



Test Report No.: RF141216N012



TEST REPORT

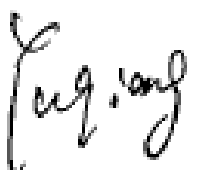

Applicant	NETGEAR, Inc.
Address	350 East Plumeria Drive San Jose, CA 95134

Manufacturer or Supplier	NETGEAR, Inc.
Address	350 East Plumeria Drive San Jose, CA 95134
Product	ADSL2+ Modem Router
Brand Name	NETGEAR
Model	D2200D-1FRNAS
Additional Model & Model Difference	N/A
Date of tests	Dec. 17, 2014 ~ Mar. 19, 2015

The tests have been carried out 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

Tested by Yuqiang Yin Project Engineer / EMC Department	Approved by Glyn He Supervisor / EMC Department
	 Date: Mar. 19, 2015

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Test Report No.: RF141216N012

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF141216N012	Original release	Mar. 19, 2015



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	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -10.9dB at 0.37656MHz.
15.205 & 209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 2483.5MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(d)	Conducted 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

1.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.66dB
Radiated emissions	9KHz ~ 30MHz	2.74dB
	30MHz ~ 1GMHz	3.55dB
	1GHz ~ 18GHz	4.84dB
	18GHz ~ 40GHz	4.84dB

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



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

EUT	ADSL2+ Modem Router
MODEL NO.	D2200D-1FRNAS
FCC ID	PY314400297
POWER SUPPLY	DC 12V by Adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b:11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300.0Mbps
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(20MHz) 2422-2452MHz for 11n(40MHz)
NUMBER OF CHANNEL	11 for 802.11b/g/n (20MHz) 7 for 802.11n (40MHz)
AVG. OUTPUT POWER	402.717mW
ANTENNA TYPE	PCB antenna with 1.5dBi gain
DATA CABLE	0.9m non-shielded RJ45 cable without core
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter

NOTE:

1. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

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

2. The EUT consumes power from the following adapter.

Brand	NETGEAR
Model	AD2015F23
Input Power	AC100-240V~ 50/60Hz Max.0.15A
Output Power	DC12V, 0.5A
Power Line	1.8m/Unshielded, Non-detachable, without core



Brand	NETGEAR
Model	2AAJ012F 1 NA
Input Power	AC100-120V~ 50/60Hz Max.0.35A
Output Power	DC12V, 1.0A
Power Line	1.8m/Unshielded, Non-detachable, without core

EUT had been tested with all of adapter model, and only the worst case was shown in this test report, then the worst case model: 2AAJ012F 1 NA

3. 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.



2.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g and 802.11n (20MHz):

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

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

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

2.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Powered by adapter+ WIFI link

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

NOTE:
 "-" means no effect.



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 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	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
A	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

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 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	802.11b	1 to 11	1	DSSS	DBPSK	1.0

POWER LINE CONDUCTED EMISSION TEST:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1	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	802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	6.5
A	802.11n (40MHz)	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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
A	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	20deg. C, 51%RH	DC 12V by Adapter	Sen He
RE<1G	20deg. C, 51%RH	DC 12V by Adapter	Sen He
PLC	20deg. C, 51%RH	DC 12V by Adapter	Sen He
APCM	20deg. C, 60%RH	DC12V by Adapter	Yuqiang Yin



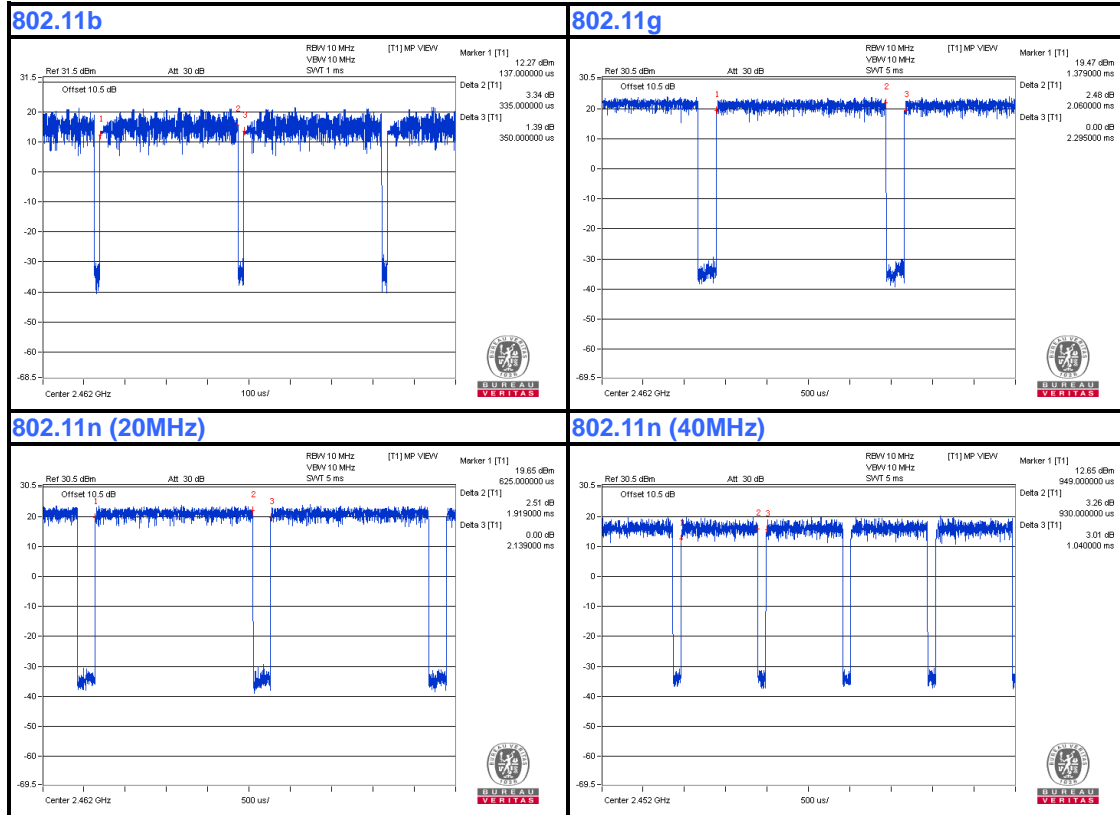
2.3 DUTY CYCLE OF TEST SIGNAL

802.11b: Duty cycle = 0.335/0.350 = 0.957, Duty factor = 10 * log(1/0.957) = 0.19

802.11g: Duty cycle = 2.060/2.295 = 0.898, Duty factor = 10 * log(1/0.898) = 0.47

802.11n (20MHz): Duty cycle = 1.919/2.139 = 0.897, Duty factor = 10 * log(1/0.897) = 0.47

802.11n (40MHz): Duty cycle = 0.930/1.040 = 0.894, Duty factor = 10 * log(1/0.894) = 0.49





2.4 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	HP	4431s	CNU238944Z	N/A

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



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Test Report No.: RF141216N012

2.5 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)

558074 D01 DTS Meas Guidance v03r02

662911 D01 Multiple Transmitter Output v02r01

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 B (DoC). The test report has been issued separately.



3. TEST TYPES AND RESULTS

3.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

3.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE 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. 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.

**3.1.2 TEST INSTRUMENTS**

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	Agilent	E4446A	MY46180622	Apr. 29,14	Apr. 28,15
EMI Test Receiver	Rohde&Schwarz	ESVS10	841431/004	May 17,14	May 16,15
Loop antenna (9kHz~30MHz)	Daze	ZN30900A	0708	Dec. 05,14	Dec. 04,15
Bilog Antenna	Teseq	CBL 6111D	30643	Jul. 25, 14	Jul. 24, 15
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 30,14	May 29,15
Horn Antenna (15GHz-40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170242	Feb. 13,15	Feb. 12,16
Pre-Amplifier (9kHz~1GHz)	SONOMA	310D	186955	Mar. 05,14	Mar. 04,15
Signal Amplifier	Agilent	8447D	2944A10488	Jun. 25,14	Jun. 24,15
Pre-Amplifier (100MHz-26.5GHz)	Agilent	8449B	3008A00409	May 13,14	May 12,15
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 20,14	Nov. 19,15
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	Apr. 19,14	Apr. 18,15
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 27,14	Oct. 26,15
Test Software	ADT	ADT_Radiated_ V7.6.15.9.2	N/A	N/A	N/A

NOTE:

1. The test was performed in 966 Chamber.
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.
3. The FCC Site Registration No. is 494399.



3.1.3 TEST PROCEDURES

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

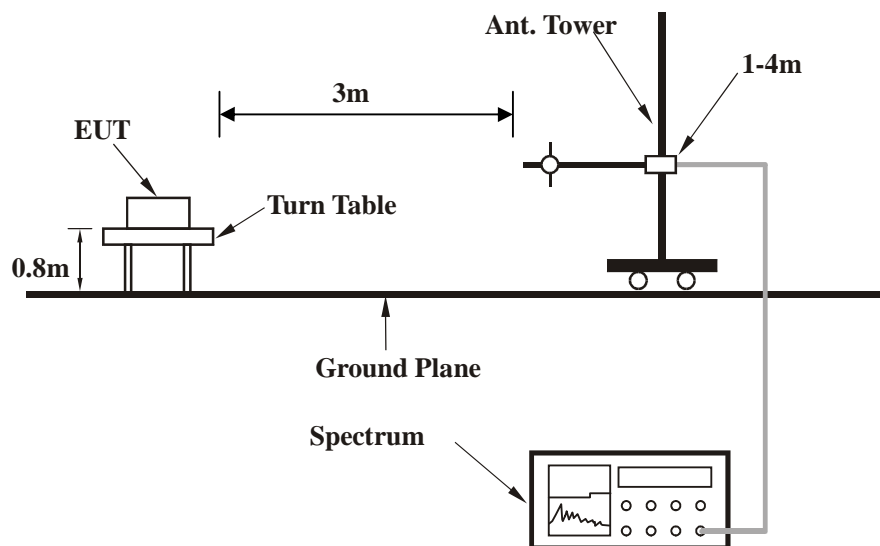
NOTE:

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 $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation.

3.1.5 TEST SETUP



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

3.1.6 EUT OPERATING CONDITIONS

- Placed the EUT on the testing table.
- Prepared notebooks to act as communication partner and placed it outside of testing area.
- The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.



3.1.7 TEST RESULTS

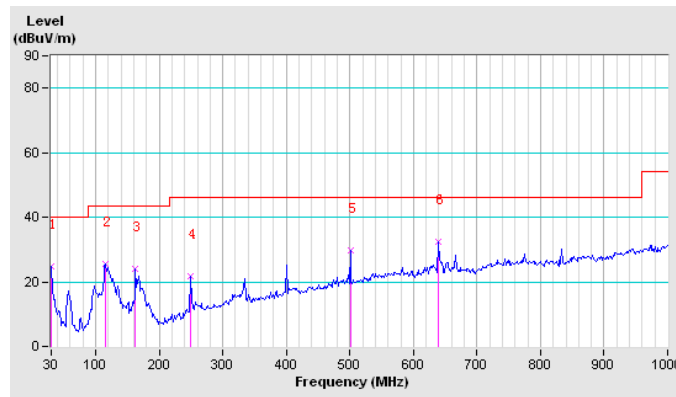
BELOW 1GHz WORST-CASE DATA: 802.11b- CH1

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	30.00	24.8 QP	40.0	-15.2	1.00 H	0	37.39	-12.55
2	115.68	25.6 QP	43.5	-17.9	1.00 H	0	44.53	-18.92
3	162.57	24.0 QP	43.5	-19.6	1.00 H	0	43.38	-19.43
4	249.87	21.7 QP	46.0	-24.3	1.00 H	0	38.52	-16.86
5	500.45	29.9 QP	46.0	-16.1	1.00 H	0	38.42	-8.54
6	639.48	32.5 QP	46.0	-13.5	1.00 H	0	38.12	-5.61

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.



