REPORT ON THE CERTIFICATION TESTING OF AN
AERIAL FACILITIES LIMITED
50-187601
2 CHANNEL UHF CELL ENHANCER
WITH RESPECT TO
THE FCC RULES CFR 47, PART 90 Subpart I
PRIVATE LAND MOBILE REPEATER.

TEST REPORT NO: RU1333/7614

COPY NO: 1

ISSUE NO: 1

FCC ID: NEO50-1876 SERIES

REPORT ON THE CERTIFICATION TESTING OF AN
AERIAL FACILITIES LIMITED
50-187601
2 CHANNEL UHF CELL ENHANCER
WITH RESPECT TO
THE FCC RULES CFR 47, PART 90 Subpart I
PRIVATE LAND MOBILE REPEATER.

TEST DATE: 16th – 18th May 2007

TESTED BY: S HODGKINSON — Digitally signed by S HODGKINSON DN: CN = S HODGKINSON, C = GB, O = TRL COMPLIANCE LTD Reason: I am the author of this document Date: 2007.06.13 16:07:54 +01'00' — S HODGKINSON

APPROVED BY: John Charters — Digitally signed by John Charters DN: CN = John Charters, C = GB, O = TRL Compliance Ltd Reason: I am approving this document Date: 2007.06.13 16:43:46 +01'00' — J CHARTERS RADIO SECTION LEADER

DATE: 13th June 2007

Distribution:

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F +44 (0)1695 557077
E test@trlcompliance.com

CONTENTS

Notes:

1. Component failure during test — YES [ ] NO [X]
2. If Yes, details of failure:
3. The facilities used for the testing of the product contain in this report are FCC Listed.

TRL Compliance
part of TRAC global

CERTIFICATE OF CONFORMITY & COMPLIANCE

FCC IDENTITY:	NEO50-1876 SERIES
PURPOSE OF TEST:	Certification
TEST SPECIFICATION:	FCC RULES CFR 47, Part 90 Subpart I
TEST RESULT:	Compliant to Specification
EQUIPMENT UNDER TEST:	2 Channel UHF cell enhancer
EQUIPMENT TYPE:	Private Land Mobile Repeater
MAXIMUM GAIN:	Downlink = 83.45 dB Uplink = 85.07 dB
MAXIMUM INPUT:	Downlink = -55.35dBm Uplink = -60.35dBm
MAXIMUM OUTPUT CONDUCTED:	Downlink = 28.10dBm Uplink = 24.72dBm
ANTENNA TYPE:	Not applicable
CHANNEL SPACING:	Not applicable
NUMBER OF CHANNELS:	2
FREQUENCY GENERATION:	N/A
MODULATION TYPE:	F3E
POWER SOURCE(s):	+110Vac
TEST DATE(s):	16th – 18th May 2007
ORDER No(s):	44059
APPLICANT:	Aerial Facilities Limited
ADDRESS:	Aerial House Asheridge Road Chesham Buckinghamshire HP5 1TU

TESTED BY: S HODGKINSON

Digitally signed by S HODGKINSON
DN: CN = S HODGKINSON, C = GB, O = TRL COMPLIANCE LTD
Reason: I am the author of this document
Date: 2007.06.13 16:08:05 +01'00'

S HODGKINSON

APPROVED BY: John Charters

Digitally signed by John Charters
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Reason: I am approving this document
Date: 2007.06.13 16:43:55 +01'00'

J CHARTERS
RADIO SECTION
LEADER

TRAC
testing regulatory and compliance

APPLICANT'S SUMMARY

EQUIPMENT UNDER TEST (EUT):	50-187601SERIES
EQUIPMENT TYPE:	Private Land Mobile Repeater
PURPOSE OF TEST:	Certification
TEST SPECIFICATION(s):	FCC RULES CFR 47, Part 90
TEST RESULT:	COMPLIANT Yes [X] No [ ]
APPLICANT'S CATEGORY:	MANUFACTURER [X] IMPORTER [ ] DISTRIBUTOR [ ] TEST HOUSE [ ] AGENT [ ]
APPLICANT'S ORDER No(s):	42437
APPLICANT'S CONTACT PERSON(s):	Mr Peter Bradfield
E-mail address:	Peterb@aerial.co.uk
APPLICANT:	Aerial Facilities Limited
ADDRESS:	Aerial House Asheridge Road Chesham Buckinghamshire HP5 1TU United Kingdom
TEL:	+44 (0)1494 777000
FAX:	+44 (0)1494 778456
MANUFACTURER:	Aerial Facilities Limited
EUT(s) COUNTRY OF ORIGIN:	United Kingdom
TEST LABORATORY:	TRL Compliance Ltd
UKAS ACCREDITATION No:	0728
TEST DATE(s):	16th – 18th May 2007
TEST REPORT No:	RU1333/7614

EQUIPMENT TEST / EXAMINATIONS REQUIRED

1.

TEST/EXAMINATION	RULE PART	APPLICABILITY	RESULT
RF Power Output	2.1046 22.913(a)	Yes	Complies
Audio Frequency Response	TIA EIA-603.3.2.6	N/A	N/A
Audio Low-Pass Filter Response	TIA EIA-603.3.2.6	N/A	N/A
Modulation Limiting	TIA EIA-603.3.2.6	N/A	N/A
Occupied Bandwidth	2.1049 22.917(b)	Yes	Complies
Spurious Emissions at Antenna Terminals	22.917(d)	Yes	Complies
Field Strength of Spurious Emissions	22.917(d)	Yes	Complies
Frequency Stability	2.1055 22.355	N/A(note 1)	N/A
Transient behaviour	N/A	N/A(note 2)	N/A

Notes:
1 The EUT does not contain modulation circuitry, therefore the test was not performed.
2 The EUT is not a keyed carrier system, therefore the test was not performed.

2. Product Use: Private Land Mobile Repeater

3. Emission Designator: F3E

4. Temperatures: Ambient (Tnom) 19^{o}C

5. Supply Voltages: Vnom 110Vac

Note: Vnom voltages are as stated above unless otherwise shown on the test report page

6. Equipment Category:
   Single channel [ ]
   Two channel [X]
   Multi-channel [ ]

7. Channel spacing:
   Narrowband [ ]
   Wideband [X]

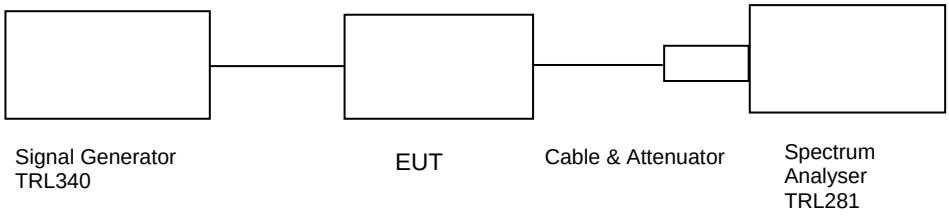
8. Test Location: TRL Compliance Services
   Up Holland [X]
   Long Green [ ]

9. Modifications made during test program No modifications were performed.

COMPLIANCE TESTS

AMPLIFIER GAIN – CONDUCTED – PART 2.1046 – UPLINK

Ambient temperature = 19°C Radio Laboratory
Relative humidity = 58%
Supply voltage = 110Vac
Channel Frequency = See test results



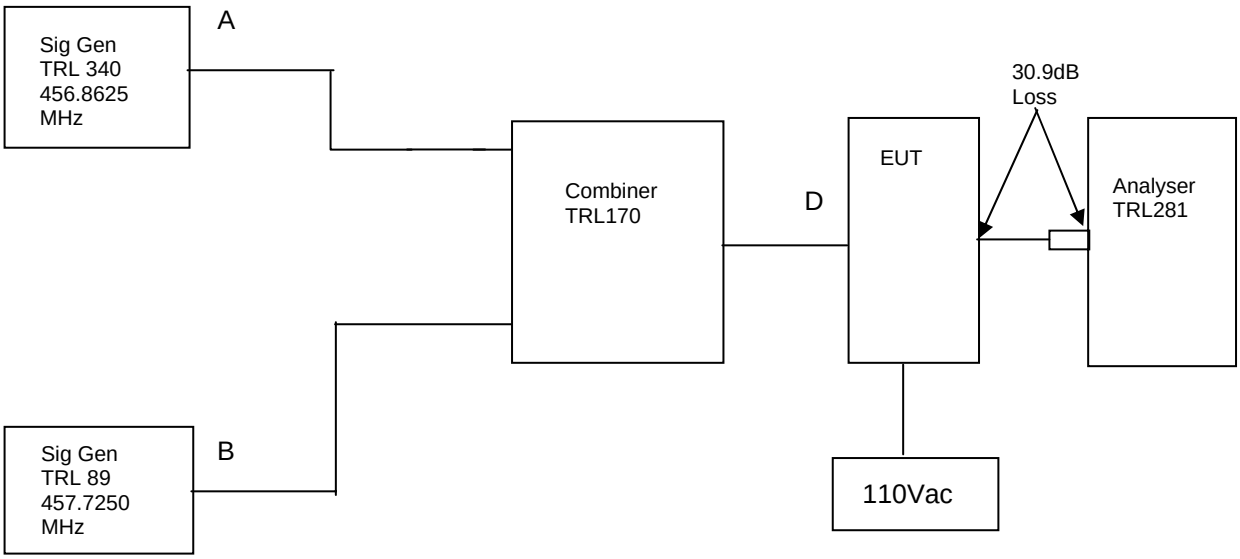
Frequency MHz	Operating Voltage	Signal Generator input level dBm	Cable & Attenuator Loss dB	Level at Spectrum Analyser dBm	Gain dB	Gain after 10dB input level increase dBm
456.8625	110Vac	-60.35	-30.9	-6.31	84.94	75.40
457.7250	110Vac	-60.35	-30.9	-6.18	85.07	75.85

Notes:
1. The level of the signal generator takes into consideration the loss from the cable.
1. The signal generator input was increased by 10dB and the level of the output signal remeasured

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	Rhode & Schwarz	FSU	200034	281	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	221	**X**
ATTENUATOR	BIRD	8304-100-N	N/A	222	**X**
CABLE	TRL	N TYPE	N/A	274	**X**
CABLE	TRL	N TYPE	N/A	273	**X**
SIGNAL GENERATOR	Hewlet Packard	83630B	3722A00588	340	**X**

AMPLIFIER INTERMODULATION SPURIOUS EMISSIONS – CONDUCTED – PART 2.1053– UPLINK

Ambient temperature = 28°C Radio Laboratory
Relative humidity = 39%
Supply voltage = 110Vac



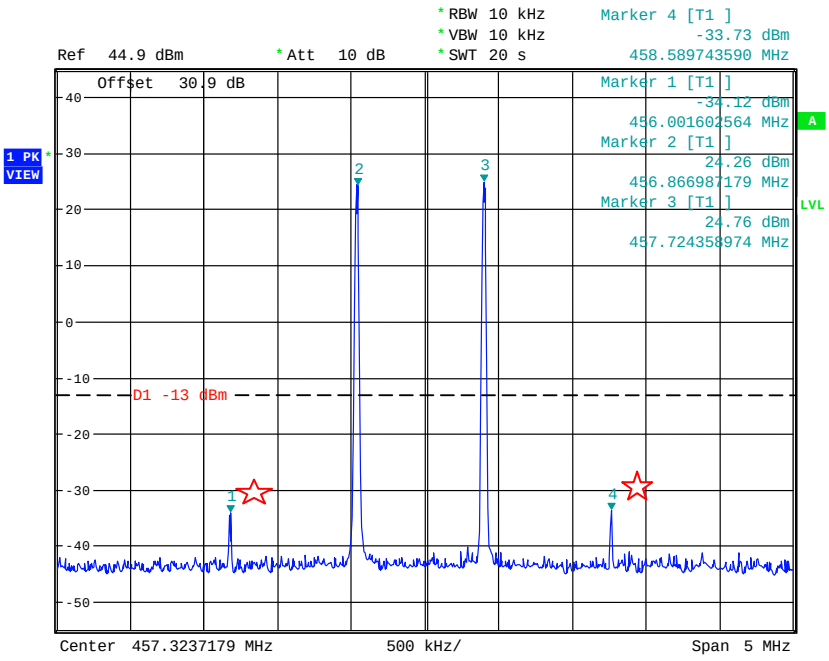
The Intermodualation and spurious products were measured with the amplifier operating at maximum gain. A two tone test was conducted using the equipment as above. The input power level was adjusted so the level at point D was the maximum input of –50dBm. The cable and attenuator loss between the EUT and the spectrum analyser was -30.9dB.

Note: 2 tone test was performed because the unit is a two channel device only.

Sweep data is shown on the next page:

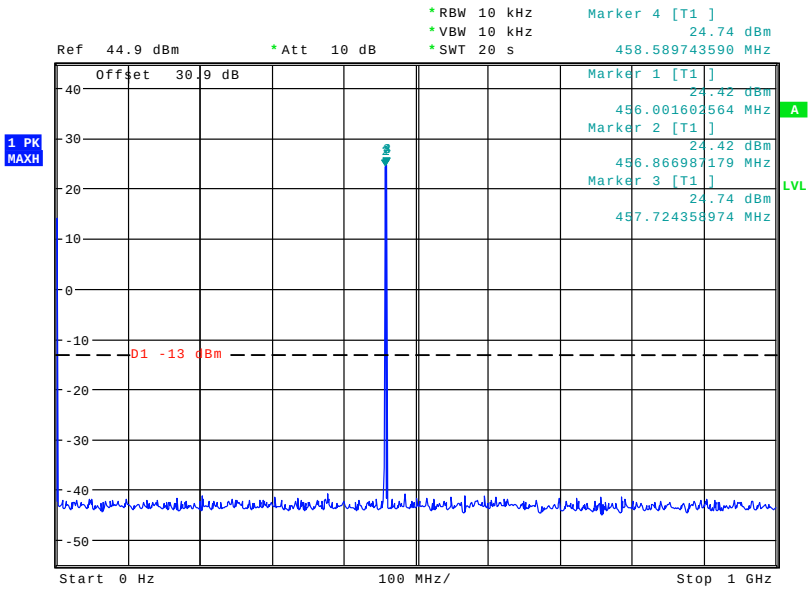
TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	Rhode & Schwarz	FSU	200034	281	**X**
SIGNAL GENERATOR	Hewlet Packard	83630B	3722A00588	340	**X**
SIGNAL GENERATOR	MARCONI	2022D	119224/035	UH89	**X**
COMBINER	ELCOM	RC-4-50	N/A	170	**X**

Intermodulation inband



The above plot shows that all products (designated by ☆) are at least 40dB below the fundamentals.

Intermodulation wideband



TRANSMITTER TESTS

AMPLIFIER MODULATED CHANNEL TEST – CONDUCTED – Part 2.1049– UPLINK

Ambient temperature	=	19^{o}C	Radio Laboratory
Relative humidity	=	58%	
Supply voltage	=	110Vac	
Channel Frequency	=	See test results	

This test was performed to show that the amplifier does not alter the input signal in any way. The input signal was set to the maximum input level (-50dBm) and modulated with a 2500Hz tone and a 5000Hz tone. The plots show the signal measured at the signal generator and the signal measured at the output of the EUT.

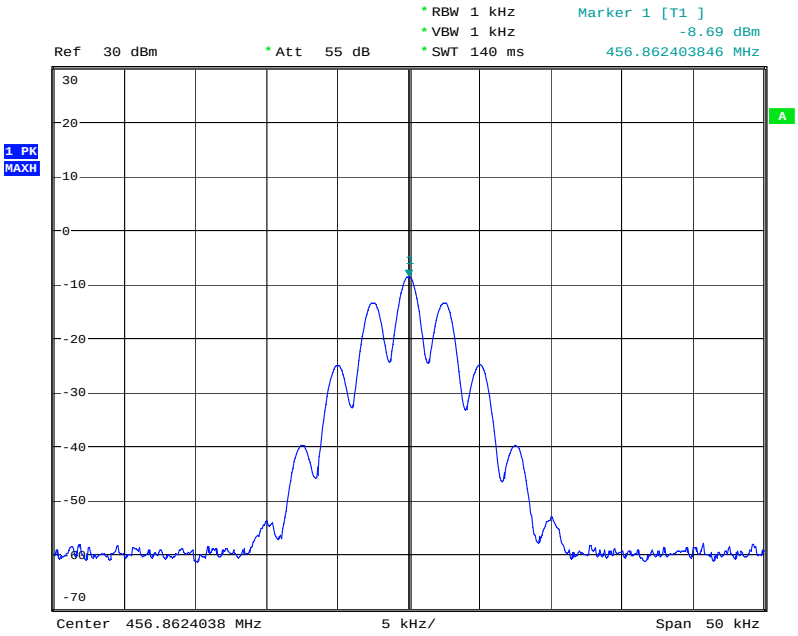
Note: The cables and attenuators had the following losses.

