TEST REPORT NO: RU1244/7039

COPY NO: 2

ISSUE NO: 1

FCC ID: NEO60-1661Series

REPORT ON THE CERTIFICATION TESTING OF A
AERIAL FACILITIES LIMITED
60-166101 CELL ENHANCER
WITH RESPECT TO
THE FCC RULES CFR 47, PART 90 Subpart I
PRIVATE LAND MOBILE REPEATER.

TEST DATE: 24th – 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 10:21:31 +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 20:36:21 +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

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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:	NEO60-1661Series
PURPOSE OF TEST:	Certification
TEST SPECIFICATION:	FCC RULES CFR 47, Part 90 Subpart I
TEST RESULT:	Compliant to Specification
EQUIPMENT UNDER TEST:	60-166101 Cell Enhancer
EQUIPMENT TYPE:	UHF Air Interface Unit
MAXIMIUM GAIN:	Uplink = 77.98 dB Downlink = 60.58dB
MAXIMUM INPUT:	Uplink = -56.8dBm Downlink = -68.4 dBm
MAXIMUM OUTPUT:	Uplink =19.53 dBm Downlink =-9.47 dBm
ANTENNA TYPE:	Not applicable
CHANNEL SPACING:	12.5 kHz
NUMBER OF CHANNELS:	Channel No. Uplink 14 Downlink 14
FREQUENCY GENERATION:	N/A
MODULATION TYPE:	F3E
POWER SOURCE(s):	+110Vac
TEST DATE(s):	24th – 26th May 2006
ORDER No(s):	36615
APPLICANT:	Aerial Facilities Limited
ADDRESS:	Aerial House Asheridge Road Chesham Buckinghamshire HP5 1TU 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 10:21:44 +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 20:36:32 +01'00' P GREEN PRODUCT MANAGER EMC

APPLICANT'S SUMMARY

EQUIPMENT UNDER TEST (EUT):	60-166101 Cell Enhancer
EQUIPMENT TYPE:	UHF Air Interface Unit
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 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) :	24th – 26th May 2006
TEST REPORT No:	RU1244/7039

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 [X] Class B [ ]
   Downlink Class A [X] Class B [ ]
3. Product Use: Private Land Mobile Repeater
4. Emission Designator: F3E
5. Temperatures: Ambient (Tnom) 21^{o}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 [X] 12.5kHz
   Wideband [ ]
9. Test Location: TRL Compliance Limited
   Up Holland [X]
   Long Green [ ]
10. Modifications made during test program No modifications were performed.

System description:

The 60-166101 is a bi-directional amplifier. The uplink operates over the frequency range 494.3MHz – 495.3 MHz. The uplink input is fed from FCCID NEO60-1665Series via a fibre optic link made up of FCCIDs NEO20-0040Series and NEO20-0041Series. The uplink is channelised and the uplink output goes on air. The downlink operates over the frequency range 497.3MHz – 4983MHz. The downlink input is off air. The downlink is channelised. The output of the downlink input is fed to FCCID NEO60-1665Series via a fibre optic link made up of FCCIDs NEO20-0040Series and NEO20-0041Series.

COMPLIANCE TESTS

AMPLIFIER GAIN – CONDUCTED – PART 2.1046 – UPLINK

Ambient temperature	=	16°C	Radio Laboratory
Relative humidity	=	42%	
Supply voltage	=	+110Vac	
Channel number	=	See test results	

Frequency MHz	Signal Generator input level dBm	Input Cable Loss dB	Cable & Attenuator loss dB	Level at Spectrum Analyser dBm	Gain dB	Output Power dBm	Gain after 10dB input level increase dBm
497.3	-58.3	0.15	20.03	0.50	78.98	20.53	20.87
497.8	-58.2	0.15	20.03	1.43	79.81	21.46	21.75
498.3	-56.8	0.15	20.03	0.70	77.68	20.73	21.07

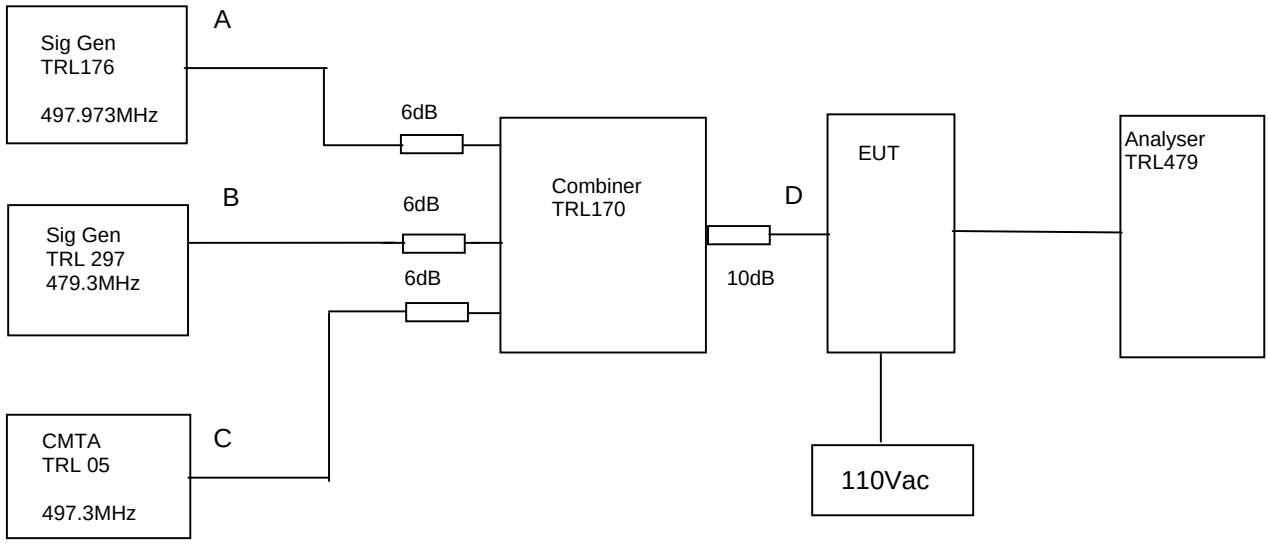
Notes:

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	RHODE & SCHWARZ	FSU	200034	281	**X**
ATTENUATOR	BIRD	HIGH POWER 50 ohm	N/A	103	**X**
CABLE	TRL	N TYPE	N/A	UH271 UH253	**X**
SIGNAL GENERATOR	MARCONI	2042	119562/021	254	**X**

AMPLIFIER INTERMODULATION SPURIOUS EMISSIONS – CONDUCTED – PART 2.1053– UPLINK

Ambient temperature = 18 °C Radio Laboratory
Relative humidity = 39%
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 –58.2dBm.The cable loss between the EUT and the spectrum analyser was 0.28dB.

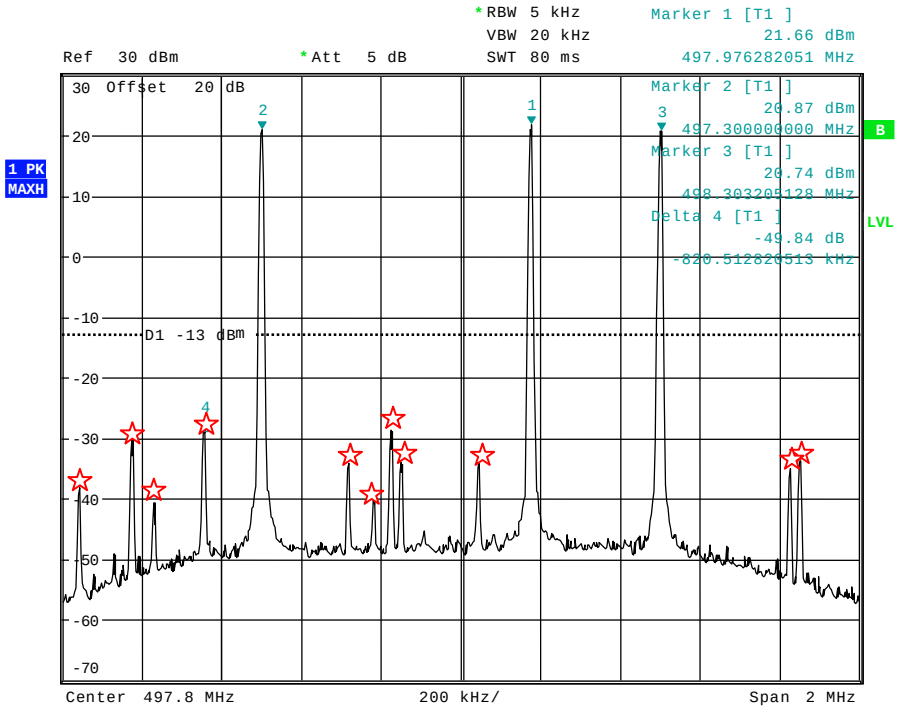
RF Input Frequency (MHz)			Highest Intermodulation Product Level (dBm)	Limit (dBm)
497.973	479.3	497.3	-29dBm@497.152MHz	-13

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	ROHDE & SCHWARZ	SML 03	102268	297	**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**

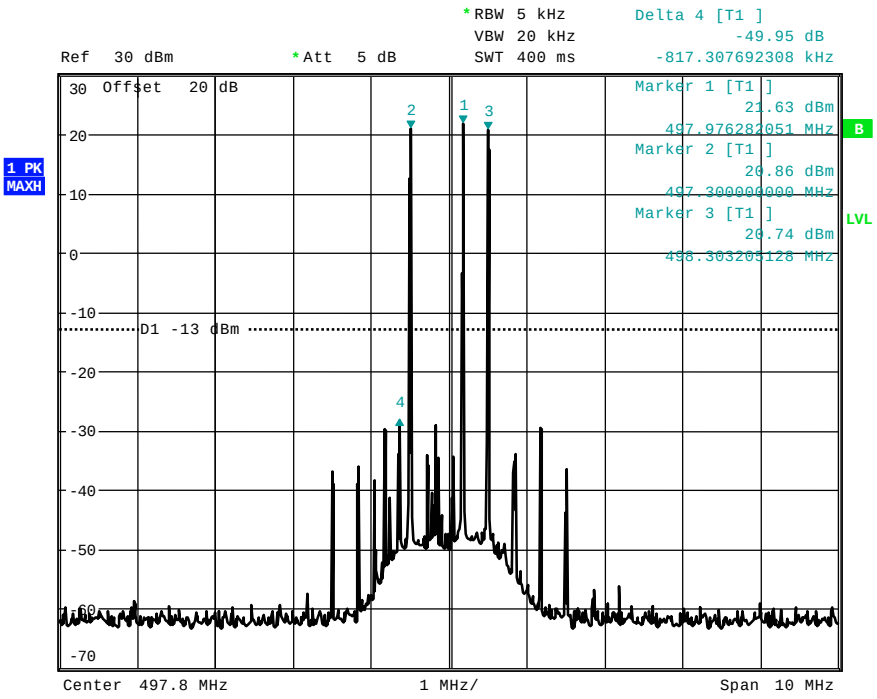
Intermodulation Inband



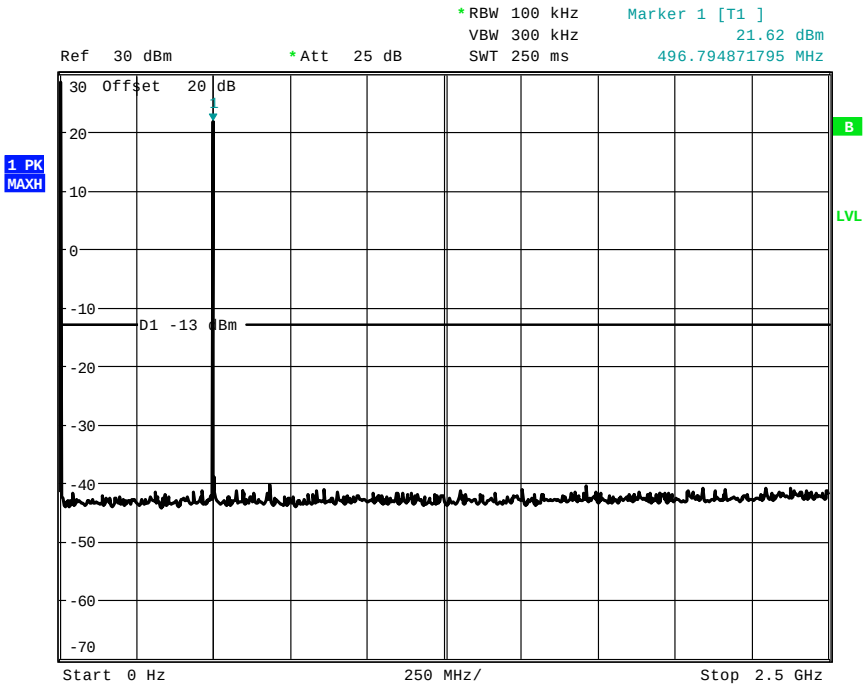
Date: 24.MAY.2006 17:31:13

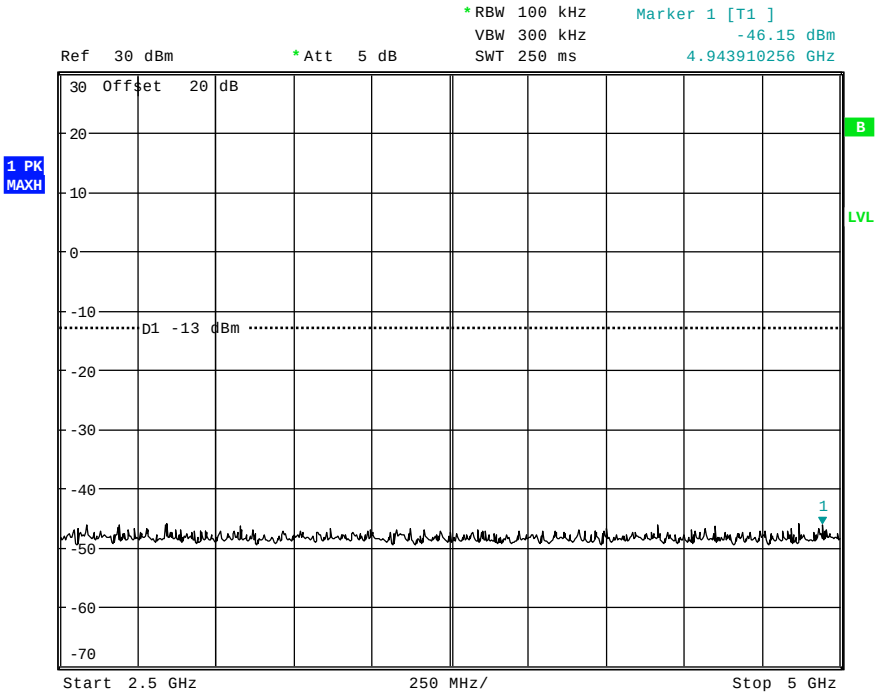
The above plot shows that all products (designated by ☆) are below the spurious limit.

