



FCC 47 CFR PART 15 SUBPART C

for

Automotive Diagnosis Computer

Model: Maximus

Brand: MATCO PAD

Test Report Number:
C130318Z01-RP1

Issued Date: May 10, 2013

Issued for

Launch Tech Co., Ltd.

**Launch Industrial Park, North of Wuhe Rd., Banxuegang,
Longgang, Shenzhen, China**

Issued by:

Compliance Certification Services (Shenzhen) Inc.

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TESTING CERT #2861.01

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Revision History

Rev.	Issue No.	Revisions	Effect Page	Revised By
00	C130318Z01-RP1	Initial Issue	ALL	Sunny Wang



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1 TEST CERTIFICATION

Product	Automotive Diagnosis Computer
Model	Maximus
Brand	MATCO PAD
Tested	March 18~May 10, 2013
Applicant	Launch Tech Co., Ltd. Launch Industrial Park, North of Wuhe Rd., Banxuegang, Longgang, Shenzhen, China
Manufacturer	Launch Tech Co., Ltd. Launch Industrial Park, North of Wuhe Rd., Banxuegang, Longgang, Shenzhen, China

APPLICABLE STANDARDS			
Standard	Test Type	Standard	Test Type
15.207(a)	Power Line Conducted Emissions	15.247(d) 15.209(a)	<ul style="list-style-type: none"> ● Spurious Emissions ● Conducted Measurement ● Radiated Emissions
15.247(a)(2)	6dB Bandwidth Measurement	15.247(b)(3) 15.247(b)(4)	Peak Power Measurement
15.247(d)	Band Edges Measurement	15.247(e)	Peak Power Spectral Density

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in **ANSI C63.4: 2009** and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

Approved by:

Tom Gan
Supervisor of EMC Dept.
Compliance Certification Service Inc.

Reviewed by:

Ruby Zhang
Supervisor of Report Dept.
Compliance Certification Service Inc.



2 TEST RESULT SUMMARY

APPLICABLE STANDARDS			
Standard	Test Type	Result	Remark
15.247(a)(2)	6dB Bandwidth Measurement	Pass	Meet the requirement of limit.
15.247(b)(3) 15.247(b)(4)	Peak Power Measurement	Pass	Meet the requirement of limit.
15.247(d)	Band Edges Measurement	Pass	Meet the requirement of limit.
15.247(e)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.247(d) 15.209(a)	<ul style="list-style-type: none">● Spurious Emissions● Conducted Measurement● Radiated Emissions	Pass	Meet the requirement of limit.
15.207(a)	Power line Conducted Emissions	Pass	Meet the requirement of limit.

- Note: 1. The statements of test result on the above are decided by the request of test standard only; the measurement uncertainties are not factored into this compliance determination.
2. The information of measurement uncertainty is available upon the customer's request.



3 EUT DESCRIPTION

Product	Automotive Diagnosis Computer
Model Number	Maximus
Brand	MATCO PAD
Model Discrepancy	N/A
Serial Number	C130318Z01-RP1
Received Date	March 18, 2013
Power Supply	DC12V supplied by the adapter or DC7.4V supplied by the battery
Adapter Manufacturer / Model No.	FY1203000 I/P: 100-240Vac, 50/60Hz, O/P: 12Vdc, 3.00A, AC Input Cable: Unshielded, 1.50m DC Output Cable: Unshielded, 1.10m
Frequency Range	IEEE 802.11b/g: 2412 ~ 2462 MHz IEEE 802.11n HT20 : 2412 ~ 2462 MHz IEEE 802.11n HT40 : 2422MHz~ 2452MHz
Transmit Power	IEEE 802.11b mode: 17.91dBm IEEE 802.11g mode: 16.38dBm IEEE 802.11n HT20 MHz mode: 16.20dBm IEEE 802.11n HT40 MHz mode: 16.14dBm
Modulation Technique	IEEE 802.11b mode: DSSS(CCK,QPSK, BPSK) IEEE 802.11g mode: OFDM (BPSK/QPSK/16QAM/64QAM) IEEE 802.11n HT20 MHz mode: OFDM (BPSK/QPSK/16QAM/64QAM) IEEE 802.11n HT40 MHz mode: OFDM (BPSK/QPSK/16QAM/64QAM)
Transmit Data Rate	IEEE 802.11b: 11Mbps(CCK) with fall back rates of 5.5/2/1Mbps IEEE 802.11g: 54Mbps with fall back rates of 48/36/24/18/12/9 /6Mbps IEEE 802.11n HT20: 65.0Mbps with fall back rates of 65.0/58.5/52.0/39.0/26.0/19.5/13.0/6.5 Mbps IEEE 802.11n HT40: 135.0Mbps with fall back rates of 121.5/ 108.0/ 81.0/54.0/40.5/27.0/13.5 Mbps
Number of Channels	IEEE 802.11b mode: 11 Channels IEEE 802.11g mode: 11 Channels IEEE 802.11n HT20 MHz mode: 11 Channels IEEE 802.11n HT40 MHz mode: 7 Channels
Antenna Specification	Linear antenna with 3.0dBi gain (Max)
Channels Spacing	IEEE 802.11b/g ,802.11n HT20/HT40 : 5MHz

Note: 1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.

2. This submittal(s) (test report) is intended for FCC ID: XUJM431PAD filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



4 TEST METHODOLOGY

4.1. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Test Item	Test mode	Worse mode
Conducted Emission	Mode 1 : Full System HDMI Out Mode 2 : Full System VGA Out	Mode 1
Radiated Emission	Mode 1 : TX	Mode 1

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz, which worst case was in normal link mode only, and power line conducted emission below 30MHz, which worst case was in normal link mode.

IEEE802.11b mode: Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High(2462MHz) with 1Mbps data rate were chosen for full testing.

IEEE802.11g mode: Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT20 MHz mode: Channel Low (2412MHz), Channel Mid(2437MHz) and Channel High (2462MHz) with 6.5Mbps data rate were chosen for full testing.

IEEE 802.11n HT40 MHz mode: Channel Low (2422MHz), Channel Mid (2437MHz) and Channel High (2452MHz) with 13.5Mbps data rate were chosen for full testing.



5 SETUP OF EQUIPMENT UNDER TEST

5.1. 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.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1.	Monitor	E17OSC	61610051	N/A	DELL	Shielded, 1.50m	Unshielded, 1.50m
2.	Mouse	WB365PA#AB 2	805CV2X	N/A	DELL	Shielded, 1.45m	N/A
3.	Keyboard	SK-8115	J1101ANN	N/A	DELL	Shielded, 1.50m	N/A
4.	Earphone	ST-908	CN-0DJ313-716 16-82P-0YTB	N/A	N/A	Shielded, 2.00m	N/A

Note:

Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

5.2. CONFIGURATION OF SYSTEM UNDER TEST

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.



6 FACILITIES AND ACCREDITATIONS

6.1. FACILITIES

All measurement facilities used to collect the measurement data are located at **No.10-1 Mingkeda Logistics park, No.18, Huanguan South Rd., Guan Lan Town, Baoan District, Shenzhen, China**

The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

USA	A2LA
China	CNAS

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

USA	FCC
Japan	VCCI(C-3478, R-3135, T-652, G-624)
Canada	INDUSTRY CANADA
Taiwan	BSMI
Norway	Nemko

Copies of granted accreditation certificates are available for downloading from our web site, <http://www.ccsrf.com>

6.3. 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	+/- 3.18dB
Radiated emissions	30MHz ~ 200MHz	+/- 3.79dB
	200MHz ~1000MHz	+/- 3.62dB
	Above 1000MHz	+/- 5.04dB
Band Edges	+/-0.182 dB	

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2. The measured result is above (below) the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliance based on the 95% level of confidence. However, the result indicates that compliance (non-compliance) is more probable than non-compliance) with the specification limit.



7 FCC PART 15.247 REQUIREMENTS

7.1. POWER LINE CONDUCTED EMISSIONS MEASUREMENT

7.1.1. LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 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 0.50 MHz.
- (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.

7.1.2. TEST INSTRUMENTS

Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
ESCI EMI TEST RECEIVER.ESCI	ROHDE&SCHWARZ	ESCI	100783	03/09/2013	03/08/2014
LISN(EUT)	ROHDE&SCHWARZ	ENV216	101543-WX	09/20/2012	09/20/2013
LISN	EMCO	3825/2	8901-1459	03/09/2013	03/08/2014
Temp. / Humidity Meter	VICTOR	HTC-1	N/A	03/04/2013	03/03/2014
Test S/W	FARAD	EZ-EMC/ CCS-3A1-CE			

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. N.C.R = No Calibration Request.

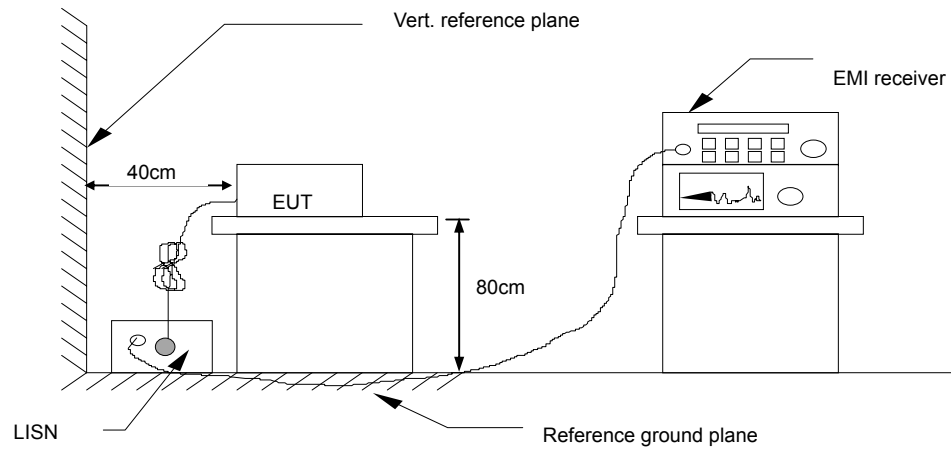


7.1.3. TEST PROCEDURES (please refer to measurement standard)

- The EUT and Support equipment, if needed, was placed on a non-conducted table, which is 0.8m above the ground plane and 0.4m away from the conducted wall.
- The test equipment EUT installed received AC main power, through a Line Impedance Stabilization Network (LISN), which supplied power source and was grounded to the ground plane. All support equipment power received from a second LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The frequency range from 150 kHz to 30 MHz was searched. The test data of the worst-case condition(s) was recorded. Emission levels under limit 20dB were not recorded.



