

TEST REPORT NO:	RU1074/4830
COPY NO:	
ISSUE NO:	1
FCC ID:	NEO60-0559series

REPORT ON THE CERTIFICATION TESTING OF A
Aerial Facilities Limited
BI_DIRECTIONAL AMPLIFIER SYSTEM (60-055903)
WITH RESPECT TO
THE FCC RULES CFR 47, PART 90 Subpart L
PRIVATE LAND MOBLIE REPEATER

TEST DATE: 24th –30th September 2003

TESTED BY:			J CHARTERS
APPROVED I	3Y: _.		P GREEN PRODUCT MANAGER EMC
DATE:	,		
Distribution:			
Copy Nos:	1.	Aerial Facilities Limited	
	2.	TCB: TRL Compliance Services Limited	

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3. TRL EMC

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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

NEO60-0559series

FCC IDENTITY:

PURPOSE OF TEST:	CERTIFICATION	
TEST SPECIFICATION:	FCC RULES CFR 47, Part 90 Subpart L	
TEST RESULT:	Compliant to Specification	
EQUIPMENT UNDER TEST:	BI_DIRECTIONAL AMPLIFIER SYSTEM ((60-055903)
EQUIPMENT TYPE:	Private Land Mobile Repeater	
MAXIMIUM GAIN	58dB	
MAXIMUM INPUT	-9dBm	
MAXIMUM OUTPUT	+20dBm	
ANTENNA TYPE:	Not applicable	
CHANNEL SPACING:	15kHz	
NUMBER OF CHANNELS:	Channel No. Uplink Downlink 1 473.0875MHz 470.0875 2 473.1375MHz 470.1375 3 473.3625MHz 470.3625	MHz MHz
FREQUENCY GENERATION:	N/A	
MODULATION TYPE:	F3E	
POWER SOURCE(s):	115Vac	
TEST DATE(s):	24 th -30 th September 2003	
ORDER No(s):	21071	
APPLICANT:	Aerial Facilities Limited	
ADDRESS:	Aerial House Latimer Park, Latimer Chesham Buckinghamshire HP5 1TU United Kingdom	
TESTED BY:		J CHARTERS
APPROVED BY:		P GREEN PRODUCT MANAGER EMC

APPLICANT'S SUMMARY

EQUIPMENT UNDER TEST (EUT):	BI_DIRECTIONAL AMPLIFIER SYSTEM (60-055903)			
EQUIPMENT TYPE:	60-055903			
PURPOSE OF TEST:	CERTIFICATION			
TEST SPECIFICATION(s):	FCC RULES CFR 47, Part 90 Subpart L			
TEST RESULT:	COMPLIANT Yes [X] No []			
APPLICANT'S CATEGORY:	MANUFACTURER [X] IMPORTER [] DISTRIBUTOR [] TEST HOUSE [] AGENT []			
APPLICANT'S ORDER No(s):	19801			
APPLICANT'S CONTACT PERSON(s):	Mr Peter Bradfield			
E-mail address:	Peterb@aerial.co.uk			
APPLICANT:	Aerial Facilities Limited			
ADDRESS:	Aerial House Latimer Park, Latimer Chesham Buckinghamshire HP5 1TU United Kingdom			
TEL:	+44 (0)1494777020			
FAX:	+44 (0)149477020			
MANUFACTURER:	Aerial Facilities Limited			
EUT(s) COUNTRY OF ORIGIN:	United Kingdom			
TEST LABORATORY:	TRL EMC			
UKAS ACCREDITATION No:	0728			
TEST DATE(s):	24 th –30 th September 2003			

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TEST REPORT No:

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

2.	Product Use:		Private Land Mobile	Repeater	
3.	Emission Designator:		F3E		
4.	Temperatures:		Ambient (Tnom)	21°C	
5.	Supply Voltages:		Vnom	115Vac	
	Note: Vnom voltages are as stated above	e unless other	wise shown on the te	st report page	
6.	Equipment Category:		Single channel Two channel Multi-channel	[] [] [X]	
7.	Channel spacing:		Narrowband Wideband	[X] []	15kHz
8.	Test Location:	TRL Complia	ance Services Up Holland Long Green	[X] []	
9.	Modifications made during test program			No modification	ns were performed

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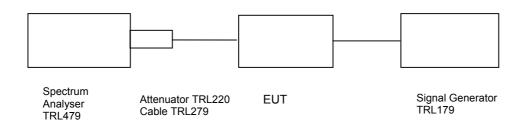
¹ The EUT does not contain modulation circuitry, therefore the test was not performed. 2 The EUT is not a keyed carrier system, therefore the test was not performed.

COMPLIANCE TESTS

AMPLIFIER GAIN - CONDUCTED - PART 2.1046 - UPLINK

21°C Radio Laboratory

Ambient temperature Relative humidity 46% Supply voltage Channel number = 115Vac See test results



	Signal Generator	Cable & Attenuator	Level at Spectrum	Gain	Gain after 20dB
Frequency	input level	loss	Analyser	dB	input level
MHz	dBm	dB	dBm		increase
					dBm
473.0875MHz	-29.1	26.6	-9.28	46.42	46.42
473.1375MHz	-29.1	26.6	-9.0	46.7	46.7
473.3625MHz	-29.1	26.6	-8.95	46.75	46.75

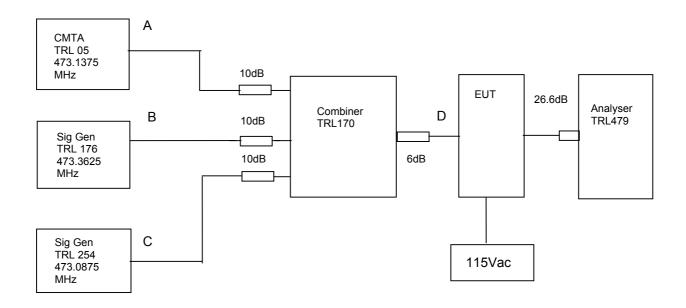
- The level of the signal generator takes into consideration the loss from the cable.
 The signal generator input was increased by 20dBs and the level of the output signal re-measured

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	х
ATTENUATOR	BIRD	8304-300-N	N/A	220	x
CABLE	ROSENBERGER	MICRO COAX	N/A	279	x
SIGNAL GENERATOR	MARCON	2042	119388/080	179	х

AMPIFIER INTERMAODULATION SPURIOUS EMISSIONS - CONDUCTED - PART 2.1053- UPLINK

Ambient temperature = 27°C Radio Laboratory

Relative humidity = 34% Supply voltage = 115Vac

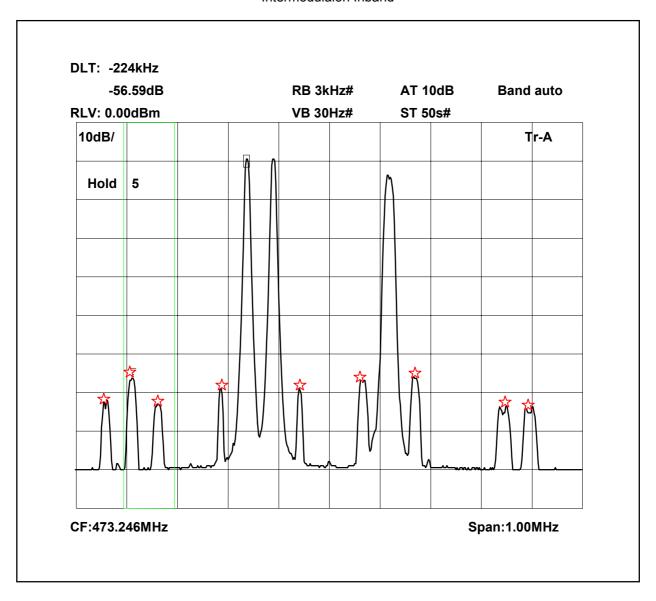


The Intermodualation and spurious products were measured with the amplifier operating at maximum gain. A three tone test was conducted using the equipment as above. The input power level was adjusted so the level at point D was the maximum input of –29.1dBm The cable and attenuator loss between the EUT and the spectrum analyser was 26.6dB.

