



Hong Kong

FCC – Test report

Report Number : **60/760.11.218.02** Date of Issue: 01 March 2012

Model : **Joule 1.0**

Product Type : **Bike Computer**

Applicant : **Dayton Industrial Co. Ltd.**

Address : **2-12 Kwai Fat Road, 11-A Kwai Chung, N.T. Hong Kong**

Production Facility : **Kendy Enterprise Ltd.**

Address : **2-12 Kwai Fat Road, 11-A Kwai Chung, N.T. Hong Kong**

Test Result : **Positive** **Negative**

Total pages including Appendices : **49**

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Hong Kong

2 Details about the Test Laboratory

Details about the Test Laboratory

Company name: TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2,
10 Science Park West Avenue,
Science Park, Shatin
HK.

Telephone: 852 2776 1323
Fax: 852 2776 1372

Test site

Company name: Neutron Engineering Inc.
3, Jinshagang 1st Road,
ShiXia, Dalang Town,
DongGuan, China

FCC Registered Test Site Number 319330



3 Description of the Equipment Under Test

Description of the Equipment Under Test

Product:	Bike Computer
Model no.:	Joule 1.0
Serial number:	NIL
Options and accessories:	NIL
Rated Voltage:	3 VDC
Rated Current:	NIL
Rated Power:	NIL
Frequency:	NIL
Description of the EUT:	EUT Main unit size: 7cm x 4.5 cm x 2 cm Operate by 3 V battery (1 x 3 VDC "CR2032"battery)
FCC ID:	O4GJOULE1
Conduct peak power:	1.559553mW



4 Summary of Test Standards and Results

Emission Tests						
Test Condition	Test Requirement	Test Method	Pages	Test Result		
				Pass	Fail	N/A
Radiated Emission (Fundamental & Spurious Emission)	FCC Part 15 Section 15.249 & 15.209	ANSI C63.4:2003	7-38	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducted Emission on AC 150kHz to 30MHz	FCC Part 15 Section 15.207	ANSI C63.4:2003	39-41	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Hong Kong

5 General Remarks

Remarks

NIL

SUMMARY:

All tests according to the regulations cited on page 5 were

- Performed

- Not Performed

The Equipment Under Test

- **Fulfills** the general approval requirements.

- **Does not** fulfill the general approval requirements.

Sample Received Date: 26 September 2011

Testing Start Date: 26 September 2011

Testing End Date: 01 February 2012

- TÜV SÜD HONG KONG LTD. -

Reviewed by:

Edmond FUNG
EMC Test Engineer

Prepared by:



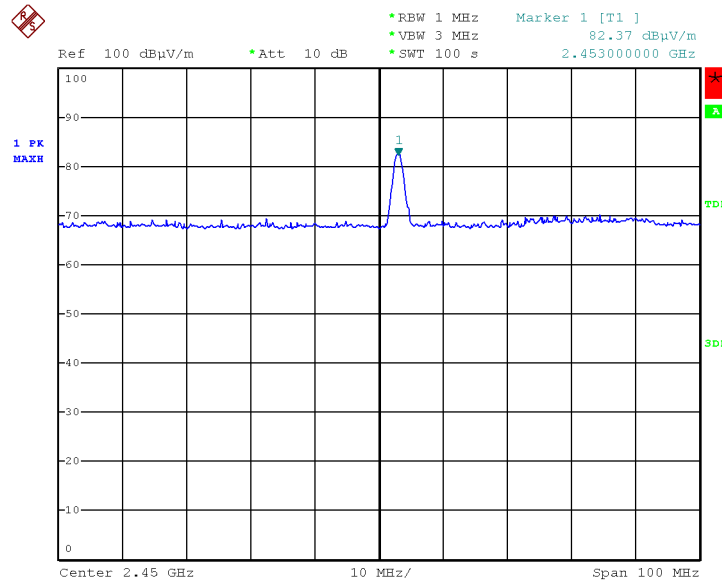
Cheng Kin Yeung
EMC Test Engineer

6 Emission Test Results

6.1 Radiated Emission Test (Fundamental)

Date of test : 20 January 2012
 Test requirement : FCC Part 15 Section 15.249
 Test method : ANSI C63.4:2003
 Operating mode : On mode (2453MHz)
 Antenna polarity : Horizontal
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant.Pol. H/V	Reading	Ant./CF CF(dB)	Average factor (dB)	Act.		Limit	
		Peak (dBuV/m)			Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)
2456.90	H	47.11	-31.54	51.05	78.65	27.60	114.00	94.00

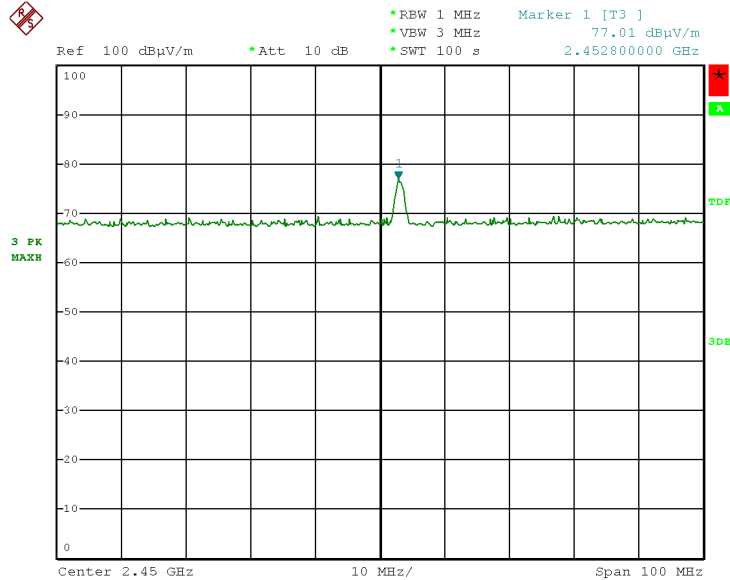
Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report



Radiated Emission Test (Fundamental)

Date of test : 20 January 2012
 Test requirement : FCC Part 15 Section 15.249
 Test method : ANSI C63.4:2003
 Operating mode : On mode (2453MHz)
 Antenna polarity : Vertical
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



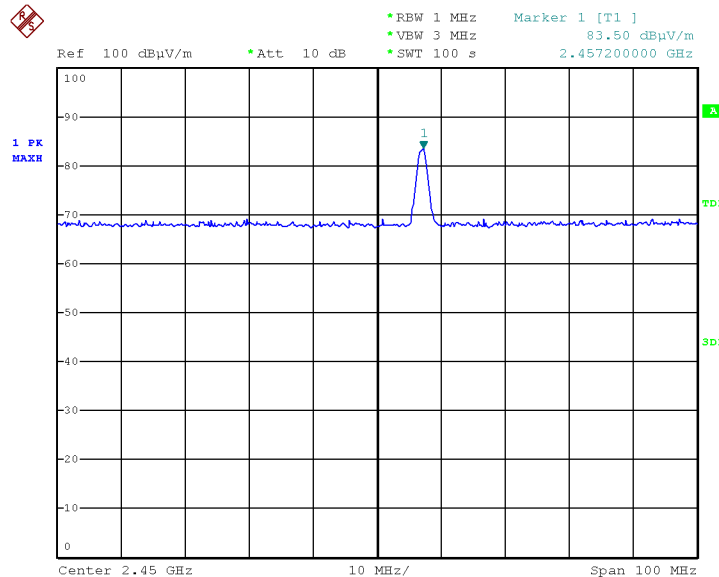
Freq. (MHz)	Ant.Pol. H/V	Reading	Ant./CF CF(dB)	Average factor (dB)	Act.		Limit	
		Peak (dBuV/m)			Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)
2457.00	V	47.18	-31.54	51.05	78.72	27.67	114.00	94.00

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test (Fundamental)

Date of test : 20 January 2012
 Test requirement : FCC Part 15 Section 15.249
 Test method : ANSI C63.4:2003
 Operating mode : On mode (2457MHz)
 Antenna polarity : Horizontal
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



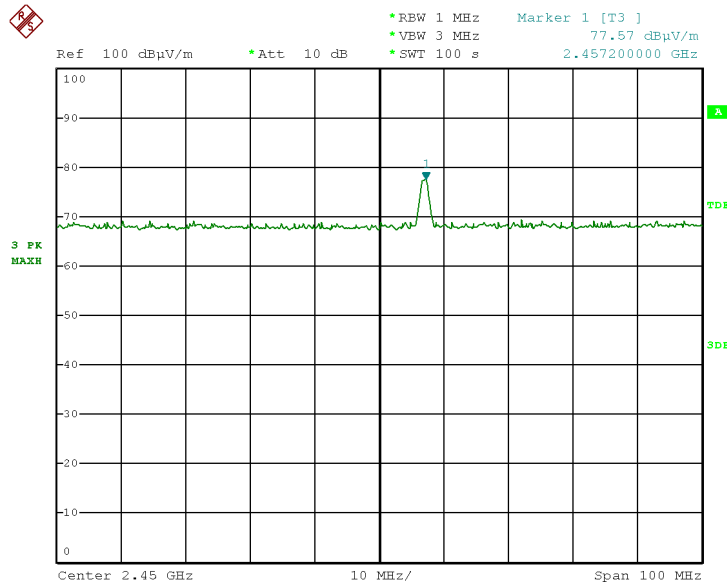
Freq. (MHz)	Ant.Pol. H/V	Reading	Ant./CF CF(dB)	Average factor (dB)	Act.		Limit	
		Peak (dBuV/m)			Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)
2456.90	H	47.11	-31.54	51.05	78.65	27.60	114.00	94.00

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test (Fundamental)

Date of test : 20 January 2012
 Test requirement : FCC Part 15 Section 15.249
 Test method : ANSI C63.4:2003
 Operating mode : On mode (2457MHz)
 Antenna polarity : Vertical
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant.Pol. H/V	Reading	Ant./CF CF(dB)	Average factor (dB)	Act.		Limit	
		Peak (dBuV/m)			Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)
2457.00	V	47.18	-31.54	51.05	78.72	27.67	114.00	94.00

