



**TEST REPORT
FROM
RFI GLOBAL SERVICES LTD**

Test of: IPWireless 2.5 GHz Node B Model: VS/VT

To: FCC Part 27: 2008 Subpart C

Test Report Serial No:
RFI/RPT2/RP75540JD01A

This Test Report Supersedes Test Report Serial No:
RFI/RPT1/RP75540JD01A

| | |
|---|--|
| This Test Report Is Issued Under The Authority Of Brian Watson, Operations Director: | |
|  | |
| Checked By: | Nigel Davison |
| Signature: |  |
| Date of Issue: | 04 February 2010 |

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1. Customer Information












| | |
|----------------------|--|
| Company Name: | IPWireless (UK) Ltd |
| Address: | Unit 7 Greenways Business Park Bellinger Close Chippenham Wilts SN15 1BN |

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: | FCC: 209735 |
| Location of Testing: | RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH. |
| Test Dates: | 16 November 2009 to 22 November 2009 |

2.2. Summary of Test Results – High & Low Chip Rates

| FCC Reference (47CFR) | Measurement | Port Type | Result |
|---|---|-------------------|---|
| Part 15.207 | Transmitter AC Conducted Spurious Emissions | AC Mains |  |
| Parts 2.1046, 27.50(h)(1) | Transmitter Conducted Carrier Output Power and Equivalent Isotropic Radiated Power (EIRP) | Antenna Terminals |  |
| Part 27.54 | Transmitter Frequency Stability (Temperature & Voltage Variation) | Antenna Terminals |  |
| Part 2.1049 | Transmitter Occupied Bandwidth | Antenna Terminals |  |
| Parts 2.1051, 27.53 | Transmitter Conducted Emissions - Channel Edge | Antenna Terminals |  |
| Parts 2.1051, 27.53 | Transmitter Conducted Emissions | Antenna Terminals |  |
| Parts 2.1051, 27.53 | Transmitter Conducted Emissions at Band Edges | Antenna Terminals |  |
| Parts 2.1051, 27.53 | Transmitter Radiated Spurious Emissions | Antenna |  |
| Parts 2.1051, 27.53 | Transmitter Radiated Spurious Emissions at Band Edges | Antenna |  |
| 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

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above.

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

| | |
|------------------------------|------------------|
| Description: | Radio Shelf |
| Brand Name: | IPWireless |
| Model Name or Number: | VS |
| Serial Number: | VS1J724001Y12 |
| FCC ID Number: | PKTNODEBVS1 |
| Date of Receipt: | 16 November 2009 |

| | |
|------------------------------|------------------|
| Description: | Digital Shelf |
| Brand Name: | IPWireless |
| Model Name or Number: | VT |
| Serial Number: | VT1J736009517 |
| FCC ID Number: | N/A |
| Date of Receipt: | 16 November 2009 |

| | |
|------------------------------|--|
| Description: | Sector card 2 (part of VT digital shelf) |
| Brand Name: | IPWireless |
| Model Name or Number: | Sector card |
| Serial Number: | VU1J73700RV17 |
| Date of Receipt: | 16 November 2009 |

3.2. Description of EUT

The equipment under test was a Node B, FDD wireless base station transceiver

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: | -48.0 V DC \pm 15% | | |
| Type of Unit: | FDD Wireless base station transceiver | | |
| Modulation Type: | QPSK, 16QAM and 64QAM | | |
| Duty Cycle: | 80% | | |
| Antenna Ports: | Two x 7/16 female. Marked ANT 1 and ANT 2 | | |
| Antenna Gain: | Up to +20 dBi (Stated) | | |
| HIGH CHIP RATE | | | |
| Chip Rate: | 7.68 Mcps | | |
| Declared Channel Bandwidth: | 11 MHz | | |
| Transmit / Receive Frequency Range: | 2496 MHz to 2690 MHz | | |
| Transmit / Receive Channels Tested: | Channel ID | Channel Number | Channel Frequency (MHz) |
| | Bottom | 12507 | 2501.4 |
| | Middle | 12965 | 2593.0 |
| | Top | 13420 | 2684.6 |
| LOW CHIP RATE | | | |
| Chip Rate: | 3.84 Mcps | | |
| Declared Channel Bandwidth: | 5.5 MHz | | |
| Transmit / Receive Frequency Range: | 2496 MHz to 2690 MHz | | |
| Transmit / Receive Channels Tested: | Channel ID | Channel Number | Channel Frequency (MHz) |
| | Bottom | 12494 | 2498.8 |
| | Middle | 12965 | 2593.0 |
| | Top | 13436 | 2687.2 |

3.5. Support Equipment

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

| | |
|------------------------------|-----------------|
| Description: | DC Power supply |
| Brand Name: | Agilent |
| Model Name or Number: | E4356A |
| Serial Number: | MY41000617 |

| | |
|------------------------------|--|
| Description: | Sector card 1 (part of VT digital shelf) |
| Brand Name: | IPWireless |
| Model Name or Number: | Sector card |
| Serial Number: | VU1J73700RQ17 |

| | |
|------------------------------|--|
| Description: | Sector card 2 (part of VT digital shelf) |
| Brand Name: | IPWireless |
| Model Name or Number: | Sector card |
| Serial Number: | VU1J73700RV17 |

| | |
|------------------------------|--|
| Description: | Sector card 3 (part of VT digital shelf) |
| Brand Name: | IPWireless |
| Model Name or Number: | Sector card |
| Serial Number: | VU1J73700RW17 |

| | |
|------------------------------|---------------------|
| Description: | 30 dB RF attenuator |
| Brand Name: | NARDA |
| Model Name or Number: | 776C-30 |
| Serial Number: | 522 |

| | |
|------------------------------|------------------|
| Description: | Laptop PC |
| Brand Name: | Sony |
| Model Name or Number: | Vaio VGN-BX195VT |
| Serial Number: | None Stated |

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating mode(s):

- Transmitting and receiving simultaneously.
- As the EUT transmits and receives simultaneously testing in idle mode to 15.107 wasn't performed, however, testing to 15.207 with the EUT transceiving.
- Operating on the bottom or top channel, as per each test case requirement.
- Constantly transmitting the maximum of 15 timeslots at +40 dBm with a chip rate of 3.84 Mcps.
- Constantly transmitting the maximum of 15 timeslots at +37 dBm with a chip rate of 7.68 Mcps
- No tests were performed in receive/idle mode as the device is constantly transmitting.
- The customer configured the EUT so that residual carrier breakthrough was present at the centre of the carrier in order to make frequency measurements.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration(s):

- The radio shelf and digital shelf connected together as required and powered from a bench DC power supply.
- Three sector cards were fitted to the digital shelf. Sector 2 card was connected to the radio shelf via the fibre optic cables. Sector 1 and 3 cards were not used during the testing and were only fitted in order to fill the card slots. This is a standard configuration of the EUT.
- The laptop PC was connected to the Ethernet port on the digital shelf by a CAT5 cable. A bespoke application on the laptop PC was used to configure the RF parameters of the EUT as required.
- RF Conducted emission tests - One RF port was connected to the measurement equipment using previously calibrated RF cables, filters and attenuators. The unused RF port was terminated with suitable loads or attenuators. Preliminary testing was performed on both antenna ports with the worst case being selected for measurements.
- AC Conducted emission tests – The Client stated they do not provide a power supply for use with the EUT, the choice is left to the end user. A -48V battery supply or -48V mains powered supply may be used, therefore AC conducted emissions tests were performed using a bench power supply. The EUT was connected to a suitable bench power supply powered from a 120 VAC 60 Hz mains supply via a LISN and the output set to 48 VDC. The power supply input was connected to the mains supply via a LISN and the output connected to the EUT. Most ports on the EUT were terminated and the Client stated that un-terminated ports were either inoperative or disabled. The EUT was configured to transmit and receive at full power on the bottom channel.
- RF Radiated emission/case radiation tests - Both RF ports were terminated with suitable loads or attenuators. The EUT was connected to a suitable bench power supply powered from a 120 VAC 60 Hz mains supply and the output set to 48 VDC. Measurements were performed with the test system antenna polarised in the vertical and horizontal planes, the highest level was recorded. Most ports on the EUT were terminated and the Client stated that un-terminated ports were either inoperative or disabled.

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.

5.2. Test Results – High Chip Rate**5.2.1. Transmitter AC Conducted Spurious Emissions****Test Summary:**

| | |
|--------------------------|--|
| FCC Part: | 15.207(b) |
| Test Method Used: | As detailed in ANSI C63.4 Section 7 and relevant annexes |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 24 |
| Relative Humidity (%): | 35 |

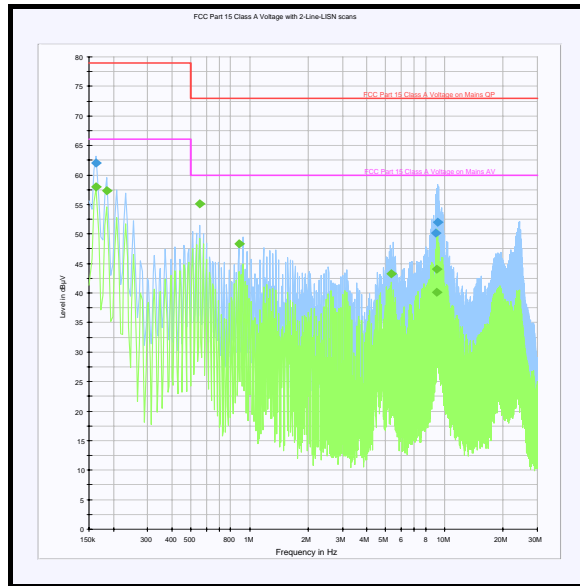
Results: Quasi Peak Detector Measurements

| Frequency (MHz) | Line | Quasi Peak Level (dB μ V) | Limit (dB μ V) | Margin (dB) | Result |
|-----------------|---------|-------------------------------|--------------------|-------------|----------|
| 0.163500 | Neutral | 62.0 | 79.0 | 17.0 | Complied |
| 9.015000 | Live | 50.2 | 73.0 | 22.8 | Complied |
| 9.222000 | Live | 51.9 | 73.0 | 21.1 | Complied |

Results: Average Detector Measurements

| Frequency (MHz) | Line | Average Level (dB μ V) | Limit (dB μ V) | Margin (dB) | Result |
|-----------------|---------|----------------------------|--------------------|-------------|----------|
| 0.163500 | Neutral | 57.9 | 66.0 | 8.1 | Complied |
| 0.186000 | Neutral | 57.4 | 66.0 | 8.6 | Complied |
| 0.555000 | Live | 55.1 | 60.0 | 4.9 | Complied |
| 0.879000 | Live | 48.3 | 60.0 | 11.7 | Complied |
| 5.316000 | Live | 43.2 | 60.0 | 16.8 | Complied |
| 9.091500 | Live | 40.2 | 60.0 | 19.8 | Complied |
| 9.154500 | Live | 44.0 | 60.0 | 16.0 | Complied |

Transmitter AC Conducted Spurious Emissions (continued)



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

5.2.2. Transmitter Conducted Carrier Output Power and Equivalent Isotropically Radiated Power (EIRP)

Test Summary:

| | |
|--------------------------|------------------------------------|
| FCC Part: | 2.1046 and 27.50(h)(1)(i) |
| Test Method Used: | As detailed in ANSI TIA-603-C-2004 |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 25 |
| Relative Humidity (%): | 32 |

Note that the limits are calculated as $33\text{dBW} + 10 \cdot \log(11\text{MHz}/5.5\text{MHz})$ as the mode tested here utilises two concatenated 5.5MHz channels(11MHz).

Results: QPSK / Antenna Port 1

| Channel | Frequency (MHz) | Conducted RF O/P Power (dBm) | Stated Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Margin (dB) | Result |
|---------|-----------------|------------------------------|---------------------------|------------|------------------|-------------|----------|
| 12507 | 2501.4 | 36.8 | 20.0 | 56.8 | 66.0 | 9.2 | Complied |
| 12965 | 2593.0 | 36.8 | 20.0 | 56.8 | 66.0 | 9.2 | Complied |
| 13420 | 2684.6 | 36.7 | 20.0 | 56.7 | 66.0 | 9.3 | Complied |

Results: 16QAM / Antenna Port 1

| Channel | Frequency (MHz) | Conducted RF O/P Power (dBm) | Stated Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Margin (dB) | Result |
|---------|-----------------|------------------------------|---------------------------|------------|------------------|-------------|----------|
| 12507 | 2501.4 | 35.8 | 20.0 | 55.8 | 66.0 | 10.2 | Complied |
| 12965 | 2593.0 | 36.0 | 20.0 | 56.0 | 66.0 | 10.0 | Complied |
| 13420 | 2684.6 | 36.0 | 20.0 | 56.0 | 66.0 | 10.0 | Complied |

Results: 64QAM / Antenna Port 1

| Channel | Frequency (MHz) | Conducted RF O/P Power (dBm) | Stated Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Margin (dB) | Result |
|---------|-----------------|------------------------------|---------------------------|------------|------------------|-------------|----------|
| 12507 | 2501.4 | 35.9 | 20.0 | 55.9 | 66.0 | 10.1 | Complied |
| 12965 | 2593.0 | 36.4 | 20.0 | 56.4 | 66.0 | 9.6 | Complied |
| 13420 | 2684.6 | 35.9 | 20.0 | 55.9 | 66.0 | 10.1 | Complied |

Transmitter Conducted Carrier Output Power and Equivalent Isotropically Radiated Power (EIRP) (continued)

Results: QPSK / Antenna Port 2

| Channel | Frequency (MHz) | Conducted RF O/P Power (dBm) | Stated Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Margin (dB) | Result |
|---------|-----------------|------------------------------|---------------------------|------------|------------------|-------------|----------|
| 12507 | 2501.4 | 36.4 | 20.0 | 56.4 | 66.0 | 9.6 | Complied |
| 12965 | 2593.0 | 35.9 | 20.0 | 55.9 | 66.0 | 10.1 | Complied |
| 13420 | 2684.6 | 36.9 | 20.0 | 56.9 | 66.0 | 9.1 | Complied |

Results: 16QAM / Antenna Port 2

| Channel | Frequency (MHz) | Conducted RF O/P Power (dBm) | Stated Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Margin (dB) | Result |
|---------|-----------------|------------------------------|---------------------------|------------|------------------|-------------|----------|
| 12507 | 2501.4 | 35.9 | 20.0 | 55.9 | 66.0 | 10.1 | Complied |
| 12965 | 2593.0 | 35.5 | 20.0 | 55.5 | 66.0 | 10.5 | Complied |
| 13420 | 2684.6 | 36.1 | 20.0 | 56.1 | 66.0 | 9.9 | Complied |

Results: 64QAM / Antenna Port 2

| Channel | Frequency (MHz) | Conducted RF O/P Power (dBm) | Stated Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Margin (dB) | Result |
|---------|-----------------|------------------------------|---------------------------|------------|------------------|-------------|----------|
| 12507 | 2501.4 | 35.8 | 20.0 | 55.8 | 66.0 | 10.2 | Complied |
| 12965 | 2593.0 | 35.6 | 20.0 | 55.6 | 66.0 | 10.4 | Complied |
| 13420 | 2684.6 | 35.8 | 20.0 | 55.8 | 66.0 | 10.2 | Complied |

Note(s):

1. Measurements were performed with the EUT transmitting on all supported modulation types on the Antenna Port 1 and Antenna Port 2.

5.2.3. 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 (°C): | 25 - 36 |
| Relative Humidity (%): | 30 - 33 |

Results: 2501.4 MHz / Port 2

| Temperature (°C) | Measured Frequency (MHz) | Frequency Error (Hz) |
|------------------|--------------------------|----------------------|
| -30 | 2501.399685 | 315 |
| -20 | 2501.399683 | 317 |
| -10 | 2501.399609 | 391 |
| 0 | 2501.399642 | 358 |
| 10 | 2501.399661 | 339 |
| 20 | 2501.399682 | 318 |
| 30 | 2501.399702 | 298 |
| 40 | 2501.399701 | 299 |
| 50 | 2501.399743 | 257 |

Results: 2593 MHz / Port 2

| Temperature (°C) | Measured Frequency (MHz) | Frequency Error (Hz) |
|------------------|--------------------------|----------------------|
| -30 | 2592.999673 | 327 |
| -20 | 2592.999673 | 327 |
| -10 | 2592.999593 | 407 |
| 0 | 2592.999630 | 370 |
| 10 | 2592.999649 | 351 |
| 20 | 2592.999668 | 332 |
| 30 | 2592.999692 | 308 |
| 40 | 2592.999701 | 299 |
| 50 | 2592.999734 | 266 |

Transmitter Frequency Stability (Temperature Variation) (continued)**Results: 2684.6 MHz / Port 2**

| Temperature (°C) | Measured Frequency (MHz) | Frequency Error (Hz) |
|-------------------------|---------------------------------|-----------------------------|
| -30 | 2684.599661 | 339 |
| -20 | 2684.599660 | 340 |
| -10 | 2684.599580 | 420 |
| 0 | 2684.599614 | 386 |
| 10 | 2684.599634 | 366 |
| 20 | 2684.599656 | 344 |
| 30 | 2684.599678 | 322 |
| 40 | 2684.599690 | 310 |
| 50 | 2684.599722 | 278 |

5.2.4. 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 (°C): | 26 |
| Relative Humidity (%): | 33 |

Results: 2501.4 MHz / Port 2

| Supply Voltage (VDC) | Measured Frequency (MHz) | Frequency Error (Hz) |
|----------------------|--------------------------|----------------------|
| -40.8 | 2501.399714 | 286 |
| -48.0 | 2501.399715 | 285 |
| -55.2 | 2501.399716 | 284 |

Results: 2593 MHz / Port 2

| Supply Voltage (VDC) | Measured Frequency (MHz) | Frequency Error (Hz) |
|----------------------|--------------------------|----------------------|
| -40.8 | 2592.999705 | 295 |
| -48.0 | 2592.999706 | 294 |
| -55.2 | 2592.999705 | 295 |

Results: 2684.6 MHz / Port 2

| Supply Voltage (VDC) | Measured Frequency (MHz) | Frequency Error (Hz) |
|----------------------|--------------------------|----------------------|
| -40.8 | 2684.599692 | 308 |
| -48.0 | 2684.599695 | 305 |
| -55.2 | 2684.599695 | 305 |

5.2.5. 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 (°C): | 25 |
| Relative Humidity (%): | 32 |

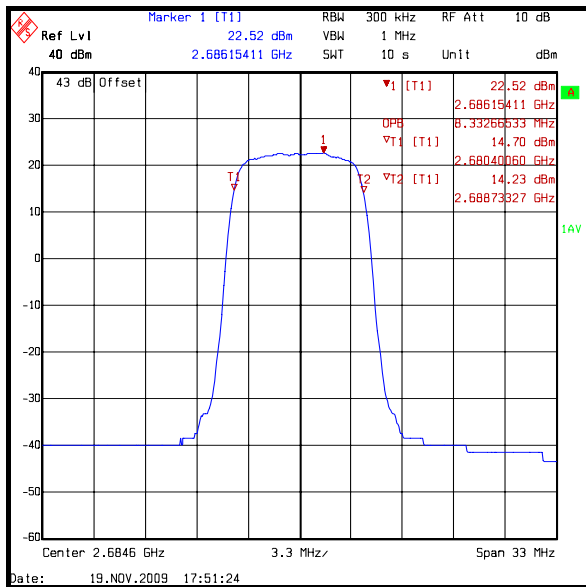
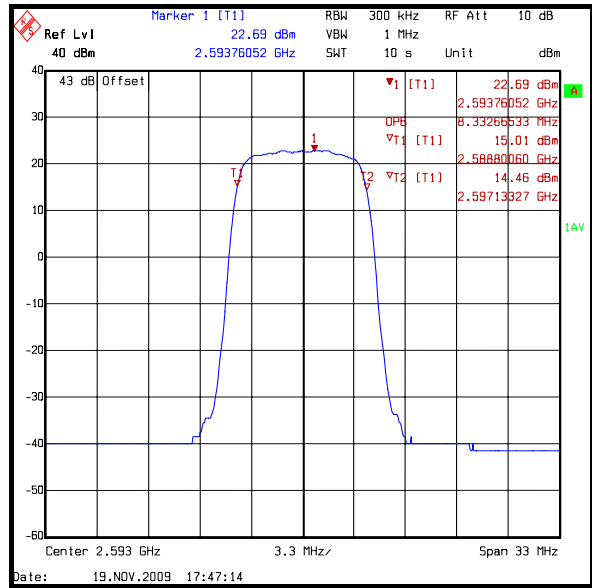
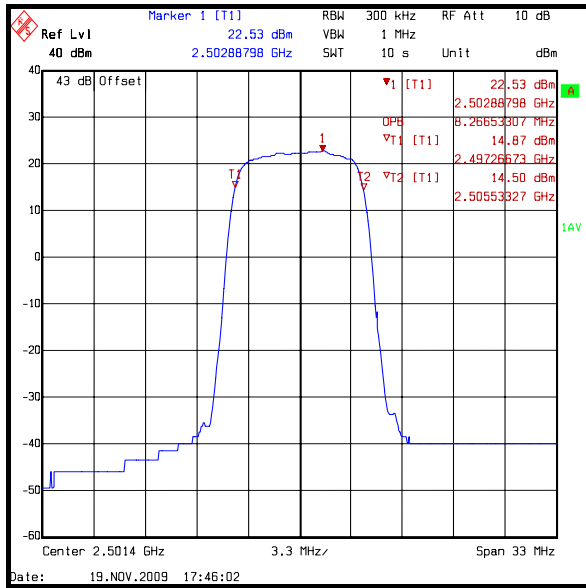
Results: QPSK / Port 1

| Channel Number | Frequency (MHz) | Resolution Bandwidth (kHz) | Video Bandwidth (kHz) | Occupied Bandwidth (MHz) |
|-----------------------|------------------------|-----------------------------------|------------------------------|---------------------------------|
| 12507 | 2501.4 | 300 | 1000 | 8.333 |
| 12965 | 2593.0 | 300 | 1000 | 8.333 |
| 13423 | 2684.6 | 300 | 1000 | 8.333 |

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.
2. Measurements were performed with the EUT transmitting on all supported modulation types on the Antenna Port 1 and Antenna Port 2.

Transmitter Occupied Bandwidth (continued)



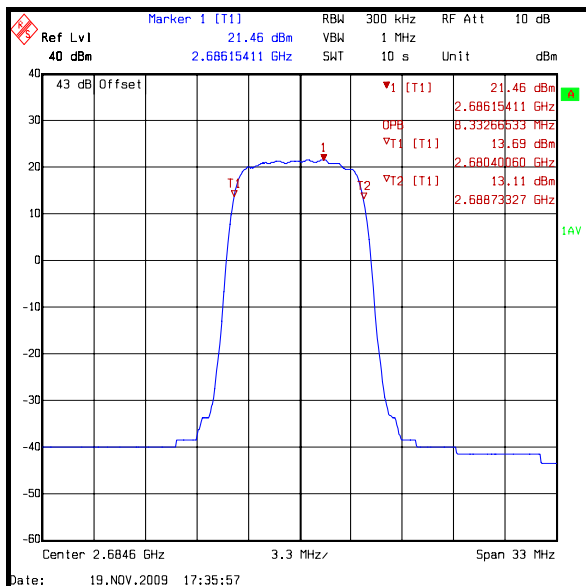
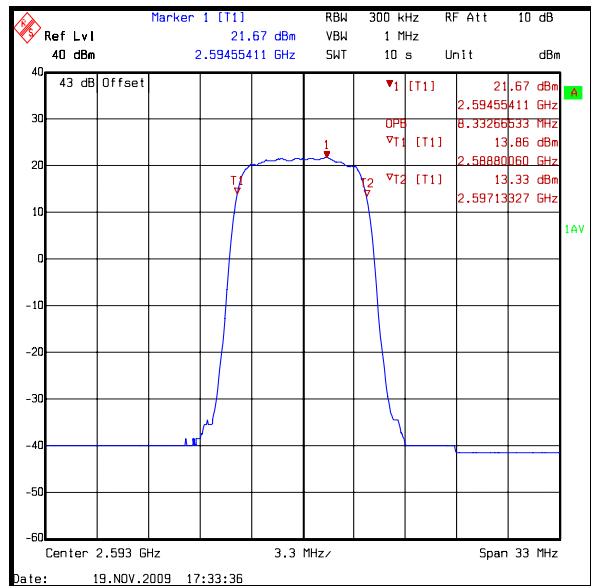
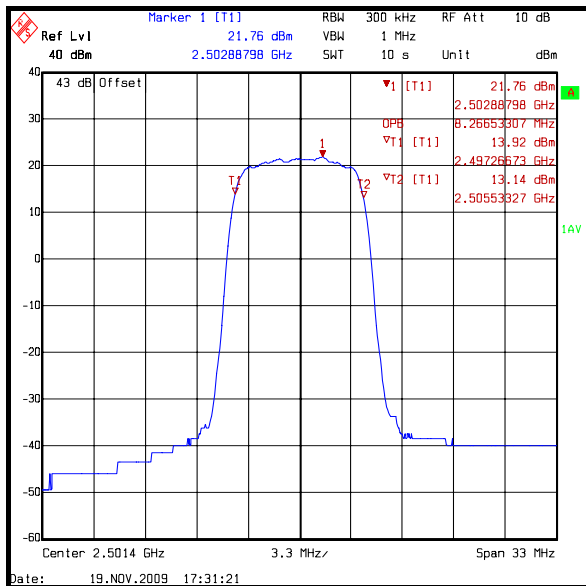
Transmitter Occupied Bandwidth (continued)

Results: 16QAM / Port 1

| Channel Number | Frequency (MHz) | Resolution Bandwidth (kHz) | Video Bandwidth (kHz) | Occupied Bandwidth (MHz) |
|----------------|-----------------|----------------------------|-----------------------|--------------------------|
| 12507 | 2501.4 | 300 | 1000 | 8.267 |
| 12965 | 2593.0 | 300 | 1000 | 8.333 |
| 13423 | 2684.6 | 300 | 1000 | 8.333 |

Note(s):

- 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.



