

MEASUREMENT AND TECHNICAL REPORT

HUGHES NETWORK SYSTEMS
10450 Pacific Center Court
San Diego, CA 92121

DATE: 30 September 2002

This Report Concerns:	Original Grant: X	Class II Change:
Equipment Type:	Hughes Model 9101 Regional BGAN Satellite IP Modem, Model 9101	
Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?	Yes: Defer until:	No: X
Company Name agrees to notify the Commission by:	N/A	
of the intended date of announcement of the product so that the grant can be issued on that date.		
Transition Rules Request per 15.37?	Yes:	No: X*
(*) FCC Part 15, Paragraph(s) 15.209(a); 15.247(a); 15.247(b); 15.247(c)		
Report Prepared by: TÜV AMERICA, INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 546 3999 Fax: 858 546 0364		

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Report No. SC202038-03A

1.0 GENERAL INFORMATION

1.1 Product Description

General Equipment Description -- NOTE: This information will be input into your test report as shown below.

EUT Description: Satellite IP Modem

EUT Name: Hughes Model 9101 Regional BGAN Satellite IP Modem

Model No.: 9101 Serial No.: --

Product Options: --

Configurations to be tested: --

Power Requirements

Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)

Voltage: 100-240 VAC 47-63Hz (If battery powered, make sure battery life is sufficient to complete testing.)

of Phases: 1

Current (Amps/phase(max)): -- Current (Amps/phase(nominal)): --

Other: --

Other Special Requirements

--

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)

--

EUT Power Cable

☐ Permanent OR ☒ Removable Length (in meters): 2

☐ Shielded OR ☐ Unshielded

☐ Not Applicable

EUT Interface Ports and Cables											
Interface				Shielding							
Type	Analog	Digital	Qty	Yes	No	Type	Termination	Connector Type	Port Termination	Length (in meters)	Removable Permanent
EXAMPLE:											
RS232	☐	☒	2	☒	☐	Foil over braid	Coaxial	Metallized 9-pin D-Sub	Characteristic Impedance	6	☒ ☐
Ethernet	☐	☒	1	☐	☐	--	--	RJ45	Characteristic Impedance	--	☐ ☒
USB	☐	☒	1	☐	☐	--	--	USB	Characteristic Impedance	--	☐ ☒
GEM Antenna Port	☒	☐	1	☐	☐	--	--	SMA Mini	50 Ohm	--	☐ ☒

EUT Software.

Revision Level: --

Description: --

EUT Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing.

Consult with your TÜV Product Service Representative if additional assistance is required.

1. Continuous transmission mode

EUT System Components -- List and describe all components which are part of the EUT. For FCC testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc.)

Description	Model #	Serial #	FCC ID #
AC/DC Power Jack	3003612-0001	--	--
Ethernet Cable	3003692-0001	--	--
USB Cable	3003027-0003	--	--
Battery	3003082-0001	--	--

Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc)

Description	Model #	Serial #	FCC ID #
-------------	---------	----------	----------

--

Oscillator Frequencies

Frequency	Derived Frequency	Component # / Location	Description of Use
32.768KHz	--	Y8/PWB	Strong ARM RTC
3.6864MHz	--	Y9/PWB	Strong ARM Main Clock
20MHz	--	Y10/PWB	DSP Main Clock
13MHz	376MHz	Y6/PWB	System Reference Clock
485-505MHz	492MHz	Y14/PWB	Tx LO Reference Clock
1136-1414.5MHz	1337-1370MHz	Y4/PWB	Rx LO Reference Clock
28MHz	--	U25/PWB	ASIC Reference Clock
16.367MHz	--	Y3/PWB	GPS Reference Clock
30.768KHz	--	Y7/PWB	GPS RTC

Power Supply

Manufacturer	Model #	Serial #	Type
FRIWO	3003612-0001	--	☒ Switched-mode: (Frequency) 110-250Hz ☐ Linear ☐ Other: --

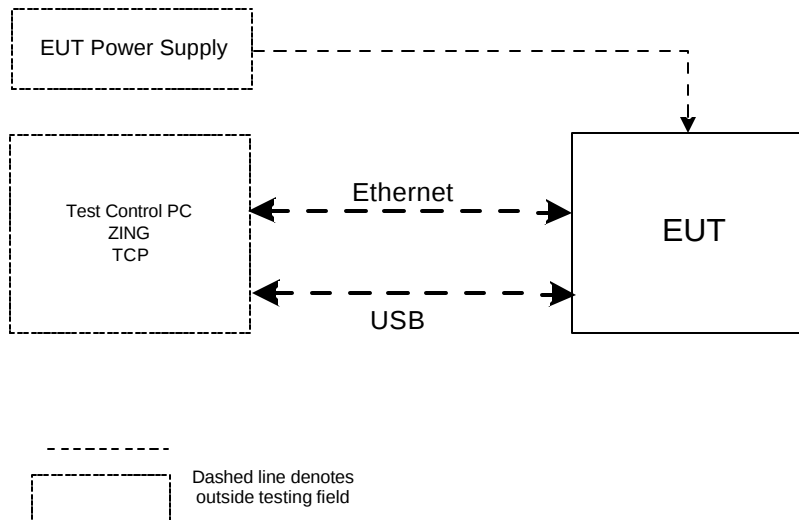
Power Line Filters		
Manufacturer	Model #	Location in EUT
Multiple	22pF	C950 PWB
Multiple	10uF	C723 PWB
Murata Electronics	3A 1206	L141

Critical EMI Components (Capacitors, ferrites, etc.)				
Description	Manufacturer	Part # or Value	Qty	Component # / Location
Ceramic Capacitor	Multiple	0.047uF	5	C839-C843 PWB
Ceramic Capacitor	Multiple	100pF	5	C835-C838, C844 PWB
Resistor	Multiple	47Ohm	5	R743, R744-R747 PWB
Resistor	Multiple	33Ohm	2	R661, R650 PWB
Ceramic Capacitor	Multiple	22pF	4	C955-C958 PWB

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

Metallic coating on bottom plastic housing. Top housing is Magnesium. All interface ports have EMI RC filters.

System Configuration Block Diagram -- Provide a line drawing identifying the EUT, simulators, support equipment, I/O cables, power cables, and any other pertinent components to be used during testing. Use a dashed line to separate the equipment in the testing field versus equipment outside testing field.



1.2 Related Submittal Grant

None

1.3 Tested System Details

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system are:

None

1.4 Test Methodology

Purpose of Test: To demonstrate compliance with the ANSI C63.4 setup.

TEST	FCC CFR 47#	PASS/FAIL
Radiated Emissions	15.209(a)	Pass
Deactivation	15.247(a)	Pass
Radiated Spurious Emissions	15.247(b)	Pass
Emissions Bandwidth	15.247(c)	Pass
Duty Cycle Measurements	ANSI C63.4, Appendix 14, Para. 10	Information Only

Both Conducted and Radiated testing were performed according to the procedures in FCC/ANSI C63.4 and CSA 108.8-M1983. Radiated testing was performed at an antenna-to-EUT distance of 3 meters (1 - 25 GHz).

1.5 Test Facility

The open area test site and conducted measurement data were tested by:

TÜV AMERICA, INC
10040 Mesa Rim Road
San Diego, CA 92121-2912
Phone: 858 546 3999
Fax: 858 546 0364

The Test Site Data and performance comply with ANSI C63.4 and are registered with the FCC, 7435 Oakland Mills Road, Columbia Maryland 21046. All Measurement Data is acquired according to the content of FCC Measurement Procedure and ANSI C63.4, unless supplemented with additional requirements as noted in the test report.

2.0 SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was initially tested for FCC emissions in the following configuration:

See Block Diagram

2.2 EUT Exercise Software

None

2.3 Special Accessories

None

2.4 Equipment Modifications

None

2.5 Configuration of Test System

See Block Diagram

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3.0 RADIATED EMISSIONS EQUIPMENT/DATA

See following page(s).

Report No. SC202038-03A

Test Conditions: RADIATED EMISSIONS: FCC Part 15.209(a)**The RADIATED EMISSIONS measurements were performed at the San Diego Testing Facility:**☐ - Test not applicable

■ - Canyon #2 (3- and 10-Meter Open Area Test Site), Carroll Canyon, San Diego

Testing was performed at a test distance of:

■ - 3 meters

Test Equipment Used:

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Due Date
LPB 2520/A	739	Antenna, Bilog	Antenna Research	1170	05/03
ESVS 30	6723	EMI Test Receiver	Rohde & Schwarz	830350/006	12/02

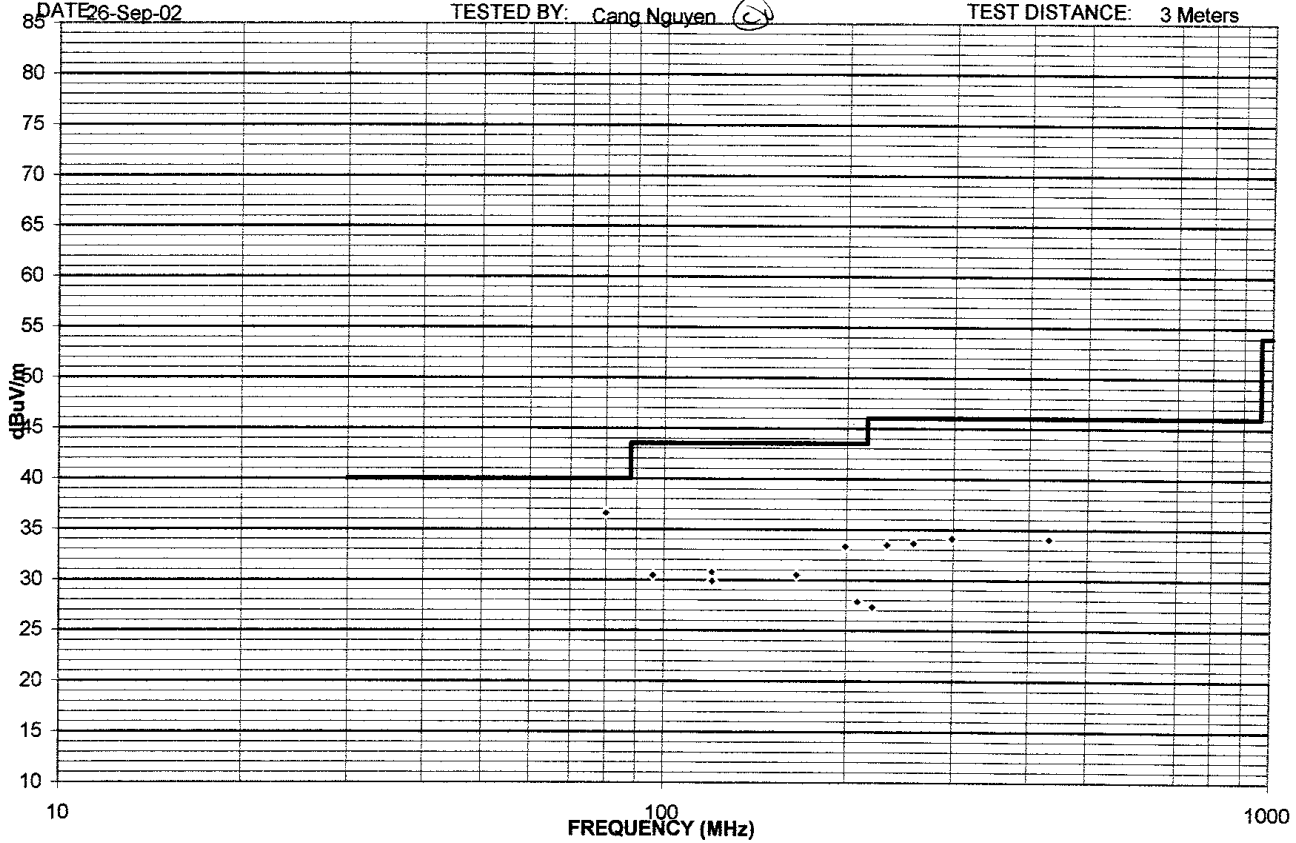
Remarks: _____

REPORT NO: SC202038
 COMPANY: Hughes Network Systems
 EUT: Inmarsat Early Entry Terminal
 EUT MODE: Transmit Channel 0
 DATE: 26-Sep-02

SPEC: FCC Part 15 para 15.109(a)

TESTED BY: Cang Nguyen (C)

TEST DISTANCE: 3 Meters



REPORT No: SC202038

SPEC: FCC Part 15 para 15.209(a)

