TEST REPORT NO: RU1244/7027

COPY NO: 1

ISSUE NO: 1

FCC ID: NE0-1668Series

REPORT ON THE CERTIFICATION TESTING OF A
AERIAL FACILITIES LIMITED
60-166801
WITH RESPECT TO
THE FCC RULES CFR 47, PART 90 Subpart I
PRIVATE LAND MOBLIE REPEATER.

TEST DATE: 23rd May – 26th May 2006

TESTED BY: John Charters Digitally signed by John Charters DN: CN = John Charters, C = GB, O = TRL Compliance Ltd Reason: I am the author of this document Date: 2006.10.09 10:53:55 +01'00' J CHARTERS

APPROVED BY: Peter Green Digitally signed by Peter Green DN: CN = Peter Green, C = GB, O = TRL Compliance Ltd Reason: I am approving this document Date: 2006.10.10 20:31:59 +01'00' P GREEN
PRODUCT MANAGER
EMC

DATE: 9th October 2006

Distribution:

Copy Nos:
1. Aerial Facilities Limited
2. TCB: TRL Compliance Limited
3. TRL Compliance Ltd

TRL COMPLIANCE LTD
MOSS VIEW NIPE LANE UP HOLLAND WEST LANCASHIRE WN8 9PY UNITED KINGDOM
TELEPHONE +44 (0) 1695 556666 FAX +44 (0) 1695 557077
E-MAIL test@trlcompliance.com www.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.

CERTIFICATE OF CONFORMITY & COMPLIANCE

FCC IDENTITY:	NE0-1668Series			
PURPOSE OF TEST:	Certification			
TEST SPECIFICATION:	FCC RULES CFR 47, Part 90 Subpart I			
TEST RESULT:	Compliant to Specification			
EQUIPMENT UNDER TEST:	60-166801			
EQUIPMENT TYPE:	Private Land Mobile Repeater			
MAXIMIUM GAIN	Uplink	= 93.5 dB	Downlink	= 95.2 dB
MAXIMUM INPUT	Uplink	=-47.5 dBm	Downlink	= -62.3 dBm
MAXIMUM OUTPUT	Uplink	= 37.07 dBm	Downlink	= 30.8 dBm
ANTENNA TYPE:	Not applicable			
CHANNEL SPACING:	Wideband			
FREQUENCY GENERATION:	N/A			
MODULATION TYPE:	F3E			
POWER SOURCE(s):	110Vac			
TEST DATE(s):	23rd May – 26th May 2006			
ORDER No(s):	36615			
APPLICANT:	Aerial Facilities Limited			
ADDRESS:	Aerial House Asheridge Road Chesham Buckinghamshire HP5 2QD United Kingdom			

TESTED BY: John Charters — Digitally signed by John Charters DN: CN = John Charters, C = GB, O = TRL Compliance Ltd Reason: I am the author of this document Date: 2006.10.09 10:54:10 +01'00' — J CHARTERS

APPROVED BY: Digitally signed by Peter Green DN: CN = Peter Green, C = GB, O = TRL Compliance Ltd Reason: I am approving this document Date: 2006.10.10 20:32:19 +01'00' — P GREEN PRODUCT MANAGER EMC

APPLICANT'S SUMMARY

EQUIPMENT UNDER TEST (EUT):	60-166801
EQUIPMENT TYPE:	Private Land Mobile Repeater
PURPOSE OF TEST:	Certification
TEST SPECIFICATION(s):	FCC RULES CFR 47, Part 90 Subpart I
TEST RESULT:	COMPLIANT Yes [X] No [ ]
APPLICANT'S CATEGORY:	MANUFACTURER [X] IMPORTER [ ] DISTRIBUTOR [ ] TEST HOUSE [ ] AGENT [ ]
APPLICANT'S ORDER No(s):	36615
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 2QD 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) :	23rd May – 26th May 2006
TEST REPORT No:	RU1244/7027

EQUIPMENT TEST / EXAMINATIONS REQUIRED

1.

TEST/EXAMINATION	RULE PART	APPLICABILITY	RESULT
RF Power Output	90.205	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	90.210	Yes	Complies
Spurious Emissions at Antenna Terminals	90.210	Yes	Complies
Field Strength of Spurious Emissions	90.210	Yes	Complies
Frequency Stability	90.213	N/A(note 1)	N/A
Transient behaviour	90.214	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 class: Uplink Class A [ ] Class B [X]
   Downlink Class A [ ] Class B [X]
3. Product Use: Private Land Mobile Repeater
4. Emission Designator: F3E
5. Temperatures: Ambient (Tnom) 25°C
6. Supply Voltages: Vnom 110Vac

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

7. Equipment Category: Single channel [ ]
   Two channel [ ]
   Multi-channel [X]
8. Channel spacing: Narrowband [ ] 25kHz
   Wideband [X]
9. Test Location TRL Compliance Limited
   Up Holland [X]
   Long Green [ ]
10. Modifications made during test program No modifications were performed.

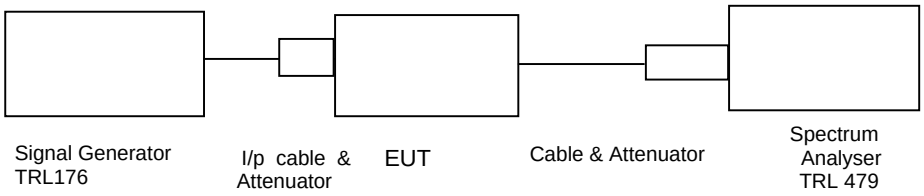
System description

The Aerial Facilities 60-166801 is a stand alone bi-directional amplifier with no connections to any other unit. The uplink is wideband and operates over the frequency range of 497.3MHz to 498.3MHz. The downlink is wideband and operates over the frequency range of 494.3MHz to 495.3MHz.

COMPLIANCE TESTS

AMPLIFIER GAIN – CONDUCTED – PART 2.1046 – UPLINK

Ambient temperature	=	25°C	Radio Laboratory
Relative humidity	=	49%	
Supply voltage	=	110Vac	
Channel number	=	See test results	



Frequency MHz	Signal Generator input level dBm	i/p cable & Attenuator Loss	Cable & Attenuator loss dB	Level at Spectrum Analyser dBm	Gain dB	Output Power dBm	Gain after 10dB input level increase dBm
497.3	-47.5	6.23	46.35	-10.6	89.48	35.75	79.55
497.8	-50.2	6.23	46.35	-9.28	93.50	37.07	83.51
498.3	-49.5	6.23	46.35	-9.32	92.76	37.03	82.76

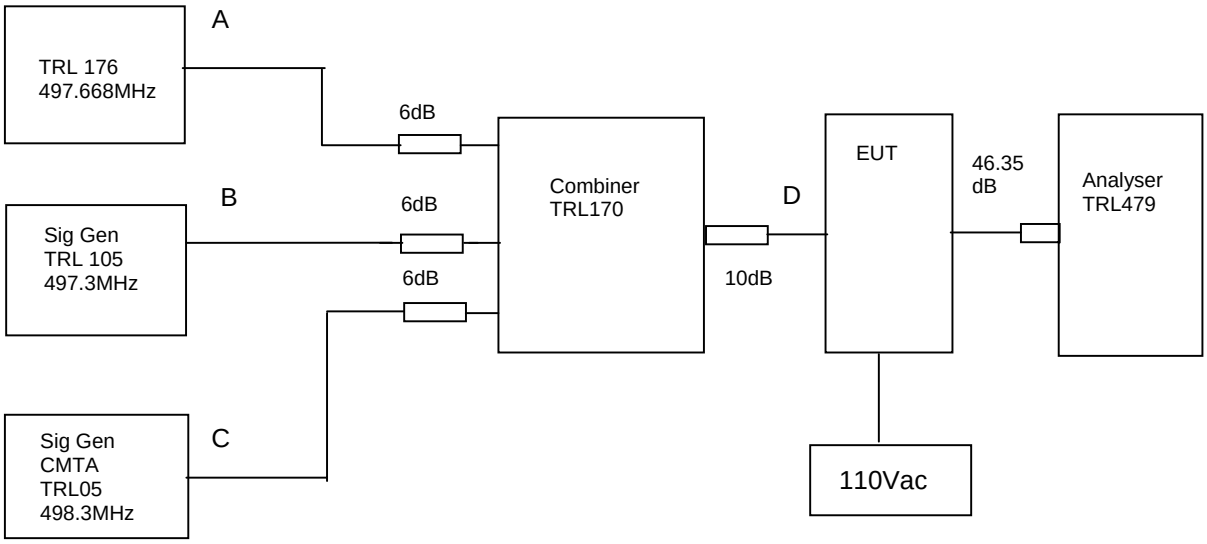
Notes:

1. The signal generator input was increased by 10dBs and the level of the output signal remeasured.

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	220/112/ 222	**X**
CABLE	N/A	N/A	N/A	TRL274	**X**
I/P CABLE & ATTENUATOR	N/A	N/A	N/A	TRL246 TRL273	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

AMPLIFIER INTERMODULATION SPURIOUS EMISSIONS – CONDUCTED – PART 2.1053– UPLINK

Ambient temperature	=	19oC	Radio Laboratory
Relative humidity	=	46%	
Supply voltage	=	110Vac	



The intermodulation and spurious products were measured with the amplifier operating at maximum gain. A three tone test was conducted using the equipment as above. The input power level was adjusted so the level at point D was 10dB above the maximum input of –47.5.dBm.The cable and attenuator loss between the EUT and the spectrum analyser was 46.35dB.

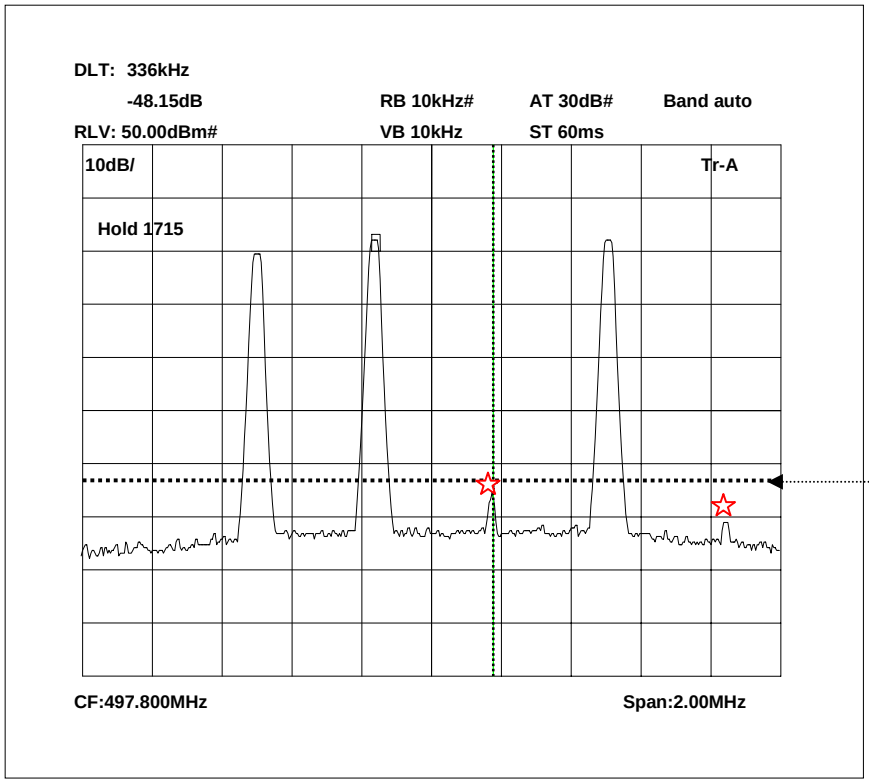
RF Input Frequency (MHz)			Highest Intermodulation Product Level (dBm)	Limit (dBm)
497.668	497.3	498.3	-15.96dB @497.967MHz	-13

Sweep data is shown on the next page:

Test equipment used for intermodulation test

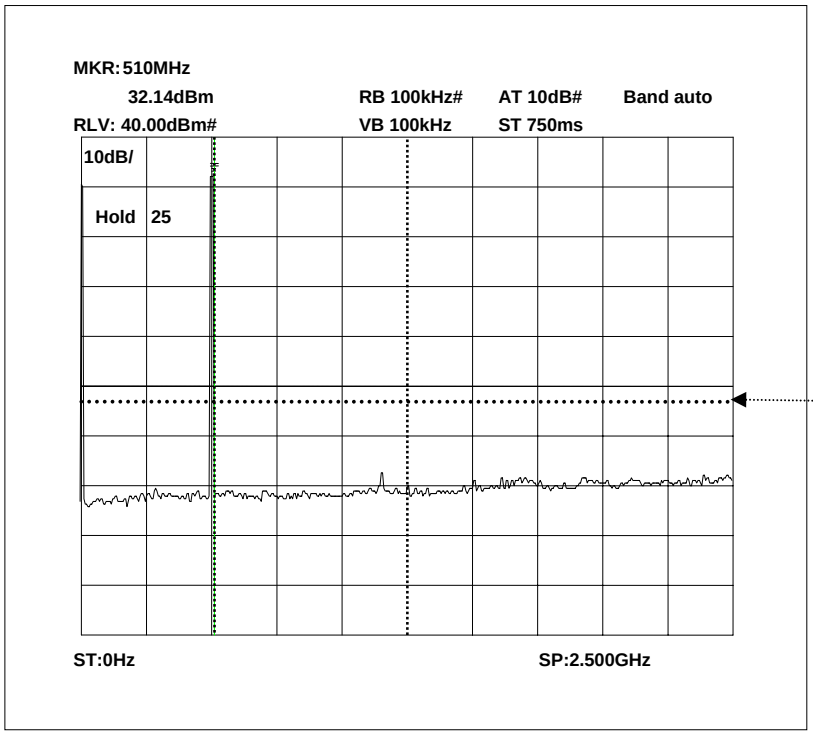
TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
SIGNAL GENERATOR	MARCONI	2042	119562/02	254	**X**
CMTA	ROHDE & SCHWARZ	CMTA52	894715/033	05	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**
COMBINER	ELCOM	RC-4-50	N/A	170	**X**

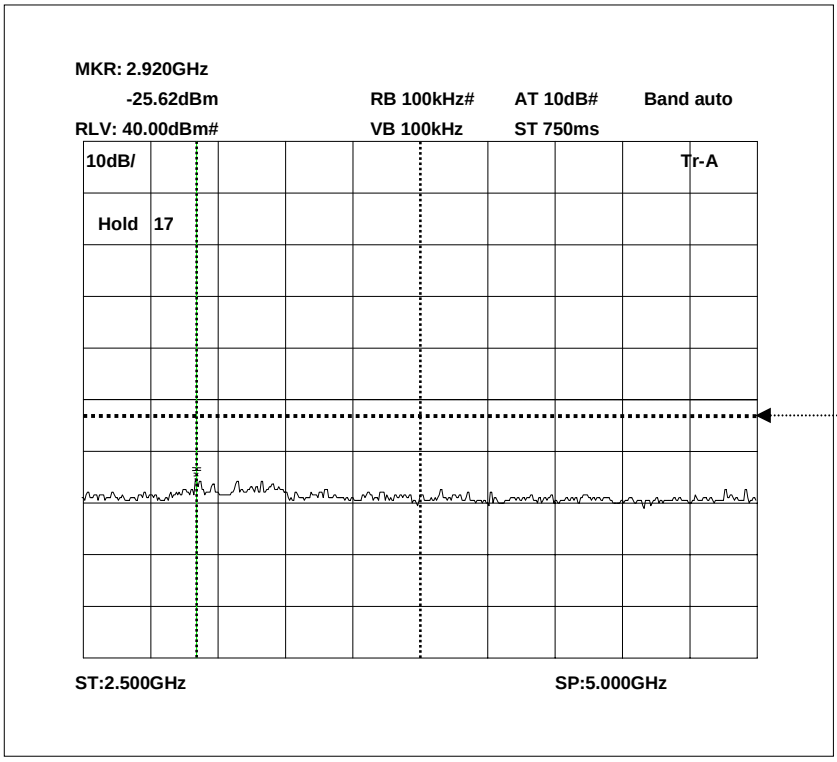
Intermodulation Inband



The above plot shows that all products (designated by ☆) are below the spurious limit.

