

FCC Test Report (TR-1101-038-01)

Applicant : Beam Communications Pty Ltd.
Address : 5/8 Anzed court Mulgrave, Victoria, Australia 3170
Manufacturer : Season Components Co., Ltd.
Address : Jun Da Lu, DongKeng, Dongguan, Guangdong, China
Product Name : Oceana 800, Terra 800
Trademark : None
Model(s) : OC800, TR800
Standard(s) : FCC Part 25: 2010
Test Result : Pass
Date of Test : May 03, 2011 to Jan 08, 2013
Report issued Dated : Jan 09, 2013

Note:

This test report covers satellite communication test mode only and refer to additional test report for Bluetooth measurements (report no.:1202-067-01).

The report shall not be reproduced except in full, without the written approval of the TDK EMC Center.

The results in this report apply only to the sample(s) tested. The production units are required to conform to the initial sample as received when the units are placed in the market.

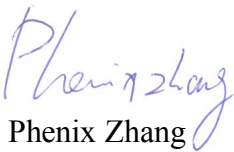

Responsible Engineer	:	 Phenix Zhang	Approved by	:	 CHAN king-chui
Date	:	2013.01.09	Date	:	2013.01.09

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1. Description of the Test Site

1.1 Test Site Location:

Laboratory : TDK South China EMC Center
SAE Technologies Development (Dongguan) Co.,
Ltd. Changan Branch
Address : Zhenan Hi-tech Industrial Park, Dongguan City,
Guangdong Province, China
Phone no. : (86)-769-8564-4678
Fax no. : (86)-769-8564-4499
Email : emc@cn.tdk.com

1.2 Site Registration

VCCI (November, 2011) : Reg. No. R-3733, C-4184
FCC site registration (August, 2011) : Reg. No. 732901
IC registration : Reg. No. 7993
CNAS(August, 2010) : Reg. No. L4677

1.3 Test Scope

EMC and RF testing according to national / international standards

2. Description of the Tested Samples

2.1 Customer Information

Customer : Beam Communications Pty Ltd.
Address : 5/8 Anzed court Mulgrave, Victoria, Australia 3170
Phone no. : NIL
Fax no. : NIL

2.2 Identification of EUT

Trademark : None
Model(s) No. : OC800
Serial No. : None

2.3 Spec of EUT (for Satellite Communication)

Description of Antenna1 : Type: active antenna,
Model: AT1595-83
Receive Amplifier : 26 dB max
Transmit Amplifier : 11 dB max
Gain : 6.0 dBi max
Max. RF Input Power: 30.0 dBm
Max. RF Output Power: 37.5 dBm
FCC ID: YP9AT1595, IC: 9218A-AT1595

Description of Antenna2 : Type: passive antenna,
Model: AT1595-86
Gain : 11dBi max
Manufacturer: AeroAntenna Technology Inc

Power Supply : 15V DC, 4A

Description of adaptor : Trademark: UNIFIVE
Model: UEC360-1540
Input: AC 100-240V, 50/60Hz, 1.5A
Output: DC 15V 4A

Operation Frequency : 1626.5 – 1660.5 MHz transmit
1525.0 – 1559.0 MHz receive

Nominal Bandwidth : 70 kHz

Number of Channels : 169

ITU Emission Designator : 1G64 G2W
Type of Modulation : TX: GMSK; RX: OQPSK
Nominal Output Power : 30dBm
Type of Connector : TNC (GMR 2+) and SMA (GPS)

2.4 Test Standards List

FCC Part 25 (2010)
SATELLITE COMMUNICATIONS

3. Test Specifications

3.1 Standard(s) Used

FCC Rules	Description Of Test	Result
25.204(a)	Power Limit	Pass
2.1049	99% Occupied Bandwidth	Pass
25.202(d)	Frequency Stability	Pass
25.202(f)&25.213	Emission Masks	Pass
25.216(h)	Spurious Emissions(Conducted)	Pass
25.216(i)	Spurious Emissions(Conducted)	Pass
25.202(f)&25.213	Spurious Emissions(Conducted)	Pass
25.202(f)&25.213	Spurious Emission(Radiated)	Pass
15.207	Conducted Emission	Pass

3.2 Test Mode

The EUT has been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting mode is programmed.

Channel 0(1626.5MHz), Channel 85(1643.5MHz) and Channel 169(1660.5MHz) are chosen for the final testing.

3.3 Deviations from the Test Specification

N/A

4. Test Result

4.1 Power Limit

4.1.1 Standard Applicable

Section 25.204(a):

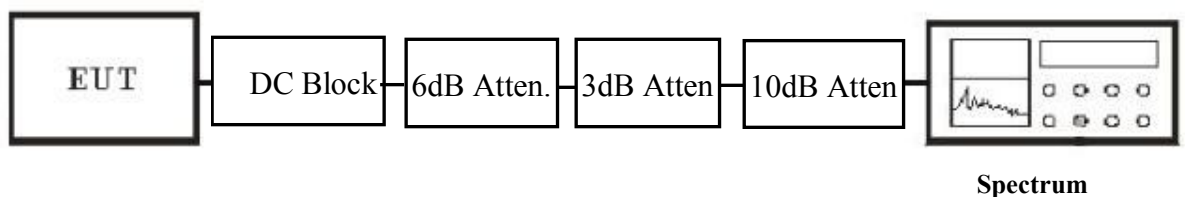
In bands shared coequally with terrestrial radio communication services, the equivalent isotropically radiated power transmitted in any direction towards the horizon by an earth station, other than an ESV, operating in frequency bands between 1 and 15 GHz, shall not exceed the following limits except as provided for in paragraph (c) of this section:

+40 dBW in any 4 kHz band for $\Theta \leq 0^\circ$

+40 + 3 Θ dBW in any 4 kHz band for $0^\circ < \Theta \leq 5^\circ$

where Θ is the angle of elevation of the horizon viewed from the center of radiation of the antenna of the earth station and measured in degrees as positive above the horizontal plane and negative below it.

4.1.2 Block diagram of test setup



4.1.3 Measurement method

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in above figure without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Use the following spectrum analyzer settings:
Measurement mode: Peak Detector
Center Frequency = 1626.5MHz, 1643.5MHz or 1660.5MHz;
RBW=VBW=1MHz
Span = 10MHz
Sweep = auto
4. Hold on 10s, find out the max value on the screen of Spectrum.
5. Repeat above procedures until all frequencies measured were complete.

4.1.4. Result

Temperature (°C) : 22~23	EUT: Oceana 800
Humidity (%RH) : 50~54	M/N: OC800
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode
Test date: May 18, 2011	Test engineer: Phenix

For active antenna:

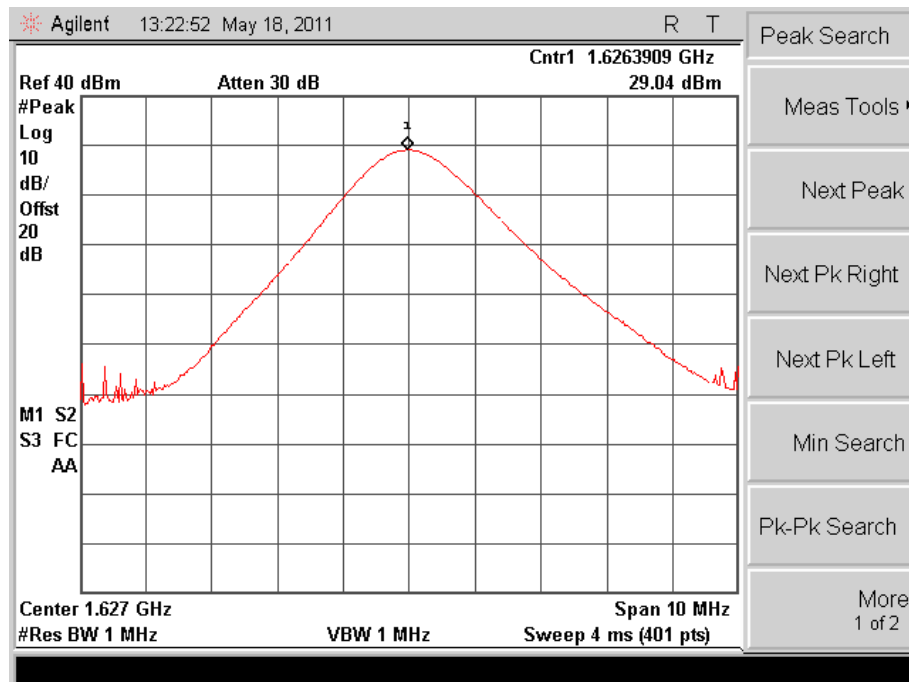
Channel No.	Frequency (MHz)	Output Power (dBm)	Max. conducted output power of active antenna (dBm)	Peak EIRP with Antenna Gain = 6dBi (dBm)	EIRP Limit Power (dBm)	Margin (dB)
LOW (CH 0)	1626.5	29.04	37.5	43.5	70	26.5
MID (CH 85)	1643.5	28.74	37.5	43.5	70	26.5
HIG (CH 169)	1660.5	28.69	37.5	43.5	70	26.5

For passive antenna:

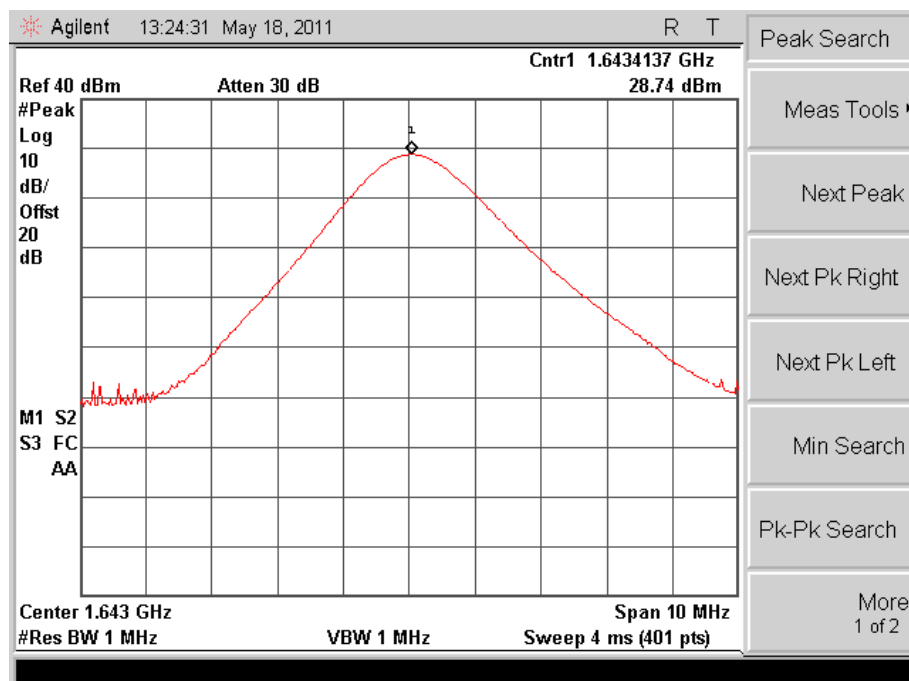
Channel No.	Frequency (MHz)	Output Power (dBm)	Peak EIRP with passive antenna Gain = 11dBi (dBm)	EIRP Limit Power (dBm)	Margin (dB)
LOW (CH 0)	1626.5	29.04	40.04	70	29.96
MID (CH 85)	1643.5	28.74	39.74	70	30.26
HIG (CH 169)	1660.5	28.69	38.69	70	31.31

Test Plots:

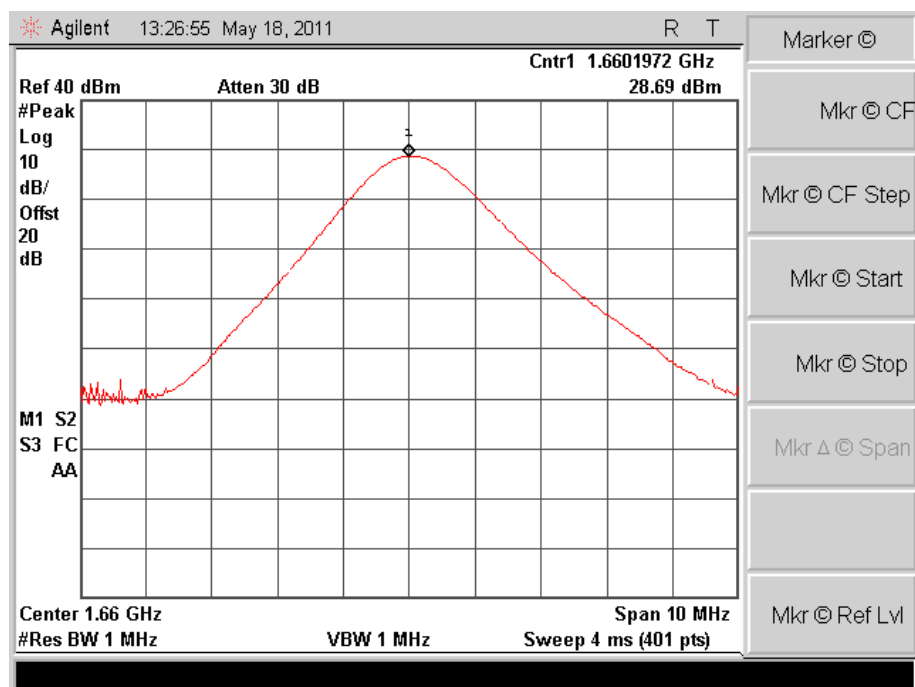
CH0:



CH85:



CH169:

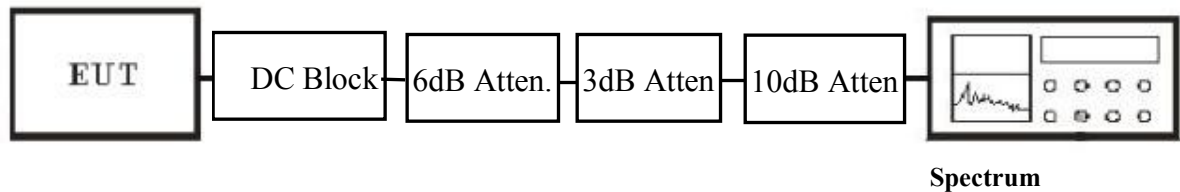


4.2 99% Occupied Bandwidth

4.2.1 Applicable Standard

Not Specified

4.2.2 Block diagram of test setup



4.2.3 Measurement method

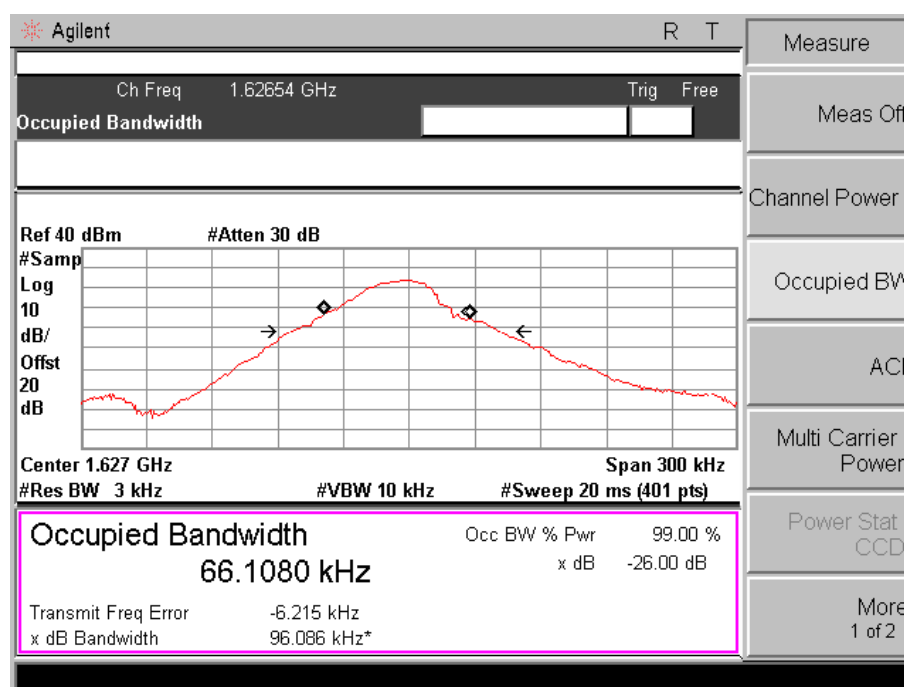
1. The transmitter output was connected to the spectrum analyzer through a shielded cable.
2. Set the spectrum analyzer as RBW=3 kHz, VBW=10 kHz, Span=300 kHz, Sweep=auto.
3. Set Center Frequency as the lowest channel.
4. Put on the Occupied Bandwidth function on the spectrum analyzer.
5. Repeat above 1-4 points for the middle and highest channel of the EUT.

