TEST REPORT

Report Number: HK11081521-1

Application
for
Original Grant of 47 CFR Part 15 Certification
Single New of RSS-210 Issue 8 Equipment Certification

WiFi Gateway

FCC ID: EW780-7597-01

IC: 1135B-80759701

Prepared and Checked by:

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November 11, 2011

GENERAL INFORMATION

Applicant Name:	VTech Telecommunications Ltd.
Applicant Address:	23/F., Tai Ping Industrial Centre, Block 1, 57 Ting Kok Road, Tai Po, Hong Kong.
FCC Specification Standard:	FCC Part 15, October 1, 2010 Edition
FCC ID:	EW780-7597-01
FCC Model(s):	MP252BW
IC Specification Standard:	RSS-210 Issue 8, December 2010 RSS-Gen Issue 3, December 2010 RSS-102 Issue 4, March 2010 ICES-003 Issue 4: 2004
IC:	1135B-80759701
IC Model(s):	MP252BW
Type of EUT:	Digital Transmission System Class B Personal Computers and Peripherals
Description of EUT:	WiFi Gateway
Serial Number:	N/A
Sample Receipt Date:	September 02, 2011
Date of Test:	September 08-October 20, 2011
Report Date:	November 11, 2011
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

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EXHIBIT 1
SUMMARY OF TEST RESULTS & STATEMENT OF COMPLIANCE

1.0 Test Results Summary & Statement of Compliance

1.1 Summary of Test Results

Test Items	FCC Part 15 Section	RSS-210/ RSS-Gen# Section	Results	Details see section
Antenna Requirement	15.203	7.1.2#	Pass	2.1
Max. Conducted Output Power	15.247(b)(3)&(4)	A8.4(4)	Pass	4.1
Min. 6dB RF Bandwidth	15.247(a)(2)	A8.2(a)	Pass	4.2
Max. Power Density	15.247(e)	A8.2(b)	Pass	4.3
Out of Band Antenna Conducted Emission	15.247(d)	A8.5	Pass	4.4
Radiated Emission in Restricted Bands and Spurious Emissions	15.247(d), 15.209 & 15.109	A8.5	Pass	4.6
Radiated Emission from Class B Personal Computers and Peripherals	15.109	ICES-003	Pass	
Radiated Emission from Receiver	N/A	2.3	Pass	4.7
AC Power Line Conducted Emission	15.207 & 15.107	7.2.4# & ICES-003	Pass	4.8
Radio Frequency Radiation Exposure	15.247(i)	RSS-102	Pass	4.9 4.10

Note: Pursuant to FCC Part 15 Section 15.215(c), the 20dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over expected variations in temperature and supply voltage were considered.

The test results of digital device portion in FCC test report are deemed satisfactory evidence of compliance with Industry Canada Interference-Causing Equipment Standard ICES003.

1.2 Statement of Compliance

The equipment under test is found to be complying with the following standards:

FCC Part 15, October 1, 2010 Edition
RSS-210 Issue 8, December 2010
RSS-Gen Issue 3, December 2010
RSS-102 Issue 4, March 2010
ICES-003 Issue 4: 2004

EXHIBIT 2
GENERAL DESCRIPTION

2.0 General Description

2.1 Product Description

The MP252BW is a WiFi Gateway. For 802.11b mode, it operates at frequency range of 2412.000MHz to 2462.000MHz with 11 channels. Only antenna 0 transmits via direct-sequence spread spectrum (DSSS) modulation. Maximum bit rate can be up to 11Mbps. For 802.11g mode, it operates at frequency range of 2412.000MHz to 2462.000MHz with 11 channels. Only antenna 0 transmits via Orthogonal Frequency Division Multiplexing (OFDM) modulation. Maximum bit rate can be up to 54Mbps. For 802.11n (with 20MHz bandwidth) mode, it operates at frequency range of 2412.000MHz to 2462.000MHz with 11 channels. Antenna 0 or 1 transmits via Orthogonal Frequency Division Multiplexing (OFDM) modulation. Maximum bit rate can support up to 150Mbps. For 802.11n (with 40MHz bandwidth) mode, it operates at frequency range of 2422.000MHz to 2452.000MHz with 7 channels. Both Antenna 0 and 1 transmit simultaneously via Orthogonal Frequency Division Multiplexing (OFDM) modulation. Maximum bit rate can be up to 300Mbps. The EUT is powered by an adaptor 100-240VAC to 12VDC 2000mA and/or 12VDC backup battery.

The antenna(s) used in the EUT are integral, and the test sample is a prototype.

The circuit description is saved with filename: descri.pdf.

Connection between the device and the telephone network is accomplished through the use of USOC RJ11C in the 2-wire loop calling central office line.

2.2 Test Methodology

Both AC power line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). Preliminary radiated scans and all radiated measurements were performed in Open Area Test Sites. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application. Antenna port conducted measurements were performed according to KDB Publication No. 558074. All other measurements were made in accordance with the procedures in 47 CFR Part 2.

2.3 Test Facility

The open area test site, AC Power Line conducted measurement facility, and antenna port conducted measurement facility used to collect the radiated data, AC Power Line conducted data, and conductive data are at Roof Top, 2nd Floor, and 5th Floor respectively of Intertek Testing Services Hong Kong Ltd., which is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been fully placed on file with the FCC and the Industry Canada.

EXHIBIT 3
SYSTEM TEST CONFIGURATION

3.0 **System Test Configuration**

3.1 Justification

For radiated emissions testing, the equipment under test (EUT) was setup to transmit under normal mode. Care was taken to ensure proper power supply voltages during testing. During testing, all cables (if any) were manipulated to produce worst case emissions.

The EUT was powered by a 100-240VAC to 12VDC 2000mA adaptor and/or 12VDC backup battery.

For the measurements, the EUT was attached to a plastic stand if necessary and placed on the wooden turntable. If the EUT attached to peripherals, they were connected and operational (as typical as possible).

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

For any intentional radiator powered by AC power line, measurements of the radiated signal level of the fundamental frequency component of the emission was performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

For transmitter radiated measurement, the spectrum analyzer resolution bandwidth was 100 kHz for frequencies below 1000 MHz. The resolution bandwidth was 1 MHz for frequencies above 1000 MHz.

For receiver radiated measurement, the spectrum analyzer resolution bandwidth was 1MHz for measurement above 1GHz while 100kHz for measurement from 30MHz to 1GHz.

Radiated emission measurement for transmitter were performed from 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. Receiver was performed from 30MHz to the fifth harmonic of the highest frequency or 40GHz, whichever is lower.

Emission that are directly caused by digital circuits in the transmit path and transmitter portion were measured, and the limit are according to FCC Part 15 Section 15.209.
Digital circuitry used to control additional functions other than the operation of the transmitter are subject to FCC Part 15 Section 15.109 Limits.

3.1 Justification - Cont'd

Detector function for radiated emissions was in peak mode. Average readings, when required, were taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings.

