TEST REPORT

For

Mobile phone

In conformity with

FCC CFR 47 Part15 (Wireless LAN)

Model: F-09C

FCC ID: VQK-F09C

Test Item: Mobile phone

Report No: RY1103Z14R1

Issue Date: 14 March, 2011

Prepared for

FUJITSU LIMITED
1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki 211-8588, Japan

Prepared by

RF Technologies Ltd.
472, Nippa-cho, Kohoku-ku, Yokohama, 223-0057, Japan
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History

Report No.	Date	Revisions	Issued By
RY1103Z14R1	14 March, 2011	Initial Issue	K. Ohnishi

1 General information

1.1 Product description

Test item	: Mobile phone
Manufacturer	: FUJITSU LIMITED
Address	: 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki 211-8588, Japan
Model	: F-09C
FCC ID	: VQK-F09C
Serial numbers	: 3551 1504 0014 190
Operating Frequency	: Tx/Rx Freq. (2412 - 2462 MHz)
Oscillator frequencies	: 26 MHz
Type of Modulation	: DSSS, CCK, OFDM
RF Output Power	: 23.49dBm (measured at the antenna terminal)
Antenna Gain	: -3.00 dBi (λ /4 Monopole antenna)
Receipt date of EUT	: 14 February, 2011
Nominal power source voltages	: DC 3.7V (Battery)

1.2 Test(s) performed/ Summary of test result

Test specification(s)	: FCC CFR 47. Part 15 (October 1, 2009)
Test method(s)	: ANSI C63.4: 2003
Test(s) started	: 2 March, 2011
Test(s) completed	: 10 March, 2011
Purpose of test(s)	: Grant for Certification of FCC
Summary of test result	: Complied (RF Conducted test only)

Note: The above judgment is only based on the measurement data and it does not include the measurement uncertainty. Accordingly, the statement below is applied to the test result.
The EUT complies with the limit required in the standard in case that the margin is not less than the measurement uncertainty in the Laboratory.
Compliance of the EUT is more probable than non-compliance is case that the margin is less than the measurement uncertainty in the Laboratory.

Test engineer : K. Ohnishi
K.Ohnishi
EMC testing Department

Reviewer : T. Ikegami
T. Ikegami
Manager
EMC testing Department

1.3 Test facility

The Federal Communications Commission has reviewed the technical characteristics of the test facilities at RF Technologies Ltd., located in 472, Nippa-cho, Kohoku-ku, Yokohama, 223-0057, Japan, and has found these test facilities to be in compliance with the requirements of 47 CFR Part 15, section 2.948, per October 1, 2009.
The description of the test facilities has been filed under registration number 319924 at the Office of the Federal Communications Commission. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.
The list of all public test facilities is available on the Internet at http://www.fcc.gov.

Registered by Voluntary Control Council for Interference by Information Technology Equipment (VCCI)
Each registered facility number is as follows;
Test site (Semi-Anechoic chamber 3m) R-2393
Test site (Shielded room) C-2617

Registered by Industry Canada (IC): The registered facility number is as follows;
Test site No. 1 (Semi-Anechoic chamber 3m): 6974A-1

Accredited by **National Voluntary Laboratory Accreditation Program** (NVLAP) for the emission tests stated in the scope of the certificate under Certificate Number 200780-0

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

NVLAP LAB CODE 200780-0

1.4 Measurement uncertainty

The treatment of uncertainty is based on the general matters on the definition of uncertainty in “Guide to the expression of uncertainty in measurement (GUM)” published by ISO. The Lab’s uncertainty is determined by referring UKAS Publication LAB34: 2002 “The Expression of Uncertainty in EMC Testing” and CISPR16-4-2: 2003 “Uncertainty in EMC Measurements”.
The uncertainty of the measurement result in the level of confidence of approximately 95% (k=2) is as follows;

RF Conducted level: ± 1.10 dB

1.5 Summary of test results

1.5.1 Table of test summary

Requirement of;	Section in FCC15	Test Performed	Result	Section in this report
1.5.1 Occupied Bandwidth (20dB / 99%)	2.1049	Yes	-	2.1
1.5.2 6dB Bandwidth	15.247(a)(2)	Yes	Complied	2.2
1.5.3 Peak Output Power	15.247(a)(1) /(b)(1)	Yes	Complied	2.3
1.5.4 Conducted Spurious Emissions	15.247(d)	Yes	Complied	2.4
1.5.5 Power Spectral density	15.247(e)	Yes	Complied	2.5
1.5.6 Transmitter Radiated Spurious Emissions	15.205(b)/15.209	No (Note)	-	-
1.5.7 Transmitter AC Power Line Conducted Emissions	15.207	No (Note)	-	-

Note: This is the manufacturer request. Please refer to another report.

