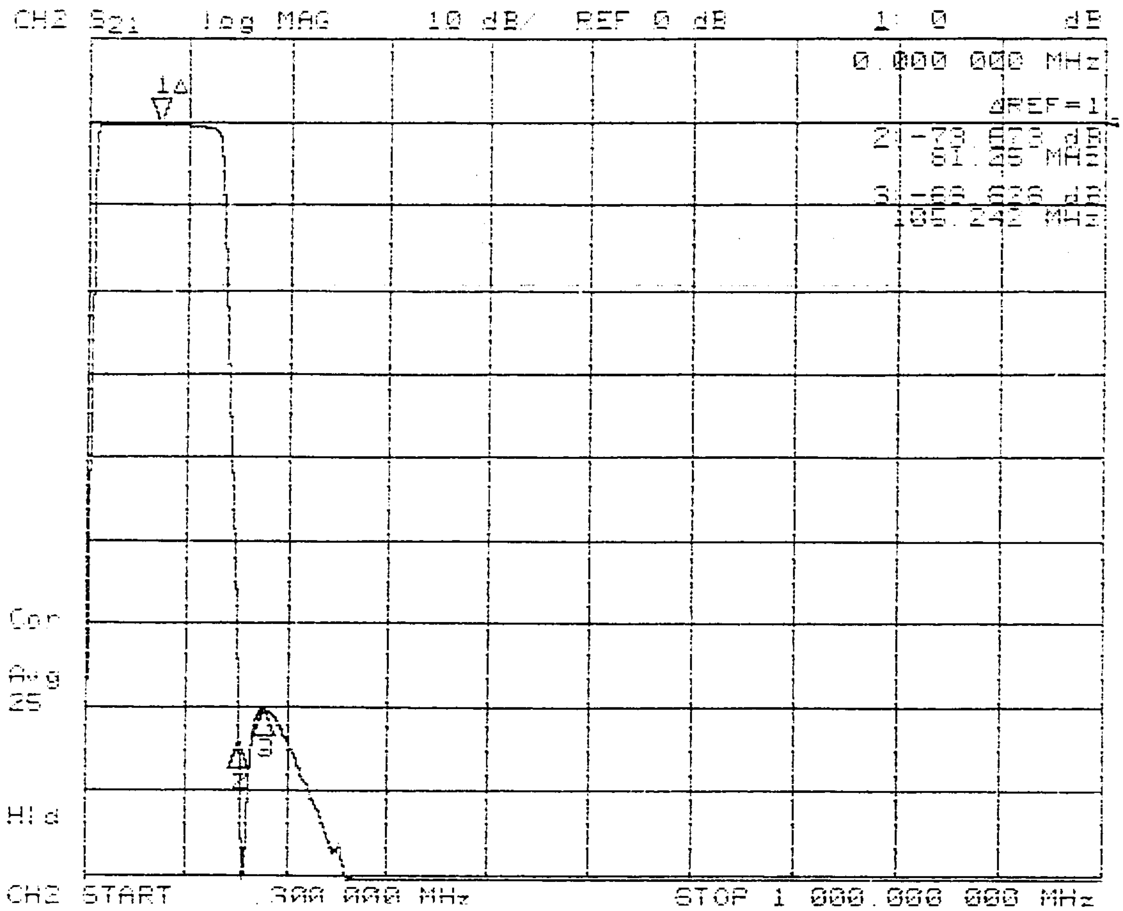
FINAL FUNCTIONAL PERFORMANCE
REJECTION PERFORMANCE
SERIAL NO. P232-005
-10C DATA
OPR: R. HOGGATT DATE 12/11/96

MARKER PARAME...	... 1	...nel 2
MARKER 1	1.000000 MHz OFF	72.500000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	153.750000 MHz -70.79 dB
MARKER 3	5.000000 MHz OFF	177.742800 MHz -69.67 dB
MARKER 4	5.000000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER	OFF	MARKER 1
PLACEMENT	CONTINUOUS	CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE	-3 dB	-3 dB
MARKER WIDTH VALUE	-3 dB OFF	-3 dB OFF
MARKER TRACKING	OFF	OFF



FINAL FUNCTIONAL PERFORMANCE
REJECTION PERFORMANCE
SERIAL NO. P232-005
+15C DATA
OPR: R. HOGGATT DATE 12/11/96

MARKER PARAME...	...annel 1	...annel 2
MARKER 1	1.000000 MHz OFF	72.500000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	153.750000 MHz -71.846 dB
MARKER 3	5.000000 MHz OFF	177.742802 MHz -69.734 dB
MARKER 4	5.000000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER	OFF	MARKER 1
PLACEMENT	CONTINUOUS	CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE	-3 dB	-3 dB
MARKER WIDTH VALUE	-3 dB OFF	-3 dB OFF
MARKER TRACKING	OFF	OFF



FINAL FUNCTIONAL PERFORMANCE
REJECTION PERFORMANCE
SERIAL NO. P232-005
+40C DATA
OPR: R. HOGGATT DATE 12/11/96

MARKER PARAMETERS	Channel 1	Channel 2
MARKER 1	1.000000 MHz OFF	72.500000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	153.750000 MHz -73.673 dB
MARKER 3	5.000000 MHz OFF	177.742800 MHz -69.828 dB
MARKER 4	5.000000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER	OFF	MARKER 1
PLACEMENT	CONTINUOUS	CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE	-3 dB	-3 dB
MARKER WIDTH VALUE	-3 dB OFF	-3 dB OFF
MARKER TRACKING	OFF	OFF

ACCEPTANCE TEST REPORT

BANDPASS FILTER MODEL HL72.5-125-10SS1 S/N P232-005
AEROJET 1331559-6 REV. E

BANDPASS CHARACTERISTICS MEASUREMENT

PER ATP PARA 4.6
(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. +24.0 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT ✓ (√)

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE	REF	FREQ	UNIT	VALUE
F1	0.5	MHz	-100.7 dB	F11	(*) 80.0	MHz	-0.30 dB
F2	1.0	MHz	-92.7 dB	F12	(*) 100.0	MHz	-0.40 dB
F3	5.0	MHz	-30.0 dB	F13	120.0	MHz	-0.64 dB
F4	7.5	MHz	-8.79 dB	F14	130.0	MHz	-1.06 dB
F5	10.0	MHz	-0.75 dB	F15	135.0	MHz	-5.23 dB
F6	15.0	MHz	-0.29 dB	F16	140.0	MHz	-21.7 dB
F7	25.0	MHz	-0.19 dB	F17	150.0	MHz	-55.4 dB
F8	(*) 45.0	MHz	-0.18 dB	F18	200.0	MHz	-73.9 dB
F9	(*) 65.0	MHz	-0.25 dB	F19	500.0	MHz	-104.2 dB
F10	72.5	MHz	-0.29 dB	F20	1000.0	MHz	-105.0 dB

TEST PERFORMED BY: R. Hoggatt DA 6 DATE 12/18/96

NOTE IF TEST WITNESSED BY AESD________ GSI - Not witnessed this time. DLD

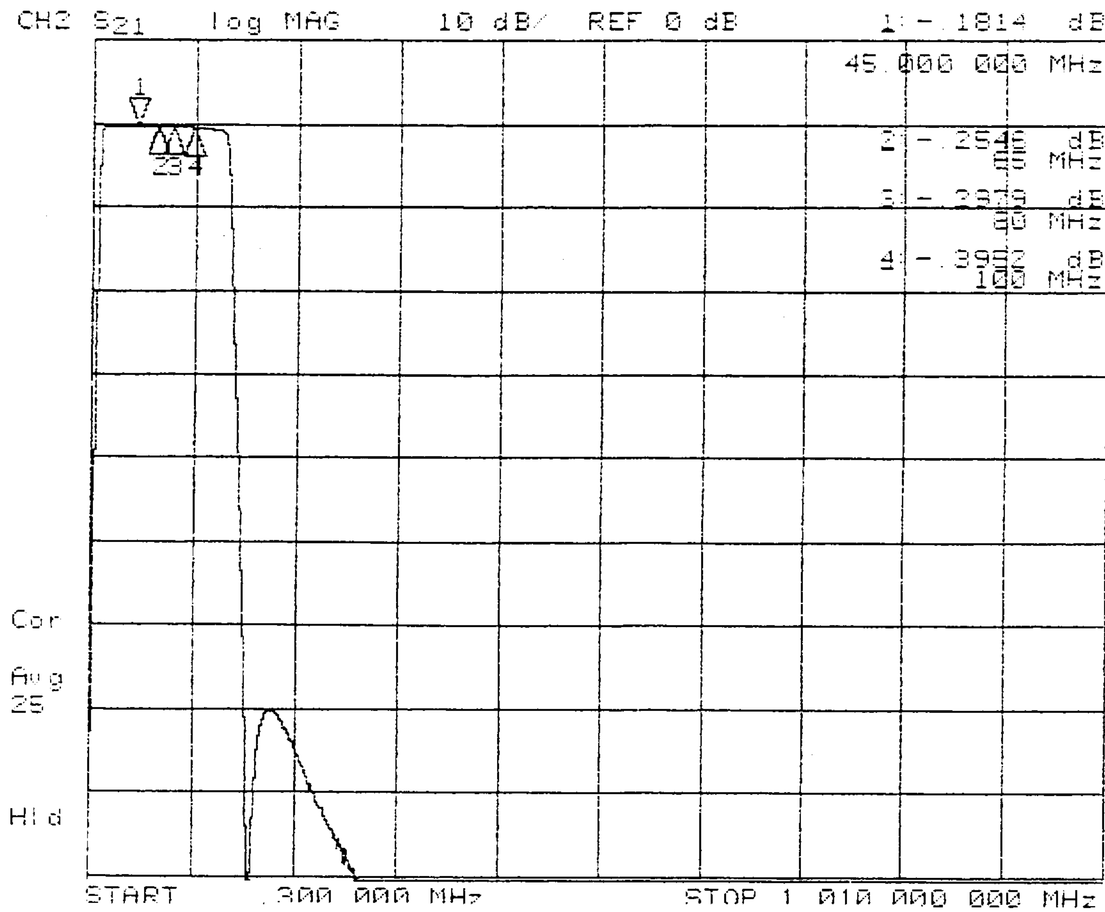
***** END OF BANDPASS CHARACTERISTICS TEST *****

FUNCTIONAL PERFORMANCE TEST

ACCEPTANCE TEST PROCEDURE
63-0005-02 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX F PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

a.) VSWR PER ATP PARA 4.5.1.
b.) INSERTION LOSS PER ATP PARA 4.5.2
c.) INSERTION LOSS VS TEMPERATURE PER ATP PARA 4.5.6.
d.) 3.0 dB BANDWIDTH PER ATP PARA 4.5.3.
e.) CENTER FREQUENCY (fc) PER ATP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
f.) PASSBAND RIPPLE PER ATP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
g.) OUT-OF-BAND REJECTION PER ATP PARA 4.5.5.



POST THERMAL CYCLE
PASSBAND CHARACTERISTICS
SERIAL NO. P232-005
AMBIENT
OPR: R. HOGGATT DATE DEC 1 8 1996

MARKER PARAMETERS	Channel 1	Channel 2
MARKER 1	45.000000 MHz OFF	45.000000 MHz -.1814 dB
MARKER 2	65.000000 MHz OFF	65.000000 MHz -.2546 dB
MARKER 3	80.000000 MHz OFF	80.000000 MHz -.2979 dB
MARKER 4	100.000000 MHz OFF	100.000000 MHz -.3952 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER	OFF	OFF
PLACEMENT	CONTINUOUS	CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE	-3 dB	-3 dB
MARKER WIDTH VALUE	-3 dB OFF	-3 dB OFF
MARKER TRACKING	OFF	OFF

Channel 2 Bandpass Filter

IF Filter (S/N: 1331559-3, S/N: P229-003)

QUALIFICATION TEST REPORT

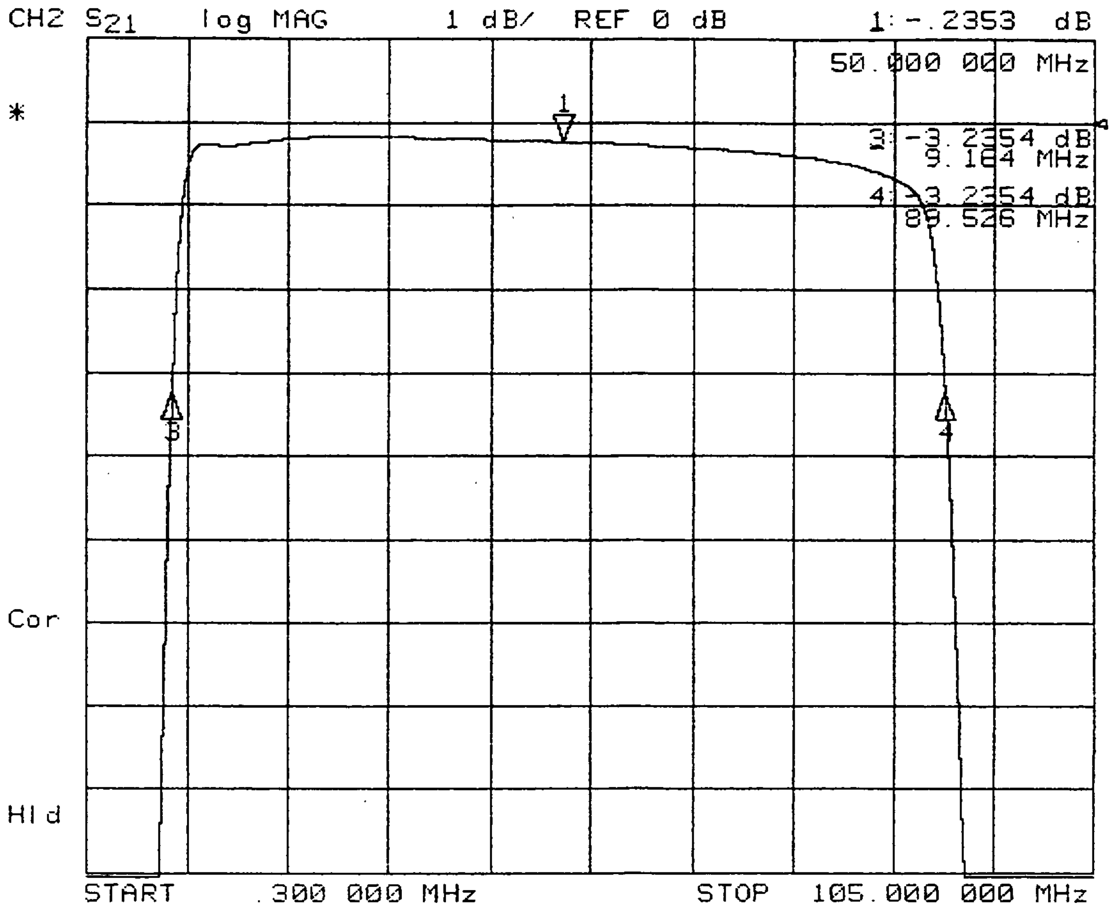
BANDPASS FILTER MODEL HL50-80-10SS1 S/N P229-003
AEROJET 1331559-3 REV. E

3.0 dB BANDWIDTH

QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.5.3	-10°C	+15°C	+40°C
{7} UPPER 3.0 dB BANDEDGE	89.53 MHz (88.0-90.0)	89.38 Mhz (88.0-90.0)	89.22 MHz (88.0-90.0)
{8} LOWER 3.0 dB BANDEDGE	9.16 MHz (8.0-10.0)	9.16 Mhz (8.0-10.0)	9.15 MHz (8.0-10.0)
{9} 3.0 dB RELATIVE BANDWIDTH	80.37 MHz (78.0-82.0)	80.22 Mhz (78.0-82.0)	80.07 MHz (78.0-82.0)
{10} ADD {7} AND {8} ÷ 2 =	49.35 MHz (50.0 NOM)	49.27 MHz (50.0 NOM)	49.19 Mhz (50.0 NOM)
{10a} RECORD MEASURED TEMPERATURE	-13.5 °C (-15.0 TO -10.0)	+14.3 °C (12.5 TO 17.5)	+43.6 °C (40.0 TO 45.0)
{6} ATTACH TRANSMISSION LOSS PERFORMANCE X-Y PLOT	✓ (√)	✓ (√)	✓ (√)

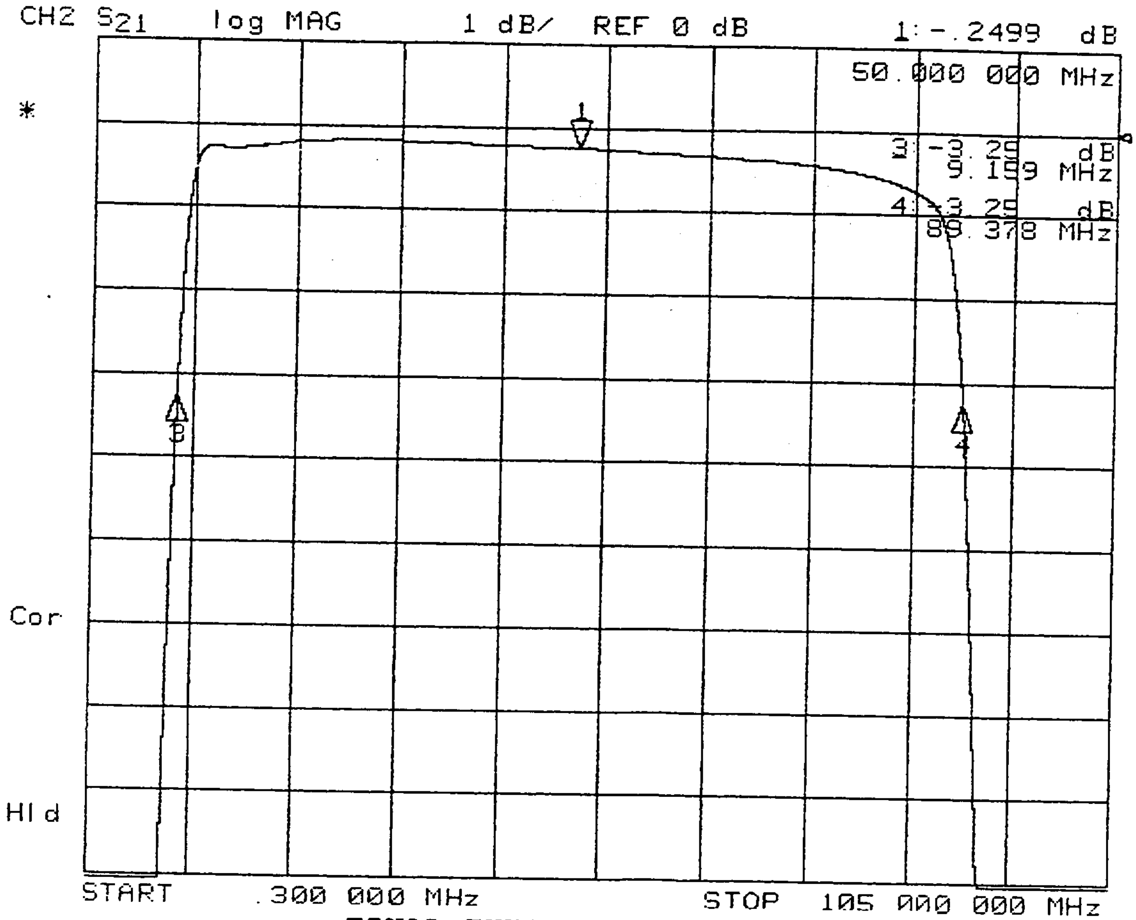
PASSBAND RIPPLE

QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.5.4	-10°C	+15°C	+40°C
{11a} MIN INSERTION LOSS FREQ	27.00 MHz	27.00 Mhz	27.00 MHz
MIN INSERTION LOSS PERFORMANCE	-0.17 dB	-0.17 dB	-0.18 dB
{11b} 75% BW LOWER BANDEDGE FREQ	11.27 MHz	11.17 Mhz	11.12 MHz
75% BW LOWER BANDEDGE I.L. PERF	-0.37 dB	-0.39 dB	-0.41 dB
{11c} 75% BW UPPER BANDEDGE FREQ	71.27 MHz	71.17 Mhz	71.12 MHz
75% BW UPPER BANDEDGE I.L. PERF	-0.37 dB	-0.39 dB	-0.41 dB
{11d} PERFORMANCE DELTA (I.L. @ {11b} - I.L. @ {11a})	0.20 dB	0.22 dB	0.23 dB
{11e} PERFORMANCE DELTA (I.L. @ {11c} - I.L. @ {11a})	0.20 dB	0.22 dB	0.23 dB



