KTL Test Report:	**0L0459RUS1**
Applicant:	Philips Semiconductor 2140 Lake Park Blvd., #200 Richardson, TX 75080
Equipment Under Test: (E.U.T.)	**CDMA Mobile Handset**
FCC ID:	PD7HHP
In Accordance With:	**FCC Part 22, Subpart H** 800 MHz Cellular Subscriber Units
Tested By:	KTL Dallas Inc. 802 N. Kealy Lewisville, TX 75057-3136
Authorized By:	
	Tom Tidwell, RF Group Manager
Date:	December, 2000
Total Number of Pages:	39

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Section 1. Summary of Test Results

Manufacturer: **Philips Semi Conductor**

Model No.: **CDMA Mobile Handset**

Serial No.: **16**

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

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: 100426-0

Summary Of Test Data

NAME OF TEST	PARA. NO.	SPEC.	MEAS.	RESULT
RF Power Output	2.1046	7W ERP	+23 dBm	Complies
Audio Frequency Response	2.1047	6dB/Octave	NA	NA
Audio Low Pass Filter Response	2.1047	Graph	NA	NA
Modulation Limiting	2.1047	Graph	NA	NA
Occupied Bandwidth (Voice & SAT)	2.1049	Mask	NA	NA
Occupies Bandwidth (WB Data & SAT)	2.1049	Mask	NA	NA
Occupied Bandwidth (ST)	2.1049	Mask	NA	NA
Occupied Bandwidth (SAT)	2.1049	Mask	NA	NA
Occupied Bandwidth (CDMA)	2.1049	Not Specified	IS-95B	Complies
Spurious Emissions at Antenna	2.1051	-13 dBm	PASS	Complies
Field Strength of Spurious Emissions	2.1053	82.3 dBµV/m	59 dBµV/m	Complies
Frequency Stability	2.1055	2.5 ppm		Complies

Footnotes:

.

Section 2. General Equipment Specification

Frequency Range:	824 - 849 MHz TX 869 - 894 MHz RX
Necessary Bandwidth:	1.25 MHz
Type of Modulation and Designator:	1M25F9W, IS-95B CDMA
Output Impedance:	50 ohms
RF Power Output (rated):	+23 dBm
Duty Cycle:	Continuous
Channel Spacing:	1.25 MHz
Operator Selection of Frequency:	Software Controlled
Power Output Adjustment Capability:	Software Controlled

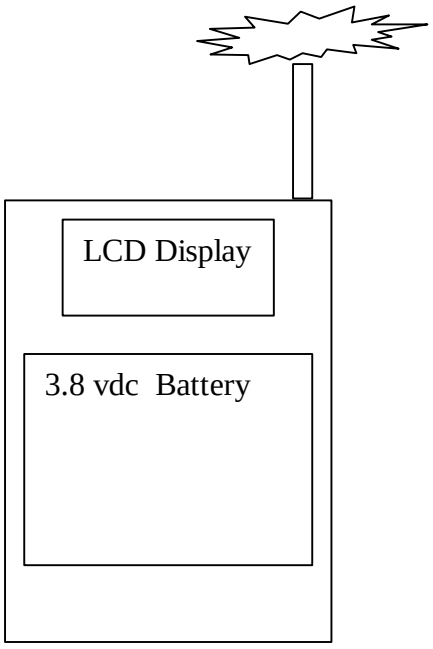
Modifications Made During Testing

During the testing modification to the EUT include grounding the LCD display corners to the ground plan of the main pcb of the unit.

Operational Description

The EUT is a CDMA single-mode Hand Held Phone (HHP) that operates in the AMPS band. The phone is completely compatible with the IS-95B standard.

System Diagram



Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 2.1046
TESTED BY: Kevin Rose	DATE: Dec 8 2000

Test Results: Complies.

Measurement Data:

	Output Power (dBm)	**Rated Power (dBm)**	**Measured / Rated (dBm)**
	+24.57	+23.0	1.87

Equipment Used: 1464 791 1484 1485 1480

Measurement Uncertainty: +/- 1.1 dB

Temperature: 21°C

Relative Humidity: 46%

Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth (Digital Modulation)	PARA. NO.: 2.1047
TESTED BY: Kevin Rose	DATE: Dec 7 2000

Test Results: Complies.

Measurement Data: See attached graph.