The EUT along with its peripherals were placed on a 1.0m(W)x1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT power cord connected to one LISN (Line impedance stabilization network), which provided 50ohm coupling impedance for measuring instrument. Meanwhile, the peripheral or support equipment power cords connected to a separate LISN. The ac power for all LISNs were obtained from the same power source. The LISN housing, measuring instrument case, reference ground plane, and vertical ground plane were bounded together. The excess power cable between the EUT and the LISN was bundled. Power cords of non-EUT equipment (peripherals) were not bundled. AC power cords of peripheral equipments draped over the rear edge of the table, and routed them down onto the floor of the ac powerline conducted emission test site to the second LISN.

All connecting cables of EUT and peripherals were manipulated to find the maximum emission.

The Base Unit has two antennas for different Wifi version:
- 802.11b/g: Use Ant 0 only for transmission;
- 802.11n (20MHz Bandwidth): Select Ant 0 or Ant 1 for transmission. Both antennas have been tested. Worst case is reported only;
- 802.11n (40MHz Bandwidth): Both antennas are using for transmission.

Different data rates in different WiFi version have been tested. Worst case is reported only.

All relevant operation modes have been tested, and the worst case data is included in this report.

3.2 EUT Exercising Software

The EUT exercise program (if any) used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

3.3 Details of EUT and Description of Accessories

Details of EUT:

An AC adaptor and/or a battery (provided with the unit) were used to power the device. Their description are listed below.

(1) An AC adaptor (100-240VAC to 12VDC 2000mA, Model: FW7583/US/12) (Supplied by Client)

Description of Accessories:

(1) Backup Battery: 12VDC battery pack (Supplied by Client)
(2) 2 x Simple Corded Phone, Model: AS7402 (Supplied by Intertek)
(3) TP-LINK Router, Model: TL-R402M, S/N: 08329805932 (Supplied by Intertek)
(4) Lenovo Notebook, Model: T61, S/N: L3-CF468, DoC Product (Supplied by Intertek)
(5) Smartdrive External Hard Disk, Model: HD3-SU2FW, S/N: 0800261, DoC Product (Supplied by Intertek)
(6) ADSL Modem, Brand: ZISA, Model: 1A8 (Supplied by Client)
(7) USB Memory Stick, Brand: SanDisk (Supplied by Intertek)
(8) 2 x 3m Telephone Line (Supplied by Intertek)
(9) 1 x USB cable with 0.7 meter long (Supplied by Intertek)
(10) 1 x 1394 cable with 0.8 meter long (Supplied by Intertek)
(11) 4 x LAN cable with 1 meter long (Supplied by Intertek)
(12) 1 x RJ11 ADSL cable with 1.2 meter long (Supplied by Intertek)

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.

EXHIBIT 4
TEST RESULTS

4.0 **Test Results**

4.1 Maximum Conducted Output Power at Antenna Terminals

☒ The antenna power of the EUT was connected to the input of a power meter. 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 for RBW>20dB bandwidth and power was read directly in dBm. External attenuation and cable loss were compensated for using the OFFSET function of the analyser.

IEEE 802.11b(DSSS, 11Mbps) Antenna Gain = 2dBi			
Frequency (MHz)		Output in dBm	Output in mWatt
Low Channel:	2412MHz	15.34	34.2
Middle Channel:	2437MHz	15.81	38.1
High Channel:	2462MHz	16.07	40.5

dBm max. output level = 16.07 dBm

IEEE 802.11g(OFDM, 54Mbps) Antenna Gain = 2dBi			
Frequency (MHz)		Output in dBm	Output in mWatt
Low Channel:	2412MHz	19.92	98.2
Middle Channel:	2437MHz	20.62	115.3
High Channel:	2462MHz	20.94	124.2

dBm max. output level = 20.94 dBm

4.1 Maximum Conducted Output Power at Antenna Terminals - Continued

IEEE 802.11n(OFDM, 150Mbps), 20MHz bandwidth, Antenna Gain = 2dBi		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412MHz	19.60	91.2
Middle Channel: 2437MHz	19.94	98.6
High Channel: 2462MHz	19.75	94.4

dBm max. output level = 19.94 dBm

IEEE 802.11n(OFDM, 300Mbps), 40MHz bandwidth, * Antenna Gain = 5dBi						
Frequency (MHz)	Antenna 0		Antenna1		Total	
	Output in dBm	Output in mWatt	Output in dBm	Output in mWatt	Output in dBm	Output in mWatt
Low Channel: 2422MHz	17.53	56.6	18.83	76.4	21.24	133.0
Middle Channel: 2437MHz	17.61	57.7	19.76	94.6	21.83	152.3
High Channel: 2452MHz	18.49	70.6	20.14	103.3	22.40	173.9

Note: For MIMO system in this mode, total power is calculated by adding individual measured data of two antennas.

dBm max. output level = 22.40 dBm

Cable loss : 0.5 dB External Attenuation : 20 dB

Cable loss, external attenuation: ☒ included in OFFSET function
☐ added to SA raw reading

Limits:
☒ 1W (30dBm) for antennas with gains of 6dBi or less

☐ ___W (___dBm) for antennas with gains more than 6dBi

* Remark: In MIMO, two WiFi Antenna are correlated, directional gain = G_{Ant} + 10log (N)dBi = 2 + 10log (2) = 5dBi

4.2 Minimum 6dB RF Bandwidth

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100kHz. 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 6dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

IEEE 802.11b(DSSS, 11Mbps)		
Frequency (MHz)		6dB Bandwidth (kHz)
Low Channel:	2412MHz	11280
Middle Channel:	2437MHz	11240
High Channel:	2462MHz	11280

IEEE 802.11g(OFDM, 54Mbps)		
Frequency (MHz)		20 dB Bandwidth (kHz)
Low Channel:	2412MHz	16520
Middle Channel:	2437MHz	16520
High Channel:	2462MHz	16520

4.2 Minimum 6dB RF Bandwidth - Continued

IEEE 802.11n(OFDM, 150Mbps), 20MHz bandwidth		
Frequency (MHz)		6dB Bandwidth (kHz)
Low Channel:	2412MHz	17640
Middle Channel:	2437MHz	17680
High Channel:	2462MHz	17680

IEEE 802.11n(OFDM, 300Mbps) 40MHz bandwidth			
Frequency (MHz)		6 dB Bandwidth (kHz)	
		Antenna 0	Antenna 1
Low Channel:	2422MHz	35840	35840
Middle Channel:	2437MHz	36080	36160
High Channel:	2452MHz	36160	35760

Limits: at least 500kHz

The plots of 6dB RF bandwidth are saved with filename: 6dB.pdf

4.3 Maximum Power Density

The spectrum analyzer RES BW was set to 3kHz. In order to look for a peak, the START and STOP frequencies were set to the band edges of the maximum output passband. If there is no clear maximum amplitude in any given portion of the band, it may be necessary to make measurements at a number of bands defined by several START and STOP frequency pairs.

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are added to the analyzer raw readings.