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 9kHz - 1000MHz

Date of test : 20 January 2012

Test requirement : FCC Part 15 Section 15.249

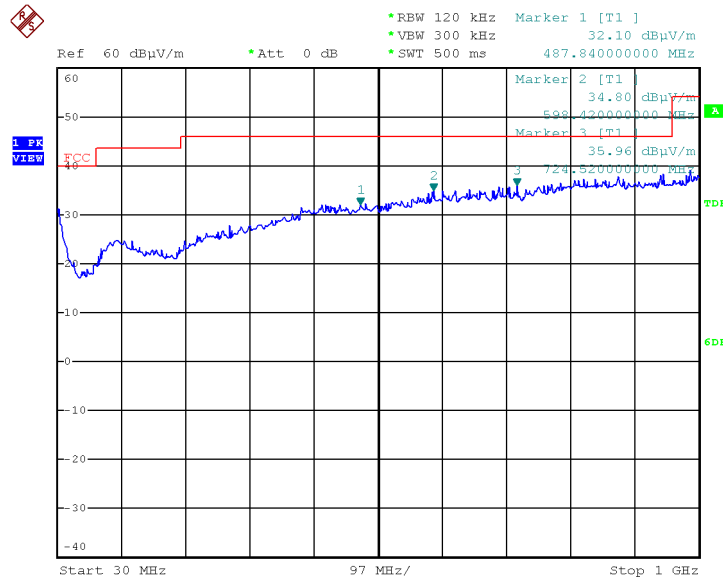
Test method : ANSI C63.4:2003

Operating mode : transmit without connect another unit(2453 MHz)

Antenna polarity : Horizontal

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant.Pol. H/V	Reading	Ant./CF CF(dB)	Act.	Limit	Note
		QP (dBuV)		QP (dBuV)	QP (dBuV)	
163.00	H	20.07	12.15	32.22	43.50	X/F
216.00	H	24.00	11.91	35.91	43.50	X/F
270.56	H	21.70	15.58	37.28	46.00	X/F
335.55	H	20.48	17.25	37.73	46.00	X/F
432.55	H	17.24	20.54	37.78	46.00	X/F
481.05	H	15.35	21.54	36.89	46.00	X/F

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 1000MHz - 2400MHz

Date of test : 20 January 2012

Test requirement : FCC Part 15 Section 15.249

Test method : ANSI C63.4:2003

Operating mode : transmit without connect another unit(2453 MHz)

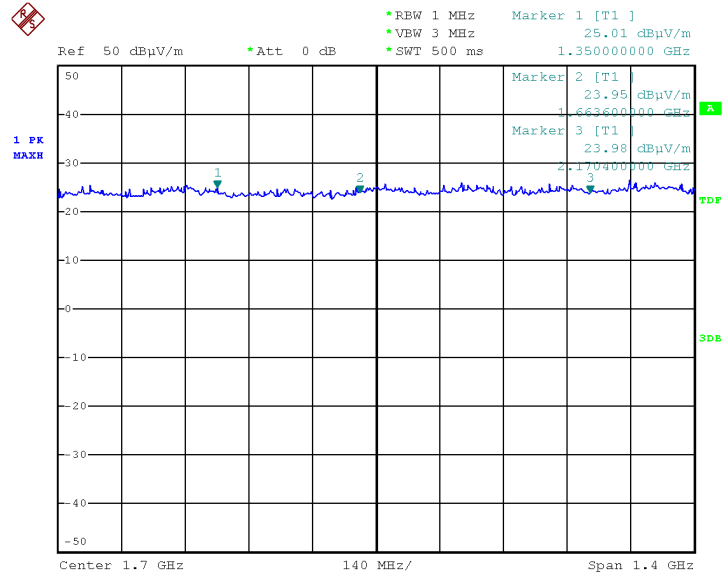
Antenna Polarity : Horizontal

Remarks : NIL

Test Result

Passed

Not Passed



Freq. (MHz)	Ant.Pol. H/V	Reading (dBμV/m)	Ant./CF CF(dB)	Act. (dBμV/m)	Limit (dBμV/m)	Note
2496.00	H	53.70	35.30	89.00	74.00	Peak
13325.00	H	26.78	45.80	72.58	74.00	Peak
13325.00	H	0.78	45.80	46.58	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 2.5GHz – 18GHz

Date of test : 20 January 2012

Test requirement : FCC Part 15 Section 15.249

Test method : ANSI C63.4:2003

Operating mode : transmit without connect another unit(2453 MHz)

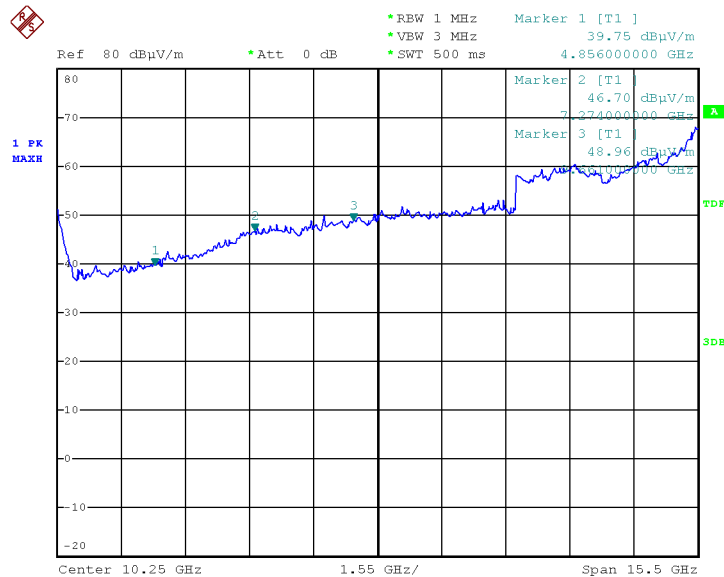
Antenna Polarity : Horizontal

Remarks : NIL

Test Result

Passed

Not Passed



Freq. (MHz)	Ant. Pol. H/V	Reading (dBµV/m)	Ant./CF CF(dB)	Act. (dBµV/m)	Limit (dBµV/m)	Note
2496.00	H	53.70	35.30	89.00	74.00	Peak
13325.00	H	26.78	45.80	72.58	74.00	Peak
13325.00	H	0.78	45.80	46.58	54.00	AVG
17864.00	H	26.51	46.50	73.01	74.00	Peak
17864.00	H	0.70	46.50	47.20	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 18GHz – 26.5GHz

Date of test : 20 January 2012

Test requirement : FCC Part 15 Section 15.249

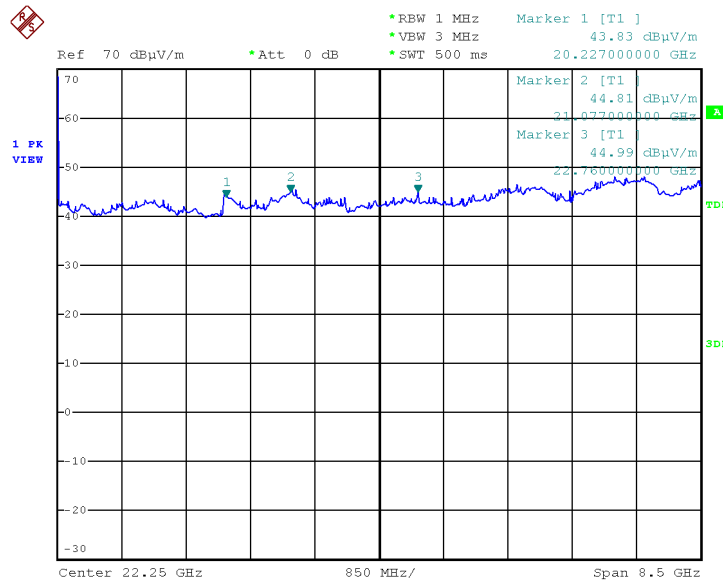
Test method : ANSI C63.4:2003

Operating mode : transmit without connect another unit(2453 MHz)

Antenna Polarity : Horizontal

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant. Pol. H/V	Reading (dBµV/m)	Ant./CF CF(dB)	Act. (dBµV/m)	Limit (dBµV/m)	Note
2496.00	H	53.70	35.30	89.00	74.00	Peak
13325.00	H	26.78	45.80	72.58	74.00	Peak
13325.00	H	0.78	45.80	46.58	54.00	AVG
17864.00	H	26.51	46.50	73.01	74.00	Peak
17864.00	H	0.70	46.50	47.20	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 9kHz - 1000MHz

Date of test : 20 January 2012

Test requirement : FCC Part 15 Section 15.249

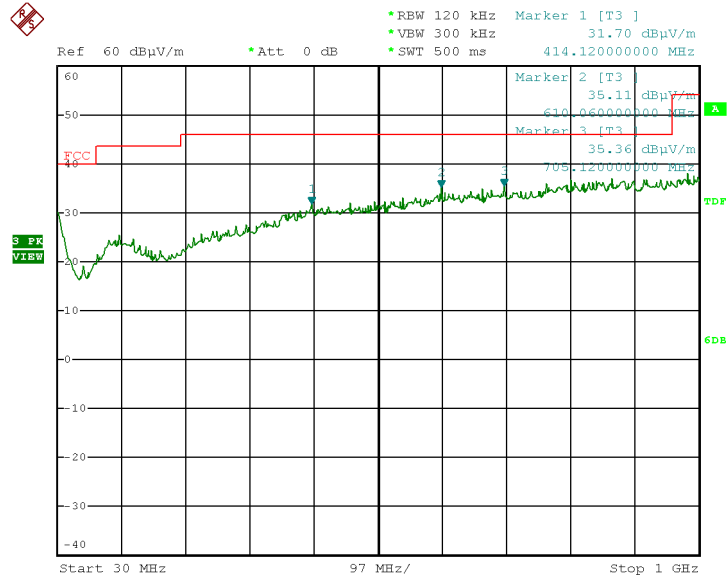
Test method : ANSI C63.4:2003

Operating mode : transmit without connect another unit(2453 MHz)

Antenna Polarity : Vertical

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant. Pol. H/V	Reading	Ant./CF CF(dB)	Act.	Limit	Note
		QP (dBuV)		QP (dBuV)	QP (dBuV)	
54.25	V	17.00	8.35	25.35	40.00	X/F
107.60	V	14.30	12.32	26.62	43.50	X/F
163.86	V	17.18	12.08	29.26	43.50	X/F
289.96	V	12.93	16.02	28.95	46.00	X/F
335.55	V	13.18	17.25	30.43	46.00	X/F
481.05	V	14.49	21.54	36.03	46.00	X/F

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 1000MHz - 2400MHz

Date of test : 20 January 2012

Test requirement : FCC Part 15 Section 15.249

Test method : ANSI C63.4:2003

Operating mode : transmit without connect another unit(2453 MHz)

