KTL Test Report:	9R01645
Applicant:	Uniden Corporation 2-10-9 Hatchobori Chuo-Ku, Tokyo 104 Japan
Equipment Under Test: **(E.U.T.)**	Model ASC911 Panic Phone
FCC ID:	AMWUH052
In Accordance With:	**FCC Part 22, Subpart H** 800 MHz Cellular Subscriber Units
Tested By:	KTL Ottawa Inc. 3325 River Road, R.R. 5 Ottawa, Ontario K1V 1H2
Authorized By:	Russell Grant R. Grant, Senior RF Specialist
Date:	June 22, 99
Total Number of Pages:	44

test report

Master: ktlPT22HCSU Date April 19, 1999

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Section 1. Summary of Test Results

Manufacturer: Uniden Corporation

Model No.: ASC911 Panic Phone

Serial No.: None

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 22, Subpart H.

☒ New Submission ☒ Production Unit

☐ Class II Permissive Change ☐ Pre-Production Unit

T	N	E

Equipment Code

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.
See " Summary of Test Data".

NVLAP

NVLAP LAB CODE: 100351-0

TESTED BY: Wayne Clarke DATE: June 22, 99
Wayne Clarke, Senior EMC Specialist

Summary Of Test Data

NAME OF TEST	PARA. NO.	SPEC.	MEAS.	RESULT
RF Power Output	2.1046	7W ERP	Meter	Complies
Audio Frequency Response	2.1047	6dB/Octave	Graph	Complies
Audio Low Pass Filter Response	2.1047	Graph	Graph	Complies
Modulation Limiting	2.1047	Graph	Graph	Complies
Occupied Bandwidth (Voice & SAT)	2.1049	Mask	Graph	Complies
Occupies Bandwidth (WB Data & SAT)	2.1049	Mask	Graph	Complies
Occupied Bandwidth (ST)	2.1049	Mask	Graph	Complies
Occupied Bandwidth (SAT)	2.1049	Mask	Graph	Complies
Spurious Emissions at Antenna Terminals	2.1051	-13 dBm	Graph	Complies
Field Strength of Spurious Emissions	2.1053	82.3 dBμV/m	Table	Complies
Frequency Stability	2.1055	2.5 ppm	Table	Complies

Footnotes For N/A's:

Test Conditions:

Indoor Temperature: 22 °C
Humidity: 30 %

Outdoor Temperature: 24 °C
Humidity: 30 %

Section 2. General Equipment Specification

Frequency Range:	924 – 849 MHz
Tunable Bands:	One
Necessary Bandwidth:	40 kHz
Type of Modulation and Designator:	40K0F8W 40K0F1D
Data Source:	Internal
Output Impedance:	50 ohms
RF Power Output (rated):	26 dBm
Number of Channels:	832
Duty Cycle:	Continuous
Channel Spacing:	30 kHz
Operator Selection of Frequency:	Software Controlled
Power Output Adjustment Capability:	Software Controlled

Description of Modifications For Class II Permissive Change

NOT APPLICABLE

Modifications Made During Testing

NOT APPLICABLE

Theory of Operation

The E.U.T. is a cordless panic telephone. It has an emergency call button as well as a panic mode which activates a panic siren. The E.U.T. will call 911 while the panic siren is operating.

Section 3. RF Power Output

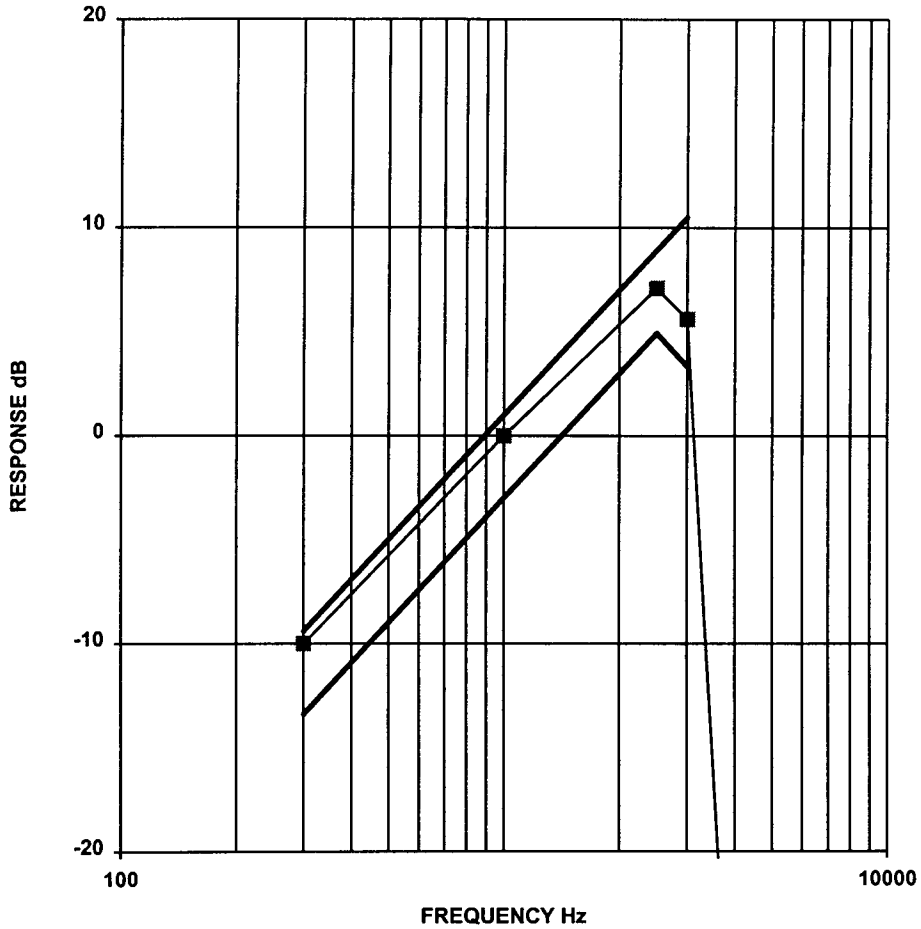
NAME OF TEST: RF Power Output	PARA. NO.: 2.1046
TESTED BY: Wayne Clarke	DATE: June 18, 1999

Test Results: Complies.

