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Test Report No.: RF170329N028



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 Router
Brand Name	TP-Link
Model	TL-WR940N
Additional Model & Model Difference	N/A
Date of tests	Apr. 15, 2017 ~ May 07, 2017

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: May 23, 2017

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Test Report No.: RF170329N028

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF170329N028	Original release	May 23, 2017



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 Router
MODEL NO.	TL-WR940N
FCC ID	TE7WR940NV6
NOMINAL VOLTAGE	DC 9V From Adapter
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	21.67dBm (Measured Average Power)
ANTENNA TYPE	Dipole Antenna; 4.29dBi 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	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. Please refer to the EUT photo document (Reference No.: 170329N028) for detailed product photo.
5. The EUT was powered by the following adapters:

ADAPTER	
BRAND:	TP-Link
MODEL:	T090060-2B1
INPUT:	AC 100-240V, 50/60hz 0.3A Max.
OUTPUT:	DC 9V, 0.6A
CABLE:	Unshielded, Detachable, 1.5m.No core



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 and MIMO mode(3TX/3RX) 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	
-	√	√	√	√	DC 9V Powered by Adapter with WIFI function MIMO mode(3TX/3RX)

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	24deg. C, 55%RH	DC 9V From Adapter	Hardy Leng
RE≥1G	24deg. C, 55%RH	DC 9V From Adapter	Hardy Leng
PLC	20deg. C, 56%RH	DC 9V From Adapter	Robert Cheng
APCM	20deg. C, 55%RH	DC 9V From Adapter	Robert Cheng

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	Notebook	DELL	VOSTRO230	357PV2X	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
2	AC Line : Unshielded, Detachable 1.5m RJ45 Line : Unshielded, Detachable 1 m,10m;



4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBµV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

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

4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101494	Apr. 05,17	Apr. 04,18
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	Mar. 06,17	Mar. 05,18
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	Apr. 05,17	Apr. 04,18
Voltage probe	SCHWARZBECK	TK 9421	TK 9421-176	Jan. 04,17	Jan. 03,18
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.

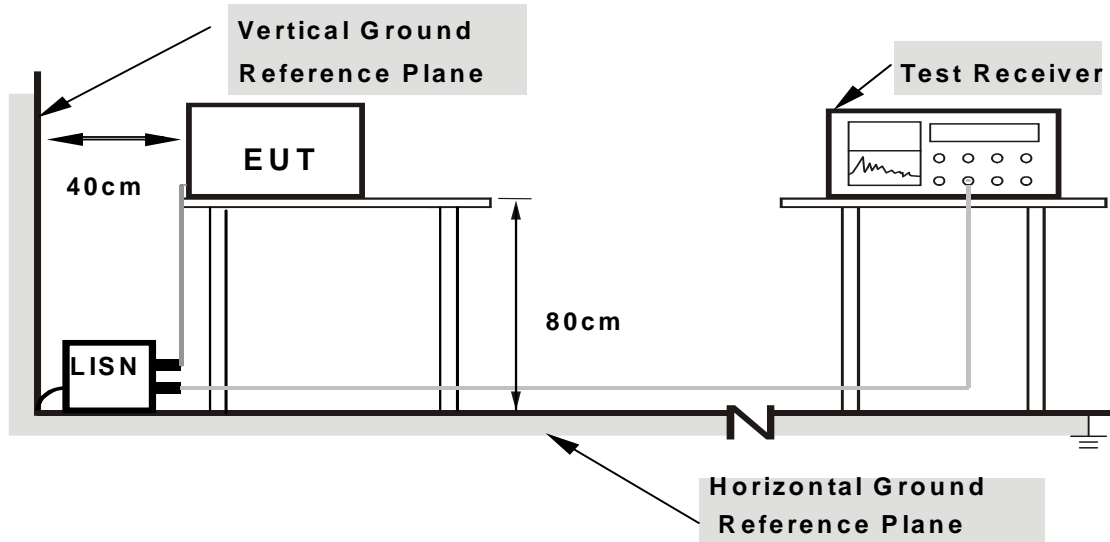
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

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.



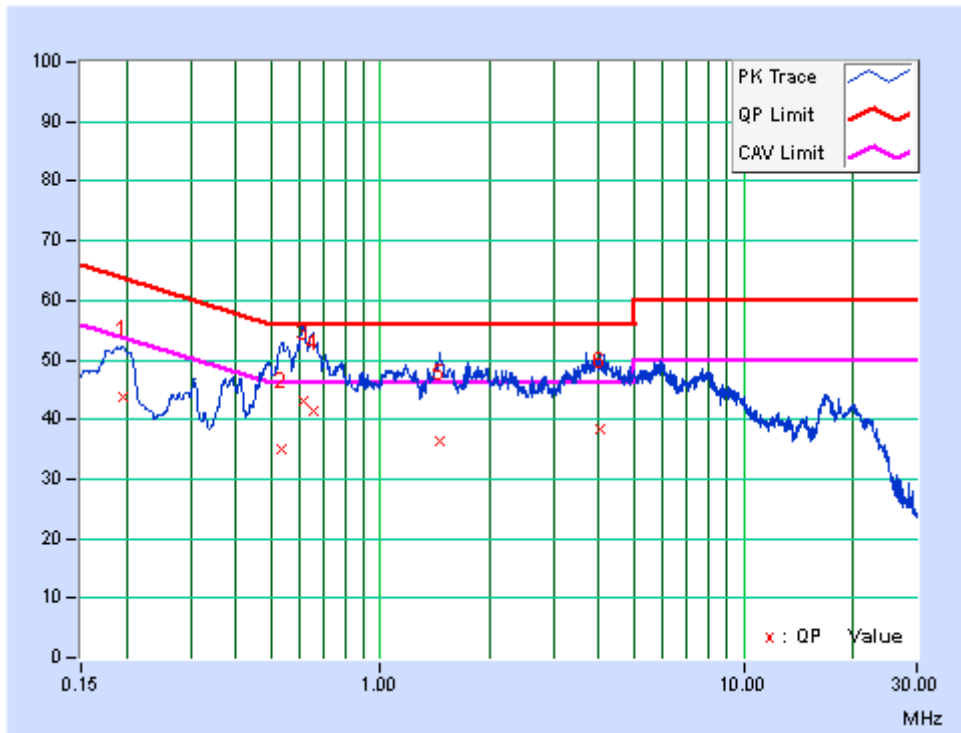
4.1.7 TEST RESULTS

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	0.19514	9.84	33.77	17.49	43.61	27.33	63.81	53.81	-20.21	-26.49
2	0.53503	9.99	24.98	8.90	34.97	18.89	56.00	46.00	-21.03	-27.11
3	0.61539	9.98	33.01	19.08	42.99	29.06	56.00	46.00	-13.01	-16.94
4	0.65220	9.92	31.45	17.16	41.37	27.08	56.00	46.00	-14.63	-18.92
5	1.45921	9.85	26.45	13.10	36.30	22.95	56.00	46.00	-19.70	-23.05
6	4.03350	9.91	28.49	16.45	38.40	26.36	56.00	46.00	-17.60	-19.64

- 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.

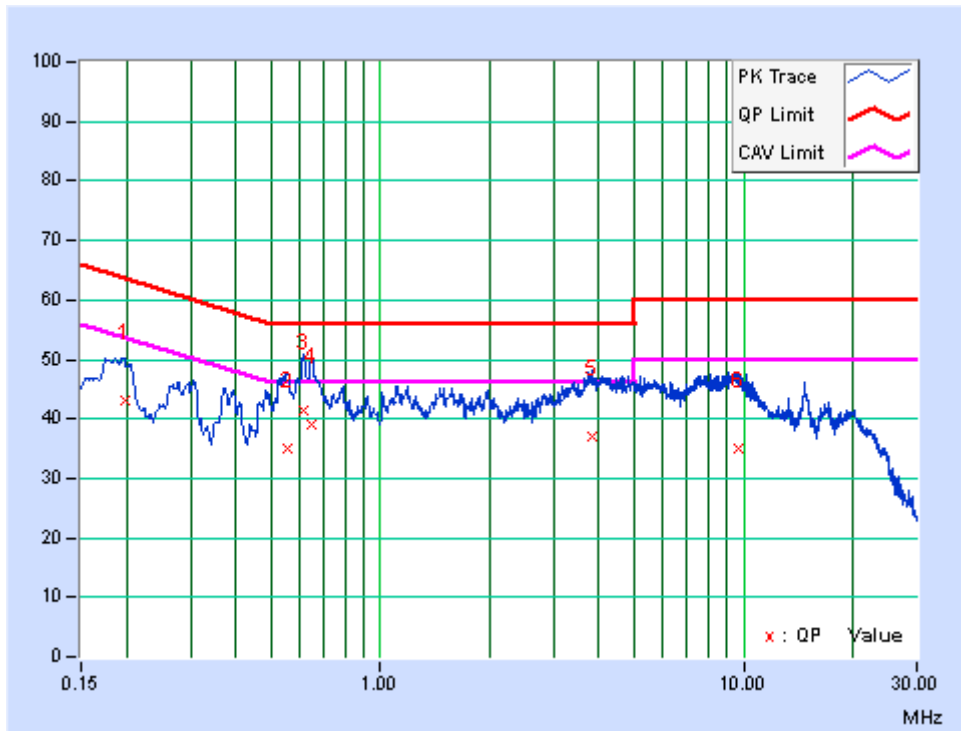




PHASE	Neutral	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19721	9.72	33.52	17.49	43.24	27.21	63.73	53.73	-20.49	-26.52
2	0.55518	9.83	25.09	8.11	34.92	17.94	56.00	46.00	-21.08	-28.06
3	0.61377	9.82	31.46	19.42	41.28	29.24	56.00	46.00	-14.72	-16.76
4	0.64535	9.81	29.37	18.87	39.18	28.68	56.00	46.00	-16.82	-17.32
5	3.82200	9.92	27.06	13.85	36.98	23.77	56.00	46.00	-19.02	-22.23
6	9.68325	9.94	24.95	11.39	34.89	21.33	60.00	50.00	-25.11	-28.67

- 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	ESU40	100449	Mar. 11,17	Mar. 10,18
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	Nov. 04,16	Nov. 03,17
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. 06,17	Mar. 05,18
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170242	Mar. 12,17	Mar. 11,18
Amplifier (9kHz-1GHz)	SONOMA	310D	186955	Mar. 04,17	Mar. 03, 18
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	Mar. 09,17	Mar. 08,18
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,16	Nov. 03,17
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 is 12 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 502831.



4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) 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.

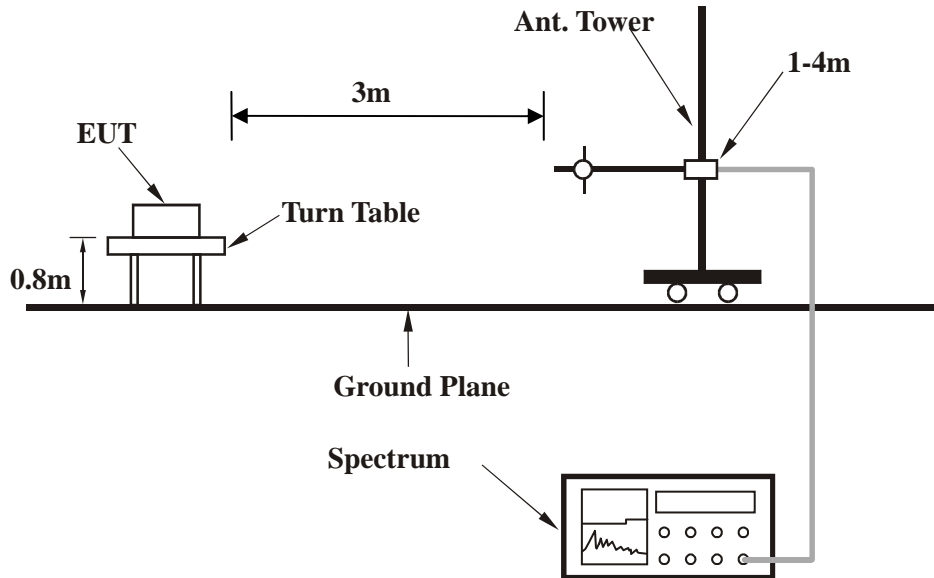
4.2.4 DEVIATION FROM TEST STANDARD

No deviation.



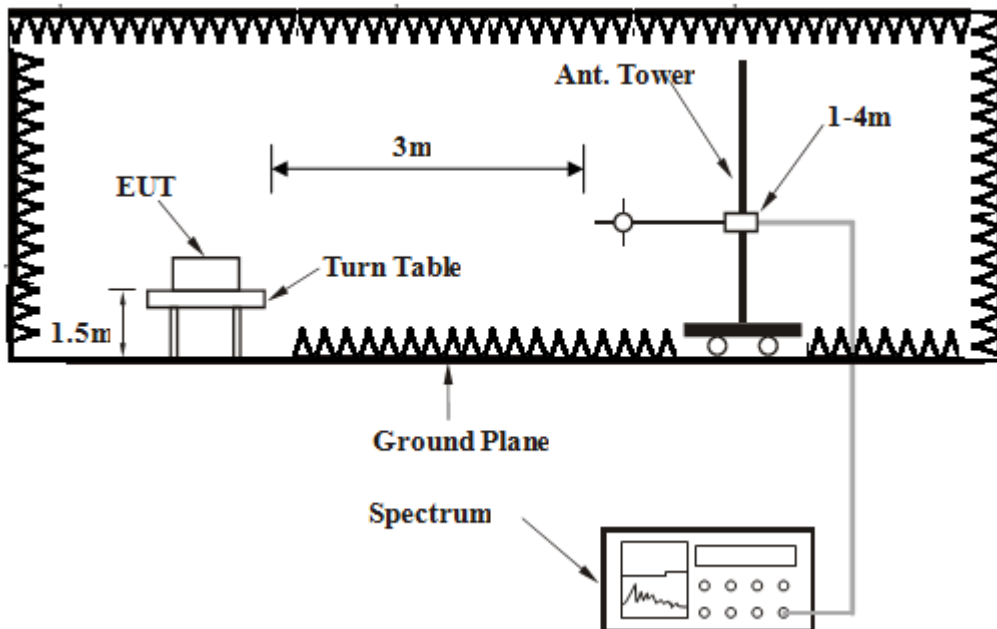
4.2.5 TEST SETUP

Below 1GHz test setup



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

Above 1GHz test setup



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



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4.2.6 EUT OPERATING CONDITIONS

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



4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA:

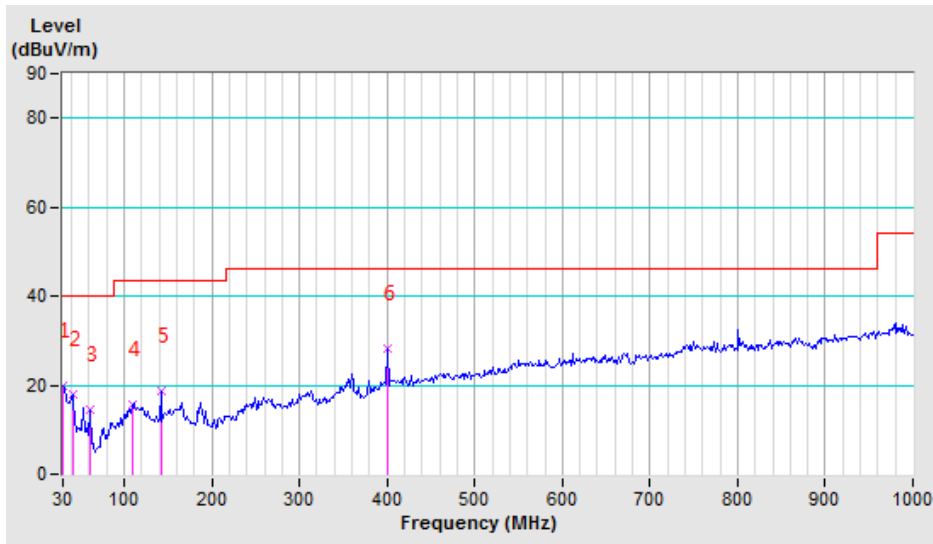
802.11b

CHANNEL	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	19.64 QP	40.00	-20.36	1.00 H	202	30.91	-11.27
2	40.88	18.04 QP	40.00	-21.96	1.00 H	144	34.80	-16.76
3	61.09	14.51 QP	40.00	-25.49	2.00 H	103	39.25	-24.74
4	109.28	15.72 QP	43.50	-27.78	2.00 H	340	33.61	-17.89
5	141.92	18.67 QP	43.50	-24.83	2.00 H	127	35.88	-17.21
6	399.97	28.06 QP	46.00	-17.94	3.00 H	294	36.61	-8.55

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.



