

TEST REPORT

For

Communication Robot (WLAN 11b/g)

In conformity with

FCC CFR 47 Part15 Subpart C

Model : YE-RB002G, YE-RB002T

FCC ID : 2AFXT-RB002-W

Report No. : ERY1604P07R1

Issue Date : 07 Apr. 2016

Prepared for

Yukai Engineering Inc.
101, Musashiya-Sky bldg, 16-11, Tomihisa-cho, Shinjuku,
Tokyo 162-0067 JAPAN

Prepared by

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SGS RF Technologies Inc. is managed to ISO17025 and has the necessary knowledge and test facilities for testing according to the referenced standards. The test results in this report apply only to the sample(s) tested.

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History

Report No.	Date	Revisions	Issued By
ERY1602P01R1	01 Feb. 2016	Initial Issue	T.Kato
ERY1604P07R1	07 Apr. 2016	- Correct of erroneous description of test result (Sec 2.8) - Add the referenced clause number for test procedure (Sec 2.3 Sec2.5)	T.Kato

1 General information

1.1 Product description

Test item : Communication Robot
Manufacturer : Yukai Engineering Inc.
Address : 101, Musashiya-Sky bldg, 16-11, Tomihisa-cho, Shinjuku, Tokyo,
162-0067 JAPAN
Model : YE-RB002G
FCC ID : 2AFXT-RB002-W
Serial number : 0103212 (Radiated test sample)
0103318 (Conducted test sample)
Hardware version : 1.0.0
Software version : 1.01
Operating frequency : 2412 - 2462 MHz
Modulation : DSSS/OFDM
Antenna Gain : +2.31 dBi
Receipt date of EUT : 26 Oct. 2015
Nominal power source voltages : AC 120 V / 60 Hz (AC ADAPTOR)

Family model : YE-RB002T (The color of case is different.)

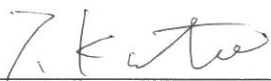
1.2 Test(s) performed/ Summary of test result

Test specification(s) : FCC CFR 47 Part 15 Subpart C (01 Oct. 2014)
Test method(s) : ANSI C63.10: 2013
Test(s) started : 08 Jan. 2016
Test(s) completed : 18 Jan. 2016
Purpose of test(s) : Certification

Summary of test result : Complied

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

: 
T. Kato
EMC testing Department

Reviewer

: 
K. Onishi
Manager
EMC testing Department

1.3 Test facility

The Federal Communications Commission has reviewed the technical characteristics of the test facilities at SGS RF Technologies Inc., 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, 2014.

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 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.

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: 2011 “Uncertainty in EMC Measurements”.

The uncertainty of the measurement result in the level of confidence of approximately 95% ($k=2$) is as follows;

Conducted emission: ± 3.4 dB (10 kHz - 30 MHz)
Radiated emission (9 kHz - 30 MHz): ± 3.3 dB
Radiated emission (30 MHz - 200 MHz): ± 4.8 dB
Radiated emission (200 MHz - 1000 MHz): ± 6.1 dB
Radiated emission (1 GHz - 6 GHz): ± 4.5 dB
Radiated emission (6 GHz - 18 GHz): ± 4.6 dB
Radiated emission (18 GHz - 26 GHz): ± 4.7 dB

1.5 Summary of test results

Requirement	Section in FCC	Result	Section in this report
Occupied Bandwidth (99 %)	2.1049	Complied	2.1
6 dB Bandwidth	15.247 (a) (2)	Complied	2.2
Conducted Output Power	15.247 (b) (3)	Complied	2.3
Conducted Spurious Emission	15.247 (d)	Complied	2.4
Power Spectral Density	15.247 (e)	Complied	2.5
Radiated Emissions	15.247(d), 15.205 (a)	Complied	2.6
AC power line conducted emissions	15.207	Complied	2.7
Radiated Emissions (Simultaneous Transmission)	15.247(d), 15.205 (a)	Complied	2.8

1.6 Setup of equipment under test (EUT)

1.6.1 Test configuration of EUT

Equipment(s) under test

No.	Item	Manufacture	Model No.	Serial No.
A1	Communication Robot (for Conducted test)	Yukai Engineering Inc.	YE-RB002G	0103318
A2	Communication Robot (for Radiated test)	Yukai Engineering Inc.	YE-RB002G	0103212

Support Equipment(s)

No.	Item	Manufacture	Model No.	Serial No.
B	AC ADAPTOR	UNIFIVE	US318-0628	-
-	-	-	-	-

Connected cable(s)

No.	Item	Identification (Manu.etc.)	Cable Shielded	Ferrite Core	Length [m]
1	DC cable for AC ADAPTOR	-	No	Yes	1.5

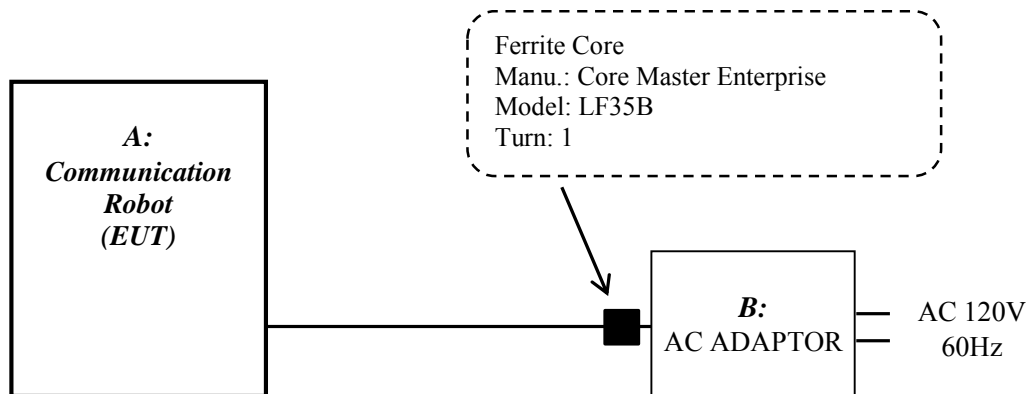
1.6.2 Operating condition:

- Tx (2412MHz): The EUT is in normal transmission mode at 2412 MHz.
- Tx (2437MHz): The EUT is in normal transmission mode at 2437 MHz.
- Tx (2462MHz): The EUT is in normal transmission mode at 2462 MHz.

Note: The EUT some support data transmission rates as below,
11b mode (1 / 2 / 5.5 / 11 Mbps)
11g mode (6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps)

- Simultaneous transmission mode with BLE:
WLAN and BLE is transmitted at the same time.
WLAN: 11b / 1 Mbps / 2412 MHz
BLE: 2480 MHz

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

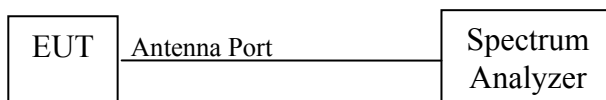
No deviations from the standards described in clause 1.2.

2 Test procedure and test data

2.1 Occupied Bandwidth (99%)

Test setup

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



Test procedure

Spectrum analyzer is set as below according to ANSI C63.10 clause 6.9

- RBW : 1 to 5 % of OBW
- VBW > 3 x RBW
- Span : OBW x 1.5 to 5
- Trace : Max hold

Limitation

There are no limitations.

The measurement value is used for the emission designator.

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

TR06	CL31				
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Test results

Tested sample: A1

Operating mode: 11b

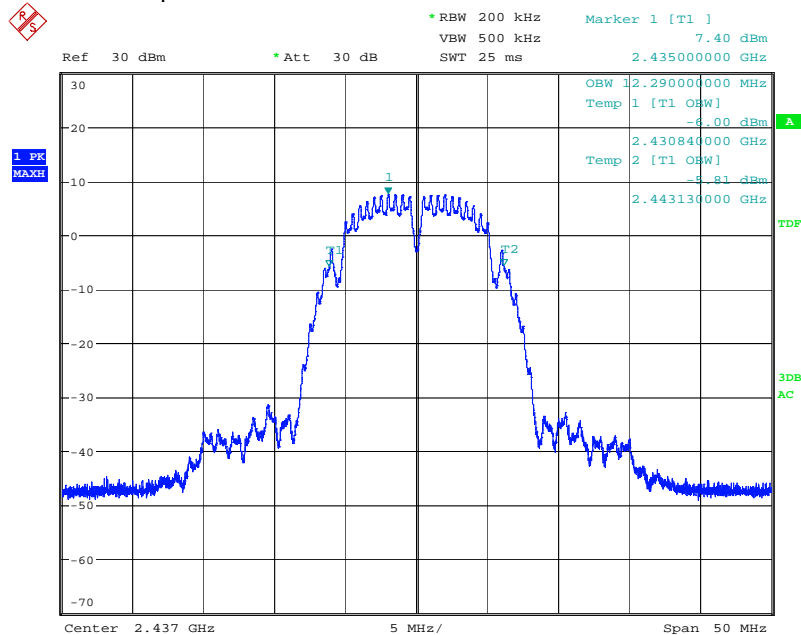
Transmission Frequency [MHz]	Data Transmission Rate	Occupied Bandwidth [MHz]
2412	1 Mbps	12.28
	2 Mbps	12.35
	5.5 Mbps	12.07
	11 Mbps	12.15
2437	1 Mbps	12.29
	2 Mbps	12.35
	5.5 Mbps	12.07
	11 Mbps	12.16
2462	1 Mbps	12.28
	2 Mbps	12.35
	5.5 Mbps	12.08
	11 Mbps	12.16

