

TEST REPORT NO: RU1063/4785

1

COPY NO:

ISSUE NO:

FCC ID:

NEO50-0606Series

REPORT ON THE CERTIFICATION TESTING OF A Aerial Facilities Limited 5 CHANNEL UHF Signal Enhancer WITH RESPECT TO THE FCC RULES CFR 47, PART 90 Subpart I PRIVATE LAND MOBLIE REPEATER.

TEST DATE: 1st August – 10th September 2003

TESTED BY:			J CHARTERS
APPROVED BY	Y:		P GREEN PRODUCT MANAGER
DATE:			EMC
Distribution:			
Copy Nos: 1	•	Aerial Facilities Limited	

2. TCB: TRL Compliance Services Limited

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

FCC IDENTITY:	NEO50-0606Series		
PURPOSE OF TEST:	CERTIFICATION		
TEST SPECIFICATION:	FCC RULES CFR 47, Part 90 Subpart I		
TEST RESULT:	Compliant to Specification		
EQUIPMENT UNDER TEST:	5 CHANNEL UHF Signal Enhancer		
EQUIPMENT TYPE:	Private Land Mobile Repeater		
MAXIMIUM GAIN	+98.03dBm		
MAXIMUM INPUT	-77.0dBm		
MAXIMUM OUTPUT	+23.0dBm		
ANTENNA TYPE:	Not applicable		
CHANNEL SPACING:	12.5kHz		
NUMBER OF CHANNELS:	Channel No. Uplink Downlink 1 453.300MHz 458.300M 2 453.600MHz 458.600M 3 453.500MHz 458.500M 4 453.200MHz 458.200M 5 453.750MHz 458.750M	IHz IHz IHz	
FREQUENCY GENERATION:	N/A		
MODULATION TYPE:	F3E		
POWER SOURCE(s):	24Vdc		
TEST DATE(s):	1 st August – 10 th September 2003		
ORDER No(s):	19800		
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):	5 CHANNEL UHF Signal Enhancer	
EQUIPMENT TYPE:	50-0606063	
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):	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)	1 st August – 10 th September 2003	
TEST REPORT No:	RU1063/4785	

EQUIPMENT TEST / EXAMINATIONS REQUIRED

1	
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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 Use:	Private Land Mobile Repeater	
3.	Emission Designator:	F3E	
4.	Temperatures:	Ambient (Tnom)	24°C
5.	Supply Voltages:	Vnom	24Vac

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

6.	Equipment Category:	Single channel Two channel Multi-channel	[] [] [X]	
7.	Channel spacing:	Narrowband Wideband	[X] []	12.5kHz
8.	Test Location	TRL Compliance Services Up Holland Long Green	[X] []	

9. Modifications made during test program

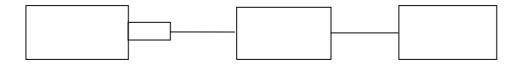
No modifications were performed.

COMPLIANCE TESTS

AMPLIFIER GAIN - CONDUCTED - PART 2.1046 - UPLINK

Ambient temperature	
Relative humidity	
Supply voltage	
Channel number	

- 27°C =
- = 45%
- = 24Vdc
 - = 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
453.20	-73.4	26.72	-3.5	96.66	96.66
453.50	-73.4	26.72	-3.5	96.66	96.66
453.75	-73.4	26.72	-3.4	96.75	96.75

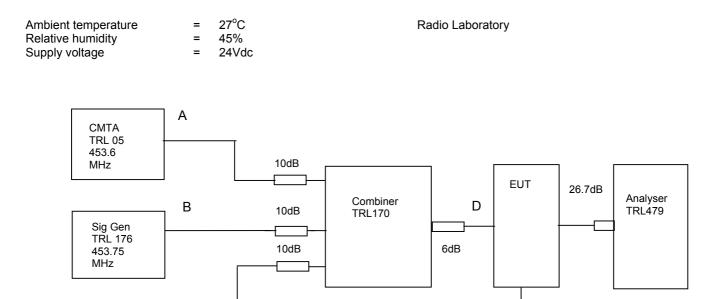
Radio Laboratory

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

AMPIFIER INTERMAODULATION SPURIOUS EMISSIONS - CONDUCTED - PART 2.1053- UPLINK



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 -73.4dBm The cable and attenuator loss between the EUT and the spectrum analyser was 26.7 dB.

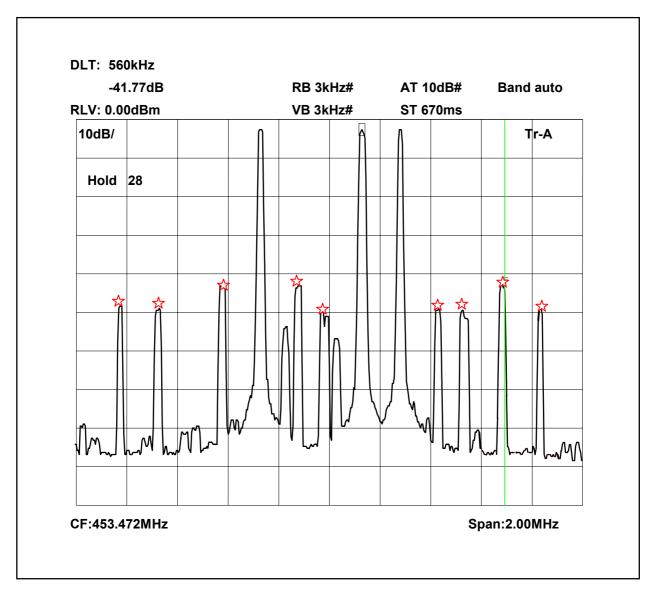
Sweep data is shown on the next page:

С

Sig Gen TRL 254

453.2 MHz 24Vdc

Intermodulaion Inband



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

Intermodulation Wideband

7.	60dB			RB 1M	/Hz#	AT 2	0dB#	Band	auto
RLV: 10	00dBm			VB 1N	/Hz#	ST 5	0ms		
10dB/	10dB/							Tr-A	
Hold	71								
	m	when	www.ww	r	mm_m	<u>h</u>	~~~ ^~~~	L.M. M.	www.w.

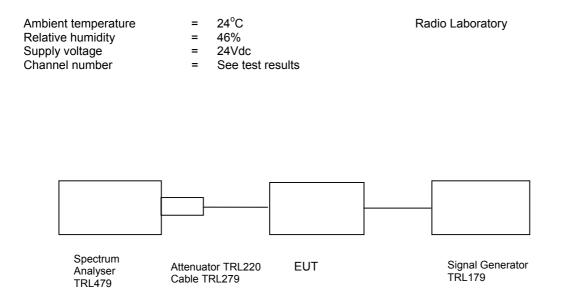
The above plot shows that there are no products outside the bands.

