FCC Part 74 Subpart H

EMI TEST REPORT

of

E.U.T. : Transmitter / Wireless Microphone

FCC ID. : JEBQF-20

MODEL : QF-20

Working Frequency : 174-216MHz

for

APPLICANT : WA GOL INDUSTRIAL CO., LTD.
ADDRESS : No. 85 Chang Hsing First Street, Tai-tzu Village, Jen-Te Hsian, Tainan Hsien, Taiwan, R.O.C.

Test Performed by

ELECTRONICS TESTING CENTER, TAIWAN
NO. 34, LIN 5, DING FU TSUN, LINKOU HSIANG
TAIPEI HSIEN, TAIWAN, R.O.C.

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Fax:(02)26010910
Report Number : ET91R-06-083-04

TEST REPORT CIRTIFICATION

Applicant : WA GOL INDUSTRIAL CO., LTD.
No. 85 Chang Hsing First Street, Tai-tzu Village, Jen-Te Hsian, Tainan Hsien, Taiwan, R.O.C.

Manufacturer : WA GOL INDUSTRIAL CO., LTD.
No. 85 Chang Hsing First Street, Tai-tzu Village, Jen-Te Hsian, Tainan Hsien, Taiwan, R.O.C.

Description of EUT :

a) Type of EUT	: Transmitter / Wireless Microphone
b) Trade Name	: MASCOT
c) Model No.	: QF-20
d) FCC ID	: JEBQF-20
e) Working Frequency	: 174-216MHz
f) Power Supply	: DC 3V Batteries

Regulation Applied : FCC Rules and Regulations Part 74 Subpart H (2001)

I HEREBY CERTIFY THAT; The data shown in this report were made in accordance with the procedures given in ANSI C63.4 and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

Issued Date : Jul. 15, 2002

Test Engineer : Jeff Chuang
(Jeff Chuang)

Approve & Authorized Signer : Will Yauo
Will Yauo, Manager
EMC Dept. II of ELECTRONICS
TESTING CENTER, TAIWAN

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1. GENERAL INFORMATION

1.1 Product Description

a) Type of EUT : Transmitter / Wireless Microphone
b) Trade Name : MASCOT
c) Model No. : QF-20
d) FCC ID : JEBQF-20
e) Working Frequency : 174-216MHz
f) Power Supply : DC 3V Batteries

1.2 Characteristics of Device:

The EUT is a frequency modulation Transmitter / Wireless Microphone with following features :

Operation Frequency Range: 174MHz to 216MHz. Type of emission is 180KF3E for headset.

1. To adjust GT/MT Switch, and Gain Control, Simply push down both snap locks on the sides of battery cover and flip it backwards to expose the adjustment panel.
2. Before power on, ascertain if same channel was set up for both receiver and micrphone. If not adjust to same channel accordingly.
3. The LED indicator flashes briefly when power on indicating normal battery status. If not flash occurs it has either no battery, the battery is drained or installed incorrectly. Change accordingly.
4. Plug the microphone connector into the input jack and tighten the connector screw by clockwise direction.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in chapter 13 of ANSI C63.4. and section 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, and 2.1055 of Part 2 of CFR 47

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the roof top of Building at No. 34, Lin 5, Ding Fu Tsun, Linkou Hsiang, Taipei Hsien, Taiwan, R.O.C.

This site has been fully described in a report submitted to your office, and accepted in a letter dated Feb. 10, 2000.

2. REQUIREMENTS OF PROVISIONS

2.1 Definition

Intentional radiator:
A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Frequencies Available

According to sec. 74.802 of Part 74, the following frequencies are available for low power auxiliary station :

Frequencies (MHz)

26.100-26.480	455.000-456.000
54.000-72.000	470.000-488.000
76.000-88.000	488.000-494.000
161.625-161.775	614.000-806.000
174.000-216.000	450.000-451.000
944.000-952.000	

2.3 Requirements for Radio Equipment on Certification

(1) RF Output Power
For transmitters, the power output shall be measured at the RF output terminals.

(2) Modulation Characteristics
For Voice Modulated Communication Equipment, a curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be submitted.

(3) Occupied Bandwidth
For radiotelephone transmitter, other than single sideband or indenpent sideband transmitter, when modulateed by a 2.5kHz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation.

(4) Spurious Emissions at Antenna Terminals
The radio frequency voltage or power generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminal when properly loaded with a suitable artificial antenna.

(5) Field Strength of Spurious Emissions

Measurements shall be made to detect spurious emission that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal condition of installation and operation.

(6) Frequencies Tolerance

a) The frequency stability shall be measured with variation of ambient temperature.
b) The frequency stability shall be measured with variation of primary supply voltage.

2.4 Labeling Requirement

Each equipment for which a type acceptance application is filed on or after May 1,1981, shall bear an identification plate or label pursuant to § 2.925（Identification of equipment） and § 2.926（FCC identifier）.

3. OUTPUT POWER MEASUREMENT

3.1 Provision Applicable

According to § 74.861(e)(1)(i), the output power shall not exceed 250 milliwatts.

3.2 Measurement Procedure

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively, adjusting the input voltage to produce the maximum power as measured in chapter 3.
2. Adjust the analyzer for each frequency measured in chapter 6 on a 1 MHz frequency span and 100 kHz resolution bandwidth.
3. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 °, and record the highest value indicated on spectrum analyzer as reference value.
4. Repeat step 3 until all frequencies need to be measured were complete.
5. Repeat step 4 with search antenna in vertical polarized orientations.
6. Replace the EUT with a tuned dipole antenna (horn antenna for above 1 GHz) relative to each frequency in horizontally polarized orientation and as the same polarized orientation with search antenna. Connect the tuned dipole antenna to a standard signal generator (SG) via a low loss cable. Power on the SG and tune the right frequency in measuring as well as set SG at a appreciated output level. Rise and lower the search antenna to get the highest value on spectrum analyzer, and then hold this position. Adjust the SG output to get a identical value derived from step 3 on spectrum analyzer. Record this value for result calculated.
7. Repeat step 6 until all frequencies need to be measured were complete.
8. Repeat step 7 with both dipole antenna (horn antenna for above 1 GHz) and search antenna in vertical polarized orientations.

