



CTK Co., Ltd.  
The Power Leader of Global Regulatory Compliance

# CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea  
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## TEST REPORT For FCC

**FCC Standards : FCC 47CFR part 15 subpart C**  
**Industry Canada Standards : RSS-247 Issue 1 & RSS-GEN Issue 4**

Test Report No. : CTK-2015-01157  
 Date of Issue : 2015-08-31  
 FCC ID : GU6-QUATECH1  
 Certification Number IC : 1502A-QUATECH1  
 Model/Type No. : 9485NP  
 Kind of Product : Mobile Printer  
 Applicant : Avery Dennison Retail Information Services, LLC  
 Applicant Address : 170 Monarch Lane, Miamisburg, Ohio, USA 45342  
 Manufacturer : SEWOO TECH Co., Ltd.  
 Manufacturer Address : 28-6, Gajangsaneopdong-ro Osan-si, Gyeonggi-do Korea  
 Contact Person : James Bacher / Senior Engineer  
 Telephone : 937.865.2020  
 Received Date : 2014-11-26  
 Test period : Start : 2015-08-06 End : 2015-08-29

The test results presented in this report relate only to the object tested.

Tested by

*Y. T. Lee*

Young-taek Lee  
Test Engineer  
Date: 2015-08-31

Reviewed by

*Y. J. Park*

Young-Joon, Park  
Technical Manager  
Date: 2015-08-31



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## REPORT REVISION HISTORY

Date	Revision	Page No
2015-08-31	Issued (CTK-2015-01157)	All

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## 1.0 General Product Description

Equipment model name	9485NP											
Device type	Client device											
Serial number	Prototype											
EUT condition	Pre-production, not damaged											
Frequency Range	802.11b/g : 2412 MHz - 2462 MHz											
RF output power :	<table border="1"> <thead> <tr> <th>Mode</th> <th>Channel Bandwidth (MHz)</th> <th>RF output power (dBm)</th> </tr> </thead> <tbody> <tr> <td>802.11b</td> <td>20</td> <td>14.64</td> </tr> <tr> <td>802.11g</td> <td>20</td> <td>6.22</td> </tr> </tbody> </table>			Mode	Channel Bandwidth (MHz)	RF output power (dBm)	802.11b	20	14.64	802.11g	20	6.22
Mode	Channel Bandwidth (MHz)	RF output power (dBm)										
802.11b	20	14.64										
802.11g	20	6.22										
Number of channels	11											
Transfer Rate	802.11b : 11 / 5.5 / 2 / 1 Mbps 802.11g : 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6 Mbps											
Type of Modulation	802.11b : DSSS 802.11g : OFDM											
Power Source	DC 7.4 V (Battery)											
Duty Cycle	802.11b : 98 % 802.11g : 86 %											
Antenna Type	PCB antenna											
Antenna Gain	3.8 dBi											

**\* Test 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.

Tested Ch	Modulation Technology	Modulation Type	Transfer Rate
Low, Mid, High	DSSS	802.11b	11
Low, Mid, High	OFDM	802.11g	54



## 1.1 Tune-up limits

Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Tune-up limits (dBm)
2.4 GHz	802.11b	20	1	2 412	15.50
			6	2 437	15.80
			11	2 462	15.10
	802.11g	20	1	2 412	9.33
			6	2 437	9.10
			11	2 462	9.30
5.2 GHz	802.11a	20	36	5 180	7.90
			40	5 200	7.90
			44	5 220	7.90
			48	5 240	7.90
5.3 GHz	802.11a	20	52	5 260	7.20
			56	5 280	7.20
			60	5 300	6.90
			64	5 320	7.60
5.6 GHz	802.11a	20	100	5 500	11.80
			104	5 520	12.60
			108	5 540	13.50
			112	5 560	13.70
			116	5 580	14.60
			120	5 600	15.40
			124	5 620	15.20
			128	5 640	15.40
			132	5 660	14.90
			136	5 680	14.80
5.8 GHz	802.11a	20	149	5 745	11.00
			153	5 765	11.00
			157	5 785	11.40
			161	5 805	11.30
			165	5 825	10.80

\* Tune up tolerance is + 1.0 dB.



## 1.2 Tested Frequency

802.11b, 802.11g

	LOW	MID	HIGH
Frequency (MHz)	2412	2442	2462

## 1.3 Device Modifications

The following modifications were necessary for compliance:

Not applicable

## 1.4 Model Differences

Not applicable

## 1.5 Peripheral Devices

Device	Manufacturer	Model No.	Serial No.
Note Computer	TOSHIBA	PSL48K-00L00K	-

## 1.6 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

## 1.7 Test Facility

The measurement facility is located at (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.







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## 1.8 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	<b>FCC</b>	3 m & 10 m SAC and Conducted Test Site to perform FCC Part 15/18 measurements	 805871
JAPAN	<b>VCCI</b>	3 m & 10 m SAC and Conducted Test Site	 R-948, C-986, T-1843
KOREA	<b>MSIP</b>	EMI (Electromagnetic Interference / Emission) EMS (Electromagnetic Susceptibility / Immunity)	 No. 51, KR0025
International	<b>KOLAS</b>	EMC	



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## 2.0 Summary of tests

FCC Part Section(s)	Parameter	Limit	Test Condition	Status (note 1)
15.247(a)	6 dB Bandwidth	> 500 kHz	Conducted	C
15.247(b)	Maximum Output Power	< 1 Watt		C
15.247(d)	Conducted Spurious emission	> 20 dBc		C
15.247(d)	Band Edge	> 20 dBc		C
15.247(e)	Transmitter Power Spectral Density	< 8 dBm @ 3 kHz		C
				C
15.209	Field Strength of Harmonics	15.209(a)	Radiated	C
15.207	AC Conducted Emissions	15.207(a)	Line Conducted	C

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

The sample was tested according to the following specification:

- FCC Part 15.247, ANSI C63.10-2013

The tests were performed according to the method of measurements prescribed in

KDB No.558074





## 2.1 Technical Characteristic Test

### 2.1.1 ON Time, Duty Cycle

**Procedure:**

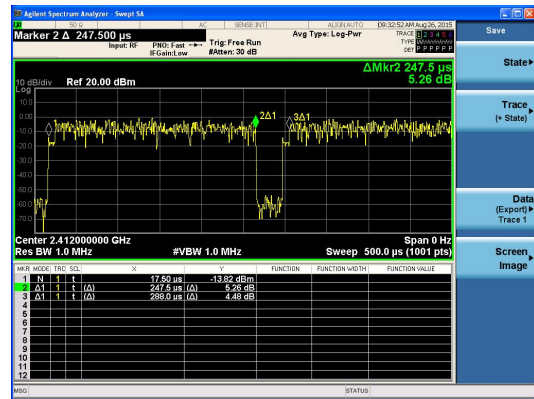
KDB 558074 Zero-Span Spectrum Analyzer Method.

**Measurement Data:**

	Period (ms)	ON Time (ms)	TX OFF (ms)	Duty Cycle (linear)	Duty Cycle (%)
802.11b	1.330	1.304	0.026	0.980	98.0
802.11g	0.288	0.247	0.041	0.857	85.7



Duty Cycle\_802.11b



Duty Cycle\_802.11g



## 2.1.2 6dB Bandwidth and 99% Bandwidth

### Procedure:

The bandwidth at 6dB below the highest in-band spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate frequencies.