Equipment Used: 1036 1426 CUSTOMER INTERCONNECT CABLE

Measurement Uncertainty: 1.1dB

Temperature: 21°C

Relative Humidity: 46%

Test Plot: Occupied Bandwidth

Page 1 of 1

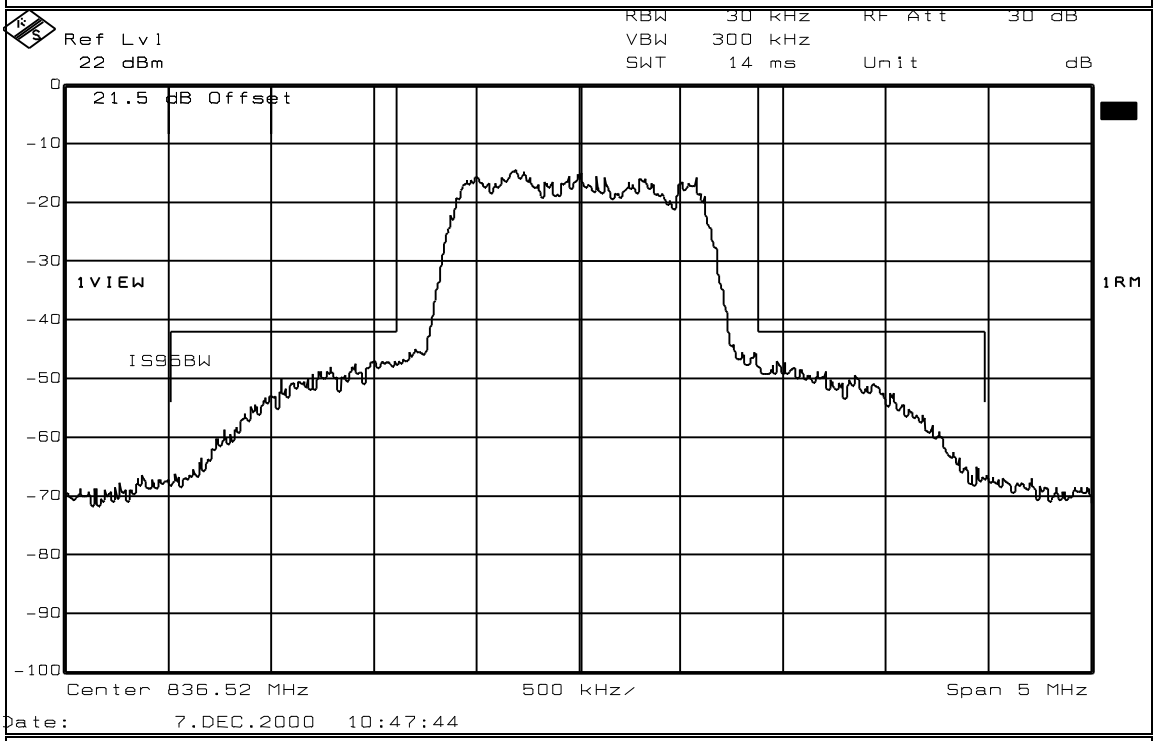
Job No.:	0l0459R	Date: 12/07/00	
Specification:	PART 22	Temperature(°C): 21	
Tested By:	Kevin Rose	Relative Humidity(%) 46	
E.U.T.:	CDMA HANSET		
Configuration:	TRANSMITTING		
Serial Number:	SAMPLE 1		
Location:	Lab 1	RBW:	30 kHz
Detector Type:	Rms	VBW:	300 kHz

Test Equipment Used

Antenna:	#N/A	Directional Coupler:	#N/A
Pre-Amp:	#N/A	Cable #1:	#N/A
Filter:	#N/A	Cable #2:	#N/A
Receiver:	1036	Cable #3:	#N/A
Attenuator #1	1472	Cable #4:	#N/A
Attenuator #2:	#N/A	Mixer:	#N/A

Additional equipment used: 1.5 dB LOSS IN CUSTOMER INTERCONNECTION TO THE EUT

Measurement Uncertainty: #N/A



Notes: MID CHANNEL

Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions At Antenna Terminals	PARA. NO.: 2.1051
TESTED BY: Kevin Rose	DATE: Dec 8 2000

Test Results: Complies.

Measurement Data: See attached graph.

