

TEST REPORT



Applicant:	Acctron Company Limited
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Manufacturer or Supplier	GuangZhou PanYu Fantasia Creation Toys Co.,Ltd.
Address	1-3F, Block 3, Standard Industrial Park ,Tai Shi Industrial Park, Dongyong, Nansha Guangzhou
Product	VERTEX-LINK MINI
Brand Name	N/A
Model	AC00017
Additional Model & Model Difference	N/A
Date of tests	Jun. 18, 2013 ~ Jul. 30, 2013

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 Glyn He Project Engineer / EMC Department	Approved by Sam Tung Manager / EMC Department
	 Date: Jul. 30, 2013

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130618N020	Original release	Jul. 30, 2013



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
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -6.7dB at 4924MHz
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	The antenna connector is Mini Connector

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	30MHz ~ 1GMHz	4.81dB
	1GHz ~ 18GHz	4.3 dB
	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	VERTEX-LINK MINI
MODEL NO.	AC00017
FCC ID	2AAJZ-AC00017
NOMINAL VOLTAGE	DC 6.0V from battery
MODULATION TECHNOLOGY	DSSS, OFDM
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(HT20) 2422-2452MHz for 11n(HT40)
PEAK POWER	19dBm (Maximum)
ANTENNA TYPE	Internal wire antenna; 2dBi gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

NOTE:

1. Add two ferrite beads in the product internal, the specifications are 20*10*10 and 16*13*8.
(Please see internal photos exhibit for reference)
2. The EUT incorporates a SISO function.

MODULATION MODE	TX FUNCTION
802.11b	1TX/1RX
802.11g	1TX/1RX
802.11n (HT20)	1TX/1RX
802.11n (HT40)	1TX/1RX

3. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.



3.2 DESCRIPTION OF TEST MODES

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

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

7 channels are provided for 802.11n (HT40):

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



3.2.1 CONFIGURATION OF SYSTEM UNDER TEST

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

3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

EUT CONFIGURE MODE	APPLICABLE TO				MODE
	RE<1G	RE≥1G	PLC	APCM	
A	√	√	NOTE	√	Powered by battery with wifi link

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

RE≥1G: Radiated Emission above 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

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

RADIATED EMISSION TEST (BELOW 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
A	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.

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

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)
N/A	-	-	-	-	-	-

**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
A	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.

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
A	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	25deg. C, 60%RH	DC 6V from battery	Yuqiang Yin
RE≥1G	25deg. C, 60%RH	DC 6V from battery	Yuqiang Yin
PLC	25deg. C, 60%RH	DC 6V from battery	Bin Wei
APCM	25deg. C, 60%RH	DC 6V from 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 (15.247)
558074 D01 DTS Meas Guidance
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 without other necessary accessories or support units.



4 TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 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.



4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	Agilent	E4446A	MY46180622	April 24,13	April 23,14
EMI Test Receiver	Rohde&Schwarz	ESVD	847398/003	May 14,13	May 13,14
Bilog Antenna	Teseq	CBL 6111D	25757	Nov. 22,12	Nov. 21,13
Horn Antenna (1GHz -18GHz)	EMCO	3117	00062558	Oct.18,12	Oct.17,13
Pre-Amplifier (20MHz-3GHz)	EMCI	EMC 330	980095	Nov. 02,12	Nov.01,13
Pre-Amplifier (100MHz-26.5GHz)	Agilent	8449B	3008A00409	May 14,13	May 13,14
10m Semi-anechoic Chamber	CHANGLING	21.4m*12.1m*8 .8m	NSEMC006	Mar. 24,13	Mar. 23,14
Digital Multimeter	FLUKE	15B	A1220010D G	Oct. 31,12	Oct. 30,13
Test Software	ADT	ADT_Radiated _V7.6.15	N/A	N/A	N/A
Spectrum Analyzer	Agilent	E4446A	MY46180622	April 24,13	April 23,14

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GREGT/CHINA and NIM/CHINA.
 2. The test was performed in Dongguan Chamber 10m.
 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.

4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. 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.

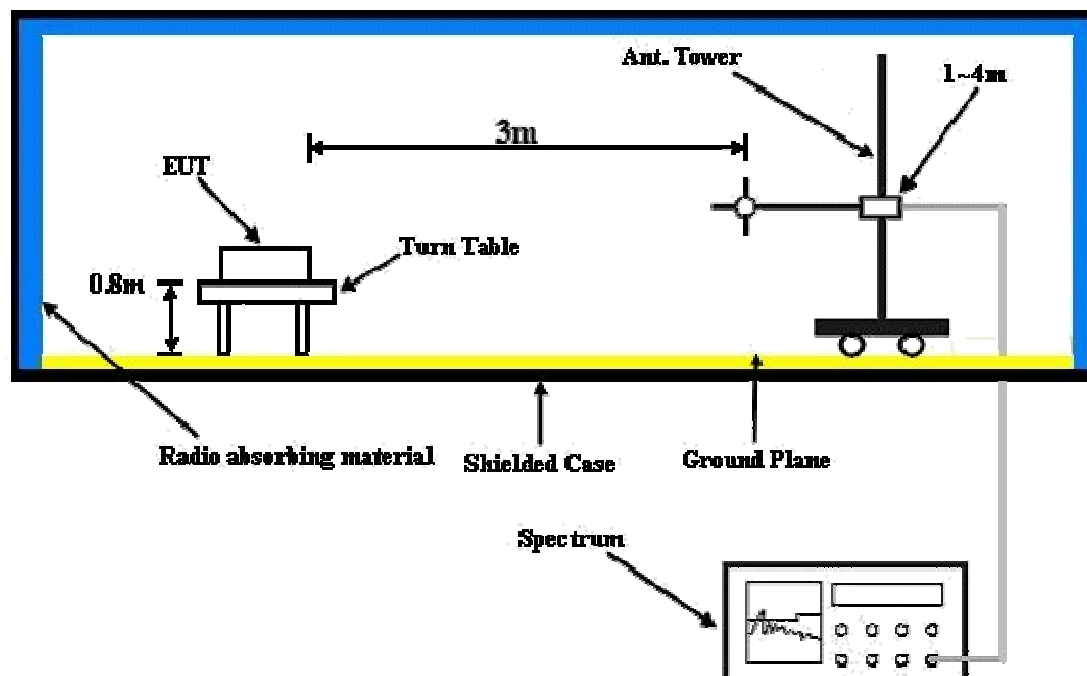
NOTE:

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.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

4.1.6 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.