Intermodulation Wideband



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



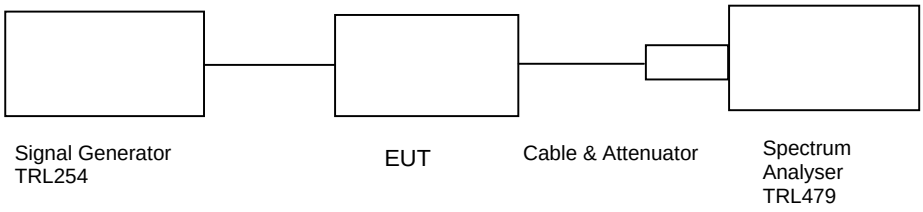


The above plot shows that there are no products outside the bands.

TRANSMITTER TESTS

AMPLIFIER MODULATED CHANNEL TEST – CONDUCTED – Part 2.1049– UPLINK

Ambient temperature	=	16 ^{o}C	Radio Laboratory
Relative humidity	=	42%	
Supply voltage	=	+110Vac	
Channel number	=	See test results	



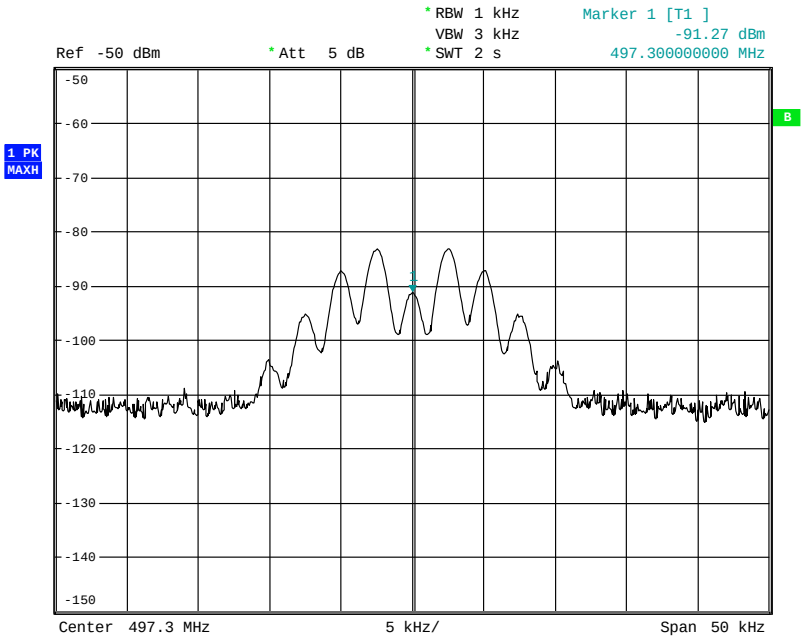
This test was performed to show that the amplifier does not alter the input signal in any way. The input signal was set to the maximum input level (-57dBm) and modulated with a 2500Hz tone. The plots show the signal measured at the signal generator and the signal measured at the output of the EUT.

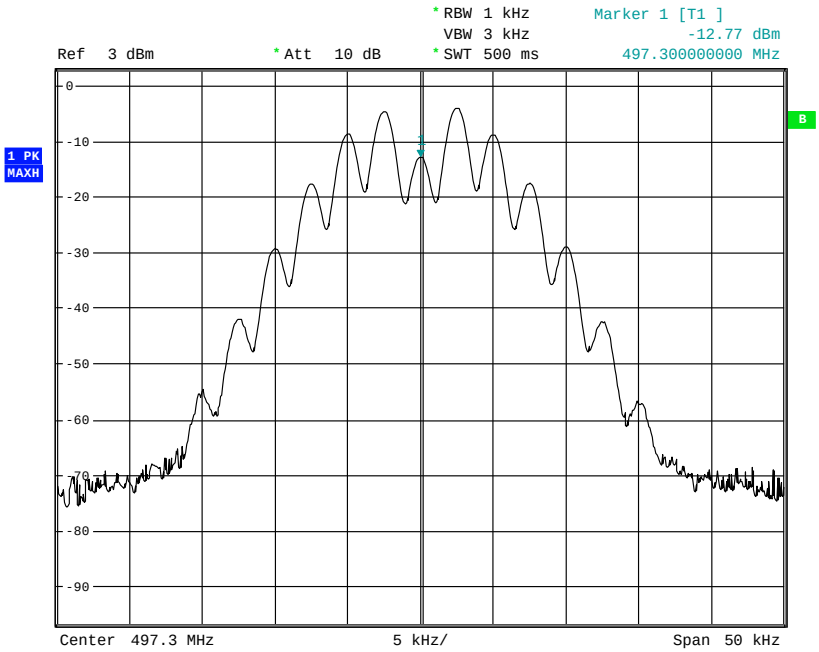
Note: The cables and attenuators had the following losses.

1. Cable and attenuator between EUT and spectrum analyser 20.03dB
2. Cable between signal generator and EUT 0.15dB

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
ATTENUATOR	BIRD	HIGH POWER 50 ohm	N/A	103	**X**
CABLES	TRL	N TYPE	N/A	UH271 UH253	**X**
SIGNAL GENERATOR	MARCONI	2042	119562/021	254	**X**

497.3MHz Signal Generator, deviation set to 5kHz

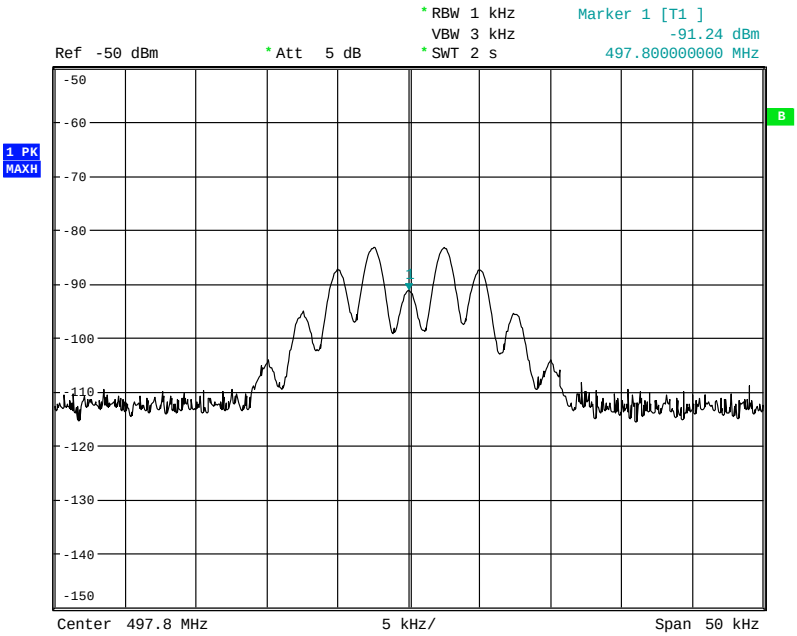




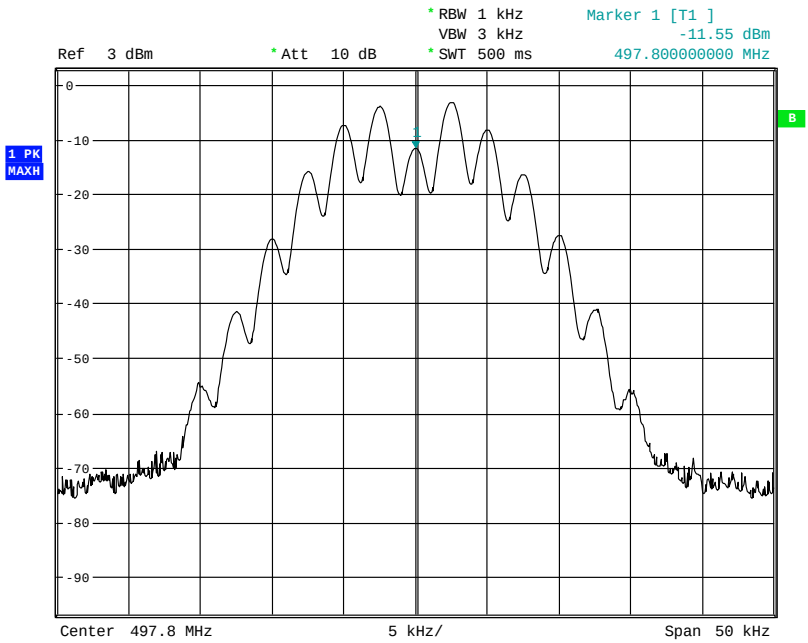
497.3MHz Signal Generator and EUT, deviation set to 5kHz

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

497.8MHz Signal Generator, deviation set to 5kHz

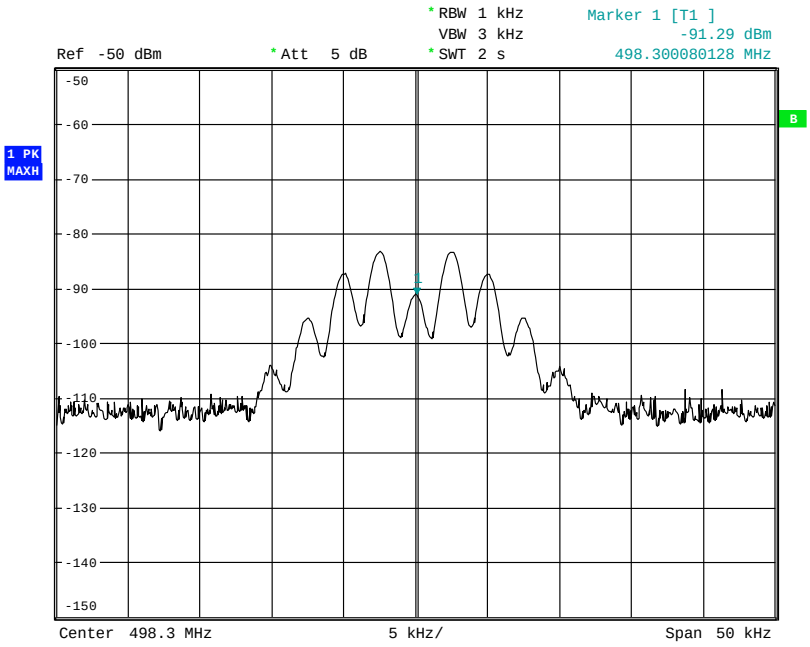


497.8MHz Signal Generator and EUT, deviation set to 5kHz

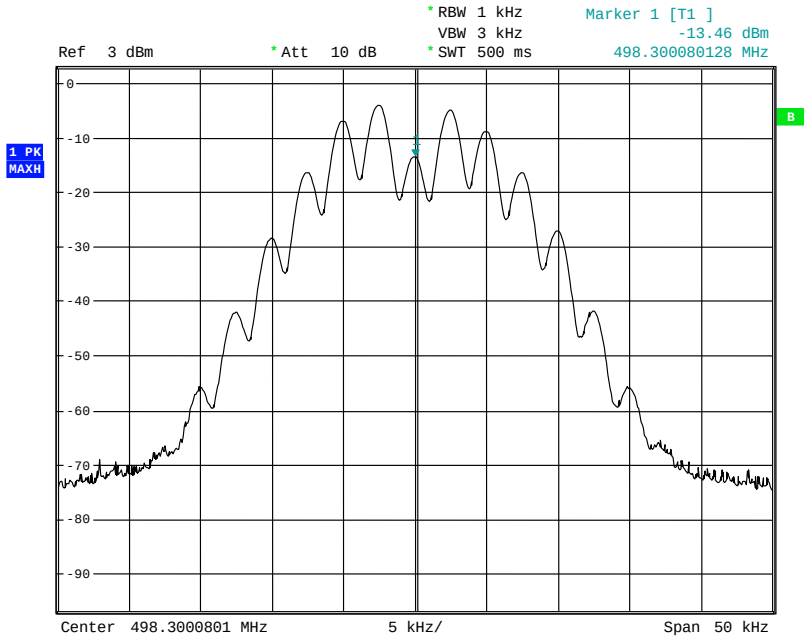


The above plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.

498.3MHz Signal Generator, deviation set to 5kHz



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

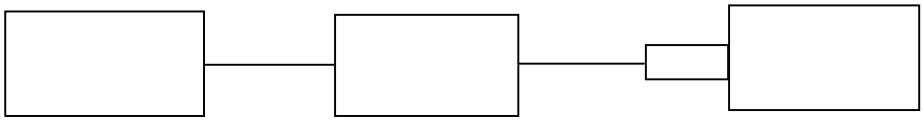


The above plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.

TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – CONDUCTED – Part 2.1053 – UPLINK

Ambient temperature	=	16°C	Radio Laboratory		
Relative humidity	=	42%	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

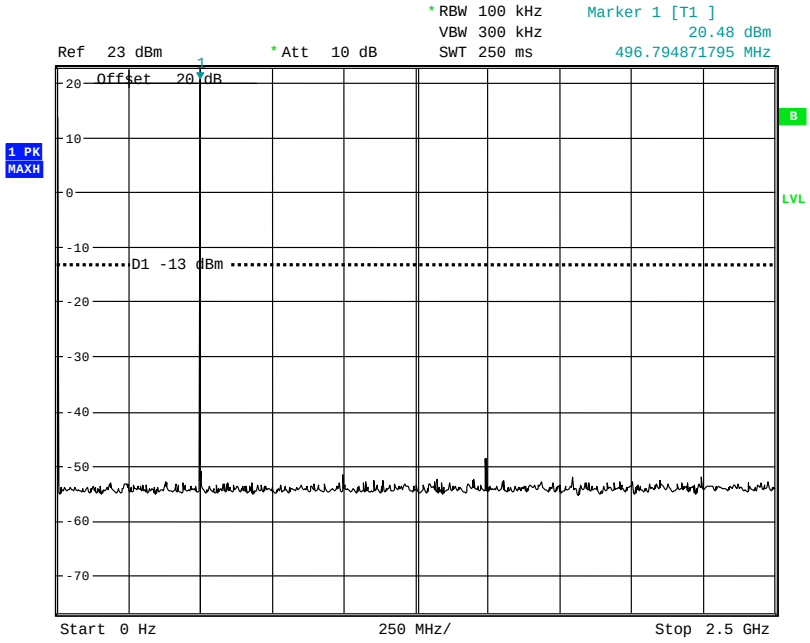
RESULTS

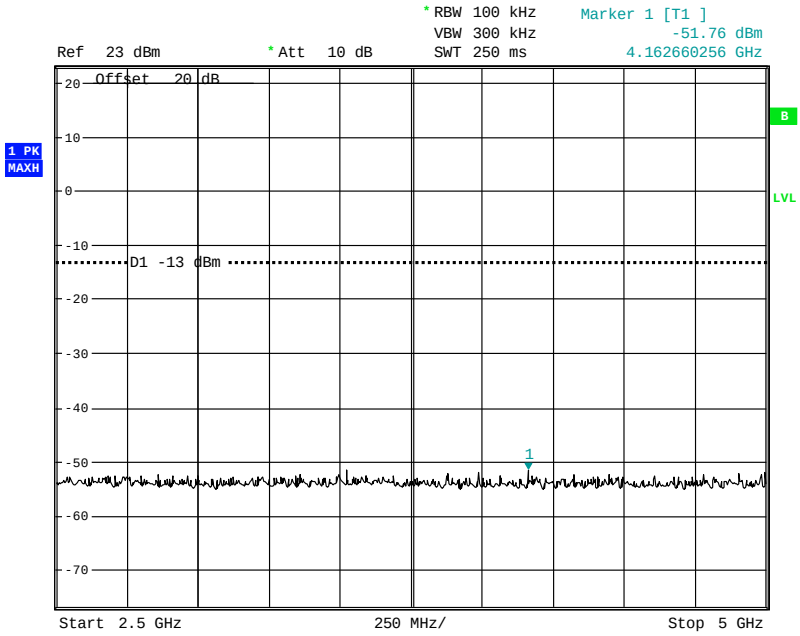
FREQUENCY RANGE	FREQ. (MHz)	MEASURED LEVEL (dBm)	ATTENUATOR & CABLE LOSSES (dB)	EMISSION LEVEL (dBm)	LIMIT (dBm)
0-5GHz	No significant emissions within 10dB of the limit				-13

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	ROHDE & SCHWARZ	FSU	200034	UH281	**X**
ATTENUATOR	BIRD	HIGH POWER 50 ohm	N/A	103	**X**
CABLES	TRL	N TYPE	N/A	253	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

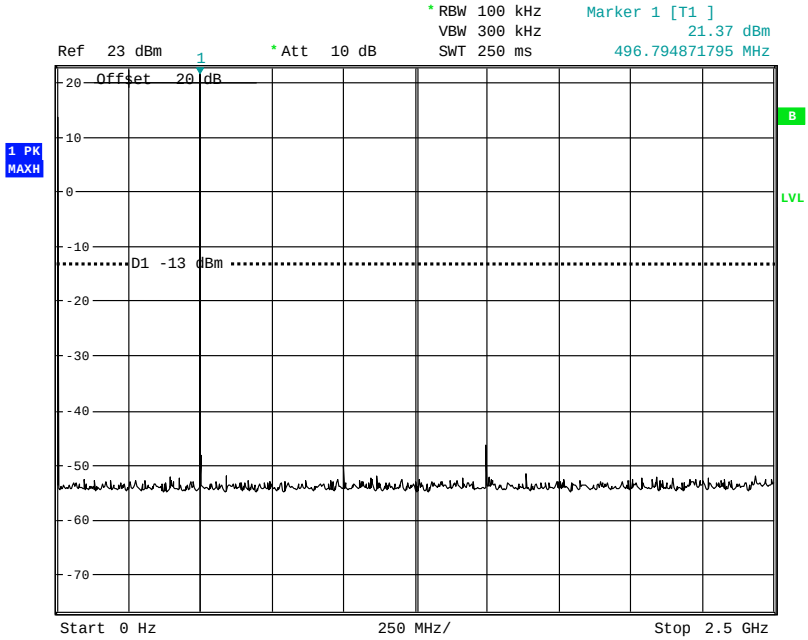
Conducted emissions 497.3MHz 0 – 2.5GHz

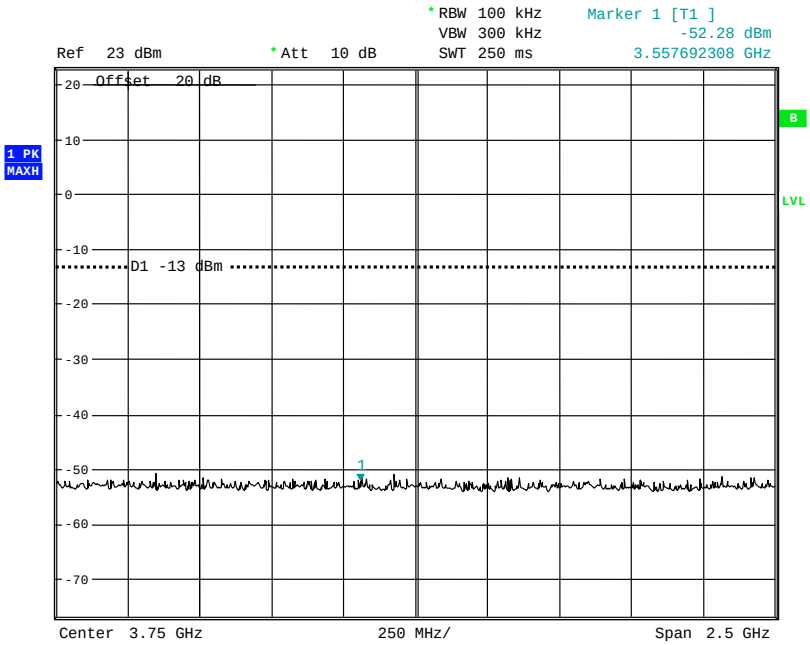




Conducted emissions 497.3MHz 2.5 – 5GHz

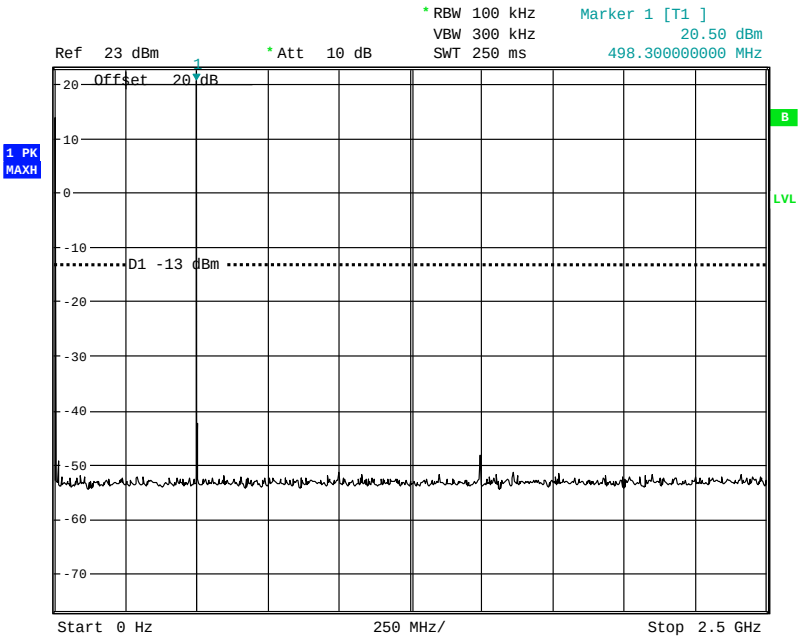
Conducted emissions 497.8 MHz 0 – 2.5GHz

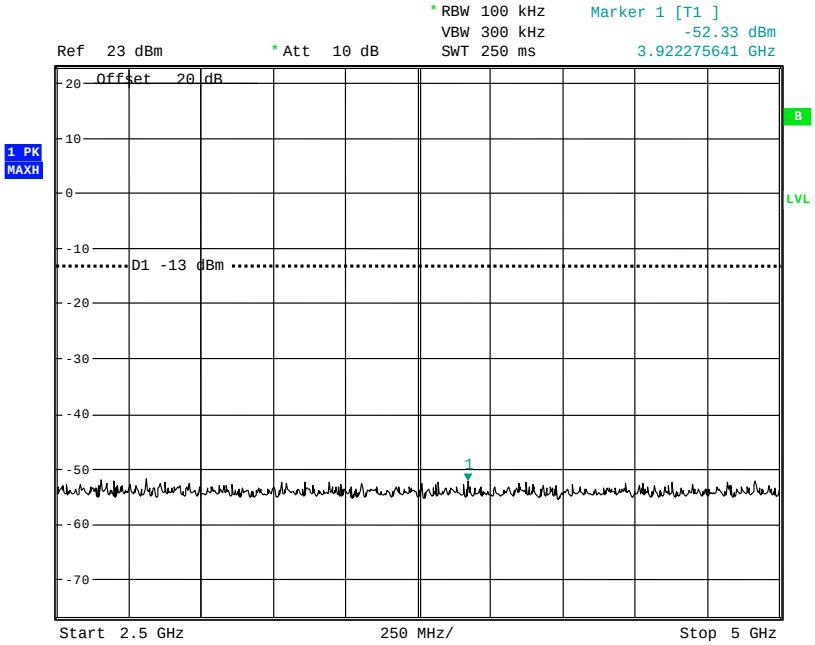




Conducted emissions 497.8 MHz 2.5 – 5GHz

Conducted emissions 498.3 MHz 0 – 2.5GHz



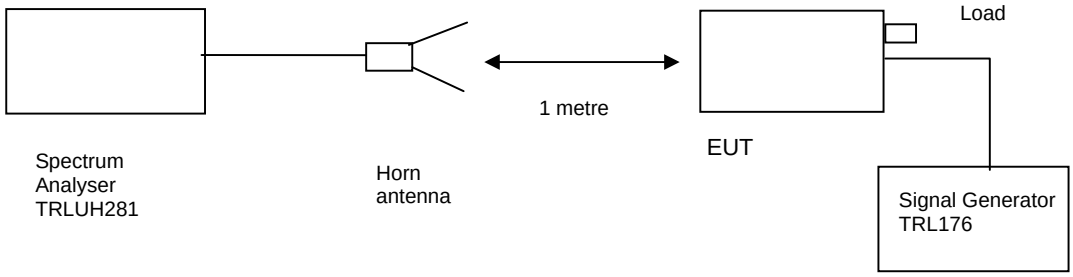


Conducted emissions 498.3 MHz 2.5 – 5GHz

TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – RADIATED – Part 2.1053– UPLINK

Ambient temperature	=	16°C	Test Signal	=	F3E
Relative humidity	=	42%			
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 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

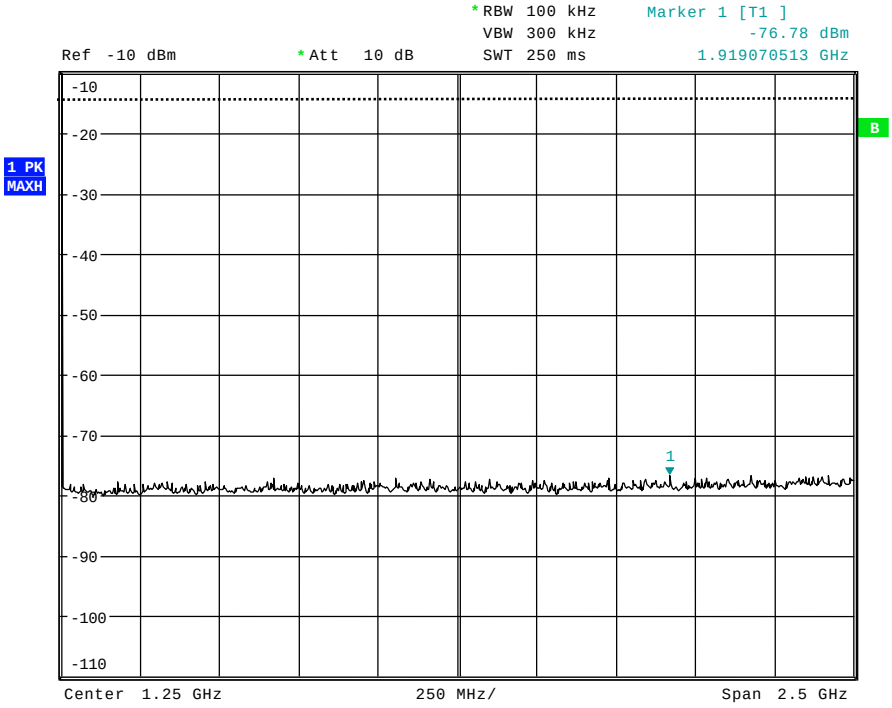
RESULTS

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

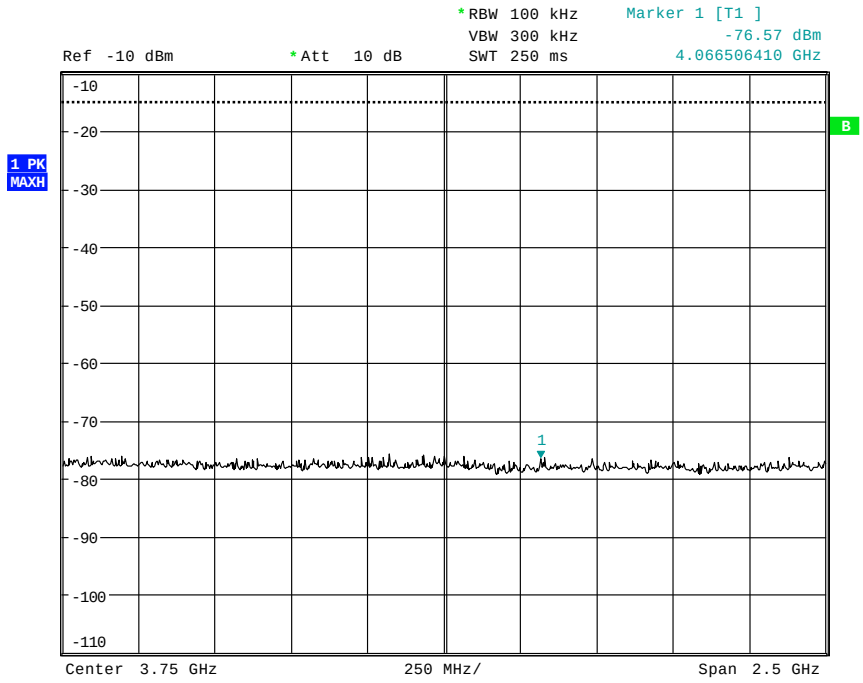
The test equipment used for the Transmitter Spurious Emissions:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ROHDE & SCHWARZ	FSU	200034	281	**X**
HORN	EMCO	3115	9010-3581	138	**X**
CABLE	1.5m Co-Ax N type	N/A	N/A	272	**X**
CABLE	ROSENBERGER	MICRO COAX	N/A	280	**X**
SIGNAL GENERATOR	MARCONI	2042	119562/021	254	**X**