FINAL FUNCTIONAL PERFORMANCE
TRANSMISSION LOSS
SERIAL NO. P229-003
-10C DATA
OPR: R. HOGGATT DATE 11/26/96

MARKER PARAMETERS	Channel 1	Channel 2
MARKER 1	14.000000 MHz OFF	50.000000 MHz -.2353 dB
MARKER 2	86.000000 MHz OFF	49.345679 MHz OFF
MARKER 3	20.000000 MHz OFF	9.164363 MHz -3.2354 dB
MARKER 4	80.000000 MHz OFF	89.526996 MHz -3.2354 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER	OFF	OFF
PLACEMENT	CONTINUOUS	CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE	-14 dB	-3 dB
MARKER WIDTH VALUE	-3 dB OFF	-3 dB OFF
MARKER TRACKING	OFF	OFF



FINAL FUNCTIONAL PERFORMANCE
TRANSMISSION LOSS
SERIAL NO. P229-003
+15C DATA
OPR: R. HOGGATT DATE 11/26/96

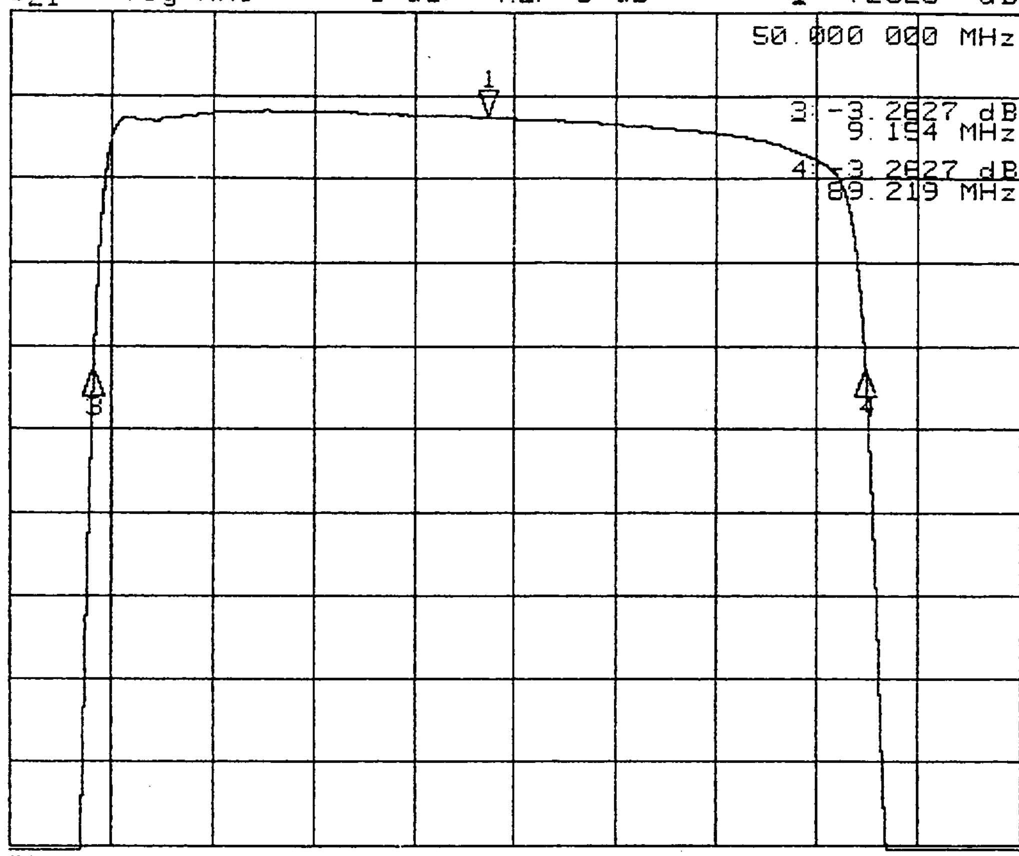
MARKER PARAMETERS	Channel 1	Channel 2
MARKER 1	14.000000 MHz OFF	50.000000 MHz -.2499 dB
MARKER 2	86.000000 MHz OFF	49.268804 MHz OFF
MARKER 3	20.000000 MHz OFF	9.159220 MHz -3.25 dB
MARKER 4	80.000000 MHz OFF	89.378388 MHz -3.25 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER	OFF	OFF
PLACEMENT	CONTINUOUS	CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE	-14 dB	-3 dB
MARKER WIDTH VALUE	-3 dB	-3 dB
	OFF	OFF
MARKER TRACKING	OFF	OFF

CH2 S_{21} log MAG 1 dB/ REF 0 dB 1: -.2626 dB

*

Cor

Hld



START .300 000 MHz STOP 105.000 000 MHz

FINAL FUNCTIONAL PERFORMANCE
TRANSMISSION LOSS
SERIAL NO. P229-003
+40C DATA
OPR: R. HOGGATT DATE 11/26/96

MARKER PARAMETERS	Channel 1	Channel 2
MARKER 1	14.000000 MHz OFF	50.000000 MHz -.2626 dB
MARKER 2	86.000000 MHz OFF	49.186938 MHz OFF
MARKER 3	20.000000 MHz OFF	9.154363 MHz -3.2627 dB
MARKER 4	80.000000 MHz OFF	89.219514 MHz -3.2627 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	89.425802 MHz -3.2342 dB
REFERENCE MARKER	OFF	OFF
PLACEMENT	CONTINUOUS	CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE	-14 dB	-3 dB
MARKER WIDTH VALUE	-3 dB OFF	-3 dB OFF
MARKER TRACKING	OFF	OFF

BANDPASS FILTER MODEL HL50-80-10SS1 S/N P229-003
AEROJET 1331559-3 REV. E

PASSBAND RIPPLE (CON'T)

{11f} RECORD PASS/FAIL (0.5 dB MAX)	PASS/FAIL	PASS/FAIL	PASS/FAIL
{11g) ATTACH PASSBAND RIPPLE PERFORMANCE X-Y PLOT(S)	✓ (√)	✓ (√)	✓ (√)

OUT-OF-BAND REJECTION

QUALIFICATION TEST PROCEDURE 63-0005-010 PARA 4.5.5 Fc=50.0 MHz. REF {5A} FOR INSERTION LOSS @ Fc	-10°C	+15°C	+40°C
{12} WORST CASE REJECTION FROM 0.300 MHz TO 1.0 MHz	>100 dB (40.0 dB MIN)	>100 dB (40.0 dB MIN)	>100 dB (40.0 dB MIN)
{13a} WORST CASE REJECTION FROM 102.0 MHz TO 1000.0 MHz	-50.8 dB (40.0 dB MIN)	-51.4 dB (40.0 dB MIN)	-52.2 dB (40.0 dB MIN)
{13c} RECORD MEASURED TEMPERATURE	-13.7 °C (-15.0 TO -10.0)	+14.2 °C (12.5 TO 17.5)	+43.8 °C (40.0 TO 45.0)
{14} ATTACH REJECTION PERFORMANCE X-Y PLOT(S)	✓ (√) ✓ (√)	✓ (√) ✓ (√)	✓ (√) ✓ (√)

TEST PERFORMED BY R. Hoggatt DATE 11/26/96 DA 5

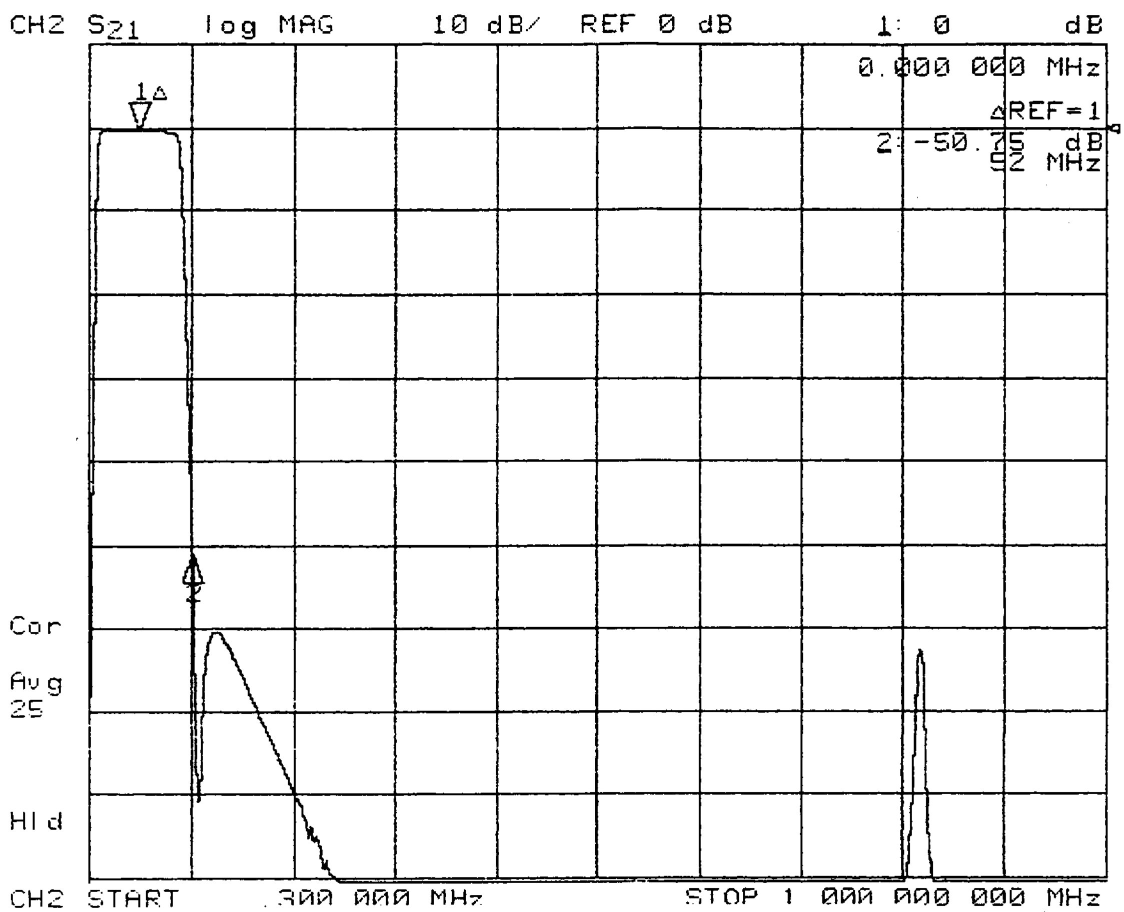
NOTE IF TEST WITNESSED BY AESD: ________ GSI: ________ → NOT WITNESSED THIS TIME DD

***** END OF FUNCTIONAL PERFORMANCE TEST ****

OUTLINE AND MOUNTING DIMENSIONS VERIFICATION

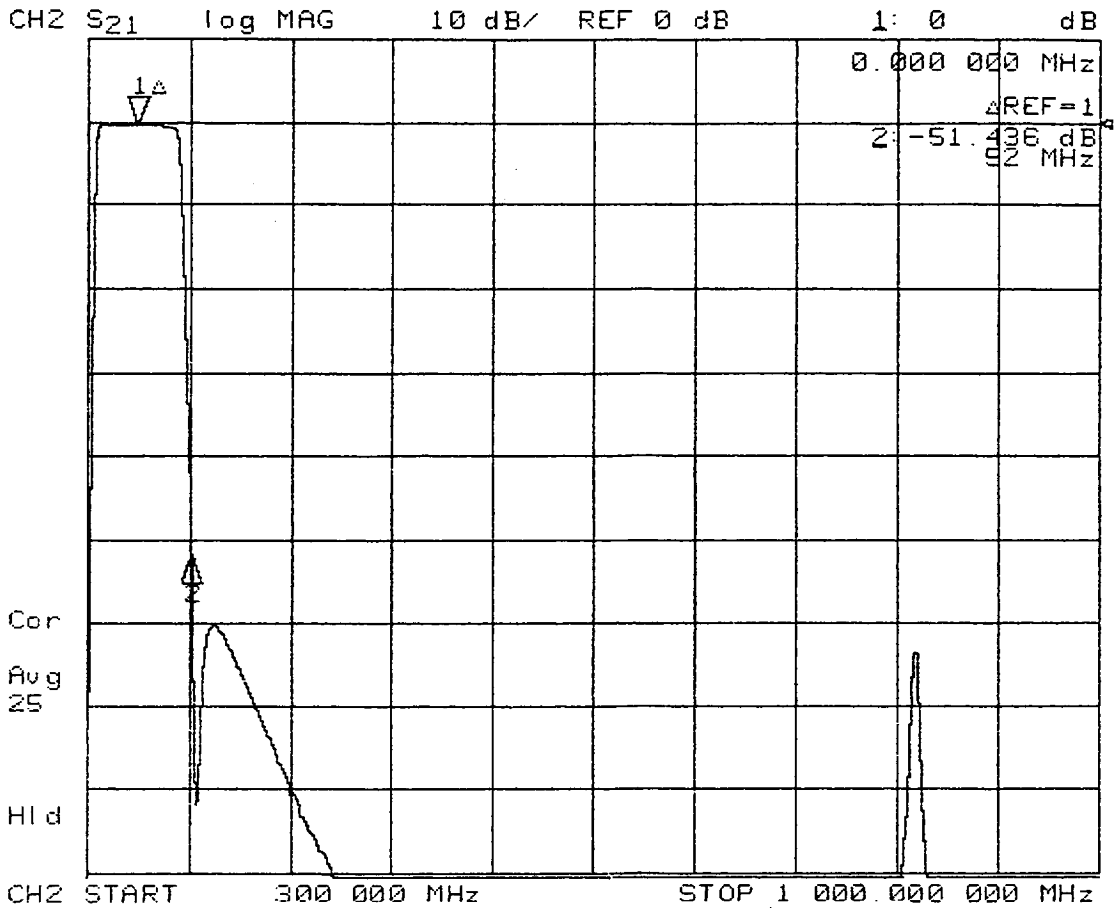
{16} REFERENCE CUSTOMER DRAWING 1331559

DESCRIPTION OF MEASUREMENT	DIMENSION AND TOLERANCE	ACTUAL MEASUREMENT
OVER ALL LENGTH	3.50 ± .03	3.502
MOUNTING HOLE CENTER	0.125 ± .010	.125
BETWEEN UPPER MOUNTING HOLES	$\boxed{3.250}$	3.250
BETWEEN LOWER MOUNTING HOLES	$\boxed{3.250}$	3.250



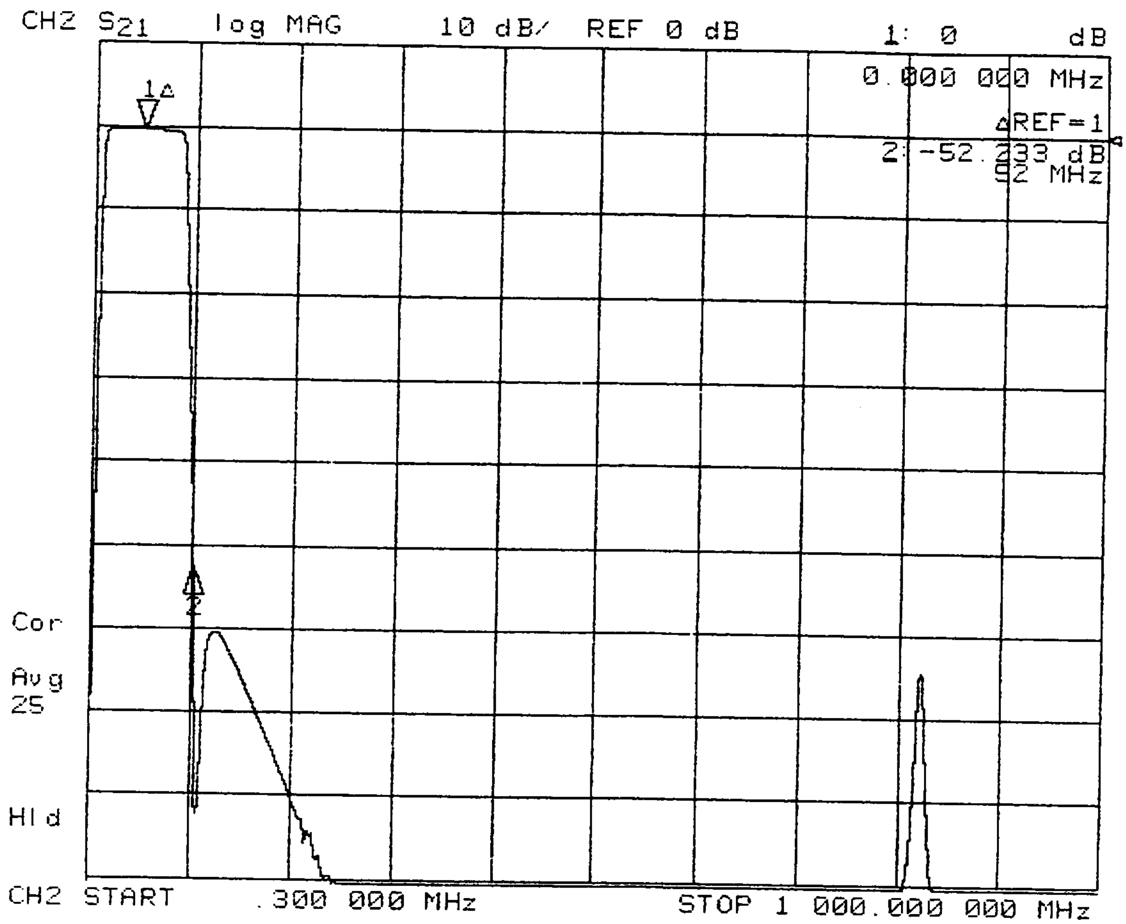
FINAL FUNCTIONAL PERFORMANCE
REJECTION PERFORMANCE
SERIAL NO. P229-003
-10C DATA
OPR: R. HOGGATT DATE 11/26/96

MARKER PARAMETERS	Channel 1	Channel 2
MARKER 1	1.000000 MHz OFF	50.000000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	102.000000 MHz -50.75 dB
MARKER 3	5.000000 MHz OFF	102.000000 MHz OFF
MARKER 4	5.000000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER	OFF	MARKER 1
PLACEMENT	CONTINUOUS	CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE	-3 dB	-3 dB
MARKER WIDTH VALUE	-3 dB OFF	-3 dB OFF
MARKER TRACKING	OFF	OFF



FINAL FUNCTIONAL PERFORMANCE
REJECTION PERFORMANCE
SERIAL NO. P229-003
+15C DATA
OPR: R. HOGGATT DATE 11/26/96

MARKER PARAMETERS	Channel 1	Channel 2
MARKER 1	1.000000 MHz OFF	50.000000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	102.000000 MHz -51.436 dB
MARKER 3	5.000000 MHz OFF	102.000000 MHz OFF
MARKER 4	5.000000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER	OFF	MARKER 1
PLACEMENT	CONTINUOUS	CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE	-3 dB	-3 dB
MARKER WIDTH VALUE	-3 dB OFF	-3 dB OFF
MARKER TRACKING	OFF	OFF



FINAL FUNCTIONAL PERFORMANCE
REJECTION PERFORMANCE
SERIAL NO. P229-003
+40C DATA
OPR: R. HOGGATT DATE 11/26/96

MARKER PARAME.		...nnel 2
MARKER 1	1.000000 MHz OFF	50.000000 MHz 0 dB
MARKER 2	5.000000 MHz OFF	102.000000 MHz -52.233 dB
MARKER 3	5.000000 MHz OFF	102.000000 MHz OFF
MARKER 4	5.000000 MHz OFF	1000.000000 MHz OFF
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER	OFF	MARKER 1
PLACEMENT	CONTINUOUS	CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE	-3 dB	-3 dB
MARKER WIDTH VALUE	-3 dB OFF	-3 dB OFF
MARKER TRACKING	OFF	OFF

BANDPASS FILTER MODEL HL50-80-10SS1 S/N P229-003
AEROJET 1331559-3 REV. E

BANDPASS CHARACTERISTICS MEASUREMENT
PER QTP PARA 4.6
(REF: AE-24687, PARA 4.8.2)

RECORD THE AMBIENT ROOM TEMPERATURE. +23.5 °C (+19°C TO +29.0°C)

{15} ATTACH PASSBAND PERFORMANCE X-Y PLOT ✓ (√)