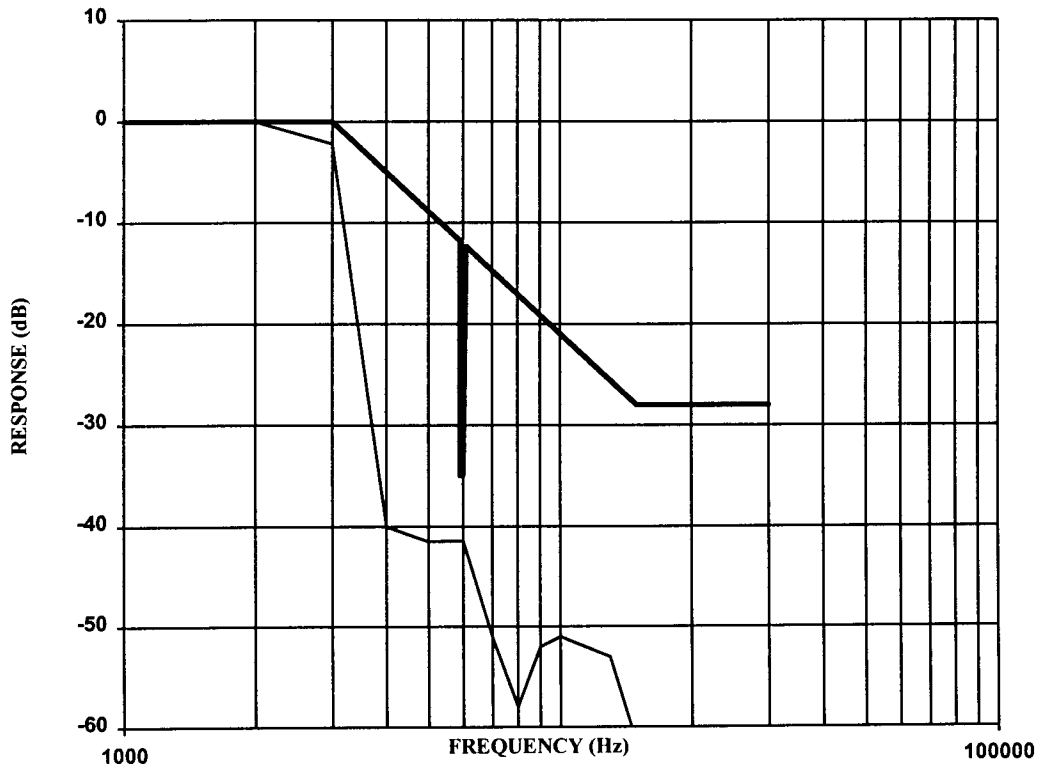
Measurement Data:

Channel	Output Power (dBm)	Rated Power (dBm)	Measured / Rated (dBm)
334	0.320W		
334	25.4	26.0	-0.6

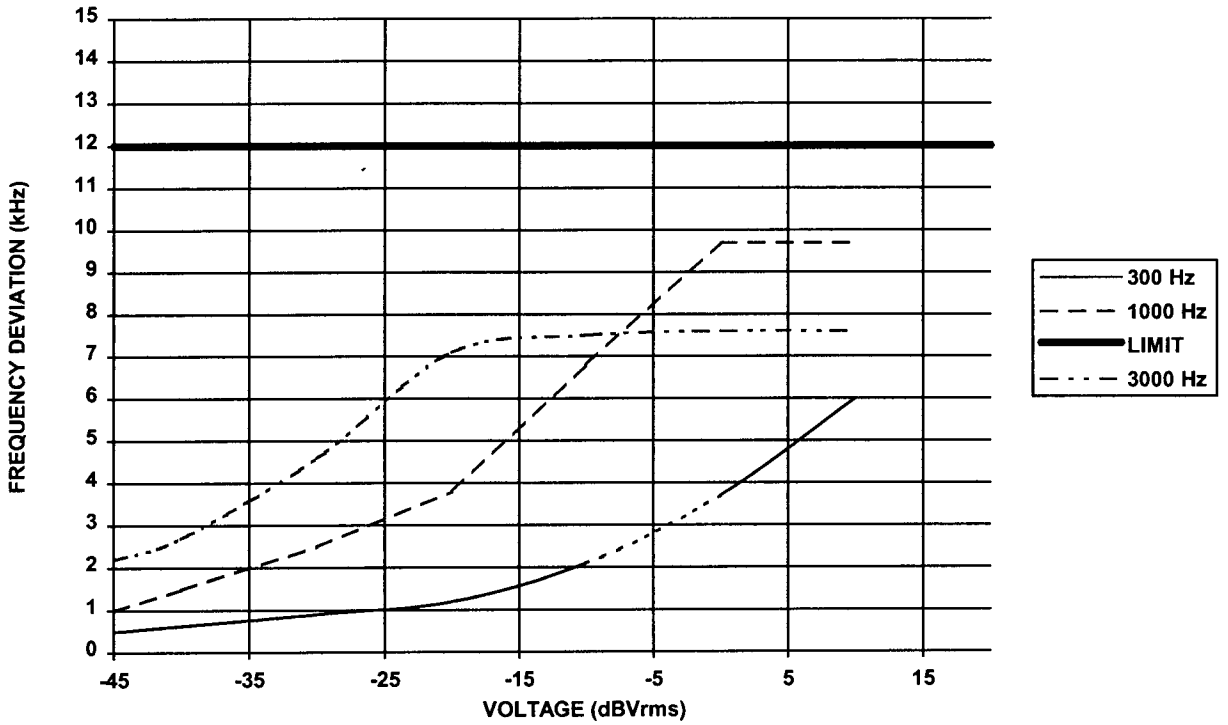
NAME OF TEST: Audio Frequency Response	PARA. NO.: 2.1047
TESTED BY: Wayne Clarke	DATE: June 18, 1999



