

TEST REPORT

Applicant	Axesstel Inc.
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Manufacturer or Supplier	Eastern Communications Company Limited
Address:	No.66, Building A, Eastcom City, Eastcom Road, Binjing Hi-tech Industry Development Zone, Hang Zhou 310053 China
Product	CDMA 1x EV-DO rev.B Router
Brand Name	AXESSTEL Inc.
Model	MV640VR
Additional Model & Model Difference	MV640, MV640R, MV640V, See section 3.1
Date of tests	May 16, 2013 ~ May 27, 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 Kent Liu Specialist / EMC Department	Approved by Sam Tung Manager / EMC Department
	 Date: May 27, 2013

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Test Report No.: RF130516N019

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130516N019	Original release	May 27, 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
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -9.13dB at 0.17744MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.2dB at 2390MHz
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 in WiFi.

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	2.94dB
Radiated emissions	30MHz ~ 1GMHz	3.64dB
	1GHz ~ 18GHz	2.2dB
	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	CDMA 1x EV-DO rev.B Router
MODEL NO.	MV640VR
FCC ID	PH7MV640
NOMINAL VOLTAGE	9VDC from adapter 7.4VDC from battery
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)
PEAK POWER	22.68 dBm (Maximum)
ANTENNA TYPE	Chain 0: PIFA antenna with 3.5 dBi gain Chain 1: PIFA antenna with 3.5 dBi gain (Chain 0 antenna as same as chain 1)
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	DIAG to USB Cable: Unshielded, Detachable,0.8m

NOTE:

1. WLAN&WWAN technologies are used for the EUT.
2. The EUT was powered by the following adapter:

ADAPTER	
BRAND:	TENWEI
MODEL:	TA850014
INPUT:	AC 100-240V, 50/60Hz, 0.45A
OUTPUT:	DC 9V, 2A
DC LINE:	Unshielded, Undetachable,1.8m

3. The additional models MV640, MV640R, MV640V are identical in test model MV640VR except product name and product function (V: VOIP, R : RUIM).

Model	Function
MV640	-
MV640R	RUIM
MV640V	VOIP
MV640VR	VOIP & RUIM



4. The EUT incorporates a MIMO function without beam forming. details refer to the following table:

MODULATION MODE	TX FUNCTION	RX FUNCTION
802.11b	1TX	2RX
802.11g	1TX	2RX
802.11n (HT20) MCS 0 ~ 7	1TX	2RX
802.11n (HT20) MCS 8 ~ 15	2TX	2RX
802.11n (HT40) MCS 0 ~ 7	1TX	2RX
802.11n (HT40) MCS 8 ~ 15	2TX	2RX

5. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.
6. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
7. Spurious emission of the simultaneous operation (WLAN&WWAN) has been evaluated and no non-compliance was found.



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, axis and antenna ports.

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	√	√	√	√	Adapter mode with WIFI function
B	-	-	NOTE	-	Battery mode with WIFI function

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

RE≥1G: Radiated Emission above 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE: 1. No need to concern of Conducted Emission due to the EUT is powered by battery.

2. The worse radiated emission (Below 1GHz) was found in **Mode A**.

The worse radiated emission (Above 1GHz) was found in **Mode A**.

The worse Power Line Conducted emission was found in **Mode A**.

The worse Antenna Port Conducted Measurement was found in **Mode A**.

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)
A	802.11g	1 to 11	1	OFDM	BPSK	6.0



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)
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

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
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	120Vac, 60Hz	Yuqiang Yin
RE≥1G	25deg. C, 60%RH	120Vac, 60Hz	Yuqiang Yin
PLC	25deg. C, 60%RH	120Vac, 60Hz	Bin Wei
APCM	25deg. C, 60%RH	120Vac, 60Hz	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 v02

662911 D01 Multiple Transmitter Output v01 r02

ANSI C63.10-2009

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(Certification). The test report has been issued separately.

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	Notebook	Dell	5P2PM2X	12400120329	N/A
2	Telephone	MSQ	HCD2968	N/A	N/A
3	Printer	HP	LaserJet 1300	CNSJF75989	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	RJ45 UTP Cable*1m
2	RJ11 UTP Cable*1m
3	USB Line: Unshielded, Dtachable 1.0m;

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	ESU 26	100005	May 14,13	May 13,14
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	May 14,13	May 13,14
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	May 14,13	May 13,14
Test software	ADT	ADT_Cond_V7.3.7	N/A	N/A	N/A

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 Shielding Room 553.

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.

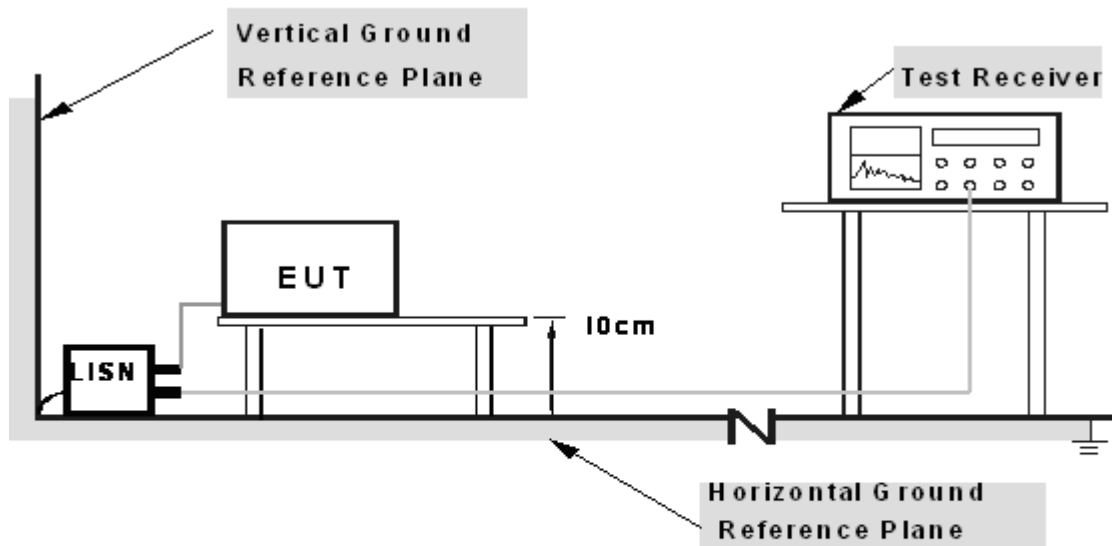
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