{24} TEST POINT MATRIX

REF	FREQ	UNIT	VALUE	REF	FREQ	UNIT	VALUE
F1	0.5	MHz	-100.7 dB	F11	(*) 60.0	MHz	-0.31 dB
F2	1.0	MHz	-93.5 dB	F12	(*) 70.0	MHz	-0.38 dB
F3	5.0	MHz	-32.2 dB	F13	80.0	MHz	-0.58 dB
F4	7.5	MHz	-11.7 dB	F14	85.0	MHz	-0.81 dB
F5	10.0	MHz	-1.71 dB	F15	90.0	MHz	-4.98 dB
F6	15.0	MHz	-0.32 dB	F16	100.0	MHz	-42.0 dB
F7	20.0	MHz	-0.23 dB	F17	200.0	MHz	-80.2 dB
F8	(*) 30.0	MHz	-0.18 dB	F18	300.0	MHz	-98.0 dB
F9	(*) 40.0	MHz	-0.22 dB	F19	500.0	MHz	-106.1 dB
F10	50.0	MHz	-0.26 dB	F20	1000.0	MHz	-97.2 dB

TEST PERFORMED BY: R. Hoggatt DATE 11/26/96 DA 6

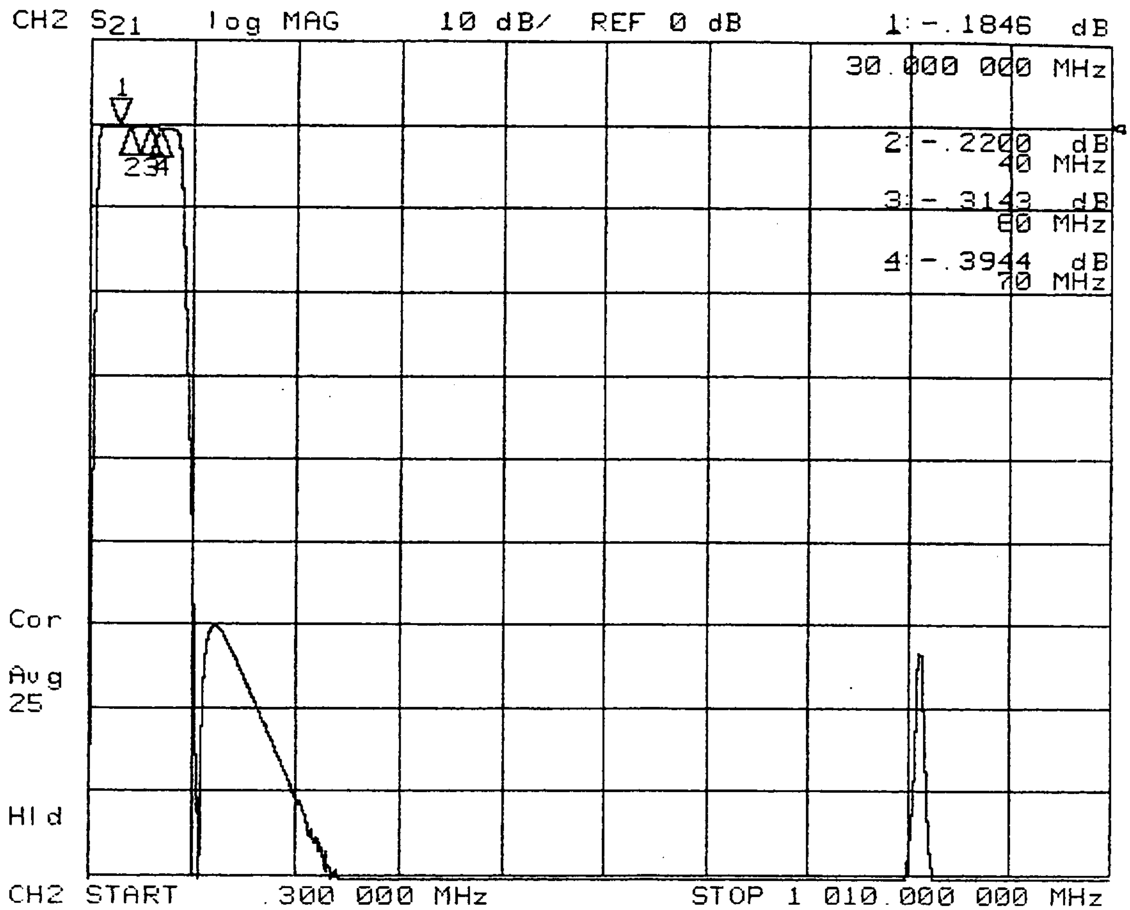
NOTE IF TEST WITNESSED BY AESD________ GSI ________ Not witnessed This time DA

***** END OF BANDPASS CHARACTERISTICS TEST *****

FUNCTIONAL PERFORMANCE TEST
QUALIFICATION TEST PROCEDURE
63-0005-010 PARA 4.1

BRIEF TEST DESCRIPTION: THE TESTS DESCRIBED IN APPENDIX C PAGE 10 THRU PAGE 13 ARE PERFORMED TO DOCUMENT THE FUNCTIONAL PERFORMANCE OF THE UNIT AT THE CONCLUSION OF ALL ENVIRONMENTAL TESTING. THE TESTS ARE AS FOLLOWS AND IN ANY SEQUENCE:

a.) VSWR PER QTP PARA 4.5.1.
b.) INSERTION LOSS PER QTP PARA 4.5.2
c.) INSERTION LOSS VS TEMPERATURE PER QTP PARA 4.5.6.
d.) 3.0 dB BANDWIDTH PER QTP PARA 4.5.3.
e.) CENTER FREQUENCY (fc) PER QTP PARA 4.5.7 (PART OF 3.0 dB B/W TEST)
f.) PASSBAND RIPPLE PER QTP PARA 4.5.4 (PART OF INSERTION LOSS TEST).
g.) OUT-OF-BAND REJECTION PER QTP PARA 4.5.5.



POST THERMAL CYCLE
PASSBAND CHARACTERISTICS
SERIAL NO. P229-003
AMBIENT
OPR: R. HOGGATT DATE 11/26/96

MARKER PARAME[illegible]	[illegible] 1	[illegible]nnel 2
MARKER 1	1.000000 MHz OFF	30.000000 MHz -.1846 dB
MARKER 2	5.000000 MHz OFF	40.000000 MHz -.2200 dB
MARKER 3	5.000000 MHz OFF	60.000000 MHz -.3143 dB
MARKER 4	5.000000 MHz OFF	70.000000 MHz -.3944 dB
MKR STIMULUS OFFSET	0.000000 MHz 0 dB	0.000000 MHz 0 dB
REFERENCE MARKER	OFF	OFF
PLACEMENT	CONTINUOUS	CONTINUOUS
MARKER SEARCH	OFF	OFF
TARGET VALUE	-3 dB	-3 dB
MARKER WIDTH VALUE	-3 dB	-3 dB
	OFF	OFF
MARKER TRACKING	OFF	OFF

GAIN STABILITY AND GAIN COMPRESSION

FOR

MIXER/IF AMPLIFIERS

GAIN-TEMPERATURE SENSITIVITY FOR MIXER/AMPLIFIERS

Channel No.	1	2
Specification (+/-dB/°C)	0.02	0.02
Measured (dB/°C)	-0.017	-0.002

Channel 1 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-11, S/N: 7A31)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLATNESS TEST: ATP PARAGRAPH 5.1.3

GAIN FLATNESS (dB)ppK	SPEC. GAIN FLATNESS (dB)ppK	ACC	REJ
0.4	0.5	QA 1	

GAIN VERSUS VOLTAGE SENSITIVITY TEST: ATP PARAGRAPH 5.1.4

ECN
CAMSU-1352

AMPLIFIER VOLTAGE	GAIN READING (dBm)	ΔG/ΔV	SPEC. ΔG/ΔV	ACC	REJ
9.96	70.66	2.25	2.0		QA 1
10.00	70.75				
10.04	70.84				

ΔGv = 0.18 dB

PART NO. 1331562-116 SPACEK QA

DATE ACC REJ
6-29-98 QA 1

SER NO. 7A31 TEST FAILURE:

TESTED BY: 7771 FAILURE ANALYSIS NO.

END DATE: 6-5-98

END TIME: 1600

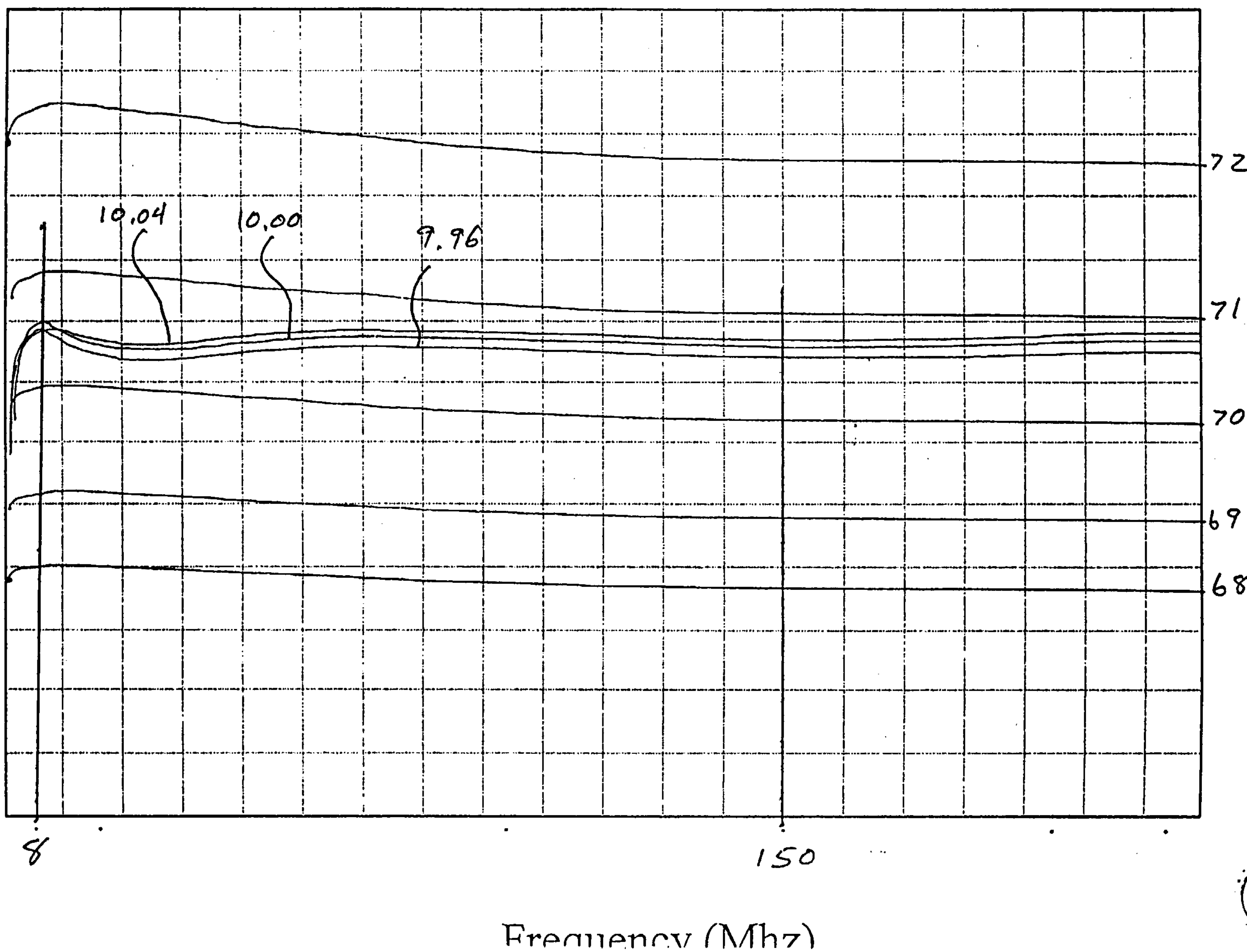
Spacek Labs, Inc.
212 E. Gutierrez St.
Santa Barbara,CA,93101

SPACEK LABS, INC.
MM-WAVE TECHNOLOGY

Amplifier Gain

Model No. 1331562-11
Serial No. 7A 31
Date 6-5-98
Tested By 77H

Amb Temp +23



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TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature (°C)	Relative Gain	ΔG/ΔT	SPEC	ACC	REJ
T1 −6	G_{T1} 71.30				
		* 0.013	0.035dB/°C	QA 1	
T2 +8	G_{T2} 71.12				
		* 0.026	0.020dB/°C		QA 1
T3 +25	G_{T3} 70.60				
		* 0.021	0.035dB/°C	QA 1	
T4 +40	G_{T4} 70.35				

ECN CAMSU-1352

* Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \frac{G_{Ti} - G_{Ti+1}}{T_i - T_{i+1}} \qquad i = 1,2,3,4$$

ΔG_T = 0.95 dB

$\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 =$ 1.53 dB Spec 1.4dB ACC_____ REJ QA 1

ECN CAMSU-1352

	DATE	ACC	REJ
SPACEK QA	6-29-98		QA 1

PART NO. 1331562-116

SER NO. 7A31

TESTED BY: [illegible]

END DATE: 6-5-98

END TIME: 1600

TEST FAILURE: ________

FAILURE ANALYSIS NO. ________

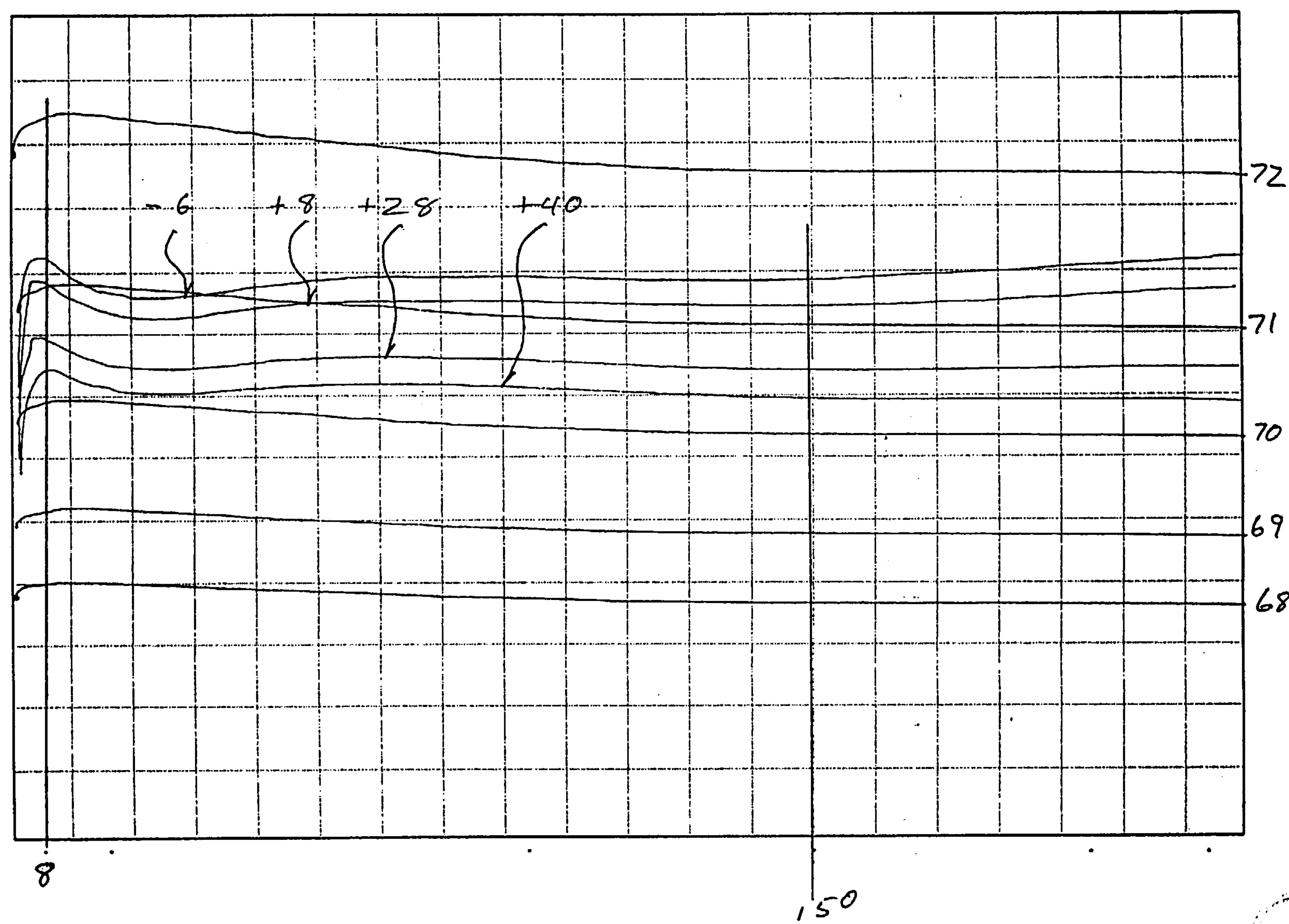
Spacek Labs, Inc.
212 E. Gutierrez St.
Santa Barbara,CA,93101

SPACEK LABS, INC.
MM-WAVE TECHNOLOGY

Amplifier Gain

Model No. 1331562-11
Serial No. 7A31
Date 6-5-98
Tested By [illegible]

Amb Temp +23



QA 1

TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

DASH #

11	12	13	14	15	16	17	18	19	20	FREQ. (MHz)	P2 COMP (dBm)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm)	ACC	REJ
X	X	X	X		X	X	X	X		10	-2.3	0.7			
				X						20					
	X	X								50					
X	X	X	X	X	X	X	X			100	-2.4	0.6			
X										150	-2.4	0.6			
			X	X	X	X	X	X		200					
								X		400					
									X	500					
									X	1000					
									X	1500					

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 6-5-98 AMBIENT ROOM TEMPERATURE °C: 23°

AMPLIFIER OUTPUT POWER AMBIENT (dBm)	AMPLIFIER OUTPUT POWER (-77 K)(dBm)	Y FACTOR (dB)	AMPLIFIER NOISE FIGURE (dB)
-22.5	-26.3	3.8	1.04

Above data taken with Daden filter attached (except -19) .

Intermediate test results for information only

PART NO. 1331562-11B

SER NO. 7A31

TESTED BY: [illegible]

END DATE: ~~1600~~ 6/5/98

END TIME: 1600

	DATE	~~ACC~~	REJ
SPACEK QA	6-29-98		

TEST FAILURE:

FAILURE ANALYSIS NO.