NAME OF TEST: Audio Low-Pass Filter Response	PARA. NO.: 2.1047
TESTED BY: Wayne Clarke	DATE: June 18, 1999



NAME OF TEST: Modulation Limiting	PARA. NO.: 2.1047
TESTED BY: Wayne Clarke	DATE: June 18, 1999



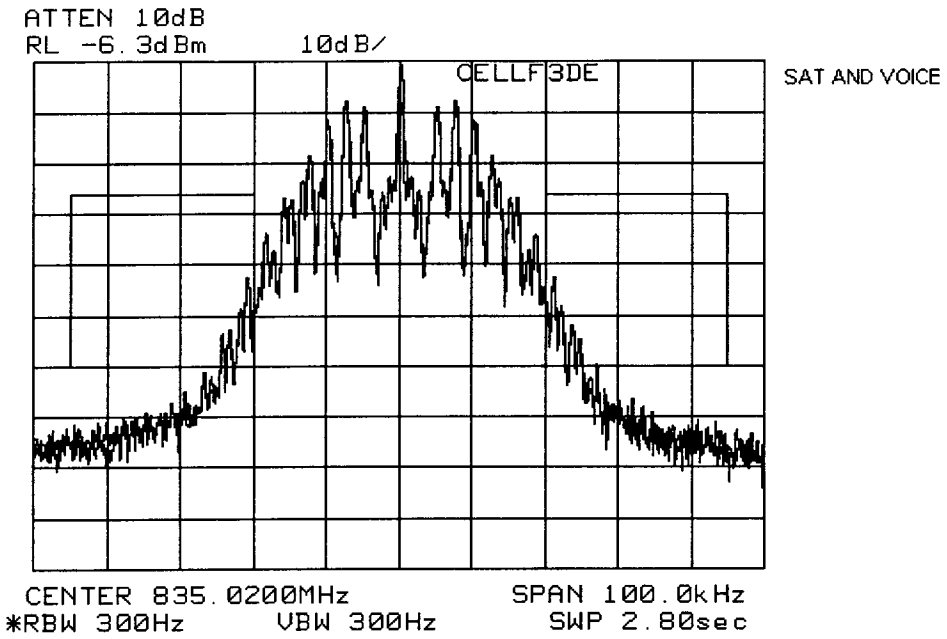
SAT Deviation: 2.0 kHz
WB Data Deviation: 8.0 kHz
ST Deviation: 8.0 kHz

Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth (Voice + SAT)	PARA. NO.: 2.1049
TESTED BY: Wayne Clarke	DATE: June 18, 1999

Test Results: Complies.

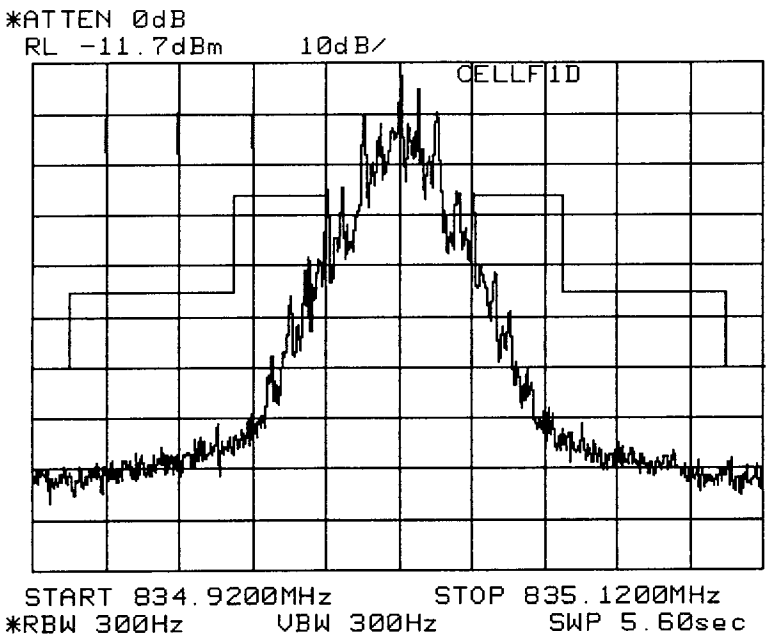
Test Data: See attached graph(s).


ATTEN 10dB
RL -6.3dBm
10dB/
CELLF3DE
SAT AND VOICE
CENTER 835.0200MHz
SPAN 100.0kHz
*RBW 300Hz
VBW 300Hz
SWP 2.80sec

NAME OF TEST: Occupied Bandwidth (WB Data & SAT)	PARA. NO.: 2.1049
TESTED BY: Wayne Clarke	DATE: June 16, 1999

Test Results: Complies.

