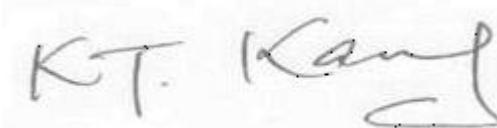


## RF TEST REPORT

Test Report No. : TK-FR11011  
Standards : Part 15 Subpart C 15.247  
FCC ID : ZB6EAM2400  
Description of Product : 2.4 GHz RF Module  
Applicant : ETERHI, Inc.  
Manufacturer : ETERHI, Inc.  
Model Name : EAM2400  
Date of test(s) : 2011.03.05 ~ 2011.03.23  
Date of issue : 2011.03.23

The test results relate only to the items tested.

Test and Report Completed by :	Report Approval by :
	
Jeff Do Test Engineer	KT Kang Technical Manager

## THRU-KES CO., LTD.

477-6, Hageo-ri, Yeoju-eup, Yeoju-gun, Gyeonggi-do, 469-803, Korea  
Tel: +82-31-425-6200 / Fax: +82-31-424-0450

## Revision history

Revision	Date of issue	Test report No.	Description
-	2011.03.16	TK-FR11010	Initial
1	2011.03.23	TK-FR11011	Add AC conducted emission in test report.

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## 1.0 General product description

Equipment model name : EAM2400  
 Serial number : Prototype  
 EUT condition : Pre-production, not damaged  
 Antenna type & gain : Chip antenna(2 dBi),  $\lambda/2$  Sleeve dipole antenna(1.46 dBi)  
 Frequency Range : 2402 MHz ~ 2480 MHz  
 Number of channels : 79  
 Type of Modulation : GFSK  
 Power Source : 3.3 V

### 1.1 Test frequency

	Low channel	Middle channel	High channel
Frequency (MHz)	2402	2441	2480

### 1.2 Test mode

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

### 1.3 Model differences

Not applicable

### 1.4 Device modifications

The following modifications were necessary for compliance: Not applicable manufacturer

### 1.5 Peripheral devices

Device	Manufacturer	Model No.	Serial No.
Netbook	Lenovo	S10-2	2957N5K MP06C4N
Notebook	FUJITSU	6020	R7300237

## 1.6 Calibration details of equipment used for measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

## 1.7 Test facility

The measurement facility is located at 477-6, Hageo-ri, Yeoju-eup, Yeoju-gun, Gyeonggi-do, 469-803, Korea. Tel: +82-31-883-5092/Fax: +82-31-883-5169.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

## 1.8 Laboratory accreditations and listings

Country	Agency	Scope of accreditation	Logo
USA	FCC	3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.	 343818
KOREA	KCC	EMI (10 meter Open Area Test Site and two conducted sites) Radio (3 & 10 meter Open Area Test Sites and one conducted site)	 KR100
Canada	IC	3 & 10 meter Open Area Test Sites and one conducted site	 4769B-1

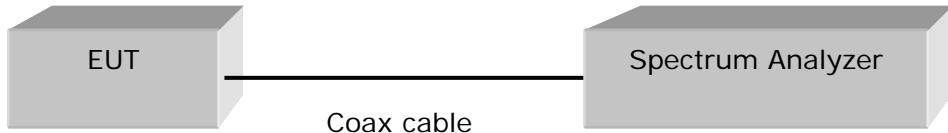
## 2.0 Summary of tests

Section in FCC Part 15	Parameter	Status
15.247(a)(1)	Frequency separation	C
15.247(a)(1)(iii)	Number of hopping frequency	C
15.247(a)(1)	20 dB bandwidth	C
15.247(a)(1)(iii)	Time of occupancy(Dwell time)	C
15.247(b)(1)	Maximum peak output power	C
15.247(d)	Conducted spurious emission & band edge	C
15.247(d)	Radiated spurious emission & band edge	C
15.247(i) 1.307(b)(1)	RF exposure evaluation	C
15.207	AC conducted emission	C
Note 1: C=Complies NC=Not complies NT=Not tested NA=Not applicable		
Note 2: The data in this test report are traceable to the national or international standards.		
Note 3: The sample was tested according to the following specification: FCC Part 15.247, ANSI C63.4-2003		

## 2.1 Technical characteristic test

### 2.1.1 Frequency separation

#### Test setup



#### Test procedure

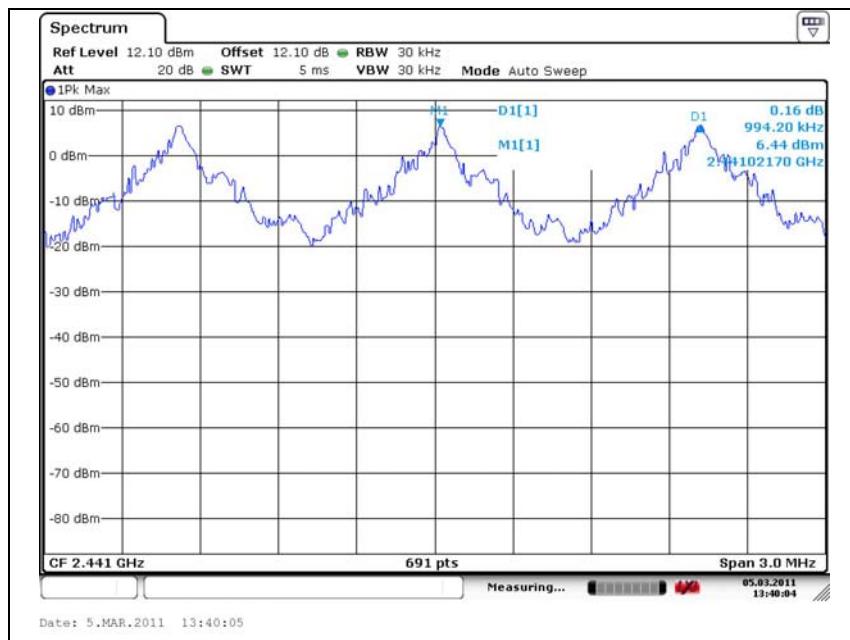
1. The EUT must have its hopping function enabled.
2. Use the following spectrum analyzer setting  
Span = 3 MHz (wide enough to capture the peaks of two adjacent channels)  
RBW = 30 kHz ( $\geq 1\%$  of the span)  
VBW = 30 kHz ( $\geq$  RBW)  
Sweep = auto  
Detector function = peak  
Trace = max hold
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

#### Limit

15.247(a)(1) Frequency hopping system operating in 2400 ~ 2483.5 MHz. Band may have hopping channel carrier frequencies that are separated by 25 kHz or two-third of 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

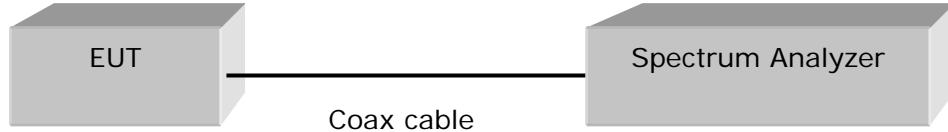
**Test results**

Operation mode	Frequency (MHz)	Adjacent hopping channel separation (kHz)	Two-third of 20 dB bandwidth (kHz)	Minimum bandwidth (kHz)
GFSK	2441	994.20	564	25



### 2.1.2 Number of hopping frequency

#### Test setup



#### Test procedure

1. The EUT must have its hopping function enabled.
2. Use the following spectrum analyzer setting
  - Frequency range: 2400 MHz ~ 2441.5 MHz, 2441.5 MHz ~ 2483.5 MHz
  - Span = the frequency band of operation
  - RBW = 300 kHz ( $\geq 1\%$  of the span)
  - VBW = 300 kHz ( $\geq$  RBW)
  - Sweep = auto
  - Detector function = peak
  - Trace = max hold
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

