TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: SCRT-1-700T

To: FCC Part 27: 2009 Subpart C in accordance with
Test Plan SC_AIR_TP01_A dated 14th April 2010

Test Report Serial No:
RFI/RPT1/RP77581JD01A

This Test Report Is Issued Under The Authority Of Brian Watson, COO Payments and Consultancy:	
Checked By:	Nigel Davison
Signature:	
Date of Issue:	21 April 2010

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1. Customer Information

Company Name:	Airspan Communications Ltd
Address:	Cambridge House Oxford Road Uxbridge Middlesex UB8 1UN United Kingdom

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR27
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2009: 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:	14 April 2010 to 16 April 2010

2.2. Summary of Test Results

FCC Reference (47CFR)	**Measurement**	**Result**
FCC Part 15.207	Transmitter AC Conducted Spurious Emissions	✓
FCC Part 2.1046 FCC Part 27.50(c)	Transmitter Carrier Output Power and Effective Radiated Power (ERP)	✓
FCC Part 2.1049	Transmitter Occupied Bandwidth	✓
FCC Part 2.1051 FCC Part 27.53(g)	Transmitter Band Edge Conducted Emissions	✓
FCC Part 2.1051 FCC Part 27.53(g)	Transmitter Conducted Emissions	✓
FCC Part 2.1051 FCC Part 27.53	Transmitter Radiated Spurious Emissions	✓
FCC Part 2.1055 FCC Part 27.54	Transmitter Frequency Stability	✓

Key to Results

✓ = Complied ✗ = Did not comply

2.3. Methods and Procedures

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.
Reference:	ANSI C63.10 (2009)
Title:	American National Standard Methods for Testing Unlicensed Wireless Devices
Reference:	ANSI/TIA-603-C-2004
Title:	Land Mobile FM or PM - Communications Equipment - Measurement and Performance Standards

2.4. Deviations from the Test Specification

Partial testing was performed in accordance with the customer's test plan SC_AIR_TP01_A dated 14th April 2010.

Transmitter AC conducted emissions, peak power density, burst power, conducted band edge emissions, conducted spurious emissions, radiated spurious emissions and frequency stability tests were requested.

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

Description:	700 MHz TDD SCRT point-to-multipoint WiMAX base station
Brand Name:	Airspan Communication
Model Name or Number:	SCRT-1-700T
Serial Number:	T1204900T0A0101
Hardware Version Number:	605-0010-902
Software Version Number:	_7_06_006
FCC ID Number:	O2J-070T

3.2. Description of EUT

The equipment under test was a point-to-multipoint WiMAX base station.

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Additional Information Related to Testing

<table>
<tr><td>Tested Technology:</td><td colspan="4">WiMAX</td></tr>
<tr><td>Category of Equipment:</td><td colspan="4">Fixed</td></tr>
<tr><td>Type of Equipment</td><td colspan="4">Base station</td></tr>
<tr><td>Intended Operating Environment:</td><td colspan="4">Commercial / Light Industrial</td></tr>
<tr><td>Highest Internally Generated Clock or Oscillator Frequency:</td><td colspan="4">746 MHz</td></tr>
<tr><td>Modulation Type:</td><td colspan="4">Various, as specified in the Test Plan</td></tr>
<tr><td>Duty Cycle</td><td colspan="4">33 (%) in test mode</td></tr>
<tr><td>Channel Spacing:</td><td colspan="4">Not stated</td></tr>
<tr><td>Chip Rate:</td><td colspan="4">Not stated</td></tr>
<tr><td>Declared Channel Bandwidth:</td><td colspan="4">5 MHz and 10 MHz</td></tr>
<tr><td>Antenna Connection Type:</td><td colspan="4">External</td></tr>
<tr><td>Antenna Type:</td><td colspan="4">Various</td></tr>
<tr><td>Antenna Gain:</td><td colspan="4">14.5 dBi</td></tr>
<tr><td rowspan="3">Power Supply Requirement:</td><td>Nominal</td><td colspan="3">48.0 V</td></tr>
<tr><td>Minimum</td><td colspan="3">40.8 V</td></tr>
<tr><td>Maximum</td><td colspan="3">55.2 V</td></tr>
<tr><td rowspan="2">Tested Temperature Range:</td><td>Minimum</td><td colspan="3">-30°C</td></tr>
<tr><td>Maximum</td><td colspan="3">50°C</td></tr>
<tr><td>Transmit Frequency Range:</td><td colspan="4">698 MHz to 746 MHz</td></tr>
<tr><td rowspan="3">Transmit Channel Description:</td><td>Channel Bandwidth (MHz)</td><td>Bottom Channel frequency (MHz)</td><td>Centre Channel Frequency (MHz)</td><td>Top Channel Frequency (MHz)</td></tr>
<tr><td>5</td><td>701</td><td>719</td><td>743</td></tr>
<tr><td>10</td><td>704</td><td>722</td><td>740</td></tr>
<tr><td>Receive Frequency Range:</td><td colspan="4">698 MHz to 746 MHz</td></tr>
<tr><td rowspan="3">Receive Channel Description:</td><td>Channel Bandwidth (MHz)</td><td>Bottom Channel Frequency (MHz)</td><td>Centre Channel Frequency (MHz)</td><td>Top Channel frequency (MHz)</td></tr>
<tr><td>5</td><td>701</td><td>719</td><td>743</td></tr>
<tr><td>10</td><td>704</td><td>722</td><td>740</td></tr>
</table>

3.5. Support Equipment

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

Description:	SDR
Brand Name:	Airspan Communications
Model Name or Number:	SDR-Micro
Serial Number:	S00041930T0619D
Hardware Version Number:	503-0030-030
Software Version Number:	7_06_006

Description:	Laptop
Brand Name:	Dell
Model Name or Number:	Latitude D610
Serial Number:	AIRN005493
Cable Length and Type:	>3m Cat 5 UTP
Connected to Port:	Connected to SDR via Ethernet cable

Description:	Power Supply
Brand Name:	TTI
Model Name or Number:	PL330DP
Serial Number:	AIRN005533
Cable Length and Type:	>3m 2-core cable
Connected to Port:	Connected to SCRT

Description:	Power Supply with 120 VAC 60 Hz input
Brand Name:	Hewlett Packard
Model Name or Number:	6032A
Serial Number:	US35420781
Cable Length and Type:	>3m 2-core cable
Connected to Port:	Connected to SCRT

Description:	Signal Analyser with WiMax option IEEE 802.16-2004 OFDM
Brand Name:	Rohde & Schwarz
Model Name or Number:	FSQ 8
Serial Number:	100206
Cable Length and Type:	Coaxial cable
Connected to Port:	Connected to SCRT antenna port

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

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

- Transmitting at maximum power using one of the following modulation types; 16QAM3/4, 64QAM3/4, QPSK3/4.
- Transmitting on the channels specified in the Client's test plan.
- No receiver / idle mode tests were performed as the EUT is based on a TDD system and constantly transmits and receives on the same frequency simultaneously.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration:

- The EUT was connected to an SDR-Micro via a fibre-optic link.
- Connected to a 48 VDC power supply.
- AC conducted tests were performed with the 120 VAC 60 Hz input of the 48 VDC power connected to a LISN. The LISN input was connected to a 120 VAC 60 Hz supply. The EUT power cables were connected to the 48 VDC output of the power supply. The EUT was configured to transmit at maximum power on the top channel during the test. The earthing point on the EUT was connected to the metal structure of the test chamber using an earth strap.
- A laptop PC with bespoke application was used to configure the EUT during testing. The laptop PC was connected to the SDR-Micro Ethernet port.
- The EUT antenna port was terminated into a 50 Ohm load during radiated tests and AC conducted tests.