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

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



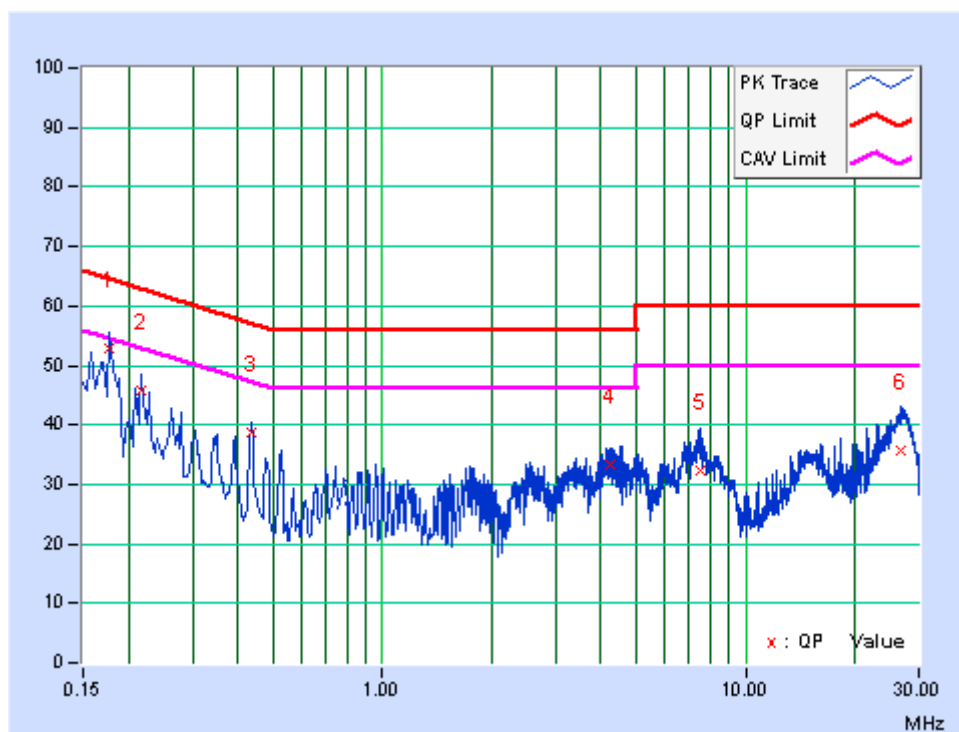
4.1.7 TEST RESULTS

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	0.17744	10.49	42.41	34.99	52.9	45.48	64.6	54.6	-11.71	-9.13
2	0.21647	10.4	35.24	22.7	45.64	33.1	62.95	52.95	-17.31	-19.85
3	0.43543	10.24	28.43	26.37	38.67	36.61	57.15	47.15	-18.48	-10.54
4	4.26332	9.86	23.31	13.81	33.17	23.67	56	46	-22.83	-22.33
5	7.5008	9.91	22.51	15.69	32.42	25.6	60	50	-27.58	-24.4
6	26.61288	10.79	25.03	19.89	35.82	30.68	60	50	-24.18	-19.32

- 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.





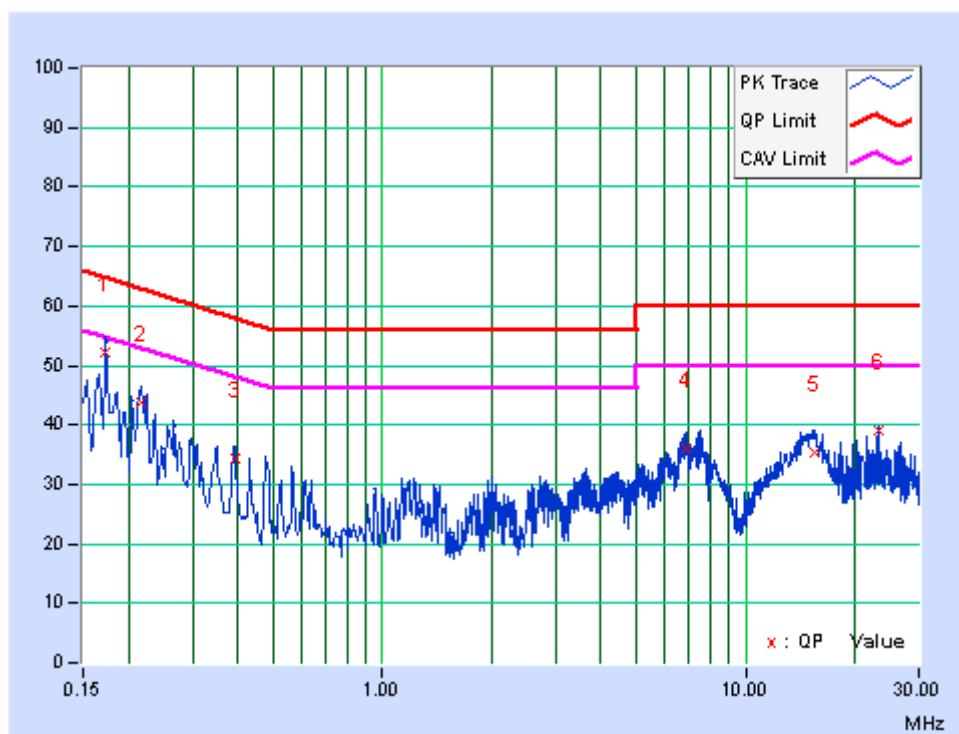
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Test Report No.: RF130516N019

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	0.17346	10.49	41.75	26.05	52.24	36.54	64.79	54.79	-12.55	-18.25
2	0.21647	10.31	33.5	21.41	43.81	31.72	62.95	52.95	-19.15	-21.24
3	0.39219	10.35	23.86	19.2	34.21	29.55	58.02	48.02	-23.81	-18.47
4	6.85565	9.86	26.12	19.08	35.98	28.94	60	50	-24.02	-21.06
5	15.43419	10.24	24.95	19.22	35.19	29.46	60	50	-24.81	-20.54
6	23.12907	10.65	28.33	25.55	38.98	36.2	60	50	-21.02	-13.8

- 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. 24,13	Apr. 23,14
EMI Test Receiver	Rohde&Schwarz	ESVD	847398/003	May 14,13	May 13,14
Bilog Antenna (25MHz-2GHz)	Teseq	CBL 6111D	27089	Jul. 16,12	Jul. 15,13
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
Horn Antenna (15GHz-40GHz)	SCHWARZBECK	BBHA 9170	BBHA91702 42	Jan. 04,12	Jan. 03,14
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,12	Nov. 03,13
Test Software	ADT	ADT_Radiated V7.6.15	N/A	N/A	N/A

- 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 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.

4.2.3 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:

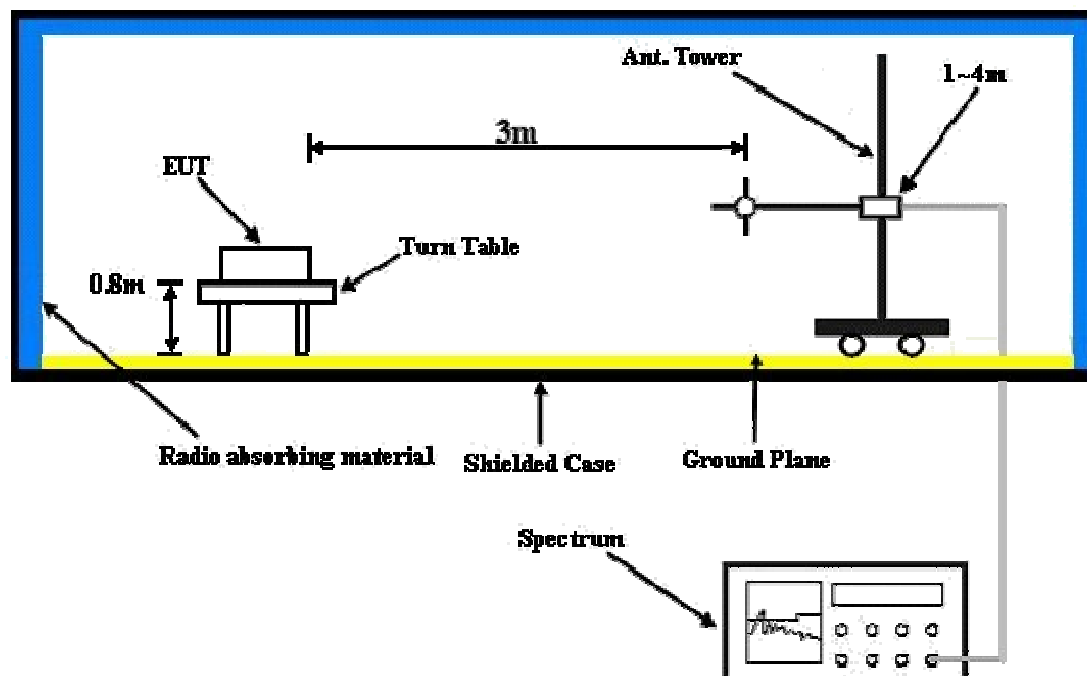
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution 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

