TEST REPORT NO: RU1219/6751

COPY NO: 2

ISSUE NO: 1

FCC ID: NEO60-1658SERIES

REPORT ON THE CERTIFICATION TESTING OF A
AERIAL FACILITIES LIMITED
60-165801
WITH RESPECT TO
THE FCC RULES CFR 47, PART 90 Subpart K
PRIVATE LAND MOBILE REPEATER.

TEST DATE: 19th – 21st December 2005

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: 2006.03.31 13:22:48 +01'00' — J CHARTERS

APPROVED BY: Peter Green — Peter Green I am approving this document 2006.03.31 15:39:27 +01'00' — P GREEN PRODUCT MANAGER EMC

DATE: 31st March 2006

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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:	NEO60-1658SERIES
PURPOSE OF TEST:	Certification
TEST SPECIFICATION:	FCC RULES CFR 47, Part 90 Subpart K
TEST RESULT:	Compliant to Specification
EQUIPMENT UNDER TEST:	60-165801
EQUIPMENT TYPE:	Private Land Mobile Repeater
MAXIMIUM GAIN	Uplink 50.95dB Downlink 43.48dB
MAXIMUM INPUT	Uplink -61.00dBm Downlink -7.00dBm
MAXIMUM OUTPUT	Uplink -10.05dBm Downlink 36.48dBm
ANTENNA TYPE:	Not applicable
CHANNEL SPACING:	Not applicable, wideband
FREQUENCY GENERATION:	N/A
MODULATION TYPE:	F3E
POWER SOURCE(s):	+110Vac
TEST DATE(s):	19th – 21st December 2005
ORDER No(s):	34379
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: 2006.03.31 13:22:59 +01'00' J CHARTERS
APPROVED BY:	Peter Green I am approving this document 2006.03.31 15:39:43 +01'00' P GREEN PRODUCT MANAGER EMC

APPLICANT'S SUMMARY

EQUIPMENT UNDER TEST (EUT):	60-165801
EQUIPMENT TYPE:	Private Land Mobile Repeater
PURPOSE OF TEST:	Certification
TEST SPECIFICATION(s):	FCC RULES CFR 47, Part 90 Subpart K
TEST RESULT:	COMPLIANT Yes [X] No [ ]
APPLICANT'S CATEGORY:	MANUFACTURER [X] IMPORTER [ ] DISTRIBUTOR [ ] TEST HOUSE [ ] AGENT [ ]
APPLICANT'S ORDER No(s):	34379
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)	19th – 21st December 2005
TEST REPORT No:	RU1219/6751

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 Use: Private Land Mobile Repeater

3. Emission Designator: F3E

4. Temperatures: Ambient (Tnom) 20°C

5. Supply Voltages: Vnom +110Vac

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

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

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

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

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

COMPLIANCE TESTS

AMPLIFIER GAIN – CONDUCTED – PART 2.1046 – UPLINK

Ambient temperature	=	23°C	Radio Laboratory
Relative humidity	=	45%	
Supply voltage	=	+110Vac	
Channel number	=	See test results	

Signal Generator TRL176 | EUT | Cable | Spectrum Analyser TRL479

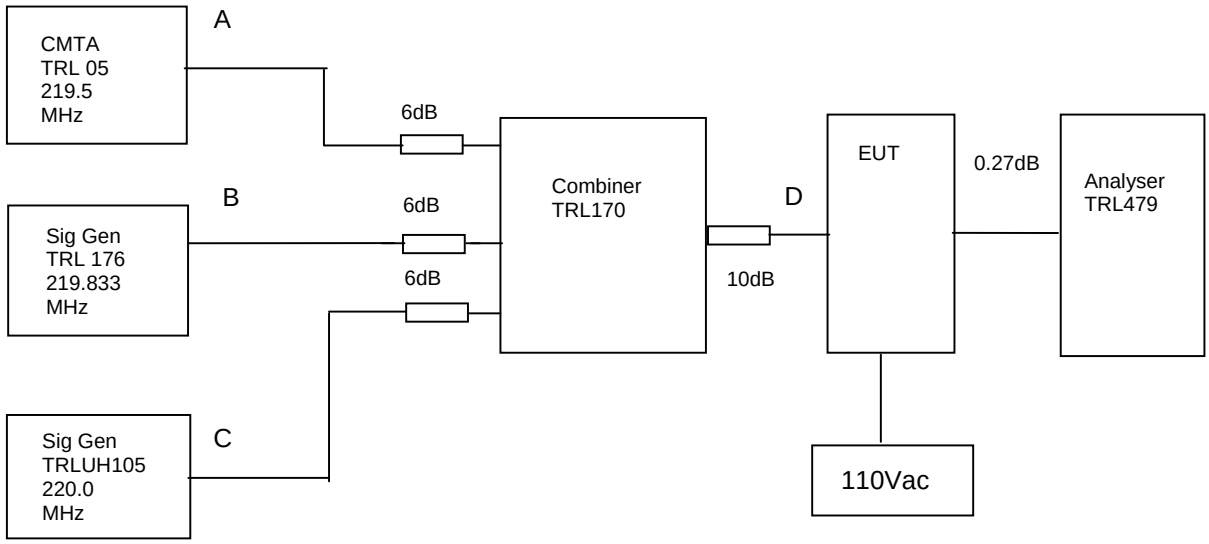
Frequency MHz	Signal Generator input level dBm	Cable & Attenuator loss dB	Level at Spectrum Analyser dBm	Gain dB	Gain after 10dB input level increase dBm
219.5 MHz	-60	0.39	-10.50	49.89	39.92
219.75 MHz	-61	0.39	-10.52	50.87	40.97
220.0 MHz	-61	0.39	-10.44	50.95	40.94

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

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
CABLE	N/A	N/A	N/A	UH253	**X**
CABLE	N/A	N/A	N/A	UH254	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

AMPLIFIER INTERMODULATION SPURIOUS EMISSIONS – CONDUCTED – PART 2.1053– UPLINK

Ambient temperature = 23°C Radio Laboratory
Relative humidity = 45%
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 –60.0dBm.The cable and attenuator loss between the EUT and the spectrum analyser was 0.27dB.

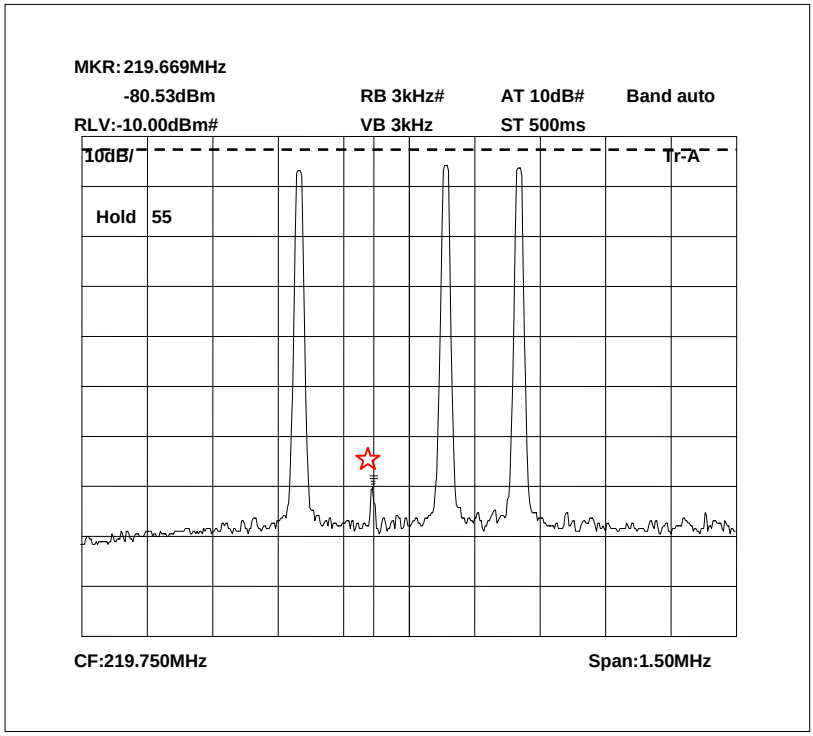
RF Input Frequency (MHz)			Highest Intermodulation Product Level (dBm)	Limit (dBm)
219.5	219.833	220.0	-80.53dBm @ 219.669 MHz	-13

Sweep data is shown on the next page:

Test equipment used for intermodulation test

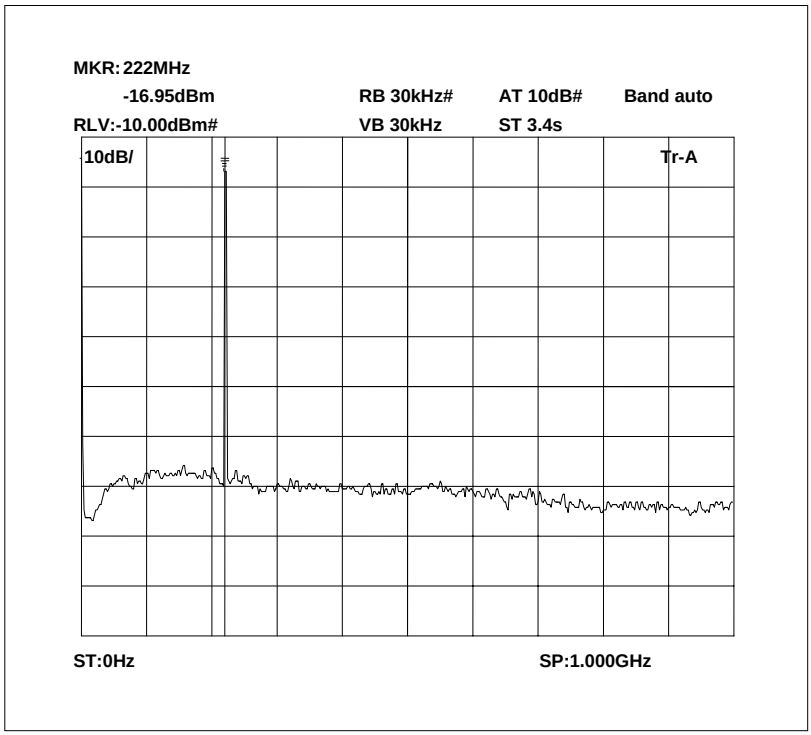
TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
SIGNAL GENERATOR	MARCONI	2023	12224/040	UH105	**X**
CMTA	ROHDE & SCHWARZ	CMTA52	894715/033	05	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**
COMBINER	ELCOM	RC-4-50	N/A	170	**X**

Intermodulation Inband



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

Intermodulation Wideband

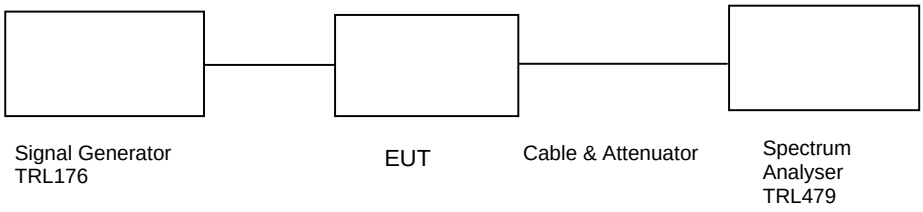


The above plot shows that there are no products outside the bands.

TRANSMITTER TESTS

AMPLIFIER MODULATED CHANNEL TEST – CONDUCTED – Part 2.1049– UPLINK

Ambient temperature	=	23°C	Radio Laboratory
Relative humidity	=	45%	
Supply voltage	=	+110Vac	
Channel number	=	See test results	



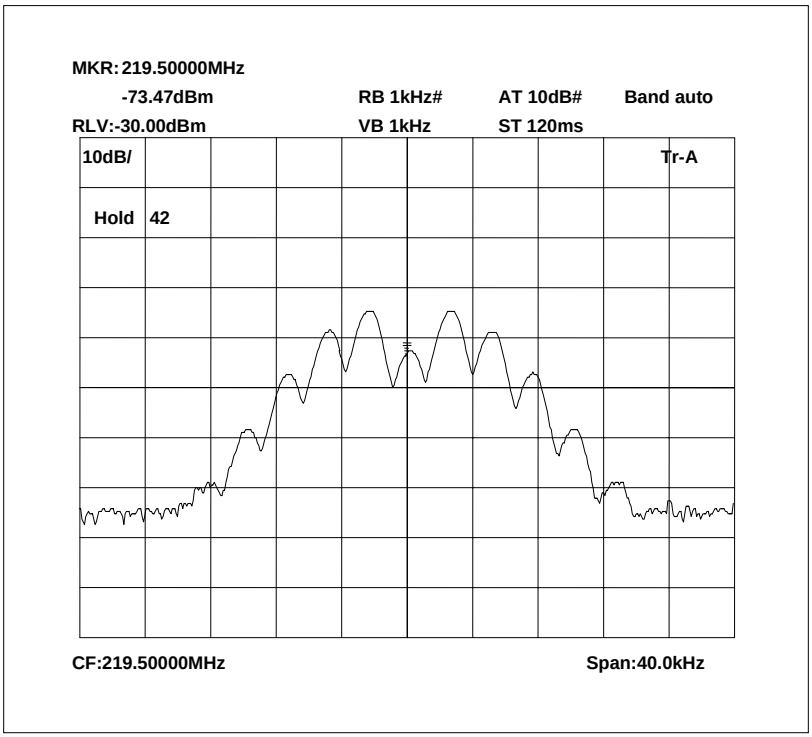
This test was performed to show that the amplifier does not alter the input signal in any way. The input signal was set to the maximum input level (-60.0dBm) and modulated with a 2500Hz tone. The plots show the signal measured at the signal generator and the signal measured at the output of the EUT.

Note: The cables and attenuators had the following losses.

