

# FCC TEST REPORT

**REPORT NO.:** RF110516C08  
**MODEL NO.:** DuraFon 1X (refer to item 3.1 for more detail)  
**FCC ID:** U2M-SN902  
**RECEIVED:** May 16, 2011  
**TESTED:** May 23 ~ Jun. 29, 2011  
**ISSUED:** Jul. 11, 2011

**APPLICANT:** Senao Networks, Inc.

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**ISSUED BY:** Bureau Veritas Consumer Products Services  
(H.K.) Ltd., Taoyuan Branch

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**TEST LOCATION:** No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen,  
Kwei Shan Hsiang, Taoyuan Hsien 333,  
Taiwan, R.O.C.

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	NA	Jul. 11, 2011

## 1. CERTIFICATION

**PRODUCT:** Industrial Cordless Phone System

**BRAND:** EnGenius

**MODEL:** DuraFon 1X (refer to item 3.1 for more detail)

**APPLICANT:** Senao Networks, Inc.

**TESTED:** May 23 ~ Jun. 29, 2011

**TEST SAMPLE:** ENGINEERING SAMPLE

**STANDARDS:** **FCC Part 15, Subpart C (Section 15.247),**  
ANSI C63.4-2003  
ANSI C63.10-2009

The above equipment (Model: DuraFon 1X) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, 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 : Andrea Hsia , DATE : Jul. 11, 2011  
Andrea Hsia / Specialist

APPROVED BY : Gary Chang , DATE : Jul. 11, 2011  
Gary Chang / Assistant Manager

## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -2.38dB at 26.223MHz.
15.247(a)(1)(i)	Number of Hopping Frequency Used Spec.: At least 50 channels	PASS	Meet the requirement of limit.
15.247(a)(1)(i)	Dwell Time on Each Channel Spec.: Max. 0.4 second within 20 second	PASS	Meet the requirement of limit.
15.247(a)(1)(i)	1. Hopping Channel Separation Spec.: Min. 25 kHz or 20 dB bandwidth, whichever is greater 2. Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	PASS	Meet the requirement of limit.
15.247(b)(2)	Maximum Peak Output Power Spec.: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Transmitter Radiated Emissions Spec.: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -2.8dB at 994.27MHz
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connectors are RTNC not a standard connector.

### 2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted Emission	9KHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.34 dB
	200MHz ~1000MHz	3.35 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	Industrial Cordless Phone System
<b>MODEL NO.</b>	DuraFon 1X (refer to note as below)
<b>FCC ID</b>	U2M-SN902
<b>POWER SUPPLY</b>	12Vdc (from AC Adapter) 3.7Vdc (from battery) 5.5Vdc (from charger)
<b>MODULATION TYPE</b>	MSK
<b>OPERATING FREQUENCY</b>	902.5155 ~ 927.5972MHz
<b>NUMBER OF CHANNEL</b>	50
<b>CHANNEL SPACING</b>	202.272kHz
<b>OUTPUT POWER</b>	972.7mW
<b>ANTENNA TYPE</b>	Dipole antenna with 2dBi gain (Base Station) Dipole antenna with 1.5dBi gain (Portable Handset)
<b>ANTENNA CONNECTOR</b>	RTNC
<b>DATA CABLE</b>	1.8m non-shielded RJ11 cable without core
<b>I/O PORTS</b>	Refer to user's manual
<b>ACCESSORY DEVICE</b>	Adapter, charger, Battery

**NOTE:**

1. All models are electrically identical, different model names are for marketing purpose.

Brand	Model	Remark
EnGenius	DuraFon 1X	marketing purpose
EnGenius	SN-902SPK	marketing purpose

2. The EUT uses following adapters, battery & Charger adapter.

ADAPTER (for Base Station used)	
<b>BRAND</b>	Powertron
<b>MODEL</b>	PA1015-120HU
<b>INPUT POWER</b>	100-240Vac, 50/60Hz, 0.4A
<b>OUTPUT POWER</b>	12Vdc, 1A
<b>POEWR LINE</b>	1.8m non-shielded cable without core

BATTERY (for Portable Handset used)	
<b>BRAND</b>	EnGenius
<b>INPUT POWER</b>	1700mAh
<b>OUTPUT POWER</b>	3.7Vdc

<b>ADAPTER (for Portable Handset Charger used)</b>	
<b>MODEL</b>	WRG10F-055A
<b>INPUT POWER</b>	100-240Vac, 50-60Hz, 0.5A
<b>OUTPUT POWER</b>	5.5Vdc, 1.5A
<b>POEWR LINE</b>	1.8m non-shielded cable without core

<b>CHARGER (for Portable Handset used)</b>	
<b>BRAND</b>	EnGenius
<b>MODEL</b>	DuraFon
<b>INPUT POWER</b>	90-264Vac
<b>OUTPUT POWER</b>	5.5Vdc, 1.5A

3. A set of the EUT include Base station & Portable handset
4. 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

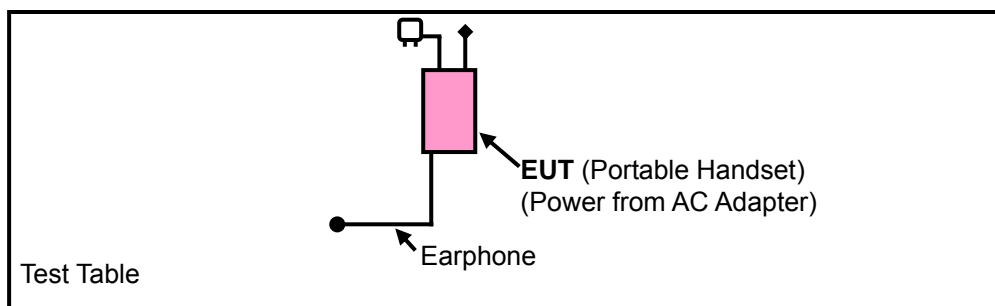
50 channels are provided to this EUT:

CH.	FREQ. (MHz)	CH.	FREQ. (MHz)	CH.	FREQ. (MHz)	CH.	FREQ. (MHz)	CH.	FREQ. (MHz)
1	902.5155	11	907.7746	21	912.6291	31	918.2927	41	923.1472
2	902.9200	12	908.1791	22	913.0336	32	919.1018	42	923.9563
3	903.3246	13	908.5837	23	913.4382	33	919.5063	43	924.3608
4	903.7291	14	909.3927	24	914.2473	34	919.9109	44	924.7654
5	904.5382	15	909.7973	25	915.0563	35	920.3154	45	925.1699
6	904.9428	16	910.2018	26	915.4609	36	920.7200	46	925.5745
7	905.3473	17	910.6064	27	915.8654	37	921.5290	47	926.3836
8	905.7519	18	911.0109	28	916.6745	38	921.9336	48	926.7881
9	906.1564	19	911.8200	29	917.4836	39	922.3381	49	927.1926
10	906.9655	20	912.2245	30	917.8881	40	922.7427	50	927.5972

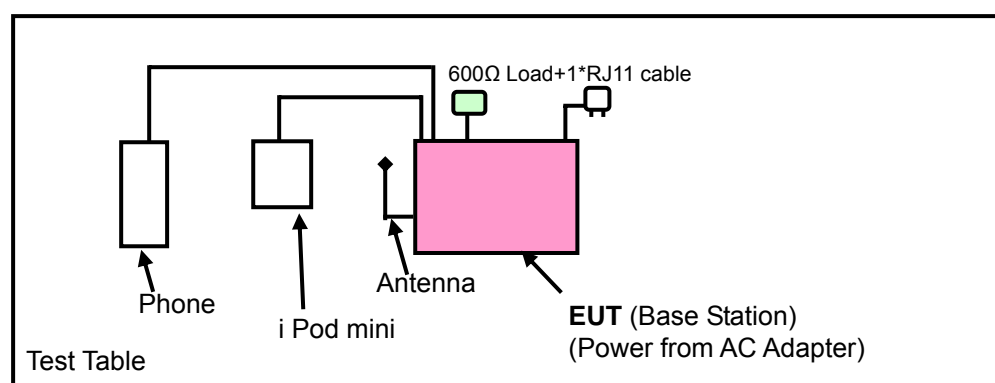


### 3.2.1 CONFIGURATION OF SYSTEM UNDER TEST

#### TEST MODE A (Handset-Standalone mode)



#### TEST MODE B (Base Station mode)



### 3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
A	√	√	√	√	Handset TX mode
B	√	√	√	√	Base Station mode

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz  
**PLC**: Power Line Conducted Emission

**RE<1G**: Radiated Emission below 1GHz  
**APCM**: Antenna Port Conducted Measurement

#### RADIATED EMISSION TEST (ABOVE 1 GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE	AXIS
A	1 to 50	1, 25, 50	MSK	Y
B	1 to 50	1, 25, 50	MSK	X

#### RADIATED EMISSION TEST (BELOW 1 GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE	AXIS
A	1 to 50	1, 25, 50	MSK	Y
B	1 to 50	1, 25, 50	MSK	X

#### POWER LINE CONDUCTED 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.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
A	1 to 50	1, 25, 50	MSK
B	1 to 50	1, 25, 50	MSK

#### **ANTENNA PORT CONDUCTED MEASUREMENT:**

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
A	1 to 50	1, 25, 50	MSK
B	1 to 50	1, 25, 50	MSK

#### **TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	27deg. C, 63%RH, 1011 hPa	120Vac, 60Hz	Sun Lin
RE $<$ 1G	25deg. C, 68%RH, 1016 hPa	120Vac, 60Hz	David Huang
PLC	24deg. C, 64%RH, 1012 hPa	120Vac, 60Hz	Sun Lin
APCM	25deg. C, 65%RH, 1018 hPa	120Vac, 60Hz	Dean Wang

### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

**FCC Part 15, Subpart C. (15.247)**

**ANSI C63.4-2003**

**ANSI C63.10-2009**

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

### 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	TELEPHONE	WONDER	WD-303	5C17DA09345	NA
2	IPOD MINI	apple	A1051	YM5270HGS41	NA
3	EARPHONE	Nokia	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	10m RJ11 cable
2	1.2m non-shielded cable without core
3	1.2m non-shielded cable without core

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

## 4. TEST TYPES AND RESULTS

### 4.1 RADIATED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a). Other emissions shall be at least 20dB below the highest level of the desired power.

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

**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.

#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	Jul. 22, 2010	Jul. 21, 2011
Spectrum Analyzer Agilent	E4446A	MY48250266	Aug. 11, 2010	Aug. 10, 2011
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 13, 2011	Apr. 12, 2012
HORN Antenna SCHWARZBECK	9120D	9120D-405	Feb. 08, 2011	Feb. 07, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8447D	2944A10633	Nov. 02, 2010	Nov. 01, 2011
Preamplifier Agilent	8449B	3008A01964	Nov. 02, 2010	Nov. 01, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295014/4	Sep 03, 2010	Sep 02, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	Sep 03, 2010	Sep 02, 2011
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 988962.
5. The IC Site Registration No. is IC 7450F-3.

#### 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 3 meter semi-anechoic chamber. 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 lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

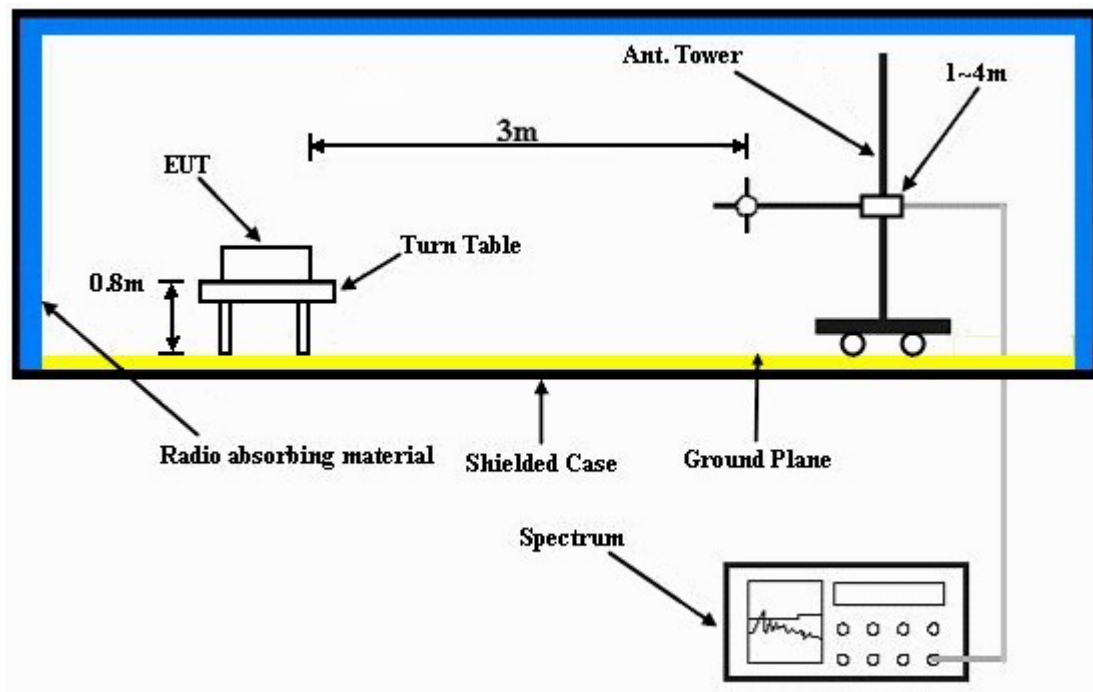
**NOTE:**

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 of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.5 TEST SETUP



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.1.6 EUT OPERATING CONDITIONS

- Placed the EUT on a testing table.
- Set the EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the system in full functions.



#### 4.1.7 TEST RESULTS

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 1011 hPa	TEST MODE	A
TESTED BY	Sun Lin		

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)	CORRECTION FACTOR (dB/m)
1	#745.40	52.4 PK	109.4	-57.0	1.50 H	123	25.9	24.6
2	#745.40	33.2 AV	91.0	-57.8	1.50 H	123	25.1	24.6
3	#893.16	51.9 PK	109.4	-57.5	1.00 H	203	30.0	26.8
4	#893.16	32.1 AV	91.0	-58.9	1.00 H	203	29.3	26.8
5	#902.00	80.7 PK	109.4	-28.7	1.42 H	115	28.2	27.0
6	#902.00	44.9 AV	91.0	-46.1	1.42 H	115	27.4	27.0
7	*902.52	129.4 PK			1.42 H	115	102.4	27.0
8	*902.52	111.0 AV			1.42 H	115	84.0	27.0
9	#914.55	54.6 PK	109.4	-54.8	1.00 H	250	41.6	27.1
10	#914.55	34.8 AV	91.0	-56.2	1.00 H	250	28.3	27.1
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)	CORRECTION FACTOR (dB/m)
1	#745.40	34.7 PK	100.3	-65.6	1.00 V	187	27.00	24.6
2	#745.40	33.8 AV	81.9	-48.1	1.00 V	187	5.6	24.6
3	#893.16	43.3 PK	100.3	-57.0	1.20 V	145	27.80	26.8
4	#893.16	42.5 AV	81.9	-39.4	1.20 V	145	7.2	26.8
5	#902.00	40.0 PK	100.3	-60.3	1.04 V	285	44.30	27.0
6	#902.00	39.2 AV	81.9	-42.7	1.04 V	285	14.2	27.0
7	*902.52	120.3 PK			1.04 V	285	93.3	27.0
8	*902.52	101.9 AV			1.04 V	285	74.9	27.0
9	#914.54	60.2 PK	100.3	-40.1	1.00 V	168	27.40	27.1
10	#914.54	46.9 AV	81.9	-35.0	1.00 V	168	6.5	27.1

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. “ \* “: Fundamental frequency.

6. “#”: The radiated frequency is out the restricted band.

7. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:

$$20 \log (\text{Duty cycle}) = 20 \log (12 \text{ ms} / 100 \text{ ms}) = -18.4 \text{ dB}$$

Please see page 23 for plotted duty.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 25	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 1011 hPa	TEST MODE	A
TESTED BY	Sun Lin		

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)	CORRECTION FACTOR (dB/m)
1	#745.40	52.8 PK	109.7	-56.9	1.00 H	152	28.2	24.6
2	#745.40	32.4 AV	91.3	-58.9	1.00 H	152	7.8	24.6
3	#904.80	73.0 PK	109.7	-36.7	1.20 H	223	46.0	27.0
4	#904.80	42.6 AV	91.3	-48.7	1.20 H	223	15.6	27.0
5	*915.06	129.7 PK			1.02 H	291	102.6	27.1
6	*915.06	111.3 AV			1.42 H	112	84.2	27.1
7	#926.10	61.5 PK	109.7	-48.2	1.40 H	137	34.3	27.2
8	#926.10	31.2 AV	91.3	-60.1	1.40 H	137	4.0	27.2
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)	CORRECTION FACTOR (dB/m)
1	#745.40	49.4 PK	100.3	-50.9	1.10 V	45	24.8	24.6
2	#745.40	24.3 AV	81.9	-57.6	1.10 V	45	-0.3	24.6
3	#904.80	66.2 PK	100.3	-34.1	1.50 V	241	39.2	27.0
4	#904.80	44.3 AV	81.9	-37.6	1.50 V	241	17.3	27.0
5	*915.06	120.3 PK			1.02 V	291	93.2	27.1
6	*915.06	101.9 AV			1.02 V	291	74.8	27.1
7	#926.20	44.3 PK	100.3	-56.0	1.00 V	163	17.1	27.2
8	#926.20	23.6 AV	81.9	-58.3	1.00 V	163	-3.6	27.2

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* “: Fundamental frequency.
6. “#”: The radiated frequency is out the restricted band.
7. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:  

$$20 \log (\text{Duty cycle}) = 20 \log (12 \text{ ms} / 100 \text{ ms}) = -18.4 \text{ dB}$$
Please see page 23 for plotted duty.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 50	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 1011 hPa	TEST MODE	A
TESTED BY	Sun Lin		

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)	CORRECTION FACTOR (dB/m)
1	#745.40	53.8 PK	108.6	-54.8	1.00 H	148	29.2	24.6
2	#745.40	33.4 AV	90.2	-56.8	1.00 H	148	8.8	24.6
3	#918.41	73.3 PK	108.6	-35.3	1.00 H	165	46.1	27.2
4	#918.41	53.1 AV	90.2	-37.1	1.00 H	165	25.9	27.2
5	*927.60	128.6 PK			1.42 H	112	101.3	27.3
6	*927.60	110.2 AV			1.42 H	112	82.9	27.3
7	#928.00	101.2 PK	108.6	-7.4	1.42 H	112	73.9	27.3
8	#928.00	56.1 AV	90.2	-34.1	1.42 H	112	28.8	27.3
9	#939.83	62.2 PK	108.6	-46.4	1.25 H	133	34.8	27.4
10	#939.83	42.6 AV	90.2	-47.6	1.25 H	133	15.2	27.4
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)	CORRECTION FACTOR (dB/m)
1	#745.40	50.9 PK	98.4	-47.5	1.00 V	196	26.3	24.6
2	#745.40	31.6 AV	80.0	-48.4	1.00 V	196	7.0	24.6
3	#918.44	67.2 PK	98.4	-31.2	1.00 V	181	40.0	27.2
4	#918.44	47.3 AV	80.0	-32.7	1.00 V	181	20.1	27.2
5	*927.60	118.4 PK			1.00 V	293	91.7	27.30
6	*927.60	100.0 AV			1.00 V	293	72.7	27.30
7	#928.00	90.2 PK	98.4	-8.2	1.00 V	293	62.9	27.3
8	#928.00	49.5 AV	80.0	-30.5	1.00 V	293	22.2	27.3
9	#939.80	49.5 PK	98.4	-48.9	1.40 V	236	22.1	27.4
10	#939.80	30.2 AV	80.0	-49.8	1.40 V	236	2.8	27.4

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. “\*”: Fundamental frequency.

