

REPORT NUMBER 2041-B

November 2004

Class II Permissive Change to Report Number 2041

On the TBAB1 Base Station Transceiver

FCC ID: CASTBAB1

Power Amplifier

Type TBA7B1

TBA70B1-0000 S/No: 18004311

In accordance with

FCC 47 CFR Parts 22, 74 and 90

PREPARED BY:

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REPORT ON :

Type approval testing of a 5W Power Amplifier Module type TBA7B1 in accordance with FCC CFR 47 Parts 22, 74 & 90. This test report is an addendum to test report 2041, and 2041-A.

The Power Amplifier was tested in conjunction with:

Reciter	TBA4B2	TBA40B2-0B00	Serial 18005103
Power Amplifier	TBA7B1	TBA70H0-0000	Serial 18004311
Power Management Unit		TBA30A1-1100	Serial 18004276
User Interface		TB2021	Serial 18005126

FCC ID: CASTBAB1

PREPARED FOR :

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APPROVED :

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Senior Technician

Date :

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

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TABLE OF CONTENTS

DECLARATION OF CONFORMITY.....4

TEST CONDITIONS5

TEST RESULTS.....6

 TRANSMITTER OUTPUT POWER (CONDUCTED)6

 SPURIOUS EMISSIONS (CONDUCTED).....7

 SPURIOUS EMISSIONS (RADIATED).....9

 TRANSIENT FREQUENCY BEHAVIOR12

TEST EQUIPMENT USED.....15

APPENDIX A16

 TEST SETUP DETAILS.....16

DECLARATION OF CONFORMITY

We, TELTEST LABORATORIES of 558 Wairakei Road,
Christchurch New Zealand, declare under our sole
responsibility that the product:

Equipment:	Base Station Transmitter		
Type:	TBAB		
Fitted with:			
	Power Amplifier	TBA7B1	TBA70B1-0000
Quantity:	1		Serial 18004311

To which this declaration relates is in conformity with the
following standards:

FCC CFR 47 Parts 22, 74 & 90

Signature:_____

S. A. Crompton
Compliance Laboratory Manager.

Date:_____

Test Conditions

All testing was performed at the following conditions.

Ambient Temperature	15°C to 30°C
Relative Humidity	20% to 75%
Standard Test Voltage	230 V ac

Test Results

TRANSMITTER OUTPUT POWER (CONDUCTED)

SPECIFICATION: FCC 47 CFR 2.1046

GUIDE: TIA/EIA-603B 2.2.1

MEASUREMENT PROCEDURE:

1. Refer Appendix A for Equipment set up.
2. The coaxial attenuator has an impedance of 50 Ohms.
3. The unmodulated output power was measured with an RF Power meter.

MEASUREMENT RESULTS:

Manufacturer's Rated Output Power: Adjustable between: 1 W and 5 W

155.9875 MHz	5 W nominal	1 W nominal
POWER (W)	4.8 W	1 W
Variation from Nominal (%)	-4%	0%
Measurement Uncertainty (dB)	+0.63 -0.68	

LIMIT CLAUSE: FCC 47 CFR 90.205

Radio Type: Base Station Transceiver

Frequency Band: 150 MHz - 174 MHz

- (o) The output power shall not exceed by more than 20% the manufacturer's rated output power for the particular transmitter.

SPURIOUS EMISSIONS (CONDUCTED)

SPECIFICATION: FCC CFR 2.1051

Tx FREQUENCY: 155.9875 MHz

12.5 kHz Channel Spacing	155.9875 MHz @ 5 W	Emission Mask D
Emission Frequency (MHz)	Level (dBm)	Level (dBc)
311.9751	-39.6	-76.4
No other emissions were detected at a level greater than 20 dB below the limit.		

LIMITS:

Carrier Output Power Watts	Emission Mask D 12.5 kHz Channel Spacing $50 + 10 \log_{10} (P_{\text{Watts}})$	
5 W	-20 dBm	-57 dBc
1 W	-20 dBm	-50 dBc

SPURIOUS EMISSIONS (RADIATED)

SPECIFICATION: FCC 47 CFR 2.1053

GUIDE: TIA/EIA-603 2.2.12

MEASUREMENT PROCEDURE:

1. Refer Appendix A for Equipment set up.
2. The EUT was placed on a wooden turntable at a distance of three metres from the test antenna. The output terminal was connected to an RF dummy load.
3. The turntable was rotated through 360° to obtain the maximum response of each spurious emission. Valid emissions were determined by switching the EUT on and off.
4. The EUT was replaced by a signal generator and substitution antenna to make measurements by the substitution method.

MEASUREMENT RESULTS:

See the tables on the following pages..