IEEE 802.11b(DSSS, 11Mbps)	
Frequency (MHz)	Power Density (dBm/3kHz)
Low Channel: 2412 MHz	-10.88
Middle Channel: 2437 MHz	-10.53
High Channel: 2462 MHz	-9.91

Frequency Span = 1.5MHz

Sweep Time = Frequency Span/3kHz
= 500 seconds

Cable Loss: 0.5 dB

Max. Peak Power Density (at 2462MHz) = -9.91dBm/3kHz

Limit:
8dBm/ 3kHz

4.3 Maximum Power Density – Continued:

IEEE 802.11g(OFDM, 54Mbps)	
Frequency (MHz)	Power Density (dBm/3kHz)
Low Channel: 2412 MHz	-16.30
Middle Channel: 2437 MHz	-16.16
High Channel: 2462 MHz	-15.65

Frequency Span = 1.5MHz

Sweep Time = Frequency Span/3kHz
= 500 seconds

Cable Loss: 0.5 dB

Max. Peak Power Density (at 2462MHz) = -15.65dBm/3kHz

Limit:
8dBm/ 3kHz

IEEE 802.11n(OFDM, 150Mbps), 20M Bandwidth	
Frequency (MHz)	Power Density (dBm/3kHz)
Low Channel: 2412 MHz	-18.90
Middle Channel: 2437 MHz	-18.34
High Channel: 2462 MHz	-18.07

Frequency Span = 1.5MHz

Sweep Time = Frequency Span/3kHz
= 500 seconds

Cable Loss: 0.5 dB

Max. Peak Power Density (at 2462MHz) = -18.07dBm/3kHz

Limit:
8dBm/ 3kHz

4.3 Maximum Power Density – Continued:

IEEE 802.11n(OFDM, 300Mbps), 40M Bandwidth				
Frequency (MHz)	Power Density (dBm/3kHz)			
	Antenna 0	Power Density +10log(2)	Antenna 1	Power Density +10log(2)
Low Channel: 2422 MHz	-21.28	-18.27	-21.43	-18.42
Middle Channel: 2437 MHz	-21.00	-17.99	-18.77	-15.76
High Channel: 2452 MHz	-20.54	-17.53	-18.64	-15.63

Note: For MIMO system, the quantity 10 log(N) dB is added to each spectrum value before comparing to the emission limit.

Frequency Span = 1.5MHz

Sweep Time = Frequency Span/3kHz
= 500 seconds

Cable Loss: 0.5 dB

Max. Peak Power Density (at 2452MHz) = -18.64dBm/3kHz

Limit:
8dBm/ 3kHz

The plots of number of power density are saved with filename: maxpd.pdf

4.4 Out of Band Conducted Emissions

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 20 dB below that of the maximum in-band 100 kHz emission.

Limits:
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 plots of out of band conducted emissions are saved with filenames: obantcon.pdf

4.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF - AG

where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:-

FS = RR + LF

where FS = Field Strength in dBμV/m
RR = RA - AG in dBμV
LF = CF + AF in dB

Assume a receiver reading of 52.0 dBμV 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, giving a field strength of 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 52.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
FS = RR + LF
FS = 23 + 9 = 32 dBμV/m

RR = 23.0 dBμV
LF = 9.0 dB

Level in μV/m = Common Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m

4.6 Transmitter Radiated Emissions in Restricted Bands and Spurious Emissions

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.

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

4.6.1 Radiated Emission Configuration Photograph

Worst Case Restricted Band Radiated Emission
at

199.999MHz & 250.000 MHz

The worst case radiated emission configuration photographs are saved with filename: config photos.pdf

4.6.2 Radiated Emission Data

The data in tables 1-15 list the significant emission frequencies, the limit and the margin of compliance.

Judgement -

Passed by 2.0 dB margin

Mode: TX-Channel 01

Table 1
IEEE 802.11b(DSSS, 11Mbps), ANT 0

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***4824.000***	***48.5***	***33***	***34.9***	***50.4***	***54.0***	***-3.6***
H	***12060.000***	***42.1***	***33***	***40.5***	***49.6***	***54.0***	***-4.4***
H	***14472.000***	***42.2***	***33***	***40.0***	***49.2***	***54.0***	***-4.8***

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
H	***2390.000***	***60.6***	***33***	***29.4***	***57.0***	***74.0***	***-17.0***
H	***4824.000***	***48.5***	***33***	***34.9***	***50.4***	***74.0***	***-23.6***
H	***12060.000***	***42.1***	***33***	***40.5***	***49.6***	***74.0***	***-24.4***
H	***14472.000***	***42.2***	***33***	***40.0***	***49.2***	***74.0***	***-24.8***

Remark: Peak detector is used for the emission measurement.

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***2390.000***	***50.1***	***33***	***29.4***	***46.5***	***54.0***	***-7.5***

Remark: Video-average Method is used for the emission measurement.

NOTES:
1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
4. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 06

Table 2
IEEE 802.11b(DSSS, 11Mbps), ANT 0

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***4874.000***	***48.4***	***33***	***34.9***	***50.3***	***54.0***	***-3.7***
H	***7311.000***	***45.5***	***33***	***37.9***	***50.4***	***54.0***	***-3.6***
H	***12185.000***	***41.9***	***33***	***40.5***	***49.4***	***54.0***	***-4.6***

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
H	***4874.000***	***48.4***	***33***	***34.9***	***50.3***	***74.0***	***-23.7***
H	***7311.000***	***45.5***	***33***	***37.9***	***50.4***	***74.0***	***-23.6***
H	***12185.000***	***41.9***	***33***	***40.5***	***49.4***	***74.0***	***-24.6***

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 is used for the emission over 1000MHz.
5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 11

Table 3
IEEE 802.11b(DSSS, 11Mbps), ANT 0

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***4924.000***	***48.7***	***33***	***34.9***	***50.6***	***54.0***	***-3.4***
H	***7386.000***	***45.4***	***33***	***37.9***	***50.3***	***54.0***	***-3.7***
H	***12310.000***	***41.8***	***33***	***40.5***	***49.3***	***54.0***	***-4.7***

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
V	***2483.500***	***62.1***	***33***	***29.4***	***58.5***	***74.0***	***-15.5***
H	***4924.000***	***48.7***	***33***	***34.9***	***50.6***	***74.0***	***-23.4***
H	***7386.000***	***45.4***	***33***	***37.9***	***50.3***	***74.0***	***-23.7***
H	***12310.000***	***41.8***	***33***	***40.5***	***49.3***	***74.0***	***-24.7***

Remark: Peak detector is used for the emission measurement.

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
V	***2483.500***	***50.2***	***33***	***29.4***	***46.6***	***54.0***	***-7.4***

Remark: Video-average Method is used for the emission measurement.

