

TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: IPWireless 700 MHz PCI Express Mini Module Model: AEX

To: FCC Part 27: 2008 Subpart C

Test Report Serial No:
RFI/RPT1/RP75335JD01A

This Test Report Is Issued Under The Authority Of Brian Watson, Operations Director:	
	
Checked By:	Nigel Davison
Signature:	
Date of Issue:	10 December 2009

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1. Customer Information

Company Name:	IPWireless (UK) Ltd
Address:	Unit 7 Greenways Business Park Bellinger Close Chippenham Wiltshire SN15 1BN England United Kingdom

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR27
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 27 Subpart C (Miscellaneous Wireless Communication Services)
Site Registration:	209735
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	19 October 2009 to 31 October 2009

2.2. Summary of Test Results – Lower and Upper Block

FCC Reference (47CFR)	Measurement	Port Type	Result
FCC Part 15.109	Receiver/Idle Mode Radiated Spurious Emissions	Enclosure	
FCC Part 15.111	Receiver/Idle Mode Conducted Spurious Emissions Main RF Port	Enclosure	
FCC Part 15.111	Receiver/Idle Mode Conducted Spurious Emissions Diversity RF Port	Enclosure	
FCC Part 2.1046 FCC Part 27.50	Transmitter Carrier Output Power and Effective Radiated Power (ERP)	Antenna Terminals	
FCC Part 2.1049	Transmitter Occupied Bandwidth	Antenna Terminals	
FCC Part 2.1055 FCC Part 27.54	Transmitter Frequency Stability (Temperature & Voltage Variation)	Antenna Terminals	
FCC Part 2.1051 FCC Part 27.53	Transmitter Conducted Emissions – Channel Edge	Antenna Terminals	
FCC Part 2.1051 FCC Part 27.53	Transmitter Conducted Emissions	Antenna Terminals	
FCC Part 2.1051 FCC Part 27.53	Transmitter Conducted Emissions at Band Edges	Antenna Terminals	
FCC Part 2.1051 FCC Part 27.53	Transmitter Radiated Spurious Emissions – Channel Edge	Enclosure	
FCC Part 2.1051 FCC Part 27.53	Transmitter Radiated Spurious Emissions	Enclosure	
FCC Part 2.1051 FCC Part 27.53	Transmitter Radiated Emissions at Band Edges	Enclosure	
Additional Testing Requirements on Upper Block			
FCC Part 2.1051 FCC Part 27.53	Transmitter Conducted Emission Limitations	Antenna Terminals	
FCC Part 2.1051 FCC Part 27.53	Transmitter Radiated Emission Limitations	Enclosure	
Key to Results			
 = Complied  = Did not comply			

2.3. Methods and Procedures

Reference:	ANSI/TIA-603-C-2004
Title:	Land Mobile Communications Equipment, Measurements and performance Standards
Reference:	ANSI C63.4 (2003)
Title:	American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

2.4. Deviations from the Test Specification

Testing at voltage extremes was carried out at Vnom and Vnom $\pm 9\%$ at the request of the customer and not at V nom and Vnom $\pm 15\%$ as required by the Standard. This is because the EUT complies with the PCI Express Standard which specifies the $\pm 9\%$ tolerance. A breakout point for the power supply was provided by the customer on adaptor board (Serial No. EMS 022630 0004) in order to vary the supply to the EUT as this is normally provided from the PCI Express interface on the standard adaptor board.

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

Description:	TD_CDMA PCI-E Mini Module
Brand Name:	IPWireless
Model Name or Number:	AEX
Serial Number:	AEXA935000T1B
IMEI Number:	358752030000263
Hardware Version Number:	Version 1
Software Version Number:	None Stated
FCC ID Number:	PKTPEMAEX

3.2. Description of EUT

The equipment under test was a PCI Express mini module.

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Additional Information Related to Testing

Power Supply Requirement:	3.3 V DC ±9%	
Equipment Category:	Module	
Type of Unit:	PCI Express mini module	
Modulation Type:	QPSK, 16QAM, 64QAM	
Duty Cycle:	100%	
Antenna Gain:	Up to +19 dBi (stated)	
Chip Rate:	3.84 Mcps	
Channel Bandwidth:	5.0 MHz	
Lower Block		
Transmit Frequency Range:	698 MHz to 716 MHz	
Transmit Channels Tested:	Channel ID	Channel Frequency (MHz)
	Bottom	700.6
	Middle	707.0
	Top	713.4
Receive Frequency Range:	728 MHz to 746 MHz	
Receive Channels Tested:	Channel ID	Channel Frequency (MHz)
	Bottom	730.6
	Middle	737.0
	Top	743.4
Upper Block		
Transmit Frequency Range:	776 MHz to 793 MHz	
Transmit Channels Tested:	Channel ID	Channel Frequency (MHz)
	Bottom	778.6
	Middle	784.4
	Top	790.4
Receive Frequency Range:	746 MHz to 763 MHz	
Receive Channels Tested:	Channel ID	Channel Frequency (MHz)
	Bottom	748.6
	Middle	754.4
	Top	760.4

3.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	Adaptor Board
Brand Name:	IPWireless
Model Name or Number:	AAF
Hardware Version:	Pass 2
Software Version:	N/A
Serial Number:	EEMS 022630 004

Description:	Adaptor Board
Brand Name:	IPWireless
Model Name or Number:	AAF
Hardware Version:	Pass 3
Software Version:	N/A
Serial Number:	None Stated

Description:	Laptop PC
Brand Name:	Toshiba
Model Name or Number:	PSAAPE-00H00KEN
Serial Number:	670709710
Connected to port:	USB

Description:	USB cable
Cable Length and Type:	1.8 metre / multicore
Connected to port:	USB

Description:	Bench power supply
Brand Name:	TTI
Model Name or Number:	CPX200
Serial Number:	163296
Cable Length and Type:	3 metre / 2 core
Connected to port:	Power

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating modes, unless otherwise stated:

- The EUT operated across the FCC Part 27 from 698 MHz to 716 MHz (Lower Block) and 776 MHz to 793 MHz (Upper Block).
- TD-CDMA idle mode on all 15 timeslots. Both RF ports terminated with antennas and RF cables supplied by the customer.
- TD-CDMA traffic mode on all 15 timeslots at full power (+24 dBm). Both RF port terminated with antennas supplied by the customer.
- For radiated emissions testing, the EUT was mounted in and powered by the adaptor board, the adaptor board was powered from a bench supply at a nominal voltage of 12VDC and the adaptor board voltage regulator reduces this to 3.3volts which is the normal supply voltage to the EUT.
- No AC conducted tests were performed as the EUT is DC powered.
- The client configured the EUT so that residual breakthrough was present at the centre of the carrier in order to make frequency accuracy measurements.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration:

- The EUT was mounted on an adaptor board and all the testing was performed in this configuration.
- The adaptor board was powered from a bench power supply supplied by the client.
- Connected to a laptop PC via USB port on the adaptor board. A bespoke application on the laptop pc was used to configure the EUT during the testing via the adaptor board.

5. Measurements, Examinations and Derived Results

5.1. General Comments

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to *Section 6. Measurement Uncertainty* for details.

5.2. Test Results – Lower Block

5.2.1. Receive/Idle Mode Radiated Emissions

Test Summary:

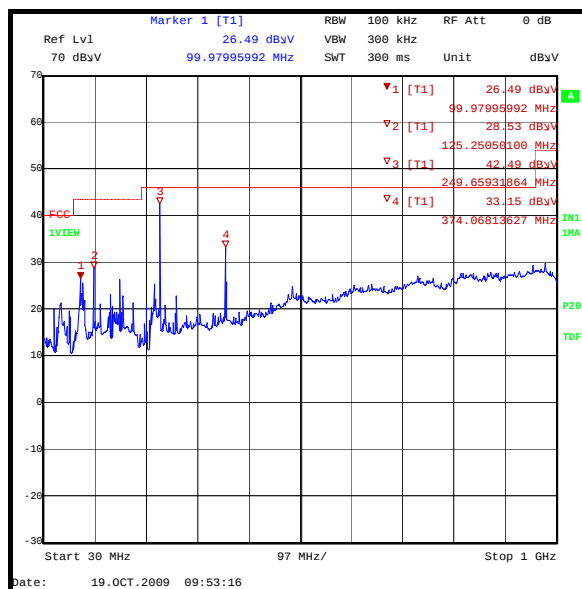
FCC Part:	15.109
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	21
Relative Humidity (%):	31

Results:

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
99.968	Vertical	24.8	43.5	18.7	Complied
124.976	Vertical	25.3	43.5	18.2	Complied
177.244	Vertical	23.5	43.5	20.0	Complied
249.918	Vertical	38.9	46.0	7.1	Complied
374.875	Vertical	28.4	46.0	17.6	Complied



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying table.

Receive/Idle Mode Radiated Emissions (continued)**Test Summary:**

FCC Part:	15.109
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes
Frequency Range:	1 GHz to 12.75 GHz

Environmental Conditions:

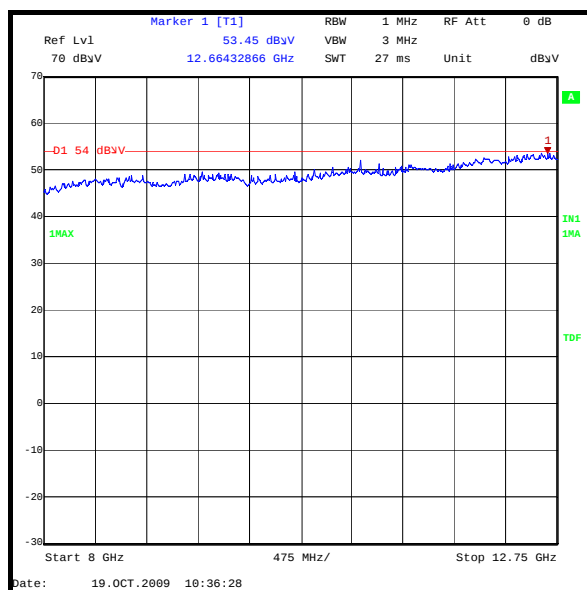
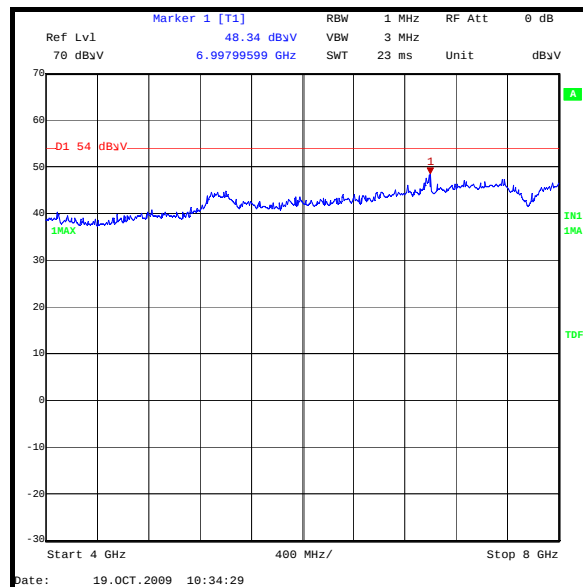
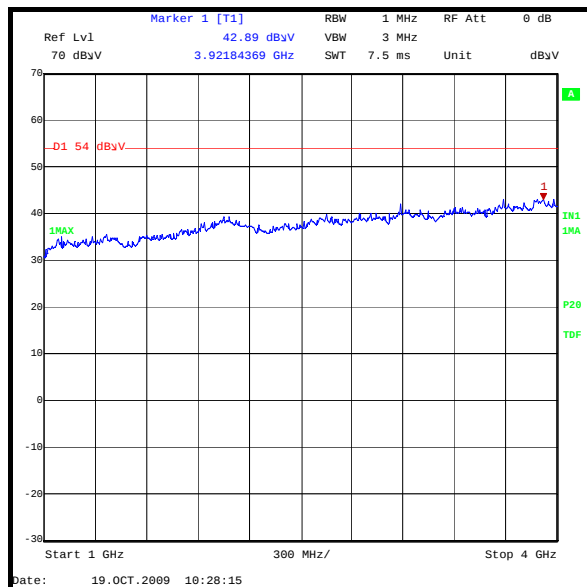
Temperature (°C):	21
Relative Humidity (%):	31

Results: Highest Peak Level

Frequency (MHz)	Antenna Polarity	Detector level (dBμV)	Transducer factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
12664.329	Vertical	40.8	12.9	53.7	54.0	0.3	Complied

Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more erroneous.

Receive/Idle Mode Radiated Emissions (continued)

5.2.2. Receive/Idle Mode Conducted Emissions**Test Summary:**

FCC Part:	2.1051, 15.111
Test Method Used:	As detailed in ANSI TIA-603-C-2004
Frequency Range:	9 kHz to 12.75 GHz

Environmental Conditions:

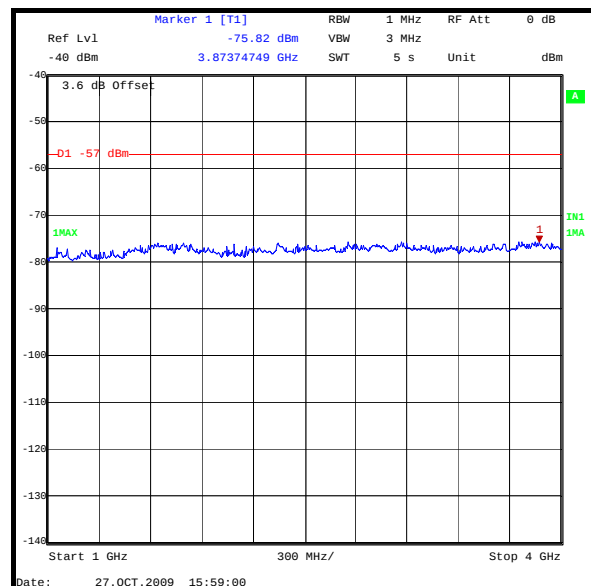
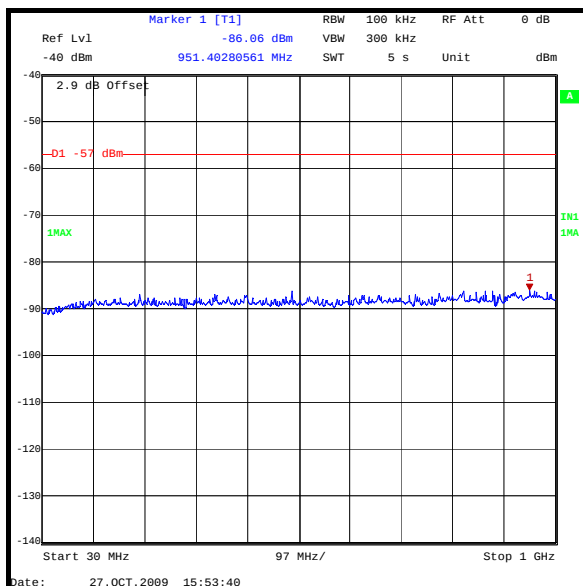
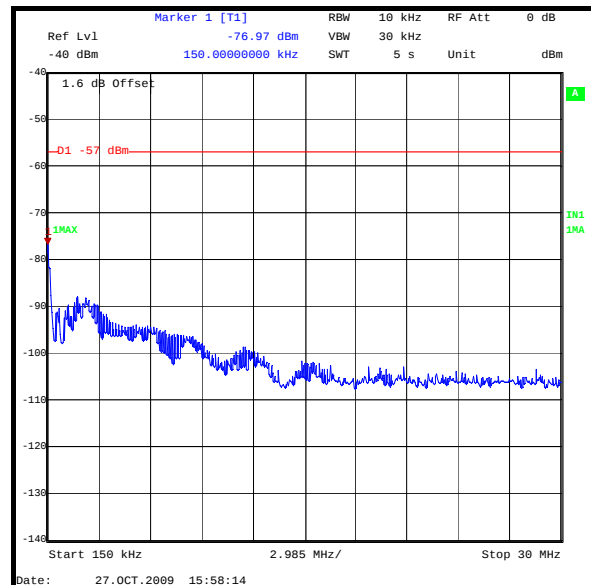
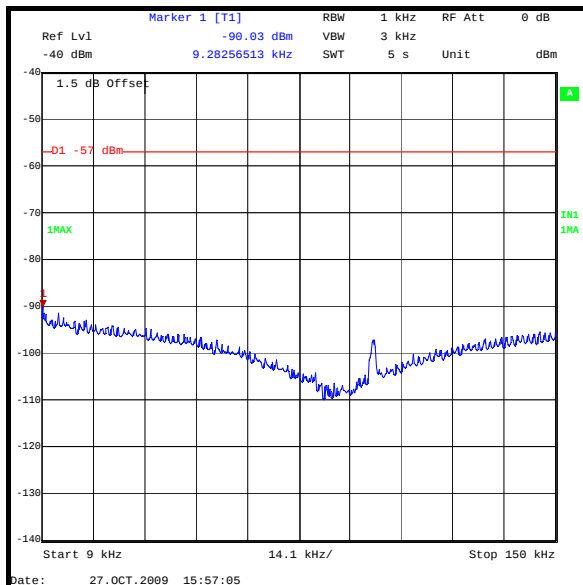
Temperature (°C):	21
Relative Humidity (%):	31

Results: Main RF Port

Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
6997.996	-71.4	-57.0	14.4	Complied

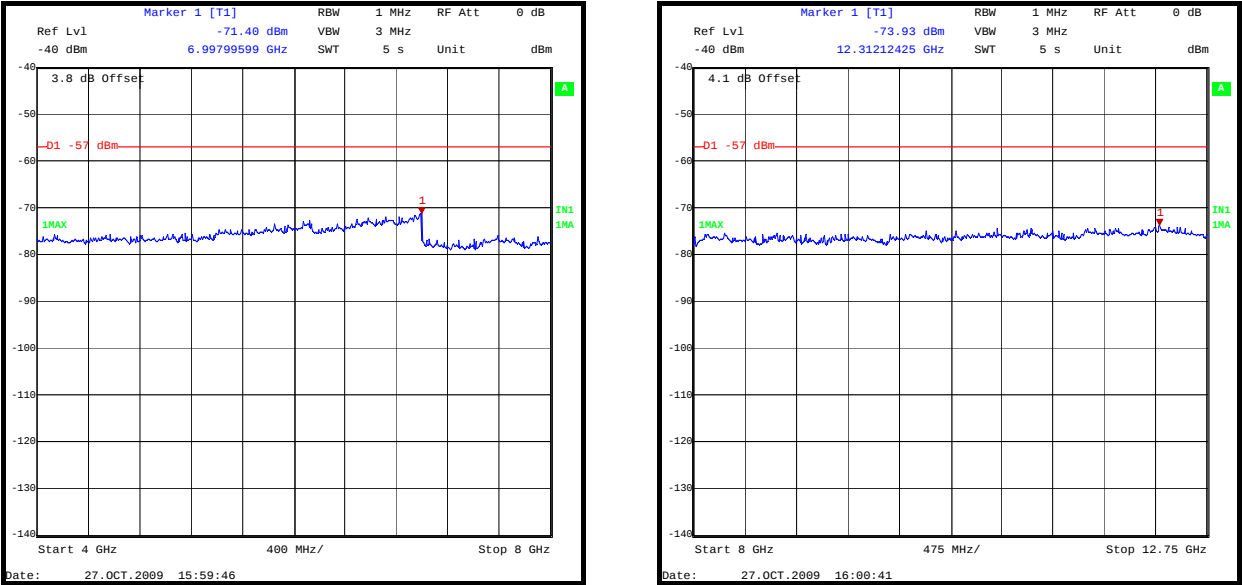
Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above.

Receive/Idle Mode Conducted Emissions (continued)

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Receive/Idle Mode Conducted Emissions (continued)



Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Receive/Idle Mode Conducted Emissions (continued)**Test Summary:**

FCC Part:	2.1051
Test Method Used:	As detailed in ANSI TIA-603-C-2004
Frequency Range:	9 kHz to 12.75 GHz

Environmental Conditions:

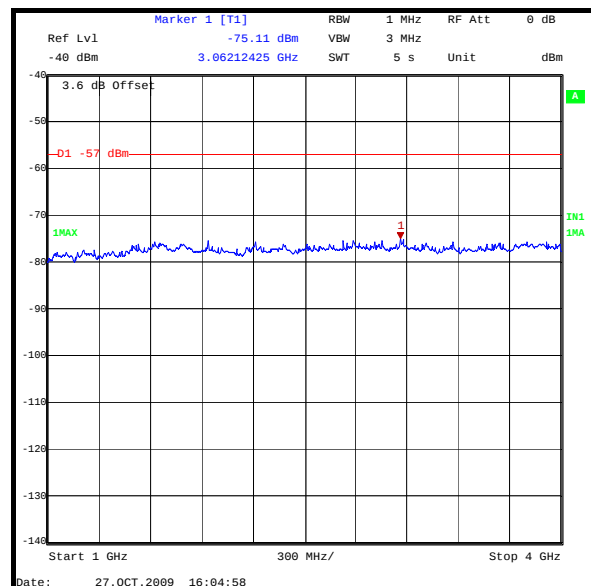
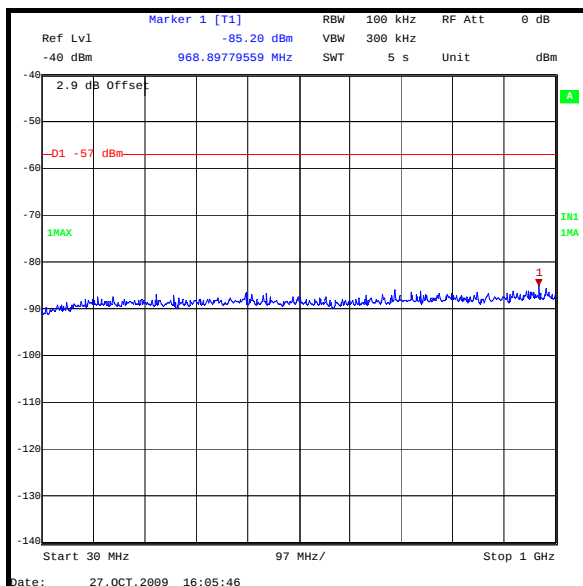
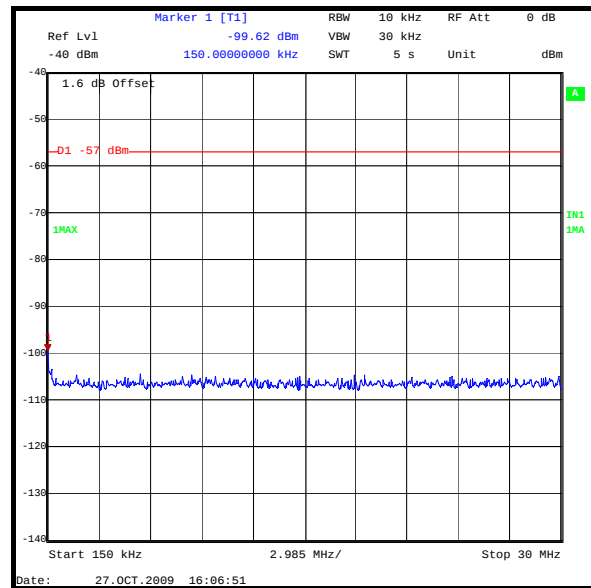
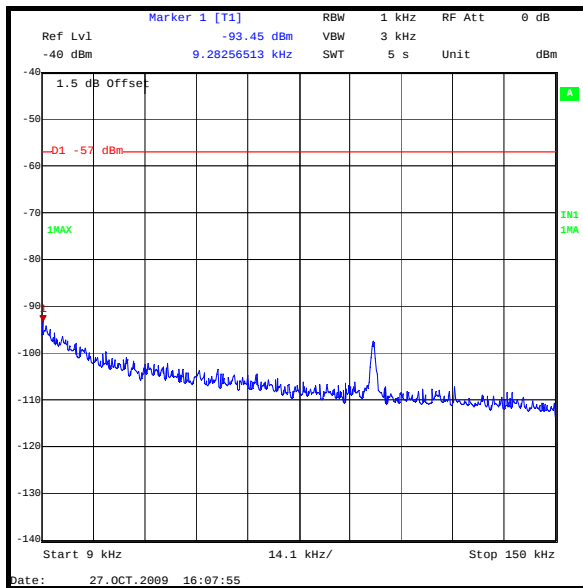
Temperature (°C):	21
Relative Humidity (%):	31

Results: Diversity RF Port

Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
6973.948	-70.8	-57.0	13.8	Complied

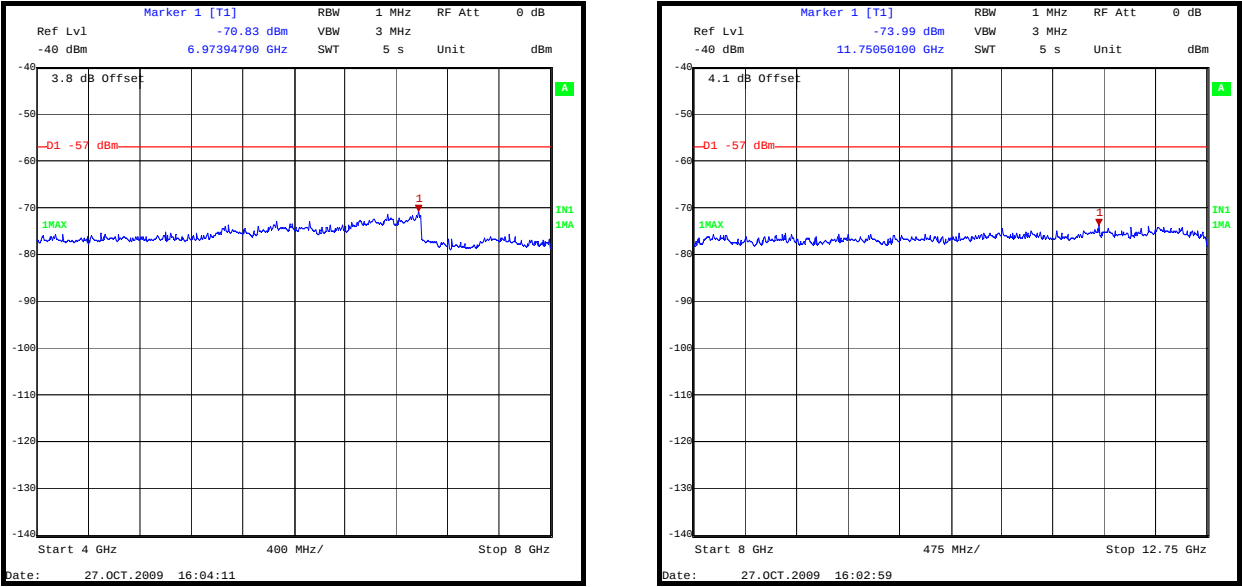
Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above.

