

FCC ID: QRM-WEX-10-EXT

Exhibit 2e

Engineering Report on
Frequency Stability (2.1055)

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NAME OF TEST: Frequency Stability (Temperature Variation)

SPECIFICATION: 47 CFR 2.1055(a)(1)

GUIDE: EIA/IS-19-B-1988
TIA/EIA/IS-137-A-1996

TEST CONDITIONS: As Indicated

TEST EQUIPMENT: As per previous page

MEASUREMENT PROCEDURE

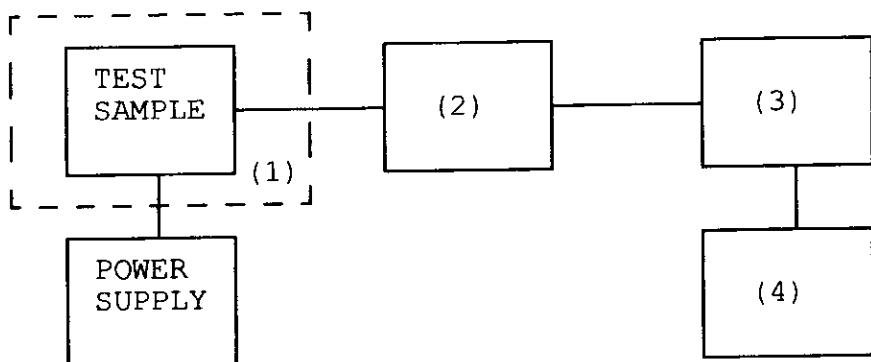
1. The EUT and test equipment were set up as shown on the following page.
2. With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was noted within one minute.
3. With power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
4. The temperature tests were performed for the worst case.
5. MEASUREMENT RESULTS: ATTACHED

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TRANSMITTER TEST SET-UP

TEST A. OPERATIONAL STABILITY
 TEST B. CARRIER FREQUENCY STABILITY
 TEST C. OPERATIONAL PERFORMANCE STABILITY
 TEST D. HUMIDITY
 TEST E. VIBRATION
 TEST F. ENVIRONMENTAL TEMPERATURE
 TEST G. FREQUENCY STABILITY: TEMPERATURE VARIATION
 TEST H. FREQUENCY STABILITY: VOLTAGE VARIATION



Asset	Description	s/n
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(1) <u>TEMPERATURE, HUMIDITY, VIBRATION</u>		
x i00027	Tenny Temp. Chamber	9083-765-234
— i00	Weber Humidity Chamber	
— i00	L.A.B. RVH 18-100	

(2) <u>COAXIAL ATTENUATOR</u>		
x i00122	NARDA 766-10	7802
— i00123	NARDA 766-10	7802A
— i00113	SIERRA 661A-3D	1059
— i00069	BIRD 8329 (30 dB)	10066

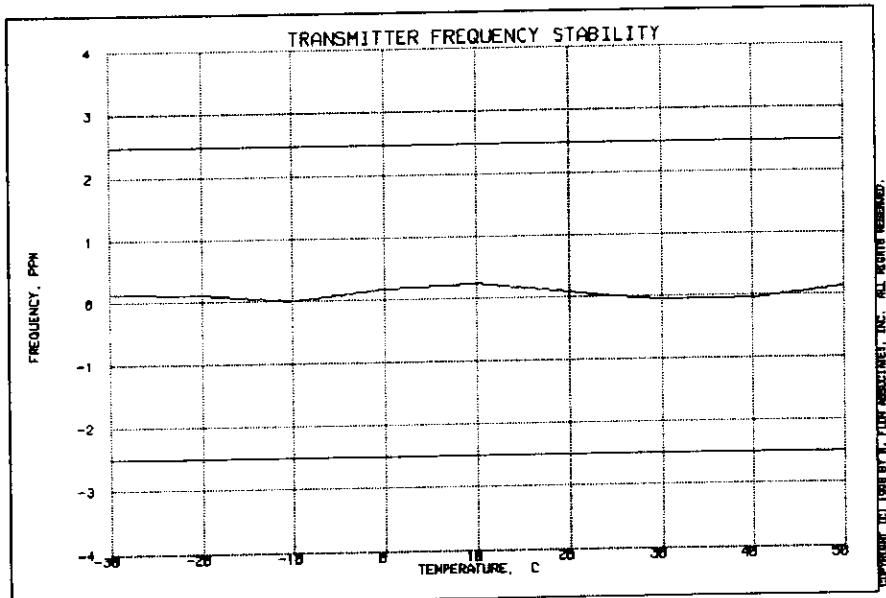
(3) <u>R.F. POWER</u>		
— i00014	HP 435A POWER METER	1733A05839
x i00039	HP 436A POWER METER	2709A26776
x i00020	HP 8901A POWER METER	2105A01087

(4) <u>FREQUENCY COUNTER</u>		
— i00042	HP 5383A	1628A00959
— i00019	HP 5334B	2704A00347
x i00020	HP 8901A	2105A01087

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NAME OF TEST: Frequency Stability (Temperature Variation)
g98b0333: 1998-Nov-24 Tue 12:44:00
STATE: 0:General



SUPERVISED BY:


Morton Flom, P. Eng.

PAGE NO. 30 of 30.NAME OF TEST: Frequency Stability (Voltage Variation)SPECIFICATION: 47 CFR 2.1055 (b) (1)GUIDE: EIA/IS-19-B-1988
TIA/EIA/IS-137-A-1996TEST EQUIPMENT: As per previous pageMEASUREMENT PROCEDURE

1. The EUT was placed in a temperature chamber at $25\pm5^{\circ}\text{C}$ and connected as for "Frequency Stability - Temperature Variation" test.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

RESULTS: Frequency Stability (Voltage Variation)

g98b0380: 1998-Nov-24 Tue 12:43:42

STATE: 0:General

LIMIT, ppm	= 2.5
LIMIT, Hz	= 2091
BATTERY ENDPOINT (Voltage)	= 3.3

% of STV	Voltage	Frequency, MHz	Change, Hz	Change, ppm
85	3.06	836.400000	0	0.00
100	3.6	836.400000	0	0.00
115	4.14	836.400010	10	0.01
85	3.2	836.399930	-70	-0.08

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