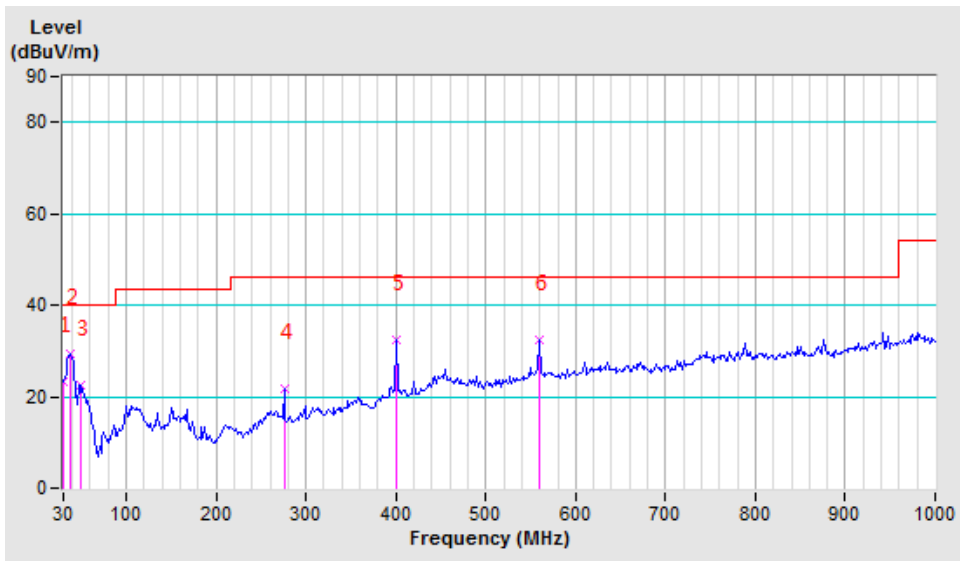


CHANNEL	Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	23.22 QP	40.00	-16.78	1.00 V	124	34.49	-11.27
2	37.77	29.23 QP	40.00	-10.77	1.00 V	305	44.42	-15.19
3	50.21	22.35 QP	40.00	-17.65	1.00 V	183	44.85	-22.50
4	275.61	21.74 QP	46.00	-24.26	1.00 V	140	35.55	-13.81
5	399.97	32.51 QP	46.00	-13.49	1.00 V	200	41.06	-8.55
6	560.08	32.42 QP	46.00	-13.58	1.00 V	179	35.87	-3.45

REMARKS:

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





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	56.44 PK	74.00	-17.56	1.00 H	215	18.45	37.99
2	2390.00	43.58 AV	54.00	-10.42	1.00 H	215	5.59	37.99
3	*2412.00	106.15 PK			1.00 H	215	68.12	38.03
4	*2412.00	100.00 AV			1.00 H	215	61.97	38.03
5	4824.00	60.48 PK	74.00	-13.52	1.00 H	254	18.94	41.54
6	4824.00	47.52 AV	54.00	-6.48	1.00 H	254	5.98	41.54
7	#7236.00	58.08 PK	74.00	-15.92	1.00 H	215	12.52	45.56
8	#7236.00	44.74 AV	54.00	-9.26	1.00 H	215	-0.82	45.56

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	64.58 PK	74.00	-9.42	1.00 V	155	26.59	37.99
2	2390.00	53.21 AV	54.00	-0.79	1.00 V	155	15.22	37.99
3	*2412.00	118.69 PK			1.00 V	155	80.66	38.03
4	*2412.00	112.92 AV			1.00 V	155	74.89	38.03
5	4824.00	60.61 PK	74.00	-13.39	1.00 V	157	19.07	41.54
6	4824.00	49.83 AV	54.00	-4.17	1.00 V	157	8.29	41.54
7	#7236.00	58.20 PK	74.00	-15.80	1.00 V	25	12.64	45.56
8	#7236.00	44.66 AV	54.00	-9.34	1.00 V	25	-0.90	45.56

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



BUREAU VERITAS

Test Report No.: RF170329N028

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	108.58 PK			1.00 H	325	70.49	38.09
2	*2437.00	102.59 AV			1.00 H	325	64.50	38.09
3	4874.00	59.39 PK	74.00	-14.61	1.00 H	210	17.84	41.55
4	4874.00	46.60 AV	54.00	-7.40	1.00 H	210	5.05	41.55
5	7311.00	59.47 PK	74.00	-14.53	2.10 H	54	13.87	45.60
6	7311.00	44.86 AV	54.00	-9.14	2.10 H	54	-0.74	45.60
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	*2437.00	119.50 PK			2.10 V	196	81.41	38.09
2	*2437.00	113.45 AV			2.10 V	196	75.36	38.09
3	4874.00	63.09 PK	74.00	-10.91	1.00 V	345	21.54	41.55
4	4874.00	52.61 AV	54.00	-1.39	1.00 V	345	11.06	41.55
5	7311.00	58.34 PK	74.00	-15.66	1.00 V	215	12.74	45.60
6	7311.00	44.78 AV	54.00	-9.22	1.00 V	215	-0.82	45.60

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 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	107.44 PK			1.88 H	324	69.29	38.15
2	*2462.00	100.77 AV			1.88 H	324	62.62	38.15
3	2483.50	59.93 PK	74.00	-14.07	1.88 H	324	21.74	38.19
4	2483.50	46.25 AV	54.00	-7.75	1.88 H	324	8.06	38.19
5	4924.00	61.56 PK	74.00	-12.44	1.40 H	252	19.99	41.57
6	4924.00	48.25 AV	54.00	-5.75	1.40 H	252	6.68	41.57
7	7386.00	59.09 PK	74.00	-14.91	1.00 H	54	13.44	45.65
8	7386.00	46.19 AV	54.00	-7.81	1.00 H	54	0.54	45.65
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	*2462.00	113.37 PK			1.00 V	170	75.22	38.15
2	*2462.00	108.16 AV			1.00 V	170	70.01	38.15
3	2483.50	66.38 PK	74.00	-7.62	1.51 V	16	28.19	38.19
4	2483.50	52.75 AV	54.00	-1.25	1.51 V	16	14.56	38.19
5	4924.00	60.55 PK	74.00	-13.45	1.00 V	2	18.98	41.57
6	4924.00	48.27 AV	54.00	-5.73	1.00 V	2	6.70	41.57
7	7386.00	59.88 PK	74.00	-14.12	1.00 V	25	14.23	45.65
8	7386.00	45.99 AV	54.00	-8.01	1.00 V	25	0.34	45.65

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.



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	54.71 PK	74.00	-19.29	1.00 H	254	16.72	37.99
2	2390.00	41.73 AV	54.00	-12.27	1.00 H	254	3.74	37.99
3	*2412.00	103.83 PK			1.00 H	12	65.80	38.03
4	*2412.00	95.35 AV			1.00 H	12	57.32	38.03
5	4824.00	60.65 PK	74.00	-13.35	2.10 H	55	19.11	41.54
6	4824.00	46.75 AV	54.00	-7.25	2.10 H	55	5.21	41.54
7	#7236.00	59.77 PK	74.00	-14.23	1.00 H	360	14.21	45.56
8	#7236.00	45.42 AV	54.00	-8.58	1.00 H	360	-0.14	45.56

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	71.32 PK	74.00	-2.68	1.00 V	5	33.33	37.99
2	2390.00	50.81 AV	54.00	-3.19	1.00 V	5	12.82	37.99
3	*2412.00	116.33 PK			1.00 V	329	78.30	38.03
4	*2412.00	107.26 AV			1.00 V	329	69.23	38.03
5	4824.00	60.96 PK	74.00	-13.04	1.00 V	255	19.42	41.54
6	4824.00	47.18 AV	54.00	-6.82	1.00 V	255	5.64	41.54
7	#7236.00	58.10 PK	74.00	-15.90	1.20 V	330	12.54	45.56
8	#7236.00	45.32 AV	54.00	-8.68	1.20 V	330	-0.24	45.56

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	106.73 PK			2.56 H	26	68.64	38.09
2	*2437.00	97.27 AV			2.56 H	26	59.18	38.09
3	4874.00	61.42 PK	74.00	-12.58	1.88 H	211	19.87	41.55
4	4874.00	48.10 AV	54.00	-5.90	1.88 H	211	6.55	41.55
5	7311.00	59.46 PK	74.00	-14.54	2.55 H	64	13.86	45.60
6	7311.00	45.70 AV	54.00	-8.30	2.55 H	64	0.10	45.60
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	*2437.00	121.96 PK			1.50 V	12	83.87	38.09
2	*2437.00	111.54 AV			1.50 V	12	73.45	38.09
3	4874.00	61.86 PK	74.00	-12.14	2.10 V	22	20.31	41.55
4	4874.00	49.39 AV	54.00	-4.61	2.10 V	22	7.84	41.55
5	7311.00	59.22 PK	74.00	-14.78	1.44 V	87	13.62	45.60
6	7311.00	45.48 AV	54.00	-8.52	1.44 V	87	-0.12	45.60

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 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	106.13 PK			2.40 H	28	67.98	38.15
2	*2462.00	96.76 AV			2.40 H	28	58.61	38.15
3	2483.50	65.34 PK	74.00	-8.66	2.40 H	48	27.15	38.19
4	2483.50	45.03 AV	54.00	-8.97	2.40 H	48	6.84	38.19
5	4924.00	61.21 PK	74.00	-12.79	2.00 H	215	19.64	41.57
6	4924.00	47.81 AV	54.00	-6.19	2.00 H	215	6.24	41.57
7	7386.00	59.64 PK	74.00	-14.36	1.22 H	32	13.99	45.65
8	7386.00	45.57 AV	54.00	-8.43	1.22 H	32	-0.08	45.65
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	*2462.00	113.99 PK			1.00 V	173	75.84	38.15
2	*2462.00	105.37 AV			1.00 V	173	67.22	38.15
3	2483.50	72.78 PK	74.00	-1.22	1.54 V	16	34.59	38.19
4	2483.50	52.48 AV	54.00	-1.52	1.54 V	16	14.29	38.19
5	4924.00	62.83 PK	74.00	-11.17	2.10 V	225	21.26	41.57
6	4924.00	48.01 AV	54.00	-5.99	2.10 V	225	6.44	41.57
7	7386.00	59.19 PK	74.00	-14.81	1.00 V	274	13.54	45.65
8	7386.00	45.43 AV	54.00	-8.57	1.00 V	274	-0.22	45.65

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.



802.11n (HT20)

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	56.71 PK	74.00	-17.29	1.00 H	255	18.72	37.99
2	2390.00	42.34 AV	54.00	-11.66	1.00 H	255	4.35	37.99
3	*2412.00	103.49 PK			1.00 H	255	65.46	38.03
4	*2412.00	94.49 AV			1.00 H	255	56.46	38.03
5	4824.00	61.52 PK	74.00	-12.48	1.00 H	32	19.98	41.54
6	4824.00	47.52 AV	54.00	-6.48	1.00 H	32	5.98	41.54
7	#7236.00	59.24 PK	74.00	-14.76	2.10 H	55	13.68	45.56
8	#7236.00	45.93 AV	54.00	-8.07	2.10 H	55	0.37	45.56

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	70.94 PK	74.00	-3.06	1.00 V	85	32.95	37.99
2	2390.00	53.64 AV	54.00	-0.36	1.00 V	85	15.65	37.99
3	*2412.00	118.44 PK			1.44 V	194	80.41	38.03
4	*2412.00	107.81 AV			1.44 V	194	69.78	38.03
5	4824.00	60.91 PK	74.00	-13.09	2.46 V	30	19.37	41.54
6	4824.00	47.42 AV	54.00	-6.58	2.46 V	30	5.88	41.54
7	#7236.00	59.24 PK	74.00	-14.76	1.20 V	66	13.68	45.56
8	#7236.00	45.45 AV	54.00	-8.55	1.20 V	66	-0.11	45.56

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.30 PK			1.45 H	360	67.21	38.09
2	*2437.00	96.98 AV			1.45 H	360	58.89	38.09
3	4874.00	60.49 PK	74.00	-13.51	1.00 H	215	18.94	41.55
4	4874.00	48.19 AV	54.00	-5.81	1.00 H	215	6.64	41.55
5	7311.00	60.55 PK	74.00	-13.45	1.22 H	37	14.95	45.60
6	7311.00	45.29 AV	54.00	-8.71	1.22 H	37	-0.31	45.60
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	*2437.00	119.03 PK			1.00 V	26	80.94	38.09
2	*2437.00	109.21 AV			1.00 V	26	71.12	38.09
3	4874.00	60.72 PK	74.00	-13.28	2.10 V	55	19.17	41.55
4	4874.00	48.16 AV	54.00	-5.84	2.10 V	55	6.61	41.55
5	7311.00	59.69 PK	74.00	-14.31	2.10 V	330	14.09	45.60
6	7311.00	45.53 AV	54.00	-8.47	2.10 V	330	-0.07	45.60

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 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	107.79 PK			2.43 H	28	69.64	38.15
2	*2462.00	96.92 AV			2.43 H	28	58.77	38.15
3	2483.50	63.76 PK	74.00	-10.24	2.43 H	28	25.57	38.19
4	2483.50	43.87 AV	54.00	-10.13	2.43 H	28	5.68	38.19
5	4924.00	62.13 PK	74.00	-11.87	4.00 H	65	20.56	41.57
6	4924.00	48.41 AV	54.00	-5.59	4.00 H	65	6.84	41.57
7	7386.00	59.49 PK	74.00	-14.51	2.10 H	360	13.84	45.65
8	7386.00	45.92 AV	54.00	-8.08	2.10 H	360	0.27	45.65

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	*2462.00	113.28 PK			1.00 V	219	75.13	38.15
2	*2462.00	104.14 AV			1.00 V	219	65.99	38.15
3	2483.50	71.24 PK	74.00	-2.76	1.00 V	254	33.05	38.19
4	2483.50	51.60 AV	54.00	-2.40	1.00 V	254	13.41	38.19
5	4924.00	61.56 PK	74.00	-12.44	1.00 V	26	19.99	41.57
6	4924.00	48.18 AV	54.00	-5.82	1.00 V	26	6.61	41.57
7	7386.00	60.01 PK	74.00	-13.99	1.00 V	25	14.36	45.65
8	7386.00	46.00 AV	54.00	-8.00	1.00 V	25	0.35	45.65

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.



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	55.17 PK	74.00	-18.83	1.00 H	25	17.18	37.99
2	2390.00	41.77 AV	54.00	-12.23	1.00 H	25	3.78	37.99
3	*2422.00	97.60 PK			1.00 H	12	59.54	38.06
4	*2422.00	89.07 AV			1.00 H	12	51.01	38.06
5	4844.00	61.66 PK	74.00	-12.34	1.00 H	24	20.12	41.54
6	4844.00	47.52 AV	54.00	-6.48	1.00 H	24	5.98	41.54
7	7266.00	59.23 PK	74.00	-14.77	1.00 H	21	13.66	45.57
8	7266.00	45.92 AV	54.00	-8.08	1.00 H	21	0.35	45.57

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	69.22 PK	74.00	-4.78	1.00 V	357	31.23	37.99
2	2390.00	51.93 AV	54.00	-2.07	1.00 V	357	13.94	37.99
3	*2422.00	111.04 PK			1.00 V	198	72.98	38.06
4	*2422.00	101.51 AV			1.00 V	198	63.45	38.06
5	4844.00	61.38 PK	74.00	-12.62	1.00 V	225	19.84	41.54
6	4844.00	47.50 AV	54.00	-6.50	1.00 V	225	5.96	41.54
7	7266.00	59.55 PK	74.00	-14.45	1.00 V	244	13.98	45.57
8	7266.00	45.91 AV	54.00	-8.09	1.00 V	244	0.34	45.57

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.



BUREAU VERITAS

Test Report No.: RF170329N028

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	54.76 PK	74.00	-19.24	2.55 H	26	16.77	37.99
2	2390.00	42.31 AV	54.00	-11.69	2.55 H	26	4.32	37.99
3	*2437.00	104.67 PK			2.55 H	26	66.58	38.09
4	*2437.00	94.63 AV			2.55 H	26	56.54	38.09
5	2483.50	57.20 PK	74.00	-16.80	2.55 H	26	19.01	38.19
6	2483.50	43.53 AV	54.00	-10.47	2.55 H	26	5.34	38.19
7	4874.00	61.10 PK	74.00	-12.90	1.00 H	215	19.55	41.55
8	4874.00	47.86 AV	54.00	-6.14	1.00 H	215	6.31	41.55
9	7311.00	59.61 PK	74.00	-14.39	1.00 H	339	14.01	45.60
10	7311.00	45.53 AV	54.00	-8.47	1.00 H	339	-0.07	45.60

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	2390.00	67.83 PK	74.00	-6.17	1.00 V	2	29.84	37.99
2	2390.00	51.03 AV	54.00	-2.97	1.00 V	2	13.04	37.99
3	*2437.00	114.96 PK			1.61 V	357	76.87	38.09
4	*2437.00	104.77 AV			1.61 V	357	66.68	38.09
5	2483.50	67.69 PK	74.00	-6.31	1.67 V	357	29.50	38.19
6	2483.50	51.55 AV	54.00	-2.45	1.67 V	357	13.36	38.19
7	4874.00	61.09 PK	74.00	-12.91	1.00 V	215	19.54	41.55
8	4874.00	47.58 AV	54.00	-6.42	1.00 V	215	6.03	41.55
9	7311.00	60.25 PK	74.00	-13.75	1.00 V	214	14.65	45.60
10	7311.00	45.74 AV	54.00	-8.26	1.00 V	214	0.14	45.60

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.



