



## Center for Quality Engineering

**Test Report No.: E01P0001**

**FCC ID: VBNFRBB-01**

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Client: Nokia Siemens Networks Oy

Equipment Under Test: Flexi Multiradio BTS RF module 760MHz  
Radio Access Technology: E-UTRA

Manufacturer: Nokia Siemens Networks Oy

Task: Conformance test according to the test specifications mentioned below

Test Specification(s): FCC 47 CFR Part 2, 27 and 90

Result: The EUT complies with the requirements of the specifications.

The results relate only to the items tested as described in this test report.

**approved by:**

**Date**

**Signature**

Neuhäusler  
Lab Manager Technical Services

Mar 08, 2011

Bauer  
Lab Manager EMC

Mar 08, 2011

This document was signed electronically.

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## 1 Summary

The measurements described in this report were conducted pursuant to 47 CFR § 2.947 and § 2.1041. All applicable paragraphs of the 47 CFR parts 2, 27 and 90 of the most current version of the rules were considered.

The following tests were performed according to the FCC rules in order to verify the compliance of the EUT with the FCC requirements:

Test No.	Measurement	FCC Rule	Page Number of this Report	Result
1	RF Power Output	§ 2.1046, § 27.50, § 90.205, § 90.542	11	compliant
2	Modulation Characteristics	§ 2.1047, § 2.201	14	compliant
3	Occupied Bandwidth	§ 2.1049	15	compliant
4	Spurious Emissions at Antenna Terminals	§ 2.1051, § 2.1057, § 27.53, § 90.543	17	compliant
5	Field Strength of Spurious Radiation	§ 2.1053, § 2.1057, § 27.53, § 90.543	26	compliant
6	Frequency Stability	§ 2.1055, § 27.54	29	compliant

**Table 1-1: Results – Summary**

In accordance with the FCC Rule §15.3 (z) the equipment was tested with the limits that are valid for an *unintentional radiator*.

## 2 References

### 2.1 Specifications

No	Standard	Title	Date
[1]	FCC 47 CFR Part 2, 27 and 90	Code of Federal Regulations, Title 47: Telecommunication Part 2: Frequency Allocations and Radio Treaty Matters; General Rules and Regulations Part 27: Miscellaneous Wireless Communications Services Part 90: Private Land Mobile Radio Services	2010-10

### 2.2 Glossary of Terms

QPSK	Quadrature Phase Shift Keying -Modulation
16QAM	16 Quadrature Amplitude Modulation
64QAM	64 Quadrature Amplitude Modulation
AC	Alternating Current
BTS	Base Transceiver System
BW	Bandwidth
chk	checked against a calibrated reference
cnn	calibration not necessary
DC	Direct Current
EIRP	Equivalent Isotropic Radiated Power
EUT	Equipment Under Test
FCC	Federal Communications Commission
LTE	Long Term Evolution
P	Power
Prat	Rated Output Power
RF	Radio Frequency

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### 3 General Information

#### 3.1 Identification of Client

Nokia Siemens Networks Oy  
P.O. Box 319,  
Kaapelitie 4,  
FI-90651, Oulu, Finland  
Jaakko Sirvio

#### 3.2 Test Laboratory

Nokia Siemens Networks Oy  
P.O. Box 319,  
Kaapelitie 4,  
FI-90651, Oulu, Finland  
Jaakko Sirvio

#### 3.3 Time Schedule

Test No.:	1, 2, 3, 4	5	6
Start of Test:	Feb 03, 2011	Jan 15, 2011	Feb 09, 2011
End of Test:	Feb 08, 2011	Feb 02, 2011	Feb 09, 2011

#### 3.4 Participants

Name	Function
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Jari Veijola (NSN)	Testing, Setup of EUT
Sami Riuttanen (NSN)	Testing, Setup of EUT
Stephane Nakpane (SGS CQE)	Editor

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## 4 Equipment Under Test

The tested equipment is representative for serial production.

### 4.1 Description of EUT

The BTS performs the full RAN function of a LTE system (evolved UTRA). This is sometimes referred to as collapsed RAN, where equivalent functions of former 3G BTS and 3G RNC are all integrated into BTS. BTS is connected directly to the core network via S1 interface, and to mobile stations via Air interface (Uu). In addition BTSs are optionally connected directly to each others via X2 interface for handover purposes.

### 4.2 Configuration of EUT

The used different EUT configurations are shown by the following tables.

<b>Module Type</b>	Flexi Multiradio BTS RF module 760MHz (E-UTRA Band 14)	
<b>Radio Access Technology</b>	E-UTRA	
<b>Frequency Bands</b>	<b>Uplink</b>	<b>Downlink</b>
<b>Block D:</b>	788 - 793	758 - 763
<b>Public Safety Broadband:</b>	793 - 798	763 - 768
	<b>Single Carrier</b>	
<b>Rated Output Power (Prat)</b>	40 W	
<b>Channel Bandwidth</b>	5MHz (Config. A), 10 MHz (Config. B)	
	<b>RX</b>	<b>TX</b>
<b>Number of Antenna Ports</b>	12 (RX1 to RX12)	6 (TX1 to TX6)
<b>MIMO</b>	Yes	Yes

**Table 4-1: Overview of EUT Configuration**

The tests were performed with one EUT at the antenna ports TX1 and/or TX2.

The used different EUT configurations are shown by the following table.

Module Name	Serial-No.	Module Type	Config.
FRBB	L9105200422	RF module	A, B
FRBB	L9105200426	RF module	A, B
Other Modules	Module Type		Config.
FSME	System module		A, B
FTLB	Transmission module		A, B

**Table 4-2: Configuration of EUT**

For a functional description of the modules, please refer to the appropriate related parts and exhibit sections of this certification application.

### 4.3 Operating Conditions

If not stated otherwise, the following standard setup procedure for the EUT was used:

The transmitter was set up according to 3GPP TS 36.141 E-UTRA Test Models (TM) for all tests:

- E-TM 1.1: QPSK modulation,
- E-TM 3.1: 64QAM modulation,
- E-TM 3.2: 16QAM modulation

The Flexi Multiradio BTS was supplied with 48 V DC.

During the measurements, one carrier channel was tested at a time. The carrier was set to the maximum power level to ensure the maximum emission amplitudes during all measurements.

During the tests, the Flexi Multiradio BTS is transmitting a pseudo random bit pattern on the data channels. This ensures that the measurements of the emission characteristics of the transmitter are pursuant to § 2.1049.

### 4.4 Compliance Criteria

The EUT must fulfil the requirements (described in the specifications mentioned in chapter 2.1, Specifications) for the selected test cases.



## 5 General Description of Tests

### 5.1 Tested Carrier Frequencies

The measurements were done on several carrier frequencies, according to the following table:

#### Config A:

Channel Bandwidth: 5MHz	
Frequency [MHz]	Remark
760.5	lowest possible carrier frequency
763.0	frequency at the middle of the band
765.5	highest possible carrier frequency

**Table 5-1: Carrier Frequencies for 5MHz channel bandwidth**

#### Config B:

Channel Bandwidth: 10MHz	
Frequency [MHz]	Remark
763.0	only possible carrier frequency

**Table 5-2: Carrier Frequencies for 10MHz channel bandwidth**

### 5.2 Modulation Characteristics

The EUT supports QPSK, 16QAM and 64QAM modulation.

### 5.3 Test Configuration

If not stated otherwise, the following measurement configuration was used to perform all measurements (see figure below).

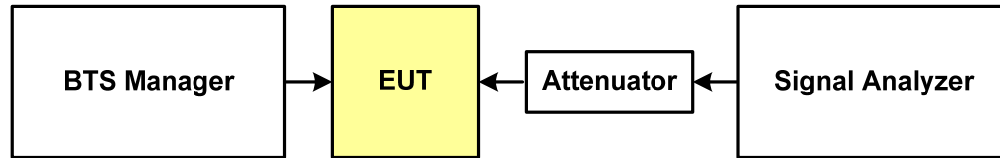


Figure 5-1: Test Configuration (single output)

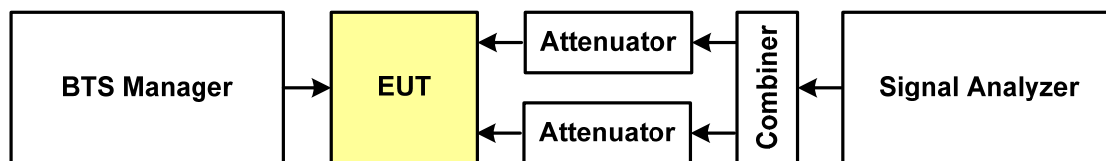


Figure 5-2: Test Configuration (combined output)

The RF output of the transceiver (cell) under test is connected to a signal analyzer via a high power attenuator to protect the input of the signal analyzer from high RF power levels. A description of the analyzer settings is given in each of the sections describing the measurements. The other transceivers are terminated.

A complete list of the measurement equipment is included on page 36 of this measurement report.

### 5.4 Calibration of the Test Equipment

All relevant test equipment has a valid calibration from an external calibration laboratory. Additionally the signal analyzer has a built-in self-calibration procedure. This calibration procedure was activated prior to the measurements so that the analyzer is deemed accurate. High quality cables were used to connect the measurement equipment to the EUT. The actual loss of the attenuator and the cables was measured with a high precision network analyzer and taken into account for all measurements.

## 6 Test Results

### 6.1 Test No. 1: RF power output (§ 2.1046, § 27.50, § 90.205, § 90.542)

#### 6.1.1 Purpose

The RF power output measurements were performed pursuant to § 2.1046 in order to determine the base station maximum RF output power.

#### 6.1.2 Limits

According to § 27.50 (755-763 MHz) and § 90.542 (763-768 MHz), base stations with an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz with an antenna height up to 305 meters HAAT.

#### 6.1.3 EUT Operating Condition

The standard setup procedure as described in section 4.3 of this report was used.

#### 6.1.4 Test Configuration

The test configuration used is described in section 5.3 of this report.

#### 6.1.5 Test Procedure and Results

Detachable Antenna:

The maximum output power at the antenna terminals was measured using a signal analyzer.

The RF power was measured with a frequency sweep across the carrier (see screenshots). The carrier power was calculated from the signal analyzer by integration over the result. The base station maximum output power is the sum of the measured carrier power and the external attenuation (cable loss of the test set up).

The following table shows the measured output powers at the antenna connector. Screenshots of the measurements are included on page 37 onwards of this report.

**Config A:**

Carrier Frequency [MHz]	RF Power Output		Result
	[dBm]	[W]	
QPSK-Modulation TX1			
760.5	45.83	38.28	compliant
763.0	45.72	37.33	compliant
765.5	45.66	36.81	compliant
QPSK-Modulation TX2			
760.5	45.91	38.99	compliant
763.0	45.67	36.90	compliant
765.5	45.73	37.41	compliant
QPSK-Modulation TX1+TX2			
760.5	48.88	77.27	compliant
763.0	48.71	74.23	compliant
765.5	48.71	74.22	compliant
16QAM-Modulation TX1			
760.5	45.88	38.73	compliant
763.0	45.73	37.41	compliant
765.5	45.65	36.73	compliant
16QAM-Modulation TX2			
760.5	45.93	39.17	compliant
763.0	45.70	37.15	compliant
765.5	45.75	37.58	compliant
16QAM-Modulation TX1+TX2			
760.5	48.92	77.90	compliant
763.0	48.73	74.56	compliant
765.5	48.71	74.31	compliant
64QAM-Modulation TX1			
760.5	45.86	38.55	compliant
763.0	45.73	37.41	compliant
765.5	45.63	36.56	compliant
64QAM-Modulation TX2			
760.5	45.91	38.99	compliant
763.0	45.75	37.58	compliant
765.5	45.71	37.24	compliant
64QAM-Modulation TX1+TX2			
760.5	48.90	77.54	compliant
763.0	48.75	74.99	compliant
765.5	48.68	73.80	compliant
Measurement Uncertainty:		±0.4dB	

**Table 6-1: Results – RF Power Output (5 MHz Channel BW)**

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**Config B:**

Carrier Frequency [MHz]	RF Power Output		Result
	[dBm]	[W]	
QPSK-Modulation TX1			
763.0	45.70	37.15	compliant
QPSK-Modulation TX2			
763.0	45.76	37.67	compliant
QPSK-Modulation TX1+TX2			
763.0	48.74	74.82	compliant
16QAM-Modulation TX1			
763.0	45.75	37.58	compliant
16QAM-Modulation TX2			
763.0	45.77	37.76	compliant
16QAM-Modulation TX1+TX2			
763.0	48.77	75.34	compliant
64QAM-Modulation TX1			
763.0	45.75	37.58	compliant
64QAM-Modulation TX2			
763.0	45.80	38.02	compliant
64QAM-Modulation TX1+TX2			
763.0	48.79	75.60	compliant
Measurement Uncertainty:		±0.4dB	

**Table 6-2: Results – RF Power Output (10 MHz Channel BW)**

The base station maximum output power was found to be compliant with the manufacturer's specifications and with all requirements of the FCC rules.

## 6.2 Test No. 2: Modulation Characteristics (§ 2.1047, § 2.201)

The occupied bandwidth was measured to be 5 MHz (Config. A) and 10MHz (Config. B), which represents the 99% power bandwidth (see the following section and screenshots on pages 53 onwards). Therefore, the modulation characteristic of the base stations transceiver is **5M00F9W** or **10M00F9W**.

No further testing is required under this section of the FCC rules. No measurements other than the occupied bandwidth are required.

**The modulation characteristics were found to be compliant with the manufacturer's specifications and with all requirements of the FCC rules.**

### 6.3 Test No. 3: Occupied Bandwidth (§ 2.1049)

#### 6.3.1 Purpose

The measurements are performed to determine the occupied bandwidth of the EUT pursuant to § 2.1049.

#### 6.3.2 Limits

According to § 2.1049 the 99% occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to 0.5% of the emitted power.

#### 6.3.3 EUT Operating Condition

The standard setup procedure as described in section 4.3 of this report was used.

#### 6.3.4 Test Configuration

The test configuration used is described in section 5.3 of this report.

#### 6.3.5 Test Procedure and Results

The 99% occupied bandwidth of the carrier emission is measured using a signal analyzer with Resolution Bandwidth set to 30 kHz (less than 1% of bandwidth; see screenshots on pages 53 onwards for details). The following table summarizes the results:

##### Config A:

Carrier Frequency [MHz]	Occupied Bandwidth [MHz]	Result
QPSK-Modulation TX1		
760.5	4.4788	compliant
763.0	4.4788	compliant
765.5	4.4788	compliant
QPSK-Modulation TX2		
760.5	4.4788	compliant
763.0	4.4788	compliant
765.5	4.4788	compliant
16QAM-Modulation TX1		
760.5	4.4707	compliant
763.0	4.4707	compliant
765.5	4.4625	compliant
16QAM-Modulation TX2		
760.5	4.4707	compliant
763.0	4.4707	compliant
765.5	4.4707	compliant

Carrier Frequency [MHz]	Occupied Bandwidth [MHz]	Result
64QAM-Modulation TX1		
760.5	4.4788	compliant
763.0	4.4788	compliant
765.5	4.4788	compliant
64QAM-Modulation TX2		
760.5	4.4788	compliant
763.0	4.4788	compliant
765.5	4.4788	compliant
Measurement Uncertainty:		±48kHz

**Table 6-3: Results – Occupied Bandwidth (5 MHz Channel BW)**

#### Config B:

Carrier Frequency [MHz]	Occupied Bandwidth [MHz]	Result
QPSK-Modulation TX1		
763.0	8.9346	compliant
QPSK-Modulation TX2		
763.0	8.9346	compliant
16QAM-Modulation TX1		
763.0	8.9346	compliant
16QAM-Modulation TX2		
763.0	8.9346	compliant
64QAM-Modulation TX1		
763.0	8.9346	compliant
64QAM-Modulation TX2		
763.0	8.9346	compliant
Measurement Uncertainty:		±48kHz

**Table 6-4: Results – Occupied Bandwidth (10 MHz Channel BW)**

The occupied bandwidth was found to be compliant with the manufacturer's specifications and with all requirements of the FCC rules.



## 6.4 Test No. 4: Spurious Emissions at Antenna Terminals (§ 2.1051, § 2.1057, § 27.53)

### 6.4.1 Purpose

The measurements of the spurious emissions at the equipment output terminals were performed pursuant to § 2.1051 in order to verify that all emissions are below the specified limits.

### 6.4.2 Limits

Compliance with § 27.53 and § 90.543 requires that any emission will be sufficiently attenuated. Following requirements have to be fulfilled:

- According to § 27.53(d) for operations in the 758-763 MHz band, the power of any emission outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, in accordance with the following:
  - On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than  $76 + 10 \log_{10} P$  dB (P = transmitter power in Watts) in a 6.25 kHz band segment.
  - On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least  $43 + 10 \log_{10} P$  dB (P = transmitter power in Watts).
- According to § 90.543(e) For operations in the 763-768 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, in accordance with the following:
 

On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than  $76 + 10 \log_{10} P$  dB (P = transmitter power in Watts) in a 6.25 kHz band segment.

The compliance limits were calculated in the following way:

Maximum transmitter output power [W]: P

Maximum transmitter output power [dBm]:  $30 + 10 \log_{10} P$  (conversion from W to dBm)

Attenuation required by FCC:

769-775 MHz and 799-805 MHz:  $76 + 10 \log_{10} P$

Below 758 MHz, Above 805 MHz:  $43 + 10 \log_{10} P$

Between 775-799 MHz:  $43 + 10 \log_{10} P$

Compliance limit = Maximum transmitter output power - Required attenuation

769-775 MHz and 799-805 MHz:  $= 30 + 10 \log_{10} P - (76 + 10 \log_{10} P) = \underline{-46 \text{ dBm}}$

Below 758 MHz, Above 805 MHz:  $= 30 + 10 \log_{10} P - (43 + 10 \log_{10} P) = \underline{-13 \text{ dBm}}$

Between 775-799 MHz:  $= 30 + 10 \log_{10} P - (43 + 10 \log_{10} P) = \underline{-13 \text{ dBm}}$

- According to § 90.543(f) all emissions including harmonics in the band 1559-1610 MHz shall be limited to -40 dBm/MHz EIRP for wideband signals, and -50 dBm EIRP for discrete emissions of less than 700 Hz bandwidth.

### 6.4.3 EUT Operating Condition

The standard setup procedure as described in section 4.3 of this report was used.

### 6.4.4 Test Configuration

The test configuration used is described in section 5.3 of this report.

### 6.4.5 Test Procedure and Results

Signal analyzer settings:

The tests were carried out in accordance with § 27.53 and § 90.543. For the frequency ranges 769-775 MHz and 799-805 MHz a resolution bandwidth of 3 kHz was used instead of the required 6.25 kHz. Therefore the limit applicable for these frequency ranges was tightened by 3.2 dB.

For the frequency ranges immediately outside and adjacent to the carrier frequency block the resolution bandwidth was lowered to a minimum of 30 kHz.

For the frequency range 30-758 MHz a resolution bandwidth of 100 kHz was used instead of 1 MHz. Therefore the applicable limit was tightened by 10 dB.

For all other frequency ranges a 1 MHz resolution bandwidth was used for the measurements.

According to § 2.1057, all emissions including the fundamental frequency from the lowest radio frequency generated in the equipment, without going below 9 kHz, up to the 10th harmonic were investigated.

The following tables summarize the worst case detected emission levels (see screenshots on pages 67 onwards for details). The external attenuation (cable loss of the set up) is already added in the results. It can be seen separately as the 'Offset' value in the screenshots.

#### Config A Lower band edge:

Carrier Frequency: 760.5 MHz			
Frequency Range [MHz]	Emission Frequency [MHz]	Maximum Emission Level [dBm]	Result
QPSK-Modulation TX1			
-	758.0	-16.65	compliant
QPSK-Modulation TX2			
-	758.0	-17.38	compliant
QPSK-Modulation TX1+TX2			
-	758.0	-14.23	compliant
16QAM-Modulation TX1			
-	758.0	-18.88	compliant
16QAM-Modulation TX2			
-	758.0	-18.19	compliant
16QAM-Modulation TX1+TX2			
-	758.0	-16.92	compliant
64QAM-Modulation TX1			
-	758.0	-17.23	compliant
64QAM-Modulation TX2			
-	758.0	-17.43	compliant
64QAM-Modulation TX1+TX2			
-	758.0	-14.29	compliant
Measurement Uncertainty:			f < 1.0GHz: ±1.1dB 1.0GHz ≤ f < 3.6GHz: ±1.2dB 3.6GHz ≤ f < 8.0GHz: ±1.6dB

**Table 6-5: Results - Spurious Emissions (Lower band edge) (5 MHz Channel BW)**

**Config A Upper band edge:**

Carrier Frequency: 765.5 MHz			
Frequency Range [MHz]	Emission Frequency [MHz]	Maximum Emission Level [dBm]	Result
QPSK-Modulation TX1			
-	768.0	-17.78	compliant
QPSK-Modulation TX2			
-	768.0	-17.36	compliant
QPSK-Modulation TX1+TX2			
-	768.0	-13.72	compliant
16QAM-Modulation TX1			
-	768.0	-17.77	compliant
16QAM-Modulation TX2			
-	768.0	-17.76	compliant
16QAM-Modulation TX1+TX2			
-	768.0	-13.29	compliant
64QAM-Modulation TX1			
-	768.0	-18.83	compliant
64QAM-Modulation TX2			
-	768.0	-18.18	compliant
64QAM-Modulation TX1+TX2			
-	768.0	-13.86	compliant
Measurement Uncertainty:			f < 1.0GHz: ±1.1dB 1.0GHz ≤ f < 3.6GHz: ±1.2dB 3.6GHz ≤ f < 8.0GHz: ±1.6dB

**Table 6-6: Results - Spurious Emissions (Upper band edge) (5 MHz Channel BW)**

**Config A Spurious emissions:**

Carrier Frequency: 763.0 MHz			
Frequency Range [MHz]	Emission Frequency [MHz]	Maximum Emission Level [dBm]	Result
QPSK-Modulation TX1			
0.009 - 758	758.000	-30.89	compliant
769 - 775	773.279	-53.93	compliant
775 - 799	791.308	-34.76	compliant
799 - 805	802.106	-61.93	compliant
805 - 1559	1546.917	-40.41	compliant
1559 -1610	1599.375	-50.23	compliant
1610 - 7700	3527.244	-42.52	compliant
QPSK-Modulation TX2			
0.009 - 758	758.000	-32.48	compliant
769 - 775	769.663	-49.44	compliant
775 - 799	775.035	-34.70	compliant
799 - 805	799.038	-62.63	compliant
805 - 1559	1542.083	-40.45	compliant
1559 -1610	1587.688	-50.22	compliant
1610 - 7700	3542.308	-42.52	compliant
QPSK-Modulation TX1+TX2			
0.009 - 758	758.000	-27.12	compliant
769 - 775	769.731	-55.54	compliant
775 - 799	775.115	-35.48	compliant
799 - 805	804.740	-62.32	compliant
805 - 1559	1526.375	-36.95	compliant
1559 -1610	1590.221	-56.82	compliant
1610 - 7700	3534.776	-50.45	compliant
16QAM-Modulation TX1			
0.009 - 758	758.000	-31.55	compliant
769 - 775	773.365	-51.65	compliant
775 - 799	797.846	-34.76	compliant
799 - 805	799.308	-62.57	compliant
805 - 1559	1482.875	-40.42	compliant
1559 -1610	1596.024	-50.24	compliant
1610 - 7700	3542.308	-42.47	compliant
16QAM-Modulation TX2			
0.009 - 758	758.000	-32.67	compliant
769 - 775	769.221	-49.53	compliant
775 - 799	797.500	-34.77	compliant
799 - 805	801.500	-62.19	compliant
805 - 1559	1548.125	-40.43	compliant
1559 -1610	1599.947	-50.23	compliant
1610 - 7700	3512.179	-42.47	compliant

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Carrier Frequency: 763.0 MHz			
Frequency Range [MHz]	Emission Frequency [MHz]	Maximum Emission Level [dBm]	Result
16QAM-Modulation TX1+TX2			
0.009 - 758	758.000	-29.15	compliant
769 - 775	769.933	-51.03	compliant
775 - 799	791.231	-40.54	compliant
799 - 805	801.337	-63.39	compliant
805 - 1559	1526.375	-33.16	compliant
1559 -1610	1593.736	-56.87	compliant
1610 - 7700	2289.407	-50.37	compliant
64QAM-Modulation TX1			
0.009 - 758	756.833	-30.79	compliant
769 - 775	773.337	-50.85	compliant
775 - 799	778.731	-34.81	compliant
799 - 805	803.375	-62.40	compliant
805 - 1559	1472.000	-40.41	compliant
1559 -1610	1596.024	-50.24	compliant
1610 - 7700	3527.244	-42.54	compliant
64QAM-Modulation TX2			
0.009 - 758	758.000	-32.21	compliant
769 - 775	769.798	-49.55	compliant
775 - 799	775.000	-34.77	compliant
799 - 805	804.981	-62.01	compliant
805 - 1559	1550.542	-40.46	compliant
1559 -1610	1595.779	-50.23	compliant
1610 - 7700	3519.711	-42.52	compliant
64QAM-Modulation TX1+TX2			
0.009 - 758	758.000	-35.88	compliant
769 - 775	769.404	-54.78	compliant
775 - 799	775.346	-40.49	compliant
799 - 805	803.837	-63.35	compliant
805 - 1559	1526.375	-33.61	compliant
1559 -1610	1599.130	-56.78	compliant
1610 - 7700	2289.407	-48.60	compliant
Measurement Uncertainty:			f < 1.0GHz: $\pm 1.1\text{dB}$ 1.0GHz $\leq$ f < 3.6GHz: $\pm 1.2\text{dB}$ 3.6GHz $\leq$ f < 8.0GHz: $\pm 1.6\text{dB}$

Table 6-7: Results - Spurious Emissions (5 MHz Channel BW)

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**Config B Lower band edge:**

Carrier Frequency: 763.0 MHz			
Frequency Range [MHz]	Emission Frequency [MHz]	Maximum Emission Level [dBm]	Result
QPSK-Modulation TX1			
-	758.0	-19.16	compliant
QPSK-Modulation TX2			
-	758.0	-19.76	compliant
QPSK-Modulation TX1+TX2			
-	758.0	-14.11	compliant
16QAM-Modulation TX1			
-	758.0	-20.45	compliant
16QAM-Modulation TX2			
-	758.0	-20.14	compliant
16QAM-Modulation TX1+TX2			
-	758.0	-15.15	compliant
64QAM-Modulation TX1			
-	758.0	-19.31	compliant
64QAM-Modulation TX2			
-	758.0	-20.14	compliant
64QAM-Modulation TX1+TX2			
-	758.0	-14.46	compliant
Measurement Uncertainty:			f < 1.0GHz: ±1.1dB 1.0GHz ≤ f < 3.6GHz: ±1.2dB 3.6GHz ≤ f < 8.0GHz: ±1.6dB

**Table 6-8: Results - Spurious Emissions (Lower band edge) (10 MHz Channel BW)**

**Config B Upper band edge:**

Carrier Frequency: 763.0 MHz			
Frequency Range [MHz]	Emission Frequency [MHz]	Maximum Emission Level [dBm]	Result
QPSK-Modulation TX1			
-	768.0	-19.90	compliant
QPSK-Modulation TX2			
-	768.0	-19.80	compliant
QPSK-Modulation TX1+TX2			
-	768.0	-15.00	compliant
16QAM-Modulation TX1			
-	768.0	-21.00	compliant
16QAM-Modulation TX2			
-	768.0	-19.87	compliant
16QAM-Modulation TX1+TX2			
-	768.0	-15.06	compliant
64QAM-Modulation TX1			
-	768.0	-20.34	compliant
64QAM-Modulation TX2			
-	768.0	-19.63	compliant
64QAM-Modulation TX1+TX2			
-	768.0	-15.41	compliant
Measurement Uncertainty:			f < 1.0GHz: ±1.1dB 1.0GHz ≤ f < 3.6GHz: ±1.2dB 3.6GHz ≤ f < 8.0GHz: ±1.6dB

**Table 6-9: Results - Spurious Emissions (Upper band edge) (10 MHz Channel BW)**

**Config B Spurious emissions:**

Carrier Frequency: 763.0 MHz			
Frequency Range [MHz]	Emission Frequency [MHz]	Maximum Emission Level [dBm]	Result
QPSK-Modulation TX1			
0.009 - 758	758.000	-28.58	compliant
769 - 775	769.798	-49.79	compliant
775 - 799	775.038	-34.72	compliant
799 - 805	799.346	-61.76	compliant
805 - 1559	1555.375	-40.49	compliant
1559 - 1610	1599.865	-50.24	compliant
1610 - 7700	3527.244	-42.55	compliant
QPSK-Modulation TX2			
0.009 - 758	758.000	-30.07	compliant
769 - 775	769.596	-50.82	compliant
775 - 799	775.077	-34.65	compliant
799 - 805	803.904	-62.00	compliant
805 - 1559	1551.750	-40.46	compliant
1559 - 1610	1595.125	-50.26	compliant
1610 - 7700	3527.244	-42.50	compliant
QPSK-Modulation TX1+TX2			
0.009 - 758	758.000	-26.07	compliant
769 - 775	769.826	-49.40	compliant
775 - 799	775.308	-35.52	compliant
799 - 805	801.279	-62.42	compliant
805 - 1559	1526.375	-41.36	compliant
1559 - 1610	1609.183	-56.91	compliant
1610 - 7700	2291.635	-46.26	compliant
16QAM-Modulation TX1			
0.009 - 758	758.000	-29.23	compliant
769 - 775	769.558	-49.73	compliant
775 - 799	775.231	-34.70	compliant
799 - 805	803.413	-62.52	compliant
805 - 1559	1544.500	-40.43	compliant
1559 - 1610	1606.731	-50.20	compliant
1610 - 7700	3527.244	-42.54	compliant
16QAM-Modulation TX2			
0.009 - 758	758.000	-29.94	compliant
769 - 775	769.779	-50.57	compliant
775 - 799	775.000	-34.71	compliant
799 - 805	800.462	-62.59	compliant
805 - 1559	1552.958	-40.35	compliant
1559 - 1610	1588.913	-50.28	compliant
1610 - 7700	3497.115	-42.52	compliant

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Carrier Frequency: 763.0 MHz			
Frequency Range [MHz]	Emission Frequency [MHz]	Maximum Emission Level [dBm]	Result
16QAM-Modulation TX1+TX2			
0.009 - 758	758.000	-26.35	compliant
769 - 775	770.125	-49.39	compliant
775 - 799	775.000	-31.53	compliant
799 - 805	801.462	-62.89	compliant
805 - 1559	1526.375	-39.24	compliant
1559 -1610	1600.438	-56.87	compliant
1610 - 7700	3512.179	-50.46	compliant
64QAM-Modulation TX1			
0.009 - 758	758.000	-28.23	compliant
769 - 775	769.827	-49.58	compliant
775 - 799	775.077	-34.70	compliant
799 - 805	802.615	-62.41	compliant
805 - 1559	1470.792	-40.47	compliant
1559 -1610	1600.438	-50.22	compliant
1610 - 7700	3519.712	-42.55	compliant
64QAM-Modulation TX2			
0.009 - 758	758.000	-30.34	compliant
769 - 775	769.625	-49.54	compliant
775 - 799	775.000	-34.74	compliant
799 - 805	799.769	-62.74	compliant
805 - 1559	1559.000	-40.46	compliant
1559 -1610	1598.558	-50.27	compliant
1610 - 7700	3512.179	-42.49	compliant
64QAM-Modulation TX1+TX2			
0.009 - 758	758.000	-26.01	compliant
769 - 775	769.019	-49.46	compliant
775 - 799	775.000	-32.07	compliant
799 - 805	800.683	-63.68	compliant
805 - 1559	1526.375	-39.06	compliant
1559 -1610	1593.817	-56.91	compliant
1610 - 7700	2291.634	-49.37	compliant
Measurement Uncertainty:			f < 1.0GHz: $\pm 1.1\text{dB}$ 1.0GHz $\leq$ f < 3.6GHz: $\pm 1.2\text{dB}$ 3.6GHz $\leq$ f < 8.0GHz: $\pm 1.6\text{dB}$

**Table 6-10: Results - Spurious Emissions (10 MHz Channel BW)**

The measured conducted emission levels were found to be compliant with the manufacturer's specifications and with all requirements of the FCC rules.

## 6.5 Test No. 5: Field Strength of Spurious Radiation (§ 2.1053, § 2.1057, § 27.53)

### 6.5.1 Purpose

The measurement of spurious radiated emissions was performed pursuant to § 2.1053 and § 2.1057 to verify that the field strength of any spurious emissions radiated directly from the cabinet, control circuits, power leads or intermediate circuit elements are attenuated below the specified limits.

### 6.5.2 Limits

Compliance with § 27.53 and § 90.543 requires that any emission will be sufficiently attenuated. Following requirements have to be fulfilled:

- According to § 27.53(d) for operations in the 758-763 MHz band, the power of any emission outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, in accordance with the following:
  - On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than  $76 + 10 \log_{10} P$  dB (P = transmitter power in Watts) in a 6.25 kHz band segment.
  - On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least  $43 + 10 \log_{10} P$  dB (P = transmitter power in Watts).
- According to § 90.543(e) For operations in the 763-768 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, in accordance with the following:
 

On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than  $76 + 10 \log_{10} P$  dB (P = transmitter power in Watts) in a 6.25 kHz band segment.

The compliance limits were calculated in the following way:

Maximum transmitter output power [W]: P

Maximum transmitter output power [dBm]:  $30 + 10 \log_{10} P$  (conversion from W to dBm)

Attenuation required by FCC:

769-775 MHz and 799-805 MHz:  $76 + 10 \log_{10} P$

Below 758 MHz, Above 805 MHz:  $43 + 10 \log_{10} P$

Between 775-799 MHz:  $43 + 10 \log_{10} P$

Compliance limit = Maximum transmitter output power - Required attenuation

769-775 MHz and 799-805 MHz:  $= 30 + 10 \log_{10} P - (76 + 10 \log_{10} P) = \underline{-46 \text{ dBm}}$

Below 758 MHz, Above 805 MHz:  $= 30 + 10 \log_{10} P - (43 + 10 \log_{10} P) = \underline{-13 \text{ dBm}}$

Between 775-799 MHz:  $= 30 + 10 \log_{10} P - (43 + 10 \log_{10} P) = \underline{-13 \text{ dBm}}$

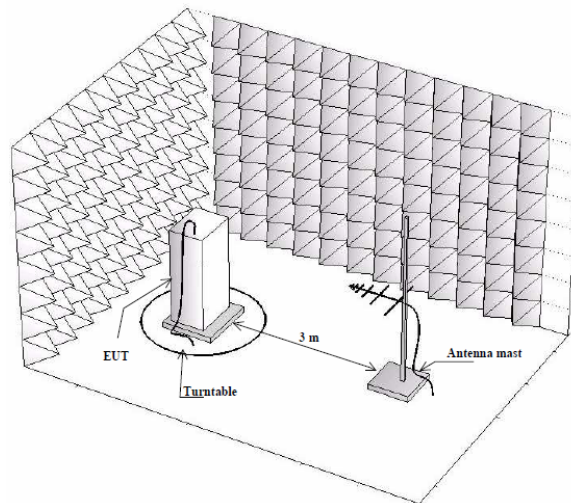
- According to § 90.543(f) all emissions including harmonics in the band 1559-1610 MHz shall be limited to -40 dBm/MHz EIRP for wideband signals, and -50 dBm EIRP for discrete emissions of less than 700 Hz bandwidth.

### 6.5.3 EUT Operating Condition

The standard setup procedure as described in section 4.3 of this report was used.

#### 6.5.4 Test Configuration

The measurements were performed in an anechoic chamber. The radiated test site complies with the site attenuation requirements listed in ANSI C63.4 2003 and is listed with the FCC.



**Figure 6-1: Test Configuration**

Photographs of the EUT in the anechoic chamber are shown on page 177 of this test report.

#### 6.5.5 Test Procedure and Results

TIA/EIA-603-C-2004, Section 2.2.12

The test was performed in a semi-anechoic shielded room. The EUT was placed on a non-conductive 0.8 m high table standing on the turntable. During the test in the frequency range 30 - 8000 MHz the distance from the EUT to the measuring antenna was 3 m. In order to find the maximum levels of the disturbance radiation the angle of the turntable, the height of the measuring antenna were varied during the tests. The test was performed with the measuring antenna being both in horizontal and vertical polarizations.

Vertical and horizontal polarizations in the frequency range 30 - 8000 MHz was first measured by using the peak detector. During the peak detector scan the turntable was rotated from 0° to 360° with 30° step with the antenna heights 1.0 m and 2.5 m.

The limit of -13 dBm has been calculated to correspond 84.4 dB (μV/m).

The limit of -46 dBm has been calculated to correspond 51.4 dB (μV/m).

Spurious emissions closer than 20 dB to the limits were measured with average detector.

According to § 2.1057, all emissions from the lowest radio frequency generated in the equipment, without going below 9 kHz, up to the 10th harmonic were investigated.

The antenna substitution method was used to determine the equivalent radiated power at spurious frequencies. The EUT was replaced with a reference substitution antenna with a known gain referenced to an isotropic radiator  $G_{Antenna[dBi]}$ . This antenna was fed with a signal at the spurious frequency  $P_{Gen[dBm]}$ . The level of the signal was adjusted to repeat the previously measured level. The resulting EIRP is the signal level fed to the reference antenna corrected for gain referenced to an isotropic radiator. The formula below was used to calculate the EIRP of the EUT.

$$P_{EIRP[dbm]} = P_{Gen[dBm]} - L_{Cable[dB]} + G_{Antenna[dBi]}$$

Worst case detected emission levels are reported in the following table (refer to spectral plots included on Annex 5 for details). The antenna factor and cable loss is according to the manufacturer's specification.

#### Config A:

Carrier Frequency: 763.0 MHz			
Frequency Range [MHz]	Emission Frequency [MHz]	Maximum Emission Level [dBm]	Result
30 - 8000	More than 20dB below limits -13/-46 dBm		compliant
Measurement Uncertainty:			±5.4dB

**Table 6-11: Results – Field Strength of Spurious Radiation (5 MHz Channel BW)**

#### Config B:

Carrier Frequency: 763.0 MHz			
Frequency Range [MHz]	Emission Frequency [MHz]	Maximum Emission Level [dBm]	Result
30 - 7700	More than 20dB below limits -13/-46 dBm		compliant
Measurement Uncertainty:			±5.4dB

**Table 6-12: Results – Field Strength of Spurious Radiation (10 MHz Channel BW)**

The measured emission levels were found to be compliant with the manufacturer's specifications and with all requirements of the FCC rules.

## 6.6 Test No. 6: Frequency Stability (§ 2.1055, § 27.54)

### 6.6.1 Purpose

Frequency stability measurements were performed to verify that the frequency deviation of the emission stays within the licensee's frequency block under extreme temperature (-30°C to +50 °C) and supply voltage conditions according to § 2.1055.

### 6.6.2 Limits

According to § 27.54, the frequency of the fundamental emission is required to stay within the authorized frequency block.

### 6.6.3 EUT Operating Condition

The standard setup procedure as described in section 4.3 of this report was used.

### 6.6.4 Test Configuration

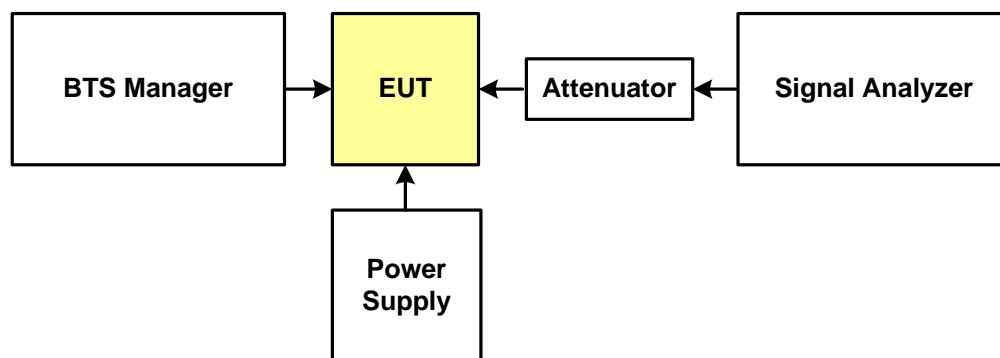


Figure 6-2: Test Configuration for frequency stability with voltage variation

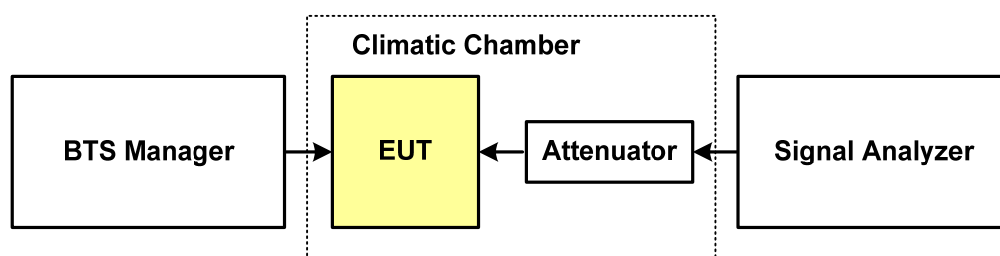


Figure 6-3: Test Configuration for frequency stability with temperature variation

A complete list of the measurement equipment is included on page 36 of this measurement report.

### 6.6.5 Test Procedure and Results

Frequency Stability with Temperature Variation:

The supply voltage of the EUT was set to the nominal value and the temperature of the environmental chamber was varied in 10 degree steps from -30 degrees celsius to +50 degrees celsius. The EUT was allowed to stabilize at each temperature and the frequency error was measured.

**Config A:**

Carrier Frequency: 763.0 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation [ppm]		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation TX1						
-48.0	-30	-0.98	-0.0013	38	0.05	compliant
-48.0	-20	-1.16	-0.0015	38	0.05	compliant
-48.0	-10	-0.91	-0.0012	38	0.05	compliant
-48.0	0	-0.50	-0.0007	38	0.05	compliant
-48.0	+10	0.61	0.0008	38	0.05	compliant
-48.0	+30	0.67	0.0009	38	0.05	compliant
-48.0	+40	0.37	0.0005	38	0.05	compliant
-48.0	+50	0.54	0.0007	38	0.05	compliant
QPSK Modulation TX2						
-48.0	-30	-0.89	-0.0012	38	0.05	compliant
-48.0	-20	-1.03	-0.0013	38	0.05	compliant
-48.0	-10	-0.76	-0.0010	38	0.05	compliant
-48.0	0	-0.47	-0.0006	38	0.05	compliant
-48.0	+10	0.41	0.0005	38	0.05	compliant
-48.0	+30	0.79	0.0010	38	0.05	compliant
-48.0	+40	0.76	0.0010	38	0.05	compliant
-48.0	+50	0.37	0.0005	38	0.05	compliant
16QAM Modulation TX1						
-48.0	-30	-0.69	-0.0009	38	0.05	compliant
-48.0	-20	-0.66	-0.0009	38	0.05	compliant
-48.0	-10	0.40	0.0005	38	0.05	compliant
-48.0	0	0.36	0.0005	38	0.05	compliant
-48.0	+10	0.61	0.0008	38	0.05	compliant
-48.0	+30	0.99	0.0013	38	0.05	compliant
-48.0	+40	1.10	0.0014	38	0.05	compliant
-48.0	+50	0.99	0.0013	38	0.05	compliant
16QAM Modulation TX2						
-48.0	-30	-0.70	-0.0009	38	0.05	compliant
-48.0	-20	-0.73	-0.0010	38	0.05	compliant
-48.0	-10	-0.40	-0.0005	38	0.05	compliant
-48.0	0	0.44	0.0006	38	0.05	compliant
-48.0	+10	0.81	0.0011	38	0.05	compliant
-48.0	+30	1.07	0.0014	38	0.05	compliant
-48.0	+40	0.85	0.0011	38	0.05	compliant
-48.0	+50	0.95	0.0012	38	0.05	compliant

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Carrier Frequency: 763.0 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation [ppm]		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
64QAM Modulation TX1						
-48.0	-30	1.47	0.0019	38	0.05	compliant
-48.0	-20	1.67	0.0022	38	0.05	compliant
-48.0	-10	2.12	0.0028	38	0.05	compliant
-48.0	0	2.73	0.0036	38	0.05	compliant
-48.0	+10	2.83	0.0037	38	0.05	compliant
-48.0	+30	2.95	0.0039	38	0.05	compliant
-48.0	+40	2.86	0.0037	38	0.05	compliant
-48.0	+50	2.75	0.0036	38	0.05	compliant
64QAM Modulation TX2						
-48.0	-30	1.57	0.0021	38	0.05	compliant
-48.0	-20	1.63	0.0021	38	0.05	compliant
-48.0	-10	2.30	0.0030	38	0.05	compliant
-48.0	0	2.83	0.0037	38	0.05	compliant
-48.0	+10	2.99	0.0039	38	0.05	compliant
-48.0	+30	2.63	0.0034	38	0.05	compliant
-48.0	+40	2.83	0.0037	38	0.05	compliant
-48.0	+50	2.85	0.0037	38	0.05	compliant
Measurement Uncertainty:					±1.0 Hz	

**Table 6-13: Results – Frequency stability with temp. var. (5 MHz Channel BW)**

**Config B:**

Carrier Frequency: 763.0 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation [ppm]		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation TX1						
-48.0	-30	-0.59	-0.0008	38	0.05	compliant
-48.0	-20	0.57	0.0007	38	0.05	compliant
-48.0	-10	1.10	0.0014	38	0.05	compliant
-48.0	0	1.03	0.0013	38	0.05	compliant
-48.0	+10	1.69	0.0022	38	0.05	compliant
-48.0	+30	1.40	0.0018	38	0.05	compliant
-48.0	+40	1.36	0.0018	38	0.05	compliant
-48.0	+50	1.56	0.0020	38	0.05	compliant
QPSK Modulation TX2						
-48.0	-30	-0.41	-0.0005	38	0.05	compliant
-48.0	-20	1.14	0.0015	38	0.05	compliant
-48.0	-10	0.81	0.0011	38	0.05	compliant
-48.0	0	1.22	0.0016	38	0.05	compliant
-48.0	+10	1.56	0.0020	38	0.05	compliant
-48.0	+30	1.99	0.0026	38	0.05	compliant
-48.0	+40	1.44	0.0019	38	0.05	compliant
-48.0	+50	1.19	0.0016	38	0.05	compliant
16QAM Modulation TX1						
-48.0	-30	0.49	0.0006	38	0.05	compliant
-48.0	-20	0.70	0.0009	38	0.05	compliant
-48.0	-10	1.33	0.0017	38	0.05	compliant
-48.0	0	1.16	0.0015	38	0.05	compliant
-48.0	+10	1.94	0.0025	38	0.05	compliant
-48.0	+30	1.65	0.0022	38	0.05	compliant
-48.0	+40	1.94	0.0025	38	0.05	compliant
-48.0	+50	1.70	0.0022	38	0.05	compliant
16QAM Modulation TX2						
-48.0	-30	-0.24	-0.0003	38	0.05	compliant
-48.0	-20	0.93	0.0012	38	0.05	compliant
-48.0	-10	0.96	0.0013	38	0.05	compliant
-48.0	0	1.17	0.0015	38	0.05	compliant
-48.0	+10	2.10	0.0028	38	0.05	compliant
-48.0	+30	1.83	0.0024	38	0.05	compliant
-48.0	+40	2.10	0.0028	38	0.05	compliant
-48.0	+50	1.67	0.0022	38	0.05	compliant

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Carrier Frequency: 763.0 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation [ppm]		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
64QAM Modulation TX1						
-48.0	-30	-0.74	-0.0010	38	0.05	compliant
-48.0	-20	0.45	0.0006	38	0.05	compliant
-48.0	-10	1.18	0.0015	38	0.05	compliant
-48.0	0	1.30	0.0017	38	0.05	compliant
-48.0	+10	1.65	0.0022	38	0.05	compliant
-48.0	+30	1.72	0.0023	38	0.05	compliant
-48.0	+40	1.51	0.0020	38	0.05	compliant
-48.0	+50	1.64	0.0021	38	0.05	compliant
64QAM Modulation TX2						
-48.0	-30	-0.29	-0.0004	38	0.05	compliant
-48.0	-20	0.73	0.0010	38	0.05	compliant
-48.0	-10	0.82	0.0011	38	0.05	compliant
-48.0	0	1.21	0.0016	38	0.05	compliant
-48.0	+10	1.47	0.0019	38	0.05	compliant
-48.0	+30	1.77	0.0023	38	0.05	compliant
-48.0	+40	1.37	0.0018	38	0.05	compliant
-48.0	+50	1.56	0.0020	38	0.05	compliant
Measurement Uncertainty:					±1.0 Hz	

**Table 6-14: Results – Frequency stability with temp. var. (10 MHz Channel BW)**

### Frequency Stability with Supply Voltage Variation:

The EUT was placed in a climatic chamber and allowed to stabilize at +20 degrees celsius for at least 30 minutes. With the supply voltage of the EUT set to 85% of the nominal value, the frequency error was measure. This procedure was repeated at 100% and 115% of the nominal supply voltage value.

### Config A:

Carrier Frequency: 763.0 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation [ppm]		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation TX1						
-40.8	+20	0.46	0.0006	38	0.05	compliant
-48.0	+20	0.20	0.0003	38	0.05	compliant
-55.2	+20	0.54	0.0007	38	0.05	compliant
QPSK Modulation TX2						
-40.8	+20	0.62	0.0008	38	0.05	compliant
-48.0	+20	0.38	0.0005	38	0.05	compliant
-55.2	+20	0.68	0.0009	38	0.05	compliant
16QAM Modulation TX1						
-40.8	+20	1.00	0.0013	38	0.05	compliant
-48.0	+20	0.88	0.0012	38	0.05	compliant
-55.2	+20	0.93	0.0012	38	0.05	compliant
16QAM Modulation TX2						
-40.8	+20	0.76	0.0010	38	0.05	compliant
-48.0	+20	0.75	0.0010	38	0.05	compliant
-55.2	+20	0.59	0.0008	38	0.05	compliant
64QAM Modulation TX1						
-40.8	+20	2.87	0.0038	38	0.05	compliant
-48.0	+20	2.77	0.0036	38	0.05	compliant
-55.2	+20	2.73	0.0036	38	0.05	compliant
64QAM Modulation TX2						
-40.8	+20	2.76	0.0036	38	0.05	compliant
-48.0	+20	2.73	0.0036	38	0.05	compliant
-55.2	+20	2.76	0.0036	38	0.05	compliant
Measurement Uncertainty:					±1.0 Hz	

**Table 6-15: Results – Frequency stability with voltage var. (5 MHz Channel BW)**

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**Config B:**

Carrier Frequency: 763.0 MHz						
Supply Voltage (DC) [V]	Ambient Temperature [°C]	Frequency Deviation [ppm]		Manufacturer's Specification		Result
		[Hz]	[ppm]	[Hz]	[ppm]	
QPSK Modulation TX1						
-40.8	+20	1.32	0.0017	38	0.05	compliant
-48.0	+20	1.72	0.0023	38	0.05	compliant
-55.2	+20	1.72	0.0023	38	0.05	compliant
QPSK Modulation TX2						
-40.8	+20	1.51	0.0020	38	0.05	compliant
-48.0	+20	1.83	0.0024	38	0.05	compliant
-55.2	+20	1.62	0.0021	38	0.05	compliant
16QAM Modulation TX1						
-40.8	+20	1.54	0.0020	38	0.05	compliant
-48.0	+20	1.80	0.0024	38	0.05	compliant
-55.2	+20	1.42	0.0019	38	0.05	compliant
16QAM Modulation TX2						
-40.8	+20	1.79	0.0023	38	0.05	compliant
-48.0	+20	1.87	0.0025	38	0.05	compliant
-55.2	+20	1.57	0.0021	38	0.05	compliant
64QAM Modulation TX1						
-40.8	+20	1.97	0.0026	38	0.05	compliant
-48.0	+20	1.51	0.0020	38	0.05	compliant
-55.2	+20	1.42	0.0019	38	0.05	compliant
64QAM Modulation TX2						
-40.8	+20	1.44	0.0019	38	0.05	compliant
-48.0	+20	1.68	0.00222	38	0.05	compliant
-55.2	+20	1.57	0.0021	38	0.05	compliant
Measurement Uncertainty:					±1.0 Hz	

**Table 6-16: Results – Frequency stability with voltage var. (10 MHz Channel BW)**

The measured frequency stability was found to be compliant with the manufacturer's specifications and with all requirements of the FCC rules.

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## 7 Test Data and Screenshots

### 7.1 Part List of the RF Measurement Test Equipment

No.	Test Equipment	Type (Manufacturer)	Serial Number	Calibration date	Calibration due	Test No.
1	Network Analyzer	Hewlett-Packard: HP8753E	US38431868	06/2010	06/2011	1, 2, 3, 4, 6
2	Network Analyzer	Hewlett-Packard: HP8720ES	US39172107	06/2010	06/2011	1, 2, 3, 4, 6
3	Calibration kit	Hewlett-Packard: HP85032B	2919A04843	06/2010	06/2011	1, 2, 3, 4, 6
4	DC power	Sørensen: DHP series	9950C0085	cnn	-	1, 2, 3, 4, 6
5	Signal Analyzer	Rohde & Schwarz: FSQ 26	100206	02/2010	02/2011	1, 2, 3, 4, 6
6	Frequency Standard	Datum 8040	0041005473	01/2010	01/2011	6
7	Temperature/humidity meter	VAISALA: HMI 31	P3730008	12/2010	12/2011	1, 2, 3, 4, 5, 6
8	Environmental chamber	Weiss technik	59226012320 010	06/2010	06/2011	6
9	Attenuator	Spinner: BN 74 53 58	35016	cnn	-	1, 2, 3, 4, 6
10	Attenuator	Spinner: BN 74 53 58	25823	cnn	-	1, 2, 3, 4, 6
11	Attenuator	Spinner: BN 52 77 36	86962	cnn	-	1, 2, 3, 4, 6
12	Attenuator	Spinner: BN 53 12 51	32803	cnn	-	1, 2, 3, 4, 6
13	Attenuator	Weinschel: 66-20-34	BM6886	cnn	-	4
14	Attenuator	Weinschel: 66-20-33	BV3346	cnn	-	4
15	High pass filter	Mini-Circuits: SHP-1000	15542	cnn	-	4
16	Combiner	Weinschel: 1870A	6275	cnn	-	4
17	Semianechoic chamber	Siemens Matsushita 9m × 5m × 6m (room 0039)	Product No S&M B83317-C6019-T232	08/2008	08/2011	5
18	EMI Test Receiver	R&S ESIB 26	100335	07/2010	07/2011	5
19	Horn Antenna	Emco 3115	00075697	07/2010	07/2011	5
20	Bilog Antenna	Chase CBL6112B	2694	07/2010	07/2011	5
21	Amplifier	Miteq AFSX4	791117	cnn	-	5
22	Antenna Mast	Deisel HD240	2401323194	cnn	-	5
23	Mast Controller	Deisel HD100	1001331	cnn	-	5
24	Amplifier	HP 83017A	3123A00444	cnn	-	5

**Table 7-1: Part List of the RF Measurement Test Equipment**

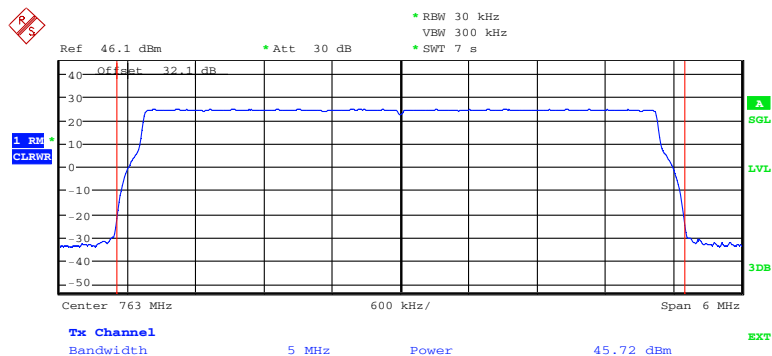
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### 7.2.1 Test No. 1: RF Power Output

### Config A TX1:



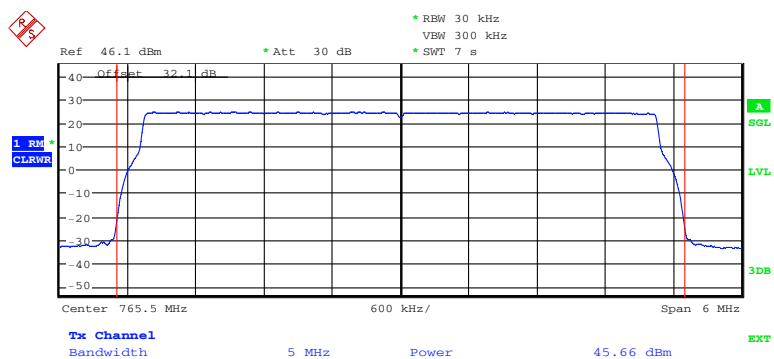
**Figure 7-1: RF Power Output – QPSK (760.5 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 14:14:14

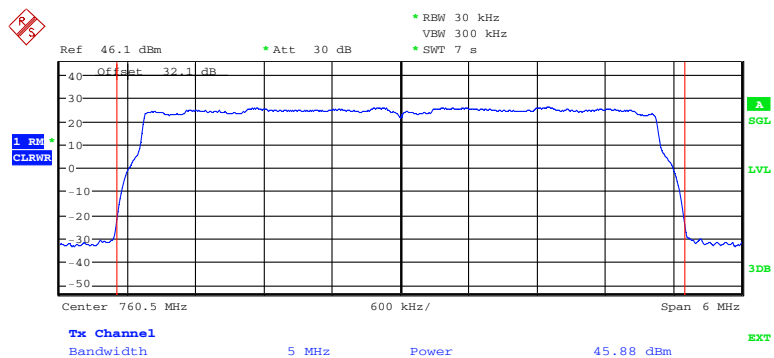
**Figure 7-2: RF Power Output – QPSK (763.0 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 11:12:38

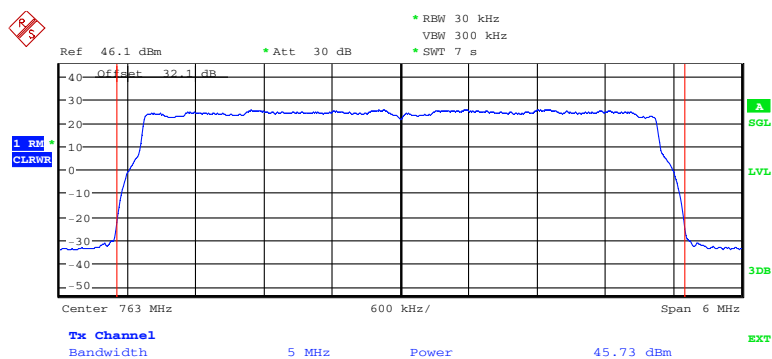
Figure 7-3: RF Power Output – QPSK (765.5 MHz) (5MHz Channel BW)



Date: 7.FEB.2011 08:41:32

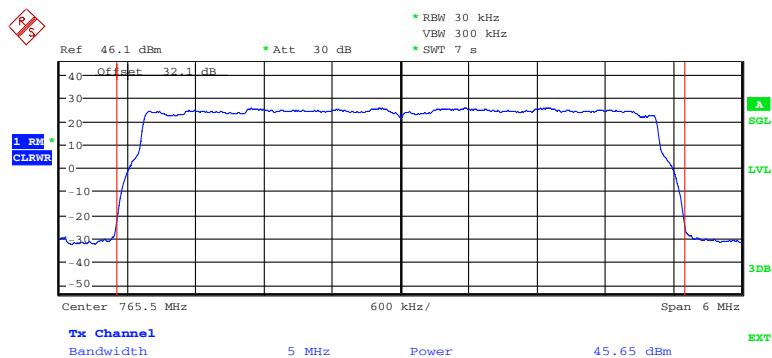
Figure 7-4: RF Power Output – 16QAM (760.5 MHz) (5MHz Channel BW)

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Date: 7.FEB.2011 14:15:21

Figure 7-5: RF Power Output – 16QAM (763.0 MHz) (5MHz Channel BW)

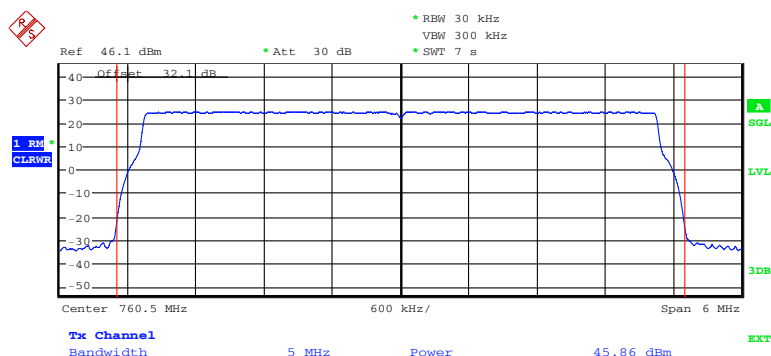


Date: 7.FEB.2011 11:14:36

Figure 7-6: RF Power Output – 16QAM (765.5 MHz) (5MHz Channel BW)

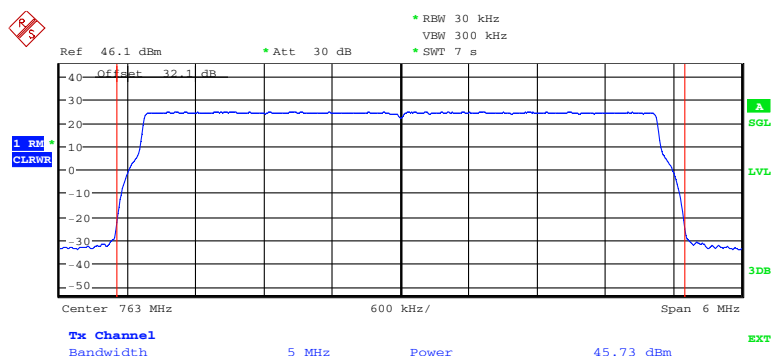
The test report shall not be reproduced except in full without the written approval of the testing laboratory