Receive/Idle Mode Conducted Emissions (continued)

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Receive/Idle Mode Conducted Emissions (continued)



Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

5.2.3. Transmitter Carrier Output Power and Effective Radiated Power (ERP)**Test Summary:**

FCC Part:	2.1046 and 27.50(c)(9)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.17.2

Environmental Conditions:

Temperature Variation (°C):	24
Relative Humidity Variation (%):	40

Results: QPSK

Frequency (MHz)	Conducted RF Power (dBm)	Antenna Gain (dBd)	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
700.6	24.9	16.9	41.8	44.8	3.0	Complied
707.0	25.0	16.9	41.9	44.8	2.9	Complied
713.4	25.2	16.9	42.1	44.8	2.7	Complied

Results: 16QAM

Frequency (MHz)	Conducted RF Power (dBm)	Antenna Gain (dBd)	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
700.6	24.9	16.9	41.8	44.8	3.0	Complied
707.0	25.1	16.9	42.0	44.8	2.8	Complied
713.4	25.1	16.9	42.0	44.8	2.8	Complied

Results: 64QAM

Frequency (MHz)	Conducted RF Power (dBm)	Antenna Gain (dBd)	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
700.6	24.9	16.9	41.8	44.8	3.0	Complied
707.0	25.0	16.9	41.9	44.8	2.9	Complied
713.4	25.1	16.9	42.0	44.8	2.8	Complied

5.2.4. Transmitter Occupied Bandwidth**Test Summary:**

FCC Part:	2.1049
Test Method Used:	As detailed in ANSI C63.4 Section 13.1.7 and relevant annexes referencing FCC CFR Part 2.1049 (see note below)

Environmental Conditions:

Temperature Variation (°C):	26
Relative Humidity Variation (%):	36

Results: QPSK

Frequency	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
700.6	100	300	4.148
707.0	100	300	4.118
713.4	100	300	4.148

Results: 16QAM

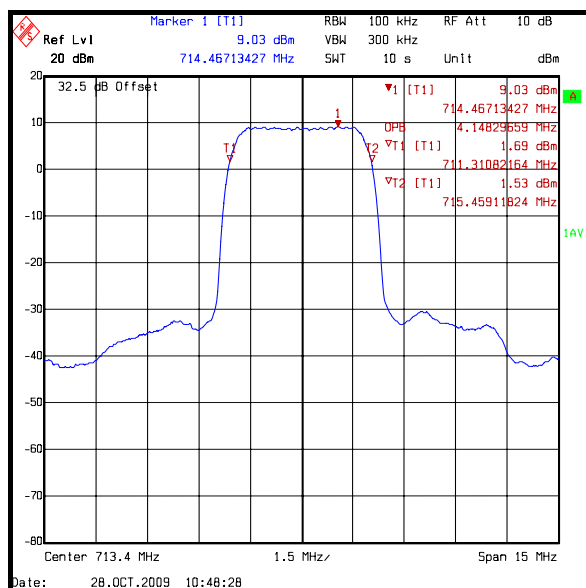
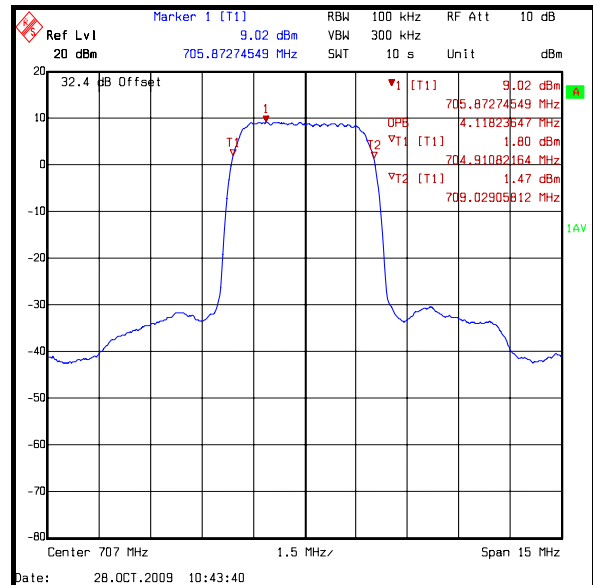
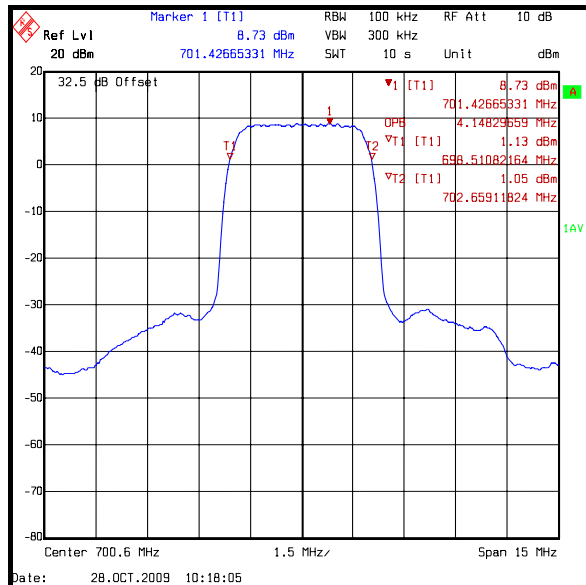
Frequency	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
700.6	100	300	4.148
707.0	100	300	4.118
713.4	100	300	4.148

Results: 64QAM

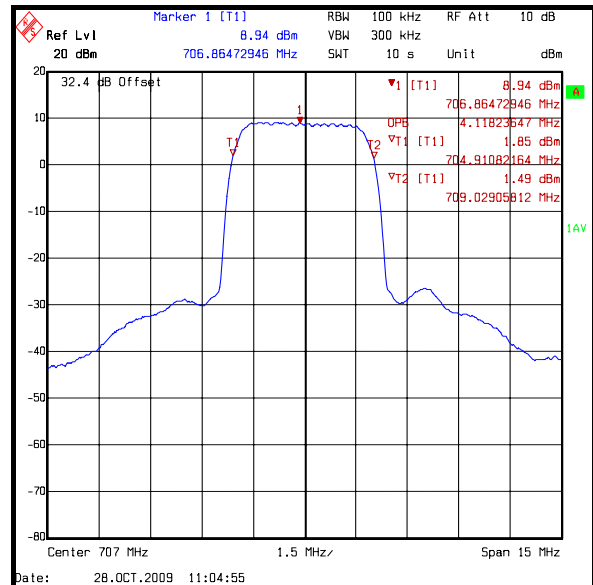
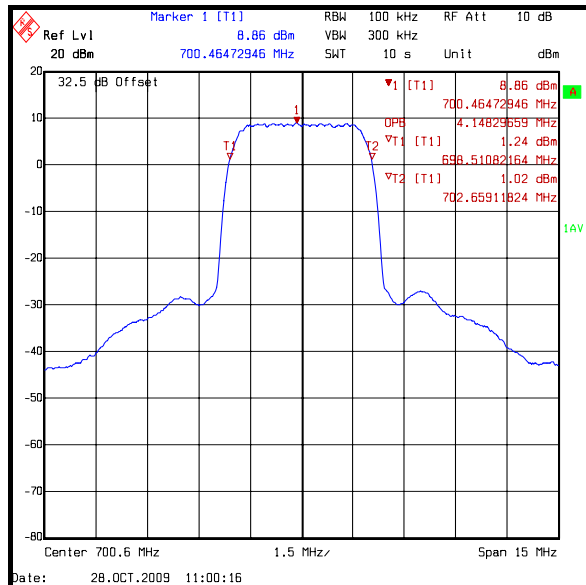
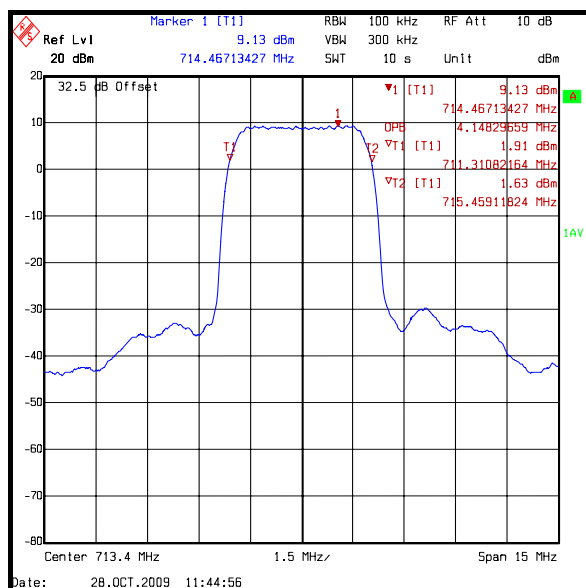
Frequency	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
700.6	100	300	4.148
707.0	100	300	4.118
713.4	100	300	4.148

Note(s):

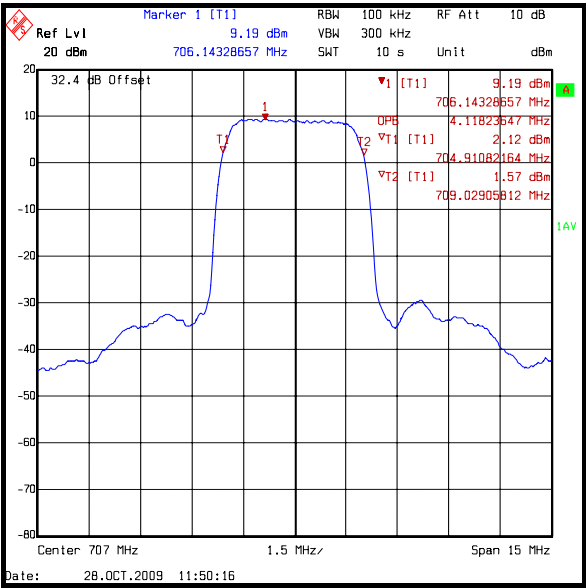
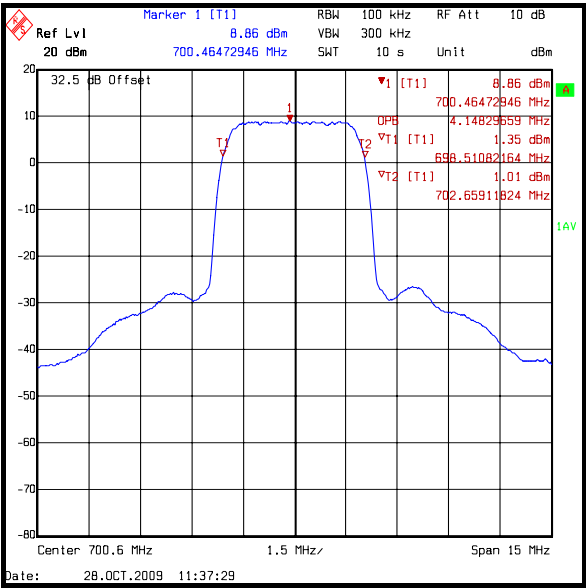
1. In lieu of the test method detailed in ANSI C63.4 Section 13.1.7 the 99% occupied bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser.

Transmitter Occupied Bandwidth (continued)

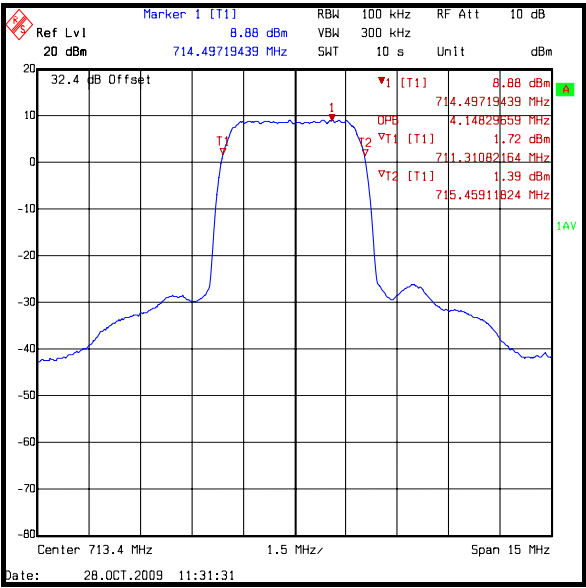
QPSK

Transmitter Occupied Bandwidth (continued)**16QAM**

Transmitter Occupied Bandwidth (continued)



64QAM



5.2.5. Transmitter Frequency Stability - Temperature Variation**Test Summary:**

FCC Part:	27.54
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.2 referencing FCC CFR Part 2.1055

Environmental Conditions:

Temperature Variation (°C):	25 - 26
Relative Humidity Variation (%):	35 - 36

Results: 700.6 MHz

Temp (°C)	Measured Frequency (MHz)	Frequency Error (kHz)
-30	700.603067	3.067
-20	700.602789	2.789
-10	700.602979	2.979
0	700.602734	2.734
10	700.602824	2.824
20	700.602541	2.541
30	700.602753	2.753
40	700.600017	0.017
50	700.604794	4.794

Results: 707.0 MHz

Temp (°C)	Measured Frequency (MHz)	Frequency Error (kHz)
-30	707.003005	3.005
-20	707.002784	2.784
-10	707.002834	2.834
0	707.002768	2.768
10	707.002750	2.750
20	707.002755	2.755
30	707.002662	2.662
40	706.999986	0.014
50	707.004866	4.866

Transmitter Frequency Stability - Temperature Variation – (continued)**Results: 713.4 MHz**

Temp (°C)	Measured Frequency (MHz)	Frequency Error (kHz)
-30	713.403084	3.084
-20	713.402929	2.929
-10	713.402941	2.941
0	713.402892	2.892
10	713.402855	2.855
20	713.402631	2.631
30	713.402780	2.780
40	713.399995	0.005
50	713.404992	4.992

5.2.6. Transmitter Frequency Stability - Voltage Variation**Test Summary:**

FCC Part:	27.54
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.2 referencing FCC CFR Part 2.1055

Environmental Conditions:

Temperature Variation (°C):	25
Relative Humidity Variation (%):	36

Results: 700.6 MHz

Supply Voltage (VDC)	Measured Frequency (MHz)	Frequency Error (kHz)
3.0	700.603736	3.736
3.3	700.603660	3.660
3.6	700.603888	3.888

Results: 707.0 MHz

Supply Voltage (VDC)	Measured Frequency (MHz)	Frequency Error (kHz)
3.0	707.003846	3.846
3.3	707.003849	3.849
3.6	707.003784	3.784

Results: 713.4 MHz

Supply Voltage (VDC)	Measured Frequency (MHz)	Frequency Error (kHz)
3.0	713.403756	3.756
3.3	713.403889	3.889
3.6	713.403808	3.808

5.2.7. Transmitter Conducted Emissions - Channel Edge

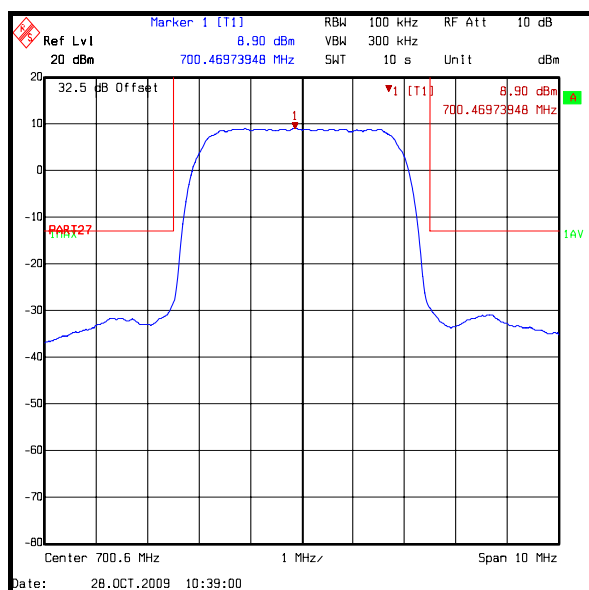
Test Summary:

FCC Part:	2.1051 and 27.53(g)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2.1051

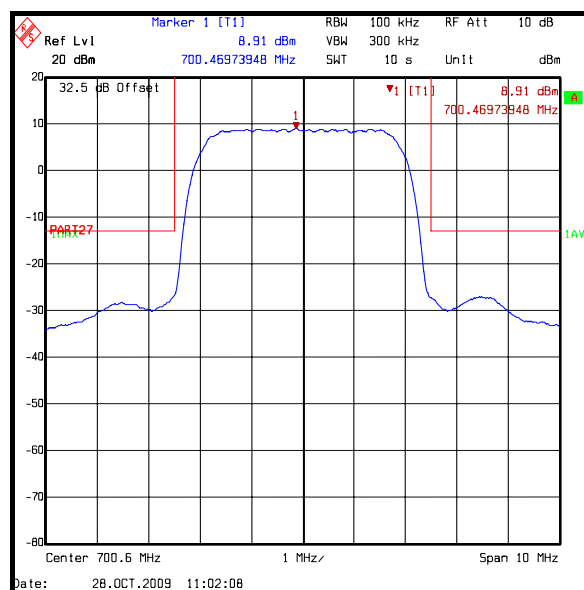
Environmental Conditions:

Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

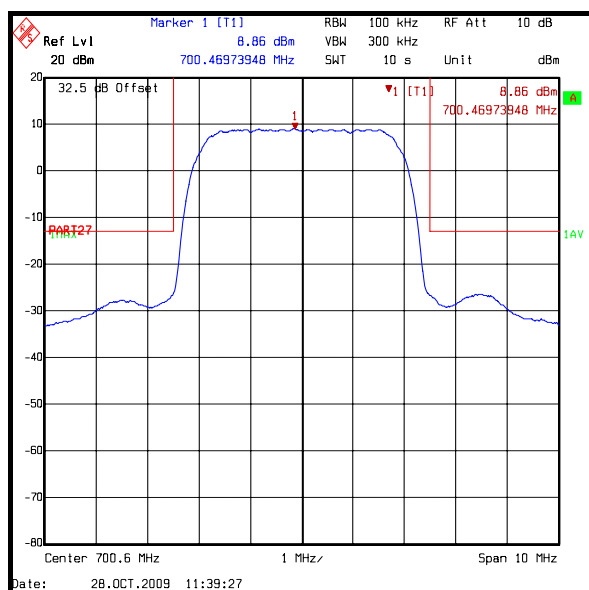
Results: Bottom Channel 700.6 MHz



QPSK



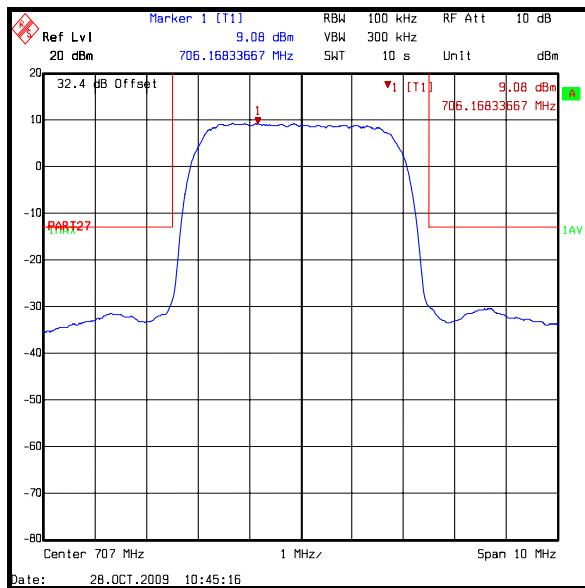
16QAM



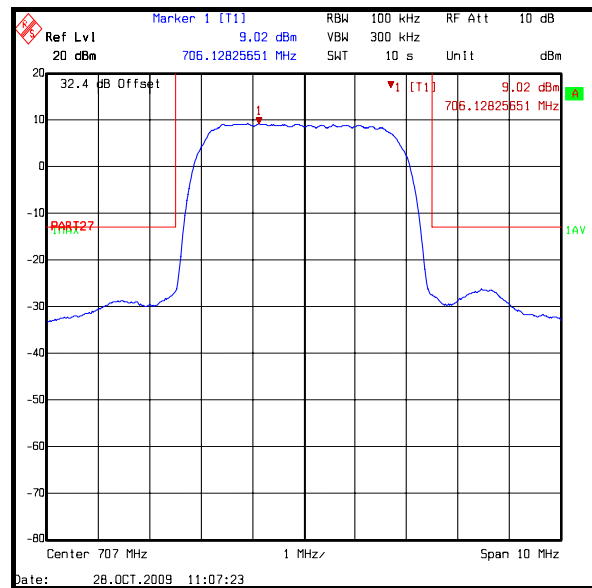
64QAM

Transmitter Conducted Emissions - Channel Edge (continued)

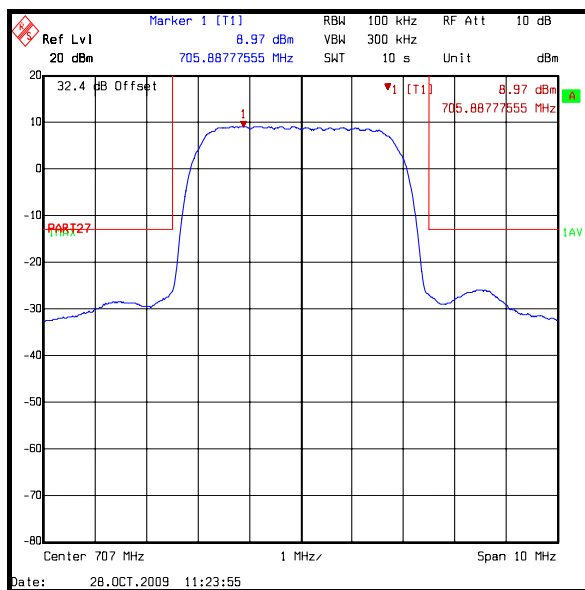
Results: Middle Channel 707.0 MHz



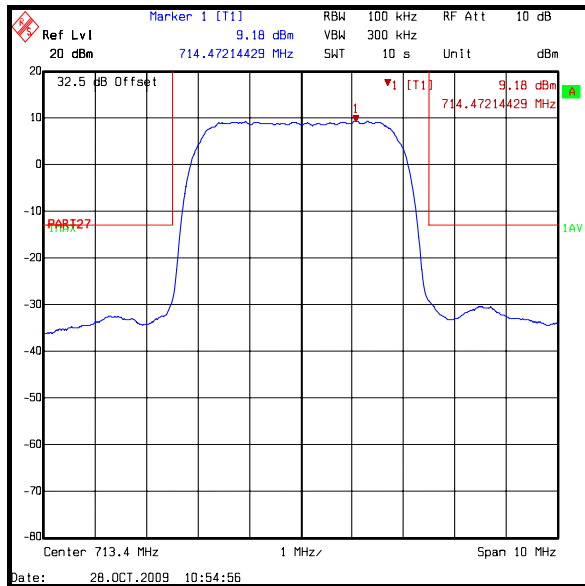
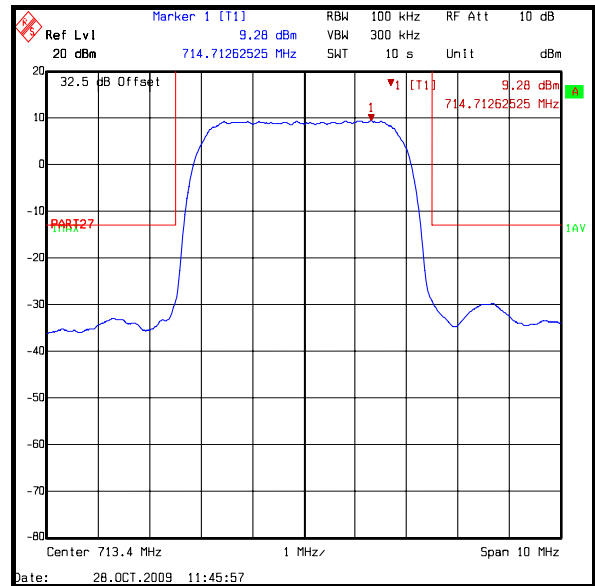
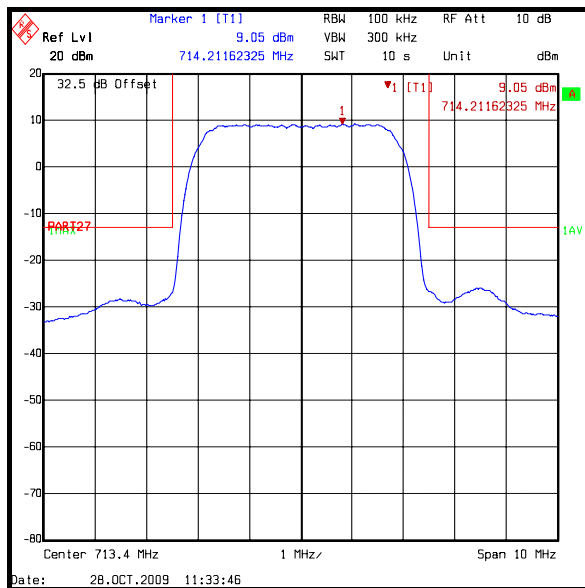
QPSK