Spacek Labs, Inc.
212 E. Gutierrez St.
Santa Barbara,CA,93101

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 6-24-98 AMBIENT ROOM TEMPERATURE °C: +21

UUT TEMP °C.	UUT CURRENT	MIXER-AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER-AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER-AMP. NOISE FIGURE (dB)	SPEC. MIXER-AMP. NOISE FIGURE (dB)	ACC	REJ
-6	43.3	-21.30	-23.10	1.80	3.4	3.5	QA 1	
+8	43.4	-21.50	-23.20	1.70	3.6	3.5		QA 1
+28	43.5	-21.80	-23.50	1.70	3.6	3.5		QA 1
+40	43.6	-22.10	-23.75	1.65	3.7	3.5		QA 1

Noise figure change 0.3 dB Spec is .5dB peak to peak on -20 ACC QA 1 REJ ~~QA 1~~

NOTE: *Above data to be taken with the Daden filter, except on the -19 unit.*

NEΔT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

Date: 6-23-98 Ambient Room Temperature °C: 24

Attach computer generated *NEΔT* spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0.037

Record Nps(K) 0.07 for dash number from Aerojet specification AE-24869, Table II.
Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

ACC QA 1 REJ ______

PART NO. 1331562- 11G SPACEK QA DATE 6-29-98 ACC ____ REJ QA 1

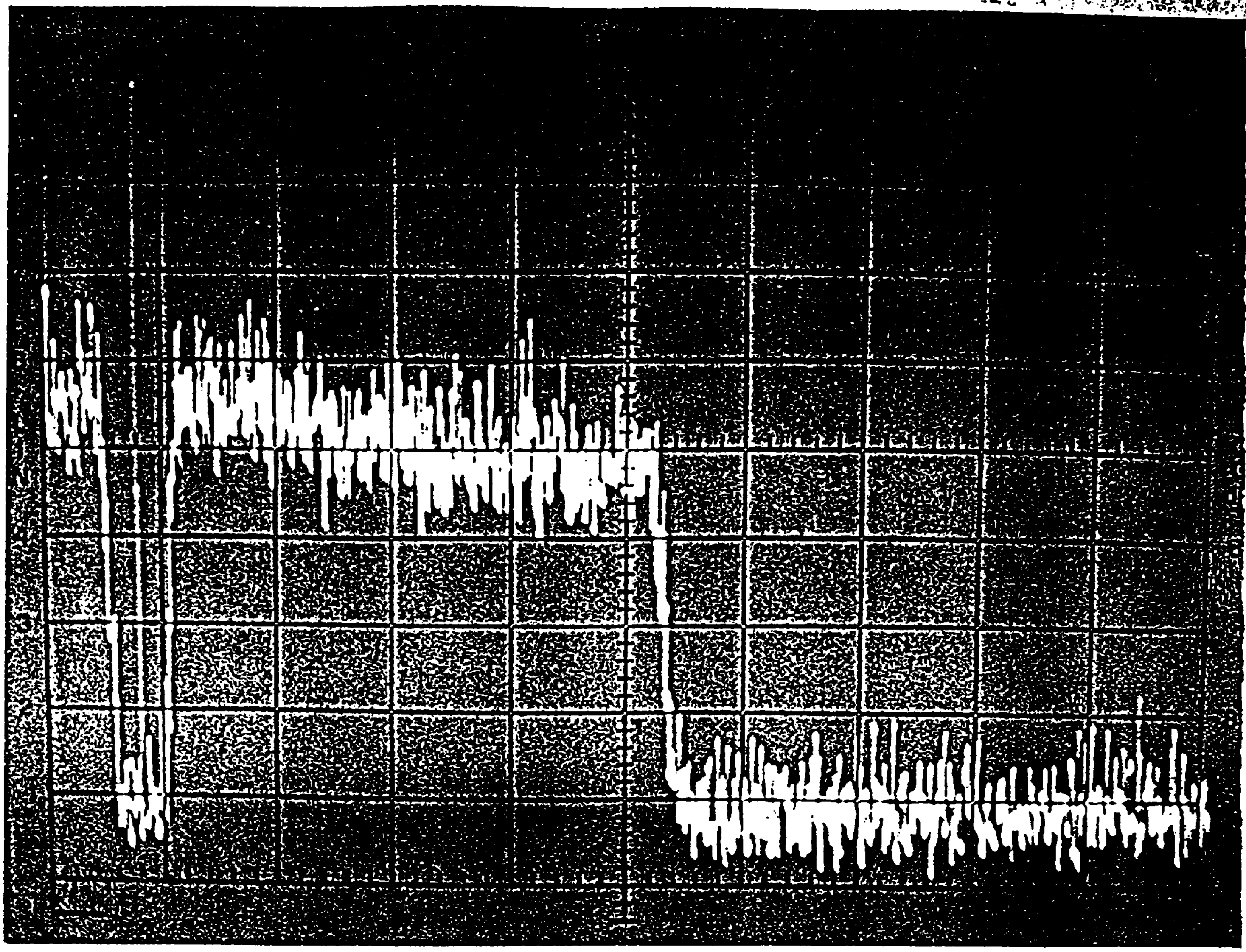
SER NO. 7A31 TEST FAILURE: ________

TESTED BY: DA FAILURE ANALYSIS NO. ________

END DATE: 6-24-98

END TIME: 1600

Spacek Labs, Inc.
212 E. Gutierrez St.
Santa Barbara,CA,93101



5.4.14 Noise Power Profile

Model No.: 1331562-116

Serial No.: 7431

Date: 6-29-99

Tested by: GW

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.

Scan Width: 50 mhz/Div.

IF Band Width: 10 Khz

Scan Time: 3 sec/Div.

QA

Channel 2 Mixer/Amplifier

Mixer/Amplifier (P/N: 1331562-12, S/N: 7A22)

TEST DATA SHEET NO. 6. AMPLIFIER TESTS

GAIN FLATNESS TEST: ATP PARAGRAPH 5.1.3

GAIN FLATNESS (dB)ppK	SPEC. GAIN FLATNESS (dB)ppK	ACC	REJ
0.30	0.50	QA 1	

GAIN VERSUS VOLTAGE SENSITIVITY TEST: ATP PARAGRAPH 5.1.4

AMPLIFIER VOLTAGE	GAIN READING (dBm)	ΔG/ΔV	SPEC. ΔG/ΔV	ACC	~~REJ~~
9.96	~~10.00~~ 70.92	2.25	2.0		QA 1
10.00	71.00				
10.04	71.09				
ΔGv =	0.18 dB				

ECN
CAMSU-1352

	DATE	ACC	REJ
SPACEK QA	6-29-98		QA 1

PART NO. 1331562-126

SER NO. 7A22

TESTED BY: [illegible]

END DATE: 6-5-98

END TIME: 1600

TEST FAILURE: ______

FAILURE ANALYSIS NO. ______

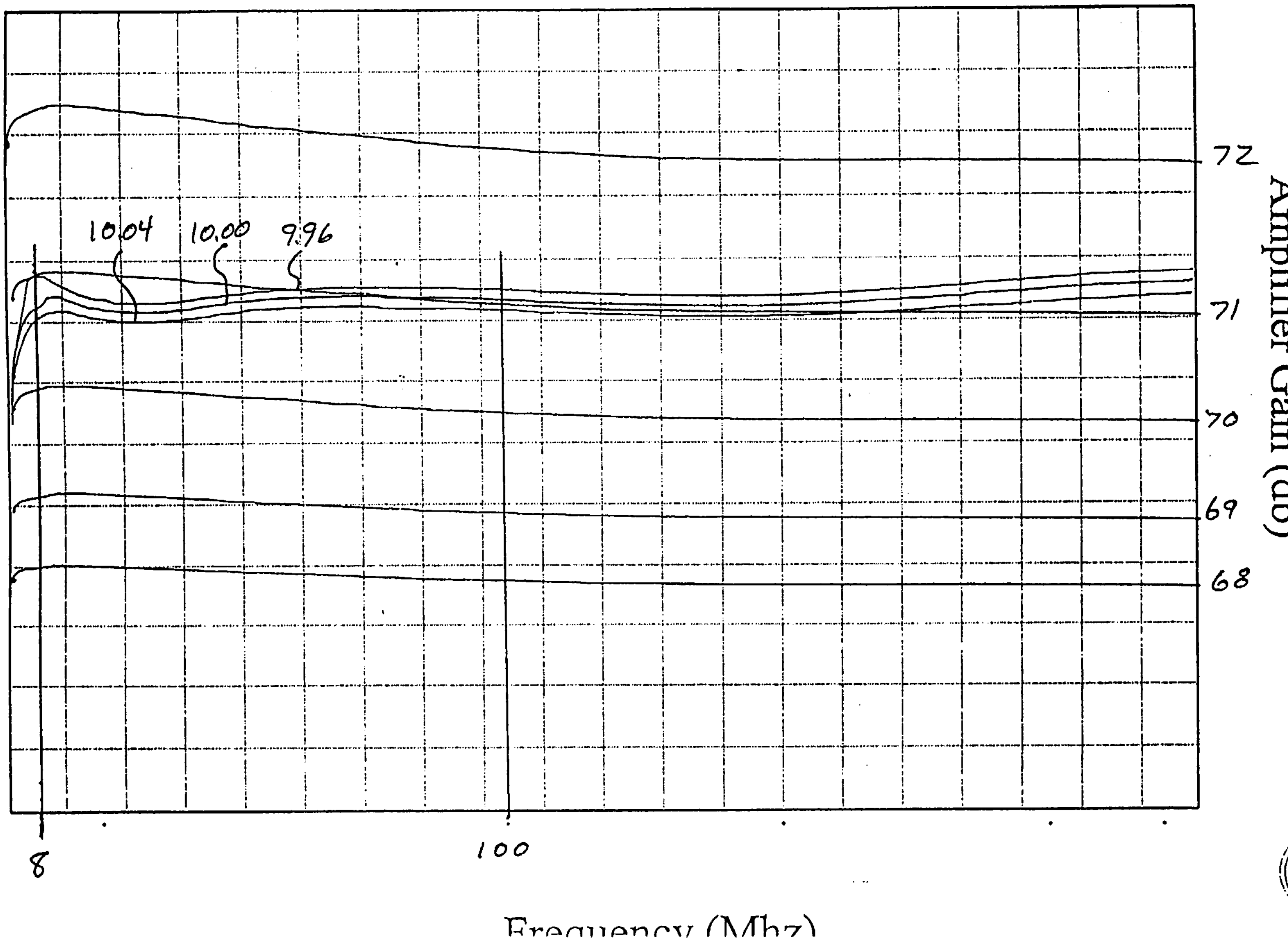
Spacek Labs, Inc.
212 E. Gutierrez St.
Santa Barbara,CA,93101

SPACEK LABS, INC.
MM-WAVE TECHNOLOGY

Amplifier Gain

Model No.	1331562-12
Serial No.	7A22
Date	6-5-98
Tested By	TTY

Amb Temp +23°c



TEST DATA SHEET NO. 7. AMPLIFIER TESTS

GAIN VERSUS TEMPERATURE SENSITIVITY TEST: ATP PARAGRAPH 5.1.5

Nominal Temperature (°C)	Relative Gain	ΔG/ΔT	SPEC	ACC	REJ
T1 -6	G_{T1} 71,55				
		* 0.012	0.035dB/°C	QA 1	
T2 +8	G_{T2} 71,38				
		* 0.019	0.020dB/°C	QA 1	
T3 +28	G_{T3} 71,01				
		* 0,026	0.035dB/°C	QA 1	
T4 +40	G_{T4} 70,70				

* Perform the following calculations and record on the TDS

$$\Delta G/\Delta T = \frac{G_{Ti} - G_{Ti+1}}{T_i - T_{i+1}} \qquad i = 1,2,3,4 \qquad \Delta G_T = \underline{0.85}\ \mathrm{dB}$$

ECN
CAMSU 1352

$\Delta G_{TOTAL} = \Delta G_V + \Delta G_T + 0.4 =$ 1.43 dB Spec 1.4dB ACC_____ REJ QA 1

		DATE	ACC	REJ
PART NO. 1331562-12E	SPACEK QA	6-29-98	___	QA 1
SER NO. 7A22	TEST FAILURE: ________			
TESTED BY: 77H	FAILURE ANALYSIS NO. ________			
END DATE: 6-5-98				
END TIME: 1600				

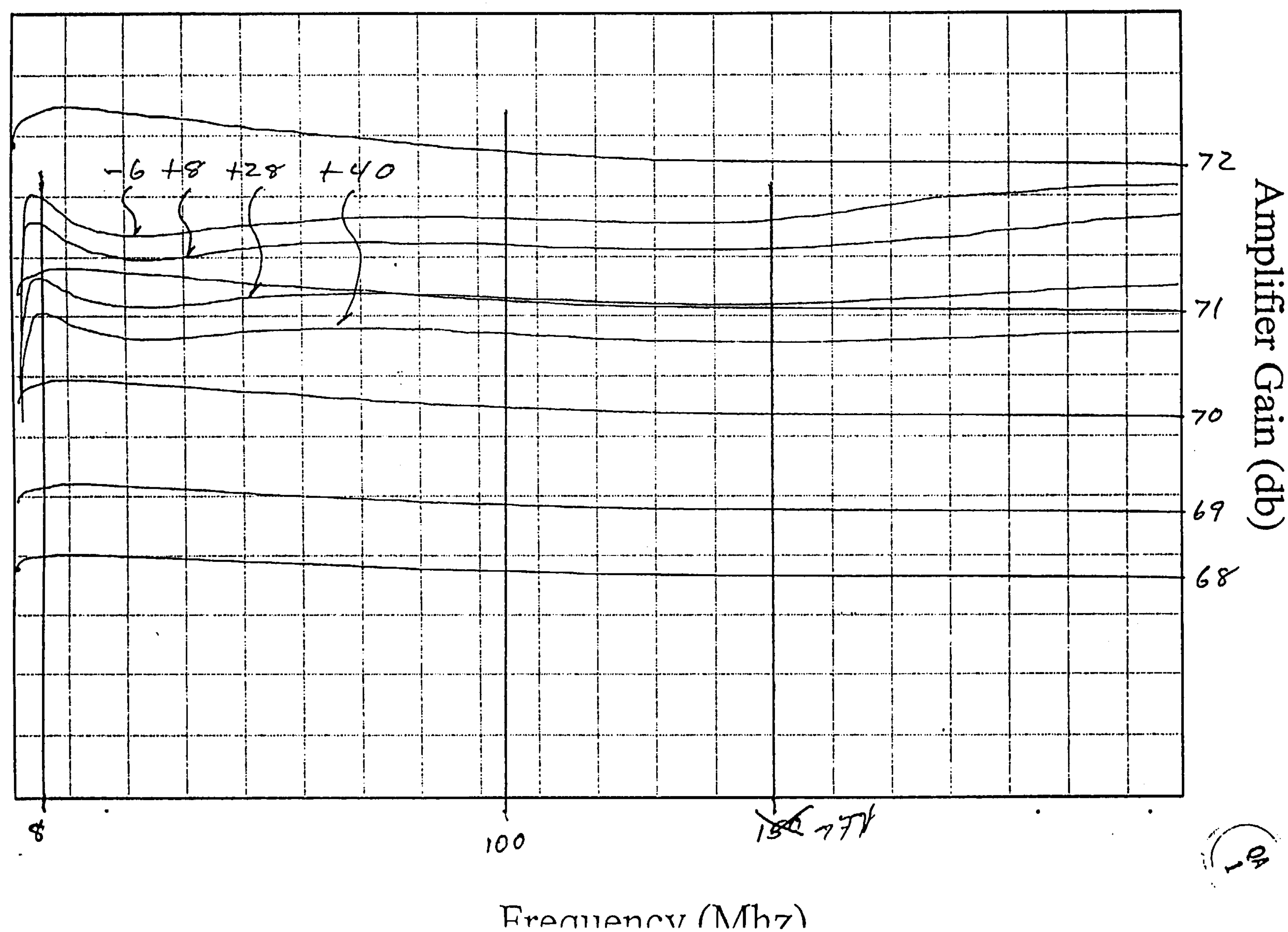
Spacek Labs, Inc.
212 E. Gutierrez St.
Santa Barbara,CA,93101

SPACEK LABS, INC.
MM-WAVE TECHNOLOGY

Amplifier Gain

Model No. 1331562-12
Serial No. 7A22
Date 6-5-98
Tested By 77?

Amb Temp +23



TEST DATA SHEET NO. 8. AMPLIFIER TESTS

OUTPUT 1.0 dB COMPRESSION POINT TEST: ATP PARAGRAPH 5.1.6

DASH #

11	12	13	14	15	16	17	18	19	20	FREQ. (MHz)	P2 COMP (dBm)	OUTPUT COMP. at+10(dBm)	SPEC. COMP. PT.(dBm)	ACC	REJ
X	X	X	X		X	X	X	X		10	-2.5	0.5	1.0		
				X						20					
	X	X								50	-2.4	0.6	1.0		
X	X	X	X	X	X	X	X			100	-2.6	0.4	Ø.0		
X										150					
			X	X	X	X	X	X		200					
								X		400					
									X	500					
									X	1000					
									X	1500					

AMPLIFIER NOISE FIGURE AND TOTAL POWER TEST: ATP PARAGRAPH 5.1.7

DATE: 6-5-98 AMBIENT ROOM TEMPERATURE °C: 23°

AMPLIFIER OUTPUT POWER AMBIENT (dBm)	AMPLIFIER OUTPUT POWER (-77 K)(dBm)	Y FACTOR (dB)	AMPLIFIER NOISE FIGURE (dB)
-24.2	-27.9	3.1	1.11

Above data taken with Daden filter attached (except -19) .

Intermediate test results for information only

PART NO. 1331562-12G

SER NO. 7A22

TESTED BY: 77T

END DATE: 6-5-98

END TIME: 1600

SPACEK QA 6-29-98 (DATE / ACC / REJ)

TEST FAILURE:

FAILURE ANALYSIS NO.

Spacek Labs, Inc.
212 E. Gutierrez St.
Santa Barbara,CA,93101

TEST DATA SHEET NO. 13. MIXER-AMPLIFIER ASSEMBLY TESTS

NOISE FIGURE, TOTAL POWER AND CURRENT VS. TEMPERATURE TEST: ATP PARA 5.4.8.

DATE: 6-24-98 AMBIENT ROOM TEMPERATURE °C: +21

UUT TEMP °C.	UUT CURRENT	MIXER-AMP. OUTPUT POWER (AMBIENT) (dBm)	MIXER-AMP. OUTPUT POWER (77 DEG K) (dBm)	Y FACTOR (dB)	MIXER-AMP. NOISE FIGURE (dB)	SPEC. MIXER-AMP. NOISE FIGURE (dB)	~~ACC~~	REJ
-6	43.9	-22.50	-24.45	1.95	3.2	3.2	QA 1	
+8	43.9	-22.80	-24.75	1.95	3.2	3.2	QA 1	
+28	44.0	-23.30	-25.25	1.95	3.2	3.2	QA 1	
+40	44.1	-23.50	-25.40	1.90	3.2	3.2	QA 1	

Noise figure change 0 dB Spec is .5dB peak to peak on -20 ACC QA 1 REJ______

NOTE: *Above data to be taken with the Daden filter, except on the -19 unit.*

NEΔT-NOISE POWER STABILITY TEST: ATP PARAGRAPH 5.4.9

Date: 6-23-98 Ambient Room Temperature °C: 25

Attach computer generated *NEΔT* spreadsheet to this test data sheet.

Record the calculated Nps(K) from spreadsheet data: 0.028

Record Nps(K) 0.07 for dash number from Aerojet specification AE-24869, Table II.
Accept units if calculated Nps(K) is less than or equal to specified Nps(K), otherwise reject.

ACC QA 1 REJ _____

PART NO. 1331562-126 SPACEK QA DATE 6-29-98 ~~ACC~~ QA 1 REJ _____

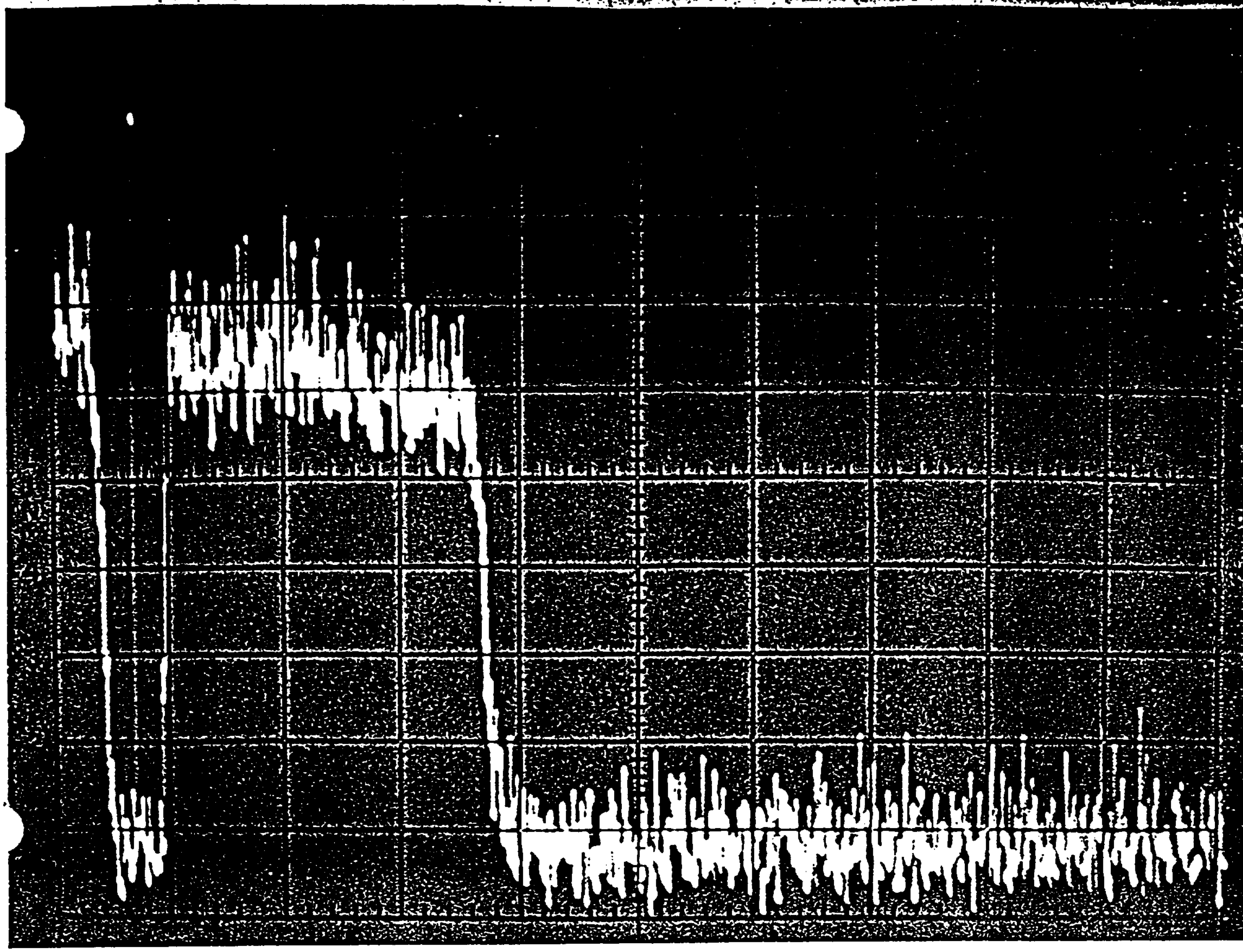
SER NO. 7A22 TEST FAILURE: __________

TESTED BY: [signature] FAILURE ANALYSIS NO. __________

END DATE: 6-23-98

END TIME: 1600

Spacek Labs, Inc.
212 E. Gutierrez St.
Santa Barbara,CA,93101



5.4.14 Noise Power Profile

Model No.: 1331562-/26
Serial No.: 7A22
Date: 6-29-98
Tested by: DA

Spectrum Analyzer Parameters

Vertical Scale: 2 dB/div.
Scan Width: 30 mhz/Div.
IF Band Width: 10 Khz
Scan Time: 3 sec/Div.
No video filter

QA
1

SUBSYSTEM-LEVEL TEST DATA

TEST DATA

FOR

AMSU-A2 (P/N: 1356441-1, S/N: F03)

CENTER FREQUENCY OF LOs

Channel No.	1	2
Specification (GHz) * Setting Accuracy (+/-GHz)	23.8 0.008	31.4 0.008
Measured (GHz) **	23.8005	31.4007

* Specification in vacuum condition.

