

TEST REPORT

Applicant	TP-Link Technologies Co., Ltd.
Address	Building 24(floors1, 3, 4, 5) and 28(floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China

Manufacturer or Supplier	TP-Link Technologies Co., Ltd.
Address	Building 24(floors1, 3, 4, 5) and 28(floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China
Product	450Mbps Wireless N Gigabit Router
Brand Name	TP-Link
Model	TL-WR1043N
Additional Model & Model Difference	N/A
Date of tests	Dec.10, 2015 ~ Dec. 24, 2015 Aug. 18, 2016 ~ Sep. 20, 2016

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 Harry Li Project Engineer/ EMC Department	Approved by Glyn He Supervisor/ EMC Department
	 Date: Oct. 13, 2016

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**BUREAU
VERITAS**

Test Report No.: RF160818N017

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF151030N028	Original release	Dec. 23, 2015
RF160818N017	Based on the original report RF151030N028 changed the antenna information, canceled the USB function and it needed to be retested after engineer evaluated.	Oct. 13, 2016

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit.
15.247(d)	Band Edge 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 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	2.70dB
Radiated emissions	9KHz ~ 30MHz	2.90dB
	30MHz ~ 1GMHz	3.83dB
	1GHz ~ 18GHz	4.93dB
	18GHz ~ 40GHz	4.80dB

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	450Mbps Wireless N Gigabit Router
MODEL NO.	TL-WR1043N
FCC ID	TE7WR1043NV5
NOMINAL VOLTAGE	Adapter input: AC 100-240V 50/60Hz, Adapter output: DC9V/0.85A output
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(HT20) 2422-2452MHz for 11n(HT40)
AVERAGE POWER	25.58dBm (Measured Average Power)
ANTENNA TYPE	Dipole Antenna; 5.0dBi gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

NOTE:

1. The EUT have MIMO function. Physically, the EUT provides 3 completed transmitters and 3 receivers.

MODULATION MODE	TX FUNCTION
802.11b	3TX/3RX
802.11g	3TX/3RX
802.11n (HT20)	3TX/3RX
802.11n (HT40)	3TX/3RX

2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
4. The EUT can be powered by adapter as list as following:

ADAPTER	
BRAND:	TP-Link
MODEL:	T090085-2B1
INPUT:	AC 100-240V, 50/60Hz 0.3A
OUTPUT:	DC 9V/ 0.85A
DC CABLE:	Unshielded, Non-detachable, 1.5m



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 X 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	
-	√	√	√	√	Powered by AC 120V with WIFI function

Where

RE<1G: Radiated Emission below 1GHz

RE≥1G: Radiated Emission above 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

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	TESTED CONDITION
-	WIFI (2.4G) Link

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)	AXIS
802.11g	1 to 11	1	OFDM	BPSK	6.0	X

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)	AXIS
802.11b	1 to 11	1, 2, 6, 10, 11	CCK	DBPSK	1.0	X
802.11g	1 to 11	1, 2, 6, 10, 11	OFDM	BPSK	6.0	X
802.11n HT20	1 to 11	1, 2, 6, 10, 11	OFDM	BPSK	6.5	X
802.11n HT40	3 to 9	3, 4, 6, 8, 9	OFDM	BPSK	13.5	X

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	26deg. C, 67%RH	AC 120V 60Hz	Sen He
RE≥1G	26deg. C, 67%RH	AC 120V 60Hz	Sen He
PLC	20deg. C, 56%RH	AC 120V 60Hz	Sen He
APCM	20deg. C, 55%RH	AC 120V 60Hz	Blue Zheng

3.3 DUTY CYCLE OF TEST SIGNAL

Chain 0:

Duty cycle of test signal is 100 %

Chain 1:

Duty cycle of test signal is 100 %

Chain 2:

Duty cycle of test signal is 100 %



3.4 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 v03r05

KDB 662911 D01 v02r01

ANSI C63.10-2013

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

NOTE: 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.

3.5 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	N/A	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A



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	ESR7	101588	Jan. 22,16	Jan. 21,17
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	Mar. 04,16	Mar. 03,17
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	Apr. 05,16	Apr. 04,17
Voltage probe	SCHWARZBECK	TK 9421	TK 9421-176	Jan. 08,16	Jan. 07,17
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.



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) were not recorded.

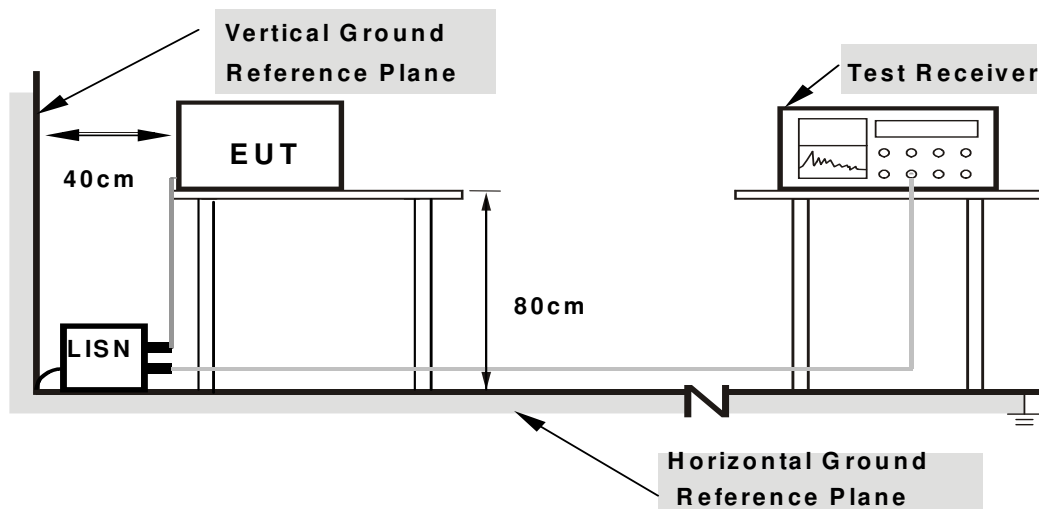
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

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.



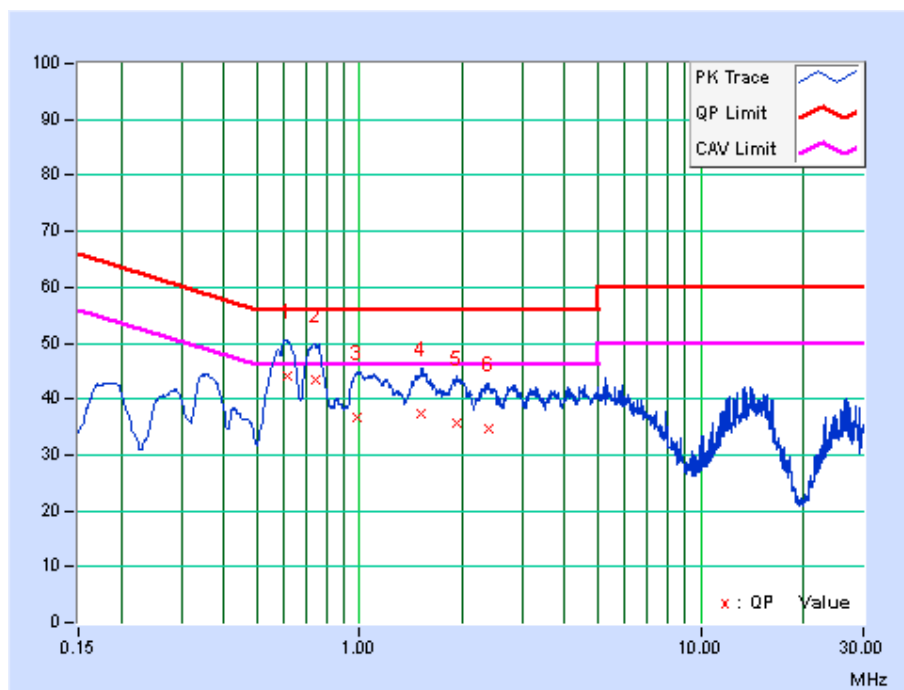
4.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA: WIFI link

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	0.61215	10.30	33.69	21.37	43.99	31.67	56.00	46.00	-12.01	-14.33
2	0.74032	10.32	33.24	21.83	43.56	32.15	56.00	46.00	-12.44	-13.85
3	0.98460	10.37	26.49	15.08	36.86	25.45	56.00	46.00	-19.14	-20.55
4	1.52217	10.38	27.15	15.86	37.53	26.24	56.00	46.00	-18.47	-19.76
5	1.92075	10.38	25.38	14.73	35.76	25.11	56.00	46.00	-20.24	-20.89
6	2.37975	10.38	24.35	13.41	34.73	23.79	56.00	46.00	-21.27	-22.21

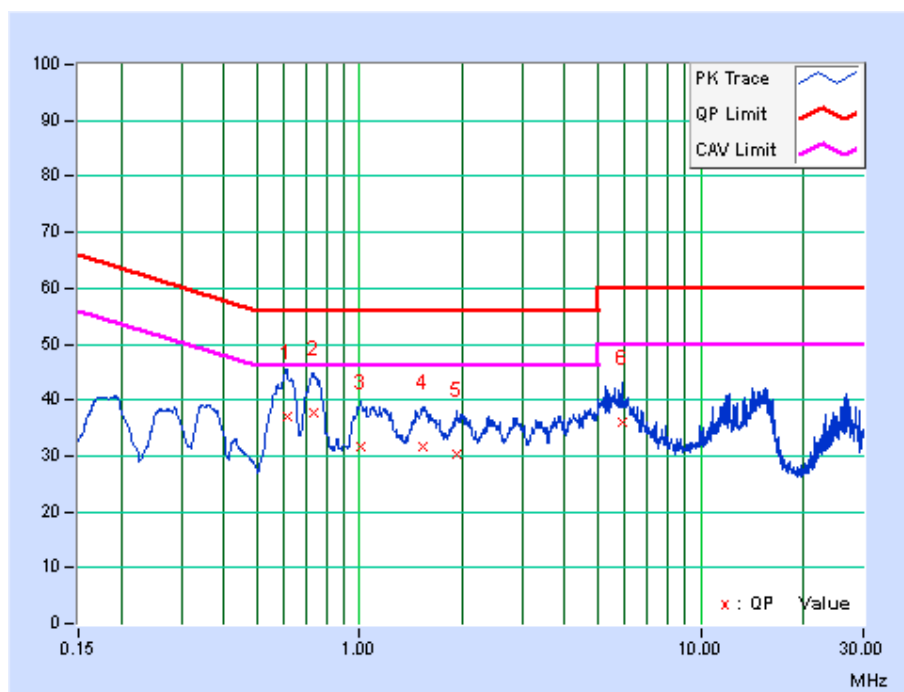
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



PHASE	Neutral	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	0.61215	9.94	27.22	17.07	37.16	27.01	56.00	46.00	-18.84	-18.99
2	0.73050	9.96	27.66	18.65	37.62	28.61	56.00	46.00	-18.38	-17.39
3	1.00562	9.98	21.63	13.02	31.61	23.00	56.00	46.00	-24.39	-23.00
4	1.52620	10.00	21.59	15.52	31.59	25.52	56.00	46.00	-24.41	-20.48
5	1.92539	10.02	20.14	14.17	30.16	24.19	56.00	46.00	-25.84	-21.81
6	5.91000	10.25	25.66	13.57	35.91	23.82	60.00	50.00	-24.09	-26.18

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





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	ESR7	101494	Apr. 05,16	Apr. 04,17
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	Nov. 09,15	Nov. 08,16
Bilog Antenna	Teseq	CBL 6111D	30643	Jul. 14, 16	Jul. 13, 17
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 18,16	May 17,17
GPS Generator+ Antenna	TOJOIN	GNSS-5000A	E1-010119	Aug. 08, 16	Aug. 07, 17
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	Mar. 12,16	Mar. 11,18
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170242	Mar. 12,16	Mar. 11,17
Amplifier (9kHz-1GHz)	SONOMA	310D	186955	Mar. 04,16	Mar. 03, 17
Pre-Amplifier(1-18G)	HP	8449B	3008A00409	Apr. 25,16	Apr. 24,17
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 20,15	Nov. 19,16
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Aug. 08,16	Aug. 07,17

NOTE:

1. The test was performed in 966 Chamber.
2. The calibration interval of the above test instruments are 12 or 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 494399.

4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 1.5 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.

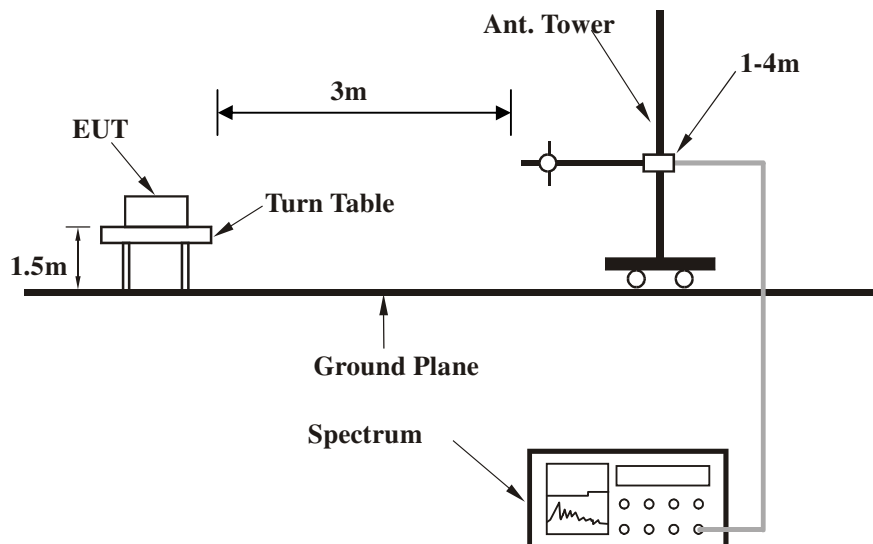
NOTE:

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.
5. The testing of the EUT was performed on all 3 orthogonal axes, the worst-case test configuration was reported on the file test setup photo.

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:

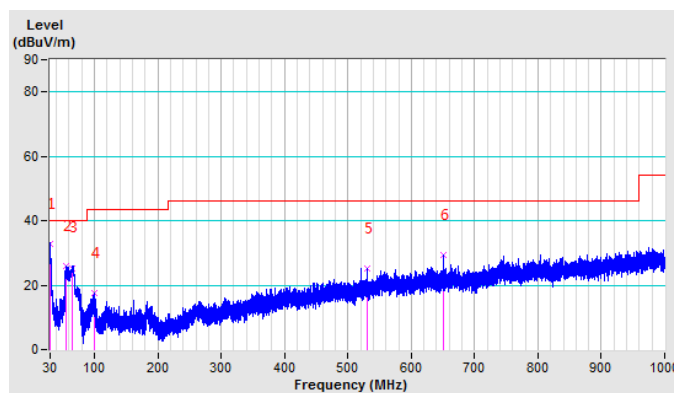
802.11g

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 (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.00	32.70	40.00	-7.30	150	204	43.48	-10.78
2	54.77	25.81	40.00	-14.19	200	147	48.89	-23.08
3	64.77	25.34	40.00	-14.66	100	283	49.60	-24.26
4	99.26	17.40	43.50	-26.10	200	304	35.79	-18.39
5	530.82	25.22	46.00	-20.78	100	277	30.91	-5.69
6	649.98	29.40	46.00	-16.60	100	104	32.59	-3.19

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.

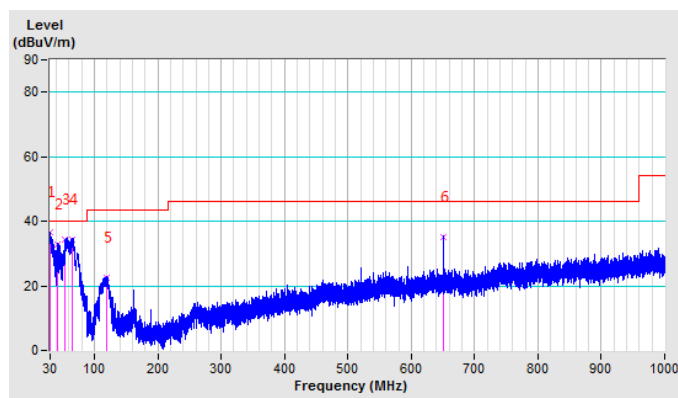


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.00	36.69	40.00	-3.31	100	200	47.47	-10.78
2	41.37	32.88	40.00	-7.12	200	174	49.47	-16.59
3	53.83	34.38	40.00	-5.62	200	106	57.24	-22.86
4	64.62	34.30	40.00	-5.70	300	253	58.55	-24.25
5	119.18	22.62	43.50	-20.88	200	135	39.06	-16.44
6	649.98	35.16	46.00	-10.84	100	308	38.35	-3.19

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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Test Report No.: RF160818N017

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	52.0 PK	74.0	-22.0	1.69 H	152	48.13	3.87
2	2390.00	40.1 AV	54.0	-13.9	1.69 H	152	36.21	3.87
3	*2412.00	100.9 PK			1.69 H	152	96.99	3.94
4	*2412.00	96.8 AV			1.69 H	152	92.81	3.94
5	4824.00	52.4 PK	74.0	-21.6	1.02 H	214	44.00	8.40
6	4824.00	48.3 AV	54.0	-5.7	1.02 H	214	39.90	8.40
7	#7236.00	55.1 PK	70.9	-15.8	1.01 H	87	43.40	11.70
8	#7236.00	48.4 AV	66.8	-18.4	1.01 H	87	36.70	11.70
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	55.5 PK	74.0	-18.5	1.69 V	325	51.68	3.87
2	2390.00	52.4 AV	54.0	-1.6	1.69 V	325	48.53	3.87
3	*2412.00	114.9 PK			1.56 V	325	110.91	3.94
4	*2412.00	109.3 AV			1.56 V	325	105.39	3.94
5	4824.00	52.1 PK	74.0	-21.9	1.04 V	343	43.64	8.46
6	4824.00	48.6 AV	54.0	-5.4	1.04 V	343	40.14	8.46
7	#7236.00	54.7 PK	84.9	-30.2	1.39 V	2	43.02	11.68
8	#7236.00	47.2 AV	79.3	-32.1	1.39 V	2	35.52	11.68

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.