Equipment Used: 1036 1426 CUSTOMER INTERCONNECT CABLE

Measurement Uncertainty: +/- 1.1 dB

Temperature: 21°C

Relative Humidity: 46%

Test Plot: TRANSMITER SPURIOUS

Page 1 of 1

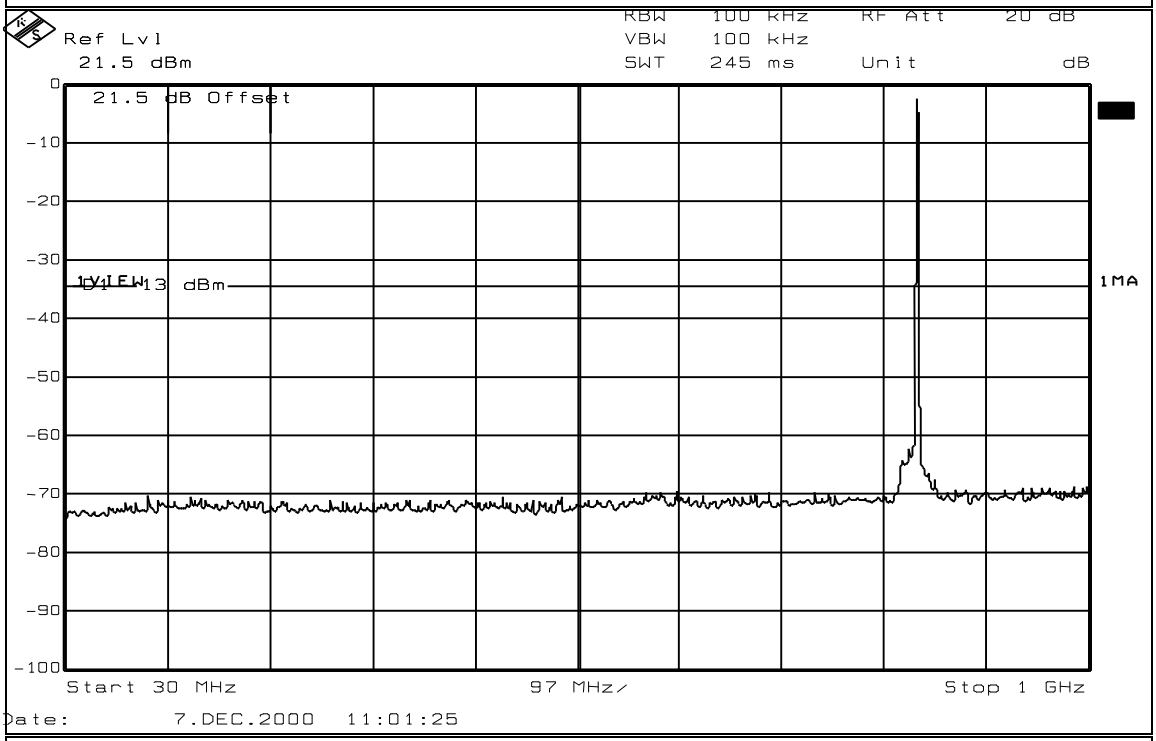
Job No.:	0l0459R	Date: 12/07/00	
Specification:	PART 22	Temperature(°C): 21	
Tested By:	Kevin Rose	Relative Humidity(%) 46	
E.U.T.:	CDMA HANSET		
Configuration:	TRANSMITTING		
Serial Number:	SAMPLE 1		
Location:	Lab 1	RBW:	100 kHz
Detector Type:	Peak	VBW:	100 kHz

Test Equipment Used

Antenna:	#N/A	Directional Coupler:	#N/A
Pre-Amp:	#N/A	Cable #1:	#N/A
Filter:	#N/A	Cable #2:	#N/A
Receiver:	1036	Cable #3:	#N/A
Attenuator #1	1472	Cable #4:	#N/A
Attenuator #2:	#N/A	Mixer:	#N/A

Additional equipment used: 1.5 dB LOSS IN CUSTOMER INTERCONNECTION TO THE EUT

Measurement Uncertainty: #N/A

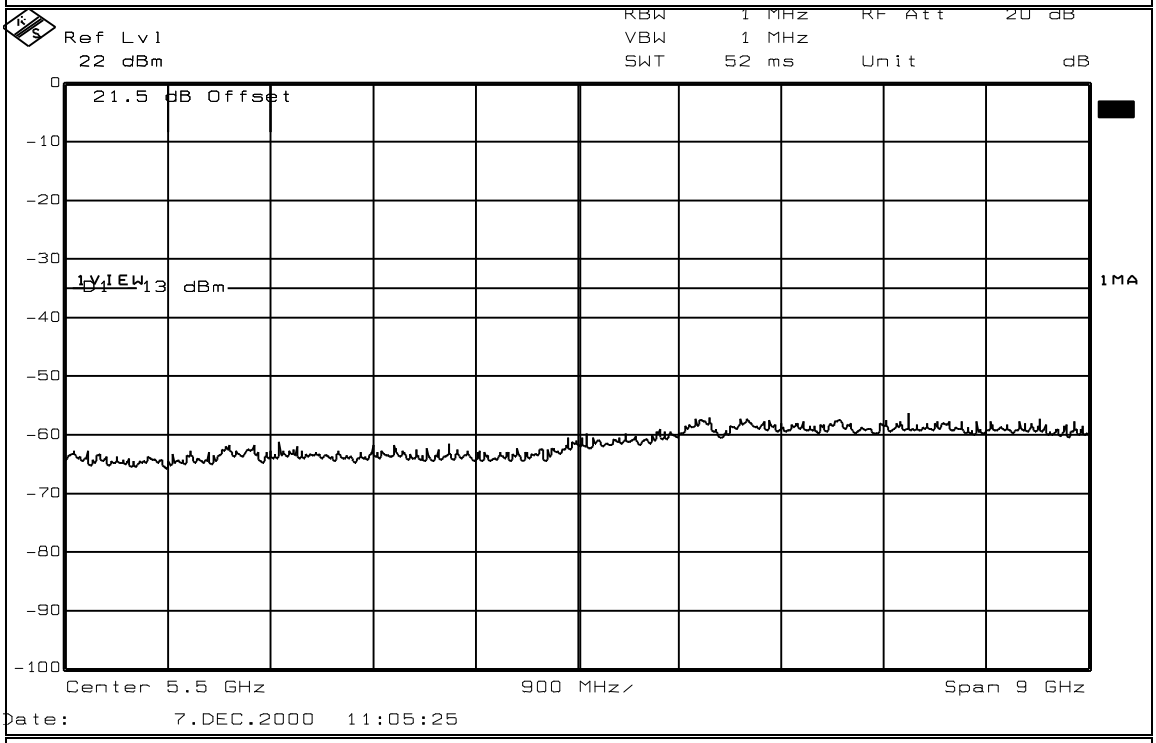


Notes: MID CHANNEL

Test Plot: TRANSMITER SPURIOUS

Page 2 of 1

Job No.: 0l0459R Date: 12/7/00
Specification: PART 22 Temperature(°C): 21
Tested By: Kevin Rose Relative Humidity(%) 46
E.U.T.: CDMA HANSET
Configuration: TRANSMITTING



Notes: MID CHANNEL

NAME OF TEST: Spurious Emissions at Band Edges

TESTED BY: Kevin Rose DATE: Dec 8 2000

Test Results: Complies.