** Measured at ambient pressure (standard atmosphere).

TEST DATA SHEET 3
LO Frequency Test Data (Paragraph 3.5.1) (A2)

Test Setup Verified: Y. Trinh
Signature

Baseplate Temperature (T_B) 25.2 °C

Component	Channel No.	V_b(V)	I_b(mA)	P_{dc}(mW)			f_o(GHz)		
				Required (Max)	Measured	Pass/ Fail	Required	Measured	Pass/ Fail
LO	1	10.02	68.6	2,000	687.4	P	23.800 ± 0.008	23.800	P
	2	10.02	122.3	2,100	1225.4	P	31.400 ± 0.008	31.400	P
Mixer/ Amps	All	10.01	84.0	900	840				
TOTAL				5,000	2752				

Pass = P, Fail = F

Part No.: 1356441-1

Serial No.: F03

Test Engineer: Y. Trinh

Quality Assurance: 7A 268 AUG 6 '98

Date: 07/27/98

TEST DATA SHEET 2
LO Frequency Test Data (Paragraph 3.5.1) (A1-2)

Test Setup Verified:__________________ Baseplate Temperature (T_B) ________ °C
Signature

Component	Channel No.	V_b(V)	I_b(mA)	P_{dc}(mW)			f_o(GHz)		
				Required (Max)	Measured	Pass/ Fail	Required	Measured	Pass/ Fail
LO	3			2,700			50.300 ± 0.008		
	4			2,700			52.800 ± 0.003		
	5			2,700			53.596 ± 0.003		
	8			2,700			55.500 ± 0.008		
Mixer/ Amps	All			1,800					
TOTAL				12,600					

Pass = P, Fail = F

Part No.:____________________ Test Engineer:____________________

Serial No.:____________________ Quality Assurance:____________________

Date:____________________

FOR REFERENCE ONLY

07/27/98 P/N: 1356441-1 S/N: F03

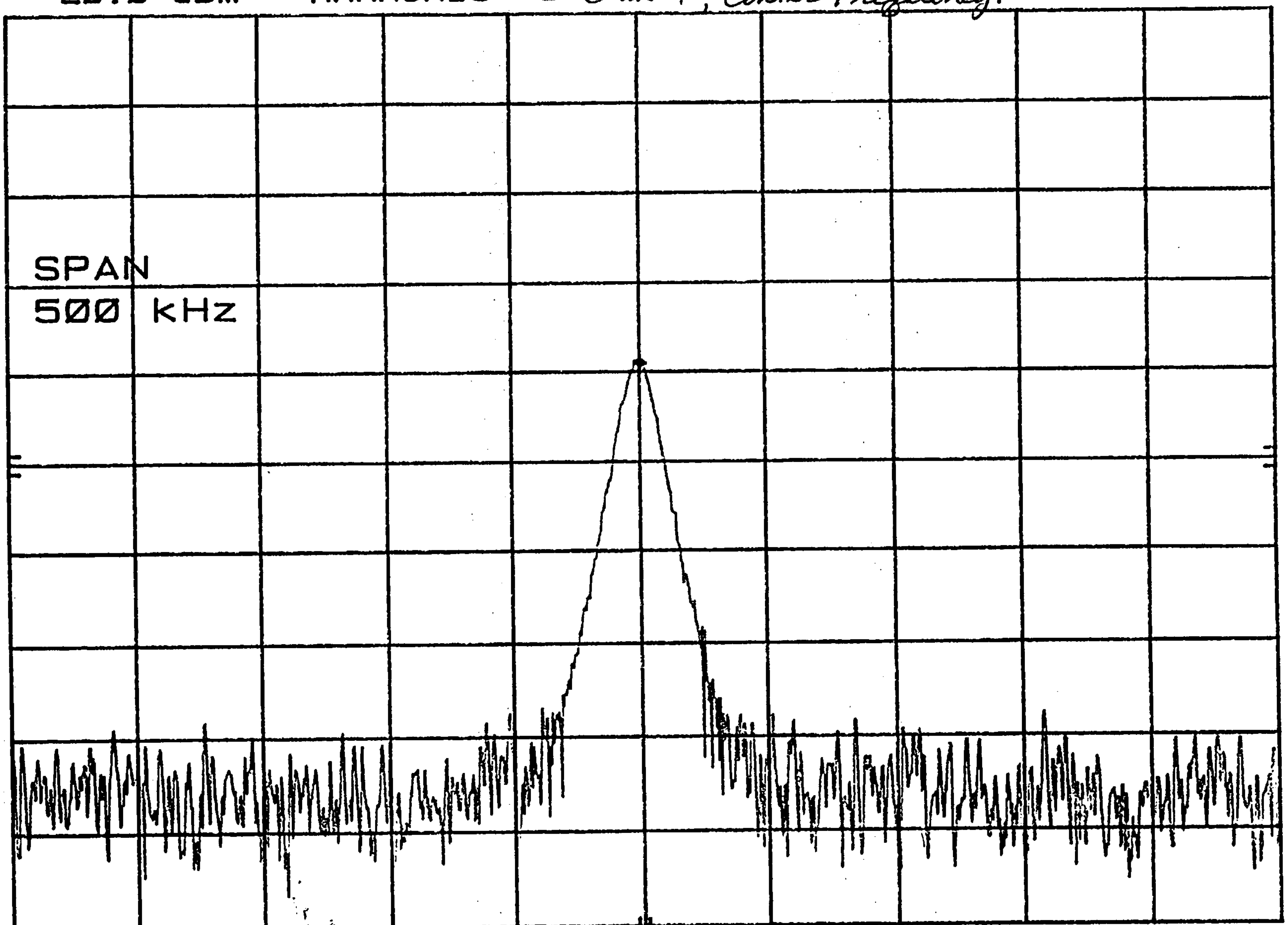
MKR 23.800 518 4 GHz

hp REF -20.0 dBm HARMONIC 6 Chan #1, Center Frequency. -59.00 dBm

10 dB/

CNVLOSS
18.0
dB

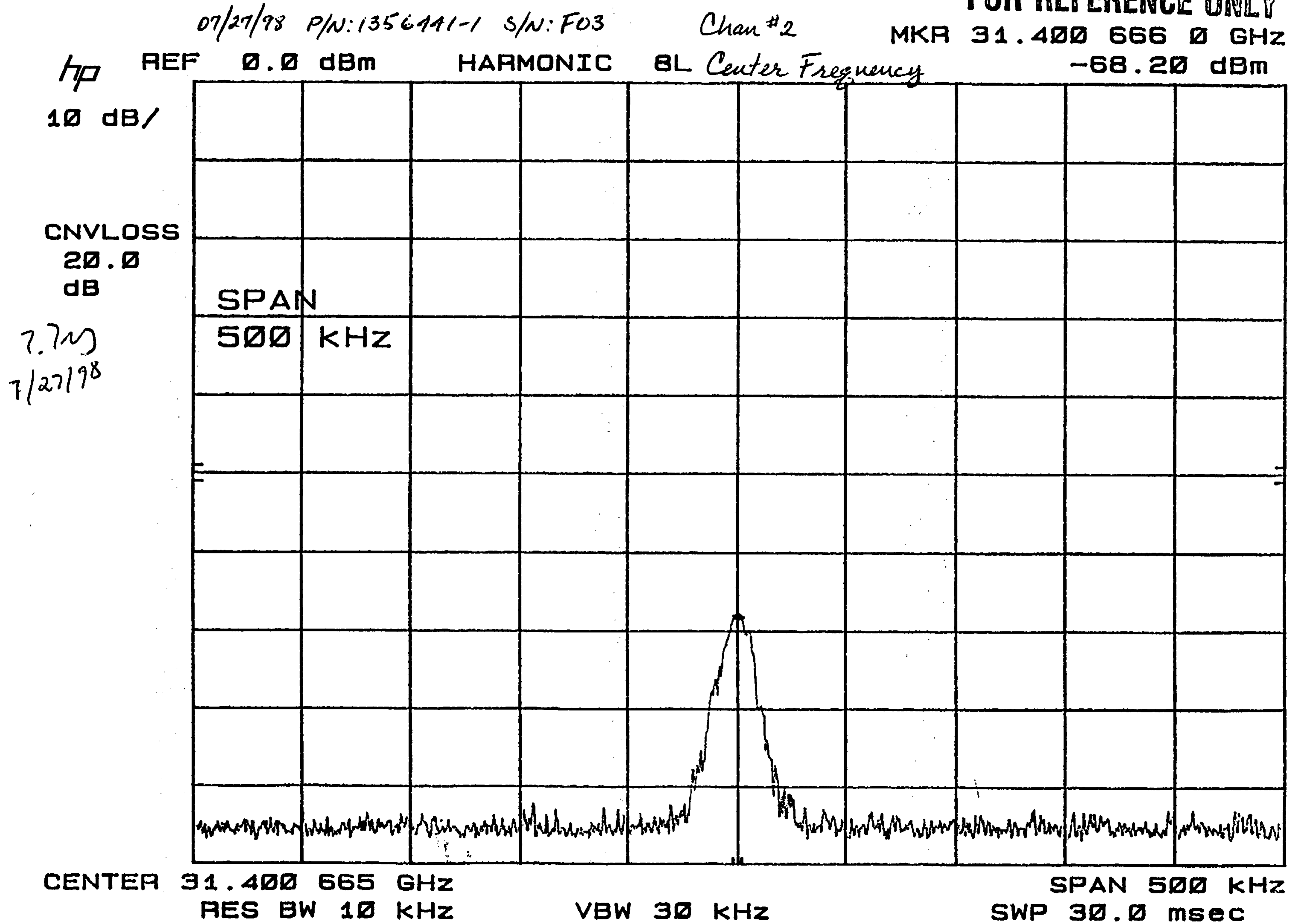
7.Tw
7/27/98



CENTER 23.800 518 GHz
RES BW 10 kHz VBW 30 kHz

SPAN 500 kHz
SWP 30.0 msec

FOR REFERENCE ONLY



TEST DATA SHEET 6

IF Output Test Data (Paragraph 3.5.2) (A2)

Test Setup Verified: T. Truong
Signature

Baseplate Temperature (T_B) 25.1°C

Component	Channel No.	V_b(V)	I_b(mA)	P_o(dBm)	Atten (dB)	P_o(dBm) Required	P_o(dBm) Measured	Pass/ Fail
LO	1	10.02	68.7	-21.51	6	–27.0 ± 1.0	-27.44	P
	2	10.02	122.2	-23.09	4	–27.0 ± 1.0	-27.14	P
Mixer/ Amps	All	10.01	84.0					

Pass = P, Fail = F

Part No.: 1356441-1

Serial No.: F03

Test Engineer: [illegible]

Quality Assurance: TA 263 AUG 6 '98

Date: 8/5/98

TEST DATA SHEET 9

Bandpass Characteristics Test Data (Paragraph 3.5.3) (A2)

Test Setup Verified: *[signature]* Baseplate Temperature (T_B) 25.1 °C
Signature

Component	Channel No.	V_b(V)	I_b(mA)	3 dB BW Frequency (MHz)		3 dB BW Frequency (MHz)		Pass/ Fail
				Lower	Higher	Required MAX.	Measured	
LO	1	10.02	68.7	8.5	133.4	135	124.9	P
	2	10.02	122.2	9.0	88.1	90	79.1	P
Mixer/ Amps	All	10.01	84.0					

Component	Channel No.	V_b(V)	I_b(mA)	40 dB BW Frequency (MHz)		40 dB BW Frequency (MHz) (Ref. Only)		Pass/ Fail
				Lower	Higher	Required MAX.	Measured	
LO	1	10.02	68.7	3.6	146.0	351	142.4	P
	2	10.02	122.2	3.6	99.9	234	96.3	P
Mixer/ Amps	All	10.01	84.0					