Tested sample: A1
Operating mode: 11g

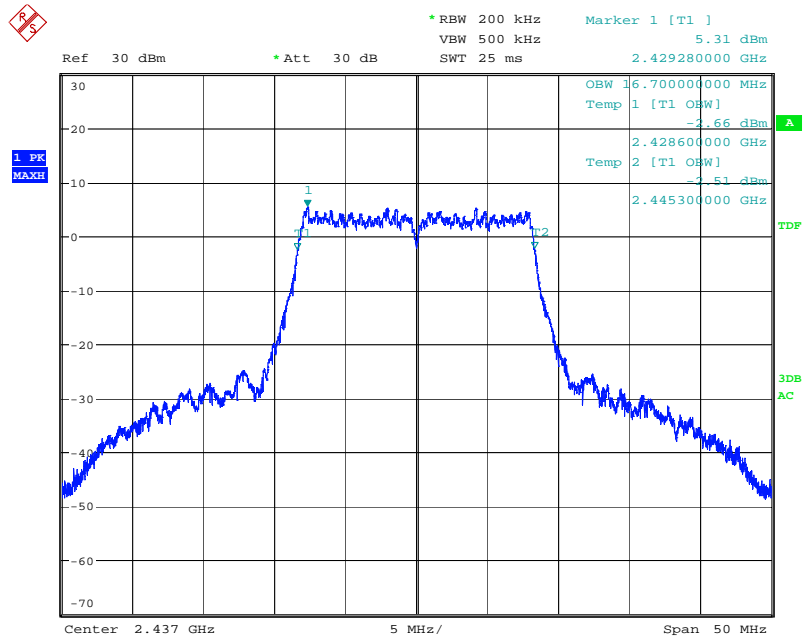
Transmission Frequency [MHz]	Data Transmission Rate	Occupied Bandwidth [MHz]
2412	6 Mbps	16.70
	9 Mbps	16.72
	12 Mbps	16.64
	18 Mbps	16.55
	24 Mbps	16.57
	36 Mbps	16.54
	48 Mbps	16.52
	54 Mbps	16.58
2437	6 Mbps	16.70
	9 Mbps	16.79
	12 Mbps	16.66
	18 Mbps	16.55
	24 Mbps	16.60
	36 Mbps	16.54
	48 Mbps	16.53
	54 Mbps	16.58
2462	6 Mbps	16.83
	9 Mbps	16.69
	12 Mbps	16.66
	18 Mbps	16.58
	24 Mbps	16.58
	36 Mbps	16.57
	48 Mbps	16.56
	54 Mbps	16.59

[Chart]

2437 MHz / 11b / 1 Mbps



2437 MHz / 11g / 6 Mbps



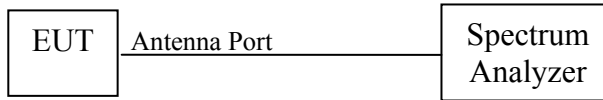
Tested Date: 14 Jan. 2016
Humidity: 38 %

Temperature: 16 degC
Atmos. Press: 1013 hPa

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

Spectrum analyzer is set as below according to ANSI C63.10 clause 11.8

- RBW = 100 kHz
- VBW : 300 kHz
- Detector : Peak
- Trace : Max hold

Applicable rule and 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	CL31				
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Test results - Complied with requirement

Test Data

Tested sample: A1

Operating mode: 11b

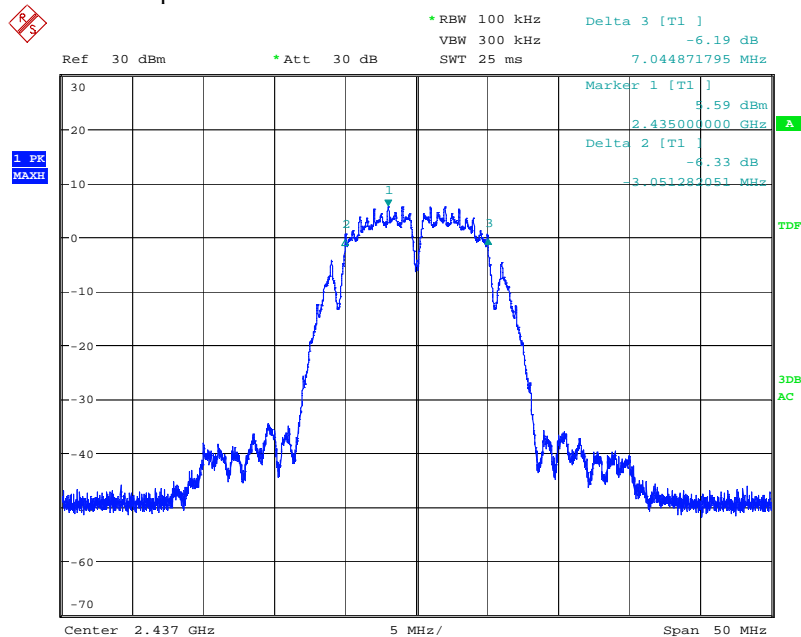
Transmission Frequency [MHz]	Data Transmission Rate	6dB Bandwidth [MHz]
2412	1 Mbps	9.695
	2 Mbps	9.776
	5.5 Mbps	9.455
	11 Mbps	9.375
2437	1 Mbps	10.096
	2 Mbps	9.856
	5.5 Mbps	9.819
	11 Mbps	9.695
2462	1 Mbps	10.016
	2 Mbps	9.776
	5.5 Mbps	9.826
	11 Mbps	9.786

Tested sample: A1
Operating mode: 11g

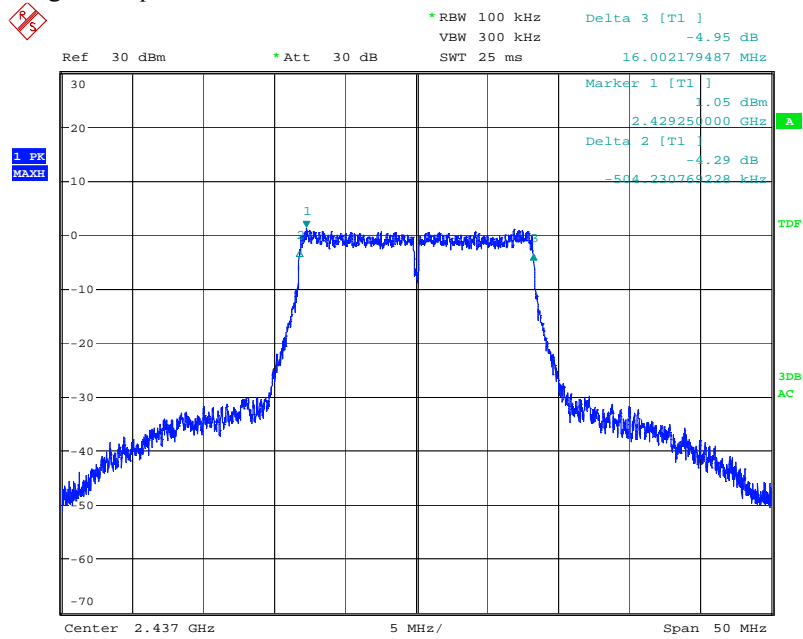
Transmission Frequency [MHz]	Data Transmission Rate	6dB Bandwidth [MHz]
2412	6 Mbps	16.586
	9 Mbps	16.587
	12 Mbps	16.586
	18 Mbps	16.506
	24 Mbps	16.506
	36 Mbps	16.506
	48 Mbps	16.506
	54 Mbps	16.506
2437	6 Mbps	16.506
	9 Mbps	16.615
	12 Mbps	16.587
	18 Mbps	16.586
	24 Mbps	16.587
	36 Mbps	16.587
	48 Mbps	16.586
	54 Mbps	16.586
2462	6 Mbps	16.586
	9 Mbps	16.587
	12 Mbps	16.506
	18 Mbps	16.506
	24 Mbps	16.506
	36 Mbps	16.506
	48 Mbps	16.586
	54 Mbps	16.587

[Chart]

2437 MHz / 11b / 1 Mbps



2437 MHz / 11g / 6 Mbps



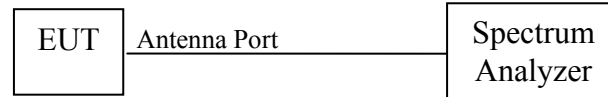
Tested Date: 14 Jan. 2016
Humidity: 38 %

Temperature: 16 degC
Atmos. Press: 1013 hPa

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

Spectrum analyzer is set as below according to ANSI C63.10 clause 11.9.1.1.

- RBW > 6dB BW
- Span > 3 x RBW
- Trace : Max hold
- VBW > 3 x RBW
- Detector : Peak

For the EUT that 6dB BW is wider than 1 MHz, below setting is used. (ANSI C63.10 clause 11.9.1.2)

- RBW = 1 MHz
- Span > 1.5 x 6dB BW
- Trace : Max hold
- VBW > 3 MHz
- Detector : Peak
- Channel power measurement function

Applicable rule and 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 (30 dBm).

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

TR06	CL31				
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Test results - Complied with requirement

Test Data

Tested sample: A1

Operating mode: 11b

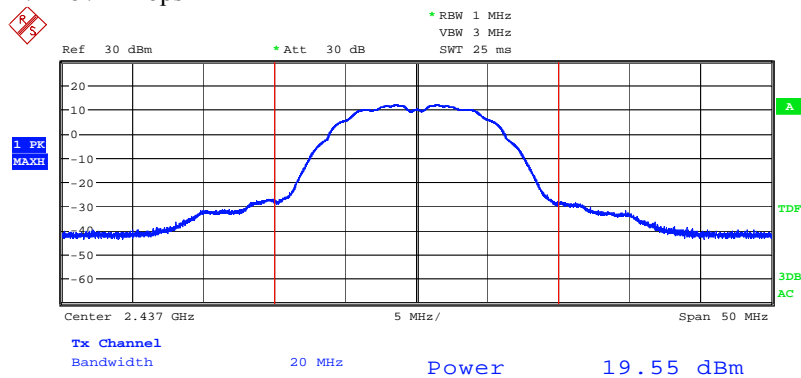
Transmission Frequency [MHz]	Data Transmission Rate	Output Power [dBm]
2412	1 Mbps	19.24
	2 Mbps	19.51
	5.5 Mbps	20.87
	11 Mbps	22.17
2437	1 Mbps	19.55
	2 Mbps	19.86
	5.5 Mbps	21.21
	11 Mbps	22.51
2462	1 Mbps	19.35
	2 Mbps	19.66
	5.5 Mbps	21.01
	11 Mbps	22.34

Tested sample: A1
Operating mode: 11g

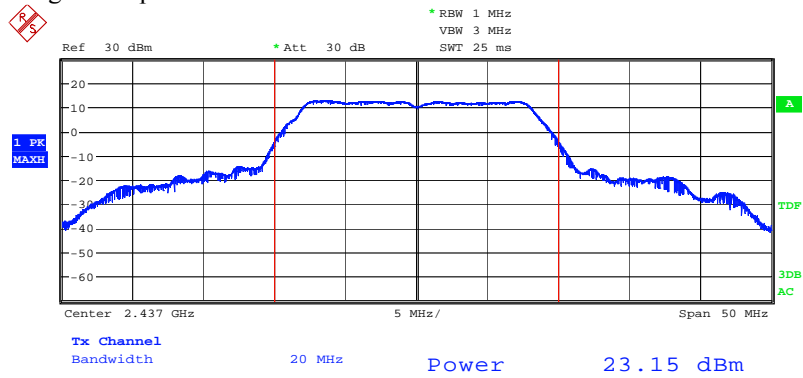
Transmission Frequency [MHz]	Data Transmission Rate	Output Power [dBm]
2412	6 Mbps	22.94
	9 Mbps	23.03
	12 Mbps	22.36
	18 Mbps	22.09
	24 Mbps	21.08
	36 Mbps	21.33
	48 Mbps	20.65
	54 Mbps	20.93
2437	6 Mbps	23.15
	9 Mbps	23.35
	12 Mbps	22.61
	18 Mbps	22.44
	24 Mbps	21.32
	36 Mbps	21.60
	48 Mbps	20.79
	54 Mbps	21.27
2462	6 Mbps	22.82
	9 Mbps	22.92
	12 Mbps	22.36
	18 Mbps	22.01
	24 Mbps	21.10
	36 Mbps	21.24
	48 Mbps	20.53
	54 Mbps	20.83

