FCC TEST REPORT

REPORT NO.: RF940804H03B
MODEL NO.: RBT-4102-LIC
RECEIVED: Nov. 21, 2005
TESTED: Dec. 15 to 19, 2005
ISSUED: Dec. 22, 2005

APPLICANT: Enterasys Networks, Inc.

ADDRESS: 50 Minuteman Road Andover, MA 01810

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien, Taiwan, R.O.C.

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1 CERTIFICATION

PRODUCT :	Multi-Channel Access Point
BRAND NAME :	Enterasys
MODEL NO. :	RBT-4102-LIC
TESTED:	Dec. 15 to 19, 2005
APPLICANT :	Enterasys Networks, Inc.
TEST ITEM:	ENGINEERING SAMPLE
STANDARDS :	47 CFR Part 90, Subpart Y ANSI C63.4-2003

The above equipment (Model: RBT-4102-LIC) has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : _____ , **DATE:** Dec. 20, 2005
(Midoli Peng)

TECHNICAL ACCEPTANCE : _____ , **DATE:** Dec. 20, 2005
Responsible for RF
(Hank Chung)

APPROVED BY : _____ , **DATE:** Dec. 20, 2005
(May Chen, Deputy Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 90, Subpart Y			
Standard Section	**Test Type and Limit**	**Result**	**REMARK**
90.210(l)	RADIATED EMISSION MEASUREMENT	PASS	Meet the requirement of limit Minimum passing margin is –14.86 dB at 9910.0 MHz
-	EMISSION BANDWIDTH MEASUREMENT	N/A	For reporting purposes only
90.1215(a)	MAXIMUM PEAK OUTPUT POWER	PASS	Meet the requirement of limit
-	AVERAGE POWER MEASUREMENT	N/A	For reporting purposes only
90.1215(a)	POWER SPECTRAL DENSITY MEASUREMENT Limit: max. 21dBm/MHz	PASS	Meet the requirement of limit
90.210(l)	EMISSION MASK AND CONDUCTED SPURIOUS MEASUREMENT	PASS	Meet the requirement of limit
90.213	FREQUENCY STABILITY	N/A	For reporting purposes only

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Multi-Channel Access Point
MODEL NO.	RBT-4102-LIC
POWER SUPPLY	DC 48V from power adapter or POE (Power over Ethernet)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b:11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11a: 54/48/36/24/18/12/9/6Mbps 802.11j: 54/48/36/24/18/12/9/6Mbps
FREQUENCY RANGE	802.11b & 802.11g: 2412 ~ 2462MHz 802.11a: 5.15 ~ 5.35GHz and 5.725 ~ 5.850GHz 802.11j: 4.955 ~ 4.975GHz
NUMBER OF CHANNEL	802.11b & 802.11g: 11 802.11a: 13 802.11j: 3
CHANNEL SPACING	802.11b & 802.11g: 5MHz 802.11a: 20MHz for Normal mode 802.11j: 20MHz
OUTPUT POWER	Please see note 4 (on next three page)
DATA CABLE	NA
ANTENNA TYPE	Please see note 3 (on next page)
I/O PORTS	Console Port x1, LAN Port x1
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.

2. The EUT was operated with the following power adapter or POE:

Adapter	
Brand:	PHIHONG
Model:	PSA 18U-480C
Input:	AC 100~240V, 0.5A, 50~60Hz
Output:	DC 48V, 0.38A , 1.5m/ nonshield/ with one core

POE (for test only)	
Brand:	3Com
Model:	PW130
Input:	AC100-250V, 0.5A, 50/60Hz
Output:	DC 48V, 0.42A

3. The EUT must be supplied with a antenna as following table could be chosen:

For 802.11b/g(2400 ~ 2483.5MHz)

Item	SPEC No.	Model No.	Product Description	Antenna Gain	Remark	Connector
1	NA	RBT4K-AG-IA	2.4-4.9/5.8 GHz, 8ft of cable RPSMA Indoor Antenna.	2dBi	Omni	RPSMA

For 802.11a (5725 ~ 5850MHz band)

Item	SPEC No.	Model No.	Product Description	Antenna Gain	Remark	Connector
1	NA	RBT4K-AG-IA	2.4-4.9/5.8 GHz, 8ft of cable RPSMA Indoor Antenna.	4dBi	Omni	RPSMA
2	8910605	RBTES-AH-P23M	5.8GHz GHz Directional Antenna Assy Outdoor Antenna..	23 dBi	Point to point Directional	Reverse N
3	8910606	RBTES-AH-M10M	5.8GHz GHz Omni Antenna Assy Outdoor Antenna.	10 dBi	Omni	Reverse N

For 802.11a (5150 ~ 5350MHz band)

Item	SPEC No.	Model No.	Product Description	Antenna Gain	Remark	Connector
1	NA	RBT4K-AG-IA	2.4-4.9/5.8 GHz, 8ft of cable RPSMA Indoor Antenna.	4dBi	Omni	RPSMA

For 802.11j (4955 ~ 4975MHz band)

Item	SPEC No.	Model No.	Product Description	Antenna Gain	Remark	Connector
1	8910620	RBTES-AW-S1590M	4.9 GHz -6 GHz Adjustable Sector Antenna Assy Outdoor Antenna	16 dBi at 60° 15 dBi at 90°	1. Point to point 2. Directional 3. Reverse N Connector	RPSMA

Note: The above antennas which with Reverse N connector will tested with a Pig Tail Cable (Model No.: RBT4K-AG-PT20F, SMA female RP - N female RP).

4. Peak output power (Unit : mW) :

For 802.11b/g(2400 ~ 2483.5MHz)

Item	SPEC No.	Model No.	Maximum Peak output power (Unit : mW)
1	NA	RBT4K-AG-IA	316.227

For 802.11a (5725 ~ 5850MHz band)

Item	SPEC No.	Model No.	Maximum Peak output power (Unit : mW)
1	NA	RBT4K-AG-IA	230.674
2	8910605	RBTES-AH-P23M	230.674
3	8910606	RBTES-AH-M10M	230.674

For 802.11a (5150 ~ 5350MHz band)

Item	SPEC No.	Model No.	Maximum Peak output power (Unit : mW)	
			Operating Frequency (5150~5250MHz)	Operating Frequency (5250~5350MHz)
1	NA	RBT4K-AG-IA	45.920	202.768

For 802.11j (4955 ~ 4975MHz band)

Item	SPEC No.	Model No.	Maximum Peak output power (Unit : mW)
1	8910620	RBTES-AW-S1590M	195.88

5. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Operated in 4955 ~ 4975MHz band:

For normal mode: Three channels are provided to this EUT.

Frequency	Channel Bandwidth
4955MHz	20MHz
4965MHz	20MHz
4975MHz	20MHz

3.3 TEST MODE APPLICABLITY AND TESTED CHANNEL DETAIL:

EUT configure mode	Applicable to				Description
	MPOP	PSD	RE	EM&CE	
-	x	x	x	x	NA

Where MPOP: Maximum Peak Output Power PSD: Power Spectrum Density
RE: Radiated Emission EM&CE: Emission Mask and Conducted Emission Measurement

Radiated Emission Test :

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Channel Bandwidth	Total Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
1	3	20	3	OFDM	BPSK	6

☒ The EUT was pre-tested in chamber as the following test modes:

Test Mode	Power
Mode A	With Adapter
Mode B	**With POE**

The worst was found in Mode B, the worst cases, were chosen for final test.

MAXIMUM PEAK OUTPUT POWER:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Channel Bandwidth	Total Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
1	3	20	3	OFDM	BPSK	6

POWER SPECTRAL DENSITY :

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Channel Bandwidth	Total Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
1	3	20	3	OFDM	BPSK	6

EMISSION MASK AND CONDUCTED SPURIOUS MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Channel Bandwidth	Total Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
1	3	20	3	OFDM	BPSK	6

3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Multi-Channel Access Point. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

47 CFR Part 90, Subpart Y
ANSI C63.4 : 2003

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 47 CFR Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

3.5 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.