NOTES:
1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
4. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: Talk

Table 4
IEEE 802.11b(DSSS, 11Mbps)(ADSL), ANT 0

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Limit at 3m (dBuV/m)	Margin (dB)
H	100.000	39.0	16	12.0	35.0	43.5	-8.5
V	***125.000***	***40.0***	***16***	***14.0***	***38.0***	***43.5***	***-5.5***
V	175.000	32.1	16	19.0	35.1	43.5	-8.4
H	200.000	41.4	16	16.0	41.4	43.5	-2.1
H	225.000	34.6	16	18.0	36.6	46.0	-9.4
H	***250.000***	***40.0***	***16***	***20.0***	***44.0***	***46.0***	***-2.0***
H	***275.000***	***32.0***	***16***	***22.0***	***38.0***	***46.0***	***-8.0***
H	300.000	31.1	16	22.0	37.1	46.0	-8.9
H	***325.000***	***29.0***	***16***	***24.0***	***37.0***	***46.0***	***-9.0***
H	350.000	30.6	16	24.0	38.6	46.0	-7.4
H	375.000	33.6	16	24.0	41.6	46.0	-4.4
H	***400.000***	***31.0***	***16***	***25.0***	***40.0***	***46.0***	***-6.0***
H	425.000	23.0	16	25.0	32.0	46.0	-14.0
H	500.000	31.8	16	26.0	41.8	46.0	-4.2

NOTES:
1. Simultaneous operation of SIP call conference through ADSL or WAN, WiFi transmission, PC online, and USB data transferring are operating during the emission measurement.
2. Peak detector is used for the emission measurement.
3. 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.
4. Negative value in the margin column shows emission below limit.
5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 01

Table 5
IEEE 802.11g(OFDM, 54Mbps), ANT 0

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***4824.000***	***49.0***	***33***	***34.9***	***50.9***	***54.0***	***-3.1***
H	***12060.000***	***42.2***	***33***	***40.5***	***49.7***	***54.0***	***-4.3***
H	***14472.000***	***41.6***	***33***	***40.0***	***48.6***	***54.0***	***-5.4***

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
V	***2390.000***	***60.5***	***33***	***29.4***	***56.9***	***74.0***	***-17.1***
H	***4824.000***	***49.0***	***33***	***34.9***	***50.9***	***74.0***	***-23.1***
H	***12060.000***	***42.2***	***33***	***40.5***	***49.7***	***74.0***	***-24.3***
H	***14472.000***	***41.6***	***33***	***40.0***	***48.6***	***74.0***	***-25.4***

Remark: Peak detector is used for the emission measurement.

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***2390.000***	***49.6***	***33***	***29.4***	***46.0***	***54.0***	***-8.0***

Remark: Video-average Method is used for the emission measurement.

NOTES:
1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
4. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 06

Table 6
IEEE 802.11g (OFDM, 54Mbps), ANT 0

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***4874.000***	***48.9***	***33***	***34.9***	***50.8***	***54.0***	***-3.2***
H	***7311.000***	***45.7***	***33***	***37.9***	***50.6***	***54.0***	***-3.4***
H	***12185.000***	***42.0***	***33***	***40.5***	***49.5***	***54.0***	***-4.5***

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
H	***4874.000***	***48.9***	***33***	***34.9***	***50.8***	***74.0***	***-23.2***
H	***7311.000***	***45.7***	***33***	***37.9***	***50.6***	***74.0***	***-23.4***
H	***12185.000***	***42.0***	***33***	***40.5***	***49.5***	***74.0***	***-24.5***

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 is used for the emission over 1000MHz.
5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 11

Table 7
IEEE 802.11g (OFDM, 54Mbps), ANT 0

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***4924.000***	***48.7***	***33***	***34.9***	***50.6***	***54.0***	***-3.4***
H	***7386.000***	***45.5***	***33***	***37.9***	***50.4***	***54.0***	***-3.6***
H	***12310.000***	***42.3***	***33***	***40.5***	***49.8***	***54.0***	***-4.2***

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
H	***2483.500***	***61.8***	***33***	***29.4***	***58.2***	***74.0***	***-15.8***
H	***4924.000***	***48.7***	***33***	***34.9***	***50.6***	***74.0***	***-23.4***
H	***7386.000***	***45.5***	***33***	***37.9***	***50.4***	***74.0***	***-23.6***
H	***12310.000***	***42.3***	***33***	***40.5***	***49.8***	***74.0***	***-24.2***

Remark: Peak detector is used for the emission measurement.

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***2483.500***	***49.9***	***33***	***29.4***	***46.3***	***54.0***	***-7.7***

Remark: Video-average Method is used for the emission measurement.

NOTES:
1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
4. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: Talk

Table 8
IEEE 802.11g (OFDM, 54Mbps)(ADSL), ANT 0

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Limit at 3m (dBuV/m)	Margin (dB)
V	***125.000***	***39.6***	***16***	***14.0***	***37.6***	***43.5***	***-5.9***
V	175.000	36.6	16	19.0	39.6	43.5	-3.9
H	200.000	39.5	16	16.0	39.5	43.5	-4.0
H	225.000	33.0	16	18.0	35.0	46.0	-11.0
H	***250.000***	***36.6***	***16***	***20.0***	***40.6***	***46.0***	***-5.4***
H	***275.000***	***31.5***	***16***	***22.0***	***37.5***	***46.0***	***-8.5***
H	300.000	33.1	16	22.0	39.1	46.0	-6.9
H	***325.008***	***26.4***	***16***	***24.0***	***34.4***	***46.0***	***-11.6***
H	***333.341***	***32.4***	***16***	***24.0***	***40.4***	***46.0***	***-5.6***
H	350.000	28.6	16	24.0	36.6	46.0	-9.4
H	375.004	30.6	16	24.0	38.6	46.0	-7.4
H	***400.000***	***29.6***	***16***	***25.0***	***38.6***	***46.0***	***-7.4***
H	425.000	24.0	16	25.0	33.0	46.0	-13.0
H	500.000	30.0	16	26.0	40.0	46.0	-6.0
H	666.605	22.0	16	29.0	35.0	46.0	-11.0
H	800.000	25.0	16	31.0	40.0	46.0	-6.0

NOTES: 1. Simultaneous operation of SIP call conference through ADSL or WAN, WiFi transmission, PC online, and USB data transferring are operating during the emission measurement.

2. Peak detector is used for the emission measurement.

3. 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.

4. Negative value in the margin column shows emission below limit.

5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 01

Table 9
IEEE 802.11n(OFDM, 150Mbps), 20MHz Bandwidth, ANT 0

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***4824.000***	***48.9***	***33***	***34.9***	***50.8***	***54.0***	***-3.2***
H	***12060.000***	***42.3***	***33***	***40.5***	***49.8***	***54.0***	***-4.2***
H	***14472.000***	***42.3***	***33***	***40.0***	***49.3***	***54.0***	***-4.7***

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
H	***2390.000***	***60.1***	***33***	***29.4***	***56.5***	***74.0***	***-17.5***
H	***4824.000***	***48.9***	***33***	***34.9***	***50.8***	***74.0***	***-23.2***
H	***12060.000***	***42.3***	***33***	***40.5***	***49.8***	***74.0***	***-24.2***
H	***14472.000***	***42.3***	***33***	***40.0***	***49.3***	***74.0***	***-24.7***

Remark: Peak detector is used for the emission measurement.