1. Cable and attenuator losses 30.9dB
2. Cable between signal generator and EUT 0.35dB

The test equipment used for the Transmitter Modulated Channel test:

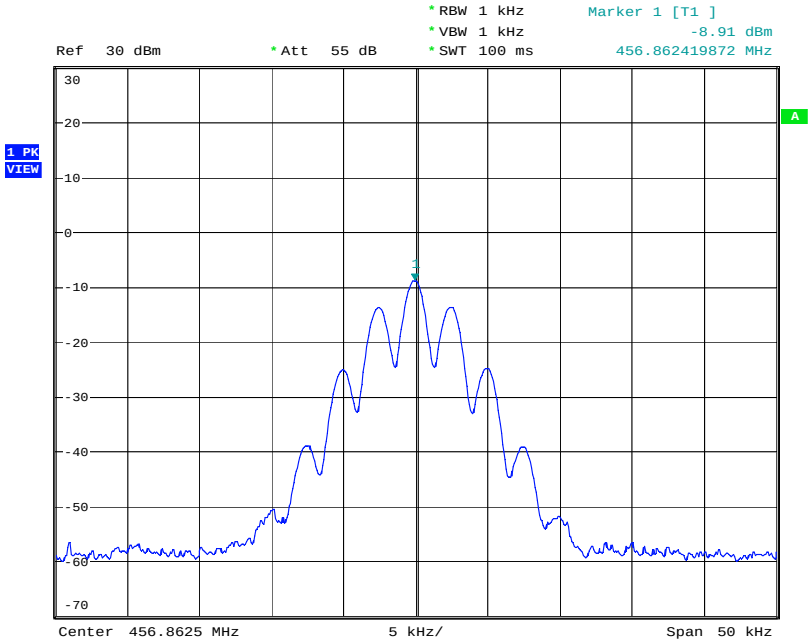
TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	Rhode & Schwarz	FSU	200034	281	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	221	**X**
ATTENUATOR	BIRD	8304-100-N	N/A	222	**X**
CABLE	TRL	N TYPE	N/A	274	**X**
CABLE	TRL	N TYPE	N/A	273	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	179	**X**

456.8625MHz Signal generator only 2.5kHz deviation



Date: 16.MAY.2007 15:07:13

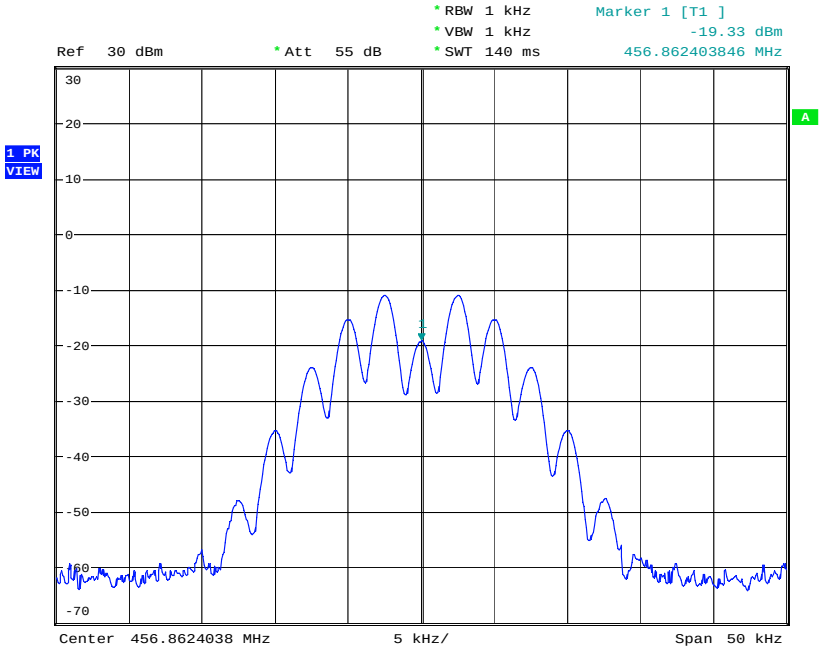
456.8625MHz Signal generator and EUT 2.5kHz deviation



Date: 16.MAY.2007 15:41:21

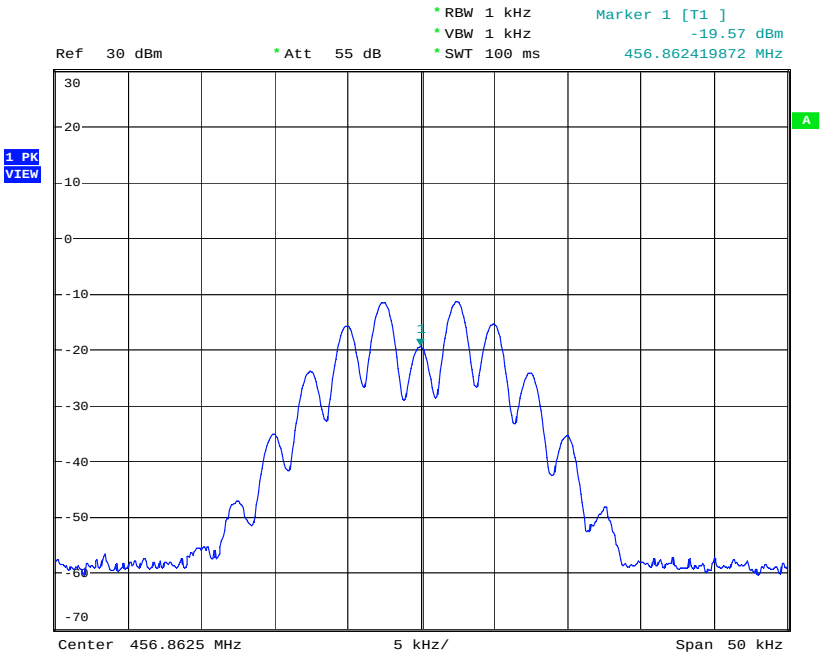
The above plots depicting the output waveshape show no measurable distortion visible. When compared to the input signal.

456.8625MHz Signal generator only 5kHz deviation



Date: 16.MAY.2007 15:07:54

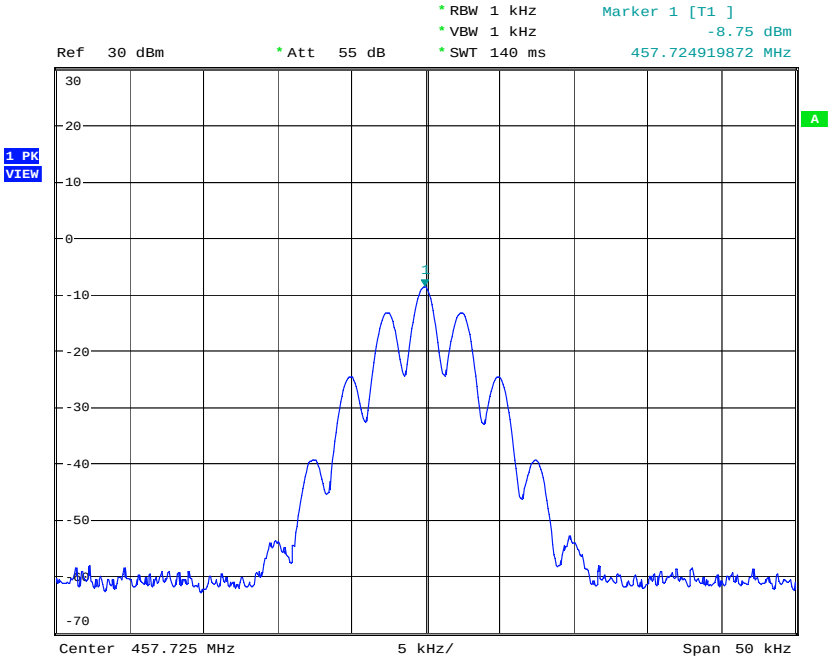
456.8625MHz Signal generator and EUT 5kHz deviation



Date: 16.MAY.2007 15:45:04

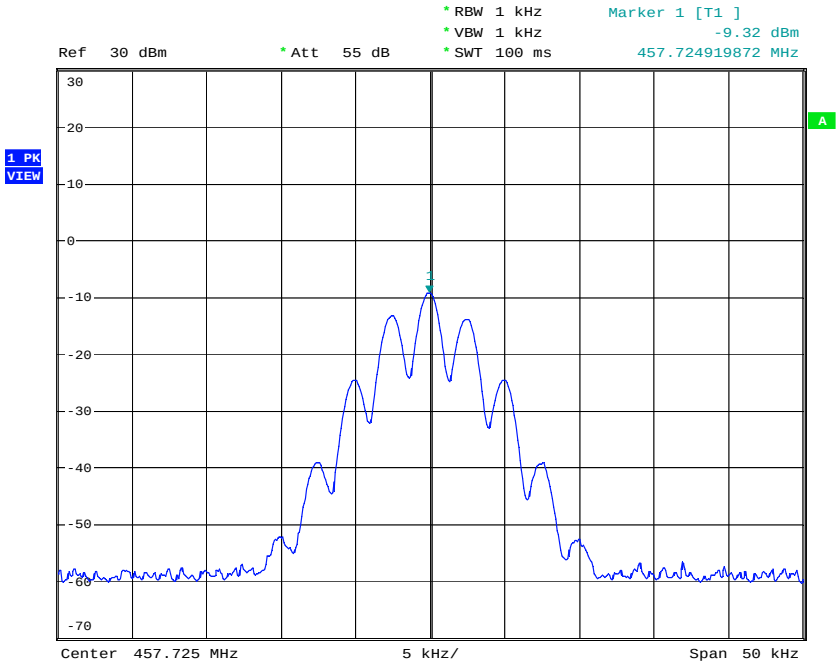
The above plots depicting the output waveshape show no measurable distortion visible. When compared to the input signal.

457.7250MHz Signal generator only 2.5kHz deviation



Date: 16.MAY.2007 15:10:41

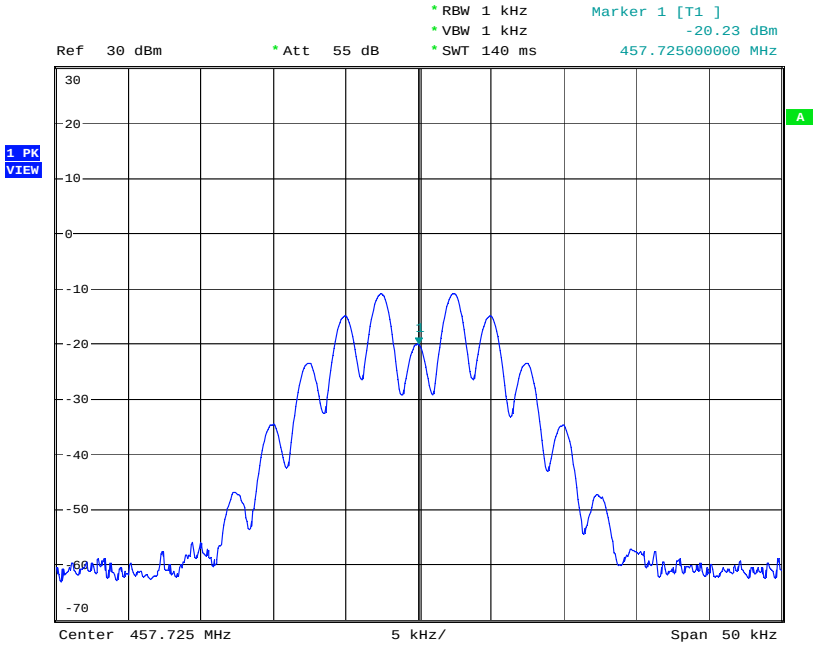
457.7250MHz Signal generator and EUT 2.5kHz deviation



Date: 16.MAY.2007 15:54:19

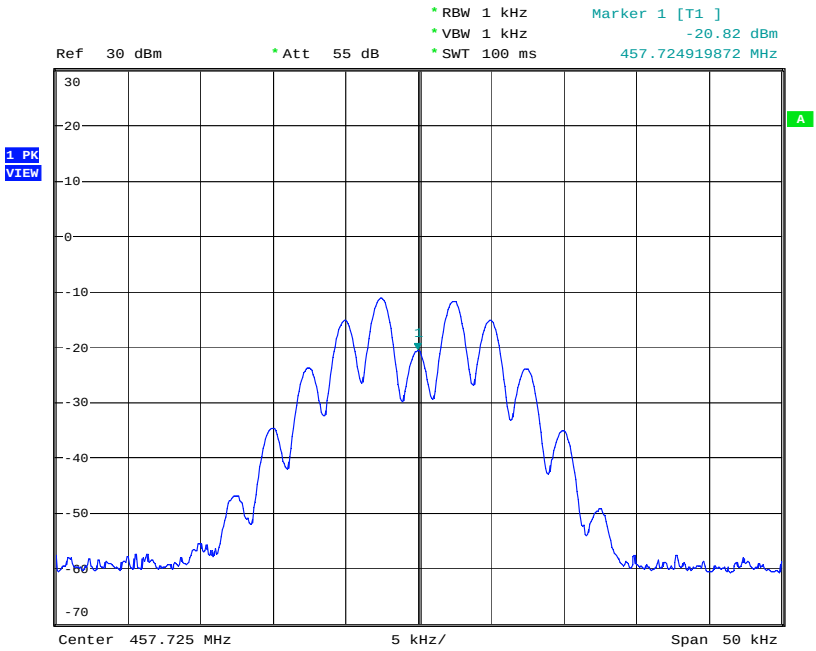
The above plots depicting the output waveshape show no measurable distortion visible. When compared to the input signal.

457.7250MHz Signal generator only 5kHz deviation



Date: 16.MAY.2007 15:09:38

457.7250MHz Signal generator and EUT 5kHz deviation



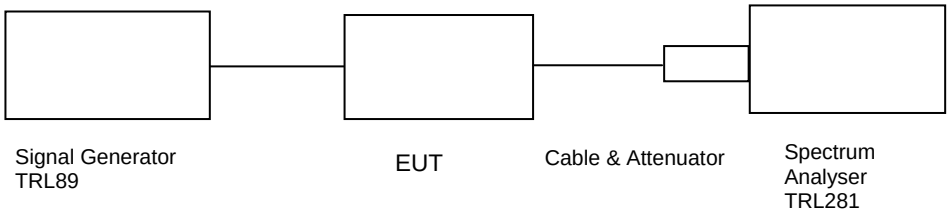
Date: 16.MAY.2007 15:49:48

The above plots depicting the output waveshape show no measurable distortion visible. When compared to the input signal.

TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – CONDUCTED – Part 2.1053 – UPLINK

Ambient temperature	=	20°C	Radio Laboratory		
Relative humidity	=	66%	Test Signal	=	F3E
Supply voltage	=	110Vac			



The test was set up as per the diagram. The level at the input was adjusted to compensate for the loss of the interconnecting cable. The unit was tested operating at maximum power and on two test frequencies.