After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 6dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is ( as close as possible to ) even with the reference marker level. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 100 kHz

Span = 50 MHz

VBW = 300 kHz (3 x RBW)

Sweep = auto

Trace = max hold

Detector function = peak

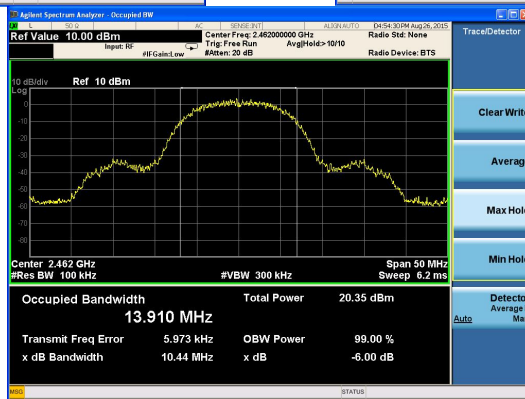
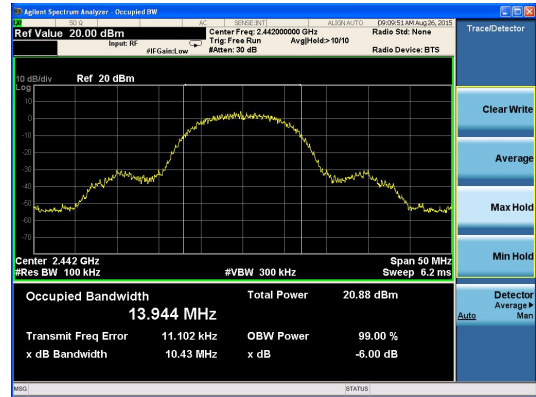
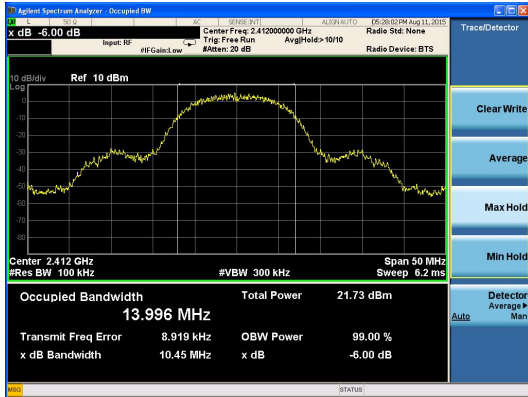
### Measurement Data:

Frequency	6 dB Bandwidth and 99% Bandwidth (MHz)					
	2412 MHz		2442 MHz		2462 MHz	
Mode	6dB	99%	6dB	99%	6dB	99%
802.11b	10.45	13.99	10.43	13.94	10.44	13.91
802.11g	16.47	16.44	16.47	16.43	16.46	16.42
Measurement uncertainty	± 3 dB					

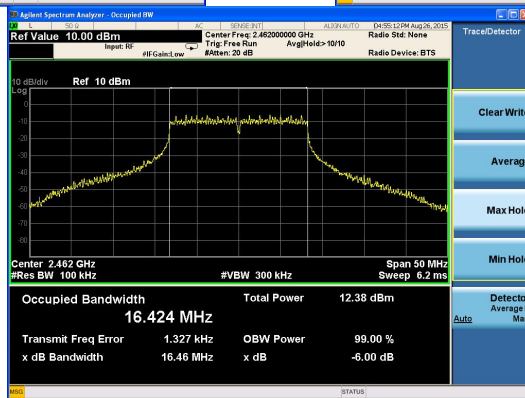
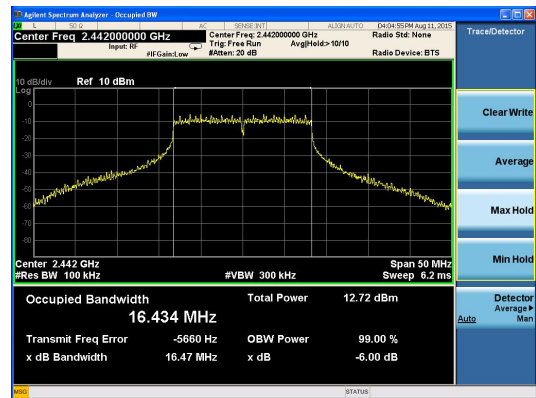
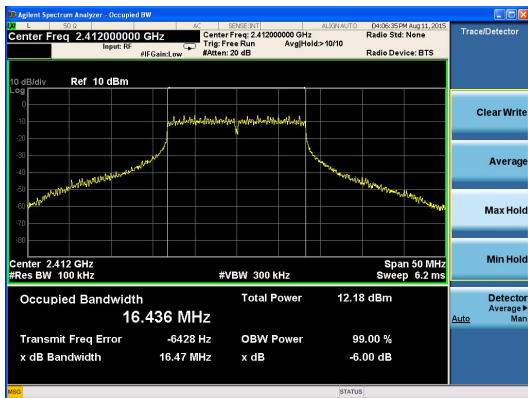
### Minimum Standard:

6 dB Bandwidth > 500kHz

See next pages for actual measured spectrum plots.



**802.11b**



**802.11g**

## 2.1.3 Conducted Output Power

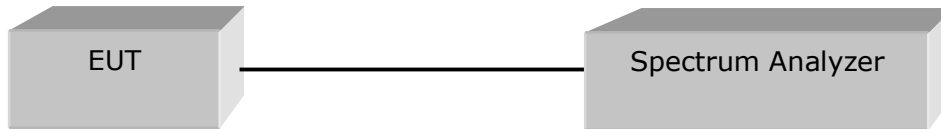
### Test Location

RF Test Room

### Test Procedures

Average Power(Procedure 9.2.2.2 in KDB 558074, Method AVGSA-1)

The transmitter output is connected to a spectrum analyzer and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth.



The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 1 MHz

Span = about 36 MHz, 50 MHz

VBW = 3 MHz (3 x RBW)

Sweep = auto

Trace = average at least 100

Detector function = RMS

### Limit

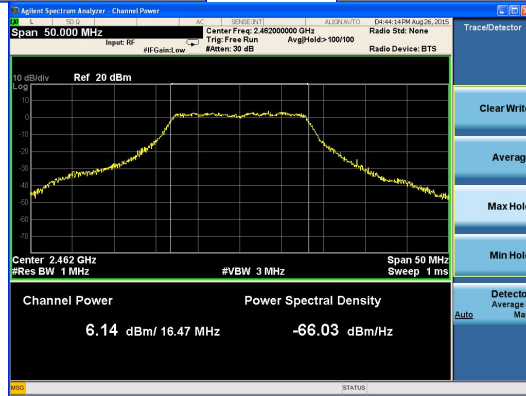
Not exceed 1W(30 dBm)

### Test Results

Mode	Measured Output Power (dBm)		
	2412 MHz	2442 MHz	2462 MHz
802.11b	14.64	13.59	13.69
802.11g	5.71	6.22	6.14
Measurement uncertainty	± 3 dB		



**802.11b**



**802.11g**



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## 2.1.4 Power Spectral Density

### Procedure:

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

The spectrum analyzer is set to:

RBW = 3 kHz

VBW = 10 kHz

Sweep = Auto

Span = 20 MHz

Detector function = peak

Trace = max hold

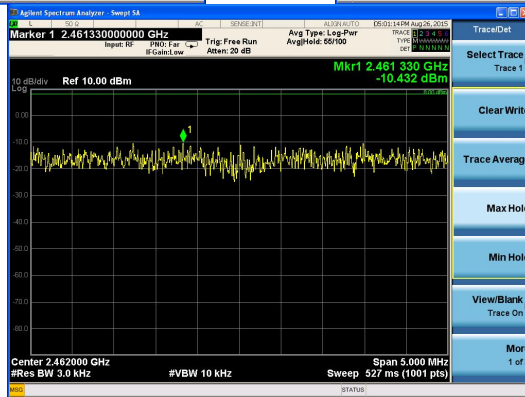
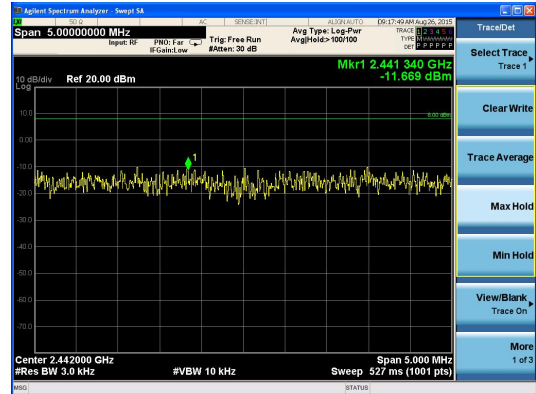
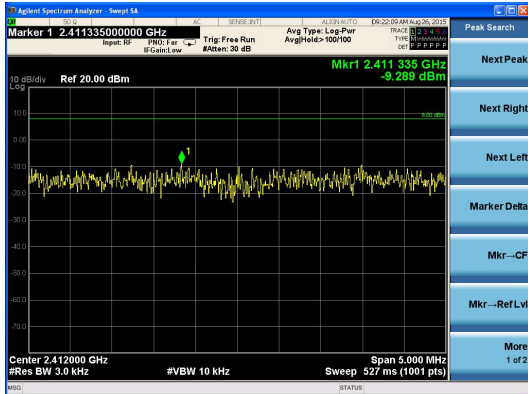
### Limit

Power Spectral Density	< 8dBm @ 3 kHz BW
------------------------	-------------------