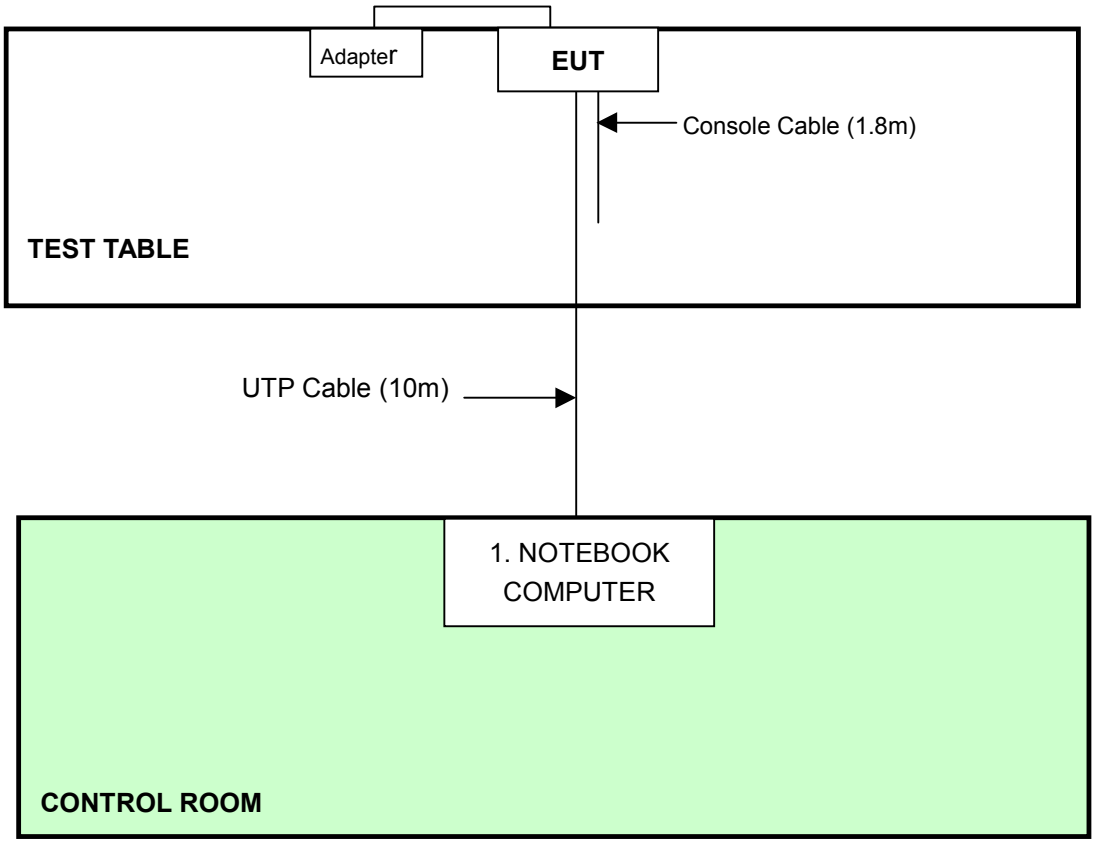
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER (For adapter mode)	DELL	C600	6DRV601	DoC
	NOTEBOOK COMPUTER (For POE mode)	DELL	PP01L	TW-09c748-12800-165-3171	DoC

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA

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

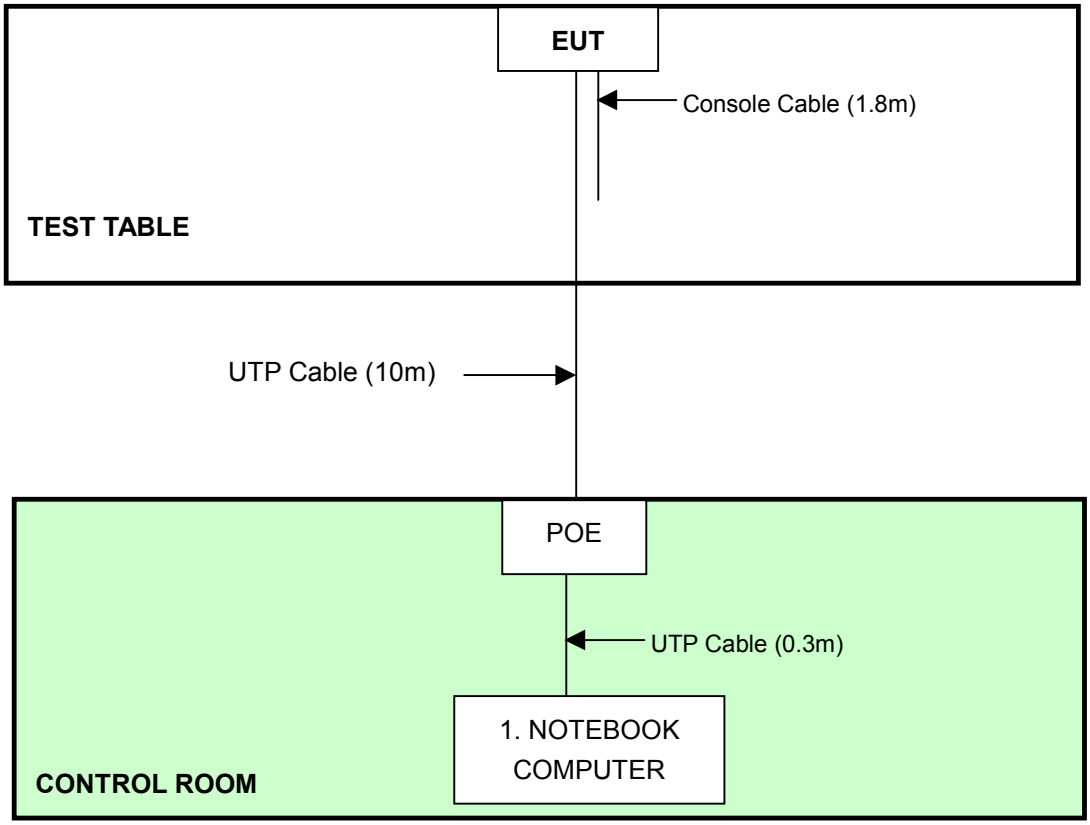
3.6 CONFIGURATION OF SYSTEM UNDER TEST

With adapter test mode :



NOTE: 1. Support unit 1 was kept in the control room during the test.
2. Please refer to the photos of test configuration in Item 5 also.

With POE test mode :



NOTE: 1. Support unit 1 was kept in the control room during the test.
2. Please refer to the photos of test configuration in Item 5 also.

4 TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

§90.210(M) Emission Mask M. For high power transmitters (greater that 20 dBm) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:
On any frequency removed from the assigned frequency above 150 % of the authorized bandwidth: 50 dB or 55 + 10 log (P) dB, whichever is the lesser attenuation.

The Radiated Spurious Emission Limit is obtained by the following:

Channel 4955MHz: Measured Average Power Output of EUT:16.87dBm
Spur limit=16.87dBm-50dB=-33.13dBm

Channel 4965MHz: Measured Average Power Output of EUT:17.04dBm
Spur limit=17.04dBm-50dB =-32.96dBm

Channel 4975MHz: Measured Average Power Output of EUT:17.03dBm
Spur limit=17.03dBm-50dB=-32.97dBm

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 07, 2006
HP Pre_Amplifier	8449B	3008A01922	Oct. 02, 2006
ROHDE & SCHWARZ Test Receiver	ESCS30	100287	Dec. 08, 2006
CHASE Broadband Antenna	VULB9168	138	Dec. 21, 2005
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 11, 2006
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 30, 2006
SCHWARZBECK Biconical Antenna	VHBA9123	459	Jun. 26, 2006
SCHWARZBECK Periodic Antenna	UPA6108	1148	Jun. 26, 2006
RF Switches (ARNITSU)	CS-201	1565157	NA
RF CABLE (Chaintek) 1GHz-20GHz	SF102	22054-2	Nov. 16. 2006
RF Cable(RICHTEC)	9913-30M	STCCAB-30M-1GHz-021	Jul. 16, 2006
Software	ADT_Radiated_V 5.14	NA	NA
CHANCE MOST Antenna Tower	AT-100	0203	NA
CHANCE MOST Turn Table	TT-100	0203	NA

Note: 1. The calibration interval of the above test instruments is 12 months (36 months for Periodic Antenna)and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in ADT Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 4824-3.
7. The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Radiated emissions (30MHz-1GHz)	2.98 dB
Radiated emissions (1GHz ~18GHz)	2.21 dB
Radiated emissions (18GHz ~20GHz)	1.88 dB

4.1.3 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.

