

# Certificate of Test

November 2004

## PRIME ELECTRONICS & SATELLITICS INC.

Product Type : LNB  
Model Number : BK24J-\*\*\* (\* = A-Z, 0-9, SA, LA, Blank)  
Brand Name : PESI  
Test Report Number : GTK-0410096  
Date of Test : October 29, 2004 – November 01, 2004

This Product was tested to the following standards at the laboratory  
of Global EMC Standard Tech. Corp., and found Compliance.

Standards:  
EN 55013 : 2001 + A1 : 2003

<http://www.gestek.com.tw>



Sharon Chang, President

### GesTek EMC Lab

N0. 3, Pau-Tou-Tsuo Valley, Chia-Pau Tsuen,  
Lin Kou Hsiang, Taipei County, Taiwan, R.O.C.  
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Date: November 08, 2004



# Declaration of Conformity

We, Manufacturer/Importer  
(full address)

**PRIME ELECTRONICS & SATELLITICS INC.**  
69, Tung-Yuan Rd., Chung-Li Industrial Park, Chung-Li City 320, Taoyuan, Taiwan

declare that the product  
(description of the apparatus, system, installation to which it refers)

**LNB**

**EUT: LNB**

**Model Number: BK24J-\*\*\* (\* = A-Z, 0-9, SA, LA, Blank)**

is in conformity with

(reference to the specification under which conformity is declared)  
in accordance with 89/336 EEC-EMC Directive

- |   |  |  |   |
|---|--|--|---|
| <input type="checkbox"/> <b>EN 55011</b>            | Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) high frequency equipment                | <input type="checkbox"/> <b>EN 61000-3-2</b> | Disturbances in supply systems caused   |
| <input checked="" type="checkbox"/> <b>EN 55013</b> | Limits and methods of measurement Information Technology of radio disturbance characteristics of broadcast receivers and associated equipment              | <input type="checkbox"/> <b>EN 61000-3-3</b> | Disturbances in supply systems caused by household appliances and similar electrical equipment "Voltage fluctuations" |
| <input type="checkbox"/> <b>EN 55014-1</b>          | Limits and methods of measurement of radio disturbance characteristics of household electrical appliances, portable tools and similar electrical apparatus | <input type="checkbox"/> <b>EN 55024</b>     | Information Technology equipment-Immunity characteristics-Limits and methods of measurement                           |
| <input type="checkbox"/> <b>EN 61000-6-3</b>        | Generic standards—Emission standard for residential, commercial and light-industrial environments  | <input type="checkbox"/> <b>EN 61000-6-1</b> | Generic standards—Immunity for residential, commercial and light-industrial environments                              |
| <input type="checkbox"/> <b>EN 61000-6-4</b>        | Generic standards—Emission standard for industrial environments  | <input type="checkbox"/> <b>EN 61000-6-2</b> | Generic standards—Immunity for industrial environments  |
| <input type="checkbox"/> <b>EN 55015</b>            | Limits and methods of measurement of radio disturbance characteristics of fluorescent lamps and luminaries   | <input type="checkbox"/> <b>EN 55014-2</b>   | Immunity requirements for household appliances tools and similar apparatus  |
| <input type="checkbox"/> <b>EN 55022</b>            | Limits and methods of measurement of radio disturbance characteristics of information technology equipment   | <input type="checkbox"/> <b>EN 50091- 2</b>  | EMC requirements for uninterruptible power systems (UPS)  |
| <input type="checkbox"/> <b>DIN VDE 0855</b>        | Cabled distribution systems; Equipment for receiving and/or distribution from sound and television signals   | <input type="checkbox"/> <b>EN 55020</b>     | Immunity from radio interference of broadcast receivers and associated equipment                                      |
| <input type="checkbox"/> <b>part 10</b>             |  |  |   |
| <input type="checkbox"/> <b>part 12</b>             |  |  |   |