6. “#”: The radiated frequency is out the restricted band.

7. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:

$$20 \log (\text{Duty cycle}) = 20 \log (12 \text{ ms} / 100 \text{ ms}) = -18.4 \text{ dB}$$

Please see page 23 for plotted duty.



A D T

## ABOVE 1GHz DATA

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 12.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 1011 hPa	TEST MODE	A
TESTED BY	Sun Lin		

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)	CORRECTION FACTOR (dB/m)
1	1804.86	59.9 PK	74.0	-14.1	1.46 H	40	31.10	28.80
2	1804.86	41.5 AV	54.0	-12.5	1.46 H	40	12.70	28.80
3	2707.29	45.5 PK	74.0	-28.5	1.14 H	316	13.90	31.60
4	2707.29	27.1 AV	54.0	-26.9	1.14 H	316	-4.50	31.60
5	3609.72	52.3 PK	74.0	-21.7	1.87 H	78	19.00	33.30
6	3609.72	33.9 AV	54.0	-20.1	1.87 H	78	0.60	33.30
7	4512.15	55.9 PK	74.0	-18.1	1.52 H	243	20.00	35.90
8	4512.15	37.5 AV	54.0	-16.5	1.52 H	243	1.60	35.90
9	5414.58	59.4 PK	74.0	-14.6	1.00 H	15	21.80	37.60
10	5414.58	41.0 AV	54.0	-13.0	1.00 H	15	3.40	37.60
11	6317.01	55.4 PK	74.0	-18.6	1.21 H	175	15.60	39.80
12	6317.01	37.0 AV	54.0	-17.0	1.21 H	175	-2.80	39.80
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)	CORRECTION FACTOR (dB/m)
1	1804.86	58.6 PK	74.0	-15.4	1.00 V	184	29.80	28.80
2	1804.86	40.2 AV	54.0	-13.8	1.00 V	184	11.40	28.80
3	2707.29	48.9 PK	74.0	-25.1	1.08 V	34	17.30	31.60
4	2707.29	30.5 AV	54.0	-23.5	1.08 V	34	-1.10	31.60
5	3609.72	56.2 PK	74.0	-17.8	1.26 V	176	22.90	33.30
6	3609.72	37.8 AV	54.0	-16.2	1.26 V	176	4.50	33.30
7	4512.15	49.8 PK	74.0	-24.2	1.00 V	25	13.90	35.90
8	4512.15	31.4 AV	54.0	-22.6	1.00 V	25	-4.50	35.90
9	5414.58	56.7 PK	74.0	-17.3	1.12 V	173	19.10	37.60
10	5414.58	38.3 AV	54.0	-15.7	1.12 V	173	0.70	37.60
11	6317.01	53.5 PK	74.0	-20.5	1.22 V	322	13.70	39.80
12	6317.01	35.1 AV	54.0	-18.9	1.22 V	322	-4.70	39.80

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.  
5. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:  
 $20 \log (\text{Duty cycle}) = 20 \log (12 \text{ ms} / 100 \text{ ms}) = -18.4 \text{ dB}$   
Please see page 23 for plotted duty.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 25	FREQUENCY RANGE	1 ~ 12.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 1011 hPa	TEST MODE	A
TESTED BY	Sun Lin		

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)	CORRECTION FACTOR (dB/m)
1	1829.88	59.8 PK	74.0	-14.2	1.40 H	50	31.00	28.80
2	1829.88	41.4 AV	54.0	-12.6	1.40 H	50	12.60	28.80
3	2744.82	44.3 PK	74.0	-29.7	1.17 H	357	12.60	31.70
4	2744.82	25.9 AV	54.0	-28.1	1.17 H	357	-5.80	31.70
5	3659.76	52.5 PK	74.0	-21.5	1.70 H	298	19.10	33.40
6	3659.76	34.1 AV	54.0	-19.9	1.70 H	298	0.70	33.40
7	4574.70	53.8 PK	74.0	-20.2	1.06 H	199	17.80	36.00
8	4574.70	35.4 AV	54.0	-18.6	1.06 H	199	-0.60	36.00
9	5489.64	60.4 PK	74.0	-13.6	1.00 H	204	22.70	37.70
10	5489.64	42.0 AV	54.0	-12.0	1.00 H	204	4.30	37.70
11	6404.58	55.9 PK	74.0	-18.1	1.46 H	271	15.80	40.10
12	6404.58	37.5 AV	54.0	-16.5	1.46 H	271	-2.60	40.10
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)	CORRECTION FACTOR (dB/m)
1	1829.88	60.4 PK	74.0	-13.6	1.28 V	186	31.60	28.80
2	1829.88	42.0 AV	54.0	-12.0	1.28 V	186	13.20	28.80
3	2744.82	47.3 PK	74.0	-26.7	1.22 V	48	15.60	31.70
4	2744.82	28.9 AV	54.0	-25.1	1.22 V	48	-2.80	31.70
5	3659.76	55.8 PK	74.0	-18.2	1.06 V	167	22.40	33.40
6	3659.76	37.4 AV	54.0	-16.6	1.06 V	167	4.00	33.40
7	4574.70	48.7 PK	74.0	-25.3	1.00 V	133	12.70	36.00
8	4574.70	30.3 AV	54.0	-23.7	1.00 V	133	-5.70	36.00
9	5489.64	56.6 PK	74.0	-17.4	1.00 V	252	18.90	37.70
10	5489.64	38.2 AV	54.0	-15.8	1.00 V	252	0.50	37.70
11	6404.58	55.0 PK	74.0	-19.0	1.12 V	313	14.90	40.10
12	6404.58	36.6 AV	54.0	-17.4	1.12 V	313	-3.50	40.10

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.  
5. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:  
 $20 \log (\text{Duty cycle}) = 20 \log (12 \text{ ms} / 100 \text{ ms}) = -18.4 \text{ dB}$   
Please see page 23 for plotted duty.

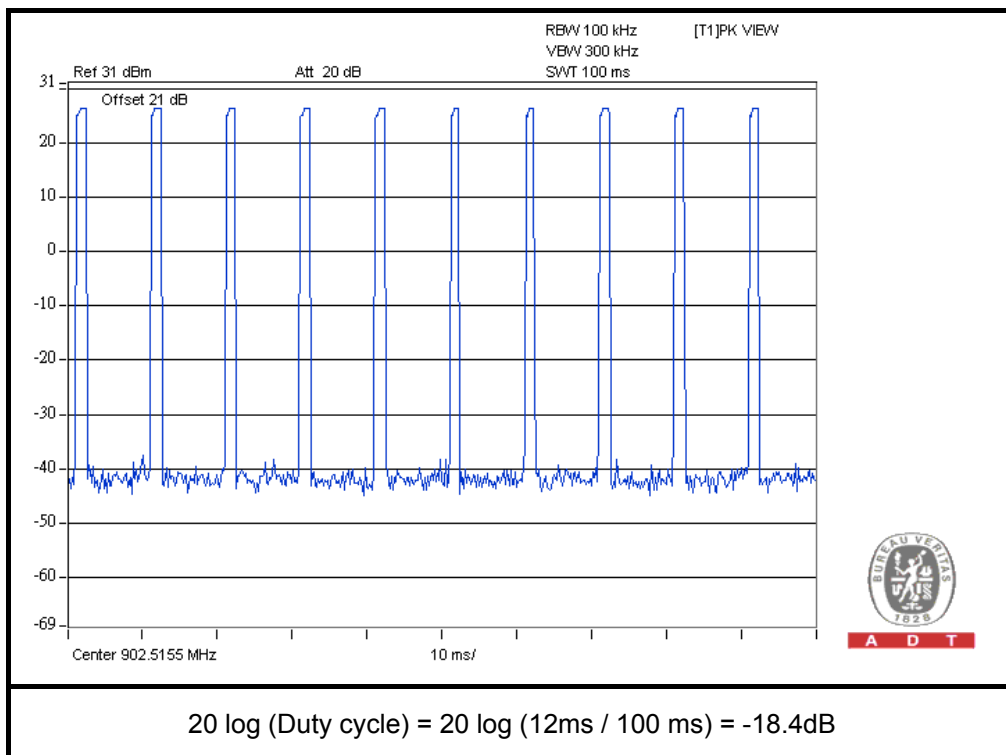
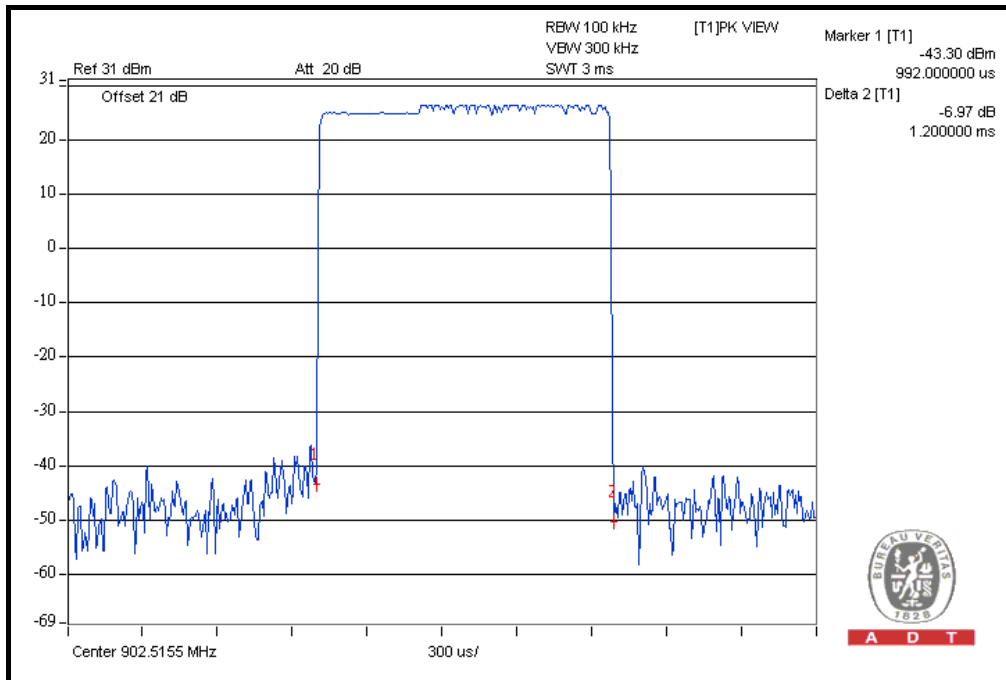


A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 50	FREQUENCY RANGE	1 ~ 12.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 1011 hPa	TEST MODE	A
TESTED BY	Sun Lin		

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)	CORRECTION FACTOR (dB/m)
1	1854.96	58.4 PK	74.0	-15.6	1.00 H	247	29.50	28.90
2	1854.96	40.0 AV	54.0	-14.0	1.00 H	247	11.10	28.90
3	2782.44	43.3 PK	74.0	-30.7	1.12 H	214	11.50	31.80
4	2782.44	24.9 AV	54.0	-29.1	1.12 H	214	-6.90	31.80
5	3709.92	47.0 PK	74.0	-27.0	1.00 H	152	13.50	33.50
6	3709.92	28.6 AV	54.0	-25.4	1.00 H	152	-4.90	33.50
7	4637.40	53.0 PK	74.0	-21.0	1.83 H	231	16.90	36.10
8	4637.40	34.6 AV	54.0	-19.4	1.83 H	231	-1.50	36.10
9	5564.88	57.5 PK	74.0	-16.5	1.00 H	190	19.70	37.80
10	5564.88	39.1 AV	54.0	-14.9	1.00 H	190	1.30	37.80
11	6492.36	57.0 PK	74.0	-17.0	1.50 H	275	16.50	40.50
12	6492.36	38.6 AV	54.0	-15.4	1.50 H	275	-1.90	40.50
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)	CORRECTION FACTOR (dB/m)
1	1854.96	59.8 PK	74.0	-14.2	1.34 V	158	30.90	28.90
2	1854.96	41.4 AV	54.0	-12.6	1.34 V	158	12.50	28.90
3	2782.44	43.4 PK	74.0	-30.6	1.22 V	254	11.60	31.80
4	2782.44	25.0 AV	54.0	-29.0	1.22 V	254	-6.80	31.80
5	3709.92	49.9 PK	74.0	-24.1	1.43 V	330	16.40	33.50
6	3709.92	31.5 AV	54.0	-22.5	1.43 V	330	-2.00	33.50
7	4637.40	48.5 PK	74.0	-25.5	1.00 V	140	12.40	36.10
8	4637.40	30.1 AV	54.0	-23.9	1.00 V	140	-6.00	36.10
9	5564.88	54.1 PK	74.0	-19.9	1.30 V	264	16.30	37.80
10	5564.88	35.7 AV	54.0	-18.3	1.30 V	264	-2.10	37.80
11	6492.36	55.5 PK	74.0	-18.5	1.00 V	343	15.00	40.50
12	6492.36	37.1 AV	54.0	-16.9	1.00 V	343	-3.40	40.50

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.  
5. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:  
 $20 \log (\text{Duty cycle}) = 20 \log (12 \text{ ms} / 100 \text{ ms}) = -18.4 \text{ dB}$   
Please see page 23 for plotted duty.



$$20 \log (\text{Duty cycle}) = 20 \log (12\text{ms} / 100 \text{ ms}) = -18.4\text{dB}$$

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 1011 hPa	TEST MODE	B
TESTED BY	Sun Lin		

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)	CORRECTION FACTOR (dB/m)
1	#238.00	41.7 PK	100.9	-59.2	1.00 H	226	29.3	12.4
2	#238.00	34.6 AV	82.6	-48.0	1.00 H	226	22.2	12.4
3	#653.99	40.3 PK	100.9	-60.6	1.00 H	10	16.9	23.4
4	#653.99	31.5 AV	82.6	-51.1	1.00 H	10	8.1	23.4
5	#902.00	72.3 PK	100.9	-28.6	1.00 H	177	45.3	27.0
6	#902.00	42.2 AV	82.6	-40.4	1.00 H	177	15.2	27.0
7	*902.52	120.9 PK			1.00 H	177	93.9	27.0
8	*902.52	102.6 AV			1.00 H	177	75.6	27.0
9	#928.08	47.7 PK	100.9	-53.2	1.00 H	40	20.4	27.3
10	#928.08	39.2 AV	82.6	-43.4	1.00 H	40	11.9	27.3
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)	CORRECTION FACTOR (dB/m)
1	#238.00	45.3 PK	107.7	-62.4	1.00 V	148	32.9	12.4
2	#238.00	34.7 AV	89.4	-54.7	1.00 V	148	22.3	12.4
3	#653.99	45.2 PK	107.7	-62.5	1.00 V	106	21.8	23.4
4	#653.99	36.1 AV	89.4	-53.3	1.00 V	106	12.7	23.4
5	#902.00	81.9 PK	107.7	-25.8	1.00 V	177	54.9	27.0
6	#902.00	46.1 AV	89.4	-43.3	1.00 V	177	19.0	27.0
7	*902.52	127.7 PK			1.00 V	281	100.7	27.0
8	*902.52	109.4 AV			1.00 V	281	82.4	27.0
9	#926.13	46.4 PK	107.7	-61.3	1.00 V	35	19.2	27.2
10	#926.13	57.0 AV	89.4	-32.4	1.00 V	35	29.8	27.2

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. “ \* ”: Fundamental frequency.

6. “#”:The radiated frequency is out the restricted band.

7. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:

$$20 \log (\text{Duty cycle}) = 20 \log (12.0 \text{ ms} / 100 \text{ ms}) = -18.3 \text{ dB}$$

Please see page 30 for plotted duty.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 25	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 1011 hPa	TEST MODE	B
TESTED BY	Sun Lin		

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)	CORRECTION FACTOR (dB/m)
1	#238.00	41.9 PK	100.8	-58.9	1.00 H	244	29.5	12.4
2	#238.00	32.3 AV	82.5	-50.2	1.00 H	224	19.9	12.4
3	#667.60	44.6 PK	100.8	-56.2	1.00 H	169	21.0	23.6
4	#667.60	30.2 AV	82.5	-52.3	1.00 H	169	6.6	23.6
5	#904.75	49.3 PK	100.8	-51.5	1.00 H	118	22.3	27.0
6	#904.75	41.9 AV	82.5	-40.6	1.00 H	118	14.9	27.0
7	*915.06	120.8 PK			1.00 H	188	93.7	27.1
8	*915.06	102.5 AV			1.00 H	188	75.4	27.1
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)	CORRECTION FACTOR (dB/m)
1	#667.60	47.5 PK	109.2	-61.7	1.00 V	10	23.9	23.6
2	#667.60	40.2 AV	90.9	-50.7	1.00 V	10	16.6	23.6
3	#904.75	56.8 PK	109.2	-52.4	1.00 V	27	29.8	27.0
4	#904.75	41.3 AV	90.9	-49.6	1.00 V	27	14.3	27.0
5	#928.08	58.7 PK	109.2	-50.5	1.00 V	118	31.4	27.3
6	#928.08	42.6 AV	90.9	-48.3	1.00 V	118	15.4	27.3
7	*915.06	129.2 PK			1.03 V	279	102.1	27.1
8	*915.06	110.9 AV			1.03 V	279	83.8	27.1

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.  
5. “ \* ”: Fundamental frequency.  
6. “#”: The radiated frequency is out the restricted band.  
7. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:  
20 log (Duty cycle) = 20 log (12.0 ms / 100 ms) = -18.3 dB  
Please see page 30 for plotted duty.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 50	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 1011 hPa	TEST MODE	B
TESTED BY	Sun Lin		

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)	CORRECTION FACTOR (dB/m)
1	238.00	42.3 PK	103.0	-60.7	1.03 H	52	29.9	12.4
2	238.00	38.5 AV	84.7	-46.2	1.03 H	52	26.1	12.4
3	679.12	53.7 PK	103.0	-49.3	2.25 H	7	29.9	23.8
4	679.12	26.6 AV	84.7	-58.1	2.25 H	7	2.8	23.8
5	918.36	51.5 PK	103.0	-51.5	2.00 H	10	24.3	27.2
6	918.36	41.0 AV	84.7	-43.7	1.03 H	65	13.8	27.2
7	*927.60	123.0 PK			1.50 H	360	95.7	27.3
8	*927.60	104.7 AV			1.50 H	360	77.4	27.3
9	928.00	91.3 PK	103.0	-11.7	1.50 H	360	64.0	27.3
10	928.00	50.2 AV	84.7	-34.5	1.50 H	360	22.9	27.3
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)	CORRECTION FACTOR (dB/m)
1	#238.00	40.1	111.6	-71.5	1.00 V	148	27.7	12.4
2	#238.00	39.5	93.3	-53.8	1.00 V	148	27.1	12.4
3	#679.26	44.0	111.6	-67.6	2.25 V	325	20.2	23.8
4	#679.26	25.6	93.3	-67.7	2.25 V	325	1.8	23.8
5	#898.92	59.7	111.6	-51.9	2.25 V	283	32.8	26.9
6	#898.92	21.6	93.3	-71.7	2.25 V	283	-5.3	26.9
7	*927.60	131.6			1.03 V	105	104.3	27.3
8	*927.60	113.3			1.03 V	105	86.0	27.3
9	#928.00	102.0	111.6	-9.6	1.03 V	105	74.7	27.3
10	#928.00	57.6	93.3	-35.7	1.03 V	105	30.3	27.3

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.  
5. “ \* ”: Fundamental frequency.  
6. “#”: The radiated frequency is out the restricted band.  
7. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:  
20 log (Duty cycle) = 20 log (12.0 ms / 100 ms) = -18.3 dB  
Please see page 30 for plotted duty.