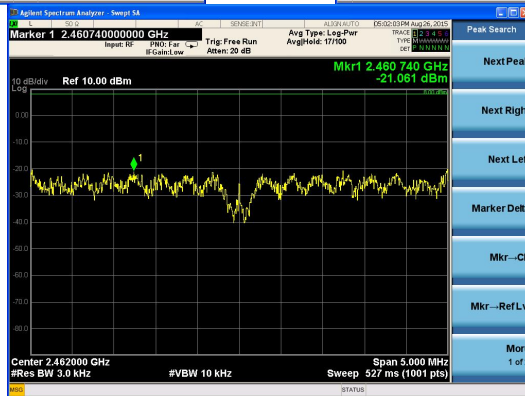
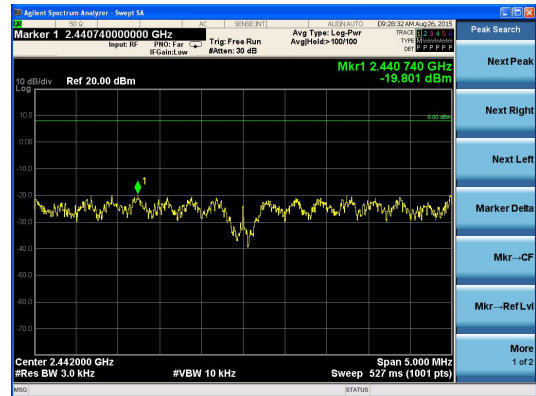
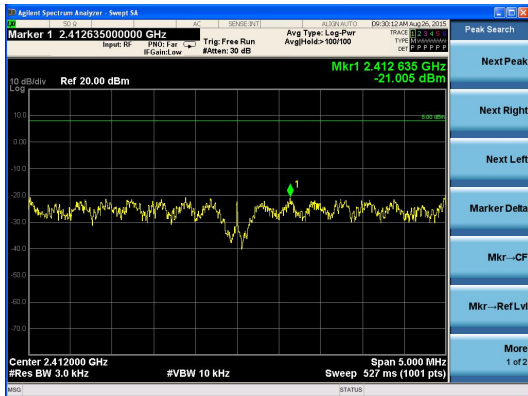
### Test Results

Mode	Measured Power Density (dBm)		
	2412 MHz	2442 MHz	2462 MHz
802.11b	-9.29	-11.66	-10.43
802.11g	-21.00	-19.80	-21.06
Measurement uncertainty	± 3 dB		

See next pages for actual measured spectrum plots.



802.11b



802.11g



## 2.1.5 Band - edge

### Procedure:

The bandwidth at 30dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate frequencies.

After the trace being stable, Use the marker-to-peak function to measure 30 dB down both sides of the intentional emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 100 kHz

VBW = 300 kHz

Span = 50 MHz

Detector function = peak

Trace = max hold

Sweep = auto

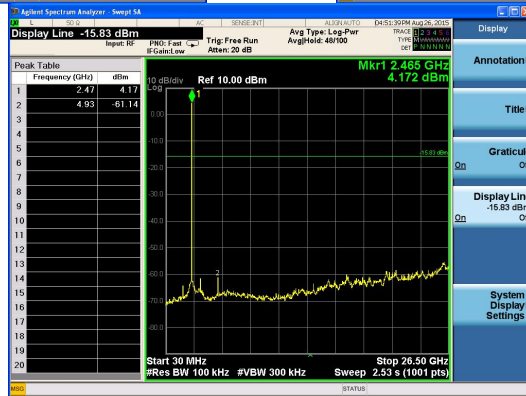
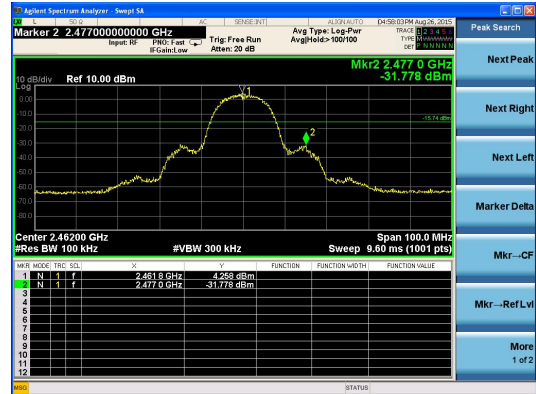
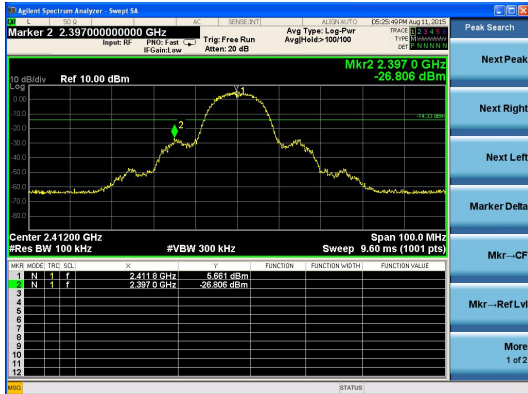
### Measurement Data: Complies

- All conducted emission in any 100 kHz bandwidth outside of the spread spectrum band was at least 30dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.

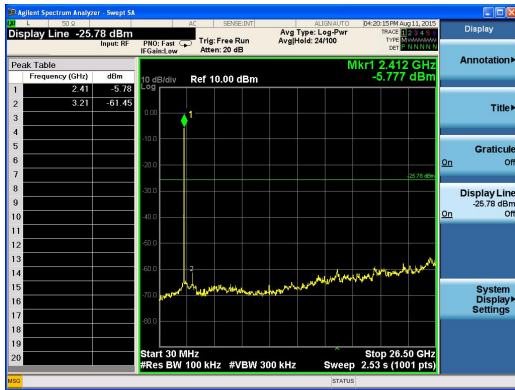
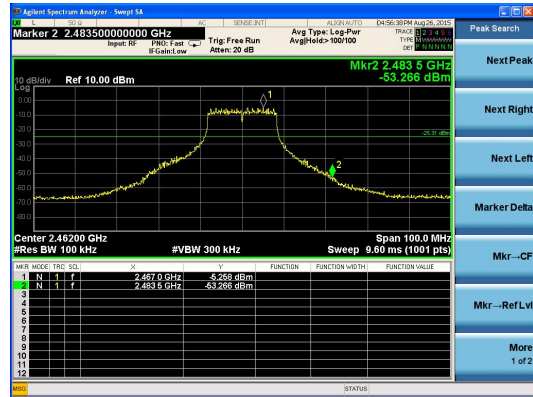
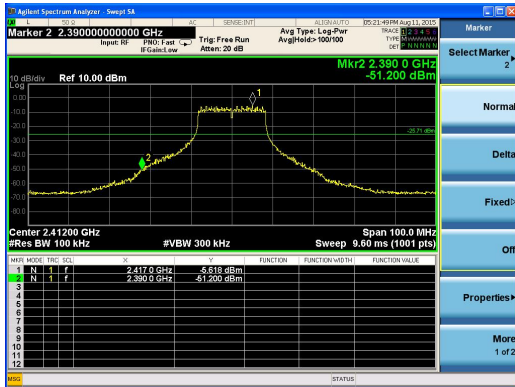
<b>Minimum Standard:</b>	> 30 dBc
--------------------------	----------

See next pages for actual measured spectrum plots.





802.11b



802.11g



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### 2.1.6 Field Strength of Emissions

#### Test Location

- 10 m SAC (test distance :  10 m,  3 m)  
 3 m SAC (test distance : 3 m)

#### Test Procedures

- 1) In the frequency range of 9 kHz to 30 MHz, magnetic field is measured with Loop Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.
- 2) In the frequency range above 30 MHz, Bi-Log Test Antenna(30 MHz to 1 GHz) and Horn Test Antenna(above 1 GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is carried from 1m to 4m above the ground to determine the maximum value of the field strength. The emissions levels at both horizontal and vertical polarizations should be tested.