Part No.: 135441-1

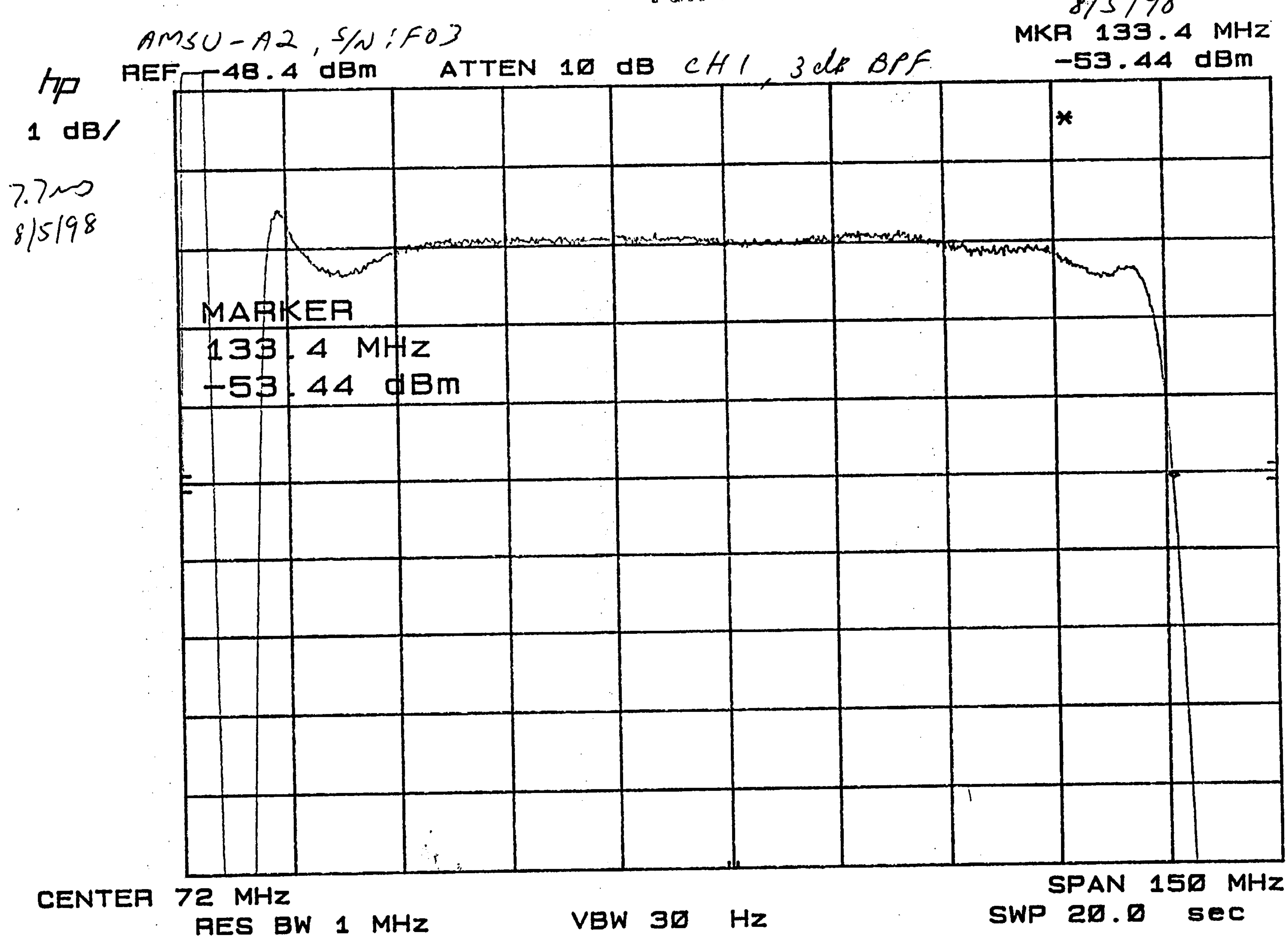
Serial No.: F03

Test Engineer: *[signature]*

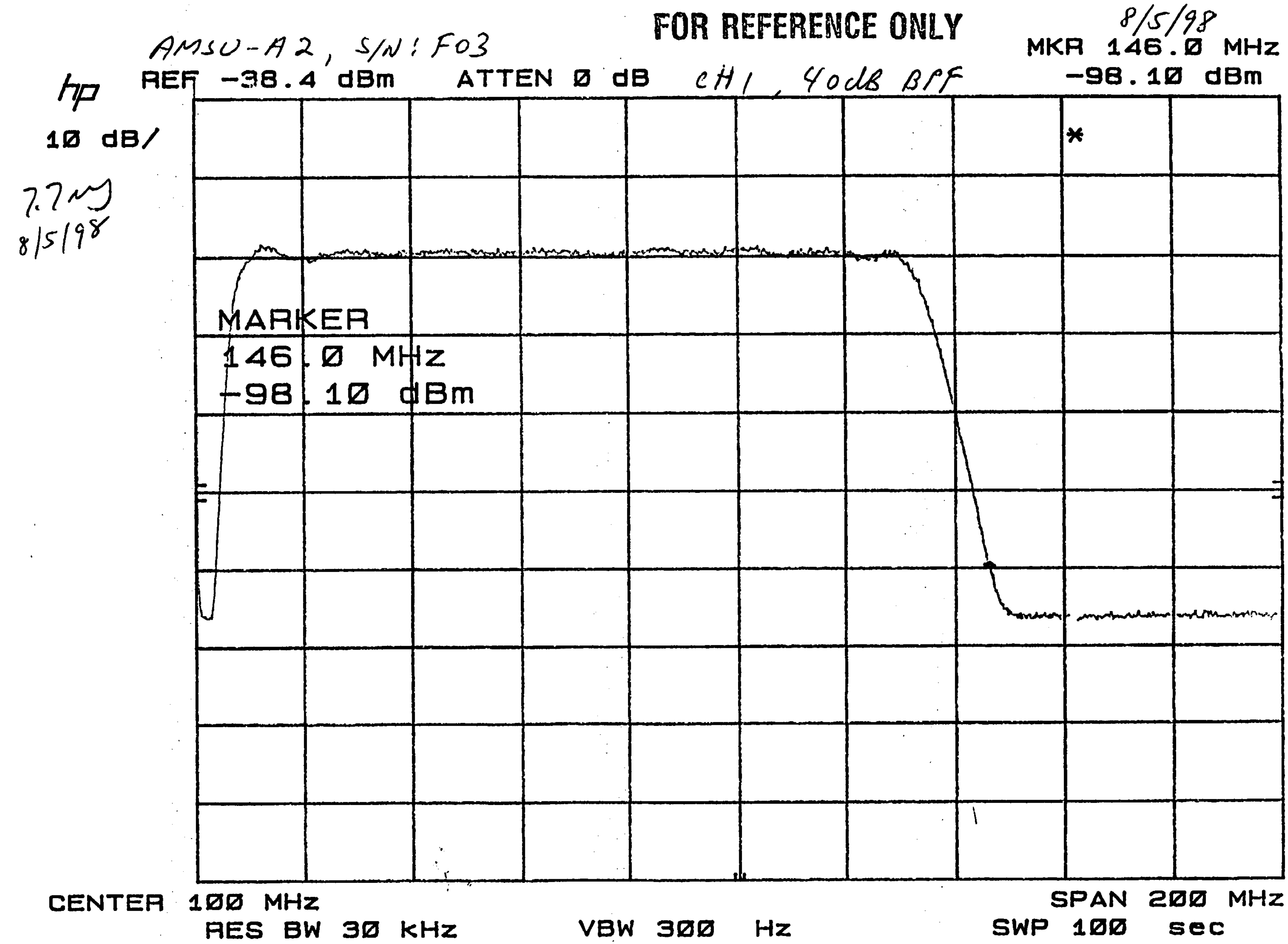
Quality Assurance: QA 268 AUG 6 '98

Date: 8/5/98

FOR REFERENCE ONLY



FOR REFERENCE ONLY



FOR REFERENCE ONLY

AMSU-A2, S/N: F03

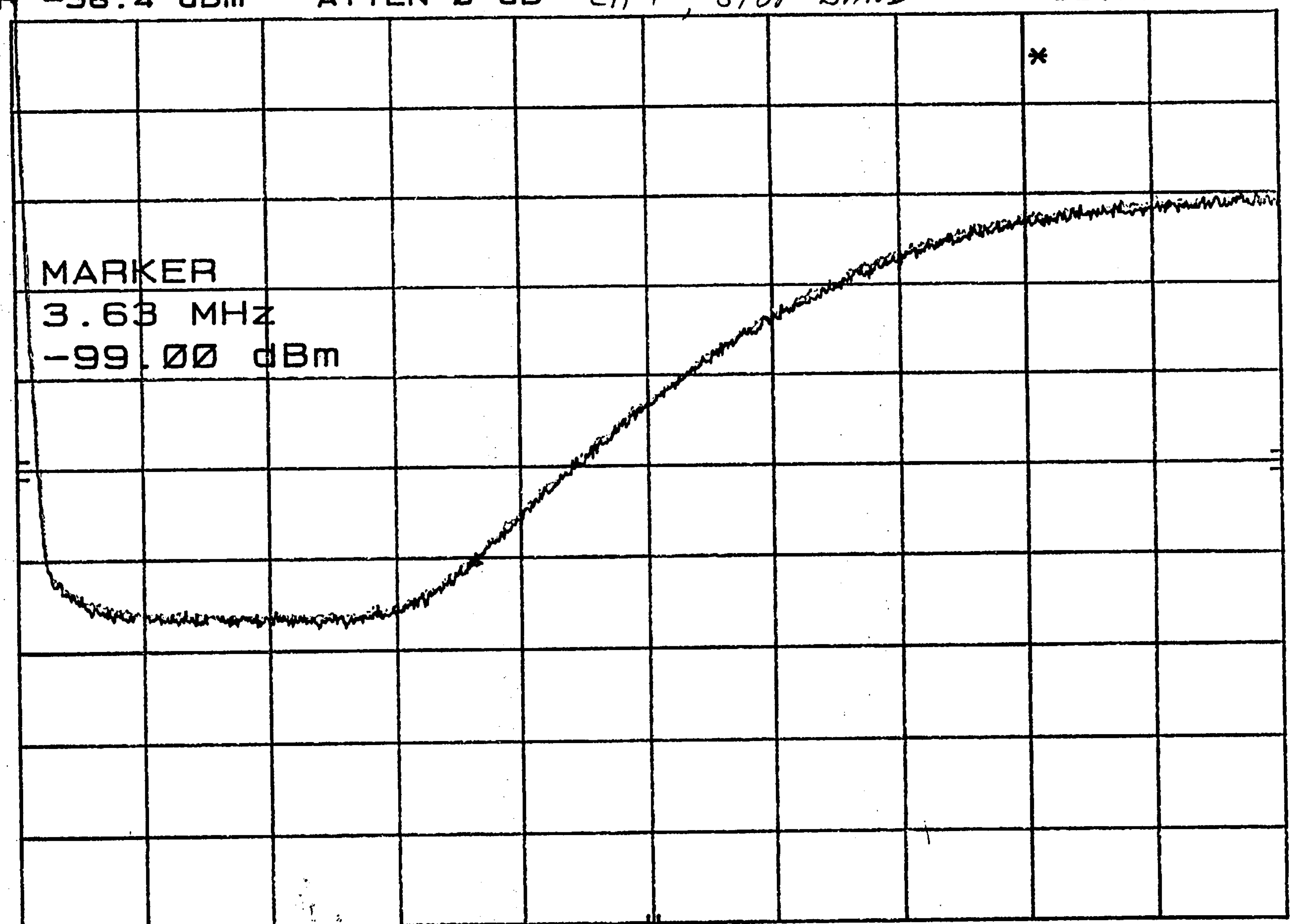
8/5/98

hp REF -38.4 dBm ATTEN 0 dB CH 1, STOP BAND

MKR 3.63 MHz
-99.00 dBm

10 dB/

7.7
8/5/98



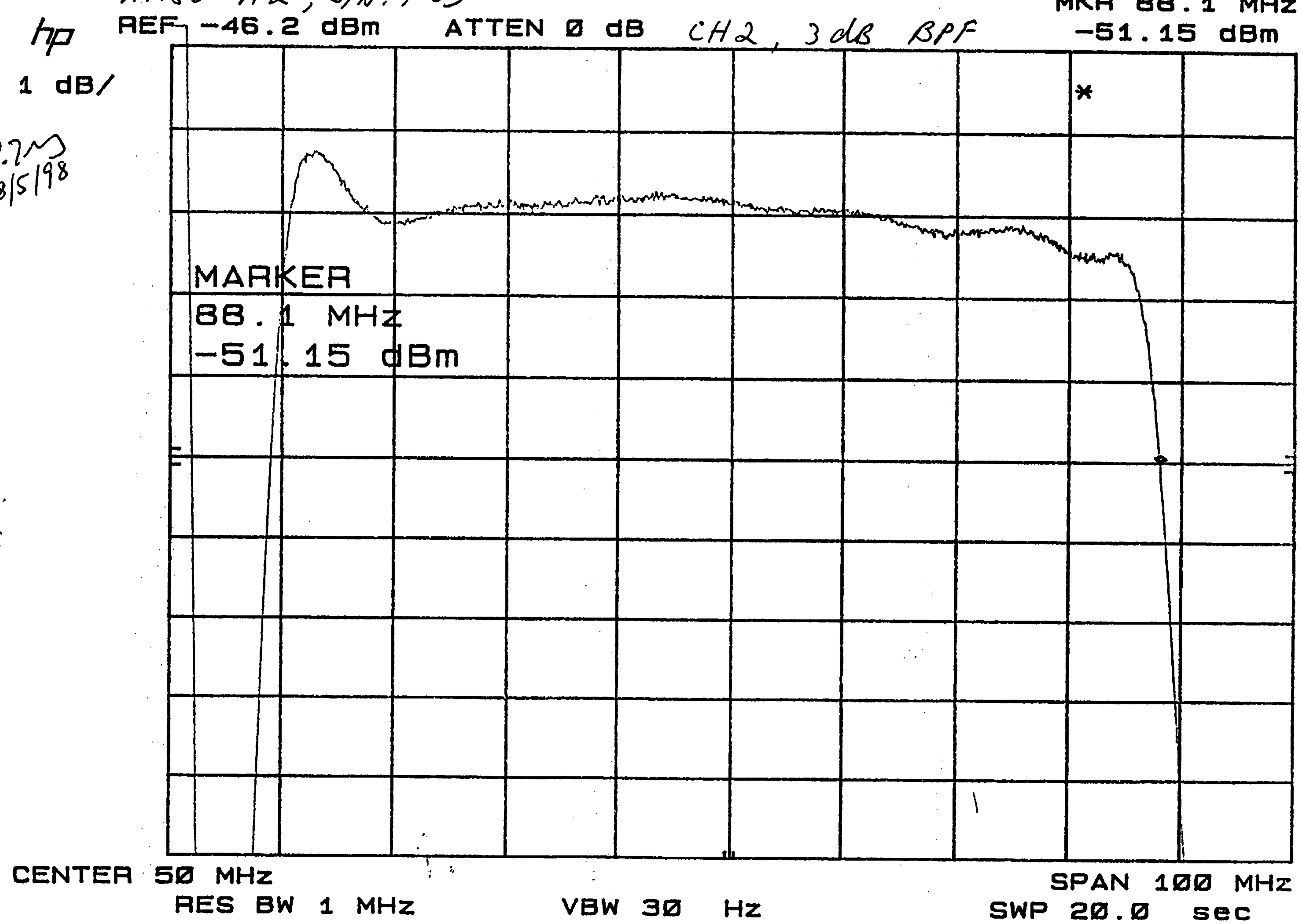
START 0 Hz
RES BW 30 kHz VBW 300 Hz

STOP 10.0 MHz
SWP 10.0 sec

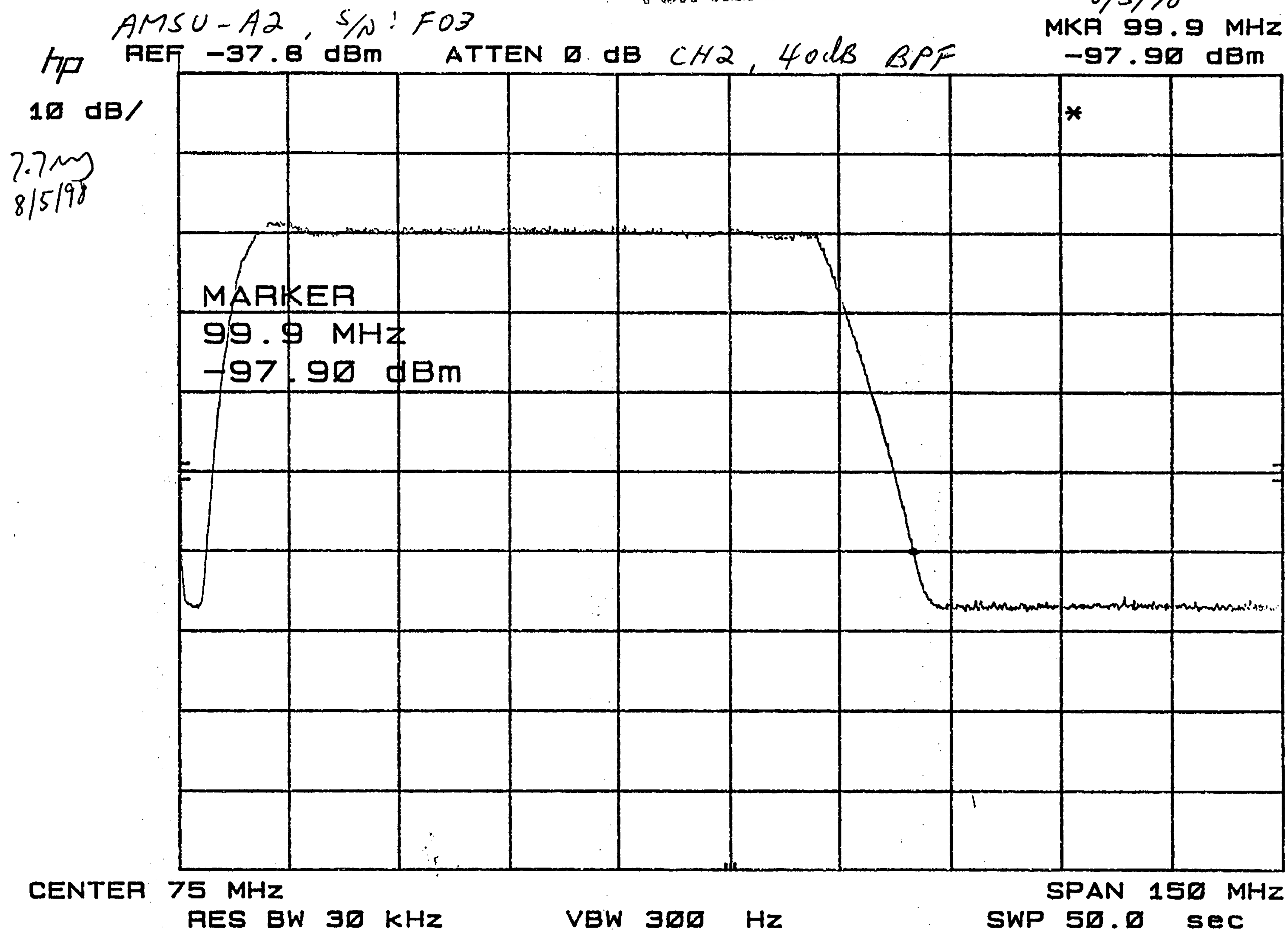
FOR REFERENCE ONLY

AMSU-A2, S/N: F03

8/5/98



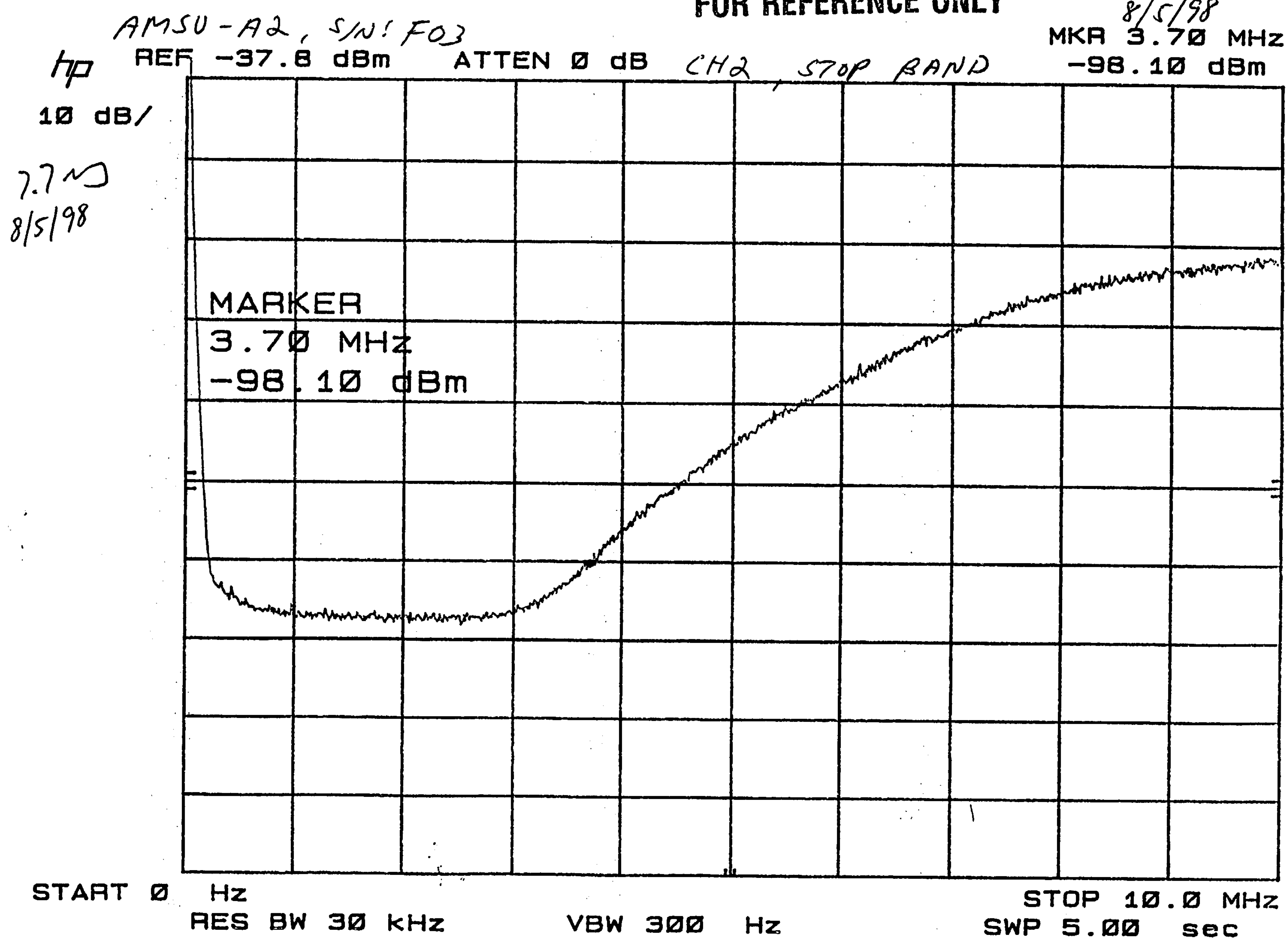
FOR REFERENCE ONLY



FOR REFERENCE ONLY

AMSU-A2, S/N: F03

8/5/98



TEST DATA SHEET 12 (Sheet 1 of 4)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A2)

Test Setup Verified: ____________ Signature

Baseplate Temperature (T_B) 25.1 °C

Component	Channel No.	V_b(V)	I_b(mA)	T_H(°C)	V_H (V) Mean	V_H (V) Standard Deviation	T_C(°C)	V_C (V) Mean	V_C (V) Standard Deviation
LO	1	10.02	68.7	22.4	-0.8859	.00019	-194.0	-0.6491	.00021
				22.4	-0.8859	.00021	-194.0	-0.6494	.00022
				22.4	-0.8861	0.00024	-194.0	-0.6499	.00018
				22.4	-0.8860	0.00020	-194.0	-0.6491	.00016
				22.4	-0.8862	.00026	-194.0	-0.6491	.00018
				22.4	-0.8861	.00021	-194.0	-0.6486	.00021
				22.4	-0.8860	.00024	-194.0	-0.6489	.00018
				22.4	-0.8857	.00021	-194.0	-0.6506	.00021
				22.4	-0.8858	.00022	-194.0	-0.6494	.00021
				22.4	-0.8859	.00021	-194.0	-0.6496	.00017
Mixer/ Amps	All	10.01	84.0						
IF Amps	All	N/A	N/A						

Part No.: 1356441-1

Serial No.: F03

Test Engineer: ____________

Quality Assurance: 268 74 AUG 6 '98

Date: 8/5/98

TEST DATA SHEET 12 (Sheet 2 of 4)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A2)

Test Setup Verified: [illegible] Signature   Baseplate Temperature (T_B) 25.1°C

Component	Channel No.	V_b(V)	I_b(mA)	T_H(°C)	V_H (V) Mean	V_H (V) Standard Deviation	T_C(°C)	V_C (V) Mean	V_C (V) Standard Deviation
LO	2	10.02	122.2	22.4	-0.9184	.00030	-194.0	-0.6343	.00022
				22.4	-0.9182	.00028	-194.0	-0.6355	.00020
				22.4	-0.9180	.00025	-194.0	-0.6390	.00023
				22.4	-0.9180	.00024	-194.0	-0.6376	.00018
				22.4	-0.9185	.00029	-194.0	-0.6379	.00023
				22.4	-0.9176	.00027	-194.0	-0.6364	.00033
				22.4	-0.9178	.00027	-194.0	-0.6367	.00023
				22.4	-0.9178	.00028	-194.0	-0.6370	.00024
				22.4	-0.9180	.00031	-194.0	-0.6369	.00025
				22.4	-0.9182	.00028	-194.0	-0.6365	0.00022
Mixer/ Amps	All	10.01	84.0						
IF Amps	All	N/A	N/A						

Part No.: 135644-1

Serial No.: F03

Test Engineer: [illegible]

Quality Assurance: TA 268 AUG 8 98

Date: 8/5/98

TEST DATA SHEET 12 (Sheet 3 of 4)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A2)

Test Setup Verified: 7. 7urung
Signature

Baseplate Temperature (T_B) 25.1 °C

Channel No.	NF (dB) Required (Max)	NF (dB) Measured	NF (dB) Average	NF (dB) Pass/Fail	NPS (K) Required (Max)	NPS (K) Measured	NPS (K) Average	NPS (K) Delta	NPS (K) Pass/Fail
1		4.43				0.06			
		4.44				0.05			
		4.44				0.12			
		4.43				0.04			
		4.43				0.15			
		4.42				0.05			
		4.42				0.12			
		4.46				0.05			
		4.43				0.09			
		4.44				0.06			
	4.5		4.43	PASS	0.09		0.08	0.109	PASS

Pass = P, Fail = F

Part No.: 135441-1

Serial No.: F03

Test Engineer: 7. 7urung

Quality Assurance: QA 268 AUG 6 '98

Date: 8/5/98

TEST DATA SHEET 12 (Sheet 4 of 4)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A2)

Test Setup Verified: [illegible signature]
Signature

Baseplate Temperature (T_B) 25.1 °C

Channel No.	NF (dB) Required (Max)	NF (dB) Measured	NF (dB) Average	NF (dB) Pass/Fail	NPS (K) Required (Max)	NPS (K) Measured	NPS (K) Average	NPS (K) Delta	NPS (K) Pass/Fail
2		3.79				0.11			
		3.81				0.08			
		3.87				0.05			
		3.85				0.07			
		3.84				0.10			
		3.83				0.05			
		3.83				0.05			
		3.84				0.07			
		3.83				0.14			
		3.82				0.09			
	3.95		3.83	PASS	0.09		0.08	0.088	PASS

Pass = P, Fail = F

Part No.: 135441-1

Serial No.: F03

Test Engineer: [illegible signature]

Quality Assurance: 7A 268 AUG 6 '98

Date: 8/5/98

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A2, CH1, S/N: F03, NF & NPS TEST DATA, 8/5/98

