REPORT NUMBER 2041 June 2004

RADIO PERFORMANCE MEASUREMENTS

On the TBAB VHF Base Station Transceiver

FCC ID: CASTBAB1

Reciters
TBA40B2-0B00 S/N: 18004424 (100W)
TBA40B3-0B00 S/N: 18004412 (100W)
TBA40B2-0B00 S/N: 18004425 (50W)
TBA40B3-0B00 S/N: 18004419 (50W)

Power Amplifiers
TBA90B1-0000 S/N: 18004316 (100W)
TBA80B1-0000 S/N: 18003325 (50W)

Power Management Unit
TBA30A1-1100 S/N: 18004273 (100W)
TBA30A1-1100 S/N: 18004276 (50W)

User Interface
TBA2021 S/N: 18002183 (50W)
TBA2020 S/N: 18004326 (100W)

In accordance with
FCC 47 CFR Parts 22 and 90

PREPARED BY: Marcus Ludwig _____
Test Technician

CHECKED & APPROVED BY: SA Crompton _____
Laboratory Manager

577 new zealand accredited laboratory

TELTEST Laboratories
Tait Electronics Limited
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Fax: (64) (3) 3580432

REPORT ON :

Type Approval Testing of the TBAB VHF Base Station Transceiver
in accordance with:

FCC CFR 47 Parts 22 & 90

FCC ID: CASTBAB1

PREPARED FOR :

Tait Electronics Ltd
PO Box 1645
558 Wairakei Rd
Christchurch
New Zealand

DISTRIBUTION :

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Tait Electronics Ltd	Mr. Des Fox	Copy No 2
Tait Electronics Ltd	Mr. Project manager	Copy No 3

APPROVED :

S. A. Crompton

Compliance Laboratory Manager

Date :

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

Copy No:

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DECLARATION OF CONFORMITY

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

Equipment: Base Station Transceiver

Type: TBAB

Product Type	Product Code	Serial Number
Reciter	TBA40B2-0B00	18004424
Reciter	TBA40B2-0B00	18004425
Reciter	TBA40B3-0B00	18004412
Reciter	TBA40B3-0B00	18004419
Power Amplifier	TBA90B1-0000	18004316
Power Amplifier	TBA80B1-0000	18003325
Power Management Unit	TBA30A1-1100 TBA30A1-1100	18004273 18004276
User Interface	TBA2021	18002183
User Interface	TBA2020	18004326

Quantity: 1

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

FCC CFR 47 Parts 22 & 90

Signature:_____

S. A. Crompton
Compliance Laboratory Manager.

Date:_____

Test Results

TRANSMITTER OUTPUT POWER (CONDUCTED)

TEST CONDITIONS: Ambient Temperature 22.5 °C
Relative Humidity 48 %
Standard Voltage 120 V AC

SPECIFICATION: FCC 47 CFR 2.1046

GUIDE: TIA/EIA-603 2.2.1

MEASUREMENT PROCEDURE:
1. Refer Appendix A for the 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: Switchable: 10 W and 100 W

155.1 MHz	10W nominal	100W nominal
POWER (W)	10.0	101.3
Variation from Nominal (%)	0	1.3
Measurement Uncertainty (dB)	+0.63 -0.68	

LIMIT CLAUSE: FCC 47 CFR 90.205

Radio Type: Basestation 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.

Equipment Used: 11,116, 61, 118

TRANSMITTER OUTPUT POWER (CONDUCTED)

TEST CONDITIONS: Ambient Temperature 22.5 °C
Relative Humidity 51 %
Standard Voltage 120 V AC

SPECIFICATION: FCC 47 CFR 2.1046

GUIDE: TIA/EIA-603 2.2.1

MEASUREMENT PROCEDURE:
1. Refer Appendix A for the 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: Switchable: 5 W and 50 W

155.1 MHz	5 W nominal	50 W nominal
POWER (W)	5.1	51.4
Variation from Nominal (%)	+2.0	+2.8
Measurement Uncertainty (dB)	+0.63 -0.68	

LIMIT CLAUSE: FCC 47 CFR 90.205

Radio Type: Basestation 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.

Equipment Used: 11,116, 61, 118

TRANSMITTER AUDIO FREQUENCY RESPONSE - PRE-EMPHASIS

TEST CONDITIONS :	Ambient Temperature	22.5 ^{o}C
	Relative Humidity	48 %
	Standard Voltage	120 V AC

SPECIFICATION: FCC 47 CFR 2.1047 (a)

GUIDE: TIA/EIA-603 2.2.6

MEASUREMENT PROCEDURE:
1. Refer Appendix A for the equipment set up.
2. An audio input tone of 1000Hz was applied with the level set to obtain 20% of maximum deviation. This was used as the 0dB reference point.
3. The AF was varied while the audio level was held constant.
4. The response in dB relative to 1000Hz was measured.

MEASUREMENT RESULTS:
See the plots on the following pages for 12.5 kHz & 25.0 kHz channel spacings.
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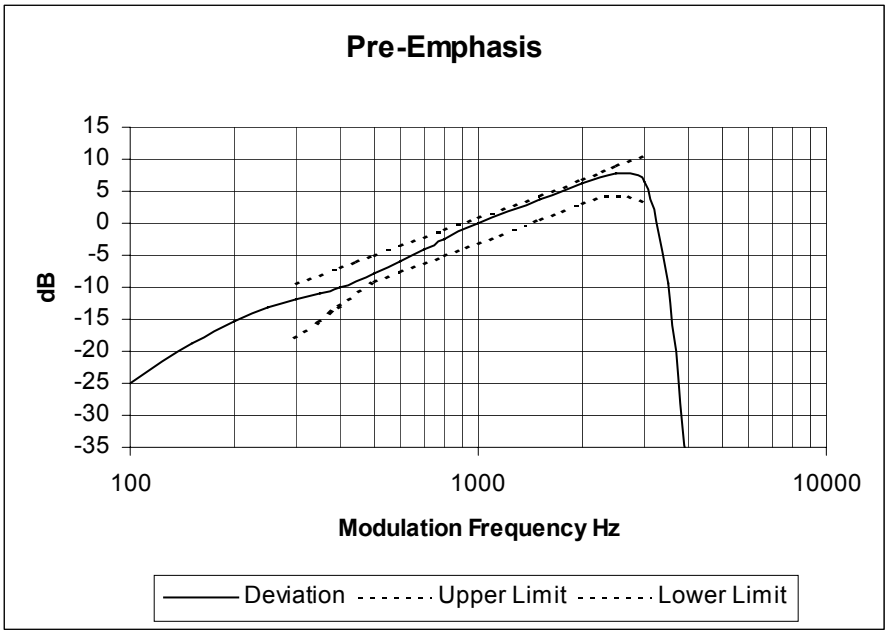
LIMIT CLAUSE: TIA/EIA-603 3.2.6