Measurement Data: See attached table.

Equipment Used: 1036 1426 CUSTOMER INTERCONNECT CABLE

Measurement Uncertainty: +/- 1.1 dB

Temperature: 20°C

Relative Humidity: 46%

Test Plot: BAND EDGE

Page 1 of 1

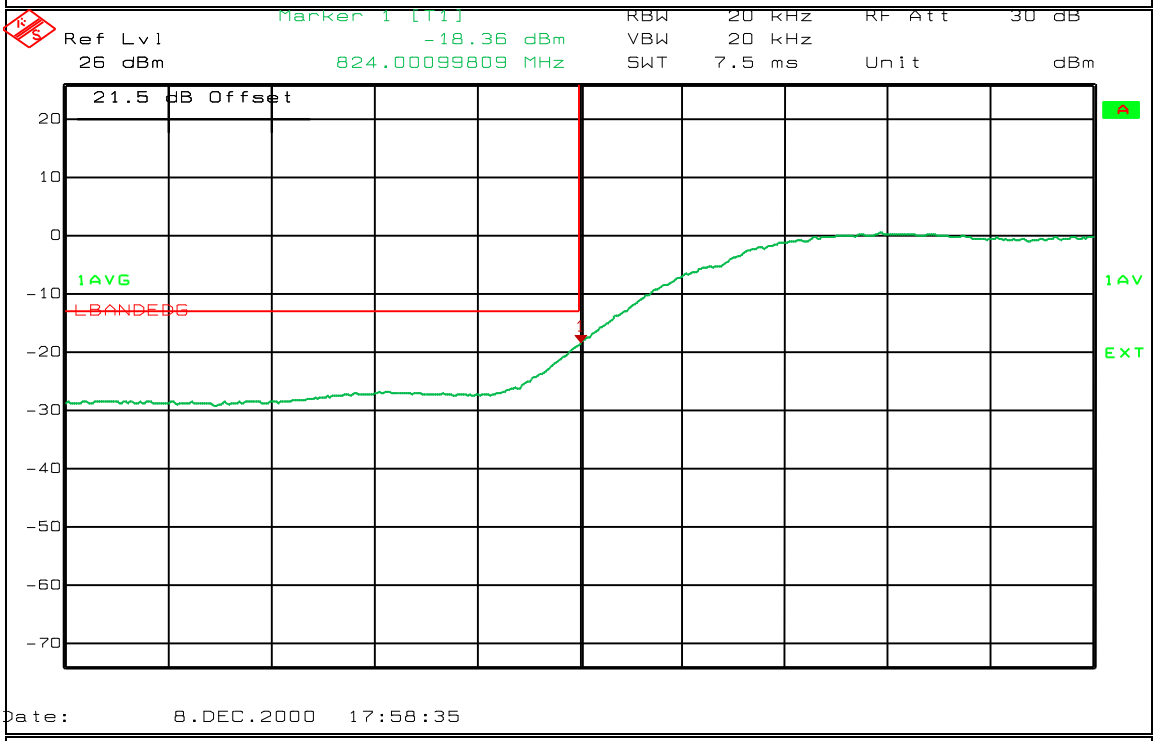
Job No.:	0L0459R	Date: 12/08/00	
Specification:	PART22	Temperature(°C): 21	
Tested By:	Kevin Rose	Relative Humidity(%) 46	
E.U.T.:	CDMA HANDHELD		
Configuration:	TRANSMITTING		
Serial Number:	16		
Location:	Lab 1	RBW: 20 kHz	
Detector Type:	Average	VBW: 20 kHz	

Test Equipment Used

Antenna:	#N/A	Directional Coupler:	#N/A
Pre-Amp:	#N/A	Cable #1:	#N/A
Filter:	#N/A	Cable #2:	#N/A
Receiver:	1036	Cable #3:	#N/A
Attenuator #1	1472	Cable #4:	#N/A
Attenuator #2:	#N/A	Mixer:	#N/A