Date: 7.FEB.2011 08:39:54

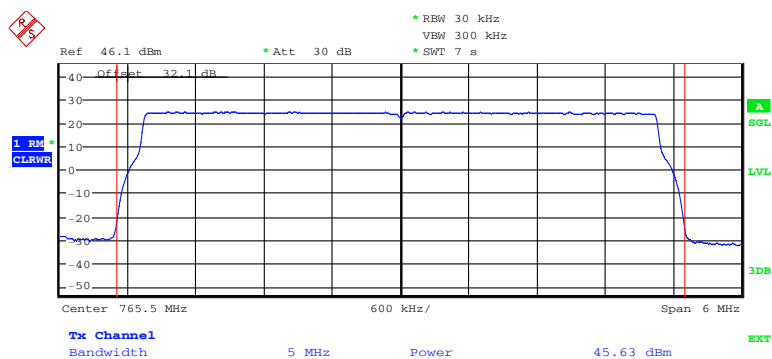
**Figure 7-7: RF Power Output – 64QAM (760.5 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 14:16:17

**Figure 7-8: RF Power Output – 64QAM (763.0 MHz) (5MHz Channel BW)**

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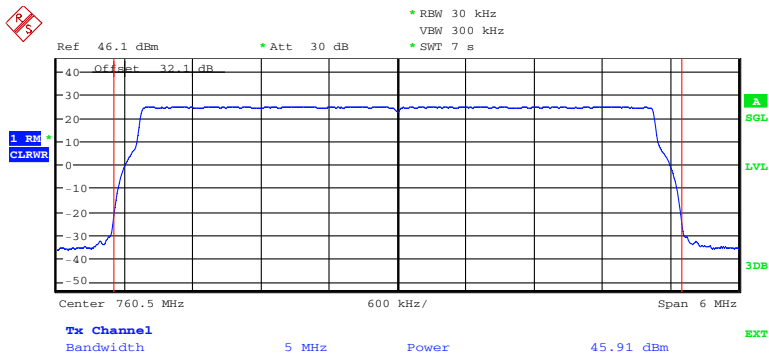


Date: 7.FEB.2011 11:16:25

**Figure 7-9: RF Power Output – 64QAM (765.5 MHz) (5MHz Channel BW)**

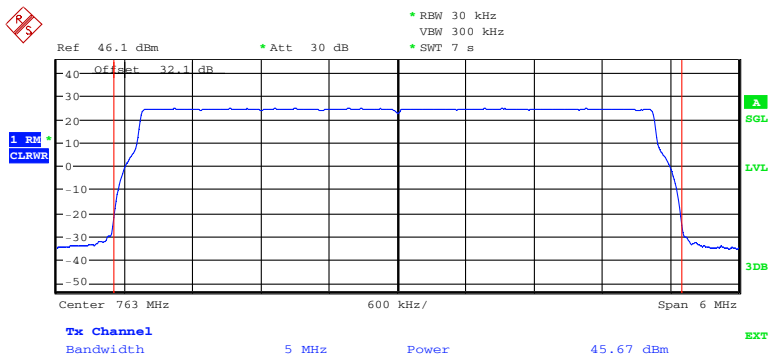
The test report shall not be reproduced except in full without the written approval of the testing laboratory

Config A TX2:



Date: 7.FEB.2011 08:45:01

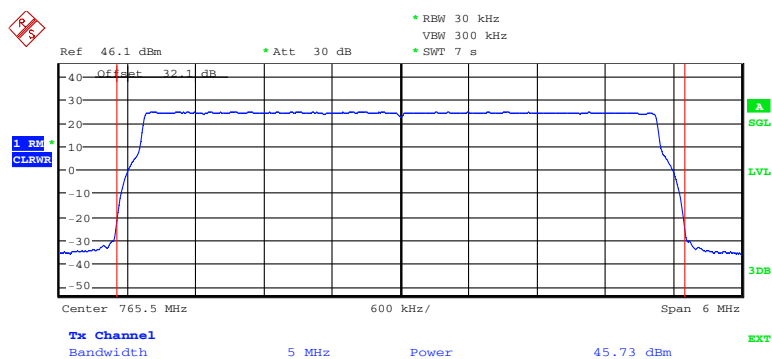
Figure 7-10: RF Power Output – QPSK (760.5 MHz) (5MHz Channel BW)



Date: 7.FEB.2011 13:56:41

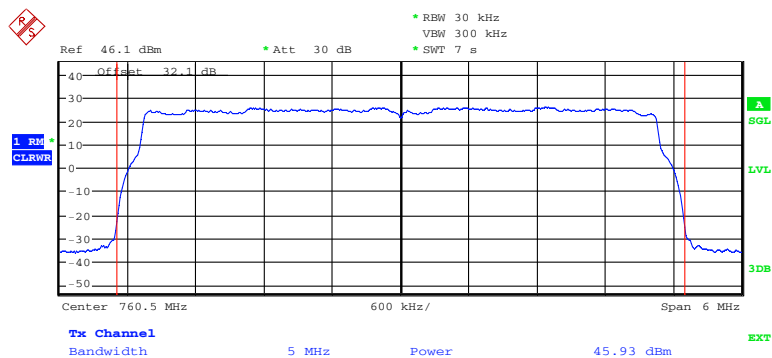
Figure 7-11: RF Power Output – QPSK (763.0 MHz) (5MHz Channel BW)

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Date: 7.FEB.2011 11:27:39

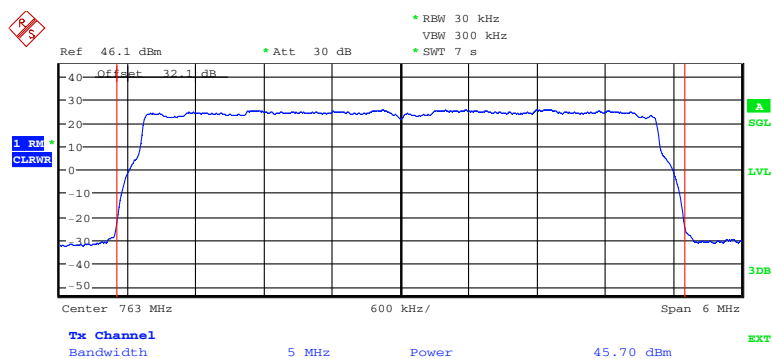
Figure 7-12: RF Power Output – QPSK (765.5 MHz) (5MHz Channel BW)



Date: 7.FEB.2011 08:48:20

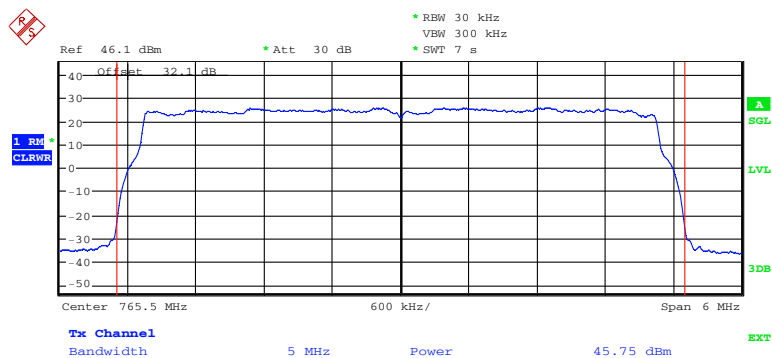
Figure 7-13: RF Power Output – 16QAM (760.5 MHz) (5MHz Channel BW)

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Date: 7.FEB.2011 13:58:59

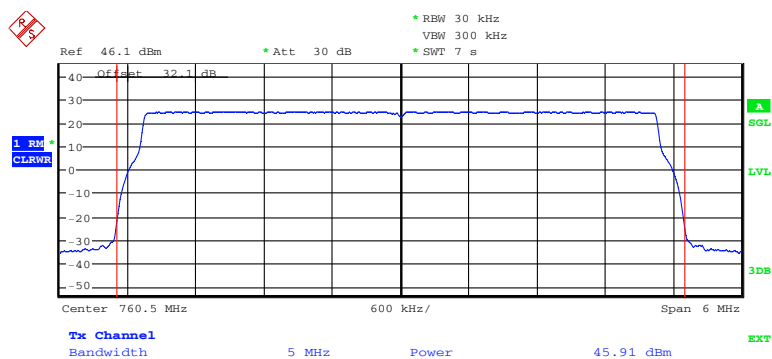
**Figure 7-14: RF Power Output – 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 11:29:48

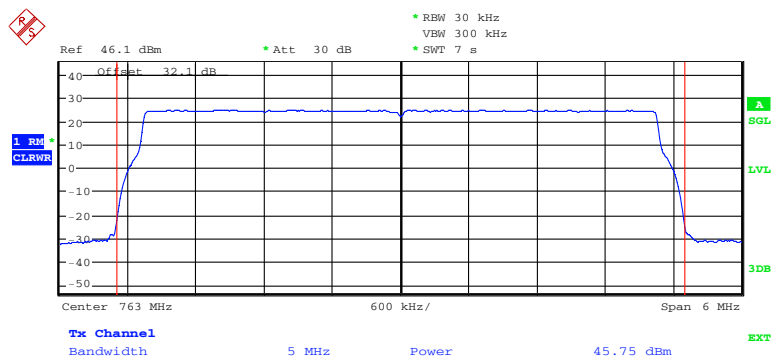
**Figure 7-15: RF Power Output – 16QAM (765.5 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 08:46:55

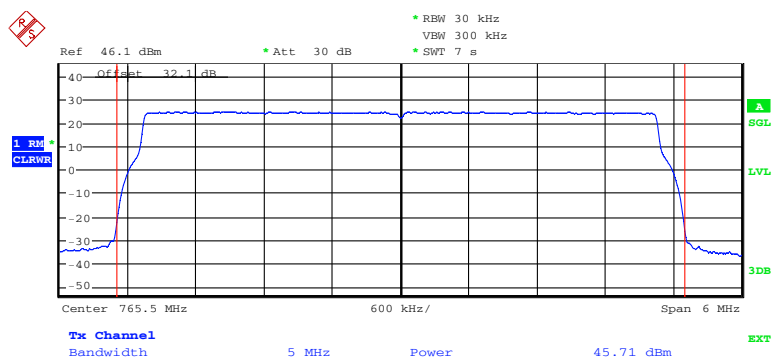
Figure 7-16: RF Power Output – 64QAM (760.5 MHz) (5MHz Channel BW)



Date: 7.FEB.2011 14:01:37

Figure 7-17: RF Power Output – 64QAM (763.0 MHz) (5MHz Channel BW)

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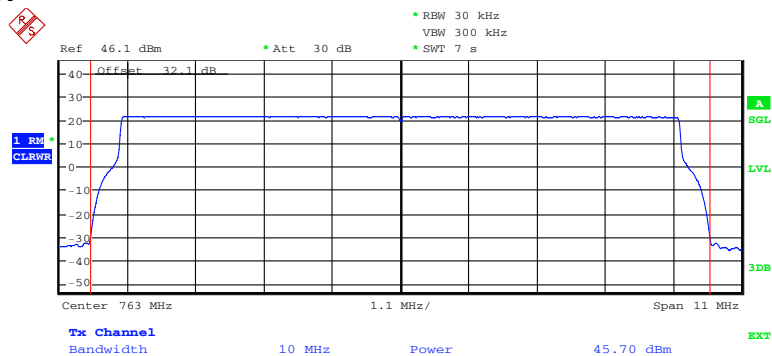


Date: 7.FEB.2011 11:31:35

**Figure 7-18: RF Power Output – 64QAM (765.5 MHz) (5MHz Channel BW)**

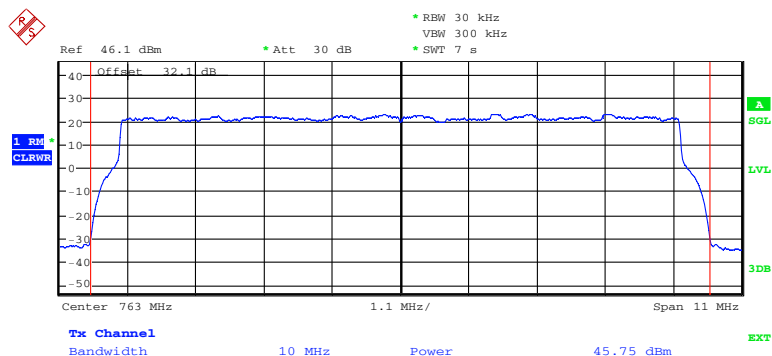
The test report shall not be reproduced except in full without the written approval of the testing laboratory

## Config B TX1:



Date: 7.FEB.2011 14:25:58

Figure 7-19: RF Power Output – QPSK (763.0 MHz) (10MHz Channel BW)

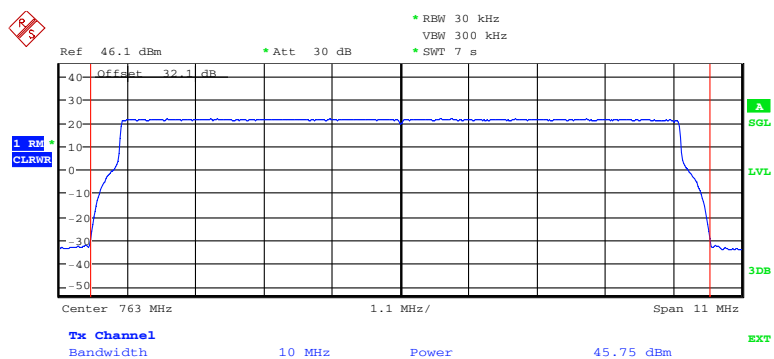


Date: 7.FEB.2011 14:27:35

Figure 7-20: RF Power Output – 16QAM (763.0 MHz) (10MHz Channel BW)

The test report shall not be reproduced except in full without the written approval of the testing laboratory



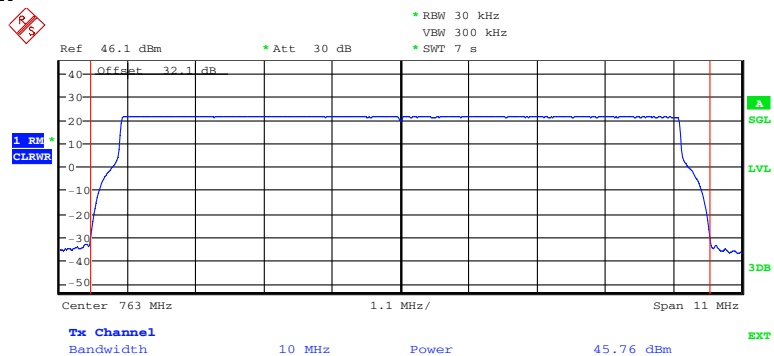


Date: 7.FEB.2011 14:29:37

**Figure 7-21: RF Power Output – 64QAM (763.0 MHz) (10MHz Channel BW)**

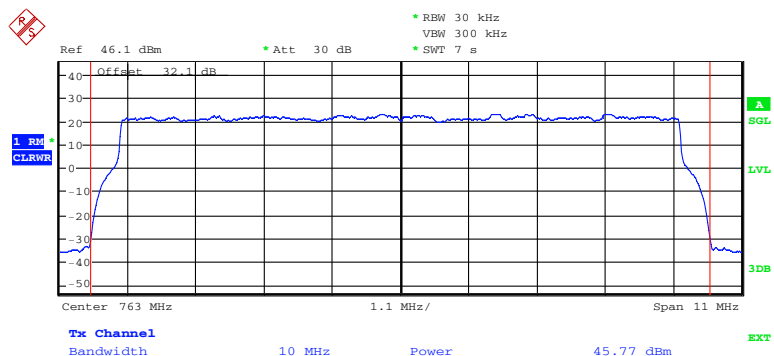
The test report shall not be reproduced except in full without the written approval of the testing laboratory

## Config B TX2:



Date: 7.FEB.2011 14:32:25

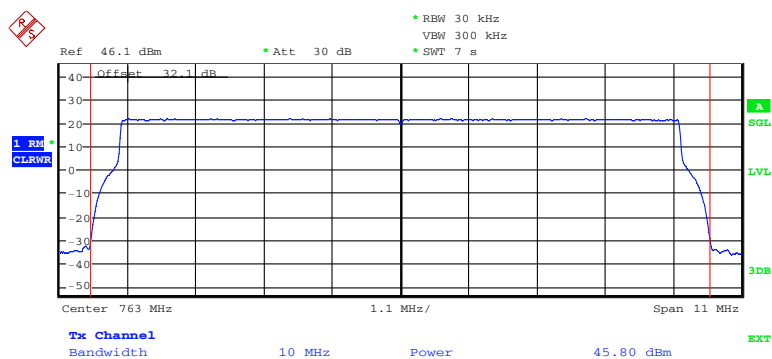
Figure 7-22: RF Power Output – QPSK (763.0 MHz) (10MHz Channel BW)



Date: 7.FEB.2011 14:34:09

Figure 7-23: RF Power Output – 16QAM (763.0 MHz) (10MHz Channel BW)

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Date: 7.FEB.2011 14:35:41

**Figure 7-24: RF Power Output – 64QAM (763.0 MHz) (10MHz Channel BW)**

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### 7.2.2 Test No. 2: Modulation Characteristics

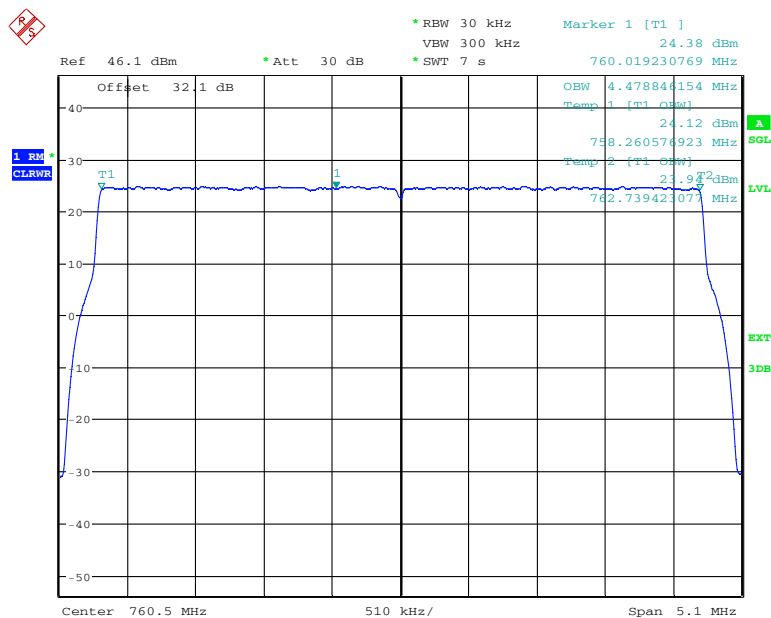
No additional measurements are required for the modulation characteristics. Please refer to test no. 3, occupied bandwidth on Annex 2.

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## 7.2.3 Test No. 3: Occupied Bandwidth

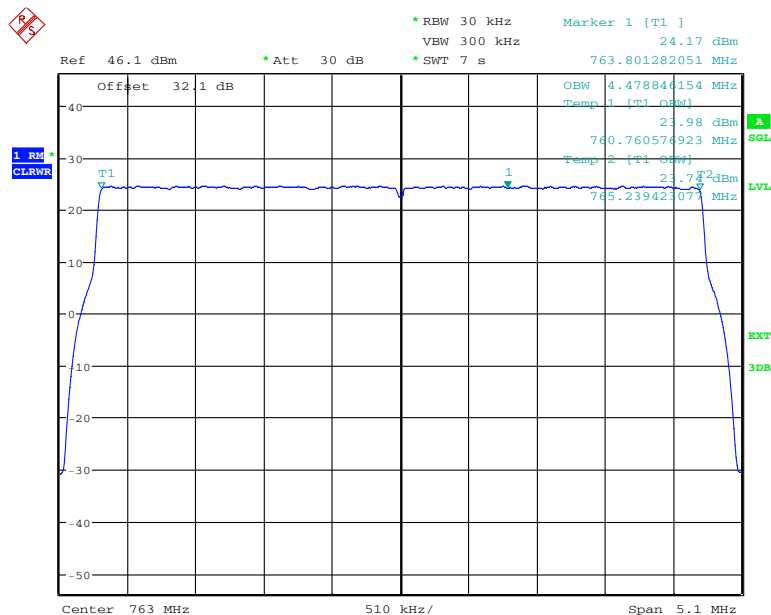
The value 'OBW' is the measured occupied bandwidth.

### Config A TX1:



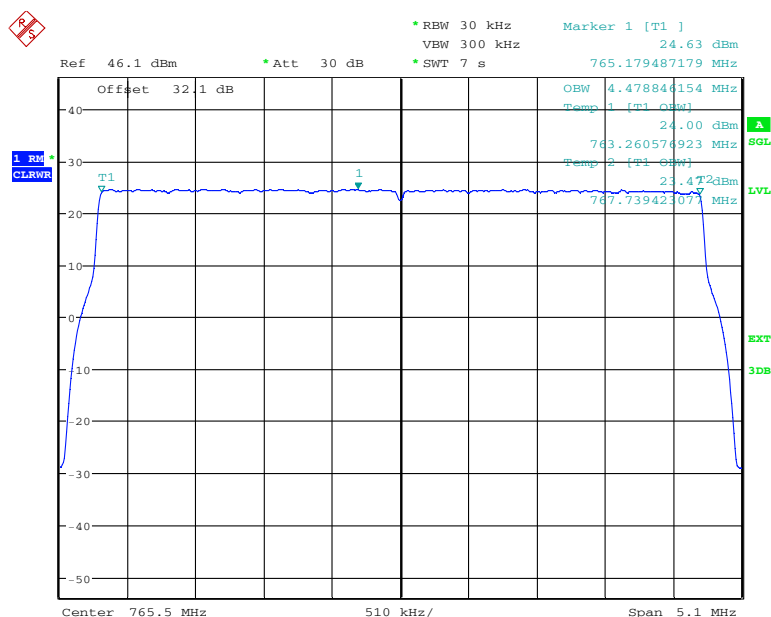
Date: 7.FEB.2011 08:36:55

Figure 7-25: Occupied Bandwidth – QPSK (760.5 MHz) (5MHz Channel BW)



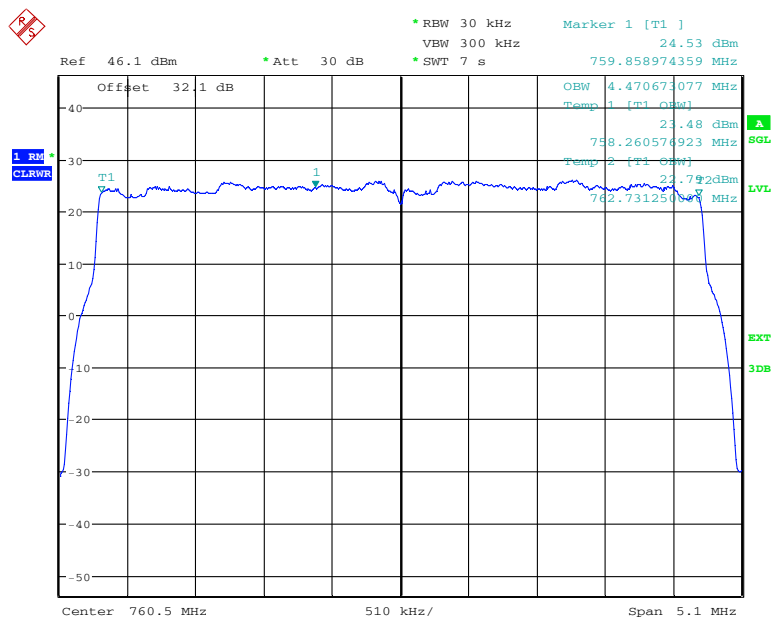
Date: 7.FEB.2011 14:09:40

Figure 7-26: Occupied Bandwidth – QPSK (763.0 MHz) (5MHz Channel BW)



Date: 7.FEB.2011 11:13:38

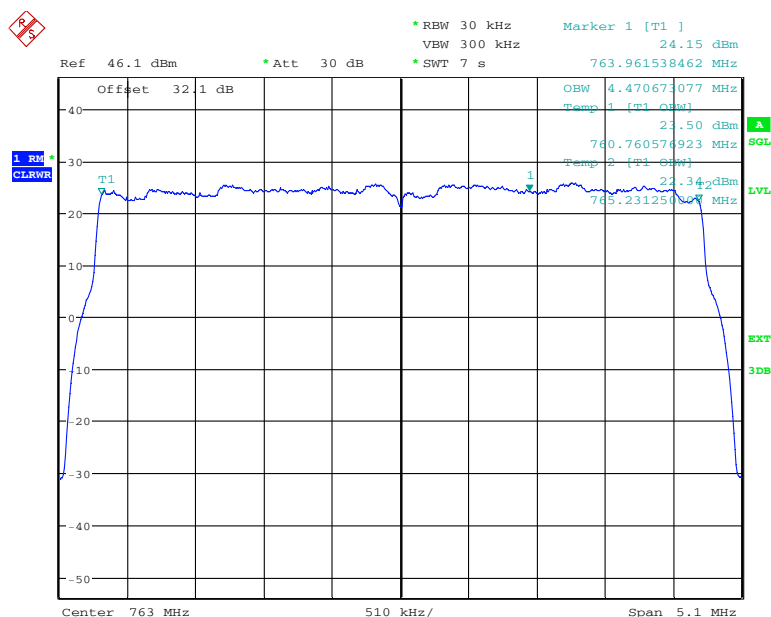
**Figure 7-27: Occupied Bandwidth – QPSK (765.5 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 08:42:16

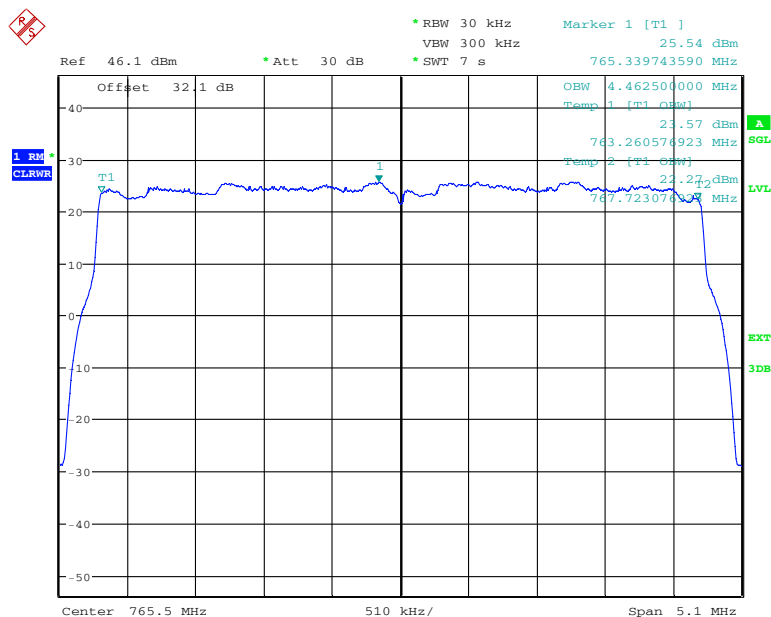
**Figure 7-28: Occupied Bandwidth – 16QAM (760.5 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 14:10:32

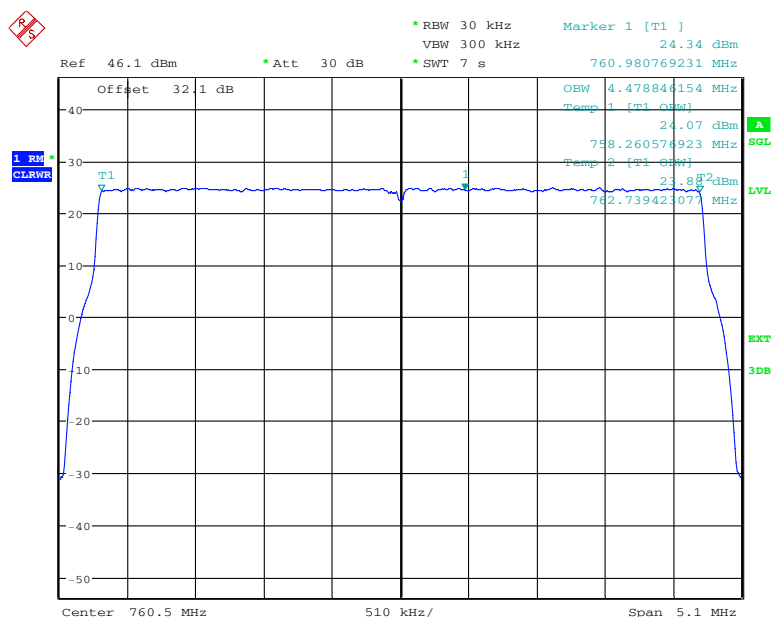
**Figure 7-29: Occupied Bandwidth – 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 11:15:22

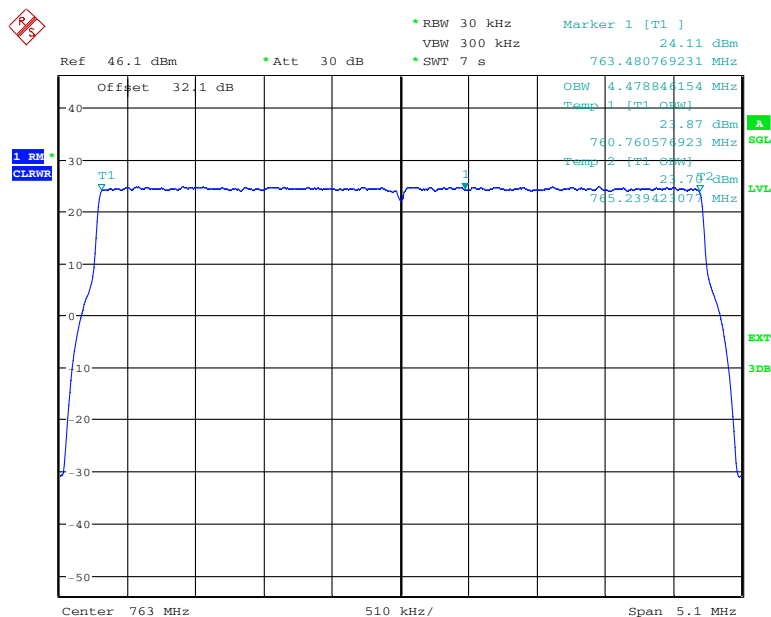
**Figure 7-30: Occupied Bandwidth – 16QAM (765.5 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 08:40:47

Figure 7-31: Occupied Bandwidth – 64QAM (760.5 MHz) (5MHz Channel BW)

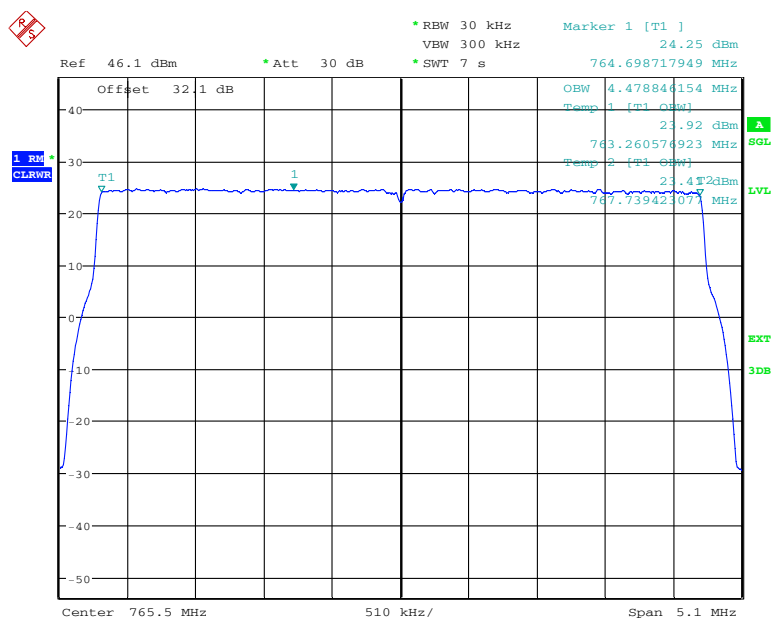


Date: 7.FEB.2011 14:11:26

Figure 7-32: Occupied Bandwidth – 64QAM (763.0 MHz) (5MHz Channel BW)

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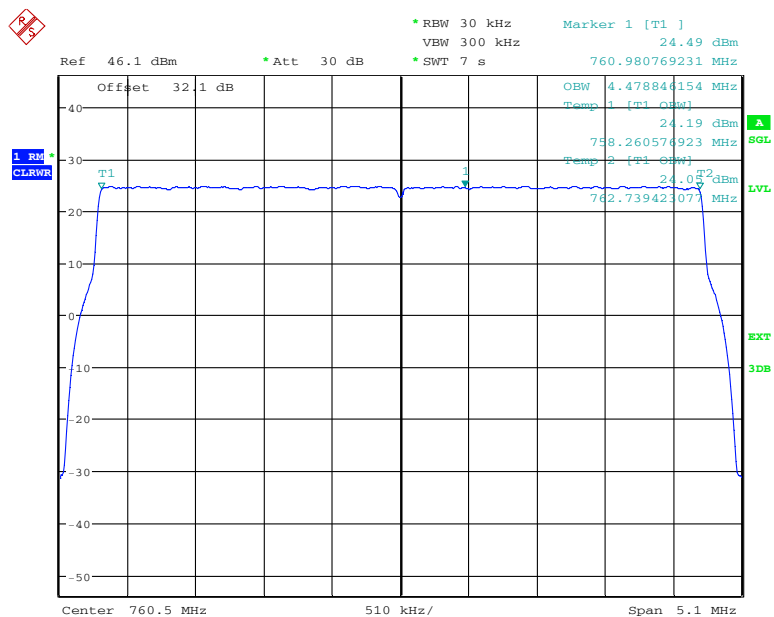


Date: 7.FEB.2011 11:17:27

**Figure 7-33: Occupied Bandwidth – 64QAM (765.5 MHz) (5MHz Channel BW)**

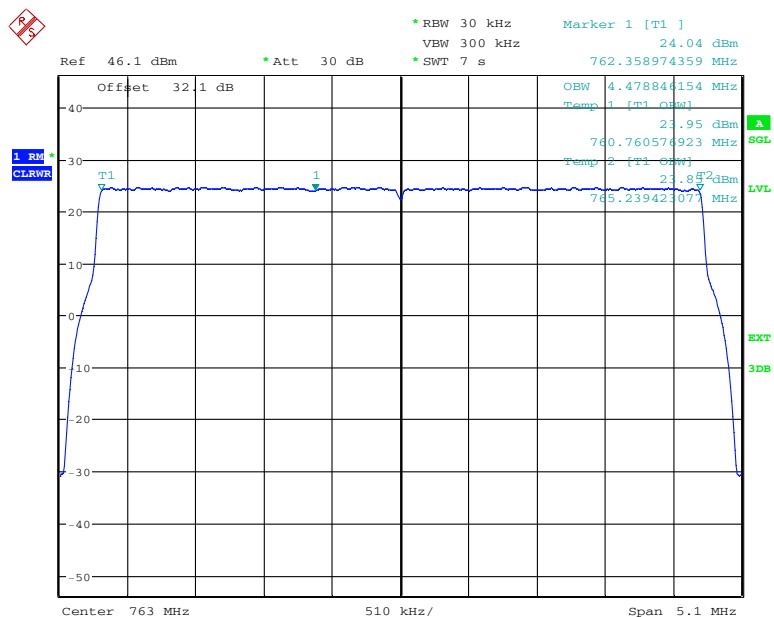
The test report shall not be reproduced except in full without the written approval of the testing laboratory

## Config A TX2:



Date: 7.FEB.2011 08:46:07

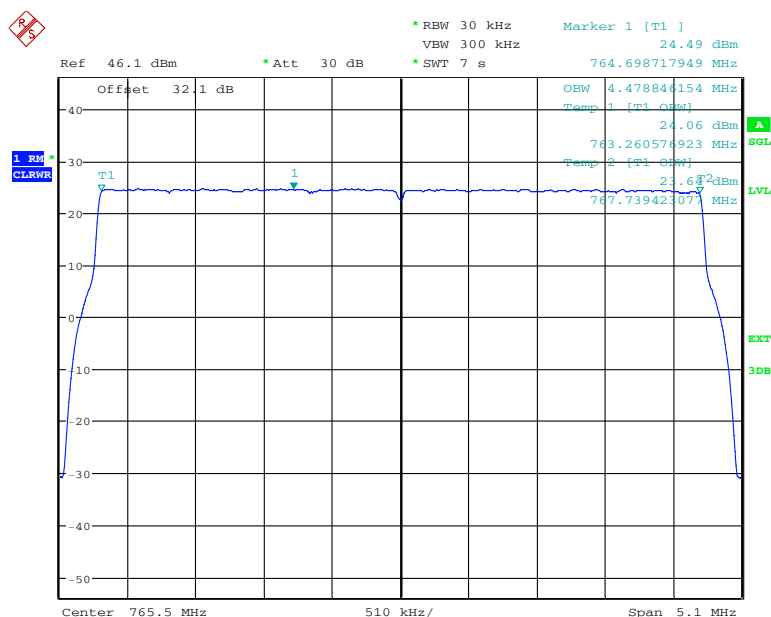
Figure 7-34: Occupied Bandwidth – QPSK (760.5 MHz) (5MHz Channel BW)



Date: 7.FEB.2011 13:58:00

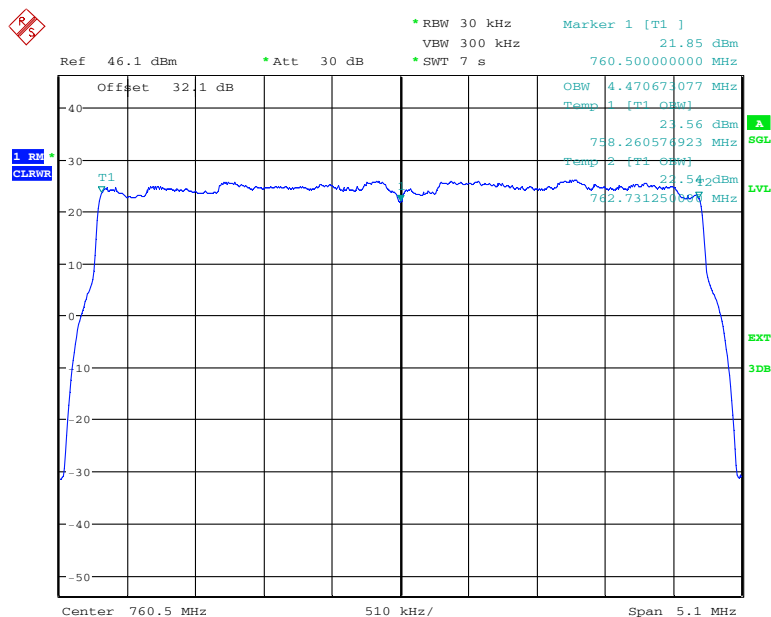
Figure 7-35: Occupied Bandwidth – QPSK (763.0 MHz) (5MHz Channel BW)

The test report shall not be reproduced except in full without the written approval of the testing laboratory



Date: 7.FEB.2011 11:28:24

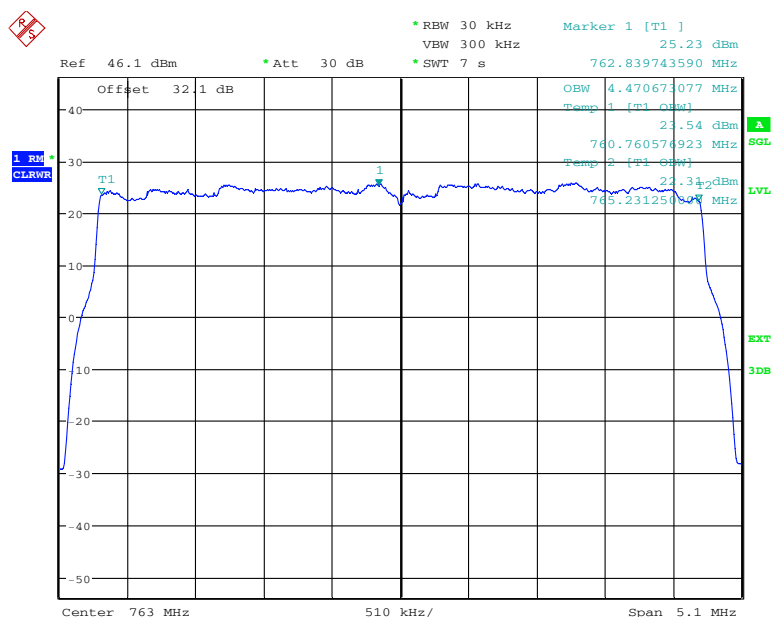
Figure 7-36: Occupied Bandwidth – QPSK (765.5 MHz) (5MHz Channel BW)



Date: 7.FEB.2011 08:49:10

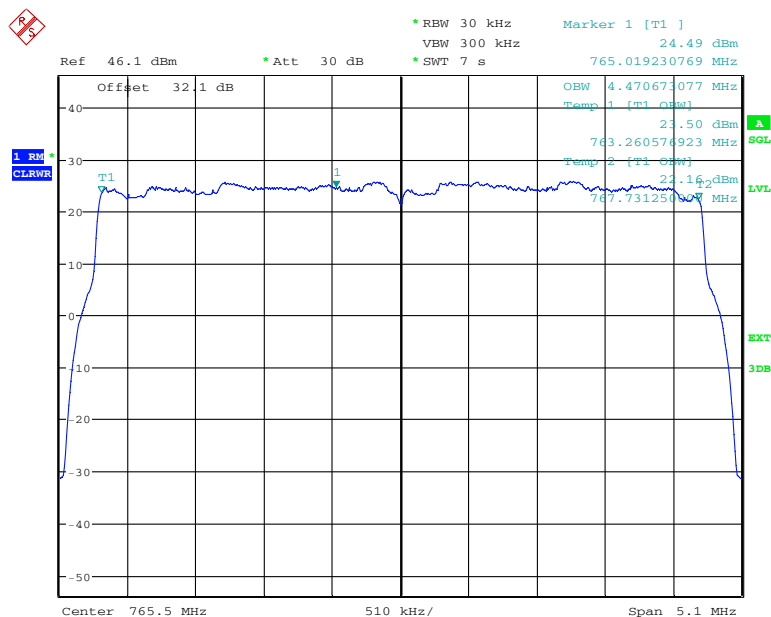
Figure 7-37: Occupied Bandwidth – 16QAM (760.5 MHz) (5MHz Channel BW)

The test report shall not be reproduced except in full without the written approval of the testing laboratory



Date: 7.FEB.2011 14:00:16

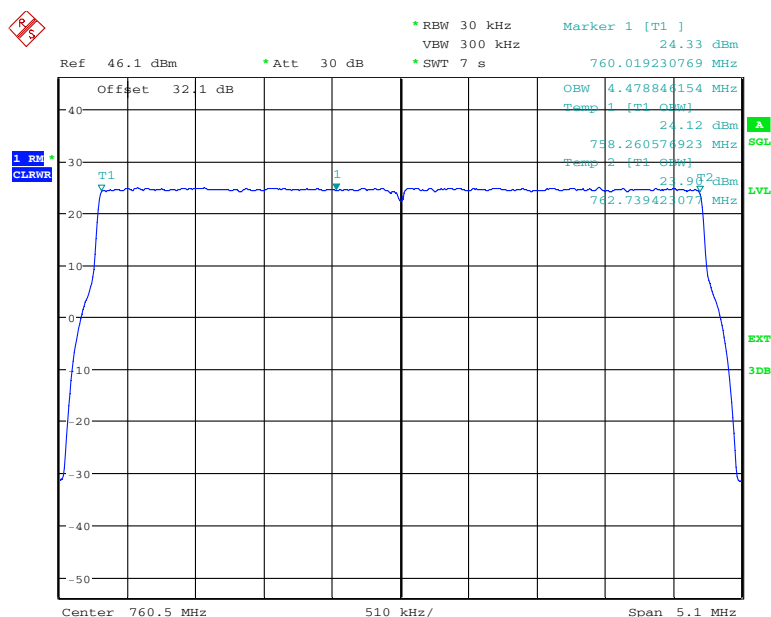
**Figure 7-38: Occupied Bandwidth – 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 11:30:34

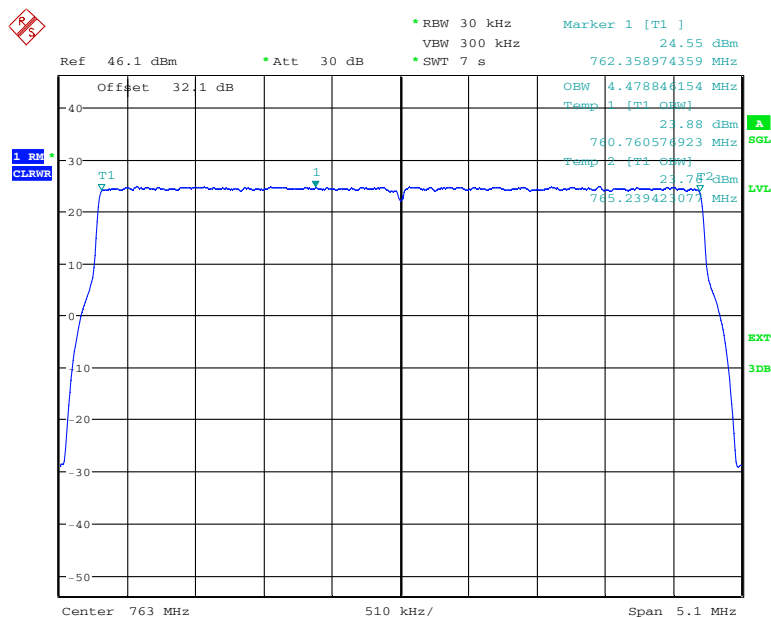
**Figure 7-39: Occupied Bandwidth – 16QAM (765.5 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 08:47:39

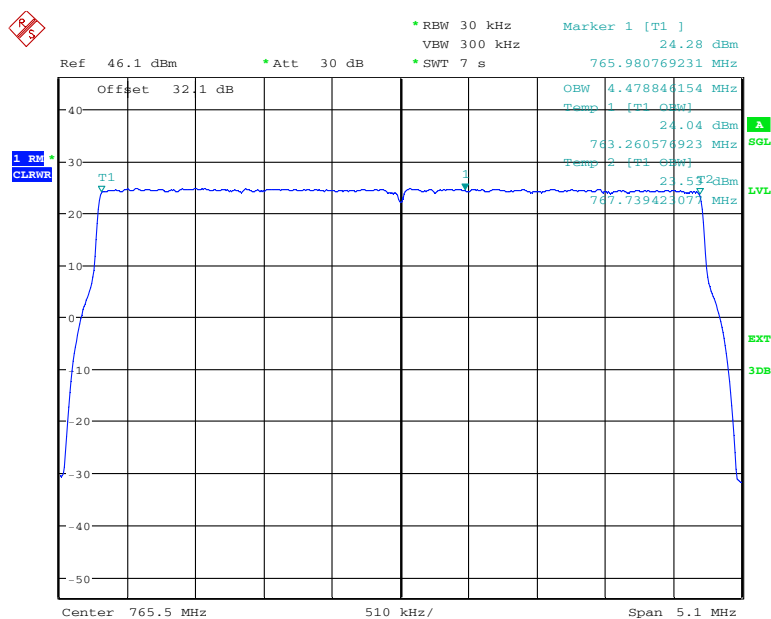
**Figure 7-40: Occupied Bandwidth – 64QAM (760.5 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 14:03:48

**Figure 7-41: Occupied Bandwidth – 64QAM (763.0 MHz) (5MHz Channel BW)**

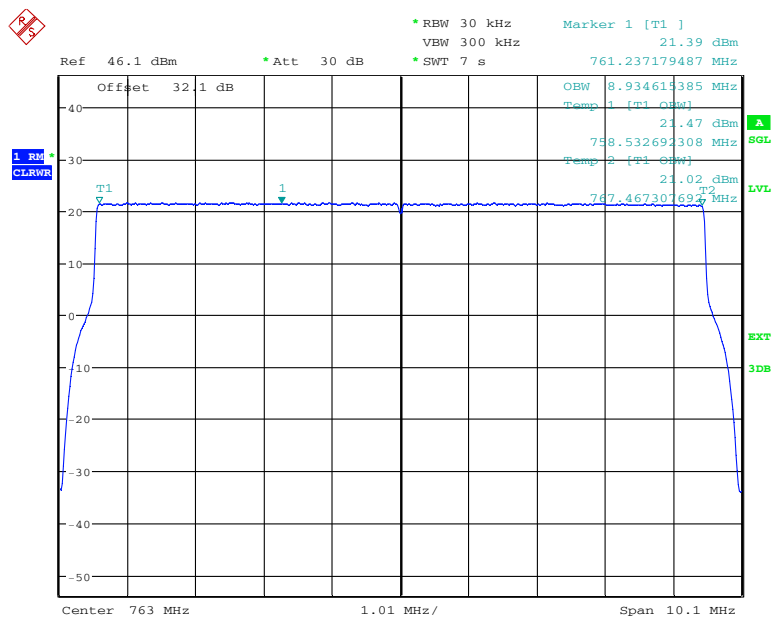
The test report shall not be reproduced except in full without the written approval of the testing laboratory



Date: 7.FEB.2011 11:32:36

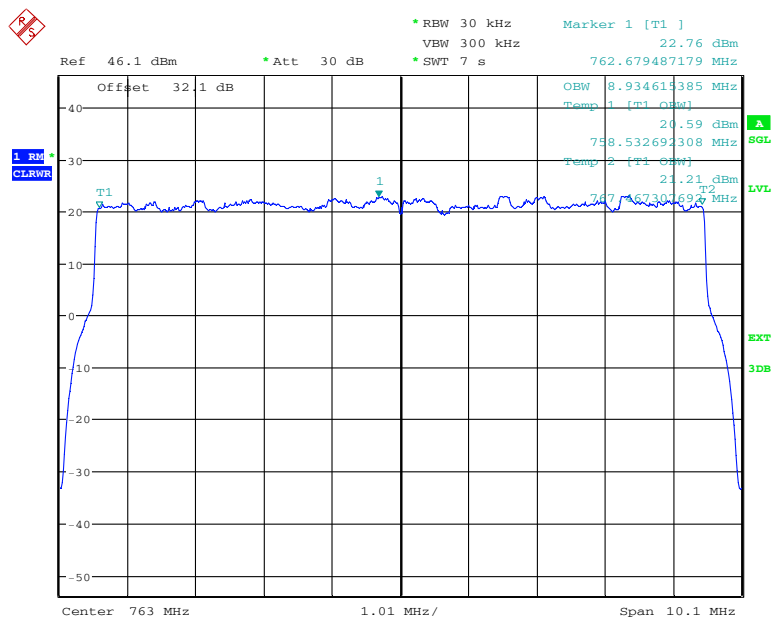
**Figure 7-42: Occupied Bandwidth – 64QAM (765.5 MHz) (5MHz Channel BW)**

## Config B TX1:



Date: 7.FEB.2011 14:26:35

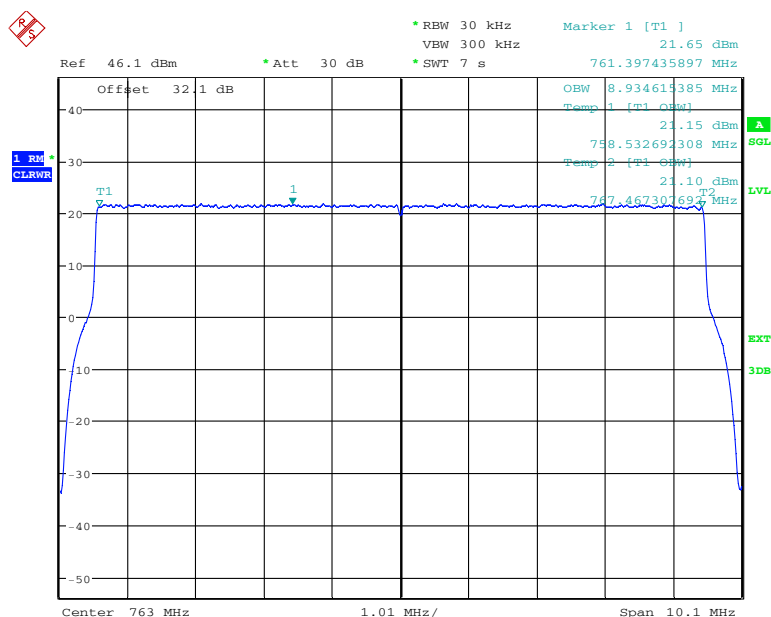
Figure 7-43: Occupied Bandwidth – QPSK (763.0 MHz) (10MHz Channel BW)



Date: 7.FEB.2011 14:28:31

Figure 7-44: Occupied Bandwidth – 16QAM (763.0 MHz) (10MHz Channel BW)

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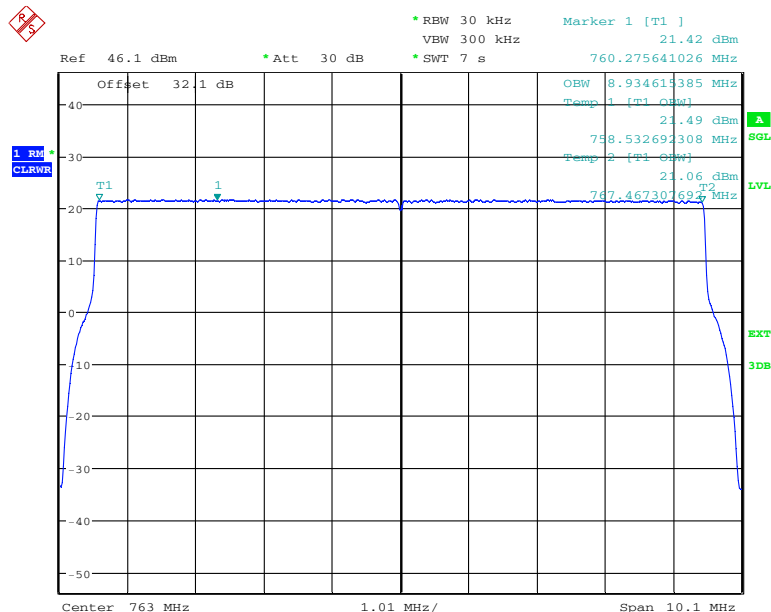
Date: 7.FEB.2011 14:30:34

**Figure 7-45: Occupied Bandwidth – 64QAM (763.0 MHz) (10MHz Channel BW)**

The test report shall not be reproduced except in full without the written approval of the testing laboratory

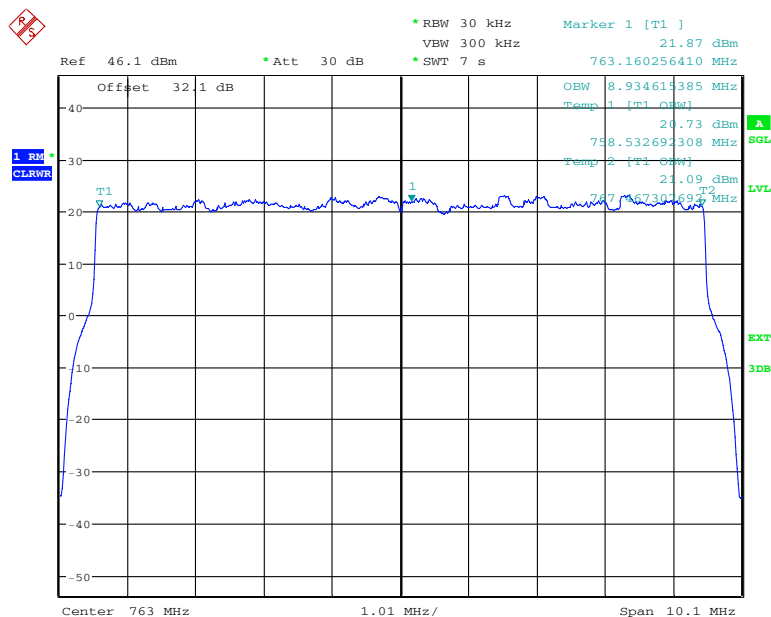


## Config B TX2:



Date: 7.FEB.2011 14:33:18

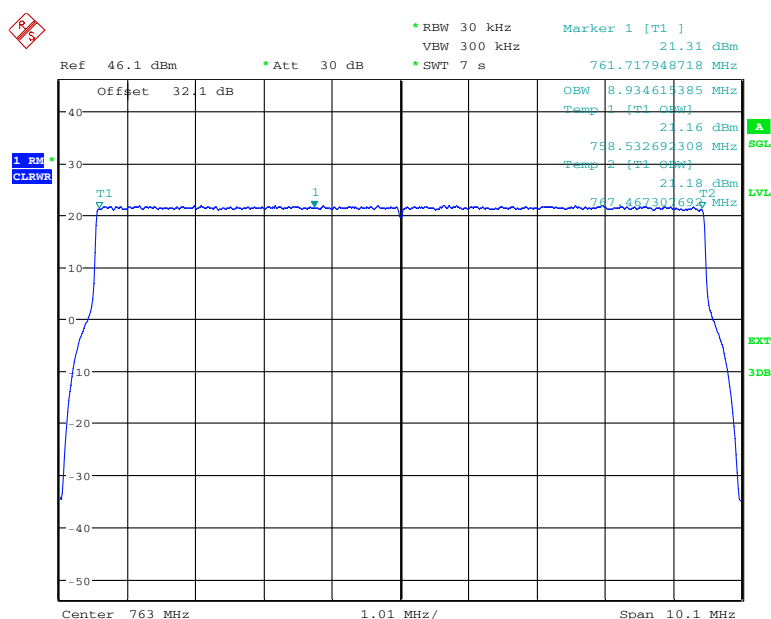
Figure 7-46: Occupied Bandwidth – QPSK (763.0 MHz) (10MHz Channel BW)



Date: 7.FEB.2011 14:34:53

Figure 7-47: Occupied Bandwidth – 16QAM (763.0 MHz) (10MHz Channel BW)

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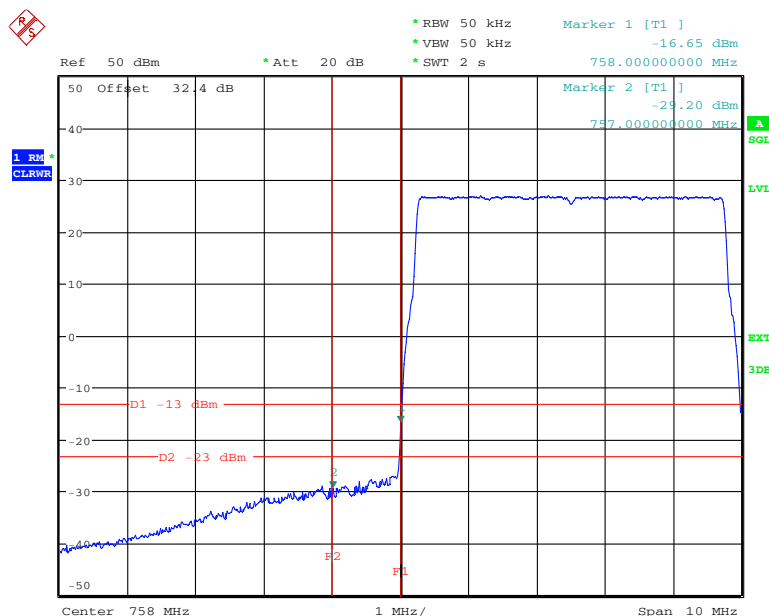
Date: 7.FEB.2011 14:36:27

**Figure 7-48: Occupied Bandwidth – 64QAM (763.0 MHz) (10MHz Channel BW)**

## 7.2.4 Test No. 4: Spurious Emissions at the Antenna Terminals

The external attenuation (cable loss of the setup) can be seen as the 'Offset' value in the screenshots. The external attenuation is frequency dependant. Thus the various 'Offset' values in the screenshots may differ. The maximum Spurious Emission levels are given on Annex 3 and Annex 4.