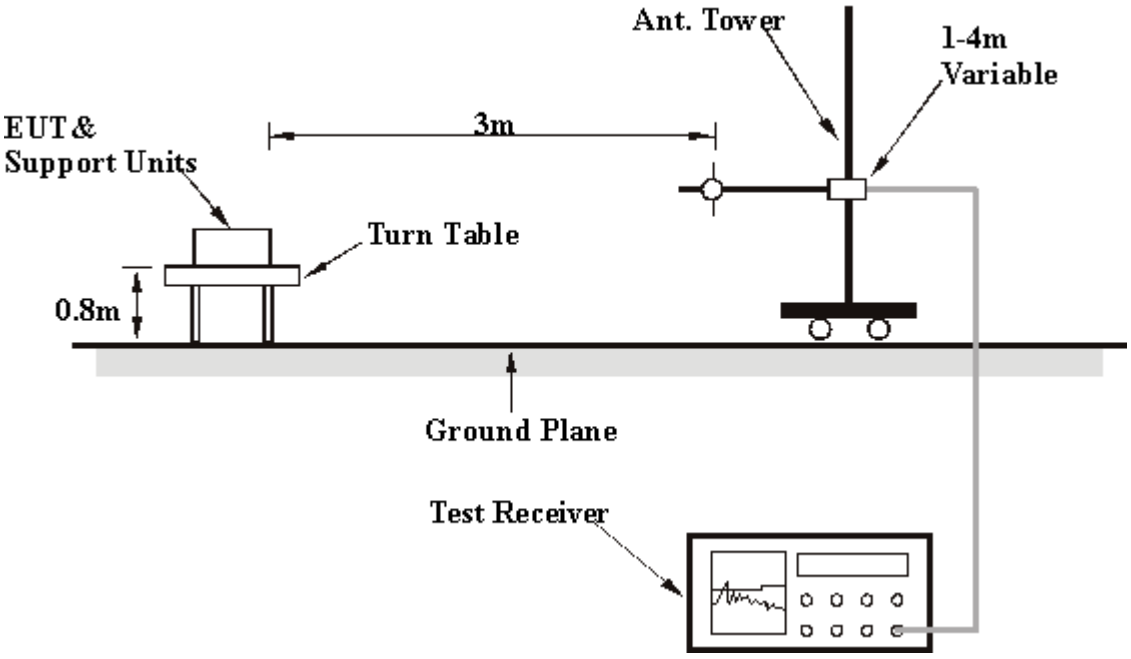
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The maximum EIRP of the emission was calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps were carried out with the receiving antenna in both vertical and horizontal polarization. Harmonic emissions up to the 10^{th}or40GHz,which ever was the lesser, were investigated.

NOTE:

1.The resolution bandwidth of at least one percent of the occupied bandwidth of the fundamental emission and a video bandwidth of 30 kHz.

4.1.4 TEST SETUP



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 on the testing table.

b. Prepared other computer systems to act as a communication partner and placed them outside of testing area.

c. The communication partner run test program “Art 48 b 6” to enable EUT under transmission/receiving condition continuously at specific channel frequency via UTP cable and wireless.

4.1.6 TEST RESULTS

EUT	Multi-Channel Access Point	**MODEL**	RBT-4102-LIC
MODE	Channel Frequency 4955MHz	**FREQUENCY RANGE**	1000~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) 300KHz/30KHz
ENVIRONMENTAL CONDITIONS	19 deg. C, 47%RH, 980 hPa	**TESTED BY**	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6606.60	-59.46	-33.10	-26.36	-66.30	6.84
2	9910.00	-57.46	-33.10	-24.36	-66.10	8.64

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6606.60	-53.66	-33.10	-20.56	-60.50	6.84
2	**9910.00**	**-47.96**	**-33.10**	**-14.86**	**-56.60**	**8.64**

REMARKS:
1. Emission level(dBm)<EIRP>=SG reading-CL+Gain(dBi)
2. The other emission levels were very low against the limit.
3. Margin value = Emission level – Limit value.
4. The limit value is defined as per 90.210
5. " * " : Fundamental frequency

EUT	Multi-Channel Access Point	**MODEL**	RBT-4102-LIC
MODE	Channel Frequency 4965MHz	**FREQUENCY RANGE**	1000~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) 300KHz/30KHz
ENVIRONMENTAL CONDITIONS	19 deg. C, 47%RH, 980 hPa	**TESTED BY**	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6620.00	-59.46	-33.00	-26.46	-66.31	6.85
2	9930.00	-56.66	-33.00	-23.66	-65.30	8.64

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6620.00	-53.66	-33.0	-20.66	-60.51	6.85
2	9930.00	-48.06	-33.0	-15.06	-56.70	8.64

REMARKS:
1. Emission level(dBm)<EIRP>=SG reading-CL+Gain(dBi)
2. The other emission levels were very low against the limit.
3. Margin value = Emission level – Limit value.
4. The limit value is defined as per 90.210
5. " * " : Fundamental frequency

EUT	Multi-Channel Access Point	**MODEL**	RBT-4102-LIC
MODE	Channel Frequency 4975MHz	**FREQUENCY RANGE**	1000~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) 300KHz/30KHz
ENVIRONMENTAL CONDITIONS	19 deg. C, 47%RH, 980 hPa	**TESTED BY**	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6633.30	-61.16	-33.00	-28.16	-68.02	6.86
2	9950.00	-57.36	-33.00	-24.36	-66.00	8.64

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6633.30	-54.16	-33.00	-21.16	-61.02	6.86
2	9950.00	-48.76	-33.00	-15.76	-57.40	8.64

REMARKS:
1. Emission level(dBm)<EIRP>=SG reading-CL+Gain(dBi)
2. The other emission levels were very low against the limit.
3. Margin value = Emission level – Limit value.
4. The limit value is defined as per 90.210
5. " * " : Fundamental frequency

4.2 EMISSION BANDWIDTH MEASUREMENT

4.2.1 LIMITS OF 26dB BANDWIDTH MEASUREMENT

For reporting purposes only.

4.2.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2006

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.2.3 TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 1% to 3% of the 26dB bandwidth and /or the 99% bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled.

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

The software provided by client to enable the EUT under transmission condition continuously at channel frequencies individually.

4.2.6 TEST RESULTS

EUT	Multi-Channel Access Point		
MODEL	RBT-4102-LIC	**ENVIRONMENTAL CONDITIONS**	20 deg. C, 60%RH, 980 hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Wen Yu

26dB Bandwidth

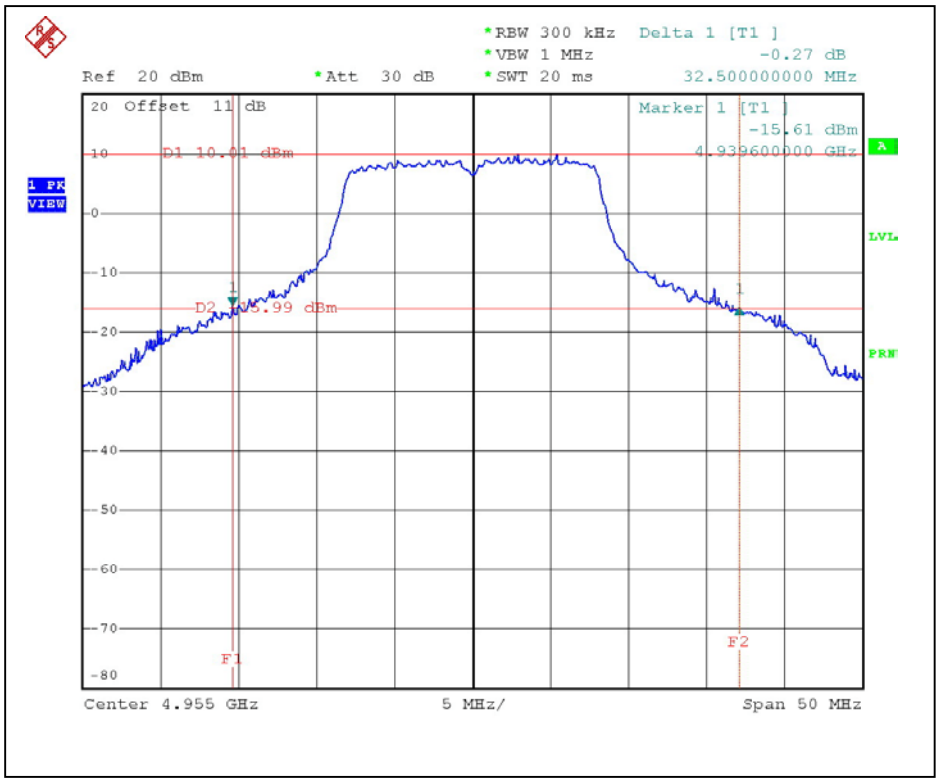
CHANNEL FREQUENCY (MHz)	26 dB BANDWIDTH (MHz)	10 Log B (dB)
4955	32.5	15.11
4965	33.6	15.26
4975	33.4	15.24

99% Bandwidth

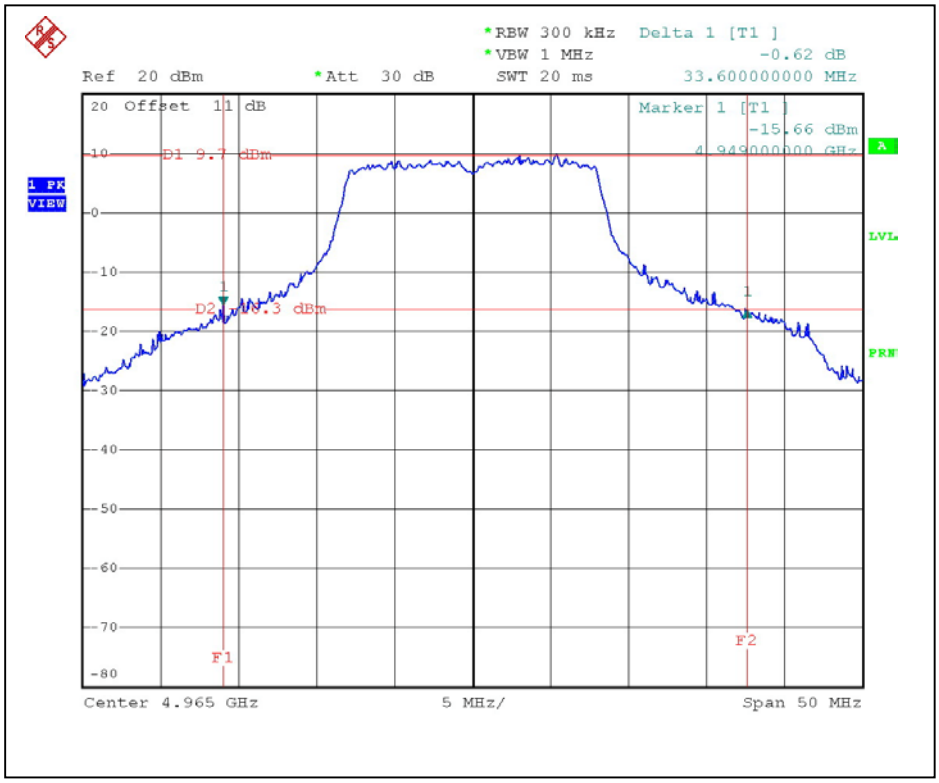
CHANNEL FREQUENCY (MHz)	99% BW (MHz)
4955	9.27
4965	9.56
4980	9.74