7.1.4. TEST SETUP



For the actual test configuration, please refer to the related item - Photographs of the Test Configuration.

7.1.5. DATA SAMPLE

Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XXXX	32.69	25.65	11.52	44.21	37.17	65.78	55.79	-21.57	-18.62	Pass

- Factor = Insertion loss of LISN + Cable Loss
- Result = Quasi-peak Reading/ Average Reading + Factor
- Limit = Limit stated in standard
- Margin = Result (dBuV) – Limit (dBuV)



7.1.6. TEST RESULTS

Model No.	Maximus	RBW,VBW	9 kHz
Environmental Conditions	22°C, 45% RH	Test Mode	Mode 1
Tested by	Leevin Li	Line	L1

Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)	Line (L1/L2)
0.1980	40.84	25.64	9.60	50.44	35.24	63.69	53.69	-13.25	-18.45	Pass	L1
0.2660	42.32	36.89	9.61	51.93	46.50	61.24	51.24	-9.31	-4.74	Pass	L1
0.9220	31.42	15.58	9.68	41.10	25.26	56.00	46.00	-14.90	-20.74	Pass	L1
6.6900	36.02	23.37	9.77	45.79	33.14	60.00	50.00	-14.21	-16.86	Pass	L1
8.6420	38.45	26.48	9.78	48.23	36.26	60.00	50.00	-11.77	-13.74	Pass	L1
11.0900	38.93	25.67	9.80	48.73	35.47	60.00	50.00	-11.27	-14.53	Pass	L1
0.2660	42.34	38.97	9.63	51.97	48.60	61.24	51.24	-9.27	-2.64	Pass	L2
0.3260	37.98	34.31	9.66	47.64	43.97	59.55	49.55	-11.91	-5.58	Pass	L2
0.9540	31.59	15.88	9.67	41.26	25.55	56.00	46.00	-14.74	-20.45	Pass	L2
6.5860	36.73	23.96	9.78	46.51	33.74	60.00	50.00	-13.49	-16.26	Pass	L2
8.6380	37.81	26.03	9.79	47.60	35.82	60.00	50.00	-12.40	-14.18	Pass	L2
10.7220	38.36	27.39	9.81	48.17	37.20	60.00	50.00	-11.83	-12.80	Pass	L2

REMARKS: L1 = Line One (Live Line)

L2 = Line Two (Neutral Line)



7.2. SPURIOUS EMISSIONS MEASUREMENT

7.2.1. LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

§15.247(d) specifies that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to 15.247(b)(3) requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to 15.247(b)(3) requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

7.2.2. TEST INSTRUMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Due Calibration
Spectrum Analyzer	Agilent	E4446A	US44300399	03/09/2013	03/08/2014

7.2.3. TEST PROCEDURE (please refer to measurement standard)

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

Measurements are made over the 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

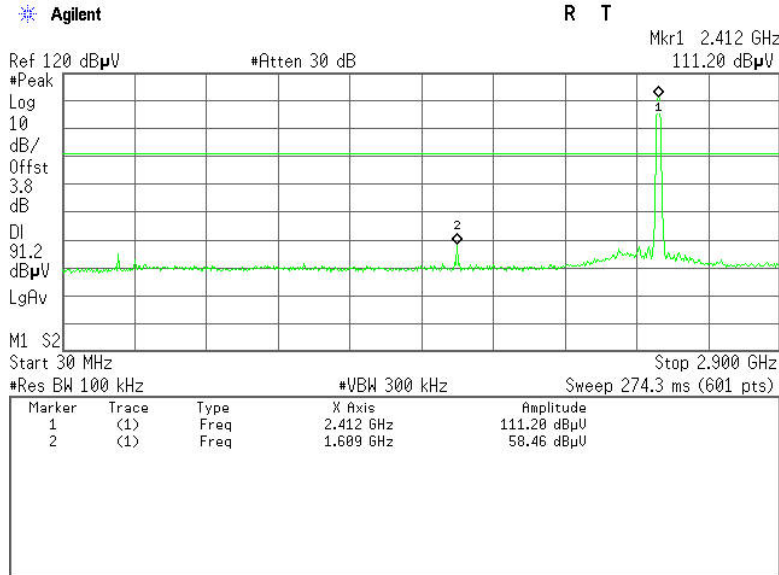


7.2.4. TEST RESULTS

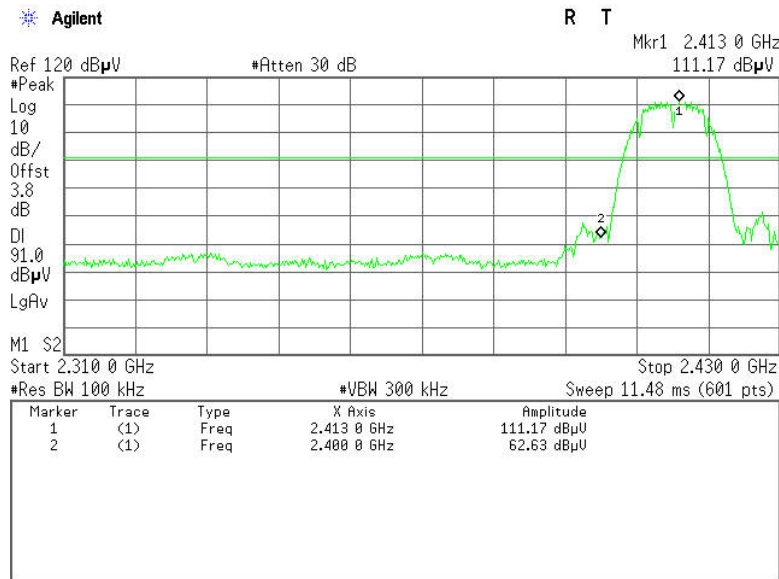
Test Plot

IEEE 802.11b mode

CH Low (30MHz ~2.9GHz)

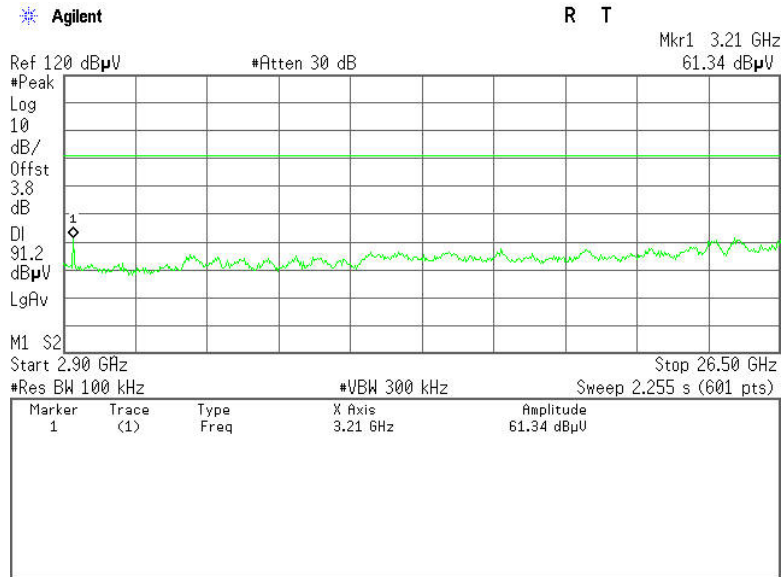


CH Low (2.31GHz ~2.43GHz)

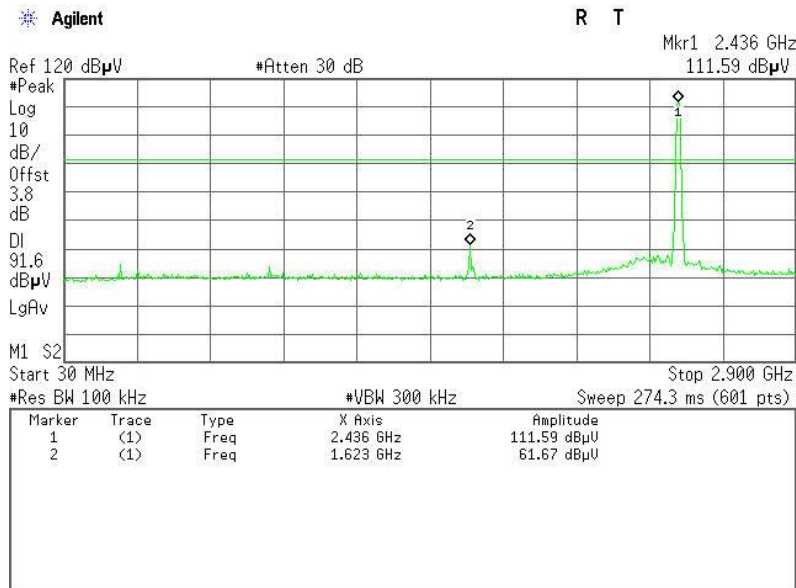




CH Low (2.9GHz ~26.5GHz)

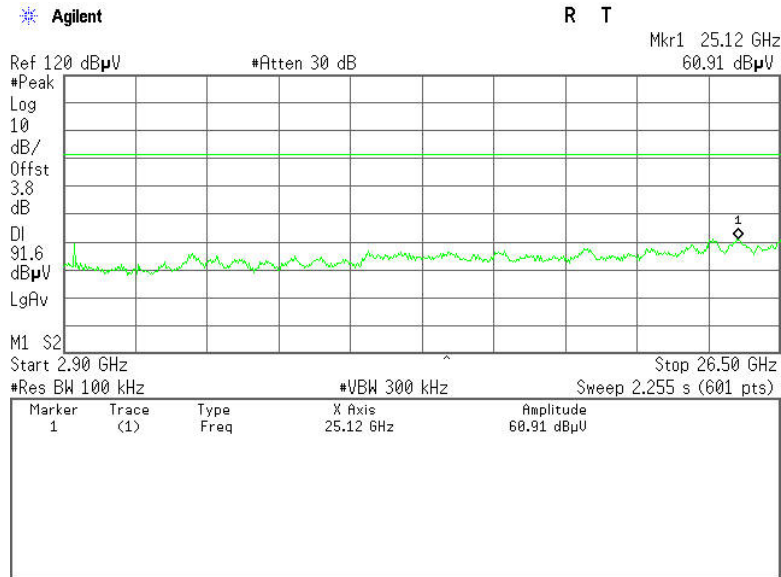


CH Mid (30MHz ~2.9GHz)