**CE marking**



**The manufacturer also declares the conformity of above mentioned product with the actual required safety standards in accordance with LVD 73/23 EEC**

- |  |   |  |   |
|--|---|--|---|
| <input type="checkbox"/> <b>EN 60065</b> | Safety requirements for mains operated electronic and related apparatus for household and similar general use | <input type="checkbox"/> <b>EN 60950</b>   | Safety for information technology equipment including electrical business equipment |
| <input type="checkbox"/> <b>EN 60335</b> | Safety of household and similar electrical appliances   | <input type="checkbox"/> <b>EN 50091-1</b> | General and Safety requirements for uninterruptible power systems (UPS)             |

**Manufacturer/Importer**

Signature: \_\_\_\_\_

(Stamp)


Date:

Name: \_\_\_\_\_

Tested by **GesTek EMC Lab.**  
FCC / VCCI / NEMKO / DNV/NVLAP Certified

Ref. No. GTK-0410096  
Date: November 09, 2004

Signature :   
Name : Tony Lin / General Manager



**European Union [EU]  
EMC Directive [89/336/EEC, As Amended]**

**EMC Test Report  
For:**

**PRIME ELECTRONICS & SATELLITICS INC.**

**EUT: LNB**

**Model Number: BK24J-\*\*\* (\* = A-Z, 0-9, SA, LA, Blank)**

**Prepared for:**

**PRIME ELECTRONICS & SATELLITICS INC.**

**69, Tung-Yuan Rd., Chung-Li Industrial Park, Chung-Li City 320 Taoyuan,  
Taiwan**

**Report By : Global EMC Standard Tech. Corp.**

**No.3 Pau-Tou-Tsuo Valley, Chia-Pau  
Tsuen, Lin Kou Hsiang, Taipei County,  
Taiwan, R.O.C.**

**Tel : (02) 2603-5321**

**Fax : (02) 2603-5325**

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3. The report must not be used by the client to claim product certification, approval, or endorsement by any agency of the federal government.
4. All data in this report are traceable to national standard or international standard.

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# 1. CERTIFICATION

**Applicant : PRIME ELECTRONICS & SATELLITICS INC.**  
 EUT Description : LNB  
 Model Number : BK24J-\*\*\* (\* = A-Z, 0-9, SA, LA, Blank)  
 Brand Name : PESI  
 Tested Power Supply : DC 11V~19V

## MEASUREMENT PROCEDURES USED :

EN 55013:2001+A1: 2003

### For EN 55013:2001+A1:2003:

The measurements shown in the attachment were made in accordance with the procedures indicated, and the maximum emissions from the equipment were found to be within the applicable EN 55013:2001+A1:2003 limits.

## GENERAL REMARKS:

The tests were performed according to the technical requirement of EUT.

Radiated power (EN 55013:2001+A1:2003)

Sample Received Date : October 29, 2004

Final Test Date : November 01, 2004

In order to ensure the quality and accuracy of this document, the contents have been thoroughly reviewed by the following qualified personnel from GesTek Lab.

**Documented By :**

*Vivi Huang*

Vivi Huang / adm. Dept. Technical Report Author

**Test By:**

*David Hung*

David Hung / eng. Dept. Engineer

**Approved By :**

*Tonny Lin*

Tonny Lin / General Manager

## 2. SUMMARY OF TEST RESULTS

STANDARD	TEST ITEM	TEST RESULT	REMARKS
EN 55013 : 2001+A1:2003	Radiated power	PASS	The worst emission frequency is <u>17022.500</u> MHz. And minimum passing margin is <u>-0.44</u> .