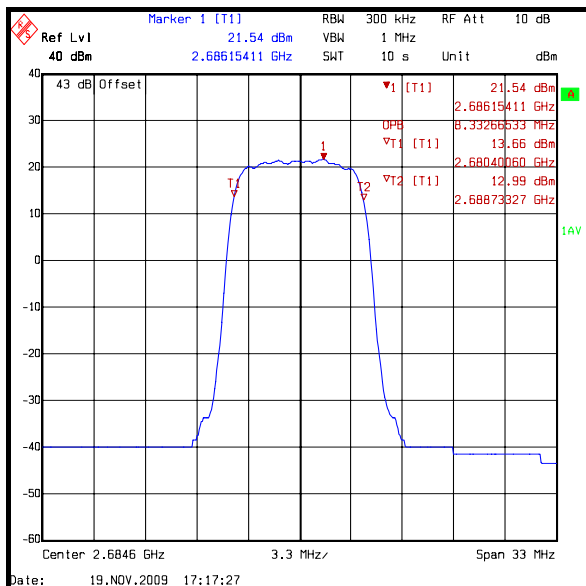
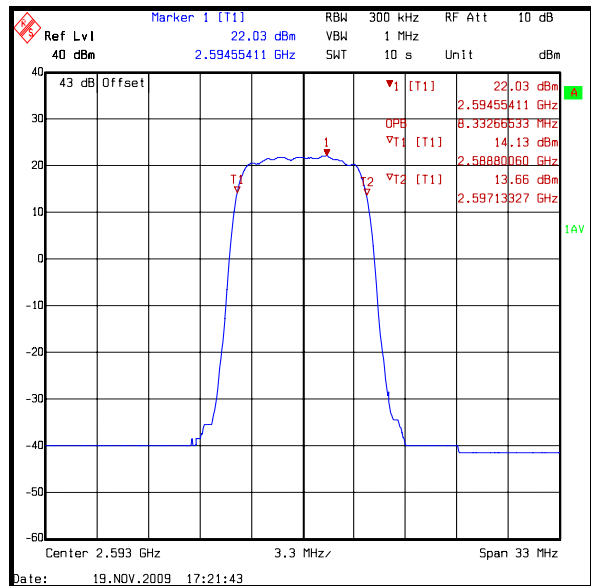
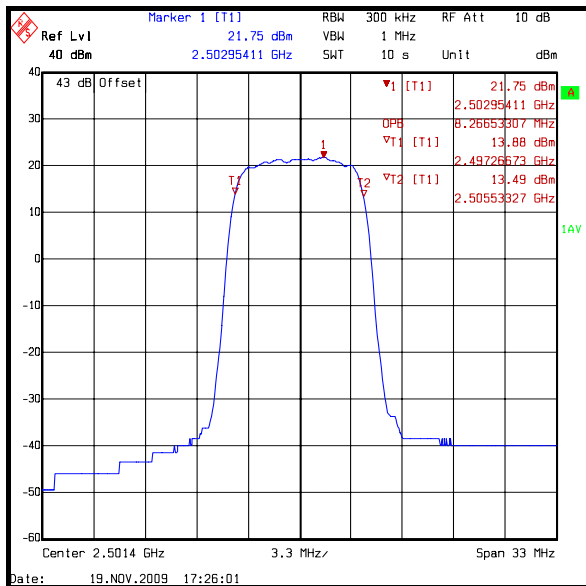
Transmitter Occupied Bandwidth (continued)

Results: 64QAM / Port 1

| Channel Number | Frequency (MHz) | Resolution Bandwidth (kHz) | Video Bandwidth (kHz) | Occupied Bandwidth (MHz) |
|----------------|-----------------|----------------------------|-----------------------|--------------------------|
| 12507 | 2501.4 | 300 | 1000 | 8.267 |
| 12965 | 2593.0 | 300 | 1000 | 8.333 |
| 13423 | 2684.6 | 300 | 1000 | 8.333 |

Note(s):

- 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.



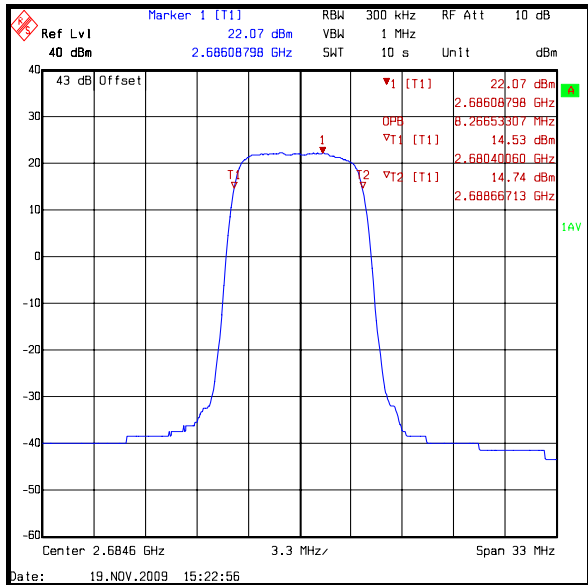
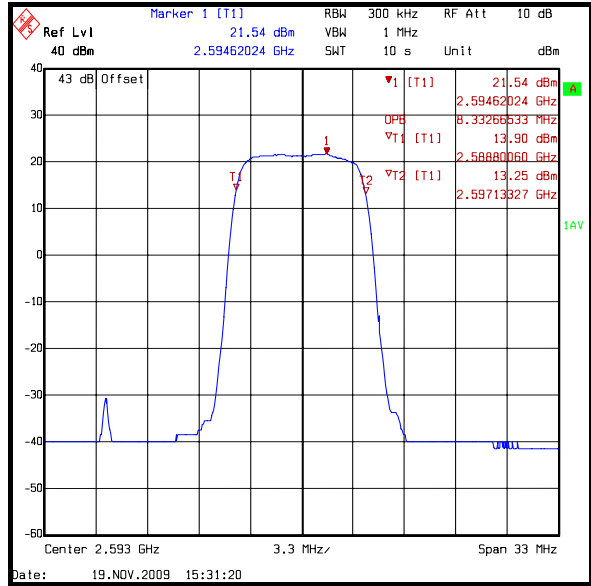
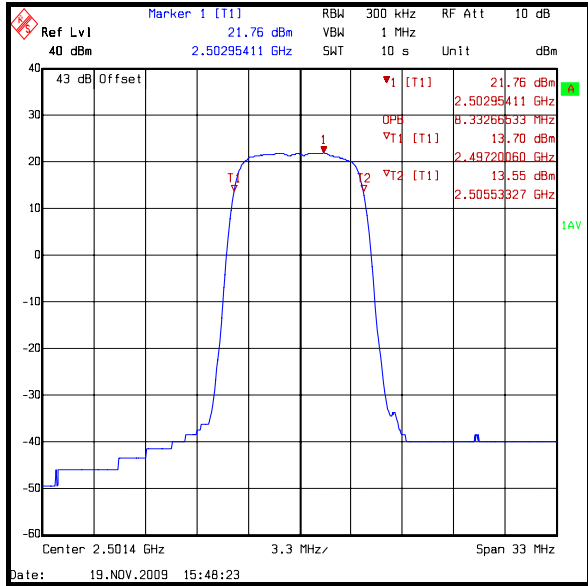
Transmitter Occupied Bandwidth (continued)**Results: QPSK / Port 2**

| Channel Number | Frequency (MHz) | Resolution Bandwidth (kHz) | Video Bandwidth (kHz) | Occupied Bandwidth (MHz) |
|-----------------------|------------------------|-----------------------------------|------------------------------|---------------------------------|
| 12507 | 2501.4 | 300 | 1000 | 8.333 |
| 12965 | 2593.0 | 300 | 1000 | 8.333 |
| 13423 | 2684.6 | 300 | 1000 | 8.267 |

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)



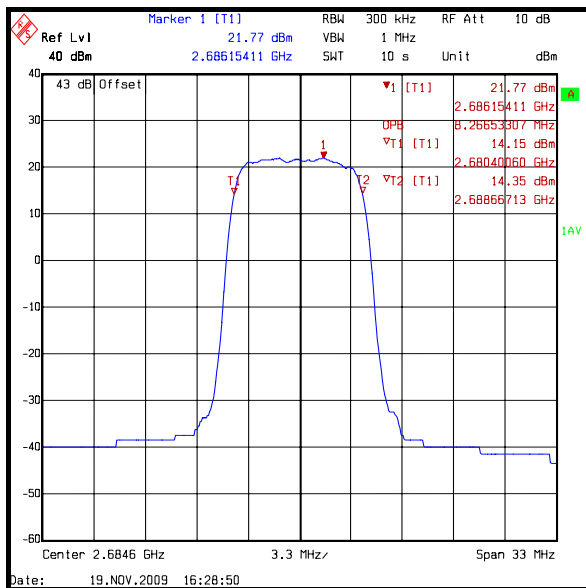
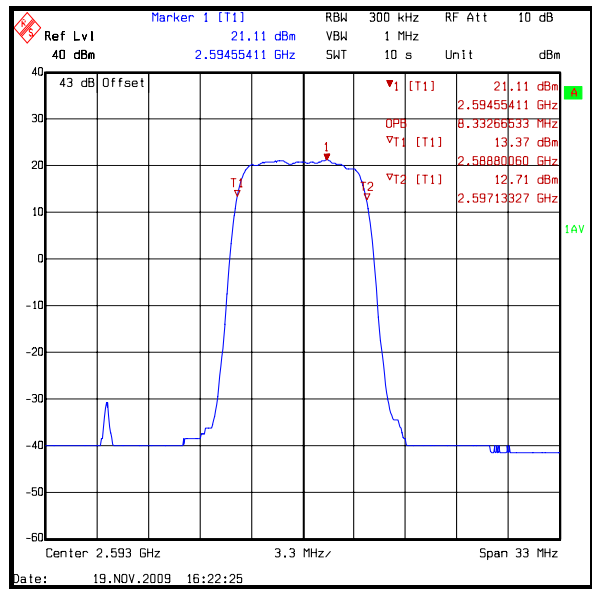
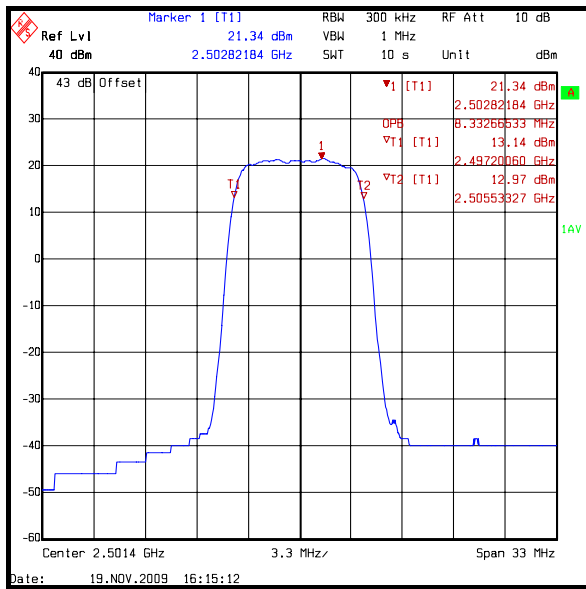
Transmitter Occupied Bandwidth (continued)

Results: 16QAM / Port 2

| Channel Number | Frequency (MHz) | Resolution Bandwidth (kHz) | Video Bandwidth (kHz) | Occupied Bandwidth (MHz) |
|----------------|-----------------|----------------------------|-----------------------|--------------------------|
| 12507 | 2501.4 | 300 | 1000 | 8.333 |
| 12965 | 2593.0 | 300 | 1000 | 8.333 |
| 13423 | 2684.6 | 300 | 1000 | 8.267 |

Note(s):

- 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.



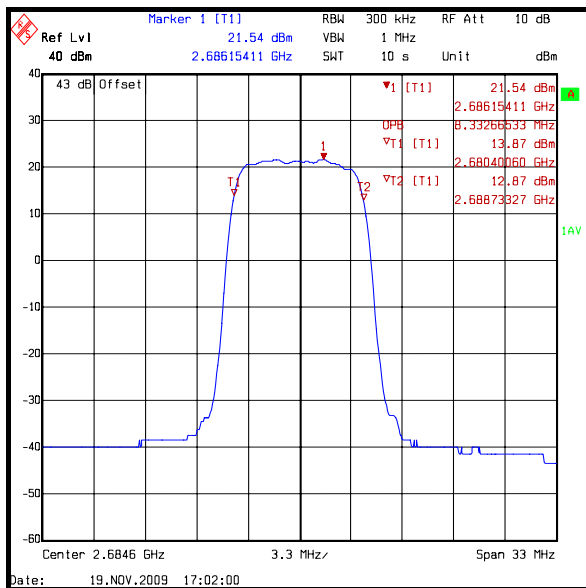
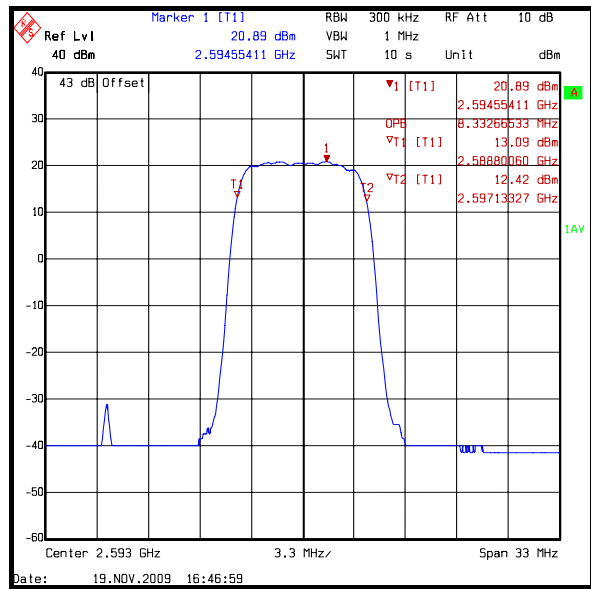
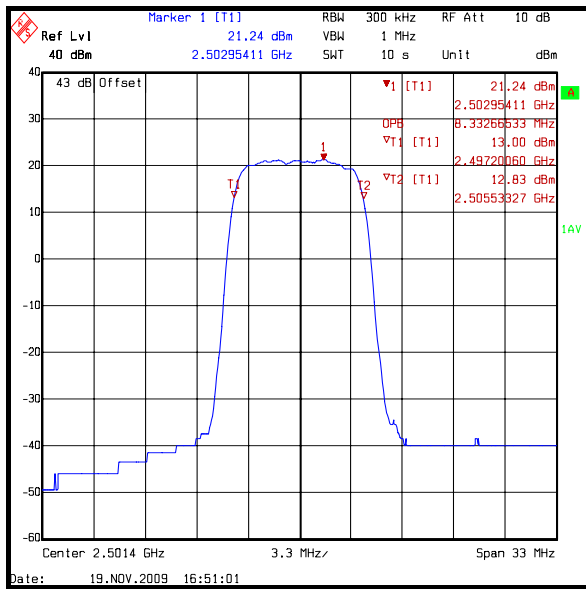
Transmitter Occupied Bandwidth (continued)

Results: 64QAM / Port 2

| Channel Number | Frequency (MHz) | Resolution Bandwidth (kHz) | Video Bandwidth (kHz) | Occupied Bandwidth (MHz) |
|----------------|-----------------|----------------------------|-----------------------|--------------------------|
| 12507 | 2501.4 | 300 | 1000 | 8.333 |
| 12965 | 2593.0 | 300 | 1000 | 8.333 |
| 13423 | 2684.6 | 300 | 1000 | 8.333 |

Note(s):

- 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.



5.2.6. Transmitter Conducted Emissions - Channel Edge**Test Summary:**

| | |
|--------------------------|--|
| FCC Part: | 2.1051 and 27.53 (m)(v) |
| Test Method Used: | As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2 and 27.53 (m)(6) |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 25 |
| Relative Humidity (%): | 32 |

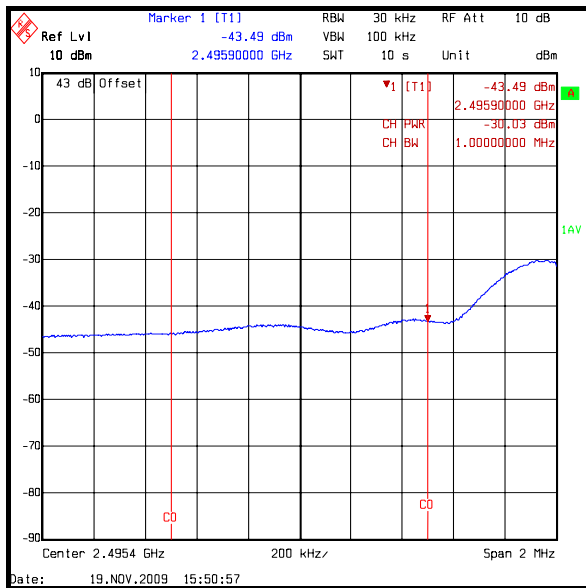
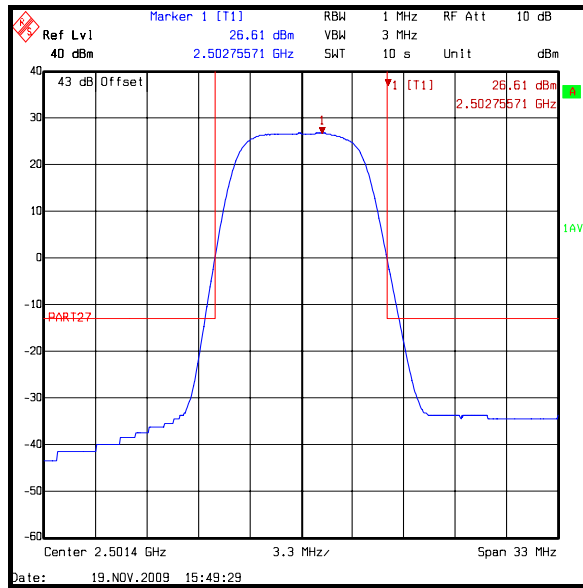
Note(s):

1. It can be seen on the main mask plots that the emission goes through the limit line. This is on account of the analyser bandwidth being too great to make an accurate measurement. The analyser integration function was thus used to demonstrate compliance and this can be seen on the two plots accompanying the mask plot.
2. Preliminary testing was performed on both antenna ports with the worse case port being selected for measurements.

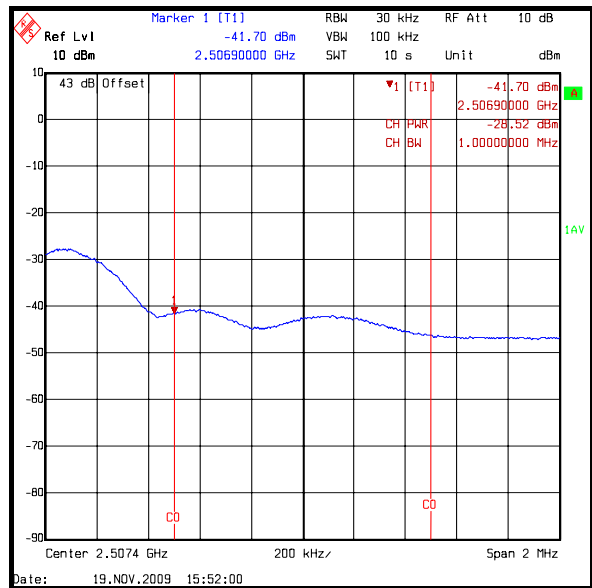
Results: Bottom Channel / QPSK / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band Edge Limit (dBm) | Margin (dB) | Result |
|--|--|------------------------------|--------------------|---------------|
| 2495.9 | -30.0 | -13.0 | 17.0 | Complied |
| 2506.9 | -28.5 | -13.0 | 15.5 | Complied |

Transmitter Conducted Emissions - Channel Edge (continued)



1 MHz strip below channel centre freq

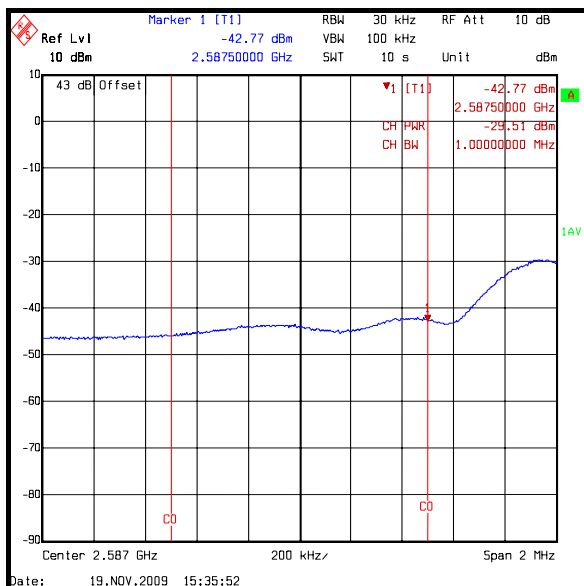
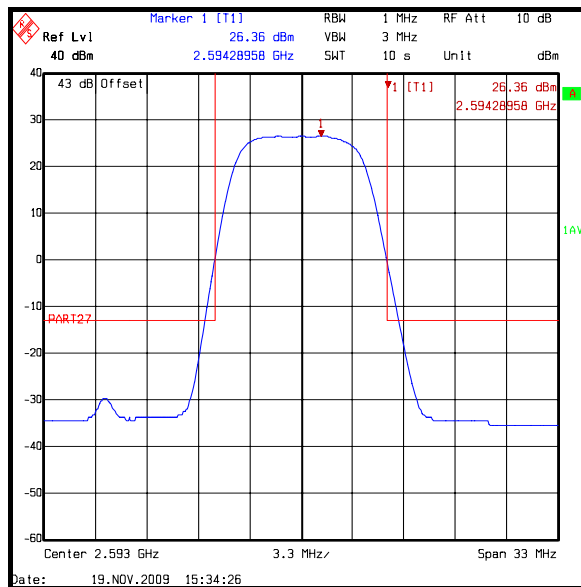


1 MHz strip above channel centre freq

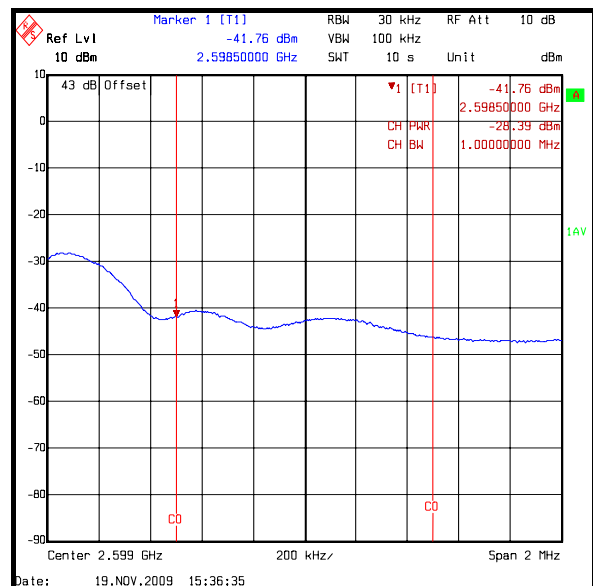
Transmitter Conducted Emissions - Channel Edge (Continued)

Results: Middle channel / QPSK / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band Edge Limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2587.5 | -29.5 | -13.0 | 16.5 | Complied |
| 2598.5 | -28.4 | -13.0 | 15.4 | Complied |



1 MHz strip below channel centre freq

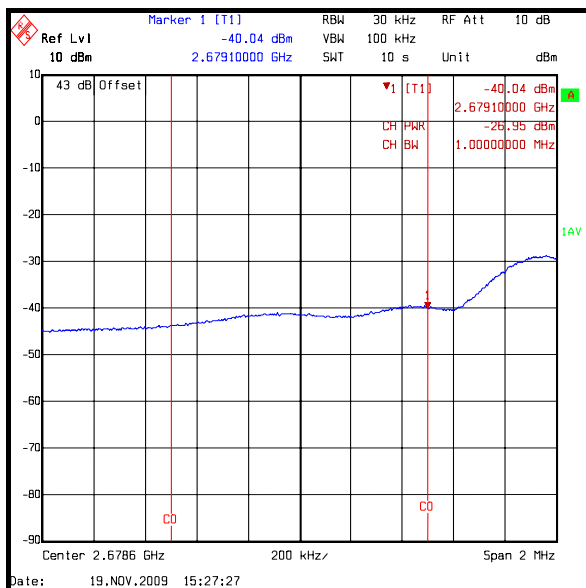
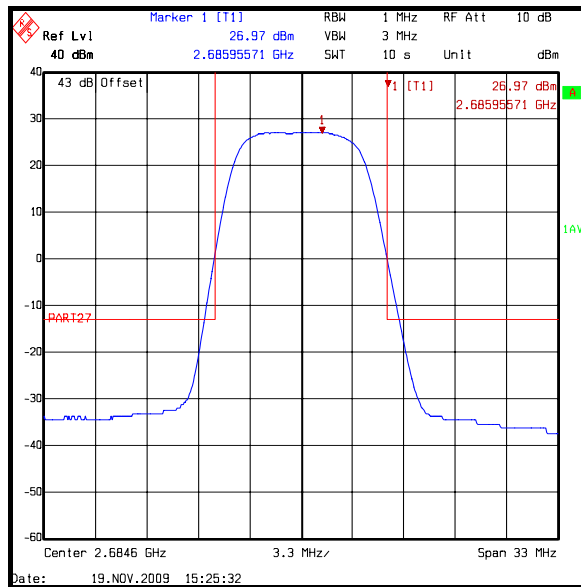


1 MHz strip above channel centre freq

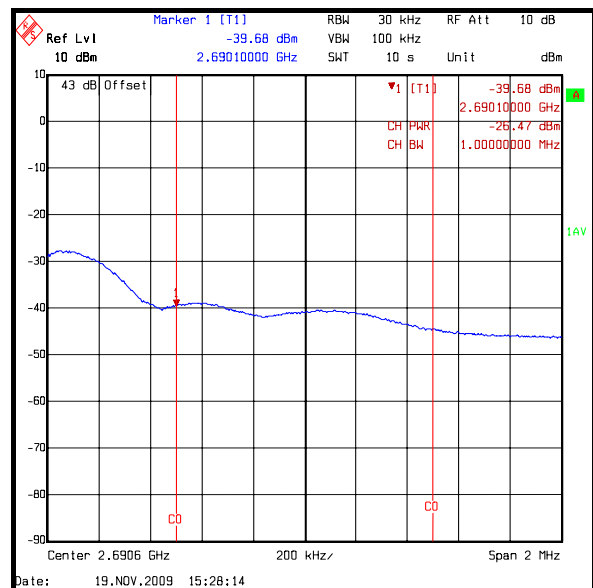
Transmitter Conducted Emissions - Channel Edge (continued)

Results: Top channel / QPSK / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band Edge Limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2679.1 | -27.0 | -13.0 | 14.0 | Complied |
| 2690.1 | -26.5 | -13.0 | 13.5 | Complied |