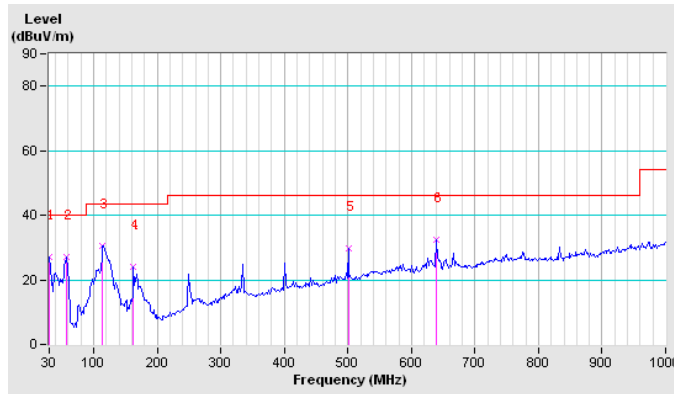


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	30.00	27.2 QP	40.0	-12.8	1.00 V	0	39.72	-12.55
2	57.48	27.2 QP	40.0	-12.8	1.00 V	0	52.00	-24.78
3	114.07	30.6 QP	43.5	-12.9	1.00 V	0	49.67	-19.03
4	162.57	24.0 QP	43.5	-19.6	1.00 V	0	43.38	-19.43
5	500.45	29.9 QP	46.0	-16.1	1.00 V	0	38.42	-8.54
6	639.48	32.5 QP	46.0	-13.5	1.00 V	0	38.12	-5.61

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.





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	62.7 PK	74.0	-11.3	1.06 H	257	58.79	3.91
2	2390.00	53.8 AV	54.0	-0.2	1.06 H	257	49.89	3.91
3	*2412.00	106.7 PK			1.06 H	257	102.74	3.96
4	*2412.00	101.5 AV			1.06 H	257	97.54	3.96
5	4824.00	46.3 PK	74.0	-27.7	1.07 H	114	36.65	9.65
6	4824.00	38.2 AV	54.0	-15.8	1.07 H	114	28.55	9.65

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	53.4 PK	74.0	-20.6	1.09 V	66	49.49	3.91
2	2390.00	46.7 AV	54.0	-7.3	1.09 V	66	42.79	3.91
3	*2412.00	98.7 PK			1.09 V	66	94.74	3.96
4	*2412.00	92.4 AV			1.09 V	66	88.44	3.96
5	4824.00	47.1 PK	74.0	-26.9	1.04 V	117	37.45	9.65
6	4824.00	35.2 AV	54.0	-18.8	1.04 V	117	25.55	9.65

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 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	2390.00	50.6 PK	74.0	-23.4	1.08 H	134	46.66	3.91
2	2390.00	38.2 AV	54.0	-15.8	1.08 H	134	34.29	3.91
3	*2437.00	105.8 PK			1.08 H	134	101.76	4.04
4	*2437.00	100.4 AV			1.08 H	134	96.36	4.04
5	2483.50	49.6 PK	74.0	-24.4	1.08 H	134	45.42	4.18
6	2483.50	38.6 AV	54.0	-15.4	1.08 H	134	34.42	4.18
7	4874.00	45.2 PK	74.0	-28.8	1.03 H	114	35.48	9.72
8	4874.00	34.5 AV	54.0	-19.5	1.03 H	114	24.78	9.72
9	7311.00	45.9 PK	74.0	-28.1	1.02 H	57	32.75	13.15
10	7311.00	33.6 AV	54.0	-20.4	1.02 H	57	20.45	13.15
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	50.7 PK	74.0	-23.3	1.02 V	34	46.79	3.91
2	2390.00	38.7 AV	54.0	-15.3	1.02 V	34	34.79	3.91
3	*2437.00	100.3 PK			1.02 V	34	96.98	4.04
4	*2437.00	93.7 AV			1.02 V	34	90.38	4.04
5	2483.50	51.4 PK	74.0	-22.6	1.02 V	34	47.22	4.18
6	2483.50	40.2 AV	54.0	-13.8	1.02 V	34	36.02	4.18
7	4874.00	45.3 PK	74.0	-28.7	1.00 V	51	35.58	9.72
8	4874.00	36.8 AV	54.0	-17.2	1.00 V	51	27.08	9.72
9	7311.00	46.2 PK	74.0	-27.8	1.06 V	24	33.05	13.15
10	7311.00	36.7 AV	54.0	-17.3	1.06 V	24	23.55	13.15

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	104.8 PK			1.08 H	112	100.69	4.11
2	*2462.00	97.6 AV			1.08 H	112	93.49	4.11
3	2483.50	64.2 PK	74.0	-9.8	1.08 H	112	60.02	4.18
4	2483.50	53.9 AV	54.0	-0.1	1.08 H	112	49.72	4.18
5	4924.00	47.3 PK	74.0	-26.7	1.07 H	82	37.50	9.80
6	4924.00	36.8 AV	54.0	-17.2	1.07 H	82	27.00	9.80
7	7386.00	49.3 PK	74.0	-24.7	1.00 H	325	36.16	13.14
8	7386.00	39.2 AV	54.0	-14.8	1.00 H	325	26.06	13.14
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	98.4 PK			1.03 V	334	94.29	4.11
2	*2462.00	90.2 AV			1.03 V	334	86.09	4.11
3	2483.50	60.0 PK	74.0	-14.0	1.03 V	334	55.82	4.18
4	2483.50	48.7 AV	54.0	-5.3	1.03 V	334	44.52	4.18
5	4924.00	48.1 PK	74.0	-25.9	1.04 V	24	38.30	9.80
6	4924.00	38.2 AV	54.0	-15.8	1.04 V	24	28.40	9.80
7	7386.00	49.2 PK	74.0	-24.8	1.05 V	58	36.06	13.14
8	7386.00	38.7 AV	54.0	-15.3	1.05 V	58	25.56	13.14

- 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	73.0 PK	74.0	-1.0	4.00 H	332	69.09	3.91
2	2390.00	53.9 AV	54.0	-0.1	4.00 H	332	49.99	3.91
3	*2412.00	105.2 PK			1.10 H	332	101.24	3.96
4	*2412.00	93.7 AV			1.10 H	332	89.74	3.96
5	4824.00	47.3 PK	74.0	-26.7	1.13 H	66	37.65	9.65
6	4824.00	36.7 AV	54.0	-17.3	1.13 H	66	27.05	9.65

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	65.3 PK	74.0	-8.7	1.03 V	114	61.39	3.91
2	2390.00	51.3 AV	54.0	-2.7	1.03 V	114	47.39	3.91
3	*2412.00	98.5 PK			1.06 V	114	94.54	3.96
4	*2412.00	88.3 AV			1.06 V	114	84.34	3.96
5	4824.00	47.2 PK	74.0	-26.8	1.00 V	338	37.55	9.65
6	4824.00	36.8 AV	54.0	-17.2	1.00 V	338	27.15	9.65

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 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	2390.00	51.2 PK	74.0	-22.8	1.04 H	24	47.29	3.91
2	2390.00	39.4 AV	54.0	-14.6	1.04 H	24	35.49	3.91
3	*2437.00	109.6 PK			1.04 H	24	105.56	4.04
4	*2437.00	103.7 AV			1.04 H	24	99.66	4.04
5	2483.50	52.1 PK	74.0	-21.9	1.04 H	24	47.92	4.18
6	2483.50	41.0 AV	54.0	-13.0	1.04 H	24	36.78	4.18
7	4874.00	45.8 PK	74.0	-28.2	1.03 H	77	36.06	9.72
8	4874.00	36.7 AV	54.0	-17.3	1.03 H	77	26.98	9.72
9	7311.00	46.8 PK	74.0	-27.2	1.06 H	21	33.65	13.15
10	7311.00	37.5 AV	54.0	-16.5	1.06 H	21	24.35	13.15

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	50.8 PK	74.0	-23.2	1.00 V	212	46.89	3.91
2	2390.00	37.5 AV	54.0	-16.5	1.00 V	212	33.59	3.91
3	*2437.00	103.6 PK			1.00 V	212	99.56	4.04
4	*2437.00	97.8 AV			1.00 V	212	93.76	4.04
5	2483.50	51.6 PK	74.0	-22.4	1.00 V	212	47.42	4.18
6	2483.50	40.3 AV	54.0	-13.7	1.00 V	212	36.12	4.18
7	4874.00	45.8 PK	74.0	-28.2	1.03 V	64	36.08	9.72
8	4874.00	36.4 AV	54.0	-17.6	1.03 V	64	26.68	9.72
9	7311.00	46.2 PK	74.0	-27.8	1.01 V	271	33.05	13.15
10	7311.00	35.5 AV	54.0	-18.5	1.01 V	271	22.35	13.15

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	104.6 PK			1.00 H	44	100.49	4.11
2	*2462.00	93.6 AV			1.00 H	44	89.49	4.11
3	2483.50	72.3 PK	74.0	-1.7	1.00 H	44	68.12	4.18
4	2483.50	53.9 AV	54.0	-0.1	1.00 H	44	49.72	4.18
5	4924.00	46.5 PK	74.0	-27.5	1.03 H	85	36.70	9.80
6	4924.00	36.9 AV	54.0	-17.1	1.03 H	85	27.10	9.80
7	7386.00	48.5 PK	74.0	-25.5	1.03 H	225	35.36	13.14
8	7386.00	37.2 AV	54.0	-16.8	1.03 H	225	24.06	13.14
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	97.2 PK			1.00 V	258	93.09	4.11
2	*2462.00	86.3 AV			1.00 V	258	82.19	4.11
3	2483.50	64.2 PK	74.0	-9.8	1.00 V	258	60.02	4.18
4	2483.50	51.3 AV	54.0	-2.7	1.00 V	258	47.12	4.18
5	4924.00	49.2 PK	74.0	-24.8	1.08 V	22	39.40	9.80
6	4924.00	38.7 AV	54.0	-15.3	1.08 V	22	28.90	9.80
7	7386.00	48.7 PK	74.0	-25.3	1.04 V	246	35.56	13.14
8	7386.00	38.2 AV	54.0	-15.8	1.04 V	246	25.06	13.14

- 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	72.1 PK	74.0	-1.9	1.03 H	124	68.19	3.91
2	2390.00	53.9 AV	54.0	-0.1	1.03 H	124	49.99	3.91
3	*2412.00	104.3 PK			1.03 H	124	100.34	3.96
4	*2412.00	92.3 AV			1.03 H	124	88.34	3.96
5	4824.00	45.9 PK	74.0	-28.1	1.06 H	118	36.25	9.65
6	4824.00	34.5 AV	54.0	-19.5	1.06 H	118	24.85	9.65