4.2.4. Result

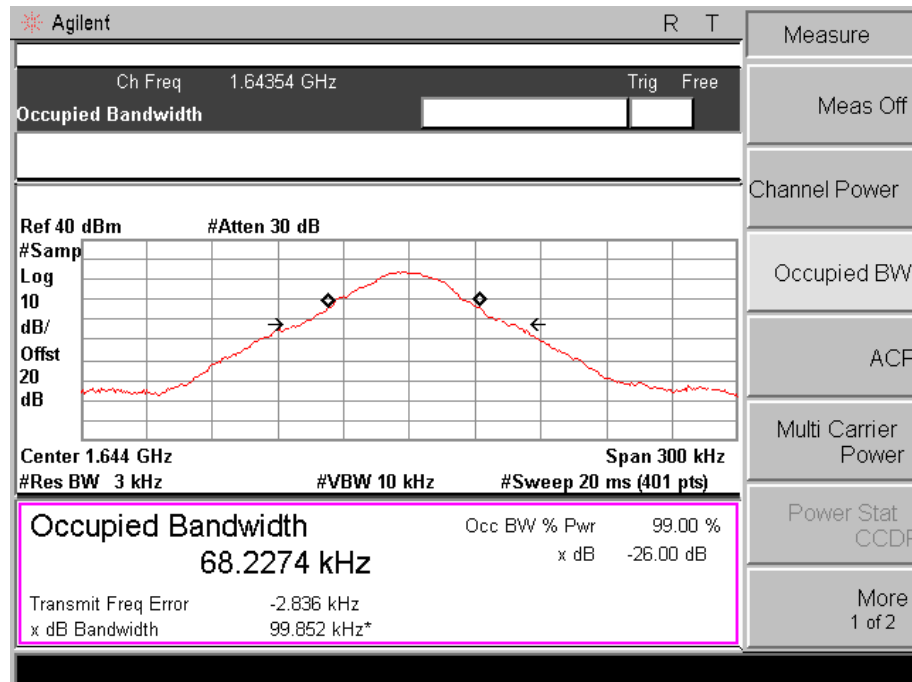
Temperature (°C) : 22~23	EUT: Oceana 800
Humidity (%RH) : 50~54	M/N: OC800
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode
Test date: Jan 09, 2013	Test engineer: Phenix

Channel No.	Frequency (MHz)	99% Occupied Bandwidth (kHz)
0	1626.5	66.1
85	1643.5	68.2
169	1660.5	69.5

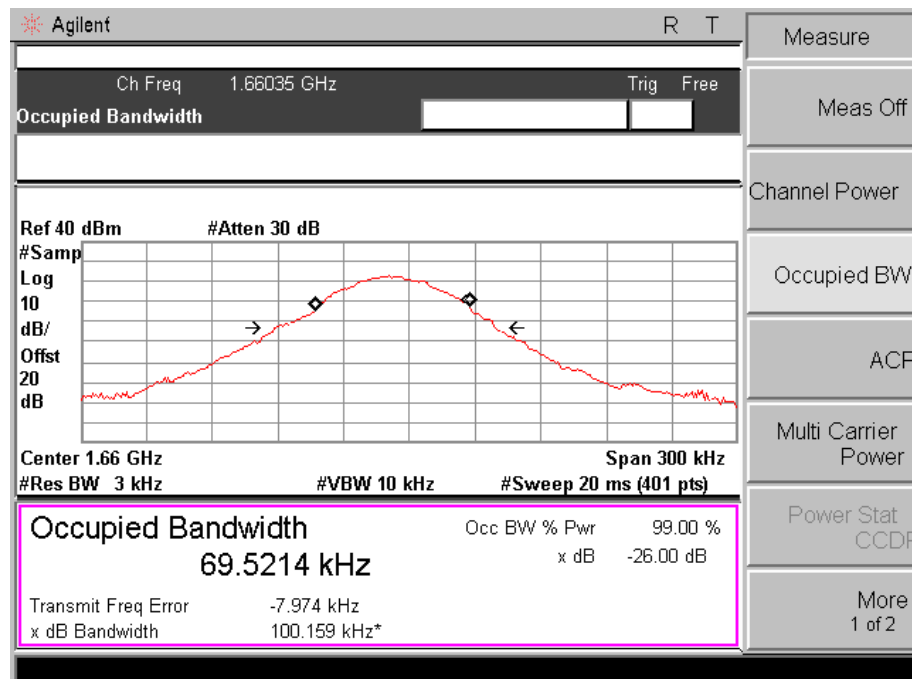
Test Plots: Channel LOW:



Channel MID:



Channel HIG:



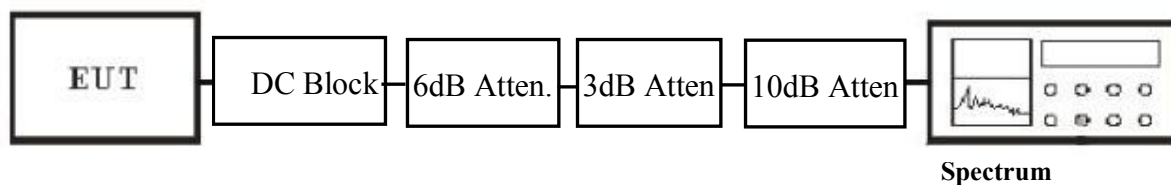
4.3 Frequency Stability

4.3.1 Applicable Standard

Section 25.202(d):

Frequency tolerance, Earth stations. The carrier frequency of each earth station transmitter authorized in these services shall be maintained within 0.001 percent of the reference frequency.

4.3.2 Block diagram of test setup



4.3.3 Measurement method

- 1, Set the environmental temperature chamber to temperature of (-30°C to +50°C) wait the temperature of the chamber to stabilize.
- 2, Set EUT on the TX mode of 1626.5MHz, 1643.5MHz, 1660.5MHz separate, and wait 10 minutes.
- 3, Set spectrum to RBW = 3kHz, Span = 100kHz
- 4, Read value of max. from -30°C to 50°C separate.

4.3.4. Result

Temperature (°C) : 22~23	EUT: Oceana 800
Humidity (%RH) : 50~54	M/N: OC800
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode
Test date: May 17, 2011	Test engineer: Phenix

Frequency Deviation:

Channel (MHz)	Voltage	Temperature								
		-30℃	-20℃	-10℃	0℃	10℃	20℃	30℃	40℃	50℃
CH0 (1626.5)	102V 60Hz	-1KHz	-1KHz	-1KHz	-1KHz	-1KHz	0Hz	0Hz	0.5KHz	0Hz
	120V 60Hz	-1KHz	-1KHz	-0.5KHz	-0.5KHz	0Hz	0Hz	0Hz	0Hz	0Hz
	138V 60Hz	-0.5KHz	-0.5KHz	-1KHz	-0.5KHz	0Hz	0.5KHz	0.5KHz	0.5KHz	0Hz
CH85 (1643.5)	102V 60Hz	-0.35KHz	-0.35KHz	-0.35KHz	0.35KHz	0Hz	0Hz	0.5KHz	0.5KHz	0.5KHz
	120V 60Hz	-0.35KHz	-0.35KHz	-0.35KHz	-0.35KHz	0Hz	0Hz	0.5KHz	1KHz	1KHz
	138V 60Hz	-0.85KHz	-0.35KHz	-0.35KHz	-0.35KHz	0Hz	0.5KHz	0.5KHz	0.5KHz	1KHz
CH169 (1660.5)	102V 60Hz	-1KHz	-1.5KHz	-1KHz	-1KHz	-1KHz	-1KHz	0Hz	0Hz	0Hz
	120V 60Hz	-1KHz	-1KHz	-1KHz	-1KHz	-1KHz	0Hz	0Hz	0Hz	0Hz
	138V 60Hz	-1KHz	-1KHz	-1KHz	-1KHz	-1KHz	-0.5KHz	0Hz	0.5KHz	0.5KHz

Maximum frequency drift	Limit	Result
-1.5KHz@1660.5MHz	$1660.5\text{MHz} \times 0.001\% =$ $\pm 16.605\text{KHz}$	PASS

4.4 Emission Masks

4.4.1 Applicable Standard

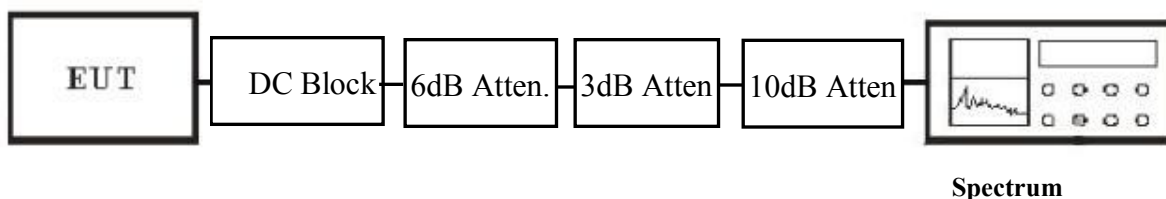
Section 25.202(f):

Emission limitations

The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

- (1) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: 25 dB;
- (2) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: 35 dB;
- (3) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: An amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts;
- (4) In any event, when an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in paragraphs (f) (1), (2) and (3) of this section.

4.4.2 Block diagram of test setup



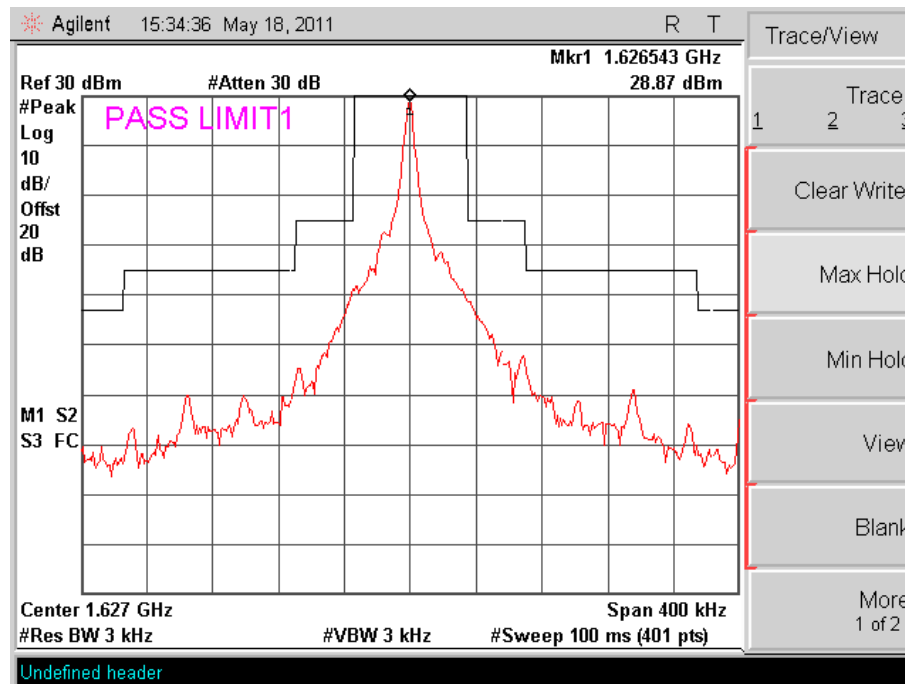
4.4.3 Measurement method

1. The transmitter set to the lowest channel.
2. The transmitter output was connected to the spectrum analyzer via a cable, DC block and 19dB attenuators. The all losses are used as the offset of the spectrum analyzer. A correction factor of 1.25dB was added to the reference level offset to account for the RBW being 3kHz not 4kHz as defined in 25.202(f).
3. Set RBW=3KHz, VBW=3KHz, span = 0.4MHz, Center= channel frequency. The detector set to peak and max hold this trace.
4. Set the Mask limit, and turn on it. Capture the plot.
5. The transmitter set to the middle and highest channel and repeat 2~4.

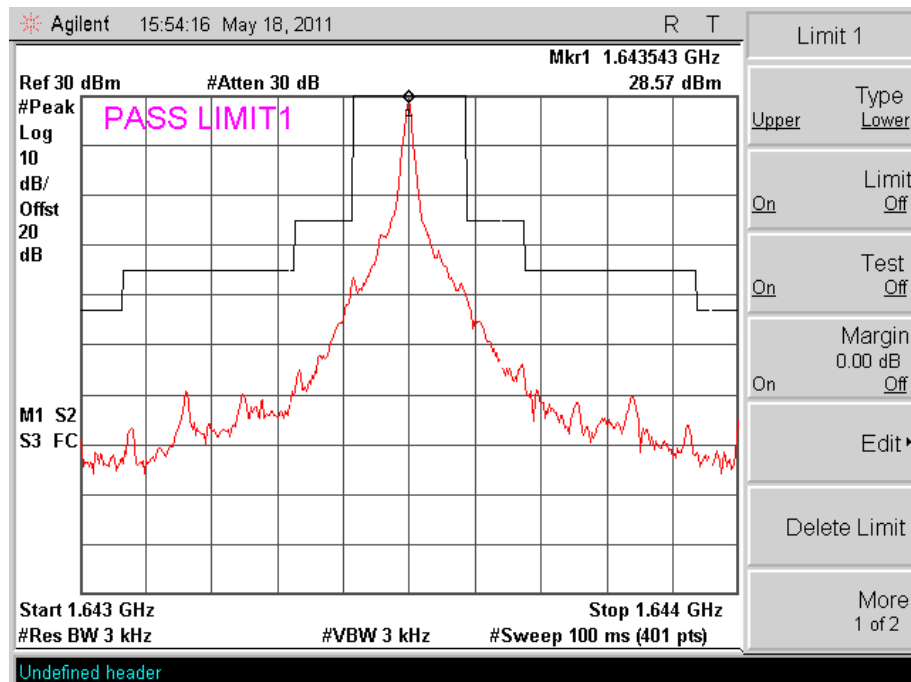
4.4.4. Result

Temperature (°C) : 22~23	EUT: Oceana 800
Humidity (%RH) : 50~54	M/N: OC800
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode
Test date: May 18, 2011	Test engineer: Phenix

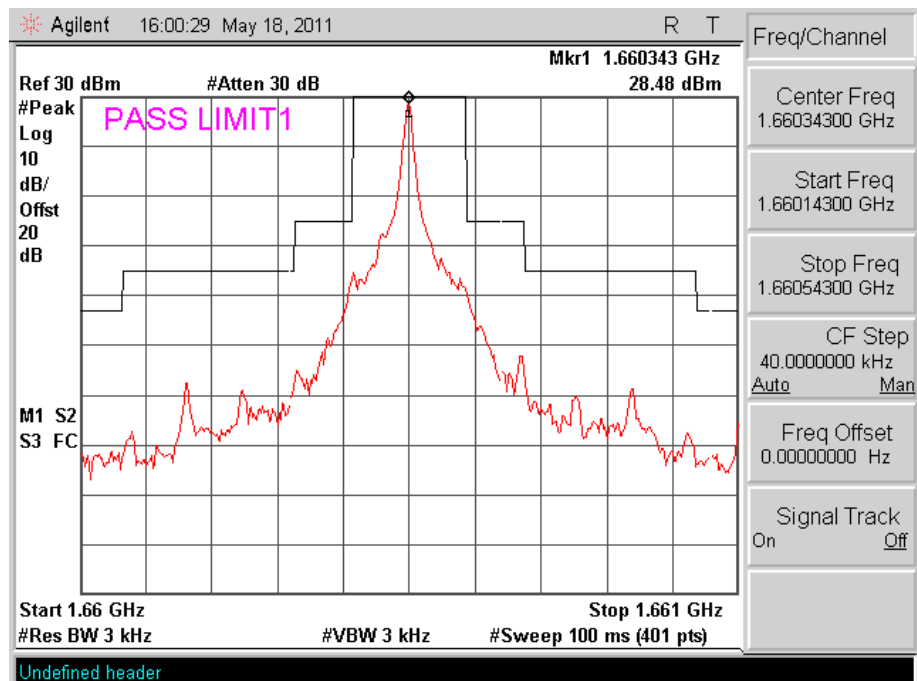
Plot:
Channel LOW:



Channel MID:



Channel HIG:

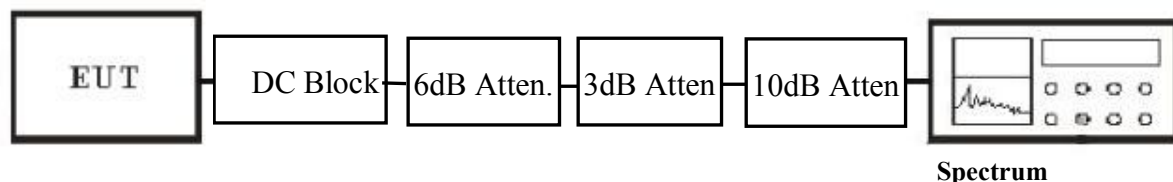


4.5 Spurious Emissions (Conducted)

4.5.1 Applicable Standard

Section 25.216(h): Mobile earth stations manufactured more than six months after FEDERAL REGISTER publication of the rule changes adopted in FCC 03–283 with assigned uplink frequencies in the 1626.5–1660.5 MHz band shall suppress the power density of emissions in the 1605–1610 MHz band-segment to an extent determined by linear interpolation from -70 dBW/MHz at 1605 MHz to -46 dBW/MHz at 1610 MHz, averaged over any 2 millisecond active transmission interval. The e.i.r.p of discrete emissions of less than 700 Hz bandwidth from such stations shall not exceed a level determined by linear interpolation from -80 dBW at 1605 MHz to -56 dBW at 1610 MHz, averaged over any 2 millisecond active transmission interval.