Figure 2 : Frequencies measured below 1 GHz configuration

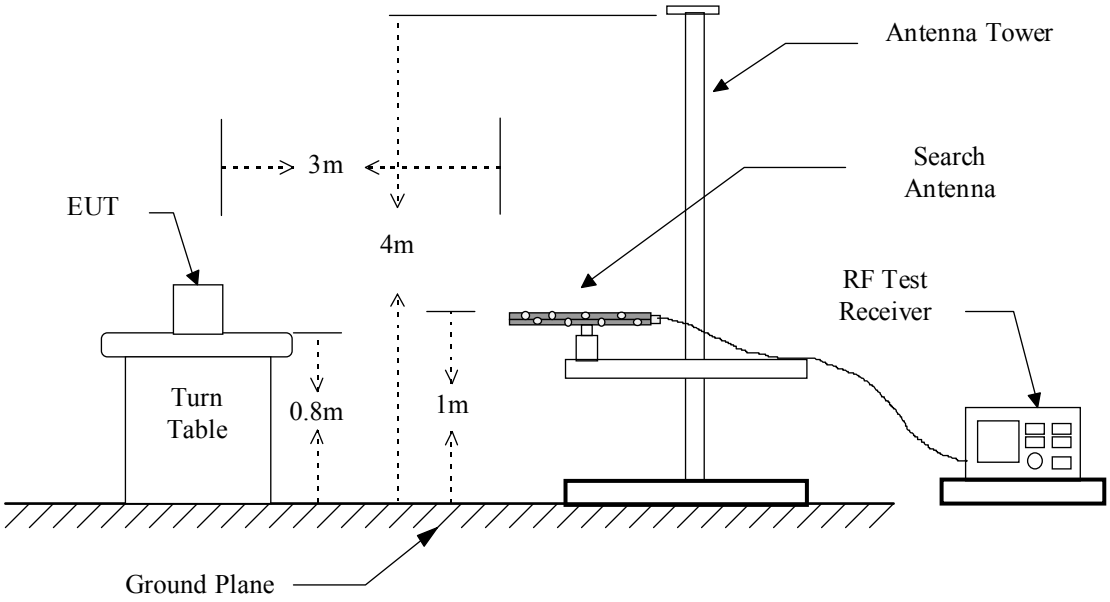
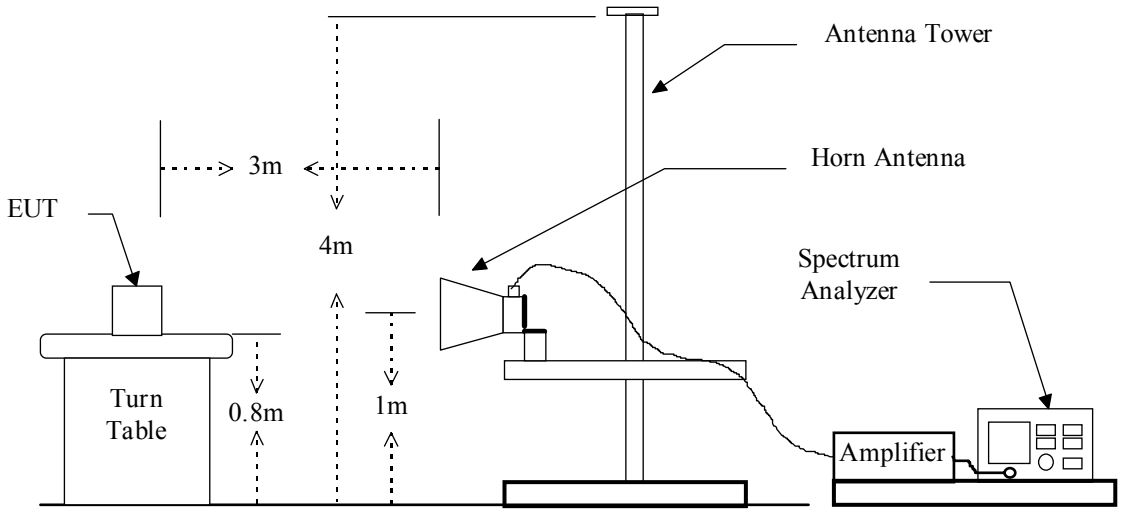


Figure 1 : Frequencies measured above 1 GHz configuration



3.3 Test Data

A. Channel Low (ERP)

Operated mode : Normal Test Date : Jul. 03, 2002
Temperature : 25 ℃ Humidity : 60 %

Frequency (MHz)	Meter Reading (dBμV/m)	SG Reading (dBm)	Cable Loss (dB)	Result (dBm)	Output Power (mW)	Limit (dBm)
174.591	69.3	-5.0	0.5	-5.5	0.28	27.0

B. Channel Mid (ERP)

Operated mode : Normal Test Date : Jan. 08, 2002
Temperature : 25 ℃ Humidity : 60 %

Frequency (MHz)	Meter Reading (dBμV/m)	SG Reading (dBm)	Cable Loss (dB)	Result (dBm)	Output Power (mW)	Limit (dBm)
195.592	70.7	-3.8	0.5	-4.3	0.37	27.0

C. Channel High (ERP)

Operated mode : Normal Test Date : Jan. 08, 2002
Temperature : 25 ℃ Humidity : 60 %

Frequency (MHz)	Meter Reading (dBμV/m)	SG Reading (dBm)	Cable Loss (dB)	Result (dBm)	Output Power (mW)	Limit (dBm)
215.837	75.9	1.2	0.6	0.6	1.15	27.0

3.3 Result Calculation

Result calculation is as following :

Result = SG Reading + Cable Loss + Antenna Gain Corrected

Antenna Gain Corrected : is used for antenna other than dipole to convert radiated power to ERP.

$$mW = \log^{-1}[\frac{Result(dBm)}{10}]$$

3.4 Test Equipment

Equipment	Manufacturer	Model No.	Next Cal. Date
EMI Test Receiver	R&S	ESBI	05/15/2003
Plotter	HP	7440A	N/A

4. MODULATION CHARACTERISTICS

4.1 Provisions Applicable

According to § 2.1047 (a), for Voice Modulated Communication Equipment, the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be measured.

4.2 Measurement Method

A) Frequency response of audio circuits

1. Position the EUT as shown in figure 3.

2. Vary the modulating frequency from 100 Hz to 5000 Hz with varying the input voltage from 0V to maximum permitted input voltage, and observe the change in output.

B) Modulation Limit

1. Position the EUT as shown in figure 3, adjust the audio input frequency to 100 Hz and the input level from 0V to maximum permitted input voltage with recording each carrier frequency deviation responding to respective input level.

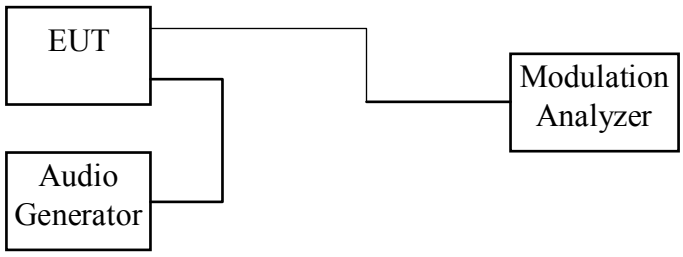
2. Repeat step 1 with changing the input frequency for 200, 500, 1000, 3000, and 5000 Hz in sequence.

C) Frequency response of all circuits

1. Position the EUT as shown in figure 3.

2. Vary the modulating frequency from 100 Hz to 15000 Hz with constant input voltage (derived from 5.4(a) of this test report), and observe the change in output.