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	63.2 PK	74.0	-10.8	1.02 V	77	59.29	3.91
2	2390.00	49.8 AV	54.0	-4.2	1.02 V	77	45.89	3.91
3	*2412.00	97.3 PK			1.02 V	77	93.34	3.96
4	*2412.00	87.2 AV			1.02 V	77	83.24	3.96
5	4824.00	46.8 PK	74.0	-27.2	1.00 V	58	37.15	9.65
6	4824.00	35.9 AV	54.0	-18.1	1.00 V	58	26.25	9.65

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 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	2390.00	50.4 PK	74.0	-23.6	1.05 H	121	46.49	3.91
2	2390.00	38.6 AV	54.0	-15.4	1.05 H	121	34.69	3.91
3	*2437.00	110.7 PK			1.05 H	121	106.66	4.04
4	*2437.00	99.1 AV			1.05 H	121	95.06	4.04
5	2483.50	51.4 PK	74.0	-22.6	1.05 H	121	47.22	4.18
6	2483.50	41.2 AV	54.0	-12.8	1.05 H	121	37.02	4.18
7	4874.00	44.8 PK	74.0	-29.2	1.05 H	284	35.08	9.72
8	4874.00	38.2 AV	54.0	-15.8	1.05 H	284	28.48	9.72
9	7311.00	46.8 PK	74.0	-27.2	1.00 H	63	33.65	13.15
10	7311.00	36.1 AV	54.0	-17.9	1.00 H	63	22.95	13.15
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	50.4 PK	74.0	-23.6	1.05 V	124	46.49	3.91
2	2390.00	38.2 AV	54.0	-15.8	1.05 V	124	34.29	3.91
3	*2437.00	102.9 PK			1.05 V	124	98.86	4.04
4	*2437.00	93.8 AV			1.05 V	124	89.76	4.04
5	2483.50	51.2 PK	74.0	-22.8	1.05 V	124	47.02	4.18
6	2483.50	40.2 AV	54.0	-13.8	1.05 V	124	36.02	4.18
7	4874.00	44.7 PK	74.0	-29.3	1.01 V	256	34.98	9.72
8	4874.00	35.2 AV	54.0	-18.8	1.01 V	256	25.48	9.72
9	7311.00	44.8 PK	74.0	-29.2	1.04 V	248	31.65	13.15
10	7311.00	36.1 AV	54.0	-17.9	1.04 V	248	22.97	13.15

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	103.8 PK			1.01 H	99	99.69	4.11
2	*2462.00	92.1 AV			1.01 H	99	87.99	4.11
3	2483.50	70.3 PK	74.0	-3.7	1.01 H	99	66.12	4.18
4	2483.50	53.8 AV	54.0	-0.2	1.01 H	99	49.62	4.18
5	4924.00	47.3 PK	74.0	-26.7	1.06 H	126	37.50	9.80
6	4924.00	36.7 AV	54.0	-17.3	1.06 H	126	26.90	9.80
7	7386.00	48.2 PK	74.0	-25.8	1.02 H	118	35.06	13.14
8	7386.00	36.7 AV	54.0	-17.3	1.02 H	118	23.56	13.14
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	95.3 PK			1.03 V	85	91.19	4.11
2	*2462.00	85.3 AV			1.03 V	85	81.19	4.11
3	2483.50	66.3 PK	74.0	-7.7	1.03 V	85	62.12	4.18
4	2483.50	50.1 AV	54.0	-3.9	1.03 V	85	45.92	4.18
5	4924.00	46.3 PK	74.0	-27.7	1.03 V	247	36.50	9.80
6	4924.00	37.2 AV	54.0	-16.8	1.03 V	247	27.40	9.80
7	7386.00	48.2 PK	74.0	-25.8	1.10 V	332	35.06	13.14
8	7386.00	38.1 AV	54.0	-15.9	1.10 V	332	24.96	13.14

- 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	68.0 PK	74.0	-6.0	1.02 H	248	64.09	3.91
2	2390.00	53.9 AV	54.0	-0.1	1.02 H	248	49.99	3.91
3	*2422.00	106.2 PK			1.02 H	248	102.21	3.99
4	*2422.00	93.5 AV			1.02 H	248	89.51	3.99
5	4844.00	48.2 PK	74.0	-25.8	1.10 H	28	38.52	9.68
6	4844.00	38.6 AV	54.0	-15.4	1.10 H	28	28.92	9.68

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	63.0 PK	74.0	-11.0	1.12 V	245	59.09	3.91
2	2390.00	50.3 AV	54.0	-3.7	1.12 V	245	46.39	3.91
3	*2422.00	98.2 PK			1.12 V	245	94.21	3.99
4	*2422.00	89.3 AV			1.12 V	245	85.31	3.99
5	4844.00	46.9 PK	74.0	-27.1	1.00 V	88	37.22	9.68
6	4844.00	35.2 AV	54.0	-18.8	1.00 V	88	25.52	9.68

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 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	2390.00	58.2 PK	74.0	-15.8	1.00 H	48	54.31	3.91
2	2390.00	39.2 AV	54.0	-14.8	1.00 H	48	35.31	3.91
3	*2437.00	109.1 PK			1.00 H	48	105.05	4.04
4	*2437.00	89.6 AV			1.00 H	48	85.59	4.04
5	2483.50	58.2 PK	74.0	-15.8	1.00 H	48	53.99	4.18
6	2483.50	39.5 AV	54.0	-14.5	1.00 H	48	35.29	4.18
7	4874.00	46.8 PK	74.0	-27.2	1.05 H	99	37.08	9.72
8	4874.00	38.5 AV	54.0	-15.5	1.05 H	99	28.78	9.72
9	7311.00	47.5 PK	74.0	-26.5	1.07 H	321	34.35	13.15
10	7311.00	38.5 AV	54.0	-15.5	1.07 H	321	25.35	13.15
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	50.8 PK	74.0	-23.2	1.04 V	212	46.89	3.91
2	2390.00	38.9 AV	54.0	-15.1	1.04 V	212	34.99	3.91
3	*2437.00	107.3 PK			1.04 V	212	103.26	4.04
4	*2437.00	95.9 AV			1.04 V	212	91.86	4.04
5	2483.50	52.3 PK	74.0	-21.7	1.04 V	212	48.12	4.18
6	2483.50	41.3 AV	54.0	-12.7	1.04 V	212	37.12	4.18
7	4874.00	44.8 PK	74.0	-29.2	1.00 V	28	35.08	9.72
8	4874.00	36.2 AV	54.0	-17.8	1.00 V	28	26.48	9.72
9	7311.00	45.7 PK	74.0	-28.3	1.02 V	66	32.55	13.15
10	7311.00	36.2 AV	54.0	-17.8	1.02 V	66	23.05	13.15

- 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	105.3 PK			1.07 H	51	101.22	4.08
2	*2452.00	92.5 AV			1.07 H	51	88.42	4.08
3	2483.50	68.3 PK	74.0	-5.7	1.07 H	51	64.12	4.18
4	2483.50	53.9 AV	54.0	-0.1	1.07 H	51	49.72	4.18
5	4904.00	48.3 PK	74.0	-25.7	1.05 H	98	38.53	9.77
6	4904.00	35.5 AV	54.0	-18.5	1.05 H	98	25.73	9.77
7	7356.00	49.2 PK	74.0	-24.8	1.00 H	258	36.06	13.14
8	7356.00	36.6 AV	54.0	-17.4	1.00 H	258	23.46	13.14
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	98.2 PK			1.06 V	52	94.12	4.08
2	*2452.00	87.6 AV			1.06 V	52	83.52	4.08
3	2483.50	60.2 PK	74.0	-13.8	1.06 V	52	56.02	4.18
4	2483.50	51.2 AV	54.0	-2.8	1.06 V	52	47.02	4.18
5	4904.00	47.6 PK	74.0	-26.4	1.00 V	35	37.83	9.77
6	4904.00	38.3 AV	54.0	-15.7	1.00 V	35	28.53	9.77
7	7356.00	49.2 PK	74.0	-24.8	1.04 V	249	36.06	13.14
8	7356.00	38.1 AV	54.0	-15.9	1.04 V	249	24.96	13.14

- 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.



3.2 CONDUCTED EMISSION MEASUREMENT

3.2.1 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.

3.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
EMI Test Receiver Rohde&Schwarz	ESCS30	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_Cond_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.

3.2.3 TEST PROCEDURES

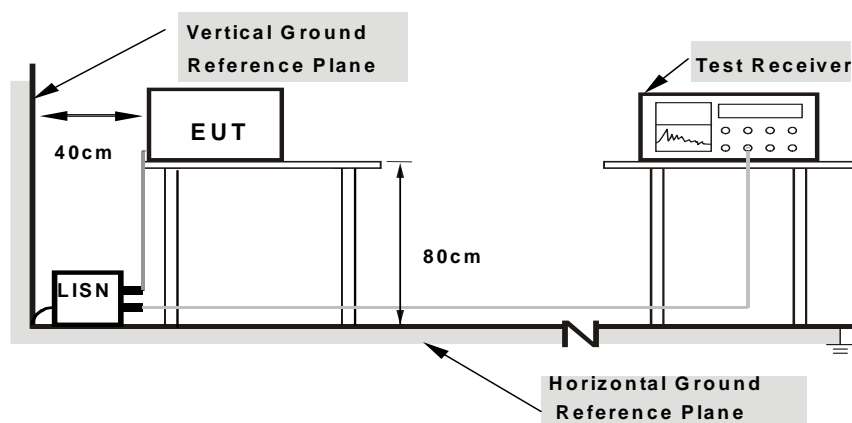
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

3.2.4 DEVIATION FROM TEST STANDARD

No deviation.

3.2.5 TEST SETUP



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

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



3.2.6 EUT OPERATING CONDITIONS

Same as 3.1.6.