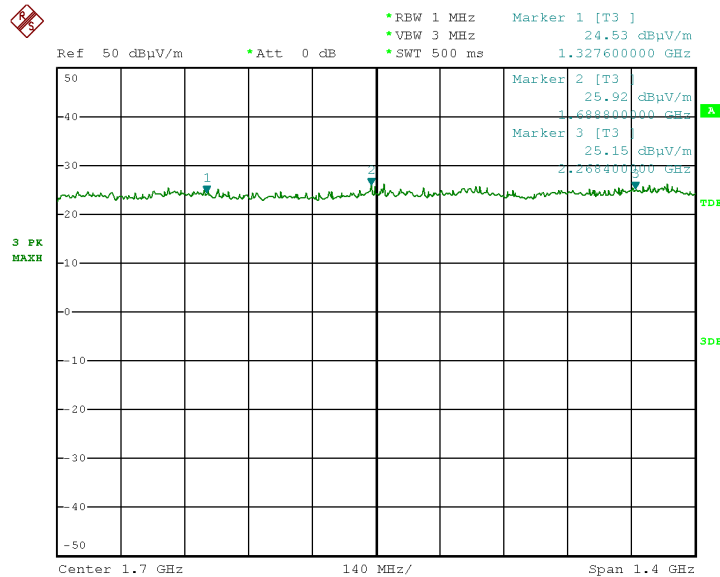
Antenna Polarity : Vertical

Remarks : NIL

Test Result

Passed

Not Passed



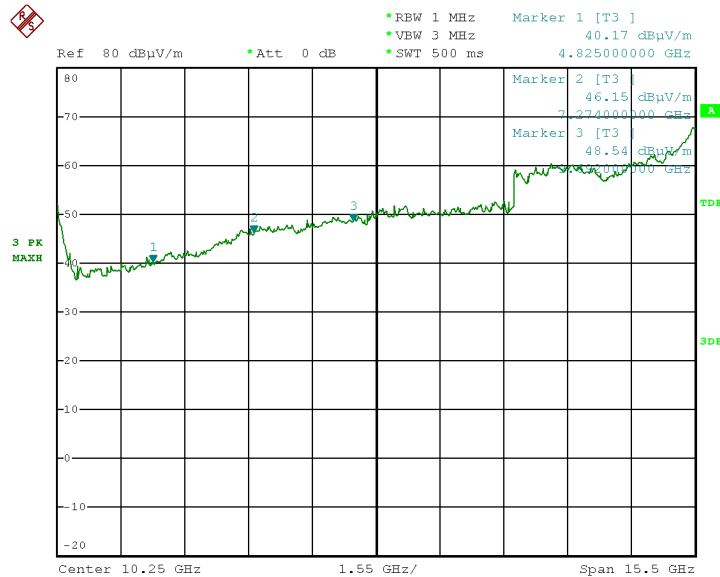
Freq. (MHz)	Ant. Pol. H/V	Reading (dBμV/m)	Ant./CF CF(dB)	Act. (dBμV/m)	Limit (dBμV/m)	Note
2496.00	V	33.38	35.30	68.68	74.00	Peak
13291.00	V	27.12	45.80	72.92	74.00	Peak
13291.00	V	0.78	45.80	46.58	54.00	AVG
17983.00	V	26.73	46.58	73.31	74.00	Peak
17983.00	V	0.62	46.58	47.20	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 2.5GHz – 18GHz

Date of test : 20 January 2012
 Test requirement : FCC Part 15 Section 15.249
 Test method : ANSI C63.4:2003
 Operating mode : transmit without connect another unit(2453 MHz)
 Antenna Polarity : Vertical
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant. Pol. H/V	Reading (dBµV/m)	Ant./CF CF(dB)	Act. (dBµV/m)	Limit (dBµV/m)	Note
2496.00	V	33.38	35.30	68.68	74.00	Peak
13291.00	V	27.12	45.80	72.92	74.00	Peak
13291.00	V	0.78	45.80	46.58	54.00	AVG
17983.00	V	26.73	46.58	73.31	74.00	Peak
17983.00	V	0.62	46.58	47.20	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 18GHz – 26.5GHz

Date of test : 20 January 2012

Test requirement : FCC Part 15 Section 15.249

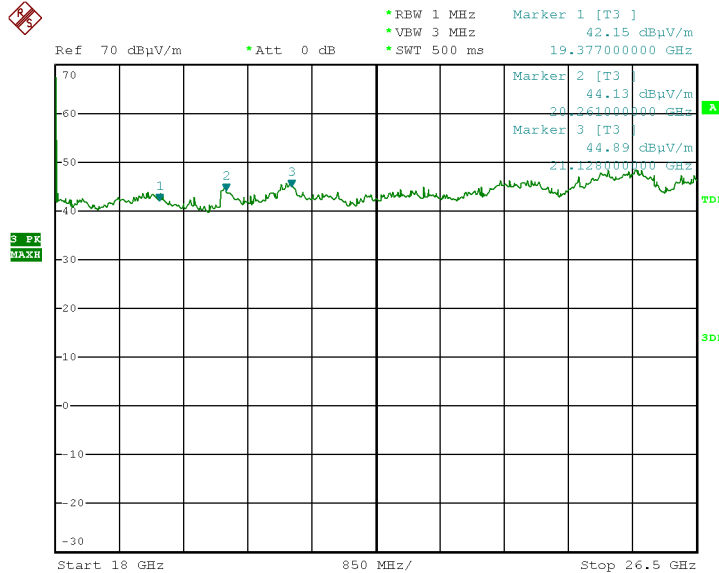
Test method : ANSI C63.4:2003

Operating mode : transmit without connect another unit(2453 MHz)

Antenna Polarity : Vertical

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant. Pol. H/V	Reading (dBµV/m)	Ant./CF CF(dB)	Act. (dBµV/m)	Limit (dBµV/m)	Note
2496.00	V	33.38	35.30	68.68	74.00	Peak
13291.00	V	27.12	45.80	72.92	74.00	Peak
13291.00	V	0.78	45.80	46.58	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 9kHz - 1000MHz

Date of test : 20 January 2012

Test requirement : FCC Part 15 Section 15.249

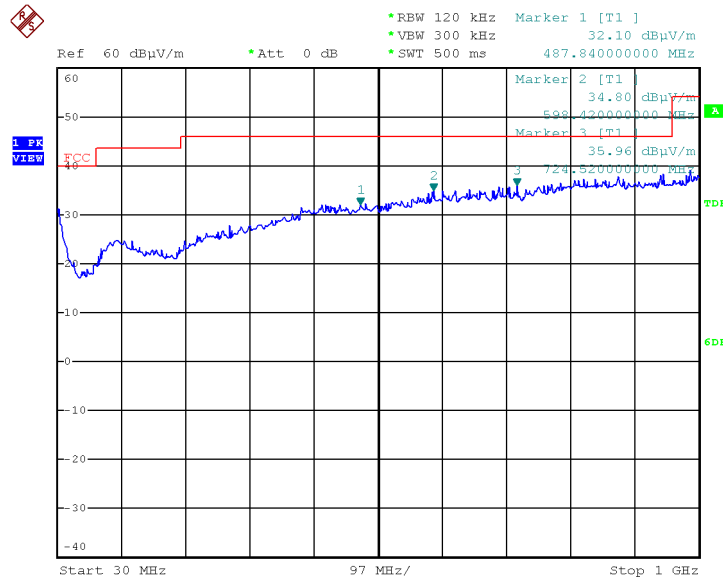
Test method : ANSI C63.4:2003

Operating mode : transmit without connect another unit(2457 MHz)

Antenna polarity : Horizontal

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant.Pol. H/V	Reading	Ant./CF CF(dB)	Act.	Limit	Note
		QP (dBuV)		QP (dBuV)	QP (dBuV)	
163.00	H	20.07	12.15	32.22	43.50	X/F
216.00	H	24.00	11.91	35.91	43.50	X/F
270.56	H	21.70	15.58	37.28	46.00	X/F
335.55	H	20.48	17.25	37.73	46.00	X/F
432.55	H	17.24	20.54	37.78	46.00	X/F
481.05	H	15.35	21.54	36.89	46.00	X/F

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 1000MHz - 2400MHz

Date of test : 20 January 2012

Test requirement : FCC Part 15 Section 15.249

Test method : ANSI C63.4:2003

Operating mode : transmit without connect another unit(2457 MHz)

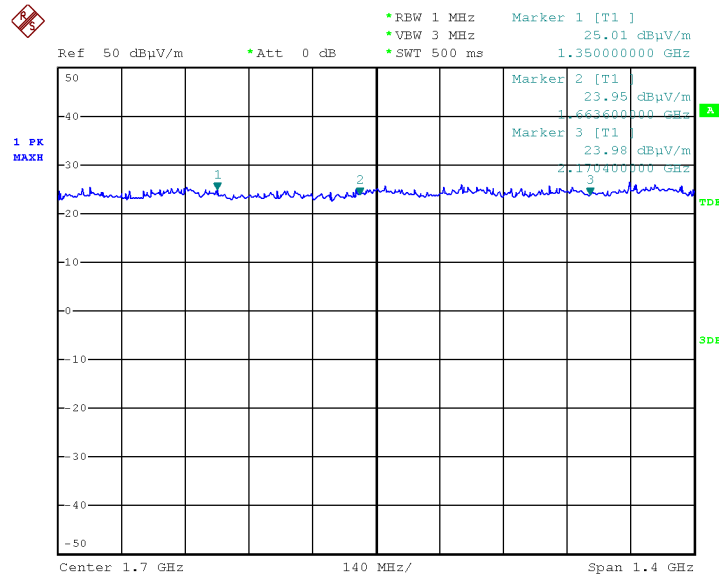
Antenna Polarity : Horizontal

Remarks : NIL

Test Result

Passed

Not Passed



Freq. (MHz)	Ant.Pol. H/V	Reading (dBμV/m)	Ant./CF CF(dB)	Act. (dBμV/m)	Limit (dBμV/m)	Note
2496.00	H	53.70	35.30	89.00	74.00	Peak
13325.00	H	26.78	45.80	72.58	74.00	Peak
13325.00	H	0.78	45.80	46.58	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 2.5GHz – 18GHz

Date of test : 20 January 2012

Test requirement : FCC Part 15 Section 15.249

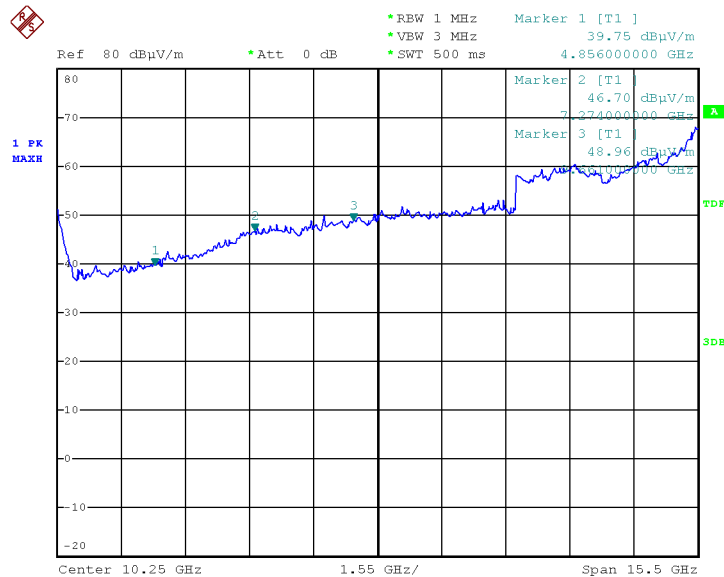
Test method : ANSI C63.4:2003

Operating mode : transmit without connect another unit(2457 MHz)