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Test Report No.: RF160818N017

CHANNEL	TX Channel 2	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	*2417.00	102.6 PK			1.51 H	154	98.59	3.95
2	*2417.00	96.6 AV			1.51 H	154	92.52	3.95
3	2390.00	49.6 PK	74.0	-24.4	1.51 H	154	45.69	3.87
4	2390.00	39.7 AV	54.0	-14.3	1.51 H	154	35.86	3.87
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	*2417.00	115.3 PK			1.79 V	315	111.30	3.95
2	*2417.00	109.5 AV			1.79 V	315	105.40	3.95
3	2390.00	55.7 PK	74.0	-18.3	1.79 V	315	51.88	3.87
4	2390.00	48.9 AV	54.0	-5.1	1.79 V	315	45.05	3.87

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

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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	108.9 PK			1.59 H	220	104.90	4.01
2	*2437.00	102.1 AV			1.59 H	220	98.13	4.01
3	2483.50	50.33 PK	74.0	-23.67	2.15 H	220	46.17	4.16
4	2483.50	42.12 AV	54.0	-11.88	2.15 H	220	37.96	4.16
5	4874.00	43.6 PK	74.0	-30.4	2.15 H	302	35.54	8.08
6	4874.00	34.1 AV	54.0	-19.9	2.15 H	302	26.06	8.08
7	7311.00	53.8 PK	74.0	-20.2	1.85 H	259	39.66	14.13
8	7311.00	47.1 AV	54.0	-6.9	1.85 H	259	32.93	14.13
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	121.4 PK			1.68 V	261	117.42	4.01
2	*2437.00	117.0 AV			1.68 V	261	113.00	4.01
3	2483.50	63.03 PK	74.0	-10.97	2.15 H	261	58.87	4.16
4	2483.50	51.67 AV	54.0	-2.33	2.15 H	261	47.51	4.16
5	4874.00	47.2 PK	74.0	-26.8	1.00 V	206	39.11	8.08
6	4874.00	42.0 AV	54.0	-12.0	1.00 V	206	33.92	8.08
7	7311.00	57.5 PK	74.0	-16.5	1.58 V	84	43.40	14.13
8	7311.00	52.0 AV	54.0	-2.0	1.58 V	84	37.91	14.13

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.



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Test Report No.: RF160818N017

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	103.9 PK			1.85 H	216	99.83	4.09
2	*2462.00	99.7 AV			1.85 H	216	95.62	4.09
3	2483.50	47.1 PK	74.0	-27.1	1.85 H	216	42.89	4.16
4	2483.50	35.1 AV	54.0	-18.9	1.85 H	216	30.94	4.16
5	4924.00	54.1 PK	74.0	-19.9	1.02 H	21	45.60	8.50
6	4924.00	51.1 AV	54.0	-2.9	1.02 H	21	42.60	8.50
7	7386.00	55.1 PK	74.0	-18.9	1.00 H	74	43.50	11.60
8	7386.00	50.3 AV	54.0	-3.7	1.00 H	74	38.70	11.60
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	116.7 PK			1.10 V	259	112.59	4.09
2	*2462.00	113.1 AV			1.10 V	259	108.96	4.09
3	2483.50	59.8 PK	74.0	-14.2	1.10 V	259	55.63	4.16
4	2483.50	52.2 AV	54.0	-1.8	1.10 V	259	48.03	4.16
5	4924.00	50.6 PK	74.0	-23.4	1.41 V	201	42.10	8.50
6	4924.00	45.2 AV	54.0	-8.8	1.41 V	201	36.70	8.50
7	7386.00	52.4 PK	74.0	-21.6	1.00 V	244	40.80	11.60
8	7386.00	42.6 AV	54.0	-11.4	1.00 V	244	31.00	11.60

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.

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CHANNEL	TX Channel 10	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	*2457.00	111.9 PK			1.56 H	226	107.87	4.07
2	*2457.00	104.8 AV			1.56 H	226	100.73	4.07
3	2483.50	42.2 PK	74.0	-31.8	1.56 H	226	37.98	4.16
4	2483.50	32.3 AV	54.0	-21.7	1.56 H	226	28.09	4.16
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	*2457.00	118.6 PK			1.12 V	260	114.55	4.07
2	*2457.00	112.9 AV			1.12 V	260	108.78	4.07
3	2483.50	56.4 PK	74.0	-17.6	1.12 V	260	52.26	4.16
4	2483.50	46.3 AV	54.0	-7.7	1.12 V	260	42.11	4.16

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



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802.11g

Test Report No.: RF160818N017

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	50.8 PK	74.0	-23.2	1.65 H	248	46.93	3.87
2	2390.00	36.8 AV	54.0	-17.2	1.65 H	248	32.91	3.87
3	*2412.00	105.8 PK			1.65 H	248	101.87	3.94
4	*2412.00	102.9 AV			1.65 H	248	98.98	3.94
5	4824.00	50.7 PK	74.0	-23.3	1.25 H	305	42.30	8.40
6	4824.00	45.1 AV	54.0	-8.9	1.25 H	305	36.70	8.40
7	#7236.00	50.4 PK	75.8	-25.4	1.62 H	151	38.70	11.70
8	#7236.00	37.1 AV	72.9	-35.8	1.62 H	151	25.40	11.70
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	67.5 PK	74.0	-6.5	1.59 V	258	63.67	3.87
2	2390.00	51.6 AV	54.0	-2.4	1.59 V	258	47.74	3.87
3	*2412.00	118.0 PK			1.59 V	258	114.07	3.94
4	*2412.00	108.0 AV			1.59 V	258	104.10	3.94
5	4824.00	50.7 PK	74.0	-23.3	1.00 V	1	42.30	8.40
6	4824.00	44.4 AV	54.0	-9.6	1.00 V	1	36.00	8.40
7	#7236.00	51.1 PK	88.0	-36.9	1.04 V	21	39.40	11.70
8	#7236.00	37.5 AV	78.0	-40.5	1.04 V	21	25.80	11.70

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.

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Test Report No.: RF160818N017

CHANNEL	TX Channel 2	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	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	*2417.00	107.3 PK			1.16 H	219	103.32	3.95
2	*2417.00	101.6 AV			1.16 H	219	97.63	3.95
3	2390.00	48.4 PK	74.0	-25.6	1.16 H	219	44.57	3.87
4	2390.00	36.0 AV	54.0	-18.0	1.16 H	219	32.13	3.87
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	*2417.00	116.6PK			1.37 V	265	112.49	3.95
2	*2417.00	110.1 AV			1.37 V	265	106.18	3.95
3	2390.00	61.2 PK	74.0	-12.8	1.37 V	224	57.31	3.87
4	2390.00	47.1 AV	54.0	-6.9	1.37 V	224	43.15	3.87

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

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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	98.9 PK			1.85 H	214	94.84	4.01
2	*2437.00	88.7 AV			1.85 H	214	84.71	4.01
3	2483.50	61.7 PK	74.0	-12.3	1.85 H	214	57.54	4.16
4	2483.50	46.4 AV	54.0	-7.6	1.85 H	214	42.24	4.16
5	4874.00	43.6 PK	74.0	-30.4	1.32 H	263	35.50	8.08
6	4874.00	35.3 AV	54.0	-18.7	1.32 H	263	27.18	8.08
7	7311.00	60.7 PK	74.0	-13.3	1.58 H	74	46.59	14.13
8	7311.00	48.3 AV	54.0	-5.7	1.58 H	74	34.19	14.13
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	113.4 PK			1.85 V	226	109.37	4.01
2	*2437.00	107.6 AV			1.85 V	226	103.55	4.01
3	2483.50	65.2 PK	74.0	-8.8	1.85 H	226	61.03	4.16
4	2483.50	49.9 AV	54.0	-4.1	1.85 H	226	45.78	4.16
5	4874.00	50.4 PK	74.0	-23.6	1.62 V	303	42.28	8.08
6	4874.00	35.9 AV	54.0	-18.1	1.62 V	303	27.81	8.08
7	7311.00	67.2 PK	74.0	-6.8	1.15 V	206	53.09	14.13
8	7311.00	53.5 AV	54.0	-0.5	1.15 V	206	39.37	14.13

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	105.8 PK			1.58 H	240	101.73	4.09
2	*2462.00	95.2 AV			1.58 H	240	91.12	4.09
3	2483.50	46.0 PK	74.0	-28.0	1.58 H	240	41.82	4.16
4	2483.50	36.0 AV	54.0	-18.0	1.58 H	240	31.84	4.16
5	4924.00	46.6 PK	74.0	-27.4	1.32 H	158	38.10	8.50
6	4924.00	33.8 AV	54.0	-20.2	1.32 H	158	25.30	8.50
7	7386.00	49.9 PK	74.0	-24.1	1.11 H	102	38.30	11.60
8	7386.00	37.2 AV	54.0	-16.8	1.11 H	102	25.60	11.60
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	114.5 PK			1.49 V	201	110.42	4.09
2	*2462.00	106.9 AV			1.49 V	201	102.81	4.09
3	2483.50	67.4 PK	74.0	-6.6	1.49 V	201	63.25	4.16
4	2483.50	51.6 AV	54.0	-2.4	1.49 V	201	47.47	4.16
5	4924.00	48.7 PK	74.0	-25.3	1.12 V	11	40.20	8.50
6	4924.00	33.6 AV	54.0	-20.4	1.12 V	11	25.10	8.50
7	7386.00	50.3 PK	74.0	-23.7	1.81 V	20	38.70	11.60
8	7386.00	37.5 AV	54.0	-16.5	1.81 V	20	25.90	11.60

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 10	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	*2457.00	108.6 PK			1.12 V	250	104.55	4.07
2	*2457.00	98.9 AV			1.12 V	250	94.78	4.07
3	2483.50	45.1 PK	74.0	-28.9	1.12 V	250	40.90	4.16
4	2483.50	34.7 AV	54.0	-19.3	1.12 V	250	30.52	4.16
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	*2457.00	116.6 PK			1.30 V	200	112.55	4.07
2	*2457.00	105.9 AV			1.30 V	200	101.78	4.07
3	2483.50	63.1 PK	74.0	-10.9	1.30 V	200	58.90	4.16
4	2483.50	45.7 AV	54.0	-8.3	1.30 V	200	41.52	4.16

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	55.6 PK	74.0	-18.4	1.54 H	120	51.71	3.87
2	2390.00	46.6 AV	54.0	-7.4	1.54 H	120	42.73	3.87
3	*2412.00	102.3 PK			1.54 H	120	98.32	3.94
4	*2412.00	97.7 AV			1.54 H	120	93.79	3.94
5	4824.00	48.6 PK	74.0	-25.4	1.33 H	22	40.20	8.40
6	4824.00	35.4 AV	54.0	-18.6	1.33 H	22	27.00	8.40
7	#7236.00	50.4 PK	72.3	-21.9	1.18 H	51	38.70	11.70
8	#7236.00	38.5 AV	67.7	-29.2	1.18 H	51	26.80	11.70
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	64.6 PK	74.0	-9.4	1.65 V	296	60.75	3.87
2	2390.00	52.1 AV	54.0	-1.9	1.65 V	296	48.19	3.87
3	*2412.00	115.7 PK			1.65 V	296	111.71	3.94
4	*2412.00	105.9 AV			1.65 V	296	101.98	3.94
5	4824.00	48.7 PK	74.0	-25.3	1.44 V	208	40.30	8.40
6	4824.00	36.1 AV	54.0	-17.9	1.44 V	208	27.70	8.40
7	#7236.00	50.2 PK	85.7	-35.5	1.02 V	225	38.50	11.70
8	#7236.00	38.6 AV	75.9	-37.3	1.02 V	225	26.90	11.70

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 2	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	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	*2417.00	108.1 PK			1.35 H	146	104.10	3.95
2	*2417.00	94.8 AV			1.35 H	146	90.83	3.95
3	2390.00	52.3 PK	74.0	-21.7	1.35 H	146	48.46	3.87
4	2390.00	43.9 AV	54.0	-10.1	1.35 H	146	40.02	3.87
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	*2417.00	114.6 PK			1.24 V	246	110.61	3.95
2	*2417.00	104.6 AV			1.24 V	246	100.58	3.95
3	2390.00	61.6 PK	74.0	-12.4	1.24 V	246	57.69	3.87
4	2390.00	48.8 AV	54.0	-5.2	1.24 V	246	44.98	3.87

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	*2437.00	108.6 PK			1.62 H	235	104.58	4.01
2	*2437.00	98.3 AV			1.62 H	235	94.29	4.01
3	2483.50	58.6 PK	74.0	-15.4	1.71 H	47	54.41	4.16
4	2483.50	47.9 AV	54.0	-6.1	1.71 H	47	43.74	4.16
5	4874.00	41.0 PK	74.0	-33.0	1.67 H	230	32.95	8.08
6	4874.00	30.3 AV	54.0	-23.7	1.67 H	230	22.24	8.08
7	7311.00	61.8 PK	74.0	-12.2	1.54 H	201	47.67	14.13
8	7311.00	47.1 AV	54.0	-6.9	1.54 H	201	32.97	14.13
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	115.6 PK			1.59 V	247	111.56	4.01
2	*2437.00	101.1 AV			1.59 V	247	97.05	4.01
3	2483.50	66.5 PK	74.0	-7.5	1.71 H	47	62.33	4.16
4	2483.50	51.9 AV	54.0	-2.1	1.71 H	47	47.72	4.16
5	4874.00	49.5 PK	74.0	-24.5	2.03 V	115	41.44	8.08
6	4874.00	36.8 AV	54.0	-17.2	2.03 V	115	28.67	8.08
7	7311.00	66.4 PK	74.0	-7.6	1.89 V	221	52.28	14.13
8	7311.00	51.6 AV	54.0	-2.4	1.89 V	221	37.49	14.13

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			1.54 H	223	99.69	4.09
2	*2462.00	94.5 AV			1.54 H	223	90.44	4.09
3	2483.50	60.3 PK	74.0	-13.7	1.54 H	223	56.12	4.16
4	2483.50	47.3 AV	54.0	-6.7	1.54 H	223	43.10	4.16
5	4924.00	48.2 PK	74.0	-25.8	1.28 H	55	39.70	8.50
6	4924.00	35.5 AV	54.0	-18.5	1.28 H	55	27.00	8.50
7	7386.00	50.1 PK	74.0	-23.9	1.43 H	66	38.50	11.60
8	7386.00	38.5 AV	54.0	-15.5	1.43 H	66	26.90	11.60
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	114.5 PK			1.46 V	231	110.38	4.09
2	*2462.00	104.6 AV			1.46 V	231	100.49	4.09
3	2483.50	66.5 PK	74.0	-7.5	1.46 V	231	62.37	4.16
4	2483.50	52.3 AV	54.0	-1.7	1.46 V	231	48.14	4.16
5	4924.00	48.7 PK	74.0	-25.3	1.55 V	116	40.20	8.50
6	4924.00	37.6 AV	54.0	-16.4	1.55 V	116	29.10	8.50
7	7386.00	50.5 PK	74.0	-23.5	1.62 V	130	38.90	11.60
8	7386.00	38.6 AV	54.0	-15.4	1.62 V	130	27.00	11.60

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 10	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	*2457.00	105.3 PK			1.95 H	195	101.24	4.07
2	*2457.00	94.4 AV			1.95 H	195	90.29	4.07
3	2483.50	56.9 PK	74.0	-17.1	1.95 H	195	52.77	4.16
4	2483.50	46.3 AV	54.0	-7.7	1.95 H	195	42.18	4.16
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	*2457.00	112.8 PK			1.58 V	216	108.77	4.07
2	*2457.00	103.0 AV			1.58 V	216	98.91	4.07
3	2483.50	61.5 PK	74.0	-12.5	1.58 V	216	57.32	4.16
4	2483.50	49.7 AV	54.0	-4.3	1.58 V	216	45.54	4.16

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	54.1 PK	74.0	-19.9	3.00 H	326	50.26	3.87
2	2390.00	41.7 AV	54.0	-12.3	3.00 H	326	37.81	3.87
3	*2422.00	104.6 PK			3.00 H	326	100.59	3.96
4	*2422.00	96.5 AV			1.00 H	326	92.56	3.96
5	4844.00	47.4 PK	74.0	-26.6	1.18 H	128	38.90	8.50
6	4844.00	35.7 AV	54.0	-18.3	1.18 H	128	27.20	8.50
7	7266.00	50.3 PK	74.0	-23.7	1.38 H	221	38.60	11.70
8	7266.00	37.9 AV	54.0	-16.1	1.38 H	221	26.20	11.70
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	60.2 PK	74.0	-13.8	1.59 V	302	56.36	3.87
2	2390.00	52.9 AV	54.0	-1.1	1.59 V	302	49.04	3.87
3	*2422.00	110.3 PK			1.59 V	302	106.34	3.96
4	*2422.00	104.0 AV			1.59 V	302	100.05	3.96
5	4844.00	48.2 PK	74.0	-25.8	1.52 V	241	39.70	8.50
6	4844.00	36.2 AV	54.0	-17.8	1.52 V	241	27.70	8.50
7	7266.00	50.9 PK	74.0	-23.1	1.52 V	333	39.20	11.70
8	7266.00	37.7 AV	54.0	-16.3	1.52 V	333	26.00	11.70

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.



