

Kobo Inc

Application For Certification

FCC ID: ZJLKOBOK107

7" Tablet

Model: K107

WiFi Transceiver

Report No.: SZ12090432-1

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [10-1-11]

Prepared and Checked by:	Approved by:	
Sign on file		
Harry Wu Testing Engineer	Billy Li Supervisor	

Date: 30 September 2012

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
- This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results referenced from this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
- For Terms And Conditions of the services, it can be provided upon request.
- The evaluation data of the report will be kept for 3 years from the date of issuance.

TRF no.: FCC 15C_Tx_b

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MEASUREMENT/TECHNICAL REPORT

Kobo Inc - MODEL: K107

FCC ID: ZJLKOBOK107

This report concerns (check one) Original Grant X Class II Change		
Equipment Type: DTS - Part 15 Digital Transmission Systems (WiFi transmitter		
portion)		
Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes NoX		
If yes, defer until:		
date		
Company Name agrees to notify the Commission by:		
date		
of the intended date of announcement of the product so that the grant can be issued on that date.		
Transition Rules Request per 15.37? Yes NoX_		
If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [10-01-11 Edition] provision.		
Report prepared by:		
Billy Li Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch 6F, Block D, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China Phone: (86 755) 8614 0645 Fax: (86 755) 8601 6751		

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Exhibit Type	File Description	Filename
Cover Letter	Letter of Agency	agency.pdf
Cover Letter	Confidentiality Letter	request.pdf
Cover Letter	Label Location Justification	Justification.pdf
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
Operation Description	Technical Description	descri.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
RF Exposure info	SAR Report	sar report. pdf

EXHIBIT 1 SUMMARY OF TEST RESULTS

1.0 Summary of Test

Kobo Inc - MODEL: K107

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TEST	REFERENCE	RESULTS
Max. Output power	15.247(b)	Pass
6 dB Bandwidth	15.247(a)(2)	Pass
Max. Power Density	15.247(e)	Pass
Out of Band Emission	15.247(d)	Pass
Radiated Emission in Restricted Bands	15.247(d)	Pass
AC Conducted Emission	15.207	Pass
Antenna Requirement	15.203	Pass (See Notes)

Notes: The EUT uses an Internal Discrete Antenna which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.

EXHIBIT 2 GENERAL DESCRIPTION

2.0 **General Description**

2.1 Product Description

The Equipment Under Test (EUT) is a 7" Tablet with internal WiFi function operating at 2412-2462MHz for 802.11b/g/n-20MHz, 11 channels with 5MHz channel spacing. It is powered by internal 3.7V rechargeable battery and charged by AC 100~240V, 50/60Hz with AC adapter (Model: BU10-0501). For more detailed features description, please refer to the user's manual.

Type of Modulation: CCK, DSSS for 802.11b, OFDM for 802.11g/n. Antenna Type: Internal Discrete Antenna.

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

2.2 Related Submittal(s) Grants

This is an application for certification of:
DTS- Part 15 Digital Transmission Systems (WiFi transmitter portion)

Remaining portions are subject to the following procedures:

- 1. Receiver portion of WiFi: exempt from technical requirement of this Part.
- 2. Data Transfer function: (Report No.: SZ12090432-2).
- 3. Other Digital function: (Report No.: SZ12090432-3).

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2009) and KDB 558074. Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "Justification Section" of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch** and located at 6F, Block D, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: 242492).

EXHIBIT 3 SYSTEM TEST CONFIGURATION

3.0 **System Test Configuration**

3.1 Justification

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables were manipulated to produce worst case emissions. It was powered by the fully charged batteries and charged by AC 120V, 60Hz during the test. Only the worst case data was reported.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

3.2 EUT Exercising Software

The EUT exercise program (provided by client) used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The worst case configuration is used in all specified testing.

The parameters of test software setting:

During the test, Channel and power controlling software provided by the applicant was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the application and is going to be fixed on the firmware of the end product.

Power Parameters of IEEE 802.11b/g/n

1 Owel 1 arameters of IEEE 602.1 fb/g/ff			
Test software setting of IEEE 802.11b/g/n			
Channel No.	Output Power (dBm)	Data rate	Modulation type
	18.0	802.11b: 1-11Mbps	802.11b: CCK, DSSS
1,6,11	17.0	802.11g: 6-54Mbps	802.11g: OFDM
	17.0	802.11n: MCS0-MCS7	802.11n-20M: OFDM

We test all data rate and only the worst – case data is shown in the report.

3.3 Special Accessories

N/A

3.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

Uncertainty and Compliance – Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

3.5 Equipment Modification

Any modifications installed previous to testing by Kobo Inc will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch.

3.6 Support Equipment List and Description

This product was tested in the following configuration:

Refer List:

Description	Manufacturer	Model No.
Earphone	N/A	Unshielded, Length: 100cm
Adapter	Kobo	BU10-0501 (Input: 100-240V, 50/60Hz, 0.35A; Output: DC 5V, 2A)

EXHIBIT 4 MEASUREMENT RESULTS

Applicant: Kobo Inc Date of Test: 30 September 2012

Model: K107

4.0 Measurement Results

4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b)(3):

- [x] The antenna power of the EUT was connected to the input of a spectrum analyzer. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.
- [] The antenna port of the EUT was connected to the input of a spectrum analyzer. The analyzer was set according to the FCC KDB 558074 spectrum analyzer's integrated band power measurement function with band limits set equal to the EBW band edges and power was read directly in dBm. External attenuation and cable loss were compensated from the measured value.

For antennas with gains of 6 dBi or less, maximum allowed Transmitter output is 1 watt (+30 dBm).

IEEE 802.11b (Antenna Gain = 2.9dBi) (DSSS, 1Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	20.52	112.7
Middle Channel: 2437	20.32	107.6
High Channel: 2462	20.21	105.0

IEEE 802.11g (Antenna Gain = 2.9dBi) (OFDM, 6Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	20.77	119.4
Middle Channel: 2437	20.46	111.2
High Channel: 2462	20.52	112.7

IEEE 802.11n 20M (Antenna Gain = 2.9dBi) (OFDM, MCS0)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	20.68	116.9
Middle Channel: 2437	20.33	107.9
High Channel: 2462	20.28	106.7

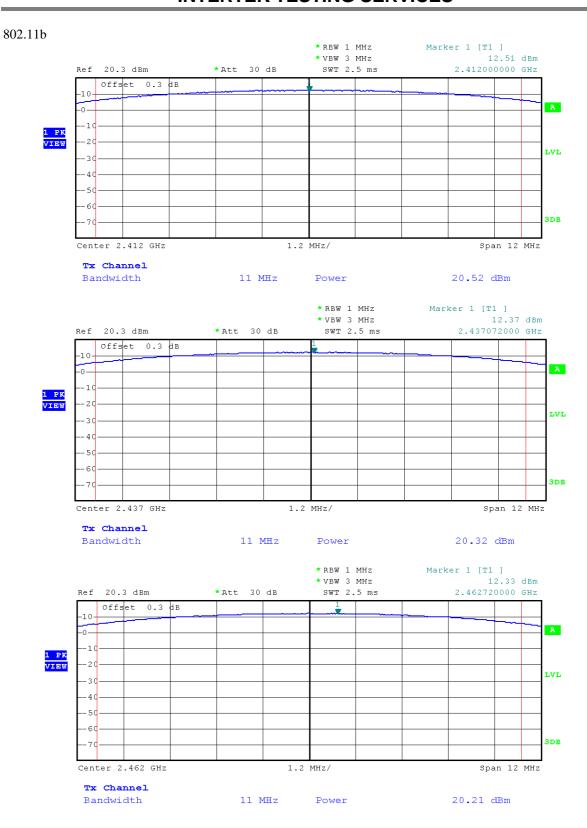
Cable loss: 0.3 dB External Attenuation: 0 dB