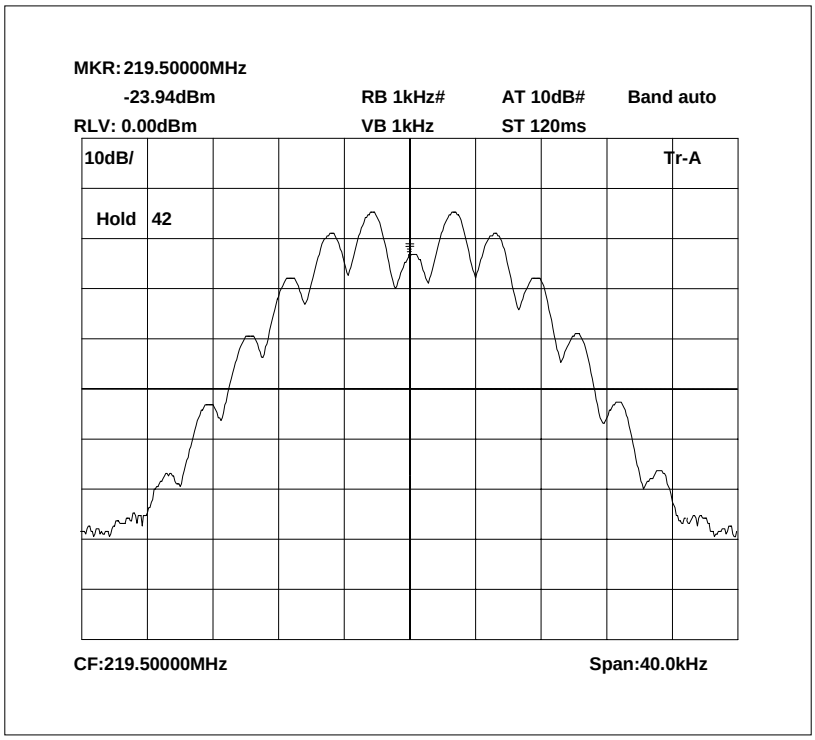
1. Cable TRLUH254 between EUT and spectrum analyser 0.27dB
2. Cable TRLUH253 between signal generator and EUT 0.12dB

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
CABLE	N/A	N/A	N/A	UH253	**X**
CABLE	N/A	N/A	N/A	UH254	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

219.5 MHz Signal Generator, deviation set to 5kHz

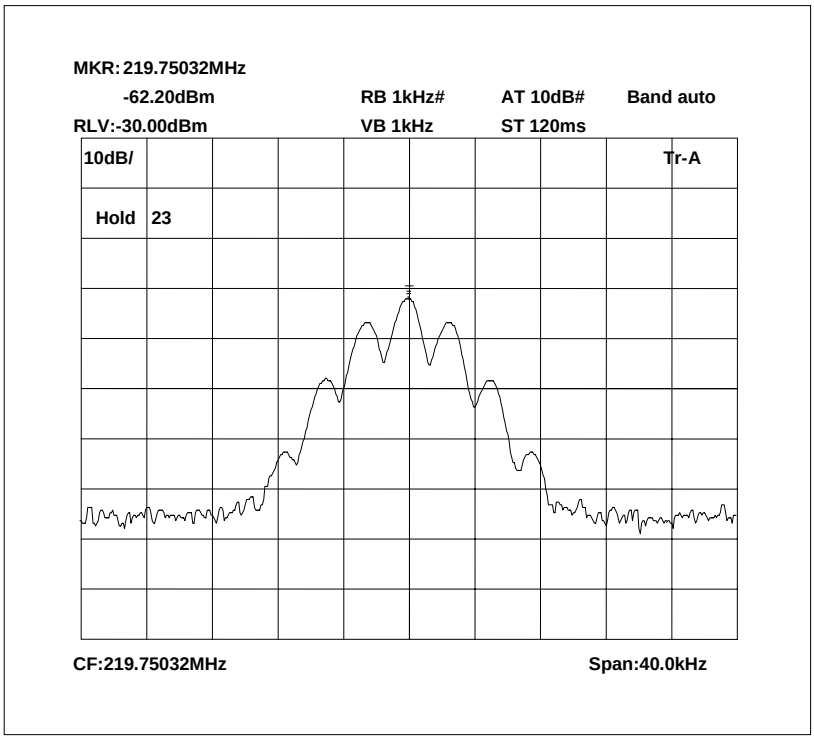


219.5 MHz Signal Generator and EUT, deviation set to 5kHz

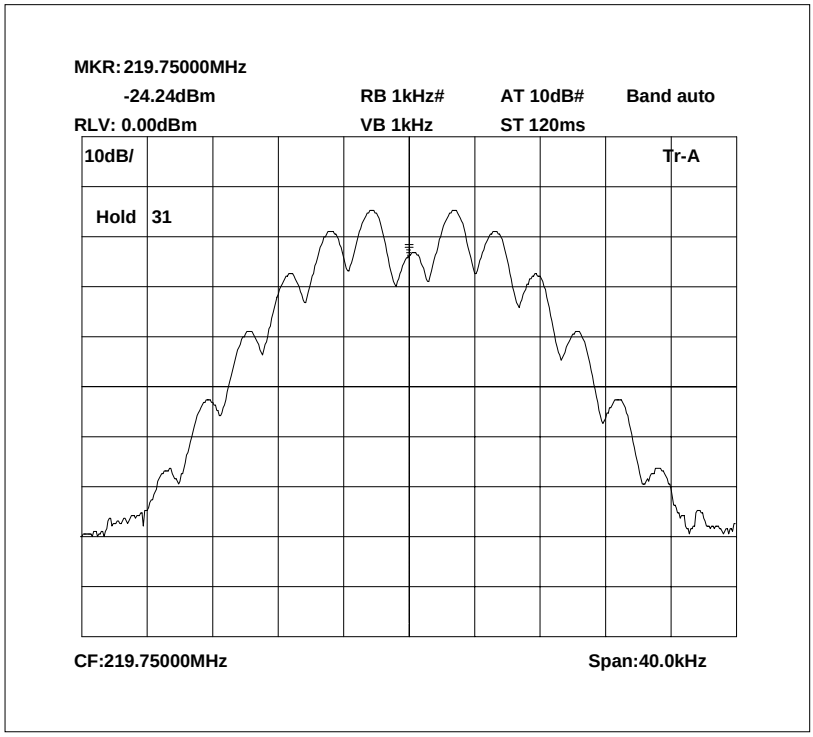


The above plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.

219.75 MHz Signal Generator, deviation set to 5kHz

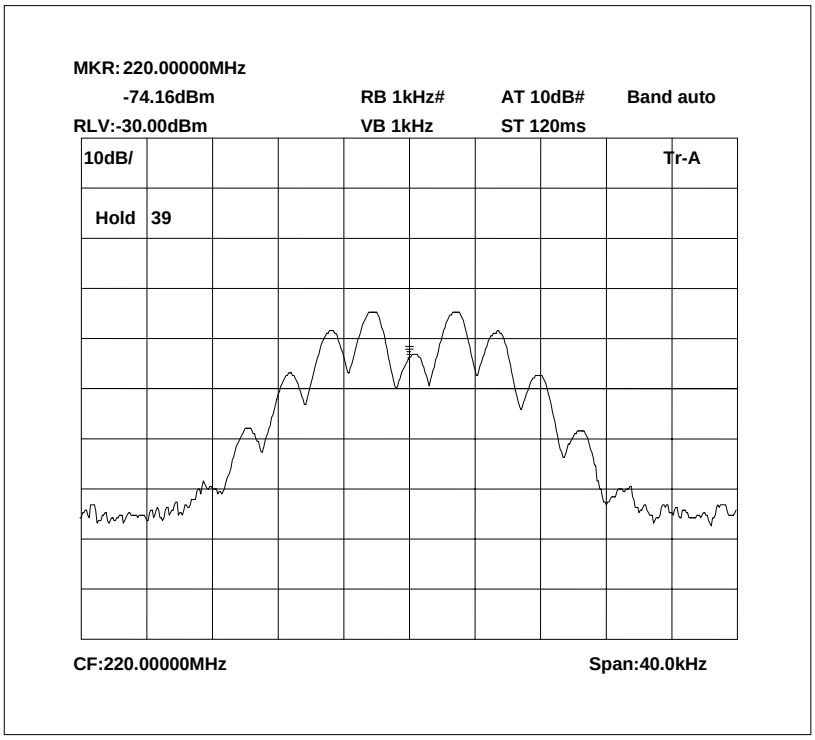


219.75 MHz Signal Generator and EUT, deviation set to 5kHz

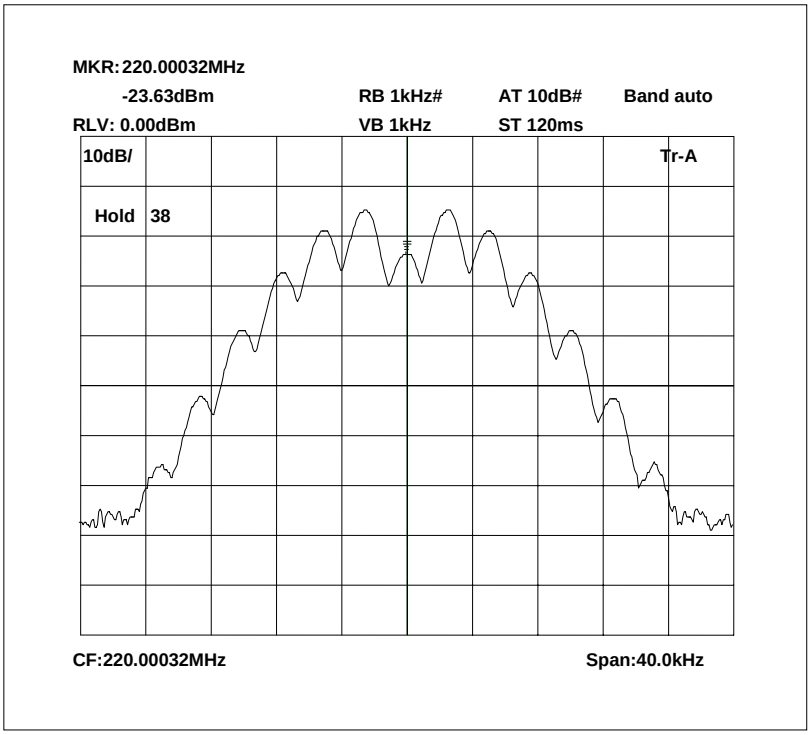


The above plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.

220.0 MHz Signal Generator, deviation set to 5kHz



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

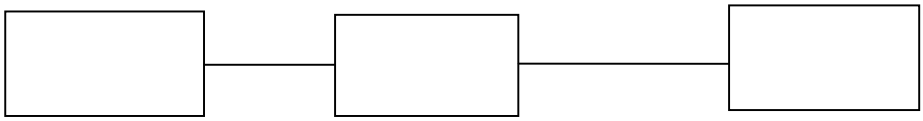


The above plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.

TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – CONDUCTED – Part 2.10– UPLINK

Ambient temperature	=	23°C	Radio Laboratory		
Relative humidity	=	45%	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

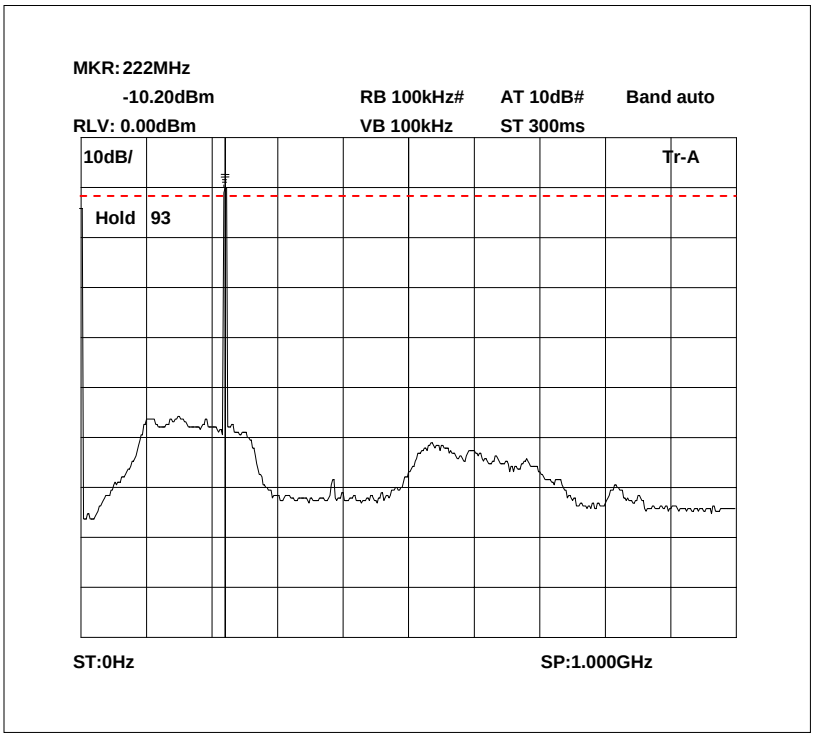
RESULTS

FREQUENCY RANGE	FREQ. (MHz)	MEASURED LEVEL (dBm)	ATTENUATOR & CABLE LOSSES (dB)	EMISSION LEVEL (dBm)	LIMIT (dBm)
0 Hz – 2.5GHz	No Significant emissions within 20 dB's of the limit				-13

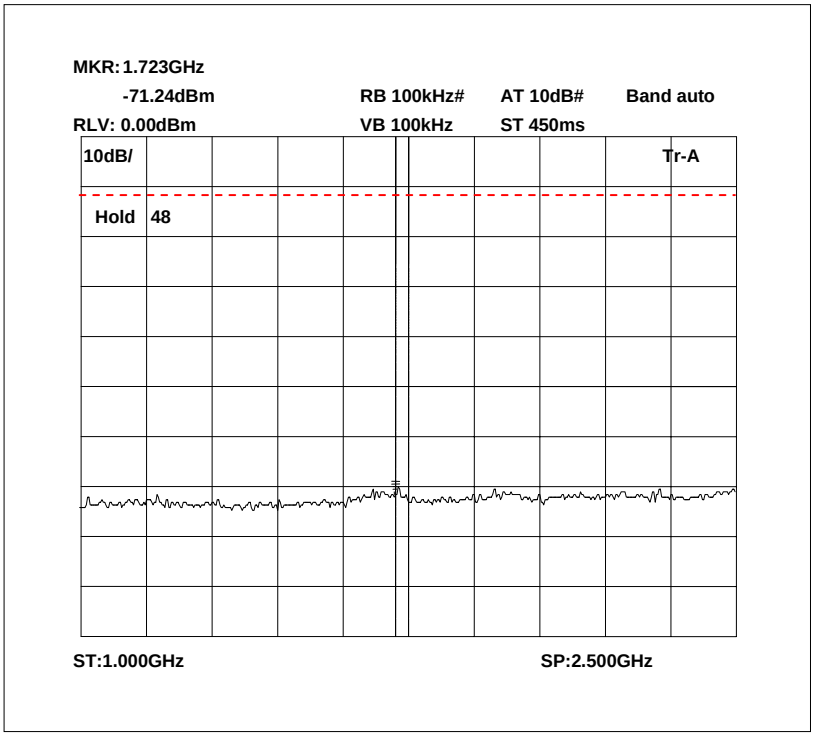
The test equipment used for the Transmitter Conducted Emissions:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
CABLE	N/A	N/A	N/A	UH254	**X**
CABLE	N/A	N/A	N/A	UH253	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