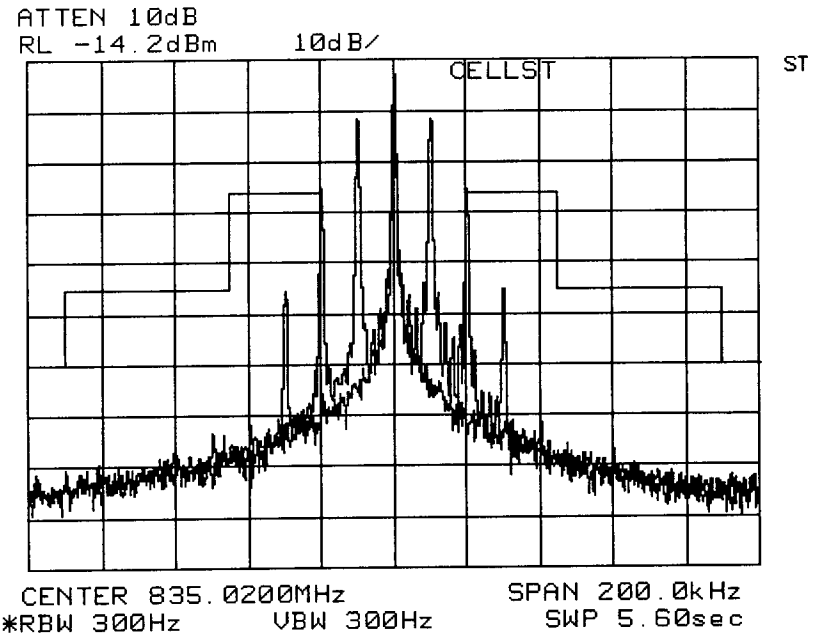
Test Data: See attached graph(s).


*ATTEN 0dB
RL -11.7dBm
10dB/
CELLF 1D
START 834.9200MHz
STOP 835.1200MHz
*RBW 300Hz
VBW 300Hz
SWP 5.60sec

NAME OF TEST: Occupied Bandwidth (ST)	PARA. NO.: 2.1049
TESTED BY: Wayne Clarke	DATE: June 18, 1999

Test Results: Complies.

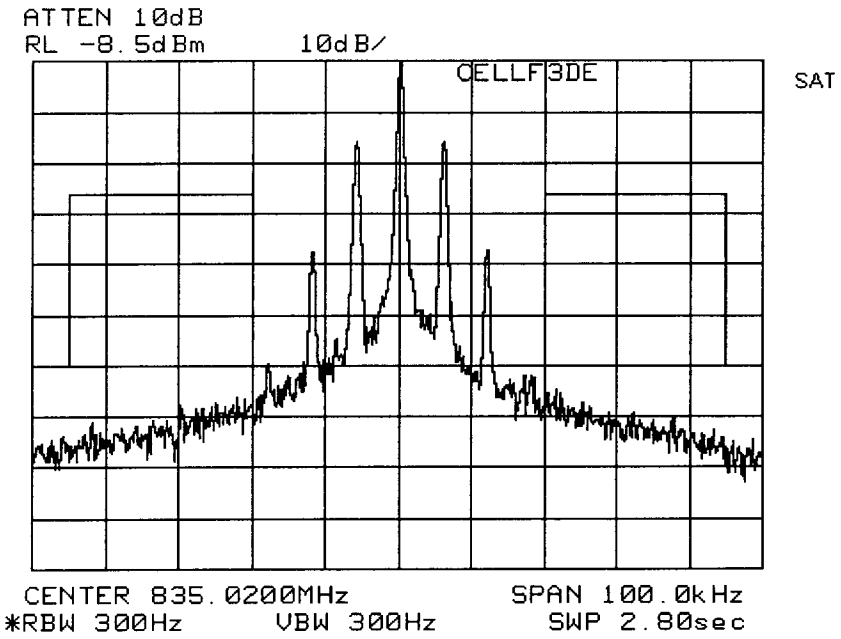
Test Data: See attached graph(s).


ATTEN 10dB
RL -14.2dBm
10dB/
CELLST
ST
CENTER 835.0200MHz
SPAN 200.0kHz
*RBW 300Hz
VBW 300Hz
SWP 5.60sec

NAME OF TEST: Occupied Bandwidth (SAT)	PARA. NO.: 2.1049
TESTED BY: Wayne Clarke	DATE: June 17, 1999

Test Results: Complies.

Test Data: See attached graph(s).

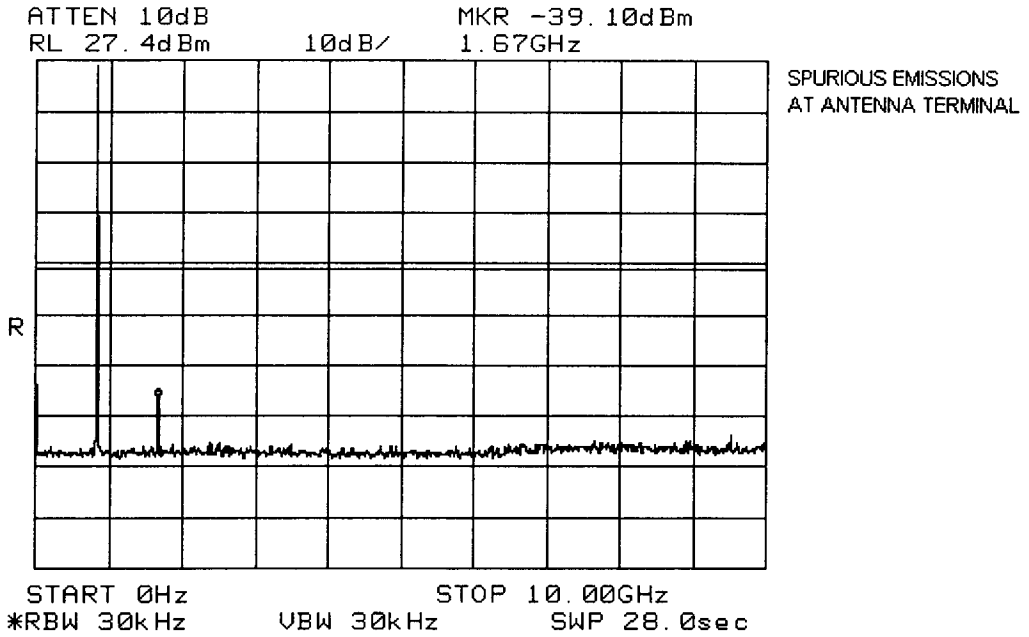

ATTEN 10dB
RL -8.5dBm
10dB/
CELLF 3DE
SAT
CENTER 835.0200MHz
SPAN 100.0kHz
*RBW 300Hz
VBW 300Hz
SWP 2.80sec

Section 5. Spurious Emissions At Antenna Terminals

NAME OF TEST: Spurious Emissions At Antenna Terminals	PARA. NO.: 2.1051
TESTED BY: Wayne Clarke	DATE: June 17, 1999

Test Results: Complies.