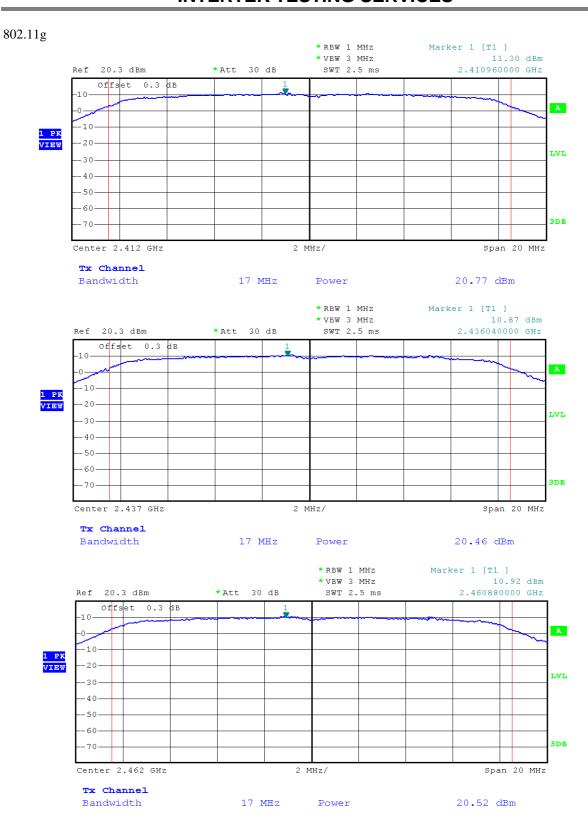
Cable loss, external attenuation has been included in OFFSET function

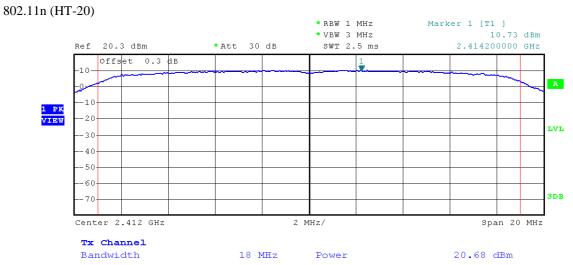
EUT dBm max. output level = 20.77dBm

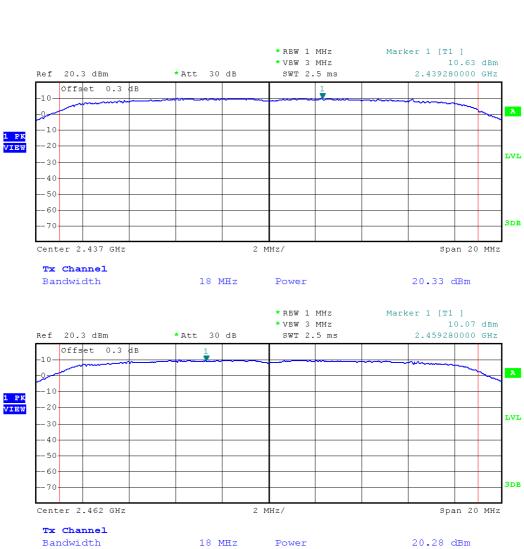
For RF Exposure, the information is saved with filename: sar report.pdf.

The test plots are attached as below.









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4.2 Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a)(2):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 1-5 % of the emission bandwidth according to FCC KDB 558074. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

Limit: The 6 dB Bandwidth is at least 500 kHz.

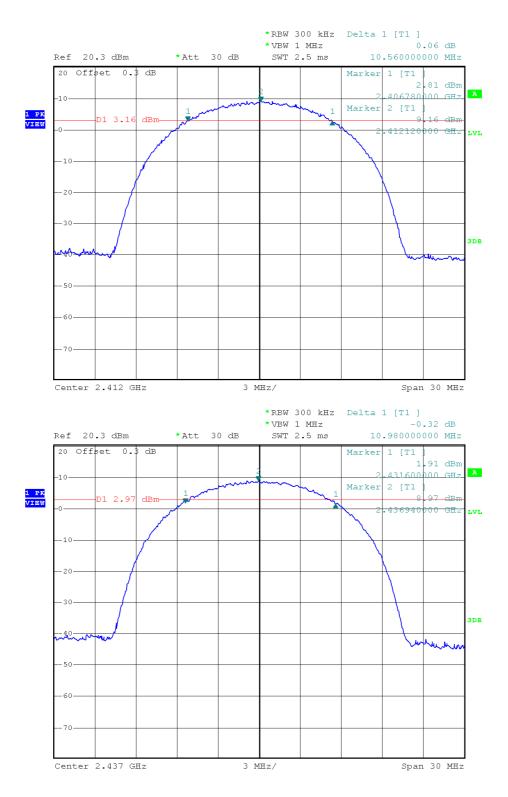
IEEE 802.11b (DSSS, 1Mbps)		
Frequency (MHz)	6 dB Bandwidth (MHz)	
2412	10.56	
2437	10.98	
2462	10.62	

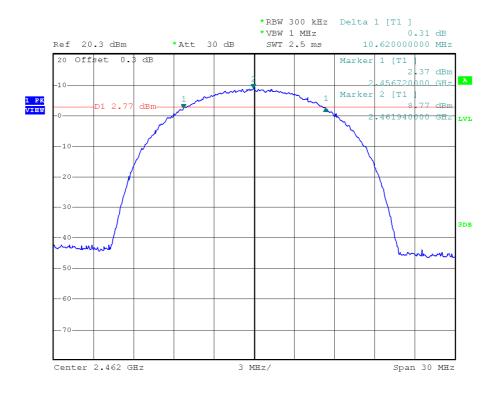
IEEE 802.11g (OFDM, 6Mbps)		
Frequency (MHz)	6 dB Bandwidth (MHz)	
2412	16.50	
2437	16.50	
2462	16.50	

IEEE 802.11n 20M (OFDM, MCS0)		
Frequency (MHz)	6 dB Bandwidth (MHz)	
2412	17.58	
2437	17.70	
2462	17.52	

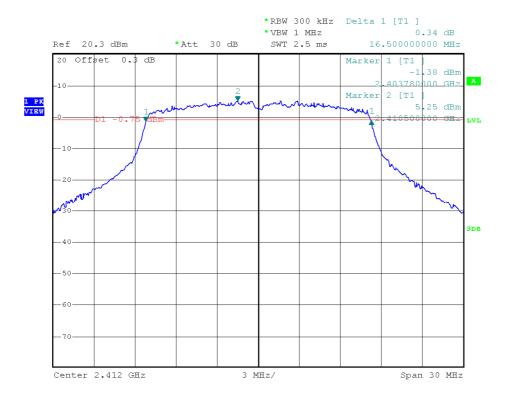
The test plots are attached as below.