4.5.2 Block diagram of test setup



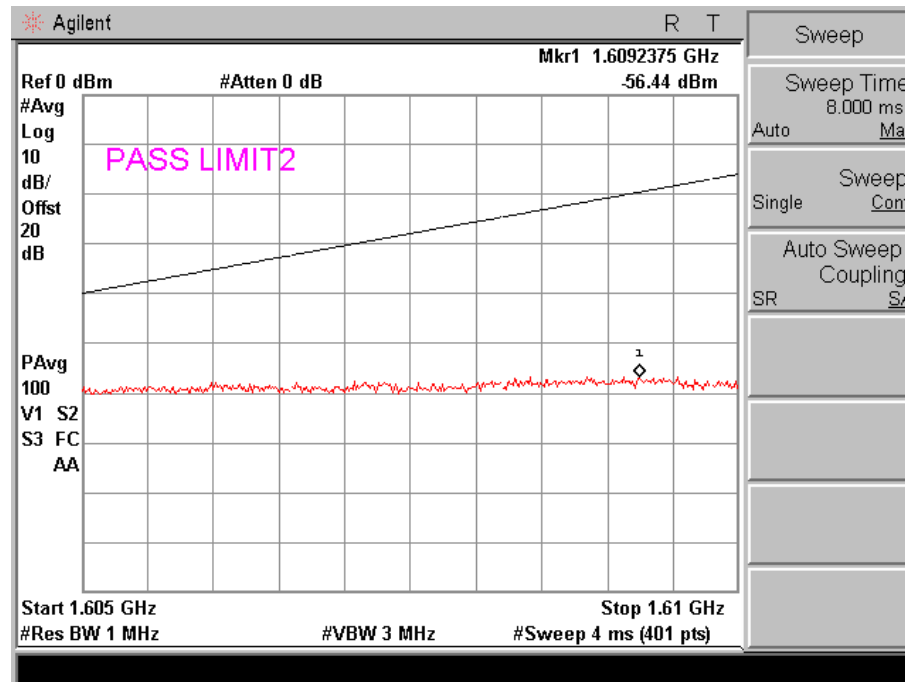
4.5.3 Measurement method

1. The transmitter output was connected to the spectrum analyzer via a shielded cable and 19dB attenuators and DC block.
2. Set the spectrum analyzer as RBW=1MHz, VBW=3MHz, Sweep=4ms.
3. Set Detector to RMS, Trace to average.
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The plot of result is show on the screen of spectrum analyzer.
5. Repeat above 1-4 points for the middle and highest channel of the EUT.

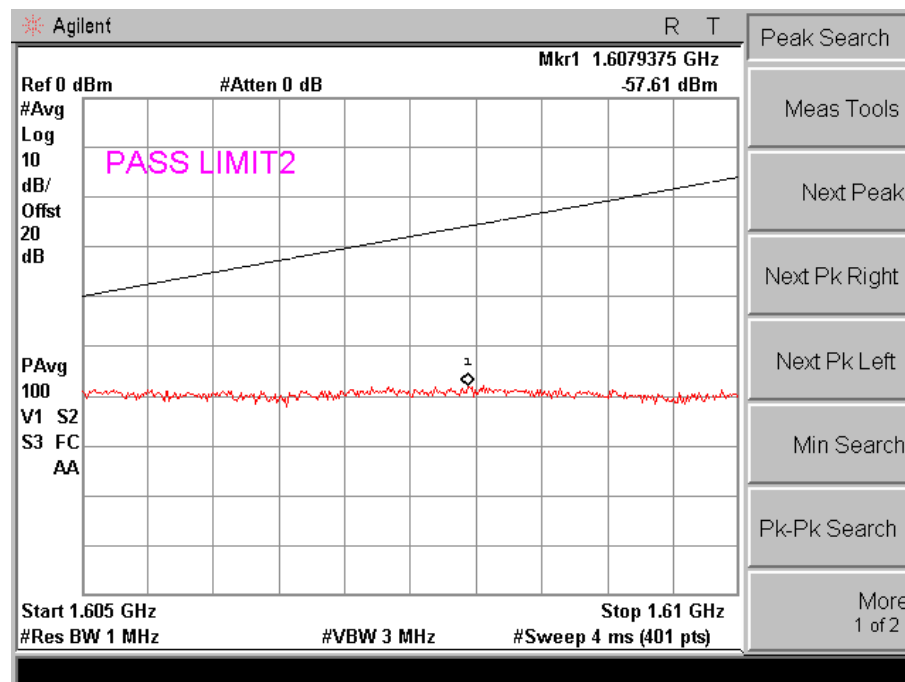
4.5.4. Result

Temperature (°C) : 22~23	EUT: Oceana 800
Humidity (%RH) : 50~54	M/N: OC800
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode
Test date: Dec 12, 2012	Test engineer: Phenix

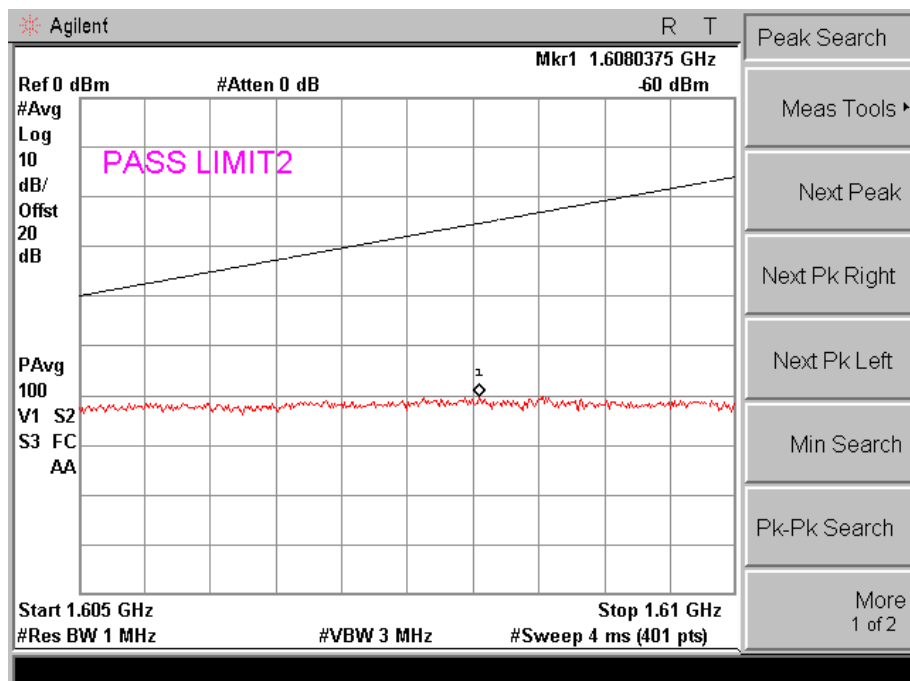
CH 0:



CH 85:



CH 169:

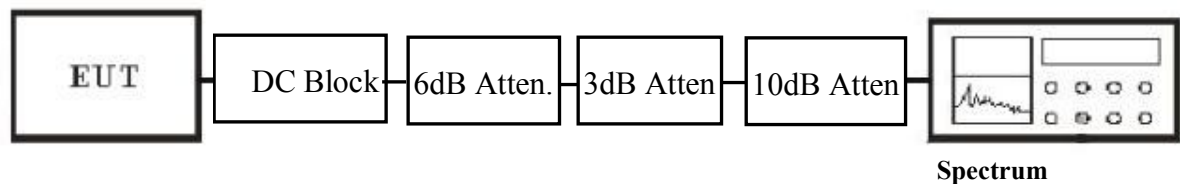


4.6 Spurious Emissions (Conducted)

4.6.1 Applicable Standard

Section 25.216(i): The e.i.r.p density of carrier-off state emissions from mobile earth stations manufactured more than six months after FEDERAL REGISTER publication of the rule changes adopted in FCC 03–283 with assigned uplink frequencies between 1 and 3 GHz shall not exceed -80 dBW/MHz in the 1559–1610 MHz band averaged over any two millisecond interval.

4.6.2 Block diagram of test setup



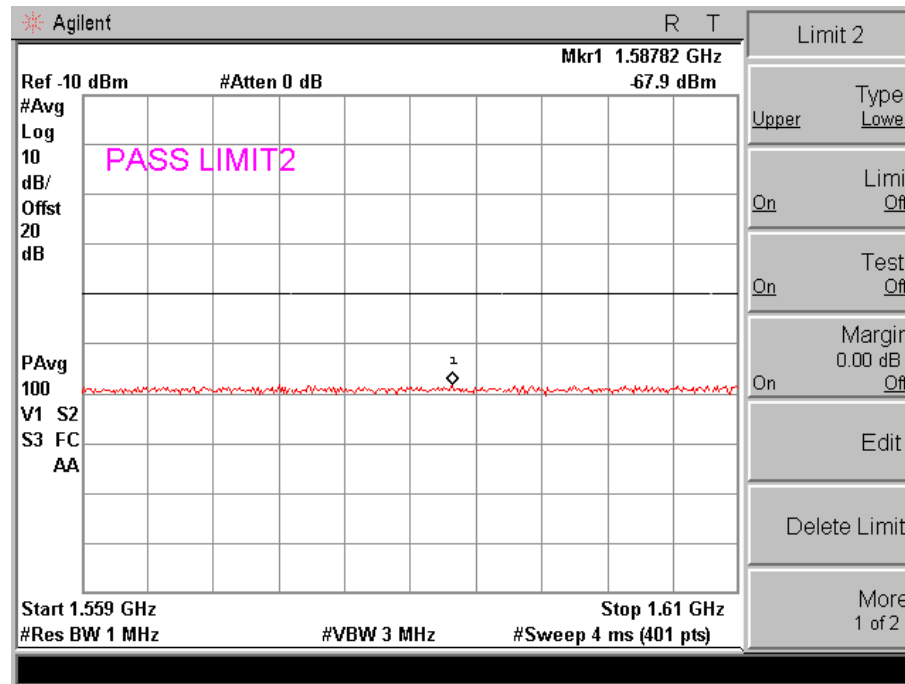
4.6.3 Measurement method

1. Set EUT on carrier-off state and connect antenna terminal with the spectrum analyzer via a shielded cable and 19dB attenuators and DC block.
2. Set the spectrum analyzer as RBW=1MHz, VBW=3MHz, Sweep=4ms.
3. Set Detector to RMS, Trace to average.
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The plot of result is show on the screen of spectrum analyzer.

4.6.4. Result

Temperature (°C) : 22~23	EUT: Oceana 800
Humidity (%RH) : 50~54	M/N: OC800
Barometric Pressure (mbar) : 950~1000	Operation Condition: Carrier-off
Test date: Dec 12, 2012	Test engineer: Phenix

Plot:



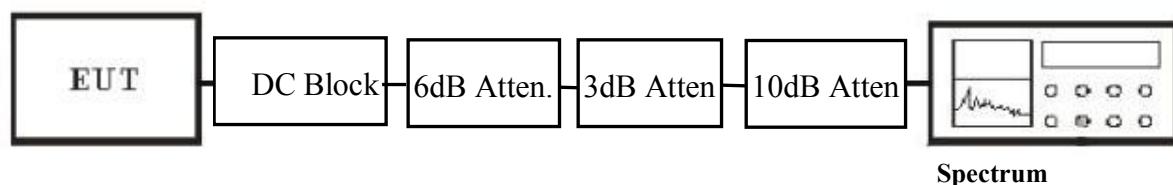
4.7 Spurious Emissions (Conducted)

4.7.1 Applicable Standard

Section 25.202(f): at least $43+10\log(P)$ or -13dBm

In any event, when an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in paragraphs (f) (1), (2) and (3) of this section.

4.7.2 Block diagram of test setup



4.7.3 Measurement method

1. The transmitter output was connected to the spectrum analyzer via a shielded cable and 19dB attenuators and DC block.
2. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Sweep=auto.
3. Set Detector to Peak, Trace to Max Hold.
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The plot of result is show on the screen of spectrum analyzer.
5. Repeat above 1-4 points for the middle and highest channel of the EUT.

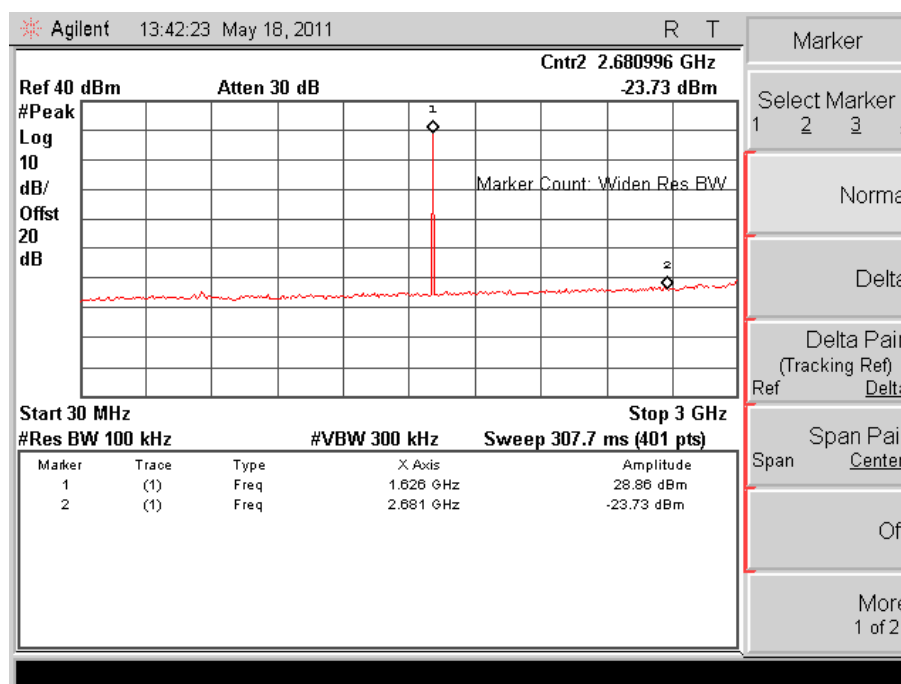
4.7.4. Result

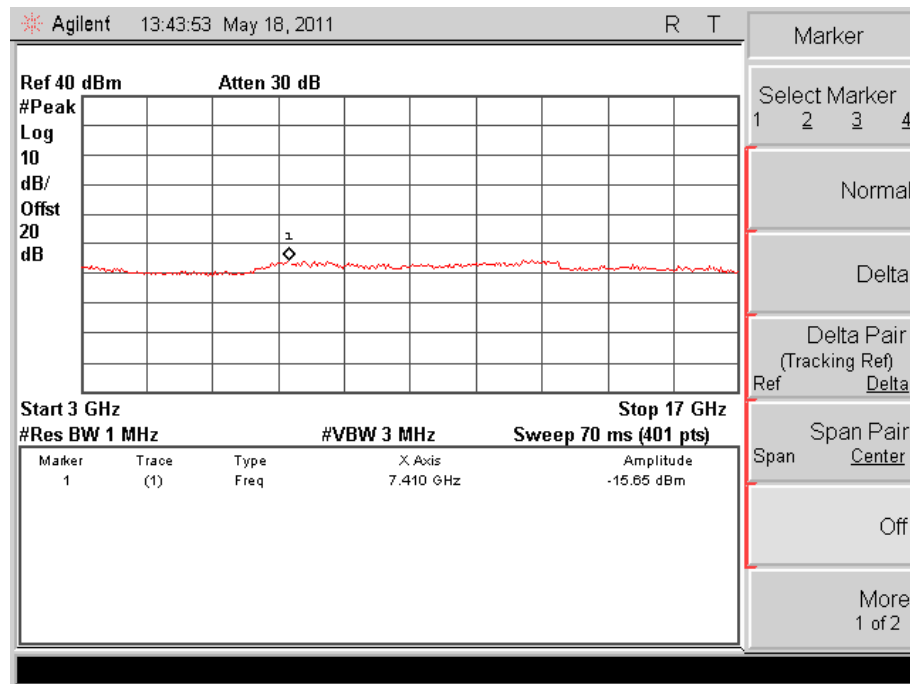
Temperature (°C) : 22~23	EUT: Oceana 800
Humidity (%RH) : 50~54	M/N: OC800
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode
Test date: May 18, 2011	Test engineer: Phenix