Sweep data is shown on the next page:

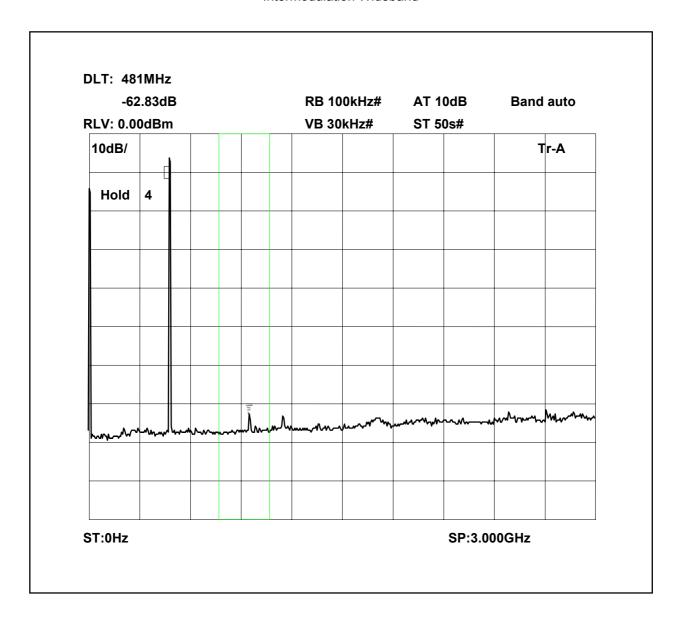
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Intermodulaion Inband



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

Intermodulation Wideband

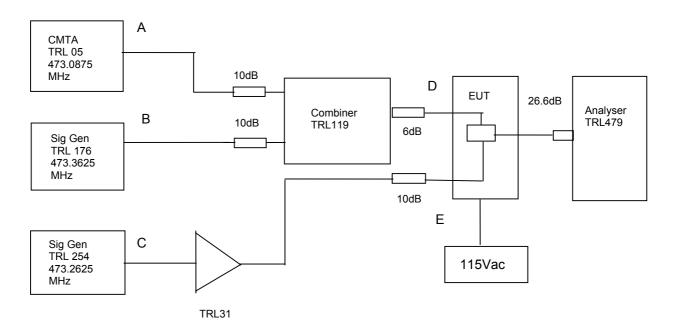


The above plot shows that there are no products outside the bands.

AMPIFIER INTERMAODULATION SPURIOUS EMISSIONS - CONDUCTED - PART 2.1053- UPLINK-cont.

Ambient temperature = 27°C Radio Laboratory

Relative humidity = 34% Supply voltage = 115Vac

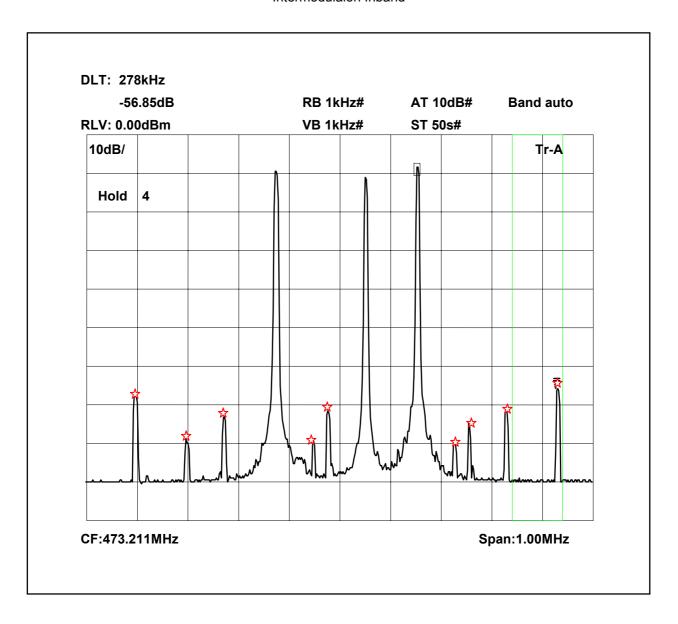


The Intermodualation and spurious products were measured with the amplifier operating at maximum gain. A three tone test was conducted using the equipment as above. The input power level was adjusted so the level at point D was the maximum input of –29.1dBm. The input power level was adjusted so the level at E was 20dBm. This is representative of a signal coming from another amplifier within the system. (See appendix C system block diagram.) The cable and attenuator loss between the EUT and the spectrum analyser was 26.6dB.

Sweep data is shown on the next page:

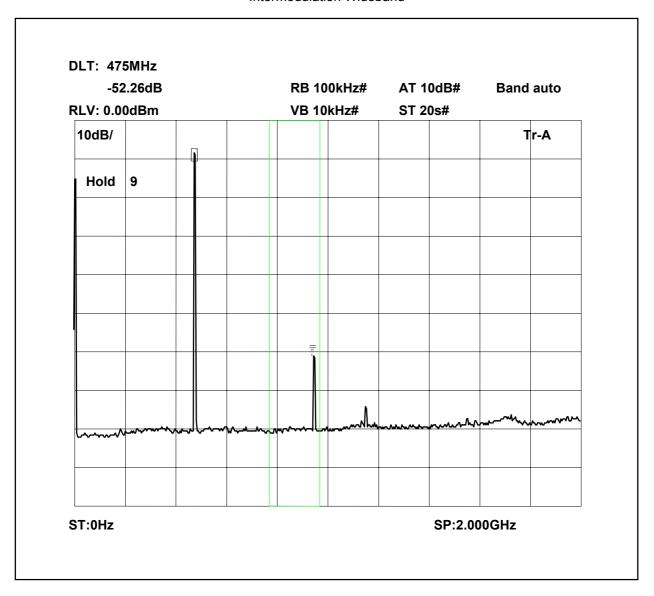
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Intermodulaion Inband



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

Intermodulation Wideband

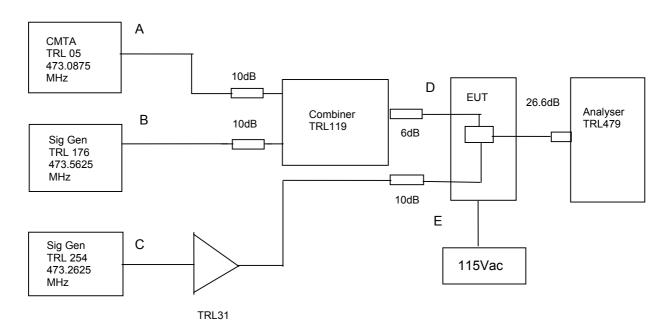


The above plot shows that there are no products outside the bands.

AMPIFIER INTERMAODULATION SPURIOUS EMISSIONS - CONDUCTED - PART 2.1053- UPLINK

Ambient temperature = 27°C Radio Laboratory

Relative humidity = 34% Supply voltage = 115Vac

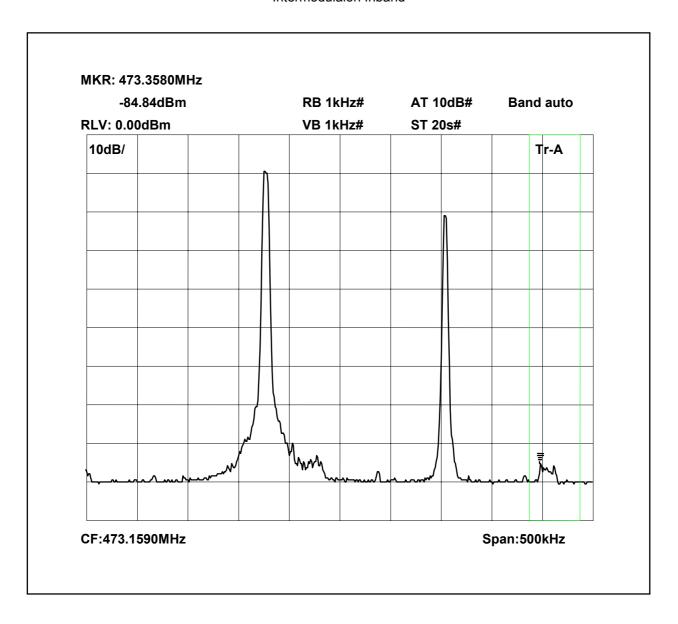


The Intermodualation and spurious products were measured with the amplifier operating at maximum gain. A three tone test was conducted using the equipment as above. The input power level was adjusted so the level at point D was the maximum input of –29.1dBm. The input power level was adjusted so the level at E was 20dBm. This is representative of a signal coming from another amplifier within the system. (See appendix C system block diagram.) The cable and attenuator loss between the EUT and the spectrum analyser was 26.6dB.