Equipment Used: 11,116, 61,13,118

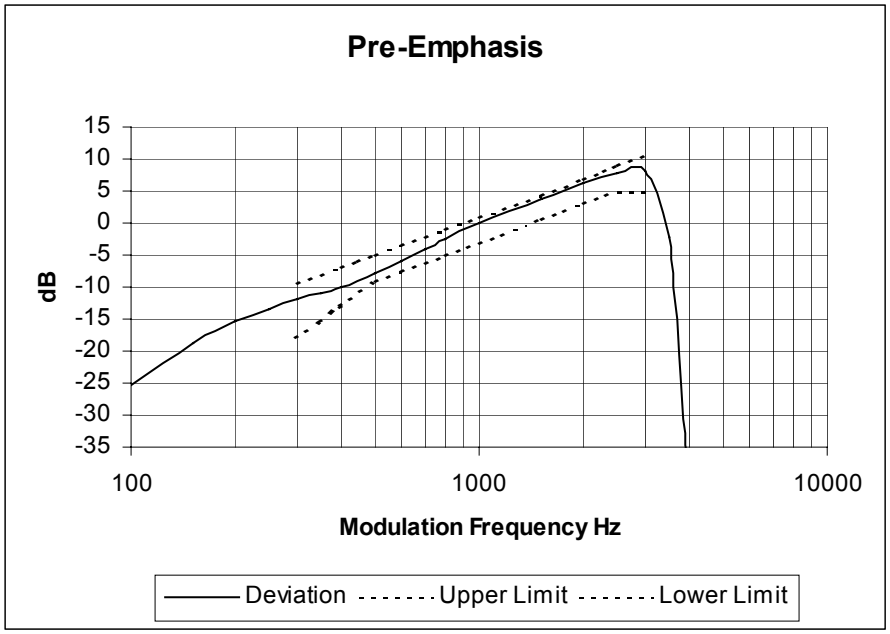
TRANSMITTER AUDIO FREQUENCY RESPONSE - PRE-EMPHASIS

SPECIFICATION: FCC CFR 2.1047 (a)

Tx FREQUENCY: 155.1MHz 100W 12.5 kHz Channel Spacing



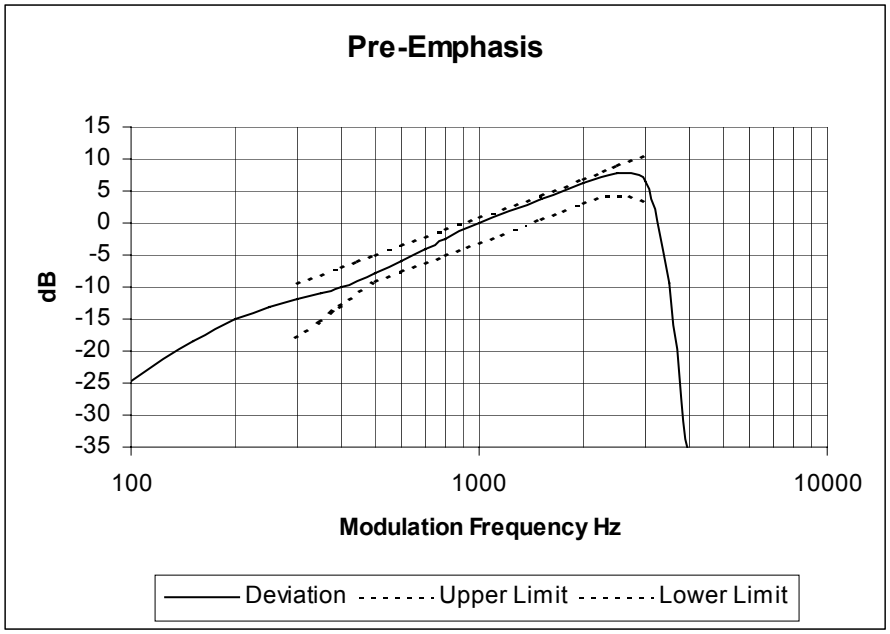
Tx FREQUENCY: 155.1MHz 100W 25.0 kHz Channel Spacing



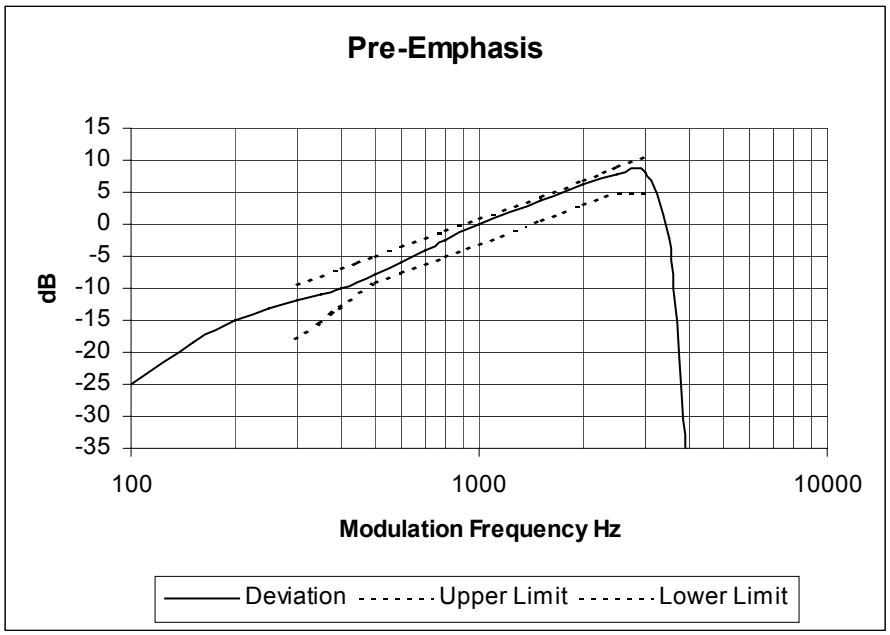
TRANSMITTER AUDIO FREQUENCY RESPONSE - PRE-EMPHASIS

SPECIFICATION: FCC CFR 2.1047 (a)

Tx FREQUENCY: 155.1 MHz 50W 12.5 kHz Channel Spacing



Tx FREQUENCY: 155.1 MHz 50W 25.0 kHz Channel Spacing



TRANSMITTER MODULATION LIMITING

TEST CONDITIONS:	Ambient Temperature	22.5 ^{o}C
	Relative Humidity	48 %
	Standard Voltage	120 V AC

SPECIFICATION: FCC 47 CFR 2.1047 (b)

MEASUREMENT PROCEDURE:
1. Refer Appendix A for the equipment set up.
2. The modulation response was measured at three audio frequencies while varying the input level.
3. Measurements were made for both Positive and Negative Deviation.

MEASUREMENT RESULTS:
See the plots on the following pages for 12.5 kHz & 25.0 kHz channel spacings.