Antenna Polarity : Horizontal

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant. Pol. H/V	Reading (dBµV/m)	Ant./CF CF(dB)	Act. (dBµV/m)	Limit (dBµV/m)	Note
2496.00	H	53.70	35.30	89.00	74.00	Peak
13325.00	H	26.78	45.80	72.58	74.00	Peak
13325.00	H	0.78	45.80	46.58	54.00	AVG
17864.00	H	26.51	46.50	73.01	74.00	Peak
17864.00	H	0.70	46.50	47.20	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 18GHz – 26.5GHz

Date of test : 20 January 2012

Test requirement : FCC Part 15 Section 15.249

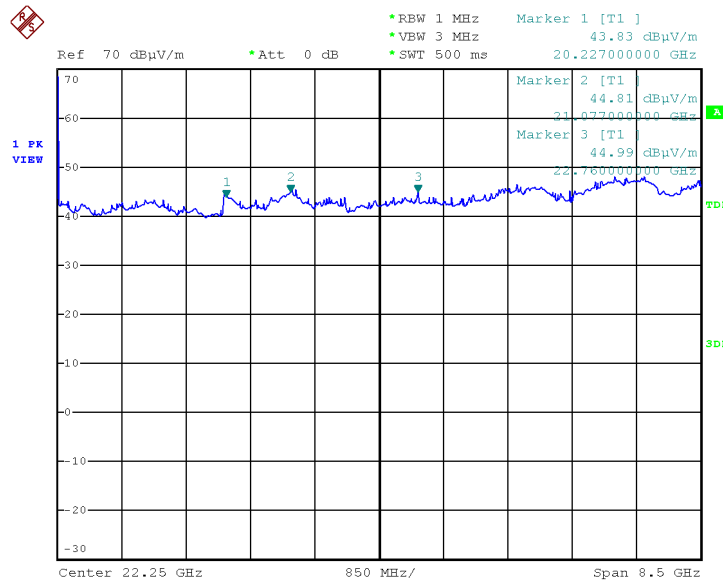
Test method : ANSI C63.4:2003

Operating mode : transmit without connect another unit(2457 MHz)

Antenna Polarity : Horizontal

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant. Pol. H/V	Reading (dBµV/m)	Ant./CF CF(dB)	Act. (dBµV/m)	Limit (dBµV/m)	Note
2496.00	H	53.70	35.30	89.00	74.00	Peak
13325.00	H	26.78	45.80	72.58	74.00	Peak
13325.00	H	0.78	45.80	46.58	54.00	AVG
17864.00	H	26.51	46.50	73.01	74.00	Peak
17864.00	H	0.70	46.50	47.20	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 9kHz - 1000MHz

Date of test : 20 January 2012

Test requirement : FCC Part 15 Section 15.249

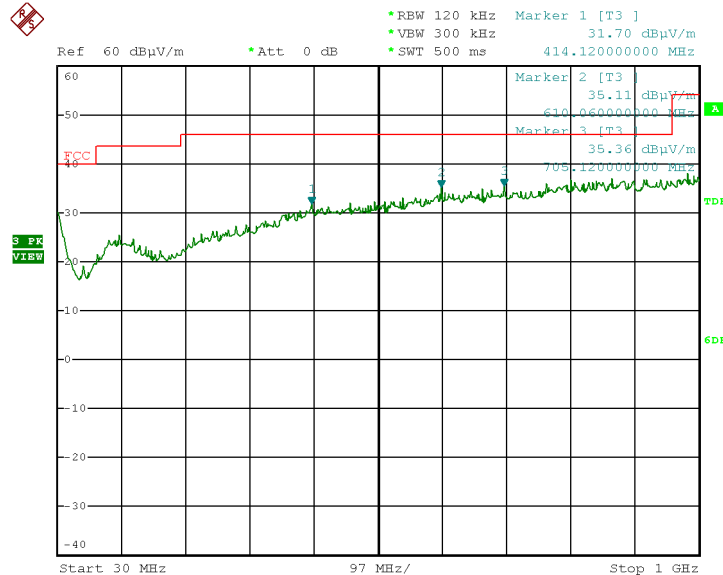
Test method : ANSI C63.4:2003

Operating mode : transmit without connect another unit(2457 MHz)

Antenna Polarity : Vertical

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant. Pol. H/V	Reading	Ant./CF CF(dB)	Act.	Limit	Note
		QP (dBuV)		QP (dBuV)	QP (dBuV)	
54.25	V	17.00	8.35	25.35	40.00	X/F
107.60	V	14.30	12.32	26.62	43.50	X/F
163.86	V	17.18	12.08	29.26	43.50	X/F
289.96	V	12.93	16.02	28.95	46.00	X/F
335.55	V	13.18	17.25	30.43	46.00	X/F
481.05	V	14.49	21.54	36.03	46.00	X/F

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 1000MHz - 2400MHz

Date of test : 20 January 2012

Test requirement : FCC Part 15 Section 15.249

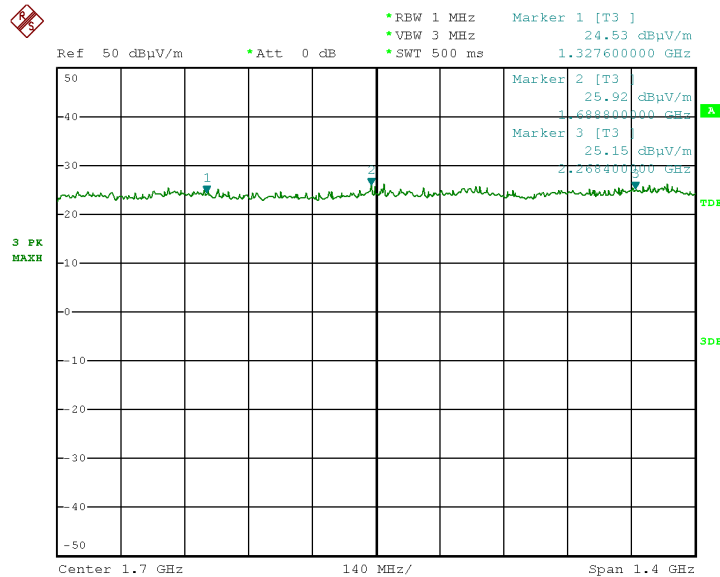
Test method : ANSI C63.4:2003

Operating mode : transmit without connect another unit(2457 MHz)

Antenna Polarity : Vertical

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



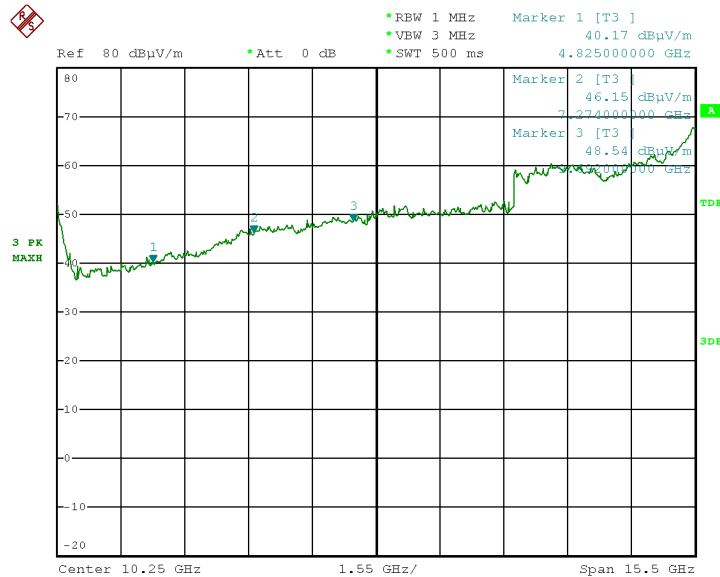
Freq. (MHz)	Ant. Pol. H/V	Reading (dBμV/m)	Ant./CF CF(dB)	Act. (dBμV/m)	Limit (dBμV/m)	Note
2496.00	V	33.38	35.30	68.68	74.00	Peak
13291.00	V	27.12	45.80	72.92	74.00	Peak
13291.00	V	0.78	45.80	46.58	54.00	AVG
17983.00	V	26.73	46.58	73.31	74.00	Peak
17983.00	V	0.62	46.58	47.20	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 2.5GHz – 18GHz

Date of test : 20 January 2012
 Test requirement : FCC Part 15 Section 15.249
 Test method : ANSI C63.4:2003
 Operating mode : transmit without connect another unit(2457 MHz)
 Antenna Polarity : Vertical
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant. Pol. H/V	Reading (dBµV/m)	Ant./CF CF(dB)	Act. (dBµV/m)	Limit (dBµV/m)	Note
2496.00	V	33.38	35.30	68.68	74.00	Peak
13291.00	V	27.12	45.80	72.92	74.00	Peak
13291.00	V	0.78	45.80	46.58	54.00	AVG
17983.00	V	26.73	46.58	73.31	74.00	Peak
17983.00	V	0.62	46.58	47.20	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 18GHz – 26.5GHz

Date of test : 20 January 2012

Test requirement : FCC Part 15 Section 15.249

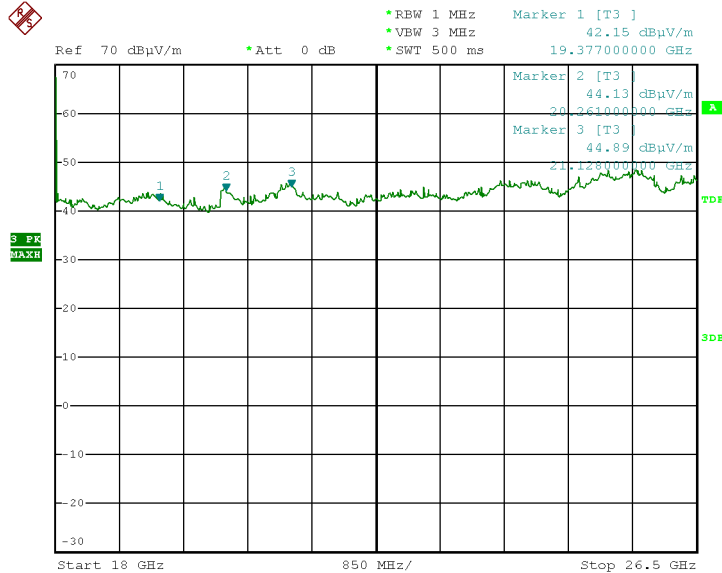
Test method : ANSI C63.4:2003

Operating mode : transmit without connect another unit(2457 MHz)