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Test Report No.: RF160818N017

CHANNEL	TX Channel 4	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	*2427.00	105.7 PK			1.54 H	303	101.74	3.98
2	*2427.00	94.4 AV			1.54 H	303	90.40	3.98
3	2390.00	51.4 PK	74.0	-22.6	1.54 H	303	47.48	3.87
4	2390.00	41.7 AV	54.0	-12.3	1.54 H	303	37.82	3.87
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	*2427.00	109.8 PK			1.72 V	319	105.87	3.98
2	*2427.00	100.1 AV			1.72 V	319	96.09	3.98
3	2390.00	56.8 PK	74.0	-17.2	1.72 V	319	52.96	3.87
4	2390.00	47.7 AV	54.0	-6.3	1.72 V	319	43.83	3.87

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

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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	103.3 PK			1.49 H	263	99.25	4.01
2	*2437.00	92.8 AV			1.49 H	263	88.74	4.01
3	2483.50	61.53 PK	74.0	-12.47	1.12 H	203	57.37	4.16
4	2483.50	46.8 AV	54.0	-7.2	1.12 H	203	42.61	4.16
3	4874.00	45.4 PK	74.0	-28.6	1.96 H	123	37.30	8.08
4	4874.00	36.2 AV	54.0	-17.8	1.96 H	123	28.12	8.08
5	7311.00	50.2 PK	74.0	-23.8	1.54 H	87	36.09	14.13
6	7311.00	41.3 AV	54.0	-12.7	1.54 H	87	27.17	14.13
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	113.1 PK			1.59 V	304	109.11	4.01
2	*2437.00	106.6 AV			1.59 V	304	102.54	4.01
3	2483.50	68.4 PK	74.0	-5.6	1.12 H	203	64.27	4.16
4	2483.50	53.6 AV	54.0	-0.4	1.12 H	203	49.48	4.16
3	4874.00	45.5 PK	74.0	-28.5	1.42 V	201	37.41	8.08
4	4874.00	34.9 AV	54.0	-19.1	1.42 V	201	26.77	8.08
5	7311.00	56.0 PK	74.0	-18.0	1.12 V	259	41.90	14.13
6	7311.00	41.5 AV	54.0	-12.5	1.12 V	259	27.41	14.13

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	101.5 PK			1.12 H	203	97.42	4.05
2	*2452.00	90.0 AV			1.12 H	203	85.98	4.05
3	2483.50	62.6 PK	74.0	-11.4	1.12 H	203	58.44	4.16
4	2483.50	44.8 AV	54.0	-9.2	1.12 H	203	40.61	4.16
5	4904.00	47.3 PK	74.0	-26.7	1.92 H	21	38.70	8.60
6	4904.00	36.2 AV	54.0	-17.8	1.92 H	21	27.60	8.60
7	7356.00	50.6 PK	74.0	-23.4	1.38 H	206	39.00	11.60
8	7356.00	37.5 AV	54.0	-16.5	1.38 H	206	25.90	11.60
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	105.8 PK			1.00 V	125	101.73	4.05
2	*2452.00	91.5 AV			1.00 V	125	87.41	4.05
3	2483.50	68.4 PK	74.0	-5.6	1.00 V	125	64.22	4.16
4	2483.50	53.4 AV	54.0	-0.6	1.00 V	125	49.23	4.16
5	4904.00	48.3 PK	74.0	-25.7	1.19 V	252	39.70	8.60
6	4904.00	36.2 AV	54.0	-17.8	1.19 V	252	27.60	8.60
7	7356.00	50.7 PK	74.0	-23.3	1.73 V	302	39.10	11.60
8	7356.00	38.1 AV	54.0	-15.9	1.73 V	302	26.50	11.60

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 8	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	*2447.00	99.8 PK			1.72 H	192	95.79	4.05
2	*2447.00	89.7 AV			1.72 H	192	85.61	4.05
3	2483.50	55.4 PK	74.0	-18.6	1.52 H	216	51.27	4.16
4	2483.50	42.8 AV	54.0	-11.2	1.52 H	216	38.64	4.16
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	*2447.00	106.0 PK			1.85 V	207	101.91	4.05
2	*2447.00	95.8 AV			1.85 V	207	91.78	4.05
3	2483.50	57.7 PK	74.0	-16.3	1.86 V	281	53.49	4.16
4	2483.50	46.8 AV	54.0	-7.2	1.86 V	281	42.59	4.16

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 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Sensor	Keysight	U2021XA	MY55060016	May 04,16	May 03,17
Power Sensor	Keysight	U2021XA	MY55060018	May 04,16	May 03,17
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 12, 15	Oct.11, 16
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.05, 16	Sep. 04,17
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 28,15	Nov. 27,16
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 09,15	Nov. 08,16
Signal Generator	Agilent	N5183A	MY50140980	Nov. 09,15	Nov. 08,16
Agile Signal Generator	Agilent	8645A	Agilent	Aug.08, 16	Aug.07, 17
ESG Vector Signal Generator	Agilent	E4438C	MY49072505	Apr. 22, 16	Apr. 21, 17
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Aug.08, 16	Aug.07, 17

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.

4.3.3 TEST PROCEDURE

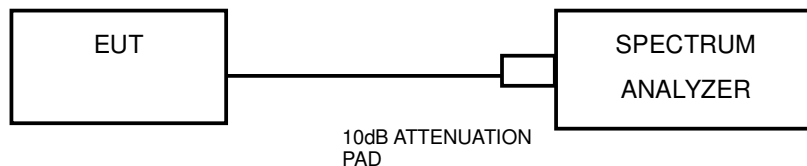
1. Set resolution bandwidth (RBW) = 100KHz
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower)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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation.



4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

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

**4.3.7 TEST RESULTS****802.11b**

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	7.06	7.08	7.06	0.5	PASS
6	2437	7.09	7.08	7.07	0.5	PASS
11	2462	6.61	7.09	7.06	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	15.45	15.70	15.33	0.5	PASS
6	2437	15.89	16.34	15.42	0.5	PASS
11	2462	15.68	15.94	15.43	0.5	PASS



802.11n 20MHz

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	16.67	16.59	17.36	0.5	PASS
6	2437	17.21	16.29	15.71	0.5	PASS
11	2462	16.30	16.09	16.31	0.5	PASS

802.11n 40MHz

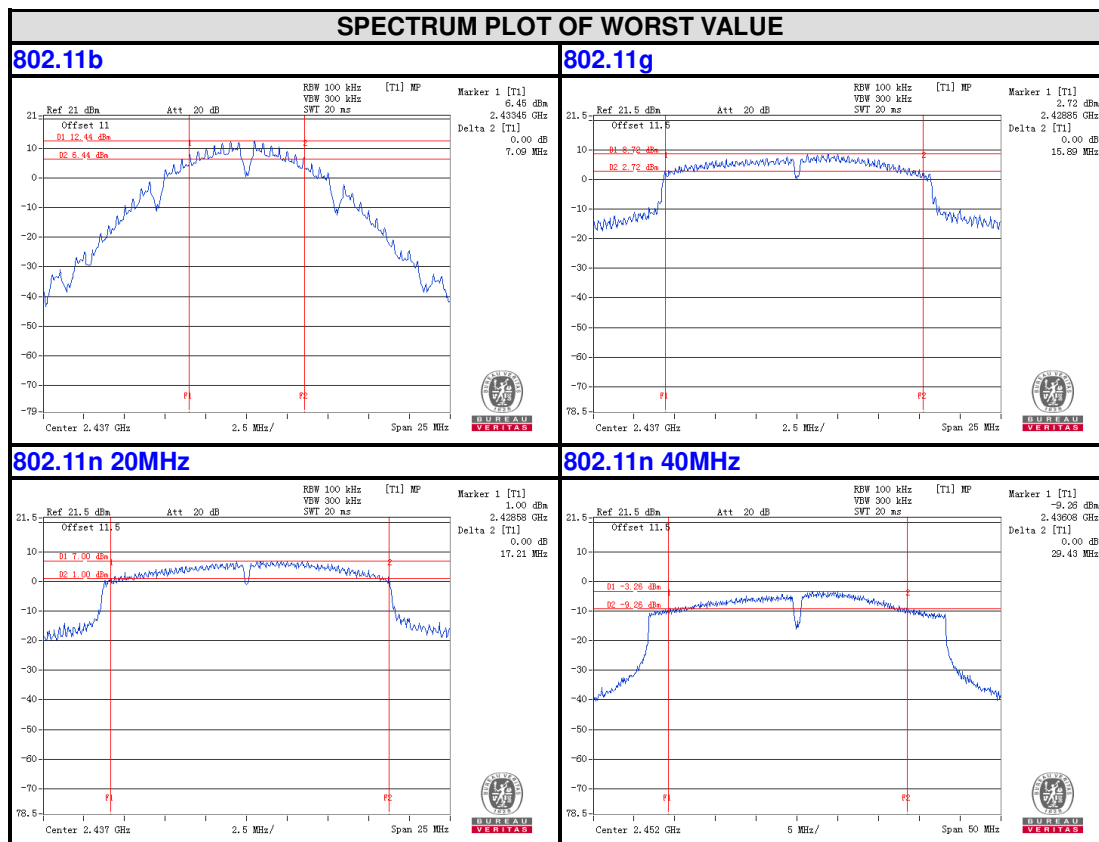
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
3	2422	29.35	31.94	31.01	0.5	PASS
6	2437	28.43	29.21	31.93	0.5	PASS
9	2452	29.43	32.45	31.54	0.5	PASS



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CHAIN 0



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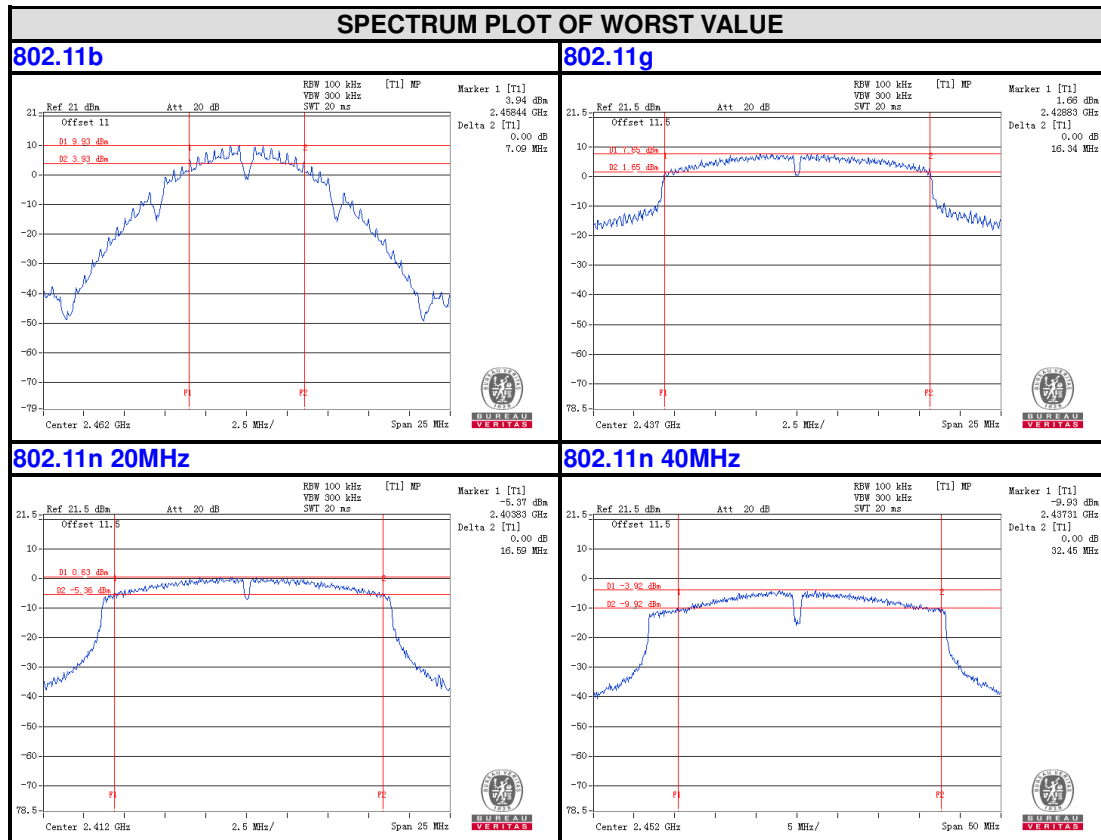
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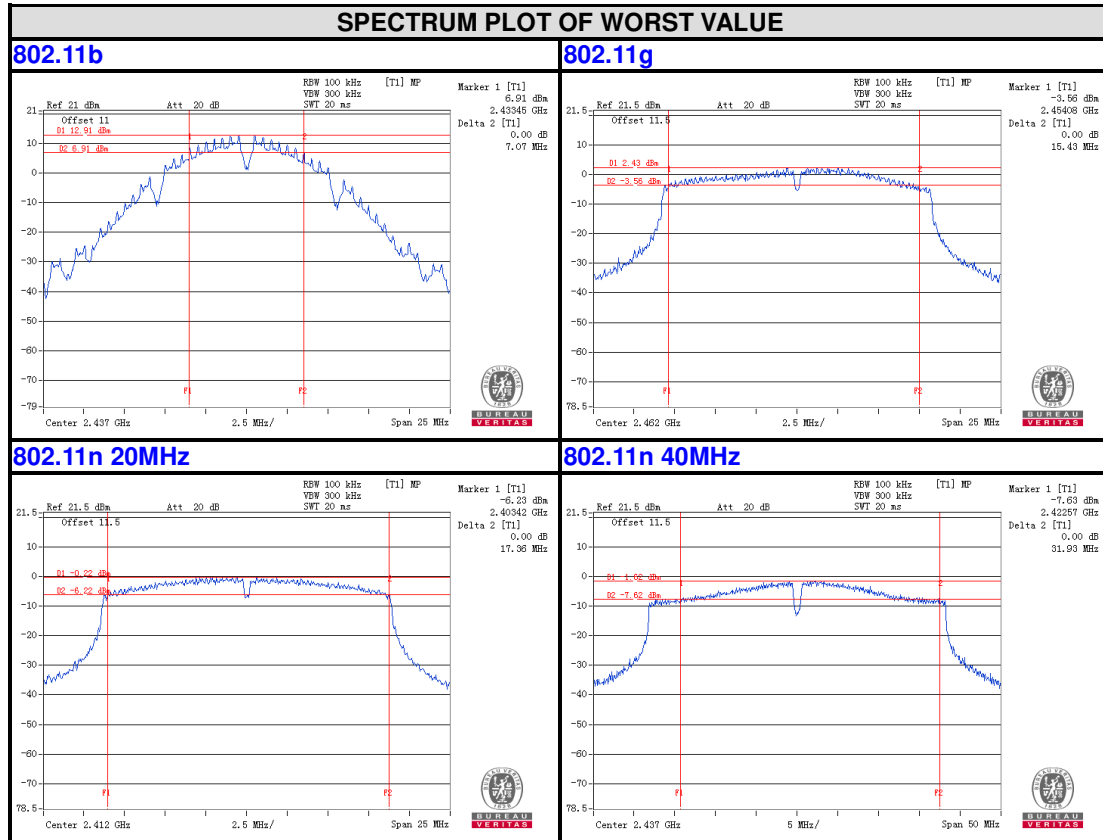
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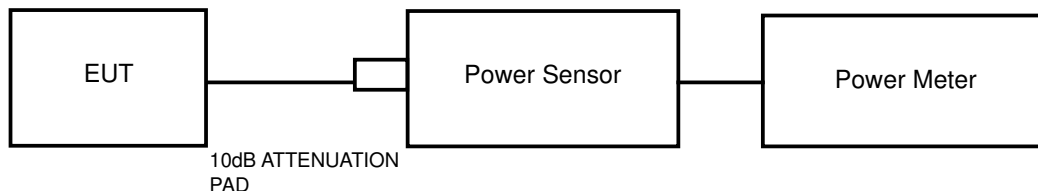
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4.4 CONDUCTED OUTPUT POWER

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.
Power Sensor	Keysight	U2021XA	MY55060016	May 04,16	May 03,17
Power Sensor	Keysight	U2021XA	MY55060018	May 04,16	May 03,17
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 12, 15	Oct.11, 16
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.05, 16	Sep. 04,17
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 28,15	Nov. 27,16
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 09,15	Nov. 08,16
Signal Generator	Agilent	N5183A	MY50140980	Nov. 09,15	Nov. 08,16
Agile Signal Generator	Agilent	8645A	Agilent	Aug.08, 16	Aug.07, 17
ESG Vector Signal Generator	Agilent	E4438C	MY49072505	Apr. 22, 16	Apr. 21, 17
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Aug.08, 16	Aug.07, 17

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.