CUSTOMER: Hughes Network Systems

TEST DIST: 3 Meters

E U T: Inmarsat Early Entry Terminal

TEST SITE: 2

EUT MODE: Transmit Channel 0

BICONICAL: 739

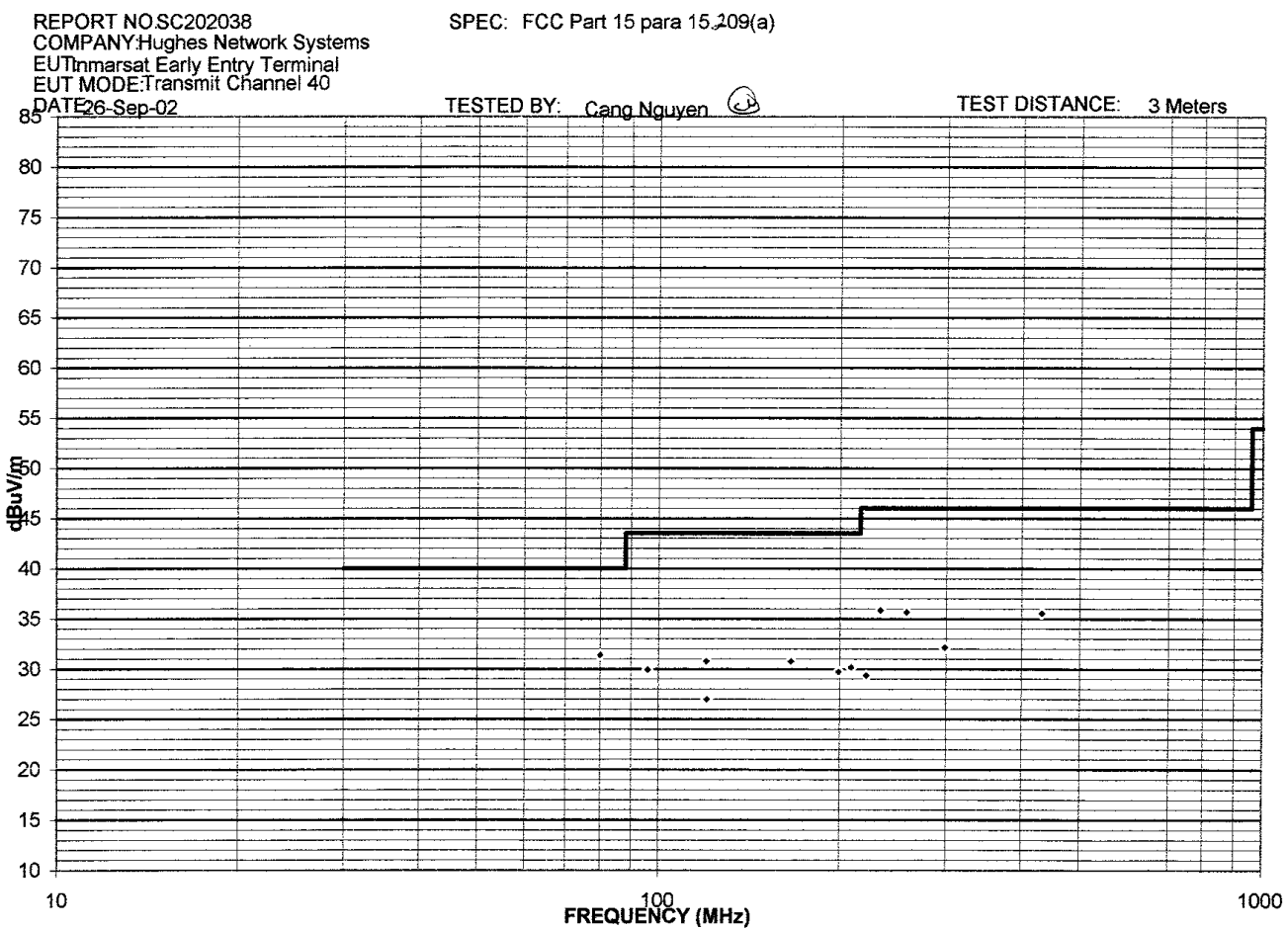
DATE: 26-Sep-02 TESTED BY: Cang Nguyen (C)

LOG PERIODIC: 739

NOTES: Quasi-Peak with 120 KHz measurement bandwidth.
110VAC 60Hz

RCVR: 6723

[illegible]



REPORT No: SC202038

SPEC: FCC Part 15 para 15.209(a)

CUSTOMER: Hughes Network Systems

TEST DIST: 3 Meters

E U T: Inmarsat Early Entry Terminal

TEST SITE: 2

EUT MODE: Transmit Channel 40

BICONICAL: 739

DATE: 26-Sep-02 TESTED BY: Cang Nguyen (C)

LOG PERIODIC: 739

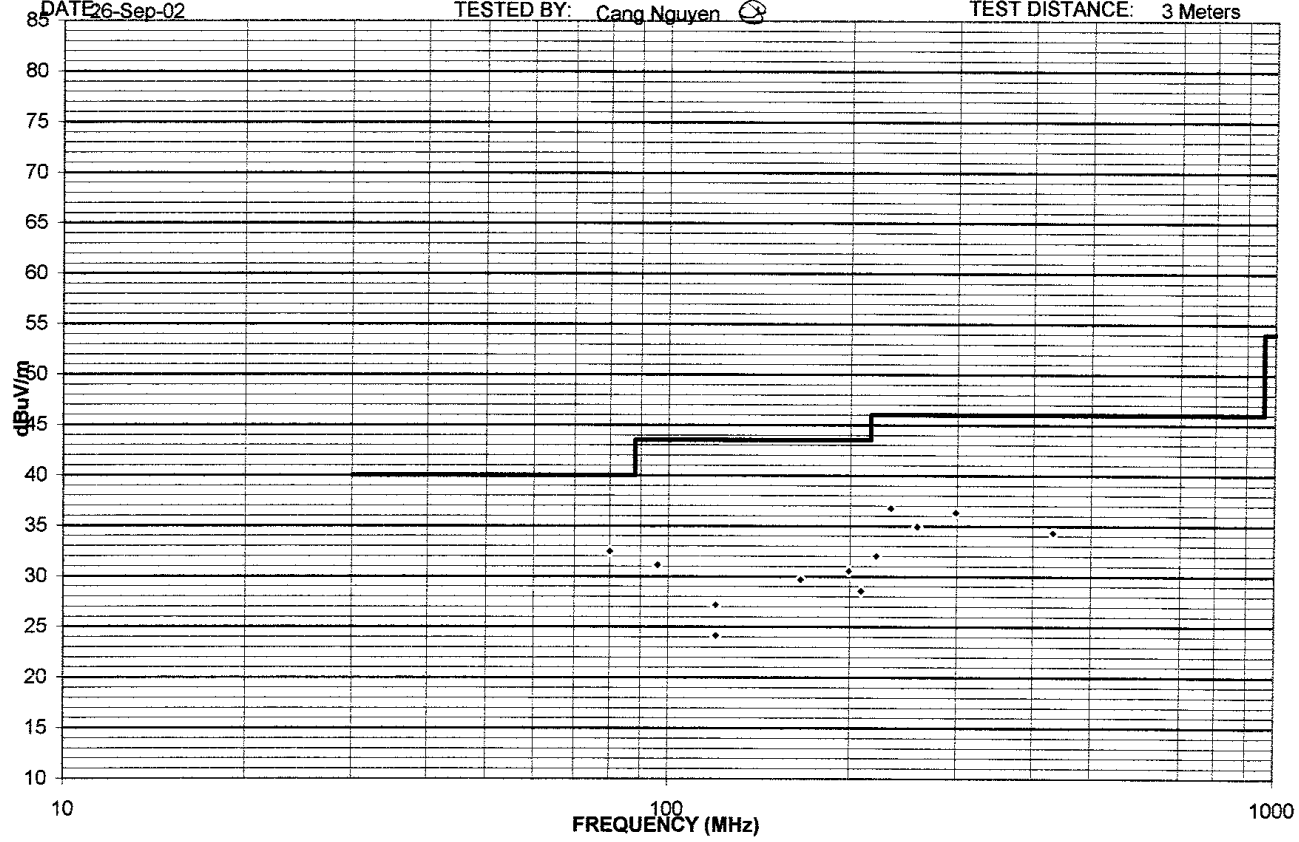
NOTES: Quasi-Peak with 120 KHz measurement bandwidth.
110VAC 60Hz

RCVR: 6723

[illegible]

REPORT NO. SC202038
 COMPANY: Hughes Network Systems
 EUT: Inmarsat Early Entry Terminal
 EUT MODE: Transmit Channel 78
 DATE: 26-Sep-02
 SPEC: FCC Part 15 para 15.209(a)
 TESTED BY: Cang Nguyen

TEST DISTANCE: 3 Meters



REPORT No: SC202038

SPEC: FCC Part 15 para 15.209(a)

CUSTOMER: Hughes Network Systems

TEST DIST: 3 Meters

E U T: Inmarsat Early Entry Terminal

TEST SITE: 2

EUT MODE: Transmit Channel 78

BICONICAL: 739

DATE: 26-Sep-02 TESTED BY: Cang Nguyen (CP)

LOG PERIODIC: 739

NOTES: Quasi-Peak with 120 KHz measurement bandwidth.
110VAC 60Hz

RCVR: 6723

Temperature: 26 Relative Humidity: 51%

EUT MARGIN

-7.5 dB at 80 MHz

ver 1.8b

[illegible]

Report No. SC202038-03A

4.0 OPERATION WITHIN THE BAND OF 2400-2483.5 MHz EQUIPMENT/DATA
5.0 MAXIMUM PEAK POWER OUTPUT < 1 WATT EQUIPMENT/DATA
6.0 RADIATED SPURIOUS EMISSIONS RESTRICTED BANDS EQUIPMENT/DATA
7.0 DUTY CYCLE MEASUREMENTS EQUIPMENT/DATA

See following page(s).

Notes and Equipment Lists for SC-202038

Hughes Network

EUT: Inmarsat Early Entry Terminal

For 15.247(a) Operation within the band of 2400-2483.5 MHz

Test Equipment Used:

Model Number	Prop. #	Description	Manufacturer	Serial No.	Cal. Dates
hp8566B	721	Spectrum Analyzer	Hewlett Packard	2542A12099	9/23/03
CBL6111	461	Bilog Antenna	Chase	1291	n.c.r.

15.247(a)(1)(ii) 20 dB Bandwidth less than 1 MHz

Spectrum Analyzer Plots demonstrate 20 dB BW as 720 kHz as measured in SR2 with Spectrum Analyzer #721 and Antenna #462

15.247(a)(1) Carrier Channel Separation greater than 20 dB Bandwidth

Spectrum Analyzer Plot demonstrate separation of 1005 kHz (typical) as measured in SR2 with Spectrum Analyzer #721 and Antenna #462

15.247(a)(1)(ii) Average time of occupancy no greater than 0.4 seconds within 30 seconds

Spectrum Analyzer Plot demonstrate time of occupancy as measured in SR2 with Spectrum Analyzer #721 and Antenna #462

Average time in 1 second = 14×0.5 milliseconds = .007 seconds

Average time in 30 seconds = 30×0.007 seconds = 210 milliseconds or 0.21 seconds

15.247(a)(1)(ii) At least 75 Hopping frequencies

Spectrum Analyzer Plot demonstrate 79 Hopping Frequencies as measured in SR2 with Spectrum Analyzer #721 and Antenna #462

For 15.247(b) Maximum Peak Power Output < 1 Watt

Data sheets report power output for Channels 0, 40 and 78 in dBuV as measured on the Roof Site with Spectrum Analyzer #407 and antenna horn #251. See below.

The following calculation was made to convert 1 watt to dBuV (see data sheets)

$E = \text{square root of } (30 \times 1 \text{ Watt} \times \text{antenna gain}) \text{ divided by distance}$

antenna gain = 1

distance = 3 meters

$E = 1.83 \text{ Volts/m}$

Converting to dBV/m:

$= 20 \times \log(\text{Volts}) + 120 \text{ dB}$

125.2

Results:

Frequency (MHz)	Max. Power Level (dBuV)		Max. Power Level (mW)	
	Peak	Average	Peak	Average
2402	96.7	82.3	1.403	0.051
2440	97.2	82.9	1.574	0.058
2480	97.3	83.0	1.611	0.060

For 15.247(c) Spurious Emissions For Restricted Bands (15.205(a))

Test Equipment Used:

Model Number	Prop. #	Description	Manufacturer	Serial No.	Cal. Dates
hp8566B	407	Spectrum Analyzer	Hewlett Packard	2311A02209	11/13/02

hp8566B	721	Spectrum Analyzer	Hewlett Packard	2542A12099	9/23/03
ESVS30	6723	EMC Receiver	Rhode & Schwartz	833825/003	12/8/02
LPB2520/A	739	Antenna, Biconical	Antenna Research	1170	5/3/03
3115	251	Antenna, Horn	Electro Mechanics Co	2595	12/1/03
3115	6669	Antenna, Horn	Electro Mechanics Co	5412-4364	12/1/03
Preamp 2-20 GHZ	719	Preamp	TUV PS	na	n.c.r.
Preamp 1-18 GHZ	6784	Preamp	Miteq/TUV PS	na	n.c.r.
CBL6111	461	Bilog Antenna	Chase	1291	n.c.r.
12A-18	6377	Antenna, Horn	M.I. Technologies	215300	n.c.r.
11975A	6381	Amplifier	Hewlett Packard	2517A00639	n.c.r.
11970K	6386	Harmonic Mixer	Hewlett Packard	3003A05400	n.c.r.

Duty Cycle was measured in SR2 with Spectrum Analyzer #721 and Antenna 461

"On Time" was found to be 520 microseconds (typical burst) x 37 bursts in a 100 millisecond time period

Duty Cycle = .52 ms x 37 / 100 ms x 100 % = 19.2 %

No emissions other than the intentional radiators were evident. Investigations were documented by data sheets for Channels 0, 40, 78, Spectrum Analyzer plots for Duty Cycle, frequency scans from 7500 MHz to 18000 MHz and from 18000 MHz to 24000 MHz

Data sheets report emissions found from 30 MHz to 1000 MHz as measured at OATS Canyon 2 with the receiver #6723 and antenna #739.

Data Sheets report no emissions from 1000 MHz to 18000 MHz as measured on the Roof Site with Spectrum Analyzer #407, preamplifier #719, antenna horn #251.