Antenna Polarity : Vertical

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



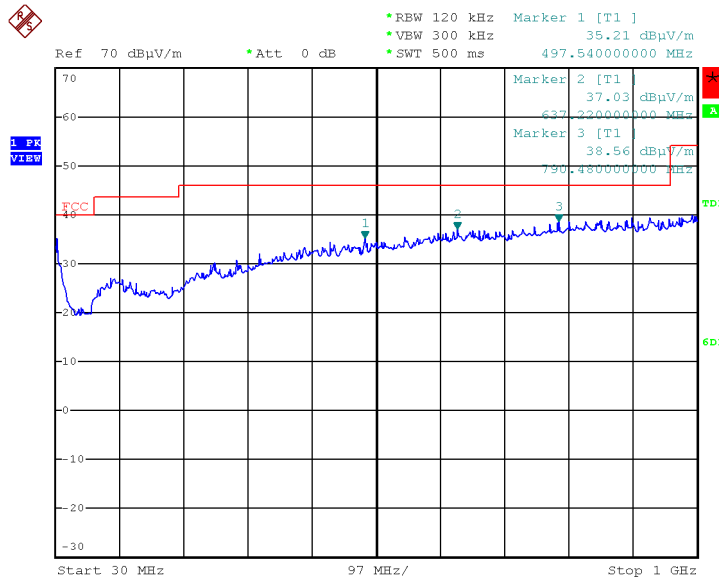
Freq. (MHz)	Ant. Pol. H/V	Reading (dBµV/m)	Ant./CF CF(dB)	Act. (dBµV/m)	Limit (dBµV/m)	Note
2496.00	V	33.38	35.30	68.68	74.00	Peak
13291.00	V	27.12	45.80	72.92	74.00	Peak
13291.00	V	0.78	45.80	46.58	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 9kHz – 1000MHz

Date of test : 20 January 2012
 Test requirement : FCC Part 15 Section 15.109
 Test method : ANSI C63.4:2003
 Operating mode : PC
 Antenna Polarity : Horizontal
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



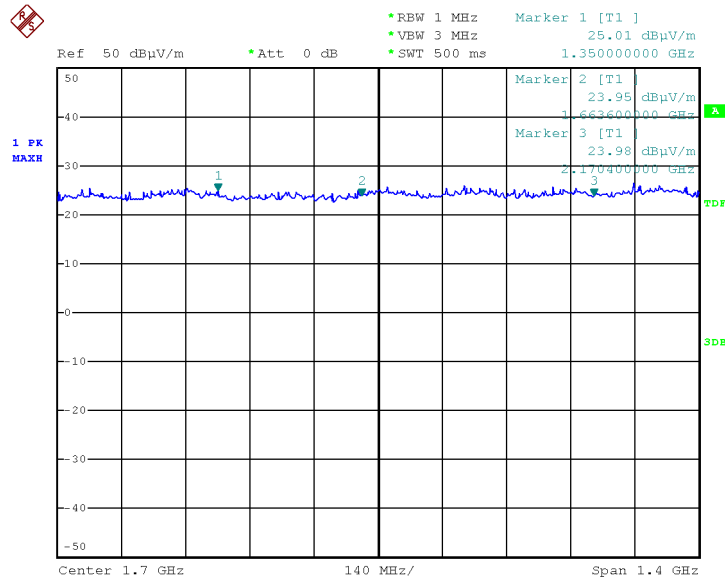
Freq. (MHz)	Ant. Pol. H/V	Reading	Ant./CF CF(dB)	Act.	Limit	Note
		QP (dBuV)		QP (dBuV)	QP (dBuV)	
108.00	H	22.90	12.32	35.22	43.50	X/F
163.86	H	21.87	12.08	33.95	43.50	X/F
216.24	H	21.92	11.91	33.83	46.00	X/F
289.96	H	20.18	16.02	36.20	46.00	X/F
335.55	H	22.71	17.25	39.96	46.00	X/F
432.55	H	17.09	20.55	37.64	46.00	X/F

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 1000MHz – 6000MHz

Date of test : 20 January 2012
 Test requirement : FCC Part 15 Section 15.109
 Test method : ANSI C63.4:2003
 Operating mode : PC
 Antenna Polarity : Horizontal
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



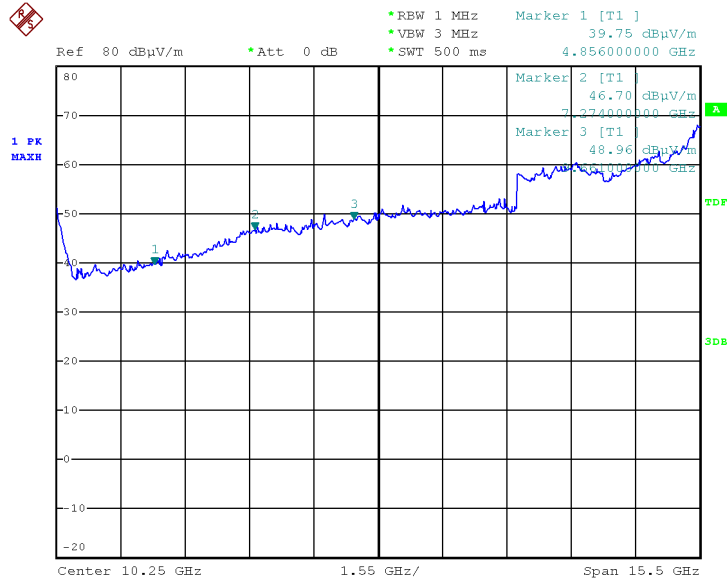
Freq. (MHz)	Ant. Pol. H/V	Reading (dBµV/m)	Ant./CF CF(dB)	Act. (dBµV/m)	Limit (dBµV/m)	Note
13325.00	H	30.60	42.32	72.92	74.00	Peak
13325.00	H	4.26	42.32	46.58	54.00	AVG
17184.00	H	24.59	46.42	71.01	74.00	Peak
17184.00	H	1.10	46.42	47.52	54.00	AVG
17830.00	H	26.78	45.65	72.43	74.00	Peak
17830.00	H	2.88	45.62	48.50	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 1000MHz – 6000MHz

Date of test : 20 January 2012
 Test requirement : FCC Part 15 Section 15.109
 Test method : ANSI C63.4:2003
 Operating mode : PC
 Antenna Polarity : Horizontal
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



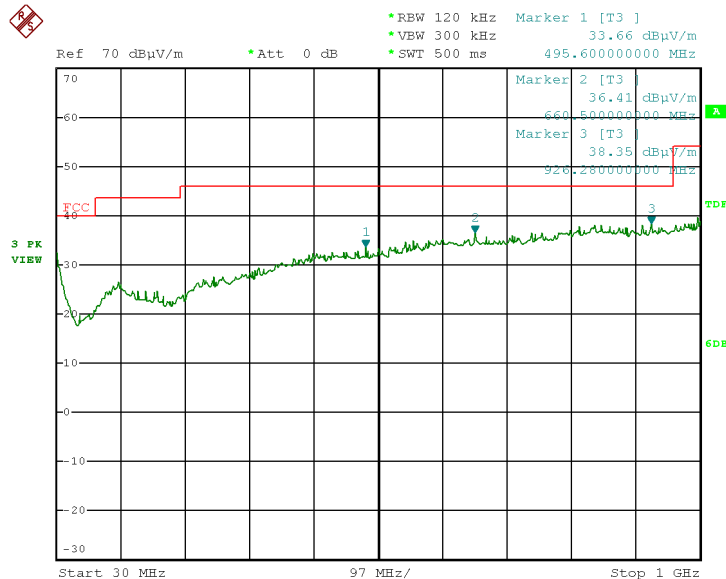
Freq. (MHz)	Ant. Pol. H/V	Reading (dBµV/m)	Ant./CF CF(dB)	Act. (dBµV/m)	Limit (dBµV/m)	Note
13325.00	H	30.60	42.32	72.92	74.00	Peak
13325.00	H	4.26	42.32	46.58	54.00	AVG
17184.00	H	24.59	46.42	71.01	74.00	Peak
17184.00	H	1.10	46.42	47.52	54.00	AVG
17830.00	H	26.78	45.65	72.43	74.00	Peak
17830.00	H	2.88	45.62	48.50	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 30MHz – 1000MHz

Date of test : 20 January 2012
 Test requirement : FCC Part 15 Section 15.109
 Test method : ANSI C63.4:2003
 Operating mode : PC
 Antenna Polarity : Vertical
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



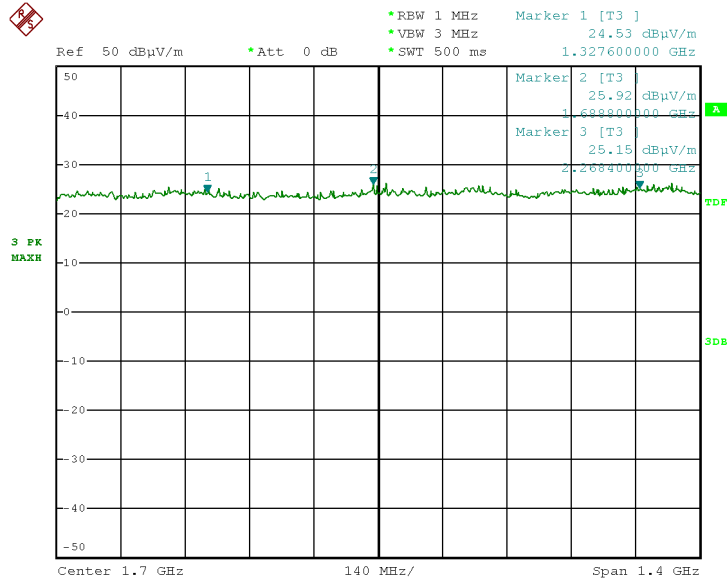
Freq. (MHz)	Ant. Pol. H/V	Reading	Ant./CF CF(dB)	Act.	Limit	Note
		QP (dBuV)		QP (dBuV)	QP (dBuV)	
54.25	V	24.04	8.35	32.39	40.00	X/F
107.60	V	20.78	12.32	33.10	43.50	X/F
163.86	V	20.49	12.08	32.57	43.50	X/F
335.55	V	16.32	17.25	33.57	46.00	X/F
398.60	V	13.90	19.30	33.20	46.00	X/F
481.05	V	11.40	21.54	32.94	46.00	X/F