Sweep data is shown on the next page:

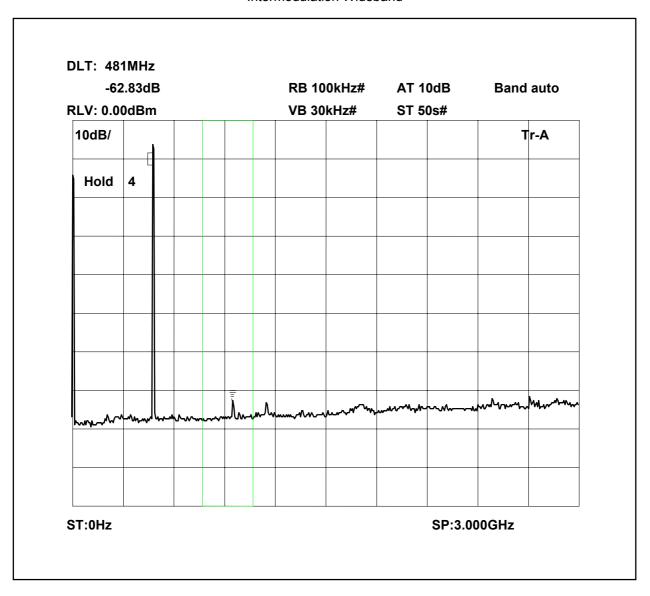
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Intermodulaion Inband



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

Intermodulation Wideband



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

Test equipment used for intermodulation test

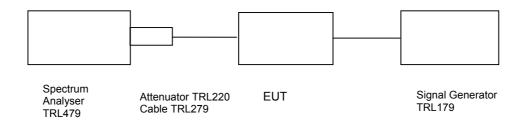
TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	x
SIGNAL GENERATOR	MARCON	2042	119562/02	254	х
СМТА	ROHDE & SCHWARZ	CMTA52	894715/033	05	х
SIGNAL GENERATOR	MARCON	2042	119388/080	179	х
AMPLIFIER	ENI	6032	1240	31	х
COMBINER	ELCOM	RC-3-50	N/A	119	x
COMBINER	ELCOM	RC-4-50	N/A	170	х

TRANSMITTER TESTS

AMPLIFER MODULATED CHANNEL TEST - CONDUCTED - Part 2.1049- UPLINK

Ambient temperature = 21°C Radio Laboratory

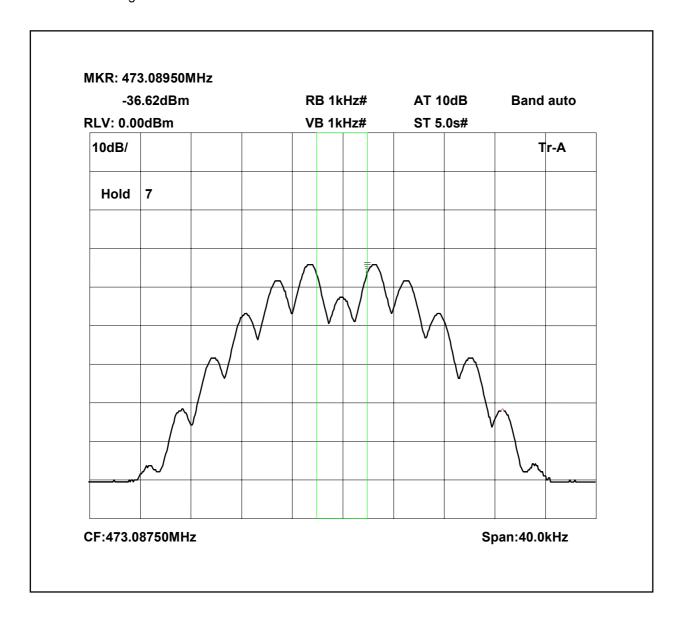
Relative humidity = 46% Supply voltage = 115Vac Channel number = See test results



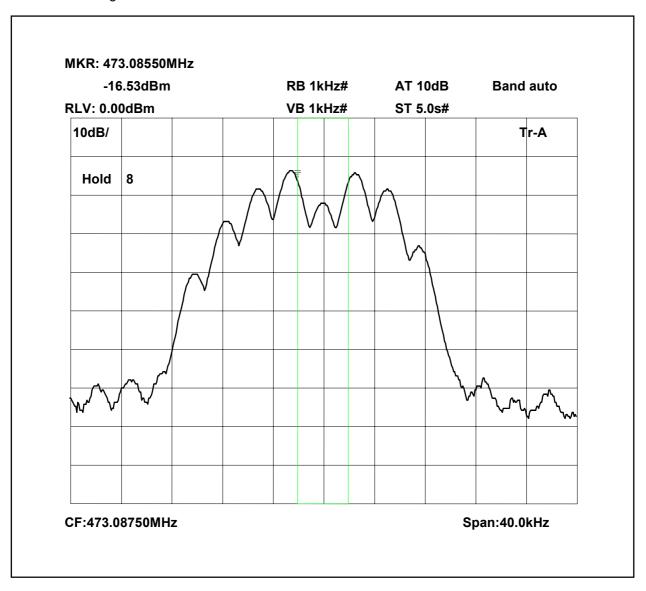
This test was performed to show that the amplifier does not alter the input signal in any way. The input signal was set to the maximum input level (-29.1dBm) and modulated with a 2500Hz tone. The plots show the signal measured at the signal generator and the signal measured at the output of the EUT.

Note: The cables and attenuators had the following losses.

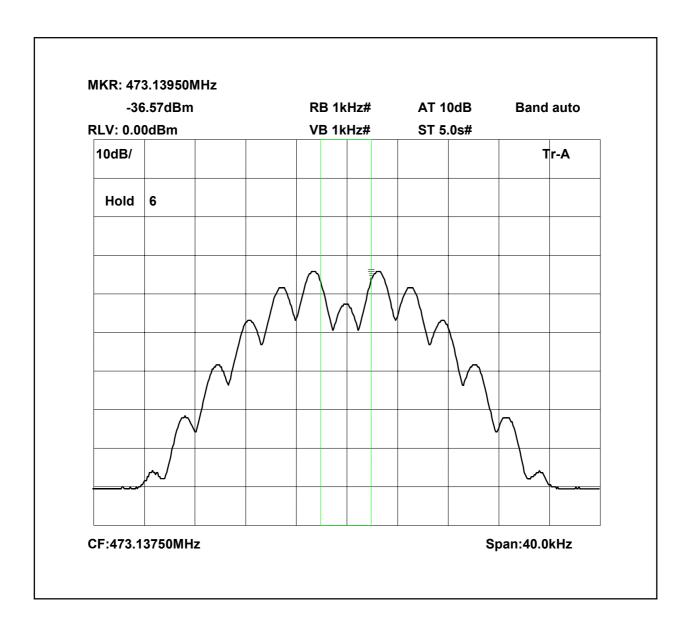
- 1. Cable TRL279 and attenuator TRL220 26.6dB
- 2. Cable between signal generator and EUT 0.4dB