1 MHz strip below channel centre freq

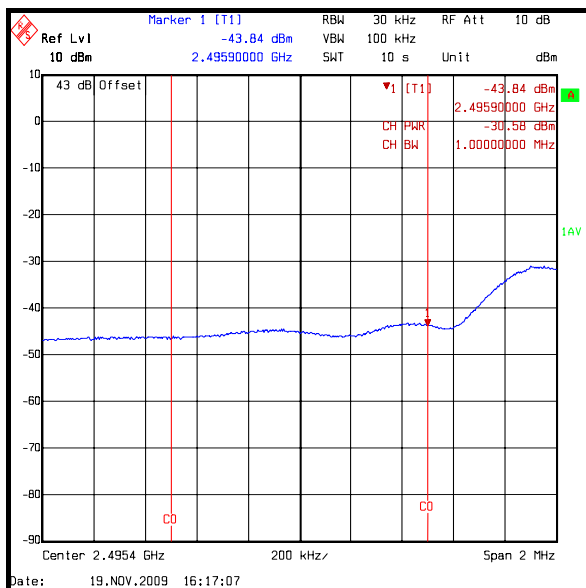
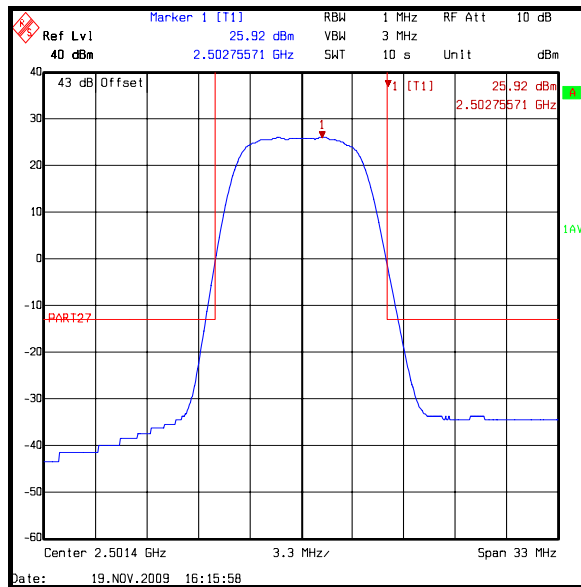


1 MHz strip above channel centre freq

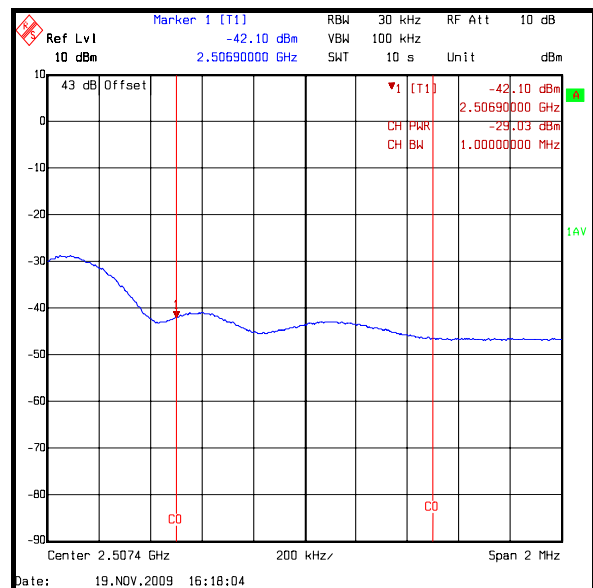
Transmitter Conducted Emissions - Channel Edge (continued)

Results: Bottom channel / 16QAM / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band Edge Limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2495.9 | -30.6 | -13.0 | 17.6 | Complied |
| 2506.9 | -29.0 | -13.0 | 16.0 | Complied |



1 MHz strip below channel centre freq

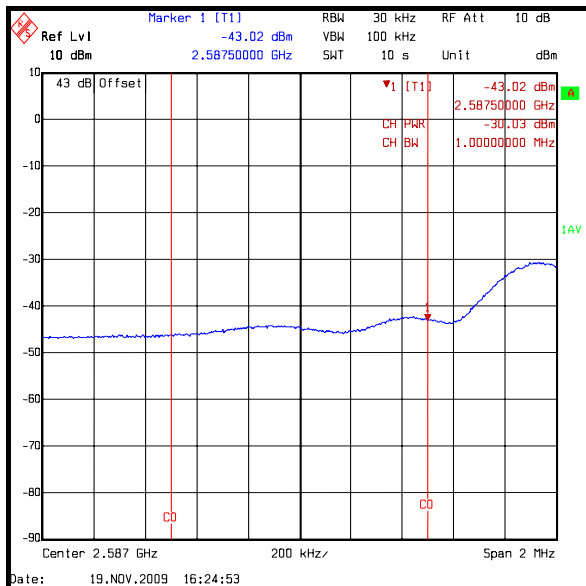
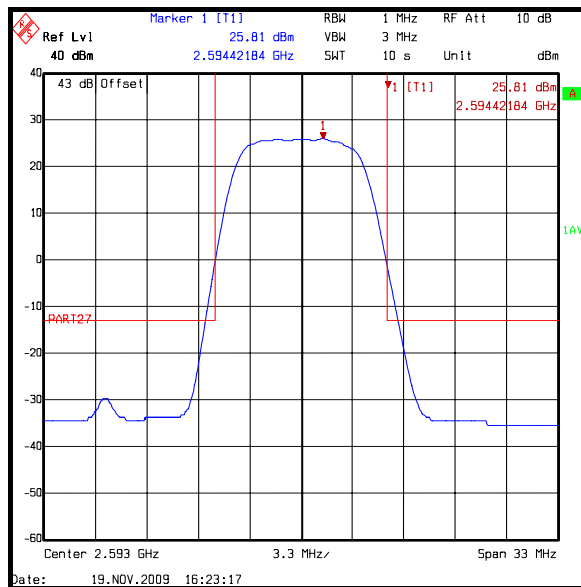


1 MHz strip above channel centre freq

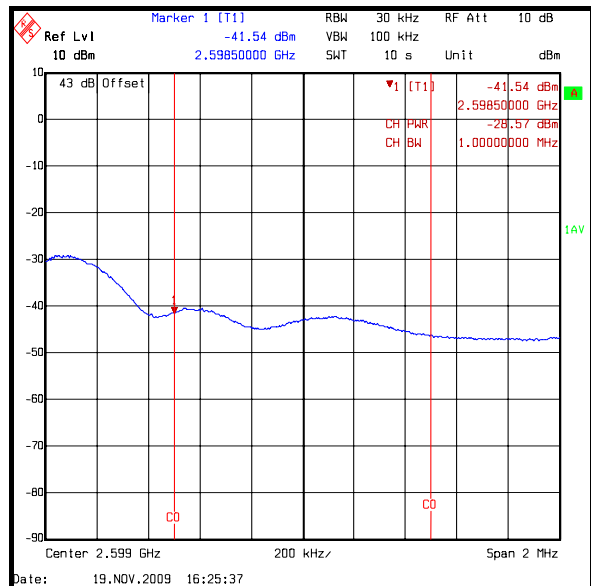
Transmitter Conducted Emissions - Channel Edge (continued)

Results: Middle channel / 16QAM / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band Edge Limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2587.5 | -30.0 | -13.0 | 17.0 | Complied |
| 2598.5 | -28.6 | -13.0 | 15.6 | Complied |



1 MHz strip below channel centre freq

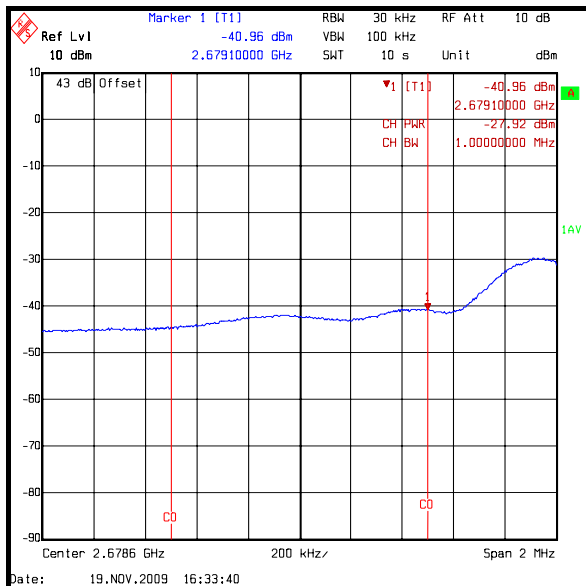
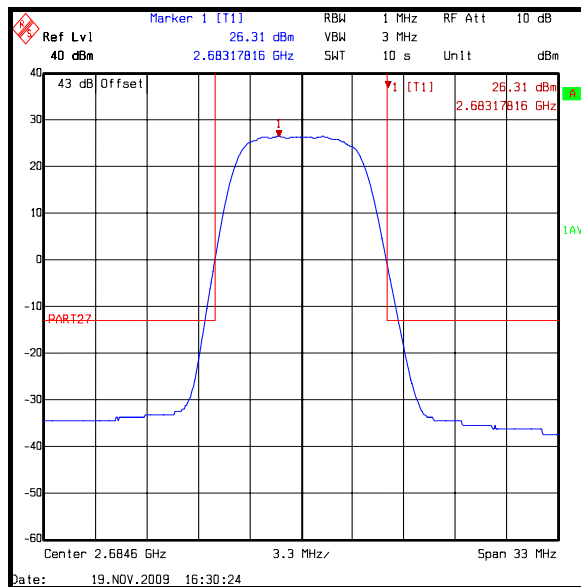


1 MHz strip above channel centre freq

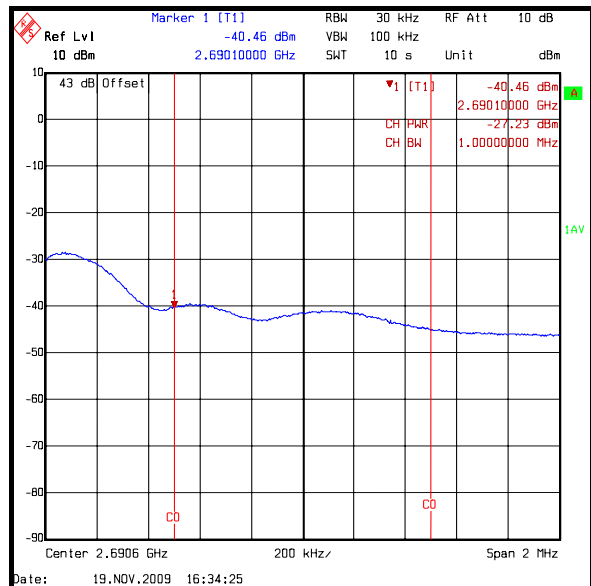
Transmitter Conducted Emissions - Channel Edge (continued)

Results: Top channel / 16QAM / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band edge limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2679.1 | -27.9 | -13.0 | 14.9 | Complied |
| 2690.1 | -27.2 | -13.0 | 14.2 | Complied |



1 MHz strip below channel centre freq

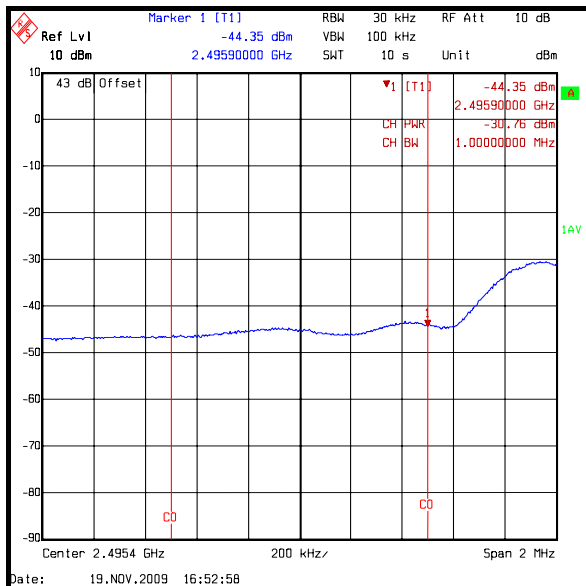
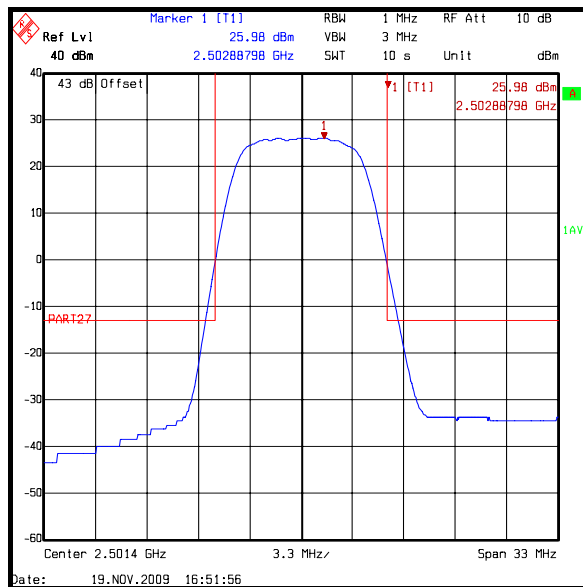


1 MHz strip above channel centre freq

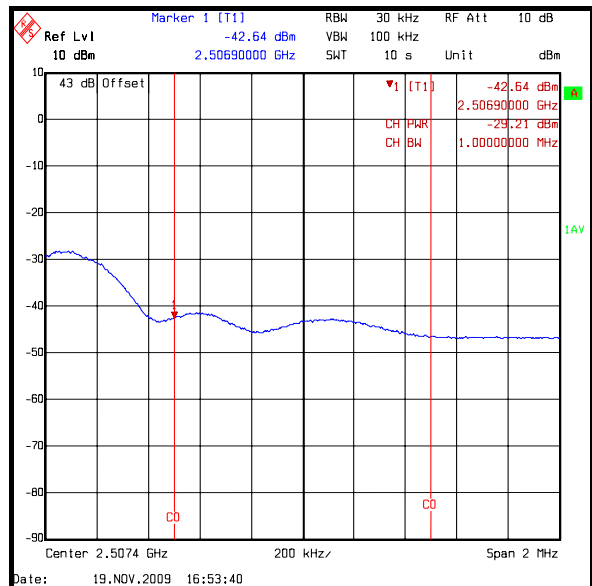
Transmitter Conducted Emissions - Channel Edge (continued)

Results: Bottom channel / 64QAM / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band edge limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2495.9 | -30.8 | -13.0 | 17.8 | Complied |
| 2506.9 | -29.2 | -13.0 | 16.2 | Complied |



1 MHz strip below channel centre freq

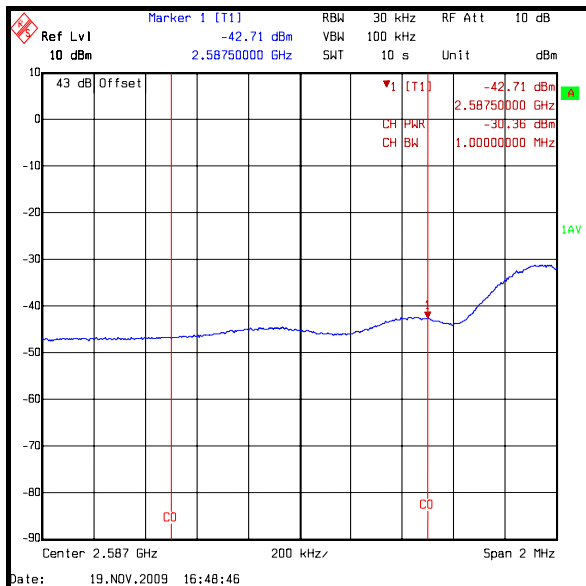
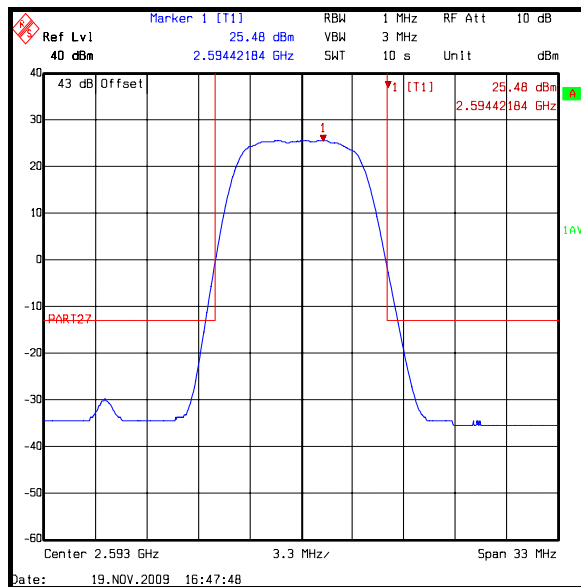


1 MHz strip above channel centre freq

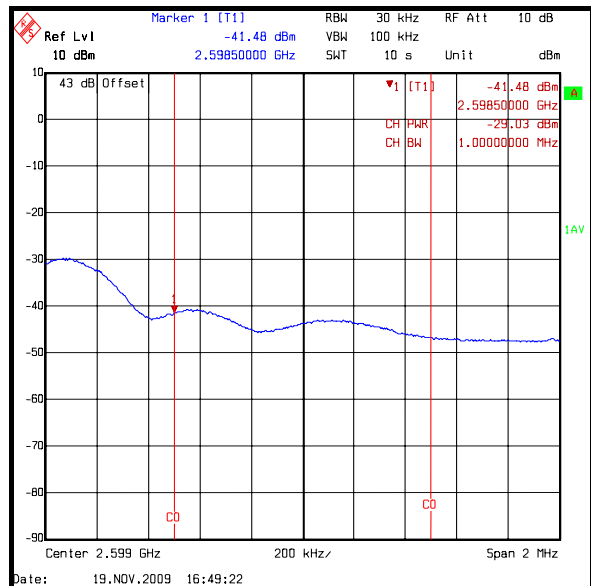
Transmitter Conducted Emissions - Channel Edge (continued)

Results: Middle channel / 64QAM / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band edge limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2587.5 | -30.4 | -13.0 | 17.4 | Complied |
| 2598.5 | -29.0 | -13.0 | 16.0 | Complied |



1 MHz strip below channel centre freq

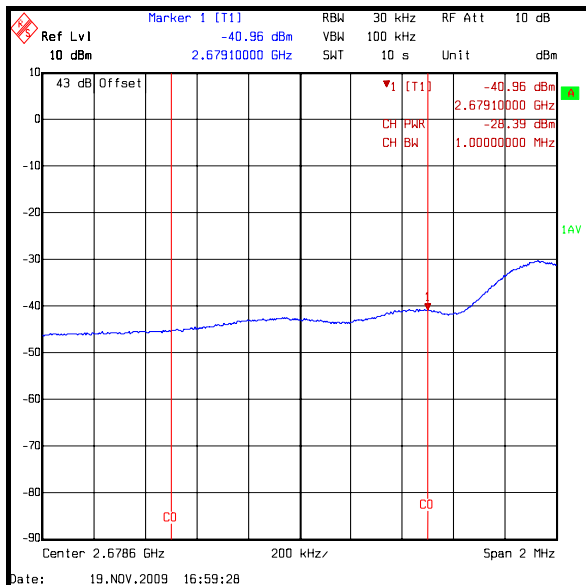
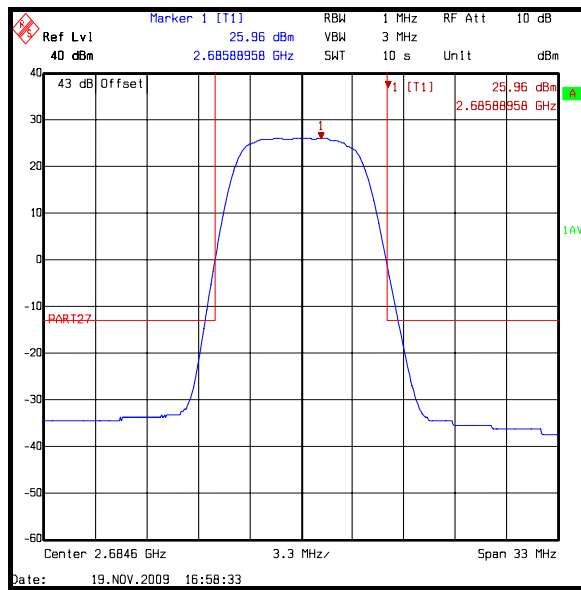


1 MHz strip above channel centre freq

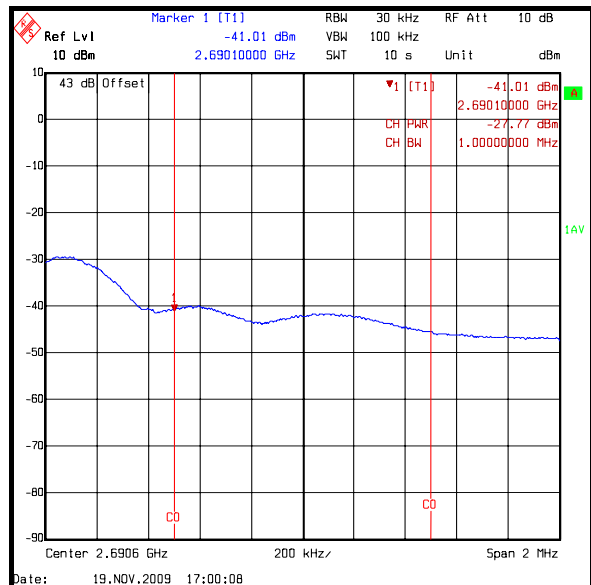
Transmitter Conducted Emissions - Channel Edge (continued)

Results: Top channel / 64QAM / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band edge limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2679.1 | -28.4 | -13.0 | 15.4 | Complied |
| 2690.1 | -27.8 | -13.0 | 14.8 | Complied |



1 MHz strip below channel centre freq



1 MHz strip above channel centre freq

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

| | |
|--------------------------|--|
| FCC Part: | 2.1051 and 27.53 (m)(v) |
| Test Method Used: | As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2 and 27.53 (m)(6) |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 23 |
| Relative Humidity (%): | 33 |

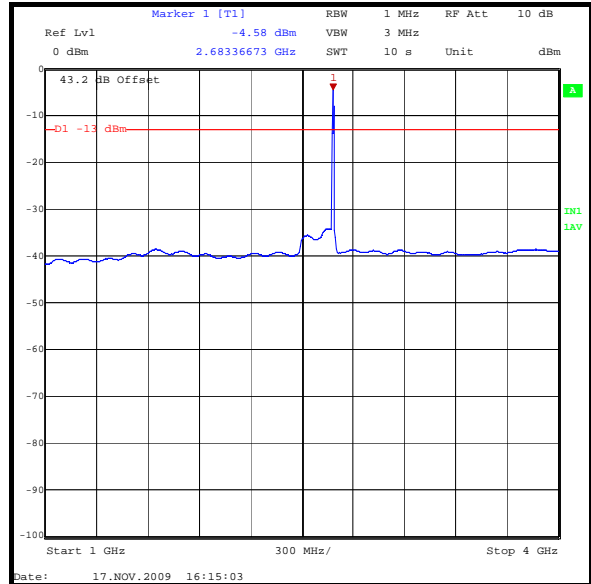
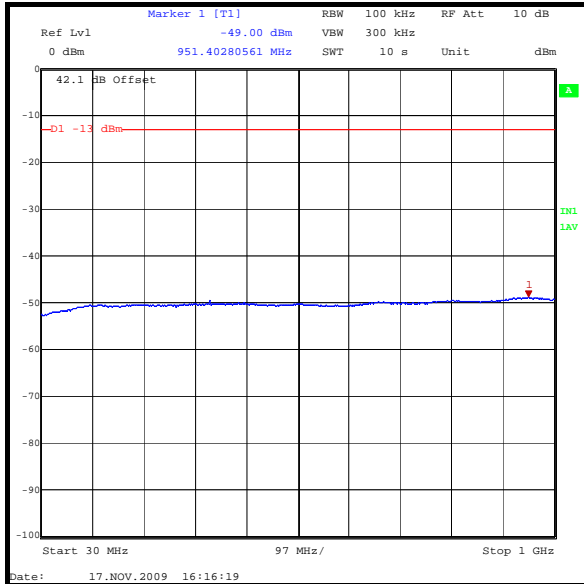
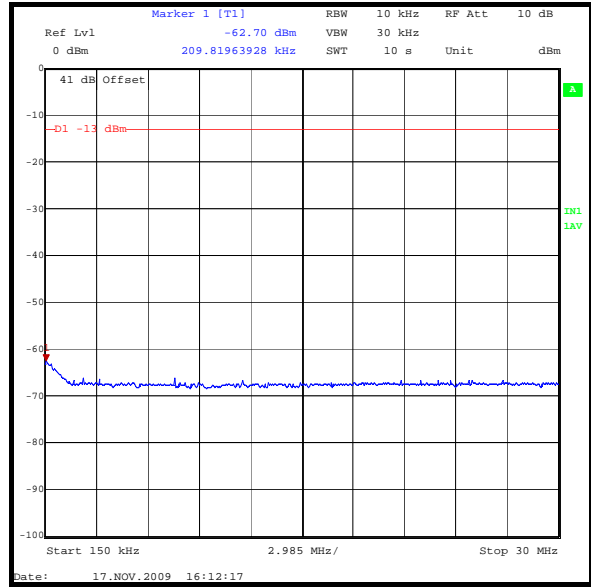
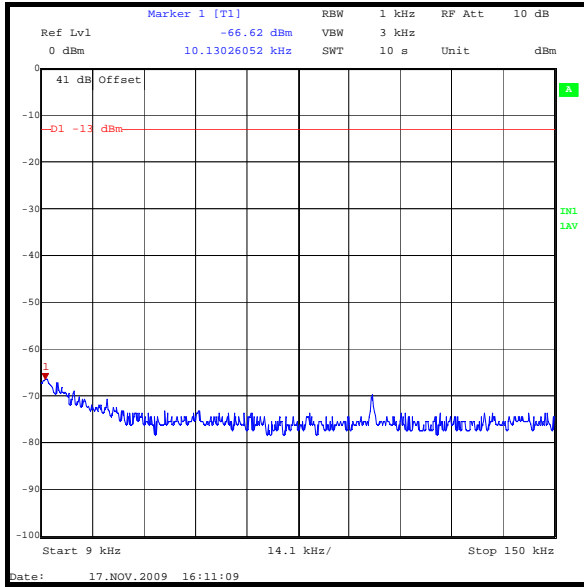
Results: Port 2

| Frequency (GHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|------------------------|-----------------------------|--------------------|--------------------|---------------|
| 25.563 | -33.1 | -13.0 | 20.1 | Complied |

Note(s):