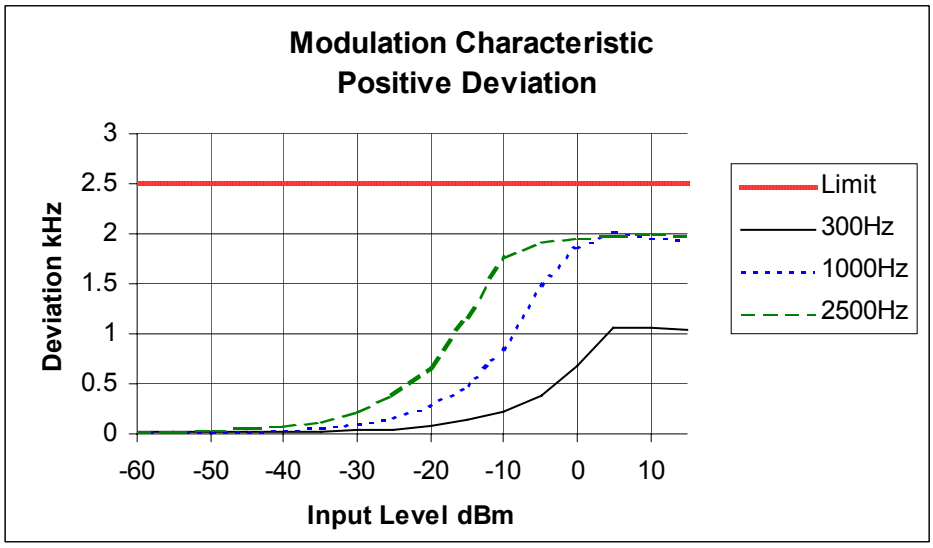
LIMIT CLAUSE: TIA/EIA-603 1.3.4.4

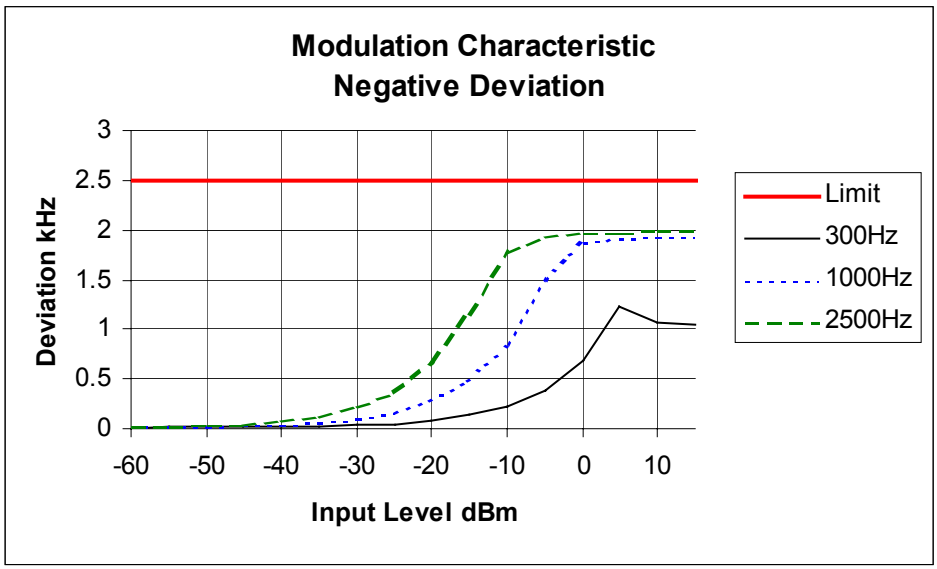
Equipment Used: 11,116, 61,13,118

TRANSMITTER MODULATION LIMITING

SPECIFICATION: FCC CFR 2.1047 (b)

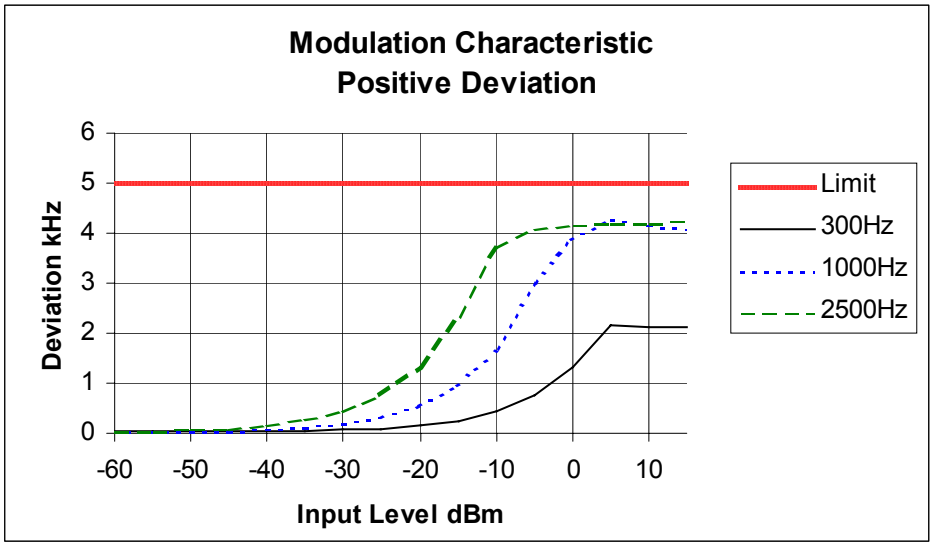
Tx FREQUENCY: 155.1 MHz 100W 12.5 kHz Channel Spacing

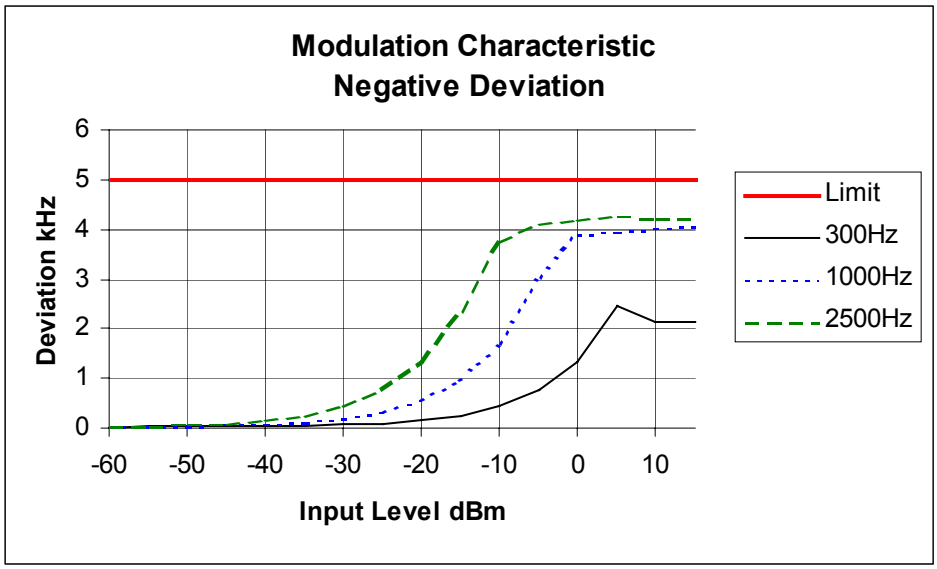




SPECIFICATION: FCC CFR 2.1047 (b)

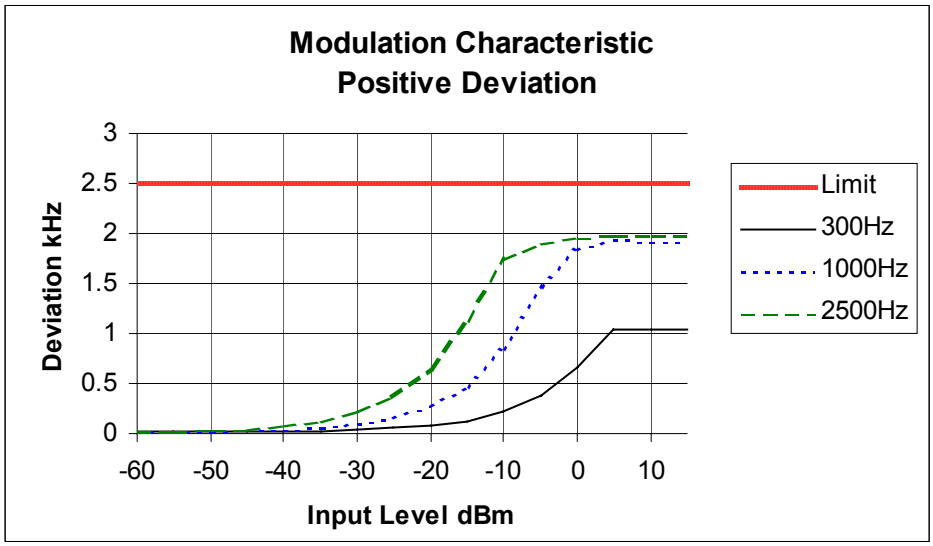
Tx FREQUENCY: 155.1 MHz 100W 25 kHz Channel Spacing