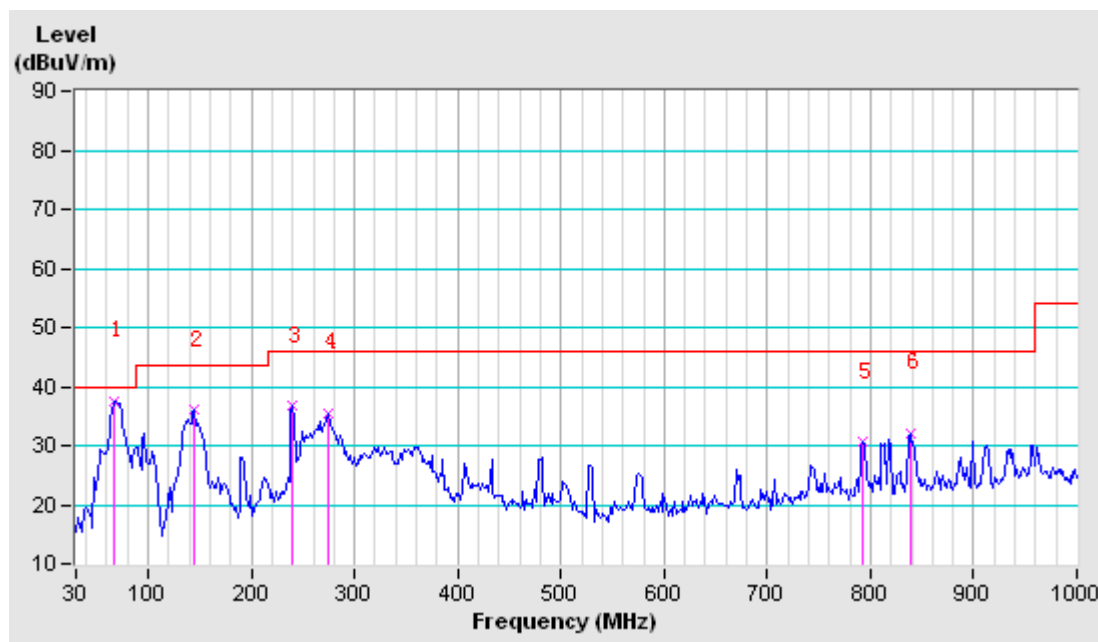
BELOW 1GHz WORST-CASE DATA: 802.11g- CH1

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	67.18	37.5 QP	40.0	-2.6	1.00 H	227	30.43	7.02
2	144.78	36.0 QP	43.5	-7.5	1.00 H	276	23.15	12.85
3	240.17	36.7 QP	46.0	-9.3	1.00 H	252	23.34	13.33
4	274.12	35.4 QP	46.0	-10.7	1.00 H	180	20.39	14.96
5	793.07	30.6 QP	46.0	-15.4	1.00 H	91	4.36	26.23
6	838.33	32.1 QP	46.0	-13.9	1.00 H	149	4.88	27.19

REMARKS:

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





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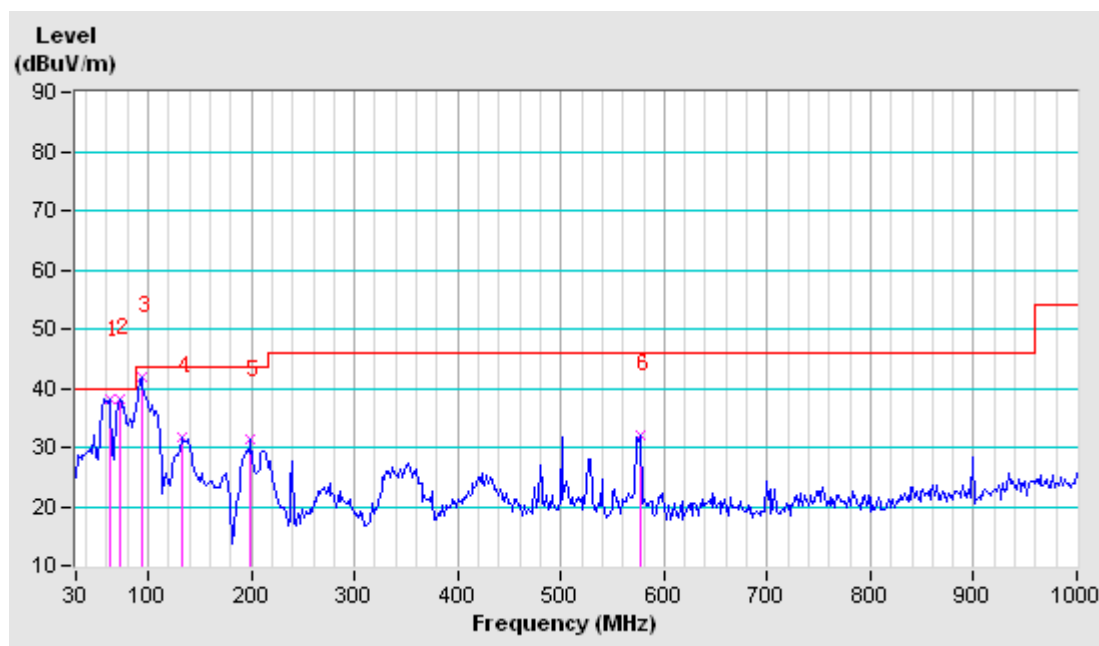
Test Report No.: RF130516N019

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	62.33	38.1 QP	40.0	-2.0	1.00 V	167	31.20	6.85
2	72.03	38.1 QP	40.0	-1.9	1.00 V	124	30.48	7.58
3	93.05	41.9 QP	43.5	-1.7	1.00 V	196	31.30	10.55
4	133.47	31.8 QP	43.5	-11.7	1.00 V	48	18.80	13.02
5	199.75	31.3 QP	43.5	-12.2	1.00 V	74	20.27	11.00
6	576.43	32.0 QP	46.0	-14.0	1.00 V	18	8.70	23.31

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**

EUT TEST CONDITION		MEASUREMENT DETAIL	
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	57.6 PK	74.0	-16.4	1.00 H	240	20.35	37.25
2	2390.00	44.8 AV	54.0	-9.2	1.00 H	240	7.55	37.25
3	4824.00	50.2 PK	74.0	-23.8	1.00 H	256	8.57	41.63
4	4824.00	38.4 AV	54.0	-15.6	1.00 H	256	-3.23	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	63.0 PK	74.0	-11.0	1.00 V	5	25.75	37.25
2	2390.00	39.3 AV	54.0	-14.7	1.00 V	5	2.05	37.25
3	4824.00	50.6 PK	74.0	-23.4	1.00 V	340	8.97	41.63
4	4824.00	39.1 AV	54.0	-14.9	1.00 V	340	-2.53	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.



EUT TEST CONDITION		MEASUREMENT DETAIL	
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	4874.00	51.6 PK	74.0	-22.4	1.00 H	268	9.91	41.69
2	4874.00	40.1 AV	54.0	-13.9	1.00 H	268	-1.59	41.69
3	7311.00	56.1 PK	74.0	-17.9	1.00 H	181	10.31	45.79
4	7311.00	42.8 AV	54.0	-11.3	1.00 H	181	-3.04	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	4874.00	51.9 PK	74.0	-22.1	1.00 V	214	10.21	41.69
2	4874.00	40.6 AV	54.0	-13.4	1.00 V	214	-1.09	41.69
3	7311.00	56.2 PK	74.0	-17.8	1.00 V	45	10.41	45.79
4	7311.00	46.9 AV	54.0	-7.1	1.00 V	45	1.11	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.



