



FCC TEST REPORT

REPORT NO.: RF900713R02A

MODEL NO.: BRG700

(The others model no. please refer to page 6)

RECEIVED: July 13, 2001

TESTED: August 17 ~ August 29, 2001

APPLICANT: NATIONAL DATACOMM CORPORATION

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0528



Lab Code: 200102-0



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1 CERTIFICATION

PRODUCT : Broadband Residential Gateway
BRAND NAME : NDC
MODEL NO. : BRG700 (The others model no. please refer to page 6)
APPLICANT : NATIONAL DATACOMM CORPORATION
STANDARDS : 47 CFR Part 15, Subpart C (Section 15.247),
ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility from August 17, 2001 to August 29, 2001. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions herein specified.

TESTED BY : Steven Lu · DATE: Sep 3, 2001
Steven Lu

CHECKED BY : Emily Lu · DATE: Sep 3, 2001
Emily Lu

APPROVED BY : Harris W. Lai · DATE: Sept. 3, 2001
Harris W. Lai
Senior V.P.



2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
Standard Section	Test Type and Limit	Result	REMARK
15.107	AC Power Conducted Emission Limit: 48dBuV	PASS	Meet the requirement of limit Minimum passing margin is -12.43dBuV at 12.206MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit
15.247(c)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is -2.90dBuV at 200 MHz
15.247(d)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit
15.247(c)	Band Edge Measurement Limit: 20 dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Broadband Residential Gateway
MODEL NO.	BRG700
POWER SUPPLY	5VDC from AC adapter
MODULATION TYPE	BPSK, QPSK, CCK
RADIO TECHNOLOGY	DSSS
TRANSFER RATE	1/2/5.5/11Mbps
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11
OUTPUT POWER	<20dBm
ANTENNA TYPE	External dual dipole antenna
POWER CABLE	Nonshielded 1.8m
I/O PORTS	RJ 45 Port, WAN Port
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT is operated with the following power adapter.

Brand Name :	HiTRON
Model No. :	HES10-05020-01-1
Input Power :	100 - 240V, 20-40VA, 50-60Hz
Output Power :	5VDC, 2A

2. The other models are identical, except model no..

BRAND NAME :	NDC
MODEL NO. :	BRG700CT,BRG700CV,BRG700CX BRG700AT,BRG700AD,BRG700CO BRG700CH,BRG700RO

3. This report is prepared for FCC class II permissive change. The difference compared with the original design is the position of the antenna and the outer appearance of the EUT. So the test is necessary.

For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



3.2 DESCRIPTION OF TEST MODES

Eleven channels are provided in this EUT.

Channel	Frequency	Channel	Frequency
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

NOTE: 1. Below 1 GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11, worst case one, was chosen for final test.
2. Above 1 GHz, the channel 1, 6, and 11 were tested individually.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Broadband Residential Gateway. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC CFR 47 Part 15, Subpart C. (15.247)
ANSI C63.4 : 1992

All tests have been performed and recorded as per the above standards.

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Personal Computer	HP	Brio BA410	SG12902751	FCC DoC APPROVED
2	21" COLOR MONITOR	HP	D2846	JP92233133	FCC DoC APPROVED
3	PS/2 KEYBOARD	FORWARD	FDA-104GA	FDKB8110111	F4ZDA-104G
4	MOUSE	LOGITECH	M-S43	LZE00703207	DZL211106
5	PRINTER	HP	2225C+	3123S97230	DSI6XU2225
6	MODEM	ACEEX	1414	980020510	IFAXDM1414
7	NOTEBOOK	DELL	Inspiron 5000e	TW-012JXN-12961-0BP-2192	FCC DoC APPROVED
8	LAN CARD	3COM	3CLFE575CT-D	6ZE1316B4E	FCC DoC APPROVED

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.8 m braid shielded wire, terminated with VGA connector via metallic frame, w/o core.
3	1.5 m foil shielded wire, terminated with PS/2 connector via metallic frame, w/o core.
4	1.8 m foil shielded wire, terminated with PS2 connector via drain wire, w/o core.
5	1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core.
6	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
7	NA
8	NA

NOTE: All power cords of the above support units are non shielded (1.8m).



4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.45 – 30	48	-

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. All emanations from a class B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
*ROHDE & SCHWARZ Test Receiver	ESHS30	828109/007	July 4, 2002
*ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	839135/006	July 3, 2002
ROHDE & SCHWARZ 4-wire ISN	ENY41	837032/016	Nov. 28, 2001
ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/016	Dec. 3, 2001
*EMCO-L.I.S.N. (for peripheral)	3825/2	9204-1964	July 3, 2002
*Software	Cond-V2J	NA	NA
*RF cable (JYEBao)	RG-58A/U	Cable-C02.01	July 9, 2001
HP Terminator (For EMCO LISN)	11593A	E1-01-298	Feb. 20, 2002
HP Terminator (For EMCO LISN)	11593A	E1-01-299	Feb. 20, 2002
Shielded Room	Site 2	ADT-C02	NA
VCCI Site Registration No.	Site 2	C-240	NA

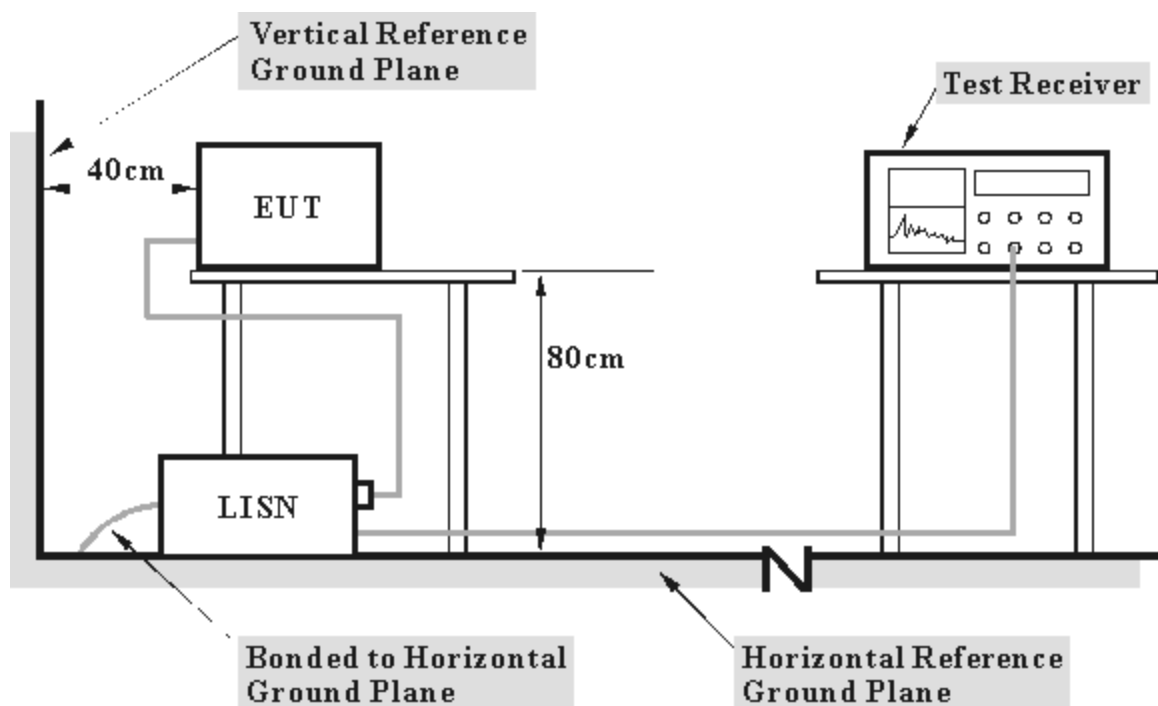
NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. "*" = These equipments are used for the final measurement.

4.1.3 TEST PROCEDURES

- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 450 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported

4.1.4 TEST SETUP



Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.



4.1.5 EUT OPERATING CONDITIONS

- a. Placed the EUT (with a computer system) on the testing table.
- b. The computer system sent data to EUT by command "PIN" via an RJ 45 cable.
- c. The computer system sent "H" messages to Color Monitor and Monitor displayed "H" patterns on its screen.
- d. The computer system sent "H" messages to modem.
- e. The computer system sent "H" messages to printer, and the printer prints them on paper.
- f. Prepared another computer system to act as a communication partner and placed it outside of testing area.
- g. The communication partner run a test program to enable EUT under transmission/receiving condition continuously at specific channel frequency via an RJ 45 cable.
- h. The communication partner sent data to EUT by command "PIN".