## 3. GENERAL INFORMATION

### 3.1 PRODUCTION DESCRIPTION

**Product Name** : LNB  
**Model Number** : BK24J-\*\*\* (\* = A-Z, 0-9, SA, LA, Blank)  
**Brand Name** : PESI  
**Applicant** : PRIME ELECTRONICS & SATELLITICS INC.  
**Address** : 69, Tung-Yuan Rd., Chung-Li Industrial Park, Chung-Li City 320  
 Taoyuan, Taiwan  
**Manufacture** : PRIME ELECTRONICS & SATELLITICS INC.  
**Address** : 69, Tung-Yuan Rd., Chung-Li Industrial Park, Chung-Li City 320  
 Taoyuan, Taiwan  
**Power Supply** : 10~20/120>max≅ (Vdc/mA)

### 3.2 TEST MODES & EUT COMPONENTS DESCRIPTION

EUT: LNB	
Test Mode	Mode 1 (Normal Operation)
Model Number	PRIME, M/N: BK24J-SA; BK24J-LA

**Note:**

1. According to pre-scan data, we determine the data shown in this test report, which reflects the worst-case data for each operation mode.
2. The EUT has serial model numbers for the requirement of marketing;  
The different between them as shown as below:

Model Number	Remark
BK24J-***	(* = A-Z, 0-9, SA, LA, Blank) (for the different outlooks and different customers.)

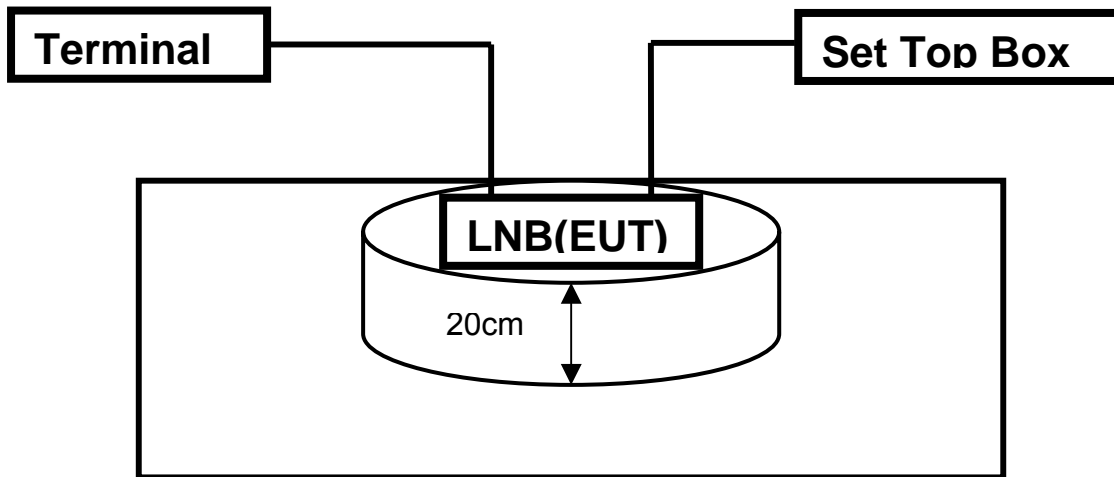
3. The report was modified as revision 2 which modified the Model Number.

### 3.3 CONFIGURATION OF THE TESTED SYSTEM

The FCC IDs/Types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards, which have grants) are:

Device	No.	Configuration
Terminal	----	Manufacturer : Gestek Model Number : 75Ω Power Cord : N/A
Set Top Box	----	Manufacturer : PRIME Model Number : TS-5518 Adapter : DC12V 2.0A, Non-Shielded, Non-Core

### 3.4 BLOCK DIAGRAM OF CONNECTIONS BETWEEN EUT AND SIMULATORS



### 3.5 TEST FACILITY

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	25-29
Humidity (%RH)	25-75 (45-75 for ESD, 1 <sup>st</sup> . ed.) (30-60 for ESD, 2 <sup>nd</sup> . ed)	50-60 for ESD 52-63 for others
Barometric pressure (mbar)	860-1060	950-1000