LIMIT CLAUSE: FCC 47 CFR 90.210

SPURIOUS EMISSIONS (RADIATED)

SPECIFICATION: FCC CFR 2.1053

Tx FREQUENCY: 155.9875 MHz

155.9875 MHz @ 5 W		Emission Mask D
Emission Frequency (MHz)	Level (dBm)	Level (dBc)
No emissions were detected at a level greater than 20 dB below the limit.		

LIMITS:

Carrier Output Power Watts	Emission Mask D 12.5 kHz Channel Spacing $50 + 10 \log_{10}(P_{\text{Watts}})$	
5 W	-20 dBm	-57 dBc
1 W	-20 dBm	-50 dBc

SPURIOUS EMISSIONS (RADIATED)

SPECIFICATION: FCC CFR 2.1053

Tx FREQUENCY: 155.9875 MHz

155.9875 MHz @ 1 W		Emission Mask D
Emission Frequency (MHz)	Level (dBm)	Level (dBc)
No emissions were detected at a level greater than 20 dB below the limit.		

LIMITS:

Carrier Output Power Watts	Emission Mask D 12.5 kHz Channel Spacing $50 + 10 \log_{10}(P_{\text{Watts}})$	
5 W	-20 dBm	-57 dBc
1 W	-20 dBm	-50 dBc

TRANSIENT FREQUENCY BEHAVIOR

SPECIFICATION: FCC 47 CFR 90.214

GUIDE: TIA/EIA-603B 2.2.19

MEASUREMENT PROCEDURE:

1. Refer Appendix A for equipment set up.
2. Measurements and plots were made following the TIA/EIA procedure.

MEASUREMENT RESULTS:

See the tables and plots on the following pages for 12.5 kHz channel spacings.

LIMIT CLAUSE: FCC 47 CFR 90.214

TRANSIENT FREQUENCY BEHAVIOUR

SPECIFICATION: FCC 47 CFR 90.214

Tx FREQUENCY: 155.9875 MHz 5 W 12.5 kHz Channel Spacing

FREQUENCY	155.9875 MHz @ 5 W Tx	
TRANSIENT RESPONSE PERIOD	CARRIER PEAK VARIATION FROM NORMAL	
	Key ON (kHz)	Key OFF (kHz)
t_1	0.5	N/A
t_2	0.4	N/A
t_3	N/A	0.4
$t_2 \rightarrow t_3$ ppm	0.4	
ERROR LIMIT ($t_2 \rightarrow t_3$) ppm	2.5	

Confirm that during periods t_1 and t_3 the frequency difference does not exceed the value of one channel separation.	YES	NO
	Y	
Confirm that during the period t_2 the frequency difference does not exceed half a channel separation.	YES	NO
	Y	
Confirm that during the period t_2 to t_3 the frequency difference does not exceed the frequency error limit.	YES	NO
	Y	