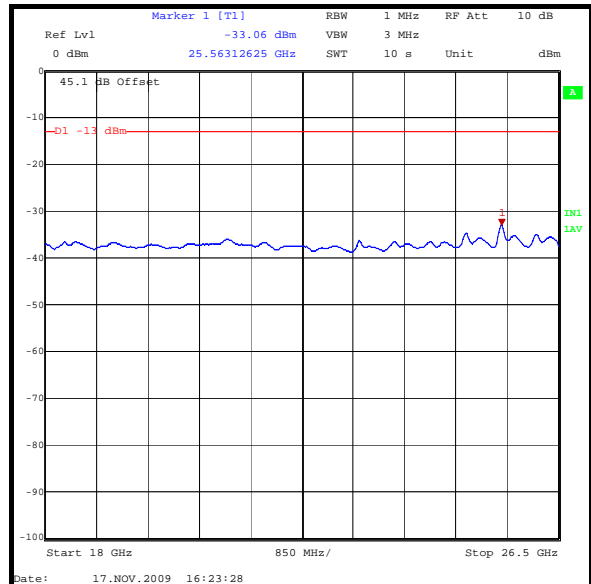
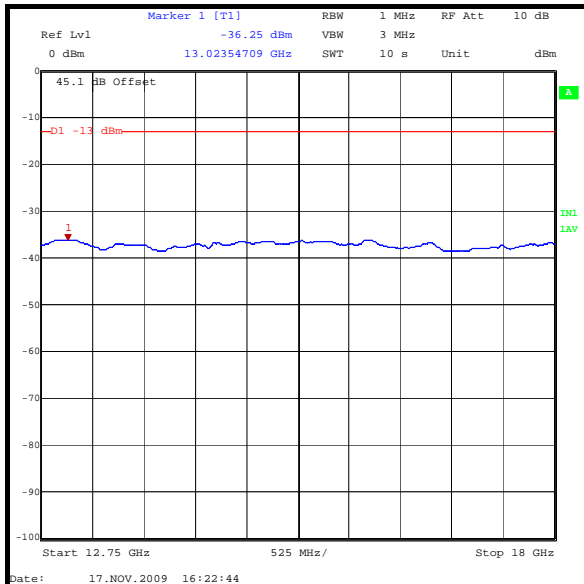
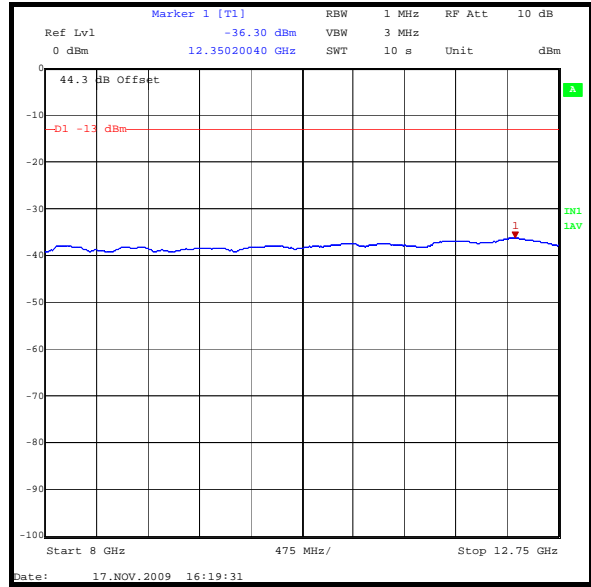
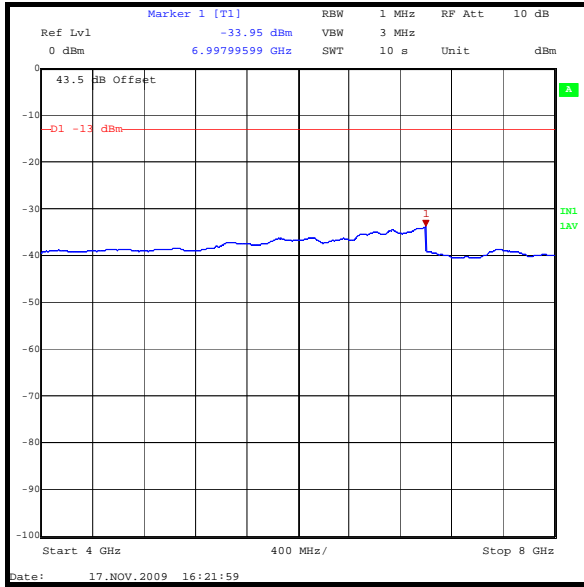
1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest average noise floor reading of the measuring receiver was recorded as shown in the table above.
2. The emission shown at approximately 2687.375 MHz on the 1 GHz to 3 GHz plot is the carrier.
3. Preliminary testing was performed on both antenna ports with the worse case port being selected for measurements.

Transmitter Conducted Emissions (continued)



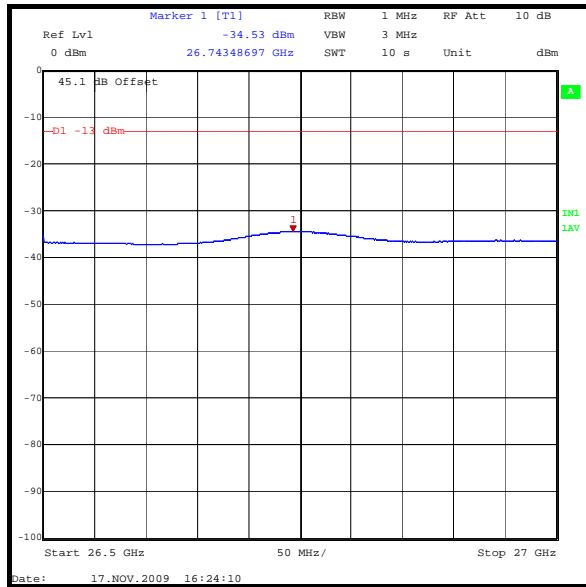
Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Transmitter Conducted Emissions (continued)



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

Transmitter Conducted Emissions (continued)



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

5.2.8. Transmitter Conducted Emissions at Band Edges

Test Summary:

| | |
|--------------------------|--|
| FCC Part: | 2.1051 and 27.53 (m)(v) |
| Test Method Used: | As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2 and 27.53 (m)(6) |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 25 |
| Relative Humidity (%): | 32 |

Results: QPSK 1 MHz strip below the lower band edge / Port 2

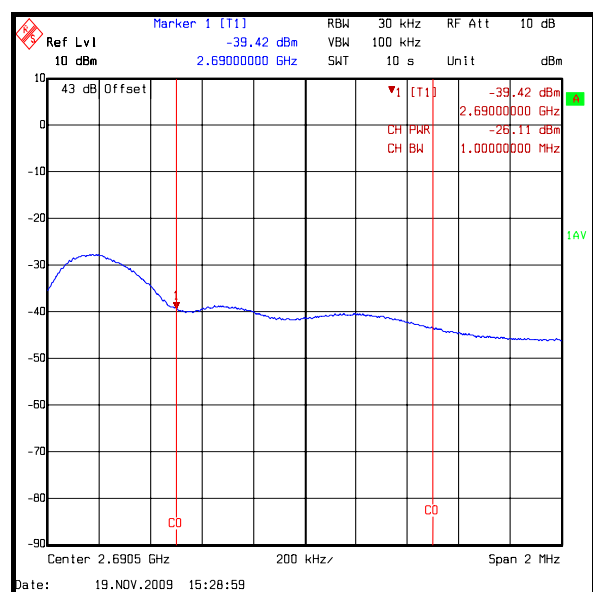
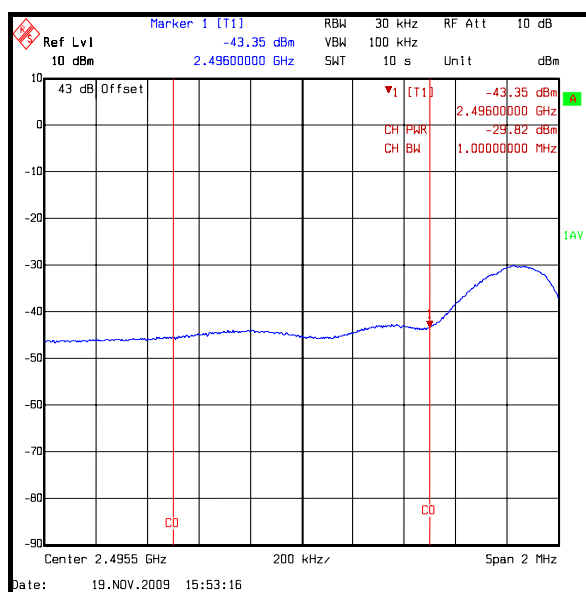
| Frequency (MHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|----------------------|-------------|-------------|----------|
| 2495 to 2496 | -29.8 | -13.0 | 16.8 | Complied |

Results: QPSK 1 MHz strip above the upper band edge / Port 2

| Frequency (MHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|----------------------|-------------|-------------|----------|
| 2690 to 2691 | -26.1 | -13.0 | 13.1 | Complied |

Note(s):

1. Measured with a 1 MHz resolution bandwidth and also using the channel power function of the spectrum analyser.
2. Preliminary testing was performed on both antenna ports with the worse case port being selected for measurements.



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

Transmitter Conducted Emissions at Band Edges (continued)

Results: 16QAM 1 MHz strip below the lower band edge / Port 2

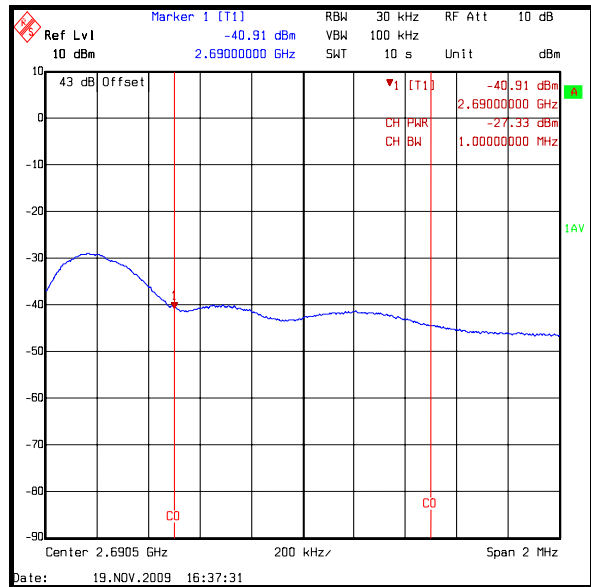
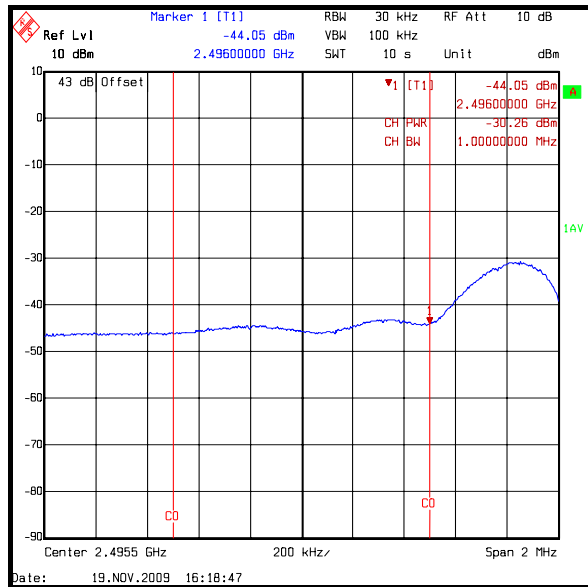
| Frequency (MHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|----------------------|-------------|-------------|----------|
| 2495 to 2496 | -30.3 | -13.0 | 17.3 | Complied |

Results: 16QAM 1 MHz strip above the upper band edge / Port 2

| Frequency (MHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|----------------------|-------------|-------------|----------|
| 2690 to 2691 | -27.3 | -13.0 | 14.3 | Complied |

Note(s):

1. Measured with a 1 MHz resolution bandwidth and also using the channel power function of the spectrum analyser.
2. Preliminary testing was performed on both antenna ports with the worse case port being selected for measurements.



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

Transmitter Conducted Emissions at Band Edges (continued)

Results: 64QAM 1 MHz strip below the lower band edge / Port 2

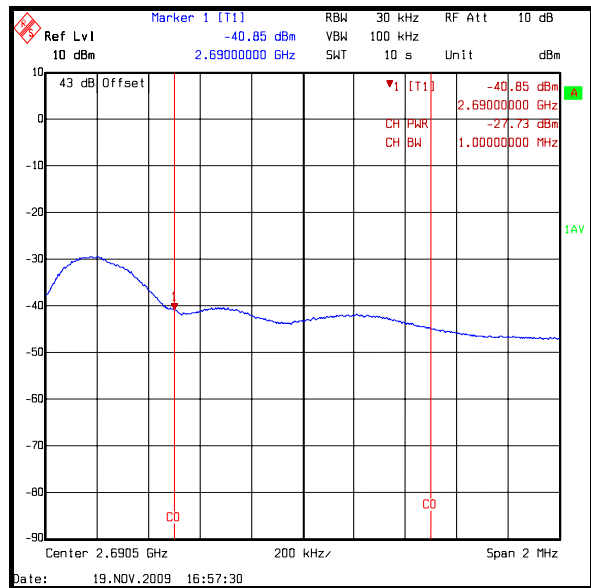
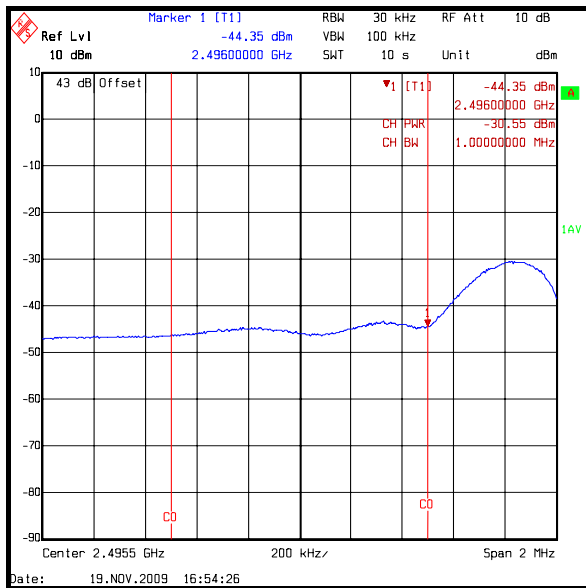
| Frequency (MHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|----------------------|-------------|-------------|----------|
| 2495 to 2496 | -30.6 | -13.0 | 17.6 | Complied |

Results: 64QAM 1 MHz strip above the upper band edge / Port 2

| Frequency (MHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|----------------------|-------------|-------------|----------|
| 2690 to 2691 | -27.7 | -13.0 | 14.7 | Complied |

Note(s):

1. Measured with a 1 MHz resolution bandwidth and also using the channel power function of the spectrum analyser.
2. Preliminary testing was performed on both antenna ports with the worse case port being selected for measurements.



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

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

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

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 21 |
| Relative Humidity (%): | 40 |

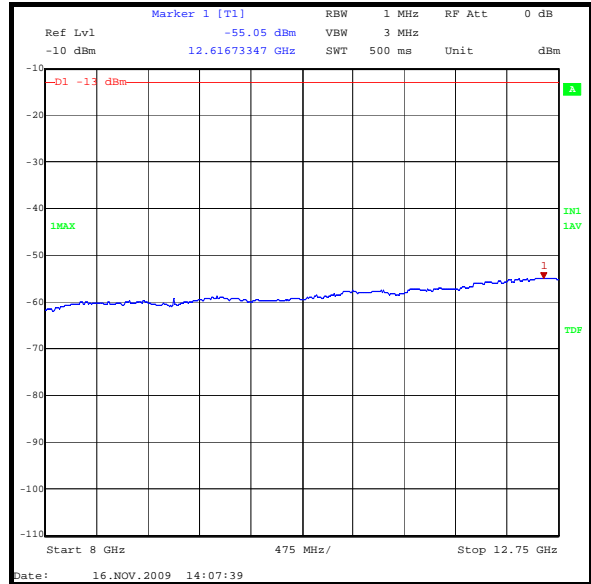
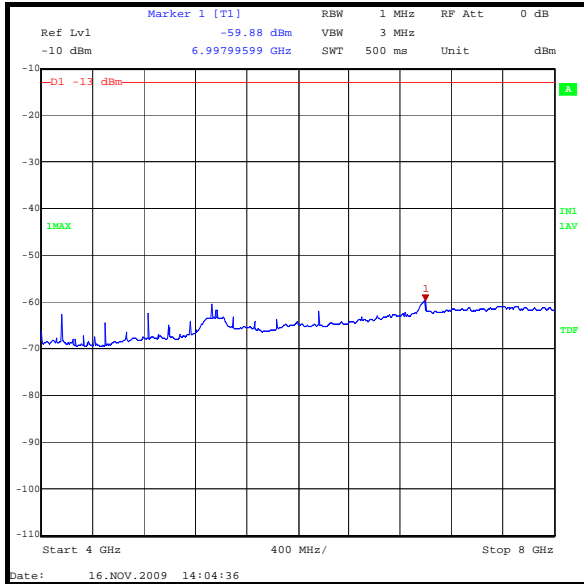
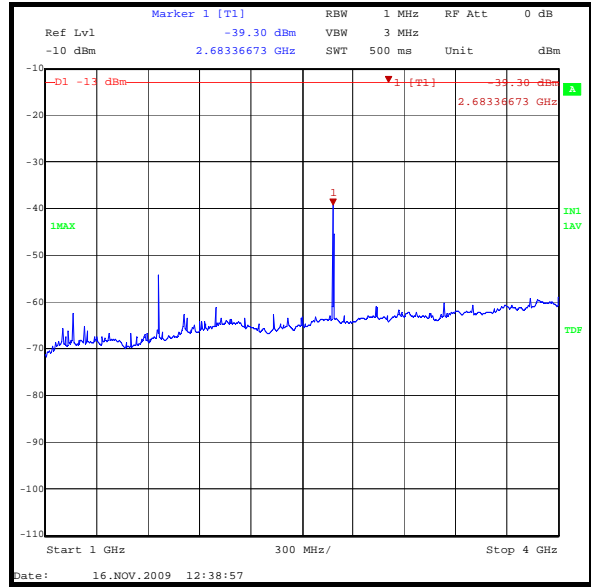
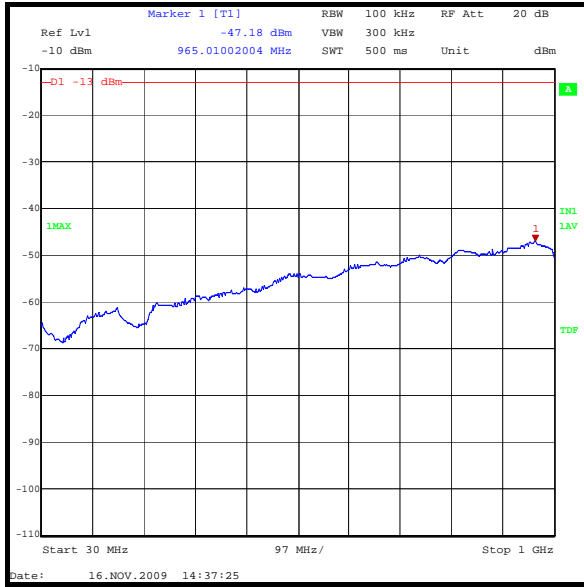
Results:

| Frequency (GHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|------------------------|-----------------------------|--------------------|--------------------|---------------|
| 17.474 | -50.9 | -13.0 | 37.9 | Complied |

Note(s):

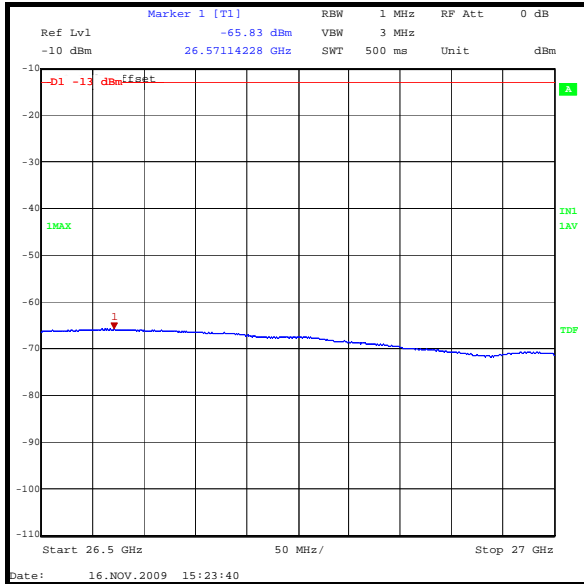
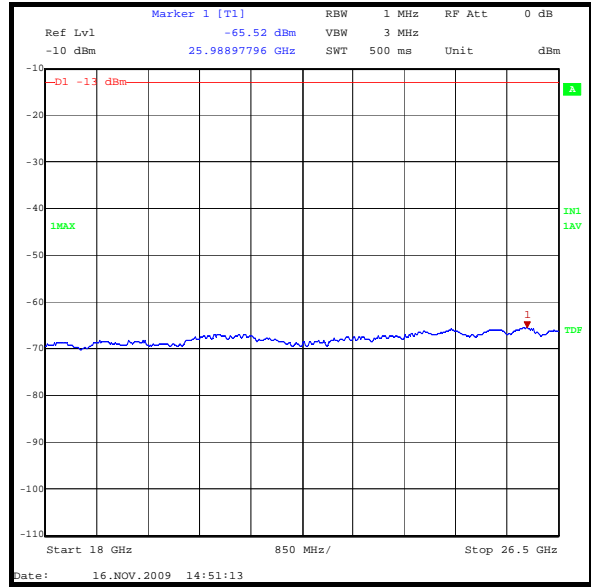
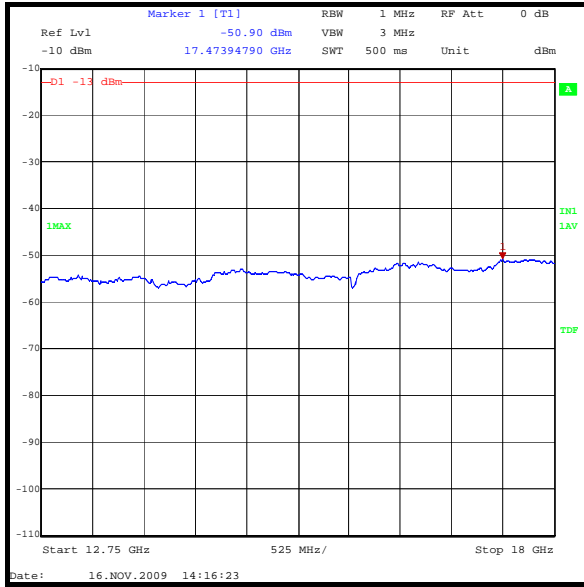
1. All other emissions were at least 20 dB below the appropriate specification limit.
2. The emission shown at approximately 2683.367 MHz on the 1 GHz to 4 GHz plot is the carrier.

Transmitter Radiated Spurious Emissions (continued)



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

Transmitter Radiated Spurious Emissions (continued)



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

5.2.10. Transmitter Radiated Spurious Emissions at Band Edges

Test Summary:

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

Environmental Conditions:

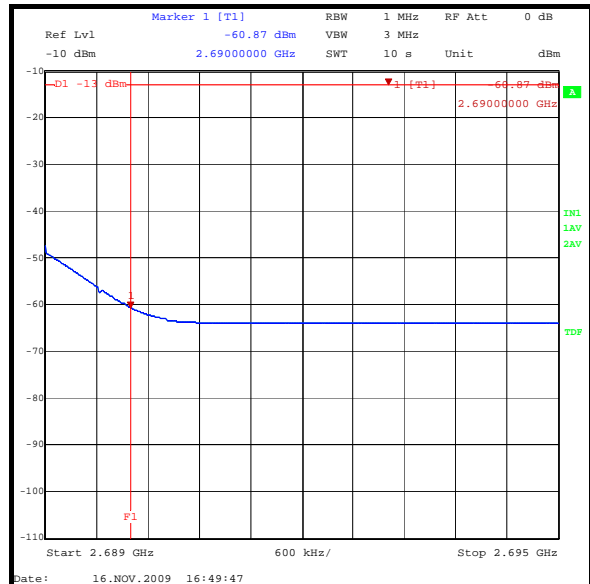
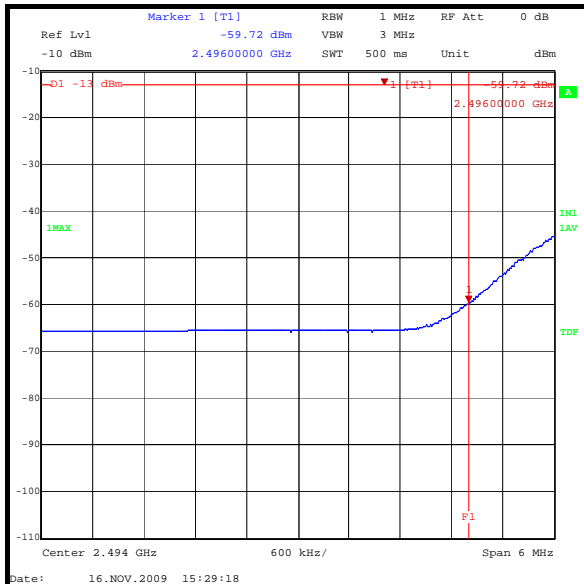
| | |
|-------------------------------|----|
| Temperature (°C): | 21 |
| Relative Humidity (%): | 40 |

Results: QPSK

| Frequency (MHz) | Spurious Emission (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|-------------------------|-------------|-------------|----------|
| 2496 | -59.7 | -13.0 | 46.7 | Complied |

Results: QPSK

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|---------------------------|-------------|-------------|----------|
| 2690 | -60.9 | -13.0 | 47.9 | Complied |



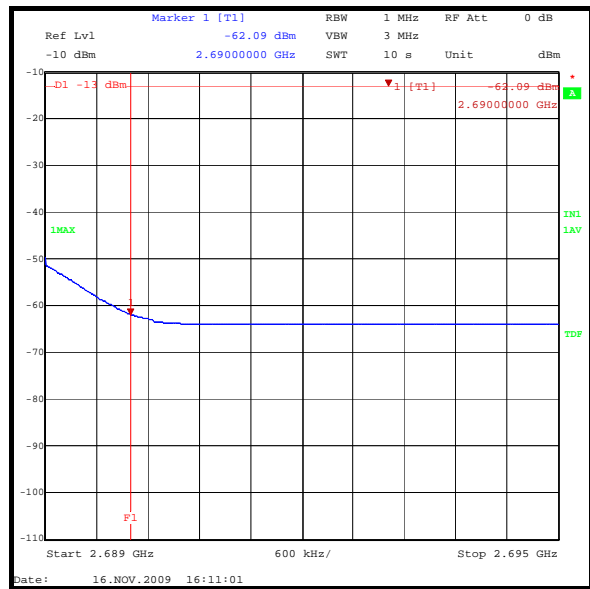
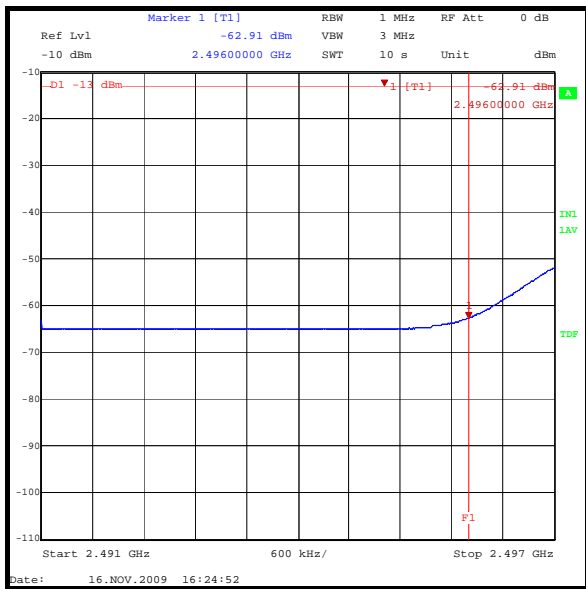
Transmitter Radiated Spurious Emissions at Band Edges (continued)