Site Description : December 31, 2005 File on NEMKO EMC Laboratory Authorization  
 Gaustadalleen 30, Postbox 73 Blindern, 0314 Oslo, Aut. No.: ELA 126  
 Aug. 15, 1997 Recognition on Det Norske Veritas AS  
 Statement No:510-96-1017  
 Accreditation on NVLAP effective through September 30, 2005.  
 For CISPR 22, FCC Method and AS/NZS 3548 Measurement.  
 NVLAP Lab Code: 200085-0  
 Registration on VCCI effective through June 28, 2007.  
 Registration No.: R-291 and C-305  
 Recognized by the Council of Chinese National Laboratory Accreditation  
 As an accredited laboratory and registration No.:1082.  
 Registration on CNLA effective through April 30, 2006.

Name of firm : Global EMC Standard Tech. Corp.

Site location : No. 3 Pau-Tou-Tsuo Valley, Chia-Pau Tsuen, Lin Kou Hsiang,  
 Taipei County, Taiwan, R.O.C.





## 4. RADIATED POWER

### 4.1 TEST METHOD

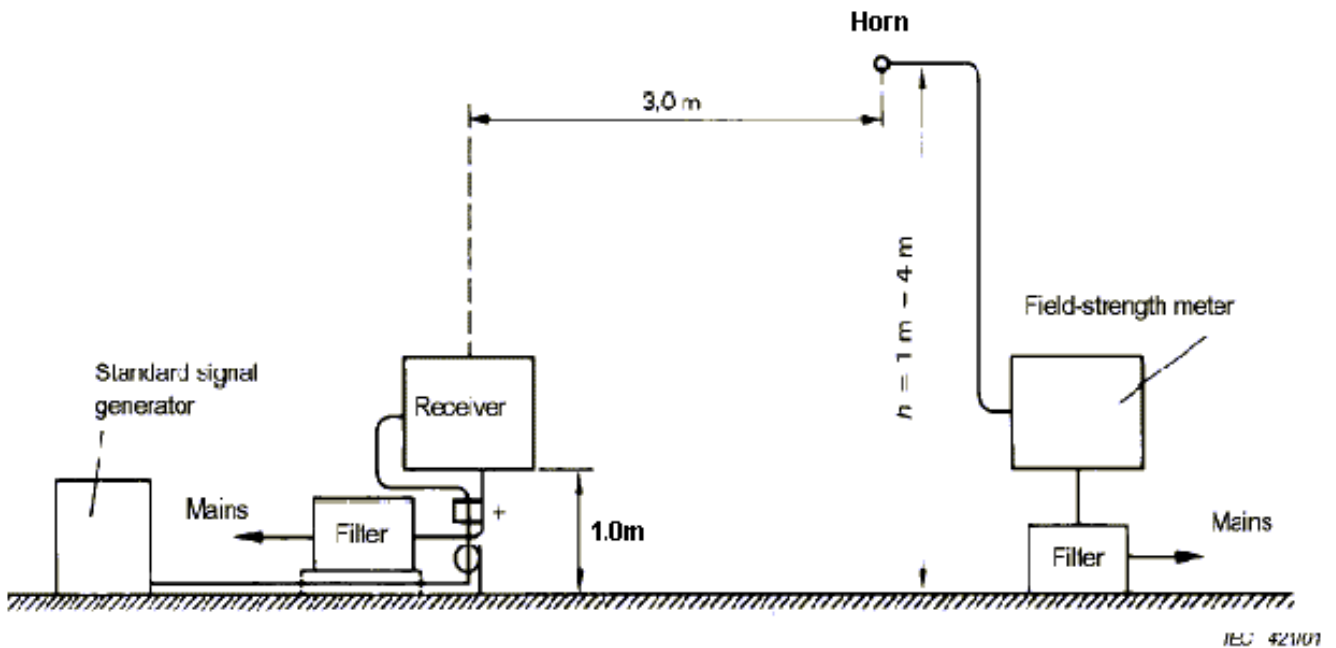
According to EN 55013:2001+A1:2003

### 4.2 TEST EQUIPMENTS

Item	Instrument	Manufacturer	Model	Last Cal. Date
1	Spectrum	HP	E4407B	07/28/04
2	Singanal generator	HP	83711A	11/27/03
3	Horn antenna	SCHWARZBECK	BBHA 9120	12/18/03
4	Horn antenna	ELECTRO-METRICS	EM-6961	07/06/04
5	Pre-amplifier	ADVANTEST	BB 525C	06/02/04
6	DC power supply	HP	E3617A	12/18/03