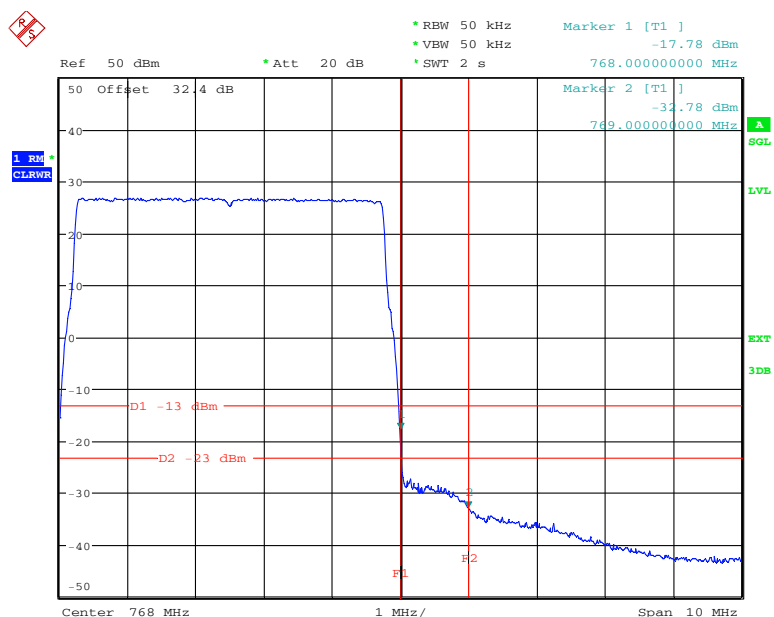
### Config A TX1:



Date: 7.FEB.2011 09:09:43

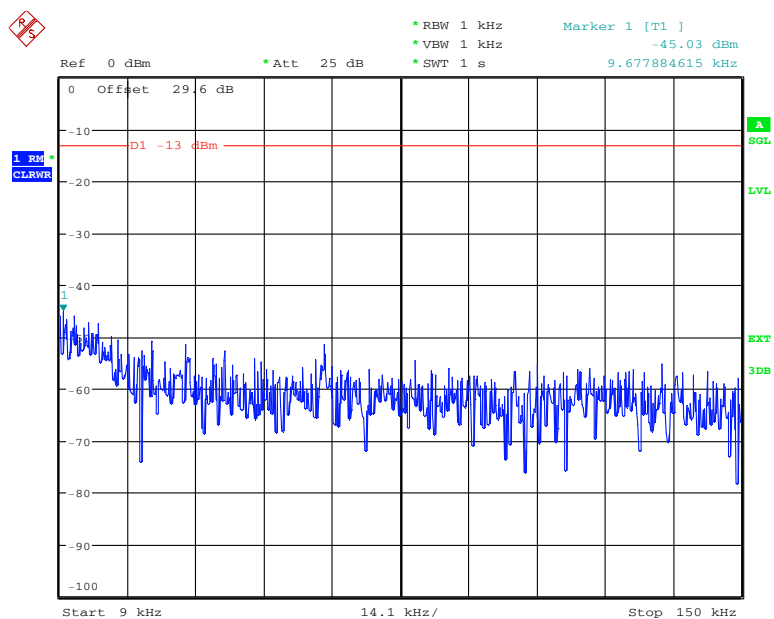
**Figure 7-49: Spurious Emissions (Lower band edge)  
– QPSK (760.5 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 11:05:24

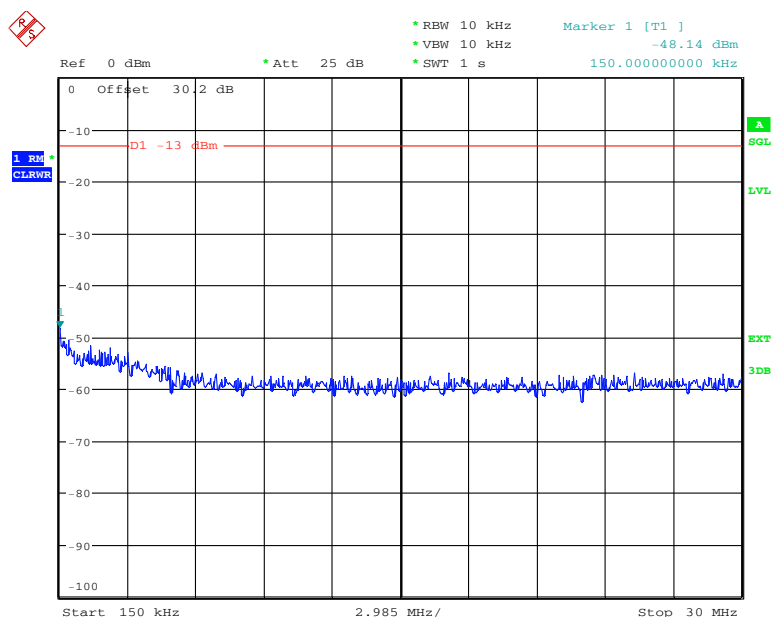
**Figure 7-50: Spurious Emissions (Upper band edge)  
– QPSK (765.5 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 09:26:32

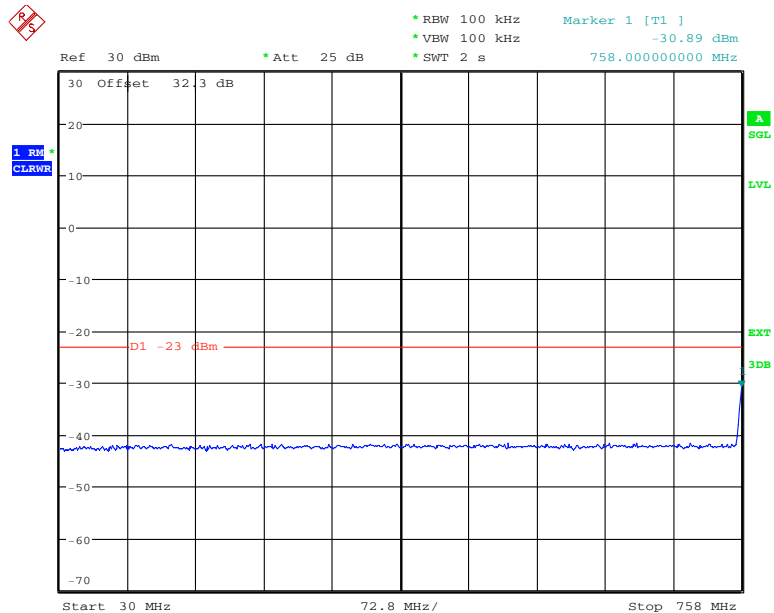
**Figure 7-51: Spurious Emissions (9kHz – 150kHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 09:47:27

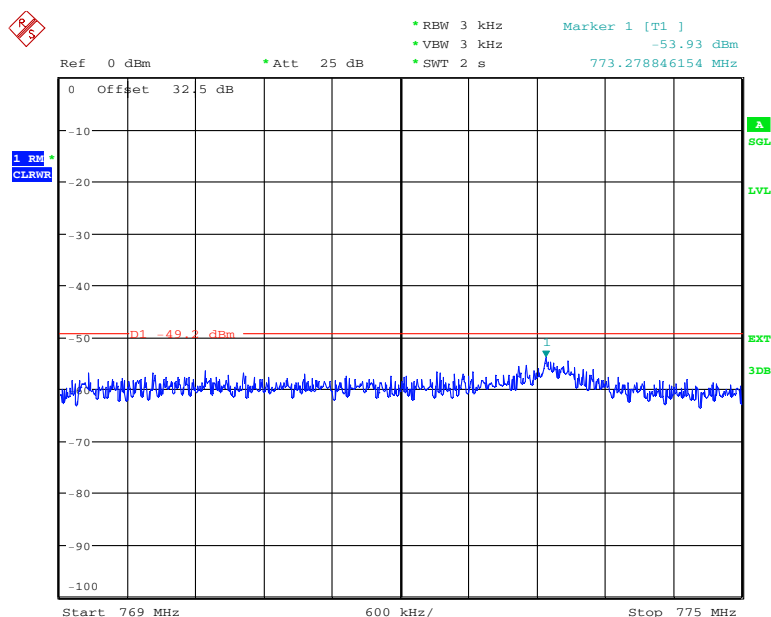
**Figure 7-52: Spurious Emissions (150kHz – 30MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**



Date: 8.FEB.2011 15:06:52

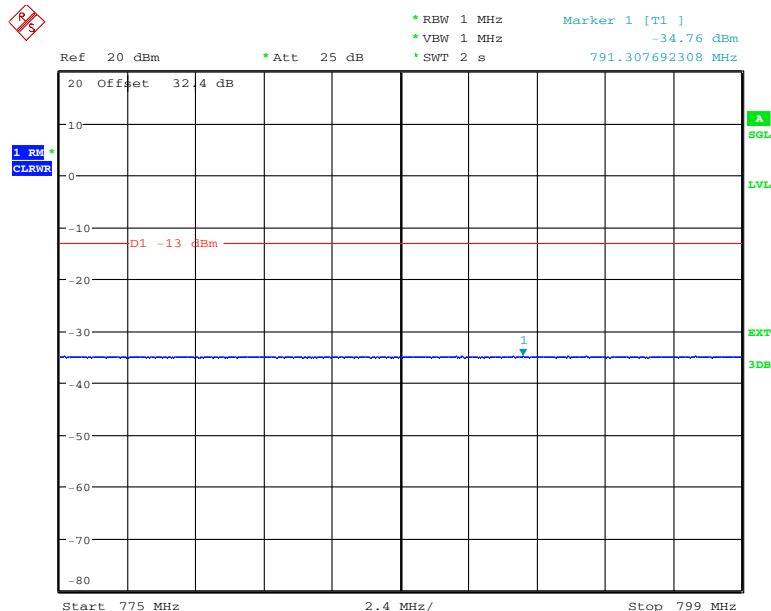
**Figure 7-53: Spurious Emissions (30MHz – 758MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 12:58:12

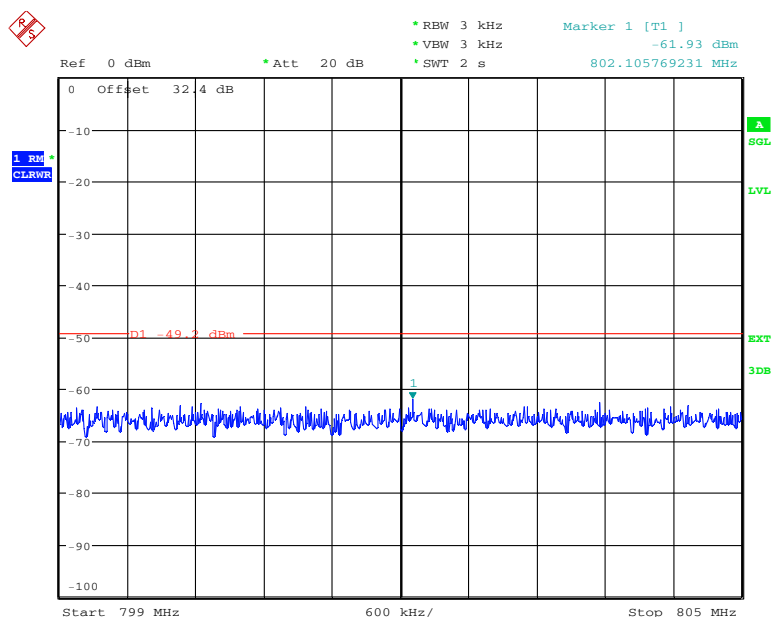
**Figure 7-54: Spurious Emissions (769MHz – 775MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 13:43:58

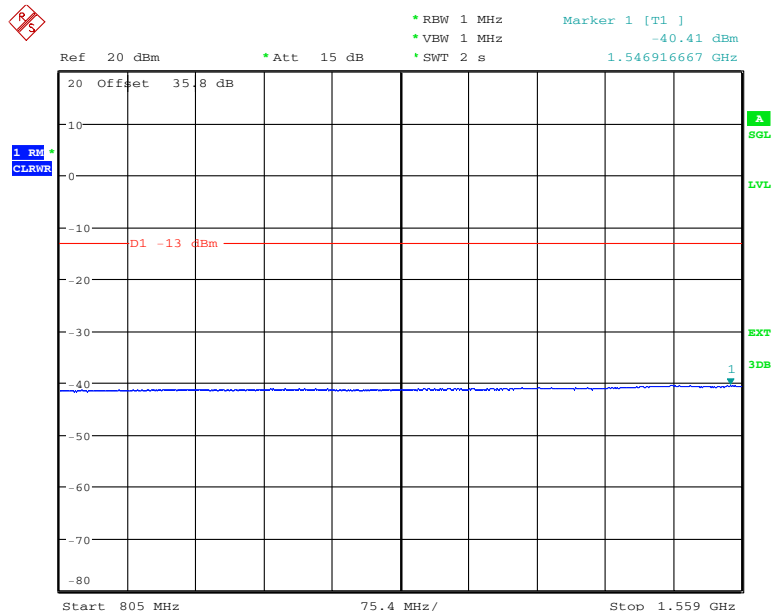
**Figure 7-55: Spurious Emissions (775MHz – 799MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 13:36:38

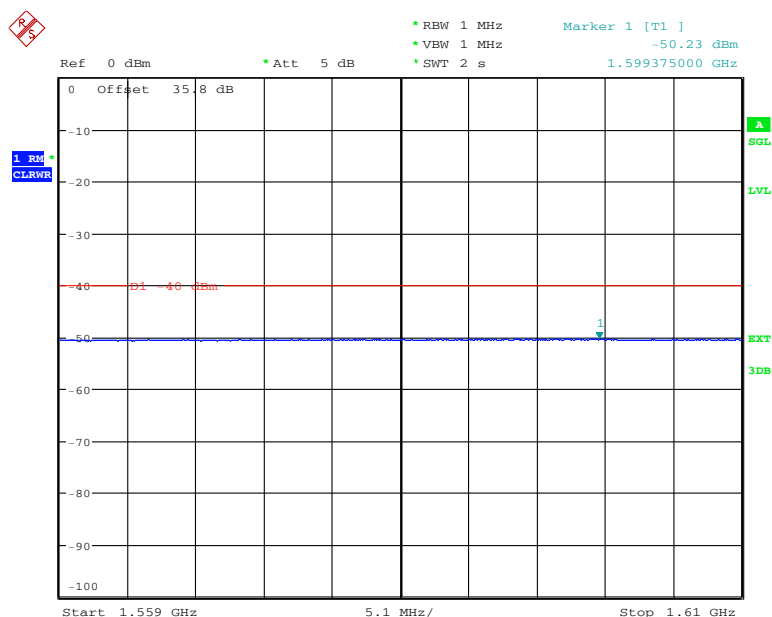
**Figure 7-56: Spurious Emissions (799MHz – 805MHz)**  
– QPSK (763.0 MHz) (5MHz Channel BW)



Date: 4.FEB.2011 14:15:49

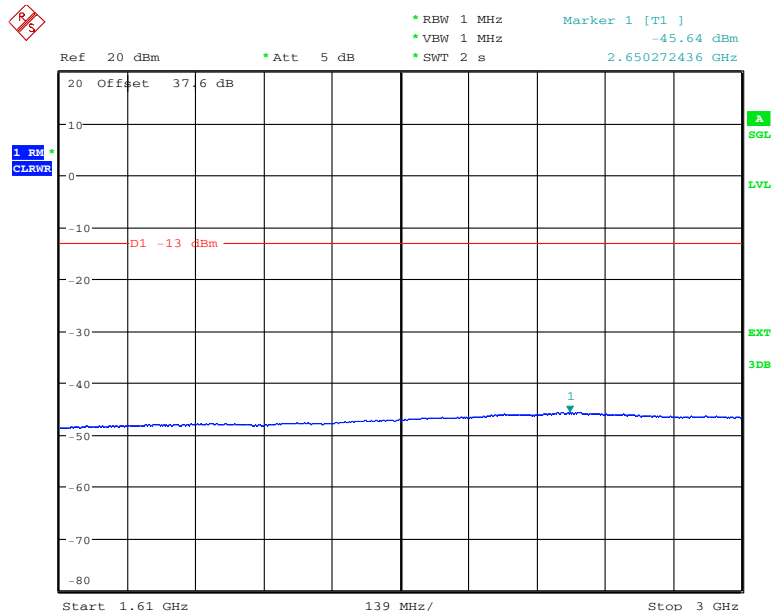
**Figure 7-57: Spurious Emissions (805MHz – 1559MHz)**  
– QPSK (763.0 MHz) (5MHz Channel BW)

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Date: 4.FEB.2011 14:21:05

**Figure 7-58: Spurious Emissions (1559MHz – 1610MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**

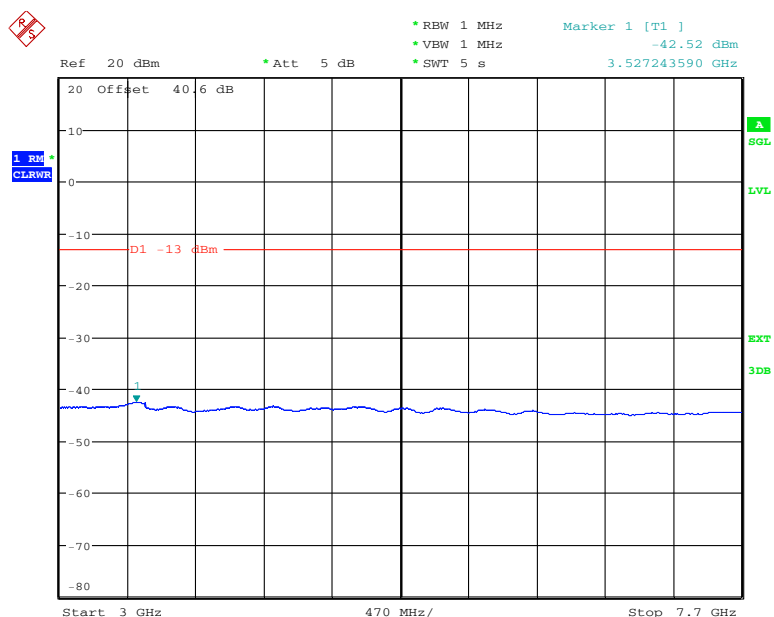


Date: 4.FEB.2011 15:00:06

**Figure 7-59: Spurious Emissions (1610MHz – 3GHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**

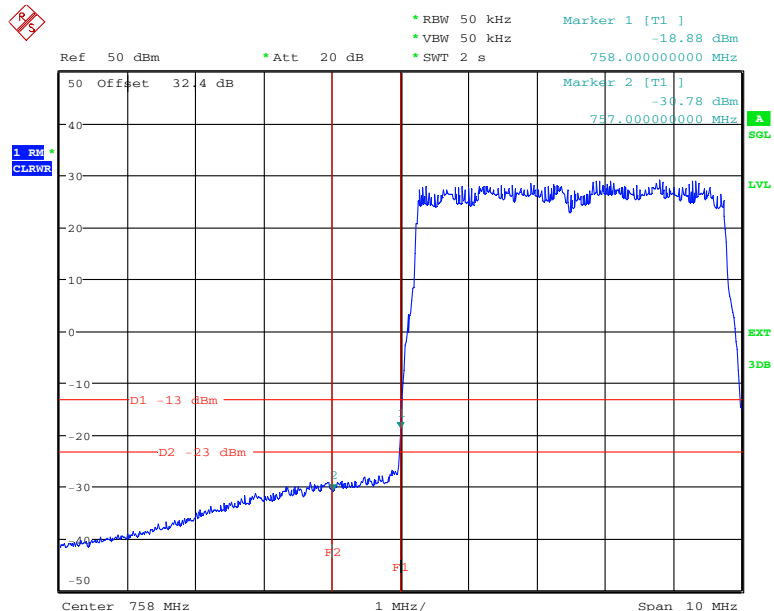
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Date: 4.FEB.2011 14:54:32

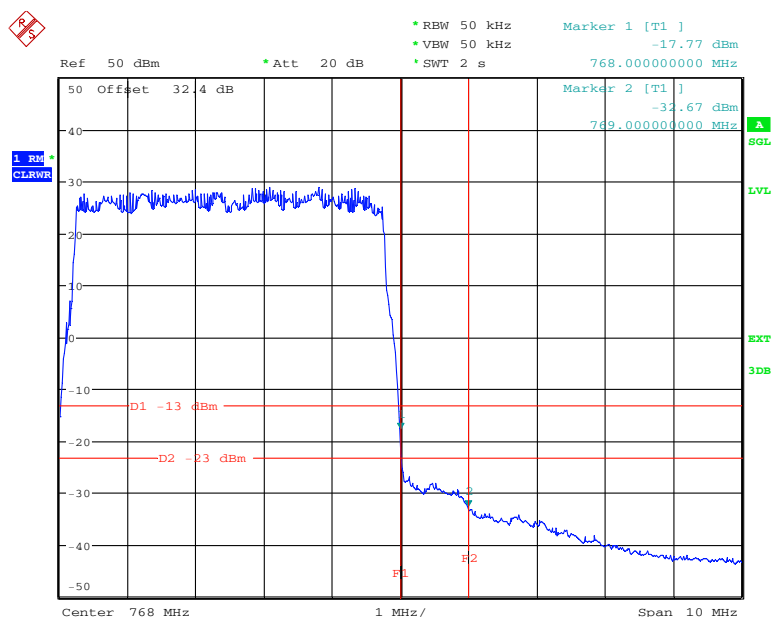
**Figure 7-60: Spurious Emissions (3GHz – 7.7GHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 09:10:36

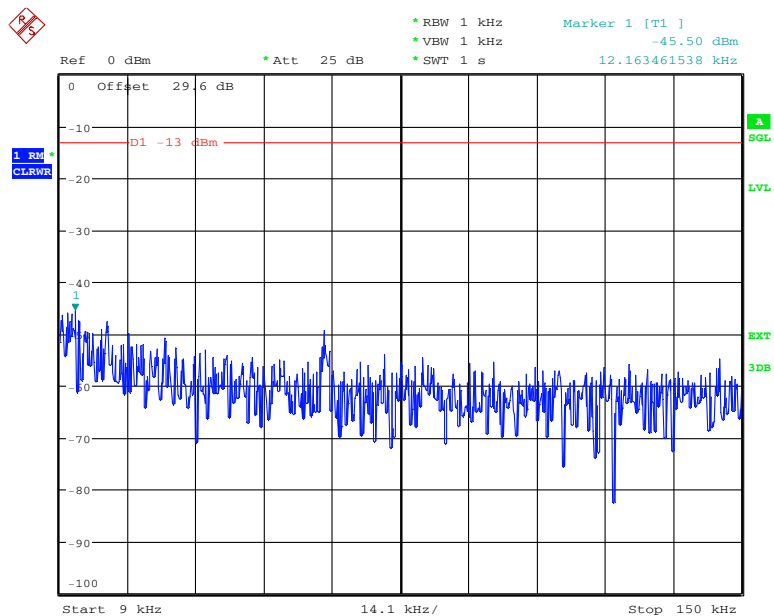
**Figure 7-61: Spurious Emissions (Lower band edge)  
– 16QAM (760.5 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 11:06:32

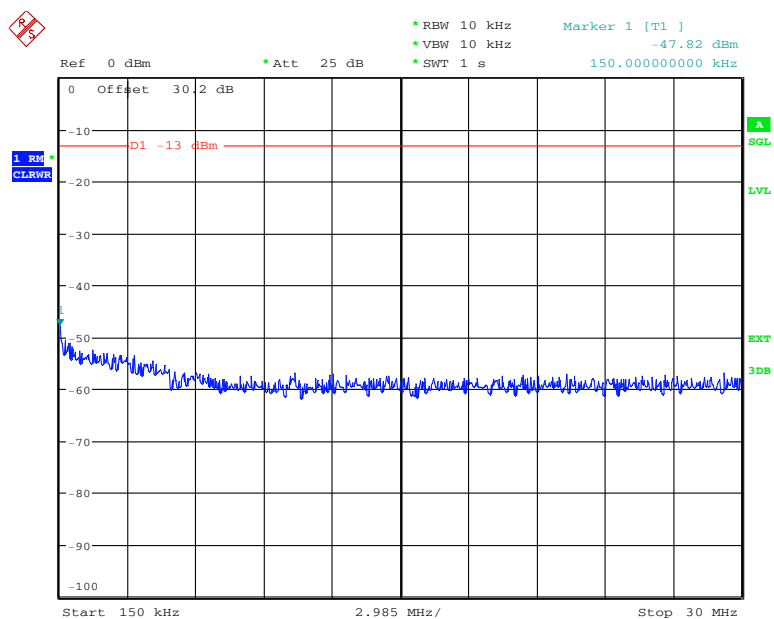
**Figure 7-62: Spurious Emissions (Upper band edge)  
– 16QAM (765.5 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 09:26:58

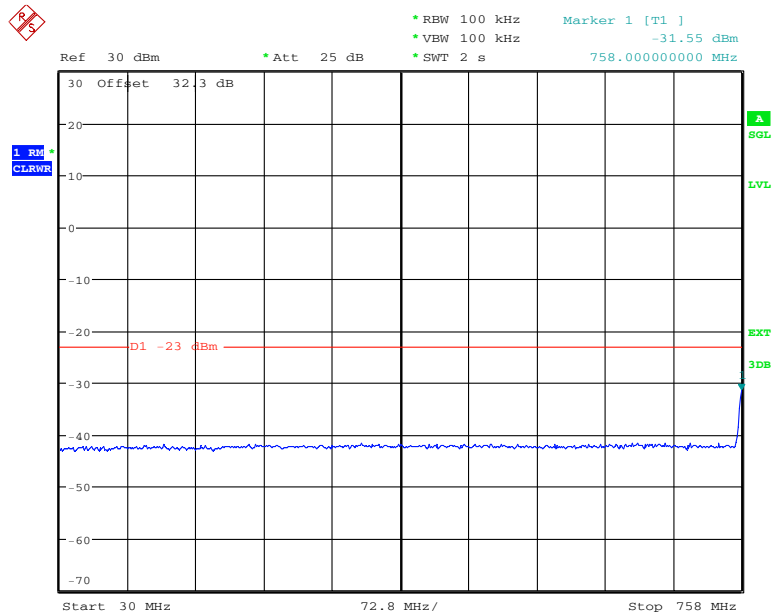
**Figure 7-63: Spurious Emissions (9kHz – 150kHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 09:47:55

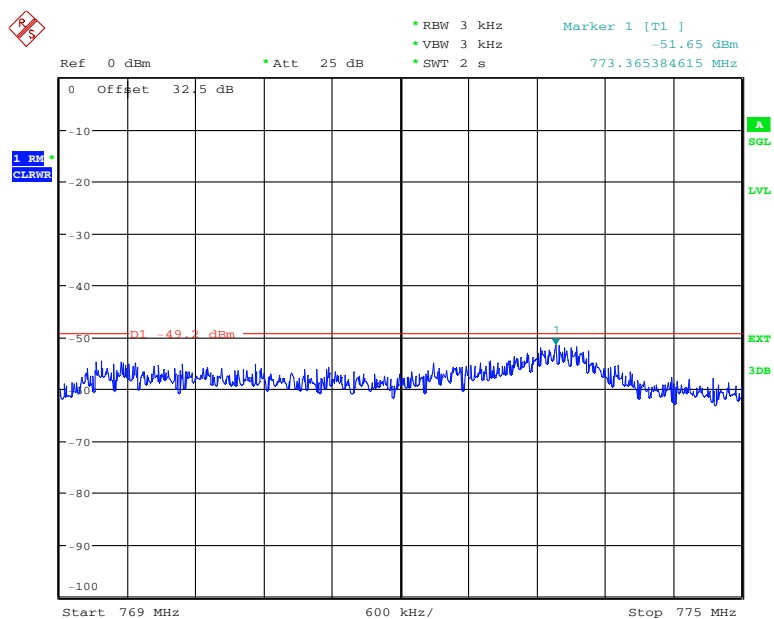
**Figure 7-64: Spurious Emissions (150kHz – 30MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 8.FEB.2011 15:08:09

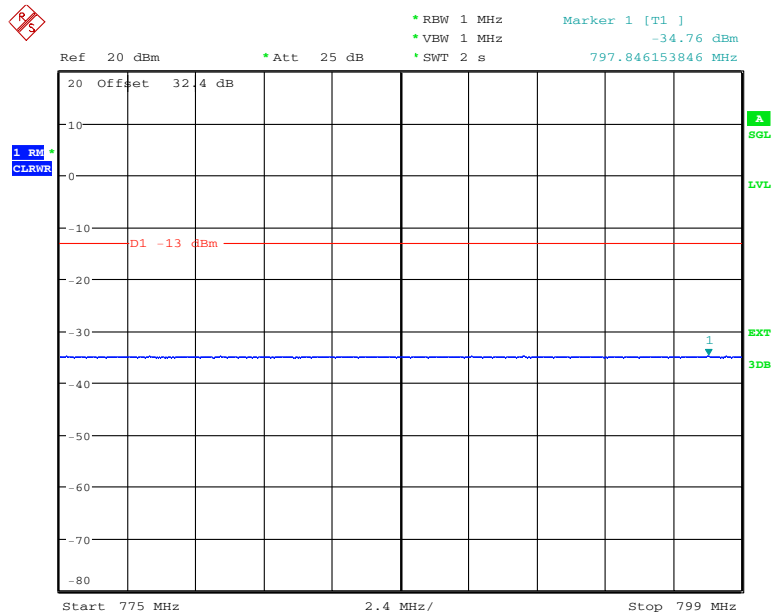
**Figure 7-65: Spurious Emissions (30MHz – 758MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 12:59:01

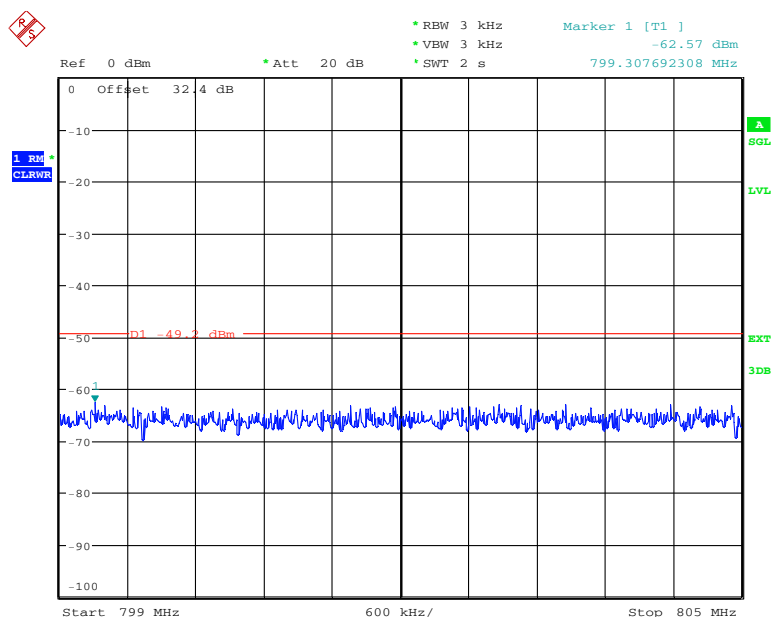
**Figure 7-66: Spurious Emissions (769MHz – 775MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 13:44:46

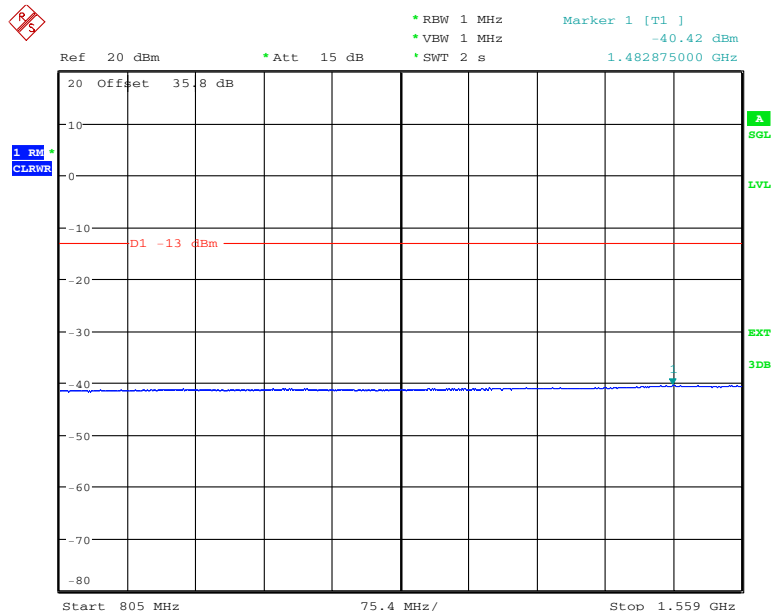
**Figure 7-67: Spurious Emissions (775MHz – 799MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 13:35:30

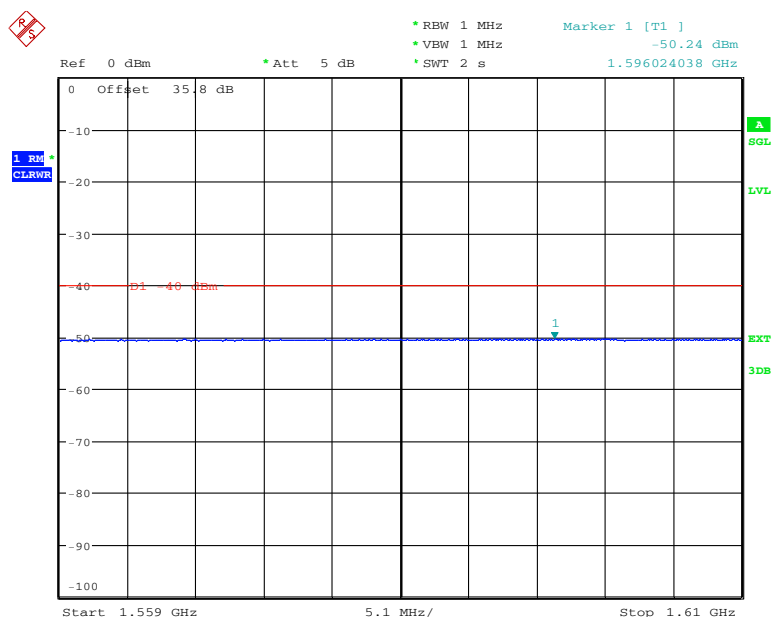
**Figure 7-68: Spurious Emissions (799MHz – 805MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 14:16:15

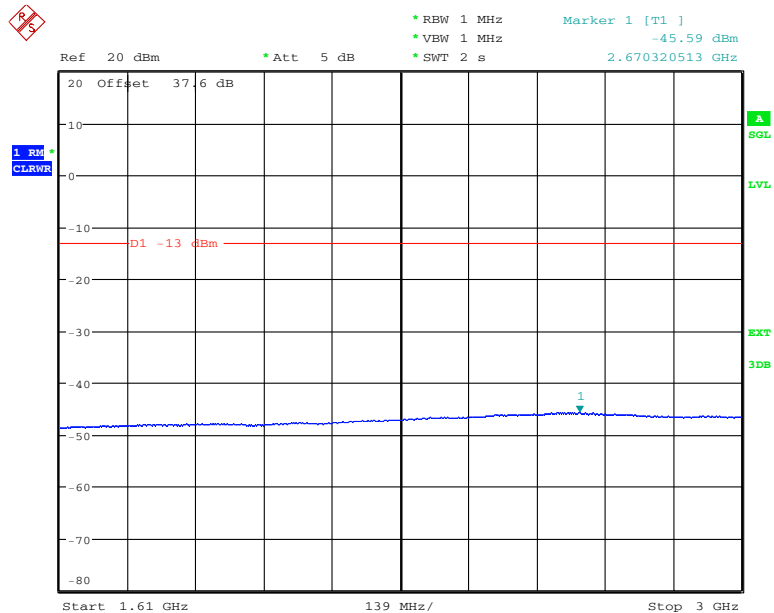
**Figure 7-69: Spurious Emissions (805MHz – 1559MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 14:21:39

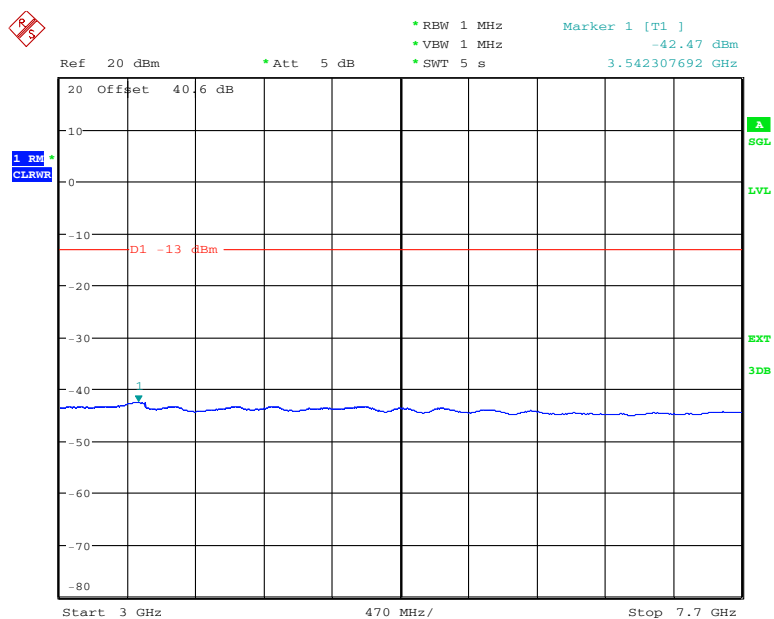
**Figure 7-70: Spurious Emissions (1559MHz – 1610MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 14:59:31

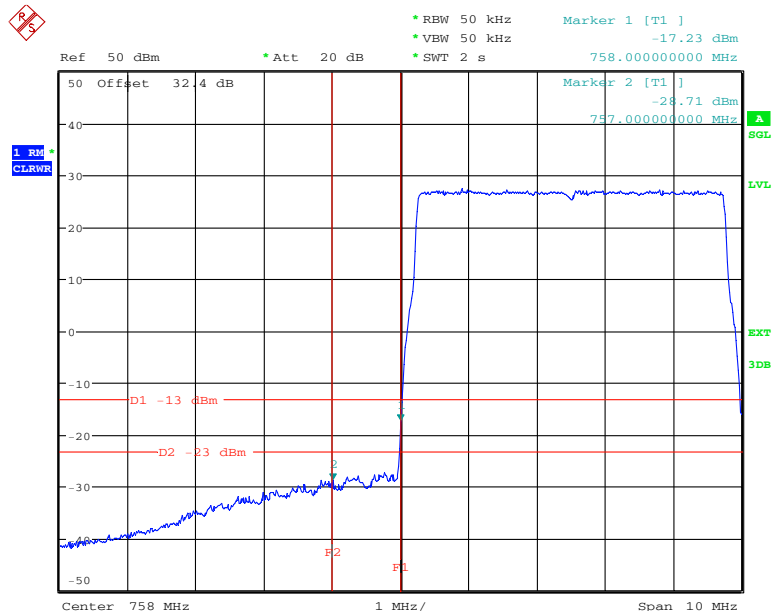
**Figure 7-71: Spurious Emissions (1610MHz – 3GHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

The test report shall not be reproduced except in full without the written approval of the testing laboratory



Date: 4.FEB.2011 14:56:10

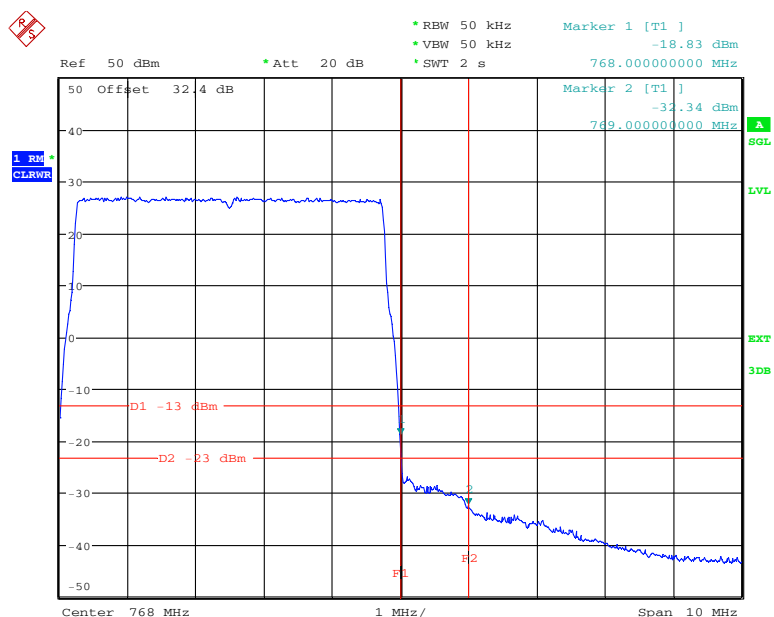
**Figure 7-72: Spurious Emissions (3GHz – 7.7GHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 09:11:33

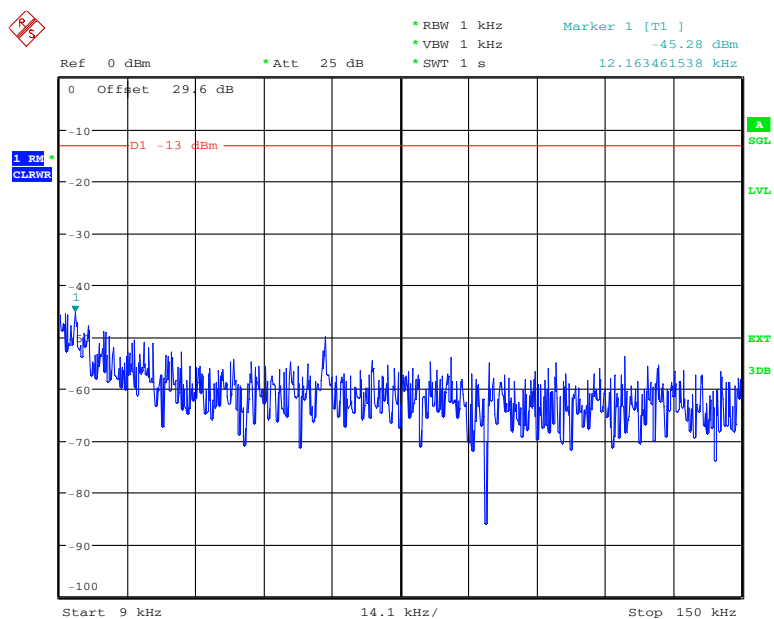
**Figure 7-73: Spurious Emissions (Lower band edge)  
– 64QAM (760.5 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 11:07:25

**Figure 7-74: Spurious Emissions (Upper band edge)  
– 64QAM (765.5 MHz) (5MHz Channel BW)**

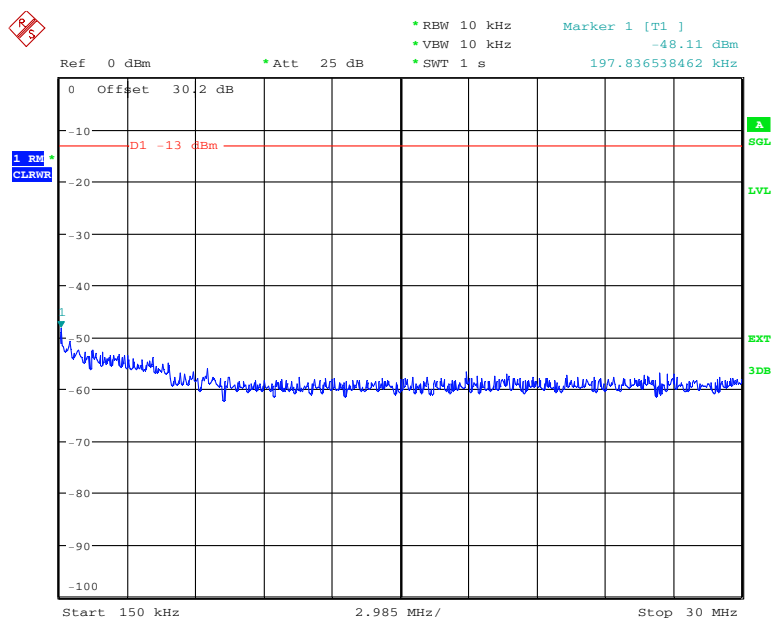


Date: 4.FEB.2011 09:27:38

**Figure 7-75: Spurious Emissions (9kHz – 150kHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

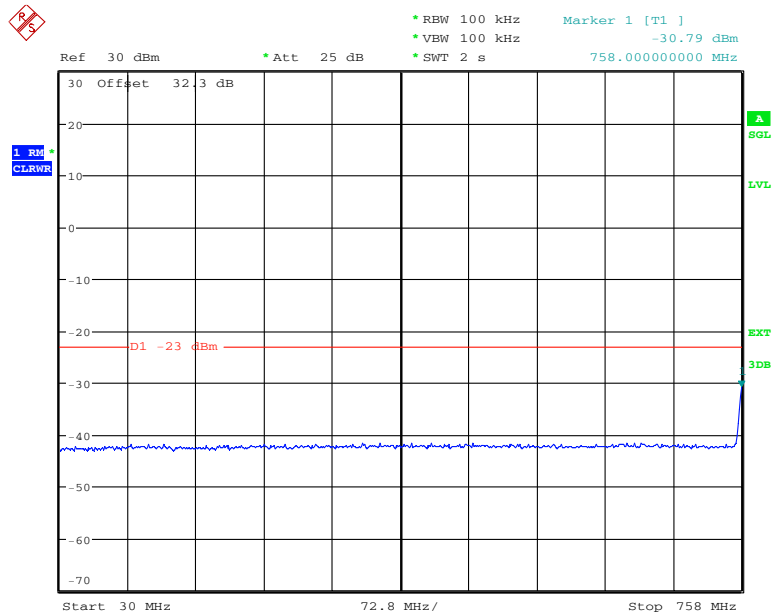
The test report shall not be reproduced except in full without the written approval of the testing laboratory





Date: 4.FEB.2011 09:48:22

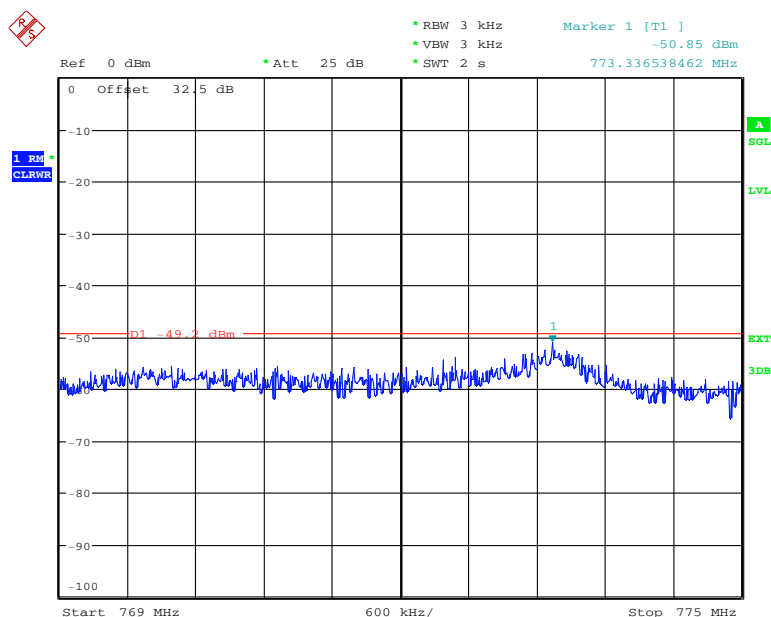
**Figure 7-76: Spurious Emissions (150kHz – 30MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**



Date: 8.FEB.2011 15:09:29

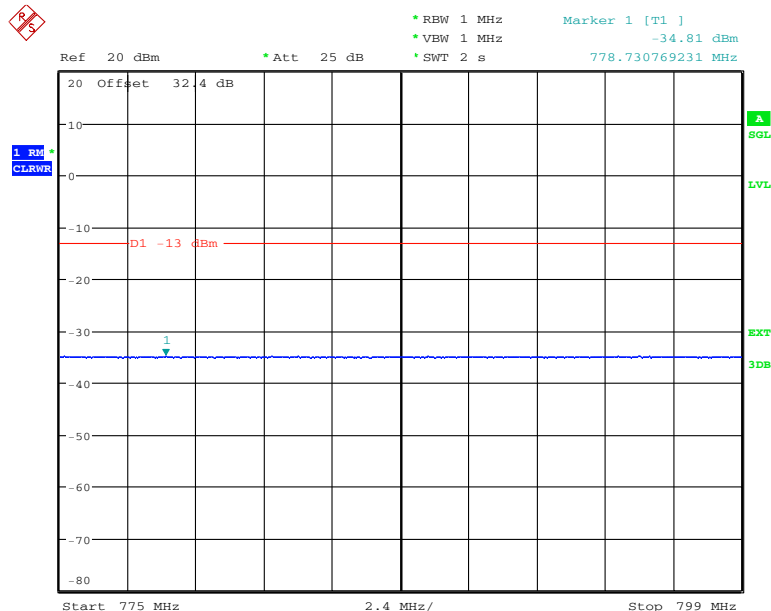
**Figure 7-77: Spurious Emissions (30MHz – 758MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 13:00:05

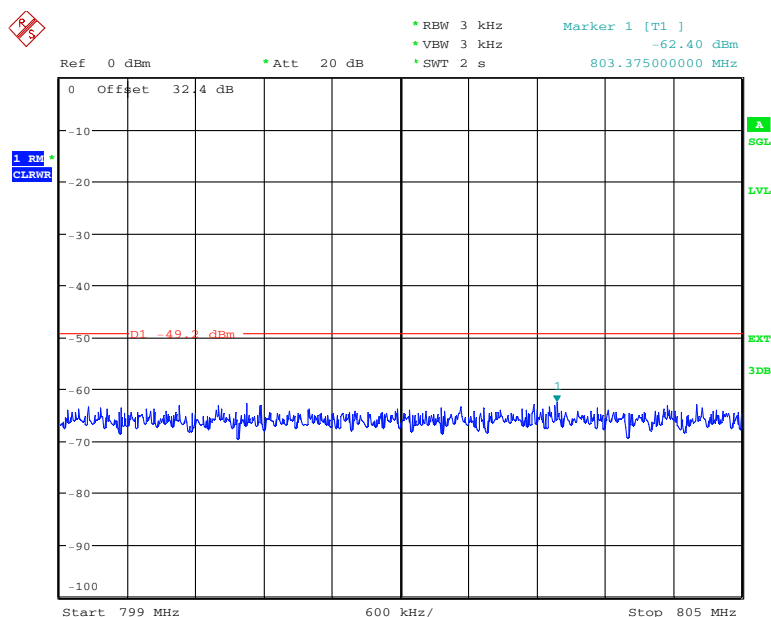
**Figure 7-78: Spurious Emissions (769MHz – 775MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 13:45:16

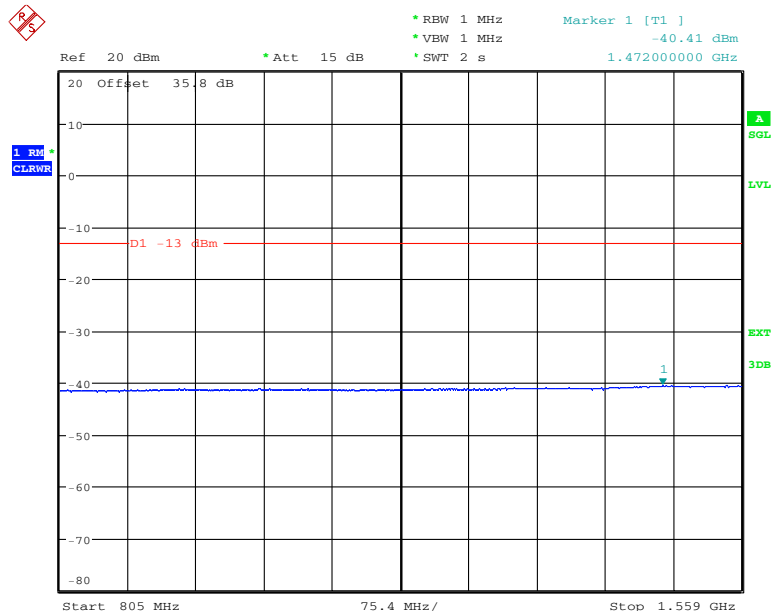
**Figure 7-79: Spurious Emissions (775MHz – 799MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 13:36:03

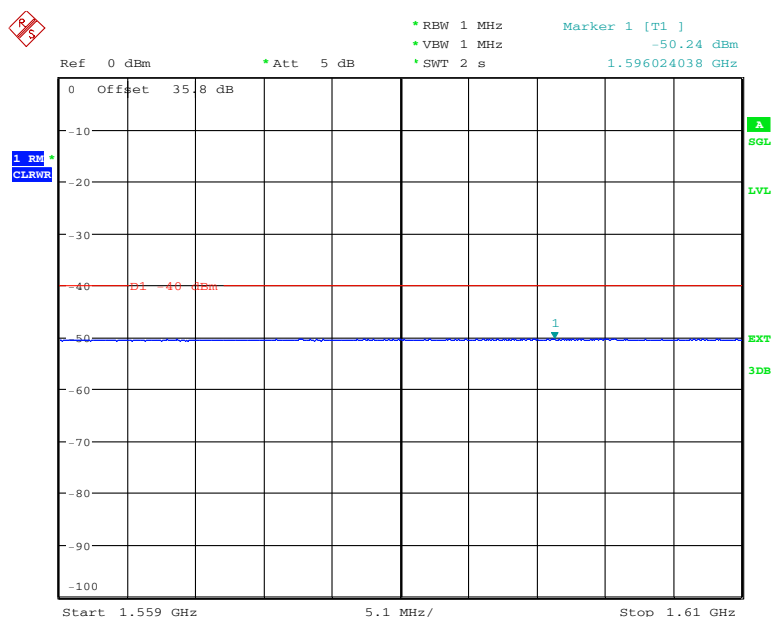
**Figure 7-80: Spurious Emissions (799MHz – 805MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 14:16:46

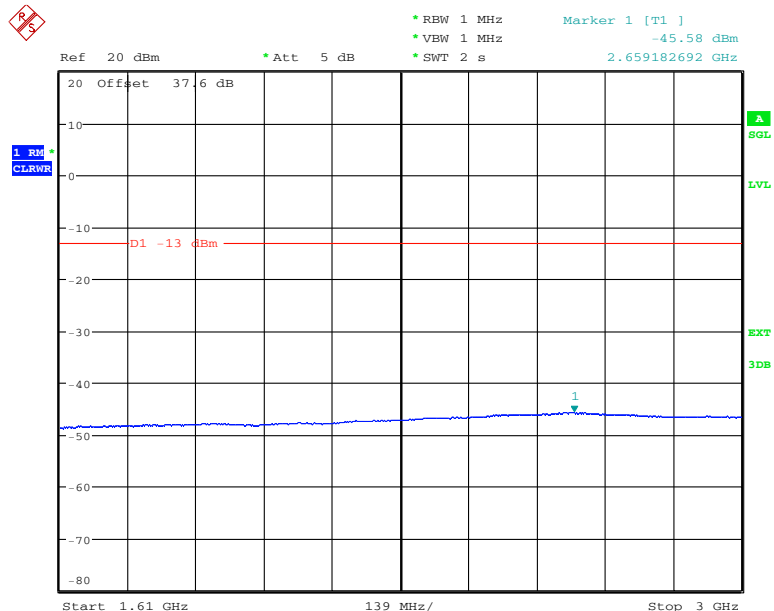
**Figure 7-81: Spurious Emissions (805MHz – 1559MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 14:22:10

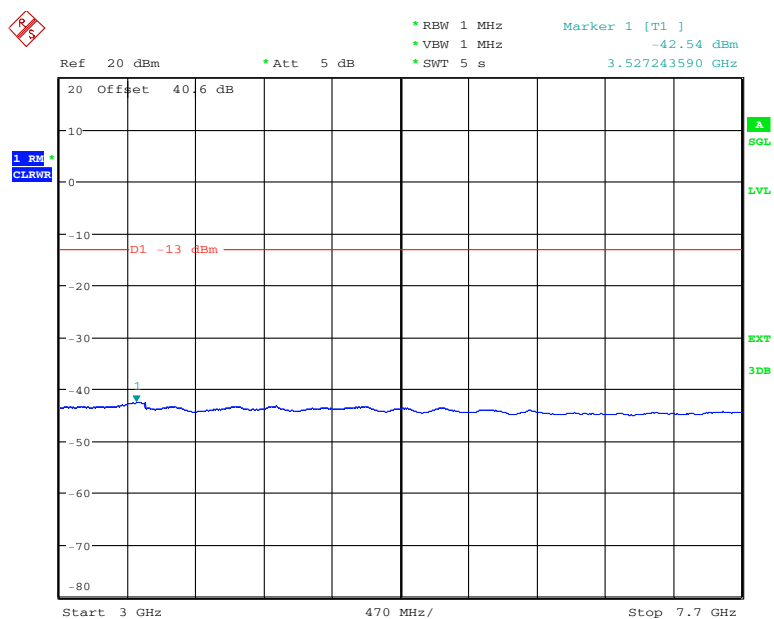
**Figure 7-82: Spurious Emissions (1559MHz – 1610MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 14:58:46

**Figure 7-83: Spurious Emissions (1610MHz – 3GHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

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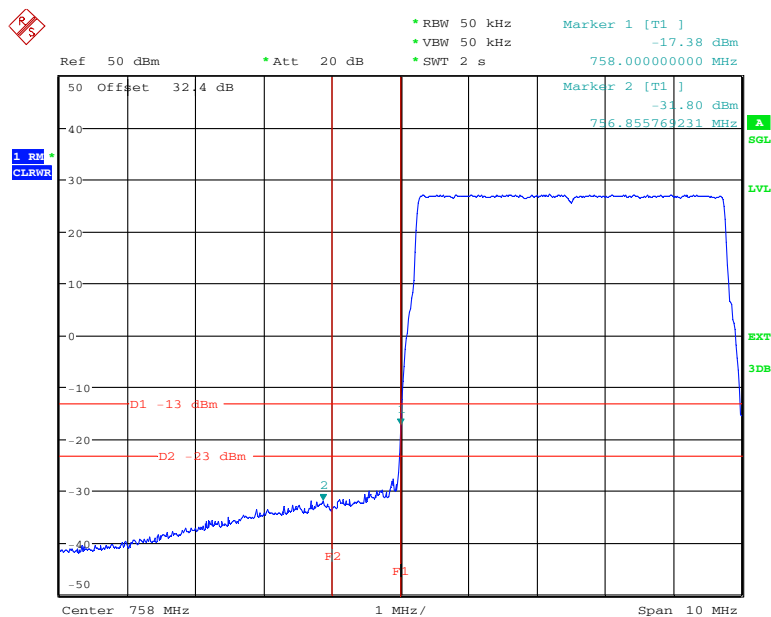


Date: 4.FEB.2011 14:57:06

**Figure 7-84: Spurious Emissions (3GHz – 7.7GHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

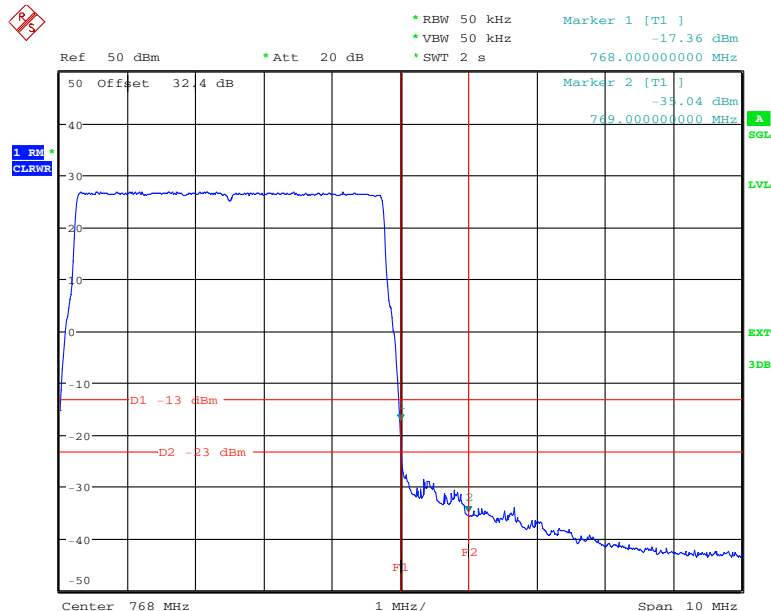
The test report shall not be reproduced except in full without the written approval of the testing laboratory

## Config A TX2:



Date: 7.FEB.2011 08:55:58

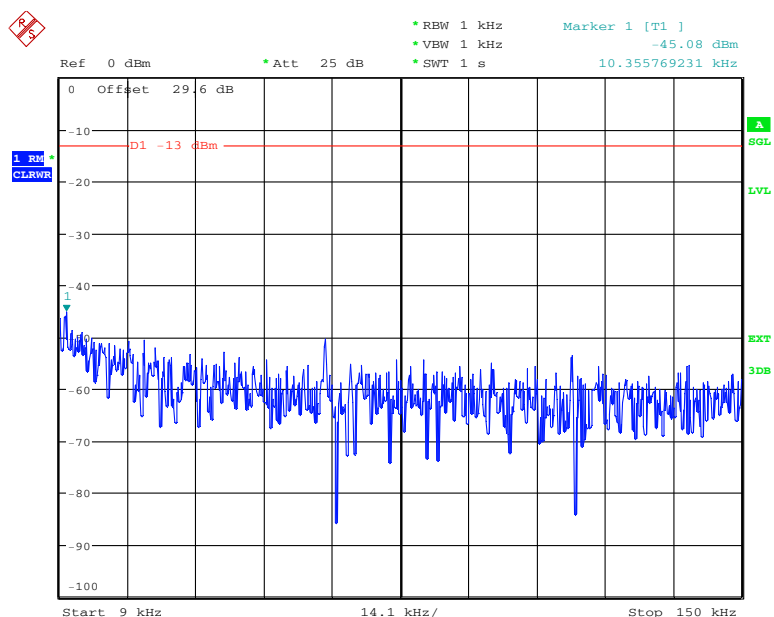
**Figure 7-85: Spurious Emissions (Lower band edge)  
– QPSK (760.5 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 11:00:55

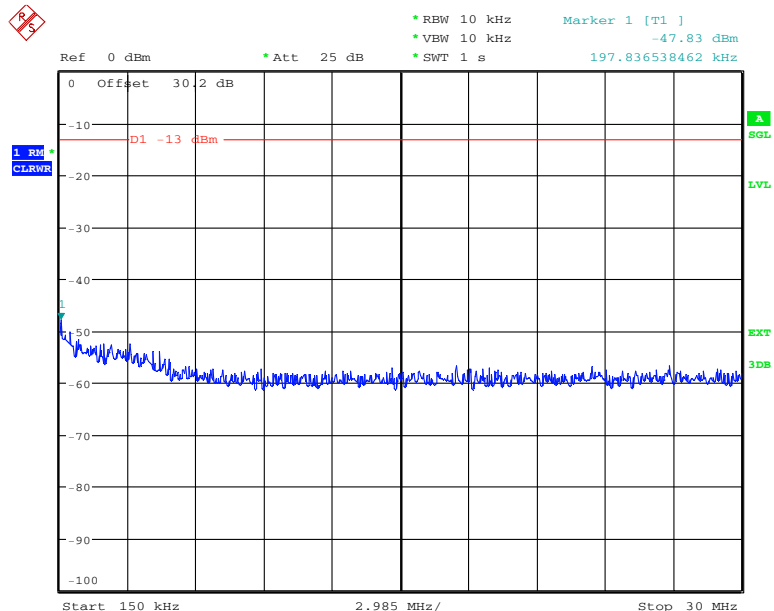
**Figure 7-86: Spurious Emissions (Upper band edge)  
– QPSK (765.5 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 09:23:01