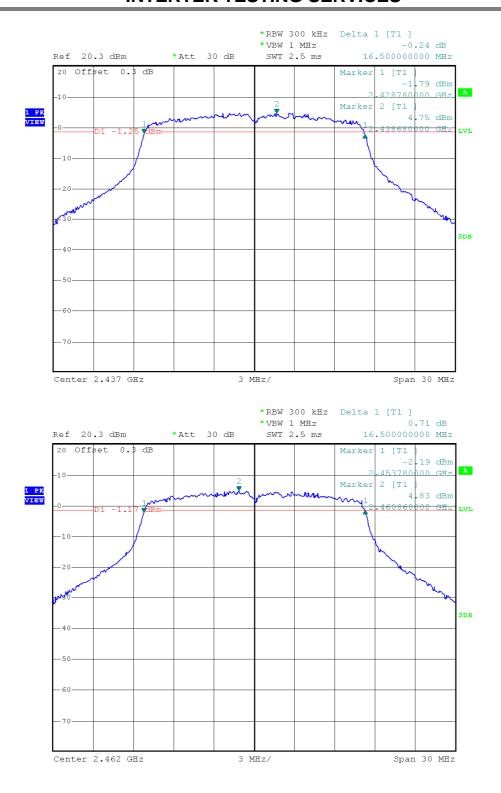
802.11b



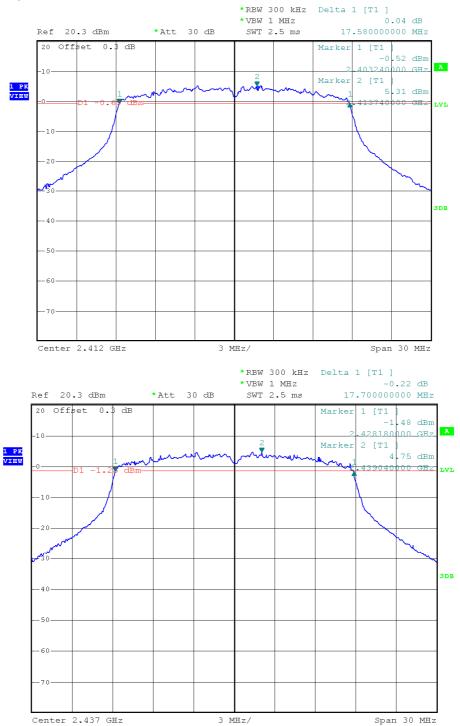


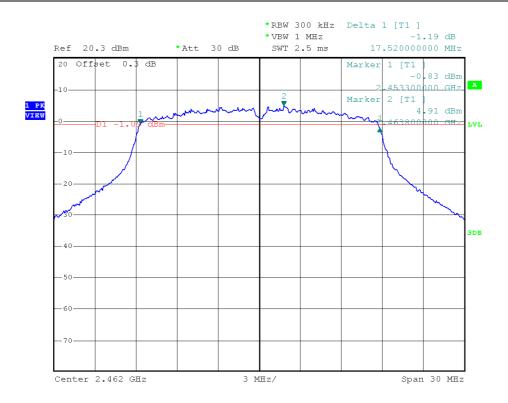
802.11g











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4.3 Maximum Power Density Reading, FCC Rule 15.247(e):

The Measurement Procedure PKPSD was set according to the FCC KDB 558074. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW and then scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(3 kHz/100 kHz= -15.2 dB).

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

Limit: The Power Density does not exceed 8dBm/ 3 kHz.

IEEE 802.11b (DSSS, 1Mbps)		
Frequency (MHz)	Power Density (dBm/3kHz)	
2412.144	-9.1	
2437.144	-9.5	
2461.472	-9.2	

IEEE 802.11g (OFDM, 6Mbps)		
Frequency (MHz)	Power Density (dBm/3kHz)	
2413.280	-14.2	
2438.280	-14.6	
2463.280	-14.5	

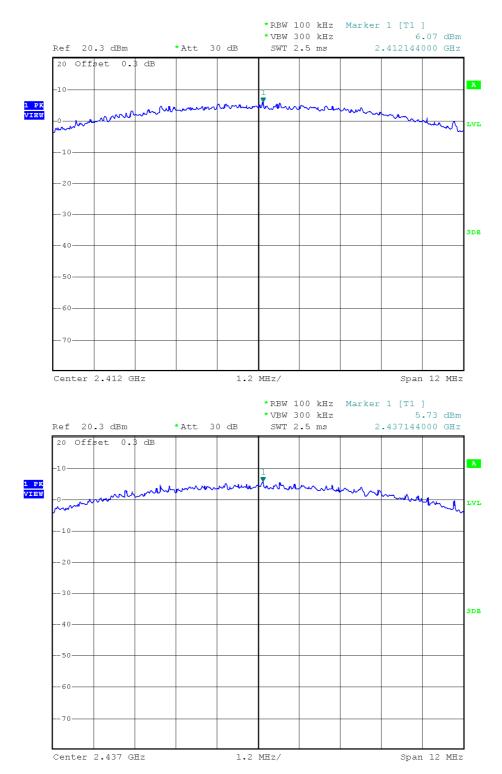
IEEE 802.11n 20M (OFDM, MCS0)		
Frequency (MHz)	Power Density (dBm/3kHz)	
2413.320	-14.1	
2438.280	-14.3	
2463.280	-14.4	

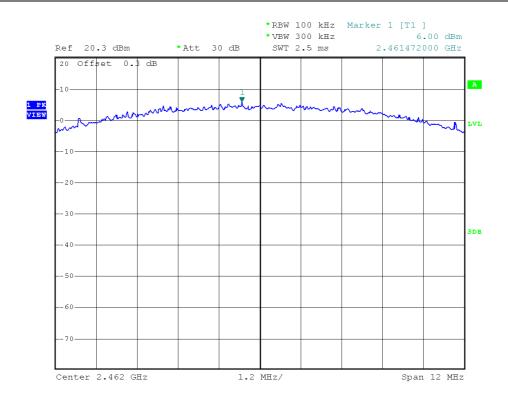
Cable loss: 0.3 dB External Attenuation: 0 dB

Cable loss, external attenuation has been included in OFFSET function

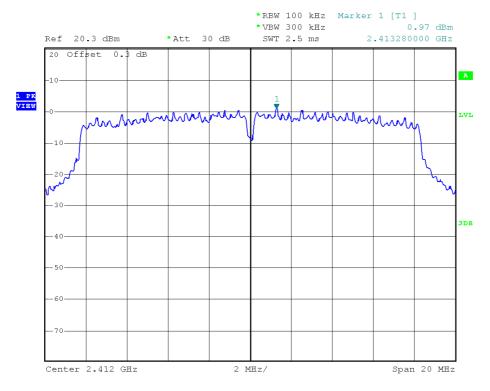
The test plots are attached as below.