Test Data: See attached graphs.


ATTEN 10dB
RL 27.4dBm
10dB/
MKR -39.10dBm
1.67GHz
SPURIOUS EMISSIONS
AT ANTENNA TERMINAL
R
START 0Hz
STOP 10.00GHz
*RBW 30kHz
VBW 30kHz
SWP 28.0sec

Section 6. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious	PARA. NO.: 2.1053
TESTED BY: Wayne Clarke	DATE: June 18, 1999

Test Results: Complies.
The maximum field strength is 72.5 dBμV/m @ 2506.06 MHz @ 3m.

Test Data: See attached tables.

Test Data - Radiated Emissions

Test Distance (meters) : 3		Range: A Tower		Receiver: 8563E		RBW (1 MHz):		Detector: PEAK			
Freq. (MHz)	Ant. *	Pol. (V/H)	Ant. HGT. (m)	Table (deg.)	RCVD Signal (dBμV/m)	Ant. Factor (dB)**	Amp. Gain (dB)***	Dist. Corr. (dB)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1670.04	H	V			38.7	29.3			68.0	82.3	14.3
1670.04	H	H			38.0	29.3			67.3	82.3	15.0
2506.06	H	V			41.3	31.2			72.5	82.3	9.8
2506.06	H	H			39.7	31.2			70.9	82.3	11.4

Notes:
The spectrum was search up to the 10th harmonic of the fundamental frequency.
B/C = Biconical, B/L = Biconilog, L/P = Log-Periodic, H = Horn, D/P = Dipole
* Includes cable loss when amplifier is not used.
** Includes cable loss.
( ) Denotes failing emission level.

Section 7. Frequency Stability

NAME OF TEST: Frequency Stability	PARA. NO.: 2.1055
TESTED BY: Wayne Clarke	DATE:

Test Results: Complies. The maximum frequency drift is 397 Hz.
This is 0.475 ppm

Measurement Data: Standard Test Frequency: 835.020 MHz
Standard Test Voltage: 6.0 Vdc

Frequency Stability Tables

	30°C	40°C	50°C
0.0	835 019 943	835 019 951	835 020 028
0.5	835 019 946	835 019 954	835 020 031
1.0	835 019 948	835 019 955	835 020 036
1.5	835 019 951	835 019 955	835 020 038
2.0	835 019 951	835 019 958	835 020 042
2.5	835 019 954	835 019 959	835 020 046
3.0	835 019 955	835 019 960	835 020 049
3.5	835 019 955	835 019 961	835 020 051
4.0	835 019 957	835 019 963	835 020 054
4.5	835 019 956	835 019 964	835 020 057
5.0	835 019 956	835 019 966	835 020 060

	20°C	
	+15%	-15%
0.0	835 019 919	835 019 926
0.5	835 019 919	835 019 926
1.0	835 019 920	835 019 927
1.5	835 019 921	835 019 926
2.0	835 019 922	835 019 927
2.5	835 019 923	835 019 927
3.0	835 019 923	835 019 927
3.5	835 019 925	835 019 928
4.0	835 019 923	835 019 929
4.5	835 019 925	835 019 928
5.0	835 019 925	835 019 929

	20°C	10°C	0°C	-10°C
0.0	835 019 940	835 019 774	835 019 907	835 019 660
0.5	835 019 938	835 019 795	835 019 907	835 019 637
1.0	835 019 939	835 019 811	835 019 905	835 019 636
1.5	835 019 937	835 019 821	835 019 904	835 019 641
2.0	835 019 935	835 019 830	835 019 903	835 019 645
2.5	835 019 934	835 019 845	835 019 903	835 019 649
3.0	835 019 933	835 019 859	835 019 902	835 019 657
3.5	835 019 933	835 019 869	835 019 899	835 019 662
4.0	835 019 932	835 019 903	835 019 898	835 019 668
4.5	835 019 932	835 019 912	835 019 897	835 019 673
5.0	835 019 930	835 019 914	835 019 896	835 019 679

Frequency Stability Tables, continued

	-20°C	-30°C
0.0	835 019 863	835 019 603
0.5	835 019 842	835 019 610
1.0	835 019 822	835 019 643
1.5	835 019 801	835 019 648
2.0	835 019 782	835 019 755
2.5	835 019 767	835 019 791
3.0	835 019 751	835 019 808
3.5	835 019 740	835 019 823
4.0	835 019 729	835 019 838
4.5	835 019 720	835 019 849
5.0	835 019 711	835 019 859

ANNEX A

TEST METHODOLOGIES

NAME OF TEST: RF Power Output **PARA. NO.: 1.1046**

Minimum Standard: Para. No. 22.913(a). The E.R.P. of mobile transmitter and auxiliary test transmitter must not exceed 7 watts.

EIA is 19B Para. No. 3.2.1.3. The transmitter shall be compiled of 8 distinct power levels.

The output power shown above shall be maintained within the range of +2 dB, -4 dB of nominal dBW value

PL	I	II	III
0	+6	+2	-2
1	+2	+2	-2
2	-2	-2	-2
3	-6	-6	-6
4	-10	-10	-10
5	-14	-14	-14
6	-18	-18	-18
7	-22	-22	-22

Method Of Measurement:

Detachable Antenna:
The power at antenna terminals is measured using an in-line power meter.

