



# FCC and IC Test Report

## FCC Part 22, 24 / RSS 132,133

for

Wavecom, Inc.

Q52 Omni

Model Number: Q52 Omni

FCC ID: O9EQ52OMNI

IC-ID: 3651C-Q52OMNI

TEST REPORT #: EMC\_WAVEC\_010\_FCC22\_24\_Rev1  
DATE: 2008-12-01



FCC listed  
A2LA certified  
IC recognized #  
3462B

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Board of Directors: Dr. Harald Ansoerge, Dr. Klaus Matkey, Hans Peter May



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# 1 Assessment

The following is in compliance with the applicable criteria specified in FCC rules Parts 2, 22 and 24 of Title 47 of the Code of Federal Regulations and in compliance with the applicable criteria specified in Industry Canada rules RSS132 and RSS133.

Company	Description	Model #
<b>Wavecom, Inc.</b>	<b>GSM/Orbcomm dual mode transceiver</b>	<b>Q52 Omni</b>

This test report reviewed by:

**Satya Radhakrishna**  
**(Project Engineer)**

**2008-12-01** **EMC & Radio**

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Date	Section	Name	Signature
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Project Leader:

**Marc Douat**  
**(Project Engineer)**

**2008-12-01** **EMC & Radio**

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Date	Section	Name	Signature
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The test results of this test report relate exclusively to the test item specified in Identification of the Equipment under Test. The CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM Inc USA.

## **2 Administrative Data**

### **2.1 Identification of the Testing Laboratory Issuing the EMC Assessment Report**

Company Name:	CETECOM Inc.
Department:	EMC
Address:	411 Dixon Landing Road Milpitas, CA 95035 U.S.A.
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Responsible Test Lab Manager:	Lothar Schmidt

### **2.2 Identification of the Client**

Applicant's Name:	Wavecom, Inc.
Address:	430 Davis Drive Suite 300, Research Triangle Park Morrisville, NC 27560, USA
Contact Person:	Brian Young; Peter Cotterill
Phone No.	+1 919 389 6631
Fax:	+1 919 237 4140
e-mail:	brian.young@wavecom.com

### **2.3 Identification of the Manufacturer**

Manufacturer's Name:	Same as above
Manufacturer's Address:	

### 3 Equipment under Test (EUT)

#### 3.1 Specification of the Equipment under Test

Product Type	GSM/Orbcomm dual mode transceiver.
Marketing Name:	Q52 Omni
Model No:	Q52 Omni
Hardware Revision :	200.0
Software Revision :	Open AT® Firmware 7.2.00
FCC-ID:	O9EQ52OMNI
IC-ID :	3651C-Q52OMNI
Frequency Range:	824 MHz to 849 MHz, 1850 MHz to 1910 MHz
Number of Channels	124-GSM850, 299-GSM1900
Type(s) of Modulation:	GMSK
Antenna Type:	MCA 18 90 MH; 0dBi
Radiated Output Power:	ERP 30.71dBm (1.18W) @ 848.8 MHz EIRP 24.53dBm (0.284W) @ 1880MHz

#### 3.2 Identification of Accessory equipment

AE #	TYPE	MANUFACTURE	MODEL	SERIAL #
1	Development Board	Wavecom	TINA	A661
2	AC Adapter	Cincon Electric Co.	TR45A12	45120-0011271

## **Subject of Investigation**

Data presented in this test report only includes Radiated emissions for transmit and receive, Radiated power and AC conducted emissions.

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT as specified by requirements listed in FCC rules Parts 2, 22 and 24 of Title 47 of the Code of Federal Regulations and Industry Canada RSP-100, RSS-132, and RSS-133. The maximization of portable equipment is conducted in accordance with ANSI C63.4.

## **4 Measurements**

### **4.1 RF Power Output**

#### **4.1.1 FCC 2.1046 Measurements required: RF power output.**

Power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on circuit elements as specified. The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

#### **4.1.2 Limits:**

##### **4.1.2.1 §22.913(a) & RSS-129 (9.1) Effective radiated power limits.**

The effective radiated power (ERP) of mobile transmitters must not exceed 7 Watts.

##### **4.1.2.2 §24.232(b)(c) & RSS-133 (4.3) & (6.4) Power limits.**

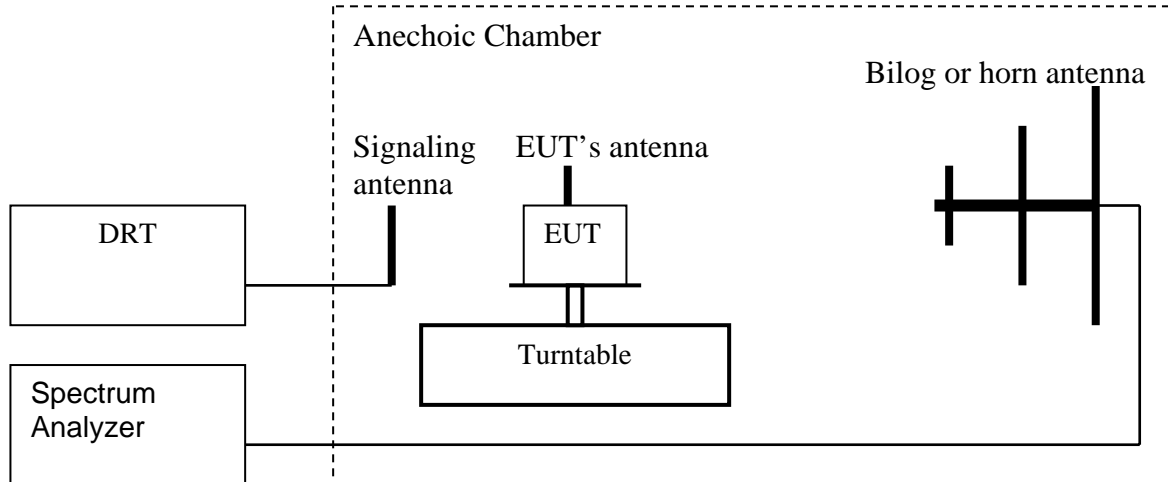
(b) Mobile/portable stations are limited to 2 Watts effective isotropic radiated power (EIRP).

(c) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms equivalent voltage. The measurement results shall be properly adjusted for any limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement over the full bandwidth of the channel.

#### 4.1.3 Radiated Output Power measurement procedure:

##### Based on TIA-603C 2004

##### 2.2.17.2 Effective Radiated Power (ERP) or Effective Isotropic Radiated Power (EIRP)



1. Connect the equipment as shown in the above diagram with the EUT's antenna in a vertical orientation.
  2. Adjust the settings of the Digital Radiocommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
  3. Set the spectrum analyzer to the channel frequency. Set the analyzer to measure peak hold with the required settings.
  4. Rotate the EUT 360°. Record the peak level in dBm (**LVL**).
  5. Replace the EUT with a vertically polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
  6. Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS**). **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).
  7. Determine the ERP using the following equation:  

$$\mathbf{ERP\ (dBm) = LVL\ (dBm) + LOSS\ (dB)}$$
  8. Determine the EIRP using the following equation:  

$$\mathbf{EIRP\ (dBm) = ERP\ (dBm) - 2.14\ (dB)}$$
  9. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band. **Spectrum analyzer settings = rbw=vbw=3MHz**
- (note: Steps 5 and 6 above are performed prior to testing and **LOSS** is recorded by test software. Steps 3, 4, 7 and 8 above are performed with test software.)



**4.1.4 ERP Results 850 MHz band:**

<b>Power Control Level</b>	<b>Burst Peak ERP</b>
5	≤38.45dBm (7W)

Frequency (MHz)	Effective Radiated Power (dBm) <sup>Note 1</sup>	
	GSM	
824.2	25.99	
836.6	29.86	
848.8	30.71	

Note 1: Measurements were obtained in EIRP (Refer to plots) and converted EIRP to ERP by subtracting 2.14dB from EIRP.

**4.1.5 EIRP Results 1900 MHz band:**

<b>Power Control Level</b>	<b>Burst Peak EIRP</b>
0	≤33dBm (2W)

Frequency (MHz)	Effective Isotropic Radiated Power (dBm)	
	GSM	
1850.2	23.73	
1880.0	24.53	
1909.8	23.78	



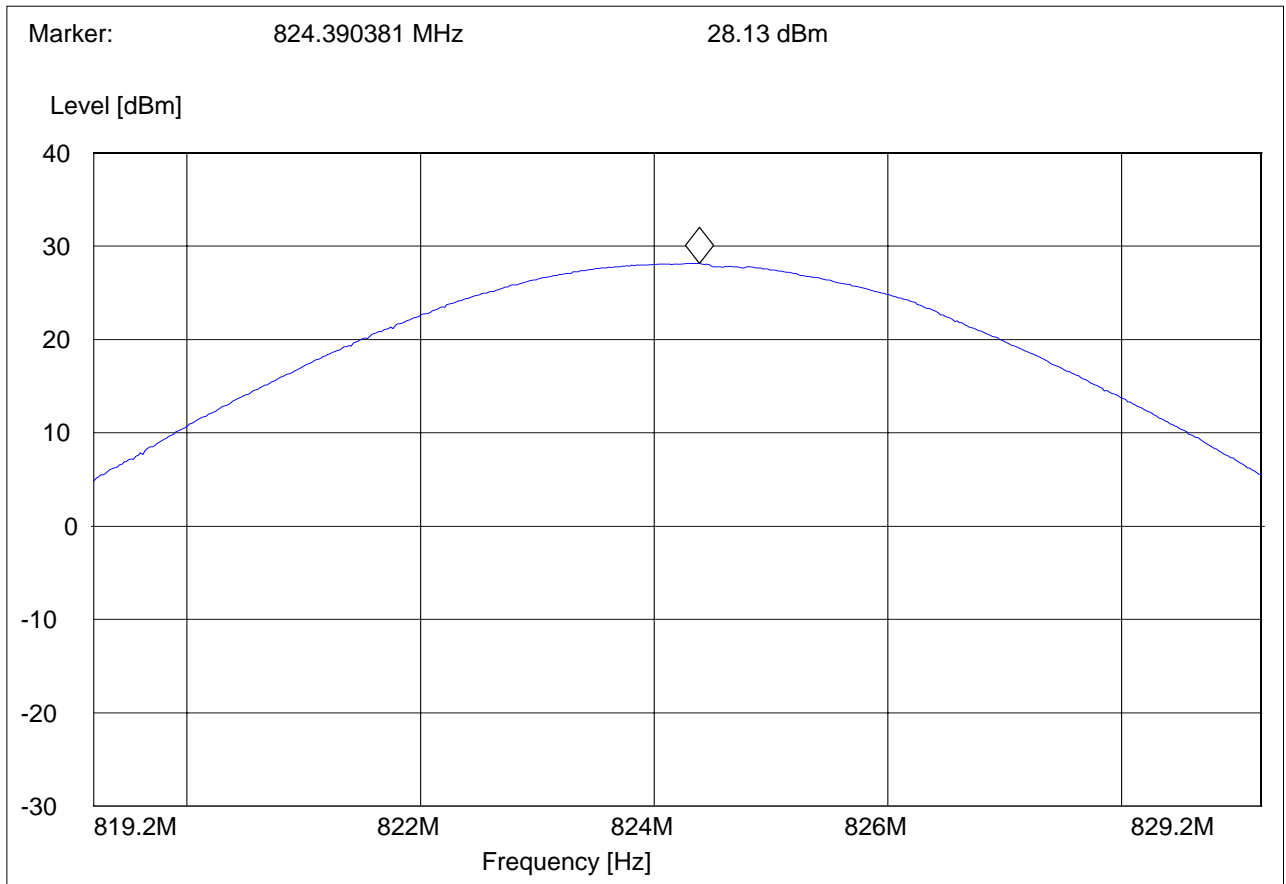
**EIRP (GSM 850)  
RF OUTPUT POWER (GSM-850)  
CHANNEL 128 GPRS**

§22.913(a) & RSS-129 (9.1)

EUT: 040K60  
 Customer:: Wavecom  
 Test Mode: GSM 850 Ch 128  
 ANT Orientation: H  
 EUT Orientation: H  
 Test Engineer: Chris  
 Voltage: AC Adaptor  
 Comments:

**SWEEP TABLE: "EIRP 850 CH 128 H"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
819.2 MHz	829.2 MHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM





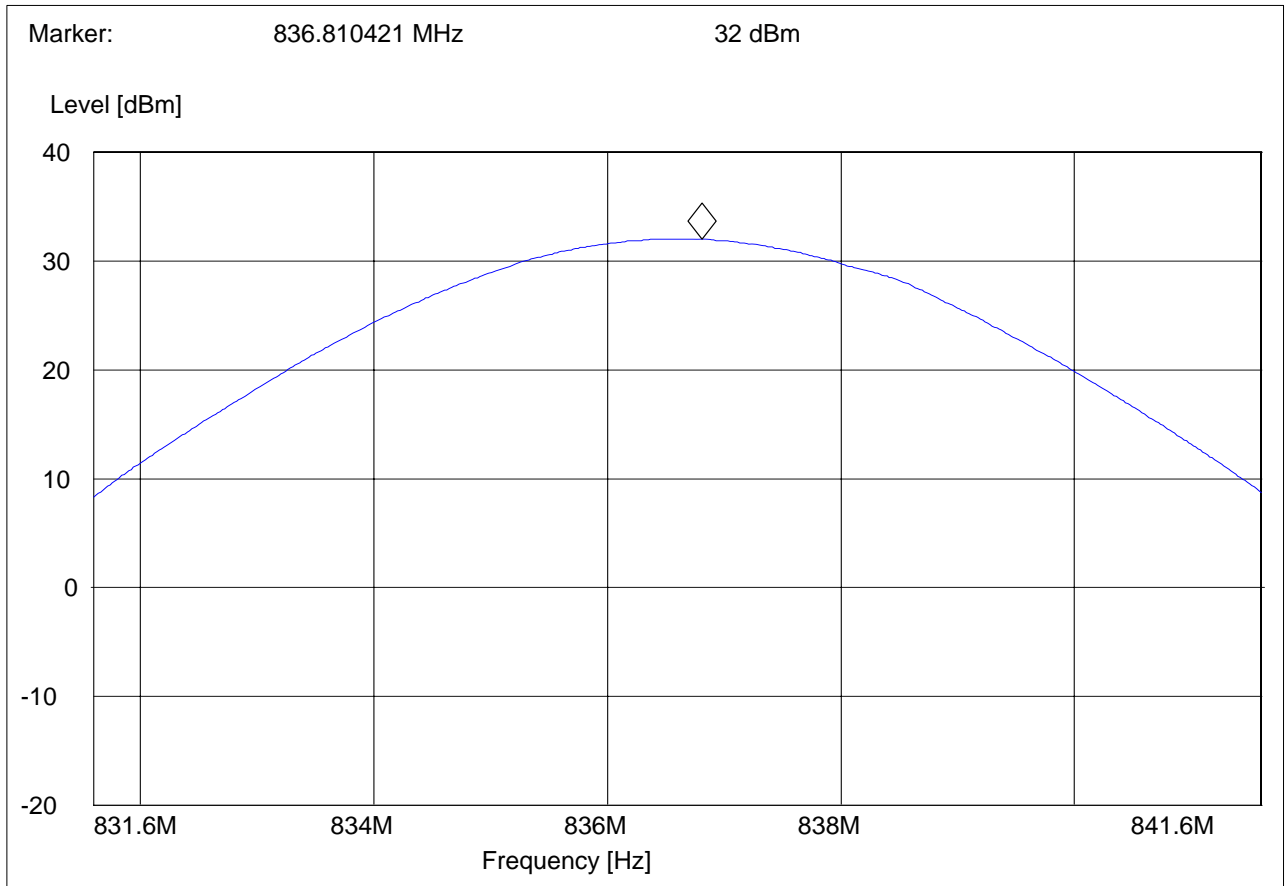
**RF OUTPUT POWER (GSM-850)  
CHANNEL 190 GPRS**

**§22.913(a) & RSS-129 (9.1)**

EUT: 040K60a  
Customer:: Wavecom, Inc  
Test Mode: GSM 850 CH 190  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: SAM  
Voltage: AC  
Comments: TT@67° ANT-93cm

***SWEEP TABLE: "EIRP 850 CH 190 H"***

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
831.6 MHz	841.6 MHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM





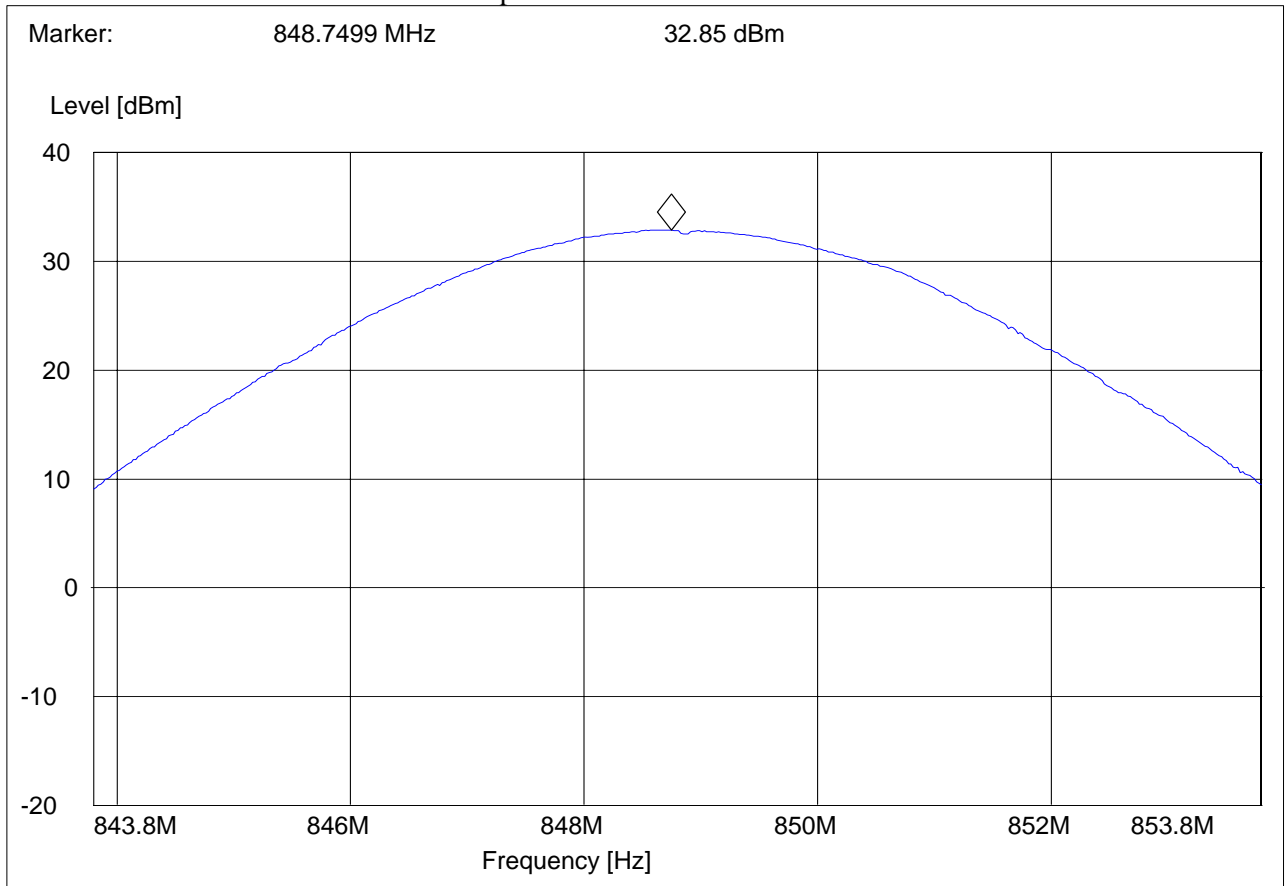
**RF OUTPUT POWER (GSM-850)  
CHANNEL 251 GPRS**

§22.913(a) & RSS-129 (9.1)

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 850 CH 251  
 ANT Orientation: H  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments: TT@67° ANT-93cm

***SWEEP TABLE: "EIRP 850 CH 251 H"***

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
843.8 MHz	853.8 MHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM





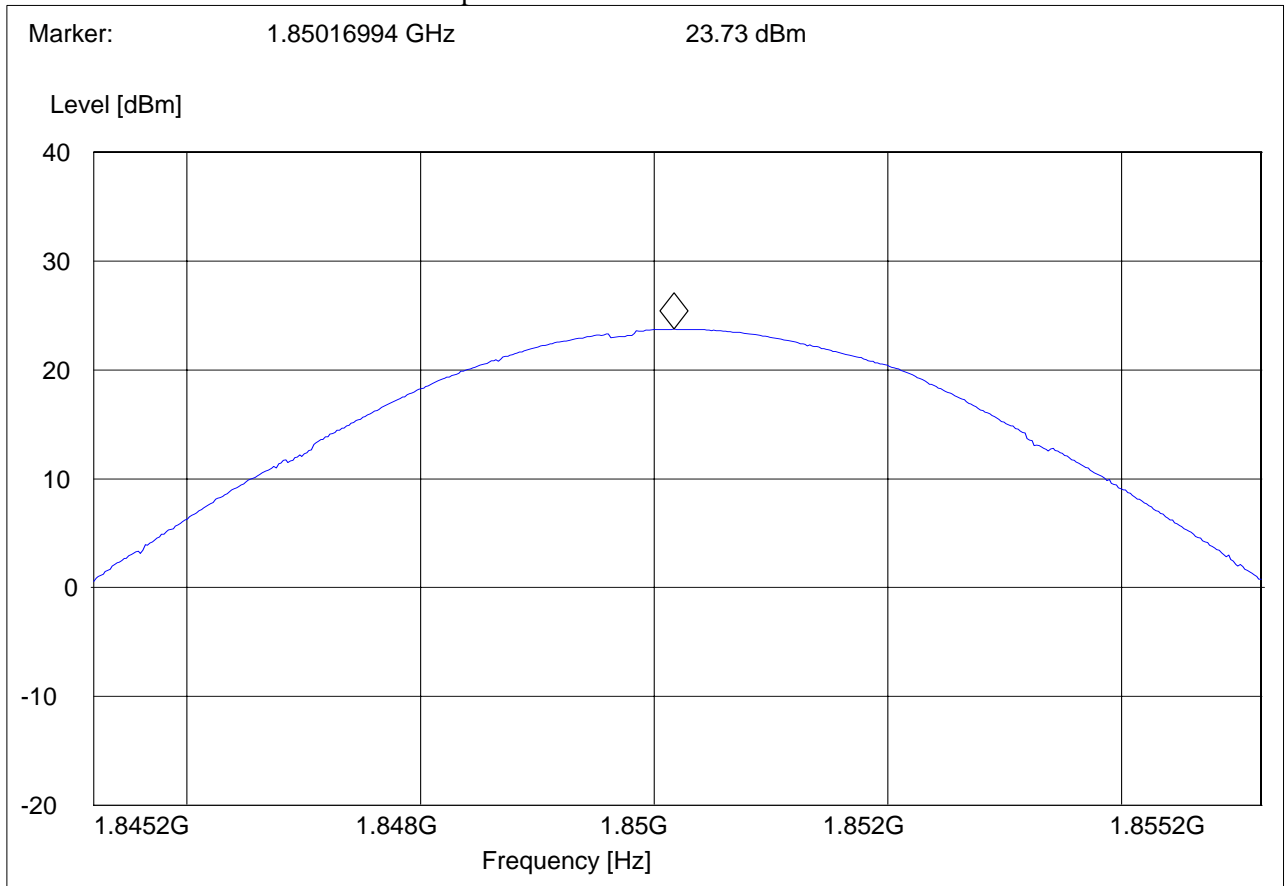
**RF OUTPUT POWER (PCS-1900)  
CHANNEL 512 GPRS**

§24.232(b)(c) & RSS-133 (4.3) & (6.4)

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 1900 CH512  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments: TT@42°

**SWEEP TABLE: "EIRP 1900 CH512"**

Short Description: EIRP PCS 1900 for channel-512  
 Start Stop Detector Meas. IF Transducer  
 Frequency Frequency Time Bandw.  
 1.8 GHz 1.9 GHz MaxPeak Coupled 3 MHz DUMMY-DBM