Intermodulation Wideband



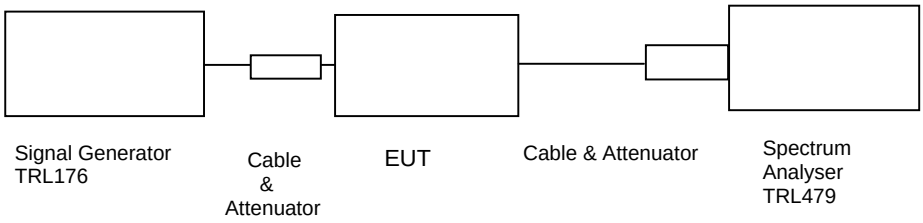


The above plot shows that there are no products outside the bands.

TRANSMITTER TESTS

AMPLIFIER MODULATED CHANNEL TEST – CONDUCTED – Part 2.1049– UPLINK

Ambient temperature	=	17°C	Radio Laboratory
Relative humidity	=	43%	
Supply voltage	=	110vac	
Channel number	=	See test results	



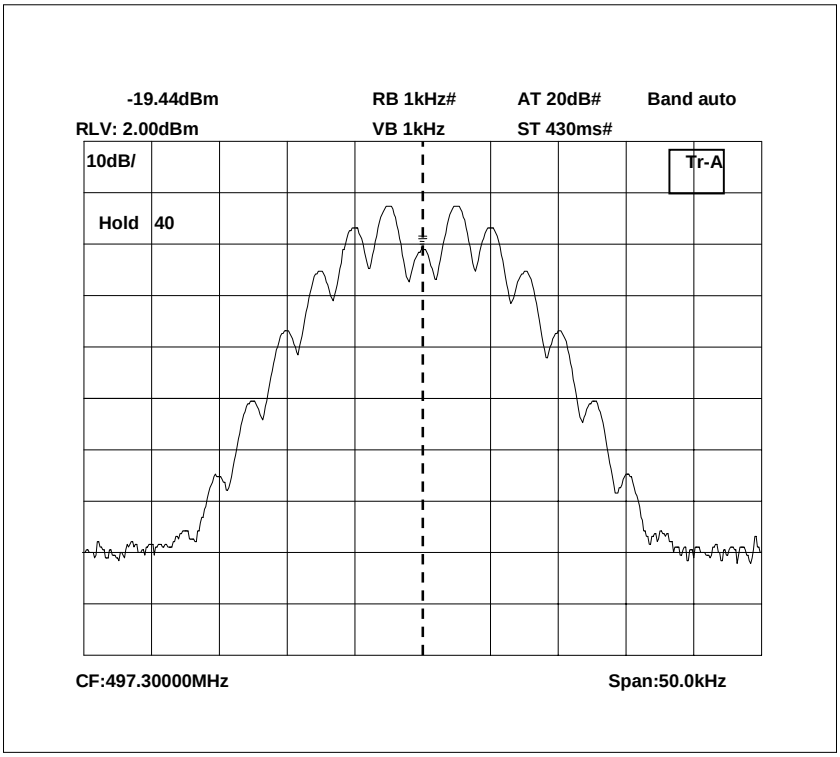
This test was performed to show that the amplifier does not alter the input signal in any way. The input signal was set to the maximum input level (-42dBm) and modulated with a 2500Hz tone. The plots show the signal measured at the signal generator and the signal measured at the output of the EUT.

Note: The cables and attenuators had the following losses.

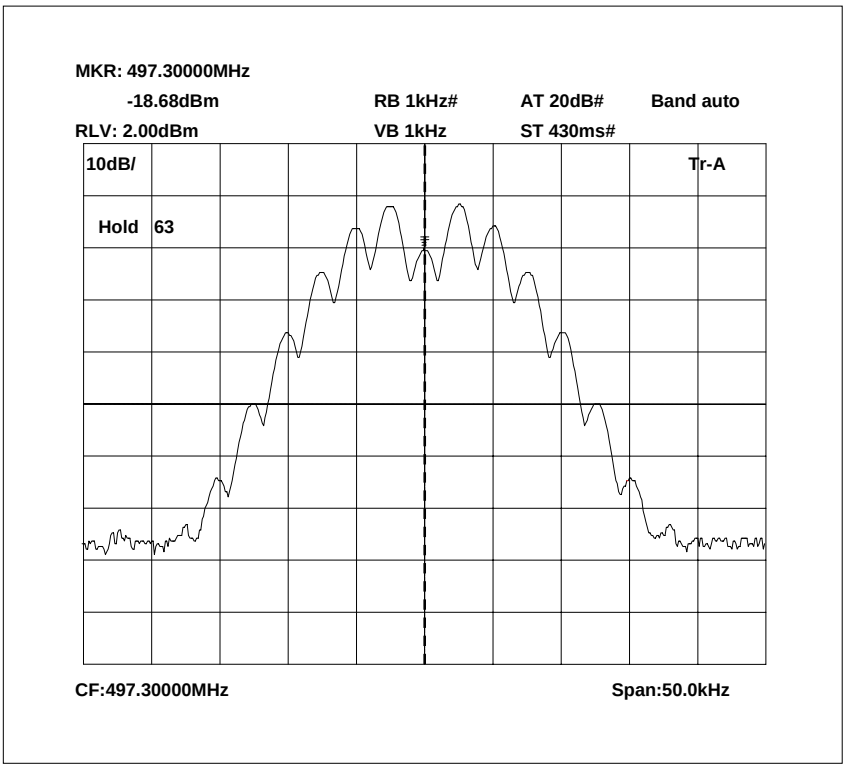
1. Cable TRL274 and attenuator TRL220/222/112 =46.35 dB
2. Cable & Attenuator between signal generator and EUT 6.23dB

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	220	**X**
CABLE	ROSENBERGER	MICRO COAX	N/A	280	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

497.3 MHz Signal Generator, deviation set to 5kHz

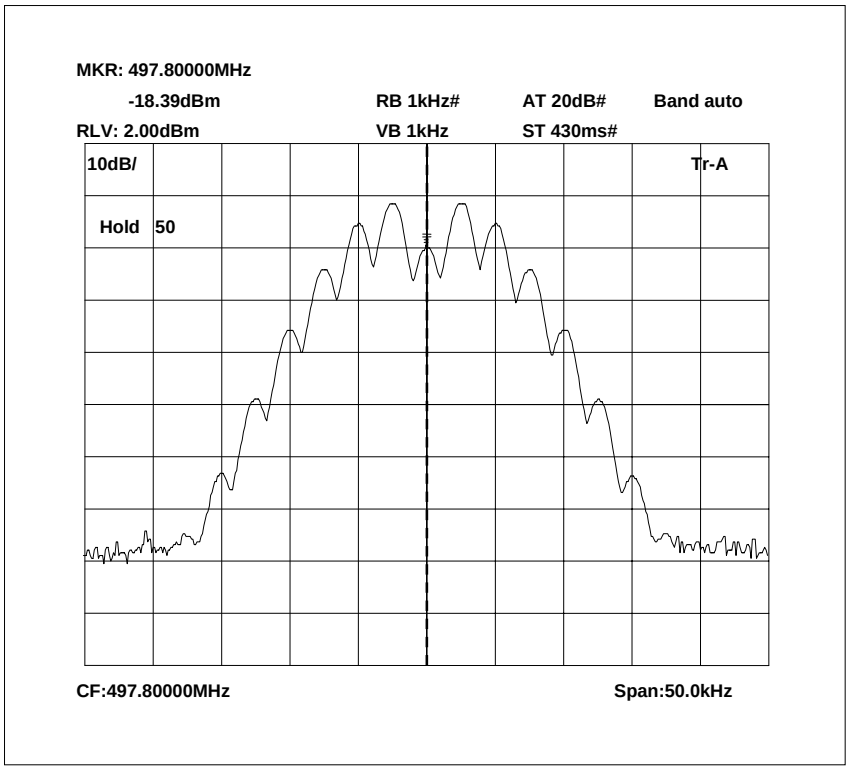


497.3 MHz Signal Generator and EUT, deviation set to 5kHz

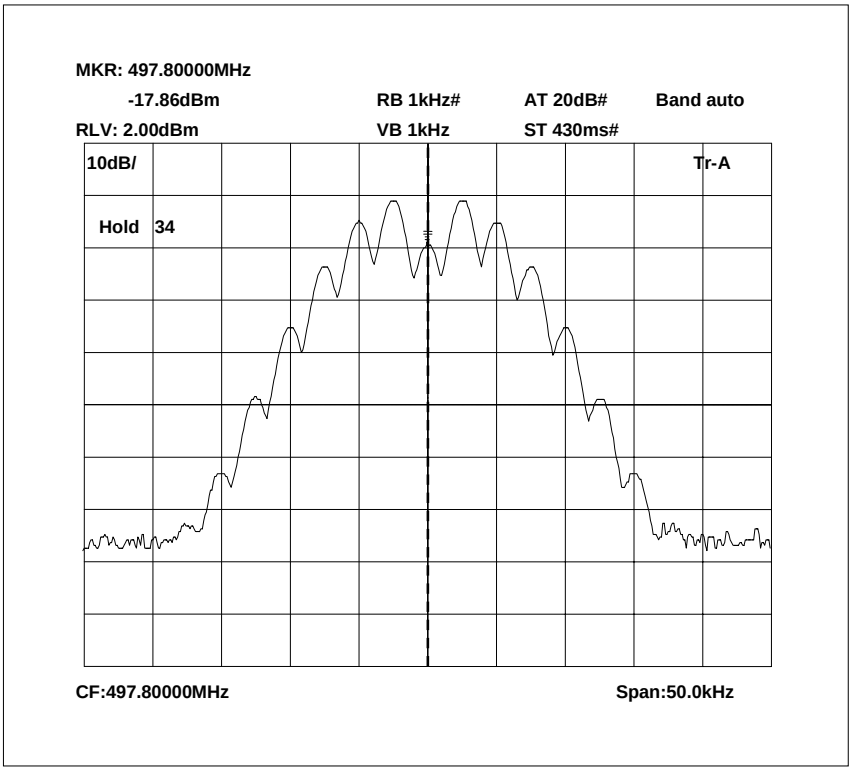


The plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.

497.8 MHz Signal Generator, deviation set to 5kHz

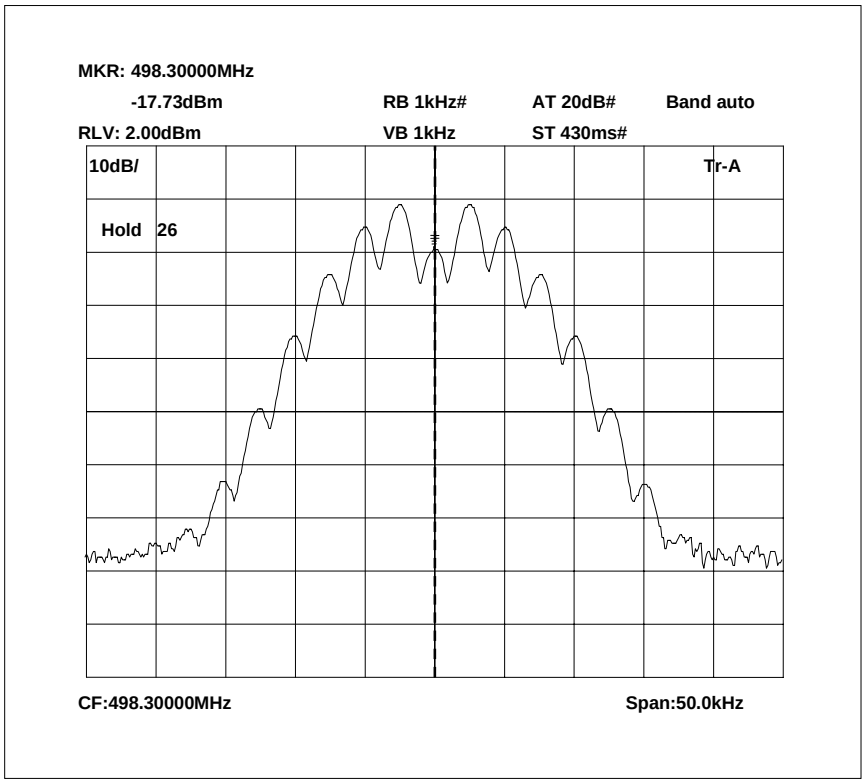


497.8 MHz Signal Generator and EUT, deviation set to 5kHz

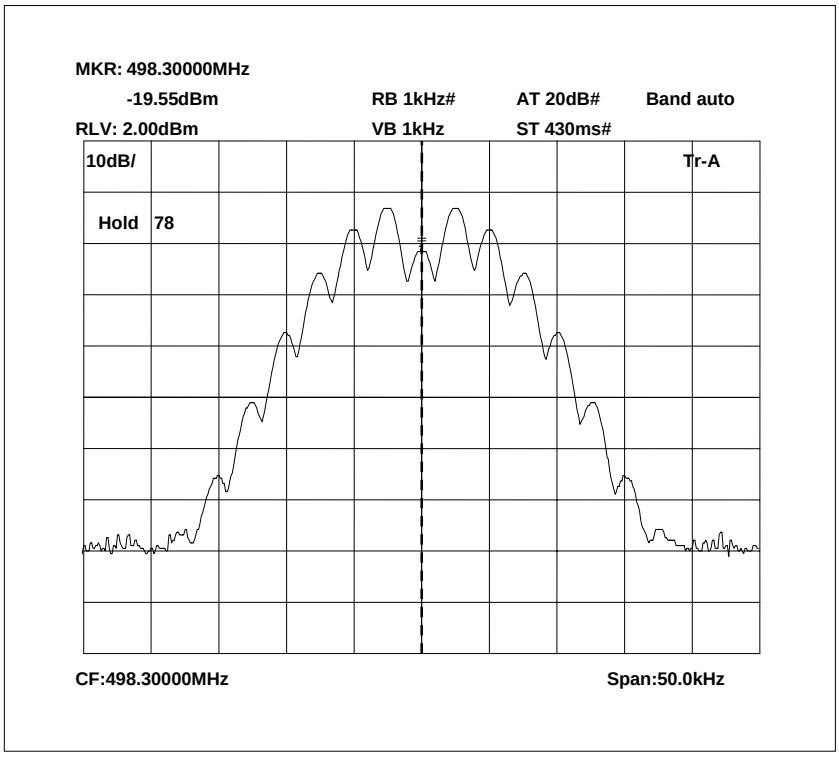


The above plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.

498.3 MHz Signal Generator, deviation set to 5kHz



498.3 MHz Signal Generator and EUT, deviation set to 5kHz

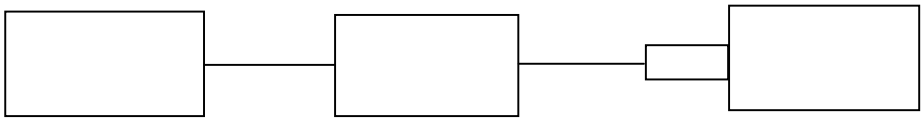


The above plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.

TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – CONDUCTED – Part 2.1053 – UPLINK

Ambient temperature	=	23°C	Radio Laboratory		
Relative humidity	=	34%	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 three 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

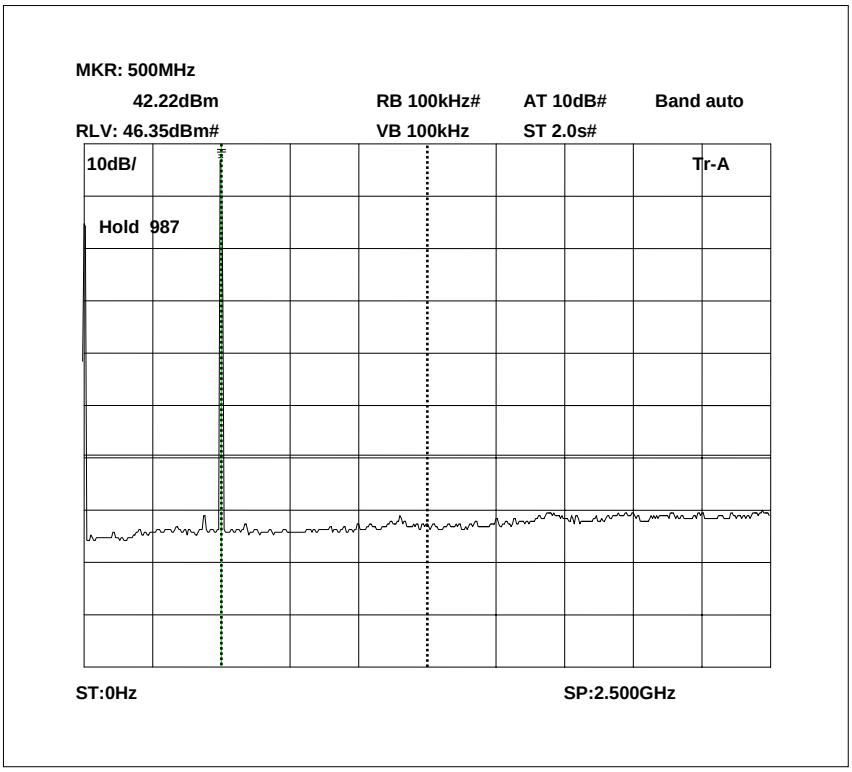
RESULTS

FREQUENCY RANGE	FREQ. (MHz)	MEASURED LEVEL (dBm)	ATTENUATOR & CABLE LOSSES (dB)	EMISSION LEVEL (dBm)	LIMIT (dBm)
0Hz – 5GHz	No Significant emissions within 10 dbm of the limit				-13

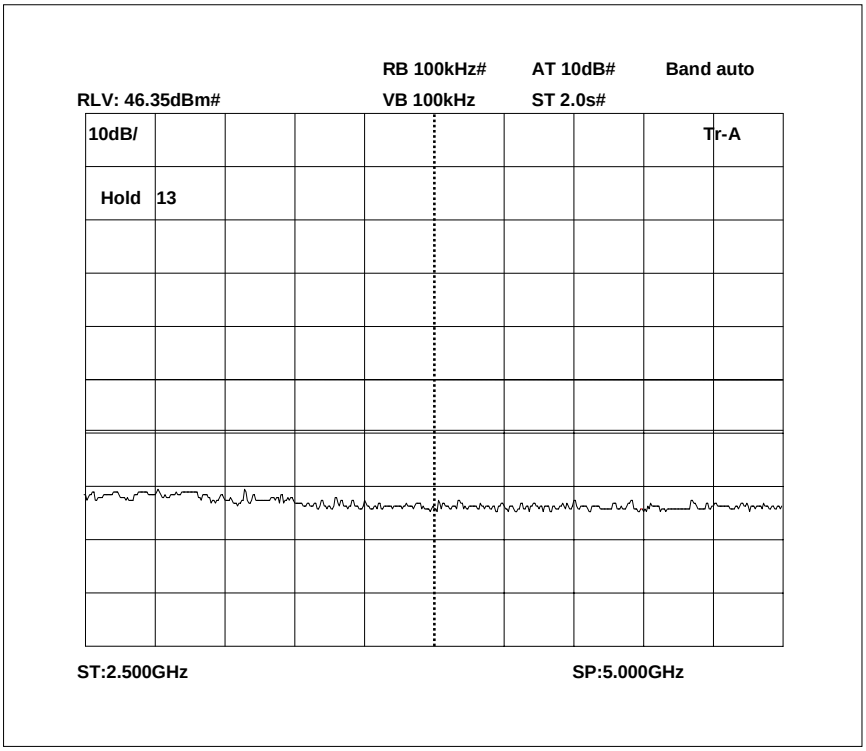
The test equipment used for the Transmitter Conducted Emissions:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	220	**X**
CABLE	ROSENBERGER	MICRO COAX	N/A	280	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

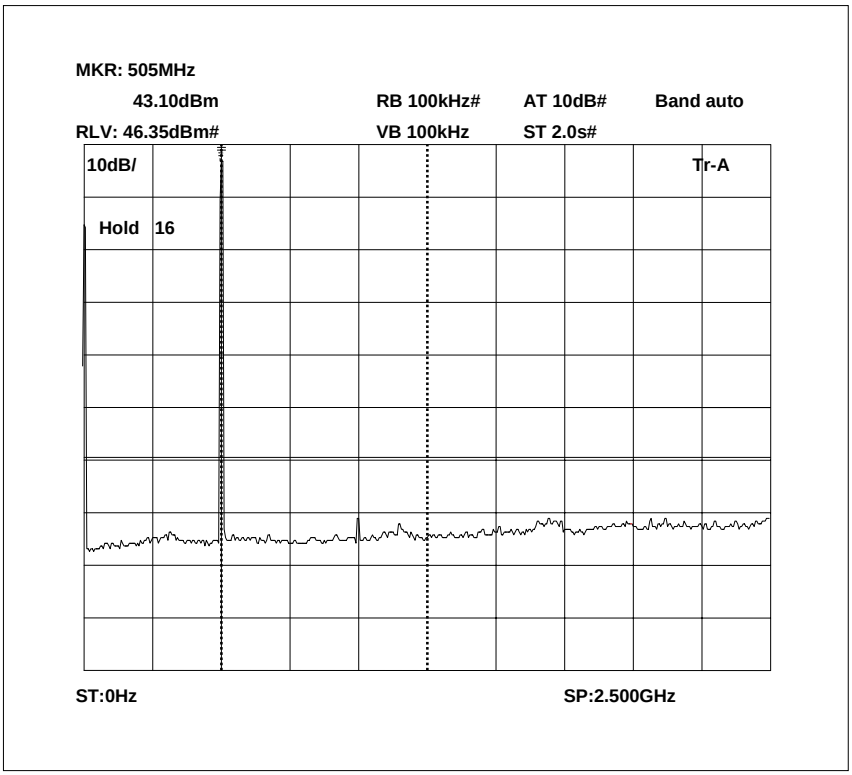
Conducted emissions 497.3 MHz 0 – 2.5GHz



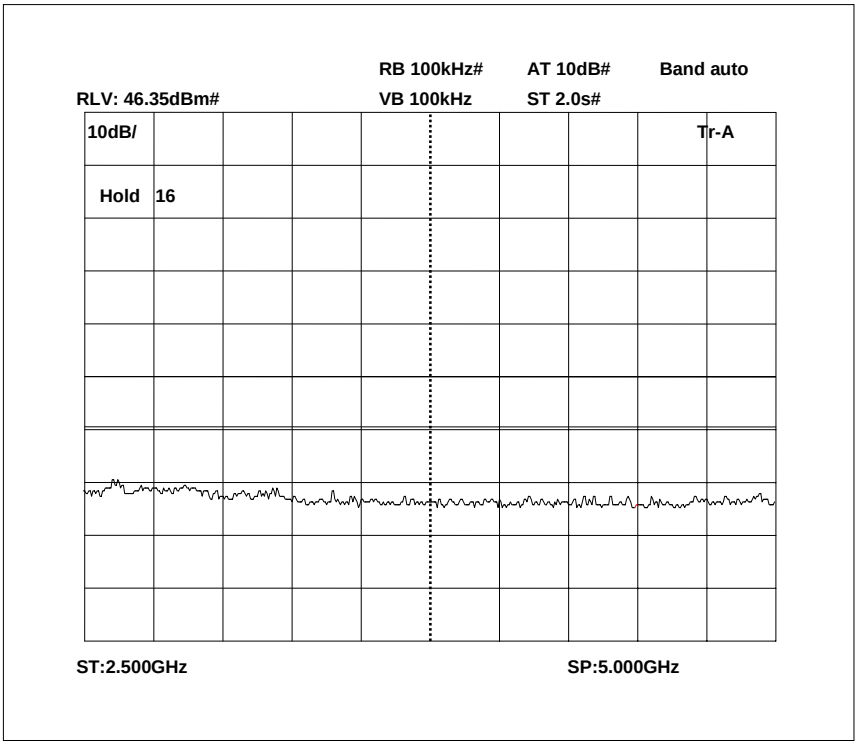
Conducted emissions 497.3 MHz 2.5 – 5GHz



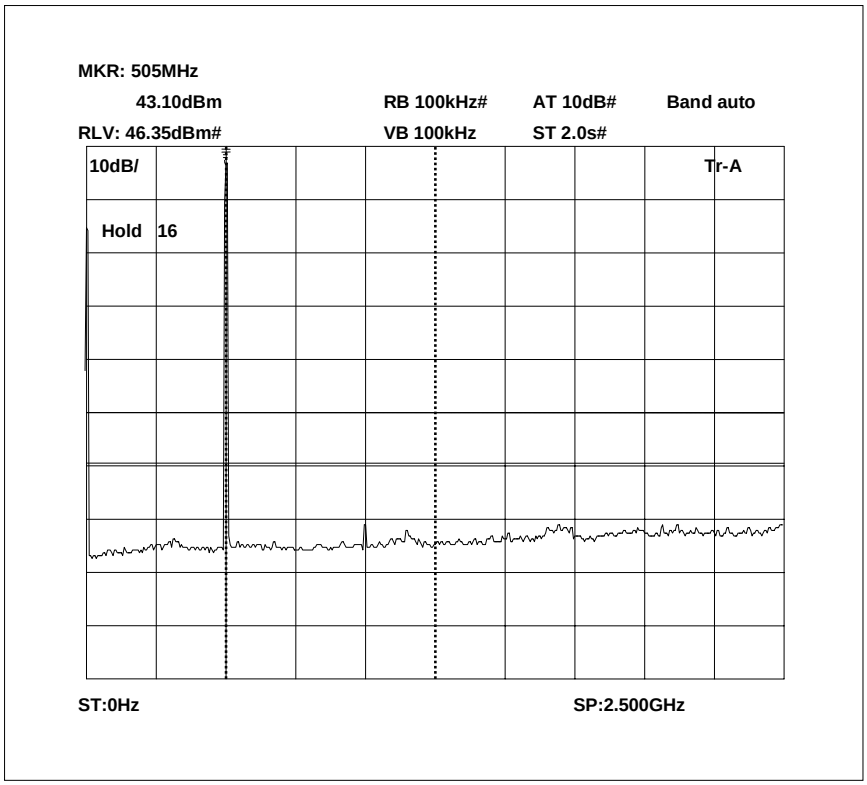
Conducted emissions 497.8 MHz 0 – 2.5GHz



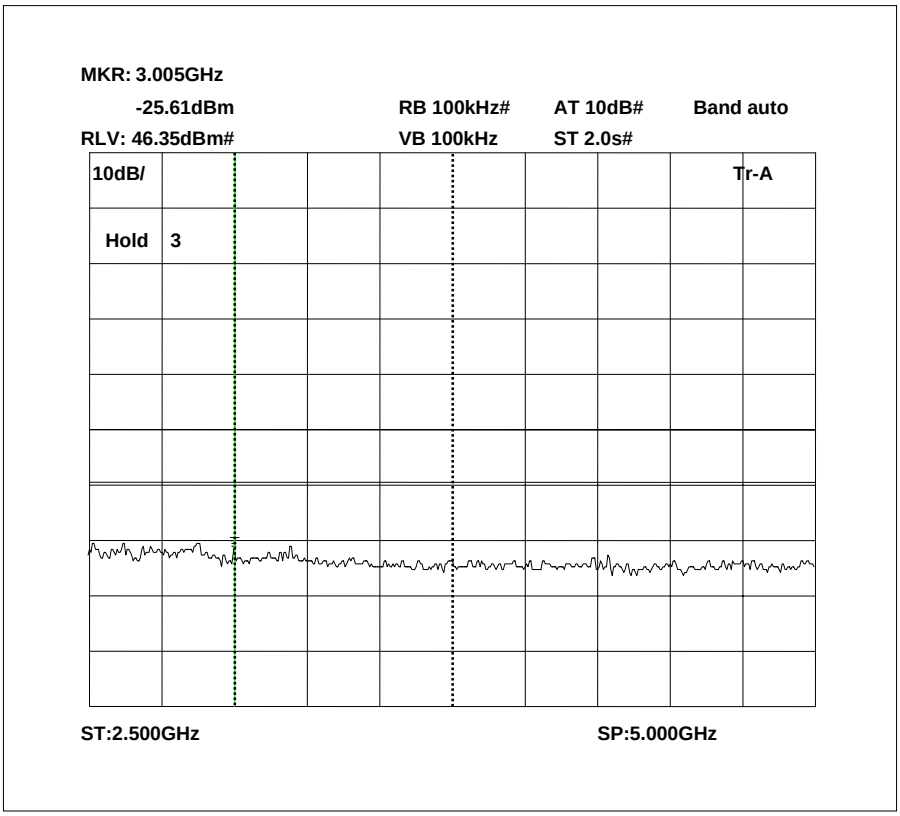
Conducted emissions 497.8 MHz 2.5 – 5GHz



Conducted emissions 498.3 MHz 0 – 2.5GHz



Conducted emissions 498.3 MHz 2.5 – 5GHz

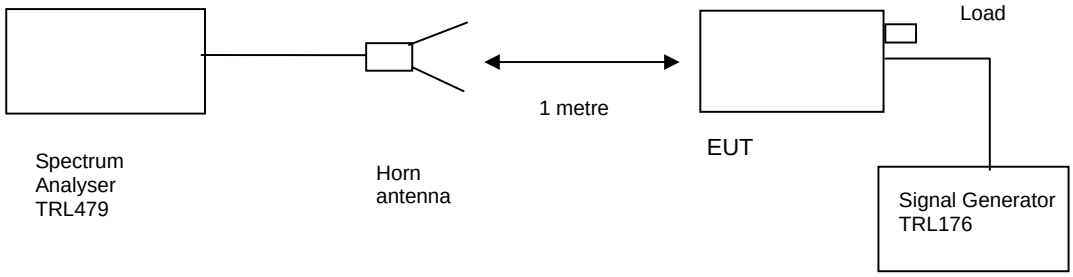


TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – RADIATED – Part 2.1053– UPLINK

Ambient temperature = 14°C
Relative humidity = 43%
Conditions = OATS
Supply voltage = 110Vac
Supply Frequency = 60Hz

Test Signal = F3E



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 three 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

