

1. TEST REPORT CERTIFICATION

APPLICANT : VISIONETICS INTERNATIONAL

ADDRESS : 3F, NO. 3, PROSPERITY ROAD,
SCIENCE-BASED INDUSTRIAL PARK,
HSINCHU, TAIWAN, R.O.C.

EUT DESCRIPTION : DIGITAL SATELLITE RECEIVER

(A) POWER SUPPLY : 115/230V

(B) MODEL : VISTAR 2000XX

(C) FCCID : LLVVISTAR2000XX

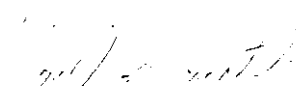
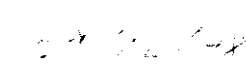
FINAL TEST DATE : 09/14/1998

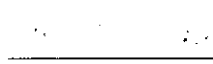
MEASUREMENT PROCEDURE USED :

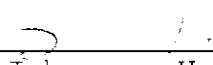
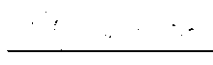
PART 15 SUB PART B OF FCC RULES AND
REGULATIONS (47 CFR PART 15)
FCC / ANSI C63.4 - 1992

WE HEREBY SHOW THAT:

THE MEASUREMENTS SHOWN IN THE ATTACHMENT WERE
MADE IN ACCORDANCE WITH THE PROCEDURES INDICATED,
AND THE ENERGY EMITTED BY THE EQUIPMENT WAS
FOUND TO BE WITHIN THE LIMITS APPLICABLE.

TESTING ENGINEER :  DATE 
Taylor Ho

SUPERVISOR :  DATE 
Jesse Ho

APPROVED BY :  DATE 
Johnson Ho

2. TEST STATEMENT

2.1 TEST STATEMENT

TO whom it may concern,

This letter is to explain the test condition of this project.
The EUT be tested as the following status.

This EUT is a TV Broadcast Receiver

The data was shown in this report reflects the worst-case data
for each condition as listed above.

2. TEST STATEMENT

2.2 DEPARTURE FROM DOCUMENT POLICIES, PROCEDURE OR SPECIFICATIONS

DID HAVE
ANY DEPARTURE FROM DOCUMENT POLICIES
& PROCEDURES OR FROM SPECIFICATIONS.

YES _____ , NO N/A .

IF YES, THE DESCRIPTION AS BELOW.

2.3 TEST STATEMENT

1. THE CERTIFICATE OR REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF THE LABORATORY.
2. THE REPORT MUST NOT BE USED BY THE CLIENT TO CLAIM PRODUCT ENDORSEMENT BY NVLAP OR ANY AGENCY OF THE U.S. GOVERNMENT.

3. EUT MODIFICATIONS

THE FOLLOWING ACCESSORIES WERE ADDED TO THE EUT DURING TESTING:

- 1). PIN1, 3, 19, 40, 41 OF SC1 ADDED FERRITE BEAD(imp: 220ohm AT 100MHz) AND 100pF CAP TO GROUND.
- 2). PIN22, 23, 24, 27 OF SC1 ADDED FERRITE BEAD(imp: 600ohm AT 100MHz).
- 3). PIN2 OF U1 ADDED A FERRITE BEAD(imp: 1Kohm AT 100MHz).
- 4). PIN1 OF J5 ADDED A FERRITE BEAD(imp: 120ohm AT 100MHz).
- 5). PIN3, 4, 5, 6 OF J5 ADDED FERRITE BEAD(imp: 600ohm AT 100MHz).
- 6). AC IN ADDED FERRITE CORE(imp: 120ohm AT 100MHz).

5. CONDUCTED POWER LINE TEST

5.1 TEST EQUIPMENT

THE FOLLOWING TEST EQUIPMENT WAS USED DURING THE
CONDUCTED POWER LINE TEST :

EQUIPMENT/ FACILITIES	SPECIFICAT -IONS	MANUFACTURER	MODEL#/ SERIAL#	DATE OF CAL. & CAL.CENTER	DUE DATE
SPECTRUM ANALYZER	9 KHz TO 1 GHz	HP	8590L/ 3624A1317	AUGUST, 1998 HP	1Y
EMI TEST RECEIVER	9 KHz TO 30 MHz	ROHDE & SCHWARZ	ESHS30/ 826003/008	AUGUST, 1998 ETC	1Y
LISN	50 uH, 50 ohm	SOLAR ELECTRONICS	9252-50- R24-BNC/ 951315	AUGUST, 1998 ETC	1Y
LISN	50 uH, 50 ohm	SOLAR ELECTRONICS	9252-50- R24-BNC/ 951318	AUGUST, 1998 ETC	1Y
SIGNAL GENERATOR	9 KHz TO 1080 MHz	ROHDE & SCHWARZ	SMY01/ 841104/019	APRIL, 1998 ITRI	1Y
POWER CONVERTER	0 TO 300 VAC 47 - 500 Hz	AFC	AFC-1KW/ 850510	APRIL, 1998 SRT	1Y

5.2 CONFIGURATION OF THE EUT

THE EUT WAS CONFIGURED ACCORDING TO ANSI C63.4 - 1992.
ALL INTERFACE PORTS WERE CONNECTED TO THE APPROPRIATE
PERIPHERALS. ALL PERIPHERALS AND CABLES ARE LISTED
BELOW.

-EUT

DEVICE	MANUFACTURER	MODEL #	FCCID
DIGITAL SATELLITE RECEIVER	VISIONETICS INTERNATIONAL	VISTAR 2000XX	LLVVISTAR2000XX

-REMARK

-INTERNAL DEVICES

<u>DEVICE</u>	<u>MANUFACTURER</u>	<u>MODEL #</u>	<u>DoC/FCCID</u>
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- PERIPHERALS

DEVICE	MANUFACTURER	MODEL# / SERIAL#	FCC STATUS	CABLE
VCR	JVC	HR-S5800E	VERIFICATION	DATA-UNS
TV MONITOR	SONY	PVM-1354Q	DoC	POWER-UNS
QPSK	SAGEM	PSM 2100	VERIFICATION	DATA-UNS
UP CONVETER	WEGENER	000915	VERIFICATION	DATA-UNS

- REMARK

- (1) . CABLE - UNS : UNSHIELDED CABLE
S : SHIELDED CABLE
- (2) . CABLES - ALL 1m OR GREATER IN LENGTH-
BUNDLED ACCORDING TO ANSI C63.4 - 1992 .

5.3 EUT OPERATING CONDITION

OPERATING CONDITION IS ACCORDING TO ANSI C63.4 - 1992.