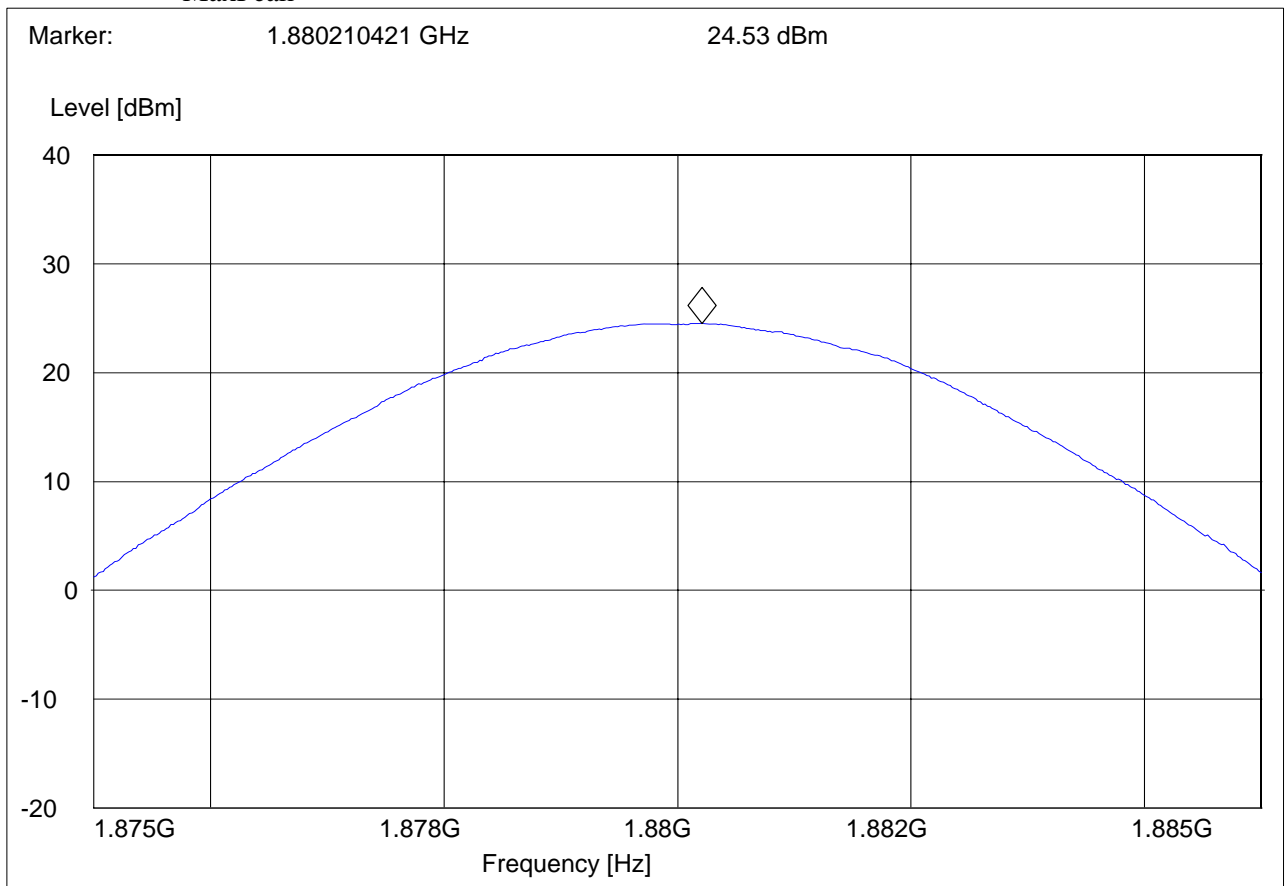
**RF OUTPUT POWER (PCS-1900)  
CHANNEL 661 GPRS**

§24.232(b)(c) & RSS-133 (4.3) & (6.4)

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 1900 CH661  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments: TT@42°

***SWEEP TABLE: "EIRP 1900 CH661"***

Short Description: EIRP PCS 1900 for channel-661  
 Start Stop Detector Meas. IF Transducer  
 Frequency Frequency Time Bandw.  
 1.9 GHz 1.9 GHz MaxPeak Coupled 3 MHz DUMMY-DBM  
 MaxPeak





**RF OUTPUT POWER (PCS-1900)  
CHANNEL 810 GPRS**

§24.232(b)(c) & RSS-133 (4.3) & (6.4)

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 1900 CH810  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments: TT@42°

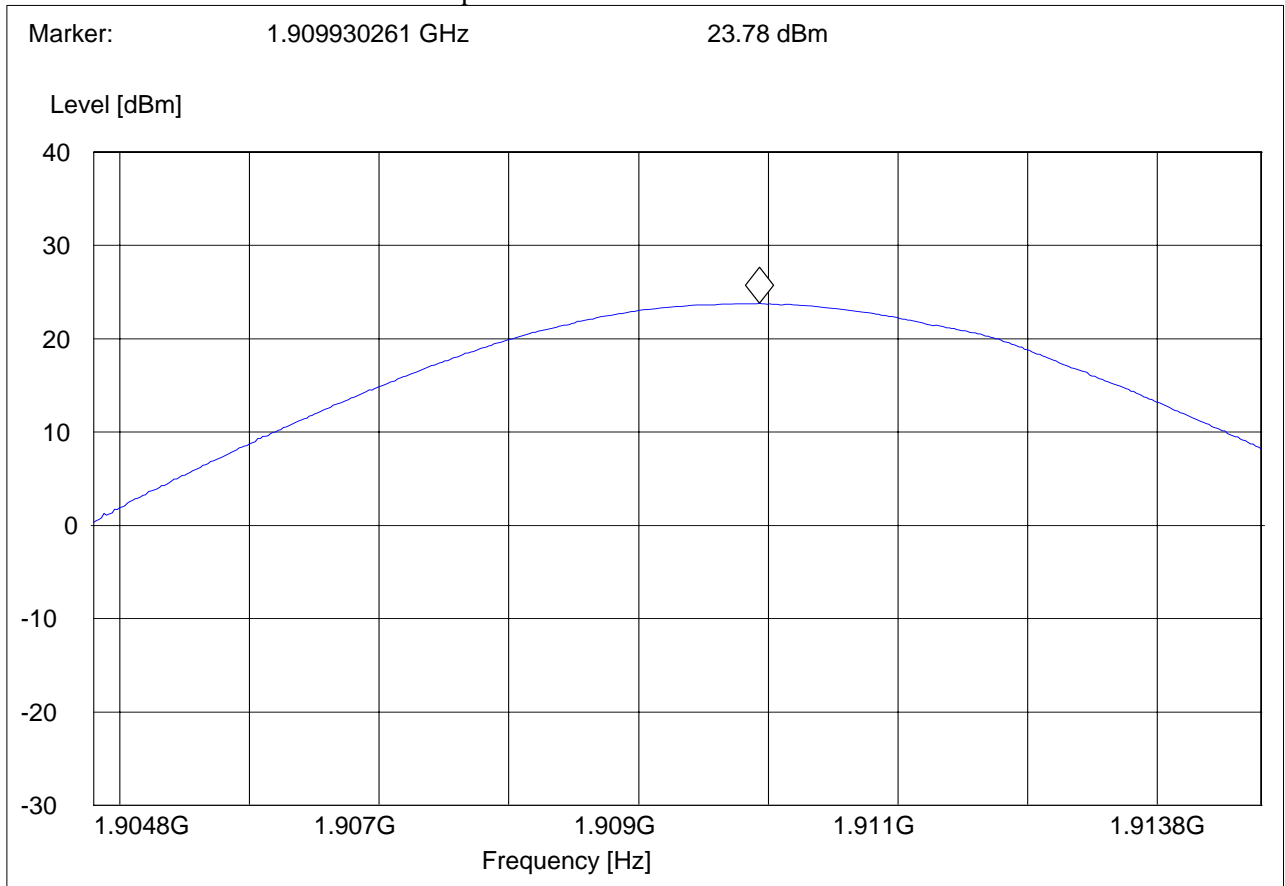
***SWEEP TABLE: "EIRP 1900 CH810"***

Short Description: EIRP PCS 1900 for channel-810

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.9 GHz 1.9 GHz MaxPeak Coupled 3 MHz DUMMY-DBM



## 4.2 Transmitter Spurious Emissions Radiated

### 4.2.1 FCC 2.1053 Measurements required: Field strength of spurious radiation.

- (a) Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission.

### 4.2.2 Limits:

#### 4.2.2.1 §22.917 & RSS-129 (8.1.2) Emission limitations for cellular equipment.

The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

- (a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

(b) *Measurement procedure.* Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 100 kHz of 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

#### 4.2.2.2 §24.238 & RSS-133 (4.4) & (6.5) Emission limitations for Broadband PCS equipment.

The rules in this section govern the spectral characteristics of emissions in the Broadband Personal Communications Service.

- (a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

(b) *Measurement procedure.* Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 100 kHz of 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the

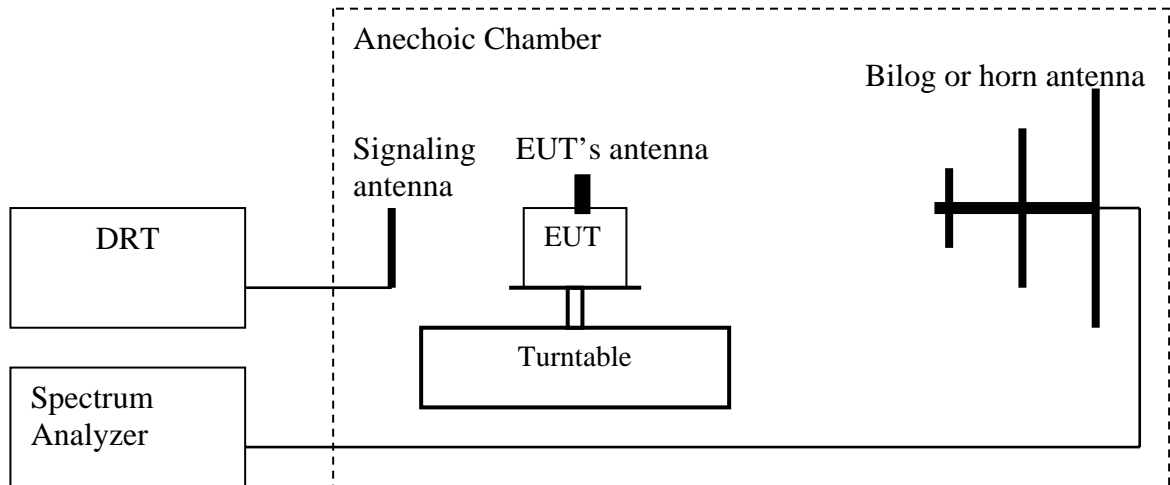


carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

#### 4.2.3 Radiated out of band measurement procedure:

Based on TIA-603C 2004

#### 2.2.12 Unwanted emissions: Radiated Spurious



1. Connect the equipment as shown in the above diagram with the EUT's antenna in a horizontal orientation.
2. Adjust the settings of the Digital Radiocommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Set the spectrum analyzer to measure peak hold with the required settings.
4. Place the measurement antenna in a horizontal orientation. Rotate the EUT 360°. Raise the measurement antenna up to 4 meters in 0.5 meters increments and rotate the EUT 360° at each height to maximize all emissions. Measure and record all spurious emissions (LVL) up to the tenth harmonic of the carrier frequency.
5. Replace the EUT with a horizontally polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
6. Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS**).  $\text{LOSS} = \text{Generator Output Power (dBm)} - \text{Analyzer reading (dBm)}$ .
7. Determine the level of spurious emissions using the following equation:  
**Spurious (dBm) = LVL (dBm) + LOSS (dB):**
8. Repeat steps 4, 5 and 6 with all antennas vertically polarized.
9. Determine the level of spurious emissions using the following equation:  
**Spurious (dBm) = LVL (dBm) + LOSS (dB):**
10. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.

(note: Steps 5 and 6 above are performed prior to testing and **LOSS** is recorded by test software. Steps 3, 4 and 7 above are performed with test software.)

**Spectrum analyzer settings:**

Res B/W: 1 MHz

VID B/W: 1 MHz

**Measurement Survey:**

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the GSM-850 & PCS-1900 bands. It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the GSM-850 & PCS-1900 band into any of the other blocks respectively. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

#### 4.2.4 Radiated out of band emissions results on EUT:

##### 4.2.4.1 RESULTS OF RADIATED TESTS GSM-850:

Harmonics	Tx ch-8 Freq. (MHz)	Level (dBm)	Tx ch-383 Freq. (MHz)	Level (dBm)	Tx ch-758 Freq. (MHz)	Level (dBm)
2	1648.4	NF	1673.2	NF	1697.6	NF
3	2472.6	NF	2509.8	NF	2546.4	NF
4	3296.8	NF	3346.4	NF	3395.2	NF
5	4121	NF	4183	NF	4244	NF
6	4945.2	NF	5019.6	NF	5092.8	NF
7	5769.4	NF	5856.2	NF	5941.6	NF
8	6593.6	NF	6692.8	NF	6790.4	NF
9	7417.8	NF	7529.4	NF	7639.2	NF
10	8242	NF	8366	NF	8488	NF
NF = NOISE FLOOR						



**4.2.4.2 RADIATED SPURIOUS EMISSIONS (GSM-850)**

**TX: 30MHz - 1GHz**

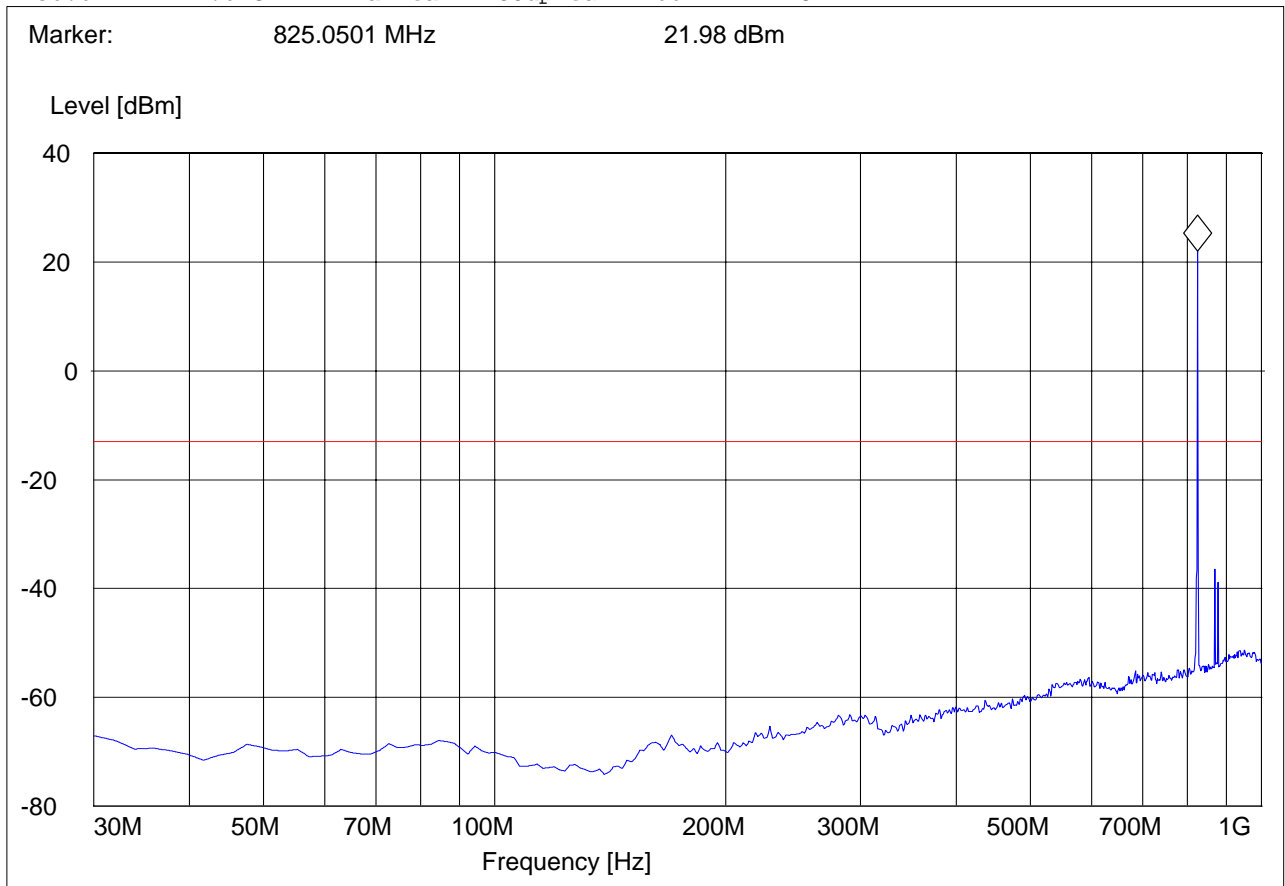
Spurious emission limit -13dBm

**Note: 1. The peak above the limit line is the carrier freq.**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 850; CH 128  
 ANT Orientation: H  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments: marker placed on uplink

**SWEEP TABLE: "FCC 24 Spur 30M-1G\_H"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	DUMMY-DBM





**TX: 30MHz - 1GHz**

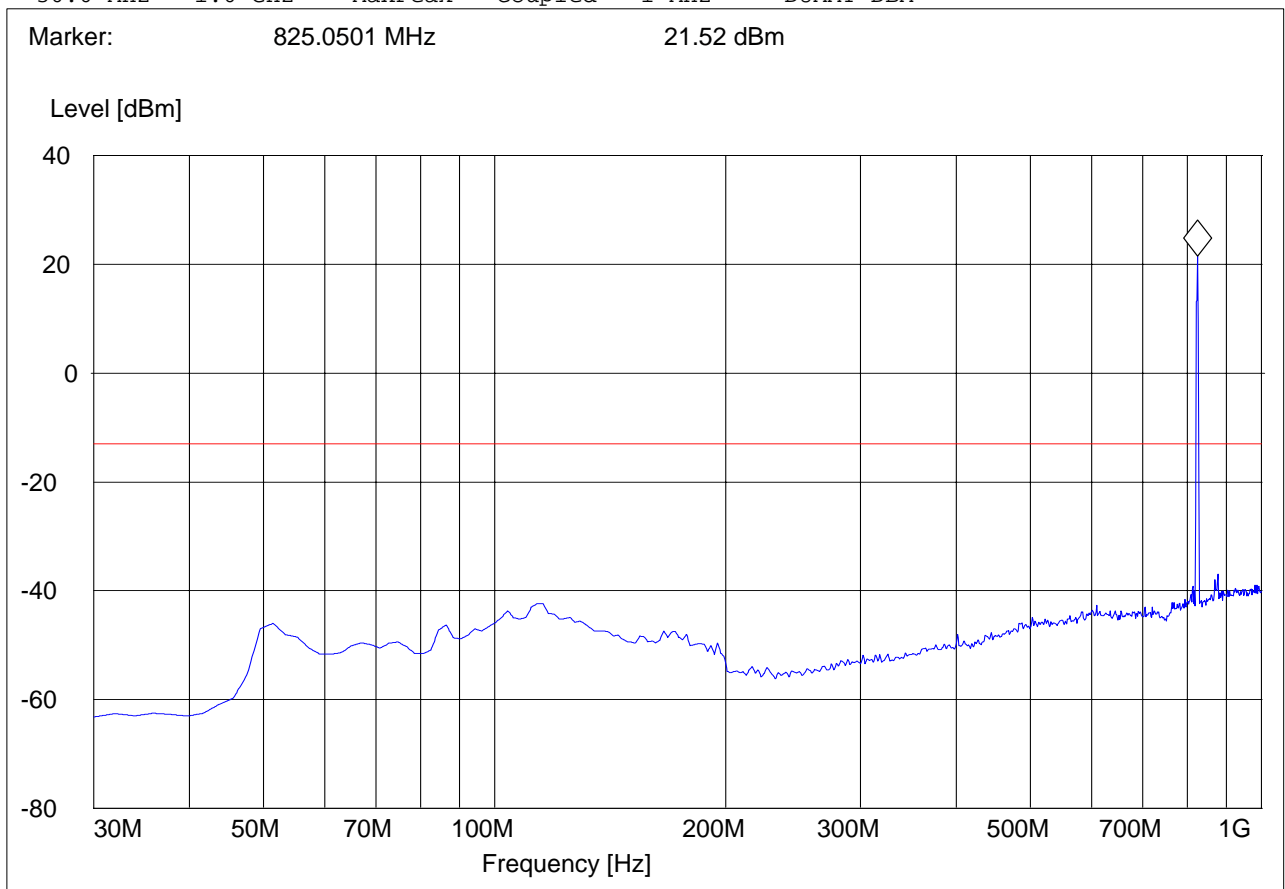
Spurious emission limit -13dBm

**Note: 1. The peak above the limit line is the carrier freq.**

EUT: 040K60a  
Customer:: Wavecom, Inc  
Test Mode: GSM 850; CH 128  
ANT Orientation: V  
EUT Orientation: H  
Test Engineer: SAM  
Voltage: AC  
Comments: marker placed on uplink

**SWEEP TABLE: "FCC 24 Spur 30M-1G\_V"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





**TX: 30MHz - 1GHz**

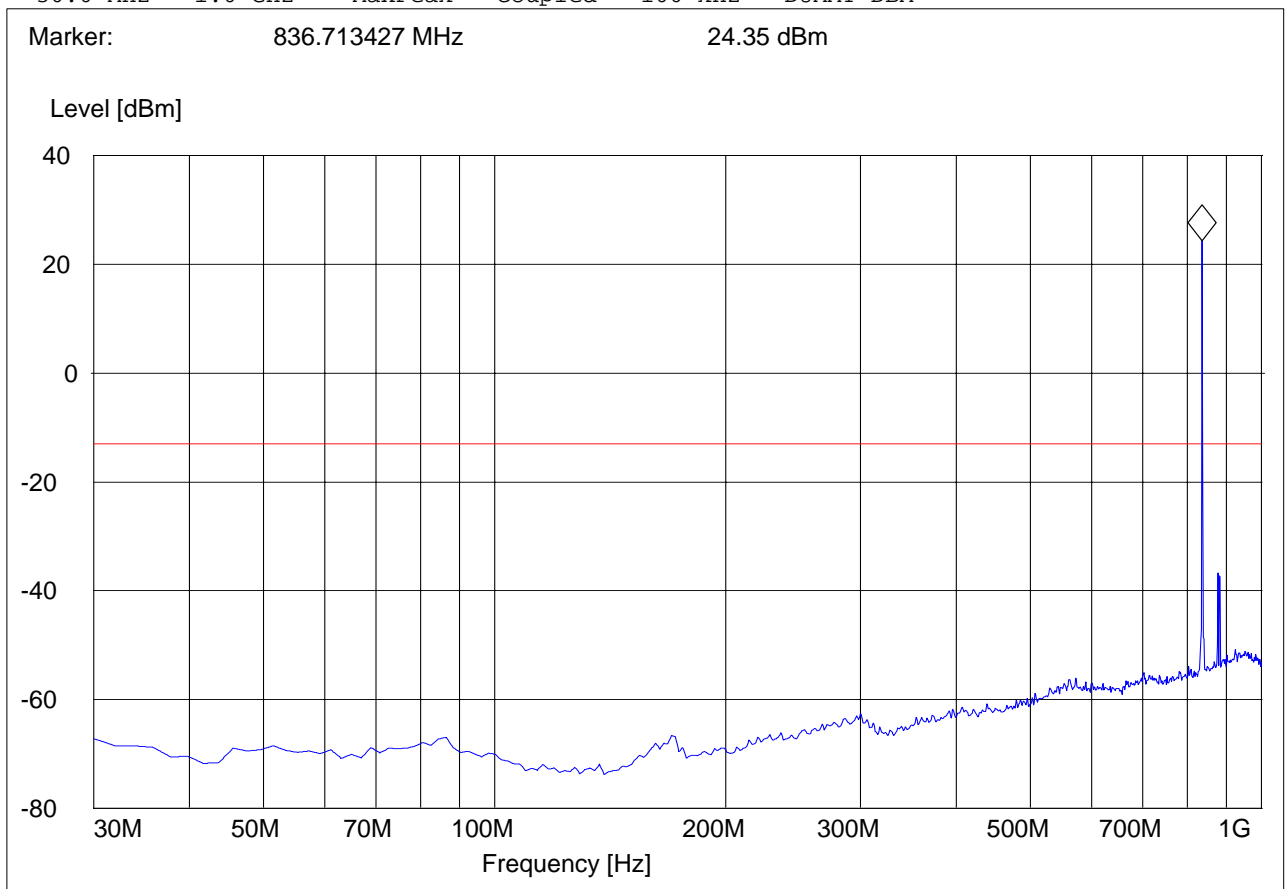
Spurious emission limit -13dBm

**Note: 1. The peak above the limit line is the carrier freq.**

EUT: 040K60a  
Customer:: Wavecom, Inc  
Test Mode: GSM 850; CH 190  
ANT Orientation: H  
EUT Orientation: H  
Test Engineer: SAM  
Voltage: AC  
Comments: marker placed on uplink

**SWEEP TABLE: "FCC 24 Spur 30M-1G\_H"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	DUMMY-DBM





**TX: 30MHz - 1GHz**

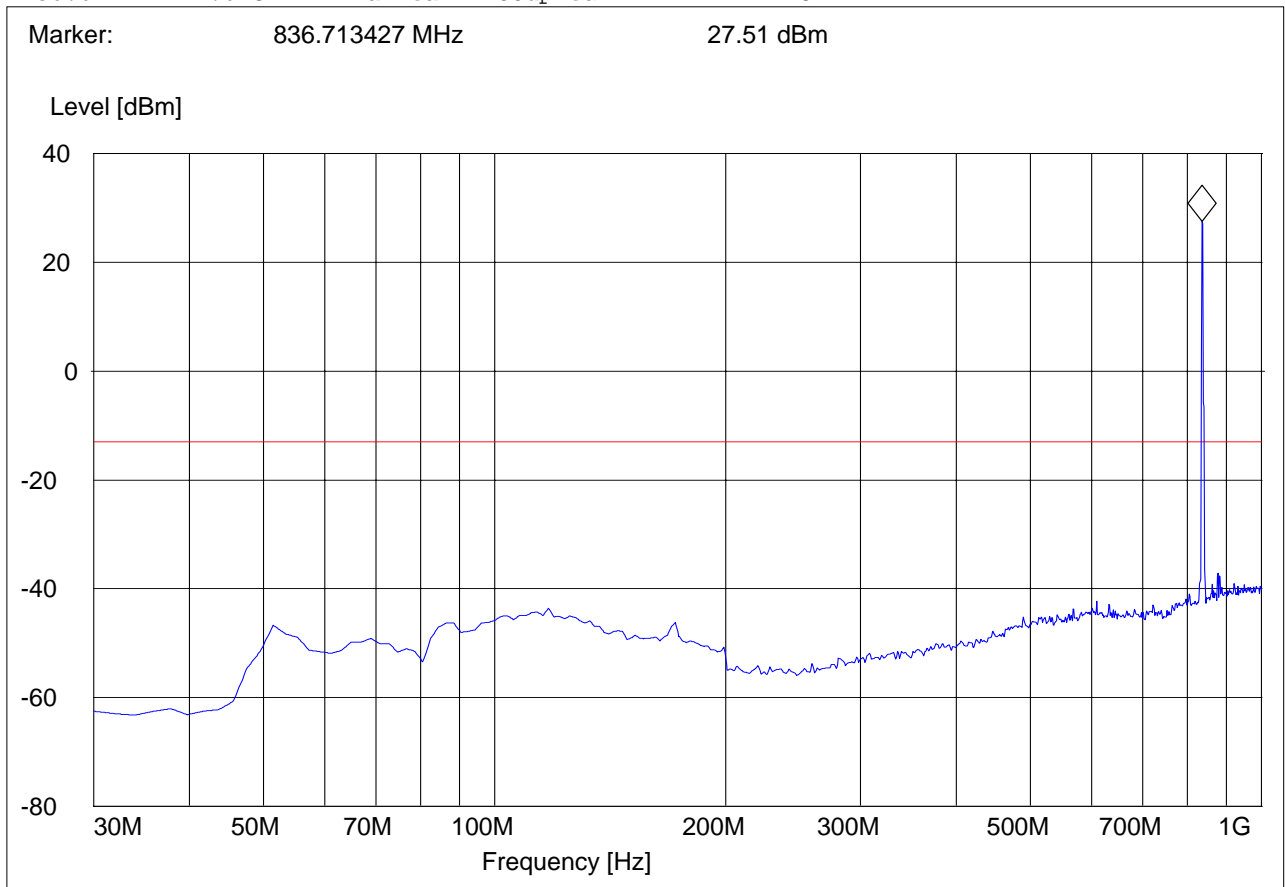
Spurious emission limit -13dBm

**Note: 1. The peak above the limit line is the carrier freq.**

EUT: 040K60a  
Customer:: Wavecom, Inc  
Test Mode: GSM 850; CH 190  
ANT Orientation: V  
EUT Orientation: H  
Test Engineer: SAM  
Voltage: AC  
Comments: marker placed on uplink