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	x
СМТА	ROHDE & SCHWARZ	CMTA52	894715/033	05	x
SIGNAL GENERATOR	MARCON	2042	119388/080	179	x
COMBINER	ELCOM	RC-4-50	N/A	170	x

TRANSMITTER TESTS

AMPLIFER MODULATED CHANNEL TEST - CONDUCTED - Part 2.1049- UPLINK

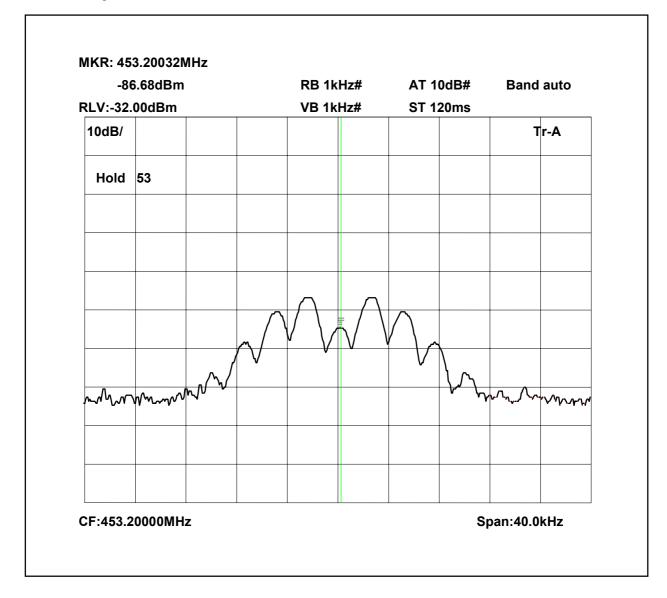


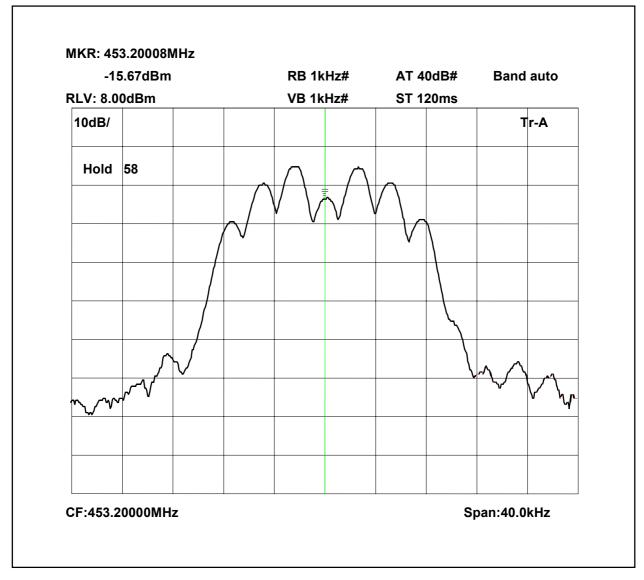
This test was performed to show that the amplifier does not alter the input signal in any way. The input signal was set to the maximum input level (-73.4dBm) and modulated with a 2500Hz tone. The plots show the signal measured at the signal generator and the signal measured at the output of the EUT.

Note: The cables and attenuators had the following losses.

- 1. Cable TRL279 and attenuator TRL220 26.7dB
- 2. Cable between signal generator and EUT 0.4dB

453.2MHz Signal Generator deviation set to 5kHz

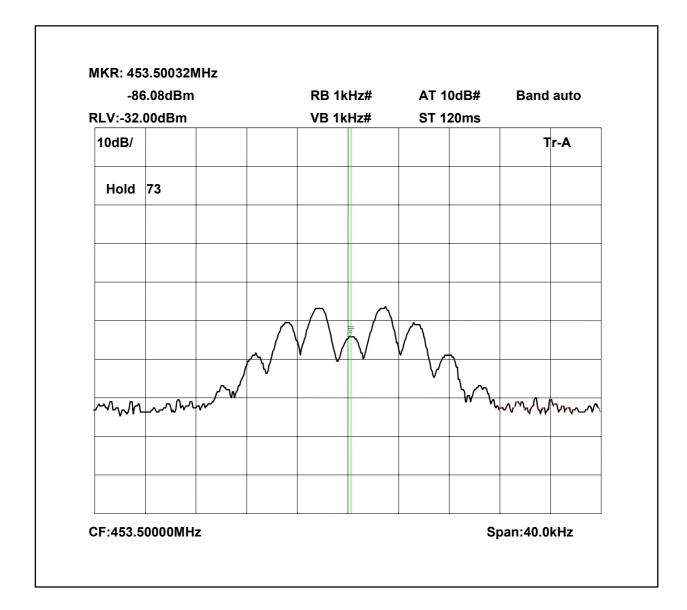


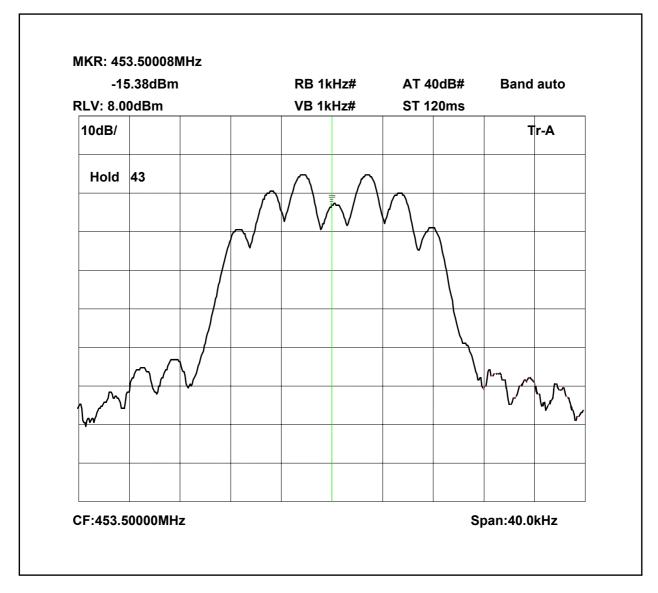


453.2MHz Signal Generator and EUT deviation set to 5kHz

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

453.5MHz Signal Generator deviation set to 5kHz

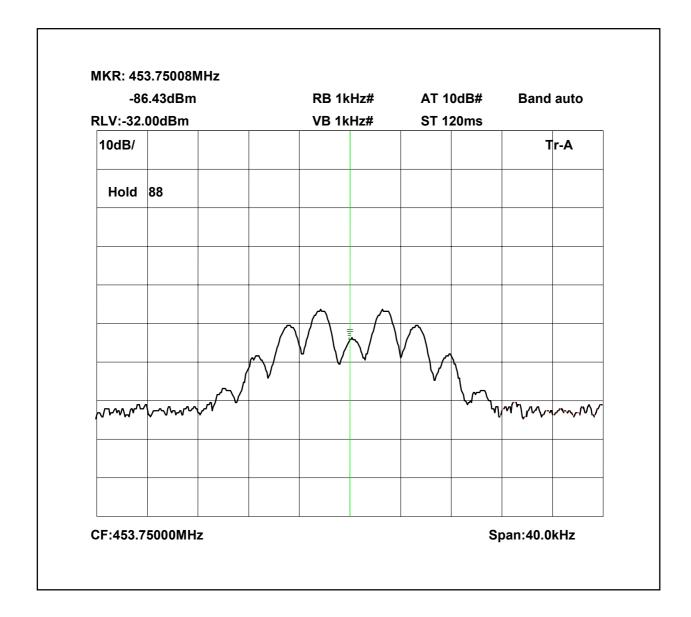




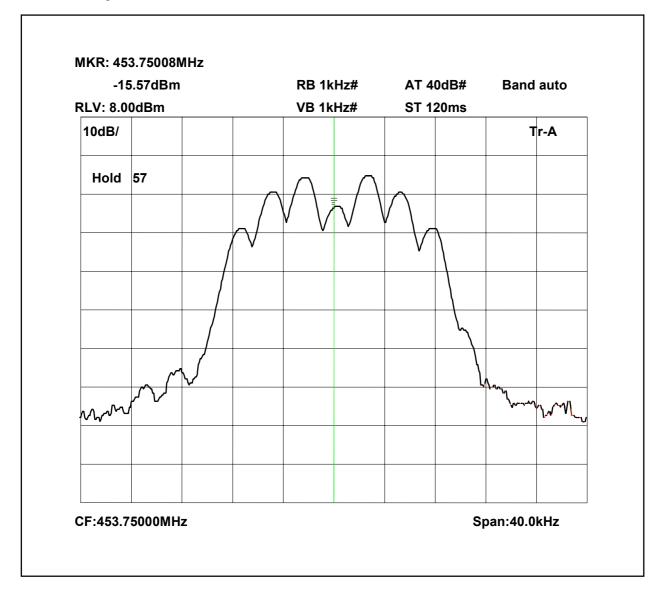
453.5MHz Signal Generator and amplifier deviation set to 5kHz