BUREAU
VERITAS

Test Report No.: RF170329N028

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	99.01 PK			2.10 H	200	60.89	38.12
2	*2452.00	89.38 AV			2.10 H	200	51.26	38.12
3	2483.50	59.47 PK	74.00	-14.53	2.10 H	200	21.28	38.19
4	2483.50	43.17 AV	54.00	-10.83	2.10 H	200	4.98	38.19
5	4904.00	61.45 PK	74.00	-12.55	2.08 H	211	19.89	41.56
6	4904.00	47.88 AV	54.00	-6.12	2.08 H	211	6.32	41.56
7	7356.00	59.28 PK	74.00	-14.72	2.10 H	58	13.65	45.63
8	7356.00	46.01 AV	54.00	-7.99	2.10 H	58	0.38	45.63
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	108.15 PK			1.00 V	215	70.03	38.12
2	*2452.00	98.44 AV			1.00 V	215	60.32	38.12
3	2483.50	71.44 PK	74.00	-2.56	1.47 V	13	33.25	38.19
4	2483.50	53.11 AV	54.00	-0.89	1.47 V	13	14.92	38.19
5	4904.00	61.40 PK	74.00	-12.60	1.00 V	2	19.84	41.56
6	4904.00	47.83 AV	54.00	-6.17	1.00 V	2	6.27	41.56
7	7356.00	59.28 PK	74.00	-14.72	1.20 V	51	13.65	45.63
8	7356.00	45.55 AV	54.00	-8.45	1.20 V	51	-0.08	45.63

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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For the Client Requested Tested Data of restricted band for other channel:

ABOVE 1GHz DATA

802.11n (11b)

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	2390.00	68.01 PK	74	-5.99	1.50 H	204	30.02	37.99
2	2390.00	50.29 AV	54	-3.71	1.50 H	204	12.3	37.99
3	*2417.00	112.07 PK			1.50 H	297	74.02	38.05
4	*2417.00	103.71 AV			1.50 H	297	65.66	38.05
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	70.01 PK	74.00	-3.99	2.00 V	118	32.02	37.99
2	2390.00	53.30 AV	54.00	-0.70	2.00 V	118	15.31	37.99
3	*2417.00	121.72 PK			2.27 V	306	77.67	38.05
4	*2417.00	103.4 AV			2.27 V	306	65.35	38.05

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	108.68 PK			1.00 H	213	70.55	38.13
2	*2457	102.48 AV			1.00 H	213	64.35	38.13
3	#2483.5	59.56 PK	74	-14.54	1.00 H	213	20.50	39.06
4	#2483.5	48.16 AV	54	-5.84	1.00 H	213	9.10	39.06
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	119.64 PK			1.50 H	24	81.51	38.13
2	*2457	112.17 AV			1.50 H	24	74.04	38.13
3	#2483.5	59.88 PK	74	-14.12	1.50 H	24	20.82	39.06
4	#2483.5	50.20 AV	54	-3.80	1.50 H	24	14.14	39.06

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 (11g)

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	2390.00	67.41 PK	74.00	-6.59	1.45 H	300	29.42	37.99
2	2390.00	50.39 AV	54.00	-3.61	1.45 H	300	12.40	37.99
3	*2417.00	108.04 PK			1.50 H	352	69.99	38.05
4	*2417.00	99.06 AV			1.50 H	352	61.01	38.05
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	71.70 PK	74.00	-2.30	2.21 V	172	33.71	37.99
2	2390.00	53.10 AV	54.00	-0.90	2.21 V	172	15.11	37.99
3	*2417.00	119.65 PK			2.26 V	193	81.60	38.05
4	*2417.00	112.39 AV			2.26 V	193	74.34	38.05

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	2483.50	68.82 PK	74.00	-5.18	2.81 V	196	30.63	38.19
2	2483.50	49.46 AV	54.00	-4.54	2.81 V	196	12.27	38.19
3	*2457.00	113.18 PK			2.16 V	257	75.05	38.13
4	*2457.00	103.84 AV			2.16 V	257	65.71	38.13

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	2483.50	70.70 PK	74.00	-3.30	2.06 H	344	32.71	37.99
2	2483.50	53.57 AV	54.00	-0.43	2.06 H	344	15.58	37.99
3	*2457.00	118.67 PK			2.01 H	174	80.62	38.05
4	*2457.00	108.36 AV			2.01 H	174	70.31	38.05

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 (HT20)

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	2390.00	69.41 PK	74.00	-4.59	1.70 H	326	31.42	37.99
2	2390.00	51.89 AV	54.00	-2.11	1.70 H	326	14.90	37.99
3	*2417.00	112.04 PK			1.82 H	326	73.99	38.05
4	*2417.00	99.06 AV			1.82 H	326	61.01	38.05

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	71.70 PK	74.00	-2.30	2.21 V	0	33.71	37.99
2	2390.00	53.10 AV	54.00	-0.90	2.21 V	0	15.11	37.99
3	*2417.00	121.65 PK			2.28 V	0	83.60	38.05
4	*2417.00	102.39 AV			2.28 V	0	64.34	38.05

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.: RF170329N028

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	103.97 PK			1.13 H	335	65.84	38.13
2	*2457.00	94.95 AV			1.13 H	335	56.82	38.13
3	2483.50	65.77 PK	74.00	-8.23	1.13 H	294	27.58	38.19
4	2483.50	50.56 AV	54.00	-3.44	1.13 H	294	12.37	38.19
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	112.06 PK			1.81 V	327	73.93	38.13
2	*2457.00	99.88 AV			1.81 V	327	61.75	38.13
3	2483.50	69.72 PK	74.00	-4.28	1.81 V	342	31.53	38.19
4	2483.50	53.74 AV	54.00	-0.26	1.81 V	342	15.54	38.19

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.
5. " * ": Fundamental frequency.



802.11n (HT40)

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	2390.00	66.06 PK	74.00	-7.94	1.71 H	343	28.07	37.99
2	2390.00	48.81 AV	54.00	-5.19	1.71 H	343	10.82	37.99
3	*2427.00	104.38 PK			1.71 H	343	66.31	38.07
4	*2427.00	92.48 AV			1.71 H	343	54.41	38.07

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	70.36 PK	74.00	-3.64	2.09 V	0	32.37	37.99
2	2390.00	53.49 AV	54.00	-0.51	2.09 V	0	15.50	37.99
3	*2427.00	109.88 PK			2.09 V	0	71.81	38.07
4	*2427.00	97.45 AV			2.09 V	0	59.38	38.07

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	101.54 PK			1.32 H	338	63.43	38.11
2	*2447.00	93.38 AV			1.32 H	338	55.27	38.11
3	2483.50	68.81 PK	74.00	-5.19	1.32 H	338	30.62	38.19
4	2483.50	50.49 AV	54.00	-3.51	1.32 H	338	1230	38.19
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	108.34 PK			2.93 V	263	70.23	38.11
2	*2447.00	95.26 AV			2.93 V	263	57.15	38.11
3	2483.50	71.74 PK	74.00	-2.26	2.93 V	263	33.55	38.19
4	2483.50	53.67 AV	54.00	-0.33	2.93 V	263	15.48	38.19

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.
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 04,17	May 03,18
Power Sensor	Keysight	U2021XA	MY55060018	May 04,17	May 03,18
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 13, 16	Oct.12, 17
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.05,16	Sep. 04,17
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 04,16	Nov. 03,17
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 04,16	Nov. 03,17
Signal Generator	Agilent	N5183A	MY50140980	Nov. 04,16	Nov. 03,17
Agile Signal Generator	Agilent	8645A	Agilent	Aug.08, 16	Aug.07, 17
Spectrum Analyzer	Keysight	N9020A	MY55400499	Apr. 05,17	Apr. 04,18
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Dec.05, 16	Dec. 04, 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

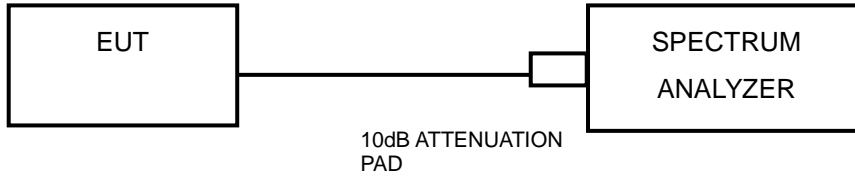
1. Set resolution bandwidth (RBW) = 100KHz
2. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation.



4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

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



4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	10.07	10.31	10.28	0.5	PASS
6	2437	9.89	10.30	10.10	0.5	PASS
11	2462	10.07	10.31	10.08	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	15.13	15.12	15.16	0.5	PASS
6	2437	15.11	13.90	15.14	0.5	PASS
11	2462	15.12	15.11	15.15	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	15.13	15.15	15.14	0.5	PASS
6	2437	15.14	15.12	15.14	0.5	PASS
11	2462	15.14	15.13	15.13	0.5	PASS

802.11n 40MHz

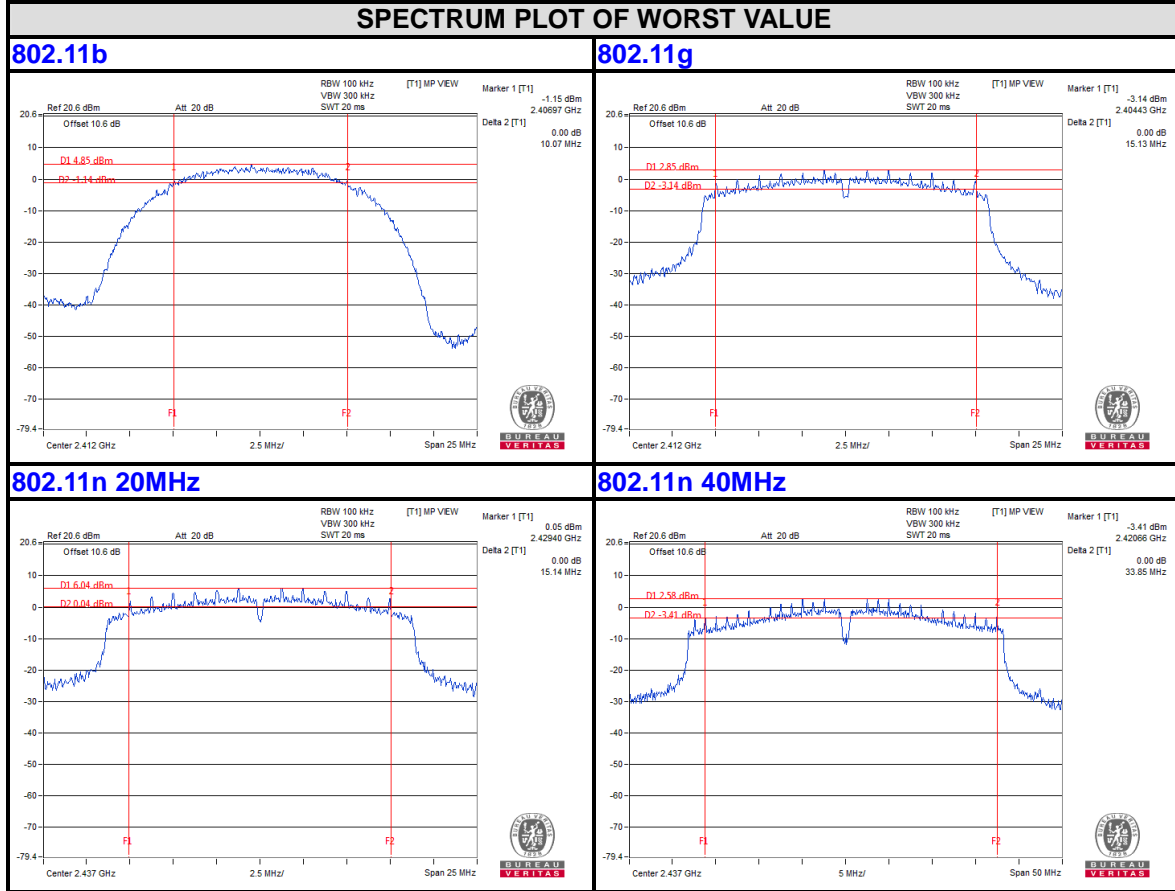
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
3	2422	32.65	33.82	33.85	0.5	PASS
6	2437	33.85	33.86	31.37	0.5	PASS
9	2452	32.60	33.86	33.78	0.5	PASS



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CHAIN 0



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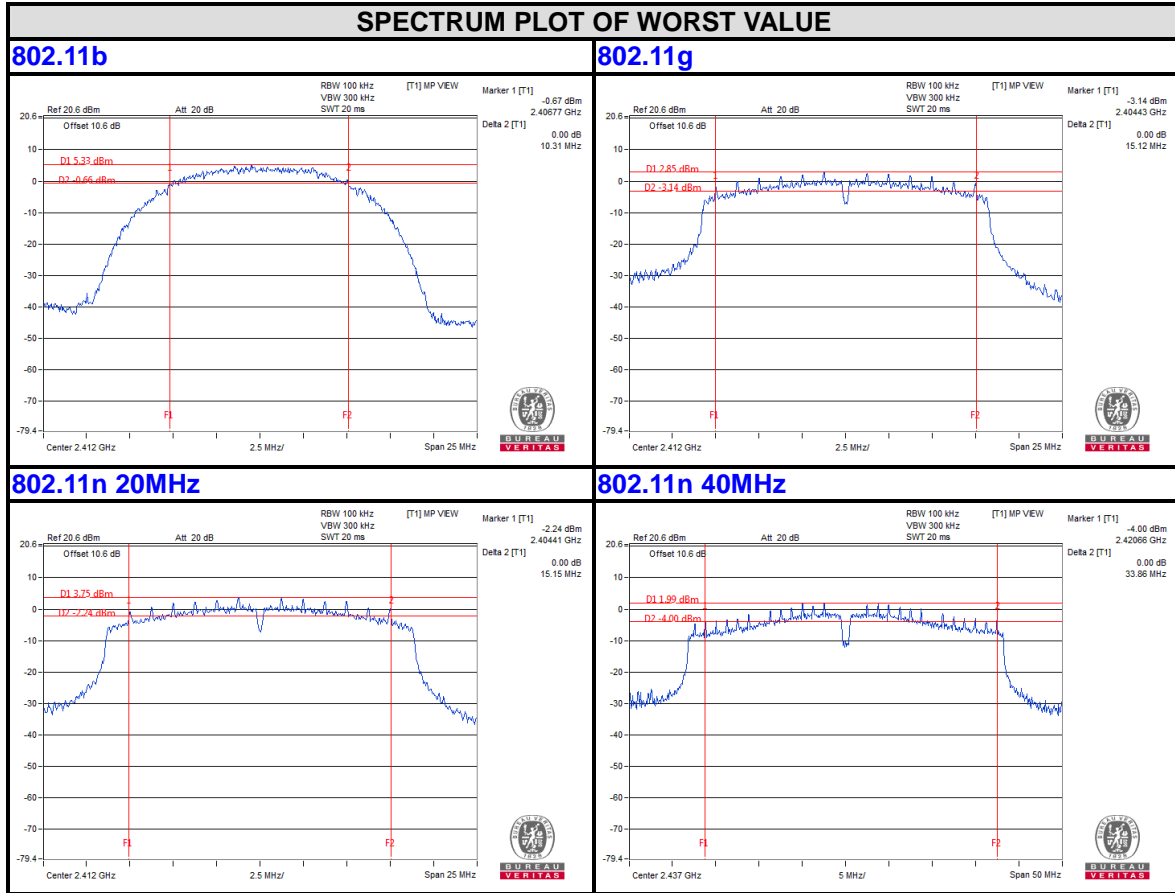
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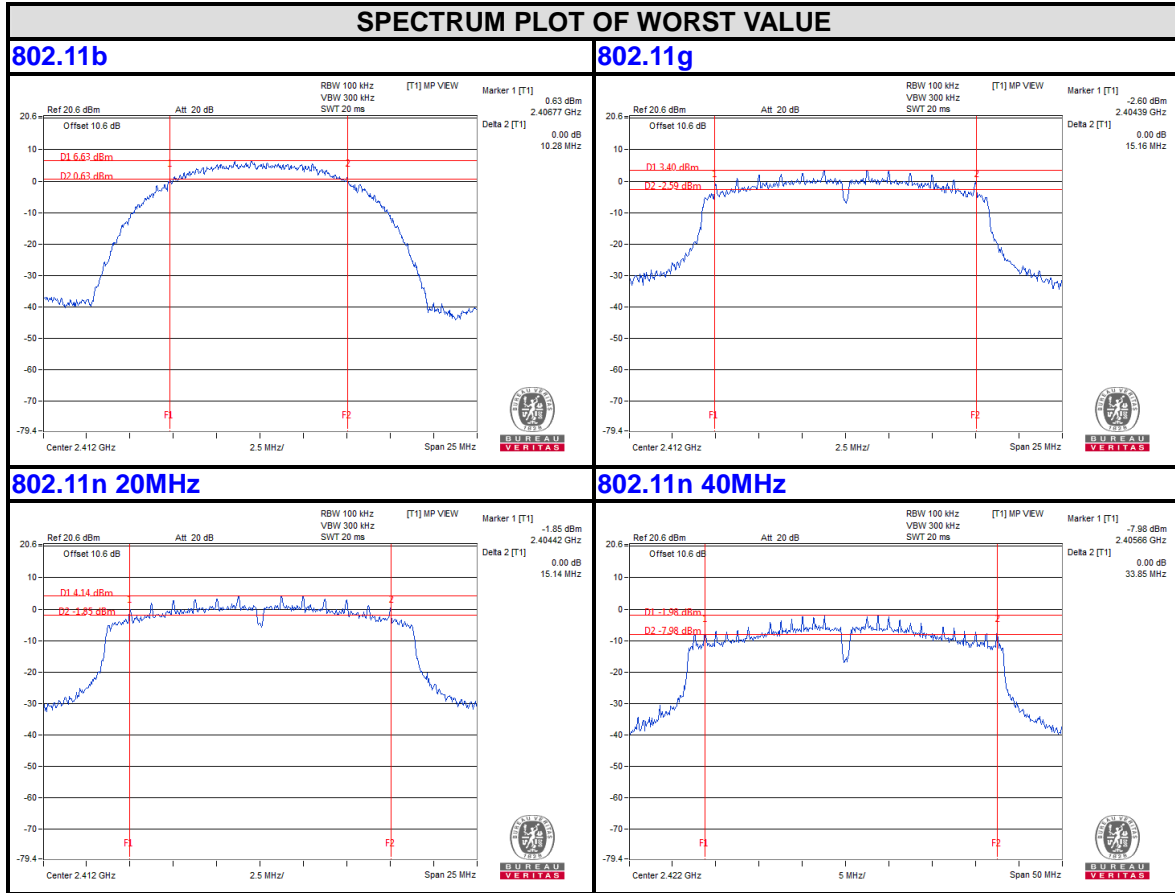
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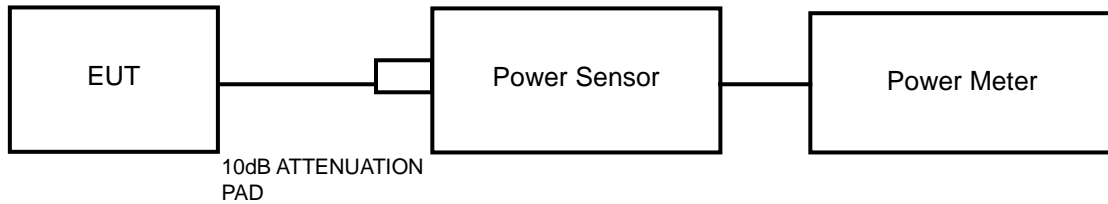


4.4 CONDUCTED OUTPUT POWER

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 04,17	May 03,18
Power Sensor	Keysight	U2021XA	MY55060018	May 04,17	May 03,18
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 13, 16	Oct.12, 17
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.05,16	Sep. 04,17
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 04,16	Nov. 03,17
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 04,16	Nov. 03,17
Signal Generator	Agilent	N5183A	MY50140980	Nov. 04,16	Nov. 03,17
Agile Signal Generator	Agilent	8645A	Agilent	Aug.08, 16	Aug.07, 17
Spectrum Analyzer	Keysight	N9020A	MY55400499	Apr. 05,17	Apr. 04,18
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Dec.05, 16	Dec. 04, 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.