**SWEEP TABLE: "FCC 24 Spur 30M-1G\_V"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





**TX: 30MHz - 1GHz**

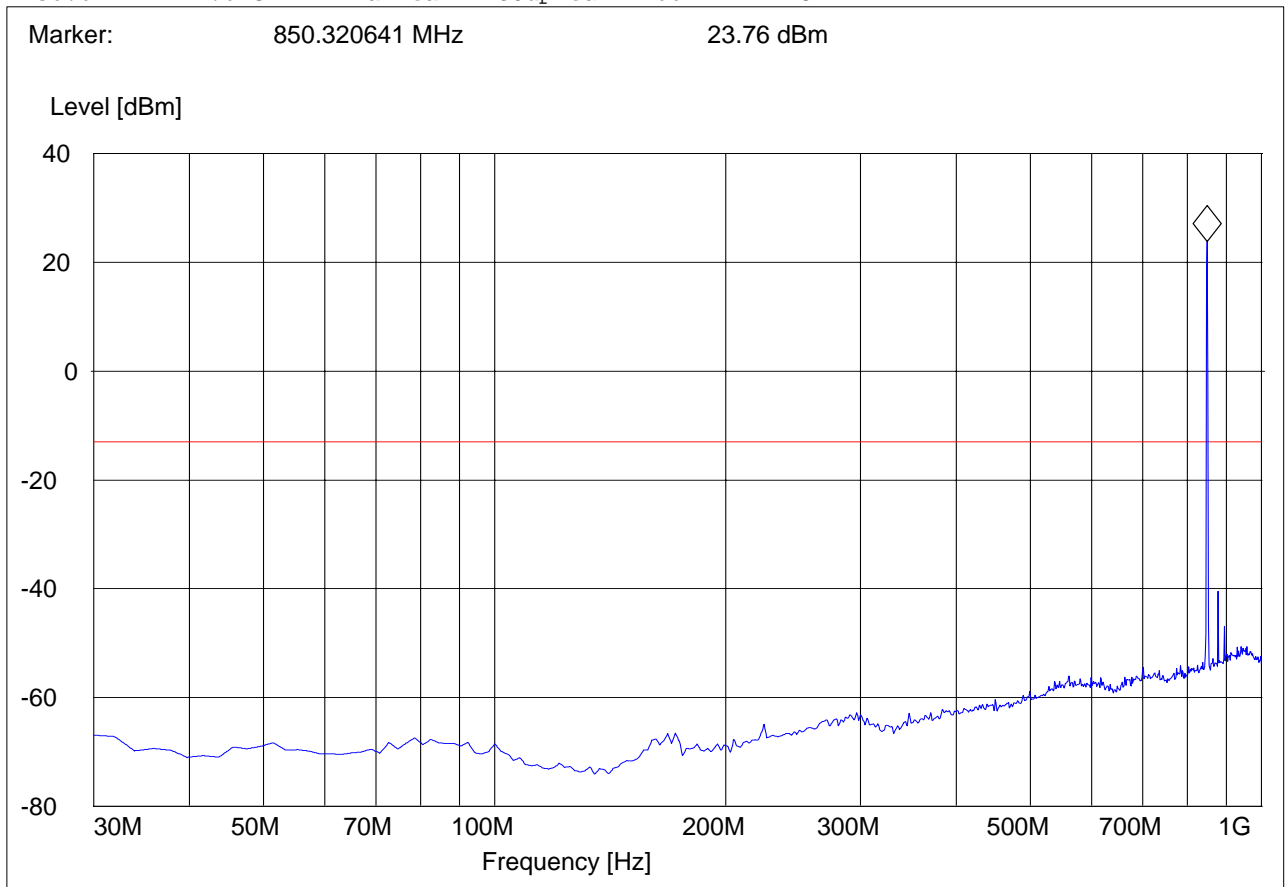
Spurious emission limit -13dBm

**Note: 1. The peak above the limit line is the carrier freq.**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 850; CH 251  
 ANT Orientation: H  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments: marker placed on uplink

**SWEEP TABLE: "FCC 24 Spur 30M-1G\_H"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	DUMMY-DBM







**TX: 30MHz - 1GHz**

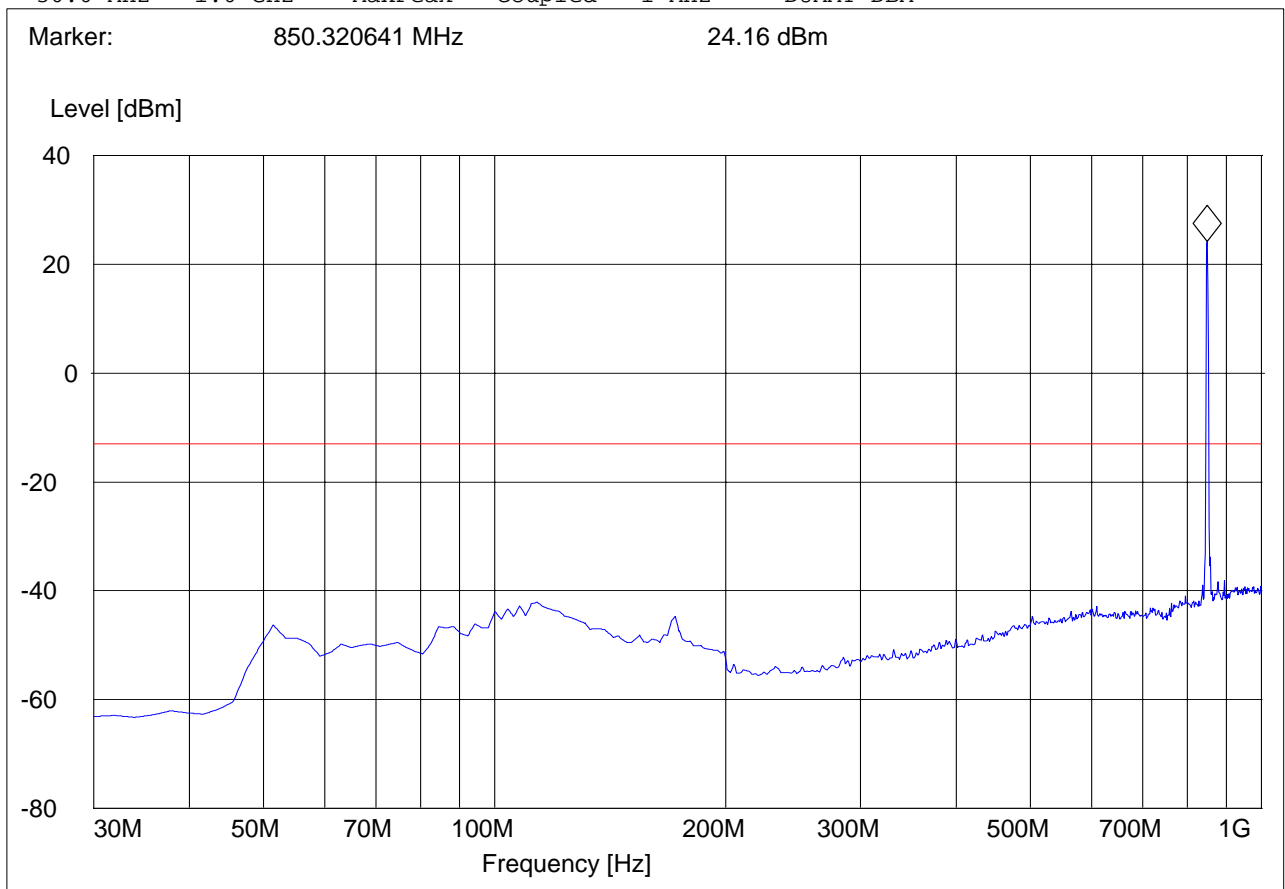
Spurious emission limit -13dBm

**Note: 1. The peak above the limit line is the carrier freq.**

EUT: 040K60a  
Customer:: Wavecom, Inc  
Test Mode: GSM 850; CH 251  
ANT Orientation: V  
EUT Orientation: H  
Test Engineer: SAM  
Voltage: AC  
Comments: marker placed on uplink

**SWEEP TABLE: "FCC 24 Spur 30M-1G\_V"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





**RADIATED SPURIOUS EMISSIONS (GSM-850)**

**Tx @ 824.2MHz: 1GHz – 1.58GHz**

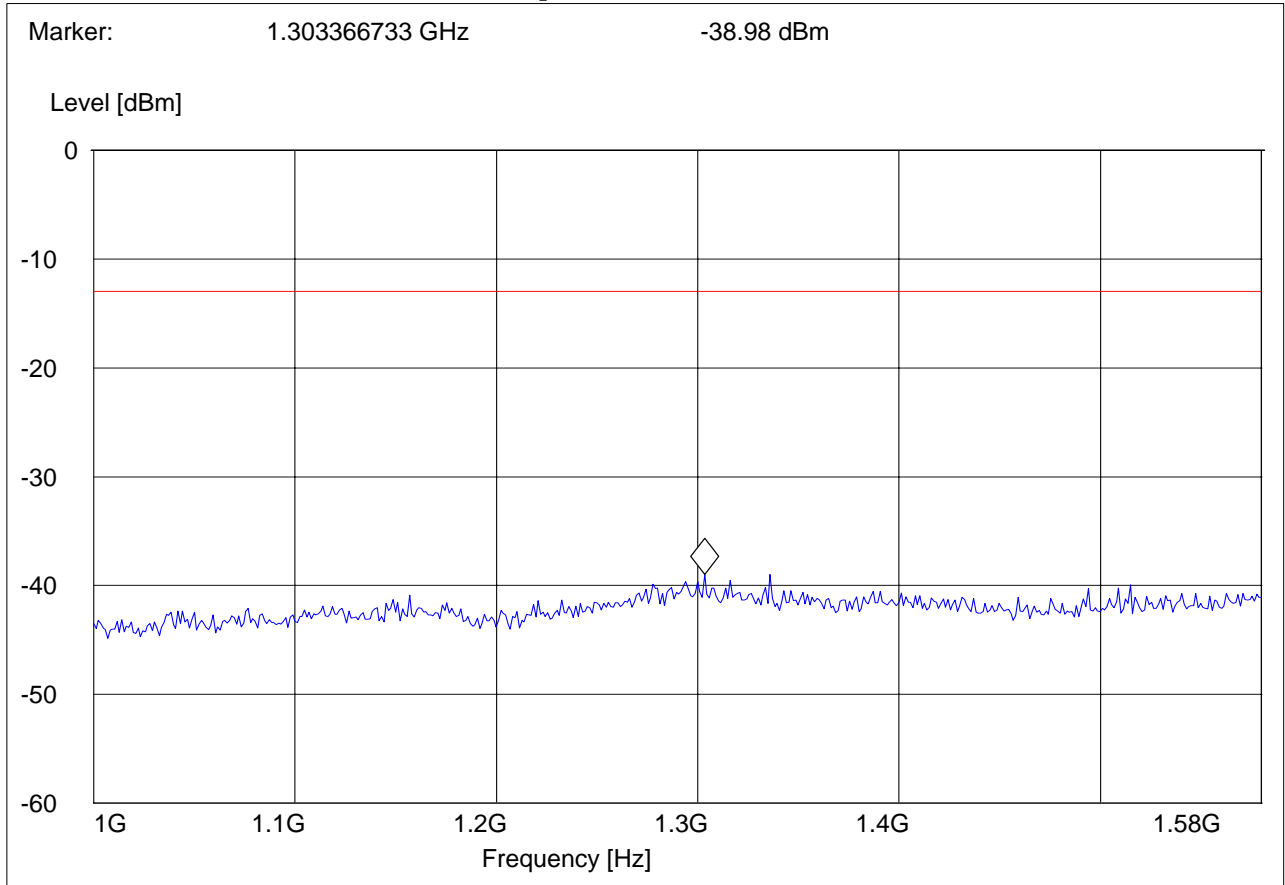
Spurious emission limit -13dBm

**Note: This plot is valid for horizontal and vertical polarization (worst-case plot)**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 850; CH 128  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

**SWEEP TABLE: "FCC 22Spuri 1-1.58G"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	1.6 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





**RADIATED SPURIOUS EMISSIONS (GSM-850)**

**Tx @ 836.6MHz: 1GHz – 1.58GHz**

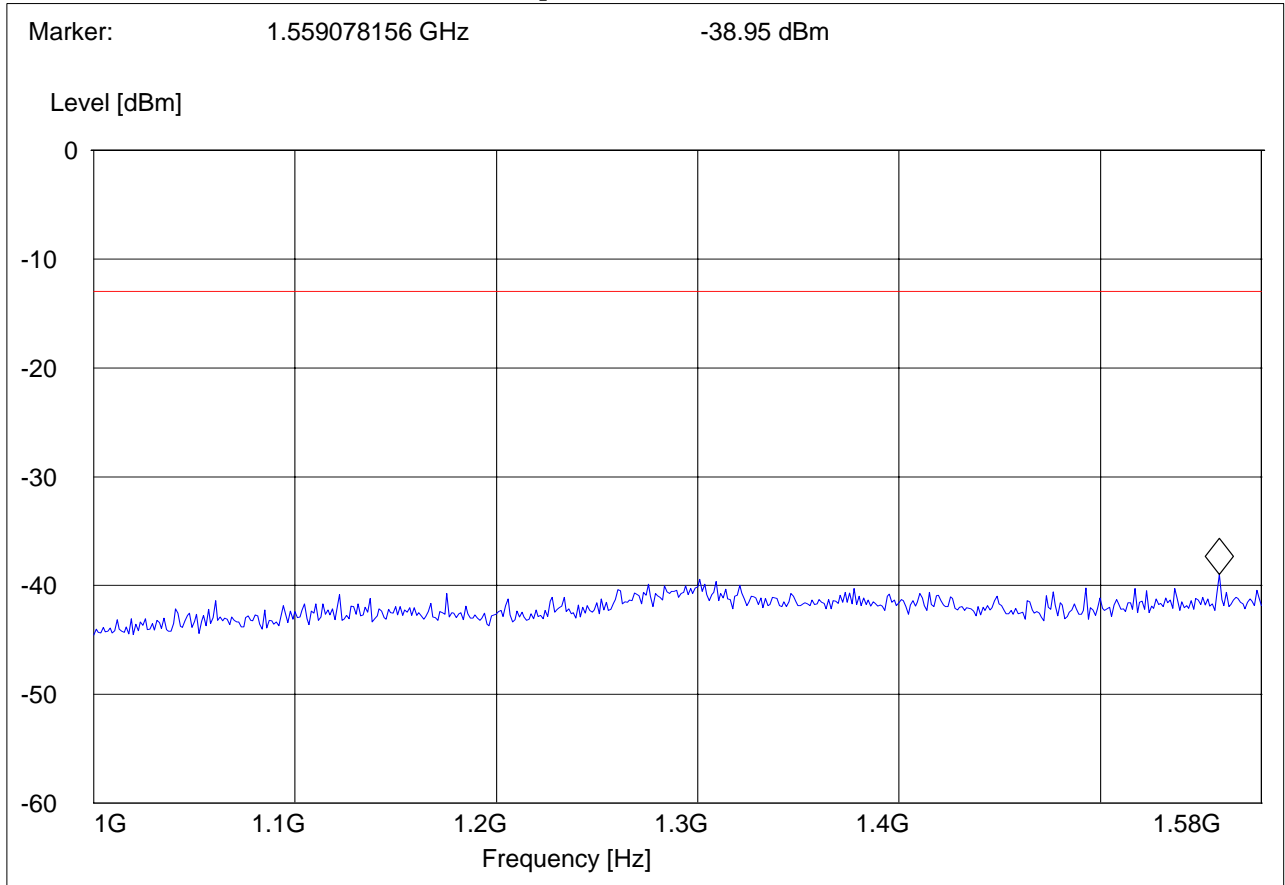
Spurious emission limit -13dBm

**Note: This plot is valid for horizontal and vertical polarization (worst-case plot)**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 850 CH 190  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

**SWEEP TABLE: "FCC 22Spuri 1-1.58G"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	1.6 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





**RADIATED SPURIOUS EMISSIONS (GSM-850)**

**Tx @ 848.8MHz: 1GHz – 1.58GHz**

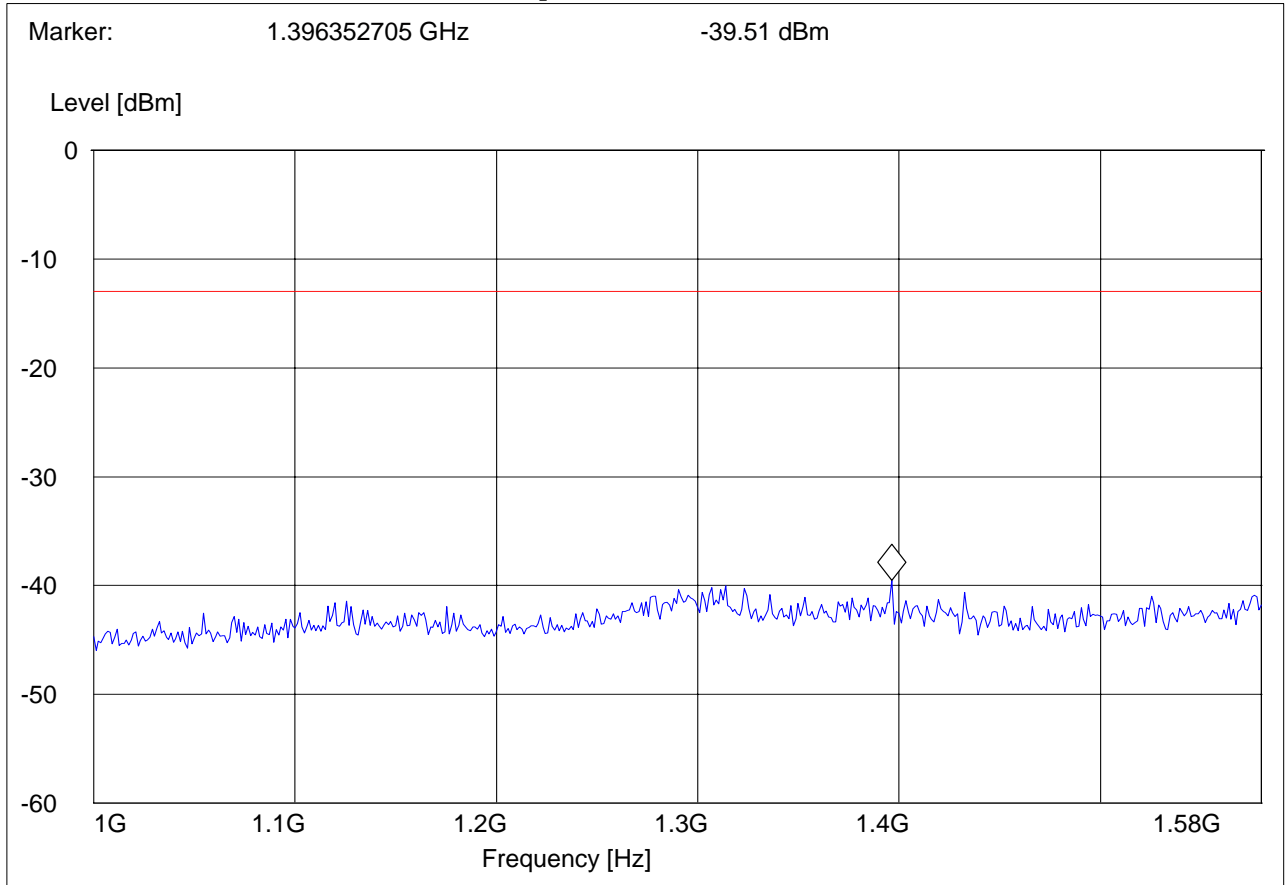
Spurious emission limit -13dBm

**Note: This plot is valid for horizontal and vertical polarization (worst-case plot)**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 850; CH 251  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

**SWEEP TABLE: "FCC 22Spuri 1-1.58G"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	1.6 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





**RADIATED SPURIOUS EMISSIONS (GSM-850)**

**Tx @ 824.2MHz: 1.58GHz – 3GHz**

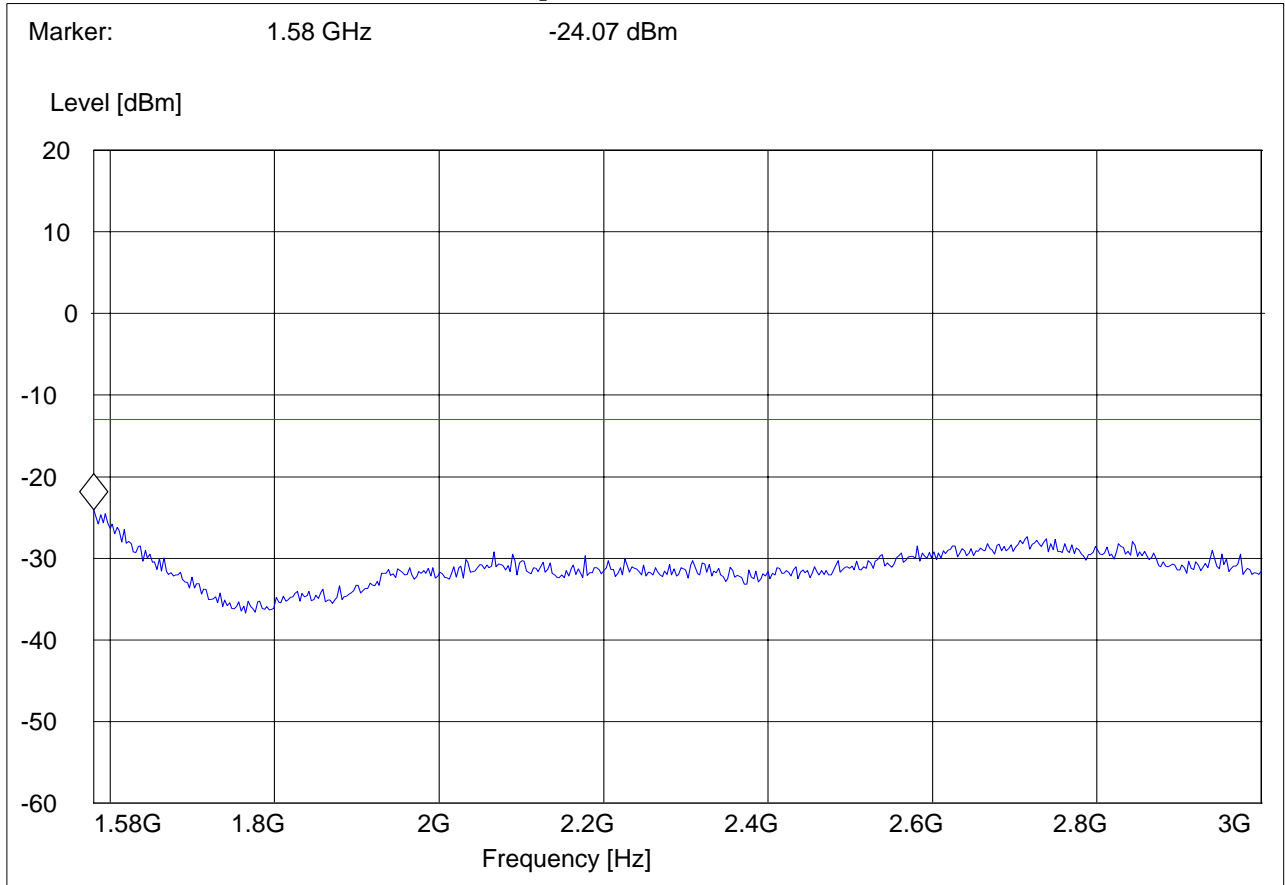
Spurious emission limit -13dBm

**Note: This plot is valid for horizontal and vertical polarization (worst-case plot)**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 850; CH 128  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

**SWEEP TABLE: "FCC 22Spuri 1.58-3G"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.6 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