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***2390.000***	***49.1***	***33***	***29.4***	***45.5***	***54.0***	***-8.5***

Remark: Video-average Method is used for the emission measurement.

NOTES:
1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
4. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 06

Table 10
IEEE 802.11n(OFDM, 150Mbps), 20MHz Bandwidth, ANT 0

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***4874.000***	***49.0***	***33***	***34.9***	***50.9***	***54.0***	***-3.1***
H	***7311.000***	***45.4***	***33***	***37.9***	***50.3***	***54.0***	***-3.7***
H	***12185.000***	***41.7***	***33***	***40.5***	***49.2***	***54.0***	***-4.8***

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
H	***4874.000***	***49.0***	***33***	***34.9***	***50.9***	***74.0***	***-23.1***
H	***7311.000***	***45.4***	***33***	***37.9***	***50.3***	***74.0***	***-23.7***
H	***12185.000***	***41.7***	***33***	***40.5***	***49.2***	***74.0***	***-24.8***

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 is used for the emission over 1000MHz.
5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 11

Table 11
IEEE 802.11n (OFDM, 150Mbps), 20MHz Bandwidth, ANT 0

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***4924.000***	***48.4***	***33***	***34.9***	***50.3***	***54.0***	***-3.7***
H	***7386.000***	***45.3***	***33***	***37.9***	***50.2***	***54.0***	***-3.8***
H	***12310.000***	***41.9***	***33***	***40.5***	***49.4***	***54.0***	***-4.6***

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
V	***2483.500***	***61.6***	***33***	***29.4***	***58.0***	***74.0***	***-16.0***
H	***4924.000***	***48.4***	***33***	***34.9***	***50.3***	***74.0***	***-23.7***
H	***7386.000***	***45.3***	***33***	***37.9***	***50.2***	***74.0***	***-23.8***
H	***12310.000***	***41.9***	***33***	***40.5***	***49.4***	***74.0***	***-24.6***

Remark: Peak detector is used for the emission measurement.

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
V	***2483.500***	***49.6***	***33***	***29.4***	***46.0***	***54.0***	***-8.0***

Remark: Video-average Method is used for the emission measurement.

NOTES:
1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
4. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 03

Table 12
IEEE 802.11n (OFDM, 300Mbps), 40MHz Bandwidth, MIMO

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***4844.000***	***48.9***	***33***	***34.9***	***50.8***	***54.0***	***-3.2***
H	***7266.000***	***45.7***	***33***	***37.9***	***50.6***	***54.0***	***-3.4***
H	***12110.000***	***42.3***	***33***	***40.5***	***49.8***	***54.0***	***-4.2***

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
H	***2390.000***	***61.6***	***33***	***29.4***	***58.0***	***74.0***	***-16.0***
H	***4844.000***	***48.9***	***33***	***34.9***	***50.8***	***74.0***	***-23.2***
H	***7266.000***	***45.7***	***33***	***37.9***	***50.6***	***74.0***	***-23.4***
H	***12110.000***	***42.3***	***33***	***40.5***	***49.8***	***74.0***	***-24.2***

Remark: Peak detector is used for the emission measurement.

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***2390.000***	***50.1***	***33***	***29.4***	***46.5***	***54.0***	***-7.5***

Remark: Video-average Method is used for the emission measurement.

NOTES:
1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
4. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 06

Table 13
IEEE 802.11n (OFDM, 300Mbps), 40MHz Bandwidth, MIMO

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***4874.000***	***48.9***	***33***	***34.9***	***50.8***	***54.0***	***-3.2***
H	***7311.000***	***45.7***	***33***	***37.9***	***50.6***	***54.0***	***-3.4***
H	***12185.000***	***42.3***	***33***	***40.5***	***49.8***	***54.0***	***-4.2***

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
H	***4874.000***	***48.9***	***33***	***34.9***	***50.8***	***74.0***	***-23.2***
H	***7311.000***	***45.7***	***33***	***37.9***	***50.6***	***74.0***	***-23.4***
H	***12185.000***	***42.3***	***33***	***40.5***	***49.8***	***74.0***	***-24.2***

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 is used for the emission over 1000MHz.
5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 09

Table 14
IEEE 802.11n (OFDM, 300Mbps), 40MHz Bandwidth, MIMO

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***4904.000***	***48.7***	***33***	***34.9***	***50.6***	***54.0***	***-3.4***
H	***7356.000***	***45.3***	***33***	***37.9***	***50.2***	***54.0***	***-3.8***
H	***12260.000***	***42.3***	***33***	***40.5***	***49.8***	***54.0***	***-4.2***

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
H	***2483.500***	***62.6***	***33***	***29.4***	***59.0***	***74.0***	***-15.0***
H	***4904.000***	***48.7***	***33***	***34.9***	***50.6***	***74.0***	***-23.4***
H	***7356.000***	***45.3***	***33***	***37.9***	***50.2***	***74.0***	***-23.8***
H	***12260.000***	***42.3***	***33***	***40.5***	***49.8***	***74.0***	***-24.2***

Remark: Peak detector is used for the emission measurement.

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBuV/m)	Average Limit at 3m (dBuV/m)	Margin (dB)
H	***2483.500***	***50.6***	***33***	***29.4***	***47.0***	***54.0***	***-7.0***

Remark: Video-average Method is used for the emission measurement.

NOTES:
1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
4. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: Talk

Table 15
IEEE 802.11n (OFDM, 300Mbps)(ADSL), MIMO

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Limit at 3m (dBuV/m)	Margin (dB)
H	***125.000***	***40.8***	***16***	***14.0***	***38.8***	***43.5***	***-4.7***
H	175.000	33.0	16	19.0	36.0	43.5	-7.5
H	199.999	41.5	16	16.0	41.5	43.5	-2.0
H	225.000	34.6	16	18.0	36.6	46.0	-9.4
H	***250.000***	***40.0***	***16***	***20.0***	***44.0***	***46.0***	***-2.0***
H	***275.000***	***32.5***	***16***	***22.0***	***38.5***	***46.0***	***-7.5***
H	300.000	32.0	16	22.0	38.0	46.0	-8.0
H	***325.000***	***28.6***	***16***	***24.0***	***36.6***	***46.0***	***-9.4***
H	***333.341***	***31.6***	***16***	***24.0***	***39.6***	***46.0***	***-6.4***
H	350.000	30.6	16	24.0	38.6	46.0	-7.4
H	375.000	35.6	16	24.0	43.6	46.0	-2.4
H	***400.000***	***26.0***	***16***	***25.0***	***35.0***	***46.0***	***-11.0***
H	450.000	25.0	16	26.0	35.0	46.0	-11.0
H	500.000	24.8	16	26.0	34.8	46.0	-11.2

NOTES: 1. Simultaneous operation of SIP call conference through ADSL or WAN, WiFi transmission, PC online, and USB data transferring are operating during the emission measurement.

2. Peak detector is used for the emission measurement.

3. 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.