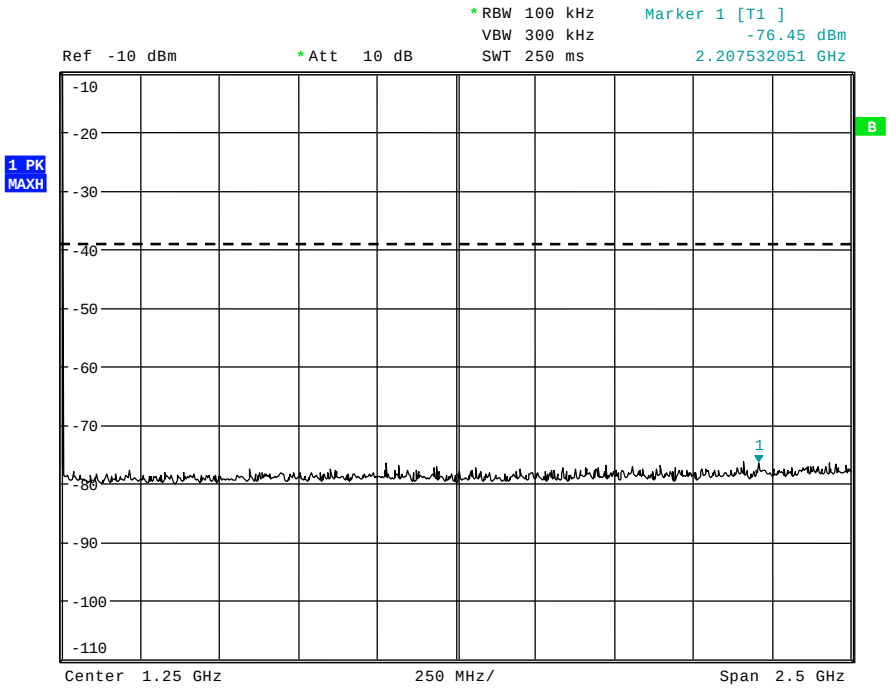
RESULTS

FREQUENCY RANGE	FREQ. (MHz)	MEAS. Rx. (dBµV)	CABLE LOSS (dB)	ANT FACTOR	FIELD STRENGTH (dBµV/m)	CALCULATED EIRP (dBm)	LIMIT (dBm)
0 Hz – 5 GHz	No significant emissions within 20 dBm of the limit						-13

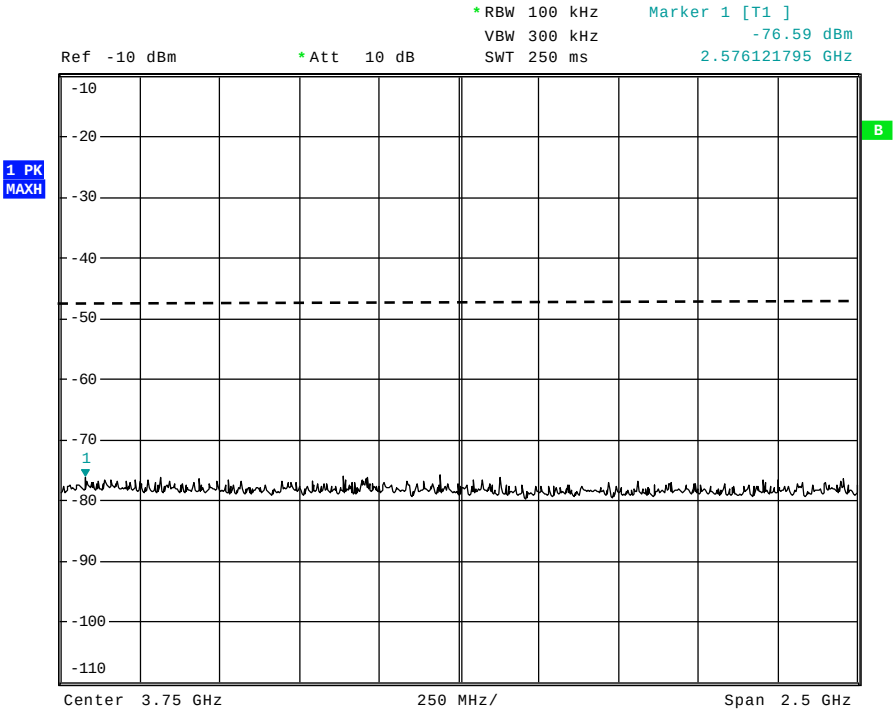
The test equipment used for the Transmitter Spurious Emissions:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
HORN	EMCO	3115	9010-3581	138	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	220	**X**
CABLE	ROSENBERGER	MICRO COAX	N/A	280	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

Radiated emissions 497.3 MHz 0 – 2.5GHz

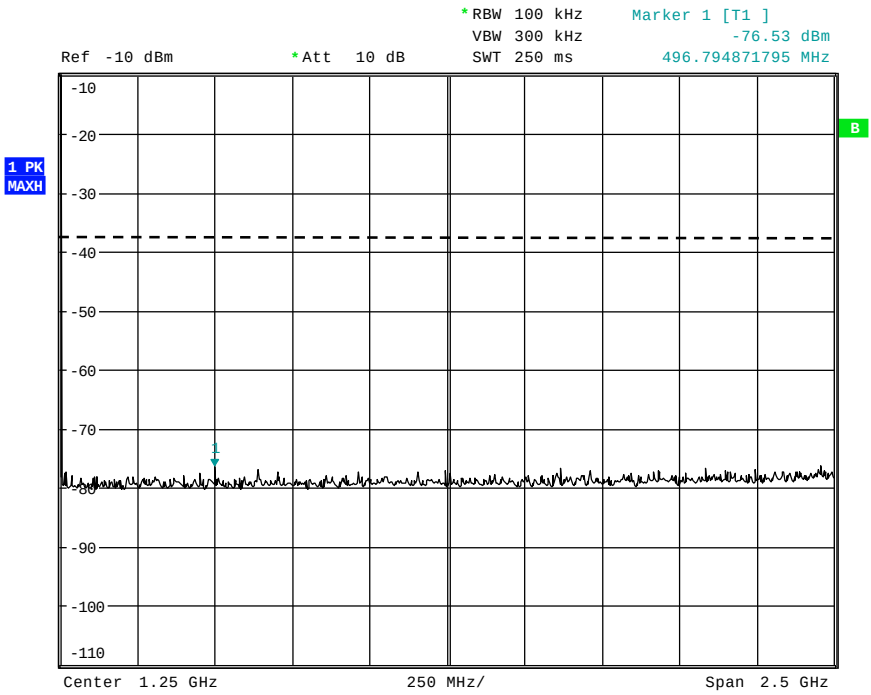


Radiated emissions 497.3 MHz 2.5 – 5GHz



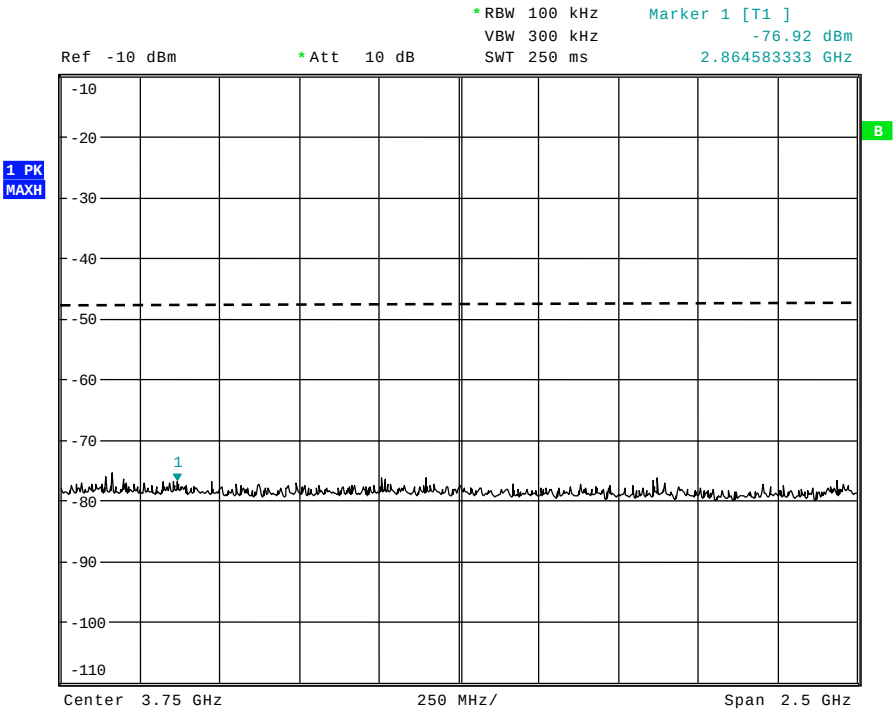
The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions 497.8MHz 0 –2.5GHz



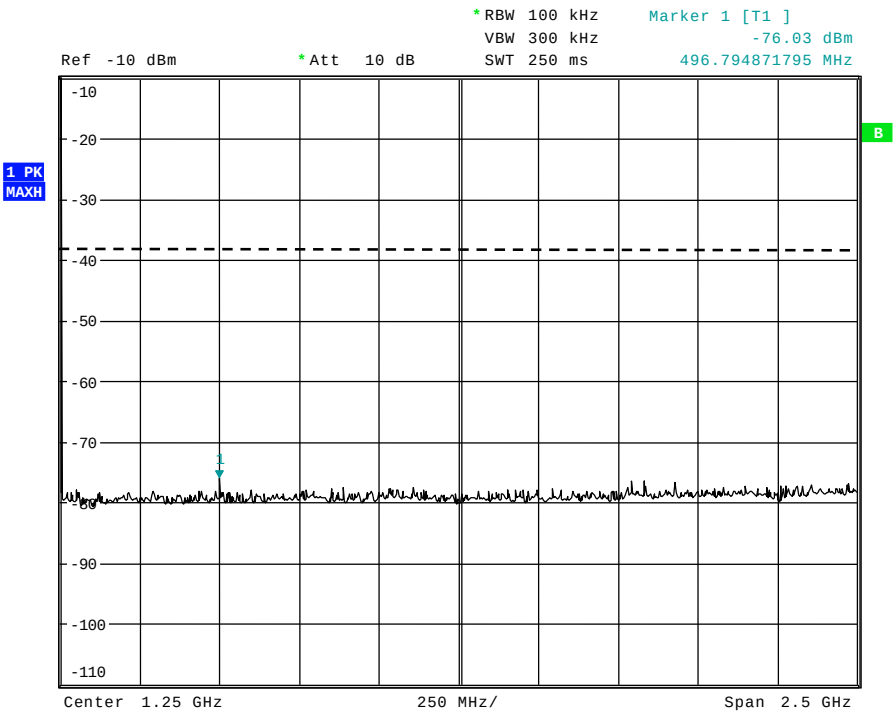
The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions 497.8 MHz 2.5 – 5GHz



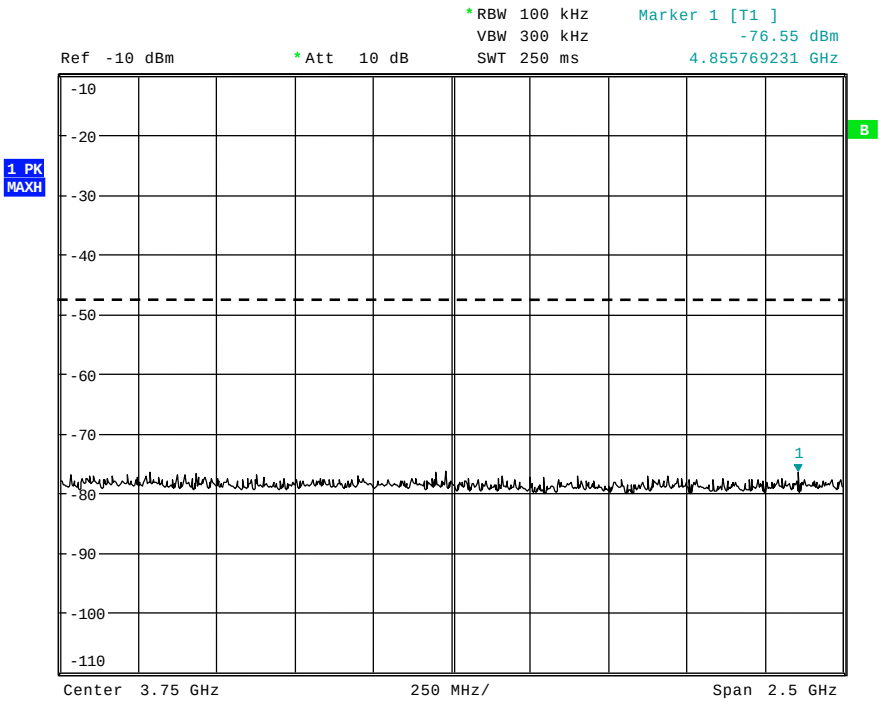
The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions 498.3 MHz 0 – 2.5GHz



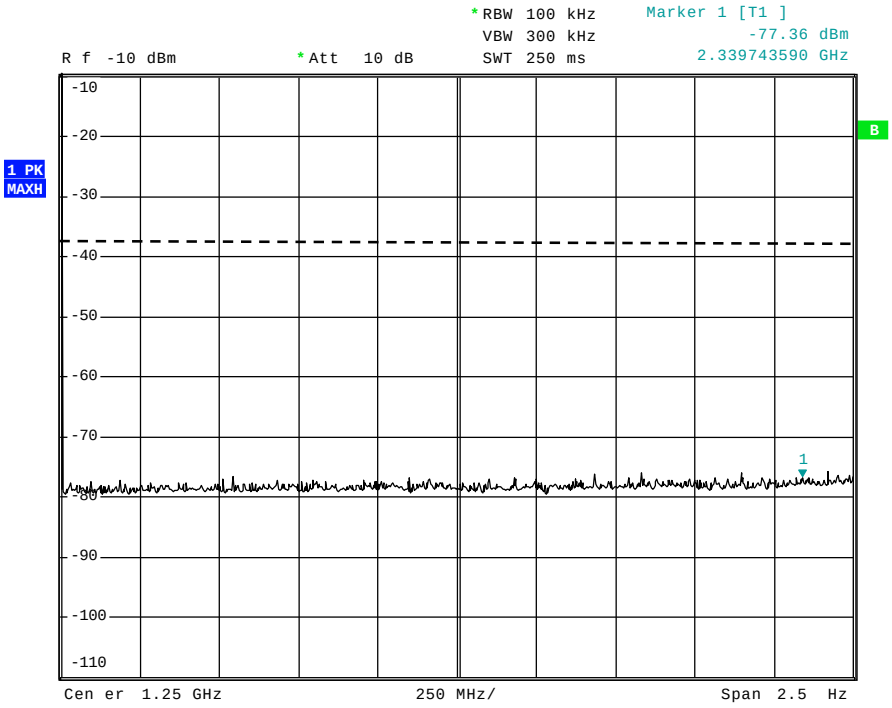
The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions 498.3 MHz 2.5 – 5GHz



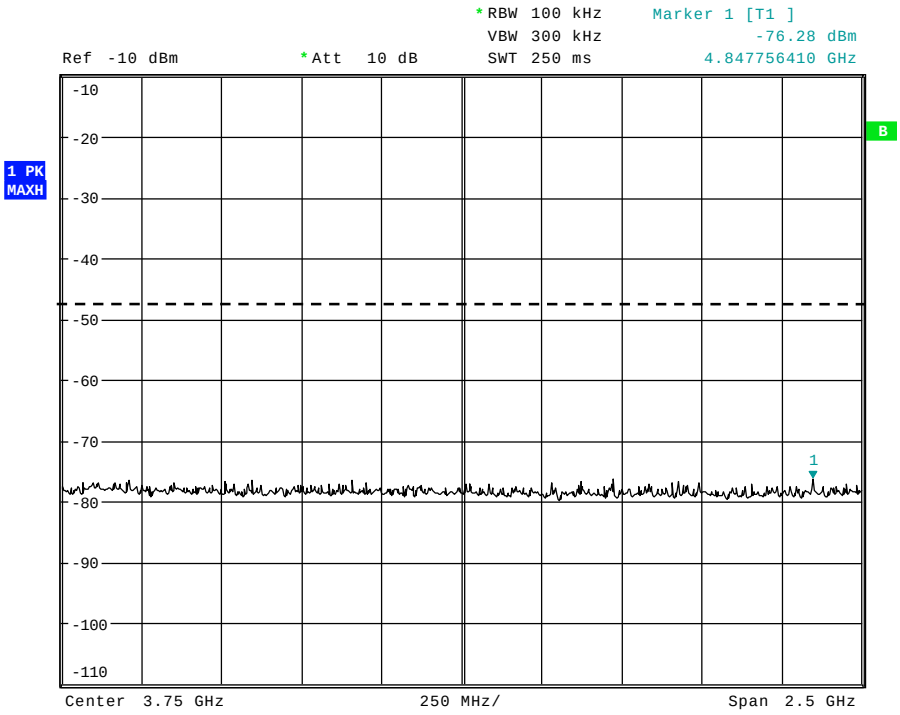
The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions no input signal 0 –2.5GHz