EUT TEST CONDITION		MEASUREMENT DETAIL	
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	2483.50	61.4 PK	74.0	-12.6	1.00 H	240	23.99	37.41
2	2483.50	47.2 AV	54.0	-6.8	1.00 H	240	9.79	37.41
3	4924.00	51.4 PK	74.0	-22.6	1.00 H	156	9.64	41.76
4	4924.00	40.1 AV	54.0	-13.9	1.00 H	156	-1.66	41.76
5	7386.00	56.4 PK	74.0	-17.6	1.00 H	342	10.59	45.81
6	7386.00	42.1 AV	54.0	-11.9	1.00 H	342	-3.71	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	2483.50	49.1 PK	74.0	-24.9	1.00 V	98	11.69	37.41
2	2483.50	36.8 AV	54.0	-17.2	1.00 V	98	-0.61	37.41
3	4924.00	52.6 PK	74.0	-21.4	1.00 V	358	10.84	41.76
4	4924.00	40.4 AV	54.0	-13.6	1.00 V	358	-1.36	41.76
5	7386.00	56.7 PK	74.0	-17.3	1.00 V	46	10.89	45.81
6	7386.00	48.8 AV	54.0	-5.2	1.00 V	46	2.99	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**

EUT TEST CONDITION		MEASUREMENT DETAIL	
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	70.2 PK	74.0	-3.8	1.15 H	289	32.95	37.25
2	2390.00	52.8 AV	54.0	-1.2	1.15 H	289	15.55	37.25
3	4824.00	53.3 PK	74.0	-20.7	1.00 H	334	11.67	41.63
4	4824.00	41.1 AV	54.0	-12.9	1.00 H	334	-0.53	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	65.1 PK	74.0	-8.9	1.00 V	6	27.85	37.25
2	2390.00	45.2 AV	54.0	-8.8	1.00 V	6	7.95	37.25
3	4824.00	52.6 PK	74.0	-21.4	1.00 V	42	10.97	41.63
4	4824.00	42.0 AV	54.0	-12.0	1.00 V	42	0.37	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.



EUT TEST CONDITION		MEASUREMENT DETAIL	
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	4874.00	52.5 PK	74.0	-21.5	1.10 H	283	10.81	41.69
2	4874.00	41.3 AV	54.0	-12.7	1.10 H	283	-0.39	41.69
3	7311.00	54.9 PK	74.0	-19.1	1.06 H	164	9.11	45.79
4	7311.00	44.2 AV	54.0	-9.8	1.06 H	164	-1.59	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	4874.00	51.6 PK	74.0	-22.4	1.00 V	143	9.91	41.69
2	4874.00	40.7 AV	54.0	-13.3	1.00 V	143	-0.99	41.69
3	7311.00	56.1 PK	74.0	-17.9	1.00 V	242	10.31	45.79
4	7311.00	47.2 AV	54.0	-6.8	1.00 V	242	1.41	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.



EUT TEST CONDITION		MEASUREMENT DETAIL	
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	2483.50	68.5 PK	74.0	-5.5	1.00 H	238	31.09	37.41
2	2483.50	51.9 AV	54.0	-2.1	1.00 H	238	14.49	37.41
3	4924.00	51.5 PK	74.0	-22.5	1.03 H	265	9.74	41.76
4	4924.00	41.1 AV	54.0	-12.9	1.03 H	265	-0.66	41.76
5	7386.00	54.6 PK	74.0	-19.4	1.00 H	170	8.79	45.81
6	7386.00	44.1 AV	54.0	-9.9	1.00 H	170	-1.71	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	2483.50	60.1 PK	74.0	-13.9	1.00 V	329	22.69	37.41
2	2483.50	42.9 AV	54.0	-11.1	1.00 V	329	5.49	37.41
3	4924.00	51.8 PK	74.0	-22.2	1.00 V	146	10.04	41.76
4	4924.00	39.3 AV	54.0	-14.7	1.00 V	146	-2.46	41.76
5	7386.00	54.5 PK	74.0	-19.5	1.00 V	326	8.69	45.81
6	7386.00	42.2 AV	54.0	-11.8	1.00 V	326	-3.61	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	67.2 PK	74.0	-6.8	1.22 H	288	29.95	37.25
2	2390.00	48.3 AV	54.0	-5.7	1.22 H	288	11.05	37.25
3	4824.00	52.4 PK	74.0	-21.6	1.12 H	272	10.74	41.66
4	4824.00	41.7 AV	54.0	-12.3	1.12 H	272	0.04	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	50.9 PK	74.0	-23.1	1.07 V	320	13.65	37.25
2	2390.00	39.5 AV	54.0	-14.5	1.07 V	320	2.25	37.25
3	4824.00	51.7 PK	74.0	-22.3	1.16 V	160	10.04	41.66
4	4824.00	40.7 AV	54.0	-13.3	1.16 V	160	-0.96	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	4874.00	52.0 PK	74.0	-22.0	1.00 H	189	10.31	41.69
2	4874.00	41.2 AV	54.0	-12.8	1.00 H	189	-0.49	41.69
3	7311.00	56.7 PK	74.0	-17.3	1.20 H	324	10.91	45.79
4	7311.00	42.9 AV	54.0	-11.1	1.20 H	324	-2.89	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	4874.00	52.5 PK	74.0	-21.5	1.00 V	322	10.81	41.69
2	4874.00	42.3 AV	54.0	-11.7	1.00 V	322	0.61	41.69
3	7311.00	56.5 PK	74.0	-17.5	1.15 V	173	10.71	45.79
4	7311.00	41.1 AV	54.0	-12.9	1.15 V	173	-4.69	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	2483.50	62.8 PK	74.0	-11.2	1.00 H	238	25.39	37.41
2	2483.50	48.7 AV	54.0	-5.3	1.00 H	238	11.29	37.41
3	4924.00	52.1 PK	74.0	-21.9	1.10 H	165	10.37	41.73
4	4924.00	41.3 AV	54.0	-12.7	1.10 H	165	-0.43	41.73
5	7386.00	56.5 PK	74.0	-17.5	1.00 H	324	10.70	45.80
6	7386.00	42.4 AV	54.0	-11.6	1.00 H	324	-3.40	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	2483.50	53.2 PK	74.0	-20.8	1.00 V	53	15.79	37.41
2	2483.50	38.3 AV	54.0	-15.7	1.00 V	53	0.89	37.41
3	4924.00	51.6 PK	74.0	-22.4	1.05 V	258	9.87	41.73
4	4924.00	39.7 AV	54.0	-14.3	1.05 V	258	-2.03	41.73
5	7386.00	55.7 PK	74.0	-18.3	1.13 V	56	9.90	45.80
6	7386.00	42.2 AV	54.0	-11.8	1.13 V	56	-3.60	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.



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	65.4 PK	74.0	-8.6	1.24 H	284	28.15	37.25
2	2390.00	47.2 AV	54.0	-6.8	1.24 H	284	9.95	37.25
3	4844.00	51.6 PK	74.0	-22.4	1.00 H	163	9.94	41.66
4	4844.00	40.5 AV	54.0	-13.5	1.00 H	163	-1.16	41.66
5	7266.00	56.4 PK	74.0	-17.6	1.03 H	279	10.62	45.78
6	7266.00	43.7 AV	54.0	-10.3	1.03 H	279	-2.08	45.78
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	52.0 PK	74.0	-22.0	1.05 V	163	14.75	37.25
2	2390.00	41.3 AV	54.0	-12.7	1.05 V	163	4.05	37.25
3	4844.00	52.3 PK	74.0	-21.7	1.00 V	258	10.64	41.66
4	4844.00	40.8 AV	54.0	-13.2	1.00 V	258	-0.86	41.66
5	7266.00	56.1 PK	74.0	-17.9	1.20 V	136	10.32	45.78
6	7266.00	43.2 AV	54.0	-10.8	1.20 V	136	-2.58	45.78

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	4874.00	51.6 PK	74.0	-22.4	1.00 H	156	9.91	41.69
2	4874.00	40.4 AV	54.0	-13.6	1.00 H	156	-1.29	41.69
3	7311.00	56.4 PK	74.0	-17.6	1.00 H	142	10.61	45.79
4	7311.00	42.5 AV	54.0	-11.5	1.00 H	142	-3.29	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	4874.00	51.7 PK	74.0	-22.3	1.00 V	289	10.01	41.69
2	4874.00	42.0 AV	54.0	-12.0	1.00 V	289	0.31	41.69
3	7311.00	55.9 PK	74.0	-18.1	1.00 V	301	10.11	45.79
4	7311.00	42.6 AV	54.0	-11.4	1.00 V	301	-3.19	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.