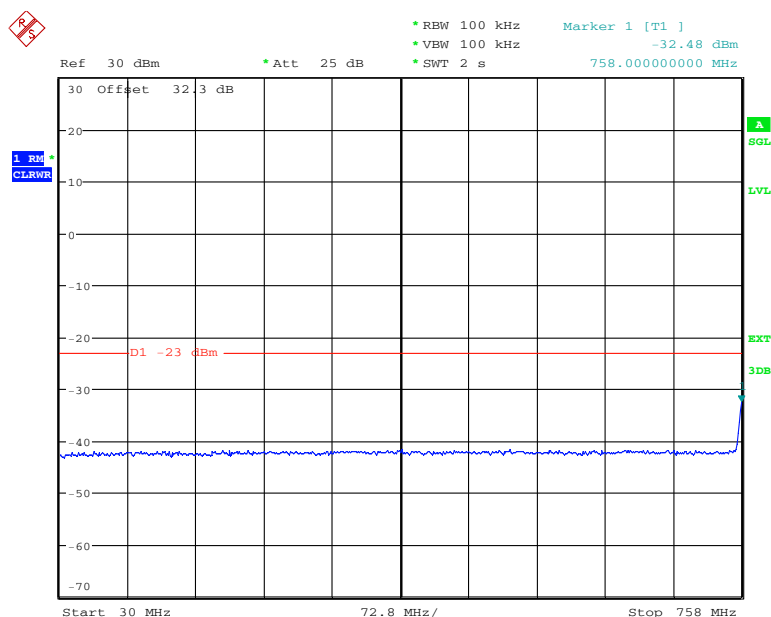
**Figure 7-87: Spurious Emissions (9kHz – 150kHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 09:46:07

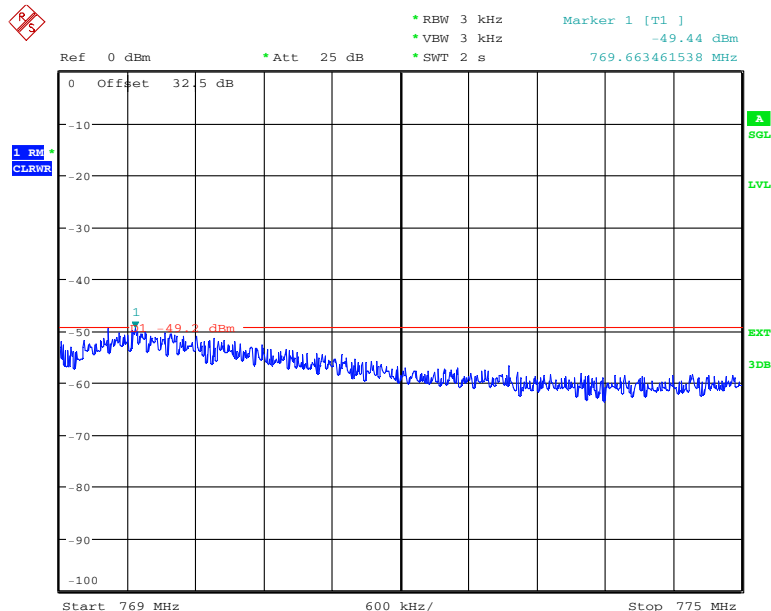
**Figure 7-88: Spurious Emissions (150kHz – 30MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**

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Date: 8.FEB.2011 15:11:14

**Figure 7-89: Spurious Emissions (30MHz – 758MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**

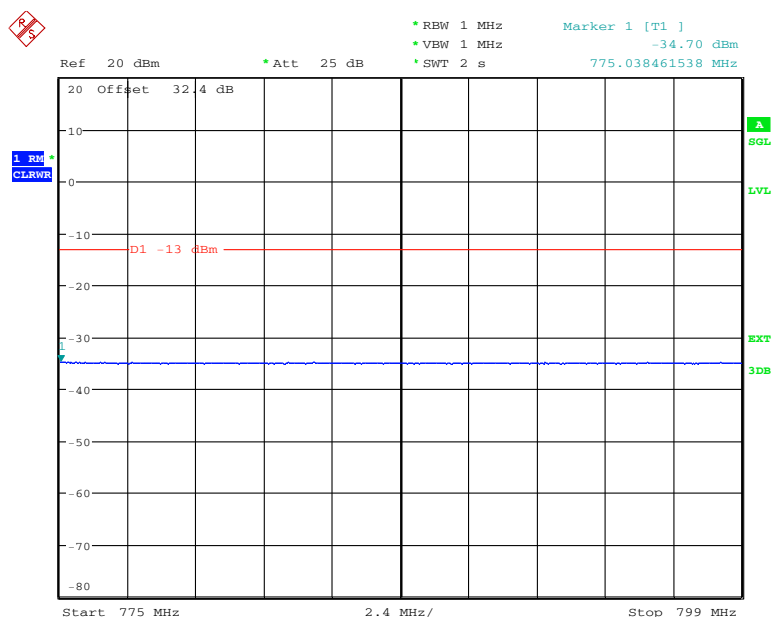


Date: 4.FEB.2011 13:04:13

**Figure 7-90: Spurious Emissions (769MHz – 775MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**

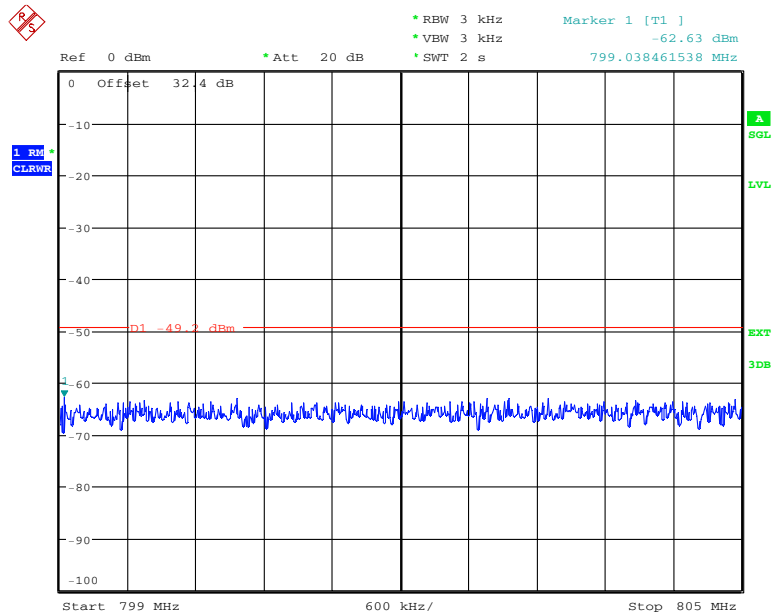
The test report shall not be reproduced except in full without the written approval of the testing laboratory





Date: 4.FEB.2011 13:41:46

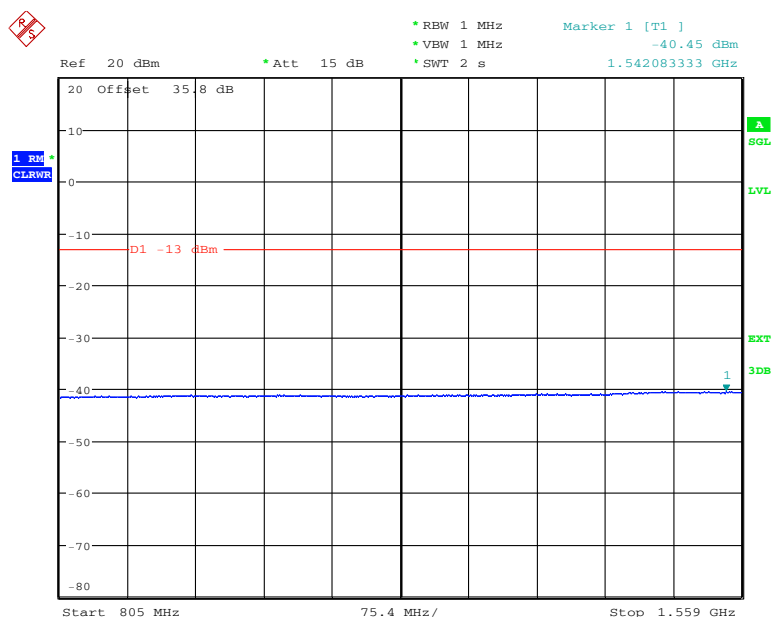
**Figure 7-91: Spurious Emissions (775MHz – 799MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 13:38:33

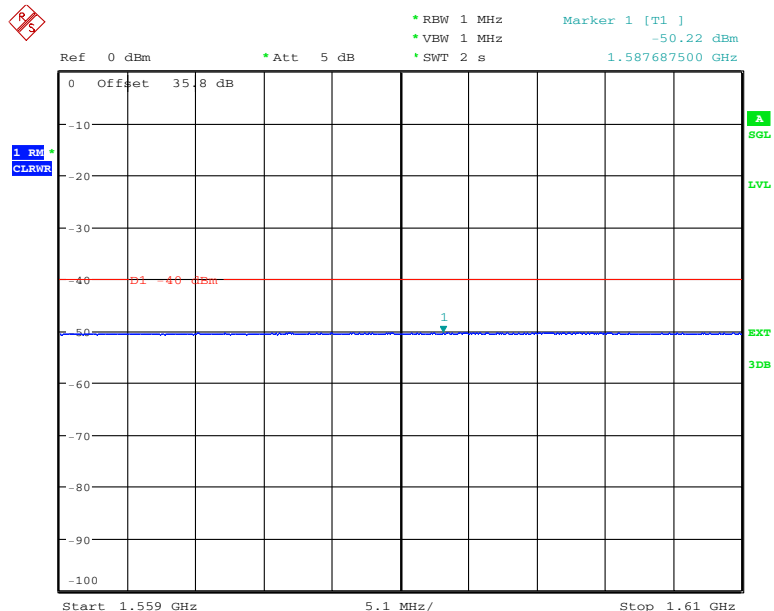
**Figure 7-92: Spurious Emissions (799MHz – 805MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 14:11:06

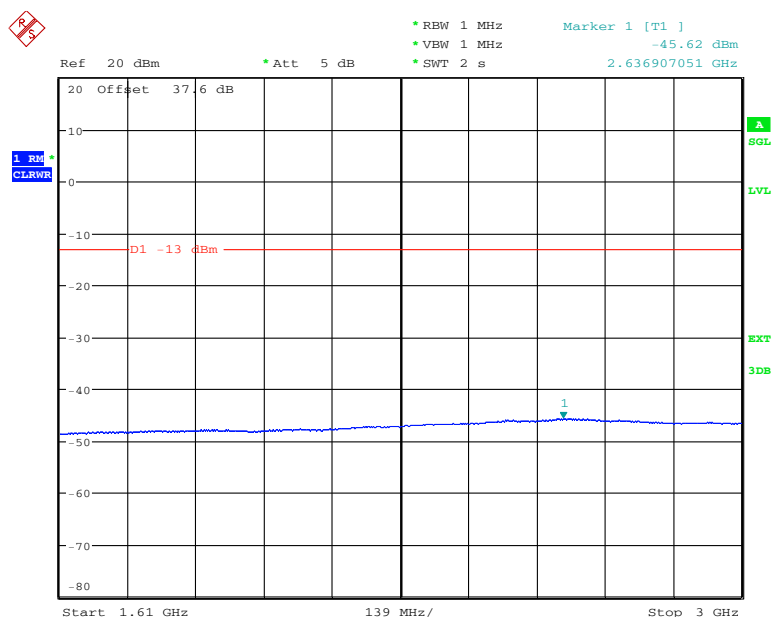
**Figure 7-93: Spurious Emissions (805MHz – 1559MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 14:24:11

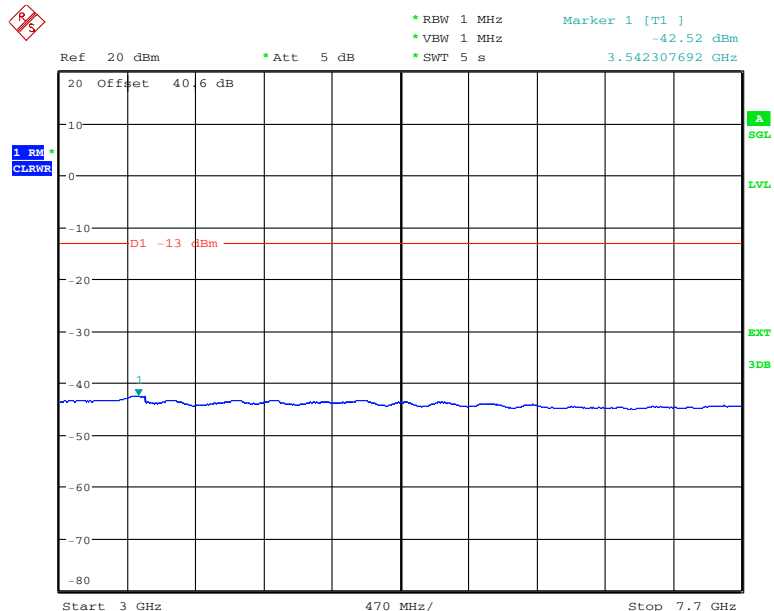
**Figure 7-94: Spurious Emissions (1559MHz – 1610MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 15:02:38

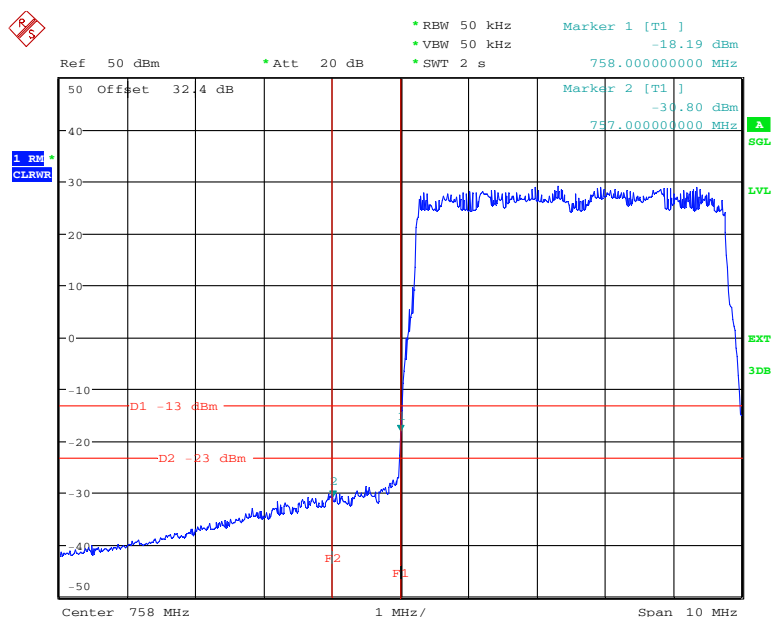
**Figure 7-95: Spurious Emissions (1610MHz – 3GHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 14:48:17

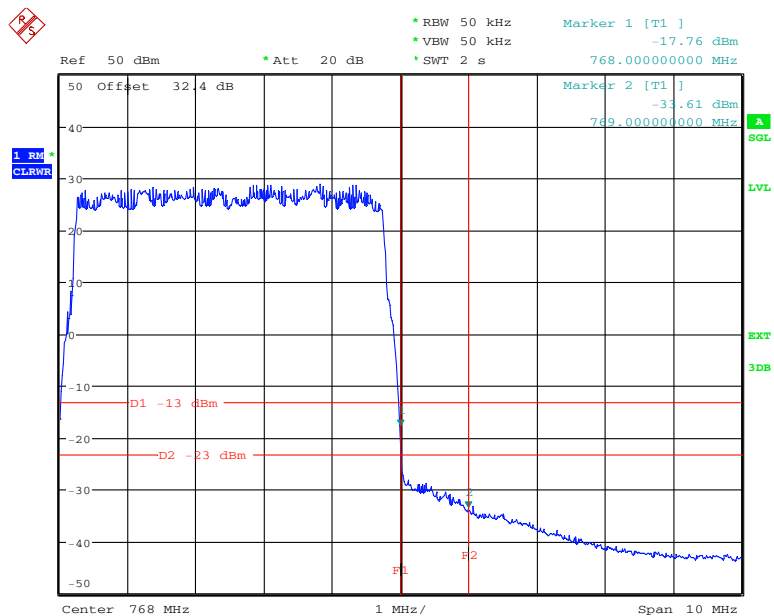
**Figure 7-96: Spurious Emissions (3GHz – 7.7GHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 08:58:26

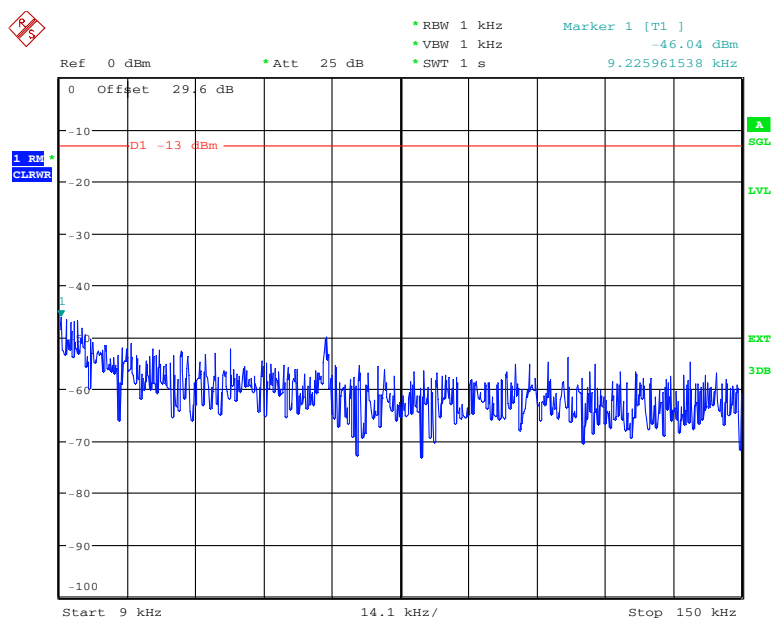
**Figure 7-97: Spurious Emissions (Lower band edge)  
– 16QAM (760.5 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 11:02:11

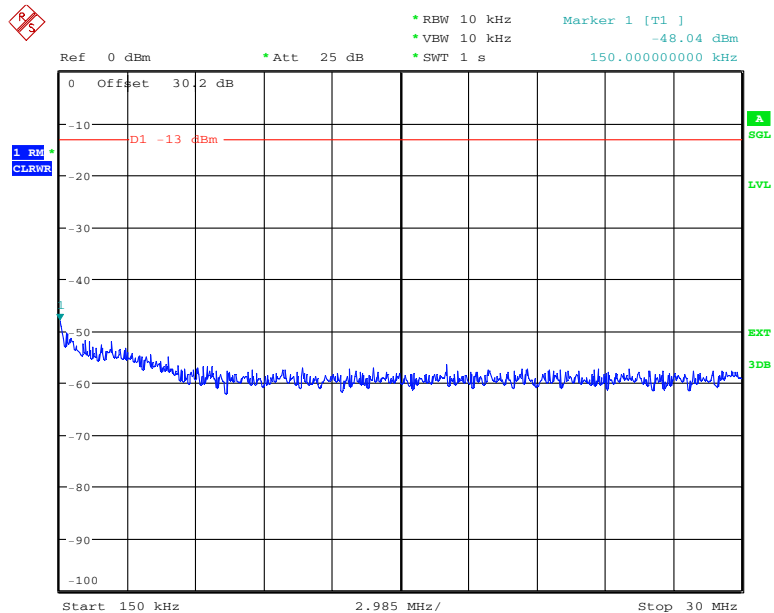
**Figure 7-98: Spurious Emissions (Upper band edge)  
– 16QAM (765.5 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 09:23:58

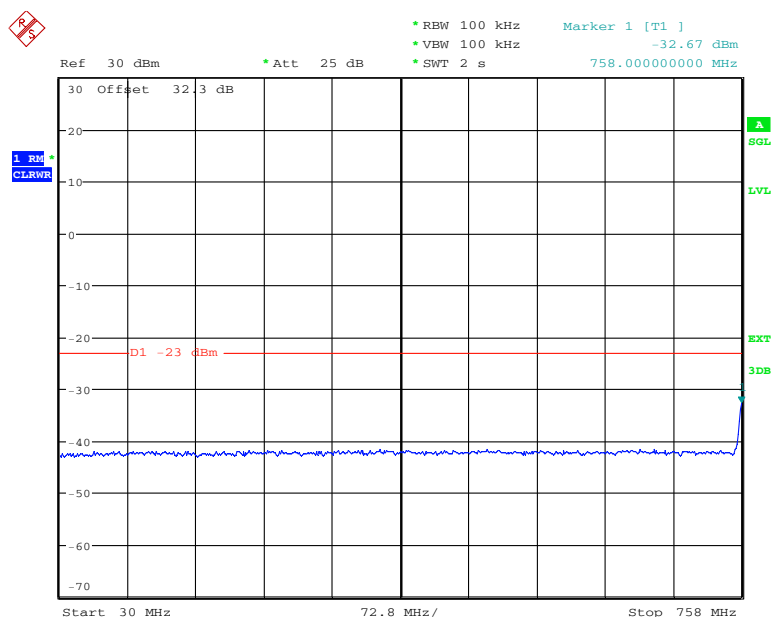
**Figure 7-99: Spurious Emissions (9kHz – 150kHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 09:45:36

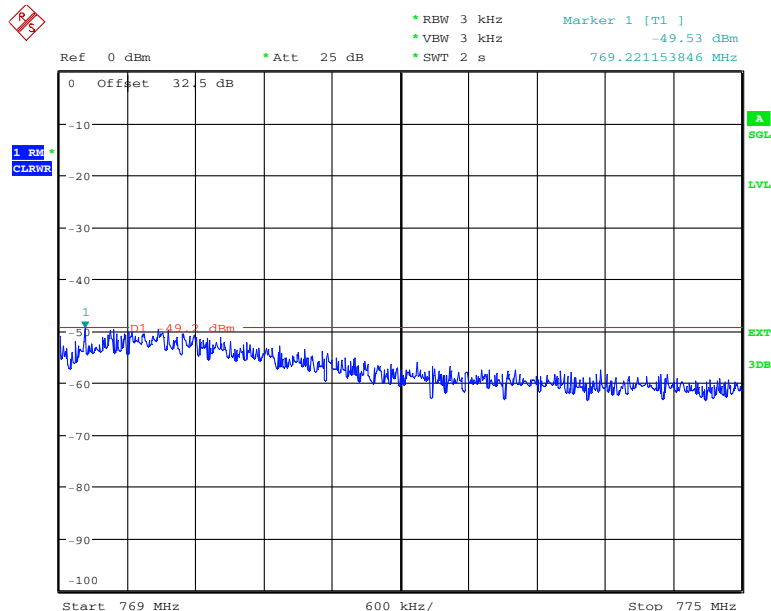
**Figure 7-100: Spurious Emissions (150kHz – 30MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 8.FEB.2011 15:12:22

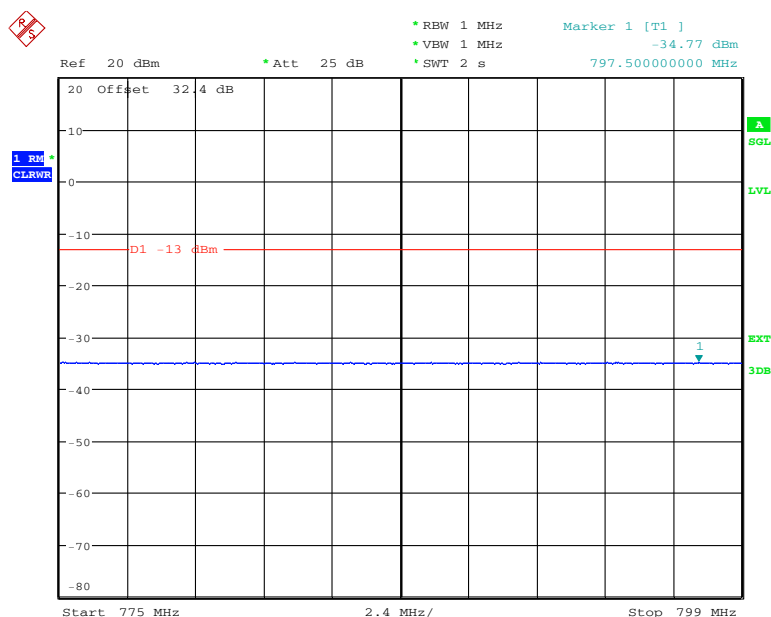
**Figure 7-101: Spurious Emissions (30MHz – 758MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 13:05:42

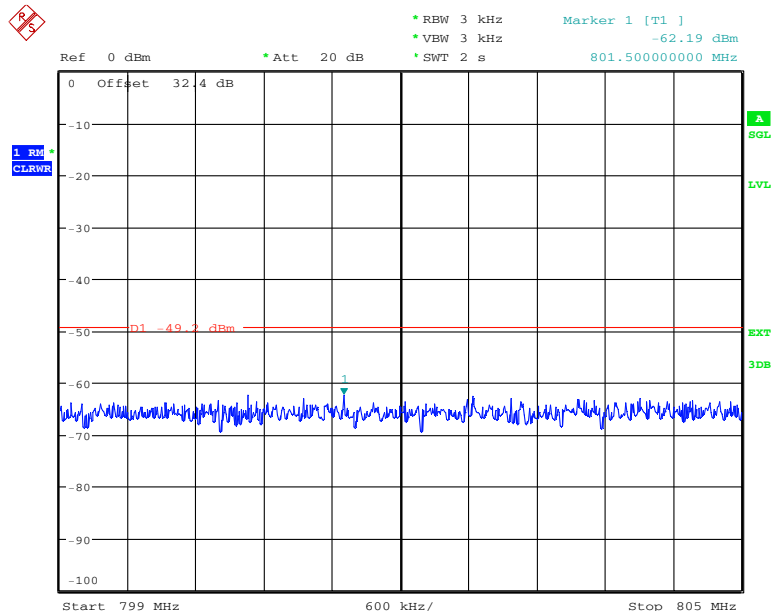
**Figure 7-102: Spurious Emissions (769MHz – 775MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 13:42:20

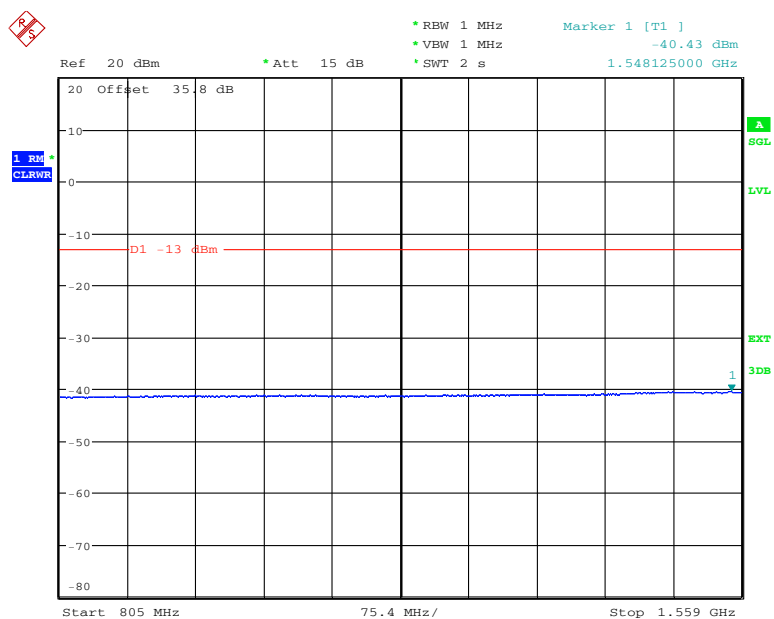
**Figure 7-103: Spurious Emissions (775MHz – 799MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 13:38:05

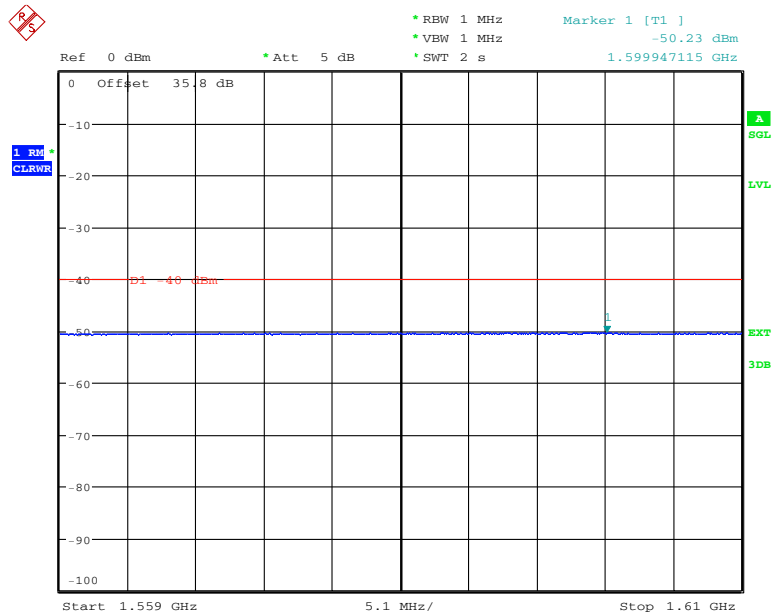
**Figure 7-104: Spurious Emissions (799MHz – 805MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 14:11:53

**Figure 7-105: Spurious Emissions (805MHz – 1559MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

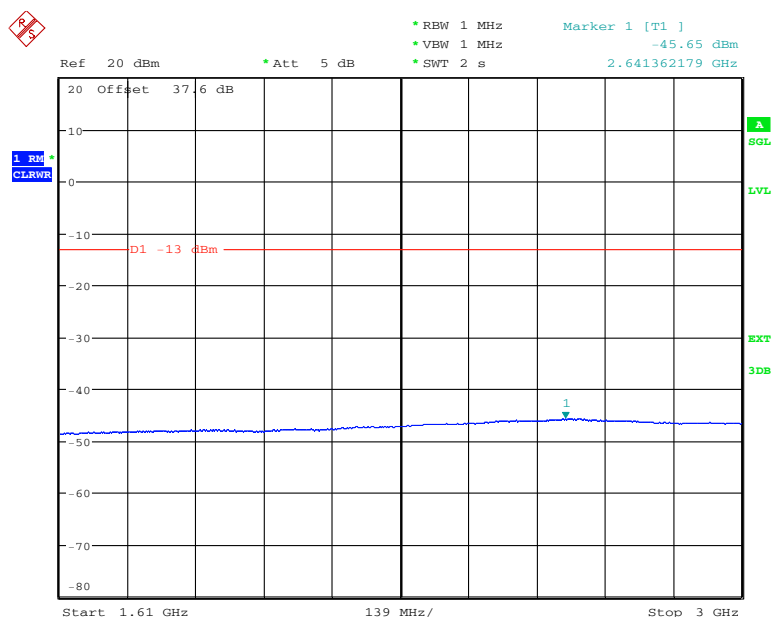


Date: 4.FEB.2011 14:24:39

**Figure 7-106: Spurious Emissions (1559MHz – 1610MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

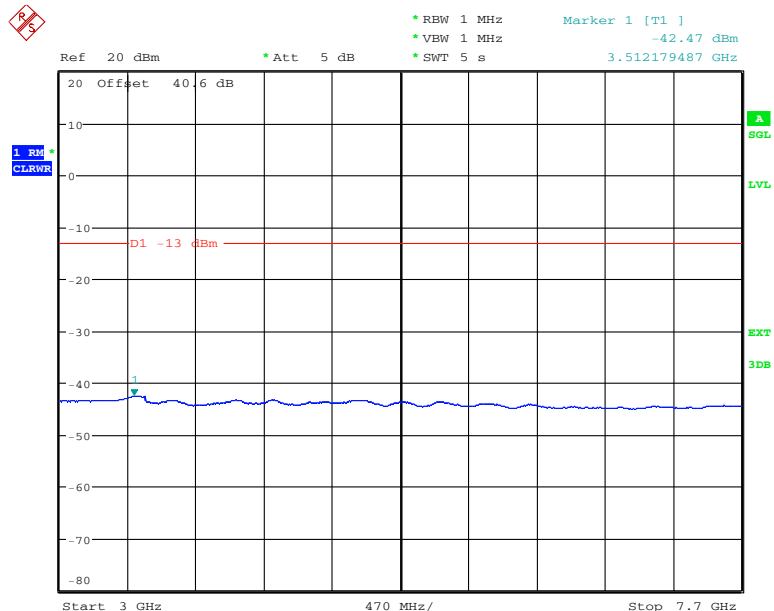
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Date: 4.FEB.2011 15:02:05

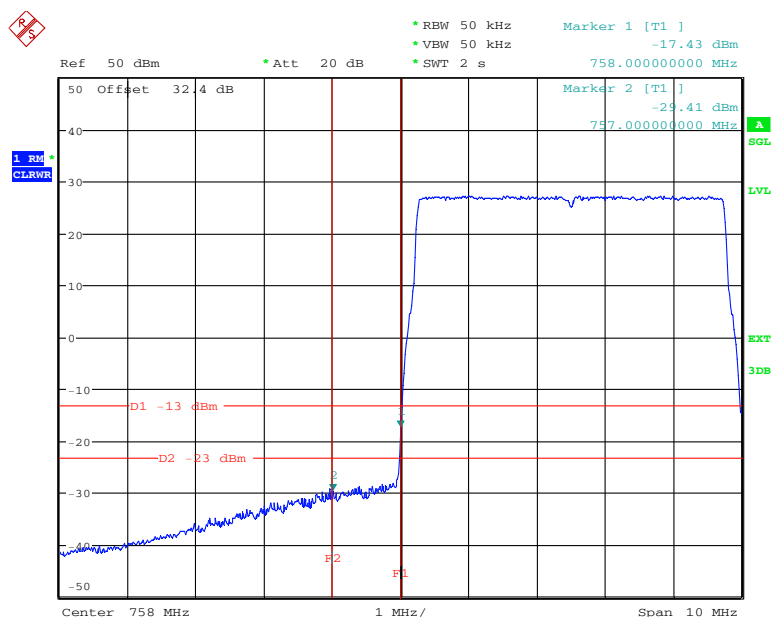
**Figure 7-107: Spurious Emissions (1610MHz – 3GHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 14:49:34

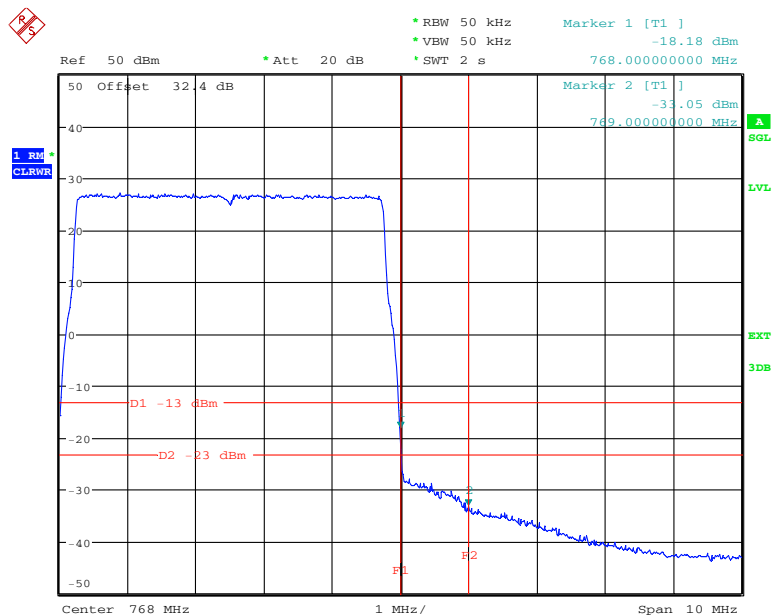
**Figure 7-108: Spurious Emissions (3GHz – 7.7GHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 08:59:29

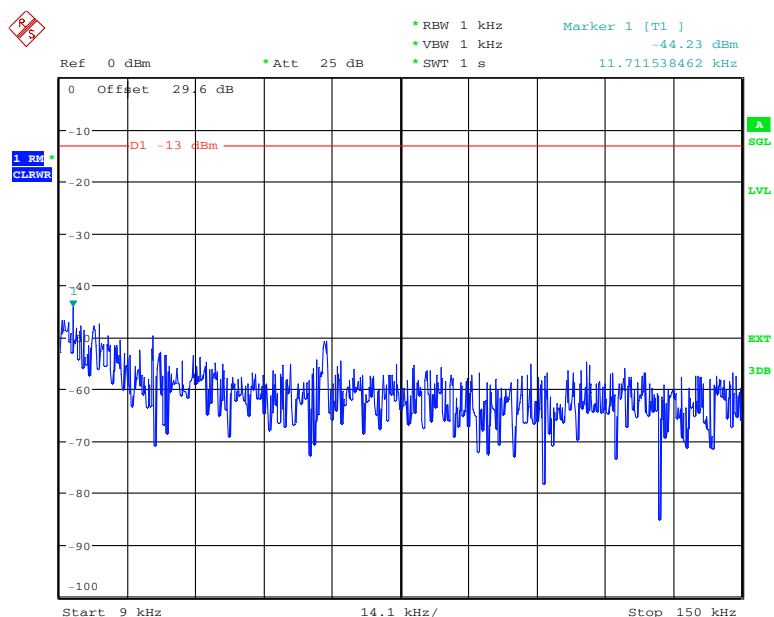
**Figure 7-109: Spurious Emissions (Lower band edge)  
– 64QAM (760.5 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 11:03:07

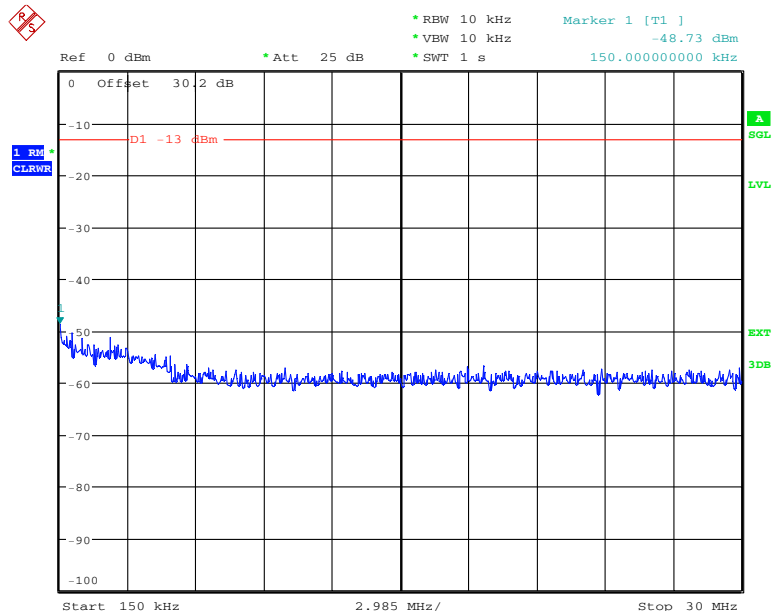
**Figure 7-110: Spurious Emissions (Upper band edge)  
– 64QAM (765.5 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 09:24:32

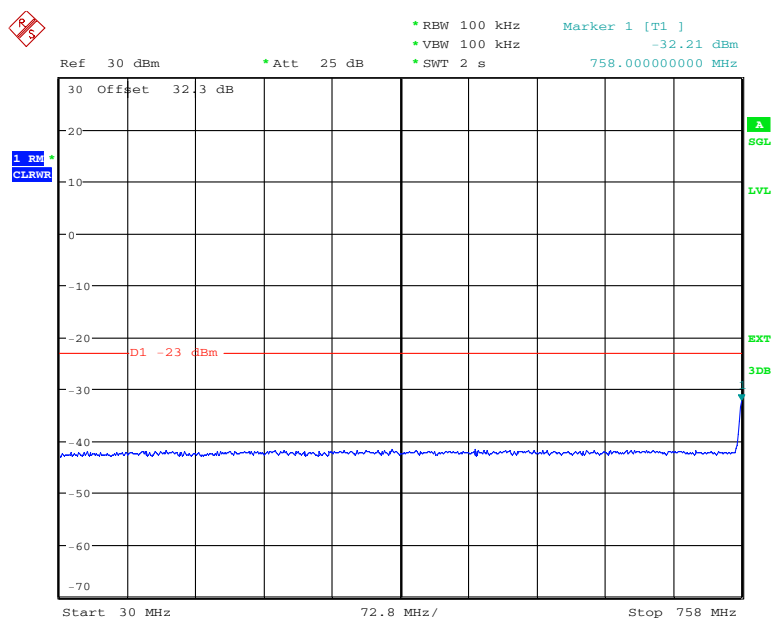
**Figure 7-111: Spurious Emissions (9kHz – 150kHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 09:45:04

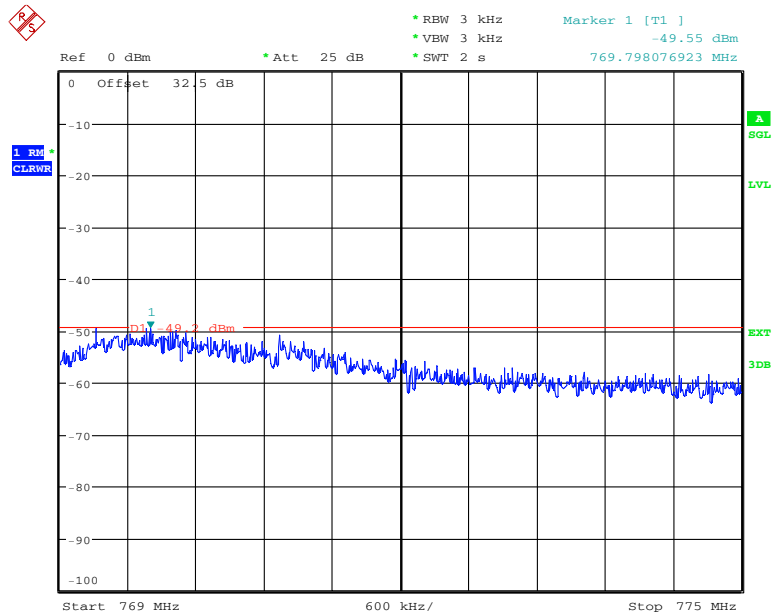
**Figure 7-112: Spurious Emissions (150kHz – 30MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 8.FEB.2011 15:13:27

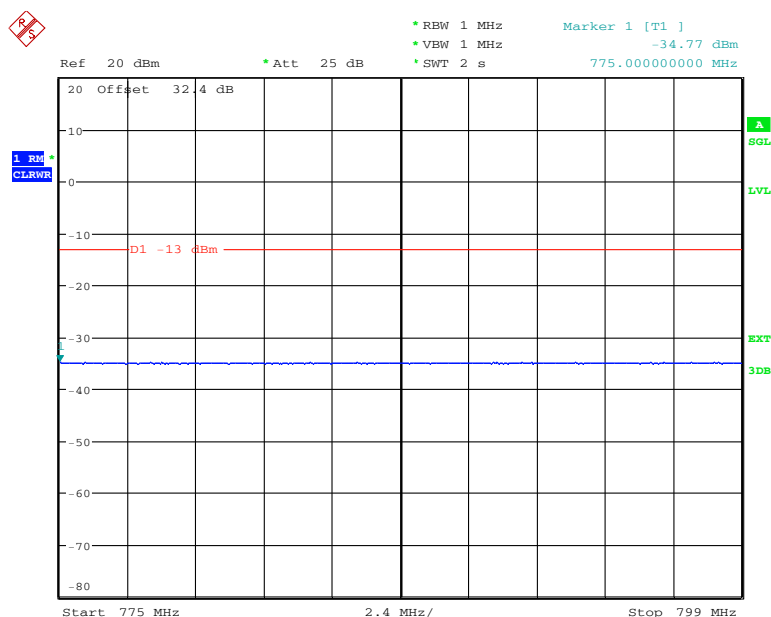
**Figure 7-113: Spurious Emissions (30MHz – 758MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 13:06:31

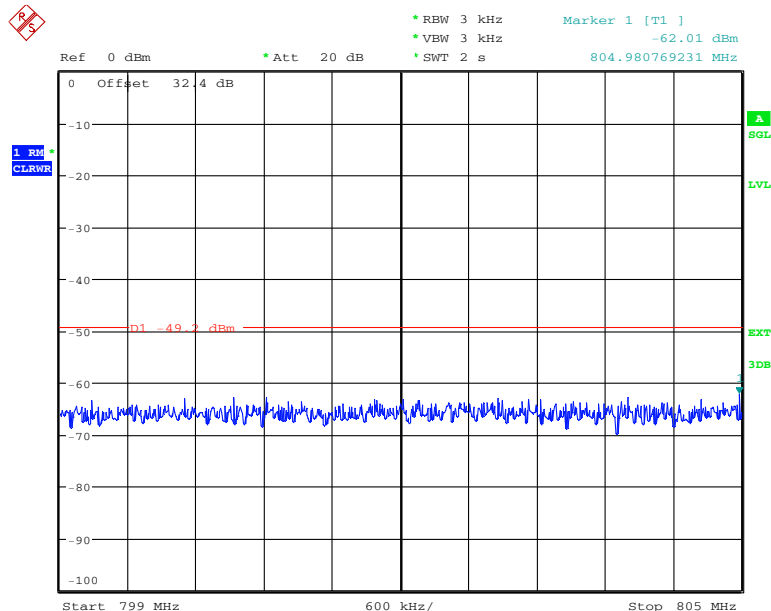
**Figure 7-114: Spurious Emissions (769MHz – 775MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 13:42:51

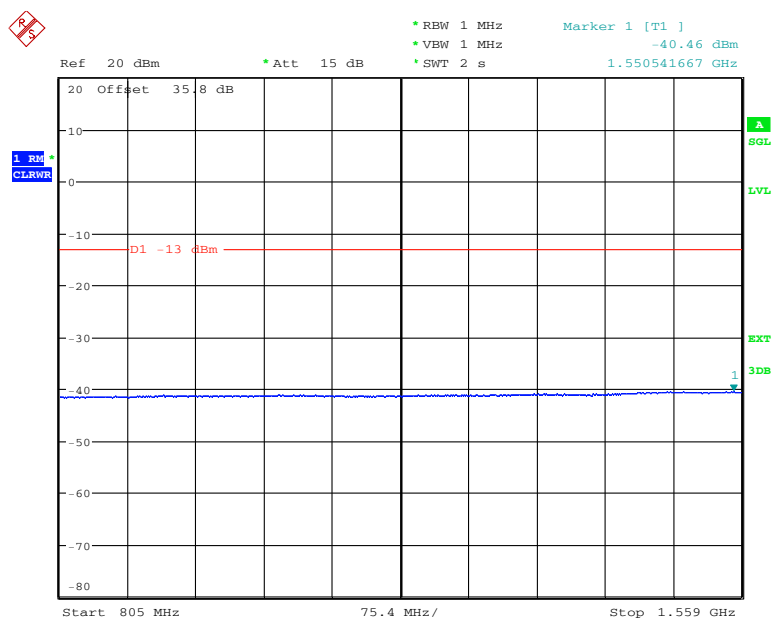
**Figure 7-115: Spurious Emissions (775MHz – 799MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 13:37:43

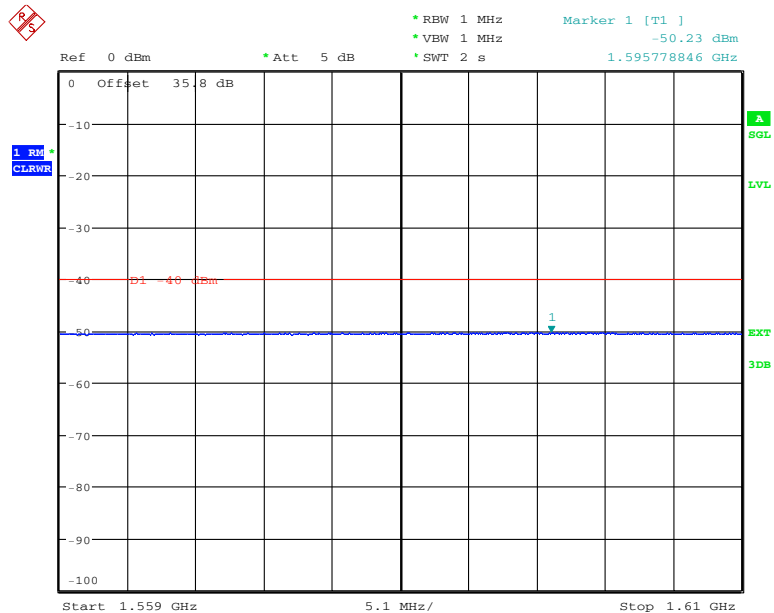
**Figure 7-116: Spurious Emissions (799MHz – 805MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 14:12:32

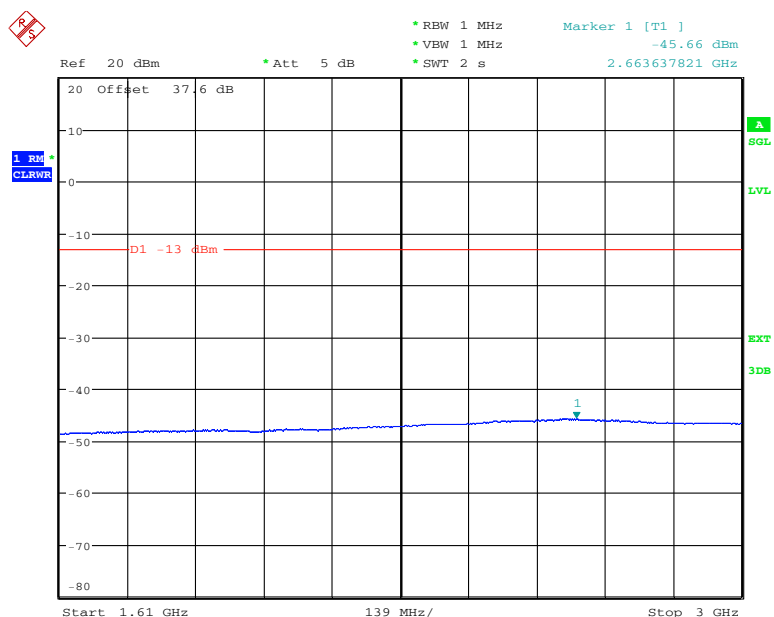
**Figure 7-117: Spurious Emissions (805MHz – 1559MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**



Date: 4.FEB.2011 14:25:10

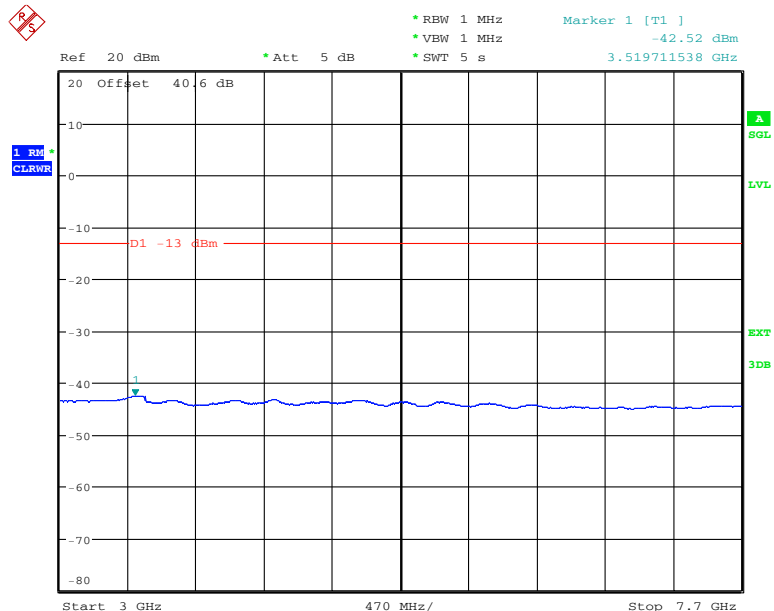
**Figure 7-118: Spurious Emissions (1559MHz – 1610MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 4.FEB.2011 15:01:31

**Figure 7-119: Spurious Emissions (1610MHz – 3GHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

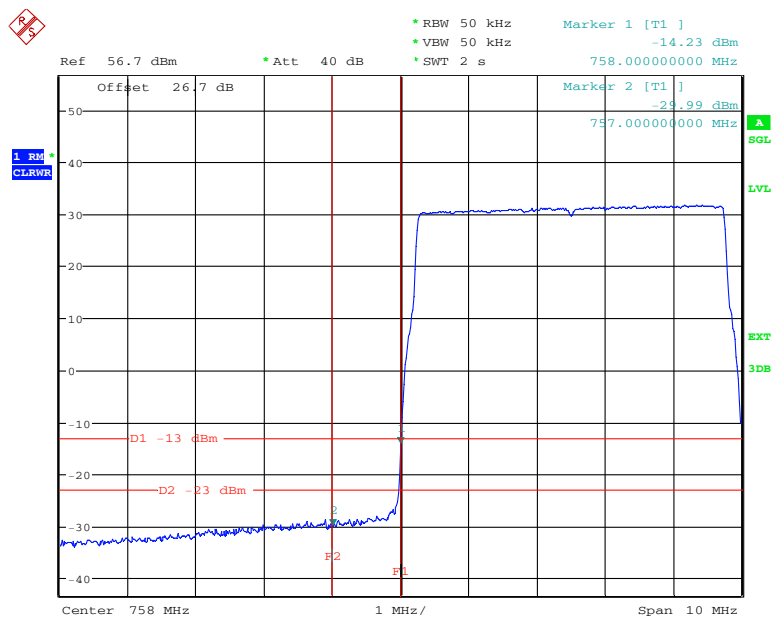


Date: 4.FEB.2011 14:51:06

**Figure 7-120: Spurious Emissions (3GHz – 7.7GHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

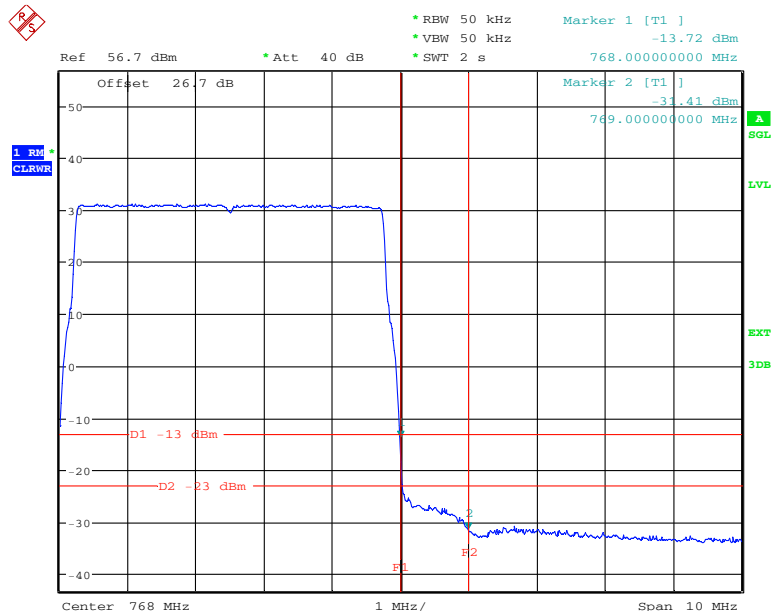
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## Config A TX1+TX2:



Date: 7.FEB.2011 09:16:42

**Figure 7-121: Spurious Emissions (Lower band edge)  
– QPSK (760.5 MHz) (5MHz Channel BW)**

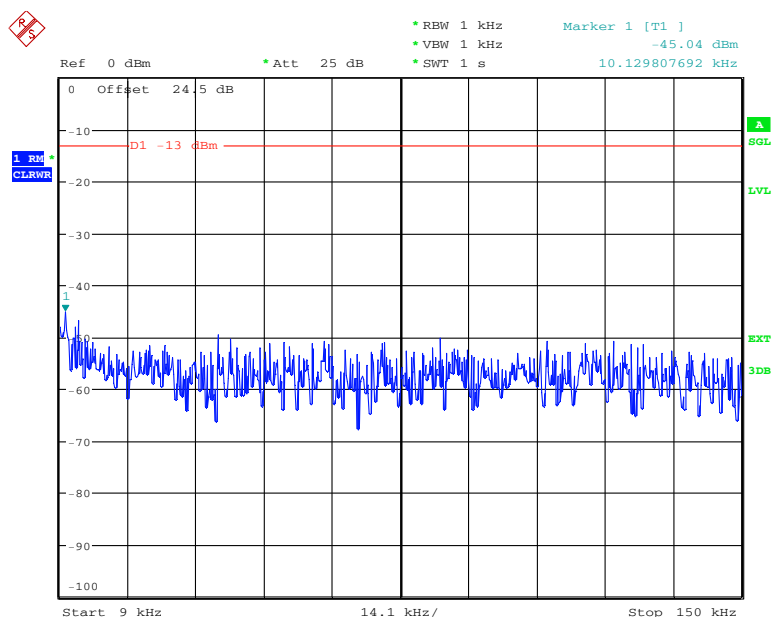


Date: 7.FEB.2011 10:53:21

**Figure 7-122: Spurious Emissions (Upper band edge)  
– QPSK (765.5 MHz) (5MHz Channel BW)**

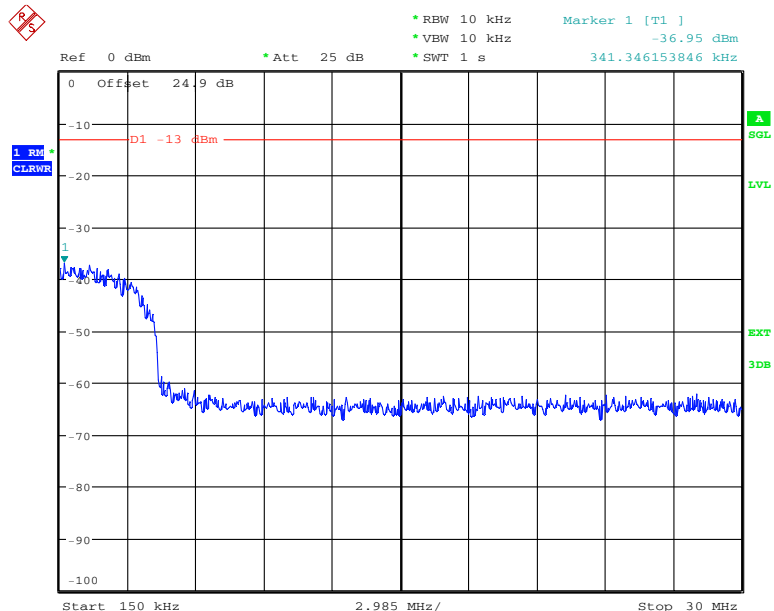
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Date: 7.FEB.2011 11:49:04

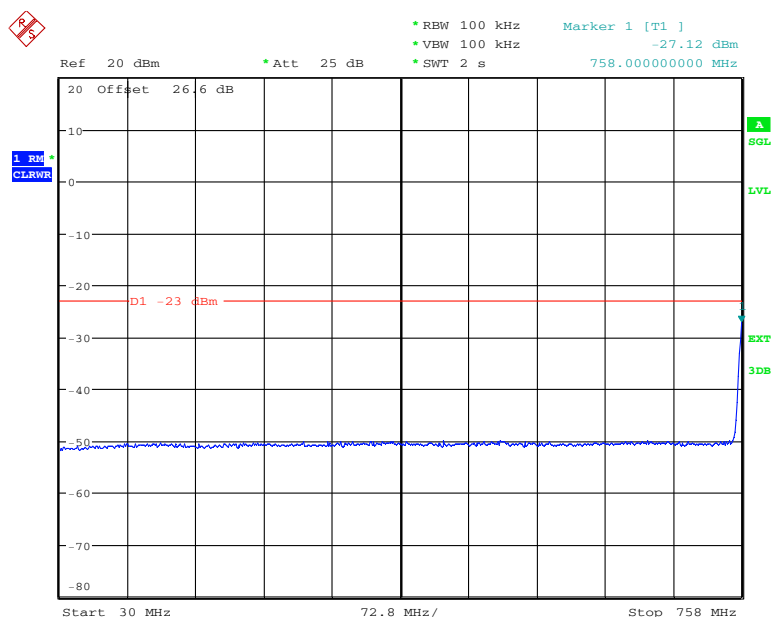
**Figure 7-123: Spurious Emissions (9kHz – 150kHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 11:53:50

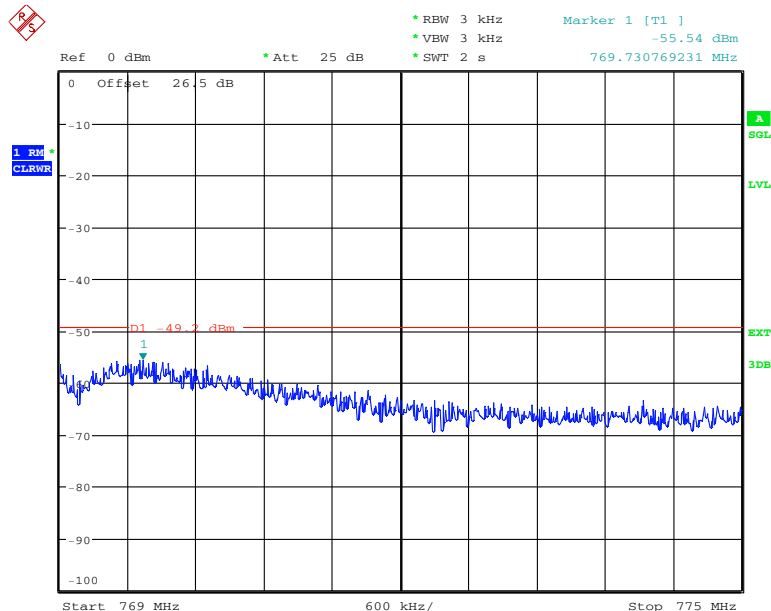
**Figure 7-124: Spurious Emissions (150kHz – 30MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**