1. EUT POWER ON.

2. OPERATION:

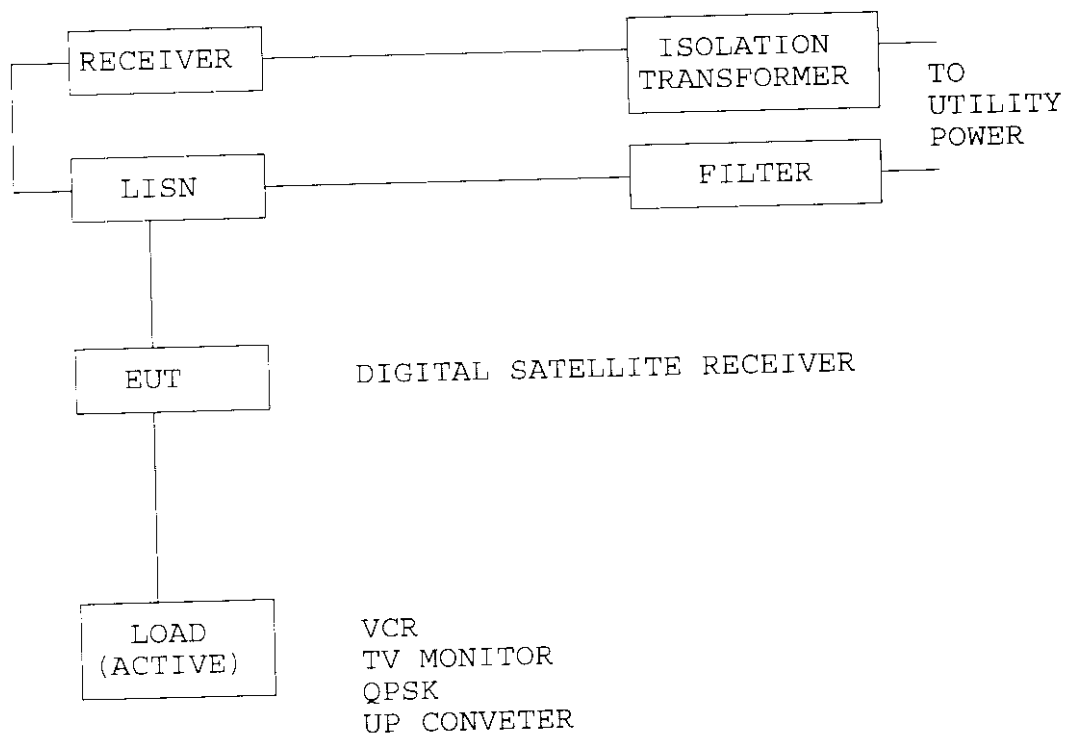
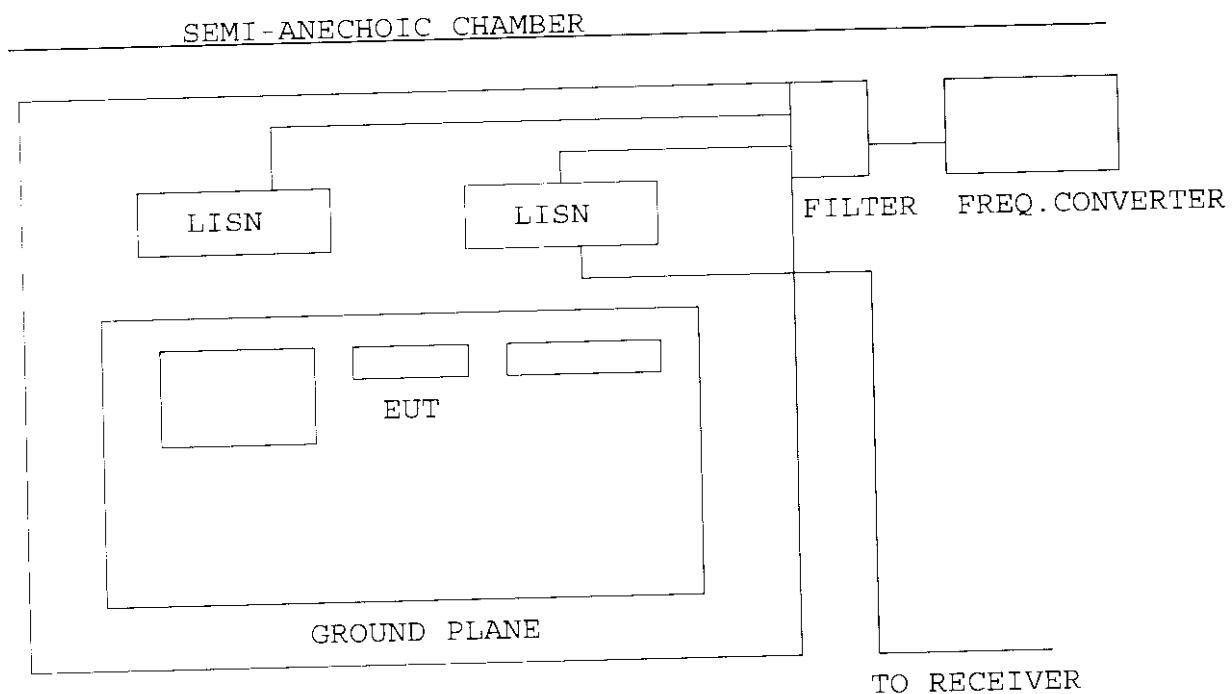
SELEC. CHANNEL

ACCORDING TO USER MANUAL AND GET PITCHURE.

5.4 TEST PROCEDURE

THE EUT WAS TESTED ACCORDING TO EN55022. THE CONDUCTED TEST WAS PERFORMED ACCORDING TO ANSI C63.4 7.2 TEST PROCEDURES. THE FREQUENCY SPECTRUM FROM 0.15MHz TO 30MHz WAS INVESTIGATED. THE LISN USED WAS 50 ohm/50 uHenry AS SPECIFIED BY EN55022. CABLES AND PERI-PHERALS WERE MOVED TO FIND THE MAXIMUM EMISSION LEVELS FOR EACH FREQUENCY.

5.5 TEST SETUP



5.6 CONDUCTED POWER LINE EMISSION LIMIT

FREQUENCY RANGE (MHz)	CLASS A	CLASS B
0.045 - 1.705	1000 uV	250 uV
1.705 - 30	3000 uV	250 uV

NOTE : IN THE ABOVE TABLE, THE TIGHTER LIMIT
APPLIES AT THE BAND EDGES.

5.7 CONDUCTED POWER LINE TEST RESULT

THE FREQUENCY SPECTRUM FROM 0.45 MHz TO 30 MHz WAS INVESTIGATED. ALL READINGS ARE QUASI-PEAK VALUES WITH A RESOLUTION BANDWIDTH OF 9 KHz.

TEMPERATURE : 28 C

HUMIDITY : 78 %RH

FREQUENCY(MHz)	LINE 1 (uv)	LINE 2 (uv)	LIMIT (uv)
0.56	69.98	*	250
0.78	29.85	44.16	250
1.42	51.88	39.81	250
7.91	85.11	51.29	250
11.9	153.1	67.61	250
22.1	*	19.05	250

- REMARKS : (1) .* = MEMENT DOES NOT APPLY FOR THIS FREQUENCY
- (2) .UNCERTAINTY IN CONDUCTED EMISSION MEASURED IS <+/-2dB
- (3) .CH3 : 950MHz
- (4) .TEST CONFIGURATION PLEASE SEE 4.2
- (5) .TEST EQUIPMENT PLEASE SEE 4.1
- (6) .ANY DEPARTURE FROM SPECIFICATION:N/A

SIGNED BY TESTING ENGINEER : _____

[Signature]

5.7 CONDUCTED POWER LINE TEST RESULT

THE FREQUENCY SPECTRUM FROM 0.45 MHz TO 30 MHz WAS INVESTIGATED. ALL READINGS ARE QUASI-PEAK VALUES WITH A RESOLUTION BANDWIDTH OF 9 KHz.