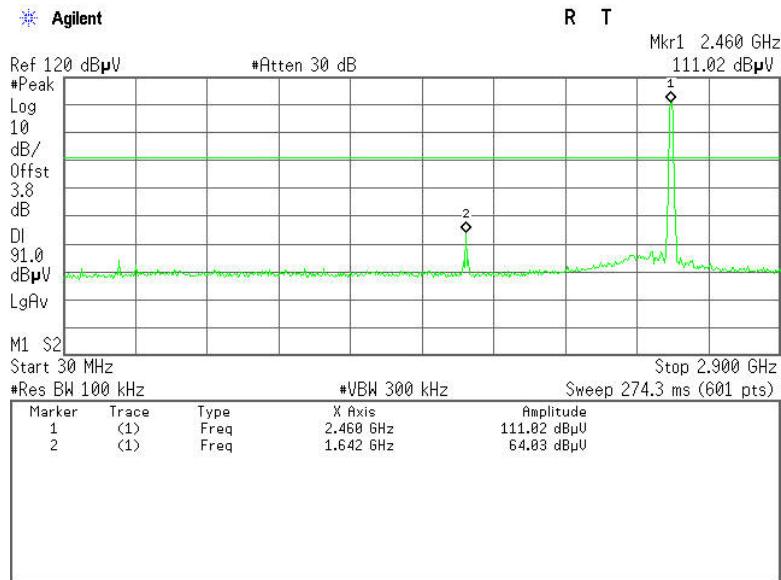




CH Mid (2.9GHz ~26.5GHz)

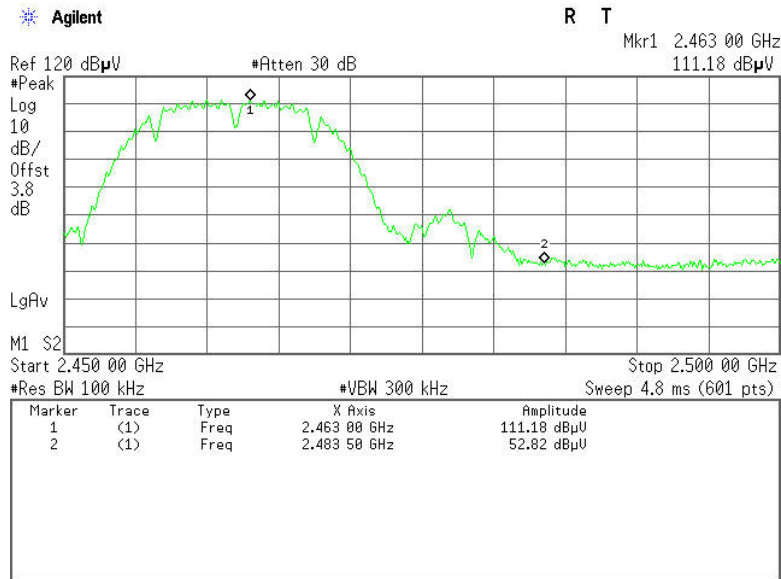


CH High (30MHz ~2.9GHz)

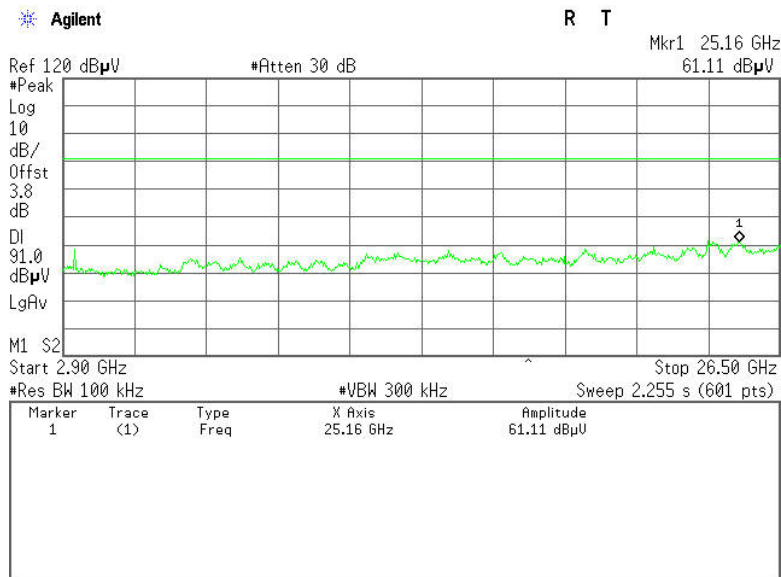




CH High (2.45GHz ~2.5GHz)



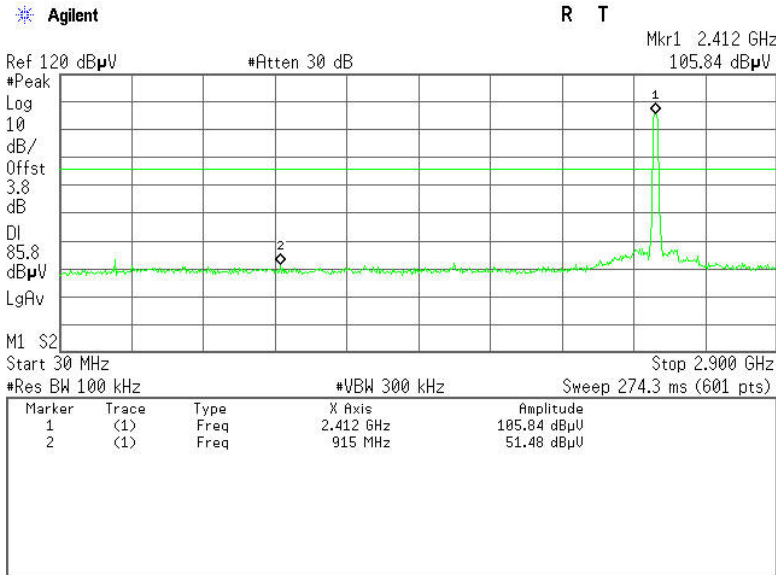
CH High(2.9GHz ~26.5GHz)



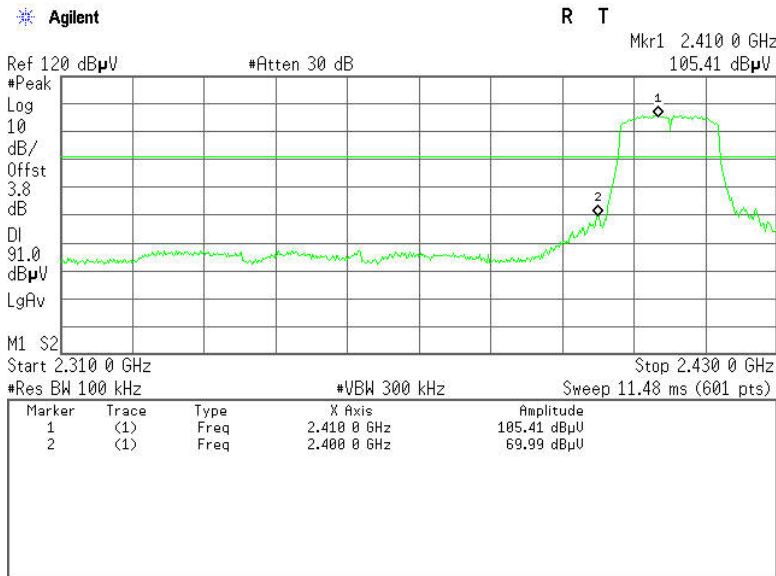


IEEE 802.11g mode

CH Low (30MHz ~2.9GHz)

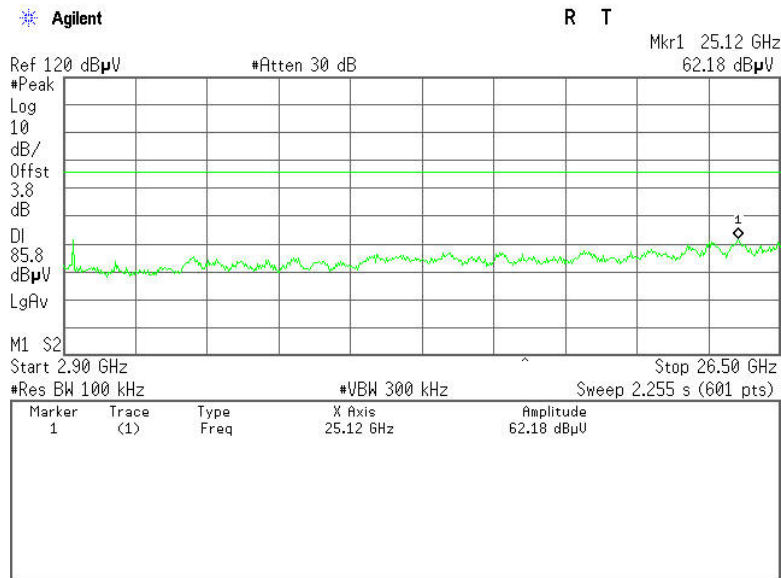


CH Low (2.31GHz ~2.43GHz)