CH 0:

Frequency (MHz)	Reading Value (dBm)	Factor of attenuators and DC block (dB)	Result (dBm)	Limits (dBm)	Margin (dB)
2681	-43.7	20	-23.7	-13	10.7
7410	-35.6	20	-15.6	-13	2.6

Plots:

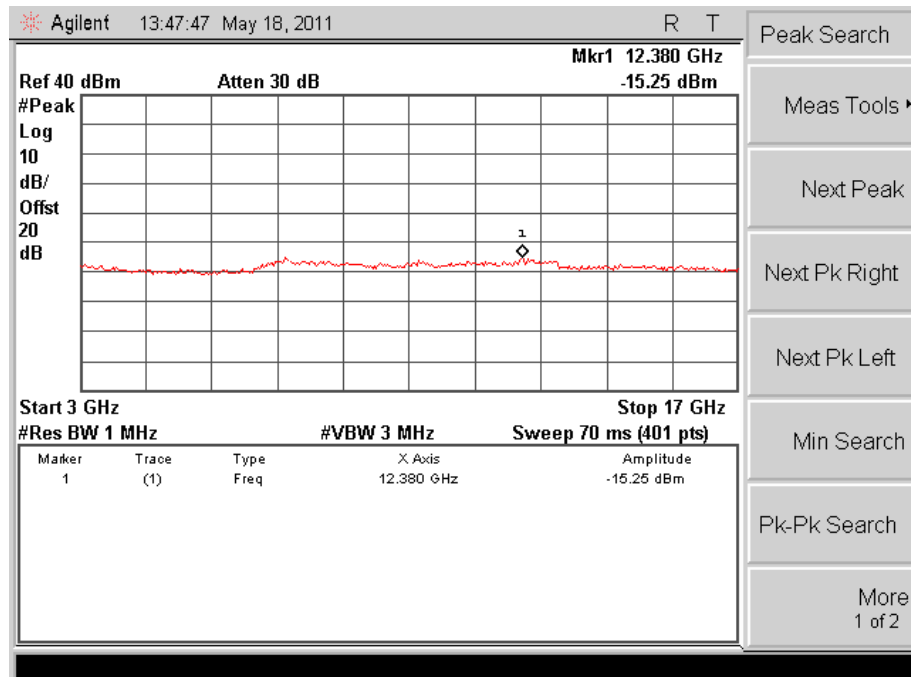
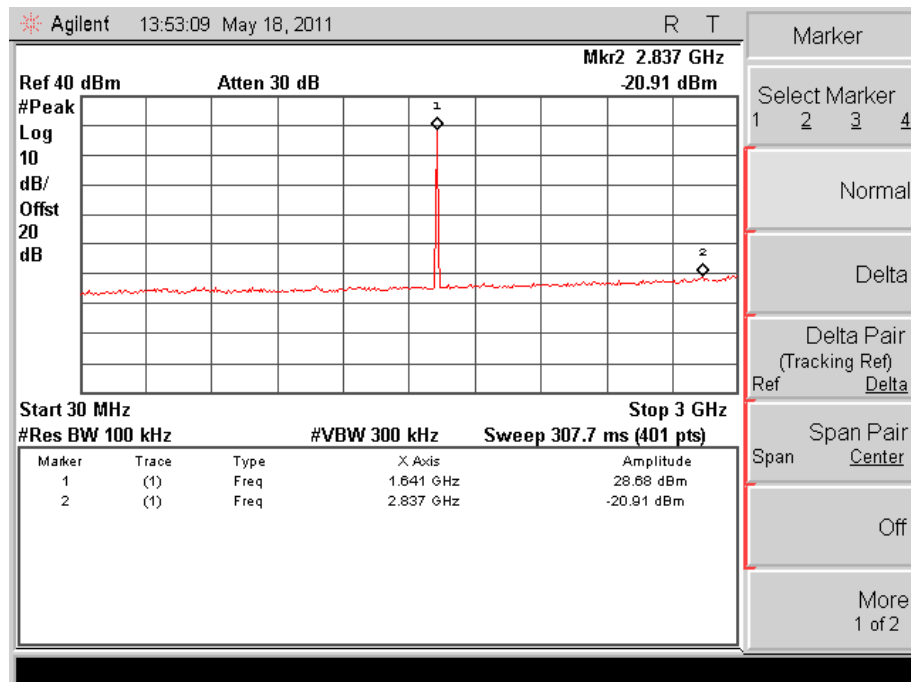




CH 85:

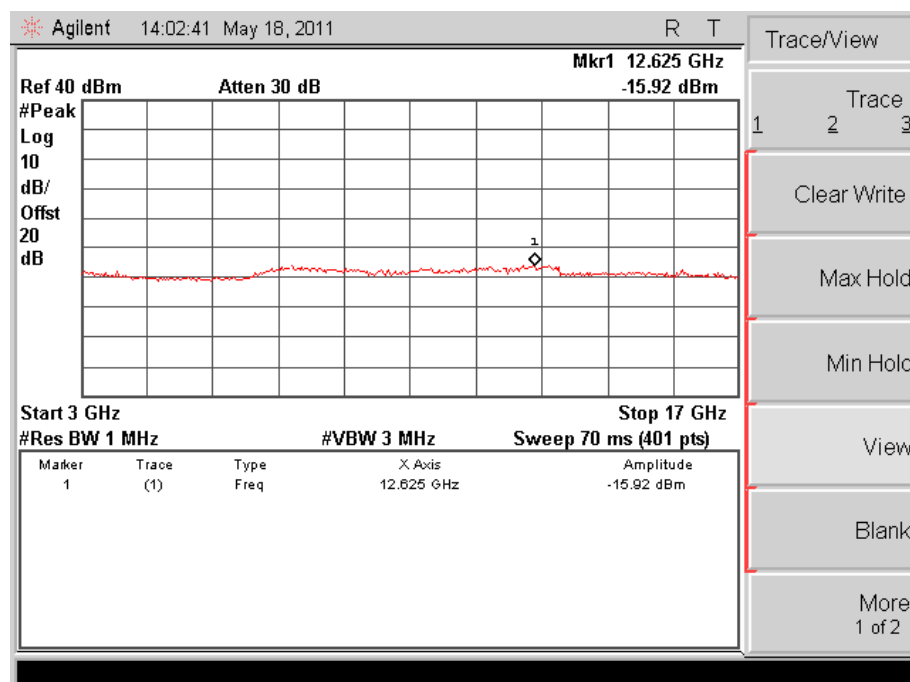
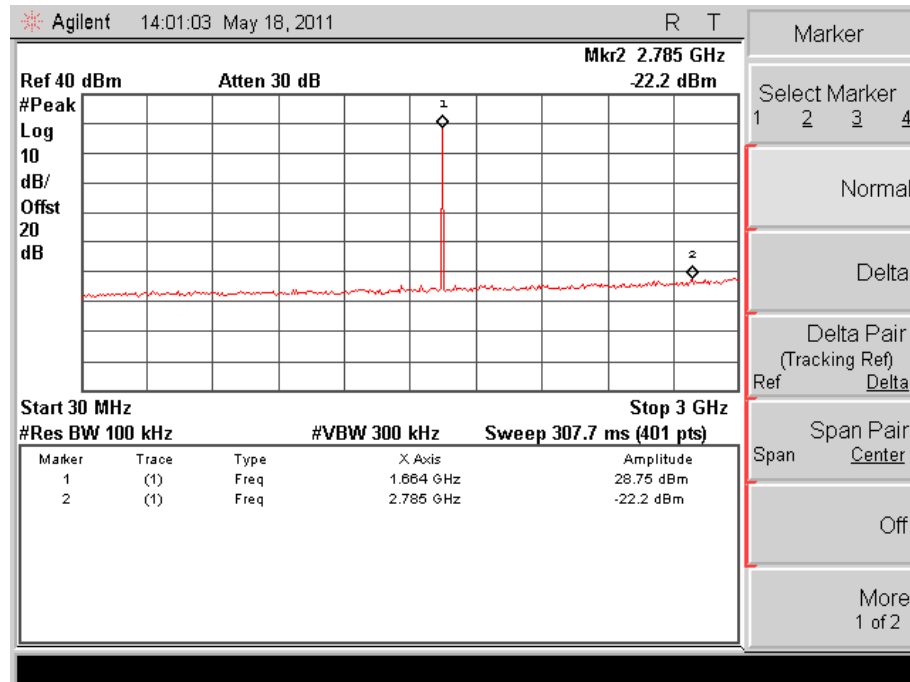
Frequency (MHz)	Reading Value (dBm)	Factor of attenuators and DC block (dB)	Result (dBm)	Limits (dBm)	Margin (dB)
2837	-40.9	20	-20.9	-13	7.9
12380	-35.3	20	-15.3	-13	2.3

Plots:



CH 169:

Frequency (MHz)	Reading Value (dBm)	Factor of attenuators and DC block (dB)	Result (dBm)	Limits (dBm)	Margin (dB)
2785	-42.2	20	-22.2	-13	9.2
12625	-35.9	20	-15.9	-13	2.9

Plots:


4.8 Spurious Emission(Radiated)

4.8.1 Applicable Standard

Section 25.202(f)(3):

The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule: In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: An amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts;

In any event, when an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in paragraphs (f) (1), (2) and (3) of this section.

4.8.2 Block diagram of test setup

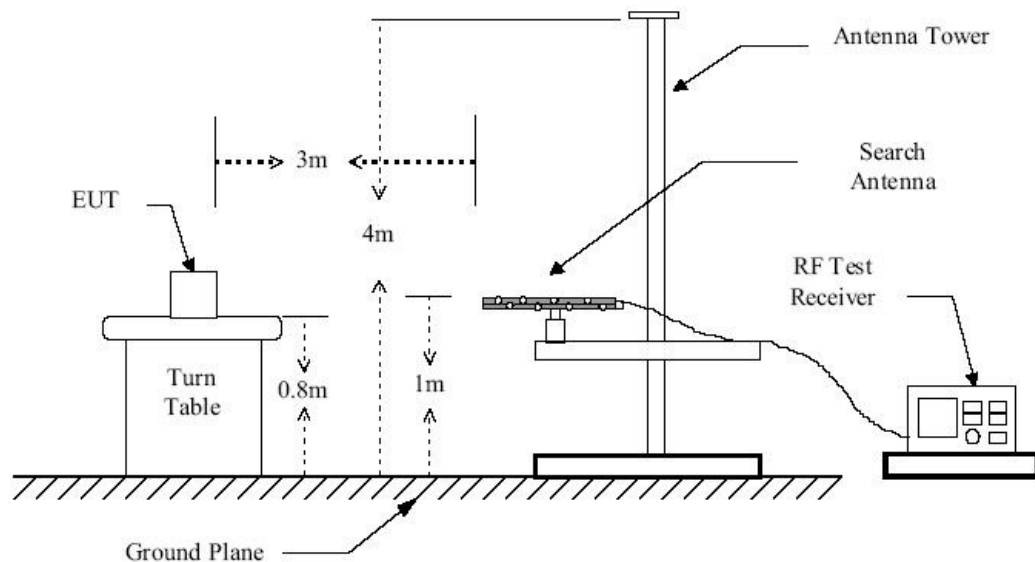


Figure 1 : Frequencies measured below 1 GHz configuration

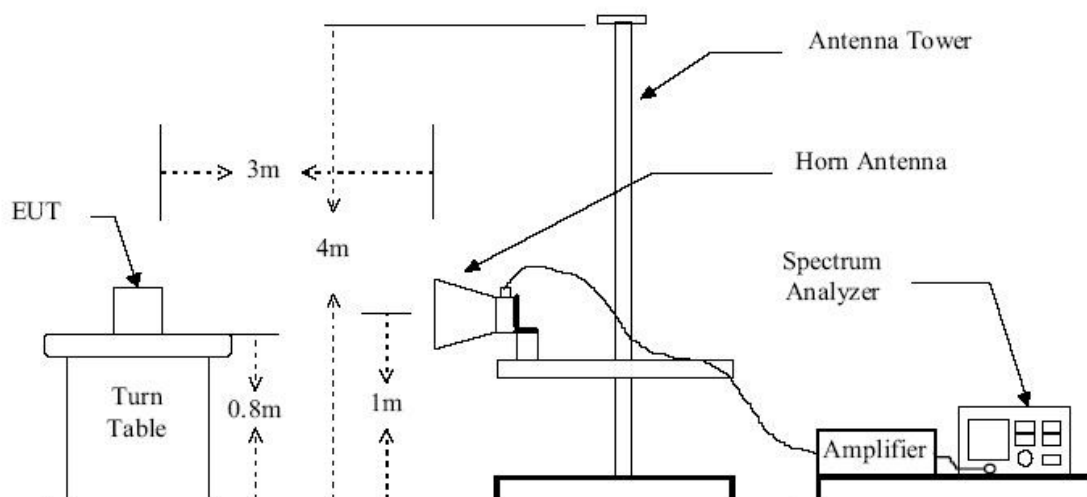


Figure 2 : Frequencies measured above 1 GHz configuration

4.8.3 Measurement method

1. Configure the EUT according to ANSI C63.4 (2003) and ANSI/TIA-603-C-2004.
2. The EUT was placed on the top of the turntable 0.8 meter above ground.
3. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
4. Power on the EUT and all the supporting units.
5. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
6. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization.
7. For each suspected emission, the antenna tower was scanned (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
8. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.

4.8.4. Result

PASS**Active Antenna:**

Temperature (°C) : 22~23	EUT: Oceana 800
Humidity (%RH) : 50~54	M/N: OC800
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode
Test date: May 23, 2011	Test engineer: Phenix

CH 0:

Frequency (MHz)	RF Level @ 3m (dBuV/m)	Detector	Antenna Polarization (H/V)	EIRP (dBm)	Limit (dBm)	Margin (dB)
30.0	31.6	Peak	H	-63.63	-13	50.63
47.495	34.3	Peak	H	-60.83	-13	47.83
117.475	35.8	Peak	H	-59.43	-13	46.43
31.944	31.4	Peak	V	-63.83	-13	50.83
47.495	33.3	Peak	V	-61.93	-13	48.93
115.531	34.0	Peak	V	-61.23	-13	48.23
1486.975	38.8	Peak	H	-56.43	-13	43.43
3254.516	49.6	Peak	H	-45.63	-13	32.63
6987.966	51.7	Peak	H	-43.53	-13	30.53
1486.975	34.0	Peak	V	-61.23	-13	48.23
3254.516	47.2	Peak	V	-48.03	-13	35.03
6987.966	51.9	Peak	V	-43.33	-13	30.33

All other emissions are more than 20 dB below the limit.