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Date: 8.FEB.2011 15:15:52

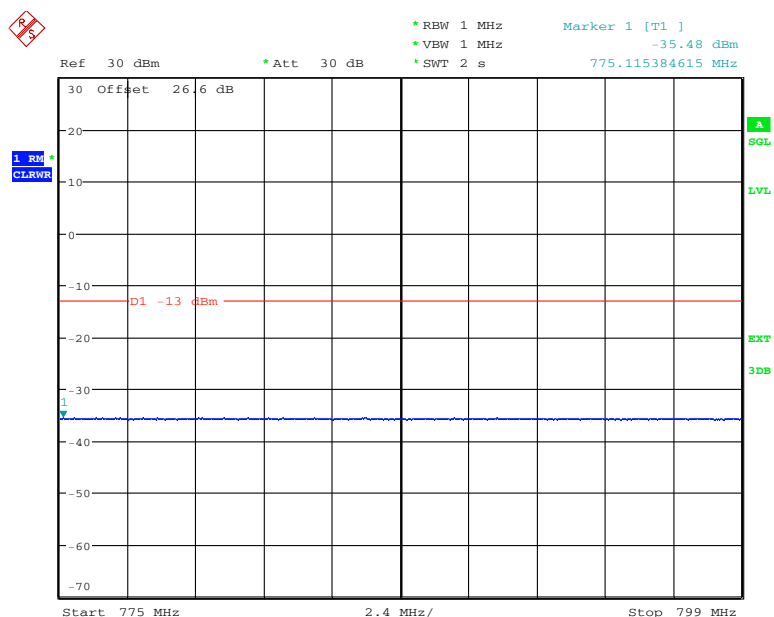
**Figure 7-125: Spurious Emissions (30MHz – 758MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 12:44:22

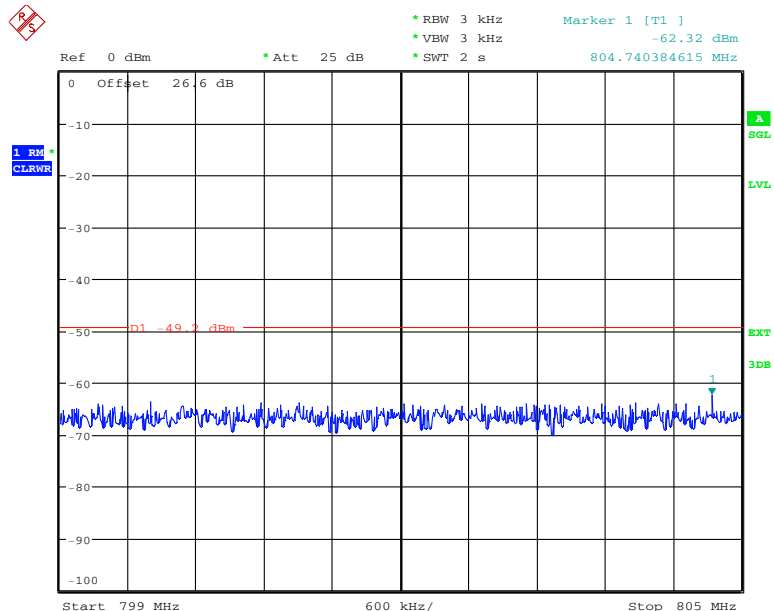
**Figure 7-126: Spurious Emissions (769MHz – 775MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 12:59:25

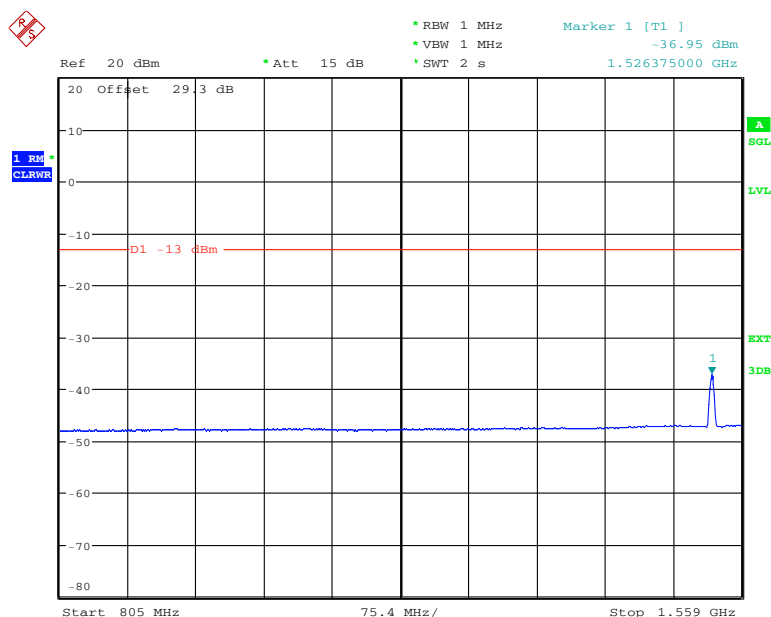
**Figure 7-127: Spurious Emissions (775MHz – 799MHz)**  
– QPSK (763.0 MHz) (5MHz Channel BW)



Date: 7.FEB.2011 12:53:24

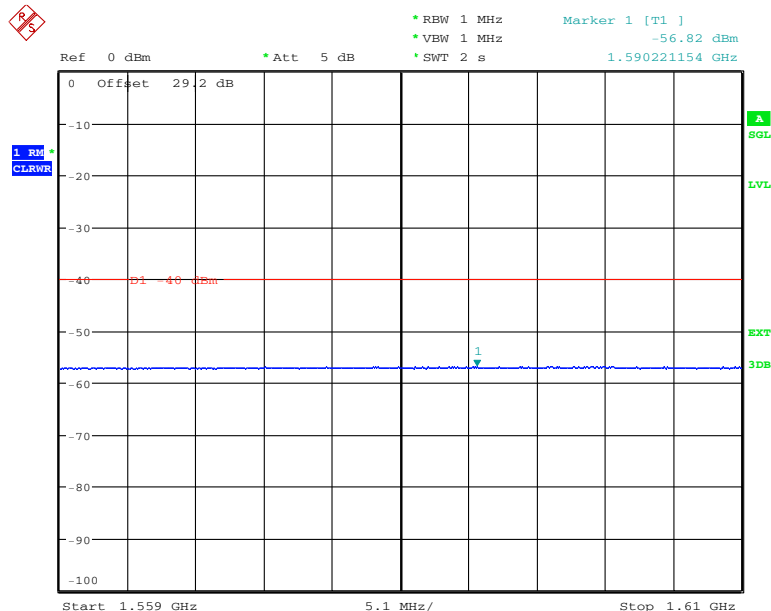
**Figure 7-128: Spurious Emissions (799MHz – 805MHz)**  
– QPSK (763.0 MHz) (5MHz Channel BW)

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Date: 7.FEB.2011 13:40:38

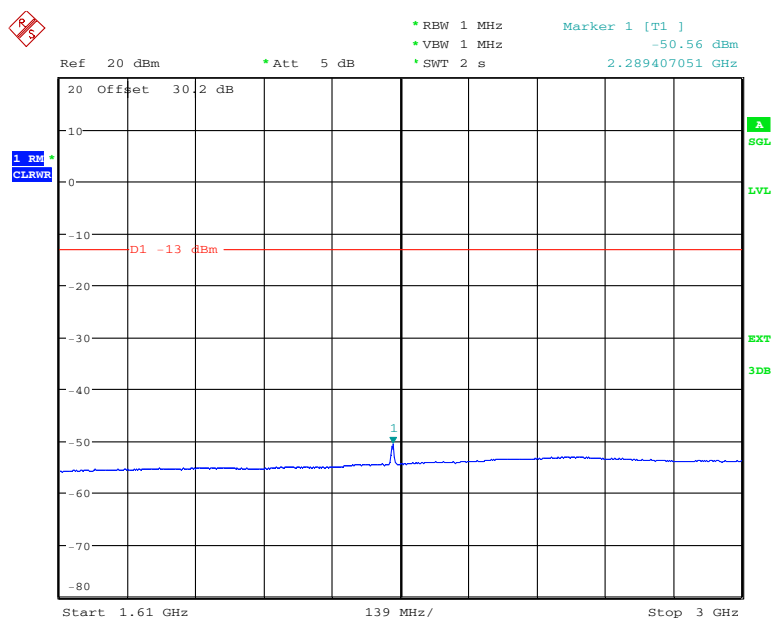
**Figure 7-129: Spurious Emissions (805MHz – 1559MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 13:11:05

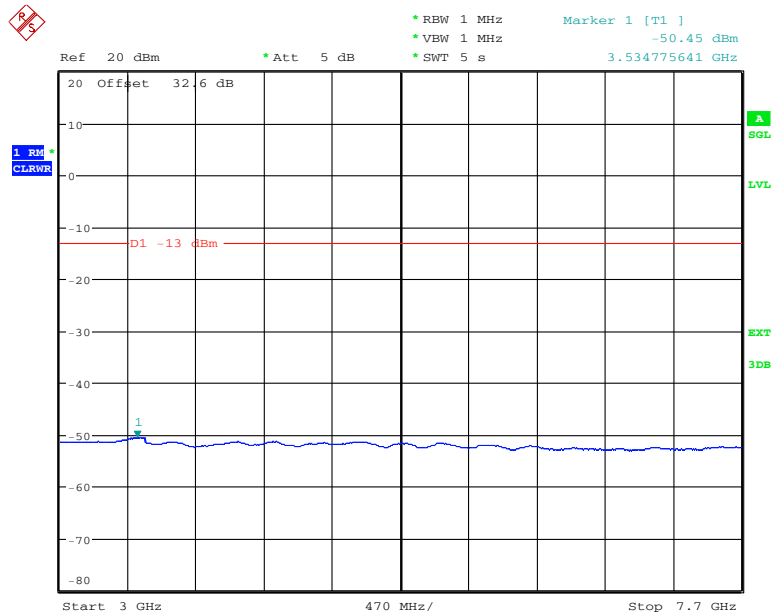
**Figure 7-130: Spurious Emissions (1559MHz – 1610MHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 13:44:15

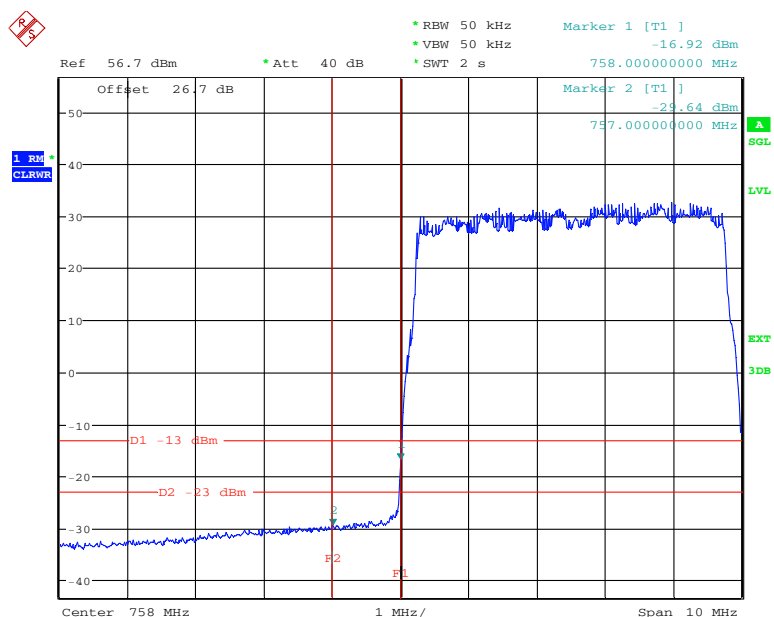
**Figure 7-131: Spurious Emissions (1610MHz – 3GHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 13:49:18

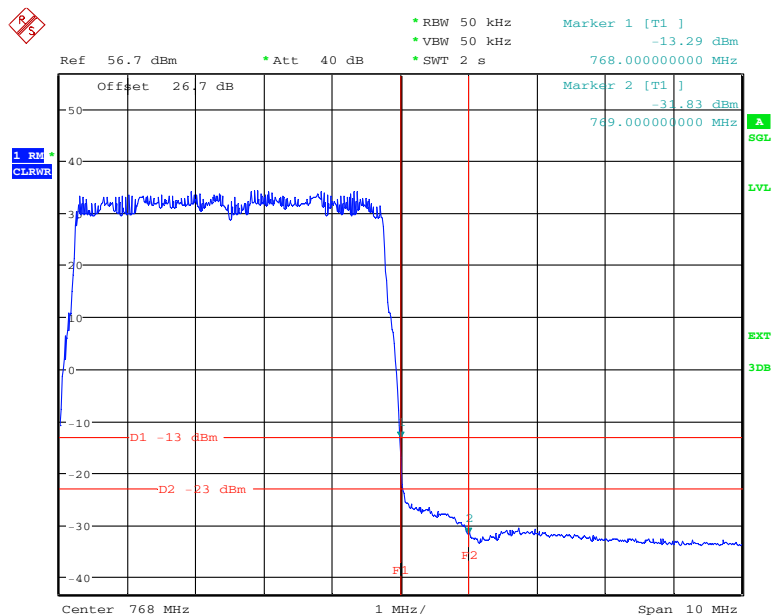
**Figure 7-132: Spurious Emissions (3GHz – 7.7GHz)  
– QPSK (763.0 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 09:18:09

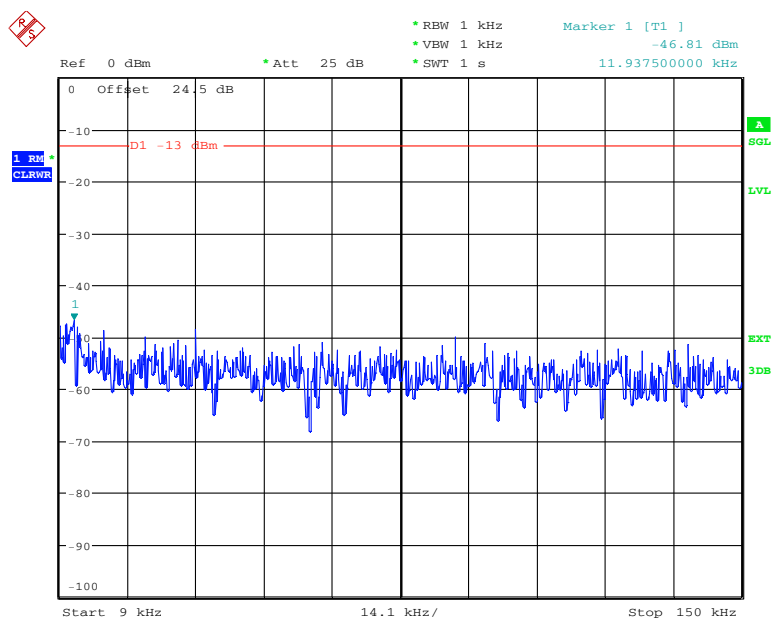
**Figure 7-133: Spurious Emissions (Lower band edge)  
– 16QAM (760.5 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 10:55:35

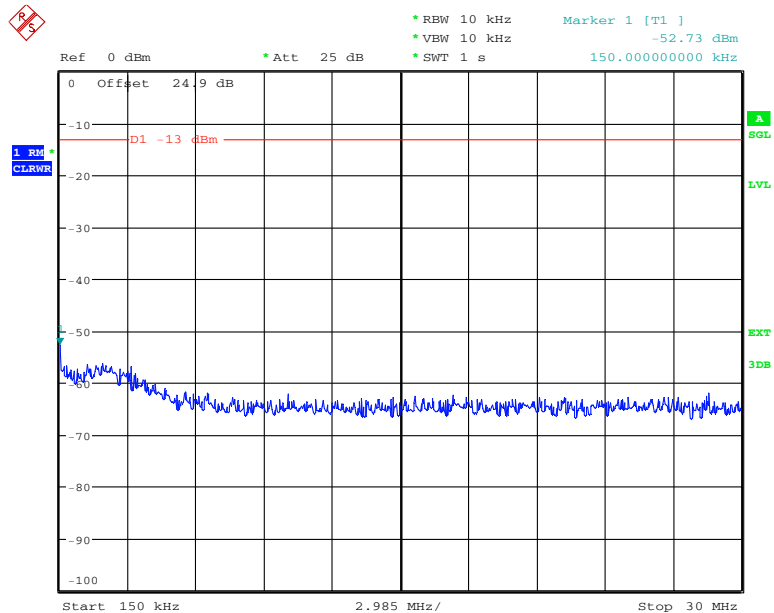
**Figure 7-134: Spurious Emissions (Upper band edge)  
– 16QAM (765.5 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 11:49:44

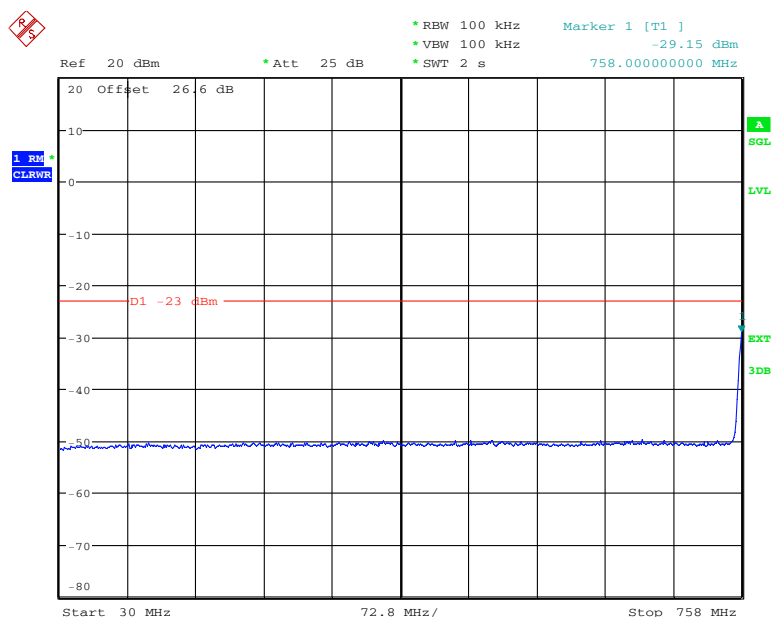
**Figure 7-135: Spurious Emissions (9kHz – 150kHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 11:53:19

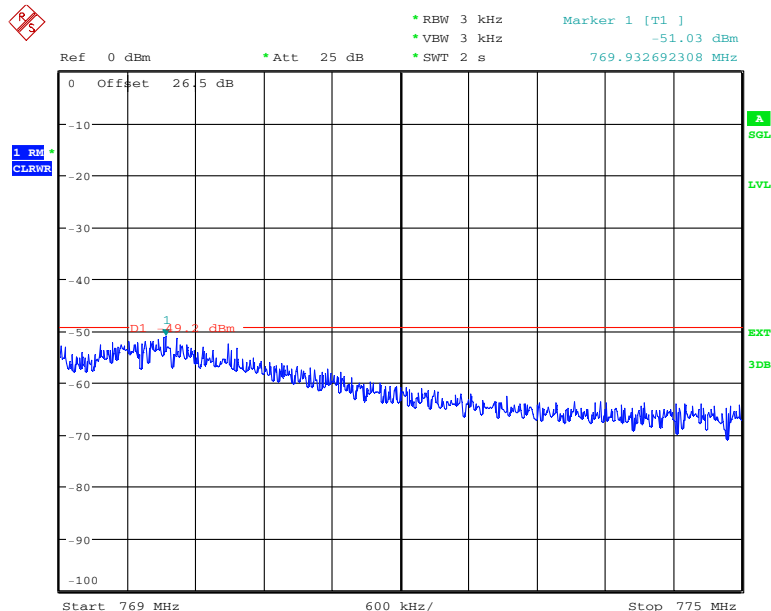
**Figure 7-136: Spurious Emissions (150kHz – 30MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 8.FEB.2011 15:16:55

**Figure 7-137: Spurious Emissions (30MHz – 758MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

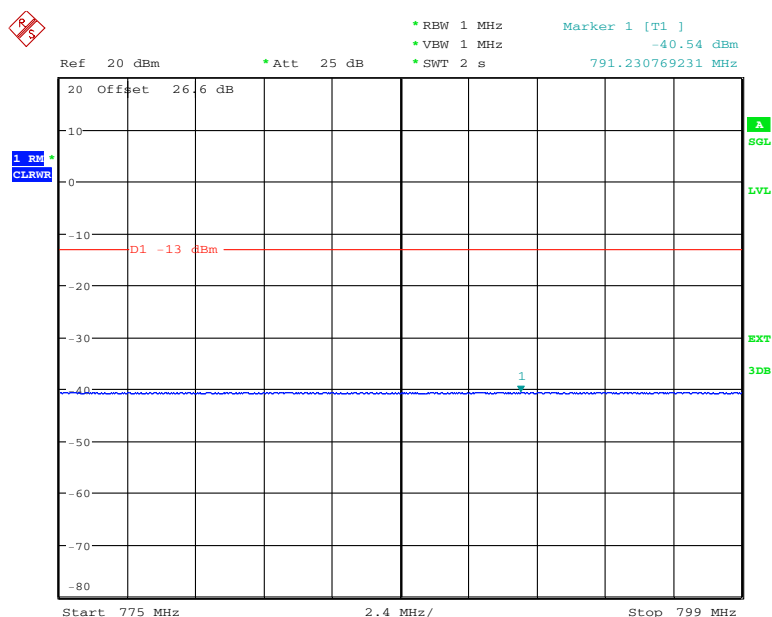


Date: 7.FEB.2011 12:46:30

**Figure 7-138: Spurious Emissions (769MHz – 775MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

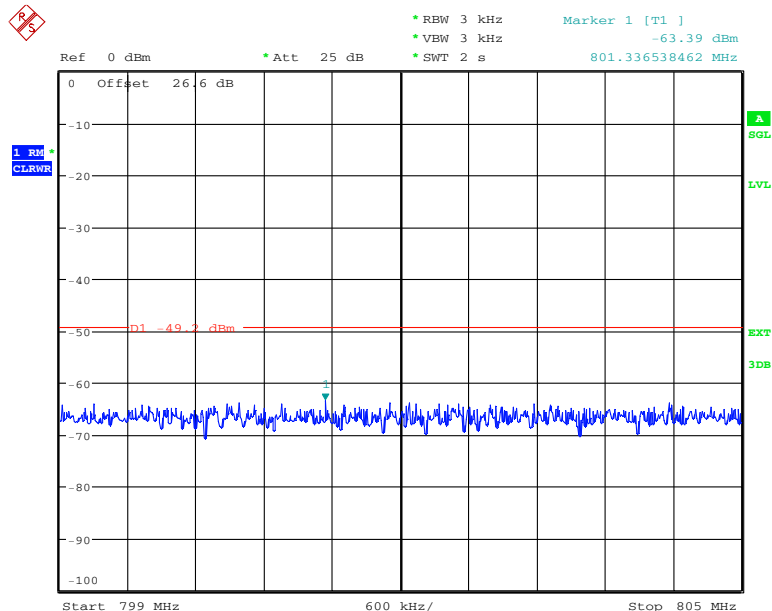
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Date: 7.FEB.2011 12:56:37

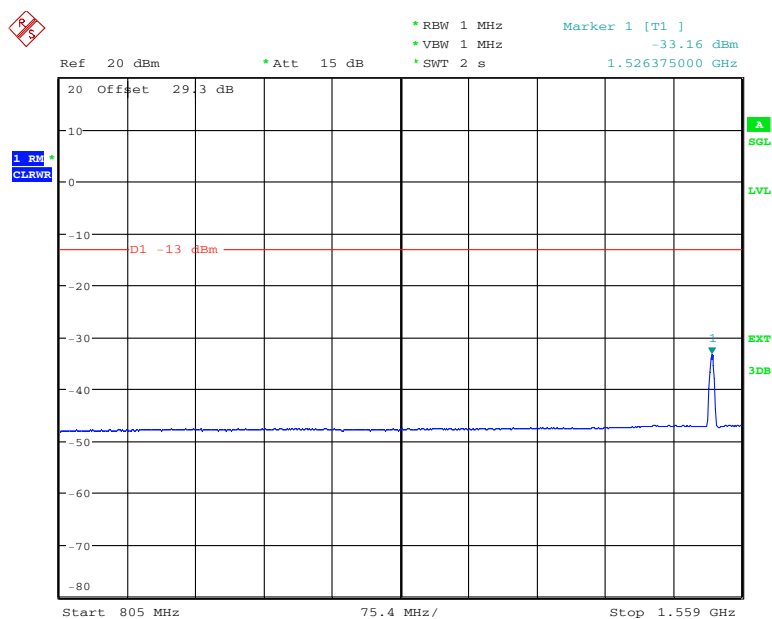
**Figure 7-139: Spurious Emissions (775MHz – 799MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 12:53:55

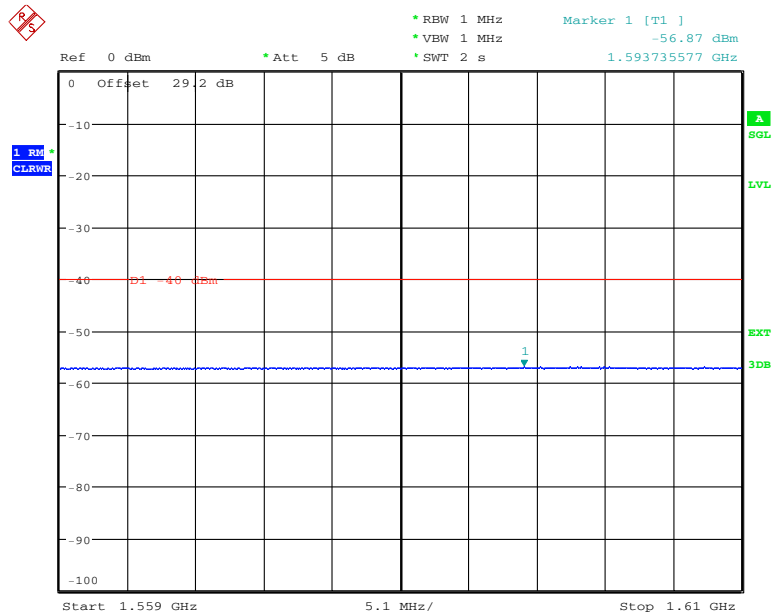
**Figure 7-140: Spurious Emissions (799MHz – 805MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 13:41:20

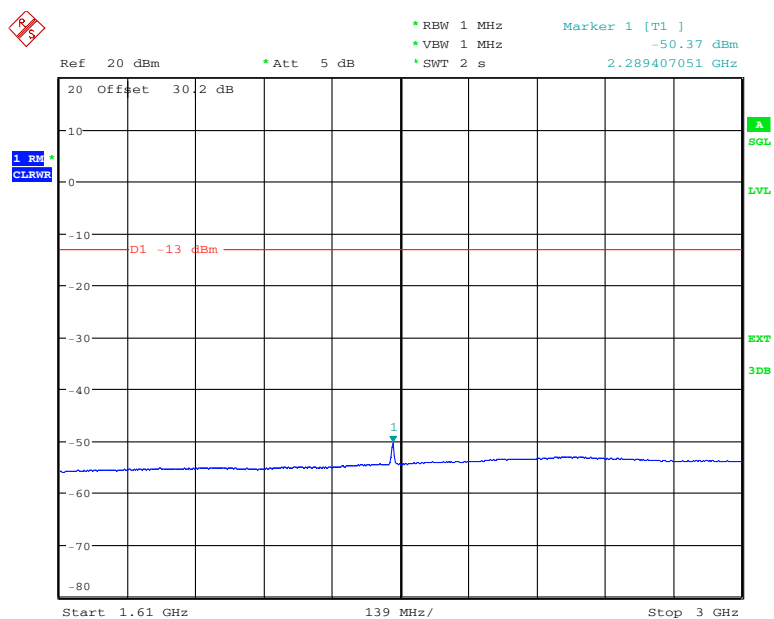
**Figure 7-141: Spurious Emissions (805MHz – 1559MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 13:10:19

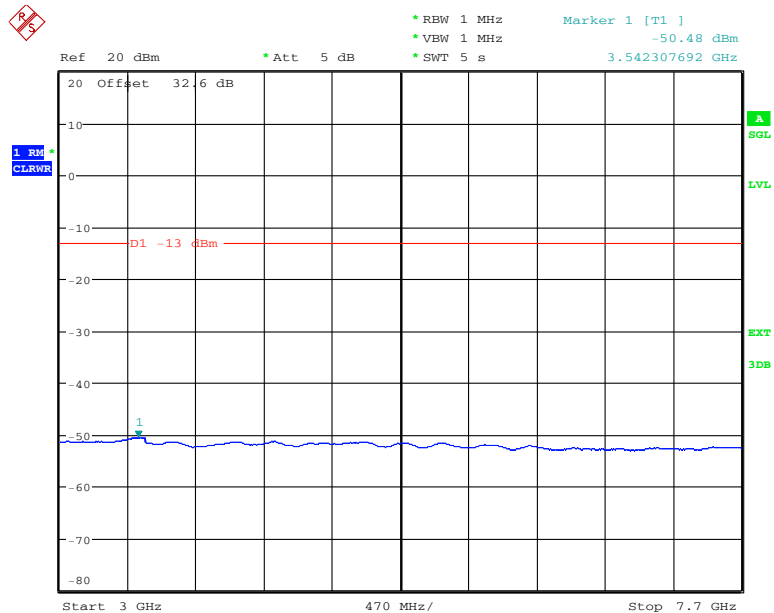
**Figure 7-142: Spurious Emissions (1559MHz – 1610MHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 13:44:49

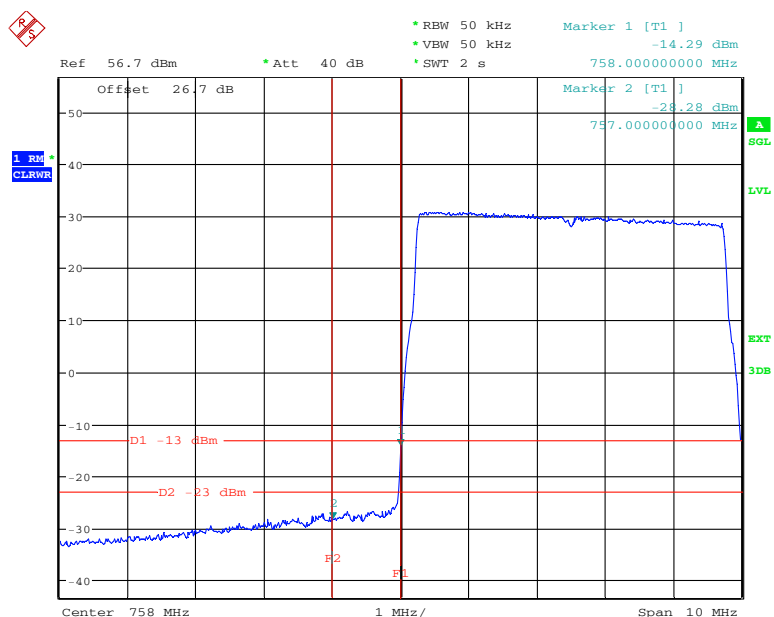
**Figure 7-143: Spurious Emissions (1610MHz – 3GHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 13:48:39

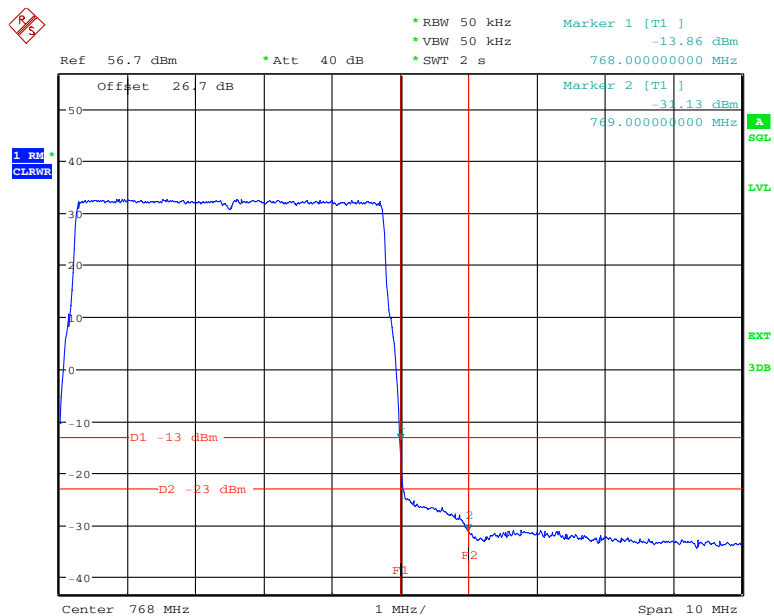
**Figure 7-144: Spurious Emissions (3GHz – 7.7GHz)  
– 16QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 09:19:20

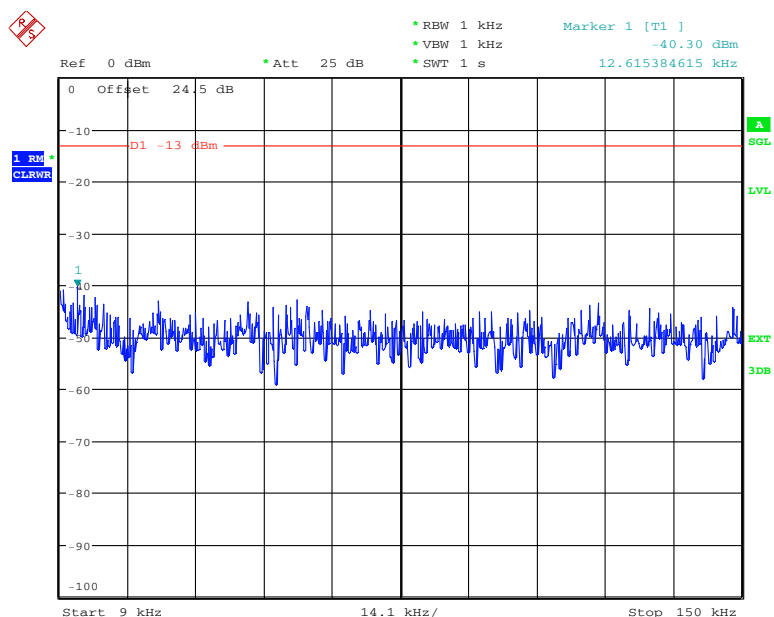
**Figure 7-145: Spurious Emissions (Lower band edge)  
– 64QAM (760.5 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 10:56:35

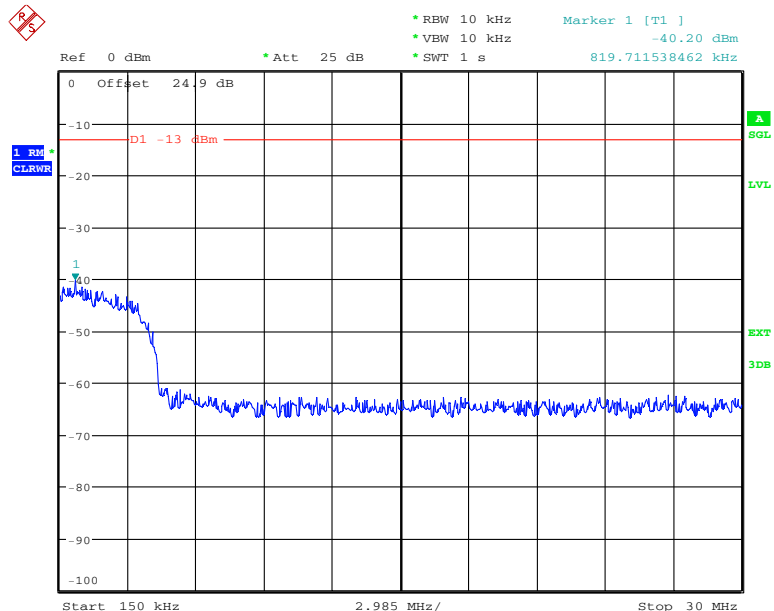
**Figure 7-146: Spurious Emissions (Upper band edge)  
– 64QAM (765.5 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 11:50:23

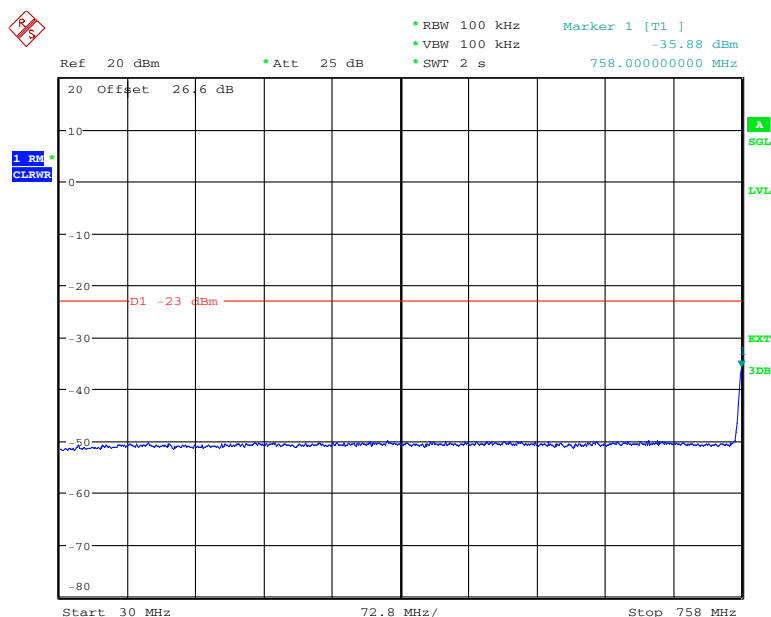
**Figure 7-147: Spurious Emissions (9kHz – 150kHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 11:52:45

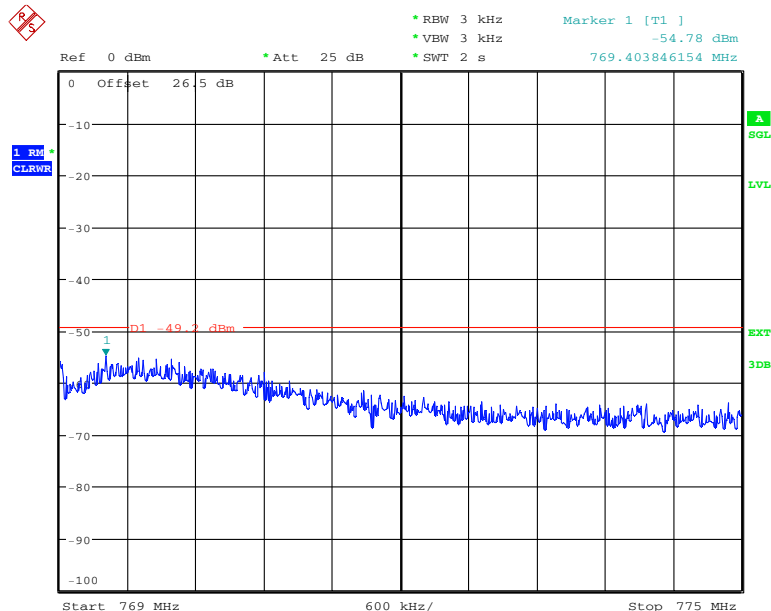
**Figure 7-148: Spurious Emissions (150kHz – 30MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 8.FEB.2011 15:17:57

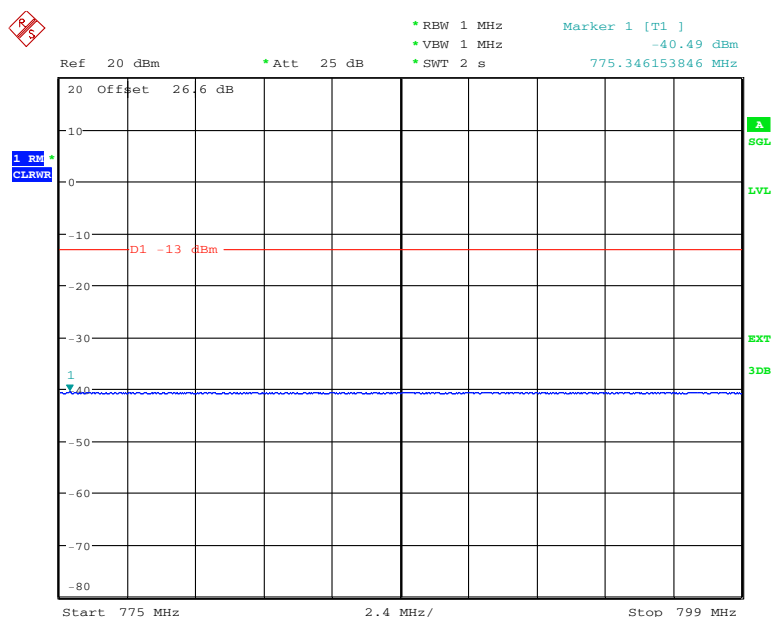
**Figure 7-149: Spurious Emissions (30MHz – 758MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 12:45:28

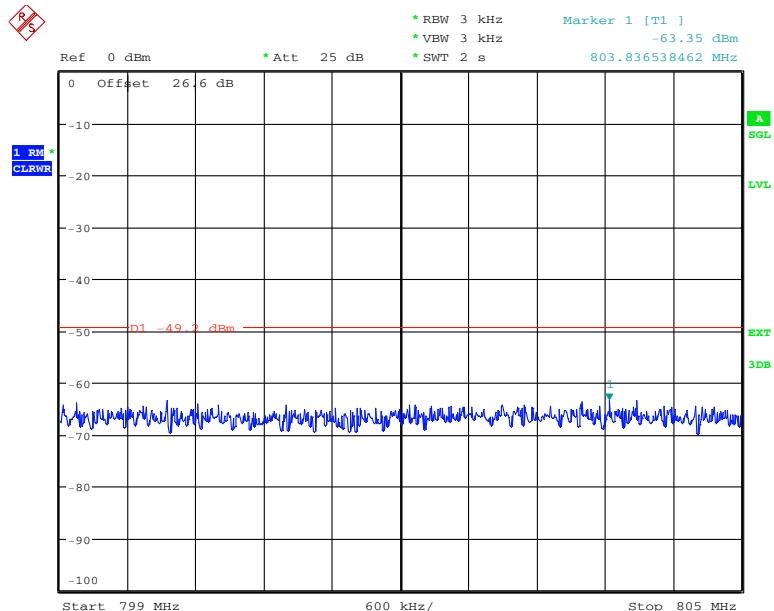
**Figure 7-150: Spurious Emissions (769MHz – 775MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 12:57:12

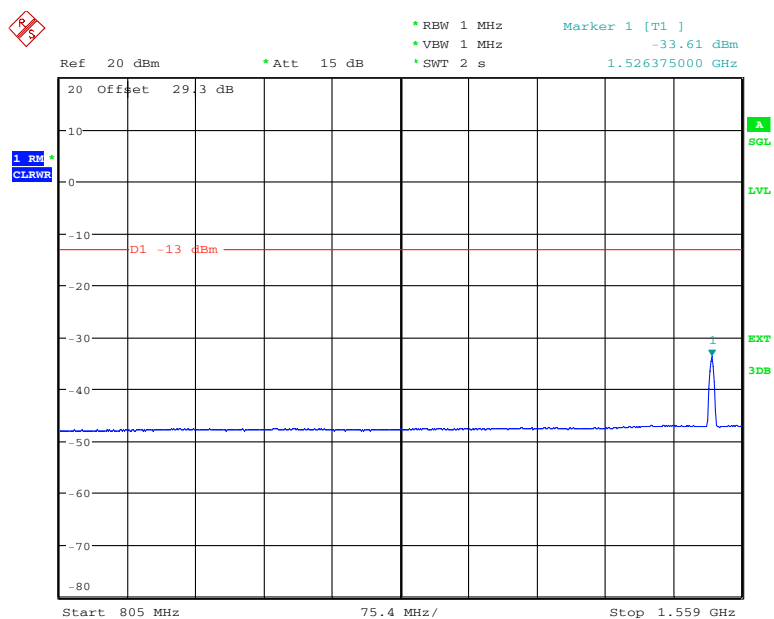
**Figure 7-151: Spurious Emissions (775MHz – 799MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**



Date: 7.FEB.2011 12:54:21

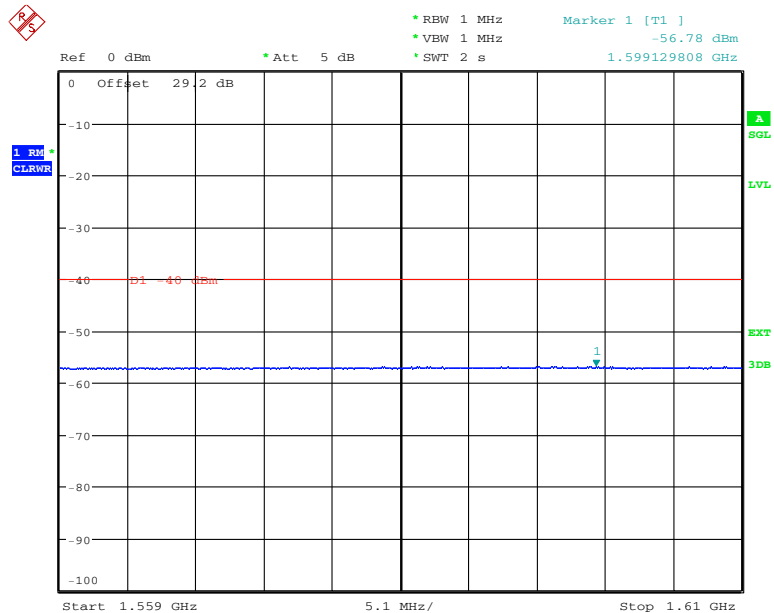
**Figure 7-152: Spurious Emissions (799MHz – 805MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

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Date: 7.FEB.2011 13:41:54

**Figure 7-153: Spurious Emissions (805MHz – 1559MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

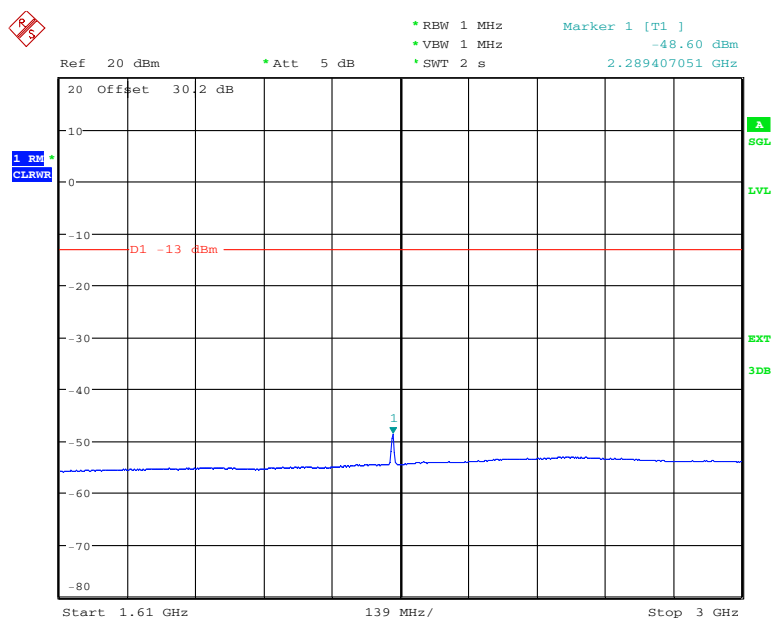


Date: 7.FEB.2011 13:09:37

**Figure 7-154: Spurious Emissions (1559MHz – 1610MHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

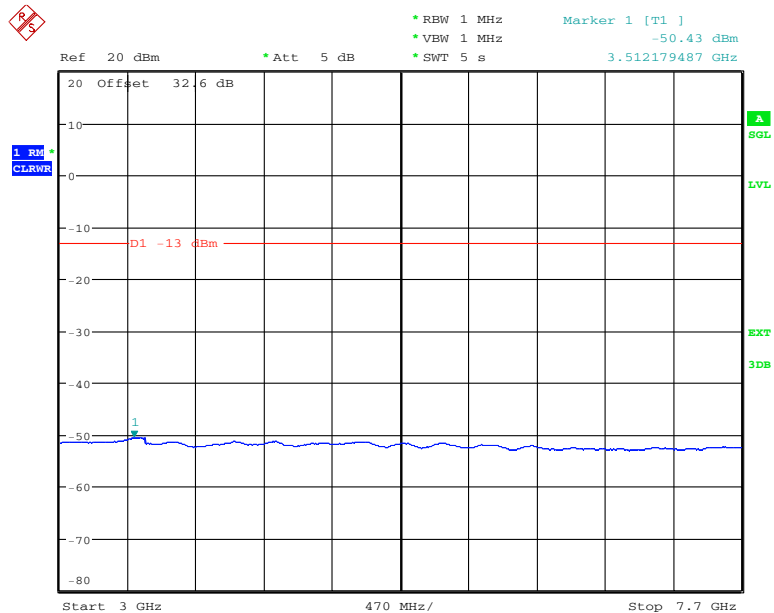
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Date: 7.FEB.2011 13:45:38

**Figure 7-155: Spurious Emissions (1610MHz – 3GHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

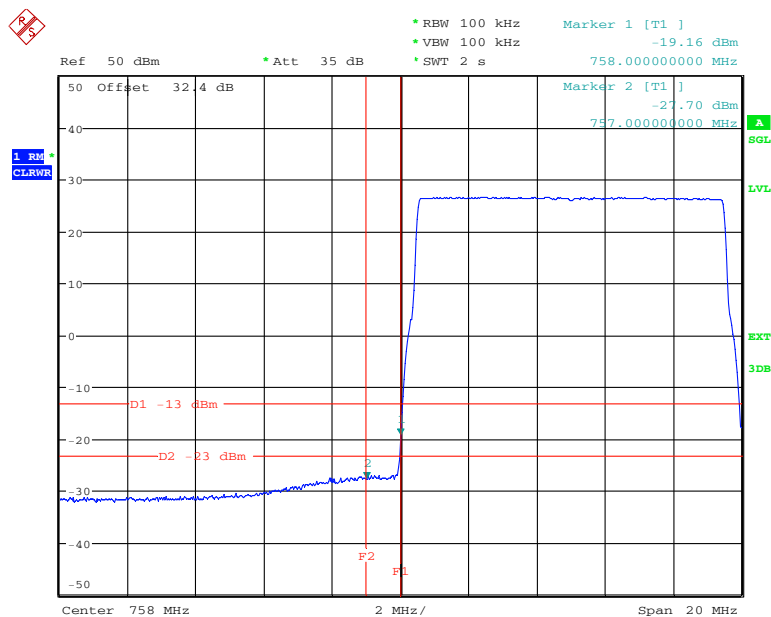


Date: 7.FEB.2011 13:48:04

**Figure 7-156: Spurious Emissions (3GHz – 7.7GHz)  
– 64QAM (763.0 MHz) (5MHz Channel BW)**

The test report shall not be reproduced except in full without the written approval of the testing laboratory

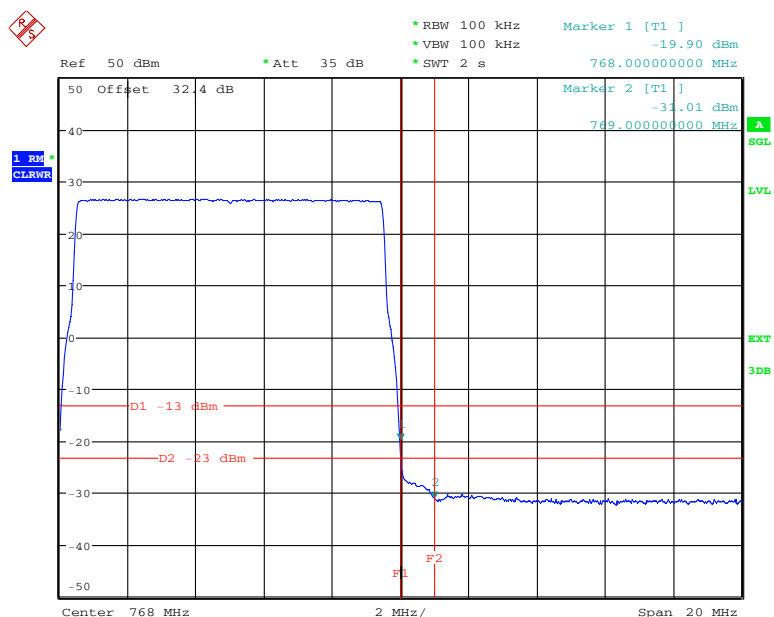
## Config B TX1:



Date: 8.FEB.2011 14:43:30

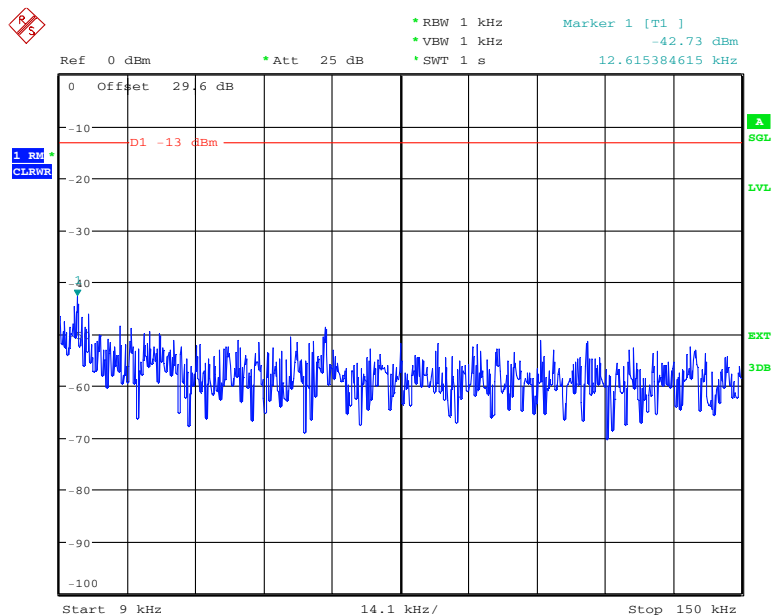
**Figure 7-157: Spurious Emissions (Lower band edge)**  
**– QPSK (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 14:46:10

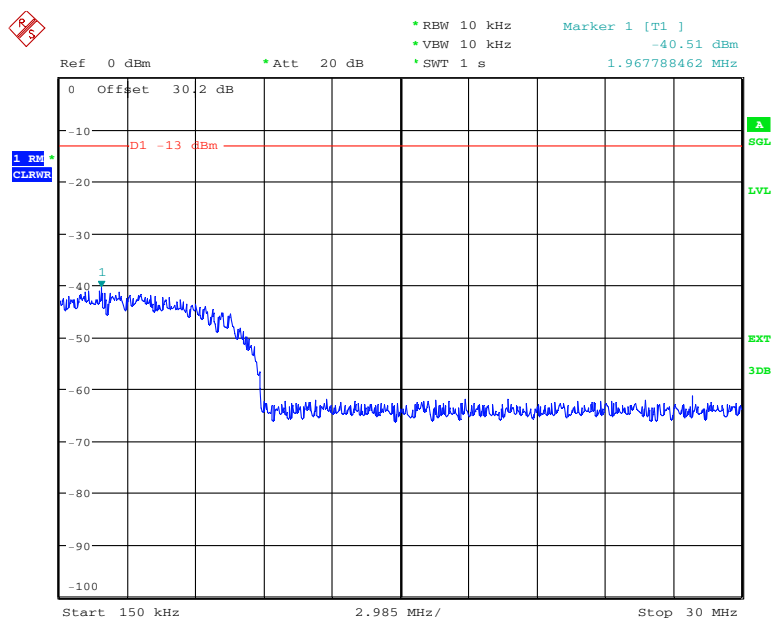
**Figure 7-158: Spurious Emissions (Upper band edge)  
– QPSK (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 07:26:39

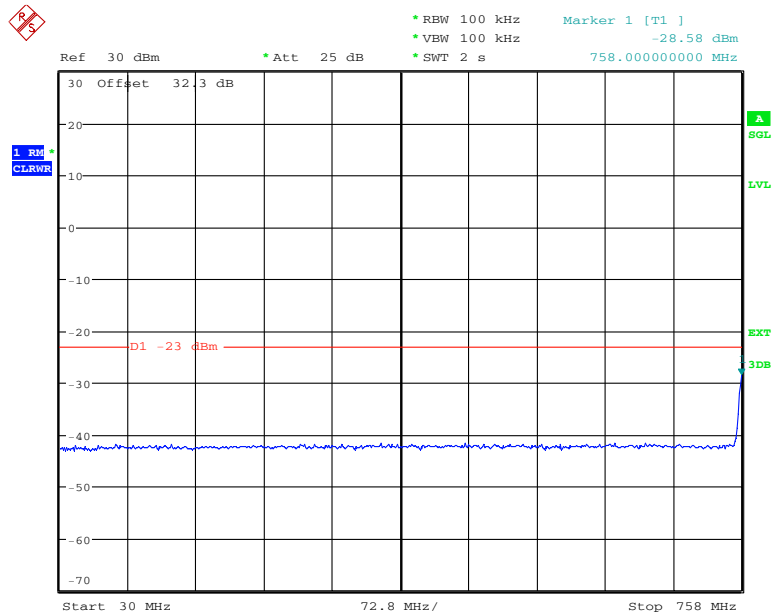
**Figure 7-159: Spurious Emissions (9kHz – 150kHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 07:33:12

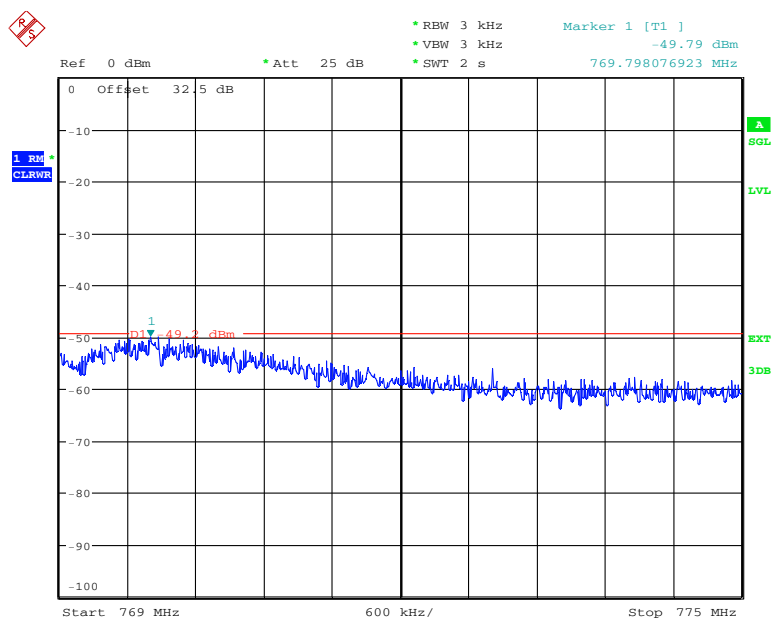
**Figure 7-160: Spurious Emissions (150kHz – 30MHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 09:52:06

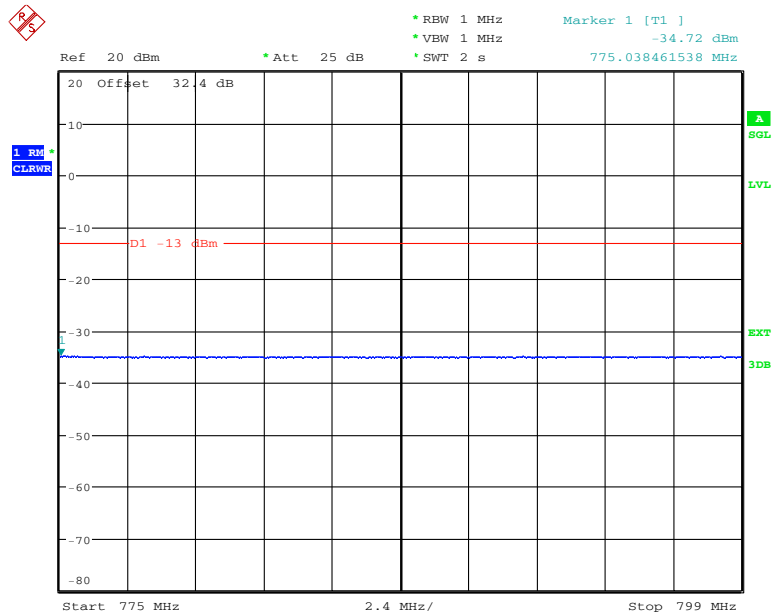
**Figure 7-161: Spurious Emissions (30MHz – 758MHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 09:56:11

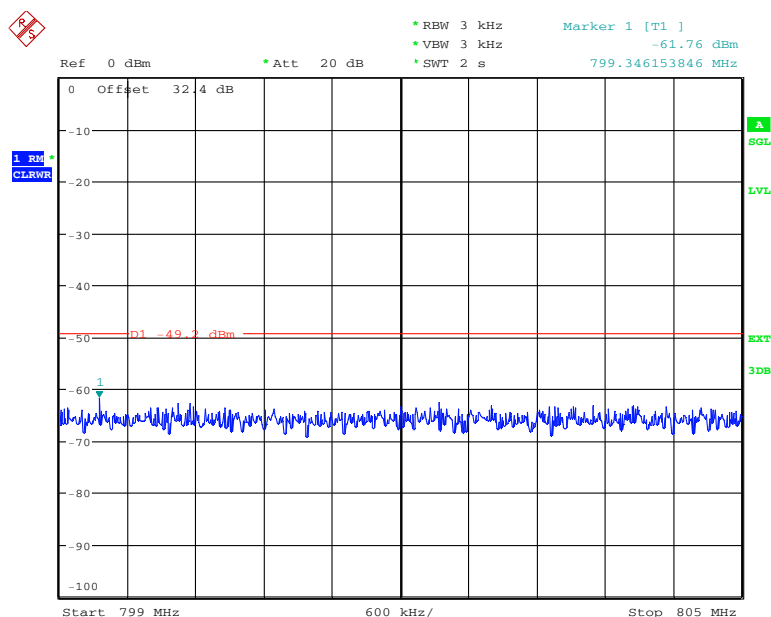
**Figure 7-162: Spurious Emissions (769MHz – 775MHz)**  
– QPSK (763.0 MHz) (10MHz Channel BW)