Radiated emissions 497.3MHz 0 – 2.5GHz

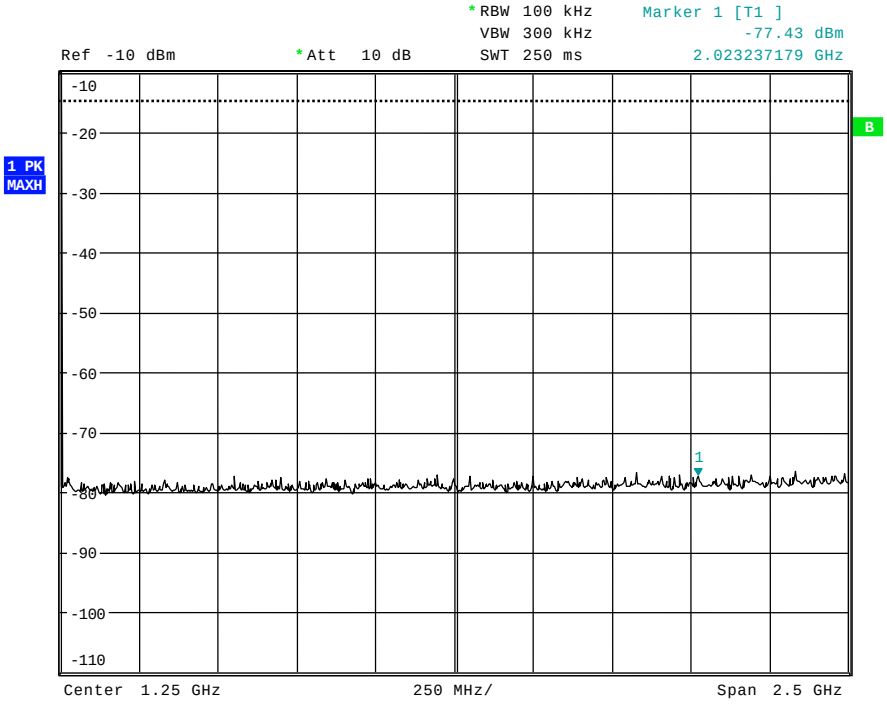


Radiated emissions 497.3MHz 2.5 – 5GHz

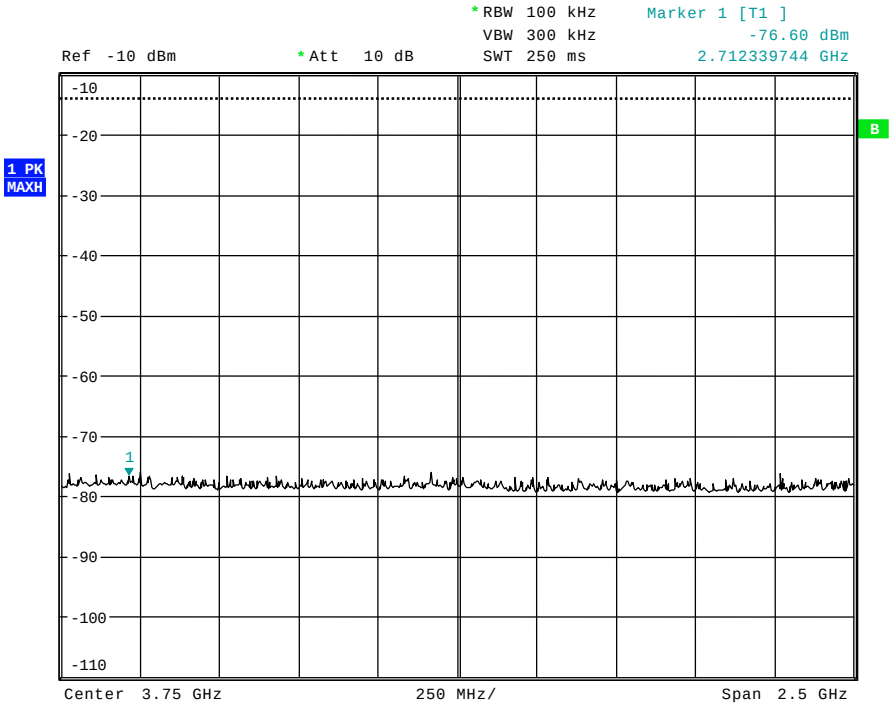


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions 497.8MHz 0 – 2.5GHz

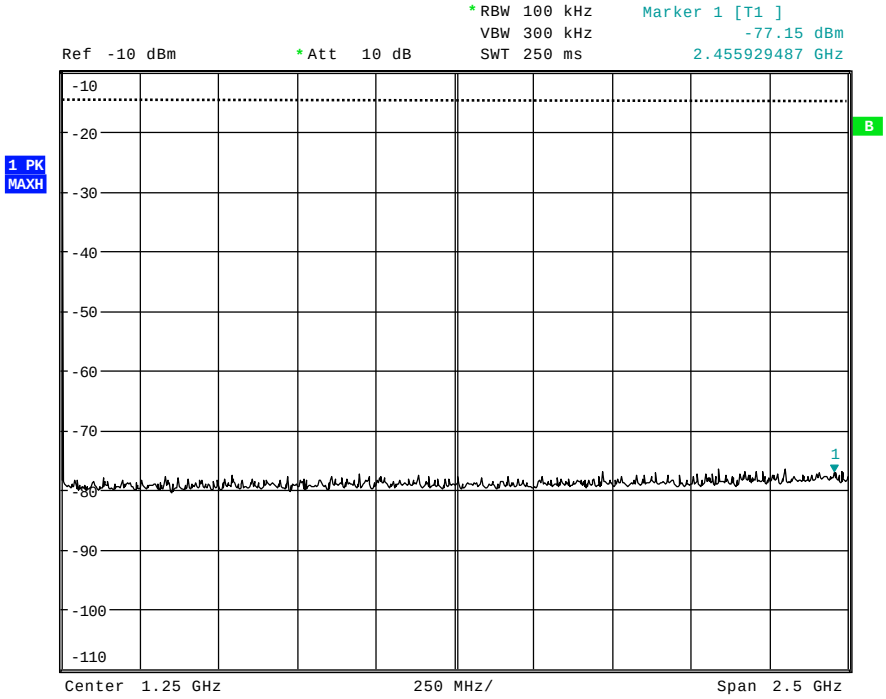


Radiated emissions 497.8MHz 2.5 – 5GHz

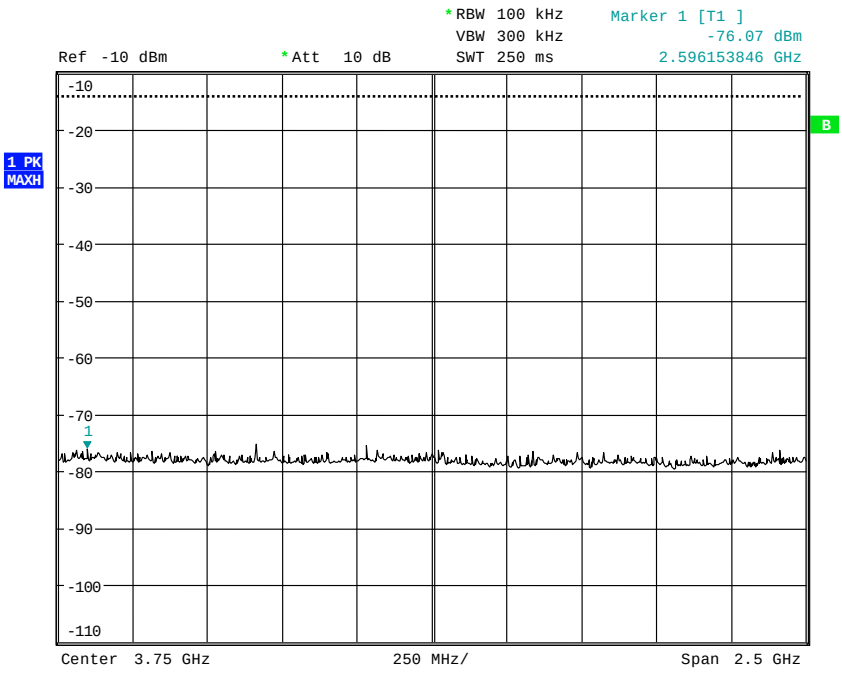


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions 498.3MHz 0 – 2.5GHz



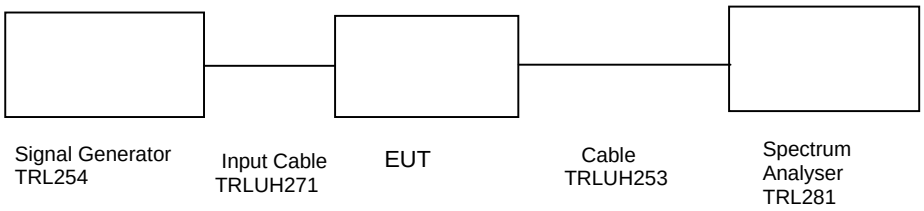
Radiated emissions 498.3MHz 2.5 – 5GHz



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	=	16 °C	Radio Laboratory
Relative humidity	=	43%	
Supply voltage	=	+110Vac	
Channel number	=	See test results	



Frequency MHz	Signal Generator input level dBm	Input Cable Loss dB	Cable loss dB	Level at Spectrum Analyser dBm	Gain dB	Output Power dBm	Gain after 10dB input level increase dBm
494.3	-69.0	0.15	0.33	-9.87	59.61	-9.54	-9.40
494.8	-69.9	0.15	0.33	-9.80	60.58	-9.47	-9.31
495.3	-68.4	0.15	0.33	-9.82	59.06	-9.49	-9.35

Notes:

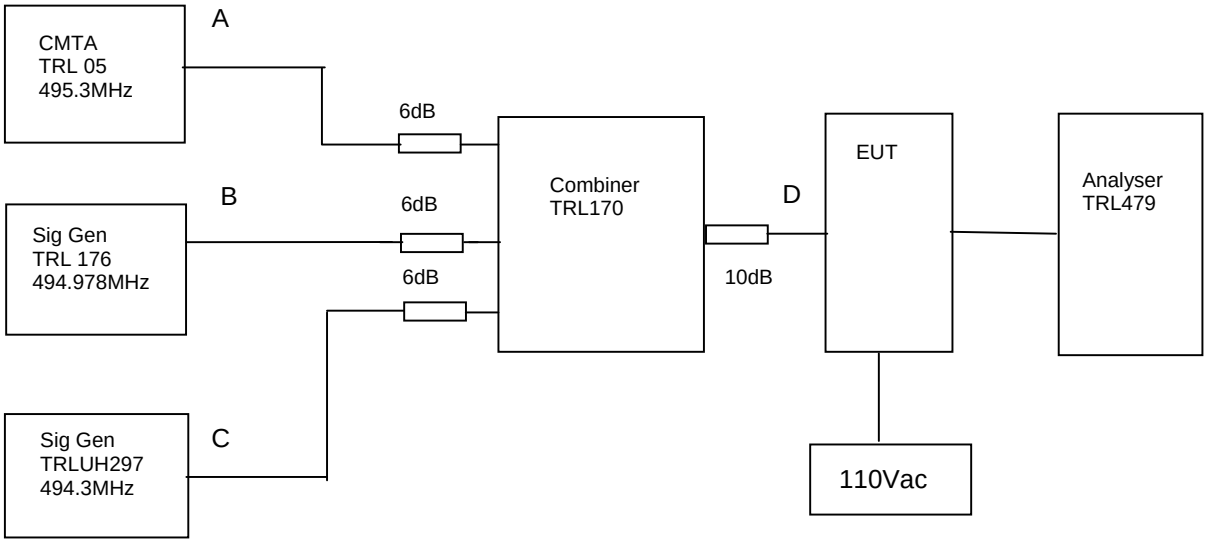
1. The signal generator input was increased by 20dBs and the level of the output signal remeasured

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	RHODE & SCHARZ	FSU	200034	281	**X**
CABLE	TRL	N TYPE	N/A	UH271 UH253	**X**
SIGNAL GENERATOR	MARCONI	2042	119562/021	254	**X**

AMPLIFIER INTERMODULATION SPURIOUS EMISSIONS – CONDUCTED – PART 2.1053– DOWNLINK

Ambient temperature = 18 °C
Relative humidity = 39%
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 -69dBm.The cable and attenuators loss between the EUT and the spectrum analyser 0.28dB.