5. Measurements, Examinations and Derived Results

5.1. General Comments

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

5.2. Test Results

5.2.1. Transmitter AC Conducted Spurious Emissions

Test Summary:

FCC Part:	FCC 15.207
Test Method Used:	As detailed in C63.10 Section 6.2

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	27

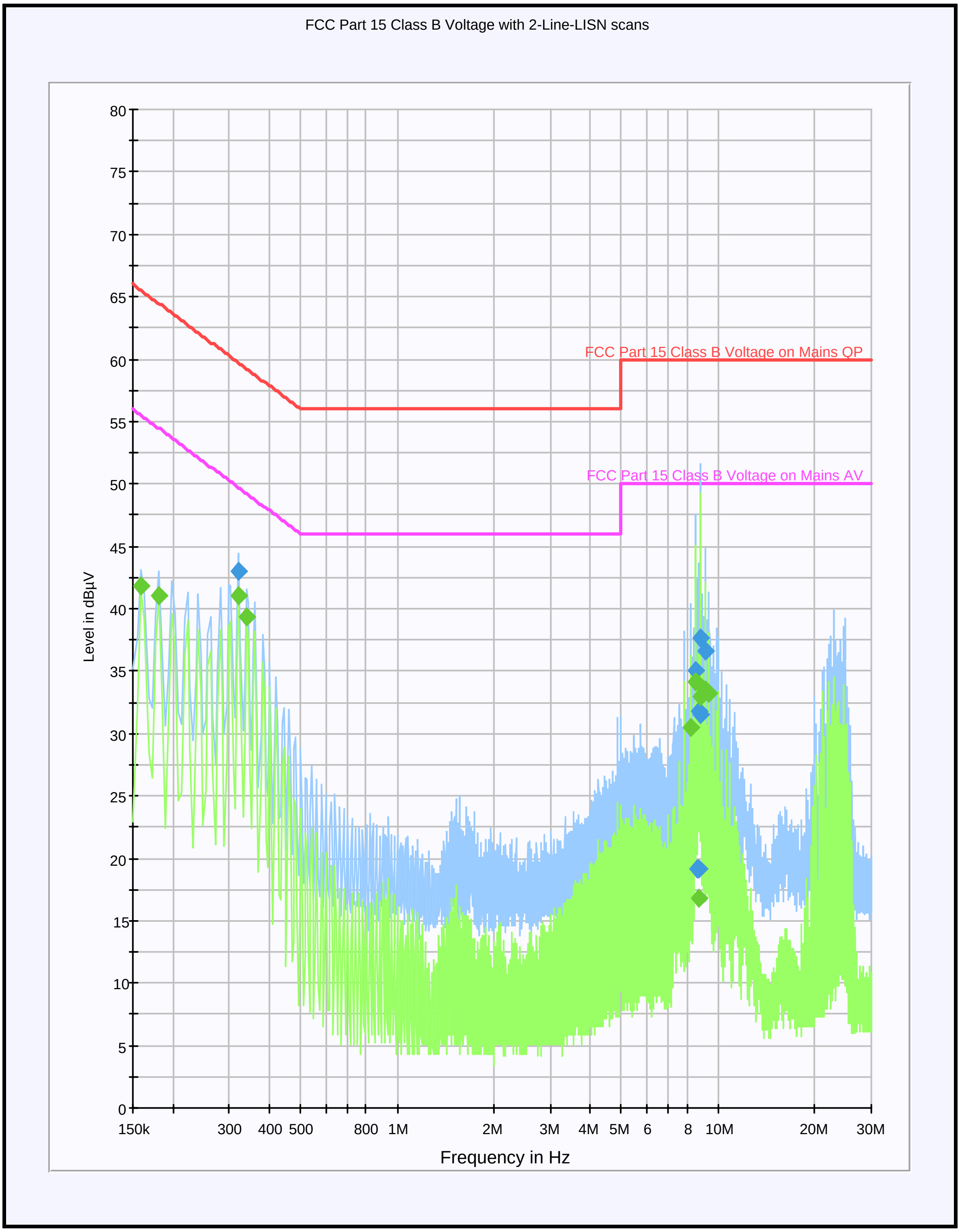
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.321000	Live	43.0	59.7	16.7	Complied
8.475000	Live	35.1	60.0	24.9	Complied
8.655000	Live	19.2	60.0	40.8	Complied
8.673000	Live	19.2	60.0	40.8	Complied
8.695500	Neutral	31.8	60.0	28.2	Complied
8.776500	Neutral	37.6	60.0	22.4	Complied
8.794500	Neutral	31.5	60.0	28.5	Complied
9.078000	Neutral	36.6	60.0	23.4	Complied

Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.159000	Live	41.8	55.5	13.7	Complied
0.181500	Live	41.0	54.4	13.4	Complied
0.321000	Live	41.1	49.7	8.6	Complied
0.339000	Live	39.3	49.2	9.9	Complied
8.173500	Neutral	30.5	50.0	19.5	Complied
8.475000	Live	34.1	50.0	15.9	Complied
8.754000	Live	16.8	50.0	33.2	Complied
8.776500	Live	33.0	50.0	17.0	Complied
9.078000	Neutral	33.5	50.0	16.5	Complied
9.384000	Neutral	33.2	50.0	16.8	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 Carrier Output Power and Effective Radiated Power (ERP)

Test Summary:

FCC Part:	FCC 2.1046 and FCC 27.50(c)(3)
Test Method Used:	ANSI/TIA-603-C-2004 Section 2.2.1

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	27

Note(s):

1. Tests were performed to establish the duty cycle of the EUT prior to performing power measurements.
2. Conducted transmit power was measured using a calibrated average power meter with associated power head. The power meter reading was corrected by the duty cycle offset.
3. The Effective Radiated Power (ERP) was calculated by adding the Client’s declared antenna gain to the measured conducted RF output power
4. Spectral density tests were made in a 1 MHz measurement bandwidth centred on the highest point of the carrier. A spectrum analyser channel power function was used and measurement bandwidths were set automatically by the spectrum analyser.
5. The customer stated that antenna gain is +14.5 dBi.

Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)

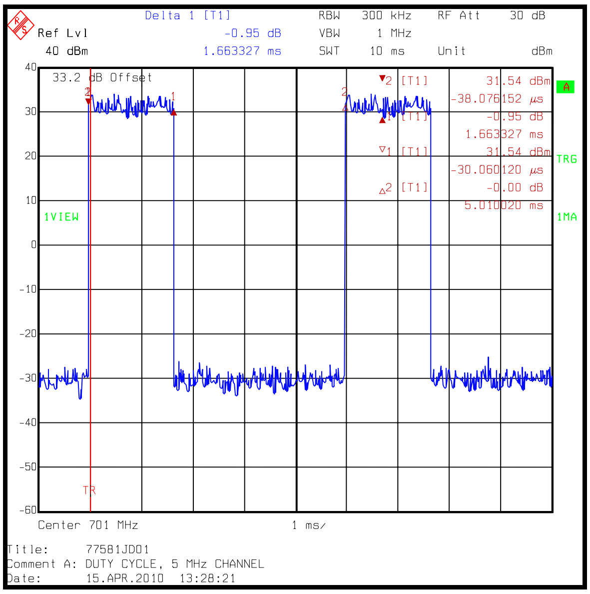
Results: 5 MHz channel duty cycle

On period = 1.66 ms

Period of one cycle = 5 ms

Duty cycle = 33 %

Duty cycle = 4.8 dB



Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)

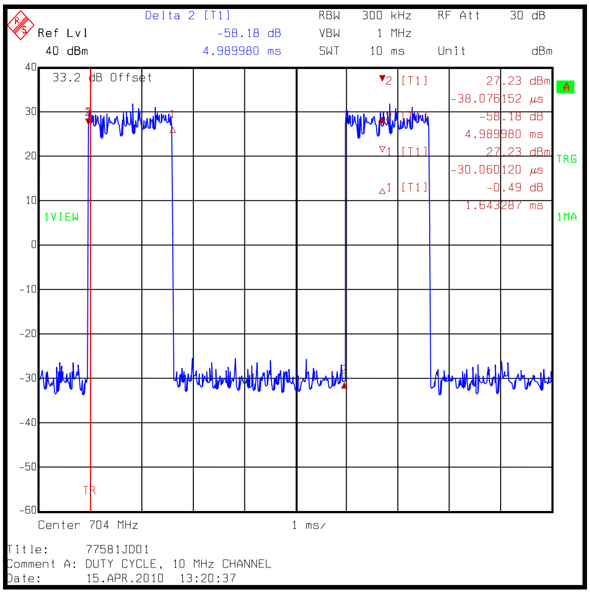
Results: 10 MHz channel duty cycle

On period = 1.64 ms

Period of one cycle = 4.99 ms

Duty cycle = 33%

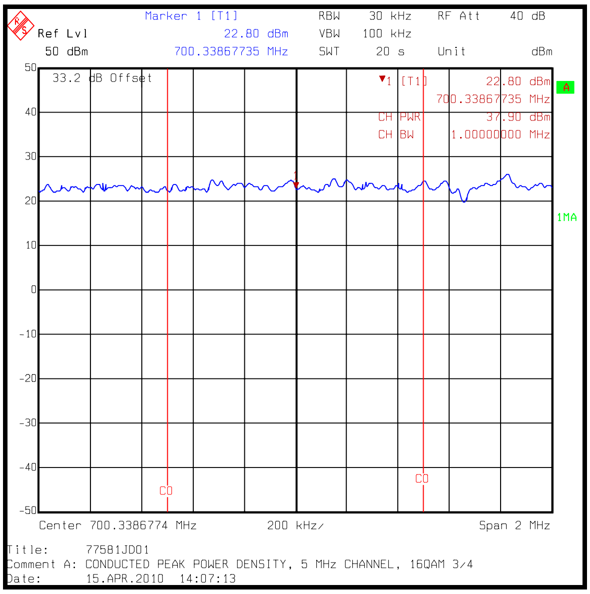
Duty cycle = 4.8 dB



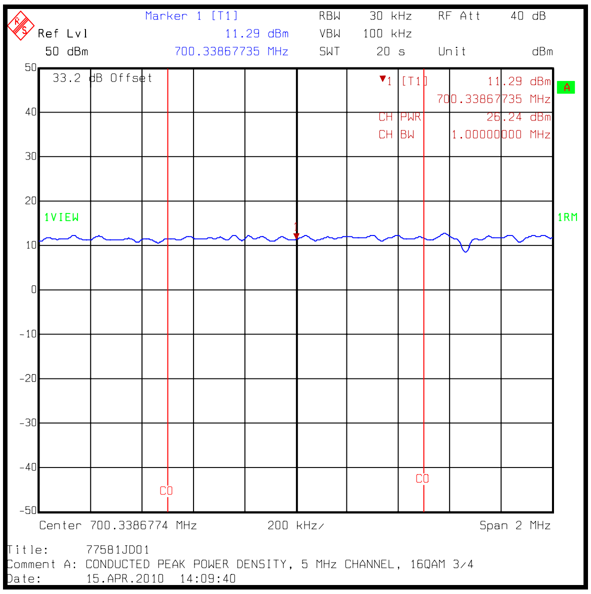
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)