## ABOVE 1GHz DATA

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 12.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 1011 hPa	TEST MODE	B
TESTED BY	Sun Lin		

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)	CORRECTION FACTOR (dB/m)
1	1805.03	40.5 PK	74.0	-33.5	1.05 H	307	11.90	28.60
2	1805.03	22.2 AV	54.0	-31.8	1.05 H	307	-6.40	28.60
3	2707.55	42.0 PK	74.0	-32.0	1.00 H	145	10.80	31.20
4	2707.55	23.7 AV	54.0	-30.3	1.00 H	145	-7.50	31.20
5	3610.06	44.1 PK	74.0	-29.9	1.00 H	208	11.20	32.90
6	3610.06	25.8 AV	54.0	-28.2	1.00 H	208	-7.10	32.90
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)	CORRECTION FACTOR (dB/m)
1	1805.03	48.2 PK	74.0	-25.8	1.39 V	174	19.60	28.60
2	1805.03	29.9 AV	54.0	-24.1	1.39 V	174	1.30	28.60
3	2707.55	43.9 PK	74.0	-30.1	1.00 V	299	12.70	31.20
4	2707.55	25.6 AV	54.0	-28.4	1.00 V	299	-5.60	31.20
5	3610.06	44.7 PK	74.0	-29.3	1.11 V	148	11.80	32.90
6	3610.06	26.4 AV	54.0	-27.6	1.11 V	148	-6.50	32.90

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
 3. The other emission levels were very low against the limit.  
 4. Margin value = Emission level – Limit value.  
 5. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:  
 $20 \log (\text{Duty cycle}) = 20 \log (12.0 \text{ ms} / 100 \text{ ms}) = -18.3 \text{ dB}$

Please see page 30 for plotted duty.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 25	FREQUENCY RANGE	1 ~ 12.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 1011 hPa	TEST MODE	B
TESTED BY	Sun Lin		

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)	CORRECTION FACTOR (dB/m)
1	1830.11	43.1 PK	74.0	-30.9	1.12 H	207	14.50	28.60
2	1830.11	24.8 AV	54.0	-29.2	1.12 H	207	-3.80	28.60
3	2745.17	43.4 PK	74.0	-30.6	1.12 H	176	12.00	31.40
4	2745.17	25.1 AV	54.0	-28.9	1.12 H	176	-6.30	31.40
5	3660.23	45.5 PK	74.0	-28.5	1.00 H	231	12.50	33.00
6	3660.23	27.2 AV	54.0	-26.8	1.00 H	231	-5.80	33.00
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)	CORRECTION FACTOR (dB/m)
1	1830.11	47.7 PK	74.0	-26.3	1.00 V	176	19.10	28.60
2	1830.11	29.4 AV	54.0	-24.6	1.00 V	176	0.80	28.60
3	2745.17	44.9 PK	74.0	-29.1	1.05 V	129	13.50	31.40
4	2745.17	26.6 AV	54.0	-27.4	1.05 V	129	-4.80	31.40
5	3660.23	46.1 PK	74.0	-27.9	1.23 V	341	13.10	33.00
6	3660.23	27.8 AV	54.0	-26.2	1.23 V	341	-5.20	33.00

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.  
5. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:  
20 log (Duty cycle) = 20 log (12.0 ms / 100 ms) = -18.3 dB

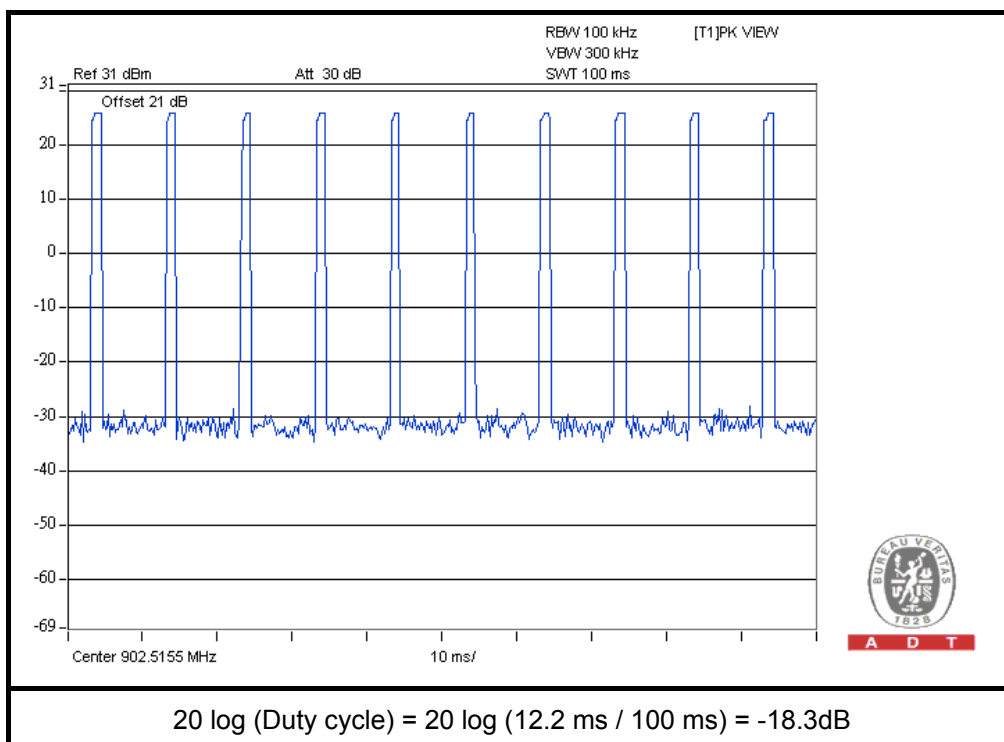
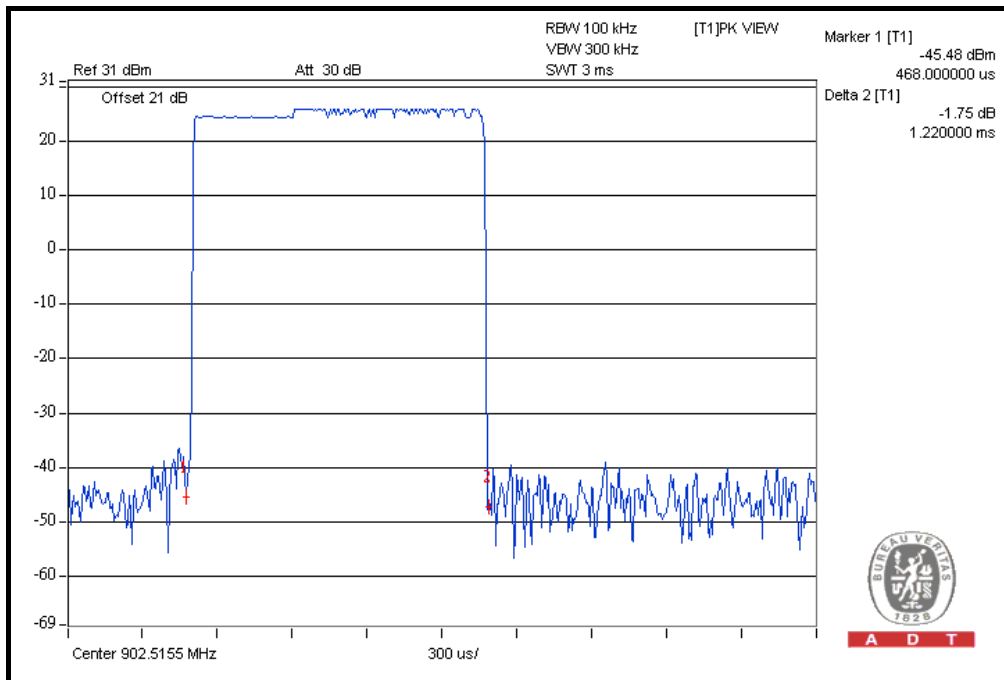
Please see page 30 for plotted duty.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 50	FREQUENCY RANGE	1 ~ 12.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 1011 hPa	TEST MODE	B
TESTED BY	Sun Lin		

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)	CORRECTION FACTOR (dB/m)
1	1830.11	41.2 PK	74.0	-32.8	1.00 H	315	12.60	28.60
2	1830.11	22.9 AV	54.0	-31.1	1.00 H	315	-5.70	28.60
3	2745.17	43.7 PK	74.0	-30.3	1.00 H	182	12.30	31.40
4	2745.17	25.4 AV	54.0	-28.6	1.00 H	182	-6.00	31.40
5	3660.23	45.5 PK	74.0	-28.5	1.00 H	230	12.50	33.00
6	3660.23	27.2 AV	54.0	-26.8	1.00 H	230	-5.80	33.00
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)	CORRECTION FACTOR (dB/m)
1	1830.11	46.7 PK	74.0	-27.3	1.00 V	168	18.10	28.60
2	1830.11	28.4 AV	54.0	-25.6	1.00 V	168	-0.20	28.60
3	2745.17	45.1 PK	74.0	-28.9	1.05 V	129	13.70	31.40
4	2745.17	26.8 AV	54.0	-27.2	1.05 V	129	-4.60	31.40
5	3660.23	45.6 PK	74.0	-28.4	1.22 V	342	12.60	33.00
6	3660.23	27.3 AV	54.0	-26.7	1.22 V	342	-5.70	33.00

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.  
5. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:  
20 log (Duty cycle) = 20 log (12.0 ms / 100 ms) = -18.3 dB

Please see page 30 for plotted duty.



# BELOW 1GHz WORST-CASE DATA :

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1016 hPa	TEST MODE	A
TESTED BY	David Huang		

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)	CORRECTION FACTOR (dB/m)
1	76.56	31.5 QP	40.0	-8.5	2.00 H	232	21.30	10.20
2	164.06	39.2 QP	43.5	-4.3	2.00 H	70	25.00	14.20
3	331.26	20.7 QP	46.0	-25.3	1.00 H	37	5.00	15.70
4	654.02	37.9 QP	46.0	-8.1	1.00 H	238	14.50	23.40
5	811.50	36.8 QP	46.0	-9.2	1.00 H	175	11.40	25.40
6	994.27	42.7 QP	54.0	-11.3	2.00 H	121	14.70	28.00
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)	CORRECTION FACTOR (dB/m)
1	45.45	19.8 QP	40.0	-20.2	1.25 V	25	5.40	14.40
2	117.39	21.2 QP	43.5	-22.3	1.00 V	82	9.00	12.20
3	156.28	19.5 QP	43.5	-24.0	1.25 V	133	4.80	14.70
4	237.94	16.9 QP	46.0	-29.1	1.00 V	82	4.50	12.40
5	488.75	21.2 QP	46.0	-24.8	1.00 V	19	1.30	19.90
6	654.02	38.0 QP	46.0	-8.0	1.25 V	142	14.60	23.40

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 25	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1016 hPa	TEST MODE	A
TESTED BY	David Huang		

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)	CORRECTION FACTOR (dB/m)
1	111.56	32.2 QP	43.5	-11.3	1.50 H	271	20.60	11.60
2	162.11	38.1 QP	43.5	-5.4	1.50 H	70	23.60	14.50
3	253.49	28.0 QP	46.0	-18.0	1.00 H	268	14.90	13.10
4	667.63	38.5 QP	46.0	-7.5	1.00 H	43	14.90	23.60
5	836.78	36.4 QP	46.0	-9.6	1.50 H	163	10.50	25.90
6	994.27	43.2 QP	54.0	-10.8	1.50 H	223	15.20	28.00
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)	CORRECTION FACTOR (dB/m)
1	119.34	33.3 QP	43.5	-10.2	1.00 V	163	20.80	12.50
2	162.11	32.1 QP	43.5	-11.4	1.00 V	133	17.60	14.50
3	206.83	29.1 QP	43.5	-14.4	2.00 V	214	18.40	10.70
4	667.63	34.9 QP	46.0	-11.1	1.00 V	286	11.30	23.60
5	836.78	34.9 QP	46.0	-11.1	1.00 V	157	9.00	25.90
6	994.27	41.3 QP	54.0	-12.7	1.00 V	181	13.30	28.00

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 50	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1016 hPa	TEST MODE	A
TESTED BY	David Huang		

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)	CORRECTION FACTOR (dB/m)
1	82.40	31.3 QP	40.0	-8.7	2.00 H	199	22.20	9.10
2	164.06	37.4 QP	43.5	-6.1	2.00 H	94	23.20	14.20
3	199.05	30.0 QP	43.5	-13.5	2.00 H	43	19.50	10.50
4	251.55	28.0 QP	46.0	-18.0	1.00 H	247	14.90	13.10
5	679.29	29.8 QP	46.0	-16.2	1.00 H	253	6.00	23.80
6	994.27	51.2 QP	54.0	-2.8	1.50 H	268	23.20	28.00
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)	CORRECTION FACTOR (dB/m)
1	76.56	30.8 QP	40.0	-9.2	1.50 V	163	20.60	10.20
2	117.39	34.6 QP	43.5	-8.9	1.00 V	229	22.40	12.20
3	160.17	29.5 QP	43.5	-14.0	1.00 V	121	14.80	14.70
4	206.83	28.6 QP	43.5	-14.9	1.00 V	10	17.90	10.70
5	679.29	30.1 QP	46.0	-15.9	1.00 V	286	6.30	23.80
6	994.27	50.5 QP	54.0	-3.5	1.50 V	169	22.50	28.00

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1016 hPa	TEST MODE	B
TESTED BY	David Huang		

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)	CORRECTION FACTOR (dB/m)
1	125.17	31.1 QP	43.5	-12.4	1.25 H	112	18.10	13.00
2	253.49	33.9 QP	46.0	-12.1	1.00 H	247	20.70	13.20
3	278.77	32.1 QP	46.0	-13.9	1.00 H	52	18.00	14.10
4	327.38	28.6 QP	46.0	-17.4	1.00 H	199	13.00	15.60
5	403.20	24.7 QP	46.0	-21.3	1.00 H	133	7.20	17.50
6	978.71	30.7 QP	54.0	-23.3	1.15 H	205	2.80	27.90
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)	CORRECTION FACTOR (dB/m)
1	125.17	33.1 QP	43.5	-10.4	1.00 V	10	20.10	13.00
2	253.49	26.7 QP	46.0	-19.3	1.00 V	358	13.50	13.20
3	278.77	24.1 QP	46.0	-21.9	2.00 V	73	10.00	14.10
4	335.15	25.3 QP	46.0	-20.7	1.25 V	73	9.50	15.80
5	613.19	30.7 QP	46.0	-15.3	2.25 V	106	8.00	22.70
6	974.82	36.5 QP	54.0	-17.5	1.00 V	55	8.60	27.90

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 25	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1016 hPa	TEST MODE	B
TESTED BY	David Huang		

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)	CORRECTION FACTOR (dB/m)
1	125.17	30.2 QP	43.5	-13.3	2.00 H	112	17.20	13.00
2	164.06	21.3 QP	43.5	-22.2	1.15 H	10	7.00	14.30
3	270.99	32.7 QP	46.0	-13.3	1.15 H	256	18.90	13.80
4	335.15	27.3 QP	46.0	-18.7	1.15 H	202	11.50	15.80
5	407.09	24.4 QP	46.0	-21.6	1.00 H	136	6.70	17.70
6	988.43	30.2 QP	54.0	-23.8	1.25 H	31	2.20	28.00
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)	CORRECTION FACTOR (dB/m)
1	125.17	31.7 QP	43.5	-11.8	1.25 V	67	18.70	13.00
2	270.99	25.7 QP	46.0	-20.3	1.15 V	331	11.90	13.80
3	278.77	24.3 QP	46.0	-21.7	1.25 V	73	10.20	14.10
4	335.15	25.3 QP	46.0	-20.7	1.25 V	64	9.50	15.80
5	403.20	23.7 QP	46.0	-22.3	1.00 V	340	6.20	17.50
6	970.94	39.1 QP	54.0	-14.9	1.00 V	76	11.30	27.80

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 50	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH 1016 hPa	TEST MODE	B
TESTED BY	David Huang		

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)	CORRECTION FACTOR (dB/m)
1	125.17	32.7 QP	43.5	-10.8	2.00 H	139	19.70	13.00
2	270.99	30.7 QP	46.0	-15.3	1.00 H	43	16.90	13.80
3	278.77	29.4 QP	46.0	-16.6	1.25 H	64	15.30	14.10
4	335.15	24.0 QP	46.0	-22.0	1.00 H	187	8.20	15.80
5	401.26	22.7 QP	46.0	-23.3	2.00 H	1	5.20	17.50
6	967.05	32.9 QP	54.0	-21.1	2.00 H	46	5.10	27.80
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)	CORRECTION FACTOR (dB/m)
1	125.17	31.2 QP	43.5	-12.3	1.15 V	40	18.20	13.00
2	253.49	26.5 QP	46.0	-19.5	1.00 V	343	13.30	13.20
3	270.99	26.1 QP	46.0	-19.9	1.00 V	7	12.30	13.80
4	409.04	26.0 QP	46.0	-20.0	1.15 V	316	8.30	17.70
5	603.47	22.4 QP	46.0	-23.6	2.00 V	247	-0.10	22.50
6	968.99	38.3 QP	54.0	-15.7	1.00 V	196	10.50	27.80

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.