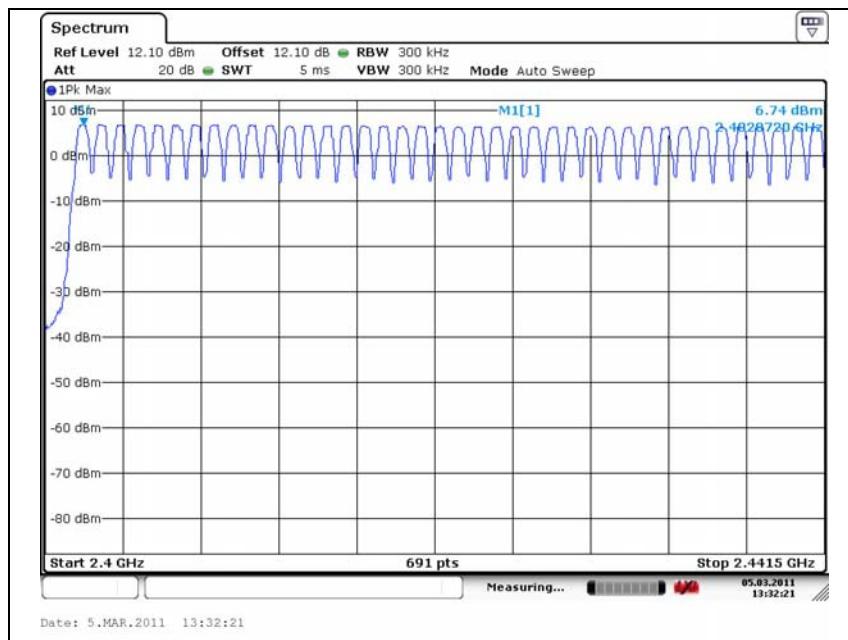
#### Limit

15.247(a)(1)(iii) For frequency hopping system operating in the 2400 - 2483.5 MHz bands shall use at least 15 hopping frequencies.

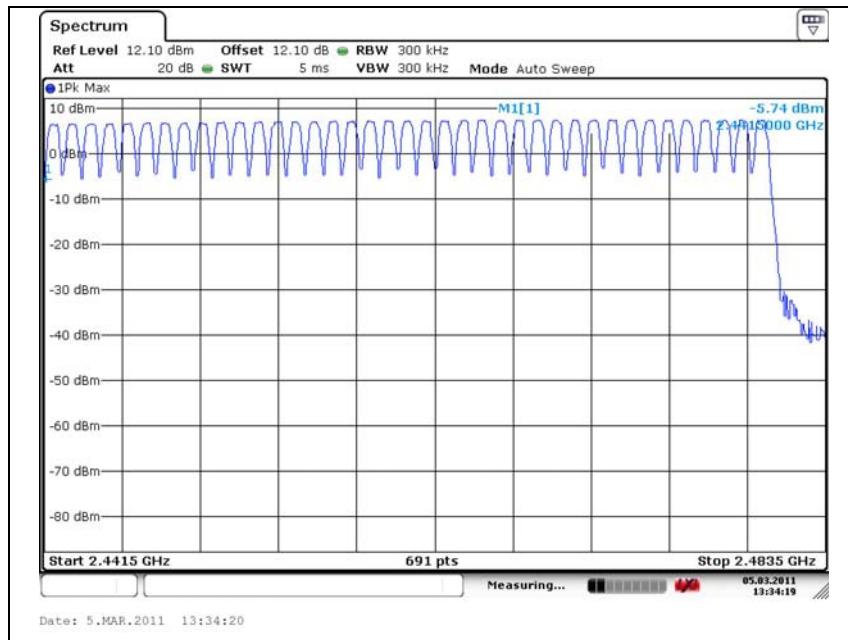
#### Test results

Operation mode	Number of Hopping Frequency	Limit
GFSK	79	$\geq 15$

**A. 2400 MHz ~ 2441.5 MHz**

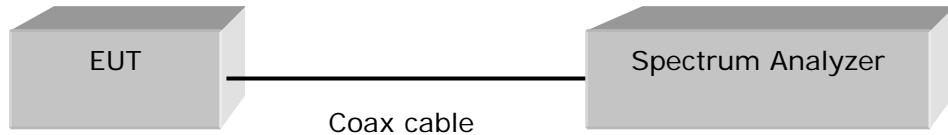


**B. 2441.5 MHz ~ 2483.5 MHz**



### 2.1.3 20 dB bandwidth

#### Test setup



#### Test procedure

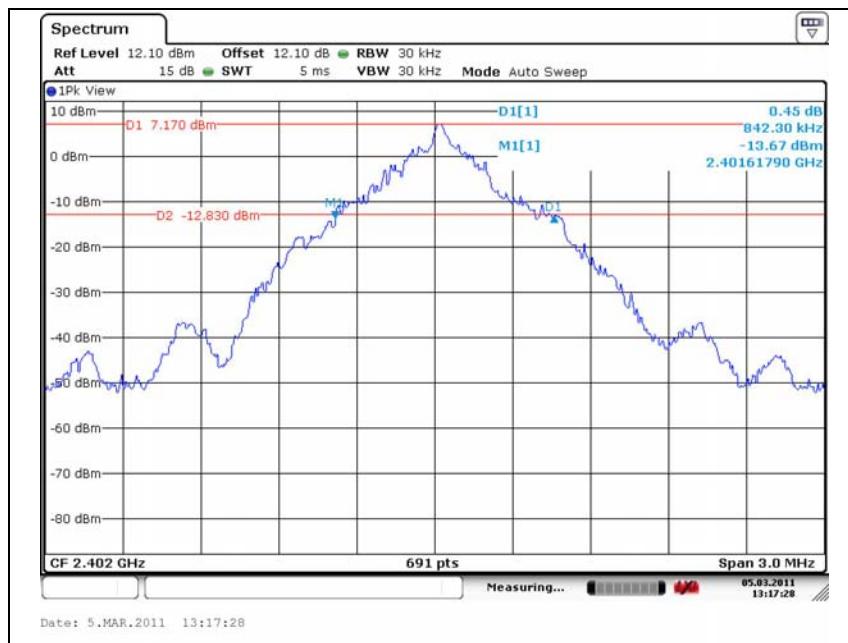
1. Use the following spectrum analyzer setting  
Center frequency: Lowest, middle and highest channels  
Span = 3 MHz (Approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel)  
RBW = 30 kHz ( $\geq$  1% of the span)  
VBW = 30 kHz ( $\geq$  RBW)  
Sweep = auto  
Detector function = peak  
Trace = max hold
2. 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 on 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. I this value varies with different modes of operation (e.g., date rate, modulation format, etc.), repeat this test for each variation.