1.6 Setup of equipment under test (EUT)

1.6.1 Test configuration of EUT

Equipment(s) under test:

	Item	Manufacturer	Model No.	Serial No.	Remarks
A1	Mobile phone	FUJITSU LIMITED	F-09C	3551 1504 0014 190	-
B	Li-ion Battery Pack	FUJITSU LIMITED	F18	No.328	-

Support Equipment(s):

	Item	Manufacturer	Model No.	Serial No.
C	AC Adapter	FUJITSU LIMITED	FOMA AC adapter02	SCB

Connected cable(s):

No.	Item	Identification (Manu.e.t.c)	Shielded YES / NO	Ferrite Core YES / NO	Connector Type Shielded YES / NO	Length (m)
1	DC power cable	FUJITSU LIMITED	No	No	No	1.5

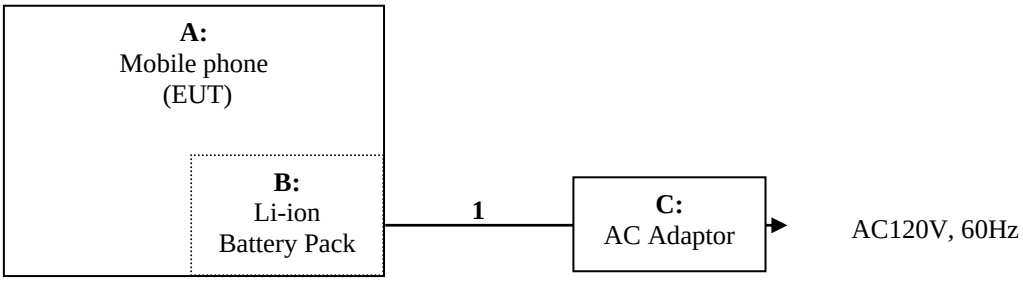
1.6.2 Operating condition:

Operating mode:

The EUT was tested under the following test mode prepared by the applicant:

(1-1) 802.11b (Data rate: 1, 2, 5.5, 11Mbps), Continuous transmission (2412MHz)
(1-2) 802.11b (Data rate: 1, 2, 5.5, 11Mbps), Continuous transmission (2437MHz)
(1-3) 802.11b (Data rate: 1, 2, 5.5, 11Mbps), Continuous transmission (2462MHz)
(1-4) 802.11g (Data rate: 6, 12, 18, 24, 36, 48, 54Mbps), Continuous transmission (2412MHz)
(1-5) 802.11g (Data rate: 6, 12, 18, 24, 36, 48, 54Mbps), Continuous transmission (2437MHz)
(1-6) 802.11g (Data rate: 6, 12, 18, 24, 36, 48, 54Mbps), Continuous transmission (2462MHz)

1.6.3 Setup diagram of tested system:



1.7 Equipment modifications

No modifications have been made to the equipment in order to achieve compliance with the applicable standards described in clause 1.2.

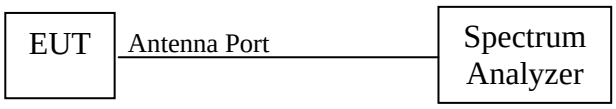
1.8 Deviation from the standard

No deviations from the standards described in clause 1.2.

2 Test procedure and test data

2.1 Occupied Bandwidth (20 dB / 99%)

Test setup
Test setup is the following drawing. The antenna port of EUT was connected to the spectrum analyzer.



Test procedure
Measurement procedures were implemented according to the method of ANSI C63.4: 2003 clauses 13.1.7.
The EUT antenna port connected to the spectrum analyzer. The RBW is set to 1% to 3% of the measured 20dB bandwidth. The VBW is set to 3 times of the RBW. The sweep time is coupled appropriate.