Results: Conducted Spectral Density in 1 MHz / Bottom Channel / 701 MHz

Modulation	Detector	Measured Level (dBm / MHz)	Antenna Gain (dBi)	Level + Antenna Gain (dBm)	Limit (dBm / MHz)	Margin (dB)	Result
16QAM 3/4	Peak	37.9	14.5	52.4	60.0	7.6	Complied
16QAM 3/4	RMS	26.2	14.5	40.7	60.0	19.3	Complied



5 MHz channel / Peak detector

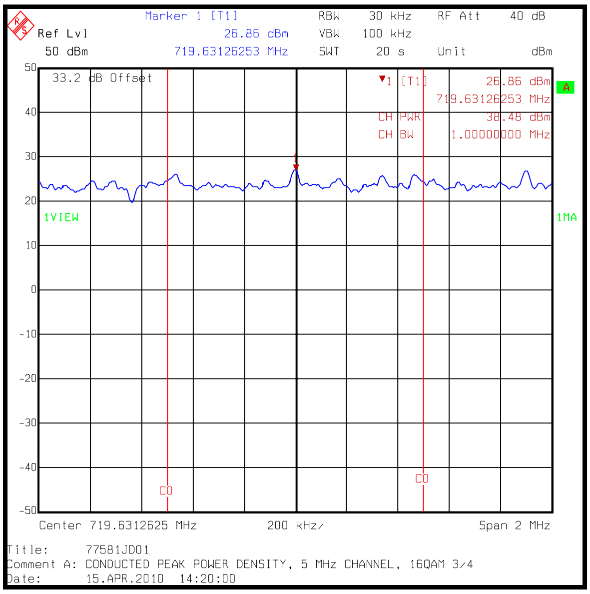


5 MHz channel / RMS detector

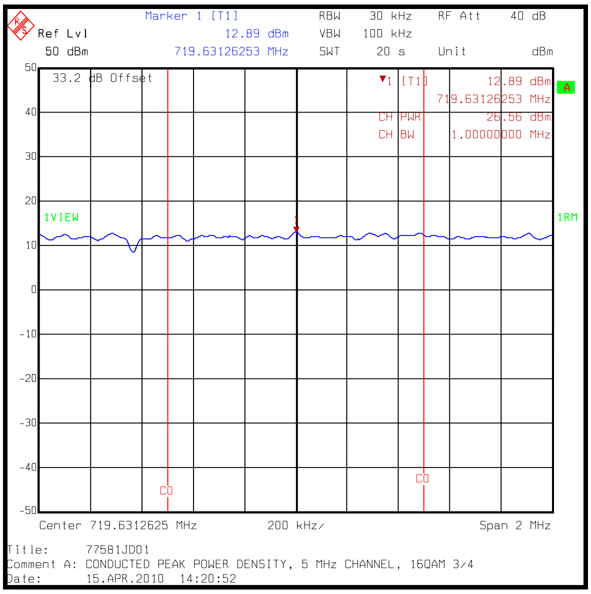
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)

Results: Conducted Spectral Density in 1 MHz / Centre Channel / 719 MHz

Modulation	Detector	Measured Level (dBm / MHz)	Antenna Gain (dBi)	Level + Antenna Gain (dBm)	Limit (dBm / MHz)	Margin (dB)	Result
16QAM 3/4	Peak	38.5	14.5	53.0	60.0	7.0	Complied
16QAM 3/4	RMS	26.6	14.5	41.1	60.0	18.9	Complied



5 MHz channel / Peak detector

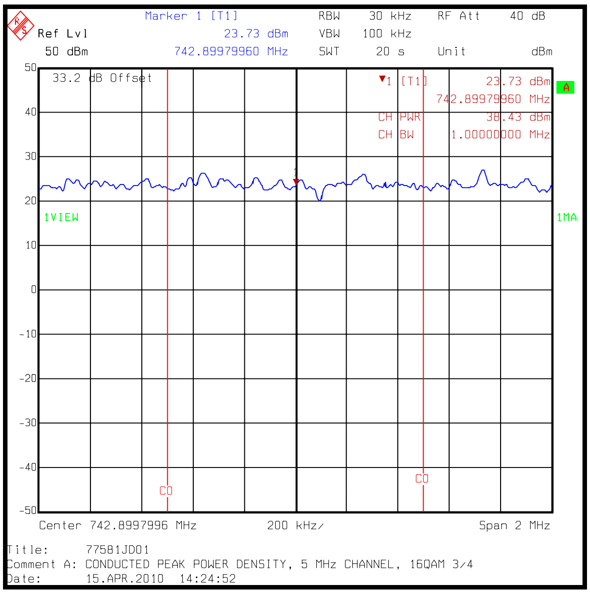


5 MHz channel / RMS detector

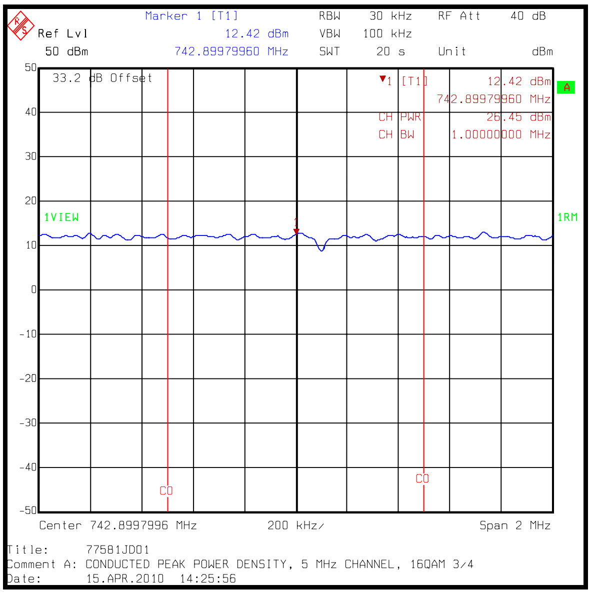
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)

Results: Conducted Spectral Density in 1 MHz / Top Channel / 743 MHz

Modulation	Detector	Measured Level (dBm / MHz)	Antenna Gain (dBi)	Level + Antenna Gain (dBm)	Limit (dBm / MHz)	Margin (dB)	Result
16QAM 3/4	Peak	38.4	14.5	52.9	60.0	7.1	Complied
16QAM 3/4	RMS	26.5	14.5	41.0	60.0	19.0	Complied



5 MHz channel / Peak detector

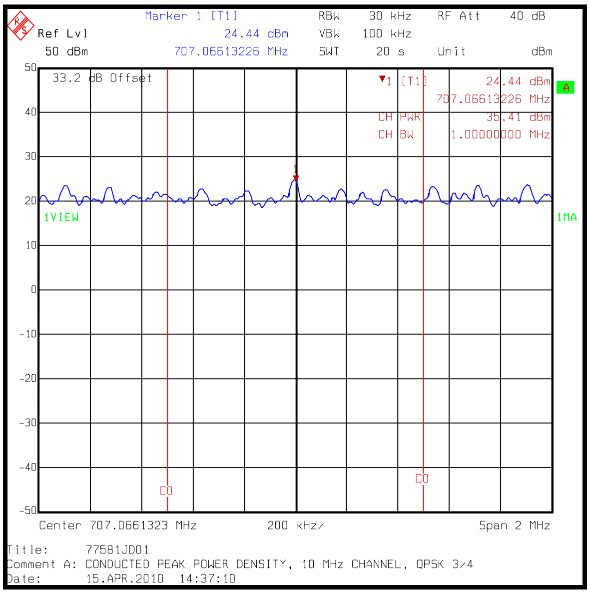


5 MHz channel / RMS detector

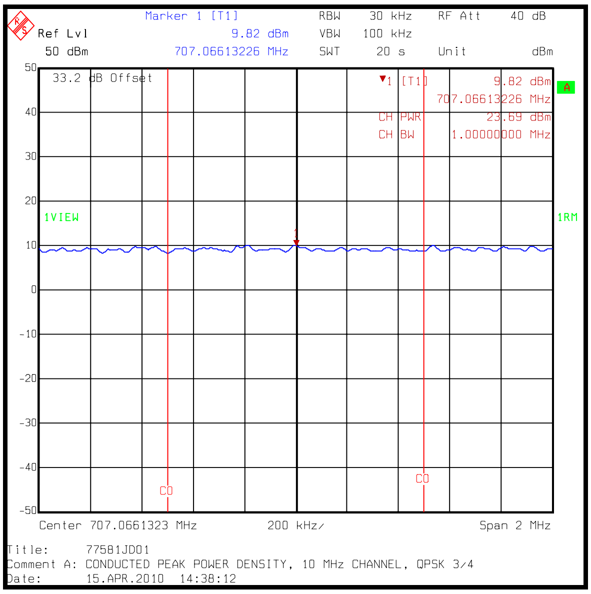
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)