The spectrum analyzer is set to:

Frequency Range = 9 kHz ~ 25 GHz (2.4 GHz 10<sup>th</sup> harmonic)

RBW = 1 MHz for  $f \geq 1$  GHz, 100 kHz for  $f < 1$  GHz, 9 kHz for  $f < 30$  MHz

VBW  $\geq$  RBW

Sweep = auto



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## Limit

§ 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	MHz	MHz	GHz
0.09-0.11	8.37626-8.38675	73-74.6	399.9-410	2690-2900	10.6-12.7
<sup>1</sup> 0.495-0.505	8.41425-8.41475	74.8-75.2	608-614	3260-3267	13.25-13.4
2.1735-2.1905	12.29-12.293	108-121.94	960-1240	3332-3339	14.47-14.5
4.125-4.128	12.51975-12.52025	123-138	1300-1427	3345.8-3358	15.35-16.2
4.17725-4.17775	12.57675-12.57725	149.9-150.05	1435-1626.5	3600-4400	17.7-21.4
4.20725-4.20775	13.36-13.41	156.52475-156.52525	1645.5-1646.5	4500-5150	22.01-23.12
6.215-6.218	16.42-16.423	156.7-156.9	1660-1710	5350-5460	23.6-24
6.26775-6.26825	16.69475-16.69525	162.0125-167.17	1718.8-1722.2	7250-7750	31.2-31.8
6.31175-6.31225	16.80425-16.80475	167.72-173.2	2200-2300	8025-8500	36.43-36.5
8.291-8.294	25.5-25.67	240-285	2310-2390	9000-9200	<sup>2</sup> Above 38.6
8.362-8.366	37.5-38.25	322-335.4	2483.5-2500	9300-9500	

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

§ 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



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§ 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 uV/m@3m	Field Strength dBuV/m@3m	Deasurement Distance (meters)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705-30	30	-	30
30-88	100**	40	3
88-216	150**	43.5	3
216-960	200**	46	3
Above 960	500	54	3

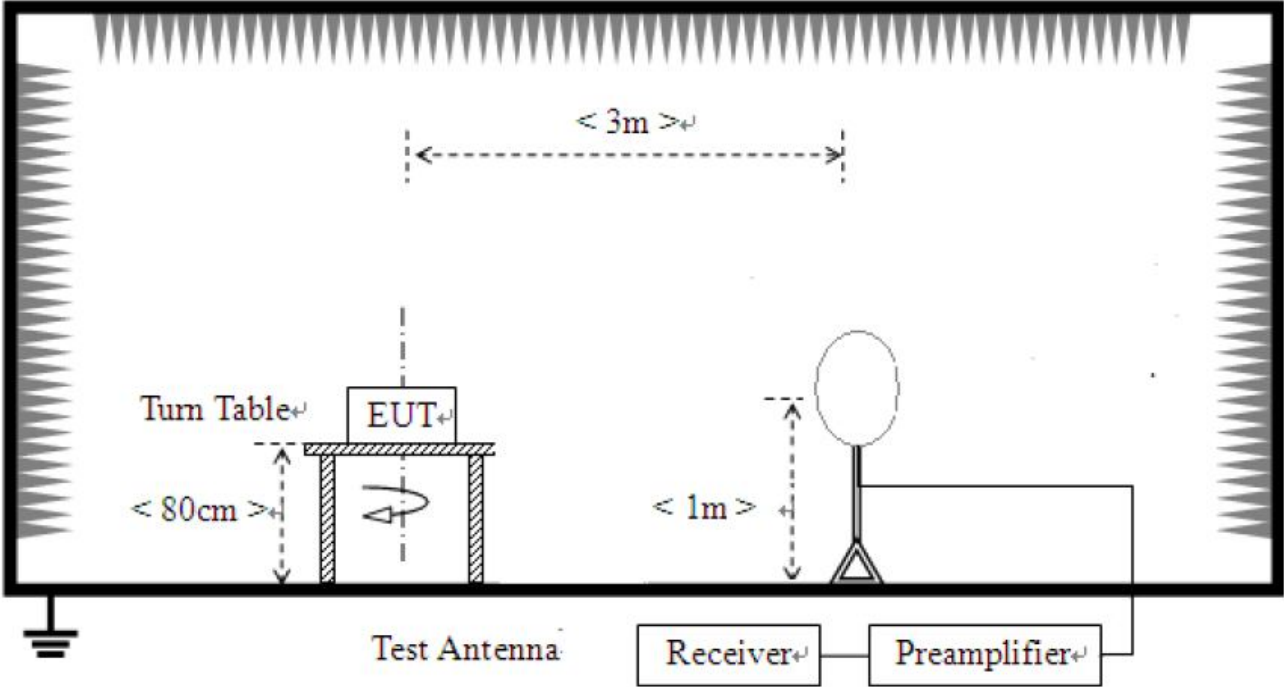
\*\* Except as provided in 15.209(g).fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72MHz, 76-88MHz, 174-216MHz, 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g.15.231 and 15.241.

Note :

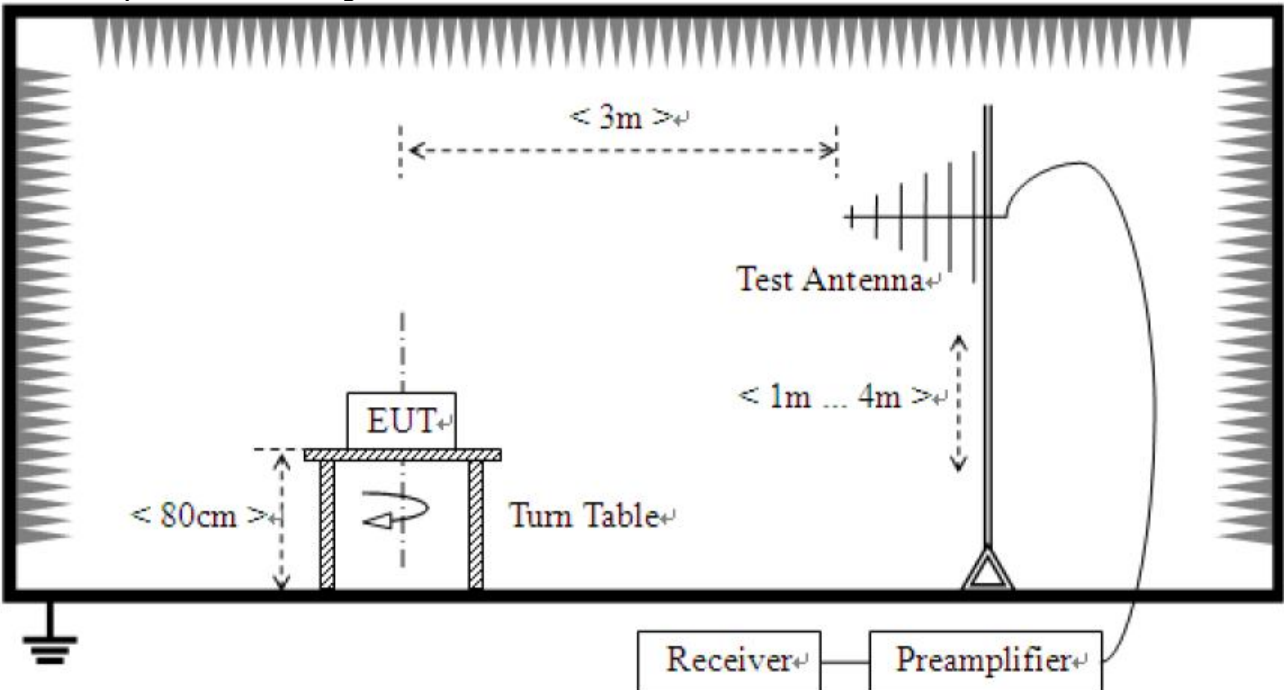
- 1) For above 1 GHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
- 2) For above 1 GHz, limit field strength of harmonics : 54 dBuV/m@3m (AV) and 74 dBuV/m@3m (PK)
- 3) For measurement above 1GHz, the resolution bandwidth is set to 1 MHz and video bandwidth is set to 1 MHz for peak measurement and 10 Hz for average measurement.(Duty Cycle is > 98%,)
- 4) Duty Cycle is < 98%, VBW setting will need to > 1/T.(1 / 0.288 ms = 3.472 kHz)