Limitation
There are no limitations. The measurement value is used to calculation of the limitation of the channel separation and the emission designator.

Test equipment used (refer to List of utilized test equipment)

TR06	CL23				

Test results

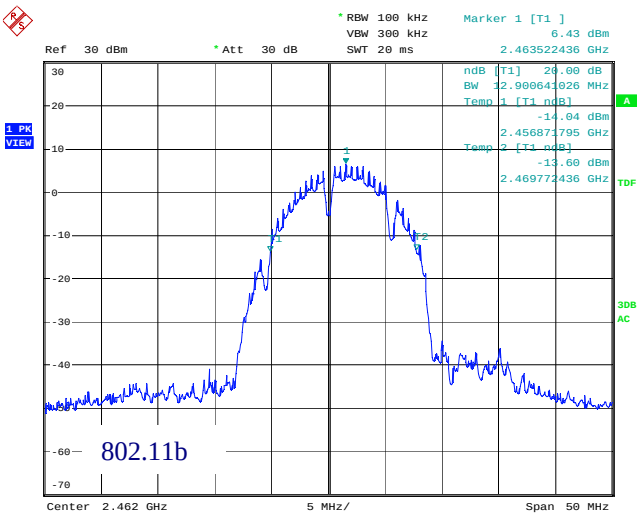
Operating Mode	Transmission Channel	Transmission Frequency	Bandwidth [MHz]	
			20dB	99%
802.11b	Low (1ch)	2412	12.756	11.730
	Middle (6ch)	2437	11.778	11.698
	High (11ch)	2462	**12.900**	**11.778**
802.11g	Low (1ch)	2412	**17.307**	**16.426**
	Middle (6ch)	2437	**17.307**	**16.426**
	High (11ch)	2462	**17.307**	**16.426**

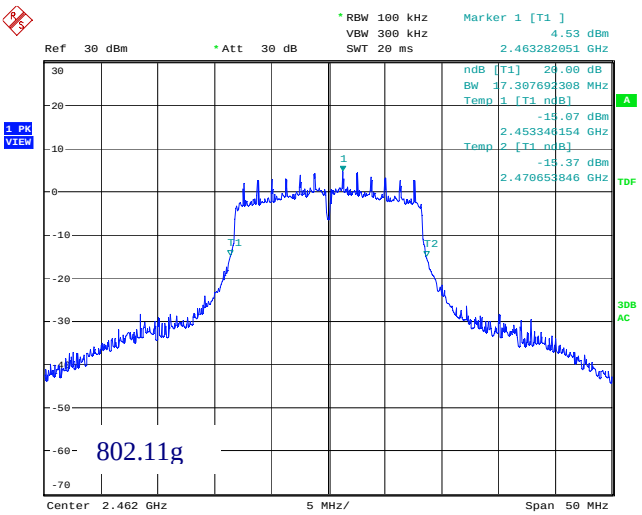
Test Data

Tested Date: 10 March, 2011

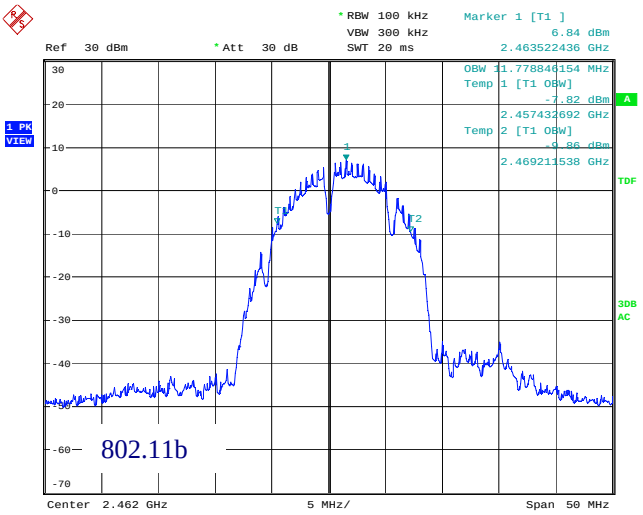
Temperature: 21 ˚C
Humidity: 23 %
Atmos. Press: 1017 hPa