Results: 16QAM

| Frequency (MHz) | Spurious Emission (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|-------------------------|-------------|-------------|----------|
| 2496 | -62.9 | -13.0 | 49.9 | Complied |

Results: 16QAM

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|---------------------------|-------------|-------------|----------|
| 2690 | -62.1 | -13.0 | 49.1 | Complied |



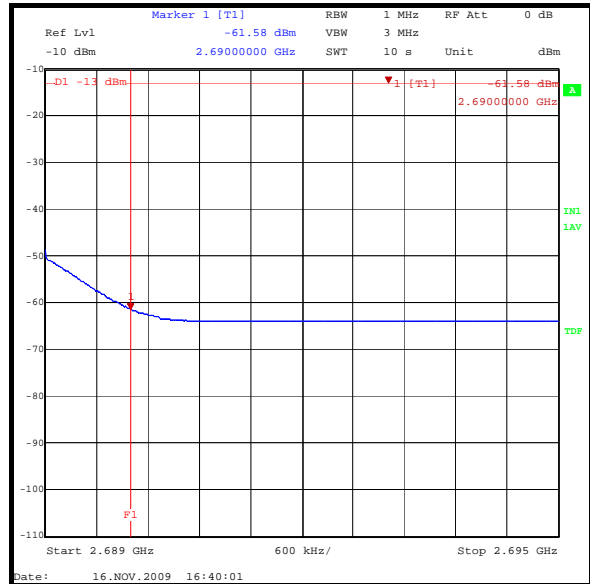
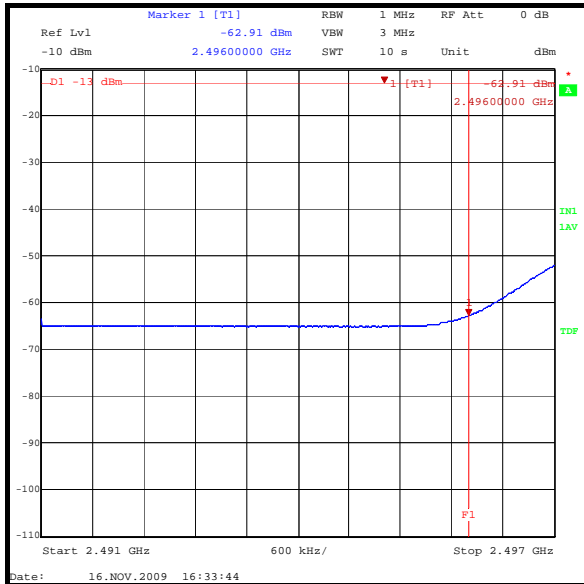
Transmitter Radiated Spurious Emissions at Band Edges (continued)

Results: 64QAM

| Frequency (MHz) | Spurious Emission (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|-------------------------|-------------|-------------|----------|
| 2496 | -62.1 | -13.0 | 49.1 | Complied |

Results: 64QAM

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|---------------------------|-------------|-------------|----------|
| 2690 | -61.6 | -13.0 | 48.6 | Complied |



5.3. Test Results – Low Chip Rate**5.3.1. Transmitter AC Conducted Spurious Emissions****Test Summary:**

| | |
|--------------------------|--|
| FCC Part: | 15.207 |
| Test Method Used: | As detailed in ANSI C63.4 Section 7 and relevant annexes |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 24 |
| Relative Humidity (%): | 35 |

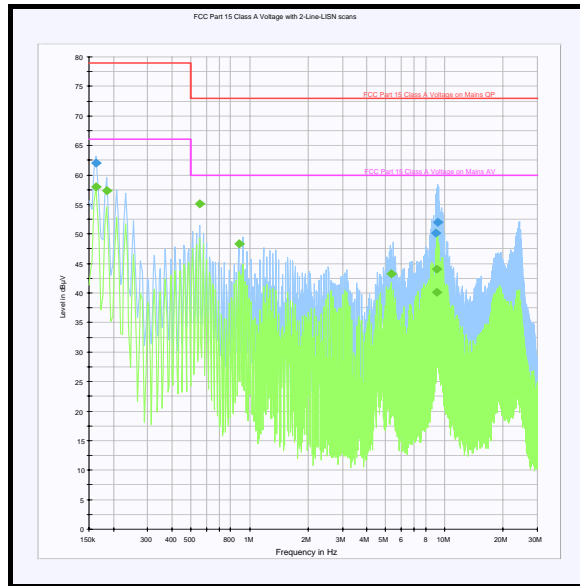
Results: Quasi Peak Detector Measurements

| Frequency (MHz) | Line | Quasi Peak Level (dB μ V) | Limit (dB μ V) | Margin (dB) | Result |
|-----------------|---------|-------------------------------|--------------------|-------------|----------|
| 0.163500 | Neutral | 62.0 | 79.0 | 17.0 | Complied |
| 9.015000 | Live | 50.2 | 73.0 | 22.8 | Complied |
| 9.222000 | Live | 51.9 | 73.0 | 21.1 | Complied |

Results: Average Detector Measurements

| Frequency (MHz) | Line | Average Level (dB μ V) | Limit (dB μ V) | Margin (dB) | Result |
|-----------------|---------|----------------------------|--------------------|-------------|----------|
| 0.163500 | Neutral | 57.9 | 66.0 | 8.1 | Complied |
| 0.186000 | Neutral | 57.4 | 66.0 | 8.6 | Complied |
| 0.555000 | Live | 55.1 | 60.0 | 4.9 | Complied |
| 0.879000 | Live | 48.3 | 60.0 | 11.7 | Complied |
| 5.316000 | Live | 43.2 | 60.0 | 16.8 | Complied |
| 9.091500 | Live | 40.2 | 60.0 | 19.8 | Complied |
| 9.154500 | Live | 44.0 | 60.0 | 16.0 | Complied |

Transmitter AC Conducted Spurious Emissions (continued)



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

5.3.2. Transmitter Conducted Carrier Output Power and Equivalent Isotropically Radiated Power (EIRP)

Test Summary:

| | |
|--------------------------|------------------------------------|
| FCC Part: | 2.1046 and 27.50(h)(1) |
| Test Method Used: | As detailed in ANSI TIA-603-C-2004 |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 25 |
| Relative Humidity (%): | 32 |

Note that the limits are calculated as $33\text{dBW} + 10 \cdot \log(5.5\text{MHz}/5.5\text{MHz})$ as the mode tested here utilises one 5.5MHz channel.

Results: QPSK / Antenna Port 1

| Channel | Frequency (MHz) | Conducted RF O/P Power (dBm) | Stated Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Margin (dB) | Result |
|---------|-----------------|------------------------------|---------------------------|------------|------------------|-------------|----------|
| 12494 | 2498.8 | 38.7 | 20.0 | 58.7 | 63.0 | 4.3 | Complied |
| 12965 | 2593.0 | 38.3 | 20.0 | 58.3 | 63.0 | 4.7 | Complied |
| 13436 | 2687.2 | 38.2 | 20.0 | 58.2 | 63.0 | 4.8 | Complied |

Results: 16QAM / Antenna Port 1

| Channel | Frequency (MHz) | Conducted RF O/P Power (dBm) | Stated Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Margin (dB) | Result |
|---------|-----------------|------------------------------|---------------------------|------------|------------------|-------------|----------|
| 12494 | 2498.8 | 39.2 | 20.0 | 59.2 | 63.0 | 3.8 | Complied |
| 12965 | 2593.0 | 39.6 | 20.0 | 59.6 | 63.0 | 3.4 | Complied |
| 13436 | 2687.2 | 39.6 | 20.0 | 59.6 | 63.0 | 3.4 | Complied |

Results: 64QAM / Antenna Port 1

| Channel | Frequency (MHz) | Conducted RF O/P Power (dBm) | Stated Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Margin (dB) | Result |
|---------|-----------------|------------------------------|---------------------------|------------|------------------|-------------|----------|
| 12494 | 2498.8 | 39.4 | 20.0 | 59.4 | 63.0 | 3.6 | Complied |
| 12965 | 2593.0 | 39.5 | 20.0 | 59.5 | 63.0 | 3.5 | Complied |
| 13436 | 2687.2 | 39.8 | 20.0 | 59.8 | 63.0 | 3.2 | Complied |

Transmitter Conducted Carrier Output Power and Equivalent Isotropically Radiated Power (EIRP) (continued)

Results: QPSK / Antenna Port 2

| Channel | Frequency (MHz) | Conducted RF O/P Power (dBm) | Stated Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Margin (dB) | Result |
|---------|-----------------|------------------------------|---------------------------|------------|------------------|-------------|----------|
| 12494 | 2498.8 | 39.7 | 20.0 | 59.7 | 63.0 | 3.3 | Complied |
| 12965 | 2593.0 | 39.9 | 20.0 | 59.9 | 63.0 | 3.1 | Complied |
| 13436 | 2687.2 | 40.0 | 20.0 | 60.0 | 63.0 | 3.0 | Complied |

Results: 16QAM / Antenna Port 2

| Channel | Frequency (MHz) | Conducted RF O/P Power (dBm) | Stated Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Margin (dB) | Result |
|---------|-----------------|------------------------------|---------------------------|------------|------------------|-------------|----------|
| 12494 | 2498.8 | 39.1 | 20.0 | 59.1 | 63.0 | 3.9 | Complied |
| 12965 | 2593.0 | 38.6 | 20.0 | 58.6 | 63.0 | 4.4 | Complied |
| 13436 | 2687.2 | 39.7 | 20.0 | 59.7 | 63.0 | 3.3 | Complied |

Results: 64QAM / Antenna Port 1

| Channel | Frequency (MHz) | Conducted RF O/P Power (dBm) | Stated Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | Margin (dB) | Result |
|---------|-----------------|------------------------------|---------------------------|------------|------------------|-------------|----------|
| 12494 | 2498.8 | 39.1 | 20.0 | 59.1 | 63.0 | 3.9 | Complied |
| 12965 | 2593.0 | 38.6 | 20.0 | 58.6 | 63.0 | 4.4 | Complied |
| 13436 | 2687.2 | 39.7 | 20.0 | 59.7 | 63.0 | 3.3 | Complied |

Note(s):

1. Measurements were performed with the EUT transmitting on all supported modulation types on the Antenna Port 1 and Antenna Port 2.

5.3.3. Transmitter Frequency Stability: (Temperature Variation)**Test Summary:**

| | |
|--------------------------|--|
| FCC Part: | FCC 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 (°C): | 24 |
| Relative Humidity (%): | 32 |

Results: 2498.8 MHz / Antenna Port 2

| Temp (°C) | Measured Frequency (MHz) | Frequency Error (Hz) |
|-----------|--------------------------|----------------------|
| -30 | 2498.799683 | 317 |
| -20 | 2498.799683 | 317 |
| -10 | 2498.799607 | 393 |
| 0 | 2498.799642 | 358 |
| 10 | 2498.799662 | 338 |
| 20 | 2498.799684 | 316 |
| 30 | 2498.799704 | 296 |
| 40 | 2498.799722 | 278 |
| 50 | 2498.799749 | 251 |

Results: 2593 MHz / Antenna Port 2

| Temp (°C) | Measured Frequency (MHz) | Frequency Error (Hz) |
|-----------|--------------------------|----------------------|
| -30 | 2592.999699 | 301 |
| -20 | 2592.999673 | 327 |
| -10 | 2592.999592 | 408 |
| 0 | 2592.999627 | 373 |
| 10 | 2592.999648 | 352 |
| 20 | 2592.999671 | 329 |
| 30 | 2592.999692 | 308 |
| 40 | 2592.999712 | 288 |
| 50 | 2592.999739 | 261 |

Transmitter Frequency Stability: (Temperature Variation) (continued)**Results: 2687.2 MHz / Antenna Port 2**

| Temp (°C) | Measured Frequency (MHz) | Frequency Error (Hz) |
|-----------|--------------------------|----------------------|
| -30 | 2687.199656 | 344 |
| -20 | 2687.199659 | 341 |
| -10 | 2687.199577 | 423 |
| 0 | 2687.199617 | 383 |
| 10 | 2687.199635 | 365 |
| 20 | 2687.199660 | 340 |
| 30 | 2687.199680 | 320 |
| 40 | 2687.199701 | 299 |
| 50 | 2687.199731 | 269 |

5.3.3.1. Transmitter Frequency Stability: (Voltage Variation)**Test Summary:**

| | |
|--------------------------|--|
| FCC Part: | FCC 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 (°C): | 26 |
| Relative Humidity (%): | 33 |

Results: 2498.8 MHz / Antenna Port 2

| Supply Voltage (VDC) | Measured Frequency (MHz) | Frequency Error (Hz) |
|----------------------|--------------------------|----------------------|
| -40.8 | 2498.799713 | 287 |
| -48.0 | 2498.799711 | 289 |
| -55.2 | 2498.799714 | 286 |

Results: 2593 MHz / Antenna Port 2

| Supply Voltage (VDC) | Measured Frequency (MHz) | Frequency Error (Hz) |
|----------------------|--------------------------|----------------------|
| -40.8 | 2592.999703 | 297 |
| -48.0 | 2592.999699 | 301 |
| -55.2 | 2592.999700 | 300 |

Results: 2687.2 MHz / Antenna Port 2

| Supply Voltage (VDC) | Measured Frequency (MHz) | Frequency Error (Hz) |
|----------------------|--------------------------|----------------------|
| -40.8 | 2687.199691 | 309 |
| -48.0 | 2687.199687 | 313 |
| -55.2 | 2687.199689 | 311 |

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

| | |
|--------------------------|--|
| FCC Part: | FCC 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 (°C): | 25 |
| Relative Humidity (%): | 32 |

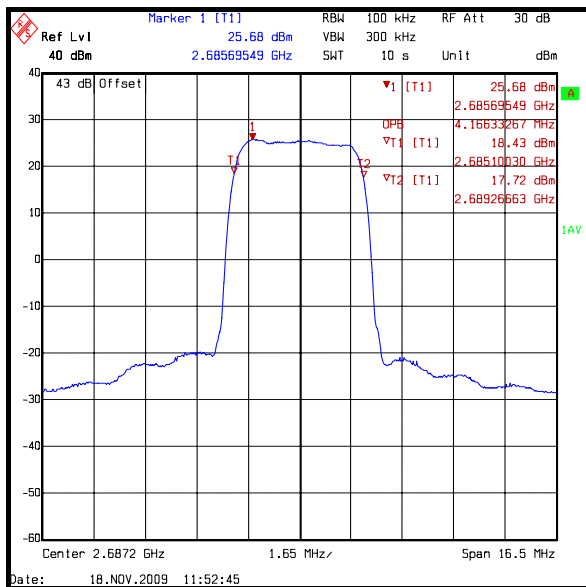
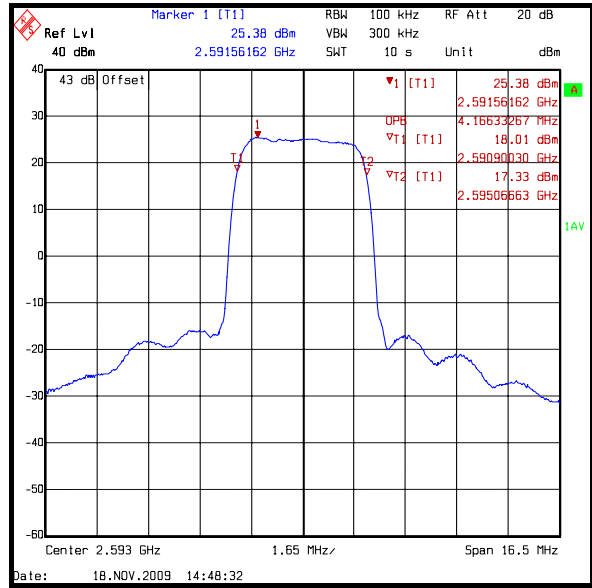
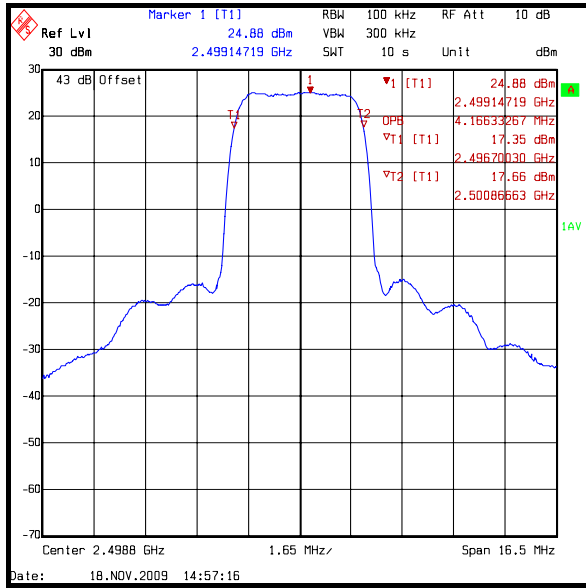
Results: QPSK / Port 1

| Channel Number | Frequency (MHz) | Resolution Bandwidth (kHz) | Video Bandwidth (kHz) | Occupied Bandwidth (MHz) |
|-----------------------|------------------------|-----------------------------------|------------------------------|---------------------------------|
| 12494 | 2498.8 | 100 | 300 | 4.166 |
| 12965 | 2593.0 | 100 | 300 | 4.166 |
| 13436 | 2687.2 | 100 | 300 | 4.166 |

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.
2. Measurements were performed with the EUT transmitting on all supported modulation types on the Antenna Port 1 and Antenna Port 2.

Transmitter Occupied Bandwidth (continued)



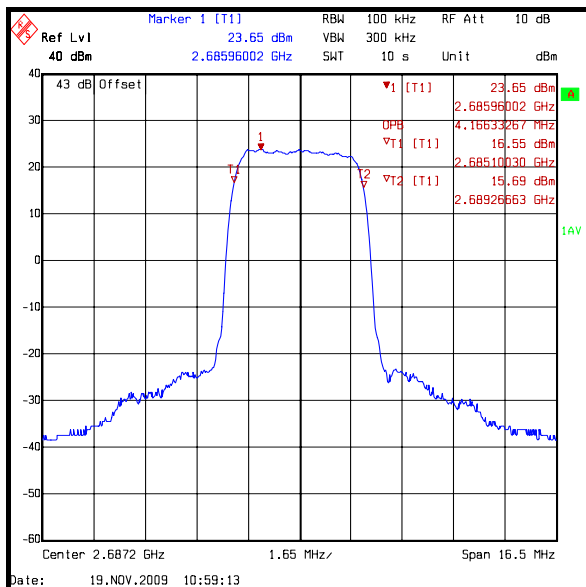
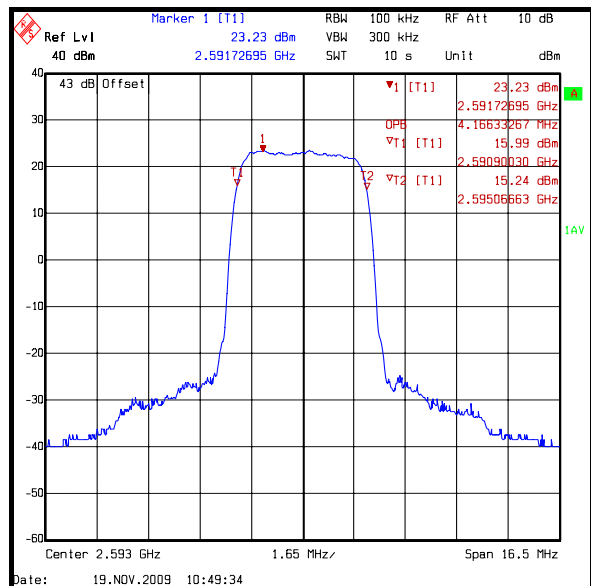
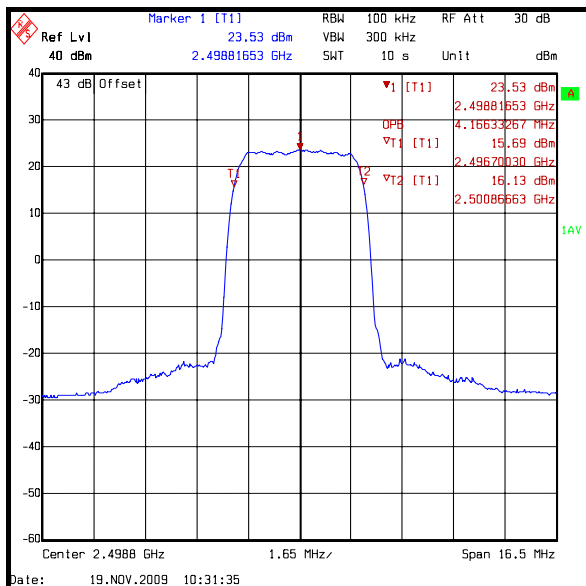
Transmitter Occupied Bandwidth (continued)

Results: 16QAM / Port 1

| Channel Number | Frequency (MHz) | Resolution Bandwidth (kHz) | Video Bandwidth (kHz) | Occupied Bandwidth (MHz) |
|----------------|-----------------|----------------------------|-----------------------|--------------------------|
| 12494 | 2498.8 | 100 | 300 | 4.166 |
| 12965 | 2593.0 | 100 | 300 | 4.166 |
| 13436 | 2687.2 | 100 | 300 | 4.166 |

Note(s):

- 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.



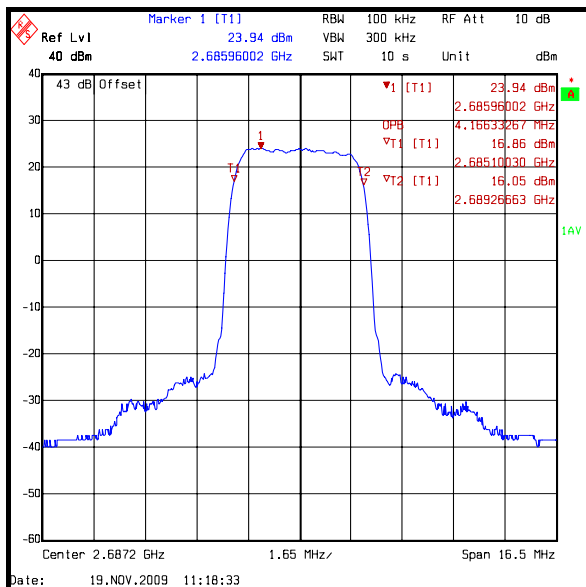
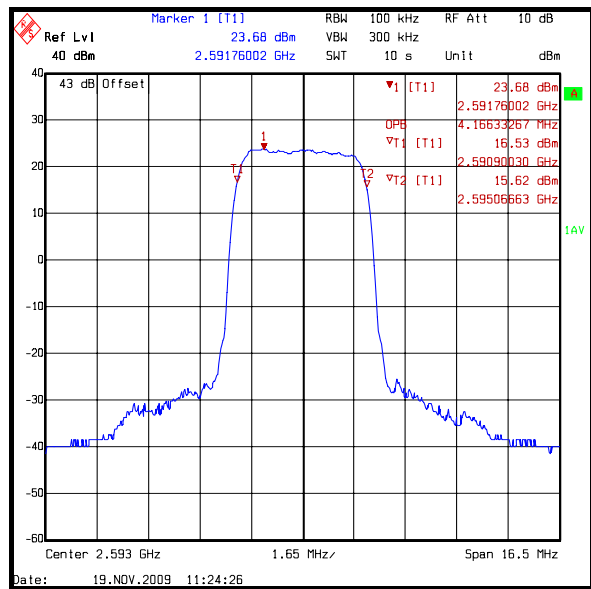
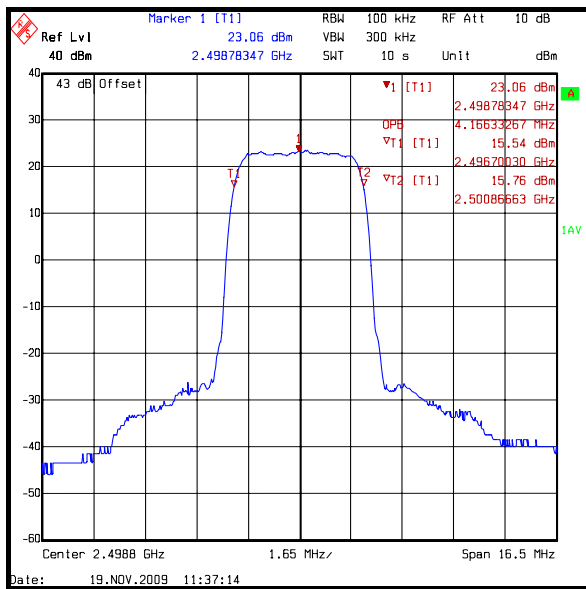
Transmitter Occupied Bandwidth (continued)

Results: 64QAM / Port 1

| Channel Number | Frequency (MHz) | Resolution Bandwidth (kHz) | Video Bandwidth (kHz) | Occupied Bandwidth (MHz) |
|----------------|-----------------|----------------------------|-----------------------|--------------------------|
| 12494 | 2498.8 | 100 | 300 | 4.166 |
| 12965 | 2593.0 | 100 | 300 | 4.166 |
| 13436 | 2687.2 | 100 | 300 | 4.166 |

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.