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

453.75MHz Signal Generator deviation set to 5kHz



453.75MHz Signal Generator deviation set to 5kHz



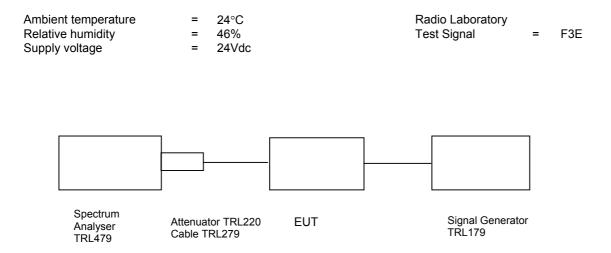
The above plots depicting the output waveshape show no measurable distortion visible. When compared to the input signal.

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	x

TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – CONDUCTED – Part 2.1051– UPLINK



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	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	x

Conducted emissions 453.2MHz 0 - 3GHz

-2.7	3dB	m			RB 1M	1Hz#	AT 1	0dB#	Band	auto	
RLV: 0.00	dBn	n			VB 1N	IHz#	ST 5	50ms			
10dB/	Ŧ								Tr-A		
Hold 1	02										
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ST:30MHz								SP:3.00	0011-		

Conducted emissions 453.2MHz 2.9 - 6GHz

-6	3.96dBr	n		RB 1	/Hz#	AT 1	0dB#	Band	auto
RLV:-20	.00dBm		-1	VB 1N	/IHz#	ST 5	0ms		1
5dB/								1	r-A
Hold	37								
h	۱	A .							
	v cyn	Mr W	www.m	mmm	mm	Ln All	mark	MY\/hwww	h~~~///v/

Conducted emissions 453.5MHz 0 - 3GHz

-2.6	67dB	ßm			RB 1N	/IHz#	AT 1	0dB#	Banc	l auto
RLV: 0.00	)dBn	n	_		VB 1N	/Hz#	ST 5	0ms		
10dB/	Ŧ								Tr-A	
Hold [•]	180									
	$\mathcal{A}$	m	wn	1_m	h	mm	mund	<b>~~~~</b> ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	wall was	a

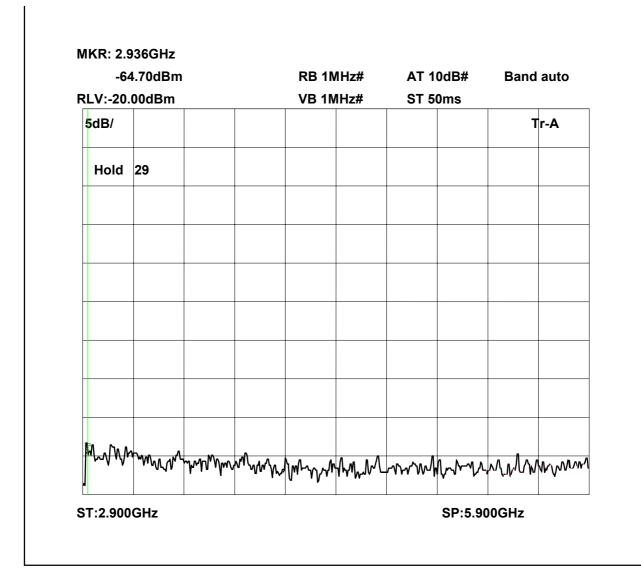
Conducted emissions 453.5MHz 2.9 - 6GHz

-	4.36dBm			RB 1			0dB#	Band	auto	
RLV:-20	.00dBm		1	VB 1N	1Hz#	ST 5	0ms			
5dB/								Т	r-A	
Hold	51									
Μιν -Λ -Λ										
1	Mohnte	MMVI	howw	h mp $h$	᠕᠕᠕	mm	mM	$\mathcal{M}_{\mathcal{M}}$	r¶-^-\{v	