The Spurious limit was calculated as follows:

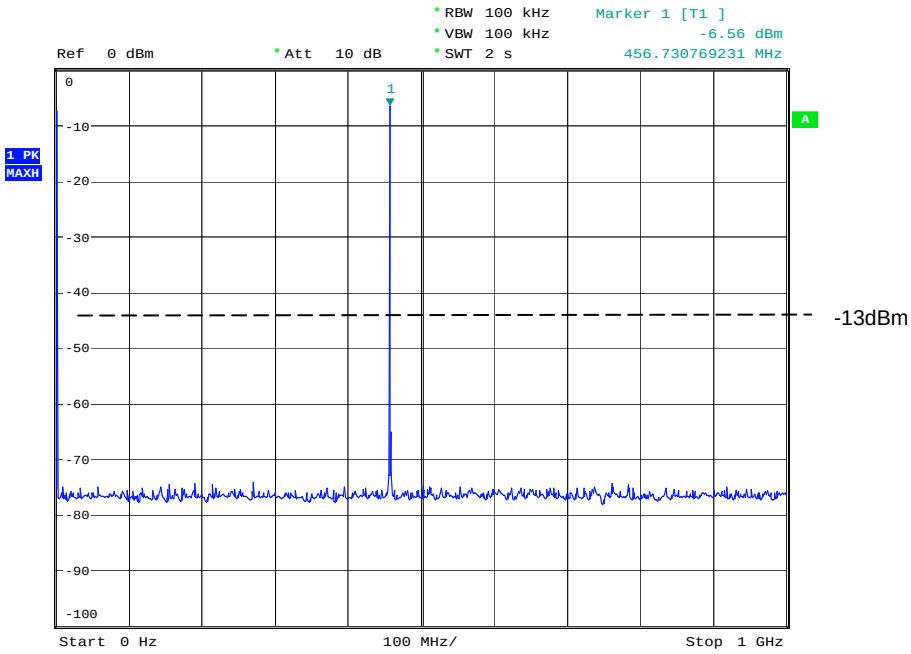
On any frequency removed from the assigned frequency by more that 250% of the authorised bandwidth

At least 43 + 10 log PdB

$(10\log P_{watts}) – (43+10\log (P_{watts} * 1000)) =$ LIMIT =-13 dBm

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	Rhode & Schwarz	FSU	200034	281	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	221	**X**
ATTENUATOR	BIRD	8304-100-N	N/A	222	**X**
CABLE	TRL	N TYPE	N/A	273	**X**
CABLE	TRL	N TYPE	N/A	274	**X**
SIGNAL GENERATOR	MARCON	2022D	119224/035	89	**X**

456.8625MHz Conducted spurious 0 - 1GHz



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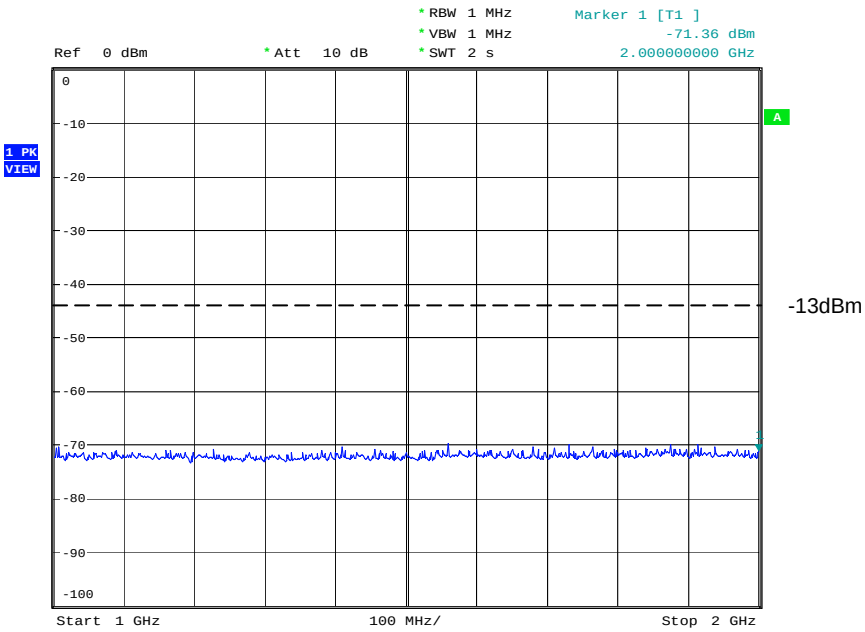
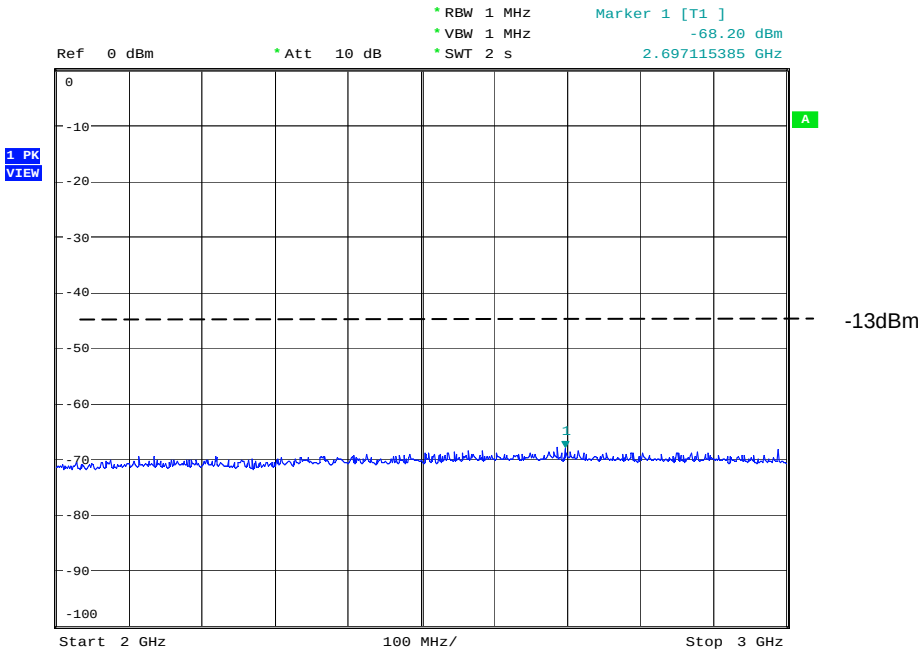
456.8625MHz Conducted spurious 1 - 2GHz



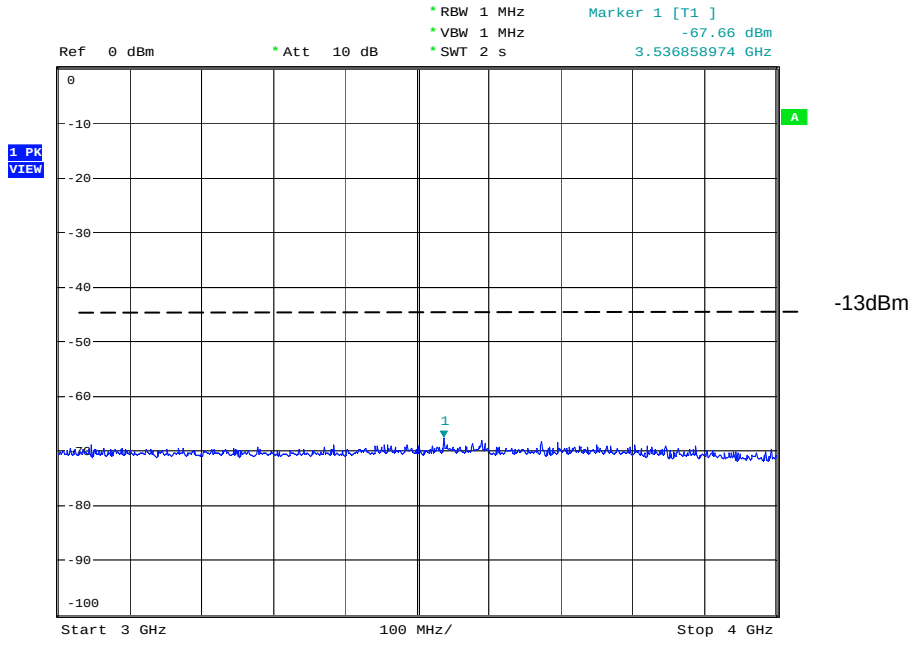
Date: 17.MAY.2007 15:44:26

456.8625MHz Conducted spurious 2 - 3GHz



Date: 17.MAY.2007 15:45:14

456.8625MHz Conducted spurious 3 - 4GHz



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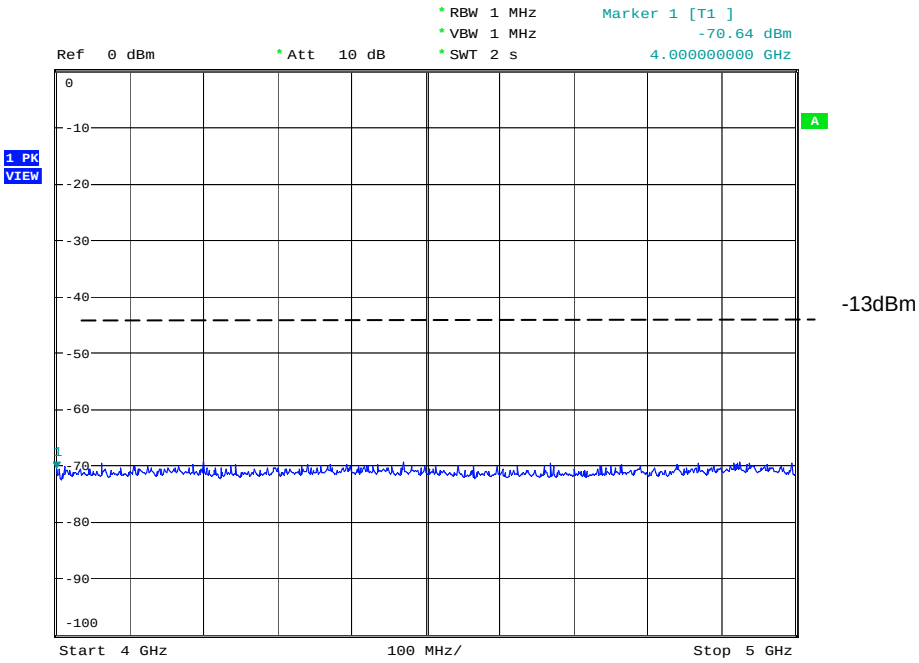
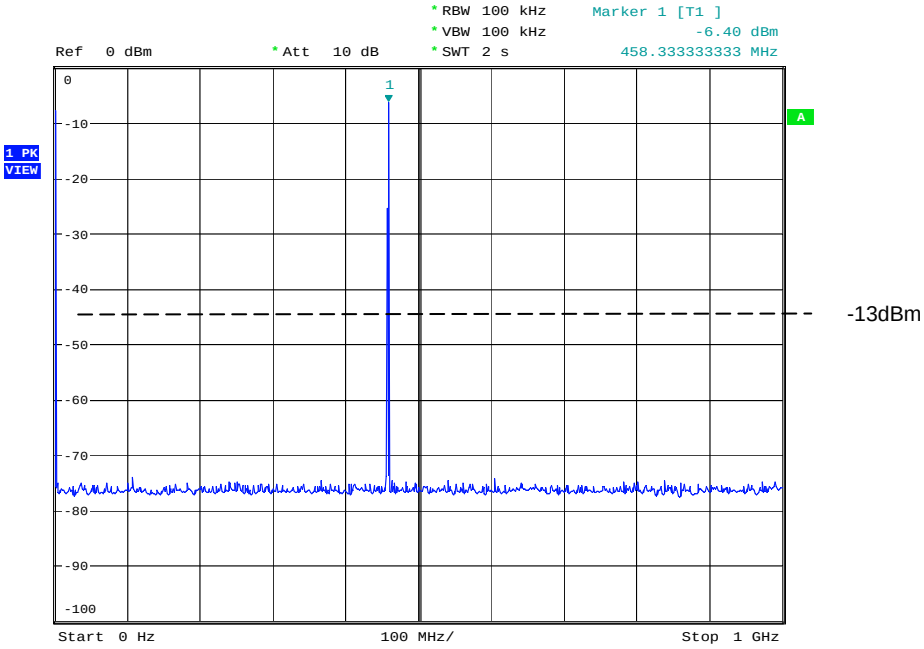
456.8625MHz Conducted spurious 4 - 5GHz



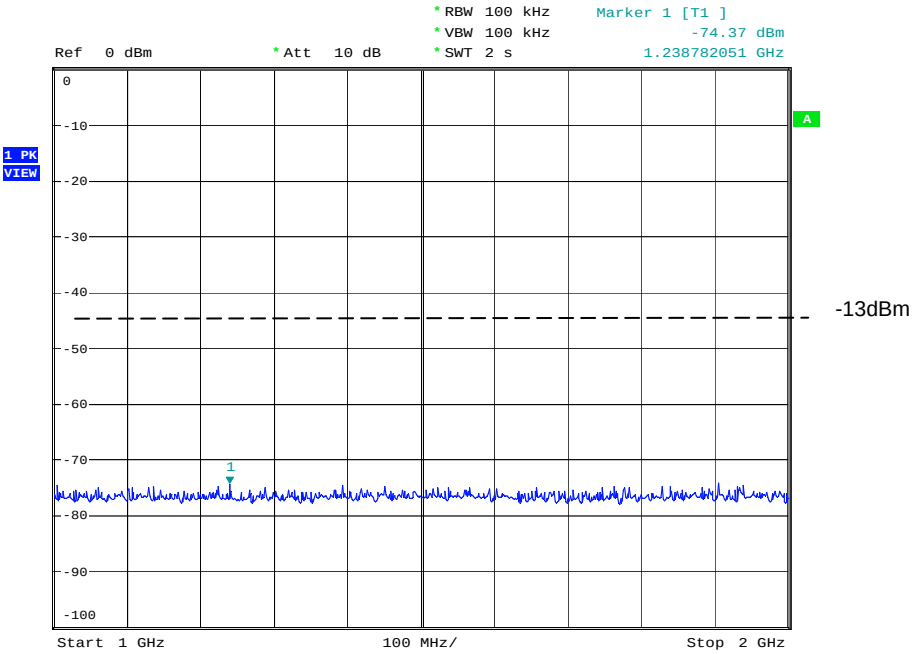
Date: 17.MAY.2007 15:47:20

457.7250MHz Conducted spurious 0 - 1GHz



Date: 17.MAY.2007 15:52:13

457.7250MHz Conducted spurious 1 - 2GHz



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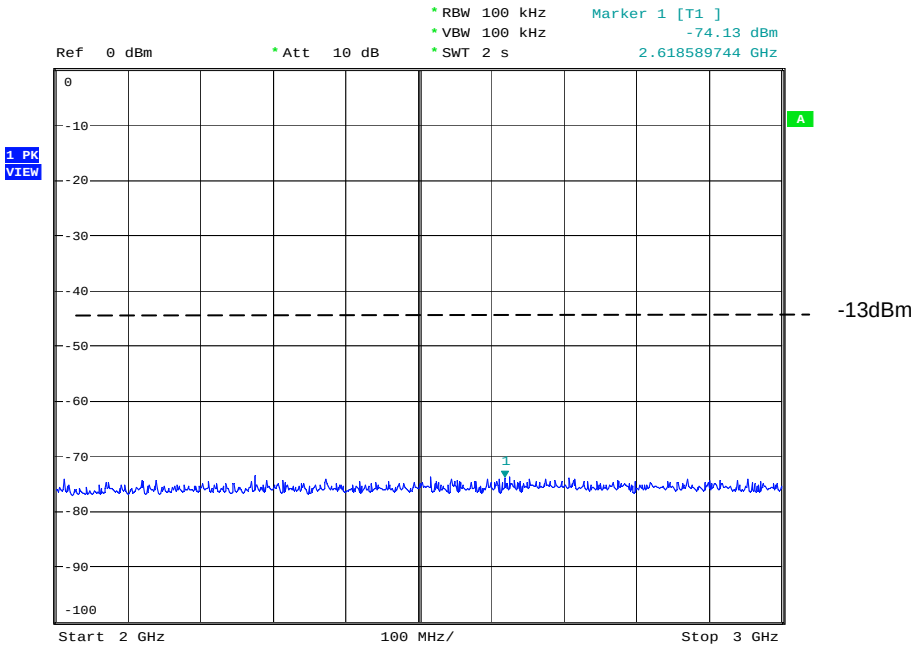
457.7250MHz Conducted spurious 2 - 3GHz