[Chart]

2437 MHz / 11b / 1 Mbps



2437 MHz / 11g / 6 Mbps



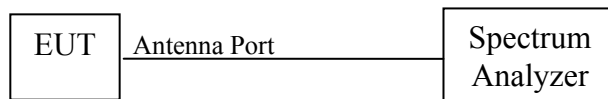
Tested Date: 14 Jan. 2016
Humidity: 38 %

Temperature: 16 degC
Atmos. Press: 1013 hPa

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

Spectrum analyzer is set as below according to ANSI C63.10 clause 7.8.8

- RBW : 100 kHz
- VBW : 300 kHz
- Detector : Peak
- Trace : Max hold

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	CL31				
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Test results - Complied with requirement

Test Data

Tested sample: AI

Operating mode: 2412 MHz / 11b / 1 Mbps (Worst condition)

Frequency [MHz]	Spurious level [dBm]	Carrier level [dBm]	20dB below [dBm]
-	-	-	-

Note: All emissions were under noise floor.

Operating mode: 2437 MHz / 11b / 1 Mbps (Worst condition)

Frequency [MHz]	Spurious level [dBm]	Carrier level [dBm]	20dB below [dBm]
-	-	-	-

Note: All emissions were under noise floor.

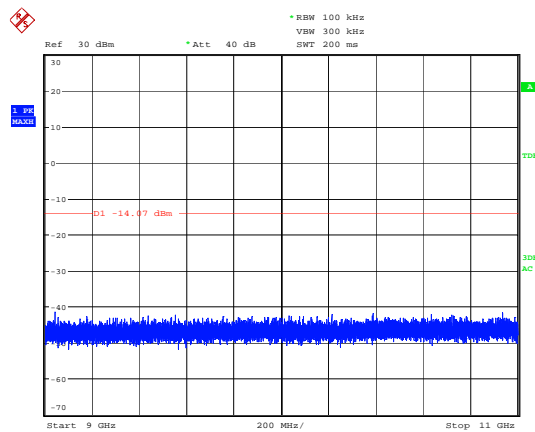
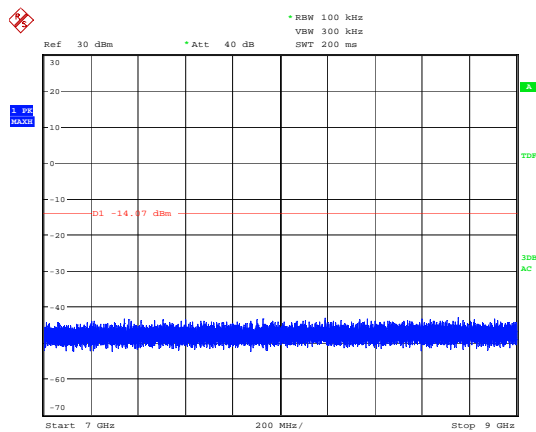
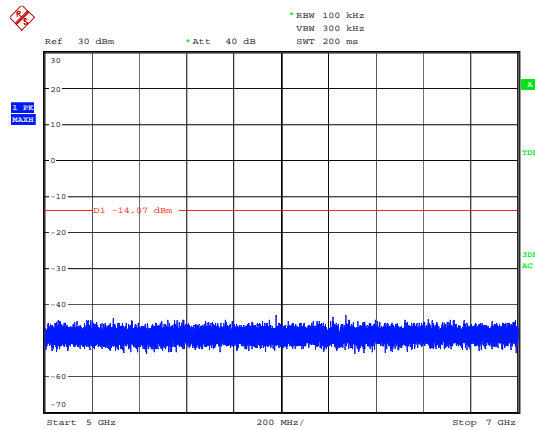
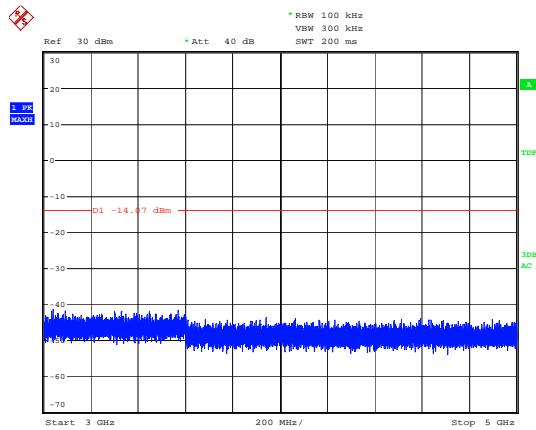
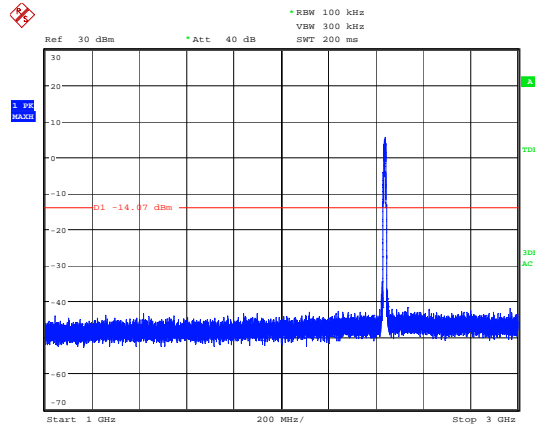
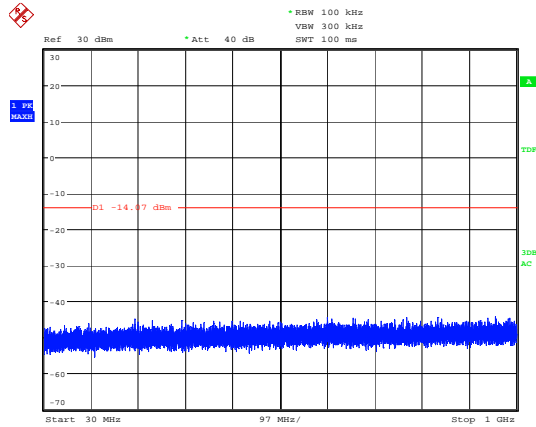
Operating mode: 2462 MHz / 11b / 1 Mbps (Worst condition)

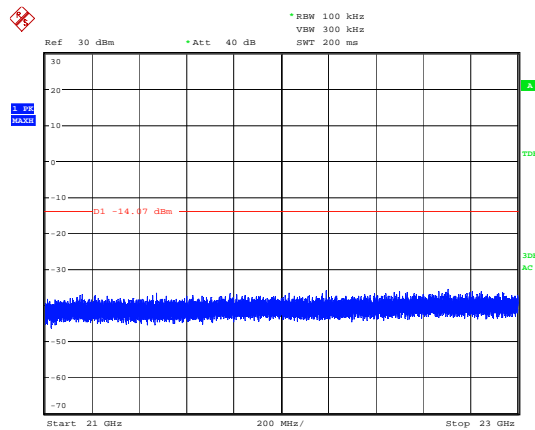
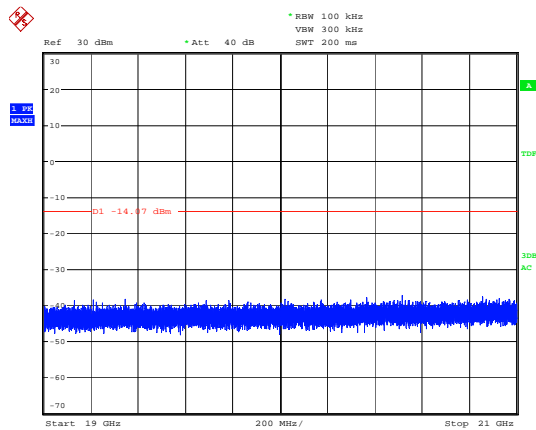
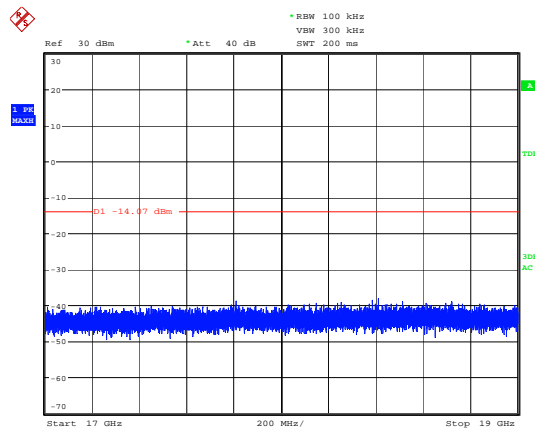
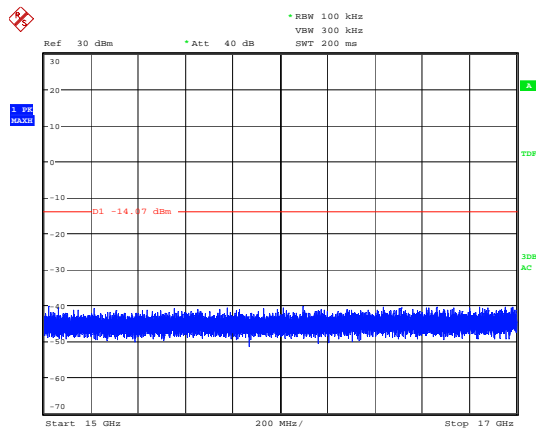
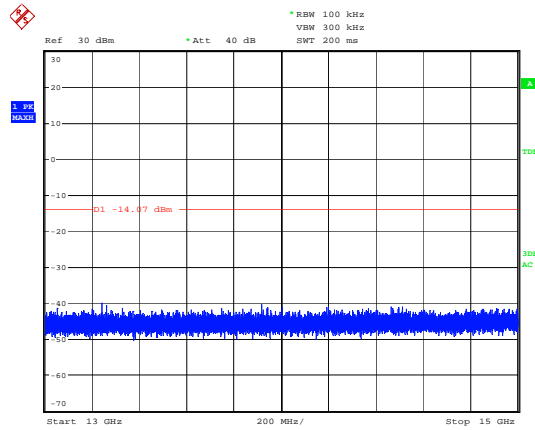
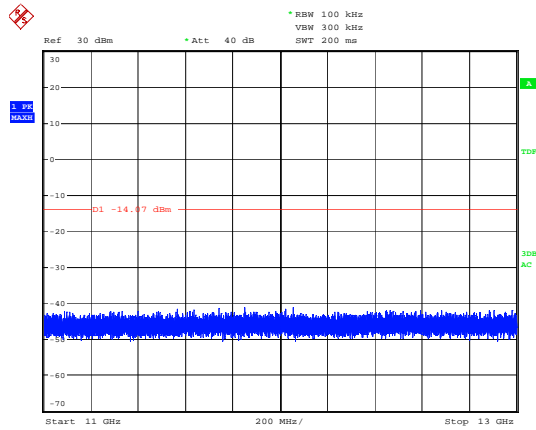
Frequency [MHz]	Spurious level [dBm]	Carrier level [dBm]	20dB below [dBm]
-	-	-	-