Conducted emissions 453.75MHz 0 - 3GHz

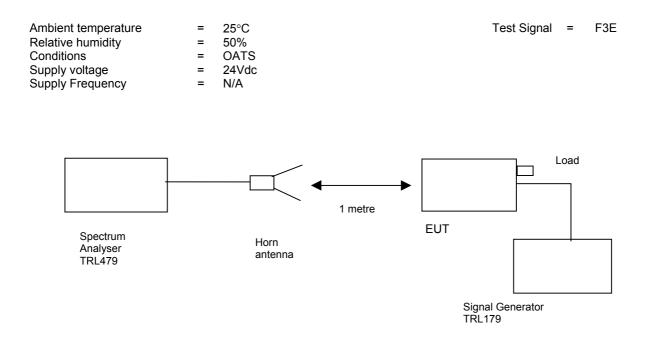
-2	.85dE	3m			RB 1N	1Hz#	AT 1	0dB#	Band	l aut
RLV: 0.0	0dBr	n			VB 1N	IHz#	ST 5	0ms		
10dB/									-	Tr-A
Hold	274									
~~~~~	<b>`~~</b>		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	hann	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mm	-l-mar	~~~~	-~~
ST:30MI								SP:3.0		

Conducted emissions 453.75MHz 2.9 - 6GHz



TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – RADIATED – Part 2.1053– UPLINK



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 50 ohm 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

Radiated emissions 453.2MHz 0-3GHz

r

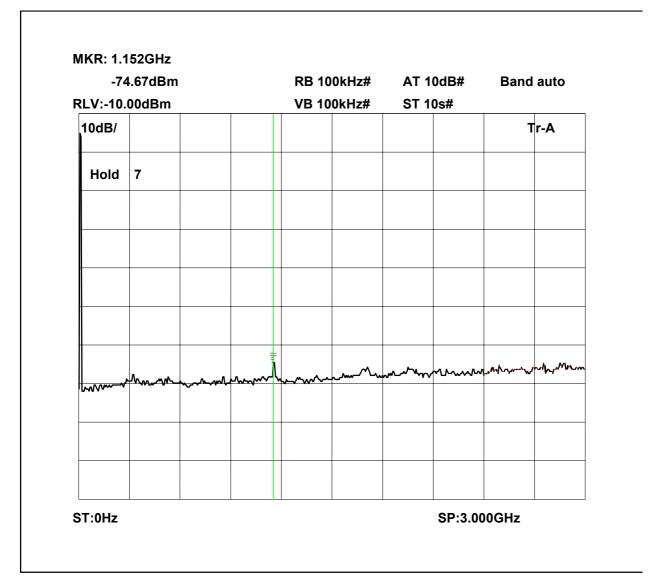
-70	6.44dBm			RB	100kHz#	AT 1	0dB#	Band	auto
RLV:-10.	.00dBm			VB	100kHz#	ST 1	0s#		
10dB/								٦	r-A
Hold	8								
han	+~~~~^	-	,	= \\ \\		mm	man	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	- Larmh
ST:0Hz							SP:3.00		

Radiated emissions 453.2MHz 2.9-10GHz

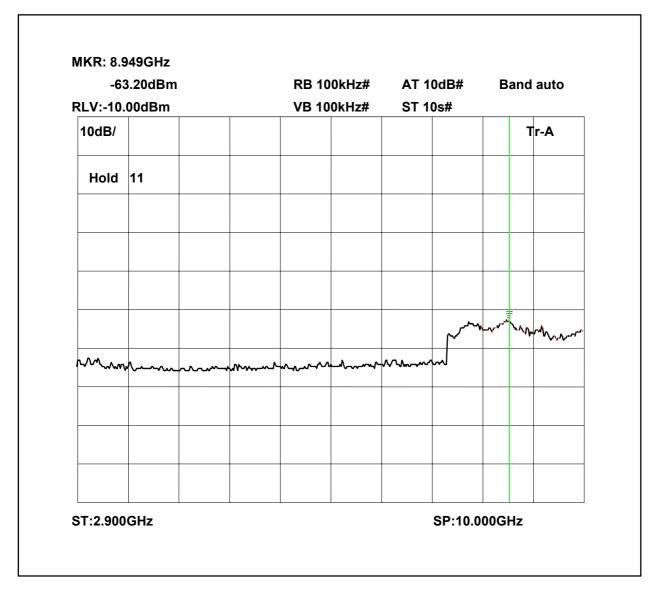
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-63	3.21dBm	ı		RB 10	0kHz#	AT 1	0dB#	Ва	nd auto
RLV:-10.	00dBm			VB 10	0kHz#	ST 1	0s#		
10dB/									Tr-A
Hold	8								
							Maria	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	·-M
m	mm_	h-mm	h	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	y	~~~~~^^	~		
ST:2.900							SP:10.0		

Radiated emissions 453.5MHz 0-3GHz



Radiated emissions 453.5MHz 2.9-10GHz

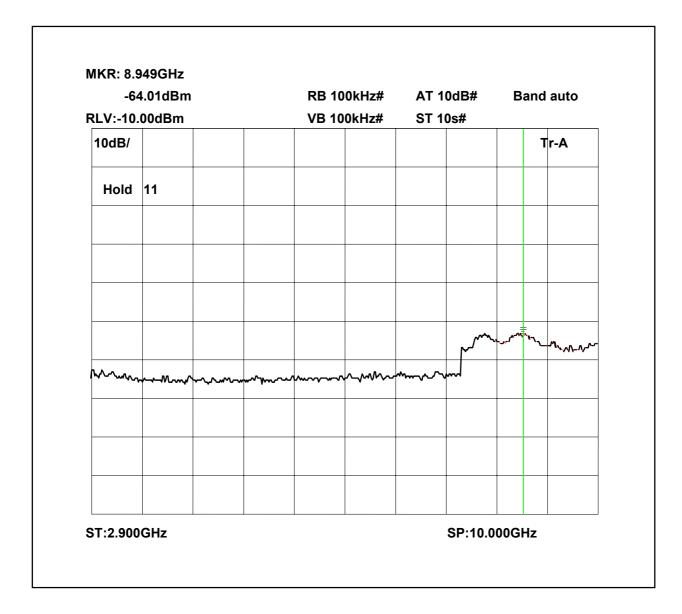


Radiated emissions 453.75MHz 0-3GHz

I

-74	4.96dBm				RB 10	0kHz#	AT 1	0dB#	Band	auto
RLV:-10.	00dBm		1		VB 10	0kHz#	ST 1	0s#		
10dB/									Т	r-A
Hold	7									
