



**BUREAU  
VERITAS**

Test Report No.: RF130301N006

# TEST REPORT

Applicant	PLANET Technology Corporation
Address	10F., No.96, Minguan Rd., Xindian Dist., New Taipei City, Taiwan, R.O.C.

Manufacturer or Supplier	PLANET Technology Corporation
Address	10F., No.96, Minguan Rd., Xindian Dist., New Taipei City, Taiwan, R.O.C.
Product	802.11a/n Wireless Outdoor AP
Brand Name	Planet
Model	WNAP-7206
Additional Model & Model Difference	N/A
Date of tests	Nov. 06, 2012 ~ Nov. 15, 2012 & Mar. 01, 2013 ~ Mar. 13, 2013

The submitted sample of the above equipment has been tested according to the requirements of the following standard:

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

**CONCLUSION: The submitted sample was found to COMPLY with the test requirement**

Prepared by Kent Liu  
Project Engineer / EMC Department

Approved by Sam Tung  
Manager / EMC Department

Date: Mar. 14, 2013

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## TABLE OF CONTENTS

RELEASE CONTROL RECORD .....	4
<b>1 SUMMARY OF TEST RESULTS.....</b>	<b>5</b>
<b>2 MEASUREMENT UNCERTAINTY.....</b>	<b>5</b>
<b>3 GENERAL INFORMATION .....</b>	<b>6</b>
<b>3.1 GENERAL DESCRIPTION OF EUT.....</b>	<b>6</b>
<b>3.2 DESCRIPTION OF TEST MODES .....</b>	<b>7</b>
3.2.1. CONFIGURATION OF SYSTEM UNDER TEST .....	8
3.2.2. TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	9
<b>3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS .....</b>	<b>11</b>
<b>3.4 DESCRIPTION OF SUPPORT UNITS .....</b>	<b>11</b>
<b>4. TEST TYPES AND RESULTS.....</b>	<b>12</b>
<b>4.1 CONDUCTED EMISSION MEASUREMENT .....</b>	<b>12</b>
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT .....	12
4.1.2 TEST INSTRUMENTS.....	12
4.1.3 TEST PROCEDURES .....	13
4.1.4 DEVIATION FROM TEST STANDARD .....	13
4.1.5 TEST SETUP.....	14
4.1.6 EUT OPERATING CONDITIONS .....	14
4.1.7 TEST RESULTS .....	15
<b>4.2 RADIATED EMISSION MEASUREMENT.....</b>	<b>17</b>
4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT .....	17
4.2.2 TEST INSTRUMENTS.....	18
4.2.3 TEST PROCEDURES .....	19
4.2.4 DEVIATION FROM TEST STANDARD .....	19
4.2.5 TEST SETUP.....	20
4.2.6 EUT OPERATING CONDITIONS .....	20
4.2.7 TEST RESULTS .....	21
<b>4.3 6dB BANDWIDTH MEASUREMENT.....</b>	<b>31</b>
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT.....	31
4.3.2 TEST INSTRUMENTS.....	31
4.3.3 TEST PROCEDURE.....	31
4.3.4 DEVIATION FROM TEST STANDARD .....	31
4.3.5 TEST SETUP.....	32



4.3.6	EUT OPERATING CONDITIONS .....	32
4.3.7	TEST RESULTS .....	33
<b>4.4</b>	<b>CONDUCTED OUTPUT POWER .....</b>	<b>37</b>
4.4.1	LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT .....	37
4.4.2	TEST SETUP .....	37
4.4.3	TEST INSTRUMENTS.....	37
4.4.4	TEST PROCEDURES .....	37
4.4.5	DEVIATION FROM TEST STANDARD .....	37
4.4.6	EUT OPERATING CONDITIONS .....	37
4.4.7	TEST RESULTS .....	38
<b>4.5</b>	<b>POWER SPECTRAL DENSITY MEASUREMENT .....</b>	<b>39</b>
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT .....	39
4.5.2	TEST SETUP .....	39
4.5.3	TEST INSTRUMENTS.....	39
4.5.4	TEST PROCEDURE.....	39
4.5.5	DEVIATION FROM TEST STANDARD .....	39
4.5.6	EUT OPERATING CONDITION .....	39
4.5.7	TEST RESULTS .....	40
<b>4.6</b>	<b>OUT OF BAND EMISSION MEASUREMENT .....</b>	<b>44</b>
4.6.1	LIMITS OF OUT OF BAND EMISSION MEASUREMENT .....	44
4.6.2	TEST SETUP .....	44
4.6.3	TEST INSTRUMENTS.....	44
4.6.4	TEST PROCEDURE.....	44
4.6.5	DEVIATION FROM TEST STANDARD .....	44
4.6.6	EUT OPERATING CONDITION .....	44
4.6.7	TEST RESULTS .....	45
<b>5</b>	<b>PHOTOGRAPHS OF THE TEST CONFIGURATION .....</b>	<b>48</b>
<b>6</b>	<b>APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB .....</b>	<b>49</b>



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Test Report No.: RF130301N006

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120625N003	Original release	Nov. 26, 2012
RF130301N006	Based on the original report change applicant, manufacturer, brand name, product name, model name, FCC ID and adapter.	Mar. 14, 2013



# 1 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 -13.22dB at 0.17329MHz.
15.205 15.209	Restricted bands of operation. & Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.4dB at 5460MHz.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted output power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.247(d)	Out of Band Emission Measurement	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is nonstandard SMA type, not a standard connector.

# 2 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 emissions	9kHz~30MHz	2.94dB
Radiated emissions	30MHz ~1000MHz	3.64dB
	1GHz ~ 18GHz	2.20dB
	18GHz ~ 40GHz	1.94dB

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>PRODUCT</b>	802.11a/n Wireless Outdoor AP
<b>MODEL NO.</b>	WNAP-7206
<b>FCC ID</b>	UL9WNAP7206
<b>NOMINAL VOLTAGE</b>	DC 12V From Adapter and PoE Box
<b>MODULATION TYPE</b>	64QAM, 16QAM, QPSK, BPSK
<b>MODULATION TECHNOLOGY</b>	OFDM
<b>TRANSFER RATE</b>	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 150.0Mbps
<b>OPERATING FREQUENCY</b>	5745 ~ 5825MHz
<b>NUMBER OF CHANNEL</b>	5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
<b>OUTPUT POWER</b>	40.738mW
<b>ANTENNA TYPE</b>	Refer to NOTE as below
<b>ANTENNA CONNECTER</b>	Refer to NOTE as below
<b>DATA CABLE</b>	Refer to user's manual
<b>I/O PORTS</b>	Refer to user's manual
<b>ACCESSORY DEVICES</b>	Refer to user's manual

**NOTE:**

- The EUT incorporates a SISO function. Physically, the EUT provides one transmitter and one receiver.

MODULATION MODE	TX FUNCTION	RX FUNCTION
802.11a	1TX	1RX
802.11n (20MHz)	1TX	1RX
802.11n (40MHz)	1TX	1RX

- The EUT was powered by the following adapter and PoE Box:

ADAPTER 1	
<b>Brand</b>	LEADER ELECTRONICS INC.
<b>Model No</b>	MU12-S120100-A1
<b>Input Power</b>	AC 100-240V ~ 50-60HZ 0.5A
<b>Output Power</b>	DC 12V/1A
<b>POWER LINE</b>	UNSHIELDED UNDETACHABLE 1.5 m.



3. There are three antennas provided to this EUT. The information about those antennas is listed in below table:

NO.	ANTENNA TYPE	GAIN (dBi)
		5GHz
1. Internal	Directivity	15 dBi
2. Internal	Directivity	15 dBi
3. External	Dipole	2 dBi

4. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

5. The product with the new model "WNAP-7206" shown in this report is identical with the original test model, with only difference being silk-screen on the shell.

6. Since the applicant had asked for changing adapter, conducted emission and low band radiated spurious emission tests were checked again for this project.