## 4.2 CONDUCTED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
  2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
  3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 23, 2010	Nov. 22, 2011
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 30, 2010	Dec. 29, 2011
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Jan. 06, 2011	Jan. 05, 2012
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jul. 08, 2010	Jul. 07, 2011
V-LISN SCHWARZBECK	NNBL 8226-2	8226-142	Jul. 12, 2010	Jul. 11, 2011
LISN ROHDE & SCHWARZ	ENV216	100072	Jun. 10, 2011	Jun. 09, 2012
Software ADT	ADT_Cond_ V7.3.7	NA	NA	NA

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  2. The test was performed in HwaYa Shielded Room 2.
  3. The VCCI Site Registration No. is C-2047.

#### 4.2.3 TEST PROCEDURES

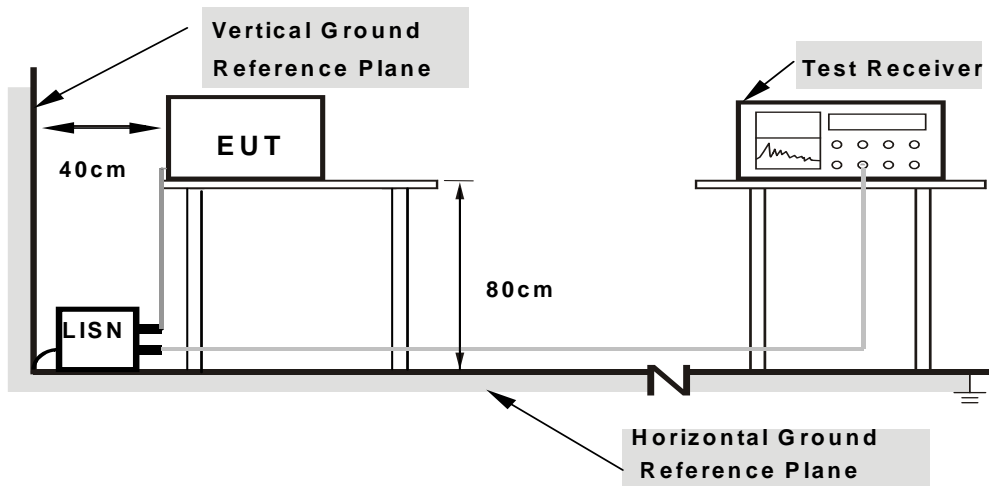
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

## 4.2.5 TEST SETUP



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

For the actual test configuration, please refer to the attached file (Test Setup Photo).

## 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

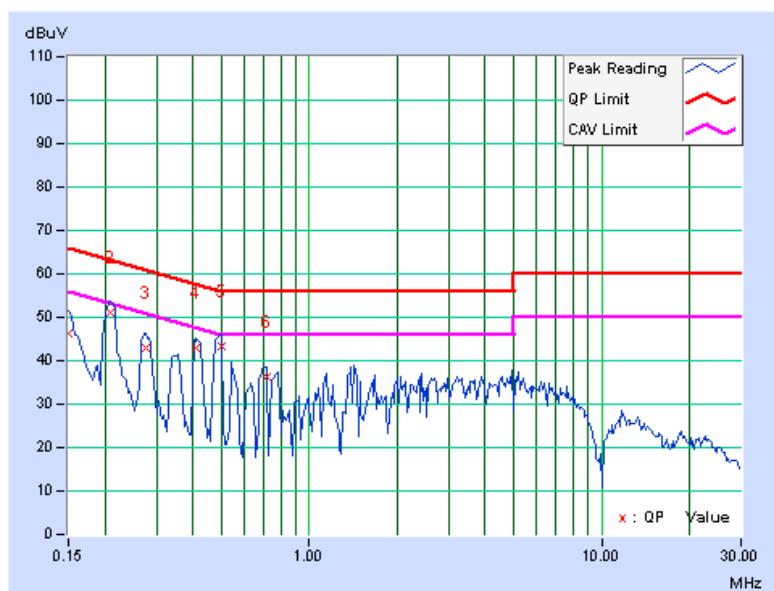
## 4.2.7 TEST RESULTS

### CONDUCTED WORST-CASE DATA

PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	CH 1	TEST MODE	A

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.15	46.15	-	46.30	-	66.00	56.00	-19.70	-
2	0.209	0.15	51.03	-	51.18	-	63.26	53.26	-12.08	-
3	0.275	0.16	42.85	-	43.01	-	60.97	50.97	-17.96	-
4	0.412	0.17	42.91	-	43.08	-	57.61	47.61	-14.53	-
5	0.502	0.17	43.31	-	43.48	-	56.00	46.00	-12.52	-
6	0.713	0.18	36.02	-	36.20	-	56.00	46.00	-19.80	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.

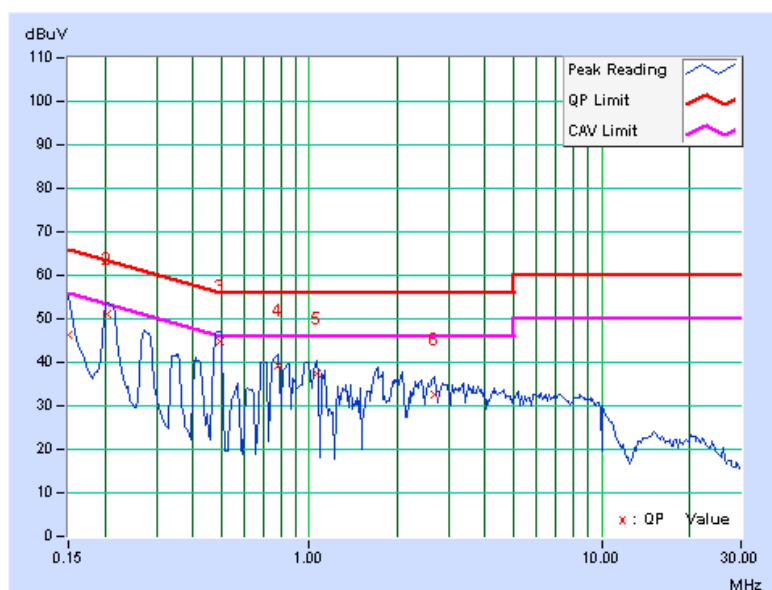




PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	CH 1	TEST MODE	A

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.16	46.07	-	46.23	-	66.00	56.00	-19.77	-
2	0.205	0.17	51.03	-	51.20	-	63.42	53.42	-12.22	-
3	0.498	0.19	44.74	-	44.93	-	56.04	46.04	-11.11	-
4	0.783	0.20	39.06	-	39.26	-	56.00	46.00	-16.74	-
5	1.063	0.21	37.20	-	37.41	-	56.00	46.00	-18.59	-
6	2.668	0.26	32.32	-	32.58	-	56.00	46.00	-23.42	-

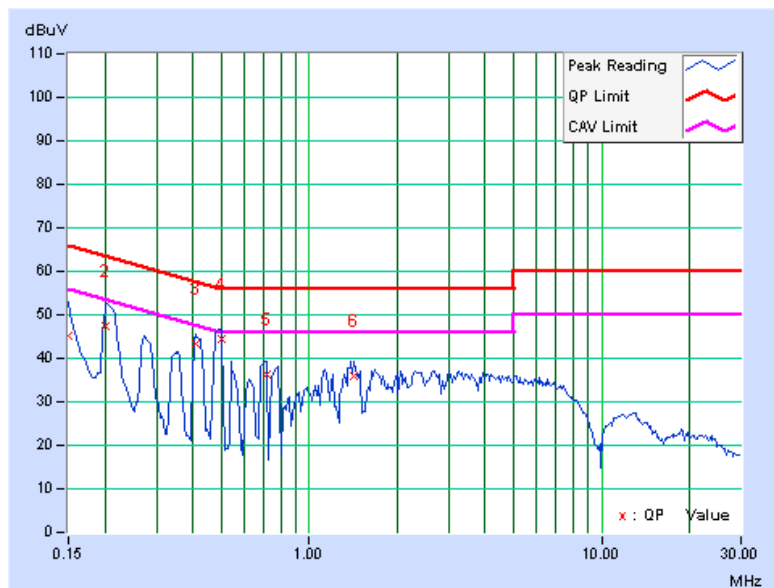
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	CH 25	TEST MODE	A

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.15	44.94	-	45.09	-	66.00	56.00	-20.91	-
2	0.201	0.15	47.11	-	47.26	-	63.58	53.58	-16.32	-
3	0.408	0.17	42.99	-	43.16	-	57.69	47.69	-14.53	-
4	0.502	0.17	44.20	-	44.37	-	56.00	46.00	-11.63	-
5	0.713	0.18	36.12	-	36.30	-	56.00	46.00	-19.70	-
6	1.426	0.20	35.64	-	35.84	-	56.00	46.00	-20.16	-

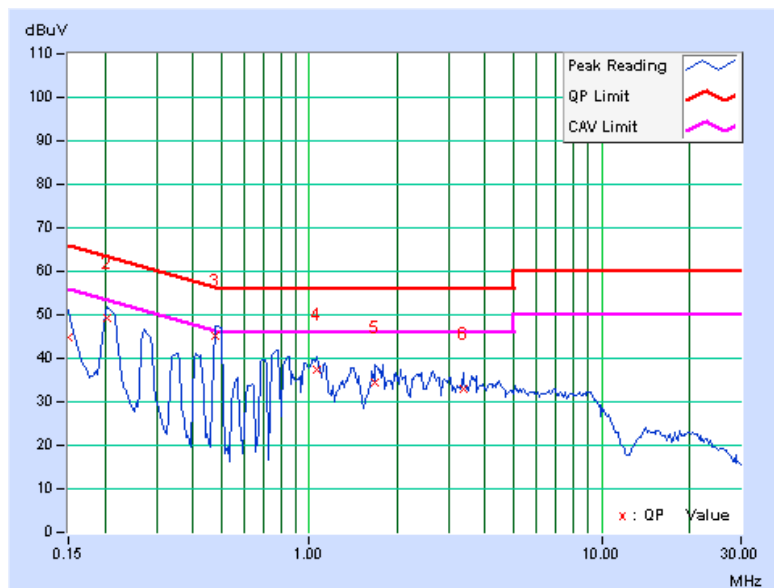
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	CH 25	TEST MODE	A

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.16	44.52	-	44.68	-	66.00	56.00	-21.32	-
2	0.205	0.17	49.03	-	49.20	-	63.42	53.42	-14.22	-
3	0.478	0.19	45.12	-	45.31	-	56.37	46.37	-11.06	-
4	1.055	0.21	37.12	-	37.33	-	56.00	46.00	-18.67	-
5	1.688	0.22	34.34	-	34.56	-	56.00	46.00	-21.44	-
6	3.367	0.29	32.53	-	32.82	-	56.00	46.00	-23.18	-

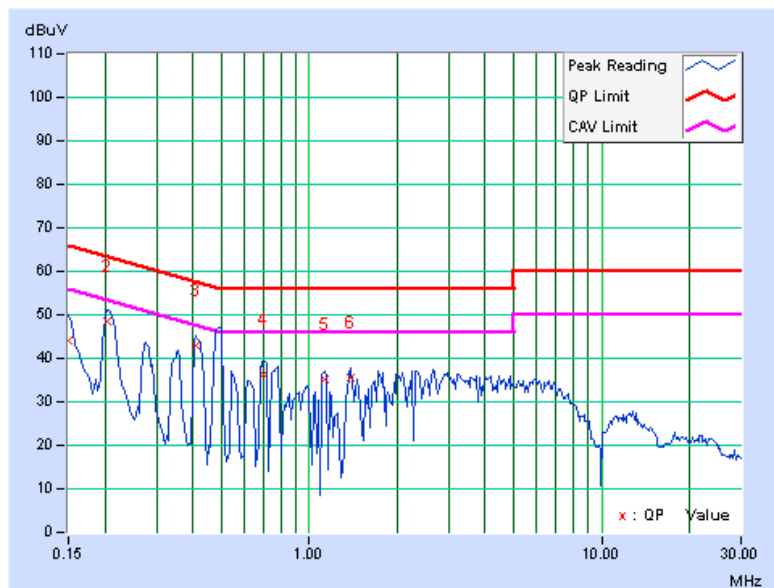
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	CH 50	TEST MODE	A

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.15	43.89	-	44.04	-	66.00	56.00	-21.96	-
2	0.205	0.15	48.48	-	48.63	-	63.42	53.42	-14.79	-
3	0.408	0.17	42.95	-	43.12	-	57.69	47.69	-14.57	-
4	0.701	0.18	36.25	-	36.43	-	56.00	46.00	-19.57	-
5	1.137	0.19	34.94	-	35.13	-	56.00	46.00	-20.87	-
6	1.379	0.20	35.27	-	35.47	-	56.00	46.00	-20.53	-

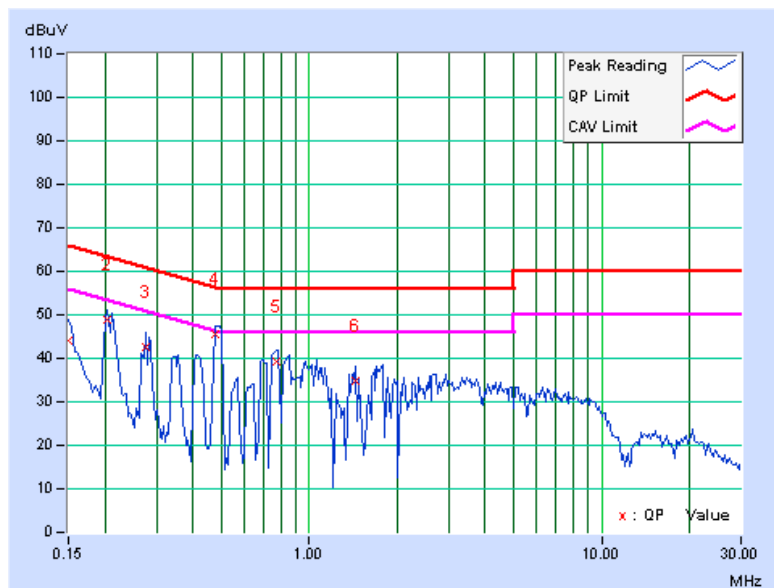
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	CH 50	TEST MODE	A

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.16	44.09	-	44.25	-	66.00	56.00	-21.75	-
2	0.205	0.17	48.56	-	48.73	-	63.42	53.42	-14.69	-
3	0.275	0.18	42.51	-	42.69	-	60.97	50.97	-18.28	-
4	0.478	0.19	45.24	-	45.43	-	56.37	46.37	-10.94	-
5	0.771	0.20	38.92	-	39.12	-	56.00	46.00	-16.88	-
6	1.434	0.22	34.54	-	34.76	-	56.00	46.00	-21.24	-

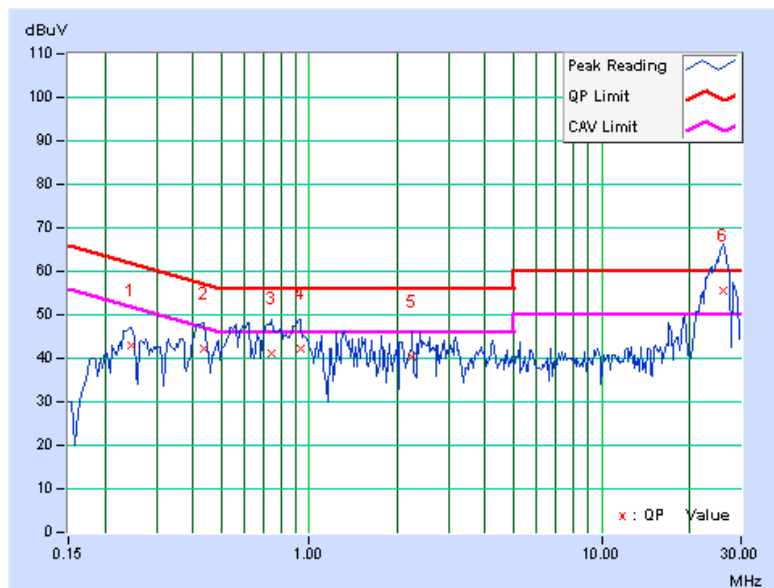
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	CH 1	TEST MODE	B

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.248	0.15	42.81	-	42.96	-	61.84	51.84	-18.87	-
2	0.435	0.17	42.18	-	42.35	-	57.15	47.15	-14.80	-
3	0.748	0.18	40.98	-	41.16	-	56.00	46.00	-14.84	-
4	0.931	0.19	42.12	-	42.31	-	56.00	46.00	-13.69	-
5	2.238	0.23	40.30	-	40.53	-	56.00	46.00	-15.47	-
6	26.223	1.24	54.18	46.38	55.42	47.62	60.00	50.00	-4.58	-2.38

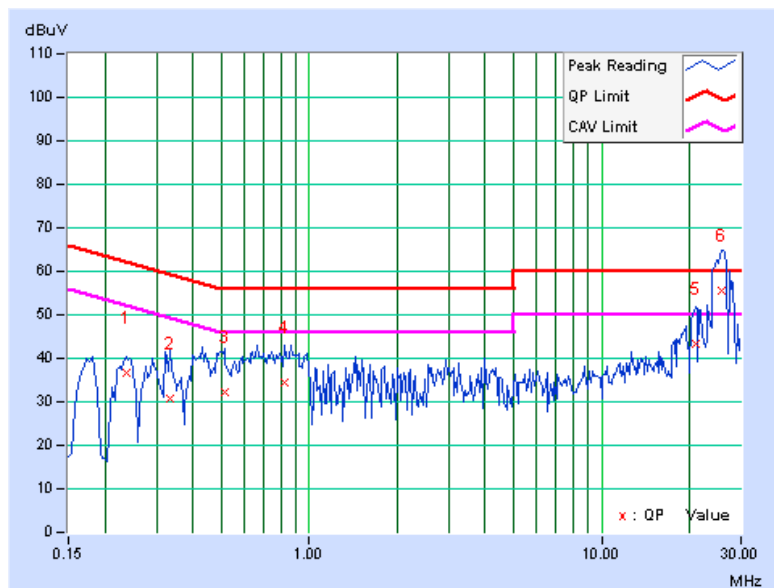
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	CH 1	TEST MODE	B

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.236	0.17	36.38	-	36.55	-	62.24	52.24	-25.68	-
2	0.334	0.18	30.38	-	30.56	-	59.36	49.36	-28.80	-
3	0.513	0.19	32.12	-	32.31	-	56.00	46.00	-23.69	-
4	0.822	0.20	34.20	-	34.40	-	56.00	46.00	-21.60	-
5	20.891	0.94	42.49	-	43.43	-	60.00	50.00	-16.57	-
6	25.676	1.05	54.57	45.69	55.62	46.74	60.00	50.00	-4.38	-3.26

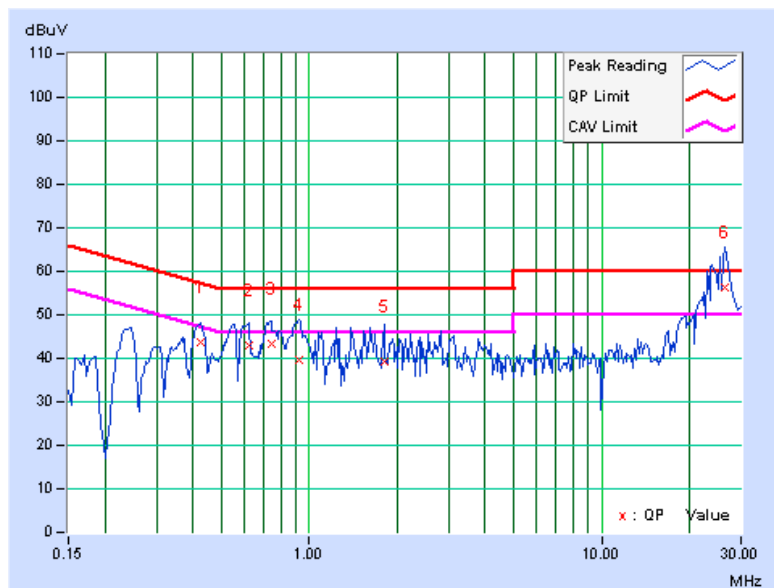
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	CH 25	TEST MODE	B

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.423	0.17	43.54	-	43.71	-	57.38	47.38	-13.67	-
2	0.619	0.18	42.81	-	42.99	-	56.00	46.00	-13.01	-
3	0.740	0.18	43.07	-	43.25	-	56.00	46.00	-12.75	-
4	0.920	0.19	39.49	-	39.68	-	56.00	46.00	-16.32	-
5	1.801	0.21	39.18	-	39.39	-	56.00	46.00	-16.61	-
6	26.367	1.24	55.06	46.06	56.30	47.30	60.00	50.00	-3.70	-2.70

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.