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 1000MHz – 6000MHz

Date of test : 20 January 2012
 Test requirement : FCC Part 15 Section 15.109
 Test method : ANSI C63.4:2003
 Operating mode : PC
 Antenna Polarity : Vertical
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



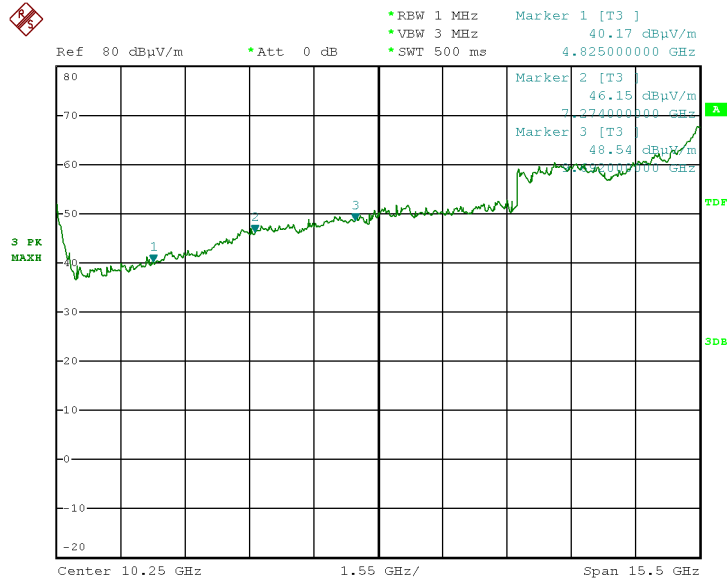
Freq. (MHz)	Ant. Pol. H/V	Reading (dBμV/m)	Ant./CF CF(dB)	Act. (dBμV/m)	Limit (dBμV/m)	Note
1204.00	V	16.61	29.56	46.17	74.00	Peak
13495.00	V	30.48	42.80	73.28	74.00	Peak
13495.00	V	1.78	42.80	44.58	54.00	AVG
17065.00	V	24.33	47.68	72.01	74.00	Peak
17065.00	V	1.29	47.68	48.97	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Radiated Emission Test 1000MHz – 6000MHz

Date of test : 20 January 2012
 Test requirement : FCC Part 15 Section 15.109
 Test method : ANSI C63.4:2003
 Operating mode : PC
 Antenna Polarity : Vertical
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant. Pol. H/V	Reading (dBµV/m)	Ant./CF CF(dB)	Act. (dBµV/m)	Limit (dBµV/m)	Note
1204.00	V	16.61	29.56	46.17	74.00	Peak
13495.00	V	30.48	42.80	73.28	74.00	Peak
13495.00	V	1.78	42.80	44.58	54.00	AVG
17065.00	V	24.33	47.68	72.01	74.00	Peak
17065.00	V	1.29	47.68	48.97	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 9 KHz, Detector function peak (9kHz~30MHz).
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph
 9kHz -30MHz and 18500 MHz to 26500MHz only have the background noise, the test date and graph does not show on the test report

Test Equipment List

Radiated Emission Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
Antenna	Schwarbeck	VULB9160	9160-3232	Jun .04.2012
Antenna	Schwarbeck	VULB9160	9160-3233	Jun .04.2012
Amplifier	Agilent	8447D	2944A11203	Nov.26.2012
Amplifier	Agilent	8447D	2944A11204	Nov.26.2012
Spectrum Analyzer	Agilent	E4443A	MY48250370	Nov.26.2012
RF Pre-selector	Agilent	N9039A	MY46520201	Nov.26.2012
Test Cable	N/A	Cable_5m_8m_15m	N/A	Jan.28.2012
Test Cable	N/A	Cable_5m_11m_15m	N/A	Jan.28.2012
Spectrum Analyzer	Agilent	E4447A	MY48250208	Nov.26.2012
RF Pre-selector	Agilent	N9039A	MY46520214	Nov.26.2012
Multi-Device Controller	ETS-Lindgren	2090	N/A	N/A
Horn Antenna	EMCO	3115	9605-4803	May.26.2012
Amplifier	Agilent	8449B	3008A02584	Nov.26.2012
Spectrum Analyzer	Agilent	E4447A	MY48250208	Nov.26.2012
Test Cable	Huber+Suhner	SUCOFLEX_15m_4m	N/A	Apr.06.2012
Multi-Device Controller	ETS-Lindgren	2090	N/A	N/A
Temp. & Humid. Chamber	GIANT FORCE	ITH-225-20-S	IAB0309-001	Dec.06.2012
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Aug.16.2012

Uncertainty:

Contribution	Probability Distribution	Uncertainty (dB)
Total uncertainty at a minimum confidence level of 95%	Normal (k=2)	± 2.66 (correct to 1 decimal place)

6.2 20dB Bandwidth measurement

Date of test : 20 January 2012

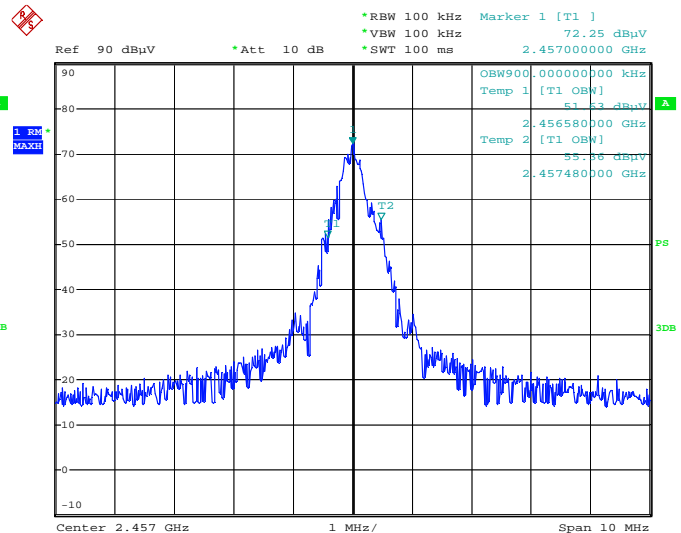
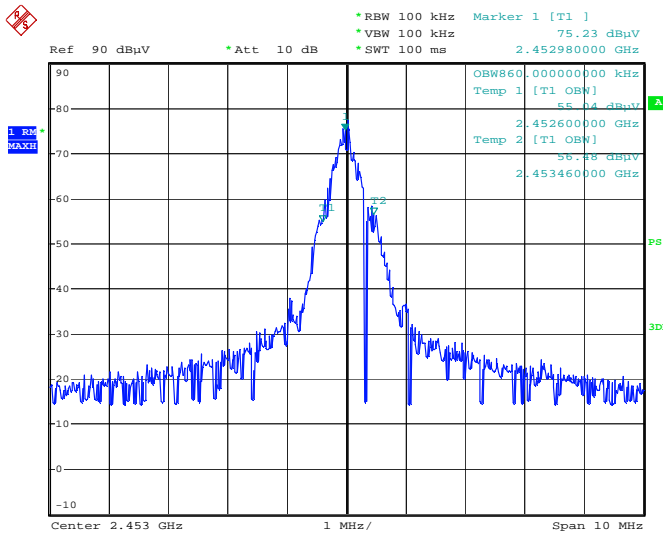
Test requirement : FCC Part 15 Section 15.249

Test method : ANSI C63.4:2003

Operating mode : On mode

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

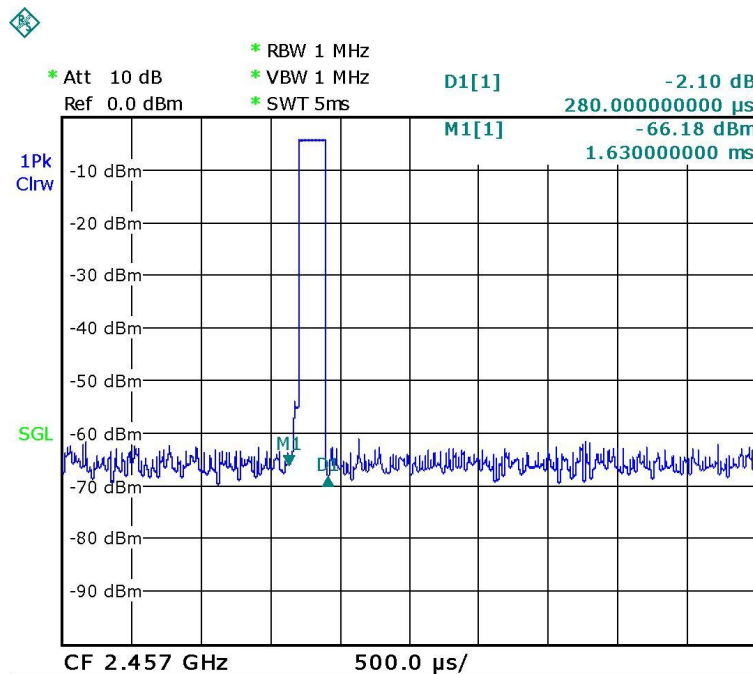


Remark: Use the following spectrum analyzer settings:
 Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
 RBW ≥ 1% of the 20 dB bandwidth
 VBW ≥ RBW Sweep = auto
 Detector function = peak
 Trace = max hold
 The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section.