### 3.2 DESCRIPTION OF TEST MODES

5 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz		

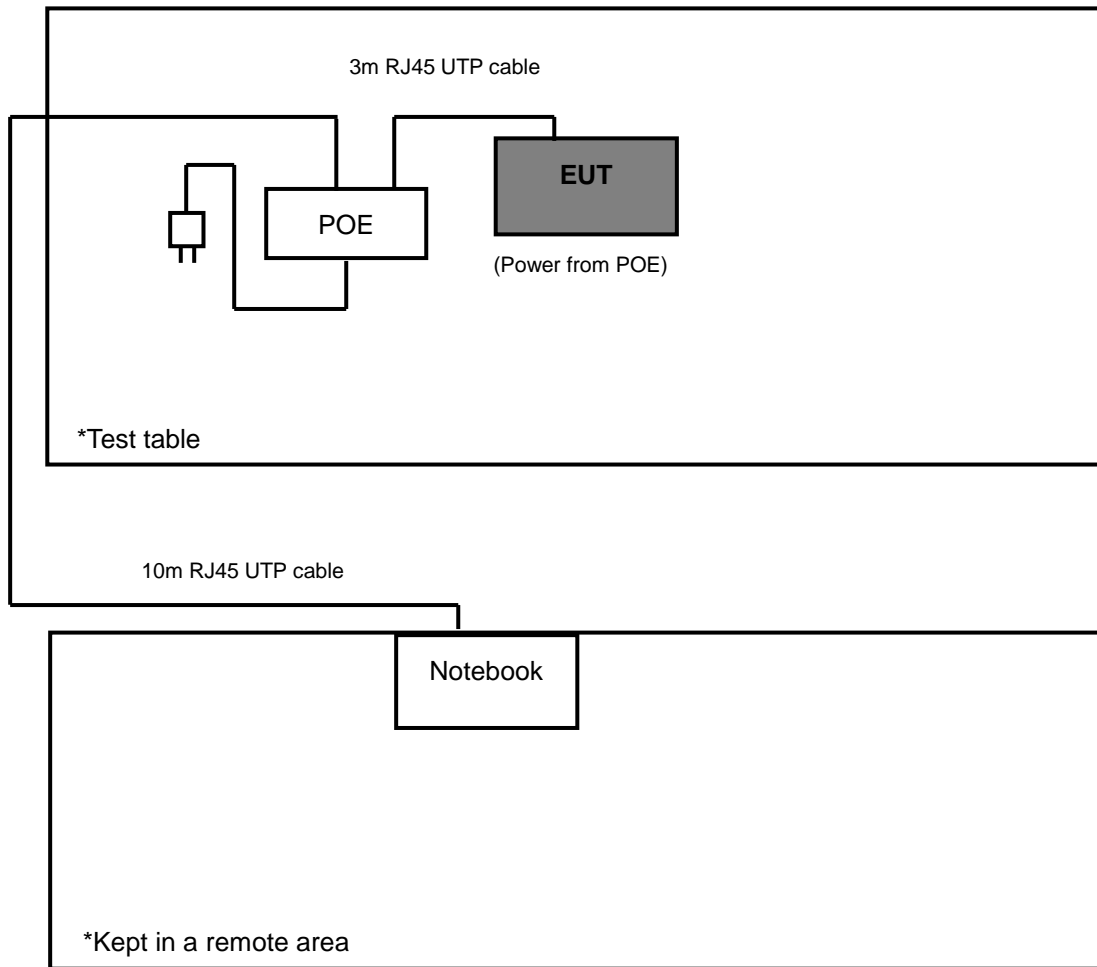
3 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755 MHz	159	5795 MHz



### 3.2.1. CONFIGURATION OF SYSTEM UNDER TEST

#### Test Mode







### 3.2.2. TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Internal Antenna 1
B	√	√			Internal Antenna 2
C	√	√			External Antenna

Where **RE≥1G**: Radiated Emission above 1GHz      **RE<1G**: Radiated Emission below 1GHz  
**PLC**: Power Line Conducted Emission      **APCM**: Antenna Port Conducted Measurement

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

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis 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	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B, C	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A, B, C	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
A, B, C	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0

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

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis 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	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 165	157	OFDM	BPSK	6.0



**AC POWER 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	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 165	157	OFDM	BPSK	6.0

**BANDEDGE 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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
A	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0

**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, 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	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
A	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0



**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 55%RH	120Vac, 60Hz	Venless long
RE<1G	25deg. C, 55%RH	120Vac, 60Hz	Venless long
PLC	25deg. C, 56%RH	120Vac, 60Hz	Venless long
APCM	25deg. C, 56%RH	120Vac, 60Hz	Venless long

**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 C63.10-2009**

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

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

**3.4 DESCRIPTION OF SUPPORT UNITS**

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	5P2PM2X	12400120329	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	3m RJ45 UTP cable. 10m RJ45 UTP cable.



## 4. TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBµV)	
	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 0.50MHz.
  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.

#### 4.1.1 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU 26	100005	May 15,12	May 14,13
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	May 15,12	May 14,13
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	May 15,12	May 14,13
Impedance Stabilization Network	TESEQ	ISN T800	27957	Oct.10,12	Oct. 09,13
Test software	ADT	ADT_Cond_V7.3.7	N/A	N/A	N/A

- NOTE:**
1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA and NIM/CHINA.
  2. The test was performed in shielded room 553.



#### 4.1.2 TEST PROCEDURES

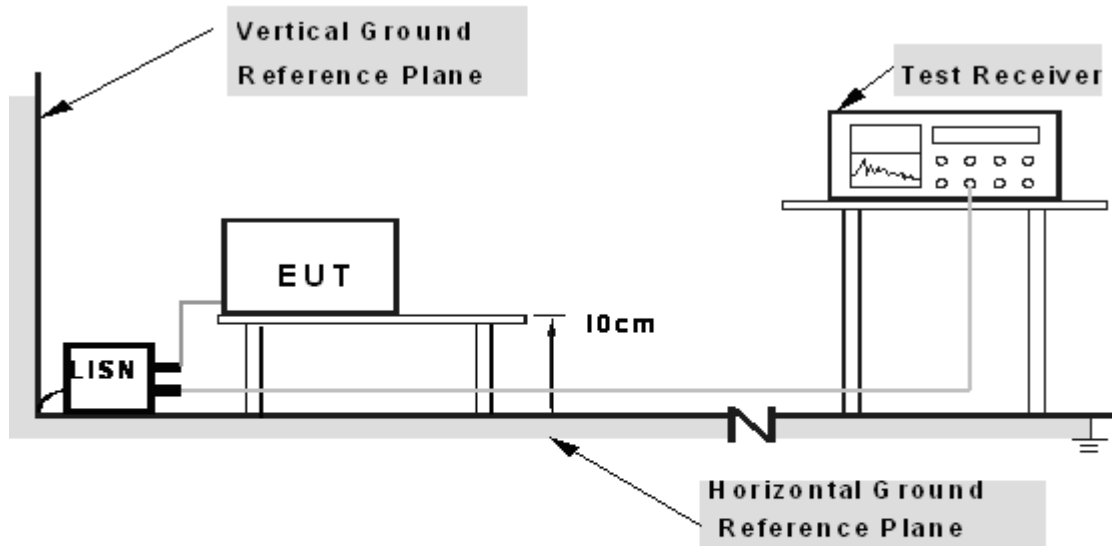
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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.

#### 4.1.3 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.1.4 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 from other units and other metal planes**

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

#### 4.1.5 EUT OPERATING CONDITIONS

- Turned on the power and connected of all equipment.
- Use the software to control the EUT under transmission condition continuously at specific channel frequency.



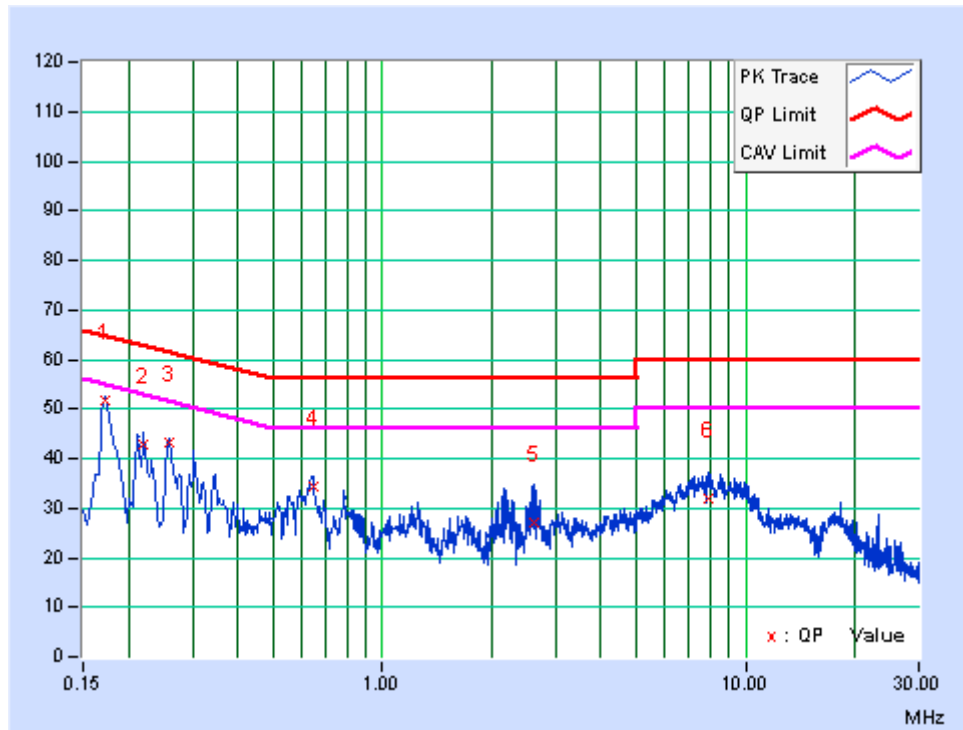
### 4.1.6 TEST RESULTS

**CONDUCTED WORST-CASE DATA:**

<b>PHASE</b>	Line	<b>6dB BANDWIDTH</b>	9kHz
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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	0.17329	10.49	41.09	28.02	51.58	38.51	64.8	54.8	-13.22	-16.29
2	0.22038	10.39	32.3	19.8	42.69	30.19	62.8	52.8	-20.11	-22.61
3	0.25932	10.33	32.71	21.32	43.04	31.65	61.45	51.45	-18.42	-19.81
4	0.64362	10.11	24.36	18.12	34.47	28.23	56	46	-21.53	-17.77
5	2.62894	9.89	17.19	5.42	27.08	15.31	56	46	-28.92	-30.69
6	7.92699	9.93	22.1	15.65	32.03	25.58	60	50	-27.97	-24.42

- 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.