4.1.7 TEST RESULTS

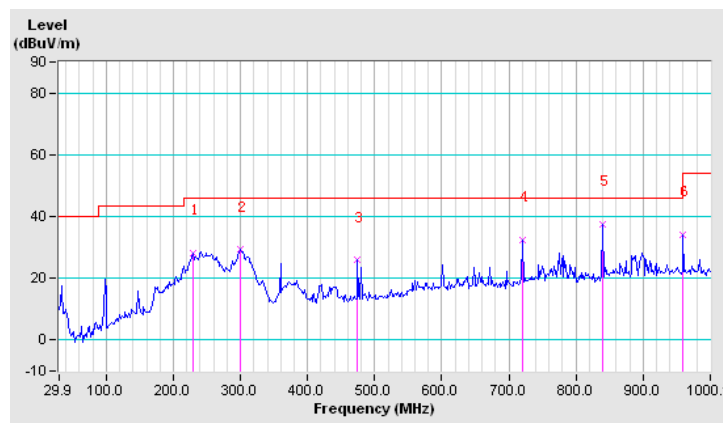
BELOW 1GHz WORST-CASE DATA: 802.11g- CH1

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	228.79	28.1 QP	46.0	-17.9	1.00 H	244	15.99	12.09
2	299.94	29.2 QP	46.0	-16.8	1.00 H	210	13.34	15.89
3	474.57	25.8 QP	46.0	-20.2	1.00 H	194	5.07	20.76
4	720.36	32.6 QP	46.0	-13.5	1.00 H	175	7.32	25.23
5	840.02	37.5 QP	46.0	-8.5	1.00 H	154	10.26	27.28
6	959.67	34.2 QP	46.0	-11.8	1.00 H	133	4.50	29.67

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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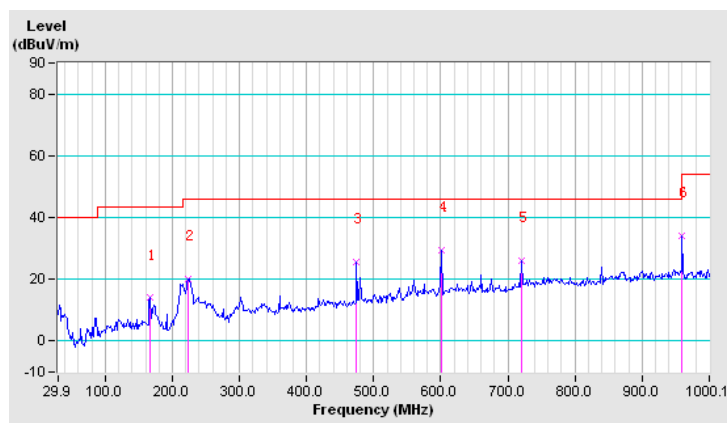
Test Report No.: RF130618N020

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	167.34	14.0 QP	43.5	-29.5	1.00 V	214	2.70	11.30
2	223.94	20.2 QP	46.0	-25.8	1.00 V	160	8.43	11.74
3	474.57	25.7 QP	46.0	-20.3	1.00 V	143	4.92	20.76
4	600.70	29.5 QP	46.0	-16.5	1.00 V	177	6.44	23.09
5	720.36	26.1 QP	46.0	-20.0	1.00 V	126	0.82	25.23
6	959.67	34.1 QP	46.0	-11.9	1.00 V	110	4.41	29.67

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	52.6 PK	74.0	-21.4	1.52 H	268	15.35	37.25
2	2390.00	40.2 AV	54.0	-13.8	1.52 H	268	2.95	37.25
3	*2412.00	102.8 PK			1.52 H	268	65.51	37.29
4	*2412.00	99.5 AV			1.52 H	268	62.21	37.29
5	4824.00	51.9 PK	74.0	-22.1	1.62 H	133	10.27	41.63
6	4824.00	45.3 AV	54.0	-8.7	1.62 H	133	3.67	41.63
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	2390.00	49.3 PK	74.0	-24.7	1.00 V	172	12.05	37.25
2	2390.00	36.3 AV	54.0	-17.7	1.00 V	172	-0.95	37.25
3	*2412.00	98.1 PK			1.00 V	172	60.81	37.29
4	*2412.00	94.3 AV			1.00 V	172	57.01	37.29
5	4824.00	49.3 PK	74.0	-24.7	1.00 V	85	7.67	41.63
6	4824.00	39.2 AV	54.0	-14.8	1.00 V	85	-2.43	41.63

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.



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	102.9 PK			1.46 H	293	65.57	37.33
2	*2437.00	99.1 AV			1.46 H	293	61.77	37.33
3	4874.00	51.3 PK	74.0	-22.7	1.00 H	265	9.61	41.69
4	4874.00	39.0 AV	54.0	-15.0	1.00 H	265	-2.69	41.69
5	7311.00	54.3 PK	74.0	-19.7	1.22 H	154	8.51	45.79
6	7311.00	41.8 AV	54.0	-12.2	1.22 H	154	-3.99	45.79
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	97.0 PK			1.00 V	268	59.67	37.33
2	*2437.00	92.5 AV			1.00 V	268	55.17	37.33
3	4874.00	51.4 PK	74.0	-22.6	1.00 V	85	9.71	41.69
4	4874.00	39.5 AV	54.0	-14.5	1.00 V	85	-2.19	41.69
5	7311.00	55.3 PK	74.0	-18.7	1.00 V	125	9.51	45.79
6	7311.00	41.9 AV	54.0	-12.1	1.00 V	125	-3.89	45.79

REMARKS:

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



CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.8 PK			1.46 H	295	66.43	37.37
2	*2462.00	99.7 AV			1.46 H	295	62.33	37.37
3	2483.50	52.7 PK	74.0	-21.3	1.46 H	295	15.29	37.41
4	2483.50	40.4 AV	54.0	-13.6	1.46 H	295	2.99	37.41
5	4924.00	52.8 PK	74.0	-21.2	1.42 H	137	11.04	41.76
6	4924.00	47.3 AV	54.0	-6.7	1.42 H	137	5.54	41.76
7	7386.00	56.3 PK	74.0	-17.7	1.17 H	125	10.49	45.81
8	7386.00	44.5 AV	54.0	-9.5	1.17 H	125	-1.31	45.81
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	95.8 PK			1.91 V	262	58.43	37.37
2	*2462.00	92.4 AV			1.91 V	262	55.03	37.37
3	2483.50	47.7 PK	74.0	-26.3	1.91 V	262	10.29	37.41
4	2483.50	34.9 AV	54.0	-19.1	1.91 V	262	-2.51	37.41
5	4924.00	50.9 PK	74.0	-23.1	1.30 V	38	9.14	41.76
6	4924.00	39.4 AV	54.0	-14.6	1.30 V	38	-2.36	41.76
7	7386.00	55.3 PK	74.0	-18.7	1.00 V	138	9.49	45.81
8	7386.00	44.5 AV	54.0	-9.5	1.00 V	138	-1.31	45.81

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	64.3 PK	74.0	-9.7	1.50 H	271	27.05	37.25
2	2390.00	44.3 AV	54.0	-9.7	1.50 H	271	7.05	37.25
3	*2412.00	102.3 PK			1.50 H	271	65.01	37.29
4	*2412.00	92.6 AV			1.50 H	271	55.31	37.29
5	4824.00	51.5 PK	74.0	-22.5	1.53 H	154	9.87	41.63
6	4824.00	44.2 AV	54.0	-9.8	1.53 H	154	2.57	41.63
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	2390.00	58.7 PK	74.0	-15.3	1.16 V	273	21.45	37.25
2	2390.00	39.7 AV	54.0	-14.3	1.16 V	273	2.45	37.25
3	*2412.00	96.4 PK			1.16 V	273	59.11	37.29
4	*2412.00	86.6 AV			1.16 V	273	49.31	37.29
5	4824.00	50.1 PK	74.0	-23.9	1.00 V	95	8.47	41.63
6	4824.00	38.9 AV	54.0	-15.1	1.00 V	95	-2.73	41.63

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.



**BUREAU
VERITAS**

Test Report No.: RF130618N020

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	103.7 PK			1.44 H	293	66.37	37.33
2	*2437.00	92.5 AV			1.44 H	293	55.17	37.33
3	4874.00	51.3 PK	74.0	-22.7	1.35 H	180	9.61	41.69
4	4874.00	39.1 AV	54.0	-14.9	1.35 H	180	-2.59	41.69
5	7311.00	52.8 PK	74.0	-21.2	1.26 H	264	7.01	45.79
6	7311.00	41.1 AV	54.0	-12.9	1.26 H	264	-4.69	45.79
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	96.9 PK			1.00 V	170	59.57	37.33
2	*2437.00	87.3 AV			1.00 V	170	49.97	37.33
3	4874.00	50.9 PK	74.0	-23.1	1.00 V	156	9.21	41.69
4	4874.00	38.9 AV	54.0	-15.1	1.00 V	156	-2.79	41.69
5	7311.00	56.6 PK	74.0	-17.4	1.00 V	289	10.81	45.79
6	7311.00	41.9 AV	54.0	-12.1	1.00 V	289	-3.89	45.79

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	102.5 PK			1.30 H	196	65.13	37.37
2	*2462.00	98.3 AV			1.30 H	196	60.93	37.37
3	2483.50	53.5 PK	74.0	-20.5	1.30 H	196	16.09	37.41
4	2483.50	42.8 AV	54.0	-11.2	1.30 H	196	5.39	37.41
5	4924.00	51.6 PK	74.0	-22.4	1.35 H	146	9.84	41.76
6	4924.00	46.7 AV	54.0	-7.3	1.35 H	146	4.94	41.76
7	7386.00	52.6 PK	74.0	-21.4	1.22 H	144	6.79	45.81
8	7386.00	43.1 AV	54.0	-10.9	1.22 H	144	-2.71	45.81
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	94.3 PK			1.52 V	246	56.93	37.37
2	*2462.00	91.5 AV			1.52 V	246	54.13	37.37
3	2483.50	47.8 PK	74.0	-26.2	1.52 V	246	10.39	37.41
4	2483.50	35.2 AV	54.0	-18.8	1.52 V	246	-2.21	37.41
5	4924.00	47.8 PK	74.0	-26.2	1.28 V	295	6.04	41.76
6	4924.00	35.0 AV	54.0	-19.0	1.28 V	295	-6.76	41.76
7	7386.00	54.2 PK	74.0	-19.8	1.08 V	159	8.39	45.81
8	7386.00	43.9 AV	54.0	-10.1	1.08 V	159	-1.91	45.81

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	51.6 PK	74.0	-22.4	1.31 H	289	14.35	37.25
2	2390.00	39.3 AV	54.0	-14.7	1.31 H	289	2.05	37.25
3	*2412.00	100.9 PK			1.31 H	289	63.61	37.29
4	*2412.00	97.7 AV			1.31 H	289	60.41	37.29
5	4824.00	52.3 PK	74.0	-21.7	1.14 H	293	10.67	41.63
6	4824.00	45.1 AV	54.0	-8.9	1.14 H	293	3.47	41.63
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	2390.00	48.7 PK	74.0	-25.3	1.24 V	192	11.45	37.25
2	2390.00	37.2 AV	54.0	-16.8	1.24 V	192	-0.05	37.25
3	*2412.00	96.8 PK			1.24 V	192	59.51	37.29
4	*2412.00	92.4 AV			1.24 V	192	55.11	37.29
5	4824.00	48.5 PK	74.0	-25.5	1.52 V	176	6.87	41.63
6	4824.00	38.8 AV	54.0	-15.2	1.52 V	176	-2.83	41.63

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.