L		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Ņ	h-mm	~~~~~	mm	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	waran Jorna	hard
						•				
ST:0Hz			I			I		SP:3.00	0GHz	

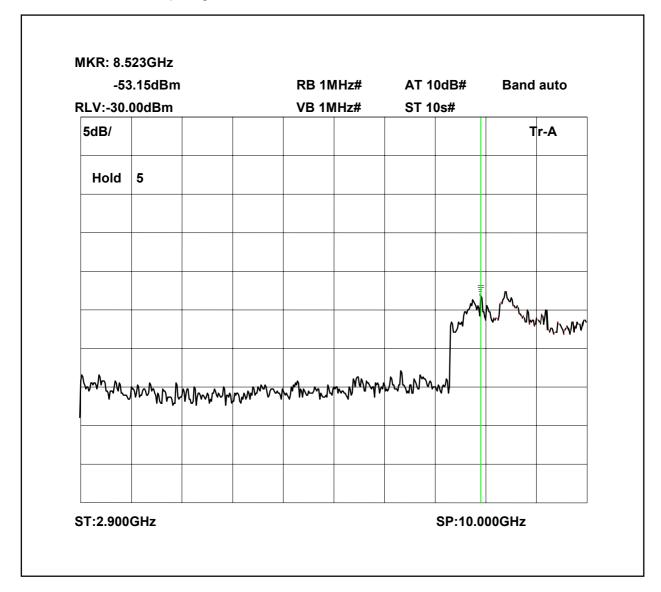
Radiated emissions 4453.75MHz 2.9-10GHz



Radiated emissions no input signal 0-3GHz

ST 20s#	Tr-A
	Tr-A
M	when we have
	M

Radiated emissions no input signal 2.9-10GHz



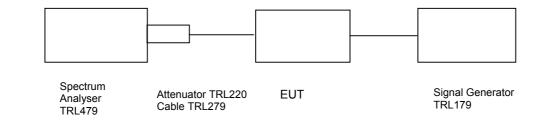
I he test equip	ment used for the	e Fransmitter S	purious Emissions:

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	x

AMPLIFIER GAIN - CONDUCTED - PART 2.1046 - DOWNLINK

Ambient temperature Relative humidity Supply voltage Channel number

- 24°C =
- Radio Laboratory
- = 43%
- = 24Vdc
- = See test results



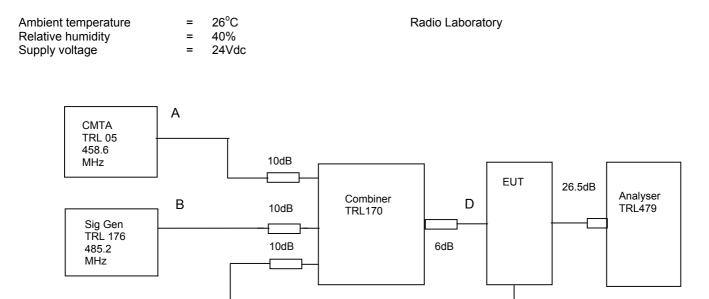
Frequency MHz	Signal Generator input level dBm	Cable & Attenuator loss dB	Level at Spectrum Analyser dBm	Gain dB	Gain after 20dB input level increase dBm
458.2	-77.0	26.5	-5.87	97.63	97.63
458.5	-77.0	26.5	-5.49	98.01	98.01
458.75	-77.0	26.5	-5.54	98.25	98.25

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 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	279	x
SIGNAL GENERATOR	MARCON	2042	119388/080	179	x

AMPIFIER INTERMAODULATION SPURIOUS EMISSIONS - CONDUCTED - PART 2.1053- DOWNLINK



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 -77.0dBm The cable and attenuators loss between the EUT and the spectrum analyser was 26.5 dB.

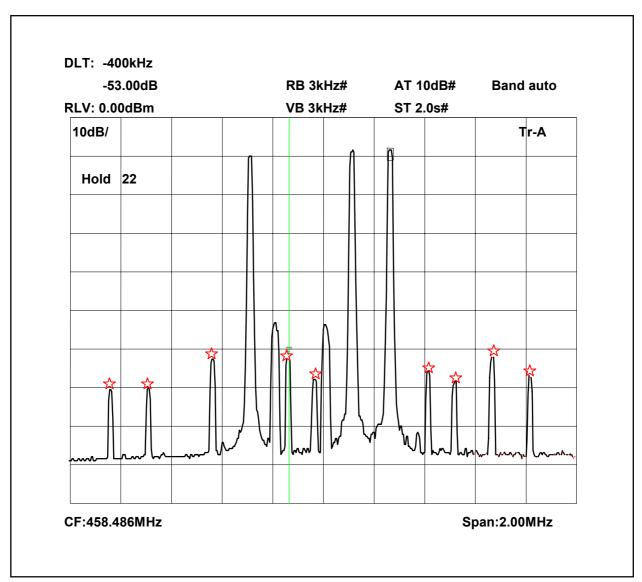
Sweep data is shown on the next page:

Sig Gen TRL 254

458.75 MHz С

24Vdc

Intermodulaion Inband



The above plot shows that all products (designated by) are at least 50dB below the fundamentals.

Intermodulation Wideband

	23dBm			RB 10				B# Band auto		
LV: 0.0	0dBm			VB 100kHz# ST 5.0s#		0s#				