TEMPERATURE : 28 C

HUMIDITY : 78 %RH

FREQUENCY(MHz)	LINE 1 (uv)	LINE 2 (uv)	LIMIT (uv)
0.69	71.61	67.61	250
0.77	49.55	56.89	250
1.42	56.23	46.77	250
7.91	63.10	*	250
10.6	*	139.6	250

REMARKS : (1). * = MEMENT DOES NOT APPLY FOR THIS FREQUENCY

(2). UNCERTAINTY IN CONDUCTED EMISSION MEASURED IS <+/-2dB

(3). CH3 : 1550MHz

(4). TEST CONFIGURATION PLEASE SEE 4.2

(5). TEST EQUIPMENT PLEASE SEE 4.1

(6). ANY DEPARTURE FROM SPECIFICATION: N/A

SIGNED BY TESTING ENGINEER : 

5.7 CONDUCTED POWER LINE TEST RESULT

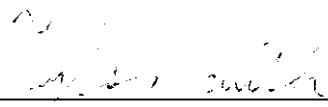
THE FREQUENCY SPECTRUM FROM 0.45 MHz TO 30 MHz WAS INVESTIGATED. ALL READINGS ARE QUASI-PEAK VALUES WITH A RESOLUTION BANDWIDTH OF 9 KHz.

TEMPERATURE : 28 C

HUMIDITY : 78 %RH

FREQUENCY(MHz)	LINE 1 (uv)	LINE 2 (uv)	LIMIT (uv)
0.69	*	63.83	250
0.77	51.29	51.29	250
1.42	50.12	45.19	250
7.91	110.9	*	250
11.9	76.74	110.9	250

- REMARKS : (1). * = MEMENT DOES NOT APPLY FOR THIS FREQUENCY
- (2). UNCERTAINTY IN CONDUCTED EMISSION MEASURED IS <+/-2dB
- (3). CH3 : 2050MHz
- (4). TEST CONFIGURATION PLEASE SEE 4.2
- (5). TEST EQUIPMENT PLEASE SEE 4.1
- (6). ANY DEPARTURE FROM SPECIFICATION: N/A

SIGNED BY TESTING ENGINEER : 

5.7 CONDUCTED POWER LINE TEST RESULT

THE FREQUENCY SPECTRUM FROM 0.45 MHz TO 30 MHz WAS INVESTIGATED. ALL READINGS ARE QUASI-PEAK VALUES WITH A RESOLUTION BANDWIDTH OF 9 KHz.

TEMPERATURE : 28 C

HUMIDITY : 78 %RH

FREQUENCY (MHz)	LINE 1 (uv)	LINE 2 (uv)	LIMIT (uv)
0.48	*	97.72	250
0.89	94.41	*	250
1.42	131.8	*	250
2.31	*	85.11	250
11.8	26.30	21.88	250
21.1	29.17	5.370	250

- REMARKS : (1). * = MEMENT DOES NOT APPLY FOR THIS FREQUENCY
 (2). UNCERTAINTY IN CONDUCTED EMISSION MEASURED IS <+/-2dB
 (3). CH4 : 950MHz
 (4). TEST CONFIGURATION PLEASE SEE 4.2
 (5). TEST EQUIPMENT PLEASE SEE 4.1
 (6). ANY DEPARTURE FROM SPECIFICATION: N/A

SIGNED BY TESTING ENGINEER : _____

5.7 CONDUCTED POWER LINE TEST RESULT

THE FREQUENCY SPECTRUM FROM 0.45 MHz TO 30 MHz WAS INVESTIGATED. ALL READINGS ARE QUASI-PEAK VALUES WITH A RESOLUTION BANDWIDTH OF 9 KHz.

TEMPERATURE : 28 C

HUMIDITY : 78 %RH

FREQUENCY (MHz)	LINE 1 (uv)	LINE 2 (uv)	LIMIT (uv)
0.47	98.86	*	250
0.62	*	104.7	250
0.98	*	104.7	250
1.00	96.61	*	250
2.57	*	75.86	250
4.00	*	34.28	250
4.58	51.29	*	250

- REMARKS : (1). * = MEMENT DOES NOT APPLY FOR THIS FREQUENCY
 (2). UNCERTAINTY IN CONDUCTED EMISSION MEASURED IS <+/-2dB
 (3). CH4 : 1550MHz
 (4). TEST CONFIGURATION PLEASE SEE 4.2
 (5). TEST EQUIPMENT PLEASE SEE 4.1
 (6). ANY DEPARTURE FROM SPECIFICATION: N/A

SIGNED BY TESTING ENGINEER : _____

5.7 CONDUCTED POWER LINE TEST RESULT

THE FREQUENCY SPECTRUM FROM 0.45 MHz TO 30 MHz WAS INVESTIGATED. ALL READINGS ARE QUASI-PEAK VALUES WITH A RESOLUTION BANDWIDTH OF 9 KHz.

TEMPERATURE : 28 C

HUMIDITY : 78 %RH

FREQUENCY (MHz)	LINE 1 (uv)	LINE 2 (uv)	LIMIT (uv)
0.63	118.9	123.0	250
1.74	84.14	*	250
2.34	*	85.11	250
6.30	13.03	9.333	250
24.0	26.00	25.70	250

- REMARKS : (1). * = MEMENT DOES NOT APPLY FOR THIS FREQUENCY
 (2). UNCERTAINTY IN CONDUCTED EMISSION MEASURED IS <+/-2dB
 (3). CH4 : 2050MHz
 (4). TEST CONFIGURATION PLEASE SEE 4.2
 (5). TEST EQUIPMENT PLEASE SEE 4.1
 (6). ANY DEPARTURE FROM SPECIFICATION: N/A

SIGNED BY TESTING ENGINEER : _____

6. RADIATED EMISSION TEST

6.1 TEST EQUIPMENT

THE FOLLOWING TEST EQUIPMENT WAS USED DURING THE RADIATED EMISSION TEST :

EQUIPMENT / FACILITIES	SPECIFICAT -IONS	MANUFACTUR -ER	MODEL#/ SERIAL#	DATE OF CAL. & CAL. CENTER	DUE DATE
RECEIVER	20 MHz TO 1000 MHz	R & S	ESVS 30/ 841977/003	APRIL, 1998 ITRI	1Y
SPECTRUM ANALYZER	100 Hz TO 1500 MHz	HP	8568B/ 3019A05294	OCT, 1997 ETC	1Y
SPECTRUM ANALYZER	9 KHz TO 22 GHz	HP	8593E/ 3322A00670	APRIL, 1998 ITRI	1Y
SPECTRUM ANALYZER	100 Hz TO 1000 MHz	IFR	A-7550/ 2684/1248	JULY, 1998 ETC	1Y
SIGNAL GENERATOR	9 KHz TO 1080 MHz	ROHDE & SCHWARZ	SMY01/ 841104/019	APRIL, 1998 ITRI	1Y
DIPOLE ANTENNA	28 MHz TO 1000 MHz	EMCO	3121C/ 9003-535	DEC, 1997 SRT	1Y
DIPOLE ANTENNA	28 MHz TO 1000 MHz	EMCO	3121C/ 9611-1239	DEC, 1997 SRT	1Y
BI-LOG ANTENNA	26 MHz TO 2000 MHz	EMCO	3142/ 9509-1152	DEC, 1997 SRT	1Y
BI-LOG ANTENNA	26 MHz TO 1100 MHz	EMCO	3143/ 9509-1152	DEC, 1997 SRT	1Y
PRE-AMPLIFIER	0.1 MHz TO 1300 MHz	HP	8447D/ 2944A08402	APRIL, 1998 ITRI	1Y
PRE-AMPLIFIER	0.1 MHz TO 1300 MHz	HP	8447D/ 2944A06412	AUGUST, 1998 ETC	1Y
HORN ANTENNA	1 GHz TO 18 GHz	EMCO	3115/ 9012-3619	DEC, 1997 SRT	1Y

6.2 CONFIGURATION OF THE EUT

SAME AS SECTION 5.4 OF THIS REPORT.