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

### 4.3 TEST SET UP



#### 4.4 TEST LIMITS

Equipment type	Source	Frequency GHz	Limit values dB(pW)
Television and sound receivers for broadcast satellite transmissions: tuner units	Local oscillator	1 to 3	Fundamental 57
		1 to 3	Harmonics 57

Equipment type	Source	Frequency GHz	Limit value dB(pW)
Outdoor units of direct to home satellite receivers	Local oscillator leakage radiated from the antenna within $\pm 7^\circ$ of the main beam axis <sup>a</sup>	0,9 to 18	Fundamental 30
	Equivalent radiated power from outdoor unit including the local oscillator leakage <sup>b</sup>	1 to 2,5	43
		2,5 to 18	57

<sup>a</sup> The direct measurement is carried out according to 5.9. When the reflector of the parabolic antenna cannot be removed, the indirect measurement according to 5.8 is carried out. In that case, the antenna gain shall be taken into account.

<sup>b</sup> Measurement of the equivalent radiated power shall be in accordance with 5.8. No requirements within  $\pm 7^\circ$  off the main beam axis of the antenna.

## 4.5 MEASURING PROCEDURES

The equipment under test shall be placed on a turntable of non-metallic material, the height of which shall be 1m above the ground.

Equipment which needs and input signal shall be connected to a suitable signal generator through a "well-screened" cable.

The unused output terminals, if any, of the equipment under test shall be terminated with their nominal impedance by means of non-radiating loads.

The mains lead, if any, shall be placed vertically and connected to the mains outlet through a suitable mains filter. Any excess length of the mains lead shall be made into a neat vertical bundle with a length between 0.3m and 0.4m.

The mains lead and the signal generator coaxial cable shall be provided with suitable absorbing devices, placed close to the equipment under test, to avoid measurement errors.

The measurements shall be made with a directive antenna of small aperture capable of making separate measurements of the vertical and horizontal components of the radiated field. The height above the ground of the center line of the antenna shall be the same as the height of the radiation center of the equipment under test.

Measurements shall be made by the substitution method with the antenna having both horizontal and vertical polarizations, and the turntable with the equipment under test shall be rotated. The highest level of radiation measured shall be noted at each measuring frequency.

The equipment under test is then replaced by a transmitting antenna supplied by a standard generator and having the same characteristics as the receiving antenna. Its center shall be placed in the same initial position as that of the equipment center.

For each measuring frequency the output level of the generator is adjusted in order to give the same reference indication on the measuring set. The level of the available power of the generator, increased by the radiating antenna gain above the half-wave dipole, is taken as the level of the radiated power of the equipment under test at the considered frequency.

When a horn antenna is used instead of a dipole antenna, the measurement results shall be expressed in terms of ERP referred to a half-wave dipole.

## 4.6 TEST PHOTOGRAPHS



**4.7 TEST DATA**

LNB Fundamental Emission

**Mode 1 : Normal Operation (M/N:BK24J-SA)**

Frequency (MHz)	Measurement (dBpW)	Reading (dBpW)	Correction Factor (dB)	Limit (dBpW)	Margin (dB)
=====					
<b>Peak Detector</b>					
9749.600	20.49	51.27	-30.78	30.00	-9.51
10524.800	13.19	42.08	-28.89	30.00	-16.81

