



BUREAU
VERITAS

Test Report No.: RF150414N009-1



Test Lab
Cert 2951.01

FCC TEST REPORT

(WIFI 2.4GHz)

Product: LENOVO CAST

Model Name: WD200

FCC ID: O57WD200

Applicant: Lenovo (Shanghai) Electronics Technology Co., Ltd.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF150414N009-1	Original release	May 06, 2015



Test Report No.: RF150414N009-1

1 CERTIFICATION

PRODUCT: LENOVO CAST
BRAND NAME: Lenovo
MODEL NAME: WD200
APPLICANT: Lenovo (Shanghai) Electronics Technology Co., Ltd.
TESTED: Apr. 15, 2015 ~ May 05, 2015
TEST SAMPLE: Production Unit
STANDARDS: **FCC Part 15, Subpart C. Section 15.247**
ANSI C63.10-2009

The above equipment has been tested by **Bureau Veritas Shenzhen Co., Ltd. Dongguan 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 : Yuqiang Yin , **DATE:** May 06, 2015
(Yuqiang Yin / Engineer)

APPROVED BY : Glyn He , **DATE:** May 06, 2015
(Glyn He / Supervisor)



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	N/A	N/A
15.205 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 2400.00MHz.
15.247(d)	Out of band Emission Measurement	PASS	Meet the requirement of limit.
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.
15.203	Antenna Requirement	PASS	No antenna connector is used

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
Radiated emissions	9KHz ~ 30MHz	2.74dB
	30MHz ~ 1GMHz	3.55dB
	1GHz ~ 18GHz	4.84dB
	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

PRODUCT	LENOVO CAST
MODEL NAME	WD200
NOMINAL VOLTAGE	5.0Vdc (adapter or host equipment)
MODULATION TECHNOLOGY	DSSS, OFDM
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
TRANSMISSION RATE	802.11b: 11/ 5.5/ 2.0 / 1.0 Mbps 802.11g: 54/ 48/ 36 / 24 / 18 / 9/ 6 Mbps 802.11n: up to 135 Mbps
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(HT20) 2422-2452MHz for 11b/g/n(HT40)
MAX. OUTPUT POWER	126.692mW (Maximum)
ANTENNA TYPE	PCB Antenna with 2dBi gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB Cable: Shielded, Detachable, 1.0m HDMI Cable: Shielded, Detachable, 1.0m

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT incorporates a SISO function. Physically, the EUT provides one transmitter and one receiver.

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX /1RX
802.11g	1TX /1RX
802.11n (20MHz)	2TX/2RX
802.11n (40MHz)	2TX/2RX

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.



3.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

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

7 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photographs of the test configuration for reference.

3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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
The worst case was found when positioned on Y axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

EUT CONFIGURE MODE	APPLICABLE TO				MODE
	RE<1G	RE≥1G	PLC	APCM	
-	√	√	-	√	-

Where **RE<1G**: Radiated Emission below 1GHz

RE≥1G: Radiated Emission above 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE: No need to concern of Conducted Emission due to the EUT is powered by battery.

**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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1	CCK	DBPSK	1.0

For the test results, only the worst case was shown in test report.

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	CCK	DBPSK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n HT40	3 to 9	3, 6, 9	OFDM	BPSK	13.5

POWER LINE CONDUCTED EMISSION TEST:

The EUT was tested with the following mode

EUT CONFIGURE MODE	TESTED CONDITION
-	BT Link+ WIFI (2.4G) Link + USB Cable + HDMI Cable



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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 11	CCK	DBPSK	1.0
802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
802.11n HT20	1 to 11	1, 11	OFDM	BPSK	6.5
802.11n HT40	3 to 9	3, 9	OFDM	BPSK	13.5

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	CCK	DBPSK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n HT40	3 to 9	3, 6, 9	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	22deg. C, 54%RH	5.0Vdc (adapter or host equipment)	Blue Zheng
RE≥1G	22deg. C, 54%RH	5.0Vdc (adapter or host equipment)	Blue Zheng
PLC	25deg. C, 60%RH	5.0Vdc (adapter or host equipment)	Yuqiang Yin
APCM	25deg. C, 60%RH	5.0Vdc (adapter or host equipment)	Yuqiang Yin



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, Section 15.247

558074 D01 DTS Meas Guidance v03r01

ANSI C63.10-2009

Note:

1. All test items have been performed and recorded as per the above standards. Due to the EUT is through the DC power supply, there was no need for Conducted Emission test.
2. The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	DC source	LONG WEI	PS-6403D	010934269	N/A
2	PC	HP	A6608CN	3CR83825X3	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.0m
2	AC Line: Unshielded, Detachable 1.5m



4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ 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 0.50MHz.
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.

4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	100340	May 17,14	May 16,15
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	May 13,14	May 12,15
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	May 13,14	May 12,15
Test software	ADT	ADT_Conc_V7.3.7	N/A	N/A	N/A

NOTE:

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



4.1.3 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.

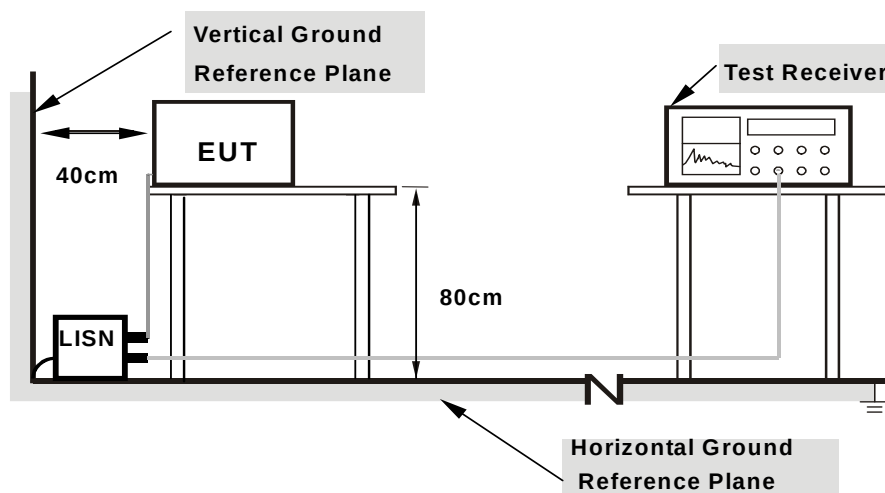
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.



4.1.5 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
from other units and other metal planes

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

4.1.6 EUT OPERATING CONDITIONS

- a. Turned on the power and connected of all equipment.
- b. EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

4.1.7 TEST RESULTS

N/A.



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.



4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU 26	100005	May 13,14	May 12,15
Bilog Antenna	Teseq	CBL 6111D	30643	Jul. 25, 14	Jul. 24, 15
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 30, 14	May 29, 16
Amplifier (9kHz-1GHz)	SONOMA	310D	186955	Mar. 04,15	Mar. 03, 16
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 20,14	Nov. 19,15
Pre-Amplifier (100MHz-26.5GHz)	Agilent	8449B	3008A00409	May 13,14	May 12,15
GPS Generator+ Antenna	TOJOIN	GNSS-5000A	E1-010119	Aug. 08, 14	Aug. 07, 15
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	Apr. 19,14	Apr. 18,16
Test Software	ADT	ADT_Radiated _V7.6.15.9.2	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, GRGT/CHINA and NIM/CHINA.
2. The test was performed in 966 Chamber.
3. The FCC Site Registration No. is 502831.



4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 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. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

NOTE:

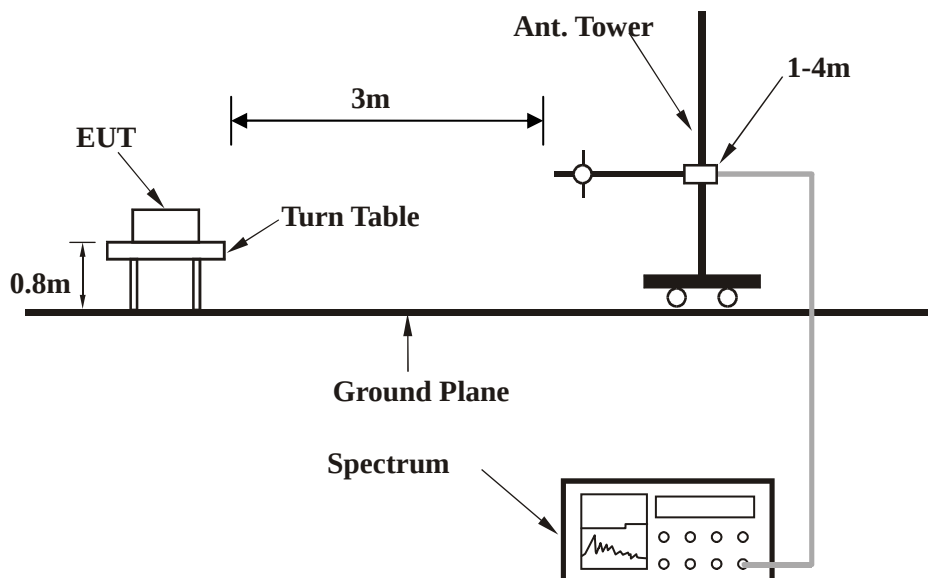
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution 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.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation



4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

- Set the EUT under full load condition and placed them on a testing table.
- Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the EUT in full functions.