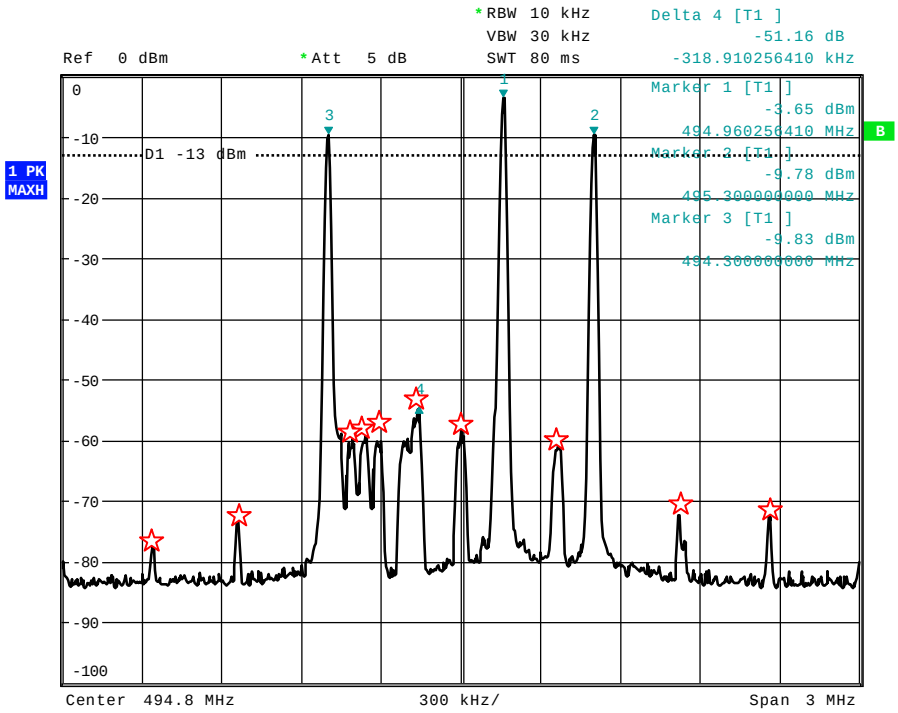
RF Input Frequency (MHz)			Highest Intermodulation Product Level (dBm)	Limit (dBm)
495.3	494.978	494.3	-58.05dBm@494.624MHz	-13

Sweep data is shown on the next page:

Test equipment used for intermodulation test

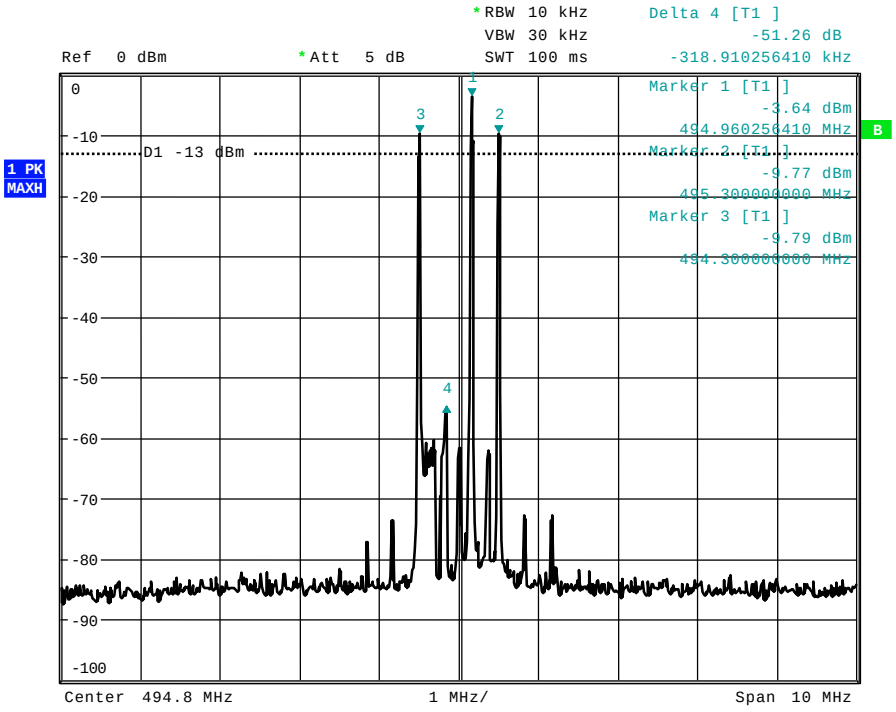
TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
SIGNAL GENERATOR	ROHDE & SCHWARZ	SML 03	102268	297	**X**
CMTA	ROHDE & SCHWARZ	CMTA52	894715/033	05	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**
COMBINER	ELCOM	RC-4-50	N/A	170	**x**

Intermodulation Inband

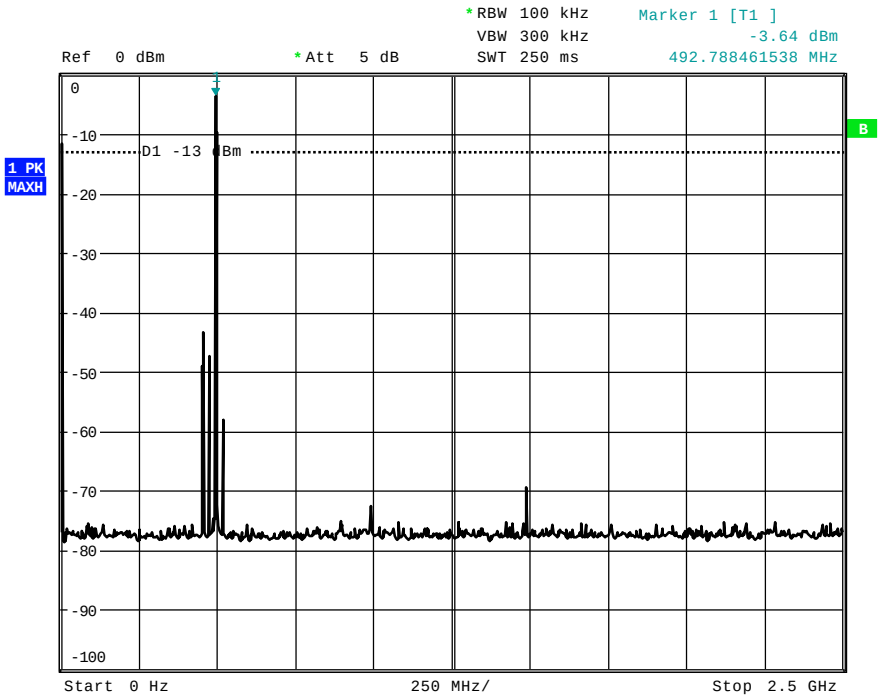


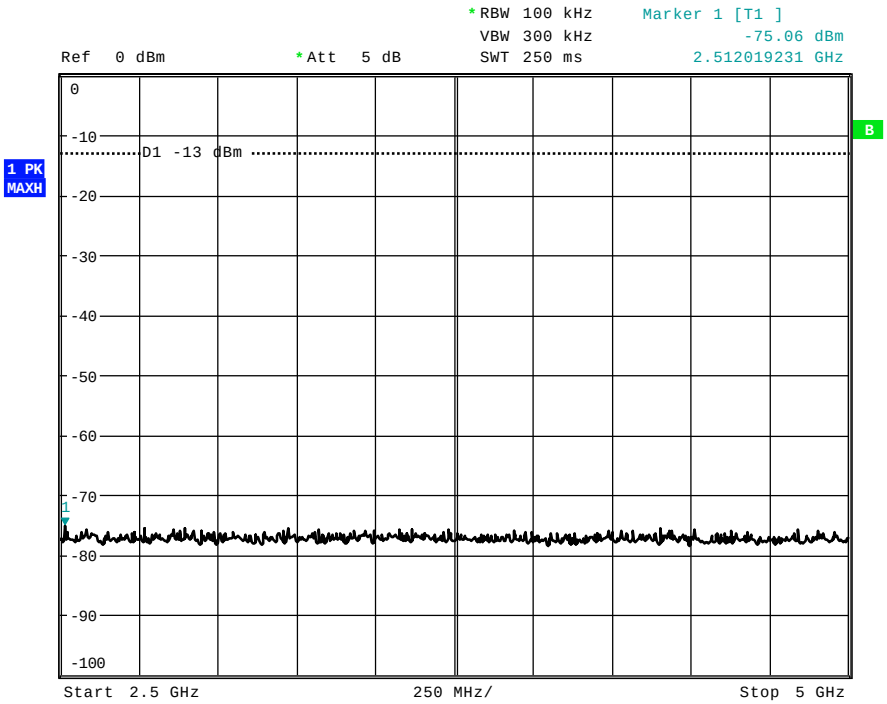
The above plot shows that all products (designated by ☆) are below the spurious limit.

Intermodulation Wideband



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





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	=	16°C	Radio Laboratory
Relative humidity	=	43%	
Supply voltage	=	+110Vac	
Channel number	=	See test results	

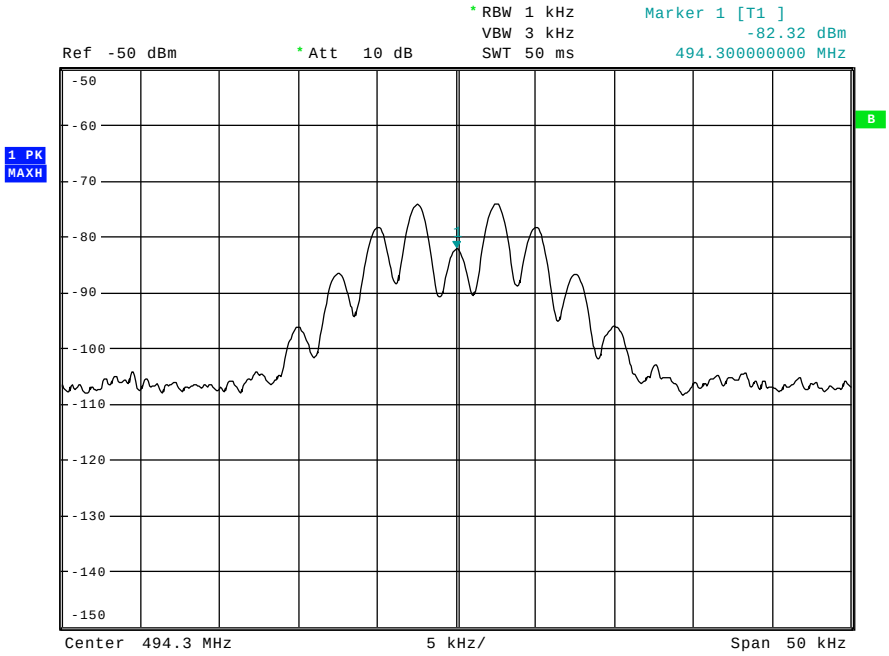
This test was performed to show that the amplifier does not alter the input signal in any way. The input signal was set to the maximum input level (-69dBm) and modulated with a 2500Hz tone. The plots show the signal measured at the signal generator and the signal measured at the output of the EUT.

Note: The cables and attenuators had the following losses.

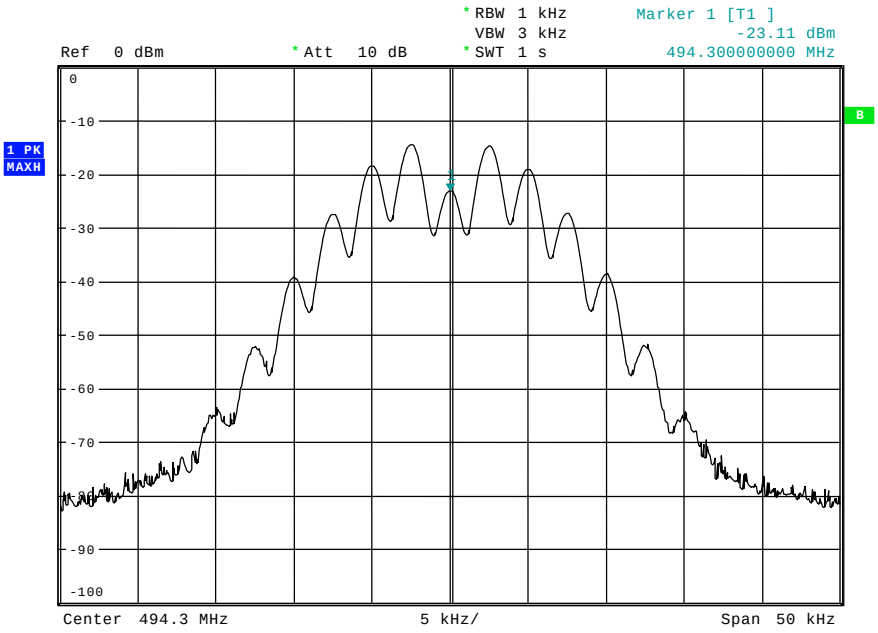
1. Cable between EUT and spectrum analyser 0.15dB
2. Cable between signal generator and EUT 0.33dB

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	RHODE & SCHWARZ	FSU	200034	281	**X**
CABLE	TRL	N TYPE		UH253 UH271	**X**
SIGNAL GENERATOR	MARCONI	2042	119562/021	UH254	**X**