#### Limit

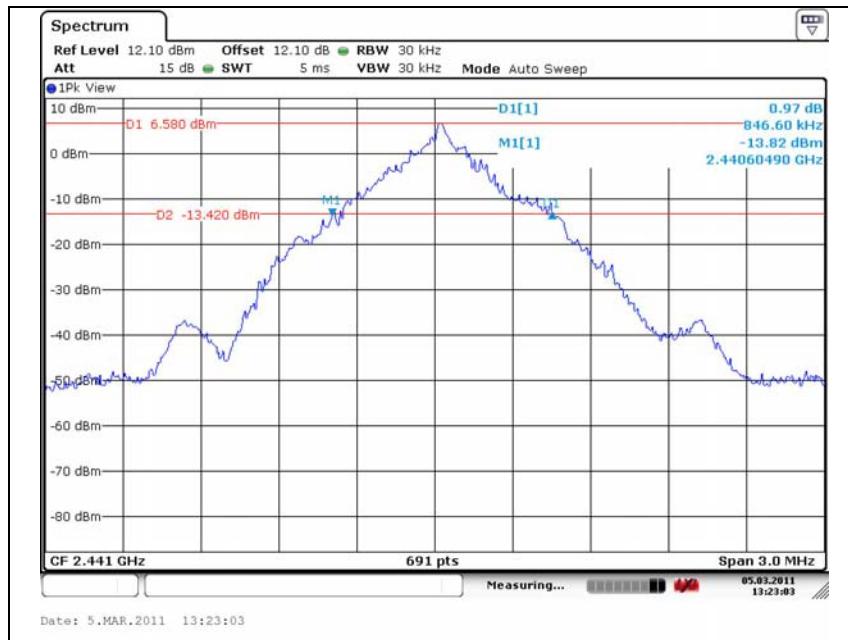
Not applicable

**Test results**

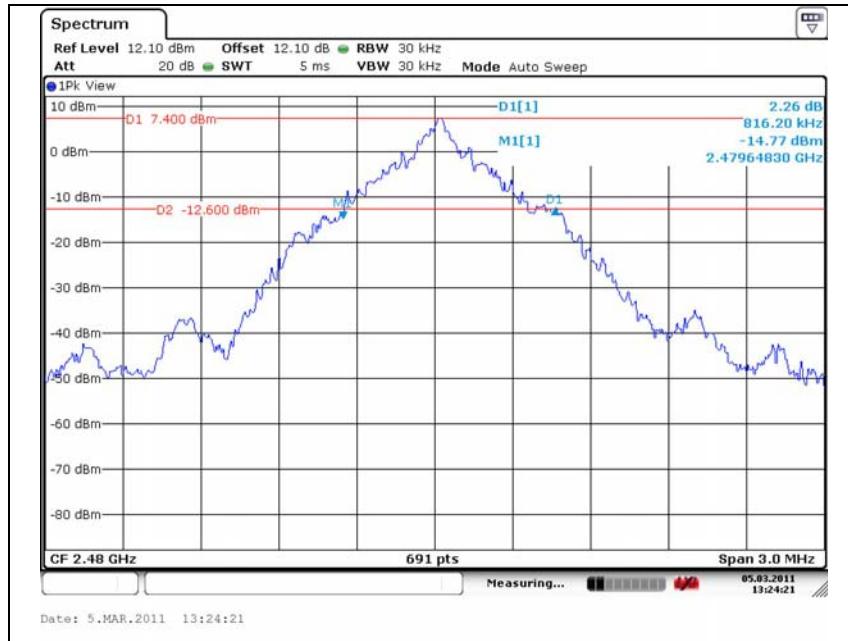
Operation mode	Frequency(MHz)	20 dB bandwidth(MHz)
GFSK	2402	0.842
	2441	0.846
	2480	0.816

**A. Low channel**

## B. Middle channel

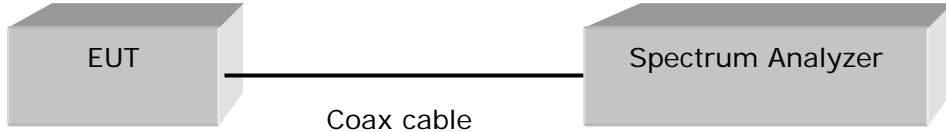


## C. High channel



## 2.1.4 Time of occupancy (Dwell time)

### Test setup



### Test procedure

1. Use the following spectrum analyzer setting  
Center frequency: 2441 MHz  
Span = Zero span, centered on a hopping channel  
RBW = 1 MHz  
VBW = 1 MHz ( $\geq$  RBW)  
Sweep = as necessary to capture the entire dwell time per hopping channel  
Detector function = peak  
Trace = max hold
2. If possible, use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., date rate, modulation format, etc.), repeat this test for each variation.

### Limit

15.247(a)(1)(iii) For frequency hopping system operating in the 2400 ~ 2483.5 MHz band, the average time of occupancy on any frequency shall not be greater than 0.4 second within a 31.6 second period.

A period time =  $0.4(s) \times 79 = 31.6(s)$

## Test results

Time of occupancy on the TX channel in 31.6 sec

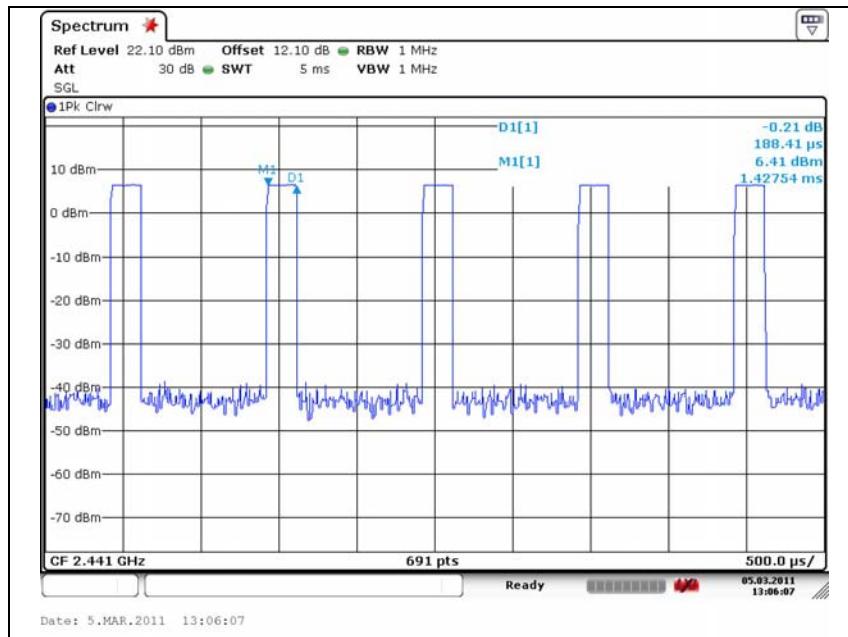
= time domain slot length  $\times$  (hop rate  $\div$  number of hop per channel)  $\times$  31.6

### Operation mode: GFSK

Frequency (MHz)	Dwell Time (ms)	Time of occupancy on the Tx channel in 31.6 sec (ms)	Limit for time of occupancy on the Tx channel in 31.6 sec (ms)
2441	0.188	60.29	400

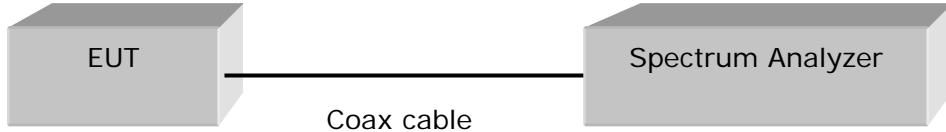
#### \* Remark:

Dwell time (ms)  $\times$  [(1600  $\div$  2)  $\div$  79]  $\times$  31.6(s) = Time of occupancy (ms)



### 2.1.5 Maximum peak power output power

#### Test setup



#### Test procedure

1. Use the following spectrum analyzer setting  
Center frequency: Lowest, middle and highest channels  
Span = 5 MHz (Approximately 5 times the 20 dB bandwidth, centered on a hopping channel)  
RBW = 1 MHz (the 20 dB bandwidth of the emission being measured)  
VBW = 1 MHz ( $\geq$  RBW)  
Sweep = auto  
Detector function = peak  
Trace = max hold
2. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power.