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

Radiated emissions no input signal 2.5 – 5GHz

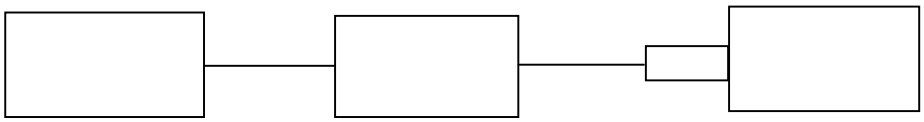


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

AMPLIFIER GAIN – CONDUCTED – PART 2.1046 – DOWNLINK

Ambient temperature = 20°C
Relative humidity = 46%
Supply voltage = 110Vac
Channel number = See test results

Radio Laboratory



Signal Generator TRL176 | EUT | Cable & Attenuator | Spectrum Analyser TRL479

Frequency MHz	Signal Generator input level dBm	I/P Cable Loss dB	Cable & Attenuator loss dB	Level at Spectrum Analyser dBm	Gain dB	Output Power dBm	Gain after 10dB input level increase dBm
494.3	-63.2	0.4	36.5	-6.2	93.9	30.3	83.93
494.8	-64.0	0.4	36.5	-5.7	95.2	30.8	85.22
495.3	-62.3	0.4	36.5	-6.5	92.7	30.0	82.72

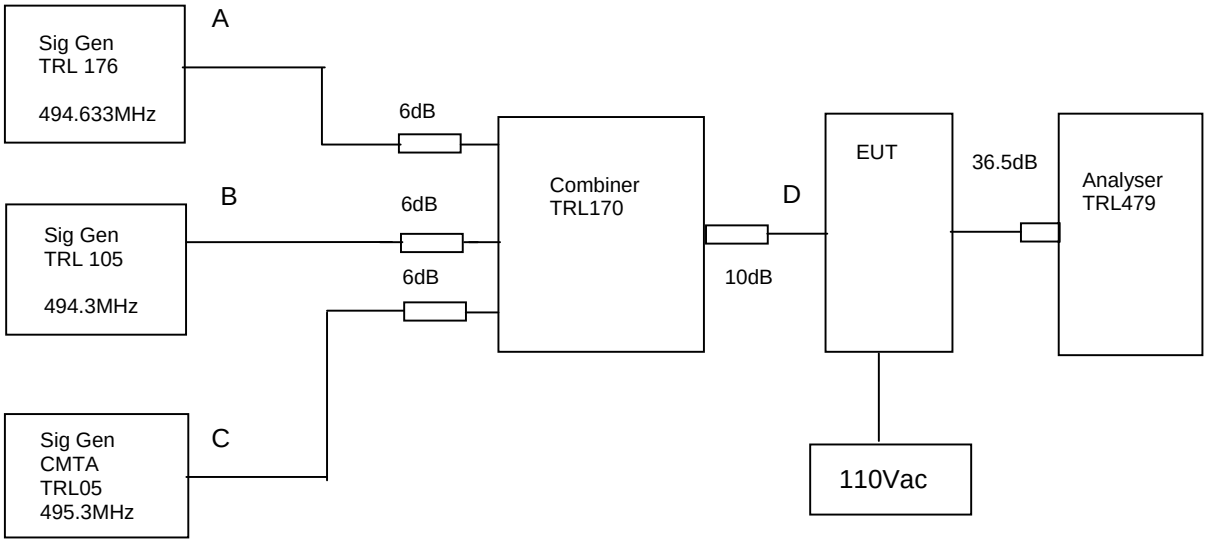
Notes:
1. The signal generator input was increased by 10dBs and the level of the output signal remeasured

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
ATTENUATOR	BIRD	8304-200	N/A	103	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	220	**X**
CABLE	ROSENBERGER	MICRO COAX	N/A	280	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

AMPLIFIER INTERMODULATION SPURIOUS EMISSIONS – CONDUCTED – PART 2.1053– DOWNLINK

Ambient temperature = 20°C
Relative humidity = 46%
Supply voltage = 110Vac

Radio Laboratory



The Intermodulation and spurious products were measured with the amplifier operating at maximum gain. A three tone test was conducted using the equipment as above. The input power level was adjusted so the level at point D was 10 dB above the maximum input of -63dBm.The cable and attenuators loss between the EUT and the spectrum analyser was 36.5 dB.

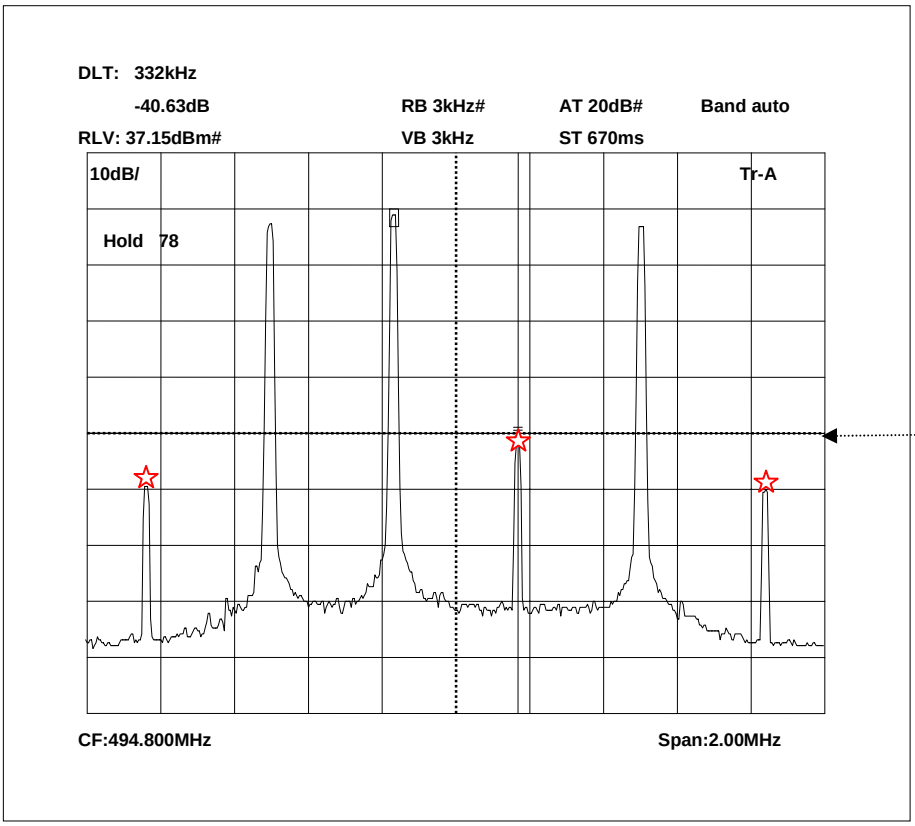
RF Input Frequency (MHz)			Highest Intermodulation Product Level (dBm)	Limit (dBm)
494.633	494.3	495.3	-14.5dBm @494.968MHz	-13

Sweep data is shown on the next page:

Test equipment used for intermodulation test

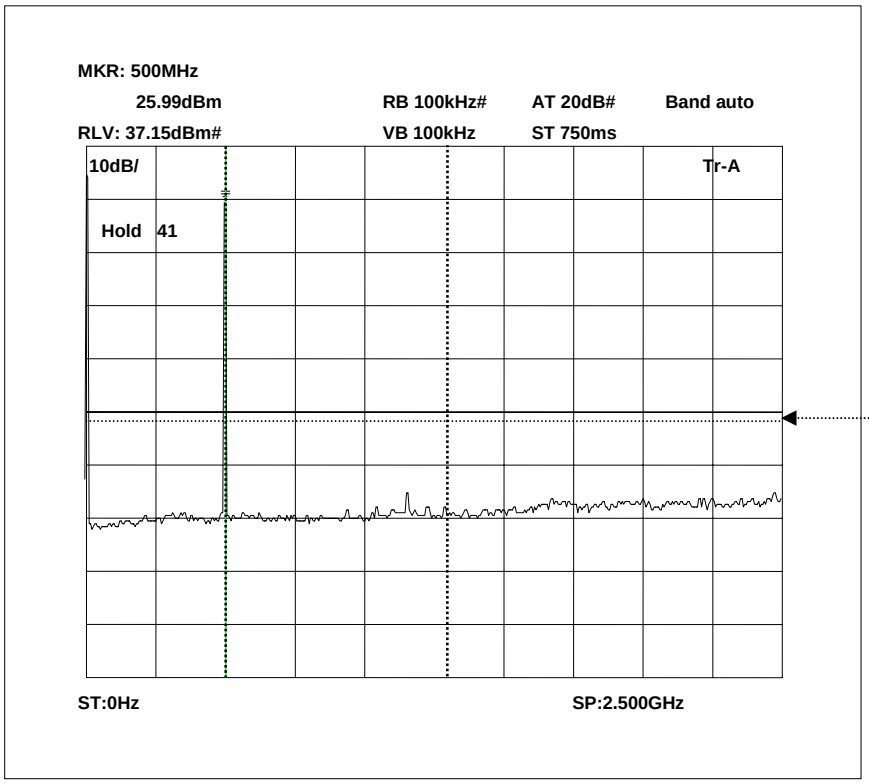
TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
SIGNAL GENERATOR	MARCONI	2042	119562/02	254	**X**
CMTA	ROHDE & SCHWARZ	CMTA52	894715/033	05	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**
COMBINER	ELCOM	RC-4-50	N/A	170	**x**

Intermodulation Inband

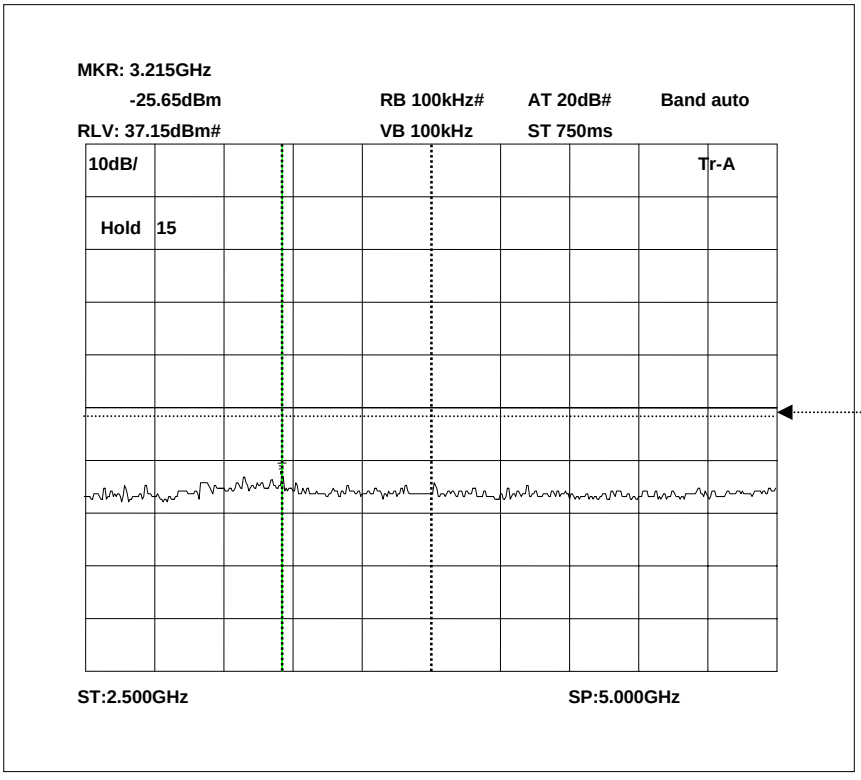


The above plot shows that all products (designated by ☆) are below the spurious limit.

Intermodulation Wideband



-13dBm limit



-13dBm limit

-13dBm limit

The above plot shows that there are no products outside the bands.

TRANSMITTER TESTS

AMPLIFIER MODULATED CHANNEL TEST – CONDUCTED – Part 2.1049– DOWNLINK

Ambient temperature	=	25°C	Radio Laboratory
Relative humidity	=	35%	
Supply voltage	=	110Vac	
Channel number	=	See test results	

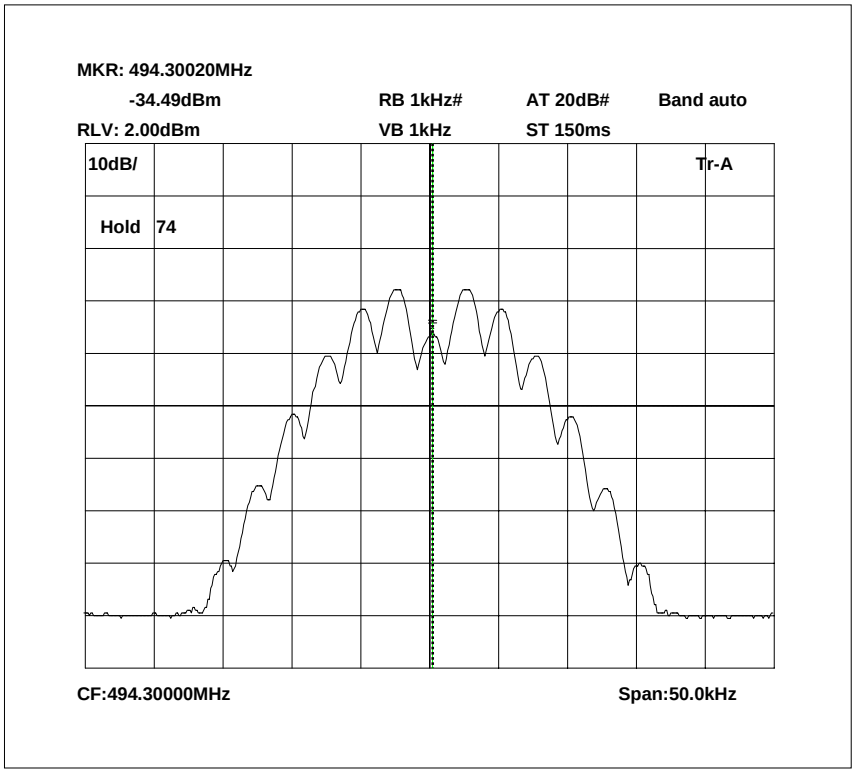
This test was performed to show that the amplifier does not alter the input signal in any way. The input signal was set to the maximum input level -57.3dBm) and modulated with a 2500Hz tone. The plots show the signal measured at the signal generator and the signal measured at the output of the EUT.

Note: The cables and attenuators had the following losses.