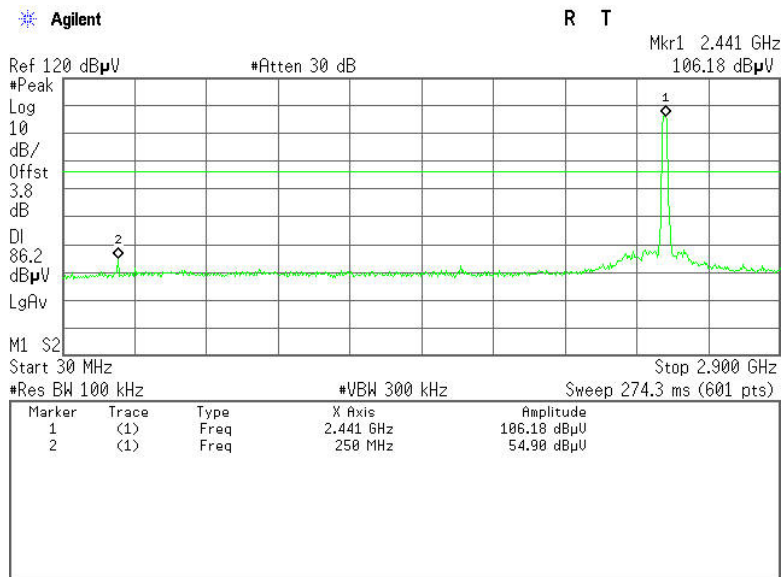




CH Low (2.9GHz ~26.5GHz)

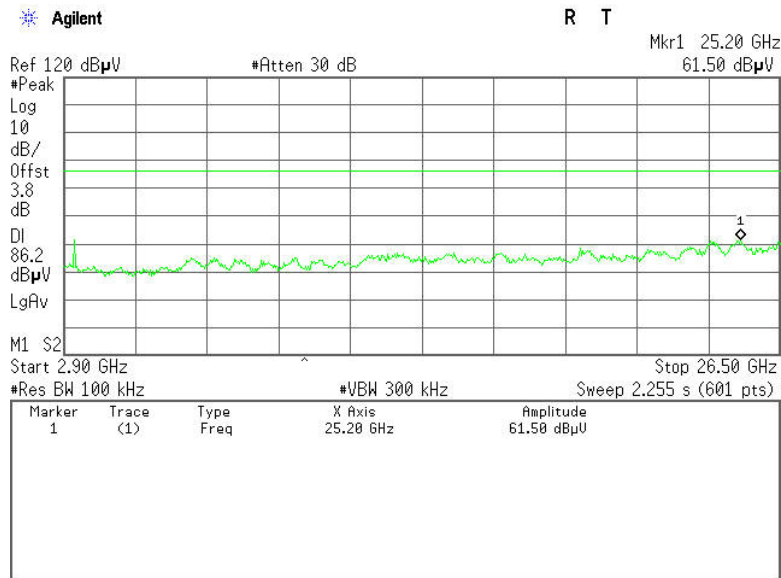


CH Mid (30MHz ~2.9GHz)

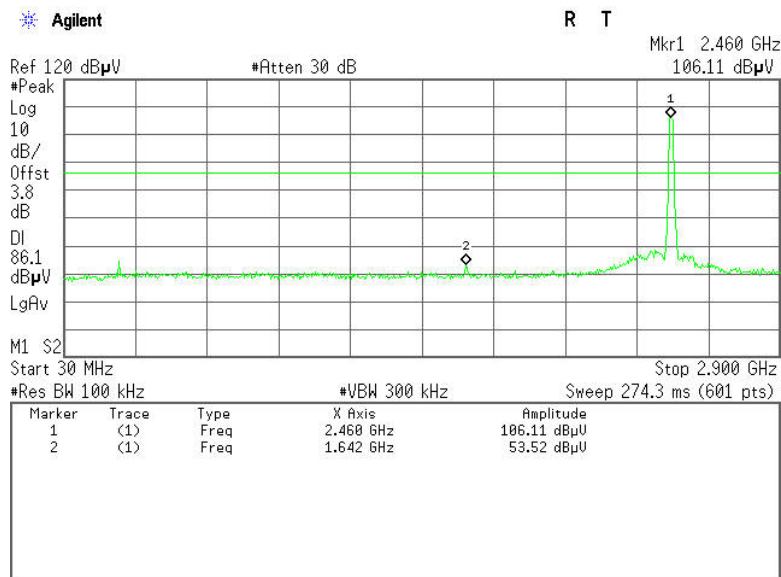




CH Mid (2.9GHz ~26.5GHz)

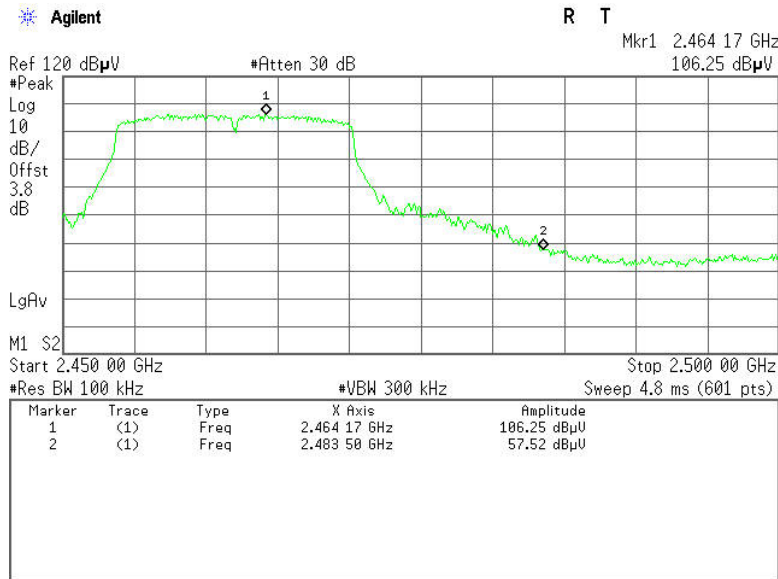


CH High (30MHz ~2.9GHz)

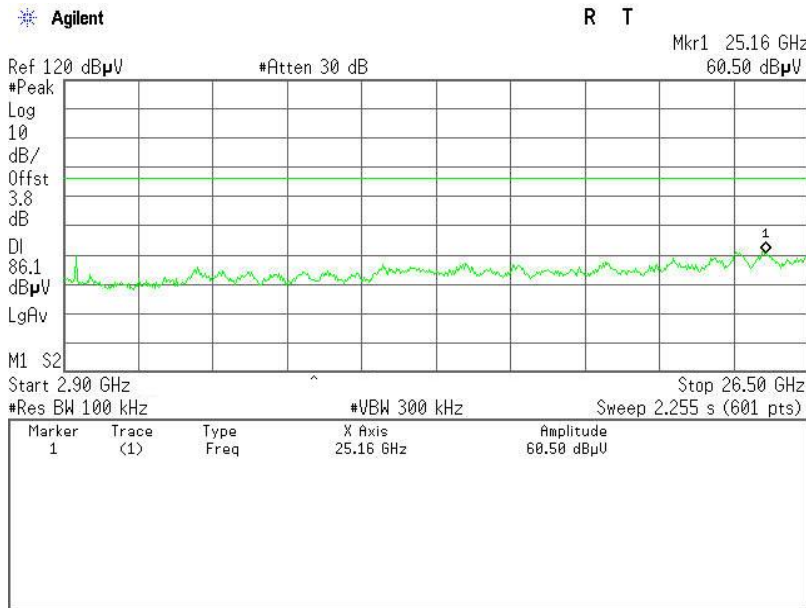




CH High (2.45GHz ~2.5GHz)



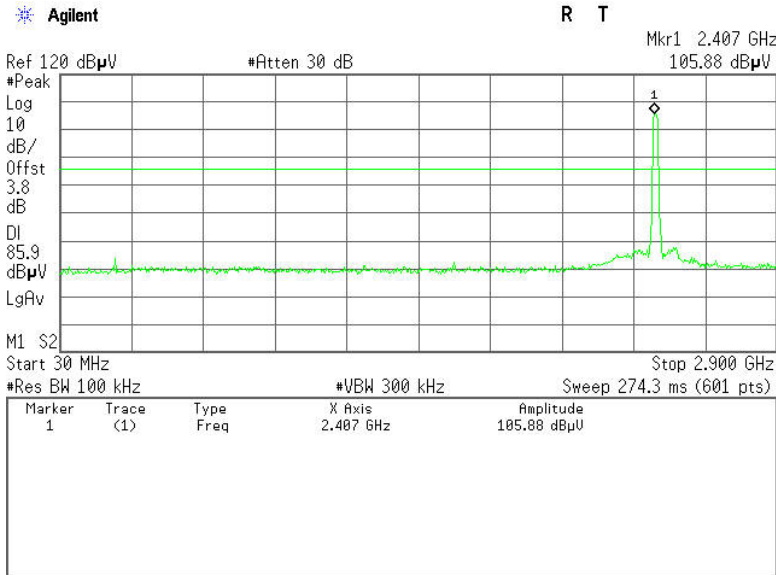
CH High(2.9GHz ~26.5GHz)



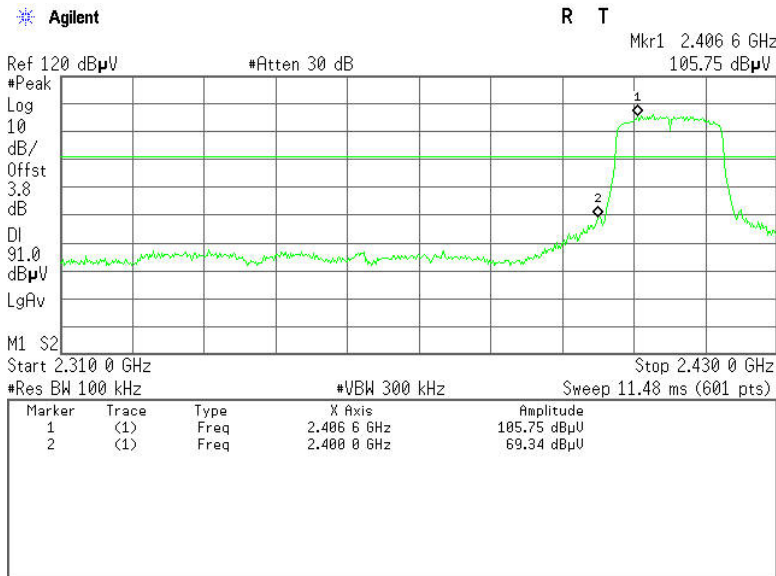


IEEE 802.11n HT20 MHz mode

CH Low (30MHz ~2.9GHz)

