

TEST REPORT

Applicant	NEOSTRA INDUSTRIAL(HK)LIMITED
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Manufacturer or Supplier	Shenzhen Neostra Technology Co., Ltd
Address	2-5/F, 7 Building, Huaide Cuihai Industrial Park, Fuyong, Shenzhen
Product	MID
Brand Name	hp
Model	HSTNH-N407I
Additional Model & Model Difference	N/A
Date of tests	Jun. 12 ~ Jul. 07, 2014

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 15, Subpart C, Section 15.247(2012-10)**

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

Tested by Venless Long Project Engineer / EMC Department	Approved by Glyn He Supervisor / EMC Department
	

Date: Jul. 09, 2014

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Test Report No.: RF140612N023

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140612N023	Original release	Jul. 09, 2014



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	2.67dB
Radiated emissions	9KHz ~ 30MHz	2.74dB
	30MHz ~ 1GMHz	4.36dB
	1GHz ~ 18GHz	3.9dB
	18GHz ~ 40GHz	1.94dB

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



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	MID
MODEL NO.	HSTNH-N407I
FCC ID	2ABNS1403
NOMINAL VOLTAGE	DC 3.7V By battery DC 5V By adapter or DC 5V By USB
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)
PEAK POWER	17.87dBm (Maximum)
ANTENNA TYPE	PIFA Antenna; 1.89dBi gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions, but only the worst case was shown in test report.
3. Please refer to the EUT photo document (Reference No.:140612N023) for detailed product photo.
4. The EUT can powered by the adaptor as listed below:

ADAPTER	
BRAND:	N/A
MODEL:	W12-010N3A
INPUT:	AC 100-240V, 50/60Hz, 0.3A
OUTPUT:	DC 5V/2A
USB LINE:	Shielded, Detachable, 0.8m with 2 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		



3.2.1 CONFIGURATION OF SYSTEM UNDER TEST

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

3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.

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

EUT CONFIGURE MODE	APPLICABLE TO				MODE
	RE<1G	RE≥1G	PLC	APCM	
A	-	-	-	√	Powered by Battery with WIFI link
B	√	√	√	-	Powered by Adapter with WIFI link
C	-	-	-	-	Powered by USB with WIFI link

Where **RE<1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission

RE≥1G: Radiated Emission above 1GHz
APCM: Antenna Port Conducted Measurement

RADIATED EMISSION TEST (BELOW 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
B	802.11g	1 to 11	1	OFDM	BPSK	6.0	Y

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

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
B	802.11b	1 to 11	1, 6, 11	CCK	DBPSK	1.0	Y
B	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	Y
B	802.11n HT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5	Y

POWER LINE CONDUCTED EMISSION TEST:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11g	1 to 11	1	OFDM	BPSK	6.0

BANDEDGE MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

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

**ANTENNA PORT CONDUCTED MEASUREMENT:**

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

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

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	25deg. C, 54%RH	DC 5V by Adapter	Blue
RE≥1G	25deg. C, 54%RH	DC 5V by Adapter	Blue
PLC	25deg. C, 60%RH	DC 5V by Adapter	Venless Long
APCM	25deg. C, 60%RH	DC 3.7V by Battery	Venless Long



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C, Section 15.247(2012-10)

558074 D01 DTS Meas Guidance v03r01

ANSI C63.10-2009

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

3.4 DESCRIPTION OF SUPPORT UNITS

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

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

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

NOTE: All power cords of the above support units are non shielded (1.8m).



4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	101418	Mar. 28,14	Mar. 27,15
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	May 14,14	May 13,15
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	May 14,14	May 13,15
Test software	ADT	ADT_Conc_V7.3.7	N/A	N/A	N/A

NOTE:

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

4.1.3 TEST PROCEDURES

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

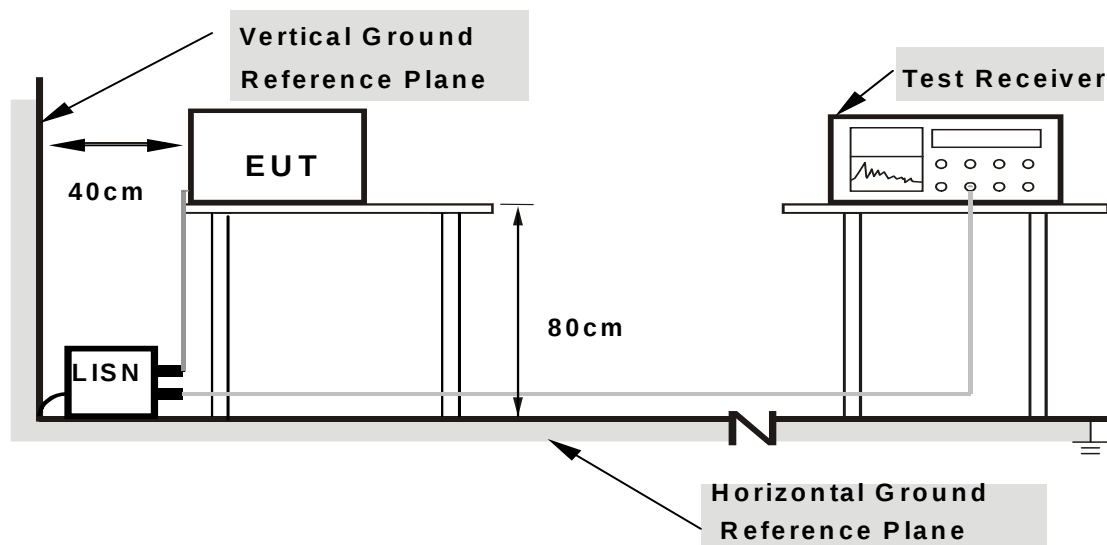
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.



4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.1.6 EUT OPERATING CONDITIONS

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



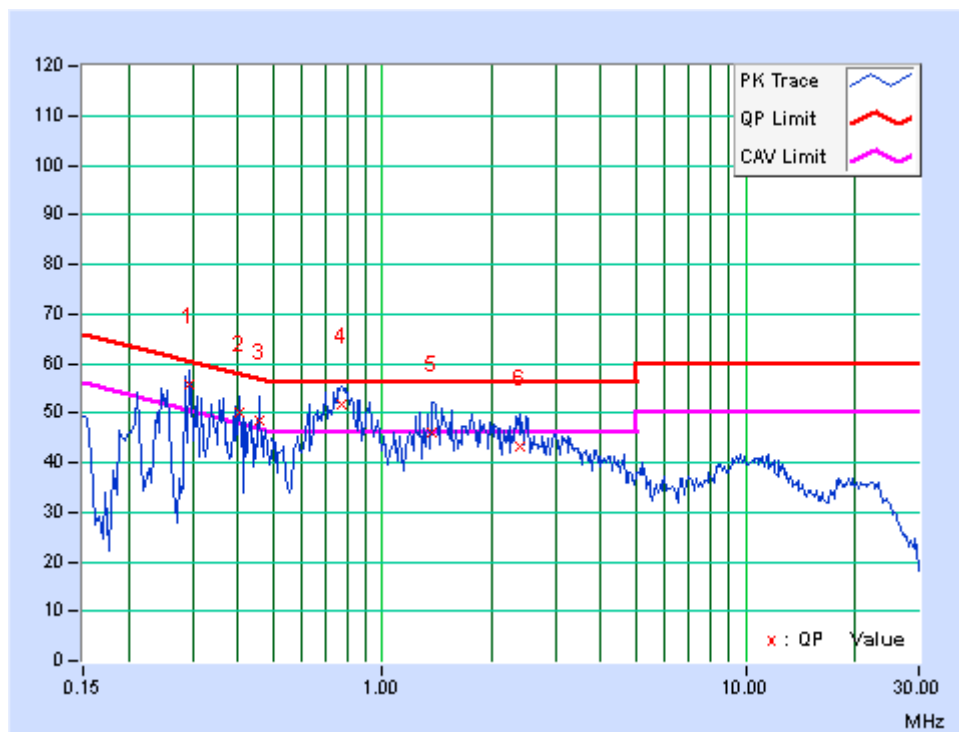
4.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA: 802.11g-CH1

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	0.29467	10.35	45.57	30.98	55.92	41.33	60.39	50.39	-4.47	-9.06
2	0.40415	10.27	39.96	24.70	50.23	34.97	57.77	47.77	-7.53	-12.79
3	0.45782	10.25	38.22	22.84	48.47	33.09	56.73	46.73	-8.26	-13.64
4	0.77062	10.09	41.62	27.04	51.71	37.13	56.00	46.00	-4.29	-8.87
5	1.37276	9.91	36.07	18.47	45.98	28.38	56.00	46.00	-10.02	-17.62
6	2.38154	9.86	33.49	17.39	43.35	27.25	56.00	46.00	-12.65	-18.75

- 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.