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	102.5 PK			1.56 H	136	65.17	37.33
2	*2437.00	98.8 AV			1.56 H	136	61.47	37.33
3	4874.00	51.2 PK	74.0	-22.8	1.05 H	151	9.51	41.69
4	4874.00	38.4 AV	54.0	-15.6	1.05 H	151	-3.29	41.69
5	7311.00	55.2 PK	74.0	-18.8	1.00 H	87	9.41	45.79
6	7311.00	41.5 AV	54.0	-12.5	1.00 H	87	-4.29	45.79
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	96.6 PK			1.00 V	298	59.27	37.33
2	*2437.00	91.8 AV			1.00 V	298	54.47	37.33
3	4874.00	50.5 PK	74.0	-23.5	1.00 V	114	8.81	41.69
4	4874.00	39.0 AV	54.0	-15.0	1.00 V	114	-2.69	41.69
5	7311.00	55.1 PK	74.0	-18.9	1.00 V	267	9.31	45.79
6	7311.00	41.7 AV	54.0	-12.3	1.00 V	267	-4.09	45.79

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	102.7 PK			1.39 H	240	65.33	37.37
2	*2462.00	98.6 AV			1.39 H	240	61.23	37.37
3	2483.50	51.8 PK	74.0	-22.2	1.39 H	240	14.39	37.41
4	2483.50	39.9 AV	54.0	-14.1	1.39 H	240	2.49	37.41
5	4924.00	52.4 PK	74.0	-21.6	1.14 H	285	10.64	41.76
6	4924.00	47.1 AV	54.0	-6.9	1.14 H	285	5.34	41.76
7	7386.00	53.6 PK	74.0	-20.4	1.26 H	253	7.79	45.81
8	7386.00	42.2 AV	54.0	-11.8	1.26 H	253	-3.61	45.81
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	95.2 PK			1.63 V	247	57.83	37.37
2	*2462.00	91.8 AV			1.63 V	247	54.43	37.37
3	2483.50	47.0 PK	74.0	-27.0	1.63 V	247	9.59	37.41
4	2483.50	34.1 AV	54.0	-19.9	1.63 V	247	-3.31	37.41
5	4924.00	51.6 PK	74.0	-22.4	1.26 V	285	9.84	41.76
6	4924.00	37.6 AV	54.0	-16.4	1.26 V	285	-4.16	41.76
7	7386.00	56.1 PK	74.0	-17.9	1.00 V	89	10.29	45.81
8	7386.00	45.7 AV	54.0	-8.3	1.00 V	89	-0.11	45.81

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	50.4 PK	74.0	-23.6	1.12 H	274	13.15	37.25
2	2390.00	38.7 AV	54.0	-15.3	1.12 H	274	1.45	37.25
3	*2422.00	101.5 PK			1.12 H	274	64.20	37.30
4	*2422.00	98.4 AV			1.12 H	274	61.10	37.30
5	4844.00	52.1 PK	74.0	-21.9	1.06 H	259	10.44	41.66
6	4844.00	44.2 AV	54.0	-9.8	1.06 H	259	2.54	41.66
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	48.3 PK	74.0	-25.7	1.16 V	184	11.05	37.25
2	2390.00	38.3 AV	54.0	-15.7	1.16 V	184	1.05	37.25
3	*2422.00	96.6 PK			1.51 V	278	59.30	37.30
4	*2422.00	86.8 AV			1.51 V	278	49.50	37.30
5	4844.00	48.5 PK	74.0	-25.5	1.00 V	271	6.84	41.66
6	4844.00	38.8 AV	54.0	-15.2	1.00 V	271	-2.86	41.66

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#2437.00	101.0 PK			1.25 H	295	63.67	37.33
2	#2437.00	97.1 AV			1.25 H	295	59.77	37.33
3	4874.00	50.1 PK	74.0	-23.9	1.23 H	230	8.41	41.69
4	4874.00	38.6 AV	54.0	-15.4	1.23 H	230	-3.09	41.69
5	7311.00	52.4 PK	74.0	-21.6	1.53 H	145	6.61	45.79
6	7311.00	40.6 AV	54.0	-13.4	1.53 H	145	-5.19	45.79
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	95.8 PK			1.13 V	254	58.47	37.33
2	#2437.00	86.4 AV			1.13 V	254	49.07	37.33
3	4874.00	50.5 PK	74.0	-23.5	1.05 V	284	8.81	41.69
4	4874.00	39.3 AV	54.0	-14.7	1.05 V	284	-2.39	41.69
5	7311.00	53.2 PK	74.0	-20.8	1.00 V	225	7.41	45.79
6	7311.00	40.6 AV	54.0	-13.4	1.00 V	225	-5.19	45.79

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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VERITAS

Test Report No.: RF130618N020

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	100.9 PK			1.35 H	121	63.54	37.36
2	*2452.00	96.6 AV			1.35 H	121	59.24	37.36
3	2483.50	52.1 PK	74.0	-21.9	1.35 H	121	14.69	37.41
4	2483.50	39.8 AV	54.0	-14.2	1.35 H	121	2.39	37.41
5	4904.00	50.2 PK	74.0	-23.8	1.22 H	290	8.47	41.73
6	4904.00	43.8 AV	54.0	-10.2	1.22 H	290	2.07	41.73
7	7356.00	54.5 PK	74.0	-19.5	1.54 H	132	8.70	45.80
8	7356.00	43.0 AV	54.0	-11.0	1.54 H	132	-2.80	45.80
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	95.2 PK			1.51 V	209	57.84	37.36
2	*2452.00	85.4 AV			1.51 V	209	48.04	37.36
3	2483.50	47.1 PK	74.0	-26.9	1.51 V	209	9.69	37.41
4	2483.50	34.0 AV	54.0	-20.0	1.51 V	209	-3.41	37.41
5	4904.00	49.6 PK	74.0	-24.4	1.11 V	88	7.87	41.73
6	4904.00	38.9 AV	54.0	-15.1	1.11 V	88	-2.83	41.73
7	7356.00	52.4 PK	74.0	-21.6	1.20 V	77	6.60	45.80
8	7356.00	42.1 AV	54.0	-11.9	1.20 V	77	-3.70	45.80

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.