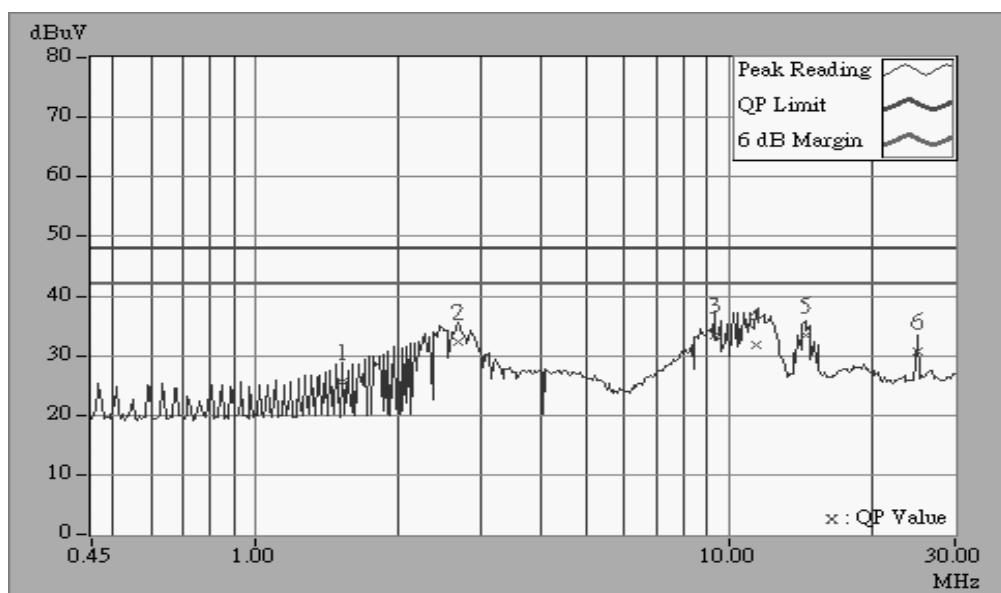


4.1.6 TEST RESULTS

EUT	Broadband Residential Gateway	MODEL	BRG700
MODE	Channel 1	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa	TESTED BY: Steven Lu	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	1.524	0.10	25.60	-	25.70	-	48.00	-	-22.30	-
2	2.667	0.17	32.39	-	32.56	-	48.00	-	-15.44	-
3	9.299	0.48	33.53	-	34.01	-	48.00	-	-13.99	-
4	11.357	0.58	31.73	-	32.31	-	48.00	-	-15.69	-
5	14.534	0.77	33.32	-	34.09	-	48.00	-	-13.91	-
6	24.998	1.10	30.78	-	31.88	-	48.00	-	-16.12	-

- Remarks:
1. "*": Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.

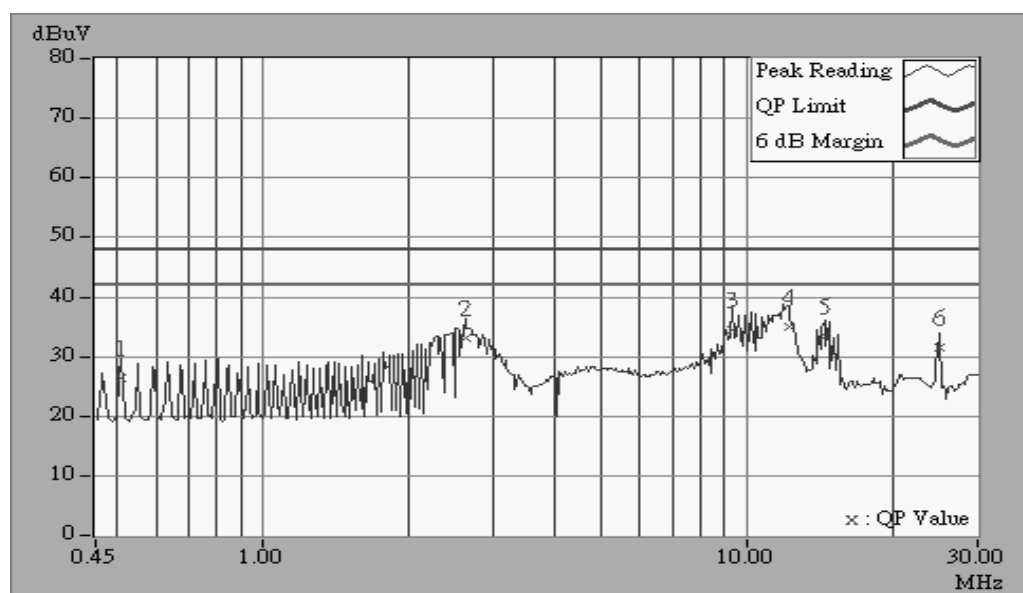




EUT	Broadband Residential Gateway	MODEL	BRG700
MODE	Channel 1	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa	TESTED BY: Steven Lu	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.507	0.10	26.50	-	26.60	-	48.00	-	-21.40	-
2	2.625	0.16	33.03	-	33.19	-	48.00	-	-14.81	-
3	9.299	0.39	34.52	-	34.91	-	48.00	-	-13.09	-
4	12.206	0.49	35.08	-	35.57	-	48.00	-	-12.43	-
5	14.531	0.58	33.50	-	34.08	-	48.00	-	-13.92	-
6	24.998	0.90	31.50	-	32.40	-	48.00	-	-15.60	-

- Remarks:
1. "*": Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.

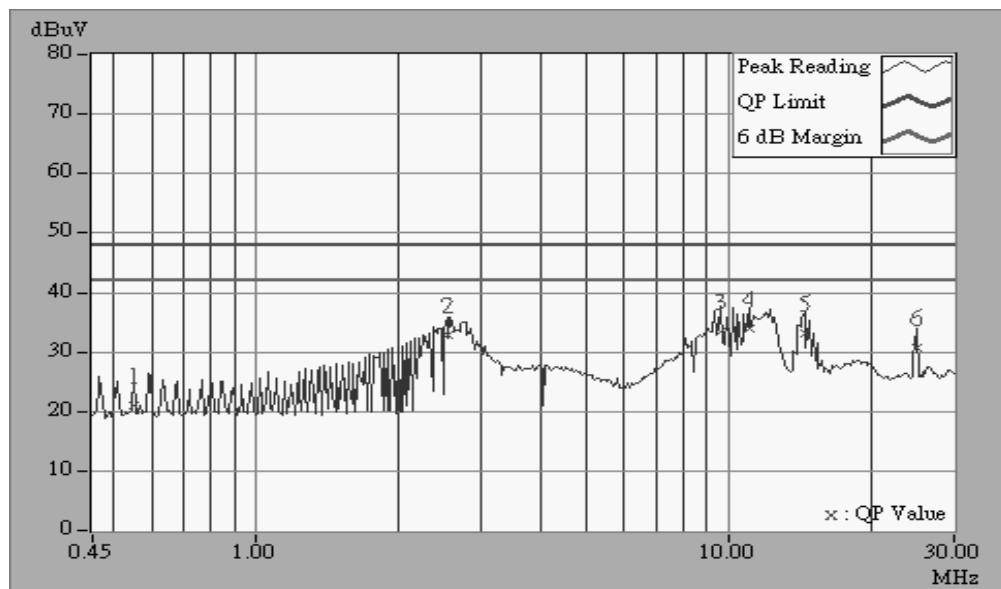




EUT	Broadband Residential Gateway	MODEL	BRG700
MODE	Channel 6	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa	TESTED BY: Steven Lu	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.549	0.10	21.11	-	21.21	-	48.00	-	-26.79	-
2	2.541	0.15	32.84	-	32.99	-	48.00	-	-15.01	-
3	9.587	0.49	33.33	-	33.82	-	48.00	-	-14.18	-
4	11.045	0.56	33.87	-	34.43	-	48.00	-	-13.57	-
5	14.528	0.77	33.12	-	33.89	-	48.00	-	-14.11	-
6	24.998	1.10	30.82	-	31.92	-	48.00	-	-16.08	-

- Remarks:
1. "*": Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.

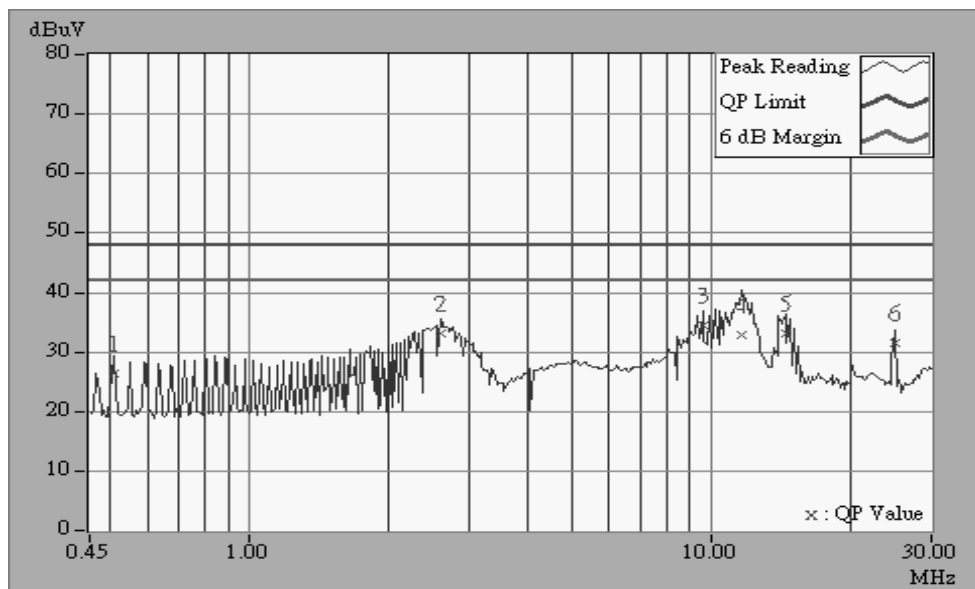




EUT	Broadband Residential Gateway	MODEL	BRG700
MODE	Channel 6	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa	TESTED BY: Steven Lu	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.507	0.10	26.52	-	26.62	-	48.00	-	-21.38	-
2	2.583	0.16	33.15	-	33.31	-	48.00	-	-14.69	-
3	9.590	0.39	34.46	-	34.85	-	48.00	-	-13.15	-
4	11.627	0.47	32.95	-	33.42	-	48.00	-	-14.58	-
5	14.531	0.58	33.16	-	33.74	-	48.00	-	-14.26	-
6	24.998	0.90	31.62	-	32.52	-	48.00	-	-15.48	-

- Remarks:
1. "*": Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.