4.4.4 TEST PROCEDURES

An Average power sensor was used on the output port of the EUT. An Average power meter was used to read the response of the Average power sensor. Record the Average 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****802.11b**

CHAN.	FREQ. (MHz)	AVG. POWER (dBm)			AVG. POWER (mW)			TOTAL POWER (mW)	TOTAL POWER (dBm)	AVG. POWER LIMIT (W)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	19.97	20.18	20.39	99.312	104.232	109.396	312.94	24.95	30	PASS
6	2437	20.79	20.68	20.82	119.95	116.950	120.781	357.681	25.53	30	PASS
11	2462	20.54	20.27	20.32	113.24	106.414	107.647	327.301	25.15	30	PASS

802.11g

CHAN.	FREQ. (MHz)	AVG. POWER (dBm)			AVG. POWER (mW)			TOTAL POWER (mW)	TOTAL POWER (dBm)	AVG. POWER LIMIT (W)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	17.18	17.32	17.29	52.24	53.951	53.580	159.771	22.03	30	PASS
6	2437	20.82	20.71	20.89	120.781	117.761	122.744	361.286	25.58	30	PASS
11	2462	17.38	17.27	17.10	54.702	53.333	51.286	159.321	22.02	30	PASS

**802.11n 20MHz**

CHAN.	FREQ. (MHz)	AVG. POWER (dBm)			AVG. POWER (mW)			TOTAL POWER (mW)	TOTAL POWER (dBm)	AVG. POWER LIMIT (W)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	16.47	16.56	16.32	44.361	45.290	42.855	132.506	21.22	30	PASS
6	2437	20.61	20.41	20.59	115.08	109.901	114.551	339.532	25.31	30	PASS
11	2462	15.41	15.57	15.39	34.754	36.058	34.594	105.406	20.23	30	PASS

802.11n 40MHz

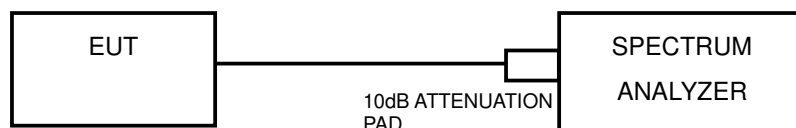
CHAN.	FREQ. (MHz)	AVG. POWER (dBm)			AVG. POWER (mW)			TOTAL POWER (mW)	TOTAL POWER (dBm)	AVG. POWER LIMIT (W)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2				
3	2422	12.27	12.05	12.41	16.866	16.032	17.418	50.316	17.02	30	PASS
6	2437	17.33	17.07	17.29	54.075	50.933	53.580	158.588	22.00	30	PASS
9	2452	14.31	14.04	14.52	26.977	25.351	28.314	80.642	19.07	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

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

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.3.2 to get information of above instrument.

4.5.4 TEST PROCEDURE

- Set instrument center frequency to DTS channel center frequency.
- Set span to at least 1.5 times the OBW.
- Set RBW to: 10 kHz.
- Set VBW $\geq 3 \times$ RBW.
- Detector = peak
- Ensure that the number of measurement points in the sweep $\geq 2 \times$ span/RBW.
- Sweep time = auto couple.
- 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

Same as item 4.3.6.

4.5.7 TEST RESULTS

802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	TOTAL PSD (dBm)	Limit (dBm)	PASS /FAIL
0	1	2412	-6.75	4.77	-1.98	4.23	PASS
	6	2437	-6.13	4.77	-1.36	4.23	PASS
	11	2462	-7.82	4.77	-3.05	4.23	PASS
1	1	2412	-6.99	4.77	-2.22	4.23	PASS
	6	2437	-6.50	4.77	-1.73	4.23	PASS
	11	2462	-7.88	4.77	-3.11	4.23	PASS
2	1	2412	-7.11	4.77	-2.34	4.23	PASS
	6	2437	-7.25	4.77	-2.48	4.23	PASS
	11	2462	-8.64	4.77	-3.87	4.23	PASS

Remark: Due ANT gain more than 6dBi, so limit 8dBm change to:
 $8 - [(5+4.77)-6] = 4.23\text{dBm}$

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	TOTAL PSD (dBm)	Limit (dBm)	PASS /FAIL
0	1	2412	-10.39	4.77	-5.62	4.23	PASS
	6	2437	-6.34	4.77	-1.57	4.23	PASS
	11	2462	-11.10	4.77	-6.33	4.23	PASS
1	1	2412	-10.68	4.77	-5.91	4.23	PASS
	6	2437	-6.89	4.77	-2.12	4.23	PASS
	11	2462	-11.73	4.77	-6.96	4.23	PASS
2	1	2412	-11.39	4.77	-6.62	4.23	PASS
	6	2437	-7.04	4.77	-2.27	4.23	PASS
	11	2462	-12.80	4.77	-8.03	4.23	PASS

Remark: Due ANT gain more than 6dBi, so limit 8dBm change to:
 $8 - [(5+4.77)-6] = 4.23\text{dBm}$

802.11n 20MHz

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	TOTAL PSD (dBm)	Limit (dBm)	PASS /FAIL
0	1	2412	-13.64	4.77	-8.87	4.23	PASS
	6	2437	-8.50	4.77	-3.73	4.23	PASS
	11	2462	-14.38	4.77	-9.61	4.23	PASS
1	1	2412	-12.47	4.77	-7.70	4.23	PASS
	6	2437	-7.63	4.77	-2.86	4.23	PASS
	11	2462	-14.40	4.77	-9.63	4.23	PASS
2	1	2412	-13.87	4.77	-9.10	4.23	PASS
	6	2437	-8.24	4.77	-3.47	4.23	PASS
	11	2462	-14.15	4.77	-9.38	4.23	PASS

Remark: Due ANT gain more than 6dBi, so limit 8dBm change to:
 $8 - [(5 + 4.77) - 6] = 4.23\text{dBm}$

802.11n 40MHz

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	TOTAL PSD (dBm)	Limit (dBm)	PASS /FAIL
0	3	2422	-20.07	4.77	-15.30	4.23	PASS
	6	2437	-14.77	4.77	-10.00	4.23	PASS
	9	2452	-17.04	4.77	-12.27	4.23	PASS
1	3	2422	-19.93	4.77	-15.16	4.23	PASS
	6	2437	-13.92	4.77	-9.15	4.23	PASS
	9	2452	-17.66	4.77	-12.89	4.23	PASS
2	3	2422	-19.85	4.77	-15.08	4.23	PASS
	6	2437	-15.41	4.77	-10.64	4.23	PASS
	9	2452	-18.04	4.77	-13.27	4.23	PASS

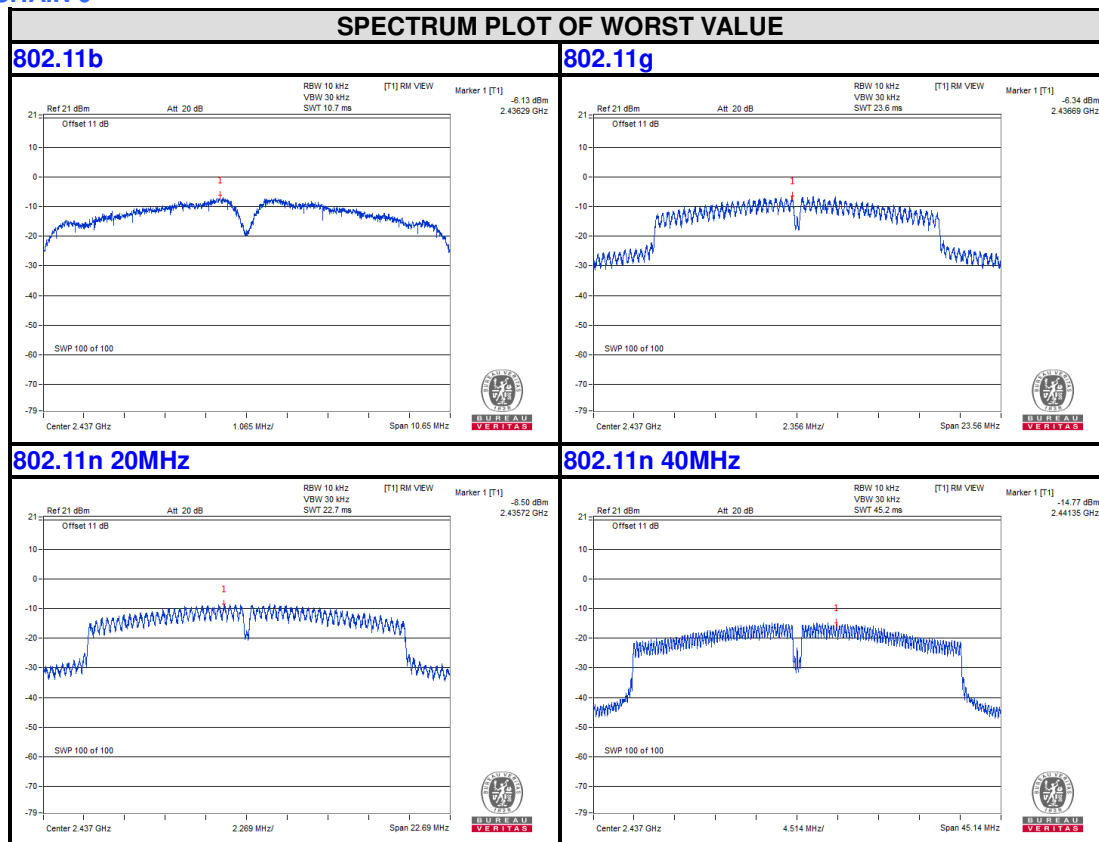
Remark: Due ANT gain more than 6dBi, so limit 8dBm change to:
 $8 - [(5 + 4.77) - 6] = 4.23\text{dBm}$



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CHAIN 0



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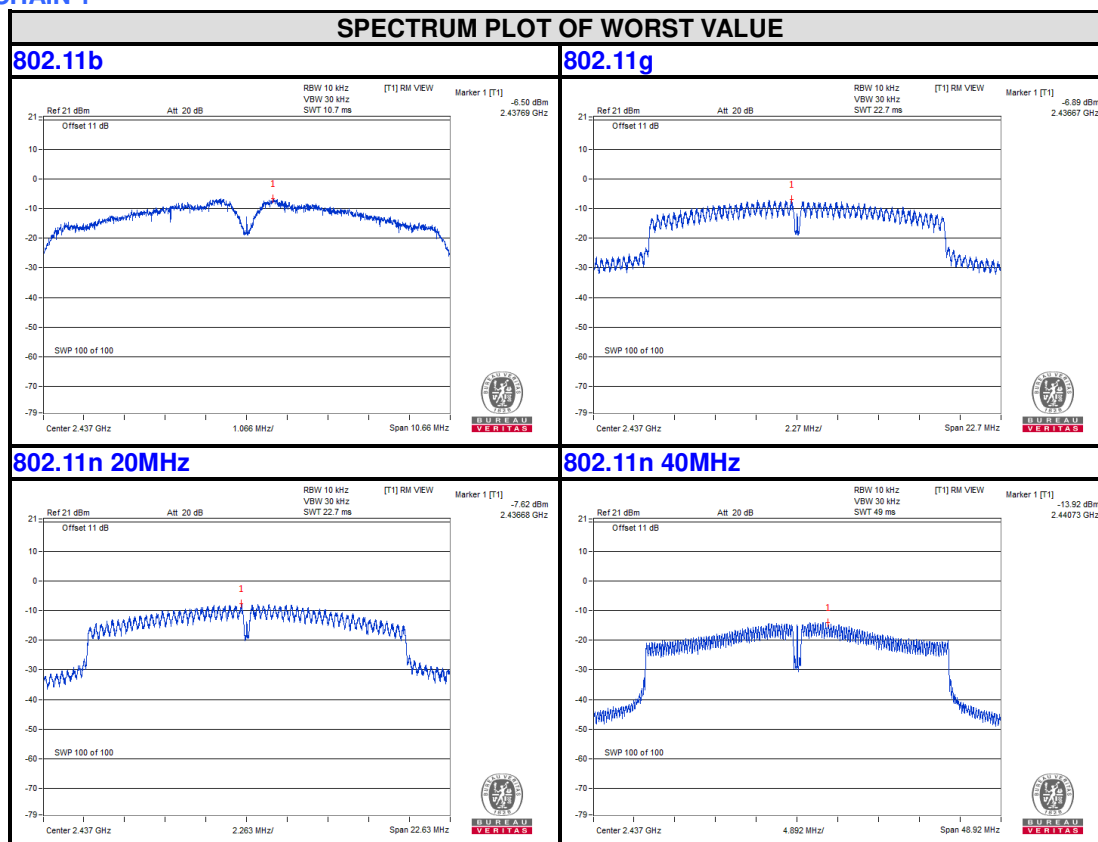
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CHAIN 1



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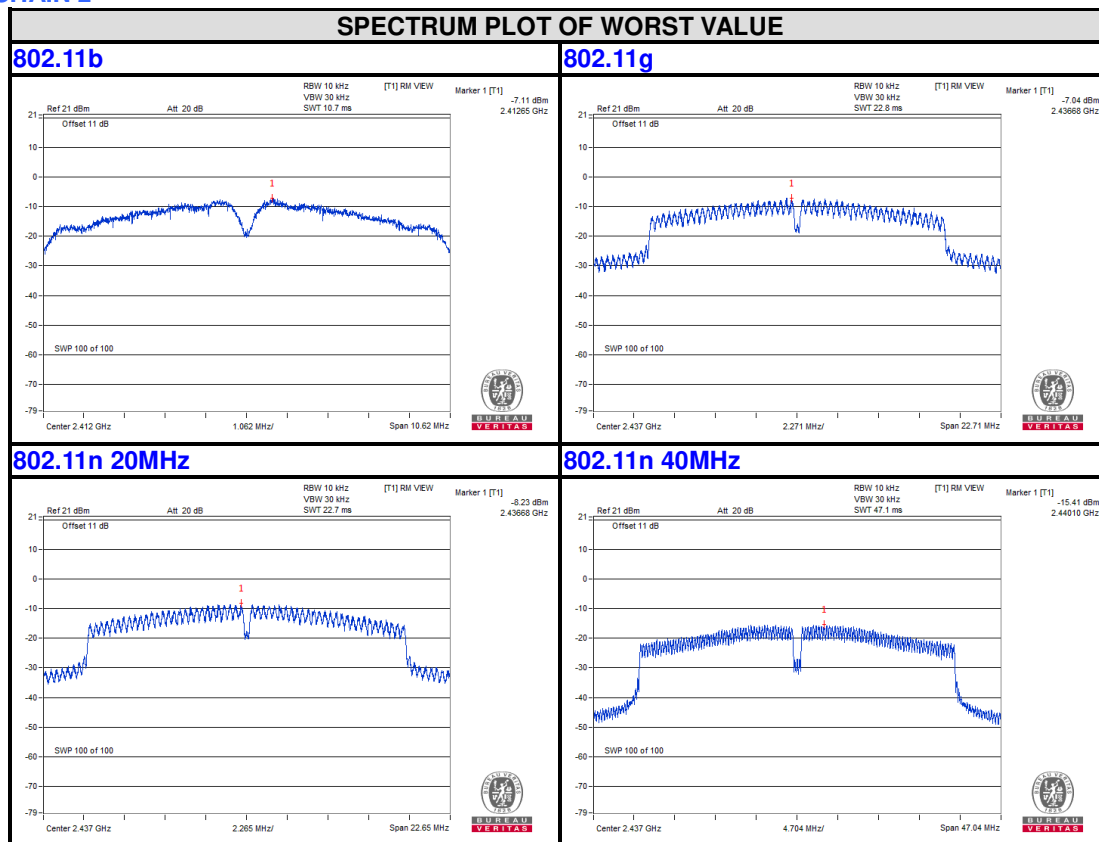
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CHAIN 2