4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA:

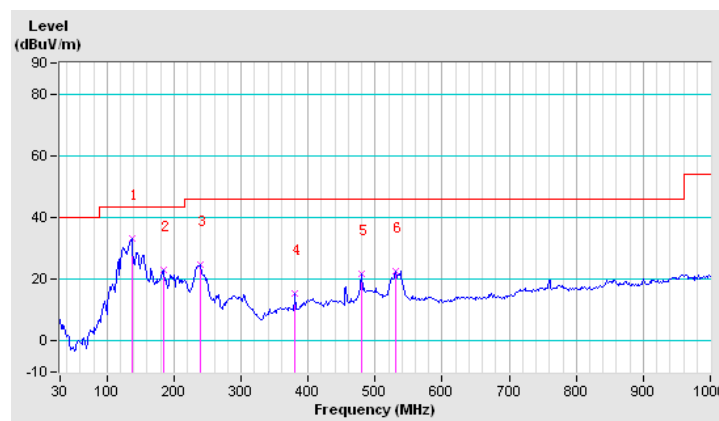
802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	136.70	33.1 QP	43.5	-10.4	1.00 H	0	19.73	13.40
2	183.58	23.1 QP	43.5	-20.5	1.00 H	0	11.82	11.23
3	240.17	24.9 QP	46.0	-21.2	1.00 H	0	11.53	13.32
4	380.82	15.3 QP	46.0	-30.7	1.00 H	0	-3.39	18.71
5	479.43	21.8 QP	46.0	-24.2	1.00 H	0	-0.30	22.07
6	531.17	22.6 QP	46.0	-23.5	1.00 H	0	-0.78	23.33

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.



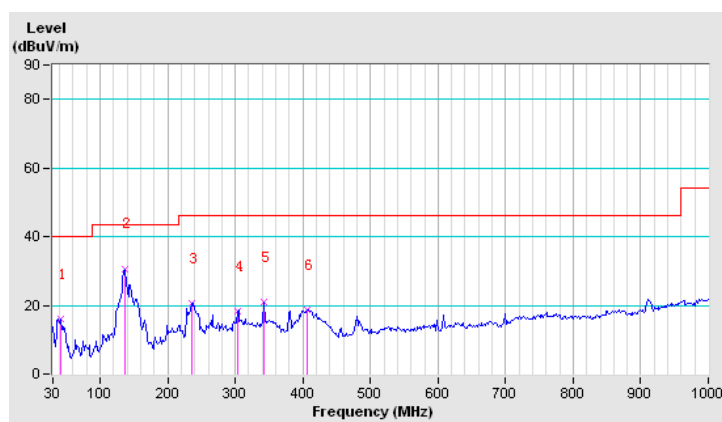


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	41.32	16.1 QP	40.0	-23.9	1.00 V	0	2.17	13.90
2	136.70	30.7 QP	43.5	-12.8	1.00 V	0	17.29	13.40
3	235.32	20.5 QP	46.0	-25.5	1.00 V	0	7.58	12.94
4	303.22	18.4 QP	46.0	-27.6	1.00 V	0	2.09	16.33
5	342.02	20.9 QP	46.0	-25.1	1.00 V	0	3.62	17.25
6	406.68	18.5 QP	46.0	-27.5	1.00 V	0	-1.84	20.37

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.





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ABOVE 1GHz DATA

802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	46.2 PK	74.0	-27.8	1.14 H	256	8.79	37.38
2	2390.00	30.9 AV	54.0	-23.1	1.14 H	256	-6.49	37.38
3	#2400.00	61.9 PK	62.0	-0.1	1.14 H	256	24.52	37.41
4	#2400.00	41.6 AV	51.0	-9.4	1.14 H	256	4.18	37.41
5	*2412.00	82.0 PK			1.14 H	256	44.55	37.45
6	*2412.00	71.0 AV			1.14 H	256	33.51	37.45
7	4824.00	46.4 PK	74.0	-27.6	1.00 H	144	3.55	42.85
8	4824.00	32.5 AV	54.0	-21.5	1.00 H	144	-10.34	42.85
9	#7236.00	48.0 PK	62.0	-14.0	1.00 H	271	2.62	45.40
10	#7236.00	35.7 AV	51.0	-15.3	1.00 H	271	-9.74	45.40
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	2390.00	44.0 PK	74.0	-30.1	1.36 V	247	6.57	37.38
2	2390.00	30.0 AV	54.0	-24.0	1.36 V	247	-7.37	37.38
3	#2400.00	58.1 PK	59.9	-1.8	1.36 V	247	20.65	37.41
4	#2400.00	35.2 AV	48.5	-13.4	1.36 V	247	-2.24	37.41
5	*2412.00	79.9 PK			1.36 V	247	42.40	37.45
6	*2412.00	68.5 AV			1.36 V	247	31.09	37.45
7	4824.00	46.9 PK	74.0	-27.1	1.00 V	236	4.06	42.85
8	4824.00	32.0 AV	54.0	-22.0	1.00 V	236	-10.84	42.85
9	#7236.00	47.9 PK	59.9	-11.9	1.00 V	167	2.52	45.40
10	#7236.00	36.4 AV	48.5	-12.1	1.00 V	167	-8.98	45.40

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.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2437.00	83.4 PK			1.11 H	278	45.91	37.53
2	*2437.00	72.1 AV			1.11 H	278	34.59	37.53
3	4874.00	46.3 PK	74.0	-27.8	1.00 H	84	3.33	42.92
4	4874.00	31.6 AV	54.0	-22.4	1.00 H	84	-11.30	42.92
5	7311.00	48.1 PK	74.0	-25.9	1.00 H	257	2.72	45.38
6	7311.00	35.0 AV	54.0	-19.0	1.00 H	257	-10.35	45.38
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	*2437.00	77.5 PK			1.01 V	247	39.97	37.53
2	*2437.00	65.1 AV			1.01 V	247	27.58	37.53
3	4874.00	46.0 PK	74.0	-28.0	1.00 V	258	3.06	42.92
4	4874.00	31.9 AV	54.0	-22.1	1.00 V	258	-11.02	42.92
5	7311.00	48.6 PK	74.0	-25.4	1.00 V	106	3.22	45.38
6	7311.00	34.7 AV	54.0	-19.3	1.00 V	106	-10.64	45.38

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.



CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2462.00	81.7 PK			1.08 H	12	44.07	37.60
2	*2462.00	69.9 AV			1.08 H	12	32.31	37.60
3	2483.50	43.3 PK	74.0	-30.7	1.08 H	12	5.66	37.67
4	2483.50	29.7 AV	54.0	-24.3	1.08 H	12	-7.98	37.67
5	4924.00	47.2 PK	74.0	-26.8	1.00 H	214	4.21	43.00
6	4924.00	32.0 AV	54.0	-22.0	1.00 H	214	-10.97	43.00
7	7386.00	48.3 PK	74.0	-25.7	1.00 H	271	2.93	45.36
8	7386.00	35.9 AV	54.0	-18.1	1.00 H	271	-9.44	45.36
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	*2462.00	77.3 PK			1.00 V	210	39.66	37.60
2	*2462.00	64.8 AV			1.00 V	210	27.18	37.60
3	2483.50	43.0 PK	74.0	-31.0	1.00 V	210	5.34	37.67
4	2483.50	29.2 AV	54.0	-24.8	1.00 V	210	-8.45	37.67
5	4924.00	47.0 PK	74.0	-27.0	1.00 V	200	3.97	43.00
6	4924.00	31.5 AV	54.0	-22.5	1.00 V	200	-11.50	43.00
7	7386.00	46.9 PK	74.0	-27.1	1.00 V	303	1.52	45.36
8	7386.00	36.0 AV	54.0	-18.0	1.00 V	303	-9.34	45.36

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.

**802.11g**

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	46.3 PK	74.0	-27.7	1.43 H	270	8.92	37.38
2	2390.00	30.8 AV	54.0	-23.2	1.43 H	270	-6.58	37.38
3	#2400.00	60.1 PK	62.6	-2.4	1.43 H	270	22.70	37.41
4	#2400.00	36.6 AV	51.7	-15.1	1.43 H	270	-0.77	37.41
5	*2412.00	82.6 PK			1.43 H	270	45.11	37.45
6	*2412.00	71.7 AV			1.43 H	270	34.26	37.45
7	4824.00	47.2 PK	74.0	-26.8	1.00 H	232	4.35	42.85
8	4824.00	31.4 AV	54.0	-22.6	1.00 H	232	-11.44	42.85
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	2390.00	43.6 PK	74.0	-30.4	1.17 V	242	6.22	37.38
2	2390.00	30.1 AV	54.0	-23.9	1.17 V	242	-7.28	37.38
3	#2400.00	54.1 PK	56.2	-2.1	1.17 V	242	16.69	37.41
4	#2400.00	34.1 AV	46.3	-12.2	1.17 V	242	-3.27	37.41
5	*2412.00	76.2 PK			1.17 V	242	38.75	37.45
6	*2412.00	66.3 AV			1.17 V	242	28.87	37.45
7	4824.00	47.7 PK	74.0	-26.3	1.00 V	297	4.88	42.85
8	4824.00	31.3 AV	54.0	-22.7	1.00 V	297	-11.59	42.85

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 of the restricted band.



CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2437.00	81.4 PK			1.23 H	267	43.89	37.53
2	*2437.00	72.2 AV			1.23 H	267	34.65	37.53
3	4874.00	46.9 PK	74.0	-27.1	1.00 H	231	3.98	42.92
4	4874.00	31.3 AV	54.0	-22.7	1.00 H	231	-11.62	42.92
5	7311.00	47.9 PK	74.0	-26.1	1.00 H	258	2.54	45.38
6	7311.00	35.2 AV	54.0	-18.8	1.00 H	258	-10.16	45.38
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	*2437.00	77.3 PK			1.04 V	255	39.72	37.53
2	*2437.00	63.7 AV			1.04 V	255	26.14	37.53
3	4874.00	47.1 PK	74.0	-26.9	1.00 V	270	4.18	42.92
4	4874.00	31.5 AV	54.0	-22.5	1.00 V	270	-11.42	42.92
5	7311.00	48.2 PK	74.0	-25.8	1.00 V	115	2.82	45.38
6	7311.00	36.1 AV	54.0	-17.9	1.00 V	115	-9.28	45.38

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.



CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2462.00	80.7 PK			1.08 H	12	43.10	37.60
2	*2462.00	69.8 AV			1.08 H	12	32.24	37.60
3	2483.50	44.3 PK	74.0	-29.7	1.08 H	12	6.64	37.67
4	2483.50	30.1 AV	54.0	-23.9	1.08 H	12	-7.59	37.67
5	4924.00	48.6 PK	74.0	-25.4	1.00 H	125	5.61	43.00
6	4924.00	32.2 AV	54.0	-21.8	1.00 H	125	-10.78	43.00
7	7386.00	47.1 PK	74.0	-26.9	1.00 H	281	1.74	45.36
8	7386.00	35.6 AV	54.0	-18.4	1.00 H	281	-9.74	45.36
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	*2462.00	75.6 PK			1.32 V	238	37.97	37.60
2	*2462.00	66.5 AV			1.32 V	238	28.91	37.60
3	2483.50	43.8 PK	74.0	-30.2	1.32 V	238	6.14	37.67
4	2483.50	29.7 AV	54.0	-24.3	1.32 V	238	-7.94	37.67
5	4924.00	47.7 PK	74.0	-26.3	1.00 V	66	4.73	43.00
6	4924.00	31.6 AV	54.0	-22.4	1.00 V	66	-11.36	43.00
7	7386.00	47.6 PK	74.0	-26.4	1.00 V	265	2.26	45.36
8	7386.00	35.5 AV	54.0	-18.5	1.00 V	265	-9.86	45.36

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.



802.11n (20MHz)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	48.3 PK	74.0	-25.7	1.43 H	270	10.92	37.38
2	2390.00	30.8 AV	54.0	-23.2	1.43 H	270	-6.56	37.38
3	#2400.00	58.7 PK	61.7	-3.1	1.43 H	270	21.26	37.41
4	#2400.00	37.5 AV	51.0	-13.5	1.43 H	270	0.13	37.41
5	*2412.00	81.7 PK			1.43 H	270	44.27	37.45
6	*2412.00	71.0 AV			1.43 H	270	33.57	37.45
7	4824.00	47.7 PK	74.0	-26.3	1.00 H	174	4.82	42.85
8	4824.00	32.1 AV	54.0	-22.0	1.00 H	174	-10.80	42.85
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	2390.00	43.0 PK	74.0	-31.0	1.34 V	242	5.62	37.38
2	2390.00	30.1 AV	54.0	-23.9	1.34 V	242	-7.27	37.38
3	#2400.00	53.7 PK	56.9	-3.2	1.34 V	242	16.25	37.41
4	#2400.00	32.4 AV	44.4	-12.0	1.34 V	242	-5.04	37.41
5	*2412.00	76.9 PK			1.34 V	242	39.40	37.45
6	*2412.00	64.4 AV			1.34 V	242	26.91	37.45
7	4824.00	47.6 PK	74.0	-26.4	1.00 V	62	4.79	42.85
8	4824.00	32.2 AV	54.0	-21.8	1.00 V	62	-10.63	42.85

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 of the restricted band.



CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2437.00	80.3 PK			1.25 H	268	42.77	37.53
2	*2437.00	70.5 AV			1.25 H	268	33.00	37.53
3	4874.00	46.2 PK	74.0	-27.8	1.00 H	274	3.28	42.92
4	4874.00	31.3 AV	54.0	-22.7	1.00 H	274	-11.66	42.92
5	7311.00	47.7 PK	74.0	-26.3	1.00 H	247	2.34	45.38
6	7311.00	35.4 AV	54.0	-18.6	1.00 H	247	-9.98	45.38
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	*2437.00	76.4 PK			1.01 V	237	38.91	37.53
2	*2437.00	65.1 AV			1.01 V	237	27.59	37.53
3	4874.00	48.1 PK	74.0	-25.9	1.00 V	112	5.18	42.92
4	4874.00	32.0 AV	54.0	-22.0	1.00 V	112	-10.89	42.92
5	7311.00	48.2 PK	74.0	-25.8	1.00 V	236	2.82	45.38
6	7311.00	35.6 AV	54.0	-18.4	1.00 V	236	-9.80	45.38

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.



CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2462.00	80.0 PK			1.08 H	12	42.42	37.60
2	*2462.00	69.5 AV			1.08 H	12	31.92	37.60
3	2483.50	44.4 PK	74.0	-29.6	1.08 H	12	6.69	37.67
4	2483.50	30.0 AV	54.0	-24.0	1.08 H	12	-7.63	37.67
5	4924.00	47.0 PK	74.0	-27.0	1.00 H	199	3.98	43.00
6	4924.00	31.6 AV	54.0	-22.4	1.00 H	199	-11.36	43.00
7	7386.00	48.3 PK	74.0	-25.8	1.00 H	147	2.89	45.36
8	7386.00	35.6 AV	54.0	-18.4	1.00 H	147	-9.75	45.36
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	*2462.00	76.5 PK			1.05 V	248	38.94	37.60
2	*2462.00	63.9 AV			1.05 V	248	26.32	37.60
3	2483.50	43.2 PK	74.0	-30.8	1.05 V	248	5.54	37.67
4	2483.50	30.0 AV	54.0	-24.0	1.05 V	248	-7.70	37.67
5	4924.00	47.7 PK	74.0	-26.3	1.00 V	45	4.73	43.00
6	4924.00	32.1 AV	54.0	-21.9	1.00 V	45	-10.86	43.00
7	7386.00	48.1 PK	74.0	-25.9	1.00 V	332	2.76	45.36
8	7386.00	35.9 AV	54.0	-18.1	1.00 V	332	-9.45	45.36

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.



802.11n (40MHz)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	44.1 PK	74.0	-29.9	1.43 H	268	6.72	37.38
2	2390.00	30.2 AV	54.0	-23.9	1.43 H	268	-7.23	37.38
3	#2400.00	47.5 PK	57.4	-9.9	1.43 H	268	10.06	37.41
4	#2400.00	34.3 AV	45.9	-11.7	1.43 H	268	-3.16	37.41
5	*2422.00	77.4 PK			1.43 H	268	39.93	37.48
6	*2422.00	65.9 AV			1.43 H	268	28.45	37.48
7	4844.00	47.0 PK	74.0	-27.0	1.00 H	174	4.10	42.88
8	4844.00	31.7 AV	54.0	-22.3	1.00 H	174	-11.14	42.88
9	7266.00	47.8 PK	74.0	-26.2	1.00 H	152	2.36	45.40
10	7266.00	35.9 AV	54.0	-18.1	1.00 H	152	-9.50	45.40
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	2390.00	43.2 PK	74.0	-30.8	1.00 V	239	5.82	37.38
2	2390.00	30.1 AV	54.0	-23.9	1.00 V	239	-7.31	37.38
3	#2400.00	44.7 PK	55.9	-11.2	1.00 V	239	7.27	37.41
4	#2400.00	31.4 AV	42.8	-11.4	1.00 V	239	-5.97	37.41
5	*2422.00	75.9 PK			1.00 V	239	38.37	37.48
6	*2422.00	62.8 AV			1.00 V	239	25.33	37.48
7	4844.00	47.4 PK	74.0	-26.6	1.00 V	264	4.48	42.88
8	4844.00	31.7 AV	54.0	-22.3	1.00 V	264	-11.14	42.88
9	7266.00	48.0 PK	74.0	-26.0	1.00 V	87	2.60	45.40
10	7266.00	35.7 AV	54.0	-18.3	1.00 V	87	-9.66	45.40

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.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2437.00	79.9 PK			1.27 H	271	42.40	37.53
2	*2437.00	67.5 AV			1.27 H	271	29.93	37.53
3	4874.00	48.2 PK	74.0	-25.8	1.00 H	275	5.29	42.92
4	4874.00	31.6 AV	54.0	-22.4	1.00 H	275	-11.32	42.92
5	7311.00	48.0 PK	74.0	-26.0	1.00 H	264	2.64	45.38
6	7311.00	36.0 AV	54.0	-18.0	1.00 H	264	-9.34	45.38
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	*2437.00	74.7 PK			1.00 V	240	37.12	37.53
2	*2437.00	60.9 AV			1.00 V	240	23.36	37.53
3	4874.00	47.7 PK	74.0	-26.3	1.00 V	297	4.75	42.92
4	4874.00	31.7 AV	54.0	-22.3	1.00 V	297	-11.20	42.92
5	7311.00	48.0 PK	74.0	-26.0	1.00 V	83	2.58	45.38
6	7311.00	35.7 AV	54.0	-18.3	1.00 V	83	-9.67	45.38

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.



CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2452.00	78.2 PK			1.15 H	236	40.63	37.57
2	*2452.00	63.5 AV			1.15 H	236	25.97	37.57
3	2483.50	43.4 PK	74.0	-30.6	1.15 H	236	5.76	37.67
4	2483.50	30.2 AV	54.0	-23.8	1.15 H	236	-7.44	37.67
5	4904.00	47.2 PK	74.0	-26.8	1.00 H	272	4.23	42.97
6	4904.00	31.9 AV	54.0	-22.1	1.00 H	272	-11.05	42.97
7	7356.00	48.3 PK	74.0	-25.7	1.00 H	330	2.94	45.37
8	7356.00	35.5 AV	54.0	-18.6	1.00 H	330	-9.92	45.37
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	*2452.00	74.1 PK			1.18 V	204	36.55	37.57
2	*2452.00	61.5 AV			1.18 V	204	23.90	37.57
3	2483.50	43.3 PK	74.0	-30.7	1.18 V	204	5.65	37.67
4	2483.50	29.7 AV	54.0	-24.3	1.18 V	204	-7.99	37.67
5	4904.00	47.9 PK	74.0	-26.1	1.00 V	169	4.95	42.97
6	4904.00	32.2 AV	54.0	-21.8	1.00 V	169	-10.77	42.97
7	7266.00	48.7 PK	74.0	-25.3	1.00 V	102	3.31	45.40
8	7266.00	36.1 AV	54.0	-17.9	1.00 V	102	-9.27	45.40

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.
5. " * ": Fundamental frequency.



4.3 6 dB 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 (10Hz–40GHz)	Rohde&Schwarz	FSV40	101003	Apr. 07,15	Apr. 06,16
Spectrum Analyzer (9KHz-25GHz)	Agilent	E7405A	MY45118807	May 13,14	May 12,15
Power Meter	Anritsu	ML2495A	1139001	Feb. 20,15	Feb. 19,16
Power Sensor	Anritsu	MA2411B	1126068	Feb. 20,15	Feb. 19,16
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 29, 14	Oct. 28, 15
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.04,14	Sep. 03,15

NOTE:

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

4.3.3 TEST PROCEDURE

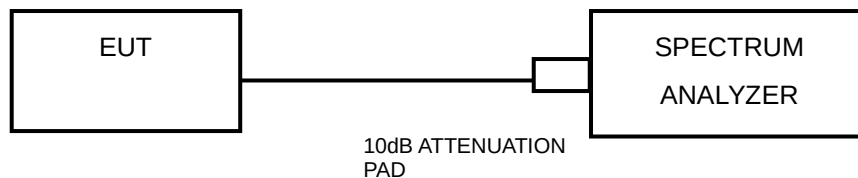
1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) 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

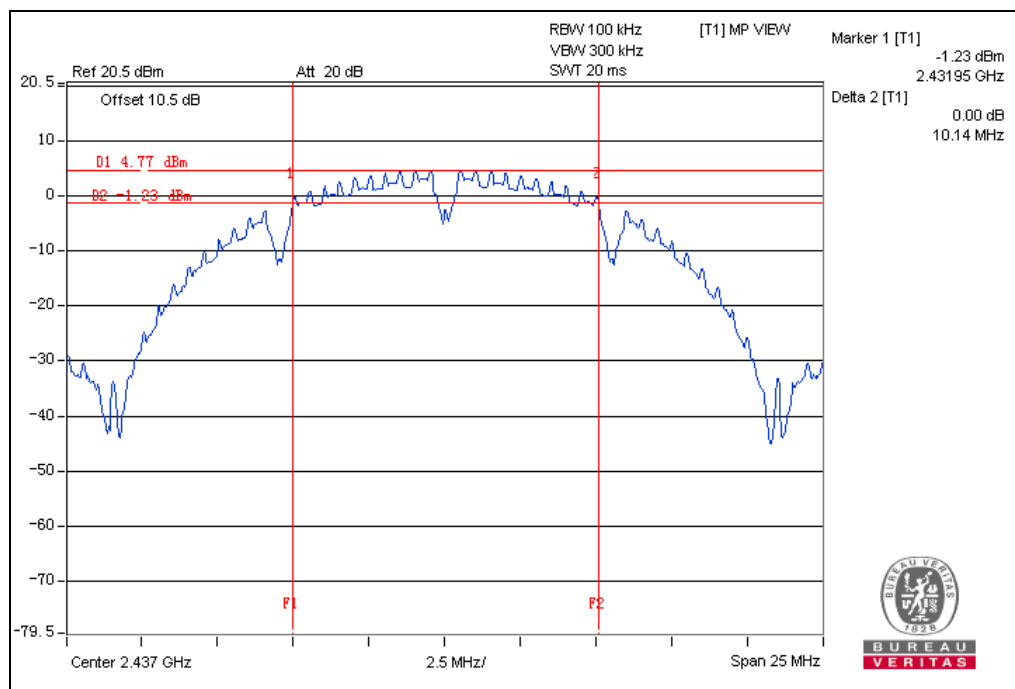
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



4.3.7 TEST RESULTS

802.11b

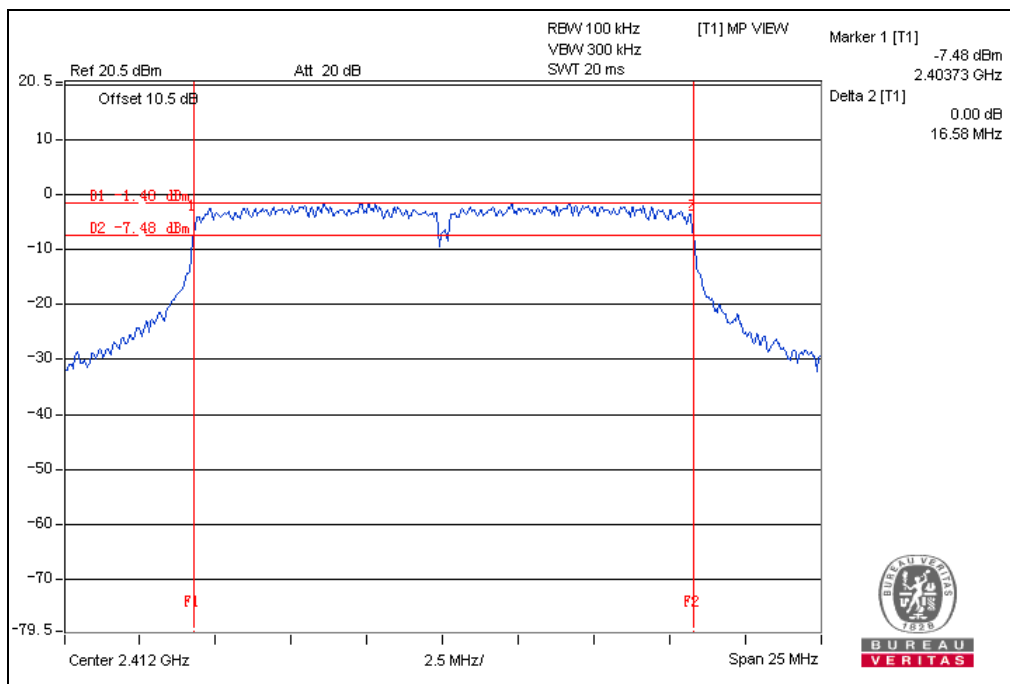
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.12	0.5	PASS
6	2437	10.14	0.5	PASS
11	2462	10.13	0.5	PASS





802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.58	0.5	PASS
6	2437	16.58	0.5	PASS
11	2462	16.57	0.5	PASS