494.3MHz Signal Generator, deviation set to 5kHz

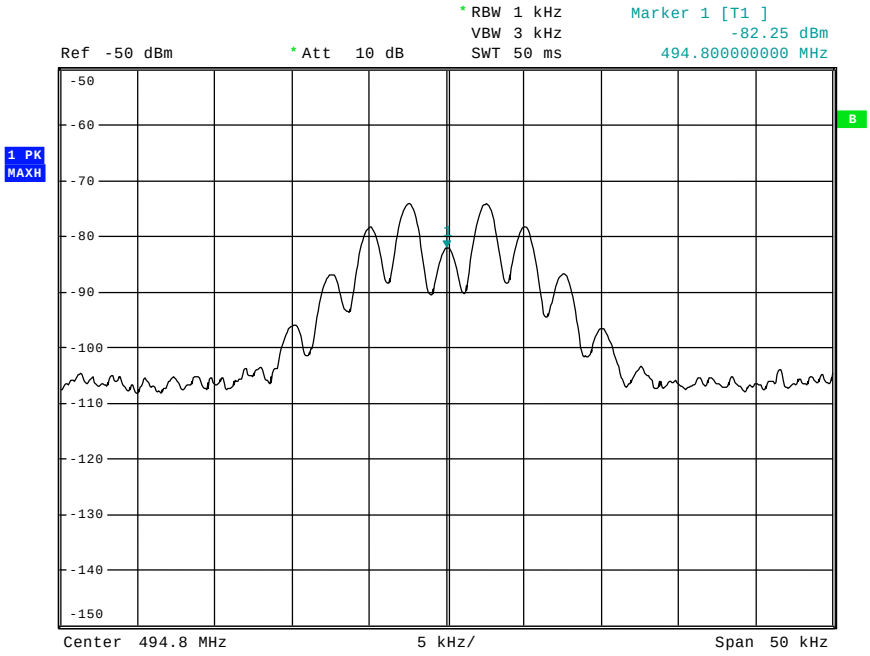


494.3MHz Signal Generator and EUT, deviation set to 5kHz

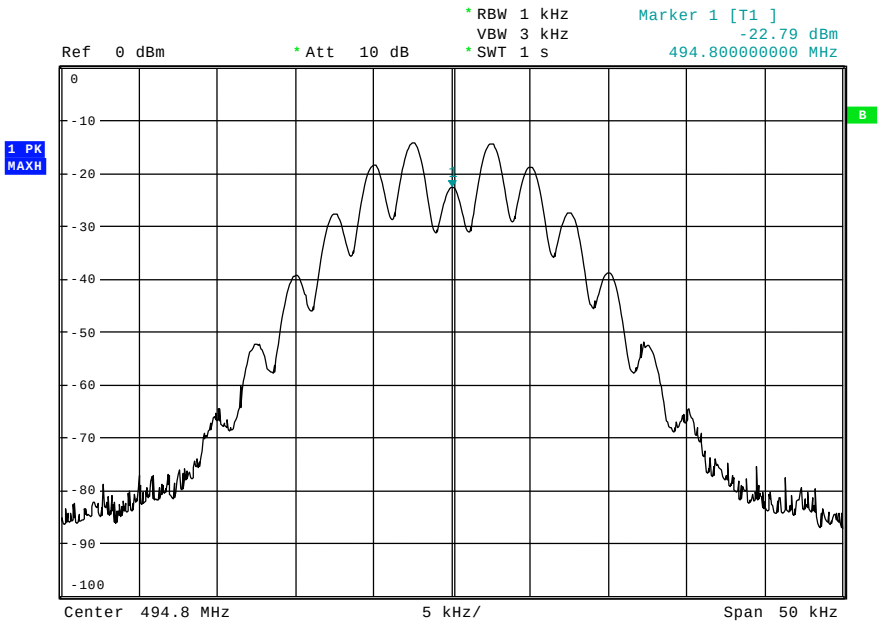


The above plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.

494.8MHz Signal Generator, deviation set to 5kHz

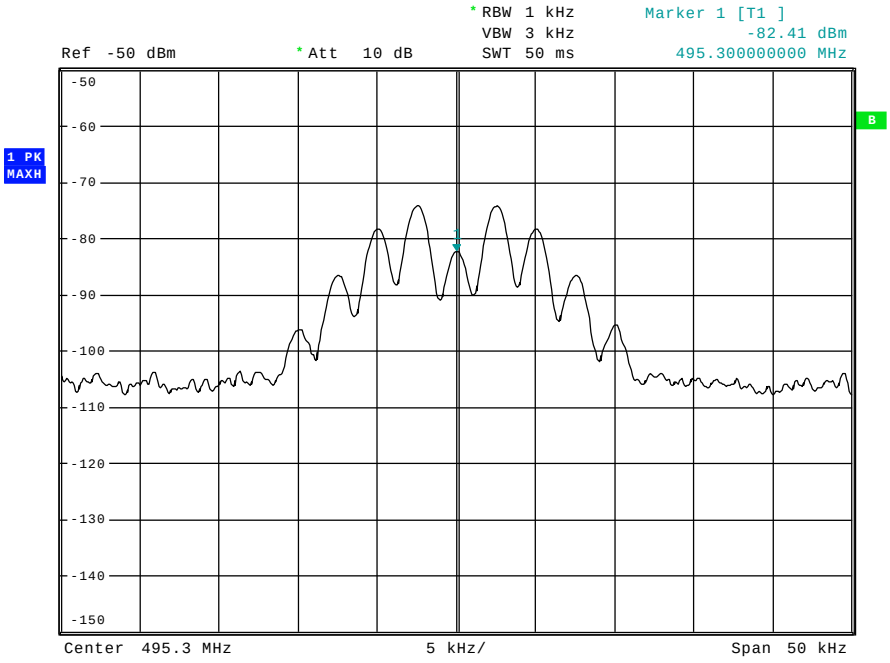


494.8MHz Signal Generator and EUT, deviation set to 5kHz

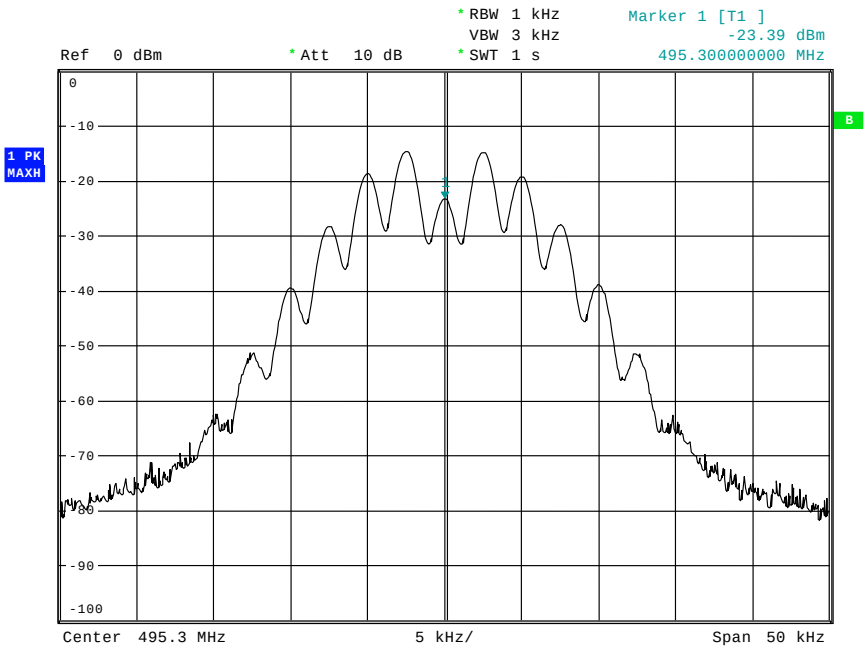


The above plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.

495.3MHz Signal Generator, deviation set to 5kHz



495.3MHz 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	=	16°C	Radio Laboratory		
Relative humidity	=	42%	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

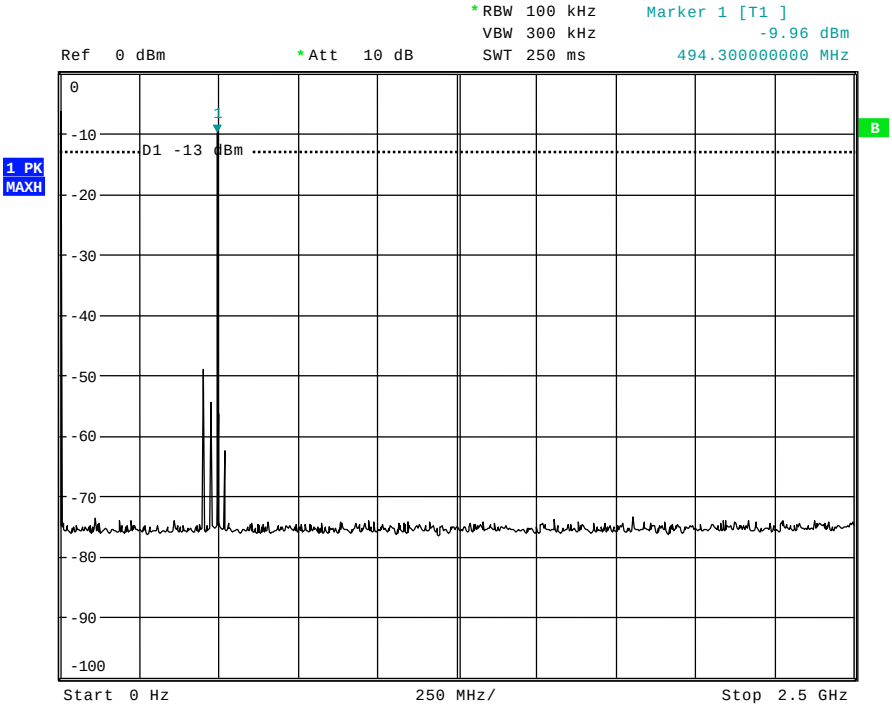
RESULTS

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

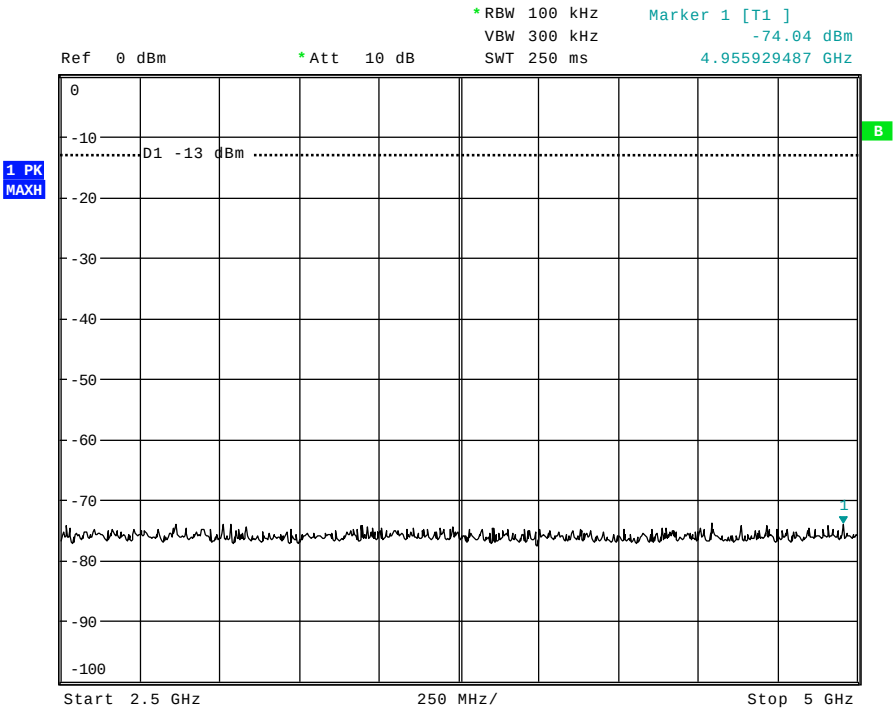
The test equipment used for the Transmitter Conducted Emissions:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	RHODE & SCHWARZ	FSU	200034	281	**X**
CABLE	TRL	N TYPE		253	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