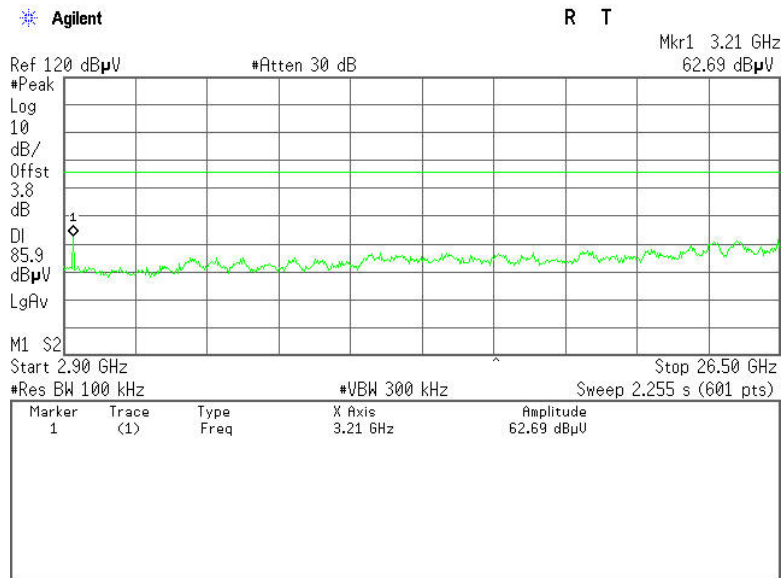


CH Low (2.31GHz ~2.43GHz)

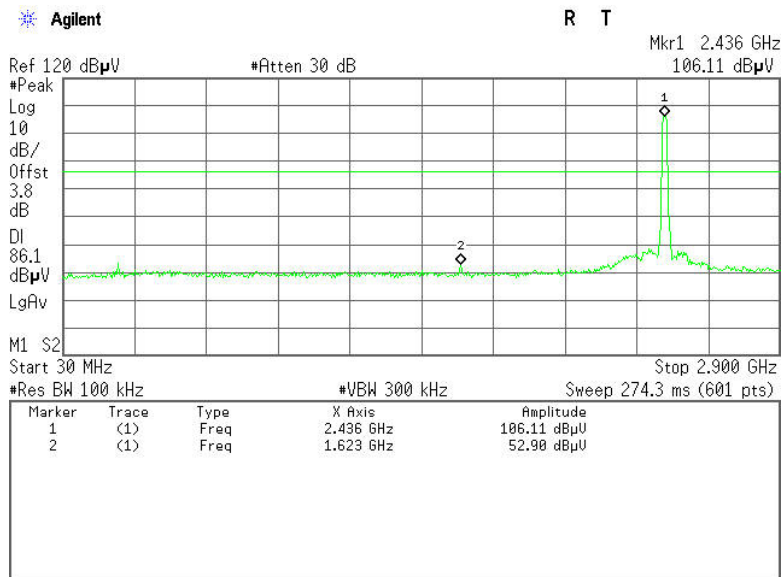




CH Low (2.9GHz ~26.5GHz)

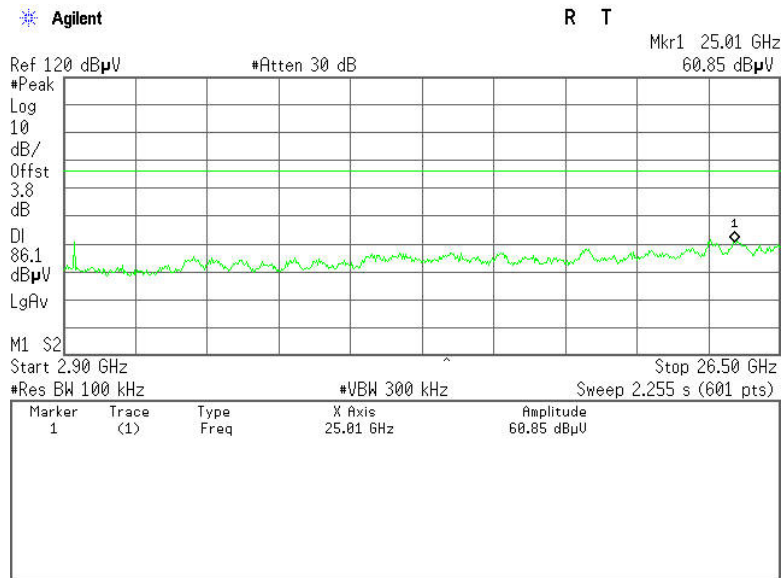


CH Mid (30MHz ~2.9GHz)

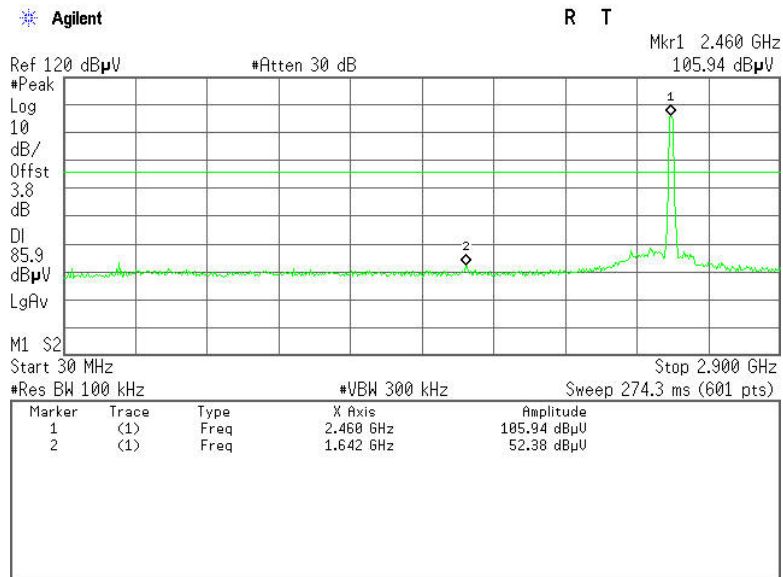




CH Mid (2.9GHz ~26.5GHz)

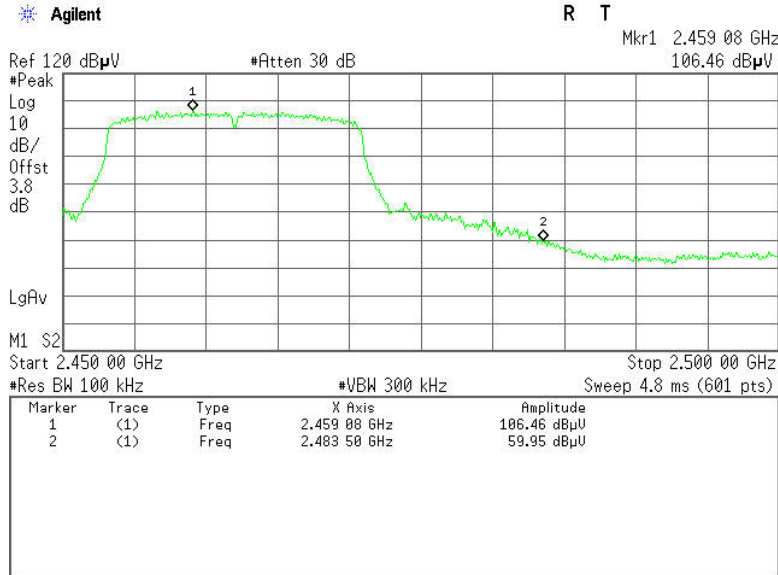


CH High (30MHz ~2.9GHz)

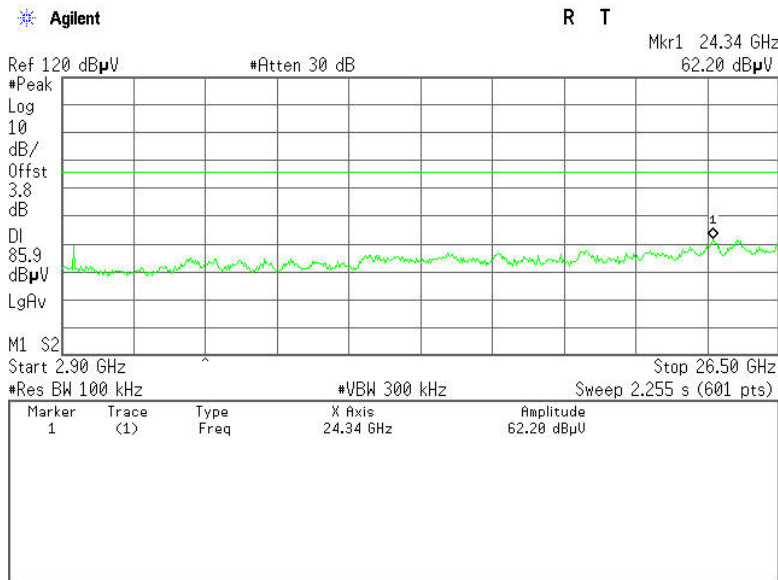




CH High (2.45GHz ~2.5GHz)



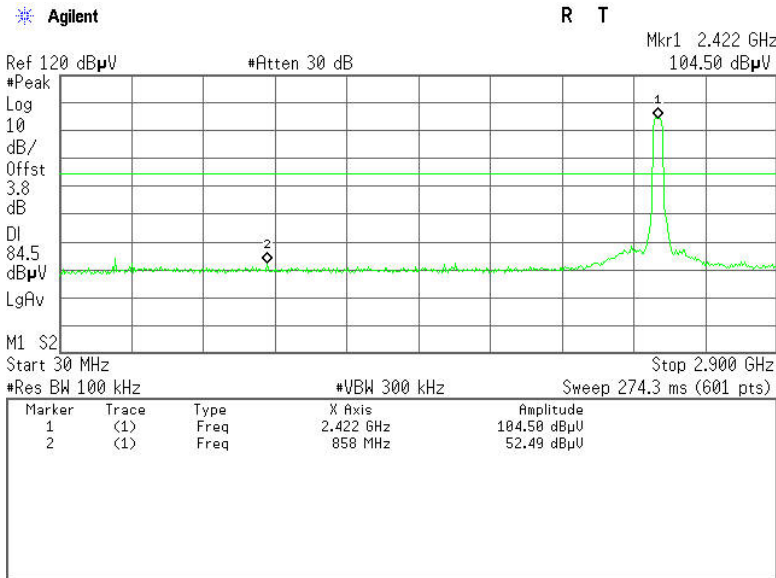
CH High(2.9GHz ~26.5GHz)