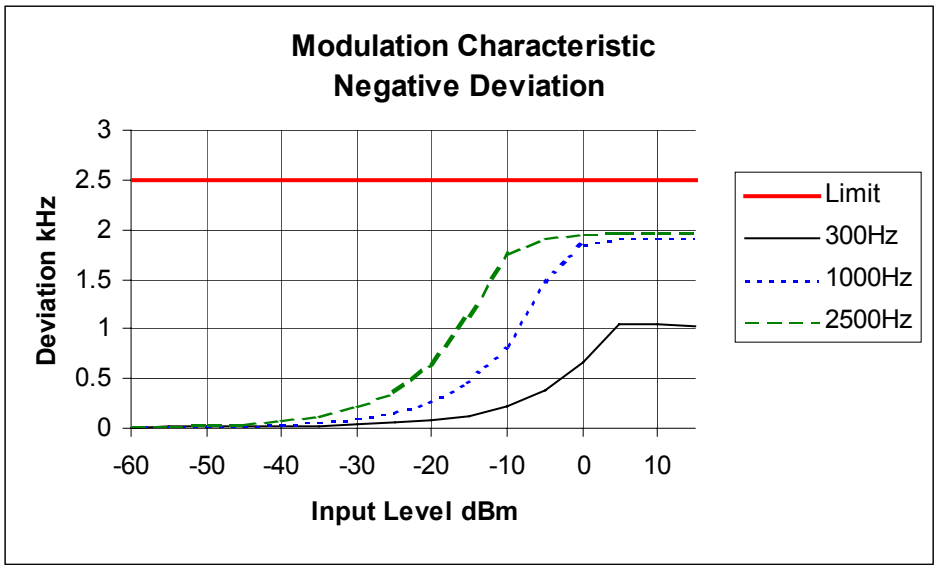




SPECIFICATION: FCC CFR 2.1047 (b)

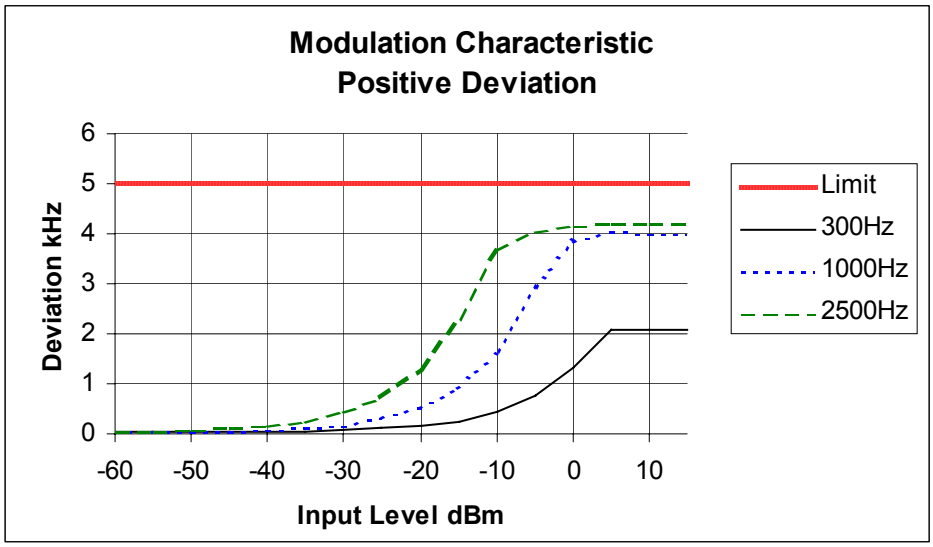
Tx FREQUENCY: 155.1 MHz 50W 12.5 kHz Channel Spacing

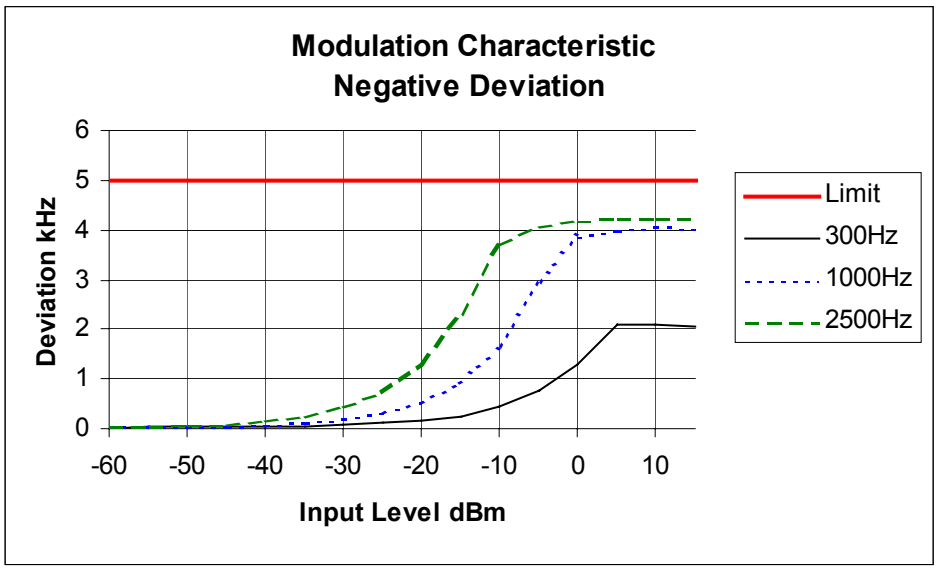




SPECIFICATION: FCC CFR 2.1047 (b)

Tx FREQUENCY: 155.1 MHz 50W 25 kHz Channel Spacing





OCCUPIED BANDWIDTH

TEST CONDITIONS:	Ambient Temperature	22.5 °C
	Relative Humidity	50 %
	Standard Voltage	120 V AC

SPECIFICATION: FCC 47 CFR 2.1049 (c)

GUIDE: TIA/EIA-603 2.2.11

MEASUREMENT PROCEDURE:
1. Refer Appendix A for the equipment set up.
2. For analogue measurements: The EUT was modulated by a 2500Hz tone at an input level 16dB above a level that produced 50% deviation. The input level was established at the frequency of maximum response of the audio modulating circuit .
   For Data measurements: The EUT was modulated with an internally generated pseudorandom bit sequence at the appropriate Baud rates.
3. The Occupied Bandwidth was measured on the Spectrum Analyser with the controls set as shown on the following plots.

MEASUREMENT RESULTS:
See the plots on the following pages for 12.5 kHz & 25.0 kHz channel spacings.