Test Plots:

2011/05/23 15:41:20

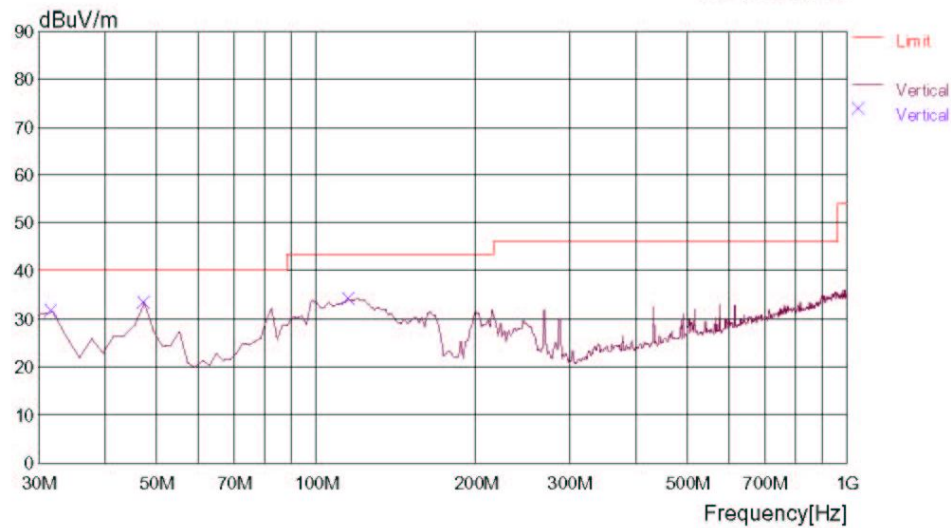
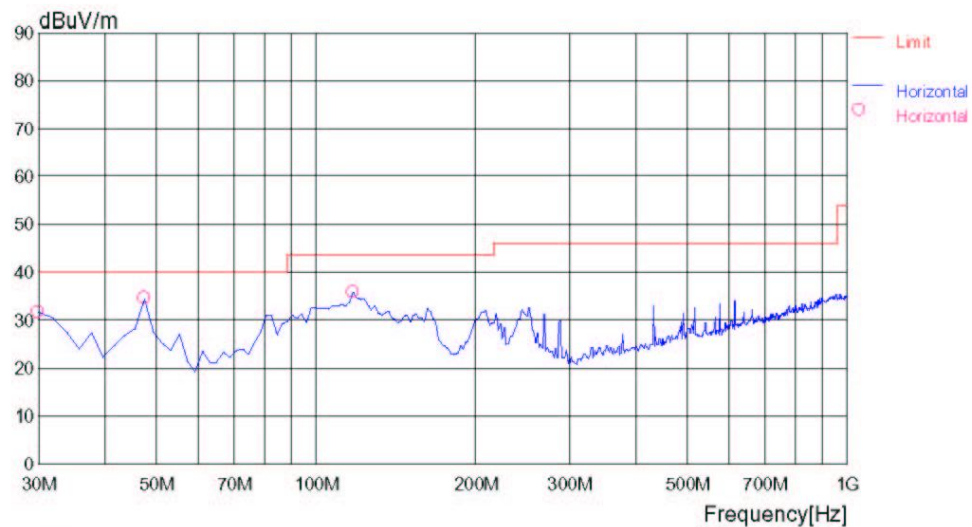
RADIATED EMISSION

Date : 2011/05/23 15:41:11

Trade Name	Document No.
Model Name	Power Supply
Product Name	Temp/Humi
Test Condition	Operator

Memo

LIMIT : FCC Part15 Class B(3m)/USA



2011/05/23 17:16:22

RADIATED EMISSION

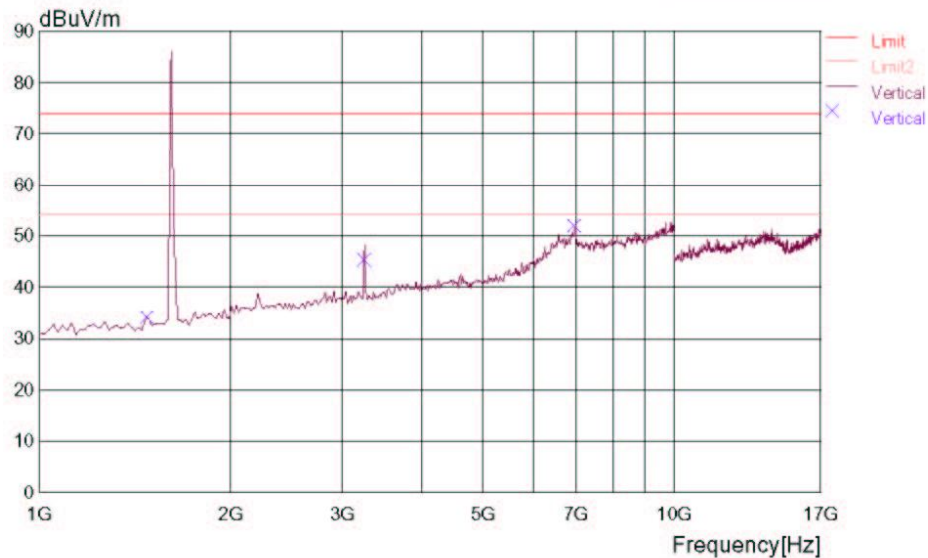
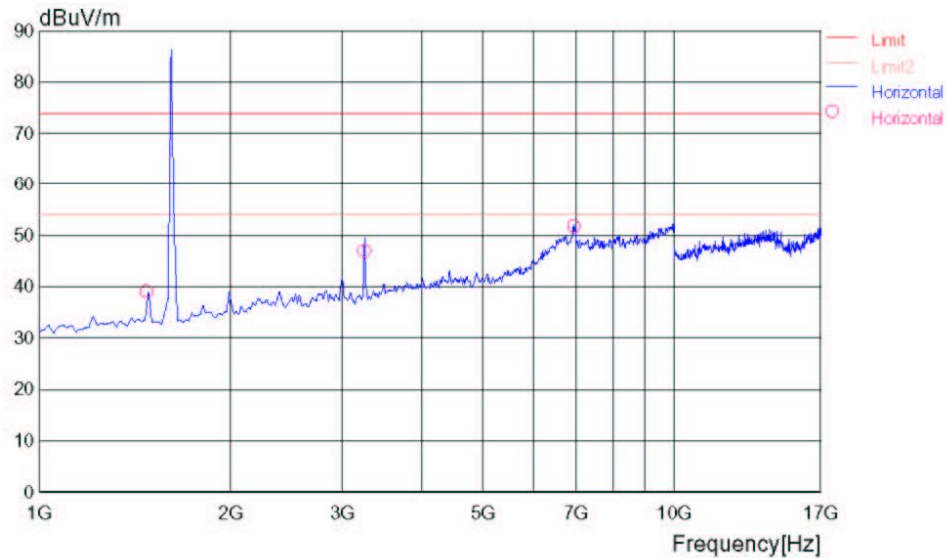
Date : 2011/05/23 17:16:18

Trade Name :
Model Name : OC800
Product Name : Oceana 800
Test Condition : TX MODE (CH 0)

Document No. :
Power Supply : AC 120V/60Hz
Temp/Humi : 27/55RH%
Operator : Eliy zhang

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)



CH 85:

Frequency (MHz)	RF Level @ 3m (dBuV/m)	Detector	Antenna Polarization (H/V)	EIRP (dBm)	Limit (dBm)	Margin (dB)
98.036	32.9	Peak	H	-62.33	-13	49.33
166.072	33.5	Peak	H	-61.73	-13	48.73
432.384	41.3	Peak	H	-53.93	-13	40.93
47.495	37.0	Peak	V	-58.23	-13	45.23
109.699	34.0	Peak	V	-61.23	-13	48.23
158.297	32.3	Peak	V	-62.93	-13	49.93
1252.506	40.0	Peak	H	-55.23	-13	42.23
1486.975	40.1	Peak	H	-55.13	-13	42.13
3290.589	55.9	Peak	H	-39.33	-13	26.33
1216.433	40.2	Peak	V	-55.03	-13	42.03
3290.589	52.1	Peak	V	-43.13	-13	30.13
6987.996	52.0	Peak	V	-43.23	-13	30.23

All other emissions are more than 20 dB below the limit.

Test Plots:

2011/05/23 16:04:29

RADIATED EMISSION

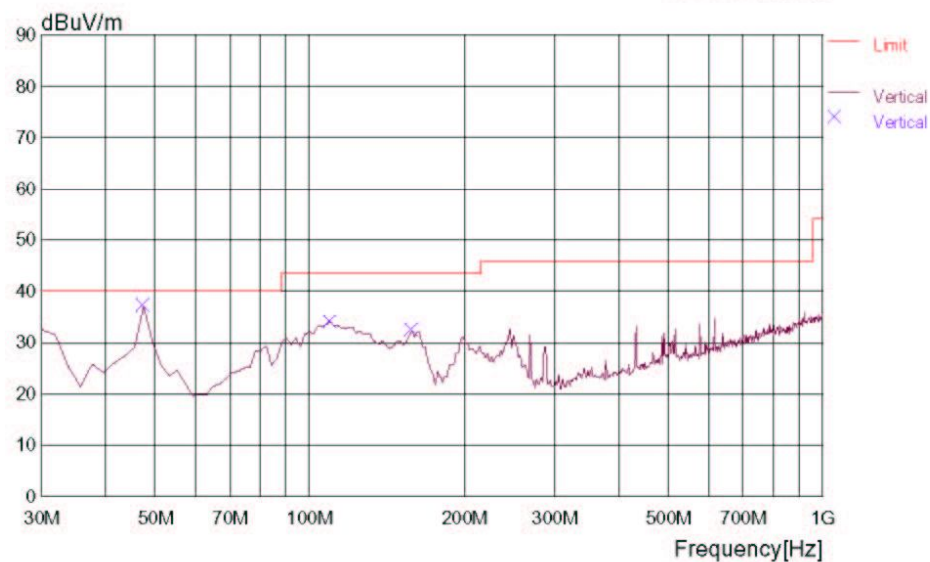
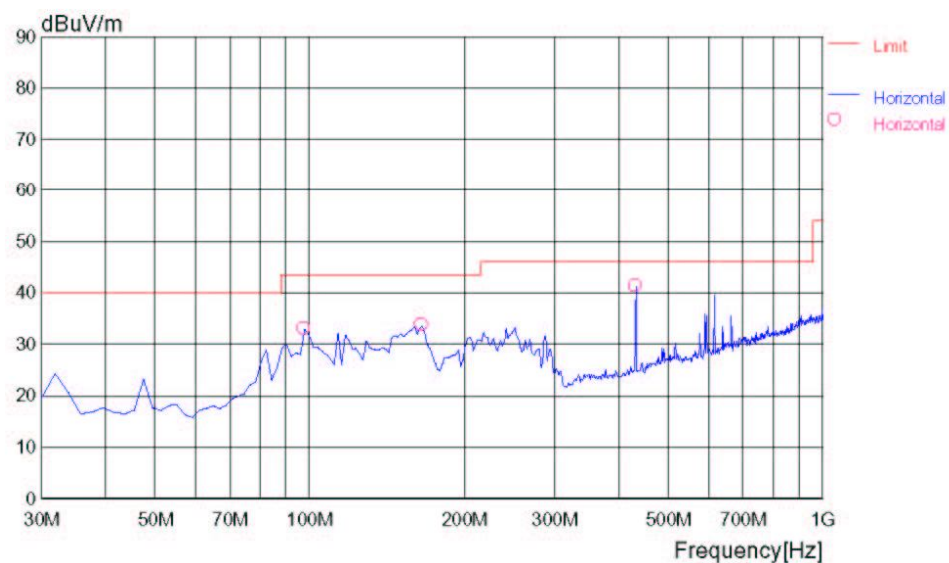
Date : 2011/05/23 16:04:26

Trade Name :
Model Name : OC800
Product Name : Oceana 800
Test Condition : TX MODE(CH-85)

Document No. :
Power Supply : AC 120V/60Hz
Temp/Humi : 27/55RH%
Operator : Phenix Zhang

Memo :

LIMIT : FCC Part15 Class B(3m)/USA



2011/05/23 17:33:18

RADIATED EMISSION

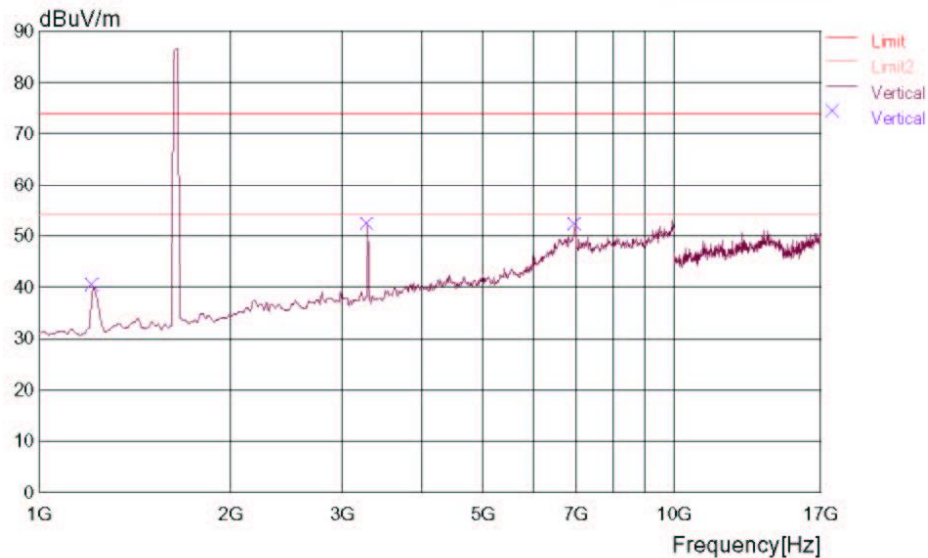
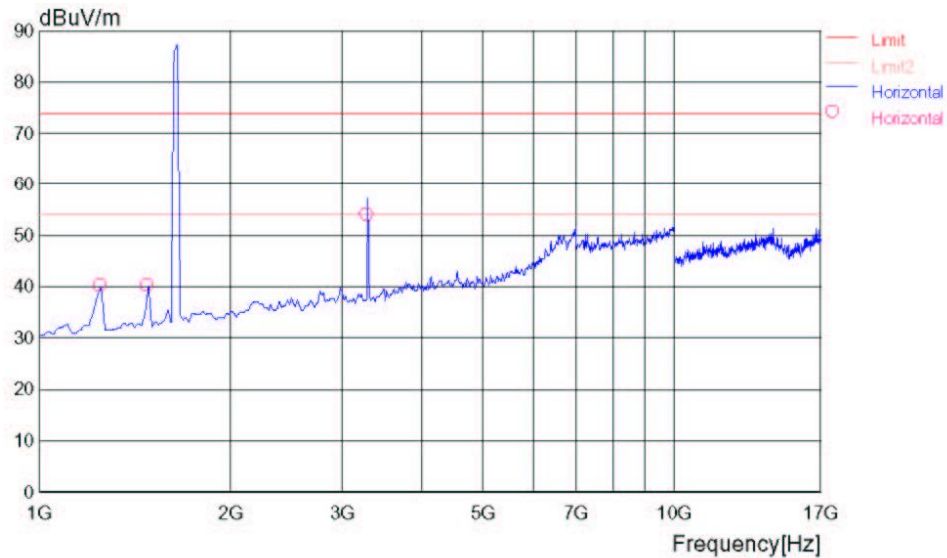
Date : 2011/05/23 17:33:15

Trade Name :
Model Name : OC800
Product Name : Oceana 800
Test Condition : TX MODE (CH 85)

Document No. :
Power Supply : AC 120V/60Hz
Temp/Humi : 27/55RH%
Operator : Eliy zhang

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)



CH 169:

Frequency (MHz)	RF Level @ 3m (dBuV/m)	Detector	Antenna Polarization (H/V)	EIRP (dBm)	Limit (dBm)	Margin (dB)
98.036	31.9	Peak	H	-63.33	-13	50.33
160.241	31.2	Peak	H	-64.03	-13	51.03
243.828	34.1	Peak	H	-61.13	-13	48.13
31.944	32.0	Peak	V	-63.23	-13	50.23
47.495	34.0	Peak	V	-61.23	-13	48.23
113.587	34.4	Peak	V	-60.83	-13	47.83
1486.975	41.0	Peak	H	-54.23	-13	41.23
3308.625	40.3	Peak	H	-54.93	-13	41.93
6987.996	50.9	Peak	H	-44.33	-13	31.33
1396.795	36.4	Peak	V	-58.83	-13	45.83
3308.625	44.8	Peak	V	-50.43	-13	37.43
6987.996	50.6	Peak	V	-44.63	-13	31.63

All other emissions are more than 20 dB below the limit.