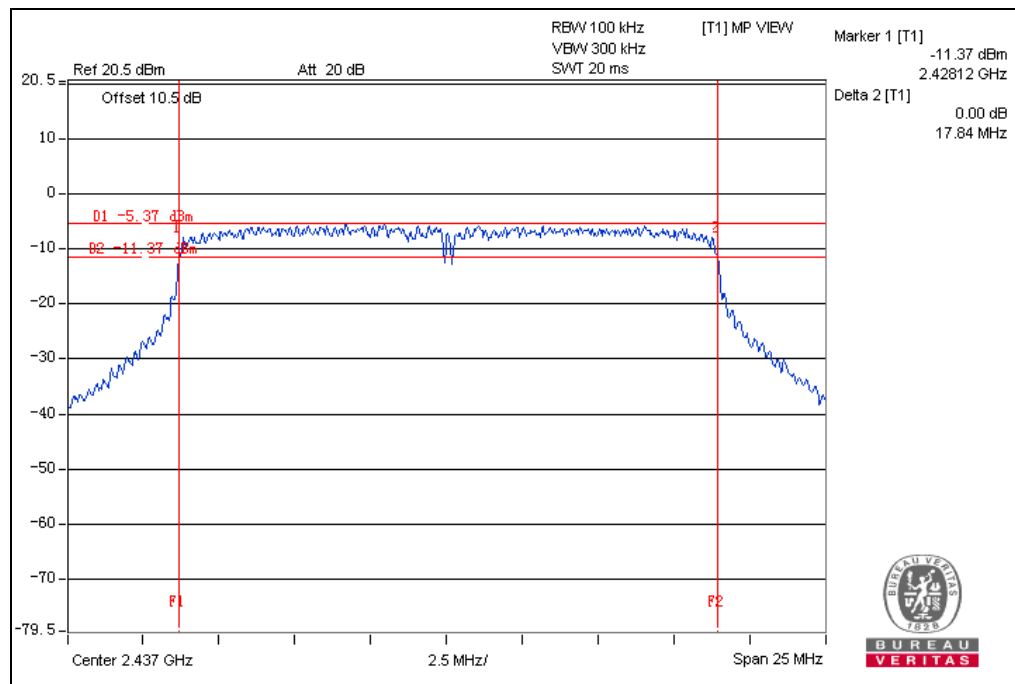
802.11n (20MHz)

CHAIN 0

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.83	0.5	PASS
6	2437	17.84	0.5	PASS
11	2462	17.81	0.5	PASS

CHAIN 1

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.67	0.5	PASS
6	2437	17.71	0.5	PASS
11	2462	17.70	0.5	PASS





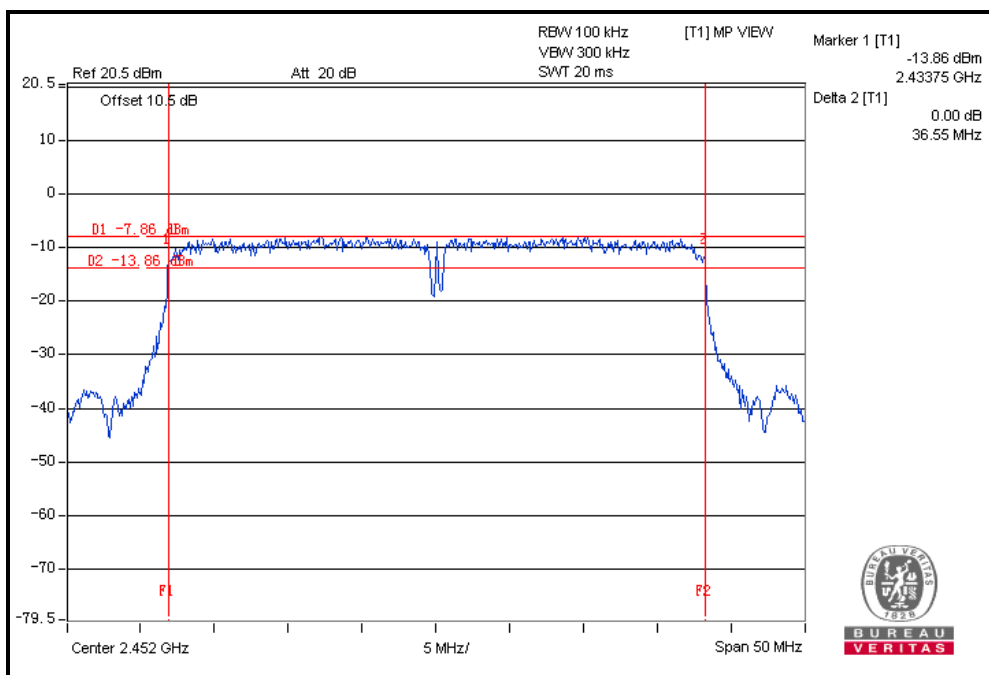
802.11n (40MHz)

CHAIN 0

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.52	0.5	PASS
6	2437	36.54	0.5	PASS
9	2452	36.55	0.5	PASS

CHAIN 1

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.45	0.5	PASS
6	2437	36.42	0.5	PASS
9	2452	36.45	0.5	PASS



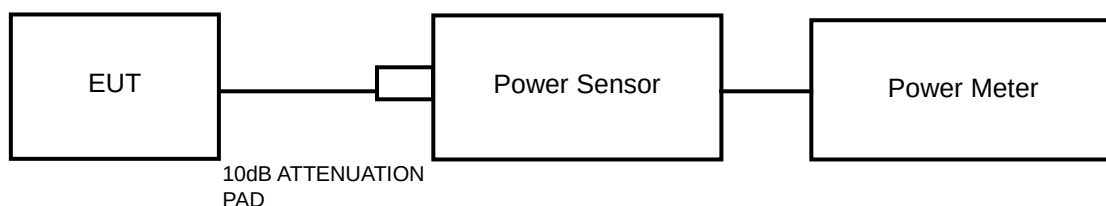


4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 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.
Spectrum Analyzer (10Hz–40GHz)	Rohde&Schwarz	FSV40	101003	Apr. 07,15	Apr. 06,16
Spectrum Analyzer (9KHz-25GHz)	Agilent	E7405A	MY45118807	May 13,14	May 12,15
Power Meter	Anritsu	ML2495A	1139001	Feb. 20,15	Feb. 19,16
Power Sensor	Anritsu	MA2411B	1126068	Feb. 20,15	Feb. 19,16
Digital Multimeter	FLUKE	15B	A1220010D G	Oct. 29, 14	Oct. 28, 15
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.04,14	Sep. 03,15

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

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

4.4.7 TEST RESULTS

4.4.7.1 MAXIMUM PEAK OUTPUT POWER

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
1	2412	18.74	74.817	1	PASS
6	2437	18.87	77.090	1	PASS
11	2462	18.94	78.343	1	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
1	2412	20.63	115.611	1	PASS
6	2437	20.80	120.226	1	PASS
11	2462	20.62	115.345	1	PASS



802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	POWER LIMIT (W)	PASS/FAIL
		CHAIN 0	CHAIN 1				
1	2412	17.72	17.92	20.83	121.100	1	PASS
6	2437	18.08	17.72	20.91	123.425	1	PASS
11	2462	18.26	17.76	21.03	126.692	1	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	POWER LIMIT (W)	PASS/FAIL
		CHAIN 0	CHAIN 1				
3	2422	17.14	17.31	20.24	105.588	1	PASS
6	2437	17.50	17.42	20.47	111.442	1	PASS
9	2452	17.49	17.44	20.48	111.568	1	PASS



4.4.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)

The average 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.

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	15.64	N/A
6	2437	15.72	N/A
11	2462	15.83	N/A

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	13.51	N/A
6	2437	13.53	N/A
11	2462	13.46	N/A

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1		
1	2412	10.34	10.44	13.40	N/A
6	2437	10.56	10.32	13.45	N/A
11	2462	10.66	10.45	13.57	N/A

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1		
3	2422	9.69	9.91	12.81	N/A
6	2437	9.82	9.98	12.91	N/A
9	2452	9.93	10.01	12.98	N/A

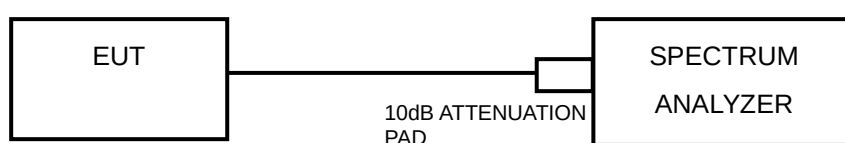


4.5 POWER SPECTRAL DENSITY MEASUREMENT

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 span to 1.5 times the DTS bandwidth
2. Set the RBW = 100 kHz, VBW $\geq 3 \times$ RBW, Detector = peak.
3. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