Due to the 2483.5 to 2500 MHz restricted band adjacent to the authorized band of operation, for Channel 78 a Band Edge measurement was required at 2483.5 the highest emission in 2483.5 to 2500 MHz

The Channel 78 frequency fundamental was measured:

	Ant. Vert	Ant. Horz	
with 1 MHz BW	62.3	60.7	(peak measured values- dBuV)
with 30 kHz BW	59.7	58.3	
difference:	2.6	2.4	

The band edge emission was found to be:

	28.7	25.6
--	------	------

Therefore the emissions were reported as

	26.1	23.2	dBuV
--	------	------	------

For average emissions, due to the pulse modulation, the duty cycle was used to calculate average:

Duty Cycle	19.2	%
------------	------	---

Average emission strength = peak emission strength + 20 x log (duty cycle)

Spectrum Analyzer Plots confirm no emissions from 7500 MHz to 18000 MHz as measured in SR5 with Spectrum Analyzer #721, preamplifier #6784, antenna horn #453

Spectrum Analyzer Plots confirm no emissions from 18000 MHz to 24000 MHz as measured in SR5 with Spectrum Analyzer #721, preamplifier #6784, antenna horn #453, preamplifier 6381, harmonic mixer 6386

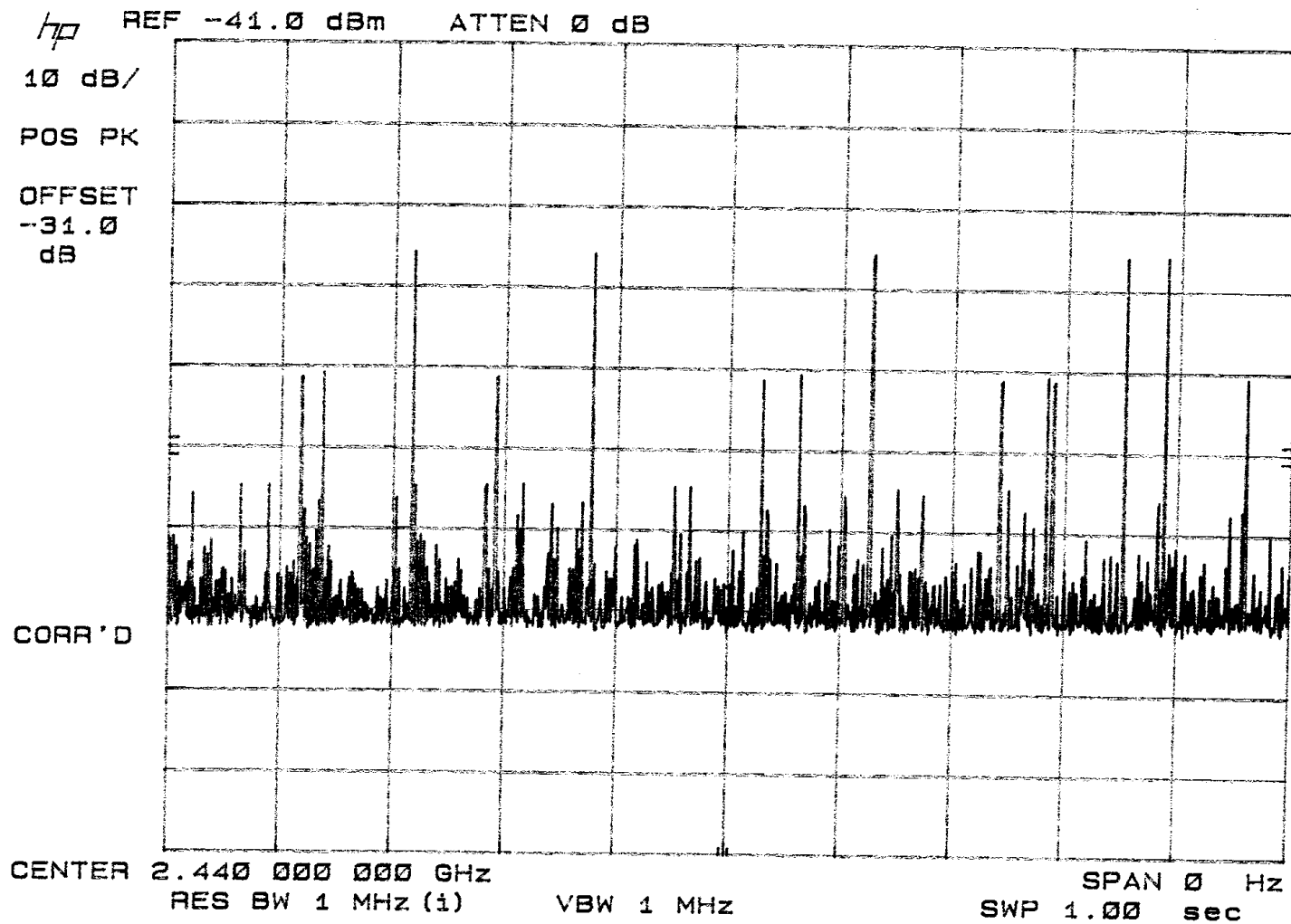
Hughes SC-202038

INMARSAT EARLY ENTRY TERMINAL

Sept.24, 2002

47 CFR Part 15.247 (a)(1)(ii) Average Occupancy Time

Test Room:SR2 / TEST ENGR: AAL *RAB*



CF = Antenna Factor + Cable Loss

TÜV AMERICA, INC. 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 546 3999 FAX 858 546 0364

CF = Antenna Factor + Cable Loss

v.beta231

CF = Antenna Factor + Cable Loss

TÜV AMERICA, INC. 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 546 3999 FAX 858 546 0364

v.beta231

[illegible]

CF = Antenna Factor + Cable Loss - Preamplifier Gain

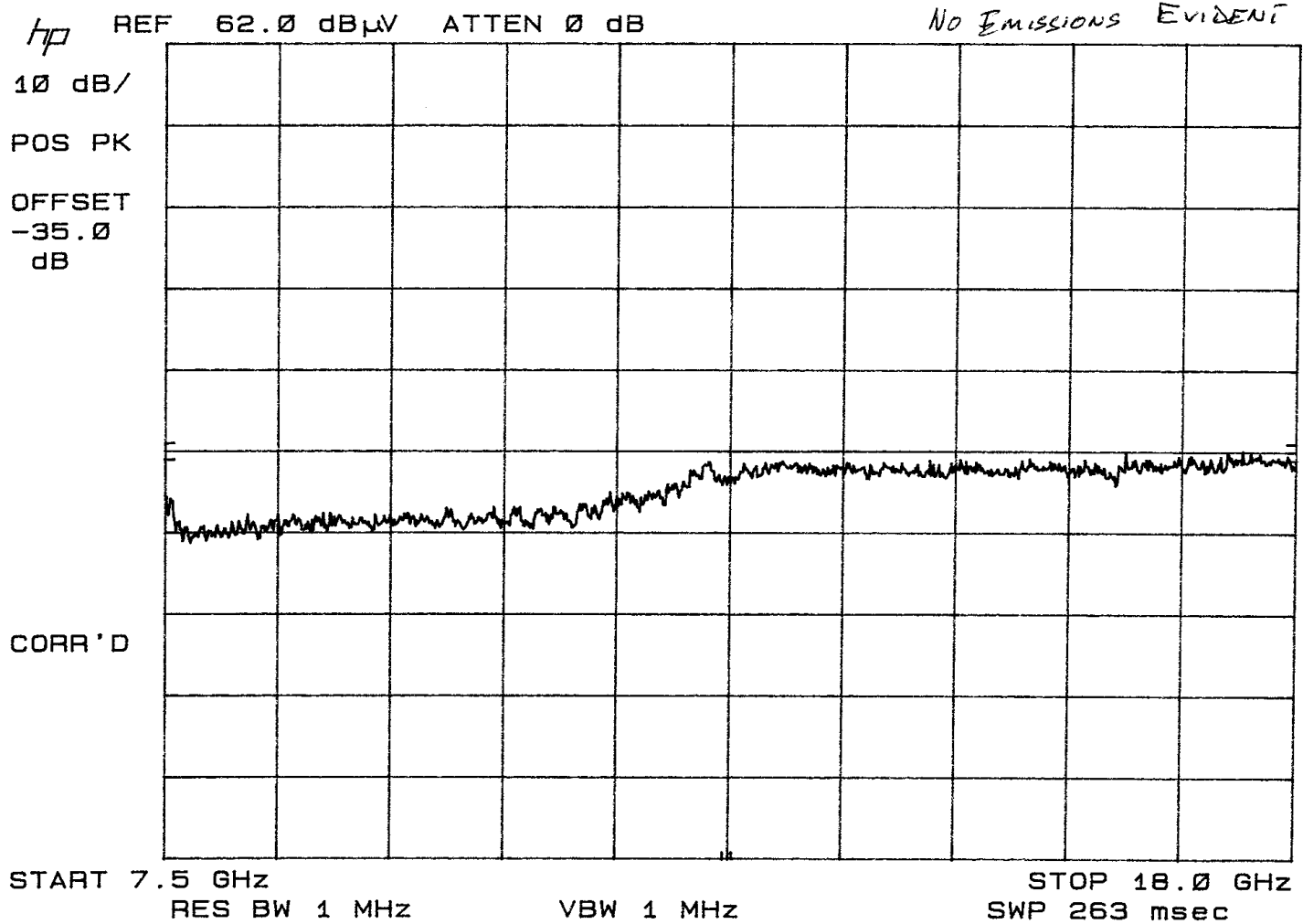
TÜV AMERICA, INC. 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone 858 546 3999 FAX 858 546 0364

v.beta231

[illegible]

Hughes SC-202038 INMARSAT EARLY ENTRY TERMINAL
47 CFR Part 15.247(c) Radiated Spurious
47 CFR Part 15.205(a) Restricted Bands - Channel 0