Results: Conducted Spectral Density in 1 MHz / Bottom Channel / 704 MHz

Modulation	Detector	Measured Level (dBm / MHz)	Antenna Gain (dBi)	Level + Antenna Gain (dBm)	Limit (dBm / MHz)	Margin (dB)	Result
QPSK 3/4	Peak	35.4	14.5	49.9	60.0	10.1	Complied
QPSK 3/4	RMS	23.7	14.5	38.2	60.0	21.8	Complied



10 MHz channel / Peak detector

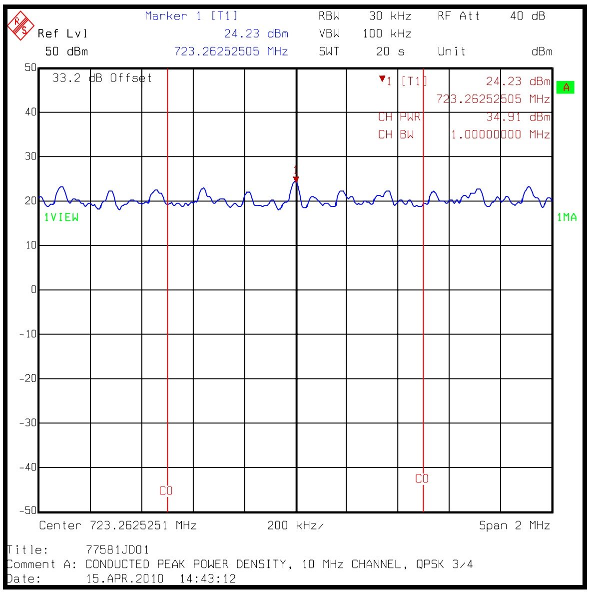


10 MHz channel / RMS detector

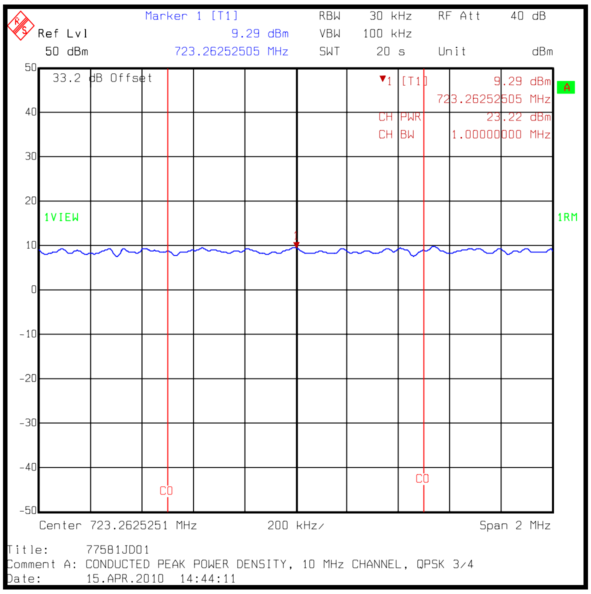
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)

Results: Conducted Spectral Density in 1 MHz / Centre Channel / 722 MHz

Modulation	Detector	Measured Level (dBm / MHz)	Antenna Gain (dBi)	Level + Antenna Gain (dBm)	Limit (dBm / MHz)	Margin (dB)	Result
QPSK 3/4	Peak	34.9	14.5	49.4	60.0	10.6	Complied
QPSK 3/4	RMS	23.2	14.5	37.7	60.0	22.3	Complied



10 MHz channel / Peak detector

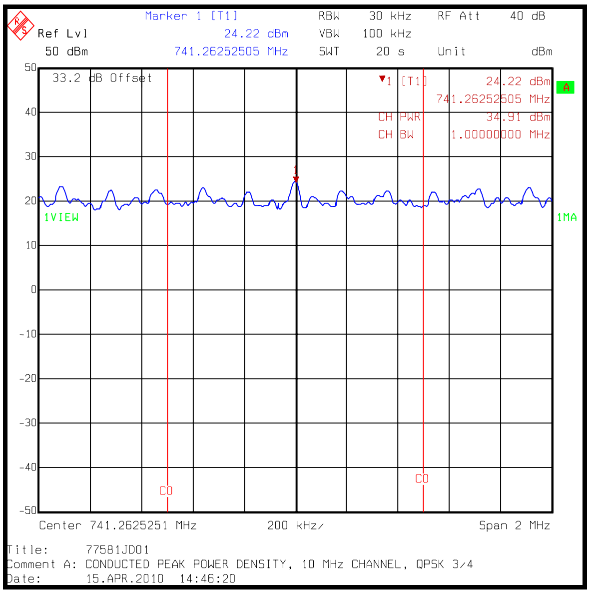


10 MHz channel / RMS detector

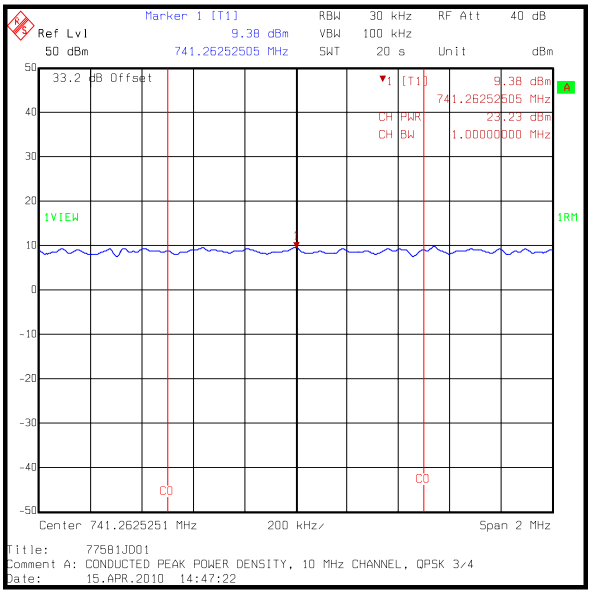
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)

Results: Conducted Spectral Density in 1 MHz / Top Channel / 740 MHz

Modulation	Detector	Measured Level (dBm / MHz)	Antenna Gain (dBi)	Level + Antenna Gain (dBm)	Limit (dBm / MHz)	Margin (dB)	Result
QPSK 3/4	Peak	34.9	14.5	49.4	60.0	10.6	Complied
QPSK 3/4	RMS	23.2	14.5	37.7	60.0	22.3	Complied



10 MHz channel / Peak detector



10 MHz channel / RMS detector

Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)

Results: Conducted Transmit Power / 5 MHz channel / 16QAM 3/4

Frequency (MHz)	Channel Bandwidth (MHz)	Measured Level (dBm)	Antenna Gain (dBi)	ERP (dBm)
701.0	5.0	37.5	14.5	52.0
719.0	5.0	37.6	14.5	52.1
743.0	5.0	37.7	14.5	52.2

Results: Conducted Transmit Power / 10 MHz channel / QPSK 3/4

Frequency (MHz)	Channel Bandwidth (MHz)	Measured Level (dBm)	Antenna Gain (dBi)	ERP (dBm)
704.0	10.0	37.2	14.5	51.7
722.0	10.0	37.2	14.5	51.7
740.0	10.0	37.2	14.5	51.7

5.2.3. 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):	26
Relative Humidity (%):	28

Results: 5 MHz Bandwidth

Modulation	TX Frequency (MHz)	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
64QAM 3/4	701.0	100	300	4.569
64QAM 3/4	743.0	100	300	4.569