## LNB Spurious Emission

**Mode 1 : Normal Operation (M/N:BK24J-SA)**

Frequency (MHz)	Measurement (dBpW)	Reading (dBpW)	Correction Factor (dB)	Limit (dBpW)	Margin (dB)
<b>Peak Detector (Horizontal)</b>					
2742.500	30.03	21.86	8.17	57.00	-26.97
5122.500	32.36	20.07	12.29	57.00	-24.64
7672.500	38.94	19.74	19.20	57.00	-18.06
10732.500	42.84	19.34	23.50	57.00	-14.16
13410.000	44.36	17.57	26.79	57.00	-12.64
17957.500	51.05	17.64	33.41	57.00	-5.95

## LNB Spurious Emission

**Mode 1 : Normal Operation (M/N:BK24J-SA)**

Frequency (MHz)	Measurement (dBpW)	Reading (dBpW)	Correction Factor (dB)	Limit (dBpW)	Margin (dB)
<b>Peak Detector (Vertical)</b>					
2785.000	29.09	20.76	8.33	57.00	-27.91
4060.000	28.30	19.31	8.99	57.00	-28.70
5122.500	32.35	20.06	12.29	57.00	-24.65
6440.000	33.21	18.82	14.39	57.00	-23.79
7672.500	38.94	19.74	19.20	57.00	-18.06
8777.500	39.24	19.30	19.94	57.00	-17.76
10562.500	42.41	19.22	23.19	57.00	-14.59
12135.000	43.43	19.71	23.72	57.00	-13.57
15492.500	43.90	17.24	26.66	57.00	-13.10
17022.500	45.83	17.99	27.84	57.00	-11.17
17702.500	48.77	18.16	30.61	57.00	-8.23

## LNB Fundamental Emission

**Mode 1 : Normal Operation (M/N:BK24J-LA)**

Frequency (MHz)	Measurement (dBpW)	Reading (dBpW)	Correction Factor (dB)	Limit (dBpW)	Margin (dB)
=====					
<b>Peak Detector</b>					
9750.000	28.10	58.98	-30.88	30.00	-1.90
10525.400	24.66	53.36	-28.70	30.00	-5.34

## LNB Spurious Emission

### Mode 1 : Normal Operation (M/N:BK24J-LA)

Frequency (MHz)	Measurement (dBpW)	Reading (dBpW)	Correction Factor (dB)	Limit (dBpW)	Margin (dB)
<b>Peak Detector (Horizontal)</b>					
1255.000	35.48	31.49	3.99	43.00	-7.52
2827.500	37.57	30.25	7.32	57.00	-19.43
5420.000	40.45	27.92	12.53	57.00	-16.55
7757.500	47.99	28.78	19.21	57.00	-9.01
8820.000	47.02	27.70	19.32	57.00	-9.98
9712.500	48.86	28.88	19.98	57.00	-8.14
10817.500	52.29	28.70	23.59	57.00	-4.71
13410.000	53.75	27.39	26.36	57.00	-3.25
14217.500	54.93	28.26	26.67	57.00	-2.07
14940.000	53.08	27.50	25.58	57.00	-3.92
16810.000	54.16	28.59	25.57	57.00	-2.84
16980.000	56.29	28.78	27.51	57.00	-0.71