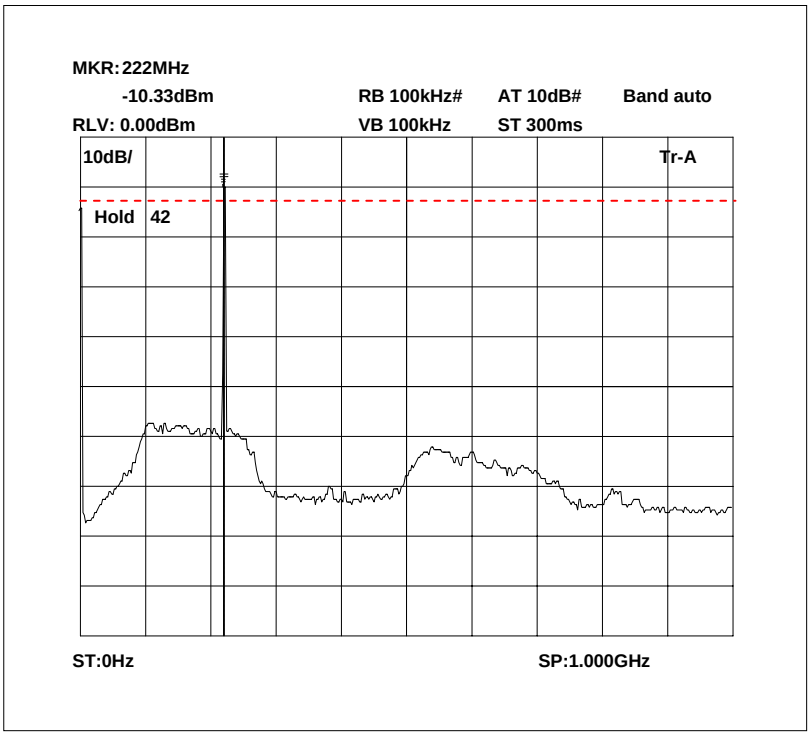
Conducted emissions 219.5 MHz 0 – 1GHz



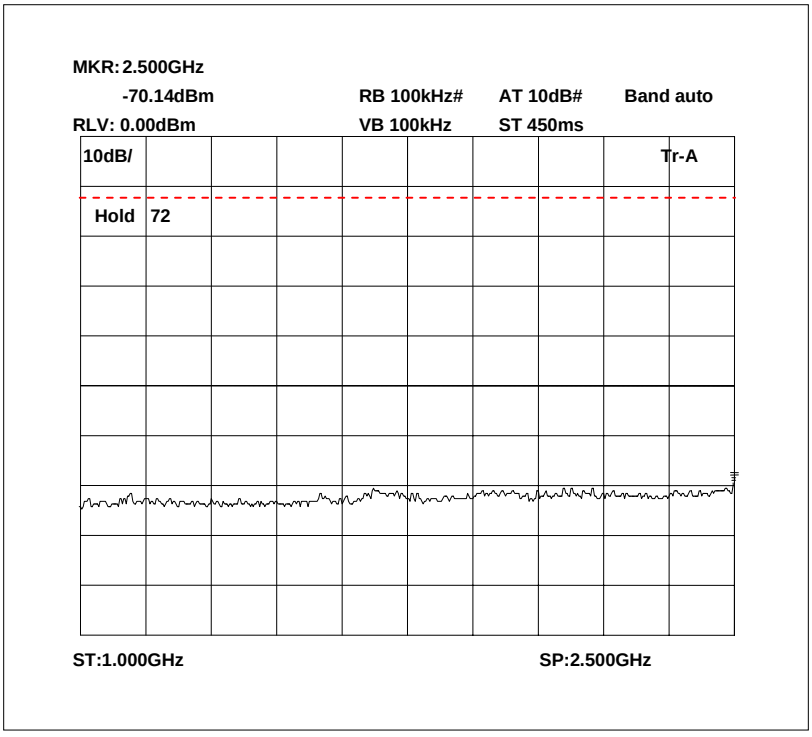
Conducted emissions 219.5 MHz 1 – 2.5GHz



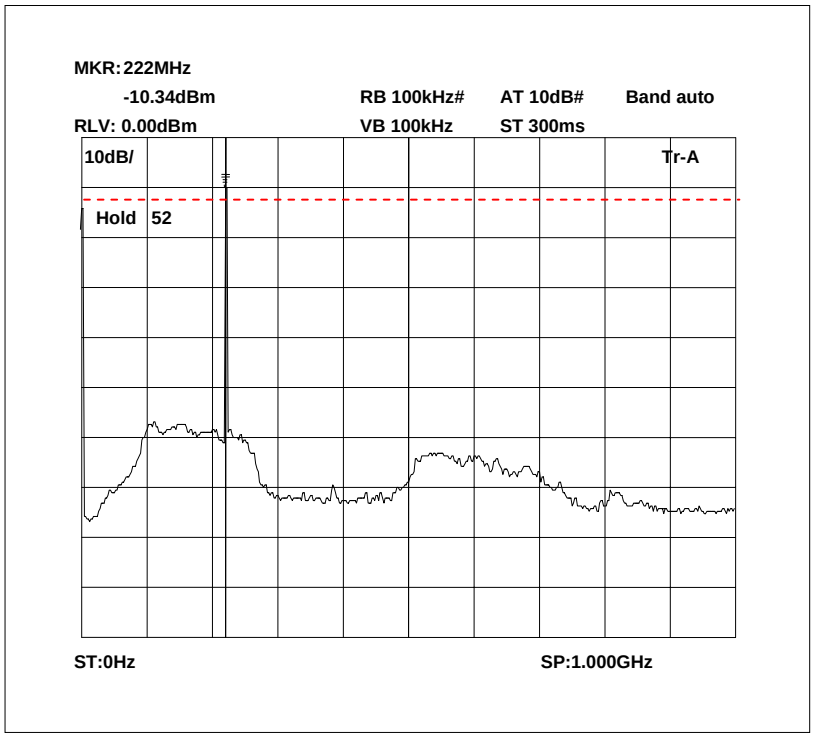
Conducted emissions 219.75 MHz 0 – 1GHz



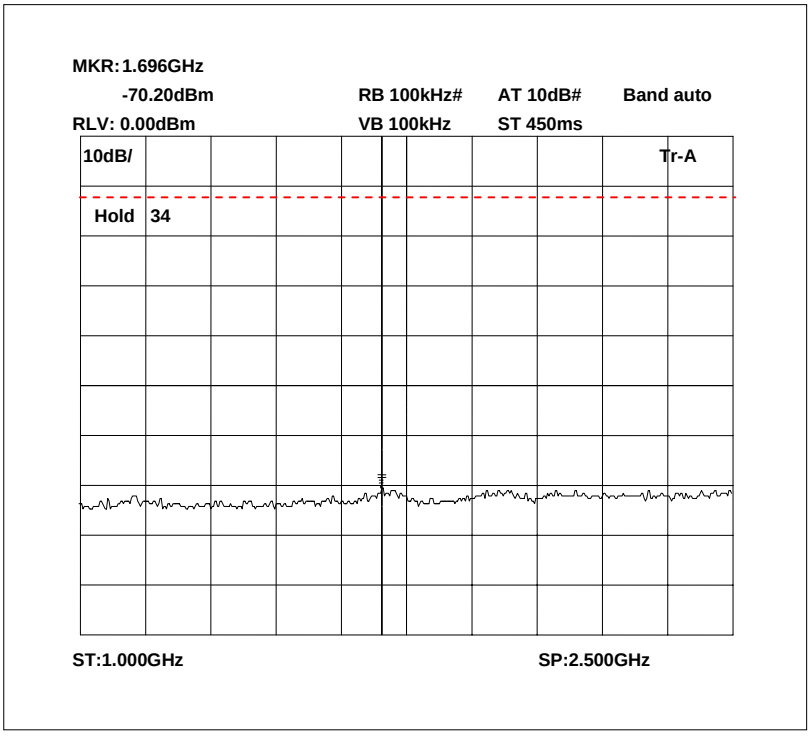
Conducted emissions 219.75 MHz 1 – 2.5GHz



Conducted emissions 220.0 MHz 0 – 1GHz



Conducted emissions 220.0 MHz 1 – 2.5GHz

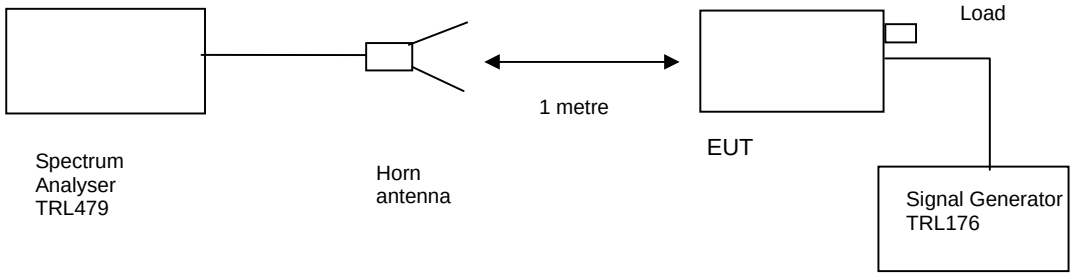


TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – RADIATED – Part 2.1053– UPLINK

Ambient temperature = 23°C
Relative humidity = 44%
Conditions = OATS
Supply voltage = +110Vac
Supply Frequency = N/A

Test Signal = F3E



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

The Spurious limit was calculated as follows:

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

At least 43 + 10 log PdB

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

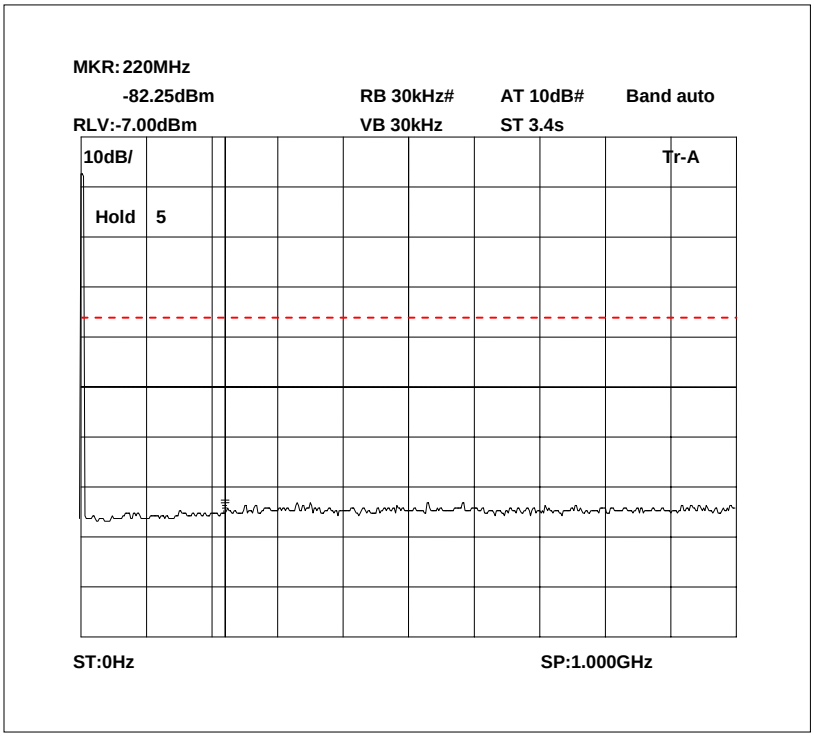
RESULTS

FREQUENCY RANGE	FREQ. (MHz)	MEAS. Rx. (dBµV)	CABLE LOSS (dB)	ANT FACTOR	FIELD STRENGTH (dBµV/m)	CALCULATED EIRP (dBm)	LIMIT (dBm)
0 – 2.5GHz	**No Significant emissions within 20dBs of the limit**						**-13**

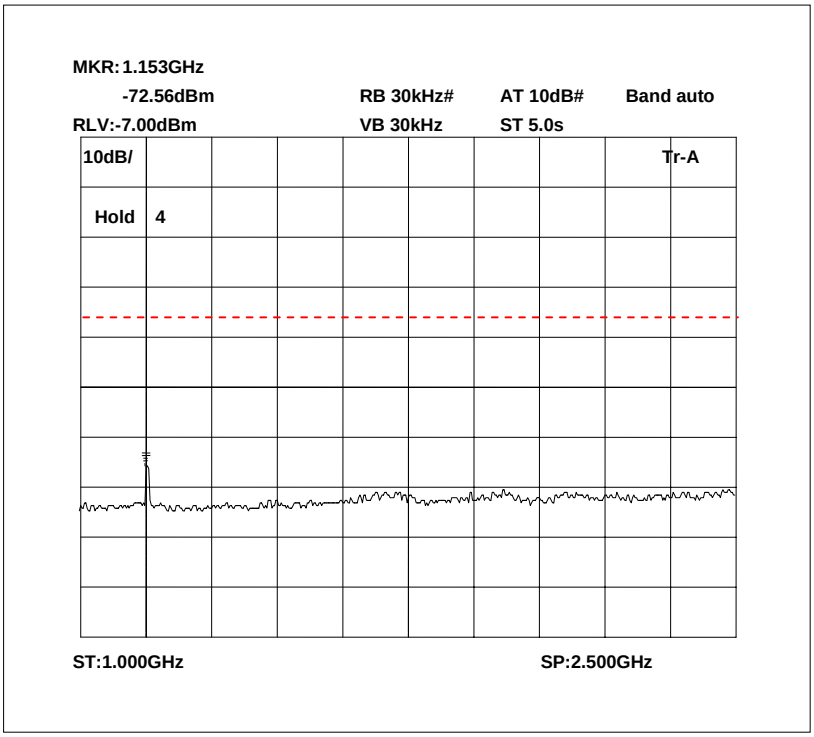
The test equipment used for the Transmitter Spurious Emissions:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
HORN	EMCO	3115	9010-3581	139	**X**
LOAD	PHILCO	608-300	1543	UH139	**X**
CABLE	ROSENBERGER	MICRO COAX	N/A	280	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