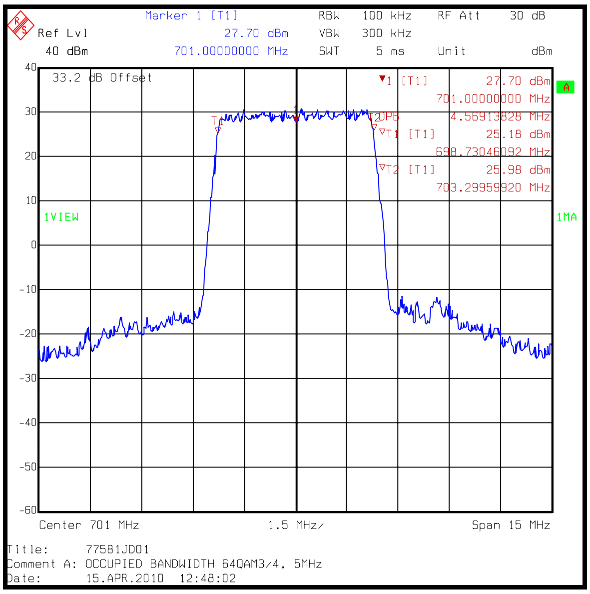
Results: 10 MHz Bandwidth

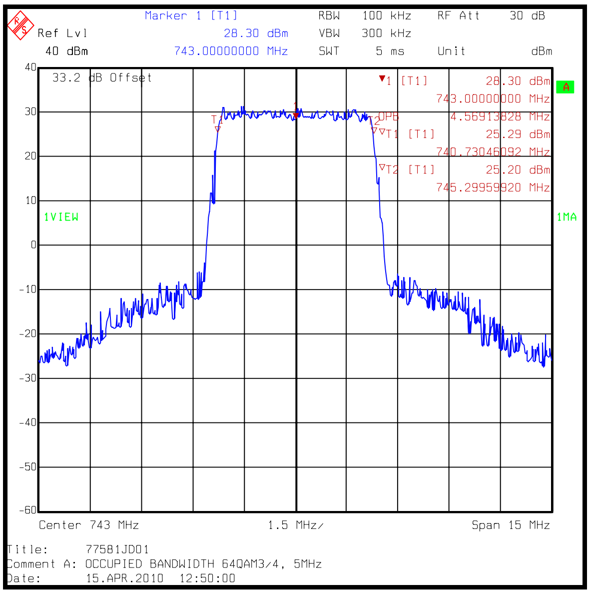
Modulation	TX Frequency (MHz)	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
16QAM 3/4	704.0	300	1000	9.259
16QAM 3/4	740.0	300	1000	9.259

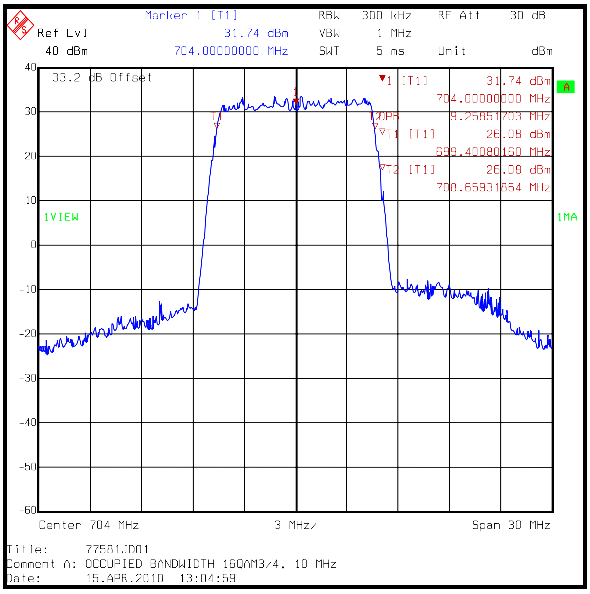
Note(s):

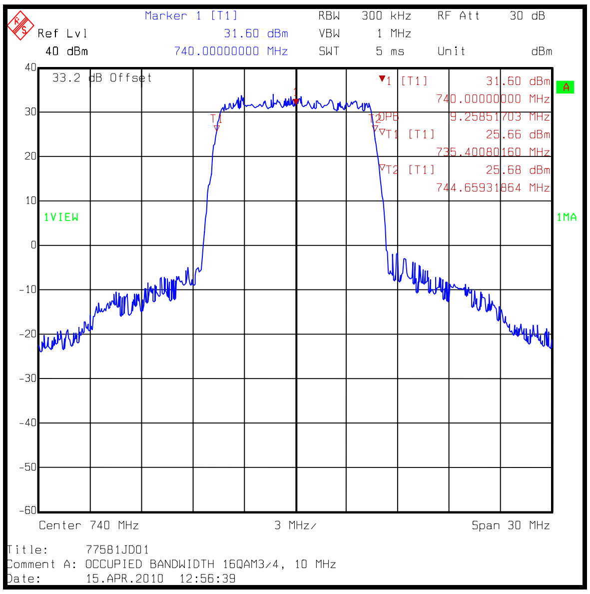
1. In lieu of the test method detailed in ANSI C63.4 Section 13.1.7 the 99% occupied bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser.
2. The EUT was configured to transmit at a maximum power on all channel bandwidths.

Transmitter Occupied Bandwidth (continued)









5.2.4. Transmitter Conducted Emissions at Band Edges

Test Summary:

FCC Part:	FCC 2.1051 and FCC Part 27.53
Test Method Used:	ANSI TIA-603-C-2004 referencing FCC CFR Parts 2.

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	28

Results: Bottom Channel / Lower Band Edge

Modulation	Bandwidth (MHz)	Peak Emission Level (dBm)	Band edge limit (dBm)	Margin (dB)	Result
16QAM 3/4	5	-19.3	-13.0	6.3	Complied
16QAM 3/4	10	-23.6	-13.0	10.6	Complied

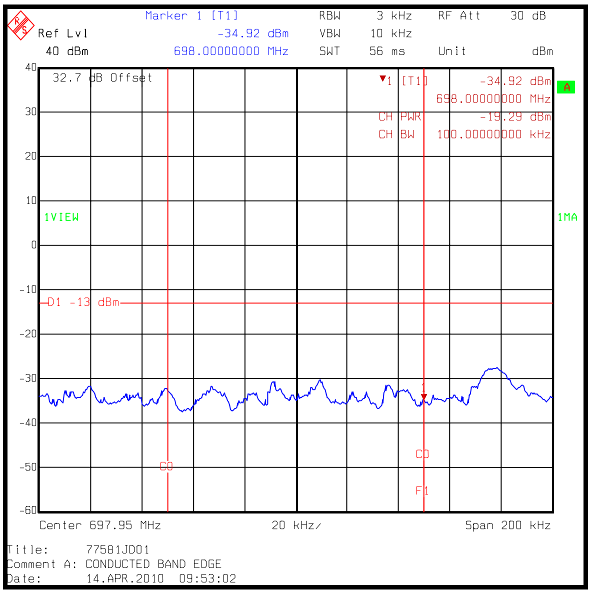
Results: Top Channel / Upper Band Edge

Modulation	Bandwidth (MHz)	Peak Emission Level (dBm)	Band edge limit (dBm)	Margin (dB)	Result
64QAM 3/4	5	-16.7	-13.0	3.7	Complied
QPSK 3/4	10	-20.8	-13.0	7.8	Complied

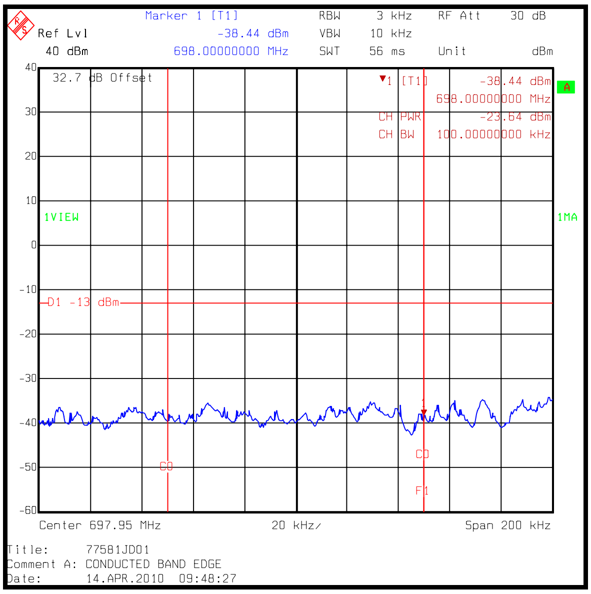
Note(s):

1. The EUT was configured to transmit at maximum power on bottom and top channels.
2. Measurements were made in the 100 kHz band immediately outside and adjacent to, the band edges using the channel power function of the spectrum analyser. The measurement bandwidths were set automatically by the spectrum analyser.
3. Measurements were performed with the EUT transmitting on 5 MHz and 10 MHz channel widths with 16QAM3/4 modulation on the bottom channel.
4. Measurements were performed with the EUT transmitting on 5 MHz and 10 MHz channel widths with 64QAM3/4 modulation and QPSK3/4 modulation on the top channel.
5. The band edge limit was calculated according to FCC Section 27.53(g) as follows: 43 + 10log(P) where P is the transmitter power in Watts.