Additional equipment used: 1.5dB LOSS IN THE CUSTOMER CABLE

Measurement Uncertainty: 1.1dB

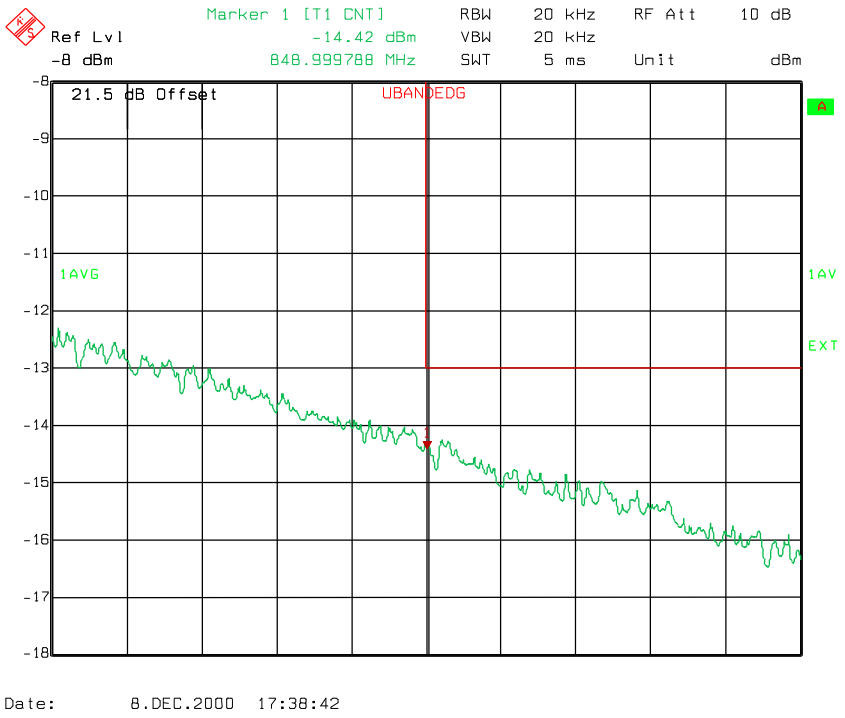


Notes: LOWER BAND EDGE

Test Plot: BAND EDGE

Page 2 of 1

Job No.: 0L0459R Date: 12/8/00
Specification: PART22 Temperature(°C): 21
Tested By: Kevin Rose Relative Humidity(%) 46
E.U.T.: CDMA HANDHELD
Configuration: TRANSMITTING



Notes: UPPER BAND EDGE

NAME OF TEST: TX Spurious Emissions in RX Band	PARA. NO.: 2.1053
TESTED BY: Kevin Rose	DATE: Dec 8 2000

Test Results: Complies.

Measurement Data: See attached table.

Measurement Uncertainty: +/- 1.1 dB

Temperature: 20°C

Relative Humidity: 46%

Test Plot: RX BAND SPURIOUS

Page 1 of 1

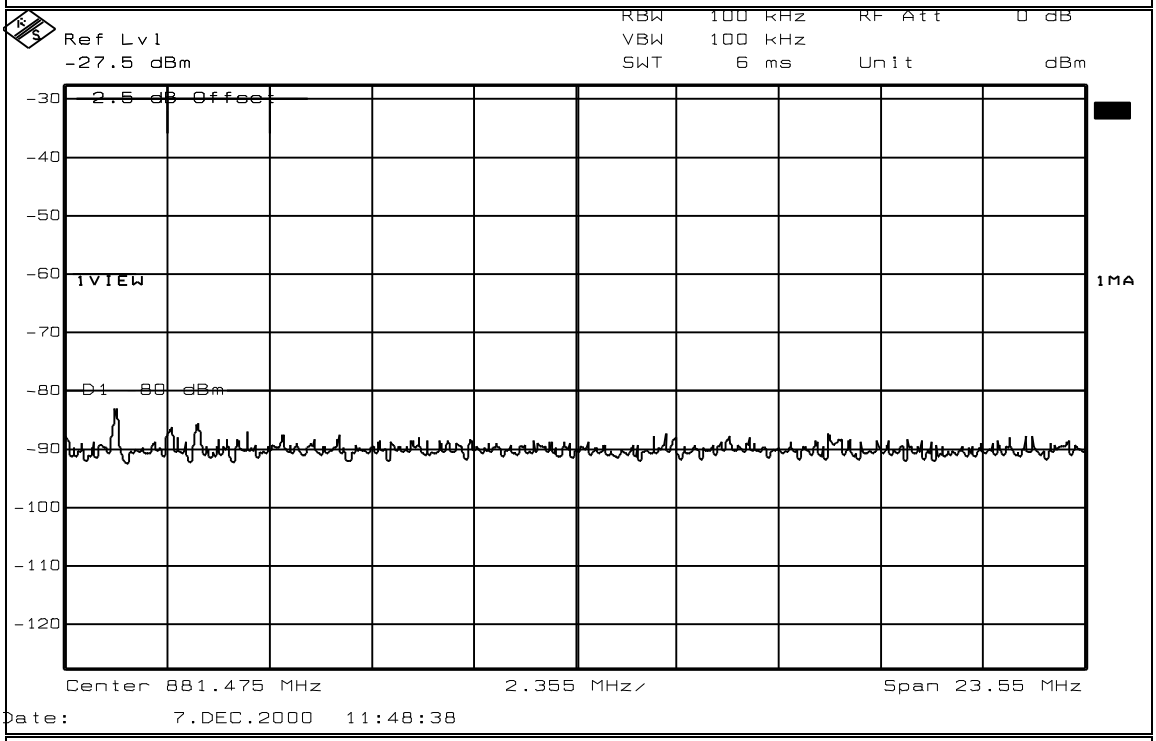
Job No.:	0l0459R	Date:	12/07/00
Specification:	PART 22	Temperature(°C):	21
Tested By:	Kevin Rose	Relative Humidity(%)	46
E.U.T.:	CDMA HANSET		
Configuration:	TRANSMITTING		
Serial Number:	SAMPLE 1		
Location:	Lab 1	RBW:	100 kHz
Detector Type:	Peak	VBW:	100 kHz