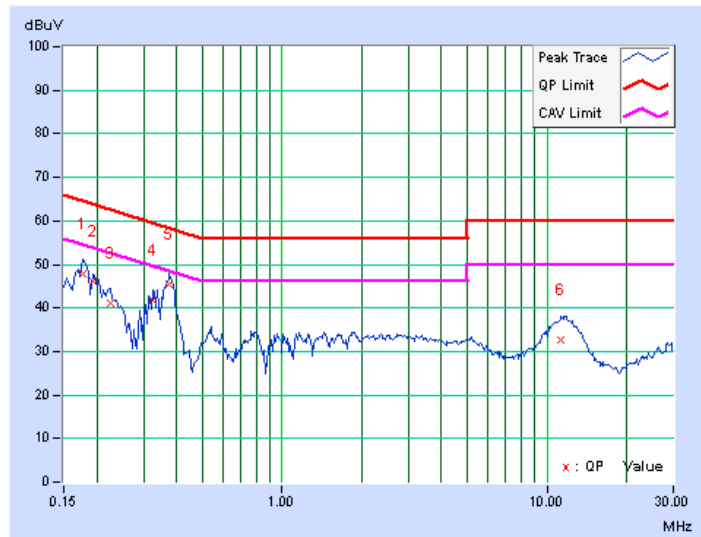
3.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA : 802.11b CH1(Adapter: 2AAJ012F 1 NA)

PHASE	Line	6dB BANDWIDTH	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	0.17734	10.75	37.21	27.56	47.96	38.31	64.61
2	0.19297	10.69	35.31	25.5	46	36.19	63.91	53.91	-17.91	-17.72
3	0.22422	10.65	30.27	22.33	40.92	32.98	62.66	52.66	-21.74	-19.68
4	0.32578	10.65	31.08	23.76	41.73	34.41	59.56	49.56	-17.83	-15.15
5	0.37656	10.65	34.83	26.81	45.48	37.46	58.35	48.35	-12.88	-10.9
6	11.32031	10.4	22.36	14.9	32.76	25.3	60	50	-27.24	-24.7

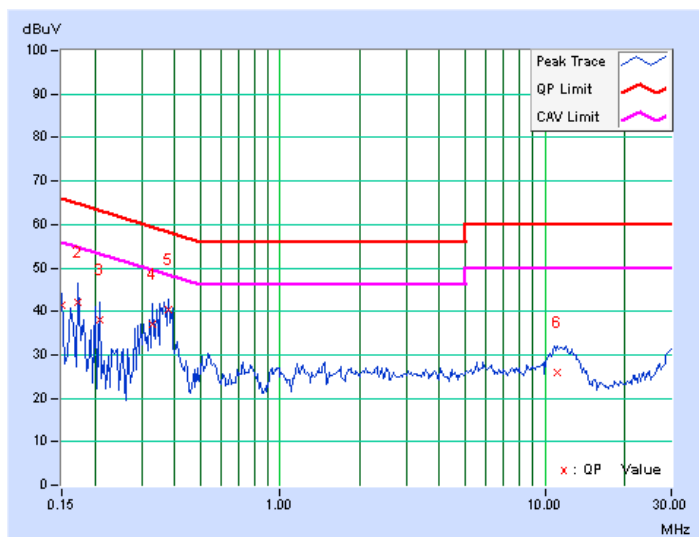
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Neutral	6dB BANDWIDTH	9kHz
--------------	---------	----------------------	------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15	10.65	30.7	15.05	41.35	25.7	66	56	-24.65	-30.3
2	0.17344	10.6	31.6	15.21	42.2	25.81	64.79	54.79	-22.59	-28.98
3	0.20859	10.55	27.33	10.07	37.88	20.62	63.26	53.26	-25.38	-32.64
4	0.32969	10.59	26.54	17.66	37.13	28.25	59.46	49.46	-22.33	-21.21
5	0.38047	10.61	29.88	22.01	40.49	32.62	58.27	48.27	-17.78	-15.65
6	11.14844	10.22	15.8	6.21	26.02	16.43	60	50	-33.98	-33.57

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

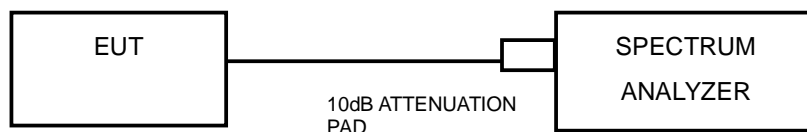


3.3 6dB BANDWIDTH MEASUREMENT

3.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

3.3.2 TEST SETUP



3.3.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer (10Hz-40GHz)	Rohde&Schwarz	FSV40	101003	Apr. 09,14	Apr. 08,15
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 27,14	Oct. 26,15
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.04,14	Sep. 03,15
Oscilloscope	Agilent	DSO9254A	MY51260160	Oct. 17, 14	Oct. 16, 15
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 05,14	Nov. 04,15

NOTE:

1. The test was performed in RF Oven room.
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.

3.3.4 TEST PROCEDURE

- a. Set resolution bandwidth (RBW) = 100kHz
- b. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. 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



**BUREAU
VERITAS**

Test Report No.: RF141216N012

3.3.5 DEVIATION FROM TEST STANDARD

No deviation.

3.3.6 EUT OPERATING CONDITIONS

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



3.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	9.10	0.5	PASS
6	2437	10.07	0.5	PASS
11	2462	9.11	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	15.15	15.13	0.5	PASS
6	2437	15.13	15.14	0.5	PASS
11	2462	15.12	15.16	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	15.13	15.62	0.5	PASS
6	2437	15.09	15.74	0.5	PASS
11	2462	15.11	15.71	0.5	PASS

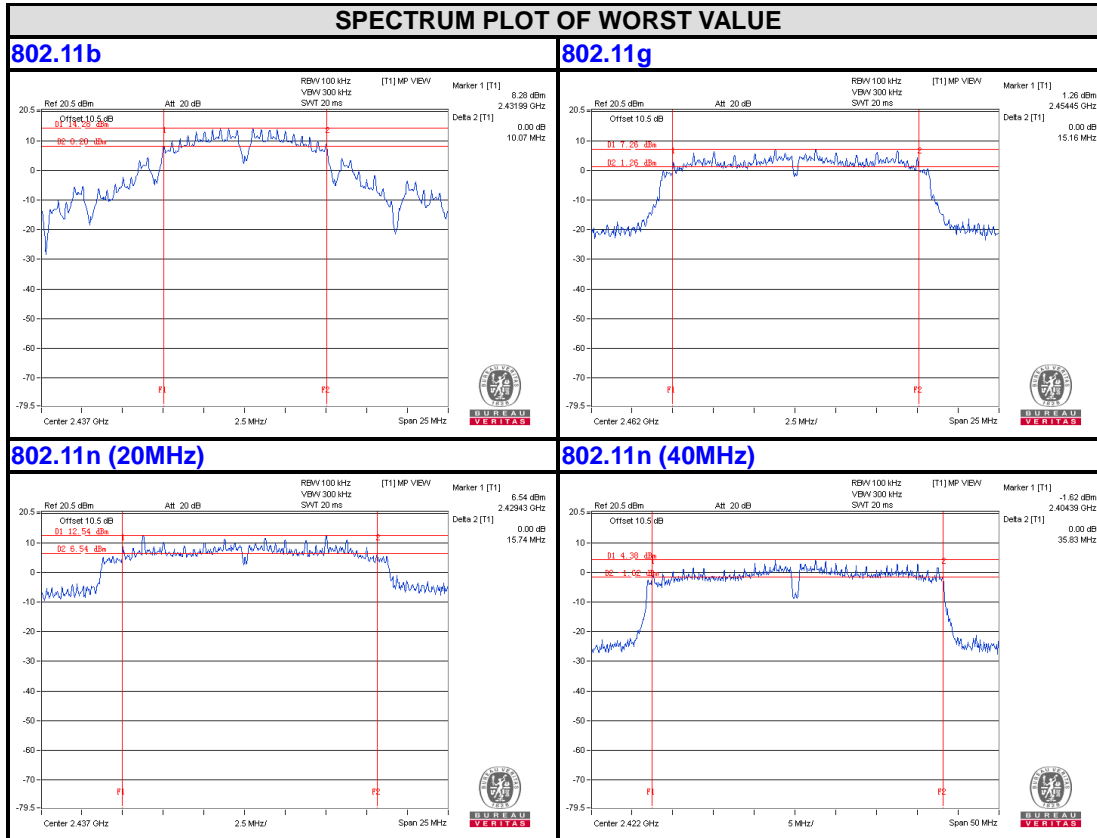


**BUREAU
VERITAS**

Test Report No.: RF141216N012

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	35.26	35.83	0.5	PASS
6	2437	35.69	35.76	0.5	PASS
9	2452	35.22	35.80	0.5	PASS



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3.4 CONDUCTED OUTPUT POWER

3.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

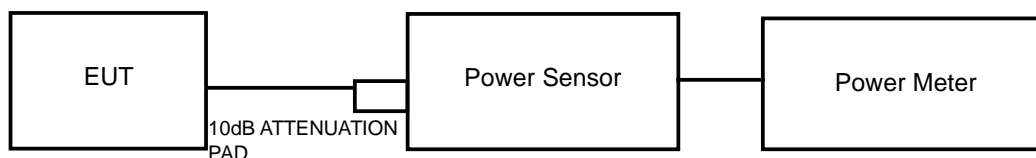
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output v02r01 Method of conducted output power measurement on IEEE 802.11 devices,

- Array Gain = 0 dB (i.e., no array gain) for NANT \leq 4;
- Array Gain = 0 dB (i.e., no array gain) for channel widths \geq 40 MHz for any NANT;
- Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT \geq 5.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

3.4.2 TEST SETUP



3.4.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer (10Hz–40GHz)	Rohde&Schwarz	FSV40	101003	Apr. 09,14	Apr. 08,15
Power Meter	Anritsu	ML2495A	1139001	Feb. 21,15	Feb. 20,16
Power Sensor	Anritsu	MA2411B	1126068	Feb. 21,15	Feb. 20,16

NOTE:

1. The test was performed in RF Oven room.
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.



3.4.4 TEST PROCEDURES

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

3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

3.4.6 EUT OPERATING CONDITIONS

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

3.4.7 TEST RESULTS

FOR AVERAGE POWER

802.11b

CHAN.	FREQ. (MHz)	AVG. POWER (dBm)	POWER (mW)	LIMIT (dBm)	PASS / FAIL
1	2412	18.79	75.683	30	PASS
6	2437	25.17	328.852	30	PASS
11	2462	18.34	68.234	30	PASS

802.11g

CHAN.	FREQ. (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	17.61	17.60	115.345	20.62	30	PASS
6	2437	23.17	22.91	402.717	26.05	30	PASS
11	2462	17.69	18.25	125.603	20.99	30	PASS

802.11n (20MHz)

CHAN.	FREQ. (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	16.23	16.21	83.753	19.23	30	PASS
6	2437	23.15	22.65	390.841	25.92	30	PASS
11	2462	17.08	17.11	102.565	20.11	30	PASS

802.11n (40MHz)

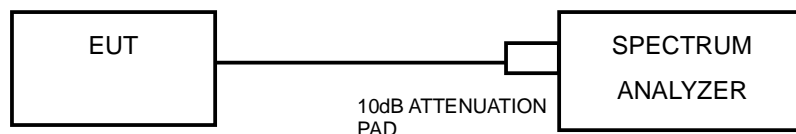
CHAN.	FREQ. (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	17.36	17.68	112.980	20.53	30	PASS
6	2437	22.82	22.95	389.045	25.90	30	PASS
9	2452	17.22	17.42	107.895	20.33	30	PASS

3.5 POWER SPECTRAL DENSITY MEASUREMENT

3.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

3.5.2 TEST SETUP



3.5.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.5.4 TEST PROCEDURE

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set span to at least 1.5 times the OBW.
- c) Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d) Set VBW $\geq 3 \times \text{RBW}$.
- e) Detector = power averaging (RMS) or sample detector (when RMS not available).
- f) Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span}/\text{RBW}$.
- g) Sweep time = auto couple.
- h) Employ trace averaging (RMS) mode over a minimum of 100 traces.
- i) Use the peak marker function to determine the maximum amplitude level.

3.5.5 DEVIATION FROM TEST STANDARD

No deviation.