Date: 8.FEB.2011 12:54:42

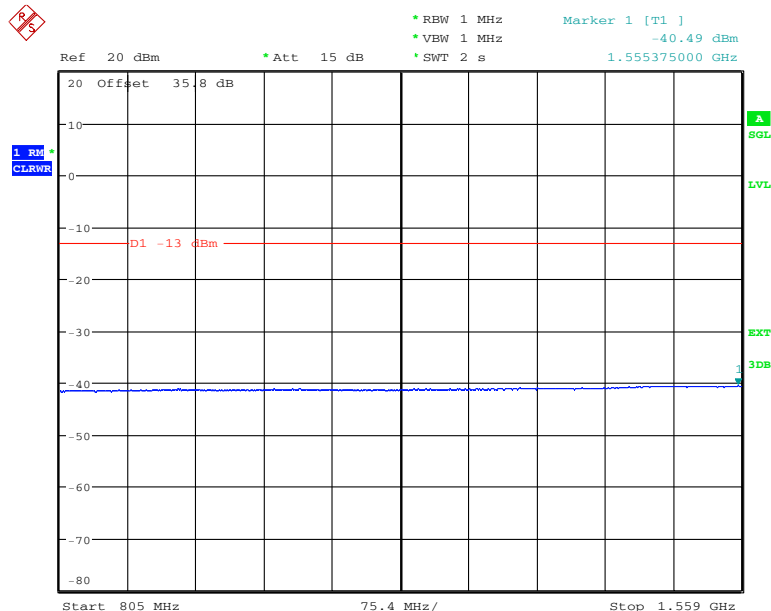
**Figure 7-163: Spurious Emissions (775MHz – 799MHz)**  
– QPSK (763.0 MHz) (10MHz Channel BW)

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Date: 8.FEB.2011 12:59:01

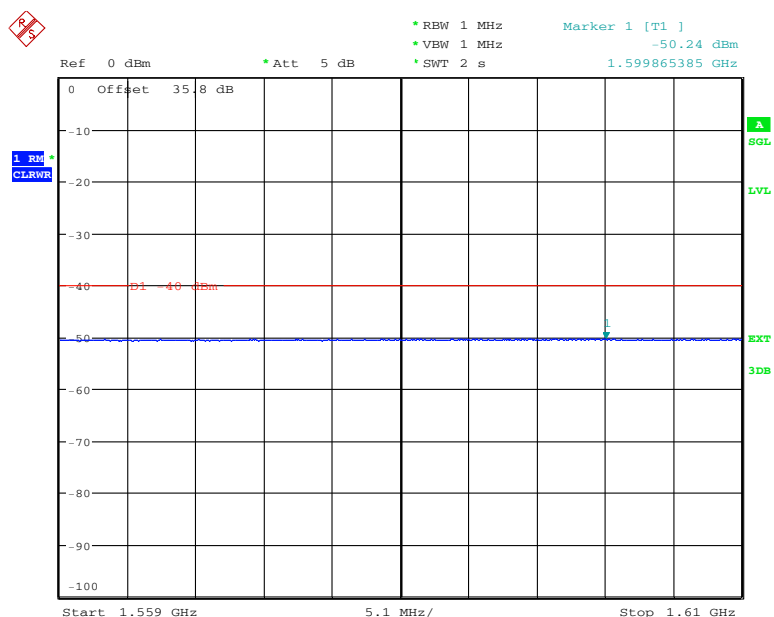
**Figure 7-164: Spurious Emissions (799MHz – 805MHz)**  
– QPSK (763.0 MHz) (10MHz Channel BW)



Date: 8.FEB.2011 13:33:58

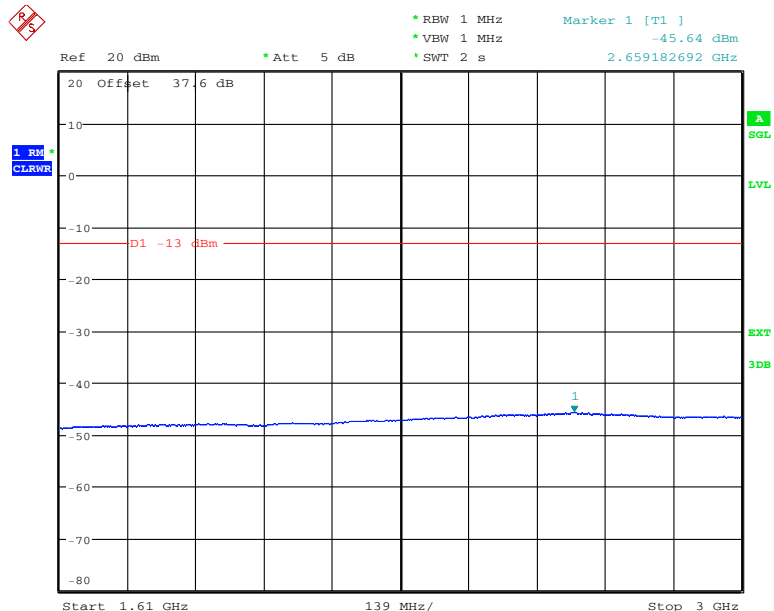
**Figure 7-165: Spurious Emissions (805MHz – 1559MHz)**  
– QPSK (763.0 MHz) (10MHz Channel BW)

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Date: 8.FEB.2011 13:36:40

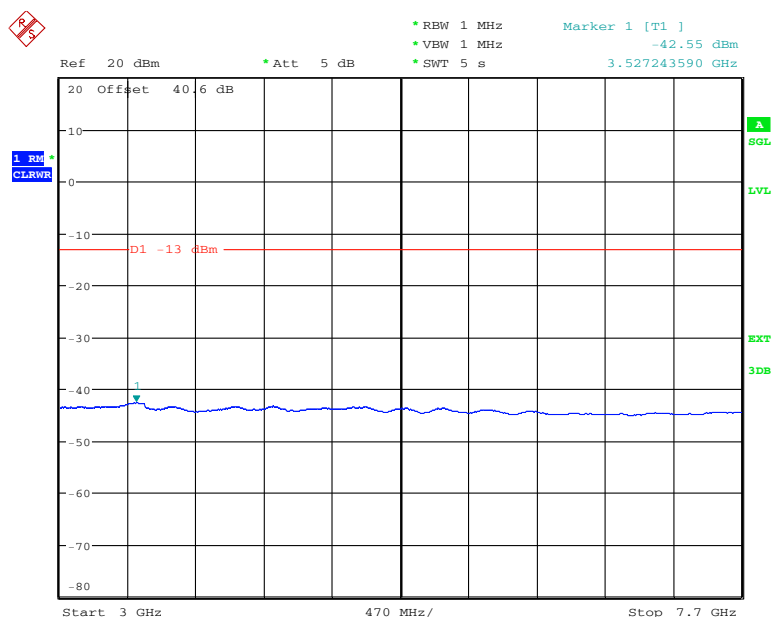
**Figure 7-166: Spurious Emissions (1559MHz – 1610MHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 14:05:33

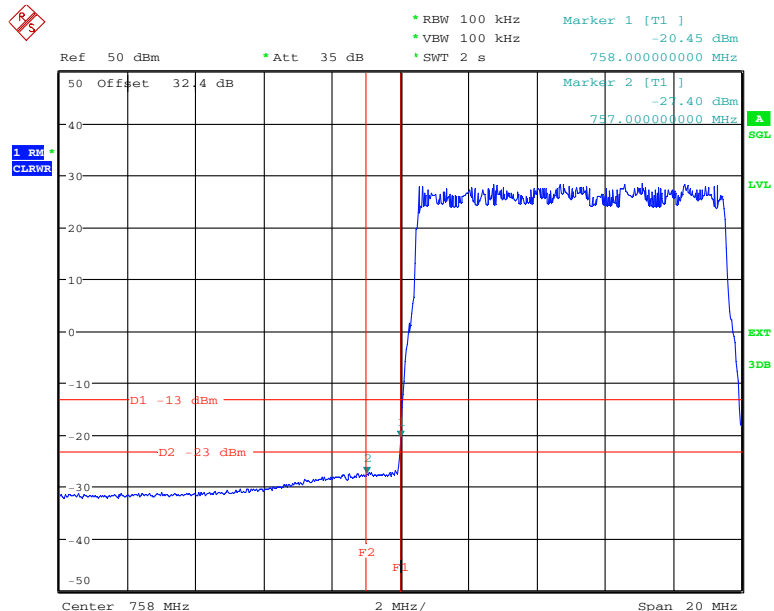
**Figure 7-167: Spurious Emissions (1610MHz – 3GHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 14:07:59

**Figure 7-168: Spurious Emissions (3GHz – 7.7GHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**

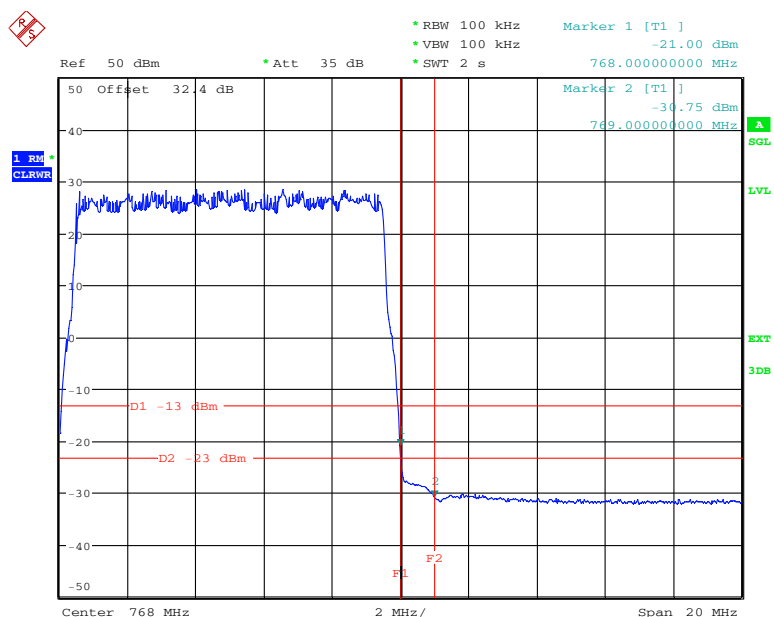


Date: 8.FEB.2011 14:42:42

**Figure 7-169: Spurious Emissions (Lower band edge)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

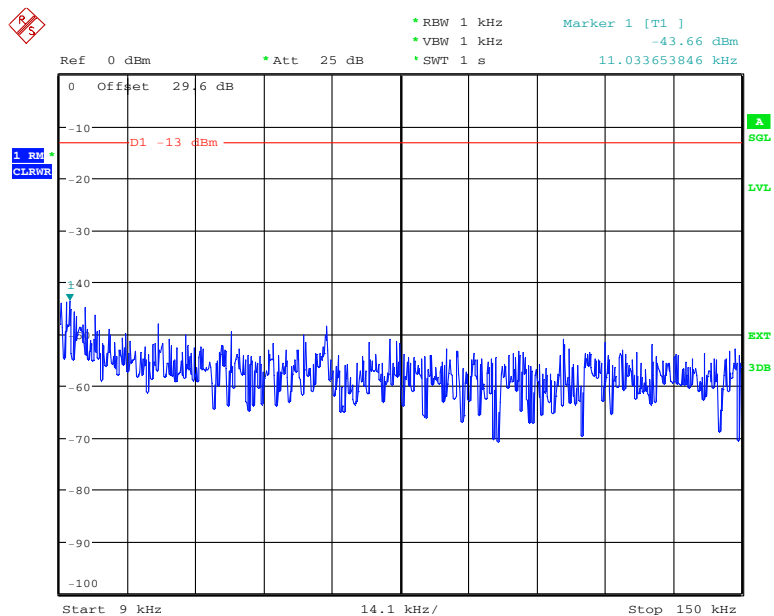
The test report shall not be reproduced except in full without the written approval of the testing laboratory





Date: 8.FEB.2011 14:47:12

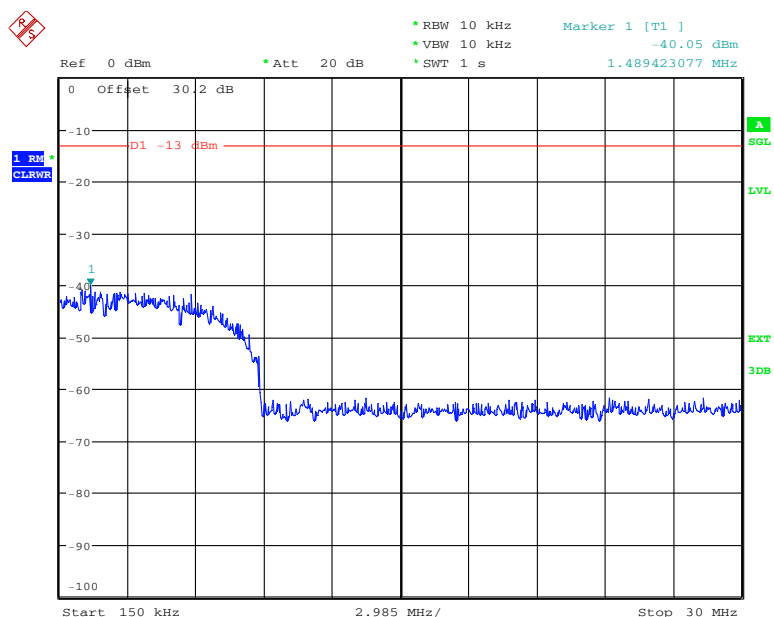
**Figure 7-170: Spurious Emissions (Upper band edge)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 07:27:10

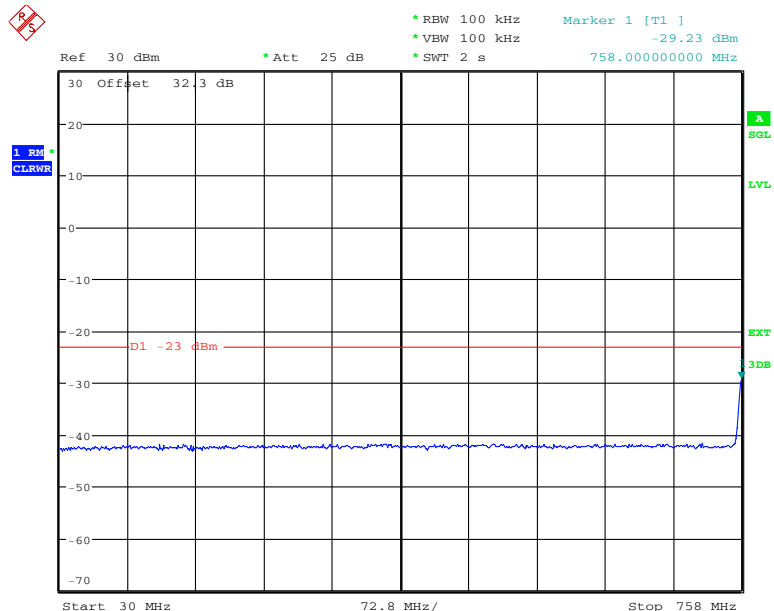
**Figure 7-171: Spurious Emissions (9kHz – 150kHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 07:34:01

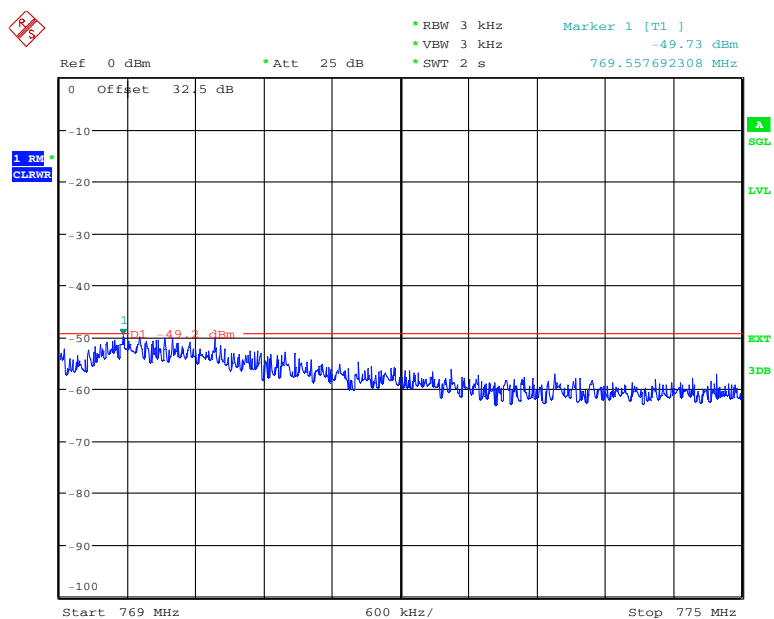
**Figure 7-172: Spurious Emissions (150kHz – 30MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 09:50:14

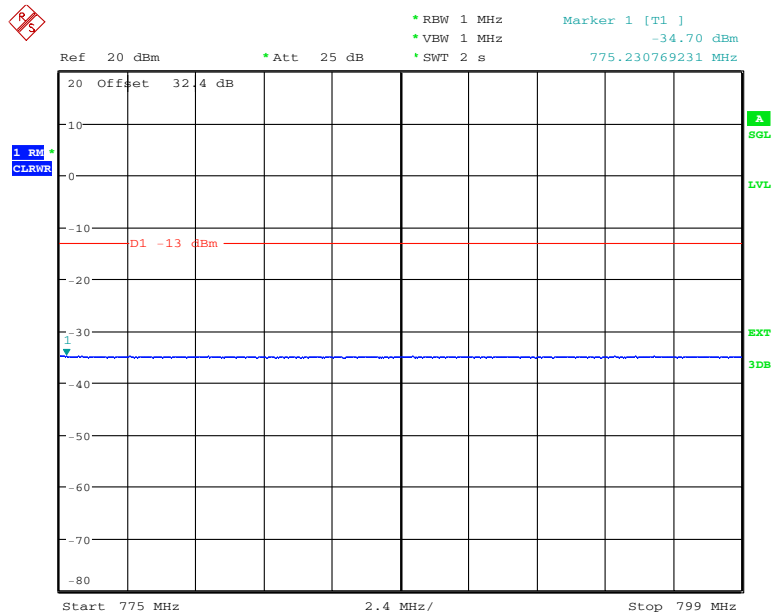
**Figure 7-173: Spurious Emissions (30MHz – 758MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 09:58:13

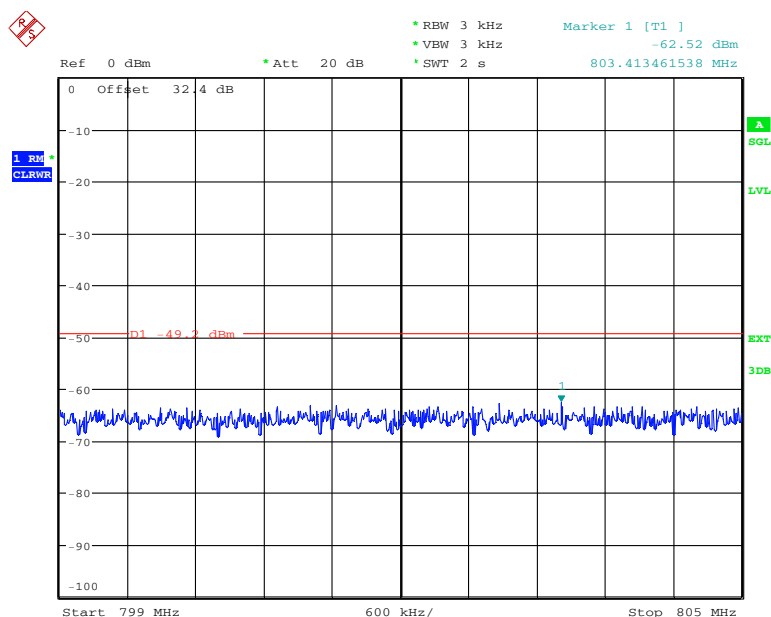
**Figure 7-174: Spurious Emissions (769MHz – 775MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 12:53:30

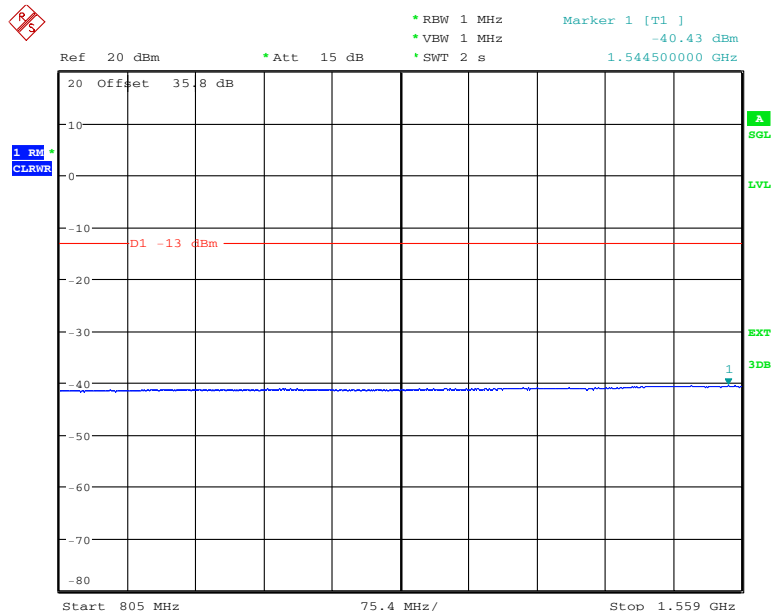
**Figure 7-175: Spurious Emissions (775MHz – 799MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 13:00:22

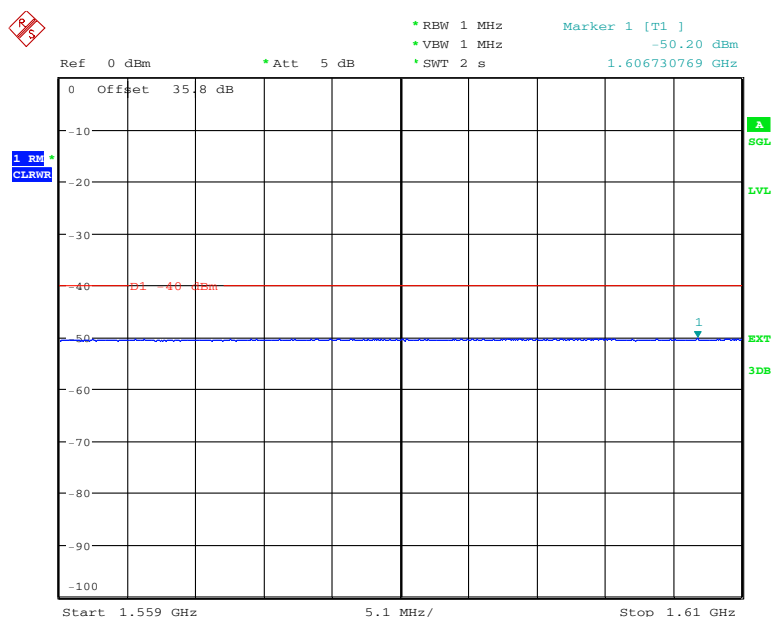
**Figure 7-176: Spurious Emissions (799MHz – 805MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 13:33:03

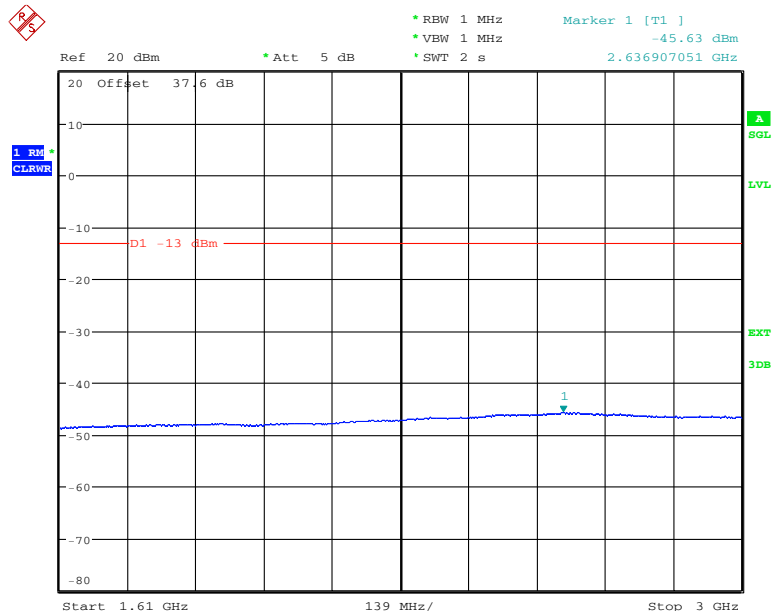
**Figure 7-177: Spurious Emissions (805MHz – 1559MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 13:37:39

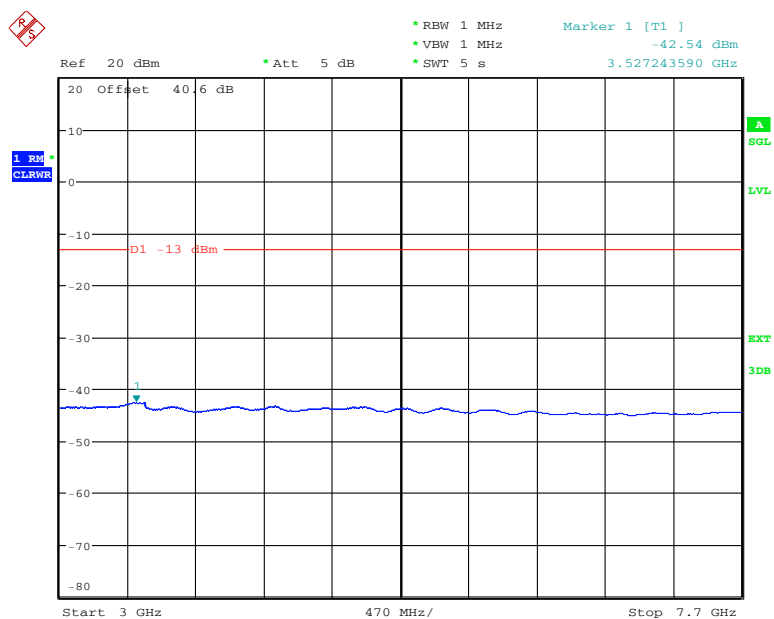
**Figure 7-178: Spurious Emissions (1559MHz – 1610MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 14:04:29

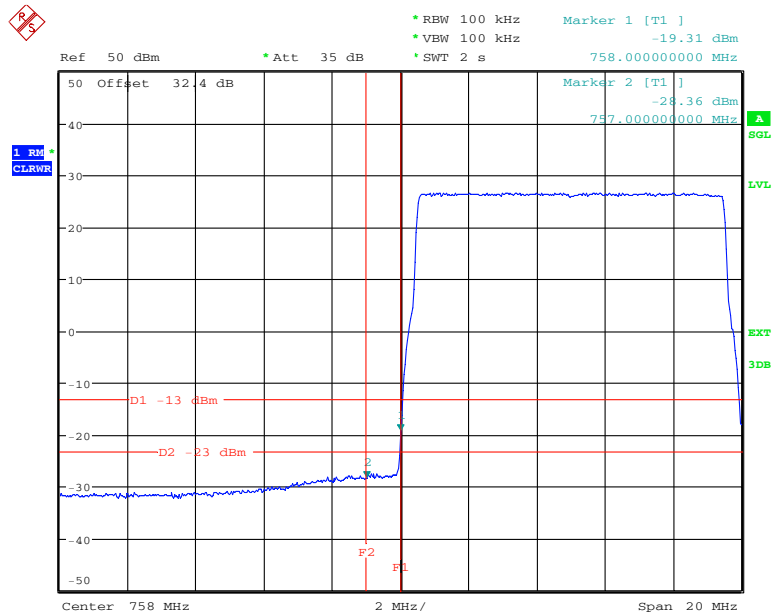
**Figure 7-179: Spurious Emissions (1610MHz – 3GHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 14:09:04

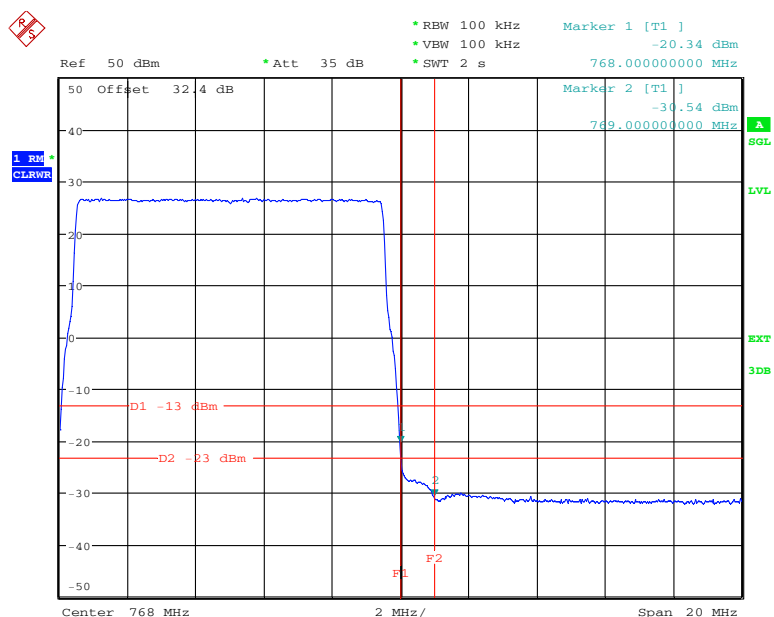
**Figure 7-180: Spurious Emissions (3GHz – 7.7GHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 14:41:48

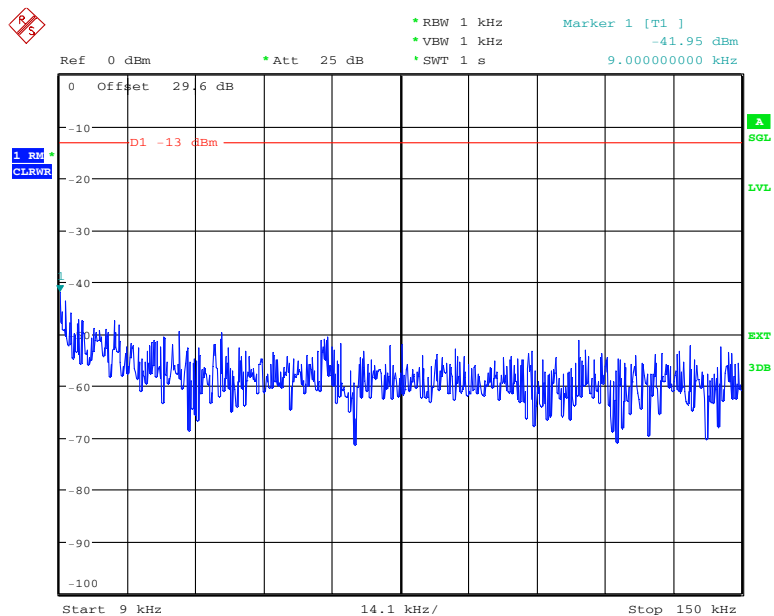
**Figure 7-181: Spurious Emissions (Lower band edge)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 14:48:16

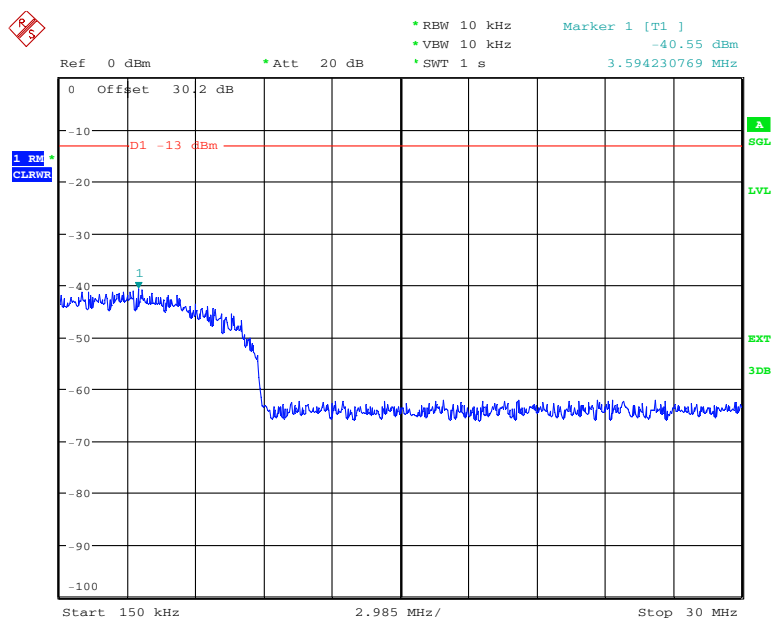
**Figure 7-182: Spurious Emissions (Upper band edge)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 07:27:44

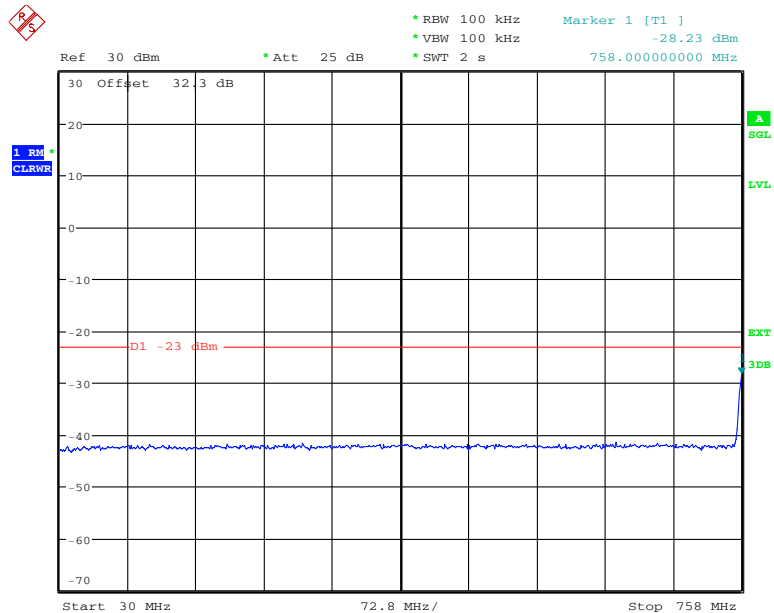
**Figure 7-183: Spurious Emissions (9kHz – 150kHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 07:34:39

**Figure 7-184: Spurious Emissions (150kHz – 30MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

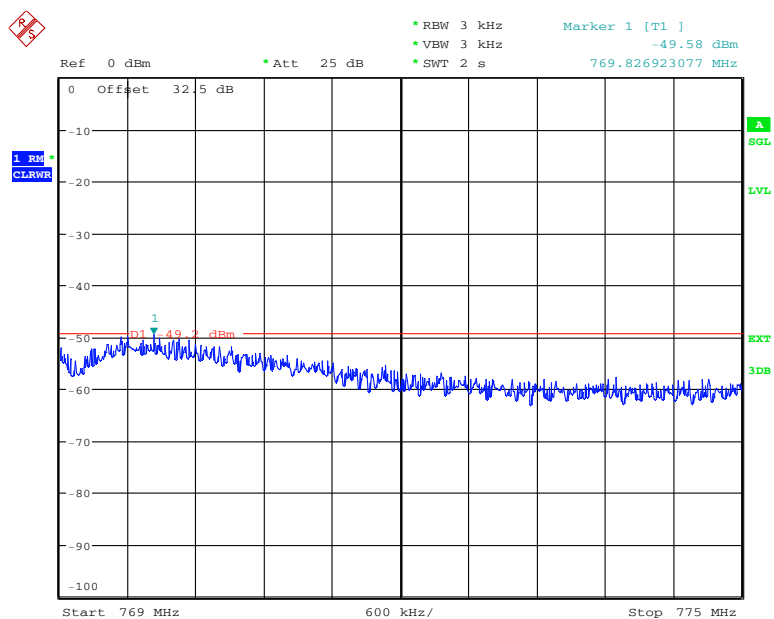


Date: 8.FEB.2011 09:48:41

**Figure 7-185: Spurious Emissions (30MHz – 758MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

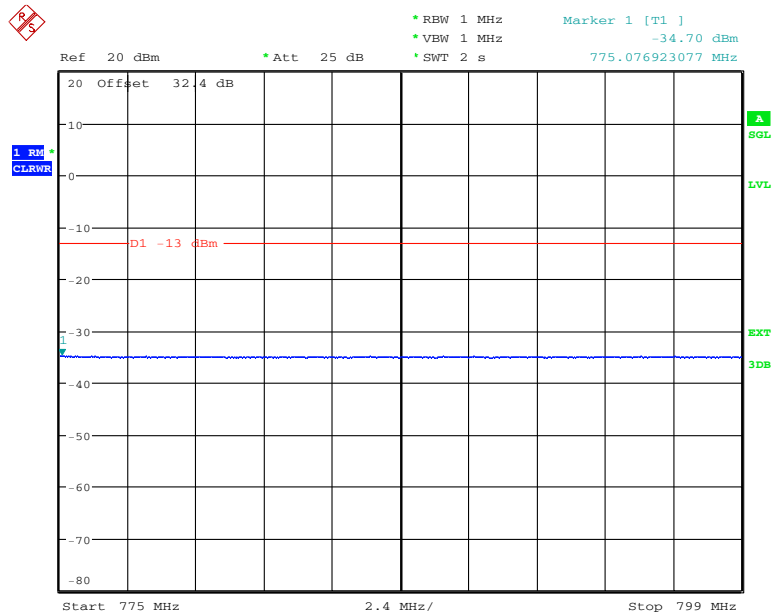
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Date: 8.FEB.2011 10:01:05

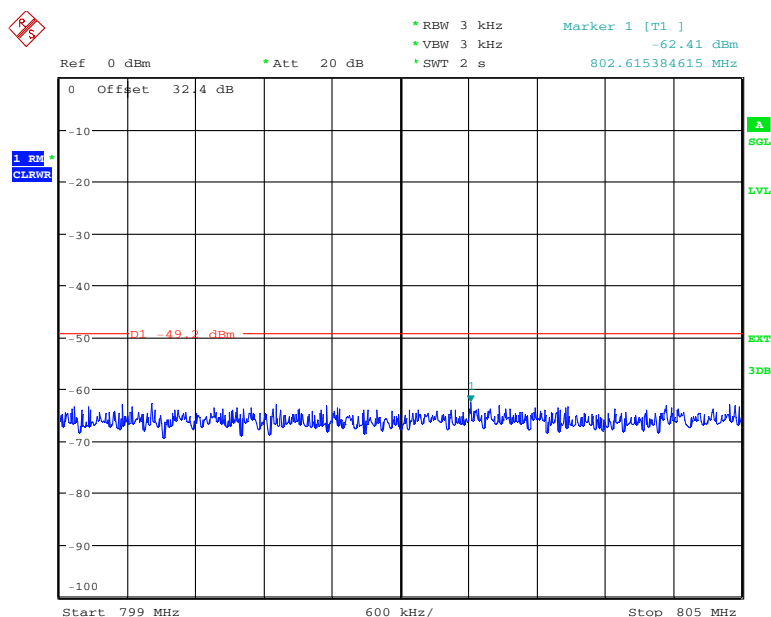
**Figure 7-186: Spurious Emissions (769MHz – 775MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 12:52:20

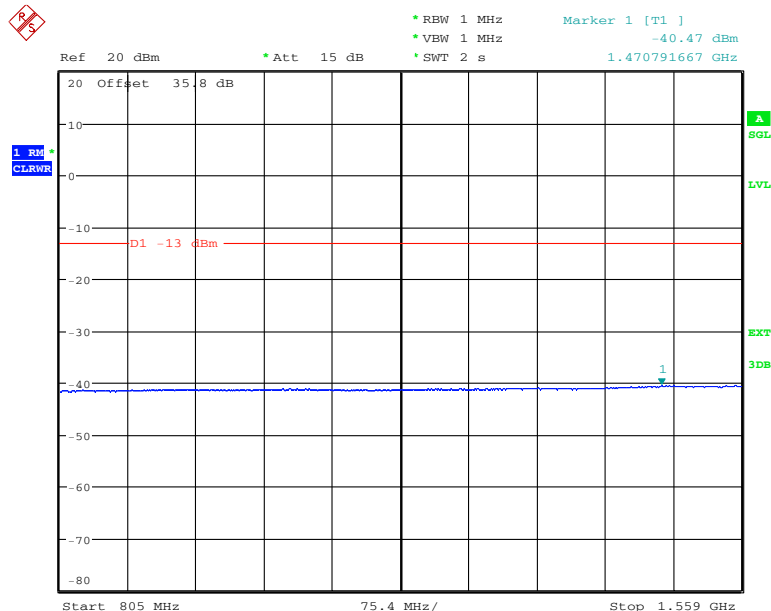
**Figure 7-187: Spurious Emissions (775MHz – 799MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 13:02:08

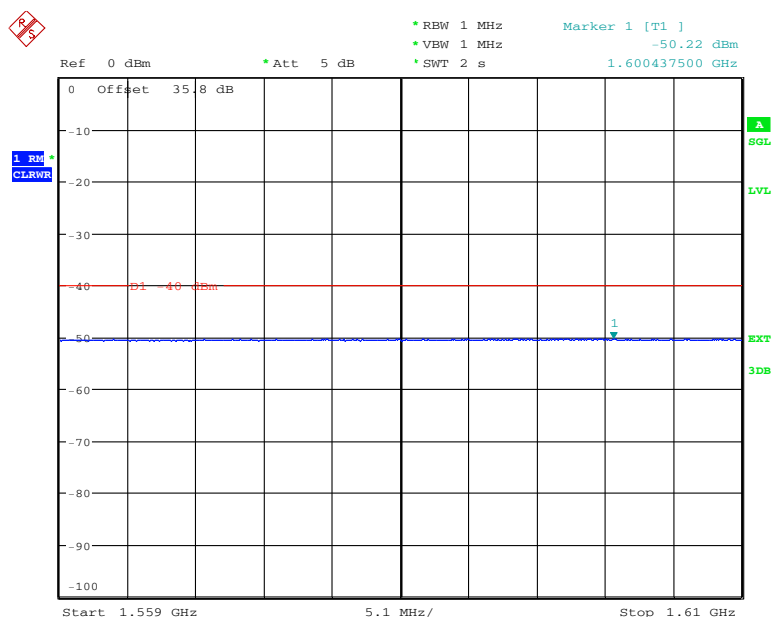
**Figure 7-188: Spurious Emissions (799MHz – 805MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 13:32:01

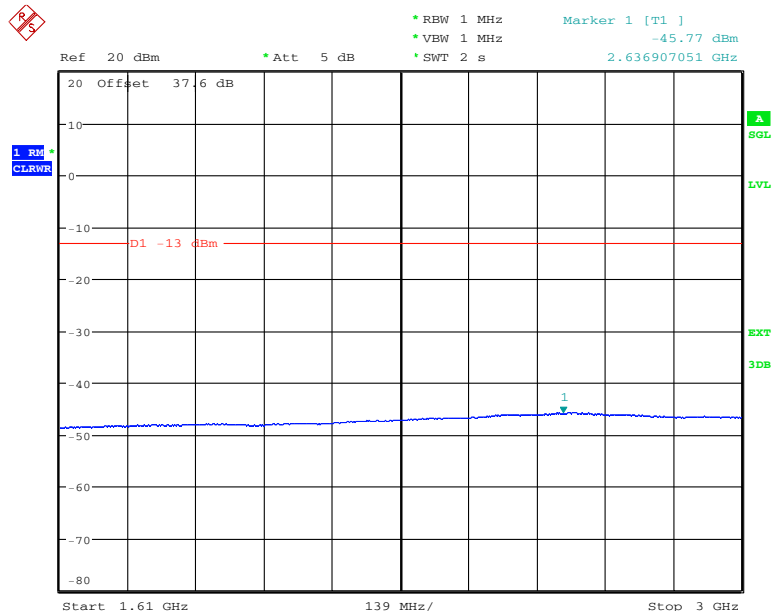
**Figure 7-189: Spurious Emissions (805MHz – 1559MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 13:38:43

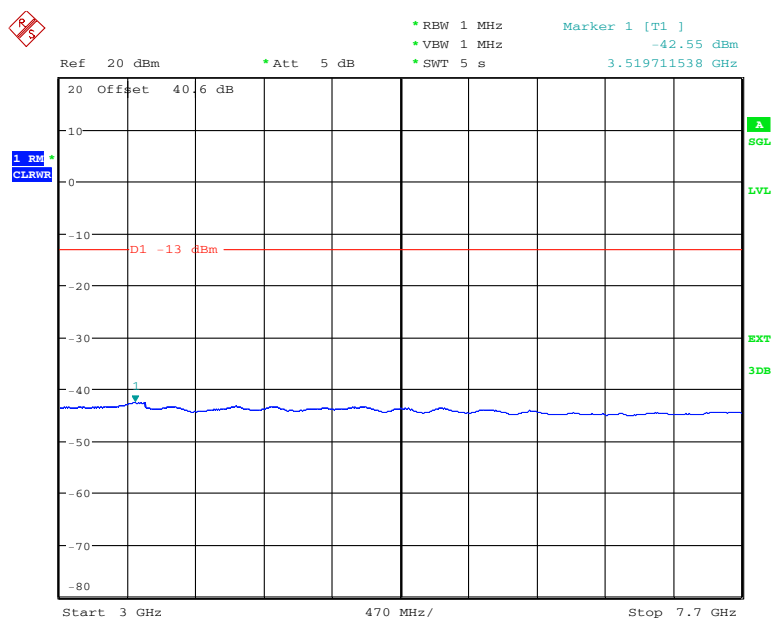
**Figure 7-190: Spurious Emissions (1559MHz – 1610MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 14:03:33

**Figure 7-191: Spurious Emissions (1610MHz – 3GHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

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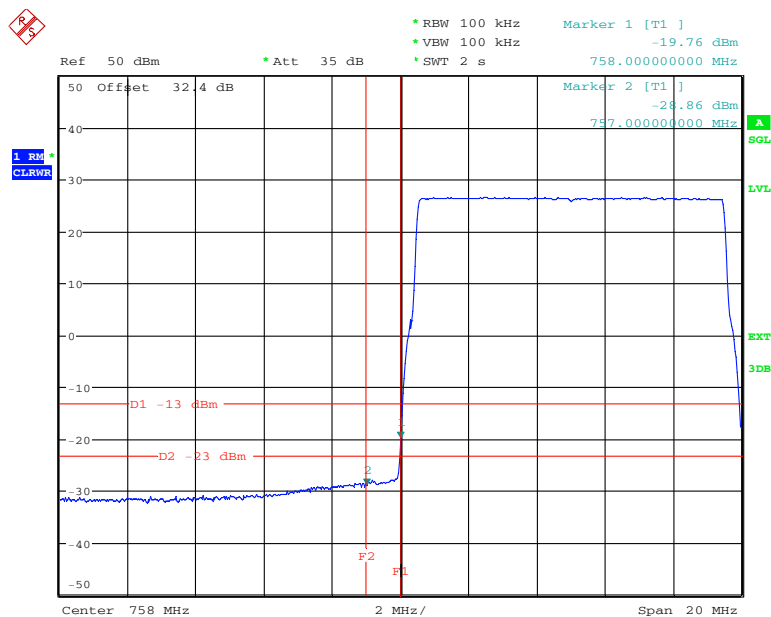


Date: 8.FEB.2011 14:10:12

**Figure 7-192: Spurious Emissions (3GHz – 7.7GHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

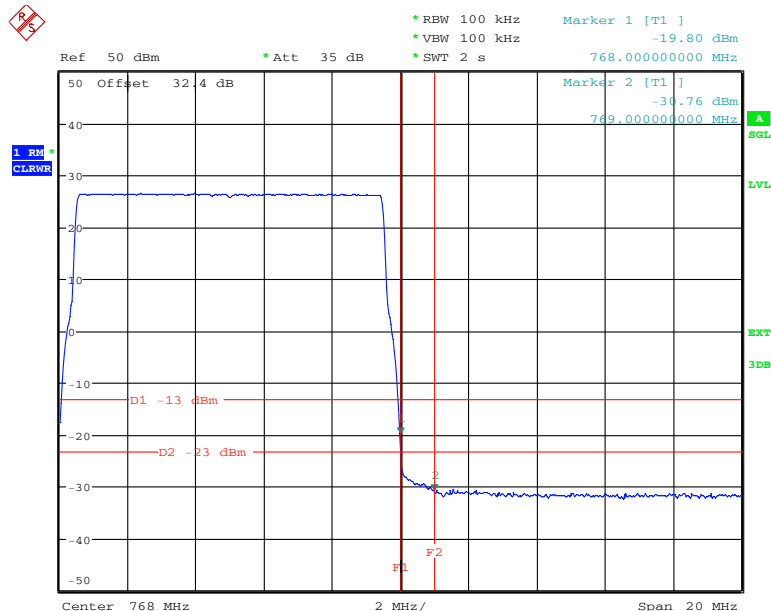
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## Config B TX2:



Date: 8.FEB.2011 14:40:12

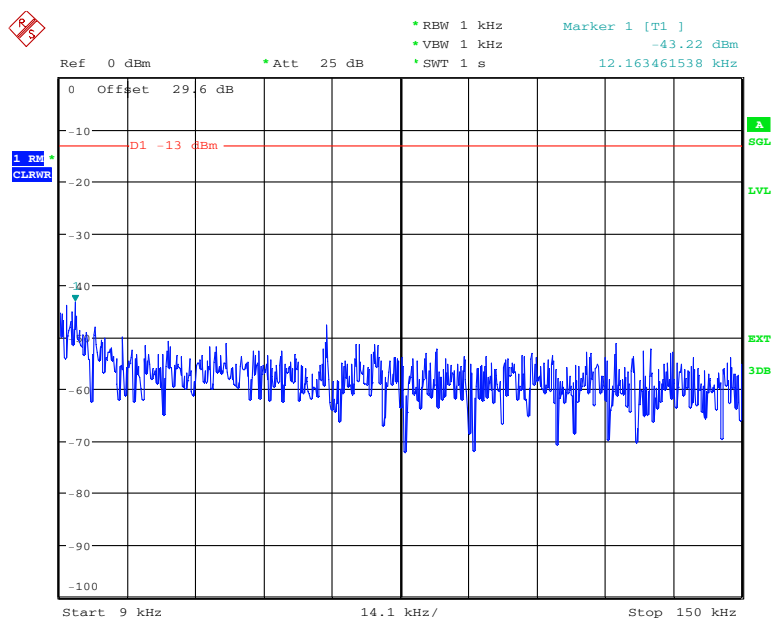
**Figure 7-193: Spurious Emissions (Lower band edge)  
– QPSK (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 14:50:18

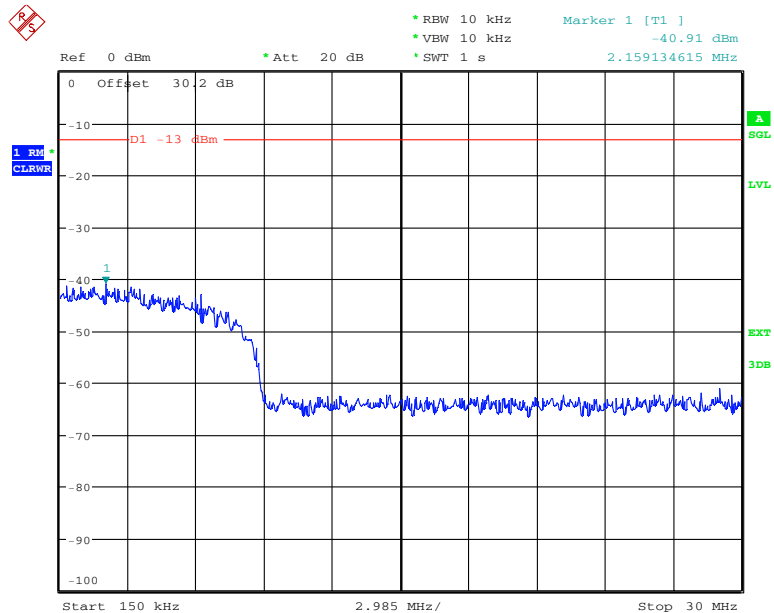
**Figure 7-194: Spurious Emissions (Upper band edge)  
– QPSK (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 07:22:44

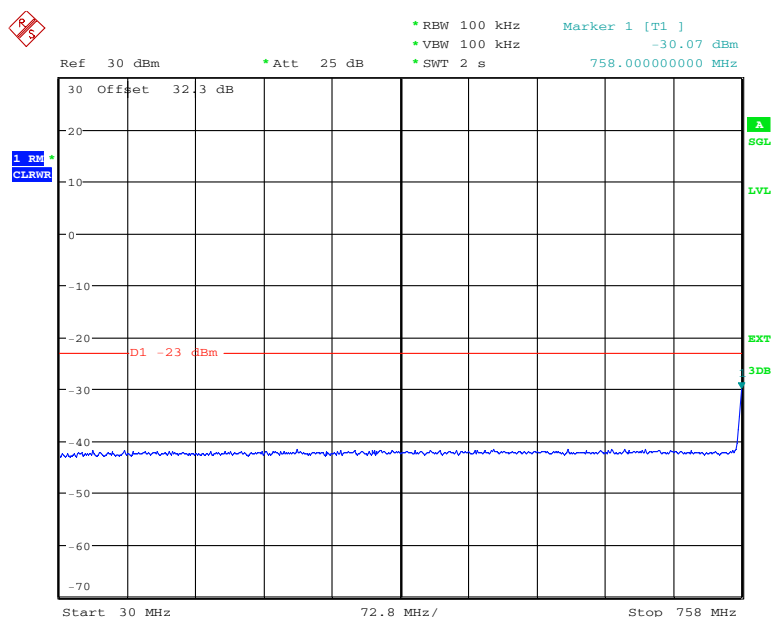
**Figure 7-195: Spurious Emissions (9kHz – 150kHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 07:35:51

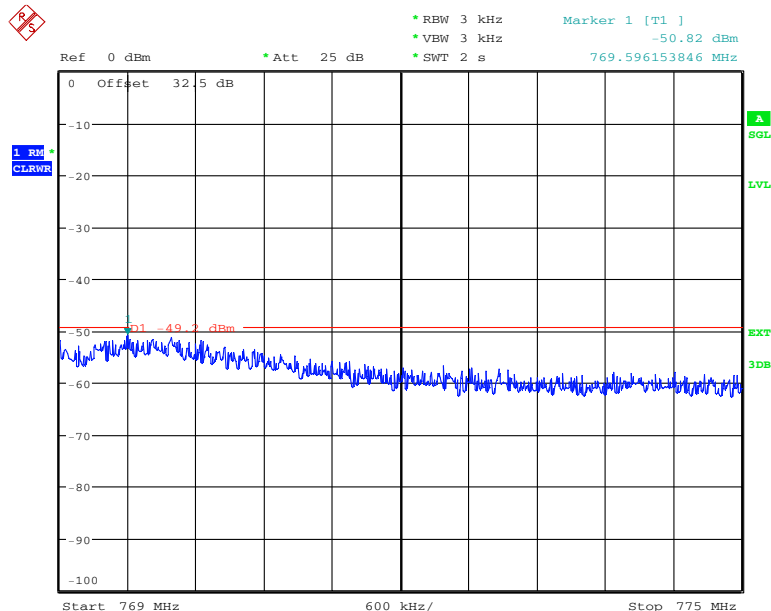
**Figure 7-196: Spurious Emissions (150kHz – 30MHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 09:46:36

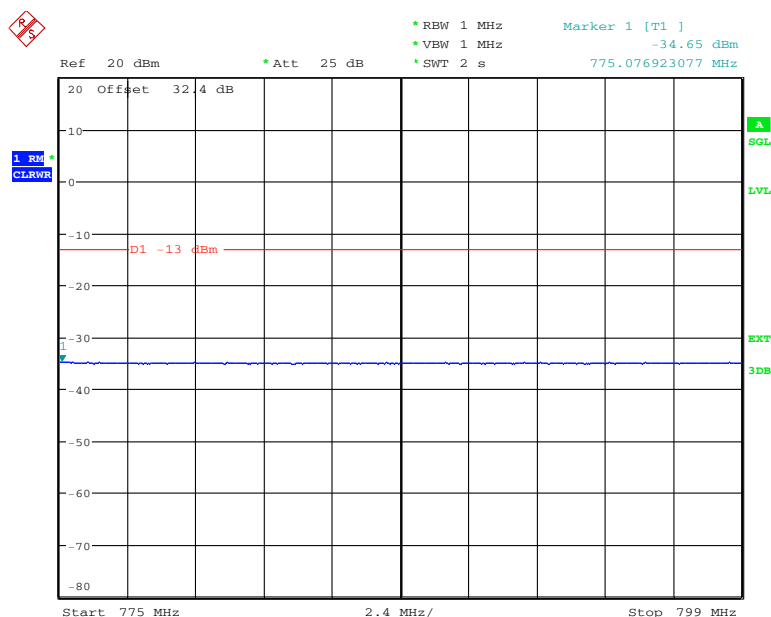
**Figure 7-197: Spurious Emissions (30MHz – 758MHz)**  
– QPSK (763.0 MHz) (10MHz Channel BW)



Date: 8.FEB.2011 10:04:29

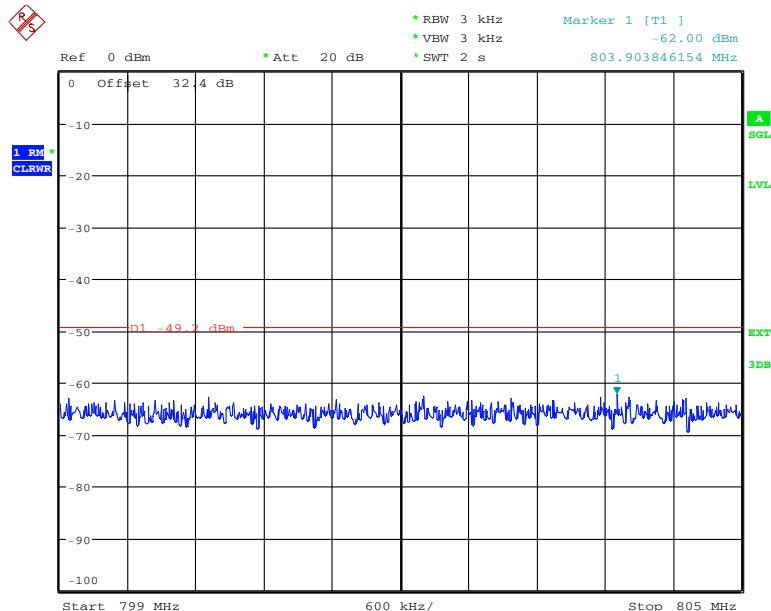
**Figure 7-198: Spurious Emissions (769MHz – 775MHz)**  
– QPSK (763.0 MHz) (10MHz Channel BW)

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Date: 8.FEB.2011 10:45:18

**Figure 7-199: Spurious Emissions (775MHz – 799MHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**

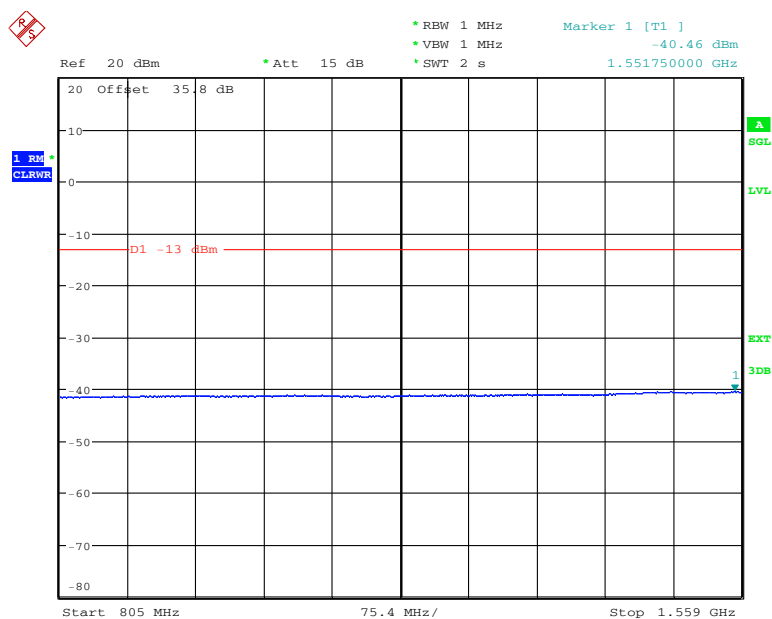


Date: 8.FEB.2011 13:03:42

**Figure 7-200: Spurious Emissions (799MHz – 805MHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**

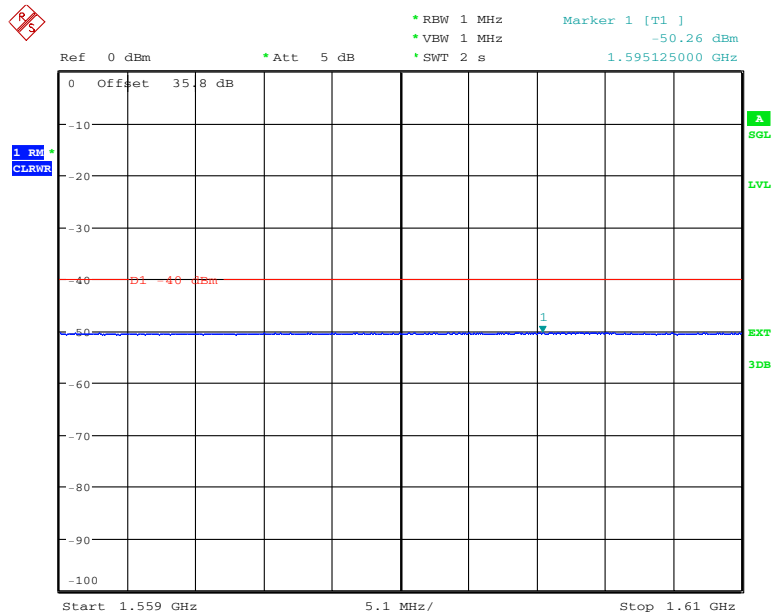
The test report shall not be reproduced except in full without the written approval of the testing laboratory