#### Limit

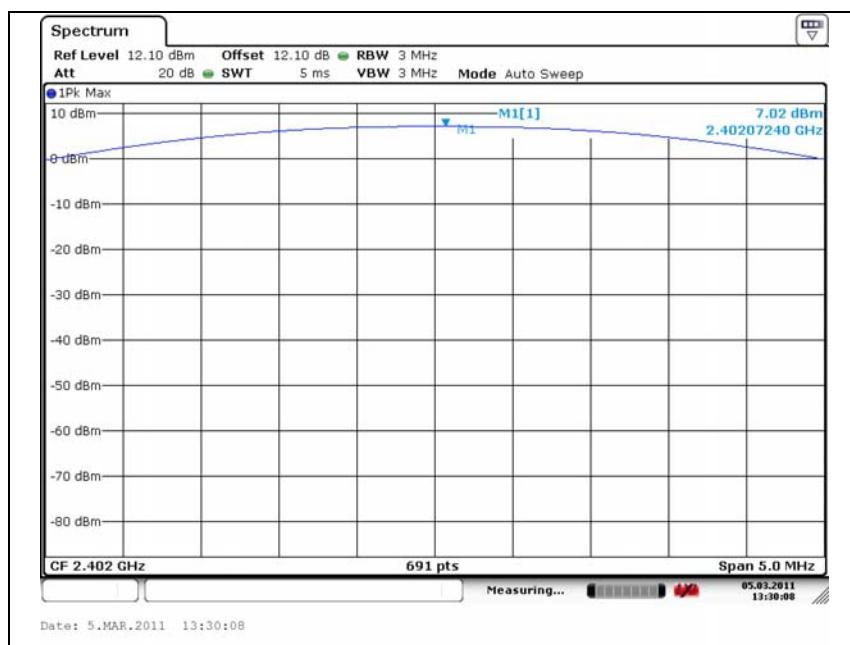
The maximum peak output power of the intentional radiator shall not exceed the following:

1. 15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.
2. 15.247(b)(1), For frequency hopping systems operating in the 2400 ~ 2483.5 MHz employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725 ~ 5805 MHz band: 1 Watt.

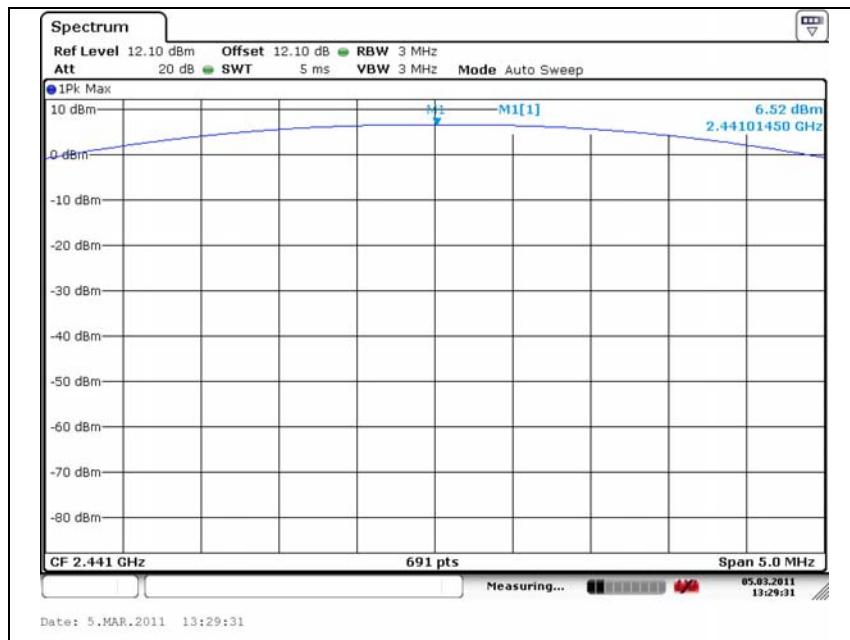
**Test results**

Operation mode	Frequency(MHz)	Peak output power (dBm)	Limit (dBm)
GFSK	2402	7.02	30
	2441	6.52	30
	2480	7.49	30

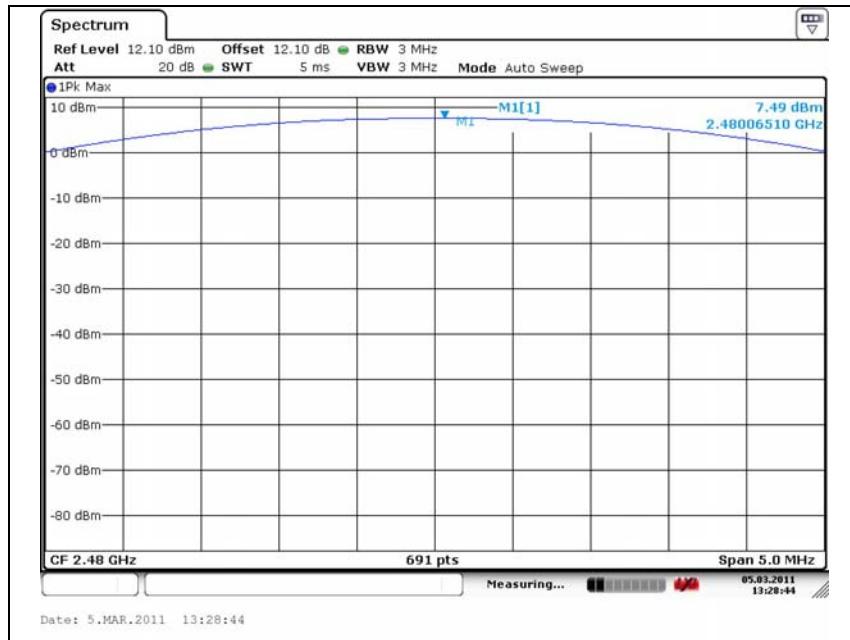
**A. Low channel**



## B. Middle channel

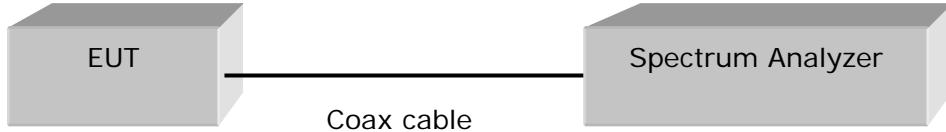


## C. High channel



## 2.1.6 Conducted spurious emission & band edge

### Test setup



### Test procedure for band edge

1. Use the following spectrum analyzer setting  
Center frequency: Lowest, middle and highest channels  
Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation.  
RBW = 100 kHz  
VBW = 100 kHz ( $\geq$  RBW)  
Sweep = auto  
Detector function = peak  
Trace = max hold
2. Allow the trace to stabilize. Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this level is greater than that at the band edge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission

### Test procedure for spurious emission

1. Use the following spectrum analyzer setting  
Center frequency: Lowest, middle and highest channels  
Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10<sup>th</sup> harmonics.  
RBW = 100 kHz  
VBW = 100 kHz ( $\geq$  RBW)  
Sweep = auto  
Detector function = peak  
Trace = max hold
2. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.