Test Equipment Used

Antenna:	#N/A	Directional Coupler:	#N/A
Pre-Amp:	#N/A	Cable #1:	#N/A
Filter:	#N/A	Cable #2:	#N/A
Receiver:	1036	Cable #3:	#N/A
Attenuator #1	1472	Cable #4:	#N/A
Attenuator #2:	#N/A	Mixer:	#N/A

Additional equipment used: 1.5 dB LOSS IN CUSTOMER INTERCONNECTION TO THE EUT 1060 1044

Measurement Uncertainty: #N/A



Notes: MID CHANNEL

Section 6. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious	PARA. NO.: 2.1053
TESTED BY: Kevin Rose	DATE: Dec 8 2000

Test Results: Complies.

Measurement Data: See attached table.

Measurement Uncertainty: +/- 3.6 dB

Temperature: 20°C

Relative Humidity: 46%

Test Data - Radiated Emissions

Field Strength of Spurious Emissions

Page 1 of 1 Complete X
Job No.: 0L0459R Date: 12/7/00 Preliminary
Specification: Field Strength of Spurious Temperature(°C): 21
Tested By: Kevin Rose Relative Humidity(%) 46
E.U.T.: CDMA Handheld Phone
Configuration: Transmit full power
Sample Number: 1
Location: AC 3 RBW: 1 MHz Measurement
Detector Type: Peak VBW: 1 MHz Distance: 3 m

Test Equipment Used

Antenna: 993 Directional Coupler:
Pre-Amp: 1016 Cable #1: 1484
Filter: Cable #2: 1485
Receiver: 1464 Cable #3:
Attenuator #1 Cable #4:
Attenuator #2: Mixer:

Additional equipment used:
Measurement Uncertainty: +/-3.6 dB

Frequency (MHz)	Meter Reading (dBm)	Correction Factor (dB)		Pre-Amp Gain (dB)	Substitution Antenna Gain (dBd)		ERP (dBm)	ERP (mW)	Polarity	Comments
836.52	-9.9	32.3		0	0.5		22.9	196.79	V	
1673.04	-67.3	29.9		31.6	6.4		-62.7	0.000001	V	
2509.56	-51.2	35.6		32.3	8.0		-40.0	0.000101	V	
3346.08	-64.7	37.1		32.3	8.1		-51.8	0.000007	V	
4182.60	-63.7	42.8		31.4	7.9		-44.4	0.000037	V	
5019.12	-70.0	40.6		29.5	9.1		-49.8	0.000010	V	
836.52	-12.0	32.3		0	0.5		20.8	120.50	H	
1673.04	-53.0	32.7		31.6	6.4		-45.6	0.000028	H	
2509.56	-47.5	34.6		32.3	8.0		-37.2	0.000190	H	
3346.08	-62.2	35.8		32.3	8.1		-50.6	0.000009	H	
4182.6	-72.7	35.2		31.4	7.9		-61.0	0.000001	H	
5019.12	-65.5	36.3		29.5	9.1		-49.7	0.000011	H	

Notes:

Photographs of Test Setup

FRONT VIEW

REAR VIEW

Section 7. Frequency Stability

NAME OF TEST: Frequency Stability	PARA. NO.: 2.1055
TESTED BY: Kevin Rose	DATE: Dec 8 2000

Test Results: Complies.

Measurement Data: See attached table.

Standard Test Frequency: 836.52 MHz
Standard Test Voltage: 3.8 Vdc

Equipment Used: 1036

Measurement Uncertainty: 1×10^{-7} ppm

Temperature: 21°C

Relative Humidity: 46%

Frequency Stability

Client: Philips Semi Conductor W.O.# 0l0459R

EUT: CDMA Mobile Handset S/N: 16

Date: Dec 8 2000 Tech: KEVIN ROSE

Notes

Temperature	Voltage	Rho	Frequency Error between Rx and Tx (Hz)	
20 °C	3.8VDC	.953	-42.1	46.2
20 °C	(-10%) 3.42VDC	.948	-5.61	+48.7
10 °C	3.42VDC	.950	-25	22.8
0 °C	3.42VDC	.950	-34.6	26.1
-10 °C	3.42VDC	.956	-20.7	8.1
-20 °C	3.42VDC	.957	-15.9	8.6
-30 °C	3.42VDC	.961	-12.3	1.3
30 °C	3.42VDC	.955	-40.1	42.8
40 °C	3.42VDC	.956	-91.7	47.4
50 °C	3.42VDC	.961	-23.8	15.3