Date: 8.FEB.2011 13:30:23

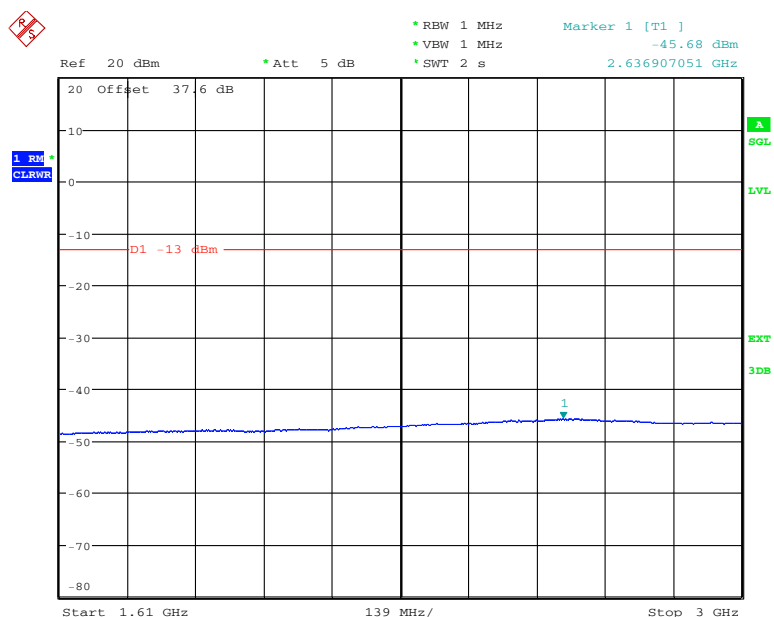
**Figure 7-201: Spurious Emissions (805MHz – 1559MHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 13:43:44

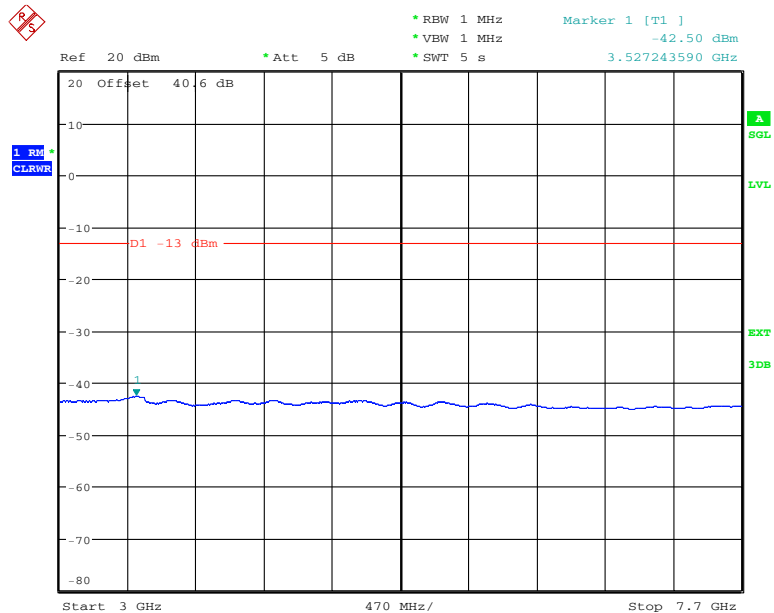
**Figure 7-202: Spurious Emissions (1559MHz – 1610MHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 14:01:53

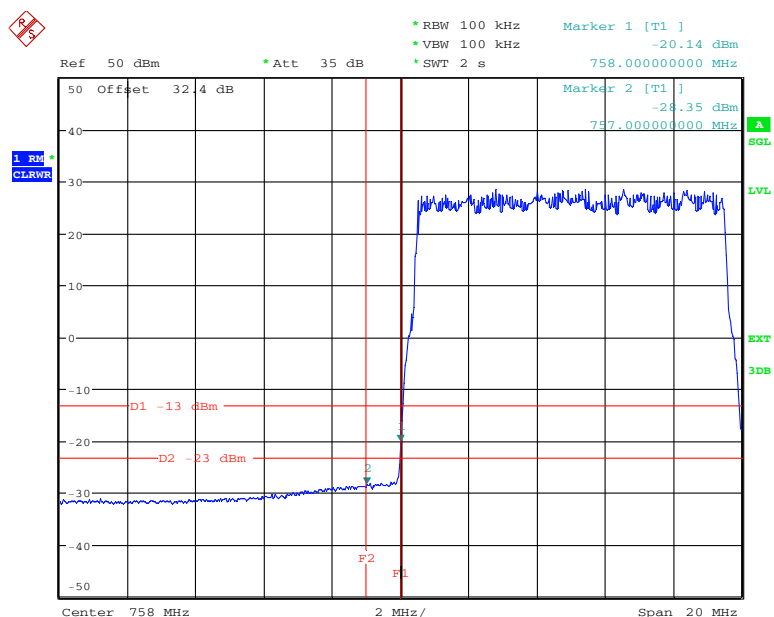
**Figure 7-203: Spurious Emissions (1610MHz – 3GHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 14:18:42

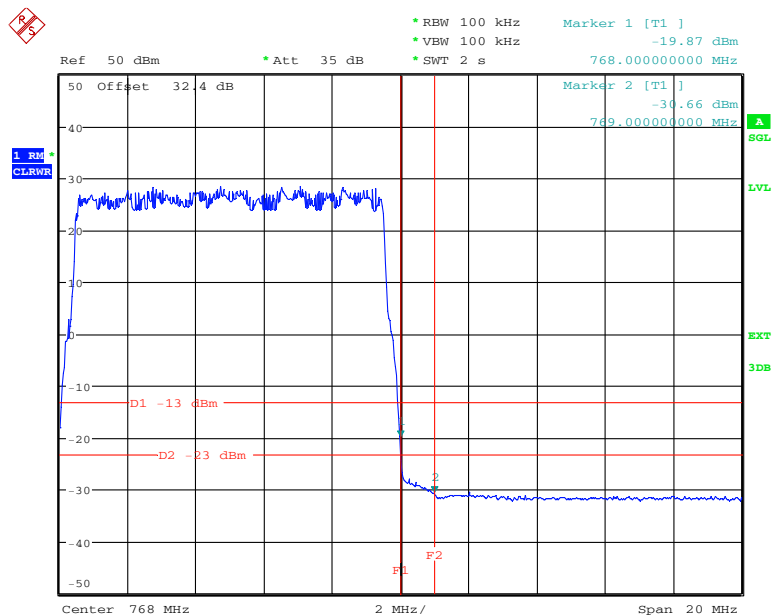
**Figure 7-204: Spurious Emissions (3GHz – 7.7GHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 14:39:07

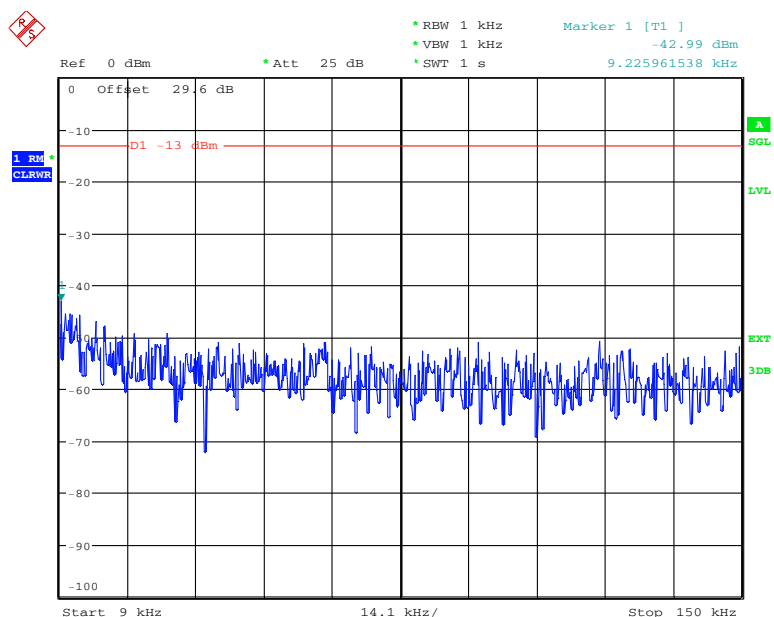
**Figure 7-205: Spurious Emissions (Lower band edge)**  
**– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 14:51:15

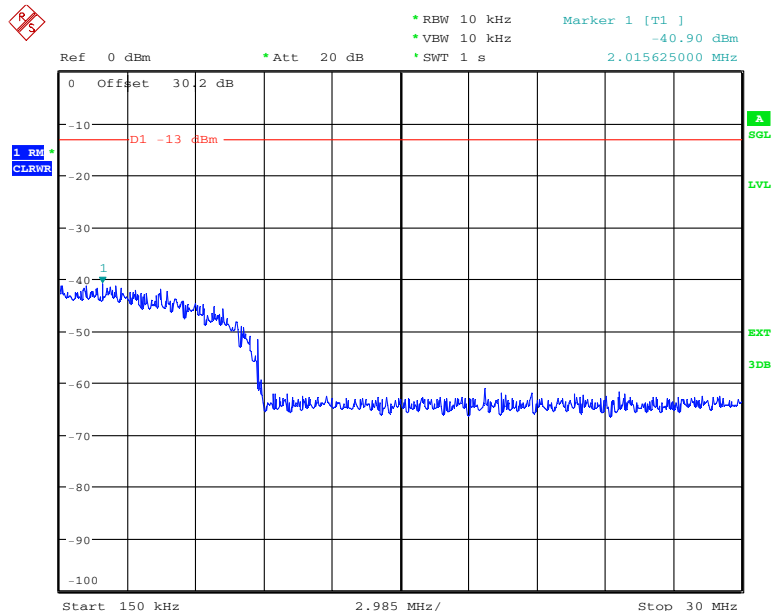
**Figure 7-206: Spurious Emissions (Upper band edge)**  
**– 16QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 07:23:28

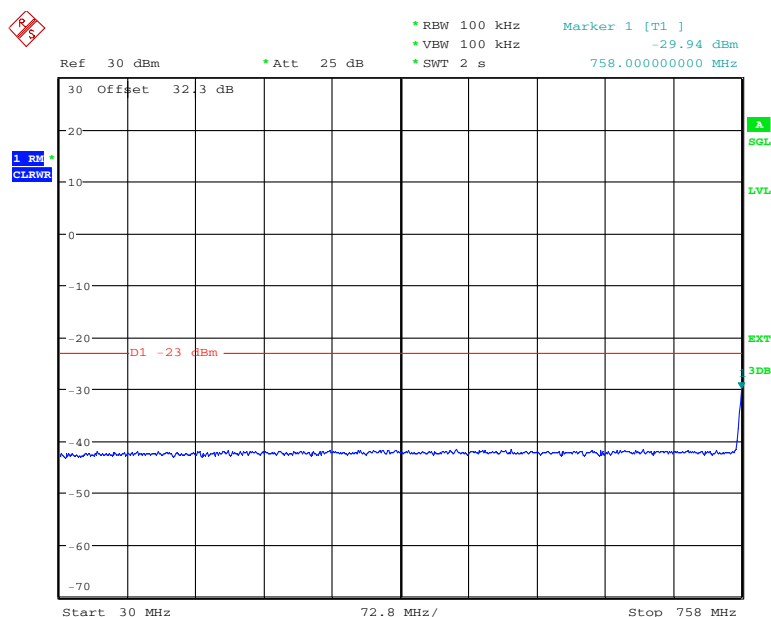
**Figure 7-207: Spurious Emissions (9kHz – 150kHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 07:36:22

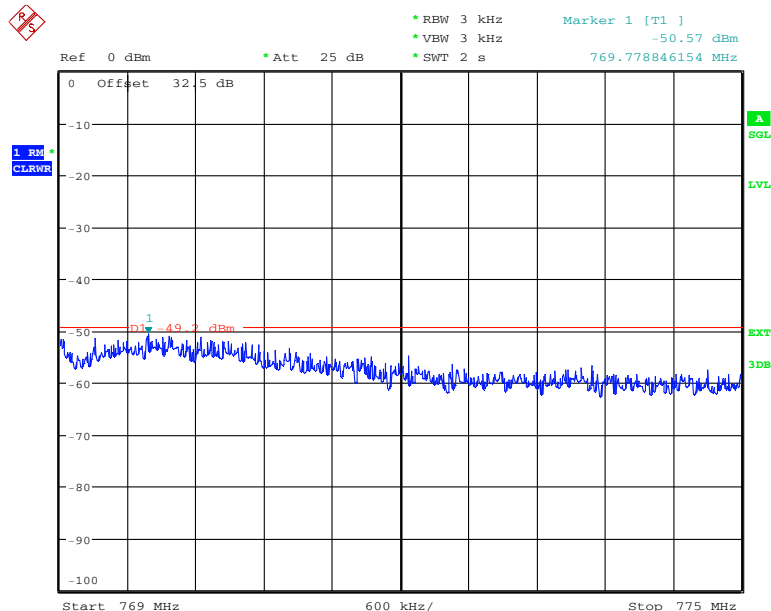
**Figure 7-208: Spurious Emissions (150kHz – 30MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 09:44:37

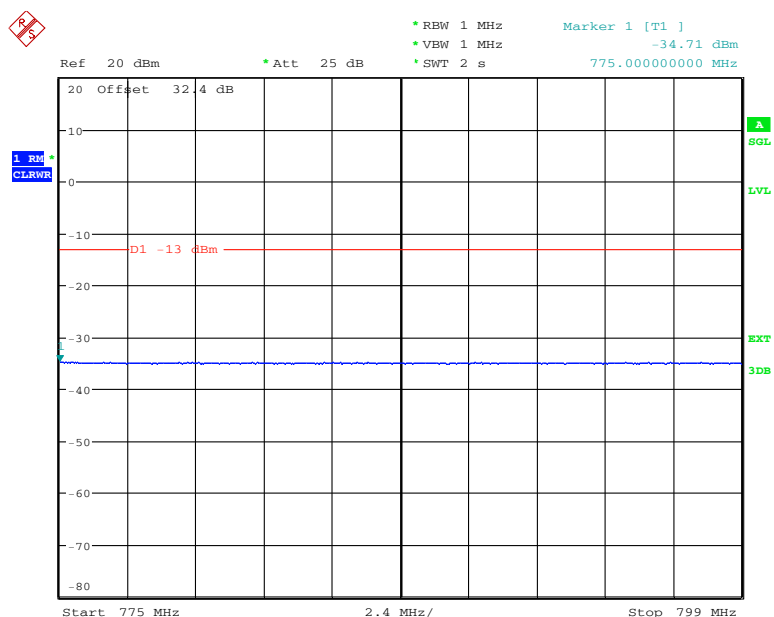
**Figure 7-209: Spurious Emissions (30MHz – 758MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 10:06:35

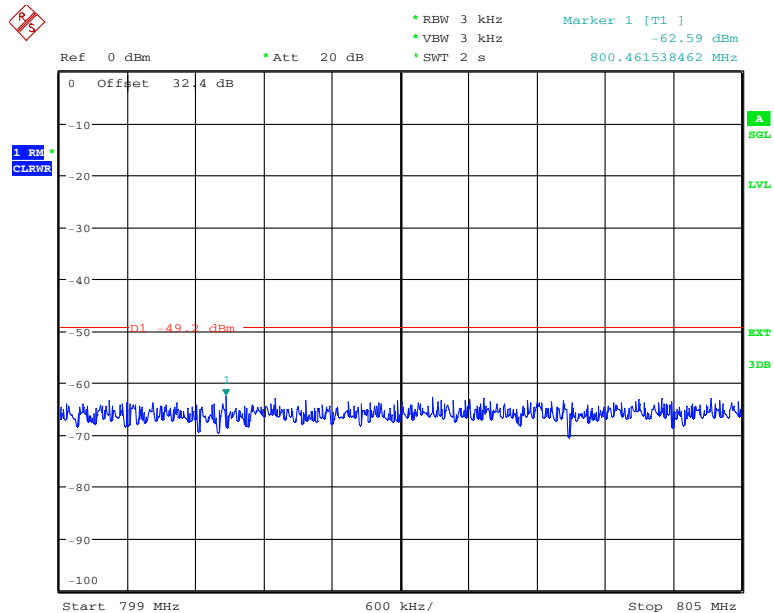
**Figure 7-210: Spurious Emissions (769MHz – 775MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 10:44:20

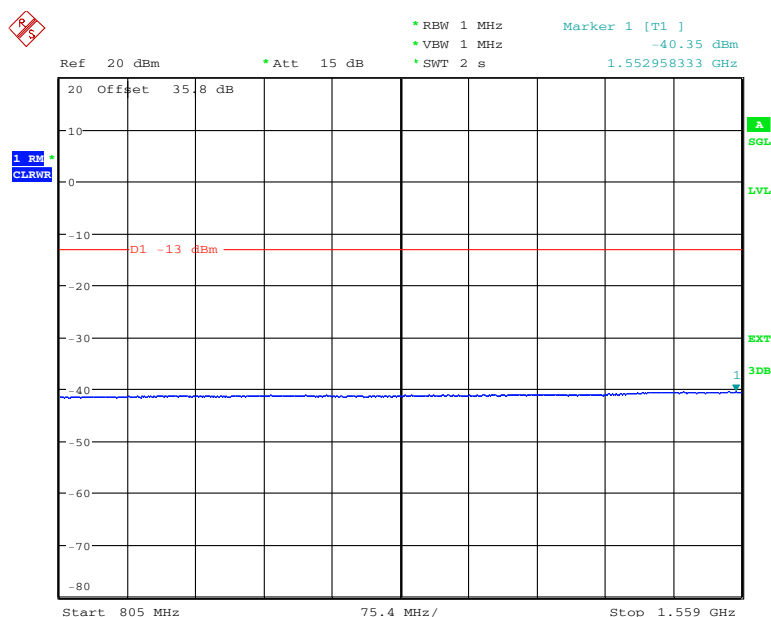
**Figure 7-211: Spurious Emissions (775MHz – 799MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 13:06:54

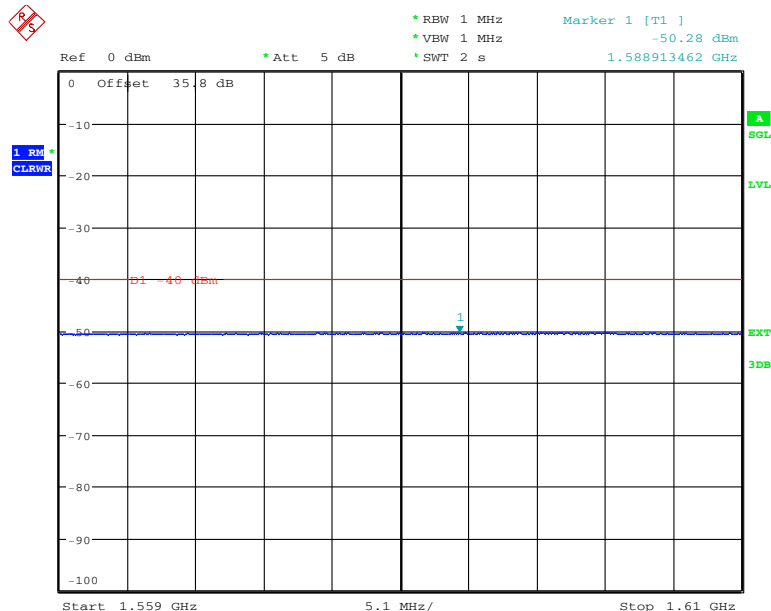
**Figure 7-212: Spurious Emissions (799MHz – 805MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 13:29:18

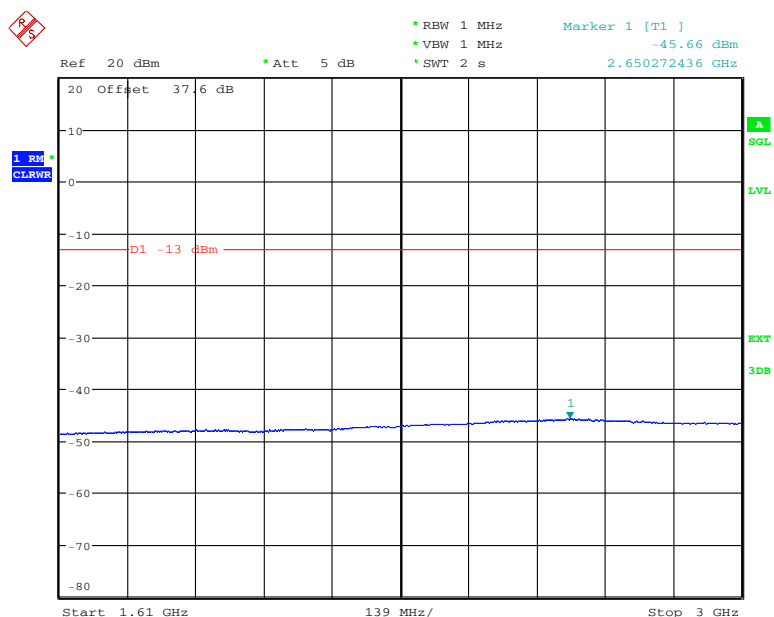
**Figure 7-213: Spurious Emissions (805MHz – 1559MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 13:44:46

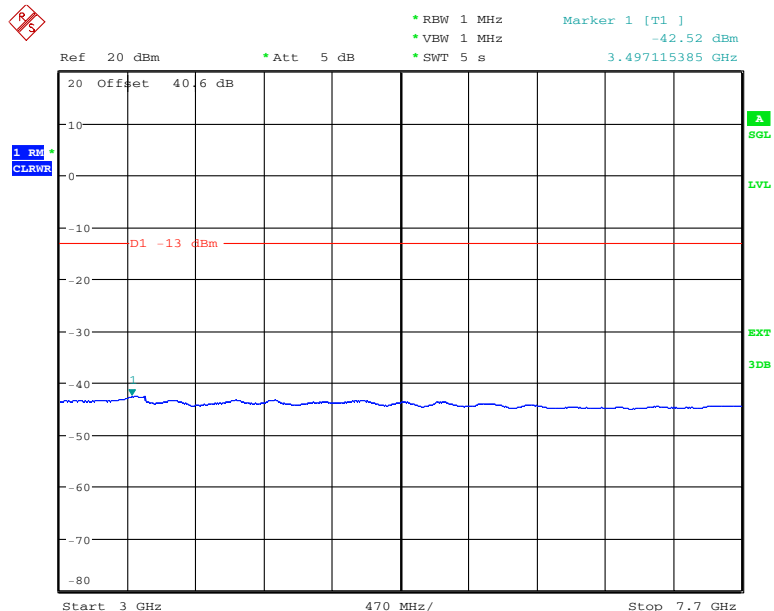
**Figure 7-214: Spurious Emissions (1559MHz – 1610MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 14:00:55

**Figure 7-215: Spurious Emissions (1610MHz – 3GHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

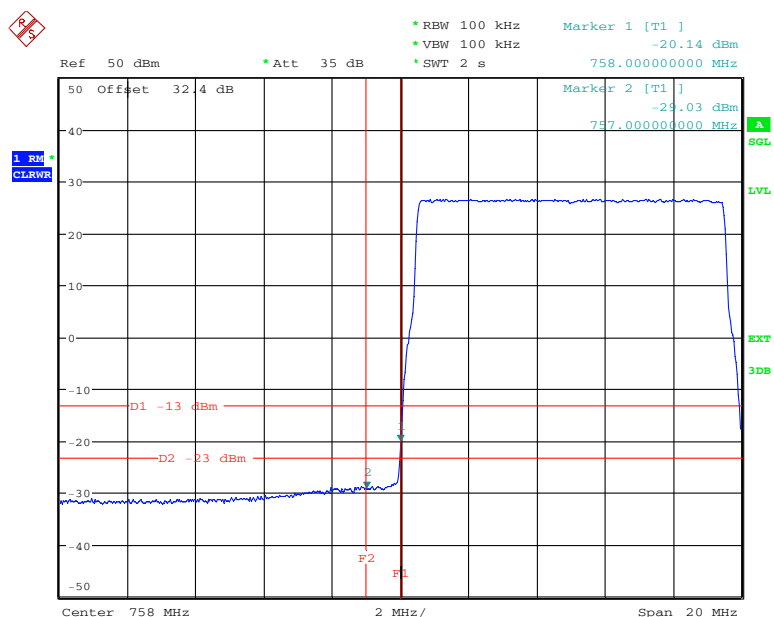


Date: 8.FEB.2011 14:19:59

**Figure 7-216: Spurious Emissions (3GHz – 7.7GHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

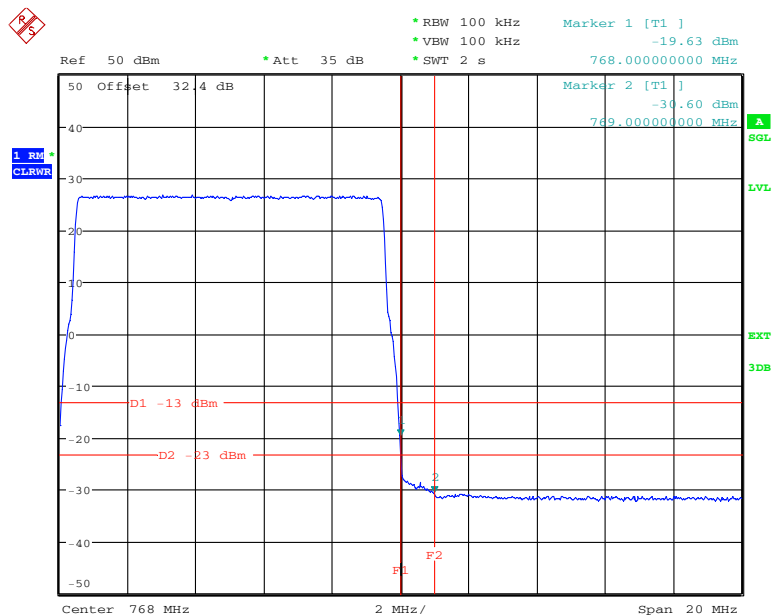
The test report shall not be reproduced except in full without the written approval of the testing laboratory





Date: 8.FEB.2011 14:37:31

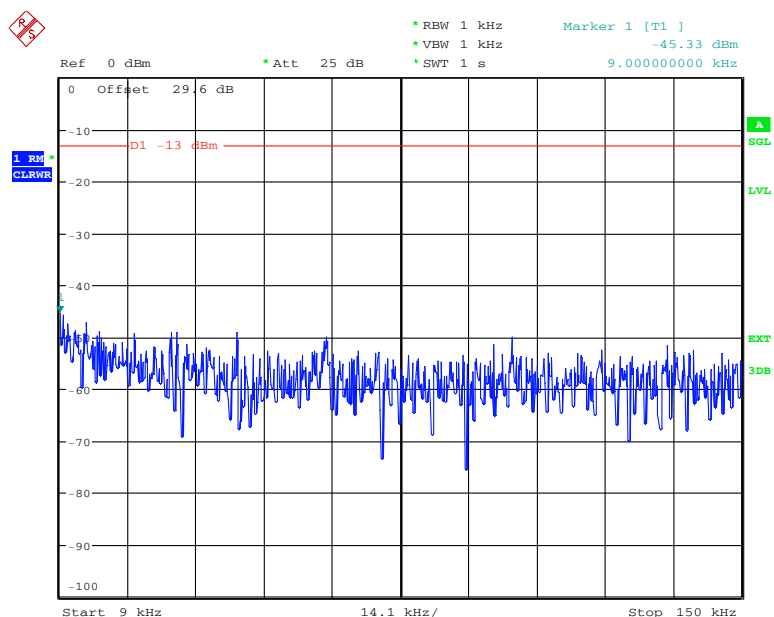
**Figure 7-217: Spurious Emissions (Lower band edge)**  
**– 64QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 14:52:16

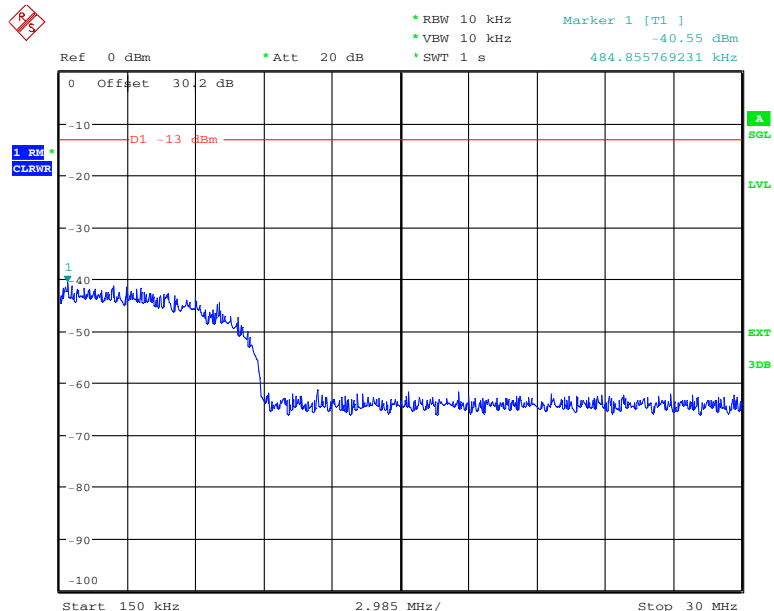
**Figure 7-218: Spurious Emissions (Upper band edge)**  
**– 64QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 07:24:04

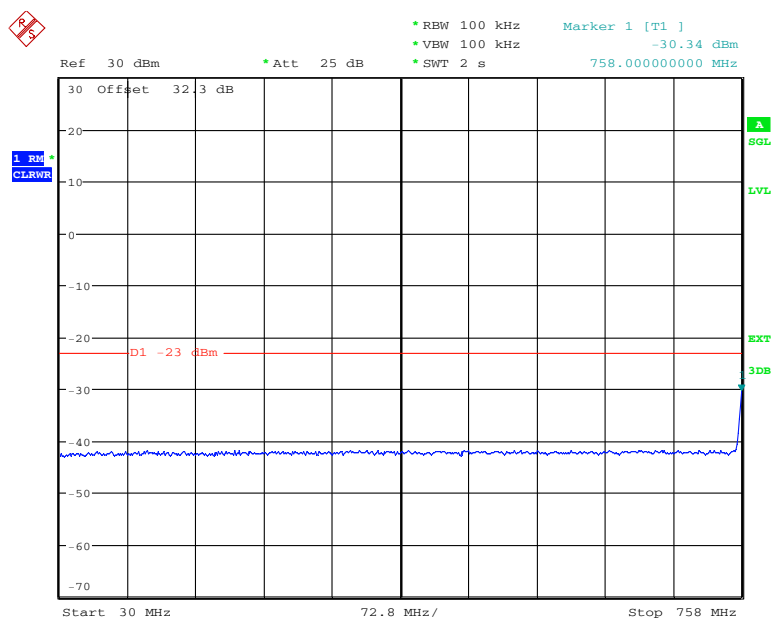
**Figure 7-219: Spurious Emissions (9kHz – 150kHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 07:37:03

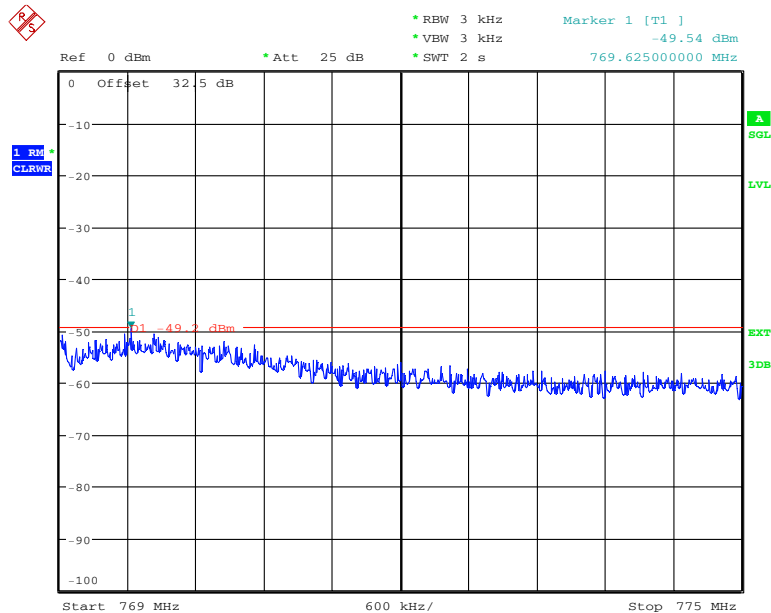
**Figure 7-220: Spurious Emissions (150kHz – 30MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 09:41:59

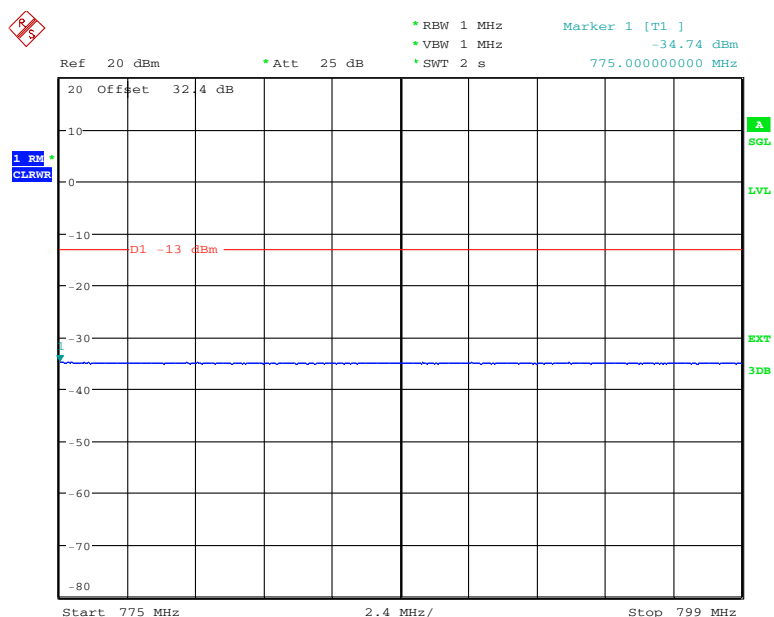
**Figure 7-221: Spurious Emissions (30MHz – 758MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 10:08:30

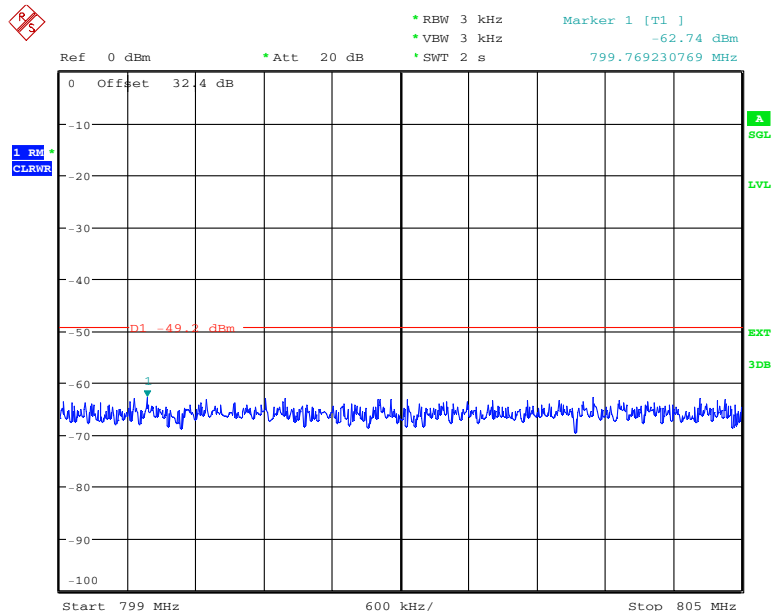
**Figure 7-222: Spurious Emissions (769MHz – 775MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 10:43:14

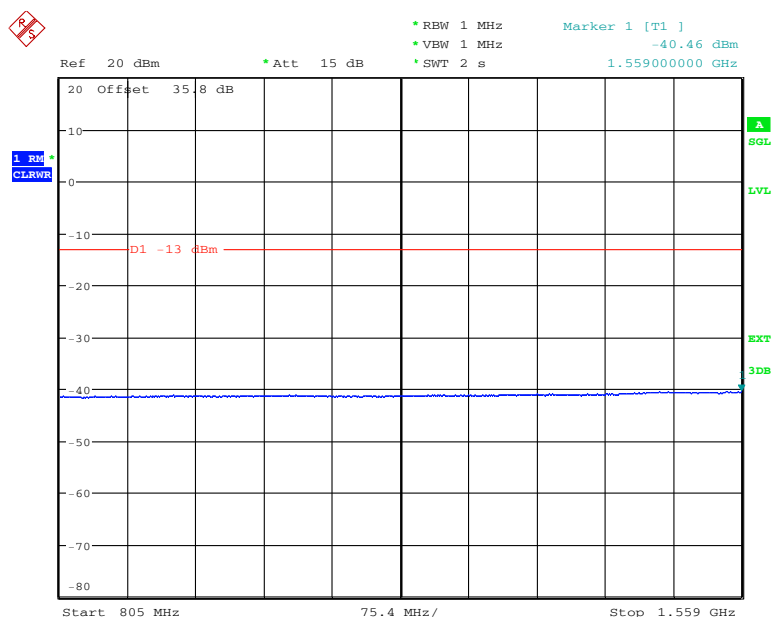
**Figure 7-223: Spurious Emissions (775MHz – 799MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 13:08:00

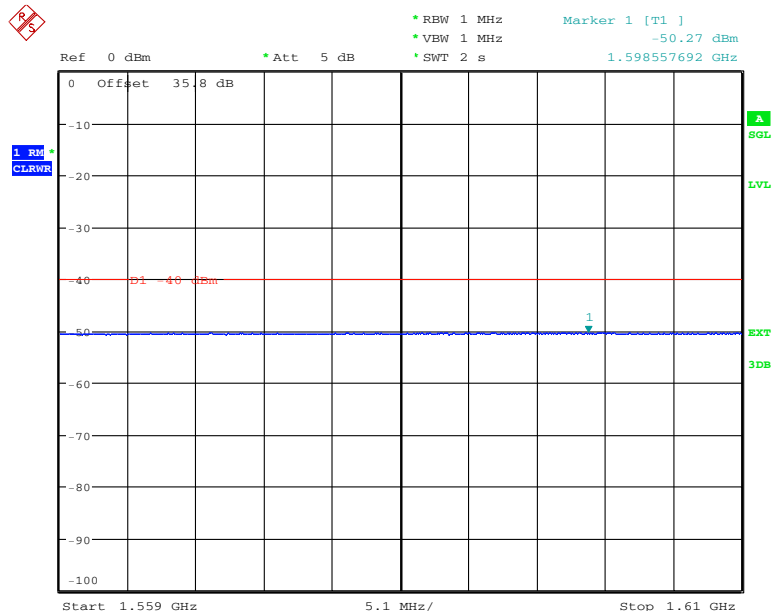
**Figure 7-224: Spurious Emissions (799MHz – 805MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 13:28:13

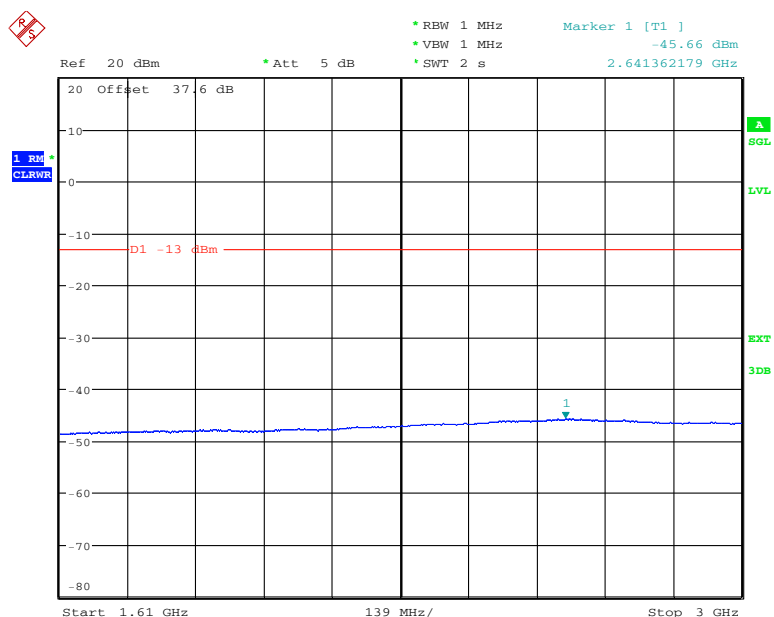
**Figure 7-225: Spurious Emissions (805MHz – 1559MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 13:45:55

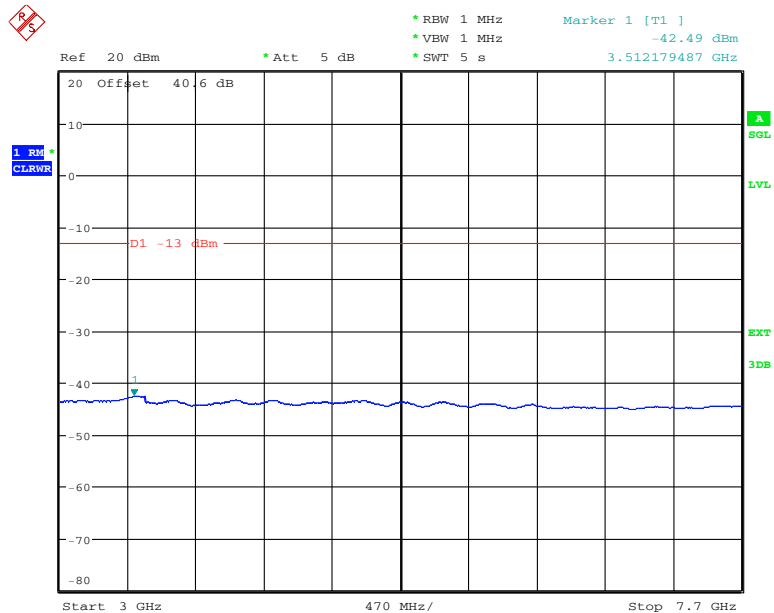
**Figure 7-226: Spurious Emissions (1559MHz – 1610MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 13:59:48

**Figure 7-227: Spurious Emissions (1610MHz – 3GHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

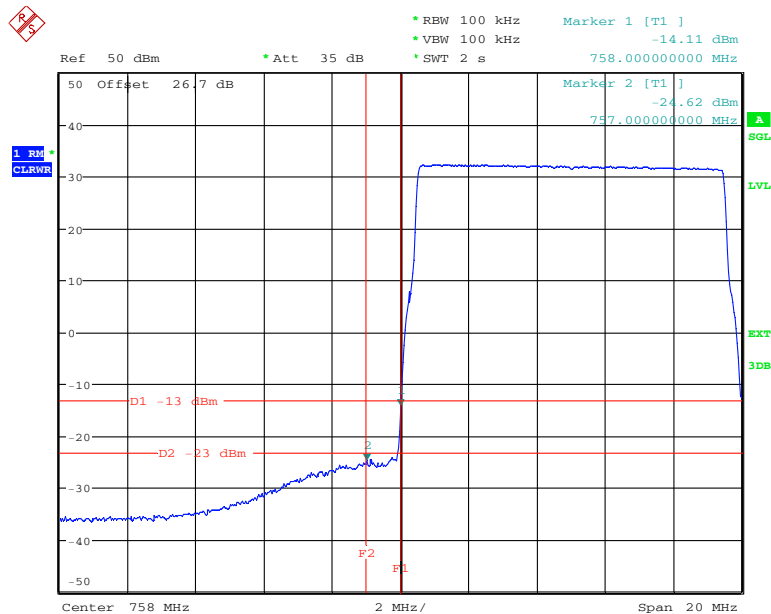


Date: 8.FEB.2011 14:21:11

**Figure 7-228: Spurious Emissions (3GHz – 7.7GHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

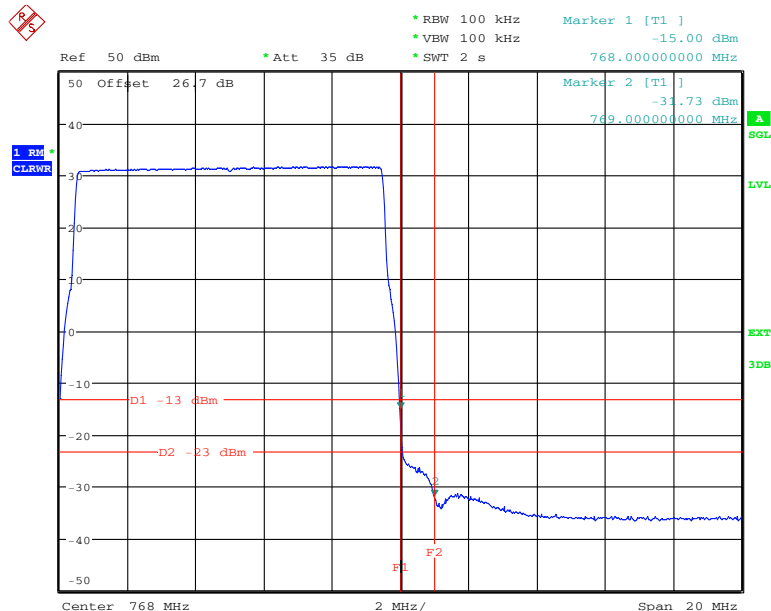
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## Config A TX1+TX2:



Date: 7.FEB.2011 15:07:53

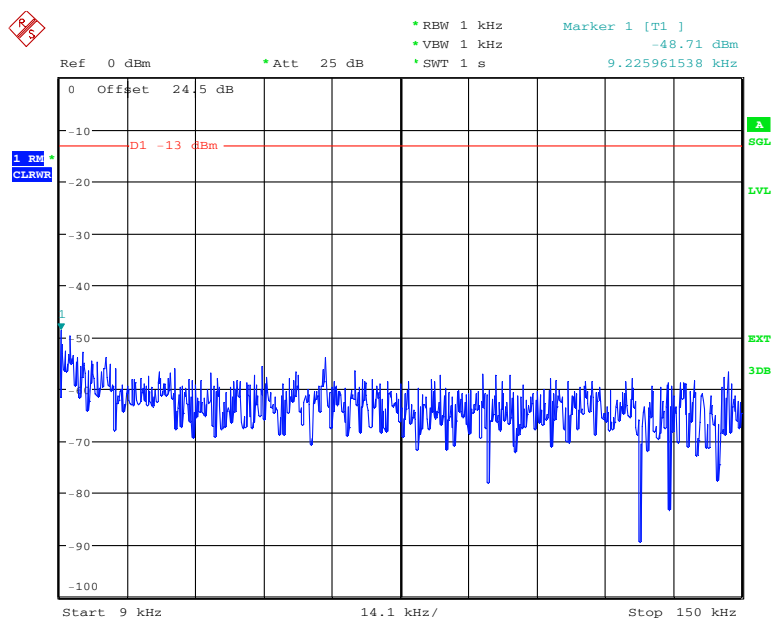
**Figure 7-229: Spurious Emissions (Lower band edge)  
– QPSK (763.0 MHz) (10MHz Channel BW)**



Date: 7.FEB.2011 15:16:07

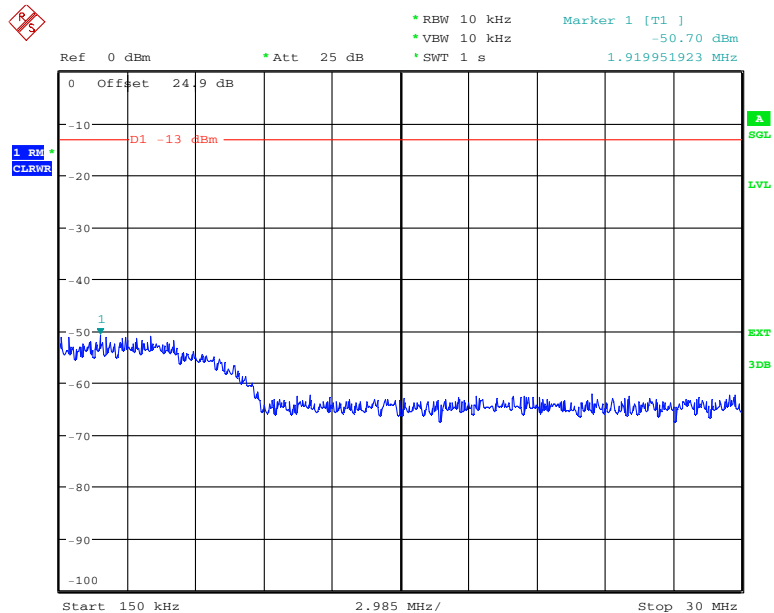
**Figure 7-230: Spurious Emissions (Upper band edge)  
– QPSK (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 07:12:06

**Figure 7-231: Spurious Emissions (9kHz – 150kHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**

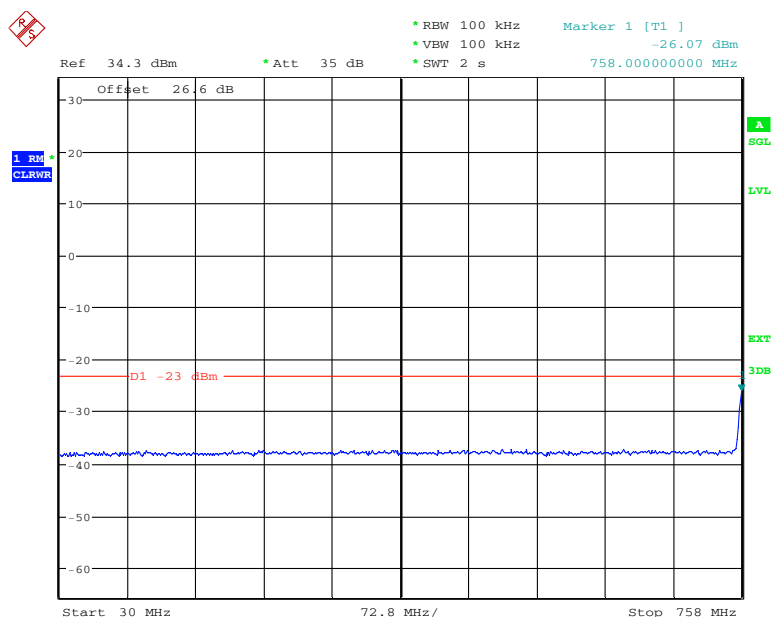


Date: 8.FEB.2011 07:40:04

**Figure 7-232: Spurious Emissions (150kHz – 30MHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**

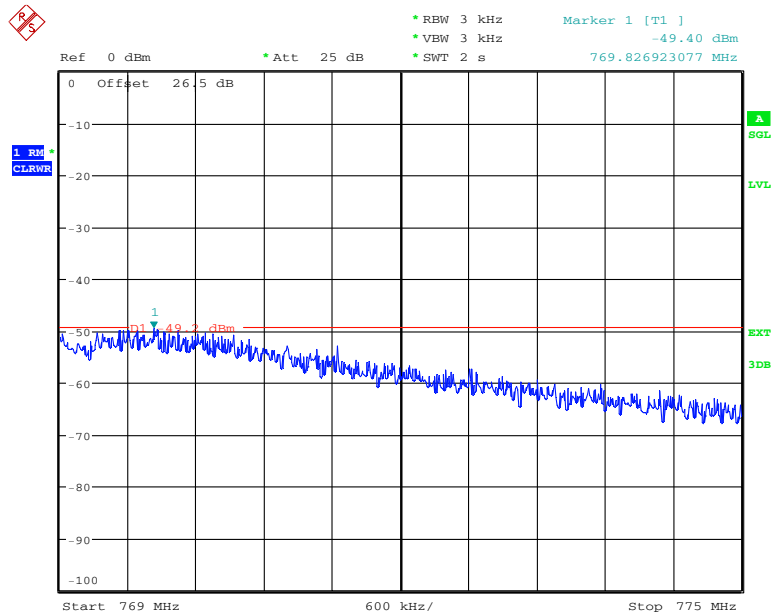
The test report shall not be reproduced except in full without the written approval of the testing laboratory





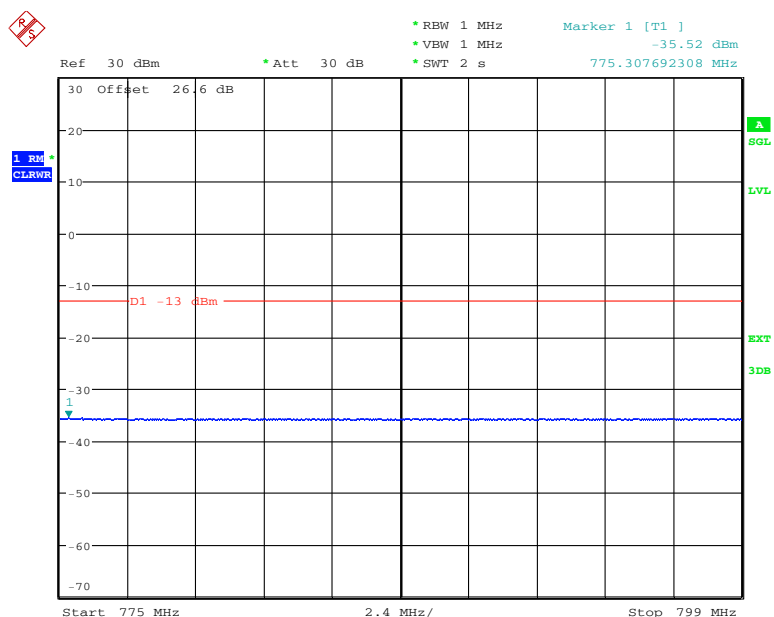
Date: 8.FEB.2011 09:36:53

**Figure 7-233: Spurious Emissions (30MHz – 758MHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**



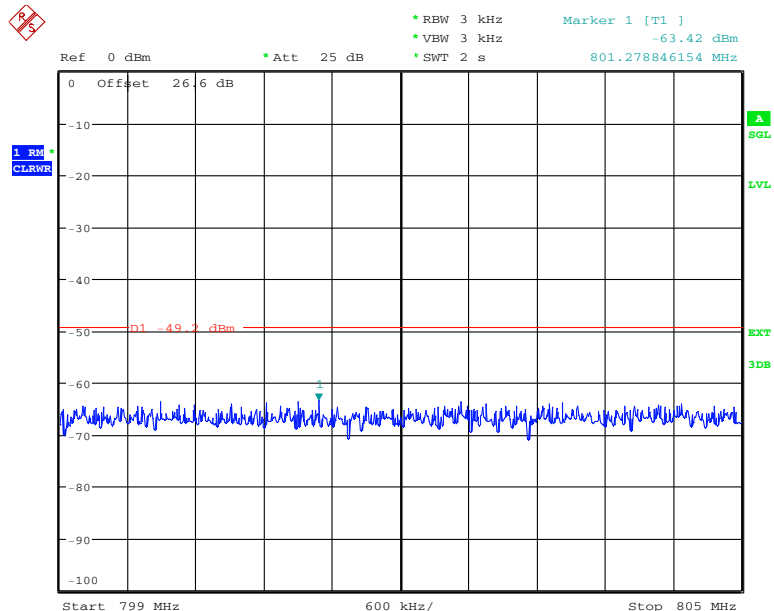
Date: 7.FEB.2011 15:21:12

**Figure 7-234: Spurious Emissions (769MHz – 775MHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 10:25:59

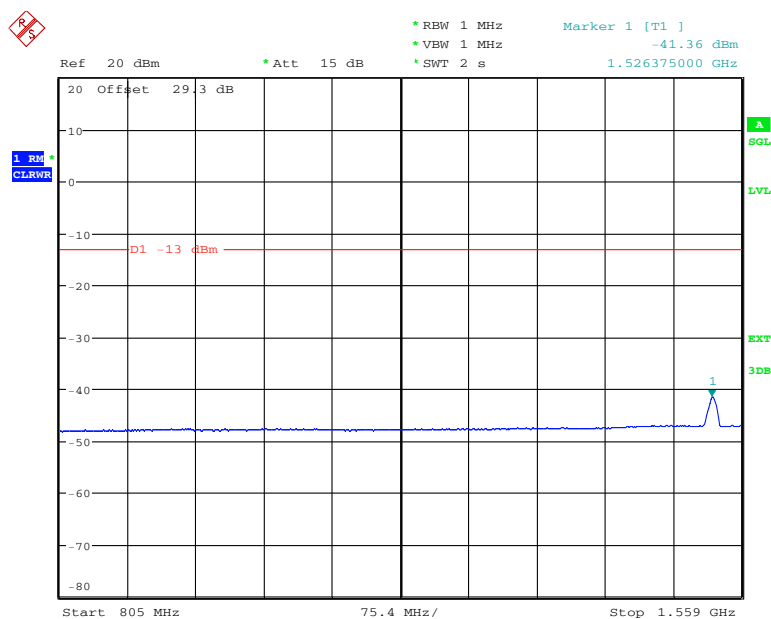
**Figure 7-235: Spurious Emissions (775MHz – 799MHz)**  
– QPSK (763.0 MHz) (10MHz Channel BW)



Date: 8.FEB.2011 13:13:12

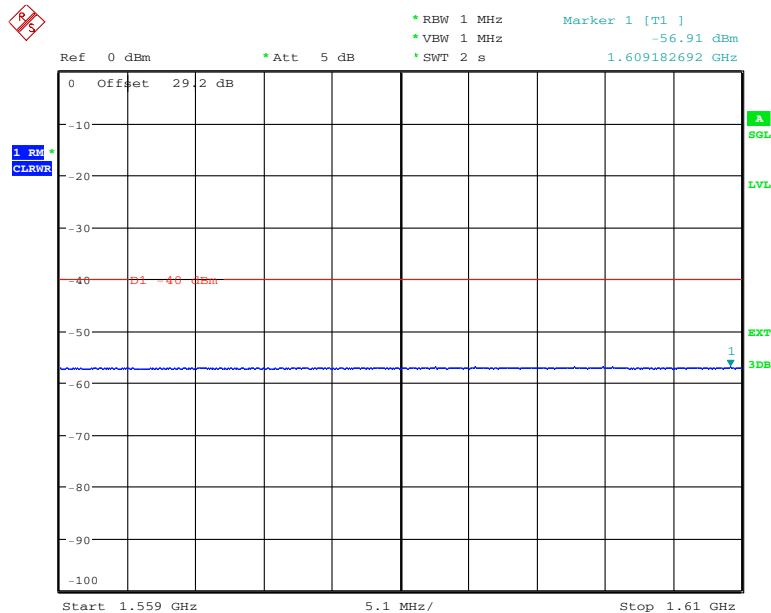
**Figure 7-236: Spurious Emissions (799MHz – 805MHz)**  
– QPSK (763.0 MHz) (10MHz Channel BW)

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Date: 8.FEB.2011 13:23:54

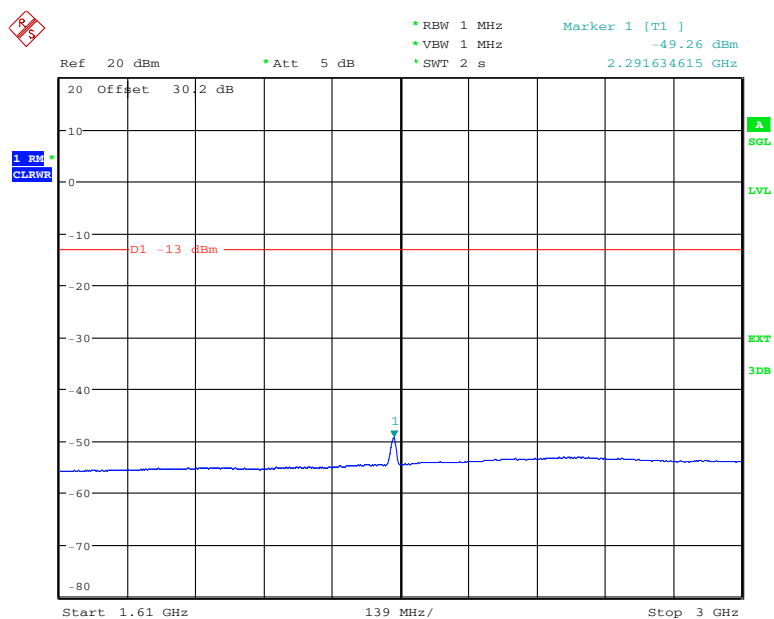
**Figure 7-237: Spurious Emissions (805MHz – 1559MHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 13:49:14

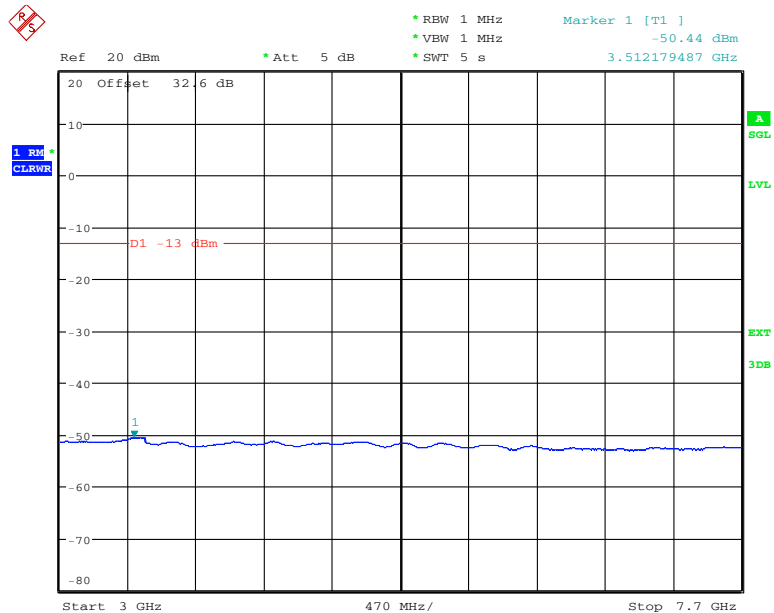
**Figure 7-238: Spurious Emissions (1559MHz – 1610MHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 13:56:50