Sept.25, 2002
Test Room:SR5 / TEST ENGR: AAL *AAL*
ANT: VERTICAL



Hughes SC-202038

INMARSAT EARLY ENTRY TERMINAL

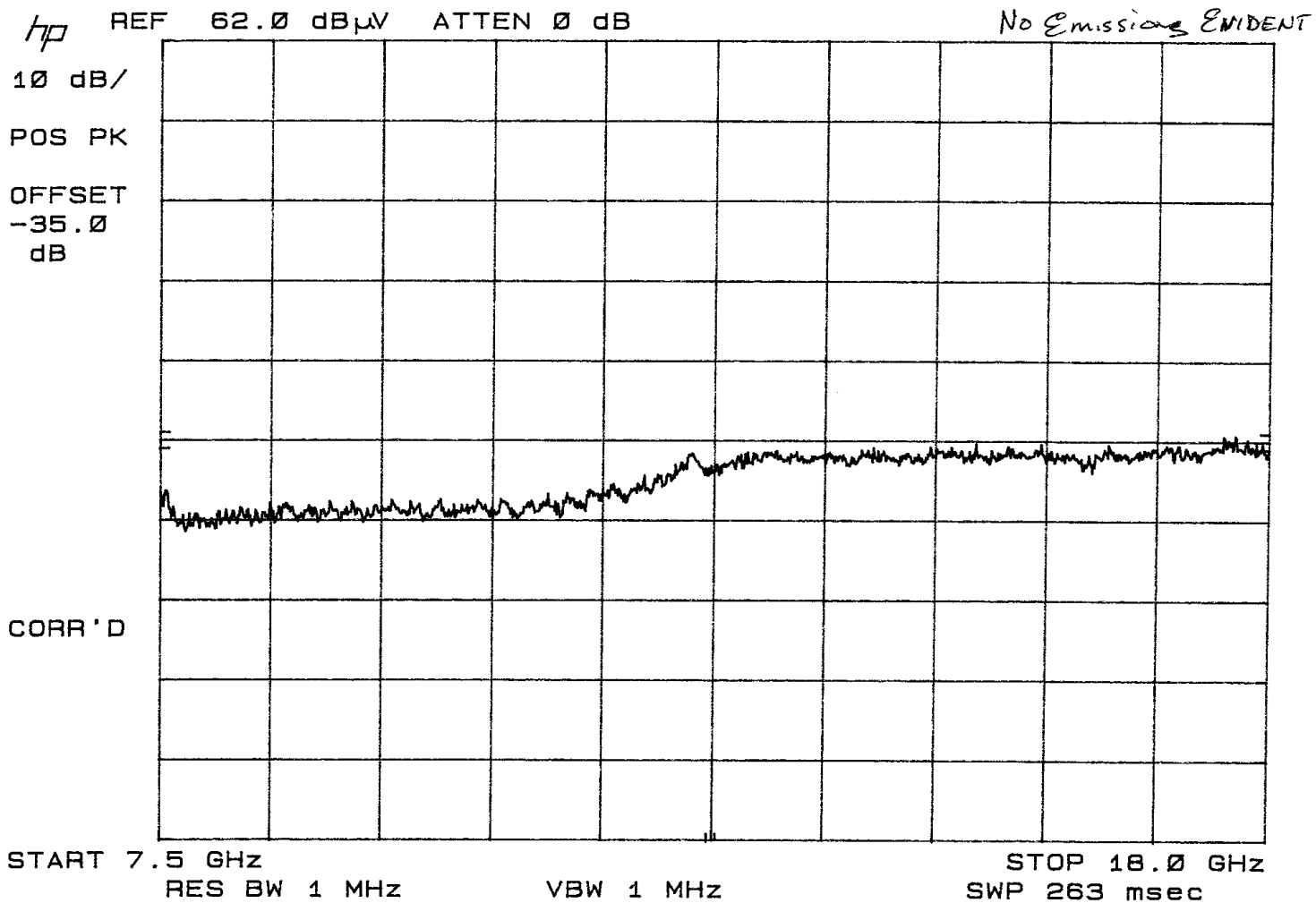
Sept.25, 2002

47 CFR Part 15.247(c) Radiated Spurious

Test Room:SR5 / TEST ENGR: AAL *AAL*

47 CFR Part 15.205(a) Restricted Bands - Channel 0

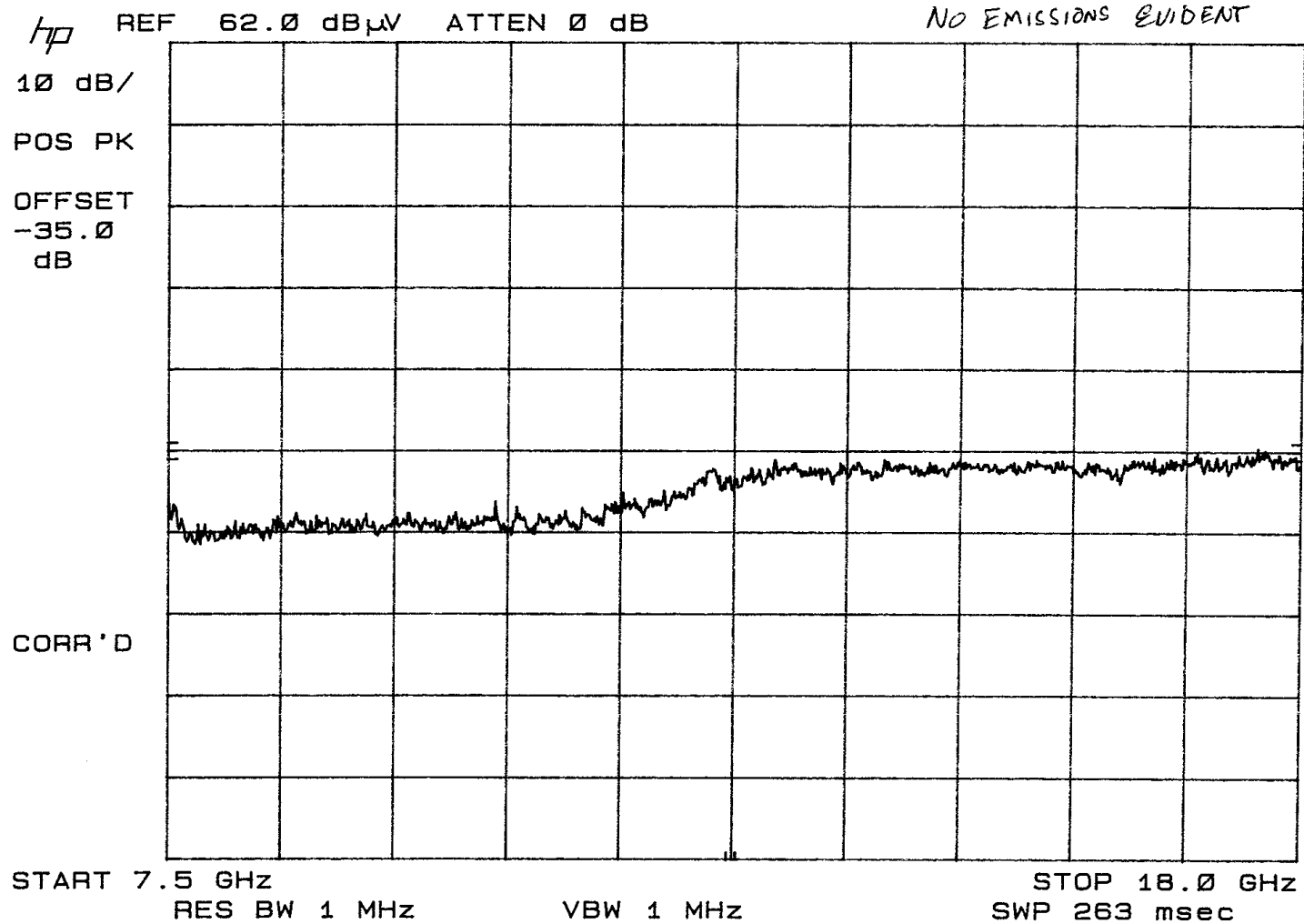
ANT: HORIZONTAL



Hughes SC-202038
47 CFR Part 15.247(c) Radiated Spurious
47 CFR Part 15.205(a) Restricted Bands - Channel 40

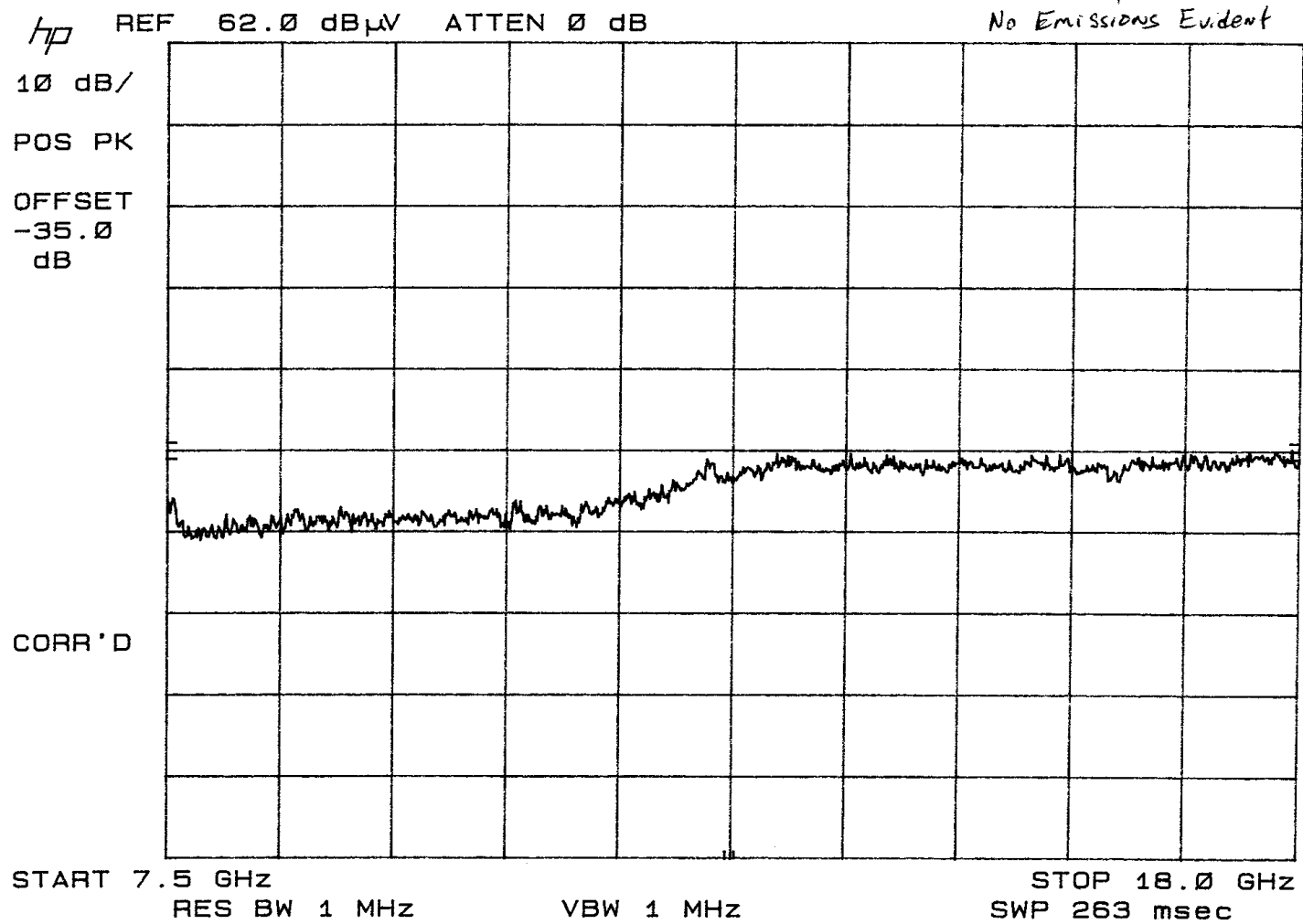
INMARSAT EARLY ENTRY TERMINAL

Sept. 25, 2002
Test Room: SR5 / TEST ENGR: AAL *RA*
ANT: VERTICAL



Hughes SC-202038 INMARSAT EARLY ENTRY TERMINAL
47 CFR Part 15.247(c) Radiated Spurious
47 CFR Part 15.205(a) Restricted Bands - Channel 40

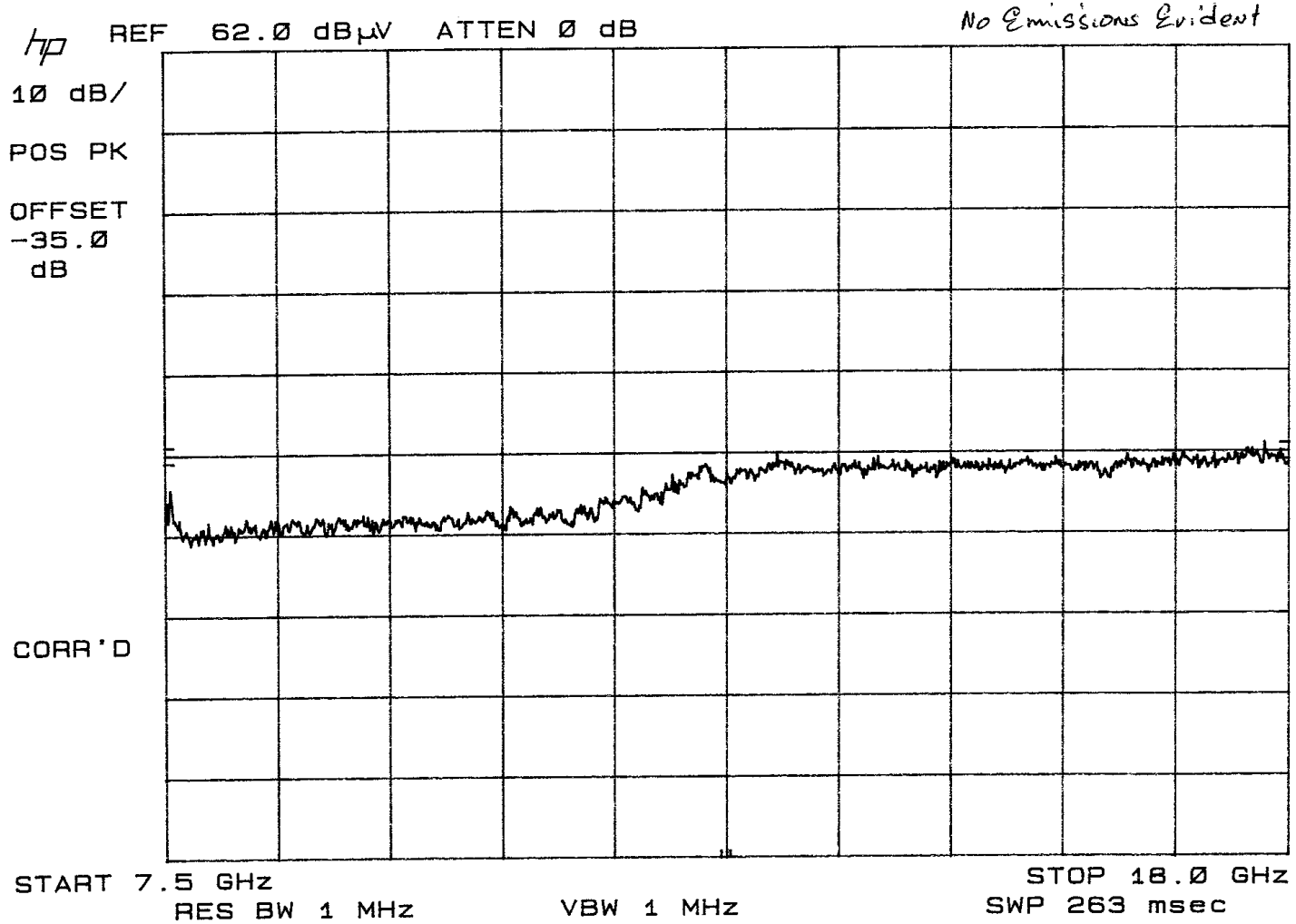
Sept.25, 2002
Test Room:SR5 / TEST ENGR: AAL AAS
ANT: HORIZONTAL



Hughes SC-202038
47 CFR Part 15.247(c) Radiated Spurious
47 CFR Part 15.205(a) Restricted Bands - Channel 78

INMARSAT EARLY ENTRY TERMINAL

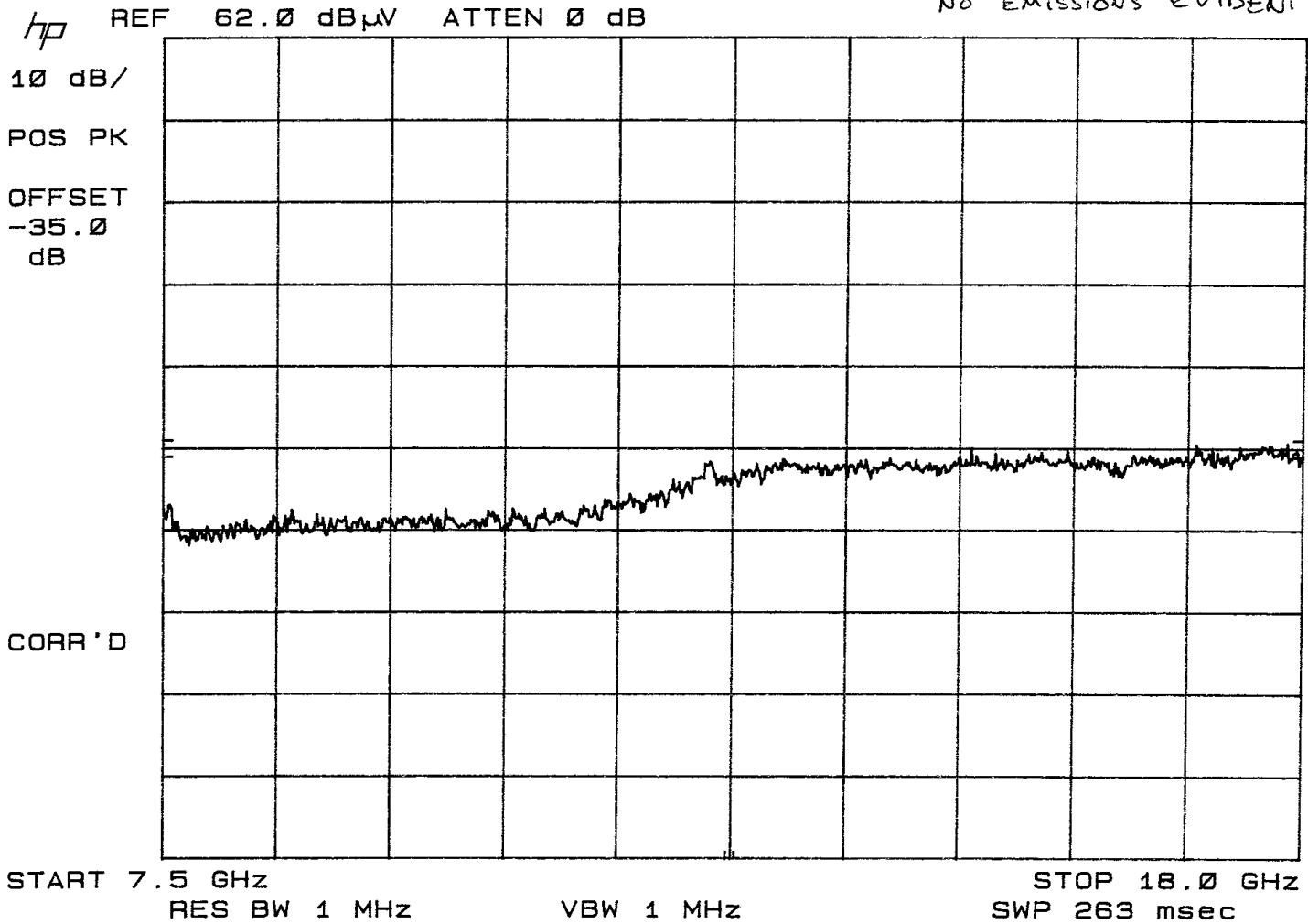
Sept.25, 2002
Test Room:SR5 / TEST ENGR: AAL *AAL*
ANT: HORIZONTAL