6.3 Duty cycle measurement

Date of test : 20 January 2012
 Test requirement : FCC Part 15 Section 15.231
 Test method : ANSI C63.4:2003
 Operating mode : On mode
 Remarks : Detector function = peak

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

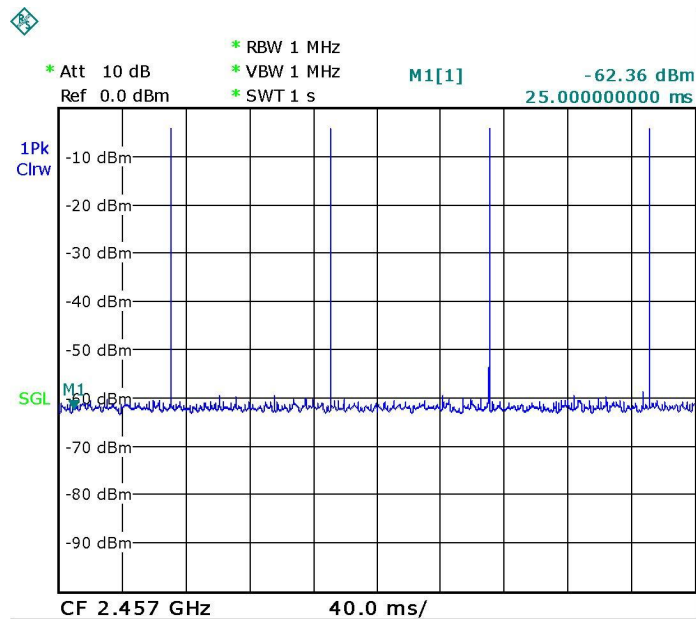


EUT data packet 1 has the period of 0.28ms

Duty cycle measurement

Date of test : 20 January 2012
 Test requirement : FCC Part 15 Section 15.231
 Test method : ANSI C63.4:2003
 Operating mode : On mode
 Remarks : Detector function = peak

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



EUT data packet off has the period of 15.8ms

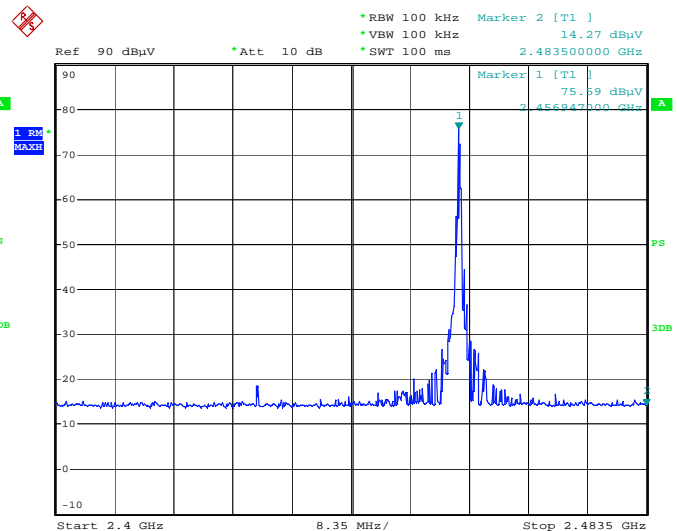
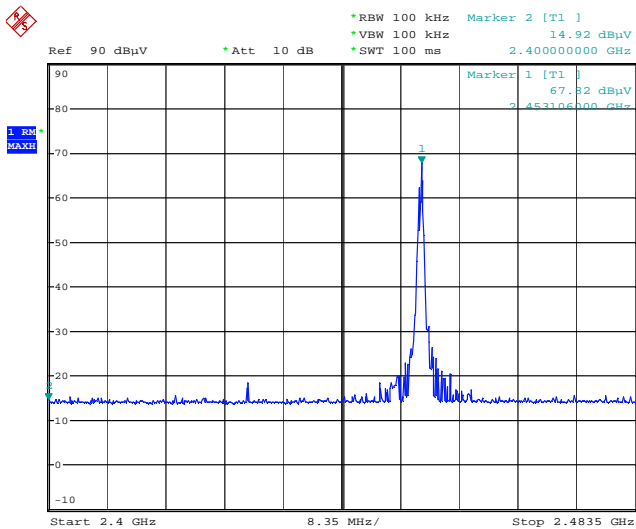
Therefore, the total signal "on" time of on successful period is = 250 ms(exceed 100ms).

Average factor: $20 \log 1/(0.28/100) = 51.05 \text{ dB}$ Average = Peak – Average Factor

6.4 Bandedge measurement

Date of test : 20 January 2012
 Test requirement : FCC Part 15 Section 15.249
 Test method : ANSI C63.4:2003
 Operating mode : On mode
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Remark: Use the following spectrum analyzer settings:
 Span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation
 RBW \geq 1% of the span
 VBW \geq RBW
 Sweep = auto
 Detector function = peak
 Trace = max hold
 Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. The marker-delta value now displayed must comply with the limit specified in this Section. Submit this plot. Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit. Submit this plot.

Test Equipment List

Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
Antenna	Schwarbeck	VULB9160	9160-3232	Jun .04.2012
Antenna	Schwarbeck	VULB9160	9160-3233	Jun .04.2012
Amplifier	Agilent	8447D	2944A11203	Nov.26.2012
Amplifier	Agilent	8447D	2944A11204	Nov.26.2012
Spectrum Analyzer	Agilent	E4443A	MY48250370	Nov.26.2012
RF Pre-selector	Agilent	N9039A	MY46520201	Nov.26.2012
Test Cable	N/A	Cable_5m_8m_15m	N/A	Jan.28.2012
Test Cable	N/A	Cable_5m_11m_15m	N/A	Jan.28.2012
Spectrum Analyzer	Agilent	E4447A	MY48250208	Nov.26.2012
RF Pre-selector	Agilent	N9039A	MY46520214	Nov.26.2012
Multi-Device Controller	ETS-Lindgren	2090	N/A	N/A
Horn Antenna	EMCO	3115	9605-4803	May.26.2012
Amplifier	Agilent	8449B	3008A02584	Nov.26.2012
Spectrum Analyzer	Agilent	E4447A	MY48250208	Nov.26.2012
Test Cable	Huber+Suhner	SUCOFLEX_15m_4m	N/A	Apr.06.2012
Multi-Device Controller	ETS-Lindgren	2090	N/A	N/A
Temp. & Humid. Chamber	GIANT FORCE	ITH-225-20-S	IAB0309-001	Dec.06.2012
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Aug.16.2012

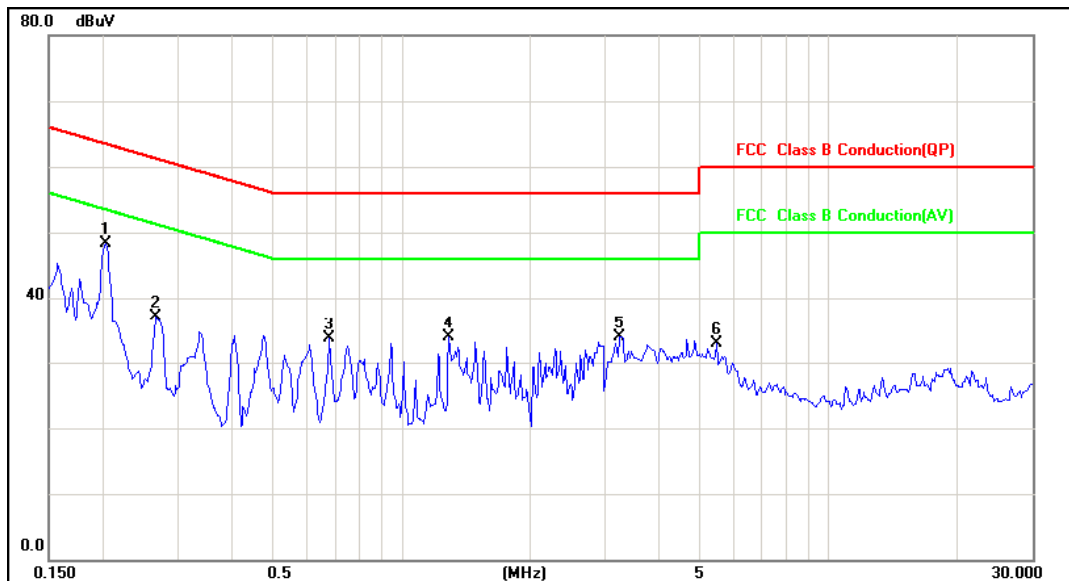
Uncertainty:

Contribution	Probability Distribution	Uncertainty (dB)
Total uncertainty at a minimum confidence level of 95%	Normal (k=2)	± 2.66 (correct to 1 decimal place)

6.5 Conducted Emission Test 150kHz – 30MHz

Date of test : 20 January 2012
 Test requirement : FCC Part 15
 Test method : ANSI C63.4:2003
 Operating mode : Normal Link
 Tested on : AC Mains, Live
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



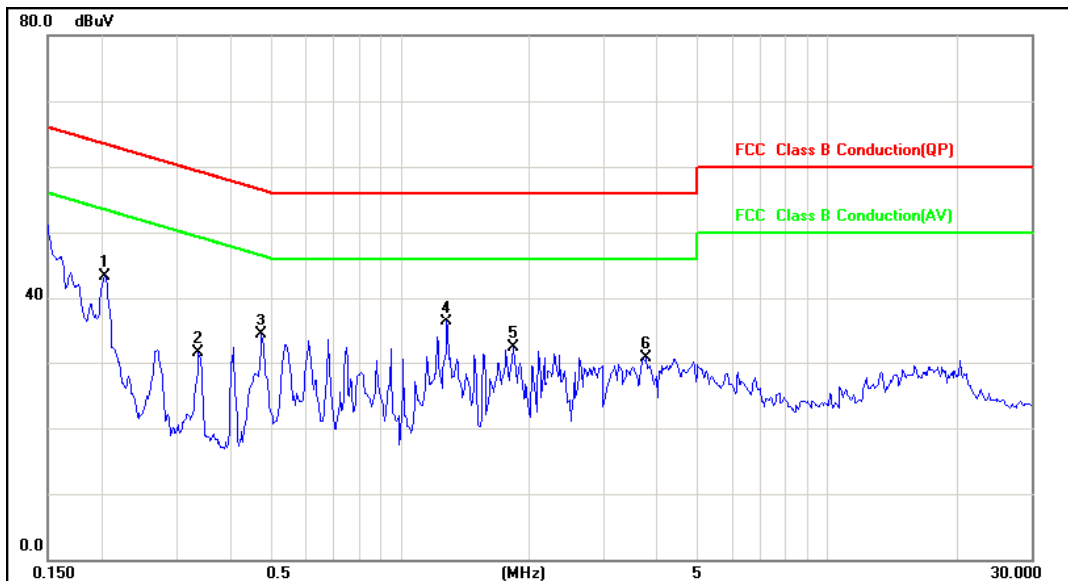
Frequency (MHz)	QP Reading (dBuV)	QP Limit	Margin
0.200	48.28	63.45	-15.17
0.270	37.06	61.25	-24.19
0.680	33.62	56.00	-22.38
1.290	33.86	56.00	-22.14
3.240	34.00	56.00	-22.00
5.480	32.93	60.00	-27.07

P.S. : If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured
 IF bandwidth 9kHz, RBW, 9kHz, VBW, 9kHz

Conducted Emission Test 150kHz – 30MHz

Date of test : 20 January 2012
 Test requirement : FCC Part 15
 Test method : ANSI C63.4:2003
 Operating mode : Normal Link
 Tested on : AC Mains, Neutral
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Frequency (MHz)	QP Reading (dBuV)	QP Limit	Margin
0.200	43.37	63.45	-20.08
0.340	31.49	59.27	-27.78
0.470	34.22	56.45	-22.23
1.280	36.26	56.00	-19.74
1.830	32.30	56.00	-23.70
3.780	30.67	56.00	-25.33