Section 8. Test Equipment List

KTL ID	Description	Manufacturer Model Number	Serial Number	Calibration Date
759	ANTENNA, LOG PERIODIC	A.H. SYSTEMS SAS-200/510	556	02/26/00
1472	20db Attenuator DC 18 Ghz	Omni Spectra 20600-20db	NONE	CBU
1480	Bilog Antenna	Schaffner-Chase CBL6111C	2572	01/14/00
791	PREAMP, 25dB	ICC LNA25	398	05/24/00
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	05/25/00
1485	Cable 2.0-18.0 Ghz	Storm PR90-010-216	N/A	05/25/00
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	06/14/99 2 Year Cycle
1983	CABLE	KTL Site A OATS	N/A	12/22/99
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	01/02/01
1016	AMPLIFIER	HEWLETT PACKARD 8449A	2749A00159	05/24/00
283	ENVIROMENTAL CHAMBER	ENVIROTRONICS SH27	129010083	04/06/00

ANNEX A - Test Details

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: Para. No. 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.: 2.1049

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)

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

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

For emissions > 1 GHz:

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

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

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

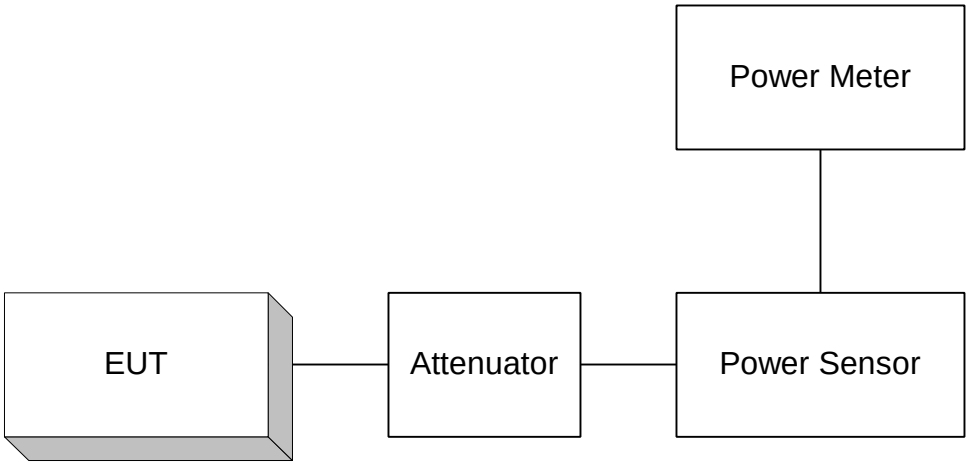
Method Of Measurement:

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.

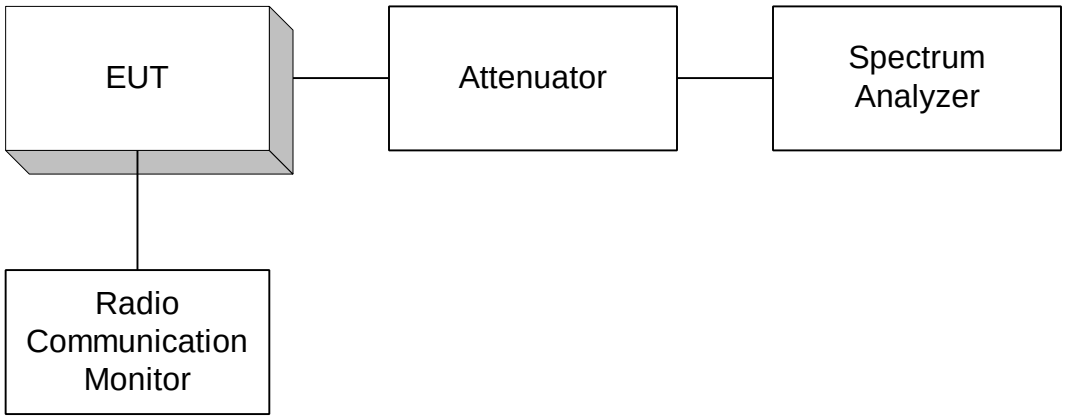
Frequency Stability With Temperature Variation:
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30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