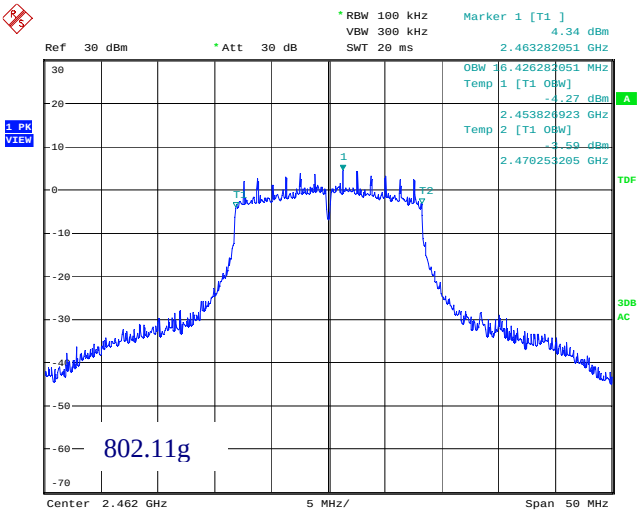
20dB Bandwidth





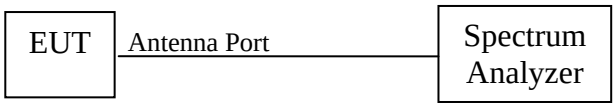
99% Occupied Bandwidth





2.2 6dB Bandwidth

Test setup
Test setup is the following drawing. The antenna port of EUT was connected to the spectrum analyzer.



Test procedure
Measurement procedures were implemented according to the method of "Measurement of Digital Transmission Systems Operating under Section 15.247(March 23, 2005)". Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

Limitation
15.247 (a) (2) Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test equipment used (refer to List of utilized test equipment)

TR06	CL23				

Test results

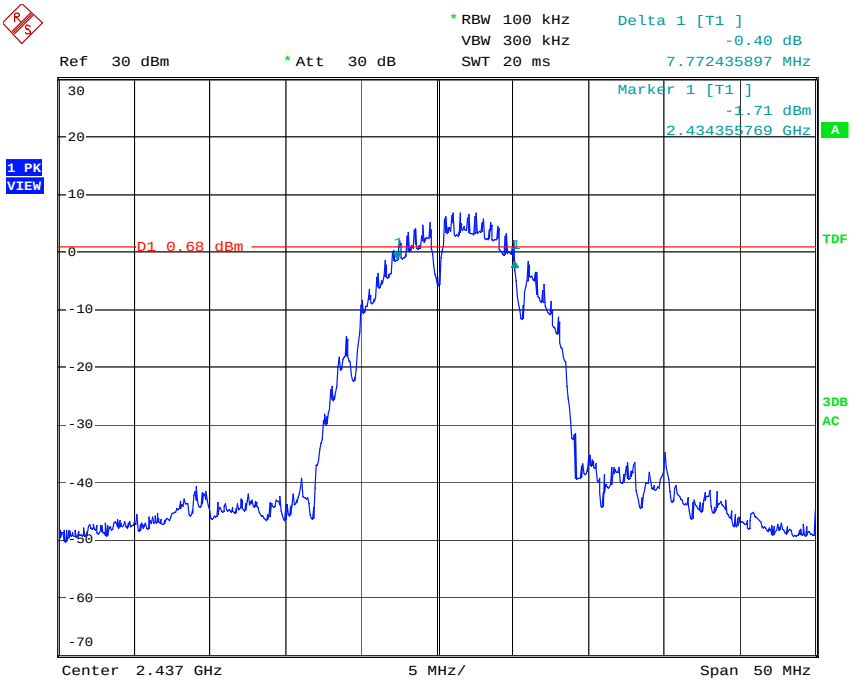
Operating Mode	Transmission Channel	Transmission Frequency	Bandwidth [MHz]
802.11b	Low (1ch)	2412	7.692
	Middle (6ch)	2437	**7.772**
	High (11ch)	2462	7.692
802.11g	Low (1ch)	2412	**15.304**
	Middle (6ch)	2437	15.224
	High (11ch)	2462	14.022