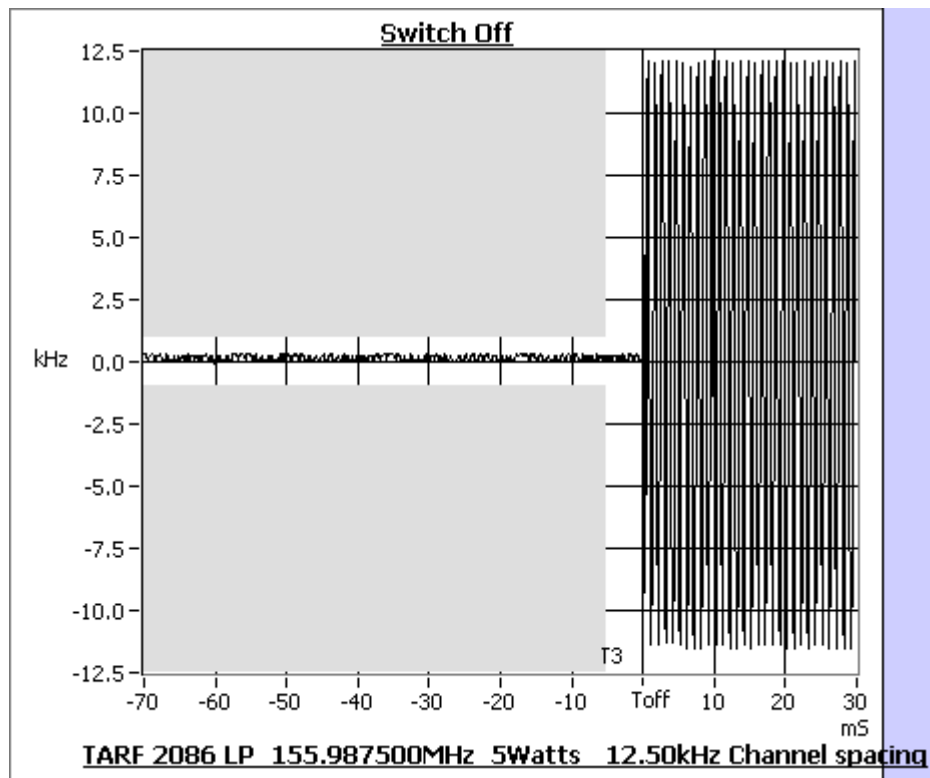
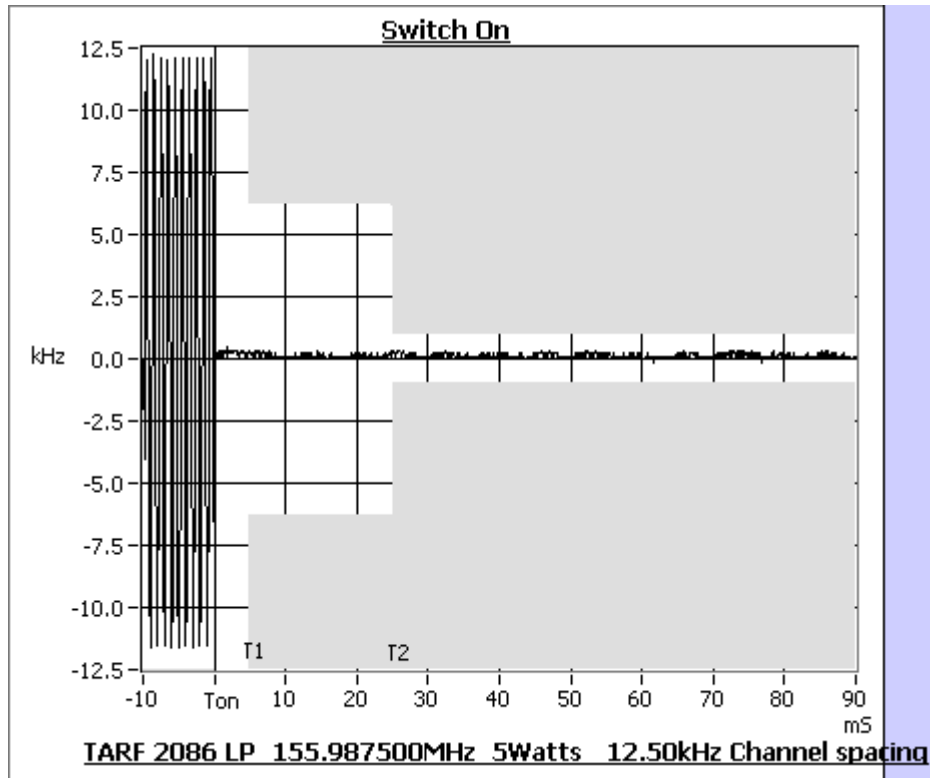
LIMIT:

TRANSIENT PERIODS	FREQUENCY RANGE 150MHz – 174 MHz	FREQUENCY RANGE 421MHz – 512 MHz
t_1 (ms)	5 ms	10 ms
t_2 (ms)	20 ms	25 ms
t_3 (ms)	5 ms	10 ms