**Test Setup:**

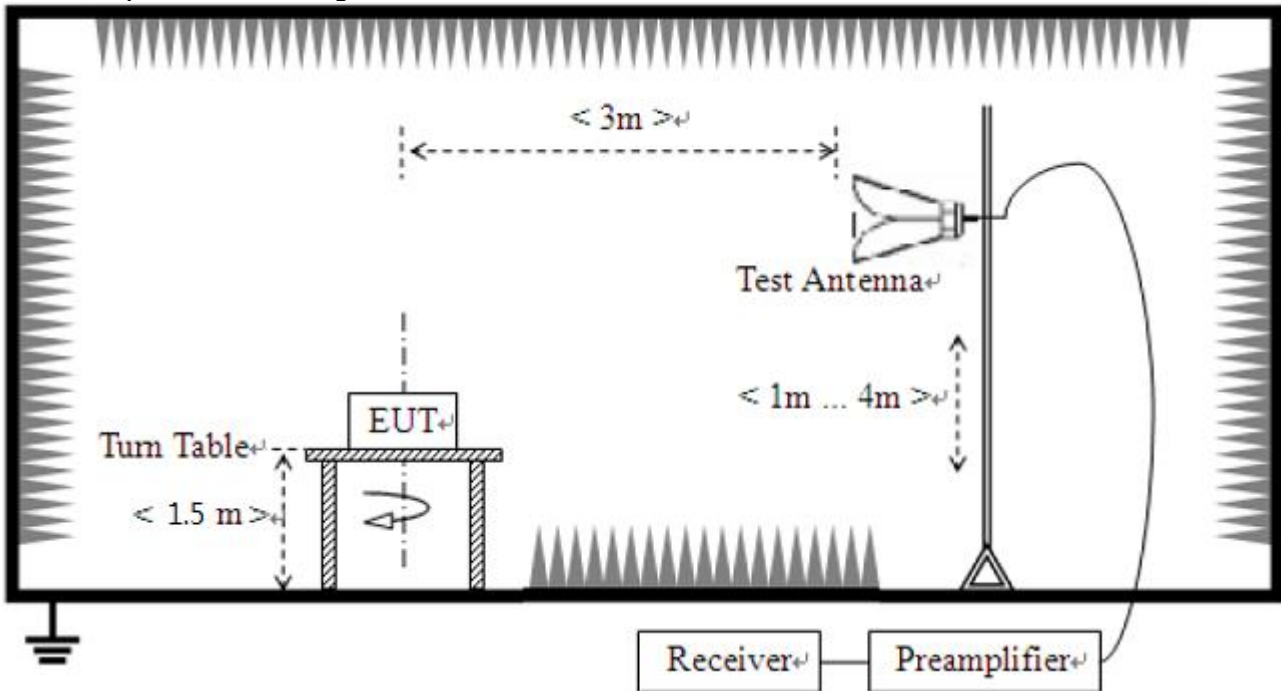
1) For field strength of emissions from 9 kHz to 30 MHz



2) For field strength of emissions from 30 MHz to 1 GHz



3) For field strength of emissions above 1 GHz



**Test Mode**

The worst-case antenna configuration are determined to be as follows for each mode.  
 802.11b mode  
 802.11g mode



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## Test Results

### 1) 9 kHz to 30 MHz

EUT	Mobile Printer	Measurement Detail	
Model	9485NP	Frequency Range	9 kHz – 30 MHz
Test mode	802.11b,802.11g	Detector function	Quasi-Peak

The requirements are:

Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
-	-	-	See note

**Note :**

The amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

Distance extrapolation factor =  $40 \log (\text{specific distance} / \text{test distance})$  (dB)





## 2) 30 MHz to 1 GHz

### Test mode : 802.11n

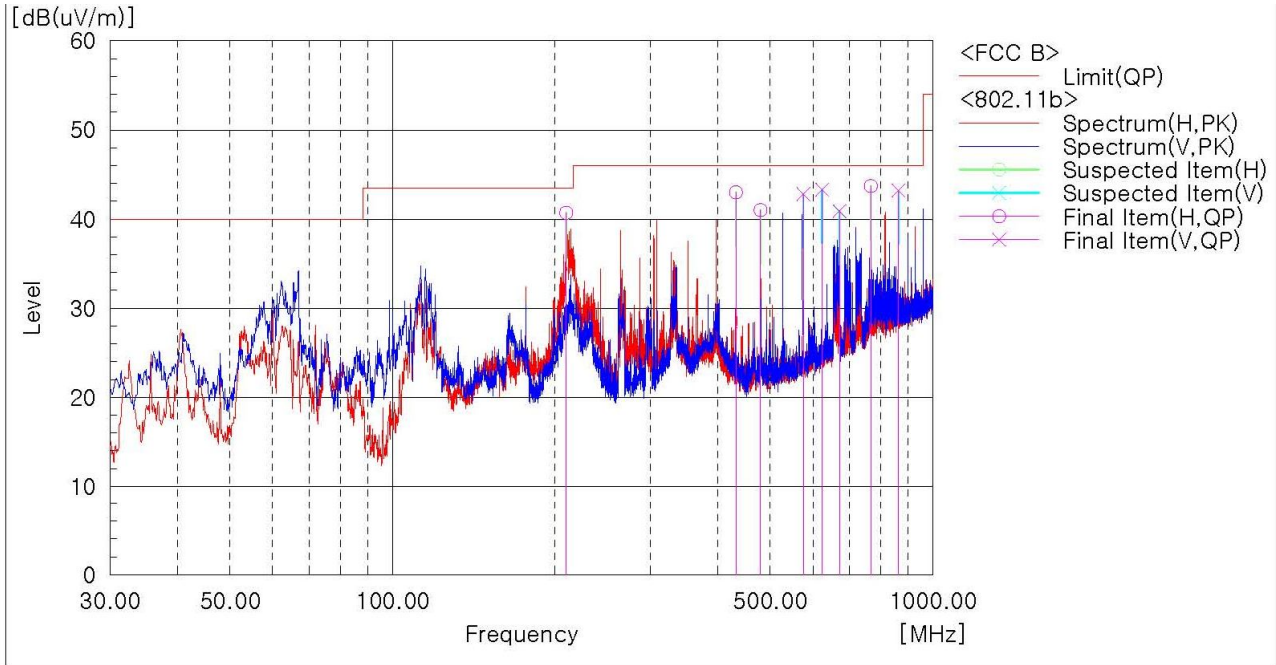
EUT	Mobile Printer	Measurement Detail	
Model	9485NP	Frequency Range	Below 1000MHz
Mode	802.11b	Detector function	Quasi-Peak

The requirements are:

Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
768.049	43.7	2.3	Quasi-peak

### Test data



### Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	209.693	H	54.0	-13.3	40.7	43.5	2.8	100.0	201.0	
2	432.065	H	47.2	-4.2	43.0	46.0	3.0	208.0	308.0	
3	480.080	H	43.9	-2.9	41.0	46.0	5.0	208.0	11.0	
4	575.989	V	43.1	-0.3	42.8	46.0	3.2	100.0	122.0	
5	624.004	V	42.5	0.8	43.3	46.0	2.7	100.0	11.0	
6	672.019	V	39.3	1.6	40.9	46.0	5.1	100.0	271.0	
7	768.049	H	40.3	3.4	43.7	46.0	2.3	208.0	122.0	
8	864.079	V	37.5	5.7	43.2	46.0	2.8	100.0	11.0	

### Remark :

1. The field strength of spurious emission was measured in the following position: EUT and antenna stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in stand-up position(X axis) and the worst case was recorded.



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## Test mode : 802.11g

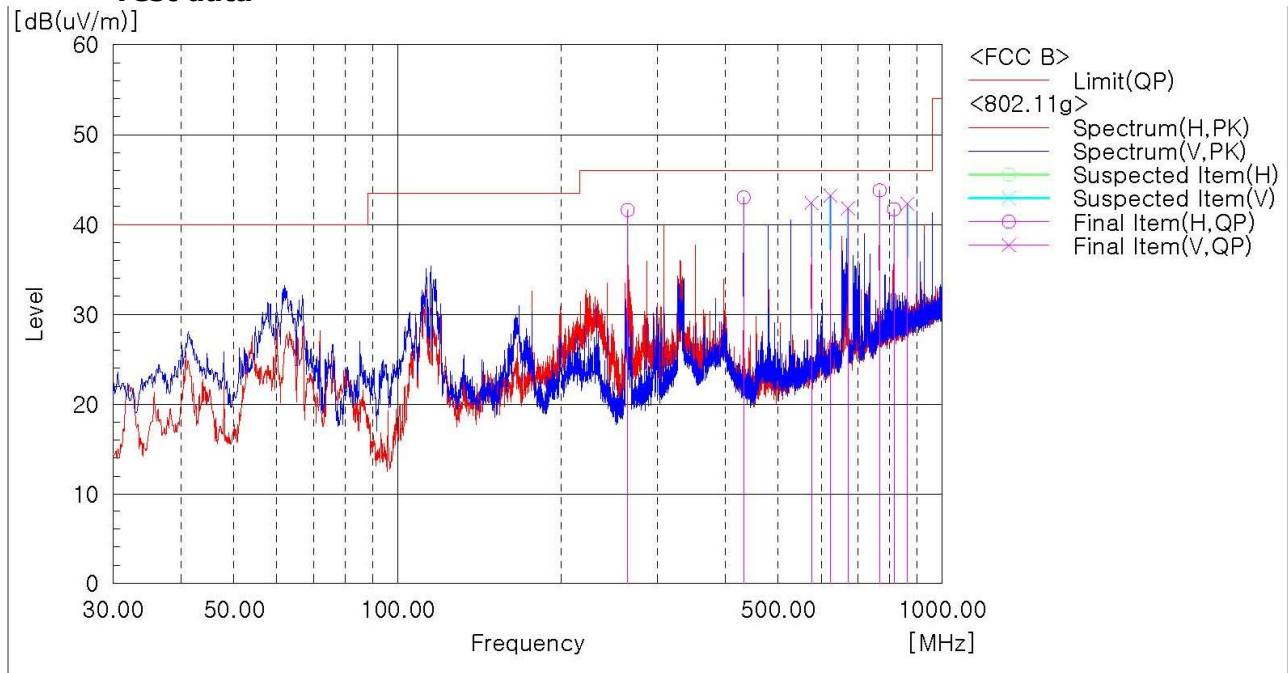
EUT	Mobile Printer	Measurement Detail	
Model	9485NP	Frequency Range	Below 1000MHz
Mode	802.11g	Detector function	Quasi-Peak