Integral Antenna:
If the antenna is not detachable from the circuit then the Power Output is derived from the radiated field strength of the fundamental emission by using the plane wave relation $GP/4\pi R^2 = E^2/120\pi$ and proceeding as follows:

$$P = \frac{E^2 R^2}{30G} = \frac{E^2 3^2}{30G}$$

where,

P = the equivalent radiated power in watts
E = the maximum measured field strength in V/m
R = the measurement range (3 meters)
G = the numeric gain of the transmit antenna in relation to a halfwave dipole antenna

NAME OF TEST: Audio Frequency Response	**PARA. NO.: 2.1047**

Minimum Standard: Para. No. 15-19-B. From 300 to 3000 Hz the audio frequency response shall not vary more than +1 to –3 dB from a true 6dB octave pre-emphasis characteristic as referred to 1000 Hz level (with the exception of a permissible 6dB per octave roll-off from 2500 to 3000 Hz).

Method Of Measurement:

Operate the transmitter with the compressor disabled, and monitor the output with a frequency deviation meter or standard test receiver without standard 750-microsecond de-emphasis, with expander disabled, and without C-message weighted filter (see 6.6.2). Apply a sine wave audio input to the transmitter external audio input port, vary the modulating frequency from 300 to 3000 Hz and observe the input levels necessary to maintain a constant ±2.9 kHz system deviation.

NAME OF TEST: Audio Low Pass Filter Response **PARA. NO.: 2.1047**

Minimum Standard: Para. No. 22.915 (d). For mobile stations, signals must be attenuated as a function of frequency as follows:

i. In the frequency ranges 3.0 to 5.9 Hz and 6.1 to 15 kHz, 40 log (f/3) dB.
ii. In the frequency range 5.9 to 6.1 kHz, 35 dB
iii. In the frequency range above 15 kHz, 28 dB.

Method Of Measurement:

Adjust the audio input frequency to 1000 Hz and adjust the input level to 20 dB greater than that required to produce ±8 kHz deviation. Note the output level on the frequency deviation meter or standard test receiver. Using the output level as reference (0dB), vary the modulating frequency from 3000 Hz to 30,000 Hz and observe the change in output while maintaining a constant audio input level.

NAME OF TEST: Modulation Limiting	**PARA. NO.: 2.1047**

Minimum Standard: 22.915(b)

The levels of the modulating signals must be set to the values specified below and must be maintained within ±10% of these values.

Voice: ±12 kHz
SAT: ±2 kHz
Wideband Data: ±8 kHz
ST: ± 8 kHz

Method Of Measurement:

Voice: A 1 kHz audio tone is injected at levels between -45 and +20 dBVrms. The peak deviation is noted. This is repeated with a 300 Hz tone and a 3 kHz tone.

SAT: A SAT tone is generated by the mobile station and the peak deviation is measured.

Wideband Data: Wideband data is generated by the mobile station and the peak deviation is measured.

ST: ST data is generated by the mobile station and the peak deviation is measured.

NAME OF TEST: Occupied Bandwidth (Voice & SAT) PARA. NO.: 2.1049

Minimum Standard: 22.917(b) The mean power of any emission removed from the carrier frequency by a displacement frequency (f_d in kHz) must be attenuated below the mean power of the unmodulated carrier (P) as follows:

(i) On any frequency removed from the carrier frequency by more than 20 kHz but not more than 45 kHz: at least 26 dB

(ii) On any frequency removed from the carrier frequency by more than 45 kHz, up to the first multiple of the carrier frequency:

at least 60 dB or 43 + 10 log (P) dB, whichever is the lesser attenuation.

Method Of Measurement:

Spectrum Analyzer Settings:

RBW: 300 Hz
VBW: ≥ RBW
Span: 100 kHz
Sweep: Auto
Mask: CELLF3E

Input Signal Characteristics (F3E/F3D):

AF1 frequency: 2.5 kHz
AF1 level: 16 dB above the level sufficient to produce ±6 kHz deviation with a 1 kHz tone.
SAT: 6000 Hz SAT
SAT level: sufficient to produce ±2 kHz deviation.

NAME OF TEST: Occupied Bandwidth (WBD & SAT) **PARA. NO.: 21049**

Minimum Standard: 22.917(d) The mean power of any emission removed from the carrier frequency by a displacement frequency (f_d in kHz) must be attenuated below the mean power of the unmodulated carrier (P) as follows:

(1) On any frequency removed from the carrier frequency by more than 20 kHz but not more than 45 kHz:

at least 26 dB

(2) On any frequency removed from the carrier frequency by more than 45 kHz but not more than 90 kHz:

at least 45 dB

(3) On any frequency removed from the carrier frequency by more than 90 kHz, up to the first multiple of the carrier frequency:

at least 60 dB or 43 + 10 log (P) dB, whichever is the lesser attenuation.

Method Of Measurement:

Spectrum Analyzer Settings:
RBW: 300 Hz
VBW: ≥ RBW
Span: 200 kHz
Sweep: Auto
Mask: CELLF1D

Input Signal Characteristics:
RF level: Maximum recommended by manufacturer
10 kbps WBD + DAT
ST

NAME OF TEST: Spurious Emission at Antenna Terminals PARA. NO.: 2.1051

Minimum Standard: Para. No. 22.917(b). The mean power of emissions must be attenuated below the mean power of the unmodulated carrier on any frequency twice or more than twice the fundamental emission by at least 43 + 10 log P. This is equivalent to -13 dBm absolute power.