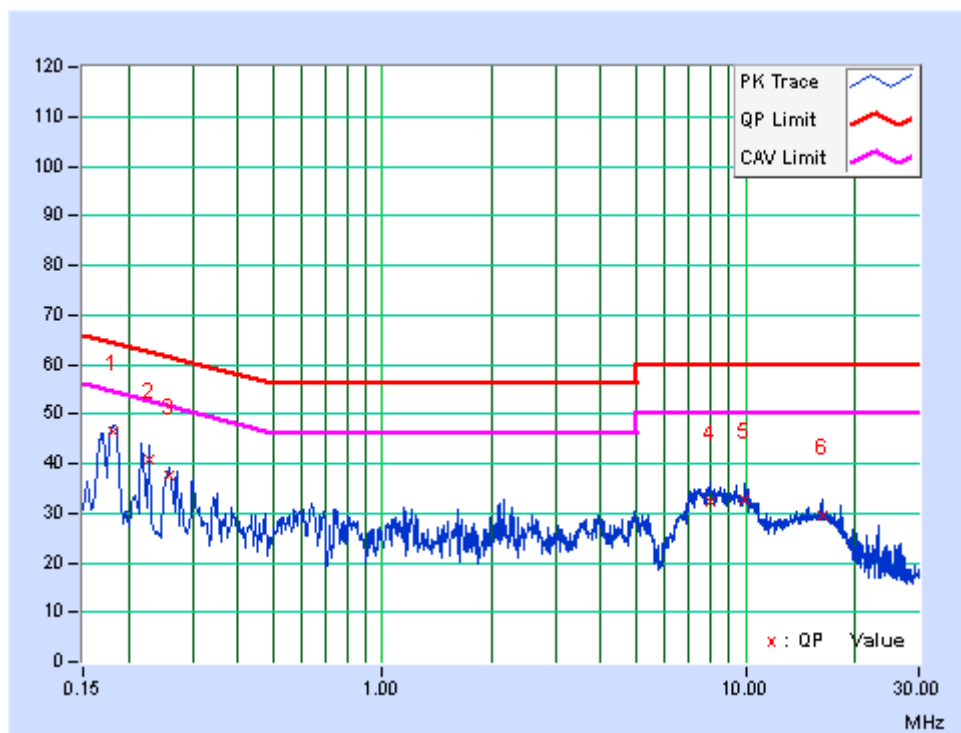




<b>PHASE</b>	Neutral	<b>6dB BANDWIDTH</b>	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18128	10.45	36.14	20.18	46.59	30.63	64.43	54.43	-17.84	-23.8
2	0.2282	10.29	30.7	14.14	40.99	24.43	62.51	52.51	-21.52	-28.08
3	0.25948	10.28	27.46	13.63	37.74	23.91	61.45	51.45	-23.71	-27.54
4	7.98564	9.9	22.42	15.68	32.32	25.58	60	50	-27.68	-24.42
5	9.93673	9.95	22.82	18.17	32.77	28.12	60	50	-27.23	-21.88
6	16.22792	10.27	19.15	14.31	29.42	24.58	60	50	-30.58	-25.42

- 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.







## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 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).

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

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	Agilent	E4446A	MY46180622	May 02,12	May 01,13
EMI Test Receiver	Rohde&Schwarz	ESVD	847398/003	May 15,12	May 14,13
Bilog Antenna (25MHz-2GHz)	Teseq	CBL 6111D	27089	Jul. 16,12	Jul. 15,13
Horn Antenna (1GHz -18GHz)	EMCO	3117	00062558	Oct.18,12	Oct.17,13
Pre-Amplifier (20MHz-3GHz)	EMCI	EMC 330	980095	Nov. 02,12	Nov.01,13
Pre-Amplifier (100MHz-26.5GHz)	Agilent	8449B	3008A00409	May 31,12	May 30,13
10m Semi-anechoic Chamber	CHANGLING	21.4m*12.1m*8.8m	NSEMC006	Mar. 24,12	Mar. 23,13
Digital Multimeter	FLUKE	15B	A1220010D G	Oct. 31,12	Oct. 30,13
Horn Antenna (15GHz-40GHz)	SCHWARZBECK	BBHA 9170	BBHA91702 42	Jan. 04,11	Jan. 03,14
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,12	Nov. 03,13
Test Software	ADT	ADT_Radiated V7.6.15	N/A	N/A	N/A

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA and NIM/CHINA.

2. The test was performed in 10m Chamber



#### 4.2.2 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters 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:**

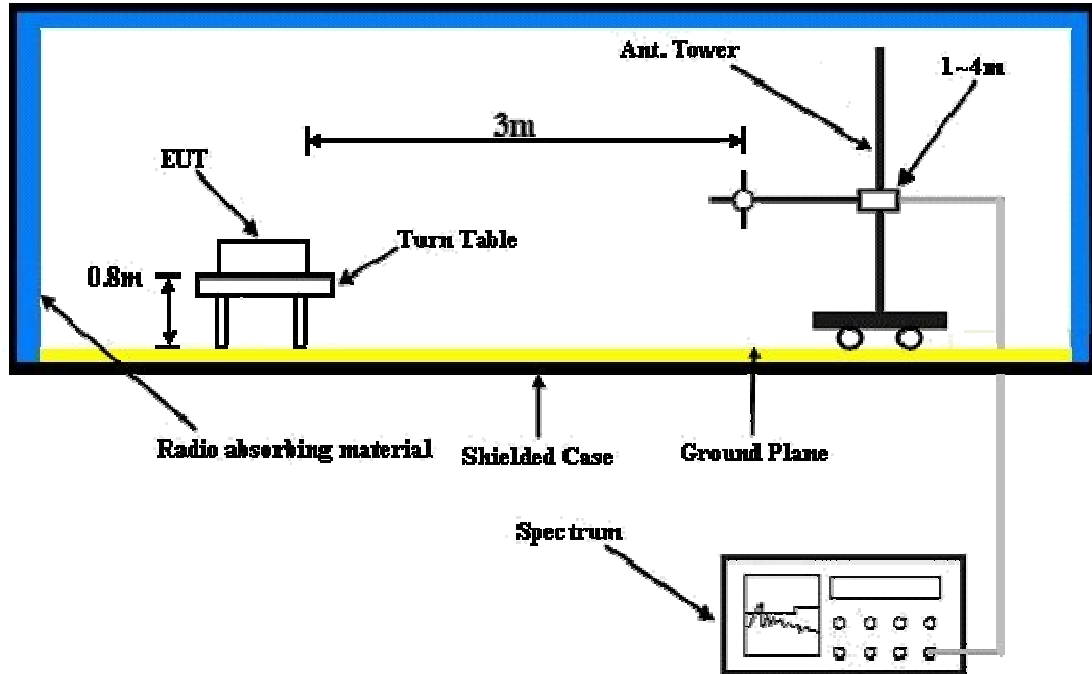
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.2.3 DEVIATION FROM TEST STANDARD

No deviation



#### 4.2.4 TEST SETUP



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

#### 4.2.5 EUT OPERATING CONDITIONS

- Placed the EUT on a testing table.
- Use the software to control the EUT under transmission condition continuously at specific channel frequency.



### 4.2.6 TEST RESULTS

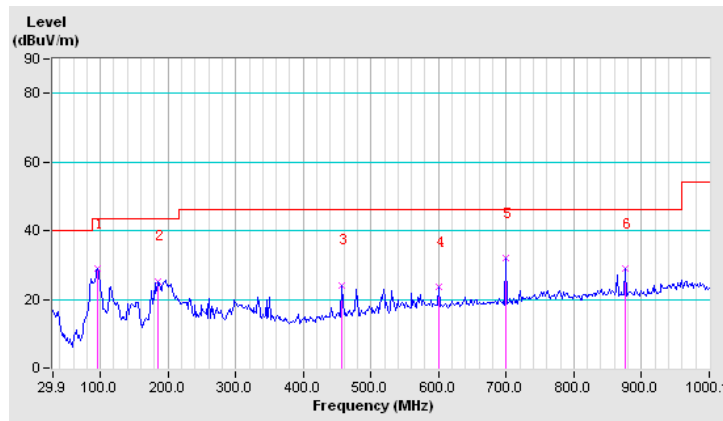
#### BELOW 1GHz WORST-CASE DATA:

EUT TEST CONDITION		MEASUREMENT DETAIL	
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak

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	96.20	28.8 QP	43.5	-14.7	1.50 H	198	18.24	10.59
2	185.13	25.3 QP	43.5	-18.2	1.50 H	178	15.20	10.14
3	456.79	24.2 QP	46.0	-21.8	1.50 H	140	4.93	19.27
4	600.70	23.6 QP	46.0	-22.4	1.50 H	110	0.97	22.63
5	699.34	31.9 QP	46.0	-14.1	1.50 H	161	8.47	23.39
6	875.59	28.9 QP	46.0	-17.1	1.50 H	67	2.88	26.01