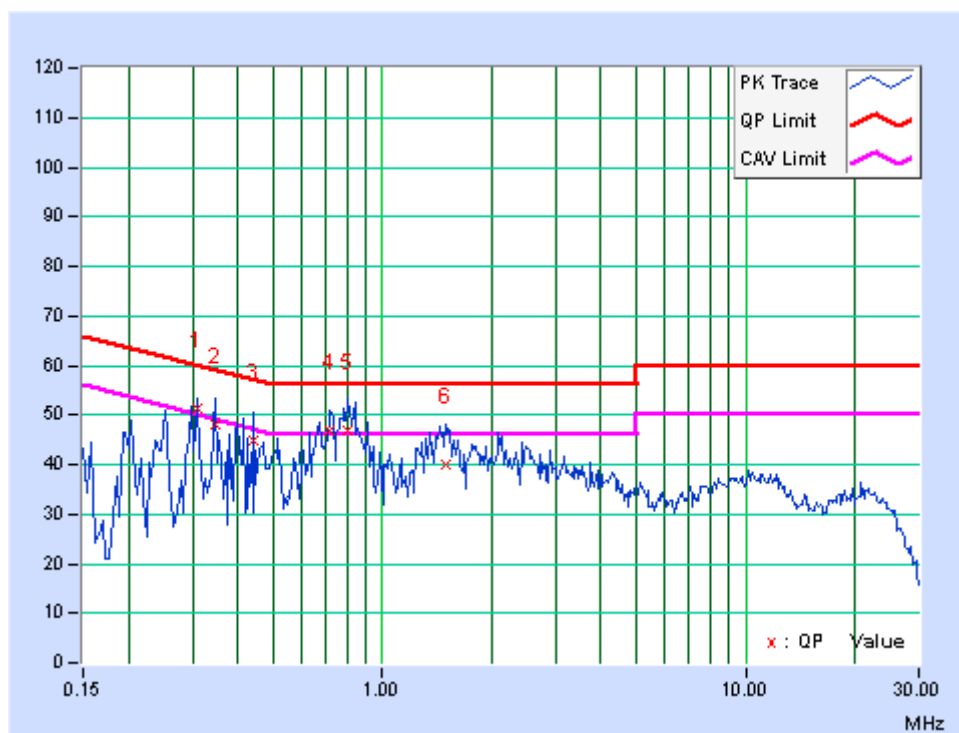
**BUREAU
VERITAS**

Test Report No.: RF140612N023

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	0.31031	10.35	41.10	24.57	51.45	34.92	59.96	49.96	-8.52	-15.05
2	0.3455	10.36	37.89	22.47	48.25	32.83	59.07	49.07	-10.82	-16.24
3	0.44325	10.40	34.30	18.49	44.70	28.89	57.00	47.00	-12.30	-18.11
4	0.71588	10.02	36.81	21.46	46.83	31.48	56.00	46.00	-9.17	-14.52
5	0.80581	9.96	36.72	20.17	46.68	30.13	56.00	46.00	-9.32	-15.87
6	1.50179	9.75	30.40	14.88	40.15	24.63	56.00	46.00	-15.85	-21.37

- 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.



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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.
Spectrum Analyzer	Agilent	E4446A	MY46180622	Apr. 29,14	Apr. 28,15
Spectrum Analyzer (10Hz~40GHz)	Rohde&Schwarz	FSV40	101003	Apr. 09,14	Apr. 08,15
Signal Generator (250KHz~6.0GHz)	Agilent	E4438C	MY49072505	Mar. 14, 14	Mar. 13, 15
Signal Analyzer	Rohde&Schwarz	FSV7	102331	Nov. 25,13	Nov. 24,14
EMI Test Receiver	Rohde&Schwarz	ESVS10	841431/004	May 17,14	May 16,15
Loop antenna (9kHz~30MHz)	Daze	ZN30900A	0708	Dec. 05,13	Dec. 05,14
Bilog Antenna (20MHz~2GHz)	Teseq	CBL 6111D	30643	Jul. 27, 13	Jul. 26, 14
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	Oct. 18, 12	Oct. 17, 14
Horn Antenna (15GHz-40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170242	Feb. 13,14	Feb. 12,15
Signal Amplifier	Agilent	8447D	2944A10488	Jun. 25,14	Jun. 24,15
Pre-Amplifier (100MHz-26.5GHz)	Agilent	8449B	3008A00409	May 13,14	May 12,15
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,13	Nov. 03,14
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 30, 13	Oct. 29, 14
Peak and Avg Power Sensor	Anritsu	MA2411B	1126068	Feb. 21,14	Feb. 20,15
Power Meter	Anritsu	ML2495A	1139001	Feb. 21,14	Feb. 20,15
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	Apr. 19,14	Apr. 18,15
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep. 17,13	Sep. 16,14
Test Software	ADT	ADT_Radiated V7.6.15.9.2	N/A	N/A	N/A

NOTE:

1. The calibration interval of the above test instruments is 12 months or 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in 966 Chamber.
3. The horn antenna are 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 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

NOTE:

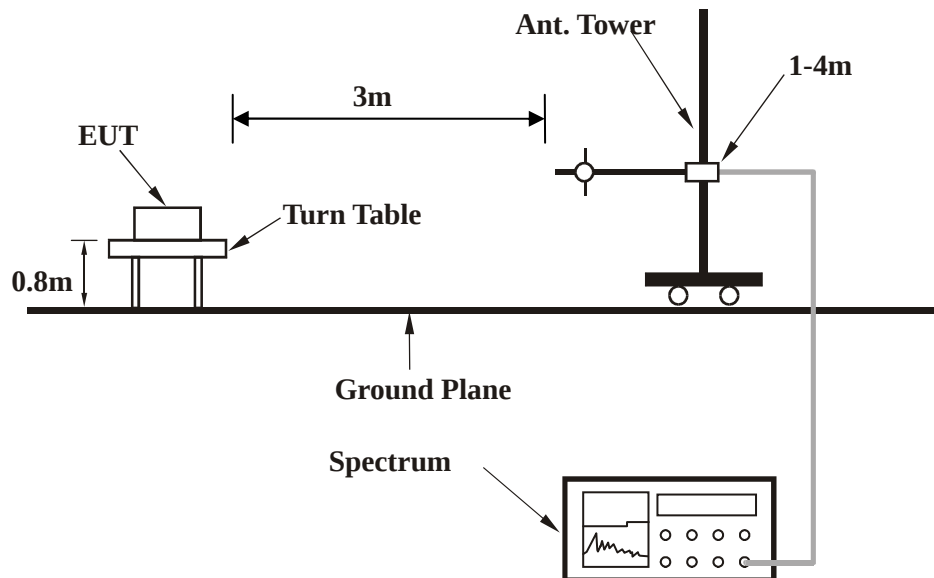
- 1.The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
- 2.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
- 3.The resolution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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation



4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

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



4.2.7 TEST RESULTS

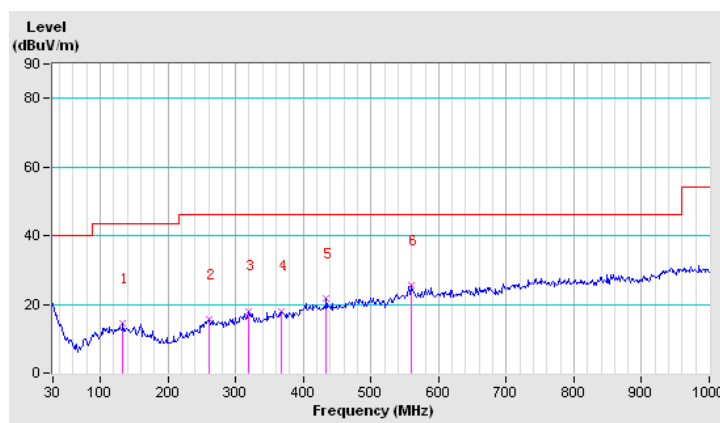
BELOW 1GHz WORST-CASE DATA: 802.11g- CH1

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	133.47	14.5 QP	43.5	-29.0	1.50 H	278	1.09	13.41
2	261.18	15.5 QP	46.0	-30.5	1.50 H	288	-0.73	16.24
3	319.38	18.1 QP	46.0	-27.9	1.50 H	298	1.14	16.97
4	367.88	18.1 QP	46.0	-27.9	1.50 H	307	-0.35	18.43
5	434.17	21.7 QP	46.0	-24.3	1.50 H	317	1.38	20.31
6	558.65	25.6 QP	46.0	-20.4	1.50 H	337	0.74	24.87

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.





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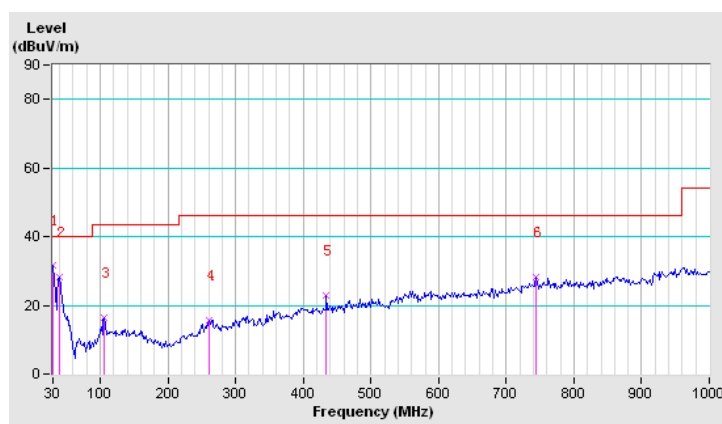
Test Report No.: RF140612N023

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

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.00	31.7 QP	40.0	-8.3	1.50 V	1	11.96	19.75
2	39.70	28.1 QP	40.0	-11.9	1.50 V	4	12.96	15.13
3	105.98	16.4 QP	43.5	-27.1	1.50 V	14	3.76	12.61
4	261.18	15.6 QP	46.0	-30.4	1.50 V	24	-0.63	16.24
5	434.17	22.8 QP	46.0	-23.2	1.50 V	51	2.51	20.31
6	744.57	28.2 QP	46.0	-17.9	1.50 V	63	0.33	27.82

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.: RF140612N023

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	50.0 PK	74.0	-24.0	1.00 H	236	14.03	35.97
2	2390.00	40.1 AV	54.0	-13.9	1.00 H	236	4.13	35.97
3	#2400.00	55.9 PK	79.2	-23.3	1.00 H	201	19.92	35.98
4	#2400.00	50.5 AV	75.3	-24.8	1.00 H	201	14.52	35.98
5	*2412.00	99.2 PK	-	-	1.00 H	214	63.20	36.00
6	*2412.00	95.3 AV	-	-	1.00 H	214	59.30	36.00
7	4824.00	50.6 PK	74.0	-23.4	1.00 H	220	11.24	39.36
8	4824.00	45.3 AV	54.0	-8.7	1.00 H	220	5.94	39.36
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	53.2 PK	74.0	-20.8	1.00 V	201	17.23	35.97
2	2390.00	43.5 AV	54.0	-10.5	1.00 V	201	7.53	35.97
3	#2400.00	61.7 PK	84.0	-22.3	1.00 V	201	25.72	35.98
4	#2400.00	54.8 AV	80.7	-25.9	1.00 V	201	18.82	35.98
5	*2412.00	104.0 PK			1.08 V	265	68.00	36.00
6	*2412.00	100.7 AV			1.08 V	265	64.70	36.00
7	4824.00	50.2 PK	74.0	-23.8	1.00 V	256	10.84	39.36
8	4824.00	45.4 AV	54.0	-8.6	1.00 V	256	6.04	39.36

REMARKS:

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



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Test Report No.: RF140612N023

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	99.5 PK	-	-	1.00 H	125	63.47	36.03
2	*2437.00	94.5 AV	-	-	1.00 H	125	58.47	36.03
3	4874.00	51.2 PK	74.0	-22.8	1.00 H	210	11.83	39.37
4	4874.00	46.1 AV	54.0	-7.9	1.00 H	210	6.73	39.37
5	7311.00	51.5 PK	74.0	-22.5	1.00 H	201	8.74	42.76
6	7311.00	45.2 AV	54.0	-8.8	1.00 H	201	2.44	42.76
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	103.5 PK	-	-	1.00 V	236	67.47	36.03
2	*2437.00	98.8 AV	-	-	1.00 V	236	62.77	36.03
3	4874.00	52.4 PK	74.0	-21.6	1.00 V	140	13.03	39.37
4	4874.00	46.5 AV	54.0	-7.5	1.00 V	140	7.13	39.37
5	7311.00	50.3 PK	74.0	-23.7	1.00 V	211	7.54	42.76
6	7311.00	44.2 AV	54.0	-9.8	1.00 V	211	1.44	42.76

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.: RF140612N023

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	98.6 PK	-	-	1.00 H	225	62.54	36.06
2	*2462.00	94.5 AV	-	-	1.00 H	225	58.44	36.06
3	2483.50	48.6 PK	74.0	-25.4	1.00 H	201	12.51	36.09
4	2483.50	37.4 AV	54.0	-16.6	1.00 H	201	1.31	36.09
5	4924.00	50.4 PK	74.0	-23.6	1.00 H	214	11.02	39.38
6	4924.00	46.2 AV	54.0	-7.8	1.00 H	214	6.82	39.38
7	7386.00	47.5 PK	74.0	-26.5	1.00 H	203	4.80	42.70
8	7386.00	34.1 AV	54.0	-19.9	1.00 H	203	-8.60	42.70
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	*2462.00	102.4 PK	-	-	1.04 V	261	66.34	36.06
2	*2462.00	98.5 AV	-	-	1.04 V	261	62.44	36.06
3	2483.50	50.5 PK	74.0	-23.5	1.00 V	210	14.41	36.09
4	2483.50	38.5 AV	54.0	-15.5	1.00 V	210	2.41	36.09
5	4924.00	55.2 PK	74.0	-18.8	1.00 V	12	15.82	39.38
6	4924.00	52.7 AV	54.0	-1.3	1.00 V	12	13.32	39.38
7	7386.00	47.5 PK	74.0	-26.5	1.00 V	250	4.80	42.70
8	7386.00	34.5 AV	54.0	-19.5	1.00 V	250	-8.20	42.70

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.