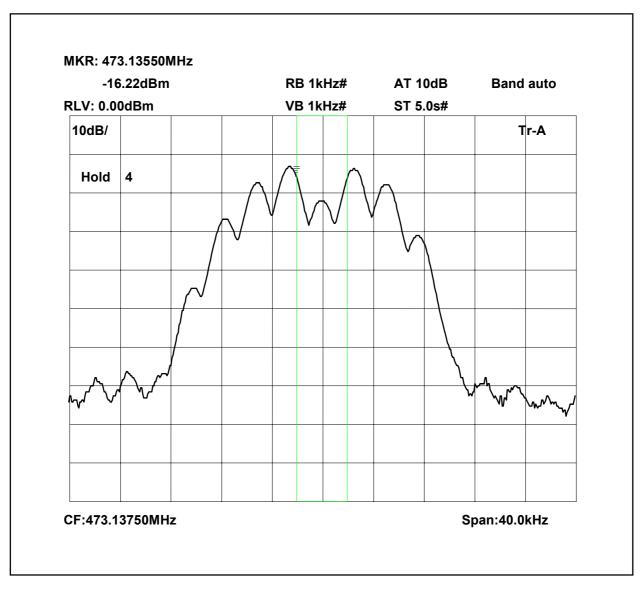


473.0875MHz Signal Generator and EUT deviation set to 5kHz

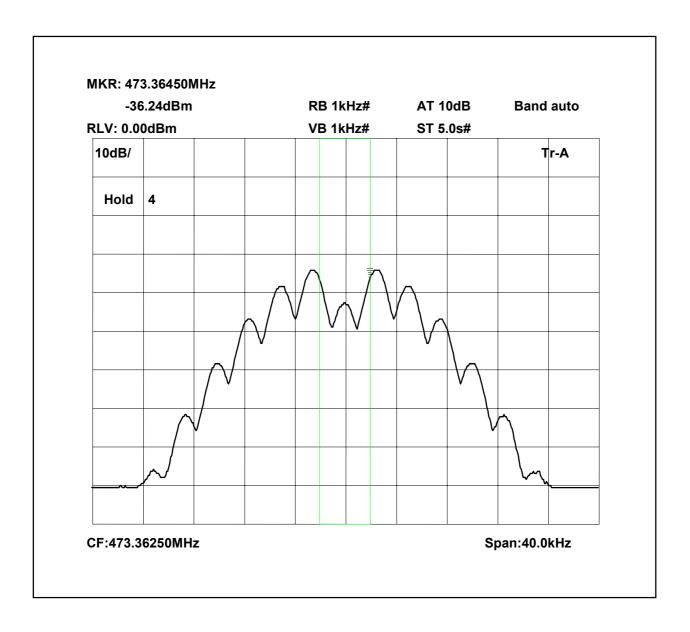


The above plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.

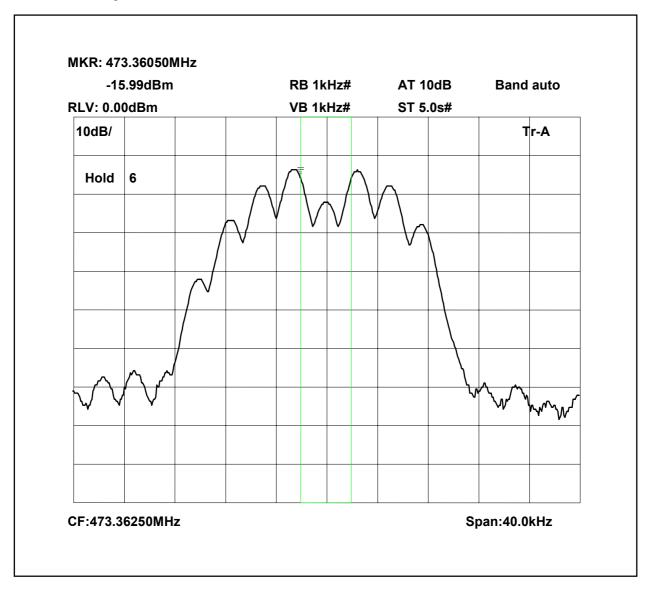




The above plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.



473.3625MHz Signal Generator deviation set to 5kHz



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

The test equipment used for the Transmitter Modulated Channel tests is shown overleaf:

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	279	x
SIGNAL GENERATOR	MARCON	2042	119388/080	179	х

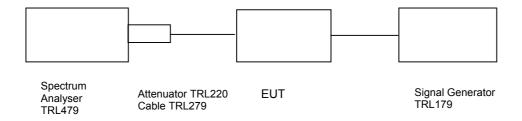
TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS - CONDUCTED - Part 2.1051- UPLINK

Ambient temperature = 21°C Radio Laboratory

Relative humidity = 46% = F3E Test Signal

= 46% = 115Vac Supply voltage



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

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

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	х
CABLE	ROSENBERGER	MICRO COAX	N/A	279	х
SIGNAL GENERATOR	MARCON	2042	119388/080	179	х

-9.	84dB	3m		RB 1I	MHz#	AT 1	0dB	Band	auto
RLV: 0.0	0dBn	n		VB 10	00kHz#	ST 5	.0s#		
10dB/		=						1	r-A
Hold	10								
L	m	lhm.	MM MALLAN	·~~~	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	~~~~~	└ ┖^^~^		, was
ST:0Hz			•	1			SP:3.00	NGH2	

-67	7.01dBn	n		RB 1	ИHz#	AT 1	0dB	Band	auto
RLV: 0.0	0dBm			VB 10	00kHz#	ST 5.0s#			
10dB/								1	r-A
Hold	5								
man	Ima	~~~~	~~~	M-M-M-M-M-M-M-M-M-M-M-M-M-M-M-M-M-M-M-		~~~~~M_			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
ST:2.900	011-						SP:5.0	2221	

-9.	57dE	3m		RB 1	MHz#	AT 1	0dB	Band	auto
RLV: 0.0	0dBr	n		VB 1	00kHz#	ST 5	.0s#		
10dB/		=						1	r-A
Hold	7								
~~~~	M~~	السب	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	·M	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~-	~~~~	~~~~~~~	WW.
ST:0Hz			•				SP:3.0	UUCH2	

-67	7.44dBn	n		RB 1	MHz#	AT 1	0dB	Band	auto
RLV: 0.0	0dBm			VB 10	00kHz#	ST 5	.0s#		
10dB/								7	r-A
Hold	7								
-	=								
M	~~~//w/ <u>~</u>	mann	<del>\</del>	<del>~~~</del>	~~~~~	<del>~~~</del>	<del>~~~</del>	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~

-9.	62dE	3m			RB 1	/IHz#	AT 1	0dB	Band	auto
RLV: 0.0	0dBr	n			VB 10	0kHz#	ST 5	Γ 5.0s#		
10dB/	₹							Tr-A		
Hold	5									
	~~~~	l.,,	~~~/	۸	MM.M	~~~~	w~~~~	~~~~~	<b>~~~</b> ~√	MANAM
ST:0Hz						1		SP:3.00	MCH-	

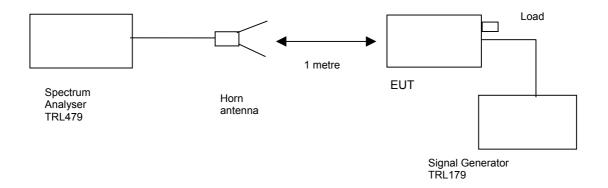
-68	8.17dBn	n		RB 1	/IHz#	AT 1	0dB	Band	l auto	
RLV: 0.0	0dBm			VB 10	0kHz#	ST 5	.0s#			
10dB/								Tr-A		
Hold	6									
	 									
1	~~~~~\\	~N~~~~~	~~~~	//////	^	/√∕~ м _~ /~	~~~~	ww	₩	

TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS - RADIATED - Part 2.1053- UPLINK

Ambient temperature = 17°C Test Signal = F3E

Relative humidity = 50%
Conditions = OATS
Supply voltage = 115Vac
Supply Frequency = N/A



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.

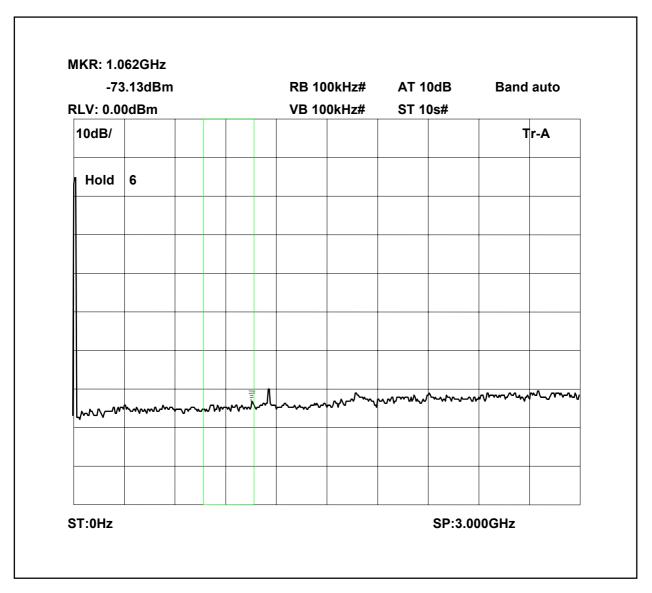
The Spurious limit was calculated as follows:

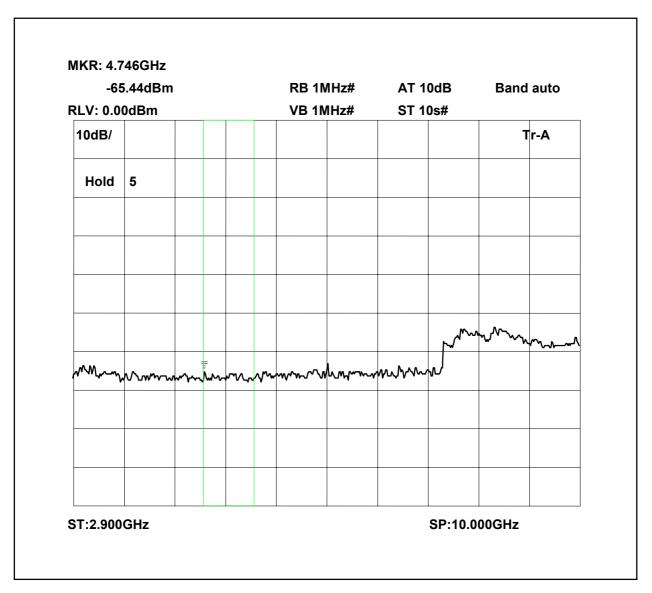
On any frequency removed from the assigned frequency by more that 250% of the authorised bandwidth

At least 43 + 10 log PdB

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

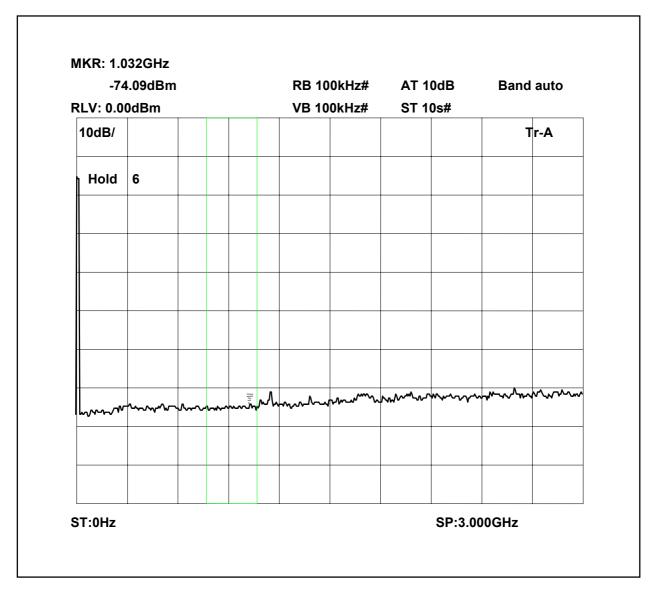
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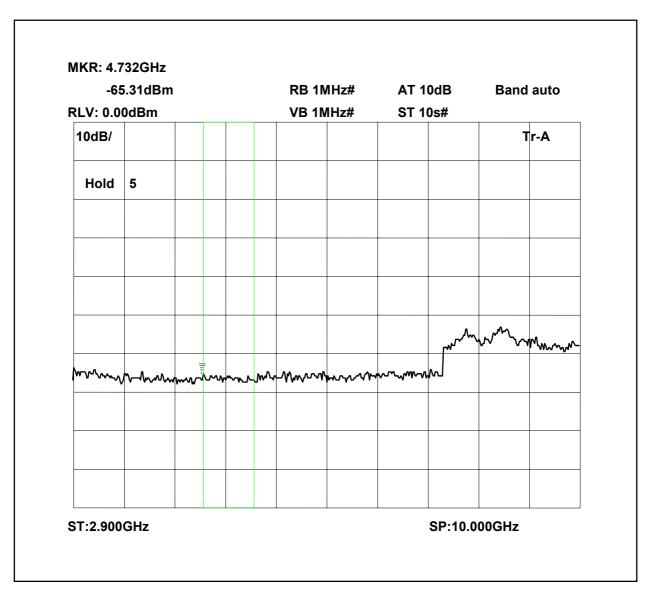