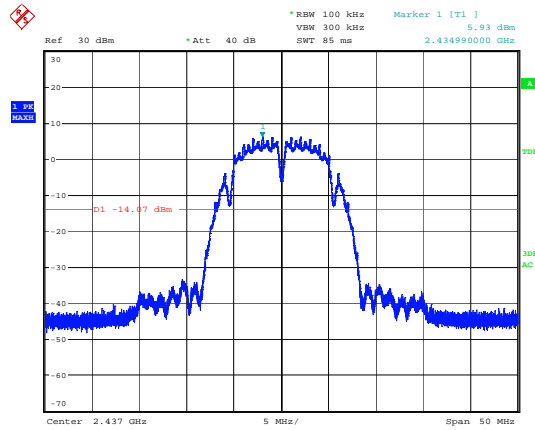
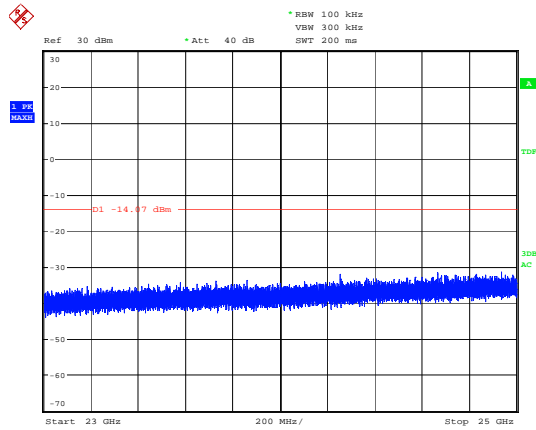
Note: All emissions were under noise floor.

[Chart (out of band)]

2437 MHz / 11b / 1 Mbps

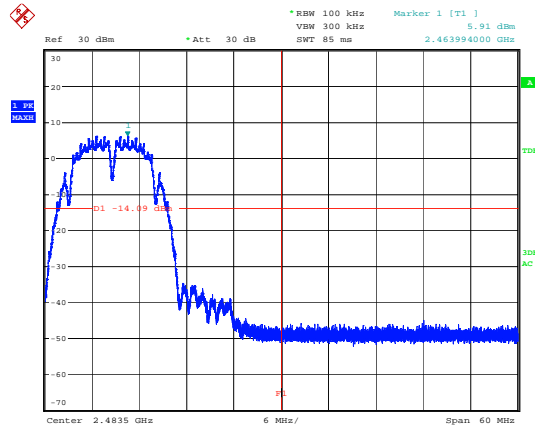
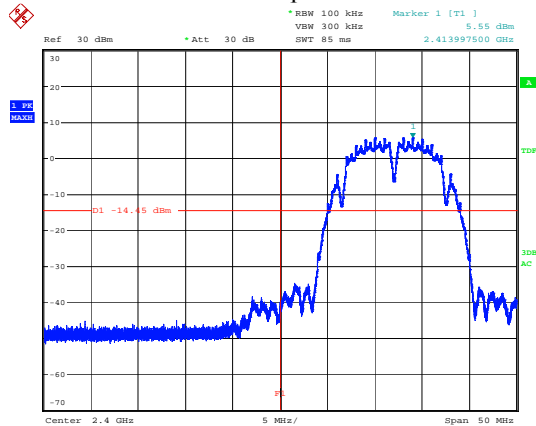




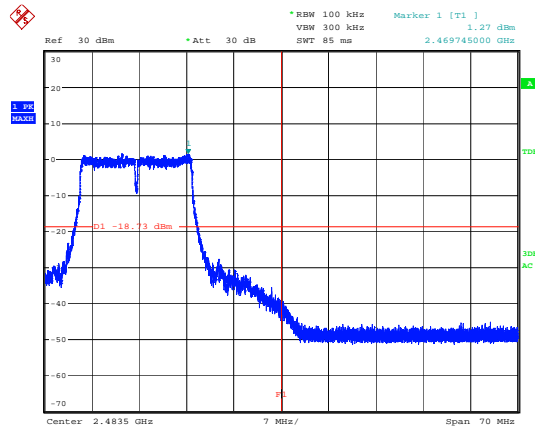
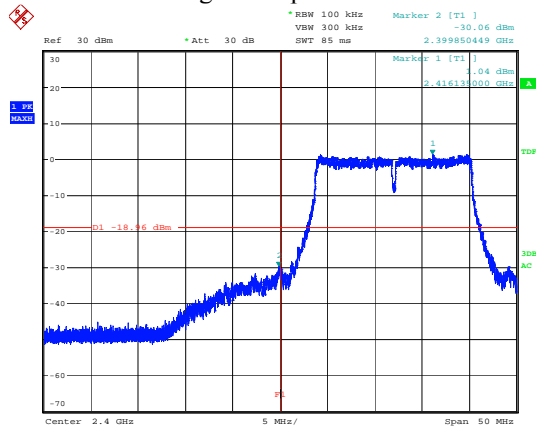


[Chart (band edge)]

2412 MHz / 11b / 1 Mbps



2412 MHz / 11g / 6 Mbps



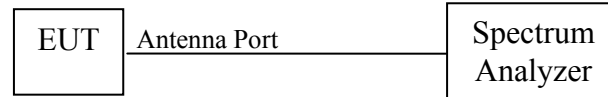
Tested Date: 14 Jan. 2016
Humidity: 38 %

Temperature: 16 degC
Atmos. Press: 1013 hPa

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

Spectrum analyzer is set as below according to ANSI C63.10 clause 11.10.2.

- RBW : 3 kHz
- VBW : 10 kHz
- Span > 1.5 x 6dB BW
- Detector : Peak
- Trace : Max hold

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	CL31				
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Test results - Complied with requirement

Test Data

Tested sample: A1

Operating mode: 11b

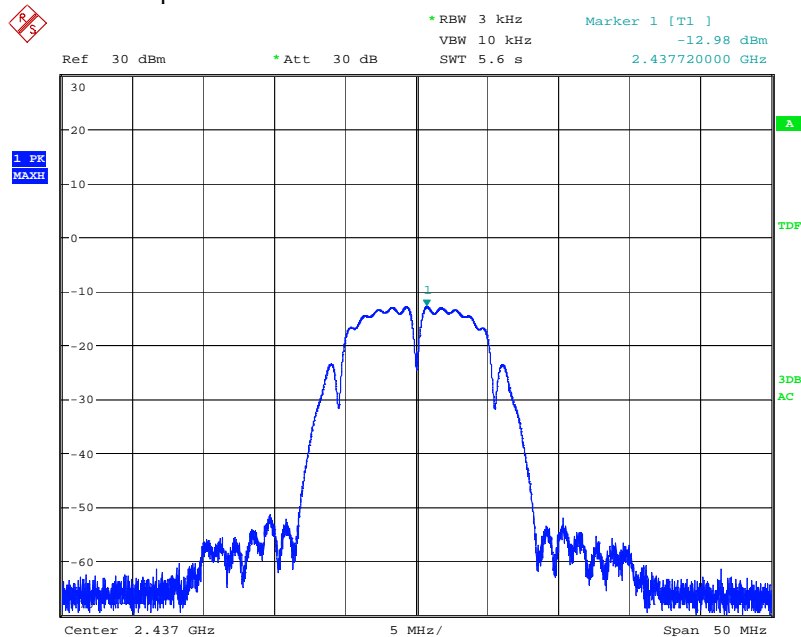
Transmission Frequency [MHz]	Data Transmission Rate	Spectral Density [dBm]
2412	1 Mbps	-13.31
	2 Mbps	-6.59
	5.5 Mbps	-7.92
	11 Mbps	-7.55
2437	1 Mbps	-12.98
	2 Mbps	-6.27
	5.5 Mbps	-7.54
	11 Mbps	-7.37
2462	1 Mbps	-13.23
	2 Mbps	-6.49
	5.5 Mbps	-7.77
	11 Mbps	-7.42

Tested sample: A1
Operating mode: 11g

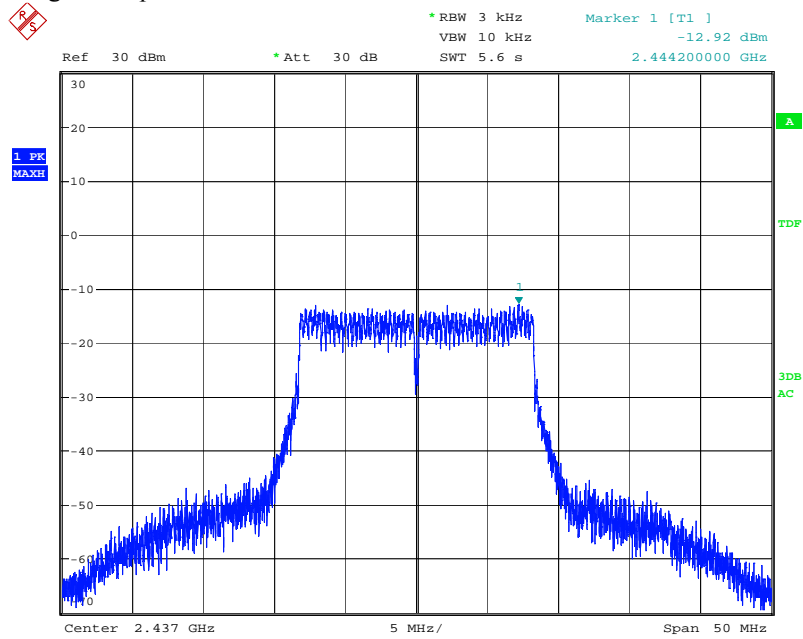
Transmission Frequency [MHz]	Data Transmission Rate	Spectral Density [dBm]
2412	6 Mbps	-13.50
	9 Mbps	-12.74
	12 Mbps	-12.67
	18 Mbps	-12.75
	24 Mbps	-12.20
	36 Mbps	-12.49
	48 Mbps	-13.40
	54 Mbps	-13.12
2437	6 Mbps	-12.92
	9 Mbps	-12.97
	12 Mbps	-12.59
	18 Mbps	-12.37
	24 Mbps	-11.53
	36 Mbps	-12.21
	48 Mbps	-13.34
	54 Mbps	-13.88
2462	6 Mbps	-13.36
	9 Mbps	-13.17
	12 Mbps	-12.73
	18 Mbps	-12.40
	24 Mbps	-12.57
	36 Mbps	-12.31
	48 Mbps	-13.92
	54 Mbps	-13.86