16QAM



64QAM

Transmitter Conducted Emissions - Channel Edge (continued)**Results: Top Channel 713.4 MHz****QPSK****16QAM****64QAM**

5.2.8. Transmitter Conducted Emissions**Test Summary:**

FCC Part:	2.1051 and 27.53(g)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2.1051

Environmental Conditions:

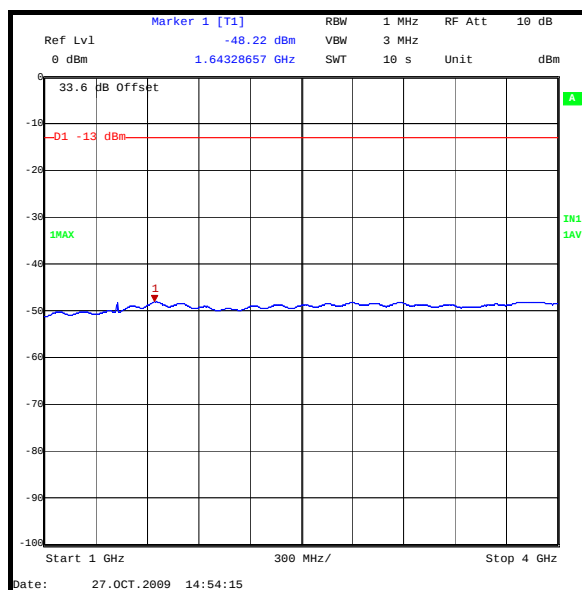
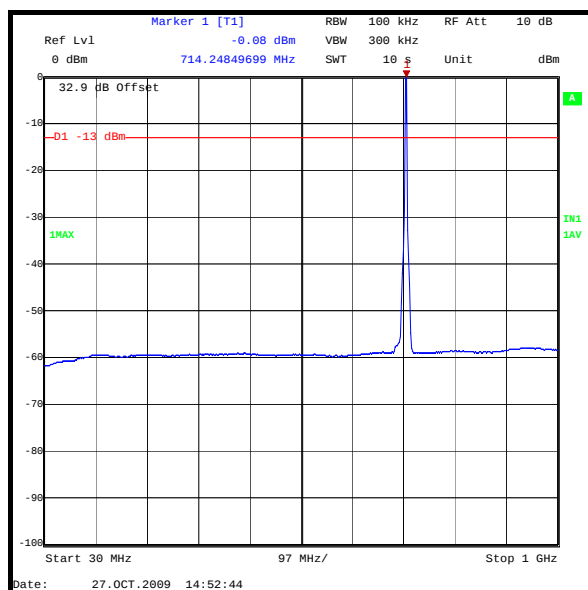
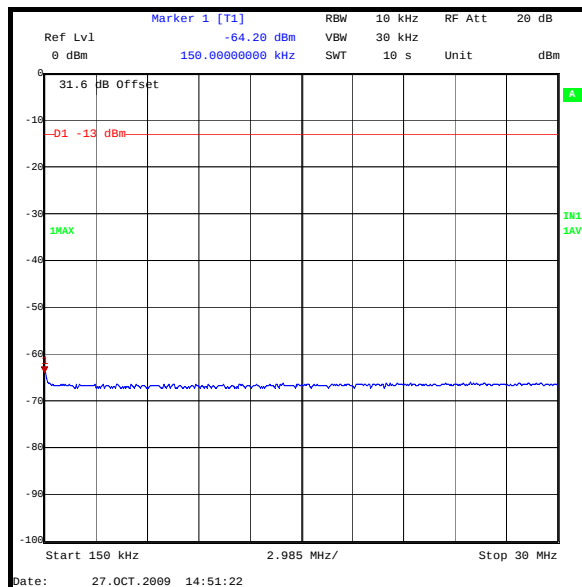
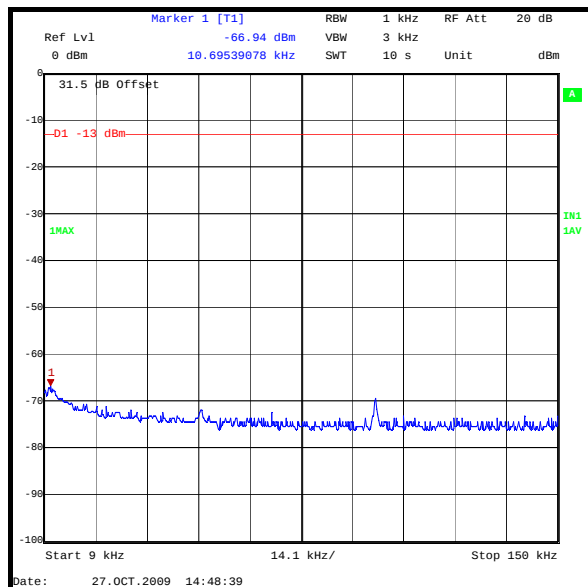
Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

Results:

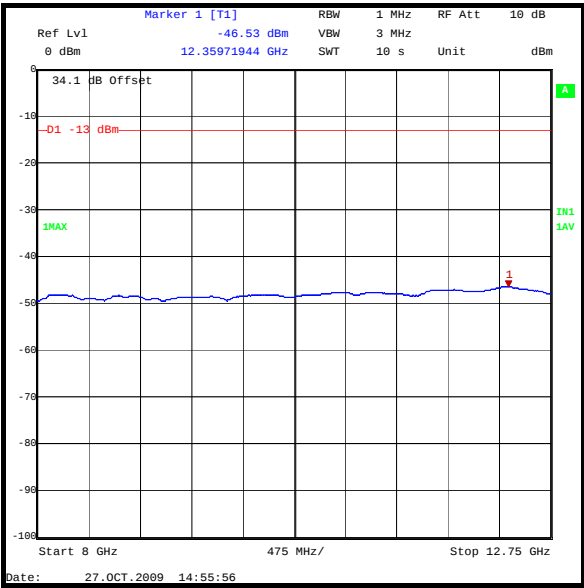
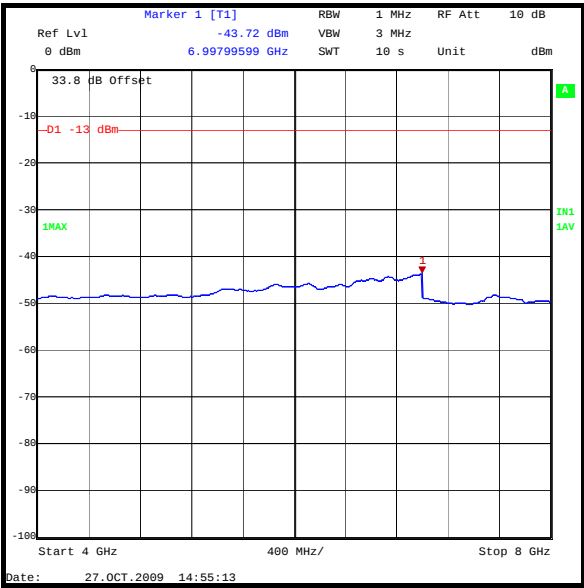
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
6997.996	-43.7	-13.0	30.7	Complied

Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest average noise floor reading of the measuring receiver was recorded as shown in the table above.

Transmitter Conducted Emissions (continued)

Transmitter Conducted Emissions (continued)



Note(s):

1. The emissions shown at approximately 714.248 MHz on the 30 MHz to 1 GHz plot is the carrier

5.2.9. Transmitter Conducted Emissions at Band Edges**Test Summary:**

FCC Part:	2.1051 and 27.53(g)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2.1051

Environmental Conditions:

Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

Results: QPSK

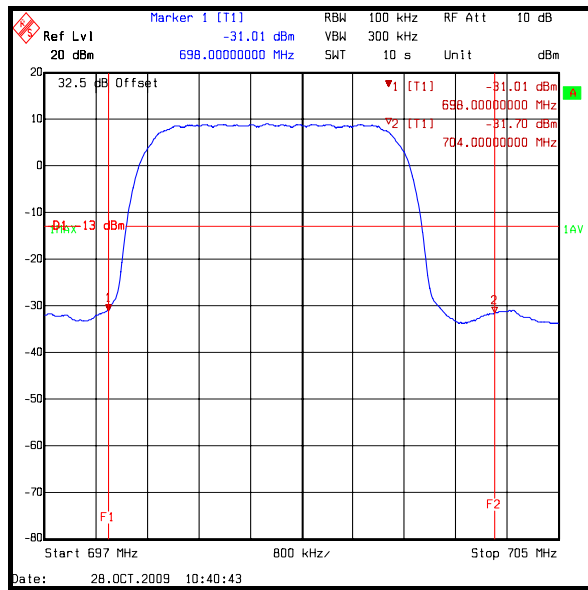
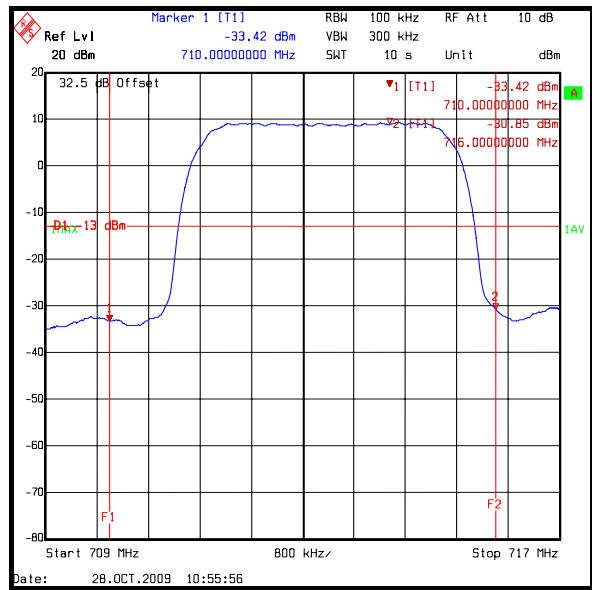
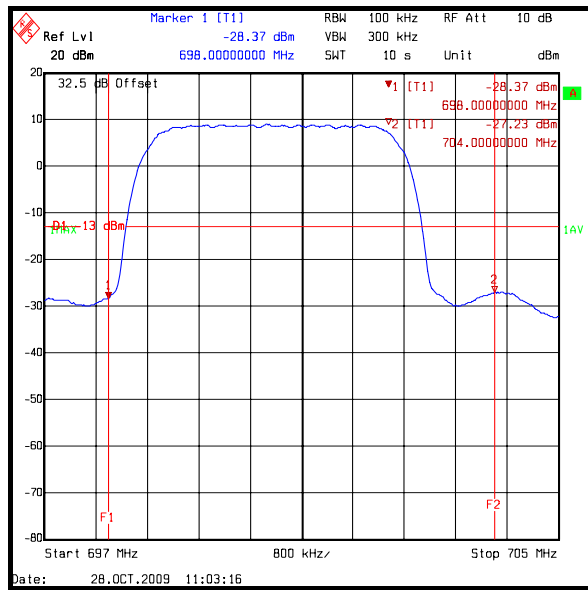
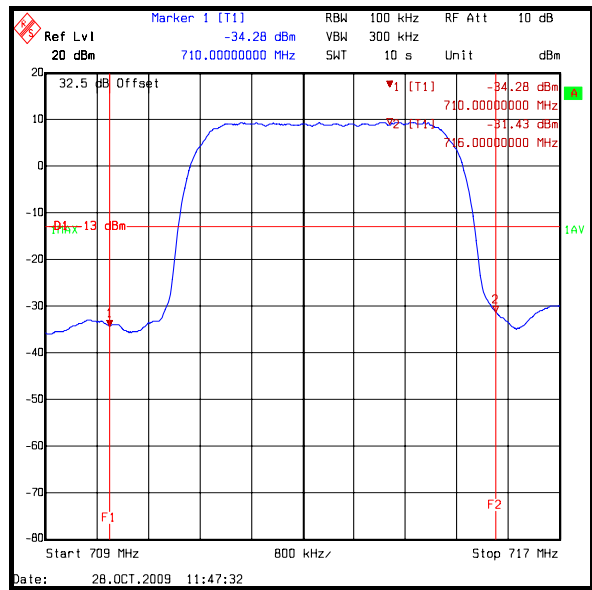
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
698	-31.0	-13.0	18.0	Complied
716	-30.9	-13.0	17.9	Complied

Results: 16QAM

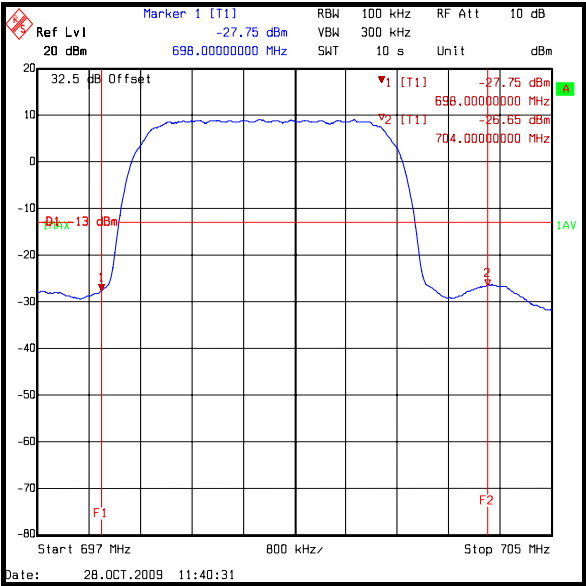
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
698	-28.4	-13.0	15.4	Complied
716	-31.4	-13.0	18.4	Complied

Results: 64QAM

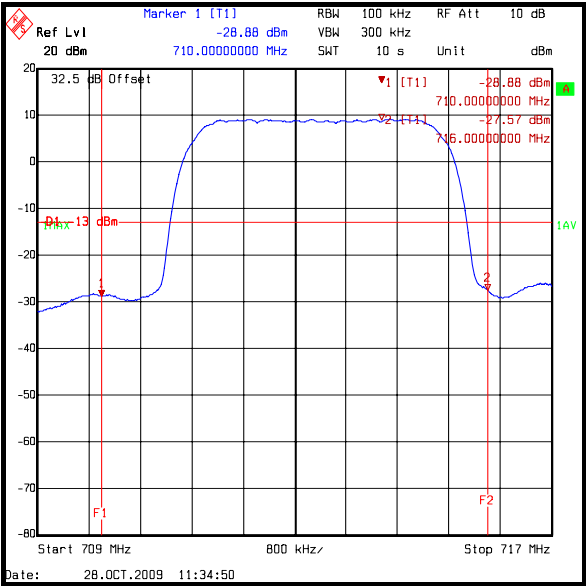
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
698	-27.8	-13.0	14.8	Complied
716	-27.6	-13.0	14.6	Complied

Transmitter Conducted Emissions at Band Edges (continued)**QPSK****QPSK****16QAM****16QAM**

Transmitter Conducted Emissions at Band Edges (continued)



64QAM



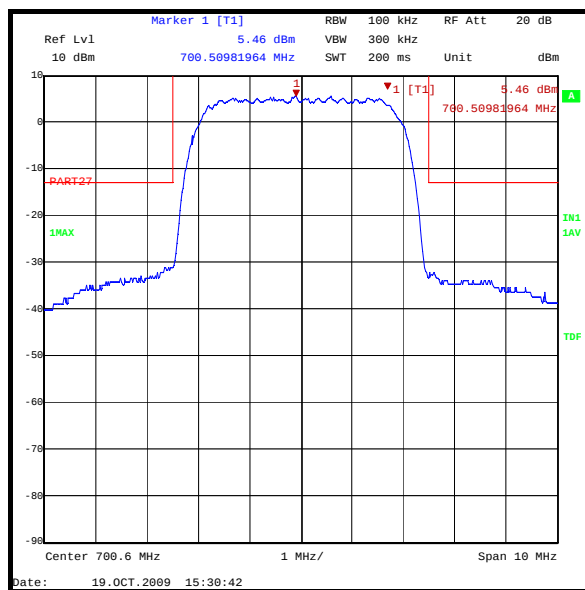
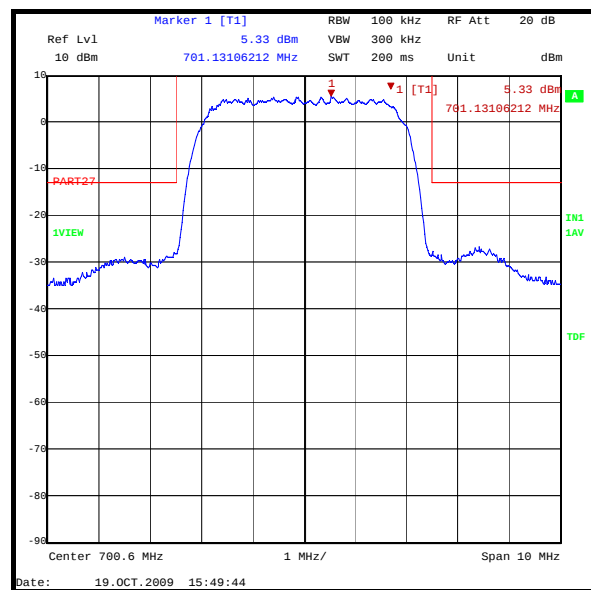
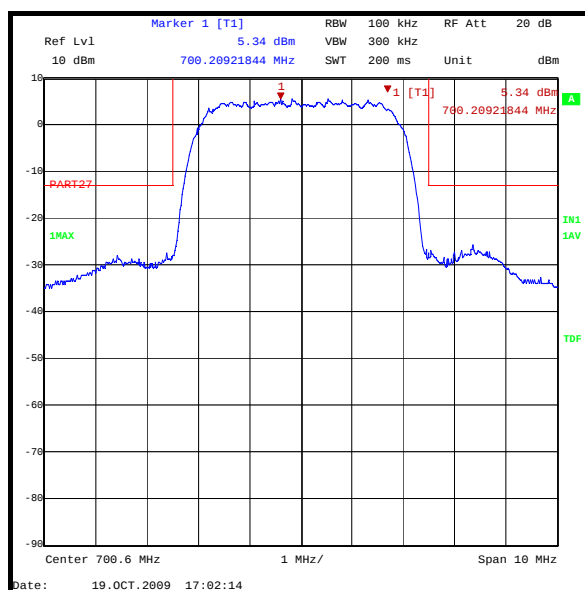
64QAM

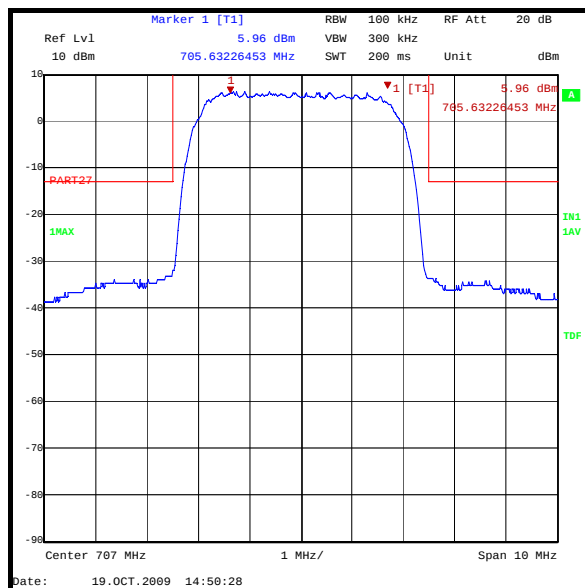
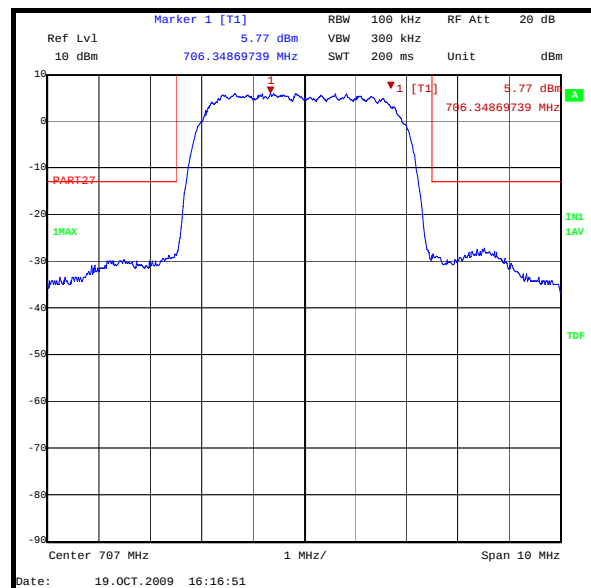
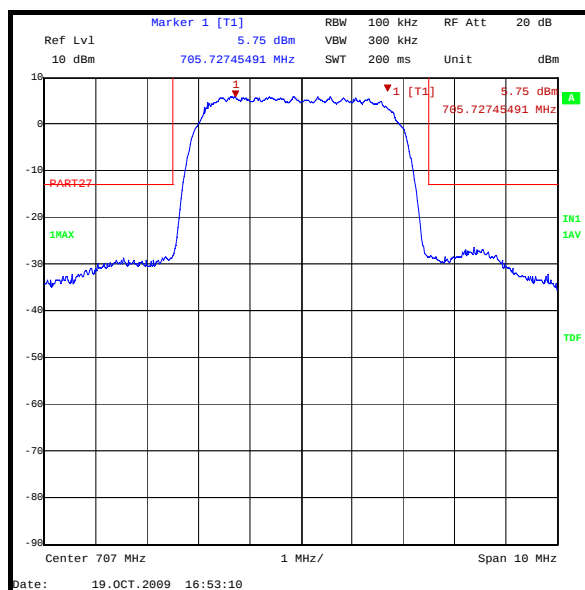
5.2.10. Transmitter Radiated Spurious Emissions - Channel Edge**Test Summary:**

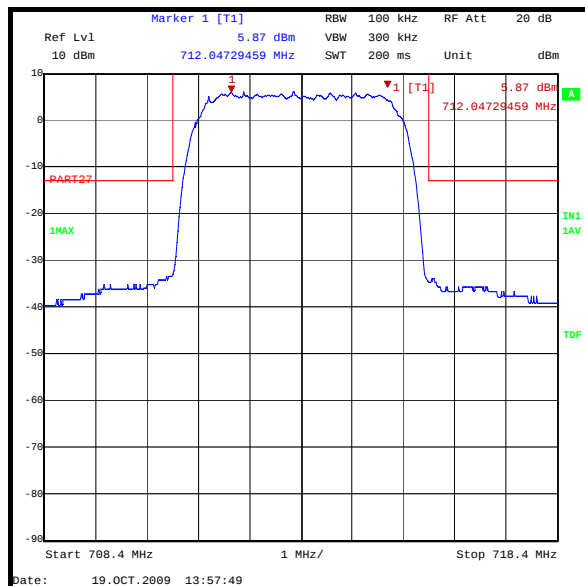
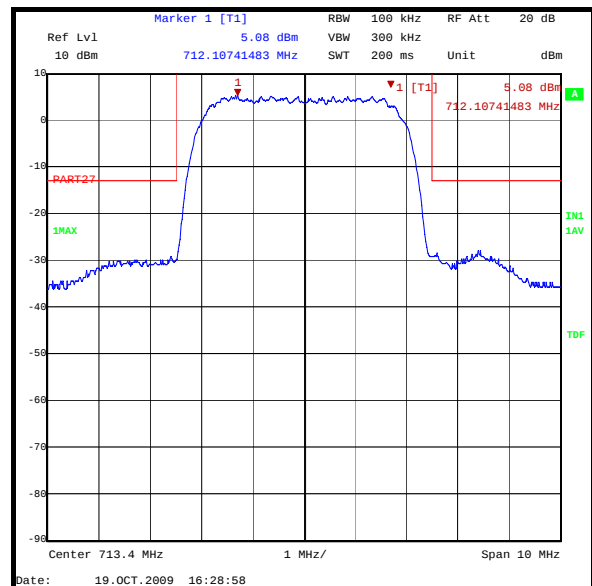
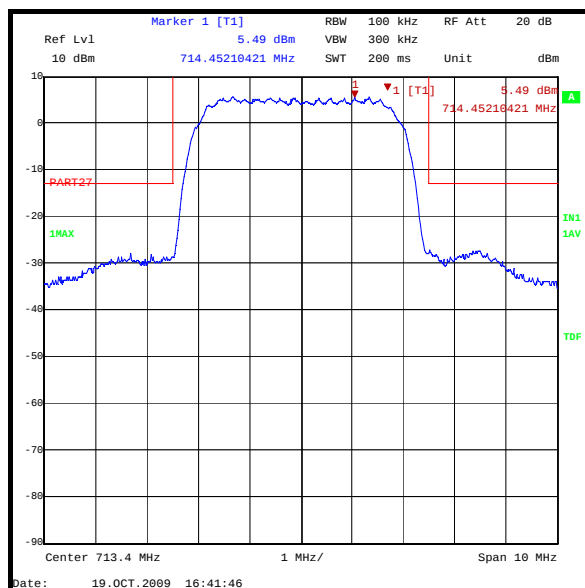
FCC Part:	2.1051 and 27.53(g)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC Part 2.1053