Radiated emissions 219.5 MHz 0 – 1GHz

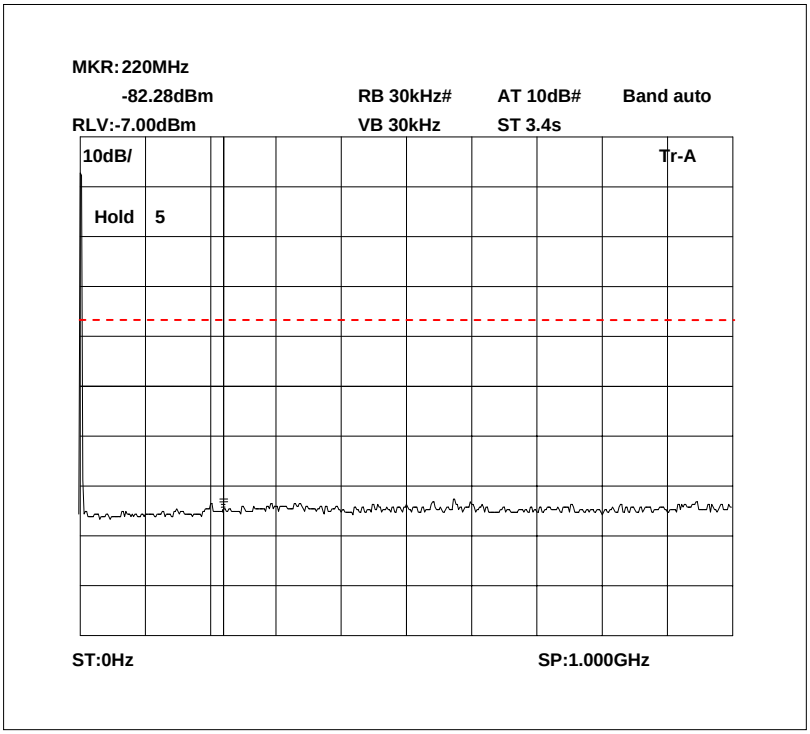


Radiated emissions 219.5 MHz 1 – 2.5GHz

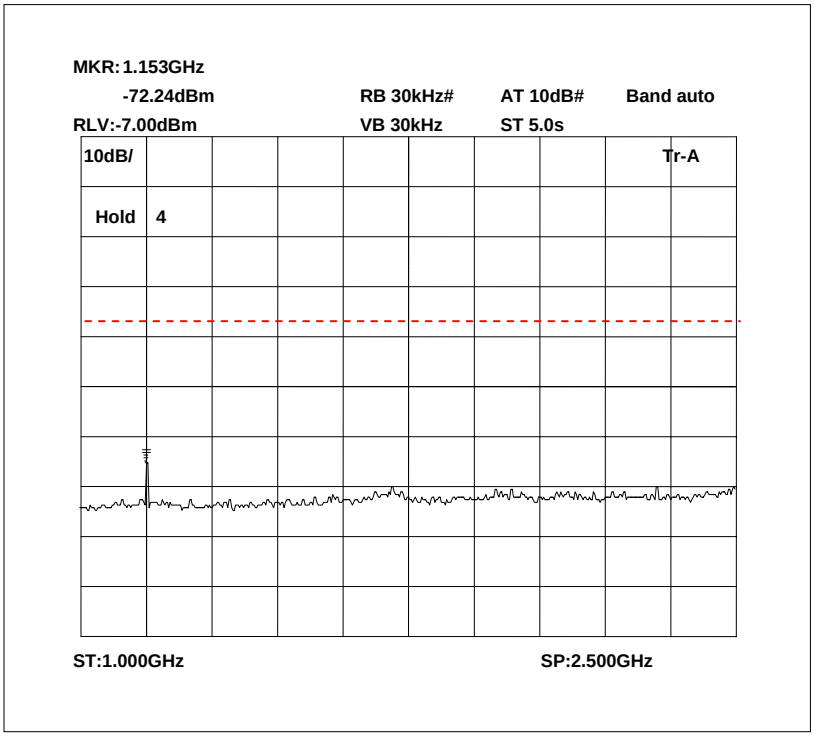


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions 219.75 MHz 0 – 1GHz

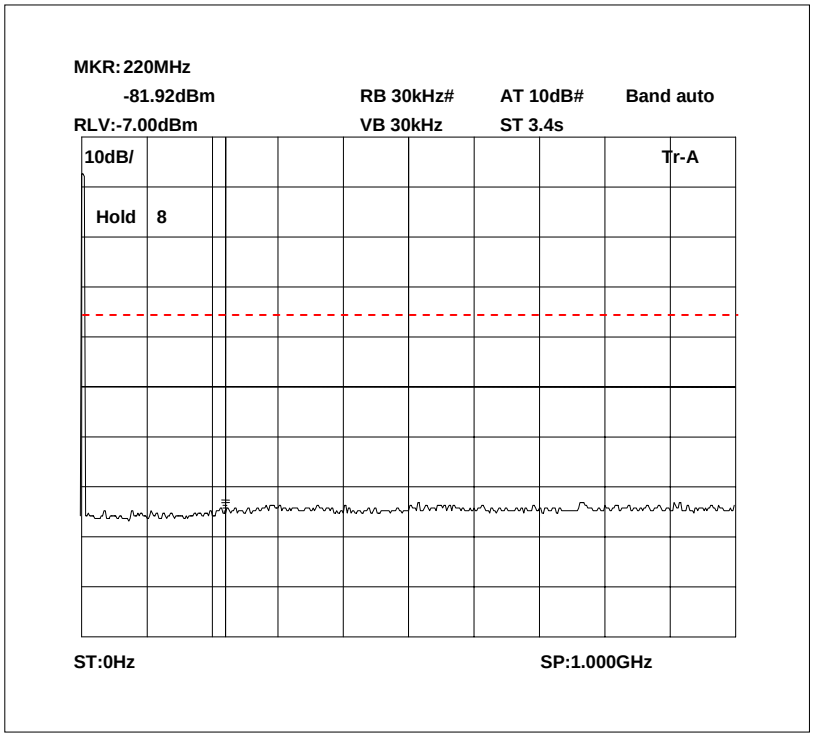


Radiated emissions 219.75 MHz 1 – 2.5GHz

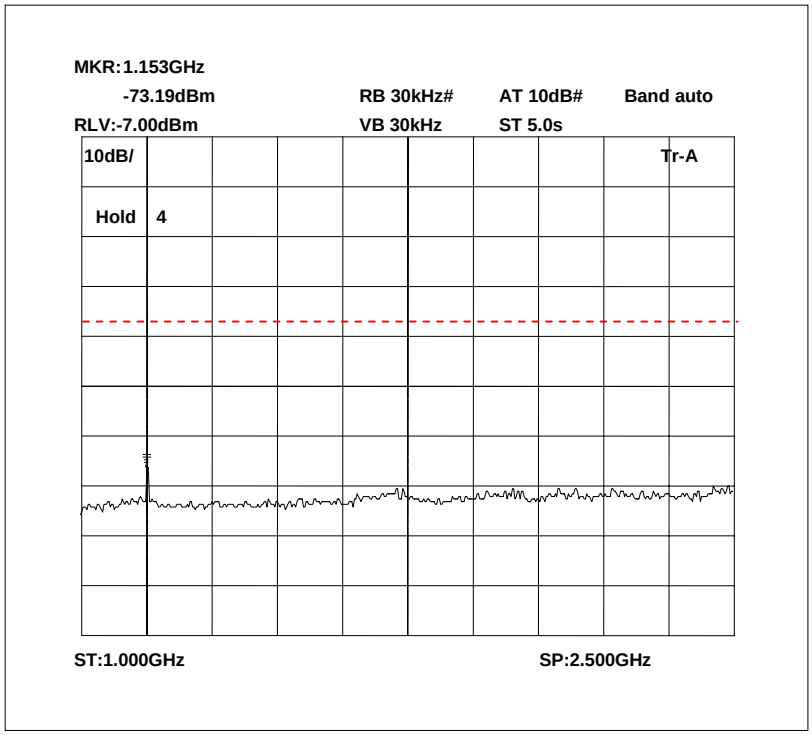


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions 220.0 MHz 0 – 1GHz

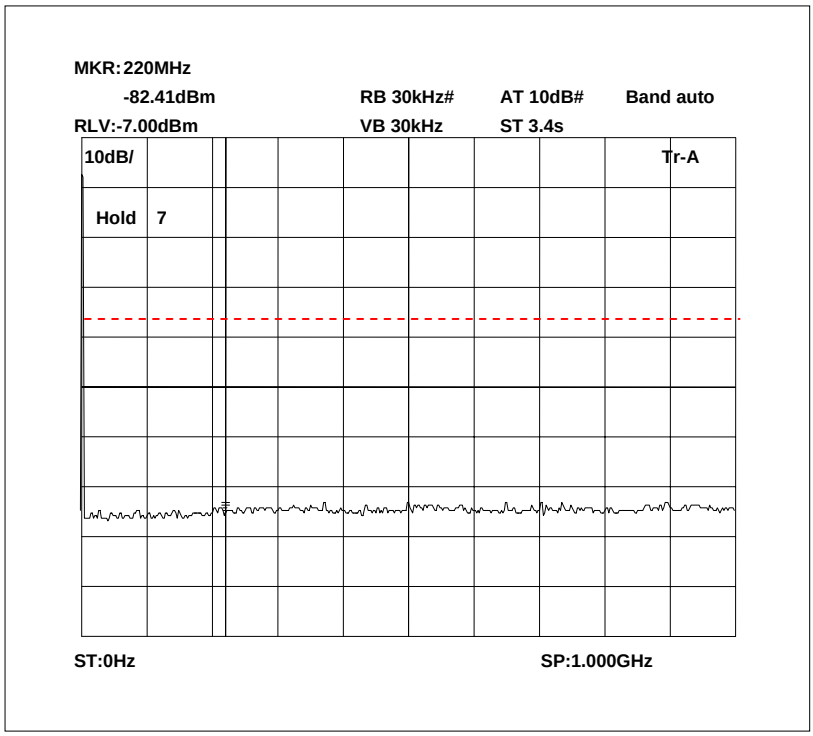


Radiated emissions 220.0 MHz 1 – 2.5GHz

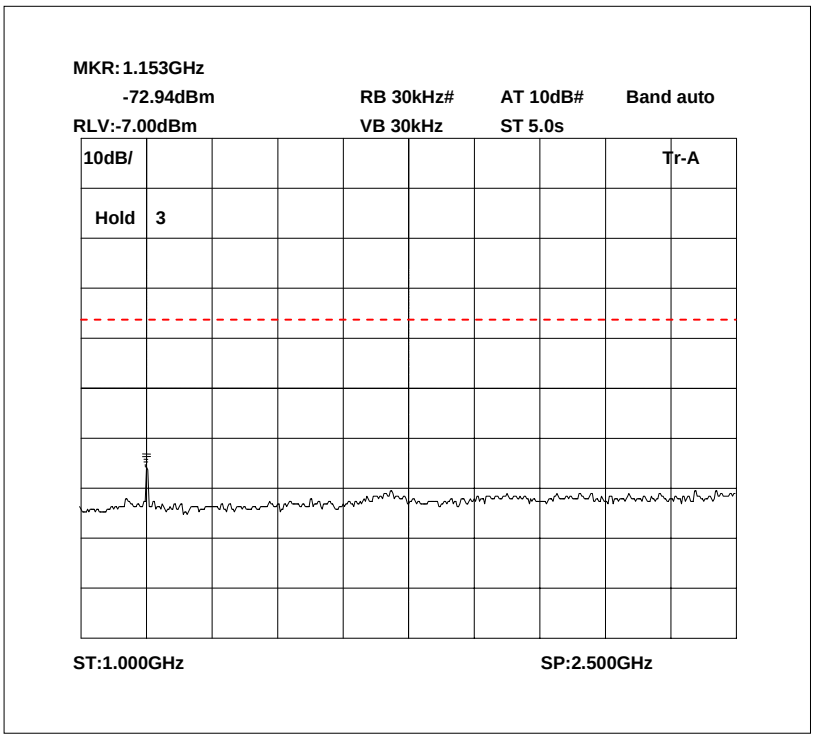


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions no input signal 0 – 1GHz



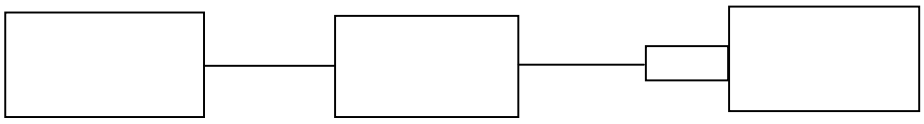
Radiated emissions no input signal 1 – 2.5GHz



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

AMPLIFIER GAIN – CONDUCTED – PART 2.1046 – DOWNLINK

Ambient temperature	=	20°C	Radio Laboratory
Relative humidity	=	53%	
Supply voltage	=	+110Vac	
Channel number	=	See test results	



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

Frequency MHz	Signal Generator input level dBm	Cable & Attenuator loss dB	Level at Spectrum Analyser dBm	Gain dB	Gain after 10dB input level increase dBm
217.5 MHz	-7.0	46.41	-9.93	43.48	34.25
217.75 MHz	-7.0	46.41	-10.33	43.08	33.67
218.0 MHz	-9.0	46.41	-12.92	42.49	33.32

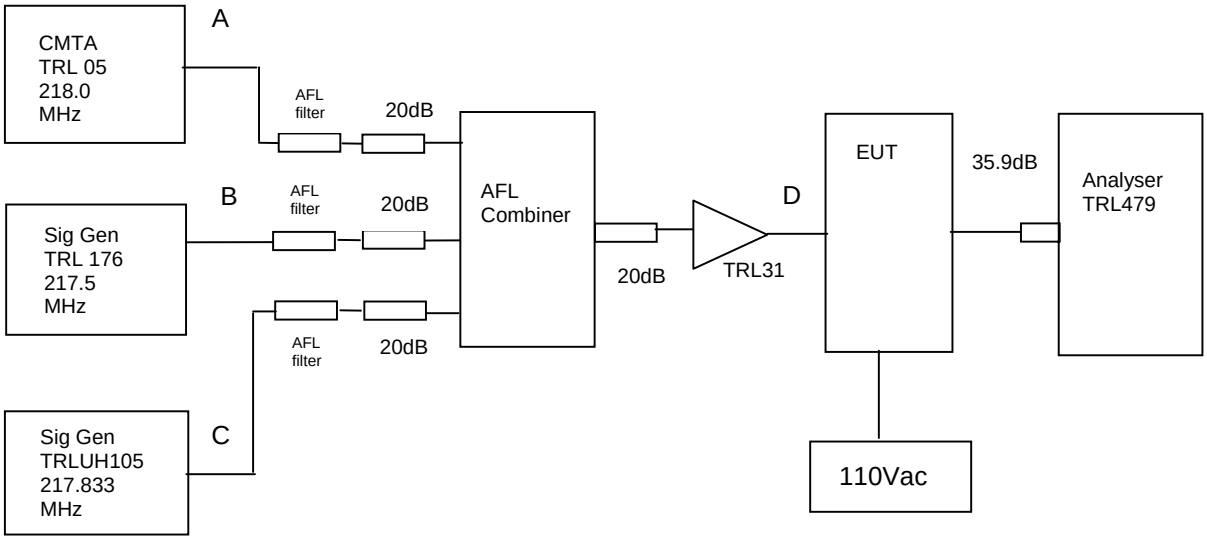
Notes:
1. The level of the signal generator takes into consideration the loss from the cable.
2. The signal generator input was increased by 10dBs and the level of the output signal remeasured.