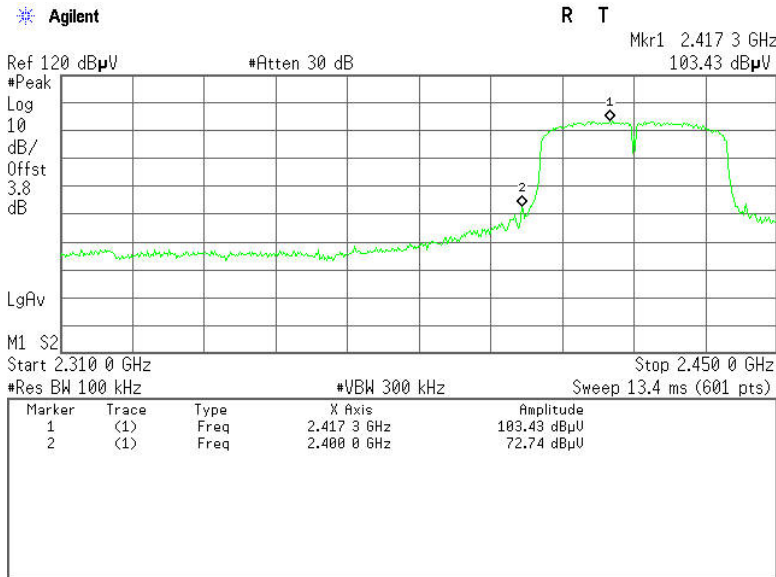


IEEE 802.11n HT40 MHz mode

CH Low (30MHz ~2.9GHz)

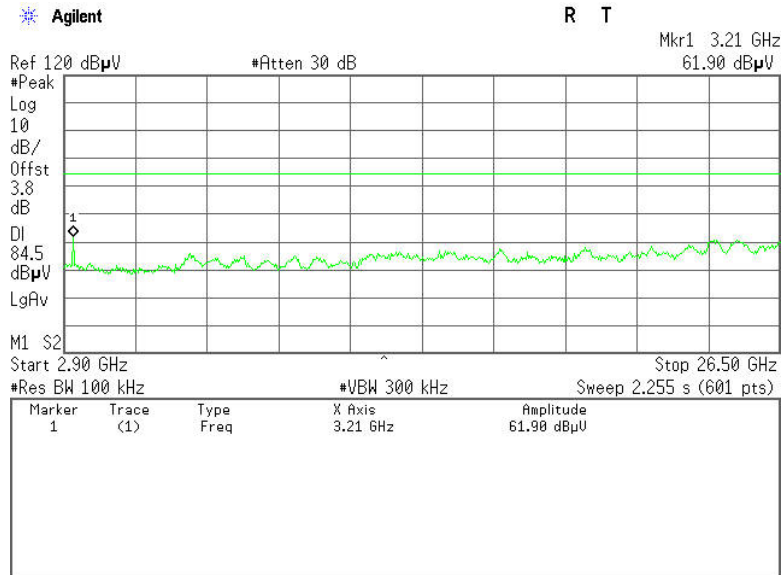


CH Low (2.31GHz ~2.45GHz)

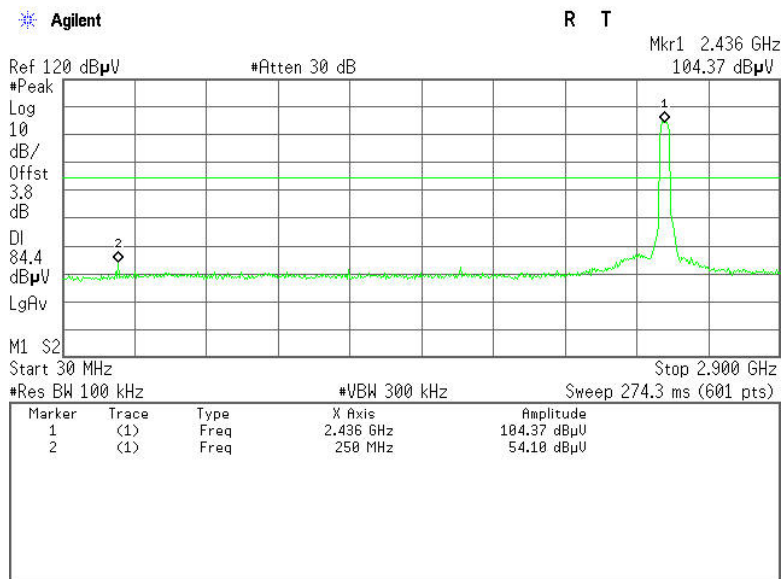




CH Low (2.9GHz ~26.5GHz)

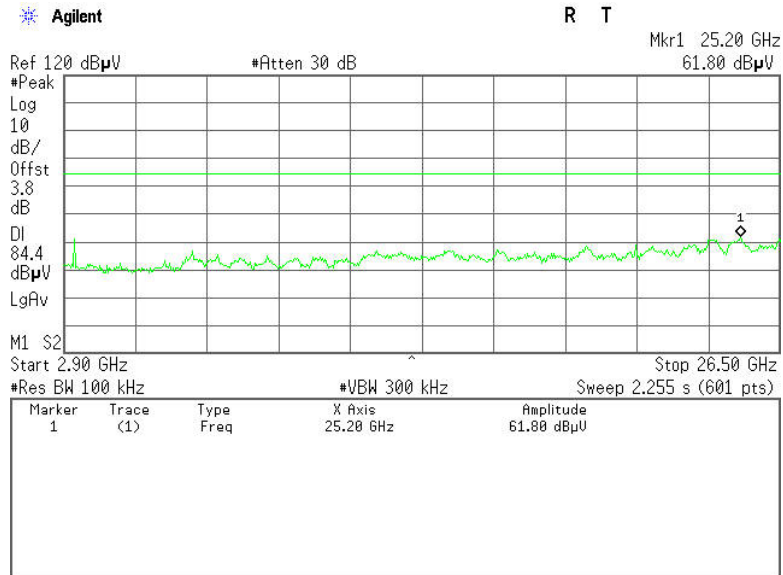


CH Mid (30MHz ~2.9GHz)

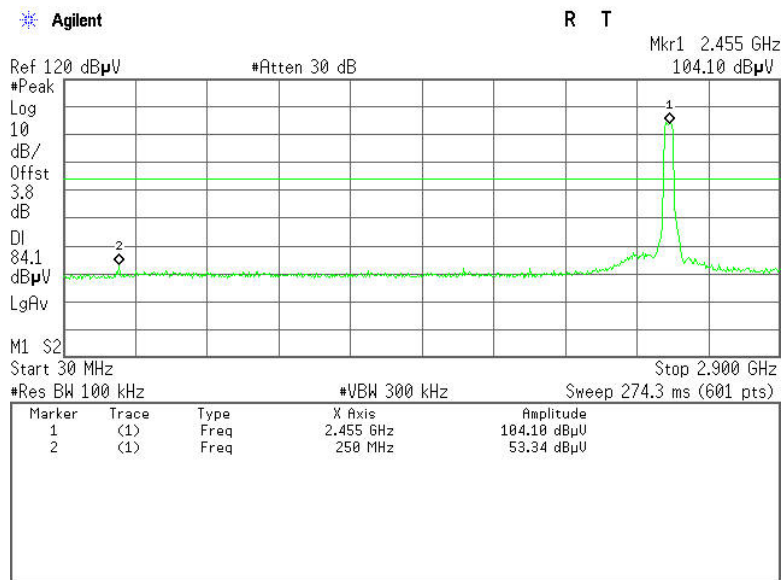




CH Mid (2.9GHz ~26.5GHz)

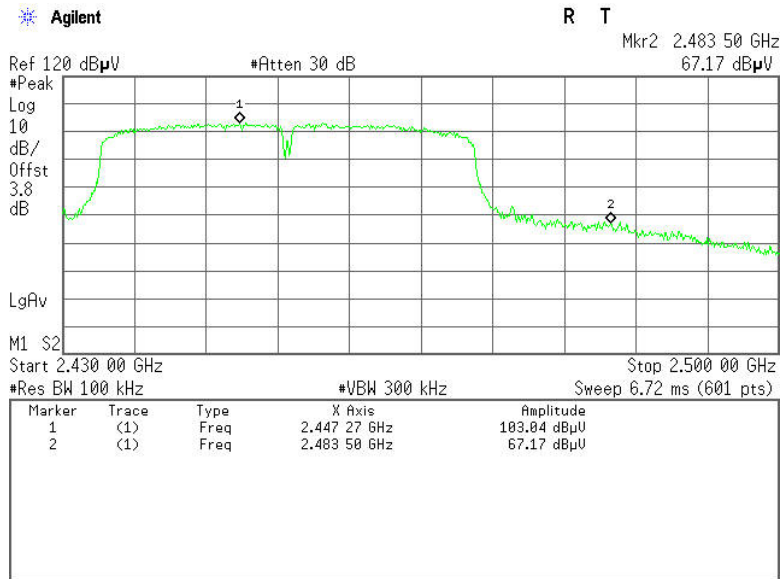


CH High (30MHz ~2.9GHz)

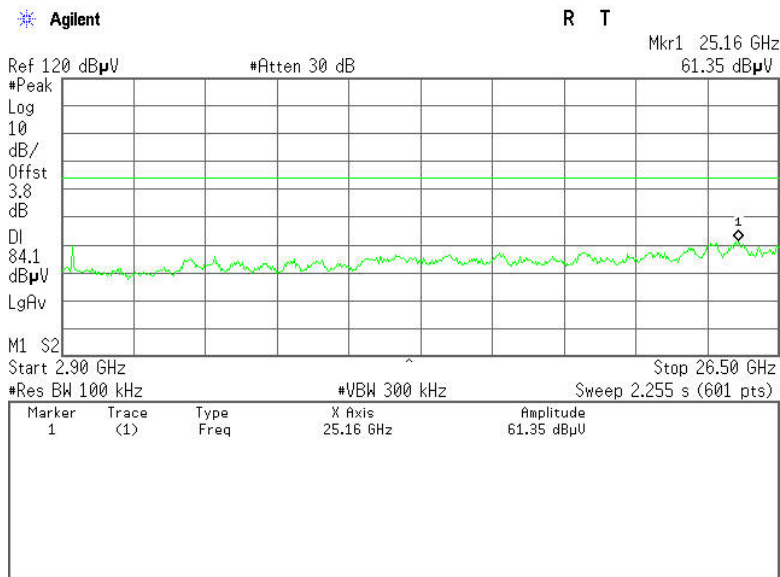




CH High (2.43GHz ~2.5GHz)



CH High (2.9GHz ~26.5GHz)





7.2.4.1. LIMITS OF RADIATED EMISSIONS MEASUREMENT

According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (mV/m)	Measurement Distance (m)
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

Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

1. In the emission table above, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength (µV/m at 3-meter)	Field Strength (dBµV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

NOTE:(1) The lower limit shall apply at the transition frequencies.
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).