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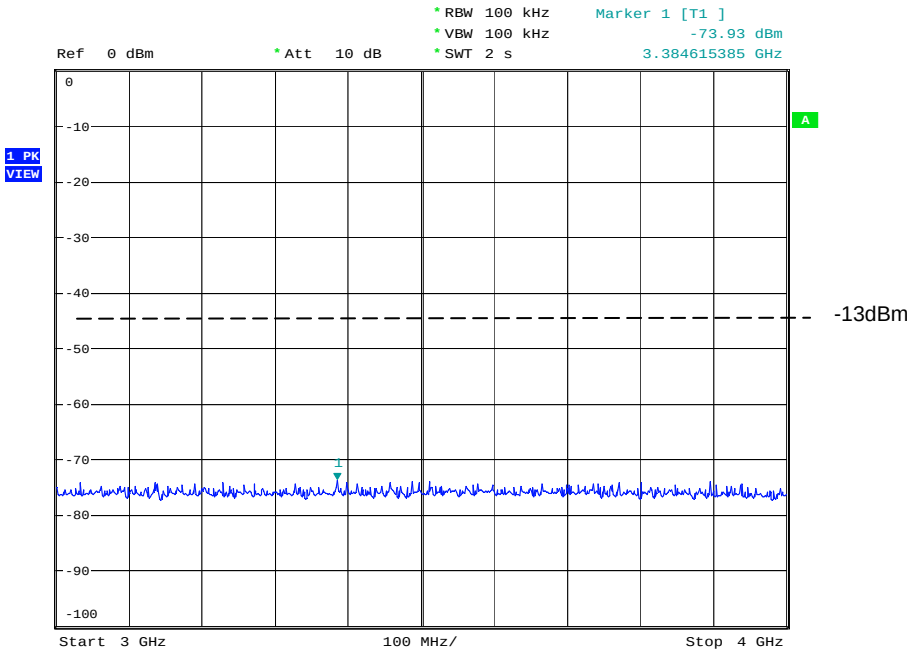
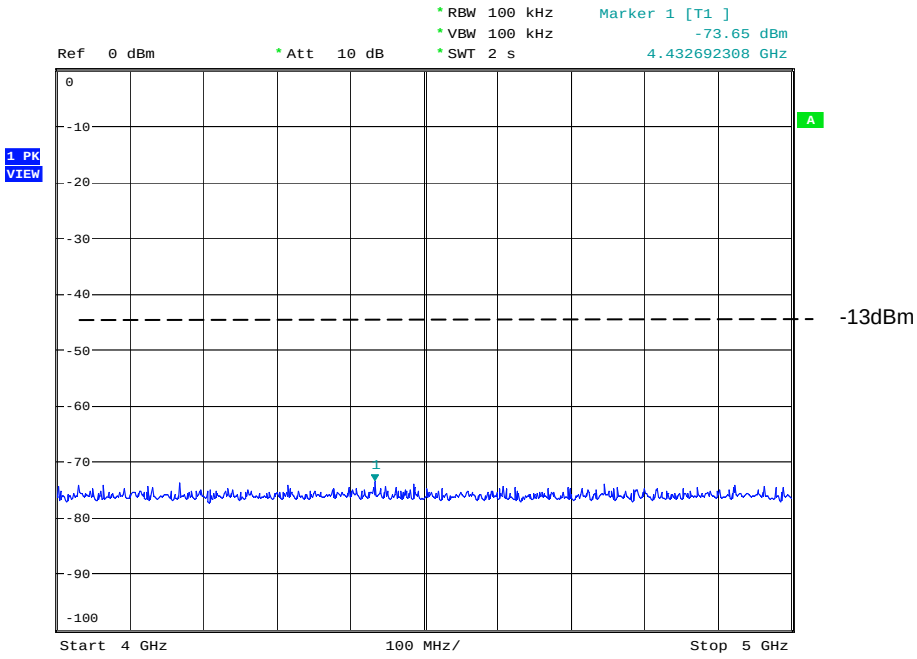
457.7250MHz Conducted spurious 3 - 4GHz



Date: 17.MAY.2007 15:54:24

457.7250MHz Conducted spurious 4 - 5GHz

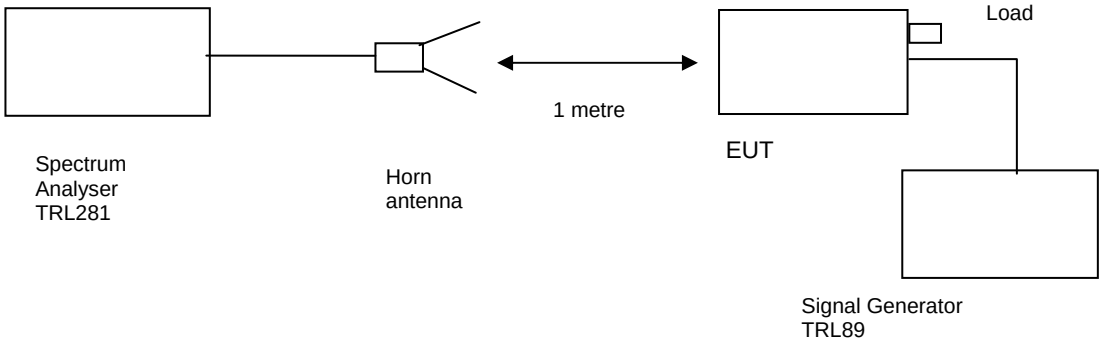


Date: 17.MAY.2007 15:55:33

TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – RADIATED – Part 2.1053– UPLINK

Ambient temperature	=	21°C	Test Signal	=	F3E
Relative humidity	=	59%			
Conditions	=	OATS			
Supply voltage	=	110Vac			
Supply Frequency	=	60Hz			



The test was set up as per the diagram. The level at the input was adjusted to compensate for the loss of the interconnecting cable. The unit was tested operating maximum power on two test frequencies with a 50 ohm load on the output. The unit was also tested with the signal generator replaced by another 50ohm load.

The Spurious limit was calculated as follows:

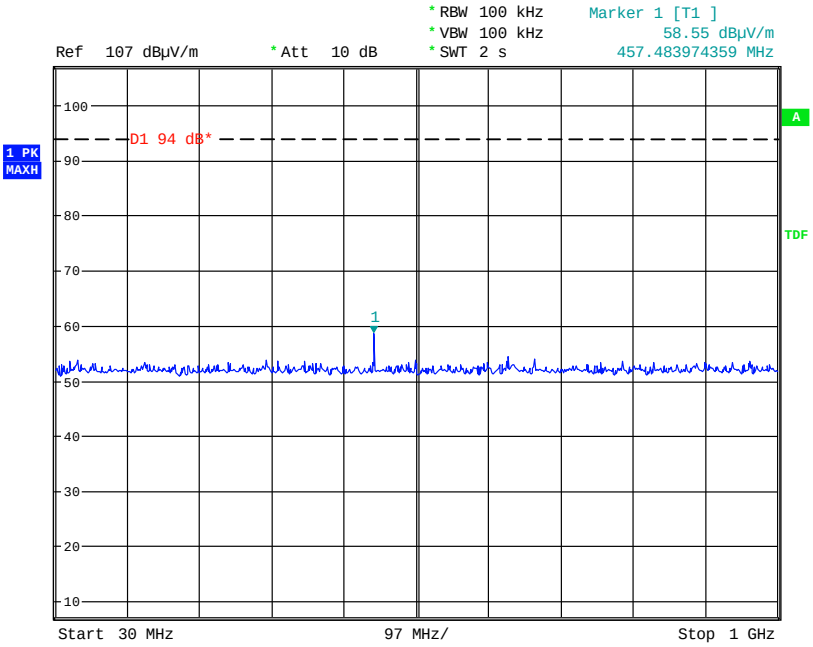
On any frequency removed from the assigned frequency by more that 250% of the authorised bandwidth

At least 43 + 10 log PdB

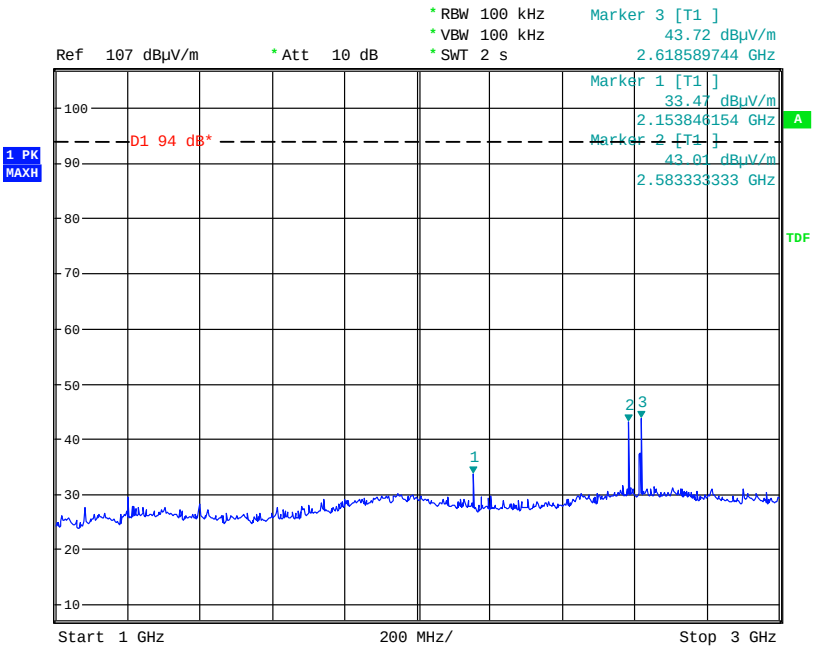
$(10\log P_{watts}) – (43+10\log (P_{watts} * 1000))$ = LIMIT =-13 dBm

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	Rhode & Schwarz	FSU	200034	281	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	221	**X**
ATTENUATOR	BIRD	8304-100-N	N/A	222	**X**
CABLE	TRL	N TYPE	N/A	273	**X**
CABLE	TRL	N TYPE	N/A	274	**X**
SIGNAL GENERATOR	MARCON	2022D	119224/035	89	**X**

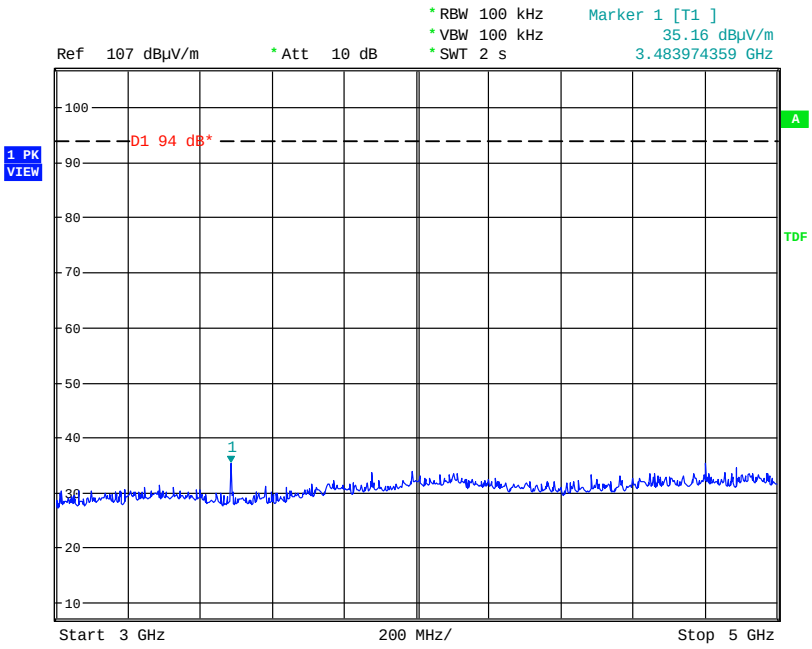
Radiated emissions 456.8625MHz 30MHz – 1GHz



Radiated emissions 456.8625MHz 1 – 3GHz

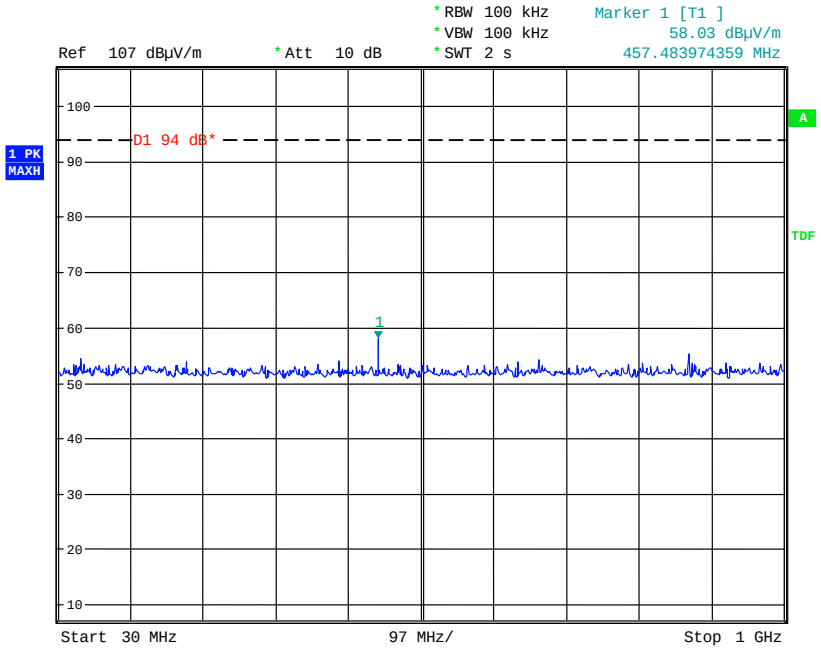


Radiated emissions 456.8625MHz 3 – 5GHz

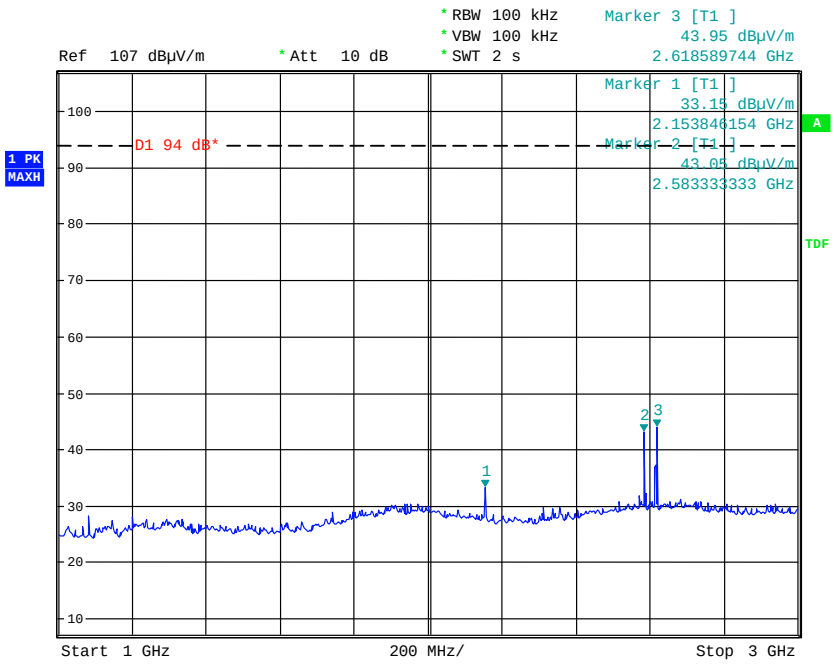


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

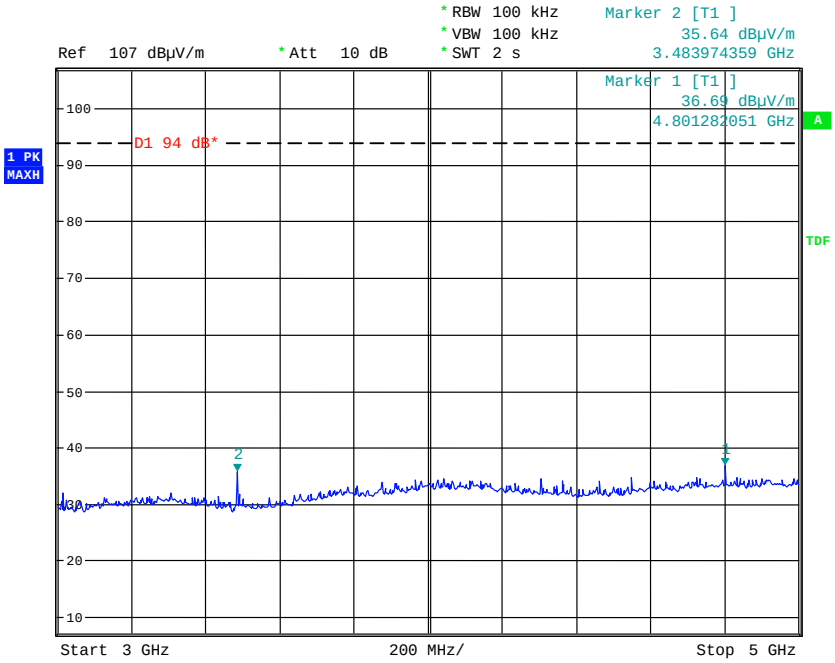
Radiated emissions 457.7250MHz 30 – 1GHz