6.3 EUT OPERATING CONDITION

SAME AS SECTION 5.3 OF THIS REPORT.

6.4 TEST PROCEDURE

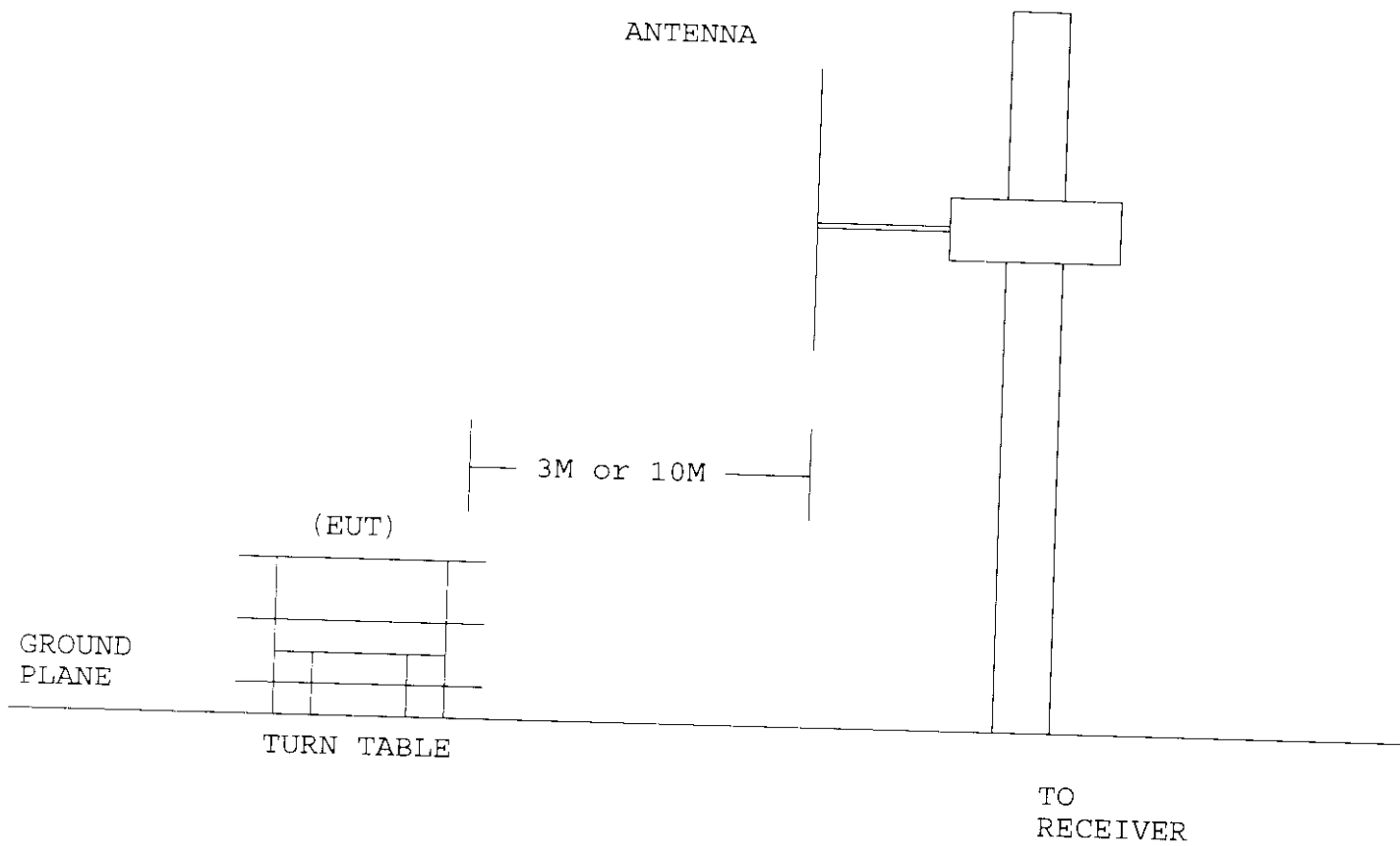
THE EUT WAS TESTED ACCORDING TO ANSI C63.4 - 1992. THE RADIATED TEST WAS PERFORMED AT SRT LAB'S OPEN SITE. THIS SITE IS ON FILE WITH THE FCC LABORATORY DIVISION, REFERENCE 31040/SIT.

THE FREQUENCY SPECTRUM FROM 30 MHz TO 1 GHz WAS INVESTIGATED. MEASUREMENTS WERE MADE AT THREE METERS WITH AN ADJUSTABLE DIPOLE ANTENNA. PERIPHERALS, CABLES, EUT ORIENTATION, AND ANTENNA HEIGHT WERE VARIED TO FIND THE MAXIMUM EMISSION FOR EACH FREQUENCY.

THE FREQUENCY SPECTRUM FROM 30 MHz TO 2 GHz WAS INVESTIGATED. THE MEASUREMENTS UNDER 1 GHz WITH RESOLUTION BANDWIDTH OF 120 KHz ARE QUASI-PEAK READING MADE AT THREE METERS USING AN ADJUSTABLE DIPOLE ANTENNA. PERIPHERALS, CABLES, EUT ORIENTATION, AND ANTENNA HEIGHT WERE VARIED TO FIND THE MAXIMUM EMISSION FOR EACH FREQUENCY.