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	65.4 PK	74.0	-8.6	1.00 H	265	29.43	35.97
2	2390.00	47.5 AV	54.0	-6.5	1.00 H	265	11.53	35.97
3	#2400.00	75.6 PK	82.1	-6.5	1.00 H	230	39.62	35.98
4	#2400.00	60.5 AV	70.0	-9.5	1.00 H	230	24.52	35.98
5	*2412.00	102.1 PK	-	-	1.00 H	235	66.10	36.00
6	*2412.00	90.0 AV	-	-	1.00 H	235	54.00	36.00
7	4824.00	53.4 PK	74.0	-20.6	1.00 H	207	14.04	39.36
8	4824.00	41.0 AV	54.0	-13.0	1.00 H	207	1.64	39.36
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.2 PK	74.0	-3.8	1.00 V	205	34.23	35.97
2	2390.00	50.1 AV	54.0	-3.9	1.00 V	205	14.13	35.97
3	#2400.00	80.7 PK	86.5	-5.8	1.00 V	266	44.72	35.98
4	#2400.00	64.5 AV	72.3	-7.8	1.00 V	266	28.52	35.98
5	*2412.00	106.5 PK	-	-	1.00 V	210	70.50	36.00
6	*2412.00	92.3 AV	-	-	1.00 V	210	56.30	36.00
7	4824.00	56.5 PK	74.0	-17.5	1.02 V	100	17.14	39.36
8	4824.00	43.6 AV	54.0	-10.4	1.02 V	100	4.24	39.36

REMARKS:

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



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Test Report No.: RF140612N023

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	101.5 PK	-	-	1.00 H	201	65.47	36.03
2	*2437.00	90.6 AV	-	-	1.00 H	201	54.57	36.03
3	4874.00	54.6 PK	74.0	-19.4	1.00 H	210	15.23	39.37
4	4874.00	43.5 AV	54.0	-10.5	1.00 H	210	4.13	39.37
5	7311.00	52.4 PK	74.0	-21.6	1.00 H	225	9.64	42.76
6	7311.00	46.1 AV	54.0	-7.9	1.00 H	225	3.34	42.76
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	105.4 PK	-	-	1.00 V	221	69.37	36.03
2	*2437.00	93.5 AV	-	-	1.00 V	221	57.47	36.03
3	4874.00	56.5 PK	74.0	-17.5	1.00 V	112	17.13	39.37
4	4874.00	44.2 AV	54.0	-9.8	1.00 V	112	4.83	39.37
5	7311.00	53.2 PK	74.0	-20.8	1.00 V	228	10.44	42.76
6	7311.00	45.2 AV	54.0	-8.8	1.00 V	228	2.44	42.76

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	100.0 PK	-	-	1.00 H	223	63.94	36.06
2	*2462.00	89.5 AV	-	-	1.00 H	223	53.44	36.06
3	2483.50	63.5 PK	74.0	-10.5	1.00 H	174	27.41	36.09
4	2483.50	44.1 AV	54.0	-9.9	1.00 H	174	8.01	36.09
5	4924.00	54.2 PK	74.0	-19.8	1.00 H	228	14.82	39.38
6	4924.00	37.6 AV	54.0	-16.4	1.00 H	228	-1.78	39.38
7	7386.00	48.0 PK	74.0	-26.0	1.00 H	63	5.30	42.70
8	7386.00	35.0 AV	54.0	-19.0	1.00 H	63	-7.70	42.70
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	*2462.00	104.2 PK	-	-	1.00 V	224	68.14	36.06
2	*2462.00	91.5 AV	-	-	1.00 V	224	55.44	36.06
3	2483.50	67.1 PK	74.0	-6.9	1.00 V	210	31.01	36.09
4	2483.50	46.5 AV	54.0	-7.5	1.00 V	210	10.41	36.09
5	4924.00	56.1 PK	74.0	-17.9	1.00 V	211	16.72	39.38
6	4924.00	39.3 AV	54.0	-14.7	1.00 V	211	-0.08	39.38
7	7386.00	48.6 PK	74.0	-25.4	1.00 V	220	5.90	42.70
8	7386.00	35.6 AV	54.0	-18.4	1.00 V	220	-7.10	42.70

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.



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	58.6 PK	74.0	-15.4	1.00 H	228	22.63	35.97
2	2390.00	45.1 AV	54.0	-8.9	1.00 H	228	9.13	35.97
3	#2400.00	70.6 PK	81.6	-11.0	1.14 H	52	34.62	35.98
4	#2400.00	55.4 AV	70.8	-15.4	1.14 H	52	19.42	35.98
5	*2412.00	101.6 PK	-	-	1.00 H	125	65.60	36.00
6	*2412.00	90.8 AV	-	-	1.00 H	125	54.80	36.00
7	4824.00	54.6 PK	74.0	-19.4	1.00 H	245	15.24	39.36
8	4824.00	42.8 AV	54.0	-11.2	1.00 H	245	3.44	39.36
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	47.9 PK	74.0	-26.1	1.00 V	26	11.93	35.97
2	2390.00	46.8 AV	54.0	-7.2	1.00 V	26	10.83	35.97
3	#2400.00	74.6 PK	82.5	-7.9	1.00 V	134	38.62	35.98
4	#2400.00	56.9 AV	71.4	-14.5	1.00 V	134	20.92	35.98
5	*2412.00	102.5 PK	-	-	1.00 V	76	66.50	36.00
6	*2412.00	91.4 AV	-	-	1.00 V	76	55.40	36.00
7	4824.00	55.8 PK	74.0	-18.2	1.00 V	64	16.44	39.36
8	4824.00	43.9 AV	54.0	-10.1	1.00 V	64	4.54	39.36

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
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	99.6 PK	-	-	1.00 H	132	63.57	36.03
2	*2437.00	89.2 AV	-	-	1.00 H	132	53.17	36.03
3	4874.00	53.2 PK	74.0	-20.8	1.00 H	20	13.83	39.37
4	4874.00	42.0 AV	54.0	-12.0	1.00 H	20	2.63	39.37
5	7311.00	50.8 PK	74.0	-23.2	1.00 H	29	8.04	42.76
6	7311.00	43.5 AV	54.0	-10.5	1.00 H	29	0.74	42.76
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	102.5 PK	-	-	1.00 V	64	66.47	36.03
2	*2437.00	91.5 AV	-	-	1.00 V	64	55.47	36.03
3	4874.00	55.2 PK	74.0	-18.8	1.00 V	136	15.83	39.37
4	4874.00	43.8 AV	54.0	-10.2	1.00 V	136	4.43	39.37
5	7311.00	52.4 PK	74.0	-21.6	1.45 V	320	9.64	42.76
6	7311.00	45.0 AV	54.0	-9.0	1.45 V	320	2.24	42.76

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.: RF140612N023

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	98.5 PK	-	-	1.00 H	255	62.44	36.06
2	*2462.00	87.6 AV	-	-	1.00 H	255	51.54	36.06
3	2483.50	55.4 PK	74.0	-18.6	1.00 H	200	19.31	36.09
4	2483.50	40.0 AV	54.0	-14.0	1.00 H	200	3.91	36.09
5	4924.00	54.6 PK	74.0	-19.4	1.01 H	325	15.22	39.38
6	4924.00	37.5 AV	54.0	-16.5	1.01 H	325	-1.88	39.38
7	7386.00	48.7 PK	74.0	-25.3	1.00 H	226	6.00	42.70
8	7386.00	36.2 AV	54.0	-17.8	1.00 H	226	-6.50	42.70
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	*2462.00	101.5 PK	-	-	1.00 V	154	65.44	36.06
2	*2462.00	89.5 AV	-	-	1.00 V	154	53.44	36.06
3	2483.50	57.3 PK	74.0	-16.7	1.00 V	223	21.21	36.09
4	2483.50	42.5 AV	54.0	-11.5	1.00 V	223	6.41	36.09
5	4924.00	54.3 PK	74.0	-19.7	1.00 V	360	14.92	39.38
6	4924.00	37.6 AV	54.0	-16.4	1.00 V	360	-1.78	39.38
7	7386.00	49.6 PK	74.0	-24.4	1.00 V	85	6.90	42.70
8	7386.00	36.4 AV	54.0	-17.6	1.00 V	85	-6.30	42.70

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.