3.5.6 EUT OPERATING CONDITION

Same as Item 3.3.6



3.5.7 TEST RESULTS

802.11b

TX chain	Channel	Freq. (MHz)	PSD W/O DUTY FACTOR (dBm/3kHz)	PSD WITH DUTY FACTOR (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-4.52	-4.33	8	PASS
	6	2437	-0.17	0.02	8	PASS
	11	2462	-4.58	-4.39	8	PASS

NOTE: Refer to section 2.3 for duty cycle spectrum plot, Duty factor=0.19

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	TOTAL PSD W/O DUTY FACTOR (dBm/3kHz)	TOTAL PSD WITH DUTY FACTOR (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-7.35	3.01	-4.34	-3.87	8	PASS
	6	2437	-2.58	3.01	0.43	0.90	8	
	11	2462	-7.67	3.01	-4.66	-4.19	8	PASS
1	1	2412	-8.15	3.01	-5.14	-4.67	8	PASS
	6	2437	-3.11	3.01	-0.10	0.37	8	
	11	2462	-7.15	3.01	-4.14	-3.67	8	PASS

NOTE: Refer to section 2.3 for duty cycle spectrum plot, Duty factor=0.47

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	TOTAL PSD W/O DUTY FACTOR (dBm/3kHz)	TOTAL PSD WITH DUTY FACTOR (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-7.78	3.01	-4.77	-4.30	8	PASS
	6	2437	-2.06	3.01	0.95	1.42	8	
	11	2462	-8.78	3.01	-5.77	-5.30	8	PASS
1	1	2412	-8.65	3.01	-5.64	-5.17	8	PASS
	6	2437	-3.03	3.01	-0.02	0.45	8	
	11	2462	-7.52	3.01	-4.51	-4.04	8	PASS

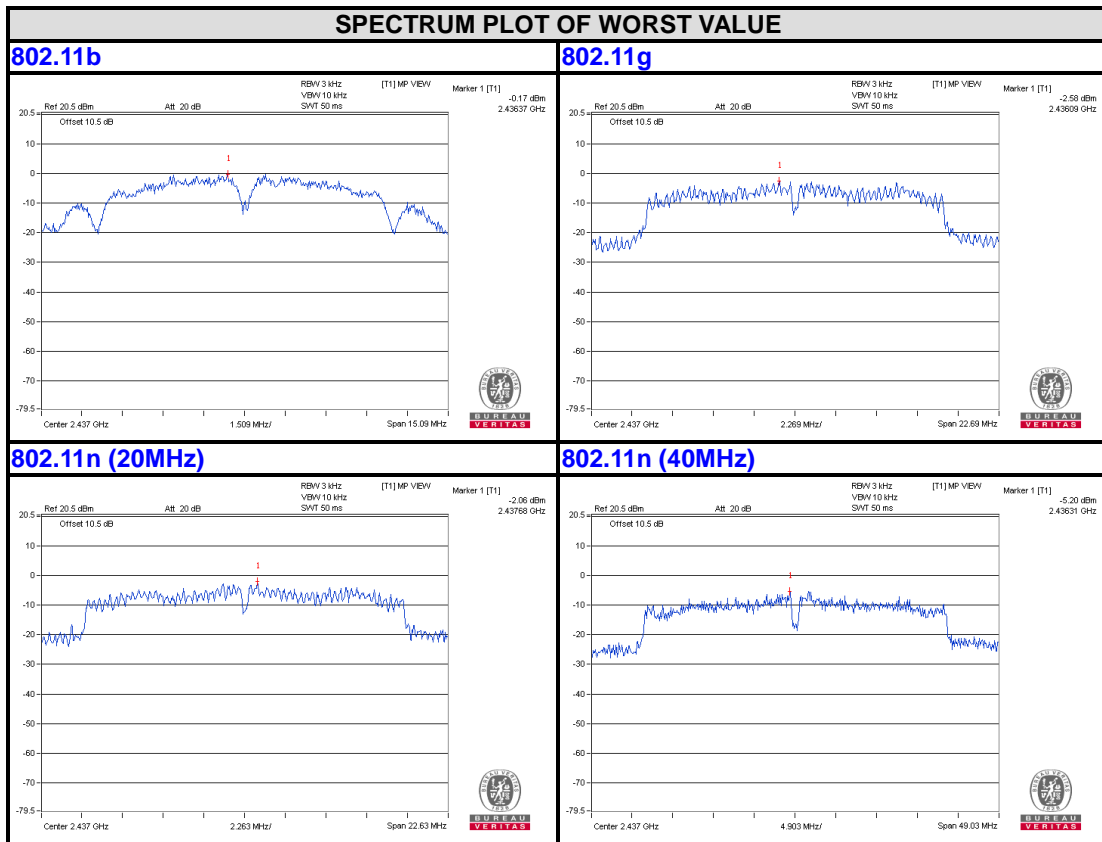
NOTE: Refer to section 2.3 for duty cycle spectrum plot, Duty factor=0.47



802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	TOTAL PSD W/O DUTY FACTOR (dBm/3kHz)	TOTAL PSD WITH DUTY FACTOR (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-11.64	3.01	-8.63	-8.14	8	PASS
	6	2437	-5.20	3.01	-2.19	-1.70	8	
	9	2452	-11.31	3.01	-8.30	-7.81	8	PASS
1	3	2422	-11.34	3.01	-8.33	-7.84	8	PASS
	6	2437	-7.35	3.01	-4.34	-3.85	8	
	9	2452	-13.11	3.01	-10.10	-9.61	8	PASS

NOTE: Refer to section 2.3 for duty cycle spectrum plot, Duty factor=0.49

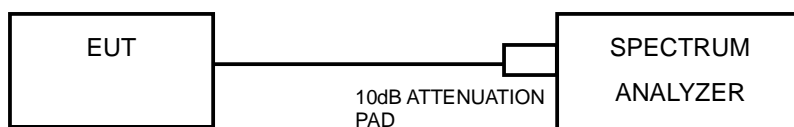


3.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

3.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below -30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

3.6.2 TEST SETUP



3.6.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.6.4 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 OOBE

1. Set RBW = 100 kHz.
2. Set VBW \geq 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

3.6.5 DEVIATION FROM TEST STANDARD

No deviation.

3.6.6 EUT OPERATING CONDITION

Same as Item 3.3.6

3.6.7 TEST RESULTS

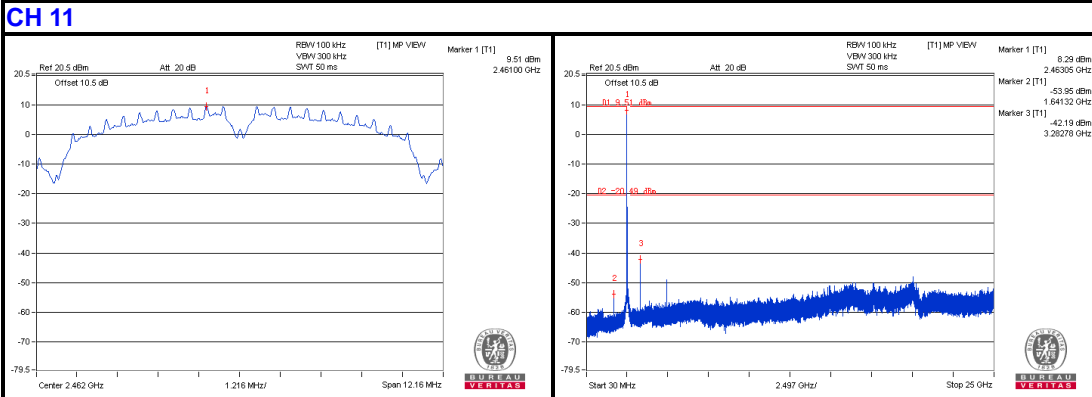
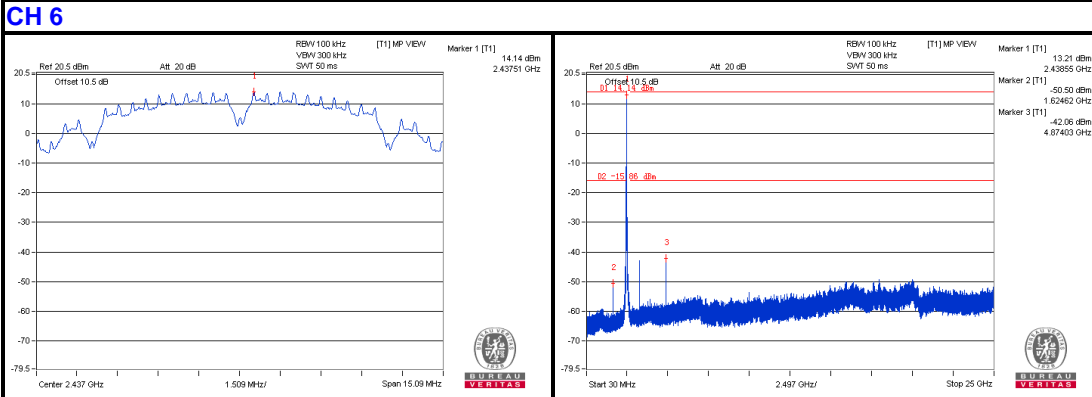
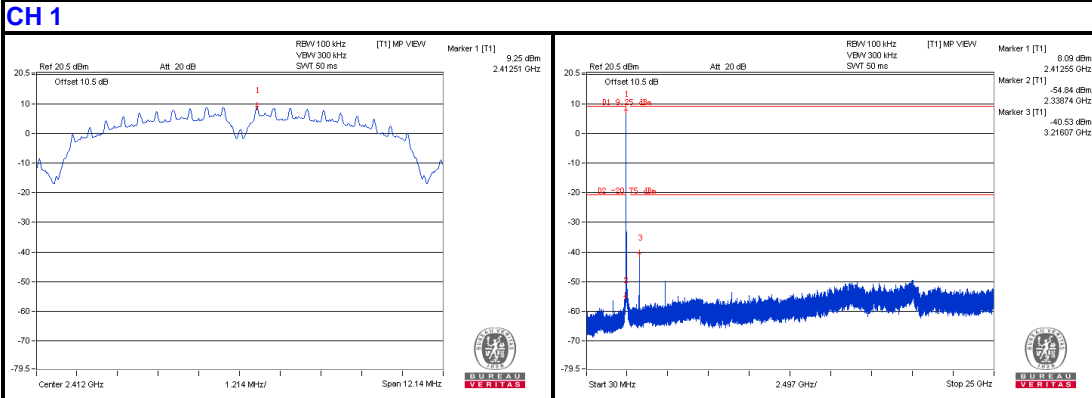
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.