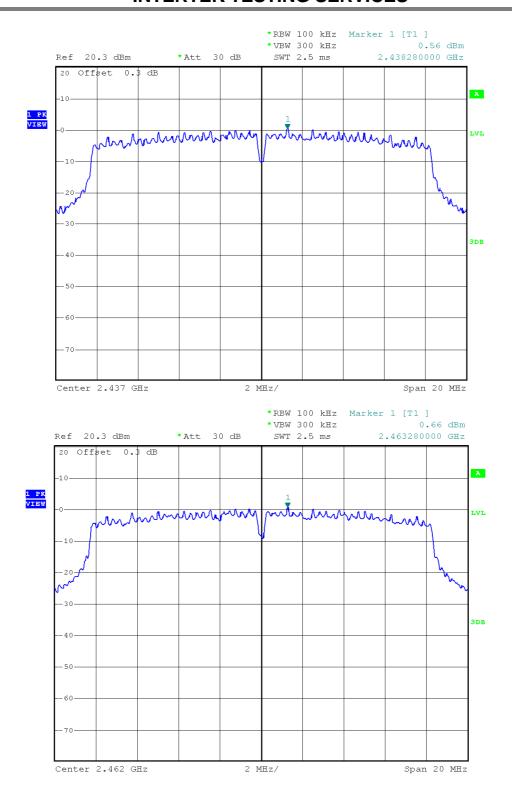




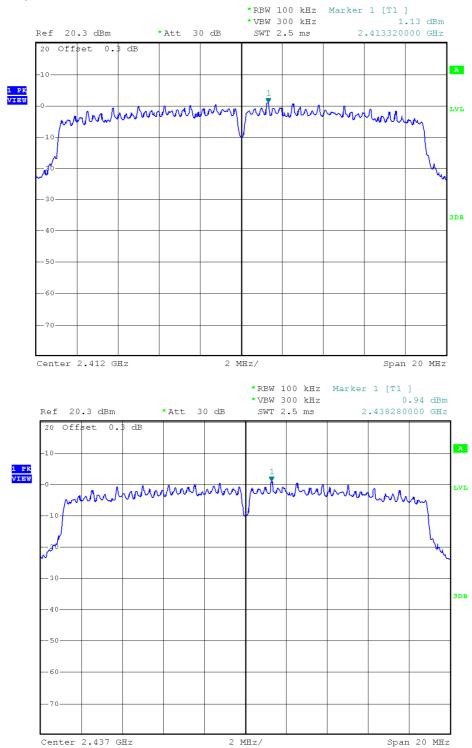


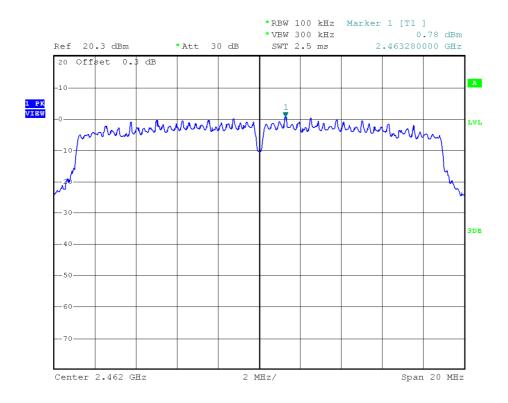
802.11g











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4.4 Out of Band Emissions (Conducted), FCC Rule 15.247(d)

In any 100 kHz bandwidth outside the EUT passband, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20dB below that of the maximum in-band 100 kHz emission, or else shall meet the general limits for radiated emissions at frequencies outside the passband, whichever results in lower attenuation. The Measurement Procedure was set according to the FCC KDB 558074.

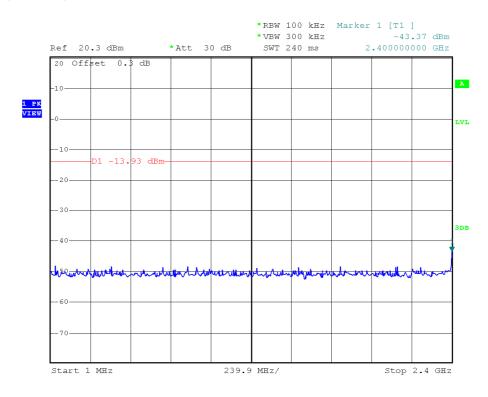
All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

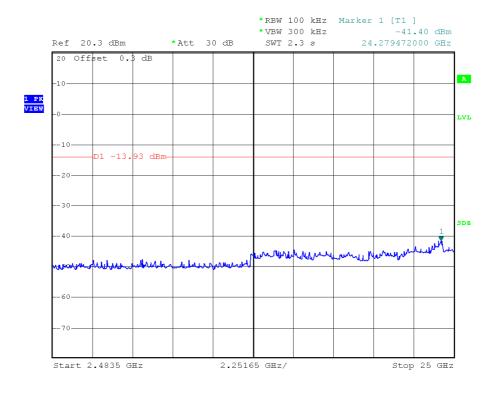
Refer to the attached test plot for out of band conducted emissions data with rate of 1Mbps for 802.11b, 6Mbps for 802.11g and MCS0 for 802.11n HT20.

The test plots showed all spurious emission and up to the tenth harmonic was measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

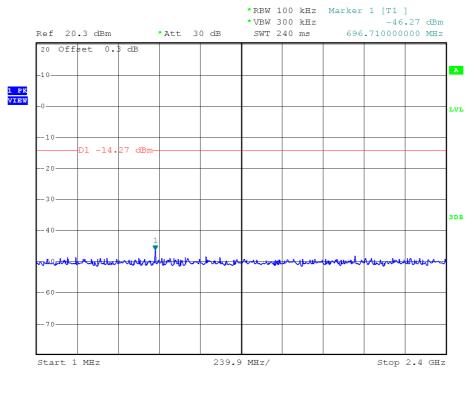
The test plots are attached as below.

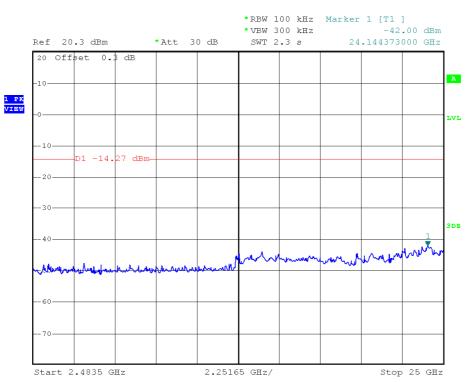
802.11b Channel 1 (2412MHz) Reference Level: 6.07dBm



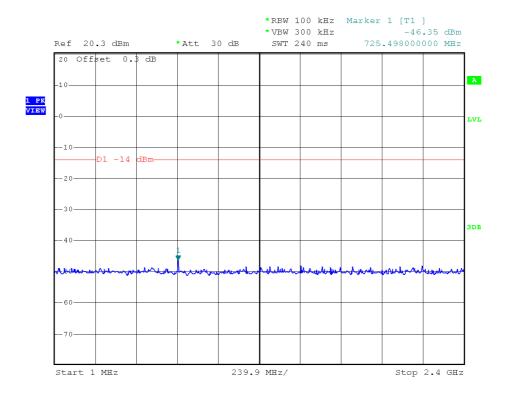


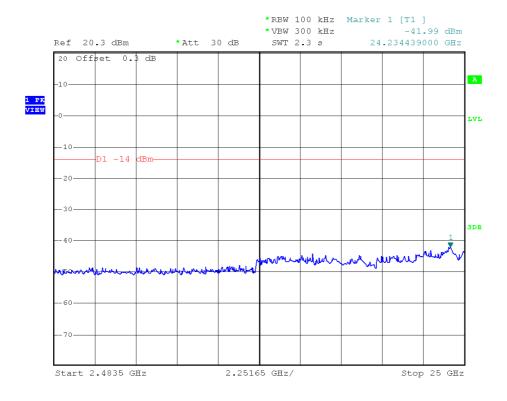
Channel 6 (2437MHz) Reference Level: 5.73dBm