Test Data

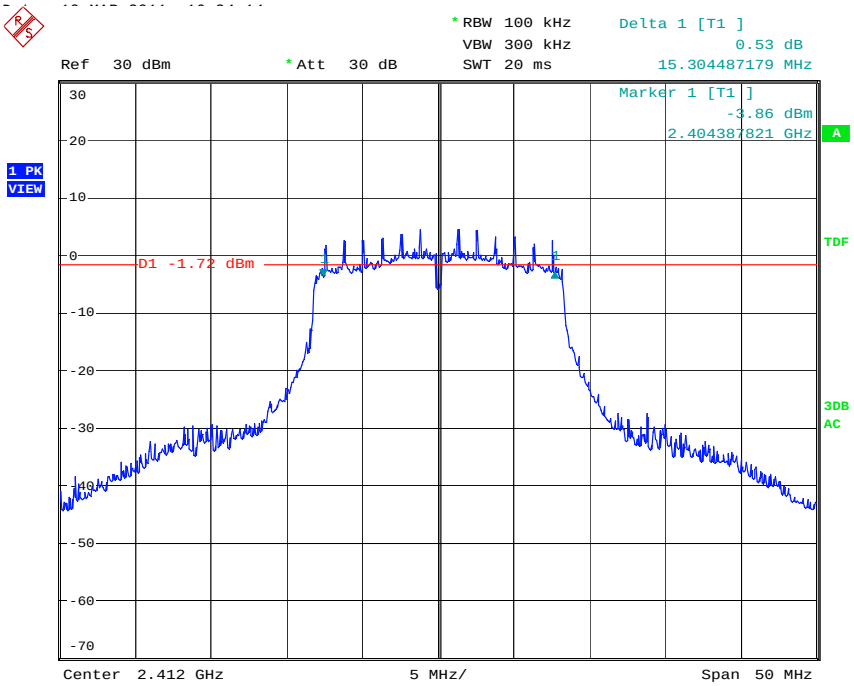
Tested Date: 10 March, 2011

Temperature: 21 ˚C
Humidity: 23 %
Atmos. Press: 1017 hPa

802.11b

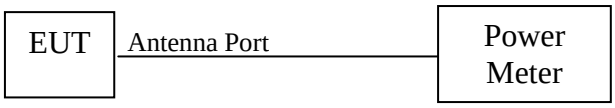


802.11g



2.3 Peak Output Power

Test setup
Test setup is the following drawing. The antenna port of EUT was connected to the spectrum analyzer.



Test procedure
The EUT antenna port connected to the RF peak power meter.

Limitation
15.247(b) (3) For systems using digital modulation in the 902–928 MHz, 2400–2483.5MHz, and 5725–5850 MHz bands: 1 Watt (30dBm).

Test equipment used (refer to List of utilized test equipment)

PM05	PU06	CL22			

Test results – comply with the limitation.

Tested Date: 2 March, 2011

Temperature: 23 ˚C
Humidity: 31 %
Atmos. Press: 1004 hPa

Operating Mode	Transmission Channel (MHz)	Output power (dBm)	Output power (mW)
802.11b	Low (2412)	17.32	54.0
	Middle (2437)	17.39	54.8
	High (2462)	17.34	54.2
802.11g	**Low (2412)**	**23.49**	**223.4**
	Middle (2437)	23.28	212.8
	High (2462)	23.43	220.3

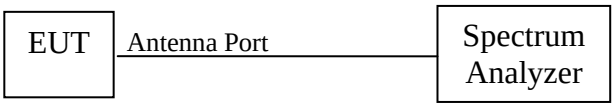
Average output power

Highest output power is 29.6mW more than 60mW/F (GHz), SAR evaluation is required.

Operating Mode	Transmission Channel (MHz)	Output power (dBm)	Output power (mW)
802.11b	Low (2412)	14.66	29.2
	Middle (2437)	14.67	29.3
	High (2462)	**14.71**	**29.6**
802.11g	Low (2412)	13.84	24.2
	Middle (2437)	13.71	23.5
	High (2462)	13.86	24.3

2.4 Conducted Spurious Emissions

Test setup
Test setup is the following drawing. The antenna port of EUT was connected to the spectrum analyzer.



Test procedure
The EUT antenna port connected to the spectrum analyzer. The RBW is set to 100 kHz. The VBW is set to 300 kHz. The sweep time is set to the coupled. The spectrum is cheated from 30 MHz to 25 GHz.
The EUT is set measured transmission channel under hopping off mode.