Figure 3 : Modulation characteristic measurement configuration

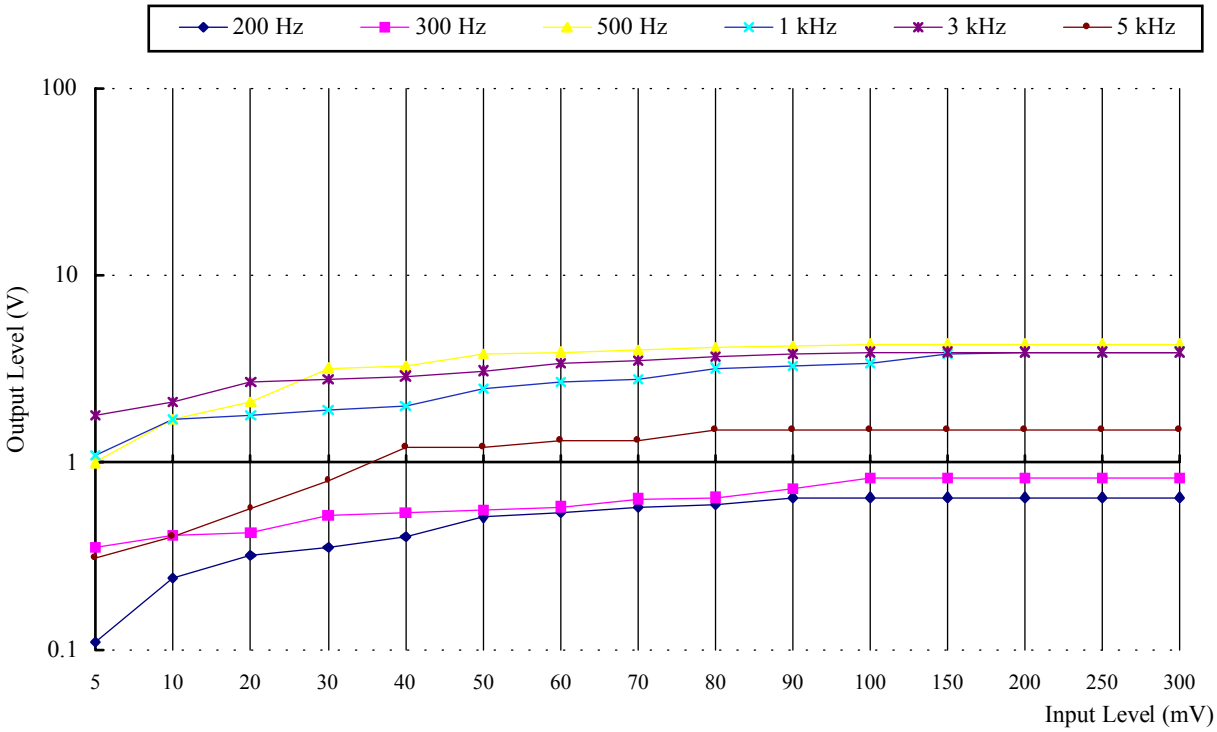


4.3 Measurement Instrument

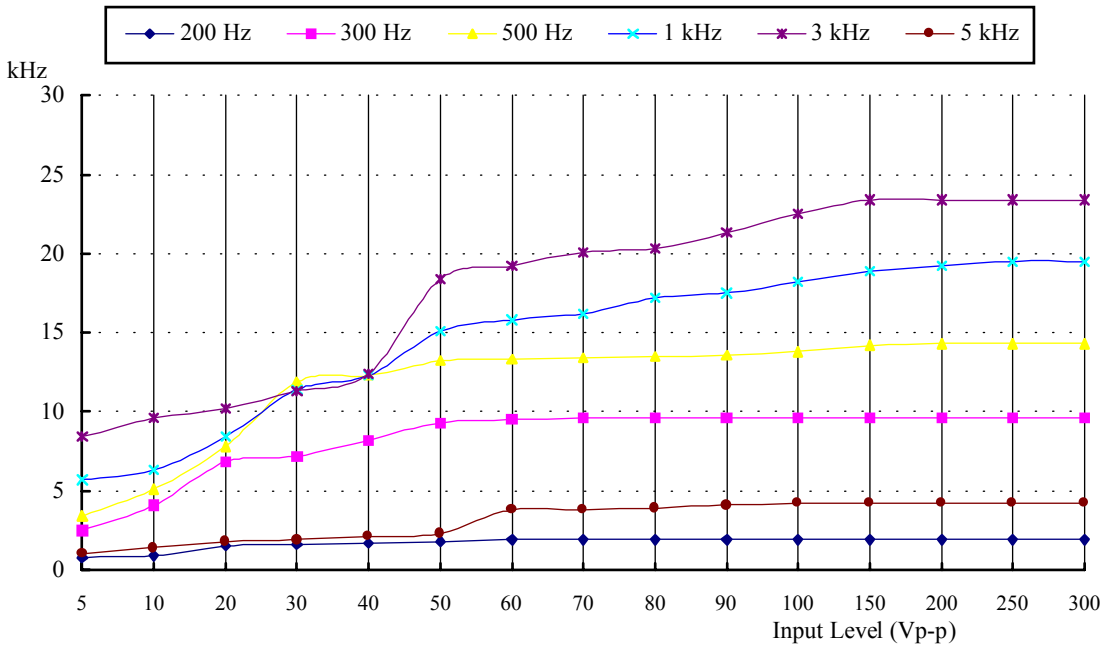
Equipment	Manufacturer	Model No.	Next Cal. Date
Modulation Analyzer	Hewlett-Packard	8901A	12/01/2002
Multifunction Synthesizer	Hewlett-Packard	8904A	11/24/2002
Oscillscope	Lecroy	9350A	12/01/2002

4.4 Measurement Result

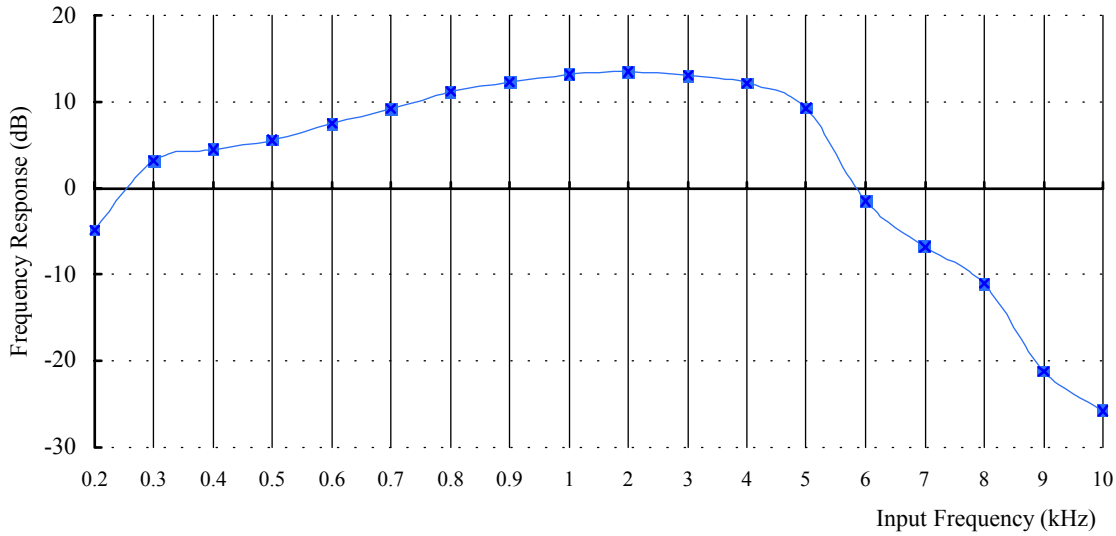
A). Frequency response



B). Modulation Limit



C). Frequency response of all circuits



5. OCCUPIED BANDWIDTH OF EMISSION

5.1 Provisions Applicable

According to § 2.1049 (c)(1), For radiotelephone transmitter, other than single sideband or indenpent sideband transmitter, when modulateed by a 2.5kHz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation.
According to § 74.861(e)(5), the frequency emission bandwidth shall not exceed 200 kHz.