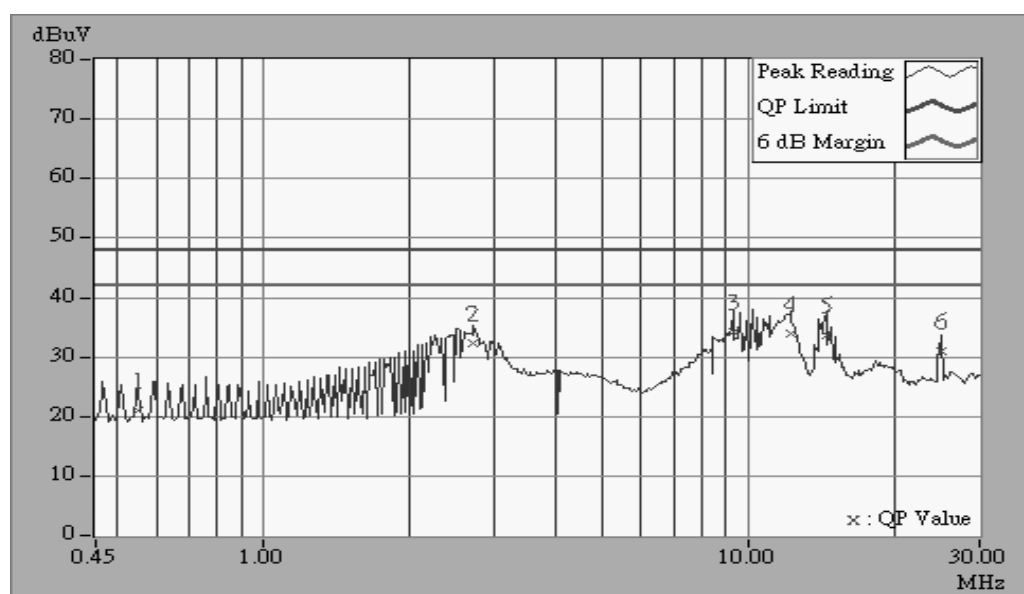




EUT	Broadband Residential Gateway	MODEL	BRG700
MODE	Channel 11	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa	TESTED BY: Steven Lu	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.549	0.10	21.01	-	21.11	-	48.00	-	-26.89	-
2	2.712	0.17	32.40	-	32.57	-	48.00	-	-15.43	-
3	9.299	0.48	34.08	-	34.56	-	48.00	-	-13.44	-
4	12.203	0.63	34.04	-	34.67	-	48.00	-	-13.33	-
5	14.531	0.77	33.65	-	34.42	-	48.00	-	-13.58	-
6	24.998	1.10	30.90	-	32.00	-	48.00	-	-16.00	-

- Remarks:
1. "*": Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.

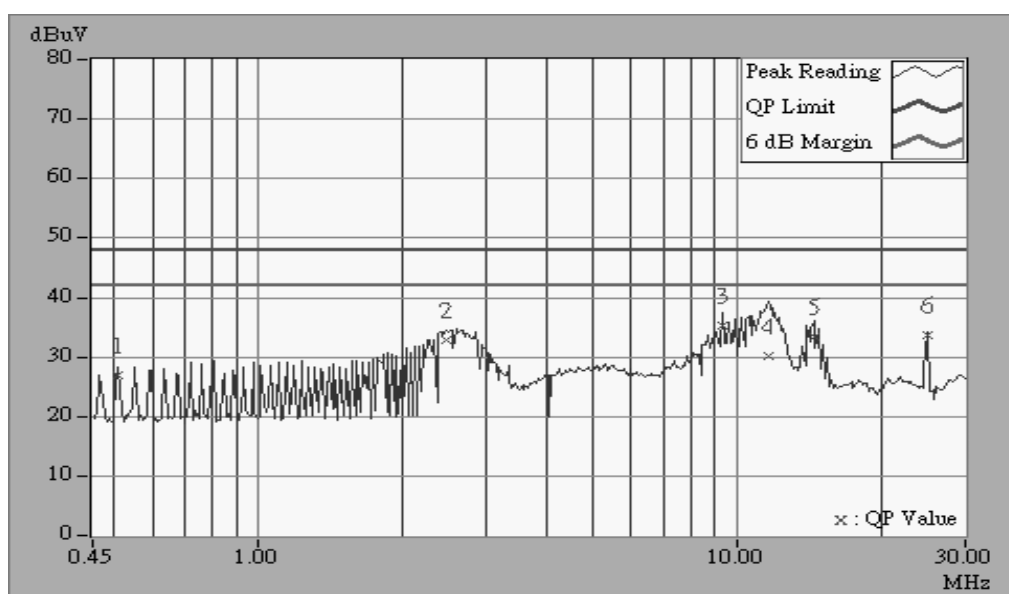




EUT	Broadband Residential Gateway	MODEL	BRG700
MODE	Channel 11	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa	TESTED BY: Steven Lu	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.507	0.10	26.94	-	27.04	-	48.00	-	-20.96	-
2	2.457	0.15	32.75	-	32.90	-	48.00	-	-15.10	-
3	9.299	0.39	35.17	-	35.56	-	48.00	-	-12.44	-
4	11.633	0.47	30.15	-	30.62	-	48.00	-	-17.38	-
5	14.531	0.58	33.30	-	33.88	-	48.00	-	-14.12	-
6	24.998	0.90	33.72	-	34.62	-	48.00	-	-13.38	-

- Remarks:
1. "*": Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.





4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Field strength limits are at the distance of 3 meters, emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field Strength of Fundamental	
	uV/m	dBuV/m
30-88	100	40.0
88-216	150	43.5
216-960	200	46.0
Above 960	500	54.0

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS30	847793/022	Feb. 25, 2002
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH2-Z5	828075/003	July 19, 2002
ROHDE & SCHWARZ 4-wire ISN	ENY41	838119/028	Dec. 12, 2001
ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/018	Dec. 3, 2001
EMCO-L.I.S.N. (for peripheral)	3825/2	90031627	July 19, 2002
Software	Cond-V2J	NA	NA
RF cable (JYEBAO)	RG-58A/U	Cable-C05.01	July 19, 2002
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-305	Feb. 20, 2002
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-306	Feb. 20, 2002
Shielded Room	Site 5	ADT-C05	NA
VCCI Site Registration No.	Site 5	C-1093	NA
Site Registration No.	FCC: 90422 VCCI : R-1039 Canada IC: IC 3789-5		

NOTE: 1. The measurement uncertainty is less than +/- 3.0dB, which is calculated as per the NAMAS document NIS81.

2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

3. "*" = These equipments are used for the final measurement.



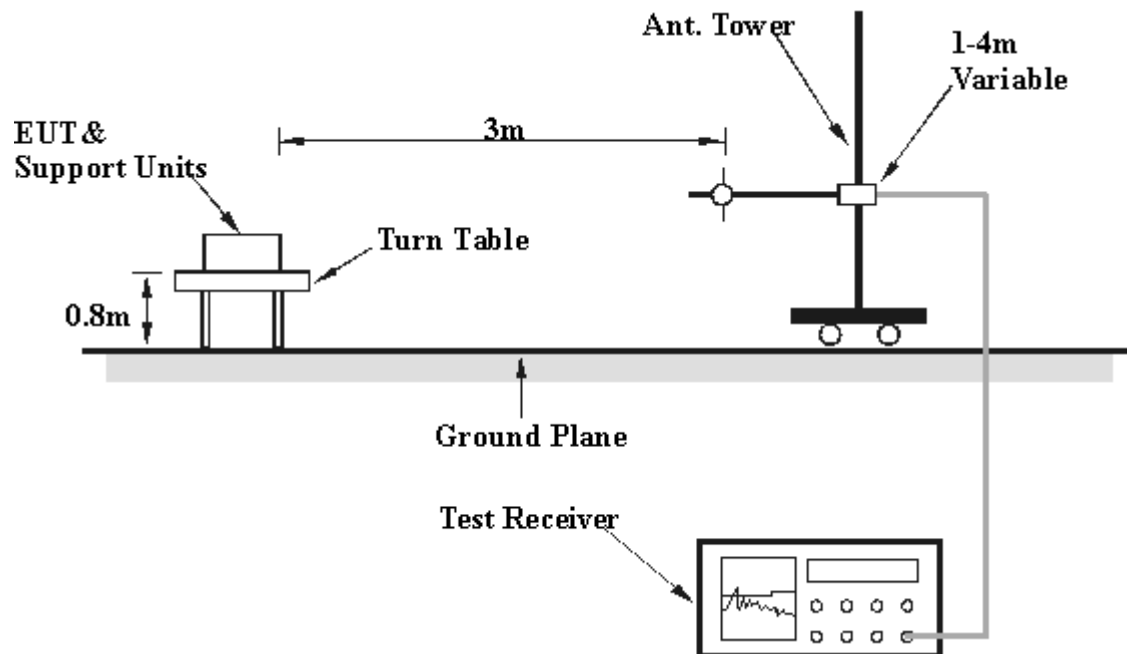
4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 300 Hz for Average detection (AV) at frequency above 1GHz.