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Test Report No.: RF170329N028

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 (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	15.03	15.11	15.67	31.842	32.434	36.898	101.174	20.05	30	PASS
2	2417	16.24	16.01	16.41	42.073	39.902	43.752	125.727	20.99	30	PASS
6	2437	16.42	16.06	15.85	43.853	40.365	38.459	122.677	20.89	30	PASS
10	2457	15.63	15.47	15.59	36.559	35.237	36.224	108.021	20.34	30	PASS
11	2462	13.51	13.21	13.56	22.439	20.941	22.699	66.079	18.20	30	PASS

802.11g

CHAN.	FREQ. (MHz)	AVG. POWER (dBm)			AVG. POWER (mW)			TOTAL POWER (mW)	TOTAL POWER (dBm)	AVG. POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	14.33	14.07	14.06	27.102	25.527	25.468	78.097	18.93	30	PASS
2	2417	16.23	16.10	16.42	41.976	40.738	43.853	126.567	21.02	30	PASS
6	2437	17.05	16.86	16.79	50.699	48.529	47.753	146.981	21.67	30	PASS
10	2457	15.72	15.71	15.91	37.325	37.239	38.994	113.558	20.55	30	PASS
11	2462	13.32	13.01	13.59	21.478	19.999	22.856	64.333	18.08	30	PASS



802.11n 20MHz

CHAN.	FREQ. (MHz)	AVG. POWER (dBm)			AVG. POWER (mW)			TOTAL POWER (mW)	TOTAL POWER (dBm)	AVG. POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	13.96	13.82	14.03	24.889	24.099	25.293	74.281	18.71	30	PASS
2	2417	16.24	16.18	16.37	42.073	41.495	43.351	126.919	21.04	30	PASS
6	2437	17.09	16.81	16.76	51.168	47.973	47.424	146.565	21.66	30	PASS
10	2457	16.18	16.24	16.35	41.495	42.073	43.152	126.720	21.03	30	PASS
11	2462	14.14	13.81	14.01	25.942	24.044	25.177	75.163	18.76	30	PASS

802.11n 40MHz

CHAN.	FREQ. (MHz)	AVG. POWER (dBm)			AVG. POWER (mW)			TOTAL POWER (mW)	TOTAL POWER (dBm)	AVG. POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2				
3	2422	10.05	9.72	9.85	10.116	9.376	9.661	29.153	14.65	30	PASS
4	2427	11.04	10.89	10.82	12.706	12.274	12.078	37.058	15.69	30	PASS
6	2437	15.00	14.19	14.38	31.623	26.242	27.416	85.281	19.31	30	PASS
8	2447	10.84	10.73	10.79	12.134	11.836	11.995	35.965	15.56	30	PASS
9	2452	10.12	9.59	9.74	10.28	9.099	9.419	28.798	14.59	30	PASS

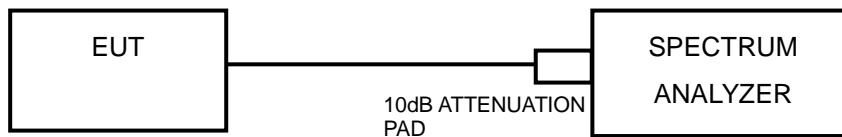


4.5 POWER SPECTRAL DENSITY MEASUREMENT

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

- 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: 10 kHz.
- d) Set VBW $\geq 3 \times$ RBW.
- e) Detector = peak
- f) Ensure that the number of measurement points in the sweep $\geq 2 \times$ span/RBW.
- g) Sweep time = auto couple.
- h) 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	-15.17	4.77	-10.30	4.94	PASS
	6	2437	-13.60	4.77	-8.73	4.94	PASS
	11	2462	-16.51	4.77	-11.64	4.94	PASS
1	1	2412	-14.54	4.77	-9.67	4.94	PASS
	6	2437	-14.25	4.77	-9.38	4.94	PASS
	11	2462	-16.49	4.77	-11.62	4.94	PASS
2	1	2412	-13.18	4.77	-8.31	4.94	PASS
	6	2437	-12.78	4.77	-7.91	4.94	PASS
	11	2462	-15.09	4.77	-10.22	4.94	PASS

Remark: Due ANT gain more than 6dBi, so limit 8dBm change to:
 $8 - [(4.29 + 4.77) - 6] = 8 - 3.09 = 4.94\text{dBm}$

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	TOTAL PSD (dBm)	Limit (dBm)	PASS /FAIL
0	1	2412	-16.06	4.77	-11.17	4.94	PASS
	6	2437	-13.31	4.77	-8.42	4.94	PASS
	11	2462	-15.63	4.77	-10.74	4.94	PASS
1	1	2412	-16.38	4.77	-11.49	4.94	PASS
	6	2437	-13.95	4.77	-9.06	4.94	PASS
	11	2462	-16.99	4.77	-12.10	4.94	PASS
2	1	2412	-15.87	4.77	-10.98	4.94	PASS
	6	2437	-13.77	4.77	-8.88	4.94	PASS
	11	2462	-16.20	4.77	-11.31	4.94	PASS

Remark: Due ANT gain more than 6dBi, so limit 8dBm change to:
 $8 - [(4.29 + 4.77) - 6] = 8 - 3.09 = 4.94\text{dBm}$



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	-15.84	4.77	-10.95	4.94	PASS
	6	2437	-13.53	4.77	-8.64	4.94	PASS
	11	2462	-16.31	4.77	-11.42	4.94	PASS
1	1	2412	-15.46	4.77	-10.57	4.94	PASS
	6	2437	-14.39	4.77	-9.50	4.94	PASS
	11	2462	-16.79	4.77	-11.90	4.94	PASS
2	1	2412	-15.48	4.77	-10.59	4.94	PASS
	6	2437	-13.71	4.77	-8.82	4.94	PASS
	11	2462	-16.27	4.77	-11.38	4.94	PASS

Remark: Due ANT gain more than 6dBi, so limit 8dBm change to:
8-[(4.29+4.77)-6]=8-3.09=4.94dBm

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	-21.64	4.77	-16.62	4.94	PASS
	6	2437	-17.30	4.77	-12.28	4.94	PASS
	9	2452	-21.79	4.77	-16.77	4.94	PASS
1	3	2422	-22.25	4.77	-17.23	4.94	PASS
	6	2437	-17.15	4.77	-12.13	4.94	PASS
	9	2452	-22.64	4.77	-17.62	4.94	PASS
2	3	2422	-21.90	4.77	-16.88	4.94	PASS
	6	2437	-6.00	4.77	-0.98	4.94	PASS
	9	2452	-21.95	4.77	-16.93	4.94	PASS

Remark: Due ANT gain more than 6dBi, so limit 8dBm change to:
8-[(4.29+4.77)-6]=8-3.09=4.94dBm



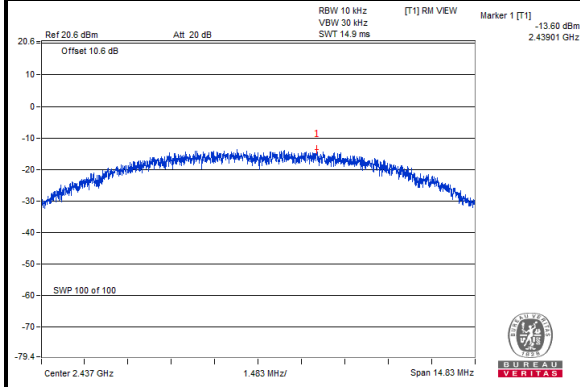
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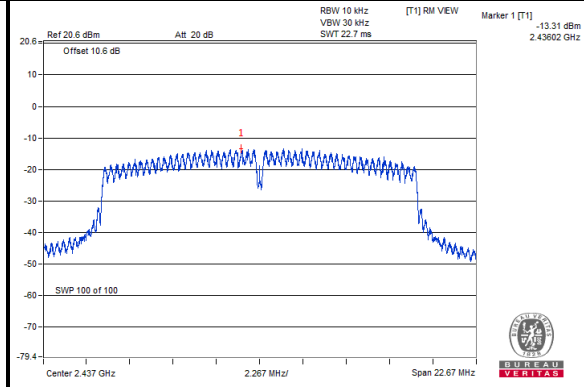
CHAIN 0

SPECTRUM PLOT OF WORST VALUE

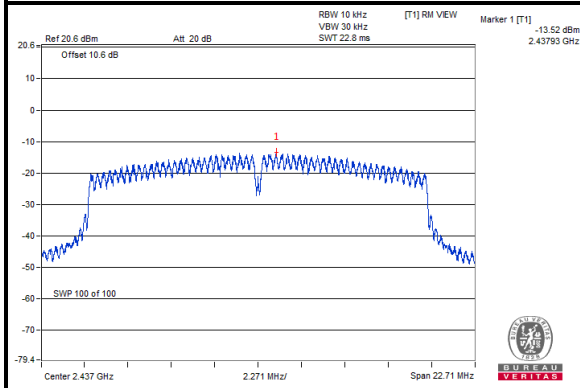
802.11b



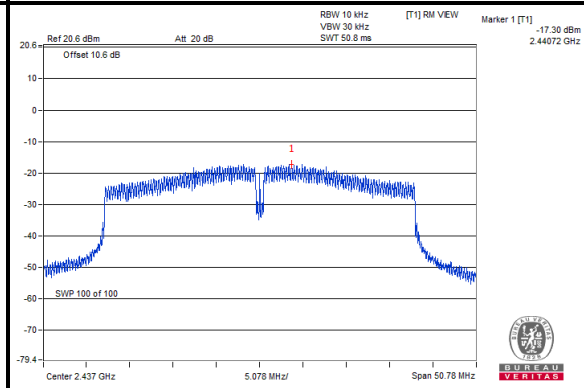
802.11g



802.11n 20MHz



802.11n 40MHz

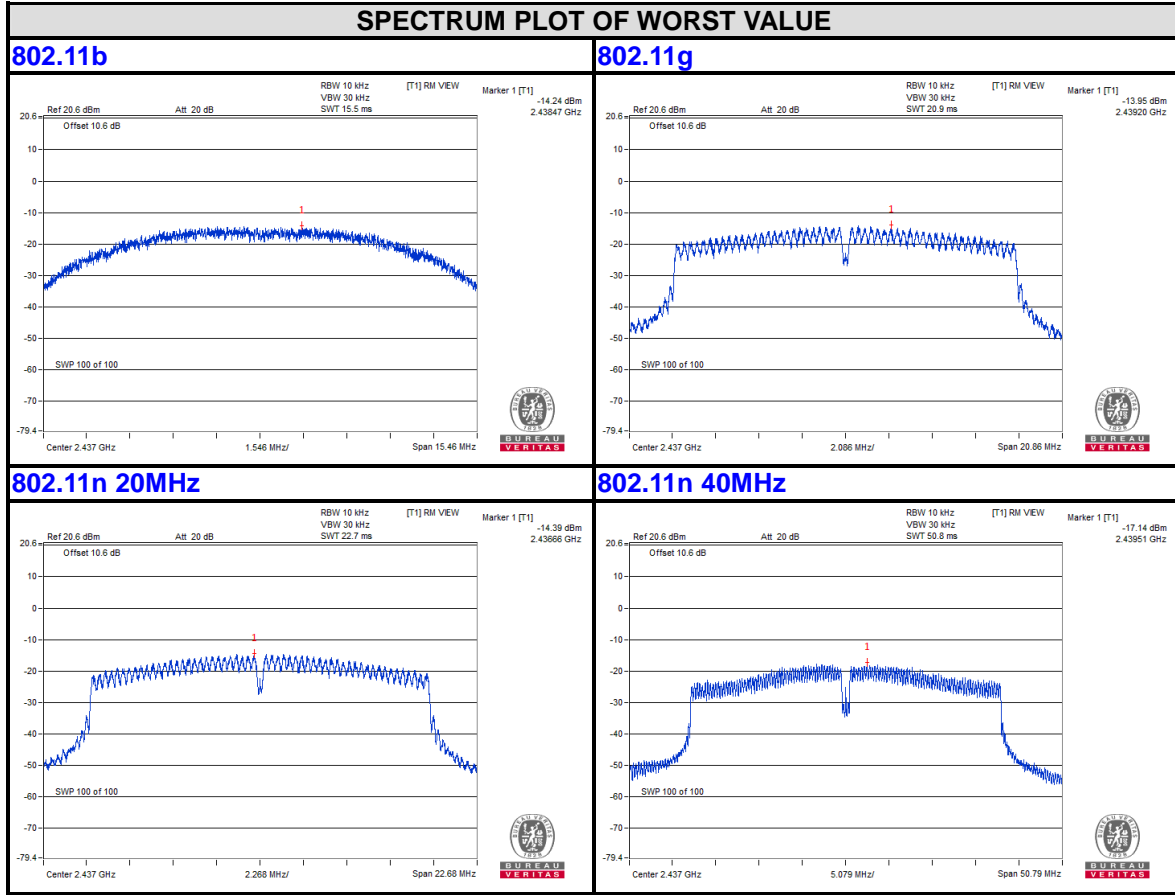




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CHAIN 1



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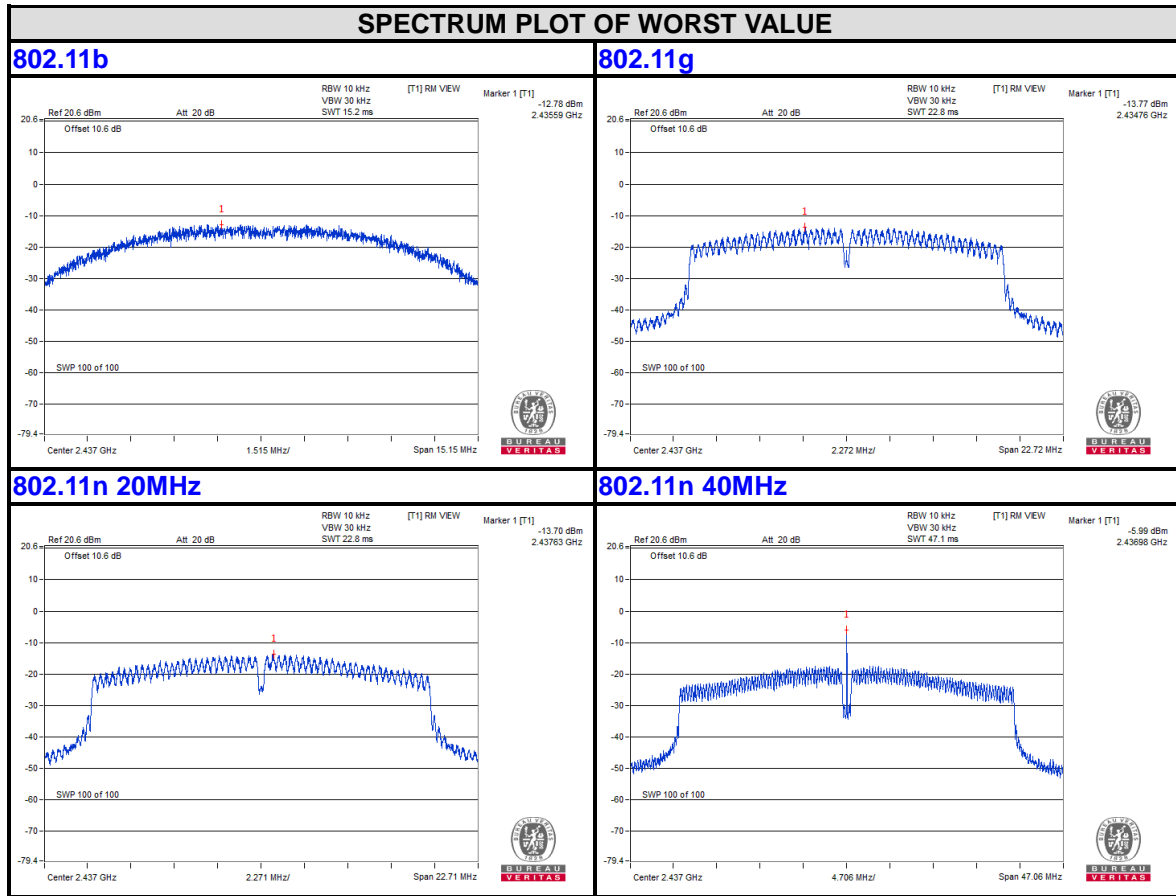
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CHAIN 2



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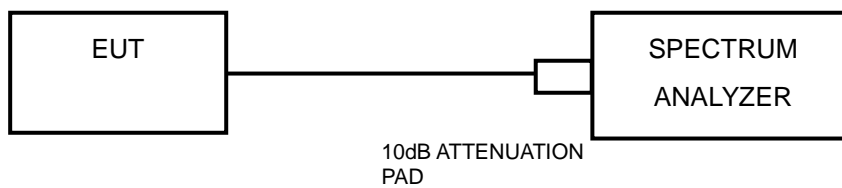


4.6 OUT OF BAND EMISSION MEASUREMENT

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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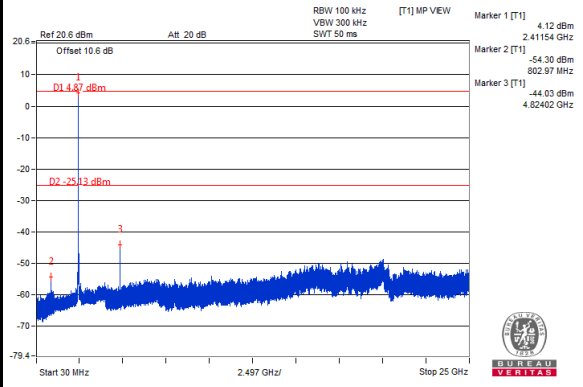
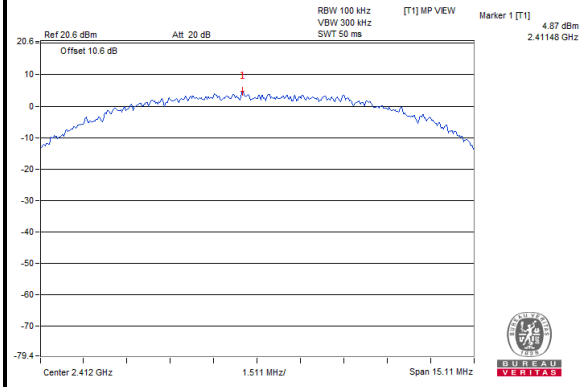
Test Report No.: RF170329N028