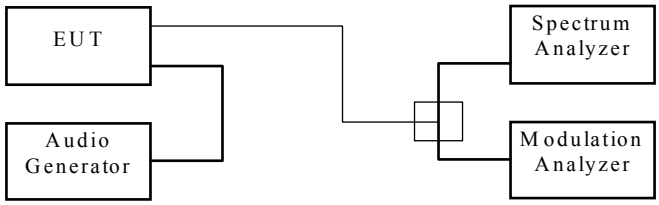
5.2 Measurement Method

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 figure 4, and Install new batteries in the EUT. Turn on the EUT ant set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

3. Apply a 2.5 kHz modulation signal to EUT and measure the frequencies of the modulated signal from the EUT where it is the specified number of dB below the reference level set in step 2. This is the occupied bandwidth specified.

Figure 4 : Occupied bandwidth measurement configuration



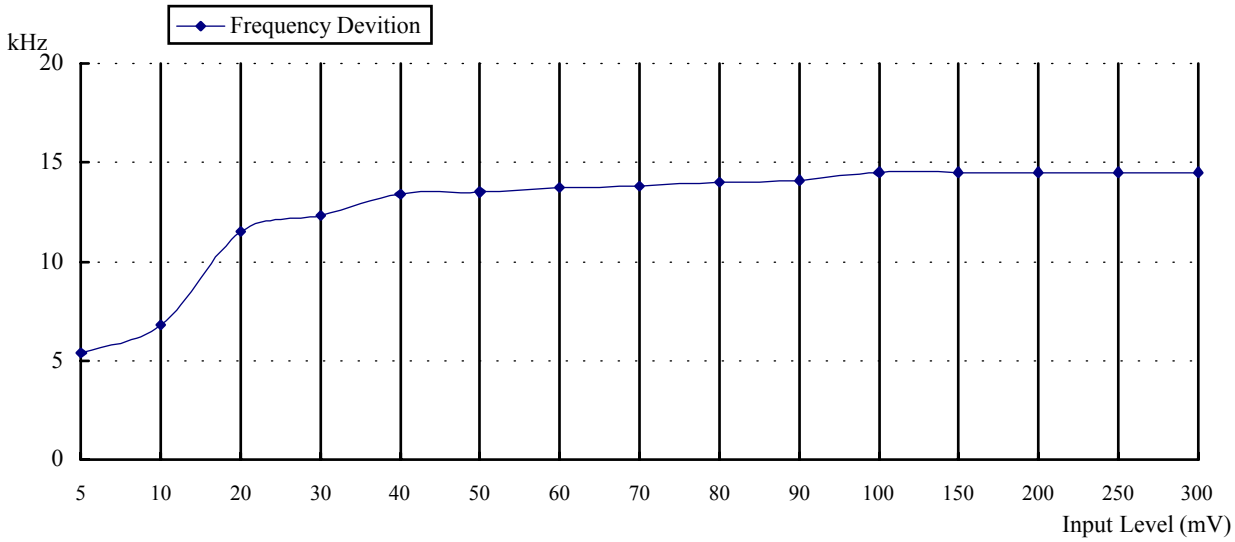
5.3 Occupied Bandwidth Test Equipment

Equipment	Manufacturer	Model No.	Next Cal. Date
Spectrum Analyzer	R&S	ESBI	05/15/2003
Modulation Analyzer	Hewlett-Packard	8901A	12/01/2002
Multifunction Synthesizer	Hewlett-Packard	8904A	11/24/2002
Plotter	Hewlett-Packard	7440A	N/A

5.4 Bandwidth Measured

5.4.1 Input Level Derived

Input Audio Frequency : 2.5 kHz, Sine Wave



The Level input to produce 50% modulation is 50 mV, therefore the magnitude 16 dB greater than it is 315.5 mV.

5.4.2 Occupied Bandwidth Plotted

The Channel Low 26 dB Bandwidth is 70.0KHz.
The Channel Mid 26 dB Bandwidth is 69.7KHz
The Channel High 26 dB Bandwidth is 68.7KHz.

Please see appendix 1 for plotted data.

6. FIELD STRENGTH OF EMISSION

6.1 Provisions Applicable

According to § 2.1053, measurements shall be made to detect spurious emission that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal condition of installation and operation. Information submitted shall include the relative radiated power of spurious emission with reference to the rated power output of the transmitter, assuming all emissions are radiated from a halfwave dipole antenna.

According to § 74.861(e)(6), the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the follwing sceedule:

(i) on any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB.

(ii) on any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB.

(iii) on any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth shall be attenuated below the unmodulated carrier by at least 43 plus 10 Log(output power in watts) dB.

6.2 Measurement Procedure

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively, adjusting the input voltage to produce the maximum power as measured in chapter 3.
2. Adjust the analyzer for each frequency measured in chapter 6 on a 1 MHz frequency span and 100 kHz resolution bandwidth.
3. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 °, and record the highest value indicated on spectrum analyzer as reference value.
4. Repeat step 3 until all frequencies need to be measured were complete.
5. Repeat step 4 with search antenna in vertical polarized orientations.
6. Replace the EUT with a tuned dipole antenna (horn antenna for above 1 GHz) relative to each frequency in horizontally polarized orientation and as the same polarized orientation with search antenna. Connect the tuned dipole antenna to a standard signal generator (SG) via a low loss cable. Power on the SG and tune the right frequency in measuring as well as set SG at a appreciated output level. Rise and lower the search antenna to get the highest value on spectrum analyzer, and then hold this position. Adjust the SG output to get a identical value derived from step 3 on spectrum analyzer. Record this value for result calculated.

7. Repeat step 6 until all frequencies need to be measured were complete.
8. Repeat step 7 with both dipole antenna (horn antenna for above 1 GHz) and search antenna in vertical polarized orientations.

6.3 Measuring Instrument

Equipment	Manufacturer	Model No.	Next Cal. Date
Spectrum Analyzer	Hewlett-Packard	8568B	01/10/2003
Quasi Peak Detector	Hewlett-Packard	85650A	01/10/2003
Pre-selector	Hewlett-Packard	85685A	01/10/2003
Spectrum Analyzer	Hewlett-Packard	8564E	04/16/2003
Horn Antenna	EMCO	3115	05/29/2003
Log periodic Antenna	EMCO	3146	11/02/2002
Biconical Antenna	EMCO	3110B	11/02/2002
Preamplifier	Hewlett-Packard	8449B	05/10/2003
Preamplifier	Hewlett-Packard	8447D	10/14/2002

Measuring instrument setup in frequency band measured is as following :

Frequency Band (MHz)	Instrument	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	Spectrum Analyzer	Peak	100 kHz	100 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz

6.4 Measuring Data

A. Channel Low

Operated mode : Normal Test Date : Jul. 03, 2002
Temperature : 25℃ Humidity : 60

Unmodulated carrier output power is –5.5 dBm , or 0.28 mW (ERP).