4.2.4 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.2.5 EUT OPERATING CONDITIONS

Same as 4.1.5.



4.2.6 TEST RESULTS

EUT	Broadband Residential Gateway	MODEL	BRG700
MODE	Channel 11	FREQUENCY RANGE	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa	TESTED BY: Gary Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M											
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	200.00	37.8 QP	43.50	-5.70	2.46H	191	27.40	8.98	1.42	0.00	-10.40
2	250.01	37.5 QP	46.00	-8.50	1.67H	206	23.80	12.02	1.66	0.00	-13.69
3	350.17	39.4 QP	46.00	-6.60	1.76H	8	23.10	14.21	2.04	0.00	-16.26
4	375.04	39.7 QP	46.00	-6.30	1.80H	218	22.40	15.13	2.14	0.00	-17.27
5	550.02	37.8 QP	46.00	-8.20	1.09H	113	17.20	17.93	2.68	0.00	-20.60
6	575.02	38.5 QP	46.00	-7.50	1.77H	256	17.41	18.28	2.76	0.00	-21.04
7	625.05	38.0 QP	46.00	-8.00	1.02H	8	16.20	18.91	2.92	0.00	-21.83
8	660.00	37.5 QP	46.00	-8.50	1.62H	299	15.20	19.25	3.05	0.00	-22.29
9	748.21	37.2 QP	46.00	-8.80	1.41H	239	13.80	20.14	3.26	0.00	-23.40
10	750.02	36.1 QP	46.00	-9.90	1.72H	40	12.70	20.18	3.26	0.00	-23.44
11	850.67	37.7 QP	46.00	-8.30	1.49H	309	13.70	20.48	3.50	0.00	-23.98
12	875.00	36.7 QP	46.00	-9.30	1.38H	5	12.50	20.63	3.54	0.00	-24.18
13	900.00	37.8 QP	46.00	-8.20	2.35H	191	13.40	20.80	3.58	0.00	-24.39
14	900.00	42.6 QP	46.00	-3.40	2.30H	355	18.20	20.80	3.58	0.00	-24.39
15	950.46	39.5 QP	46.00	-6.50	1.27H	206	14.50	21.21	3.79	0.00	-25.01

- NOTE:**
- 1 Emission level = Raw Value - Correction Factor
 - 2 Correction Factor = External Preamp. Gain - Ant. Factor - Cable loss
(External Preamp. Gain = 0, when the test receiver is used for the test.)
 - 3 The other emission levels were very low against the limit.
 - 4 Margin value = Emission level - Limit value



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M											
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	149.99	37.7 QP	43.50	-5.80	1.18V	39	26.20	10.30	1.20	0.00	-11.51
2	200.00	40.6 QP	43.50	-2.90	1.07V	347	30.25	8.98	1.42	0.00	-10.40
3	250.17	35.1 QP	46.00	-10.90	1.40V	283	21.40	12.02	1.66	0.00	-13.69
4	350.47	38.4 QP	46.00	-7.60	1.53V	91	22.10	14.21	2.04	0.00	-16.26
5	400.12	38.4 QP	46.00	-7.60	1.95V	273	20.10	16.11	2.24	0.00	-18.36
6	475.14	35.5 QP	46.00	-10.50	1.88V	149	16.20	16.83	2.46	0.00	-19.29
7	500.00	41.3 QP	46.00	-4.70	1.46V	313	21.50	17.26	2.50	0.00	-19.77
8	525.01	35.3 QP	46.00	-10.70	1.35V	173	15.10	17.59	2.59	0.00	-20.18
9	550.01	41.3 QP	46.00	-4.70	1.49V	191	20.70	17.93	2.68	0.00	-20.61
10	650.05	35.1 QP	46.00	-10.90	1.12V	99	12.80	19.23	3.02	0.00	-22.26
11	748.24	38.2 QP	46.00	-7.80	2.40V	89	14.80	20.14	3.26	0.00	-23.41
12	750.04	38.8 QP	46.00	-7.20	1.32V	15	15.40	20.18	3.26	0.00	-23.45
13	850.47	35.4 QP	46.00	-10.60	1.60V	195	11.40	20.48	3.50	0.00	-23.98
14	875.00	36.6 QP	46.00	-9.40	1.05V	221	12.40	20.63	3.54	0.00	-24.18
15	900.40	33.5 QP	46.00	-12.50	1.75V	232	9.10	20.80	3.58	0.00	-24.40
16	950.47	33.4 QP	46.00	-12.60	1.73V	7	8.40	21.21	3.79	0.00	-25.01

- NOTE:**
- 1 Emission level = Raw Value - Correction Factor
 - 2 Correction Factor = External Preamp. Gain - Ant. Factor - Cable loss
(External Preamp. Gain = 0, when the test receiver is used for the test.)
 - 3 The other emission levels were very low against the limit.
 - 4 Margin value = Emission level - Limit value



EUT	Broadband Residential Gateway	MODEL	BRG700
MODE	Channel 1	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa	TESTED BY: Gary Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	2037.80	46.6 PK	74.00	-27.40	1.04H	57	18.07	25.27	3.29	0.00	-28.57
2	*2413.40	100.2 PK	-	-	1.65H	316	69.38	27.19	3.62	0.00	-30.82
3	*2413.40	94.0 AV	-	-	1.65H	316	63.20	27.19	3.62	0.00	-30.82
4	4075.20	50.1 PK	74.00	-23.90	1.47H	287	15.20	30.18	4.77	0.00	-34.95
5	4824.20	56.4 PK	74.00	-17.60	1.68H	226	19.72	31.43	5.21	0.00	-36.64
6	4824.20	43.0 AV	54.00	-11.00	1.68H	226	6.40	31.43	5.21	0.00	-36.64

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	2037.80	49.2 PK	74.00	-24.80	2.01V	135	20.61	25.27	3.29	0.00	-28.57
2	*2413.50	106.0 PK	-	-	1.82V	57	75.23	27.19	3.62	0.00	-30.81
3	*2413.50	99.2 AV	-	-	1.82V	57	68.40	27.19	3.62	0.00	-30.81
4	4075.50	49.7 PK	74.00	-24.30	1.11V	287	14.80	30.18	4.77	0.00	-34.95
5	4824.60	62.0 PK	74.00	-12.00	1.62V	344	25.34	31.43	5.21	0.00	-36.64
6	4824.60	50.2 AV	54.00	-3.80	1.62V	344	13.54	31.43	5.21	0.00	-36.64

- NOTE:**
1. Emission level = Raw Value - Correction Factor
 2. Correction Factor = External Preamp. Gain - Ant. Factor - Cable loss
(External Preamp. Gain = 0, when the test receiver is used for the test.)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. The limit value is defined as per 15.247
 6. " * " : Fundamental frequency



EUT	Broadband Residential Gateway	MODEL	BRG700
MODE	Channel 6	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa	TESTED BY: Gary Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	2062.80	45.3 PK	74.00	-28.70	1.29H	53	16.60	25.39	3.31	0.00	-28.70
2	*2438.60	100.2 PK	-	-	1.78H	15	69.22	27.30	3.64	0.00	-30.95
3	*2438.60	94.3 AV	-	-	1.78H	15	63.40	27.30	3.64	0.00	-30.95
4	4125.50	50.5 PK	74.00	-23.50	1.75H	193	15.40	30.28	4.79	0.00	-35.07
5	4873.70	55.4 PK	74.00	-18.6	1.41H	345	18.66	31.47	5.25	0.00	-36.72
6	4873.70	42.5 AV	54.00	-11.50	1.41H	345	5.80	31.47	5.25	0.00	-36.72

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	2063.50	48.6 PK	74.00	-25.40	1.99V	58	19.90	25.39	3.31	0.00	-28.70
2	*2438.50	108.4 PK	-	-	1.62V	327	77.50	27.30	3.64	0.00	-30.94
3	*2438.50	102.3 AV	-	-	1.62V	327	71.40	27.30	3.64	0.00	-30.94
4	4125.70	49.7 PK	74.00	-24.30	1.67V	69	14.67	30.28	4.79	0.00	-35.07
5	4876.50	62.9 PK	74.00	-11.10	1.14V	225	26.17	31.47	5.25	0.00	-36.72
6	4876.50	50.2 AV	54.00	-3.80	1.14V	225	13.53	31.47	5.25	0.00	-36.72

- NOTE:**
1. Emission level = Raw Value - Correction Factor
 2. Correction Factor = External Preamp. Gain - Ant. Factor - Cable loss
(External Preamp. Gain = 0, when the test receiver is used for the test.)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. The limit value is defined as per 15.247
 6. " * " : Fundamental frequency