4.2 6dB BANDWIDTH MEASUREMENT

4.2.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer (9KHz–40GHz)	Agilent	E4446A	MY46180622	Apr. 24,13	Apr. 23,14
Spectrum Analyzer (9KHz-25GHz)	Agilent	E7405A	MY45118807	May 14,13	May 13,14
Power Meter	Anritsu	ML2495A	1139001	Nov. 04,12	Nov. 03,13
Power Sensor	Anritsu	MA2411B	1126068	Nov. 04,12	Nov. 03,13
Digital Multimeter	FLUKE	15B	A1220010D G	Oct. 31,12	Oct. 30,13

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

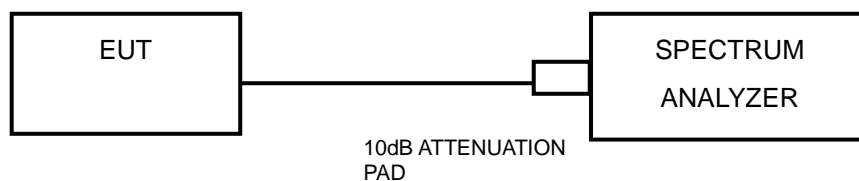
4.2.3 TEST PROCEDURE

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



4.2.6 EUT OPERATING CONDITIONS

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

**4.2.7 TEST RESULTS****802.11b**

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	12.11	0.5	PASS
6	2437	12.12	0.5	PASS
11	2462	12.13	0.5	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.24	0.5	PASS
6	2437	16.28	0.5	PASS
11	2462	16.21	0.5	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.37	0.5	PASS
6	2437	17.31	0.5	PASS
11	2462	17.40	0.5	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	35.51	0.5	PASS
6	2437	35.62	0.5	PASS
9	2452	35.52	0.5	PASS

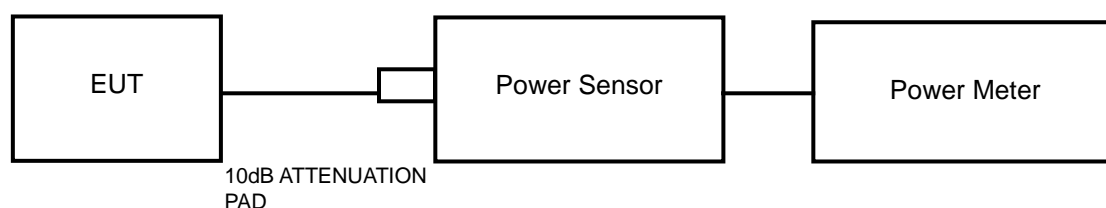


4.3 CONDUCTED OUTPUT POWER

4.3.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

4.3.2 TEST SETUP



4.3.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Meter	Anritsu	ML2495A	1139001	Nov. 04,12	Nov. 03,13
Power Sensor	Anritsu	MA2411B	1126068	Nov. 04,12	Nov. 03,13

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

2. The test was performed in Oven room

4.3.4 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.

4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

4.3.6 EUT OPERATING CONDITIONS

Same as item 4.3.6.



4.3.7 TEST RESULTS

4.3.7.1 MAXIMUM PEAK OUTPUT POWER

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	17.03	30	PASS
6	2437	16.52	30	PASS
11	2462	15.92	30	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	19.00	30	PASS
6	2437	18.20	30	PASS
11	2462	17.57	30	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
1	2412	18.06	30	PASS
6	2437	17.16	30	PASS
11	2462	17.44	30	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
3	2422	18.12	30	PASS
6	2437	18.20	30	PASS
9	2452	18.28	30	PASS

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

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

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	14.63	N/A
6	2437	14.10	N/A
11	2462	13.49	N/A

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	10.42	N/A
6	2437	10.12	N/A
11	2462	9.53	N/A

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	10.28	N/A
6	2437	9.82	N/A
11	2462	9.41	N/A

802.11n (40MHz)

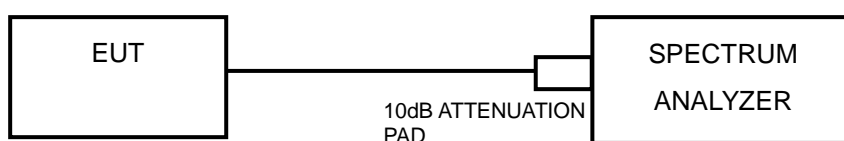
CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
3	2422	10.58	N/A
6	2437	10.20	N/A
9	2452	10.61	N/A

4.4 POWER SPECTRAL DENSITY MEASUREMENT

4.4.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

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

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.3.2 to get information of above instrument.

4.4.4 TEST PROCEDURE

1. Set the RBW = 3 kHz, VBW = 10 kHz, Detector = peak.
2. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
3. Use the peak marker function to determine the maximum amplitude level.