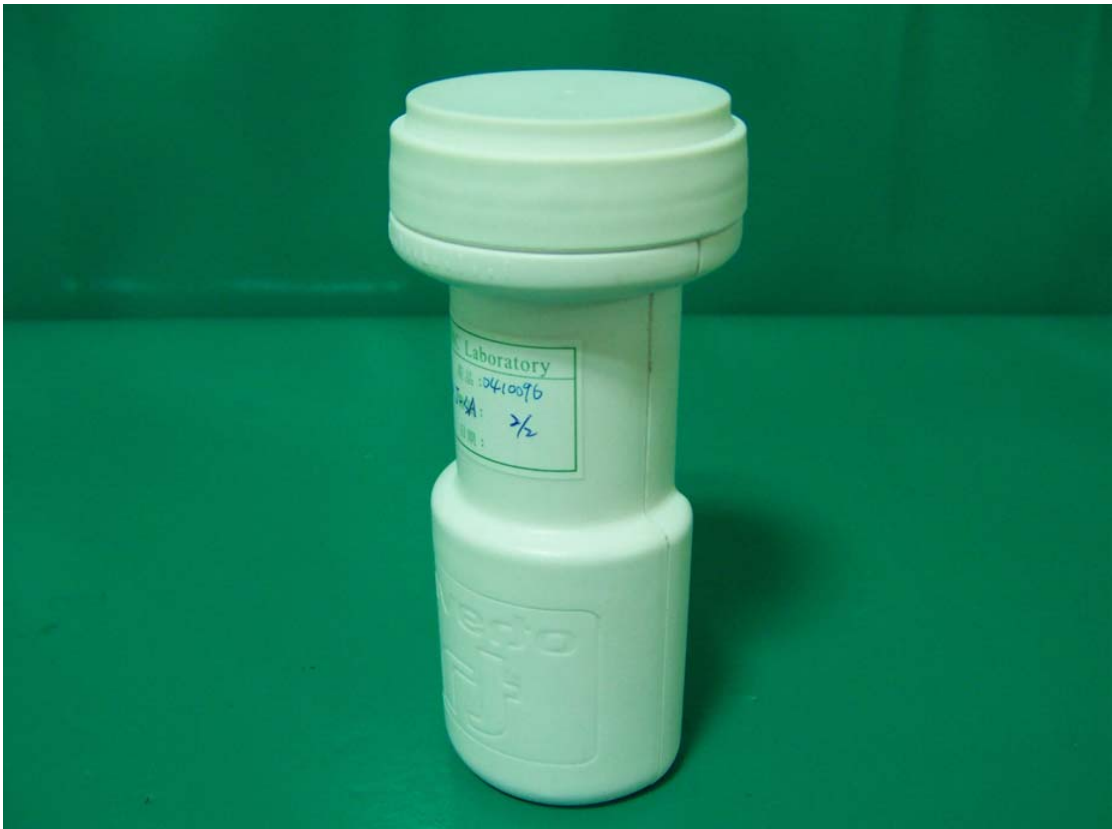
## LNB Spurious Emission

### Mode 1 : Normal Operation (M/N:BK24J-LA)

Frequency (MHz)	Measurement (dBpW)	Reading (dBpW)	Correction Factor (dB)	Limit (dBpW)	Margin (dB)
=====					
<b>Peak Detector (Vertical)</b>					
2232.500	36.71	29.93	6.78	43.00	-6.29
2785.000	37.56	30.48	7.08	57.00	-19.44
4060.000	38.20	29.02	9.18	57.00	-18.80
4740.000	40.45	29.51	10.94	57.00	-16.55
7715.000	47.79	28.37	19.42	57.00	-9.21
8395.000	46.60	28.70	17.90	57.00	-10.40
8777.500	48.06	28.58	19.48	57.00	-8.94
10902.500	52.71	28.52	24.19	57.00	-4.29
12177.500	52.24	29.26	22.98	57.00	-4.76
14217.500	54.89	28.22	26.67	57.00	-2.11
15450.000	51.65	27.88	23.77	57.00	-5.35
17022.500	56.56	28.48	28.08	57.00	-0.44

## 5. PHOTOGRAPHS FOR PRODUCT

1. Front View Of LNB (EUT) (MN: BK24J-SA)
2. Back View Of LNB (EUT) (MN: BK24J-SA)



- 3. Front View Of LNB (EUT) (MN: BK24J-LA)
- 4. Back View Of LNB (EUT) (MN: BK24J-LA)



## 6. EMI/EMS REDUCTION METHOD DURING COMPLIANCE TESTING

No modification was made during testing.