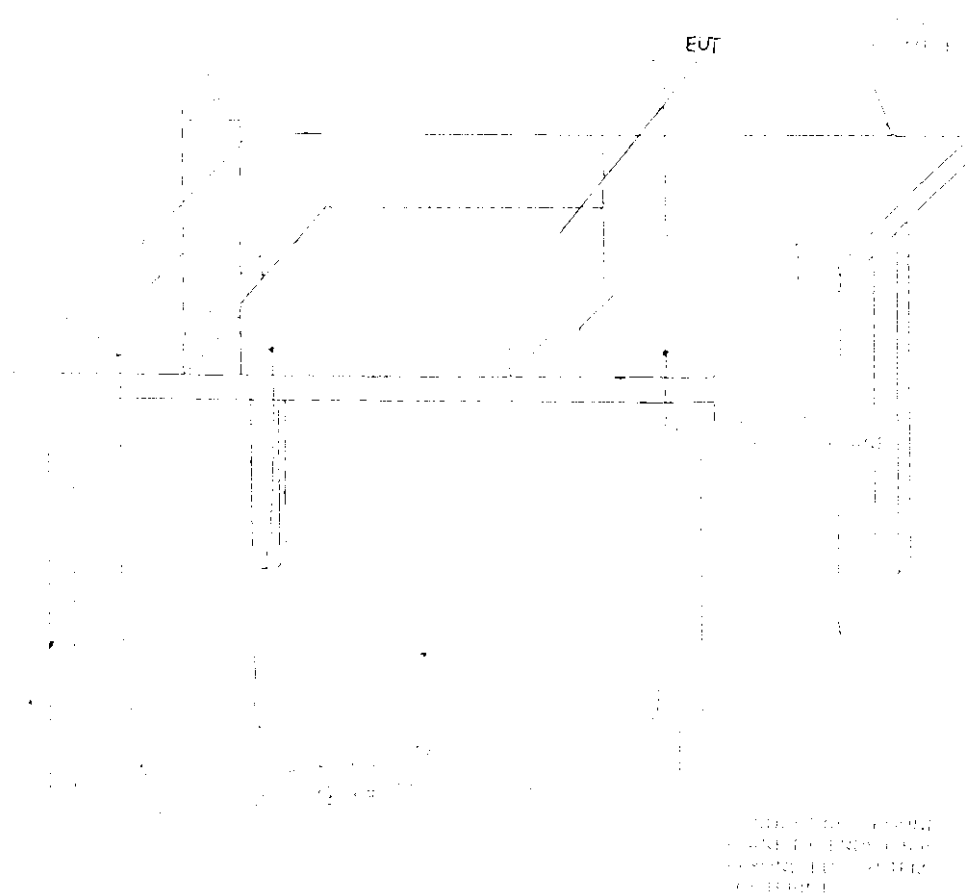
THE MEASUREMENTS ABOVE 1 GHz WITH A RESOLUTION BANDWIDTH OF 1 MHz ARE PEAK READING AT A DISTANCE OF THREE METERS WITH A HORN ANTENNA.

6.5 RADIATED TEST SETUP



6.5 RADIATED TEST SETUP

Figure 6.5.1 Radiated Test Setup



6.6 RADIATED EMISSION LIMIT

ALL EMISSION FROM A DIGITAL DEVICE, INCLUDING ANY NETWORK OF CONDUCTORS AND APPARATUS CONNECTED THERETO, SHALL NOT EXCEED THE LEVEL OF FIELD STRENGTH SPECIFIED BELOW :

CLASS B

FREQUENCY (MHz)	DISTANCE (m)	FIELD STRENGTH (uV/m)
30 - 88	3	100
88 - 216	3	150
216 - 960	3	200
ABOVE 960	3	500

CLASS B (OPEN CASE)

FREQUENCY (MHz)	DISTANCE (m)	FIELD STRENGTH (uV/m)
30 - 88	3	199.5
88 - 216	3	298.5
216 - 960	3	398.1

CLASS A

FREQUENCY (MHz)	DISTANCE (m)	FIELD STRENGTH (uV/m)
30 - 88	3	316.3
88 - 216	3	473.2
216 - 960	3	613.0
ABOVE 960	3	1000.0

- NOTE : 1. IN THE EMISSION TABLES ABOVE, THE TIGHTER LIMIT APPLIES AT THE BAND EDGES.
2. DISTANCE REFERS TO THE DISTANCE BETWEEN MEASURING INSTRUMENT, ANTENNA, AND THE CLOSEST POINT OF ANY PART OF THE DEVICE OR SYSTEM.

6.7 RADIATED EMISSION TEST RESULT

THE FREQUENCY SPECTRUM FROM 30 MHz TO 1 GHz WAS INVESTIGATED. ALL READINGS UNDER 1 GHz ARE QUASI-PEAK VALUES WITH A RESOLUTION BANDWIDTH OF 120 KHz. MEASUREMENTS WERE MADE AT 3 METERS. THE MEASUREMENTS ABOVE 1 GHz WITH A RESOLUTION BANDWIDTH OF 1 MHz ARE PEAK READING AT A DISTANCE OF 3 METERS.

TEMPERATURE : 28 C

HUMIDITY : 78 %RH

FREQ. (MHz)	CABLE LOSS (dB)	ANT. FACTOR (dB)	READING (dBuV)		EMISSION (dBuV)		LMTS (dBuV)
			HORIZ	VERT	HORIZ	VERT	
950	4.00	22.2	22.01	25.67	48.21	51.87	54
1900	5.52	28.8	14.18	14.20	48.50	48.70	54
2850	6.01	32.0	9.030	8.750	47.04	46.76	54
3800	6.47	34.1	5.110	3.980	45.68	44.55	54
4750	8.95	33.8	6.530	6.270	49.28	49.02	54
1430	6.42	25.7	10.38	13.38	42.50	45.50	54
2860	6.01	32.0	4.590	6.990	42.60	45.00	54
4290	8.95	33.8	3.250	3.750	45.50	46.50	54
5720	8.59	35.7	*	*	*	*	54

- REMARKS :
- (1). MEASUREMENT DOES NOT APPLY FOR THIS FREQUENCY.
 - (2). THE MAXIMUM CONDITION WAS WITH THE MONITOR POWER CORD CONNECTED TO THE PERSONAL COMPUTER.
 - (3). SAMPLE CALCULATION

$$20 \text{ LOG}(\text{EMISSION}) \mu\text{V/m} = \text{CABLE LOSS (dB)} + \text{FACTOR (dB)} + \text{READING (dBuV/m)}$$
 - (4). TEST EQUIPMENT PLEASE SEE 5.1
 - (5). UNCERTAINTY IN RADIATED EMISSION MEASURED IS $\pm 4\text{dB}$
 - (6). ANY DEPARTURE FROM SPECIFICATION: N/A
 - (7). RECEIVING FREQ.: 950MHz
 LOCAL FREQ.: 1430MHz

SIGNED BY TESTING ENGINEER : _____

6.7 RADIATED EMISSION TEST RESULT

THE FREQUENCY SPECTRUM FROM 30 MHz TO 1 GHz WAS INVESTIGATED. ALL READINGS UNDER 1 GHz ARE QUASI-PEAK VALUES WITH A RESOLUTION BANDWIDTH OF 120 KHz. MEASUREMENTS WERE MADE AT 3 METERS. THE MEASUREMENTS ABOVE 1 GHz WITH A RESOLUTION BANDWIDTH OF 1 MHz ARE PEAK READING AT A DISTANCE OF 3 METERS.