10dB/		Ŧ						Т	r-A	
Hold	6									
			 a 0.000 a				- 1 - •	LMI-M-	AM	
l			 ·····	www		~h_h~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
T:0Hz							SP:2.0	00GHz		

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	x
СМТА	ROHDE & SCHWARZ	CMTA52	894715/033	05	x
SIGNAL GENERATOR	MARCON	2042	119388/080	179	x
COMBINER	ELCOM	RC-4-50	N/A	170	x

TRANSMITTER TESTS

AMPLIFER MODULATED CHANNEL TEST - CONDUCTED - Part 2.1049- DOWNLINK

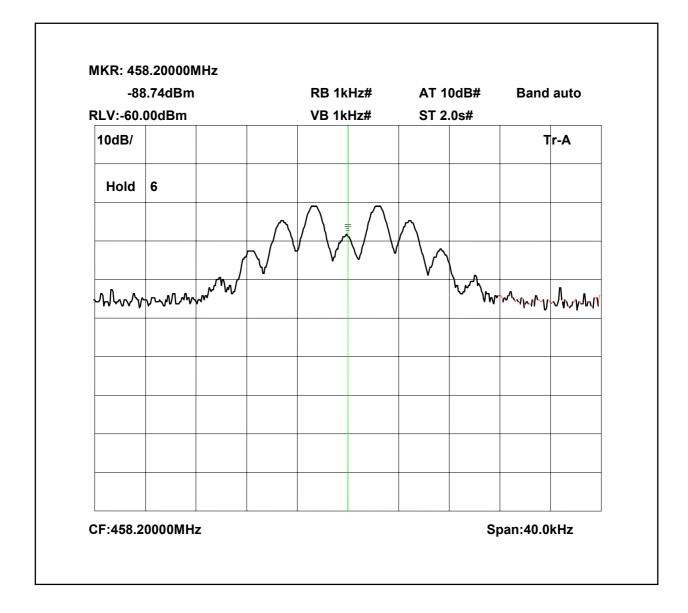
Ambient temperature Relative humidity Supply voltage Channel number	= 24°C = 43% = 24Vdc = See test	results	Radio Laboratory
Spectrum Analyser TRL479	Attenuator TRL220 Cable TRL279	EUT	Signal Generator TRL179

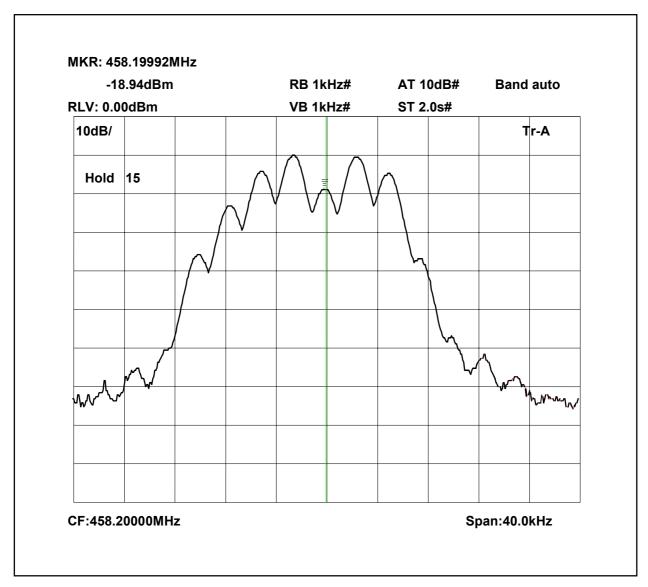
This test was performed to show that the amplifier does not alter the input signal in any way. The input signal was set to the maximum input level (-77.0dBm) and modulated with a 2500Hz tone. The plots show the signal measured at the signal generator and the signal measured at the output of the EUT.

Note: The cables and attenuators had the following losses.

- 1. Cable TRL279 and attenuators TRL220 = 26.5dB
- 2. Cable between signal generator and EUT = 0.4dB

458.2MHz Signal Generator deviation set to 5kHz

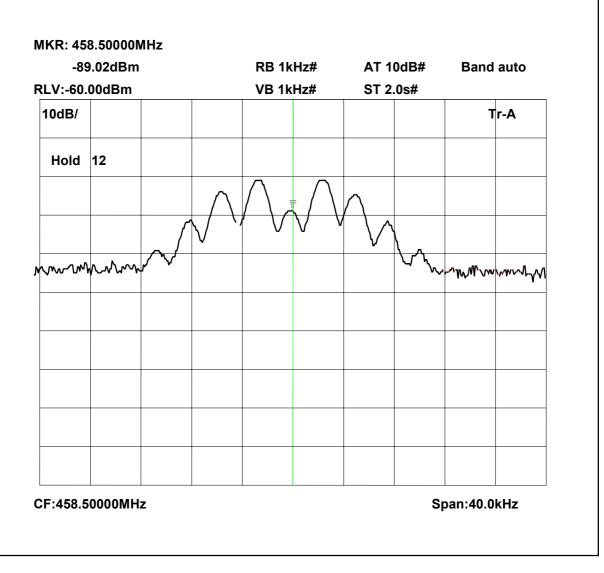


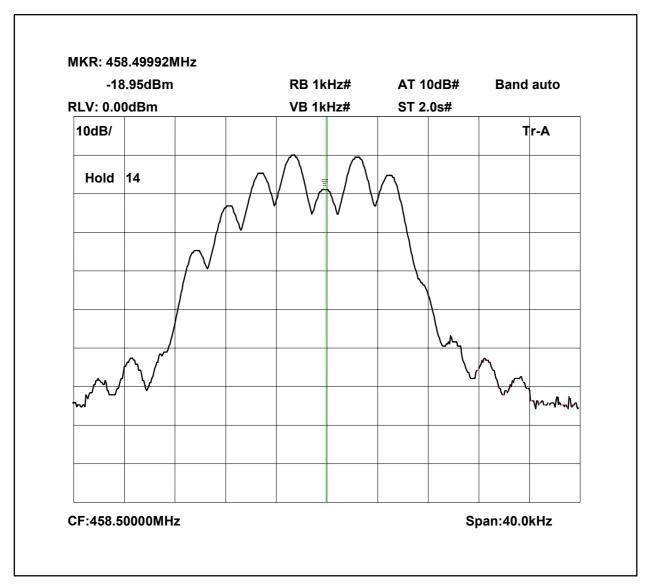


458.2MHz Signal Generator and EUT deviation set to 5kHz

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

458.5MHz Signal Generator deviation set to 5kHz

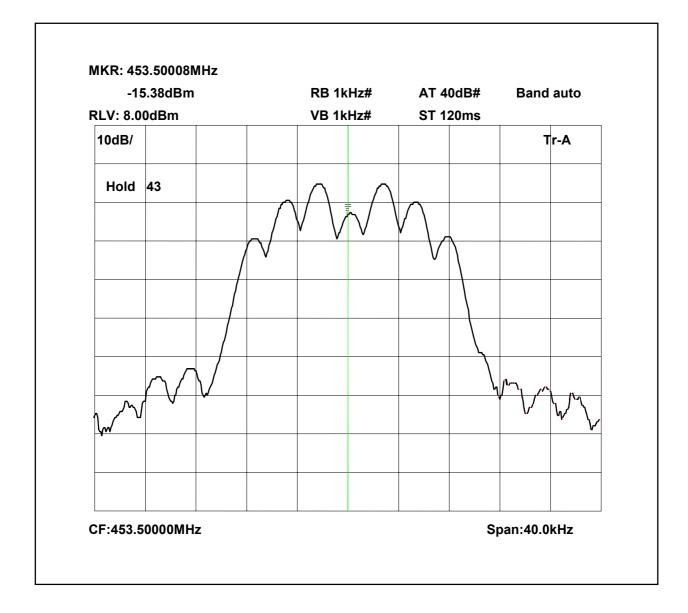




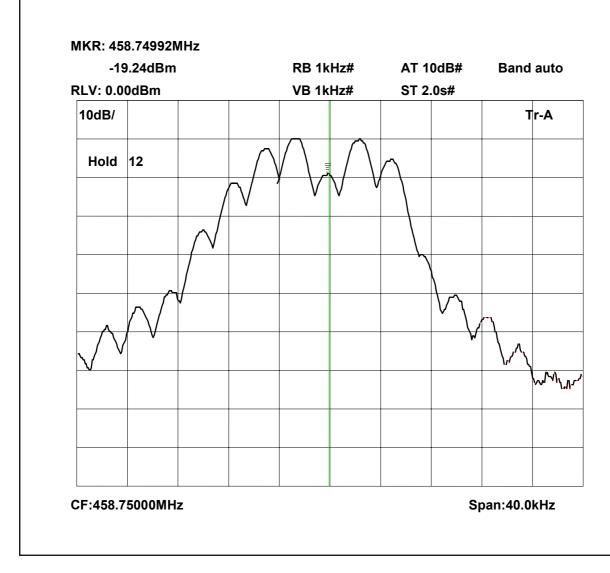
458.5MHz Signal Generator and amplifier deviation set to 5kHz

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