Radiated emissions 457.7250MHz 1 – 3GHz



Radiated emissions 457.7250MHz 3 – 5GHz

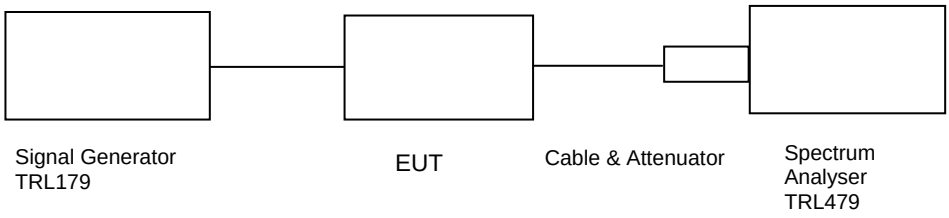


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

AMPLIFIER GAIN – CONDUCTED – PART 2.1046 – DOWNLINK

Ambient temperature = 19°C
Relative humidity = 58%
Supply voltage = 110Vac
Channel Frequency = See test results

Radio Laboratory



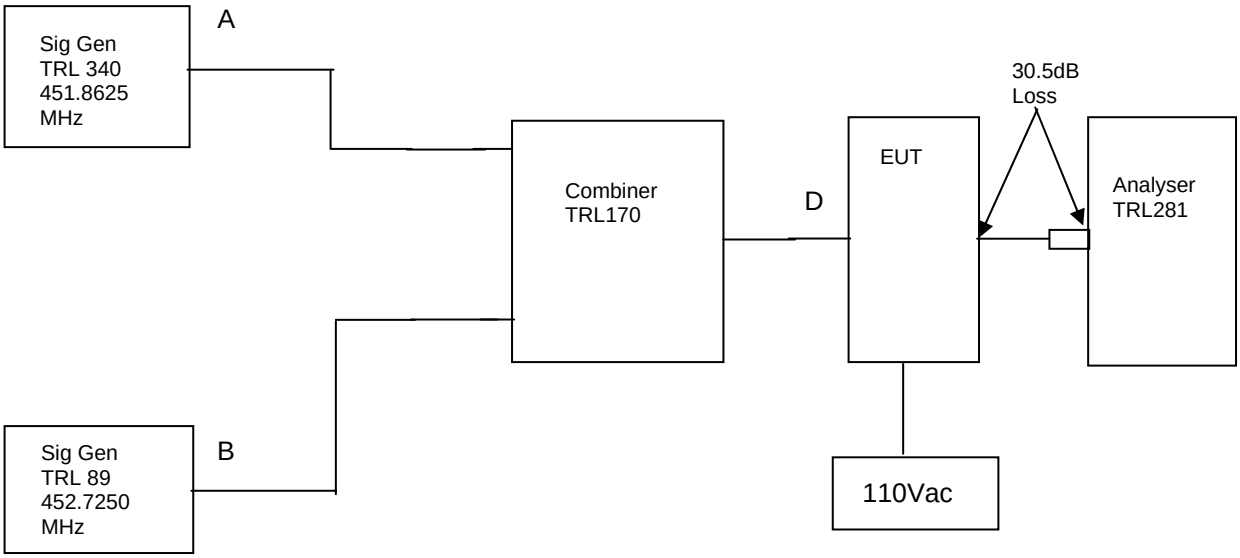
Frequency MHz	Operating Voltage	Signal Generator input level dBm	Cable & Attenuator Loss dB	Level at Spectrum Analyser dBm	Gain dB	Gain after 10dB input level increase dBm
451.8625	110Vac	-55.35	-30.5	-2.40	83.45	73.85
452.7250	110Vac	-55.35	-30.5	-2.60	83.25	73.65

Notes:
2. The level of the signal generator takes into consideration the loss from the cable.
3. The signal generator input was increased by 10dB and the level of the output signal remeasured

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	Rhode & Schwarz	FSU	200034	281	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	221	**X**
ATTENUATOR	BIRD	8304-100-N	N/A	222	**X**
CABLE	TRL	N TYPE	N/A	274	**X**
CABLE	TRL	N TYPE	N/A	273	**X**
SIGNAL GENERATOR	Hewlet Packard	83630B	3722A00588	340	**X**

AMPLIFIER INTERMODULATION SPURIOUS EMISSIONS – CONDUCTED – PART 2.1053– DOWNLINK

Ambient temperature = 28°C Radio Laboratory
Relative humidity = 39%
Supply voltage = 110Vac



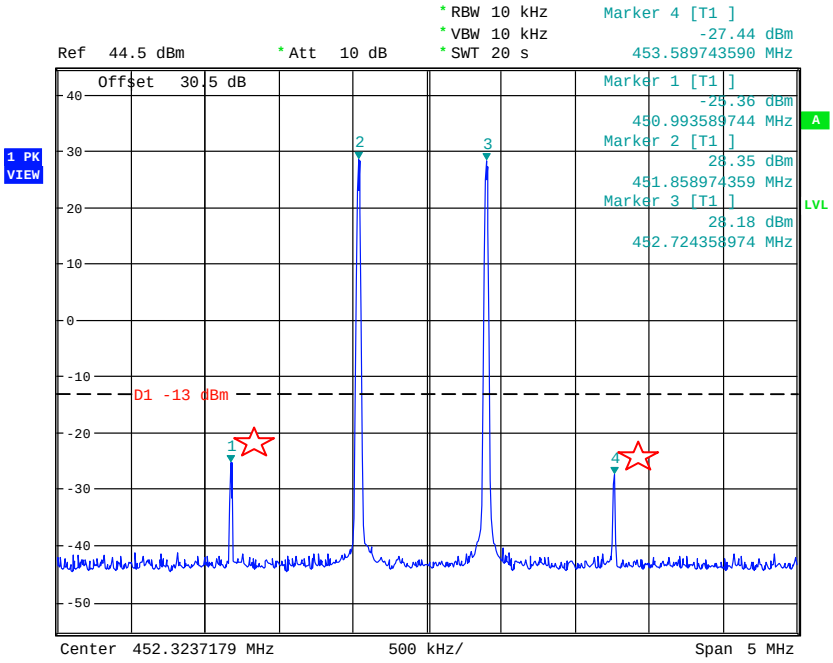
The Intermodualation and spurious products were measured with the amplifier operating at maximum gain. A two tone test was conducted using the equipment as above. The input power level was adjusted so the level at point D was the maximum input of -45dBm. The cable and attenuator loss between the EUT and the spectrum analyser was -30.5dB.

Note: 2 tone test was performed because the unit is a two channel device only.

Sweep data is shown on the next page:

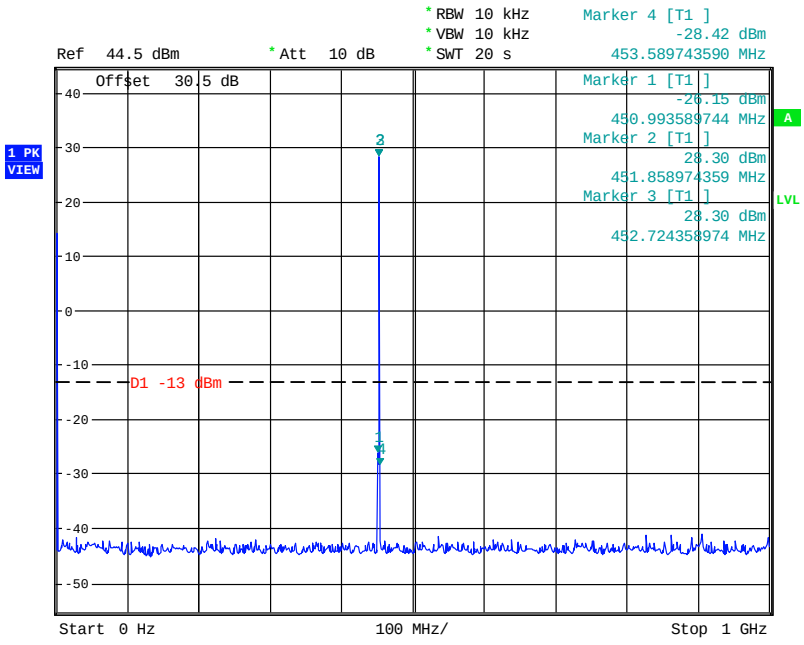
TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	Rhode & Schwarz	FSU	200034	281	**X**
SIGNAL GENERATOR	Hewlet Packard	83630B	3722A00588	340	**X**
SIGNAL GENERATOR	MARCONI	2022D	119224/035	UH89	**X**
COMBINER	ELCOM	RC-4-50	N/A	170	**X**

Intermodulation inband



The above plot shows that all products (designated by ☆) are at least 40dB below the fundamentals

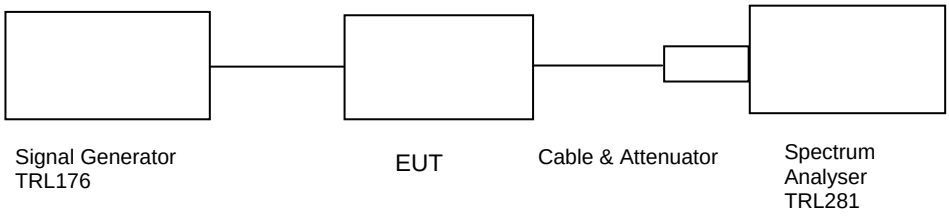
Intermodulation wideband



TRANSMITTER TESTS

AMPLIFIER MODULATED CHANNEL TEST – CONDUCTED – Part 2.1049– DOWNLINK

Ambient temperature	=	19^{o}C	Radio Laboratory
Relative humidity	=	58%	
Supply voltage	=	110Vac	
Channel Frequency	=	See test results	



This test was performed to show that the amplifier does not alter the input signal in any way. The input signal was set to the maximum input level (-50dBm) and modulated with a 2500Hz tone and a 5000Hz tone. The plots show the signal measured at the signal generator and the signal measured at the output of the EUT.

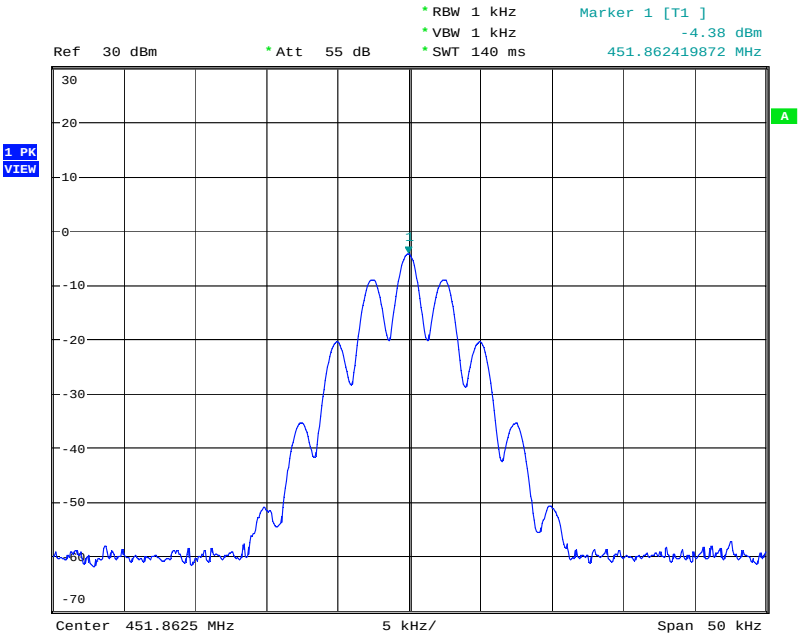
Note: The cables and attenuators had the following losses.

3. Cable and attenuator losses 30.5dB
4. Cable between signal generator and EUT 0.35dB

The test equipment used for the Transmitter Modulated Channel test:

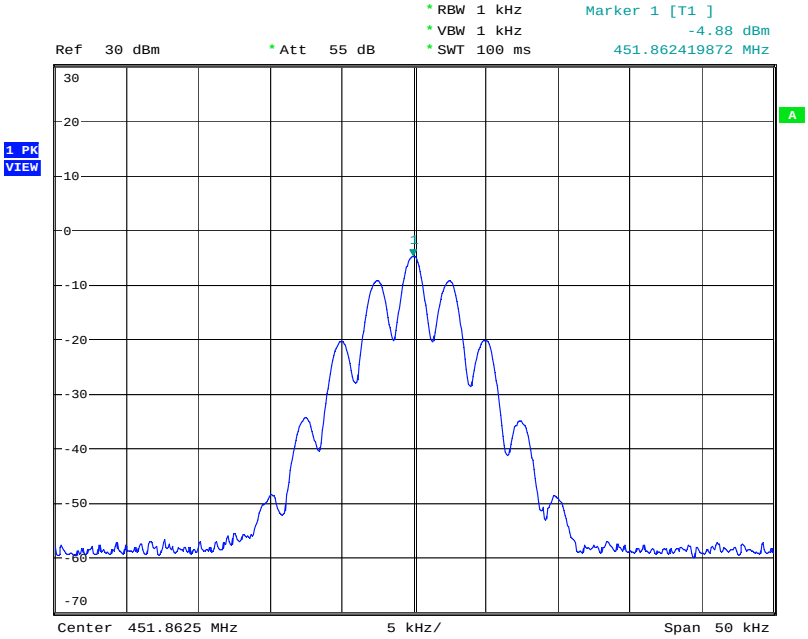
TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	Rhode & Schwarz	FSU	200034	281	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	221	**X**
ATTENUATOR	BIRD	8304-100-N	N/A	222	**X**
CABLE	TRL	N TYPE	N/A	274	**X**
CABLE	TRL	N TYPE	N/A	273	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	179	**X**

451.8625MHz Signal generator only 2.5kHz deviation



Date: 16.MAY.2007 15:17:24

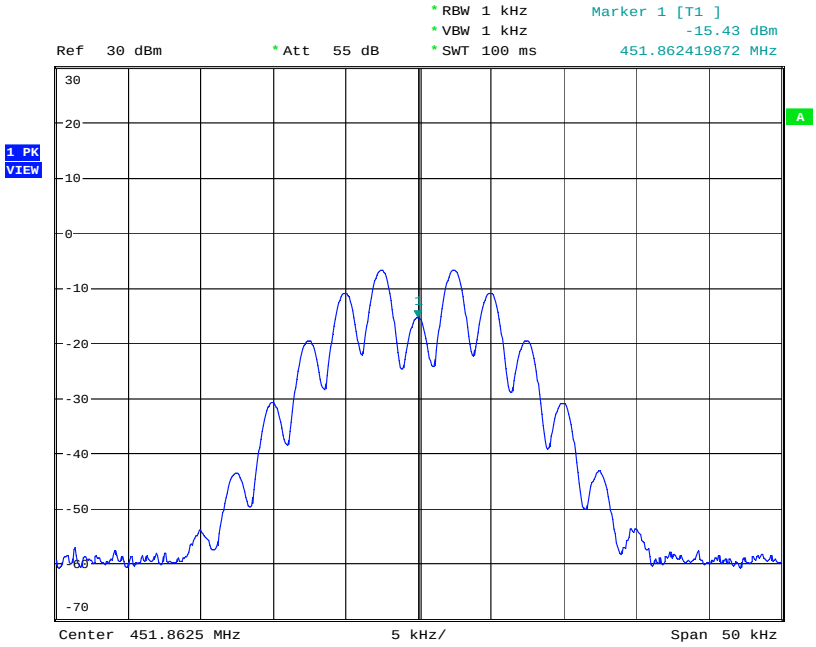
451.8625MHz Signal generator and EUT 2.5kHz deviation



Date: 16.MAY.2007 16:01:53

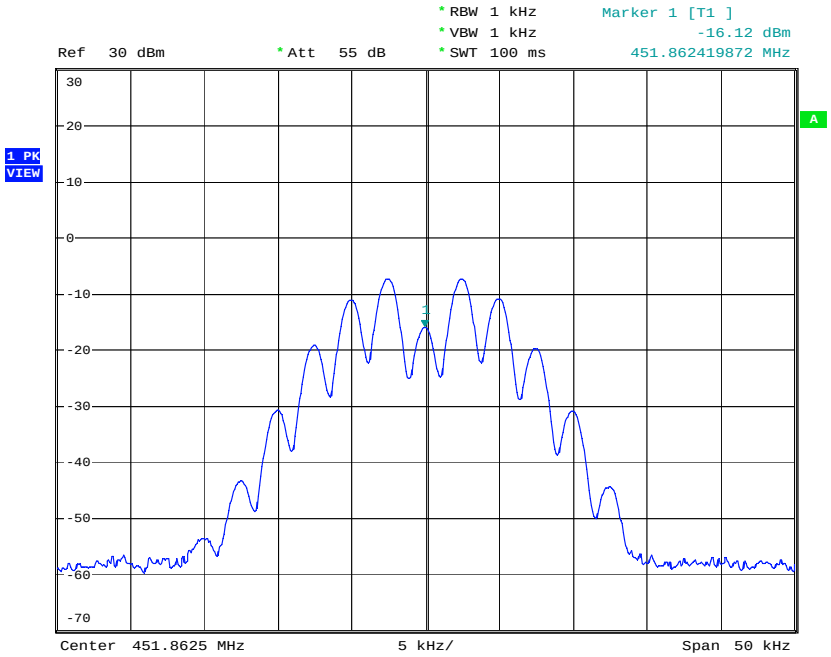
The above plots depicting the output waveshape show no measurable distortion visible. When compared to the input signal.