TEMPERATURE : 28 C

HUMIDITY : 78 %RH

FREQ. (MHz)	CABLE LOSS (dB)	ANT. FACTOR (dB)	READING (dBuV)		EMISSION (dBuV)		LMTS (dBuV)
			HORIZ	VERT	HORIZ	VERT	
1550	6.42	25.7	18.22	19.00	50.34	51.12	54
3100	6.01	32.0	9.750	9.400	47.76	47.41	54
4650	8.95	33.8	6.940	6.450	49.69	49.20	54
6200	9.00	36.2	2.100	2.500	47.30	47.70	54
7750	10.6	37.5	*	*	*	*	54
2030	5.52	28.8	13.68	15.18	48.00	49.50	54
4060	6.47	34.1	7.130	6.930	47.70	47.50	54
6090	9.00	36.2	3.800	3.700	49.00	48.90	54
8120	9.67	38.4	*	*	*	*	54

- REMARKS :
- (1). MEASUREMENT DOES NOT APPLY FOR THIS FREQUENCY.
 - (2). THE MAXIMUM CONDITION WAS WITH THE MONITOR POWER CORD CONNECTED TO THE PERSONAL COMPUTER.
 - (3). SAMPLE CALCULATION
 $20 \text{ LOG(EMISSION) uV/m} = \text{CABLE LOSS (dB)} + \text{FACTOR (dB)} + \text{READING (dBuV/m)}$
 - (4). TEST EQUIPMENT PLEASE SEE 5.1
 - (5). UNCERTAINTY IN RADIATED EMISSION MEASURED IS $\pm 4\text{dB}$
 - (6). ANY DEPARTURE FROM SPECIFICATION: N/A
 - (7). RECEIVING FREQ.: 1550MHz
 LOCAL FREQ.: 2030MHz

SIGNED BY TESTING ENGINEER : _____

6.7 RADIATED EMISSION TEST RESULT

THE FREQUENCY SPECTRUM FROM 30 MHz TO 1 GHz WAS INVESTIGATED. ALL READINGS UNDER 1 GHz ARE QUASI-PEAK VALUES WITH A RESOLUTION BANDWIDTH OF 120 KHz. MEASUREMENTS WERE MADE AT 3 METERS. THE MEASUREMENTS ABOVE 1 GHz WITH A RESOLUTION BANDWIDTH OF 1 MHz ARE PEAK READING AT A DISTANCE OF 3 METERS.

TEMPERATURE : 28 C

HUMIDITY : 78 %RH

FREQ. (MHz)	CABLE LOSS (dB)	ANT. FACTOR (dB)	READING (dBuV)		EMISSION (dBuV)		LMTS (dBuV)
			HORIZ	VERT	HORIZ	VERT	
2050	5.52	28.8	15.20	16.31	49.52	50.63	54
4100	6.47	34.1	8.690	9.290	49.26	49.86	54
6150	9.00	36.2	3.220	3.500	48.42	48.70	54
8200	9.67	38.4	*	*	*	*	54
2530	6.43	30.1	10.97	12.47	47.50	49.00	54
5060	8.26	35.0	3.040	5.240	46.30	48.50	54
7590	10.6	37.5	3.100	4.000	51.00	52.10	54

- REMARKS :
- (1). MEASUREMENT DOES NOT APPLY FOR THIS FREQUENCY.
 - (2). THE MAXIMUM CONDITION WAS WITH THE MONITOR POWER CORD CONNECTED TO THE PERSONAL COMPUTER.
 - (3). SAMPLE CALCULATION

$$20 \text{ LOG (EMISSION) } \mu\text{V/m} = \text{CABLE LOSS (dB)} + \text{FACTOR (dB)} + \text{READING (dBuV/m)}$$
 - (4). TEST EQUIPMENT PLEASE SEE 5.1
 - (5). UNCERTAINTY IN RADIATED EMISSION MEASURED IS $\pm 4\text{dB}$
 - (6). ANY DEPARTURE FROM SPECIFICATION: N/A
 - (7). RECEIVING FREQ.: 2050MHz
 LOCAL FREQ.: 2530MHz

SIGNED BY TESTING ENGINEER : _____

6. RADIATED EMISSION TEST RESULT

THE FREQUENCY SPECTRUM FROM 30 MHz TO 1 GHz WAS INVESTIGATED. ALL READINGS UNDER 1 GHz ARE QUASI-PEAK VALUES WITH A RESOLUTION BANDWIDTH OF 120 KHz. MEASUREMENTS WERE MADE AT 3 METERS. THE MEASUREMENTS ABOVE 1 GHz WITH A RESOLUTION BANDWIDTH OF 1 MHz ARE PEAK READING AT A DISTANCE OF 3 METERS.

TEMPERATURE : 28 CHUMIDITY : 78 %RH

FREQ. (MHz)	CABLE LOSS (dB)	ANT. FACTOR (dB)	READING (dBuV)		EMISSION (uV)		LMTS (uV)
			HORIZ	VERT	HORIZ	VERT	
120.2	1.4	7.20	31.65	30.30	102.9	88.10	150
180.4	1.7	9.10	31.59	25.87	131.7	68.16	150
200.7	1.7	9.90	29.29	24.97	110.8	67.38	150
261.8	2.0	12.0	28.07	*	126.9	*	200
459.7	2.7	16.4	*	21.07	*	102.0	200

REMARKS : (1). MEASUREMENT DOES NAPPY FOR THIS FREQUENCY.

(2). THE MAXIMUM CONDITION WAS WITH THE MONITOR POWER CORD CONNECTED TO THE PERSONAL COMPUTER.

(3). SAMPLE CALCULATION
 $20 \text{ LOG (EMISSION) uV/m} = \text{CABLE LOSS (dB)} + \text{FACTOR (dB)} + \text{READING (dBuV/m)}$

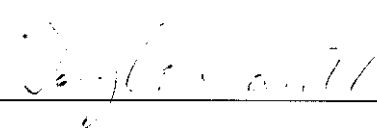
(4). TEST CONFIGURATION PLEASE SEE 5.2

(5). TEST EQUIPMENT PLEASE SEE 5.1

(6). UNCERTAINTY IN RADIATED EMISSION MEASURED IS $<+/-4\text{dB}$ (7). ANY DEPARTURE FROM SPECIFICATION : N/A

(8). CH3

SIGNED BY TESTING ENGINEER :



6. RADIATED EMISSION TEST RESULT

THE FREQUENCY SPECTRUM FROM 30 MHz TO 1 GHz WAS INVESTIGATED. ALL READINGS UNDER 1 GHz ARE QUASI-PEAK VALUES WITH A RESOLUTION BANDWIDTH OF 120 KHz. MEASUREMENTS WERE MADE AT 3 METERS. THE MEASUREMENTS ABOVE 1 GHz WITH A RESOLUTION BANDWIDTH OF 1 MHz ARE PEAK READING AT A DISTANCE OF 3 METERS.