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITION

Same as item 4.3.6

4.4.7 TEST RESULTS

802.11b

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-12.21	8	PASS
6	2437	-13.02	8	PASS
11	2462	-13.85	8	PASS

802.11g

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-19.92	8	PASS
6	2437	-20.25	8	PASS
11	2462	-20.73	8	PASS

802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-19.33	8	PASS
6	2437	-20.15	8	PASS
11	2462	-20.73	8	PASS

802.11n (40MHz)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-23.44	8	PASS
6	2437	-23.92	8	PASS
9	2452	-24.59	8	PASS

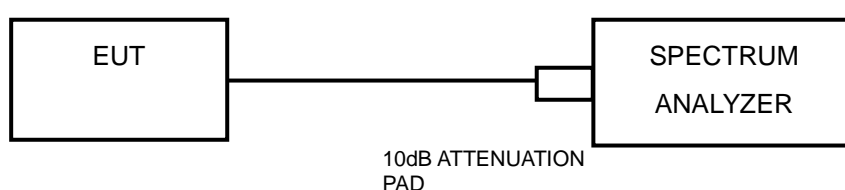


4.5 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.5.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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

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

Measurement Procedure - Reference Level

1. Set the RBW = 100 kHz .
2. Set the VBW $\geq 300\text{ kHz}$.
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.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as item 4.3.6



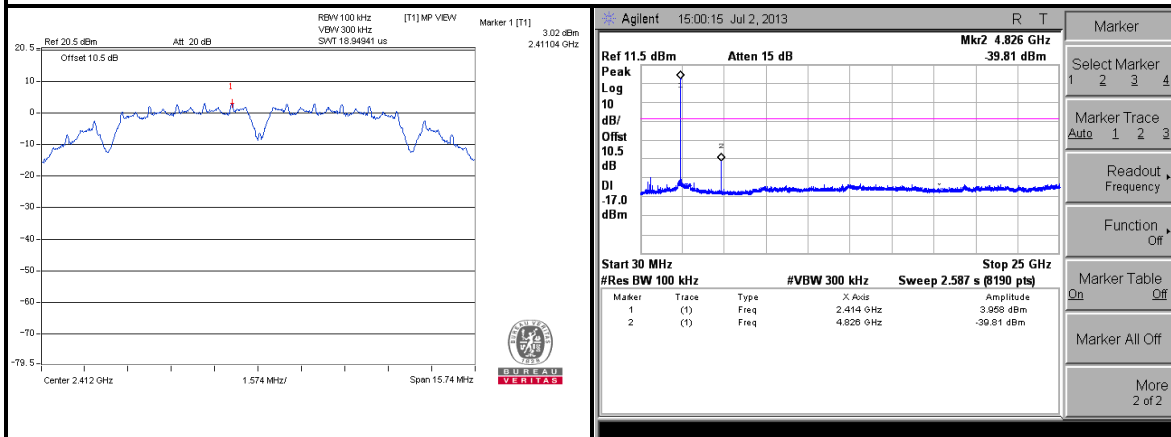
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VERITAS