SEQ	TEMP_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	295.55	-.88586811	.00018701	----------	----------
2	COLD TEST	79.15	-.64914267	.00020888	4.42996726	.06328436
3	WARM TEST	295.55	-.88586305	.00020670	----------	----------
4	COLD TEST	79.15	-.64945649	.00022485	4.43583659	.04979668
5	WARM TEST	295.55	-.88610158	.00024144	----------	----------
6	COLD TEST	79.15	-.64993358	.00018073	4.44142888	.12464550
7	WARM TEST	295.55	-.88602142	.00020369	----------	----------
8	COLD TEST	79.15	-.64906493	.00015985	4.42645801	.03776222
9	WARM TEST	295.55	-.88621120	.00025596	----------	----------
10	COLD TEST	79.15	-.64913782	.00017587	4.42523785	.14639002
11	WARM TEST	295.55	-.88605315	.00020629	----------	----------
12	COLD TEST	79.15	-.64857011	.00021146	4.41690783	.04796879
13	WARM TEST	295.55	-.88599476	.00023632	----------	----------
14	COLD TEST	79.15	-.64888429	.00017968	4.42348572	.11569308
15	WARM TEST	295.55	-.88569251	.00020783	----------	----------
16	COLD TEST	79.15	-.65060294	.00020703	4.45942310	.05399737
17	WARM TEST	295.55	-.88578735	.00022385	----------	----------
18	COLD TEST	79.15	-.64940639	.00020693	4.43593649	.09312813
19	WARM TEST	295.55	-.88585445	.00021137	----------	----------
20	COLD TEST	79.15	-.64964845	.00016679	4.43950544	.06421409

CH. 1 ,124.9 MHz MHz

NOISE FIGURE AVERAGE (dB) = 4.43343355713

NOISE POWER STABILITY (K) = .0796880252946

NOISE POWER STABILITY DELTA (K) = .108627800355

NPS_MAX (K) = .146390022254 NPS_MIN (K) = .0377622218995

INTEGRATION TIME = .158

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A2, CH2, S/N: F03, NF & NPS TEST DATA, 8/5/98

SEQ	TEMP_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	NPS(K)
1	WARM TEST	295.55	-.91842115	.00029823	----------	---------
2	COLD TEST	79.15	-.63426112	.00022195	3.78878200	.11153333
3	WARM TEST	295.55	-.91815703	.00028055	----------	---------
4	COLD TEST	79.15	-.63549702	.00020496	3.81069244	.08122245
5	WARM TEST	295.55	-.91798321	.00025239	----------	---------
6	COLD TEST	79.15	-.63899286	.00023300	3.86706438	.04735485
7	WARM TEST	295.55	-.91797747	.00024260	----------	---------
8	COLD TEST	79.15	-.63764348	.00018349	3.84600690	.07145909
9	WARM TEST	295.55	-.91849413	.00029019	----------	---------
10	COLD TEST	79.15	-.63789604	.00022815	3.84434793	.09968517
11	WARM TEST	295.55	-.91761317	.00026822	----------	---------
12	COLD TEST	79.15	-.63642141	.00033496	3.83089611	.05201938
13	WARM TEST	295.55	-.91781943	.00026878	----------	---------
14	COLD TEST	79.15	-.63666101	.00022669	3.83239892	.05353282
15	WARM TEST	295.55	-.91780166	.00027553	----------	---------
16	COLD TEST	79.15	-.63701677	.00023537	3.83813342	.07111340
17	WARM TEST	295.55	-.91801952	.00031342	----------	---------
18	COLD TEST	79.15	-.63687885	.00025101	3.83362953	.13507782
19	WARM TEST	295.55	-.91816777	.00028382	----------	---------
20	COLD TEST	79.15	-.63634087	.00021946	3.82366477	.08788561

CH. 2 ,79.1 MHz MHz

NOISE FIGURE AVERAGE (dB) = 3.83160776469

NOISE POWER STABILITY (K) = .081088391029

NOISE POWER STABILITY DELTA (K) = .0877229786147

NPS_MAX (K) = .135077823845 NPS_MIN (K) = .0473548452308

INTEGRATION TIME = .158

TEST DATA SHEET 17

Temperature Sensor and Thermistor Test Data (Paragraph 3.6.1) (A1-2)

Test Setup Verified:____________________ Baseplate Temperature (T_B) ________°C
Signature

Reference Designation	Specification	Measured Value	Pass/Fail
RT 41	2200 ± 100 Ω	Ω	
RT 42	2200 ± 100 Ω	Ω	
RT 43	2200 ± 100 Ω	Ω	
RT 44	2200 ± 100 Ω	Ω	
RT 12	2200 ± 100 Ω	Ω	
RT 17	2200 ± 100 Ω	Ω	
RT 18	2200 ± 100 Ω	Ω	
RT 19	2200 ± 100 Ω	Ω	
RT 22	2200 ± 100 Ω	Ω	
RT 33	2200 ± 100 Ω	Ω	
TB 58	3000 ± 100 Ω	Ω	
TB 59	3000 ± 100 Ω	Ω	
TB 54	4.1 – 4.6 V	V	

Pass = P, Fail = F

Part No.:____________________ Test Engineer:____________________

Serial No.:____________________ Quality Assurance:____________________

Date:____________________

TEST DATA SHEET 18

Temperature Sensor and Thermistor Test Data (Paragraph 3.6.1) (A2)

Test Setup Verified: T. Trinh
Signature

Baseplate Temperature (T_B) 22.9 °C

Reference Designation	Specification	Measured Value	Pass/Fail
RT 12	2200 ± 100 Ω	2,174 Ω	P
RT 19	2200 ± 100 Ω	2,173 Ω	P
RT 20	2200 ± 100 Ω	2,172 Ω	P
RT 13	2200 ± 100 Ω	2,176 Ω	P
RT 14	2200 ± 100 Ω	2,170 Ω	P
RT 17	2200 ± 100 Ω	2,586 Ω	F
TB 58	3000 ± 100 Ω	3,001 Ω	P
TB 59	3000 ± 100 Ω	3,001 Ω	P
TB 53	4.1 – 4.6 V	4.3 V	P

Ref TAR #2392

Ref TAR #2392 oper 8020

Pass = P, Fail = F

RETEST RT17 = 2177 Ω (PASS)

T. Trinh 8/5/98

Part No.: 1356441-1

Serial No.: F03

Test Engineer: T. Trinh

Retest RT17 Passed

Quality Assurance: QA 253 AUG 6 '98 Ref TAR #2392

Date: 07/27/98

TEST DATA SHEET 21

Survival Heater and Thermal Switch Test Data (Paragraph 3.6.3) (A1-2)

Test Setup Verified:____________________ Baseplate Temperature (T_B) ________°C

Signature

Reference Designation	Open Switch		Closed Switch		
	>10 MΩ	Pass/Fail	Specification	Measured Value	Pass/Fail
HR1/TS1			40 - 48 Ω		
HR2/TS2					

Pass = P, Fail = F

Part No.:________________________________ Test Engineer:________________________________

Serial No.:________________________________ Quality Assurance:________________________________

Date:________________________________

TEST DATA SHEET 22
Survival Heater and Thermal Switch Test Data (Paragraph 3.6.3) (A2)

Test Setup Verified: 7.7mg
Signature

Baseplate Temperature (T_B) 23.0 °C

Reference Designation	Open Switch		Closed Switch		
	>10 MΩ	Pass/Fail	Specification	Measured Value	Pass/Fail
HR1/TS1	50M	P	50 - 65 Ω	53.9 Ω	P
	50M	P		54.2 Ω	P
HR2/TS2	50M	P		57.9 Ω	P
	50M	P		57.9 Ω	P

Pass = P, Fail = F

Part No.: 1356441-1

Serial No.: F03

Test Engineer: T. Trinh

Quality Assurance: TA 269 AUG 6 '98

Date: 07/27/98

TEST DATA SHEET 23 (Sheet 3 of 3)
Bias Voltage Verification Test Data (Paragraph 3.6.4) (A2)

Test Setup Verified: Y. Trinh
Signature

Baseplate Temperature (T_B) 23.3 °C

Reference Designation	Specification	Measured Value (V)	Pass/Fail
Mixer/IF AMP Ch 1, 2	+10 ±0.1	10.0	P
DRO Ch 1	+10 ±0.1	10.01	P
DRO Ch 2	+10 ±0.1	10.01	P

Part No.: 1356441-1

Serial No.: F03

Test Engineer: Y. Trinh

Quality Assurance: QA 269 AUG 6 '98

Date: 07/27/98

TEST DATA SHEET 3
LO Frequency Test Data (Paragraph 3.5.1) (A2)

Test Setup Verified: ____________ Baseplate Temperature (T_B) 23.8 °C
Signature

Component	Channel No.	V_b(V)	I_b(mA)	P_{dc}(mW)			f_o(GHz)		
				Required (Max)	Measured	Pass/Fail	Required	Measured	Pass/Fail
LO	1	10.01	68.6	2,000	686.7	P	23.800 ± 0.008	23.801	P
	2			2,100			31.400 ± 0.008		
Mixer/Amps	All	10.01	84.0	900	840.8				
TOTAL				5,000					

Pass = P, Fail = F

Part No.: 135641-1

Serial No.: F03

NOTE:
CHANNEL #1 ONLY

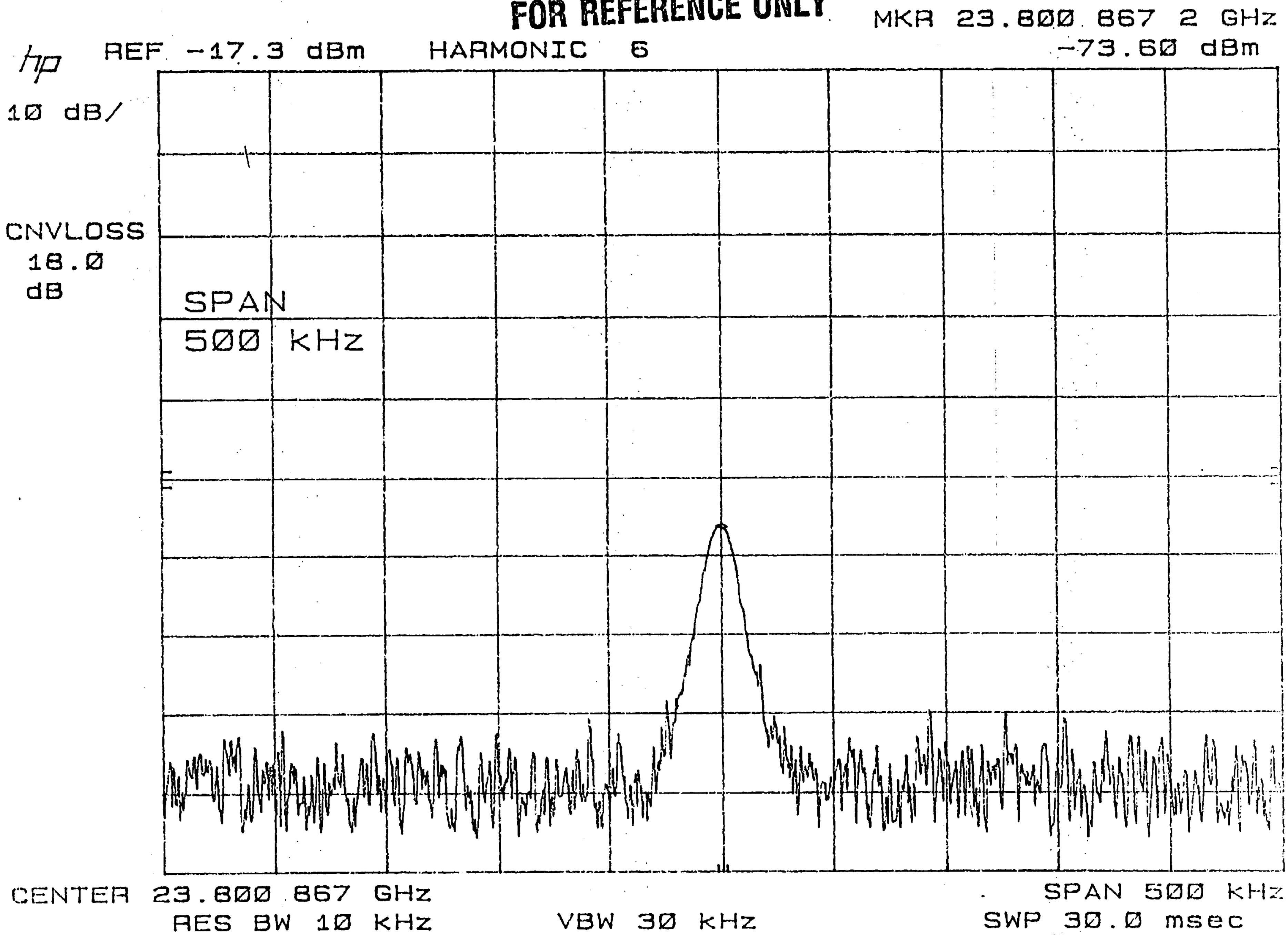
Test Engineer: ____________

Quality Assurance: AUG 29 98 7A 190

Date: 8/28/98

8/28/90 P/N 155044-1 S/N F05

FOR REFERENCE ONLY



TEST DATA SHEET 6
IF Output Test Data (Paragraph 3.5.2) (A2)

Test Setup Verified: 7.7~~ (Signature) Baseplate Temperature (T_B) 24.5 °C

Compo-nent	Channel No.	V_b(V)	I_b(mA)	P_o(dBm)	Atten (dB)	P_o(dBm)		
						Required	Measured	Pass/ Fail
LO	1	10.01	68.6	-21.67	6	−27.0 ± 1.0	-27.56	P
LO	2					−27.0 ± 1.0		
Mixer/ Amps	All	10.01	84.0					

NOTE; CHANNEL #1 ONLY

Pass = P, Fail = F

Part No.: 135644-1

Serial No.: F03

Test Engineer: [signature]

Quality Assurance: 7A 190 AUG 29 98

Date: 8/28/98

TEST DATA SHEET 9

Bandpass Characteristics Test Data (Paragraph 3.5.3) (A2)

Test Setup Verified: 77~ (Signature) Baseplate Temperature (T_B) 24.6 °C

Component	Channel No.	V_b(V)	I_b(mA)	3 dB BW Frequency (MHz) Lower	3 dB BW Frequency (MHz) Higher	3 dB BW Frequency (MHz) Required MAX.	3 dB BW Frequency (MHz) Measured	Pass/ Fail
LO	1	10.01	68.6	8.6	135.2 ~~126.6~~ 77~	135	126.6 ~~118.0~~ 77~	P
	2					90		
Mixer/ Amps	All	10.01	84.0					

Component	Channel No.	V_b(V)	I_b(mA)	40 dB BW Frequency (MHz) Lower	40 dB BW Frequency (MHz) Higher	40 dB BW Frequency (MHz) (Ref. Only) Required MAX.	40 dB BW Frequency (MHz) (Ref. Only) Measured	Pass/ Fail
LO	1	10.01	68.6	3.6	147.8	351	144.2	P
	2					234		
Mixer/ Amps	All	10.01	84.0					

NOTE: CHANNEL #1 ONLY

Part No.: 1356441-1

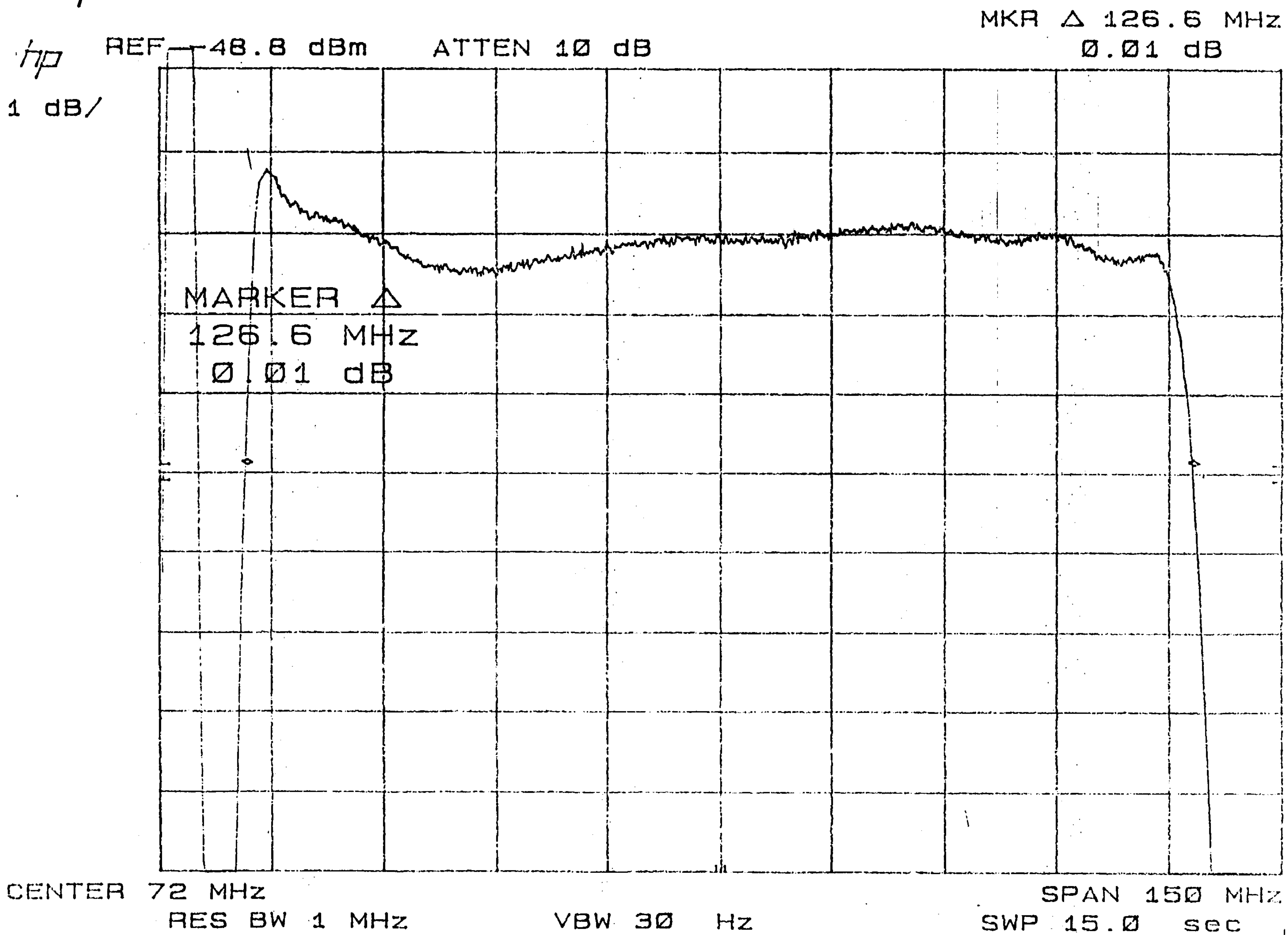
Serial No.: F03

Test Engineer: [signature]