4.6.7 TEST RESULTS

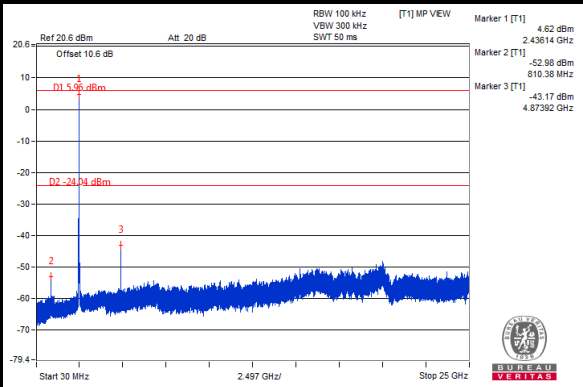
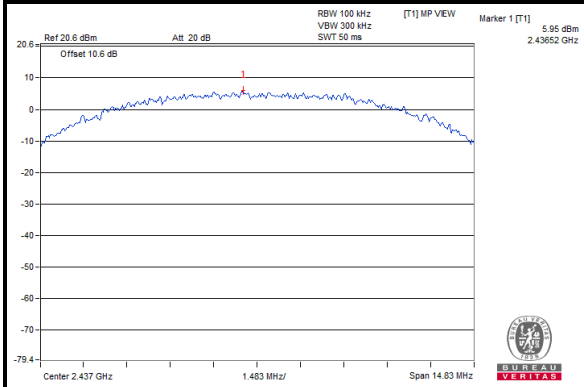
802.11b

CHAIN 0

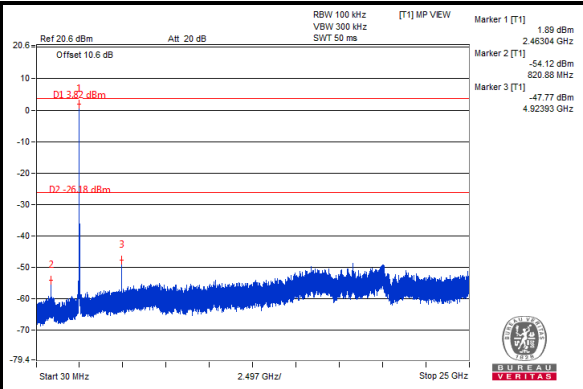
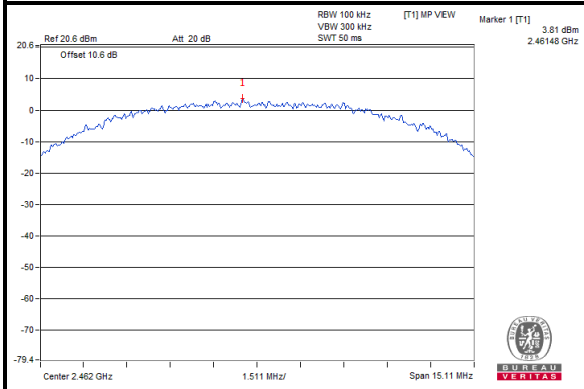
CH 1



CH 6



CH 11



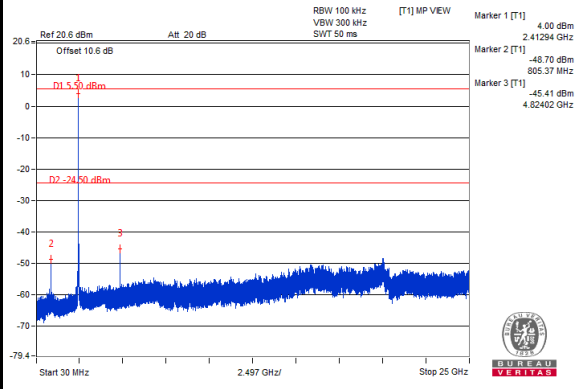
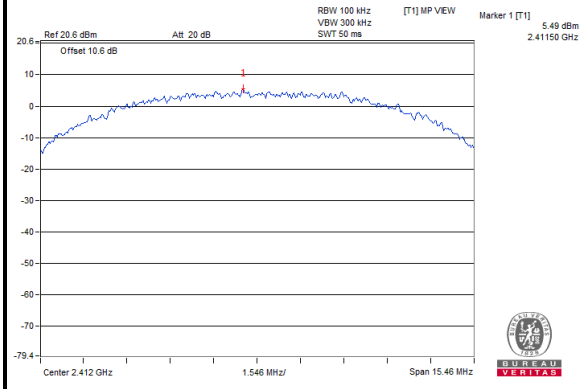


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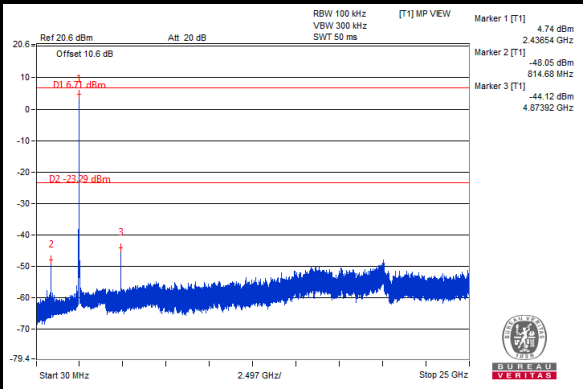
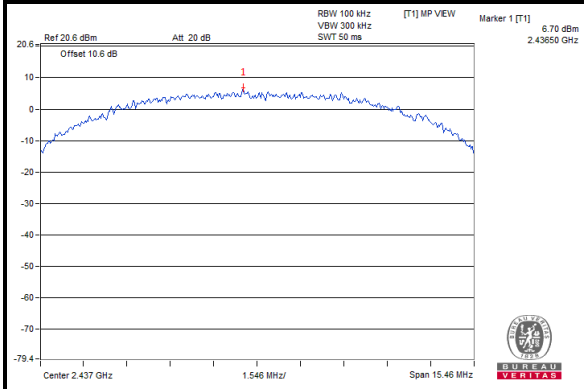
Test Report No.: RF170329N028

CHAIN 1

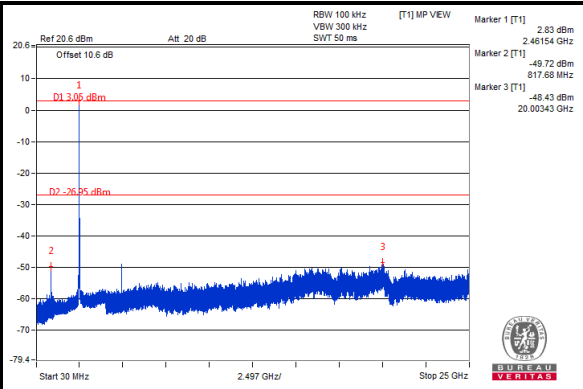
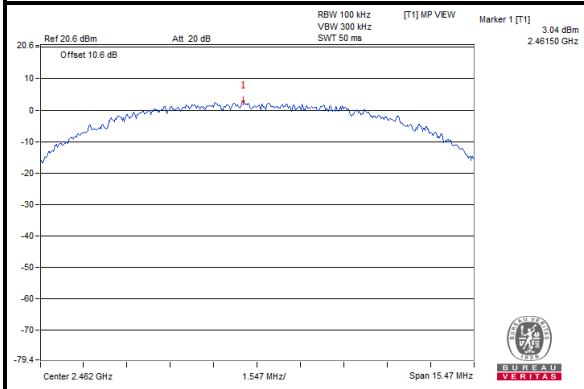
CH 1



CH 6



CH 11



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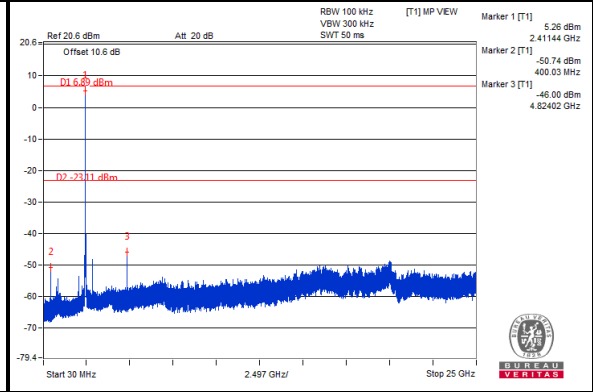
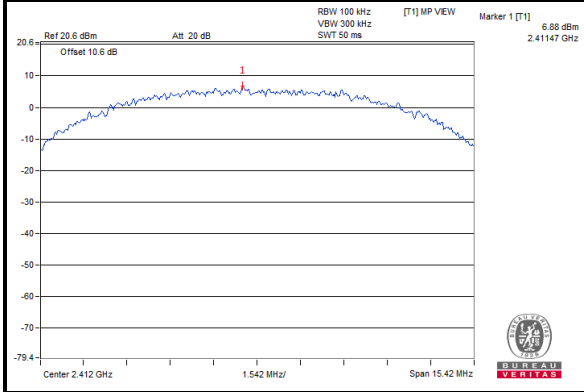


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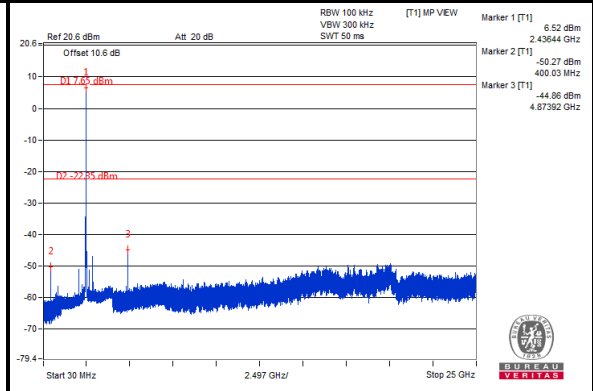
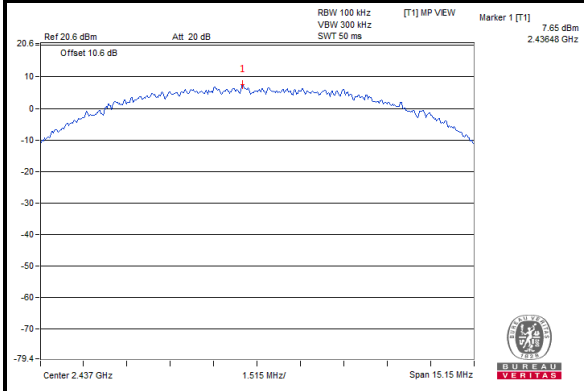
Test Report No.: RF170329N028

CHAIN 2

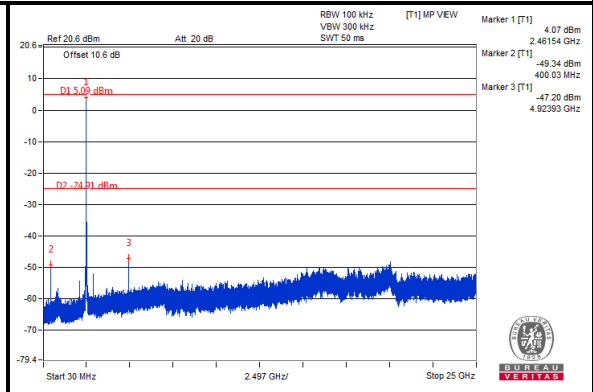
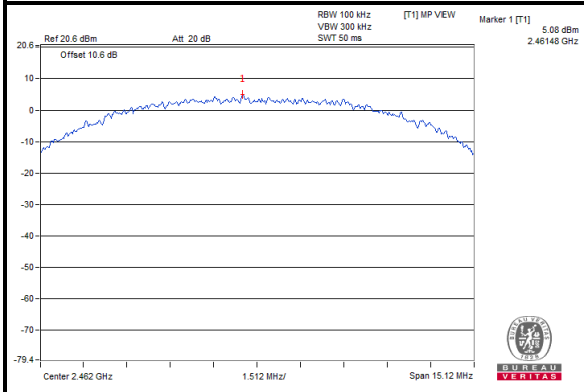
CH 1



CH 6



CH 11





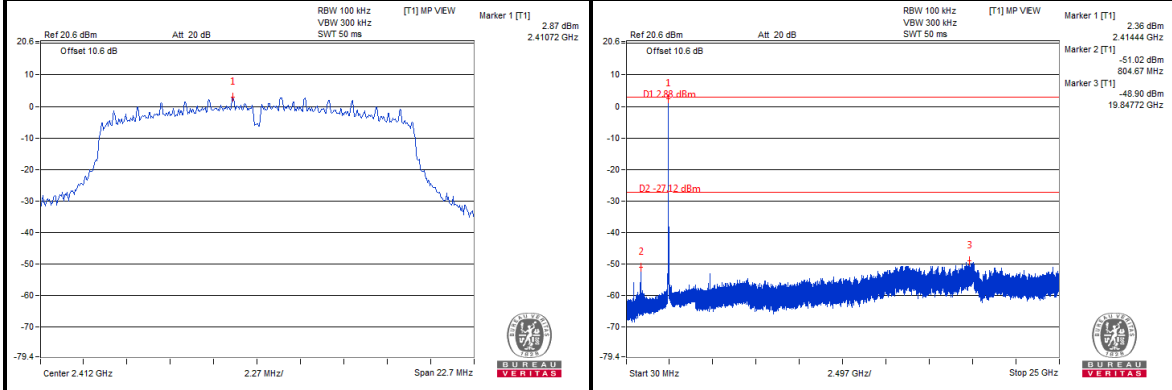
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Test Report No.: RF170329N028

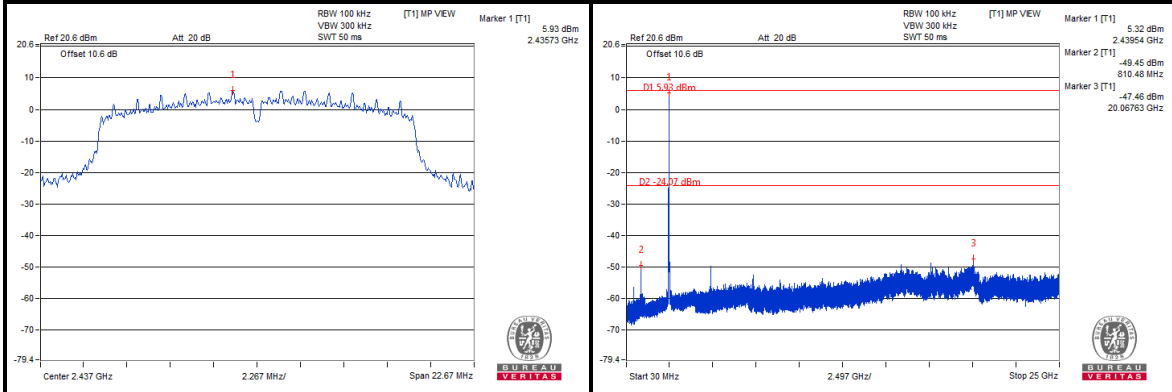
802.11g

CHAIN 0

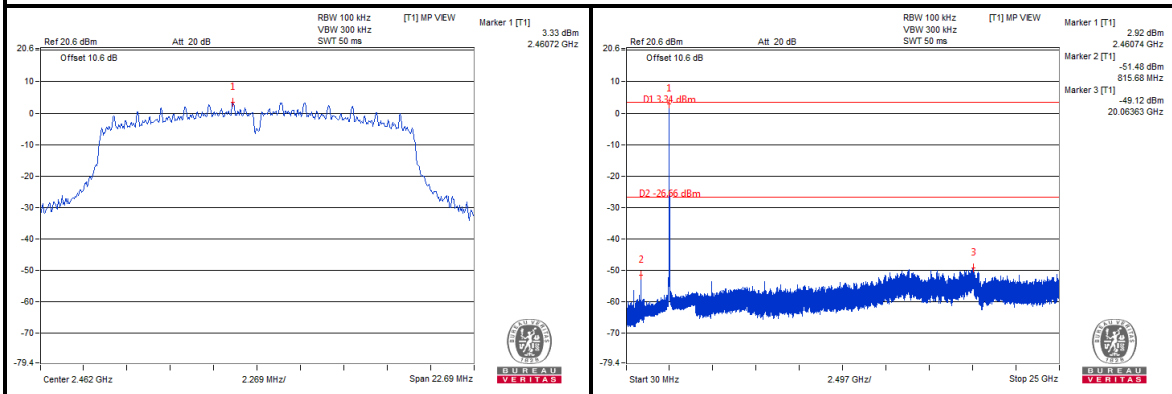
CH 1



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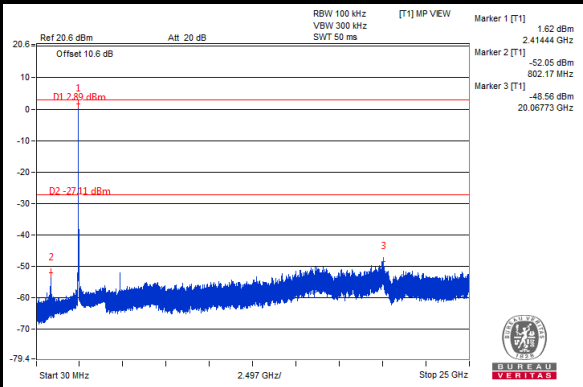
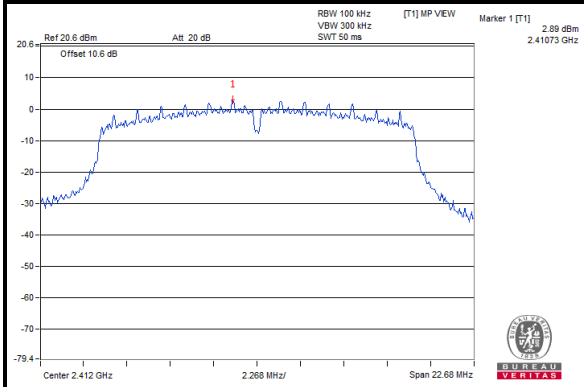