#### 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.



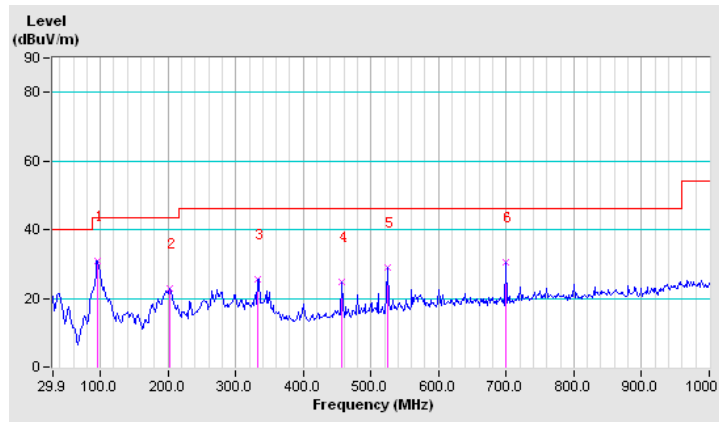


EUT TEST CONDITION		MEASUREMENT DETAIL	
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak

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	96.20	30.7 QP	43.5	-12.8	1.50 V	148	20.15	10.59
2	202.92	22.8 QP	43.5	-20.7	1.50 V	170	12.37	10.45
3	332.28	25.7 QP	46.0	-20.3	1.50 V	239	9.89	15.79
4	456.79	24.7 QP	46.0	-21.4	1.50 V	199	5.38	19.27
5	524.70	29.1 QP	46.0	-16.9	1.50 V	258	8.54	20.59
6	699.34	30.4 QP	46.0	-15.6	1.50 V	218	7.00	23.39

**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.





802.11a

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	5460.00	57.3 PK	74.0	-16.7	1.05 H	20	6.84	50.46
2	5460.00	46.3 AV	54.0	-7.7	1.05 H	20	-4.16	50.46
3	*5745.00	103.0 PK			1.00 H	216	53.20	49.80
4	*5745.00	93.9 AV			1.00 H	216	44.10	49.80
5	11490.00	60.3 PK	74.0	-13.7	1.00 H	241	10.18	50.12
6	11490.00	48.2 AV	54.0	-5.8	1.00 H	241	-1.92	50.12

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	5460.00	64.1 PK	74.0	-9.9	1.05 V	215	13.64	50.46
2	<b>5460.00</b>	<b>52.6 AV</b>	<b>54.0</b>	<b>-1.4</b>	<b>1.05 V</b>	<b>215</b>	<b>2.14</b>	<b>50.46</b>
3	*5745.00	115.6 PK			1.00 V	0	65.80	49.80
4	*5745.00	105.9 AV			1.00 V	0	56.10	49.80
5	11490.00	57.5 PK	74.0	-16.5	1.00 V	20	7.38	50.12
6	11490.00	46.1 AV	54.0	-7.9	1.00 V	20	-4.02	50.12

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 limit value is defined as per 15.247.



CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	5460.00	57.6 PK	74.0	-16.4	1.04 H	30	7.14	50.46
2	5460.00	46.6 AV	54.0	-7.4	1.04 H	30	-3.86	50.46
3	*5785.00	103.6 PK			1.03 H	23	53.92	49.68
4	*5785.00	94.2 AV			1.03 H	23	44.52	49.68
5	11570.00	60.9 PK	74.0	-13.1	1.00 H	13	10.52	50.38
6	11570.00	48.7 AV	54.0	-5.3	1.00 H	13	-1.68	50.38

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	5460.00	63.6 PK	74.0	-10.4	1.00 V	140	13.14	50.46
2	5460.00	52.2 AV	54.0	-1.8	1.00 V	140	1.74	50.46
3	*5785.00	116.2 PK			1.04 V	10	66.52	49.68
4	*5785.00	106.2 AV			1.04 V	10	56.52	49.68
5	11570.00	57.6 PK	74.0	-16.4	1.04 V	230	7.22	50.38
6	11570.00	46.1 AV	54.0	-7.9	1.04 V	230	-4.28	50.38

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 limit value is defined as per 15.247.





CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	5460.00	57.0 PK	74.0	-17.0	1.04 H	32	6.54	50.46
2	5460.00	46.3 AV	54.0	-7.7	1.04 H	32	-4.16	50.46
3	*5825.00	104.1 PK			1.04 H	10	54.55	49.55
4	*5825.00	94.5 AV			1.04 H	10	44.95	49.55
5	11650.00	60.4 PK	74.0	-13.6	1.05 H	230	9.74	50.66
6	11650.00	48.3 AV	54.0	-5.7	1.05 H	230	-2.36	50.66
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	5460.00	63.4 PK	74.0	-10.6	1.00 V	220	12.94	50.46
2	5460.00	52.2 AV	54.0	-1.8	1.00 V	220	1.74	50.46
3	*5825.00	113.2 PK			1.00 V	0	63.65	49.55
4	*5825.00	104.7 AV			1.00 V	0	55.15	49.55
5	11650.00	57.1 PK	74.0	-16.9	1.00 V	236	6.44	50.66
6	11650.00	46.2 AV	54.0	-7.8	1.00 V	236	-4.46	50.66

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 limit value is defined as per 15.247.



802.11n (20MHz)

<b>CHANNEL</b>	TX Channel 149	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

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	5460.00	57.0 PK	74.0	-17.0	1.06 H	12	6.54	50.46
2	5460.00	46.2 AV	54.0	-7.8	1.06 H	12	-4.26	50.46
3	*5745.00	103.9 PK			1.09 H	25	54.10	49.80
4	*5745.00	94.5 AV			1.09 H	25	44.70	49.80
5	11490.00	60.6 PK	74.0	-13.4	1.09 H	20	10.48	50.12
6	11490.00	48.3 AV	54.0	-5.7	1.09 H	20	-1.82	50.12
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	5460.00	62.7 PK	74.0	-11.3	1.00 V	250	12.24	50.46
2	5460.00	51.5 AV	54.0	-2.5	1.00 V	250	1.04	50.46
3	*5745.00	114.7 PK			1.00 V	0	64.90	49.80
4	*5745.00	105.3 AV			1.00 V	0	55.50	49.80
5	11490.00	57.5 PK	74.0	-16.5	1.00 V	250	7.38	50.12
6	11490.00	46.0 AV	54.0	-8.0	1.00 V	250	-4.12	50.12

**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 limit value is defined as per 15.247.



CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	5460.00	57.5 PK	74.0	-16.5	1.04 H	236	7.04	50.46
2	5460.00	46.5 AV	54.0	-7.5	1.04 H	236	-3.96	50.46
3	*5785.00	103.9 PK			1.13 H	25	54.22	49.68
4	*5785.00	94.3 AV			1.13 H	25	44.62	49.68
5	11570.00	61.0 PK	74.0	-13.0	1.11 H	240	10.62	50.38
6	11570.00	48.5 AV	54.0	-5.5	1.11 H	240	-1.88	50.38

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	5460.00	62.8 PK	74.0	-11.2	1.01 V	15	12.34	50.46
2	5460.00	51.8 AV	54.0	-2.2	1.01 V	15	1.34	50.46
3	*5785.00	113.2 PK			1.06 V	10	63.52	49.68
4	*5785.00	104.2 AV			1.06 V	10	54.52	49.68
5	11570.00	58.3 PK	74.0	-15.7	1.05 V	258	7.92	50.38
6	11570.00	45.9 AV	54.0	-8.1	1.05 V	258	-4.48	50.38

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 limit value is defined as per 15.247.



<b>CHANNEL</b>	TX Channel 165	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

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	5460.00	56.9 PK	74.0	-17.1	1.00 H	0	6.44	50.46
2	5460.00	45.9 AV	54.0	-8.1	1.00 H	0	-4.56	50.46
3	*5825.00	103.0 PK			1.00 H	31	53.45	49.55
4	*5825.00	93.7 AV			1.00 H	31	44.15	49.55
5	11650.00	60.1 PK	74.0	-13.9	1.03 H	210	9.44	50.66
6	11650.00	48.1 AV	54.0	-5.9	1.03 H	210	-2.56	50.66
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	5460.00	62.6 PK	74.0	-11.4	1.40 V	214	12.14	50.46
2	5460.00	51.8 AV	54.0	-2.2	1.40 V	214	1.34	50.46
3	*5825.00	113.9 PK			1.00 V	0	64.35	49.55
4	*5825.00	104.6 AV			1.00 V	0	55.05	49.55
5	11650.00	58.4 PK	74.0	-15.6	1.00 V	230	7.74	50.66
6	11650.00	45.8 AV	54.0	-8.2	1.00 V	230	-4.86	50.66

**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 limit value is defined as per 15.247.



802.11n (40MHz)

<b>CHANNEL</b>	TX Channel 151	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