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	2483.50	62.3 PK	74.0	-11.7	1.23 H	244	24.89	37.41
2	2483.50	48.5 AV	54.0	-5.5	1.23 H	244	11.09	37.41
3	4904.00	52.3 PK	74.0	-21.7	1.00 H	324	10.57	41.73
4	4904.00	41.8 AV	54.0	-12.2	1.00 H	324	0.07	41.73
5	7356.00	54.8 PK	74.0	-19.2	1.15 H	244	9.00	45.80
6	7356.00	41.5 AV	54.0	-12.5	1.15 H	244	-4.30	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	2483.50	54.2 PK	74.0	-19.8	1.09 V	44	16.79	37.41
2	2483.50	39.1 AV	54.0	-14.9	1.09 V	44	1.69	37.41
3	4904.00	50.9 PK	74.0	-23.1	1.00 V	286	9.17	41.73
4	4904.00	39.3 AV	54.0	-14.7	1.00 V	286	-2.43	41.73
5	7356.00	56.4 PK	74.0	-17.6	1.12 V	52	10.60	45.80
6	7356.00	42.6 AV	54.0	-11.4	1.12 V	52	-3.20	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.



4.3 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 (9KHz–40GHz)	Agilent	E4446A	MY46180622	May 02,12	May 01,13
Digital Multimeter	FLUKE	15B	A1220010DG	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 and NIM/CHINA

2. The test was performed in Oven room

4.3.3 TEST PROCEDURE

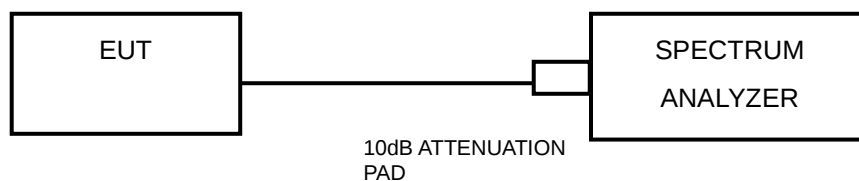
1. Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation.



4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

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

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

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	8.22	0.5	PASS
6	2437	8.23	0.5	PASS
11	2462	8.23	0.5	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.89	0.5	PASS
6	2437	15.12	0.5	PASS
11	2462	15.49	0.5	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.12	17.57	0.5	PASS
6	2437	17.22	17.56	0.5	PASS
11	2462	17.20	17.53	0.5	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	31.90	36.08	0.5	PASS
6	2437	35.68	36.55	0.5	PASS
9	2452	35.67	35.93	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)

Per KDB 662911 D01 Multiple Transmitter Output v01r02 Method of conducted output power measurement on IEEE 802.11 devices,

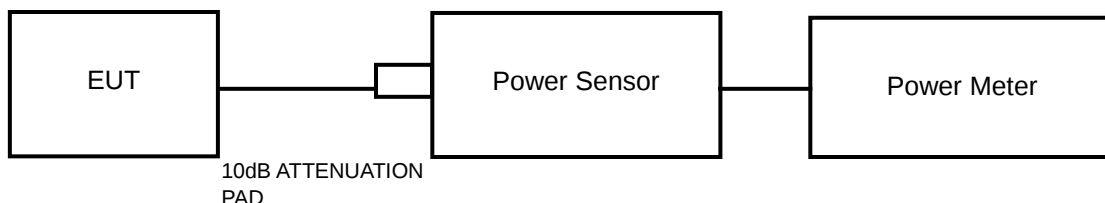
Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = $5 \log(NANT/NSS)$ dB or 3 dB, whichever is less for 20-MHz channel widths with $NANT \geq 5$.

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

4.4.2 TEST SETUP



4.4.3 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



4.4.4 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

Same as item 4.3.6.



4.4.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	14.70	18.60	30	PASS
6	2437	15.30	18.90	30	PASS
11	2462	14.50	18.50	30	PASS

Note: Average power was used power meter sensor, record the power level for reference.

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	13.40	21.80	30	PASS
6	2437	13.30	21.60	30	PASS
11	2462	13.20	21.40	30	PASS

Note: Average power was used power meter sensor, record the power level for reference.

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)		PEAK POWER (dBm)		Tetol Peak Power (dBm)	POWER LIMIT (dBm)	PASS/FAIL
		CH0	CH1	CH0	CH1			
1	2412	11.80	10.60	20.40	18.80	22.68	30	PASS
6	2437	11.70	10.80	20.20	18.90	22.61	30	PASS
11	2462	11.70	11.10	19.80	19.40	22.61	30	PASS

Note: Average power was used power meter sensor, record the power level for reference.

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)		PEAK POWER (dBm)		Tetol Peak Power (dBm)	POWER LIMIT (dBm)	PASS/FAIL
		CH0	CH1	CH0	CH1			
3	2422	10.30	9.20	18.50	17.60	21.08	30	PASS
6	2437	10.60	9.90	19.00	18.20	21.63	30	PASS
9	2452	10.50	9.60	18.40	18.00	21.21	30	PASS

Note: Average power was used power meter sensor, record the power level for reference.

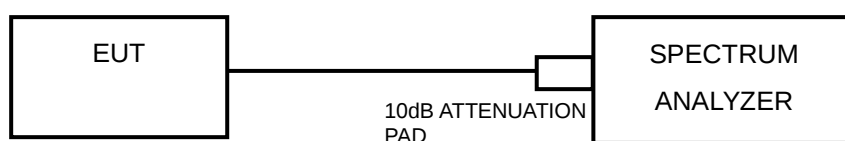


4.5 POWER SPECTRAL DENSITY MEASUREMENT

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 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.

4.5.5 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/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-8.60	8	PASS
6	2437	-8.80	8	PASS
11	2462	-8.95	8	PASS

802.11g

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-12.12	8	PASS
6	2437	-12.81	8	PASS
11	2462	-12.61	8	PASS

802.11n (20MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-14.04	3.01	-11.03	8	PASS
	6	2437	-14.32	3.01	-11.31	8	PASS
	11	2462	-14.26	3.01	-11.25	8	PASS
1	1	2412	-15.71	3.01	-12.70	8	PASS
	6	2437	-15.45	3.01	-12.44	8	PASS
	11	2462	-15.12	3.01	-12.11	8	PASS

802.11n (40MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-18.17	3.01	-15.16	8	PASS
	6	2437	-18.41	3.01	-15.40	8	PASS
	9	2452	-18.11	3.01	-15.10	8	PASS
1	3	2422	-20.22	3.01	-17.21	8	PASS
	6	2437	-19.37	3.01	-16.36	8	PASS
	9	2452	-19.54	3.01	-16.53	8	PASS

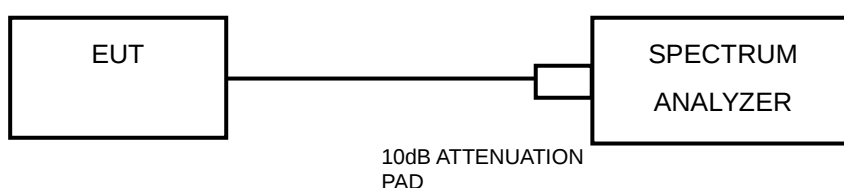


4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED 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 $\geq$ 100 kHz.
2. Set VBW $\geq$ 3 x RBW
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