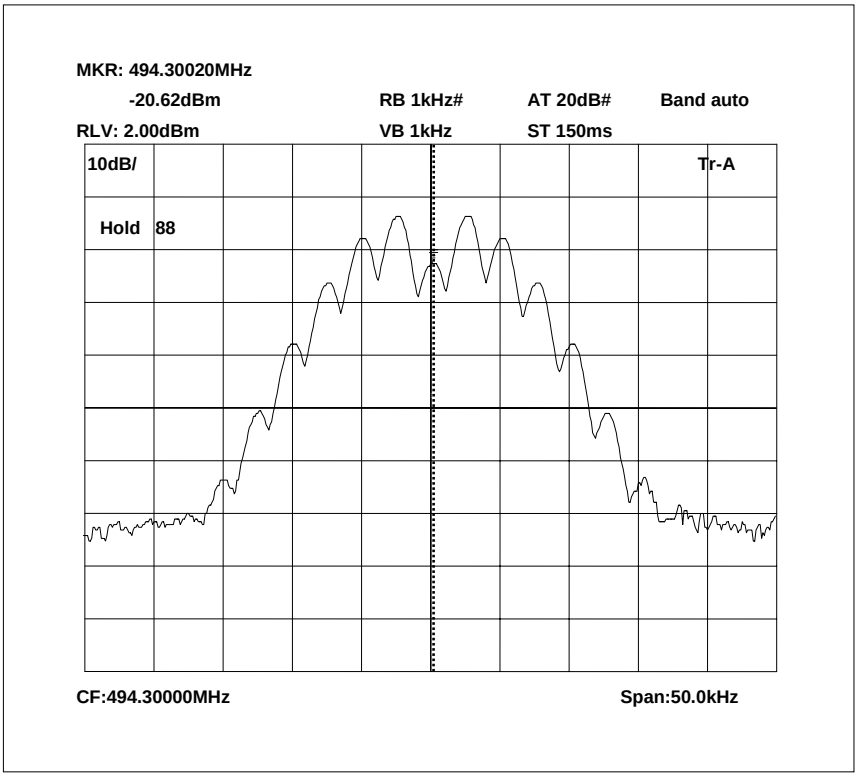
1. Cable TRL273and attenuators TRL220/TRL112 = 36.5dB
2. Cable between signal generator and EUT = 0.4dB

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
ATTENUATOR	BIRD	8304-200	N/A	103	
ATTENUATOR	BIRD	8304-300-N	N/A	220	**X**
CABLE	ROSENBERGER	MICRO COAX	N/A	280	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

494.3 MHz Signal Generator, deviation set to 5kHz

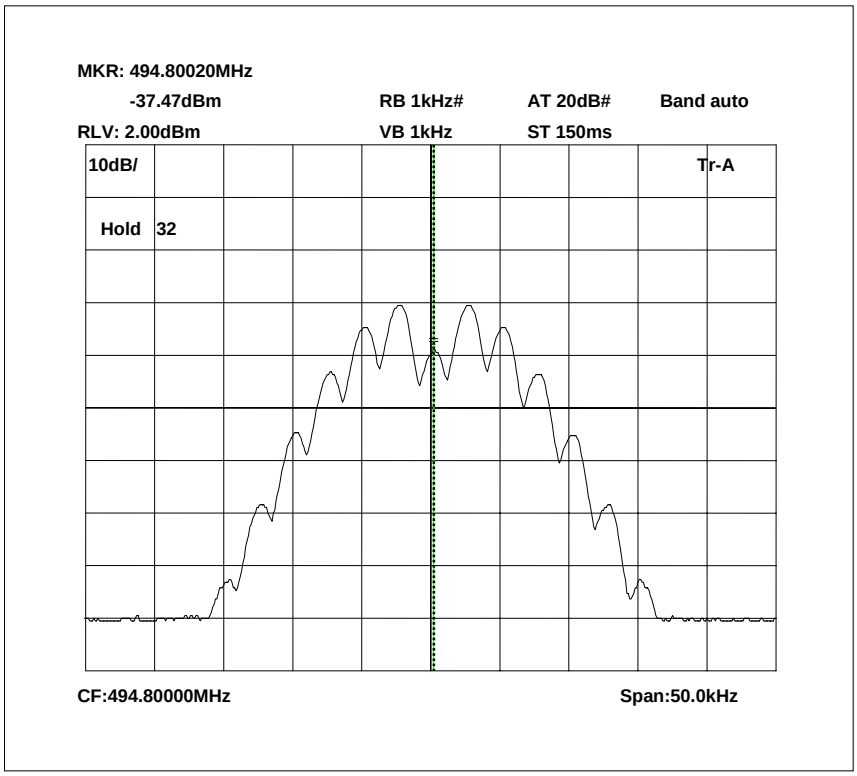


494.3 MHz Signal Generator and EUT, deviation set to 5kHz

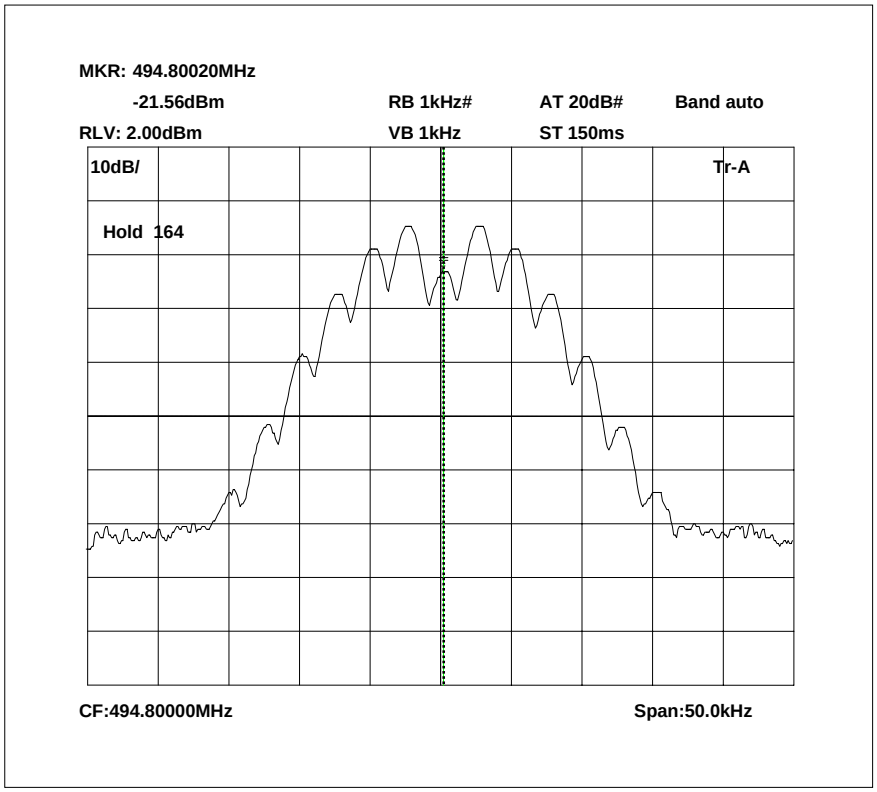


The above plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.

494.8 MHz Signal Generator, deviation set to 5kHz

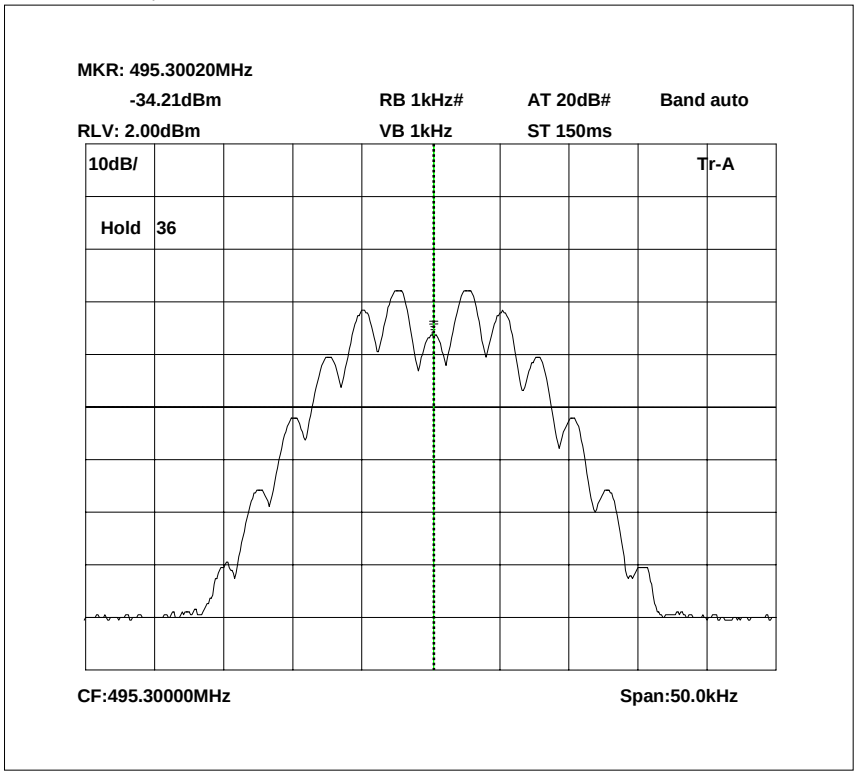


494.8 MHz Signal Generator and EUT, deviation set to 5kHz

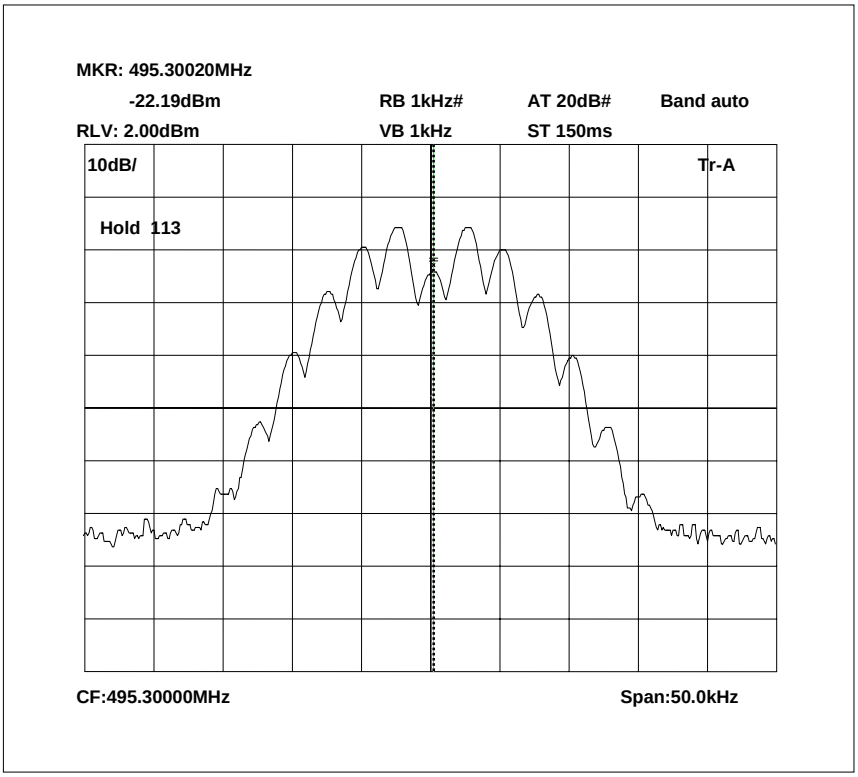


The above plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.

495.3 MHz Signal Generator, deviation set to 5kHz



495.3 MHz Signal Generator and EUT, deviation set to 5kHz



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	=	46%	Test Signal	=	F3E
Supply voltage	=	110Vac			

Signal Generator TRL176 | EUT | Cable & Attenuator | Spectrum Analyser TRL479

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 three 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

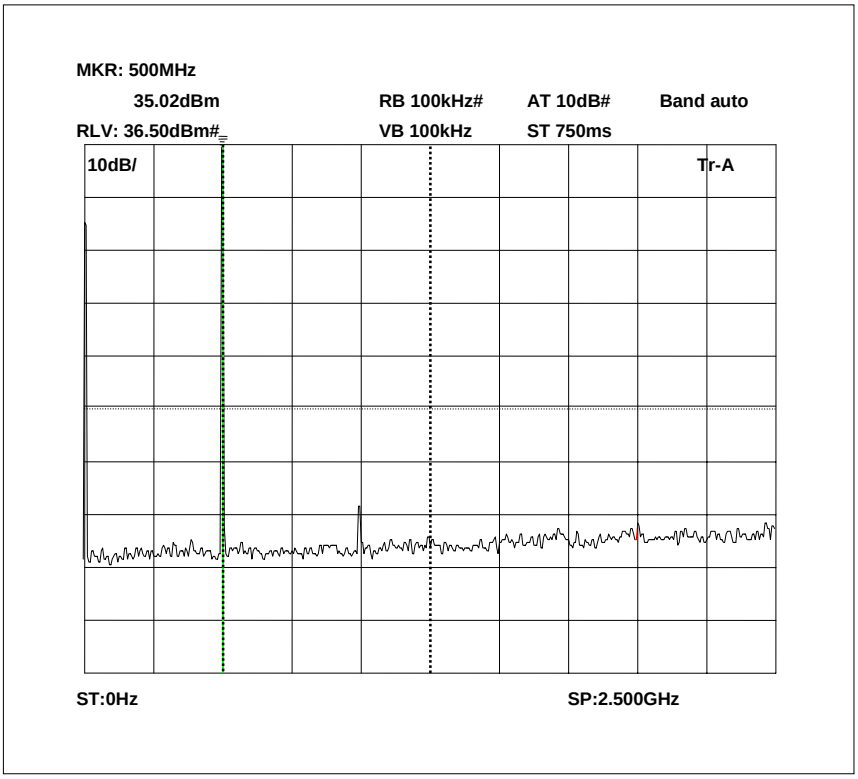
RESULTS

FREQUENCY RANGE	FREQ. (MHz)	MEASURED LEVEL (dBm)	ATTENUATOR & CABLE LOSSES (dB)	EMISSION LEVEL (dBm)	LIMIT (dBm)
0 Hz – 5 GHz	No Significant Emissions within 10 dBm of the limit				-13

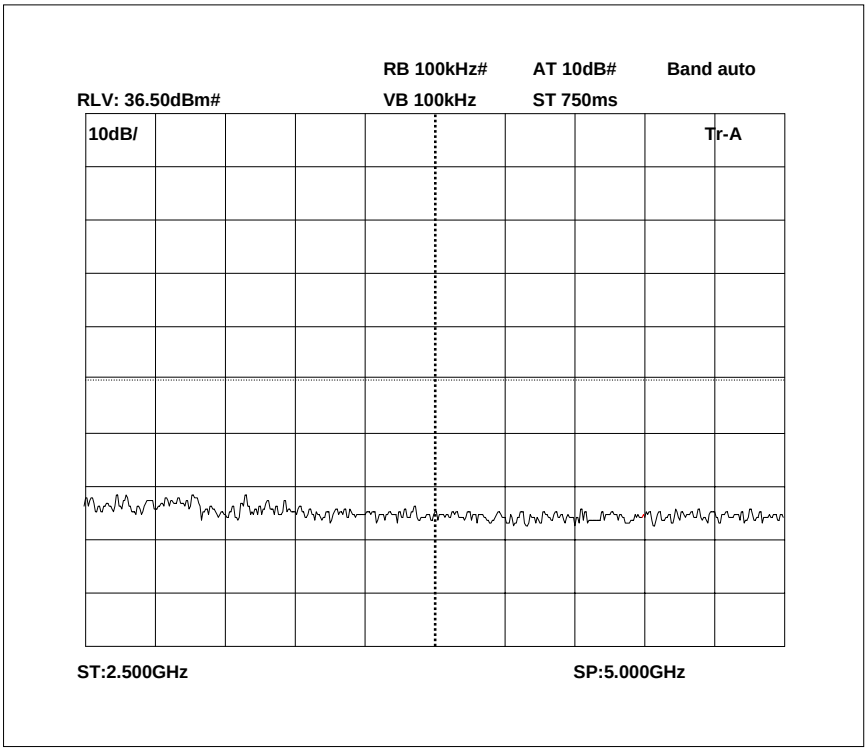
The test equipment used for the Transmitter Conducted Emissions:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
ATTENUATOR	BIRD	8304-200	N/A	103	
ATTENUATOR	BIRD	8304-300-N	N/A	220	**X**
CABLE	ROSENBERGER	MICRO COAX	N/A	280	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