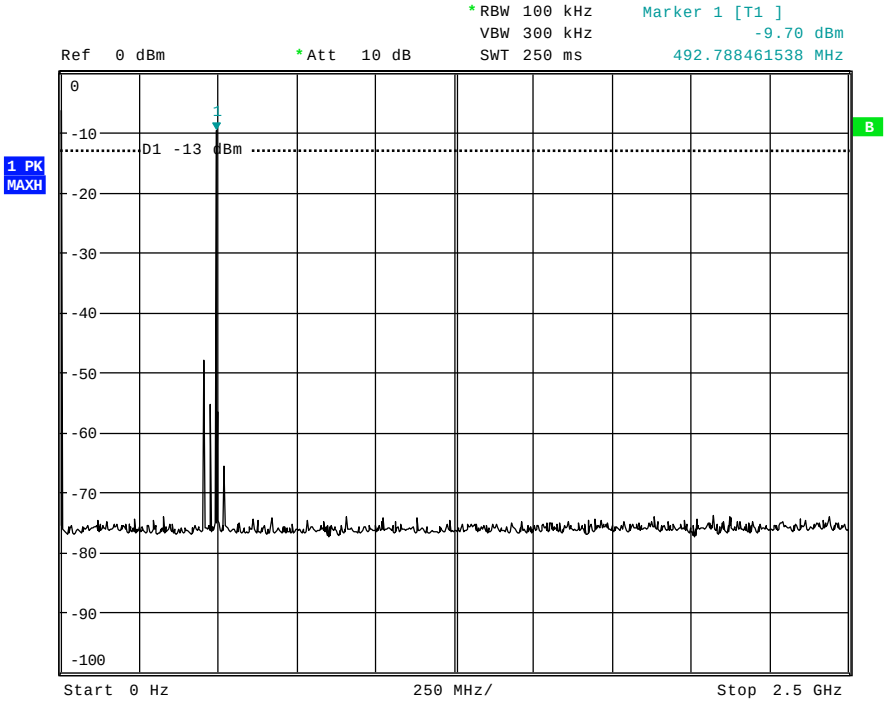
Conducted emissions 494.3MHz 0 – 2.5GHz



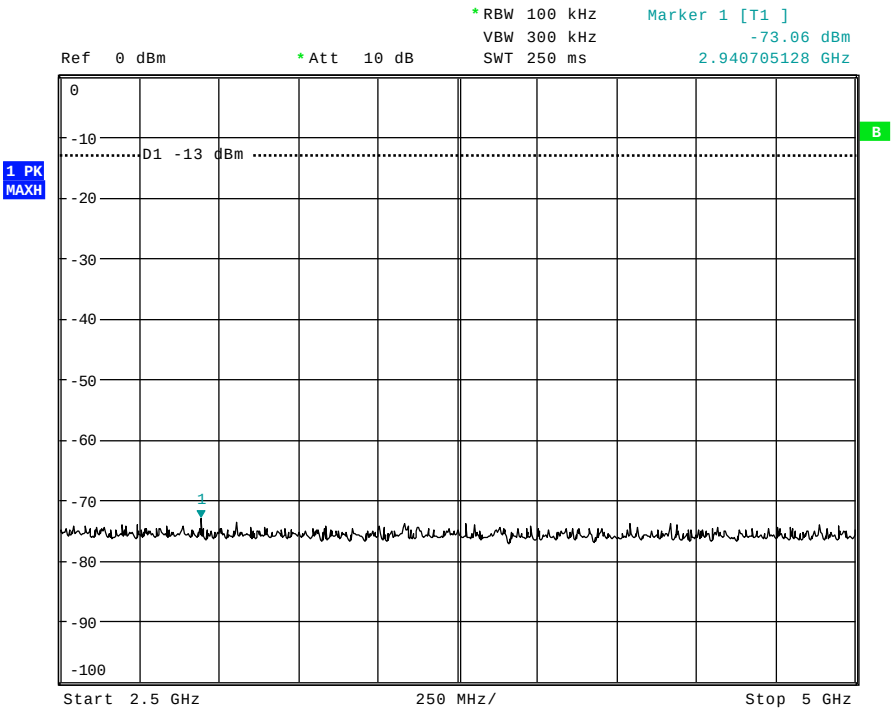
Conducted emissions 494.3MHz 2.5 – 5GHz



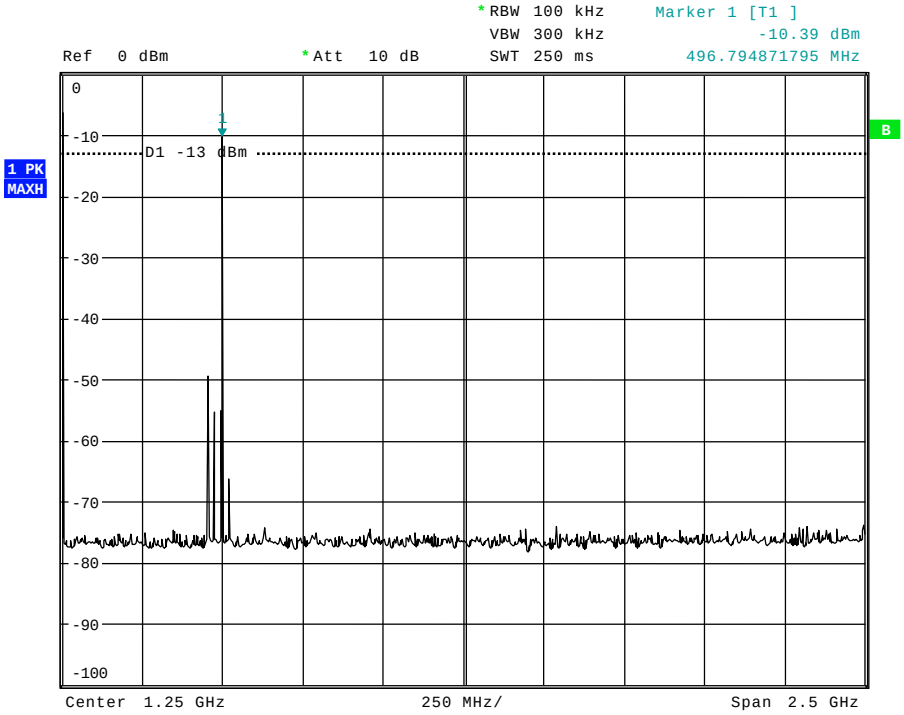
Conducted emissions 494.8MHz 0 – 2.5GHz



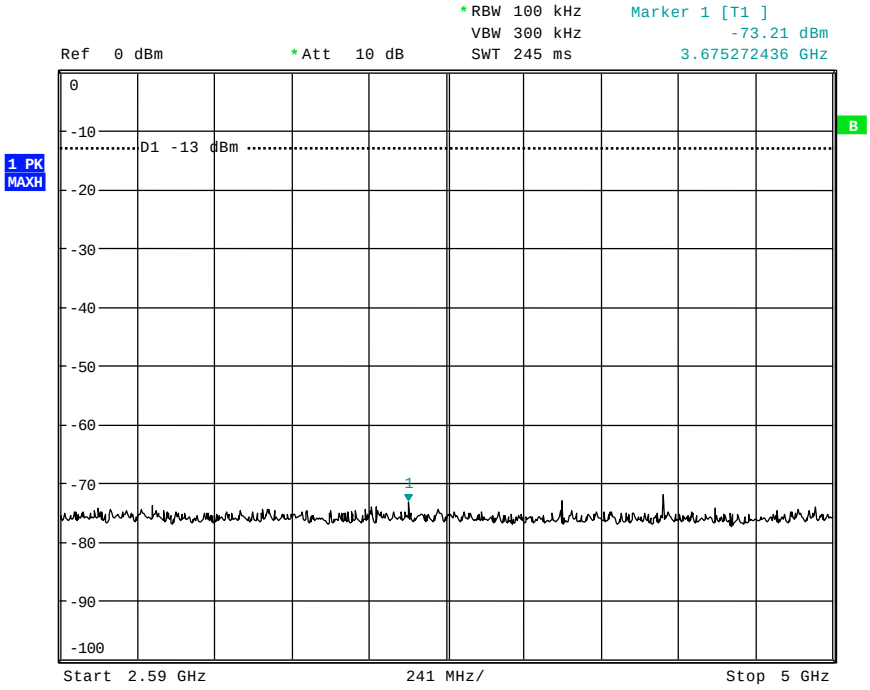
Conducted emissions 494.8MHz 2.5 – 5GHz



Conducted emissions 495.3MHz 0 –2.5GHz



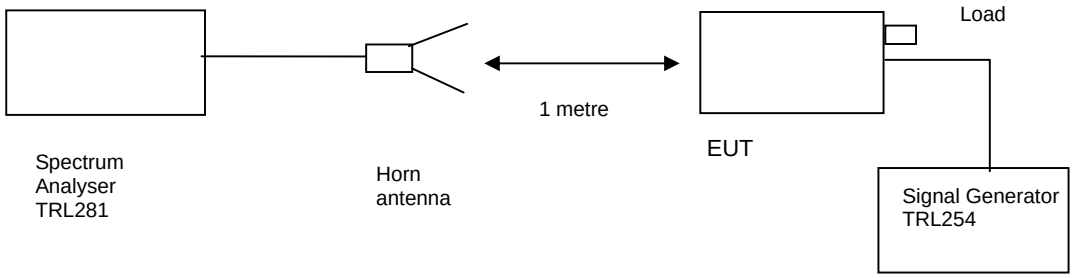
Conducted emissions 495.3MHz 2.5 – 5GHz



TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – RADIATED – Part 2.1053– DOWNLINK

Ambient temperature	=	16°C	Test Signal	=	F3E
Relative humidity	=	45%			
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 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

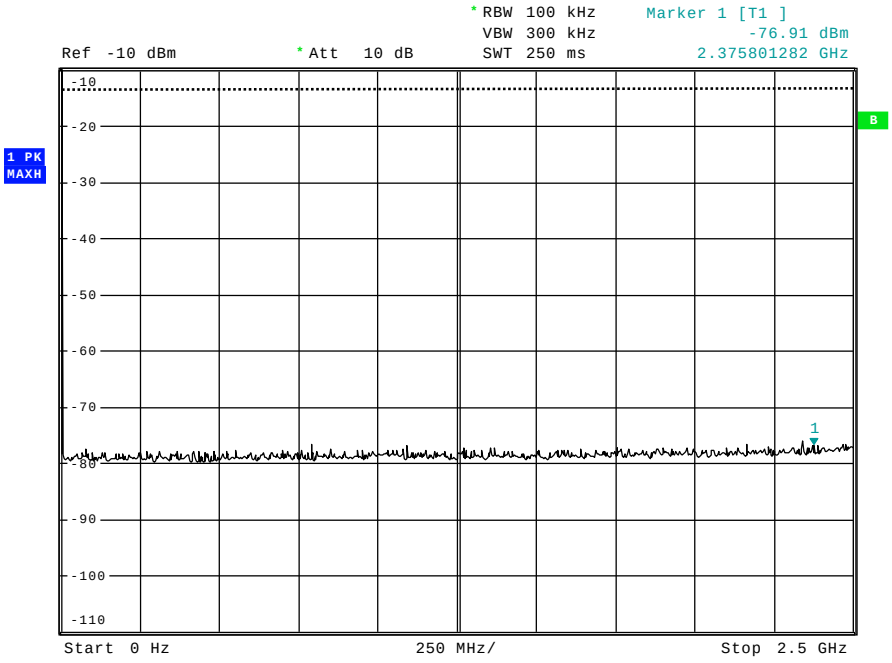
RESULTS

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

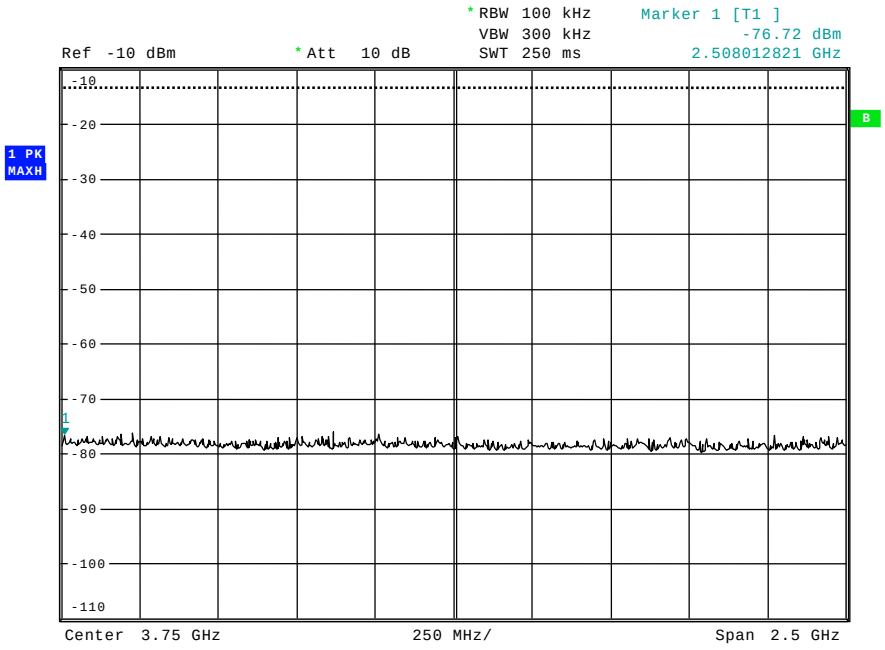
The test equipment used for the Transmitter Spurious Emissions:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	RHODE & SCHWARZ	FSU	200034	281	**X**
HORN	EMCO	3115	9010-3580	138	**X**
CABLE	ROSENBERGER	MICRO COAX	N/A	280	**X**
SIGNAL GENERATOR	MARCONI	2042	119562/021	254	**X**