4. Negative value in the margin column shows emission below limit.

5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

4.7 Radiated Emissions from Receiver

4.7.1 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at

3249.330 MHz

The worst case radiated emission configuration photographs are saved with filename: config photos.pdf

4.7.2 Radiated Emission Data

The data in tables 16-19 list the significant emission frequencies, the limit and the margin of compliance.

Judgement –

Passed by 12.5 dB margin

Mode: Receiving – Middle Channel

Table 16
IEEE 802.11b (DSSS, 11Mbps) ANT 0

Radiated Emissions Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Limit at 3m (dBuV/m)	Margin (dB)
V	3249.330	42.5	33	31.9	41.4	54.0	-12.6
V	6498.660	37.3	33	36.9	41.2	54.0	-12.8
V	9747.990	32.3	33	40.4	39.7	54.0	-14.3
V	12997.320	30.9	33	41.7	39.6	54.0	-14.4
V	16246.650	32.2	33	40.2	39.4	54.0	-14.6

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 is used for the emission over 1000MHz.

Mode: Receiving – Middle Channel

Table 17
IEEE802.11g (OFDM, 54Mbps) ANT 0

Radiated Emissions Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Limit at 3m (dBuV/m)	Margin (dB)
V	3249.330	42.6	33	31.9	41.5	54.0	-12.5
V	6498.660	37.1	33	36.9	41.0	54.0	-13.0
V	9747.990	32.6	33	40.4	40.0	54.0	-14.0
V	12997.320	31.1	33	41.7	39.8	54.0	-14.2
V	16246.650	32.3	33	40.2	39.5	54.0	-14.5

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 is used for the emission over 1000MHz.

Mode: Receiving – Middle Channel

Table 18
IEEE 802.11n (OFDM, 150Mbps), 20MHz Bandwidth, ANT 0

Radiated Emissions Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Limit at 3m (dBuV/m)	Margin (dB)
V	3249.330	42.5	33	31.9	41.4	54.0	-12.6
V	6498.660	37.3	33	36.9	41.2	54.0	-12.8
V	9747.990	32.6	33	40.4	40.0	54.0	-14.0
V	12997.320	31.0	33	41.7	39.7	54.0	-14.3
V	16246.650	32.4	33	40.2	39.6	54.0	-14.4

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 is used for the emission over 1000MHz.

Mode: Receiving – Middle Channel

Table 19
IEEE 802.11n (OFDM, 300Mbps), 40MHz Bandwidth, MIMO

Radiated Emissions Data

Polari-zation	Frequency (MHz)	Reading (dBuV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Limit at 3m (dBuV/m)	Margin (dB)
V	3249.330	42.5	33	31.9	41.4	54.0	-12.6
V	6498.660	37.4	33	36.9	41.3	54.0	-12.7
V	9747.990	32.5	33	40.4	39.9	54.0	-14.1
V	12997.320	31.1	33	41.7	39.8	54.0	-14.2
V	16246.650	32.5	33	40.2	39.7	54.0	-14.3

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 is used for the emission over 1000MHz.

4.8 AC Power Line Conducted Emission

☐ Not applicable – EUT is only powered by battery for operation.

☒ EUT connects to AC power line. Emission Data is listed in following pages.

☐ Base Unit connects to AC power line and has transmission. Handset connects to AC power line but has no transmission. Emission Data of Base Unit is listed in following pages.

4.8.1 AC Power Line Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration
at

0.150 MHz

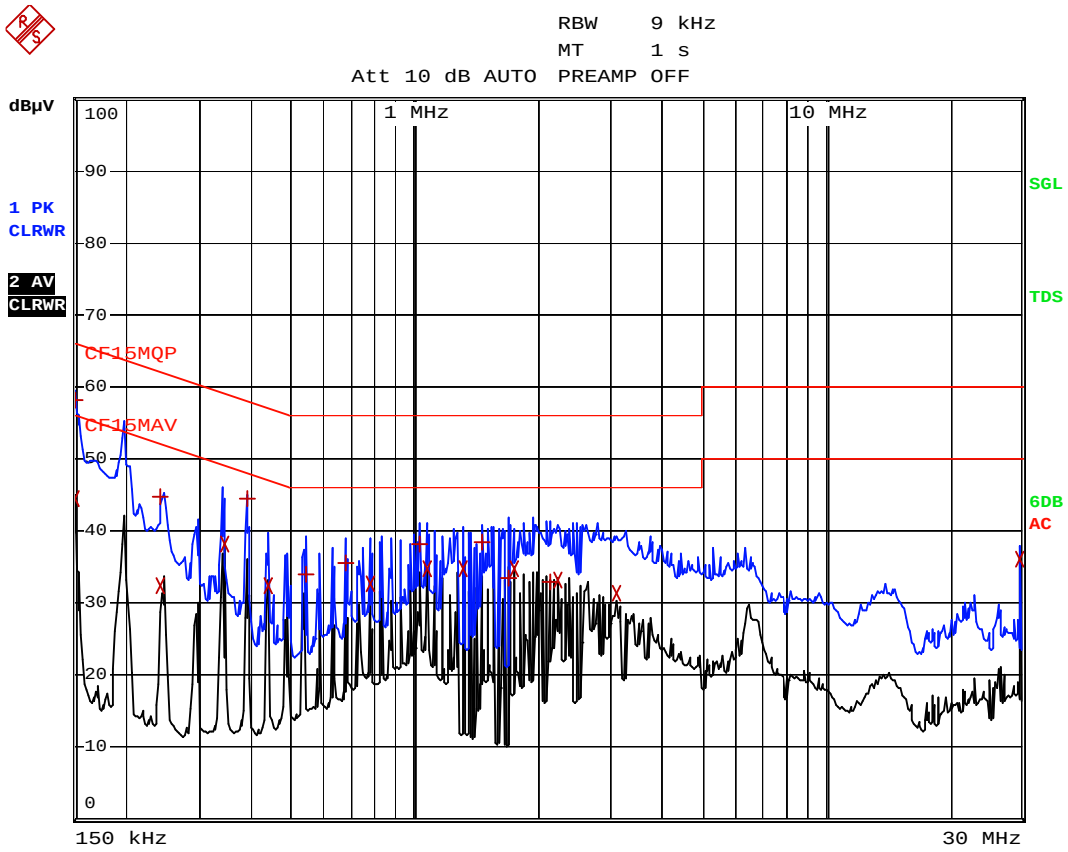
The worst case line conducted configuration photographs are saved with filename: config photos.pdf

4.8.2 AC Power Line Conducted Emission Data

The plot(s) and data in the following pages list the significant emission frequencies, the limit and the margin of compliance

Passed by 7.38 dB margin compare with quasi-peak limit

Model No.: MP252BW
Worst Case: Standby (with ADSL and Backup Battery)



Date: 9.SEP.2011 16:46:42

Model No.: MP252BW
Worst Case: Standby (with ADSL and Backup Battery)