Hughes SC-202038
47 CFR Part 15.247(c) Radiated Spurious
47 CFR Part 15.205(a) Restricted Bands - Channel 78

INMARSAT EARLY ENTRY TERMINAL

Sept.25, 2002
Test Room:SR5 / TEST ENGR: AAL *AAL*
ANT: VERTICAL
NO EMISSIONS EVIDENT



Hughes SC-202038

INMARSAT EARLY ENTRY TERMINAL

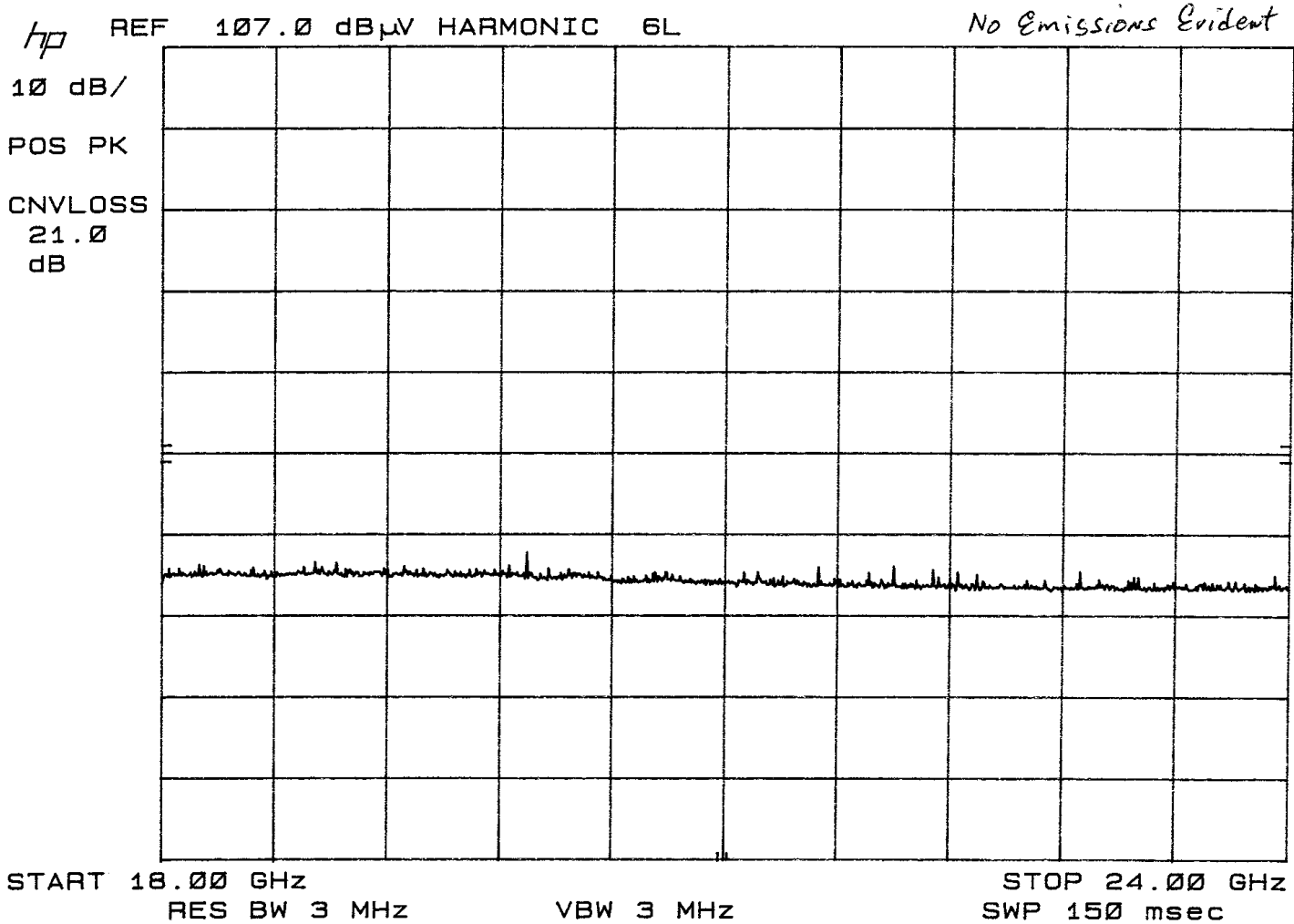
Sept.25, 2002

47 CFR Part 15.247(c) Radiated Spurious

Test Room:SR5 / TEST ENGR: AAL *AAL*

47 CFR Part 15.205(a) Restricted Bands - Channel 78

ANT: VERTICAL



Hughes SC-202038

INMARSAT EARLY ENTRY TERMINAL

Sept.25, 2002

47 CFR Part 15.247(c) Radiated Spurious

Test Room:SR5 / TEST ENGR: AAL

47 CFR Part 15.205(a) Restricted Bands - Channel 78

ANT: HORIZONTAL

hp REF 107.0 dBμV HARMONIC 6L

No Emissions Evident

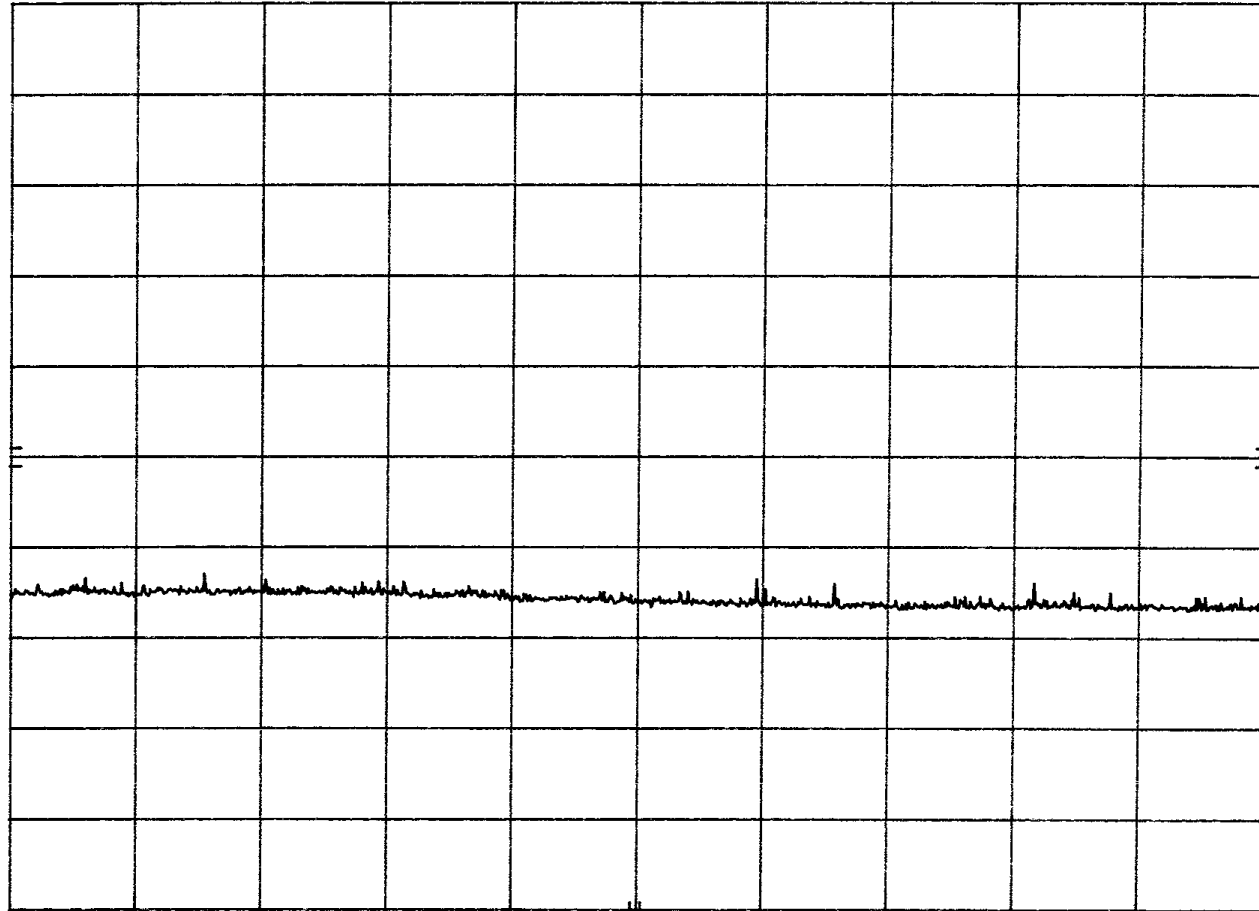
10 dB/

POS PK

CNVLOSS

21.0

dB



START 18.00 GHz

RES BW 3 MHz