## Limit

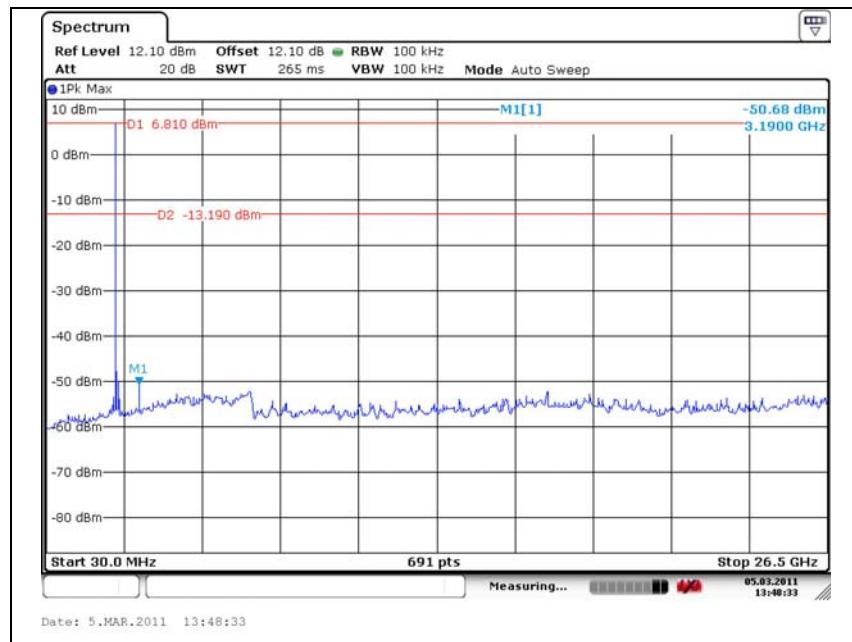
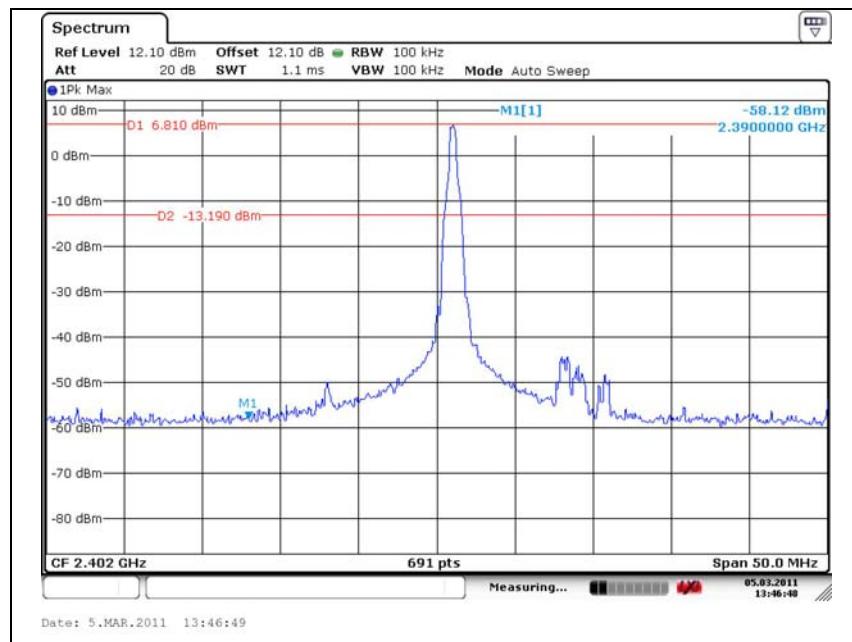
According to 15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval , as permitted under paragraph(b)(3) of this section , the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in section 15.209(a) is not required. In addition, radiated emission which in the restricted band, as define in section 15.205(a), must also comply the radiated emission limits specified in section 15.209(a) (see section 15.205(c))

According to 15.209(a), for an intentional radiator devices, the general required of field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values :

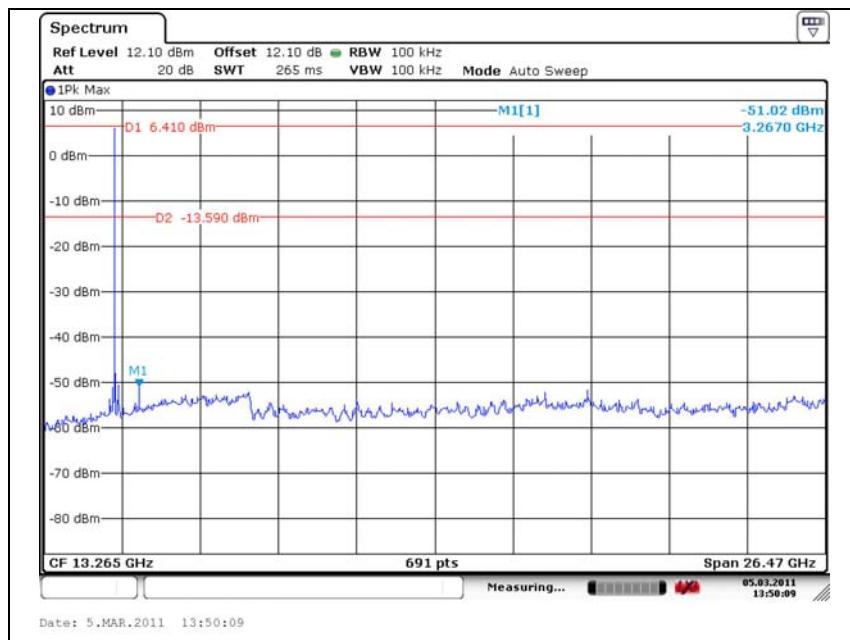
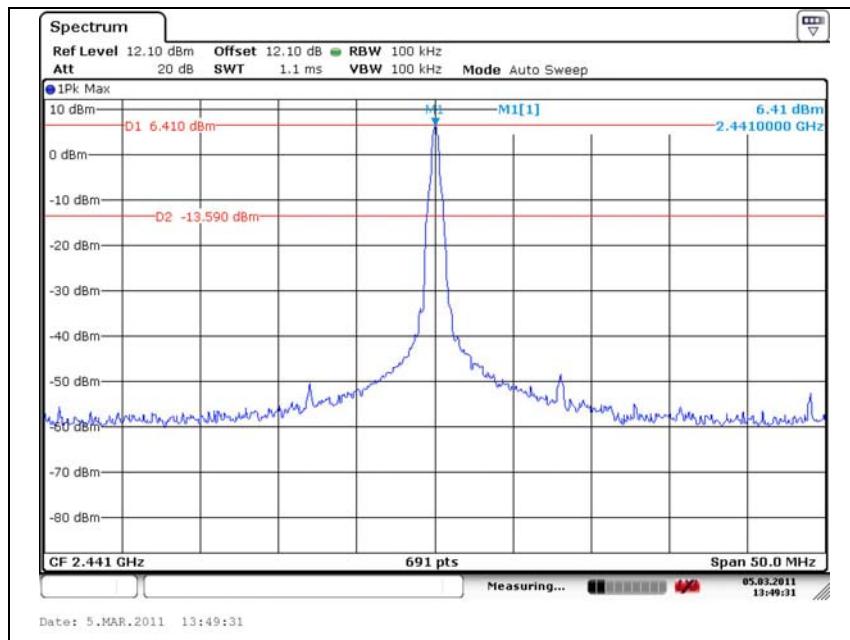
Frequency (MHz)	Distance (Meters)	Radiated (dBuV/m)	Radiated (uV/m)
30 - 88	3	40.0	100
88 – 216	3	43.5	150
216 – 960	3	46.0	200
Above 960	3	54.0	500