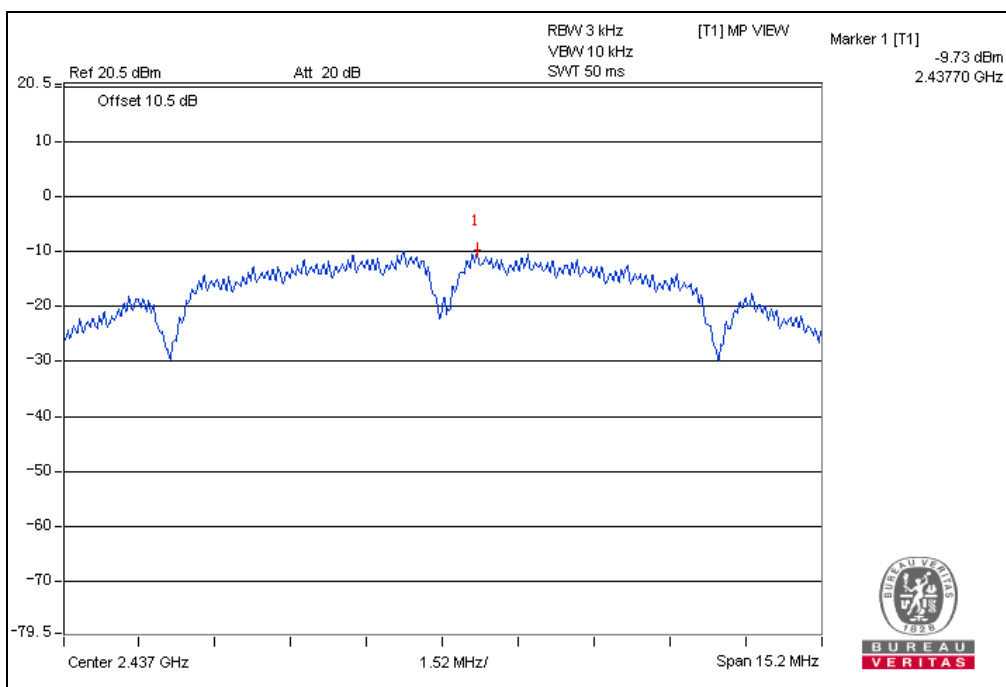
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



4.5.7 TEST RESULTS

802.11b

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-9.87	8	PASS
6	2437	-9.73	8	PASS
11	2462	-9.81	8	PASS



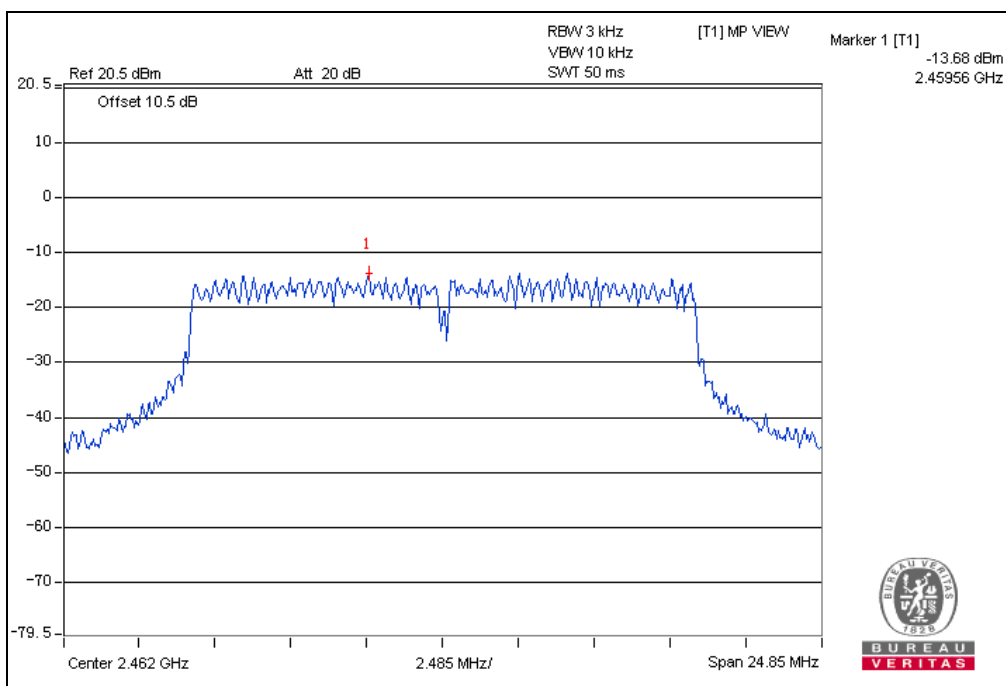


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Test Report No.: RF150414N009-1

802.11g

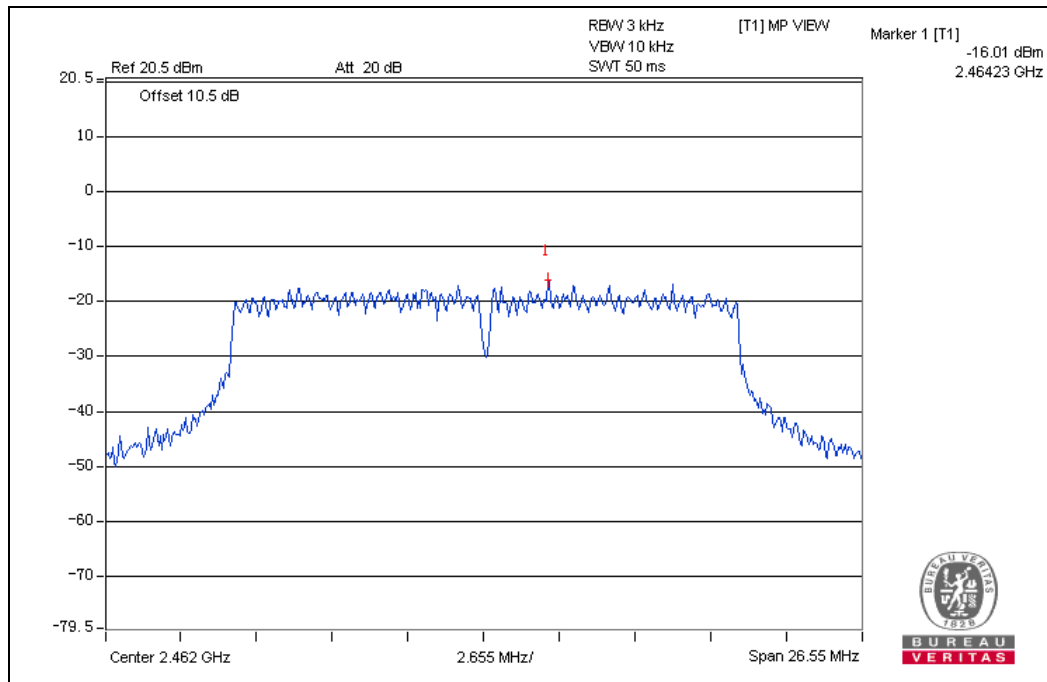
Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-13.75	8	PASS
6	2437	-13.92	8	PASS
11	2462	-13.68	8	PASS





802.11n (20MHz)

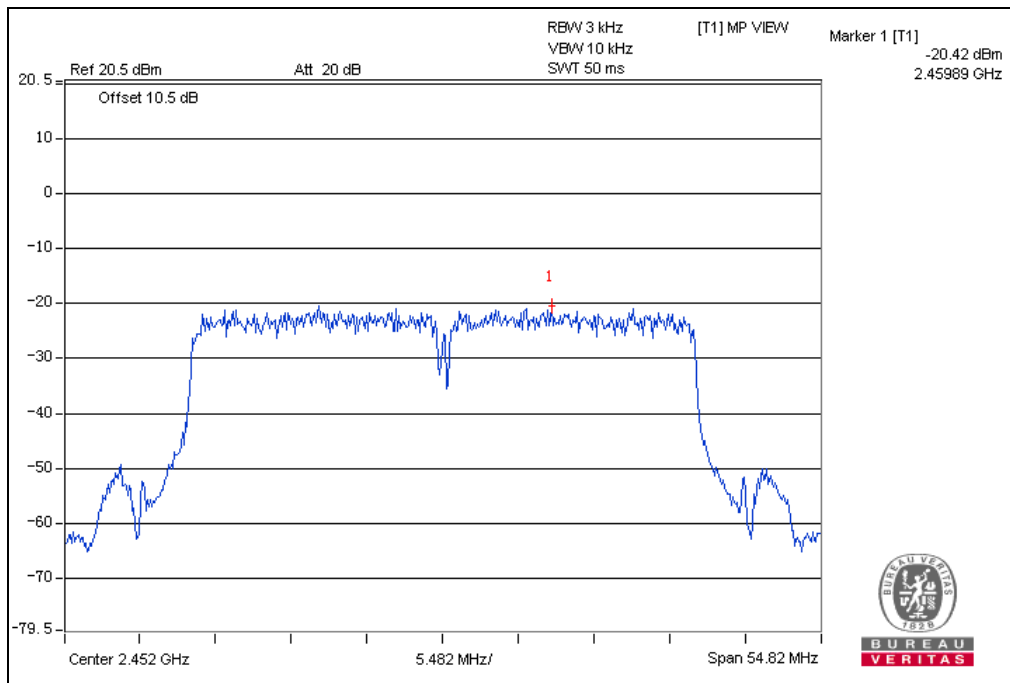
Channel	FREQ. (MHz)	PSD (dBm/3kHz)		Limit (dBm/3kHz)	PASS /FAIL
		Chain 0	Chain 1		
1	2412	-17.55	-16.47	8	PASS
6	2437	-17.80	-16.05	8	PASS
11	2462	-17.44	-16.01	8	PASS





802.11n (40MHz)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)		Limit (dBm/3kHz)	PASS /FAIL
		Chain 0	Chain 1		
3	2422	-21.20	-21.40	8	PASS
6	2437	-21.14	-21.12	8	PASS
9	2452	-20.42	-20.95	8	PASS



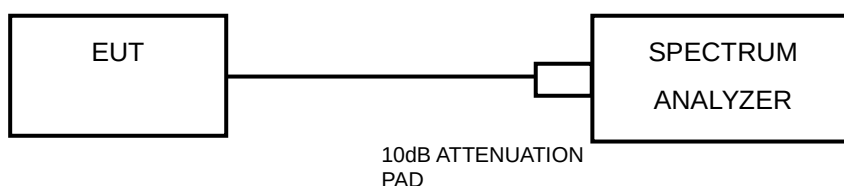


4.6 OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below –20dB 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

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.