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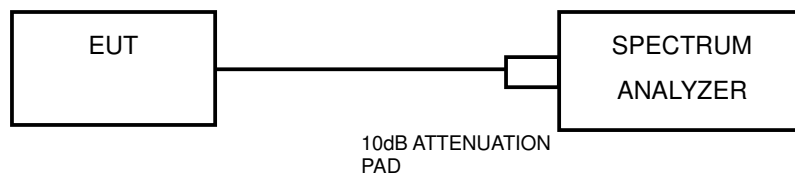


4.6 OUT OF BAND EMISSION MEASUREMENT

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 - Reference Level

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 –Unwanted Emission Level

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

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

Same as item 4.3.6



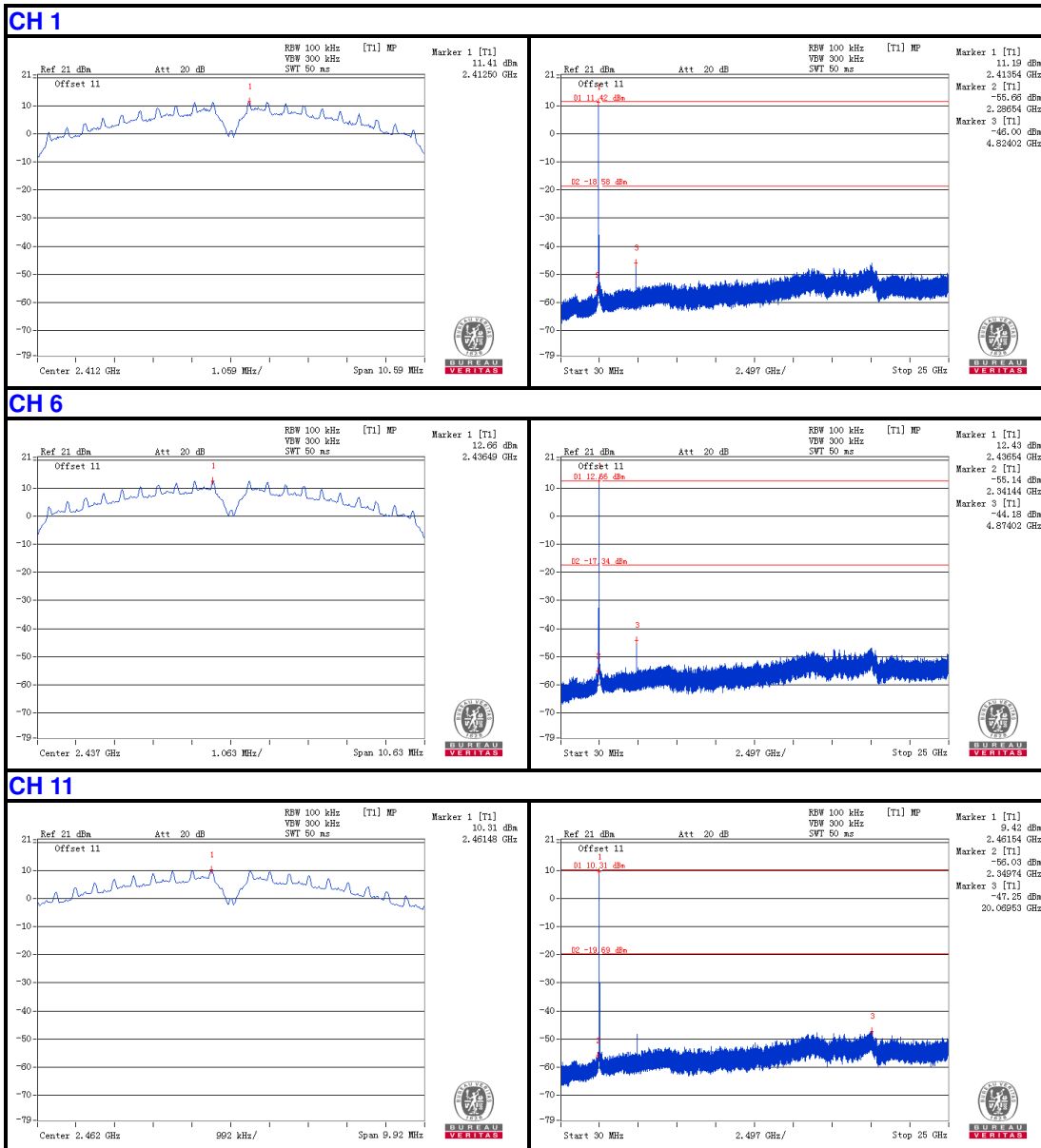
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4.6.7 TEST RESULTS

802.11b

CHAIN 0



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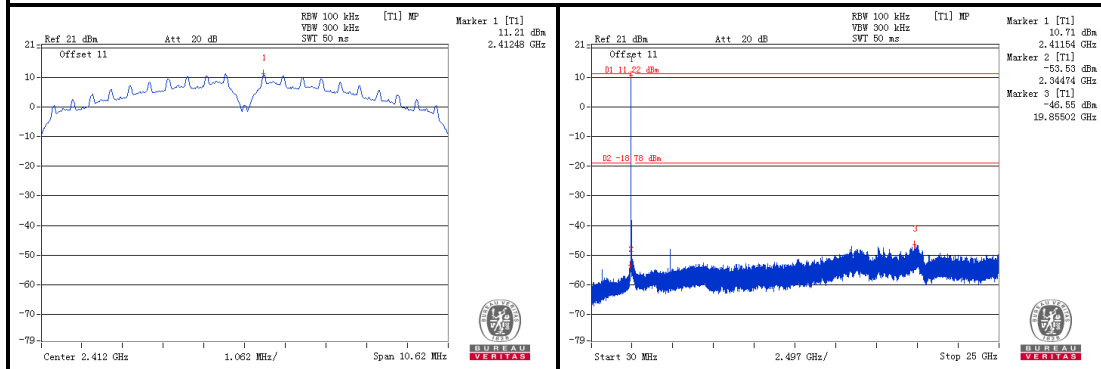


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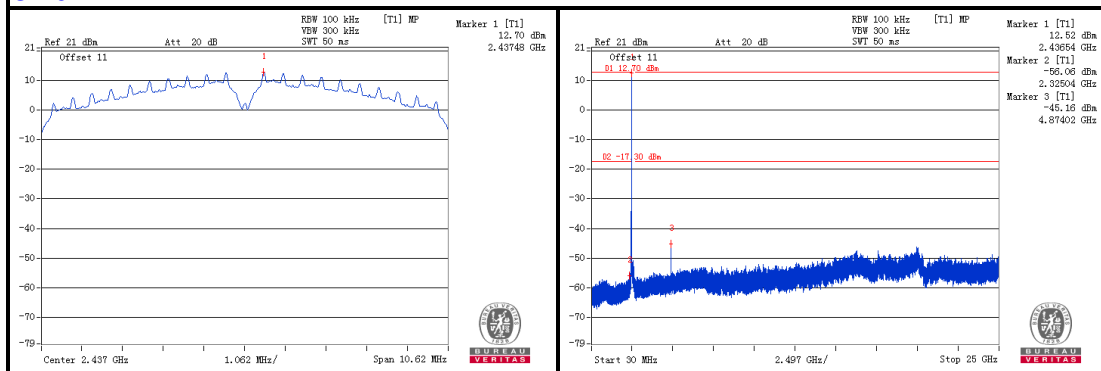
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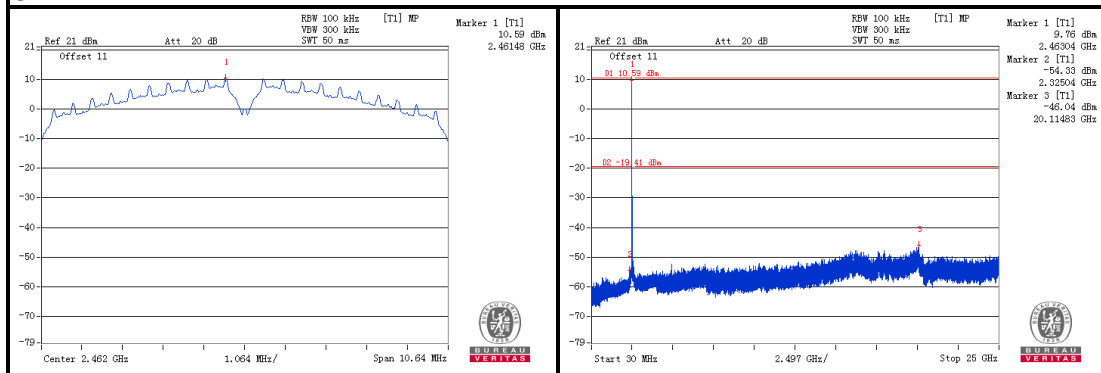
CH 1



CH 6



CH 11



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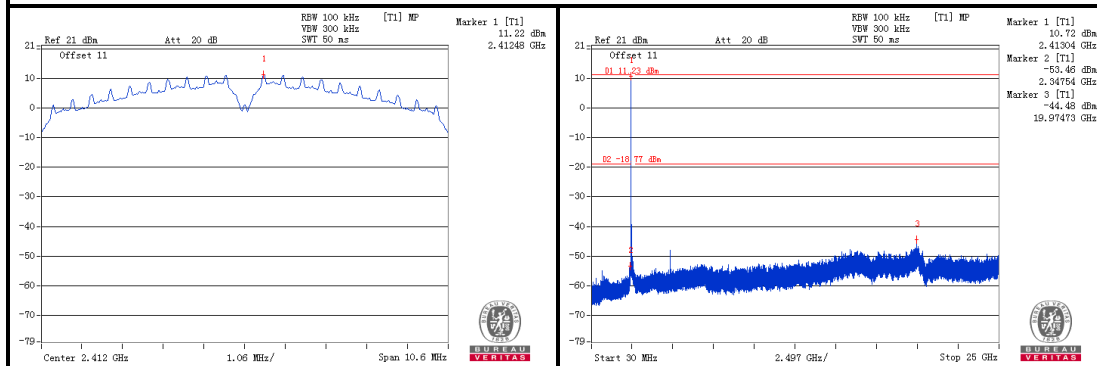


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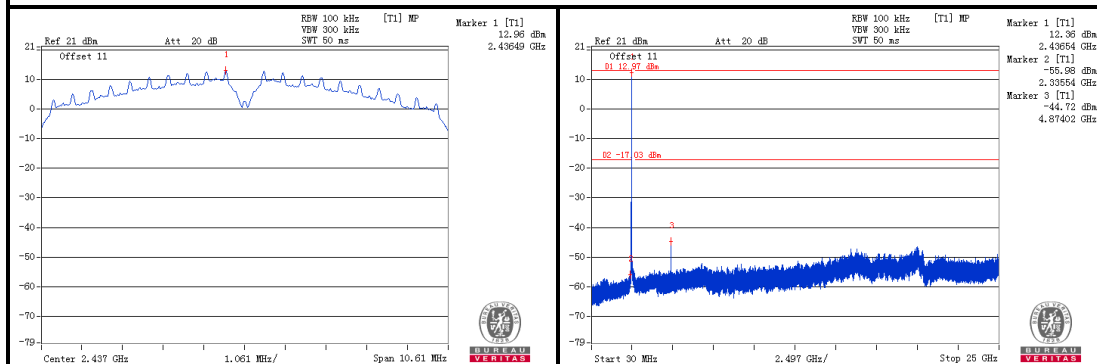
Test Report No.: RF160818N017

CHAIN 2

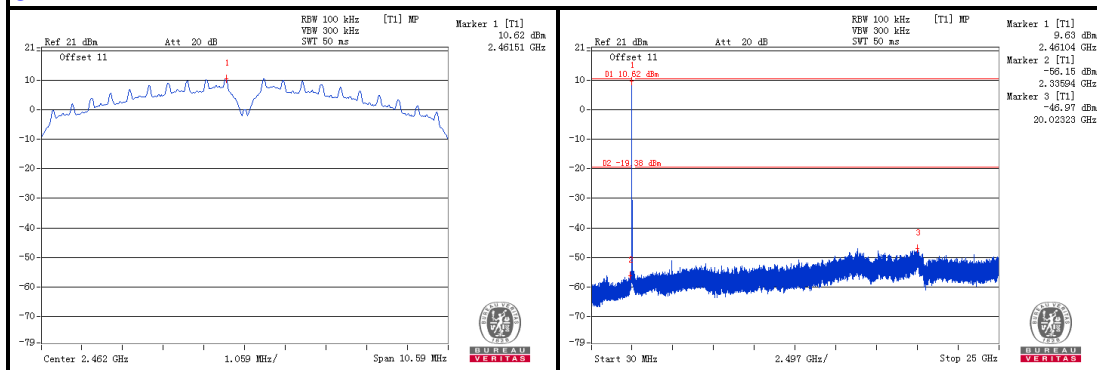
CH 1



CH 6



CH 11



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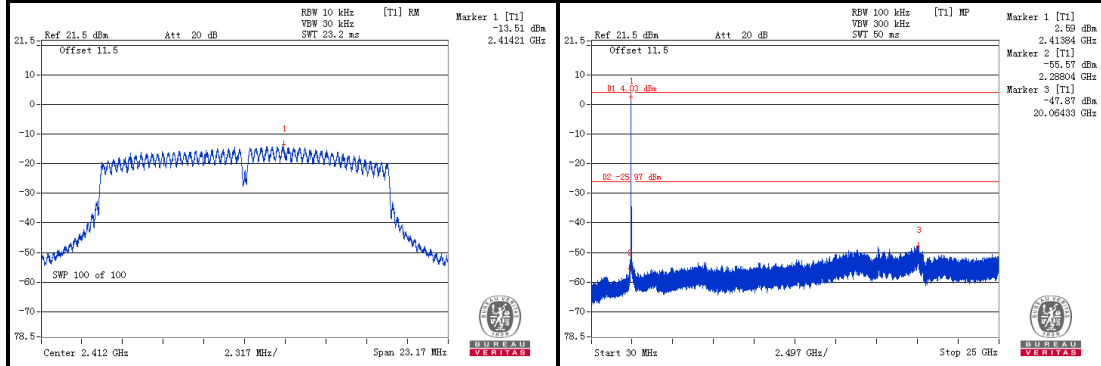
BUREAU
VERITAS

Test Report No.: RF160818N017

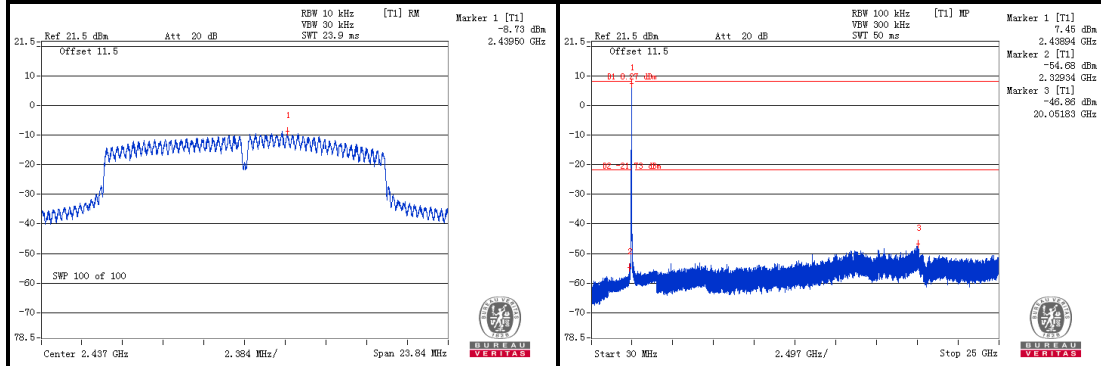
802.11g

CHAIN 0

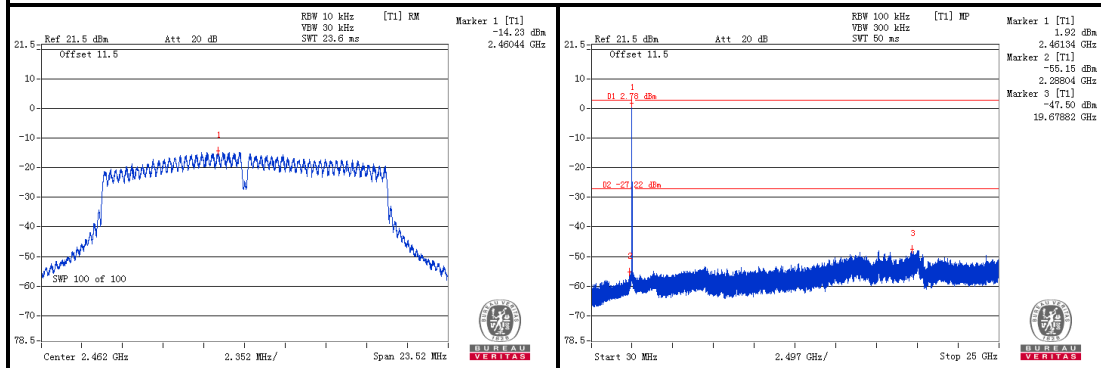
CH 1



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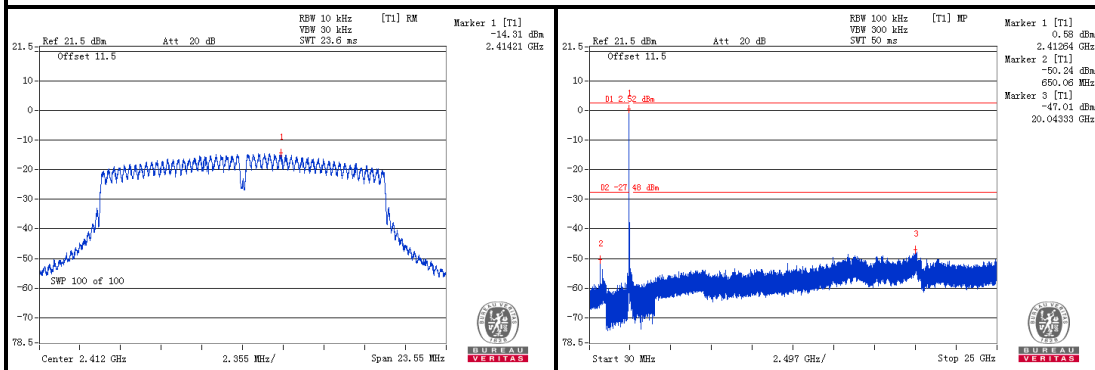