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802.11b



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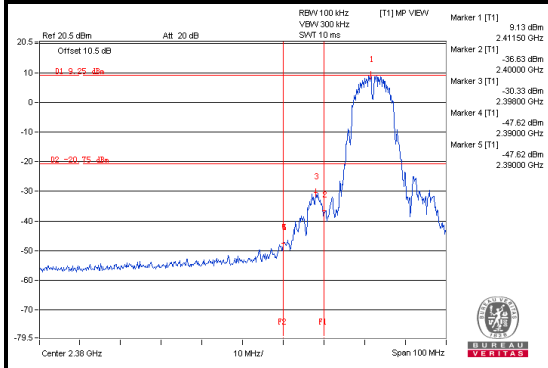
Tel: +86 769 8593 5656
Fax: +86 769 8593 1080
Email: customerservice.dg@cn.bureauveritas.com



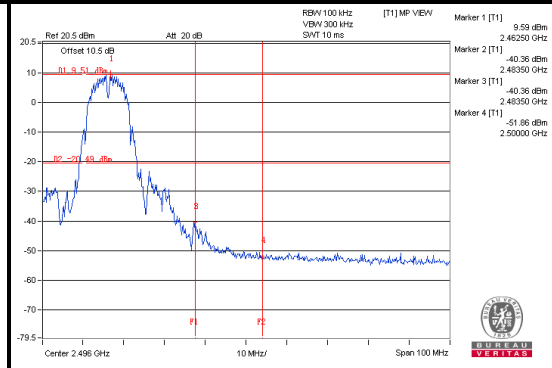
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CH 1 Band edge

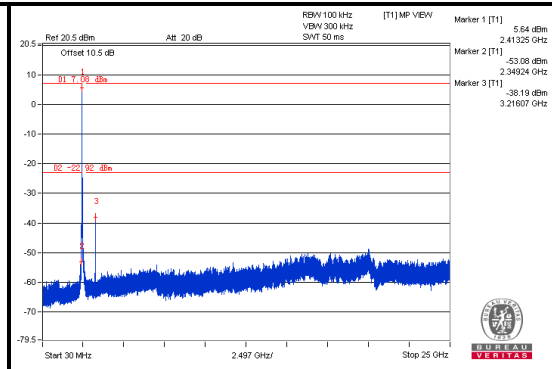
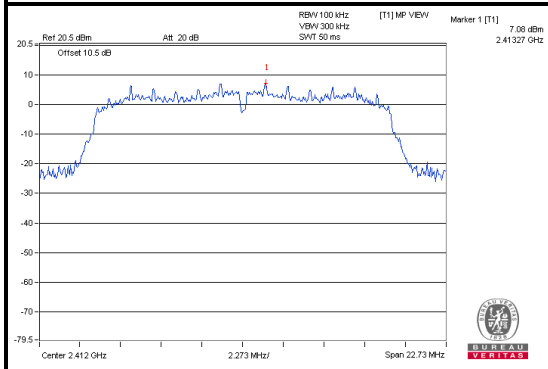


CH 11 Band edge

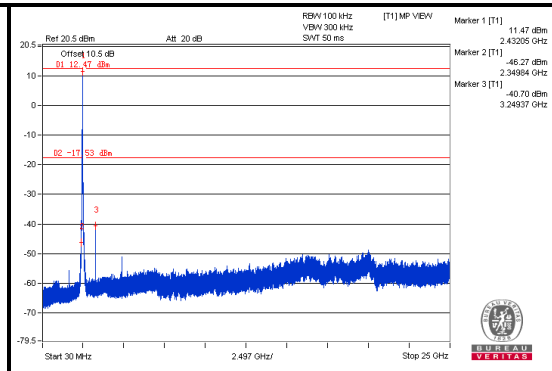
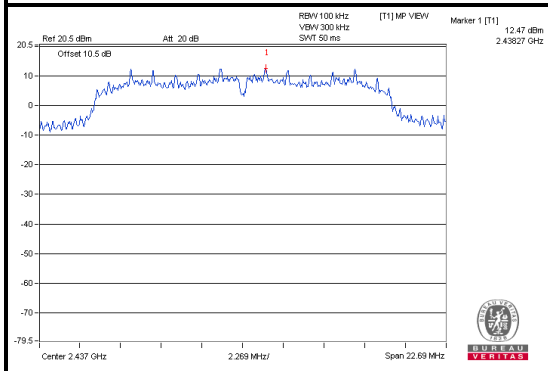


802.11g CHAIN 0

CH 1



CH 6



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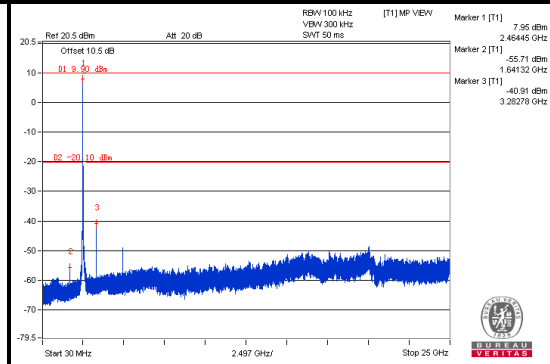
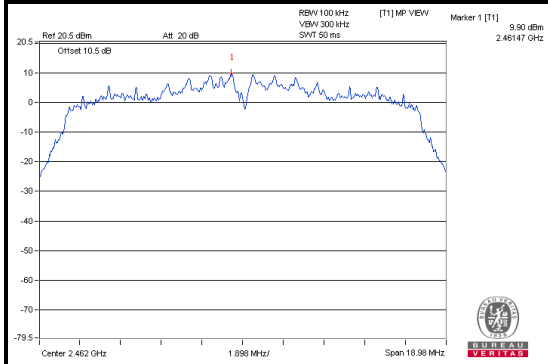
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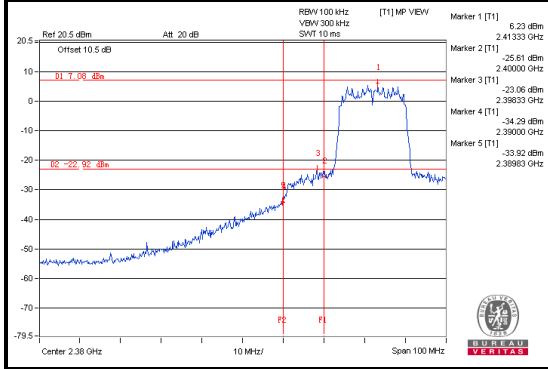
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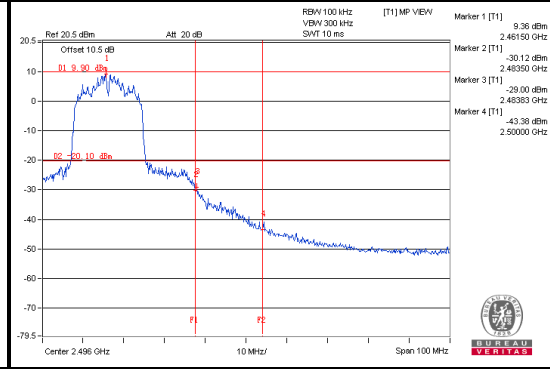
CH 11



CH 11 Band edge

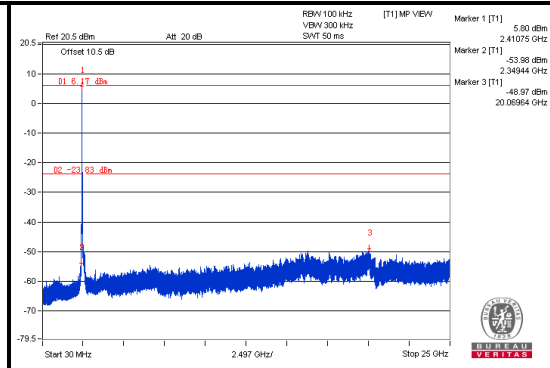
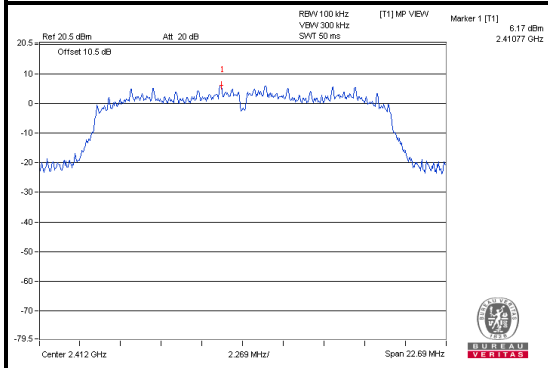


CH 11 Band edge



CHAIN 1

CH 1



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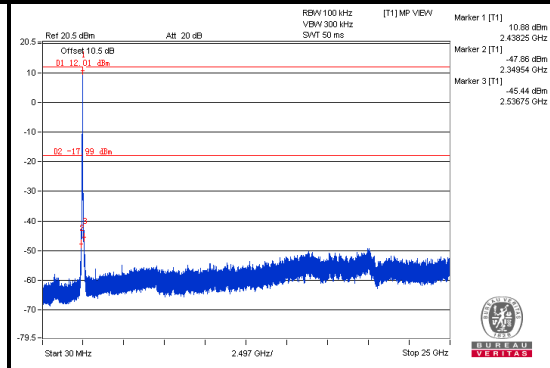
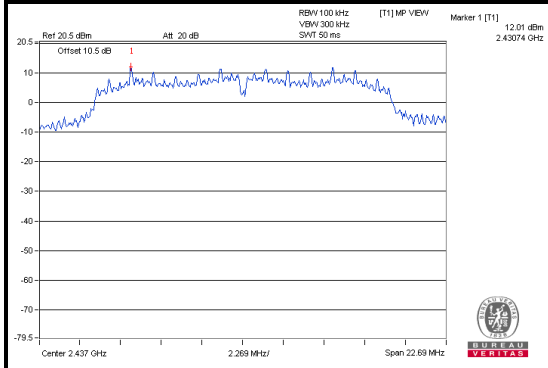
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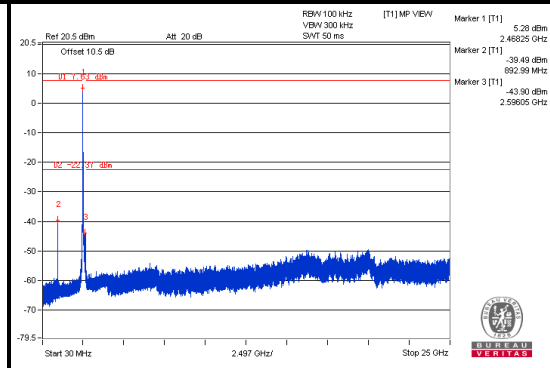
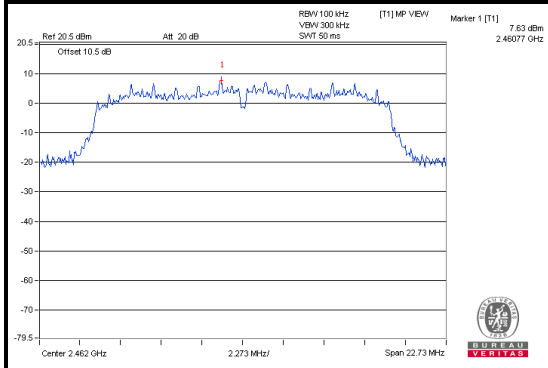
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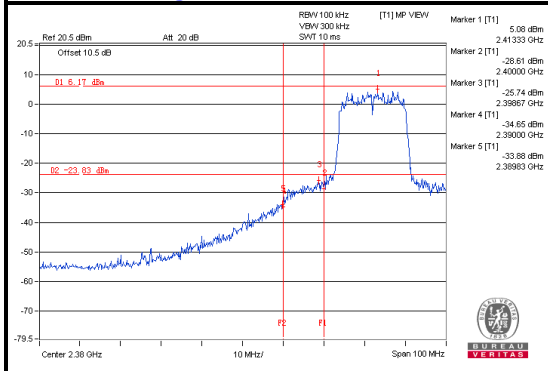
CH 6