26dB Bandwidth

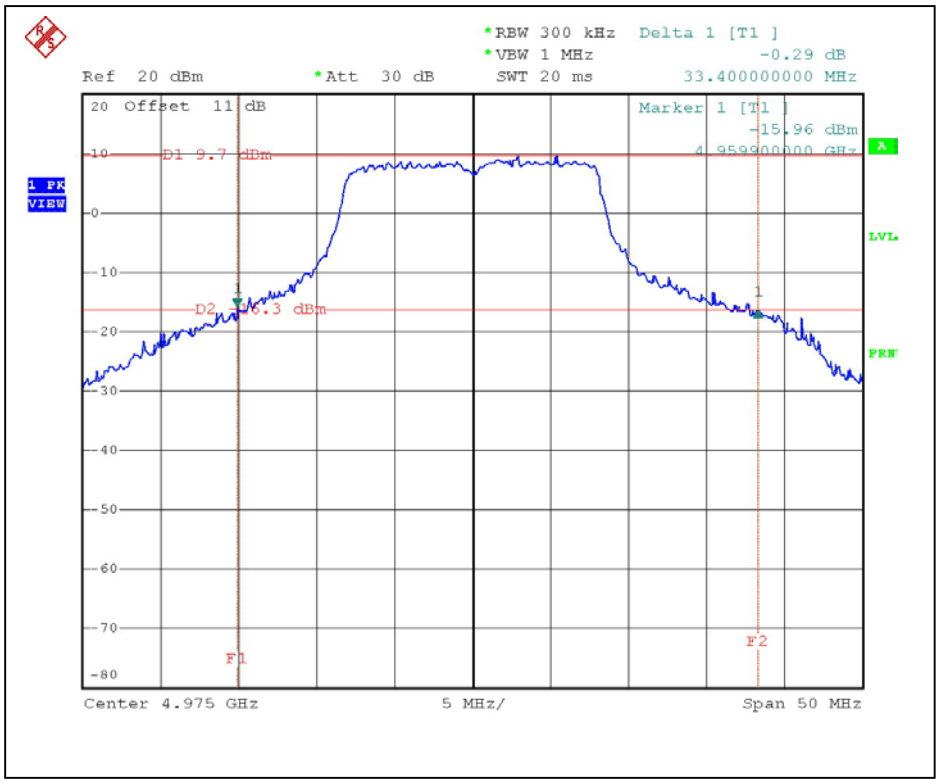
Channel Frequency: 4955 MHz



Channel Frequency: 4965 MHz

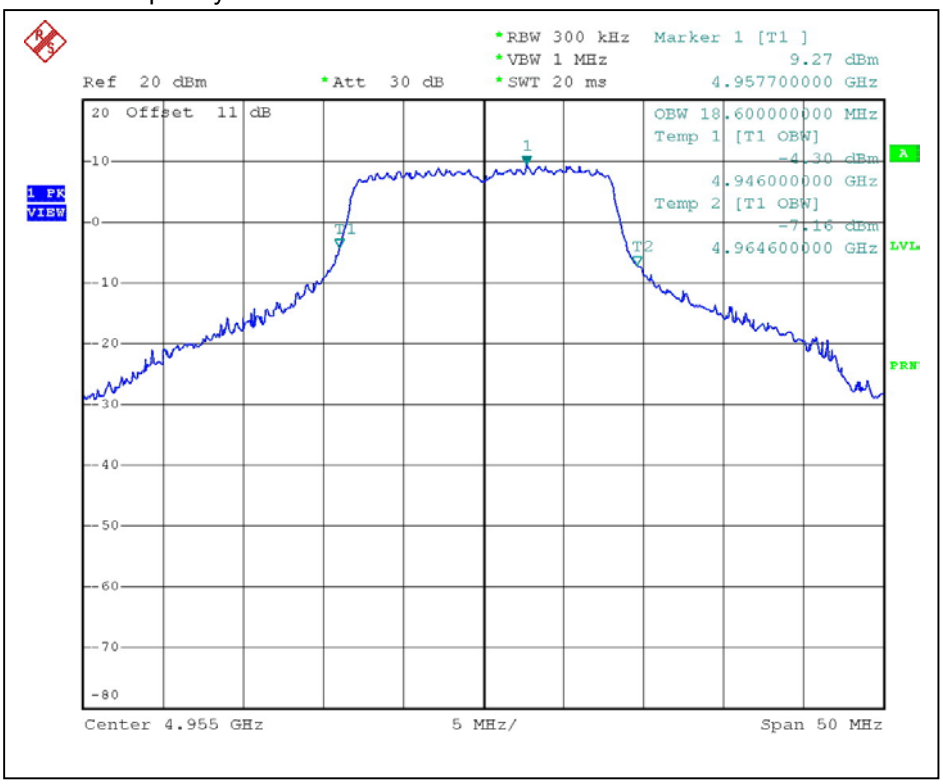


Channel Frequency: 4975 MHz

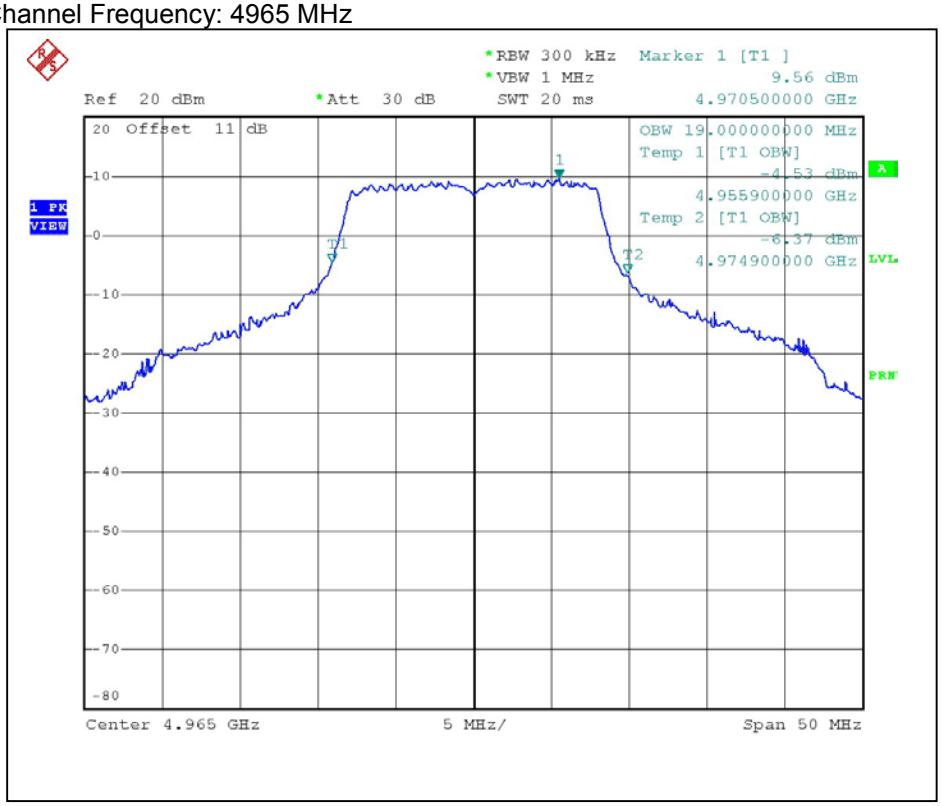


99% Bandwidth

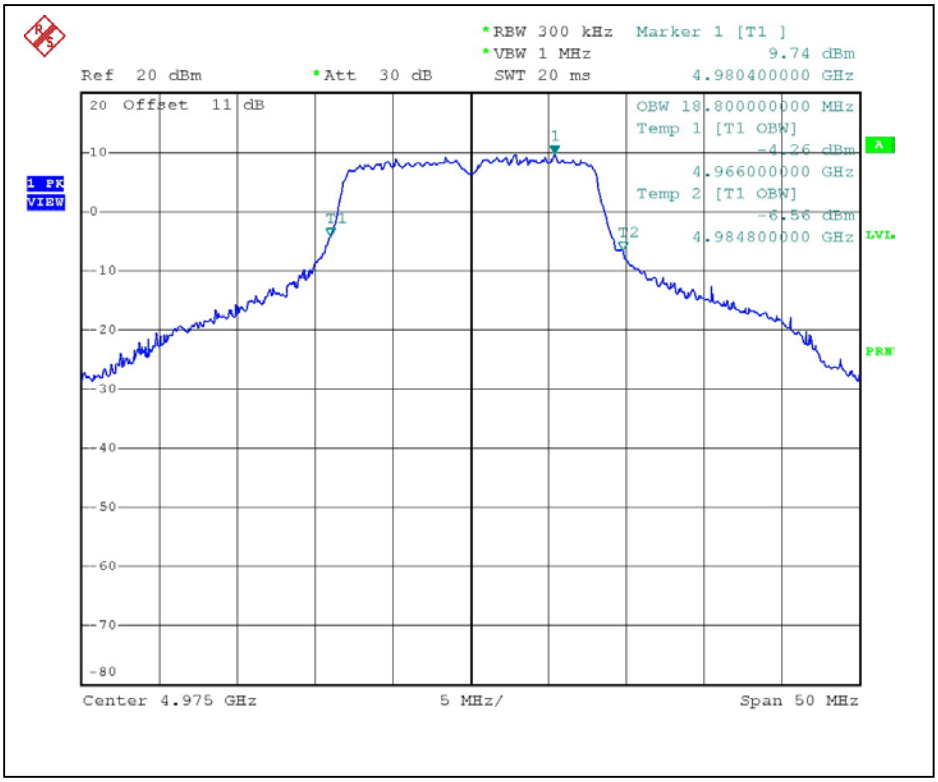
Channel Frequency: 4955 MHz



Channel Frequency: 4965 MHz



Channel Frequency: 4975 MHz



4.3 MAXIMUM PEAK OUTPUT POWER

4.3.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

§90.1215 The transmitting power of stations operating in the 4940-4990 MHz band must not exceed the maximum limits in this section.

(a) The peak transmit power should not exceed:

Channel bandwidth (MHz)	Low power device peak transmitter power (dBm)	High power device peak transmitter power (dBm)
1	7	20
5	14	27
10	17	30
15	18.8	31.8
20	20	33

4.3.2 TEST INSTRUMENTS

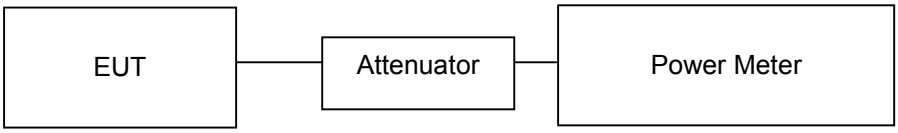
Description & Manufacturer	Model No.	Serial No.	Calibrated Until
Power Meter	ML2487A	6K00001472	Jan,31,2006

NOTE:
The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.3.3 TEST PROCEDURES

1. An attenuator was used on the output port of the EUT. Power meter was used to measurement the Peak power.
2. The EUT power was adjusted maximum output power.
3. The output power was then recorded with peak reading.

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 channel frequencies individually and power was adjusted Maximum output power by software.

4.3.6 TEST RESULTS

EUT	Multi-Channel Access Point		
MODEL	RBT-4102-LIC	ENVIRONMENTAL CONDITIONS	15 deg. c, 65%RH, 980 hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Wen Yu

CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
4955	195.88	22.92	33	PASS
4965	195.43	22.91	33	PASS
4975	194.54	22.89	33	PASS

4.4 AVERAGE POWER

4.4.1 LIMITS OF AVERAGE POWER MEASUREMENT

None; for reporting purposes only.

4.4.2 TEST INSTRUMENTS

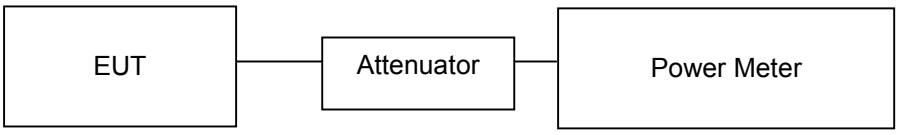