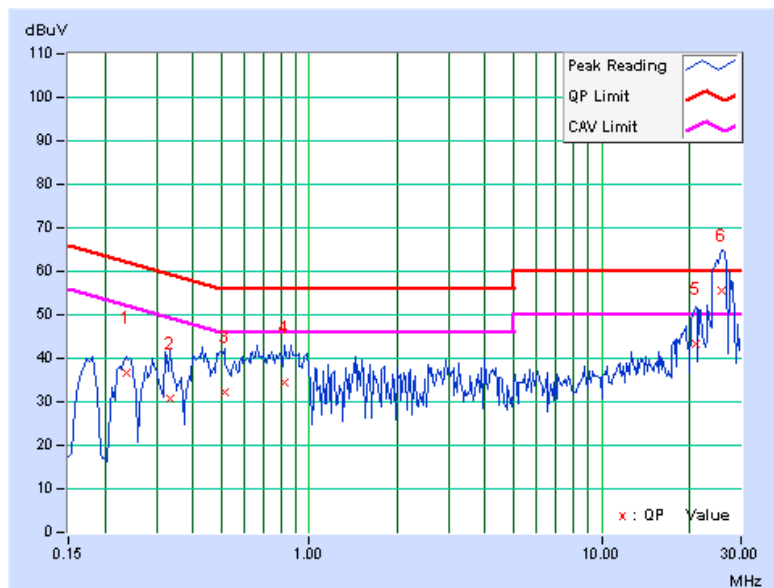




PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	CH 25	TEST MODE	B

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.236	0.17	36.38	-	36.55	-	62.24	52.24	-25.68	-
2	0.334	0.18	30.38	-	30.56	-	59.36	49.36	-28.80	-
3	0.513	0.19	32.12	-	32.31	-	56.00	46.00	-23.69	-
4	0.822	0.20	34.20	-	34.40	-	56.00	46.00	-21.60	-
5	20.891	0.94	42.49	-	43.43	-	60.00	50.00	-16.57	-
6	25.676	1.05	54.57	45.69	55.62	46.74	60.00	50.00	-4.38	-3.26

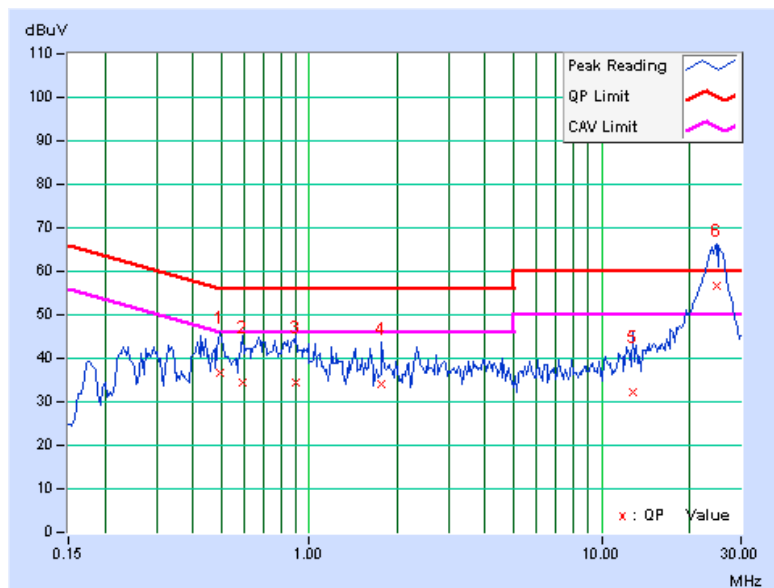
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	CH 50	TEST MODE	B

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.498	0.17	36.54	-	36.71	-	56.04	46.04	-19.33	-
2	0.591	0.18	34.25	-	34.43	-	56.00	46.00	-21.57	-
3	0.900	0.19	34.09	-	34.28	-	56.00	46.00	-21.72	-
4	1.770	0.21	33.93	-	34.14	-	56.00	46.00	-21.86	-
5	12.797	0.73	31.38	-	32.11	-	60.00	50.00	-27.89	-
6	24.754	1.23	55.35	45.91	56.58	47.14	60.00	50.00	-3.42	-2.86

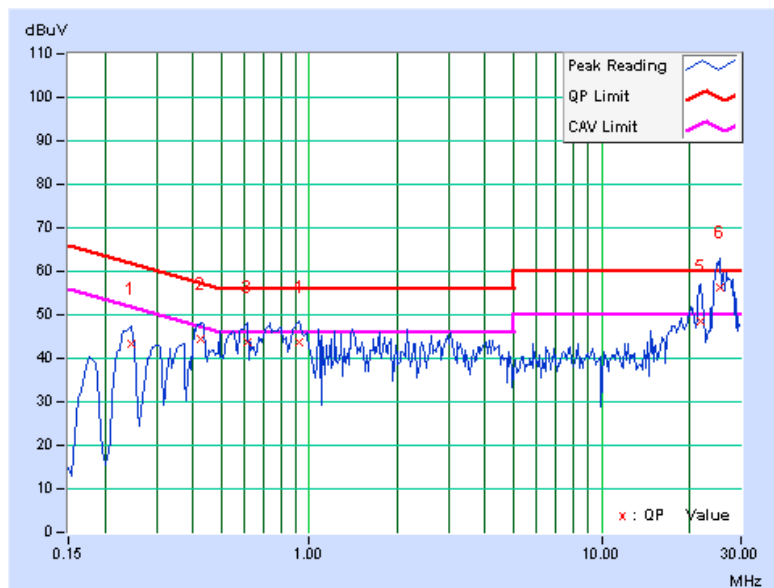
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	CH 50	TEST MODE	B

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.248	0.17	43.15	-	43.32	-	61.84	51.84	-18.51	-
2	0.427	0.19	44.09	-	44.28	-	57.30	47.30	-13.02	-
3	0.615	0.20	43.44	-	43.64	-	56.00	46.00	-12.36	-
4	0.923	0.21	43.61	-	43.82	-	56.00	46.00	-12.18	-
5	21.957	0.97	47.44	-	48.41	-	60.00	50.00	-11.59	-
6	25.563	1.05	55.41	45.01	56.46	46.06	60.00	50.00	-3.54	-3.94

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



### 4.3 NUMBER OF HOPPING FREQUENCY USED

#### 4.3.1 LIMIT OF HOPPING FREQUENCY USED

At least 50 channels frequencies, and should be equally spaced.

#### 4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100040	Jul. 17, 2010	Jul. 16, 2011

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

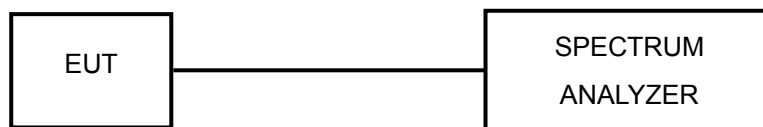
#### 4.3.3 TEST PROCEDURES

- Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
- Set the SA on View mode and then plot the result on SA screen.
- Repeat above procedures until all frequencies measured were complete.

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.3.5 TEST SETUP



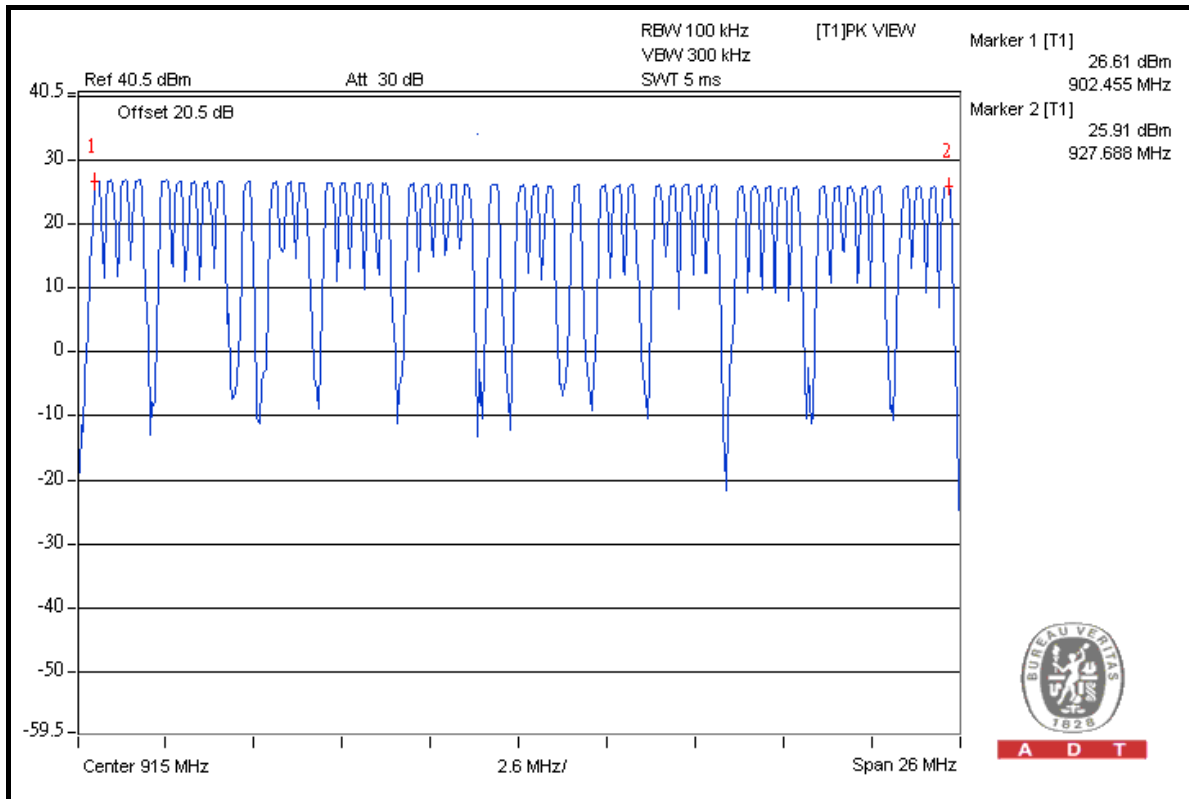
#### 4.3.6 TEST RESULTS

There are 252 hopping frequencies in the hopping mode. Please refer to next page for the test result. On the plots, it shows that the hopping frequencies are equally spaced.

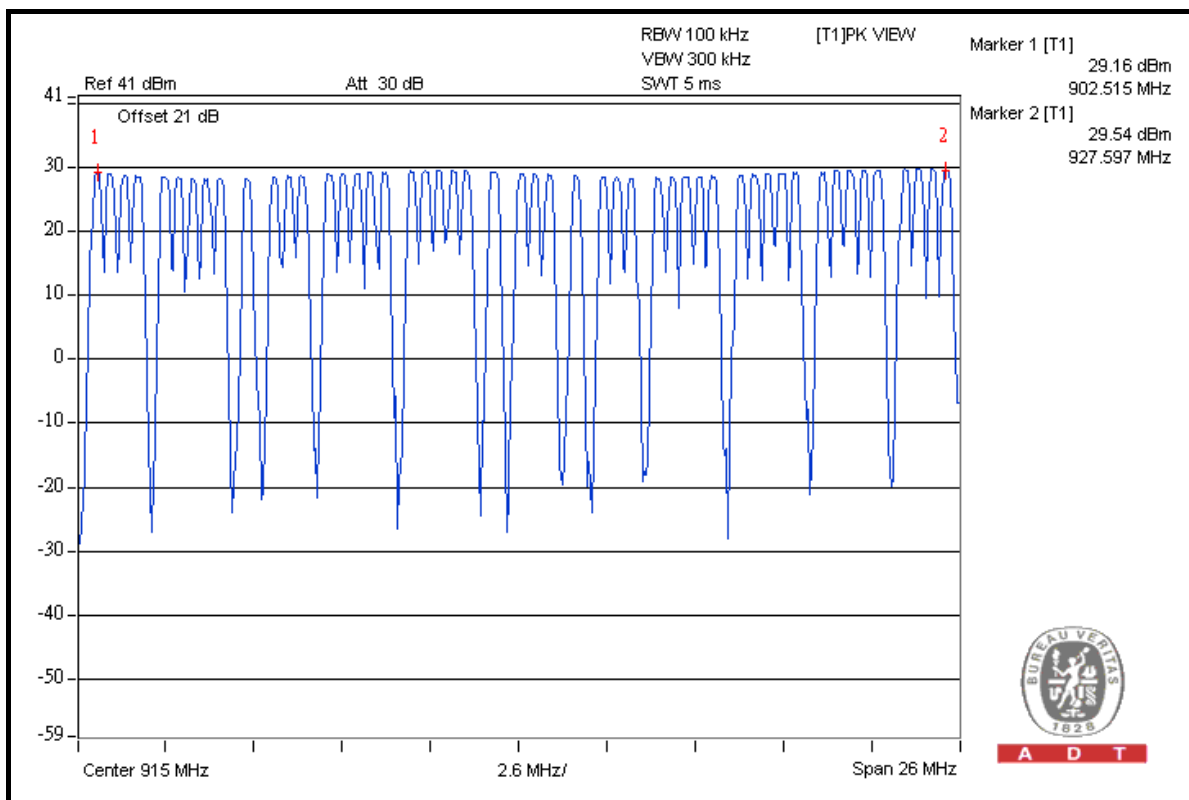


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## TEST MODE A



## TEST MODE B



#### 4.4 DWELL TIME ON EACH CHANNEL

##### 4.4.1 LIMIT OF DWELL TIME USED

The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period;

##### 4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100040	Jul. 17, 2010	Jul. 16, 2011

**NOTE:** 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

- Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
- Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
- Repeat above procedures until all different time-slot modes have been completed.

##### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

##### 4.4.5 TEST SETUP

Same as 4.3.5.

#### 4.4.6 TEST RESULTS

##### TEST MODE A

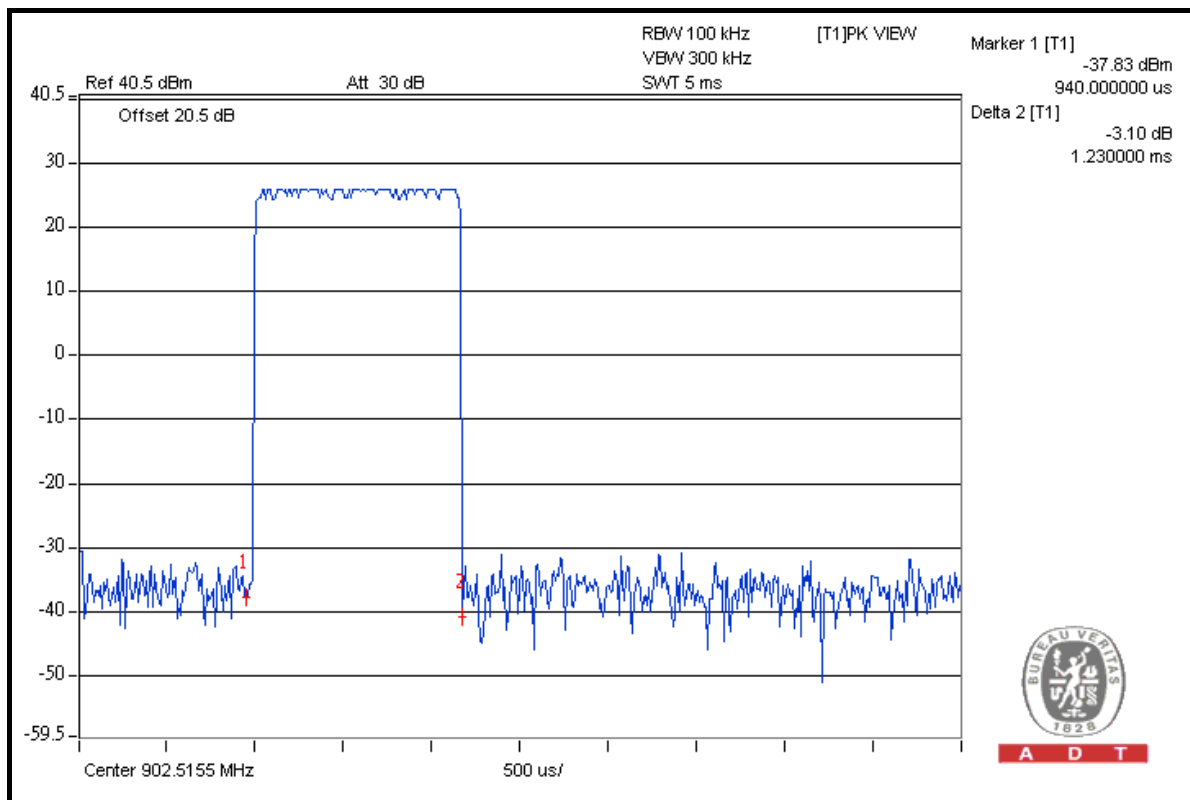
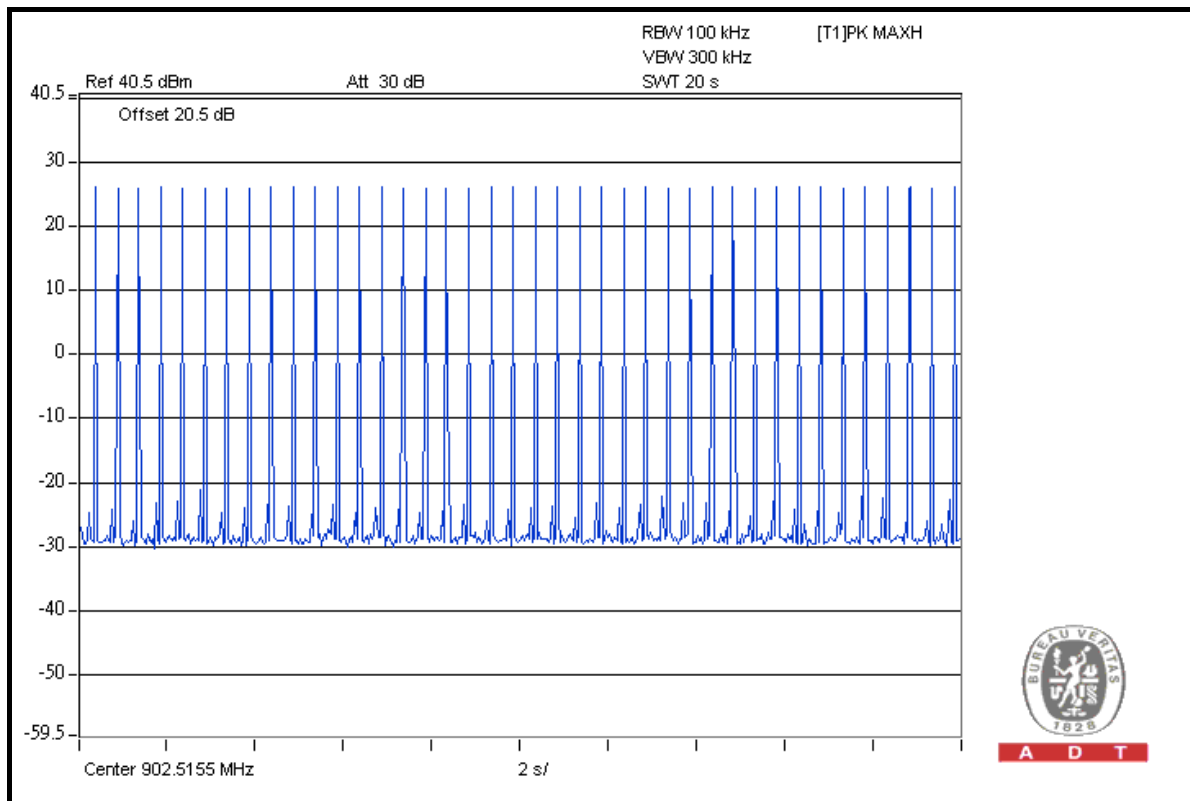
Length of transmission time (ms)	TX Burst of 20s period	Result	Limit
1.23	40	49.2ms / 20s	400ms / 20s