TRANSIENT FREQUENCY BEHAVIOUR

SPECIFICATION: FCC 47 CFR 90.214

Tx FREQUENCY: 155.9875 MHz 5 W 12.5 kHz Channel Spacing



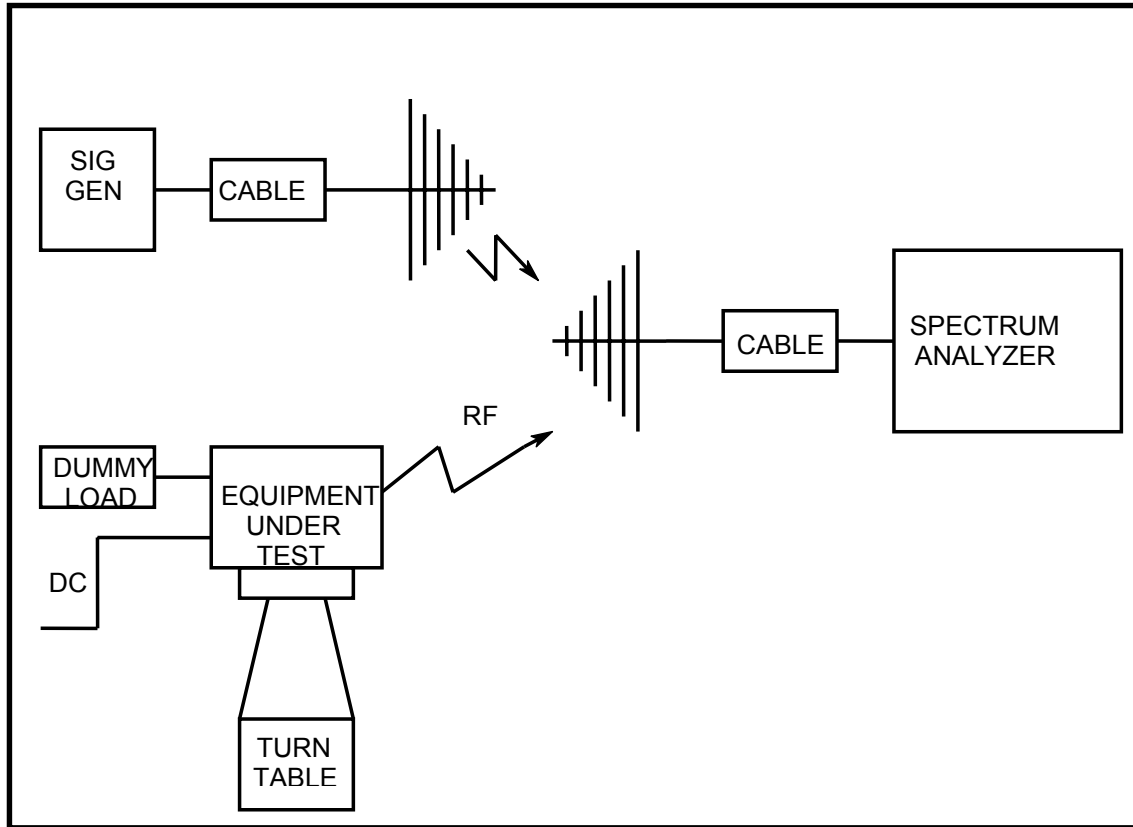
TEST EQUIPMENT USED

No#	Equipment	Manufacturer	Model No	Serial No#	Tait ID	Cal Due
4	Signal Generator	Hewlett Packard	HP8648C	3443U00543	E3558	11-Sep-05
5	Signal Generator	Rohde & Schwarz	SMY01 1062.5502.11	841736/019	E3553	06-Nov-05
22	Oscilloscope	Tektronics	TDS340	B013611	E3585	06-Nov-05
40	Reference Dipoles	Emco	3121C DB1	9510-1164	E3559	17-Oct-06
42	Reference Horn Antenna	Emco	DRG3115	9512-4638	E3560	27-Sep-06
43	Horn Antenna	Emco	DRG3115		E3076	27-Sep-06
62	RF Attenuator 150W	Weinschel	57-10-34	LB590	E3674	08-Nov-05
63	RF Attenuator 150W	Weinschel	40-06-34	KV457	E3561	07-Nov-05
65	RF Attenuator 50W	Weinschel	24-20-44	AW1266	E3562	08-Nov-05
66	RF Attenuator 25W	Weinschel	33-20-33	BD5871	E3673	07-Nov-05
82	3m Coax Cable (BLUE)	Suhner	Sucoflex 104A	25033/4A	E3694	30-Nov-04
83	1m Coax Cable (BLUE)	Suhner	Sucoflex 104A	25006/4A	E3693	30-Nov-04
84	1m Coax Cable (BLUE)	Suhner	Sucoflex 104A	25005/4A	E3692	15-Jul-05
85	1m Coax Cable (BLUE)	Suhner	Sucoflex 104A	25004/4A	E3691	15-Jul-05
86	1m Coax Cable (BLUE)	Suhner	Sucoflex 104A	25003/4A	E3690	13-Aug-05
88	Spectrum Analyser	Hewlett Packard	HP8562E	3821A00779	E3715	06-Jan-05
91	20m Coax Cable		RG214/U-50 (Ext Cal)	CBL01	E3404	21-Sep-05
123	Spectrum Analyser	Agilent	E4445A	MY42510072	E4139	23-Apr-05
129	Antenna Tower	Electrometrics	EM-4720-2			
130	Controller	Electrometrics	EM-4700			
131	Turntable	Electrometrics	EM-4704A			

APPENDIX A

TEST SETUP DETAILS

Radiated Emissions Set up.



All other testing is performed using the Teltest Radio **EVAL**uation system (TREVA), which is configured as shown below. The Spectrum Analyser is connected to the EUT via the attenuator network for Conducted Emissions testing, and Occupied Bandwidth.