BUREAU VERITAS

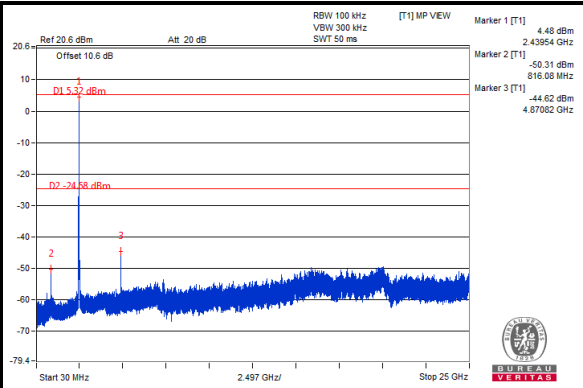
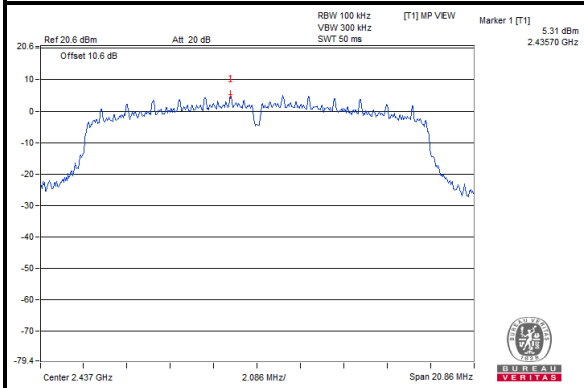
Test Report No.: RF170329N028

CHAIN 1

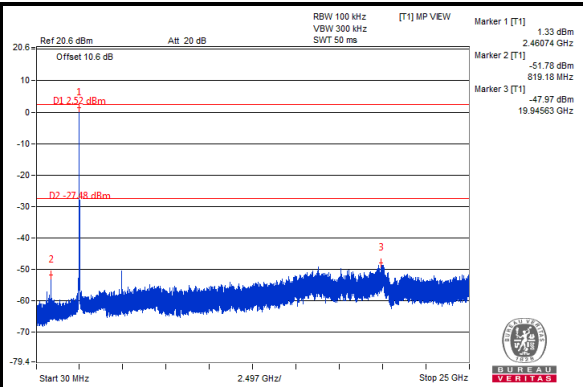
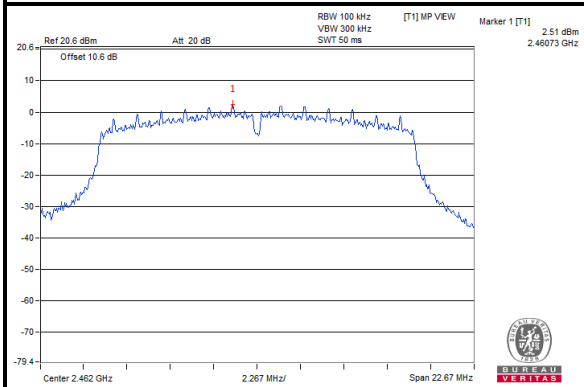
CH 1



CH 6



CH 11



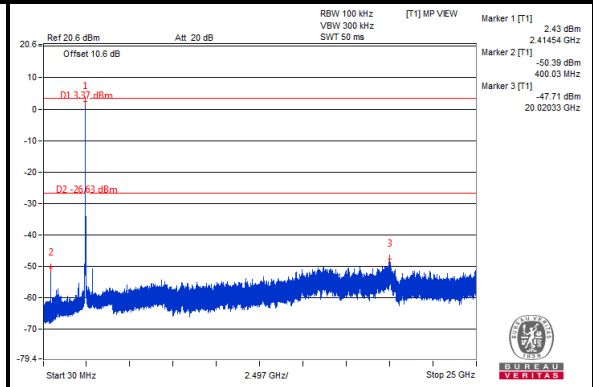
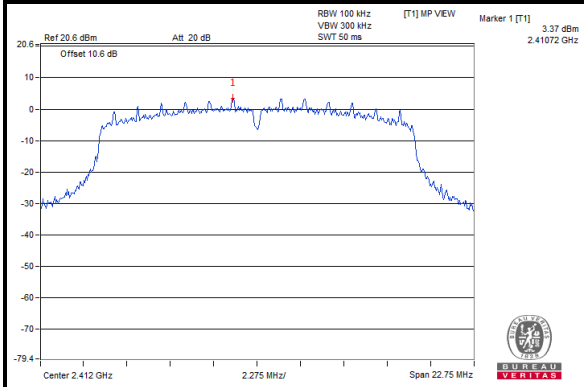


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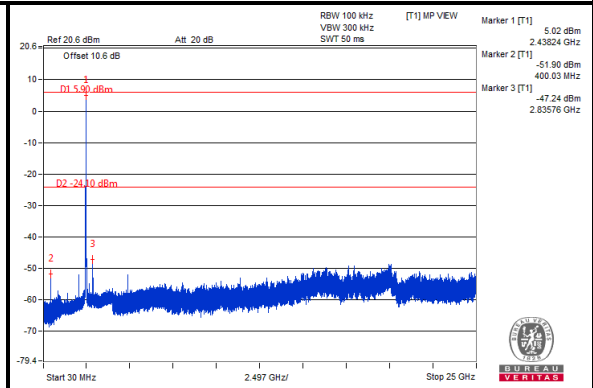
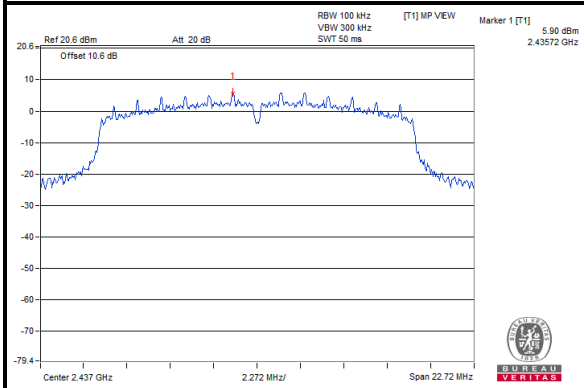
Test Report No.: RF170329N028

CHAIN 2

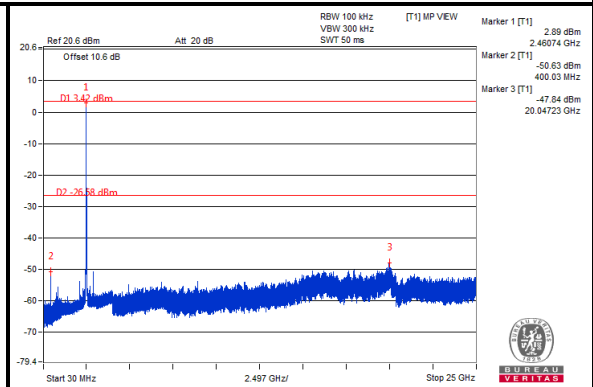
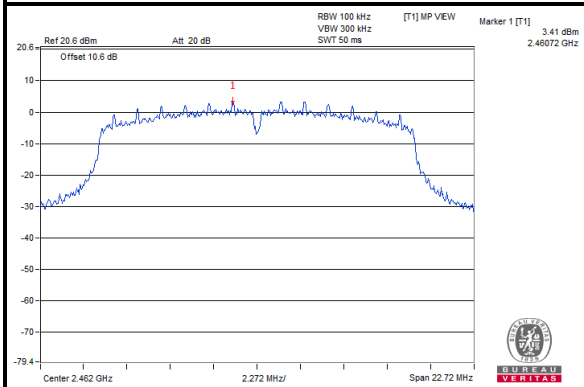
CH 1



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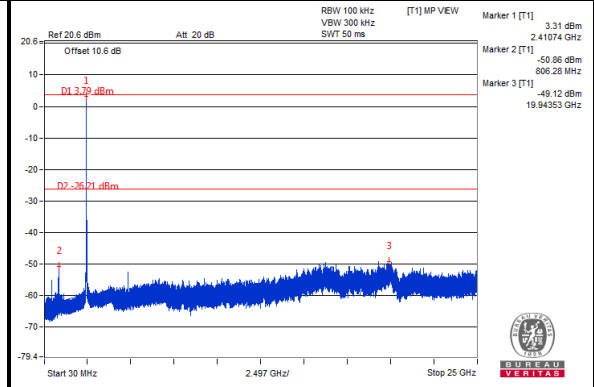
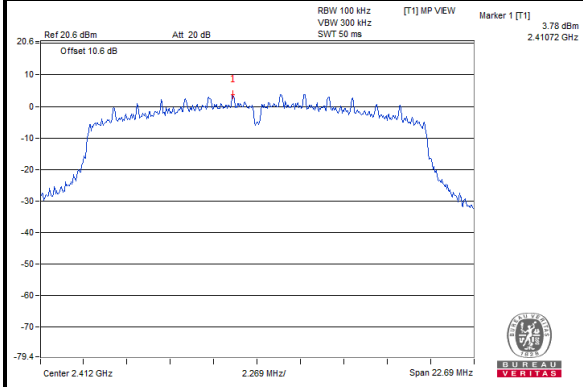
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Test Report No.: RF170329N028

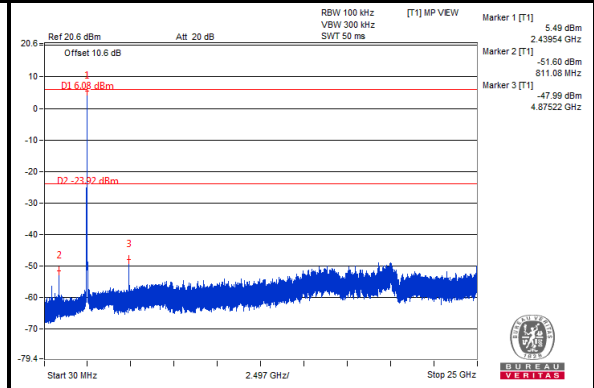
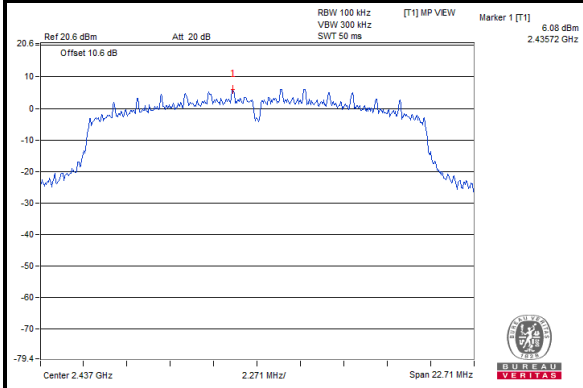
802.11n 20MHz

CHAIN 0

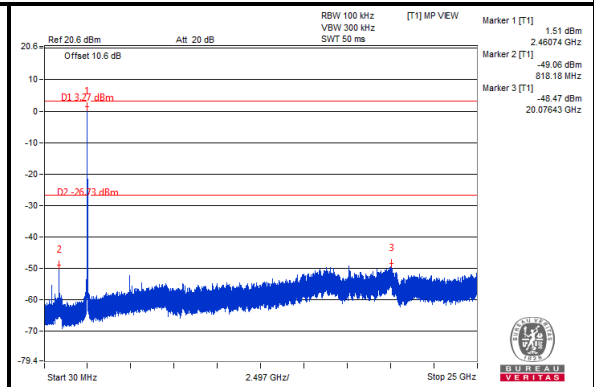
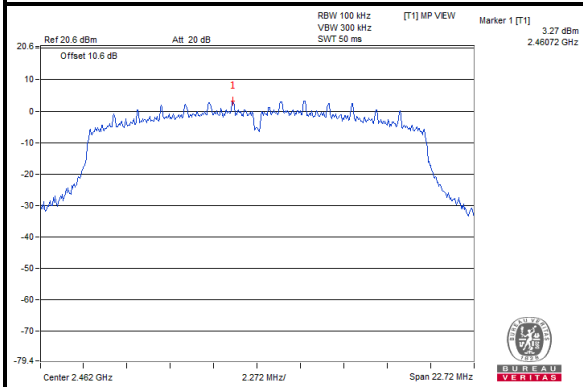
CH 1



CH 6



CH 11



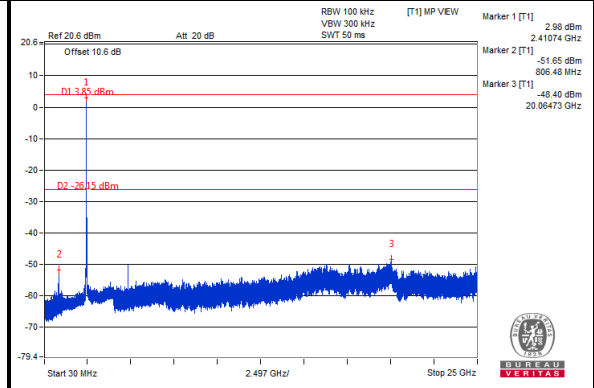
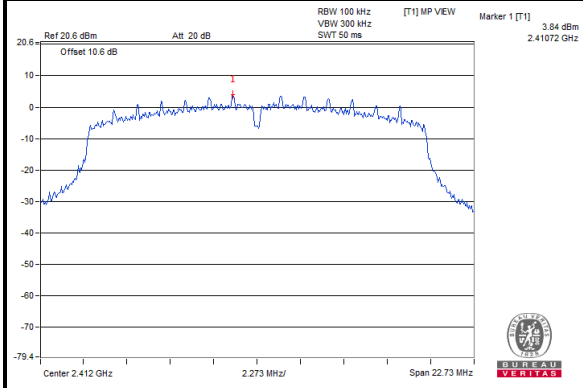


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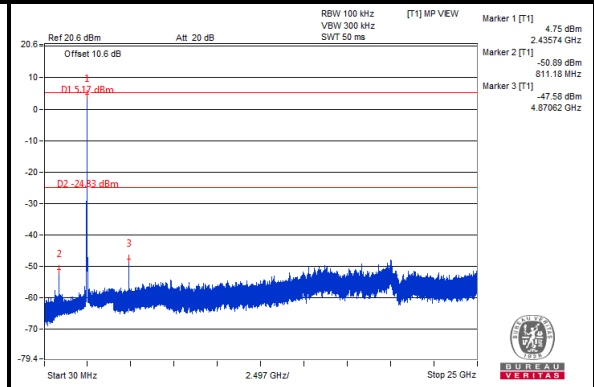
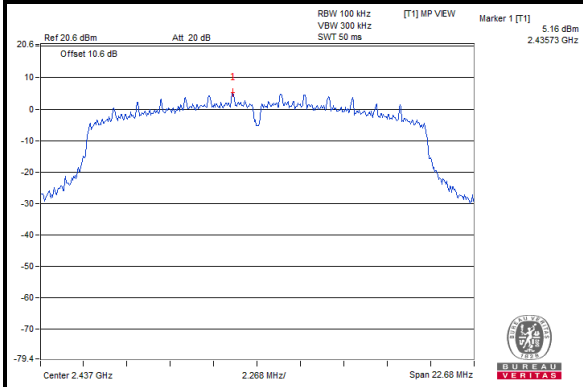
Test Report No.: RF170329N028

CHAIN 1

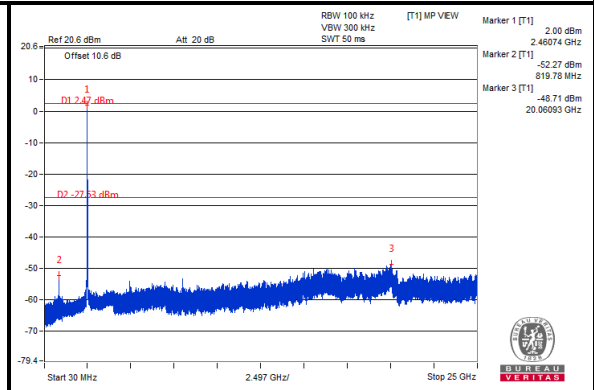
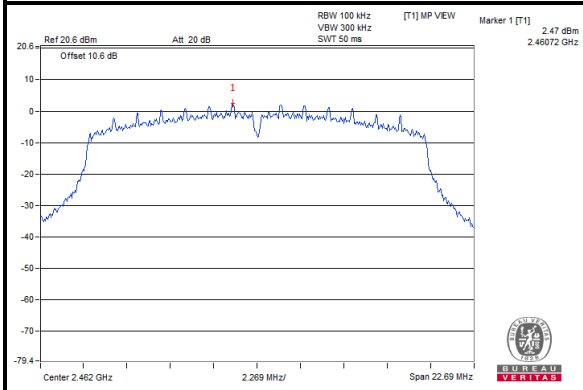
CH 1