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
ATTENUATOR	BIRD	8308-100	N/A	112	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	220	**X**
ATTENUATOR	BIRD	8304-100-N	N/A	222	**X**
CABLE	N/A	N/A	N/A	UH253	**X**
CABLE	N/A	N/A	N/A	UH254	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

AMPLIFIER INTERMODULATION SPURIOUS EMISSIONS – CONDUCTED – PART 2.1053– DOWNLINK

Ambient temperature = 23°C
Relative humidity = 48%
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 10dB above the maximum input of -7dBm.The cable and attenuators loss between the EUT and the spectrum analyser was 35.9 dB.

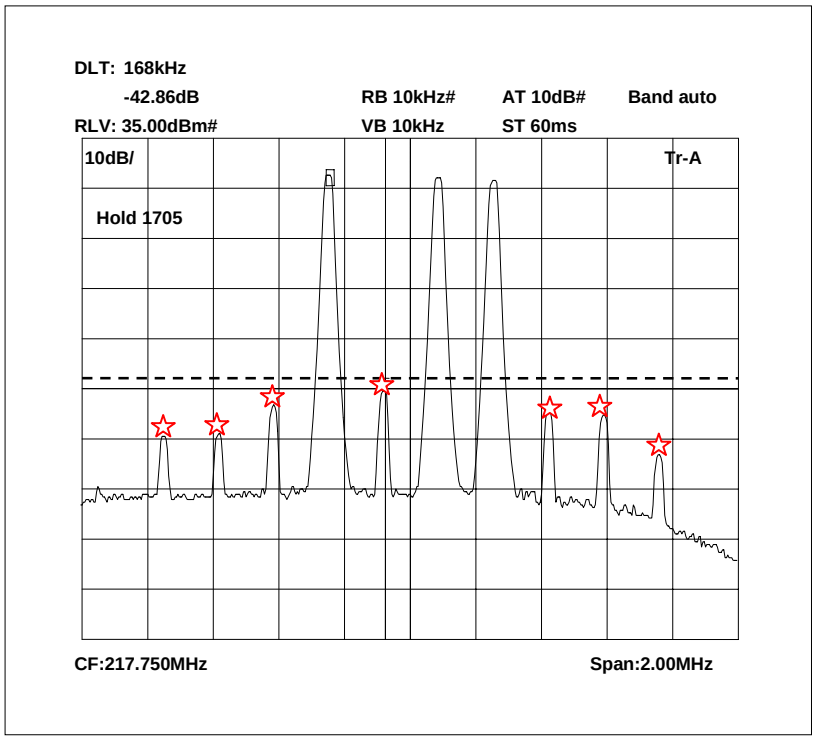
RF Input Frequency (MHz)			Highest Intermodulation Product Level (dBm)	Limit (dBm)
217.5	217.833	218.0	-14.52dBm @ 217.668MHz	-13

Sweep data is shown on the next page:

Test equipment used for intermodulation test

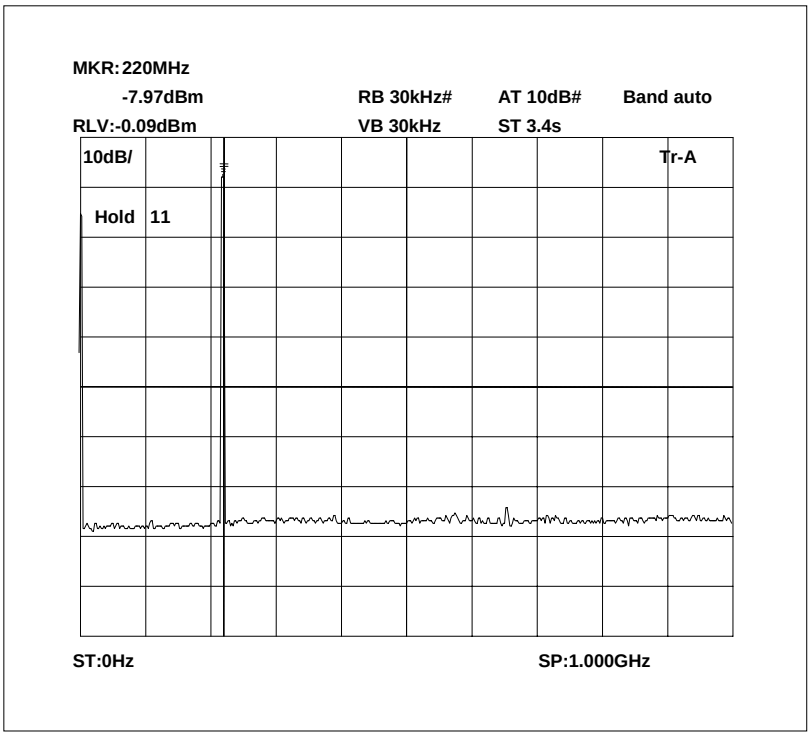
TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
SIGNAL GENERATOR	MARCONI	2023	12224/040	UH105	**X**
CMTA	ROHDE & SCHWARZ	CMTA52	894715/033	05	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**
COMBINER	AFL	N/A	N/A	N/A	**X**
AMPLIFIER	ENI	603L	1240	31	**X**
FILTER	AFL	N/A	N/A	N/A	**X**

Intermodulation Inband



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

Intermodulation Wideband

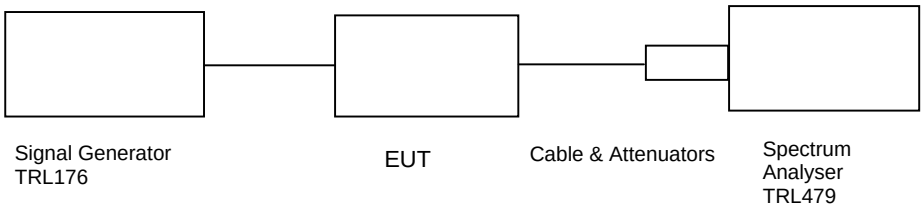


The above plot shows that there are no products outside the bands.

TRANSMITTER TESTS

AMPLIFIER MODULATED CHANNEL TEST – CONDUCTED – Part 2.1049– DOWNLINK

Ambient temperature	=	21°C	Radio Laboratory
Relative humidity	=	51%	
Supply voltage	=	+110Vac	
Channel number	=	See test results	



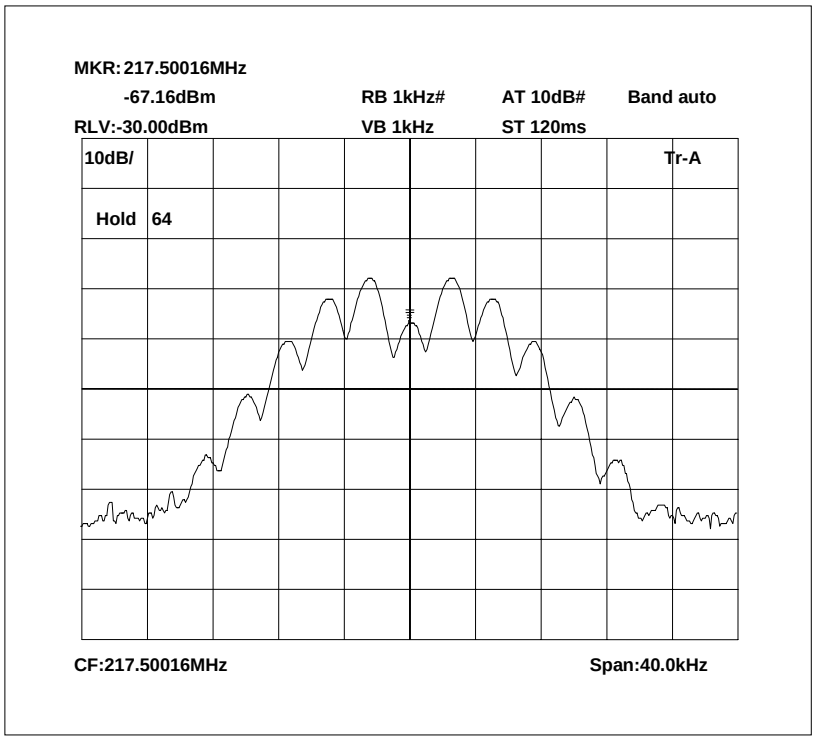
This test was performed to show that the amplifier does not alter the input signal in any way. The input signal was set to the maximum input level (-7.0dBm) and modulated with a 2500Hz tone. The plots show the signal measured at the signal generator and the signal measured at the output of the EUT.

Note: The cables and attenuators had the following losses.

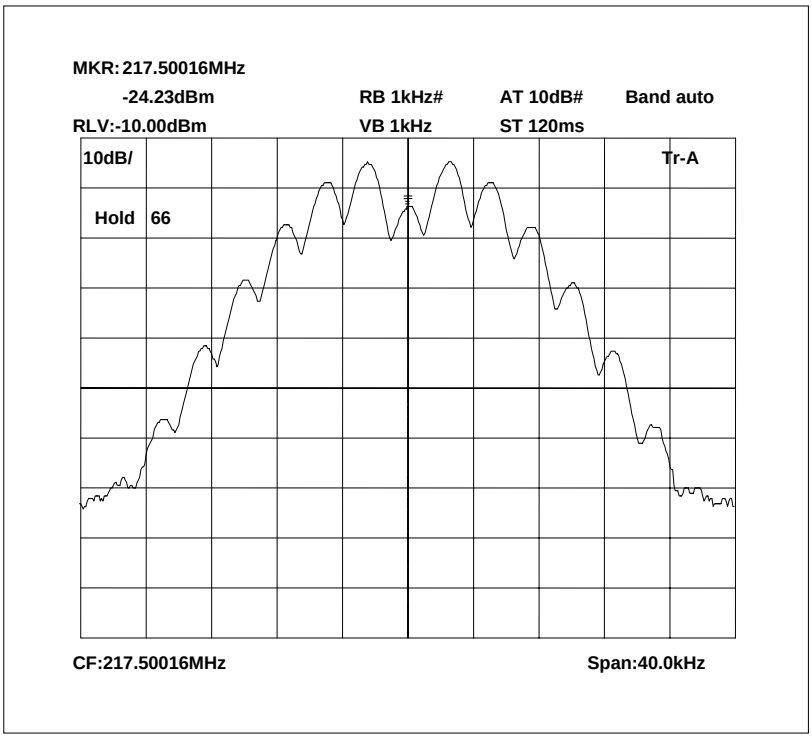
1. Cable between EUT and spectrum analyser = 46.09dB
2. Cable between signal generator and EUT = 0.32dB

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
ATTENUATOR	BIRD	8308-100	N/A	112	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	220	**X**
ATTENUATOR	BIRD	8304-100-N	N/A	222	**X**
CABLE	N/A	N/A	N/A	UH253	**X**
CABLE	N/A	N/A	N/A	UH254	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