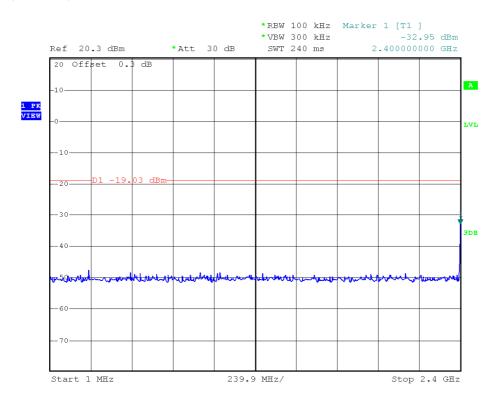


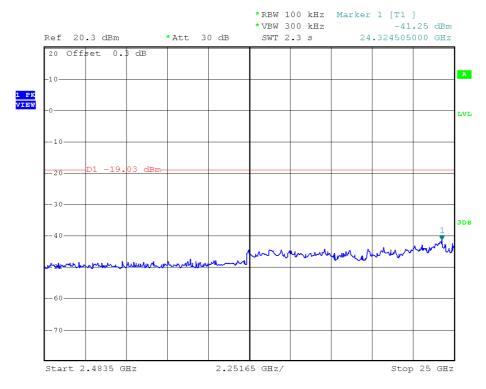
Channel 11 (2462MHz) Reference Level: 6.00dBm



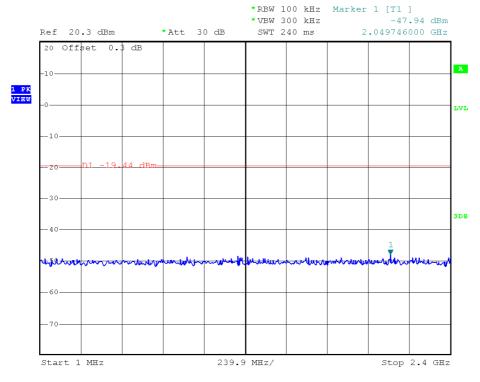


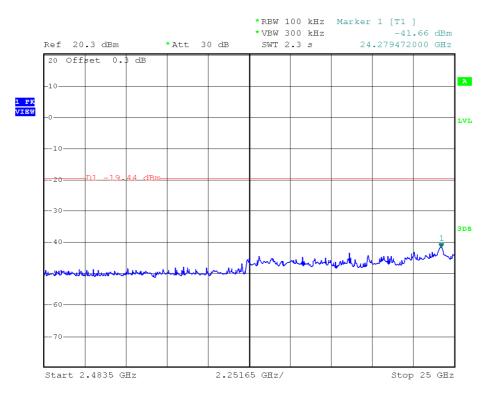
802.11g Channel 1 (2412MHz) Reference Level: 0.97dBm



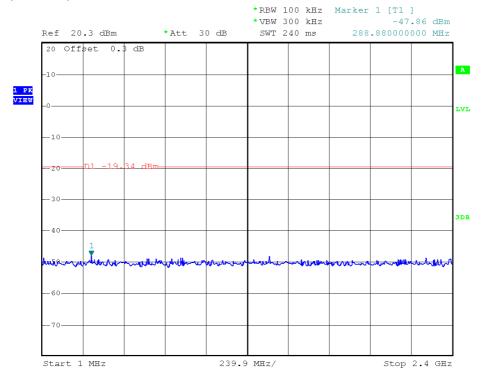


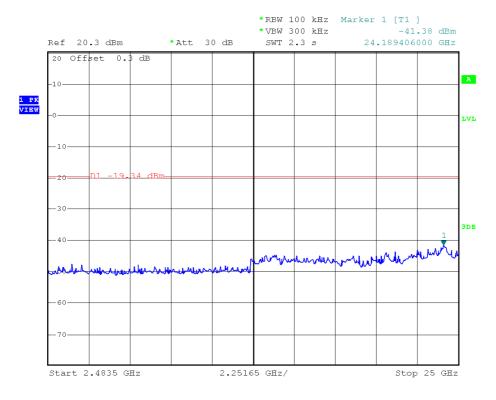




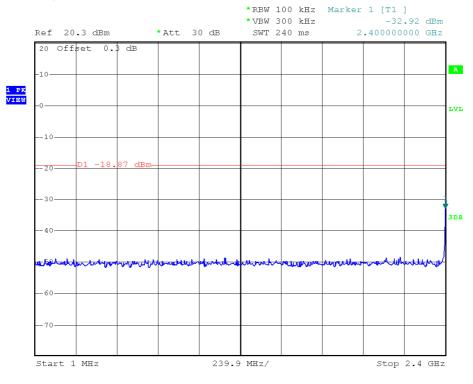


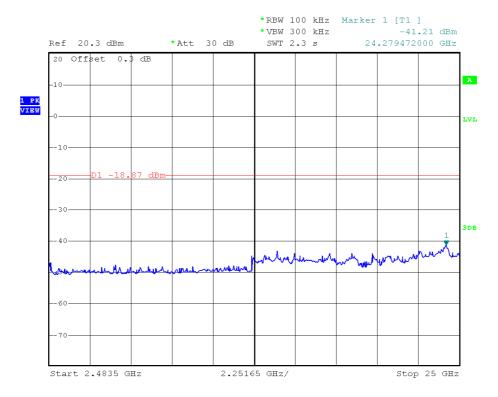
Channel 11 (2462MHz) Reference Level: 0.66dBm



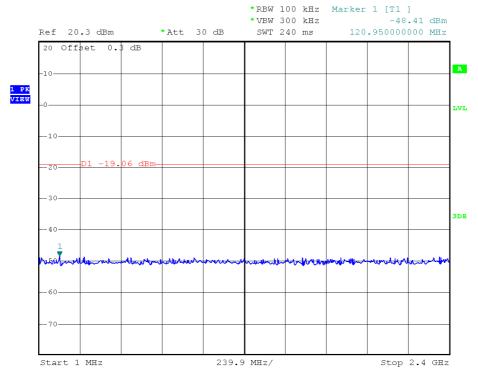


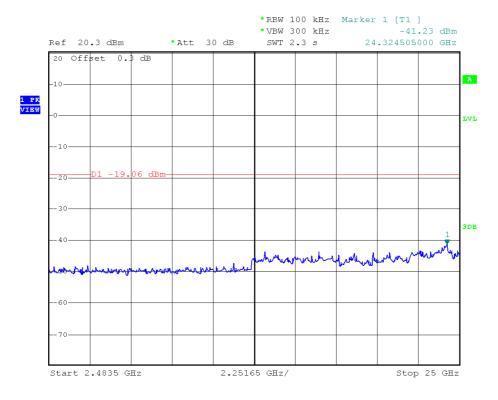
802.11n (HT-20) Channel 1 (2412MHz) Reference Level: 1.13dBm



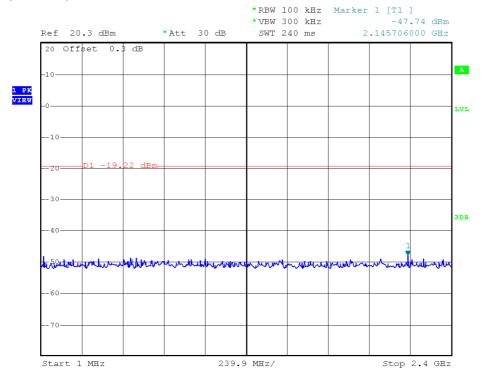


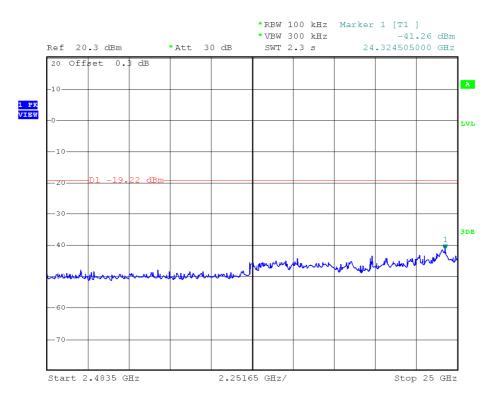
Channel 6 (2437MHz) Reference Level: 0.94dBm