CH 6



CH 11



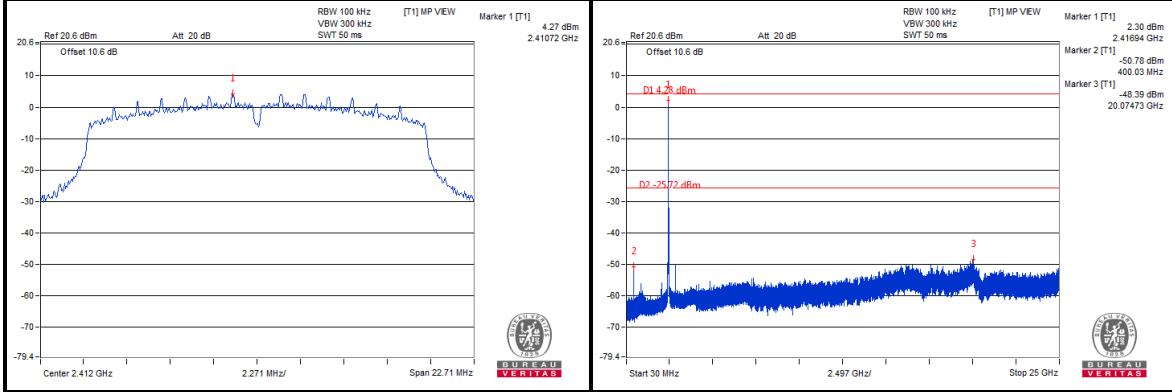


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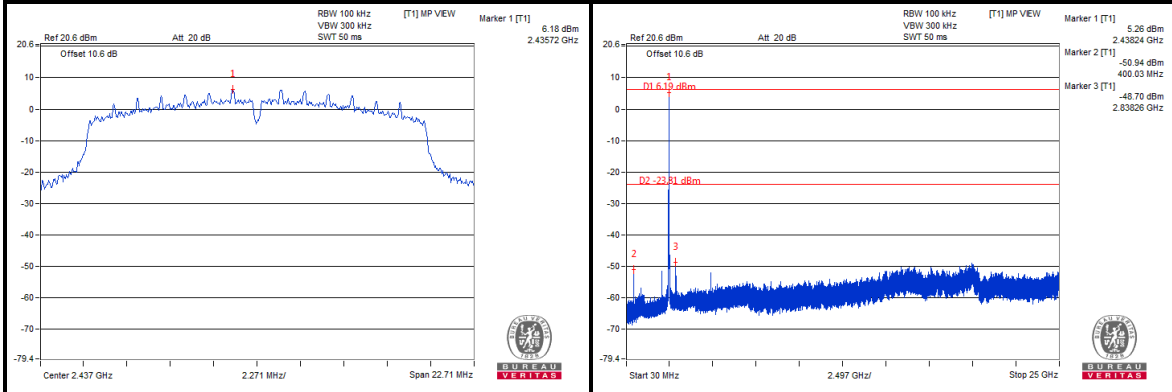
Test Report No.: RF170329N028

CHAIN 2

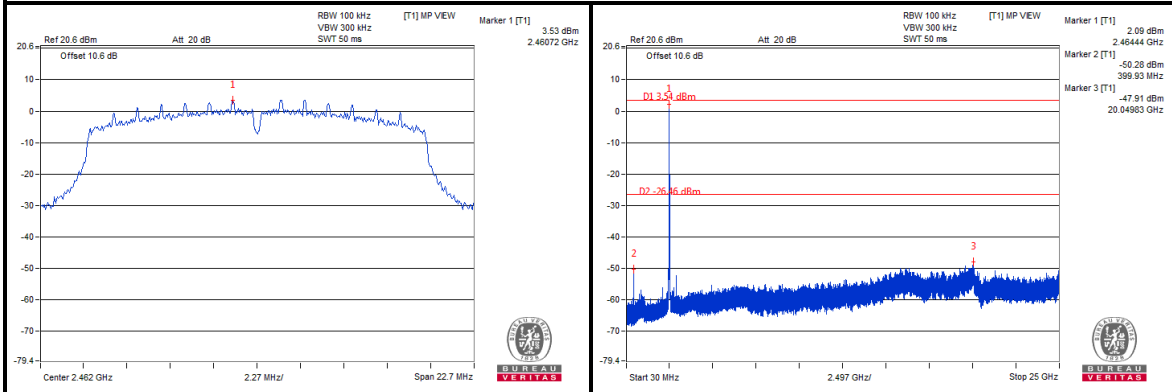
CH 1



CH 6



CH 11



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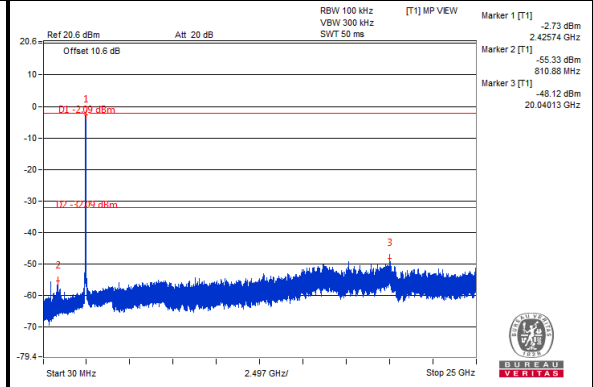
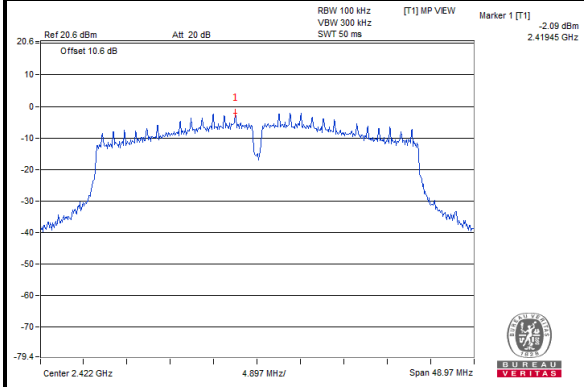
BUREAU VERITAS

Test Report No.: RF170329N028

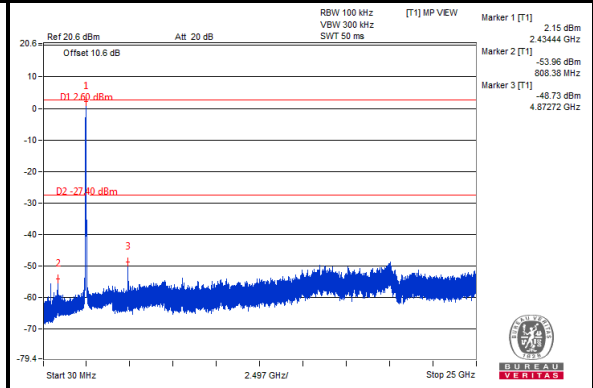
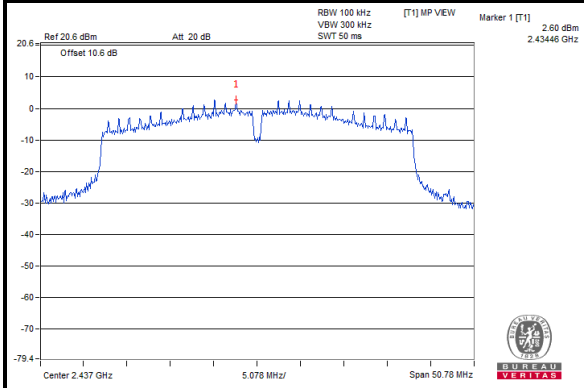
802.11n 40MHz

CHAIN 0

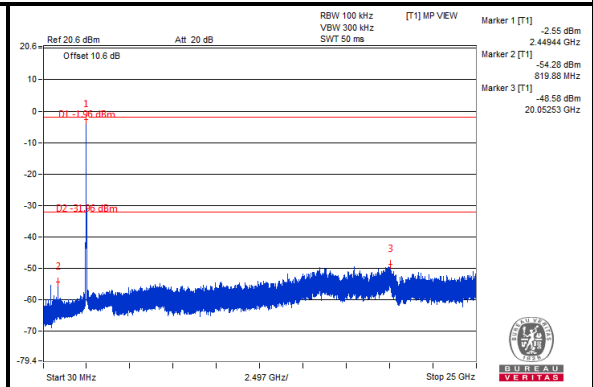
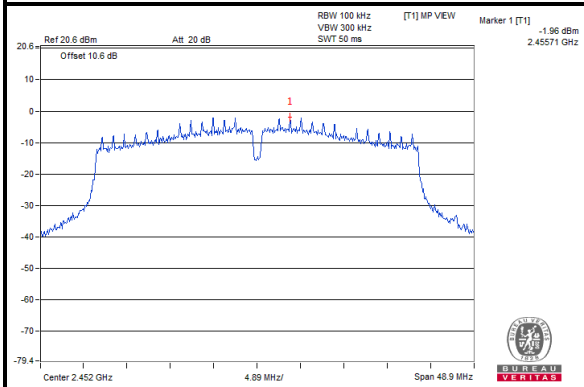
CH 3



CH 6



CH 9



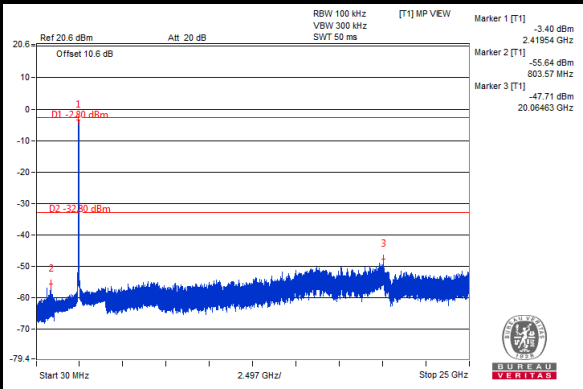
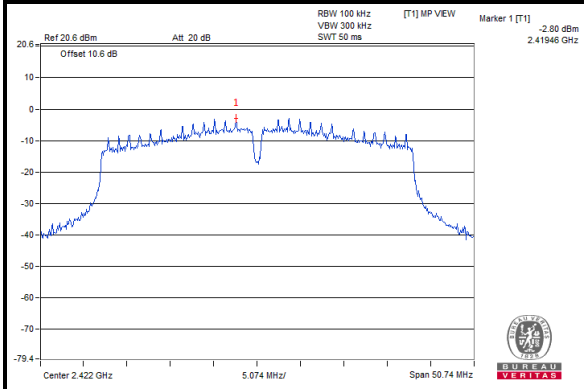


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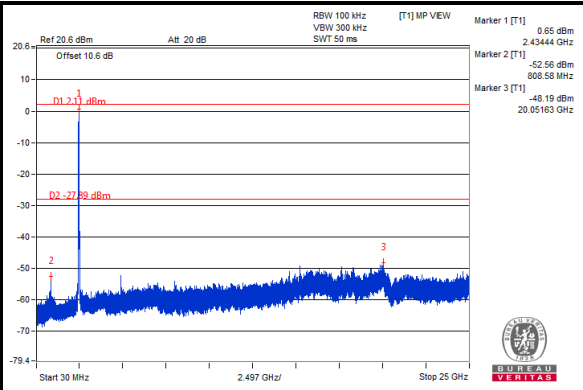
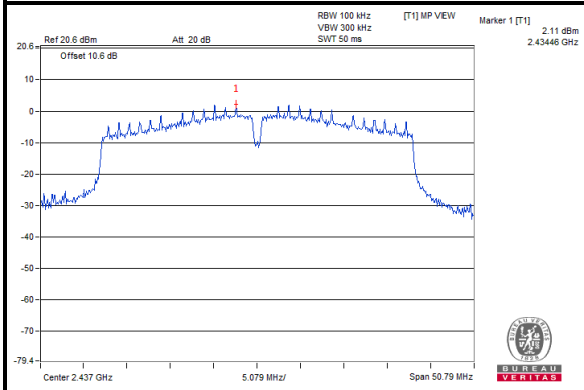
Test Report No.: RF170329N028

CHAIN 1

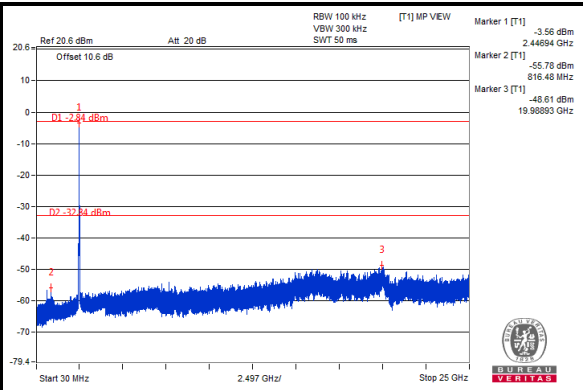
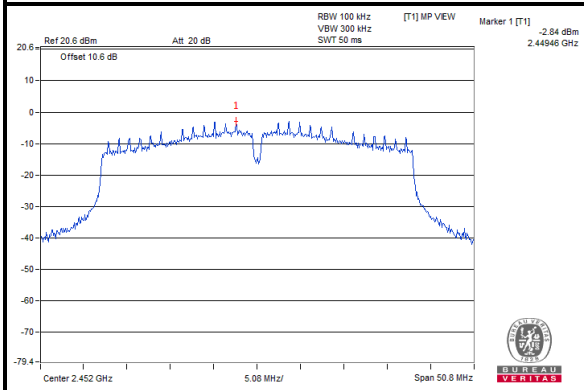
CH 3



CH 6



CH 9



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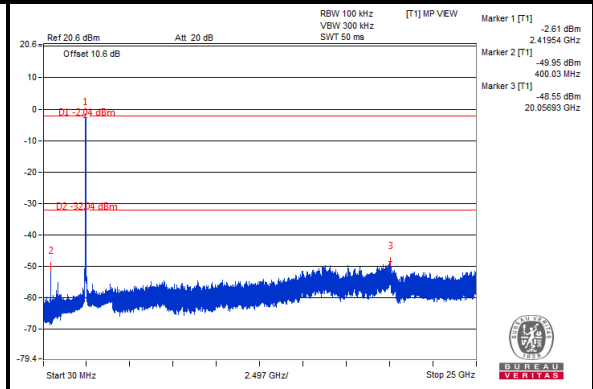
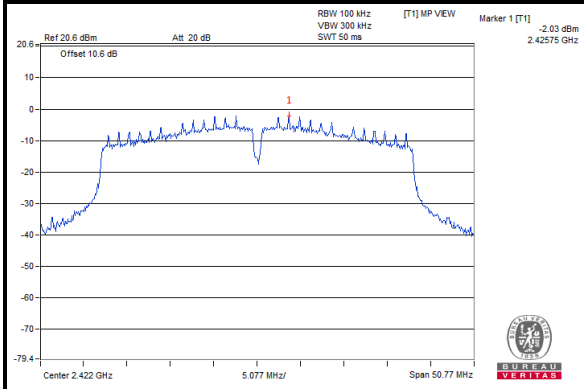


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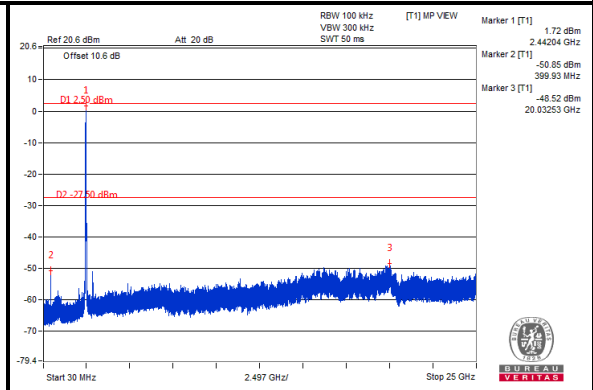
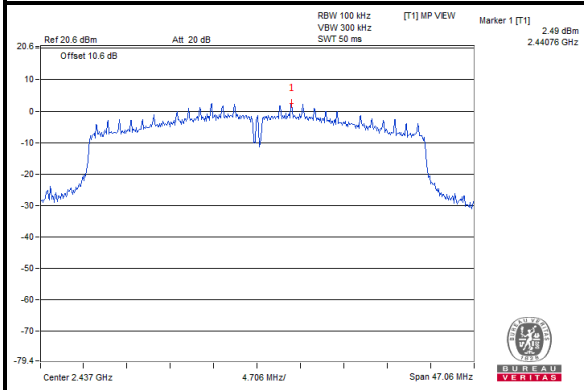
Test Report No.: RF170329N028

CHAIN 2

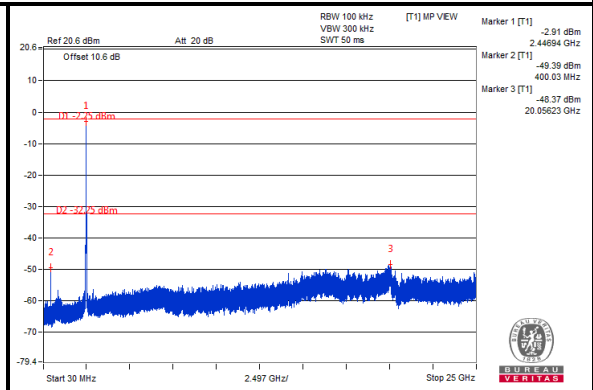
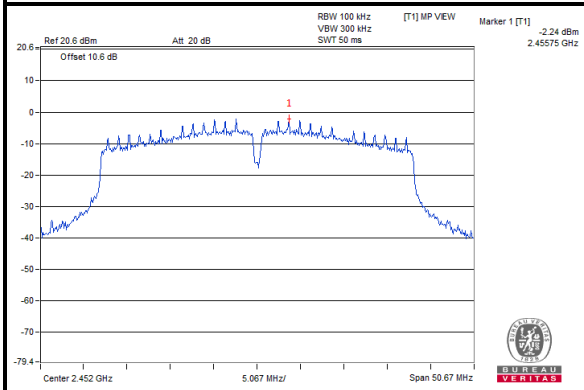
CH 3



CH 6



CH 9





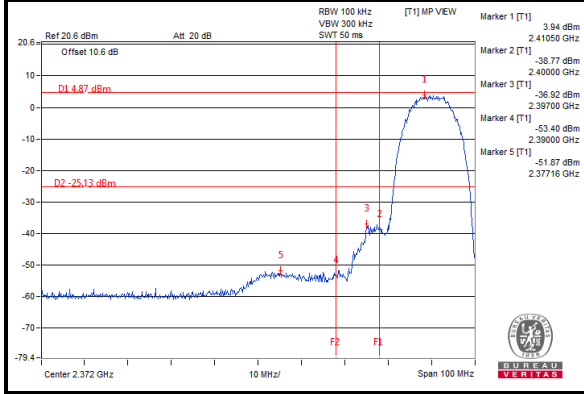
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Test Report No.: RF170329N028