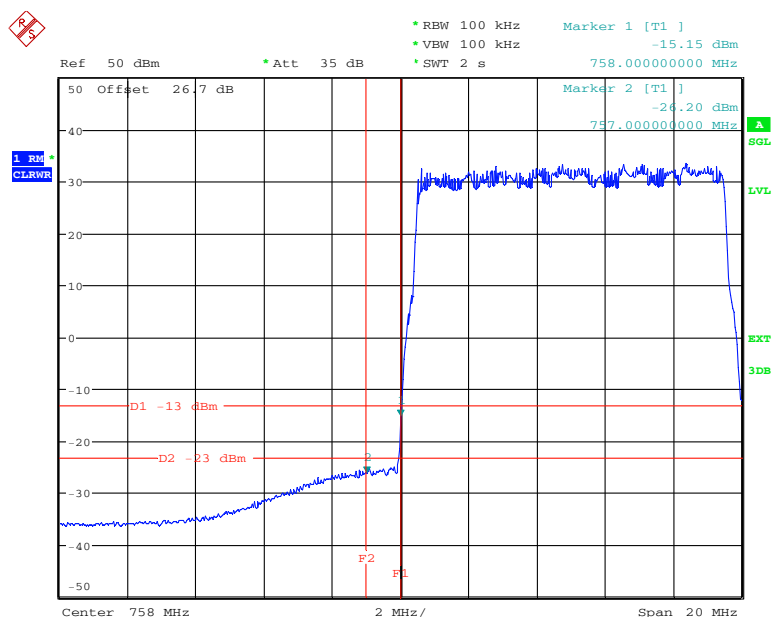
**Figure 7-239: Spurious Emissions (1610MHz – 3GHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 14:24:07

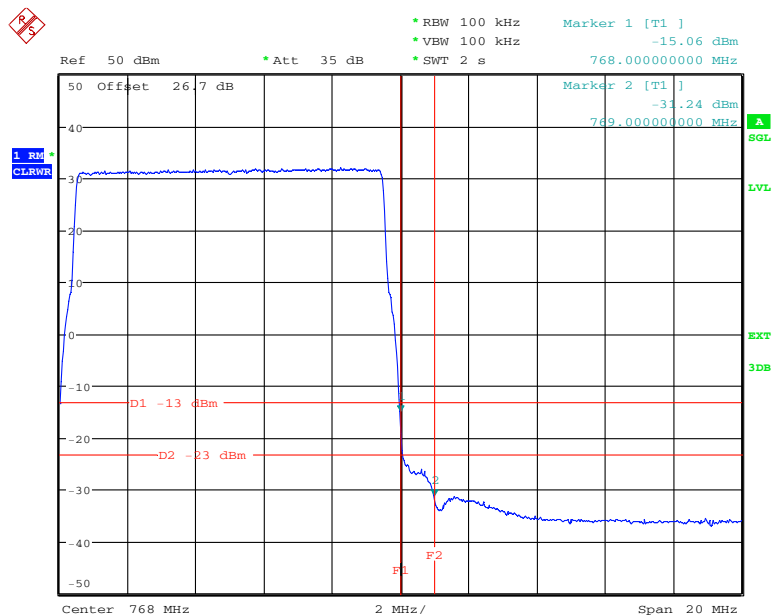
**Figure 7-240: Spurious Emissions (3GHz – 7.7GHz)  
– QPSK (763.0 MHz) (10MHz Channel BW)**

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Date: 7.FEB.2011 15:10:55

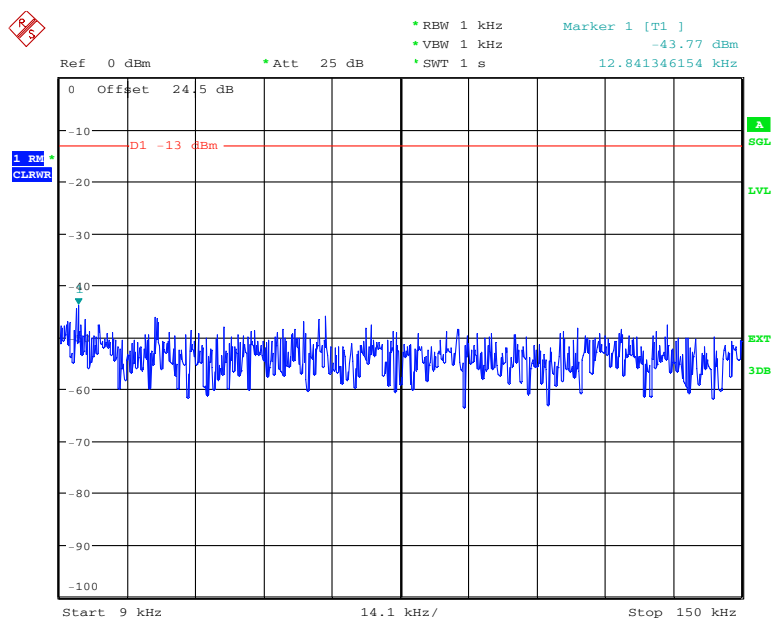
**Figure 7-241: Spurious Emissions (Lower band edge)**  
**– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 7.FEB.2011 15:15:03

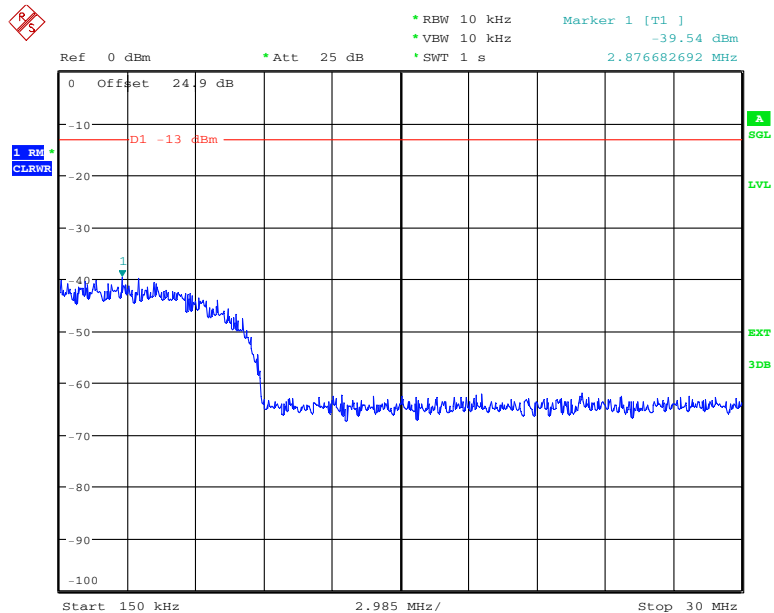
**Figure 7-242: Spurious Emissions (Upper band edge)**  
**– 16QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 07:12:56

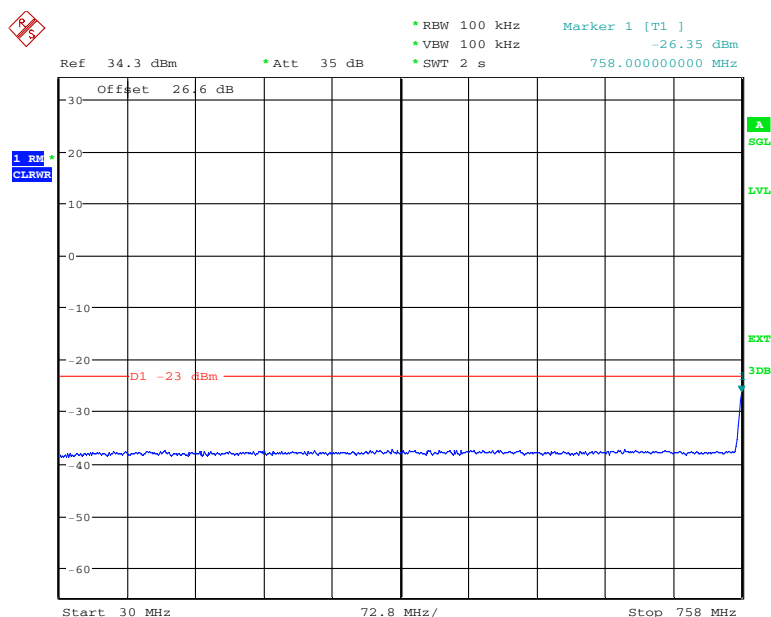
**Figure 7-243: Spurious Emissions (9kHz – 150kHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 07:40:47

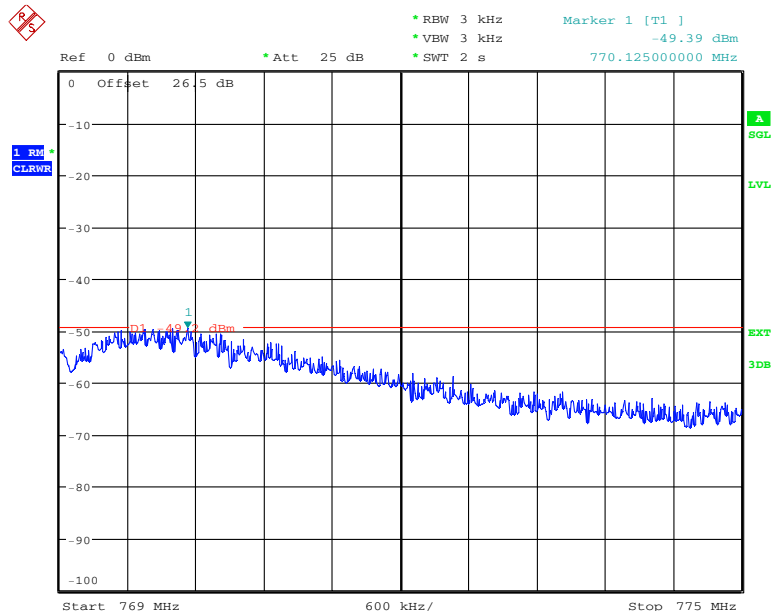
**Figure 7-244: Spurious Emissions (150kHz – 30MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 09:35:30

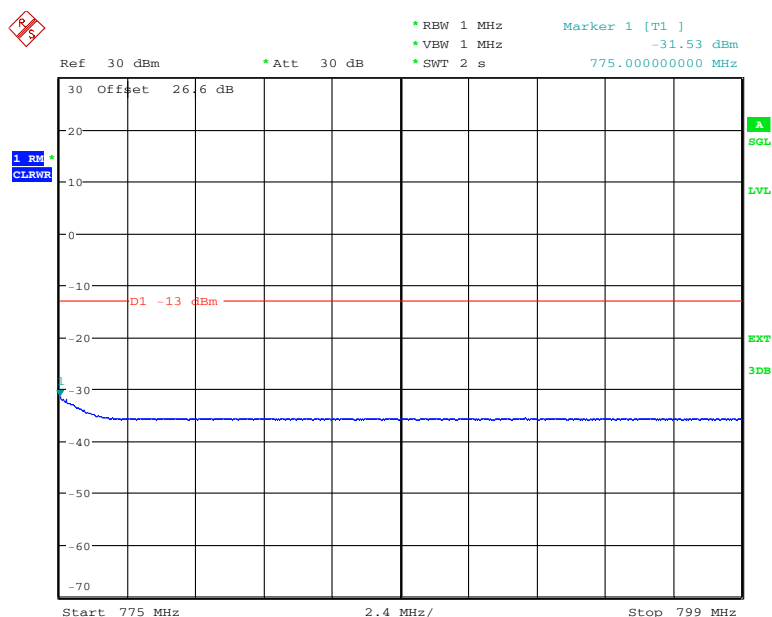
**Figure 7-245: Spurious Emissions (30MHz – 758MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 7.FEB.2011 15:24:34

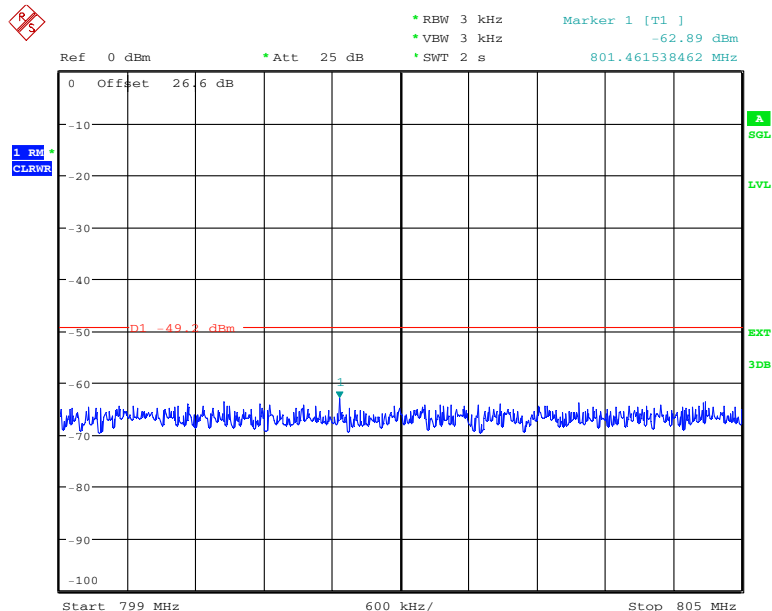
**Figure 7-246: Spurious Emissions (769MHz – 775MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 10:29:25

**Figure 7-247: Spurious Emissions (775MHz – 799MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

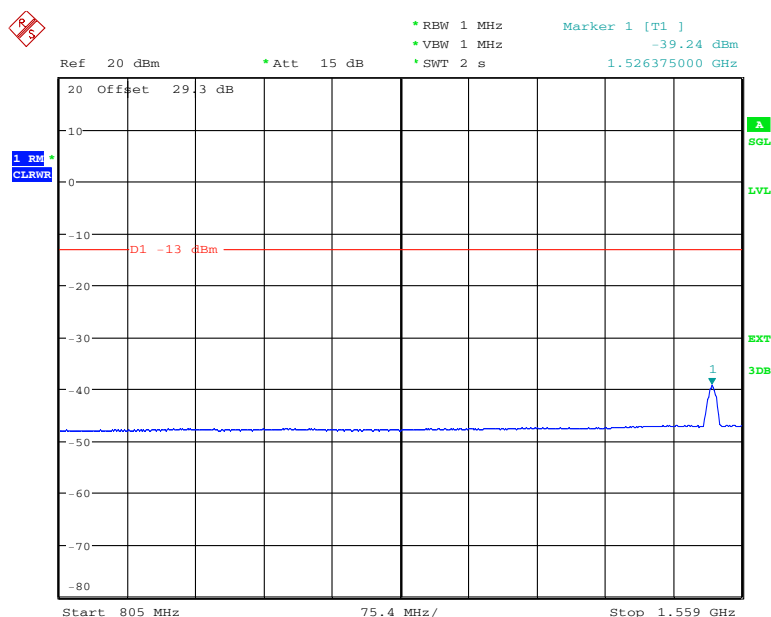


Date: 8.FEB.2011 13:15:00

**Figure 7-248: Spurious Emissions (799MHz – 805MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

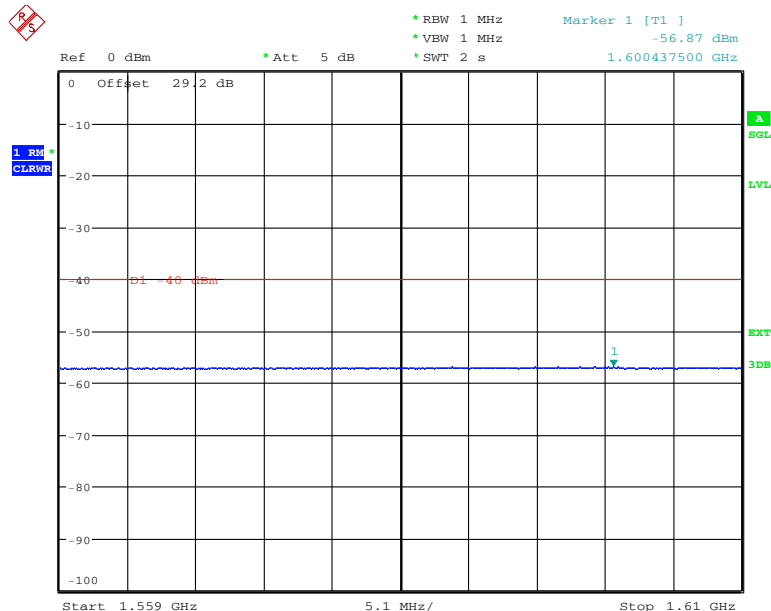
The test report shall not be reproduced except in full without the written approval of the testing laboratory





Date: 8.FEB.2011 13:22:39

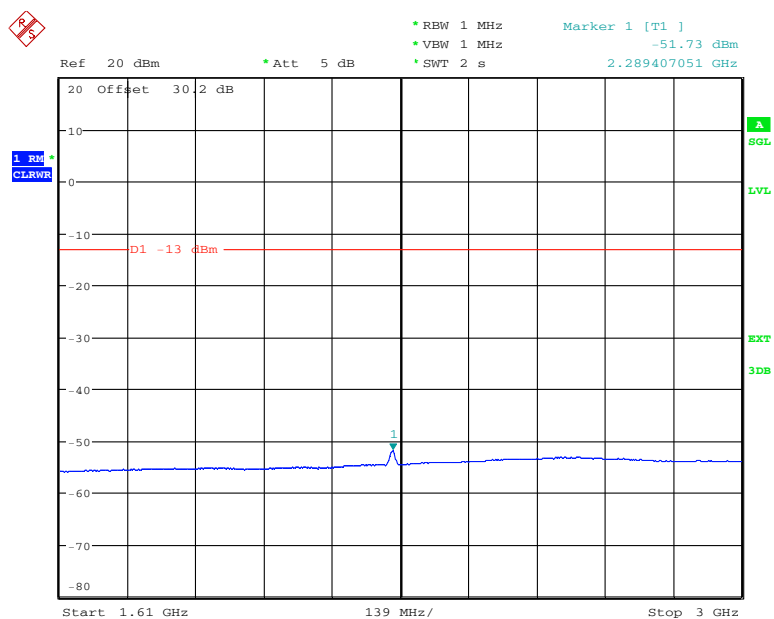
**Figure 7-249: Spurious Emissions (805MHz – 1559MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 13:50:09

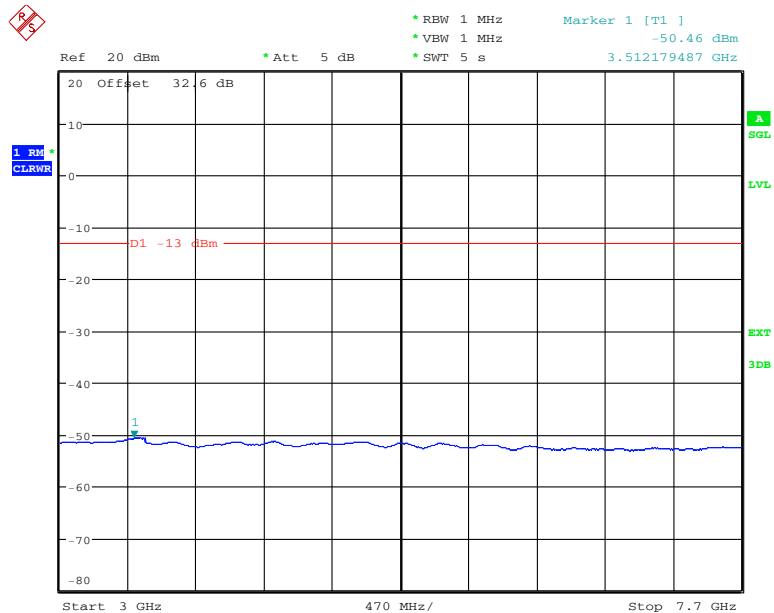
**Figure 7-250: Spurious Emissions (1559MHz – 1610MHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 13:55:49

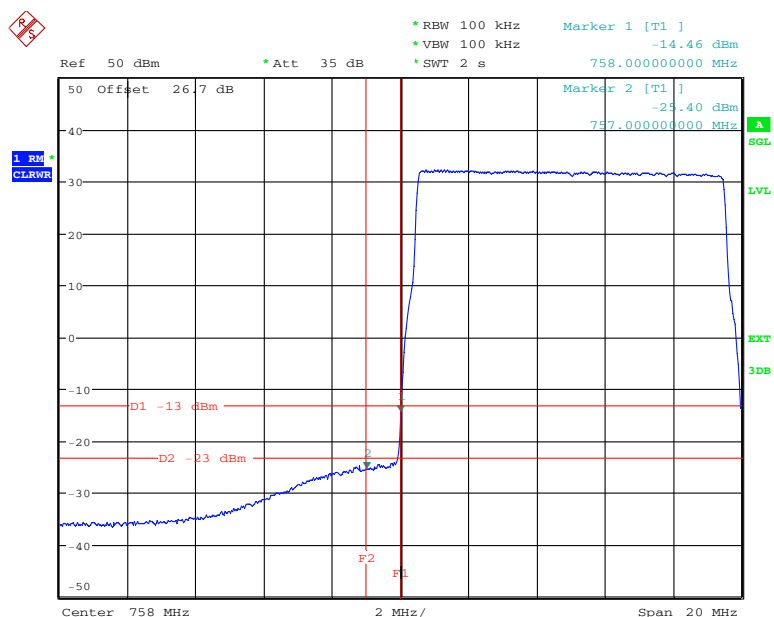
**Figure 7-251: Spurious Emissions (1610MHz – 3GHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 14:25:41

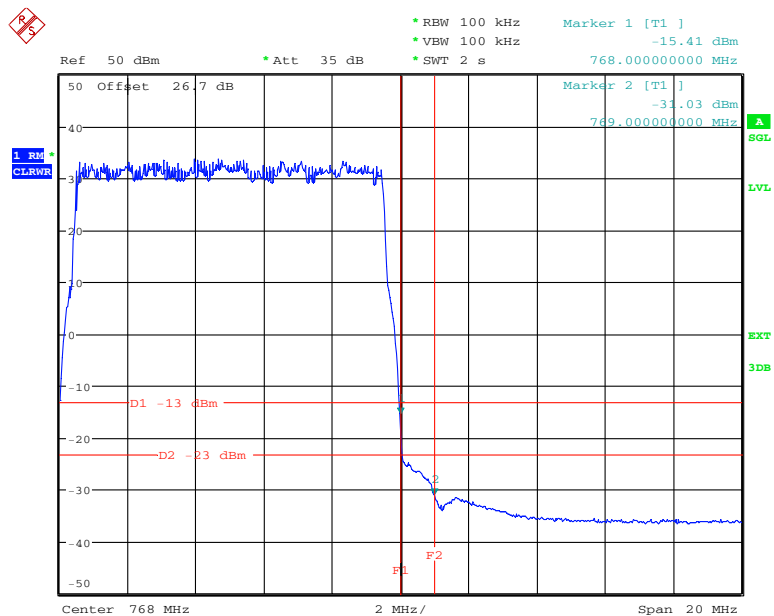
**Figure 7-252: Spurious Emissions (3GHz – 7.7GHz)  
– 16QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 7.FEB.2011 15:10:04

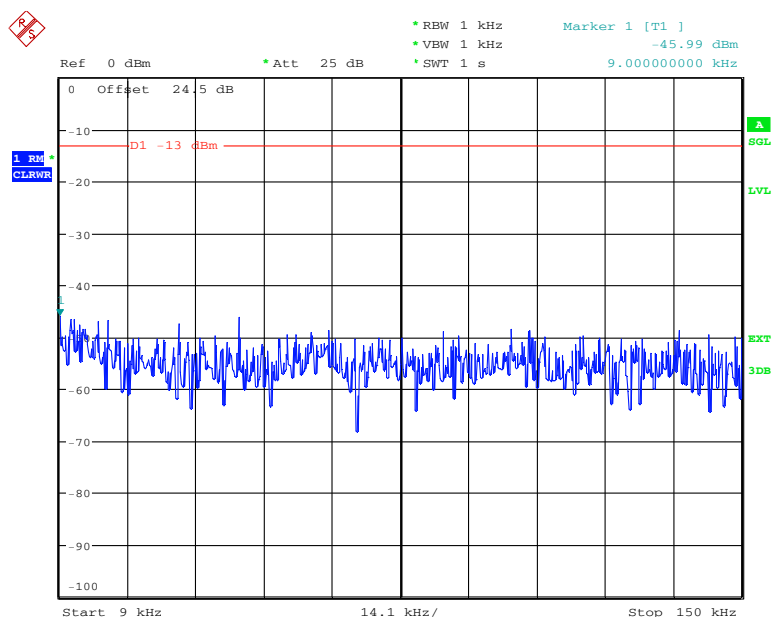
**Figure 7-253: Spurious Emissions (Lower band edge)**  
**– 64QAM (763.0 MHz) (10MHz Channel BW)**



Date: 7.FEB.2011 15:14:18

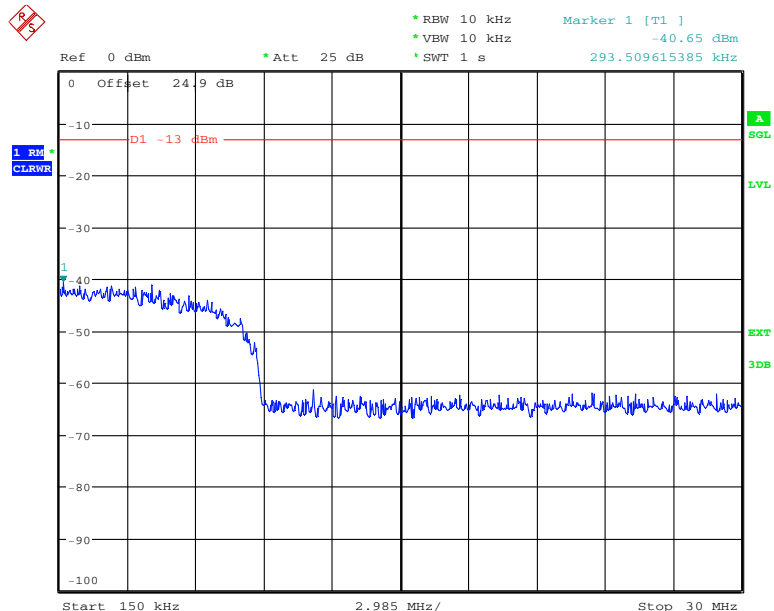
**Figure 7-254: Spurious Emissions (Upper band edge)**  
**– 64QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 07:13:59

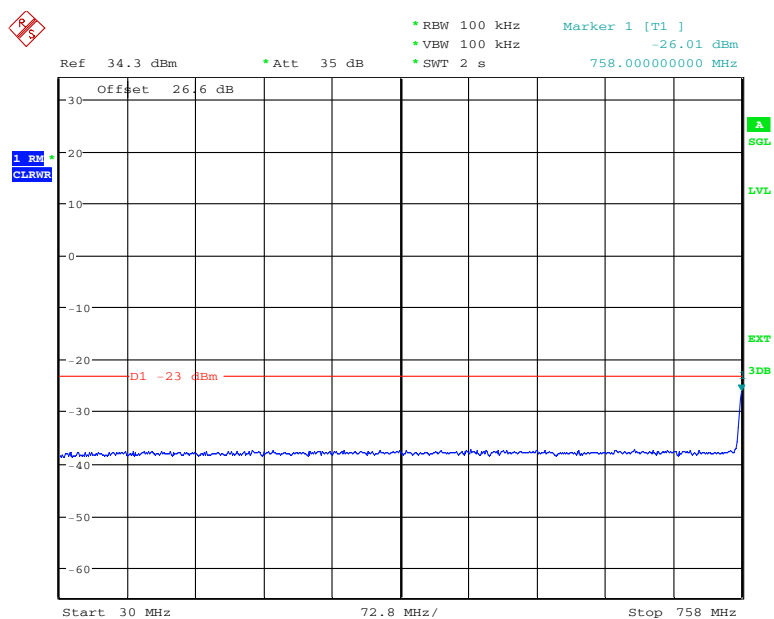
**Figure 7-255: Spurious Emissions (9kHz – 150kHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 07:41:25

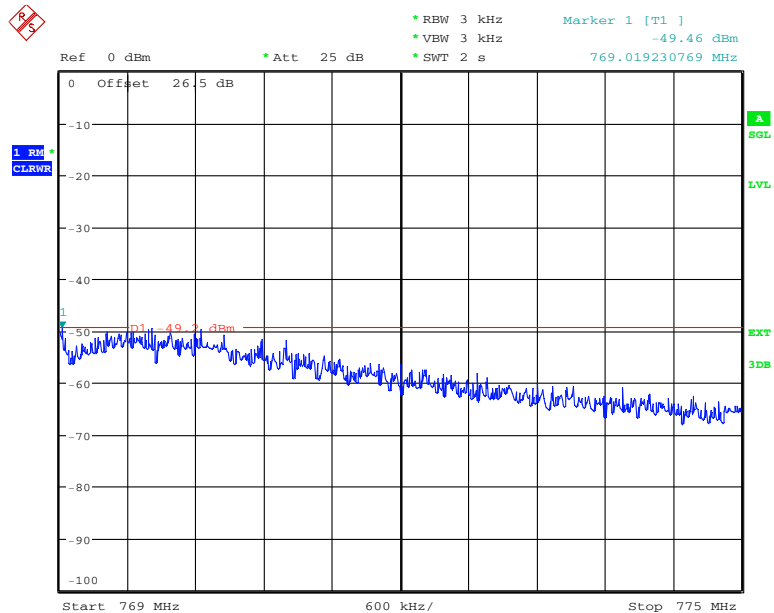
**Figure 7-256: Spurious Emissions (150kHz – 30MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 09:33:51

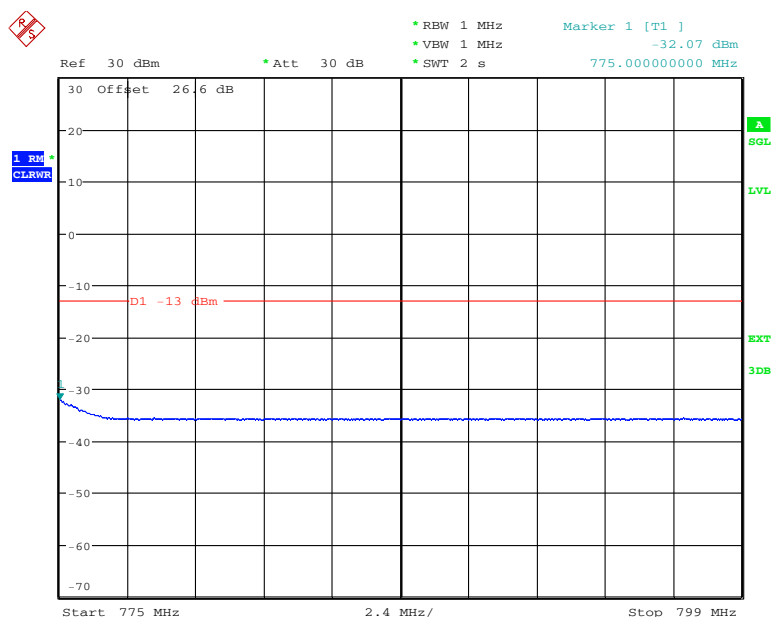
**Figure 7-257: Spurious Emissions (30MHz – 758MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**



Date: 7.FEB.2011 15:27:20

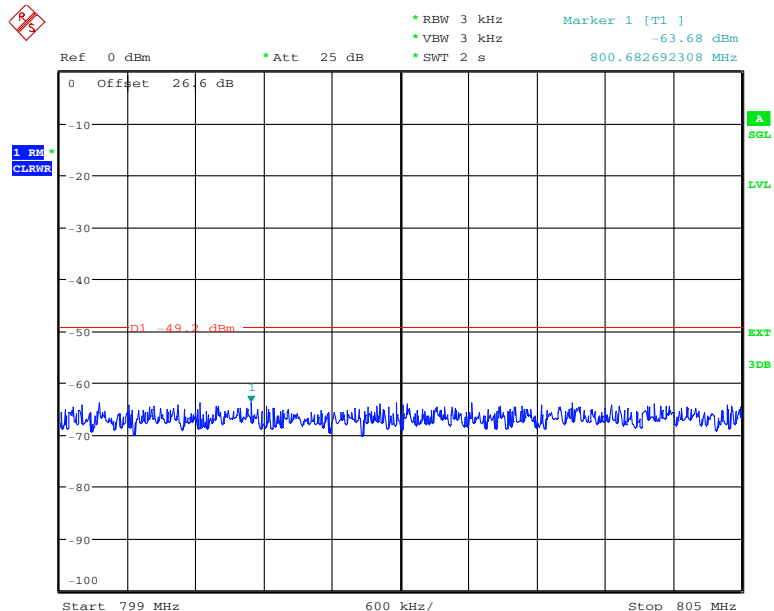
**Figure 7-258: Spurious Emissions (769MHz – 775MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

The test report shall not be reproduced except in full without the written approval of the testing laboratory



Date: 8.FEB.2011 10:27:44

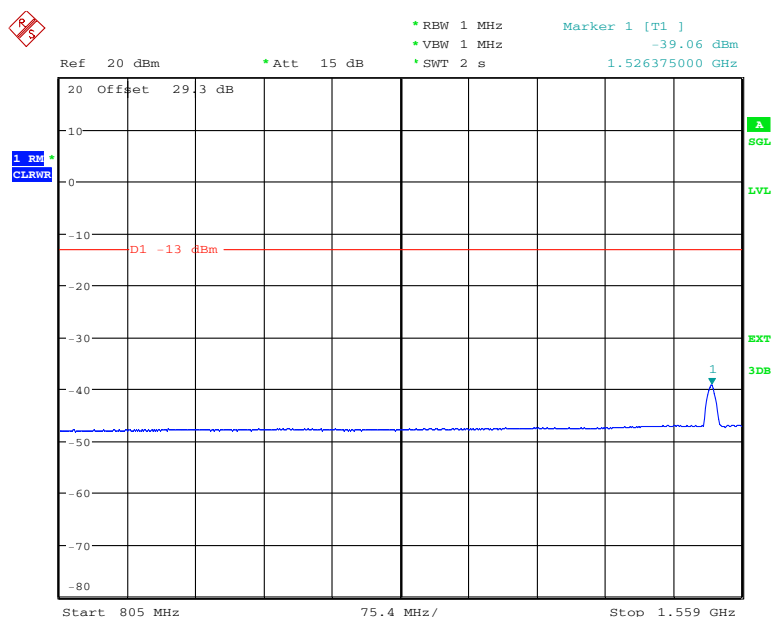
**Figure 7-259: Spurious Emissions (775MHz – 799MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 13:17:22

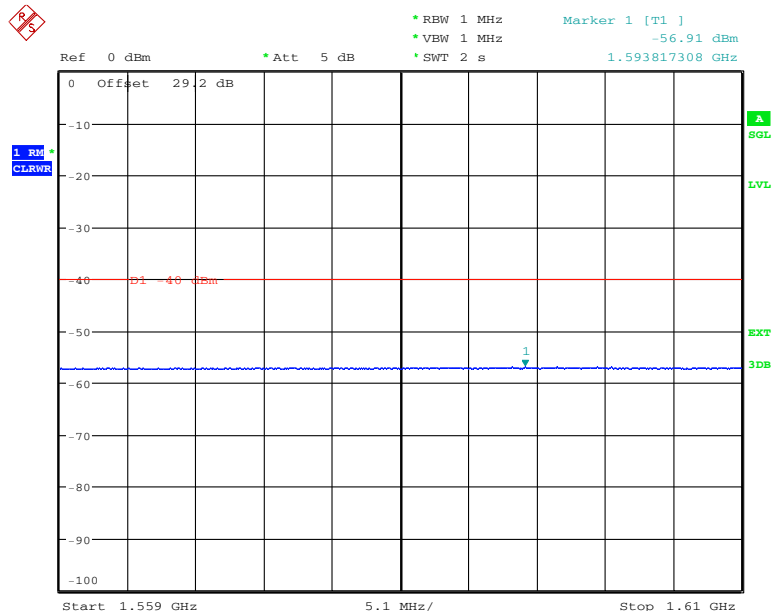
**Figure 7-260: Spurious Emissions (799MHz – 805MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

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Date: 8.FEB.2011 13:21:29

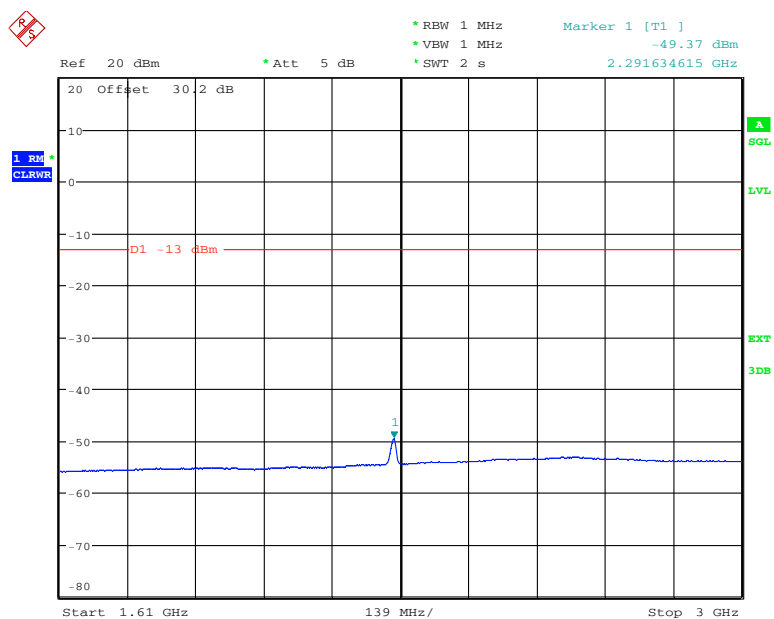
**Figure 7-261: Spurious Emissions (805MHz – 1559MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 13:51:32

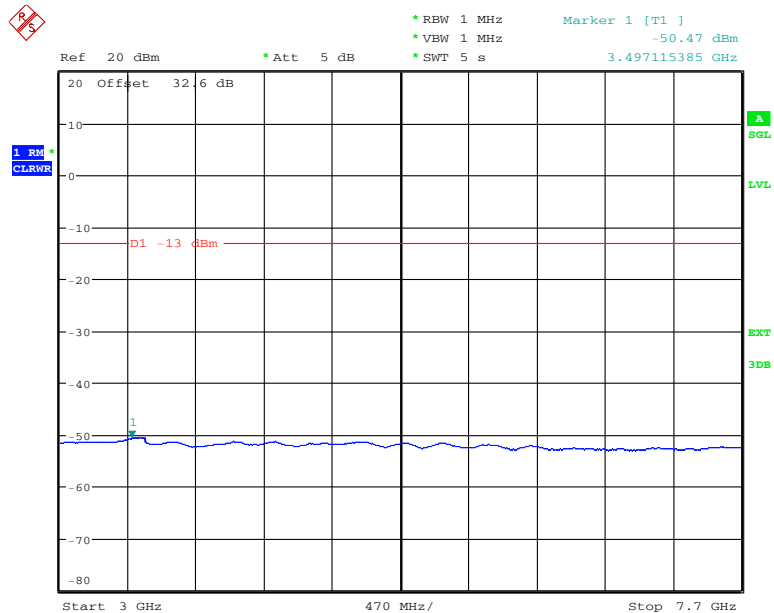
**Figure 7-262: Spurious Emissions (1559MHz – 1610MHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

The test report shall not be reproduced except in full without the written approval of the testing laboratory



Date: 8.FEB.2011 13:54:35

**Figure 7-263: Spurious Emissions (1610MHz – 3GHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**



Date: 8.FEB.2011 14:28:20

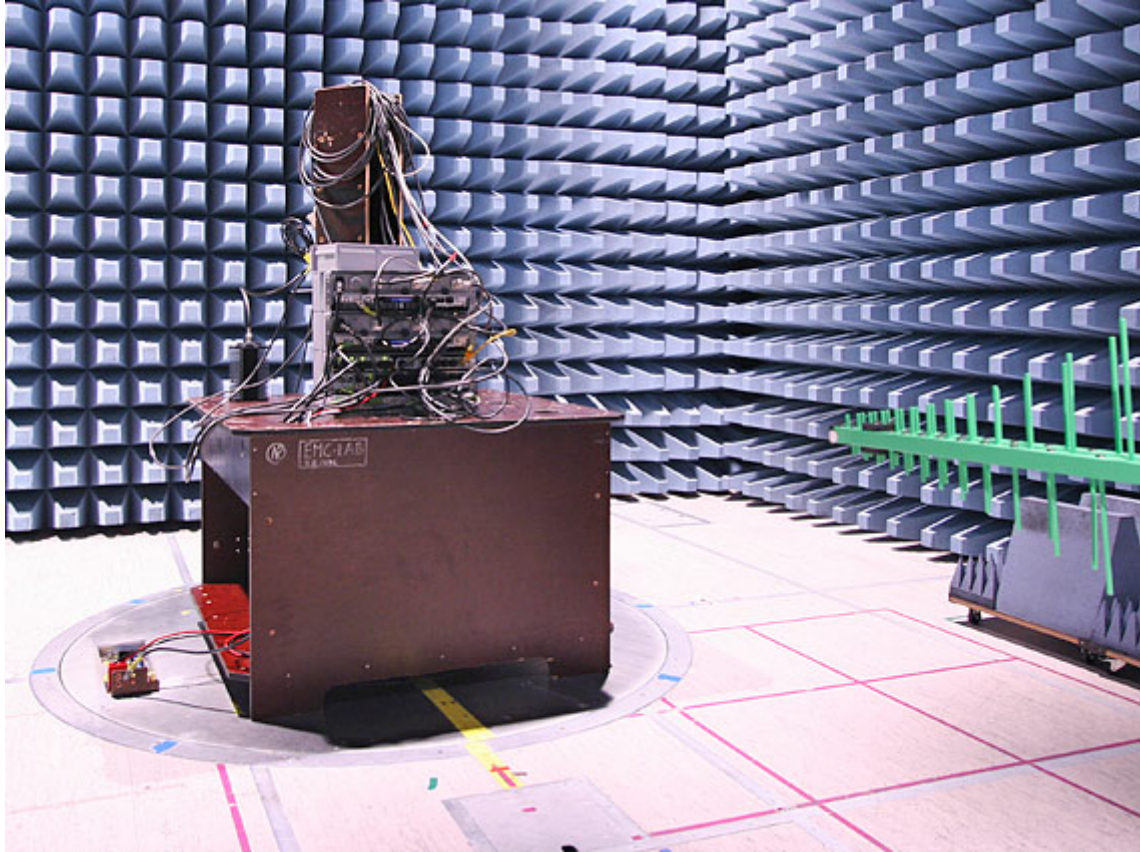
**Figure 7-264: Spurious Emissions (3GHz – 7.7GHz)  
– 64QAM (763.0 MHz) (10MHz Channel BW)**

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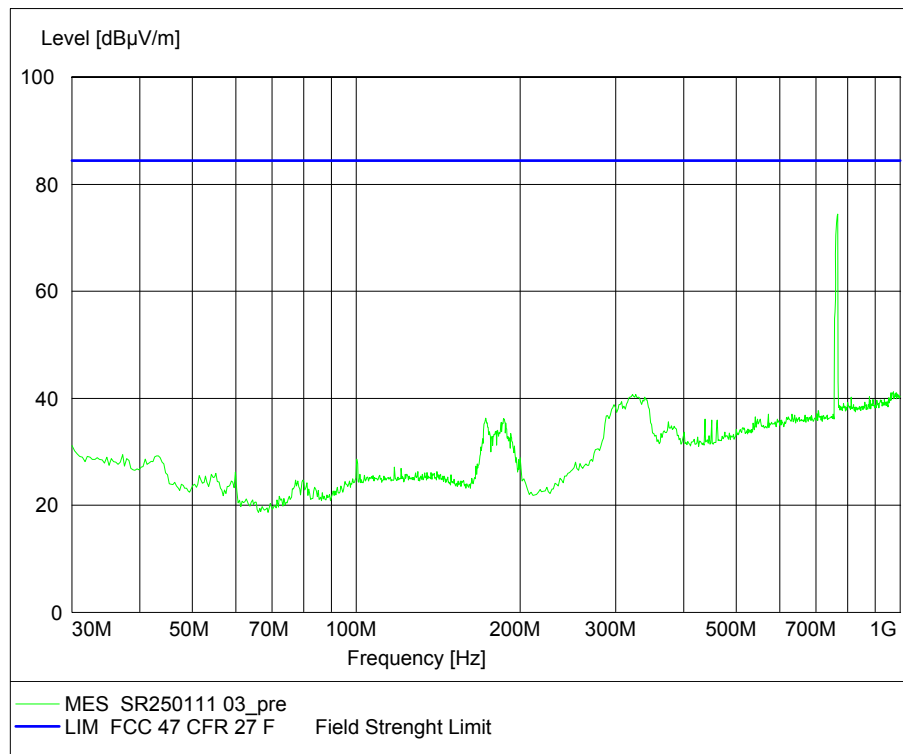
### 7.2.5 Test No. 5: Field Strength of Spurious Radiation

Worst case detected emission levels are reported in the following spectral plots. The antenna factor and cable loss is according to the manufacturer's specification.

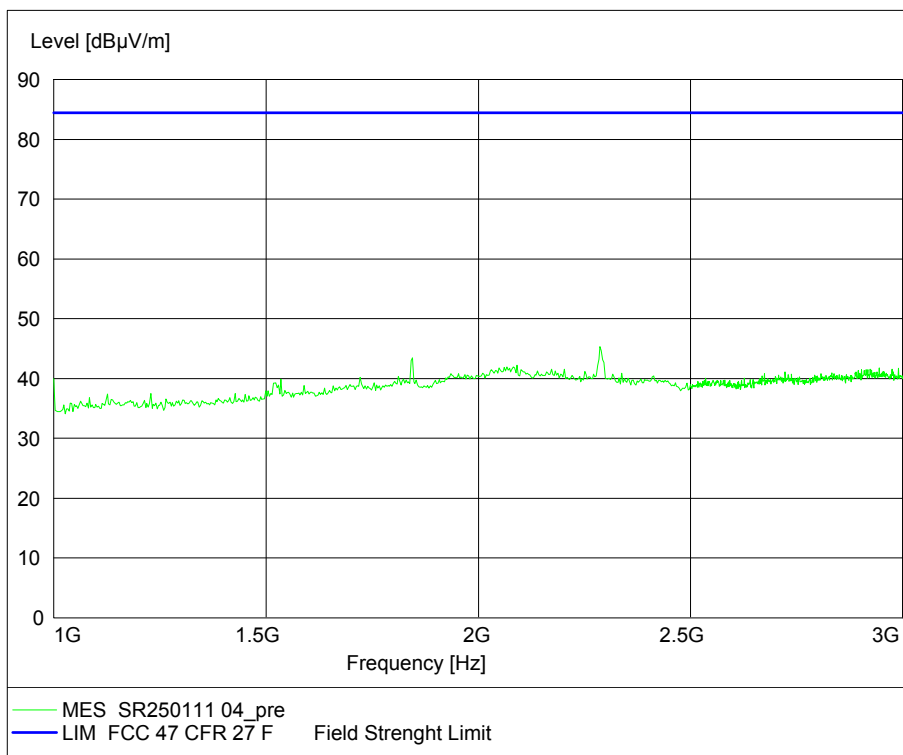


**Figure 7-265: Photograph of the anechoic chamber with the EUT**

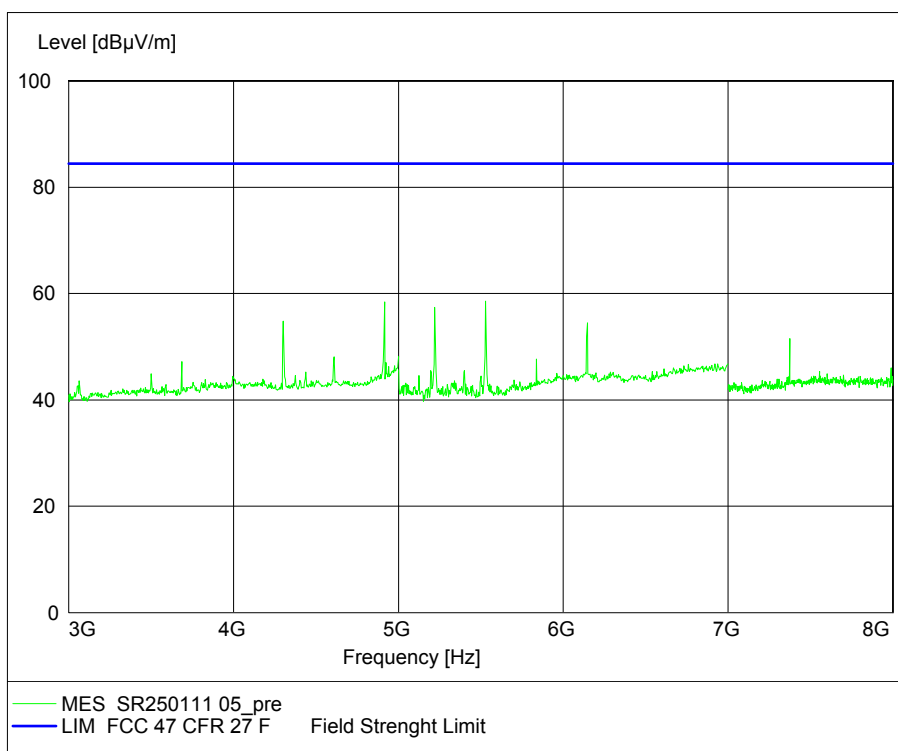
**Config A (QPSK, 64QAM, 16QAM):**



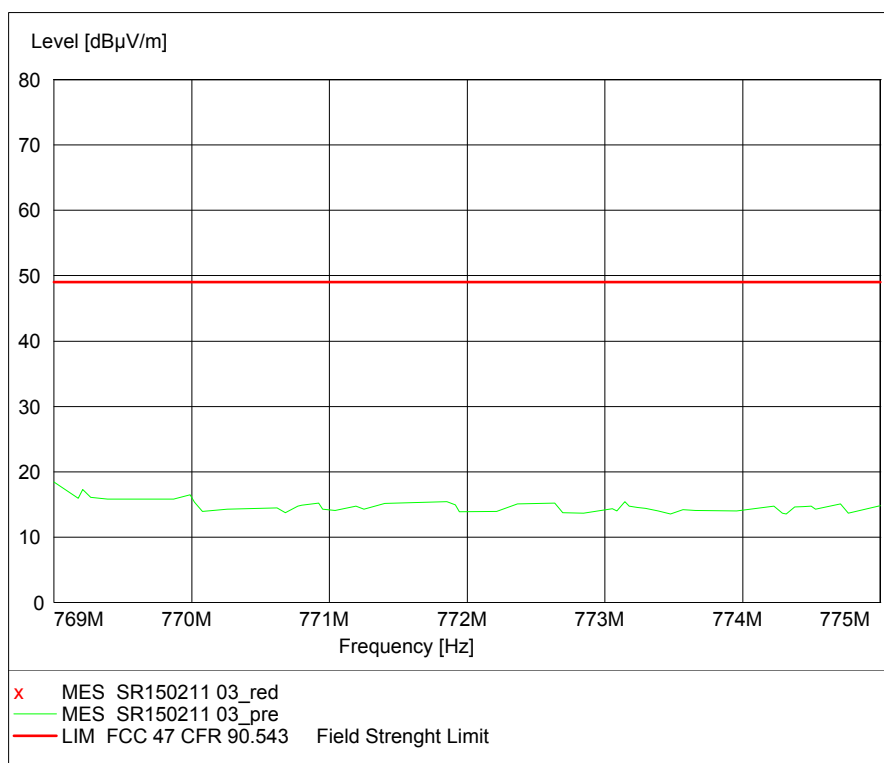
**Figure 7-266: Radiated Emission (30MHz – 1GHz) (5MHz Channel BW)**



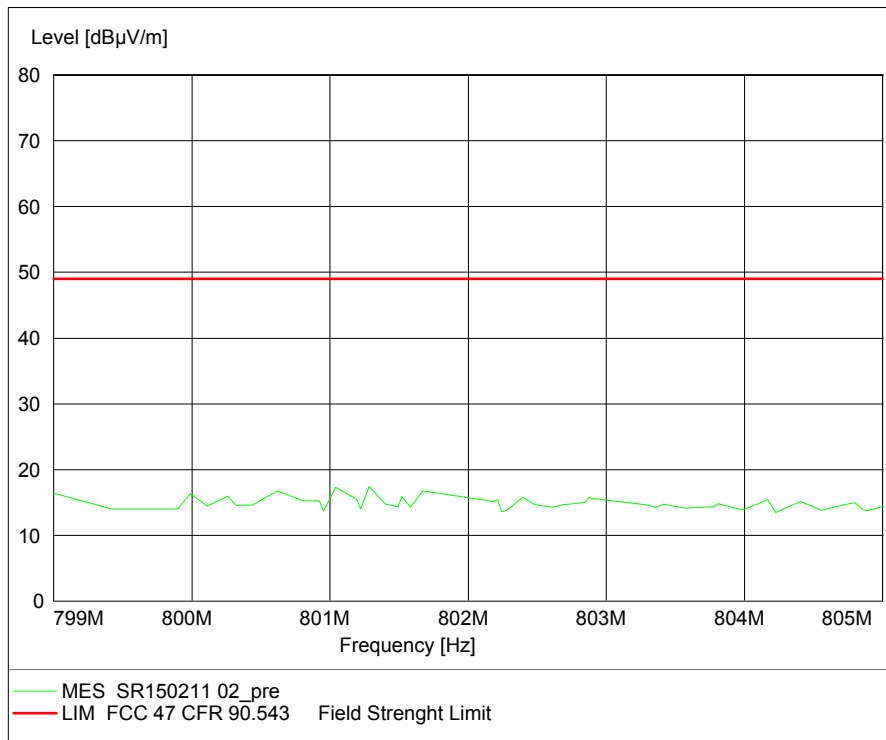
**Figure 7-267: Radiated Emission (1GHz – 3GHz) (5MHz Channel BW)**



**Figure 7-268: Radiated Emission (3GHz – 8GHz) (5MHz Channel BW)**



**Figure 7-269: Radiated Emission (769MHz – 775MHz) (5MHz Channel BW)**



**Figure 7-270: Radiated Emission (799MHz – 805MHz) (5MHz Channel BW)**

The test report shall not be reproduced except in full without the written approval of the testing laboratory

## Config B (QPSK, 64QAM, 16QAM):

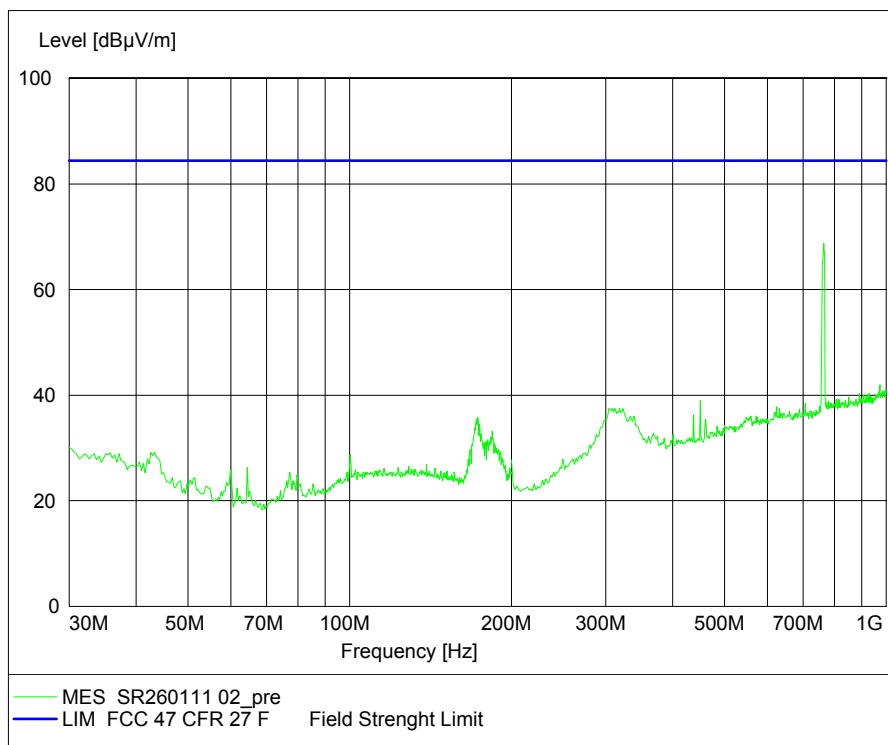


Figure 7-271: Radiated Emission (30MHz – 1GHz) (10MHz Channel BW)

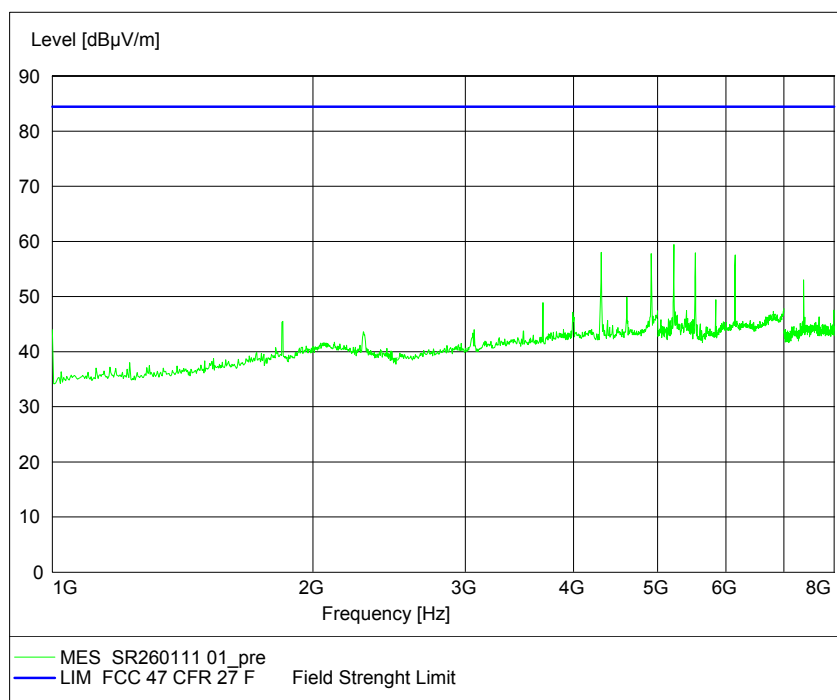
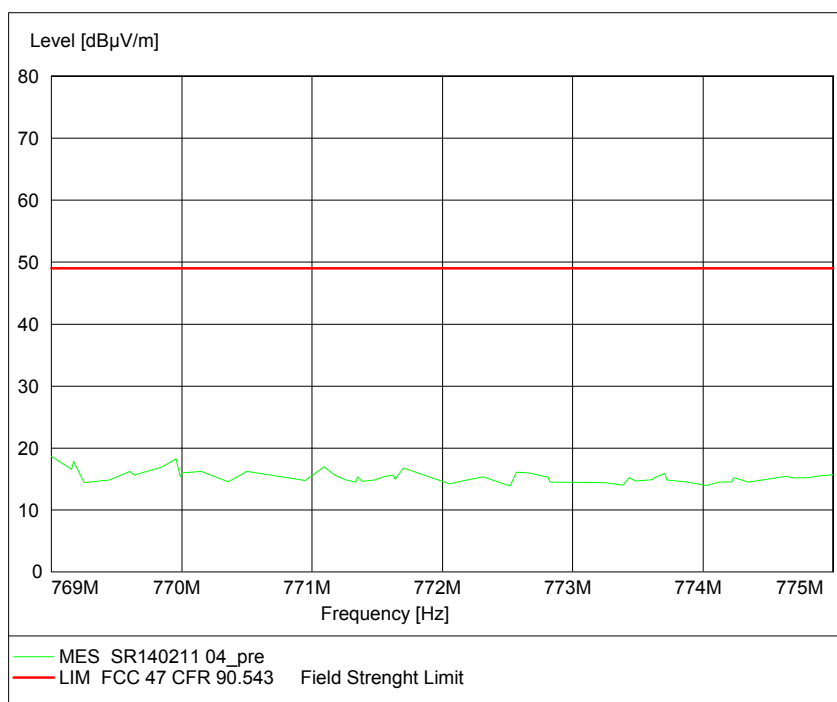
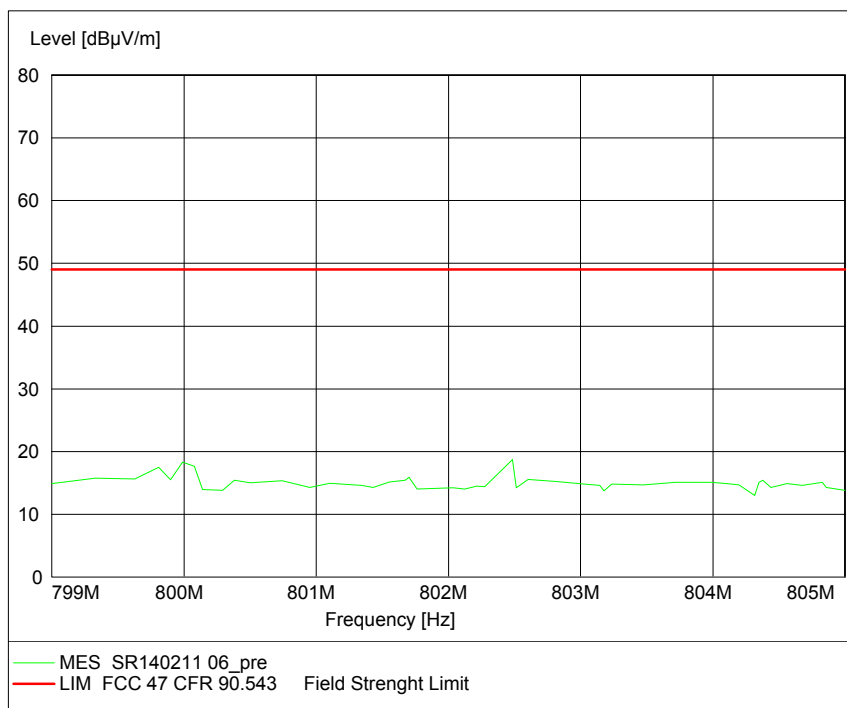


Figure 7-272: Radiated Emission (1GHz – 8GHz) (10MHz Channel BW)



**Figure 7-273: Radiated Emission (769MHz – 775MHz) (10MHz Channel BW)**



**Figure 7-274: Radiated Emission (799MHz – 805MHz) (10MHz Channel BW)**