451.8625MHz Signal generator only 5kHz deviation



Date: 16.MAY.2007 15:21:07

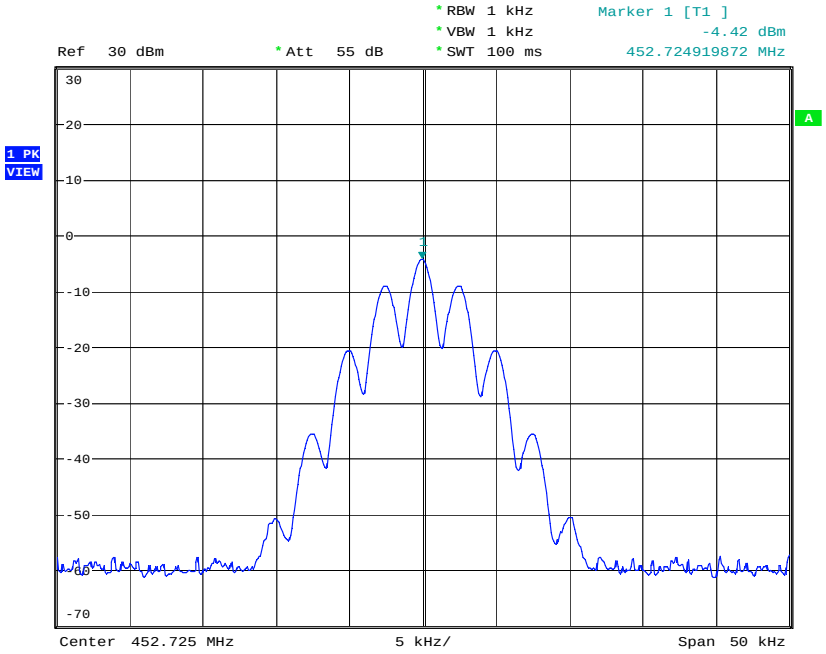
451.8625MHz Signal generator and EUT 5kHz deviation



Date: 16.MAY.2007 16:10:04

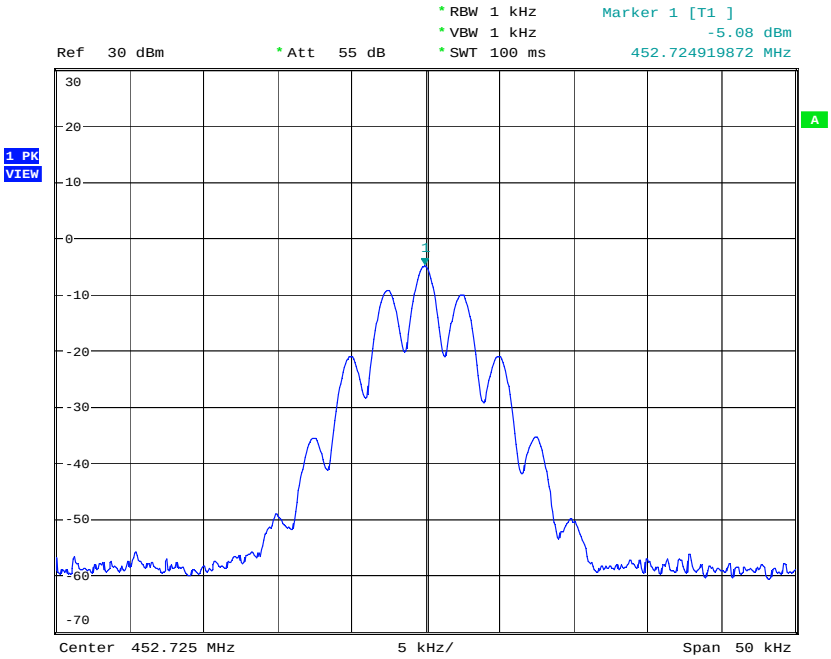
The above plots depicting the output waveshape show no measurable distortion visible. When compared to the input signal.

452.7250MHz Signal generator only 2.5kHz deviation



Date: 16.MAY.2007 15:26:43

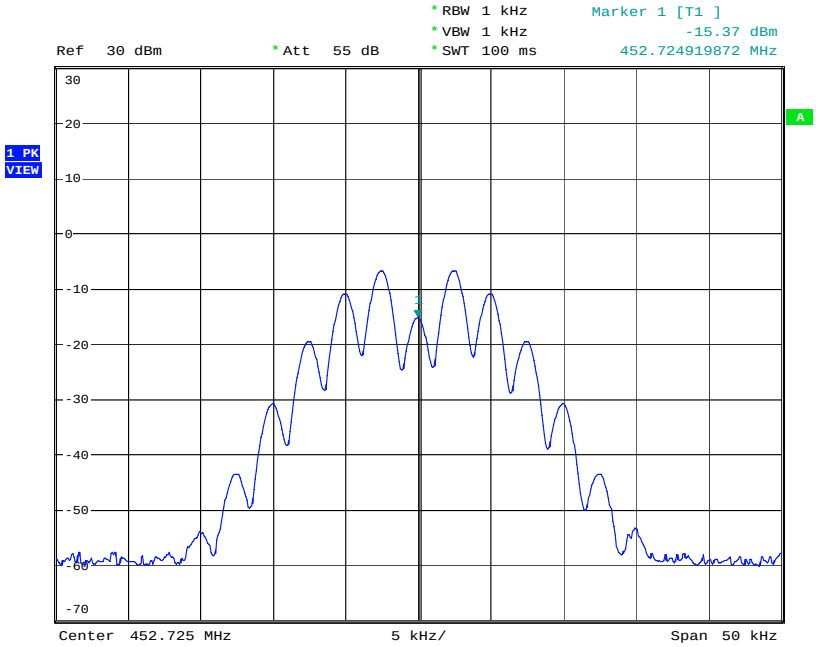
452.7250MHz Signal generator and EUT 2.5kHz deviation



Date: 16.MAY.2007 16:19:27

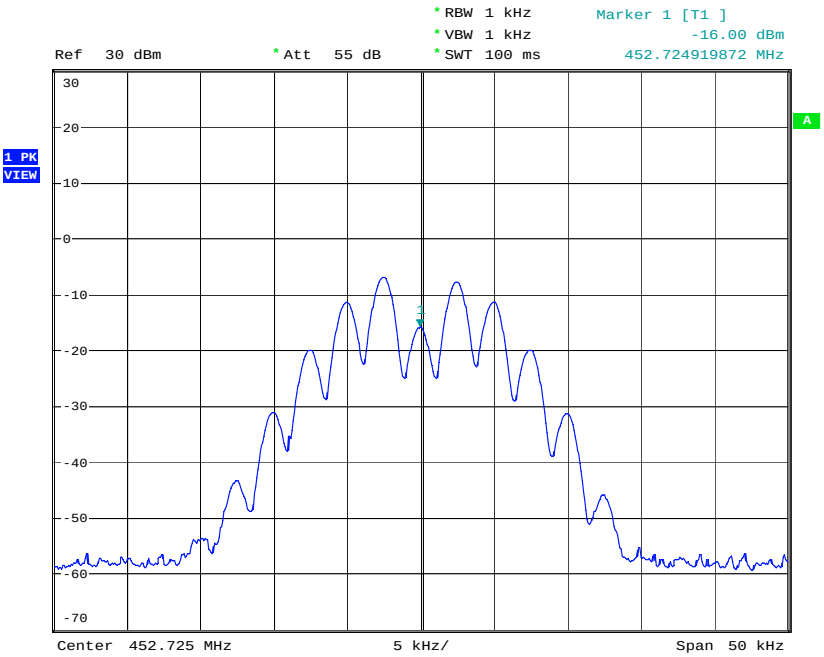
The above plots depicting the output waveshape show no measurable distortion visible. When compared to the input signal.

452.7250MHz Signal generator only 5kHz deviation



Date: 16.MAY.2007 15:25:11

452.7250MHz Signal generator and EUT 5kHz deviation



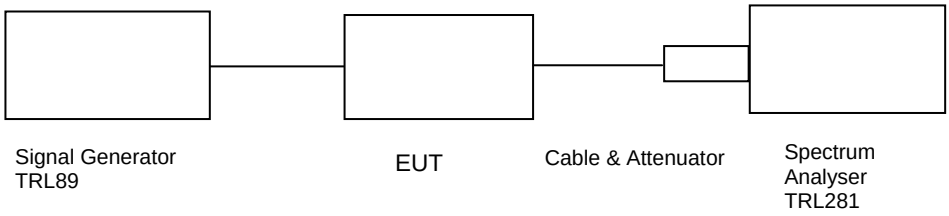
Date: 16.MAY.2007 16:17:08

The above plots depicting the output waveshape show no measurable distortion visible. When compared to the input signal.

TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – CONDUCTED – Part 2.1053 – DOWNLINK

Ambient temperature	=	20°C	Radio Laboratory		
Relative humidity	=	66%	Test Signal	=	F3E
Supply voltage	=	110Vac			



The test was set up as per the diagram. The level at the input was adjusted to compensate for the loss of the interconnecting cable. The unit was tested operating at maximum power and on two test frequencies.

The Spurious limit was calculated as follows:

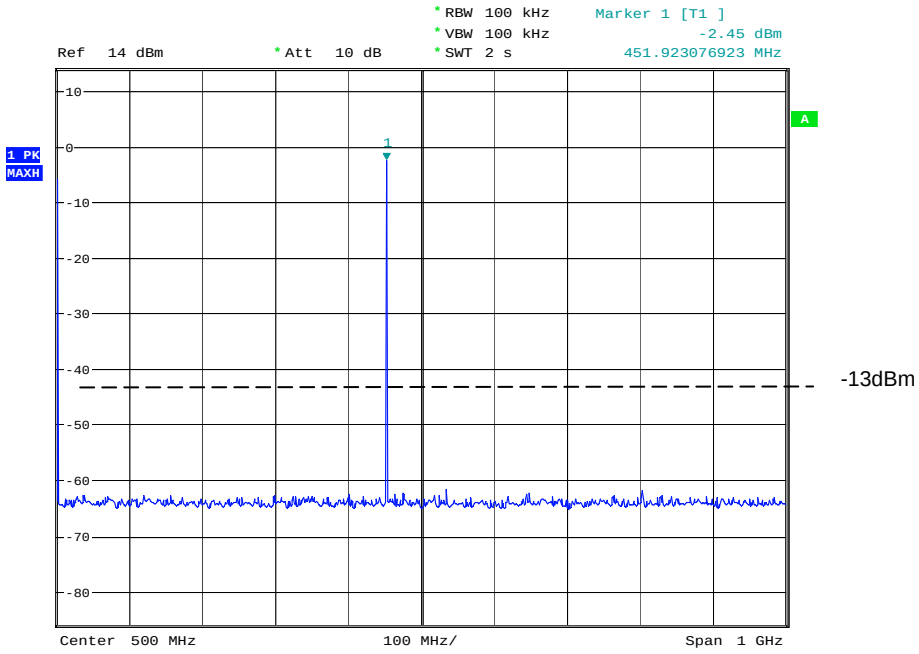
On any frequency removed from the assigned frequency by more that 250% of the authorised bandwidth

At least 43 + 10 log PdB

$(10\log P_{watts}) – (43+10\log (P_{watts} * 1000)) =$ LIMIT =-13 dBm

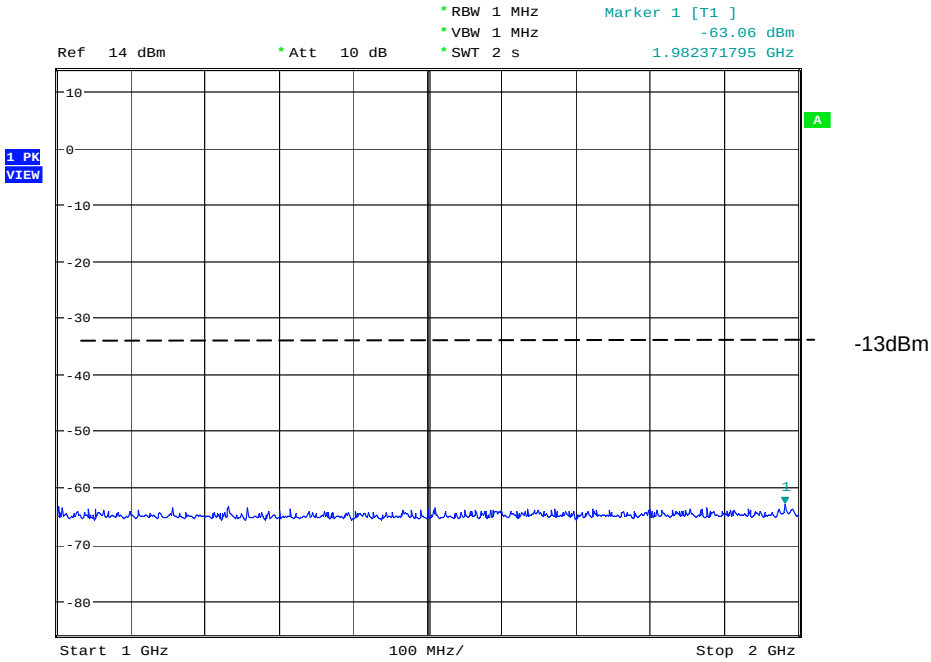
TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	Rhode & Schwarz	FSU	200034	281	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	221	**X**
ATTENUATOR	BIRD	8304-100-N	N/A	222	**X**
CABLE	TRL	N TYPE	N/A	273	**X**
CABLE	TRL	N TYPE	N/A	274	**X**
SIGNAL GENERATOR	MARCON	2022D	119224/035	89	**X**