Description & Manufacturer	Model No.	Serial No.	Calibrated Until
Power Meter	ML2487A	6K00001472	Jan,31,2006

NOTE:
The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.4.3 TEST PROCEDURES

1.An attenuator was used on the output port of the EUT. Power meter was used to measurement the Average power.
2.The EUT power was adjusted maximum output power.
3.The output power was then recorded with peak and average reading.

4.4.4 TEST SETUP



4.4.5 EUT OPERATING CONDITIONS

Same as Item 4.3.5

4.4.6 TEST RESULTS

EUT	Multi-Channel Access Point		
MODEL	RBT-4102-LIC	**ENVIRONMENTAL CONDITIONS**	20 deg. C, 60%RH, 980 hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Moris Lin

CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
4955	48.64	16.87
4965	50.58	17.04
4975	50.47	17.03

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

Complies § 90.1215 (a) High power devices.

System	Limit
For high power device	21dBm/MHz

Note:
If transmitting antennas of directional gain greater than 9dBi are used, both the peak transmit power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi. However, high power point-to point or point-to-multipoint operation (both fixed and temporary-fixed rapid deployment) may employ transmitting antennas with directional gain up to 26dBi without any corresponding reduction in the transmitter power or spectral density. Corresponding reduction in the peak transmit power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26dBi.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2006

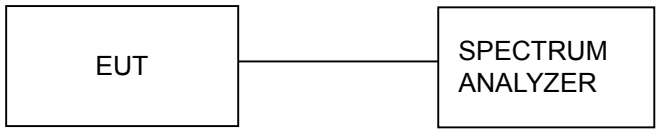
NOTE:

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 is connected to a spectrum analyzer. The measured with the spectrum analyzer using RBW=1MHz and VBW 1MHz. The EUT power was adjusted at the maximum output power level. Set max hold to capture the modulated envelope of the EUT. The peak power spectrum density was recorded.