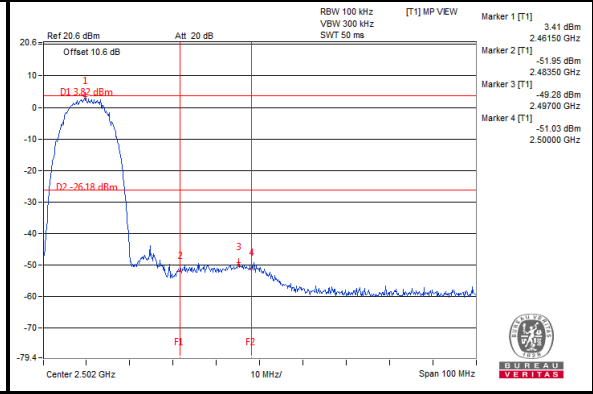
802.11b

CHAIN 0

CH 1 Band edge

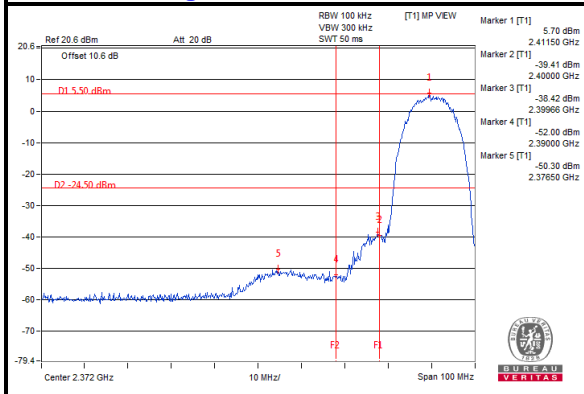


CH 11 Band edge

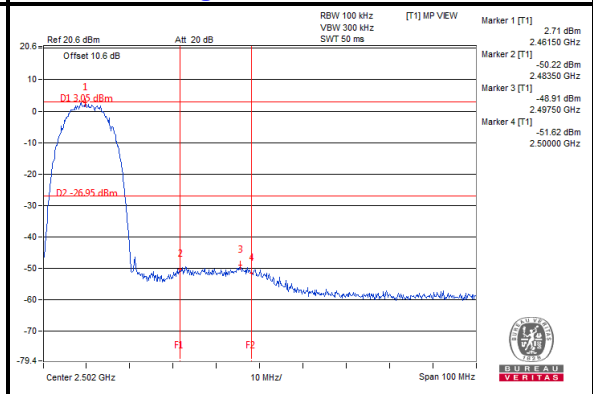


CHAIN 1

CH 1 Band edge

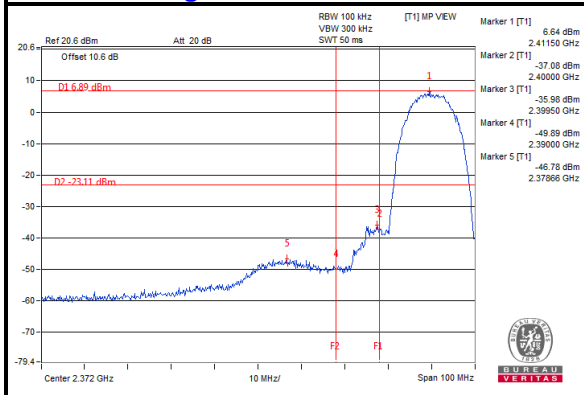


CH 11 Band edge

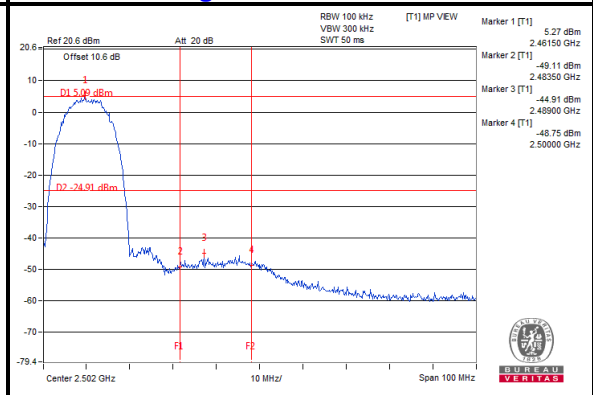


CHAIN 2

CH 1 Band edge



CH 11 Band edge



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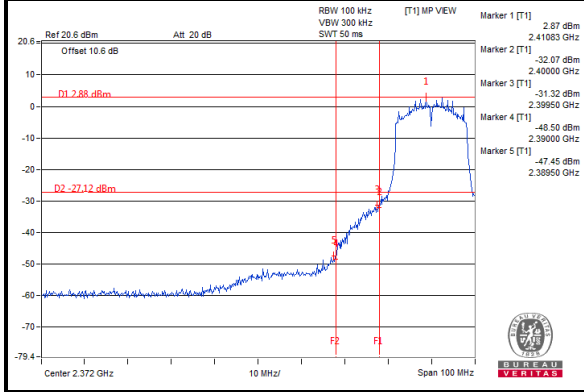
BUREAU VERITAS

Test Report No.: RF170329N028

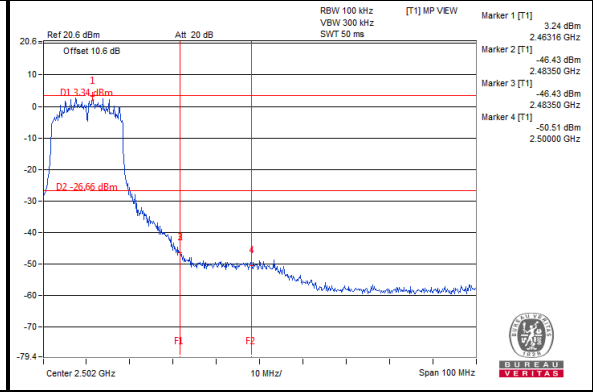
802.11g

CHAIN 0

CH 1 Band edge

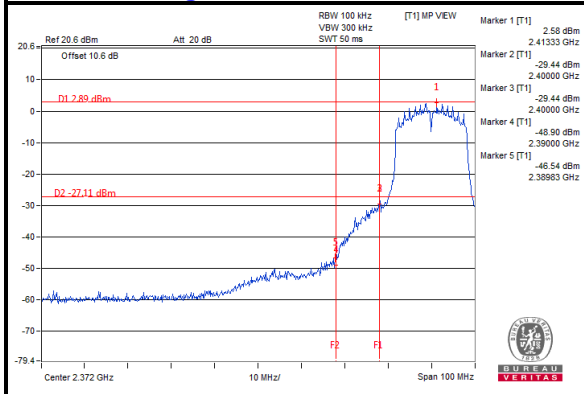


CH 11 Band edge

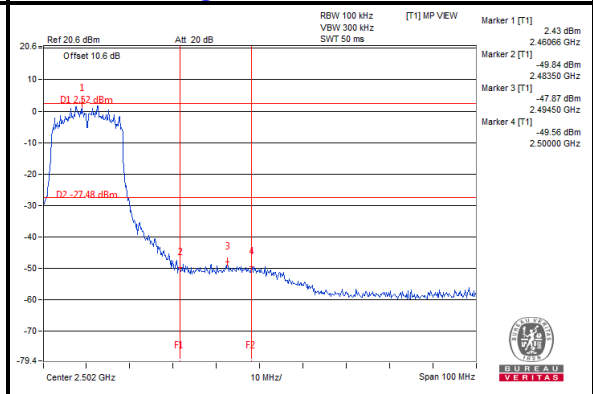


CHAIN 1

CH 1 Band edge

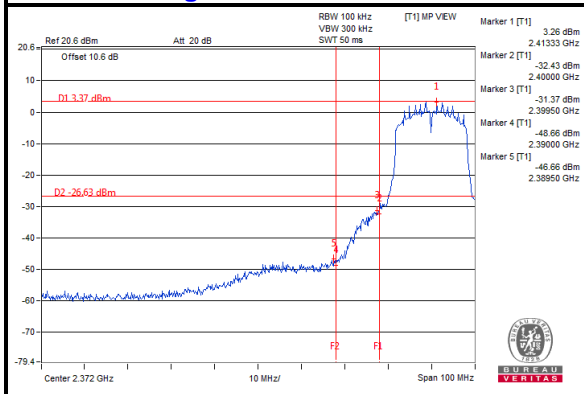


CH 11 Band edge

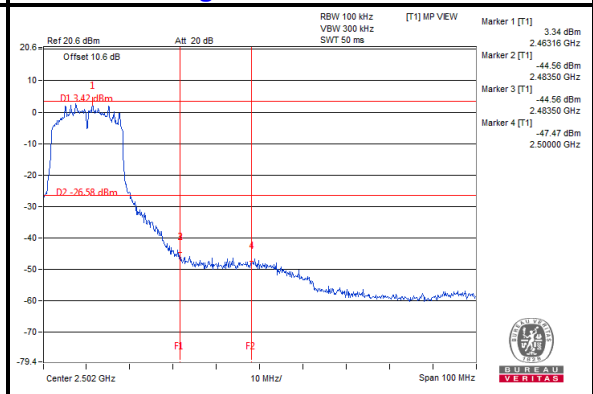


CHAIN 2

CH 1 Band edge



CH 11 Band edge





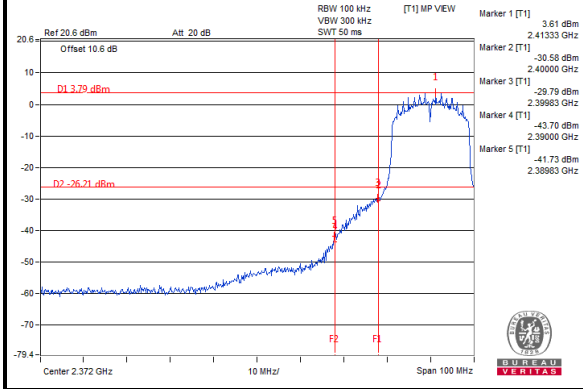
BUREAU VERITAS

Test Report No.: RF170329N028

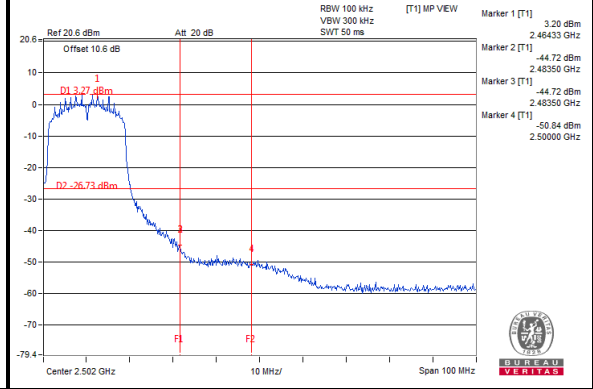
802.11n 20MHz

CHAIN 0

CH 1 Band edge

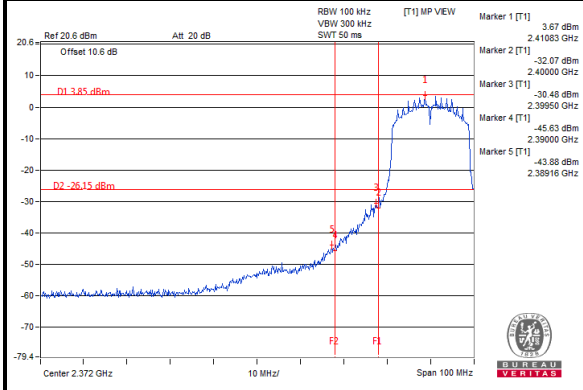


CH 11 Band edge

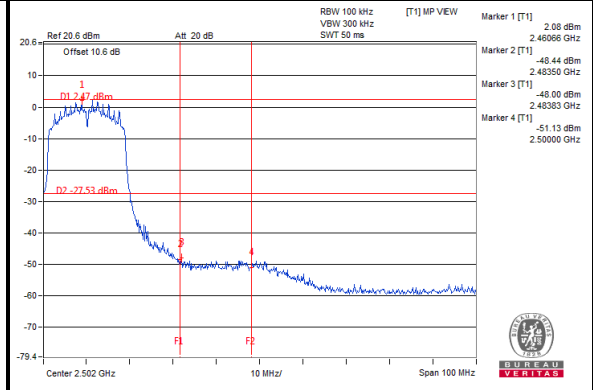


CHAIN 1

CH 1 Band edge

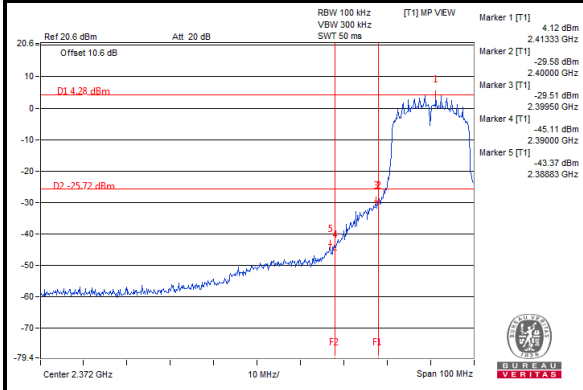


CH 11 Band edge

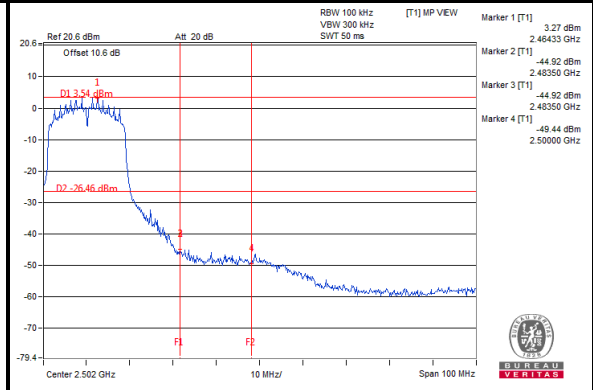


CHAIN 2

CH 1 Band edge



CH 11 Band edge



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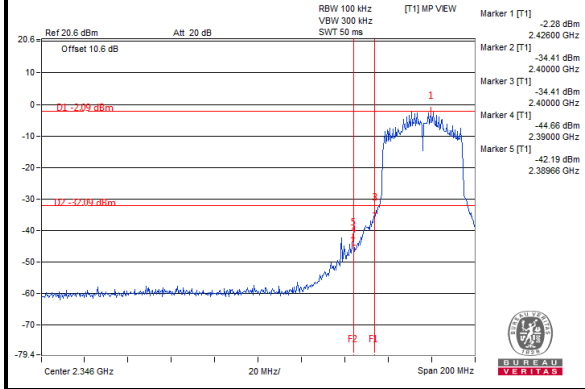
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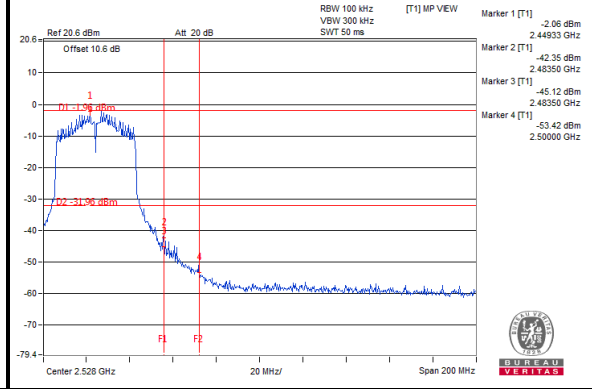
802.11n 40MHz

CHAIN 0

CH 3 Band edge

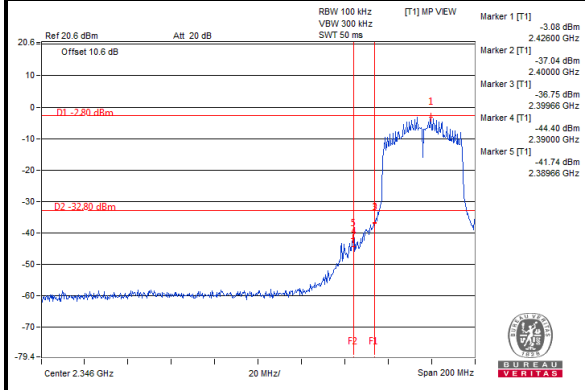


CH 9 Band edge

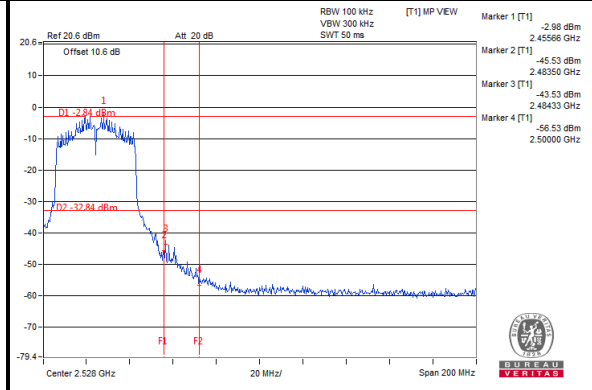


CHAIN 1

CH 3 Band edge

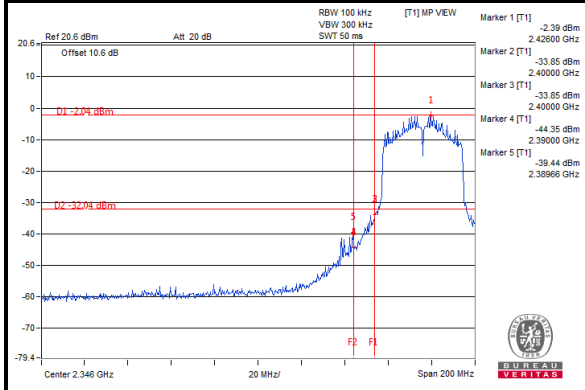


CH 9 Band edge

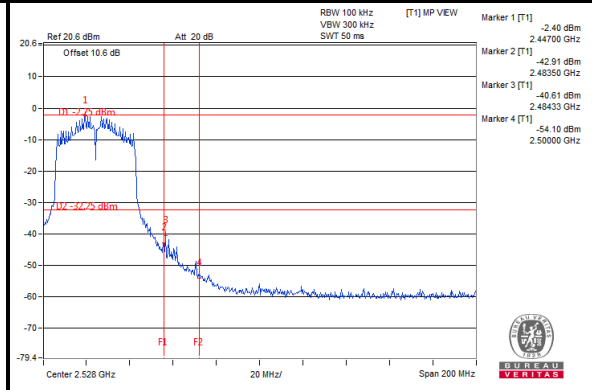


CHAIN 2

CH 3 Band edge



CH 9 Band edge



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5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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6 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---