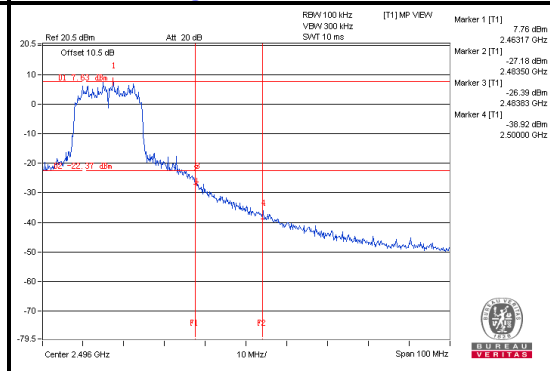
CH 11



CH 1 Band edge



CH 11 Band edge



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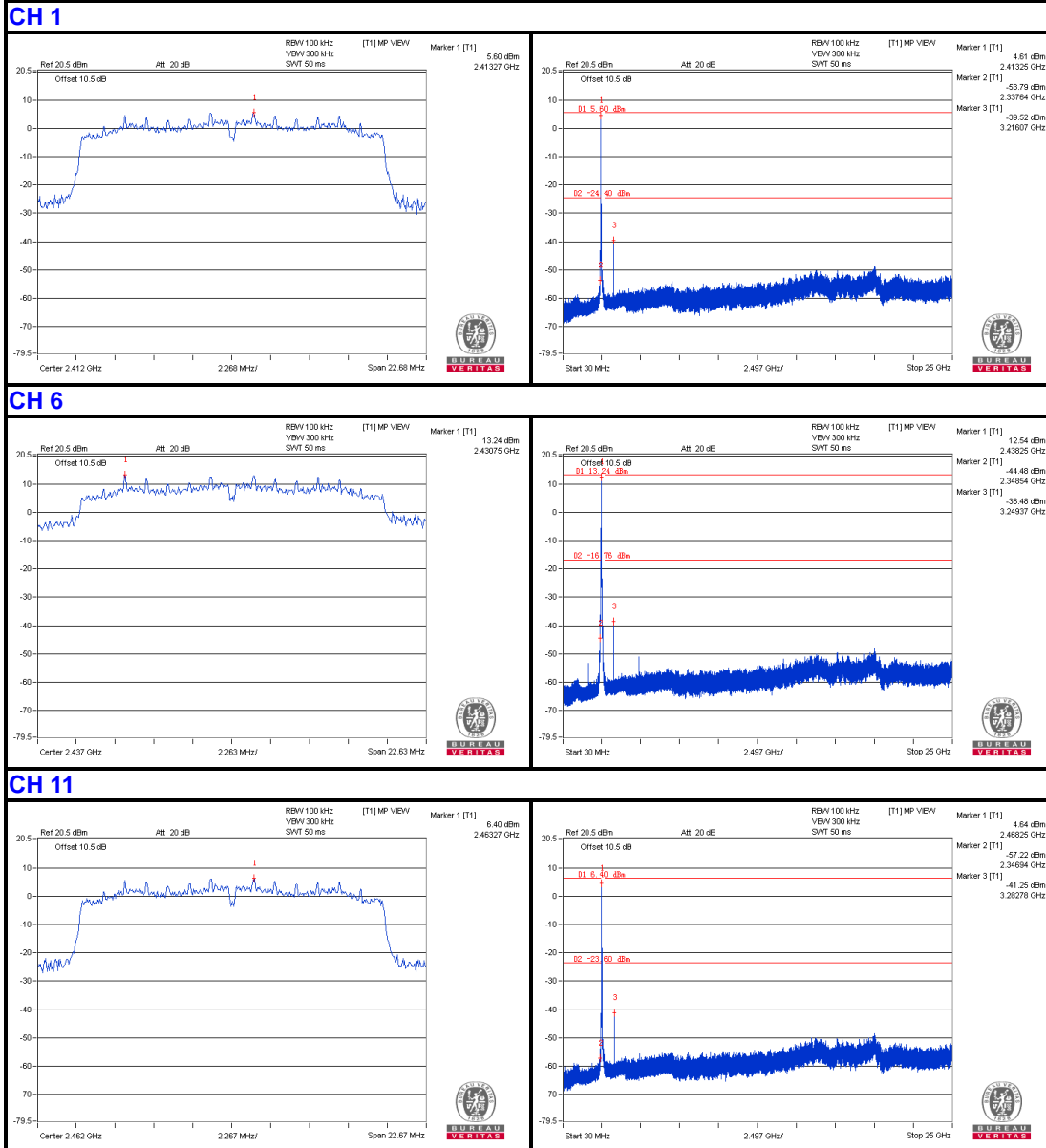
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802.11n (20MHz)
CHAIN 0



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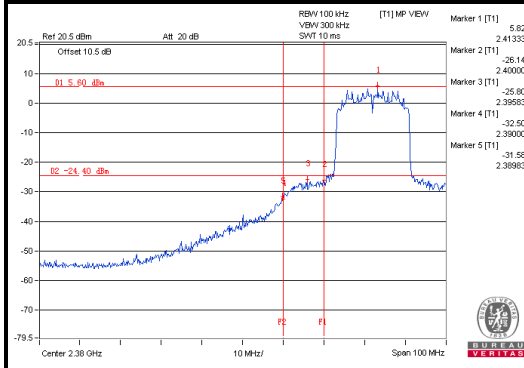
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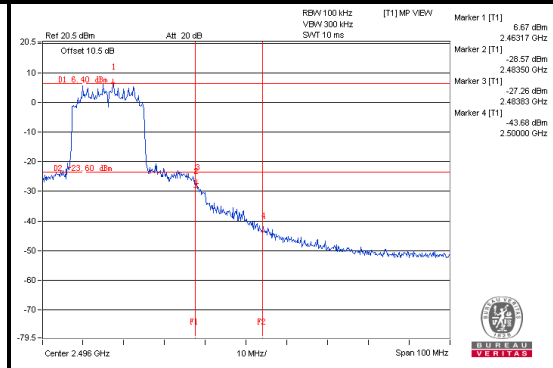
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CH 1 Band edge

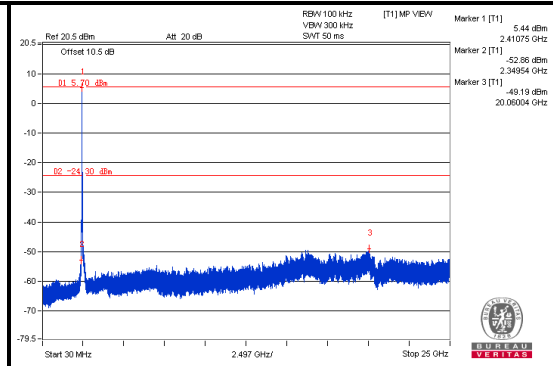
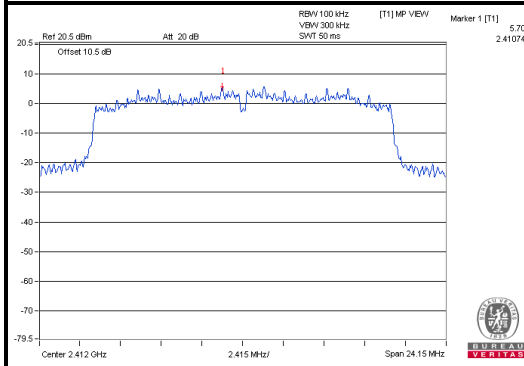


CH 11 Band edge

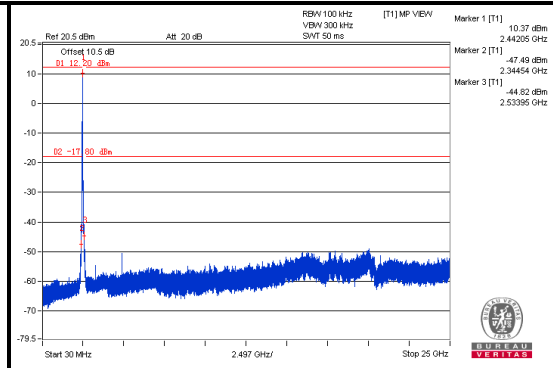
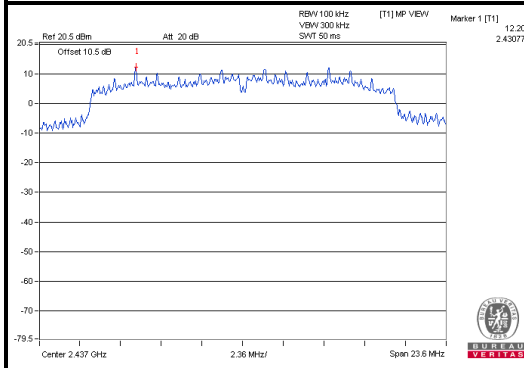


CHAIN 1

CH 1



CH 6



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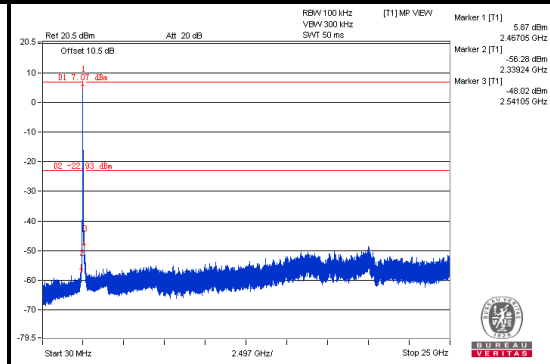
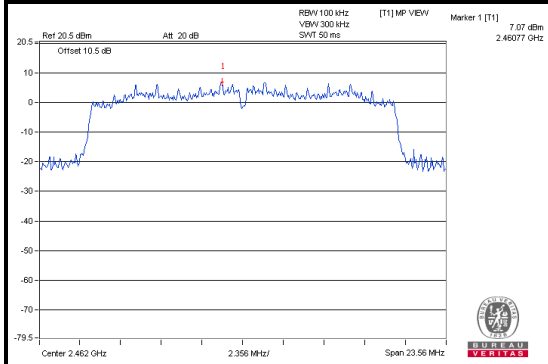
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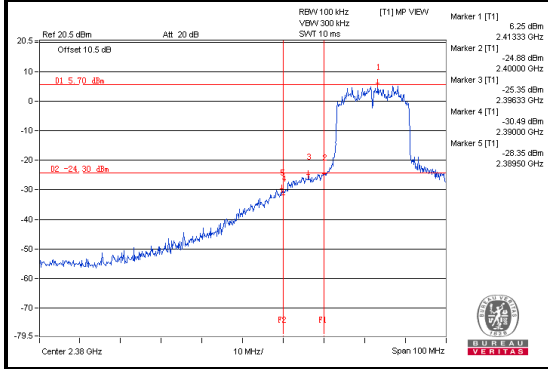
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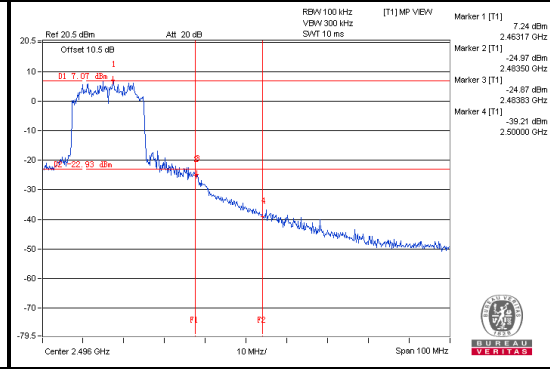
CH 11