Test Report No.: RF130618N020

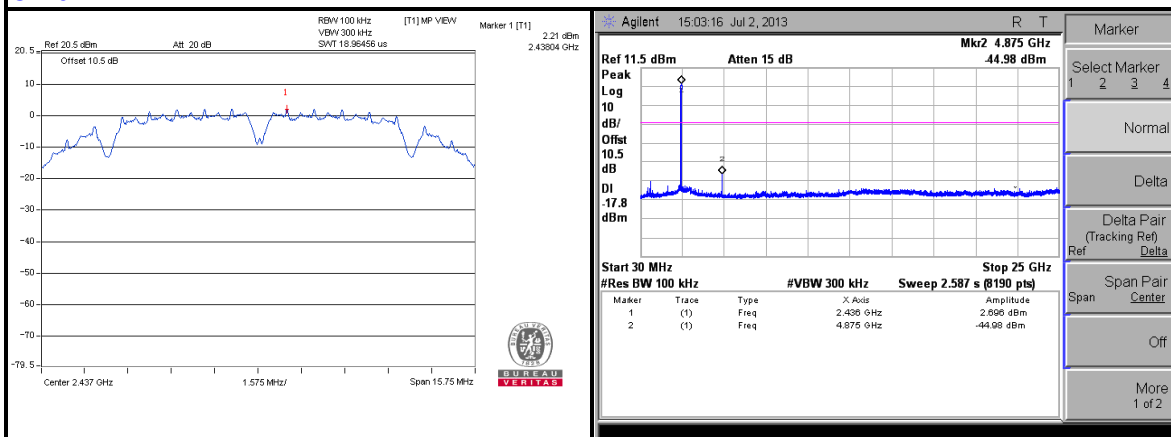
4.5.7 TEST RESULTS

802.11b

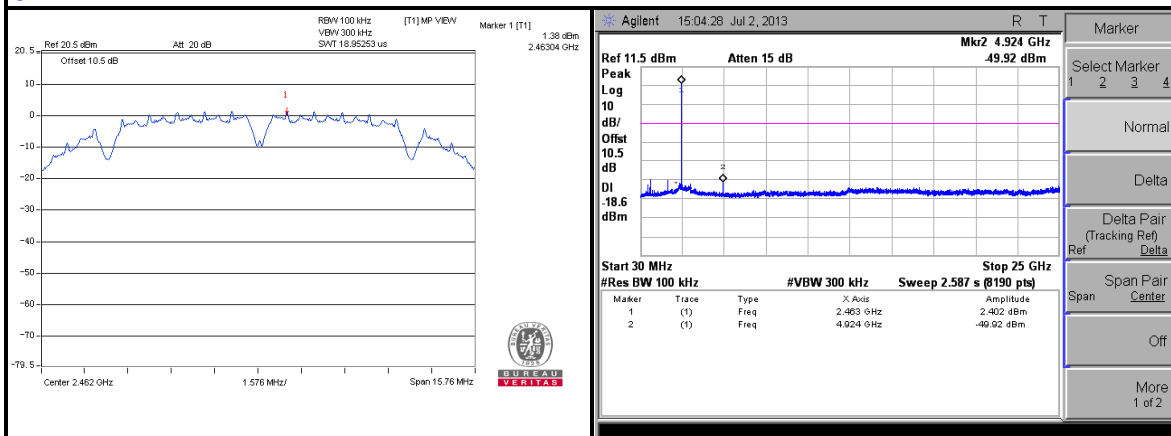
CH 1



CH 6



CH 11



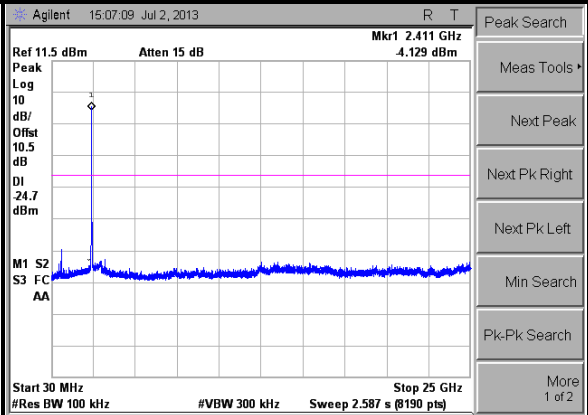
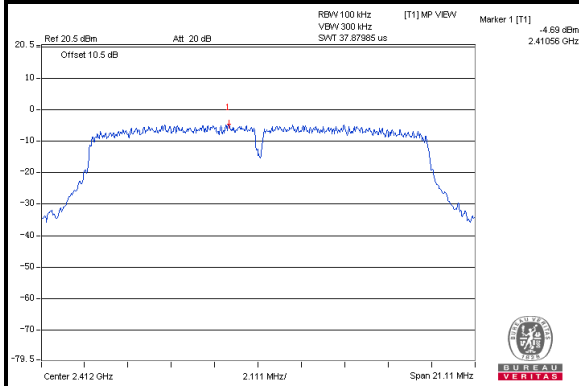


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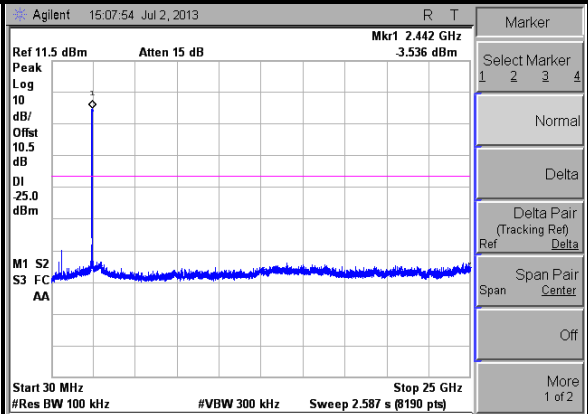
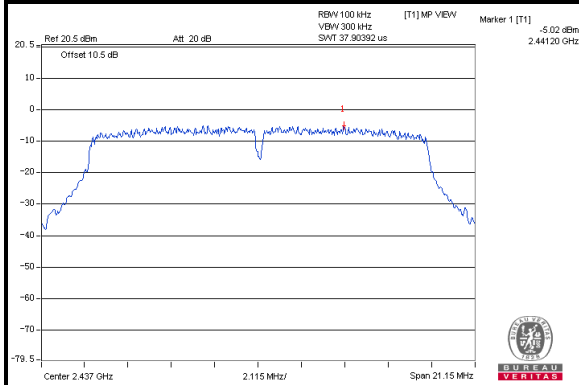
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802.11g

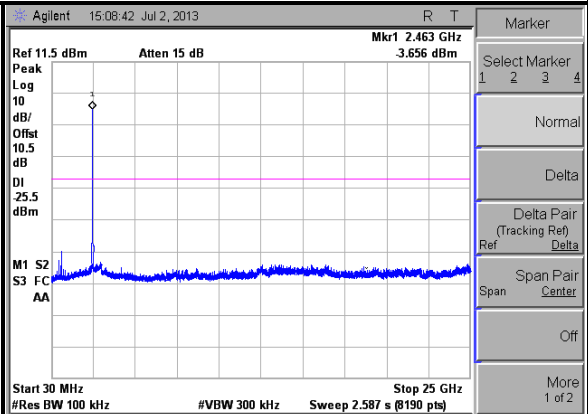
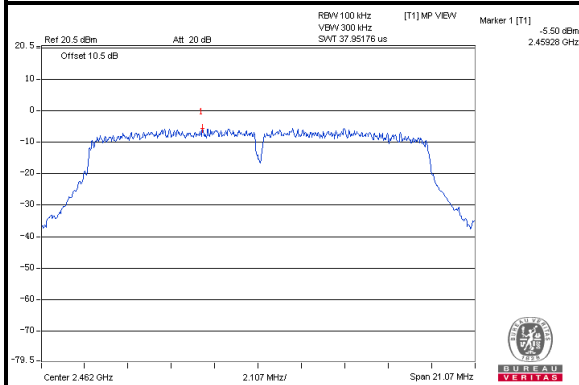
CH 1