EUT	Broadband Residential Gateway	MODEL	BRG700
MODE	Channel 11	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa	TESTED BY: Gary Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	2087.40	47.6 PK	74.00	-26.40	1.18H	144	18.81	25.50	3.33	0.00	-28.83
2	*2462.70	100.1 PK	-	-	1.06H	79	69.07	27.41	3.66	0.00	-31.07.
3	*2462.70	93.5 AV	-	-	1.06H	79	62.40	27.41	3.66	0.00	-31.07.
4	2494.20	52.7 PK	74.00	-21.30	1.27H	223	21.50	27.52	3.68	0.00	-31.20
5	2494.20	44.5 AV	54.00	-9.50	1.27H	223	13.27	27.52	3.68	0.00	-31.20
6	4175.30	50.0 PK	74.00	-24.00	1.50H	281	14.80	30.38	4.81	0.00	-35.19
7	4924.50	56.0 PK	74.00	-18.00	1.78H	196	19.24	31.51	5.28	0.00	-36.80.
8	4924.50	41.9 AV	54.00	-12.10	1.78H	196	5.10	31.51	5.28	0.00	-36.80

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	2087.70	49.1 PK	74.00	-24.90	1.15V	131	20.30	25.50	3.33	0.00	-28.83
2	*2463.50	109.5 PK	-	-	1.27V	336	78.40	27.41	3.66	0.00	-31.08
3	*2463.50	103.4 AV	-	-	1.27V	336	72.30	27.41	3.66	0.00	-31.08
4	2483.80	59.5 PK	74.00	-14.50	1.24V	225	28.31	27.52	3.68	0.00	-31.21
5	2483.80	48.7 AV	54.00	-5.30	1.24V	225	17.50	27.52	3.68	0.00	-31.20
6	4176.20	50.1 PK	74.00	-23.90	1.66V	224	14.90	30.38	4.81	0.00	-35.19
7	4921.90	62.4 PK	74.00	-11.60	1.54V	334	25.64	31.51	5.28	0.00	-36.80.
8	4921.90	48.9 AV	54.00	-5.10	1.54V	334	12.08	31.51	5.28	0.00	-36.80

- NOTE:**
1. Emission level= Raw Value - Correction Factor
 2. Correction Factor = External Preamp. Gain - Ant. Factor - Cable loss
(External Preamp. Gain = 0, when the test receiver is used for the test.)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. The limit value is defined as per 15.247
 6. " * " : Fundamental frequency



4.3 6DB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ TEST RECEIVER	ESMI	839379/002	Dec. 28, 2001
HP ATTENUATOR	8496B	3247A18505	Cal. on use
HP PLOTTER	7475A	2641V27755	N/A

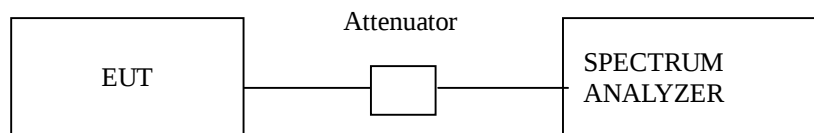
Notes:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 kHz RBW and 100 kHz VBW. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

4.3.4 TEST SETUP



4.3.5 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



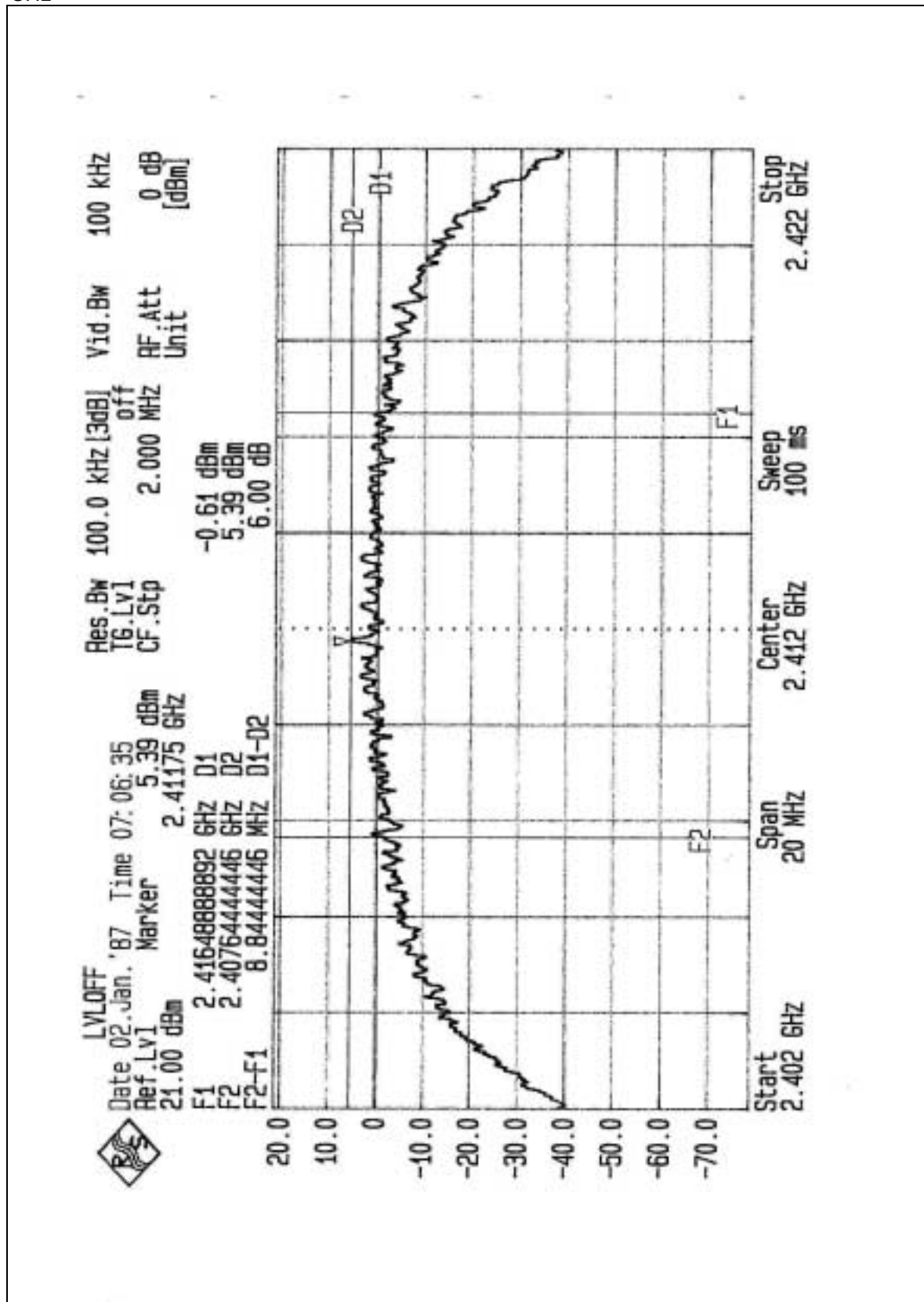
4.3.6 TEST RESULTS

EUT	Broadband Residential Gateway	MODEL	BRG700
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	27 deg. C, 65%RH, 1005 hPa
TESTED BY: Steven Lu			

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	8.84	0.5	PASS
6	2437	8.84	0.5	PASS
11	2462	8.84	0.5	PASS