CH 11 Band edge



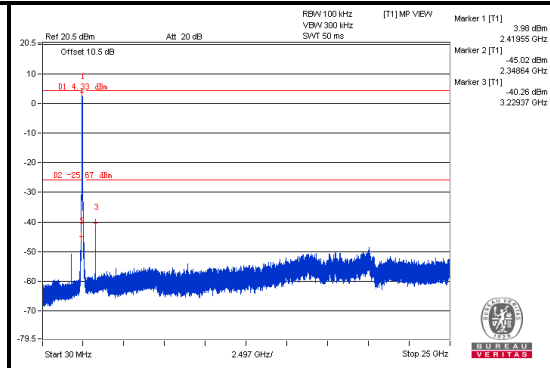
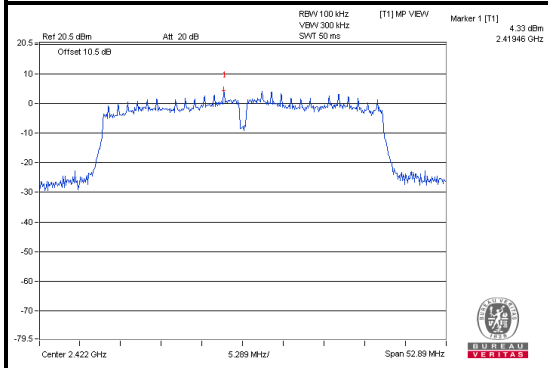
CH 11 Band edge



802.11n (40MHz)

CHAIN 0

CH 3



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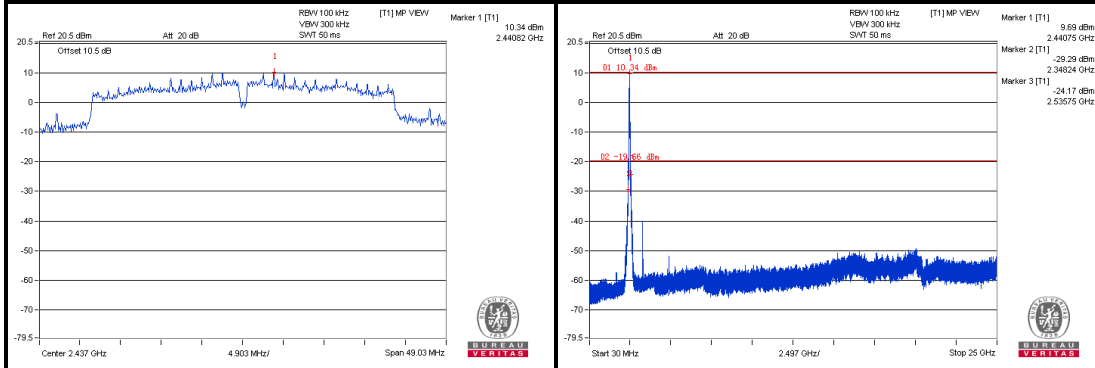
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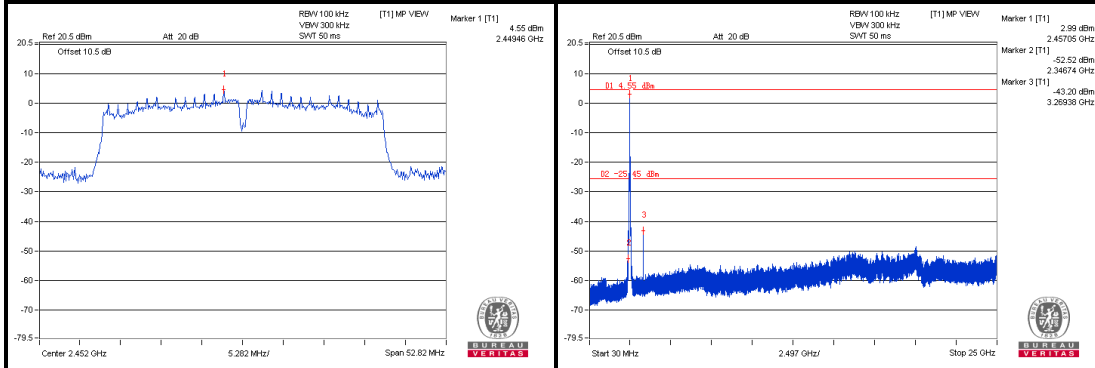
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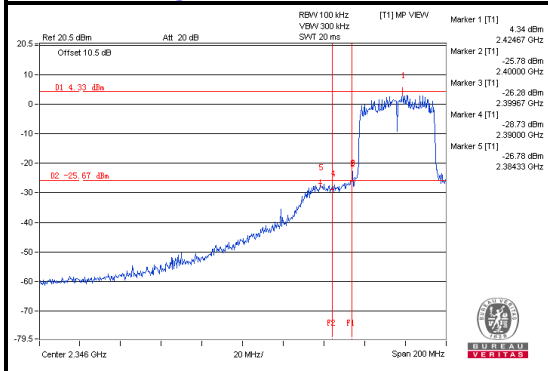
CH 6



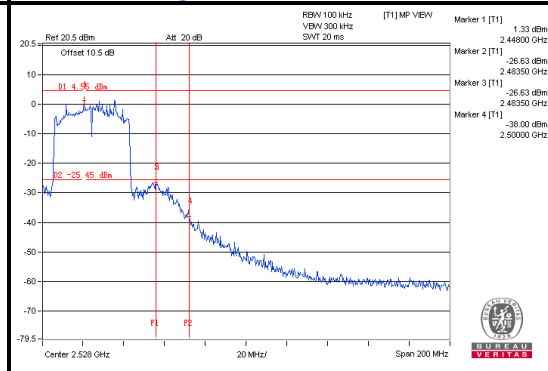
CH 9



CH 3 Band edge



CH 9 Band edge



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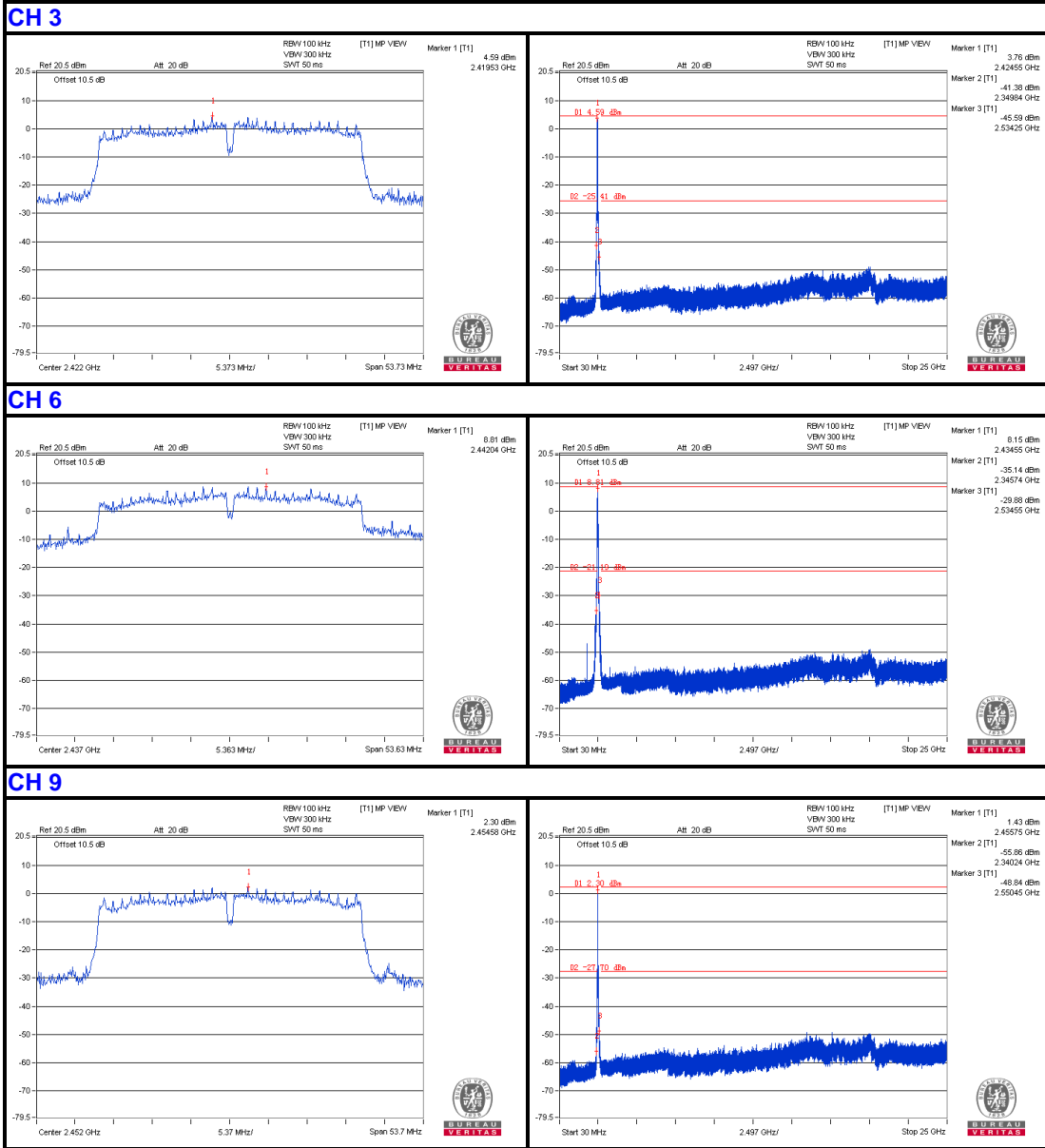
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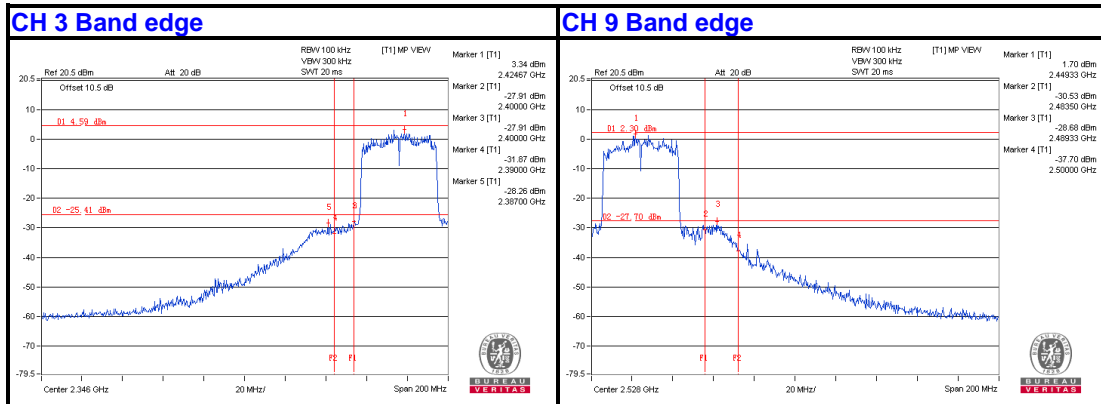
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4 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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5 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---