217.5 MHz Signal Generator, deviation set to 5kHz

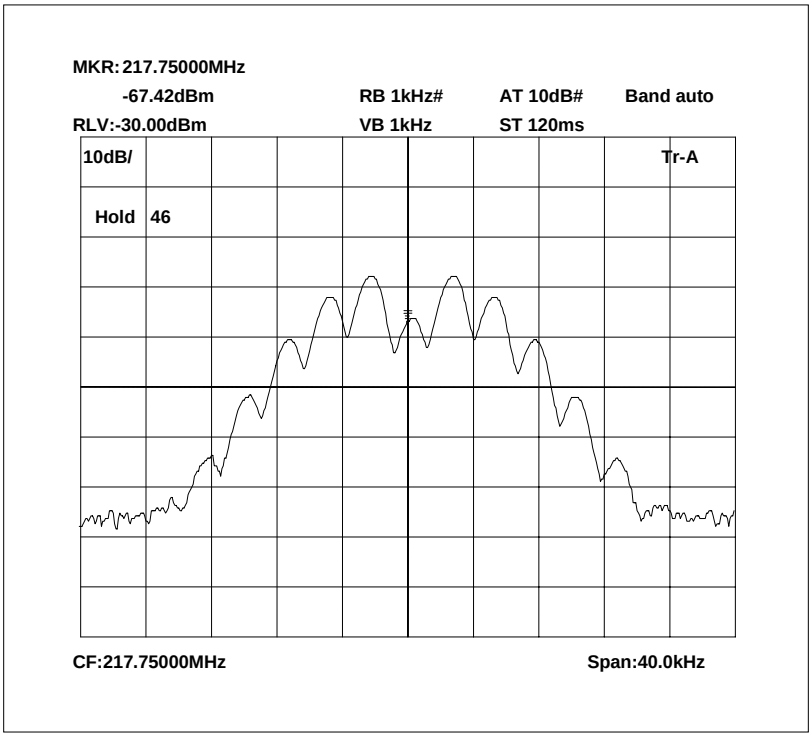


217.5 MHz Signal Generator and EUT, deviation set to 5kHz

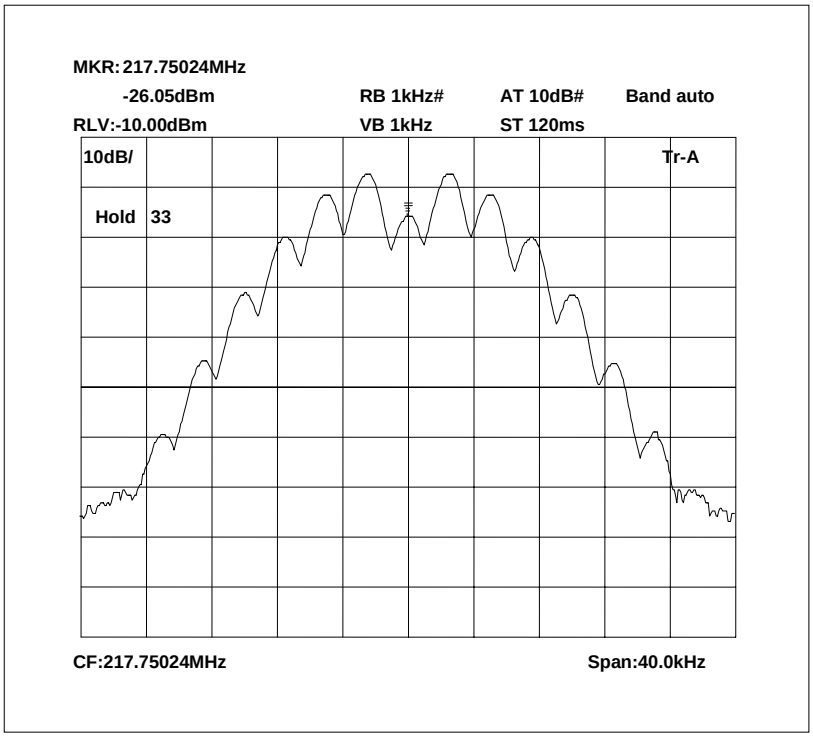


The above plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.

217.75 MHz Signal Generator, deviation set to 5kHz

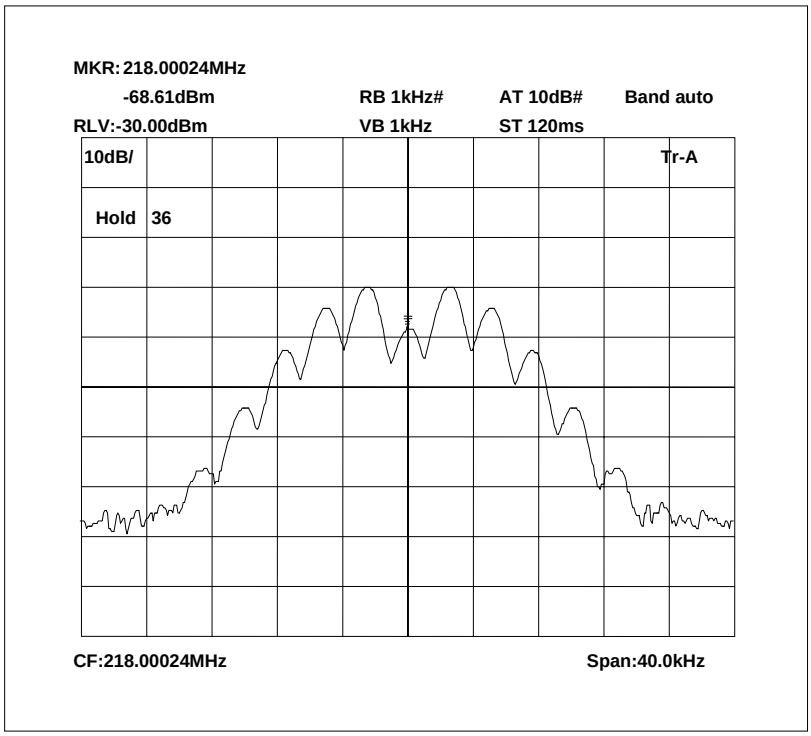


217.75 MHz Signal Generator and EUT, deviation set to 5kHz

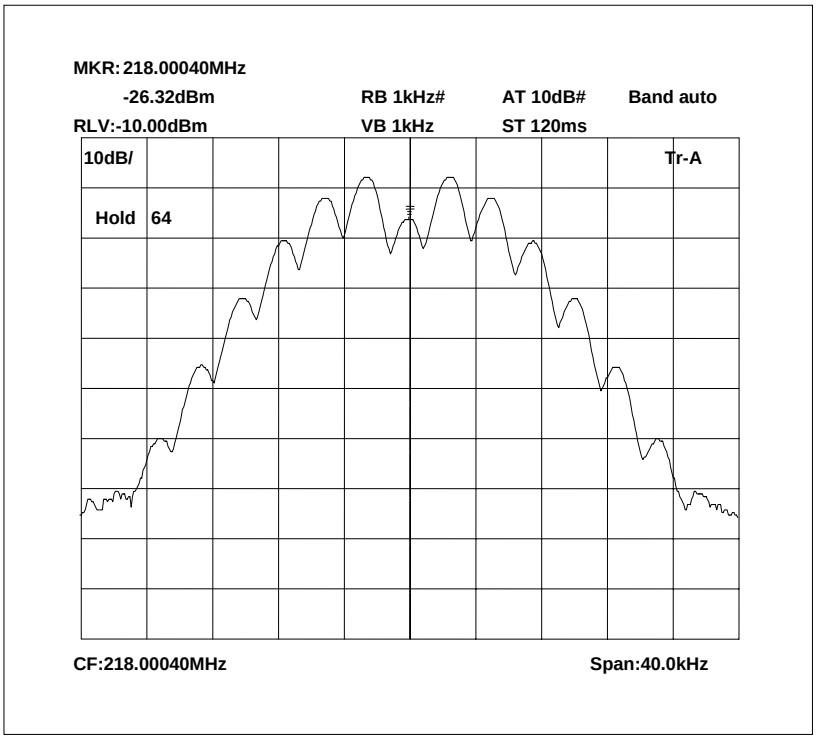


The above plots depicting the output waveshape show no measurable distortion visible when compared to the input signal.

218.0 MHz Signal Generator, deviation set to 5kHz



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



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

TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – CONDUCTED – Part 2.10 – DOWNLINK

Ambient temperature	=	20°C	Radio Laboratory		
Relative humidity	=	53%	Test Signal	=	F3E
Supply voltage	=	+110Vac			

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

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

The Spurious limit was calculated as follows:

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

At least 43 + 10 log PdB

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

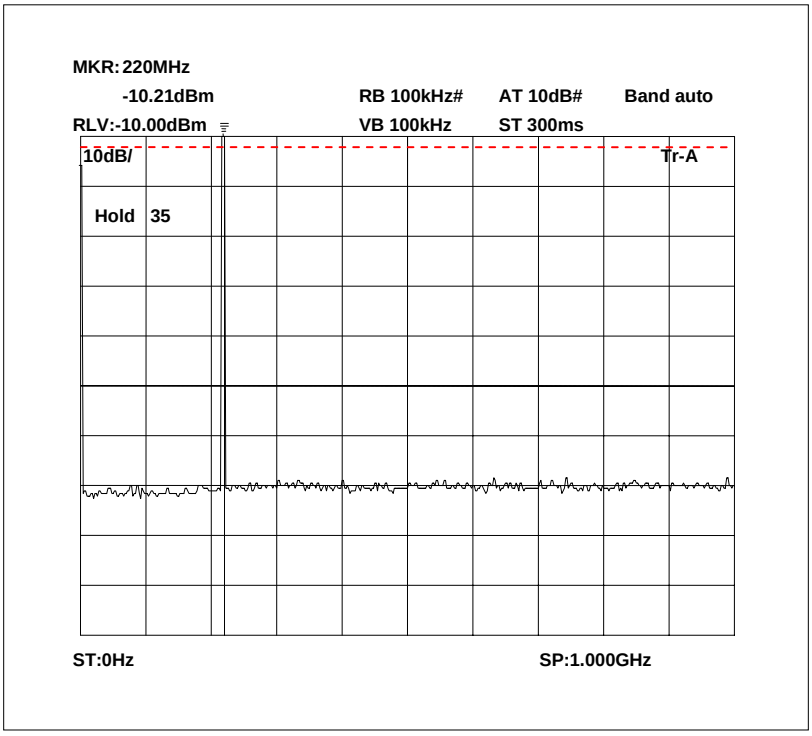
RESULTS

FREQUENCY RANGE	FREQ. (MHz)	MEASURED LEVEL (dBm)	ATTENUATOR & CABLE LOSSES (dB)	EMISSION LEVEL (dBm)	LIMIT (dBm)
0 Hz – 2.5	No Significant emissions within 20 dB's of the limit				-13

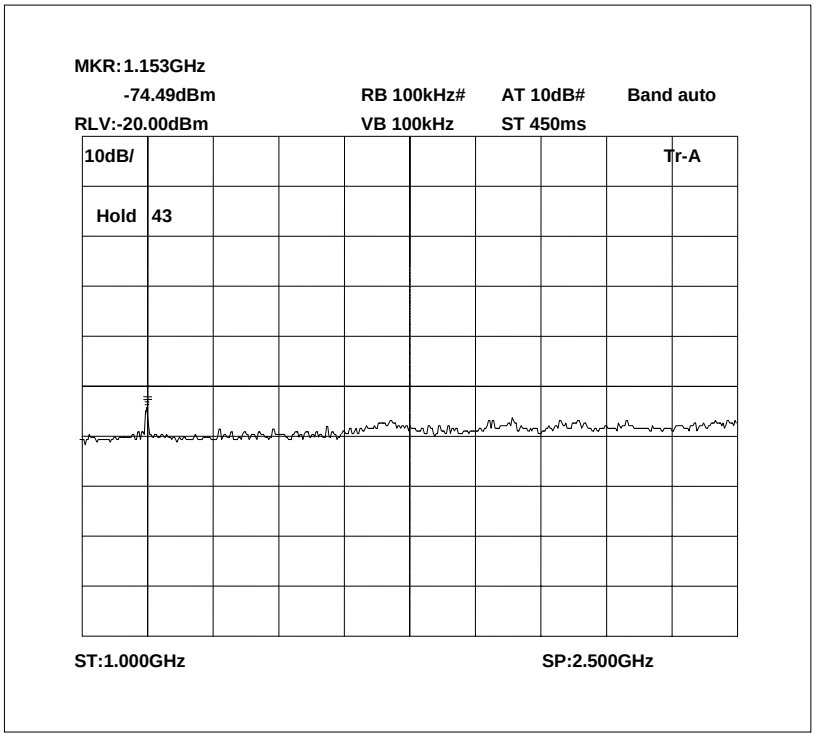
The test equipment used for the Transmitter Conducted Emissions:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
ATTENUATOR	BIRD	8308-100	N/A	112	**X**
ATTENUATOR	BIRD	8304-300-N	N/A	220	**X**
ATTENUATOR	BIRD	8304-100-N	N/A	222	**X**
CABLE	N/A	N/A	N/A	UH253	**X**
CABLE	N/A	N/A	N/A	UH254	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

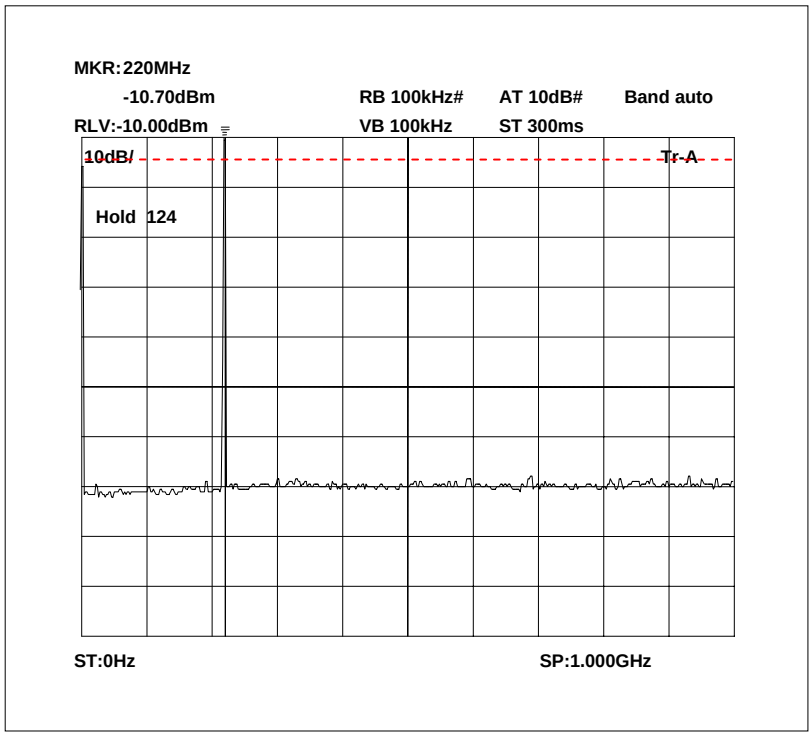
Conducted emissions 217.5 MHz 0 – 1GHz



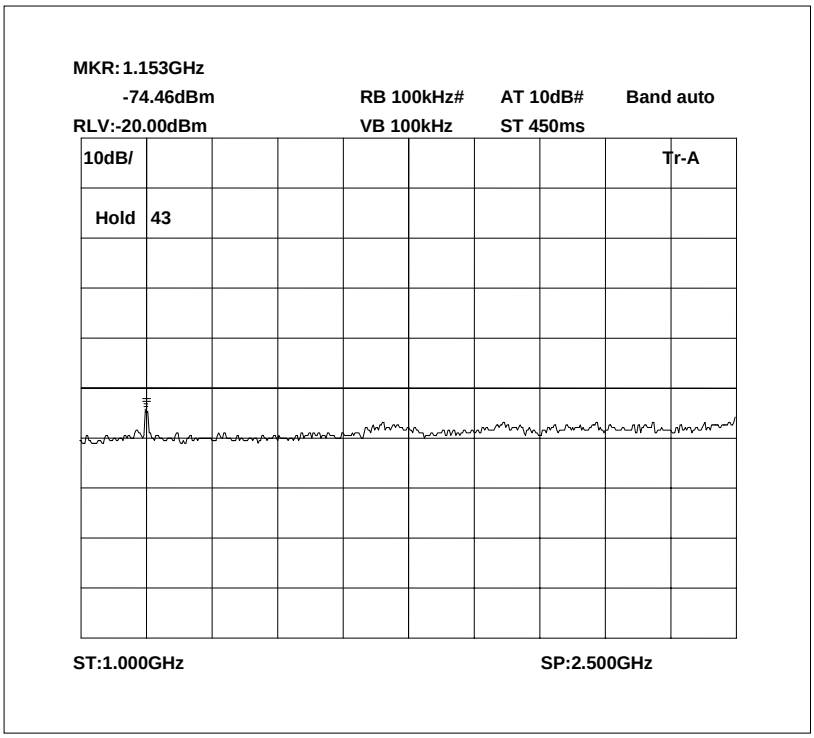
Conducted emissions 217.5 MHz 1 – 2.5GHz