The requirements are:

Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
768.049	43.8	2.2	Quasi-peak

## Test data



## Final Result

No.	Frequency [MHz]	(P)	Reading [dB(uV)]	c.f [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Angle [deg]	Remark
1	264.619	H	51.1	-9.5	41.6	46.0	4.4	100.0	238.0	
2	432.065	H	47.2	-4.2	43.0	46.0	3.0	208.0	271.0	
3	576.110	V	42.7	-0.3	42.4	46.0	3.6	100.0	122.0	
4	624.004	V	42.4	0.8	43.2	46.0	2.8	100.0	159.0	
5	672.019	V	40.2	1.6	41.8	46.0	4.2	100.0	271.0	
6	768.049	H	40.4	3.4	43.8	46.0	2.2	100.0	52.0	
7	816.064	H	37.2	4.5	41.7	46.0	4.3	100.0	52.0	
8	864.079	V	36.6	5.7	42.3	46.0	3.7	100.0	10.0	

## Remark :

1. The field strength of spurious emission was measured in the following position: EUT and antenna stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in stand-up position(X axis) and the worst case was recorded.



### 3) above 1 GHz

#### Test mode : 802.11b

EUT	Mobile Printer	Measurement Detail	
Model	9485NP	Frequency Range	1-25GHz
Mode	802.11b	Detector function	Average / Peak

#### Remarks

We have tested three mode (X, Y, Z). The worst mode (X axis) for final test.

The requirements are:

Complies

Frequency (MHz)	Measured Data (dBUV/m)	Margin (dB)	Remark
4824	44.1	9.9	Average

#### [Ch.1(2412 MHz)]

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
4824.0	H	31.5	43.5	12.6	44.1	56.1	54.0	74.0	9.9	17.9

#### [Ch.7(2442 MHz)]

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
4884.0	H	30.6	43.9	12.6	43.2	56.5	54.0	74.0	10.8	17.5

#### [Ch.11(2462 MHz)]

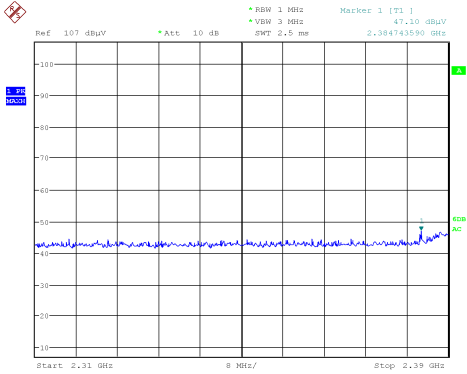
Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
4924.0	H	28.1	41.1	12.7	40.8	53.8	54.0	74.0	13.2	20.2

#### Restricted band edge test data

Measured frequency range : 2310-2390 MHz, 2483.5-2500 MHz

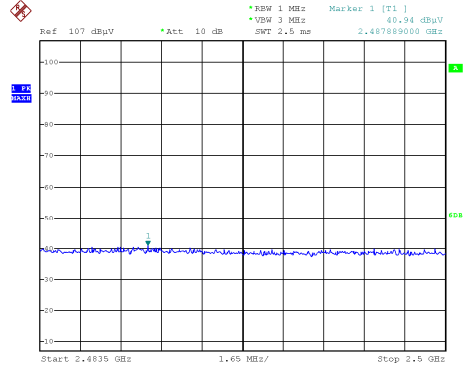
Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
2389.6	H	35.3	47.1	3.1	38.4	50.2	54.0	74.0	15.6	23.8
2485.5	H	28.1	40.9	3.2	31.3	44.1	54.0	74.0	22.7	29.9

**See next pages for actual measured spectrum plots.**



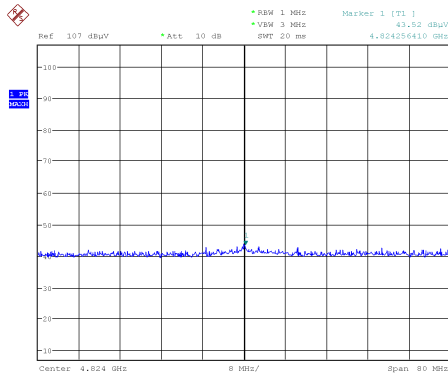
Date: 21.AUG.2015 00:06:43

**2310 MHz - 2390 MHz**



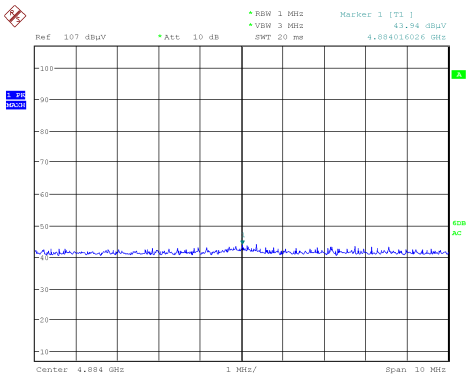
Date: 26.AUG.2015 16:46:27

**2483.5 MHz - 2500 MHz**



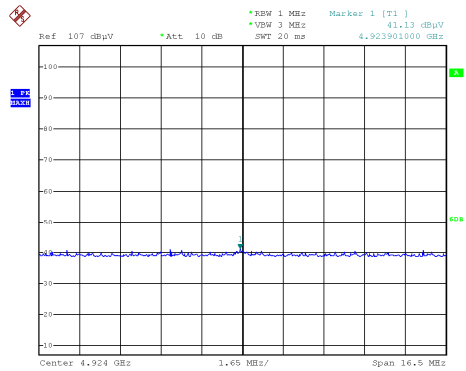
Date: 21.AUG.2015 00:10:06

**4824 MHz**



Date: 21.AUG.2015 00:14:22

**4884 MHz**



Date: 26.AUG.2015 16:48:28

**4924 MHz**



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## Test mode : 802.11g

EUT	Mobile Printer	Measurement Detail	
Model	9485NP	Frequency Range	1-25GHz
Mode	802.11g	Detector function	Average / Peak

### Remarks

We have tested three mode (X, Y, Z). The worst mode (X axis) for final test.

The requirements are:

Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
4924	41.0	13.0	Average

### [Ch.1(2412 MHz)]

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
4824.0	H	28.2	42.7	12.6	40.8	55.3	54.0	74.0	13.2	18.7

### [Ch.7(2442 MHz)]

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
4884.0	H	28.3	42.6	12.6	40.9	55.2	54.0	74.0	13.1	18.8

### [Ch.11(2462 MHz)]

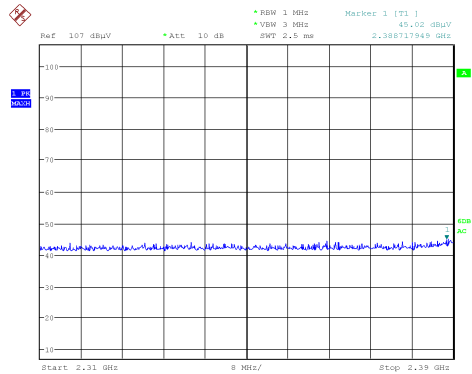
Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
4924.0	H	28.3	40.4	12.7	41.0	53.1	54.0	74.0	13.0	20.9