4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer (10Hz–40GHz)	Rohde&Schwarz	FSV40	101003	Apr. 09,14	Apr. 08,15
Power Meter	Anritsu	ML2495A	1139001	Feb. 21,14	Feb. 20,15
Power Sensor	Anritsu	MA2411B	1126068	Feb. 21,14	Feb. 20,15
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 30,13	Oct. 29,14
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep. 17,13	Sep. 16,14
Oscilloscope	Agilent	DSO9254A	MY51260160	Oct. 17, 13	Oct. 16, 14
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 25,13	Nov. 24,14

NOTE:

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

4.3.3 TEST PROCEDURE

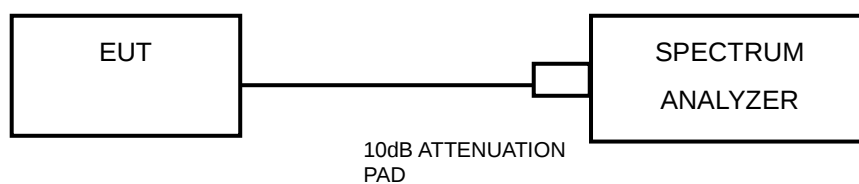
1. Set resolution bandwidth (RBW) = 100KHz
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower)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



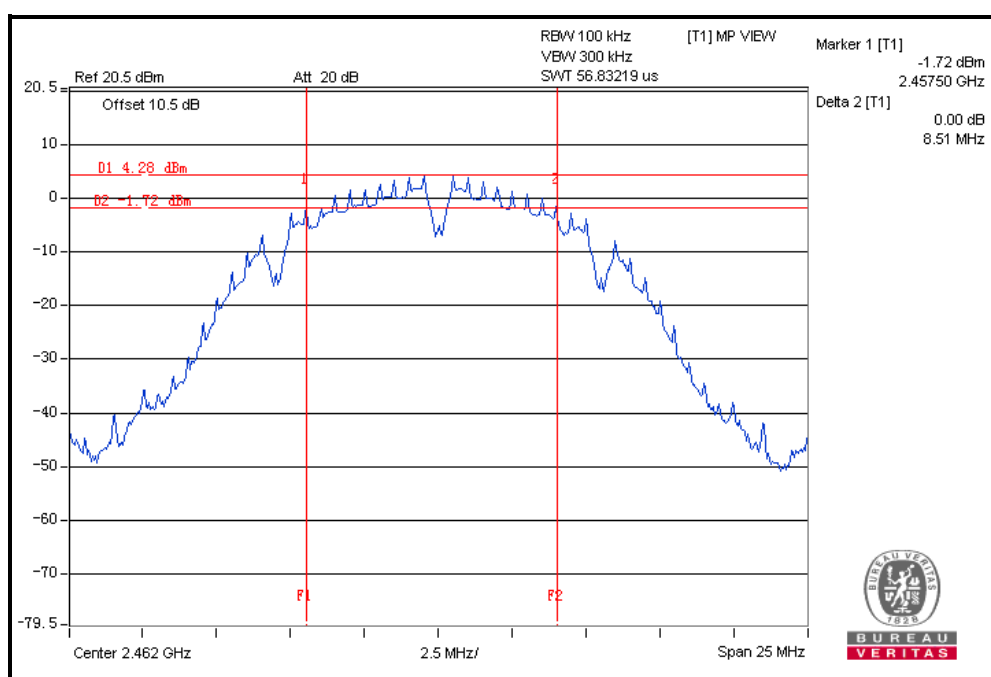
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4.3.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	7.10	0.5	PASS
6	2437	7.56	0.5	PASS
11	2462	8.51	0.5	PASS



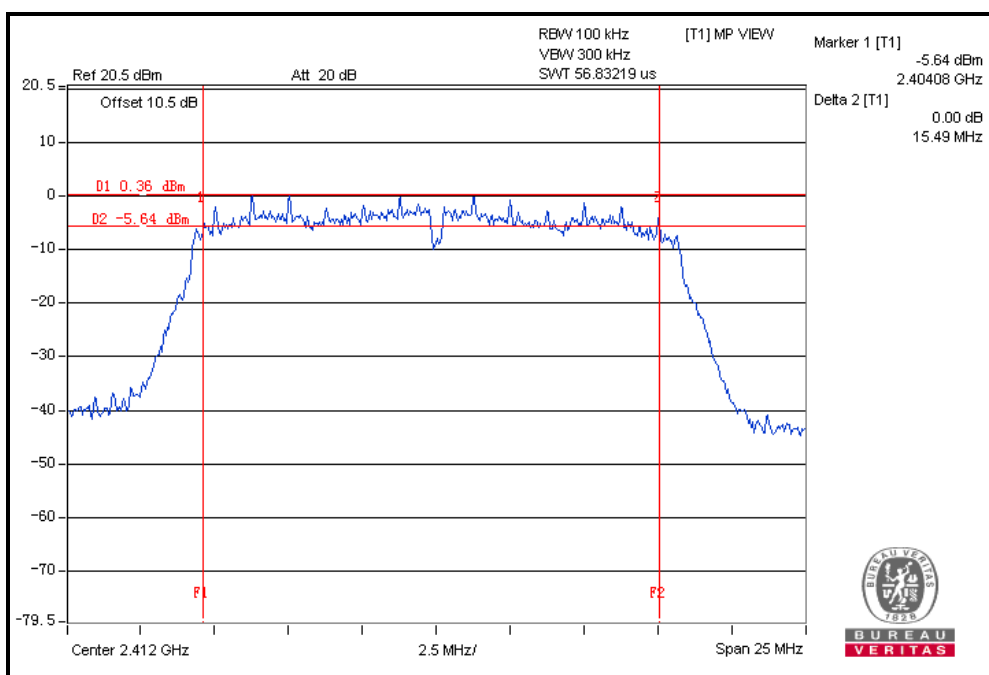


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802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.49	0.5	PASS
6	2437	15.48	0.5	PASS
11	2462	15.15	0.5	PASS



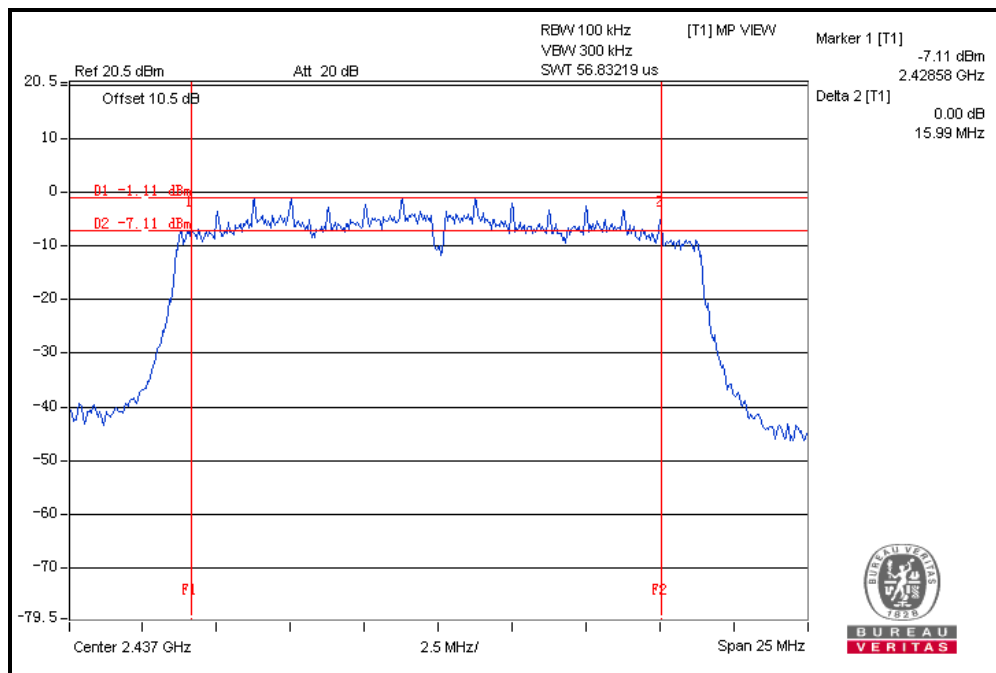


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802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.98	0.5	PASS
6	2437	15.99	0.5	PASS
11	2462	15.99	0.5	PASS