MEASUREMENT PROCEDURE OOB

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

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

4.6.7 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 to the requirement.

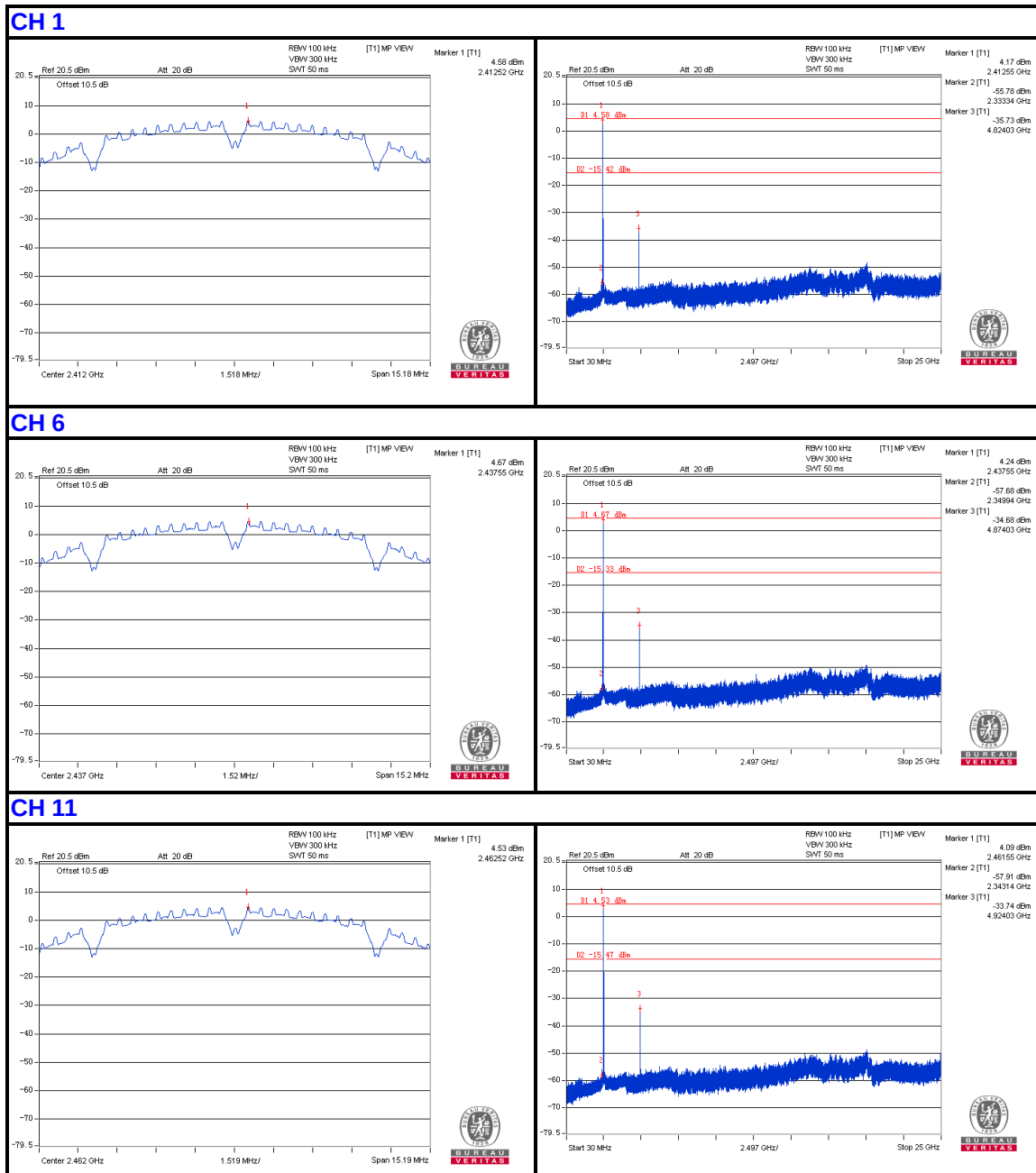


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Test Report No.: RF150414N009-1

4.6.8 TEST RESULTS

802.11b



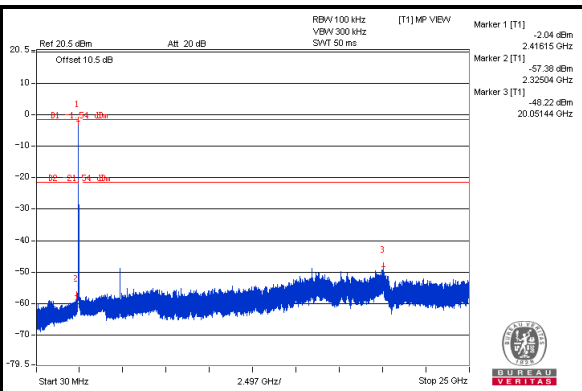
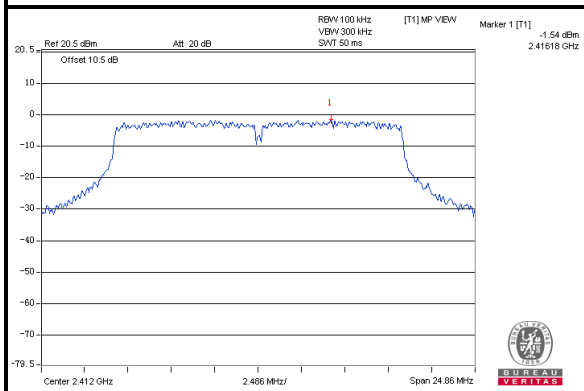


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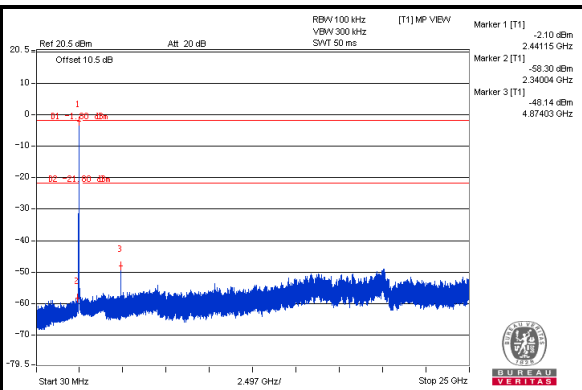
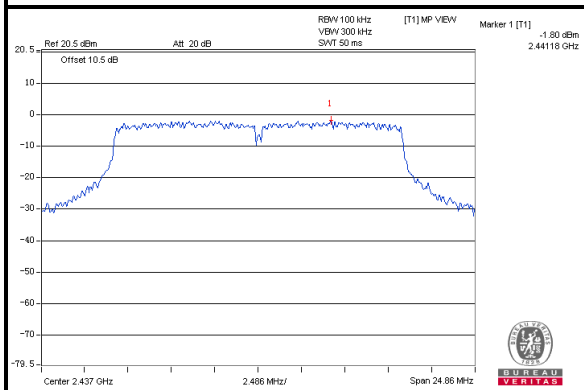
Test Report No.: RF150414N009-1

802.11g

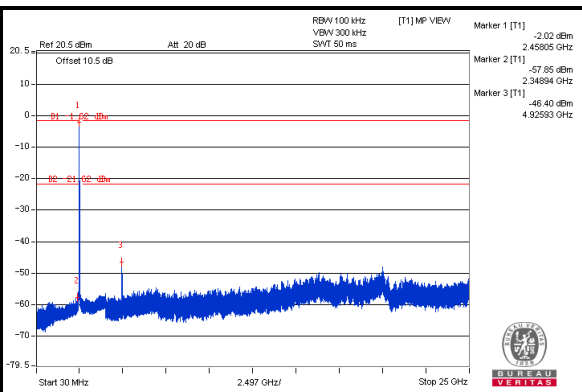
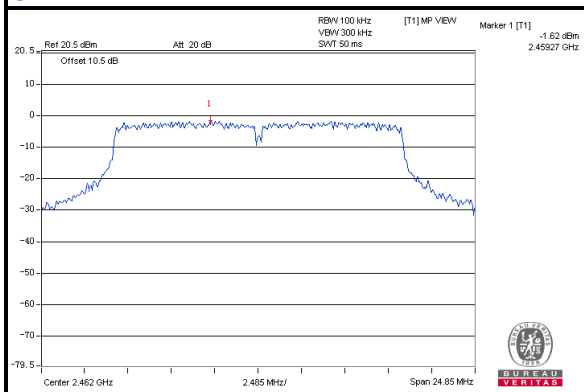
CH 1