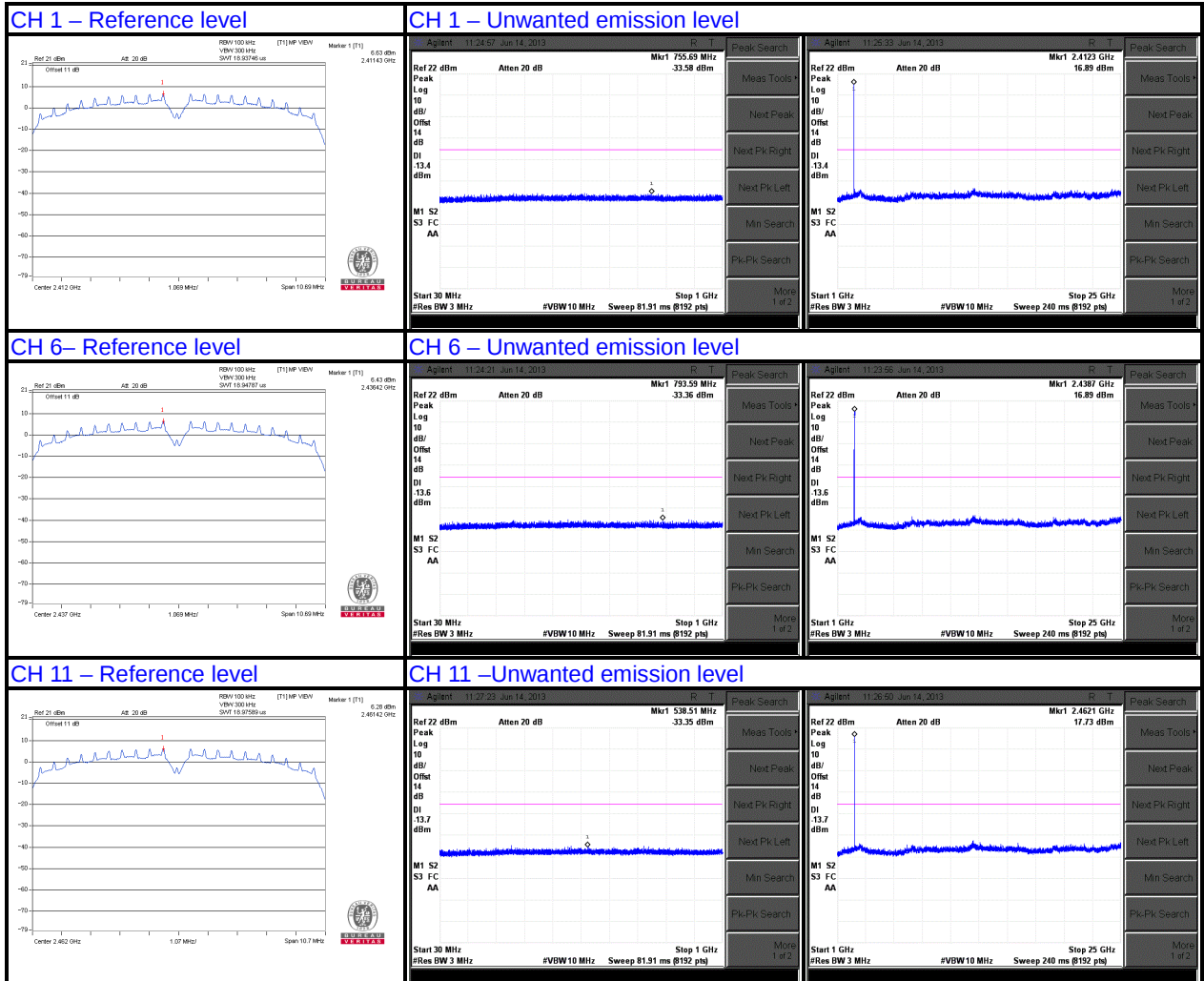


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Test Report No.: RF130516N019