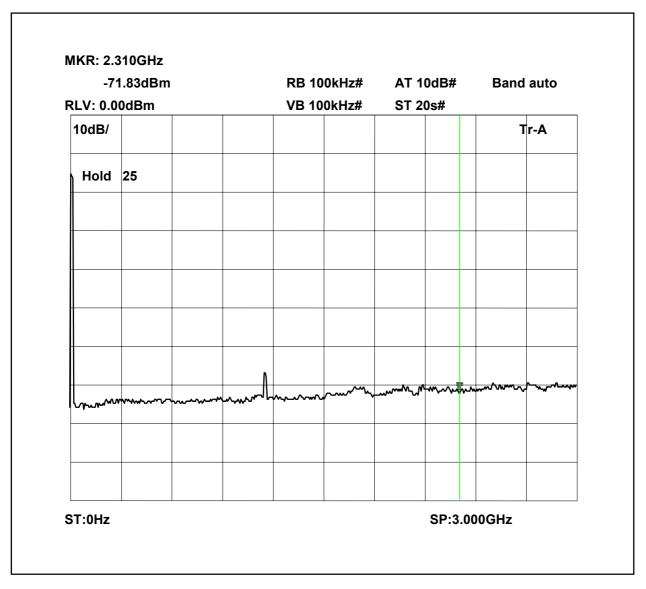


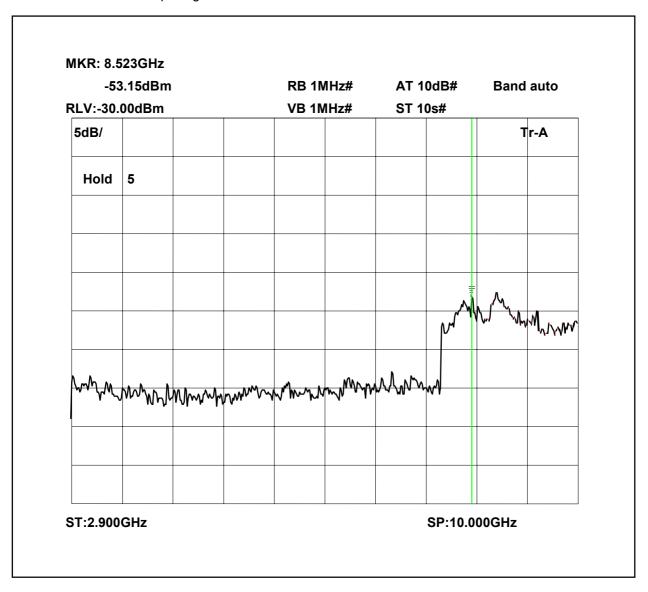
-73	3.74dBm					RB 10	00kHz#	AT 1	0dB	Band	d auto	
RLV: 0.0	0dBm					VB 10	0kHz#	ST 1	ST 10s#			
10dB/										1	Tr-A	
Hold	5											
	~~~~~	~~~	~~~	- - - -	h	······································	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	\~\^\\\\	M	~~~~~	<b>~</b> √√///~~	
ST:0Hz									SP:3.00			

-65	.51dBm	1			RB 1N	//Hz#	AT 1	0dB	Band	auto	
RLV: 0.00	0dBm				VB 1N	1Hz#	ST 10	0s#			
10dB/									٦	Tr-A	
Hold	5										
								~~~	~p~\\	*-^~ _{\\\\}	
www	۸۰۰۰۰	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~	~~~	www.h	www	^~-\			- W-V	
ST:2.900								SP:10.0			









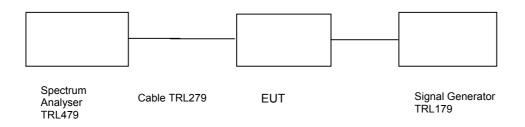
The test equipment used for the Transmitter Spurious Emissions:

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	139	X
ATTENUATOR	BIRD	8304-300-N	N/A	220	x
CABLE	ROSENBERGER	MICRO COAX	N/A	279	x
SIGNAL GENERATOR	MARCON	2042	119388/080	179	х

AMPLIFIER GAIN - CONDUCTED - PART 2.1046 - DOWNLINK

23°C Radio Laboratory

Ambient temperature Relative humidity 35% Supply voltage 115Vac Channel number See test results



Frequency MHz	Signal Generator input level dBm	Cable & Attenuator loss dB	Level at Spectrum Analyser dBm	Gain dB	Gain after 20dB input level increase dBm
470.0875	-62.6	0.5	-3.9	58.7	58.7
470.1375	-62.3	0.5	-4.9	57.4	57.4
470.3625	-61.9	0.5	-4.3	57.6	57.6

Notes:

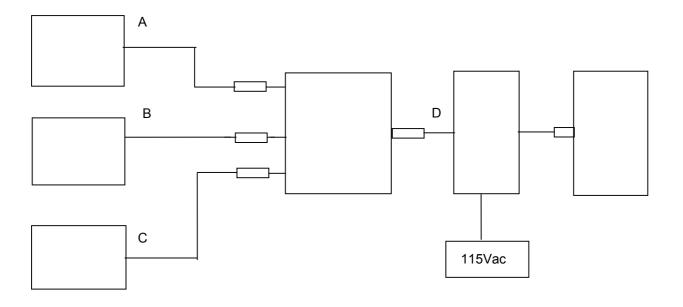
- The level of the signal generator takes into consideration the loss from the cable.
 The signal generator input was increased by 20dBs and the level of the output signal re-measured

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	
CABLE	ROSENBERGER	MICRO COAX	N/A	279	x
SIGNAL GENERATOR	MARCON	2042	119388/080	179	х

AMPIFIER INTERMAODULATION SPURIOUS EMISSIONS - CONDUCTED - PART 2.1053- DOWNLINK

Ambient temperature = N/A Radio Laboratory

Ambient temperature = N/A Relative humidity = N/A Supply voltage = 115Vac



The Intermodualation was deemed not appropriate to the downlink part of the amplifier as the output of the amplifier feeds into an RF to optical converter. See annex C system diagram.

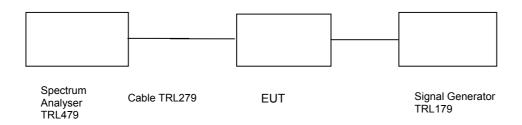
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TRANSMITTER TESTS

AMPLIFER MODULATED CHANNEL TEST - CONDUCTED - Part 2.1049- DOWNLINK

Ambient temperature = 21°C Radio Laboratory

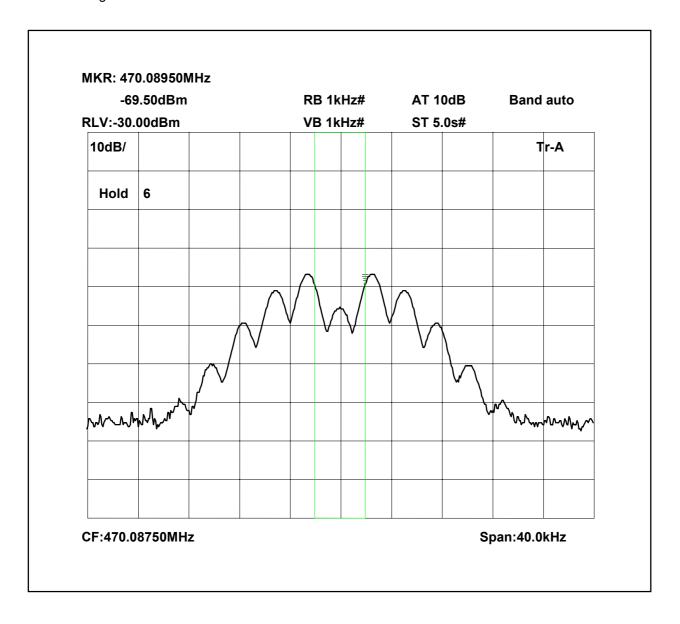
Relative humidity = 47% Supply voltage = 115Vac Channel number = See test results