## Restricted band edge test data

Measured frequency range : 2310-2390 MHz, 2483.5-2500 MHz

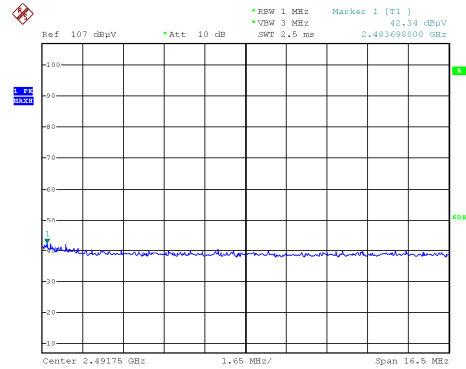
Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
2390.0	H	33.3	45.0	3.1	36.4	48.1	54.0	74.0	17.6	25.9
2483.5	H	30.0	42.3	3.2	33.2	45.5	54.0	74.0	20.8	28.5

**See next pages for actual measured spectrum plots.**



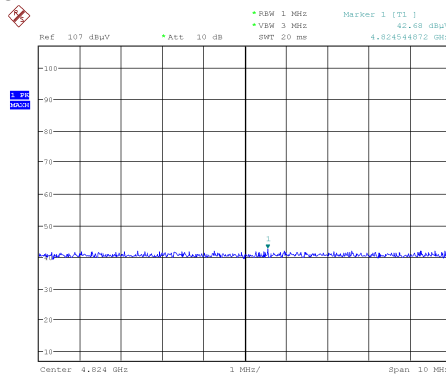
Date: 21.AUG.2015 00:28:12

**2310 MHz - 2390 MHz**



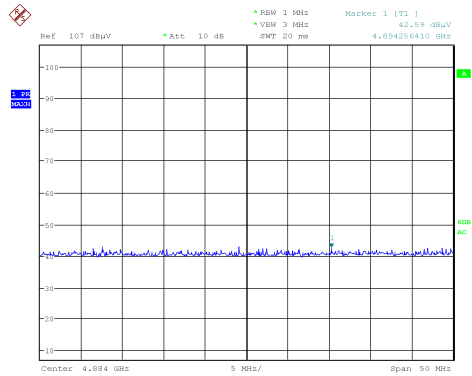
Date: 26.AUG.2015 17:01:56

**2483.5 MHz - 2500 MHz**



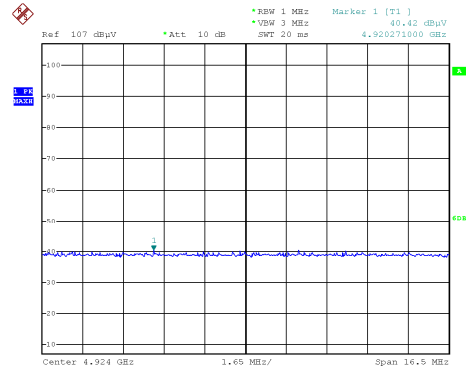
Date: 21.AUG.2015 00:27:00

**4824 MHz**



Date: 21.AUG.2015 00:24:34

**4884 MHz**



Date: 26.AUG.2015 17:05:21

**4924 MHz**



## 2.1.7 AC Conducted Emissions

### Test Location

Shielded Room

### Frequency Range of Measurement

150 kHz to 30 MHz

### Instrument Settings

IF Band Width: 9 kHz

### Test Procedures

The EUT was placed on a non-metallic table 0.8m above the metallic, grounded floor and 0.4m from the reference ground plane wall. The distance to other metallic surfaces was at least 0.8m.

Amplitude measurements were performed with a quasi-peak detector and an average detector.

### Limit

#### - 15.207(a)

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56*	56 to 46*
0.5 ~ 5	56	46
5 ~ 30	60	50

\* Decreases with the logarithm of the frequency.

### Test Results

The requirements are:

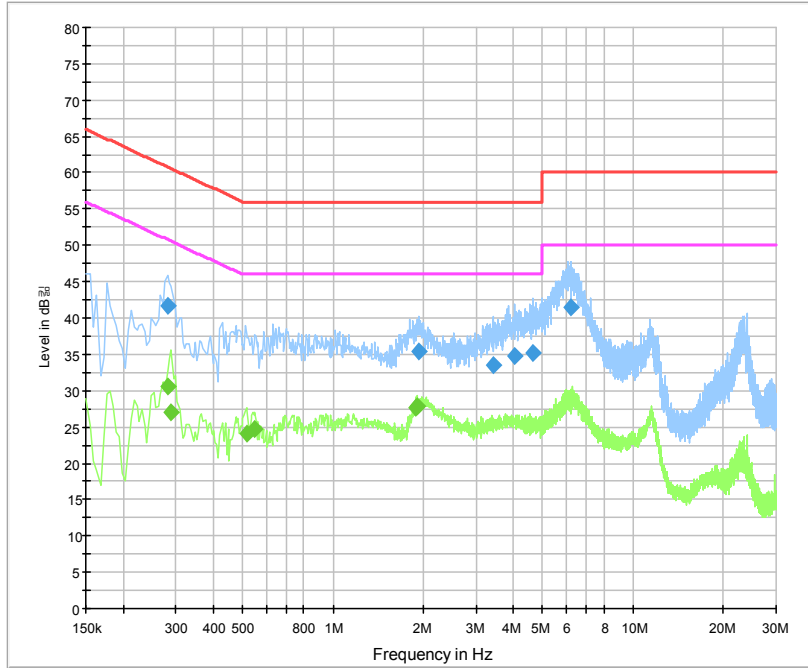
Complies

Test mode	Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
Test mode : 802.11g	6.333	43.2	16.8	Quasi-Peak



**Test Data**  
**Test mode : 802.11b**

[HOT]  
 KN 22 Class B\_L1



**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.280500	41.7	1000.0	9.000	On	L1	9.7	19.1	60.8
1.932000	35.4	1000.0	9.000	On	L1	9.7	20.6	56.0
3.403500	33.5	1000.0	9.000	On	L1	9.8	22.5	56.0
4.020000	34.7	1000.0	9.000	On	L1	9.8	21.3	56.0
4.663500	35.2	1000.0	9.000	On	L1	9.8	20.8	56.0
6.202500	41.5	1000.0	9.000	On	L1	9.8	18.5	60.0

**Final Result 2**

Frequency (MHz)	CAverage (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.280500	30.5	1000.0	9.000	On	L1	9.7	20.3	50.8
0.289500	26.9	1000.0	9.000	On	L1	9.7	23.6	50.5
0.514500	24.0	1000.0	9.000	On	L1	9.9	22.0	46.0
0.550500	24.8	1000.0	9.000	On	L1	9.9	21.2	46.0
1.896000	27.6	1000.0	9.000	On	L1	9.7	18.4	46.0
1.914000	27.9	1000.0	9.000	On	L1	9.7	18.1	46.0





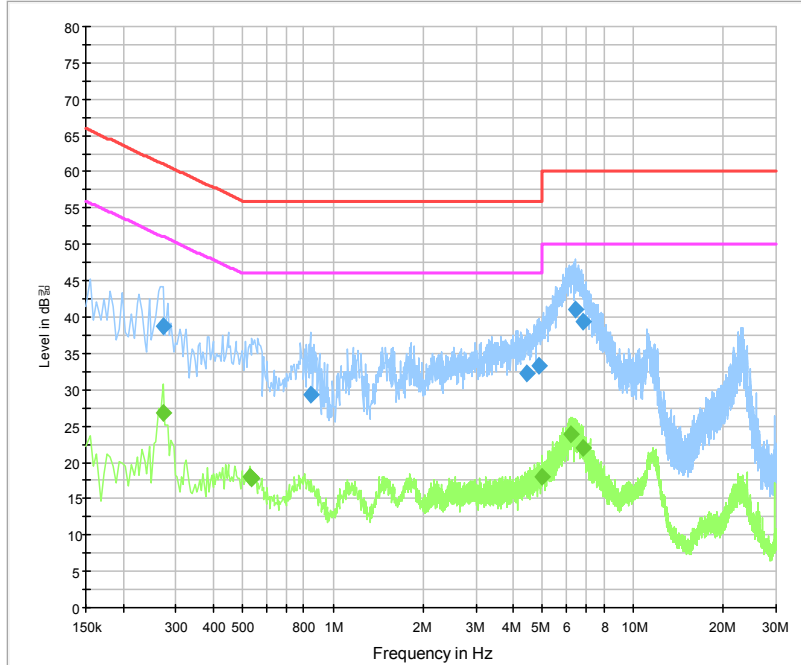
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## [NEUTRAL]