P.S. : If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured
 IF bandwidth 9kHz, RBW, 9kHz, VBW, 9kHz

Test Equipment List

Conducted Emission Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
LISN	EMCO	3816/2SH	00052766	May.26.2012
Transient Limiter	Agilent	11947A	3107A03668	May.26.2012
Test Cable	N/A	C-06_C03	N/A	Mar.31.2012
EMI TEST RECEIVER	R&S	ESCS30	8333641017	May.27.2012
50Ω Terminator	SHX	TF2-3G-A	08122902	May.26.2012
LISN	R&S	ENV216	100526	May.26.2012

Uncertainty:

Contribution	Probability Distribution	Uncertainty (dB)
Total uncertainty at a minimum confidence level of 95%	Normal (k=2)	± 2.59 (correct to 1 decimal place)

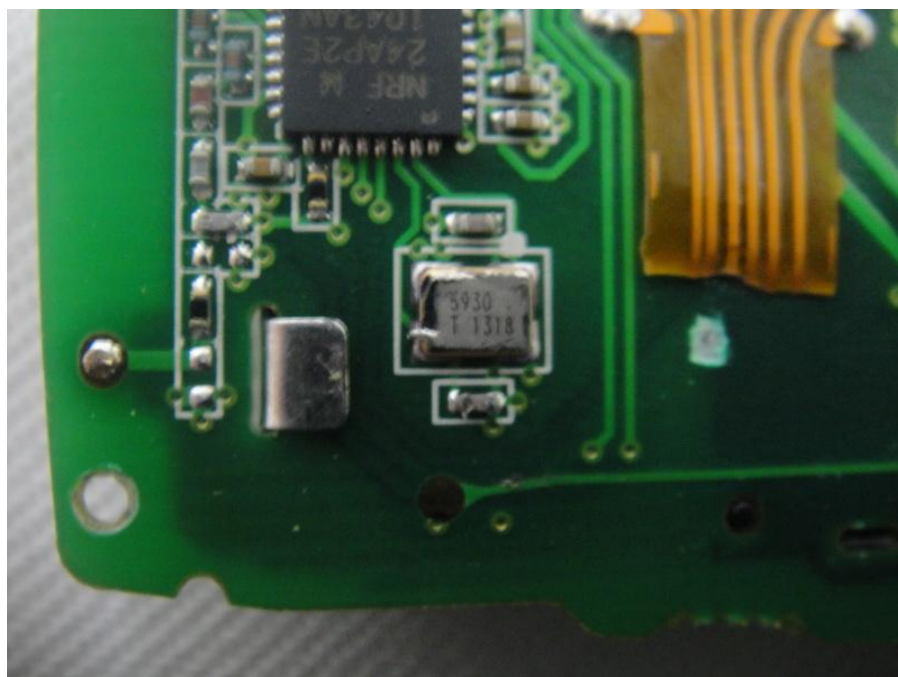
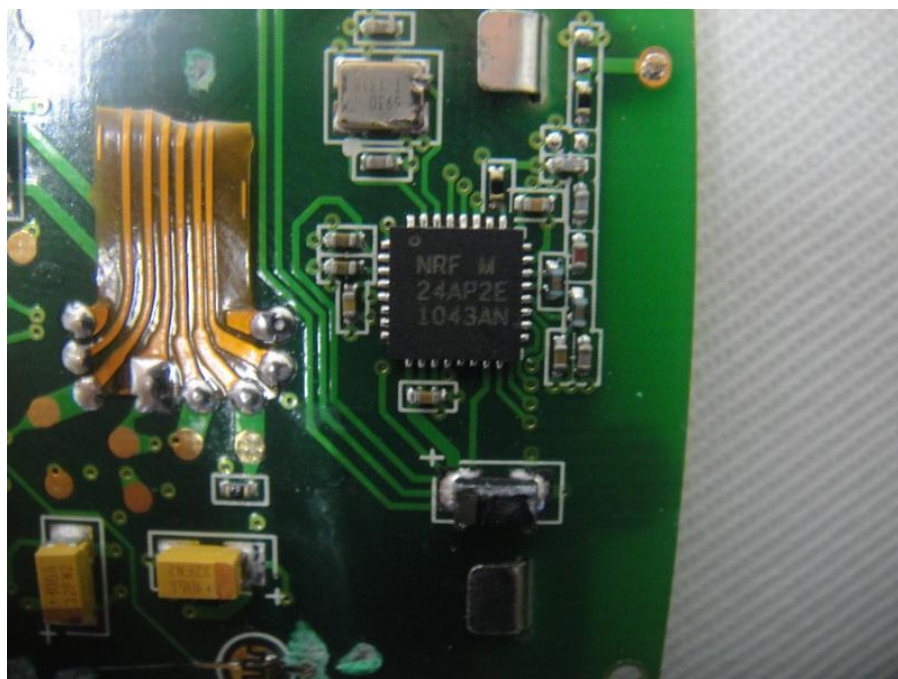
7 Appendix A



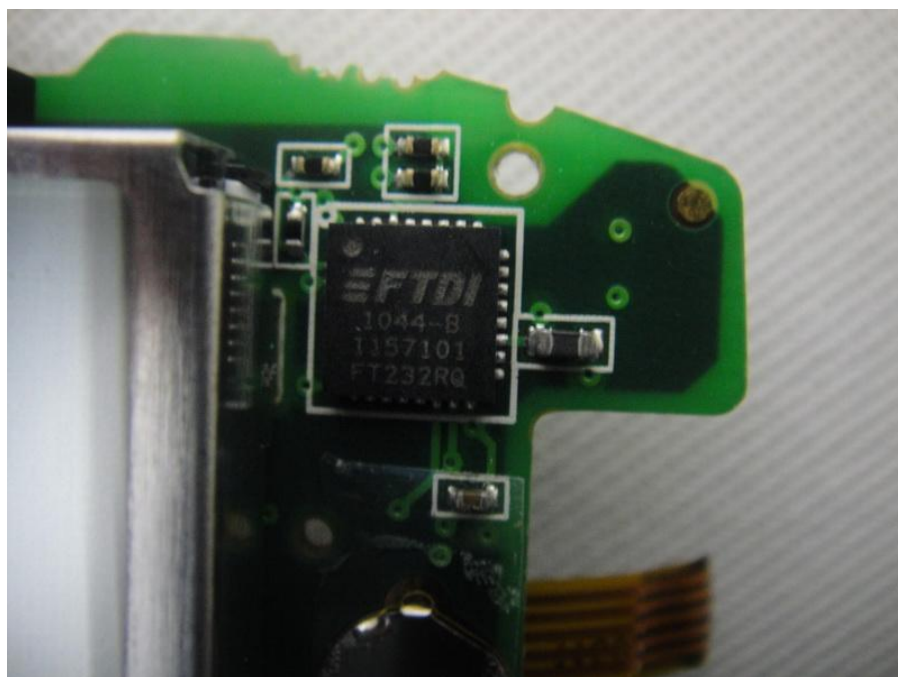
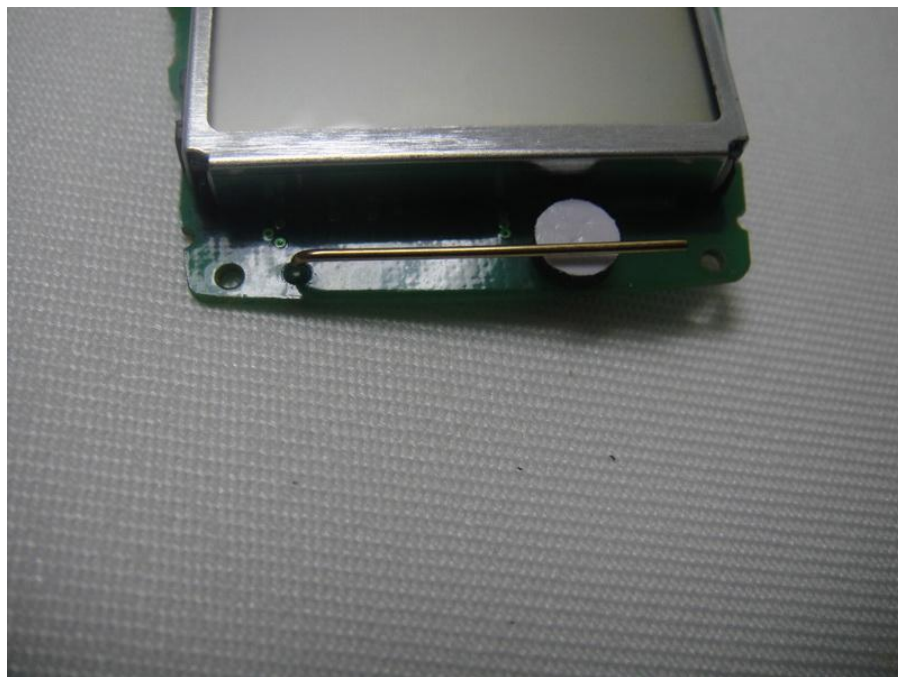
Appendix A



Appendix A

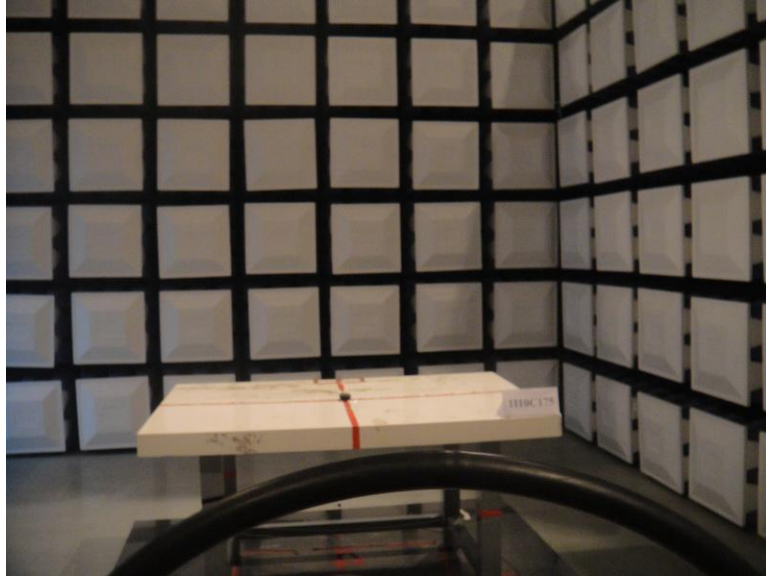


Appendix A



8 Appendix B

Radiated Emission Test Set Up



9kHz-30MHz



30MHz-1GHz

Appendix B

Radiated Emission Test Set Up



1GHz above

Appendix B

Conduct Emission Test Set Up



9 Appendix C