VBW 3 MHz

STOP 24.00 GHz

SWP 150 msec

Hughes SC-202038

INMARSAT EARLY ENTRY TERMINAL

Sept.25, 2002

47 CFR Part 15.247(c) Radiated Spurious

Test Room:SR5 / TEST ENGR: AAL

AAL

47 CFR Part 15.205(a) Restricted Bands - Channel 40

ANT: HORIZONTAL

hp REF 107.0 dBμV HARMONIC 6L

No Emissions Evident

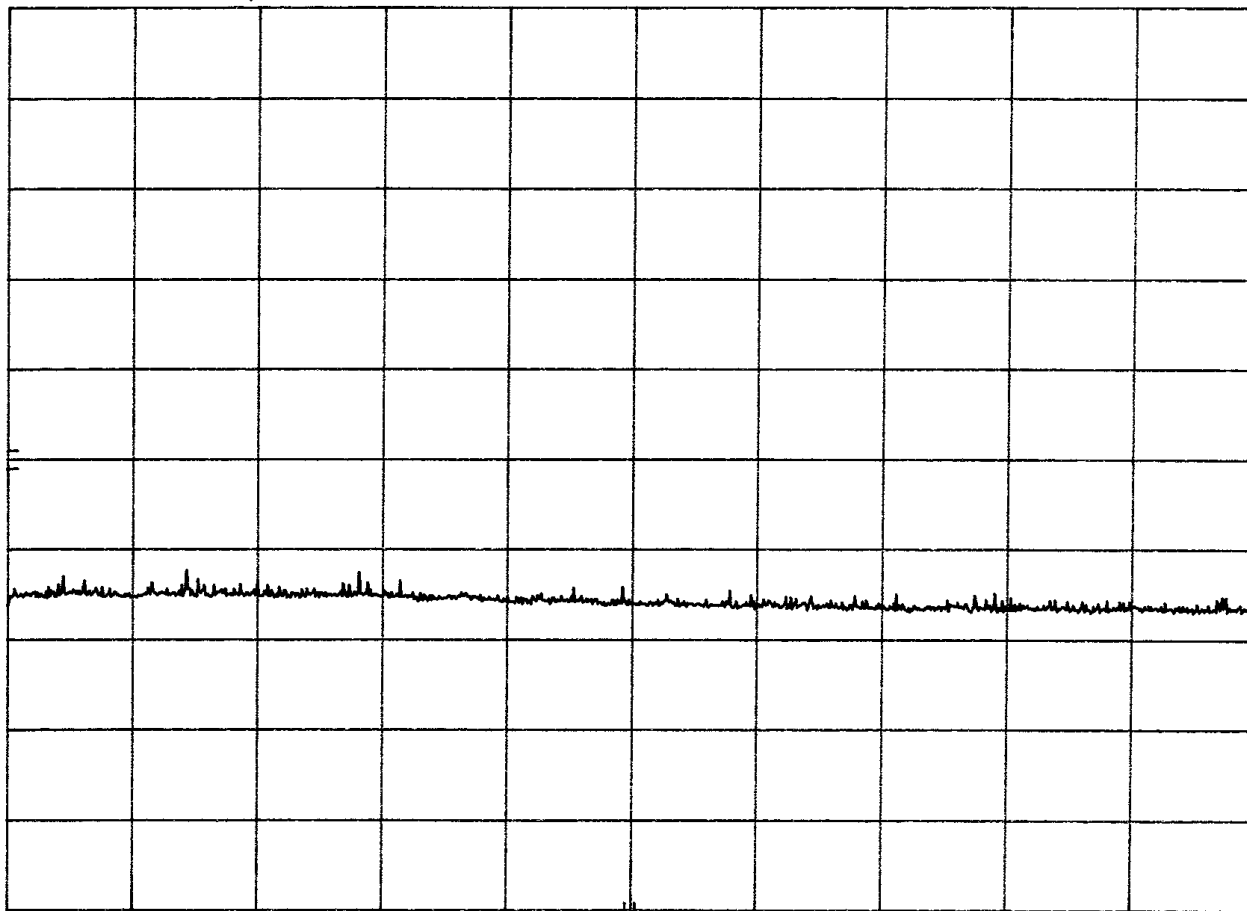
10 dB/

POS PK

CNVLOSS

21.0

dB



START 18.00 GHz

RES BW 3 MHz

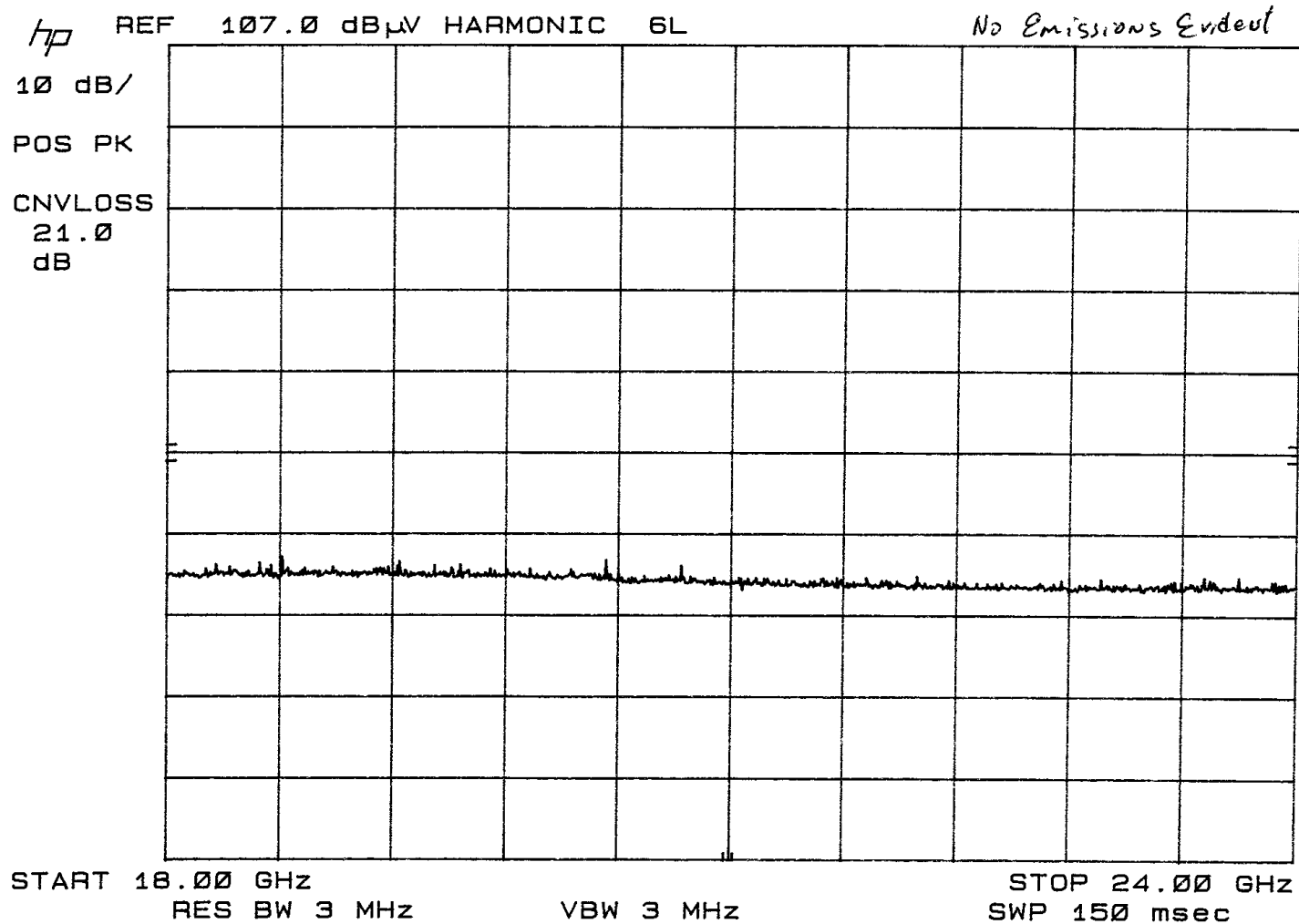
VBW 3 MHz

STOP 24.00 GHz

SWP 150 msec

Hughes SC-202038 INMARSAT EARLY ENTRY TERMINAL
 47 CFR Part 15.247(c) Radiated Spurious
 47 CFR Part 15.205(a) Restricted Bands - Channel 40

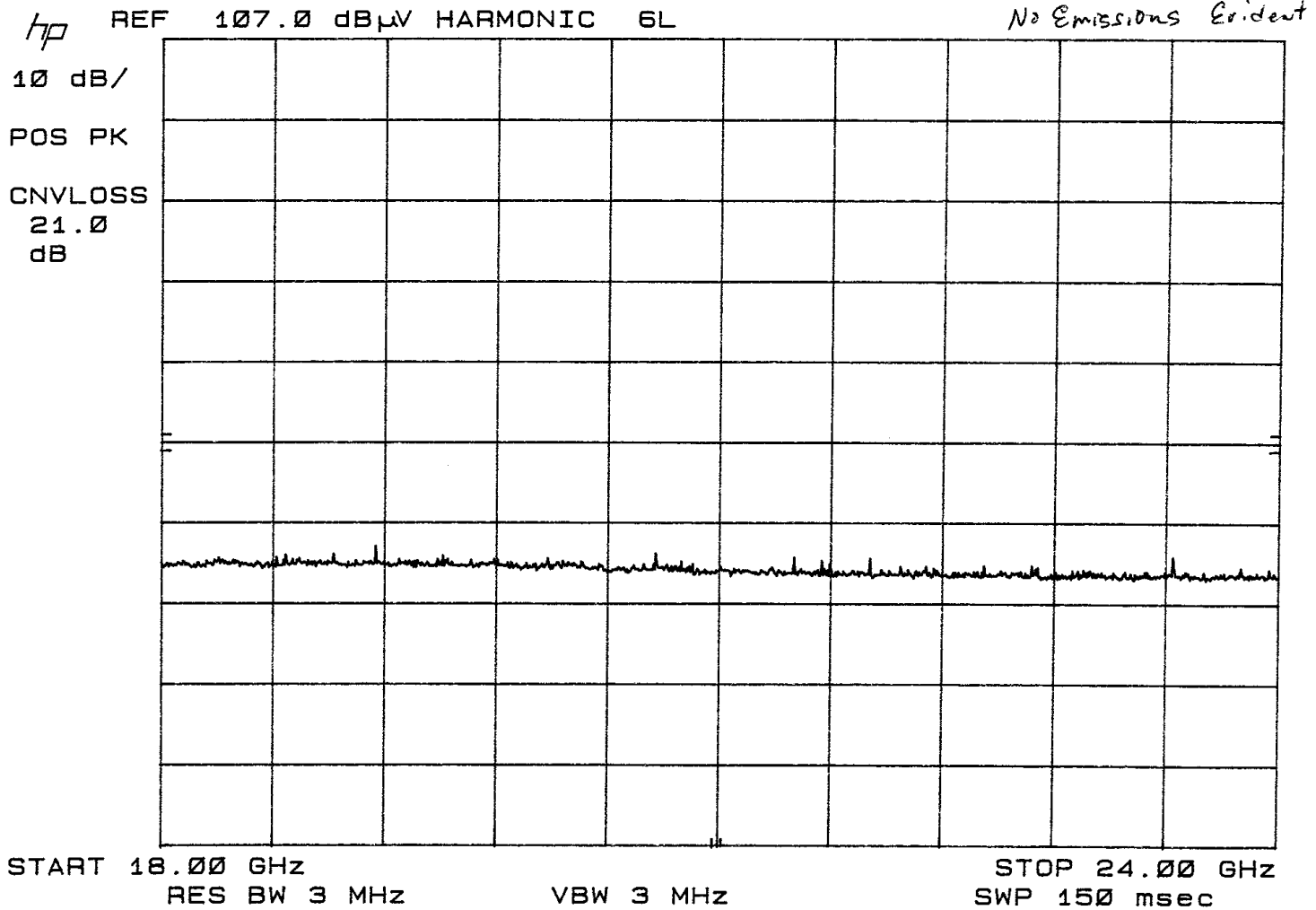
Sept.25, 2002
 Test Room:SR5 / TEST ENGR: AAL *AN*
 ANT: VERTICAL



Hughes SC-202038
47 CFR Part 15.247(c) Radiated Spurious
47 CFR Part 15.205(a) Restricted Bands - Channel 0