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### Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.271500	38.8	1000.0	9.000	On	N	9.7	22.3	61.1
0.843000	29.3	1000.0	9.000	On	N	9.8	26.7	56.0
4.416000	32.1	1000.0	9.000	On	N	9.7	23.9	56.0
4.834500	33.4	1000.0	9.000	On	N	9.7	22.6	56.0
6.418500	41.0	1000.0	9.000	On	N	9.7	19.0	60.0
6.823500	39.3	1000.0	9.000	On	N	9.7	20.7	60.0

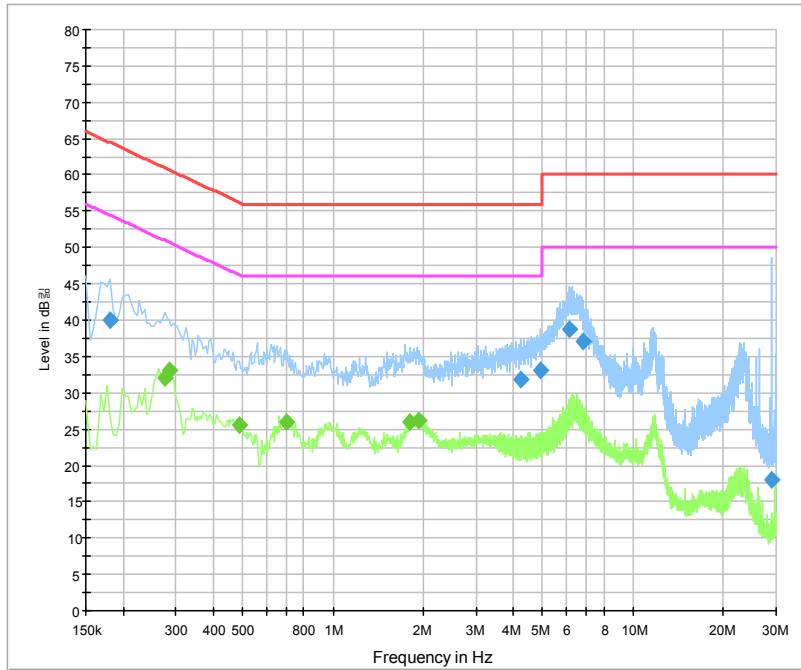
### Final Result 2

Frequency (MHz)	CAverage (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.271500	26.9	1000.0	9.000	On	N	9.7	24.2	51.1
0.528000	18.0	1000.0	9.000	On	N	9.9	28.0	46.0
0.537000	17.9	1000.0	9.000	On	N	9.9	28.1	46.0
4.969500	18.0	1000.0	9.000	On	N	9.7	28.0	46.0
6.211500	23.9	1000.0	9.000	On	N	9.7	26.1	50.0
6.823500	22.0	1000.0	9.000	On	N	9.7	28.0	50.0



**Test mode : 802.11g**

[HOT]  
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**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.181500	40.1	1000.0	9.000	On	L1	9.8	24.3	64.4
4.240500	31.8	1000.0	9.000	On	L1	9.8	24.2	56.0
4.924500	33.2	1000.0	9.000	On	L1	9.8	22.8	56.0
6.108000	38.8	1000.0	9.000	On	L1	9.8	21.2	60.0
6.810000	37.0	1000.0	9.000	On	L1	9.8	23.0	60.0
28.963500	18.1	1000.0	9.000	On	L1	10.0	41.9	60.0

**Final Result 2**

Frequency (MHz)	CAverage (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.276000	32.1	1000.0	9.000	On	L1	9.7	18.9	50.9
0.285000	33.1	1000.0	9.000	On	L1	9.7	17.6	50.7
0.487500	25.7	1000.0	9.000	On	L1	9.9	20.6	46.2
0.703500	26.0	1000.0	9.000	On	L1	9.8	20.0	46.0
1.810500	26.0	1000.0	9.000	On	L1	9.7	20.0	46.0
1.936500	26.1	1000.0	9.000	On	L1	9.7	19.9	46.0



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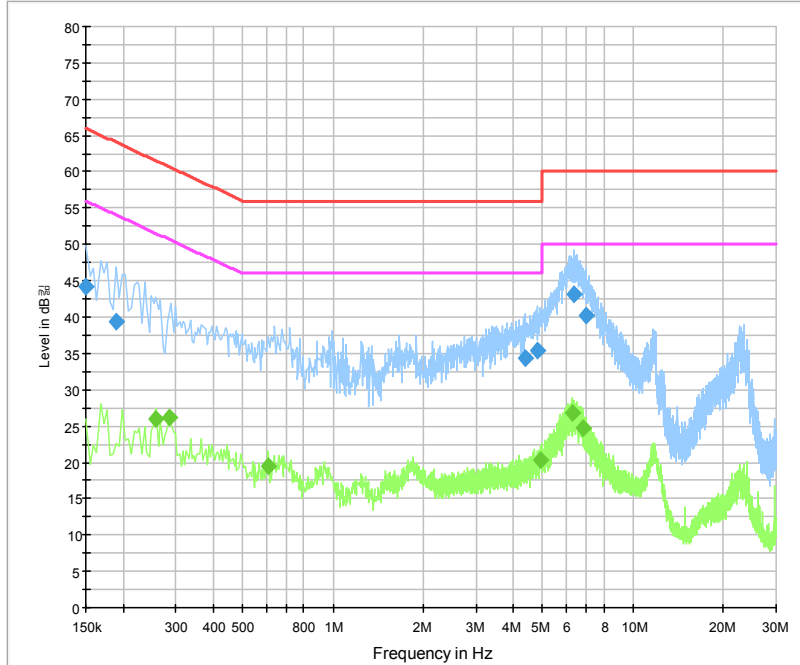
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### Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	44.1	1000.0	9.000	On	N	9.7	21.9	66.0
0.190500	39.4	1000.0	9.000	On	N	9.8	24.6	64.0
4.380000	34.3	1000.0	9.000	On	N	9.7	21.7	56.0
4.794000	35.4	1000.0	9.000	On	N	9.7	20.6	56.0
6.333000	43.2	1000.0	9.000	On	N	9.7	16.8	60.0
6.954000	40.2	1000.0	9.000	On	N	9.7	19.8	60.0

### Final Result 2

Frequency (MHz)	CAverage (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.258000	25.9	1000.0	9.000	On	N	9.6	25.6	51.5
0.285000	26.2	1000.0	9.000	On	N	9.7	24.5	50.7
0.609000	19.4	1000.0	9.000	On	N	9.8	26.6	46.0
4.911000	20.4	1000.0	9.000	On	N	9.7	25.6	46.0
6.270000	26.8	1000.0	9.000	On	N	9.7	23.2	50.0
6.837000	24.7	1000.0	9.000	On	N	9.7	25.3	50.0



## APPENDIX A – Test Equipment Used For Tests

	<b>Name of Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Cal Date</b>	<b>Due Date</b>
1	Signal Analyzer	Agilent	N9020A	MY48011598	2014-11-07	2015-11-07
2	EMI Test Receiver	Rohde & Schwarz	ESCI7	100814	2014-12-05	2015-12-05
3	EMI Test Receiver	Rohde & Schwarz	ESCI7	100816	2014-12-05	2015-12-05
4	DC POWER SUPPLY	Agilent	E3632A	MY40011638	2014-11-07	2015-11-07
5	Horn Antenna	ETS-Lindgren	3115	00078895	2015-05-07	2017-05-07
6	Horn Antenna	ETS-Lindgren	3116	00062916	2015-04-30	2017-04-30
7	OPT H64 AMPLIFIER	HP	8447F	3113A06814	2015-02-06	2016-02-06
8	PREAMPLIFIER	Agilent	8449B	3008A02307	2014-10-24	2015-10-24
9	LISN	Rohde & Schwarz	ENV216	101760	2015-02-02	2016-02-02
10	DC POWER SUPPLY	Agilent	E3632A	MY40011638	2014-11-07	2015-11-07
11	EMI Test Receiver	Rohde & Schwarz	ESCI3	100032	2015-02-02	2016-02-02
12	6dB Attenuator	R&S	DNF	272.4110.50	2014-11-07	2015-11-07
13	AMPLIFIER	Sonoma Instrument Co.	310	291721	2015-02-02	2016-02-02
14	EMI Test Receiver	Rohde & Schwarz	ESU40	100336	2015-05-15	2016-05-15
15	Signal Generator	Rohde & Schwarz	SMBV100A	258008	2015-05-13	2016-05-13
16	Signal Generator	Rohde & Schwarz	SMB100A	175528	2015-01-19	2016-01-19
17	Bilog Antenna	Schaffner	CBL6111C	2551	2014-05-08	2016-05-08