Environmental Conditions:

Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

Results: Bottom Channel 700.6 MHz**QPSK****16QAM****64QAM**

Transmitter Radiated Spurious Emissions - Channel Edge (continued)**Results: Middle Channel 707.0 MHz****QPSK****16QAM****64QAM**

Transmitter Radiated Spurious Emissions - Channel Edge (continued)**Results: Top Channel 713.4 MHz****QPSK****16QAM****64QAM**

5.2.11. Transmitter Radiated Spurious Emissions**Test Summary:**

FCC Part:	2.1051 and 27.53(g)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Part 2.1053

Environmental Conditions:

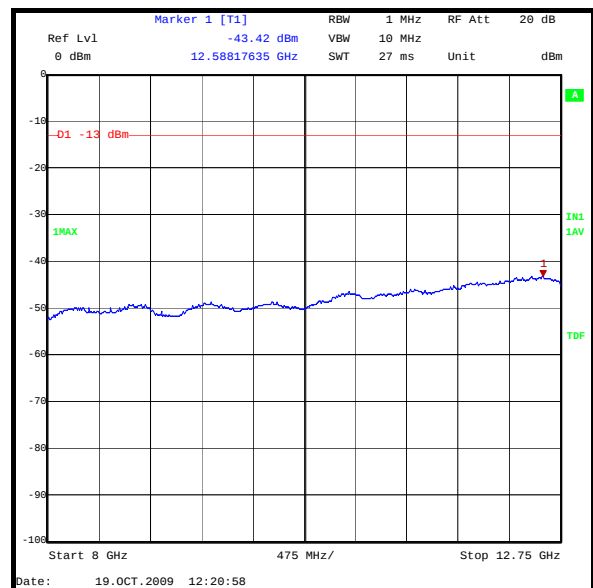
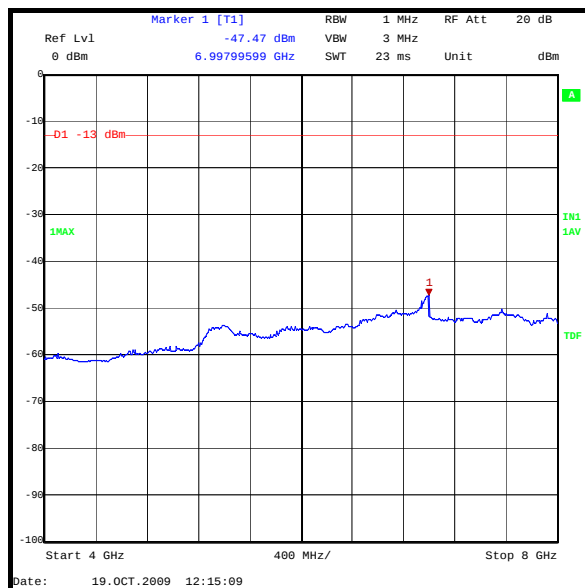
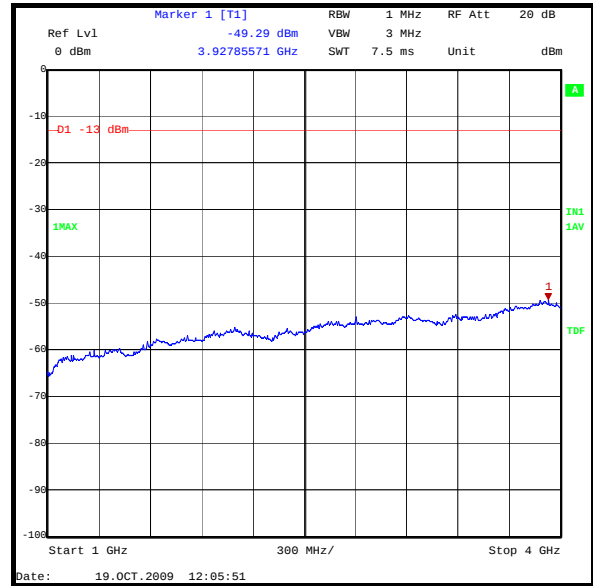
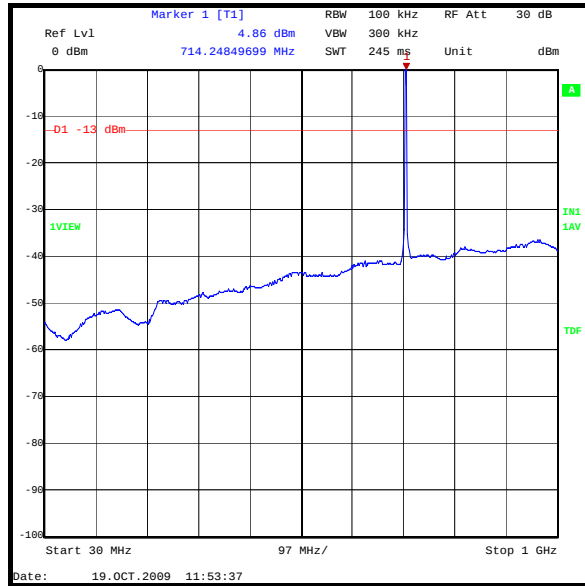
Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

Results:

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
12588.176	-43.4	-13.0	30.4	Complied

Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest average noise floor reading of the measuring receiver was recorded as shown in the table above.
2. The emissions shown at approximately 714.248 MHz on the 30 MHz to 1 GHz plot is the carrier

Transmitter Radiated Spurious Emissions (continued)

5.2.12. Transmitter Radiated Spurious Emissions at Band Edges**Test Summary:**

FCC Part:	2.1051 and 27.53(g)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2

Environmental Conditions:

Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

Results: QPSK

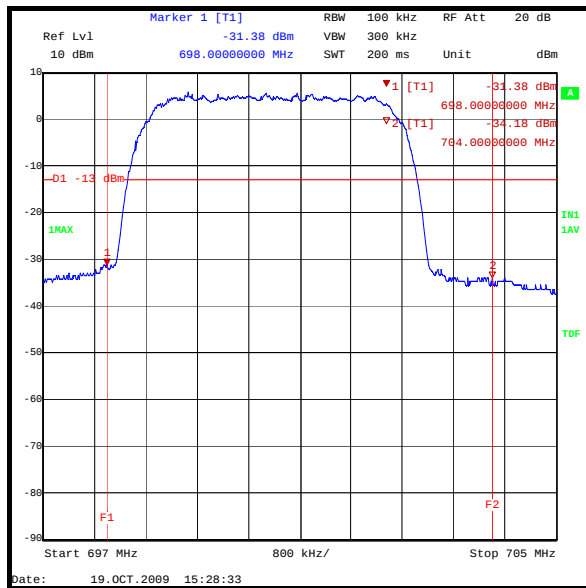
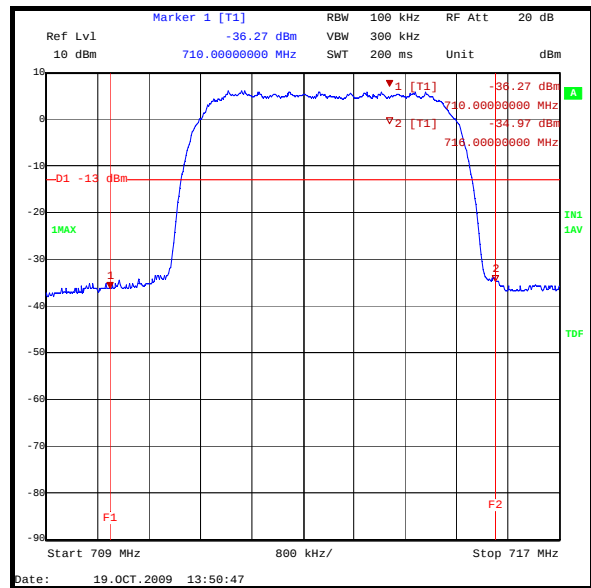
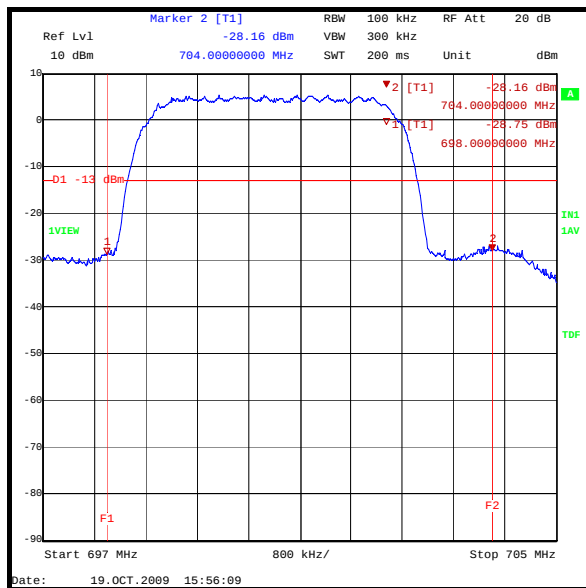
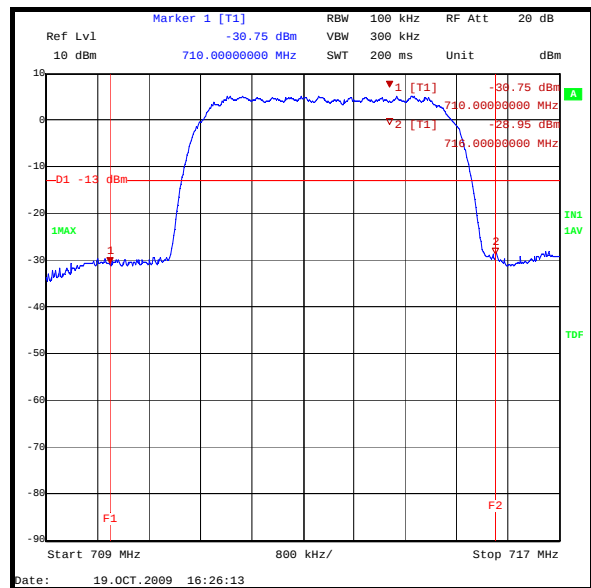
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
698	-31.4	-13.0	18.4	Complied
716	-35.0	-13.0	22.0	Complied

Results: 16QAM

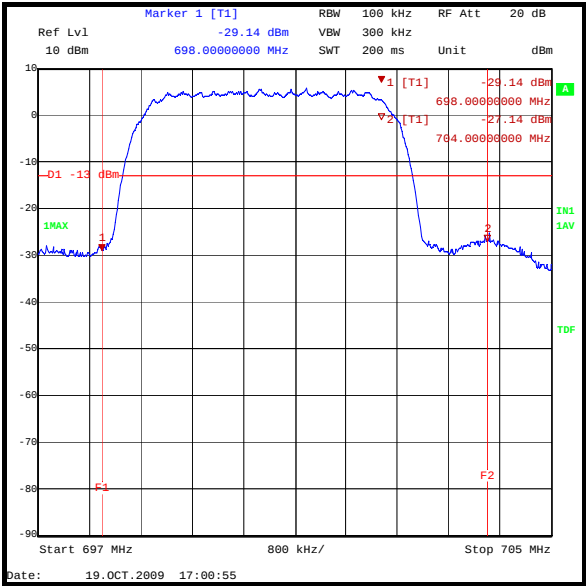
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
698	-28.8	-13.0	15.8	Complied
716	-29.0	-13.0	16.0	Complied

Results: 64QAM

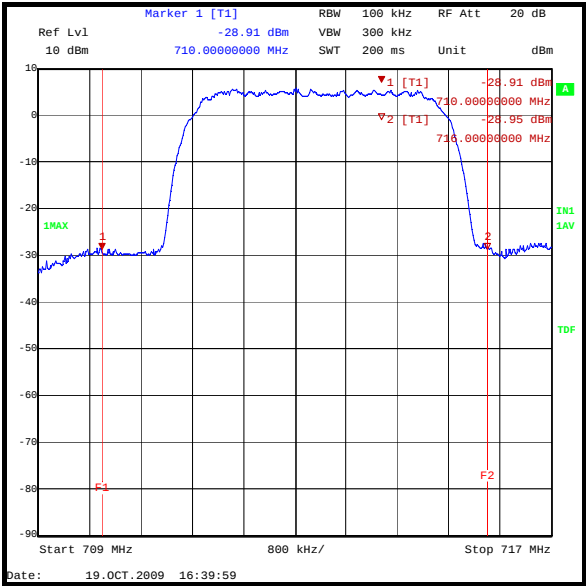
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
698	-29.1	-13.0	16.1	Complied
716	-29.0	-13.0	16.0	Complied

Transmitter Radiated Spurious Emissions at Band Edges (continued)**QPSK****QPSK****16QAM****16QAM**

Transmitter Radiated Spurious Emissions at Band Edges (continued)



64QAM



64QAM

5.3. Test Results – Upper Block

5.3.1. Receive/Idle Mode Radiated Emissions

Test Summary:

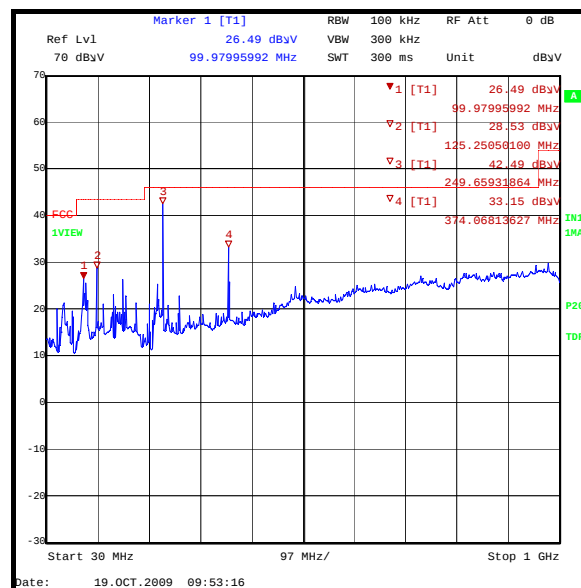
FCC Part:	15.109
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	21
Relative Humidity (%):	31

Results:

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
99.968	Vertical	24.8	43.5	18.7	Complied
124.976	Vertical	25.3	43.5	18.2	Complied
177.244	Vertical	23.5	43.5	20.0	Complied
249.918	Vertical	38.9	46.0	7.1	Complied
374.875	Vertical	28.4	46.0	17.6	Complied



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying table.

Receive/Idle Mode Radiated Emissions (continued)**Test Summary:**

FCC Part:	15.109
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes
Frequency Range:	1 GHz to 12.75 GHz

Environmental Conditions:

Temperature (°C):	21
Relative Humidity (%):	31

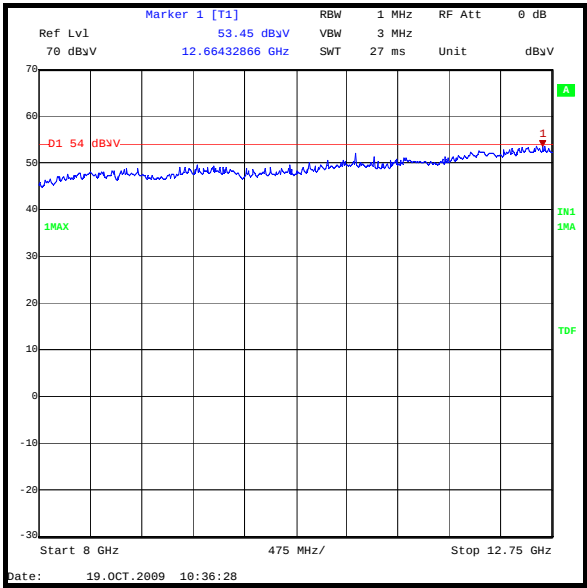
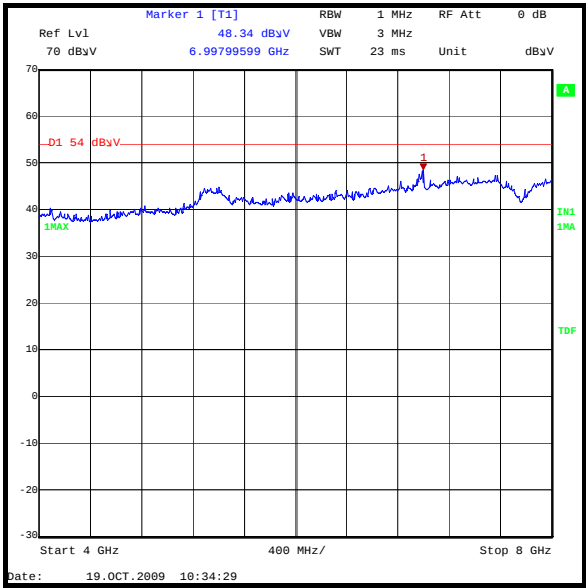
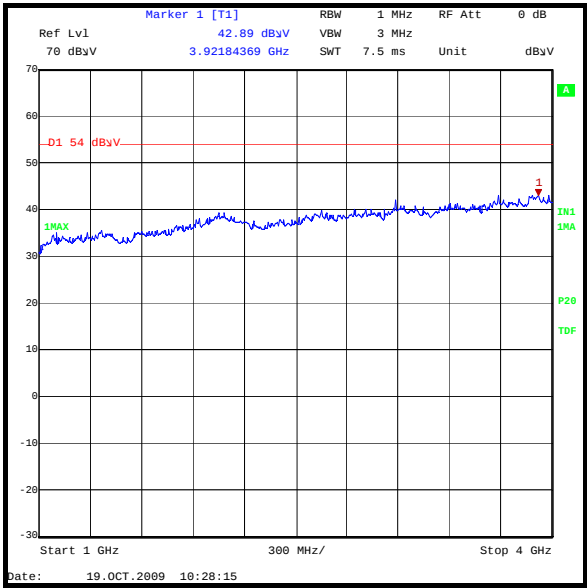
Results: Highest Peak Level

Frequency (MHz)	Antenna Polarity	Detector level (dBμV)	Transducer factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
12664.329	Vertical	66.5	13.0	53.5	54.0	0.5	Complied

Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more

Receive/Idle Mode Radiated Emissions (continued)



5.3.2. Receive/Idle Mode Conducted Spurious Emissions**Test Summary:**

FCC Part:	15.111
Test Method Used:	As detailed in ANSI TIA-603-C-2004
Frequency Range:	9 kHz to 12.75 GHz

Environmental Conditions:

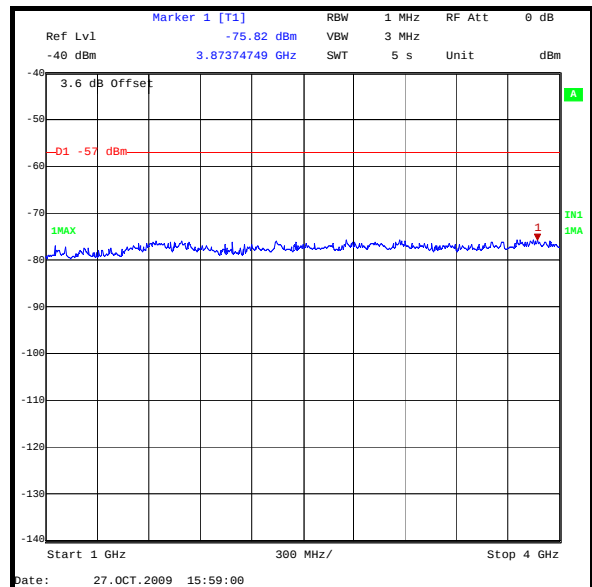
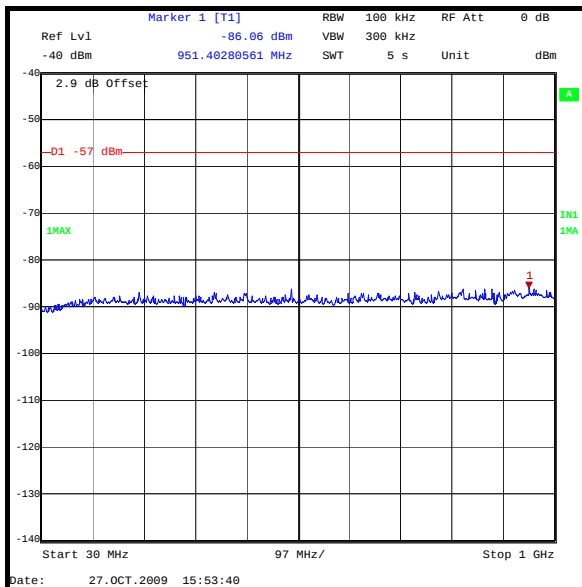
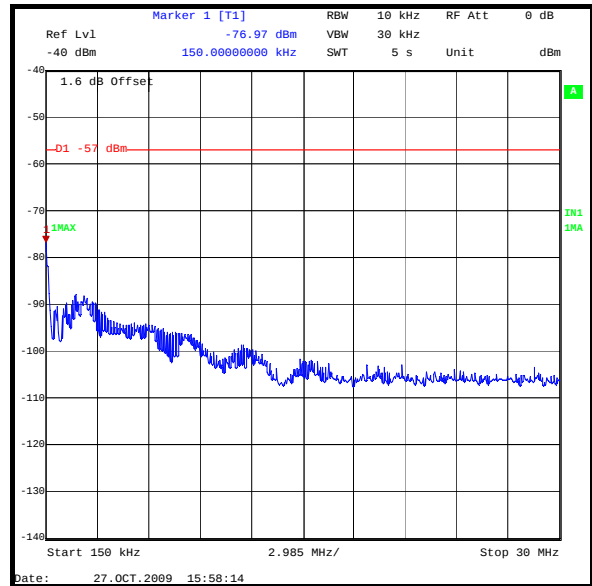
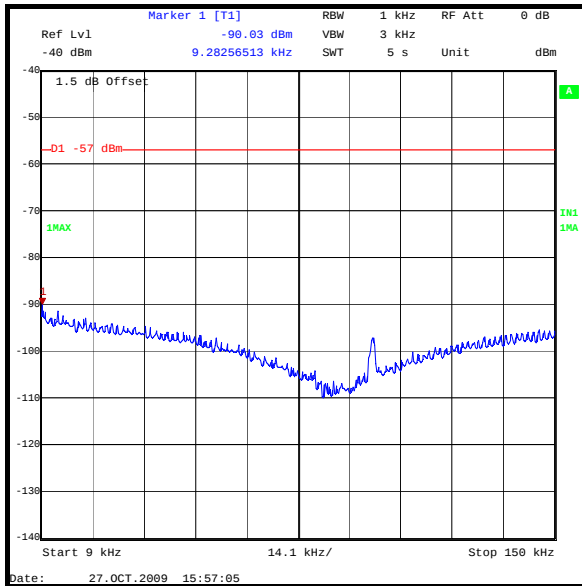
Temperature (°C):	21
Relative Humidity (%):	31

Results: Main RF Port

Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
699.800	-71.4	-57.0	14.4	Complied

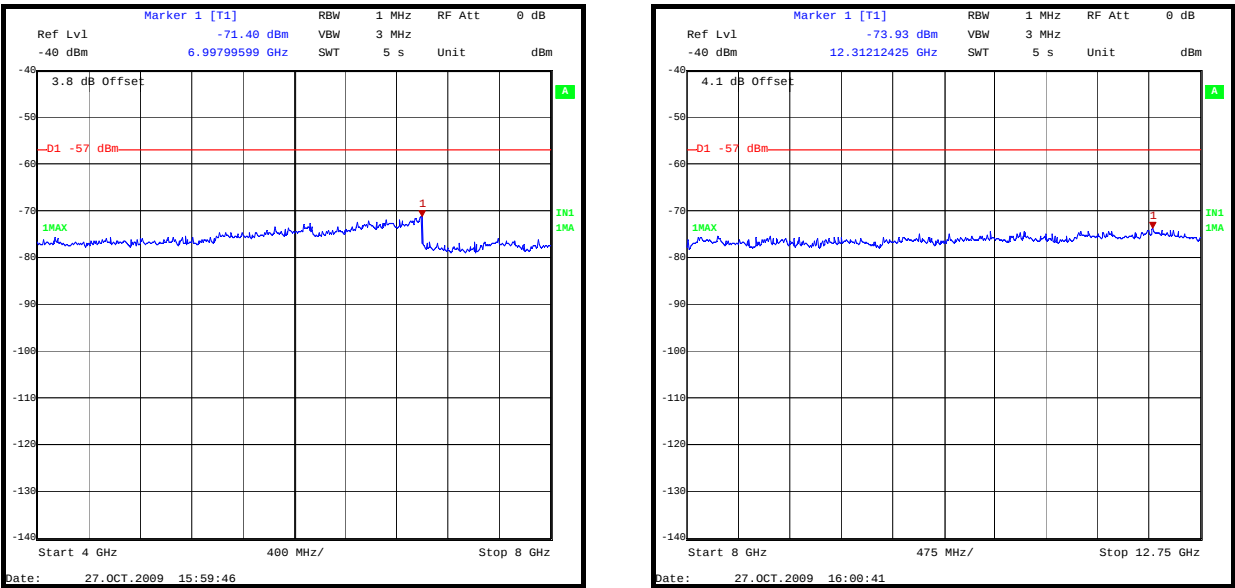
Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above.