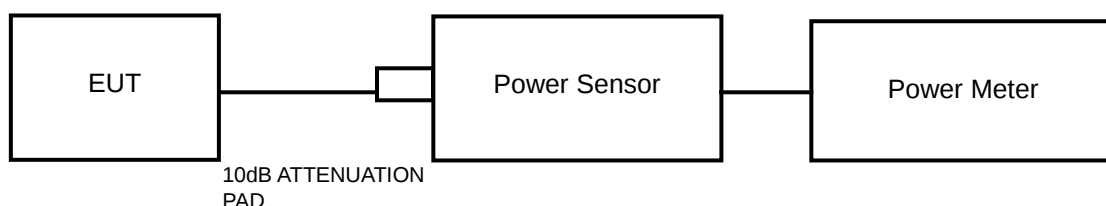


4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer (9KHz–40GHz)	Agilent	E4446A	MY46180622	Apr. 29,14	Apr. 28,15
Spectrum Analyzer (10Hz–40GHz)	Rohde&Schwarz	FSV40	101003	Apr. 09,14	Apr. 08,15
Power Meter	Anritsu	ML2495A	1139001	Feb. 21,14	Feb. 20,15
Power Sensor	Anritsu	MA2411B	1126068	Feb. 21,14	Feb. 20,15
Digital Multimeter	FLUKE	15B	A1220010D G	Oct. 30, 13	Oct. 29, 14

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

2. The test was performed in Oven room.

4.4.4 TEST PROCEDURES

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

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.



4.4.6 EUT OPERATING CONDITIONS

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

4.4.7 TEST RESULTS

4.4.7.1 MAXIMUM PEAK OUTPUT POWER

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	13.97	30.00	PASS
6	2437	14.12	30.00	PASS
11	2462	14.57	30.00	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	17.87	30.00	PASS
6	2437	17.31	30.00	PASS
11	2462	17.41	30.00	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	15.39	30.00	PASS
6	2437	15.79	30.00	PASS
11	2462	16.47	30.00	PASS

**4.4.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)**

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

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)
1	2412	10.77
6	2437	11.38
11	2462	11.63

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)
1	2412	10.35
6	2437	10.32
11	2462	11.21

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)
1	2412	8.77
6	2437	8.89
11	2462	9.62

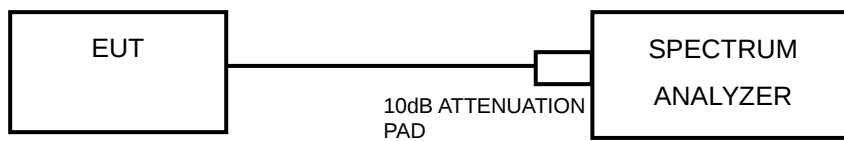


4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

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

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.3.2 to get information of above instrument.

4.5.4 TEST PROCEDURE

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

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

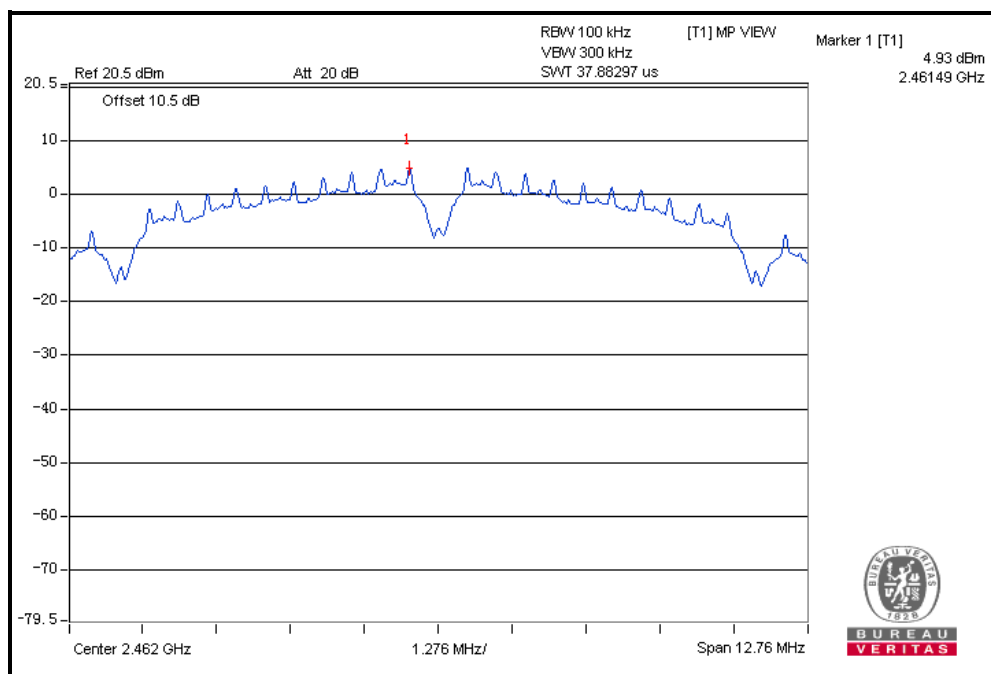
Same as item 4.3.6



4.5.7 TEST RESULTS

802.11b

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	4.53	8.00	PASS
6	2437	4.85	8.00	PASS
11	2462	4.93	8.00	PASS



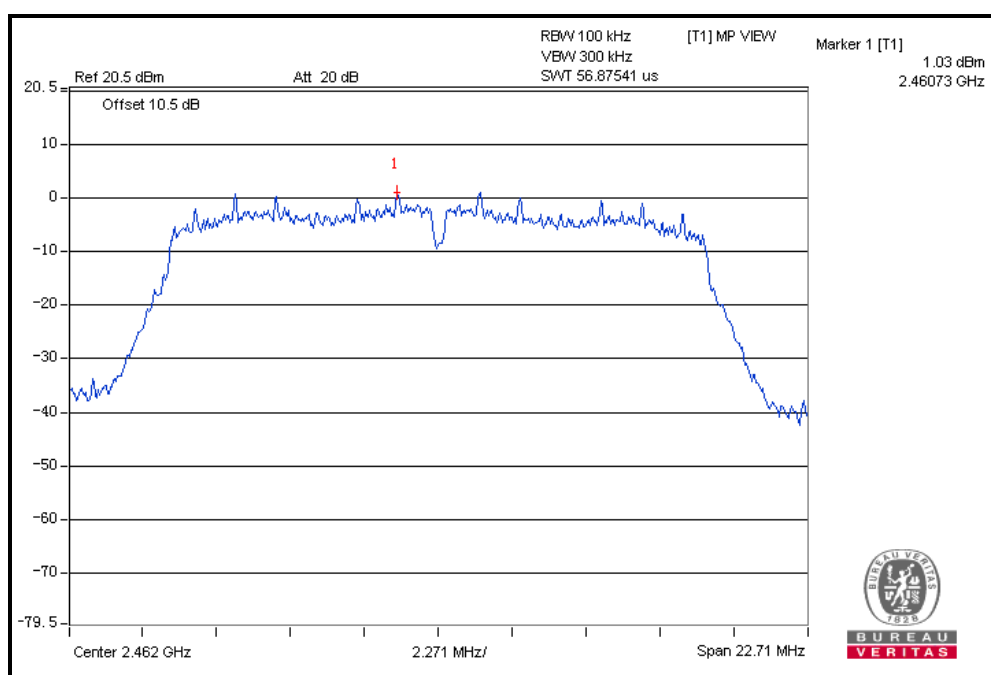


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802.11g

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	0.72	8.00	PASS
6	2437	0.85	8.00	PASS
11	2462	1.03	8.00	PASS