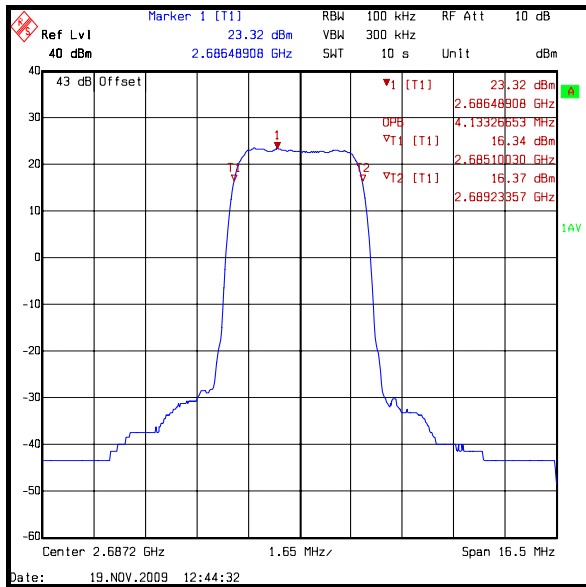
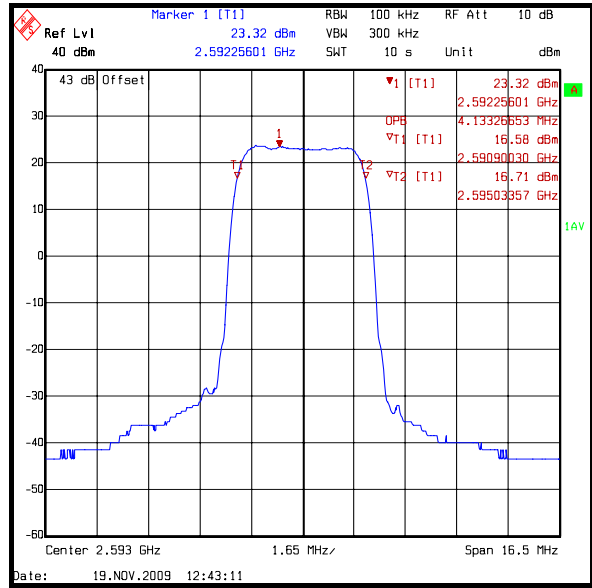
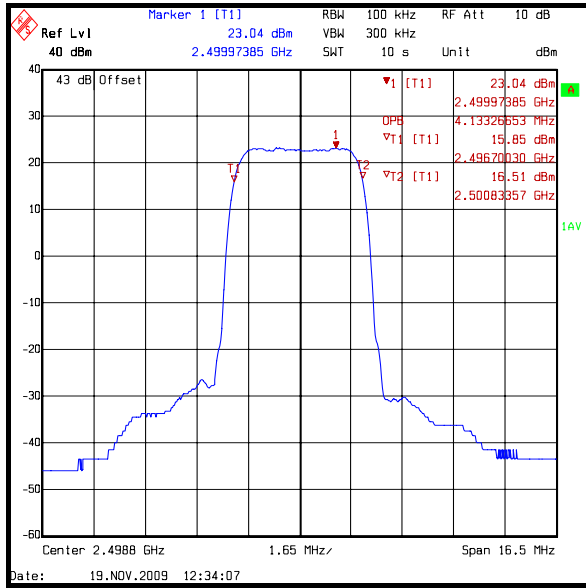
Transmitter Occupied Bandwidth (continued)**Results: QPSK / Port 2**

| Channel Number | Frequency (MHz) | Resolution Bandwidth (kHz) | Video Bandwidth (kHz) | Occupied Bandwidth (MHz) |
|-----------------------|------------------------|-----------------------------------|------------------------------|---------------------------------|
| 12494 | 2498.8 | 100 | 300 | 4.133 |
| 12965 | 2593.0 | 100 | 300 | 4.133 |
| 13436 | 2687.2 | 100 | 300 | 4.133 |

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)



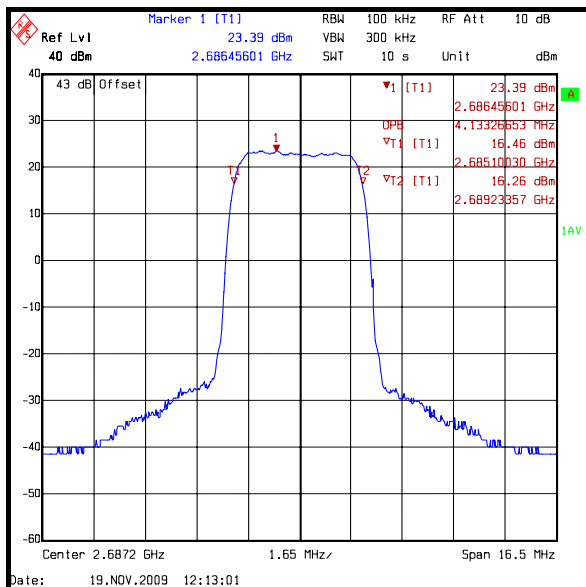
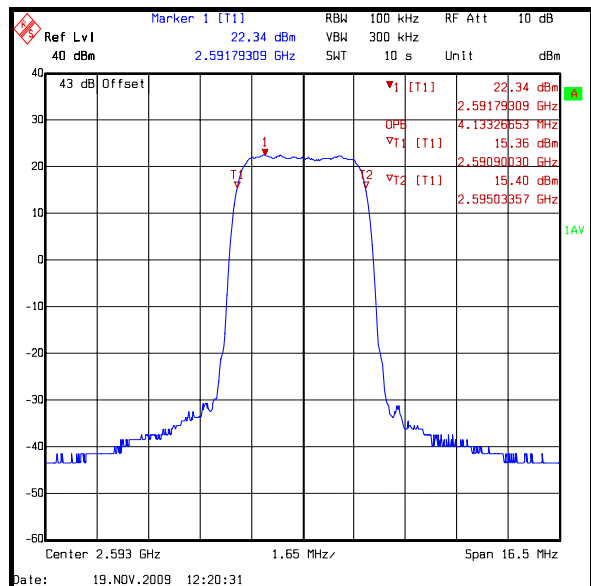
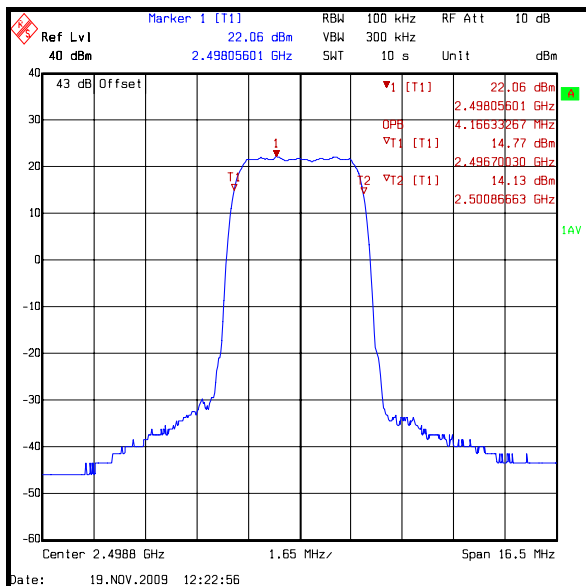
Transmitter Occupied Bandwidth (continued)

Results: 16QAM / Port 2

| Channel Number | Frequency (MHz) | Resolution Bandwidth (kHz) | Video Bandwidth (kHz) | Occupied Bandwidth (MHz) |
|----------------|-----------------|----------------------------|-----------------------|--------------------------|
| 12494 | 2498.8 | 100 | 300 | 4.166 |
| 12965 | 2593.0 | 100 | 300 | 4.133 |
| 13436 | 2687.2 | 100 | 300 | 4.133 |

Note(s):

- 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.



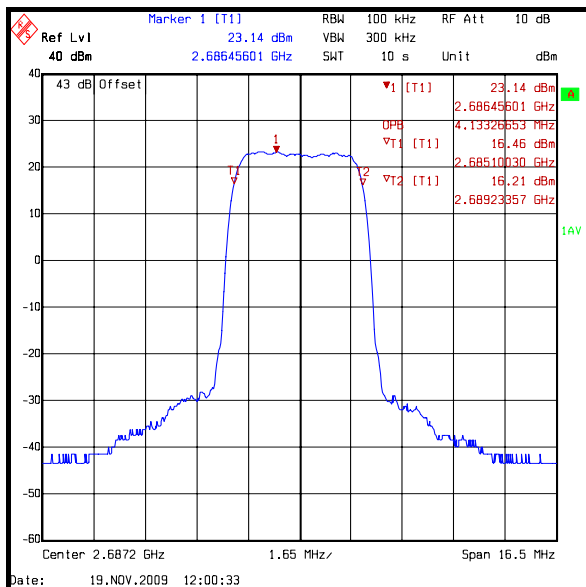
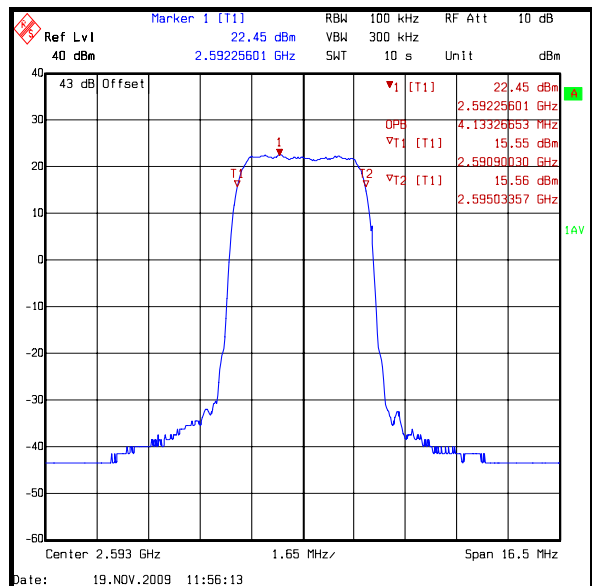
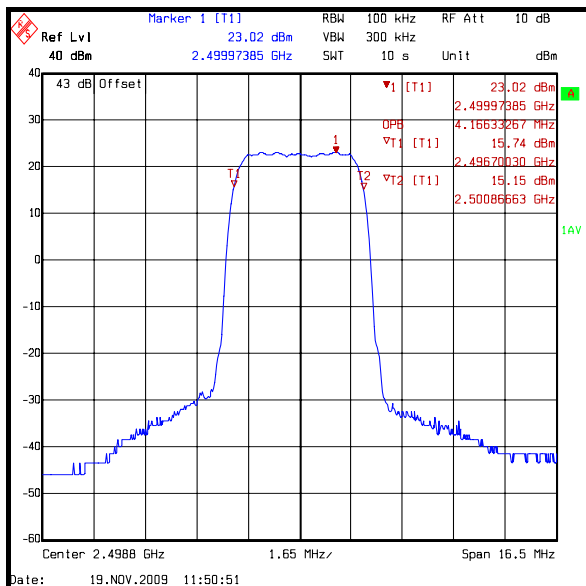
Transmitter Occupied Bandwidth (continued)

Results: 64QAM / Port 2

| Channel Number | Frequency (MHz) | Resolution Bandwidth (kHz) | Video Bandwidth (kHz) | Occupied Bandwidth (MHz) |
|----------------|-----------------|----------------------------|-----------------------|--------------------------|
| 12494 | 2498.8 | 100 | 300 | 4.166 |
| 12965 | 2593.0 | 100 | 300 | 4.133 |
| 13436 | 2687.2 | 100 | 300 | 4.133 |

Note(s):

- 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.



5.3.5. Transmitter Conducted Emissions - Channel Edge**Test Summary:**

| | |
|--------------------------|--|
| FCC Part: | 2.1051 and 27.53 (m)(v) |
| Test Method Used: | As detailed in ANSI TIA-603-C-2004 referencing FCC Part 2 and 27.53 (m)(6) |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 25 |
| Relative Humidity (%): | 32 |

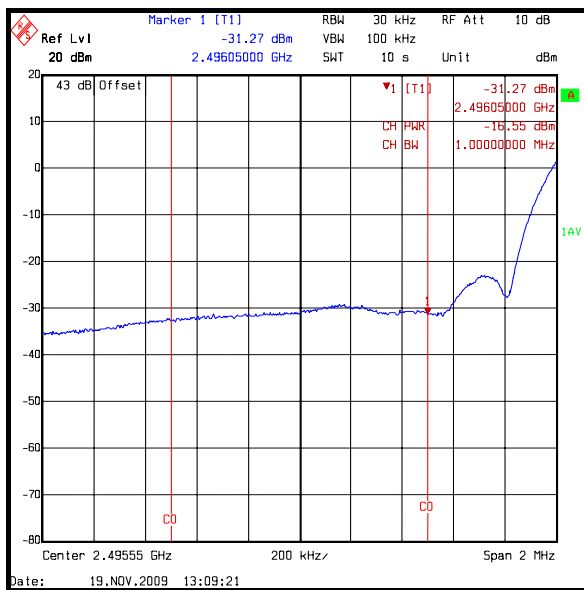
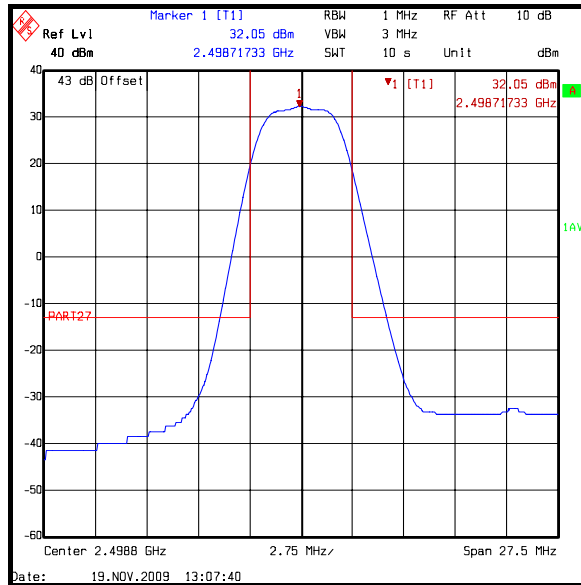
Note(s):

1. It can be seen on the main mask plots that the emission goes through the limit line. This is on account of the analyser bandwidth being too great to make an accurate measurement. The analyser Integration function was thus used to demonstrate compliance and this can be seen on the two plots accompanying the mask plot.
2. Preliminary testing was performed on both antenna ports with the worse case port being selected for measurements.

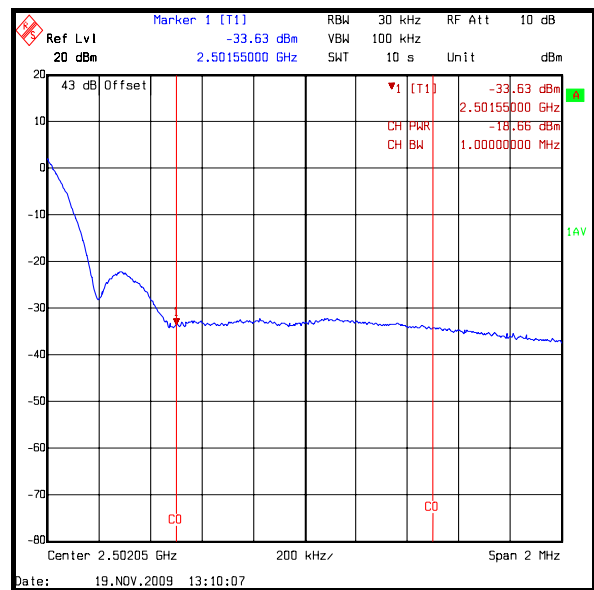
Results: Bottom channel / QPSK / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band edge limit (dBm) | Margin (dB) | Result |
|--|--|------------------------------|--------------------|---------------|
| 2496.05 | -16.6 | -13.0 | 3.6 | Complied |
| 2501.55 | -18.7 | -13.0 | 5.7 | Complied |

Transmitter Conducted Emissions - Channel Edge (continued)



1 MHz strip below channel centre freq

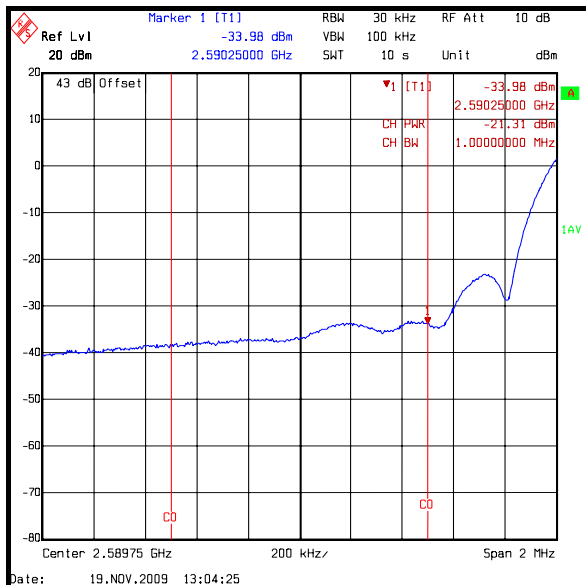
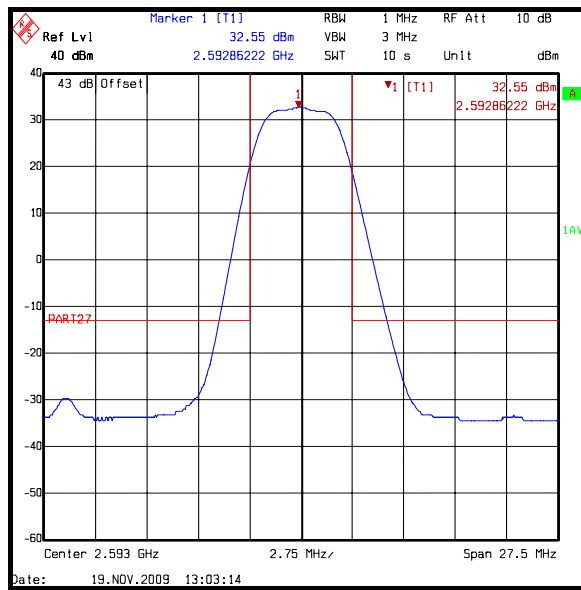


1 MHz strip above channel centre freq

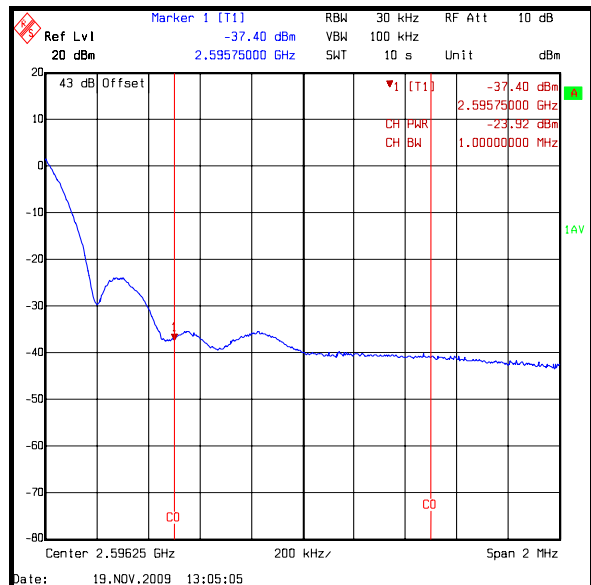
Transmitter Conducted Emissions - Channel Edge (continued)

Results: Middle channel / QPSK / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band edge limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2590.25 | -21.3 | -13.0 | 8.3 | Complied |
| 2595.75 | -23.9 | -13.0 | 10.9 | Complied |



1 MHz strip below channel centre freq

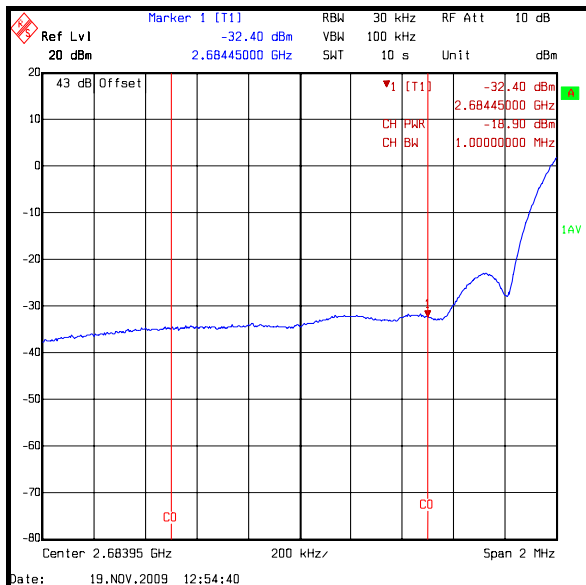
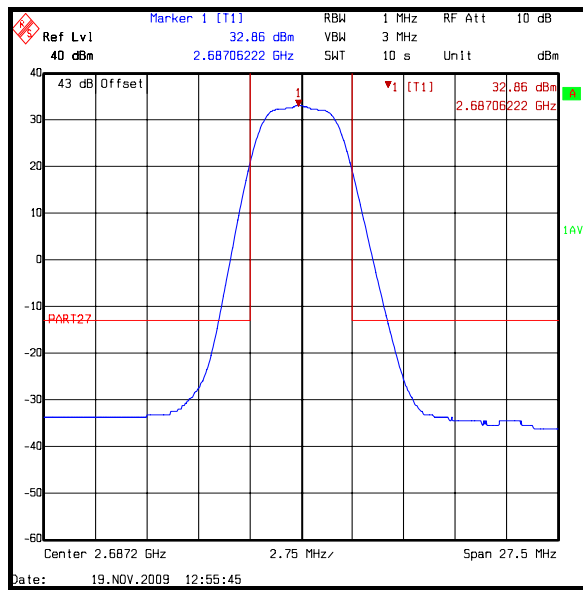


1 MHz strip above channel centre freq

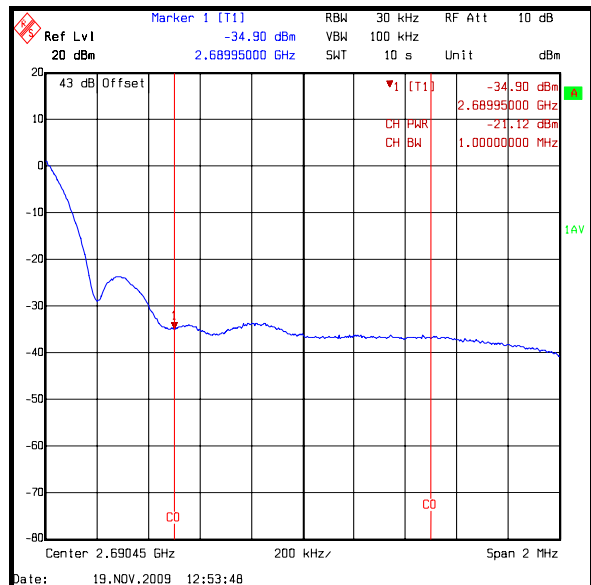
Transmitter Conducted Emissions - Channel Edge (continued)

Results: Top channel / QPSK / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band edge limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2684.45 | -18.9 | -13.0 | 5.9 | Complied |
| 2689.95 | -21.1 | -13.0 | 8.1 | Complied |



1 MHz strip below channel centre freq

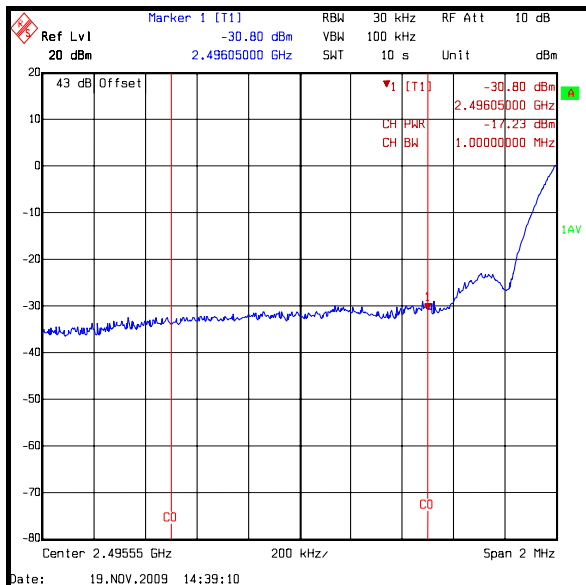
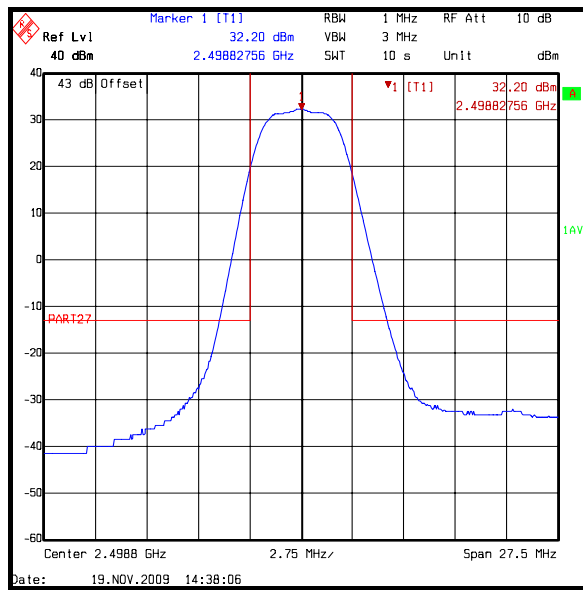


1 MHz strip above channel centre freq

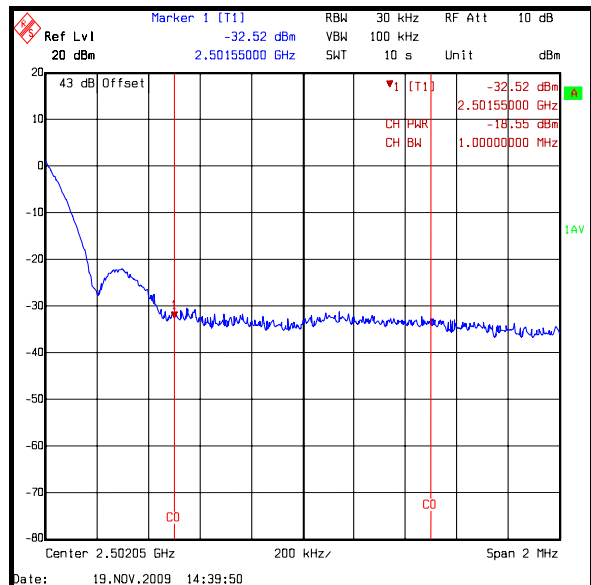
Transmitter Conducted Emissions - Channel Edge (continued)

Results: Bottom channel / 16QAM / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band edge limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2496.05 | -17.2 | -13.0 | 4.2 | Complied |
| 2501.55 | -18.6 | -13.0 | 5.6 | Complied |