INMARSAT EARLY ENTRY TERMINAL

Sept.25, 2002
Test Room:SR5 / TEST ENGR: AAL *KAF*
ANT: VERTICAL



Hughes SC-202038

INMARSAT EARLY ENTRY TERMINAL

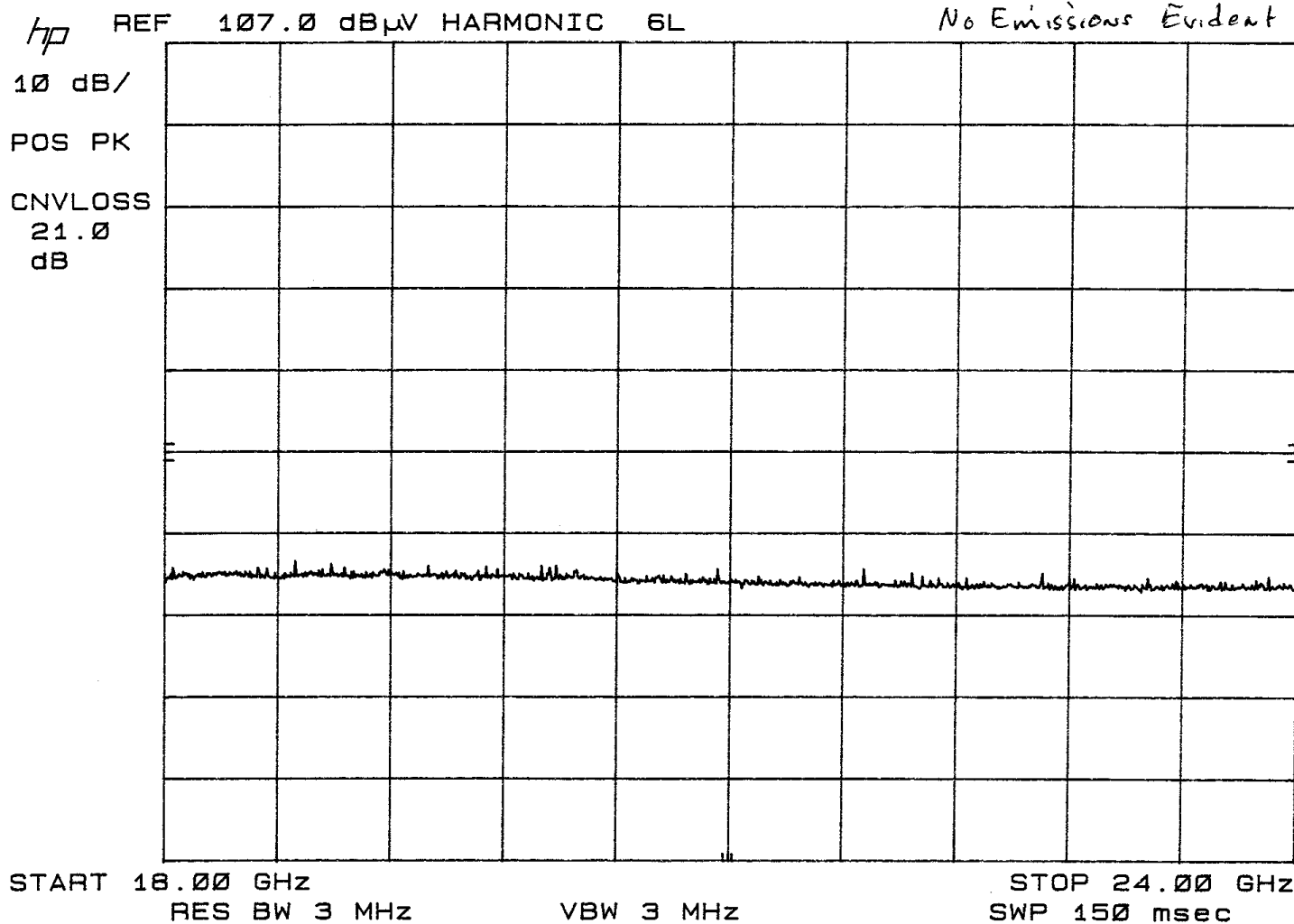
Sept.25, 2002

47 CFR Part 15.247(c) Radiated Spurious

Test Room:SR5 / TEST ENGR: AAL *AAL*

47 CFR Part 15.205(a) Restricted Bands - Channel 0

ANT: HORIZONTAL



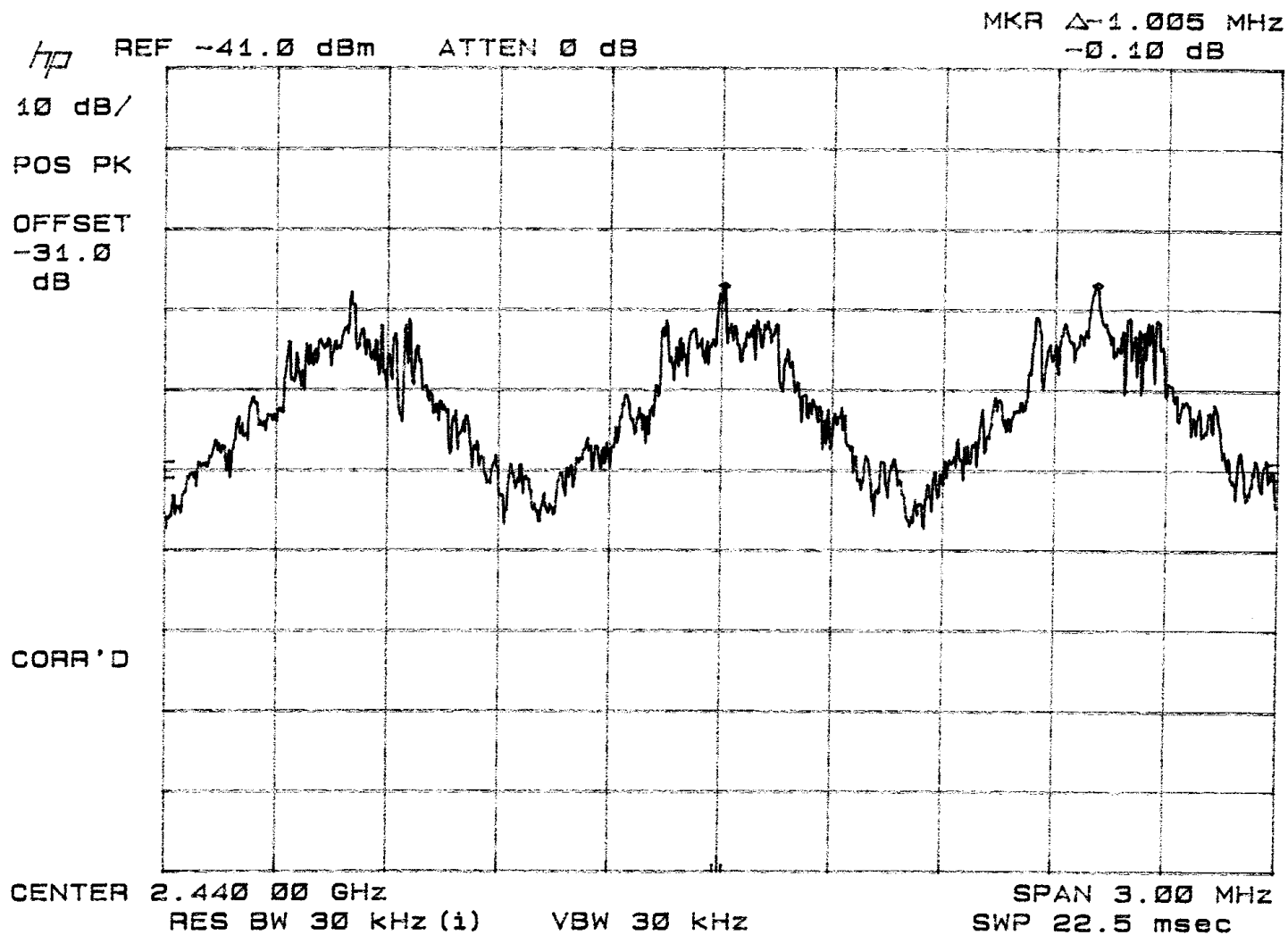
Hughes SC-202038

47 CFR Part 15.247 (a)(1) Carrier Channel Separation > 720 kHz

INMARSAT EARLY ENTRY TERMINAL

Sept.24, 2002

Test Room:SR2 / TEST ENGR: AAL *AA*



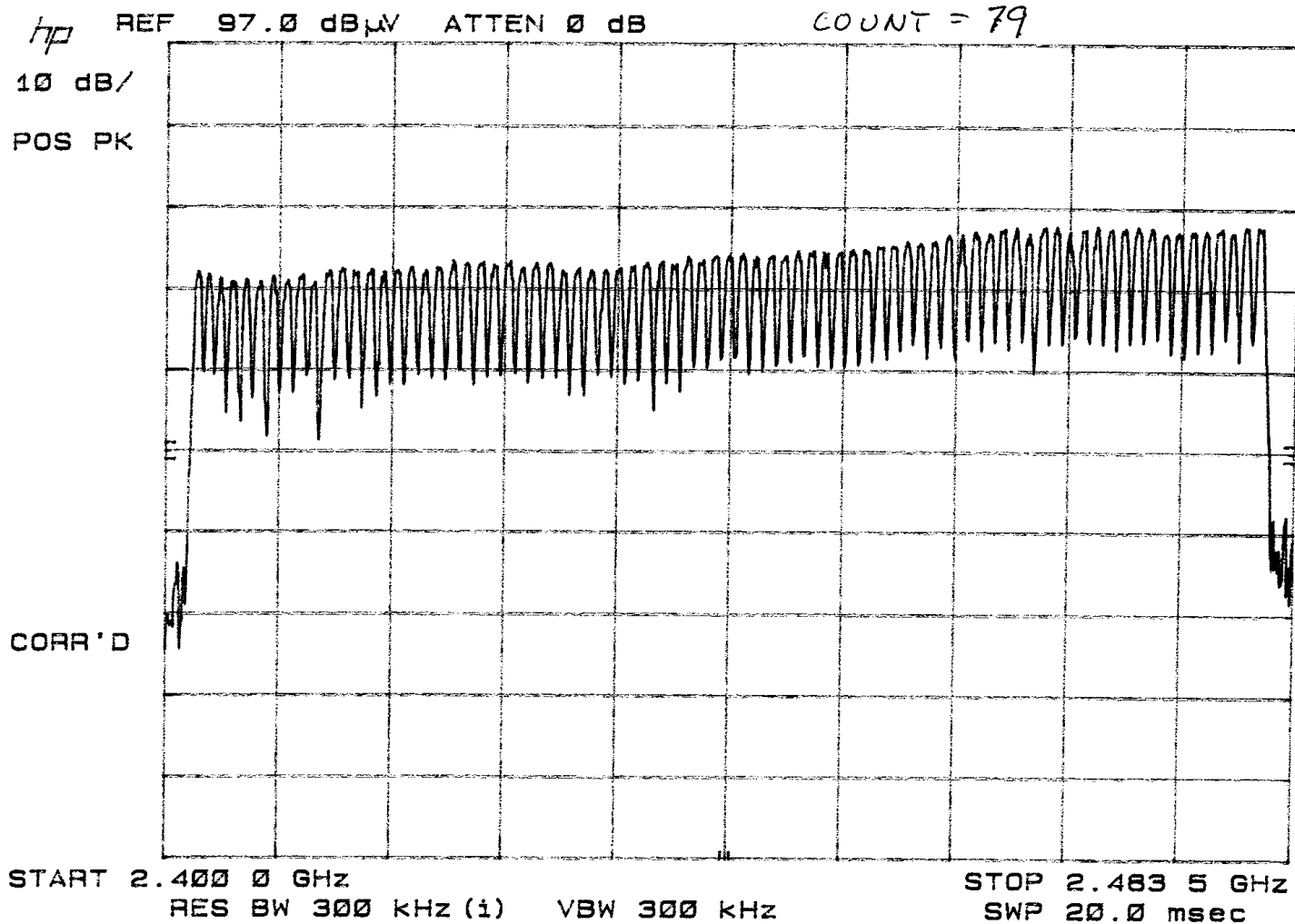
Hughes SC-202038

INMARSAT EARLY ENTRY TERMINAL

Sept.24, 2002

47 CFR Part 15.247 (a)(1)(ii) Number Hopping Frequencies > 75

Test Room:SR2 / TEST ENGR: AAL *AA*



Hughes SC-202038

INMARSAT EARLY ENTRY TERMINAL

Sept.24, 2002

47 CFR Part 15.247 (a)(1)(ii) 20 dB Bandwidth < 1 MHz

Test Room:SR2 / TEST ENGR: AAL *AAL*

Channel 78

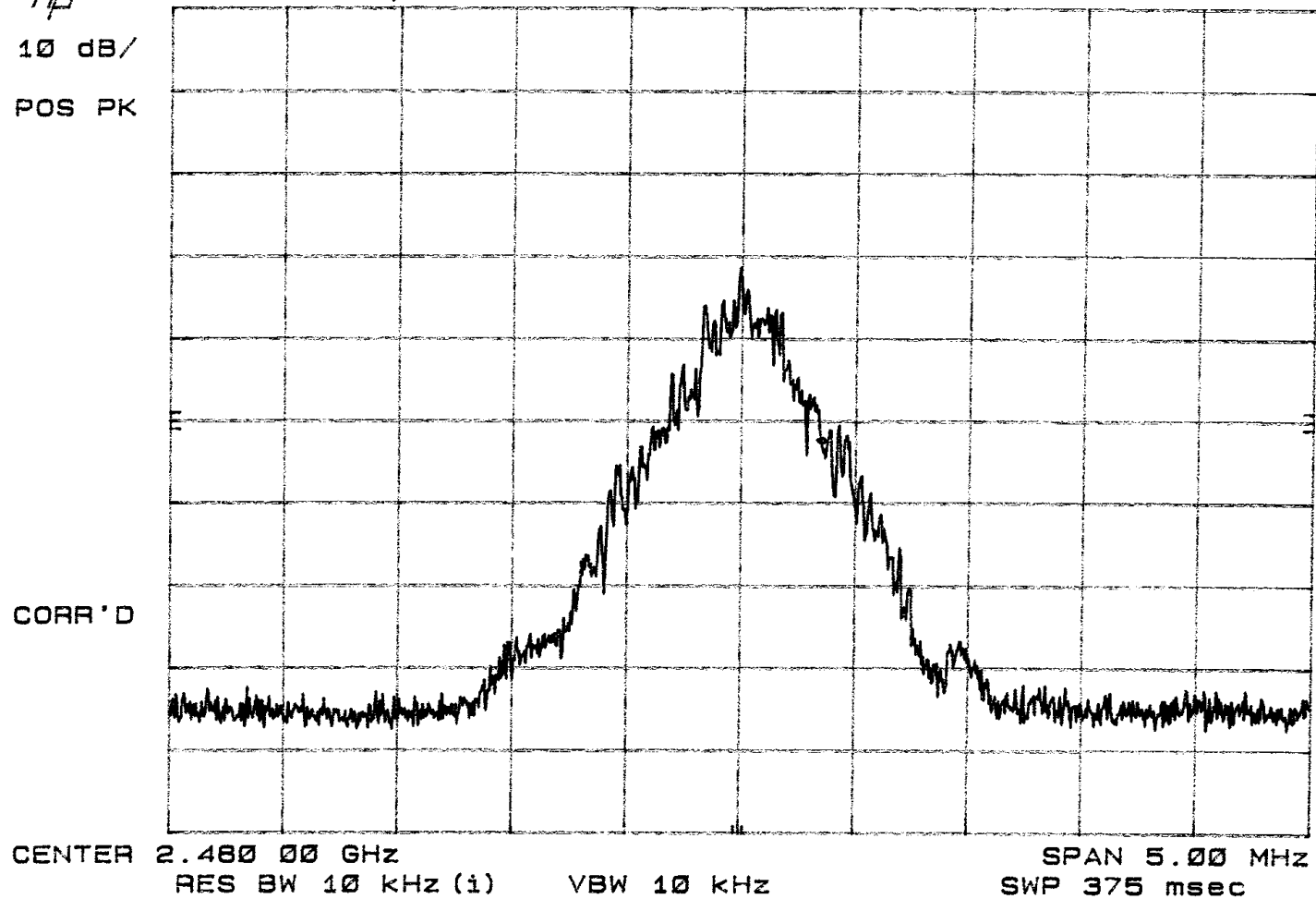
MKR Δ 720 KHz
-0.80 dB

hp REF 100.0 dB μ V ATTEN 10 dB

10 dB/

POS PK

CORR'D



Hughes SC-202038

INMARSAT EARLY ENTRY TERMINAL

Sept.24, 2002

47 CFR Part 15.247 (a)(1)(ii) 20 dB Bandwidth < 1 MHz

Test Room:SR2 / TEST ENGR: AAL *AK*

Channel 40

MKR Δ 660 KHz

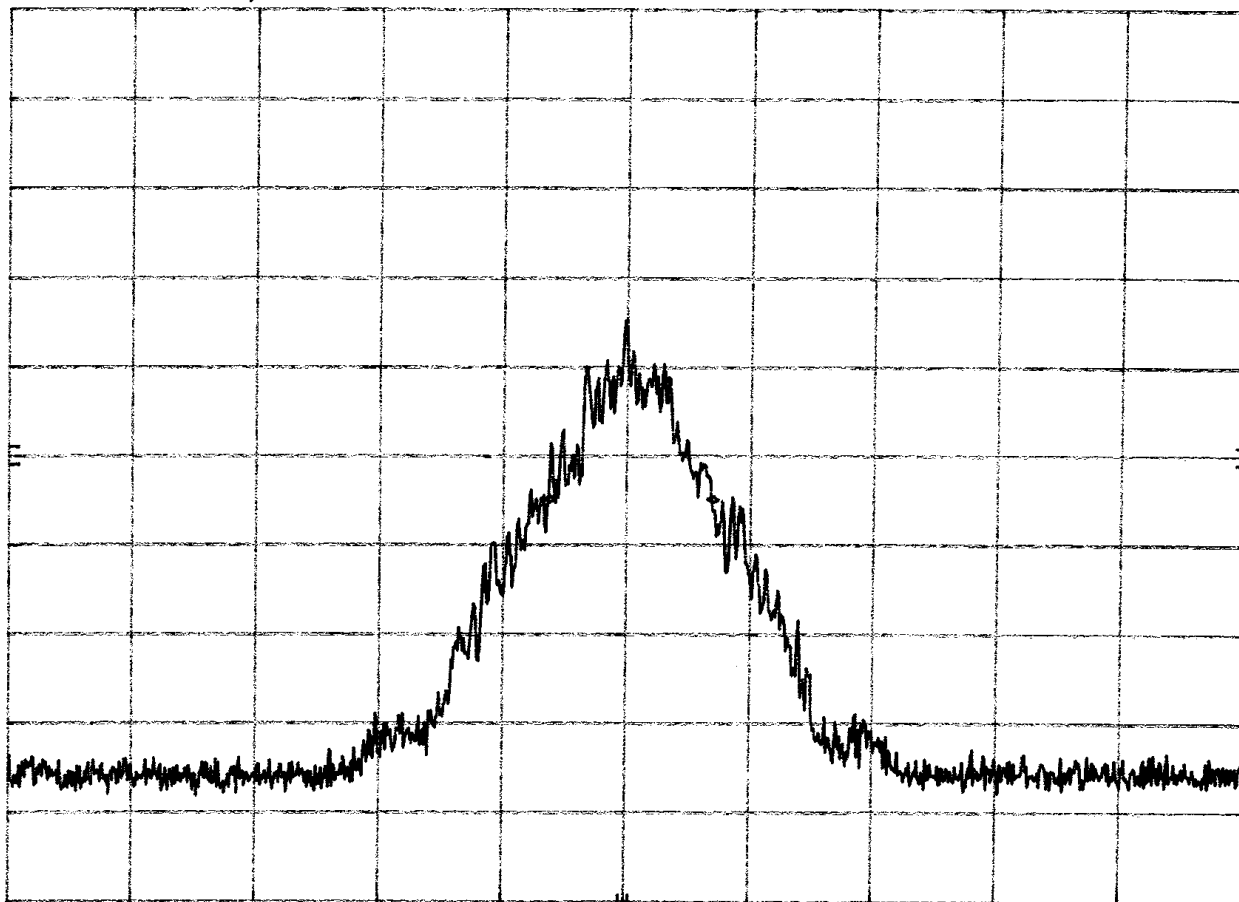
0.00 dB

HP REF 100.0 dB μ V ATTEN 10 dB

10 dB/

POS PK

CORR'D



CENTER 2.442 00 GHz

RES BW 10 KHz (1)