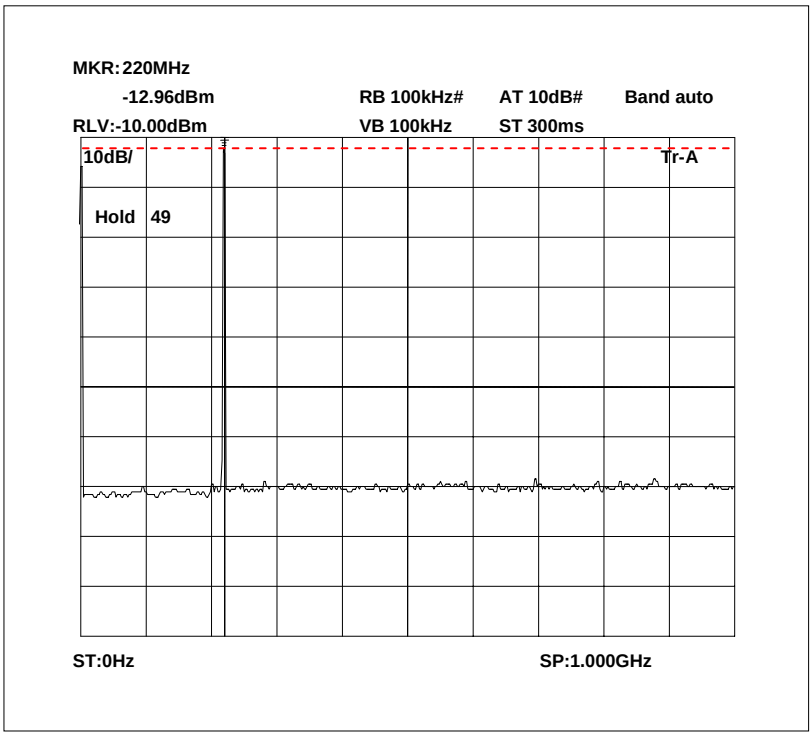
Conducted emissions 217.75 MHz 0 – 1GHz



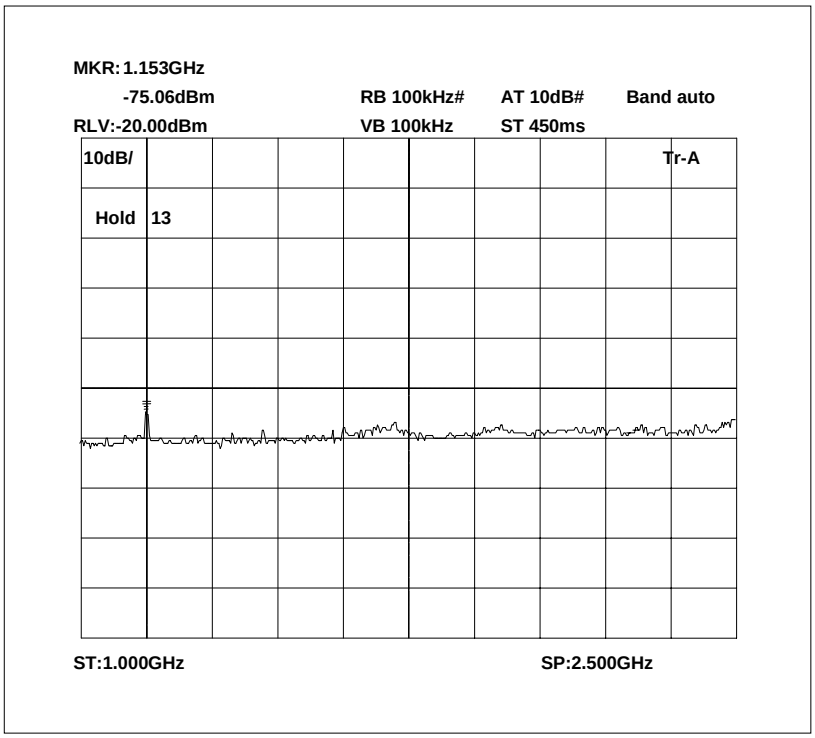
Conducted emissions 217.75 MHz 1 – 2.5GHz



Conducted emissions 218.0 MHz 0 – 1GHz



Conducted emissions 218.0 MHz 1 – 2.5GHz

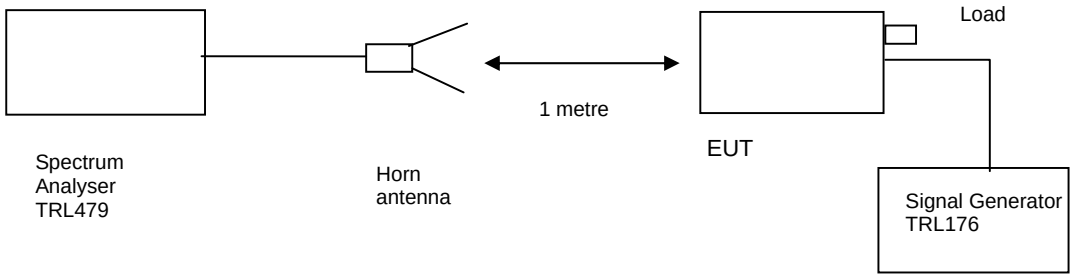


TRANSMITTER TESTS

AMPLIFIER SPURIOUS EMISSIONS – RADIATED – Part 2.1053– DOWNLINK

Ambient temperature = 23°C
Relative humidity = 44%
Conditions = OATS
Supply voltage = +110Vac
Supply Frequency = N/A

Test Signal = F3E



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

The Spurious limit was calculated as follows:

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

At least 43 + 10 log PdB

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

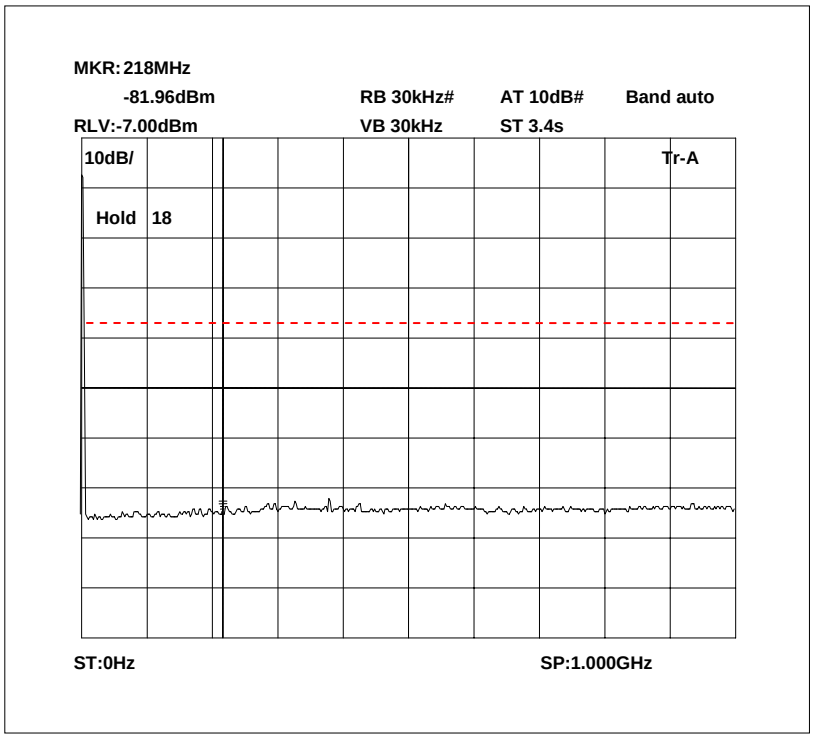
RESULTS

FREQUENCY RANGE	FREQ. (MHz)	MEAS. Rx. (dBµV)	CABLE LOSS (dB)	ANT FACTOR	FIELD STRENGTH (dBµV/m)	CALCULATED EIRP (dBm)	LIMIT (dBm)
0 Hz - 9.4GHz	No Significant emissions within 20 dB's of the limit						-13

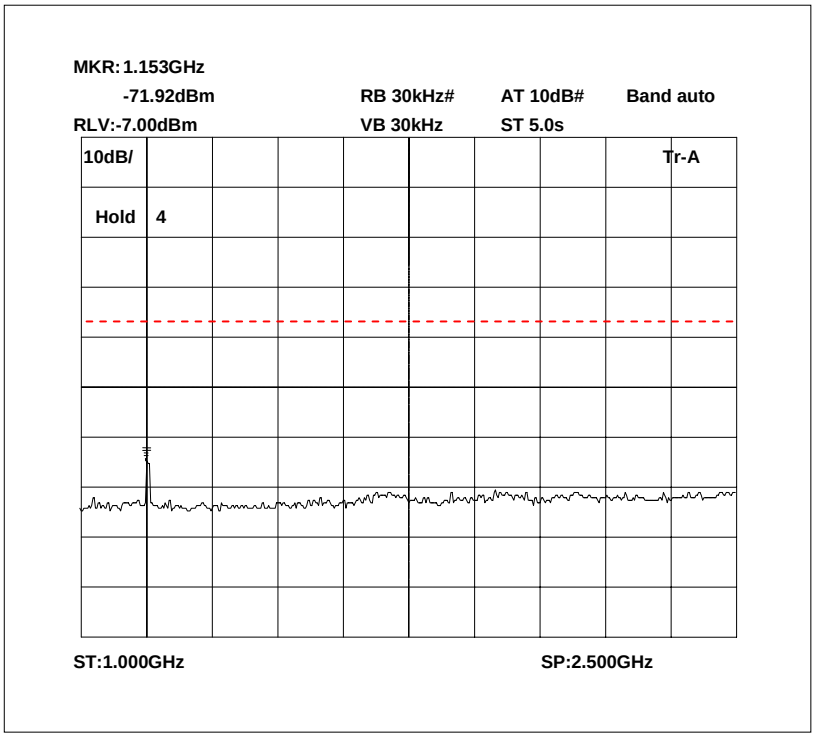
The test equipment used for the Transmitter Spurious Emissions:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	**X**
HORN	EMCO	3115	9010-3581	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	280	**X**
SIGNAL GENERATOR	MARCONI	2042	119388/080	176	**X**