Channel 11 (2462MHz) Reference Level: 0.78dBm

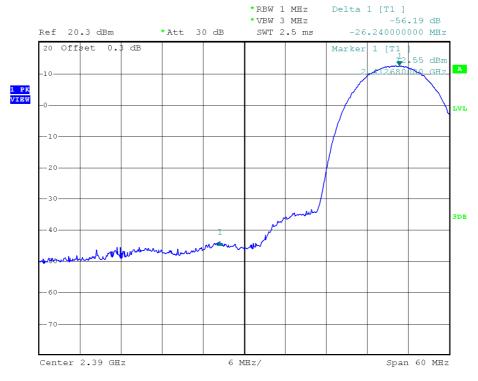




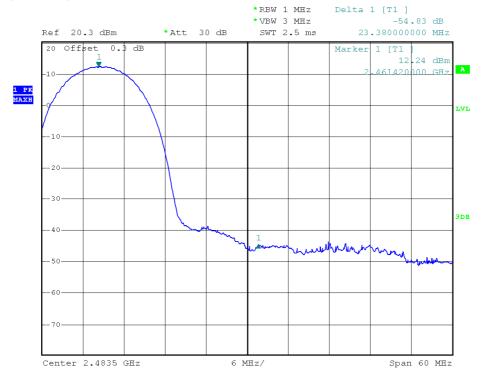
Band edge plot

802.11b

Channel 1 (2412MHz)



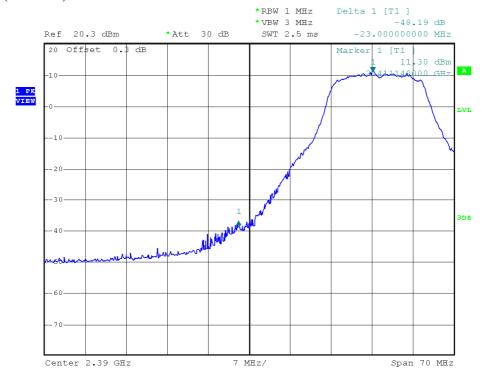
Channel 11 (2462MHz)



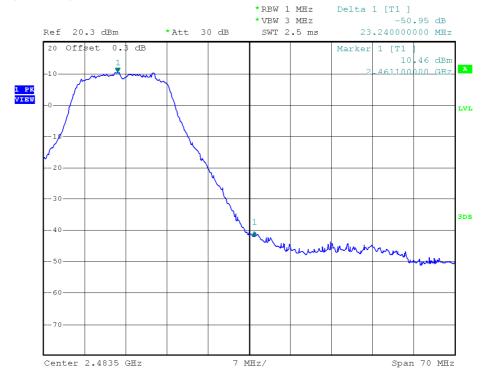
Band edge plot

802.11g

Channel 1 (2412MHz)

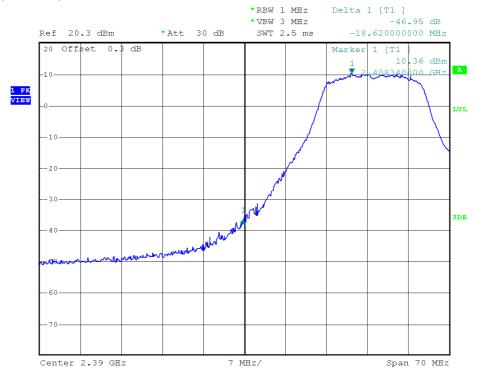


Channel 11 (2462MHz)

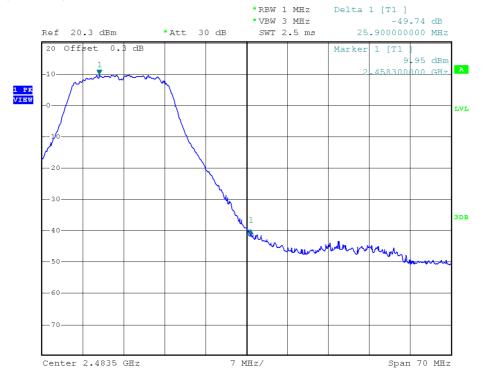


Band edge plot 802.11n (HT-20)

Channel 1 (2412MHz)



Channel 11 (2462MHz)



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4.5 Out of Band Emissions (Radiated) (for emissions in 4.4 above that are less than 20dB below carrier), FCC Rule 15.247(d):

For out of band emissions that are close to or that exceed the 20dB attenuation requirement described in the specification, radiated measurements were performed at a 3m separation distance to determine whether these emissions complied with the general radiated emission requirement.

[×] Not required, since all emissions are more than 20dB below fundamental

[] See attached data sheet

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4.6 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b), (c):

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified.

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

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4.7 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD

Where $FS = Field Strength in dB\mu V/m$

RA = Receiver Amplitude (including preamplifier) in $dB\mu V$

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB AG = Amplifier Gain in dB

PD = Pulse Desensitization in dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

Example

Assume a receiver reading of 62.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB. The net field strength for comparison to the appropriate emission limit is 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = $62.0 \text{ dB}\mu\text{V}$ AF = 7.4 dBCF = 1.6 dBAG = 29.0 dBPD = 0 dBFS = $62 + 7.4 + 1.6 - 29 + 0 = 42 \text{ dB}\mu\text{V/m}$

Level in mV/m = Common Antilogarithm [(42 dB μ V/m)/20] = 125.9 μ V/m

Applicant: Kobo Inc Date of Test: 30 September 2012

Model: K107

4.8 Radiated Spurious Emission

Worst Case Radiated Spurious Emission (802.11b) at 2484.800MHz is passed by 10.4 dB margin.

For the electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.

Applicant: Kobo Inc Date of Test: 30 September 2012

Model: K107

Worst Case Operating Mode: Transmit

Table 1

Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	171.135	34.4	20.0	9.2	23.6	43.5	-19.9
Horizontal	342.340	39.1	20.0	15.8	34.9	46.0	-11.1
Horizontal	415.575	34.8	20.0	18.9	33.7	46.0	-12.3
Vertical	48.430	24.5	20.0	18.2	22.7	40.0	-17.3
Vertical	140.580	35.4	20.0	9.4	24.8	43.5	-18.7
Vertical	452.435	29.5	20.0	19.0	28.5	46.0	-17.5

NOTES: 1. Quasi-Peak detector is used except for others stated.

- 2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.

4. All emissions are below the QP limit.

Applicant: Kobo Inc Date of Test: 30 September 2012

Model: K107

Mode: 802.11b (TX-Channel 01)

Table 2
Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Peak Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	**2412.000	116.7	36.7	28.5	108.5		
Horizontal	*4824.000	50.1	36.1	34.1	48.1	74.0	-25.9
Horizontal	*2386.440	61.8	36.7	27.2	52.3	74.0	-21.7

Polarization	Frequency	Reading	Pre-	Antenna	Net	Average Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	**2412.000	107.0	36.7	28.5	98.8		
Horizontal	*4824.000	33.7	36.1	34.1	31.7	54.0	-22.3
Horizontal	*2386.440	52.1	36.7	27.2	42.6	54.0	-11.4

NOTES: 1. Peak detector is used for the emission measurement.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.
- ** Fundamental emissions were measured for determining band-edge compliance of using delta measurements technique per KDB Publication Number: 913591 and KDB 558074 in the restricted band 2310-2390MHz and only the worst data was reported.