BUREAU
VERITAS

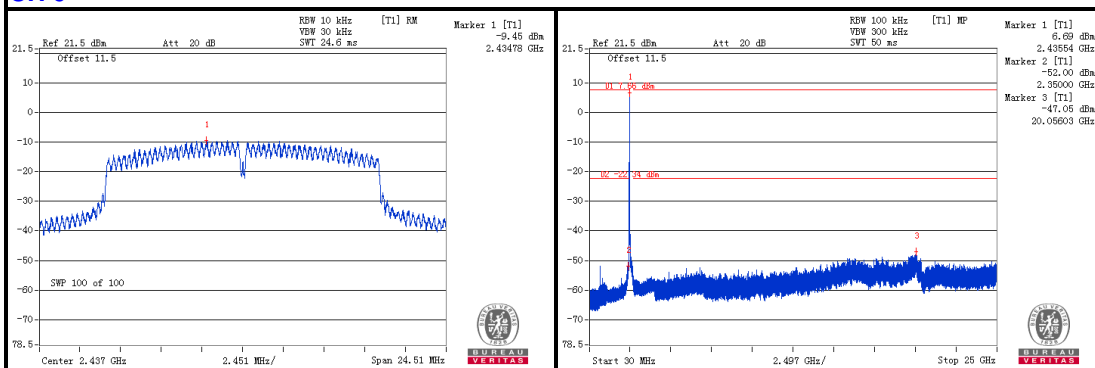
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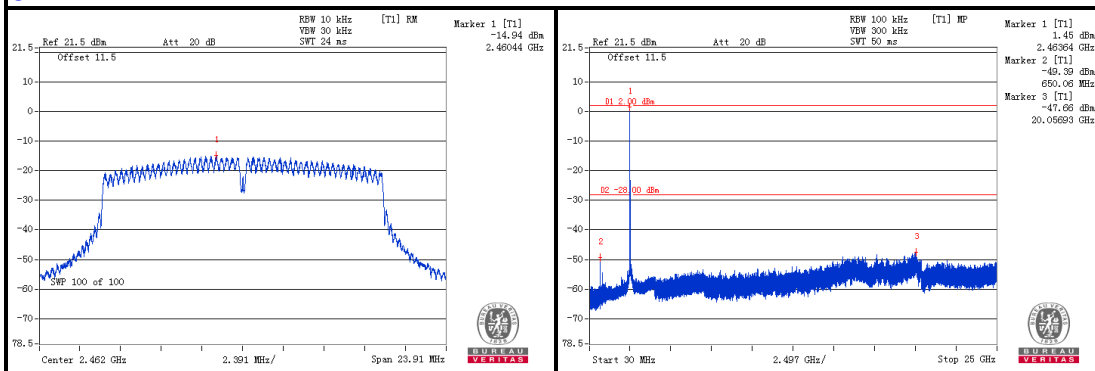
CH 1



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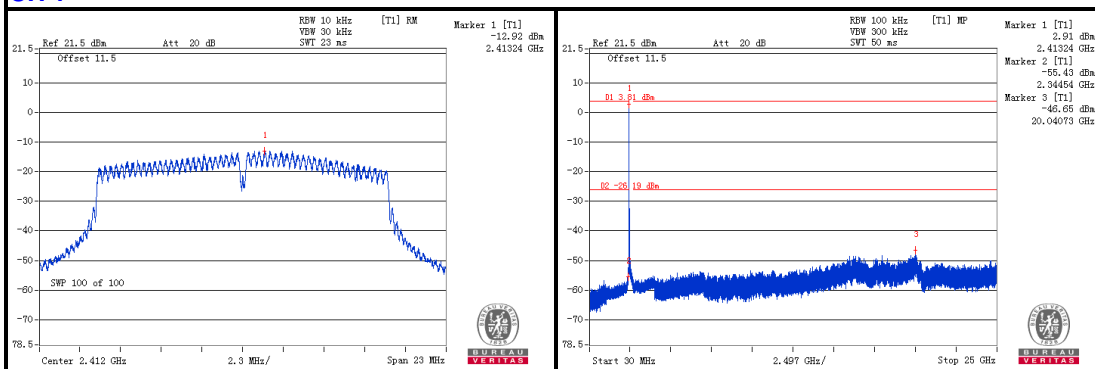


BUREAU
VERITAS

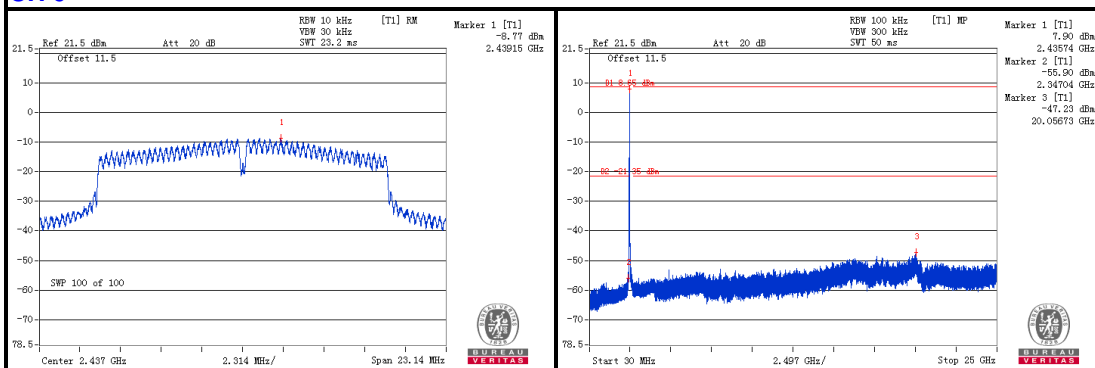
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CHAIN 2

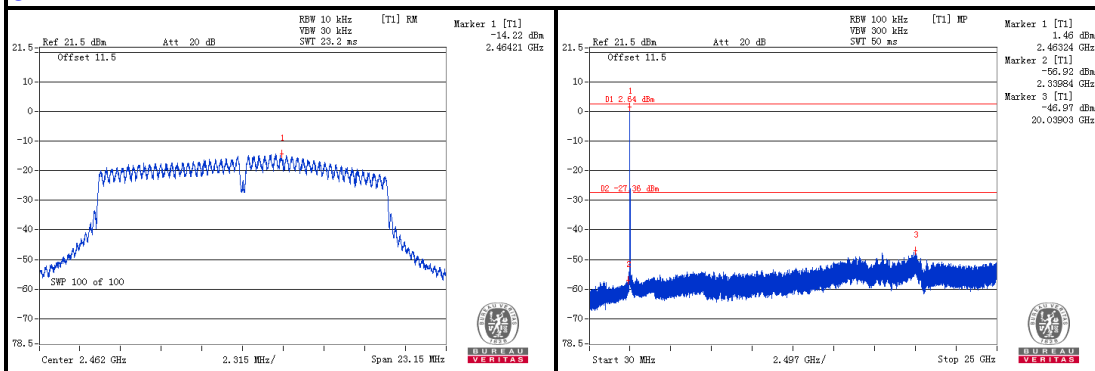
CH 1



CH 6



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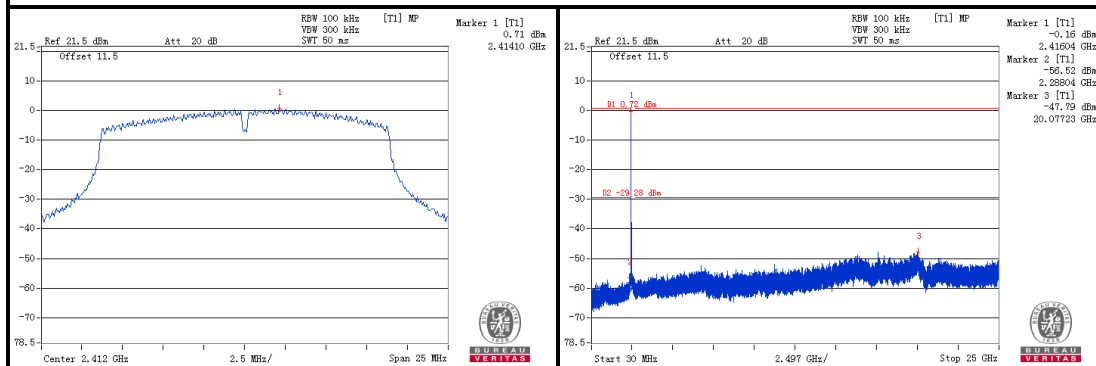
BUREAU
VERITAS

Test Report No.: RF160818N017

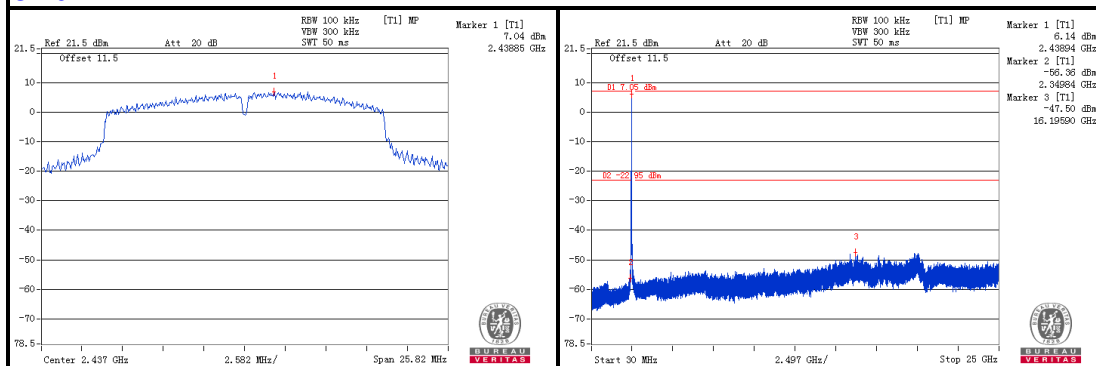
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CHAIN 0

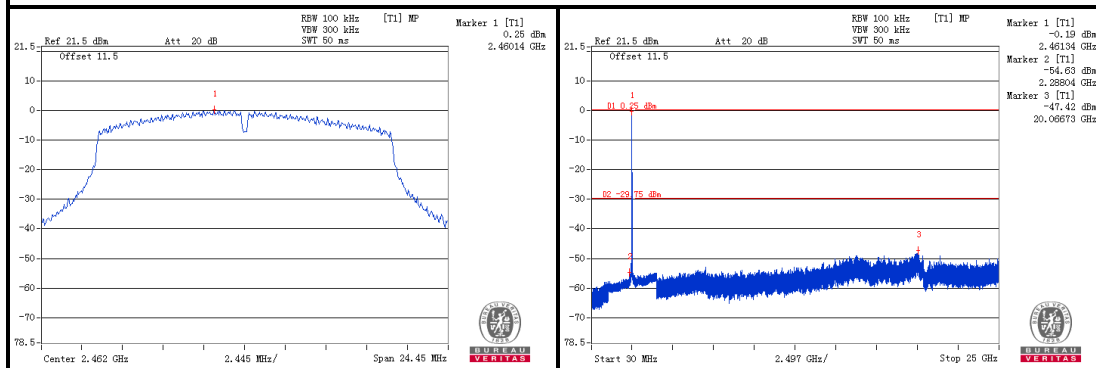
CH 1



CH 6



CH 11



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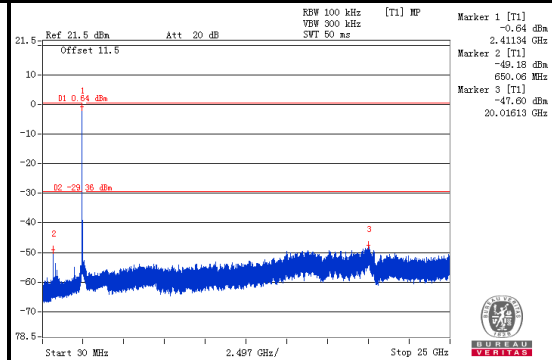
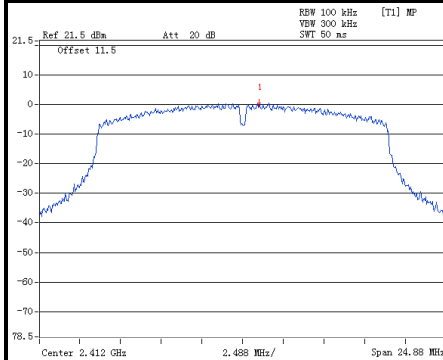


BUREAU
VERITAS

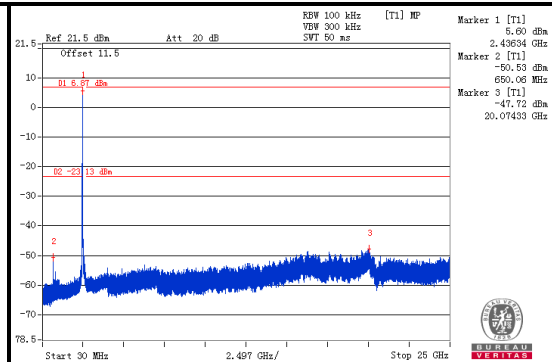
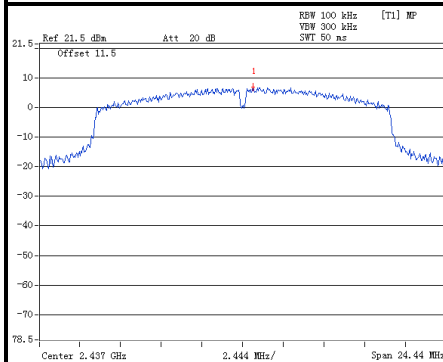
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CHAIN 1

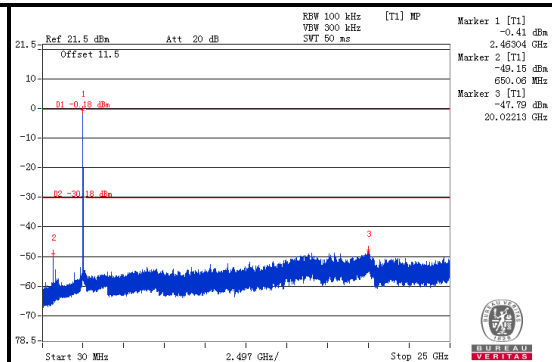
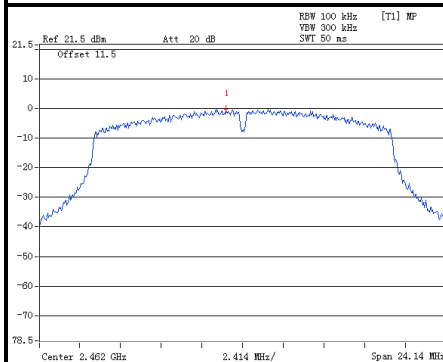
CH 1