VBW 10 KHz

SPAN 5.00 MHz

SWP 375 msec

Hughes SC-202038

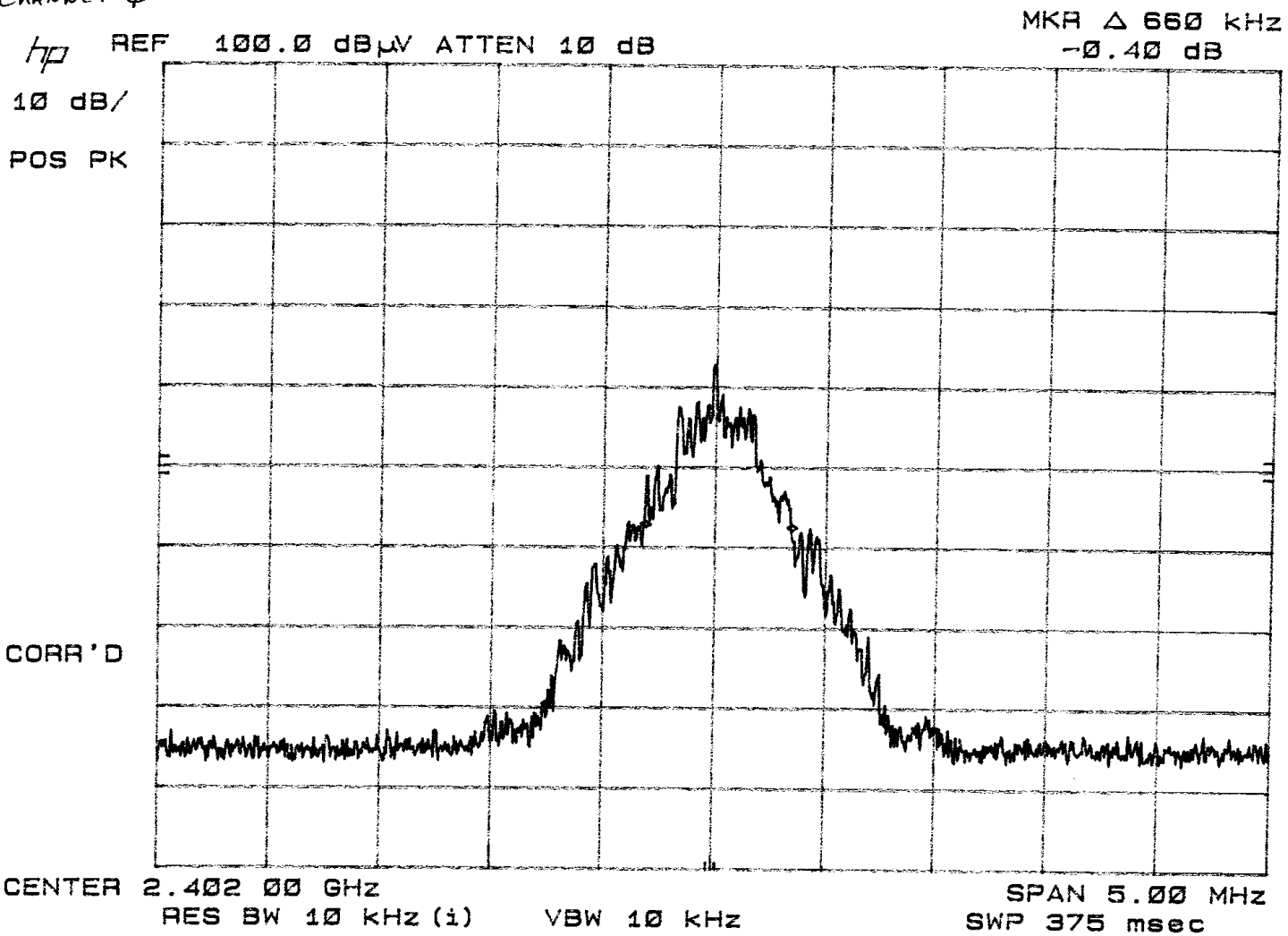
INMARSAT EARLY ENTRY TERMINAL

Sept.24, 2002

47 CFR Part 15.247 (a)(1)(ii) 20 dB Bandwidth < 1 MHz

Test Room:SR2 / TEST ENGR: AAL *AK*

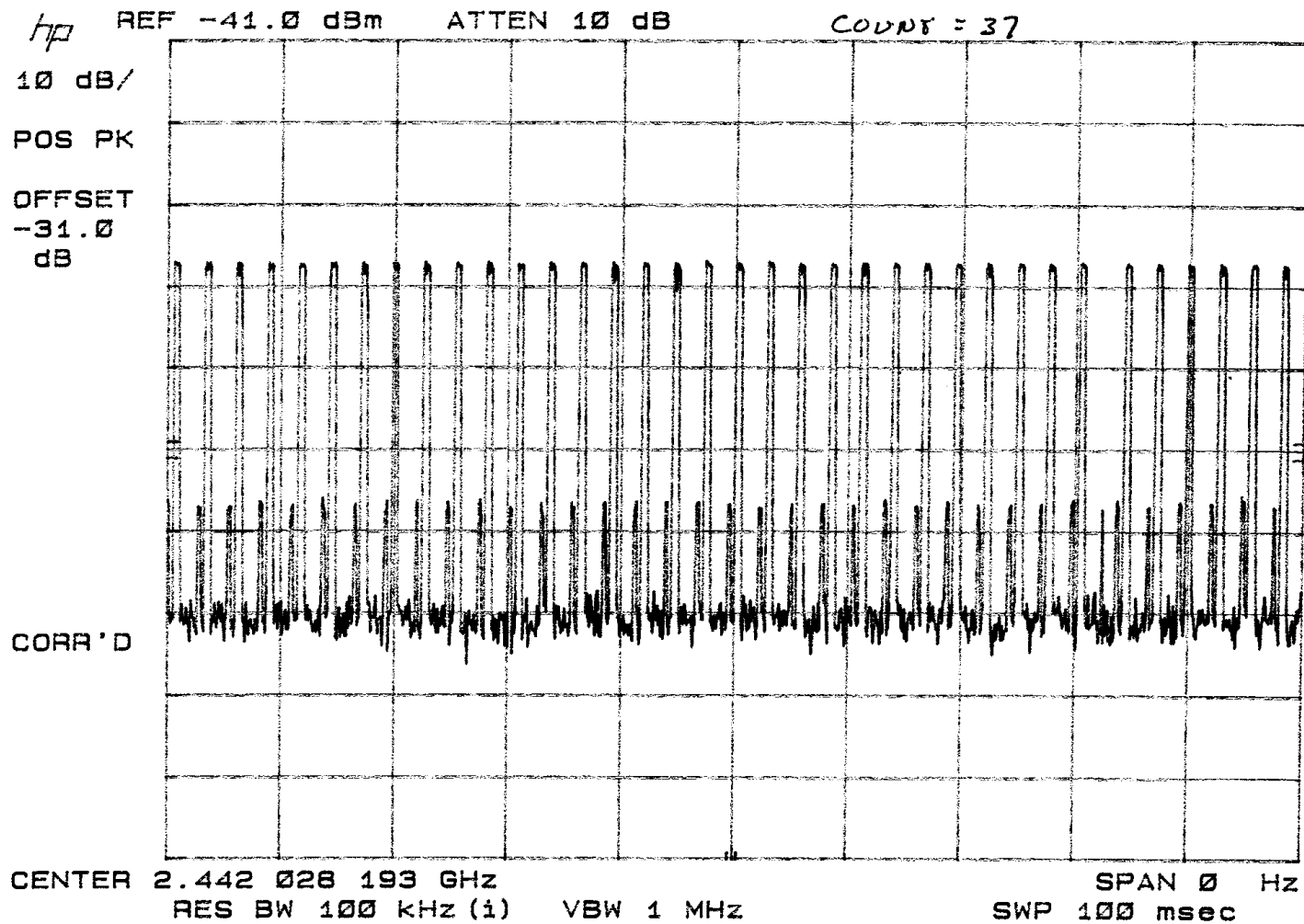
Channel ϕ



Hughes SC-202038
47 CFR Part 15.247 Duty Cycle

INMARSAT EARLY ENTRY TERMINAL

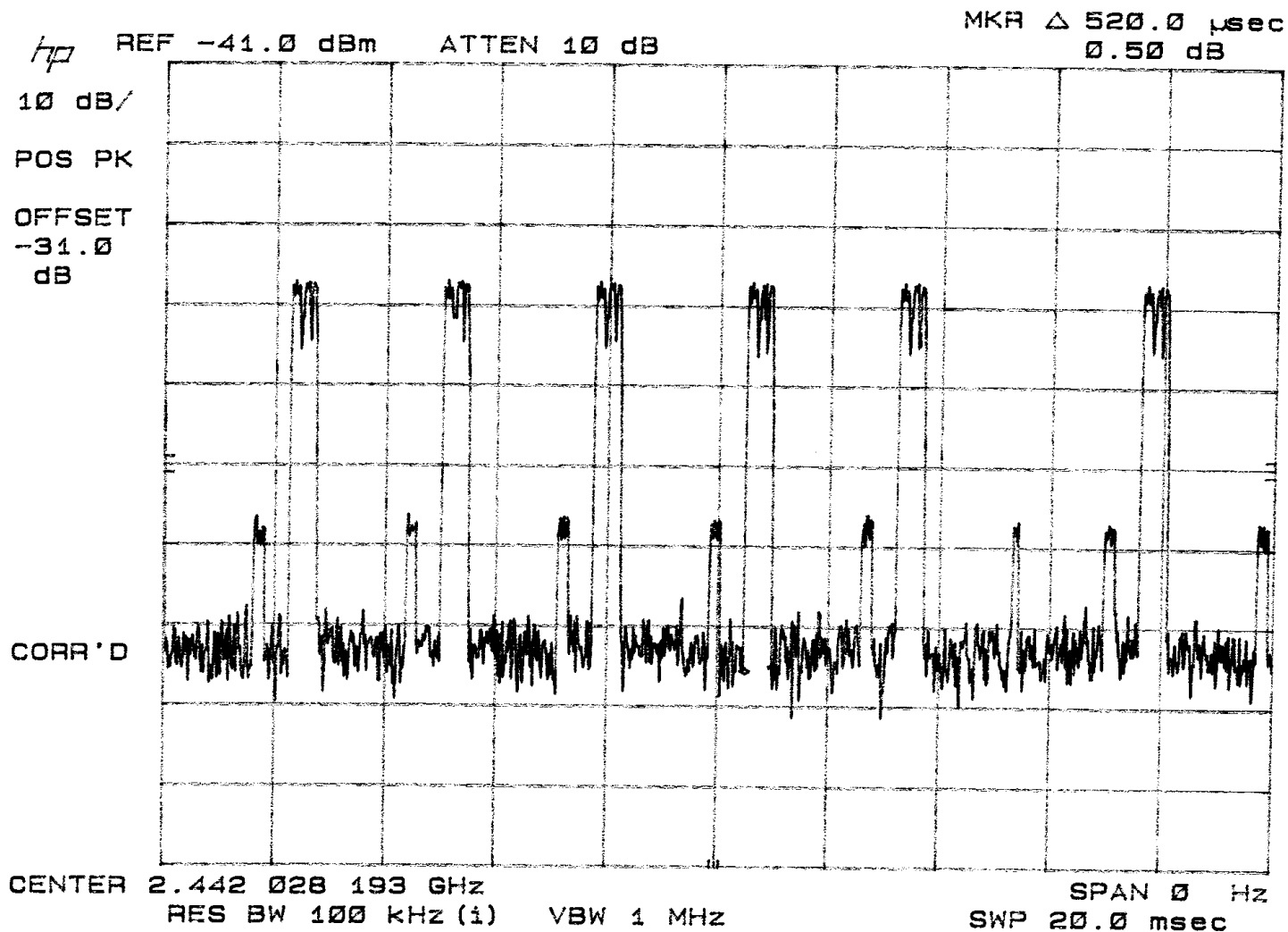
Sept.24, 2002
Test Room:SR2 / TEST ENGR: AAL *KAF*



Hughes SC-202038
47 CFR Part 15.247 Duty Cycle

INMARSAT EARLY ENTRY TERMINAL

Sept.24, 2002
Test Room:SR2 / TEST ENGR: AAL *AS*



Report No. SC202038-03A

8.0 ATTESTATION STATEMENT

GENERAL REMARKS:

SUMMARY:

All tests were performed per CFR 47, Part(s) 15.209(a); 15.247(a); 15.247(b); 15.247(c)

■ - Performed

The Equipment Under Test

■ - **Fulfills** the requirements of CFR 47, Part(s) 15.209(a); 15.247(a); 15.247(b); 15.247(c)

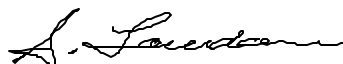
- TÜV AMERICA, INC. -

Responsible Engineer:



Jim Owen
(EMC Chief Engineer)

Responsible Technician:



Alan Laudani
(EMC Technician)