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	5460.00	56.6 PK	74.0	-17.4	1.05 H	254	6.14	50.46
2	5460.00	45.5 AV	54.0	-8.5	1.05 H	254	-4.96	50.46
3	*5755.00	102.9 PK			1.04 H	23	53.13	49.77
4	*5755.00	93.5 AV			1.04 H	23	43.73	49.77
5	11510.00	59.6 PK	74.0	-14.4	1.10 H	20	9.43	50.17
6	11510.00	47.8 AV	54.0	-6.2	1.10 H	20	-2.37	50.17
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	5460.00	64.1 PK	74.0	-9.9	1.05 V	20	13.64	50.46
2	5460.00	52.4 AV	54.0	-1.6	1.05 V	20	1.94	50.46
3	*5755.00	111.4 PK			1.00 V	0	61.63	49.77
4	*5755.00	102.4 AV			1.00 V	0	52.63	49.77
5	11510.00	57.7 PK	74.0	-16.3	1.00 V	250	7.53	50.17
6	11510.00	45.5 AV	54.0	-8.5	1.00 V	250	-4.67	50.17

**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 limit value is defined as per 15.247.



CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	5460.00	57.4 PK	74.0	-16.6	1.00 H	360	6.94	50.46
2	5460.00	46.0 AV	54.0	-8.0	1.00 H	360	-4.46	50.46
3	*5795.00	102.4 PK			1.00 H	250	52.76	49.64
4	*5795.00	93.2 AV			1.00 H	250	43.56	49.64
5	11590.00	59.4 PK	74.0	-14.6	1.08 H	50	8.95	50.45
6	11590.00	47.8 AV	54.0	-6.2	1.08 H	50	-2.65	50.45

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	5460.00	63.4 PK	74.0	-10.6	1.06 V	235	12.94	50.46
2	5460.00	52.2 AV	54.0	-1.8	1.06 V	235	1.74	50.46
3	*5795.00	110.6 PK			1.00 V	230	60.96	49.64
4	*5795.00	102.0 AV			1.00 V	230	52.36	49.64
5	11590.00	57.5 PK	74.0	-16.5	1.07 V	140	7.05	50.45
6	11590.00	45.2 AV	54.0	-8.8	1.07 V	140	-5.25	50.45

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 limit value is defined as per 15.247.



### 4.3 6dB BANDWIDTH MEASUREMENT

#### 4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

#### 4.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer (9KHz-40GHz)	Agilent	E4446A	MY46180622	May 02,12	May 01,13

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA and NIM/CHINA
2. The test was performed in Oven room.

#### 4.3.3 TEST PROCEDURE

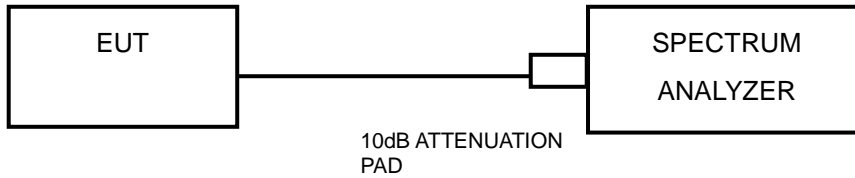
1. Set resolution bandwidth (RBW) = 100KHz
2. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation.



#### 4.3.5 TEST SETUP



#### 4.3.6 EUT OPERATING CONDITIONS

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





### 4.3.7 TEST RESULTS

#### 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.62	0.5	PASS
157	5785	16.49	0.5	PASS
165	5825	16.53	0.5	PASS

#### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	17.77	0.5	PASS
157	5785	17.71	0.5	PASS
165	5825	17.74	0.5	PASS

#### 802.11n (40MHz)

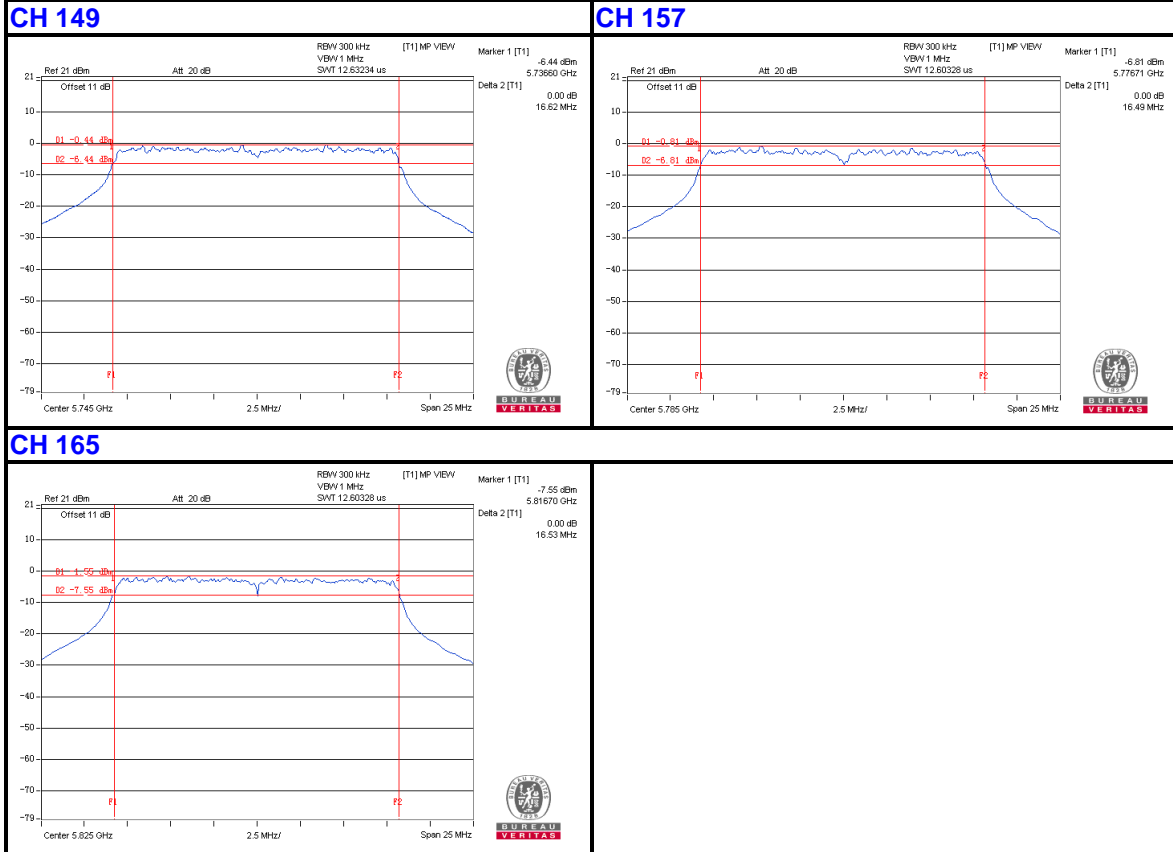
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
151	5755	36.50	0.5	PASS
159	5795	36.62	0.5	PASS



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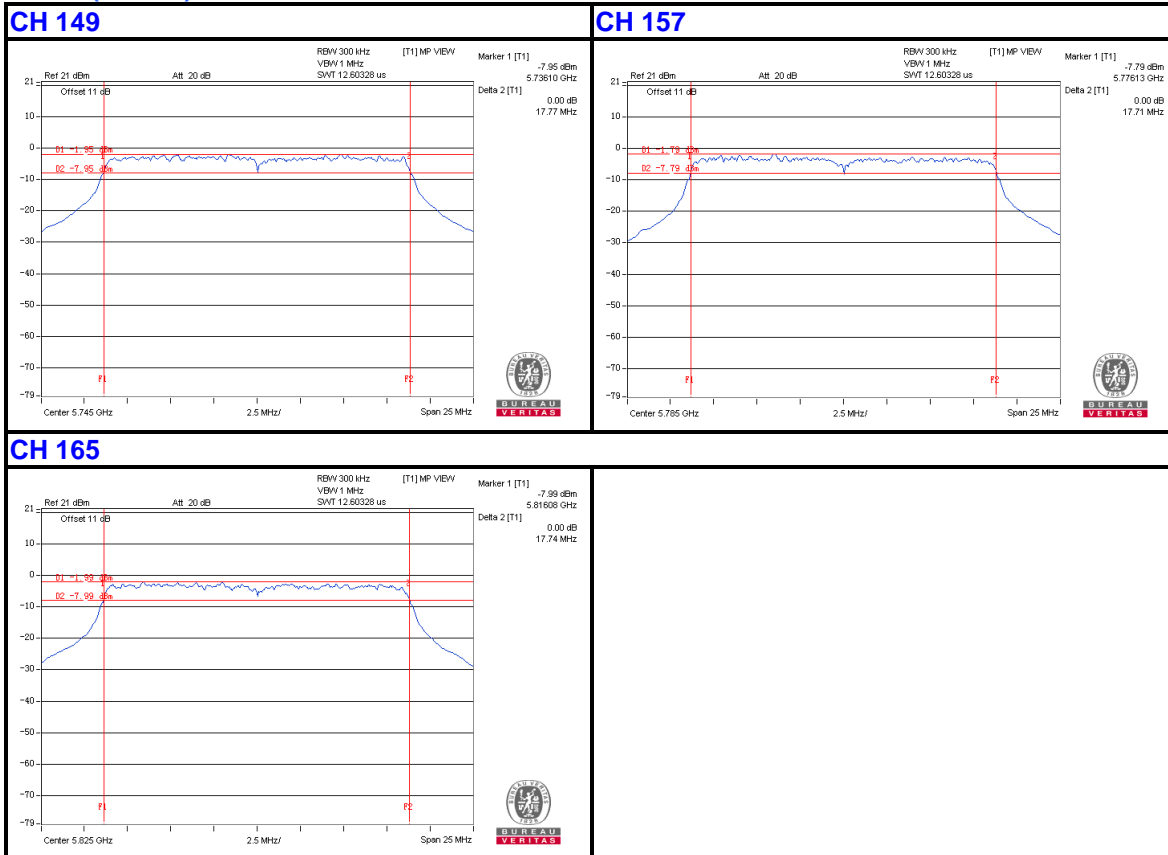
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Fax: +86 769 8593 1080  
Email: [customerservice.dg@cn.bureauveritas.com](mailto:customerservice.dg@cn.bureauveritas.com)