**RADIATED SPURIOUS EMISSIONS (GSM-850)**

**Tx @ 836.6MHz: 1.58GHz – 3GHz**

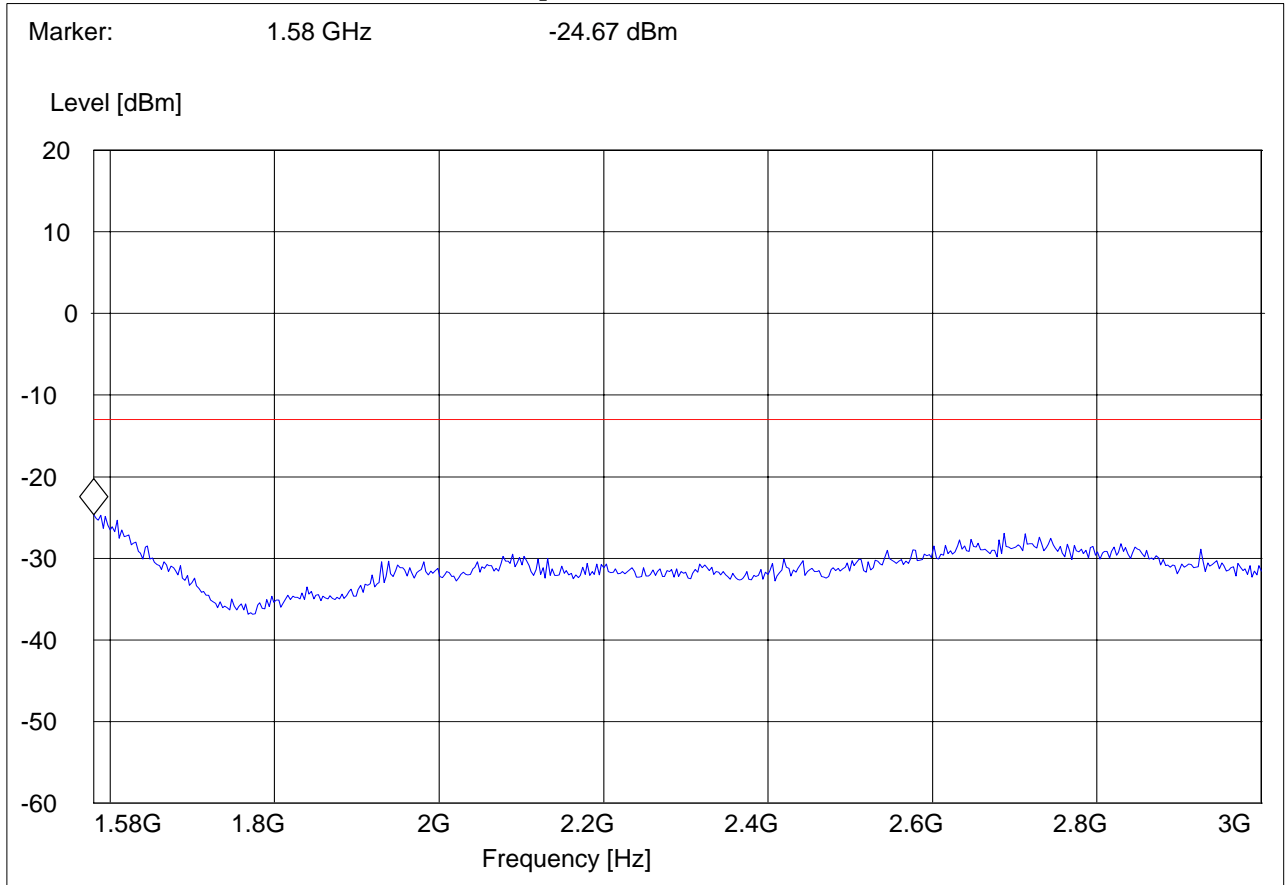
Spurious emission limit -13dBm

**Note: This plot is valid for horizontal and vertical polarization (worst-case plot)**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 850  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

**SWEEP TABLE: "FCC 22Spuri 1.58-3G"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.6 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





**RADIATED SPURIOUS EMISSIONS (GSM-850)**

**Tx @ 848.8MHz: 1.58GHz – 3GHz**

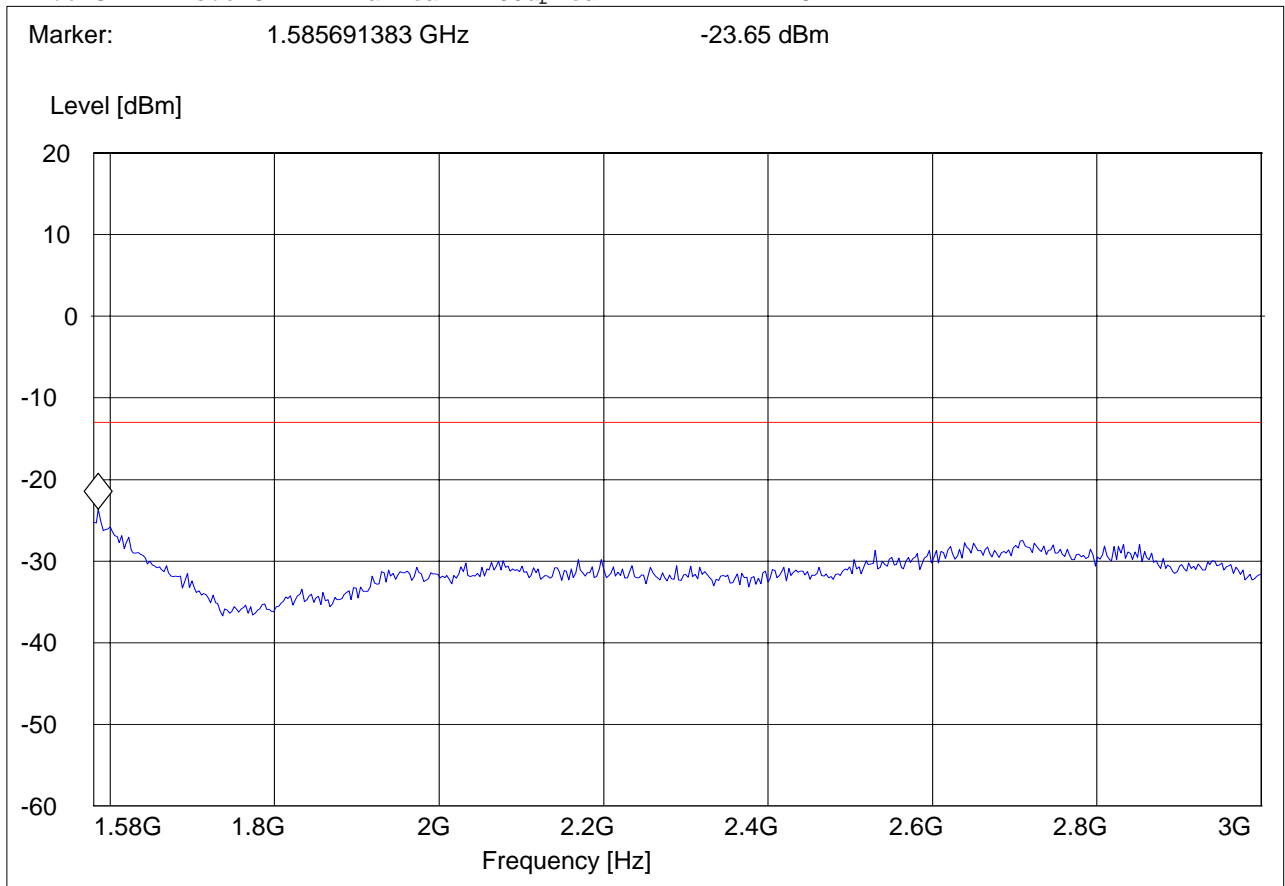
Spurious emission limit -13dBm

**Note: This plot is valid for horizontal and vertical polarization (worst-case plot)**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 850; CH 251  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

**SWEEP TABLE: "FCC 22Spuri 1.58-3G"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.6 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





**RADIATED SPURIOUS EMISSIONS (GSM-850)**

**Tx @ 824.2MHz: 3 – 9GHz**

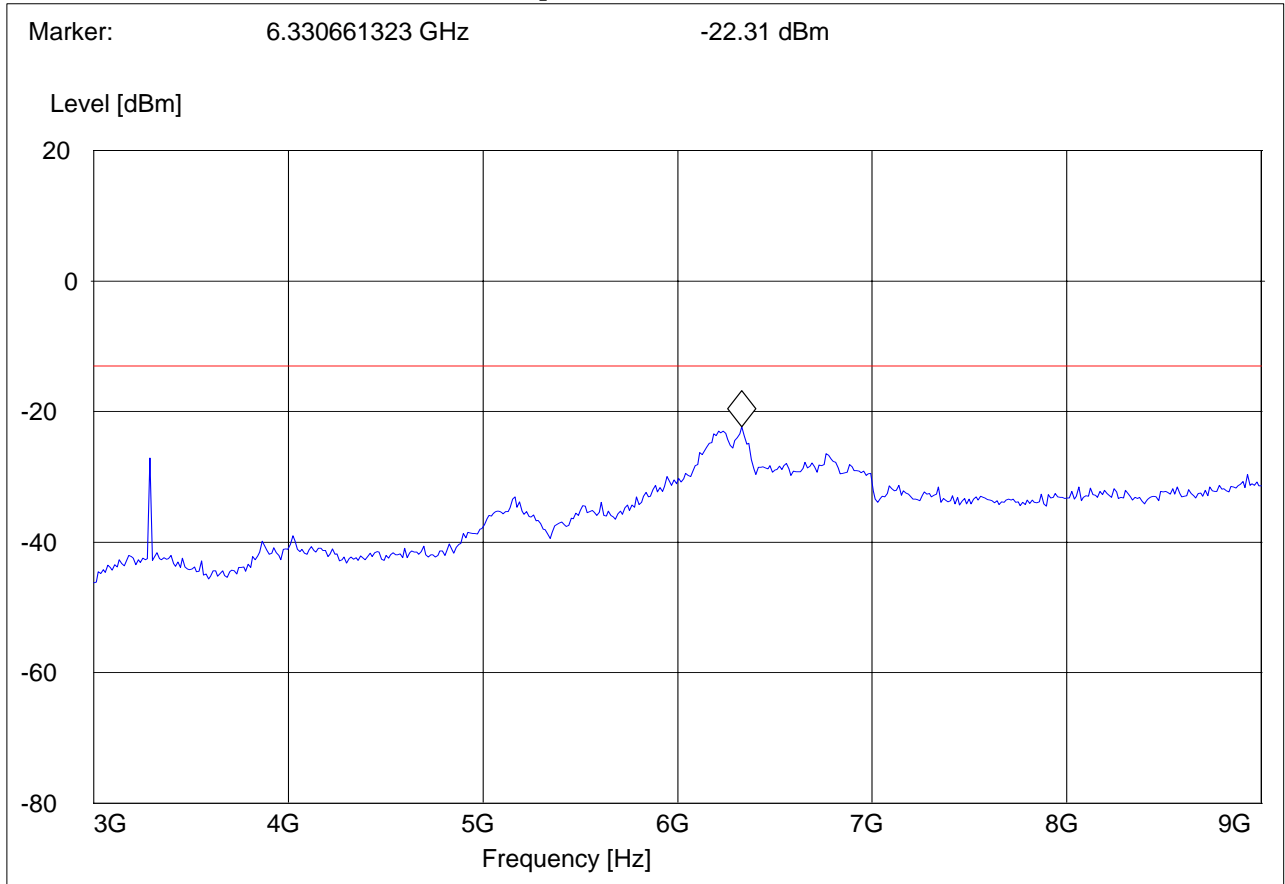
Spurious emission limit -13dBm

**Note: This plot is valid for horizontal and vertical polarization (worst-case plot)**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 850; CH 128  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

**SWEEP TABLE: "FCC 22Spuri 3-9G"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	9.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM







**RADIATED SPURIOUS EMISSIONS (GSM-850)**

**Tx @ 836.6MHz: 3 – 9GHz**

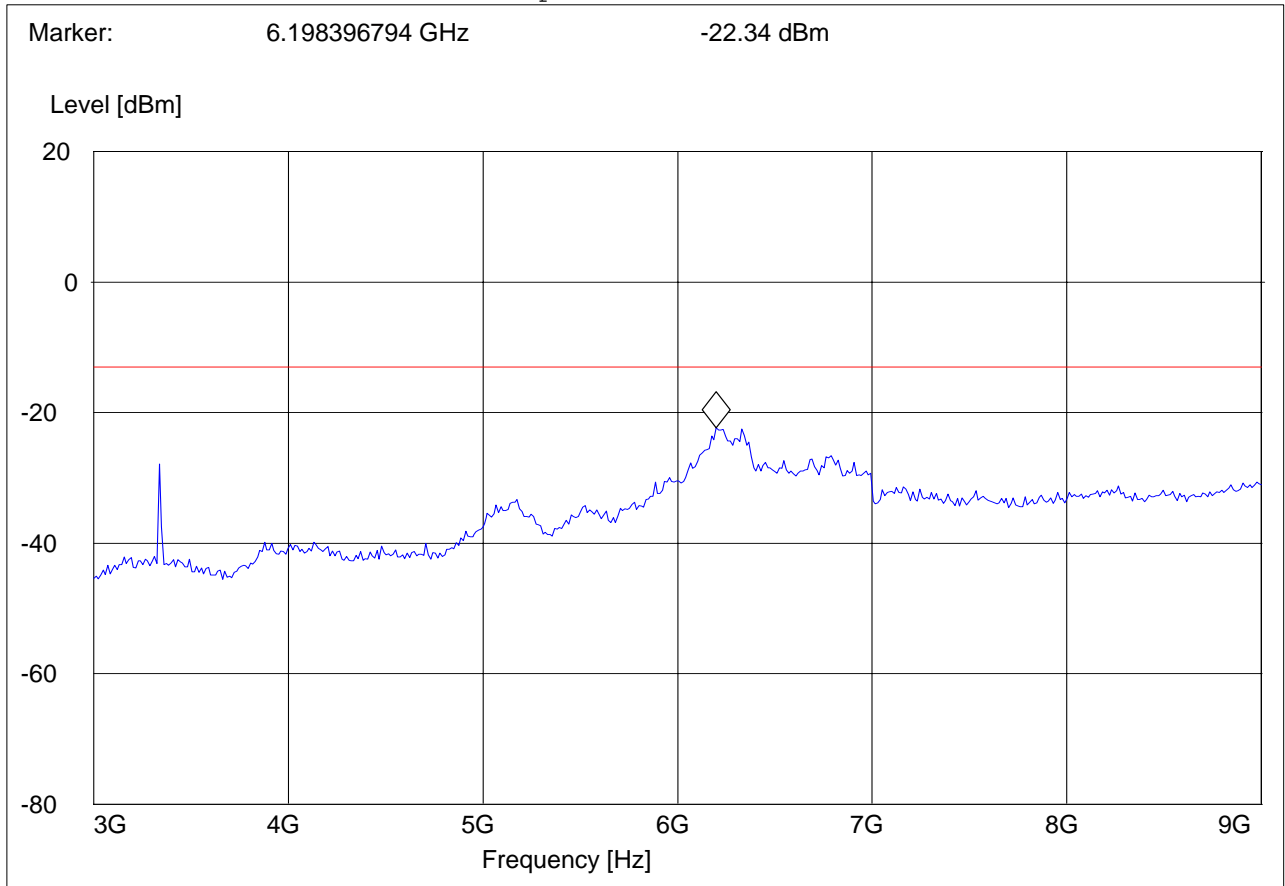
Spurious emission limit -13dBm

**Note: This plot is valid for horizontal and vertical polarization (worst-case plot)**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 850  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

**SWEEP TABLE: "FCC 22Spuri 3-9G"**

Short Description:		FCC 24 1GHz-8GHz			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	9.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





**RADIATED SPURIOUS EMISSIONS (GSM-850)**

**Tx @ 848.8MHz: 3 – 9GHz**

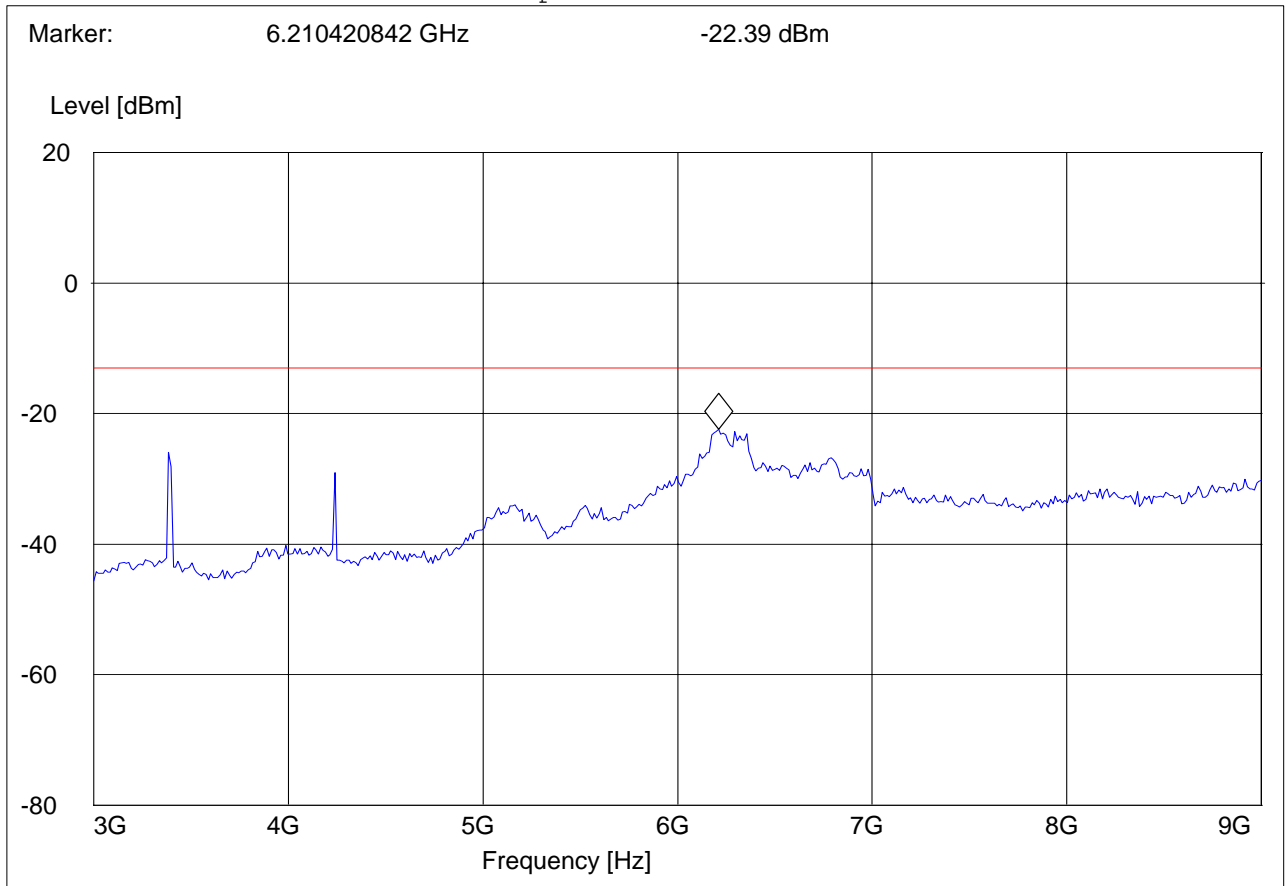
Spurious emission limit -13dBm

**Note: This plot is valid for horizontal and vertical polarization (worst-case plot)**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 850; CH 251  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

**SWEEP TABLE: "FCC 22Spuri 3-9G"**

Short Description:		FCC 24 1GHz-8GHz			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	9.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM



#### 4.2.4.3 RESULTS OF RADIATED TESTS PCS-1900:

Harmonic	Tx ch-512 Freq.(MHz)	Level (dBm)	Tx ch-661 Freq. (MHz)	Level (dBm)	Tx ch-810 Freq. (MHz)	Level (dBm)
2	3700.4	NF	3760	NF	3819.6	NF
3	5550.6	NF	5640	NF	5729.4	NF
4	7400.8	NF	7520	NF	7639.2	NF
5	9251	NF	9400	NF	9549	NF
6	11101.2	NF	11280	NF	11458.8	NF
7	12951.4	NF	13160	NF	13368.6	NF
8	14801.6	NF	15040	NF	15278.4	NF
9	16651.8	NF	16920	NF	17188.2	NF
10	18502	NF	18800	NF	19098	NF
NF = NOISE FLOOR						



**4.2.4.4 RADIATED SPURIOUS EMISSIONS (PCS 1900)**

**TX: 30MHz - 1GHz**

Spurious emission limit -13dBm

**Note: This plot is valid for low, mid & high channels (worst-case plot)**

EUT: 040K60a

Customer:: Wavecom, Inc

Test Mode: GSM 1900 CH512

ANT Orientation: H

EUT Orientation: H

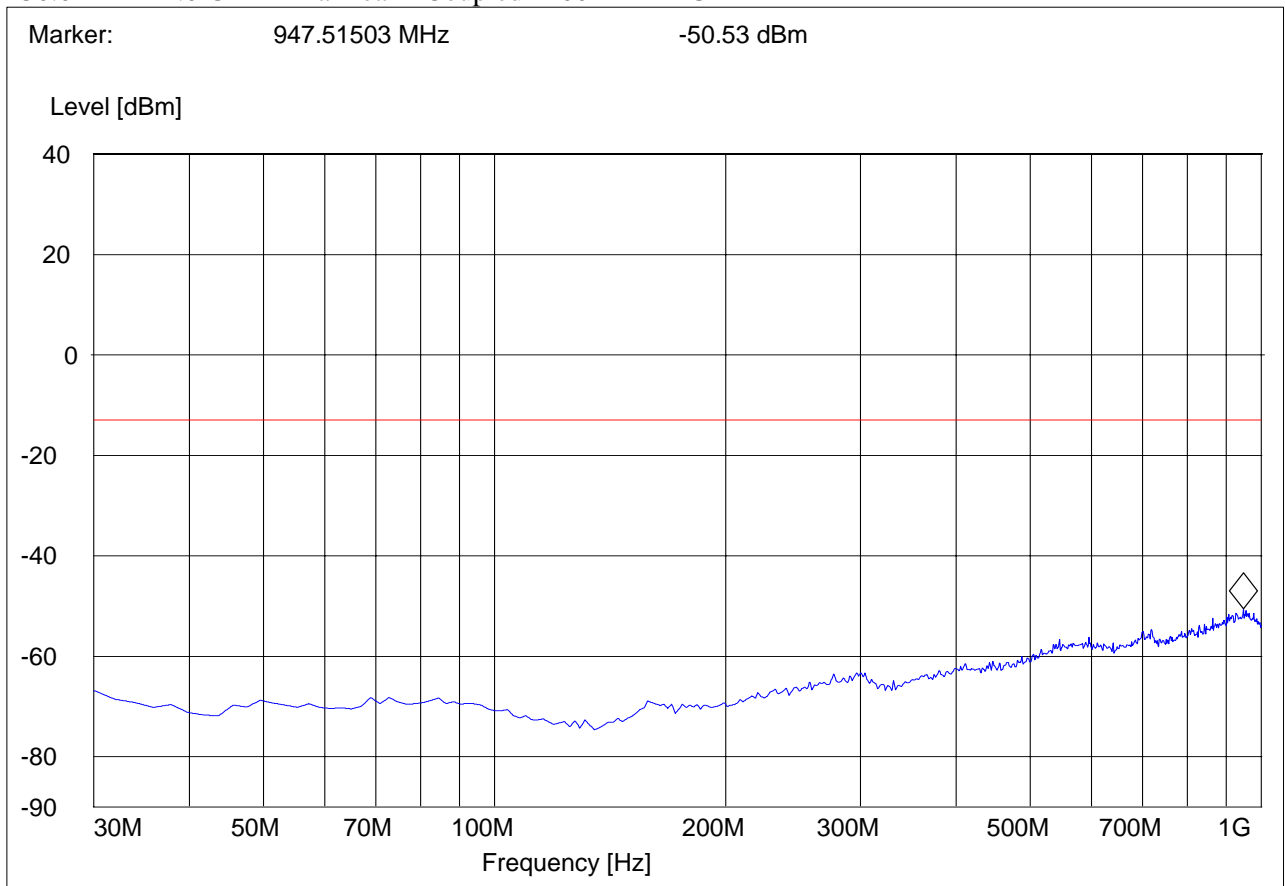
Test Engineer: SAM

Voltage: AC

Comments:

**SWEEP TABLE: "FCC 24 Spur 30M-1G\_H"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	DUMMY-DBM





**RADIATED SPURIOUS EMISSIONS (PCS 1900)**

**TX: 30MHz - 1GHz**

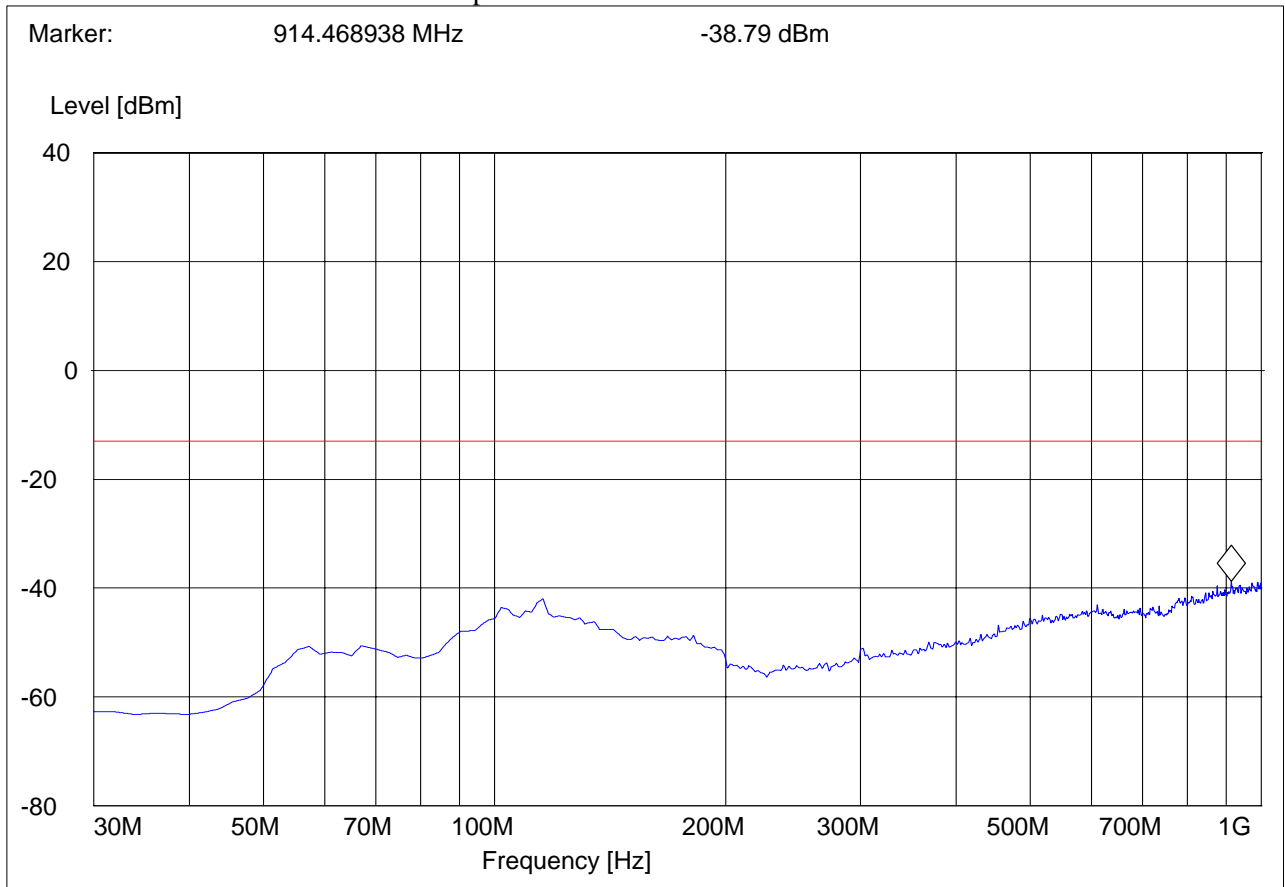
Spurious emission limit -13dBm

**Note: This plot is valid for low, mid & high channels (worst-case plot).**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 1900 CH512  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

***SWEEP TABLE: "FCC 24 Spur 30M-1G\_V"***

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





**RADIATED SPURIOUS EMISSIONS (PCS 1900)**

**Tx @ 1850.2 MHz: 1GHz – 3GHz**

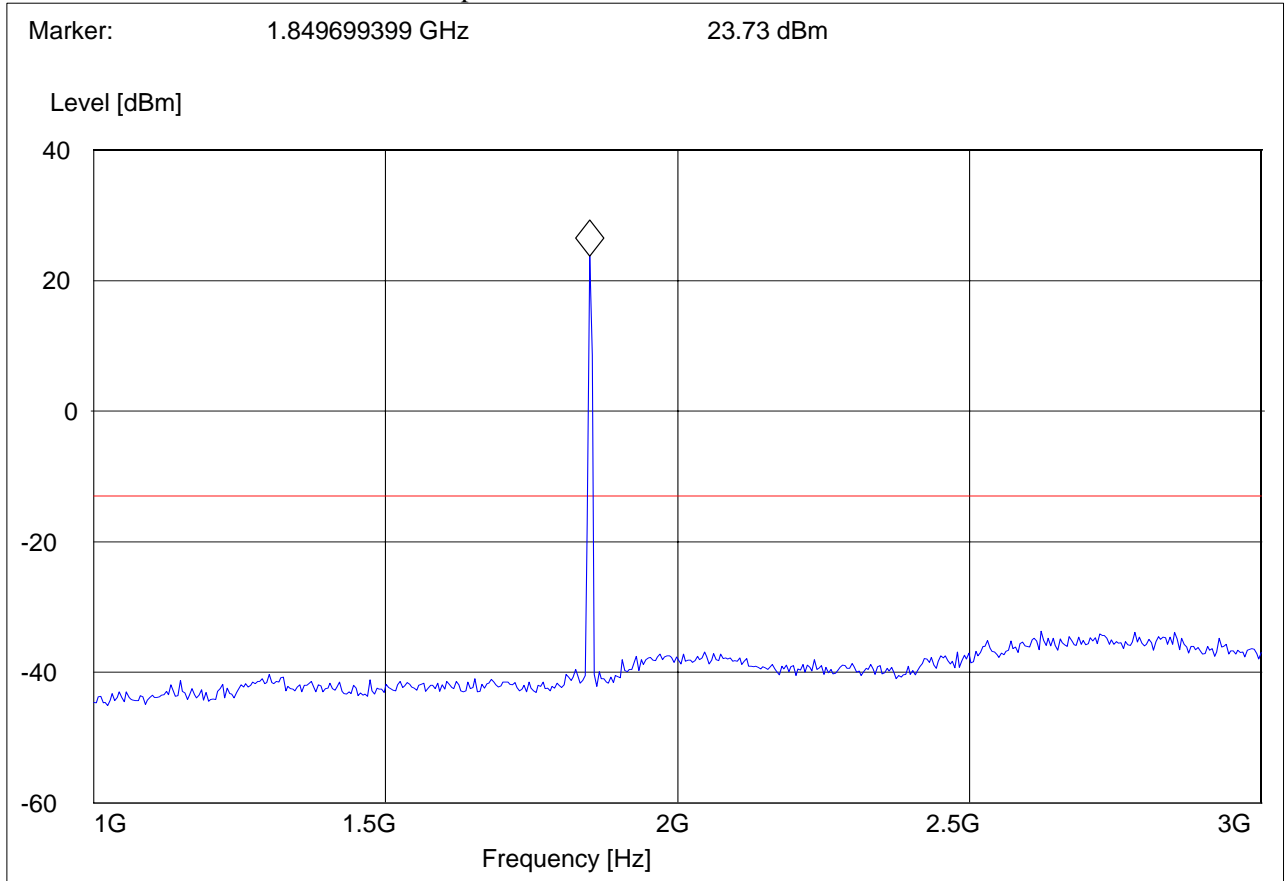
Spurious emission limit -13dBm

**Note: The peak above the limit line is the carrier freq. at ch-512.**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 1900 CH512  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments: marker placed on uplink

**SWEEP TABLE: "FCC 24Spuri 1-3G"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





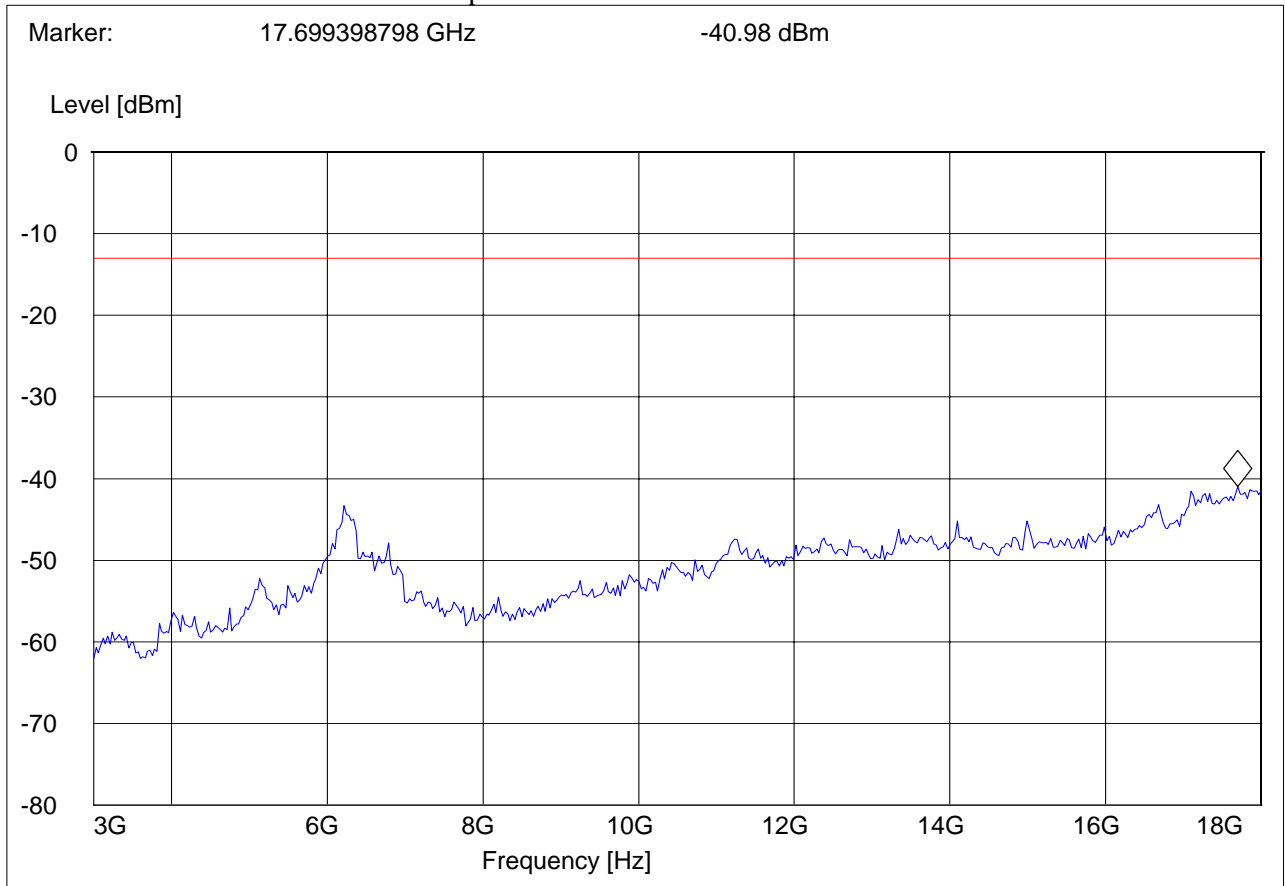
**RADIATED SPURIOUS EMISSIONS (PCS 1900)**

**Tx @ 1850.2 MHz: 3GHz – 18GHz**

EUT: 040K60a  
Customer:: Wavecom, Inc  
Test Mode: GSM 1900 CH512  
ANT Orientation: V  
EUT Orientation: H  
Test Engineer: SAM  
Voltage: AC  
Comments:

***SWEEP TABLE: "FCC 24Spuri 3-18G"***

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





**RADIATED SPURIOUS EMISSIONS (PCS 1900)**

**Tx @ 1880.0MHz: 1GHz – 3GHz**

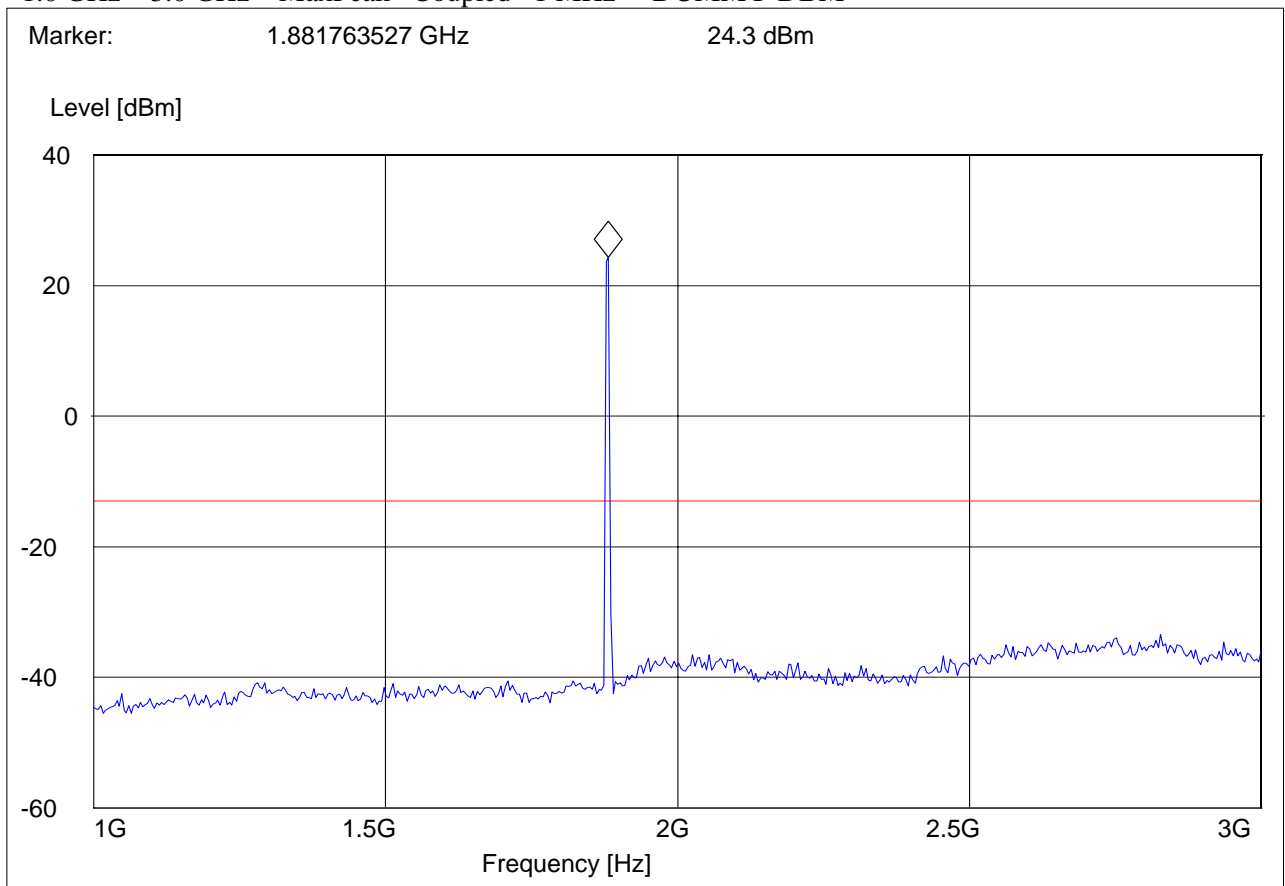
Spurious emission limit -13dBm

**Note: The peak above/close to the limit line is the carrier freq. at ch-661.**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 1900 CH661  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments: marker placed on uplink

**SWEEP TABLE: "FCC 24Spuri 1-3G"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM







**RADIATED SPURIOUS EMISSIONS (PCS 1900)**

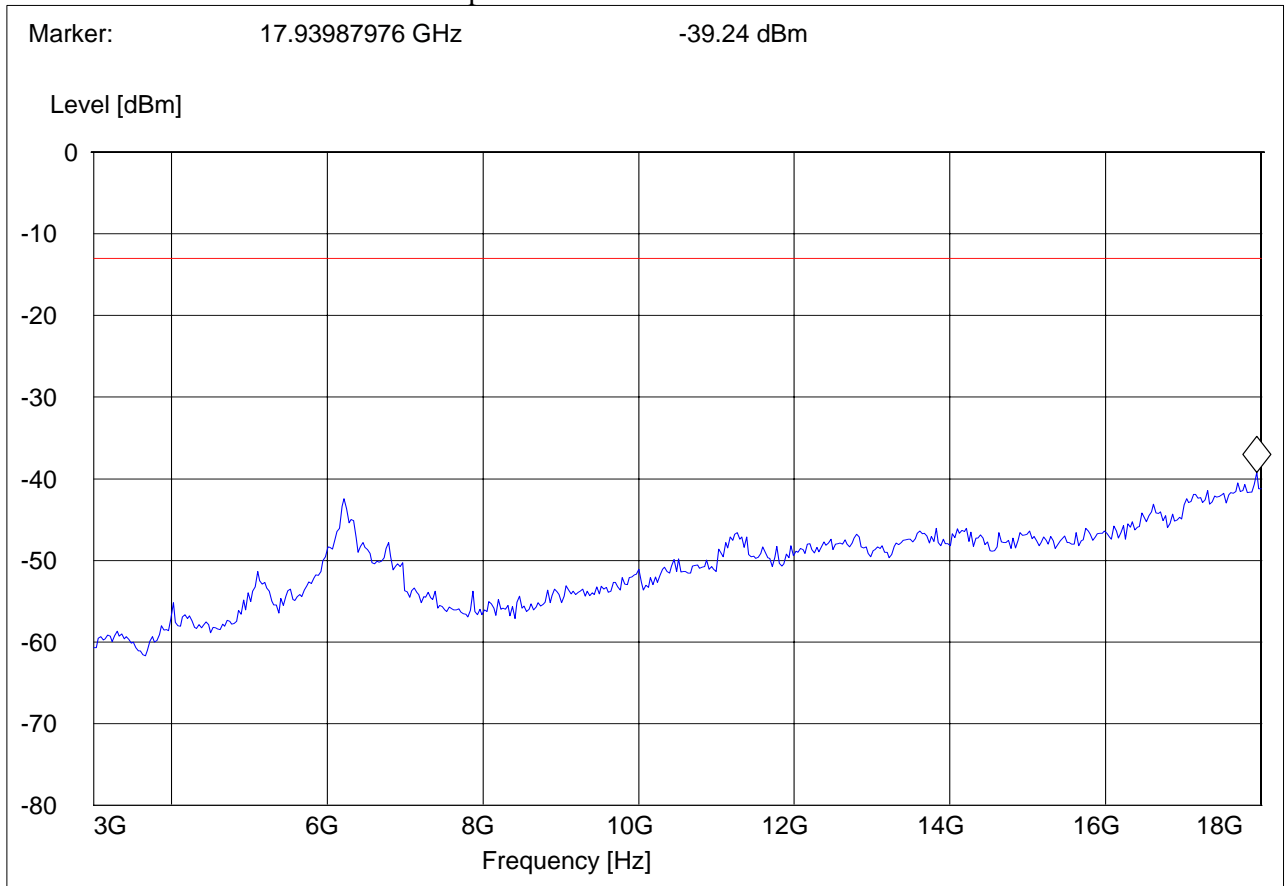
**Tx @ 1880.0MHz: 3GHz – 18GHz**

Spurious emission limit -13dBm

EUT: 040K60a  
Customer:: Wavecom, Inc  
Test Mode: GSM 1900 CH661  
ANT Orientation: V  
EUT Orientation: H  
Test Engineer: SAM  
Voltage: AC  
Comments:

**SWEEP TABLE: "FCC 24Spuri 3-18G"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





**RADIATED SPURIOUS EMISSIONS (PCS 1900)**

**Tx @ 1909.8 MHz: 1GHz – 3GHz**

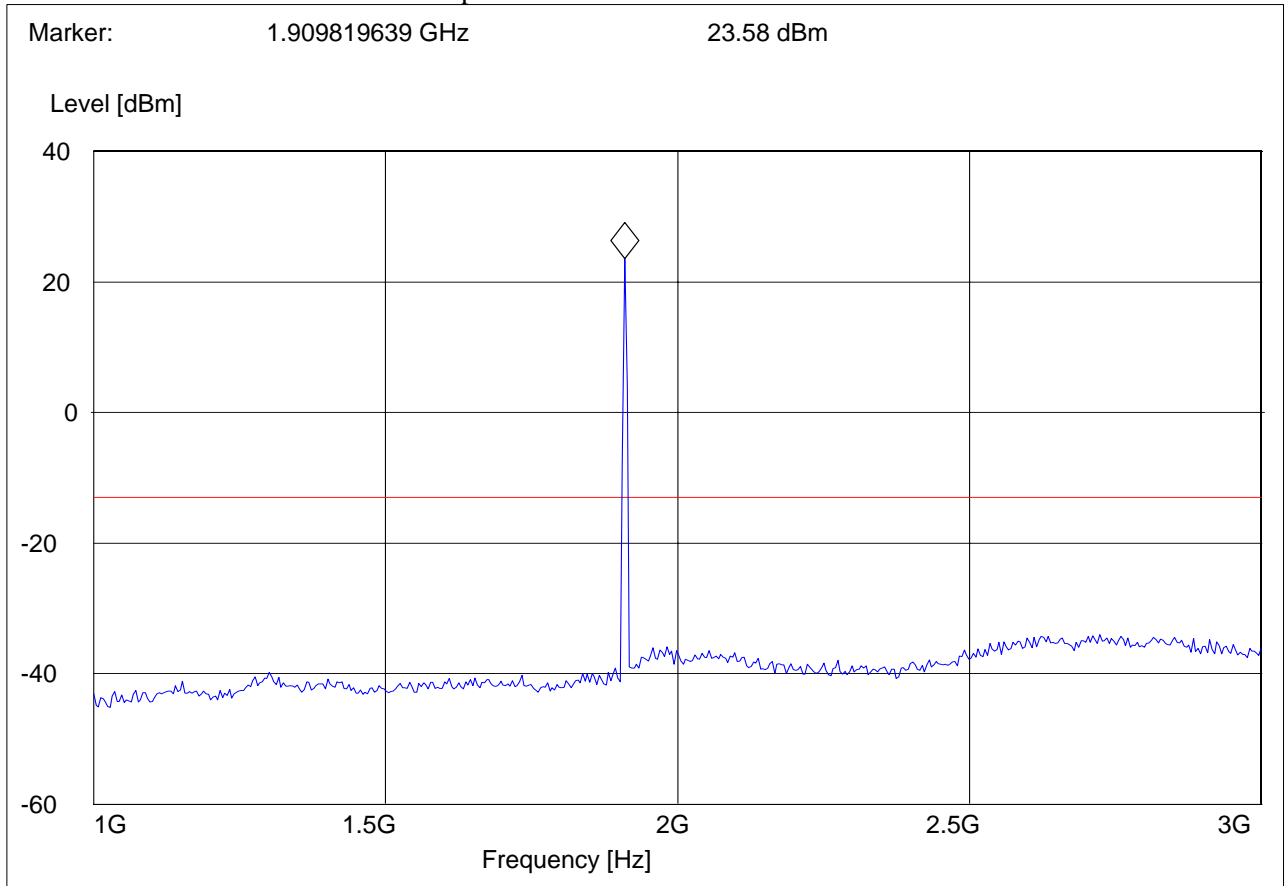
Spurious emission limit -13dBm

**Note: The peak above the limit line is the carrier freq. at ch-810.**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 1900 CH810  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments: marker placed on uplink

**SWEEP TABLE: "FCC 24Spuri 1-3G"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





**RADIATED SPURIOUS EMISSIONS (PCS 1900)**

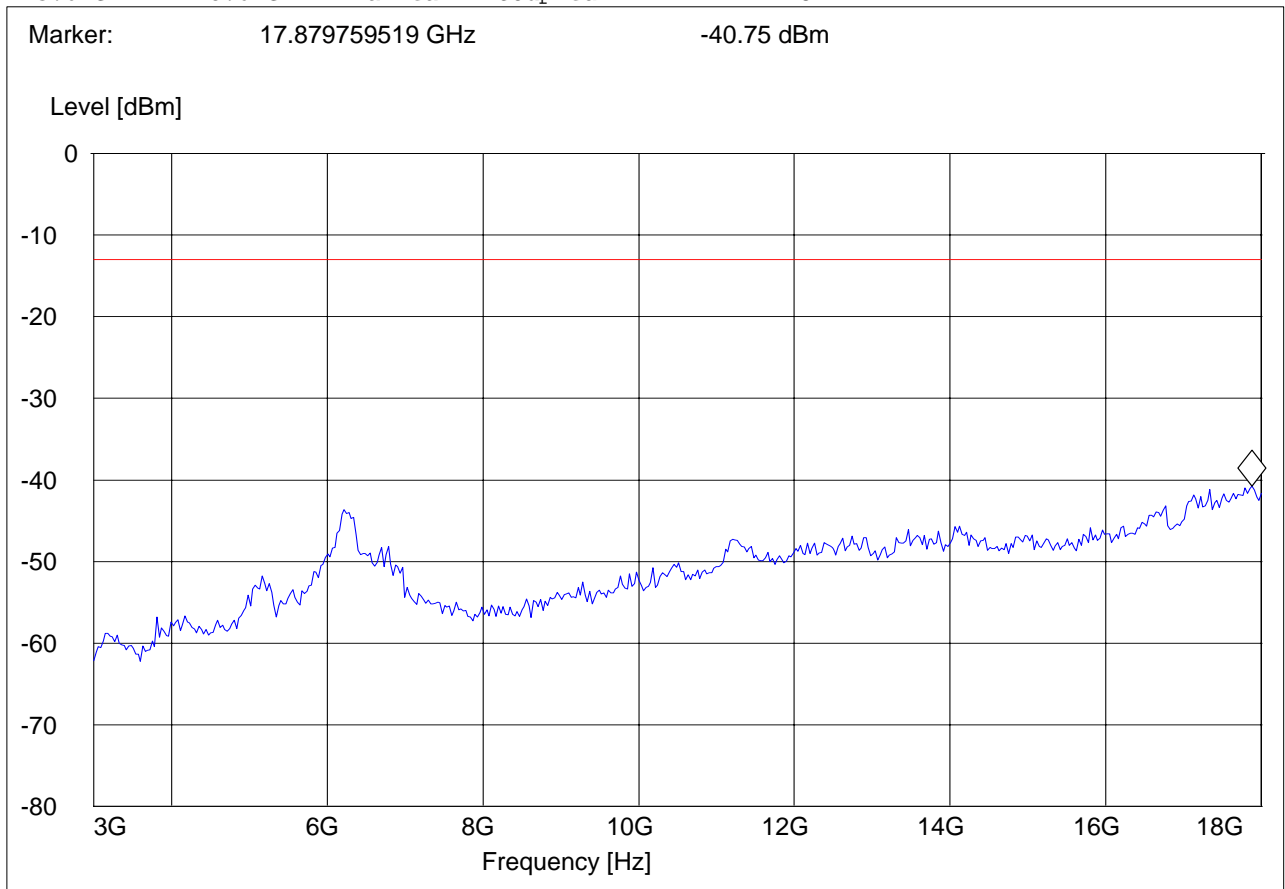
**Tx @ 1909.8 MHz: 3GHz – 18GHz**

Spurious emission limit -13dBm

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 1900 CH810  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