Radiated emissions 494.3MHz 0 – 2.5GHz

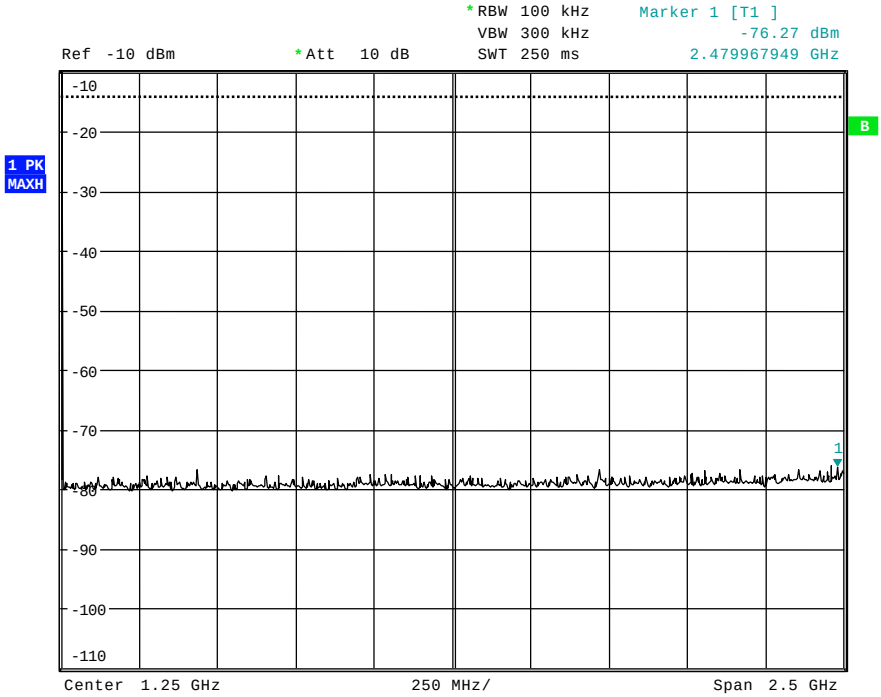


Radiated emissions 494.3MHz 2.5 – 5GHz

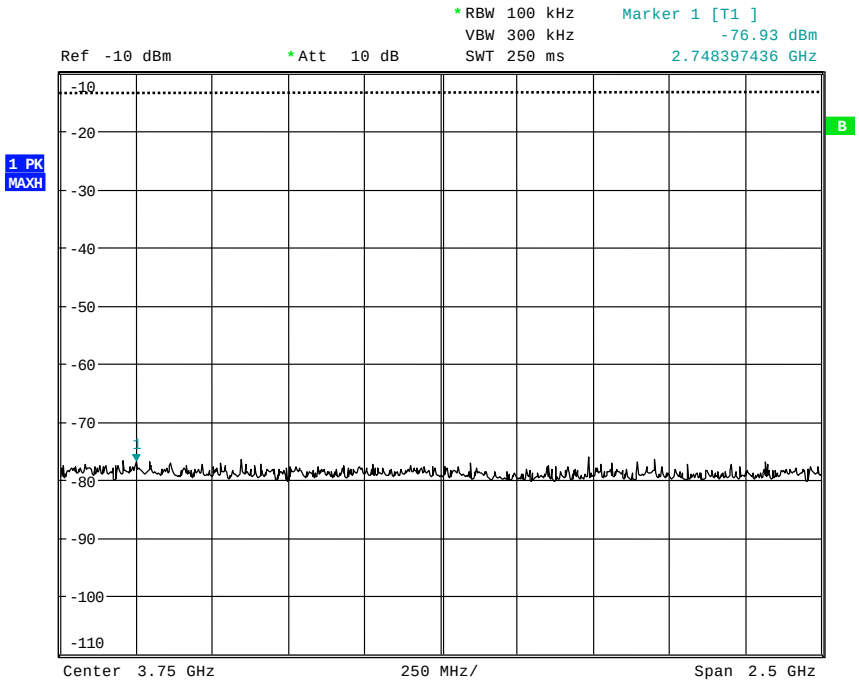


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions 494.8MHz 0 – 2.5GHz

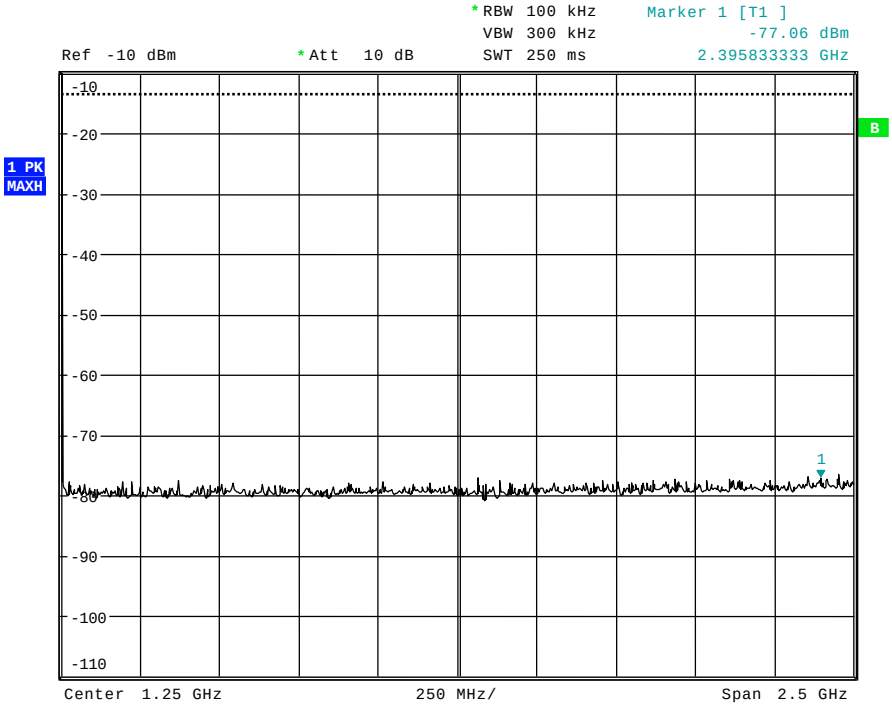


Radiated emissions 494.8MHz 2.5 – 5GHz

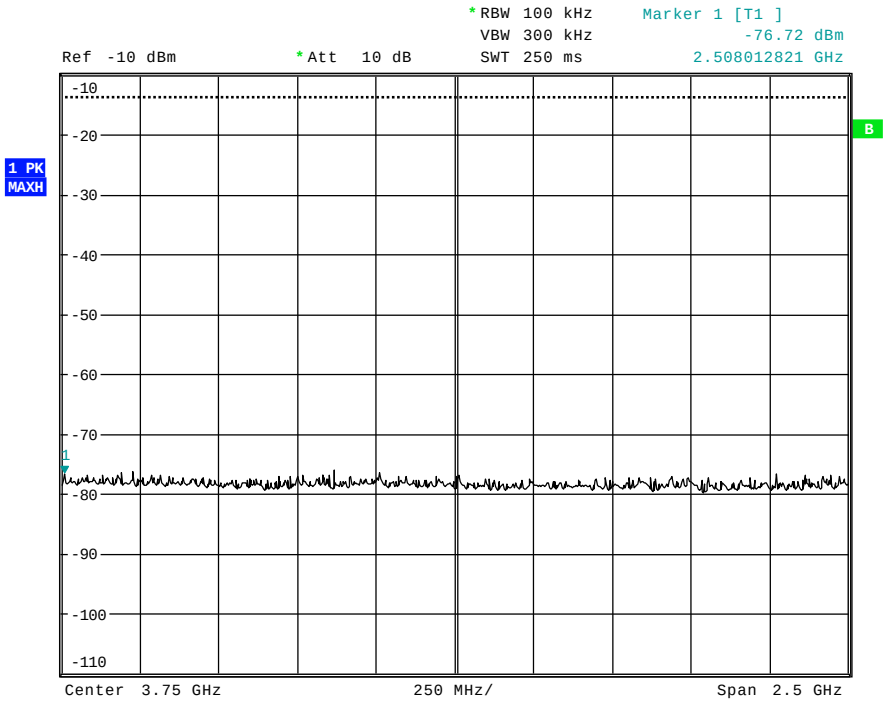


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions 495.3MHz 0 – 2.5GHz

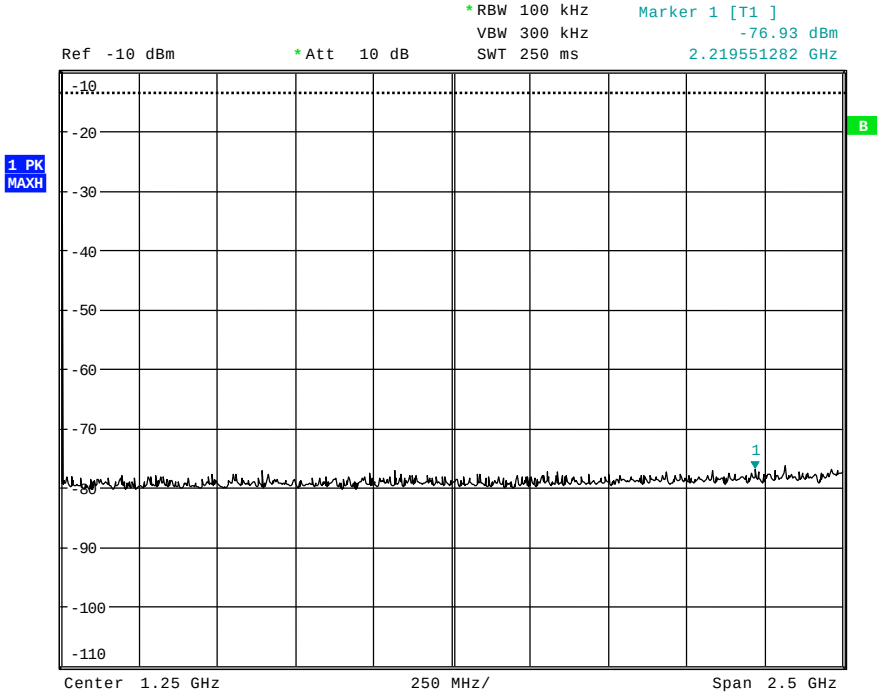


Radiated emissions 495.3MHz 2.5 – 5GHz

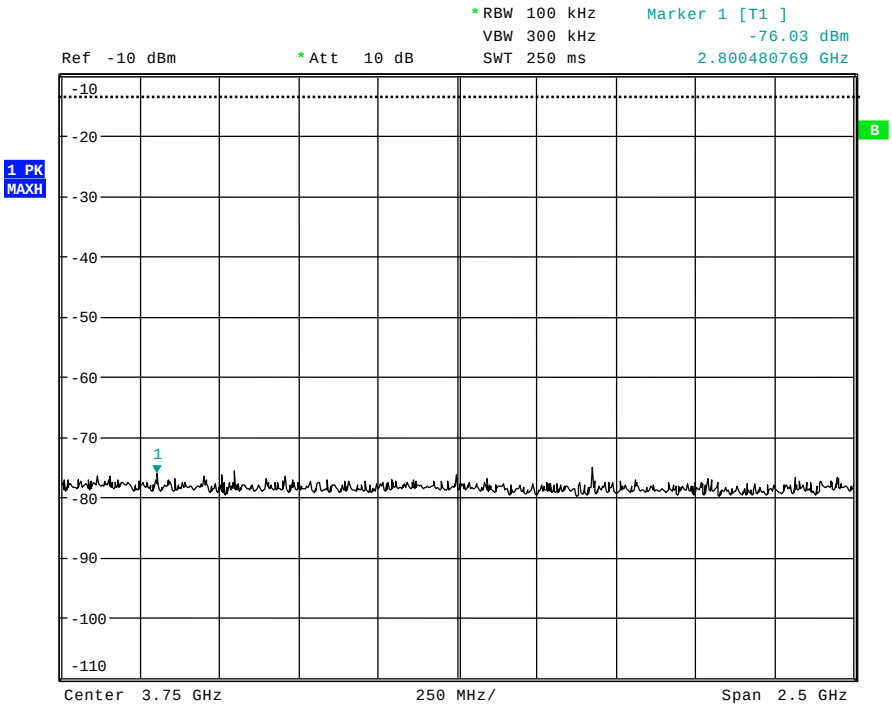


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions no input signal 0 – 2.5GHz



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

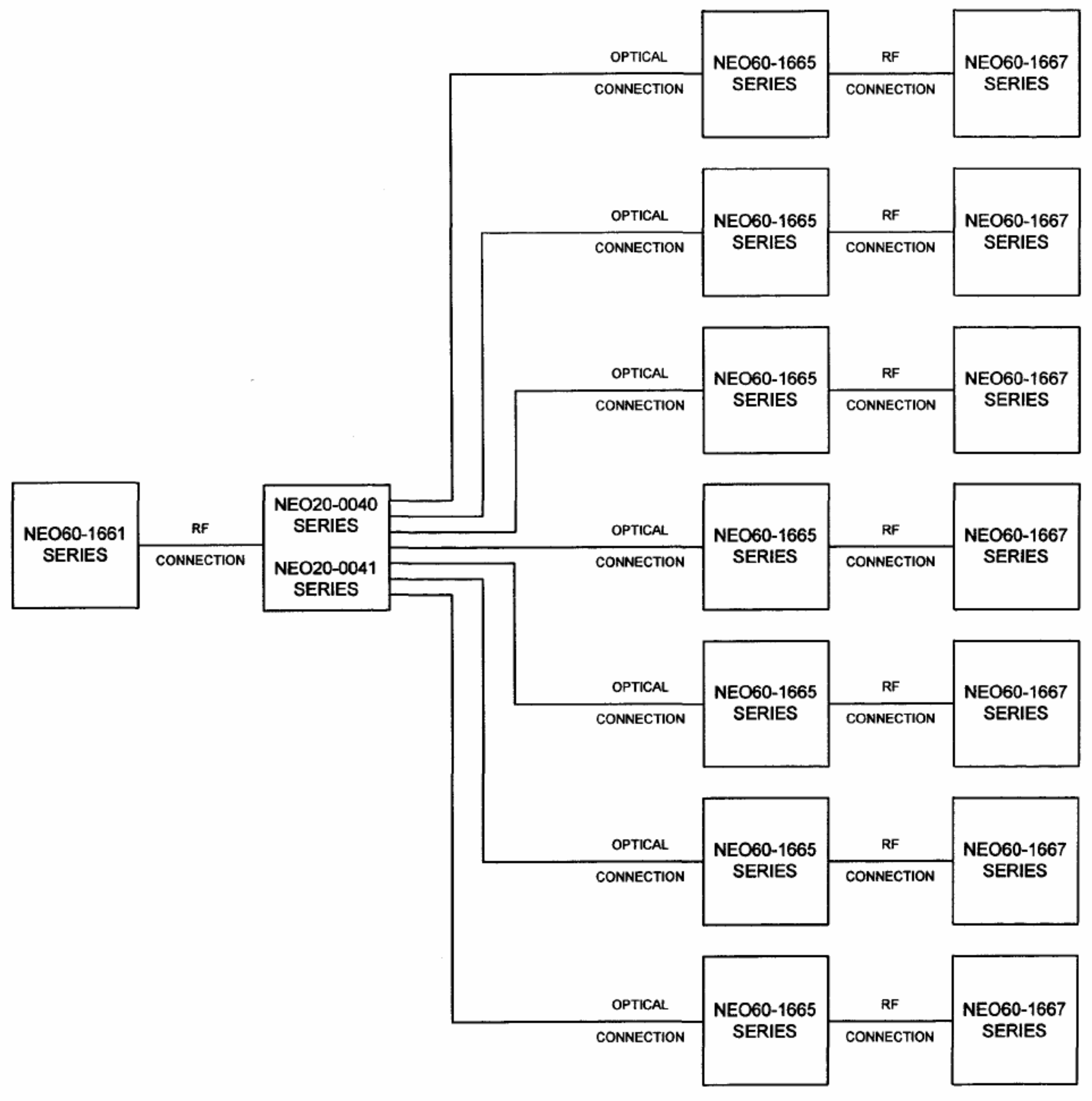
Uncertainty in overall test level = **2.1dB**, Uncertainty in time measurement = **0.59%,** Uncertainty in Amplitude measurement = **0.82%**

[11] Power Line Conduction

Uncertainty in test result = **3.4dB**

ANNEX E

SYSTEM DIAGRAM


NEO60-1661
SERIES
RF
CONNECTION
NEO20-0040
SERIES
NEO20-0041
SERIES
OPTICAL
CONNECTION
NEO60-1665
SERIES
RF
CONNECTION
NEO60-1667
SERIES
OPTICAL
CONNECTION
NEO60-1665
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SERIES