**NOTE:** Test plots of the transmitting time slot are shown on next page.





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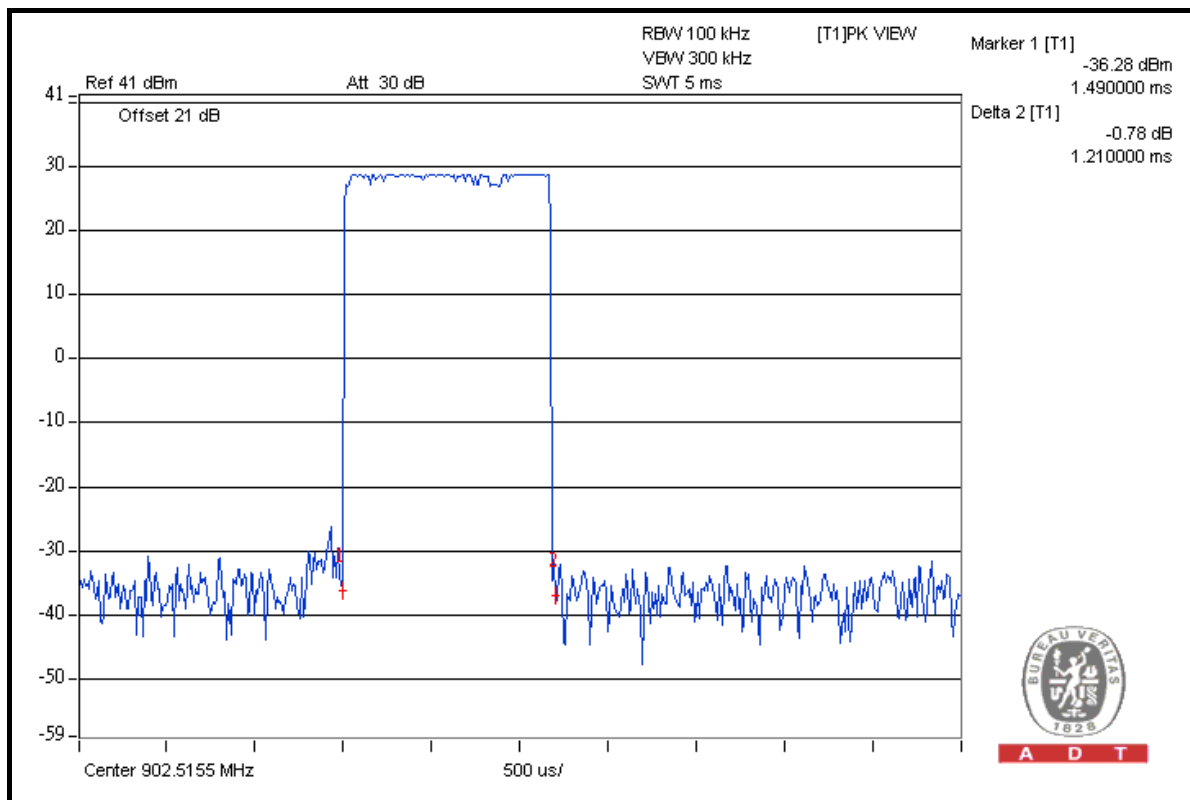
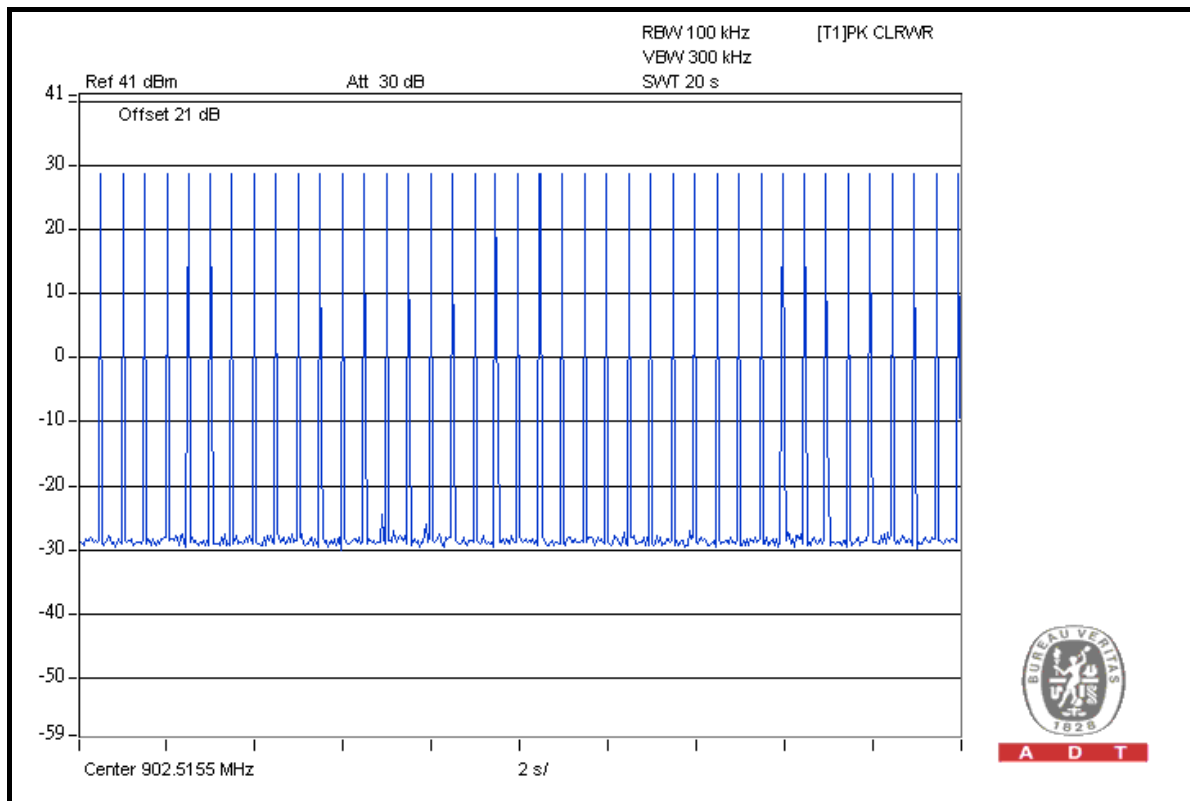
**TEST MODE B**

Length of transmission time (ms)	TX Burst of 20s period	Result	Limit
1.21	40	48.4ms / 20s	400ms / 20s

**NOTE:** Test plots of the transmitting time slot are shown on next page.



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## 4.5 CHANNEL BANDWIDTH

### 4.5.1 LIMITS OF CHANNEL BANDWIDTH

The 20 dB bandwidth of the hopping channel shall be less than 500kHz.

### 4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100040	Jul. 17, 2010	Jul. 16, 2011

**NOTE:** 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

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
- Repeat above procedures until all frequencies measured were complete.

### 4.5.4 DEVIATION FROM TEST STANDARD

No deviation.

### 4.5.5 TEST SETUP

Same as 4.3.5.

#### 4.5.6 EUT OPERATING CONDITION

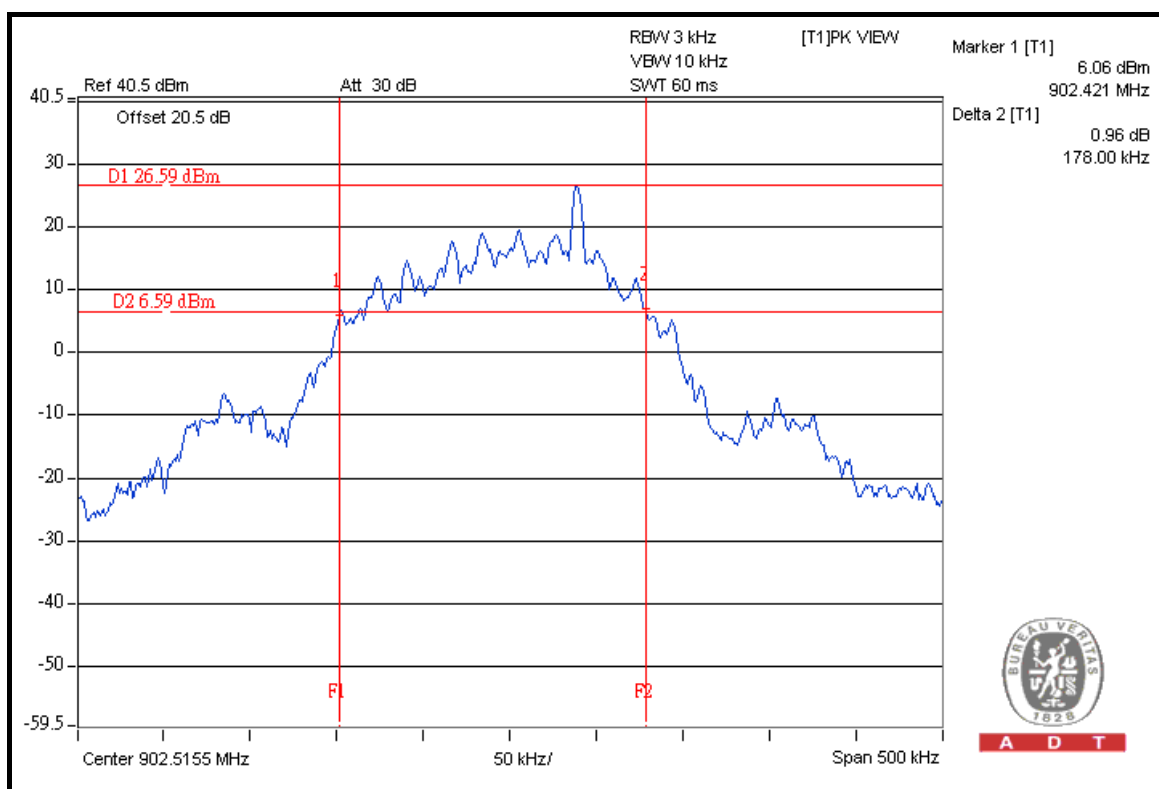
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

#### 4.5.7 TEST RESULTS

##### TEST MODE A

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)	LIMIT (kHz)
1	902.5155	0.178	500
25	915.0563	0.178	500
50	927.5972	0.178	500

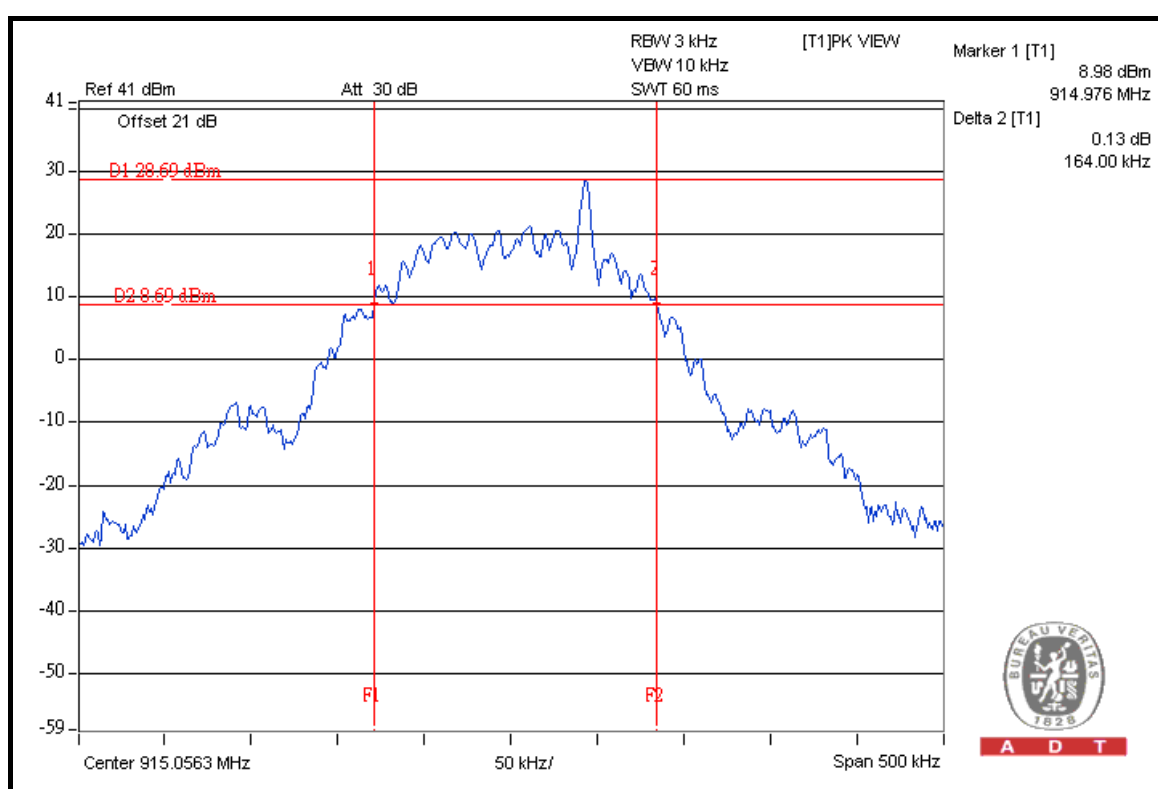
##### CH 1



## TEST MODE B

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)	LIMIT (kHz)
1	902.5155	0.163	500
25	915.0563	0.164	500
50	927.5972	0.164	500

## CH 25



## 4.6 HOPPING CHANNEL SEPARATION

### 4.6.1 LIMIT OF HOPPING CHANNEL SEPARATION

At least 25kHz or 20dB hopping channel bandwidth (whichever is greater).

### 4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100040	Jul. 17, 2010	Jul. 16, 2011

**NOTE:** 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 PROCEDURES

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
3. By using the MaxHold function record the separation of two adjacent channels.
4. Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation.