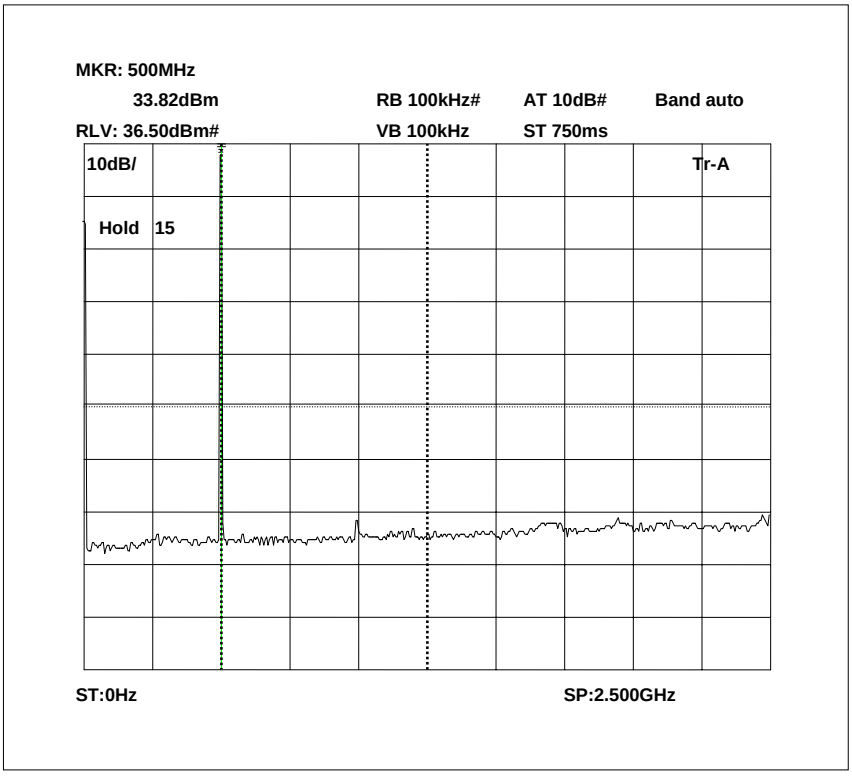
Conducted emissions 494.3 MHz 0 – 2.5GHz



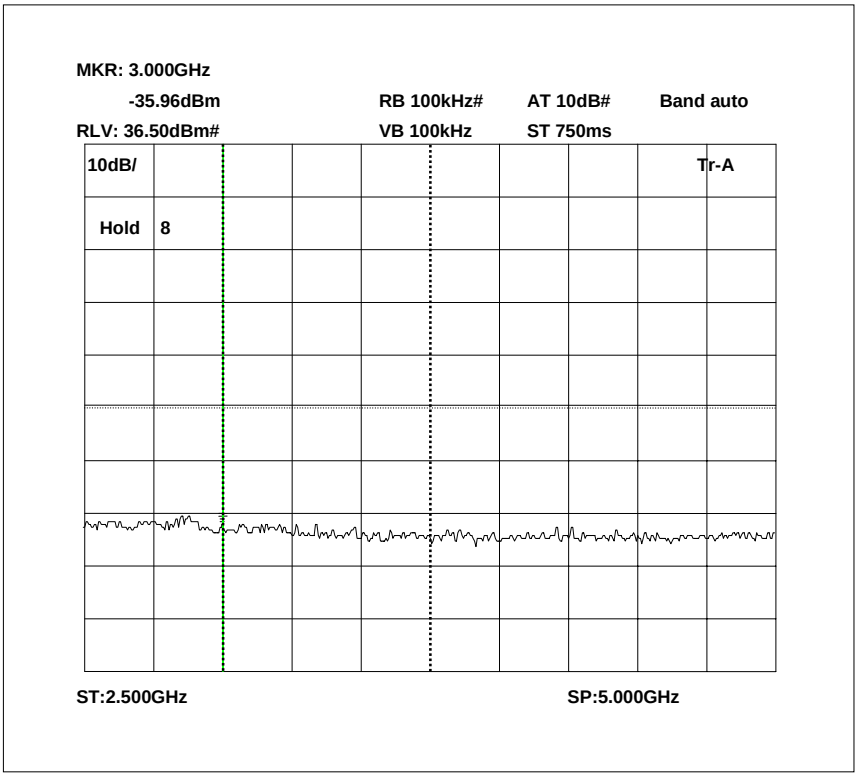
Conducted emissions 494.3 MHz 2.5 – 5GHz



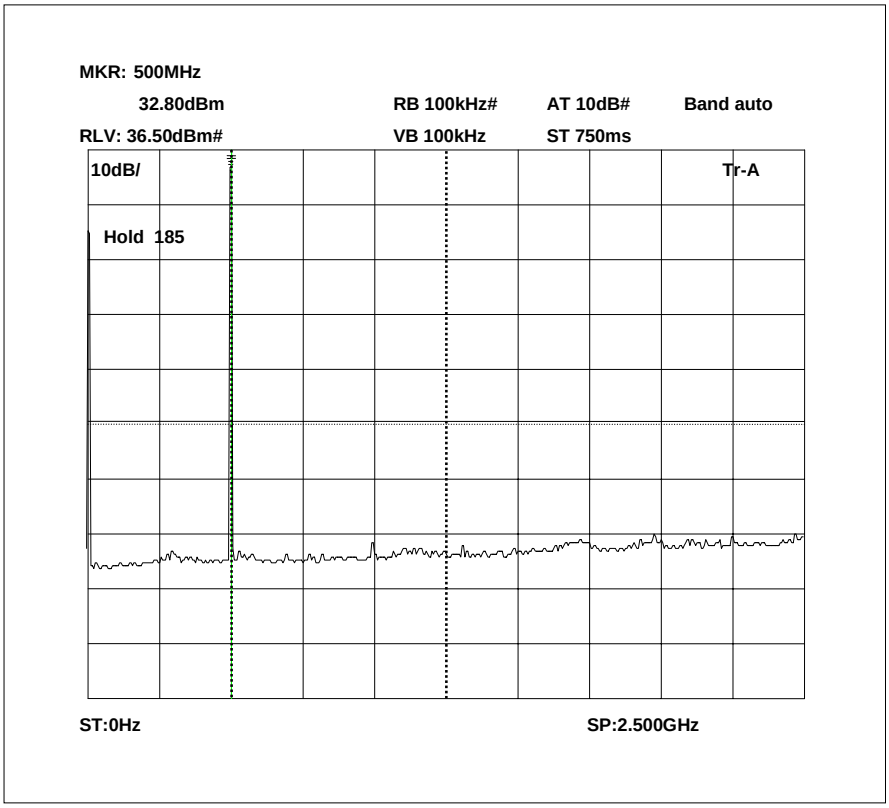
Conducted emissions 494.8 MHz 0 – 2.5GHz



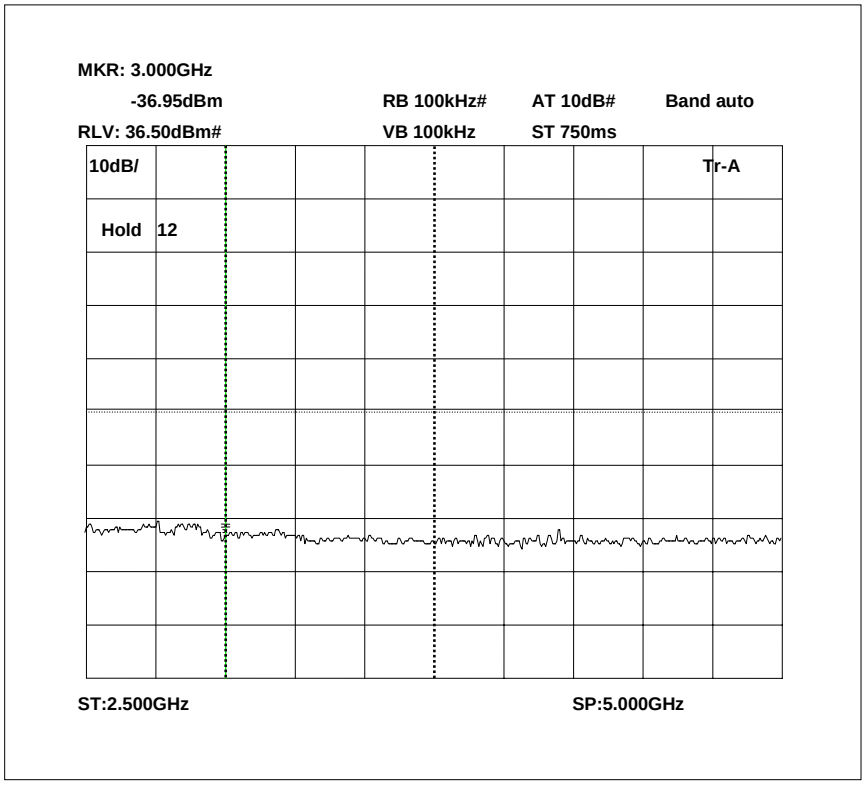
Conducted emissions 494.8 MHz 2.5 – 5GHz



Conducted emissions 495.3 MHz 0 – 2.5GHz



Conducted emissions 495.3 MHz 2.5 – 5GHz

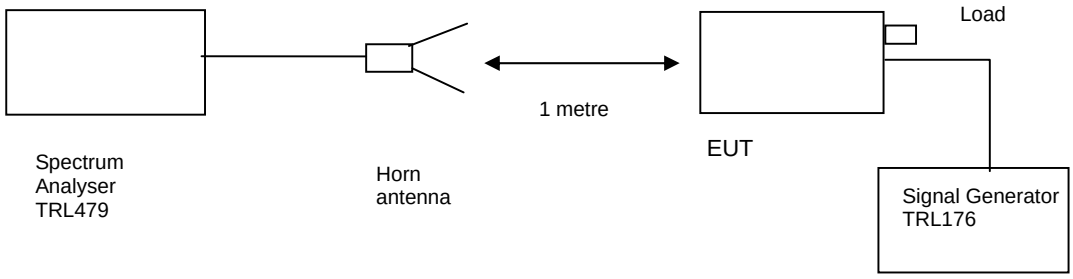


TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – RADIATED – Part 2.1053– DOWNLINK

Ambient temperature = 14°C
Relative humidity = 39%
Conditions = OATS
Supply voltage = 110Vac
Supply Frequency = 60Hz

Test Signal = F3E



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 three 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

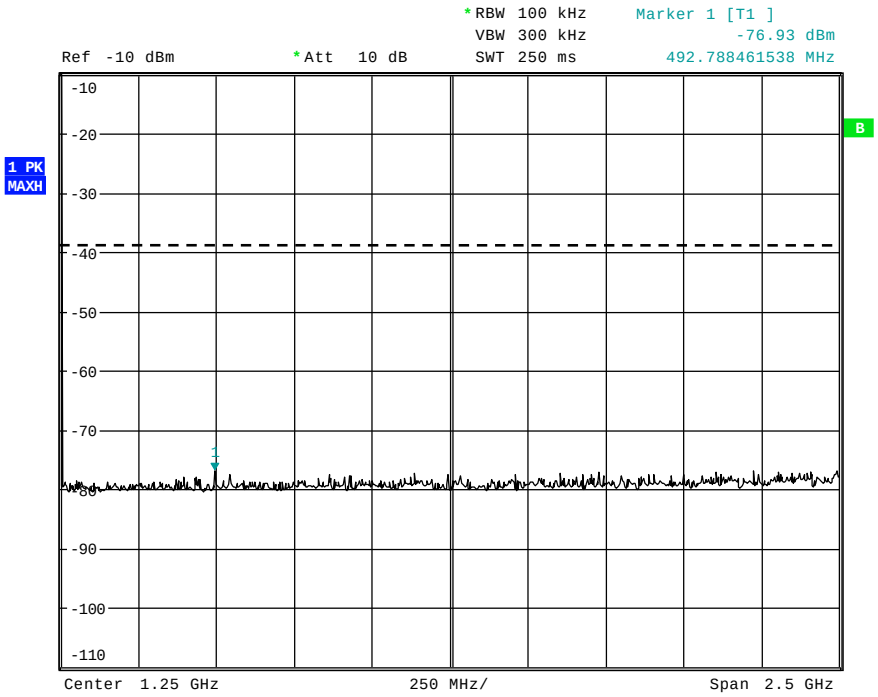
RESULTS

FREQUENCY RANGE	FREQ. (MHz)	MEAS. Rx. (dBµV)	CABLE LOSS (dB)	ANT FACTOR	FIELD STRENGTH (dBµV/m)	CALCULATED EIRP (dBm)	LIMIT (dBm)
0 HZ – 5 GHz	No Significant Emissions Within 10 dBm of the limit						-13

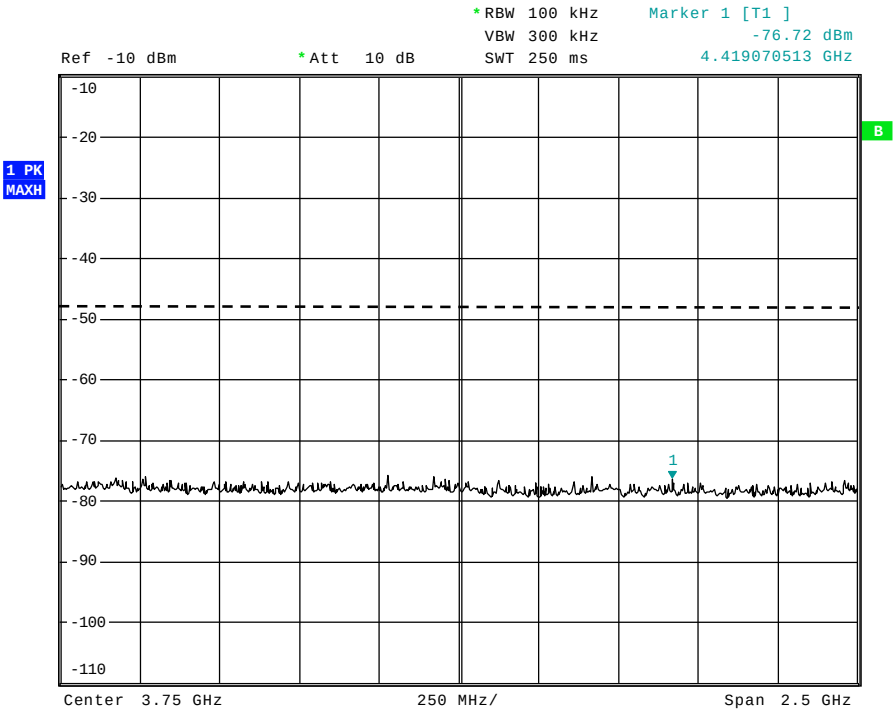
The test equipment used for the Transmitter Spurious Emissions:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
HORN	EMCO	3115	9010-3581	138	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	220	**X**
ATTENUATOR	BIRD	8308-100	N/A	112	**X**
CABLE	ROSENBERGER	MICRO COAX	N/A	280	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