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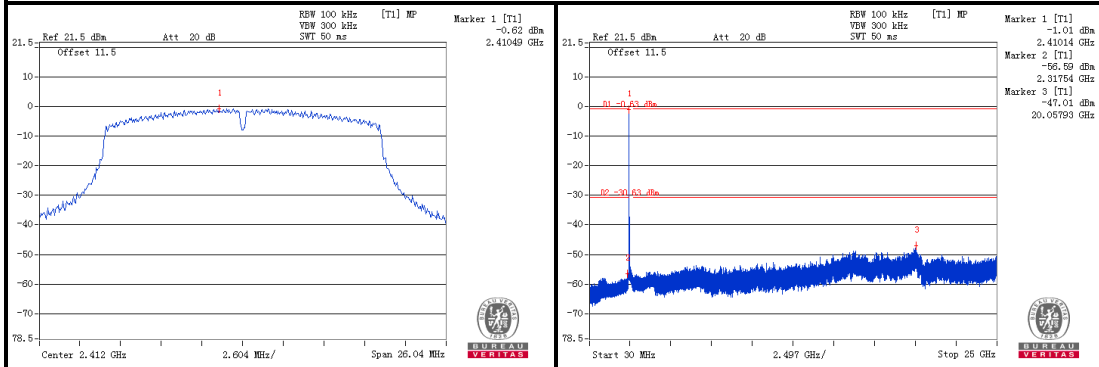


BUREAU
VERITAS

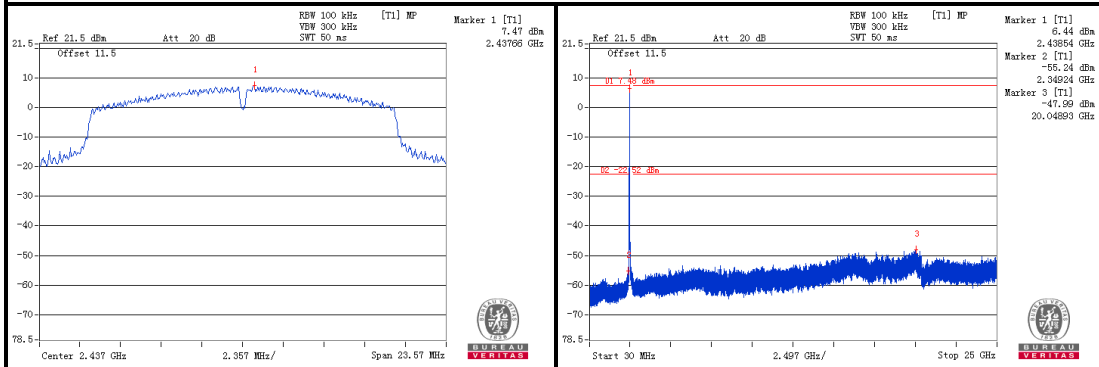
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CHAIN 2

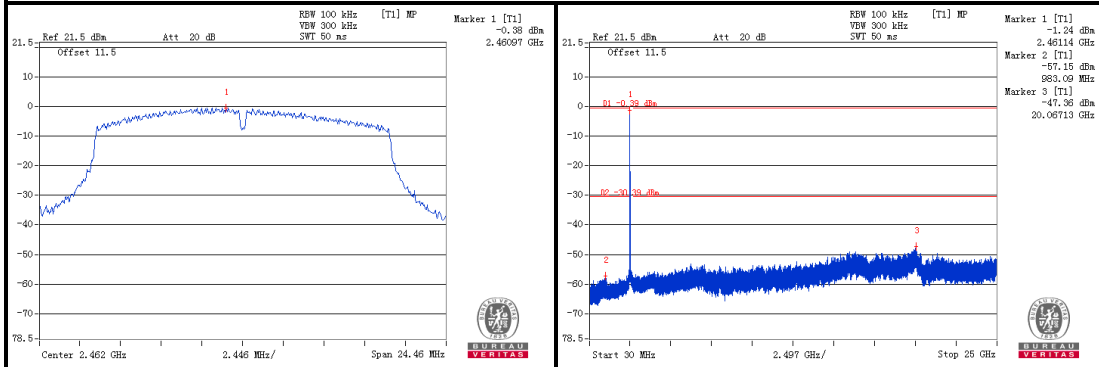
CH 1



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CH 11



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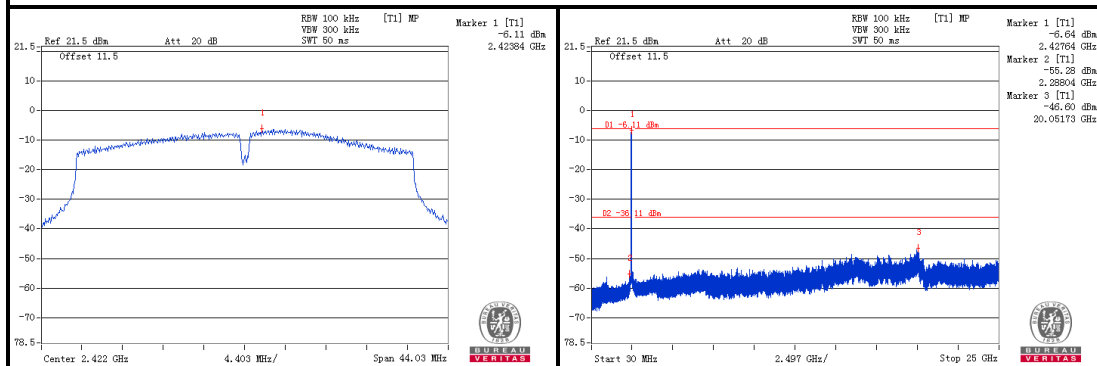
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VERITAS

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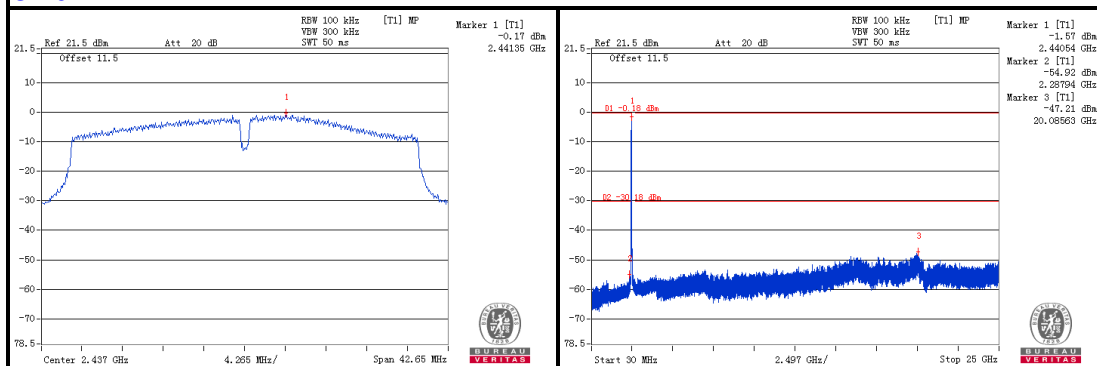
802.11n 40MHz

CHAIN 0

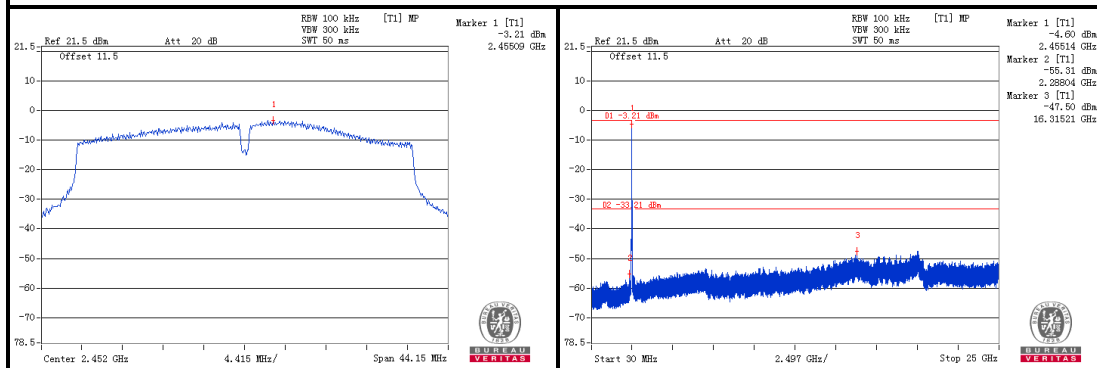
CH 3



CH 6



CH 9



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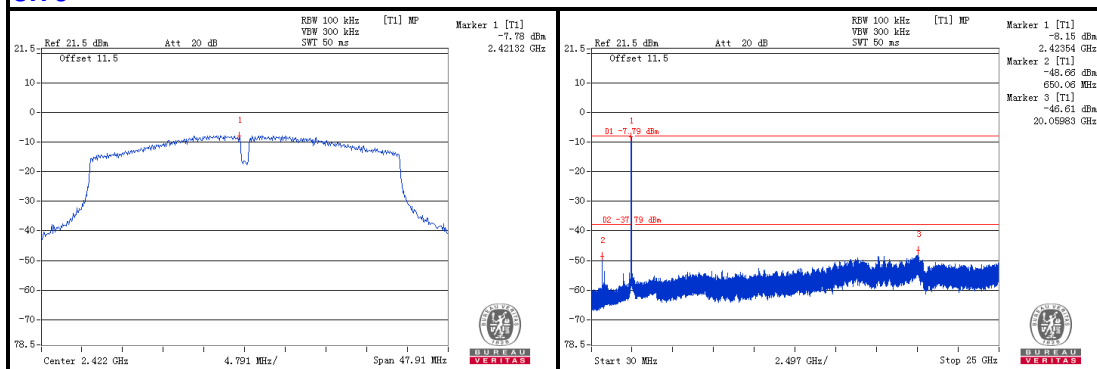


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VERITAS

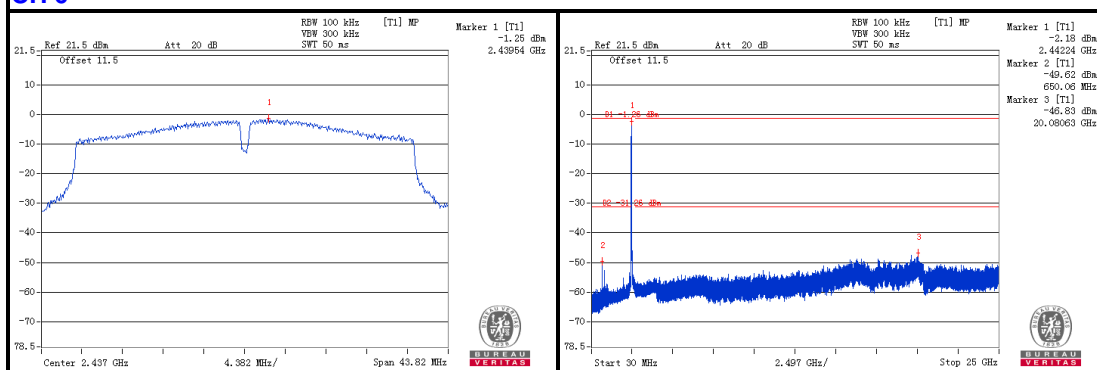
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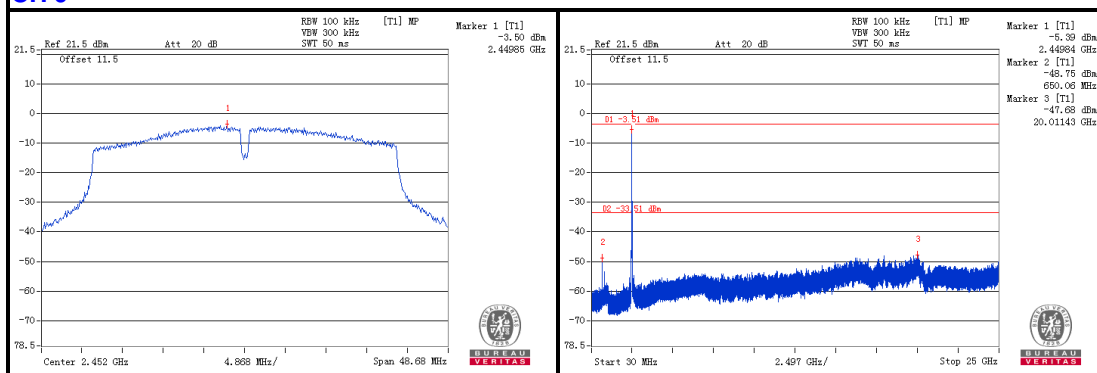
CH 3



CH 6



CH 9



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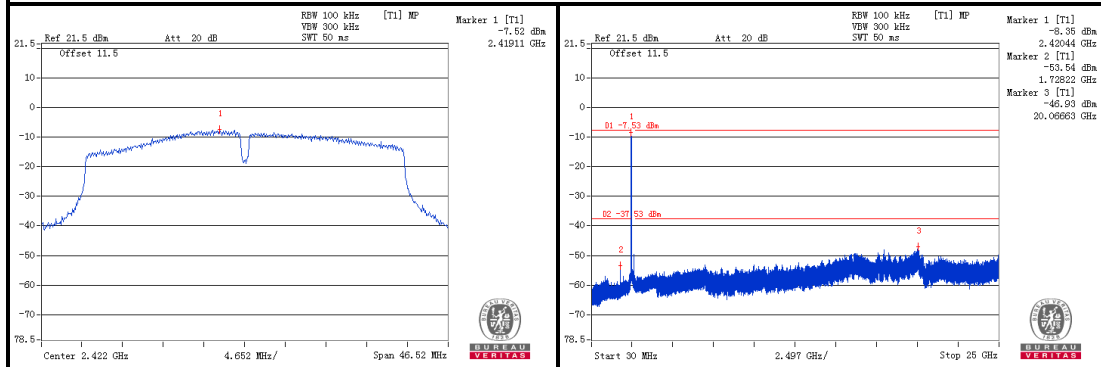


BUREAU
VERITAS

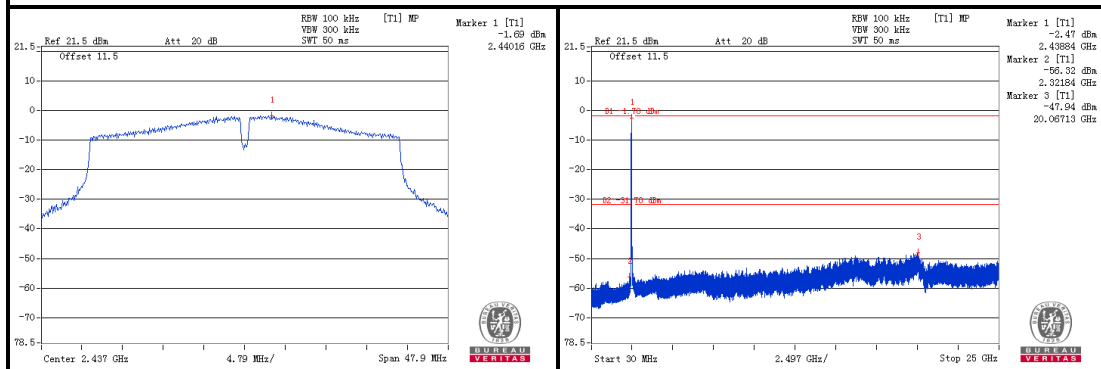
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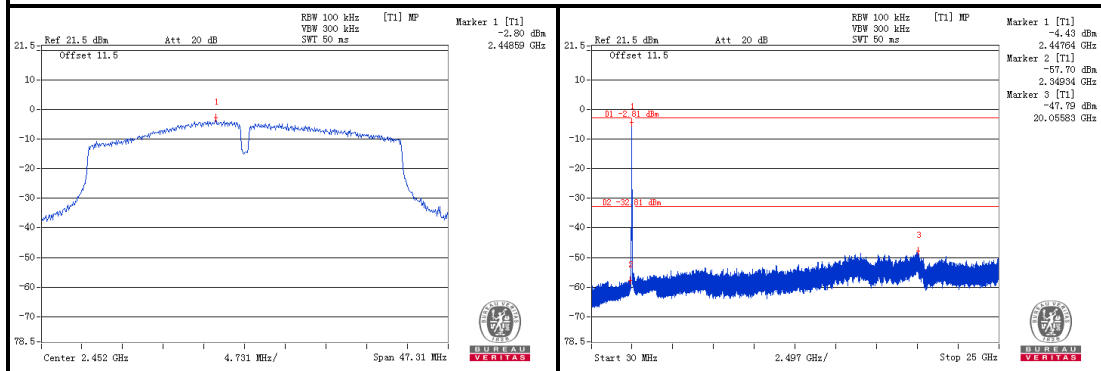
CH 3