Receive/Idle Mode Conducted Spurious Emissions (continued)

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Receive/Idle Mode Conducted Spurious Emissions (continued)



Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Receive/Idle Mode Conducted Spurious Emissions (continued)**Test Summary:**

FCC Part:	15.111
Test Method Used:	As detailed in ANSI TIA-603-C-2004
Frequency Range:	9 kHz to 12.75 GHz

Environmental Conditions:

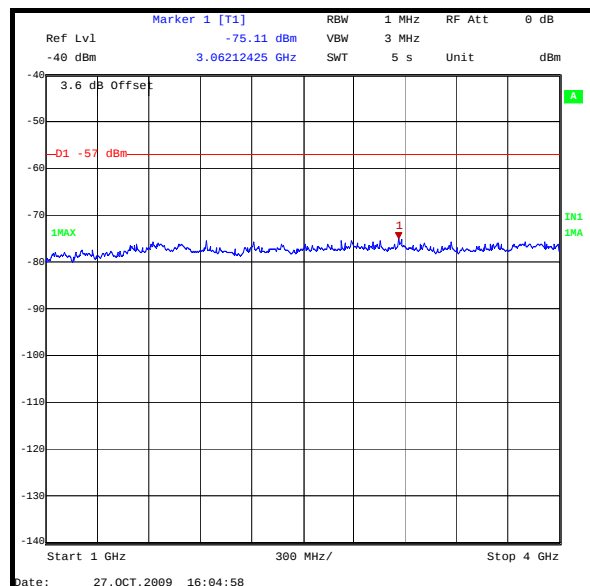
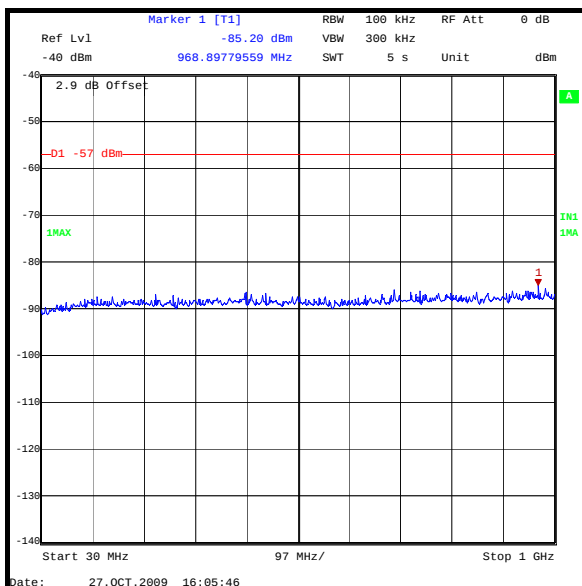
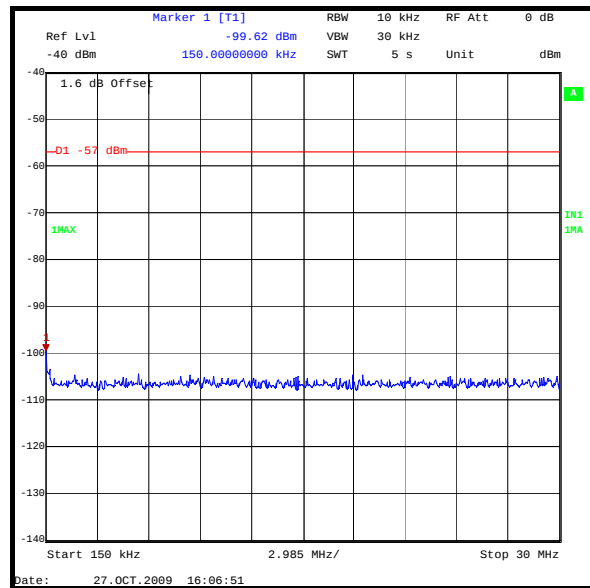
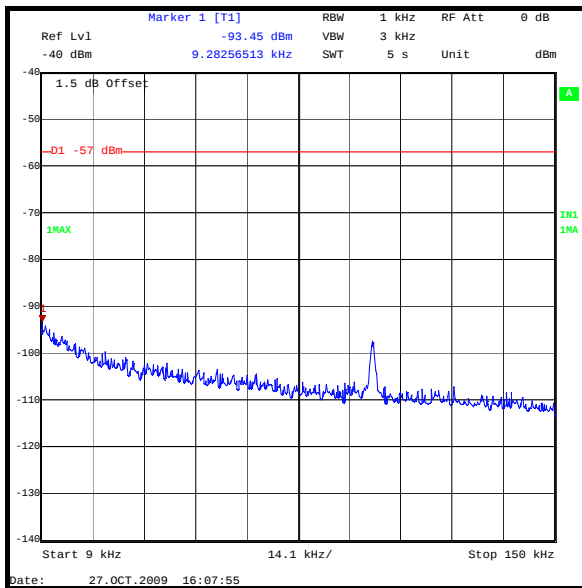
Temperature (°C):	21
Relative Humidity (%):	31

Results: Diversity RF Port

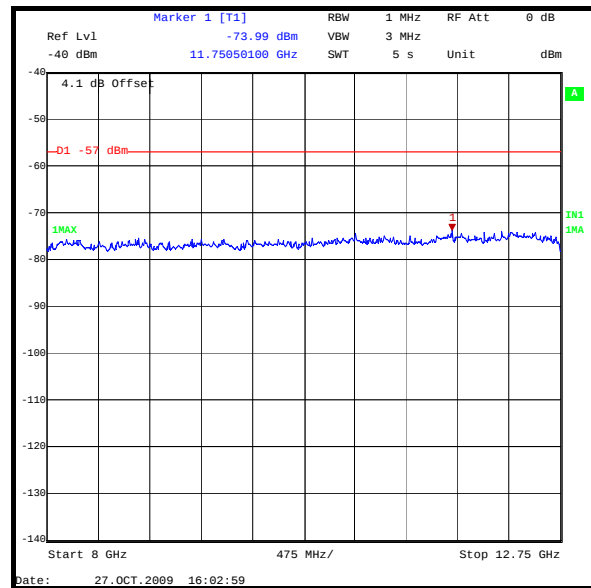
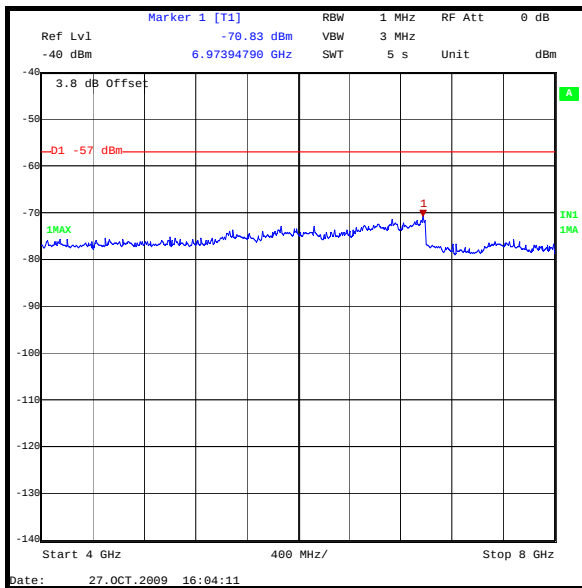
Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
697.395	-70.8	-57.0	13.8	Complied

Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above.

Receive/Idle Mode Conducted Spurious Emissions (continued)

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Receive/Idle Mode Conducted Spurious Emissions (continued)

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

5.3.3. Transmitter Carrier Output Power and Effective Radiated Power (ERP)**Test Summary:**

FCC Part:	2.1046 and 27.50(b)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.17.2

Environmental Conditions:

Temperature Variation (°C):	24
Relative Humidity Variation (%):	40

Results: QPSK

Frequency (MHz)	Conducted RF Power (dBm)	Antenna Gain (dBd)	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
778.6	25.3	16.8	42.1	44.8	2.8	Complied
784.4	24.7	16.8	41.5	44.8	3.3	Complied
790.4	24.7	16.8	41.5	44.8	3.3	Complied

Results: 16QAM

Frequency (MHz)	Conducted RF Power (dBm)	Antenna Gain (dBd)	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
778.6	25.3	16.8	42.1	44.8	2.8	Complied
784.4	24.7	16.8	41.5	44.8	3.3	Complied
790.4	24.6	16.8	41.4	44.8	3.5	Complied

Results: 64QAM

Frequency (MHz)	Conducted RF Power (dBm)	Antenna Gain (dBd)	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
778.6	25.3	16.8	42.1	44.8	2.8	Complied
784.4	24.7	16.8	41.5	44.8	3.3	Complied
790.4	24.7	16.8	41.5	44.8	3.3	Complied

5.3.4. Transmitter Occupied Bandwidth**Test Summary:**

FCC Part:	2.1049
Test Method Used:	As detailed in ANSI C63.4 Section 13.1.7 and relevant annexes referencing FCC CFR Part 2.1049 (see note below)

Environmental Conditions:

Temperature Variation (°C):	26
Relative Humidity Variation (%):	36

Results: QPSK

Frequency	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
778.6	100	300	4.118
784.4	100	300	4.118
790.4	100	300	4.118

Results: 16QAM

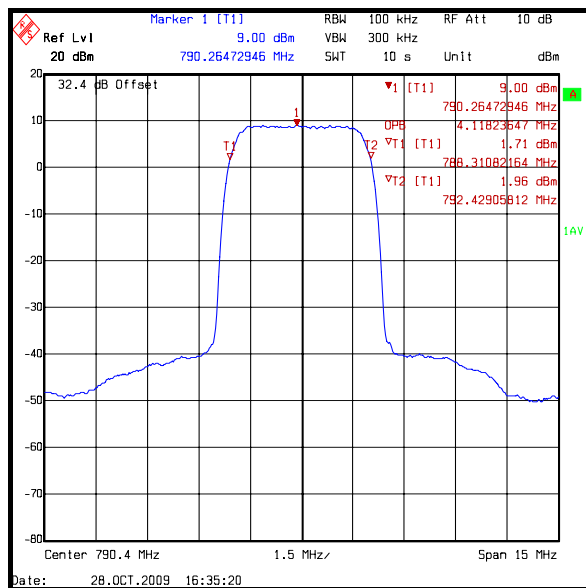
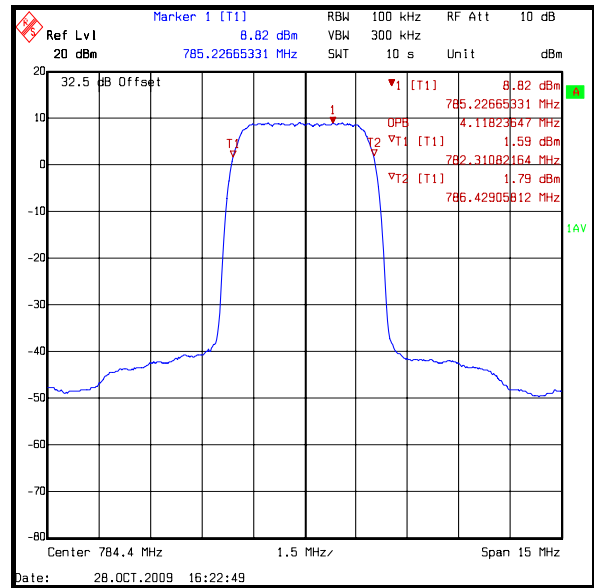
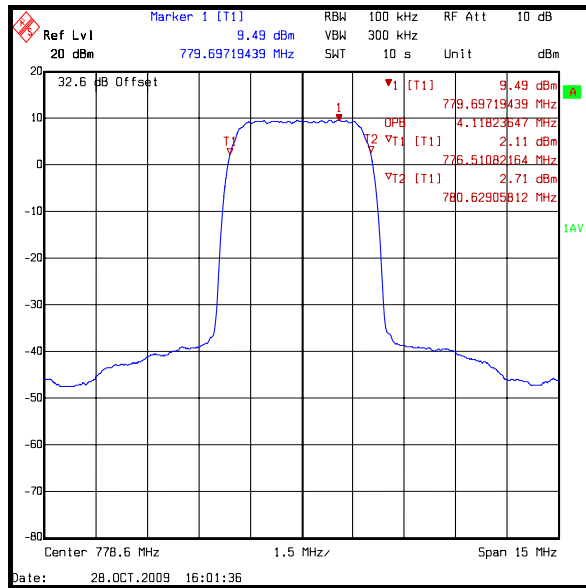
Frequency	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
778.6	100	300	4.118
784.4	100	300	4.118
790.4	100	300	4.118

Results: 64QAM

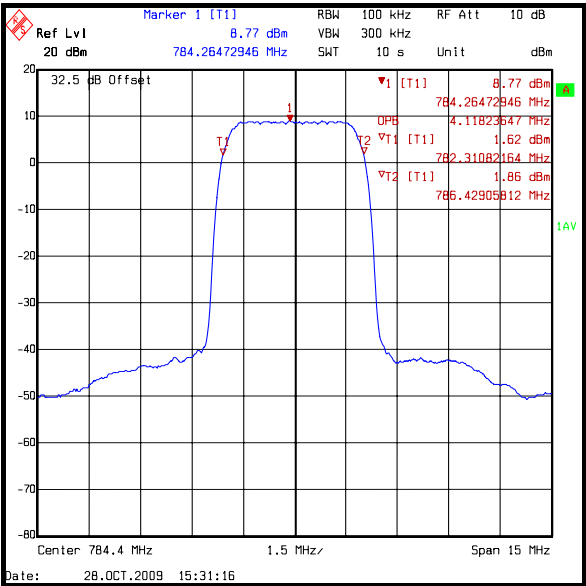
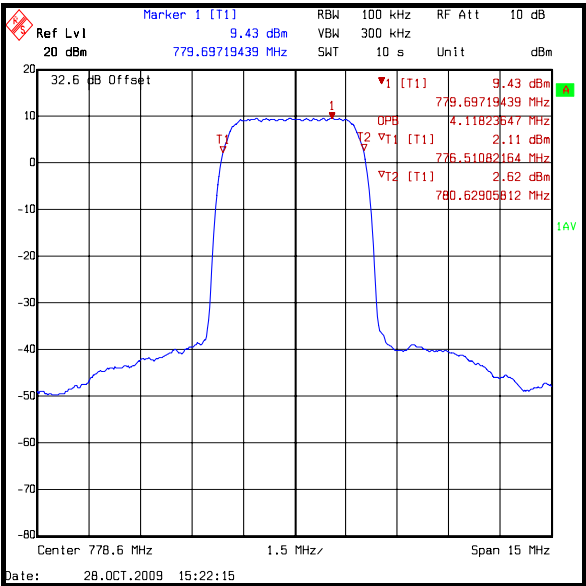
Frequency	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
778.6	100	300	4.118
784.4	100	300	4.118
790.4	100	300	4.118

Note(s):

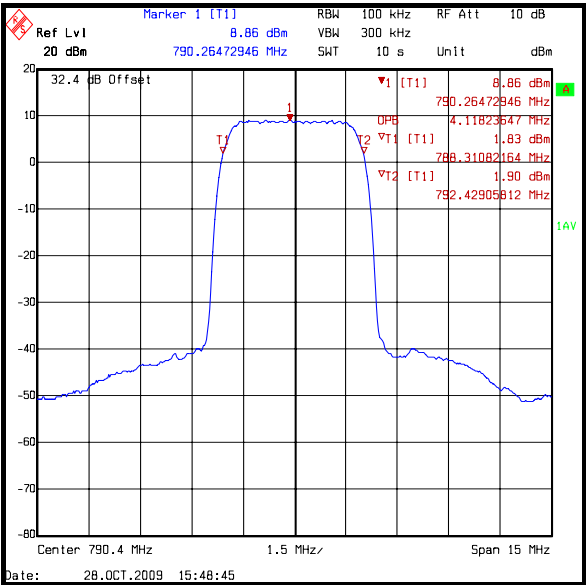
1. In lieu of the test method detailed in ANSI C63.4 Section 13.1.7 the 99% occupied bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser.

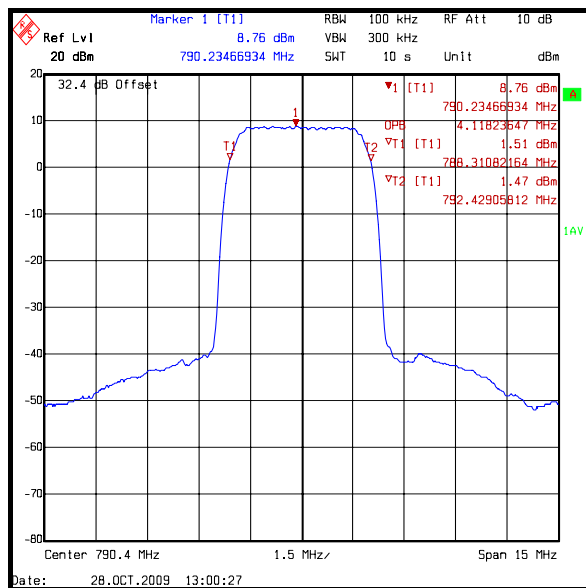
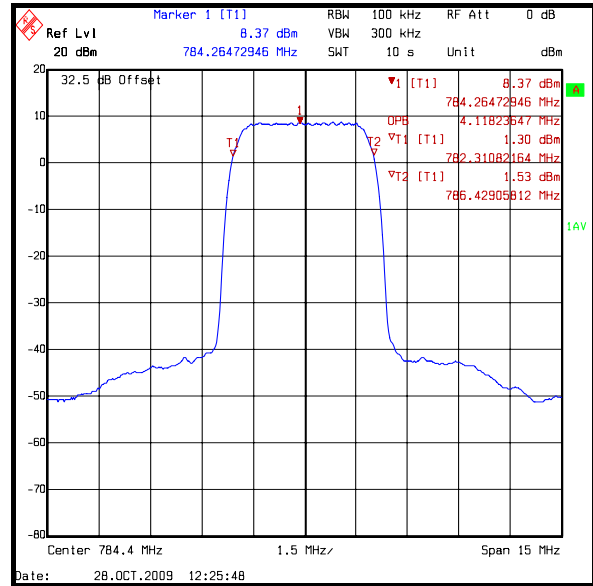
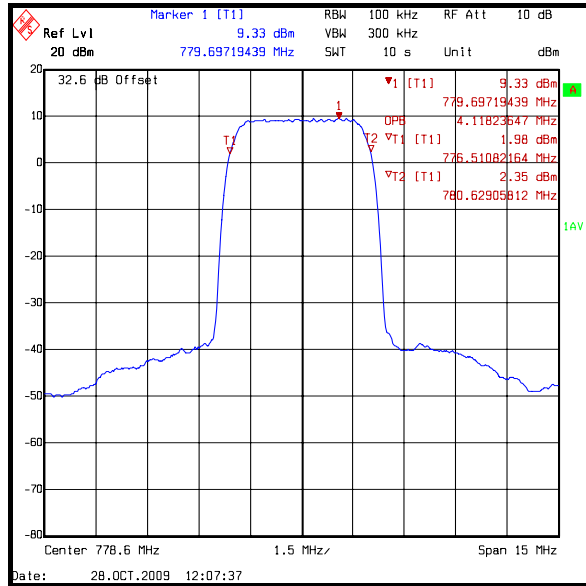
Transmitter Occupied Bandwidth (continued)**QPSK**

Transmitter Occupied Bandwidth (continued)



16QAM



Transmitter Occupied Bandwidth (continued)**64QAM**

5.3.5. Transmitter Frequency Stability - Temperature Variation**Test Summary:**

FCC Part:	27.54
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.2 referencing FCC CFR Part 2.1055

Environmental Conditions:

Temperature Variation (°C):	25 - 26
Relative Humidity Variation (%):	35 - 36

Results: 778.6 MHz

Temp (°C)	Measured Frequency (MHz)	Frequency Error (kHz)
-30	778.603407	3.407
-20	778.602798	2.798
-10	778.602997	2.997
0	778.602883	2.883
10	778.602673	2.673
20	778.602669	2.669
30	778.602708	2.708
40	778.604694	4.694
50	778.604780	4.780

Results: 784.4 MHz

Temp (°C)	Measured Frequency (MHz)	Frequency Error (kHz)
-30	784.403504	3.504
-20	784.402913	2.913
-10	784.402984	2.984
0	784.402818	2.818
10	784.402567	2.567
20	784.402543	2.543
30	784.402601	2.601
40	784.404646	4.646
50	784.404727	4.727

Transmitter Frequency Stability - Temperature Variation – (continued)**Results: 790.4 MHz**

Temp (°C)	Measured Frequency (MHz)	Frequency Error (kHz)
-30	790.402975	2.975
-20	790.402830	2.830
-10	790.402880	2.880
0	790.402706	2.706
10	790.402549	2.549
20	790.402658	2.658
30	790.403000	3.000
40	790.404836	4.836
50	790.404776	4.776

5.3.6. Transmitter Frequency Stability - Voltage Variation**Test Summary:**

FCC Part:	27.54
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.2 referencing FCC CFR Part 2.1055

Environmental Conditions:

Temperature Variation (°C):	25
Relative Humidity Variation (%):	36

Results: 778.6 MHz

Supply Voltage (°C)	Measured Frequency (MHz)	Frequency Error (kHz)
3.0	778.603730	3.730
3.3	778.603817	3.817
3.6	778.603668	3.668

Results: 784.4 MHz

Supply Voltage (°C)	Measured Frequency (MHz)	Frequency Error (kHz)
3.0	784.403814	3.814
3.3	784.403698	3.698
3.6	784.403856	3.856

Results: 795.4 MHz

Supply Voltage (°C)	Measured Frequency (MHz)	Frequency Error (kHz)
3.0	790.403649	3.649
3.3	790.403753	3.753
3.6	790.403832	3.832

5.3.7. Transmitter Conducted Emissions - Channel Edge

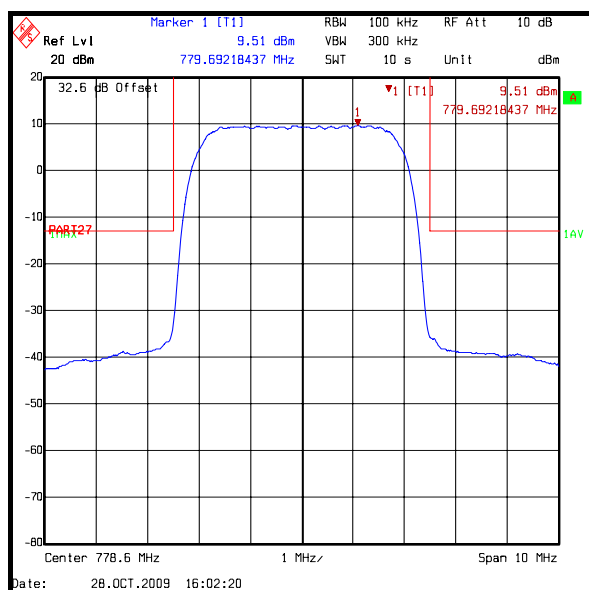
Test Summary:

FCC Part:	2.1051, 27.53(c) and 27.53(d)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2.1051

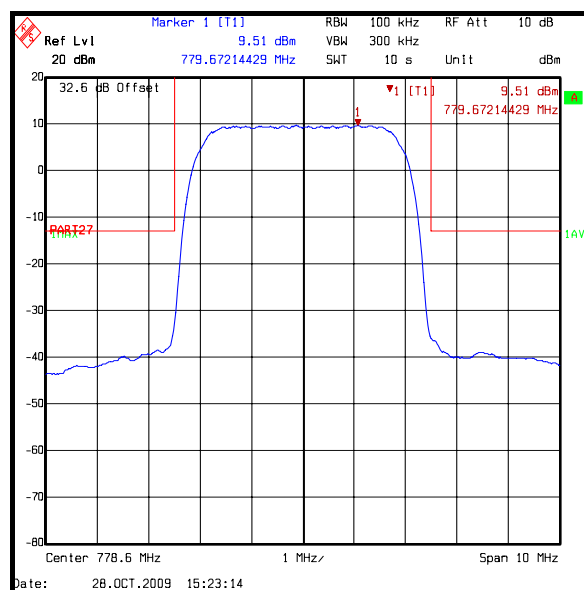
Environmental Conditions:

Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

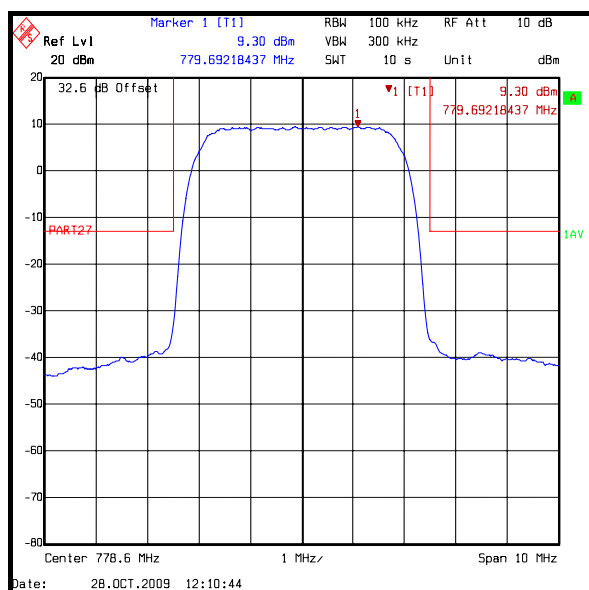
Results: Bottom Channel 778.6 MHz



QPSK



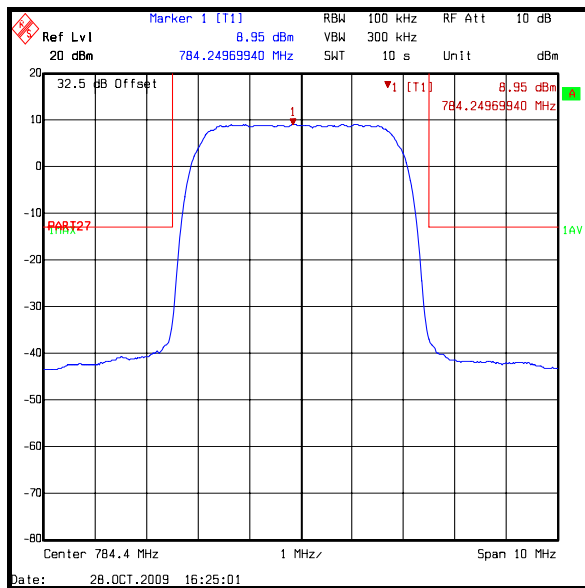
16QAM



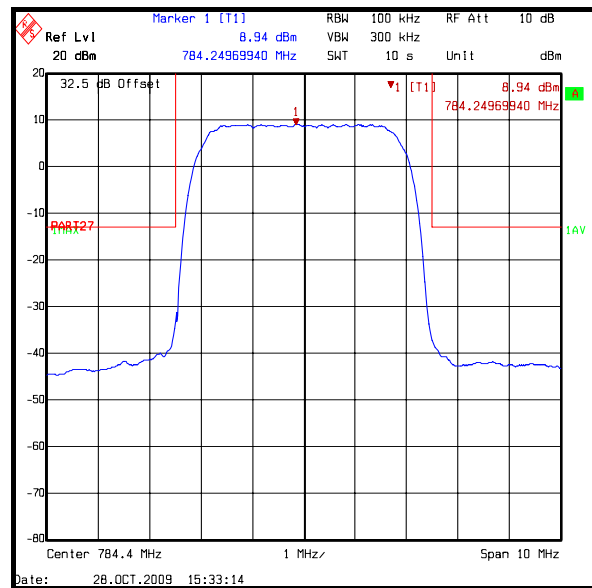
64QAM

Transmitter Conducted Emissions - Channel Edge (continued)

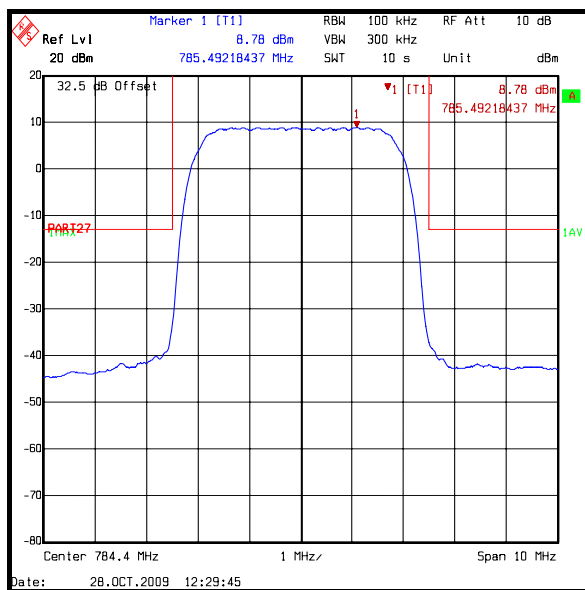
Results: Middle Channel 784.4 MHz



QPSK



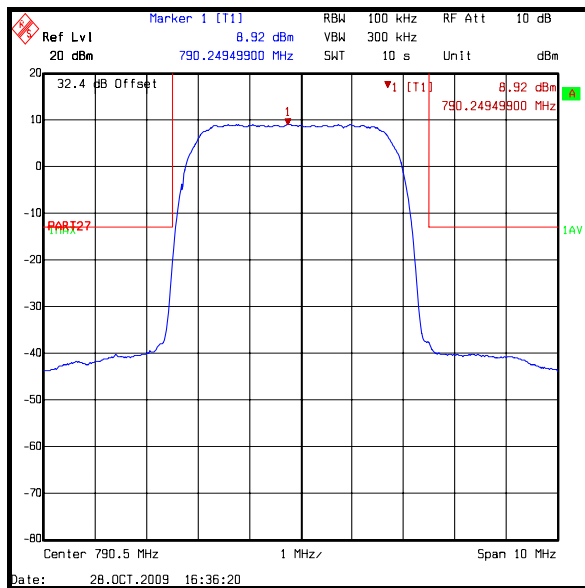
16QAM



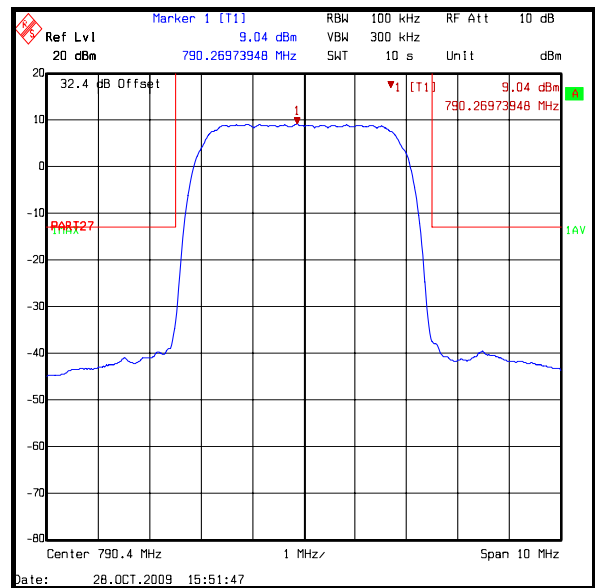
64QAM

Transmitter Conducted Emissions - Channel Edge (continued)

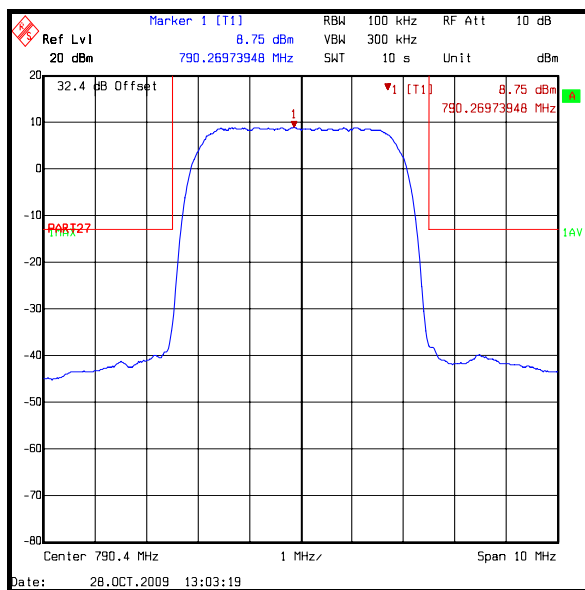
Results: Top Channel 790.4 MHz



QPSK



16QAM



64QAM

5.3.8. Transmitter Conducted Emissions**Test Summary:**

FCC Part:	2.1051, 27.53(c) and 27.53(d)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2.1051

Environmental Conditions:

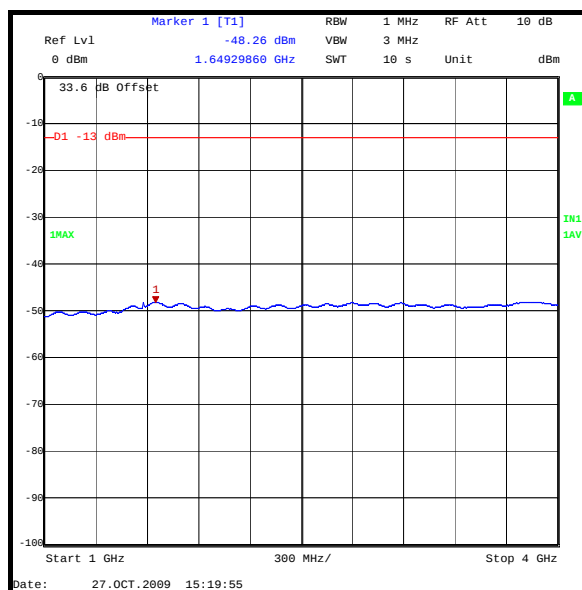
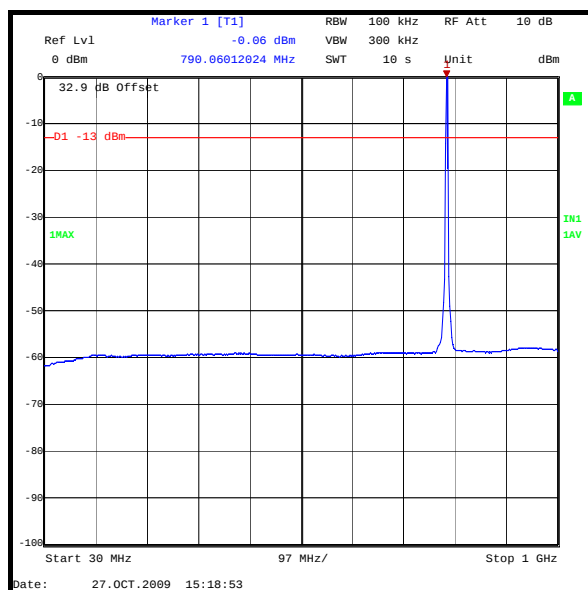
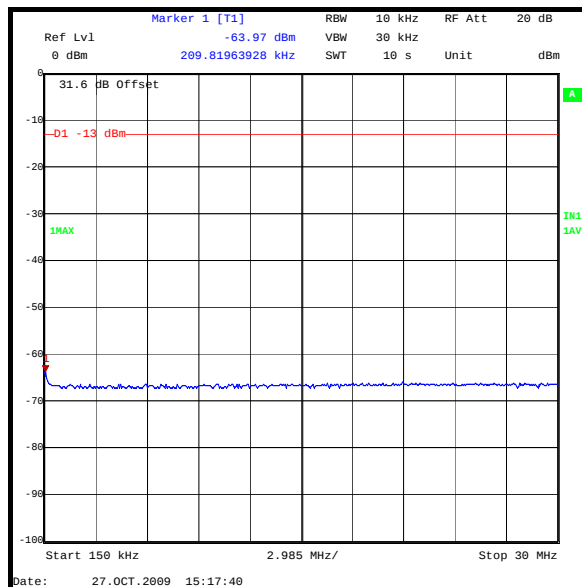
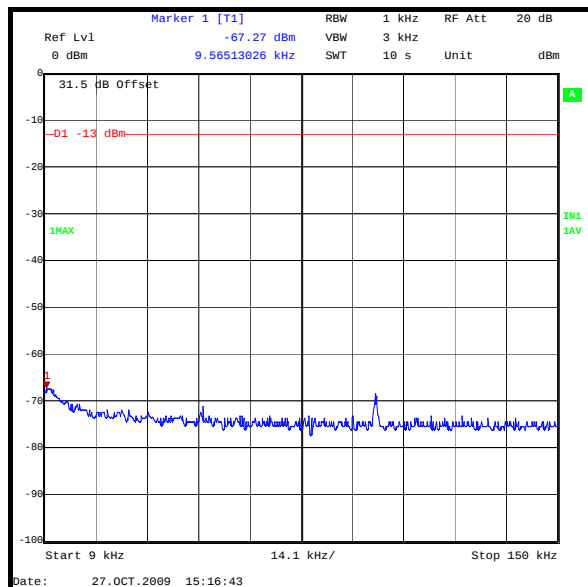
Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

Results:

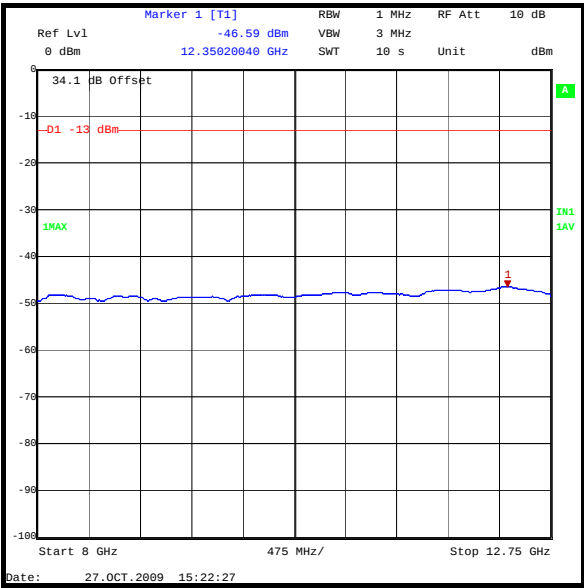
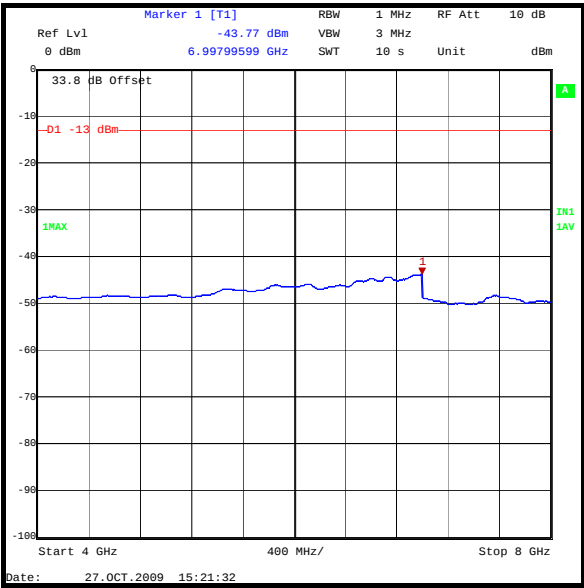
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
6997.996	-43.8	-13.0	30.8	Complied

Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest average noise floor reading of the measuring receiver was recorded as shown in the table above.

Transmitter Conducted Emissions (continued)

Transmitter Conducted Emissions (continued)



Note(s):

- 1. The emissions shown at approximately 790.060 MHz on the 30 MHz to 1 GHz plot is the carrier

5.3.9. Transmitter Conducted Emissions at Band Edges**Test Summary:**

FCC Part:	2.1051, 27.53(c) and 27.53(d)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2.1051

Environmental Conditions:

Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

Results: QPSK

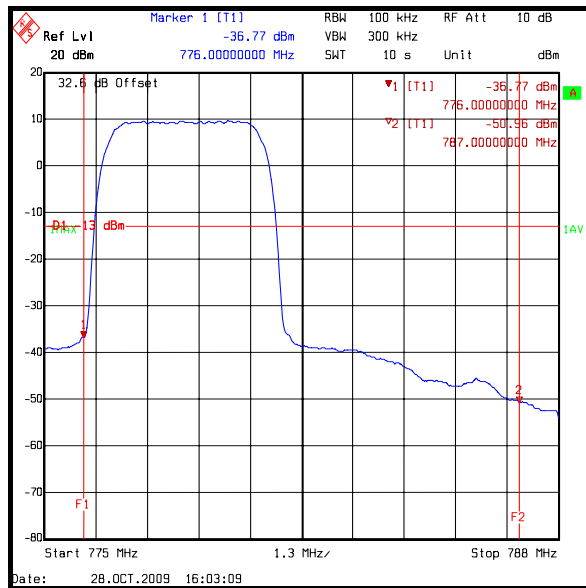
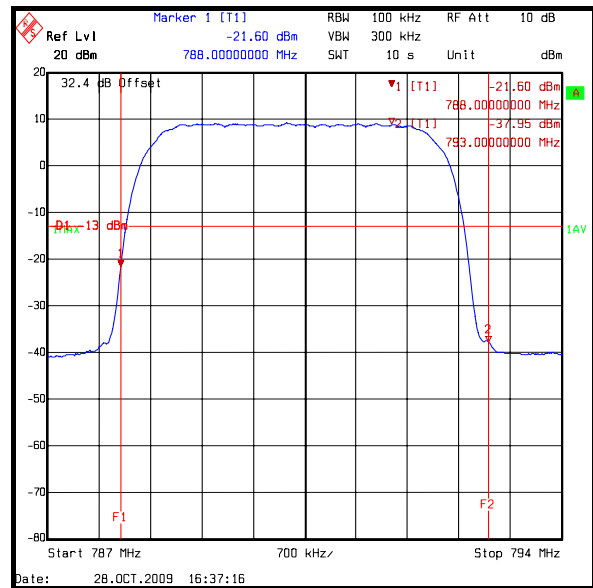
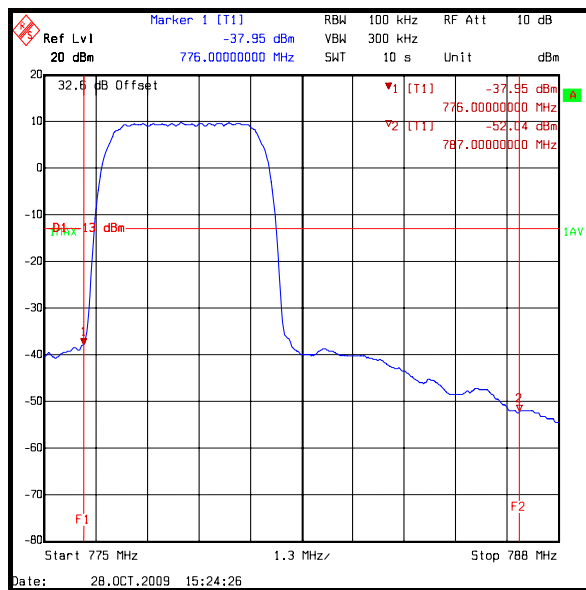
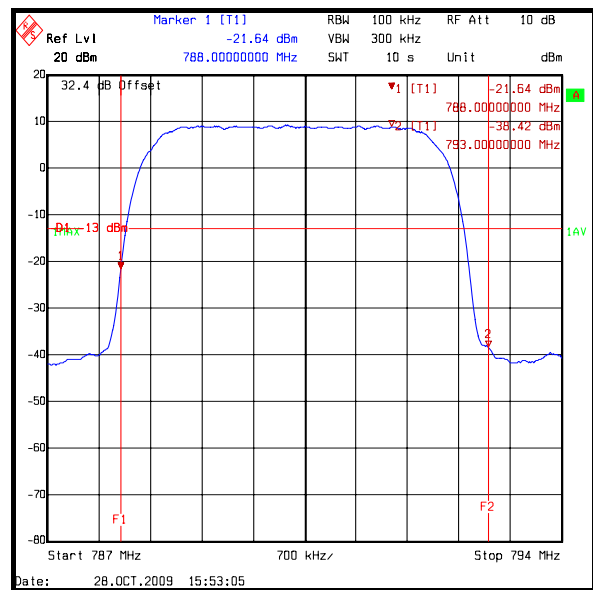
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
776	-36.8	-13.0	23.8	Complied
793	-38.0	-13.0	25.0	Complied

Results: 16QAM

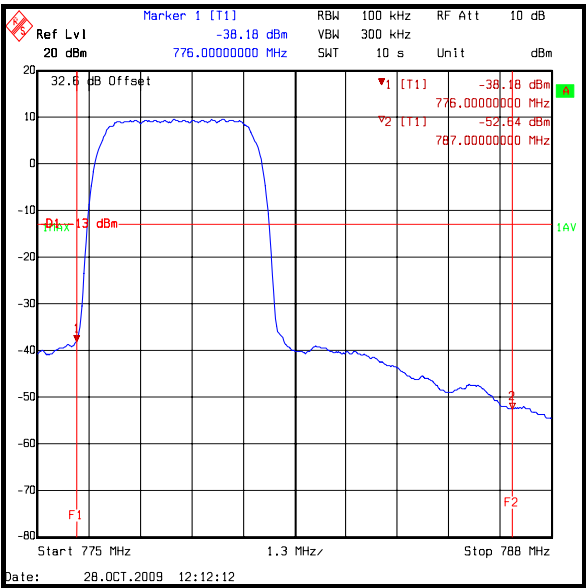
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
776	-38.0	-13.0	25.0	Complied
793	-38.4	-13.0	25.4	Complied

Results: 64QAM

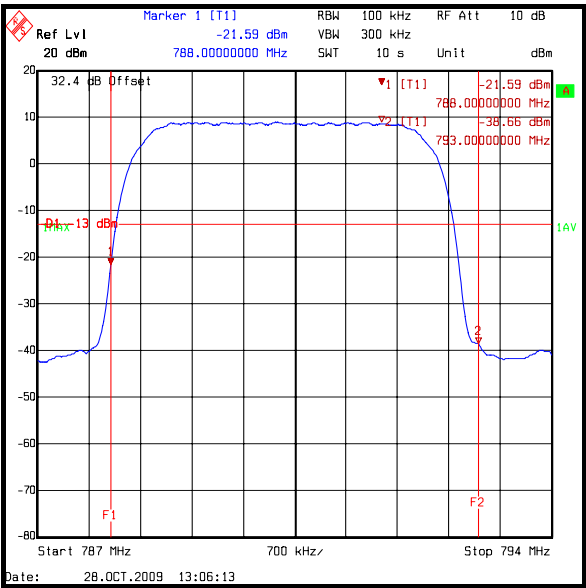
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
776	-38.2	-13.0	25.2	Complied
793	-38.7	-13.0	25.7	Complied

Transmitter Conducted Emissions at Band Edges (continued)**QPSK****QPSK****16QAM****16QAM**

Transmitter Conducted Emissions at Band Edges (continued)



64QAM



64QAM

5.3.10. Transmitter Radiated Spurious Emissions - Channel Edge

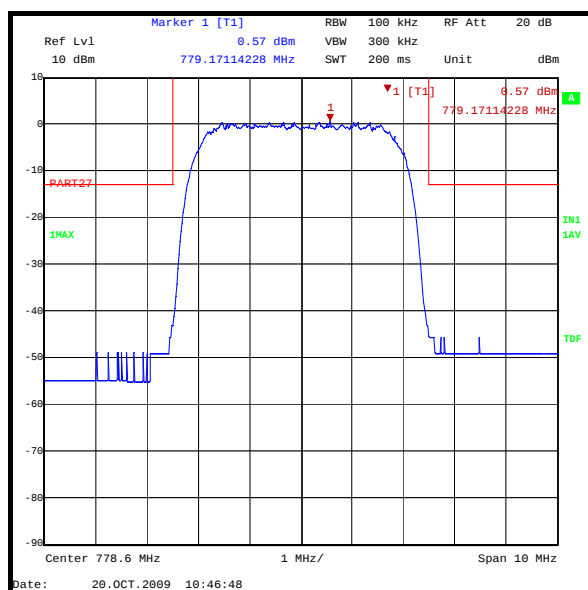
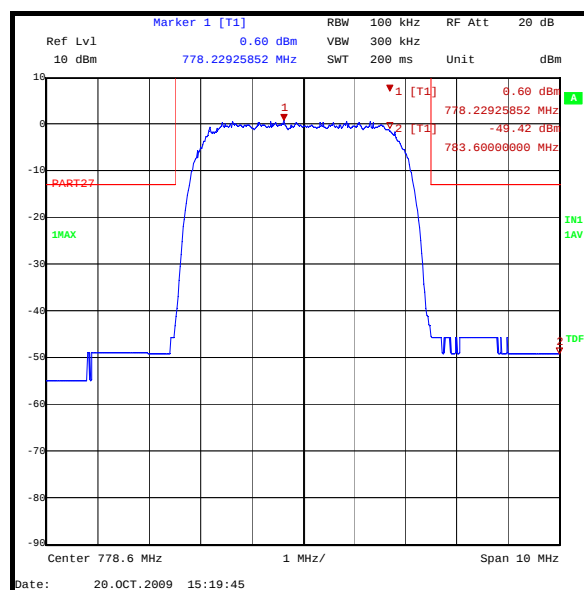
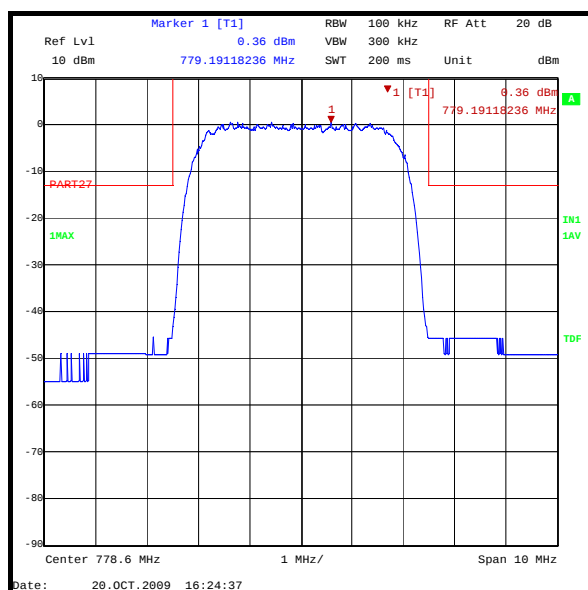
Test Summary:

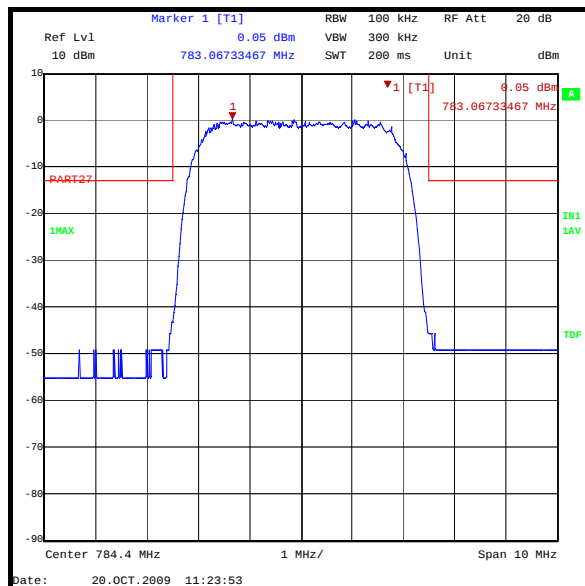
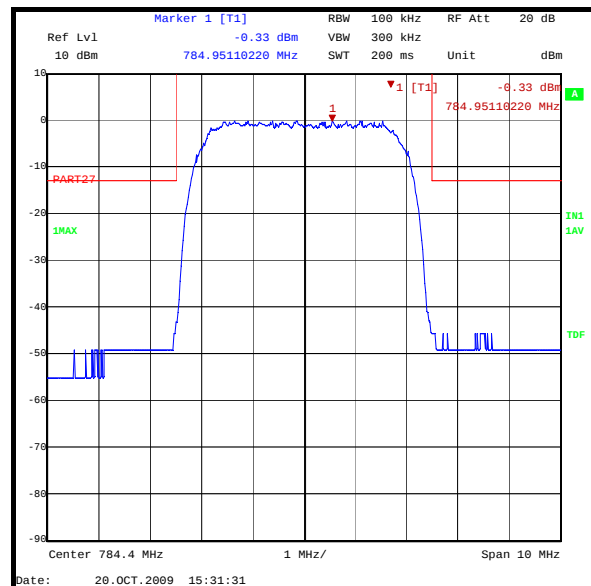
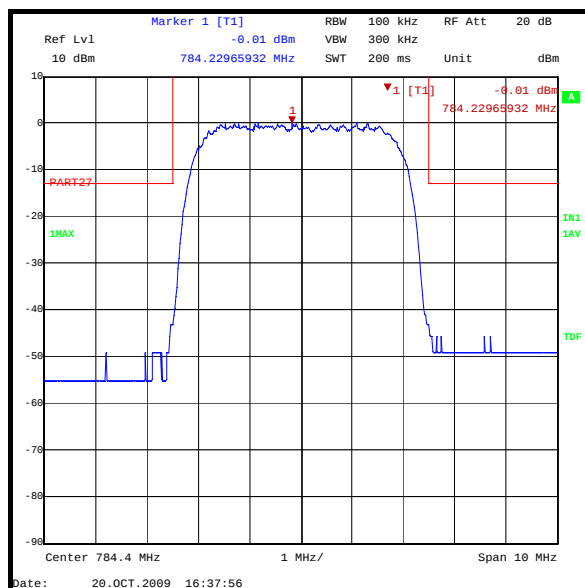
FCC Part:	2.1051, 27.53(c) and 27.53(d)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC Part 2.1053

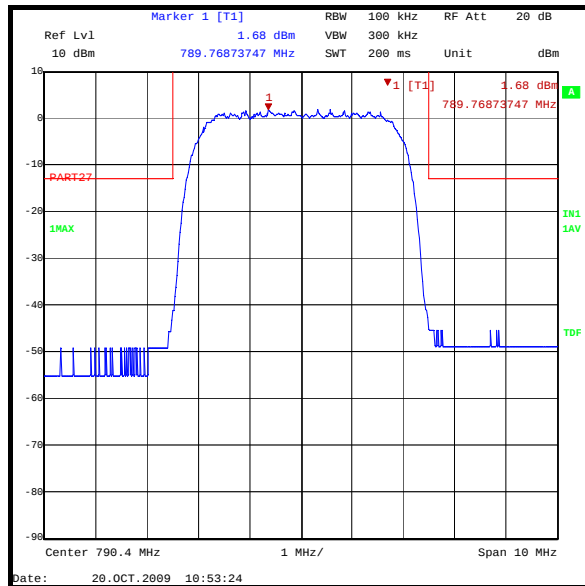
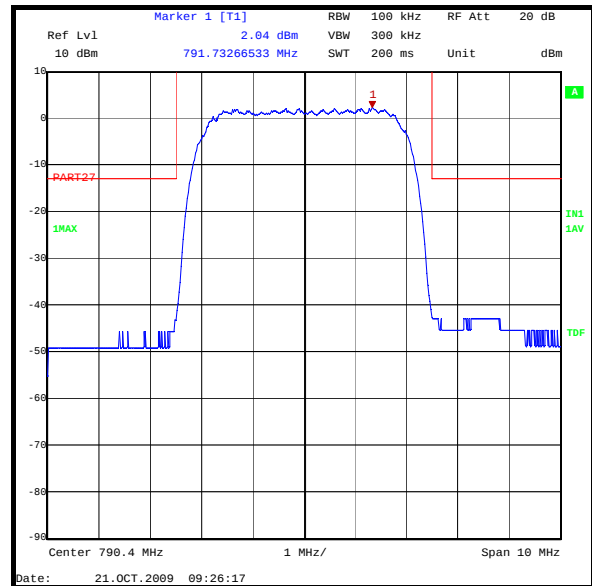
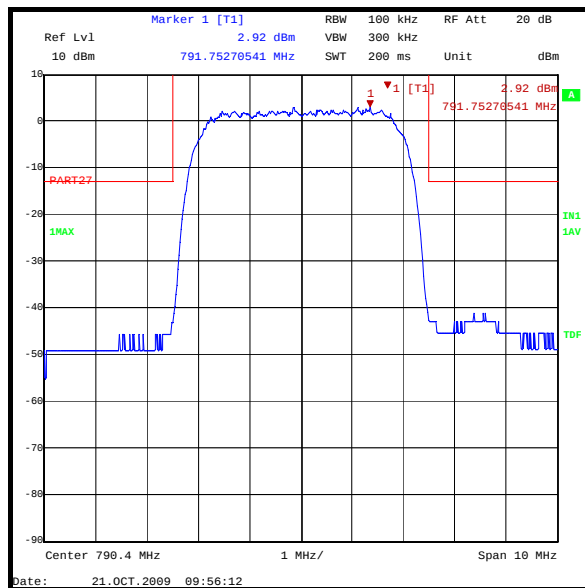
Environmental Conditions:

Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

Results: Bottom Channel 778.6 MHz

**QPSK****16QAM****64QAM**

Transmitter Radiated Spurious Emissions - Channel Edge (continued)**Results: Middle Channel 784.4 MHz****QPSK****16QAM****64QAM**

Transmitter Radiated Spurious Emissions - Channel Edge (continued)**Results: Top Channel 790.4 MHz****QPSK****16QAM****64QAM**

5.3.11. Transmitter Radiated Spurious Emissions**Test Summary:**

FCC Part:	2.1051 and 27.53(c) and 27.53(d)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC Part 2.1053

Environmental Conditions:

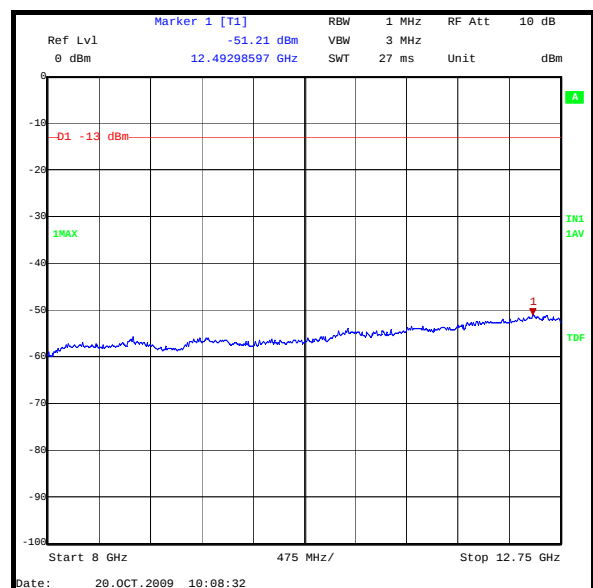
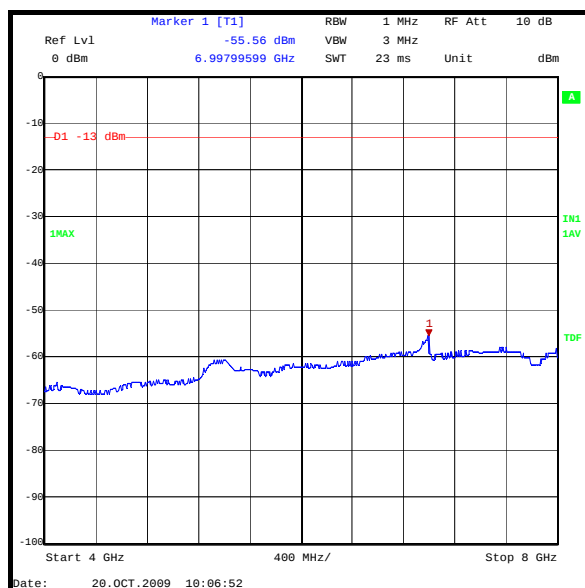
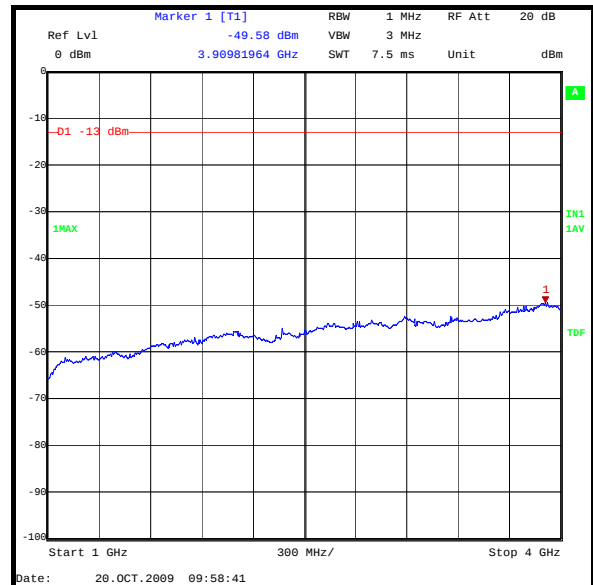
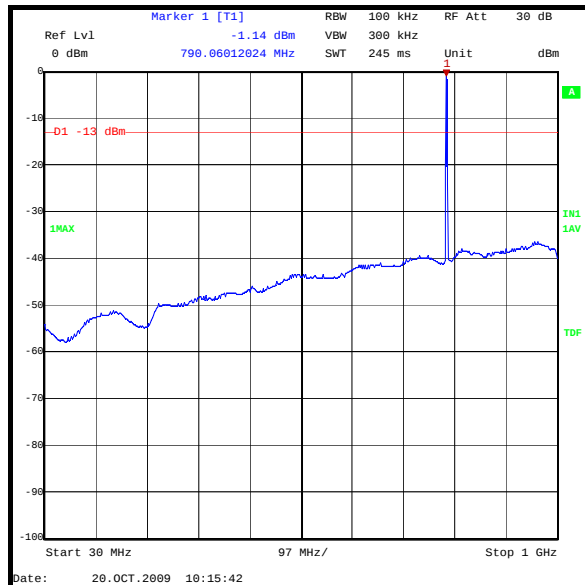
Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

Results:

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
3909.820	-49.6	-13.0	36.6	Complied

Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest average noise floor reading of the measuring receiver was recorded as shown in the table above.

Transmitter Radiated Spurious Emissions (continued)**Note(s):**

1. The emissions shown at approximately 714.248 MHz on the 30 MHz to 1 GHz plot is the carrier

5.3.12. Transmitter Radiated Spurious Emissions at Band Edges**Test Summary:**

FCC Part:	2.1051, 27.53(c) and 27.53(d)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2

Environmental Conditions:

Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

Results: Bottom Channel 778.6 MHz / QPSK

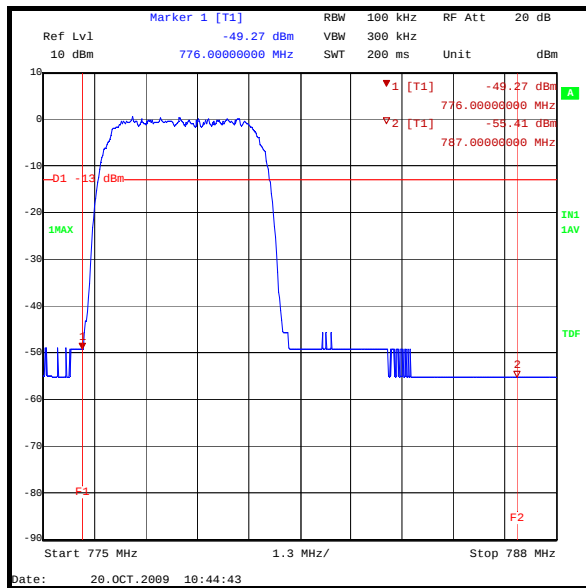
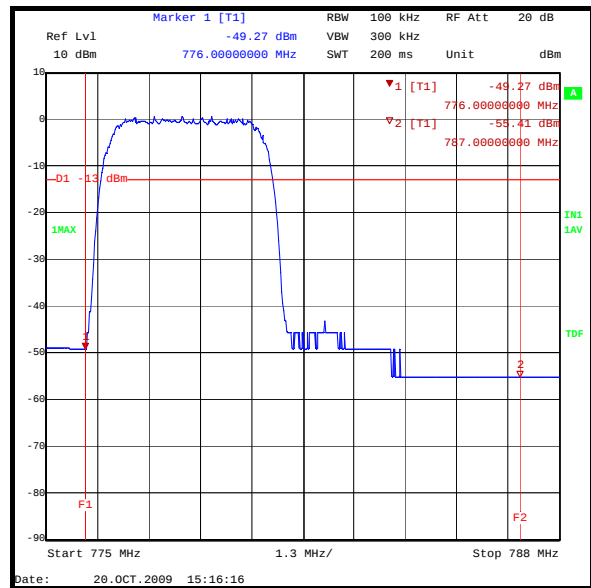
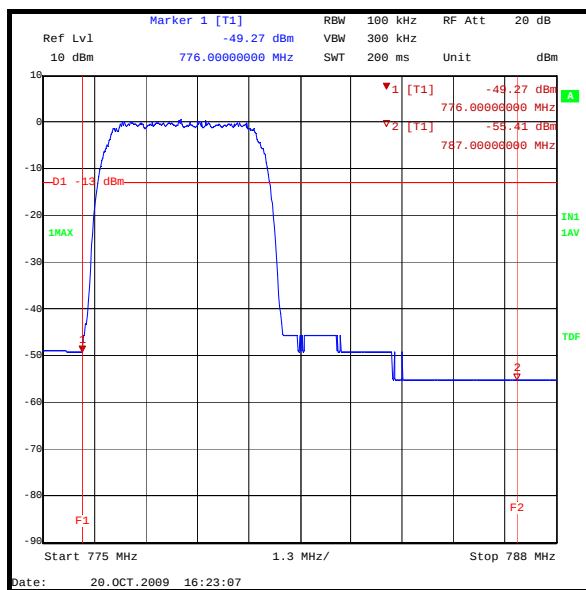
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
776	-45.3	-13.0	32.3	Complied

Results: Bottom Channel 778.6 MHz / 16QAM

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
776	-45.3	-13.0	32.3	Complied

Results: Bottom Channel 778.6 MHz / 64QAM

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
776	-45.3	-13.0	32.3	Complied

Transmitter Radiated Spurious Emissions at Band Edges (continued)**QPSK****16QAM****64QAM**

Transmitter Radiated Spurious Emissions at Band Edges (continued)**Results: Middle Channel 784.4 MHz / QPSK**

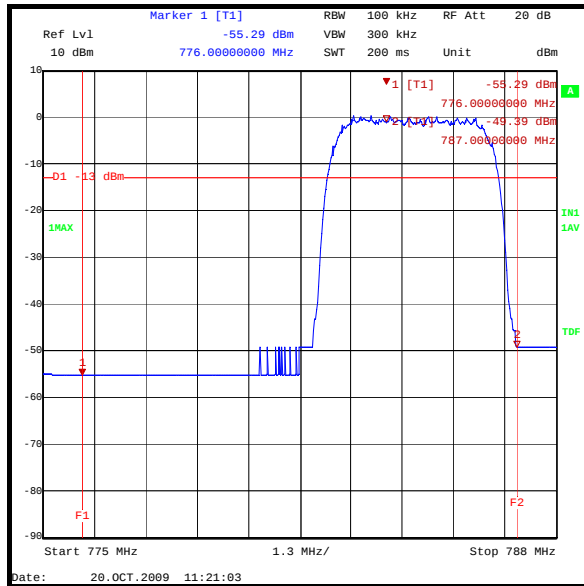
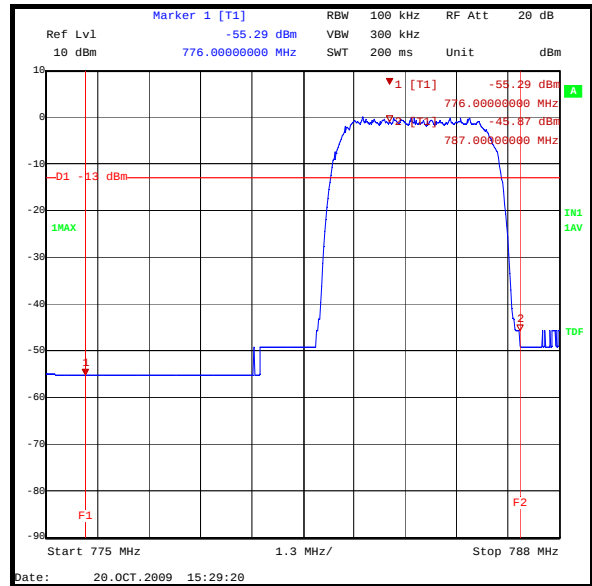
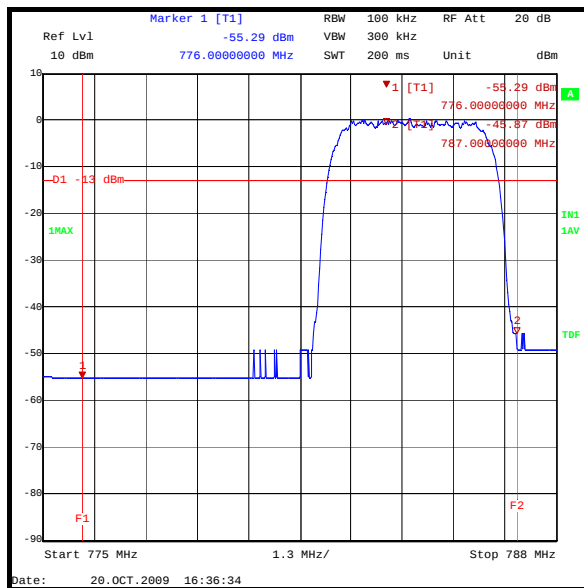
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
787	-49.4	-13.0	36.4	Complied

Results: Middle Channel 784.4 MHz / 16QAM

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
787	-45.9	-13.0	32.9	Complied

Results: Middle Channel 784.4 MHz / 64QAM

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
787	-45.9	-13.0	32.9	Complied

Transmitter Radiated Spurious Emissions at Band Edges (continued)**QPSK****16QAM****64QAM**

Transmitter Radiated Spurious Emissions at Band Edges (continued)**Results: Top Channel 790.4 MHz / QPSK**

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
788	-31.9	-13.0	18.9	Complied
793	-45.7	-13.0	32.7	Complied

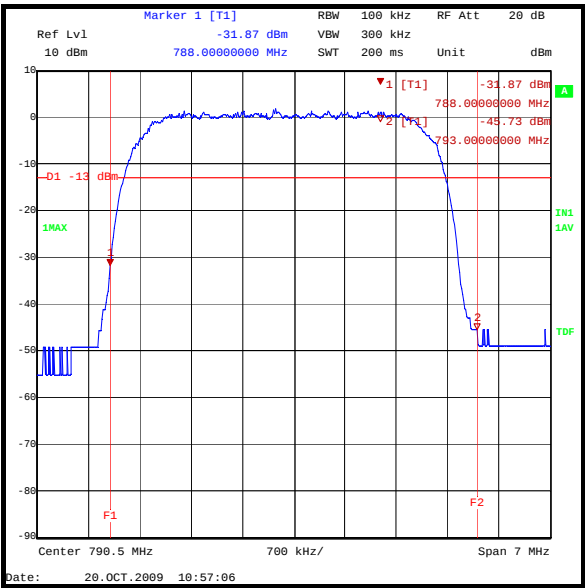
Results: Top Channel 790.4 MHz / 16QAM

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
788	-32.5	-13.0	19.5	Complied
793	-45.7	-13.0	32.7	Complied

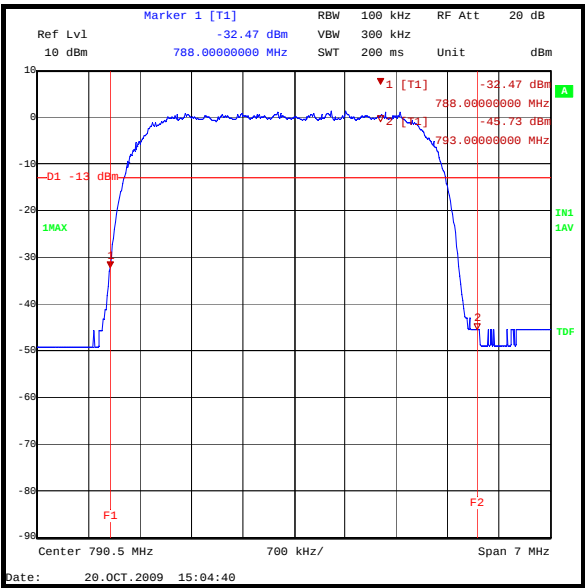
Results: Top Channel 790.4 MHz / 64QAM

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
788	-33.1	-13.0	20.1	Complied
793	-49.3	-13.0	36.6	Complied

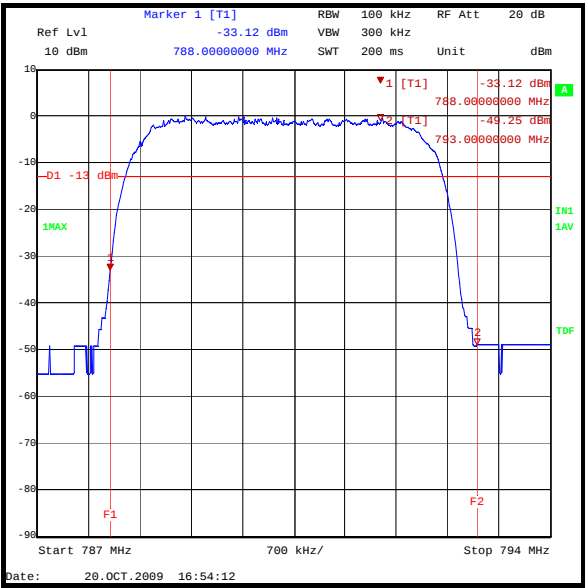
Transmitter Radiated Spurious Emissions at Band Edges (continued)