Quality Assurance: 7A 190 AUG 29 98

Date: 8/28/98

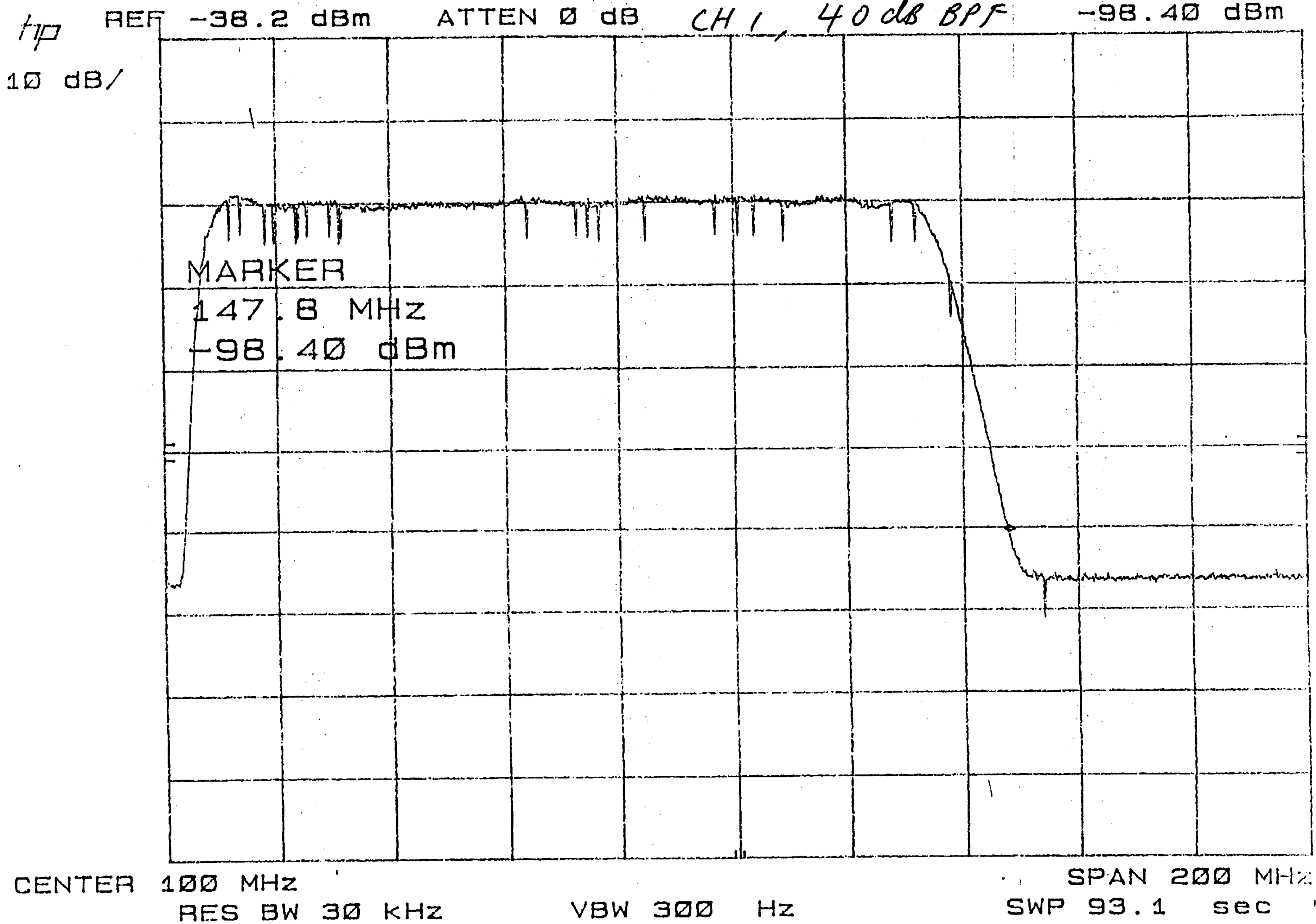
8/28/98 A2 S/N-F03 CH1 3dB Diff



FOR REFERENCE ONLY

A2, S/N: F03

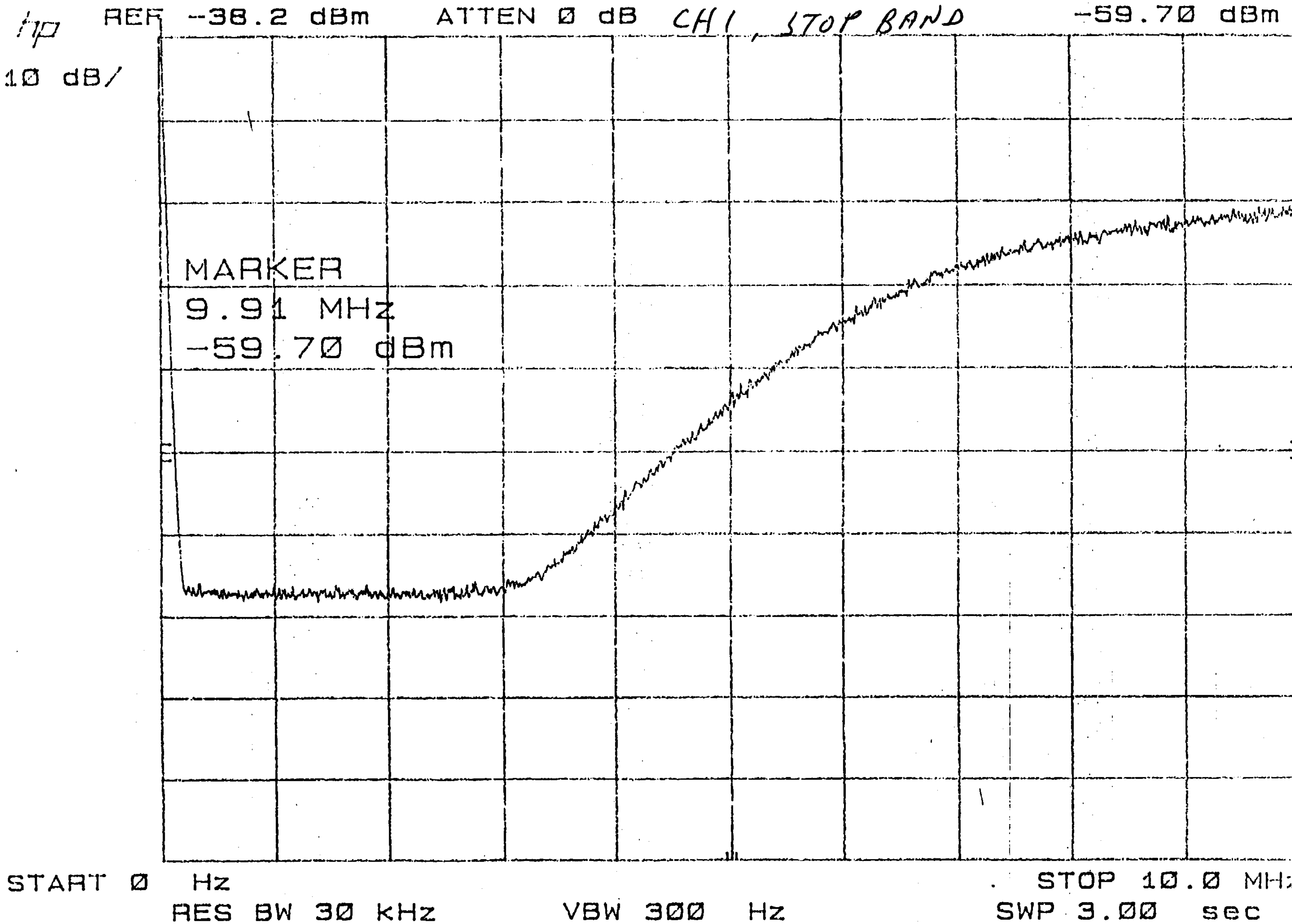
8/28/98



FOR REFERENCE ONLY

A2, S/N: F03

8/28/98



TEST DATA SHEET 12 (Sheet 1 of 4)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A2)

Test Setup Verified: 7.7ms
Signature

Baseplate Temperature (T_B) 24.8 °C

Component	Channel No.	V_b(V)	I_b(mA)	T_H(°C)	V_H (V) Mean	V_H (V) Standard Deviation	T_C(°C)	V_C (V) Mean	V_C (V) Standard Deviation
LO	1	10.01	68	22.4	-.866	.00023	-194	-.628	.00015
				22.4	-.866	.00021	-194	-.628	.00018
				22.4	-.866	.00022	-194	-.628	.00017
				22.4	-.866	.00021	-194	-.628	.00015
				22.4	-.866	.00021	-194	-.628	.00018
				22.4	-.866	.00021	-194	-.628	.00016
				22.4	-.866	.00022	-194	-.628	.00019
				22.4	-.866	.00022	-194	-.628	.00016
				22.4	-.866	.00021	-194	-.628	.00016
				22.4	-.866	.00021	-194	-.628	.00016
Mixer/ Amps	All	10.01	84						
IF Amps	All	N/A	N/A						

Part No.: 135441-1

Serial No.: F03

Test Engineer: [signature]

Quality Assurance: AUG 29 98 7A 190

Date: 8/29/98

TEST DATA SHEET 12 (Sheet 3 of 4)
Noise Figure and Noise Power Stability Test Data (Paragraph 3.5.4) (A2)

Test Setup Verified: [signature]
Signature

Baseplate Temperature (T_B) 24.8 °C

Channel No.	NF (dB)				NPS (K)				
	Required (Max)	Measured	Average	Pass/Fail	Required (Max)	Measured	Average	Delta	Pass/Fail
1		4.31				0.11 ~~.103~~			
		4.31				0.07 ~~.057~~			
		4.31				0.09 ~~.082~~			
		4.31				0.07 ~~.056~~			
		4.31				0.07 ~~.049~~			
		4.31				0.07 ~~.051~~			
		4.31				0.10 ~~.087~~			
		4.31				0.09 ~~.072~~			
		4.31				0.07 ~~.051~~			
		4.31				0.07 ~~.047~~			
	4.5		4.31	P	0.09		0.08 ~~.066~~	0.04 ~~.056~~	P

Pass = P, Fail = F

Part No.: 1356441-1

Serial No.: F03

Test Engineer: [signature]

Quality Assurance: AUG 29 98 7A 190

Date: 8/29/98

FOR REFERENCE ONLY

AMSU-A TEST

AMSU-A2, CH1, S/N: F03, NF & NPS TEST DATA, 8/29/98 $T_B = 24.8\,^{\circ}C$

SEQ	TEMP_TEST	TEST TEMP	VOLTAGE	STD_DEV	NF (dB)	~~NPS(K)~~
1	WARM TEST	295.55	-.86560682	.00023023	----------	----------
2	COLD TEST	79.15	-.62817393	.00015285	4.31573048	.10317780
3	WARM TEST	295.55	-.86564980	.00020989	----------	----------
4	COLD TEST	79.15	-.62772390	.00017977	4.30687535	.05651540
5	WARM TEST	295.55	-.86567406	.00021991	----------	----------
6	COLD TEST	79.15	-.62781224	.00017327	4.30817603	.08221006
7	WARM TEST	295.55	-.86600353	.00020982	----------	----------
8	COLD TEST	79.15	-.62830199	.00014964	4.31278842	.05611305
9	WARM TEST	295.55	-.86600953	.00020779	----------	----------
10	COLD TEST	79.15	-.62865490	.00018243	4.31920669	.04953027
11	WARM TEST	295.55	-.86576745	.00020813	----------	----------
12	COLD TEST	79.15	-.62798261	.00016293	4.31006349	.05079461
13	WARM TEST	295.55	-.86588375	.00022243	----------	----------
14	COLD TEST	79.15	-.62774606	.00018523	4.30416558	.08745254
15	WARM TEST	295.55	-.86577516	.00021582	----------	----------
16	COLD TEST	79.15	-.62812313	.00016152	4.31254604	.07269012
17	WARM TEST	295.55	-.86574085	.00020833	----------	----------
18	COLD TEST	79.15	-.62815616	.00016311	4.31361227	.05153908
19	WARM TEST	295.55	-.86556312	.00020709	----------	----------
20	COLD TEST	79.15	-.62791390	.00015525	4.31152640	.04731723

wrong data

CH. 1 118 MHz wrong data MHz

NOISE FIGURE AVERAGE (dB) = 4.3114710646

NOISE POWER STABILITY (K) = .0657340148965

NOISE POWER STABILITY DELTA (K) = .0558605719374

NPS_MAX ~~(K)~~ = .103177799574 NPS_MIN (K) = .0473172276363

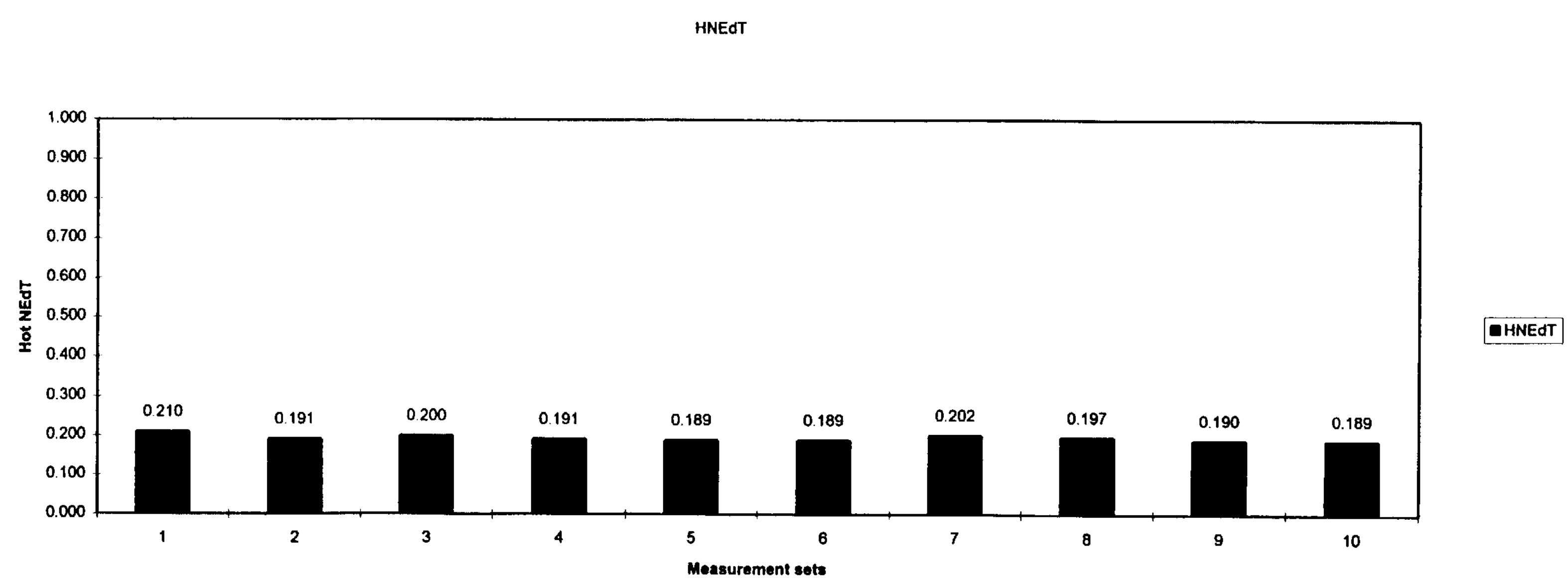
INTEGRATION TIME = .158

AMSU-A2, CH1, RECEIVER SHELF, S/N F03
(BPF 126.6 MHZ & LO FREQUENCY 23.801 GHZ)

8/29/98

To	290		
Thot	295.55	BandW	1.27E+08
Tcold	79.15	IntTime	0.158
CHconst	6.1327E-06		

Data	Description	Number Of Samples	V Hot Mean	V Hot Std Dev	V Cold Mean	V Cold Std Dev	Scale Fac K/Volt	Hot NEdT	Cold NEdT	Y Fact	Log(Y) dB	Noise Fig dB	Tsys (K)	dTrec (K)	theory dG/G	overall expected test NEdT		
Data	Description	Samples	MeanVh	StdDevVh	MeanVc	StdDevVc	ScalFac	HNEdT	CNEdT	YFact	NPS	NFdB	Tsys	dTrec	theorydG/G	testNEdT	Wload	Cload
		100	-0.8656068	0.000230230	-0.62817393	0.000152850	911.415432	0.210	0.139	1.377973167	0.114	4.316	788.9274138	0.176	0.169	0.245	295.55	79.15
		100	-0.8656498	0.000209890	-0.62772390	0.000179770	909.5268737	0.191	0.164	1.379029538	0.074	4.307	787.3317563	0.176	0.169	0.244	295.55	79.15
		100	-0.8656741	0.000219910	-0.62781224	0.000173270	909.7719003	0.200	0.158	1.378874136	0.095	4.308	787.5659346	0.176	0.169	0.244	295.55	79.15
		100	-0.8660035	0.000209820	-0.62830199	0.000149640	910.3853513	0.191	0.136	1.378323710	0.074	4.313	788.3969279	0.176	0.169	0.244	295.55	79.15
		100	-0.8660095	0.000207790	-0.62865490	0.000182430	911.7159417	0.189	0.166	1.377559500	0.069	4.319	789.5546941	0.177	0.169	0.245	295.55	79.15
		100	-0.8657675	0.000208130	-0.62798261	0.000162930	910.0664281	0.189	0.148	1.378648765	0.070	4.310	787.9058908	0.176	0.169	0.244	295.55	79.15
		100	-0.8658838	0.000222430	-0.62774606	0.000185230	908.7179774	0.202	0.168	1.379353540	0.100	4.304	786.8441300	0.176	0.169	0.244	295.55	79.15
		100	-0.8657752	0.000215820	-0.62812313	0.000161520	910.5750117	0.197	0.147	1.378352617	0.087	4.313	788.3532265	0.176	0.169	0.244	295.55	79.15
		100	-0.8657409	0.000208330	-0.62815616	0.000163110	910.8331012	0.190	0.149	1.378225520	0.070	4.314	788.5454233	0.176	0.169	0.244	295.55	79.15
		100	-0.8655631	0.000207090	-0.62791390	0.000155250	910.5857785	0.189	0.141	1.378474214	0.067	4.312	788.1694675	0.176	0.169	0.244	295.55	79.15
	AVERAGE		-0.8657674	0.000213944	-0.62805888	0.000166600	910.3593796	**0.195**	0.152	1.378481471	**0.082**	**4.311**	788.1594865	0.176	0.169	0.244	295.55	79.15



FOR REFERENCE ONLY

TEST DATA SHEET 18
Temperature Sensor and Thermistor Test Data (Paragraph 3.6.1) (A2)

Test Setup Verified: R. Kapp
Signature

Baseplate Temperature (T_B) 22.5 °C

Reference Designation	Specification	Measured Value	Pass/Fail
RT 12	2200 ± 100 Ω	2172 Ω	P
RT 19	2200 ± 100 Ω	2171 Ω	P
RT 20	2200 ± 100 Ω	2169 Ω	P
RT 13	2200 ± 100 Ω	2174 Ω	P
RT 14	2200 ± 100 Ω	2168 Ω	P
RT 17	2200 ± 100 Ω	2171 Ω	P
TB 58	3000 ± 100 Ω	3005 Ω	P
TB 59	3000 ± 100 Ω	3006 Ω	P
TB 53	4.1 – 4.6 V	4.34 V	P

Pass = P, Fail = F

Part No.: 135644-1

Serial No.: F03

Test Engineer:

Quality Assurance: 7A 190 AUG 28 98

Date: 8/28/98

TEST DATA SHEET 22
Survival Heater and Thermal Switch Test Data (Paragraph 3.6.3) (A2)

Test Setup Verified: [signature]
Signature

Baseplate Temperature (T_B) 22.5 °C

Reference Designation	Open Switch		Closed Switch		
	>10 MΩ	Pass/Fail	Specification	Measured Value	Pass/Fail
HR1/TS1	>50MΩ	P	50 - 65 Ω	58.4Ω	P
	>50MΩ	P		58.4Ω	P
HR2/TS2	>50MΩ	P		58.1Ω	P
	>50MΩ	P		57.8Ω	P

Pass = P, Fail = F

Part No.: 1356441-1

Serial No.: F03

Test Engineer: [signature]

Quality Assurance: 7A 190 AUG 29 98

Date: 8/28/98

TEST DATA SHEET 23 (Sheet 3 of 3)
Bias Voltage Verification Test Data (Paragraph 3.6.4) (A2)

Test Setup Verified: 7.7ry
Signature

Baseplate Temperature (T_B) 22.5 °C

Reference Designation	Specification	Measured Value (V)	Pass/Fail
Mixer/IF AMP Ch 1, 2	+10 ±0.1	10.01 V	P
DRO Ch 1	+10 ±0.1	10.01 V	P
DRO Ch 2	+10 ±0.1		

NOTE: CHANNEL #1 ONLY

Part No.: 135641-1

Serial No.: F03

Test Engineer: [signature]

Quality Assurance: AUG 29 98 7A 190

Date: 8/28/98

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Report Documentation Page

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		6. Performing Organization Code: ---
7. Author(s): R. Kapper		8. Performing Organization Report No.: 11225
		10. Work Unit No.: ---
9. Performing Organization Name and Address: Aerojet, 1100 W. Hollyvale, Azusa, CA 91702		11. Contract or Grant No.: NAS 5-32314
		13. Type of Report and Period Covered: Final
12. Sponsoring Agency Name and Address: NASA, Goddard Space Flight Center, Greenbelt, Maryland 20771		14. Sponsoring Agency Code: ---
15. Supplementary Notes: ---		

16. ABSTRACT (*Maximum 200 words*)

This is the Performance Verification Report, METSAT AMSU-A2 Receiver Assembly, P/N 1356441-1, S/N 106 For The EOS/AMSU-A1 for the Integrated Advanced Microwave Sounding Unit-A (AMSU-A).

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EOS Microwave System	Unclassified — Unlimited

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of pages	22. Price
Unclassified	Unclassified		---

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6. AUTHOR(S) R. KapOper			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Aerojet 1100 W. Hollyvale Azusa, CA 91702		8. PERFORMING ORGANIZATION REPORT NUMBER 11225 September 1998	
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