**SWEEP TABLE: "FCC 24Spuri 3-18G"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM





**RADIATED SPURIOUS EMISSIONS (PCS 1900)**

**Tx mode: 18GHz – 19.1GHz**

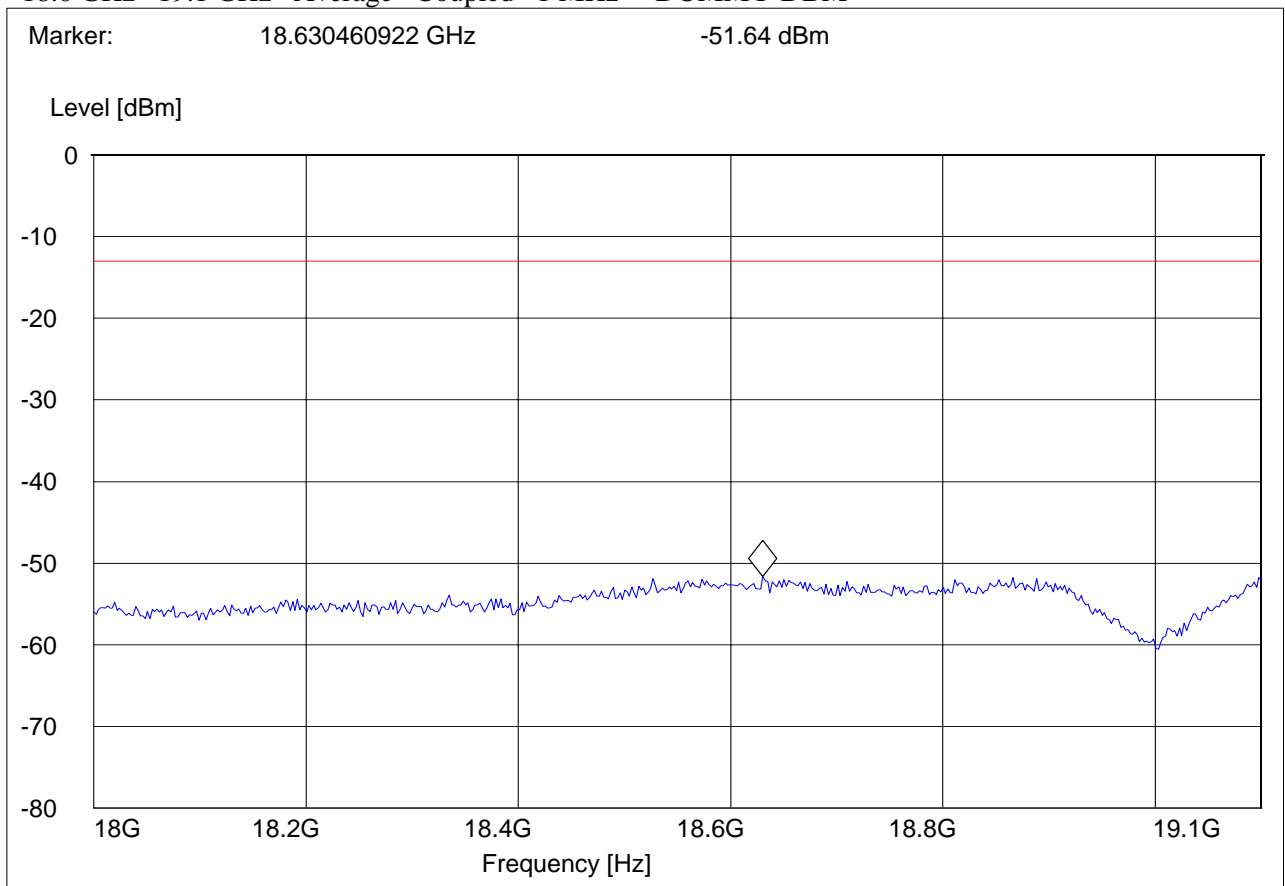
Spurious emission limit -13dBm

**Note: This plot is valid for low, mid & high channels (worst-case plot).**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 1900 CH661  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

**SWEEP TABLE: "FCC 24spuri 18-19.1G"**

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	19.1 GHz	Average	Coupled	1 MHz	DUMMY-DBM



### 4.3 Receiver Spurious Emissions Radiated

#### 4.3.1 Limits:

##### 4.3.1.1 **FCC §15.109 & RSS-129 (10) Emission limitations for cellular equipment.**

The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

EUT in Idle mode & hooked up with any available ancillary equipment (Limit: FCC-15.109 Class B) Per FCC section 15.31(m) receiver has to be tested on the low, middle, and high channel.  
Per RSS-129 (10) states that receiver emissions are to be performed at the middle channel up to the 3rd harmonic of the LO.

##### 4.3.1.2 **IC § RSS-133 (4.5) & (6.7) Emission limitations for Broadband PCS equipment.**

The rules in this section govern the spectral characteristics of emissions in the Broadband Personal Communications Service.

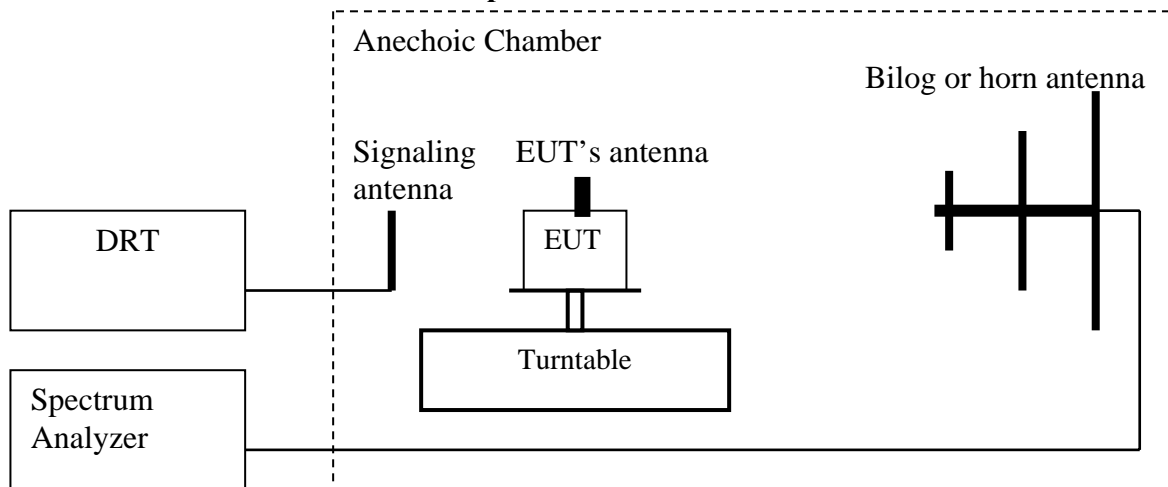
EUT in Idle mode & hooked up with any available ancillary equipment (Limit: FCC-15.109 Class B) Per FCC section 15.31(m) receiver has to be tested on the low, middle, and high channel.  
Per RSS-129 (10) states that receiver emissions are to be performed at the middle channel up to the 3rd harmonic of the LO.

**Note: Per 15.111 Receivers that operate or tune between 30 to 960 MHz must show compliance to section 15.109 limits. All other receivers operating below 30 MHz or above 960 MHz are exempt from testing. No such exclusion exists in the RSS standards, so all receivers are to be tested.**

#### 4.3.2 Radiated receiver measurement procedure:

Based on ANSI63.4: 2004

##### 2.2.12 Unwanted emissions: Radiated Spurious



11. Connect the equipment as shown in the above diagram with the EUT's antenna in a horizontal orientation.
12. Adjust the settings of the Digital Radiocommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
13. Set the spectrum analyzer to measure peak hold with the required settings.
14. Place the measurement antenna in a horizontal orientation. Rotate the EUT 360°. Raise the measurement antenna up to 4 meters in 0.5 meters increments and rotate the EUT 360° at each height to maximize all emissions. Measure and record all spurious emissions (LVL) up to the tenth harmonic of the carrier frequency.
15. Replace the EUT with a horizontally polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
16. Repeat steps 4, 5 and 6 with all antennas vertically polarized.
17. Determine the level of spurious emissions using the following equation:  
**Spurious** (dBuV/m) = **LVL** (dBuV) + **LOSS** (dB/m):
18. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.

(note: Steps 5 and 6 above are performed prior to testing and **LOSS** is recorded by test software. Steps 3, 4 and 7 above are performed with test software.)

**Spectrum analyzer settings:**

Below 1GHz: RBW=VBW=100 kHz, Detector: QP

Above 1GHz: RBW=VBW= 1MHz, Detector: Peak

**Measurement Survey:**

For FCC receiver radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the GSM-850. For Industry Canada receiver radiated emissions measurements were made only at the middle carrier frequencies of the PCS-1900 bands. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

All measurements were performed with Heart monitoring sensors connected to the device.

**4.3.2.1 RESULTS OF RADIATED TESTS GSM-850:**

<b>Harmonics</b>	<b>Tx ch-8 Freq. (MHz)</b>	<b>Level (dBuV/m)</b>	<b>Tx ch-383 Freq. (MHz)</b>	<b>Level (dBuV/m)</b>	<b>Tx ch-758 Freq. (MHz)</b>	<b>Level (dBuV/m)</b>
1	825.25	NF	836.5	NF	847.75	NF
2	1648.4	NF	1673.2	NF	1697.6	NF
3	2472.6	NF	2509.8	NF	2546.4	NF
4	3296.8	NF	3346.4	NF	3395.2	NF
5	4121	NF	4183	NF	4244	NF
NF = NOISE FLOOR						





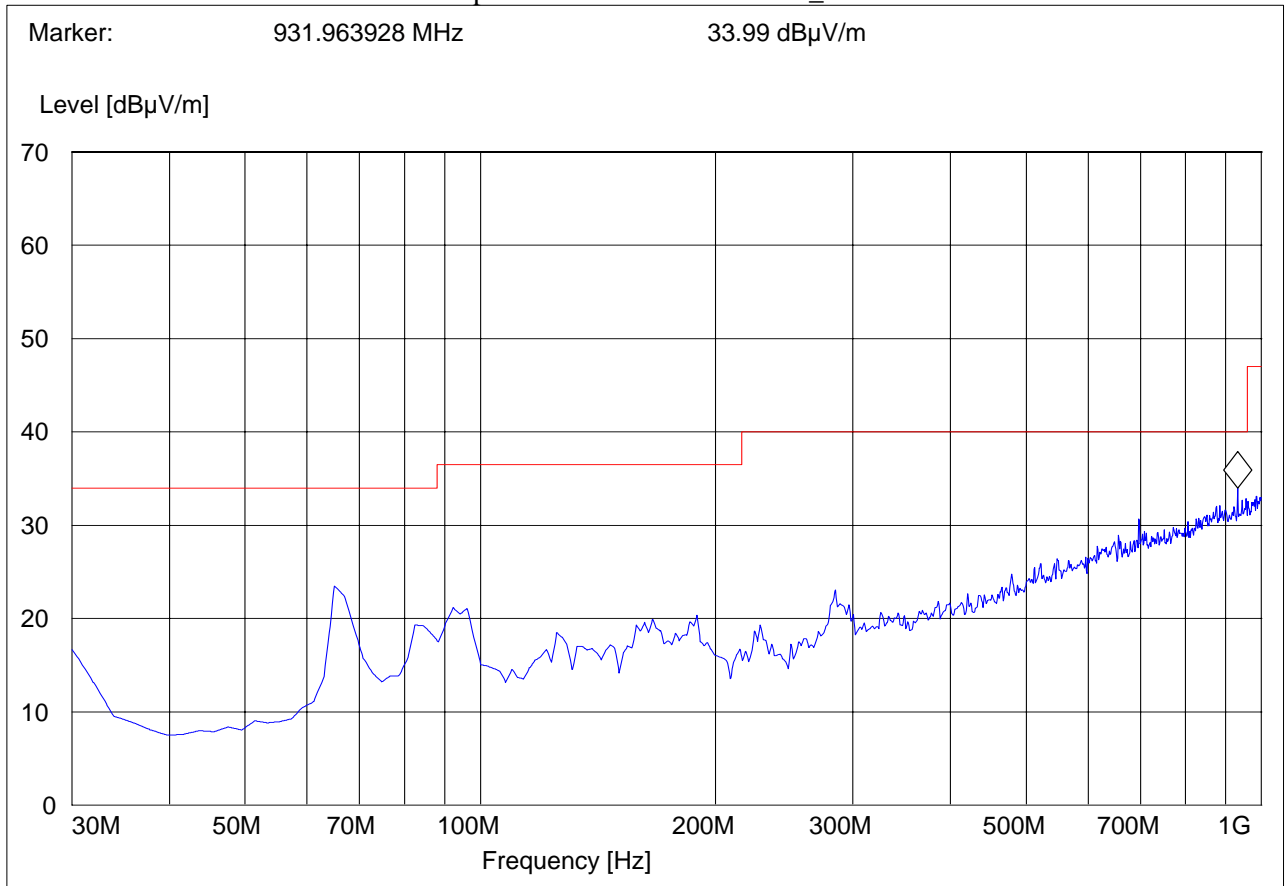
**4.3.2.2 RADIATED SPURIOUS EMISSIONS (GSM 850)**

**RX: 30MHz - 1GHz**

EUT: Omni Q52  
 Customer:: Wavecom, Inc  
 Test Mode: RX  
 ANT Orientation: H  
 EUT Orientation: H  
 Test Engineer: Chris  
 Voltage: AC  
 Comments:

***SWEEP TABLE: "CANDA RE\_30M-1G\_Hor"***

Start Stop Detector Meas. IF Transducer  
 Frequency Frequency Time Bandw.  
 30.0 MHz 1.0 GHz MaxPeak Coupled 100 kHz 3141-#1186\_Horz





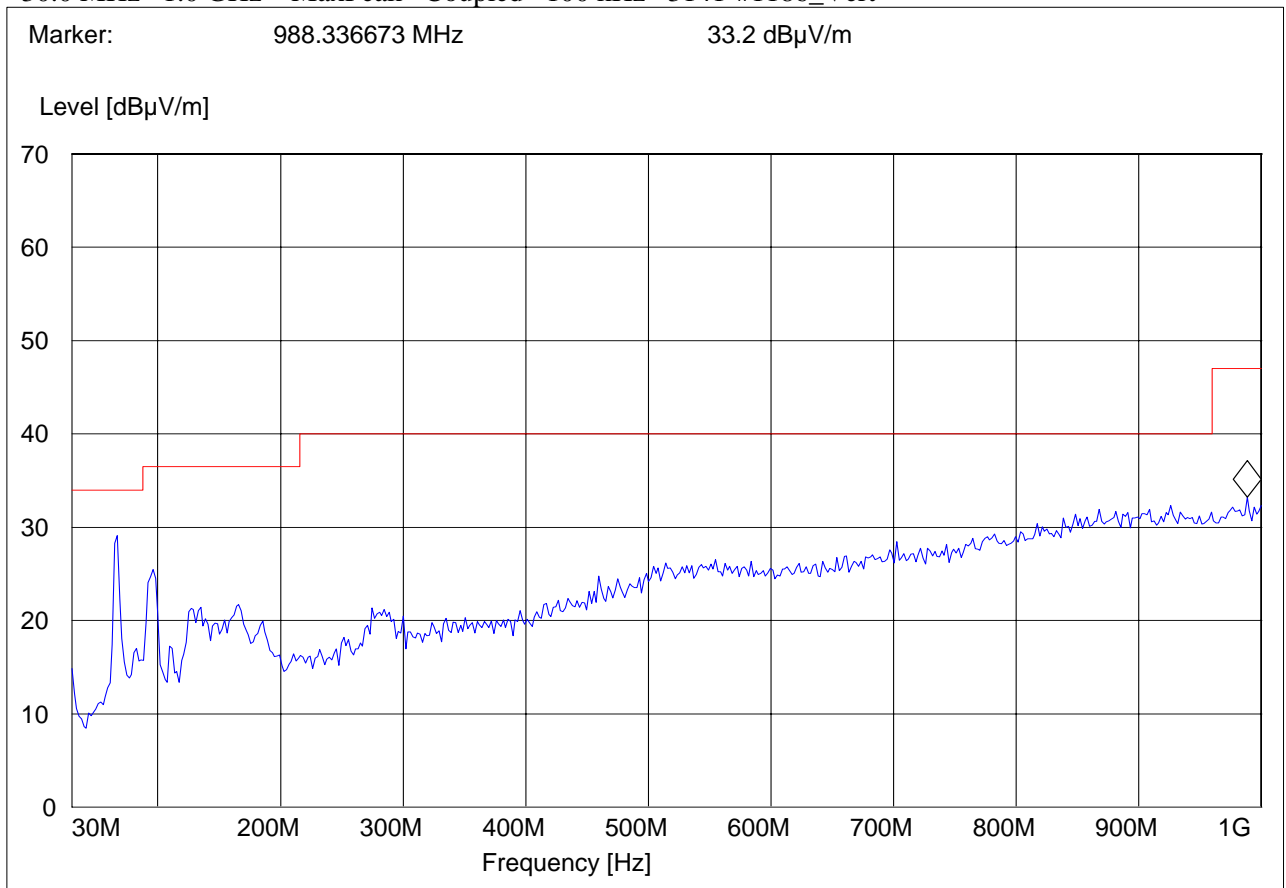
**RADIATED SPURIOUS EMISSIONS**

**RX: 30MHz - 1GHz**

EUT: Omni Q52  
 Customer:: Wavecom, Inc  
 Test Mode: RX  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: Chris  
 Voltage: AC  
 Comments:

***SWEEP TABLE: "CANADA RE\_30M-1G\_Ver"***

Start Stop Detector Meas. IF Transducer  
 Frequency Frequency Time Bandw.  
 30.0 MHz 1.0 GHz MaxPeak Coupled 100 kHz 3141-#1186\_Vert





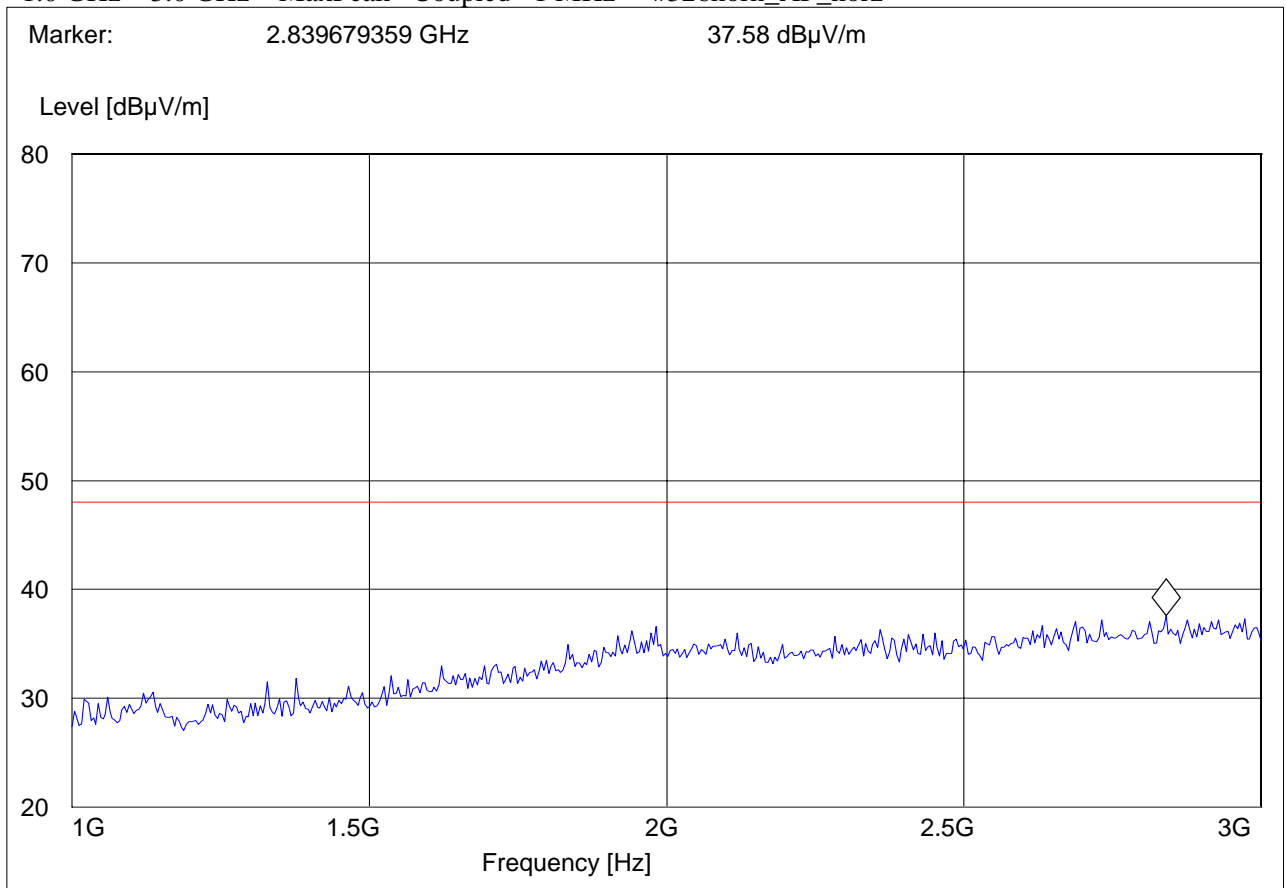
**RADIATED SPURIOUS EMISSIONS**

**Rx Mode: 1 – 3 GHz**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 1900 ; IDLE  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

***SWEEP TABLE: "CANADA RE\_1-3G"***

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz





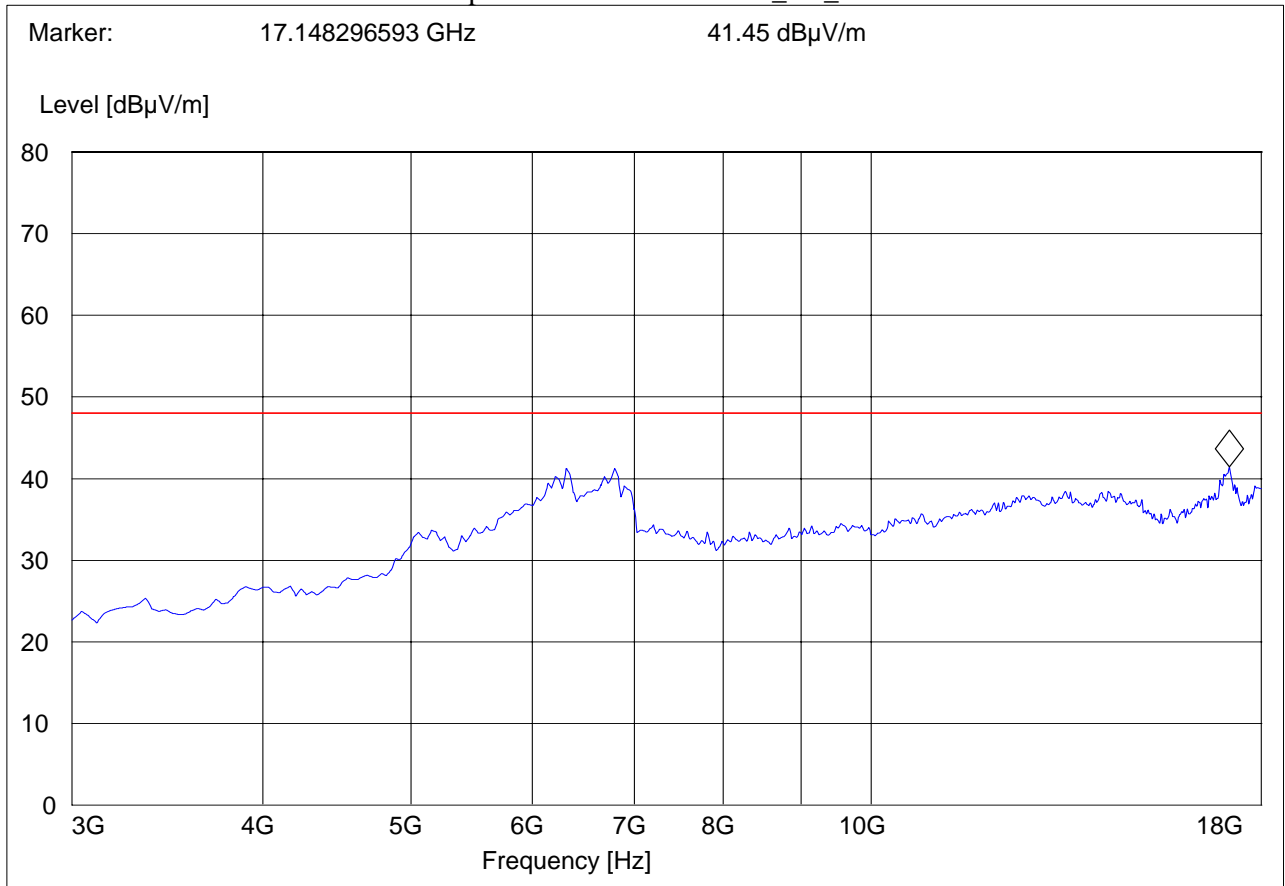
**RADIATED SPURIOUS EMISSIONS**

**Rx Mode: 3 – 18 GHz**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 1900 ; IDLE  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

***SWEEP TABLE: "CANADA RE\_3-18G"***

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



**4.3.2.3 RESULTS OF RADIATED TESTS PCS-1900:**

<b>Harmonic</b>	<b>Tx ch-661 Freq. (MHz)</b>	<b>Level (dBuV/m)</b>
<b>1</b>	<b>1880</b>	NF
<b>2</b>	<b>3760</b>	NF
<b>3</b>	<b>5640</b>	NF
<b>4</b>	<b>7520</b>	NF
<b>5</b>	<b>9400</b>	NF
NF = NOISE FLOOR		