458.75MHz Signal Generator deviation set to 5kHz



458.75MHz Signal Generator deviation set to 5kHz



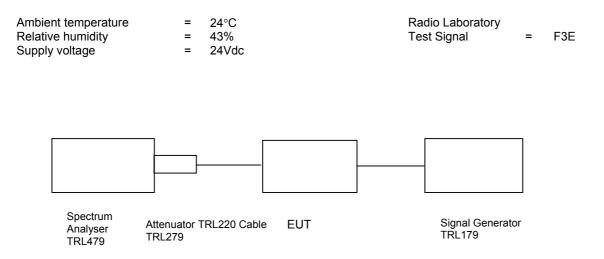
The above plots depicting the output waveshape show no measurable distortion visible. When compared to the input signal.

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	8304-200	N/A	103	
ATTENUATOR	BIRD	8304-300-N	N/A	220	x
CABLE	ROSENBERGER	MICRO COAX	N/A	279	x
SIGNAL GENERATOR	MARCON	2042	119388/080	179	x

TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS - CONDUCTED - Part 2.1051- DOWNLINK



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

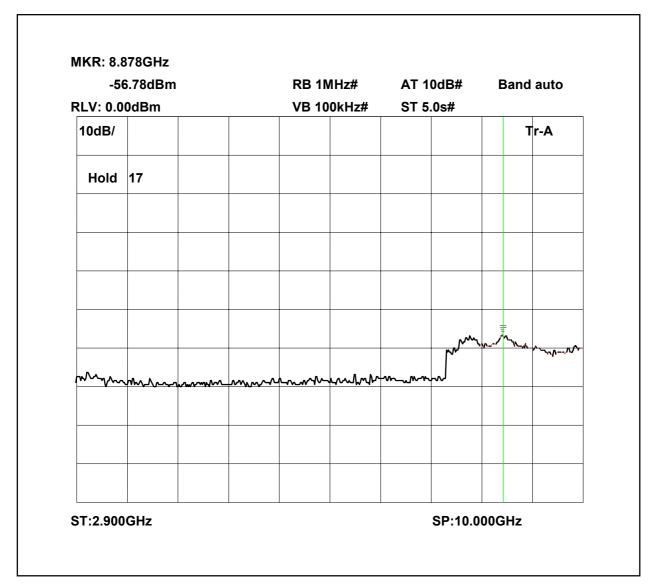
The test equipment used for the Transmitter Conducted Emissions:

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

Conducted emissions 458.2MHz 0-3GHz

-5.55dBm RLV: 0.00dBm					RB 1MHz#		AT 1	AT 10dB#		Band auto	
					VB 100kHz# ST 5.			5.0s#			
10dB/ 								Tr-A			
Hold	11										
						m	h	hh	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
h_{n}	~~ ~~	16,~~	w-~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							
ST:0Hz								SP:3.00			

Conducted emissions 458.2MHz 2.9-10GHz



Conducted emissions 458.5MHz 0-3GHz

r

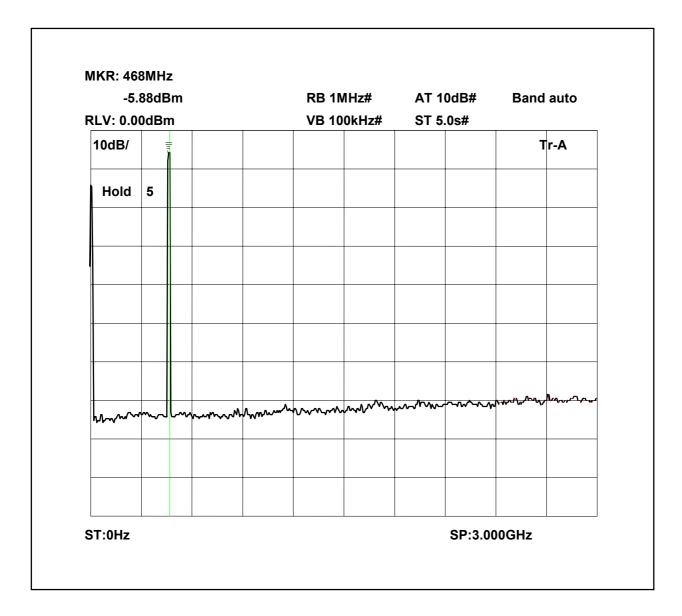
-5.75dBm RLV: 0.00dBm					RB 1M	/IHz#	AT 1	0dB#	Band	l auto
					VB 100kHz# ST 5.0s#			.0s#		
10dB/									1	۲r-A
Hold	12									
L		han	~~~	<u>ل</u> مرمر ۸	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	har mark	,	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		7 ⁴⁴ -747-71
ST:0Hz								SP:3.00		

Conducted emissions 458.5MHz 2.9-10GHz

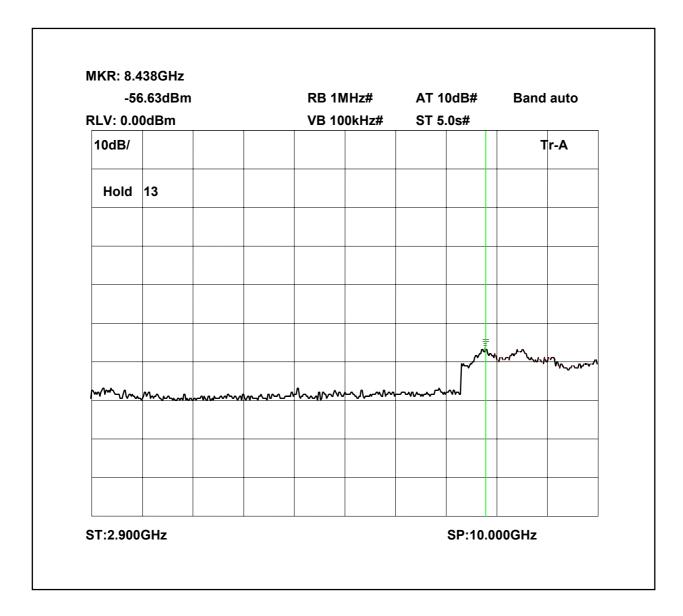
.

-5	6.99dBn	n		RB 1MHz# VB 100kHz#		AT 1	AT 10dB#		Band auto		
RLV: 0.0	0dBm					ST 5.0s#					