TEMPERATURE : 28 C HUMIDITY : 78 %RH

FREQ. (MHz)	CABLE LOSS (dB)	ANT. FACTOR (dB)	READING (dBuV)		EMISSION (uV)		LMTS (uV)
			HORIZ	VERT	HORIZ	VERT	
63.00	1.0	6.00	27.15	27.20	50.99	51.29	100
124.1	1.4	7.20	28.30	26.40	69.98	56.23	150
135.7	1.4	10.0	24.50	23.10	62.37	53.09	150
175.5	1.7	9.1	26.30	26.70	71.61	74.99	150
180.4	1.7	9.1	27.50	23.20	82.22	50.12	150
200.7	1.7	9.9	28.90	26.88	105.9	83.95	150
459.6	2.7	16.4	20.90	21.4	100.0	105.9	200
499.5	2.7	17.2	24.10	23.00	158.5	139.6	200

- REMARKS : (1). MEASUREMENT DOES NOT APPLY FOR THIS FREQUENCY.
- (2). THE MAXIMUM CONDITION WAS WITH THE MONITOR POWER CORD CONNECTED TO THE PERSONAL COMPUTER.
- (3). SAMPLE CALCULATION
 $20 \text{ LOG}(\text{EMISSION}) \text{ uV/m} = \text{CABLE LOSS (dB)} + \text{FACTOR (dB)} + \text{READING (dBuV/m)}$
- (4). TEST CONFIGURATION PLEASE SEE 5.2
- (5). TEST EQUIPMENT PLEASE SEE 5.1
- (6). UNCERTAINTY IN RADIATED EMISSION MEASURED IS $\pm 4\text{dB}$
- (7). ANY DEPARTURE FROM SPECIFICATION : N/A
- (8). CH4

SIGNED BY TESTING ENGINEER : _____

7. RF OUTPUT LEVEL MEASUREMENT

7.1 MEASUREMENT DESCRIPTION

ACCORDING TO SECTION 12.2.5 OF ANSI C63.4, THE OUTPUT SIGNAL LEVEL IS THE MAXIMUM VOLTAGE LEVEL PRESENT AT THE OUTPUT TERMINAL OF A TV INTERFACE DEVICE ON A PARTICULAR FREQUENCY DURING NORMAL USE OF THE DEVICE.

THIS EUT IS SUPPLIED WITH A SIMULATION RF SIGNAL TO SAT RF INPUT TERMINAL. AND MEASURE THE SIGNAL LEVEL AT THE VISUAL AND AURAL CARRIER FREQUENCIES OF THE OUTPUT CHANNEL.

7.2 DATA OF MEASUREMENT

TEST DATE : Sept. 11, 1998 TEMPERATURE : 28°C HUMIDITY: 70%

A. OUTPUT CHANNEL: 3

TUNED	VIDEO	AUDIO	LOSS dB	VIDEO	AUDIO	VIDEO	AUDIO	VIDEO	AUDIO
950	61.28	56.83	0.5	63.9	59.3	1567	923	3000	671
1500	61.28	56.83	0.5	62.3	59.0	1304	892	3000	671
2050	61.28	56.83	0.5	62.1	59.1	1274	902	3000	671

B. OUTPUT CHANNEL: 4

TUNED	VIDEO	AUDIO	LOSS dB	VIDEO	AUDIO	VIDEO	AUDIO	VIDEO	AUDIO
950	67.30	62.85	0.5	63.6	59.6	1497	955	3000	671
1500	67.30	62.85	0.5	62.5	58.7	1497	861	3000	671
2050	67.30	62.85	0.5	62.9	58.5	1397	842	3000	671

NOTE: THE AUDIO CHANNEL SHOWED ABOVE TABLE IS THE ONE GENERATING HIGHER OUTPUT LEVEL OF TWO AUDIO CHANNELS.

7.3 CALCULATION OF DATA MEASURED

THE MEASURING DATA FOR OUTPUT SIGNAL LEVEL IS CALCULATED AS FOLLOWING FORMULA:

$$\text{RESULT (uV)} = 10 \left[\frac{(\text{READING} + \text{PAD LOSS})}{20} \right]$$

7.4 EQUIPMENT FOR RF OUTPUT LEVEL MEASUREMENT

EQUIPMENT	MANUFACTURER	MODEL NO.	NEXT CAL. DUE
SPECTRUM ANALYZER	HEWLETT-PACKARD	8593E	Apr. 1999

THE PARAMETERS OF SPECTRUM ANALYZER IS SET AS FOLLOWING WHILE MEASUREMENT IS PERFORMED:

RESOLUTION BANDWIDTH : 100KHz
 VIDEO BANDWIDTH : 100KHz
 FREQUENCY SPAN : 10MHz
 SWEEP TIME : 200ms
 FUNCTION : PEAK
 INPUT IMPEDANCE ADAPTER : 75ohm - 50ohm

8. RF CONDUCTED SPURIOUS EMISSION MEASUREMENT

8.1 DESCRIPTION OF MEASUREMENT

ACCORDING TO SECTION 12.2.5 OF ANSI C63.4, THE OUTPUT SIGNAL LEVEL IS THE MAXIMUM VOLTAGE LEVEL PRESENT AT THE OUTPUT TERMINAL OF A TV INTERFACE DEVICE ON A PARTICULAR FREQUENCY DURING MORMAL USE OF THE DEVICE.

THIS EUT IS SUPPLIED WITH A SIMULATION RF SIGNAL TO SAT RF INPUT TERMINAL. AND MEASURE THE SIGNAL LEVEL AT THE VISUAL AND AURAL CARRIER FREQUENCIES OF THE OUTPUT CHANNEL.

8.2 MEASUREMENT DATA

TEST DATE : Sept. 11, 1998 TEMPERATURE : 26°C HUMIDITY: 68%

A. OUTPUT CHANNEL: 3
INPUT CHANNEL: 950MHz

FREQ UENCY MHz	METER READING dBuV	ATT. dB	AMPLIFIER GAIN dB	RESULT IN dBuV	RESULT IN uV	LIMIT IN uV
40.00	26.8	6	0	32.8	43.7	94.8
47.88	29.2	6	0	35.2	57.5	94.8
50.50	30.7	6	0	36.7	68.4	94.8
56.30	30.3	6	0	36.3	67.6	94.8
66.63	32.6	6	0	38.6	85.1	94.8
72.13	27.2	6	0	33.2	45.7	94.8
79.95	26.8	6	0	32.8	43.7	94.8
81.08	27.6	6	0	33.6	47.9	94.8
108.08	26.3	6	0	32.3	41.2	94.8
122.65	30.8	6	0	36.8	69.2	94.8
162.20	24.8	6	0	30.8	34.7	94.8
189.09	23.2	6	0	29.2	28.8	94.8
279.66	29.3	6	0	35.3	58.2	94.8
324.11	31.5	6	0	37.5	75.0	94.8

NOTE: MEASURING INSTRUMENT INPUT IMPEDANCE IS SET TO 75 OHMS WHEN PERFORM THIS ITEM OF MEASUREMENT AND A BUILT IN PRE-AMPLIFIER IS ACTIVE.

B. OUTPUT CHANNEL: 4
INPUT CHANNEL: 950MHz

FREQ UENCY MHz	METER READING dBuV	ATT. dB	AMPLIFIER GAIN dB	RESULT IN dBuV	RESULT IN uV	LIMIT IN uV
40.13	23.4	6	0	29.4	29.5	94.8
54.13	30.1	6	0	36.1	63.8	94.8
56.50	30.3	6	0	36.3	65.3	94.8
62.25	30.1	6	0	36.1	63.8	94.8
72.63	26.3	6	0	32.3	41.2	94.8
78.25	28.5	6	0	34.5	53.1	94.8
80.00	29.6	6	0	35.6	60.3	94.8
108.13	19.7	6	0	25.7	19.3	94.8
134.63	18.9	6	0	24.9	17.6	94.8
162.13	17.6	6	0	23.6	15.1	94.8
279.63	21.3	6	0	27.3	23.2	94.8
324.13	29.3	6	0	35.3	58.2	94.8
359.88	24.5	6	0	30.5	33.5	94.8
607.63	17.3	6	0	23.3	14.6	94.8

NOTE: MEASURING INSTRUMENT INPUT IMPEDANCE IS SET TO 75 OHMS WHEN PERFORM THIS ITEM OF MEASUREMENT AND A BUILT IN PRE-AMPLIFIER IS ACTIVE.