LIMIT CLAUSE: FCC 47 CFR 90.210

EMISSION MASKS

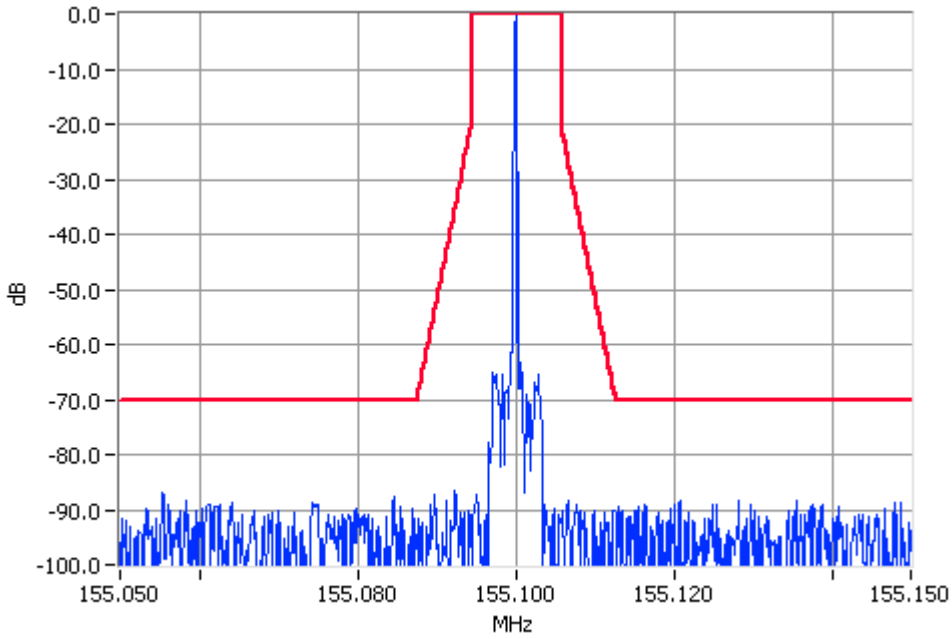
Emission Mask D	12.5 kHz Channel Spacing	Analog
Emission Mask B	25.0 kHz Channel Spacing	Analog

Equipment Used: 62, 66, 82, 85, 87, 111, 14, 117, 119, 123

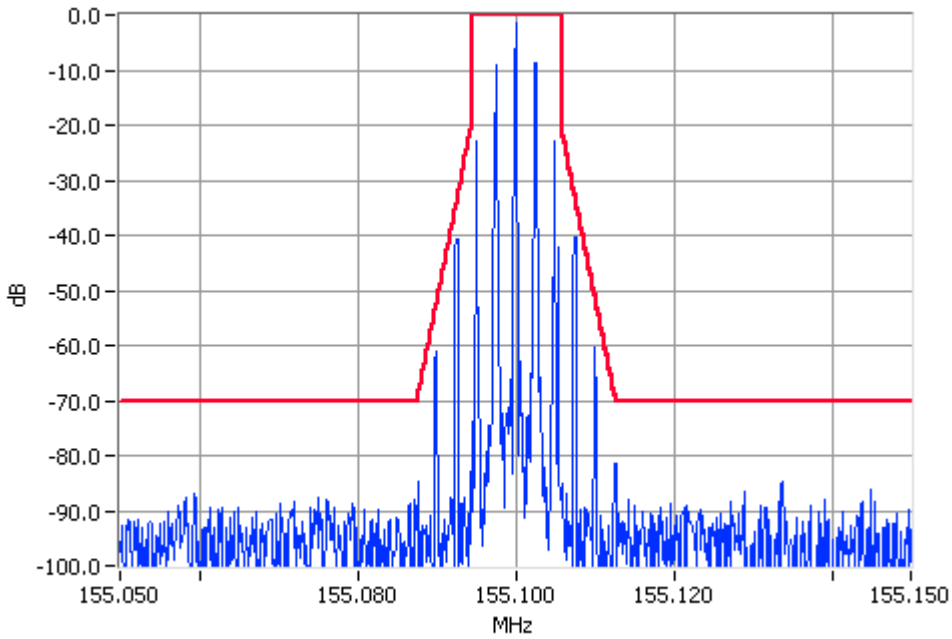
OCCUPIED BANDWIDTH

SPECIFICATION: FCC CFR 2.1049 (c)

Tx FREQUENCY: 155.1 MHz 100 W 12.5 kHz Channel Spacing



Unmodulated 155.1000MHz Mask D 100W Pass

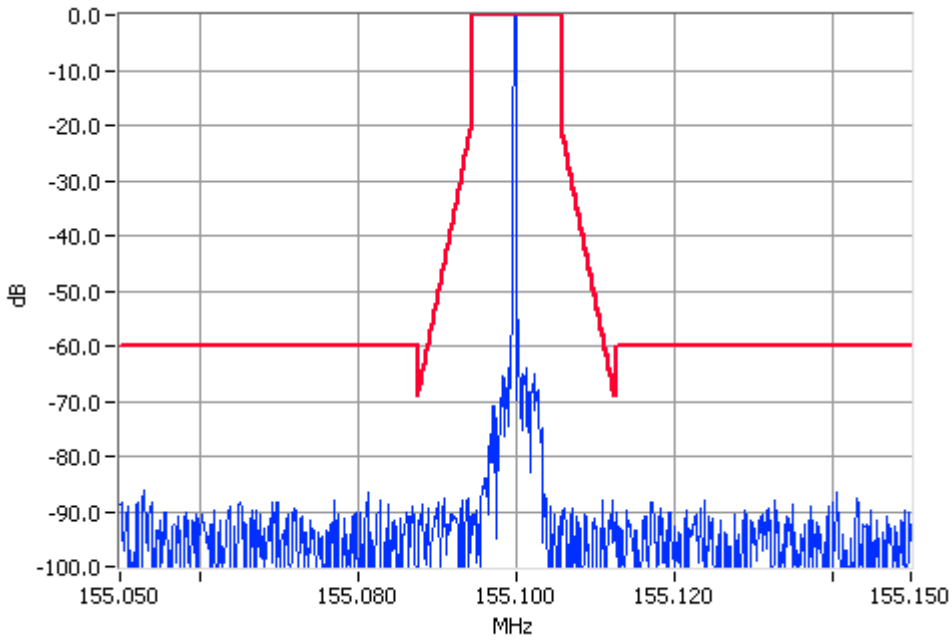


Analogue Modulation 155.1000MHz Mask D 100W Pass

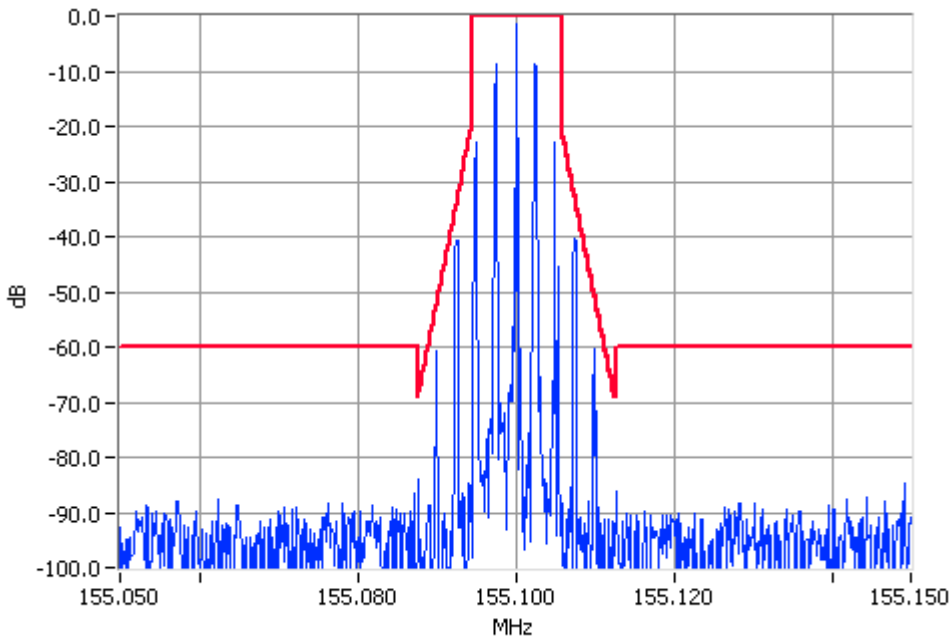
OCCUPIED BANDWIDTH

SPECIFICATION: FCC CFR 2.1049 (c)