4.6.7 TEST RESULTS

802.11b

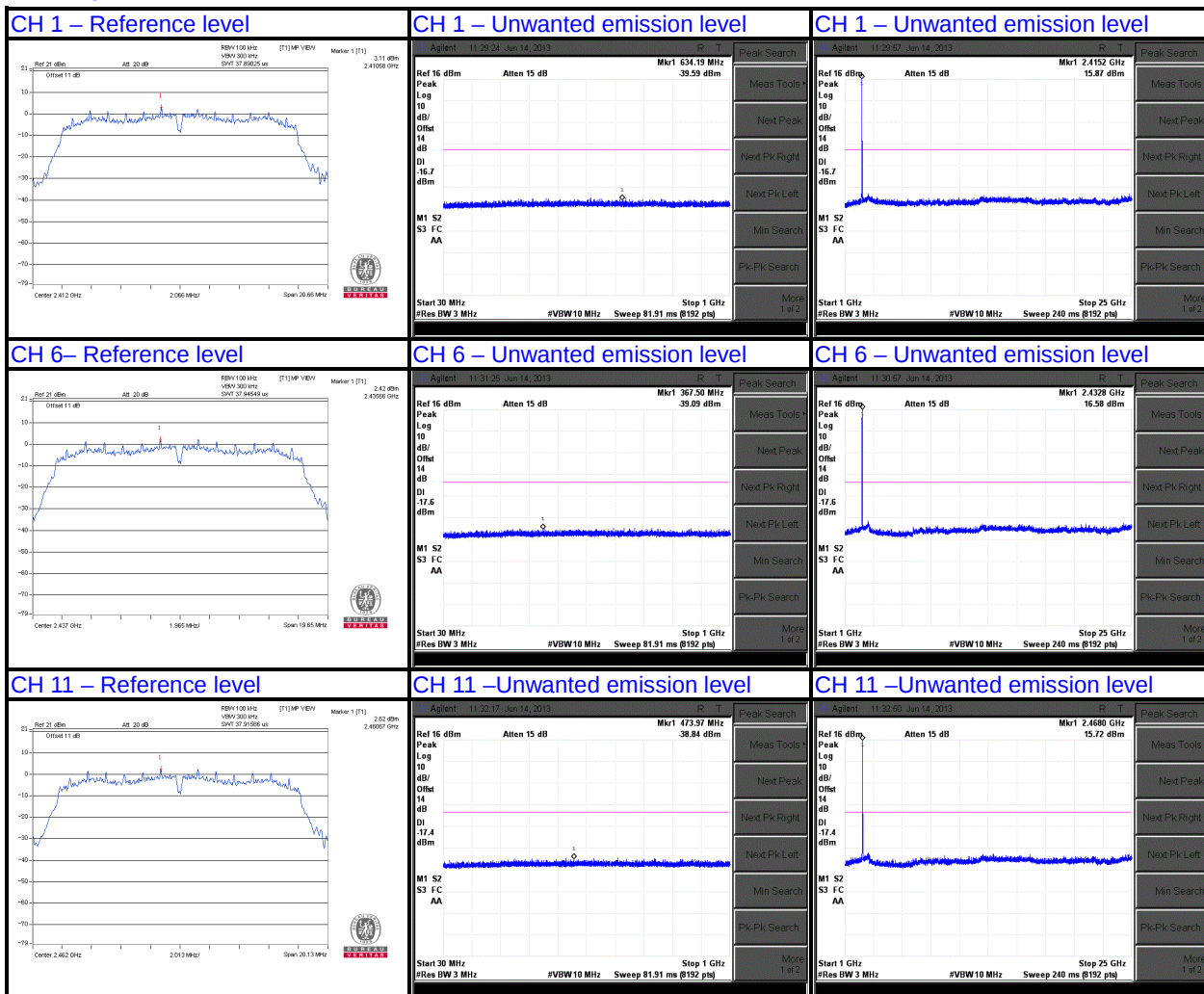




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VERITAS

Test Report No.: RF130516N019

802.11g

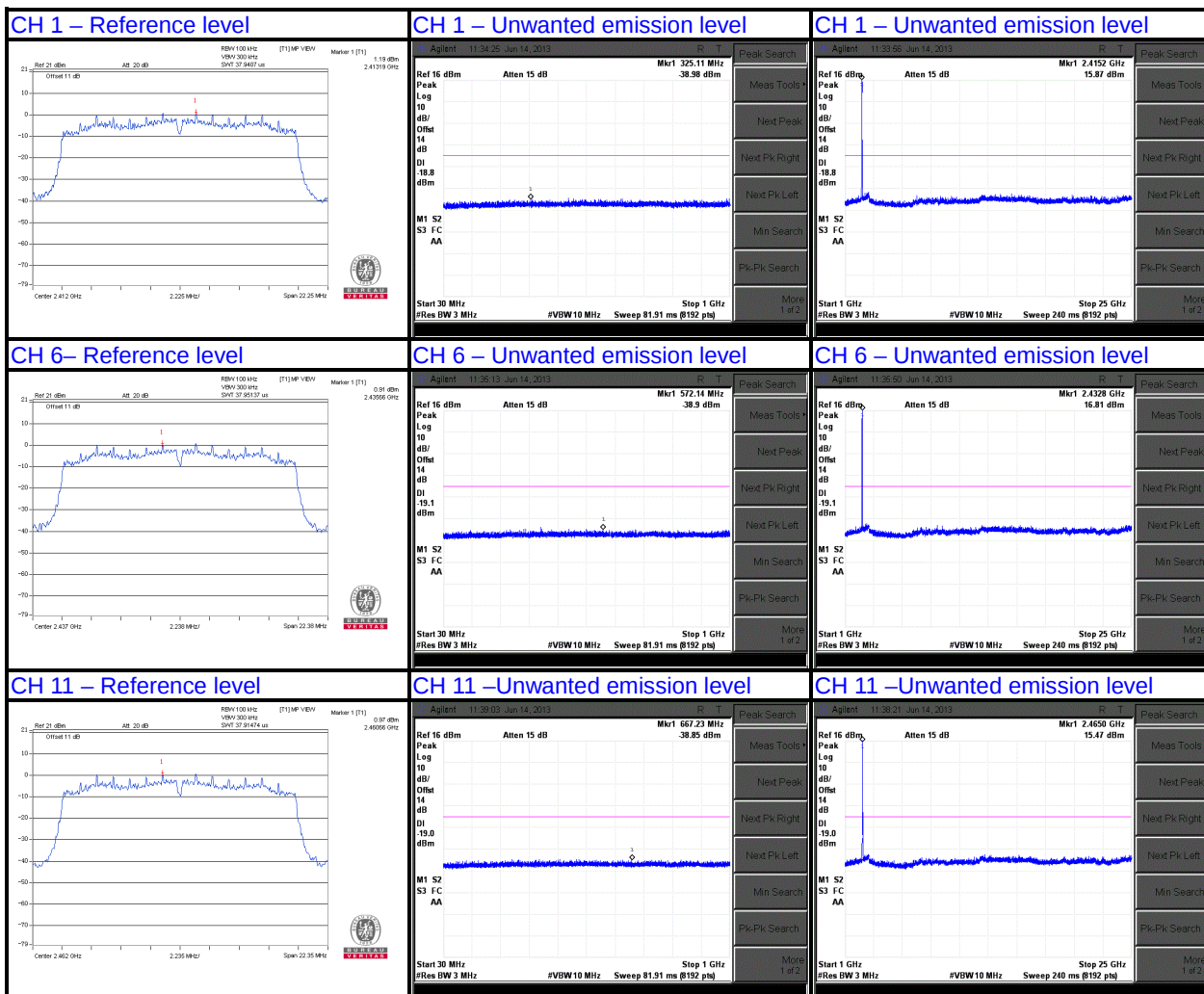




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VERITAS

Test Report No.: RF130516N019

802.11n HT20 Chain 0

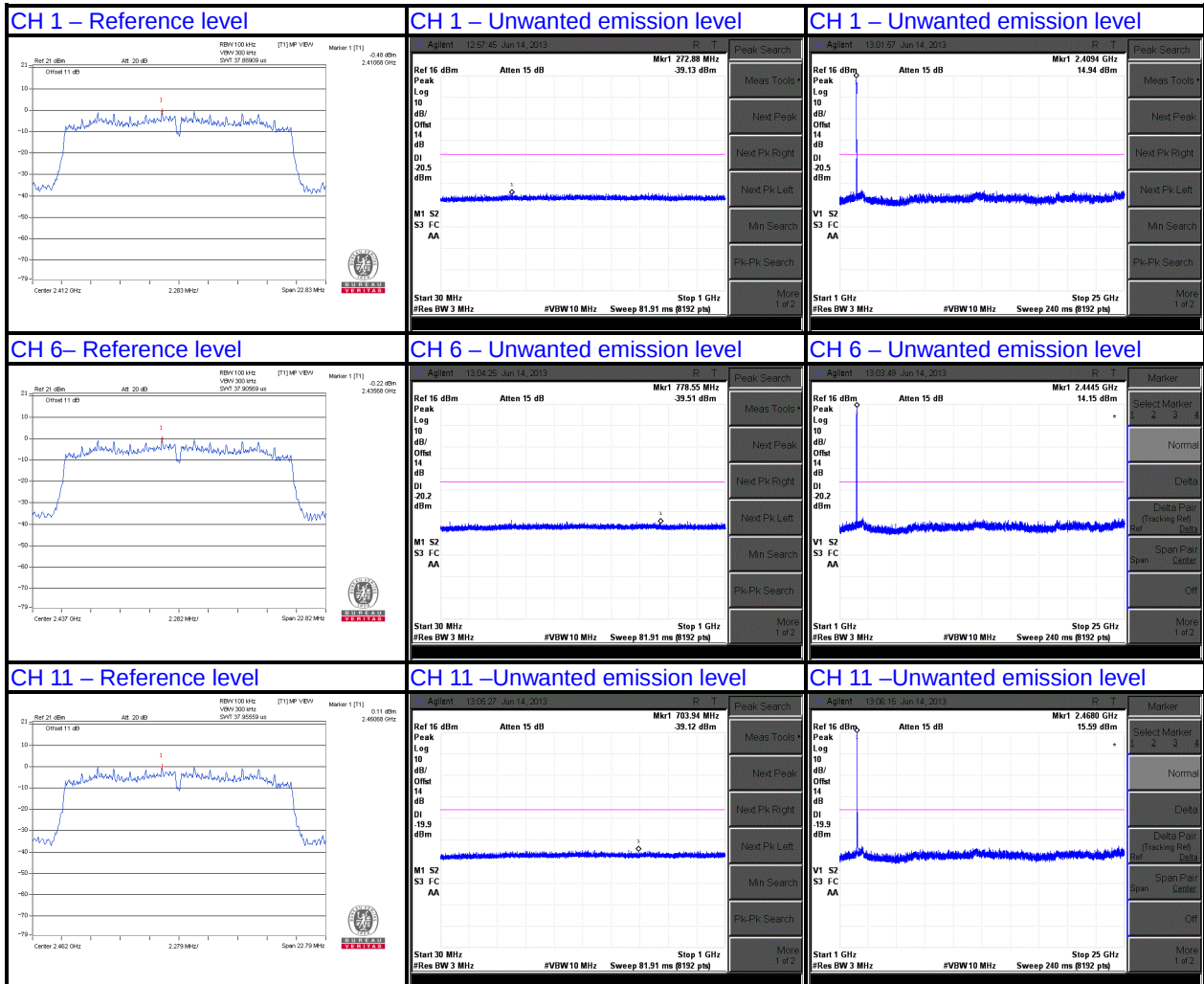




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VERITAS

Test Report No.: RF130516N019