4.5.4 TEST SETUP



4.5.5 EUT OPERATING CONDITIONS

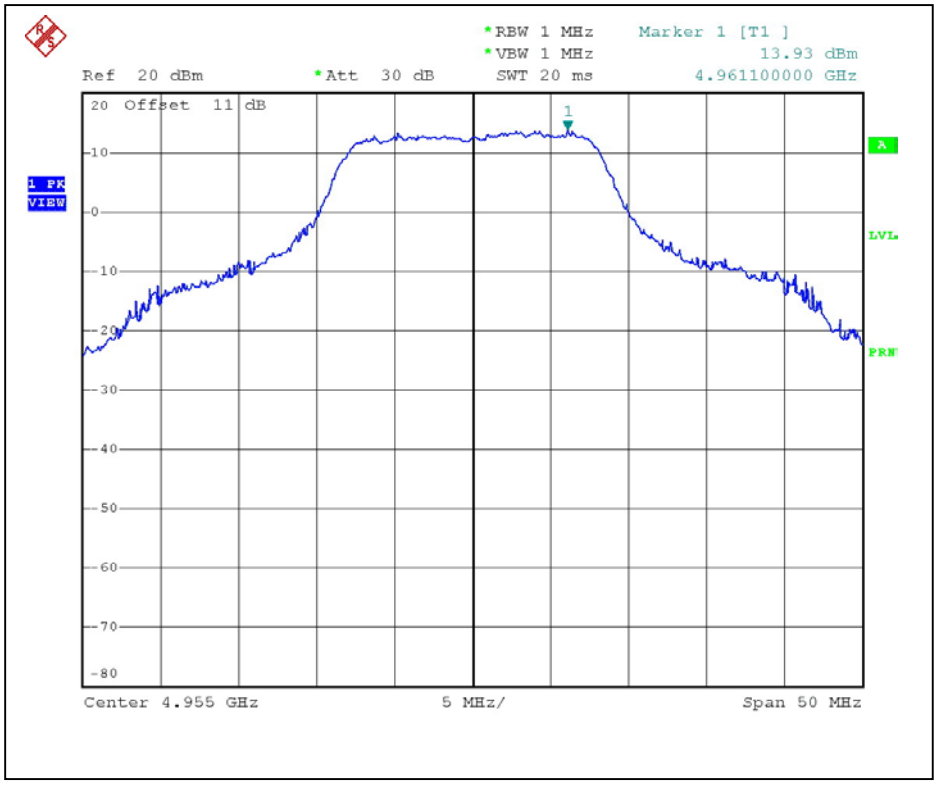
Same as 4.2.5

4.5.6 TEST RESULTS

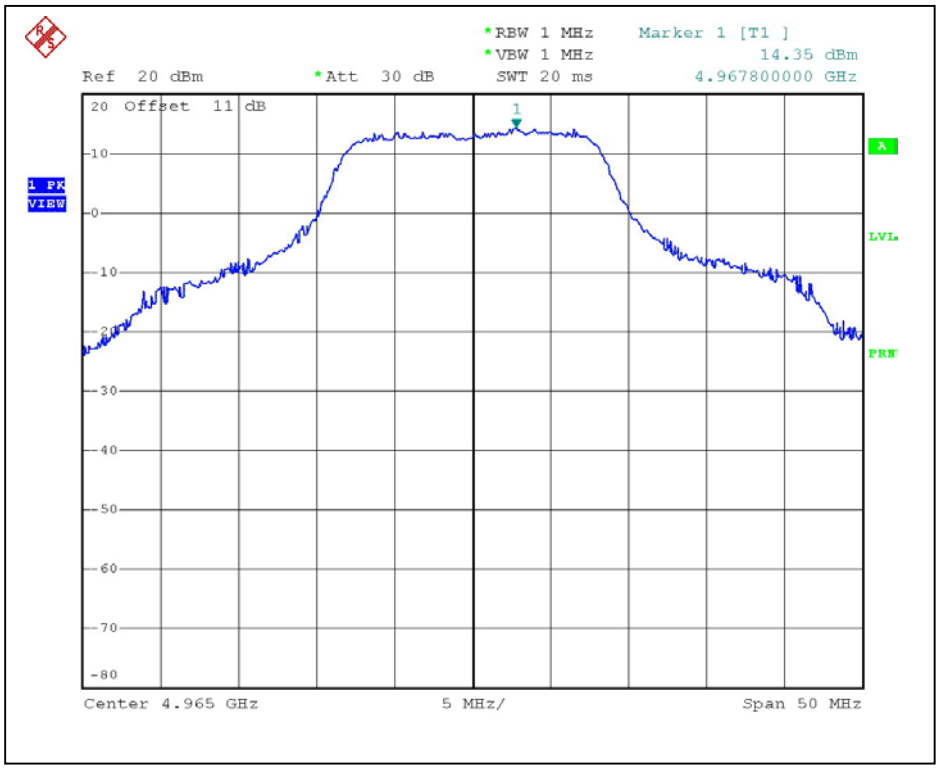
EUT	Multi-Channel Access Point		
MODEL	RBT-4102-LIC	ENVIRONMENTAL CONDITIONS	15 deg. C, 65%RH, 980 hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Wen Yu

CHANNEL FREQUENCY (MHz)	POWER SPECTRAL DENSIYT (dBm/MHz)	MAXIMUM LIMIT (dBm/MHz)	PASS/FAIL
4955	13.93	21	PASS
4965	14.35	21	PASS
4975	14.60	21	PASS

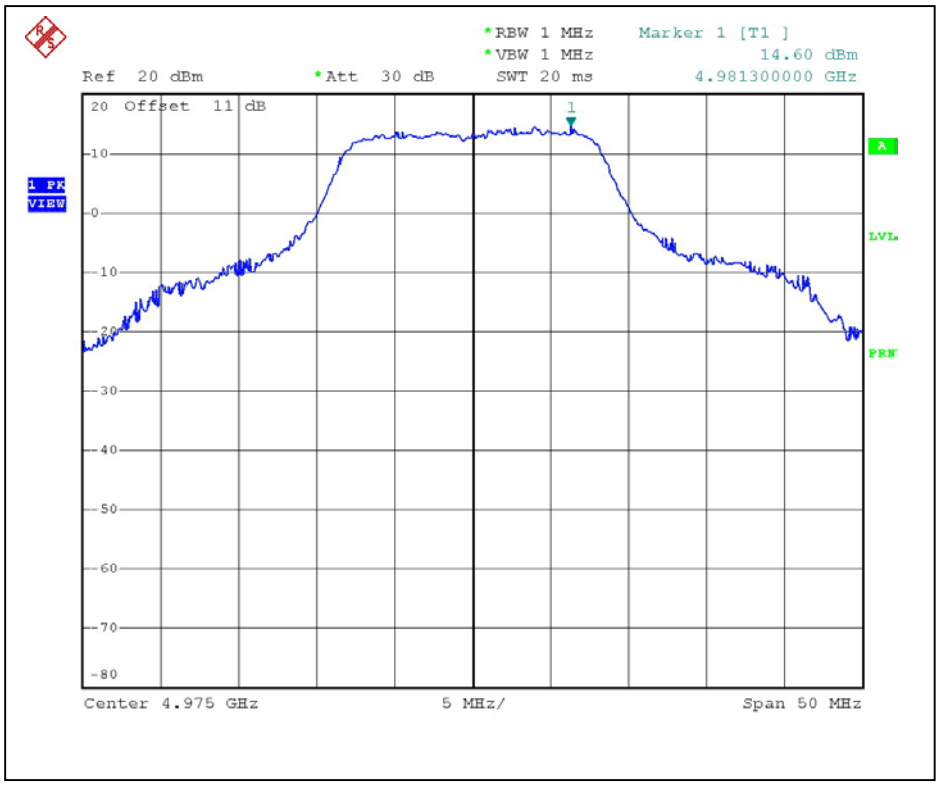
Channel Frequency: 4955 MHz



Channel Frequency: 4965 MHz



Channel Frequency: 4975 MHz



4.6 EMISSION MASK AND CONDUCTED SPURIOUS MEASUREMENT

4.6.1 LIMITS OF EMISSION MASK MEASUREMENT

Compliance §90.210(M) Emission Mask M (For High power device) .
PSD of the emission on any frequency removed from the assigned frequency must be attenuated below the output power of the transmitter as follows:

Authorized bandwidth(BW)	Limit
0-45%	0dB
45-50%	568 log (% of (BW) / 45) dB
50-55%	26 + 145 log (% of BW / 50) dB
55-100%	32 + 31 log (% of (BW) / 55) dB
100-150%	40 + 57 log (% of (BW) / 100) dB
Above 150%	50 dB or 55 + 10 log (P) dB, whichever is the lesser attenuation.

Note: The zero dB reference is measured relative to the highest average power of the fundamental emission measured across the designated channel bandwidth using a resolution bandwidth of at least one percent of the occupied bandwidth of the fundamental emission and a video bandwidth of 30 kHz.

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2006

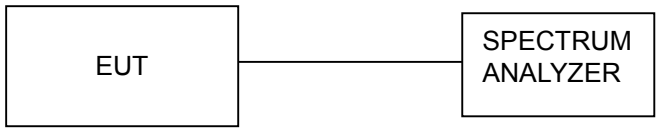
NOTE:

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 EUT is connected to the spectrum analyzer. The measured highest Average Power was set relative to zero dB reference. The RBW was set to at least 1% of the channel bandwidth with a VBW set to 30kHz. The EUT power was adjusted at the maximum output power level. Set max hold to capture the modulated envelope of the EUT. The Emission Mask was recorded.