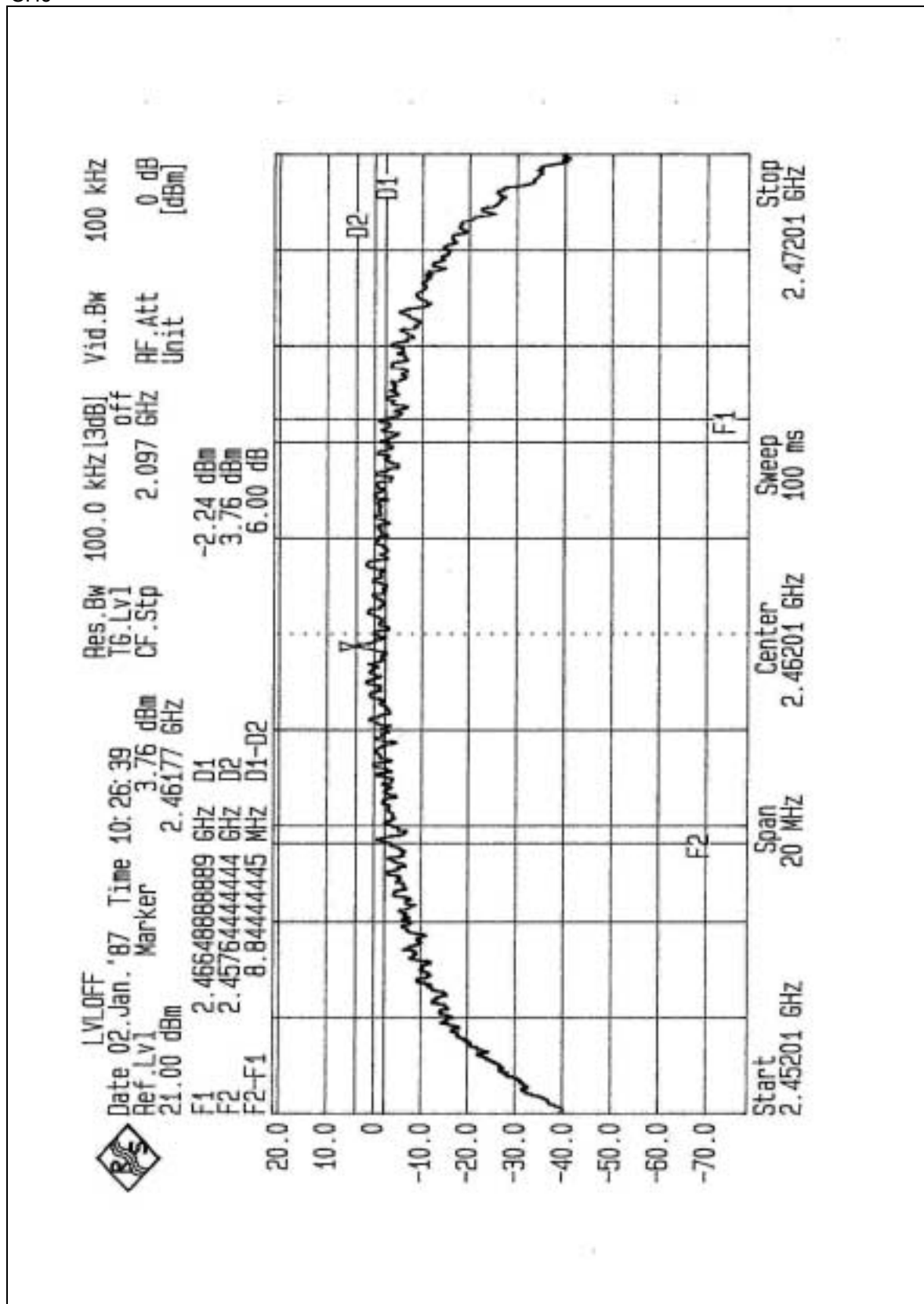


CH1



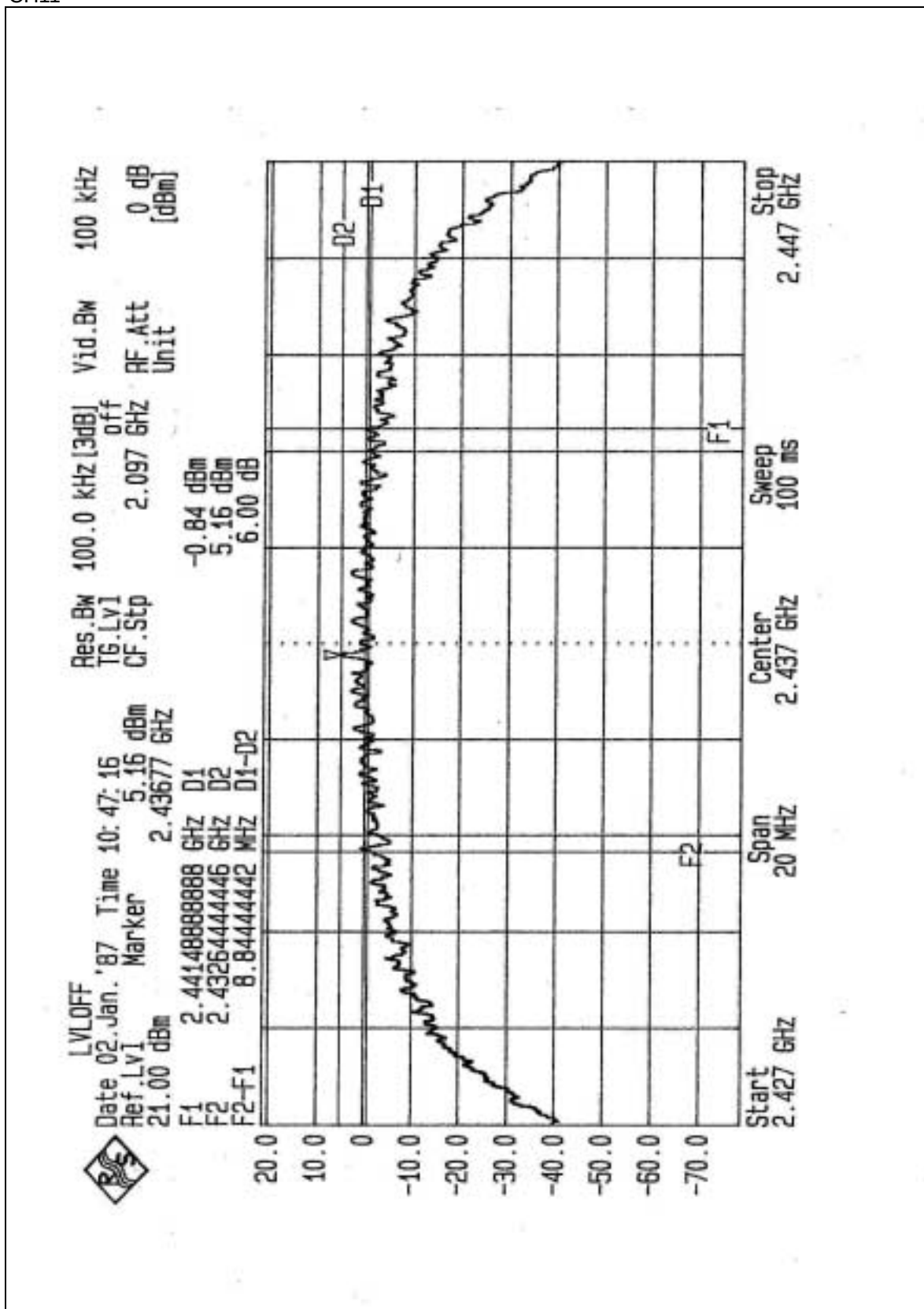


CH6





CH11





4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ TEST RECEIVER	ESMI	839379/002	Dec. 28, 2001
HP ATTENUATOR	8496B	3247A18505	Cal. on use
HP PLOTTER	7475A	2641V27755	N/A

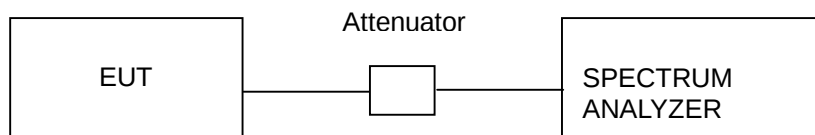
NOTE:1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.4.3 TEST PROCEDURES

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. The center frequency of the spectrum analyzer was set to the fundamental frequency and using 3 MHz RBW and 3 MHz VBW.
3. The span of the spectrum analyzer was larger than 6dB BandWidth plus 10MHz.
4. Used Peak Search to read the peak power after Maximum Hold function is activated.
5. Shifted the marker to +/- 3MHz and +/-6MHz, and recorded the reading.
6. The Maximum Peak Output Power is the linear summation of the five readings in 4 and 5.

NOTE: This measurement is the total power of 12MHz bandwidth which is far more wider than 6dB bandwidth.

4.4.4 TEST SETUP



4.4.5 EUT OPERATING CONDITIONS

Same as Item 3.4.5



4.4.6 TEST RESULTS

EUT	Broadband Residential Gateway	MODEL	BRG700
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa
TESTED BY: Steven Lu			

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	18.17	30	PASS
6	2437	18.58	30	PASS
11	2462	17.49	30	PASS



4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ TEST RECEIVER	ESMI	839379/002	Dec. 28, 2001
HP ATTENUATOR	8496B	3247A18505	Cal. on use
HP PLOTTER	7475A	2641V27755	N/A

NOTE:1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.

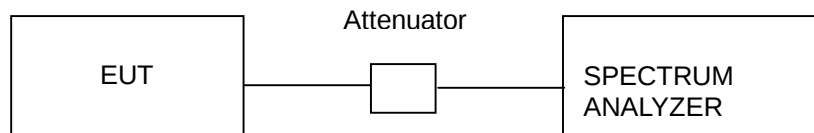
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz. The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span/3 kHz for a full response of the mixer in the spectrum analyzer.