Tx FREQUENCY: 155.1MHz 10W 12.5 kHz Channel Spacing



Unmodulated 155.1000MHz Mask D 10W Pass

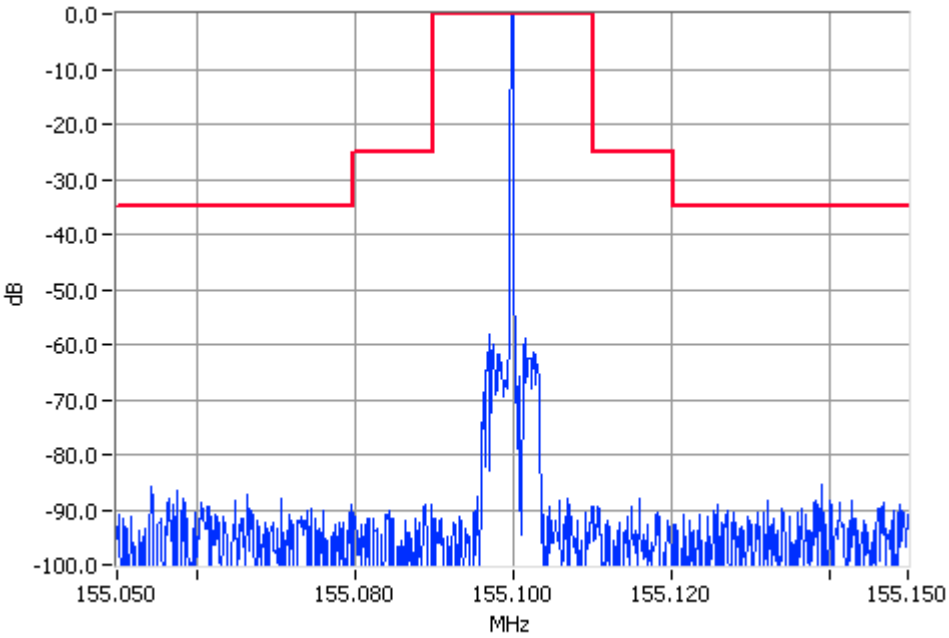


Analogue Modulation 155.1000MHz Mask D 10W Pass

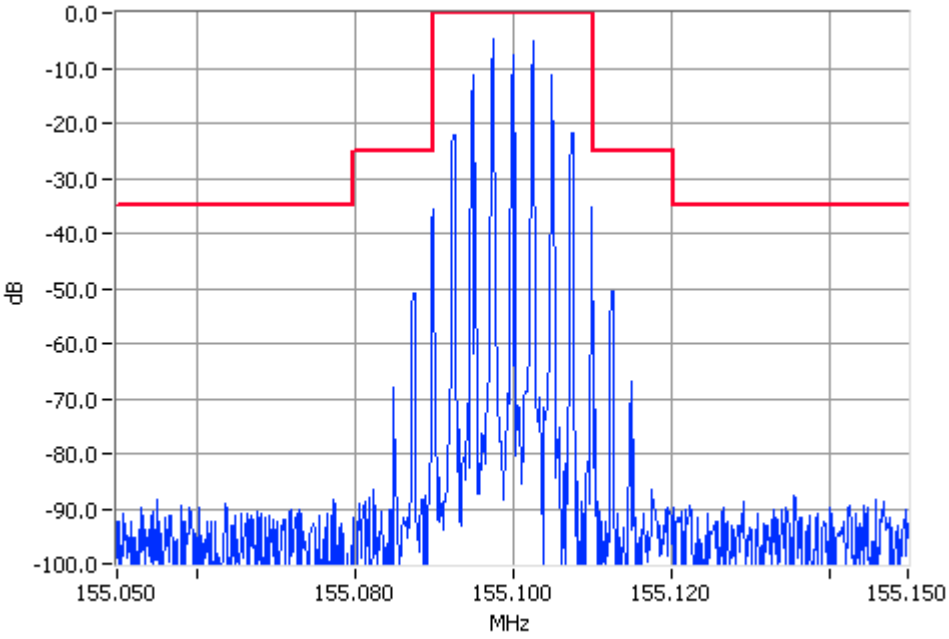
OCCUPIED BANDWIDTH

SPECIFICATION: FCC CFR 2.1049 (c)