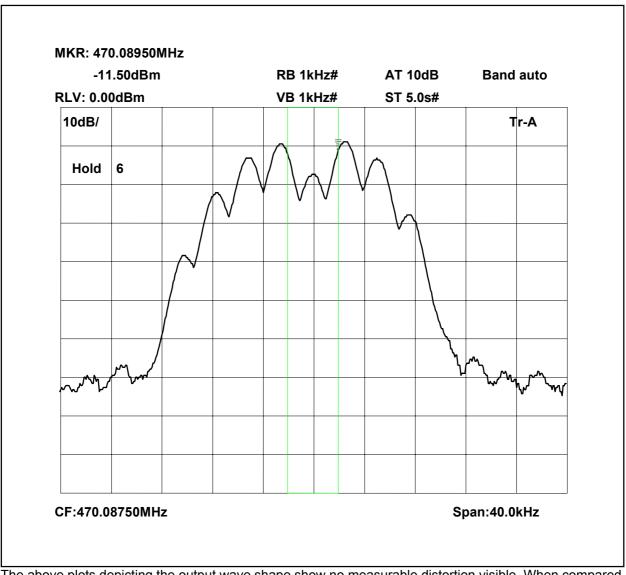


This test was performed to show that the amplifier does not alter the input signal in any way. The input signal was set to the maximum input level (dBm) and modulated with a 2500Hz tone. The plots show the signal measured at the signal generator and the signal measured at the output of the EUT.

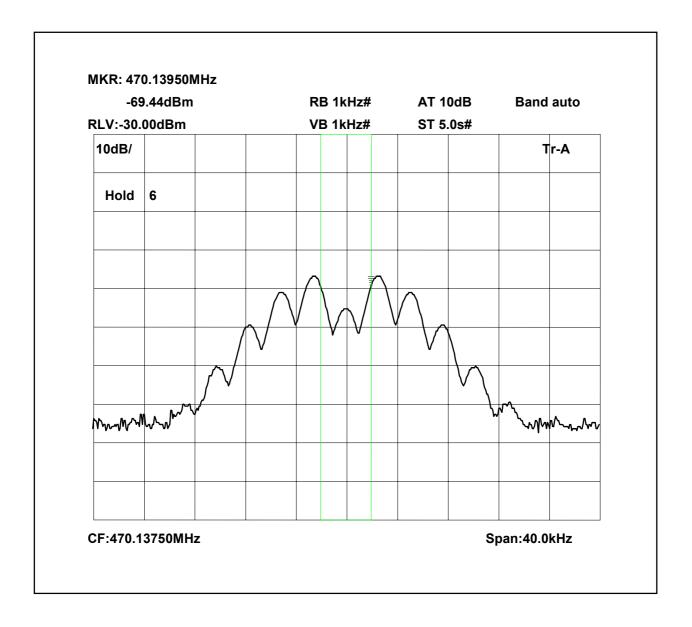
Note: The cables and attenuators had the following losses.

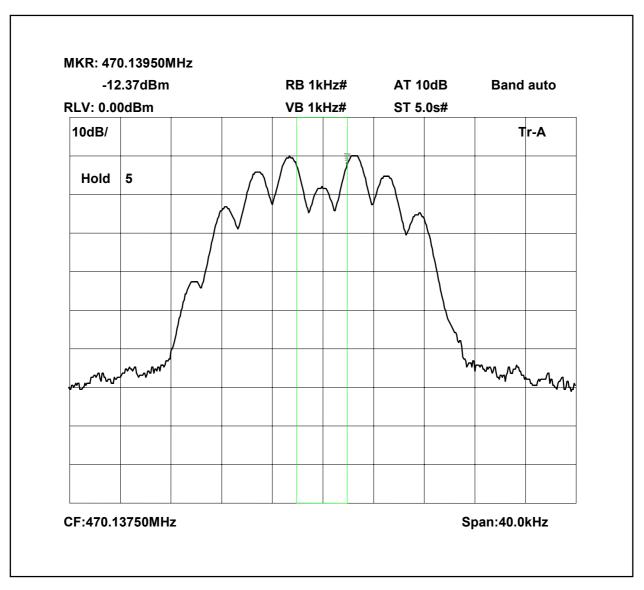
- 1. Cable TRL279 and analyser = 0.5dB
- 2. Cable between signal generator and EUT = 0.4dB



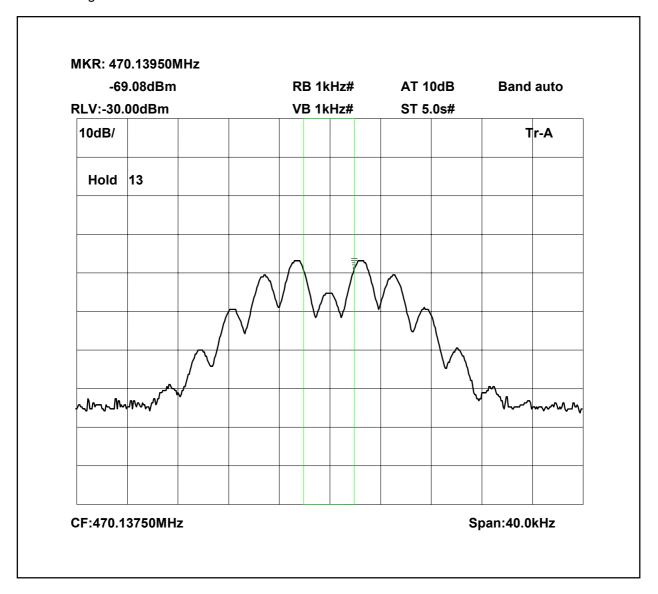


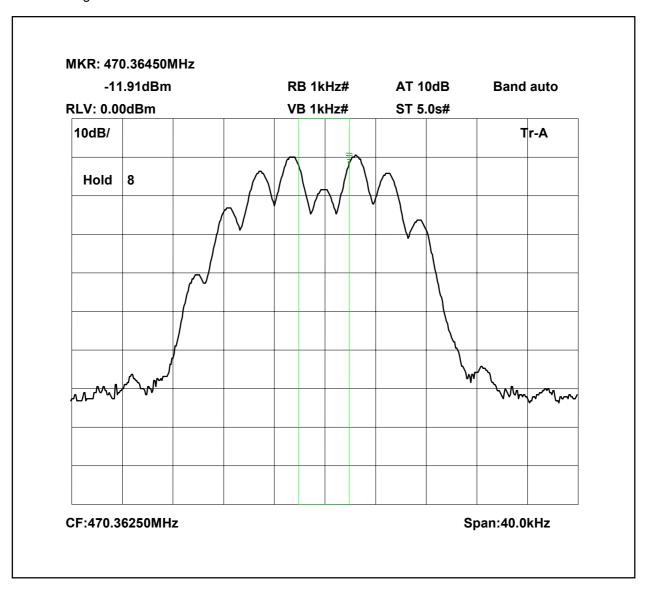
The above plots depicting the output wave shape show no measurable distortion visible. When compared to the input signal.





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





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

The test equipment used for the Transmitter modulated channel tests is shown overleaf:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	х
ATTENUATOR	BIRD	8304-200	N/A	103	
ATTENUATOR	BIRD	8304-300-N	N/A	220	
CABLE	ROSENBERGER	MICRO COAX	N/A	279	x
SIGNAL GENERATOR	MARCON	2042	119388/080	179	х

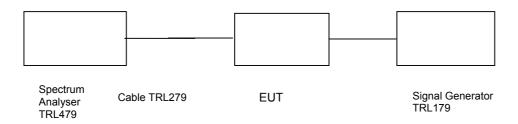
TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS - CONDUCTED - Part 2.1051- DOWNLINK

= 23°C Radio Laboratory

Ambient temperature = 23°C Relative humidity = 35% Supply voltage = 115V Test Signal F3E

= 115Vac



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:

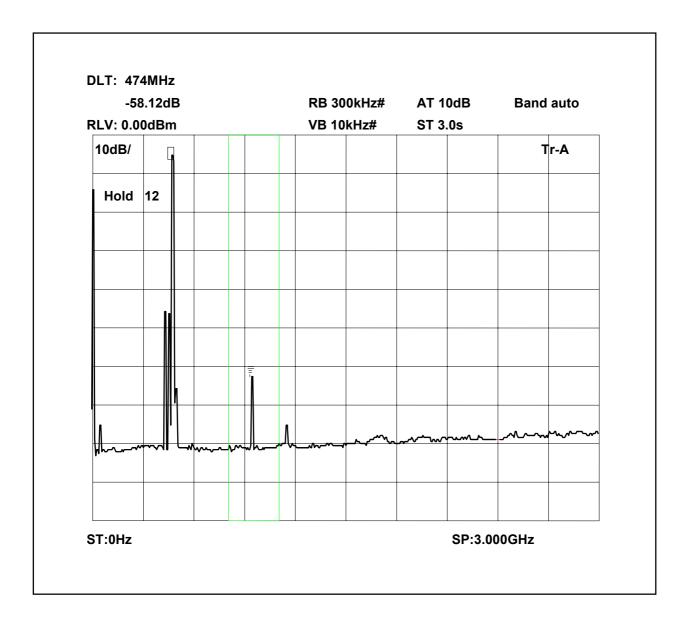
On any frequency removed from the assigned frequency by more that 250% of the authorised bandwidth

At least 43 + 10 log PdB

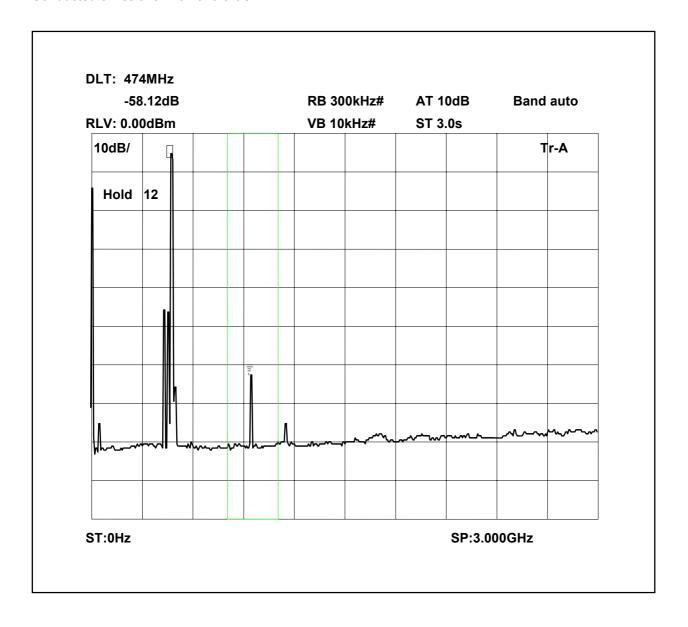
 $(10logP_{watts}) - (43+10log (P_{watts} * 1000)) = LIMIT = -13 dBm$

The test equipment used for the Transmitter Conducted Emissions:

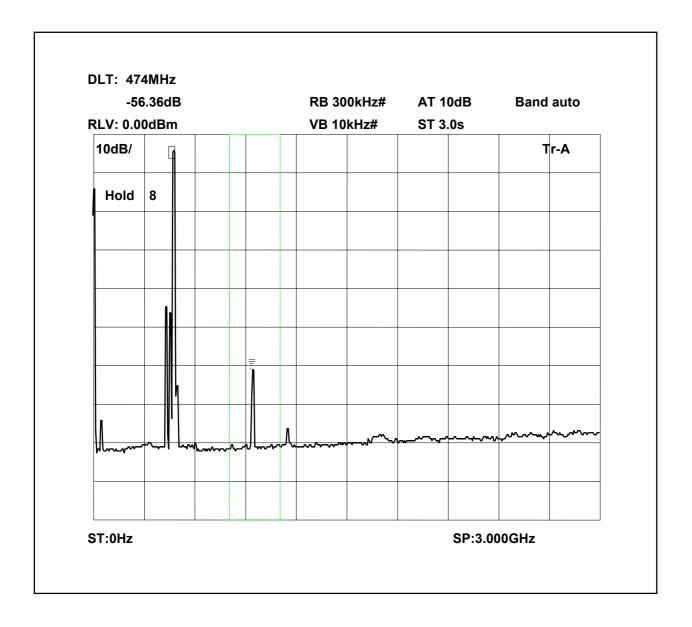
TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	х
ATTENUATOR	BIRD	8304-200	N/A	103	
ATTENUATOR	BIRD	8304-300-N	N/A	220	
CABLE	ROSENBERGER	MICRO COAX	N/A	279	x
SIGNAL GENERATOR	MARCON	2042	119388/080	179	х



	-63	.12dBm)		RB 1N	/IHz#	AT 1	0dB	Band	auto
RLV: (0.0)dBm			VB 1N	1Hz#	ST 2	.0s#		
10dE	3/								1	r-A
Hol	d	9								
	Λ Λ,	~~~~	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	www	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mm	~~~~~	144~~~	m	VmvV~
ST:2.9		CU-						SP:5.00)0CU-	



-64	l.88dBm			R	B 1N	1Hz#	ŧ	AT 1	0dB	Band	l auto		
RLV: 0.0	0dBm			VI	B 1N	1Hz#	!	ST 2	.0s#				
10dB/										1	Гr-А		