ANNEX B - Test Diagrams

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

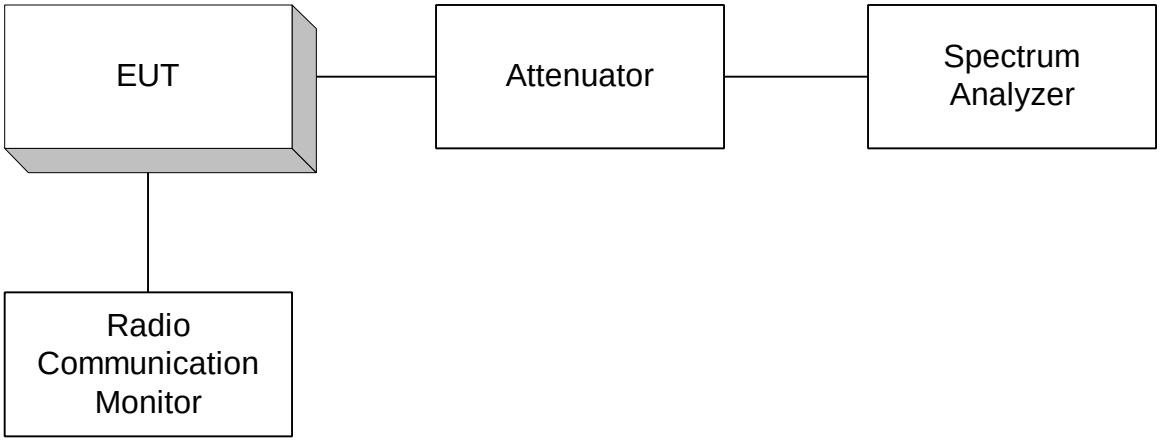


Para. No. 2.1049 - Occupied Bandwidth



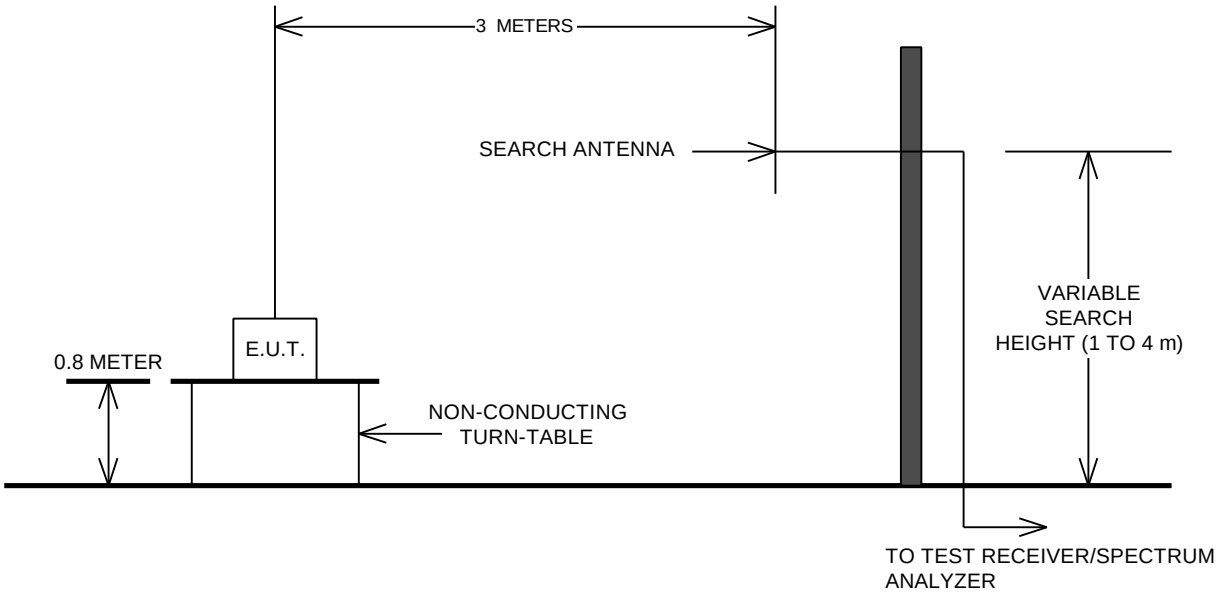
The Radio Communication Monitor is used only to provide modulation input for external modulation.

Para. No. 2.1051 Spurious Emissions at Antenna Terminals

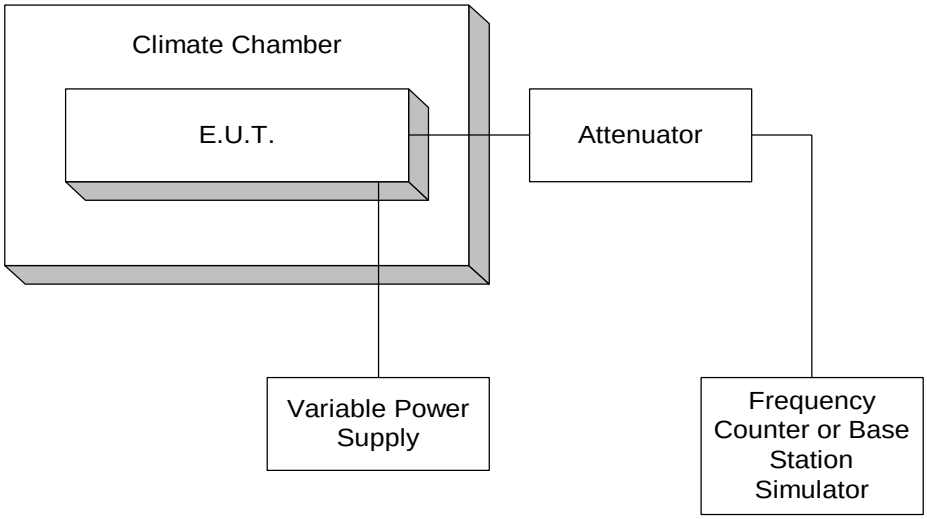


The Radio Communication Monitor is used only to provide modulation input for external modulation.

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