Applicant: Kobo Inc Date of Test: 30 September 2012

Model: K107

Mode: 802.11b (TX-Channel 06)

Table 3
Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	50.9	36.1	34.5	49.3	74.0	-24.7
Horizontal	*7311.000	52.3	35.6	37.1	53.8	74.0	-20.2

Polarization	Frequency	Reading	Pre-	Antenna	Net	Average Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	*4874.000	34.4	36.1	34.5	32.8	54.0	-21.2
Horizontal	*7311.000	34.9	35.6	37.1	36.4	54.0	-17.6

NOTES: 1. Peak detector is used for the emission measurement.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Kobo Inc Date of Test: 30 September 2012

Model: K107

Mode: 802.11b (TX-Channel 11)

Table 4
Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Peak Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)	, ,	, ,	,	
Horizontal	**2462.000	116.5	36.7	28.5	108.3		
Horizontal	*4924.000	49.7	36.1	34.7	48.3	74.0	-25.7
Horizontal	*7386.000	53.7	35.6	37.2	55.3	74.0	-18.7
Horizontal	*2484.800	62.5	36.7	27.7	53.5	74.0	-20.5

Polarization	Frequency	Reading	Pre-	Antenna	Net	Average Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	**2462.000	106.6	36.7	28.5	98.4		
Horizontal	*4924.000	35.6	36.1	34.7	34.2	54.0	-19.8
Horizontal	*7386.000	39.1	35.6	37.2	40.7	54.0	-13.3
Horizontal	*2484.800	52.6	36.7	27.7	43.6	54.0	-10.4

NOTES: 1. Peak detector is used for the emission measurement.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.
- ** Fundamental emissions were measured for determining band-edge compliance of using delta measurements technique per KDB Publication Number: 913591 and KDB 558074 in the restricted band 2483.5-2500MHz and only the worst data was reported.

Applicant: Kobo Inc Date of Test: 30 September 2012

Model: K107

Mode: 802.11g (TX-Channel 01)

Table 5
Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Peak Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	**2412.000	115.1	36.7	28.5	106.9		
Horizontal	*4824.000	50.7	36.1	34.1	48.7	74.0	-25.3
Horizontal	*2388.140	68.2	36.7	27.2	58.7	74.0	-15.3

Polarization	Frequency	Reading	Pre-	Antenna	Net	Average Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	**2412.000	98.0	36.7	28.5	89.8		
Horizontal	*4824.000	36.3	36.1	34.1	34.3	54.0	-19.7
Horizontal	*2388.140	51.1	36.7	27.2	41.6	54.0	-12.4

NOTES: 1. Peak detector is used for the emission measurement.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.
- ** Fundamental emissions were measured for determining band-edge compliance of using delta measurements technique per KDB Publication Number: 913591 and KDB 558074 in the restricted band 2310-2390MHz and only the worst data was reported.

Applicant: Kobo Inc Date of Test: 30 September 2012

Model: K107

Mode: 802.11g (TX-Channel 06)

Table 6
Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	49.1	36.1	34.5	47.5	74.0	-26.5
Horizontal	*7311.000	51.4	35.6	37.1	52.9	74.0	-21.1

Polarization	' '	Reading	Pre-	Antenna		Average Limit	•
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain (dB)	(dB)	(dBµV/m)	(dBµV/m)	
Horizontal	*4874.000	36.1	36.1	34.5	34.5	54.0	-19.5
Horizontal	*7311.000	38.6	35.6	37.1	40.1	54.0	-13.9

NOTES: 1. Peak detector is used for the emission measurement.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Kobo Inc Date of Test: 30 September 2012

Model: K107

Mode: 802.11g (TX-Channel 11)

Table 7
Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Peak Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	**2462.000	114.9	36.7	28.5	106.7		
Horizontal	*4924.000	49.9	36.1	34.7	48.5	74.0	-25.5
Horizontal	*7386.000	52.2	35.6	37.2	53.8	74.0	-20.2
Horizontal	*2484.340	64.7	36.7	27.7	55.7	74.0	-18.3

Polarization	Frequency	Reading	Pre-	Antenna	Net	Average Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	**2462.000	96.4	36.7	28.5	88.2		
Horizontal	*4924.000	35.2	36.1	34.7	33.8	54.0	-20.2
Horizontal	*7386.000	38.3	35.6	37.2	39.9	54.0	-14.1
Horizontal	*2484.340	46.2	36.7	27.7	37.2	54.0	-16.8

NOTES: 1. Peak detector is used for the emission measurement.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.
- ** Fundamental emissions were measured for determining band-edge compliance of using delta measurements technique per KDB Publication Number: 913591 and KDB 558074 in the restricted band 2483.5-2500MHz and only the worst data was reported.

Applicant: Kobo Inc Date of Test: 30 September 2012

Model: K107

Mode: 802.11n-20M (TX-Channel 01)

Table 8 Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Peak Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	**2412.000	114.1	36.7	28.5	105.9		
Horizontal	*4824.000	51.1	36.1	34.1	49.1	74.0	-24.9
Horizontal	*2389.720	68.4	36.7	27.2	58.9	74.0	-15.1

Polarization	Frequency	Reading	Pre-	Antenna	Net	Average Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)			, , ,	
Horizontal	**2412.000	95.6	36.7	28.5	87.4		
Horizontal	*4824.000	37.0	36.1	34.1	35.0	54.0	-19.0
Horizontal	*2389.720	49.9	36.7	27.2	40.4	54.0	-13.6

NOTES: 1. Peak detector is used for the emission measurement.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.
- ** Fundamental emissions were measured for determining band-edge compliance of using delta measurements technique per KDB Publication Number: 913591 and KDB 558074 in the restricted band 2310-2390MHz and only the worst data was reported.

Applicant: Kobo Inc Date of Test: 30 September 2012

Model: K107

Mode: 802.11n-20M (TX-Channel 06)

Table 9 Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	50.4	36.1	34.5	48.8	74.0	-25.2
Horizontal	*7311.000	52.2	35.6	37.1	53.7	74.0	-20.3

Polarization	Frequency	Reading	Pre-	Antenna	Net	Average Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	*4874.000	36.2	36.1	34.5	34.6	54.0	-19.4
Horizontal	*7311.000	38.4	35.6	37.1	39.9	54.0	-14.1

NOTES: 1. Peak detector is used for the emission measurement.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Applicant: Kobo Inc Date of Test: 30 September 2012

Model: K107

Mode: 802.11n-20M (TX-Channel 11)

Table 10 Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Peak Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)	, ,	,	,	
Horizontal	**2462.000	114.4	36.7	28.5	106.2		
Horizontal	*4924.000	49.6	36.1	34.7	48.2	74.0	-25.8
Horizontal	*7386.000	52.9	35.6	37.2	54.5	74.0	-19.5
Horizontal	*2484.200	65.5	36.7	27.7	56.5	74.0	-17.5

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	**2462.000	95.8	36.7	28.5	87.6		
Horizontal	*4924.000	35.4	36.1	34.7	34.0	54.0	-20.0
Horizontal	*7386.000	38.1	35.6	37.2	39.7	54.0	-14.3
Horizontal	*2484.200	46.9	36.7	27.7	37.9	54.0	-16.1

NOTES: 1. Peak detector is used for the emission measurement.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.
- ** Fundamental emissions were measured for determining band-edge compliance of using delta measurements technique per KDB Publication Number: 913591 and KDB 558074 in the restricted band 2483.5-2500MHz and only the worst data was reported.

4.9 Conducted Emission

Worst Case Line-Conducted emission at 14.946MHz is Passed by 11.4 dB margin.