Tx FREQUENCY: 155.1MHz 100 W 25.0 kHz Channel Spacing



Unmodulated 155.1000MHz Mask B 100W Pass

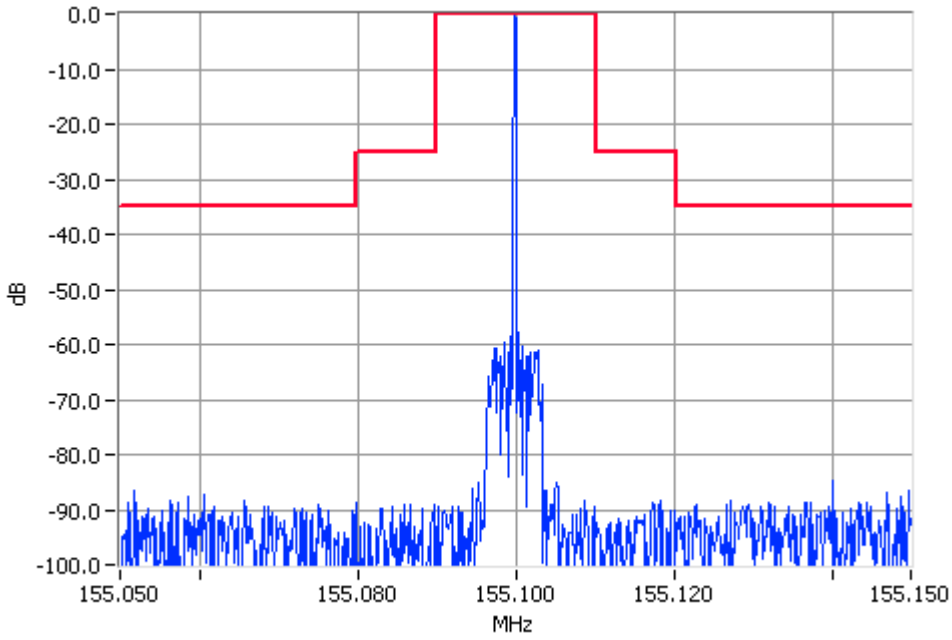


Analogue Modulation 155.1000MHz Mask B 100W Pass

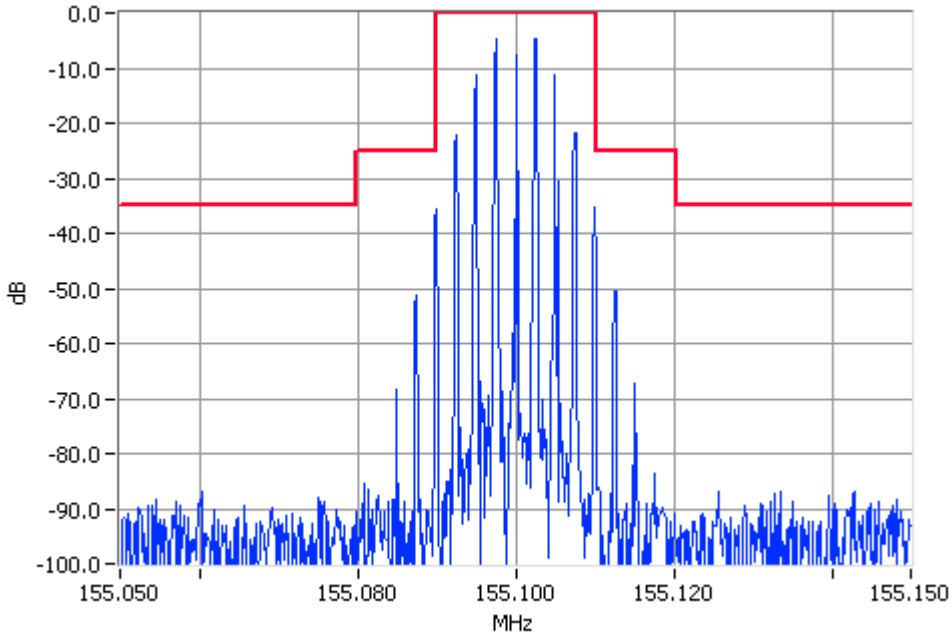
OCCUPIED BANDWIDTH

SPECIFICATION: FCC CFR 2.1049 (c)

Tx FREQUENCY: 155.1 MHz 10 W 25.0 kHz Channel Spacing



Unmodulated 155.1000MHz Mask B 10W Pass

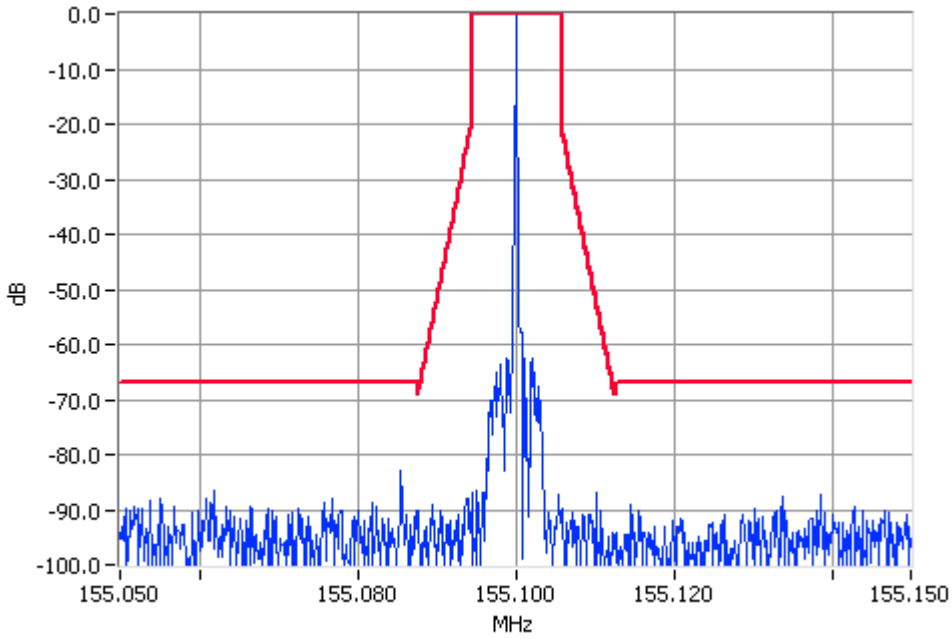


Analogue Modulation 155.1000MHz Mask B 10W Pass

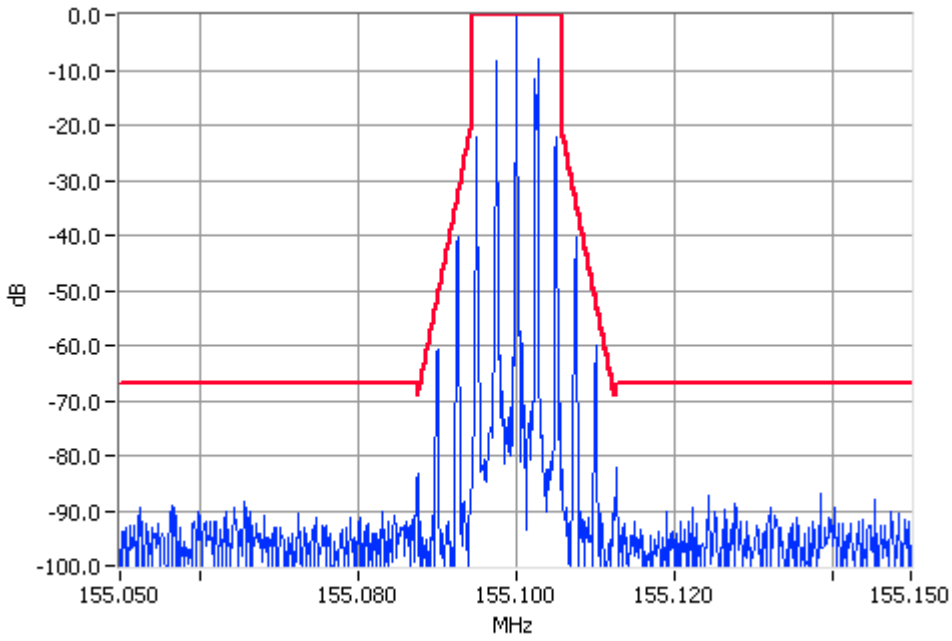
OCCUPIED BANDWIDTH

SPECIFICATION: FCC CFR 2.1049 (c)