[Chart]

2437 MHz / 11b / 1 Mbps



2437 MHz / 11g / 6 Mbps



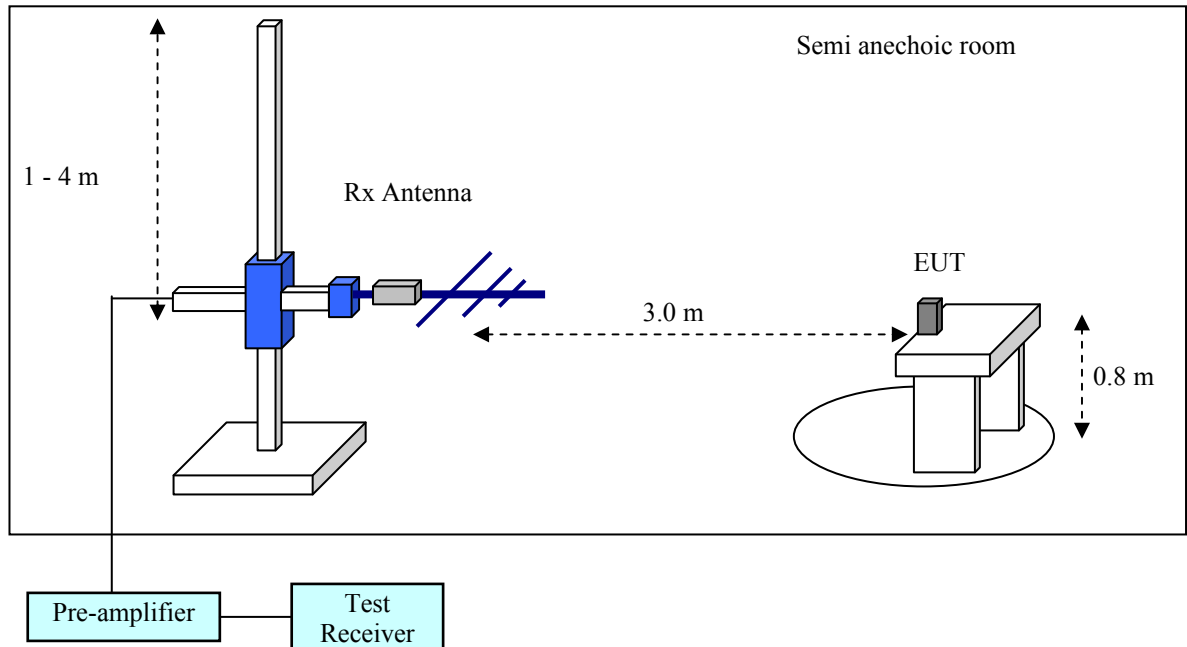
Tested Date: 14 Jan. 2016
Humidity: 38 %

Temperature: 16 degC
Atmos. Press: 1013 hPa

2.6 Radiated emissions (for restricted frequency band)

Test setup

Test setup was implemented according to the method of ANSI C63.10 clause 6.



Test procedure

Measurement procedures were implemented according to the method of ANSI C63.10 clauses 6. The test receiver is set as below

[below 1000 MHz]
RBW: 120 kHz, Detector: QP

[above 1000 MHz]
RBW: 1 MHz, Detector: Ave/PK

Applicable rule and limitation

FCC 15.205 restricted bands of operation

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

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
0.490 - 0.510	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	38.6 -

The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in FCC 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in FCC 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions.

FCC 15.209 Field strength limits

Frequency [MHz]	Field Strength [μ V/m]	Measurement Distance [m]	Field Strength [dB μ V/m]
30 – 88	100	3	40.0
88 – 216	150	3	43.5
216 – 960	200	3	46.0
Above 960	500	3	53.9

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

The emission limits shown in the above table are based on measurements employing a quasi-peak detector.

Test results - Complied with requirement

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

AC01(EM)	CL11	TR06	PR15	BA07	CL29	CL30	PR12
DH01	CH01	SH01	LPF1	BRF12	HPF1	CL31	

Test software used

EMI1 Ver. 3.2

Calculation method

The Correction Factor and Result are calculated as followings.

Correction Factor [dB/m] = Ant. Factor [dB/m] + Loss [dB] – Gain [dB]

Result [dBμV/m] = Reading [dBμV] + Correction Factor [dB/m]

Test Data

Tested sample: A2

Operating mode: 2412 MHz / 11b / 1Mbps (Worst)

[Emission level (Below 1000MHz)] X-plane

No.	Frequency [MHz]	Reading [dBμV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Ant.
1	454.607	35.1	16.6	10.2	29.7	32.2	46.0	13.8	Hori.
2	490.508	32.3	17.0	10.4	29.6	30.1	46.0	15.9	Hori.
3	48.608	41.5	13.5	7.2	30.2	32.0	40.0	8.0	Vert.
4	58.758	41.3	10.5	7.3	30.2	28.9	40.0	11.1	Vert.
5	73.795	37.9	8.0	7.5	30.2	23.2	40.0	16.8	Vert.
6	123.135	37.0	12.4	8.0	30.1	27.3	43.5	16.2	Vert.

[Emission level (Above 1000MHz)] X-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4824.000	48.0	41.0	3.3	51.3	44.3	73.9	53.9	22.6	9.6	Hori.
2	4824.000	46.1	39.2	3.3	49.4	42.5	73.9	53.9	24.5	11.4	Vert.

[Emission level (Below 1000MHz)] Y-plane

No.	Frequency [MHz]	Reading [dBμV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Ant.
1	466.543	34.8	16.7	10.3	29.7	32.1	46.0	13.9	Hori.
2	32.913	25.5	21.1	6.9	30.3	23.2	40.0	16.8	Vert.
3	49.172	44.8	13.3	7.2	30.2	35.1	40.0	4.9	Vert.
4	58.570	41.9	10.6	7.3	30.2	29.6	40.0	10.4	Vert.
5	75.111	37.1	7.8	7.5	30.2	22.2	40.0	17.8	Vert.
6	123.417	36.6	12.4	8.0	30.1	26.9	43.5	16.6	Vert.

[Emission level (Above 1000MHz)] Y-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4824.000	44.4	35.8	3.3	47.7	39.1	73.9	53.9	26.2	14.8	Hori.
2	4824.000	50.0	40.4	3.3	53.3	43.7	73.9	53.9	20.6	10.2	Vert.

[Emission level (Below 1000MHz)] Z-plane

No.	Frequency [MHz]	Reading [dBμV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Ant.
1	33.383	26.1	20.8	6.9	30.3	23.5	40.0	16.5	Vert.
2	48.608	42.6	13.5	7.2	30.2	33.1	40.0	6.9	Vert.
3	58.006	41.5	10.7	7.3	30.2	29.3	40.0	10.7	Vert.
4	123.605	37.3	12.4	8.0	30.1	27.6	43.5	15.9	Vert.
5	494.737	31.8	17.0	10.4	29.6	29.6	46.0	16.4	Vert.
6	524.195	28.5	17.4	10.6	29.5	26.9	46.0	19.1	Vert.

[Emission level (Above 1000MHz)] Z-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4824.000	49.8	44.5	3.3	53.1	47.8	73.9	53.9	20.8	6.1	Hori.
2	4824.000	45.1	37.9	3.3	48.4	41.2	73.9	53.9	25.5	12.7	Vert.

Operating mode: 2437 MHz / 11b / 1Mbps (Worst)

[Emission level (Below 1000MHz)] X-plane

No.	Frequency [MHz]	Reading [dBμV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Ant.
1	432.803	31.8	16.4	10.1	29.8	28.5	46.0	17.5	Hori.
2	452.540	32.8	16.6	10.2	29.7	29.9	46.0	16.1	Hori.
3	490.038	32.9	17.0	10.4	29.6	30.7	46.0	15.3	Hori.
4	49.078	41.4	13.3	7.2	30.2	31.7	40.0	8.3	Vert.
5	59.040	40.6	10.4	7.3	30.2	28.1	40.0	11.9	Vert.
6	123.135	37.5	12.4	8.0	30.1	27.8	43.5	15.7	Vert.

[Emission level (Above 1000MHz)] X-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4874.000	45.2	37.4	3.4	48.6	40.8	73.9	53.9	25.3	13.1	Hori.
2	7311.000	42.2	29.3	9.1	51.3	38.4	73.9	53.9	22.6	15.5	Hori.
3	4874.000	45.5	37.8	3.4	48.9	41.2	73.9	53.9	25.0	12.7	Vert.
4	7311.000	42.5	29.9	9.1	51.6	39.0	73.9	53.9	22.3	14.9	Vert.

[Emission level (Below 1000MHz)] Y-plane

No.	Frequency [MHz]	Reading [dBμV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Ant.
1	455.359	35.2	16.6	10.2	29.7	32.3	46.0	13.7	Hori.
2	33.665	26.1	20.7	6.9	30.3	23.4	40.0	16.6	Vert.
3	48.702	44.1	13.5	7.2	30.2	34.6	40.0	5.4	Vert.
4	59.416	40.4	10.3	7.3	30.2	27.8	40.0	12.2	Vert.
5	73.137	37.3	8.1	7.5	30.2	22.7	40.0	17.3	Vert.
6	122.947	38.0	12.4	8.0	30.1	28.3	43.5	15.2	Vert.

[Emission level (Above 1000MHz)] Y-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4874.000	45.6	38.3	3.4	49.0	41.7	73.9	53.9	24.9	12.2	Hori.
2	7311.000	43.4	31.3	9.1	52.5	40.4	73.9	53.9	21.4	13.5	Hori.
3	4874.000	46.1	39.3	3.4	49.5	42.7	73.9	53.9	24.4	11.2	Vert.
4	7311.000	42.7	30.2	9.1	51.8	39.3	73.9	53.9	22.1	14.6	Vert.