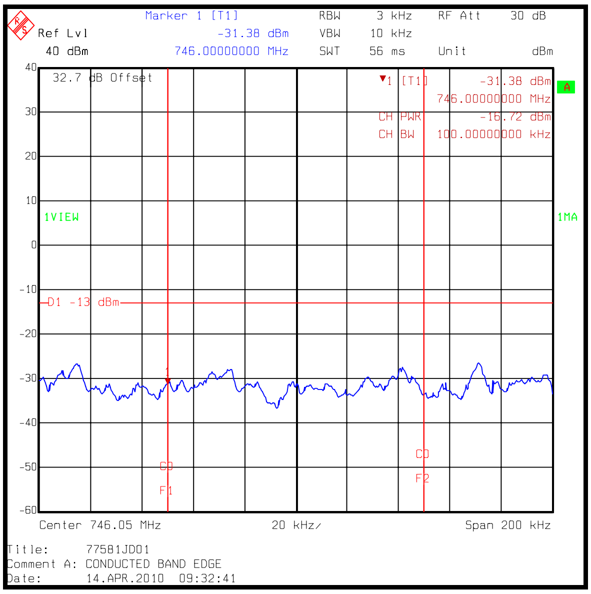
Transmitter Conducted Emissions at Band Edges (continued)



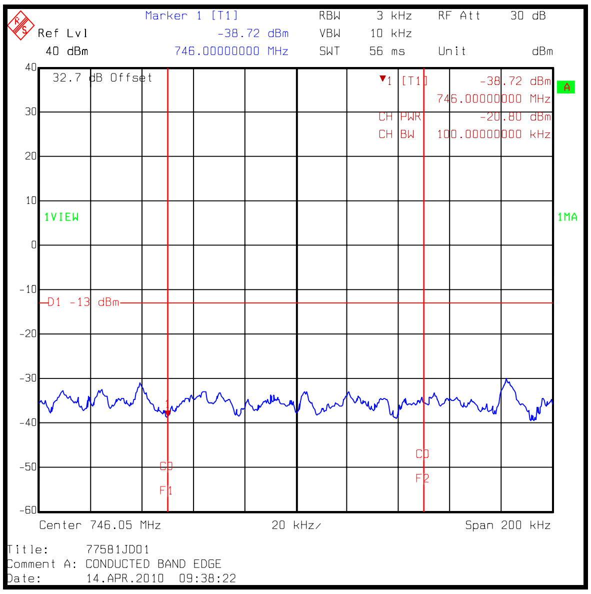
5 MHz / Bottom channel / Lower band edge / 16QAM 3/4



10 MHz / Bottom channel / Lower band edge / 16QAM 3/4



5 MHz / Top channel / Upper band edge / 64QAM 3/4



10 MHz / Top channel / Upper band edge / QPSK 3/4

5.2.5. Transmitter Conducted Emissions

Test Summary:

FCC Part:	FCC 2.1051 and FCC Part 27.53
Test Method Used:	Tests were performed using the test methods detailed in ANSI TIA-603-C-2004

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	30

Results: Top Channel 5 MHz Bandwidth 16QAM 3/4

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1402.581	-31.7	-13.0	18.7	Complied
2104.944	-34.0	-13.0	21.0	Complied

Results: Top Channel 5 MHz Bandwidth 64QAM 3/4

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1486.954	-31.9	-13.0	18.9	Complied
2228.304	-33.5	-13.0	20.5	Complied

Results: Bottom Channel 10 MHz Bandwidth 16QAM 3/4

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1407.008	-34.7	-13.0	21.7	Complied
2111.790	-37.5	-13.0	24.5	Complied

Results: Top Channel 10 MHz Bandwidth QPSK 3/4

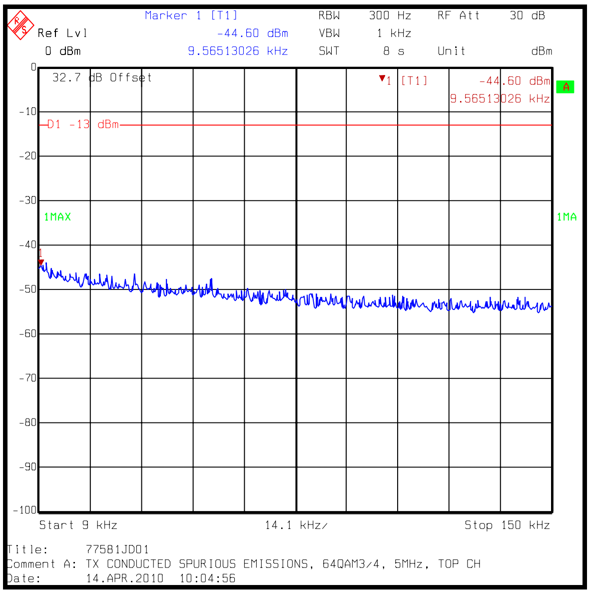
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1486.954	-34.9	-13.0	21.9	Complied
2222.014	-36.9	-13.0	23.9	Complied

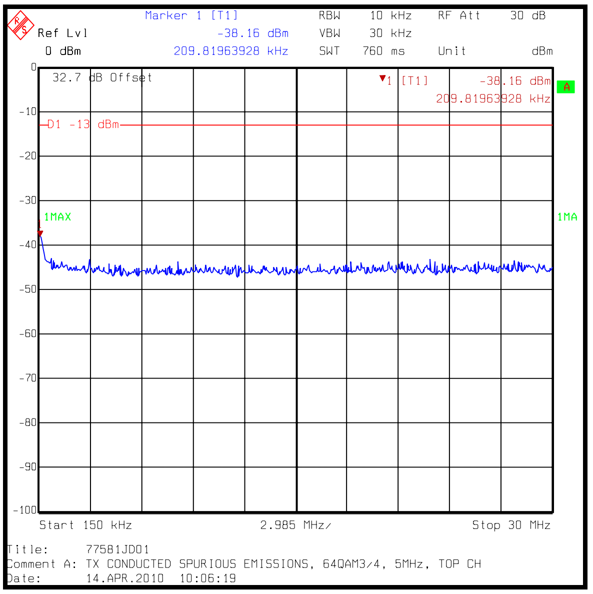
Transmitter Conducted Emissions (continued)

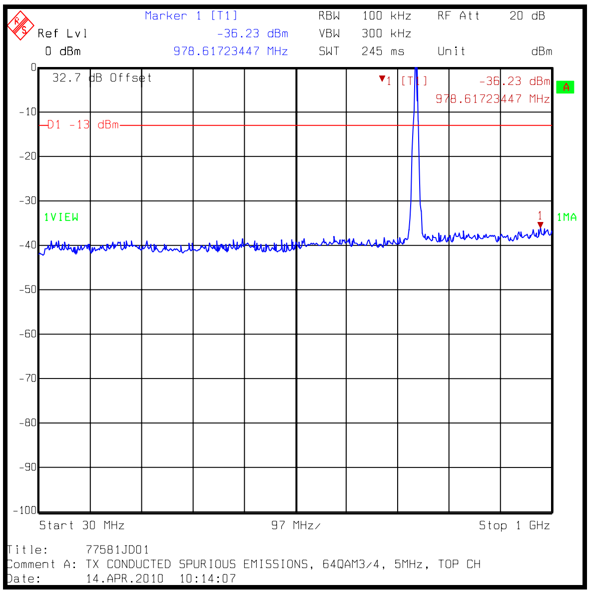
Note(s):

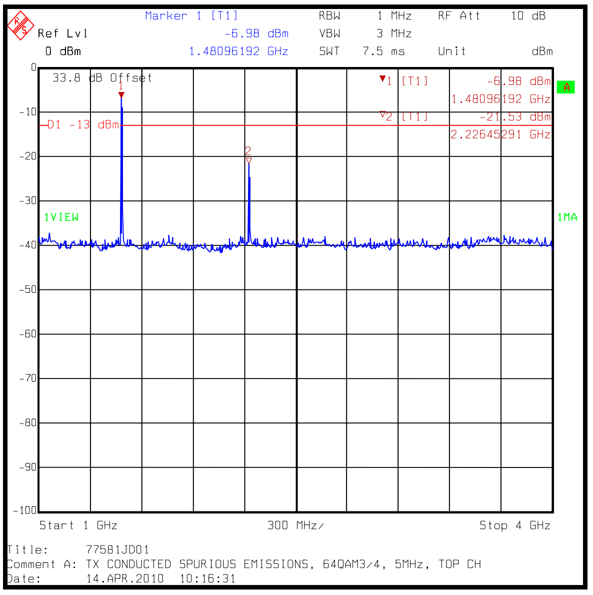
1. Pre-scans were performed on the top channel 64QAM3/4 / 5 MHz bandwidth as this combination was previously measured and resulted in the highest power at the band edge.
2. The carrier is shown on the 30 MHz to 1 GHz plot at approximately 740 MHz.
3. Final measurements were made using appropriate RF filters where required.
4. Final measurements were made on 5 MHz / 16QAM3/4 bottom and 5 MHz / 64QAM3/4 top channels.
5. Final measurements were made on 10 MHz / 16QAM3/4 bottom and 10 MHz / QPSK3/4 top channels.
6. All other emissions were >20 dB below the applicable limit or below the level of the measurement system noise floor.