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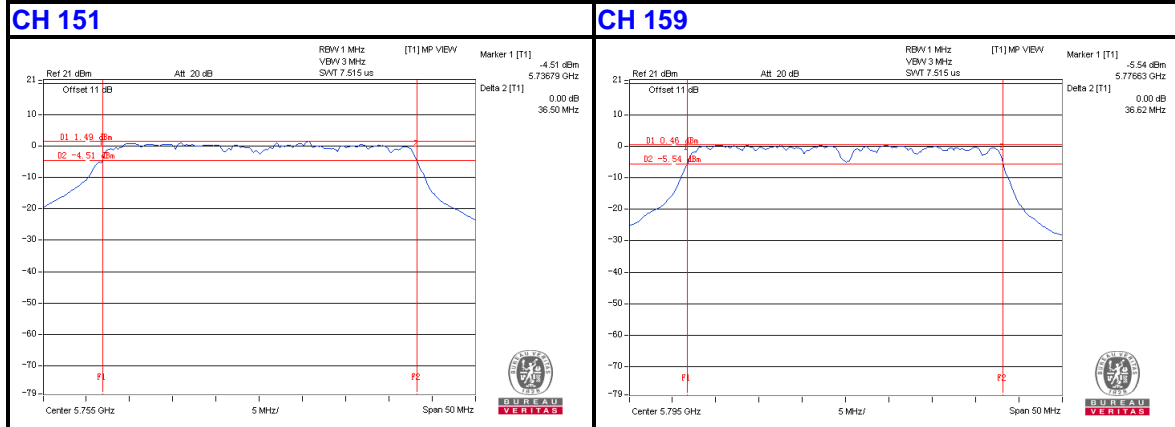
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Fax: +86 769 8593 1080  
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Dongguan Branch

No. 34, Chenwulu Section, Guantai Rd., Houjie  
Town, Dongguan City,  
Guangdong 523942, China

Tel: +86 769 8593 5656  
Fax: +86 769 8593 1080  
Email: [customerservice.dg@cn.bureauveritas.com](mailto:customerservice.dg@cn.bureauveritas.com)

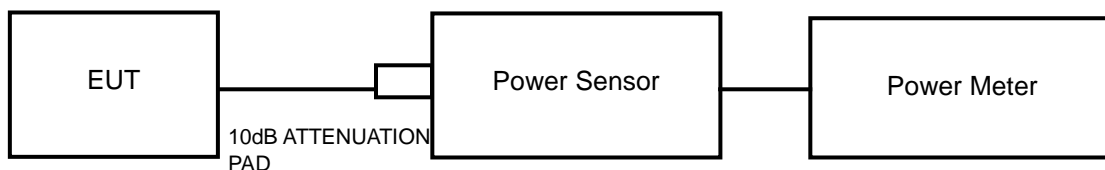


#### 4.4 CONDUCTED OUTPUT POWER

##### 4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 5725 - 5850 MHz band: 1 Watt (30dBm)

##### 4.4.2 TEST SETUP



##### 4.4.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Meter	Anritsu	ML2495A	1139001	Nov. 04,12	Nov. 03,13
Power Sensor	Anritsu	MA2411B	1126068	Nov. 04,12	Nov. 03,13

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA and NIM/CHINA.

2. The test was performed in Oven room

##### 4.4.4 TEST PROCEDURES

A power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

##### 4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

##### 4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.



#### 4.4.7 TEST RESULTS

##### 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	POWER LIMIT (dBm)	PASS/FAIL
149	5745	15.10	32.359	30	PASS
157	5785	16.10	40.738	30	PASS
165	5825	15.52	35.645	30	PASS

##### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	POWER LIMIT (dBm)	PASS/FAIL
149	5745	15.00	31.623	30	PASS
157	5785	15.04	31.915	30	PASS
165	5825	15.52	35.645	30	PASS

##### 802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	POWER LIMIT (dBm)	PASS/FAIL
151	5755	14.96	31.333	30	PASS
159	5795	14.90	30.903	30	PASS

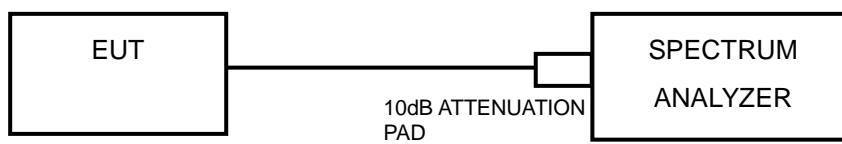


## 4.5 POWER SPECTRAL DENSITY MEASUREMENT

### 4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm/3KHz.

### 4.5.2 TEST SETUP



### 4.5.3 TEST INSTRUMENTS

Refer to section 4.3.2 to get information of above instrument.

### 4.5.4 TEST PROCEDURE

1. Set the RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
2. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
3. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where  $BWCF = 10\log(3 \text{ kHz}/100\text{kHz})$

### 4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

### 4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



#### 4.5.7 TEST RESULTS

##### 802.11a

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-3.55	-18.78	8.00	PASS
157	5785	-3.89	-19.12	8.00	PASS
165	5825	-3.85	-19.08	8.00	PASS

##### 802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-3.75	-18.98	8.00	PASS
157	5785	-4.42	-19.65	8.00	PASS
165	5825	-4.56	-19.79	8.00	PASS

##### 802.11n (40MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
151	5755	-7.20	-22.43	8.00	PASS
159	5795	-6.86	-22.09	8.00	PASS