[Emission level (Below 1000MHz)] Z-plane

No.	Frequency [MHz]	Reading [dBμV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Ant.
1	33.853	26.1	20.6	6.9	30.3	23.3	40.0	16.7	Vert.
2	49.266	43.1	13.3	7.2	30.2	33.4	40.0	6.6	Vert.
3	58.946	40.5	10.5	7.3	30.2	28.1	40.0	11.9	Vert.
4	72.667	39.2	8.1	7.5	30.2	24.6	40.0	15.4	Vert.
5	123.229	37.6	12.4	8.0	30.1	27.9	43.5	15.6	Vert.
6	457.051	29.9	16.6	10.2	29.7	27.0	46.0	19.0	Vert.
7	518.496	30.5	17.3	10.5	29.5	28.8	46.0	17.2	Vert.

[Emission level (Above 1000MHz)] Z-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4874.000	46.1	39.2	3.4	49.5	42.6	73.9	53.9	24.4	11.3	Hori.
2	7311.000	42.6	29.7	9.1	51.7	38.8	73.9	53.9	22.2	15.1	Hori.
3	4874.000	45.6	38.9	3.4	49.0	42.3	73.9	53.9	24.9	11.6	Vert.
4	7311.000	42.8	30.2	9.1	51.9	39.3	73.9	53.9	22.0	14.6	Vert.

Operating mode: 2462 MHz / 11b / 1Mbps (Worst)

[Emission level (Below 1000MHz)] X-plane

No.	Frequency [MHz]	Reading [dBμV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Ant.
1	436.469	32.6	16.4	10.1	29.8	29.3	46.0	16.7	Hori.
2	495.677	34.8	17.0	10.4	29.6	32.6	46.0	13.4	Hori.
3	47.762	40.8	13.9	7.2	30.2	31.7	40.0	8.3	Vert.
4	51.240	42.4	12.6	7.2	30.2	32.0	40.0	8.0	Vert.
5	58.006	40.1	10.7	7.3	30.2	27.9	40.0	12.1	Vert.
6	122.665	36.7	12.4	8.0	30.1	27.0	43.5	16.5	Vert.

[Emission level (Above 1000MHz)] X-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4924.000	45.7	37.8	3.6	49.3	41.4	73.9	53.9	24.6	12.5	Hori.
2	4924.000	46.0	38.1	3.6	49.6	41.7	73.9	53.9	24.3	12.2	Vert.
3	7386.000	42.3	29.5	9.0	51.3	38.5	73.9	53.9	22.6	15.4	Vert.

[Emission level (Below 1000MHz)] Y-plane

No.	Frequency [MHz]	Reading [dBμV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Ant.
1	455.735	34.2	16.6	10.2	29.7	31.3	46.0	14.7	Hori.
2	49.078	44.2	13.3	7.2	30.2	34.5	40.0	5.5	Vert.
3	57.818	41.2	10.8	7.3	30.2	29.1	40.0	10.9	Vert.
4	74.171	38.3	7.9	7.5	30.2	23.5	40.0	16.5	Vert.
5	122.759	38.0	12.4	8.0	30.1	28.3	43.5	15.2	Vert.
6	479.136	30.5	16.9	10.3	29.6	28.1	46.0	17.9	Vert.

[Emission level (Above 1000MHz)] Y-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4924.000	45.7	37.8	3.6	49.3	41.4	73.9	53.9	24.6	12.5	Hori.
2	7386.000	42.4	29.7	9.0	51.4	38.7	73.9	53.9	22.5	15.2	Hori.
3	4924.000	45.3	38.0	3.6	48.9	41.6	73.9	53.9	25.0	12.3	Vert.
4	7386.000	42.3	29.4	9.0	51.3	38.4	73.9	53.9	22.6	15.5	Vert.

[Emission level (Below 1000MHz)] Z-plane

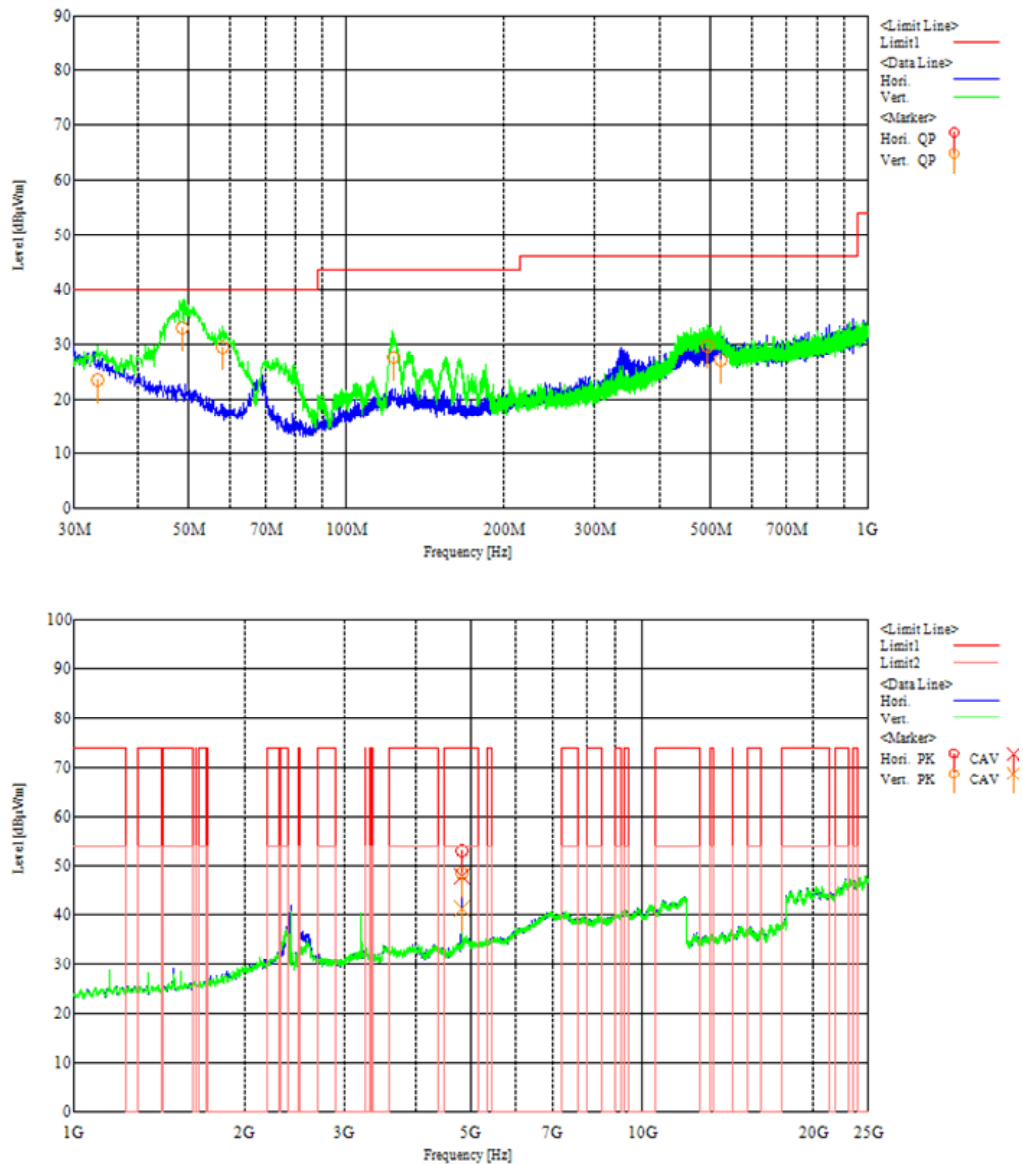
No.	Frequency [MHz]	Reading [dBμV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Ant.
1	534.293	26.9	17.6	10.6	29.5	25.6	46.0	20.4	Hori.
2	48.890	41.5	13.4	7.2	30.2	31.9	40.0	8.1	Vert.
3	59.792	40.0	10.3	7.3	30.2	27.4	40.0	12.6	Vert.
4	69.190	38.9	8.6	7.4	30.2	24.7	40.0	15.3	Vert.
5	122.102	38.3	12.4	8.0	30.1	28.6	43.5	14.9	Vert.
6	493.139	31.8	17.0	10.4	29.6	29.6	46.0	16.4	Vert.

[Emission level (Above 1000MHz)] Z-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4924.000	46.9	40.9	3.6	50.5	44.5	73.9	53.9	23.4	9.4	Hori.
2	4924.000	46.6	39.5	3.6	50.2	43.1	73.9	53.9	23.7	10.8	Vert.

[Chart]

2412MHz / 11b / 1Mbps / Y-plane (Worst)



[Result (Band edge)]

Operating mode: 2412 MHz / 11b / 1Mbps (Worst)

[Emission level] X-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	46.3	33.4	5.5	51.8	38.9	73.9	53.9	22.1	15.0	Hori.

[Emission level] Y-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	48.5	35.6	5.5	54.0	41.1	73.9	53.9	19.9	12.8	Vert.

[Emission level] Z-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	49.3	33.2	5.5	54.8	38.7	73.9	53.9	19.1	15.2	Hori.

Operating mode: 2462 MHz / 11b / 1Mbps (Worst)

[Emission level] X-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	44.3	31.0	6.4	50.7	37.4	73.9	53.9	23.2	16.5	Vert.

[Emission level] Y-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	45.0	31.7	6.4	51.4	38.1	73.9	53.9	22.5	15.8	Vert.

[Emission level] Z-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	46.6	31.4	6.4	53.0	37.8	73.9	53.9	20.9	16.1	Hori.

Operating mode: 2412 MHz / 11g / 6Mbps (Worst)

[Emission level] X-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	57.4	42.1	5.5	62.9	47.6	73.9	53.9	11.0	6.3	Hori.

[Emission level] Y-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	61.9	46.3	5.5	67.4	51.8	73.9	53.9	6.5	2.1	Vert.

[Emission level] Z-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	57.5	42.2	5.5	63.0	47.7	73.9	53.9	10.9	6.2	Hori.

Operating mode: 2462 MHz / 11g / 6Mbps (Worst)

[Emission level] X-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	50.2	34.9	6.4	56.6	41.3	73.9	53.9	17.3	12.6	Hori.