Limitation
15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Test equipment used (refer to List of utilized test equipment)

TR06	CL23				

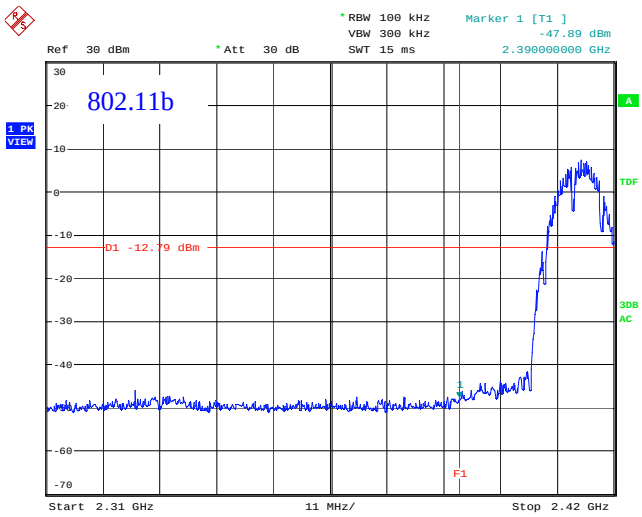
Test results – comply with the limitation.

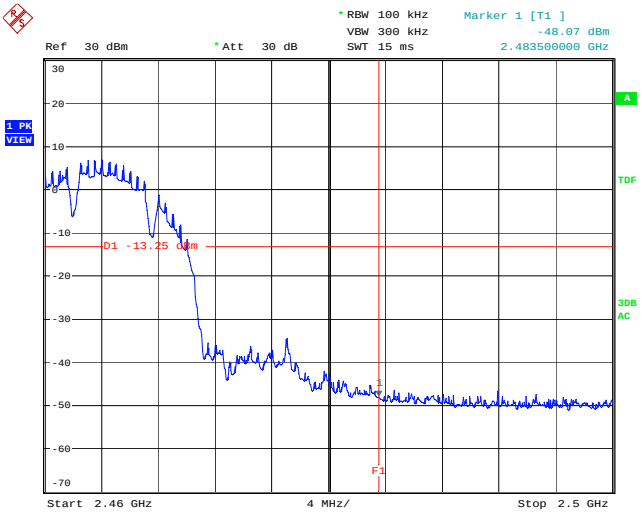
Test Data

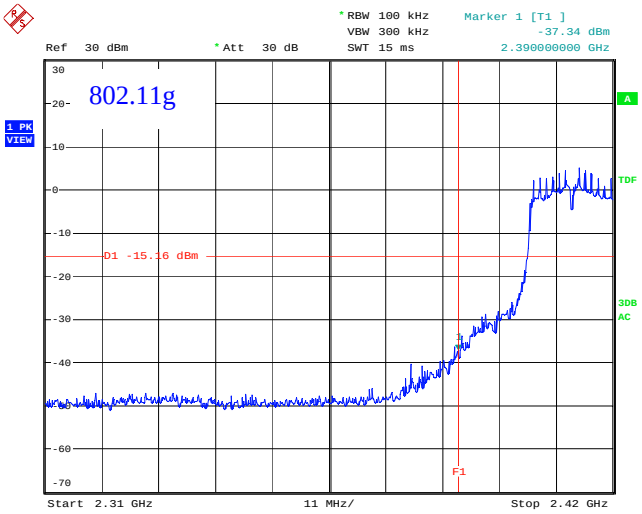
Tested Date: 10 March, 2011

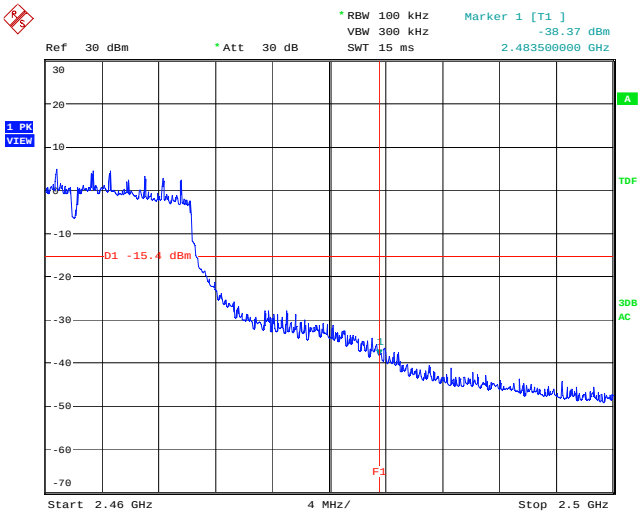
Temperature: 21 ˚C
Humidity: 23 %
Atmos. Press: 1017 hPa