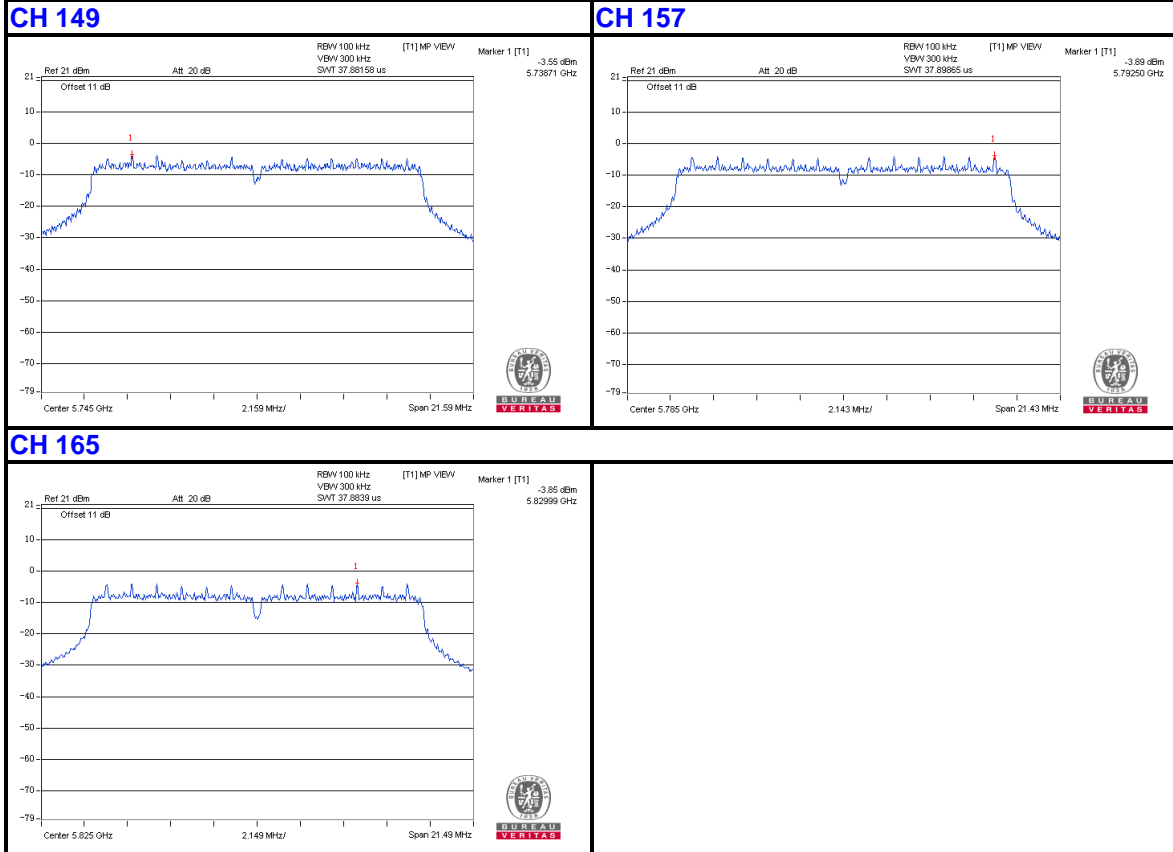




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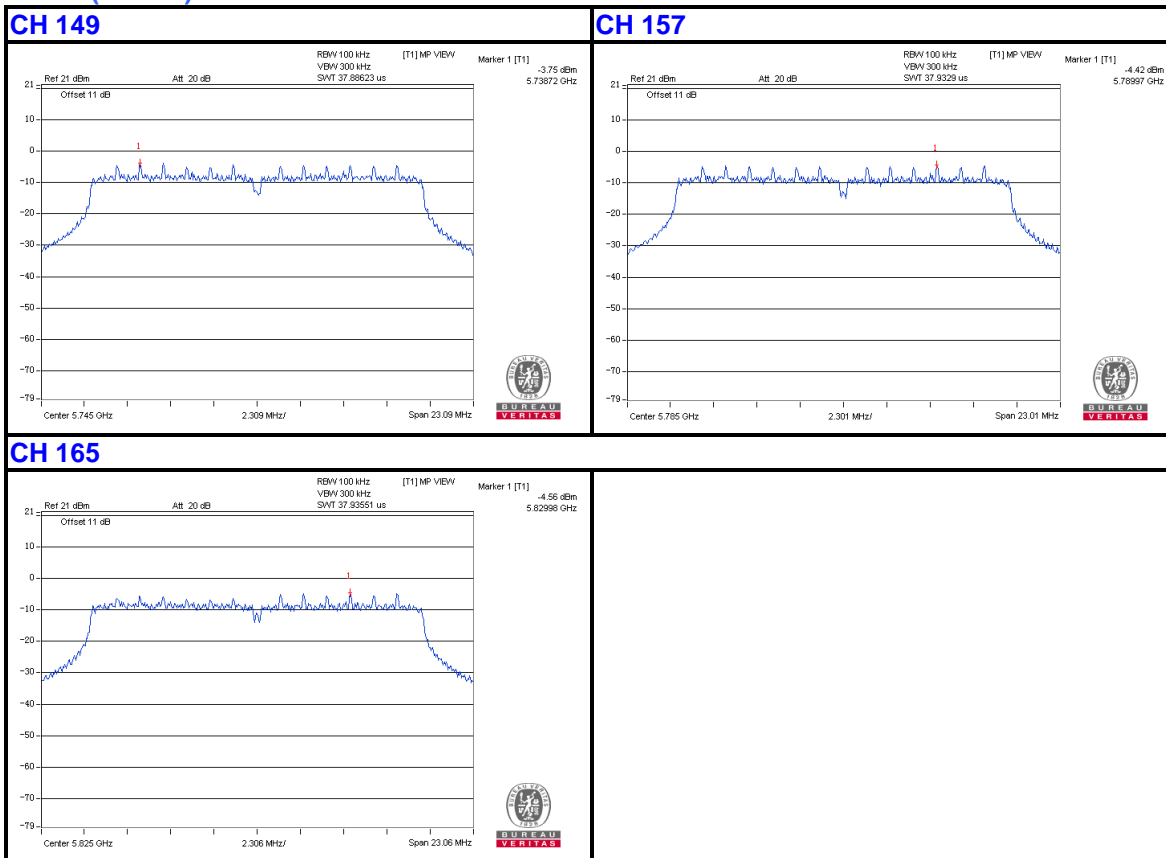
Tel: +86 769 8593 5656  
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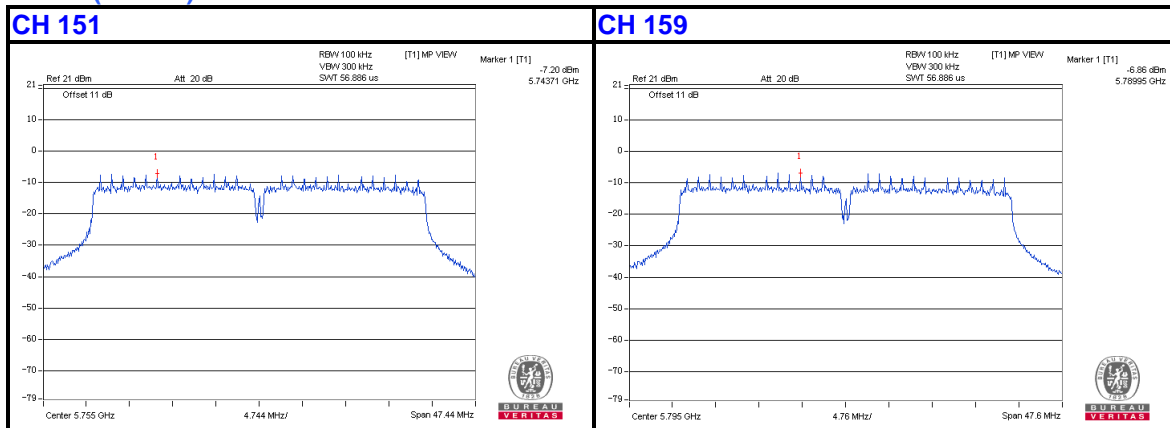
Tel: +86 769 8593 5656  
Fax: +86 769 8593 1080  
Email: [customerservice.dg@cn.bureauveritas.com](mailto:customerservice.dg@cn.bureauveritas.com)



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Dongguan Branch

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Town, Dongguan City,  
Guangdong 523942, China

Tel: +86 769 8593 5656  
Fax: +86 769 8593 1080  
Email: [customerservice.dg@cn.bureauveritas.com](mailto:customerservice.dg@cn.bureauveritas.com)

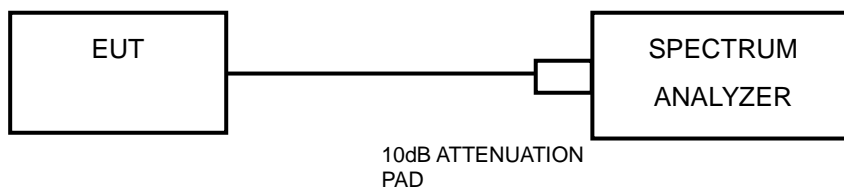


## 4.6 OUT OF BAND EMISSION MEASUREMENT

### 4.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below  $-20\text{dB}$  of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

### 4.6.2 TEST SETUP



### 4.6.3 TEST INSTRUMENTS

Refer to section 4.3.2 to get information of above instrument.

### 4.6.4 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set VBW  $\geq$  300 kHz.
3. Set span to encompass the spectrum to be examined.
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

### 4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

### 4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

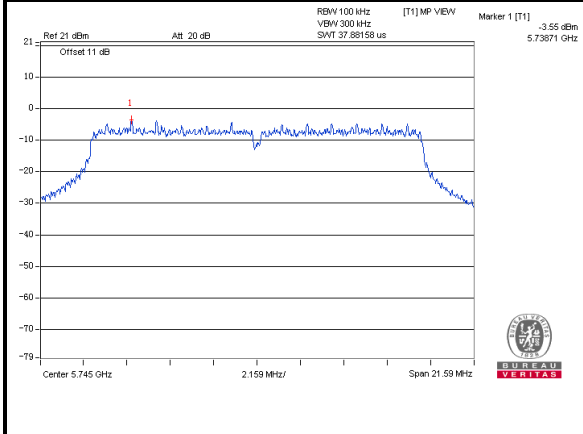


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# Test Report No.: RF130301N006 4.6.7 TEST RESULTS

## 802.11a

### CH 149



Agilent 13:22:20 Aug 24, 2012

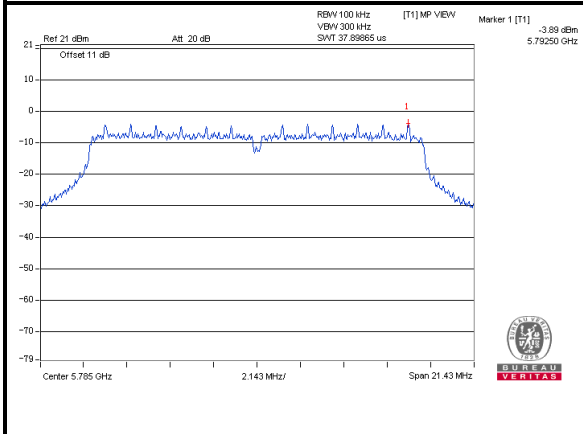
Ref -2 dBm      Atten 10 dB      Mkr3 14.02 GHz      -61.52 dBm

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	5.76 GHz	-5.51 dBm
2	(1)	Freq	3.83 GHz	-58.84 dBm
3	(1)	Freq	14.02 GHz	-61.52 dBm

Start 30 MHz      Stop 40.00 GHz  
#Res BW 100 kHz      #VBW 300 kHz      Sweep 3.82 s (601 pts)

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### CH 157



Agilent 13:23:31 Aug 24, 2012

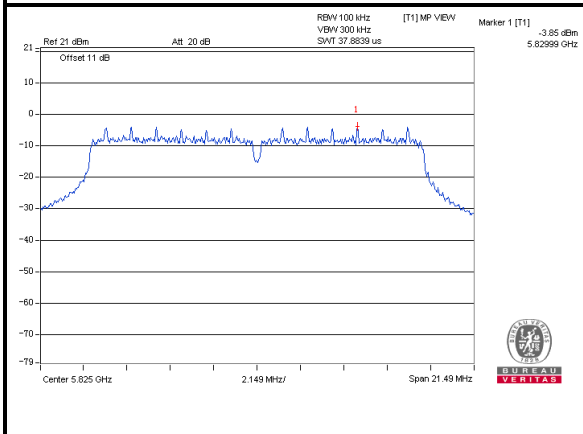
Ref -2 dBm      Atten 10 dB      Mkr1 5.76 GHz      -5.70 dBm