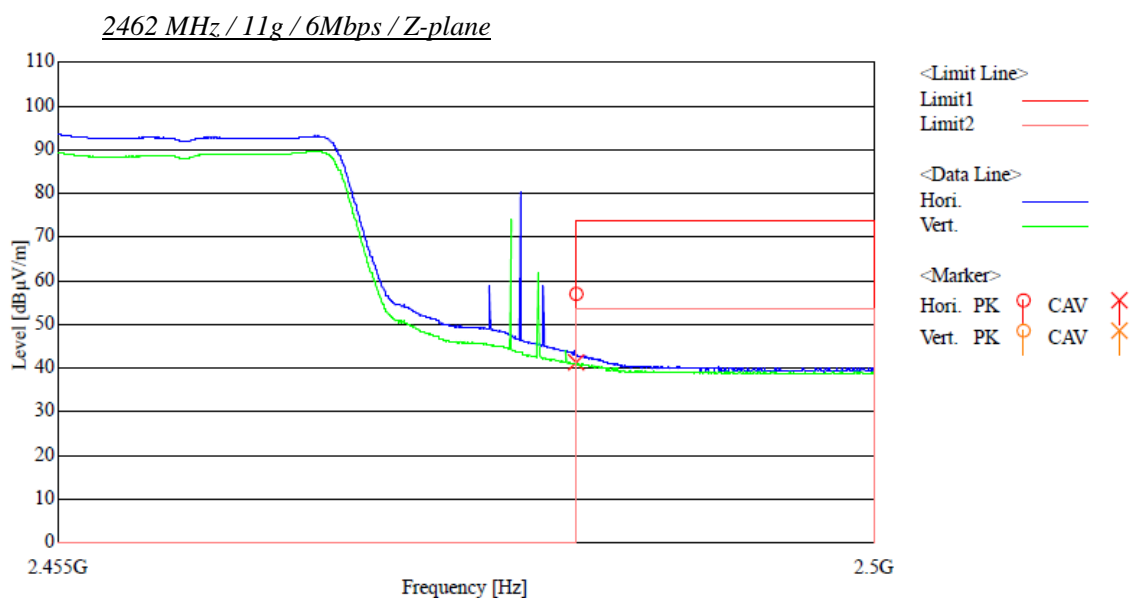
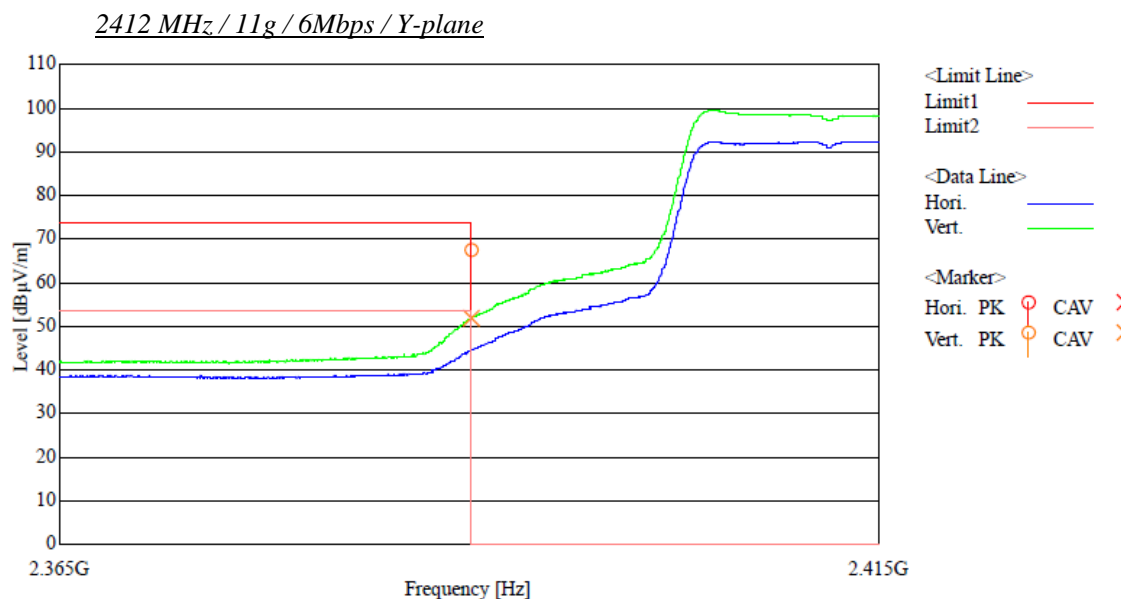
[Emission level] Y-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	49.2	34.3	6.4	55.6	40.7	73.9	53.9	18.3	13.2	Vert.

[Emission level] Z-plane

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	50.7	35.1	6.4	57.1	41.5	73.9	53.9	16.8	12.4	Hori.

[Chart (Band edge)]



Tested Date: 08 Jan. 2016
Humidity: 37 %

Temperature: 16 degC
Atmos. Press: 1015 hPa

2.7 AC power line conducted emissions

Test setup

Test setup was implemented according to the method of ANSI C63.10 clause 6.2.

Test procedure

Measurement procedures were implemented according to the method of ANSI C63.10 clause 6.2.

Applicable rule and limitation

FCC 15.207 AC power line conducted emissions limits

Frequency of Emission [MHz]	Conducted emissions Limit [dB μ V]	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5	56	46
5 - 30	60	50

* Decreases with the logarithm of the frequency. The lower limit applies at the band edges.

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

TR09	CL18	LN05
------	------	------

Test software used

EMI Ver. 5.6

Calculation method

The Correction Factor and Result are calculated as followings.

$$\begin{aligned}\text{Correction Factor [dB]} &= \text{ISN Factor [dB]} + \text{Loss [dB]} \\ \text{Result [dB}\mu\text{V]} &= \text{Reading [dB}\mu\text{V]} + \text{Correction Factor [dB]}\end{aligned}$$

Test results - Complied with requirement

Test Data

Tested sample: A2

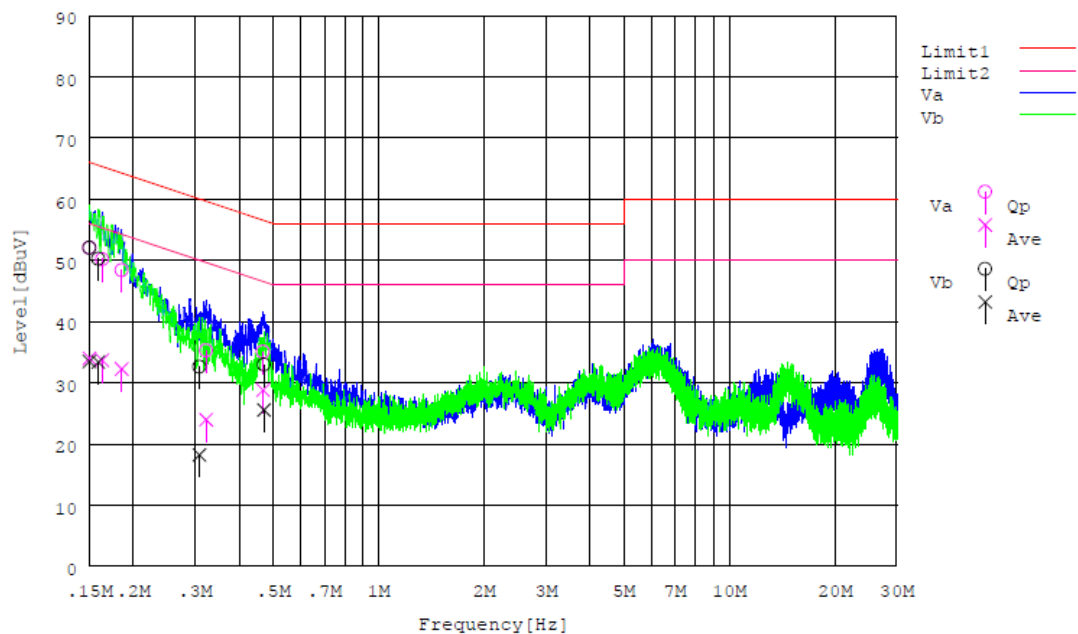
Operating mode: 2437MHz / 11b / 1Mbps (Worst)

[Emission level]

No.	Frequency [MHz]	Reading		C.F. [dB]	Result		Limit		Phase	Pass/Fail
		QP [dBμV]	AV [dBμV]		QP [dBμV]	AV [dBμV]	QP [dBμV]	AV [dBμV]		
1	0.15000	41.9	23.8	10.2	52.1	34.0	66.0	56.0	Va	Pass
2	0.16332	40.0	23.5	10.2	50.2	33.7	65.3	55.3	Va	Pass
3	0.18514	38.3	22.2	10.1	48.4	32.3	64.3	54.3	Va	Pass
4	0.32202	25.3	14.0	10.0	35.3	24.0	59.7	49.7	Va	Pass
5	0.46851	25.1	18.8	10.0	35.1	28.8	56.5	46.5	Va	Pass
6	0.15000	41.9	23.3	10.2	52.1	33.5	66.0	56.0	Vb	Pass
7	0.15888	40.1	23.2	10.2	50.3	33.4	65.5	55.5	Vb	Pass
8	0.30870	22.5	8.1	10.1	32.6	18.2	60.0	50.0	Vb	Pass
9	0.47147	23.0	15.6	10.0	33.0	25.6	56.5	46.5	Vb	Pass

[Chart]

2437MHz / 11b / 1Mbps (Worst)



Tested Date: 15 Jan. 2016
Humidity: 47 %

Temperature: 15 degC
Atmos. Press: 1016 hPa

2.8 Radiated emissions (Simultaneous Transmission)

This EUT is intended that WLAN and BLE are transmitted simultaneously.
So radiated emission test is applied with simultaneous transmission mode also.

Setup and limit is same as section 2.6.

Test results - Complied with requirement

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

AC01	CL11	TR06	PR15	BA07	CL29	CL30	PR12
DH01	CH01	SH01	LPF1	BRF12	HPF1	CL31	

Test software used

EMI1 Ver. 3.2

Calculation method

The Correction Factor and Result are calculated as followings.