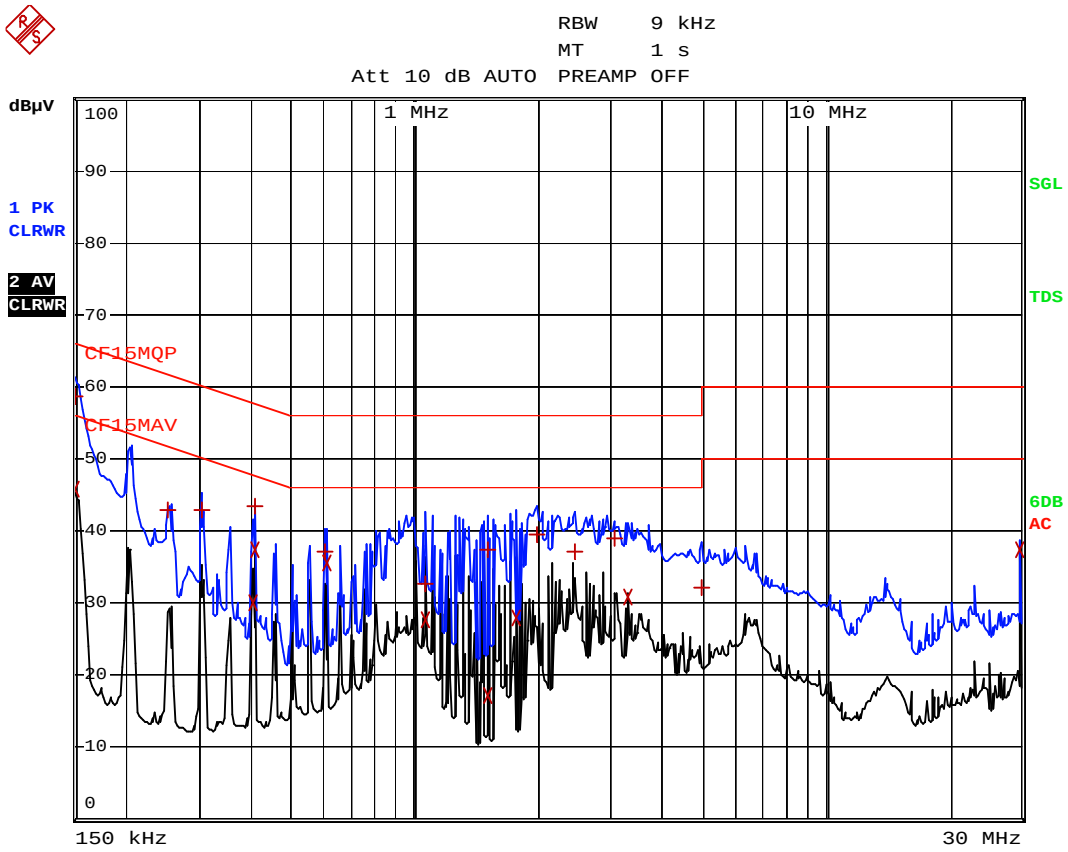
EDIT PEAK LIST (Final Measurement Results)

Trace1: CF15MQP
Trace2: CF15MAV
Trace3: ---

	TRACE	FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	150 kHz	58.23	N gnd	-7.76
2	CISPR Average	150 kHz	44.40	N gnd	-11.59
1	Quasi Peak	244.5 kHz	44.70	N gnd	-17.24
2	CISPR Average	244.5 kHz	32.49	L1 gnd	-19.45
2	CISPR Average	343.5 kHz	38.13	N gnd	-10.98
1	Quasi Peak	388.5 kHz	44.47	N gnd	-13.62
2	CISPR Average	438 kHz	32.34	L1 gnd	-14.75
1	Quasi Peak	541.5 kHz	33.93	L1 gnd	-22.06
1	Quasi Peak	681 kHz	35.58	N gnd	-20.41
2	CISPR Average	780 kHz	32.67	N gnd	-13.32
1	Quasi Peak	1.023 MHz	38.22	N gnd	-17.77
2	CISPR Average	1.0725 MHz	34.85	N gnd	-11.14
2	CISPR Average	1.3155 MHz	34.66	L1 gnd	-11.33
1	Quasi Peak	1.4595 MHz	38.40	L1 gnd	-17.59
1	Quasi Peak	1.689 MHz	33.34	N gnd	-22.65
2	CISPR Average	1.752 MHz	34.77	N gnd	-11.22
1	Quasi Peak	2.13 MHz	32.91	L1 gnd	-23.08
2	CISPR Average	2.238 MHz	33.27	L1 gnd	-12.72
2	CISPR Average	3.1155 MHz	31.41	N gnd	-14.58
2	CISPR Average	29.8095 MHz	36.15	N gnd	-13.84

Date: 9.SEP.2011 16:46:31

Model No.: MP252BW
Worst Case: SIP Call Ringing (Thru ADSL) + WiFi + PC Online + USB Data Transfer



Date: 9.SEP.2011 17:42:09

Model No.: MP252BW
Worst Case: SIP Call Ringing (Thru ADSL) + WiFi + PC Online + USB Data Transfer

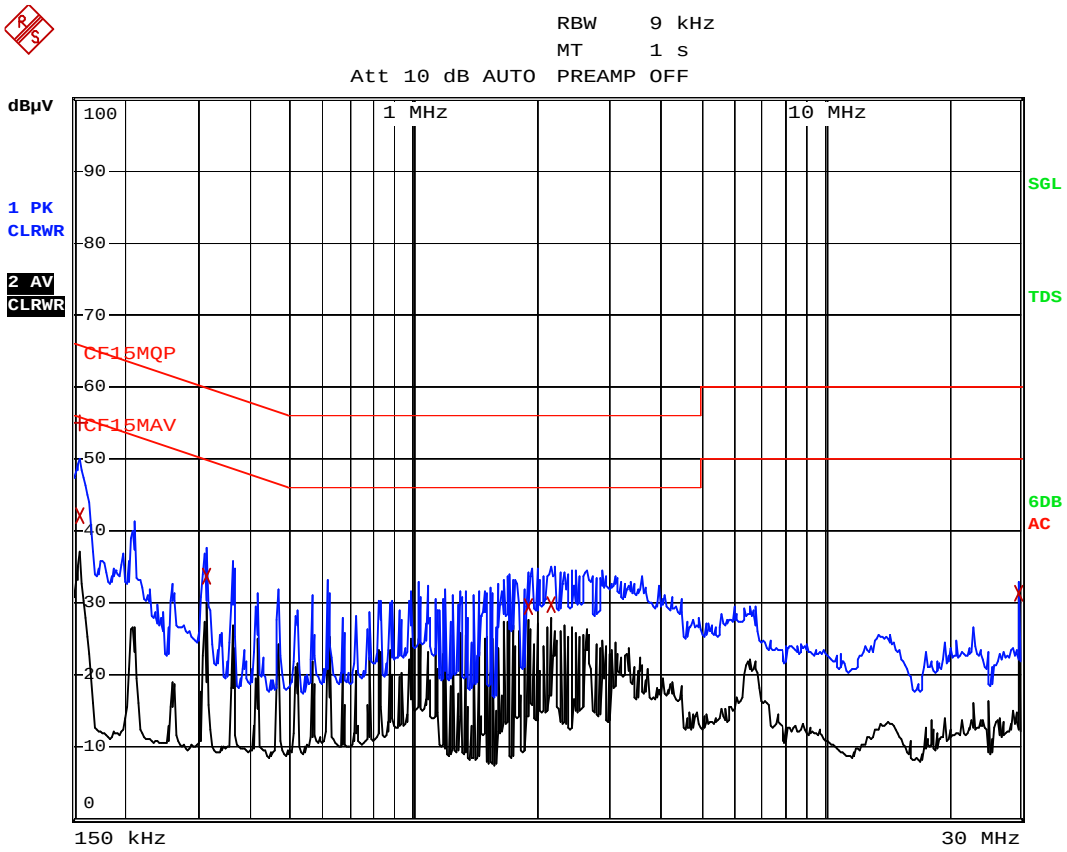
EDIT PEAK LIST (Final Measurement Results)