Test Plots:

2011/05/23 16:16:03

RADIATED EMISSION

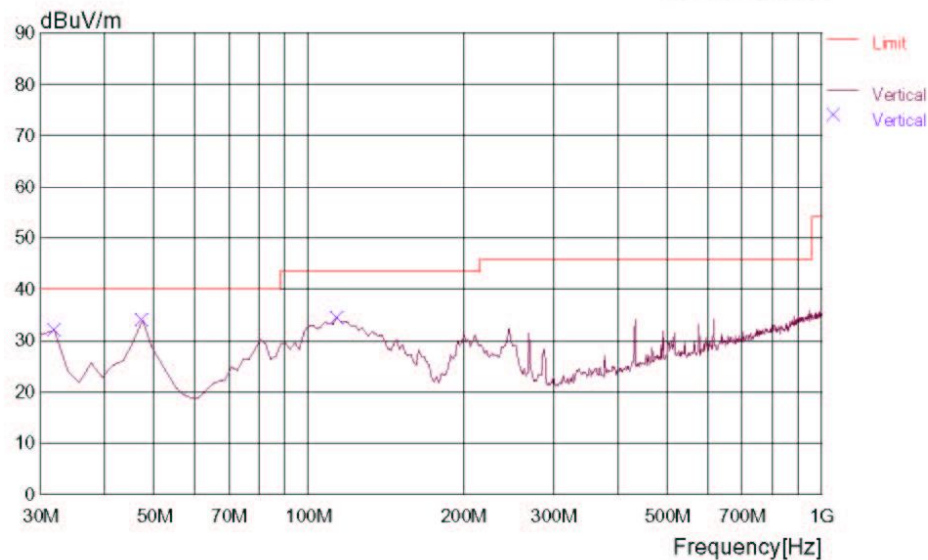
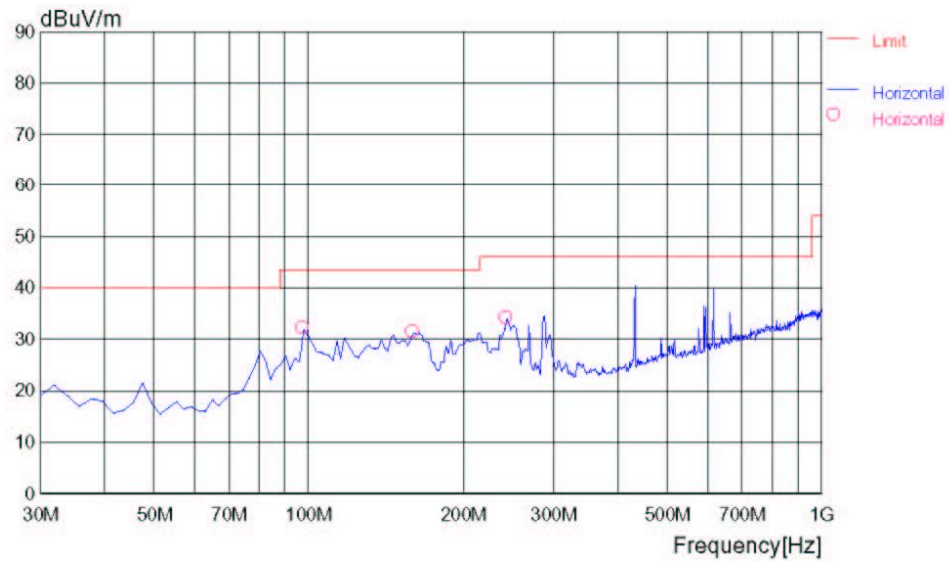
Date : 2011/05/23 16:15:59

Trade Name :
Model Name : OC800
Product Name : Oceana 800
Test Condition : TX MODE(CH-169)

Document No. :
Power Supply : AC 120V/60Hz
Temp/Humi : 27/55RH%
Operator : Phenix Zhang

Memo :

LIMIT : FCC Part15 Class B(3m)/USA



2011/05/23 17:39:02

RADIATED EMISSION

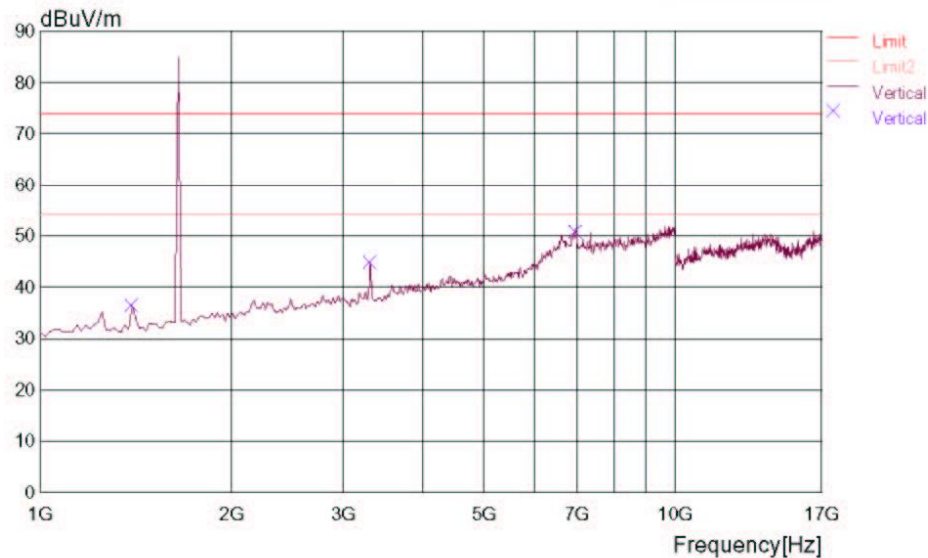
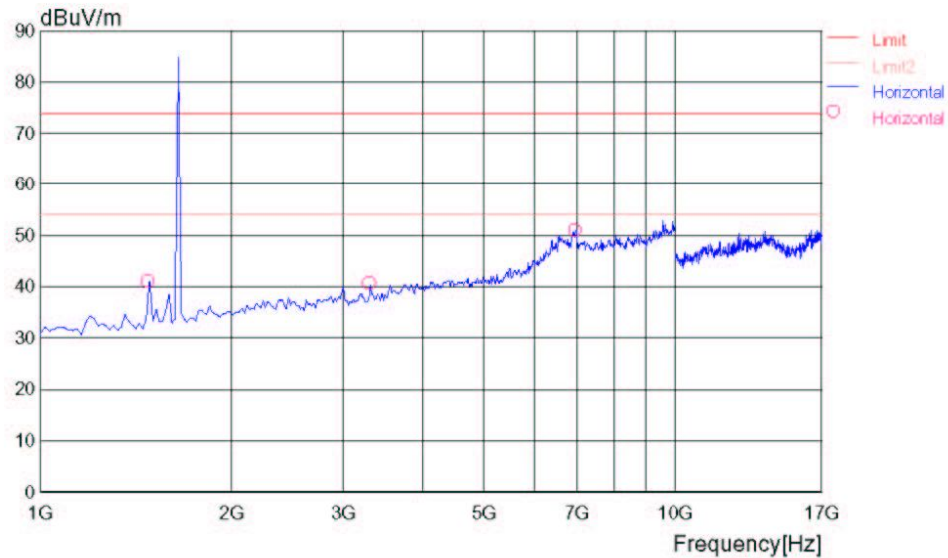
Date : 2011/05/23 17:38:59

Trade Name :
Model Name : OC800
Product Name : Oceana 800
Test Condition : TX MODE (CH 169)

Document No. :
Power Supply : AC 120V/60Hz
Temp/Humi : 27/55RH%
Operator : Eliy zhang

Memo :

LIMIT : FCC Part15 C transmitter spurious above1G(peak)
FCC Part15 C transmitter spurious above1G(average)



Passive Antenna:

Temperature (°C) : 22~23	EUT: Oceana 800
Humidity (%RH) : 50~54	M/N: OC800
Barometric Pressure (mbar) : 950~1000	Operation Condition: Tx Mode
Test date: Apr 25, 2012	Test engineer: Phenix

CH 0:

Frequency (MHz)	RF Level @ 3m (dBuV/m)	Detector	Antenna Polarization (H/V)	EIRP (dBm)	Limit (dBm)	Margin (dB)
212.726	36.2	Peak	H	-58.9	-13	45.9
245.772	34.4	Peak	H	-60.8	-13	47.8
47.495	35.7	Peak	V	-59.6	-13	46.6
59.158	36.0	Peak	V	-59.2	-13	46.2
119.419	37.7	Peak	V	-57.7	-13	44.7
2388.782	38.9	Peak	H	-55.0	-13	42.0
3254.516	48.3	Peak	H	-45.2	-13	32.2
1486.975	38.3	Peak	V	-55.7	-13	42.7
2388.782	39.5	Peak	V	-54.4	-13	41.4

All other emissions are more than 20 dB below the limit.

Test Plots:

2012/04/25 22:16:19

RADIATED EMISSION

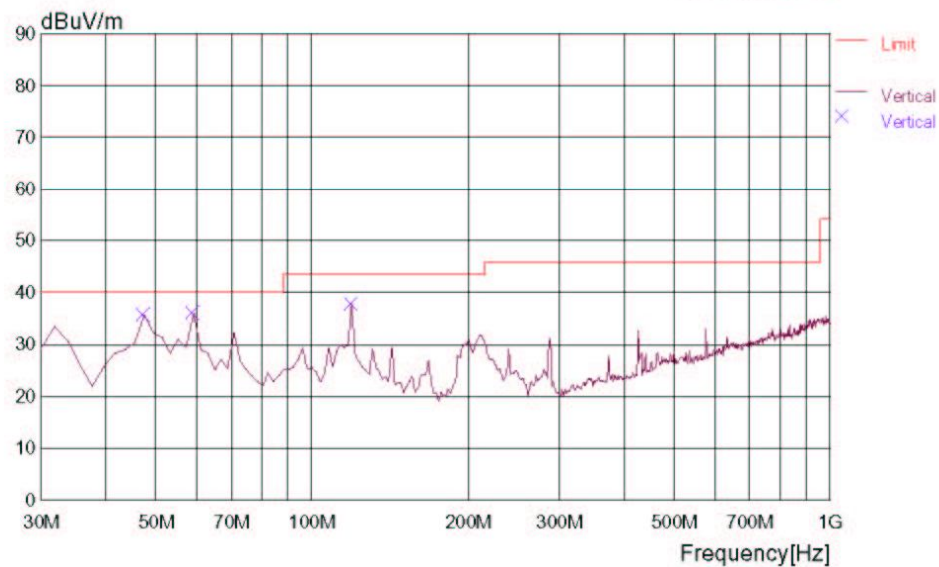
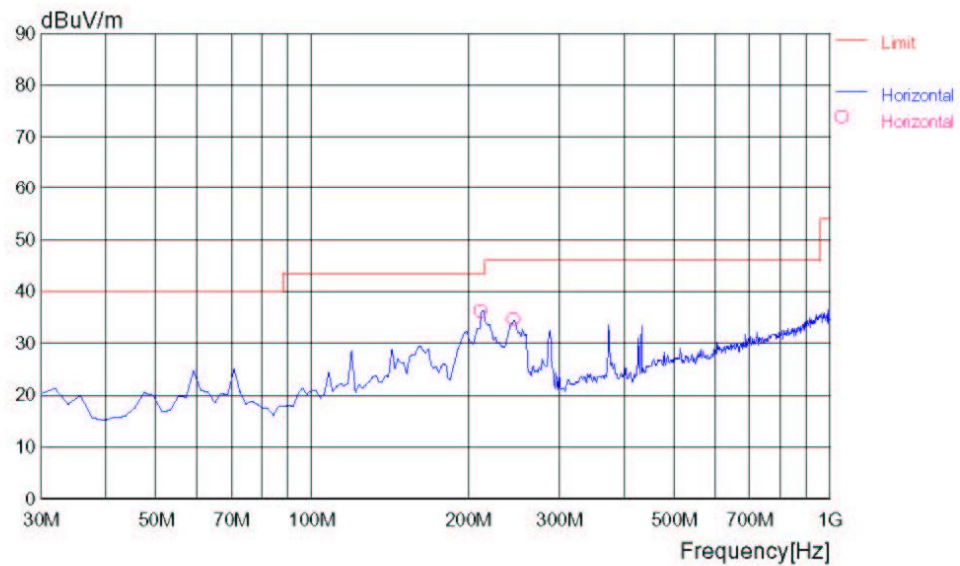
Date : 2012/04/25 22:16:03

Trade Name :
Model Name : OC 800
Product Name : Oceana 800
Test Condition : TX mode(CH 0)

Document No. :
Power Supply : AC 120V/60Hz
Temp/Humi : 27/55RH%
Operator : pang

Memo : passive antenna

LIMIT : FCC Part15 Class B(3m)/USA



2012/04/25 22:55:18

RADIATED EMISSION

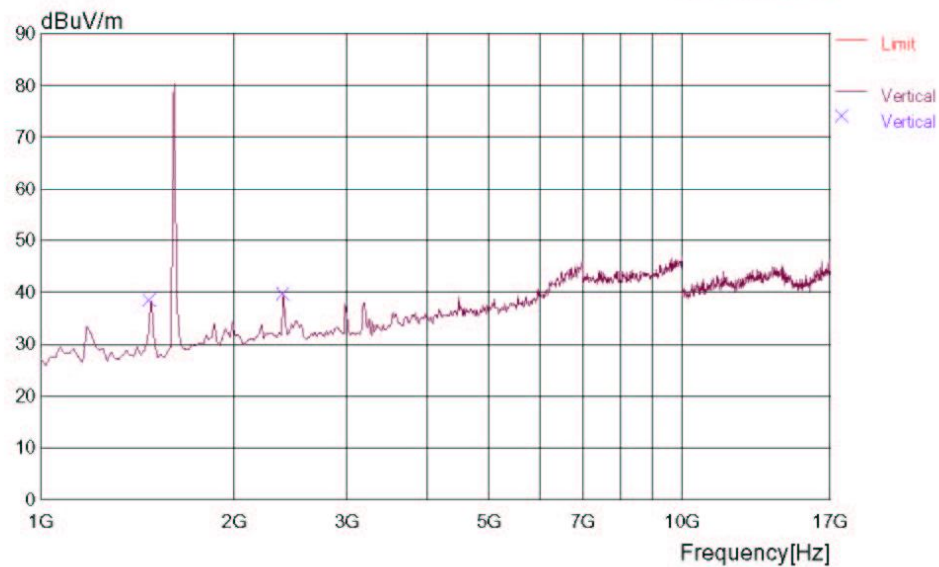
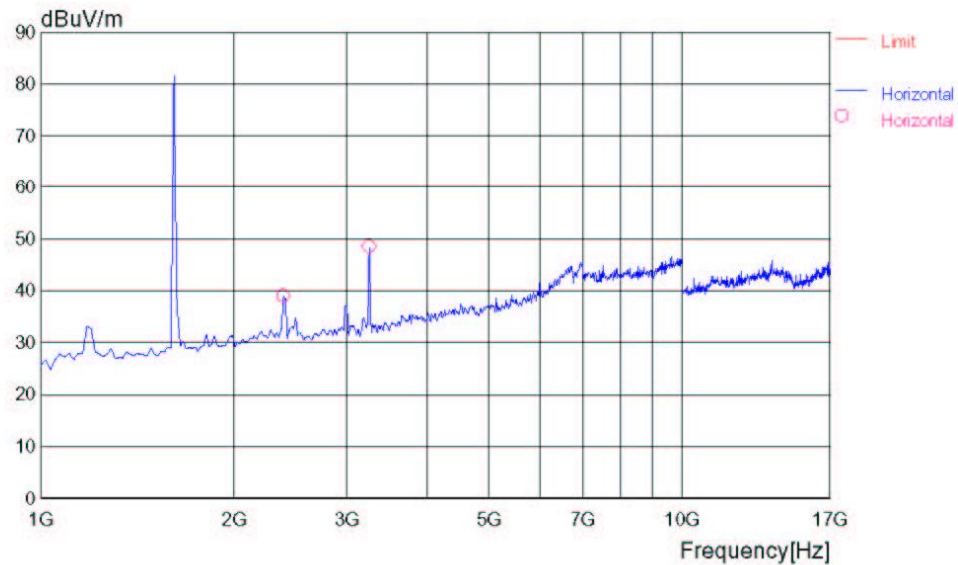
Date : 2012/04/25 22:55:04

Trade Name :
Model Name : OC 800
Product Name : Oceana 800
Test Condition : TX mode(CH 0)

Document No. :
Power Supply : AC 120V/60Hz
Temp/Humi : 27/55RH%
Operator : Eliy zhang

Memo : passive antenna

LIMIT :



CH 85:

Frequency (MHz)	RF Level @ 3m (dBuV/m)	Detector	Antenna Polarization (H/V)	EIRP (dBm)	Limit (dBm)	Margin (dB)
247.716	32.9	Peak	H	-62.0	-13	49.0
374.068	33.8	Peak	H	-61.2	-13	48.2
31.944	34.7	Peak	V	-60.1	-13	47.1
59.158	36.0	Peak	V	-59.0	-13	46.0
119.419	36.5	Peak	V	-58.1	-13	45.1
1396.795	36.3	Peak	H	-57.4	-13	44.4
3290.589	44.4	Peak	H	-44.1	-13	31.1
6987.996	46.2	Peak	H	-47.2	-13	34.2
1486.975	39.5	Peak	V	-54.2	-13	41.2
1991.987	40.1	Peak	V	-53.6	-13	40.6
3290.589	40.8	Peak	V	-53.0	-13	40.0

All other emissions are more than 20 dB below the limit.