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	5.76 GHz	-5.70 dBm
2	(1)	Freq	3.83 GHz	-58.82 dBm
3	(1)	Freq	14.22 GHz	-62.55 dBm

Start 30 MHz      Stop 40.00 GHz  
#Res BW 100 kHz      #VBW 300 kHz      Sweep 3.82 s (601 pts)

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### CH 165



Agilent 13:26:02 Aug 24, 2012

Ref 0 dBm      Atten 10 dB      Mkr1 5.83 GHz      -3.31 dBm

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	5.83 GHz	-3.31 dBm
2	(1)	Freq	3.89 GHz	-59.66 dBm
3	(1)	Freq	14.02 GHz	-61.33 dBm

Center 20.02 GHz      Span 39.97 GHz  
#Res BW 100 kHz      #VBW 300 kHz      Sweep 3.82 s (601 pts)

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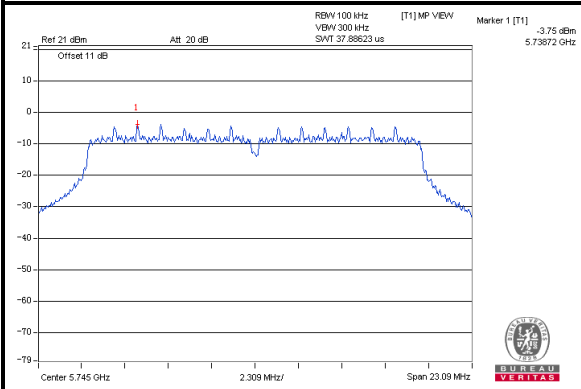


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### 802.11n (20Mhz)

#### CH 149



Agilent 1332:58 Aug 24, 2012 R L

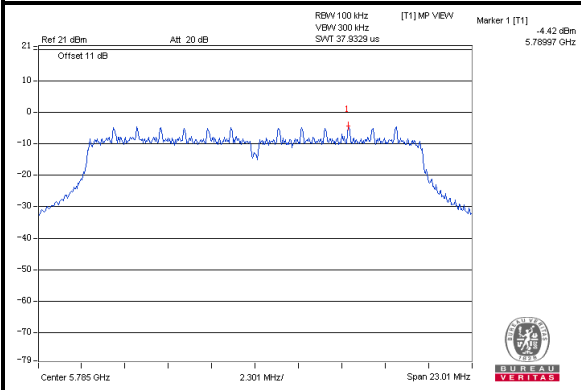
Ref 0 dBm Atten 10 dB Mkr1 5.76 GHz -4.53 dBm  
 #Peak Log 10 dB/ Offst 11 dB  
 DJ -23.8 dBm LgAv

Center 20.02 GHz Span 39.97 GHz  
 #Res BW 100 kHz #VBW 300 kHz Sweep 3.82 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(L)	Freq	5.76 GHz	-4.53 dBm
2	(L)	Freq	3.83 GHz	-59.31 dBm
3	(L)	Freq	14.02 GHz	-62.34 dBm

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#### CH 157



Agilent 1331:45 Aug 24, 2012 R T

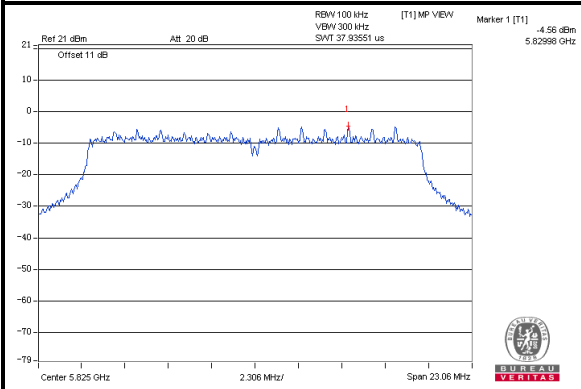
Ref 0 dBm Atten 10 dB Mkr1 5.76 GHz -3.68 dBm  
 #Peak Log 10 dB/ Offst 11 dB  
 DJ -24.4 dBm LgAv

Center 20.02 GHz Span 39.97 GHz  
 #Res BW 100 kHz #VBW 300 kHz Sweep 3.82 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(L)	Freq	5.76 GHz	-3.68 dBm
2	(L)	Freq	3.83 GHz	-59.17 dBm
3	(L)	Freq	13.95 GHz	-60.89 dBm

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#### CH 165



Agilent 1328:25 Aug 24, 2012 R T

Ref 0 dBm Atten 10 dB Mkr1 5.83 GHz -4.04 dBm  
 #Peak Log 10 dB/ Offst 11 dB  
 DJ -24.6 dBm LgAv

Center 20.02 GHz Span 39.97 GHz  
 #Res BW 100 kHz #VBW 300 kHz Sweep 3.82 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(L)	Freq	5.83 GHz	-4.04 dBm
2	(L)	Freq	3.83 GHz	-59.67 dBm
3	(L)	Freq	14.09 GHz	-61.30 dBm

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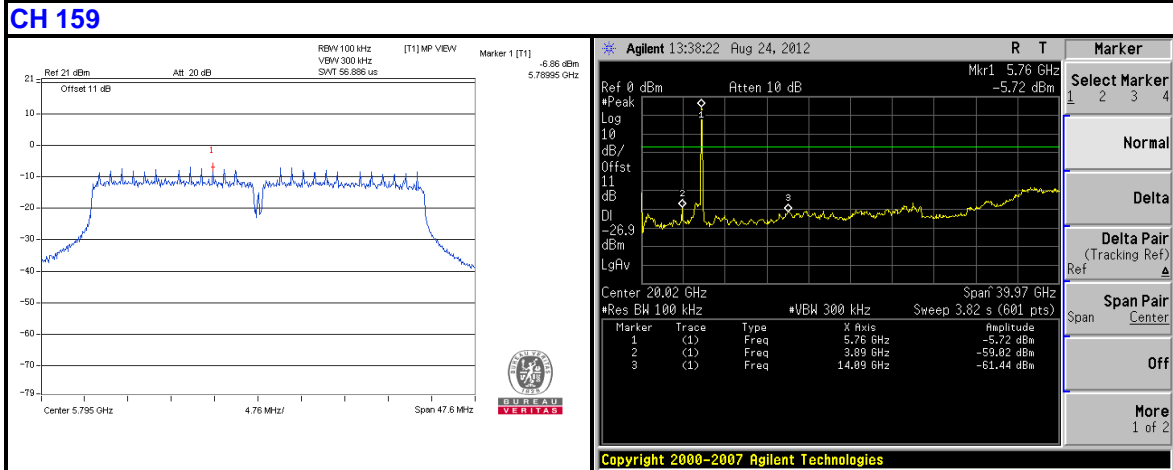
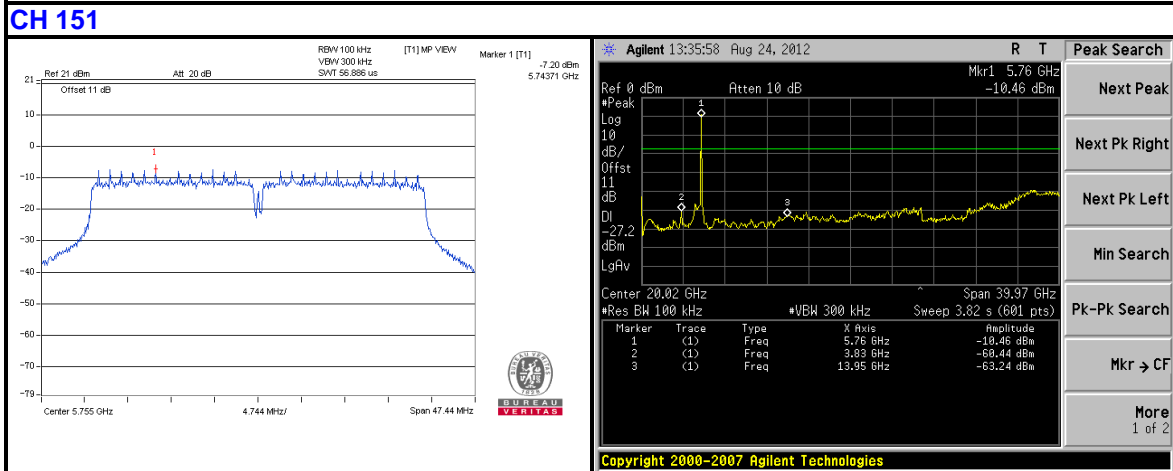
Tel: +86 769 8593 5656  
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Dongguan Branch

No. 34, Chenwulu Section, Guantai Rd., Houjie  
Town, Dongguan City,  
Guangdong 523942, China

Tel: +86 769 8593 5656  
Fax: +86 769 8593 1080  
Email: [customerservice.dg@cn.bureauveritas.com](mailto:customerservice.dg@cn.bureauveritas.com)



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## 5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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





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## **6 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---**