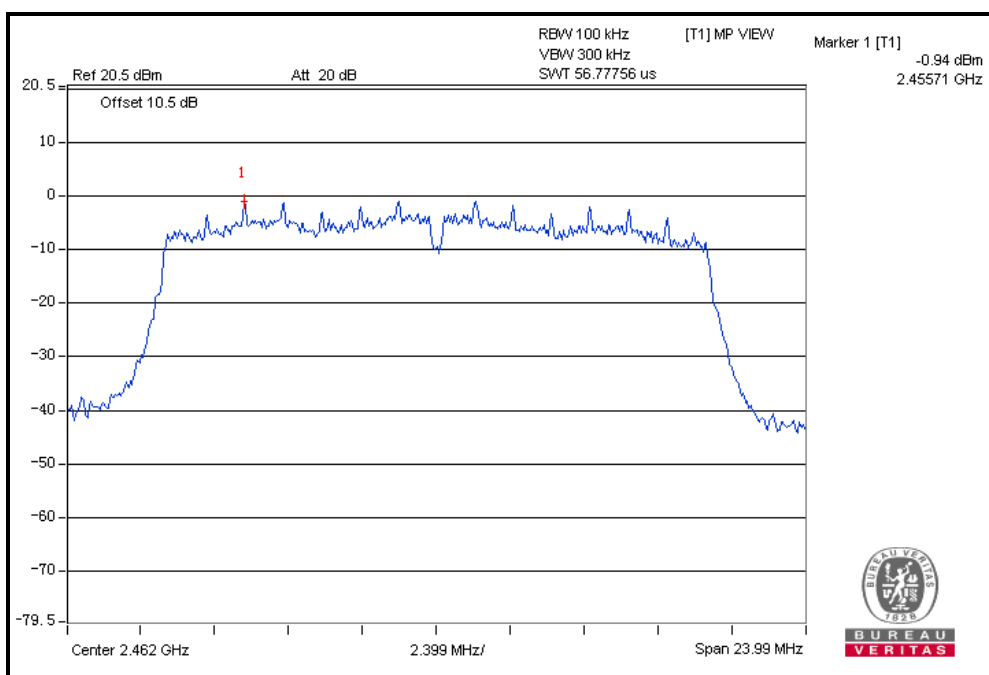


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Test Report No.: RF140612N023

802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-1.00	8.00	PASS
6	2437	-1.09	8.00	PASS
11	2462	-0.94	8.00	PASS



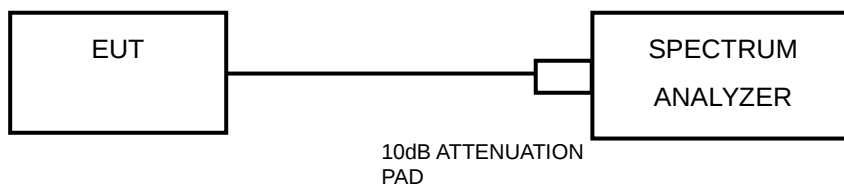


4.6 OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.3.2 to get information of above instrument.

4.6.4 TEST PROCEDURE

Measurement Procedure - 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



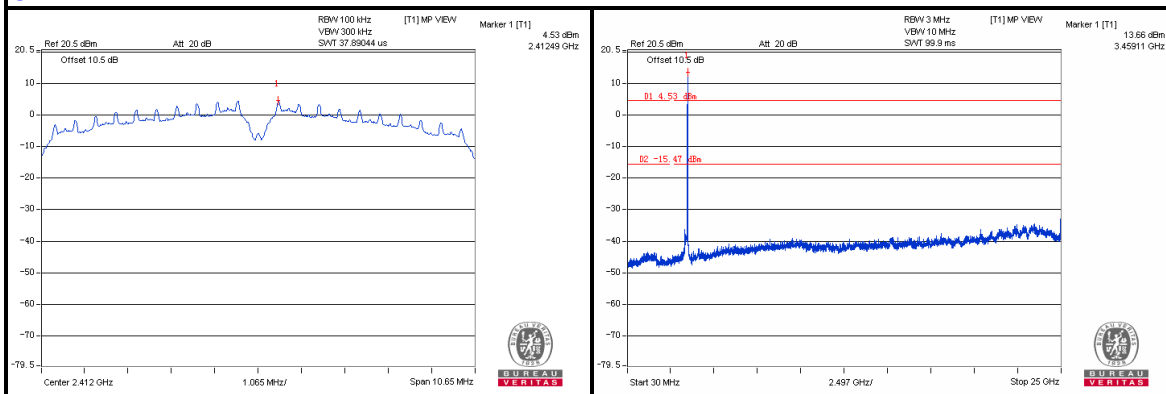
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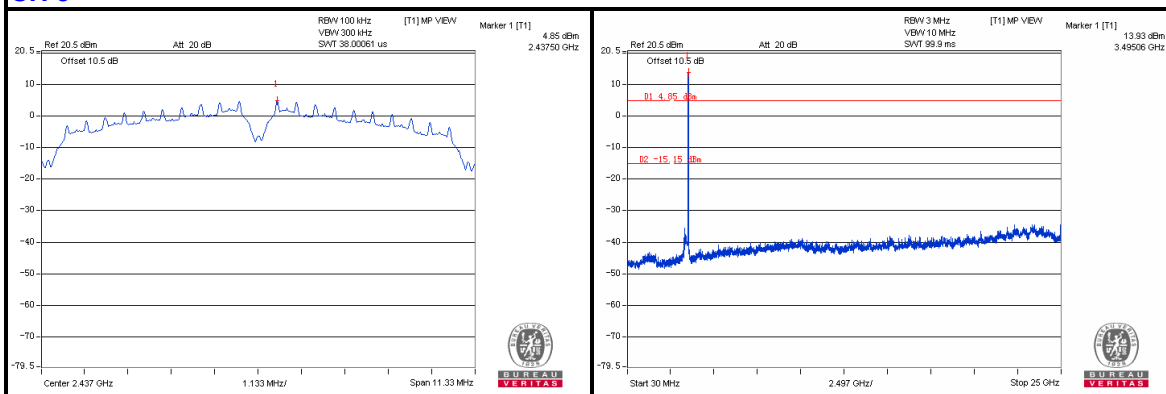
4.6.7 TEST RESULTS