451.8625MHz Conducted spurious 0 - 1GHz



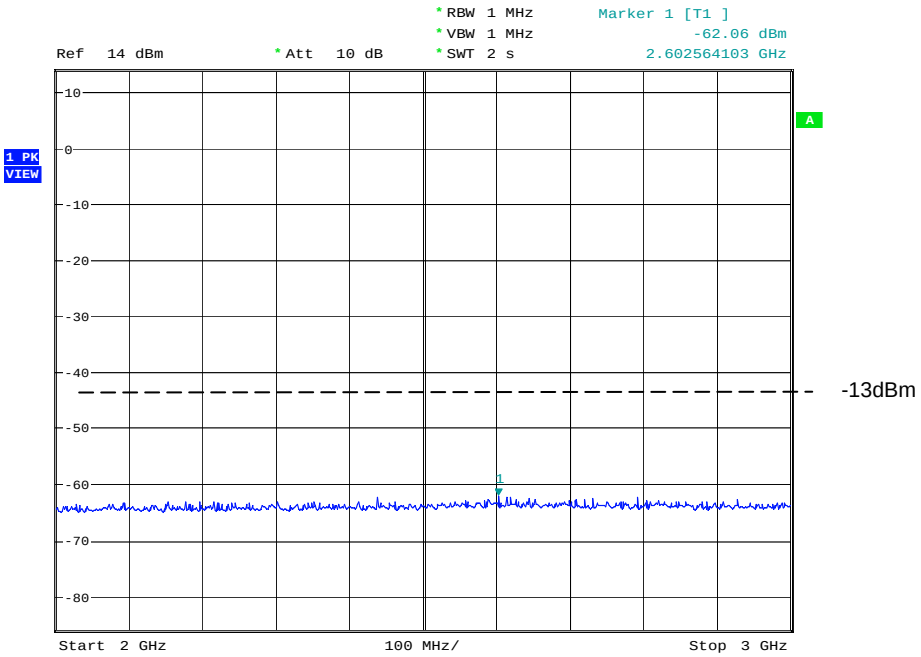
Date: 18.MAY.2007 08:55:51

451.8625MHz Conducted spurious 1 - 2GHz



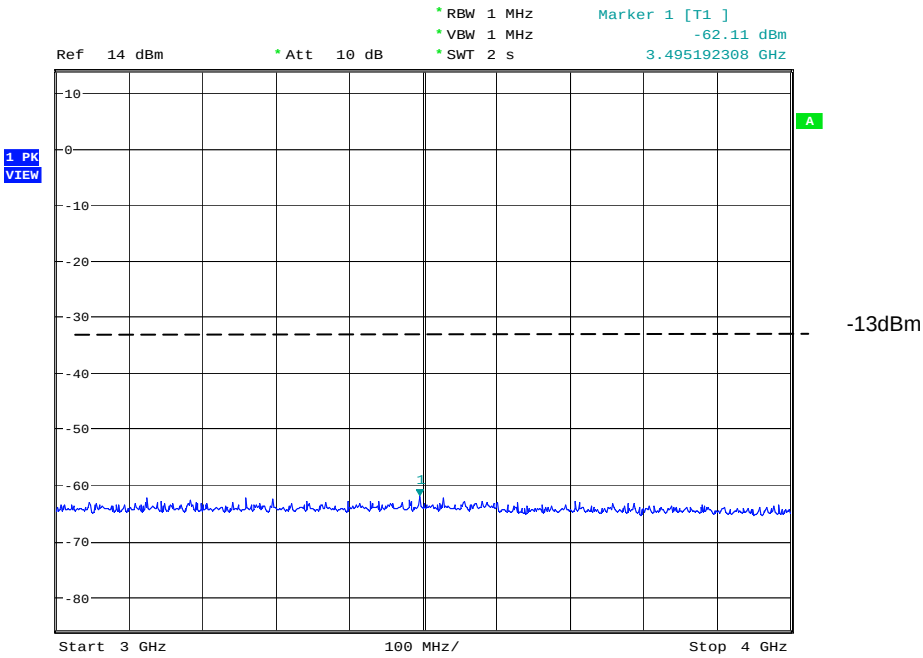
Date: 18.MAY.2007 08:56:48

451.8625MHz Conducted spurious 2 - 3GHz



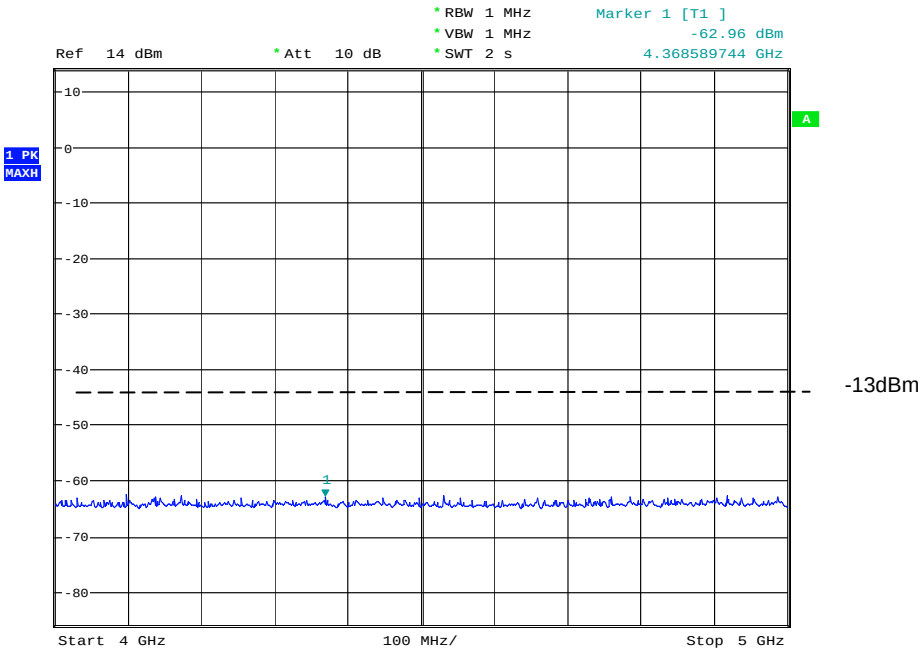
Date: 18.MAY.2007 08:57:34

451.8625MHz Conducted spurious 3 - 4GHz



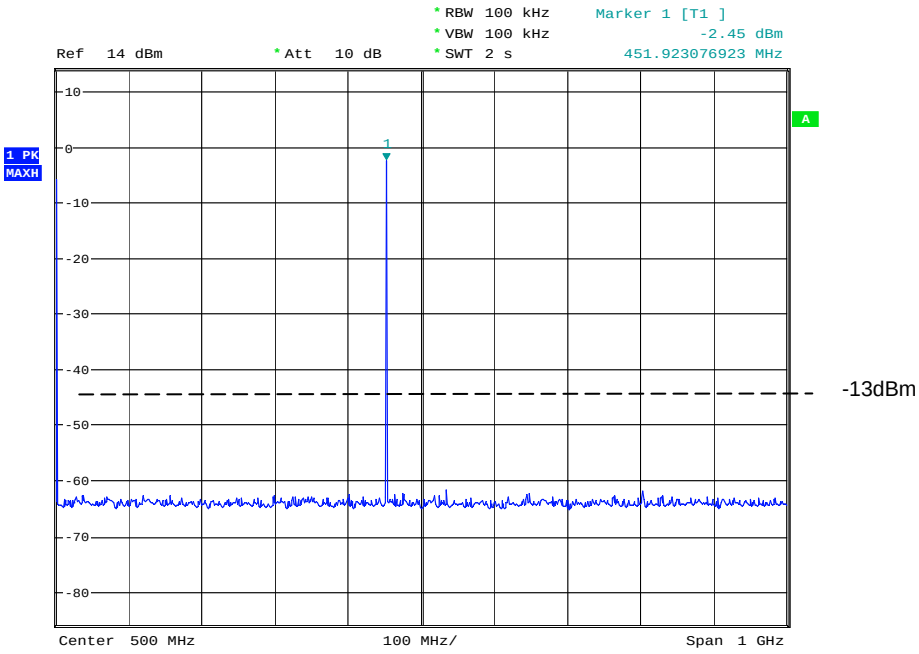
Date: 18.MAY.2007 08:58:12

451.8625MHz Conducted spurious 4 - 5GHz



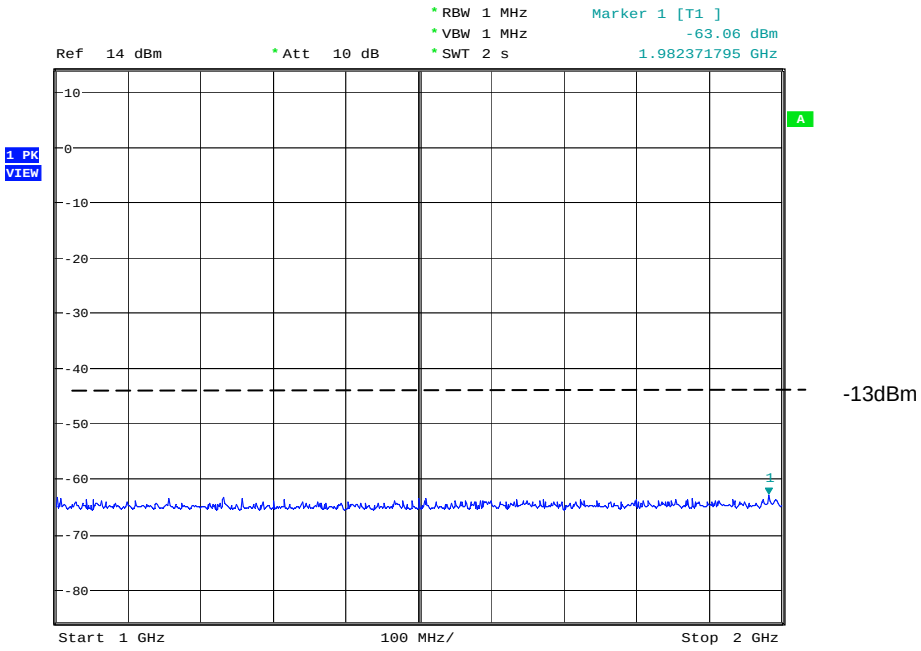
Date: 18.MAY.2007 08:58:49

452.7250MHz Conducted spurious 0 - 1GHz



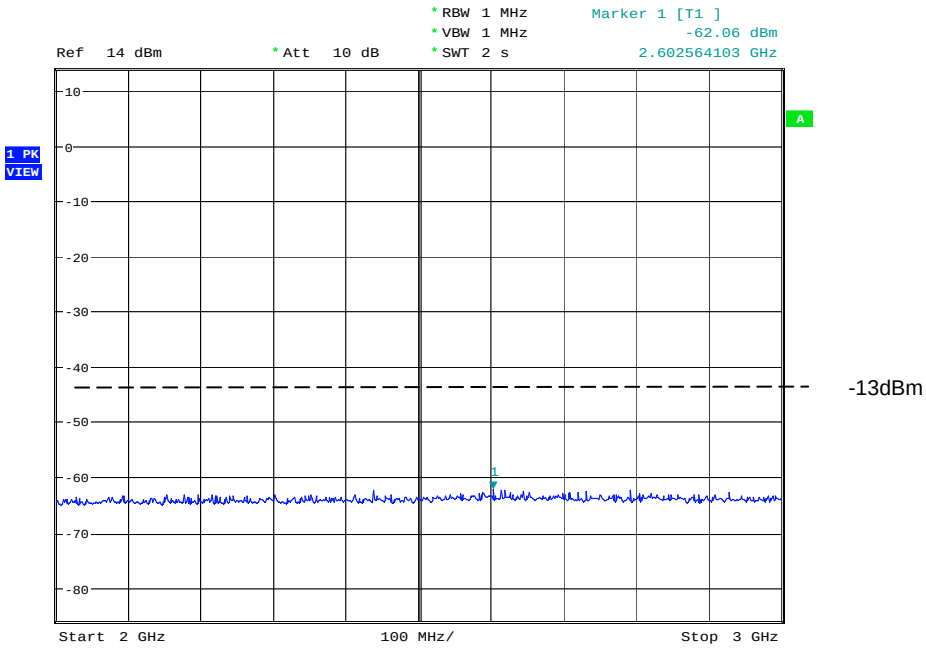
Date: 18.MAY.2007 08:55:51

452.7250MHz Conducted spurious 1 - 2GHz



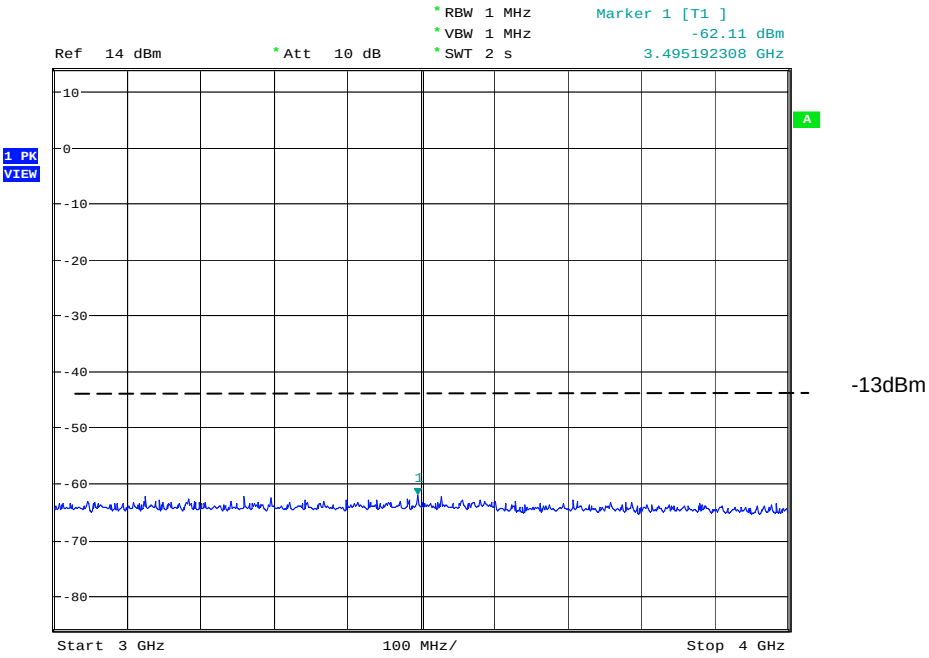
Date: 18.MAY.2007 08:56:48

452.7250MHz Conducted spurious 2 - 3GHz



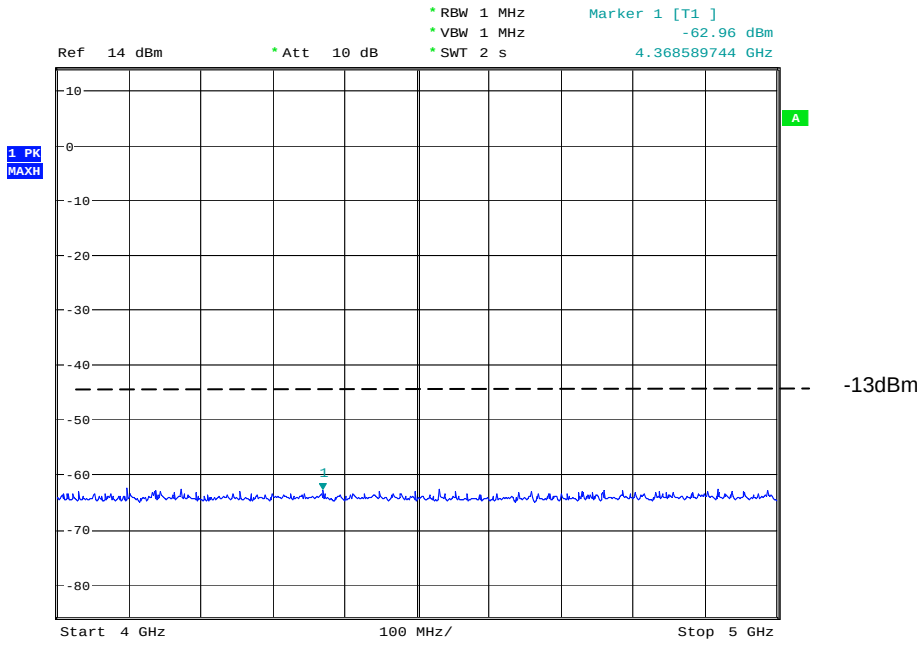
Date: 18.MAY.2007 08:57:34

452.7250MHz Conducted spurious 3 - 4GHz



Date: 18.MAY.2007 08:58:12

452.7250MHz Conducted spurious 4 - 5GHz

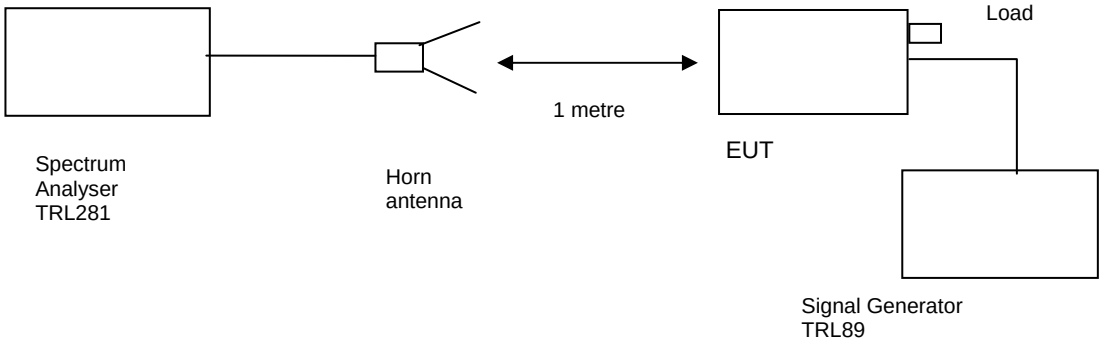


Date: 18.MAY.2007 08:58:49

TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – RADIATED – Part 2.1053– DOWNLINK

Ambient temperature	=	21°C	Test Signal	=	F3E
Relative humidity	=	59%			
Conditions	=	OATS			
Supply voltage	=	110Vac			
Supply Frequency	=	60Hz			



The test was set up as per the diagram. The level at the input was adjusted to compensate for the loss of the interconnecting cable. The unit was tested operating maximum power on two test frequencies with a 50 ohm load on the output. The unit was also tested with the signal generator replaced by another 50ohm load.