1 MHz strip below channel centre freq

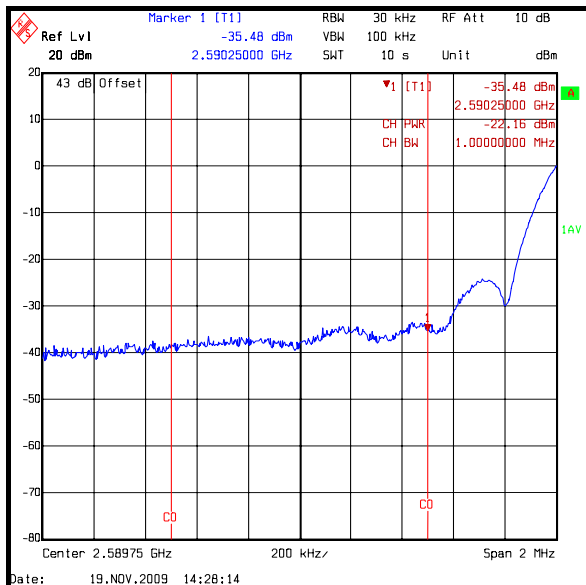
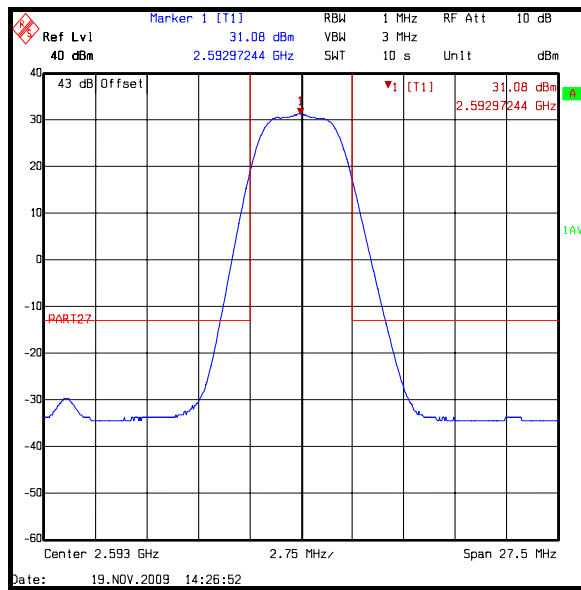


1 MHz strip above channel centre freq

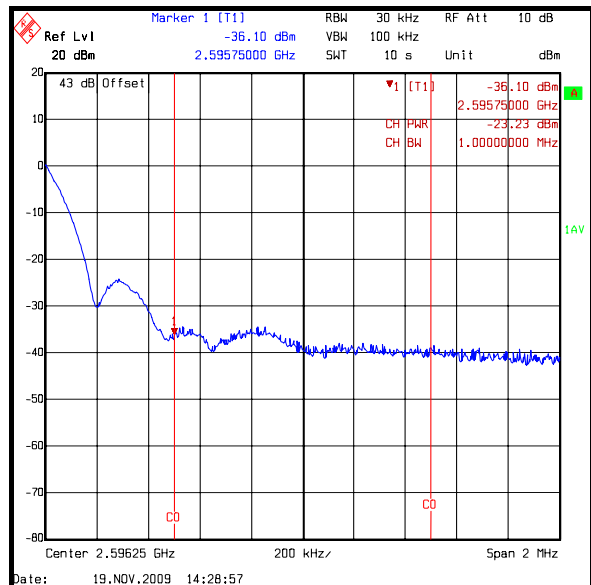
Transmitter Conducted Emissions - Channel Edge (continued)

Results: Middle channel / 16QAM / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band edge limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2590.25 | -22.2 | -13.0 | 9.2 | Complied |
| 2595.75 | -23.2 | -13.0 | 10.2 | Complied |



1 MHz strip below channel centre freq

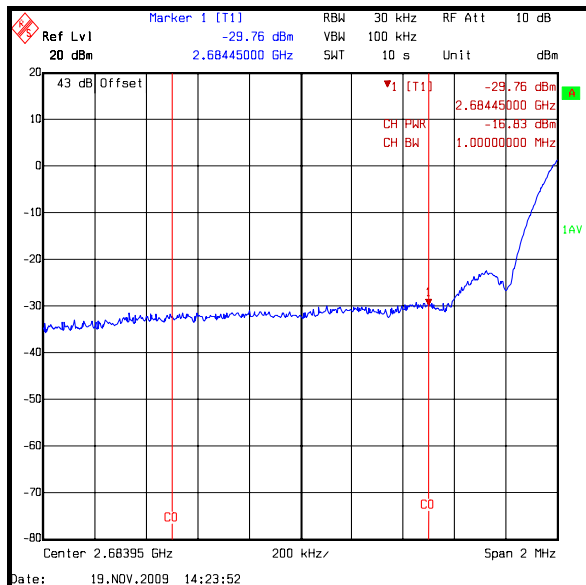
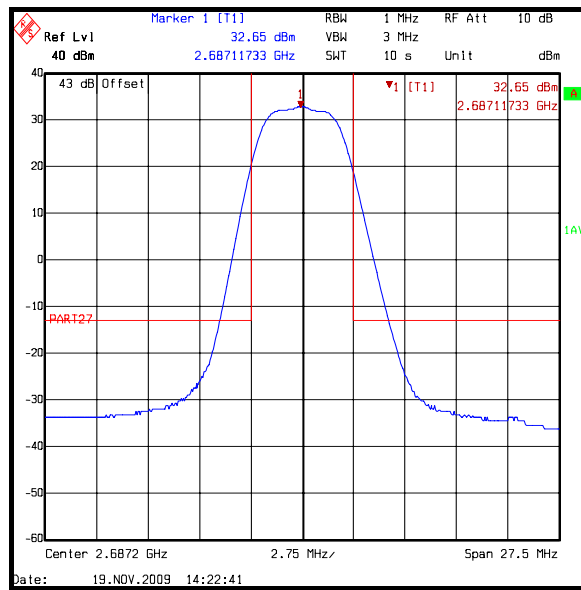


1 MHz strip above channel centre freq

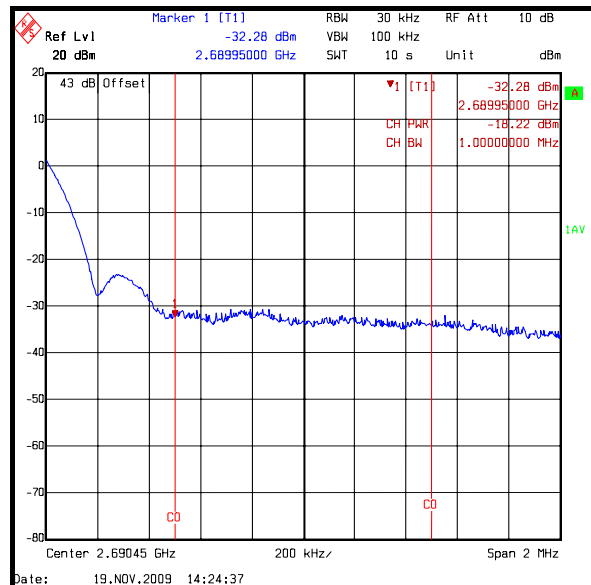
Transmitter Conducted Emissions - Channel Edge (continued)

Results: Top channel / 16QAM / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band edge limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2684.45 | -16.8 | -13.0 | 3.8 | Complied |
| 2689.95 | -18.2 | -13.0 | 5.2 | Complied |



1 MHz strip below channel centre freq

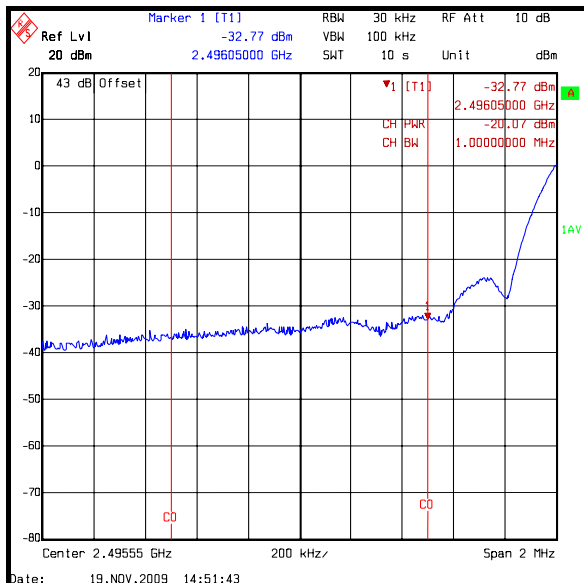
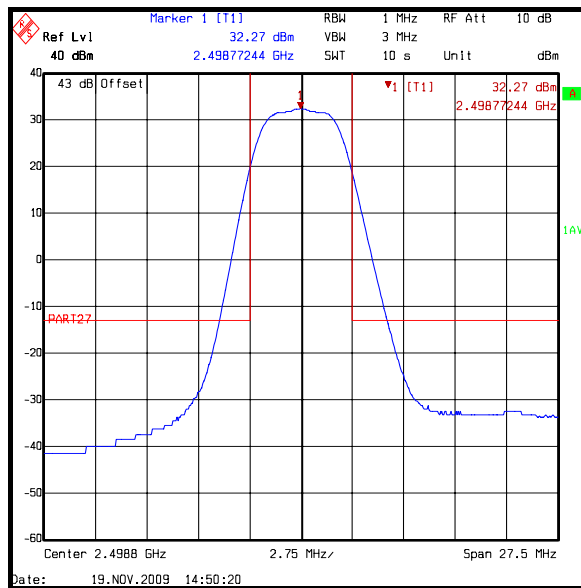


1 MHz strip above channel centre freq

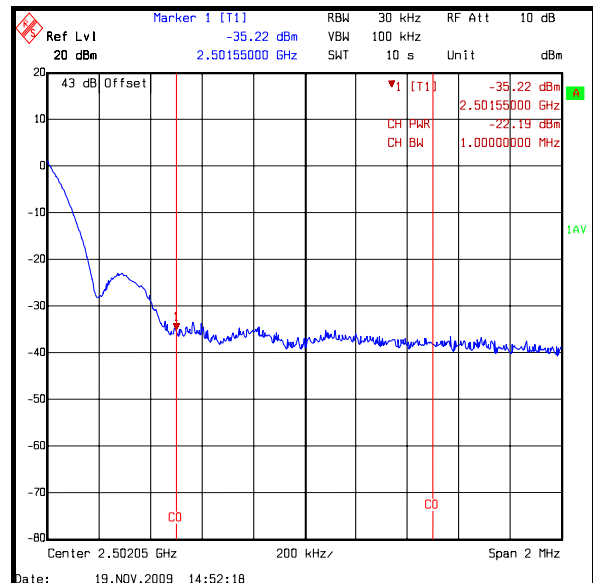
Transmitter Conducted Emissions - Channel Edge (continued)

Results: Bottom channel / 64QAM / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band edge limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2496.05 | -20.1 | -13.0 | 7.1 | Complied |
| 2501.55 | -22.2 | -13.0 | 9.2 | Complied |



1 MHz strip below channel centre freq

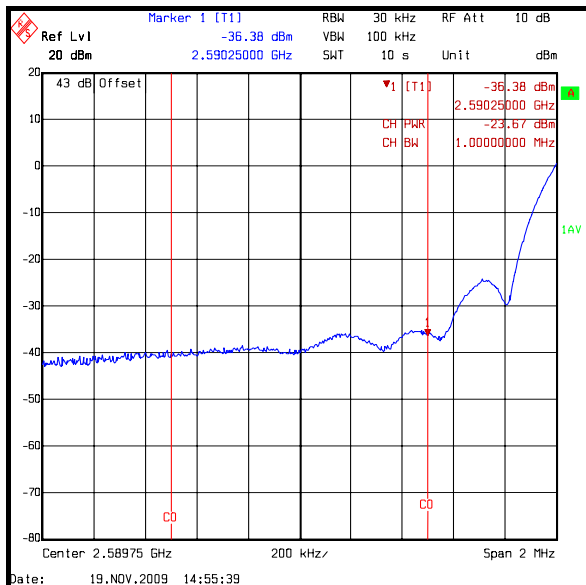
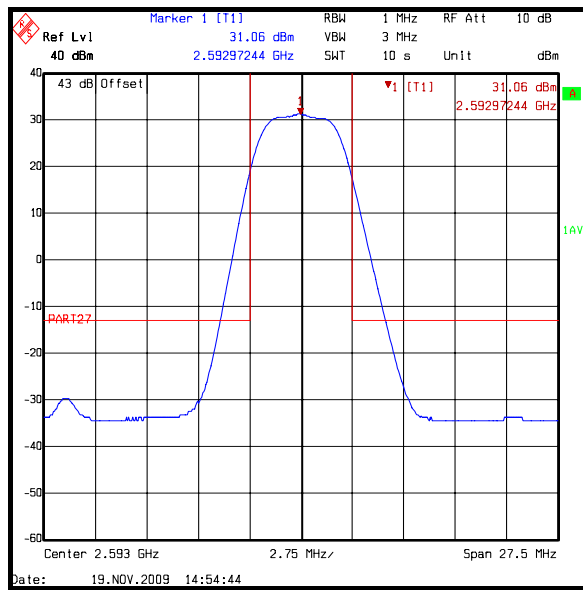


1 MHz strip above channel centre freq

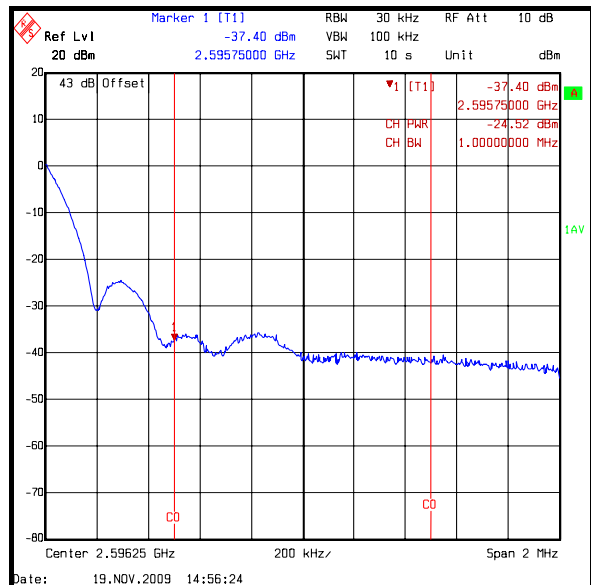
Transmitter Conducted Emissions - Channel Edge (continued)

Results: Middle channel / 64QAM / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band edge limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2590.25 | -23.7 | -13.0 | 10.7 | Complied |
| 2595.75 | -24.5 | -13.0 | 11.5 | Complied |



1 MHz strip below channel centre freq

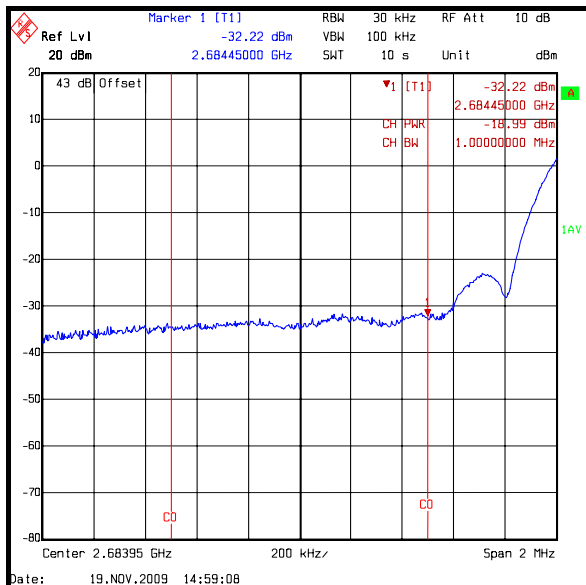
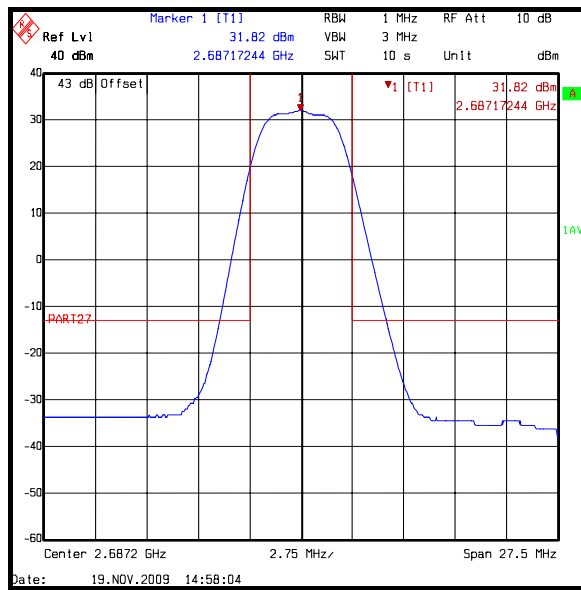


1 MHz strip above channel centre freq

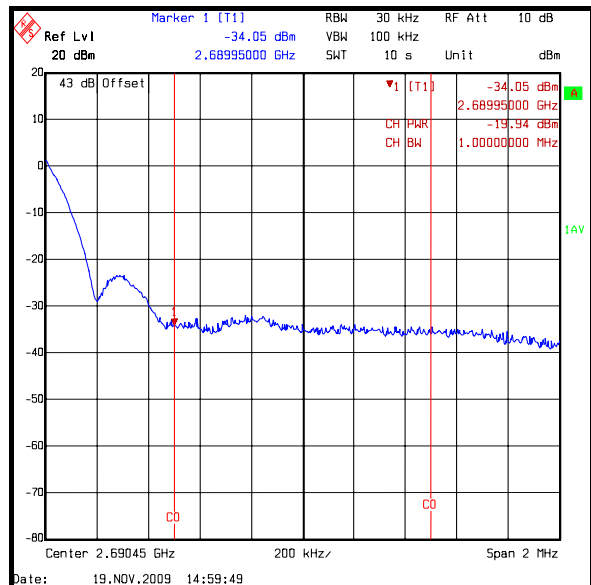
Transmitter Conducted Emissions - Channel Edge (continued)

Results: Top channel / 64QAM / Port 2

| Frequency of 1 MHz strip adjacent to channel edge | Level in 1 MHz strip adjacent to block edge (dBm) | Band edge limit (dBm) | Margin (dB) | Result |
|---|---|-----------------------|-------------|----------|
| 2684.45 | -19.0 | -13.0 | 6.0 | Complied |
| 2689.95 | -19.9 | -13.0 | 6.9 | Complied |



1 MHz strip below channel centre freq



1 MHz strip above channel centre freq

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

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

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 23 |
| Relative Humidity (%): | 33 |

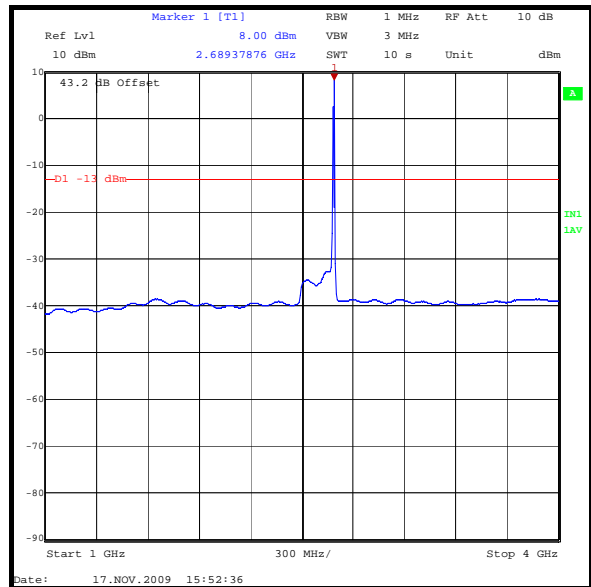
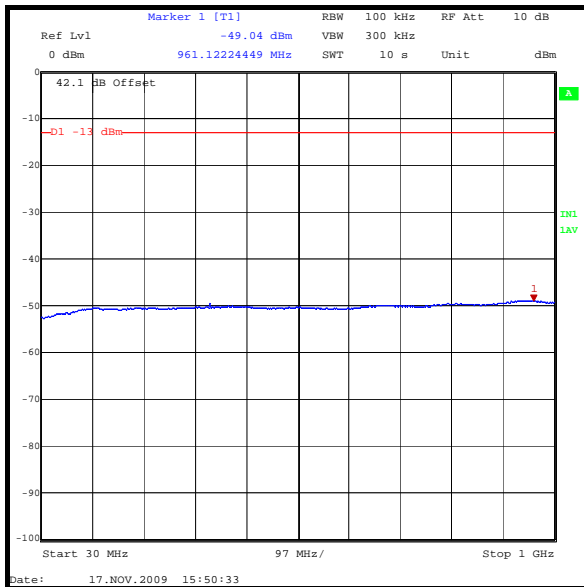
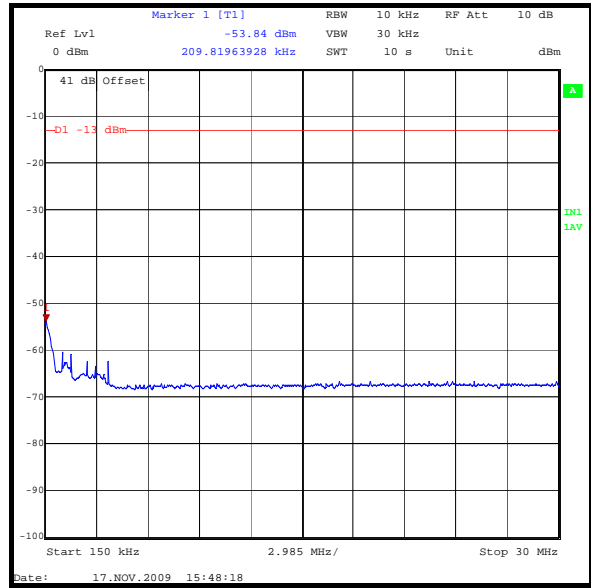
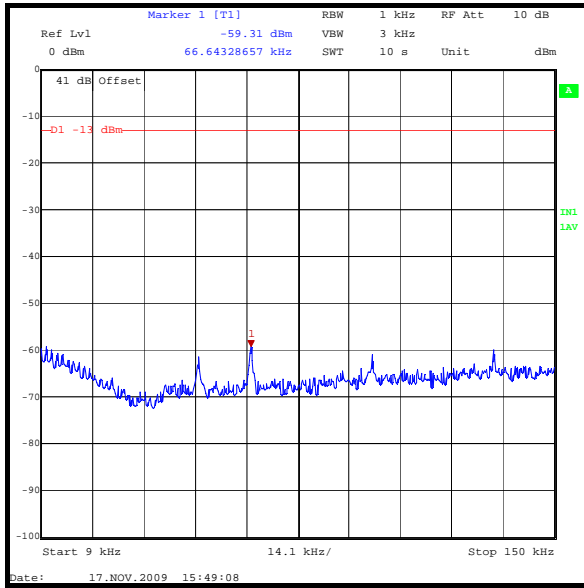
Results: Antenna Port 2

| Frequency (GHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|------------------------|-----------------------------|--------------------|--------------------|---------------|
| 25.563 | -33.2 | -13.0 | 20.2 | Complied |

Note(s):

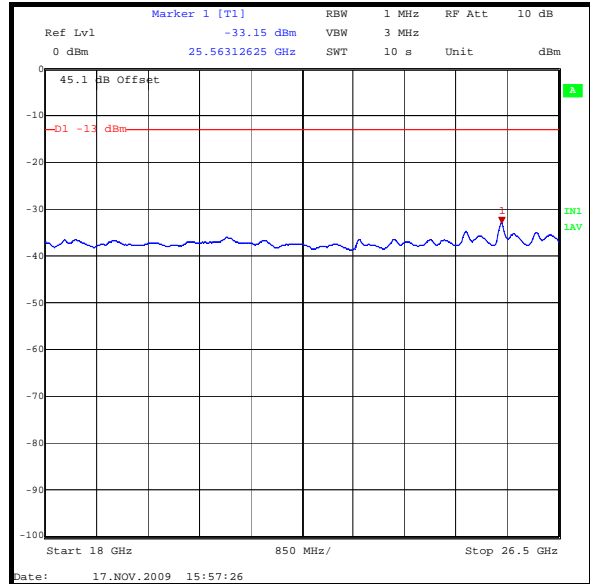
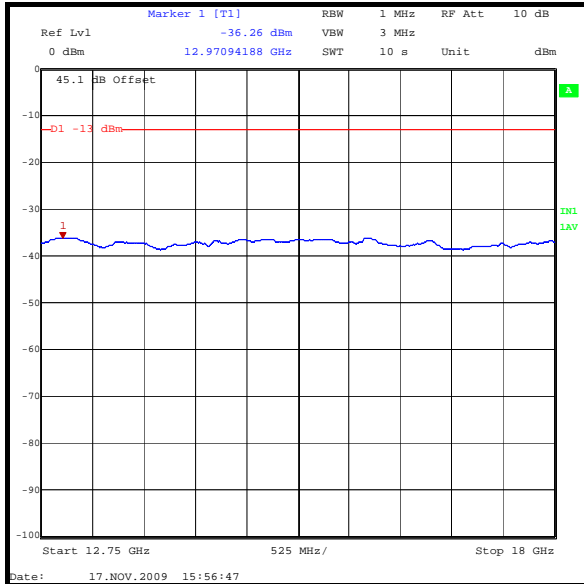
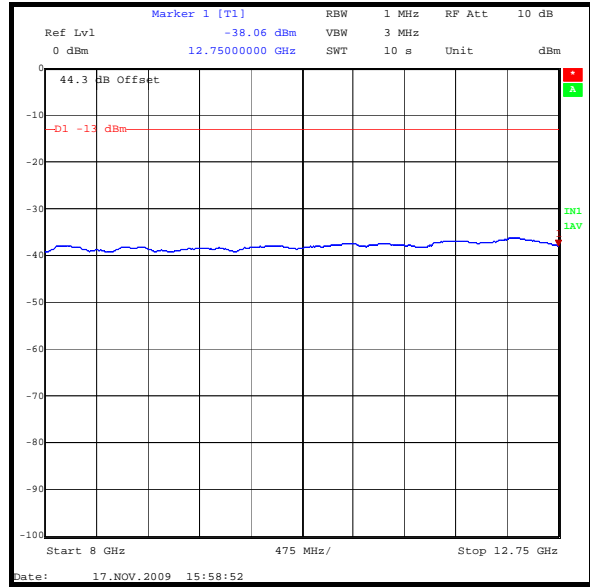
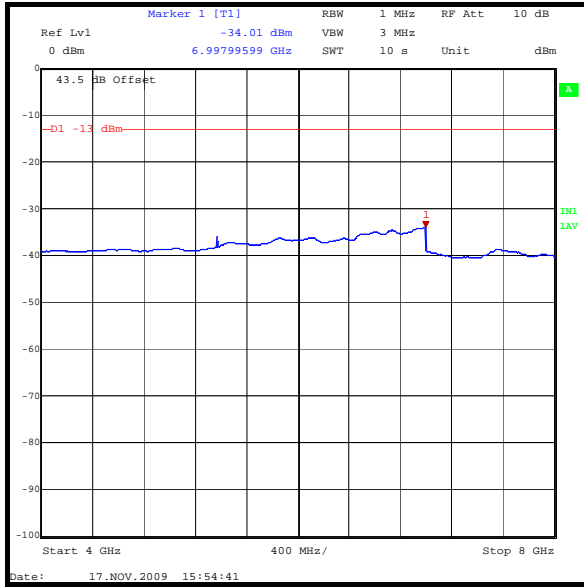
1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above.
2. The emission shown at approximately 2689.379 MHz on the 1 GHz to 3 GHz plot is the carrier.
3. Preliminary testing was performed on both antenna ports with the worse case port being selected for measurements.