CH 6



CH 11



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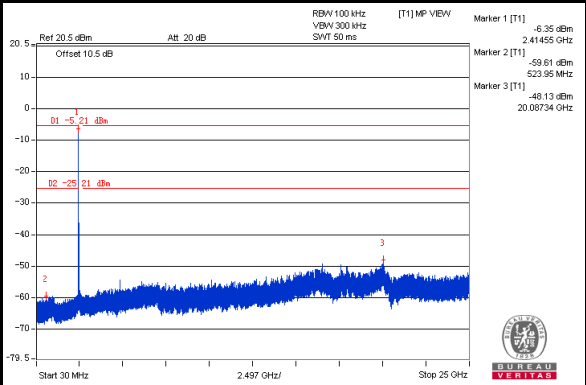
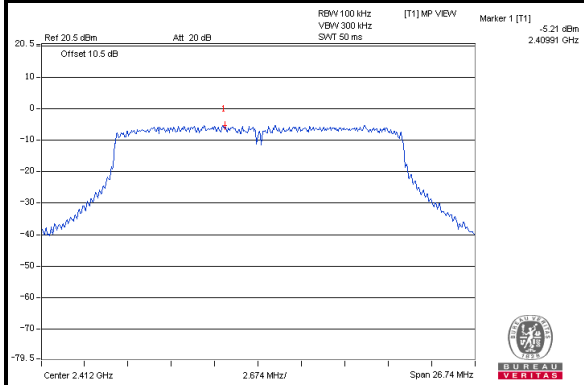


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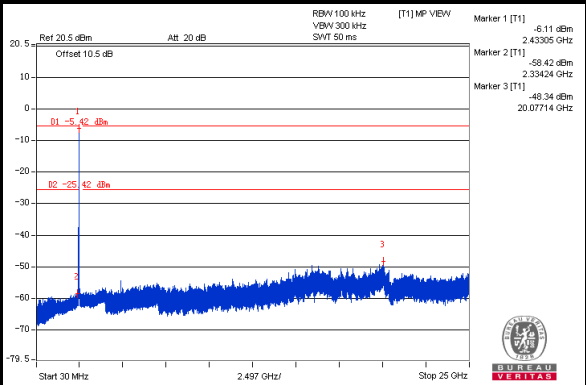
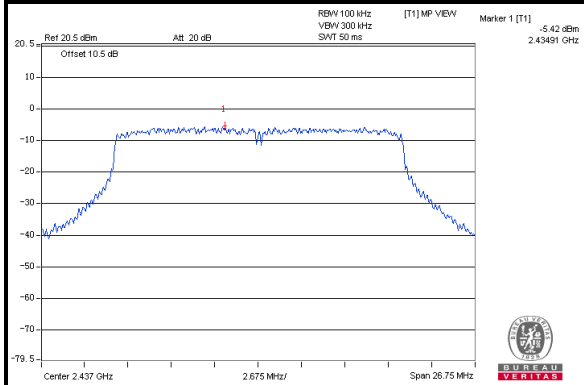
Test Report No.: RF150414N009-1

802.11n (20MHz)

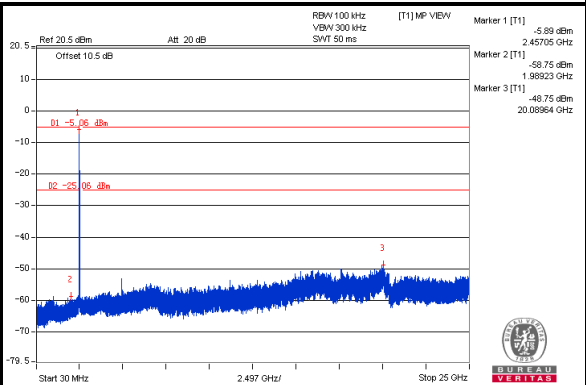
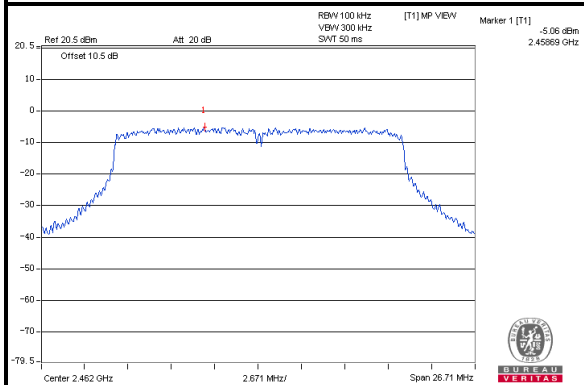
CH 1



CH 6



CH 11



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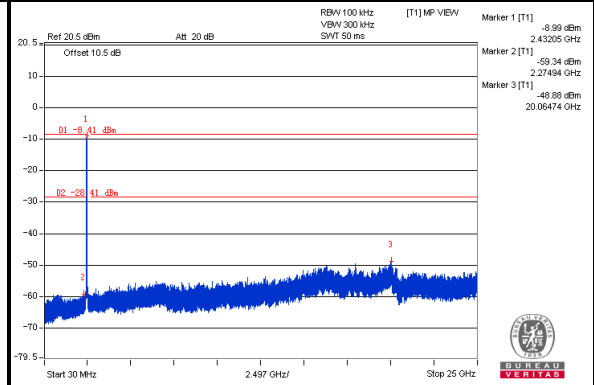
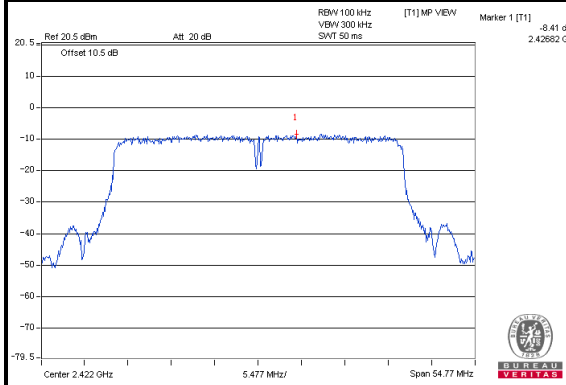


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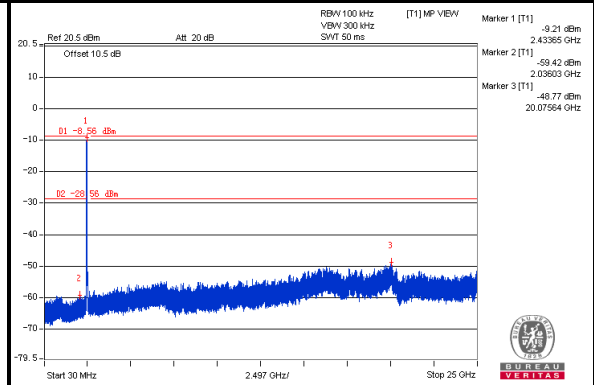
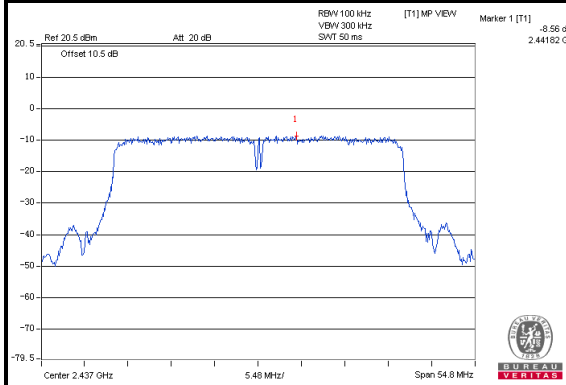
Test Report No.: RF150414N009-1

802.11n (40MHz)

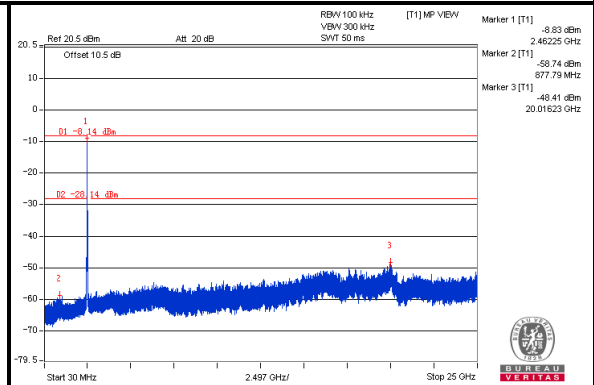
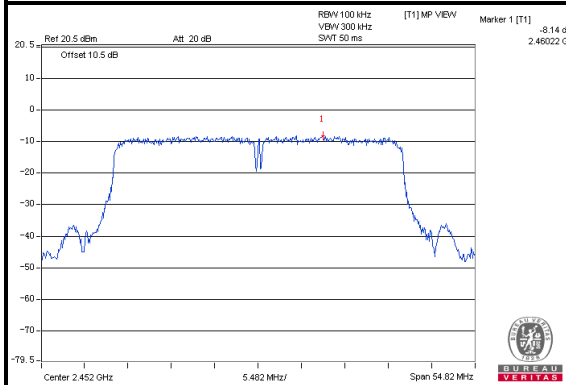
CH 3



CH 6



CH 9



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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---