Correction Factor [dB/m] = Ant. Factor [dB/m] + Loss [dB] – Gain [dB]

Result [dBμV/m] = Reading [dBμV] + Correction Factor [dB/m]

Test Data

Tested sample: A2

Worst operating mode: WLAN 2412 MHz / 11b / 1Mbps
BLE 2480 MHz

[Emission level (Below 1000MHz)] Y-plane (Worst)

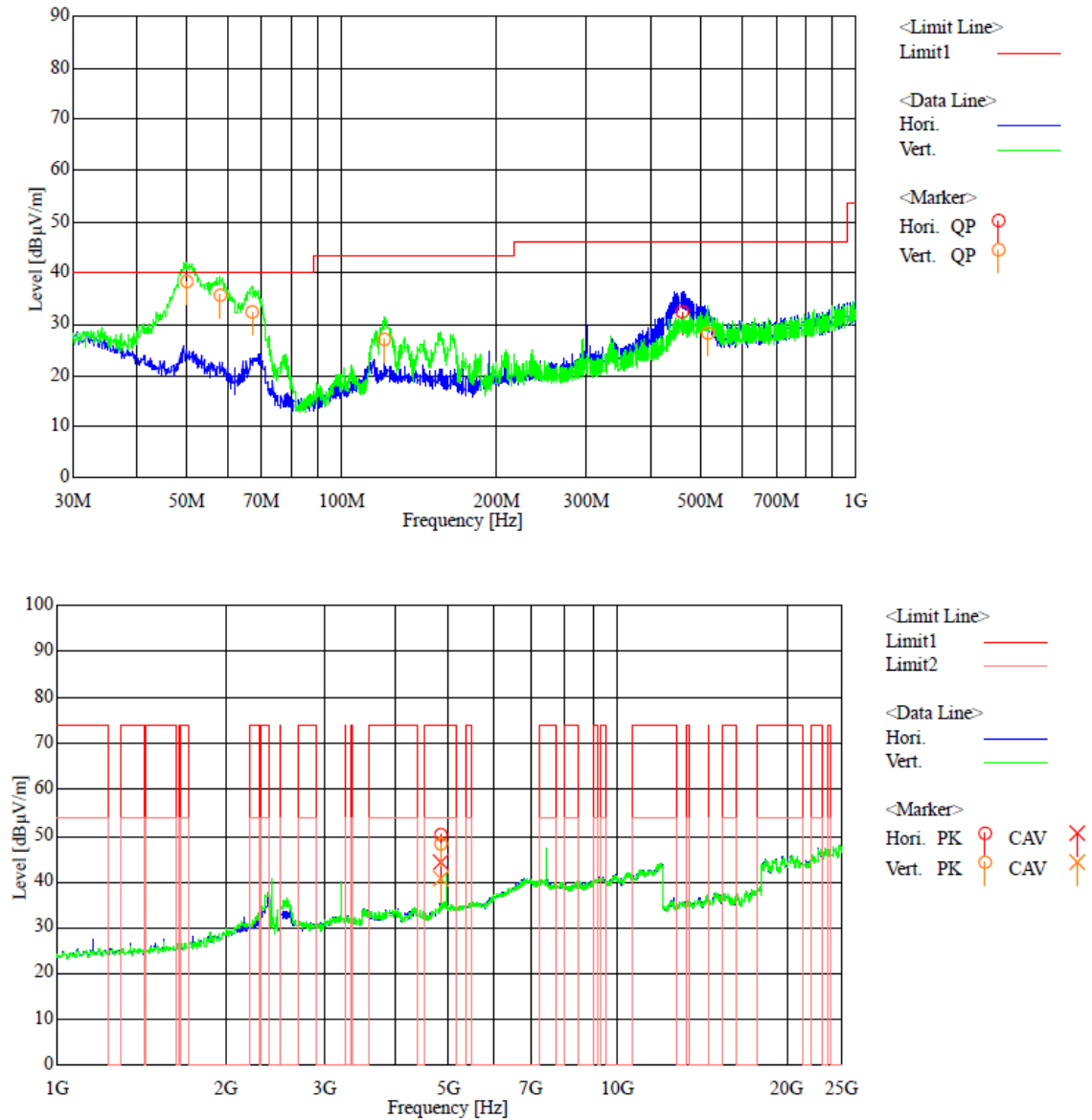
No.	Frequency [MHz]	Reading [dBμV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Ant.
1	459.306	35.3	16.7	10.2	29.7	32.5	46.0	13.5	Hori.
2	50.018	48.5	12.9	7.2	30.2	38.4	40.0	1.6	Vert.
3	58.006	47.8	10.7	7.3	30.2	35.6	40.0	4.4	Vert.
4	66.841	46.1	9.0	7.4	30.2	32.3	40.0	7.7	Vert.
5	121.444	36.8	12.4	8.0	30.1	27.1	43.5	16.4	Vert.
6	517.596	30.0	17.3	10.5	29.5	28.3	46.0	17.7	Vert.

[Emission level (Above 1000MHz)] Y-plane (Worst)

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4824.005	46.8	40.9	3.3	50.1	44.2	73.9	53.9	23.8	9.7	Hori.
2	4824.006	45.0	37.4	3.3	48.3	40.7	73.9	53.9	25.6	13.2	Vert.

[Chart]

WLAN: 2412MHz / 11b / 1Mbps
BLE: 2480MHz
Y-plane



[Result (Band edge)]

Tested sample: A2

Operating mode: WLAN 2412 MHz / 11b / 1Mbps (Worst)
BLE 2402 MHz

[Emission level] Y-plane (Worst)

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	49.8	39.3	5.5	55.3	44.8	73.9	53.9	18.6	9.1	Vert.

Operating mode: WLAN 2462 MHz / 11b / 1Mbps (Worst)
BLE 2480 MHz

[Emission level] Y-plane (Worst)

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	51.9	31.1	6.4	58.3	37.5	73.9	53.9	15.6	16.4	Vert.

Operating mode: WLAN 2412 MHz / 11g / 6Mbps (Worst)
BLE 2402 MHz

[Emission level] Z-plane (Worst)

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	58.9	41.8	5.5	64.4	47.3	73.9	53.9	9.5	6.6	Hori.
2	2390.000	59.7	42.4	5.5	65.2	47.9	73.9	53.9	8.7	6.0	Vert.

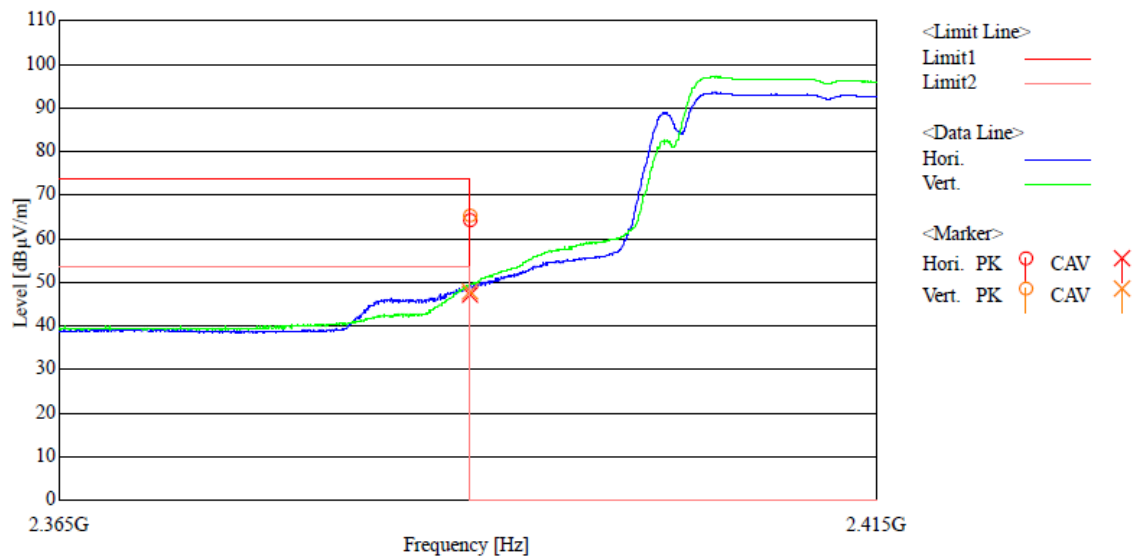
Operating mode: WLAN 2462 MHz / 11g / 6Mbps (Worst)
BLE 2480 MHz

[Emission level] Y-plane (Worst)

No.	Frequency [MHz]	Reading PK [dBμV]	Reading Ave [dBμV]	C.Factor [dB]	Result PK [dBμV/m]	Result Ave [dBμV/m]	Limit PK [dBμV/m]	Limit Ave [dBμV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	50.5	33.8	6.4	56.9	40.2	73.9	53.9	17.0	13.7	Vert.

[Chart]

WLAN 2412 MHz / 11g / 6Mbps (Worst)
BLE 2402 MHz
Z-plane



[Band edge testing]

Tested Date:	15 Jan. 2016	Temperature:	16 degC
Humidity:	38 %	Atmos. Press:	1016 hPa

[out of band testing]

Tested Date:	18 Jan. 2016	Temperature:	15 degC
Humidity:	40 %	Atmos. Press:	1000 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
AC01(EM)	Anechoic Chamber (1st test room)	JSE	203397C	-	2015/4/18	2016/4/30
AC01(EG)	Anechoic Chamber (1st test room)	JSE	203397C	-	2015/11/3	2016/11/30
BA07	Biological Antenna	TESEQ	CBL6143A	26670	2015/1/5	2016/1/31
BRF12	Band Reject Filter (2400MHz)	M-City	BRF2440-01	RF0012-02	2015/2/23	2016/2/29
CH01	Conical Horn Antenna (12-18GHz)	ETS-Lindgren	3163-05	00126641	2014/7/3	2016/7/31
CL11	RF Cable for RE	RFT	-	-	2015/3/13	2016/3/31
CL18	RF Cable for CE	RFT	-	-	2015/5/1	2016/5/31
CL29	RF Cable 2 m	SUHNER	SUCOFLEX104PE	94709	2015/8/25	2016/8/31
CL30	RF Cable 5 m	SUHNER	SUCOFLEX104PE	MY3599	2015/8/25	2016/8/31
CL31	RF Cable 1 m	Junkosha	MWX221	1303S118	2015/11/24	2016/11/30
DH01	DRG Horn Antenna	A.H. Systems	SAS-571	785	2014/1/21	2016/1/31
HPF1	High Pass Filter (3500MHz)	TOKIMEC	TF323DCA	603	2015/6/13	2016/6/30
LN05	LISN	Kyoritsu	KNW-407F	8-1773-2	2015/6/2	2016/6/30
LPF1	Low Pass Filter (1000MHz)	M-City	LPF1000-04	RF0012-01	2015/2/23	2016/2/29
PR12	Pre. Amplifier (1-26G)	Agilent Technologies	8449B	3008A02513	2015/1/26	2016/1/31
PR15	Pre. Amplifier	Anritsu	MH648A	6201156141	2015/6/13	2016/6/30
SH01	Standard Horn Antenna (18-26G)	A.H. Systems	SAS-572	208	2014/7/3	2016/7/31
TR06	Test Receiver (F/W : 3.93 SP2)	Rohde & Schwarz	ESU26	100002	2015/9/28	2016/9/30
TR09	Test Receiver (F/W : 4.43 SP3)	Rohde & Schwarz	ESU8	100386	2015/2/13	2016/2/29

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.