The limit of spurious or harmonics is calculated as following :

-13.5-[43+10log(carrier output power in W)], or -13dBm

Frequency (MHz)	Meter Reading (dBuV)		SG Reading (dBm)		Cable Loss (dB)	Result (dBm)		Limit (dBm)	Margin (dB)
349.184	27.2	31.5	-54.1	-47.9	1.1	-55.2	-49.0	-13.0	-36.0
523.776	5.8	8.9	-70.4	-63.9	1.3	-71.7	-65.2	-13.0	-52.2
698.368	---	8.7	---	-60.9	1.5	---	-62.4	-13.0	-49.4
872.960	6.9	16.2	-62.5	-48.6	2.1	-64.6	-50.7	-13.0	-37.7
1047.552	---	---	---	---	---	---	---	-13.0	---
1222.144	53.2	58.5	-18.0	-16.2	1.3	-52.4	-50.6	-13.0	-37.6
1396.736	51.4	54.5	-25.9	-19.7	1.3	-58.2	-52	-13.0	-39.0
1571.328	---	---	---	---	---	---	---	-13.0	---
1745.920	---	---	---	---	---	---	---	-13.0	---

Note :

1. Remark "---" means that the emission level is too weak to be detected.
2. Result calculation is as following :

   Result = SG Reading + Cable Loss + Antenna Gain Corrected

   Antenna Gain Corrected : is used for antenna other than dipole to convert radiated power to ERP.
3. Spurious or harmonics above 1 GHz is too low to be detected or attenuated more than 60 dB from limit value.

B. Channel Mid

Operated mode : Normal Test Date : Jul. 03, 2002
Temperature : 25℃ Humidity : 60%

Unmodulated carrier output power is –4.3 dBm , or 0.37 mW (ERP).

The limit of spurious or harmonics is calculated as following :

-11.6-[43+10log(carrier output power in W)], or -13dBm

Frequency (MHz)	Meter Reading (dBuV) H	V	SG Reading (dBm) H	V	Cable Loss (dB)	Result (dBm) H	V	Limit (dBm)	Margin (dB)
391.184	9.6	23.2	-70.8	-56.2	1.0	-71.8	-57.2	-13.0	-44.2
586.776	---	5.7	---	-64.4	1.4	---	-65.8	-13.0	-52.8
782.368	---	---	---	---	---	---	---	-13.0	---
977.960	---	---	---	---	---	---	---	-13.0	---
1173.552	---	---	---	---	---	---	---	-13.0	---
1369.144	---	---	---	---	---	---	---	-13.0	---
1564.736	---	---	---	---	---	---	---	-13.0	---
1760.328	---	---	---	---	---	---	---	-13.0	---
1955.920	---	---	---	---	---	---	---	-13.0	---

Note :

1. Remark "---" means that the emission level is too weak to be detected.
2. Result calculation is as following :

   Result = SG Reading + Cable Loss + Antenna Gain Corrected

   Antenna Gain Corrected : is used for antenna other than dipole to convert radiated power to ERP.
3. Spurious or harmonics above 1 GHz is too low to be detected or attenuated more than 60 dB from limit value.

C. Channel High

Operated mode : Normal Test Date : Jul. 03, 2002
Temperature : 25℃ Humidity : 60%

Unmodulated carrier output power is 0.6 dBm , or 1.15 mW (ERP).

The limit of spurious or harmonics is calculated as following :

-11.9-[43+10log(carrier output power in W)], or -13dBm

Frequency (MHz)	Meter Reading (dBuV) H	V	SG Reading (dBm) H	V	Cable Loss (dB)	Result (dBm) H	V	Limit (dBm)	Margin (dB)
431.674	21.2	31.0	-57.4	-43.5	1.0	-58.4	-44.5	-13.0	-31.5
647.511	12.3	19.6	-58.6	-49.0	1.5	-60.1	-50.5	-13.0	-37.5
863.348	7.3	6.2	-61.9	-58.8	2.1	-64.0	-60.9	-13.0	-47.9
1079.185	20.4	30.9	-48.2	-40.7	1.3	-49.5	-42.0	-13.0	-29.0
1295.022	34.8	34.2	-41.0	-36.2	1.3	-42.3	-37.5	-13.0	-24.5
1510.859	---	---	---	---	---	---	---	-13.0	---
1726.696	---	---	---	---	---	---	---	-13.0	---
1942.533	---	---	---	---	---	---	---	-13.0	---
2158.370	---	---	---	---	---	---	---	-13.0	---

Note :

1. Remark "---" means that the emission level is too weak to be detected.
2. Result calculation is as following :

   Result = SG Reading - Cable Loss + Antenna Gain Corrected

   Antenna Gain Corrected : is used for antenna other than dipole to convert radiated power to ERP.
3. Spurious or harmonics above 1 GHz is too low to be detected or attenuated more than 60 dB from limit value.

6.5 Radiated Measurement Photos

Please see Setup Photos in Exhibit F.

7. FREQUENCY STABILITY MEASUREMENT

7.1 Provisions Applicable

According to § 2.1055 (a)(1), the frequency stability shall be measured with variation of ambient temperature from -30℃ to +50℃ centigrade, and according to § 2.1055 (d)(2), the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point which is specified by the manufacturer.

According to § 74.861(e)(4), the frequency tolerance of the transmitter shall be 0.005 percent.

7.2 Measurement Procedure

A) Frequency stability versus environmental temperature

1. Setup the configuration per figure 5 for frequencies measured at ambient temperature if it is within 15℃ to 25℃. Otherwise, an environmental chamber set for a temperature of 20℃ shall be used. Install new batteries in the EUT.

2. Turn on EUT and set SA center frequency to the right frequency needs to be measured. Then set SA RBW to 30 kHz, VBW to 100kHz and frequency span to 500 kHz. Record this frequency to be a reference.

3. Set the temperature of chamber to 50℃. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.

4. Repeat step 2 with a 10℃ decreased per stage until the lowest temperature -30℃ is measured, record all measurement frequencies.

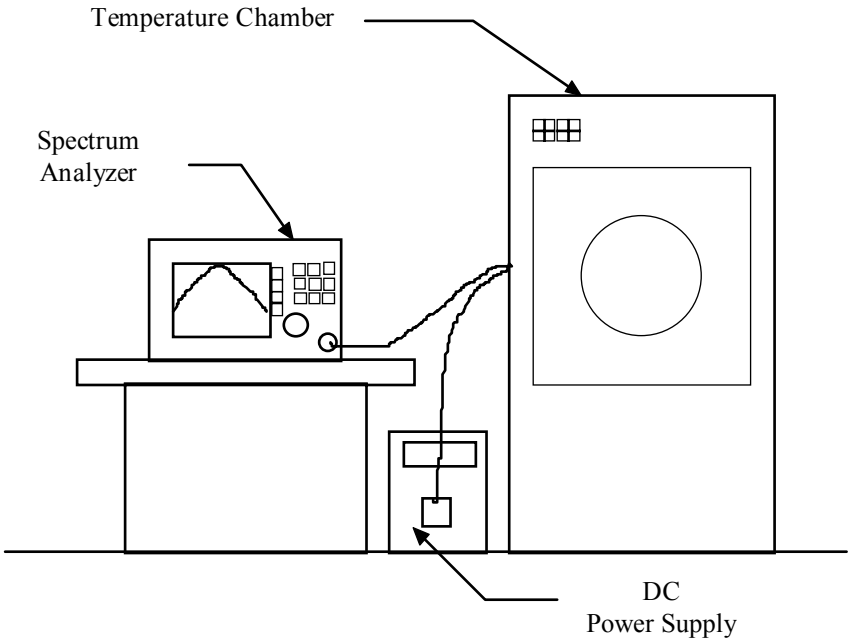
B) Frequency stability versus input voltage

1. Setup the configuration per figure 7 for frequencies measured at ambient temperature if it is within 15℃ to 25℃. Otherwise, an environmental chamber set for a temperature of 20℃ shall be used. Install new batteries in the EUT.