Trace1: CF15MQP
Trace2: CF15MAV
Trace3: ---

	TRACE	FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	150 kHz	58.61	L1 gnd	-7.38
2	CISPR Average	150 kHz	45.92	L1 gnd	-10.07
1	Quasi Peak	253.5 kHz	42.87	N gnd	-18.76
1	Quasi Peak	303 kHz	42.93	N gnd	-17.22
2	CISPR Average	402 kHz	30.16	N gnd	-17.64
2	CISPR Average	406.5 kHz	37.27	L1 gnd	-10.44
1	Quasi Peak	406.5 kHz	43.32	L1 gnd	-14.39
1	Quasi Peak	604.5 kHz	37.23	L1 gnd	-18.77
2	CISPR Average	609 kHz	35.56	N gnd	-10.43
2	CISPR Average	1.059 MHz	27.57	N gnd	-18.42
1	Quasi Peak	1.059 MHz	32.64	N gnd	-23.35
1	Quasi Peak	1.5135 MHz	37.37	L1 gnd	-18.62
2	CISPR Average	1.5135 MHz	17.30	N gnd	-28.69
2	CISPR Average	1.7655 MHz	28.03	L1 gnd	-17.97
1	Quasi Peak	1.9905 MHz	39.55	L1 gnd	-16.44
1	Quasi Peak	2.4675 MHz	37.24	N gnd	-18.75
1	Quasi Peak	3.0615 MHz	39.07	N gnd	-16.93
2	CISPR Average	3.3135 MHz	30.77	N gnd	-15.23
1	Quasi Peak	4.974 MHz	32.27	L1 gnd	-23.72
2	CISPR Average	29.8095 MHz	37.31	N gnd	-12.68

Date: 9.SEP.2011 17:41:57

Model No.: MP252BW
Worst Case: SIP Call Online (Thru ADSL)+WiFi +PC Online+ USB Data Transfer



Date: 9.SEP.2011 18:18:17

Model No.: MP252BW
Worst Case: SIP Call Online (Thru ADSL)+WiFi +PC Online+ USB Data Transfer

EDIT PEAK LIST (Final Measurement Results)

Trace1: CF15MQP
Trace2: CF15MAV
Trace3: ---

	TRACE	FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	154.5 kHz	54.91	N gnd	-10.84
2	CISPR Average	154.5 kHz	42.01	N gnd	-13.73
2	CISPR Average	312 kHz	33.64	N gnd	-16.27
2	CISPR Average	1.9095 MHz	29.48	L1 gnd	-16.51
2	CISPR Average	2.1705 MHz	29.67	L1 gnd	-16.32
2	CISPR Average	29.8095 MHz	31.48	N gnd	-18.51

Date: 9.SEP.2011 18:18:04

4.9 Radio Frequency Radiation Exposure

EUT is subject to the radio frequency exposure requirements specified in FCC Rule §§ 1.1307. It shall be considered to operate in a “general population / uncontrolled” environment.

☐ Output power is less than the applicable low threshold from SAR evaluation. The evaluation calculation results are saved with filename: RF exposure info.pdf

☒ EUT was evaluated for Maximum Permissible Exposure (MPE) evaluation compliance according to OET Bulletin 65, Supplement C (Edition 01-01). The evaluation calculation results are saved with filename: RF exposure info.pdf

☐ EUT was evaluated for Specific Absorption Rate (SAR) evaluation compliance according to OET Bulletin 65, Supplement C (Edition 01-01). It is in compliance with the SAR evaluation requirements. A SAR test report was submitted at same time and saved as SAR Report.pdf

4.10 Radio Frequency Exposure Compliance

The Routine RF Exposure Evaluation, Routine SAR Evaluation and Declaration of RF Exposure Compliance are saved with filename: RF exposure.pdf

EXHIBIT 5
EQUIPMENT LIST

5.0 **Equipment List**

1) Radiated Emissions Test

Equipment	EMI Test Receiver	Spectrum Analyzer	Biconical Antenna	
Registration No.	EW-2500	EW-2253	EW-0571	EW-0954
Manufacturer	R&S	R&S	EMCO	EMCO
Model No.	ESCI	FSP40	CORAD	3104C
Calibration Date	Jan. 25, 2011	Nov. 23, 2010	Sep. 28, 2010	Apr. 14, 2010
Calibration Due Date	Jan. 25, 2012	Nov. 23, 2011	Mar. 28, 2012	Oct. 14, 2011

Equipment	Log Periodic Antenna		Broad-Band Horn Antenna with frequency range 14G - 40GHz	Double Ridged Guide Antenna (1GHz - 18GHz)
Registration No.	EW-1042	EW-0446	EW-1679	EW-1133
Manufacturer	EMCO	EMCO	SCHWARZBECK	MAXBRIGHT
Model No.	MAXBRIGHT	3146	BBHA9170	3115
Calibration Date	Oct. 06, 2010	Apr. 26, 2010	Mar. 03. 2011	Mar. 02, 2011
Calibration Due Date	Apr. 06, 2012	Oct. 26, 2011	Sep. 03, 2012	Sep. 02, 2012

2) Conducted Emissions Test

Equipment	EMI Test Receiver	LISN	Artificial Mains Network	Pulse Limiter
Registration No.	EW-2251	EW-0192	EW-2501	EW-0698
Manufacturer	R&S	R&S	R&S	R&S
Model No.	ESCI	ESH3-Z5	ENV-216	ESH3-Z2
Calibration Date	May 06, 2011	Nov. 30, 2010	Mar. 30, 2011	Mar.11, 2011
Calibration Due Date	May 06, 2012	Nov. 30, 2011	Mar. 30, 2012	Mar.11, 2012

3) Conductive Measurement Test

Equipment	Spectrum Analyzer	RF Power Sensor	RF Power Meter
Registration No.	EW-2466	EW-2270a	EW-2270b
Manufacturer	R&S	AGILENTTECH	AGILENTTECH
Model No.	FSP30	N1921A	N1911A
Calibration Date	Apr. 11, 2011	Dec. 03, 2010	Dec. 03, 2010
Calibration Due Date	Apr. 11, 2012	Dec. 03, 2011	Dec. 03, 2011

END OF TEST REPORT