CH 6



CH 9



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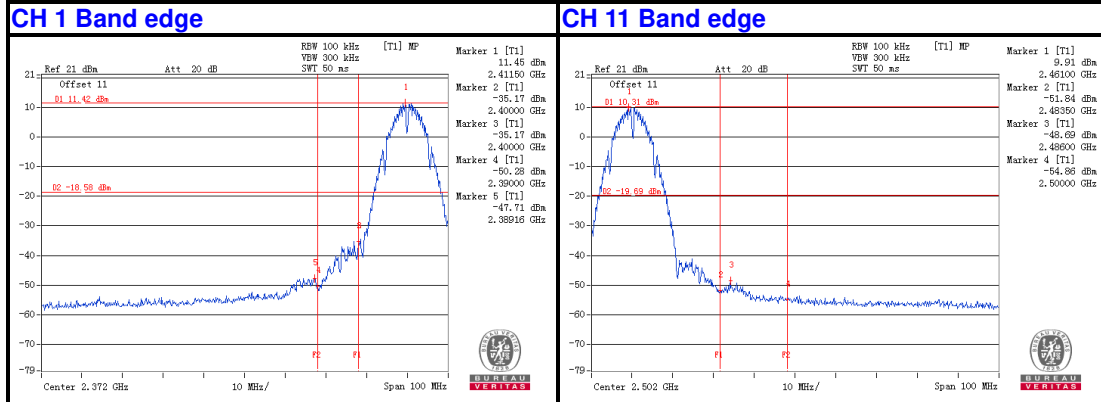


BUREAU
VERITAS

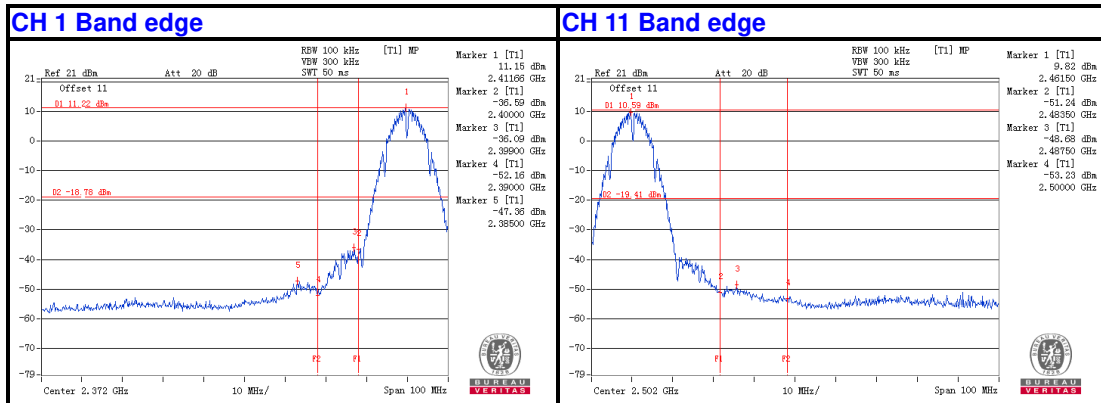
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802.11b

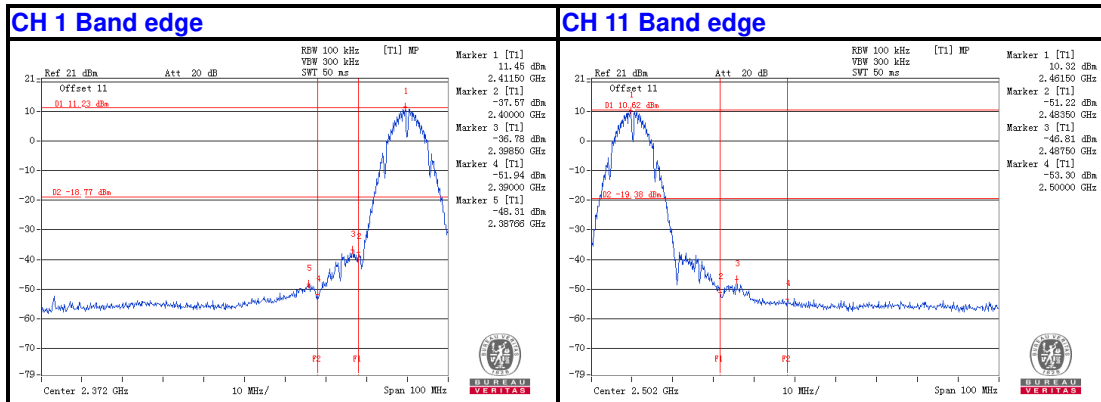
CHAIN 0



CHAIN 1



CHAIN 2



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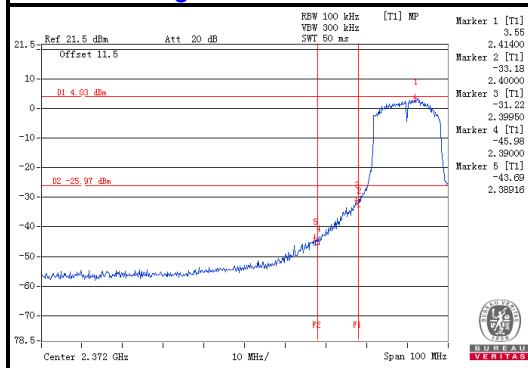
BUREAU
VERITAS

Test Report No.: RF160818N017

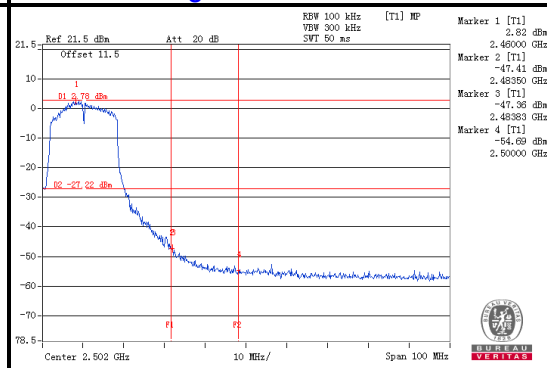
802.11g

CHAIN 0

CH 1 Band edge

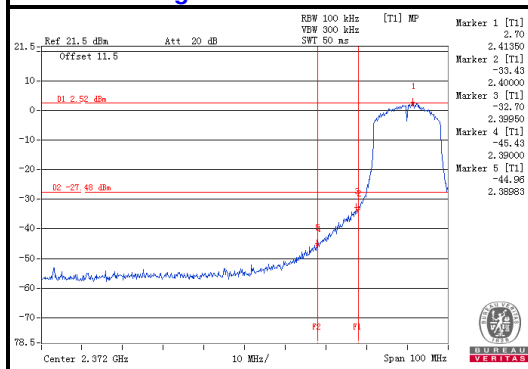


CH 11 Band edge

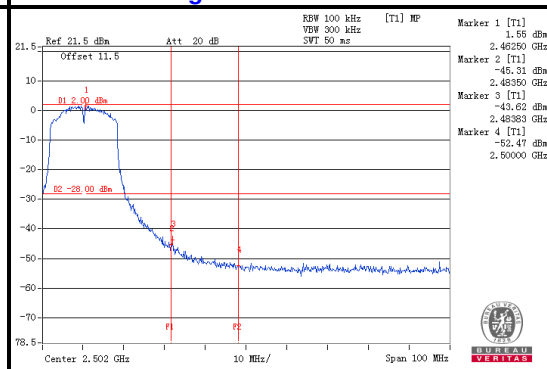


CHAIN 1

CH 1 Band edge

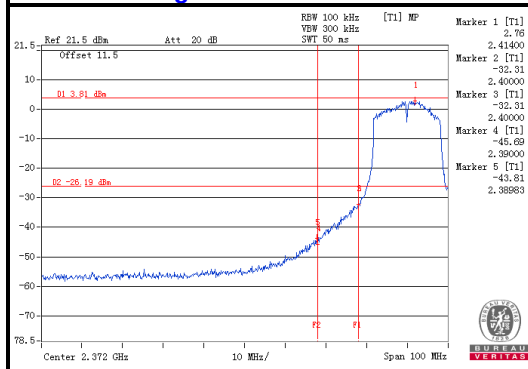


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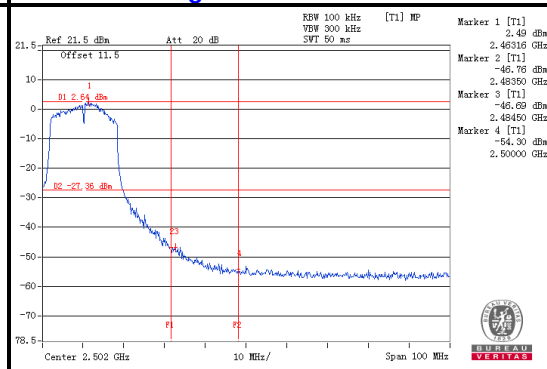


CHAIN 2

CH 1 Band edge



CH 11 Band edge



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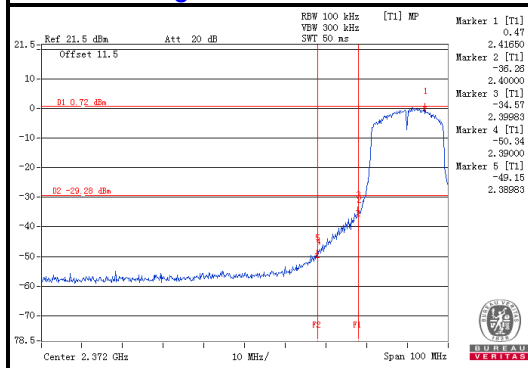
BUREAU
VERITAS

Test Report No.: RF160818N017

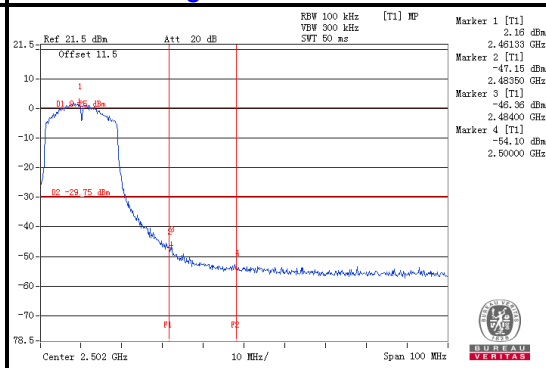
802.11n 20MHz

CHAIN 0

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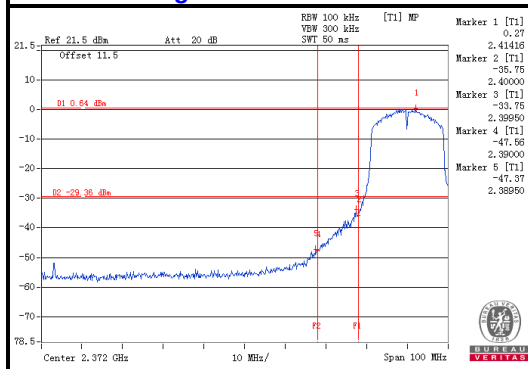


CH 11 Band edge

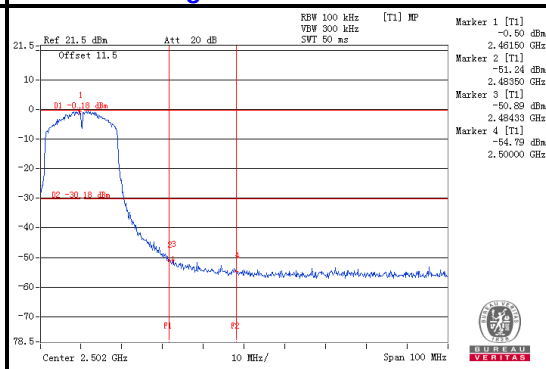


CHAIN 1

CH 1 Band edge

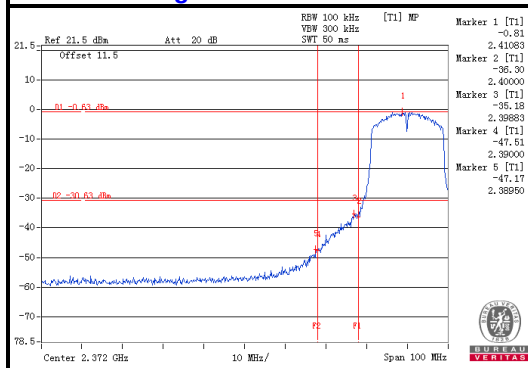


CH 11 Band edge

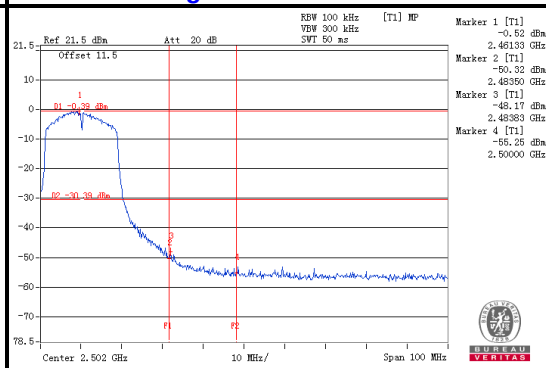


CHAIN 2

CH 1 Band edge



CH 11 Band edge





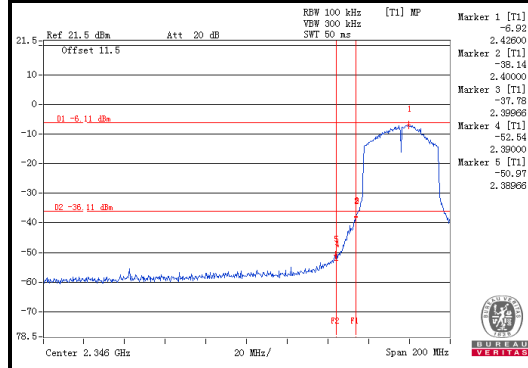
BUREAU
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Test Report No.: RF160818N017

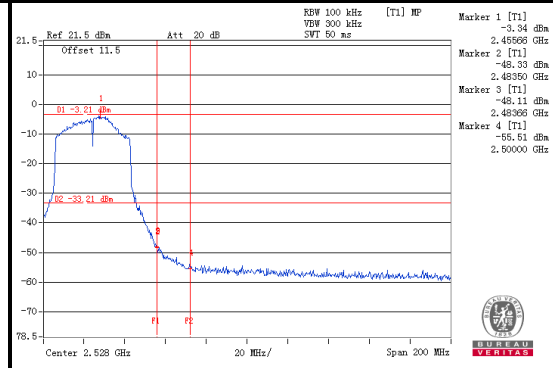
802.11n 40MHz

CHAIN 0

CH 3 Band edge

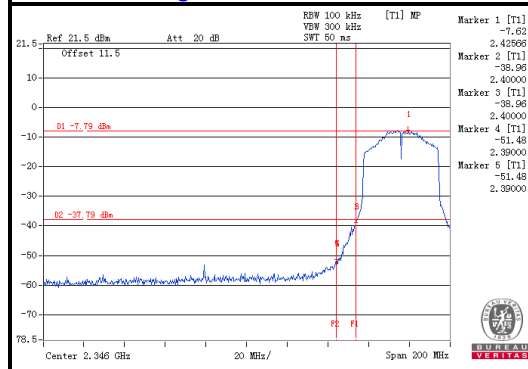


CH 9 Band edge

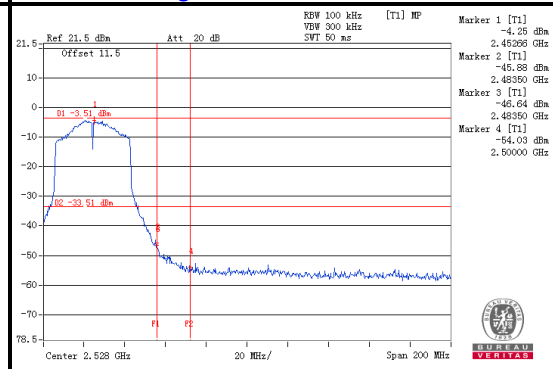


CHAIN 1

CH 3 Band edge

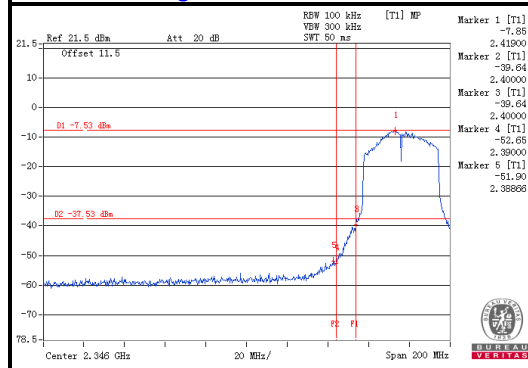


CH 9 Band edge

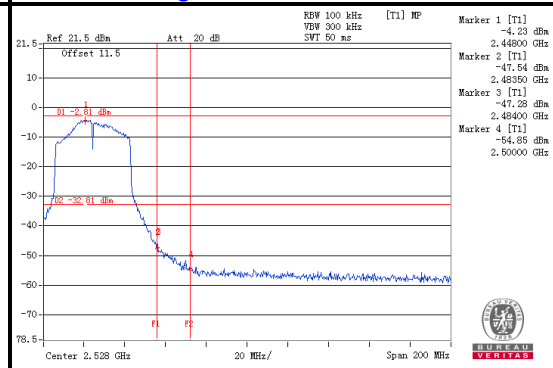


CHAIN 2

CH 3 Band edge



CH 9 Band edge





Test Report No.: RF160818N017

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---