2. Set SA center frequency to the right frequency needs to be measured. Then set SA RBW to 30 kHz, VBW to 100kHz and frequency span to 500 kHz. Record this frequency to be a reference.

3. For battery operated only device, supply the EUT primary voltage at the battery operating end point which is specified by the manufacturer and record the frequency.

Figure 5 : Frequency stability measurement configuration



7.3 Measurement Instrument

Equipment	Manufacturer	Model No.	Next Cal. Date
Spectrum Analyzer	HP	8564E	05/16/2003
Temperature Chamber	ACS	EOS 200T	01/17/2003

7.4 Measurement Data

A1. Frequency stability versus enviroment tempture

Reference Frequency : 174.591 MHz		Limit：0.005%					
Enviroment	Power	Frequency measured with time elapsed					
Tempture	Supplied	2 minute		5 minute		10 minute	
(℃)	(Vdc)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	New Batt.	174.5891	-0.00110	174.5895	-0.00085	174.5925	0.00084
	New Batt.	174.5890	-0.00114	174.5903	-0.00038	174.5876	-0.00194
	New Batt.	174.5845	-0.00374	174.5936	0.00149	174.5914	0.00020
40	New Batt.	174.5903	-0.00040	174.5849	-0.00350	174.5921	0.00063
	New Batt.	174.5936	0.00149	174.5876	-0.00195	174.5852	-0.00334
	New Batt.	174.5920	0.00056	174.5888	-0.00124	174.5904	-0.00036
30	New Batt.	174.5940	0.00174	174.5874	-0.00205	174.5919	0.00049
	New Batt.	174.5966	0.00323	174.5967	0.00327	174.5872	-0.00220
	New Batt.	174.5905	-0.00027	174.5977	0.00382	174.5903	-0.00039
20	New Batt.	174.5966	0.00319	174.5915	0.00031	174.5901	-0.00050
	New Batt.	174.5916	0.00035	174.5873	-0.00211	174.5943	0.00190
	New Batt.	174.5922	0.00067	174.5977	0.00381	174.5857	-0.00305
10	New Batt.	174.5975	0.00371	174.5947	0.00213	174.5950	0.00232
	New Batt.	174.5853	-0.00327	174.5862	-0.00278	174.5956	0.00265
	New Batt.	174.5934	0.00137	174.5898	-0.00069	174.5908	-0.00013
0	New Batt.	174.5885	-0.00144	174.5862	-0.00274	174.5858	-0.00300
	New Batt.	174.5976	0.00377	174.5937	0.00154	174.5963	0.00305
	New Batt.	174.5953	0.00246	174.5949	0.00224	174.5948	0.00215
-10	New Batt.	174.5976	0.00378	174.5949	0.00222	174.5922	0.00068
	New Batt.	174.5846	-0.00365	174.5883	-0.00157	174.5956	0.00265
	New Batt.	174.5971	0.00350	174.5912	0.00013	174.5866	-0.00254
-20	New Batt.	174.5931	0.00120	174.5908	-0.00013	174.5845	-0.00371
	New Batt.	174.5856	-0.00308	174.5954	0.00249	174.5887	-0.00129
	New Batt.	174.5950	0.00228	174.5928	0.00101	174.5870	-0.00227

A2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 174.591 MHz		Limit：0.005%					
Enviroment	Power	Frequency measured with time elapsed					
Tempture	Supplied	2 minute		5 minute		10 minute	
(℃)	(Vdc)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
25	End-Point	174.5845	-0.00374	174.5936	0.00150	174.5879	-0.00175

B1. Frequency stability versus enviroment tempture

Reference Frequency : 195.592 MHz		Limit：0.005%					
Enviroment	Power	Frequency measured with time elapsed					
Tempture	Supplied	2 minute		5 minute		10 minute	
(℃)	(Vdc)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	New Batt.	195.5917	-0.00013	195.5866	-0.00277	195.5980	0.00305
	New Batt.	195.5989	0.00351	195.5869	-0.00258	195.5921	0.00006
	New Batt.	195.5931	0.00057	195.5939	0.00097	195.5978	0.00295
40	New Batt.	195.5976	0.00286	195.5898	-0.00111	195.5908	-0.00059
	New Batt.	195.5864	-0.00287	195.5849	-0.00361	195.5942	0.00111
	New Batt.	195.5958	0.00193	195.5857	-0.00320	195.5885	-0.00181
30	New Batt.	195.5949	0.00146	195.5944	0.00124	195.5920	0.00001
	New Batt.	195.5959	0.00200	195.5878	-0.00214	195.5911	-0.00044
	New Batt.	195.5926	0.00031	195.5934	0.00073	195.5910	-0.00050
20	New Batt.	195.5853	-0.00341	195.5957	0.00190	195.5991	0.00363
	New Batt.	195.5971	0.00263	195.5881	-0.00200	195.5886	-0.00174
	New Batt.	195.5851	-0.00355	195.5859	-0.00313	195.5864	-0.00285
10	New Batt.	195.5960	0.00206	195.5894	-0.00135	195.5995	0.00385
	New Batt.	195.5988	0.00348	195.5968	0.00247	195.5984	0.00325
	New Batt.	195.5962	0.00215	195.5856	-0.00327	195.5881	-0.00197
0	New Batt.	195.5887	-0.00171	195.5954	0.00174	195.5896	-0.00122
	New Batt.	195.5856	-0.00325	195.5881	-0.00199	195.5852	-0.00349
	New Batt.	195.5931	0.00056	195.5878	-0.00216	195.5900	-0.00101
-10	New Batt.	195.5922	0.00009	195.5877	-0.00219	195.5896	-0.00123
	New Batt.	195.5886	-0.00172	195.5889	-0.00159	195.5928	0.00039
	New Batt.	195.5883	-0.00191	195.5898	-0.00114	195.5981	0.00310
-20	New Batt.	195.5852	-0.00348	195.5974	0.00275	195.5991	0.00361
	New Batt.	195.5913	-0.00038	195.5853	-0.00344	195.5848	-0.00367
	New Batt.	195.5938	0.00094	195.5962	0.00217	195.5976	0.00288

B2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 195.591 MHz		Limit：0.005%					
Enviroment	Power	Frequency measured with time elapsed					
Tempture	Supplied	2 minute		5 minute		10 minute	
(℃)	(Vdc)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
25	End-Point	195.5850	-0.00358	195.5992	0.00368	195.5853	-0.00341