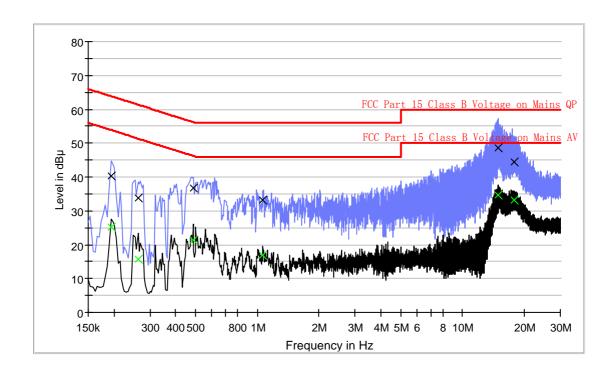
For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

Company: Kobo Inc Date of Test: 30 September 2012

Model: K107

Worst Case Operating Mode: Transmit (802.11n-20M 2437MHz)

Conducted Emission Test - FCC



Result Table QP

Frequency	QuasiPeak	Line	Corr.	Margin	Limit
(MHz)	(dB µ V)		(dB)	(dB)	(dB µ V)
0.194000	40.3	L1	9.6	23.6	63.9
0.262000	33.7	L1	9.6	27.7	61.4
0.486000	36.7	L1	9.6	19.5	56.2
1.066000	33.2	L1	9.7	22.8	56.0
14.946000	48.6	L1	10.0	11.4	60.0
17.842000	44.6	L1	10.0	15.4	60.0

Result Table AV

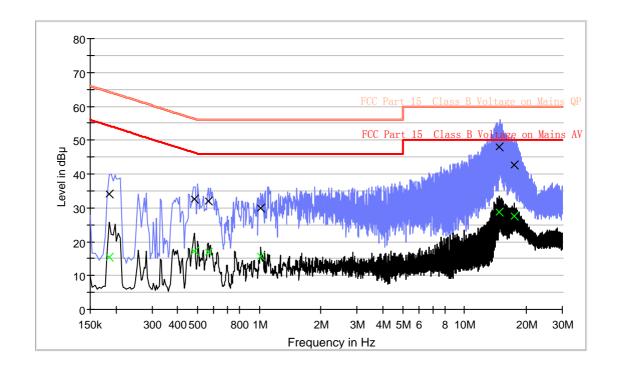
Frequency	Average	Line	Corr.	Margin	Limit
(MHz)	(dB µ V)		(dB)	(dB)	(dB μ V)
0.194000	25.3	L1	9.6	28.6	53.9
0.262000	15.7	L1	9.6	35.7	51.4
0.486000	21.2	L1	9.6	25.0	46.2
1.066000	16.9	L1	9.7	29.1	46.0
14.946000	34.5	L1	10.0	15.5	50.0
17.842000	33.3	L1	10.0	16.7	50.0

Company: Kobo Inc Date of Test: 30 September 2012

Model: K107

Worst Case Operating Mode: Transmit (802.11n-20M 2437MHz)

Conducted Emission Test - FCC



Result Table QP

Frequency	QuasiPeak	Line	Corr.	Margin	Limit
(MHz)	(dB μ V)		(dB)	(dB)	(dB µ V)
0.186000	34.2	Ν	9.6	30.0	64.2
0.482000	32.5	Ν	9.6	23.8	56.3
0.566000	32.0	Ν	9.6	24.0	56.0
1.018000	30.0	Ν	9.7	26.0	56.0
14.810000	48.0	Ν	10.1	12.0	60.0
17.522000	42.7	Ν	10.1	17.3	60.0

Result Table AV

Frequency	Average	Line	Corr.	Margin	Limit
(MHz)	(dB µ V)		(dB)	(dB)	(dB µ V)
0.186000	15.3	Ν	9.6	38.9	54.2
0.482000	17.1	Ν	9.6	29.2	46.3
0.566000	16.9	Ν	9.6	29.1	46.0
1.018000	15.7	Ν	9.7	30.3	46.0
14.810000	28.8	Ν	10.1	21.2	50.0
17.522000	27.5	Ν	10.1	22.5	50.0

Applica Model:	ant: Kobo Inc K107	Date of Test: 30 September 2012
4.10 R	adiated Emissions from Digital Section of Tra	ansceiver, FCC Ref: 15.109
[] N	ot required - No digital part	
[] Te	est results are attached	
[x] In	cluded in the separated report.	

Applicant: Kobo Inc Date of Test: 30 September 2012

Model: K107

4.11 Transmitter Duty Cycle Calculation and Measurements, FCC Rule 15.35(b), (c)

The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SWEP function on the analyzer was set to ZERO SPAN. The Transmitter ON time was determined from the resultant time-amplitude display:

	See attached spectrum analyzer chart (s) for Transmitter timing
	See Transmitter timing diagram provided by manufacturer
Х	Not applicable, duty cycle was not used.

EXHIBIT 5

EQUIPMENT PHOTOGRAPHS

5.0 **Equipment Photographs**

For electronic filing, the photographs are saved with filename: external photos.doc & internal photos.pdf.

EXHIBIT 6

PRODUCT LABELLING

6.0 **Product Labelling**

For electronic filing, the FCC ID label artwork and location is saved with filename: label.pdf.

EXHIBIT 7 TECHNICAL SPECIFICATIONS

7.0 <u>Technical Specifications</u>

For electronic filing, the block diagram and circuit diagram are saved with filename: block.pdf and circuit.pdf respectively.

EXHIBIT 8

INSTRUCTION MANUAL

8.0 **Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

EXHIBIT 9

MISCELLANEOUS INFORMATION

9.0 <u>Discussion of Pulse Desensitization</u>

The determination of pulse desensitivity was made in accordance with Hewlett Packard Application Note 150-2, *Spectrum Analysis ... Pulsed RF.*

Pulse desensitivity is not applicable for this device since the transmitter transmits the RF signal continuously.

EXHIBIT 10 TEST EQUIPMENT LIST

10.0 **Test Equipment List**

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	30-Jun-12	30-Jun-13
SZ185-01	EMI Receiver	R&S	ESCI	100547	11-Mar-12	11-Mar-13
SZ061-08	Horn Antenna	ETS	3115	00092346	15-Oct-12	15-Oct-13
SZ061-06	Loop Antenna	Electro- Metrics	EM-6876	217	11-Mar-12	11-Mar-13
SZ056-03	Spectrum Analyzer	R&S	FSP 30	101148	11-Mar-12	11-Mar-13
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	11-Mar-12	11-Mar-13
SZ188-01	Anechoic Chamber	ETS	RFD-F/A- 100	4102	03-Mar-12	03-Mar-13
SZ062-02	RF Cable	RADIALL	RG 213U		22-Sep-12	22-Mar-13
SZ062-04	RF Cable	RADIALL	RG 213U		7-Jul-12	7-Jul-13
SZ062-06	RF Cable	RADIALL	0.04- 26.5GHz		01-Nov-11	01-Nov-12
SZ067-04	Notch Filter	Micro-Tronics	BRM5070 2-02		11-Jun-12	11-Jun-13
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	05-Nov-11	05-Nov-12
SZ187-01	Two-Line V- Network	R&S	ENV216	100072	05-Nov-11	05-Nov-12
SZ187-02	Two-Line V- Network	R&S	ENV216	100073	05-Nov-11	05-Nov-12
SZ188-03	Shielding Room	ETS	RFD-100	4100	10-Sep-12	10-Sep-13