INPUT CHANNEL: 1550MHz

FREQ UENCY MHz	METER READING dBuV	ATT. dB	AMPLIFIER GAIN dB	RESULT IN dBuV	RESULT IN uV	LIMIT IN uV
40.13	23.8	6	0	29.8	30.9	94.8
54.13	30.3	6	0	36.3	65.3	94.8
56.50	30.1	6	0	36.1	63.8	94.8
62.25	30.4	6	0	36.4	66.1	94.8
72.63	27.5	6	0	33.5	47.3	94.8
78.25	28.8	6	0	34.8	55.0	94.8
80.00	29.1	6	0	35.1	56.9	94.8
108.13	20.1	6	0	26.1	20.2	94.8
134.63	19.3	6	0	25.3	18.4	94.8
162.13	18.5	6	0	24.5	16.8	94.8
279.63	20.9	6	0	26.9	22.1	94.8
324.13	29.2	6	0	35.2	57.5	94.8
359.88	24.6	6	0	30.6	33.9	94.8
607.63	17.5	6	0	23.5	15.0	94.8

INPUT CHANNEL: 1550MHz

FREQ UENCY MHz	METER READING dBuV	ATT. dB	AMPLIFIER GAIN dB	RESULT IN dBuV	RESULT IN uV	LIMIT IN uV
40.00	26.3	6	0	32.3	41.2	94.8
47.88	29.8	6	0	35.8	61.7	94.8
50.50	30.7	6	0	36.7	68.4	94.8
56.30	30.3	6	0	36.3	65.3	94.8
66.63	28.6	6	0	34.6	53.7	94.8
72.13	28.5	6	0	34.5	53.1	94.8
79.95	27.3	6	0	33.3	46.2	94.8
81.08	27.8	6	0	33.8	49.0	94.8
108.08	27.1	6	0	33.1	45.2	94.8
122.65	29.9	6	0	35.9	62.4	94.8
162.20	23.8	6	0	29.8	31.0	94.8
189.09	24.5	6	0	30.5	33.5	94.8
279.66	29.1	6	0	35.1	56.9	94.8
324.11	31.2	6	0	37.2	72.4	94.8

INPUT CHANNEL: 2050MHz

FREQ UENCY MHz	METER READING dBuV	ATT. dB	AMPLIFIER GAIN dB	RESULT IN dBuV	RESULT IN uV	LIMIT IN uV
40.13	24.1	6	0	30.1	32.0	94.8
54.13	30.5	6	0	36.5	66.8	94.8
56.50	30.1	6	0	36.1	63.8	94.8
62.25	30.8	6	0	36.8	69.2	94.8
72.63	27.1	6	0	33.1	45.2	94.8
78.25	28.9	6	0	34.9	55.6	94.8
80.00	28.7	6	0	34.7	54.3	94.8
108.13	19.6	6	0	25.6	19.1	94.8
134.63	18.6	6	0	24.6	17.0	94.8
162.13	17.3	6	0	23.3	14.6	94.8
279.63	21.4	6	0	27.4	23.4	94.8
324.13	29.5	6	0	35.5	59.6	94.8
359.88	24.6	6	0	30.6	33.9	94.8
607.63	17.3	6	0	23.3	14.6	94.8

8.3 CALCULATION OF DATA MEASURED
THE MEASURING DATA FOR OUTPUT SIGNAL LEVEL IS CALCULATED AS
FOLLOWING FORMULA:

$$\text{RESULT (uV)} = 10^{\left[\frac{(\text{READING} + \text{PAD LOSS} - \text{AMPLIFIER GAIN} + \text{ATT.})}{20} \right]}$$

8.4 EQUIPMENT FOR RF OUTPUT LEVEL MEASUREMENT

EQUIPMENT	MANUFACTURER	MODEL NO.	NEXT CAL. DUE
SPECTRUM ANALYZER	HEWLETT-PACKARD	8593E	Apr. 1999

THE PARAMETERS OF SPECTRUM ANALYZER IS SET AS FOLLOWING WHILE MEASUREMENT IS PERFORMED:

RESOLUTION BANDWIDTH : 100KHz
 VIDEO BANDWIDTH : 100KHz
 FREQUENCY SPAN : 10MHz
 SWEEP TIME : 200ms
 FUNCTION : PEAK
 INPUT IMPEDANCE ADAPTER : 75ohm - 50ohm

9. ANTENNA TRANSFER SWITCH MEASUREMENT

9.1 DESCRIPTION FOR MEASUREMENT

FOR TV INTERFACE DEVICES, ACCORDING TO 15.115(c)(ii), ISOLATION OF TRANSFER SWITCH SHALL NOT EXCEED 0.346 TIMES THE SQUARE ROOT OF R (SAME AS THE R IN RF OUTPUT SIGNAL). THE EUT IS SUPPLIED WITH A SIMULATION RF SIGNAL TO SAT RF INPUT TERMINAL.

9.2 DATA OF MEASUREMENT

TEST DATE : May 11, 1998 TEMPERATURE : 26°C HUMIDITY: 68%
RECEIVING SAT INPUT SIGNAL OF 2050MHz

OUTPUT CHANNEL	METER READING (dBuV)	CORRECTED FACTOR (dB)	RESULT (uV)	LIMIT (uV)	MARGIN (uV)
3	5.4	3	2.63	3.0	-0.37
4	5.1	3	2.54	3.0	-0.46

NOTE:

1. MEASURING INSTRUMENT INPUT IMPEDANCE IS SET TO 75 OHMS WHEN PERFORM THIS ITEM OF MEASUREMENT AND A BUILT IN PRE-AMPLIFIER IS ACTIVE.
2. CORRECTED FACTOR INCLUDES CABLE LOSS AND MATCHING PAD LOSS (IF ANY) OR ATTENUATOR ATTENUATION (IF ANY), CABLE LOSS AND AMPLIFIER GAIN (IF ANY), THAT IS: = PAD LOSS + ATTENUATION - AMPLIFIER GAIN
3. THERE IS NO OBVIOUS DIFFERENCE OF MEASUREMENT RESULT WHEN OPERATING AT OTHER SAT INPUT FREQUENCIES OR CHANNELS.

9.3 RESULT CALCULATION

$$\text{RESULT (uV)} = 10 \left[\frac{(\text{READING} + \text{CORRECTED FACTOR})}{20} \right]^{-3} \times 75 \times 10^{-6} \times 10^{\frac{1}{2}}$$

9.4 MEASURING INSTRUMENT

EQUIPMENT	MANUFACTURER	MODEL NO.	NEXT CAL. DUE
SPECTRUM ANALYZER	HEWLETT-PACKARD	8593E	Apr. 1999

THE PARAMETERS OF RF TEST RECEIVER IS SET AS FOLLOWING WHILE MEASUREMENT IS PERFORMED:

RESOLUTION BANDWIDTH : 100KHz
 VIDEO BANDWIDTH : 100KHz
 FREQUENCY SPAN : 10MHz
 SWEEP TIME : 200ms
 FUNCTION : PEAK