4.5.4 TEST SETUP



4.5.5 EUT OPERATING CONDITION

Same as Item 3.4.5



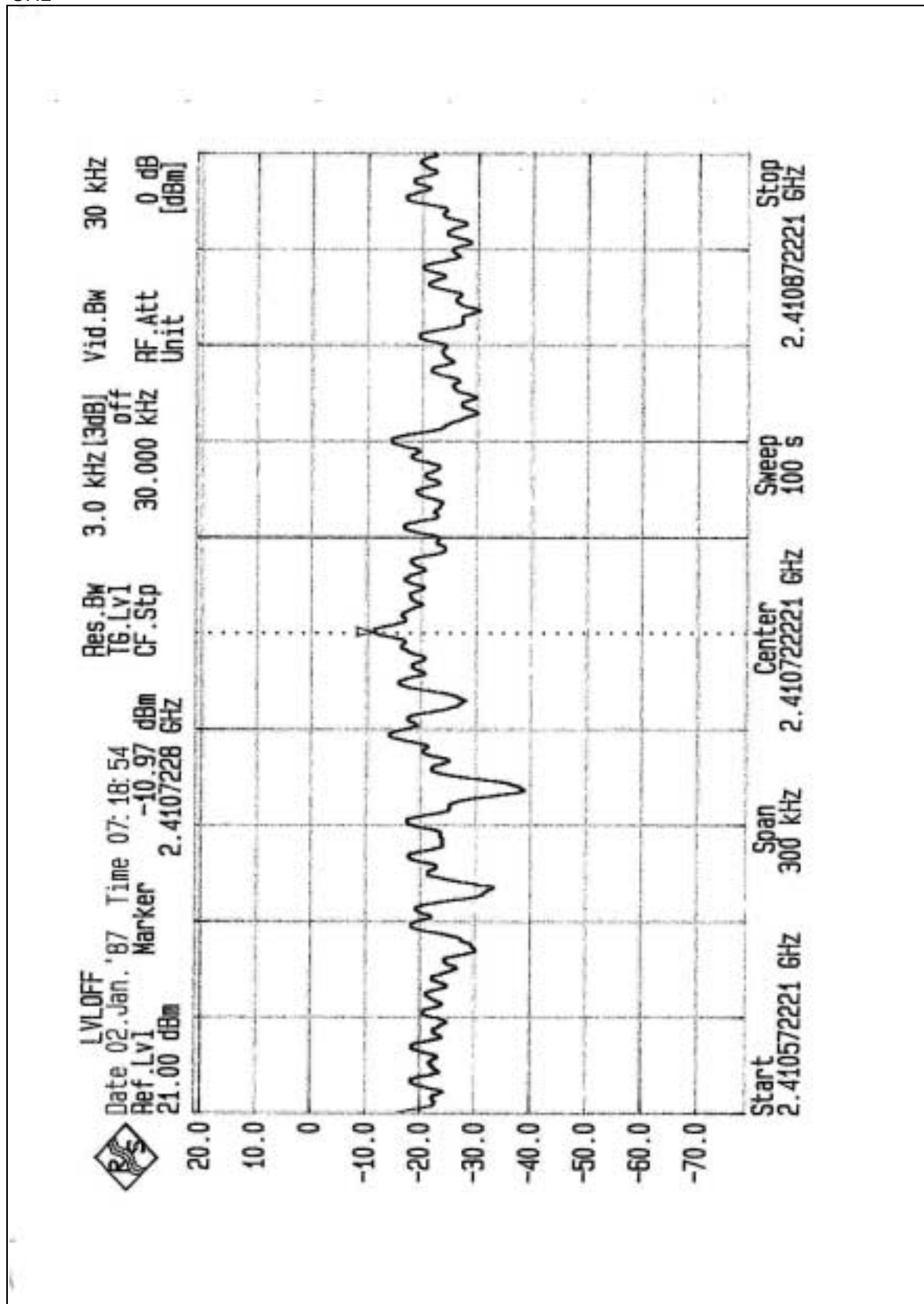
4.5.6 TEST RESULTS

EUT	Broadband Residential Gateway	MODEL	BRG700
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	27 deg. C, 65%RH, 1005 hPa
TESTED BY: Steven Lu			

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-10.97	8	PASS
6	2437	-12.72	8	PASS
11	2462	-11.02	8	PASS

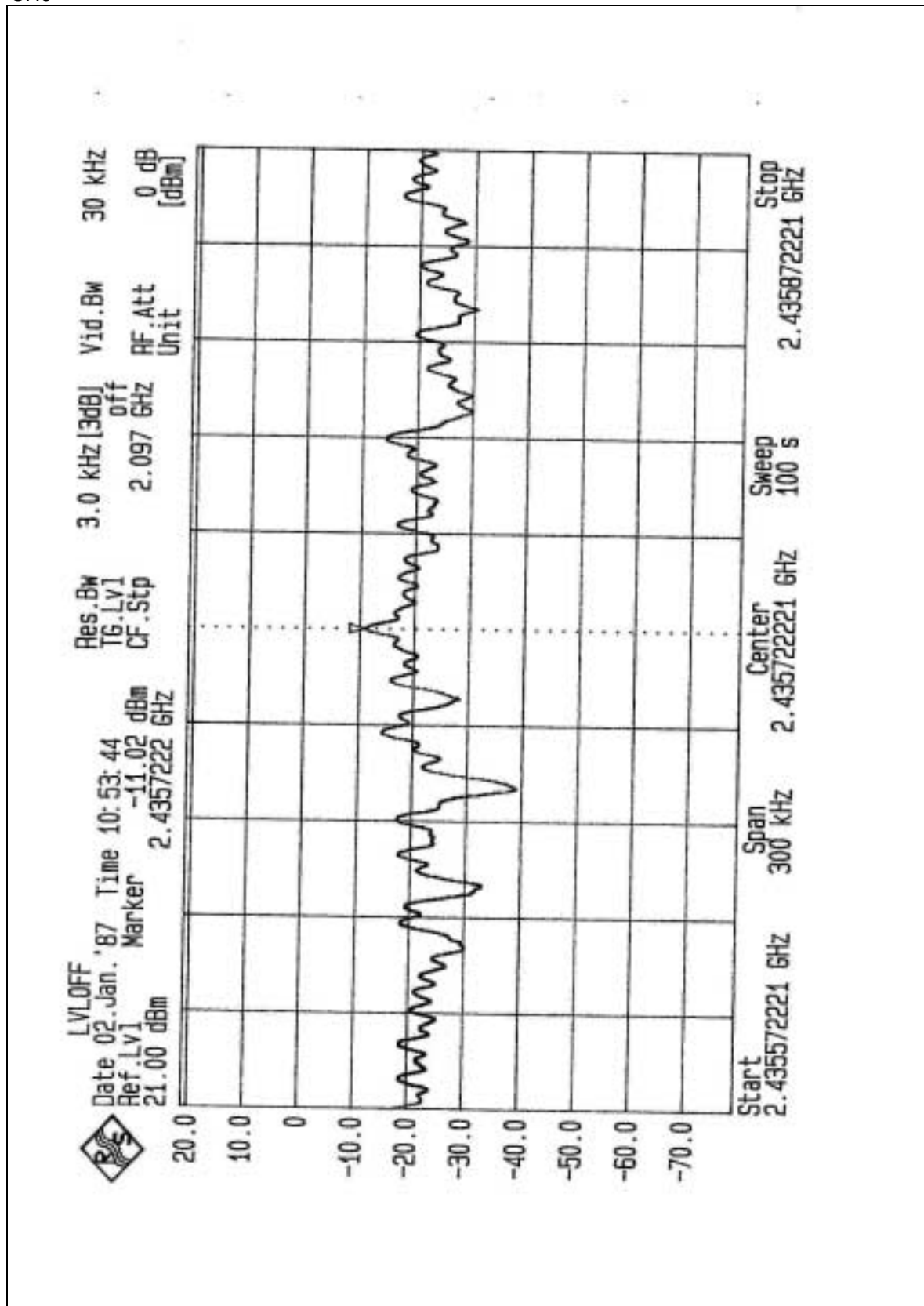


CH1



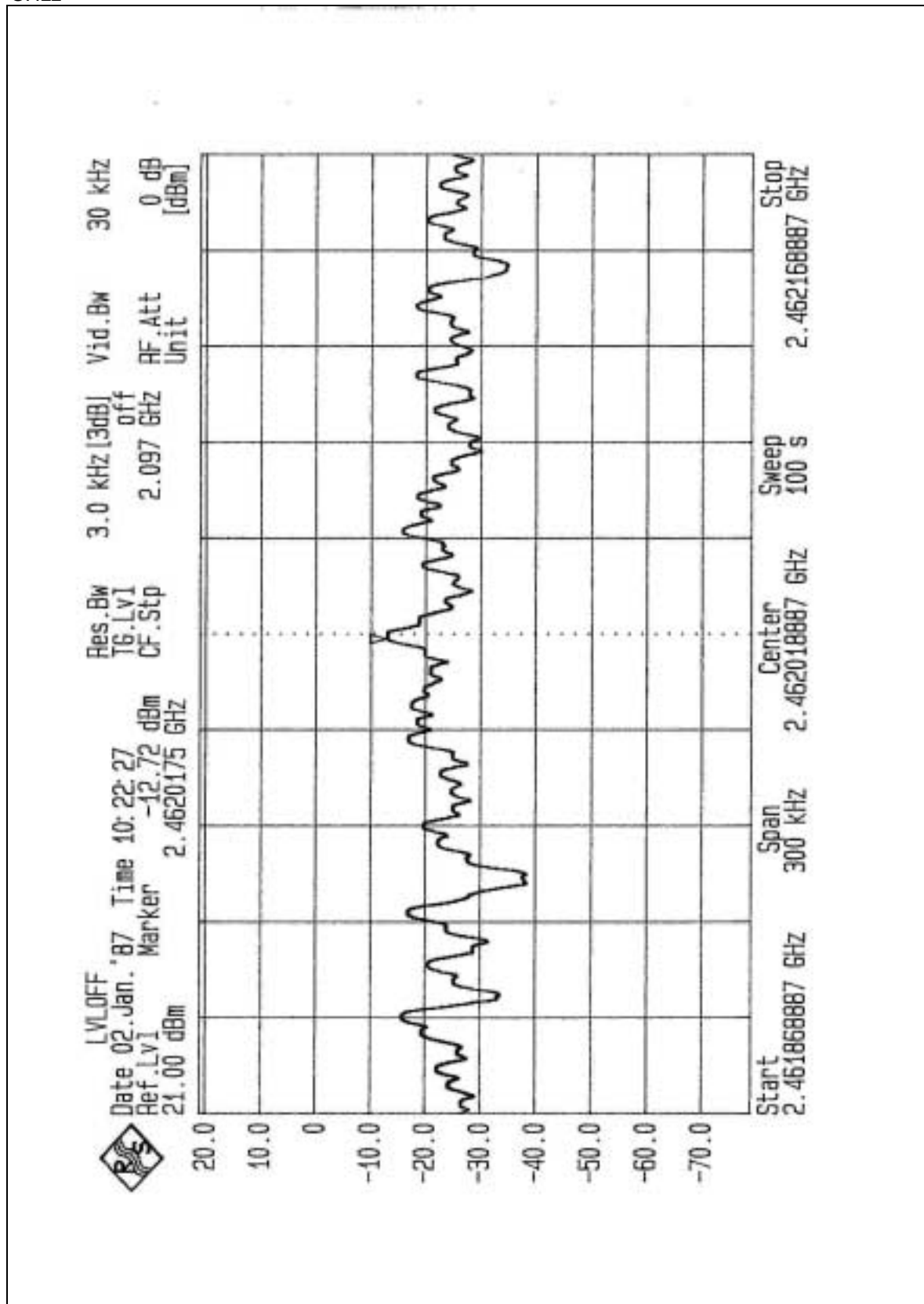


CH6





CH11





4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100KHz Resolution Bandwidth).