### 4.6.5 TEST SETUP

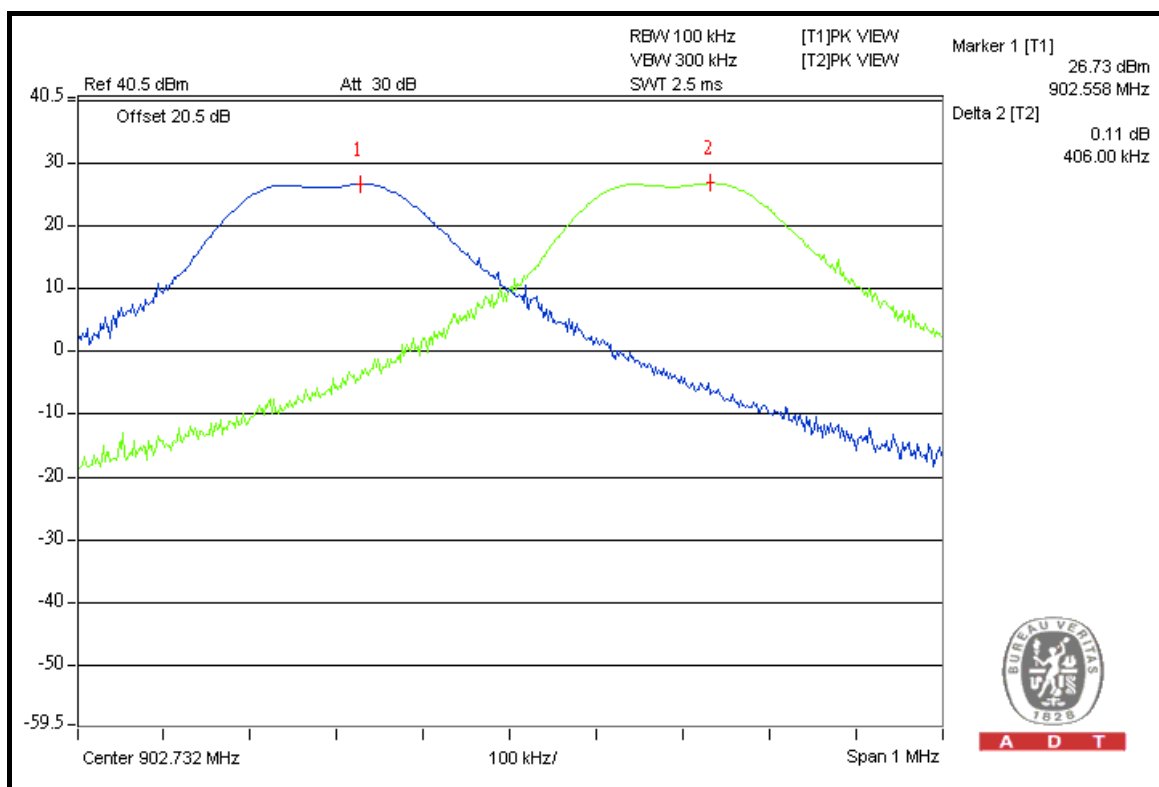
Same as 4.3.5

## 4.6.6 TEST RESULTS

### TEST MODE A

CHANNEL	FREQUENCY (MHz)	ADJACENT CHANNEL SEPARATION (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	902.5155	0.406	0.178	PASS
25	915.0563	0.404	0.178	PASS
50	927.5972	0.406	0.178	PASS

### CH 1





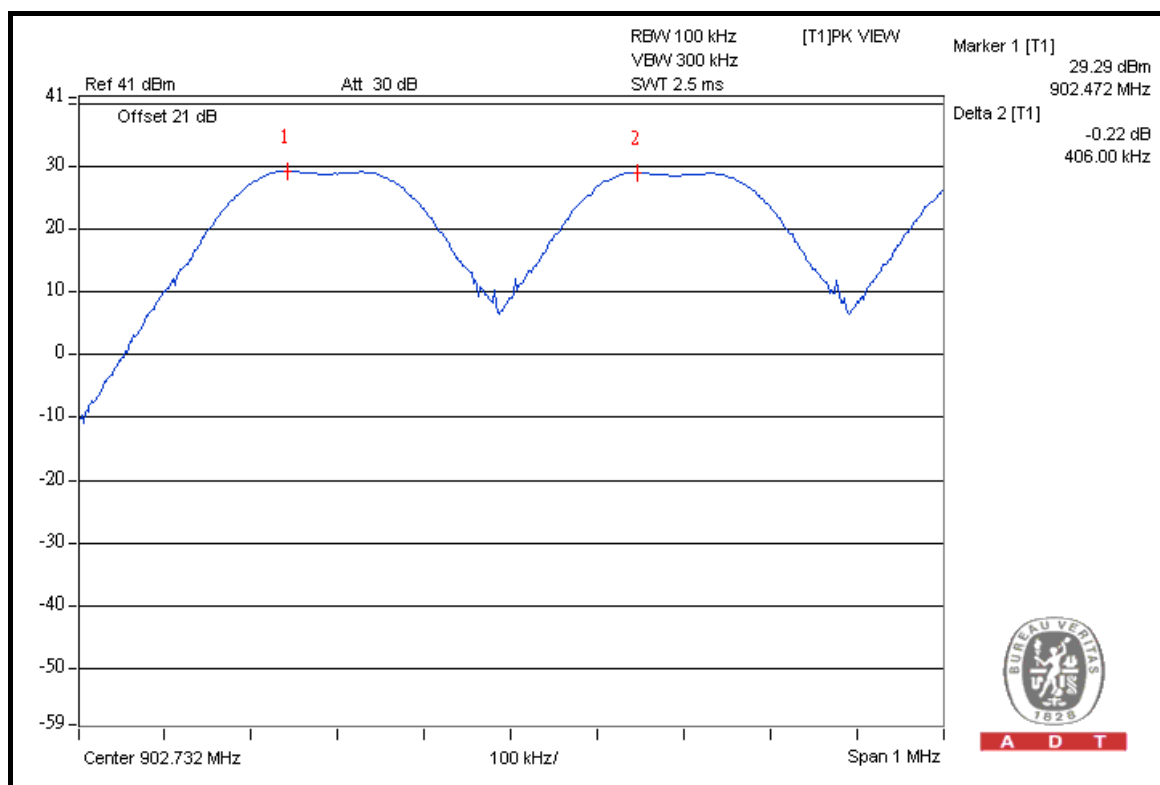


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## TEST MODE B

CHANNEL	FREQUENCY (MHz)	ADJACENT CHANNEL SEPARATION (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	902.5155	0.406	0.163	PASS
25	915.0563	0.404	0.164	PASS
50	927.5972	0.404	0.164	PASS

## CH 1



## 4.7 MAXIMUM OUTPUT POWER

### 4.7.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

The Maximum Output Power Measurement is 30dBm.

### 4.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100040	Jul. 17, 2010	Jul. 16, 2011

**NOTE:** 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 PROCEDURES

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- The center frequency of the spectrum analyzer is set to the fundamental frequency and using 1MHz RBW and 3 MHz VBW.
- Measure the captured power within the band and recording the plot.
- Repeat above procedures until all frequencies required were complete.

### 4.7.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.7.5 TEST SETUP

Same as 4.3.5.

#### 4.7.6 EUT OPERATING CONDITION

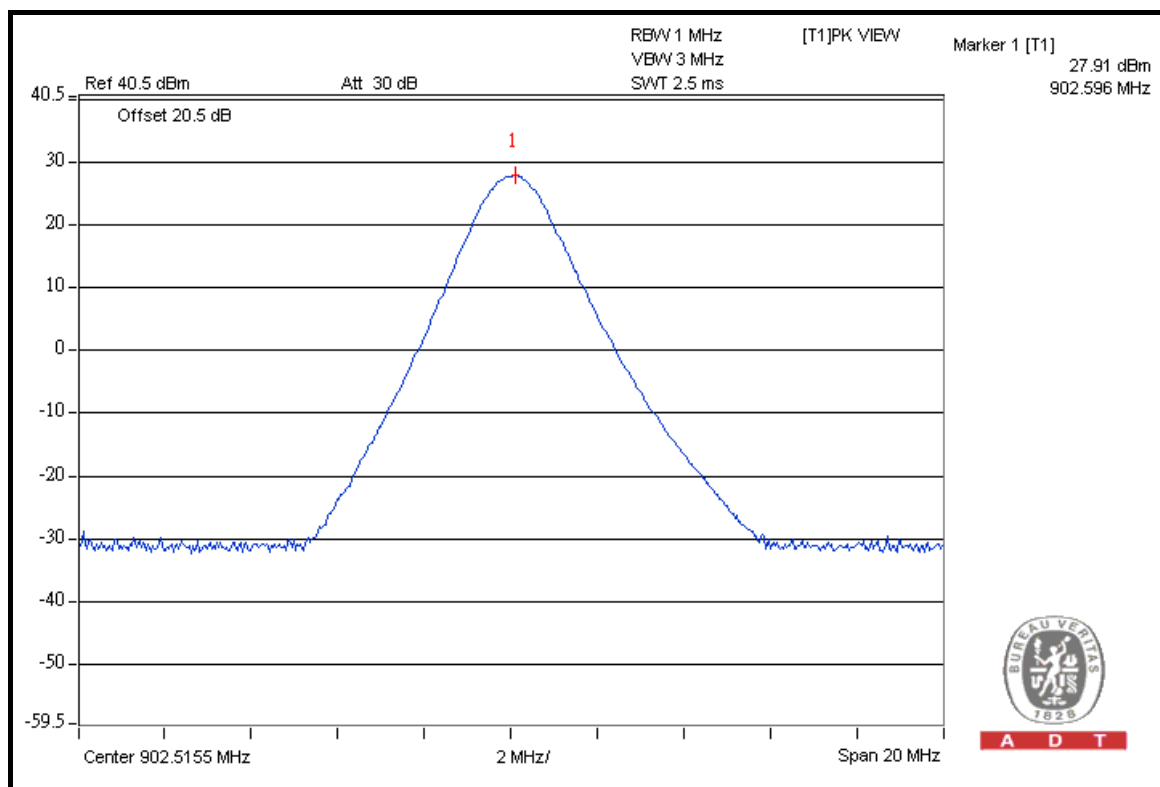
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

#### 4.7.7 TEST RESULTS

##### TEST MODE A

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (dBm)	PASS/FAIL
1	902.5155	902.5	27.9	30	PASS
25	915.0563	915.1	27.3	30	PASS
50	927.5972	927.6	27.2	30	PASS

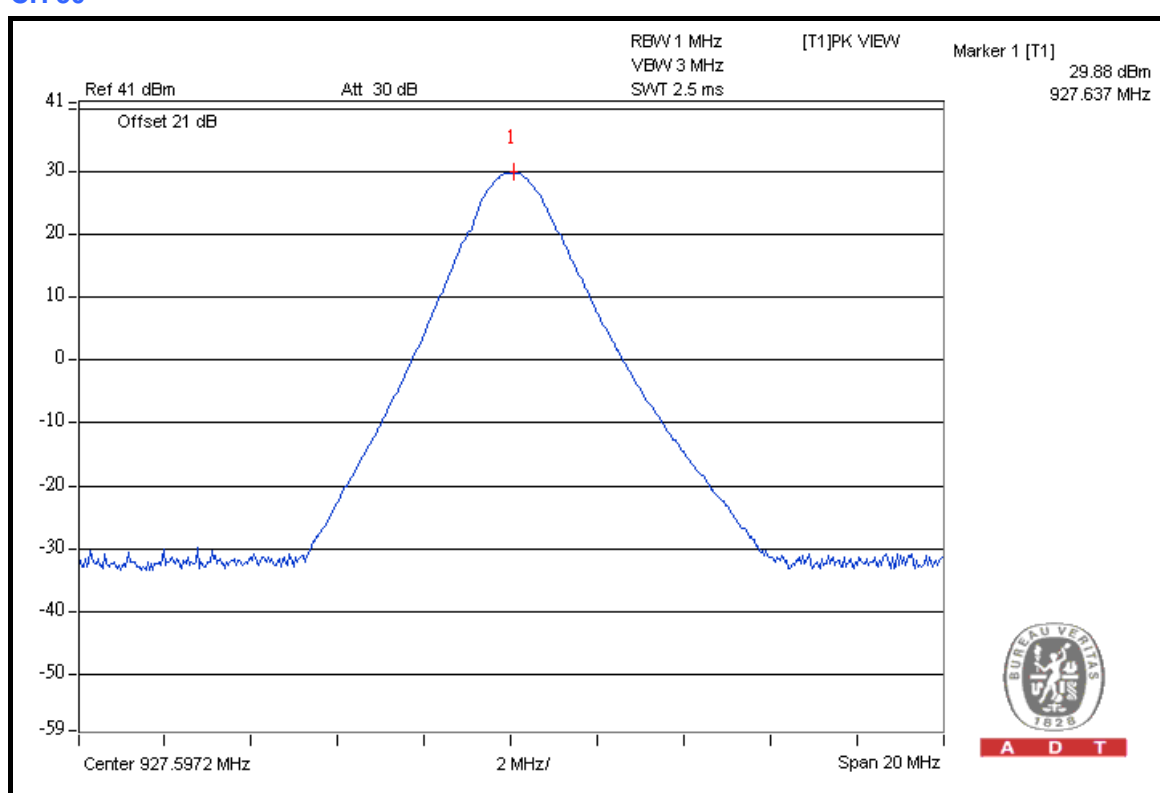
##### CH 1



## TEST MODE B

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (dBm)	PASS/FAIL
1	902.5155	935.4	29.7	30	PASS
25	915.0563	922.6	29.7	30	PASS
50	927.5972	972.7	29.9	30	PASS

## CH 50



## 4.8 BAND EDGES MEASUREMENT

### 4.8.1 LIMITS OF BAND EDGES MEASUREMENT

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

### 4.8.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100040	Jul. 17, 2010	Jul. 16, 2011

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

### 4.8.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 / 300 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

### 4.8.4 DEVIATION FROM TEST STANDARD

No deviation.

### 4.8.5 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest and highest channel frequencies individually.

#### 4.8.6 TEST RESULTS

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

##### TEST MODE A

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH OUT OF BAND (dBuV/m)	LIMIT (dBuV/m)
902.5155 (PK)	129.4	54.05	75.35	109.4
902.5155 (AV)	-	-	56.95	91.0

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH OUT OF BAND (dBuV/m)	LIMIT (dBuV/m)
927.5972 (PK)	128.6	42.30	86.30	108.6
927.5972 (AV)	-	-	67.90	90.2

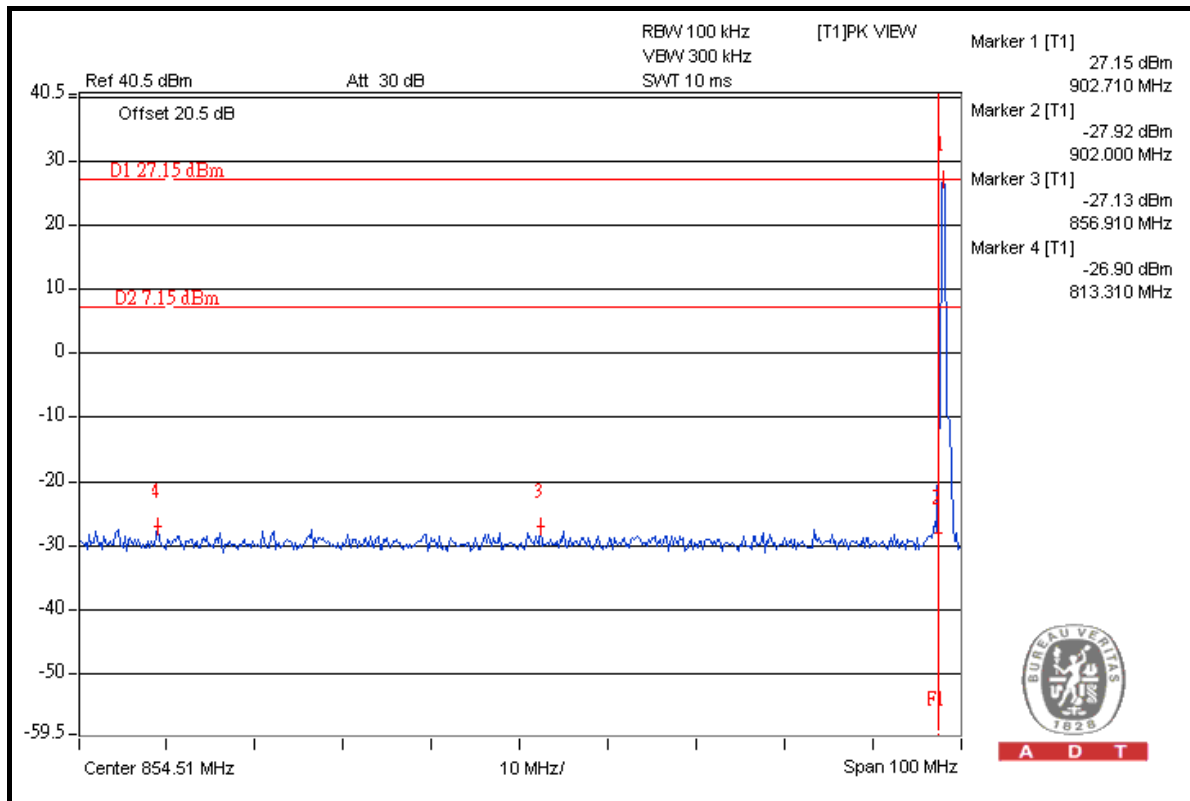
##### NOTE:

1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 2 pages.
2. Maximum field strength out of band (PK value) = Fundamental emission (PK value) – Delta.
3. Average value = Peak value + 20 Log (duty cycle) = Peak value – 18.4dB.
4. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:  

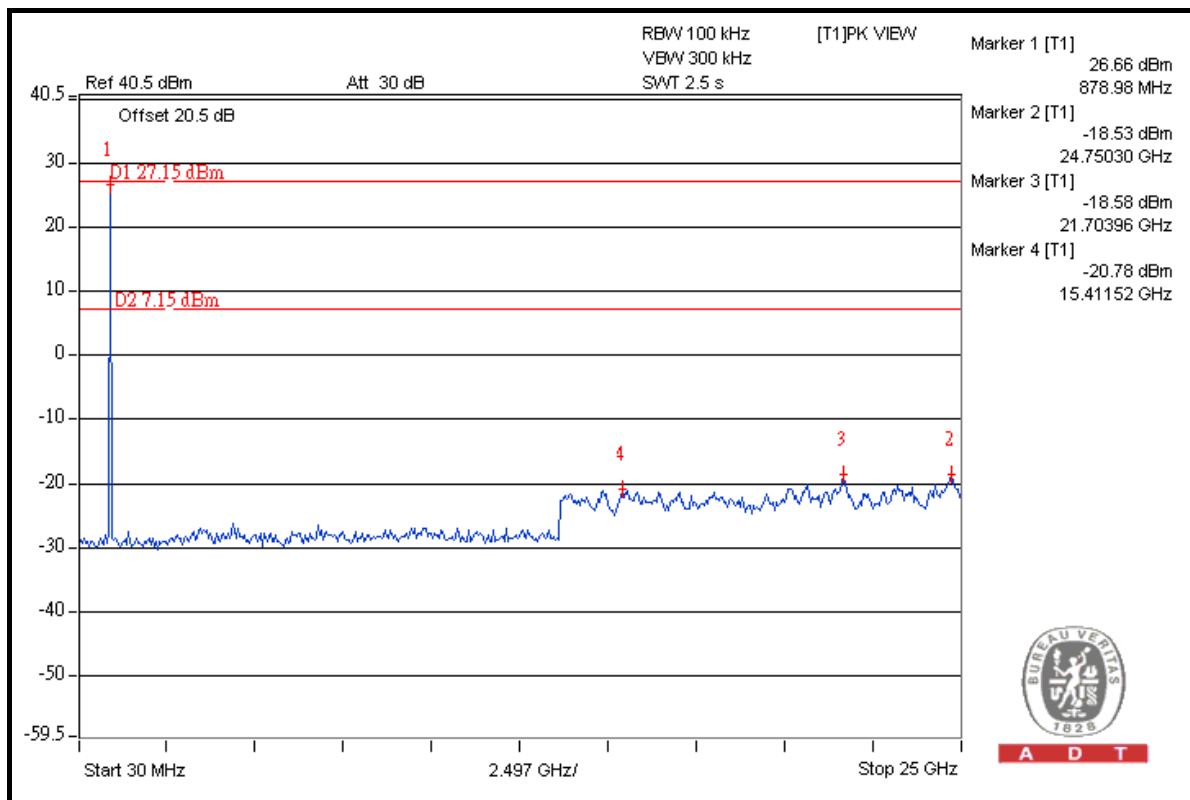
$$20 \log (\text{Duty cycle}) = 20 \log (12 \text{ ms} / 100 \text{ ms}) = -18.4\text{dB}$$