Radiated emissions 494.3 MHz 0 – 2.5GHz

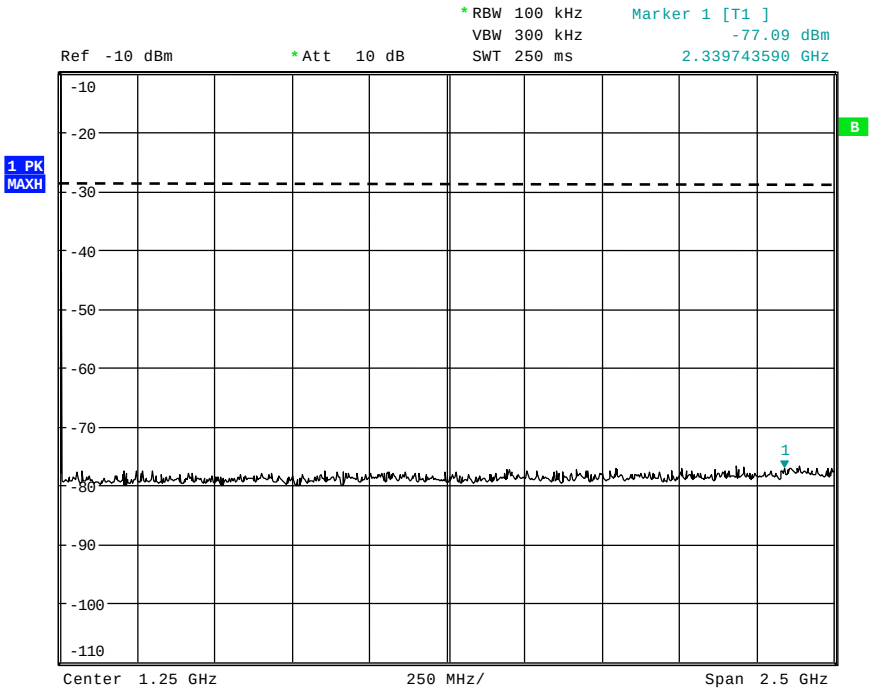


Radiated emissions 494.3 MHz 2.5 – 5GHz

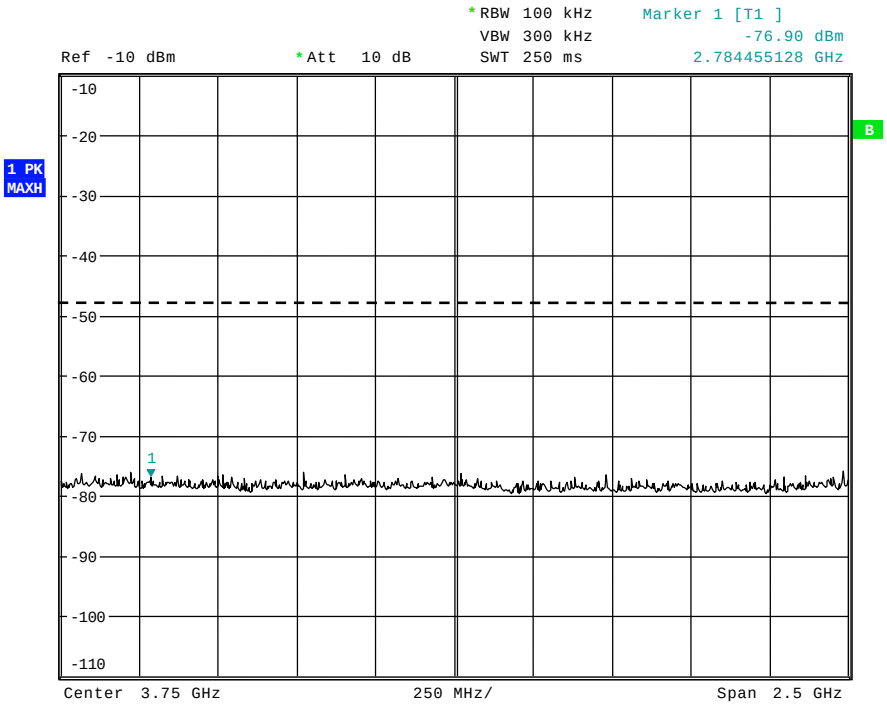


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions 494.8 MHz 0 – 2.5GHz

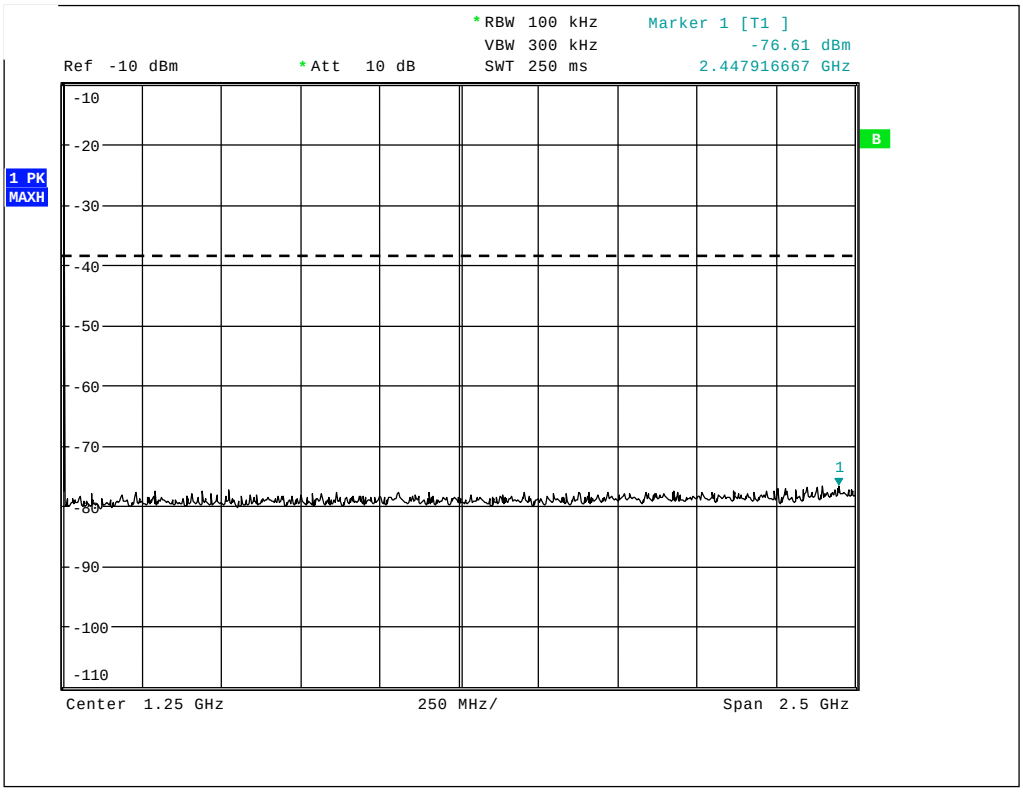


Radiated emissions 494.8 MHz 2.5 – 5GHz



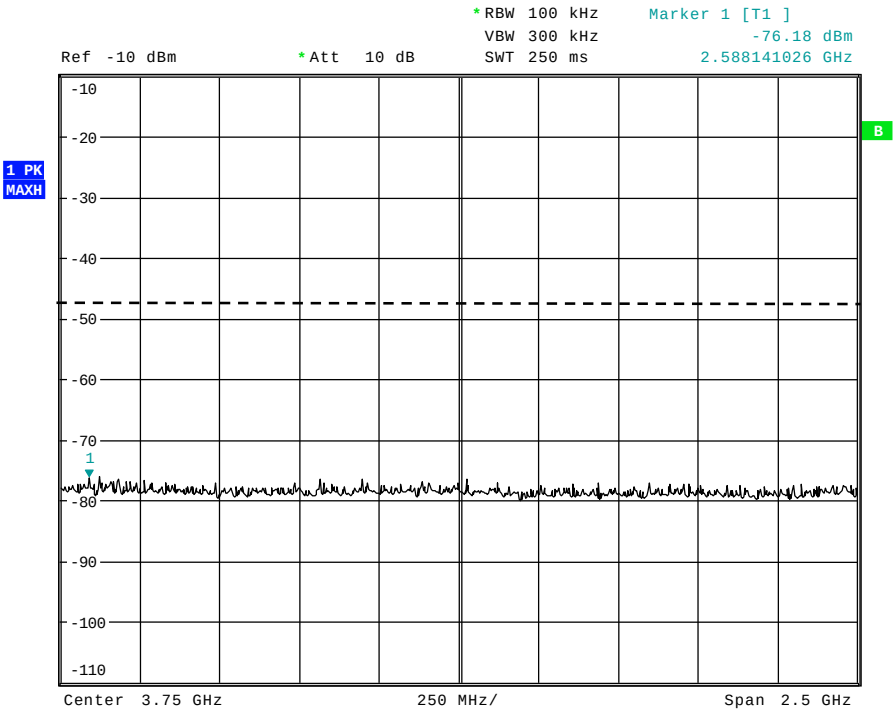
The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions 495.3 MHz 0 – 2.5GHz



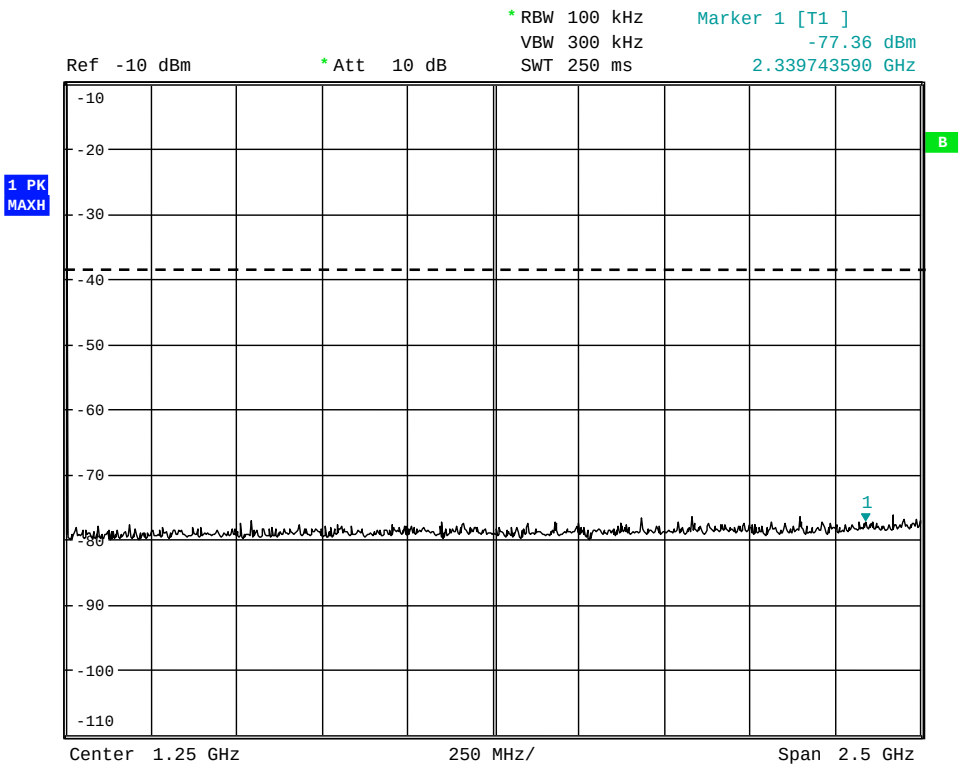
The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions 495.3 MHz 2.5 – 5GHz



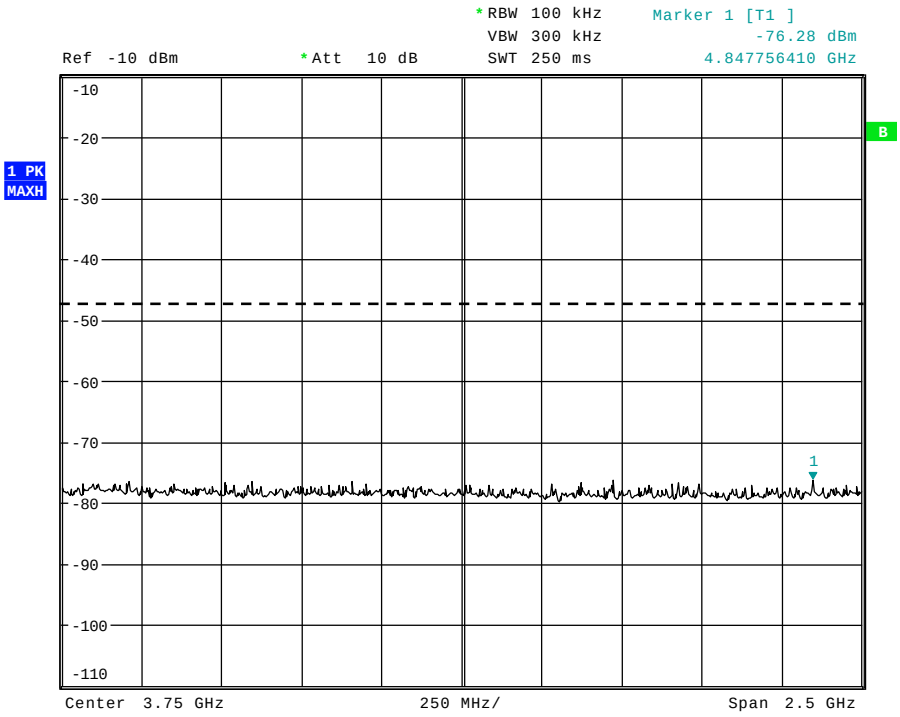
The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions no input signal 0 – 2.5GHz



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

Radiated emissions no input signal 2.5 – 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**

PHOTOGRAPH No. 2 **TEST SETUP**

ANNEX B

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]

ANNEX C

EQUIPMENT CALIBRATION

TRL Number	Equipment Type	Manufacturer	Last Cal Calibration	Calibration Period	Due For Calibration
UH281	Spectrum Analyser	R&S			
UH297	Signal Generator	R&S	21/04/2006	12	21/04/2007
L005	CMTA	R&S	05/12/2005	12	05/12/2006
L031	Power Amp	ENI		Calibrate in Use	
L103	Attenuator	Bird		Calibrate in Use	
L138	1-18GHz Horn	EMCO	15/04/2005	24	15/04/2007
L139	1-18GHz Horn	EMCO	03/05/2005	24	03/05/2007
L170	Combiner	Elcom		Calibrate in Use	
L176	Signal Generator	Marconi	15/02/2006	12	15/02/2007
L220	Attenuator	Bird		Calibrate in Use	
L222	Attenuator	Bird		Calibrate in Use	
L280	18GHz Cable	Rosenberger	05/01/2006	12	05/01/2007
L254	Signal Generator	Marconi	04/01/2006	12	04/01/2007
L479	Analyser	Anritsu	18/11/2005	12	18/11/2006

ANNEX D

MEASUREMENT UNCERTAINTY

Radio Testing – General Uncertainty Schedule

All statements of uncertainty are expanded standard uncertainty using a coverage factor of 1.96 to give a 95% confidence where no required test level exists.

[1] Adjacent Channel Power

Uncertainty in test result = **1.86dB**

[2] Carrier Power

Uncertainty in test result (Equipment - TRLUH120) = **2.18dB**
Uncertainty in test result (Equipment – TRL05) = **1.08dB**
Uncertainty in test result (Equipment – TRL479) = **2.48dB**

[3] Effective Radiated Power

Uncertainty in test result = **4.71dB**

[4] Spurious Emissions

Uncertainty in test result = **4.75dB**

[5] Maximum frequency error

Uncertainty in test result (Equipment - TRLUH120) = **119ppm**
Uncertainty in test result (Equipment – TRL05) = **0.113ppm**
Uncertainty in test result (Equipment – TRL479) = **0.265ppm**

[6] Radiated Emissions, field strength OATS 14kHz-18GHz Electric Field

Uncertainty in test result (14kHz – 30MHz) = **4.8dB**, Uncertainty in test result (30MHz – 1GHz) = **4.6dB**, Uncertainty in test result (1GHz-18GHz) = **4.7dB**

[7] Frequency deviation

Uncertainty in test result = **3.2%**

[8] Magnetic Field Emissions

Uncertainty in test result = **2.3dB**

[9] Conducted Spurious

Uncertainty in test result (Equipment TRL479) Up to 8.1GHz = **3.31dB**
Uncertainty in test result (Equipment TRL479) 8.1GHz – 15.3GHz = **4.43dB**
Uncertainty in test result (Equipment TRL479) 15.3GHz – 21GHz = **5.34dB**
Uncertainty in test result (Equipment TRLUH120) Up to 26GHz = **3.14dB**

[10] Channel Bandwidth

Uncertainty in test result = **15.5%**

[11] Amplitude and Time Measurement – Oscilloscope

Uncertainty in overall test level = **2.1dB**, Uncertainty in time measurement = **0.59%,** Uncertainty in Amplitude measurement = **0.82%**

[11] Power Line Conduction

Uncertainty in test result = **3.4dB**

ANNEX E

SYSTEM DIAGRAM

AWAITING SYSTEM DIAGRAM