4.6.4 TEST SETUP



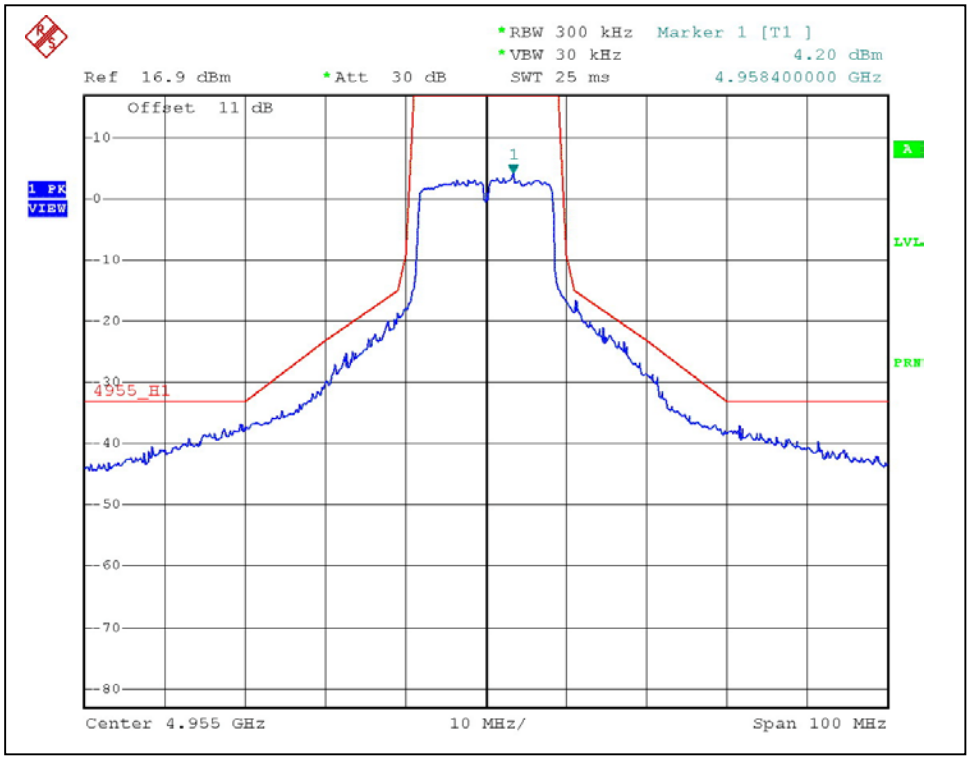
4.6.5 EUT OPERATING CONDITIONS

Same as 4.2.5

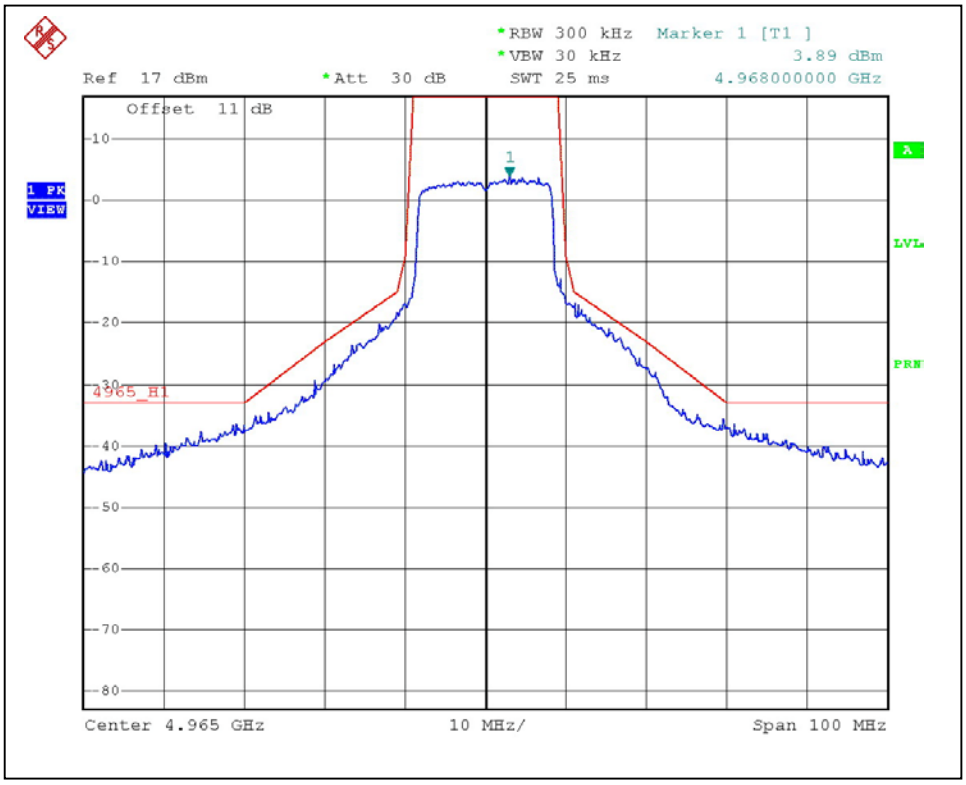
4.6.6 TEST RESULTS

EMISSION MASK：

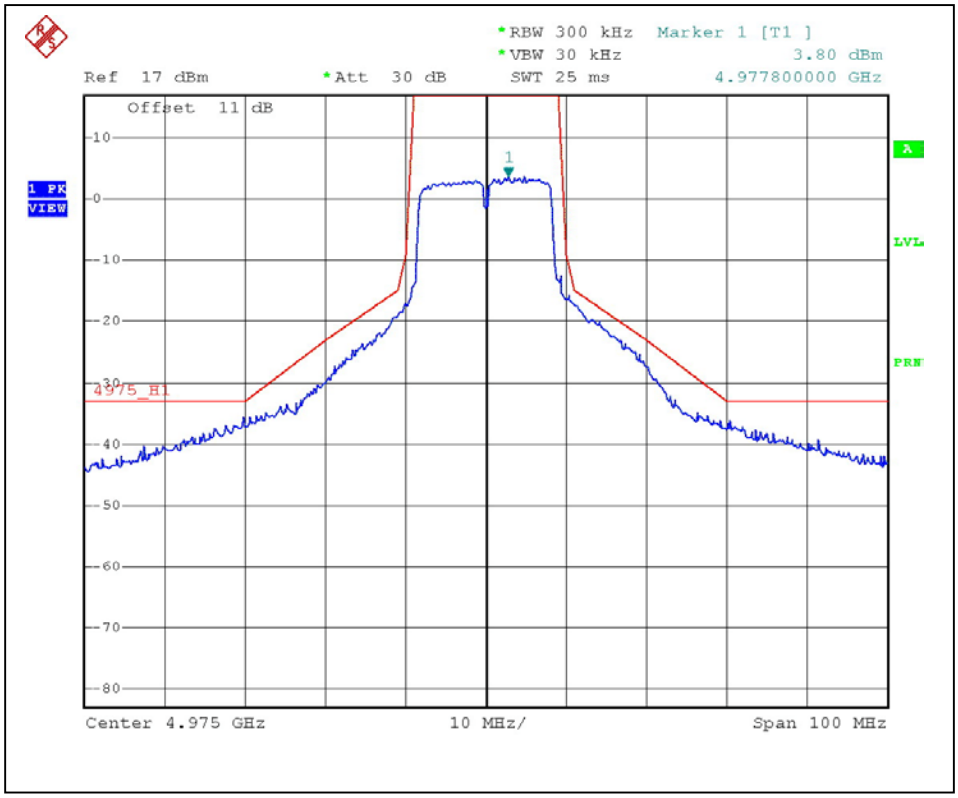
Channel Frequency: 4955 MHz



Channel Frequency: 4965 MHz

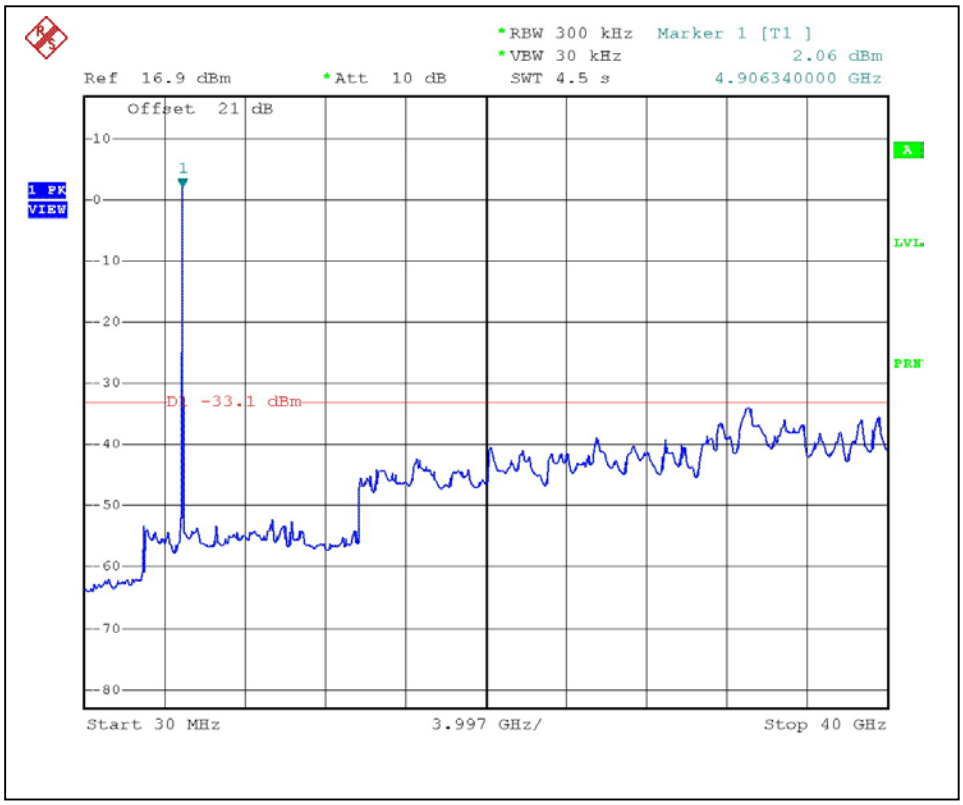


Channel Frequency: 4975 MHz

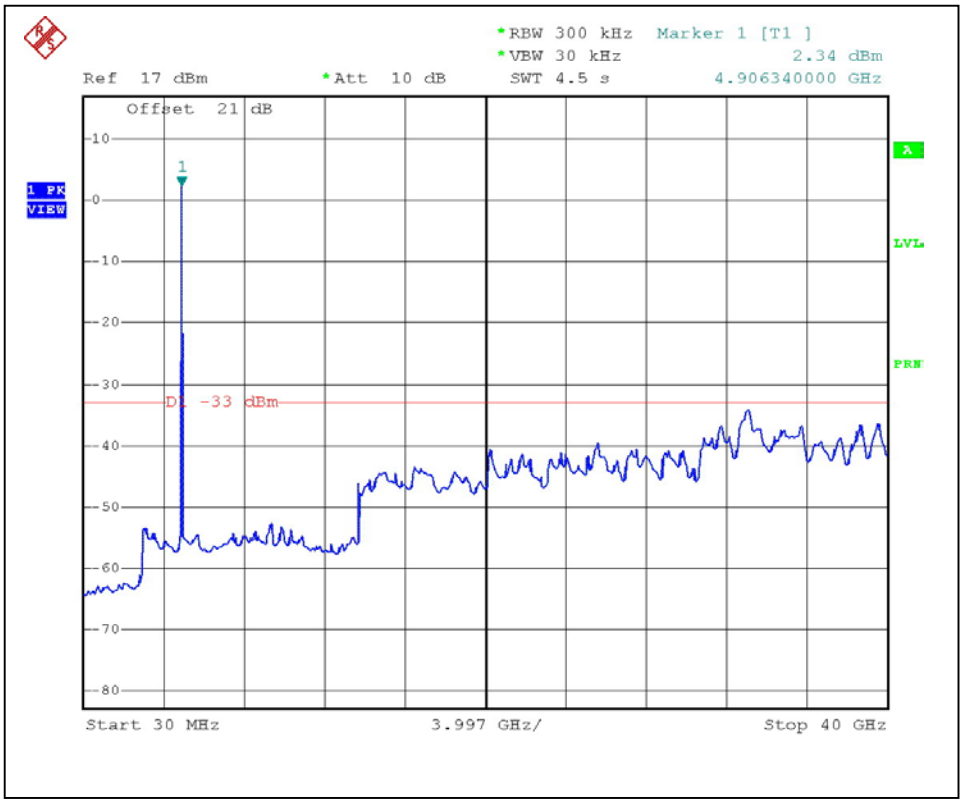


CONDUCTED SPURIOUS:

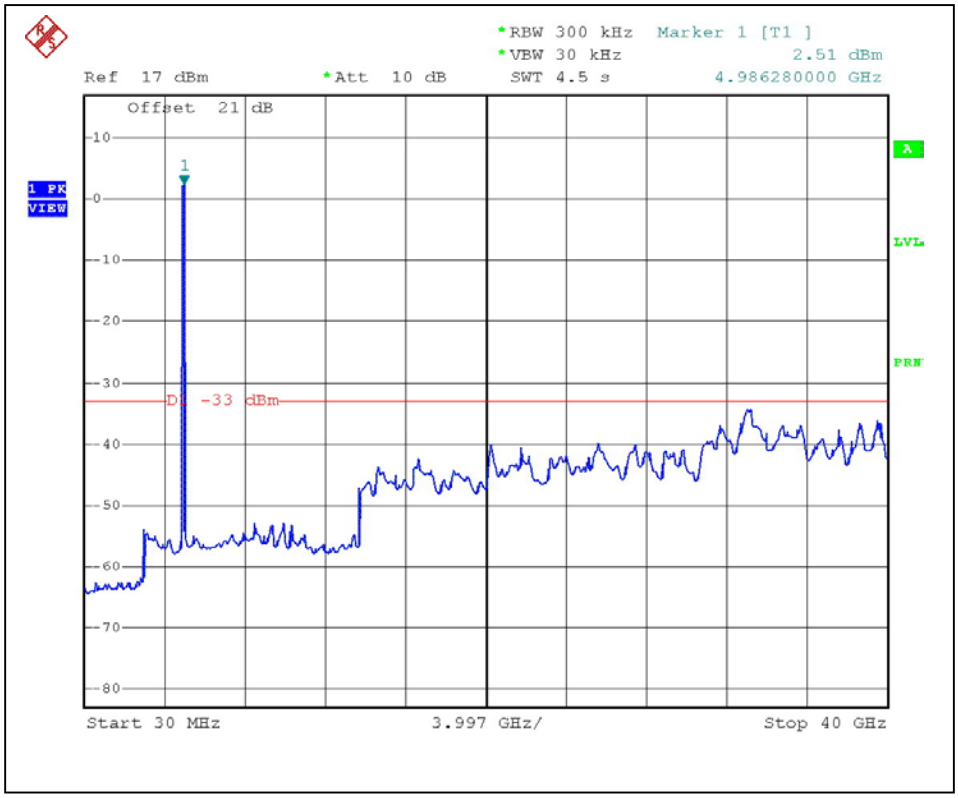
Channel Frequency: 4955 MHz



Channel Frequency: 4965 MHz



Channel Frequency: 4975 MHz



4.7 FREQUENCY STABILITY

4.7.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

For reporting purposes only.

4.7.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2006

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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

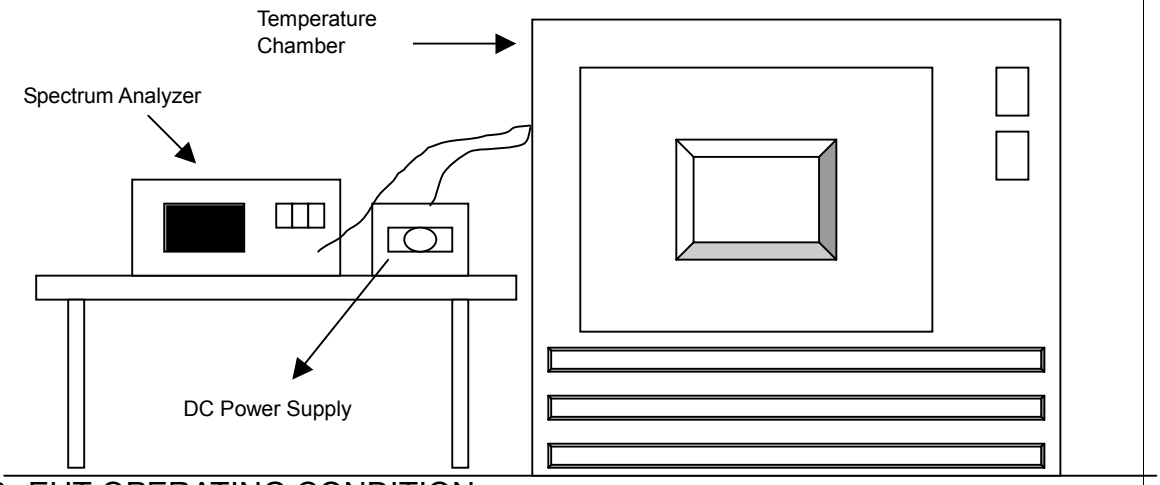
4.7.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



4.7.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.7.7 TEST RESULTS

OPERATING FREQUENCY: MHZ							
Temp. (℃)	Power supply (VAC)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	4974.9811	0.000380	4974.9811	0.000380	4974.9821	0.000360
	110	4974.981	0.000382	4974.981	0.000382	4974.9820	0.000362
	93.5	4974.9809	0.000384	4974.981	0.000382	4974.9818	0.000366
40	126.5	4974.9802	0.000398	4974.9812	0.000378	4974.9812	0.000378
	110	4974.98	0.000402	4974.981	0.000382	4974.9810	0.000382
	93.5	4974.9799	0.000404	4974.9809	0.000384	4974.9810	0.000382
30	126.5	4974.9821	0.000360	4974.9822	0.000358	4974.9831	0.000340