Transmitter Conducted Emissions (continued)

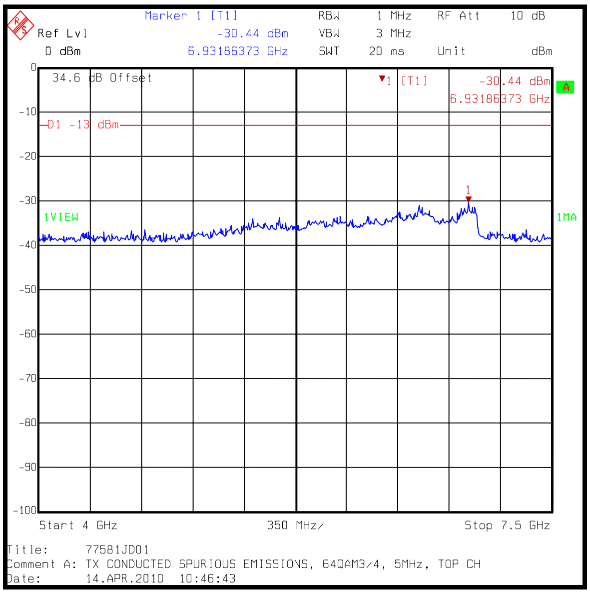








Transmitter Conducted Emissions (continued)



5.2.6. Transmitter Radiated Emissions

Test Summary:

FCC Part:	FCC 2.1053 and FCC Part 27.53
Test Method Used:	ANSI C63.10: 2009 Section 6 and ANSI TIA-603-C-2004 Section 2.2

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	21

Results: Bottom Channel (5 MHz Bandwidth)

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1180.7114	-47.8	-13.0	34.8	Complied
4723.1563	-47.7	-13.0	34.7	Complied

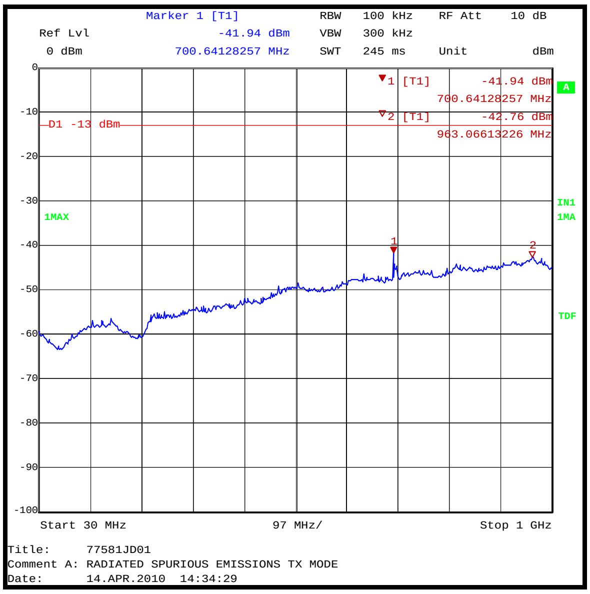
Results: Bottom Channel (10 MHz Bandwidth)

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1184.5190	-47.3	-13.0	34.3	Complied
4738.6073	-46.7	-13.0	33.7	Complied

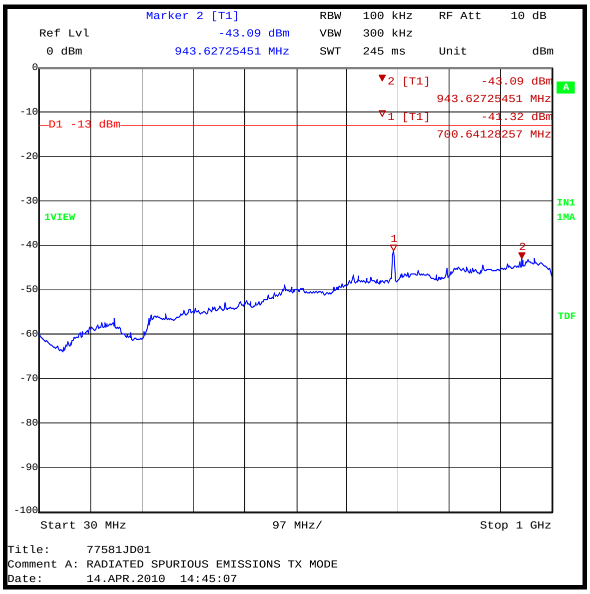
Note(s):

1. The limit was calculated according to Section 27.53(l)(2) as follows: 43 + 10log(P) where P is the transmitter power in Watts.
2. Results were obtained with the measurement antenna in both polarisations and the highest level recorded.
3. All other emissions were >20 dB below the applicable limit or below the level of the measurement system noise floor.
4. Prescans were performed on the top channel only. Final measurements were performed on the bottom 5 MHz and bottom 10 MHz channels. As all reported emissions levels were >30 dB below the applicable limit, no further testing was performed.
5. The EUT was mounted on a metal pole at a height of 1.5 metres above the chamber floor. This is representative of a typical user installation.
6. The antenna port was terminated into a 50 Ohm load.
7. The emission shown on the 30 MHz to 1 GHz plot at approximately 700 MHz is the carrier.

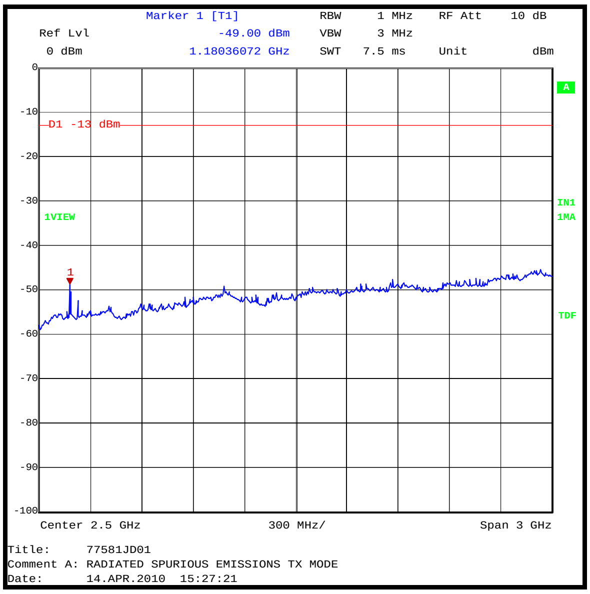
Transmitter Radiated Emissions (continued)



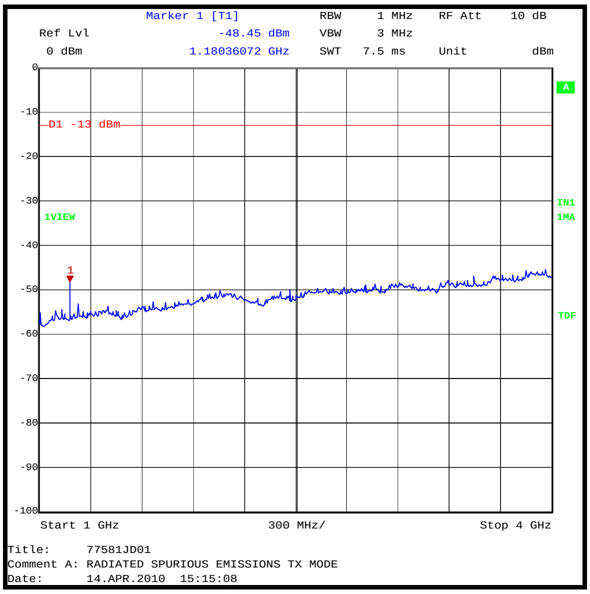
Transmit frequency 704 MHz / 10 MHz bandwidth / 16QAM 3/4