Method Of Measurement:

Spectrum Analyzer Settings:
RBW: 30 kHz (AMPS). As required for digital modulations.
VBW: ≥ RBW
Start Frequency: 0 MHz
Stop Frequency: 10 GHz
Sweep: Auto

NAME OF TEST: Field Strength of Spurious Radiation **PARA. NO.: 2.1053**

Minimum Standard: Para. No. 22.917(b). The mean power of emissions must be attenuated below the mean power of the unmodulated carrier on any frequency twice or more than twice the fundamental emission by at least 43 + 10 log P. This is equivalent to -13 dBm absolute power.

Calculation Of Field Strength Limit:

An example of attenuation requirement of 43 + 10 Log P is equivalent to -13 dBm (5×10^{-5} Watts) at the antenna terminal. We determine the field strength limit by using the plane wave relation.

$GP/4\pi R^2 = E^2/120\pi$

For emissions ≤ 1 GHz:

G = 1.64 (Dipole Gain)
P = 10^{-5} Watts (Maximum spurious output power)
R = 3m (Measurement Distance)

$$E = \frac{\sqrt{30GP}}{R}$$

$$E = \frac{\sqrt{30 \times 1.64 \times 5 \times 10^{-5}}}{3} = 0.016533 \text{ V/m} = 84.4 \text{ dB}\mu\text{V/m}$$

For emissions > 1 GHz:

G = 1 (Isotropic Gain)
P = 1 x 10^{-5} Watts (Maximum spurious output power)
R = 3m (Measurement Distance)

$$E = 84.4 - 20Log\sqrt{1.64} = 82.3 dB\mu V / m@3m$$

The spectrum is searched to 10 GHz.

NAME OF TEST: Frequency Stability **PARA. NO.: 2.1055**

Minimum Standard: Para. No. 22.355. The transmitter carrier frequency shall remain within the tolerances given in Table C-1.

Freq. Range (MHz)	Mobile > 3 W	Mobile ≤ 3 W
821 to 896	2.5	2.5

Table C-1

Method Of Measurement:

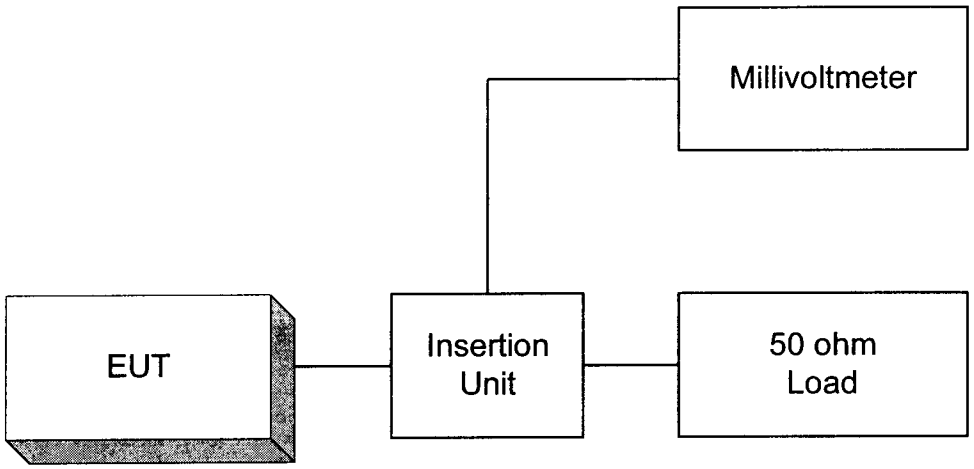
Frequency Stability With Voltage Variation:
The E.U.T. is placed in an environmental chamber and allowed to stabilize at +20 degrees Celsius for at least 15 minutes. The frequency counter and signal generator are phase locked with the same 10 MHz reference frequency by connecting the 10 MHz ref. out of the counter to the 10 MHz ref, in of the signal generator. With the voltage input to the E.U.T. set to 85% S.T.V., the frequency is measured in 30 second intervals for a period of 5 minutes. This procedure is repeated at 100% S.T.V. and 115% S.T.V.

Frequency Stability With Temperature Variation:
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30 second intervals for a period of 5 minutes.