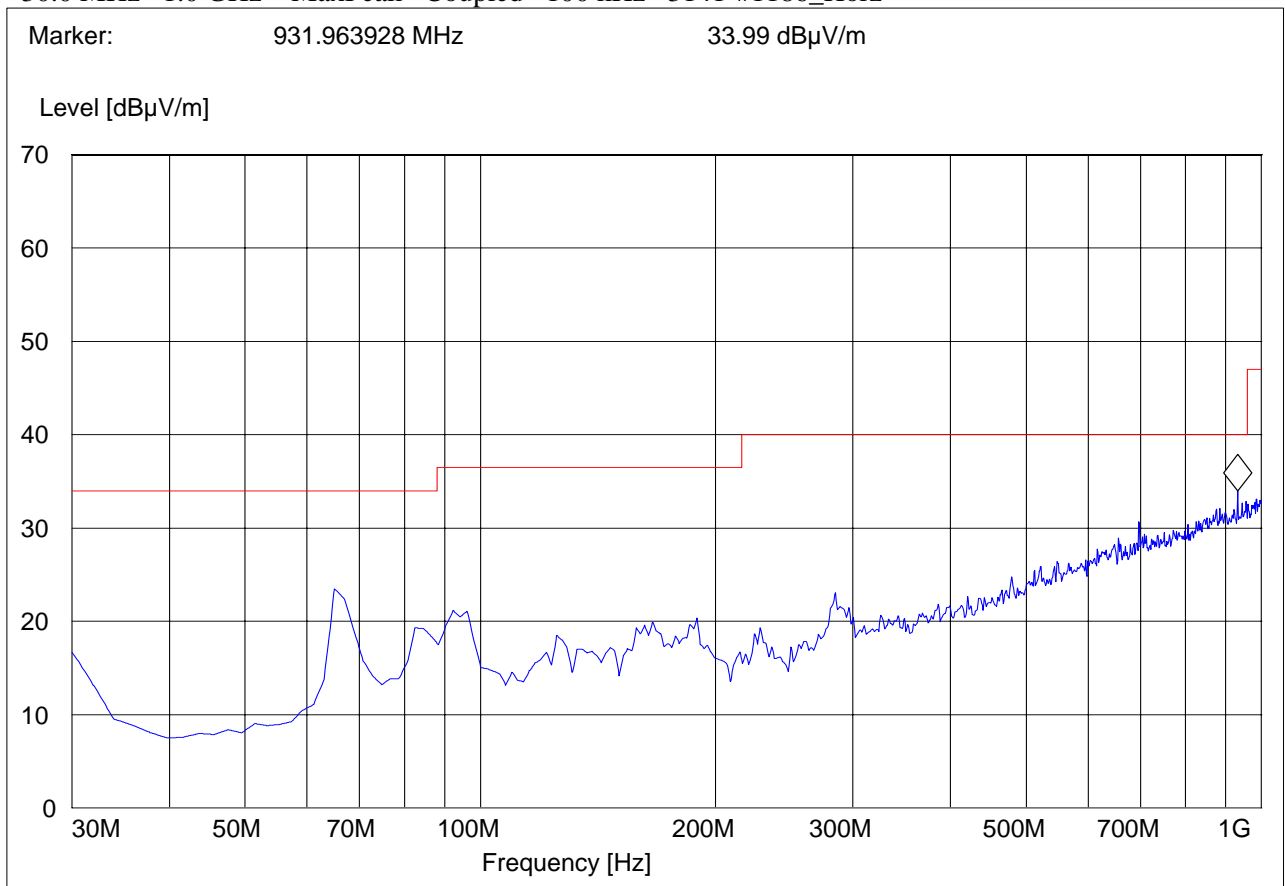
**4.3.2.4 RADIATED SPURIOUS EMISSIONS (PCS 1900)**

**RX: 30MHz - 1GHz**

EUT: Omni Q52  
 Customer:: Wavecom, Inc  
 Test Mode: RX  
 ANT Orientation: H  
 EUT Orientation: H  
 Test Engineer: Chris  
 Voltage: AC  
 Comments:

***SWEEP TABLE: "CANDA RE\_30M-1G\_Hor"***

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz





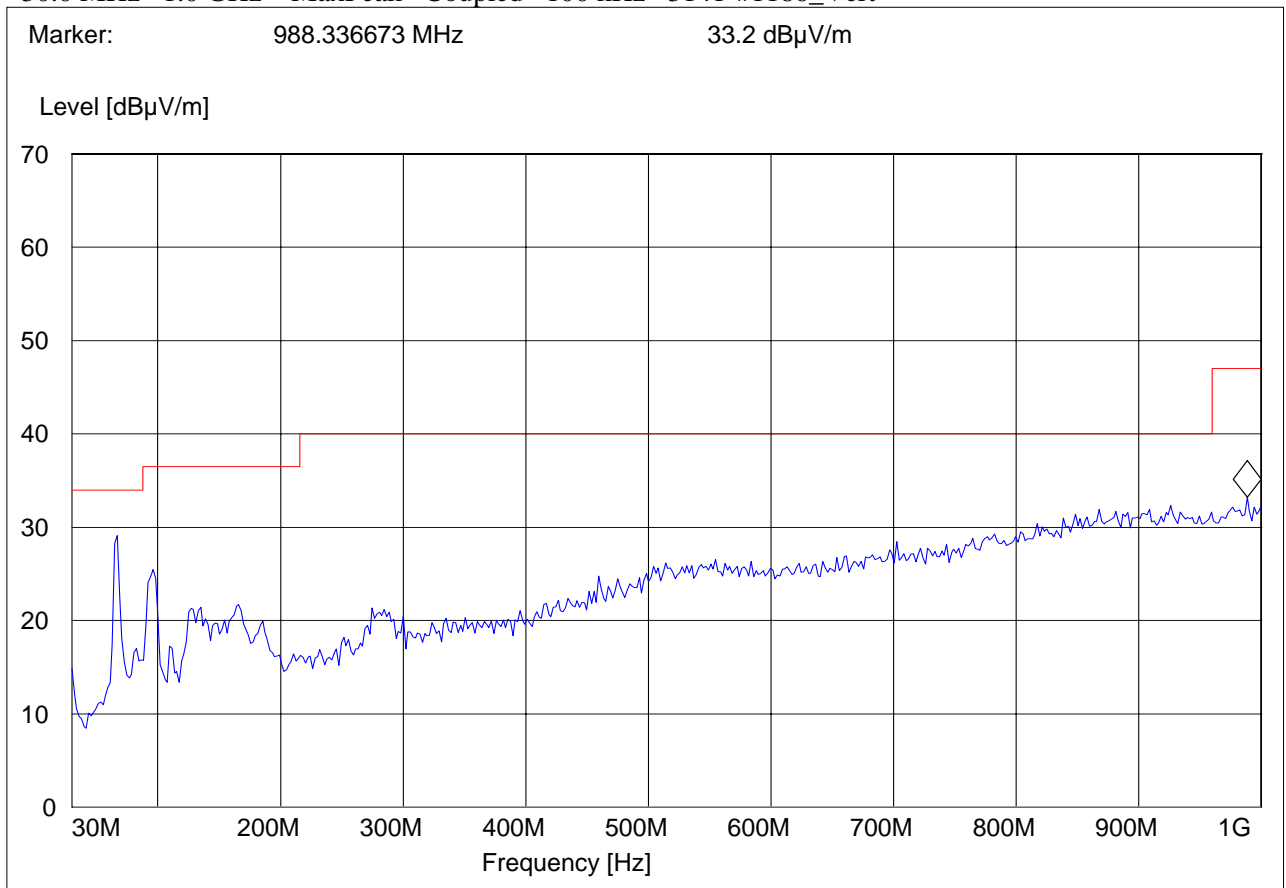
**RADIATED SPURIOUS EMISSIONS**

**RX: 30MHz - 1GHz**

EUT: Omni Q52  
Customer:: Wavecom, Inc  
Test Mode: RX  
ANT Orientation: V  
EUT Orientation: H  
Test Engineer: Chris  
Voltage: AC  
Comments:

***SWEEP TABLE: "CANADA RE\_30M-1G\_Ver"***

Start Stop Detector Meas. IF Transducer  
Frequency Frequency Time Bandw.  
30.0 MHz 1.0 GHz MaxPeak Coupled 100 kHz 3141-#1186\_Vert





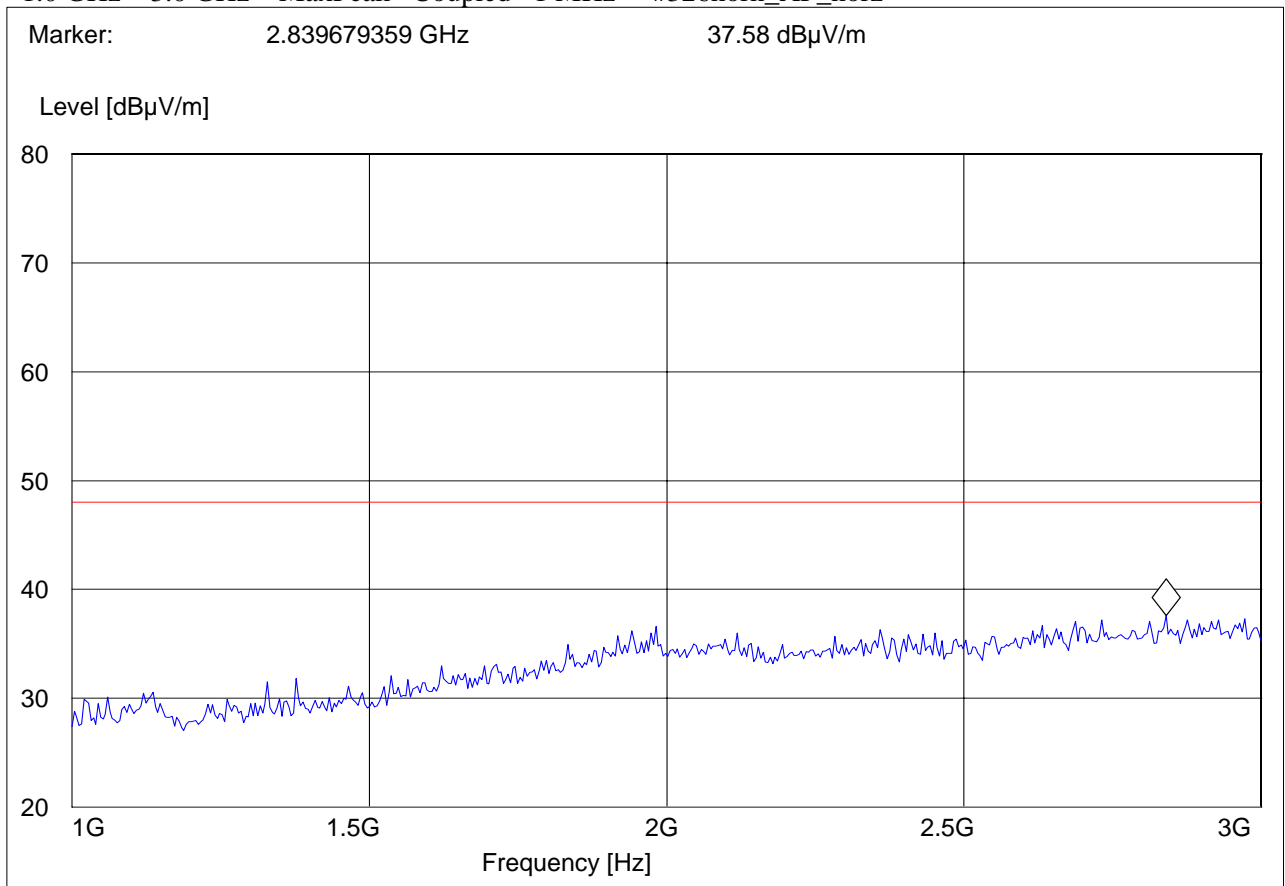
**RADIATED SPURIOUS EMISSIONS**

**Rx Mode: 1 – 3 GHz**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 1900 ; IDLE  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

***SWEEP TABLE: "CANADA RE\_1-3G"***

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz







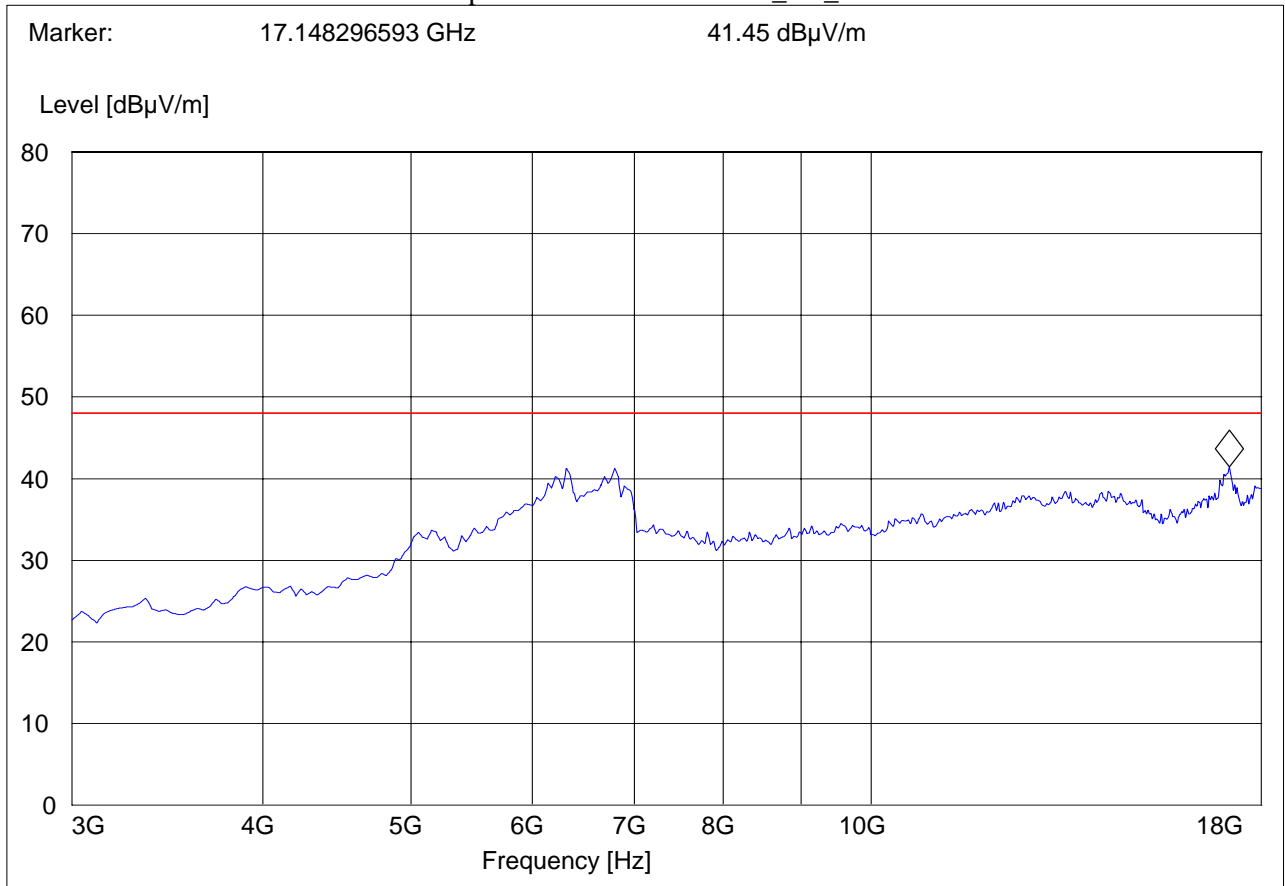
**RADIATED SPURIOUS EMISSIONS**

**Rx Mode: 3 – 18 GHz**

EUT: 040K60a  
 Customer:: Wavecom, Inc  
 Test Mode: GSM 1900 ; IDLE  
 ANT Orientation: V  
 EUT Orientation: H  
 Test Engineer: SAM  
 Voltage: AC  
 Comments:

***SWEEP TABLE: "CANADA RE\_3-18G"***

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz





**4.4 AC LINE CONDUCTED EMISSIONS**

§15.107 revised as of Aug. 20, 2002 & RSS-GEN (7.2.2)

NOTE: Test setup should be according ANSI C63.4 (Page 30/36). Both transmit and receive must be tested. For transmit test the channel with the highest power. For receive test the channel that produce worst radiated emission level only.

(Please do not repeat if already covered under part 24 or 15.247)

	Frequency (MHz)	
Frequency Range	150KHz – 30MHz	
LISN Setting	Result Saved	Result (Fail/Pass)
<b>TRANSMIT MODE</b>		
Line	TXLISN-L	Pass
Neutral	TXLISN-N	Pass
<b>RECEIVE MODE</b>		
Line	RXLISN-L	Pass
Neutral	RXLISN-N	Pass

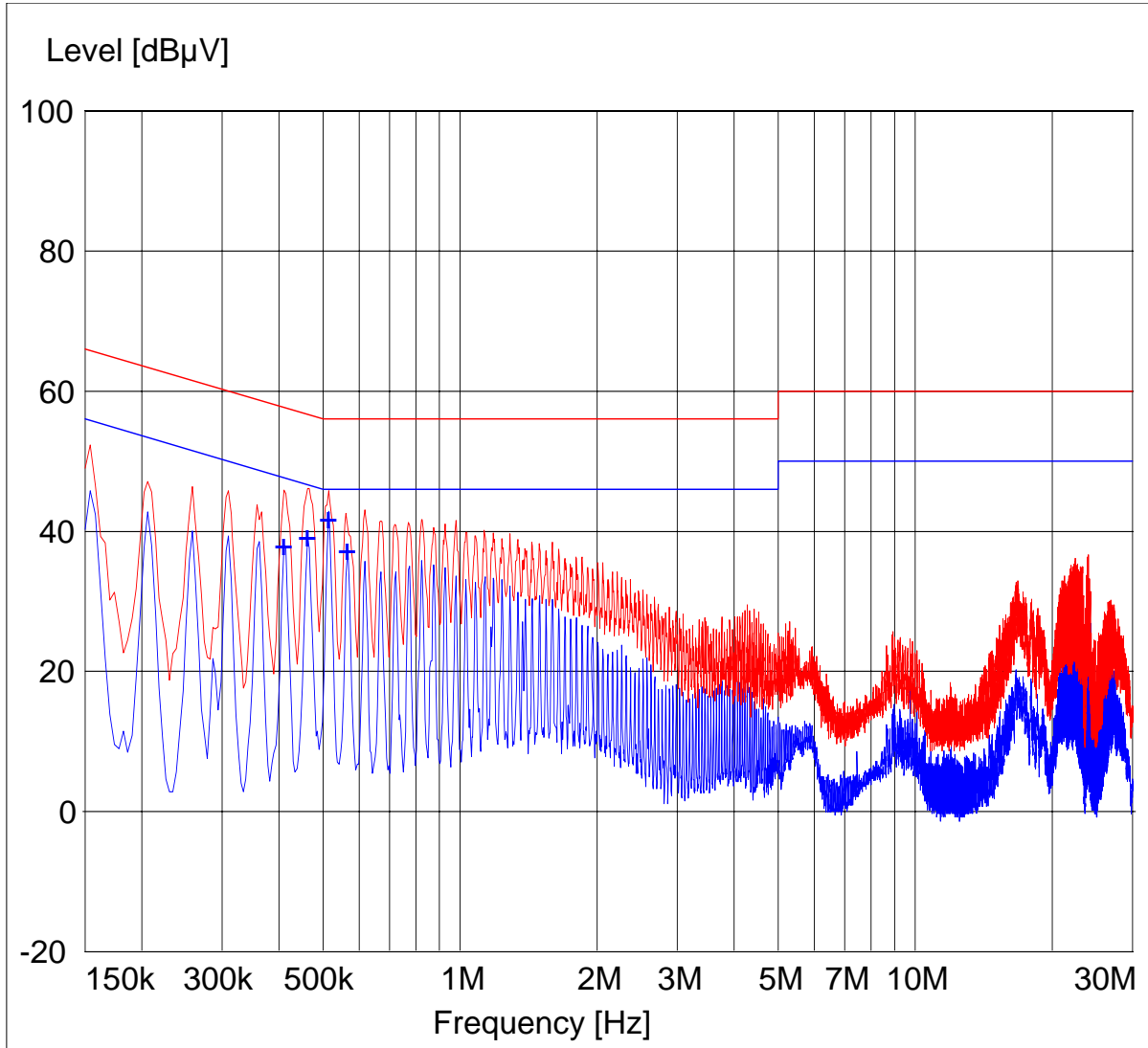
Technical specification : 15.107 & RSS-GEN (7.2.2) Limit

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 to .5	66 to 56	56 to 46
.5 to 5	56	46
5 to 30	60	50

Note: Per Section 15.107(d) only performed if device is normally connected to the AC mains either by an external AC adaptor or DC supply. In this case AC conducted emissions is to be performed on the external AC adaptor or DC supply. If the device uses a rechargeable adaptor and the device could be used while charging, conducted measurements must be perform. If the device receives its power from a host device, conducted measurements are to be performed on the host device. Battery operated devices are exempt from testing even if an external DC supply is being used.

**AC LINE CONDUCTED EMISSIONS (GSM 850)  
LINE**

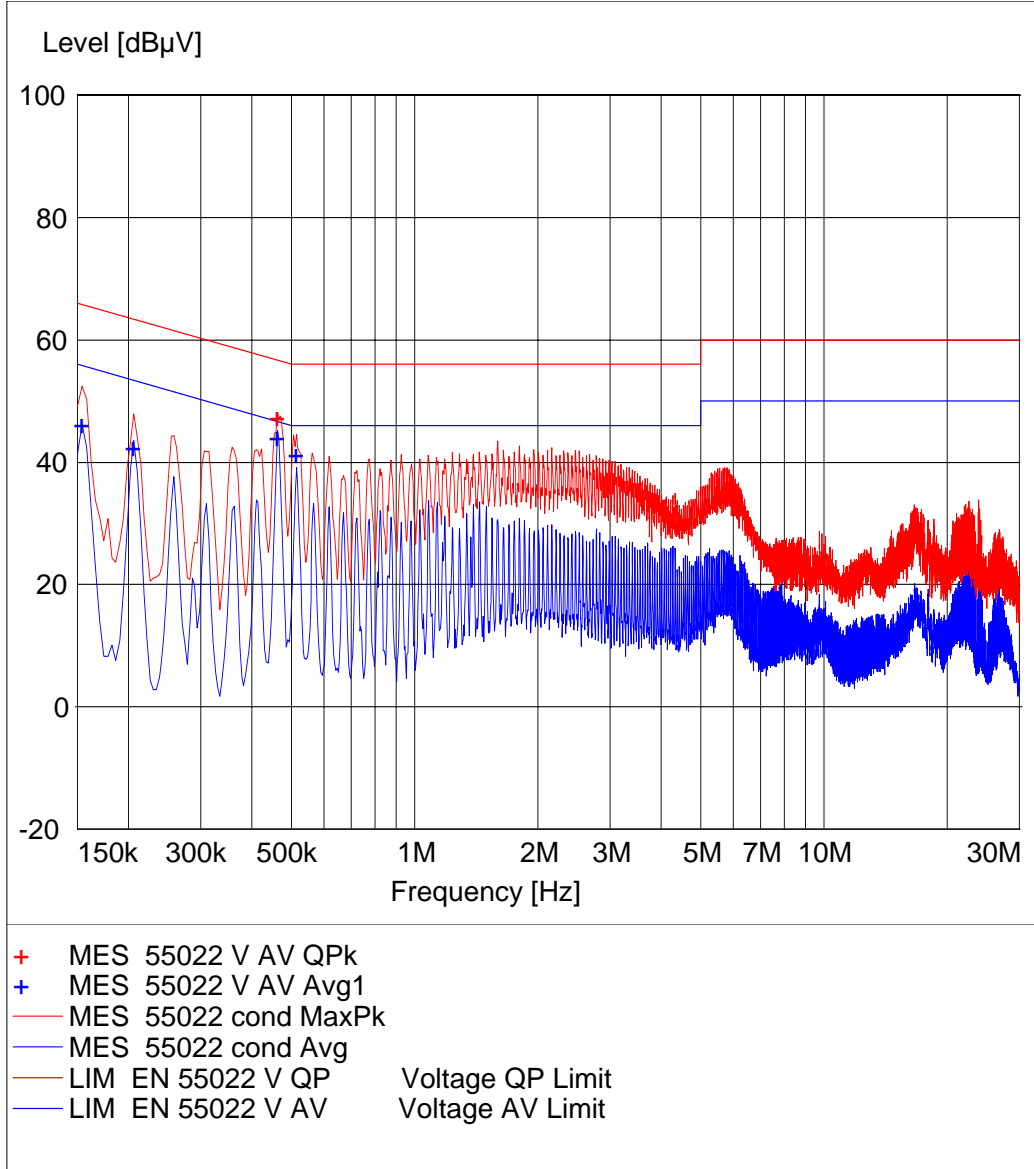
EUT: Omni Q52  
 Manufacturer: Wavecom  
 Test Mode: GSM 850  
 ANT Orientation:: N/A  
 EUT Orientation:: H  
 Test Engineer:: Chris  
 Power Supply: : AC  
 Comments: : LINE



- + MES 55022 V AV Avg1
- MES 55022 cond MaxPk
- MES 55022 cond Avg
- LIM EN 55022 V QP Voltage QP Limit
- LIM EN 55022 V AV Voltage AV Limit