Restricted Band Edge

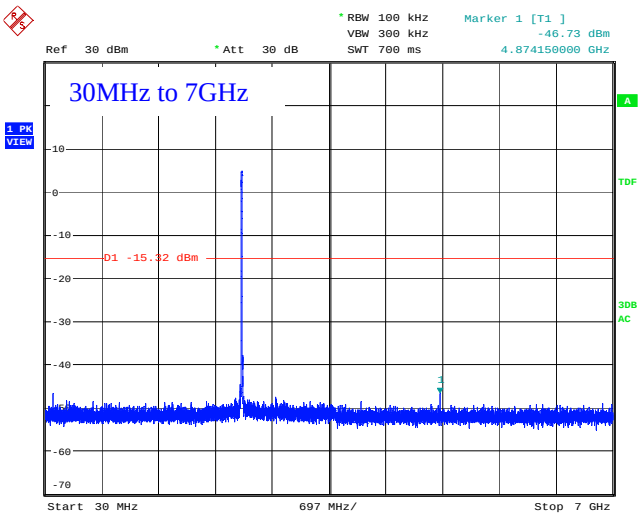


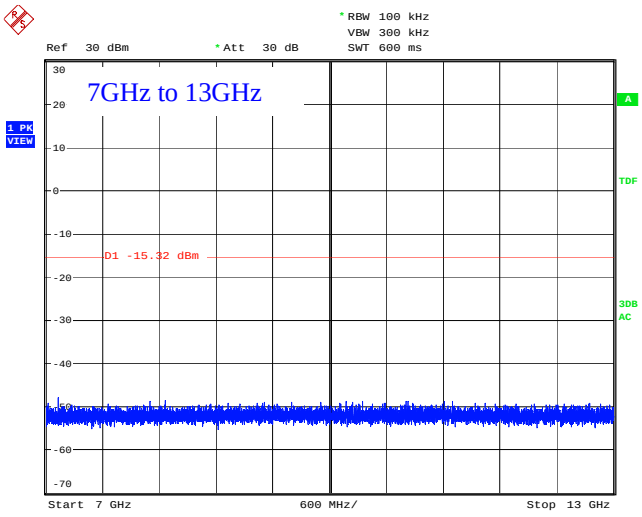


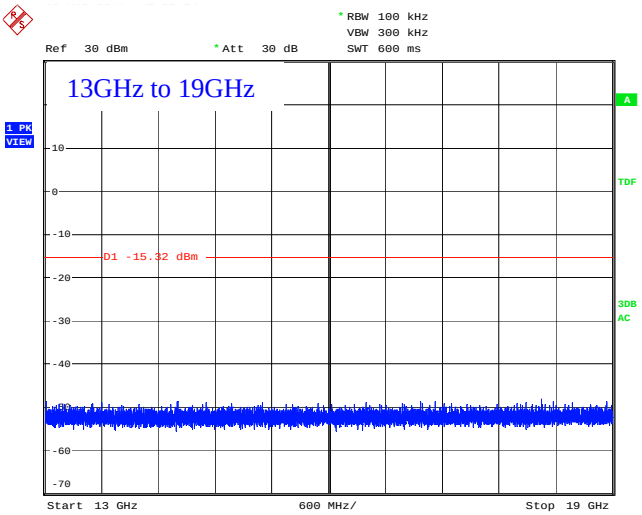


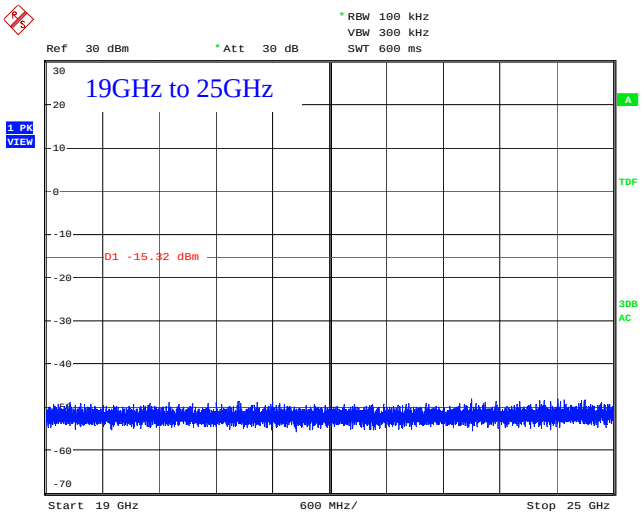


Worst Configuration (802.11b, 2412MHz)



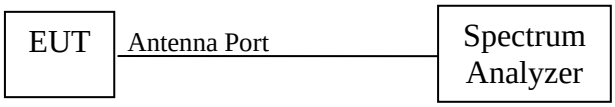






2.5 Power Spectral density

Test setup
Test setup is the following drawing. The antenna port of EUT was connected to the spectrum analyzer.



Test procedure
The EUT antenna port connected to the spectrum analyzer. The RBW is set to 3 kHz. The VBW is set to three times of RBW. The sweep time is set to SPAN / 3 kHz [sec].

Limitation
15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Test equipment used (refer to List of utilized test equipment)

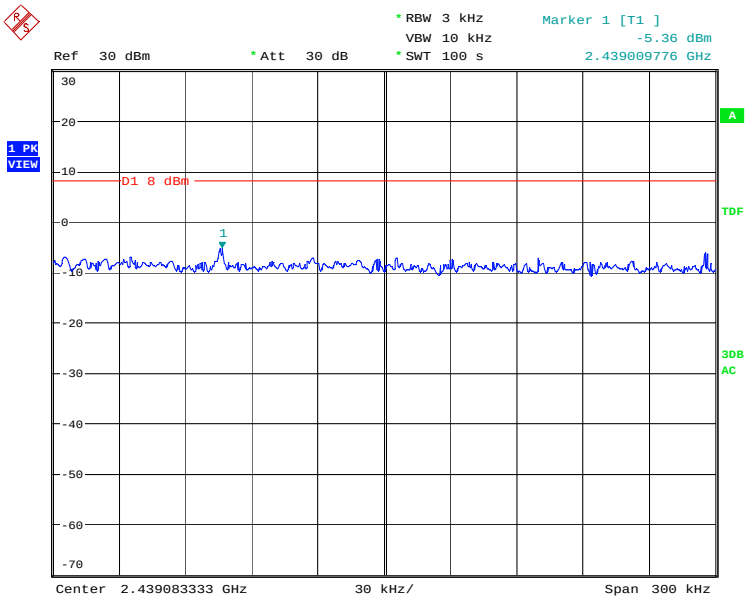
TR06	CL23				

Test results – comply with the limitation.

Operating Mode	Transmission Channel (Frequency: MHz)	Output power (dBm) [Result]
802.11b	Low (2412)	-5.85
	Middle (2437)	**-5.36**
	High (2462)	-5.98
802.11g	Low (2412)	-7.86
	Middle (2437)	-7.24
	High (2462)	-5.77

Test Data
Tested Date: 10 March, 2011

Temperature: 21 ˚C
Humidity: 23 %
Atmos. Press: 1017 hPa



4 List of utilized test equipment/ calibration

RFT ID No.	Kind of Equipment and Precision	Manufacturer	Model No.	Serial Number	Calibration Date	Calibrated until
CL22	RF Cable 2.0m	SUHNER	SUCOFLEX104	274755	2010/03/12	2011/03/31
CL23	RF Cable 0.5m	SUHNER	SUCOFLEX104PE	48773	2010/06/15	2011/06/30
PM05	Power Meter	Anritsu	ML2487A	6K00004724	2010/09/13	2011/09/30
PU06	Power Sensor (Peak/Ave)	Anritsu	MA2491A	033696	2010/09/13	2011/09/30
TR06	Test Receiver (F/W : 3.93 SP2)	Rohde & Schwarz	ESU26	100002	2010/09/02	2011/09/30

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.