## Test results

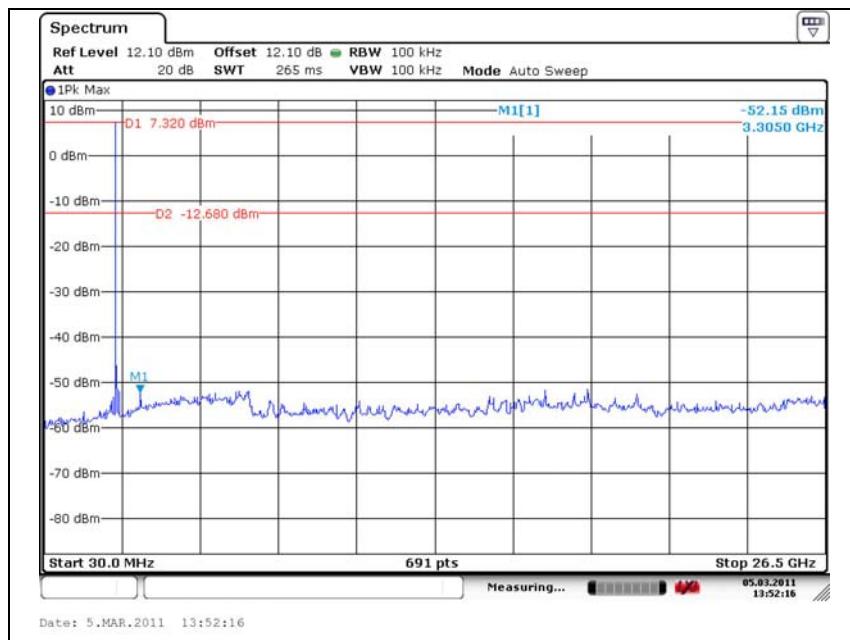
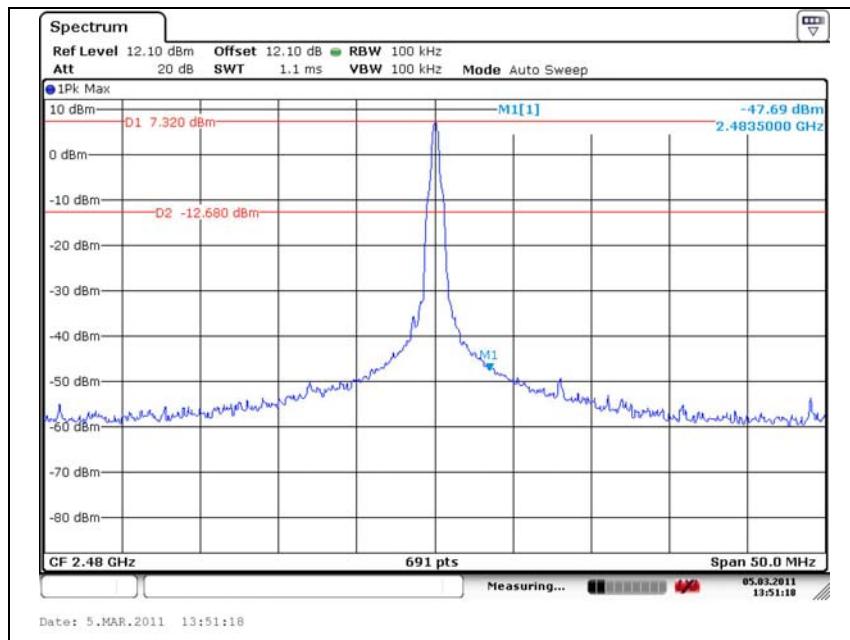
### A. Low channel



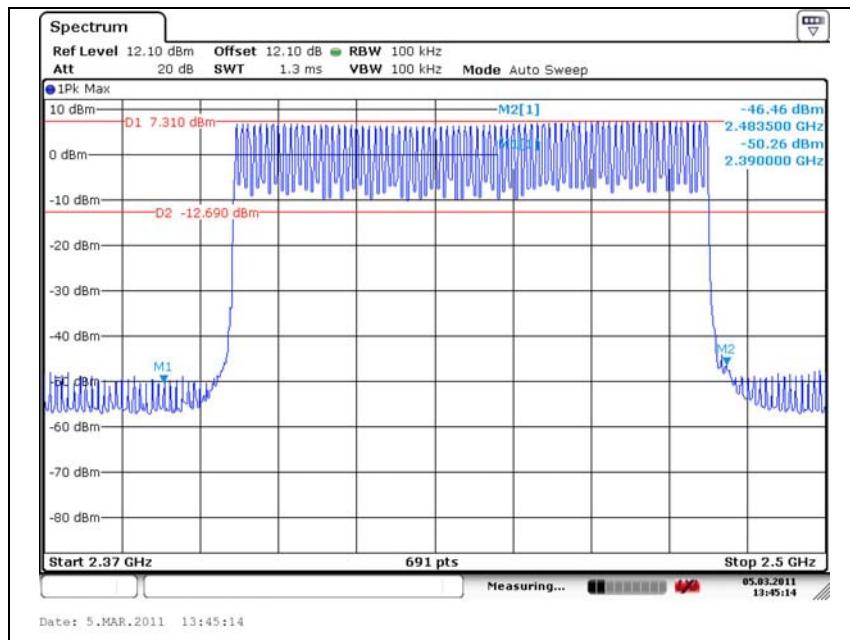
## B. Middle channel



### C. High channel



**D. Band edge (Hopping mode)**



## 2.1.7 Radiated spurious emission & band edge

### Test location

Testing was performed at a test distance of 3 meter Open Area Test Site

### Test procedures

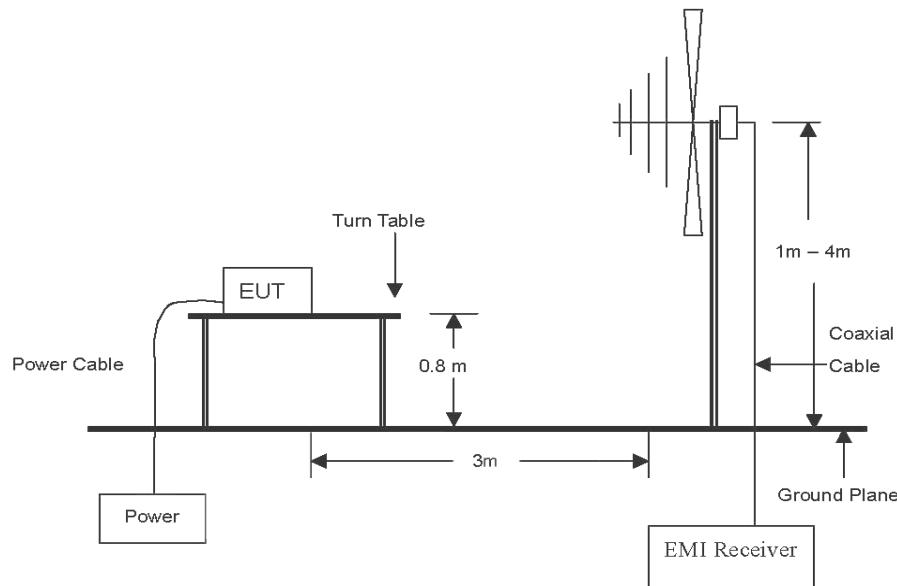
The height of the measuring antenna was varied between 1 to 4 m and the table was rotated a full revolution in order to obtain maximum values of the electric field intensity.

The measurement was made in both the vertical and horizontal polarization, and the maximum value is presented in the report.

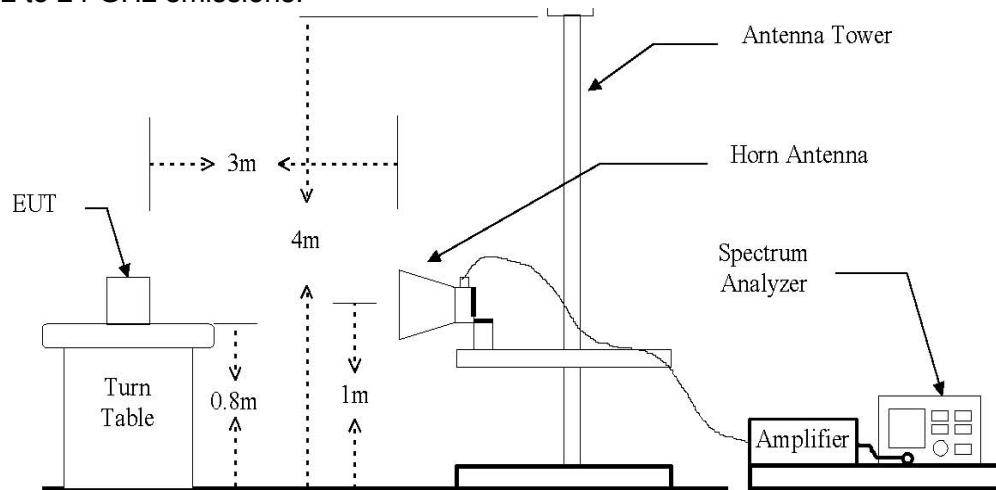
The spectrum analyzer is set to:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer 120 kHz for Peak detection (PK) or Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1 GHz.