C1. Frequency stability versus enviroment tempture

Reference Frequency : 215.837 MHz		Limit：0.005%					
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	New Batt.	215.8419	0.00228	215.8411	0.00188	215.8411	0.00192
	New Batt.	215.8449	0.00366	215.8406	0.00165	215.8318	-0.00241
	New Batt.	215.8437	0.00308	215.8288	-0.00381	215.8437	0.00310
40	New Batt.	215.8344	-0.00121	215.8403	0.00151	215.8393	0.00107
	New Batt.	215.8383	0.00061	215.8438	0.00314	215.8425	0.00257
	New Batt.	215.8313	-0.00265	215.8352	-0.00084	215.8403	0.00153
30	New Batt.	215.8325	-0.00210	215.8439	0.00319	215.8423	0.00247
	New Batt.	215.8365	-0.00025	215.8324	-0.00215	215.8407	0.00169
	New Batt.	215.8415	0.00208	215.8316	-0.00249	215.8331	-0.00182
20	New Batt.	215.8326	-0.00206	215.8382	0.00057	215.8408	0.00175
	New Batt.	215.8432	0.00288	215.8345	-0.00116	215.8316	-0.00250
	New Batt.	215.8376	0.00030	215.8400	0.00137	215.8370	0.00000
10	New Batt.	215.8359	-0.00050	215.8380	0.00047	215.8427	0.00265
	New Batt.	215.8367	-0.00015	215.8407	0.00171	215.8323	-0.00219
	New Batt.	215.8295	-0.00348	215.8366	-0.00017	215.8369	-0.00004
0	New Batt.	215.8344	-0.00120	215.8298	-0.00335	215.8402	0.00147
	New Batt.	215.8449	0.00367	215.8369	-0.00007	215.8446	0.00354
	New Batt.	215.8317	-0.00245	215.8320	-0.00233	215.8309	-0.00284
-10	New Batt.	215.8330	-0.00185	215.8393	0.00107	215.8303	-0.00309
	New Batt.	215.8298	-0.00332	215.8337	-0.00154	215.8366	-0.00016
	New Batt.	215.8327	-0.00199	215.8306	-0.00296	215.8398	0.00131
-20	New Batt.	215.8384	0.00067	215.8295	-0.00346	215.8404	0.00157
	New Batt.	215.8330	-0.00187	215.8307	-0.00292	215.8410	0.00184
	New Batt.	215.8372	0.00011	215.8342	-0.00131	215.8298	-0.00334

C2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 215.837 MHz		Limit：0.005%					
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
25	End-Point	215.8393	0.00106	215.8418	0.00221	215.8317	-0.00244