Transmit frequency 701 MHz / 5 MHz bandwidth / 16QAM 3/4

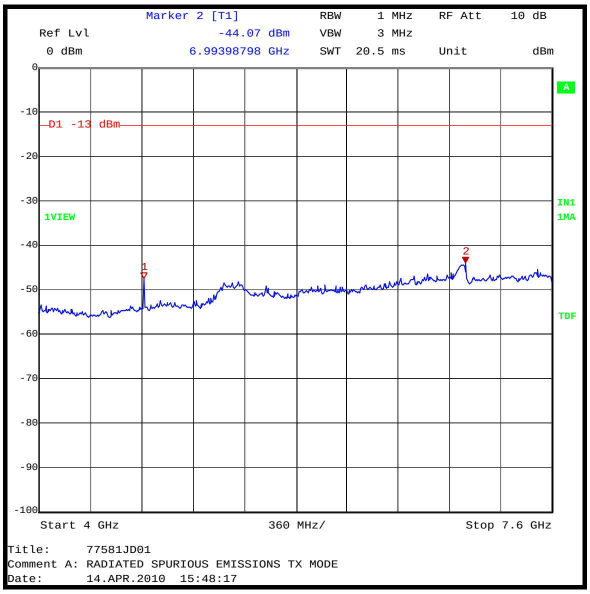


Transmit frequency 704 MHz / 10 MHz bandwidth / 16QAM 3/4

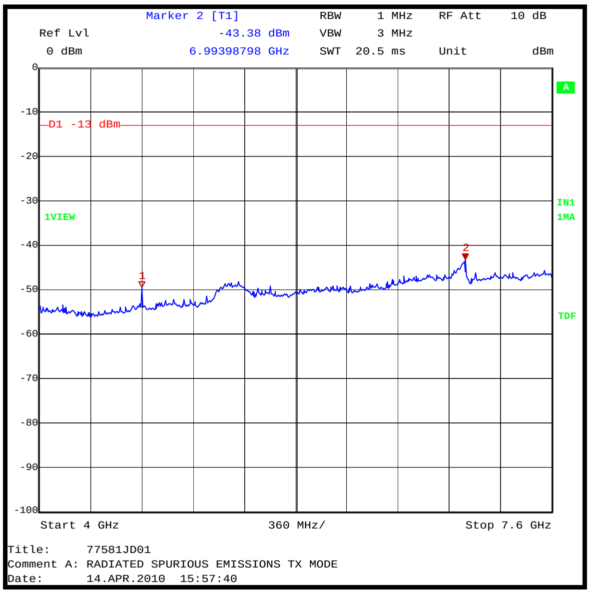


Transmit frequency 701 MHz / 5 MHz bandwidth / 16QAM 3/4

Transmitter Radiated Emissions (continued)



Transmit frequency 704 MHz / 10 MHz bandwidth / 16QAM 3/4



Transmit frequency 701 MHz / 5 MHz bandwidth / 16QAM 3/4

5.2.7. Transmitter Frequency Stability (Temperature Variation)

Test Summary:

FCC Part:	Part 27.54 and 2.1055
Test Method Used:	ANSI TIA-603-C-2004 Section 2.2.2

Environmental Conditions:

Ambient Temperature (°C):	24 to 27
Ambient Relative Humidity (%):	25 to 28

Results: Bottom Channel (701 MHz) / 64QAM 3/4 / 5 MHz channel

Temperature (°C)	Measured Frequency (MHz)	Lower Band Edge (MHz)	Margin (MHz)	Result
-30	698.531062	698.000	0.531062	Complied
-20	698.511022	698.000	0.511022	Complied
-10	698.511022	698.000	0.511022	Complied
0	698.511022	698.000	0.511022	Complied
10	698.511022	698.000	0.511022	Complied
20	698.511022	698.000	0.511022	Complied
30	698.531062	698.000	0.531062	Complied
40	698.511022	698.000	0.511022	Complied
50	698.490982	698.000	0.490982	Complied

Results: Top Channel (743 MHz) / 64QAM 3/4 / 5 MHz channel

Temperature (°C)	Measured Frequency (MHz)	Upper Band Edge (MHz)	Margin (MHz)	Result
-30	745.448898	746.000	0.551102	Complied
-20	745.448898	746.000	0.551102	Complied
-10	745.448898	746.000	0.551102	Complied
0	745.428858	746.000	0.571142	Complied
10	745.448898	746.000	0.551102	Complied
20	745.448898	746.000	0.551102	Complied
30	745.448898	746.000	0.551102	Complied
40	745.448898	746.000	0.551102	Complied
50	745.448898	746.000	0.551102	Complied

Transmitter Frequency Stability (Temperature Variation) (continued)

Results: Bottom Channel (701 MHz) / 64QAM 3/4 / 5 MHz channel

Temperature (°C)	Absolute Frequency (MHz)	Measured Frequency (MHz)	Frequency error (Hz)
-30	701.000	701.000407	407
-20	701.000	701.000631	631
-10	701.000	701.000327	327
0	701.000	701.000155	155
10	701.000	701.000033	33
20	701.000	700.999973	-27
30	701.000	700.999971	-29
40	701.000	701.000146	146
50	701.000	701.000306	306

Note(s):

1. The EUT was configured to transmit on the bottom and top channels using a 5 MHz channel width. A 5 MHz channel width was used as this produces a higher emission level at the band edge than a 10 MHz channel and therefore has less margin.
2. Frequency stability measurements at the band edges were made by recording the frequency at the -20 dBc points closest to the band edge when the EUT was transmitting on the bottom and top channels and comparing these values with the band edge frequencies to show the margins.
3. The Client requested that absolute frequency accuracy was measured on the bottom channel using a Rohde & Schwarz FSQ 8 signal analyser with WiMax option. The accuracy of the signal analyser was verified against a calibrated signal generator before testing commenced. No limit is specified.
4. Temperature was monitored using a calibrated digital thermometer.

5.2.8. Transmitter Frequency Stability (Voltage Variation)

Test Summary:

FCC Part:	Part 27.54 and 2.1055
Test Method Used:	ANSI TIA-603-C-2004 Section 2.2.2

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	28

Results: Bottom Channel (701 MHz) / 64QAM 3/4 / 5 MHz channel

Voltage (VDC)	Measured Frequency (MHz)	Lower Band Edge (MHz)	Margin (MHz)	Result
40.8	698.511022	698.000	0.511022	Complied
48.0	698.511022	698.000	0.511022	Complied
55.2	698.490982	698.000	0.511022	Complied

Results: Bottom Channel (701 MHz) / 64QAM 3/4 / 5 MHz channel

Voltage (VDC)	Absolute Frequency (MHz)	Measured Frequency (MHz)	Frequency error (Hz)
40.8	701.000	701.000241	241
48.0	701.000	701.000243	243
55.2	701.000	701.000241	241

Note(s):

1. The EUT was configured to transmit on the bottom and top channels using a 5 MHz channel width. A 5 MHz channel width was used as this produces a higher emission level at the band edge than a 10 MHz channel and therefore has less margin.
2. Frequency stability measurements at the band edges were made by recording the frequency at the -20 dBc points closest to the band edge when the EUT was transmitting on the bottom and top channels and comparing these values with the band edge frequencies to show the margins.
3. The Client requested that absolute frequency accuracy was measured on the bottom channel using a Rohde & Schwarz FSQ 8 signal analyser with WiMax option. The accuracy of the signal analyser was verified against a calibrated signal generator before testing commenced. No limit is specified.
4. Voltage was monitored using a calibrated digital multimeter

6. Measurement Uncertainty

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

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

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

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

Measurement Type	**Range**	**Confidence Level (%)**	**Calculated Uncertainty**
AC Conducted Spurious Emissions	0.15 MHz to 30.0 MHz	95%	+/- 3.25 dB
Conducted Carrier Output Power	698 MHz to 746 MHz	95%	+/- 1.2 dB
Occupied Bandwidth	698 MHz to 746 MHz	95%	+/- 0.12%
Conducted Emissions Antenna Port	9 kHz to 7.5 GHz	95%	+/- 1.2 dB
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	±3.53 dB
Radiated Spurious Emissions	1 GHz to 7.5 GHz	95%	±2.94 dB
Frequency Stability	698 MHz to 746 MHz	95%	+/- 20 Hz

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)
A067	Line Impedance Stabilization Network	Rohde & Schwarz	ESH3-Z5	890603/002	03 Jun 2009	12
A1242	Antenna	Dorado international corp	12-GH-12-2	0002	Calibrated before use	-
A1267	Pin Diode Switch	Mini circuits	ZMSW-1211	006	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	01 Mar 2010	12
A1974	High Pass Filter	AtlanTecRF	AFH-01000	090000283	Calibrated before use	-
A199	Antenna	Amplifier Research	AT2000	8583/078	Calibration not required	-
A288	Antenna	Chase	CBL6111A	1589	16 Mar 2010	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	01 Sep 2009	12
L0999	Hewlett Packard 6032A	Hewlett Packard	6032A	US3542078 1	Calibrated before use	-
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	09 Mar 2009	12
M1242	Spectrum Analyser	Rohde & Schwarz, Inc.	FSEM30	845986/022	18 Mar 2010	12
M1252	Signal Generator	HP	83640A	3119A00489	02 Oct 2008	12
M1379	Test Receiver	Rohde and Schwarz	ESIB7	100330	20 Aug 2009	12
M244	Thermometer/ Barometer/Hygrometer	Oregon Scientific	BA 116	None	21 Jul 2009	12
None	FSQ 8	Not stated	Not stated	25037	Not applicable Supplied by Customer	

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