802.11b

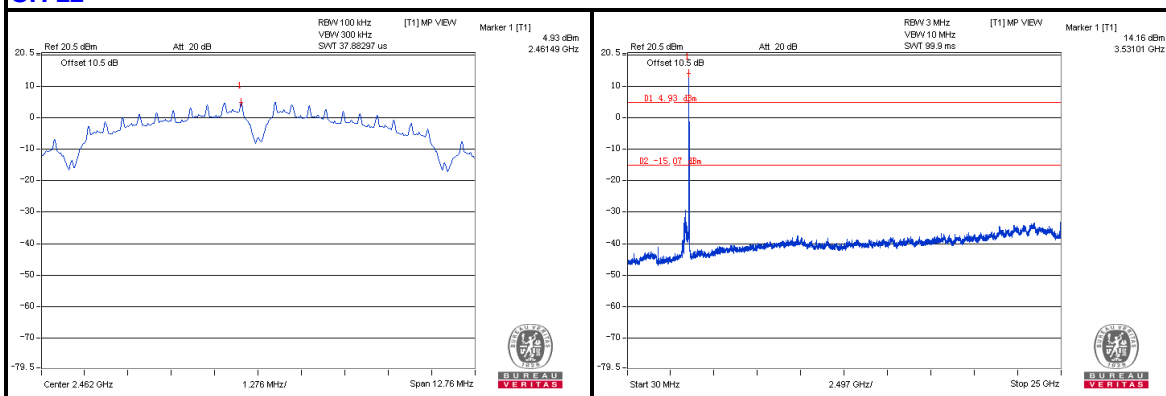
CH 1



CH 6



CH 11



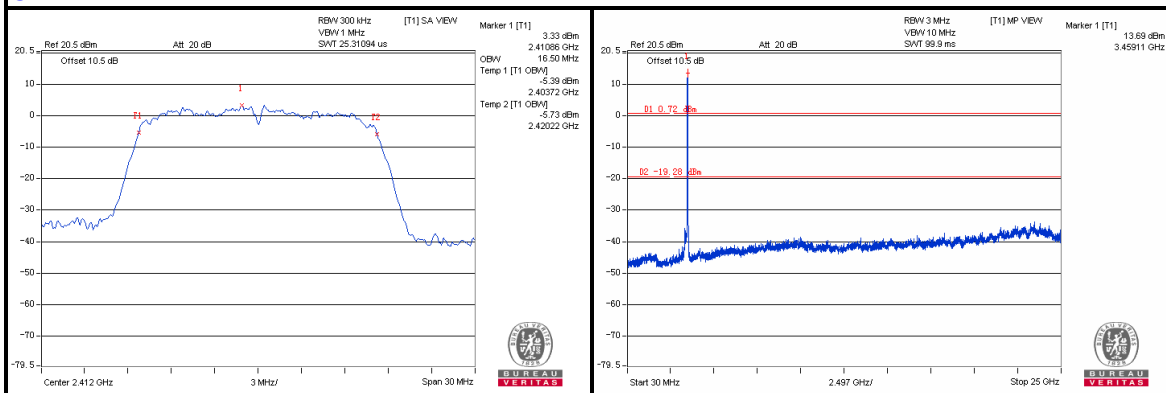


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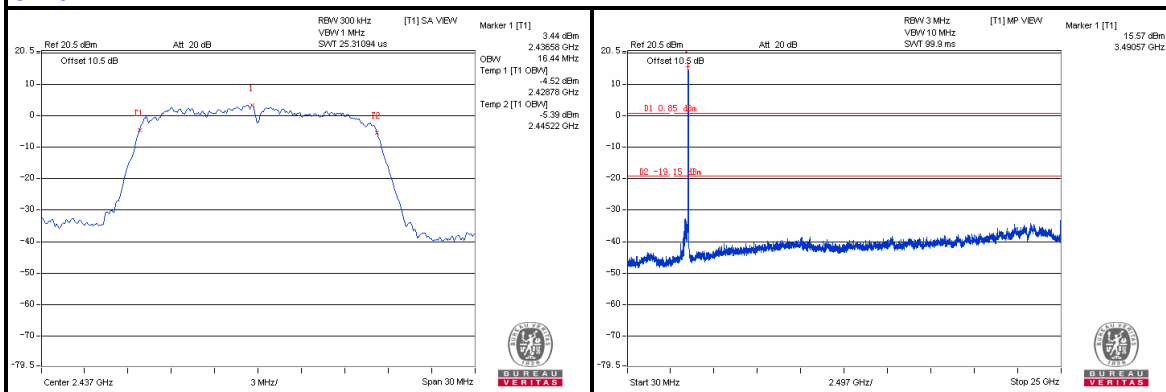
Test Report No.: RF140612N023

802.11g

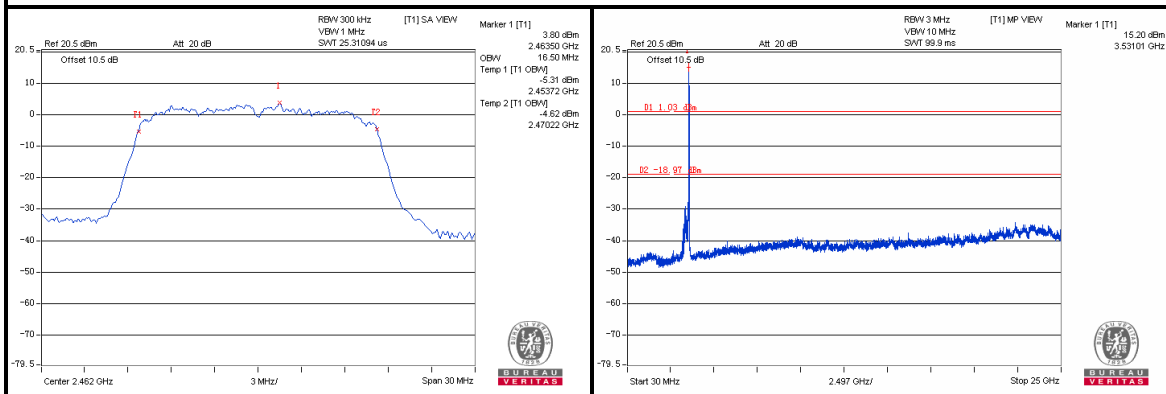
CH 1



CH 6



CH 11



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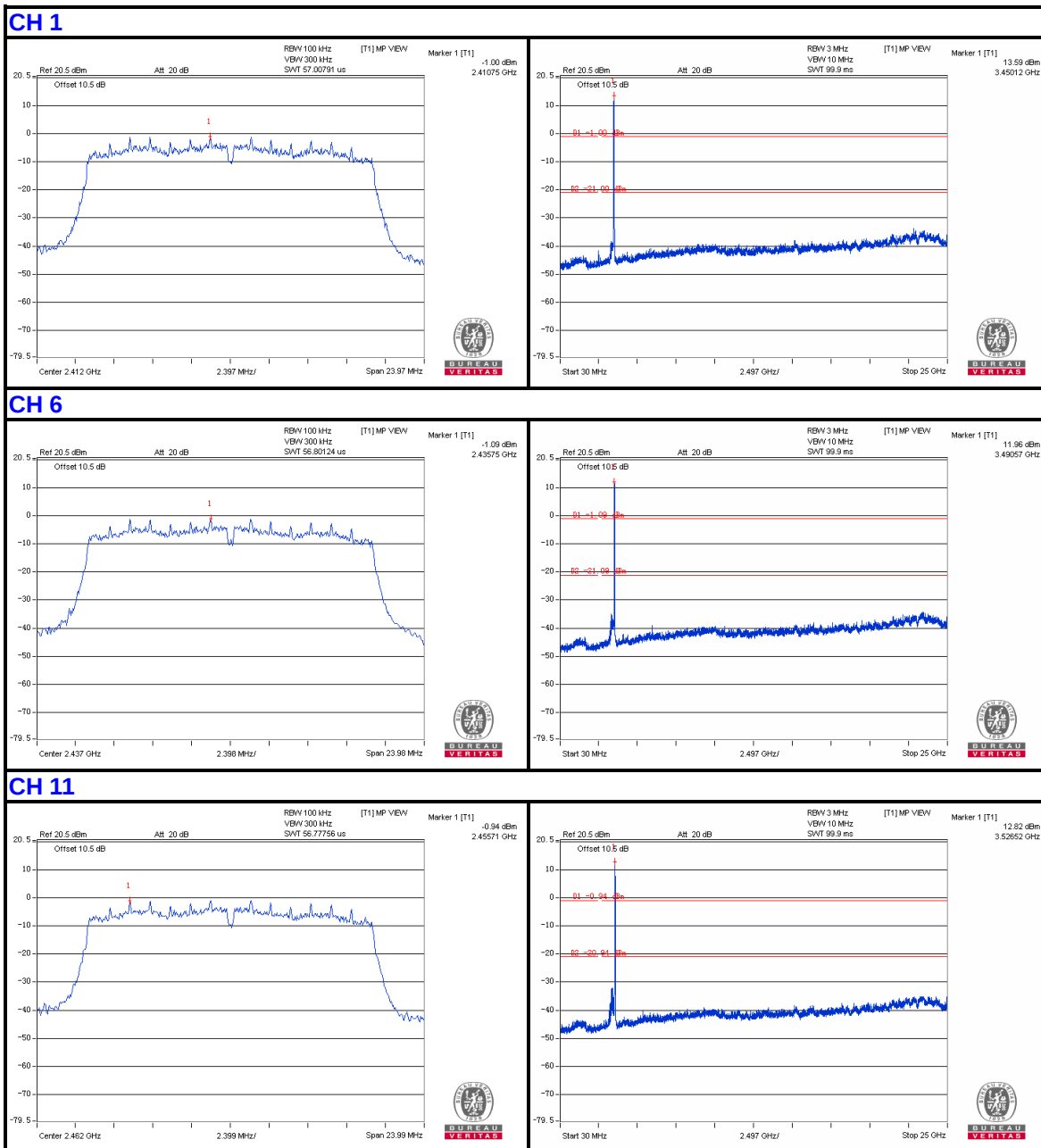
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802.11n (20MHz)



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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---