802.11n HT20 Chain 1

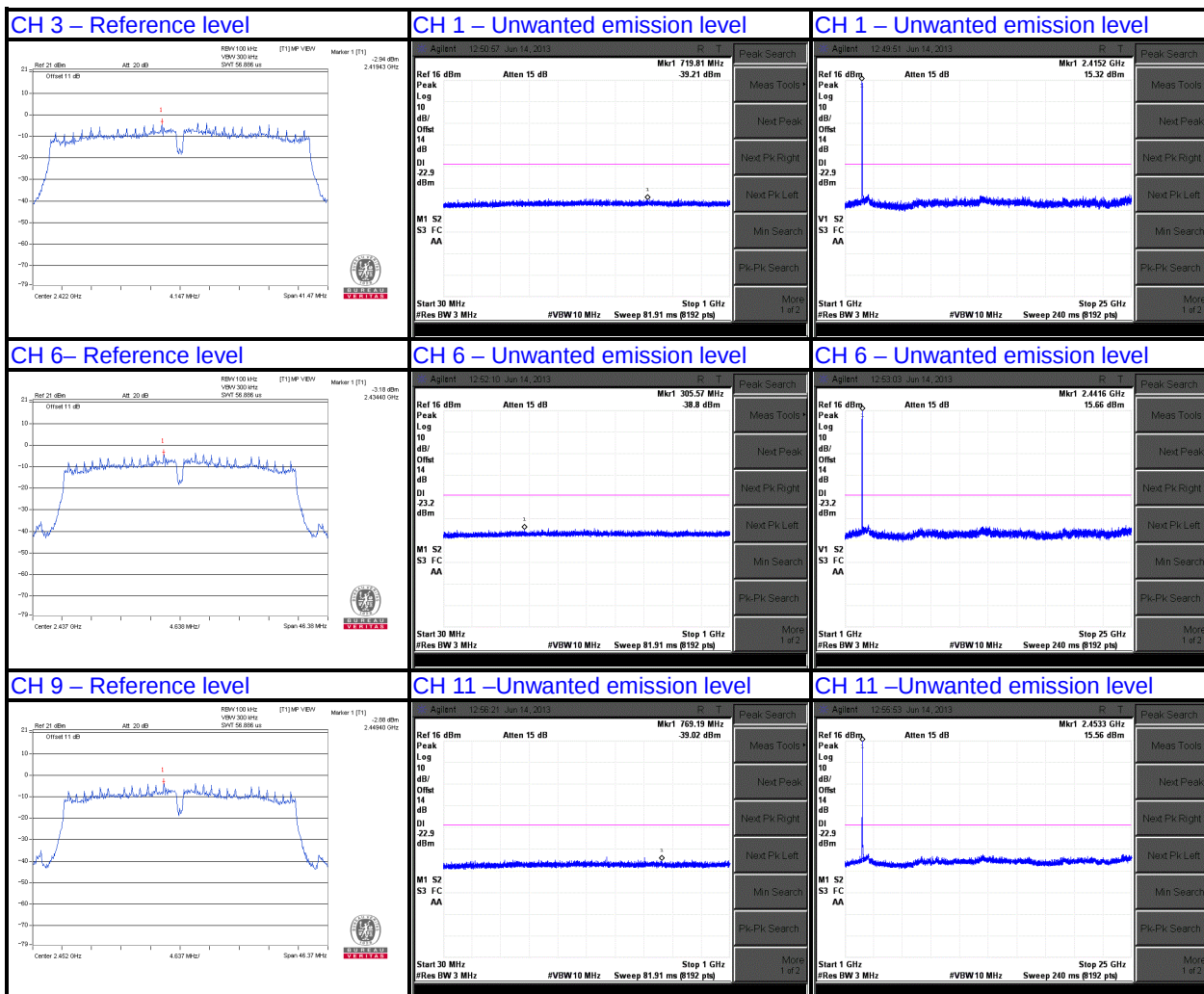




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VERITAS

Test Report No.: RF130516N019

802.11n HT40 Chain 0

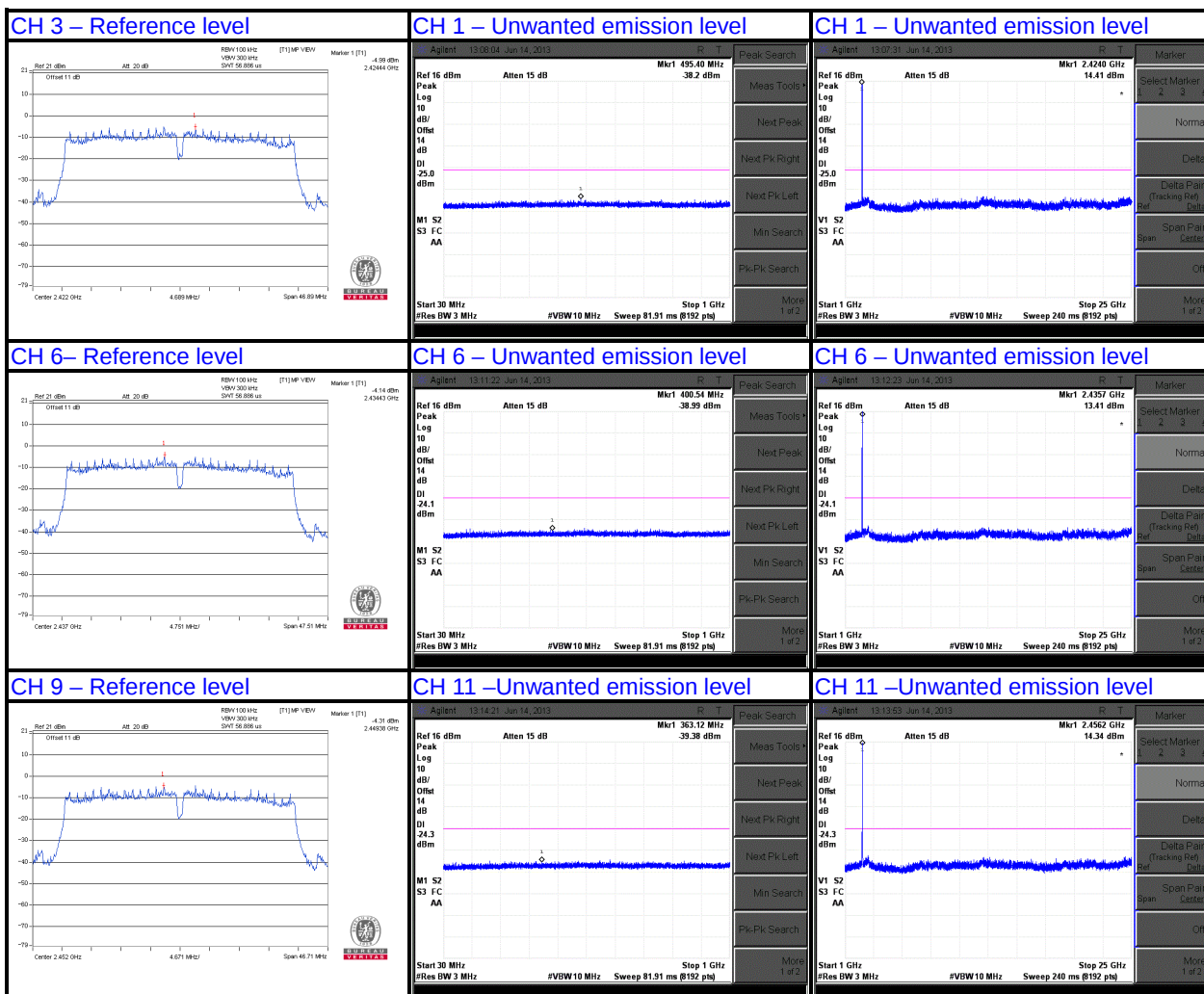




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802.11n HT40 Chain 1





Test Report No.: RF130516N019

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



Test Report No.: RF130516N019

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---