Hold	8												
Mann	~~~~	^ ~~~	-~~~~	اسب	₩ _ſ ~w	~~~	<i>ر</i> ۸۰۰,	m	~~~~~	₩~₩~	L		
└─── ST:2.900	CU-								SP:5.00)))			



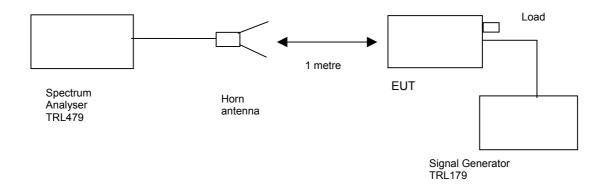
-65	5.70dBm			RI	B 1N	/IHz#	ŧ	AT 1	0dB	Band	Band auto	
RLV: 0.0	0dBm			VI	B 1N	1Hz#		ST 2	.0s#			
10dB/										٦	Tr-A	
Hold	9											
/m//	www	-w1041	Mannal	_ _	~ <u>\</u> ₩	~ ~~	₩~_		~~~~~	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
ST:2.900	OU-								SP:5.00	00011-		

TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS - RADIATED - Part 2.1053- DOWNLINK

Ambient temperature = 17°C Test Signal = F3E

Relative humidity = 46%
Conditions = OATS
Supply voltage = 115Vac
Supply Frequency = N/A



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.

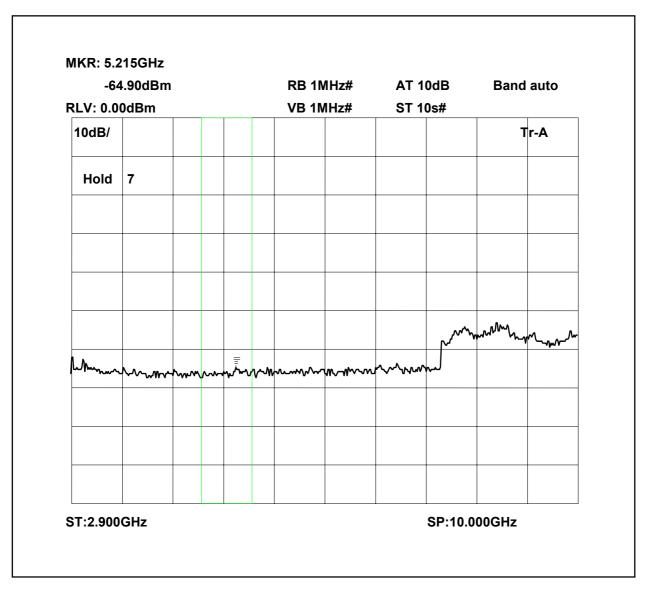
The Spurious limit was calculated as follows:

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

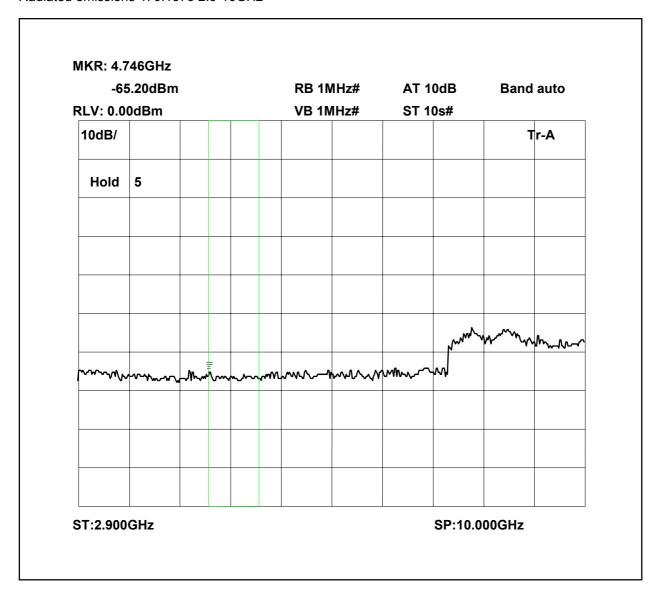
At least 43 + 10 log PdB

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

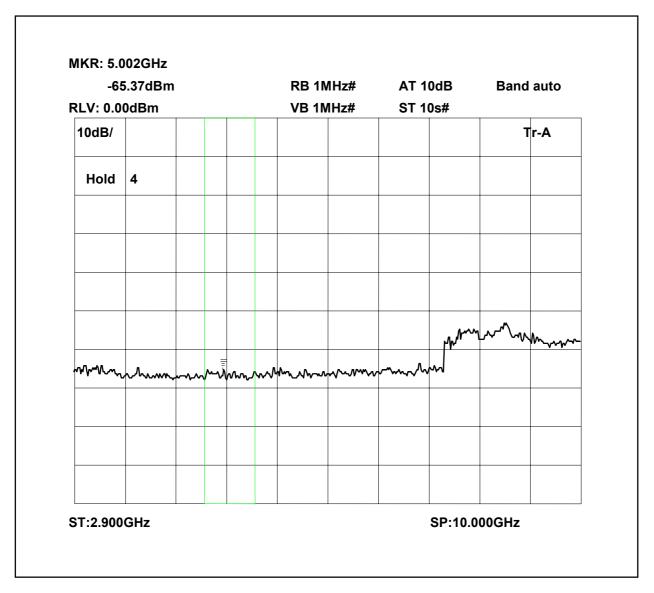
-74	4.05dBm	1				RB 10	0kHz#	AT 1	0dB	Band	auto	
RLV: 0.0	0dBm					VB 10	0kHz#	ST 1	0s#			
10dB/	10dB/									Tr-A		
Hold	5											
L~~~~	~~~~	·~~	√ ~	••••	ww	~~~~	~~~~	www		_^~~	,^^^,	
ST:0Hz									SP:3.00			



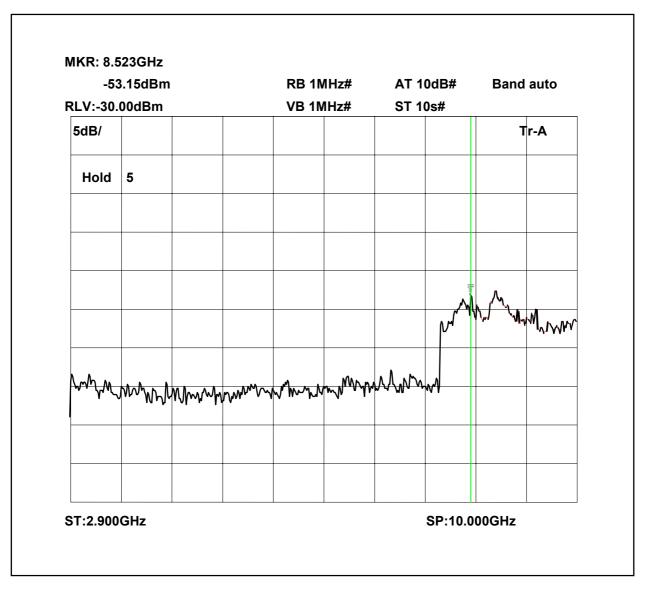
-74	4.07dBm	1				RB 10	0kHz#	AT 1	AT 10dB Band auto		
RLV: 0.0	0dBm					VB 10	0kHz#	ST 1	0s#		
10dB/										Tr-A	
Hold	6										
	www	·····	,,,,	₩₩	سالہ	~~~~	~~~~	~~~~~	~~~~	~^~~~	~~~~~~
ST:0Hz									SP:3.00	0011-	



-73	3.87dBn	า				RB 10	0kHz#	AT 1	AT 10dB Band au			
RLV: 0.0		-					0kHz#	ST 1				
10dB/										Tr-A		
Hold	6											
L		mvv	~~	~~ ~	,h	w^^^~	~~~~	Mornwork	ww.^_~	~b~~~~~~~~	~^{~^~~	
ST:0Hz									SP:3.00	20011-	1	



-73	3.86dBm	l			RB 10	0kHz#	AT 1	0dB	Band	d auto
RLV: 0.0	0dBm				VB 10	0kHz#	ST 1	0s#		
10dB/									٦	Tr-A
Hold	5									
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	·~~~	 w~~	,۔۔/لہ	M	~~~	~~~~	1	,	Mrvv-vv
·			•							
ST:0Hz								SP:3.00		



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	х
HORN	EMCO	3115	9010-3581	139	х
ATTENUATOR	BIRD	8304-300-N	N/A	220	x
ATTENUATOR	BIRD	8308-100	N/A	112	x
CABLE	ROSENBERGER	MICRO COAX	N/A	279	x
SIGNAL GENERATOR	MARCON	2042	119388/080	179	х

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.	ТСВ	-	APPLICATION 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 Rx PSU AUX	[X] [] []
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 SYSTEM DIAGRAM

System Block Diagram Location One