The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to 24 GHz emissions.



### Limit

Same as clause 2.1.6

**Test results (Below 1000 MHz)**

The frequency spectrum from 30 MHz to 1000 MHz was investigated. Emission levels are not reported much lower than the limits by over 20 dB.

**A.  $\lambda/2$  Sleeve dipole antenna**

Radiated emissions		Ant.	Correction factors		Total	Limit	
Frequency (MHz)	Reading (dBuV)	Pol.	Ant. factor (dB/m)	Cable loss (dB)	Actual (dBuV/m)	Limit (dBuV/m)	Margin (dB)
31.00	19.65	V	13.25	0.25	33.15	40.00	6.85
63.00	19.63	V	12.17	0.43	32.23	40.00	7.77
66.00	22.34	V	11.59	0.44	34.37	40.00	5.63
73.60	23.50	V	10.27	0.48	34.25	40.00	5.75
180.20	20.81	H	11.66	1.00	33.47	43.50	10.03
186.10	22.44	H	10.94	1.02	34.40	43.50	9.10
208.80	23.83	H	10.05	1.10	34.98	43.50	8.52
246.00	18.50	H	11.52	1.21	31.23	46.00	14.77
270.40	18.84	H	12.10	1.29	32.23	46.00	13.77

**B. Chip antenna**

Radiated emissions		Ant.	Correction factors		Total	Limit	
Frequency (MHz)	Reading (dBuV)	Pol.	Ant. factor (dB/m)	Cable loss (dB)	Actual (dBuV/m)	Limit (dBuV/m)	Margin (dB)
30.50	17.74	V	13.24	0.24	31.22	40.00	8.78
61.40	18.99	V	12.48	0.42	31.89	40.00	8.11
64.50	21.39	V	11.88	0.43	33.70	40.00	6.30
72.20	24.72	V	10.48	0.47	35.67	40.00	4.33
75.00	20.12	V	10.06	0.48	30.66	40.00	12.84
184.50	19.80	H	11.14	1.02	31.96	43.50	11.54
192.20	21.40	H	10.34	1.04	32.78	43.50	10.72
233.60	19.60	H	11.30	1.17	32.07	46.00	13.93
258.20	18.18	H	11.73	1.25	31.16	46.00	14.84

**\* Remark**

1. All spurious emission at channels are almost the same below 1 GHz, so that High channel was chosen at representative in final test.
2. Actual = Reading + Ant. factor + Cable loss
3. Detector mode: Quasi peak
4. To get a maximum emission level from the EUT, the EUT was moved throughout the XY, XZ and YZ planes.

**Test results (Above 1000 MHz) for  $\lambda/2$  Sleeve dipole antenna**

**A. Low channel**

Radiated emissions			Ant.	Correction factors		Total	Limit	
Frequency (MHz)	Reading (dBuV)	Detector mode	Pol.	Ant. factor (dB/m)	Amp + CL (dB)	Actual (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2390.00*	44.53	P	H	27.40	-24.75	47.18	74.00	26.82
2390.00*	45.38	P	V	27.40	-24.75	48.03	74.00	25.97
4804.00*	30.49	P	H	31.85	-18.87	43.47	74.00	30.53
4804.00*	30.68	P	V	31.85	-18.87	43.66	74.00	30.34

**B. Middle channel**

Radiated emissions			Ant.	Correction factors		Total	Limit	
Frequency (MHz)	Reading (dBuV)	Detector mode	Pol.	Ant. factor (dB/m)	Amp + CL (dB)	Actual (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4882.00*	31.14	P	H	31.96	-18.67	44.43	74.00	29.57
4882.00*	31.79	P	V	31.96	-18.67	45.08	74.00	28.92

**C. High channel**

Radiated emissions			Ant.	Correction factors		Total	Limit	
Frequency (MHz)	Reading (dBuV)	Detector mode	Pol.	Ant. factor (dB/m)	Amp + CL(dB)	Actual (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.50*	44.67	P	H	27.66	-24.47	47.86	74.00	26.14
2483.50*	44.45	P	V	27.66	-24.47	47.64	74.00	26.36
4960.00*	31.04	P	H	32.07	-18.48	44.63	74.00	29.37
4960.00*	31.68	P	V	32.07	-18.48	45.27	74.00	28.73

**Test results (Above 1000 MHz) for Chip antenna**

**A. Low channel**

Radiated emissions			Ant.	Correction factors		Total	Limit	
Frequency (MHz)	Reading (dBuV)	Detector mode	Pol.	Ant. factor (dB/m)	Amp + CL (dB)	Actual (dBuV/m)	Limit (dBuV/ m)	Margin (dB)
2390.00*	44.53	P	H	27.40	-24.75	47.18	74.00	26.82
2390.00*	45.38	P	V	27.40	-24.75	48.03	74.00	25.97
4804.00*	30.49	P	H	31.85	-18.87	43.47	74.00	30.53
4804.00*	30.68	P	V	31.85	-18.87	43.66	74.00	30.34

**B. Middle channel**

Radiated emissions			Ant.	Correction factors		Total	Limit	
Frequency (MHz)	Reading (dBuV)	Detector mode	Pol.	Ant. factor (dB/m)	Amp + CL (dB)	Actual (dBuV/m)	Limit (dBuV/ m)	Margin (dB)
4882.00*	31.14	P	H	31.96	-18.67	44.43	74.00	29.57
4882.00*	31.79	P	V	31.96	-18.67	45.08	74.00	28.92

**C. High channel**

Radiated emissions			Ant.	Correction factors		Total	Limit	
Frequency (MHz)	Reading (dBuV)	Detector mode	Pol.	Ant. factor (dB/m)	Amp + CL(dB)	Actual (dBuV/m)	Limit (dBuV/ m)	Margin (dB)
2483.50*	44.67	P	H	27.66	-24.47	47.86	74.00	26.14
2483.50*	44.45	P	V	27.66	-24.47	47.64	74.00	26.36
4960.00*	31.04	P	H	32.07	-18.48	44.63	74.00	29.37
4960.00*	31.68	P	V	32.07	-18.48	45.27	74.00	28.73

**\* Remark**

1. “\*” means the restricted band.
2. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using peak/average detector mode.
4. Average test would be performed if the peak result were greater than the average limit.
5. Actual = Reading + Ant. factor + Amp + CL (Cable loss)
6. To get a maximum emission level from the EUT, the EUT was moved throughout the XY, XZ and YZ planes.

## 2.1.8 RF exposure

### Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

According to FCC 1.1310 : The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

Limits for maximum permissible exposure (MPE)

Frequency range (MHz)	Electric field strength(V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Average time
(A) Limits for Occupational / Control exposures				
300 – 1500	--	--	F/300	6
1500 – 100000	--	--	5	6
(B) Limits for General Population / Uncontrol Exposures				
300 – 1500	--	--	F/1 500	6
1500 – 100000	--	--	1	30

Friis transmission formula

$$P_d = (P_{out} \times G) / (4 \times \pi \times R^2)$$

Where  $P_d$  = power density in  $\text{mW/cm}^2$

$P_{out}$  = output power to antenna in mW

$G$  = gain of antenna in linear scale

$\pi$  = 3.1416

$R$  = distance between observation point and center of the radiator in cm

$P_d$  the limit of MPE,  $1 \text{ mW/cm}^2$ . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

Output power into antenna & RF exposure evaluation distance for  $\lambda/2$  Sleeve dipole antenna

Frequency (MHz)	Output average power to antenna (dBm)	Antenna gain (dBi)	Power density at 20 cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2402	3.30	1.46	0.00060	1
2441	3.55		0.00063	
2480	4.63		0.00081	

Output power into antenna & RF exposure evaluation distance for Chip antenna

Frequency (MHz)	Output average power to antenna (dBm)	Antenna gain (dBi)	Power density at 20 cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2402	3.30	2	0.00067	1
2441	3.55		0.00071	
2480	4.63		0.00092	

**\* Remark**

The power density Pd (5th column) at a distance of 20 cm calculated from the friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.