10dB/									Tr-A		
Hold	10										
							\mathbf{r}		Langenred		
hhr	www.	marm	hman	mm	A-40	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m				

Conducted emissions 458.75MHz 0-3GHz

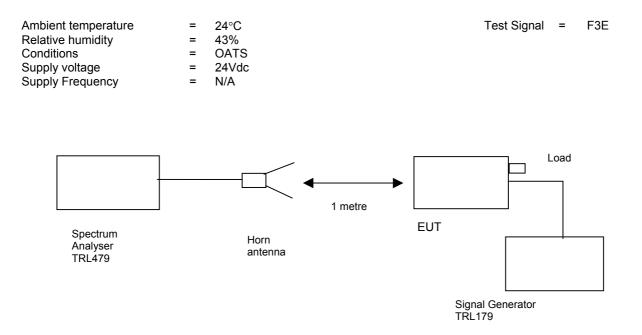


Conducted emissions 458.75MHz 2.9-10GHz



TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – RADIATED – Part 2.1053– DOWNLINK



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 50 ohm load.

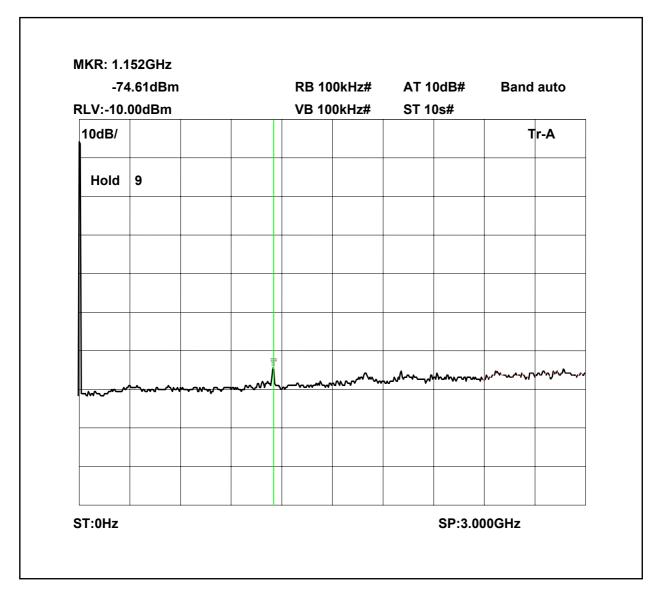
The Spurious limit was calculated as follows:

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

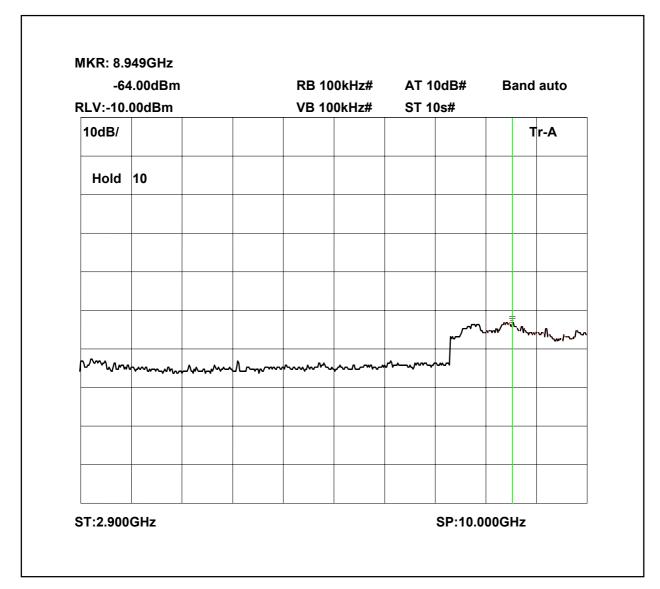
At least 43 + 10 log PdB

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

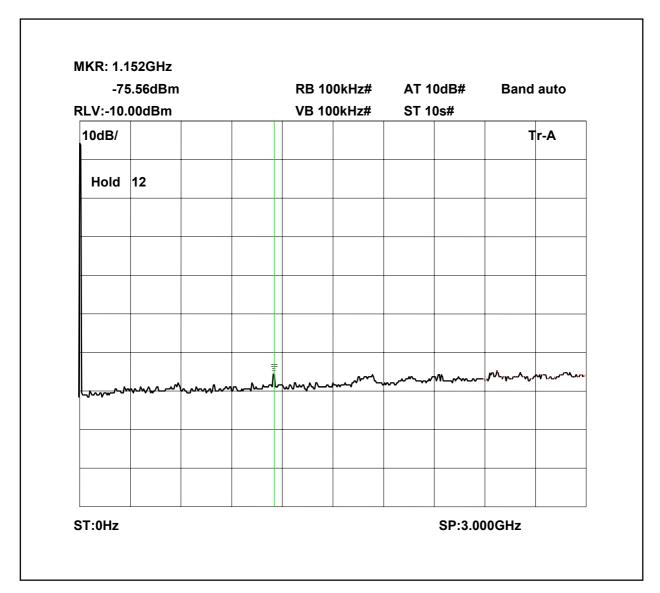
Radiated emissions 458.2MHz 0-3GHz



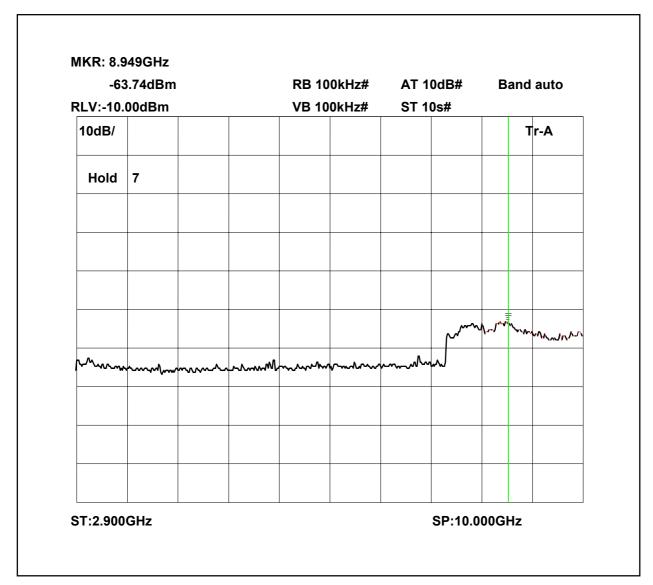
Radiated emissions 458.2MHz 2.9-10GHz



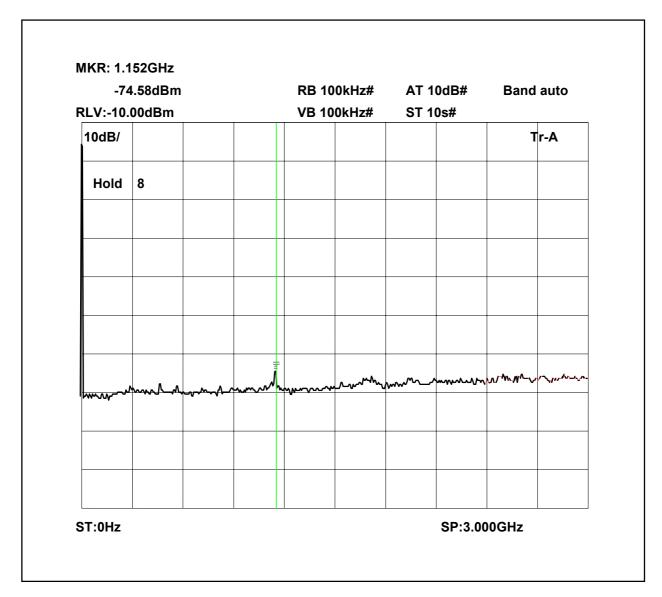
Radiated emissions 458.5MHz 0-3GHz



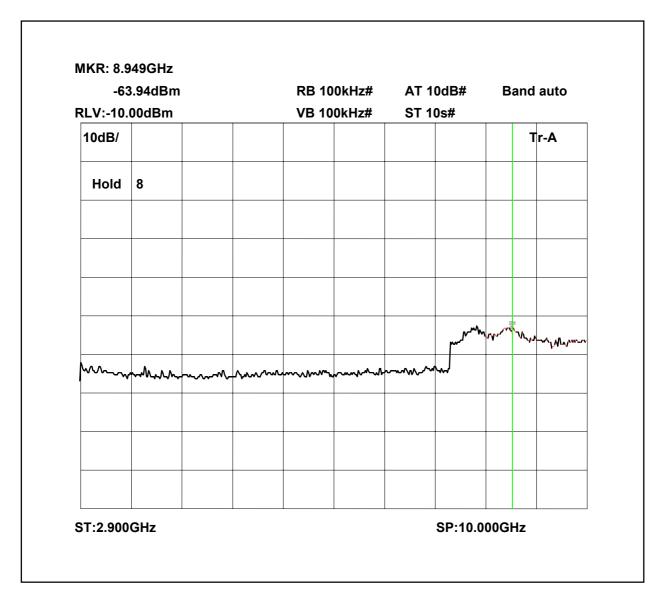
Radiated emissions 458.5MHz 2.9-10GHz



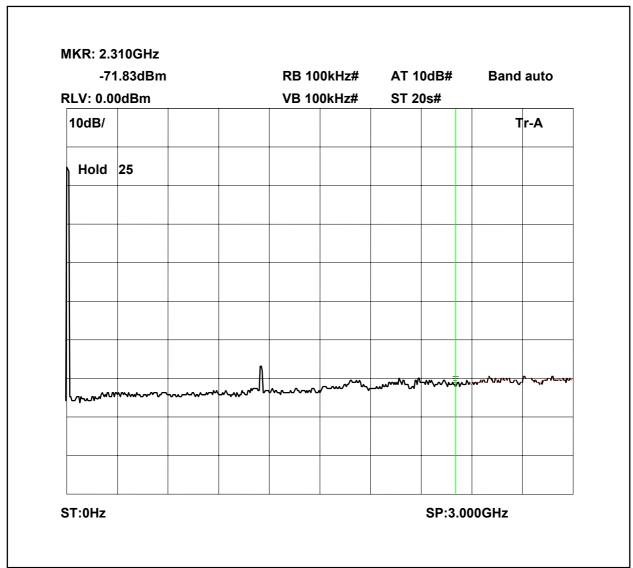
Radiated emissions 458.75MHz 0-3GHz



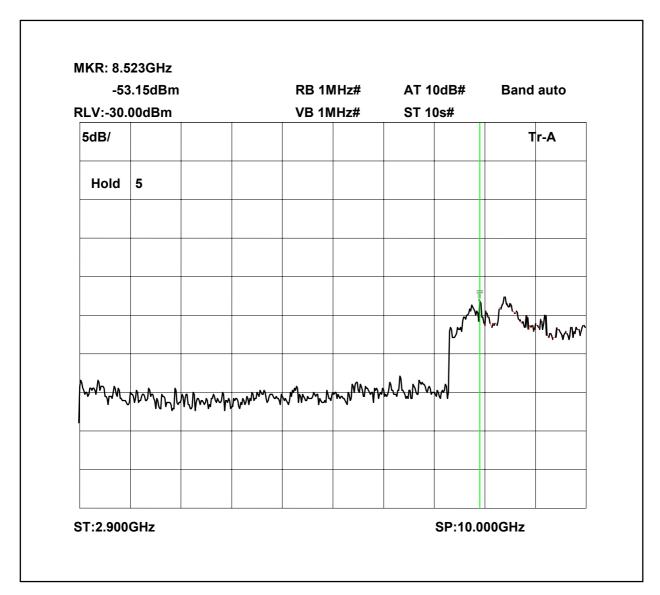
Radiated emissions 458.75MHz 2.9-10GHz



Radiated emissions no input signal 0-3GHz



Radiated emissions no input signal 2.9-10GHz



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
ATTENUATOR	BIRD	8308-100	N/A	112	x
CABLE	ROSENBERGER	MICRO COAX	N/A	279	x
SIGNAL GENERATOR	MARCON	2042	119388/080	179	x

ANNEX A

PHOTOGRAPHS

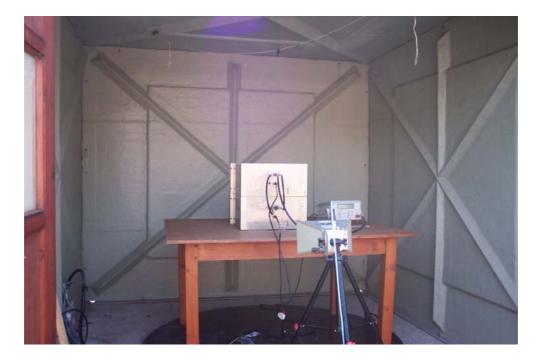
PHOTOGRAPH No. 1

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] [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	[] [] [] []
I.	USER INSTALLATION / OPERATING INSTRUCTIONS	-		[X]