Transmitter Conducted Emissions (continued)



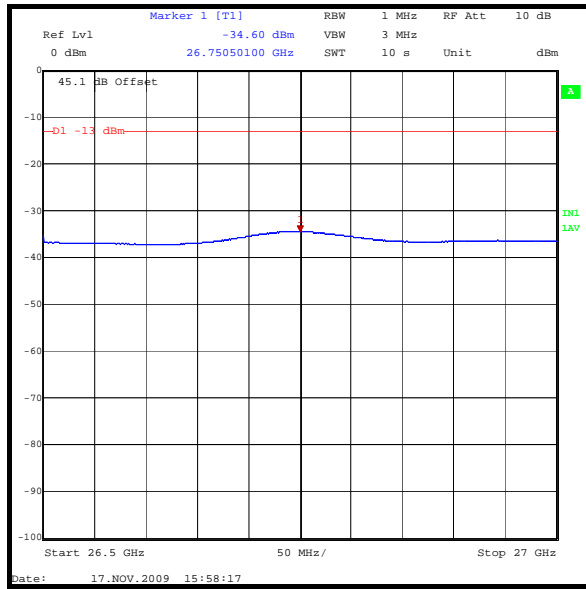
Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Transmitter Conducted Emissions (continued)



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

Transmitter Conducted Emissions (continued)



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

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

| | |
|--------------------------|--|
| FCC Part: | FCC Part 2.1051, FCC Part 27.53(m)(v) |
| Test Method Used: | ANSI TIA-603-C-2004 referencing FCC CFR Parts 2. |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 25 |
| Relative Humidity (%): | 32 |

Results: QPSK 1 MHz strip below the lower band edge / Antenna Port 2

| Frequency (MHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|----------------------|-------------|-------------|----------|
| 2495 to 2496 | -16.4 | -13.0 | 3.4 | Complied |

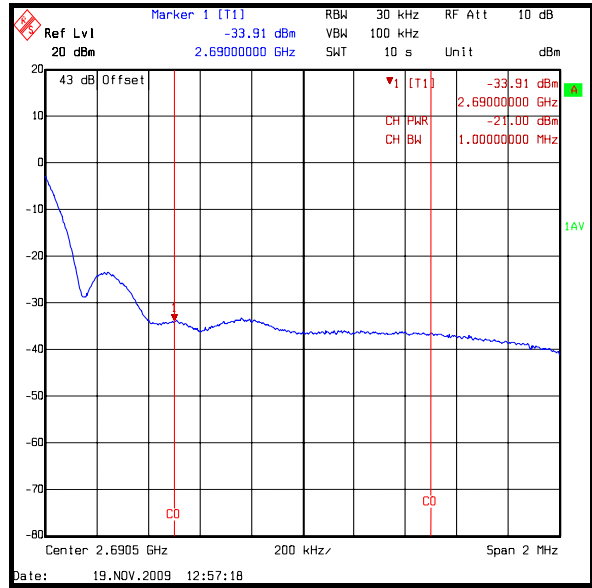
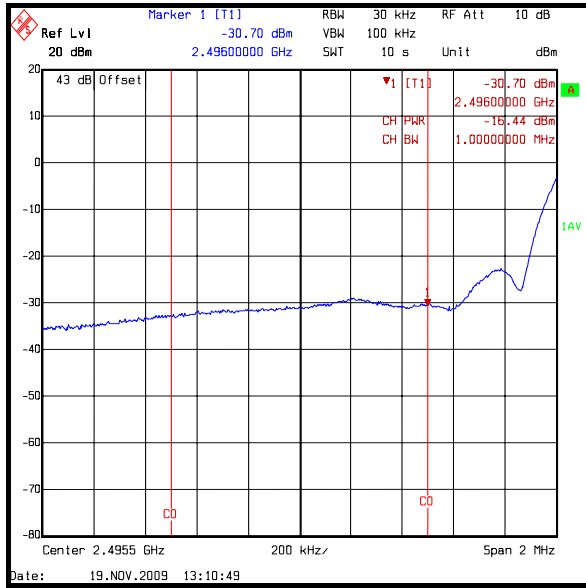
Results: QPSK 1 MHz strip above the upper band edge / Antenna Port 2

| Frequency (MHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|----------------------|-------------|-------------|----------|
| 2690 to 2691 | -21.0 | -13.0 | 8.0 | Complied |

Note(s):

1. Measured with a 1 MHz resolution bandwidth and also using the channel power function of the spectrum analyser.
2. Preliminary testing was performed on both antenna ports with the worse case port being selected for measurements.

Transmitter Conducted Emissions at Band Edges (continued)



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

Transmitter Conducted Emissions at Band Edges (continued)**Results: 16QAM 1 MHz strip below the lower band edge / Antenna Port 2**

| Frequency (MHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|----------------------|-------------|-------------|----------|
| 2495 to 2496 | -17.0 | -13.0 | 4.0 | Complied |

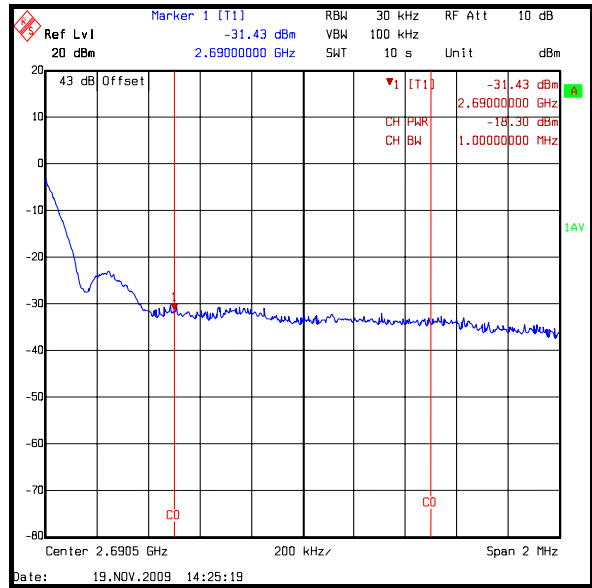
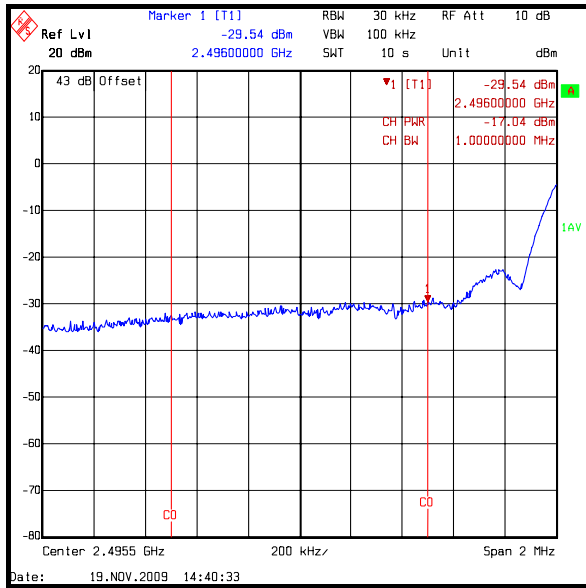
Results: 16QAM 1 MHz strip above the upper band edge / Antenna Port 2

| Frequency (MHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|----------------------|-------------|-------------|----------|
| 2690 to 2691 | -18.3 | -13.0 | 5.3 | Complied |

Note(s):

1. Measured with a 1 MHz resolution bandwidth and also using the channel power function of the spectrum analyser.
2. Preliminary testing was performed on both antenna ports with the worse case port being selected for measurements.

Transmitter Conducted Emissions at Band Edges (continued)



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

Transmitter Conducted Emissions at Band Edges (continued)**Results: 64QAM 1 MHz strip below the lower band edge / Antenna Port 2**

| Frequency (MHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|----------------------|-------------|-------------|----------|
| 2495 to 2496 | -20.0 | -13.0 | 7.0 | Complied |

Results: 64QAM 1 MHz strip above the upper band edge / Antenna Port 2

| Frequency (MHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|----------------------|-------------|-------------|----------|
| 2690 to 2691 | -19.9 | -13.0 | 6.9 | Complied |

Note(s):

1. Measured with a 1 MHz resolution bandwidth and also using the channel power function of the spectrum analyser.
2. Preliminary testing was performed on both antenna ports with the worse case port being selected for measurements.

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

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

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 21 |
| Relative Humidity (%): | 40 |

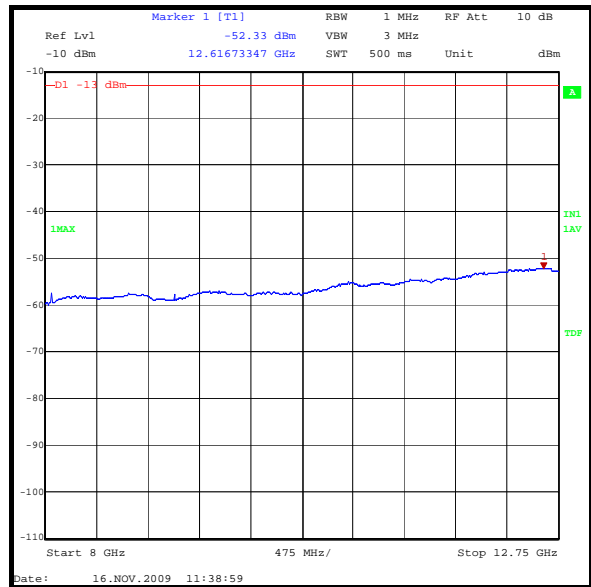
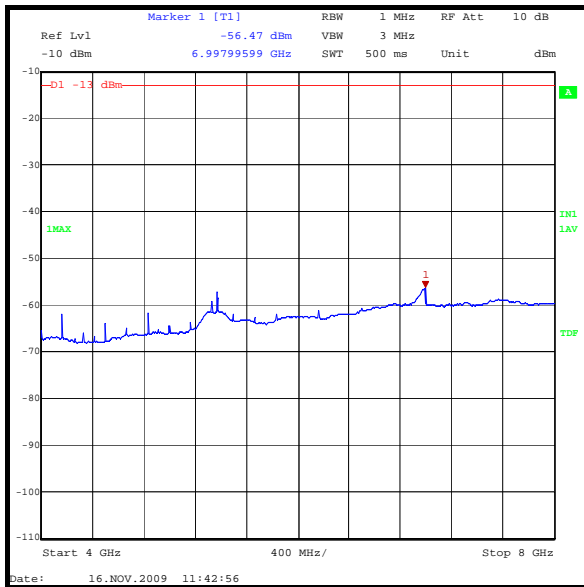
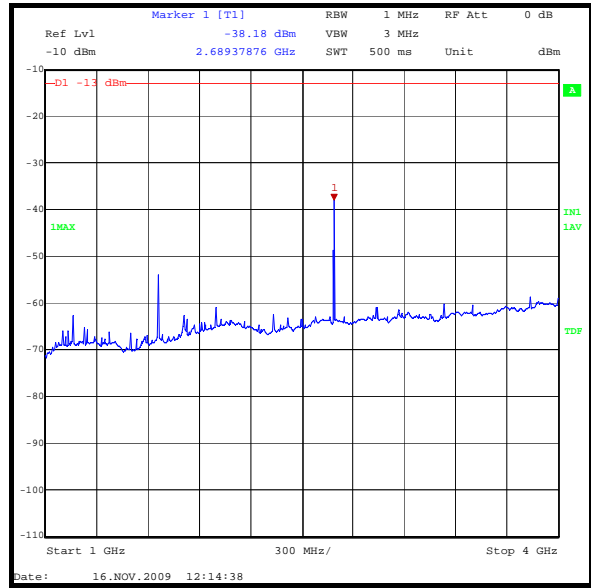
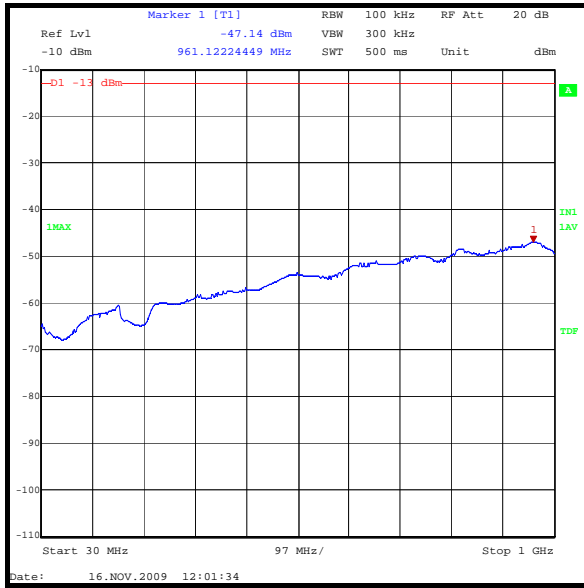
Results:

| Frequency (MHz) | Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|------------------------|-----------------------------|--------------------|--------------------|---------------|
| 961.122 | -47.1 | -13.0 | 34.1 | Complied |

Note(s):

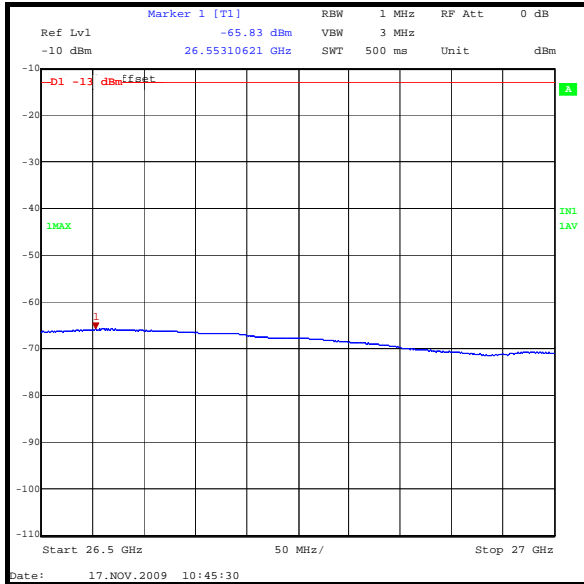
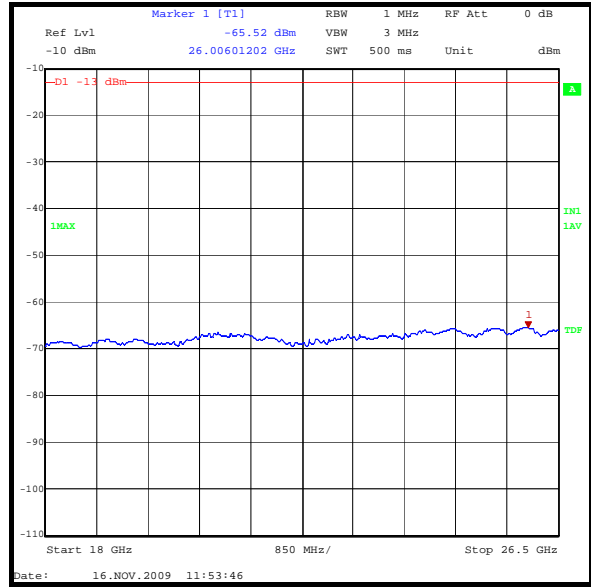
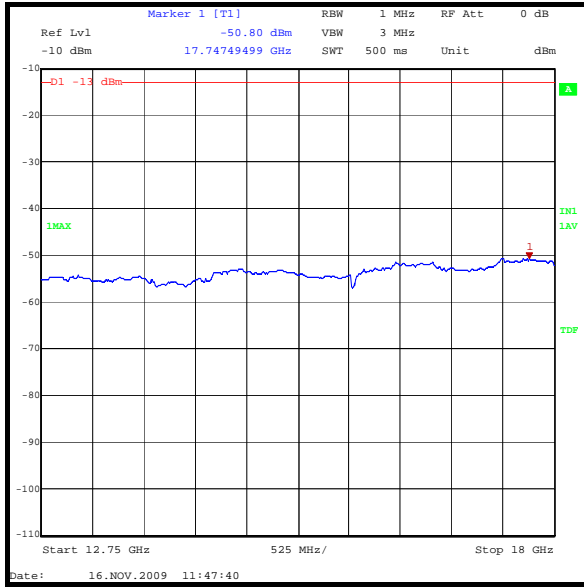
1. All other emissions were at least 20 dB below the appropriate specification limit.

Transmitter Radiated Emissions (continued)



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

Transmitter Radiated Emissions (continued)



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

Note(s):

1. The emission shown at approximately 2689.379 MHz on the 1 GHz to 4 GHz plot is the carrier

5.3.9. Transmitter Radiated Emissions at Band Edges

Test Summary:

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

Environmental Conditions:

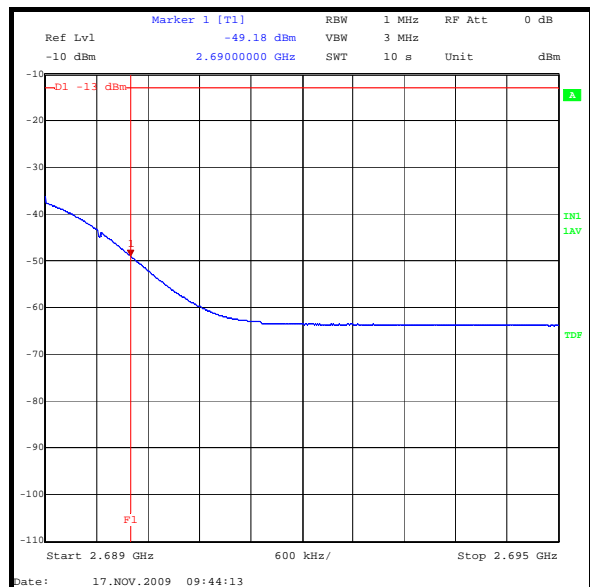
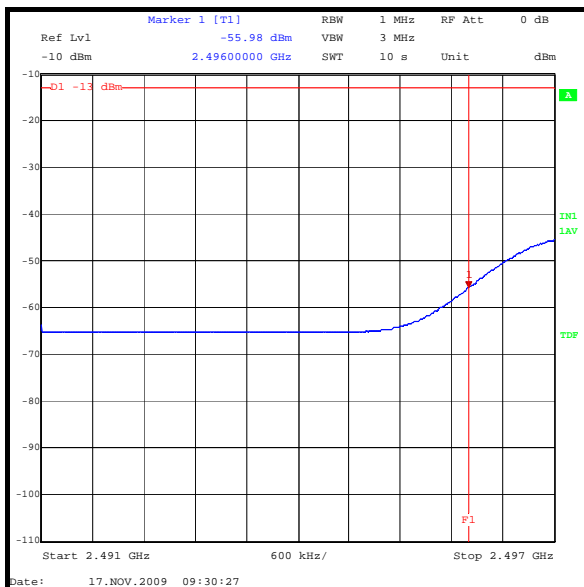
| | |
|-------------------------------|----|
| Temperature (°C): | 21 |
| Relative Humidity (%): | 40 |

Results: QPSK

| Frequency (MHz) | Spurious Emission (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|-------------------------|-------------|-------------|----------|
| 2496 | -56.0 | -13.0 | 43.0 | Complied |

Results: QPSK

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|---------------------------|-------------|-------------|----------|
| 2690 | -49.2 | -13.0 | 36.2 | Complied |



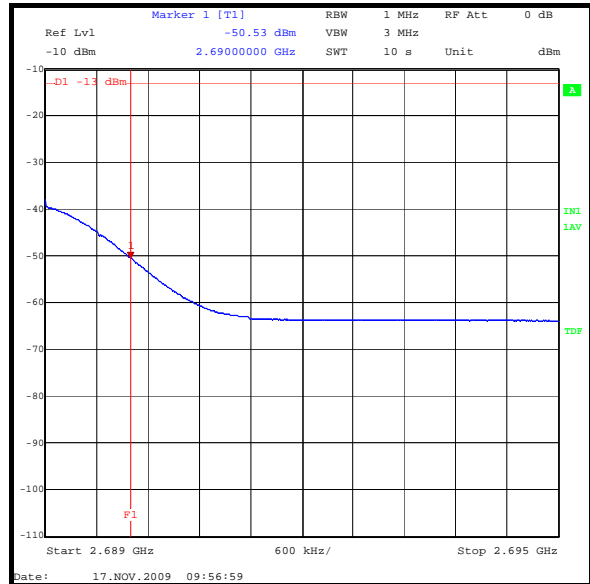
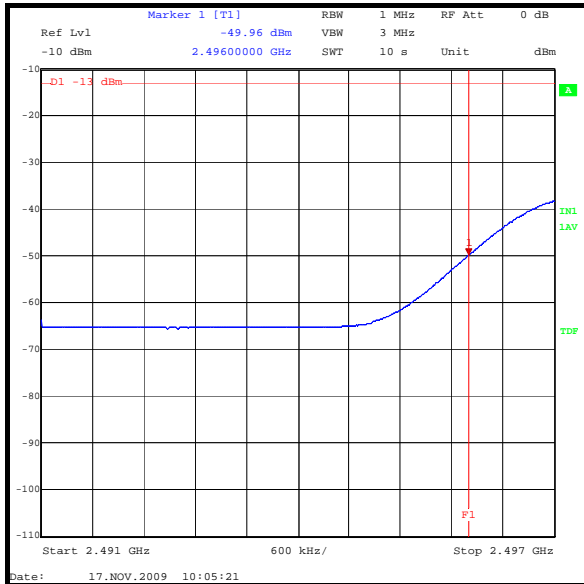
Transmitter Radiated Emissions at Band Edges (continued)

Results: 16QAM

| Frequency (MHz) | Spurious Emission (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|-------------------------|-------------|-------------|----------|
| 2496 | -50.0 | -13.0 | 37.0 | Complied |

Results: 16QAM

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|---------------------------|-------------|-------------|----------|
| 2690 | -50.5 | -13.0 | 37.5 | Complied |



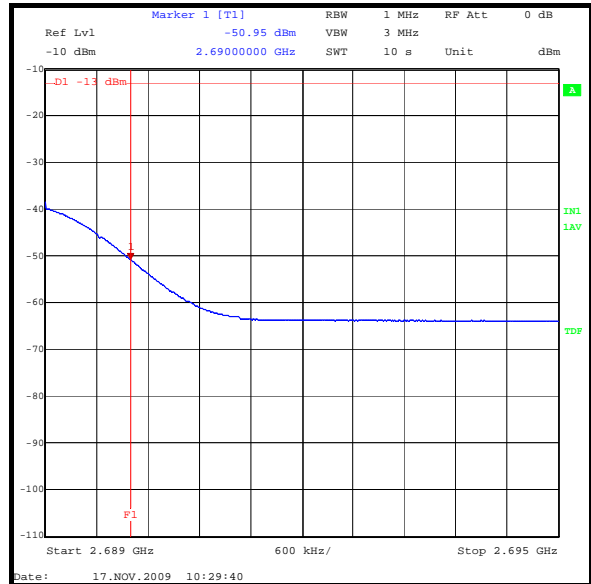
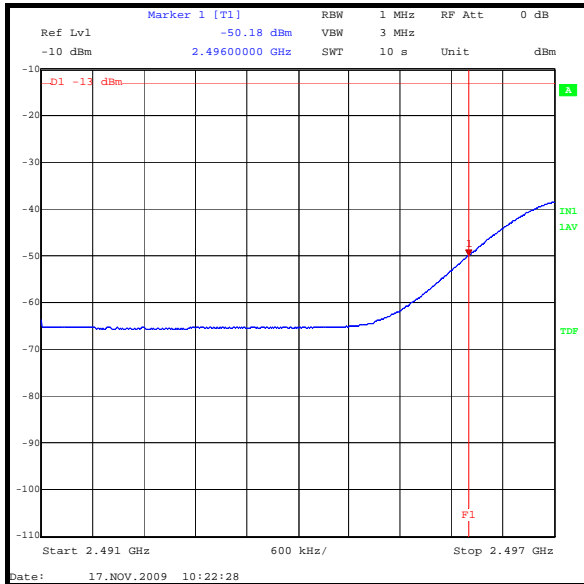
Transmitter Radiated Emissions at Band Edges (continued)

Results: 64QAM

| Frequency (MHz) | Spurious Emission (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|-------------------------|-------------|-------------|----------|
| 2496 | -50.2 | -13.0 | 37.2 | Complied |

Results: 64QAM

| Frequency (MHz) | Peak Emission Level (dBm) | Limit (dBm) | Margin (dB) | Result |
|-----------------|---------------------------|-------------|-------------|----------|
| 2690 | -51.0 | -13.0 | 38.0 | Complied |



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 |
| Frequency Stability | Not applicable | 95% | ±0.92 ppm |
| Effective Isotropic Radiated Power (EIRP) | Not applicable | 95% | ±2.94 dB |
| Occupied Bandwidth | Not applicable | 95% | ±0.92 ppm |
| Radiated Spurious Emissions | 30 MHz to 40 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) |
|---------|------------------------|-------------------------|-----------------------|-------------|--------------------------|------------------------|
| A1391 | Attenuator | HUBER + SUHNER AG | 757987 | 6810.17.B | Calibrated before use | - |
| A1534 | Pre Amplifier | Hewlett Packard | 8449B OPT H02 | 3008A00405 | Calibrated before use | - |
| A1818 | Antenna | EMCO | 3115 | 00075692 | 27 Nov 2009 | 12 |
| A1830 | Pulse Limiter | Rhode & Schwarz | ESH3-Z2 | 100668 | 05 Jan 2009 | 12 |
| A288 | Antenna | Chase | CBL6111A | 1589 | 13 Mar 2009 | 12 |
| C321 | Cable | Rosenberger | UFA 210A-1-0788-50x50 | 96A0122 | Calibrated before use | - |
| C363 | Cable | Rosenberger | RG142 | 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 | - |
| K0008 | Site Reference 4422 | RFI Global Services Ltd | N/A | N/A | Calibration not required | - |
| M1124 | Spectrum Analyser | Rohde & Schwarz | ESIB26 | 100046K | 09 Mar 2009 | 12 |
| M1263 | Test Receiver | Rohde & Schwarz | ESIB7 | 100265 | 22 Apr 2009 | 12 |
| M127 | Spectrum Analyser | Rohde & Schwarz | FSEB 30 | 842 659/016 | 10 July 2009 | 12 |
| M1347 | Digital Multimeter | Fluke | 73III | 90680080 | Calibration not required | - |
| M199 | Power Meter | Rohde & Schwarz | NRVS | 827023/075 | 14 May 2009 | 12 |
| S0525 | Regulated Power Supply | Farnell | AP60-50 | 00141 | Calibrated before use | - |

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