7.2.4.2. TEST INSTRUMENTS

Radiated Emission Test Site 966 (2)					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
PSA Series Spectrum Analyzer	Agilent	E4446A	US44300399	03/09/2013	03/08/2014
ESCI EMI TEST RECEIVER.ESCI	ROHDE&SCHWARZ	ESCI	100783	03/09/2013	03/08/2014
Amplifier	MITEQ	AM-1604-3000	1123808	03/18/2013	03/18/2014
High Noise Amplifier	Agilent	8449B	3008A01838	03/18/2013	03/18/2014
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170-497	06/21/2012	06/21/2013
Bilog Antenna	SCHAFFNER	CBL6143	5082	03/02/2013	03/01/2014
Horn Antenna	SCHWARZBECK	BBHA9120	D286	03/02/2013	03/01/2014
Loop Antenna	A、R、A	PLA-1030/B	1029	03/23/2013	03/23/2014
Turn Table	N/A	N/A	N/A	N.C.R	N.C.R
Controller	Sunol Sciences	SC104V	022310-1	N.C.R	N.C.R
Controller	CT	N/A	N/A	N.C.R	N.C.R
Temp. / Humidity Meter	Anymetre	JR913	N/A	03/04/2013	03/03/2014
Antenna Tower	SUNOL	TLT2	N/A	N.C.R	N.C.R
Test S/W	FARAD	LZ-RF / CCS-SZ-3A2			

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The FCC Site Registration number is 101879.
 3. N.C.R = No Calibration Required.



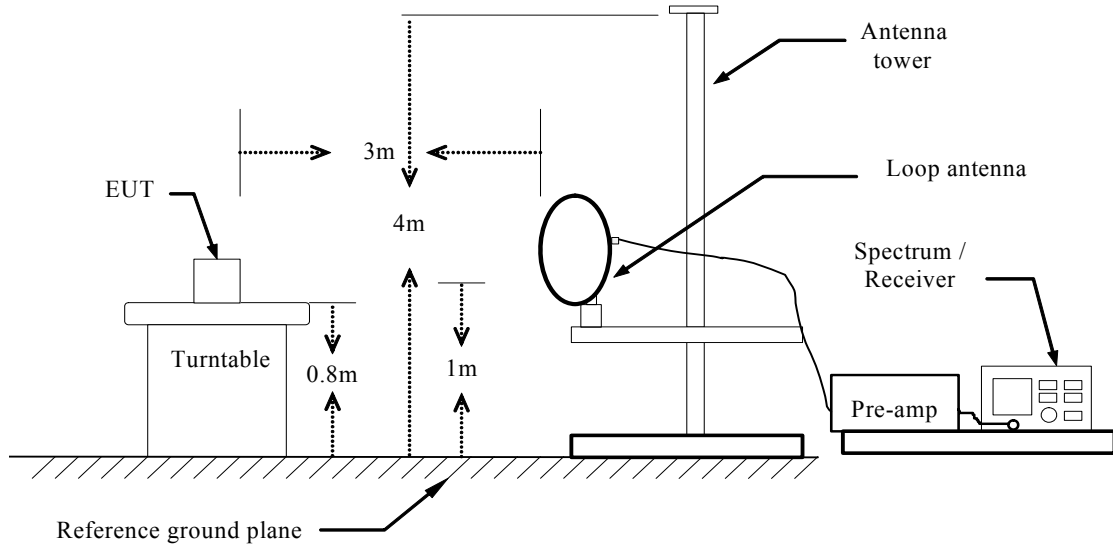
7.2.4.3. TEST PROCEDURE (please refer to measurement standard)

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
 - Below 1GHz:
 - RBW=100kHz / VBW=300kHz / Sweep=AUTO
 - Above 1GHz:
 - (a) PEAK: RBW=1MHz,VBW=3MHz / Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

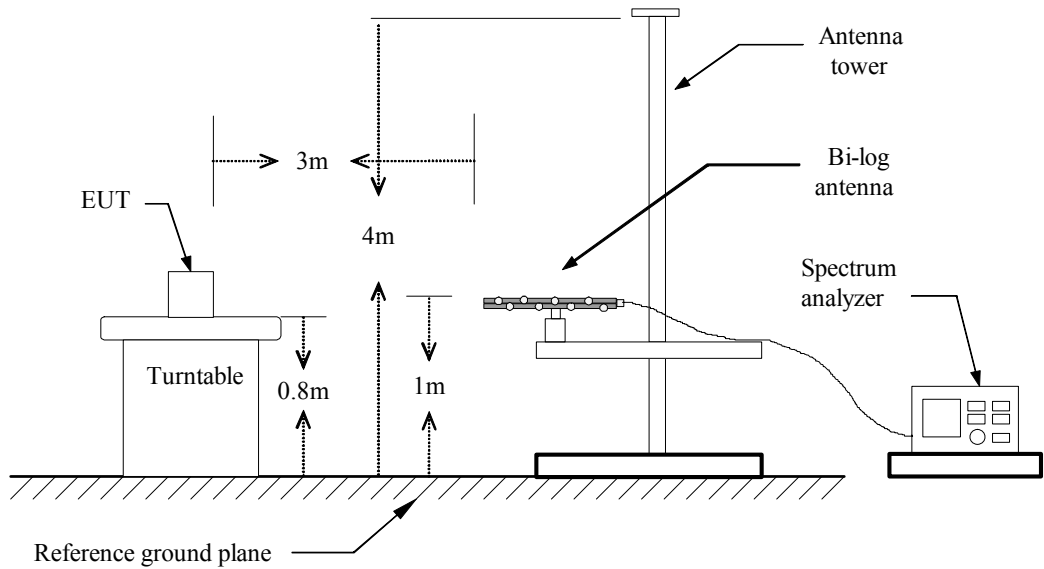


7.2.4.4. TEST SETUP

Below 30MHz

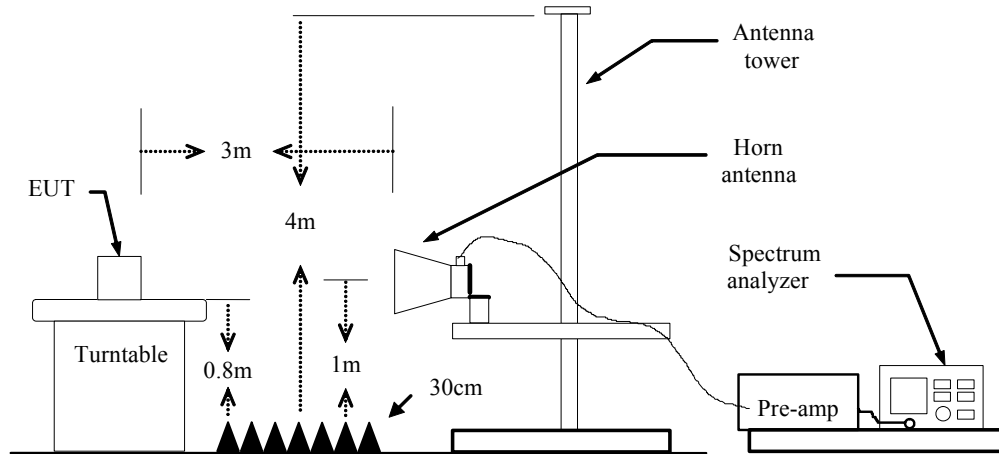


Below 1 GHz





Above 1 GHz



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.



7.2.4.5. DATA SAPLE

Below 1GHz

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
XXX.XXXX	36.37	-12.20	24.17	40.00	-15.83	V	QP

- Frequency (MHz) = Emission frequency in MHz
- Reading (dBuV) = Uncorrected Analyzer / Receiver reading
- Correct Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain
- Result (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)
- Limit (dBuV/m) = Limit stated in standard
- Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)
- Q.P. = Quasi-peak Reading

Above 1GHz

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
XXXX.XXXX	62.09	-11.42	50.67	74.00	-23.33	V	Peak
XXXX.XXXX	49.78	-11.42	38.36	54.00	-15.64	V	AVG

- Frequency (MHz) = Emission frequency in MHz
- Reading (dBuV) = Uncorrected Analyzer / Receiver reading
- Correction Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain
- Result (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)
- Limit (dBuV/m) = Limit stated in standard
- Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)
- Peak = Peak Reading
- AVG = Average Reading

Calculation Formula

Margin (dB) = Result (dBuV/m) – Limits (dBuV/m)
 Result (dBuV/m) = Reading (dBuV) + Correction Factor



7.2.4.6. TEST RESULTS

Below 1 GHz

Test Mode: TX

Test Date: May 7, 2013

Temperature: 24°C

Tested by: Leevin Li

Humidity: 52% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
337.1666	54.00	-17.53	36.47	46.00	-9.53	V	QP
413.1500	54.21	-15.23	38.98	46.00	-7.02	V	QP
487.5167	51.53	-14.77	36.76	46.00	-9.24	V	QP
712.2332	48.45	-11.10	37.35	46.00	-8.65	V	QP
796.3000	48.48	-10.61	37.87	46.00	-8.13	V	QP
996.7667	54.05	-8.67	45.38	54.00	-8.62	V	QP
167.4165	56.15	-18.70	37.45	43.50	-6.05	H	QP
191.6665	58.42	-18.73	39.69	43.50	-3.81	H	QP
215.9165	56.59	-17.80	38.79	43.50	-4.71	H	QP
288.6666	52.44	-18.38	34.06	46.00	-11.94	H	QP
337.1666	51.29	-17.53	33.76	46.00	-12.24	H	QP
998.3831	50.50	-8.65	41.85	54.00	-12.15	H	QP