Radiated emissions 217.5 MHz 0 – 1GHz

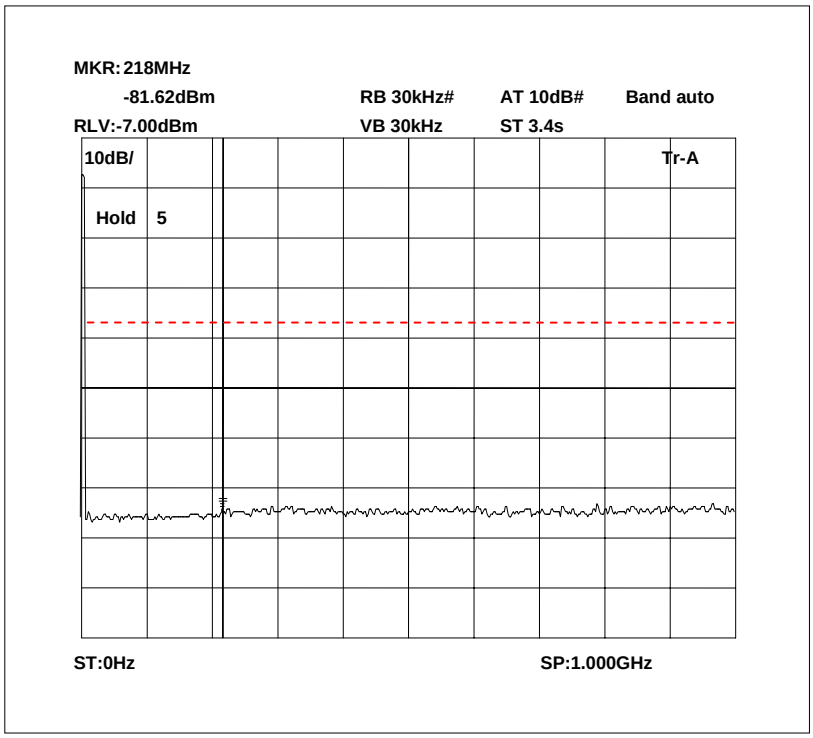


Radiated emissions 217.5 MHz 1 – 2.5GHz

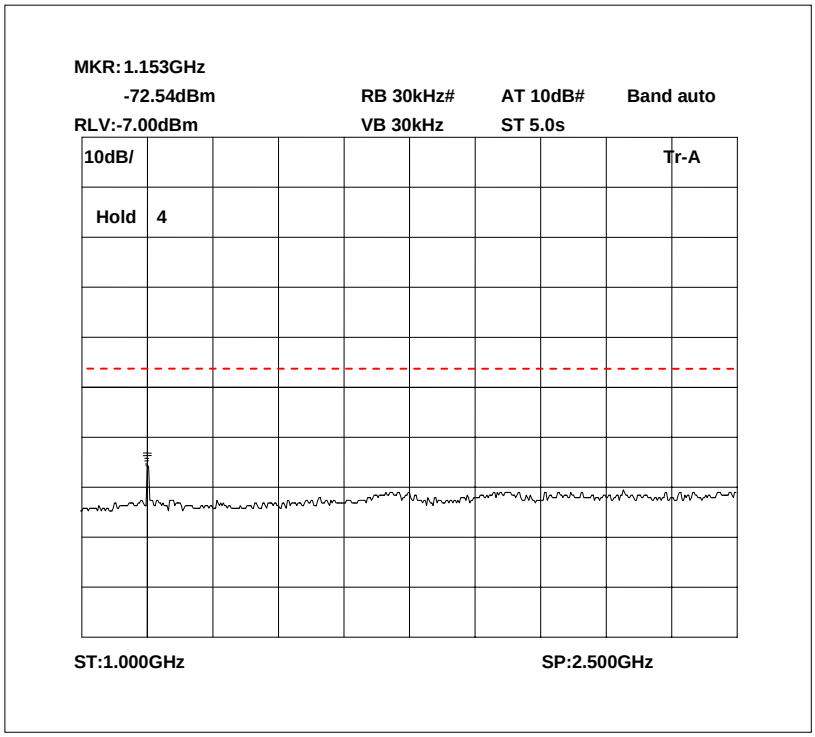


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions 217.75 MHz 0 – 1GHz

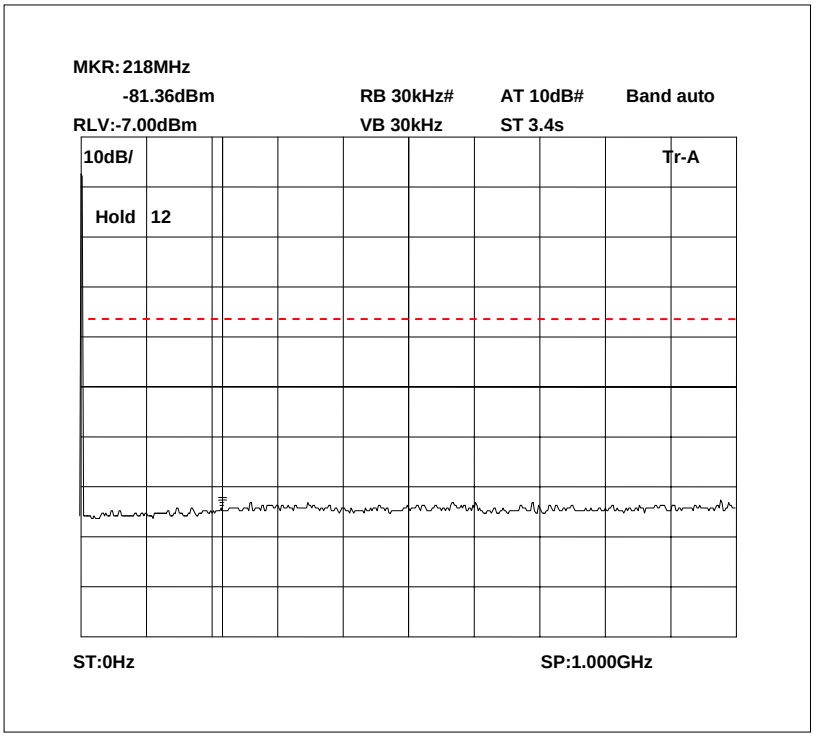


Radiated emissions 217.75 MHz 1 – 2.5GHz

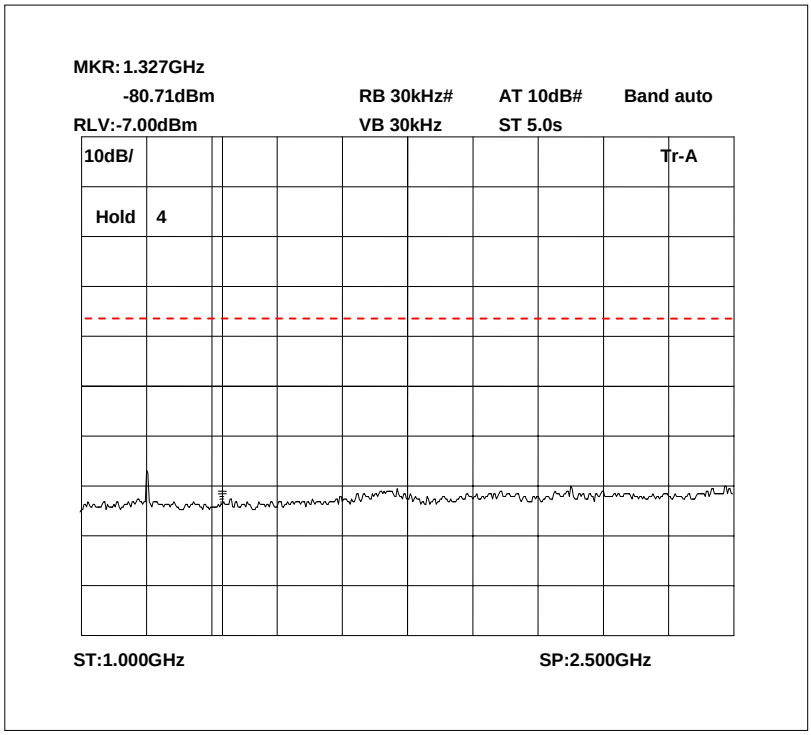


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions 218.0 MHz 0 – 1GHz

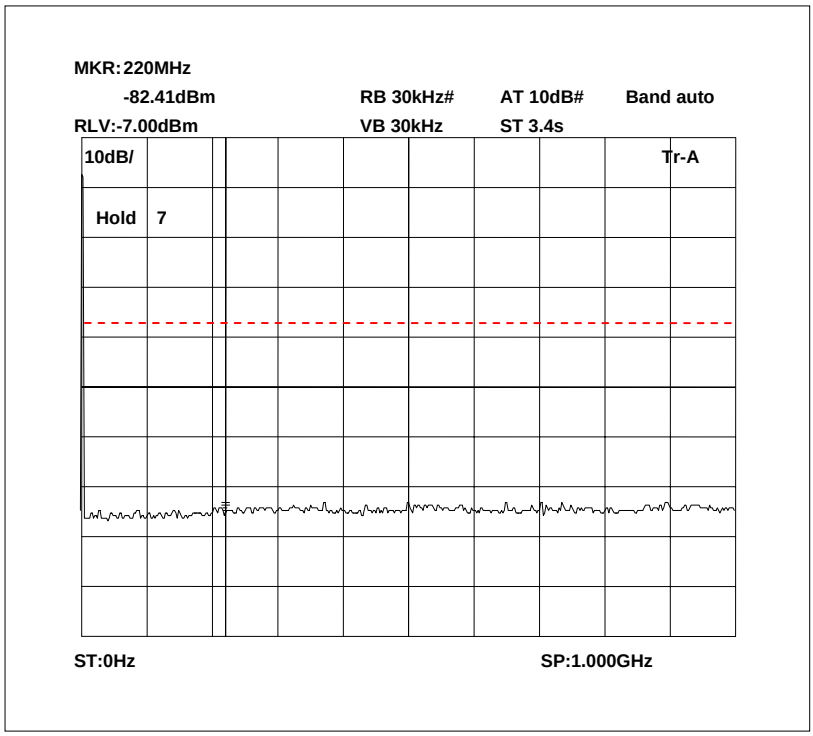


Radiated emissions 218.0 MHz 1 – 2.5GHz

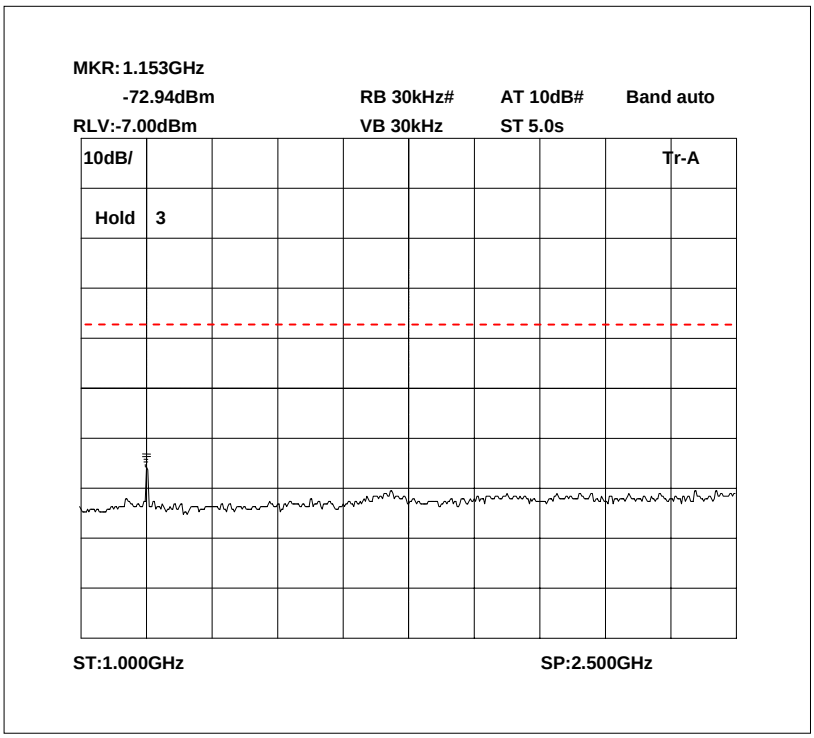


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

Radiated emissions no input signal 0 – 1GHz



Radiated emissions no input signal 1 – 2.5GHz

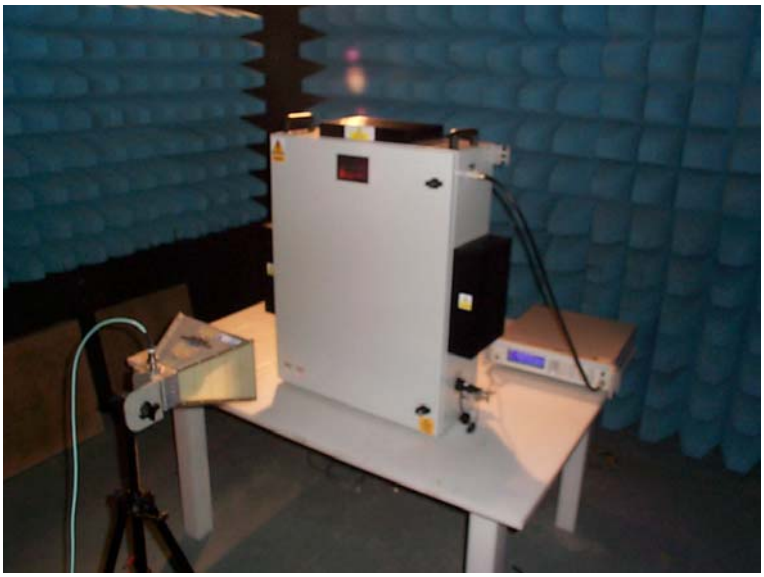


The above test results show that there were no emissions within 20dBs of the –13dBm limit.

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
UH006	3m Range ERP CAL	TRL	01/03/2005	12	01/03/2006
UH028	Log Periodic Ant	Schwarbeck	28/04/2005	24	28/04/2007
UH029	Bicone Antenna	Schwarbeck	27/04/2005	24	27/04/2007
UH105	Signal Generator	Marconi	17/02/2005	12	17/02/2006
UH120	Spectrum Analyser	Marconi	15/03/2005	12	15/03/2006
UH122	Oscilloscope	Tektronix	07/06/2005	24	07/06/2007
UH162	ERP Cable Cal	TRL	23/05/2005	12	23/05/2006
UH253	1m Cable N type	TRL	10/01/2005	12	10/01/2006
UH254	1m Cable N type	TRL	10/01/2005	12	10/01/2006
UH265	Notch filer	Telonic	24/06/2005	12	24/06/2006
L005	CMTA	R&S	05/12/2005	12	05/12/2006
L007	Loop Antenna	R&S	29/03/2005	24	29/03/2007
L031	Amplifier	ENI		Calibrate in use	
L112	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
L176	Signal Generator	Marconi	31/01/2005	12	31/01/2006
L220	Attenuator	Bird		Calibrate in use	
L222	Attenuator	Bird		Calibrate in use	
L280	18GHz Cable	Rosenberger	10/01/2005	12	10/01/2006
L343	CCIR Noise Filter	TRL	07/06/2005	12	07/06/2006
L479	Analyser	Anritsu	18/11/2005	12	18/11/2006
L552	Signal Generator	Agilent	25/04/2005	12	25/04/2006

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

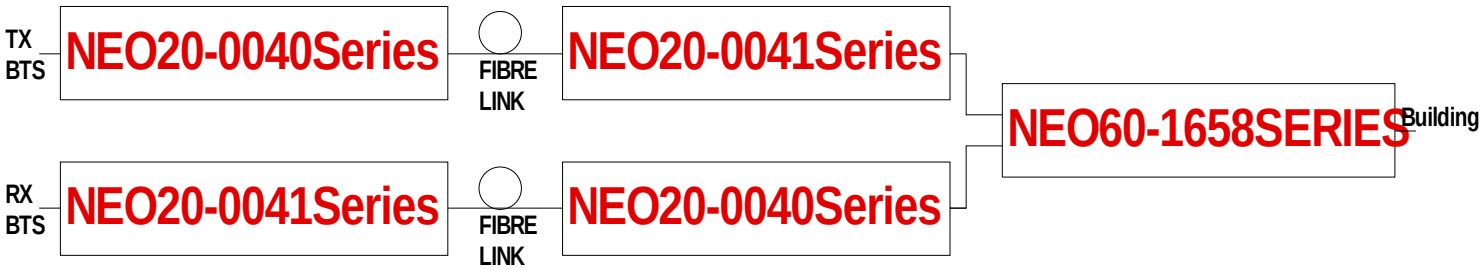
Uncertainty in overall test level = **2.1dB**, Uncertainty in time measurement = **0.59%,** Uncertainty in Amplitude measurement = **0.82%**

[11] Power Line Conduction

Uncertainty in test result = **3.4dB**

ANNEX E

SYSTEM DIAGRAM


TX
BTS
NEO20-0040Series
FIBRE
LINK
NEO20-0041Series
NEO60-1658SERIES
Building
RX
BTS
NEO20-0041Series
FIBRE
LINK
NEO20-0040Series