CH 6



CH 11



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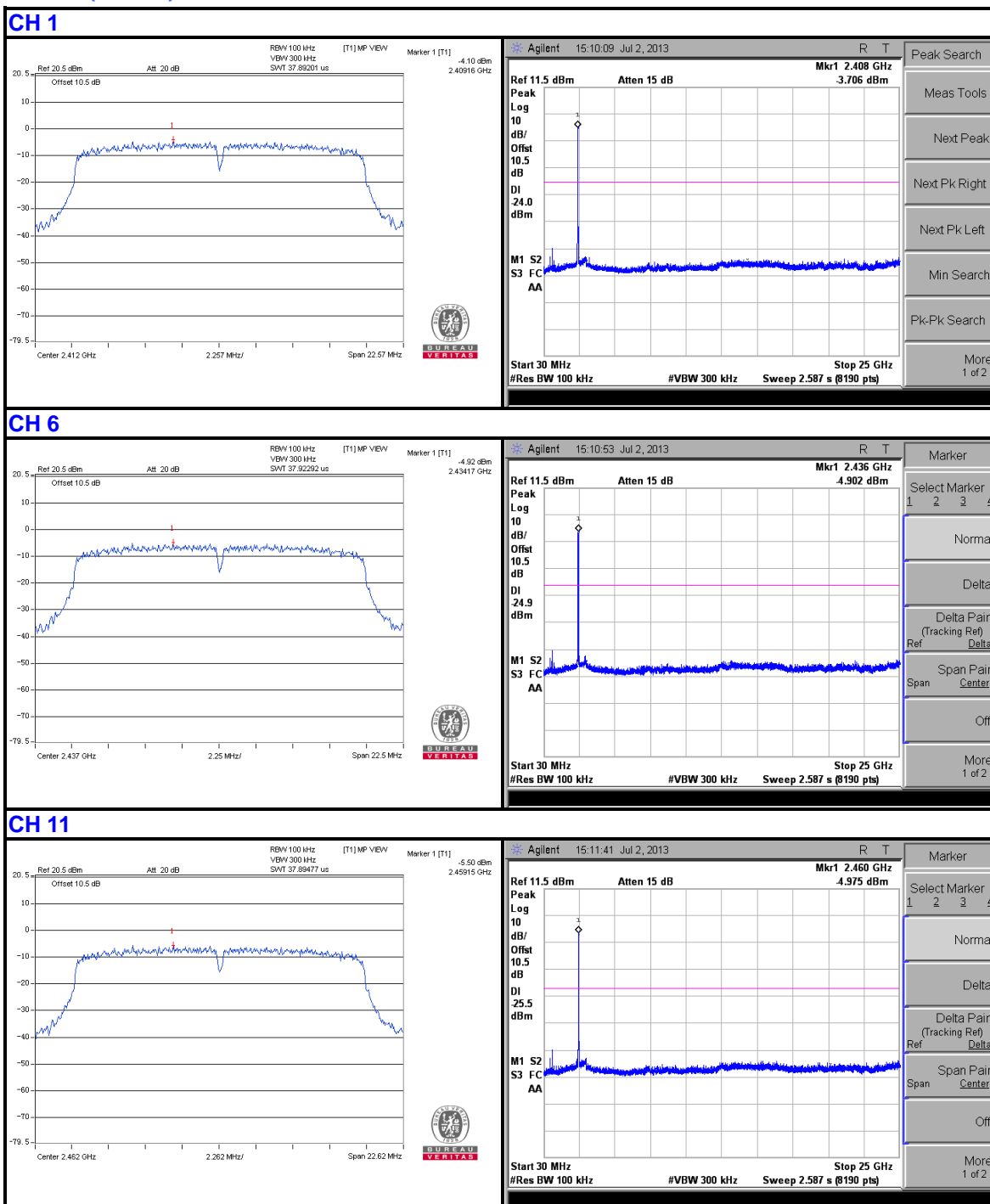
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802.11n (20MHz)



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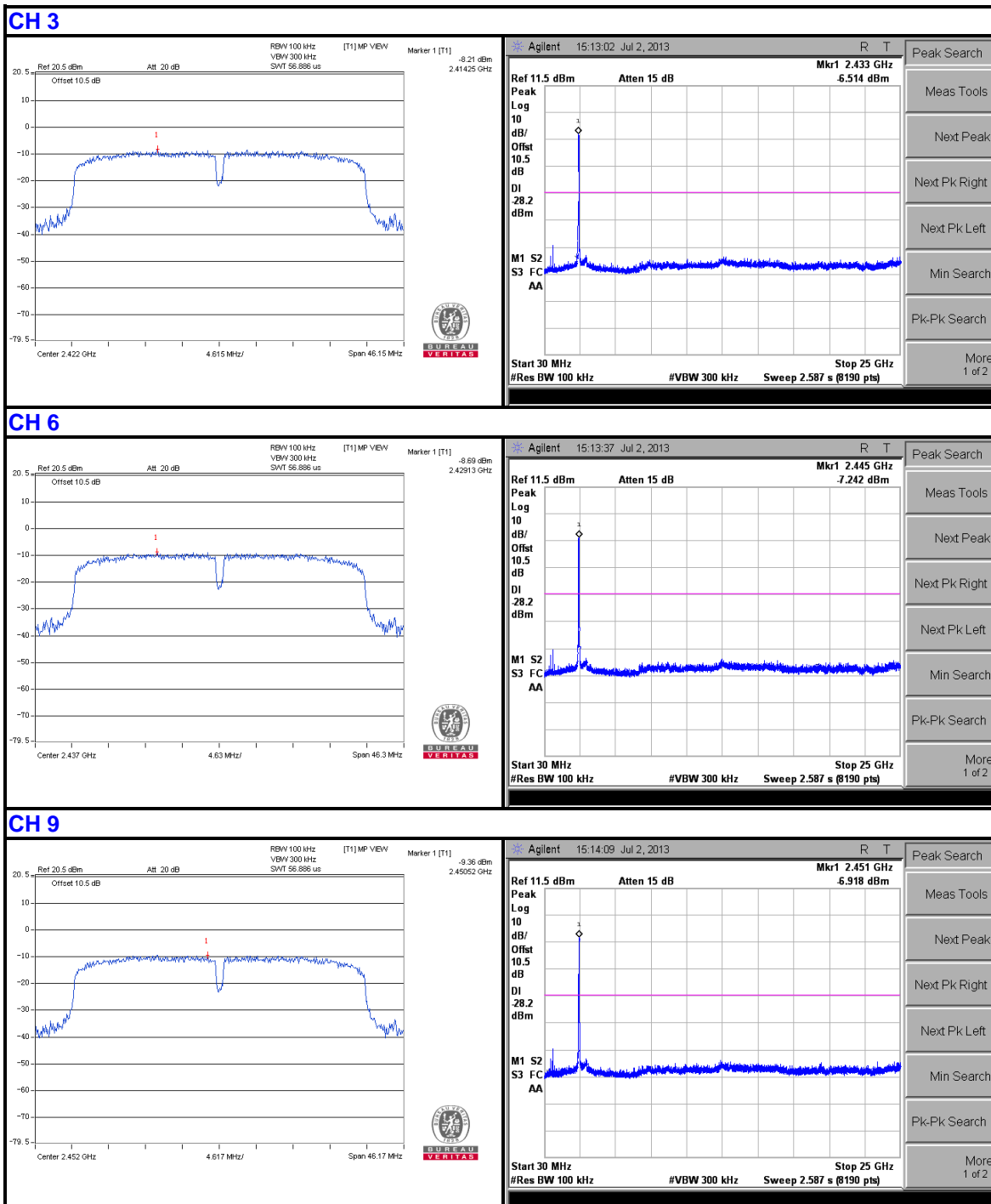
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802.11n (40MHz)



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5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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---