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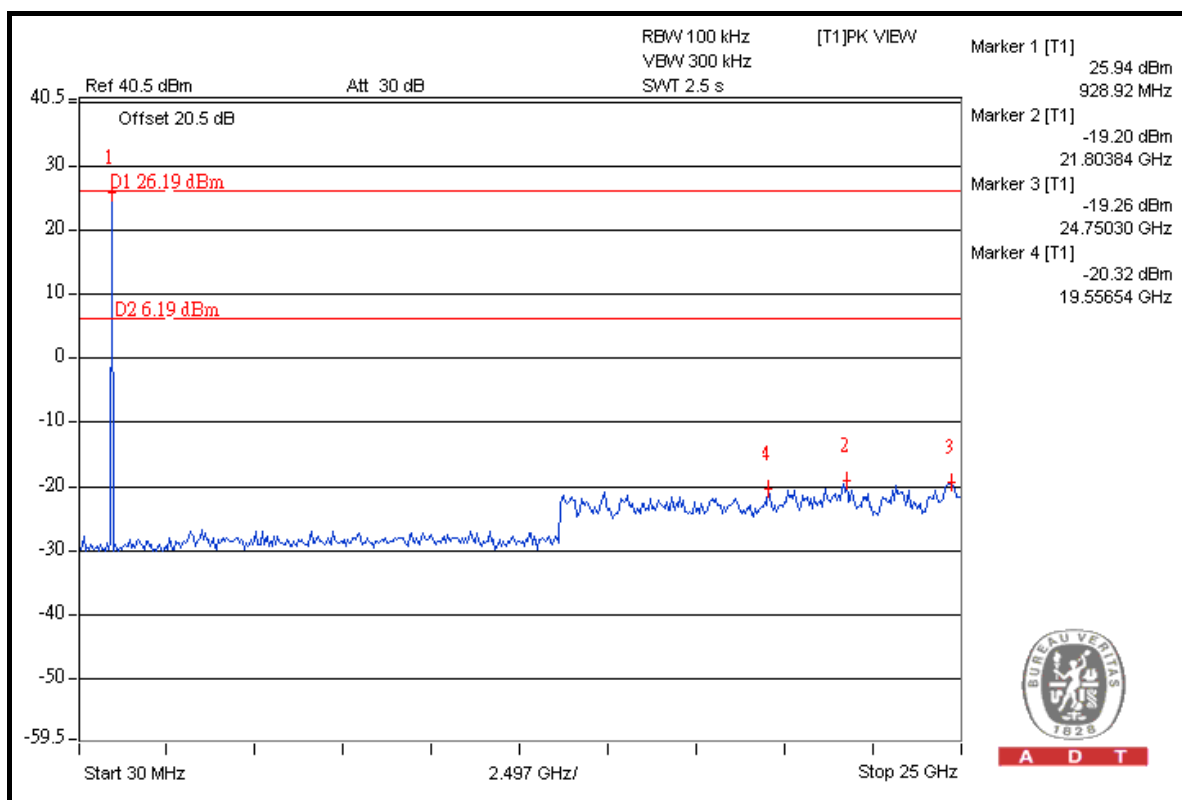
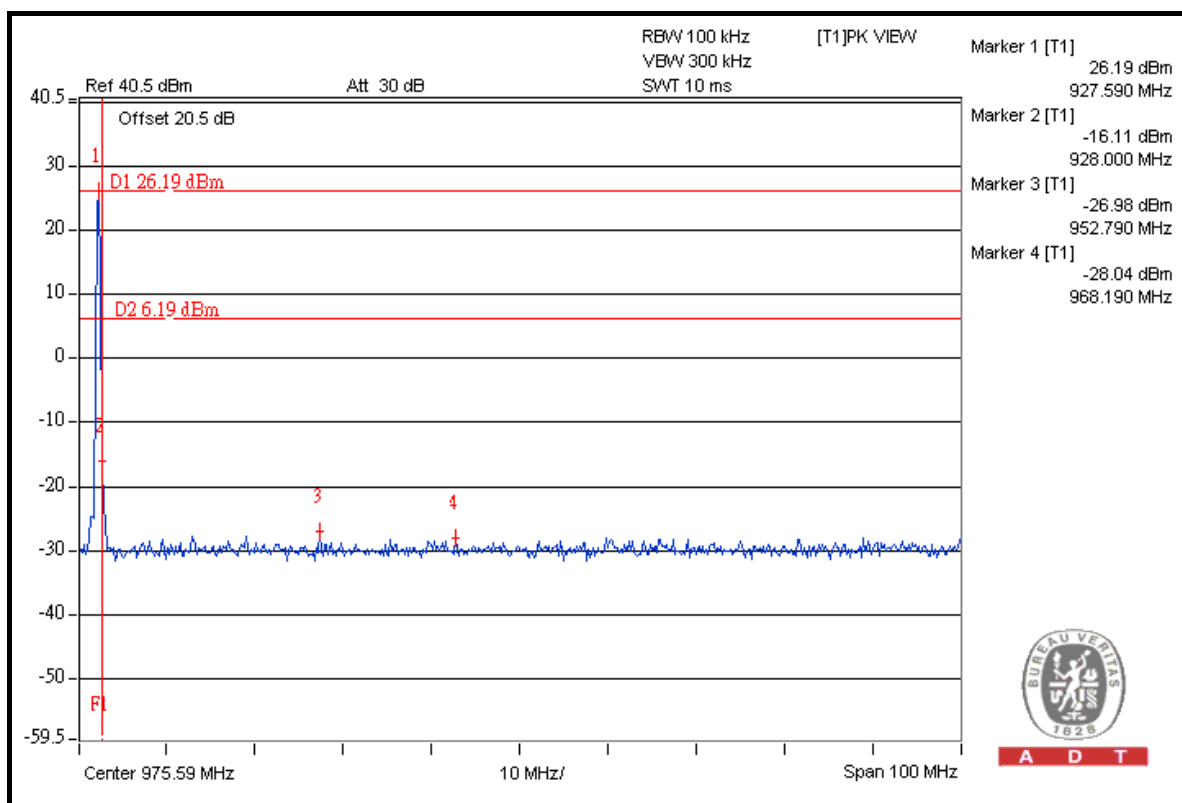
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## TEST MODE B

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH OUT OF BAND (dBuV/m)	LIMIT (dBuV/m)
902.5155 (PK)	127.7	57.21	70.49	107.7
902.5155 (AV)	-	-	52.19	89.4

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH OUT OF BAND (dBuV/m)	LIMIT (dBuV/m)
927.5972 (PK)	131.6	32.08	99.52	111.6
927.5972 (AV)	-	-	81.22	93.3

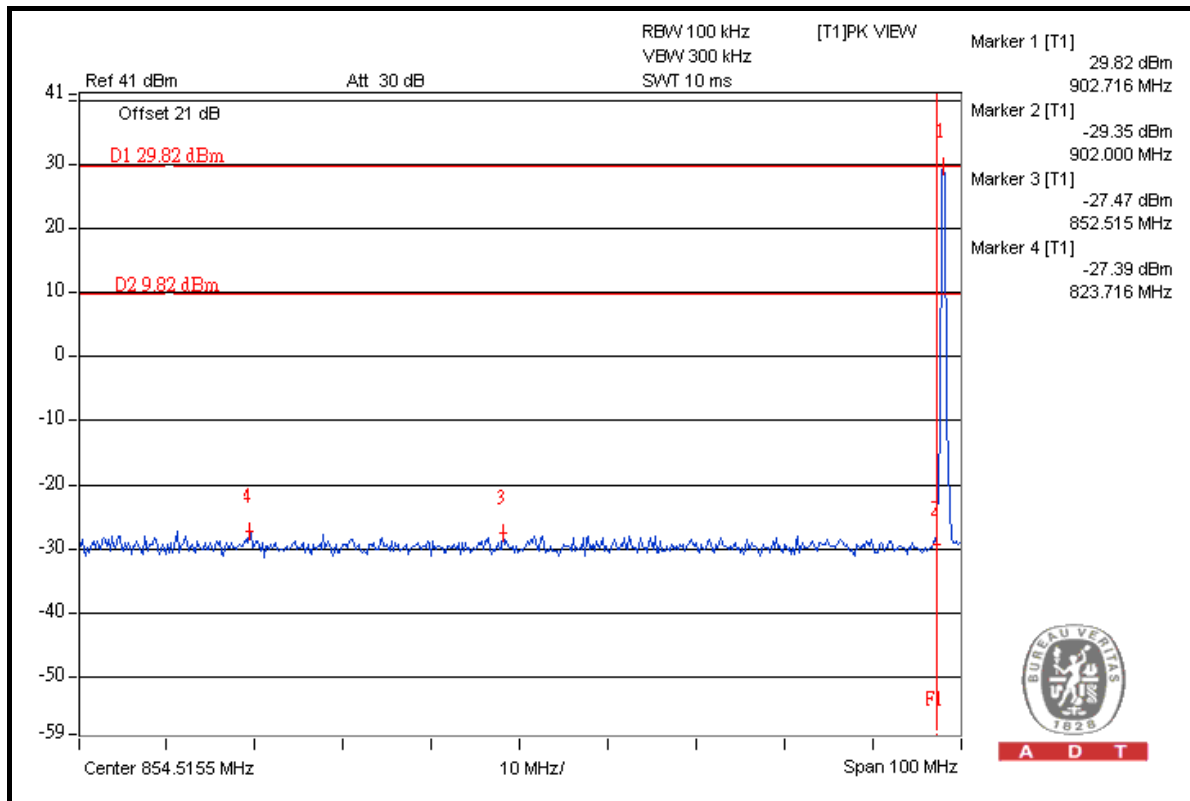
### NOTE:

1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 2 pages.
2. Maximum field strength out of band (PK value) = Fundamental emission (PK value) – Delta.
3. Average value = Peak value + 20 Log (duty cycle) = Peak value – 18.3dB.
4. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:  

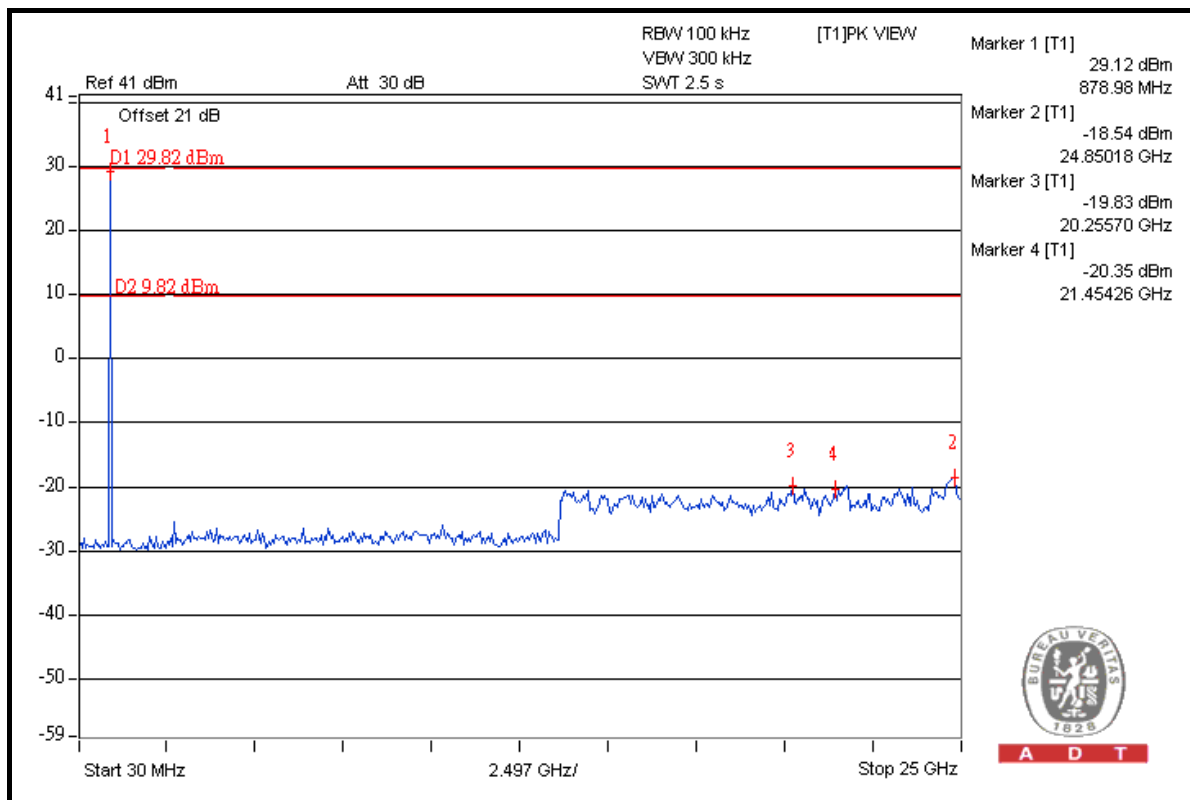
$$20 \log (\text{Duty cycle}) = 20 \log (12.2\text{ms} / 100 \text{ ms}) = -18.3 \text{ dB}$$



A D T



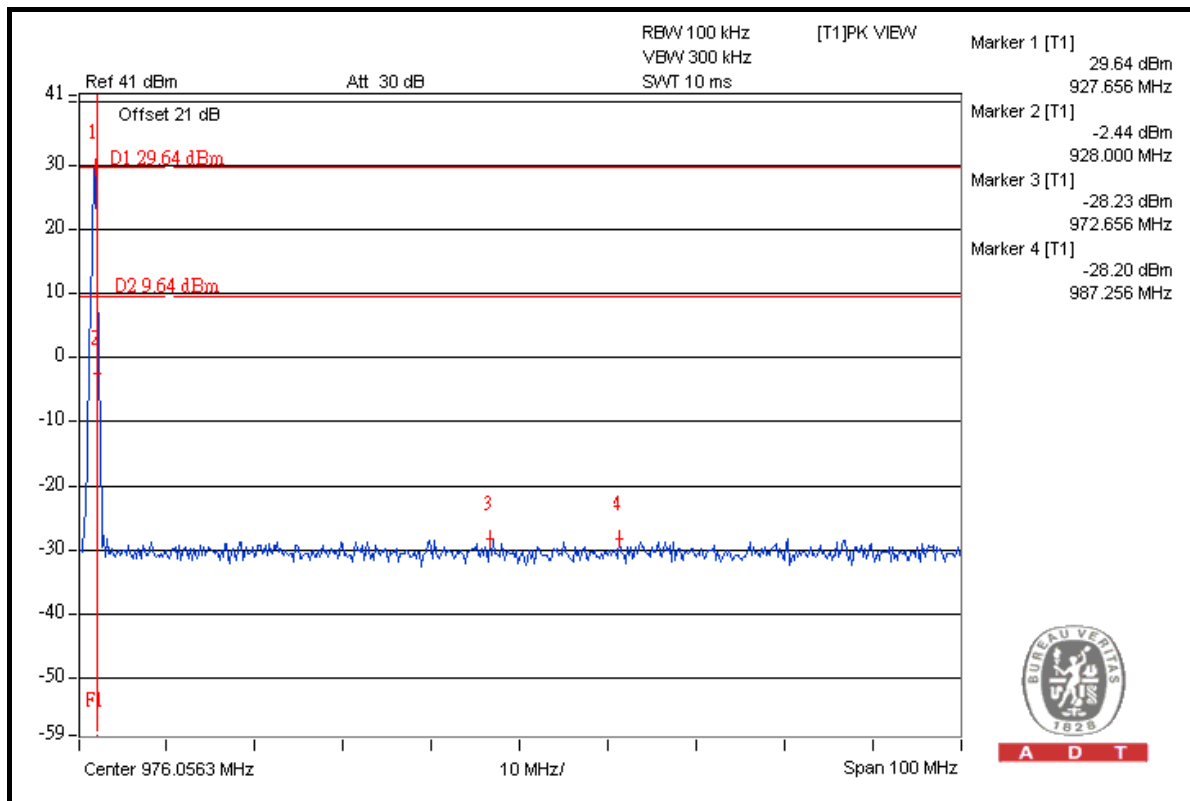
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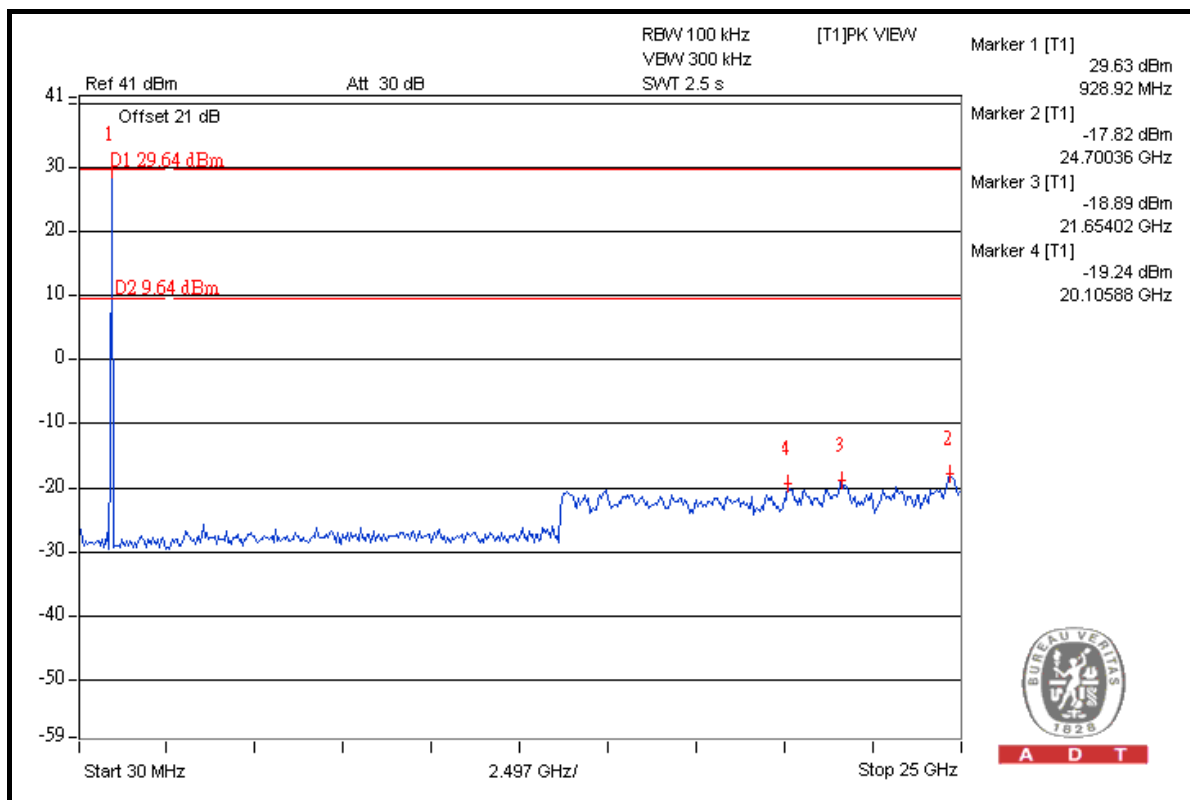
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## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

## 6. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

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](http://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: 886-2-26051924

**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@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)

**Web Site:** [www.adt.com.tw](http://www.adt.com.tw)

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

## **7. 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.

**--- END ---**