**Remark: No emission found between lowest internal used/generated frequency to 30MHz.

Notes:

- Radiated emissions measured in frequency range from 9kHz to 1GHz were made with an instrument using Quasi-peak detector mode.
- Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.
- | | |
|------------------------|--|
| Frequency (MHz). | = Emission frequency in MHz |
| Reading (dBuV/m) | = Receiver reading |
| Correction Factor (dB) | = Antenna factor + Cable loss – Amplifier gain |
| Limit (dBuV/m) | = Limit stated in standard |
| Margin (dB) | = Measured (dBuV/m) – Limits (dBuV/m) |
| Antenna Pol e(H/V) | = Current carrying line of reading |



Above 1 GHz

Operation Mode: TX / IEEE 802.11b/ CH Low

Test Date: May 7, 2013

Temperature: 24°C Humidity: 52% RH Polarity: Ver. / Hor. Tested by: Leevin Li

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1085.0000	60.23	-9.65	50.58	74.00	-23.42	V	peak
1283.3333	60.20	-8.36	51.84	74.00	-22.16	V	peak
1793.3333	58.36	-9.41	48.95	74.00	-25.05	V	peak
3011.6667	50.31	-4.23	46.08	74.00	-27.92	V	peak
5250.0000	45.94	1.54	47.48	74.00	-26.52	V	peak
6213.3333	44.35	3.72	48.07	74.00	-25.93	V	peak
1396.6667	58.37	-7.84	50.53	74.00	-23.47	H	Peak
1906.6666	57.80	-10.43	47.37	74.00	-26.63	H	Peak
3011.6667	49.11	-4.23	44.88	74.00	-29.12	H	Peak
4173.3333	46.10	-1.71	44.39	74.00	-29.61	H	Peak
4966.6666	45.53	1.17	46.70	74.00	-27.30	H	Peak
6043.3333	45.66	3.22	48.88	74.00	-25.12	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11b/ CH Mid

Test Date: May 7, 2013

Temperature: 24°C Humidity: 52% RH Polarity: Ver. / Hor. Tested by: Leevin Li

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1311.6666	59.81	-8.23	51.58	74.00	-22.42	V	Peak
1793.3333	58.68	-9.41	49.27	74.00	-24.73	V	Peak
2105.0000	57.83	-9.55	48.28	74.00	-25.72	V	Peak
4400.0000	45.65	-0.82	44.83	74.00	-29.17	V	Peak
4995.0000	46.27	1.30	47.57	74.00	-26.43	V	Peak
1311.6667	59.10	-8.23	50.87	74.00	-23.13	H	Peak
1906.6667	57.28	-10.43	46.85	74.00	-27.15	H	Peak
4881.6667	47.30	0.78	48.08	74.00	-25.92	H	Peak
5731.6667	45.93	2.49	48.42	74.00	-25.58	H	Peak
6496.6667	44.38	4.53	48.91	74.00	-25.09	H	Peak
6950.0000	45.85	6.09	51.94	74.00	-22.06	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11b/ CH High

Test Date: May 7, 2013

Temperature: 24°C Humidity: 52% RH Polarity: Ver. / Hor. Tested by: Leevin Li

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1283.3333	60.93	-8.36	52.57	74.00	-21.43	V	Peak
1793.3333	57.51	-9.41	48.10	74.00	-25.90	V	Peak
3691.6667	50.32	-2.77	47.55	74.00	-26.45	V	Peak
4910.0000	45.50	0.91	46.41	74.00	-27.59	V	Peak
5845.0000	44.42	2.85	47.27	74.00	-26.73	V	Peak
6581.6667	43.76	4.77	48.53	74.00	-25.47	V	Peak
1396.6667	57.54	-7.84	49.70	74.00	-24.30	H	Peak
1651.6667	58.26	-8.88	49.38	74.00	-24.62	H	Peak
3011.6667	48.33	-4.23	44.10	74.00	-29.90	H	Peak
4400.0000	45.81	-0.82	44.99	74.00	-29.01	H	Peak
4910.0000	45.08	0.91	45.99	74.00	-28.01	H	Peak
6100.0000	44.15	3.39	47.54	74.00	-26.46	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11g / CH Low

Test Date: May 7, 2013

Temperature: 24°C Humidity: 52% RH Polarity: Ver. / Hor. Tested by: Leevin Li

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1283.3333	59.94	-8.36	51.58	74.00	-22.42	V	Peak
1906.6667	58.95	-10.43	48.52	74.00	-25.48	V	Peak
3691.6667	49.68	-2.77	46.91	74.00	-27.09	V	Peak
5618.3333	44.64	2.01	46.65	74.00	-27.35	V	Peak
6468.3333	44.62	4.45	49.07	74.00	-24.93	V	Peak
6921.6666	45.95	5.95	51.90	74.00	-22.10	V	Peak
1396.6667	60.05	-7.84	52.21	74.00	-21.79	H	Peak
3011.6667	47.97	-4.23	43.74	74.00	-30.26	H	Peak
4230.0000	45.56	-1.47	44.09	74.00	-29.91	H	Peak
4966.6667	45.63	1.17	46.80	74.00	-27.20	H	Peak
5590.0000	45.43	1.91	47.34	74.00	-26.66	H	Peak
6468.3333	43.64	4.45	48.09	74.00	-25.91	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11g / CH Mid

Test Date: May 7, 2013

Temperature: 24°C Humidity: 52% RH Polarity: Ver. / Hor. Tested by: Leevin Li

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1311.6666	59.96	-8.23	51.73	74.00	-22.27	V	Peak
2105.0000	57.84	-9.55	48.29	74.00	-25.71	V	Peak
3011.6667	50.57	-4.23	46.34	74.00	-27.66	V	Peak
3493.3332	49.80	-3.54	46.26	74.00	-27.74	V	Peak
6156.6666	45.17	3.55	48.72	74.00	-25.28	V	Peak
6468.3333	45.08	4.45	49.53	74.00	-24.47	V	Peak
1085.0000	58.19	-9.65	48.54	74.00	-25.46	H	Peak
1311.6667	56.03	-8.23	47.80	74.00	-26.20	H	Peak
3011.6667	48.64	-4.23	44.41	74.00	-29.59	H	Peak
3663.3333	46.06	-2.85	43.21	74.00	-30.79	H	Peak
5108.3333	45.09	1.44	46.53	74.00	-27.47	H	Peak
6241.6667	44.60	3.81	48.41	74.00	-25.59	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11g / CH High

Test Date: May 7, 2013

Temperature: 24°C Humidity: 52% RH Polarity: Ver. / Hor. Tested by: Leevin Li

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
2615.0000	48.00	-5.78	42.22	74.00	-31.78	V	Peak
3295.0000	52.99	-4.05	48.94	74.00	-25.06	V	Peak
4145.0000	45.54	-1.84	43.70	74.00	-30.30	V	Peak
5108.3333	44.36	1.44	45.80	74.00	-28.20	V	Peak
5986.6667	46.37	3.07	49.44	74.00	-24.56	V	Peak
6950.0000	44.55	6.09	50.64	74.00	-23.36	V	Peak
3295.0000	47.94	-4.05	43.89	74.00	-30.11	H	Peak
3890.0000	45.78	-2.51	43.27	74.00	-30.73	H	Peak
4938.3333	45.64	1.04	46.68	74.00	-27.32	H	Peak
5760.0000	44.57	2.61	47.18	74.00	-26.82	H	Peak
6610.0000	44.77	4.85	49.62	74.00	-24.38	H	Peak
7205.0000	43.96	7.38	51.34	74.00	-22.66	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11n HT20 MHz/ CH Low

Test Date: May 7, 2013

Temperature: 24°C

Humidity: 52% RH

Polarity: Ver. / Hor.

Tested by: Leevin Li

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1396.6667	60.51	-7.84	52.67	74.00	-21.33	V	Peak
1906.6667	59.28	-10.43	48.85	74.00	-25.15	V	Peak
3011.6667	49.77	-4.23	45.54	74.00	-28.46	V	Peak
3691.6667	48.48	-2.77	45.71	74.00	-28.29	V	Peak
4910.0000	46.42	0.91	47.33	74.00	-26.67	V	Peak
6128.3333	45.42	3.47	48.89	74.00	-25.11	V	Peak
1283.3333	56.18	-8.36	47.82	74.00	-26.18	H	Peak
1906.6667	57.33	-10.43	46.90	74.00	-27.10	H	Peak
3011.6667	48.44	-4.23	44.21	74.00	-29.79	H	Peak
3720.0000	46.15	-2.70	43.45	74.00	-30.55	H	Peak
5363.3333	45.21	1.53	46.74	74.00	-27.26	H	Peak
6581.6667	45.42	4.77	50.19	74.00	-23.81	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11n HT20 MHz/ CH Mid

Test Date: May 7, 2013

Temperature: 24°C

Humidity: 52% RH

Polarity: Ver. / Hor.

Tested by: Leevin Li

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1000.0000	60.22	-10.33	49.89	74.00	-24.11	V	Peak
1311.6666	58.71	-8.23	50.48	74.00	-23.52	V	Peak
1793.3333	59.10	-9.41	49.69	74.00	-24.31	V	Peak
3011.6667	50.44	-4.23	46.21	74.00	-27.79	V	Peak
4711.6666	44.73	0.03	44.76	74.00	-29.24	V	Peak
5051.6666	45.72	1.38	47.10	74.00	-26.90	V	Peak
1085.0000	55.44	-9.65	45.79	74.00	-28.21	H	Peak
1906.6667	57.49	-10.43	47.06	74.00	-26.94	H	Peak
3011.6667	48.18	-4.23	43.95	74.00	-30.05	H	Peak
4343.3333	45.68	-1.04	44.64	74.00	-29.36	H	Peak
5193.3333	45.17	1.54	46.71	74.00	-27.29	H	Peak
6270.0000	44.33	3.89	48.22	74.00	-25.78	H	Peak

REMARKS:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).