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ TEST RECEIVER	ESMI	848926/005 846839/018	Dec 28, 2001
HP ATTENUATOR	8496B	3247A18505	Cal. on use
HP PLOTTER	7475A	2641V27755	N/A

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 kHz bandwidth from band edge. The band edges were measured and recorded.



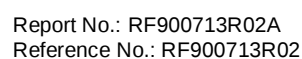
4.6.4 EUT OPERATING CONDITION

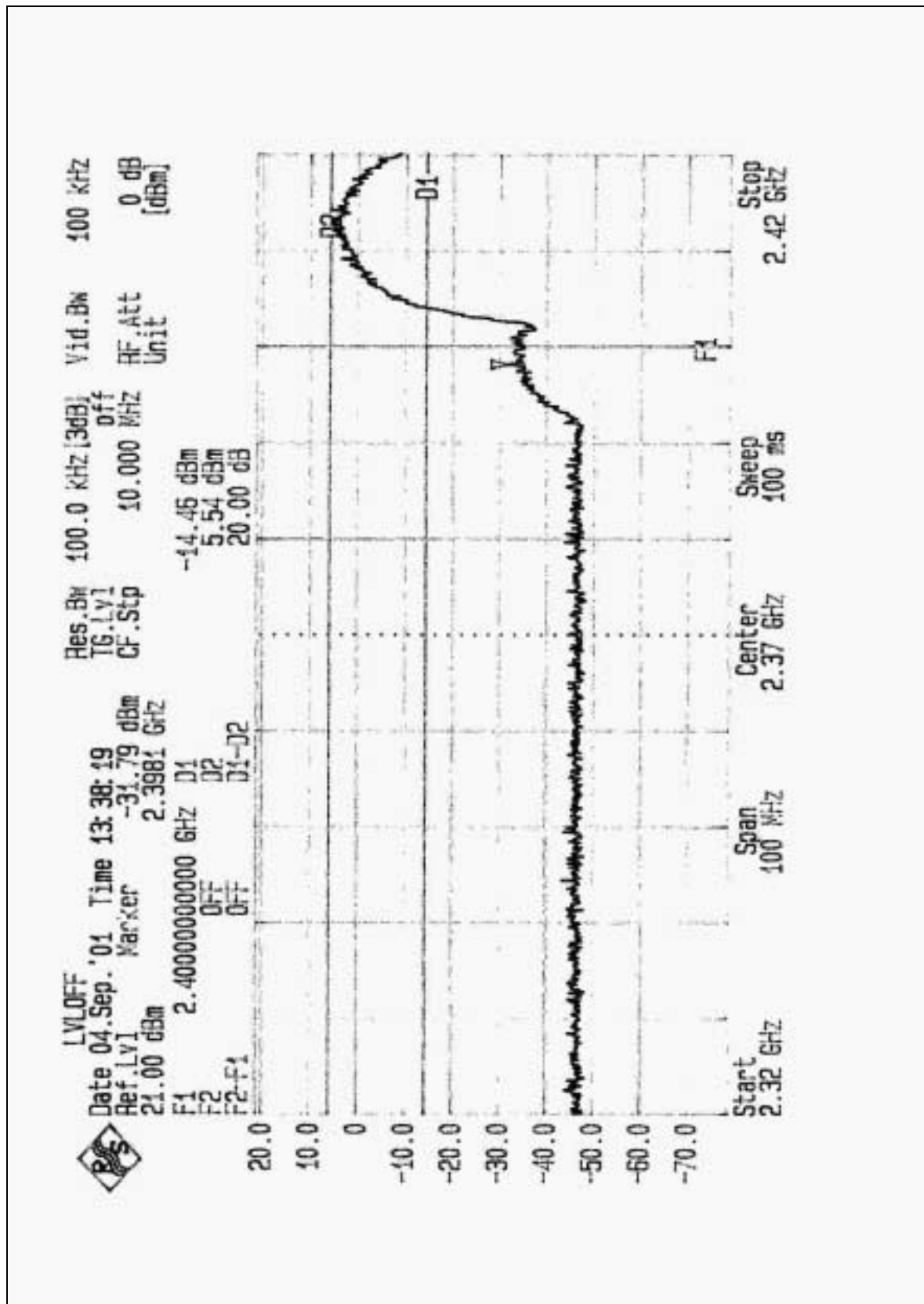
Same as Item 3.4.5

4.6.5 TEST RESULTS

The spectrum plots are attached on the following 2 pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

NOTE: The band edge emission plot on the following 2 pages shows 49.97dB delta between carrier maximum power and local maximum emission in restrict band (2.4885GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.6 (Page 26) is 103.4dBuV/m, so the maximum field strength in restrict band is $103.4 - 49.97 = 53.43$ dBuV/m which is under 54 dBuV/m limit.







4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

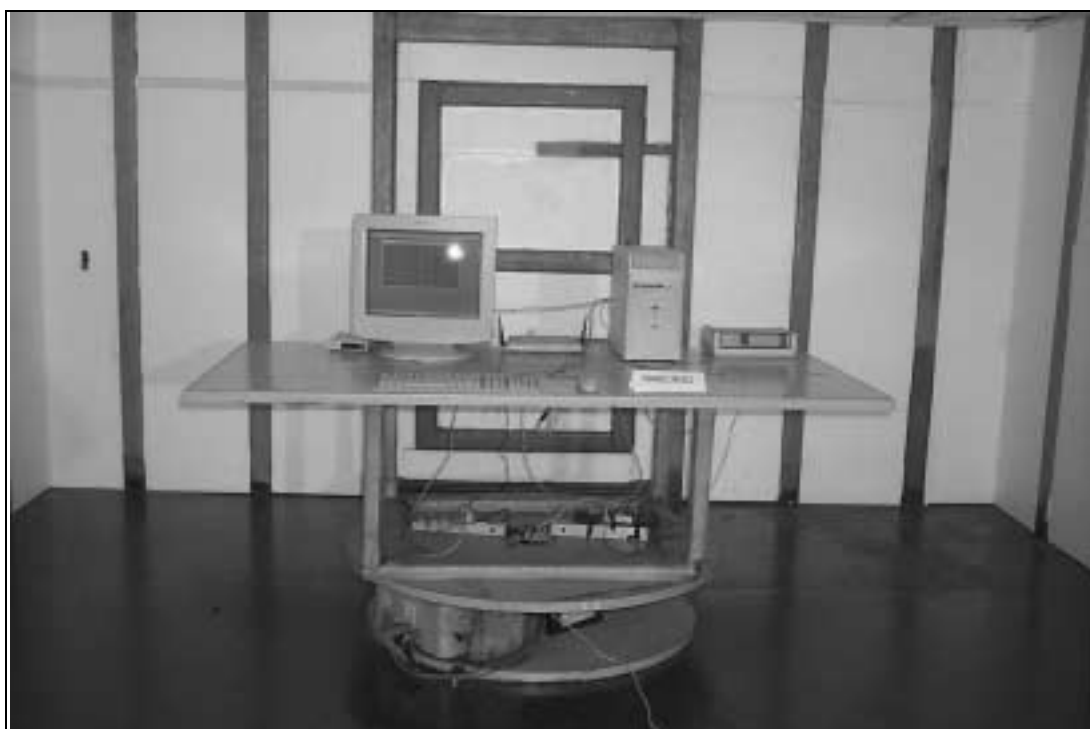
4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is dual dipole antenna and its connector type is Reversed TNC. The maximum Gain of the antenna is 1dBi only.

5 PHOTOGRAPHS OF THE TEST CONFIGURATION CONDUCTED EMISSION TEST



RADIATED EMISSION TEST





6 INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025, Guide 25 or EN 45001:

USA	FCC, NVLAP, UL
Germany	TUV Rheinland
Japan	VCCI
New Zealand	MoC
Norway	NEMKO
R.O.C.	BSMI, DGT, CNLA

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site:

www.adt.com.tw/index.5/phtml.

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The address and road map of all our labs can be found in our web site also.