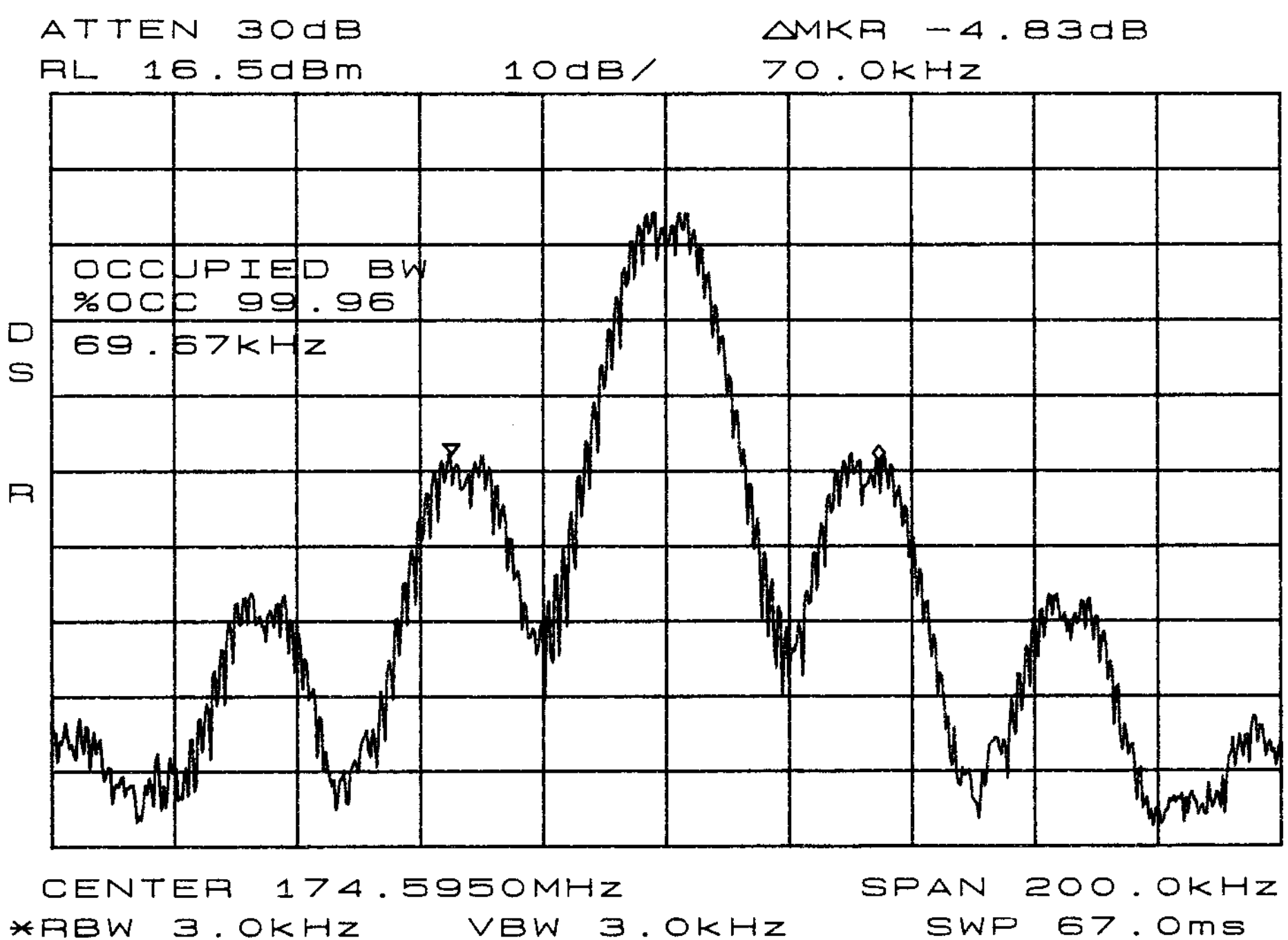
8 CONDUCTED EMISSION MEASUREMENT

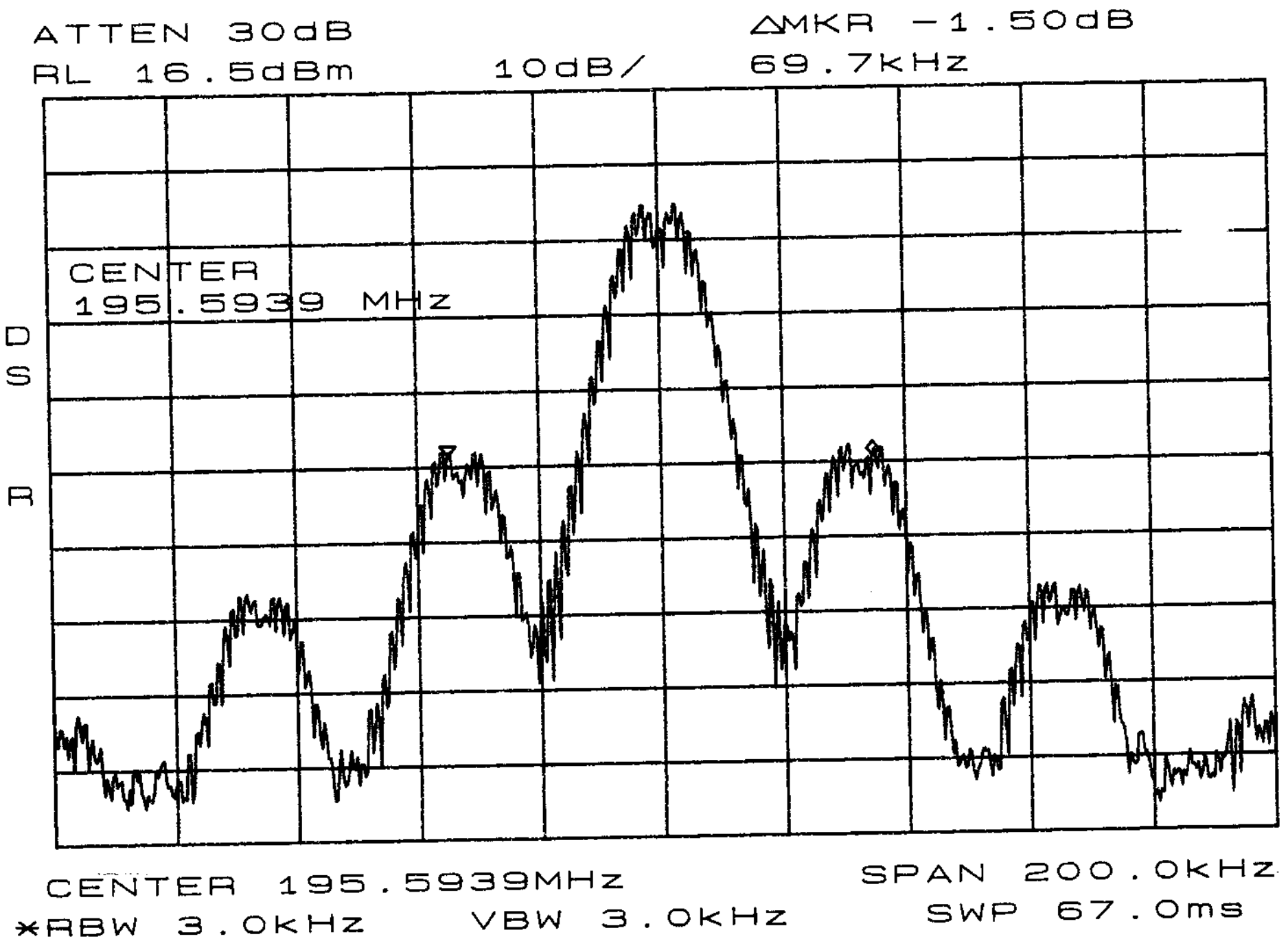
8.1 Standard Applicable

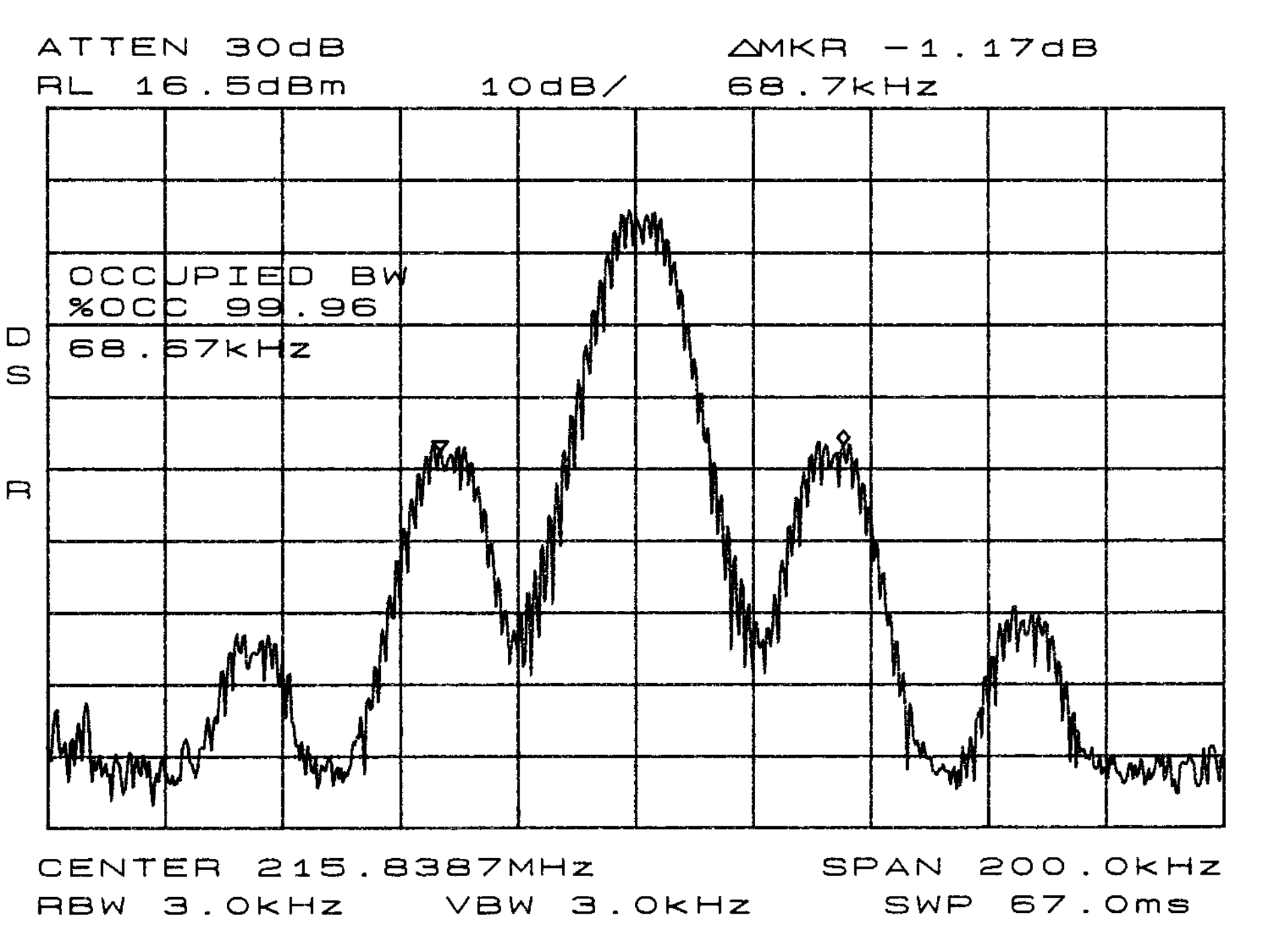
This EUT is excused from investigation of conducted emission, for it is powered by battery only. According to § 15.207 (d), measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

For intentional device, Line Conducted Emission Limits are in accordance to § 15.207(a), any emissions level shall not exceed 48 dBuV.

Appendix 1 : Occupied Emission Bandwidth Plotted Data


ATTEN 30dB
ΔMKR -4.83dB
RL 16.5dBm
10dB/
70.0kHz
OCCUPIED BW
%OCC 99.96
69.67kHz
D
S
R
CENTER 174.5950MHz
SPAN 200.0kHz
*RBW 3.0kHz
VBW 3.0kHz
SWP 67.0ms


ATTEN 30dB
RL 16.5dBm
10dB/
ΔMKR -1.50dB
69.7kHz
CENTER
195.5939 MHz
D
S
R
CENTER 195.5939MHz
SPAN 200.0kHz
*RBW 3.0kHz
VBW 3.0kHz
SWP 67.0ms


ATTEN 30dB
ΔMKR −1.17dB
RL 16.5dBm
10dB/
68.7kHz
OCCUPIED BW
%OCC 99.96
68.67kHz
D
S
R
CENTER 215.8387MHz
SPAN 200.0kHz
RBW 3.0kHz
VBW 3.0kHz
SWP 67.0ms