The Spurious limit was calculated as follows:

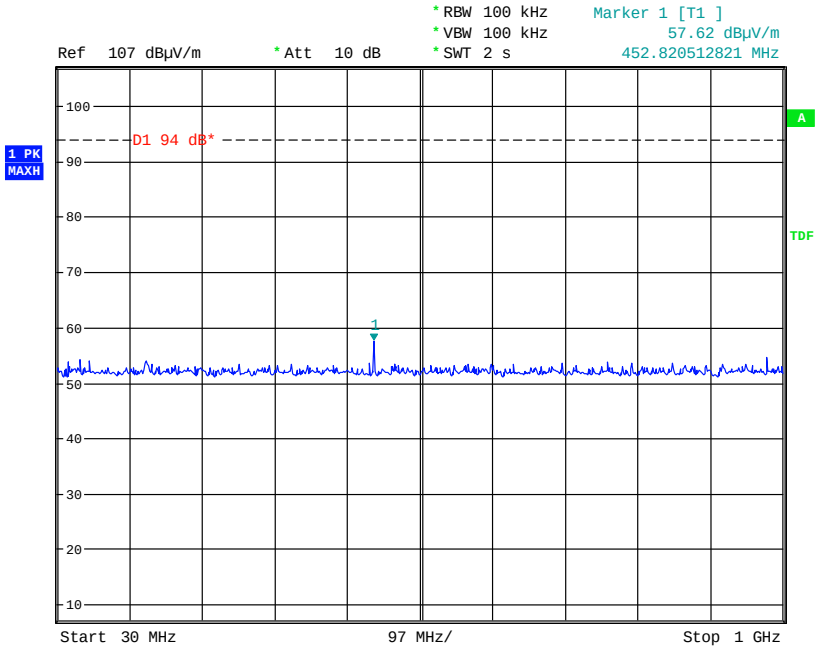
On any frequency removed from the assigned frequency by more that 250% of the authorised bandwidth

At least 43 + 10 log PdB

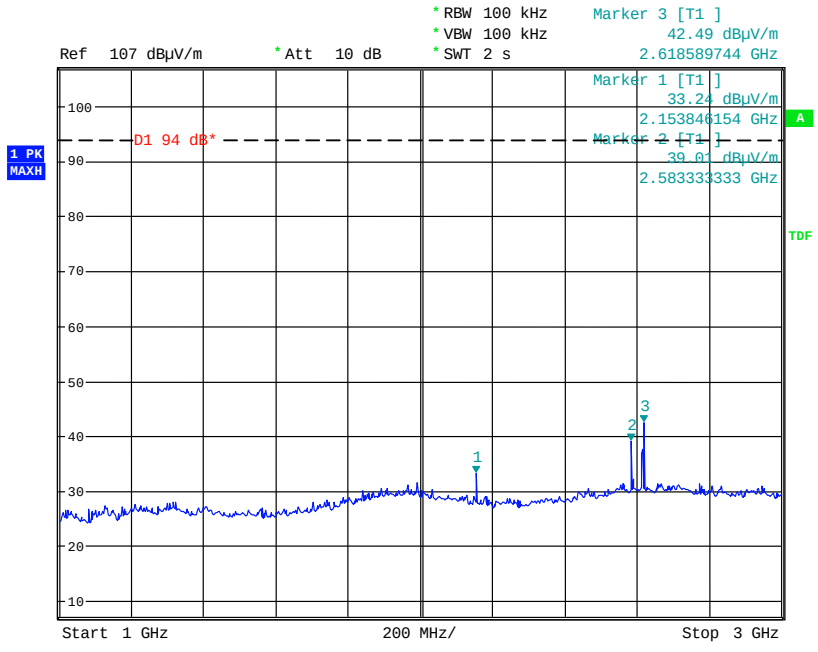
$(10\log P_{watts}) – (43+10\log (P_{watts} * 1000))$ = LIMIT =-13 dBm

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	Rhode & Schwarz	FSU	200034	281	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	221	**X**
ATTENUATOR	BIRD	8304-100-N	N/A	222	**X**
CABLE	TRL	N TYPE	N/A	273	**X**
CABLE	TRL	N TYPE	N/A	274	**X**
SIGNAL GENERATOR	MARCON	2022D	119224/035	89	**X**

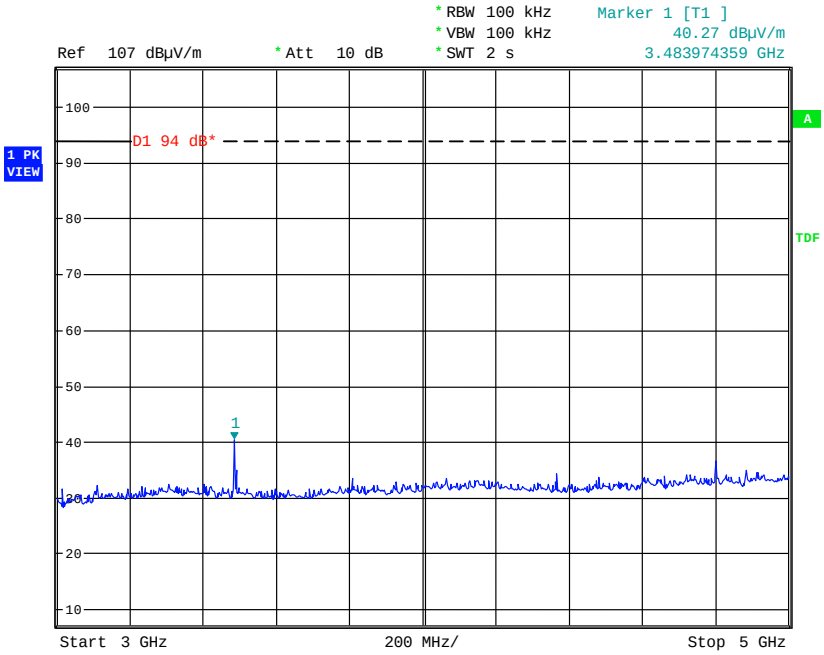
Radiated emissions 451.8625MHz 30MHz – 1GHz



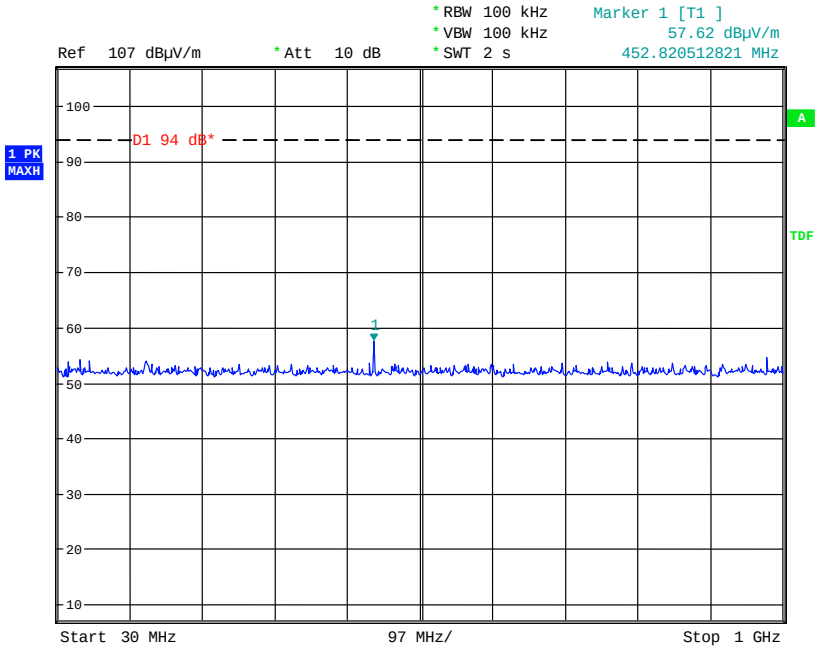
Radiated emissions 451.8625MHz 1GHz – 3GHz



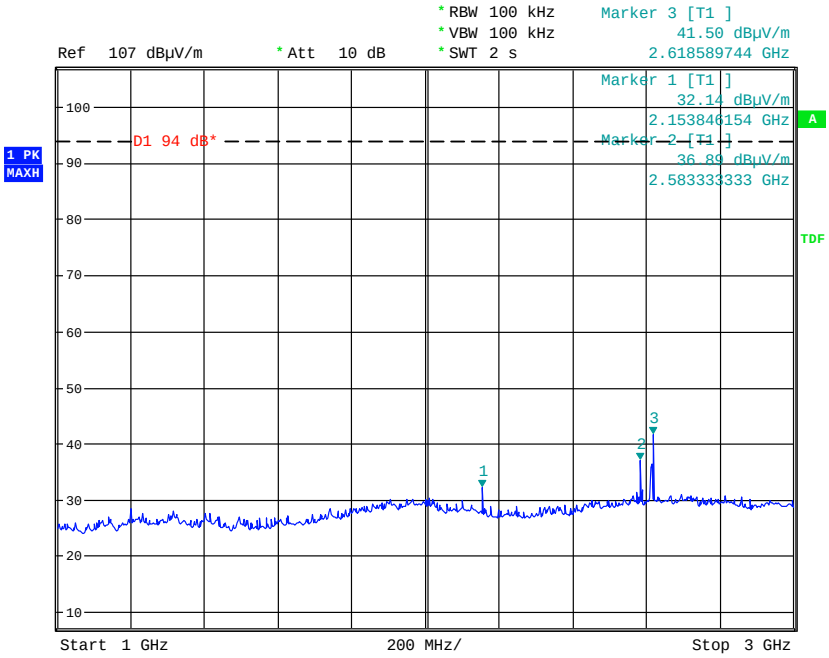
Radiated emissions 451.8625MHz 3GHz – 5GHz



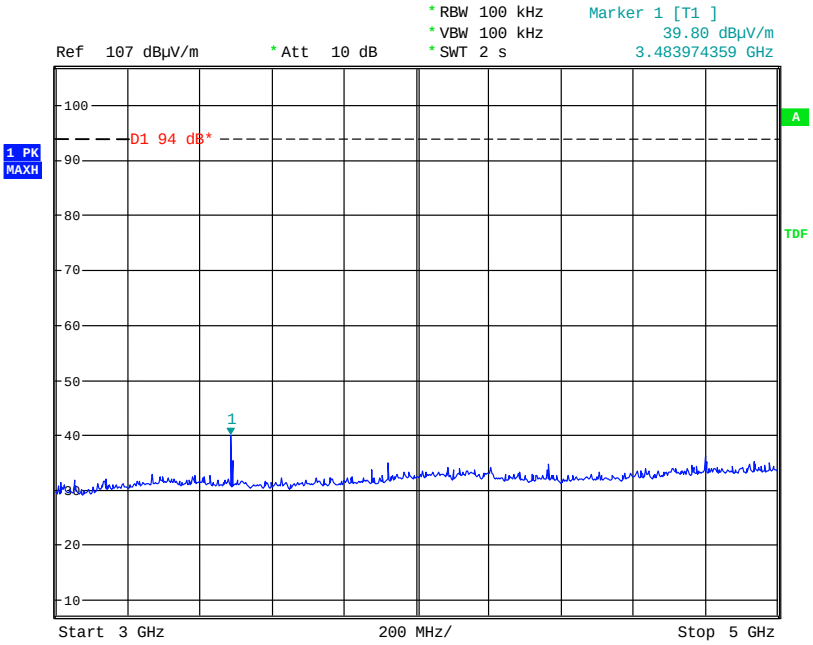
Radiated emissions 452.725MHz 30MHz – 1GHz



Radiated emissions 452.725MHz 1GHz – 3GHz



Radiated emissions 452.725MHz 3GHz – 5GHz

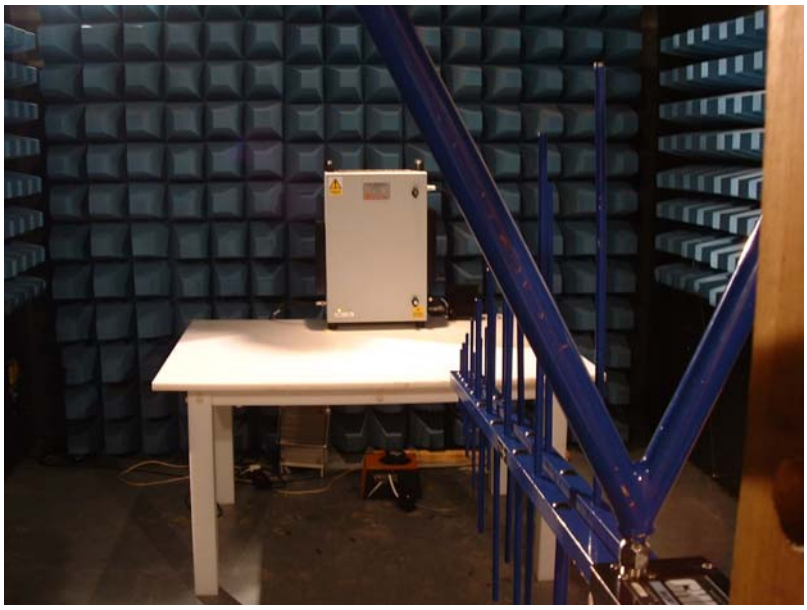


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

ANNEX A

PHOTOGRAPHS

PHOTOGRAPH NO 1 TEST SETUP



ANNEX B

SYSTEM DIAGRAM

Q115559

Two Channel UHF Cell Enhancer
User Handbook

50-187601

3.5 System Diagram

ADDITIONAL INFO:

STANDARD LOOP ALARM REQUIRED

110V AC Operation – Correctly Labled Input.

D J Newton
19/03/2007

ANNEX C

APPLICANT'S SUBMISSION OF DOCUMENTATION LIST

APPLICANT'S SUBMISSION OF DOCUMENTATION LIST

a.	TCB	-	APPLICATION	[X]
		-	FEE	[X]
b.	AGENT'S LETTER OF AUTHORISATION	-		[X]
c.	MODEL(s) vs IDENTITY	-		[ ]
d.	ALTERNATIVE TRADE NAME DECLARATION(s)	-		[ ]
e.	LABELLING	-	PHOTOGRAPHS	[ ]
		-	DECLARATION	[ ]
		-	DRAWINGS	[ ]
f.	TECHNICAL DESCRIPTION	-		[X]
g.	BLOCK DIAGRAMS	-	Tx	[X]
		-	Rx	[ ]
		-	PSU	[ ]
		-	AUX	[ ]
h.	CIRCUIT DIAGRAMS	-	Tx	[ ]
		-	Rx	[ ]
		-	PSU	[ ]
		-	AUX	[ ]
i.	COMPONENT LOCATION	-	Tx	[ ]
		-	Rx	[ ]
		-	PSU	[ ]
		-	AUX	[ ]
j.	PCB TRACK LAYOUT	-	Tx	[ ]
		-	Rx	[ ]
		-	PSU	[ ]
		-	AUX	[ ]
k.	BILL OF MATERIALS	-	Tx	[ ]
		-	Rx	[ ]
		-	PSU	[ ]
		-	AUX	[ ]
l.	USER INSTALLATION / OPERATING INSTRUCTIONS	-		[X]