Test Plots:

2012/04/25 22:23:14

RADIATED EMISSION

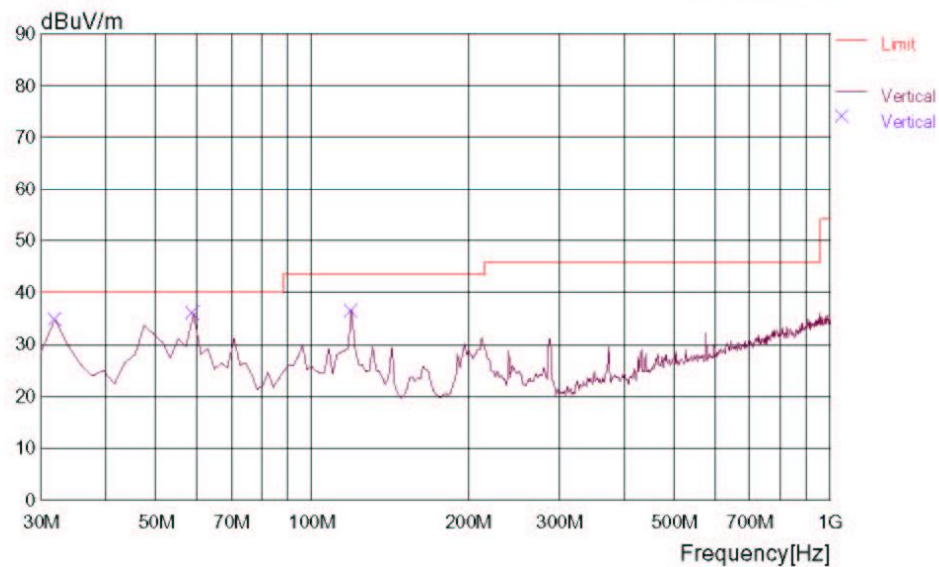
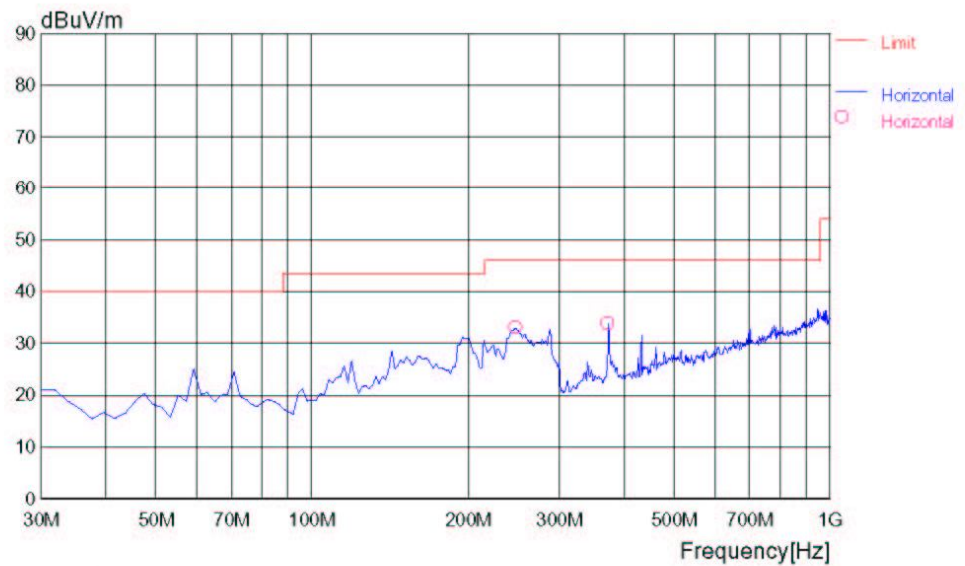
Date : 2012/04/25 22:19:41

Trade Name :
Model Name : OC 800
Product Name : Oceana 800
Test Condition : TX mode(CH 85)

Document No. :
Power Supply : AC 120V/60Hz
Temp/Humi : 27/55RH%
Operator : pang

Memo : passive antenna

LIMIT : FCC Part15 Class B(3m)/USA



2012/04/25 23:13:16

RADIATED EMISSION

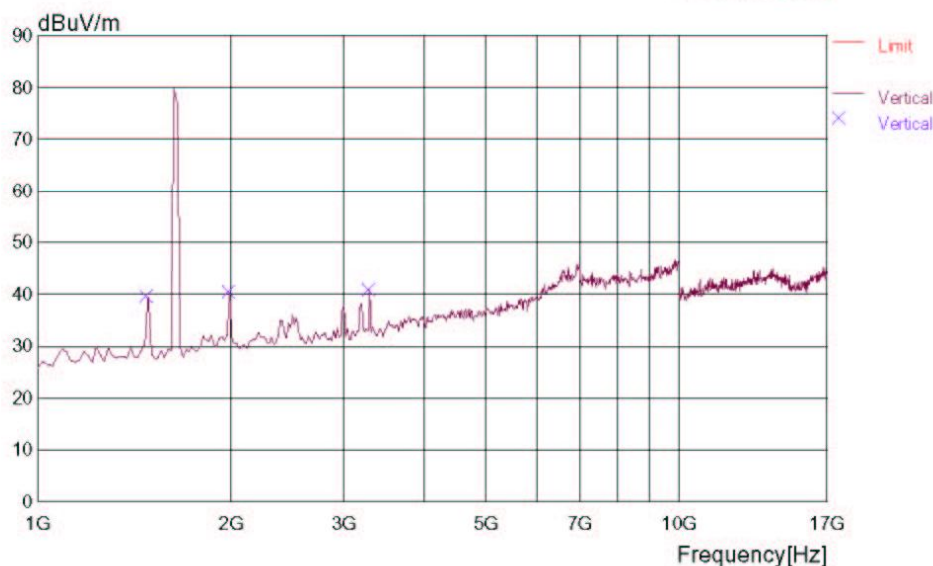
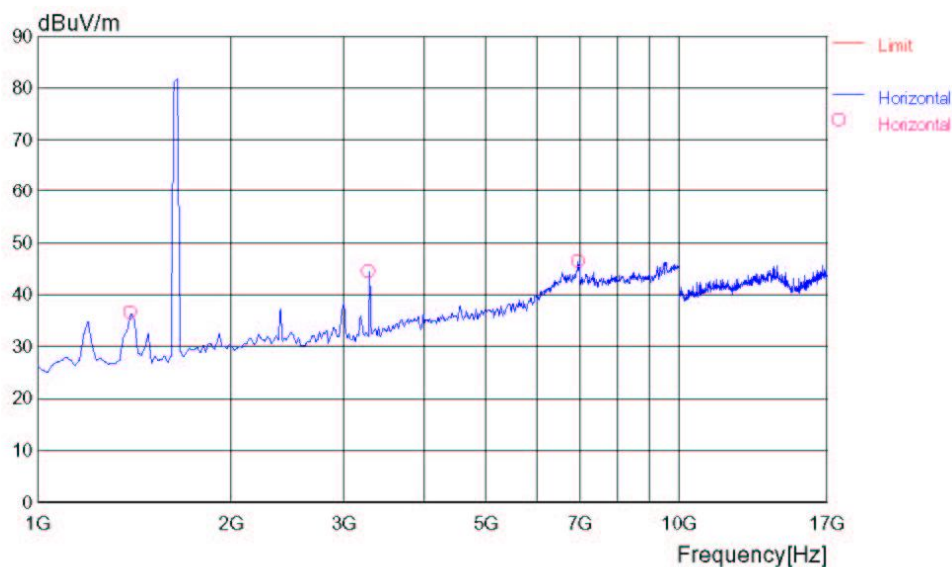
Date : 2012/04/25 23:13:04

Trade Name :
Model Name : OC 800
Product Name : Oceana 800
Test Condition : TX mode(CH 85)

Document No. :
Power Supply : AC 120V/60Hz
Temp/Humi : 27/55RH%
Operator : Eliy zhang

Memo : passive antenna

LIMIT :



CH 169:

Frequency (MHz)	RF Level @ 3m (dBuV/m)	Detector	Antenna Polarization (H/V)	EIRP (dBm)	Limit (dBm)	Margin (dB)
214.670	36.5	Peak	H	-58.2	-13	45.2
31.944	34.0	Peak	V	-61.1	-13	48.1
59.158	35.9	Peak	V	-59.3	-13	46.3
119.419	37.6	Peak	V	-57.2	-13	44.2
2388.782	36.7	Peak	H	-57.0	-13	44.0
3308.625	50.8	Peak	H	-43.1	-13	30.1
1486.975	38.5	Peak	V	-55.4	-13	42.4
3182.372	38.8	Peak	V	-54.8	-13	41.8
3308.625	39.9	Peak	V	-53.7	-13	40.7

All other emissions are more than 20 dB below the limit.

Test Plots:

2012/04/25 22:22:14

RADIATED EMISSION

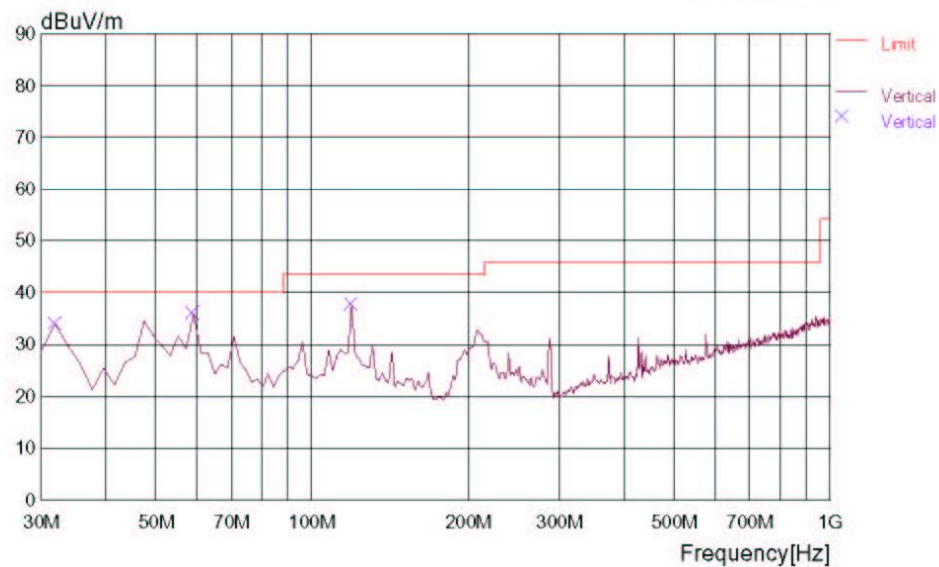
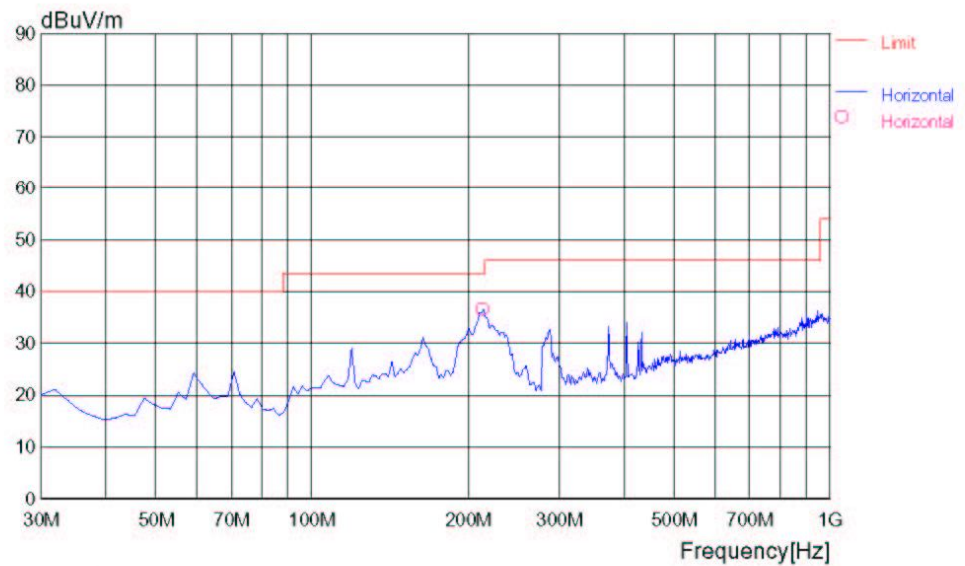
Date : 2012/04/25 22:21:50

Trade Name :
Model Name : OC 800
Product Name : Oceana 800
Test Condition : TX mode(CH 169)

Document No. :
Power Supply : AC 120V/60Hz
Temp/Humi : 27/55RH%
Operator : pang

Memo : passive antenna

LIMIT : FCC Part15 Class B(3m)/USA



2012/04/25 23:23:54

RADIATED EMISSION

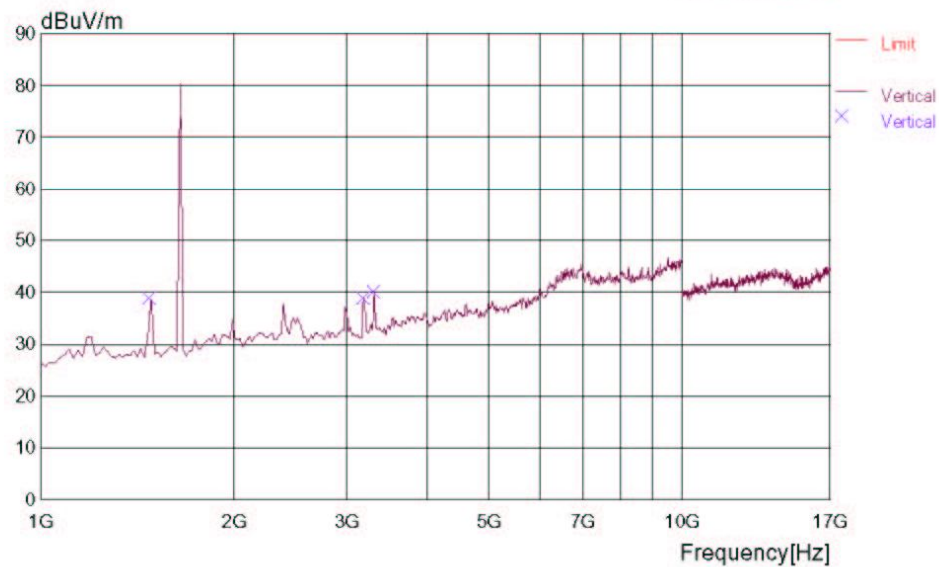
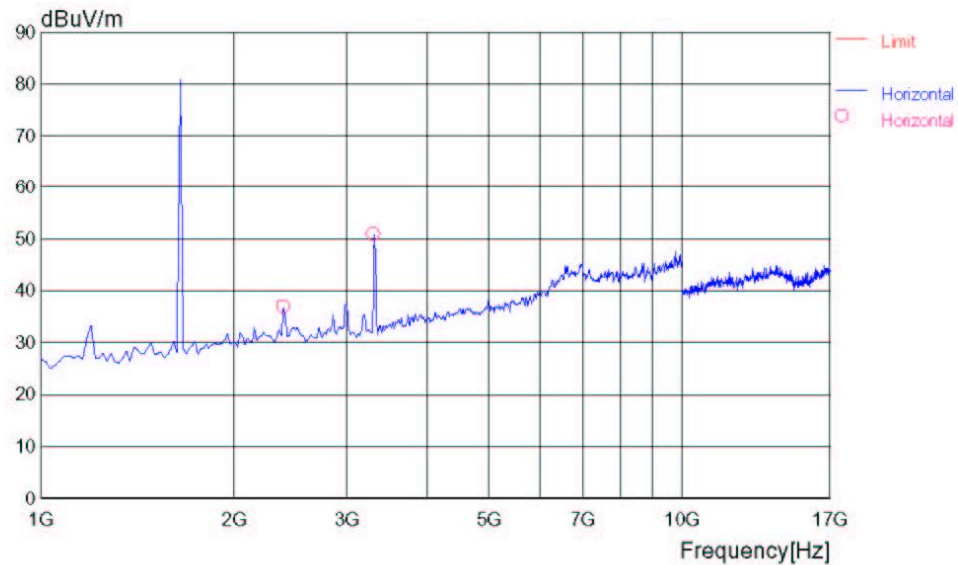
Date : 2012/04/25 23:23:44

Trade Name :
Model Name : OC 800
Product Name : Oceana 800
Test Condition : TX mode(CH 169)

Document No. :
Power Supply : AC 120V/60Hz
Temp/Humi : 27/55RH%
Operator : Eliy zhang

Memo : passive antenna

LIMIT :

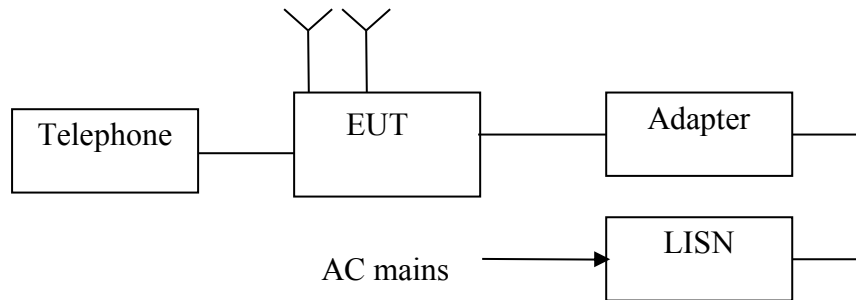


4.9 Conducted Emission (mains)

4.9.1 Test Summary

Test Room	: Shielded Room
Power Source	: AC 120V / 60Hz
Standards:	: FCC Part15 B : 2010
EUT Type	: Table Top
EUT configuration	: EUT's highest possible emission level

4.9.2 Block diagram of test setup



4.9.3 Measurement method

The EUT along with its peripherals were placed on a 1.0m (W) x 1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4m space from a vertical reference plane. The EUT was connected to power mains through a Artificial Mains Network(AMN), which provided 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room.