QPSK



16QAM



64QAM

5.3.13. Transmitter Conducted Emissions Limitations**Test Summary:**

FCC Part:	2.1051 and 27.53(c)(4)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2

Environmental Conditions:

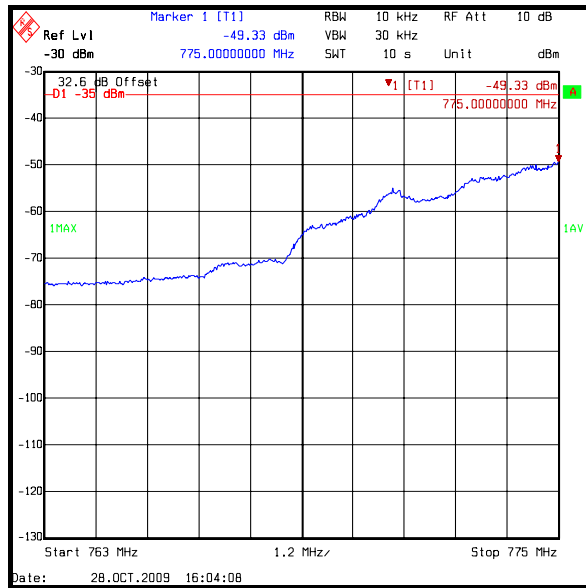
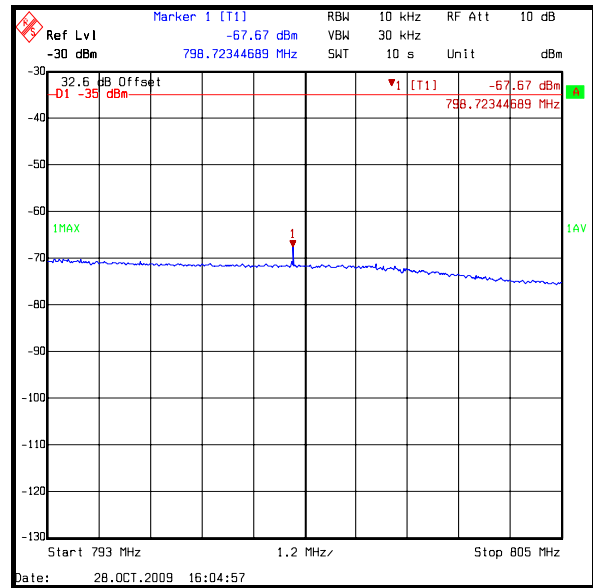
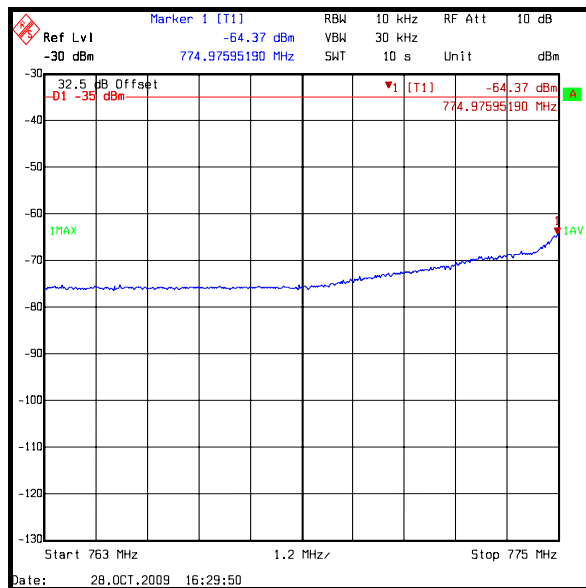
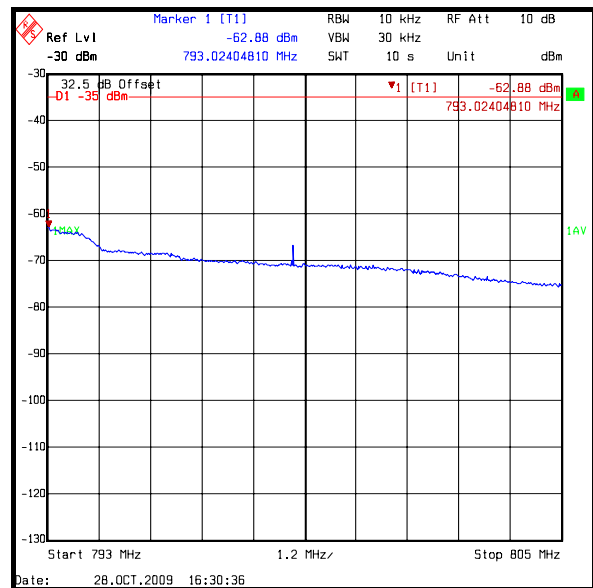
Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

Results: Bottom Channel 778.6 MHz

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
775.000	-49.3	-35.0	14.3	Complied
798.723	-67.7	-35.0	32.7	Complied

Results: Middle Channel 784.4 MHz

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
774.976	-64.4	-35.0	39.4	Complied
793.024	-62.9	-35.0	27.9	Complied

Transmitter Conducted Emissions Limitations (continued)**Bottom Channel 778.6 MHz****Bottom Channel 778.6 MHz****Middle Channel 784.4 MHz****Middle Channel 784.4 MHz**

5.3.14. Transmitter Conducted Emissions Limitations**Test Summary:**

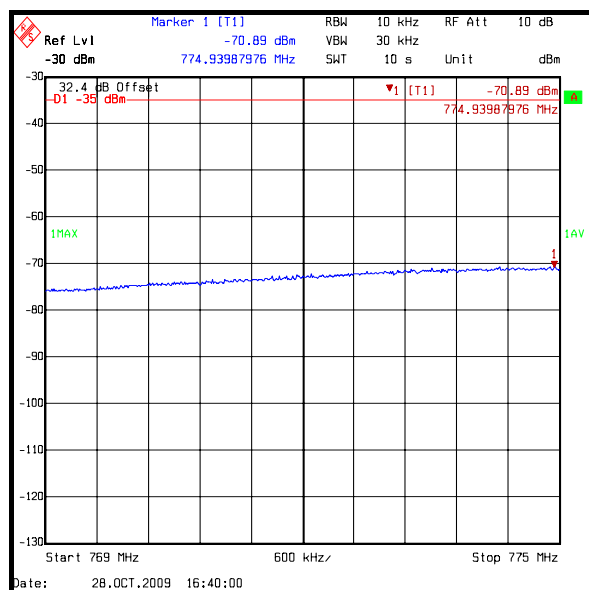
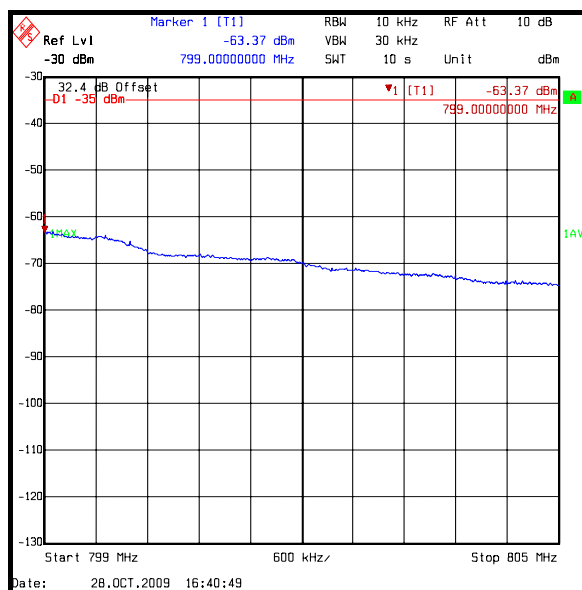
FCC Part:	2.1051 and 27.53(d)(2)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2

Environmental Conditions:

Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

Results: Top Channel 790.4 MHz

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
775.000	-49.3	-35.0	14.3	Complied
799.000	-63.4	-35.0	28.4	Complied

Transmitter Conducted Emissions Limitations (continued)**Top Channel 790.4 MHz****Top Channel 790.4 MHz**

5.3.15. Transmitter Conducted Emissions Limitations**Test Summary:**

FCC Part:	2.1051 and 27.53(f)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2

Environmental Conditions:

Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

Results: Bottom Channel 778.6 MHz

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1559.000	-87.9	-50.0	37.9	Complied

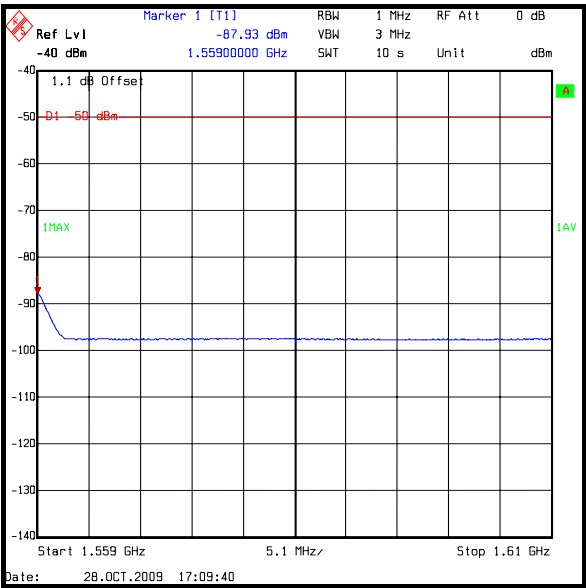
Results: Middle Channel 784.4 MHz

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1566.914	-63.4	-50.0	13.4	Complied

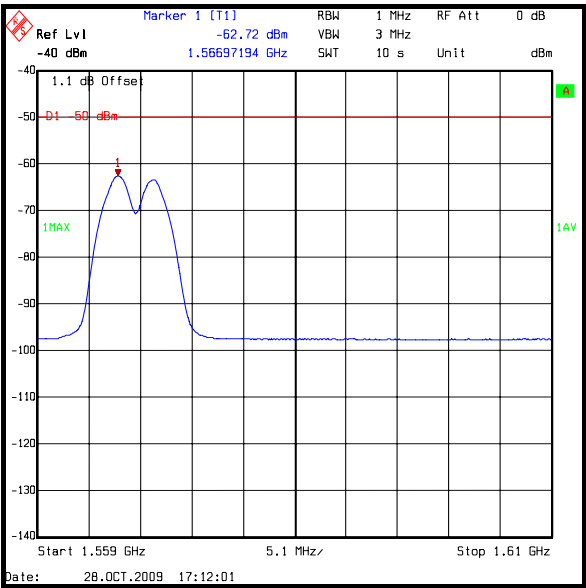
Results: Top Channel 790.4 MHz

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1578.995	-64.3	-50.0	14.3	Complied

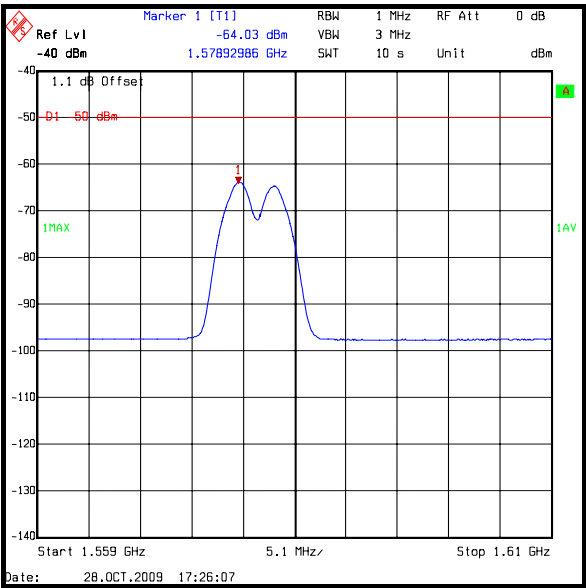
Transmitter Conducted Emissions Limitations (Continued)



Bottom Channel 778.6 MHz



Middle Channel 784.4 MHz



Top Channel 790.4 MHz

5.3.16. Transmitter Radiated Spurious Emission Limitations**Test Summary:**

FCC Part:	2.1051 and 27.53(c)(4)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2

Environmental Conditions:

Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

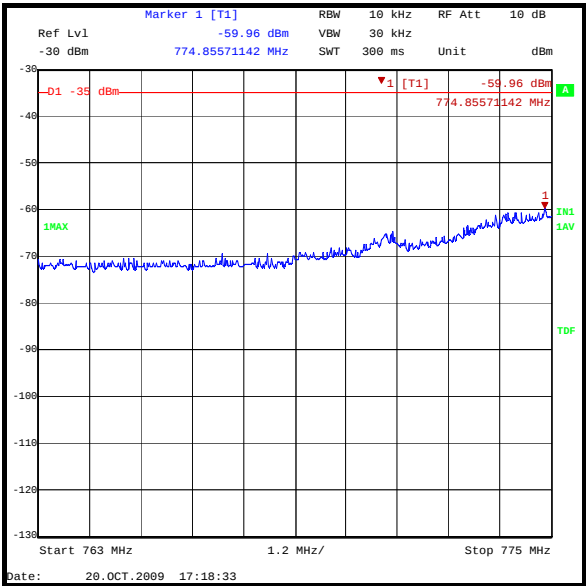
Results: Bottom Channel 778.6 MHz

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
774.856	-60.0	-35.0	25.0	Complied
793.866	-70.1	-35.0	35.1	Complied

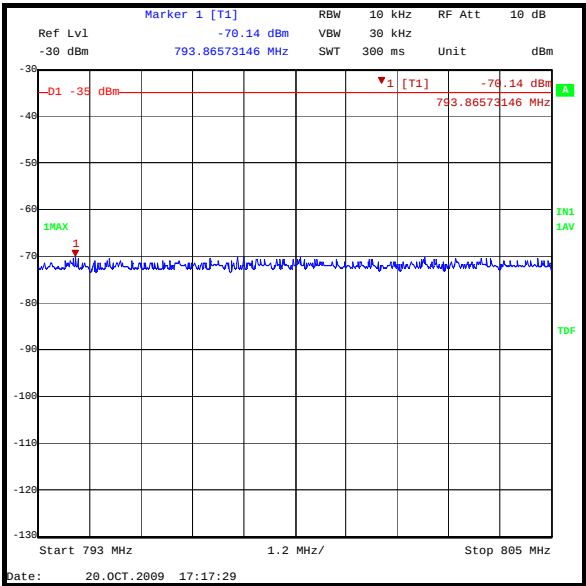
Results: Middle Channel 784.4 MHz

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
774.784	-70.1	-35.0	35.1	Complied
793.240	-67.3	-35.0	32.3	Complied

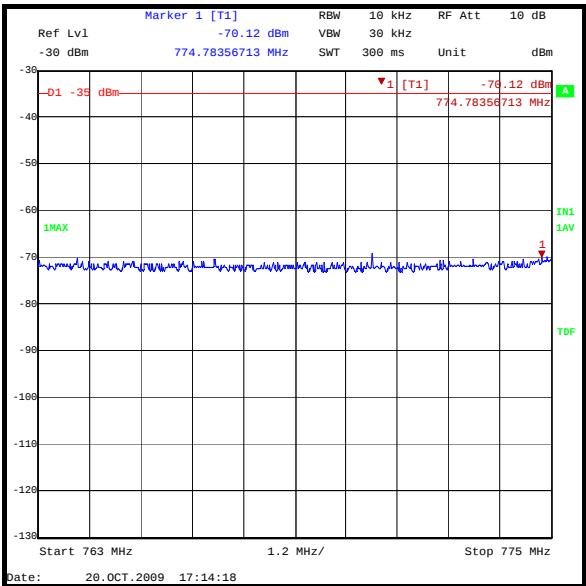
Transmitter Radiated Spurious Emission Limitations (continued)



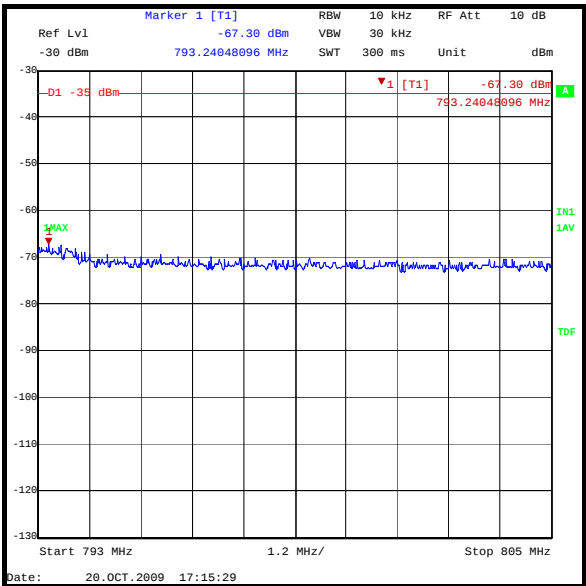
Bottom Channel 778.6 MHz



Bottom Channel 778.6 MHz



Middle Channel 784.4 MHz



Middle Channel 784.4 MHz

5.3.17. Transmitter Radiated Spurious Emissions Limitations**Test Summary:**

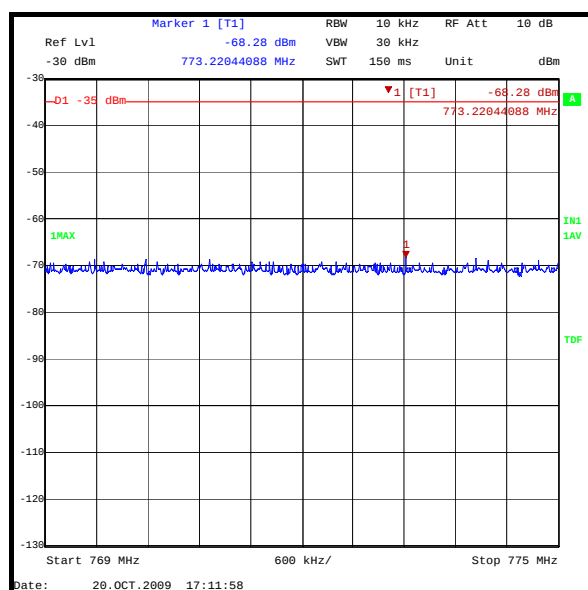
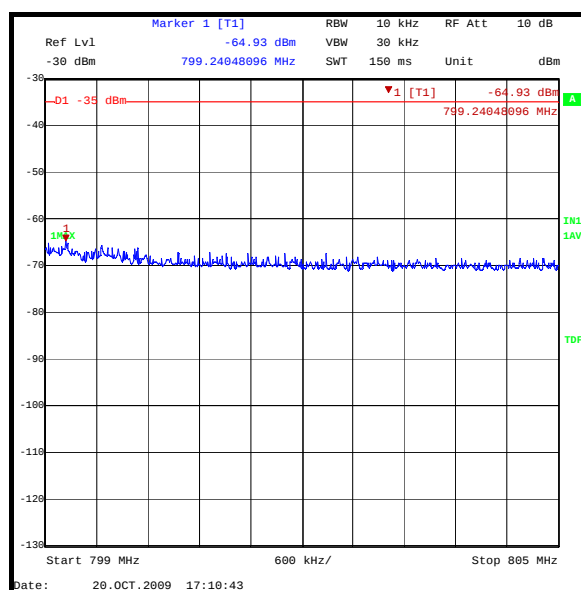
FCC Part:	2.1051 and 27.53(d)(2)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2

Environmental Conditions:

Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

Results: Top Channel 790.4 MHz

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
773.220	-68.3	-35.0	33.3	Complied
799.240	-64.9	-35.0	29.9	Complied

**Top Channel 790.4 MHz****Top Channel 790.4 MHz**

5.3.18. Transmitter Radiated Spurious Emissions Limitations**Test Summary:**

FCC Part:	2.1051 and 27.53(f)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2

Environmental Conditions:

Temperature Variation (°C):	21
Relative Humidity Variation (%):	31

Results: Bottom Channel 778.6 MHz

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1559.000	-63.2	-50.0	13.2	Complied

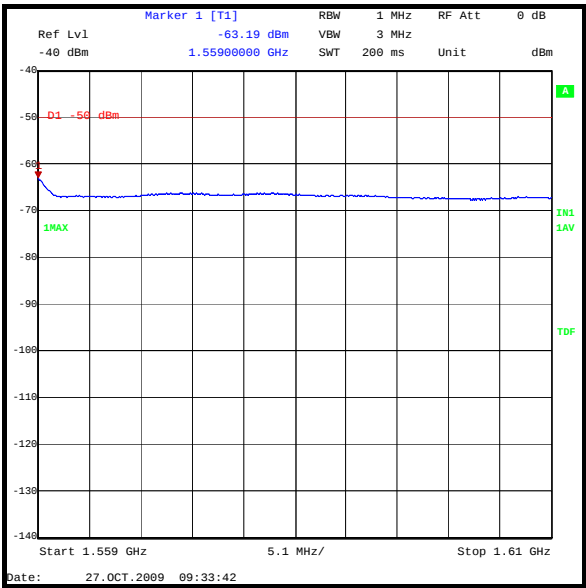
Results: Middle Channel 784.4 MHz

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1570.754	-64.7	-50.0	14.7	Complied

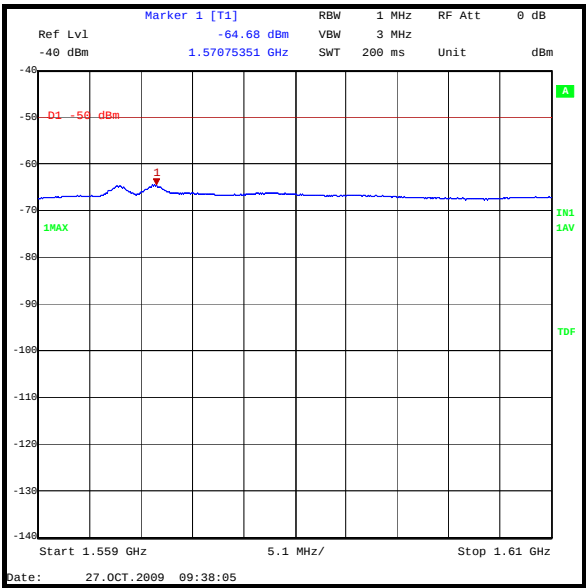
Results: Top Channel 795.4 MHz

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1578.930	-64.6	-50.0	14.6	Complied

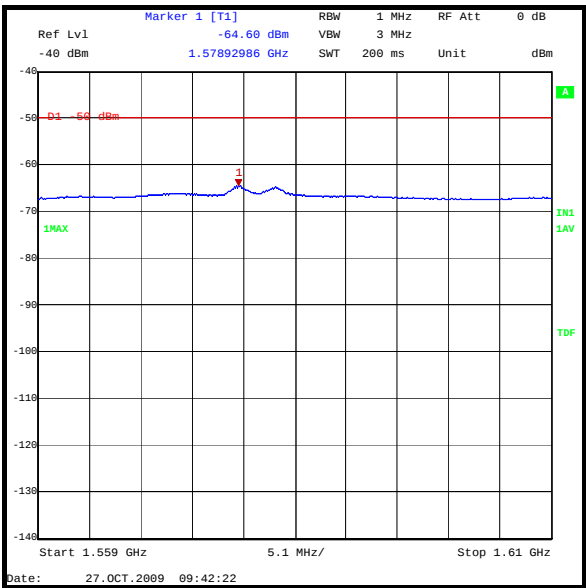
Transmitter Radiated Spurious Emissions Limitations (continued)



Bottom Channel 778.6 MHz



Middle Channel 784.4 MHz



Top Channel 795.4 MHz

6. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30.0 MHz	95%	±3.25 dB
Conducted Carrier Output Power	2350 MHz to 2360 MHz	95%	±1.2 dB
Carrier Output Power (EIRP)	2350 MHz to 2360 MHz	95%	±1.78 dB
Occupied Bandwidth	2350 MHz to 2360 MHz	95%	±0.92 ppm
Conducted Emissions Antenna Port	9 kHz to 26.5 GHz	95%	±1.2 dB
Frequency Stability	2350 MHz to 2360 MHz	95%	±0.92 ppm
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	±5.26 dB
Radiated Spurious Emissions	1 GHz to 26.5 GHz	95%	±2.94 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
A1534	Pre Amplifier	Hewlett Packard	8449B OPT H02	3008A00405	Calibrated before use	-
A1818	Antenna	EMCO	3115	00075692	27 Nov 2009	12
A288	Antenna	Chase	CBL6111A	1589	13 Mar 2009	12
A390	Attenuator	Suhner	6830.17.B	None	Calibrated before use	-
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	01 Sep 2009	12
K0004	Bench Test Site	RFI Global Services Ltd	N/A	N/A	Calibration not required	-
M1068	Thermometer	Iso-Tech	RS55	93102884	09 Jul 2009	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	09 Mar 2009	12
M1223	Votsch VT4002	Votsch	VT4002	58566072720010	Calibrated before use	-
M127	Spectrum Analyser	Rohde & Schwarz	FSEB 30	842 659/016	10 Jul 2010	12
M1347	Digital Multimeter	Fluke	73III	90680080	Calibration not required	-
M199	Power Meter	Rohde & Schwarz	NRVS	827023/075	14 May 2009	12
S021	Dual DC Power Supply Unit	Thurlby Thandar Instruments	CPX200	061034	Calibration not required	-

NB In accordance with UKAS requirements all the measurement equipment is on a calibration schedule.