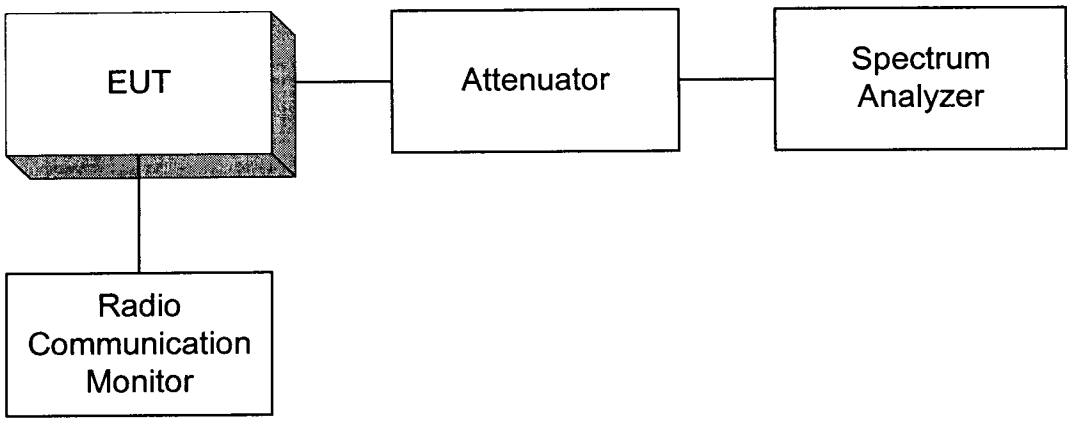
ANNEX B

TEST DIAGRAMS

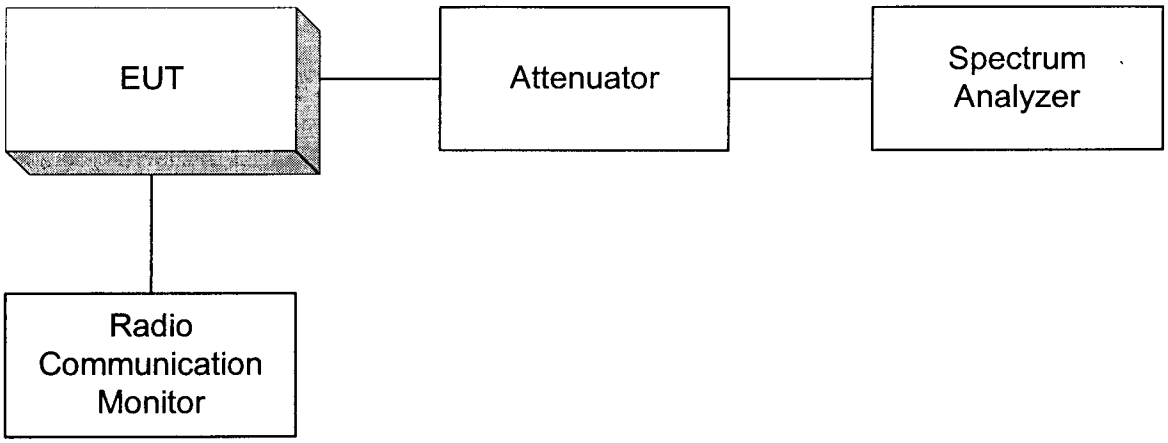
Para. No. 2.1046 - R.F. Power Output



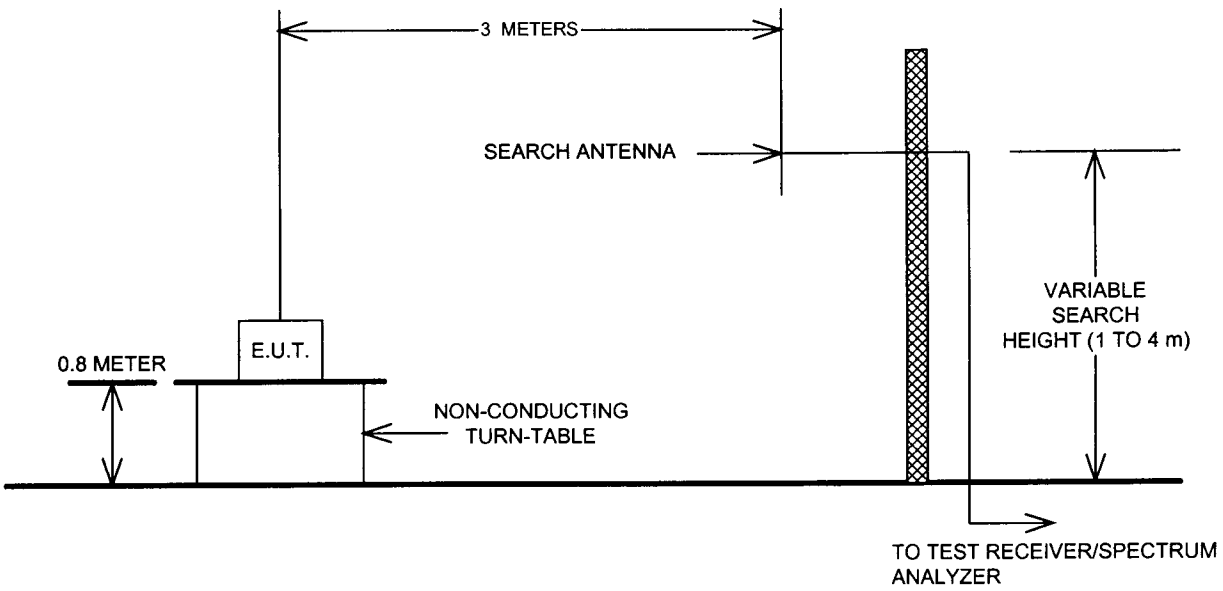
Para. No. 2.1049 - Occupied Bandwidth



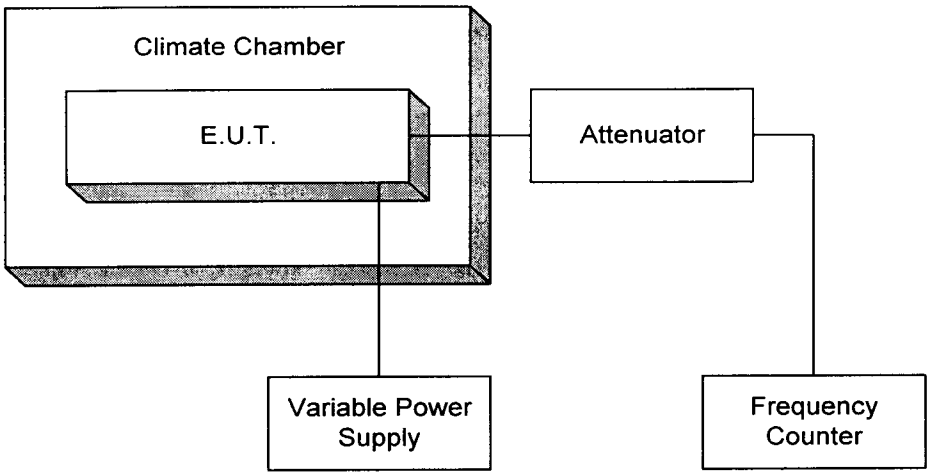
Para. No. 2.1051 Spurious Emissions at Antenna Terminals



Para. No. 2.1053 - Field Strength of Spurious Radiation



Para. No. 2.1055 - Frequency Stability



Para. No. 2.1045 – Audio Frequency Response, Audio Low Pass Filter Response And Modulation Limiting