**AC LINE CONDUCTED EMISSIONS (GSM 850)  
NEUTRAL**

EUT: Omni Q52  
 Manufacturer: Wavecom  
 Test Mode: GSM 850  
 ANT Orientation:: N/A  
 EUT Orientation:: H  
 Test Engineer:: Chris  
 Power Supply: : AC  
 Comments: : Neutral





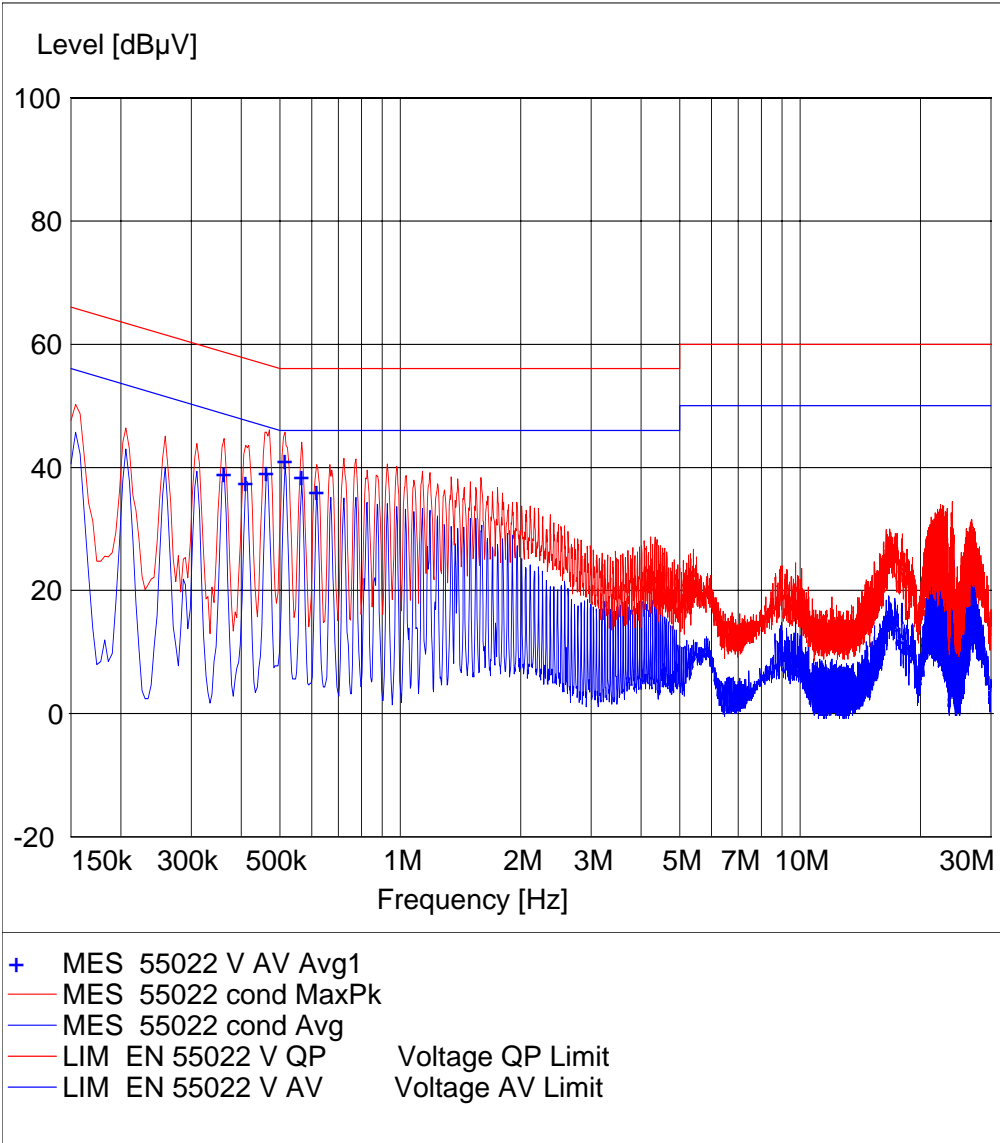
**MEASUREMENT RESULT: "55022 V AV QPk"**

11/10/2008 9:41AM

Frequency	Level	Transd	Limit	Margin	Line	PE	AUX
				STATE			
MHz	dB $\mu$ V	dB	dB $\mu$ V	dB			
0.462000	47.40	0.1	57	9.3	1	---	OFF

**AC LINE CONDUCTED EMISSIONS (PCS 1900)  
LINE**

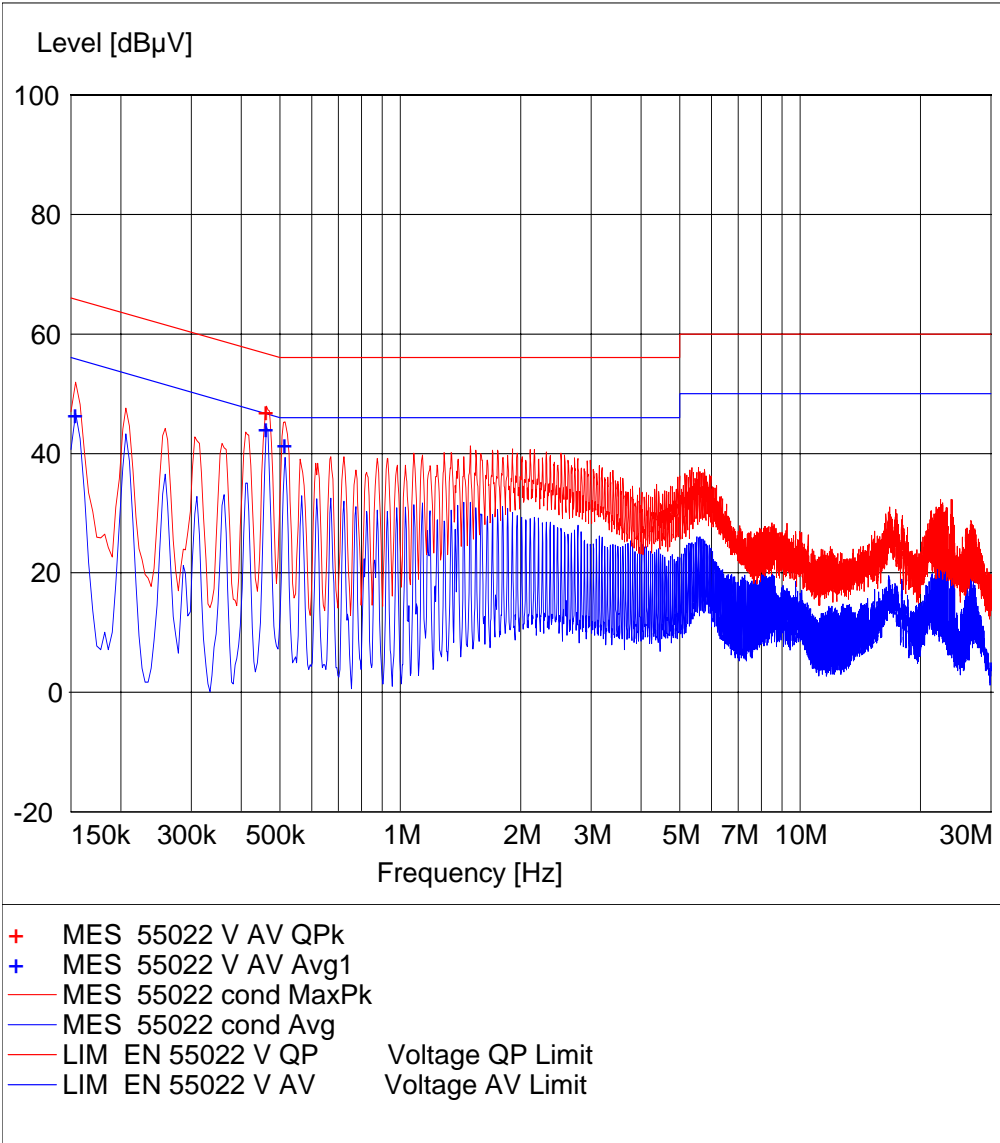
EUT: Omni Q52  
 Manufacturer: Wavecom  
 Test Mode: GSM 1900  
 ANT Orientation:: N/A  
 EUT Orientation:: H  
 Test Engineer:: Chris  
 Power Supply: : AC  
 Comments: : Line





### AC LINE CONDUCTED EMISSIONS (PCS 1900) NEUTRAL

EUT: Omni Q52  
Manufacturer: Wavecom  
Test Mode: GSM 1900  
ANT Orientation: N/A  
EUT Orientation: H  
Test Engineer: Chris  
Power Supply: AC  
Comments: Neutral





**MEASUREMENT RESULT: "55022 V AV QPk"**

11/10/2008 9:46AM

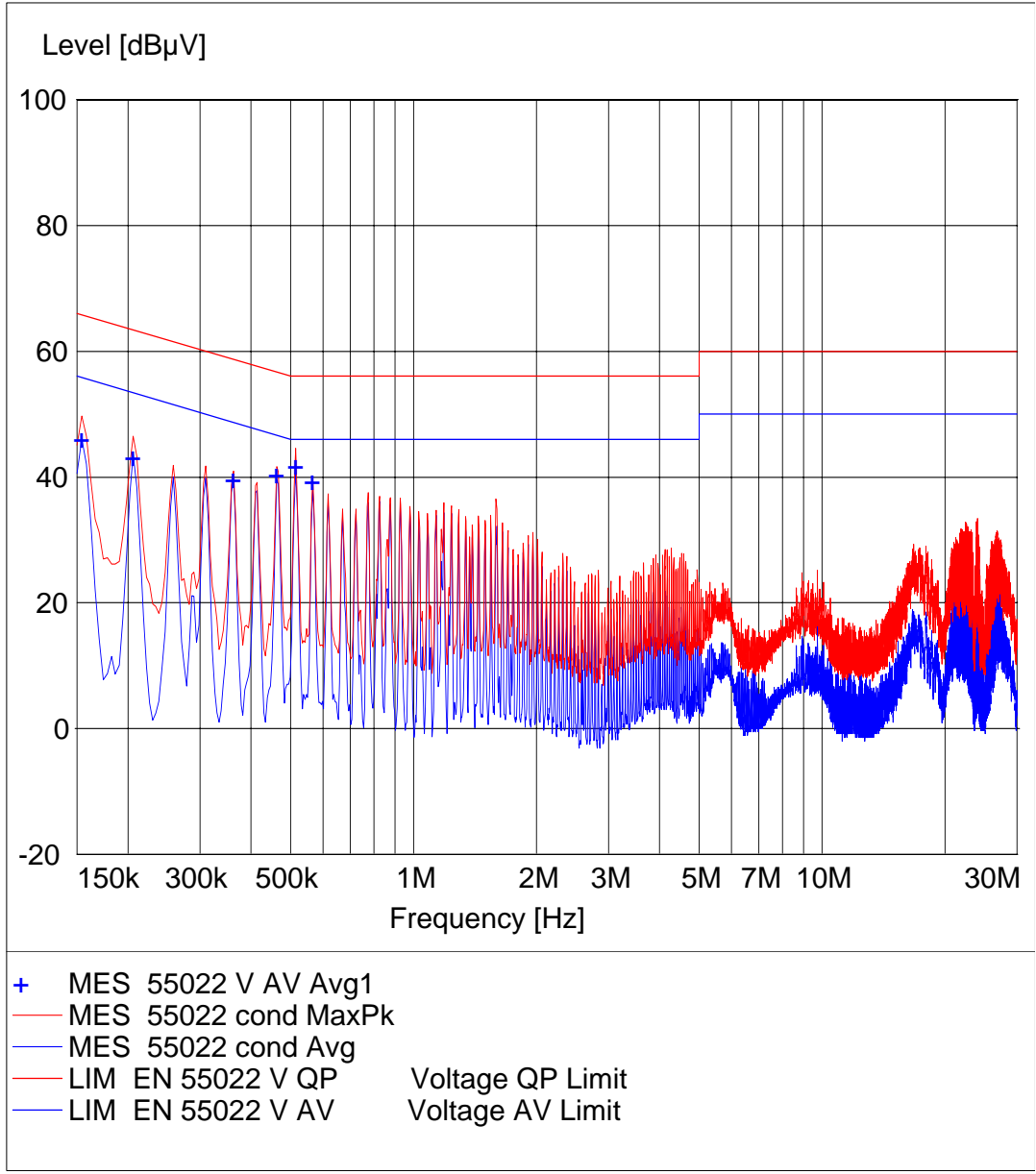
Frequency	Level	Transd	Limit	Margin	Line	PE	AUX
				STATE			
MHz	dB $\mu$ V	dB	dB $\mu$ V	dB			
0.462000	47.10	0.1	57	9.6	1	---	OFF





**AC LINE CONDUCTED EMISSIONS (RX)  
LINE**

EUT: Omni Q52  
 Manufacturer: Wavecom  
 Test Mode: RX  
 ANT Orientation: N/A  
 EUT Orientation: H  
 Test Engineer: Chris  
 Power Supply: AC  
 Comments: Line

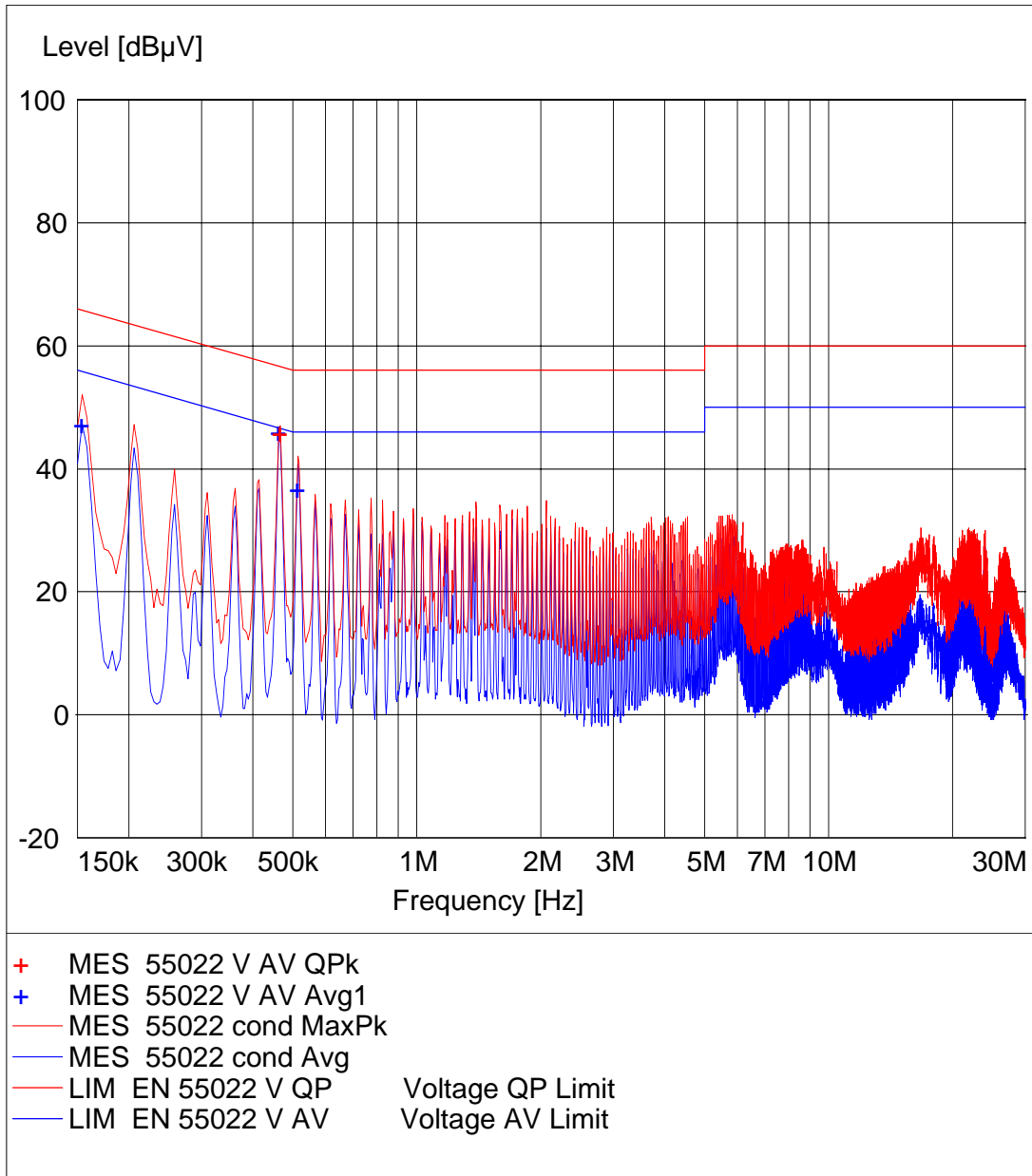




**AC LINE CONDUCTED EMISSIONS (RX)**

**NEUTRAL**

EUT: Omni Q52  
 Manufacturer: Wavecom  
 Test Mode: RX  
 ANT Orientation:: N/A  
 EUT Orientation:: H  
 Test Engineer:: Chris  
 Power Supply: : AC  
 Comments: : Neutral





**MEASUREMENT RESULT: "55022 V AV QPk"**

11/10/2008 9:58AM

Frequency	Level	Transd	Limit	Margin	Line	PE	AUX
MHz	dB $\mu$ V	dB	dB $\mu$ V	dB	STATE		
0.466000	45.90	0.1	57	10.7	1	---	OFF

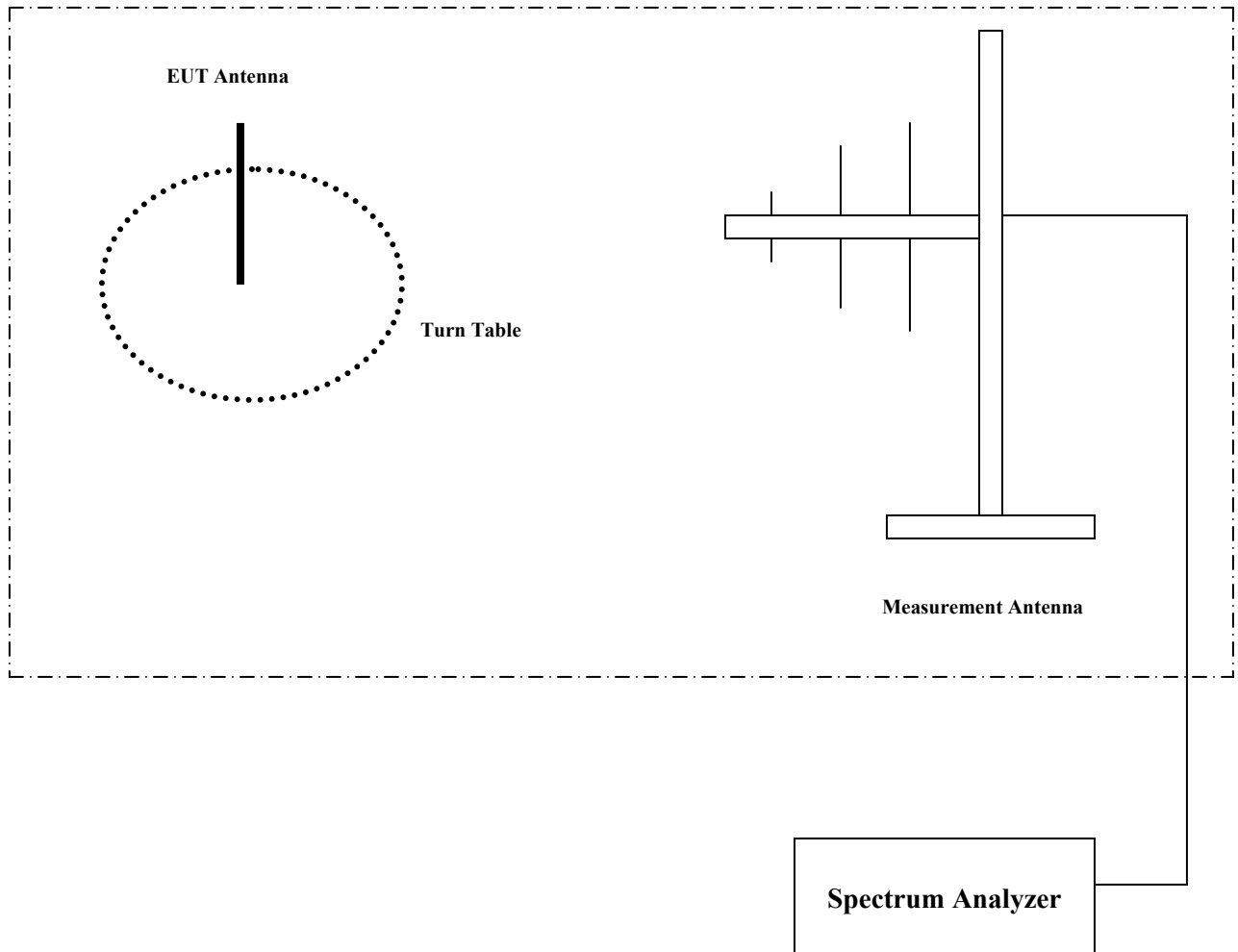
## 5 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal Due	Interval
01	Anechoic Chamber	3 meter	Euroshield	NA	NA	In house
02	Receiver / Spectrum Analyzer	ESIB 40	Rohde & Schwarz	100017	May 2009	1 year
03	Signal Generator	SMY02	Rohde & Schwarz	836878/011	May 2009	1 year
04	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	May 2009	1 year
05	Biconilog Antenna	3141	EMCO	0005-1186	July 2010	2 year
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	June 2009	1 year
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	June 2009	1 year
08	Power Splitter	11667B	Hewlett Packard	645348	n/a	n/a
09	Turn table	2088	EMCO/ETS	NA	NA	In house
10	High Pass Filter	5HC2700	Trilithic Inc.	9926013	n/a	n/a
11	High Pass Filter	4HC1600	Trilithic Inc.	9922307	n/a	n/a
12	Pre-Amplifier	JS4-00102600	Miteq	340125	May 2009	1 year
13	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	May 2009	1 year
14	MAPS Position Controller	2092	ETS-Lindgren	0004-1510	NA	In house
15	Universal Radio Comm. Tester	CMU 200 #2	Rohde & Schwarz	109879	May 2009	1 year
16	EMC Software	ESK1	Rohde & Schwarz	NA	NA	NA

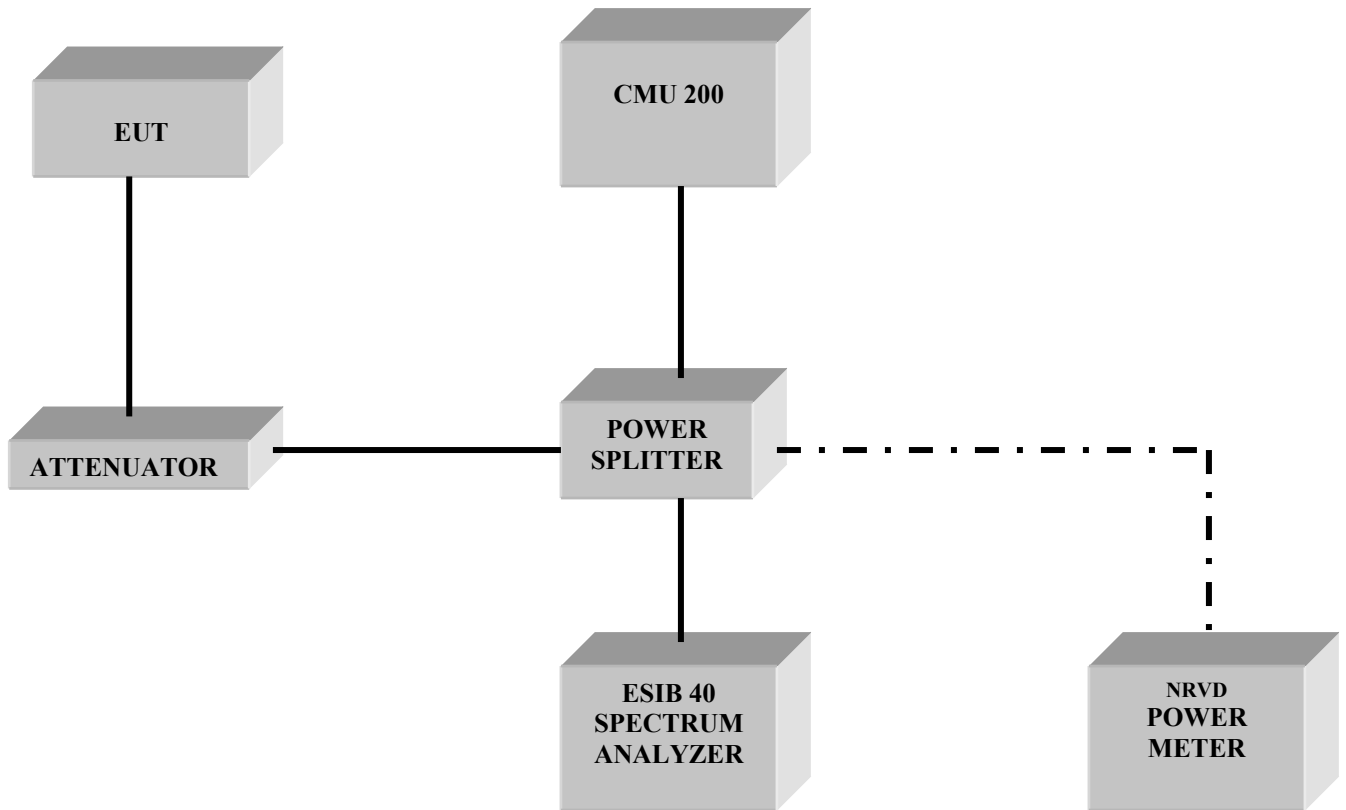
## 6 BLOCK DIAGRAMS

### Radiated Testing

#### ANECHOIC CHAMBER



### Conducted Testing





## **7 Report History**

2008-11-13 Original Report

2008-12-01 Updated antenna information