## 2.1.9 AC conducted emissions

### Frequency range of measurement

150 kHz to 30 MHz

### Instrument settings

IF Band Width: 9 kHz

### Test procedures

The EUT was placed on a non-metallic table 0.8m above the metallic, grounded floor and 0.4m from the reference ground plane wall. The distance to other metallic surfaces was at least 0.8m. Amplitude measurements were performed with a quasi-peak detector and an average detector.

### Limit

15.207(a) for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50uH/50 ohm line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall be on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted limit (dBuV/m)	
	Quasi-peak	Average
0.15 – 0.50	66 - 56*	56 - 46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

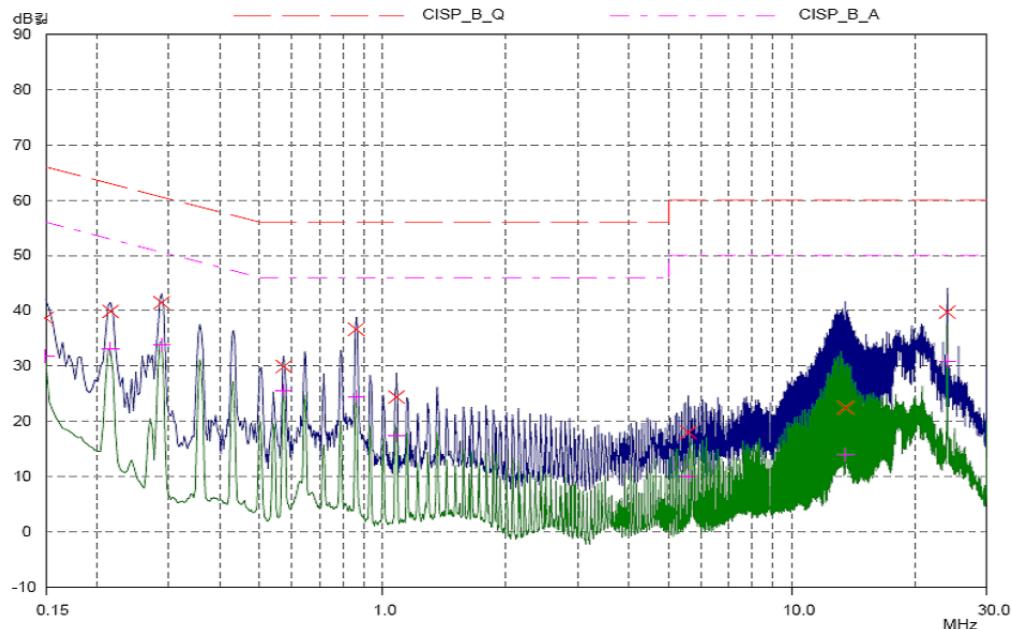
### \* Remark

Decreases with the logarithm of the frequency.

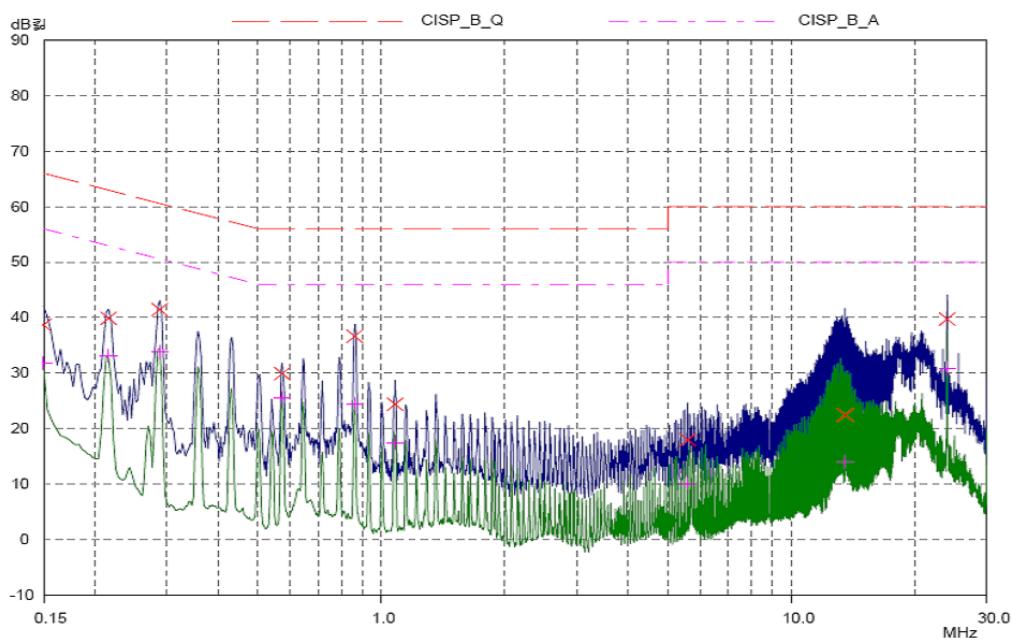
**Test results**

Frequency (MHz)	Correction		Phase Hot/ Neutral	Quasi peak			Average		
	LISN	Cable Loss		Reading	Result	Limit	Reading	Result	Limit
0.150	0.08	0.10	H	38.65	38.83	66	31.73	31.91	56
0.150	0.12	0.10	N	39.53	39.75	66	34.18	34.40	56
0.213	0.09	0.16	N	40.06	40.31	63	37.60	37.85	53
0.216	0.05	0.16	H	39.86	40.07	63	33.09	33.30	53
0.288	0.06	0.11	H	41.45	41.61	61	33.80	33.96	51
0.288	0.07	0.11	N	37.14	37.32	61	29.25	29.43	51
0.573	0.05	0.10	H	29.94	30.09	56	25.47	25.62	46
0.861	0.05	0.02	N	38.38	38.45	56	23.81	23.88	46
0.861	0.05	0.02	H	36.63	36.70	56	24.40	24.47	46
0.936	0.05	0.06	N	28.39	28.50	56	15.76	15.87	46
1.080	0.06	0.07	H	24.37	24.50	56	17.38	17.51	46
2.796	0.08	0.09	N	15.93	16.10	56	9.46	9.63	46
5.583	0.13	0.05	H	18.04	18.22	60	9.98	10.16	50
13.089	0.44	0.03	N	39.81	40.28	60	32.94	33.41	50
13.530	0.45	0.07	H	22.43	22.95	60	13.97	14.49	50
18.264	0.75	0.20	N	30.81	31.76	60	23.51	24.46	50
23.943	1.13	0.10	N	41.73	42.96	60	36.92	38.15	50
23.979	1.01	0.10	H	39.74	40.85	60	30.79	31.90	50

**[Hot]**



**[Neutral]**



**Appendix A – Test equipment used for test**

Equipment	Manufacturer	Model	Calibration due.
Spectrum Analyzer	R&S	FSV30	2012-01-07
Vector Signal Generator	R&S	SMBV2100A	2012-01-07
Attenuator	HP	8495B	2011-05-06
Attenuator	HP	8494B	2011-05-06
Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168-385	2012-03-05
Horn Antenna	Schwarzbeck	BBHA9120D	2012-10-13
High Pass Filter	Wainwright Instrument	WHJS3000-10TT	2012-01-07
Preamplifier	HP	8449B	2011-07-27
EMI Test Receiver	R&S	ESHS10	2011-06-01
LISN	R&S	ENV216	2012-02-16

## Test setup photo and configuration

### Radiated field emissions



**AC conducted emission**