The excess power cable between the EUT and the AMN was bundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

4.9.4. Result

PASS

Conducted Emission

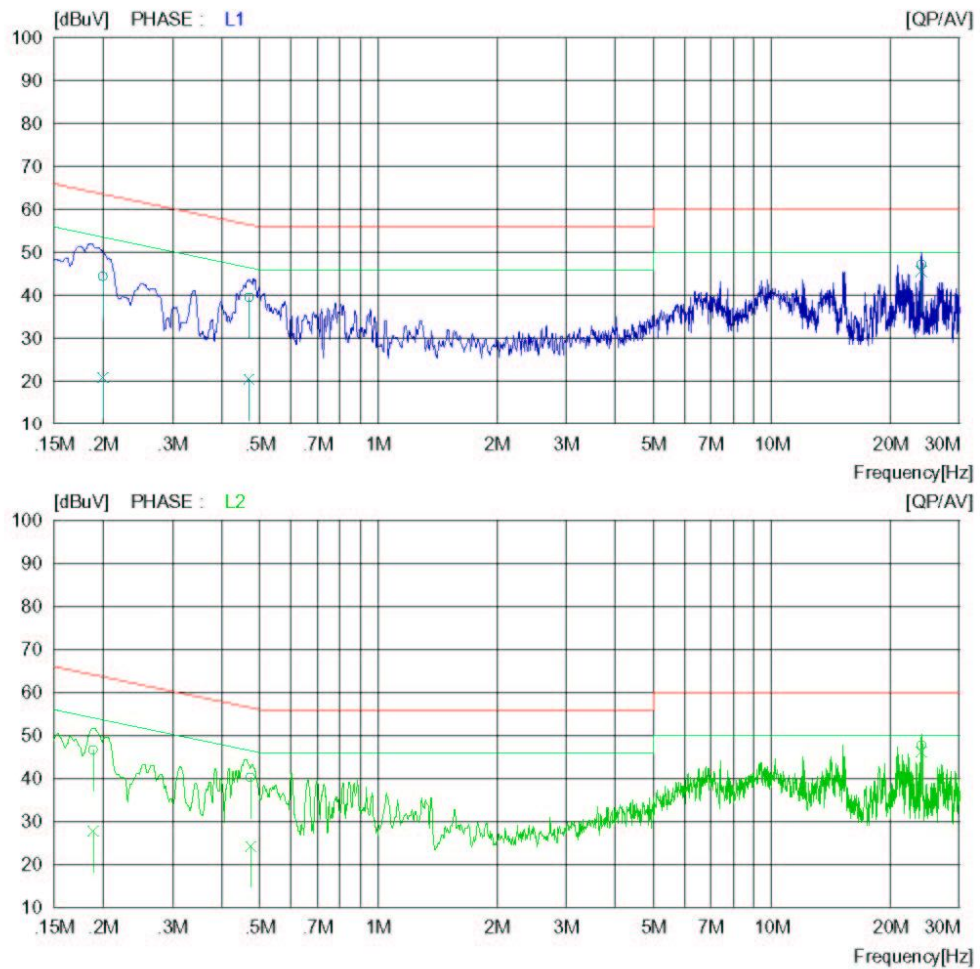
TDK South China EMC Centre
Date : 2011-05-03 17:13:41

Company Name :
Model Name : OC800
Product Name : Oceana 800
Test condition : Normal

Document No. :
Power Supply : AC120V/50Hz
Temp/Humi : 25deg / 52%RH
Operator : PANG

Memo :

LIMIT : FCC Part 15 B QP
FCC Part 15 B AV



TDK South China EMC Centre Tell:0769-8564-4678 Fax:0769-8564-4499

Conducted Emission

TDK South China EMC Centre
Date : 2011-05-03 17:13:41

Company Name	:		Document No.	:	
Model Name	:	OC800	Power Supply	:	AC120V/50Hz
Product Name	:	Oceana 800	Temp/Humi	:	25deg / 52%RH
Test condition	:	Normal	Operator	:	PANG

Memo :

LIMIT : FCC Part 15 B QP
FCC Part 15 B AV

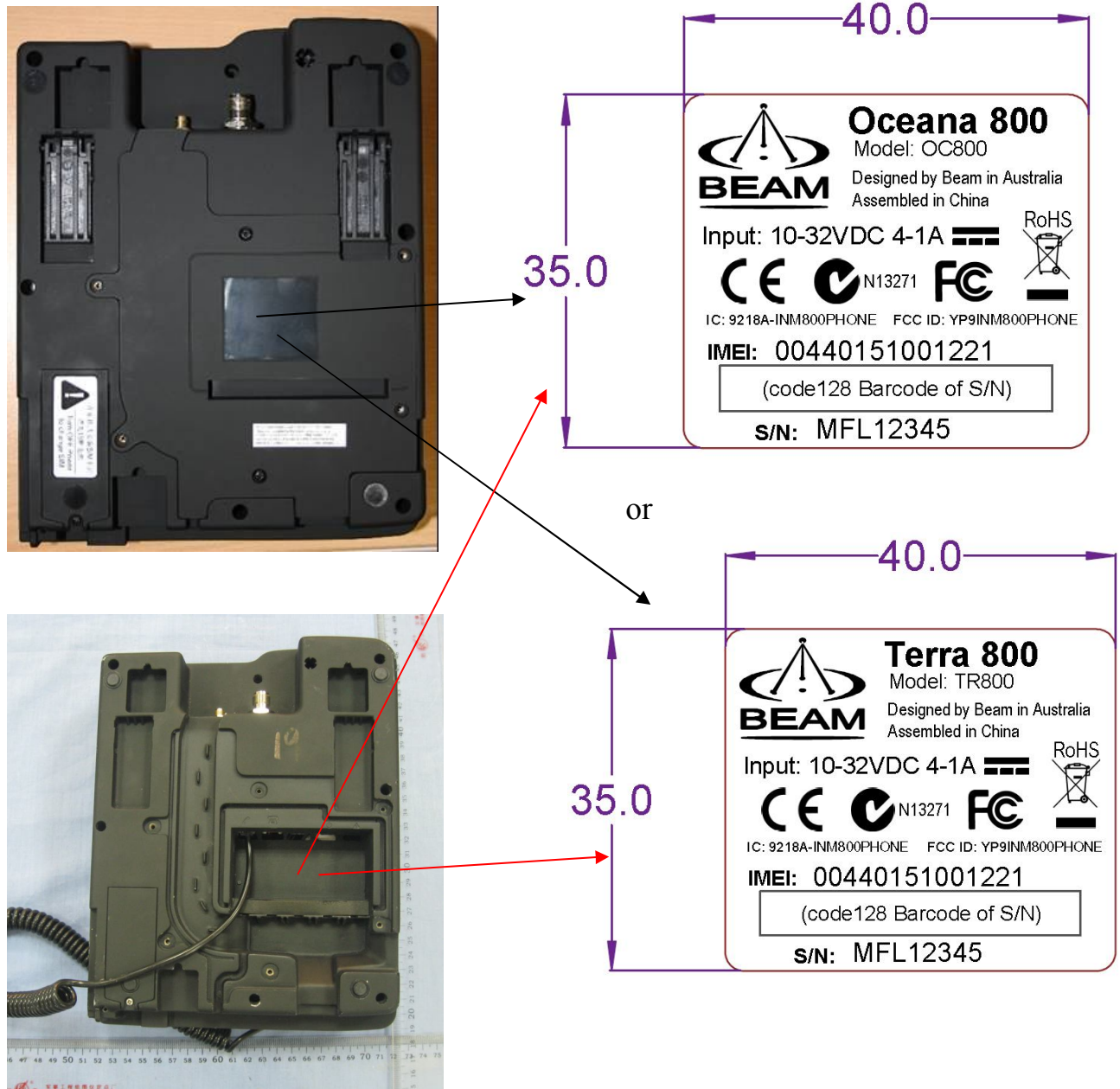
NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.20000	34.4	10.9	10.0	44.4	20.9	63.6	53.6	19.2	32.7	L1
2	0.47000	29.7	10.7	9.9	39.6	20.6	56.5	46.5	16.9	26.0	L1
3	24.00000	37.8	36.2	9.4	47.2	45.6	60.0	50.0	12.8	4.4	L1
4	0.18900	36.6	17.7	10.0	46.6	27.7	64.1	54.1	17.5	26.4	L2
5	0.47400	30.3	14.3	9.9	40.2	24.2	56.4	46.4	16.2	22.2	L2
6	24.00000	38.3	36.7	9.4	47.7	46.1	60.0	50.0	12.3	3.9	L2

TDK South China EMC Centre Tell:0769-8564-4678 Fax:0769-8564-4499

5. FCC ID Label

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Mark Location:



6. Test Setup

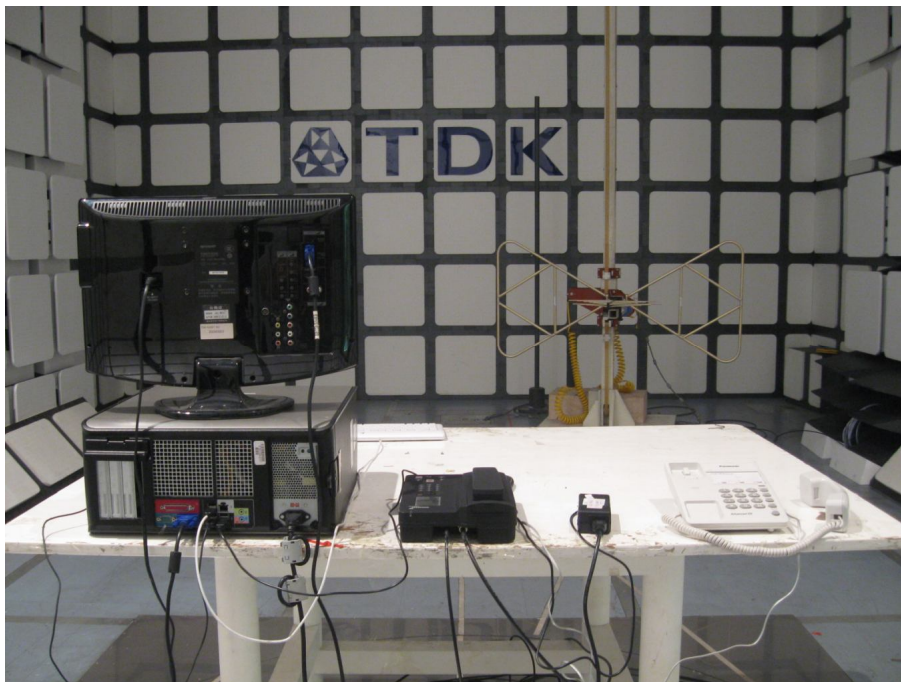
6.1 Ancillary and Accessory Equipment Used

No.	Description	Specification	Quantity
1.	PC	DELL, M/N:OPTIPLEX 380, S/N: FDXQW2X	1
2.	Monitor	SHARP/AQUOS, M/N:LCD-19A35-BK, S/N:806915210	1
3.	Keyboard	Logitech, M/N:Y-BP62a, P/N: 820-000260	1
4.	Mouse	Logitech, M/N:M-UAS144, P/N: 810-00728	1
5.	Telephone	Panasonic, Model:KX-T2371MXW, S/N:9ABKB073080	1

6.2 Photographs of the Test Configuration

6.2.1 Radiated emission

Below 1GHz:



Above 1GHz:



6.2.2 Conducted emission



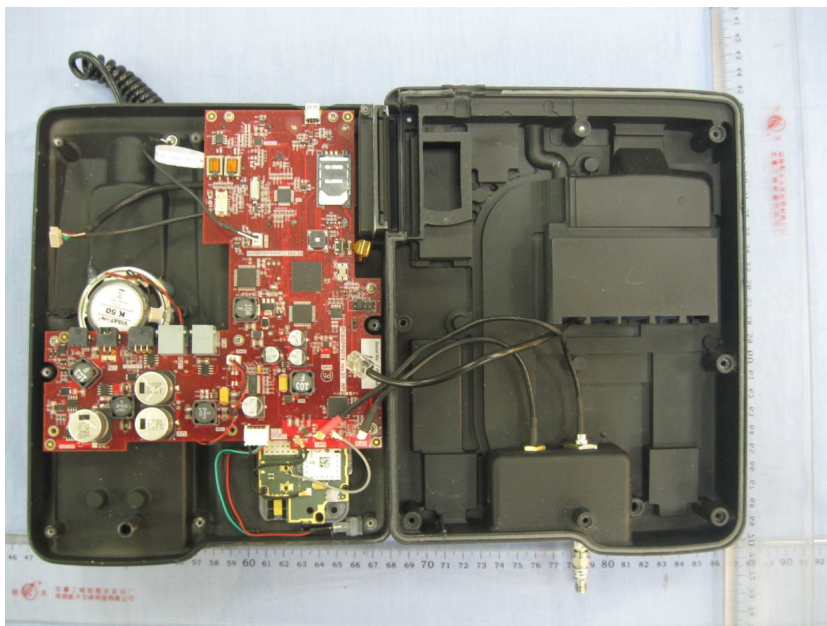
6.3 Photographs of the EUT



Enclosure of EUT



Enclosure of EUT



Internal Photo



Photo of adapter



Photo of adapter

7. Equipment List

No.	Equipment	Manufacturer	Model	Serial No.	Due to Calibration Date
1	Precision Biconical Antenna	TDK Co.	PBA-2030	090500	2013-09-18
2	Precision Log Periodic Antenna	TDK Co.	PLP-3003	061001	2013-09-18
3	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130174	2013-09-18
4	Horn antenna	TDK	HRN-0118	130186	2013-04-07
5	Attenuator 6 dB	Agilent	8491B	MY39260147	2013-09-18
6	Preamplifier	TDK Sonoma	310	242803	2013-04-07
7	Preamplifier	ELENA	EAU-3718 GXA	A070701	2013-04-07
8	EMI Receiver	Rohde & Schwarz	ESIB26	100234	2013-04-07
9	EMI Receiver	Rohde & Schwarz	ESCS30	100350	2013-04-07
10	Spectrum Analyzer	Agilent	E4403B	MY44210199	2013-04-07
11	Art. Mains Network	EMCO	3816/2	00044921	2013-04-07
12	Transient Limiter(10 dB)	Agilent	11947A	3107A03736	2013-04-07
13	Personal Computer	HP	DX2000MT	MXD4250FZM	N/A
14	Personal Computer	HP	DX2000MT	MXD4130B2N	N/A
15	Semi-Anechoic Chamber	TDK Co.	N/A	N/A	2013-04-07
16	Shielded Room	TDK Co.	N/A	N/A	N/A
17	Loop Antenna	EMCO	6502	9107-2440	2013-04-07
18	DC Block	Mini-Circuits	BLK-18-S+	31035	2013-10-16
19	10dB Attenuator	Mini-Circuits	BW-S10W2 +	1014	2013-10-16
20	10dB Attenuator	Weinschel	54A-10	T8872	2013-10-16

8. Test Uncertainty

Test	Range	Confidence Level	Calculated Uncertainty
Radiated emission(3m)	30-1000MHz	95%	4.3dB
Radiated emission(3m)	1-18GHz	95%	5.2dB
Conducted emission	0.15-30MHz	95%	3.3dB

9. Appendix

9.1 Confirmation of Compliance within the Limits

9.1.1 Method of calculating measurement result

Conducted Emission

For example the point of 0.200MHz, L1 QP, Page 35.

Reading + C. FACTOR = Result

Example 34.4 + 10.0 = 44.4