	110	4974.982	0.000362	4974.982	0.000362	4974.9830	0.000342
	93.5	4974.9819	0.000364	4974.982	0.000362	4974.9825	0.000352
20	126.5	4974.9801	0.000400	4974.9802	0.000398	4974.9803	0.000396
	110	4974.98	0.000402	4974.981	0.000382	4974.9820	0.000362
	93.5	4974.9798	0.000406	4974.9799	0.000404	4974.9815	0.000372
10	126.5	4974.9932	0.000137	4974.9933	0.000135	4974.9933	0.000135
	110	4974.993	0.000141	4974.993	0.000141	4974.9940	0.000121
	93.5	4974.9929	0.000143	4974.9929	0.000143	4974.9931	0.000139
0	126.5	4974.9972	0.000056	4974.9972	0.000056	4974.9973	0.000054
	110	4974.997	0.000060	4974.9980	0.000040	4974.9980	0.000040
	93.5	4974.997	0.000060	4974.9971	0.000058	4974.9971	0.000058
-5	126.5	4975.0021	0.000042	4975.0022	0.000044	4975.0030	0.000060
	110	4975.002	0.000040	4975.0020	0.000040	4975.0030	0.000060
	93.5	4975.0018	0.000036	4975.0020	0.000040	4975.0026	0.000052

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

RADIATED EMISSION TEST (With adapter)

RADIATED EMISSION TEST (With POE)

6 INFORMATION ON THE TESTING LABORATORIES

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

USA	FCC, NVLAP, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA, CSA
R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB, GOST-ASIA (MOU)
Russia	CERTIS (MOU)

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. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Email: service@adt.com.tw
Web Site: www.adt.com.tw

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

APPENDIX-A

MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.