Tx FREQUENCY: 155.1 MHz 50 W 12.5 kHz Channel Spacing



Unmodulated 155.1000MHz Mask D 50W Pass

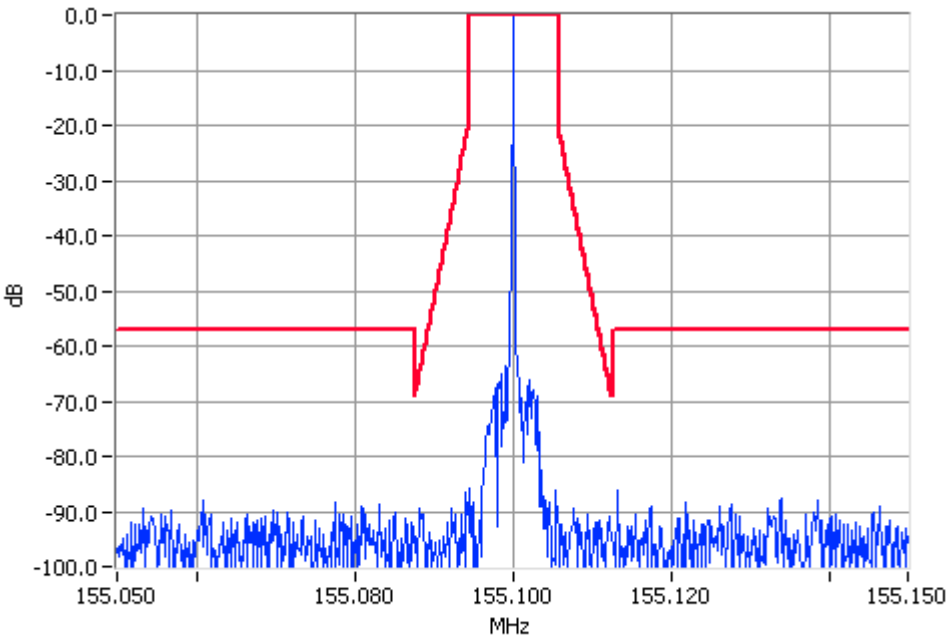


Analogue Modulation 155.1000MHz Mask D 50W Pass

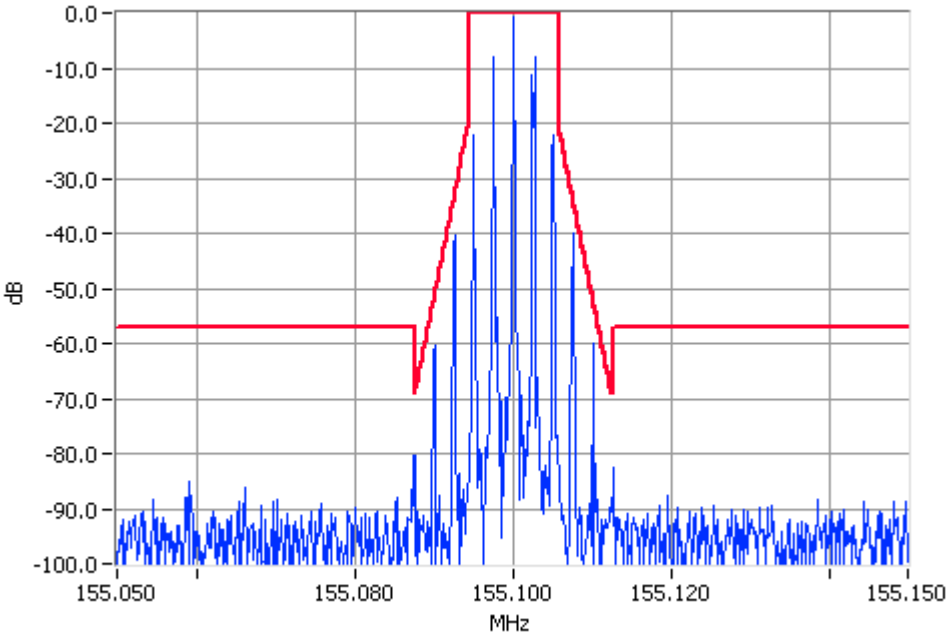
OCCUPIED BANDWIDTH

SPECIFICATION: FCC CFR 2.1049 (c)

Tx FREQUENCY: 155.1 MHz 5 W 12.5 kHz Channel Spacing



Unmodulated 155.1000MHz Mask D 5W Pass

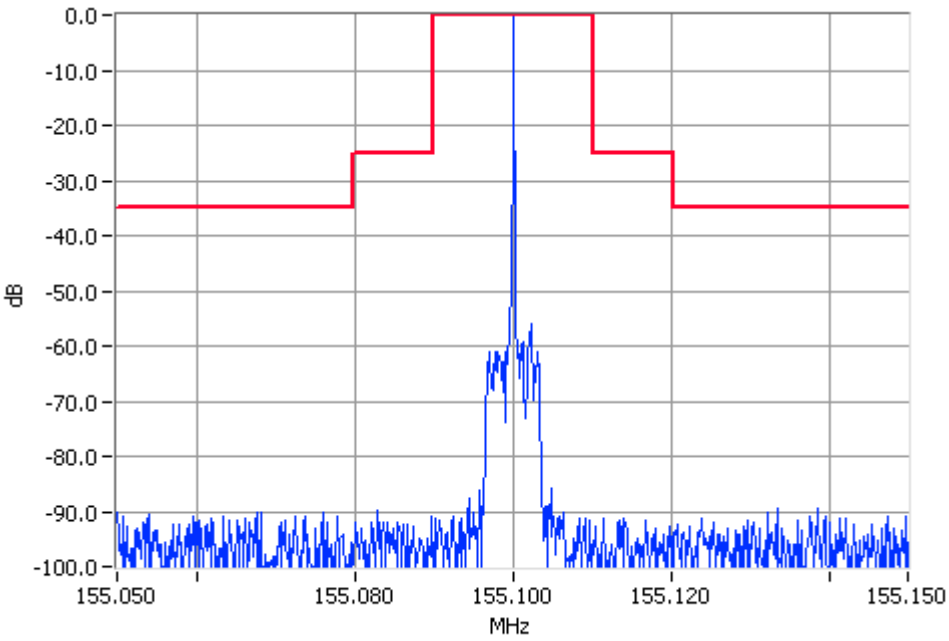


Analogue Modulation 155.1000MHz Mask D 5W Pass

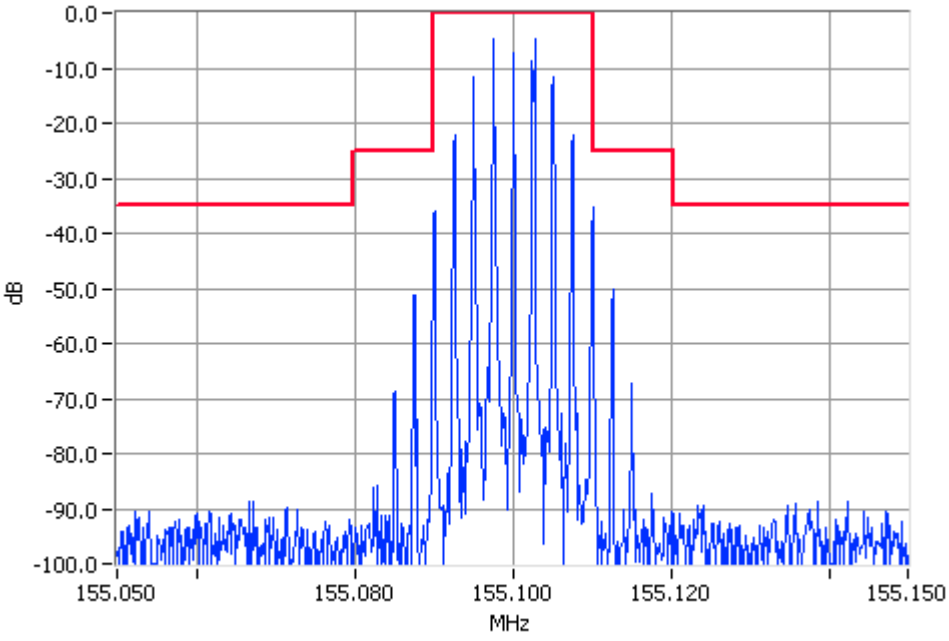
OCCUPIED BANDWIDTH

SPECIFICATION: FCC CFR 2.1049 (c)

Tx FREQUENCY: 155.1 MHz 50 W 25.0 kHz Channel Spacing



Unmodulated 155.1000MHz Mask B 50W Pass

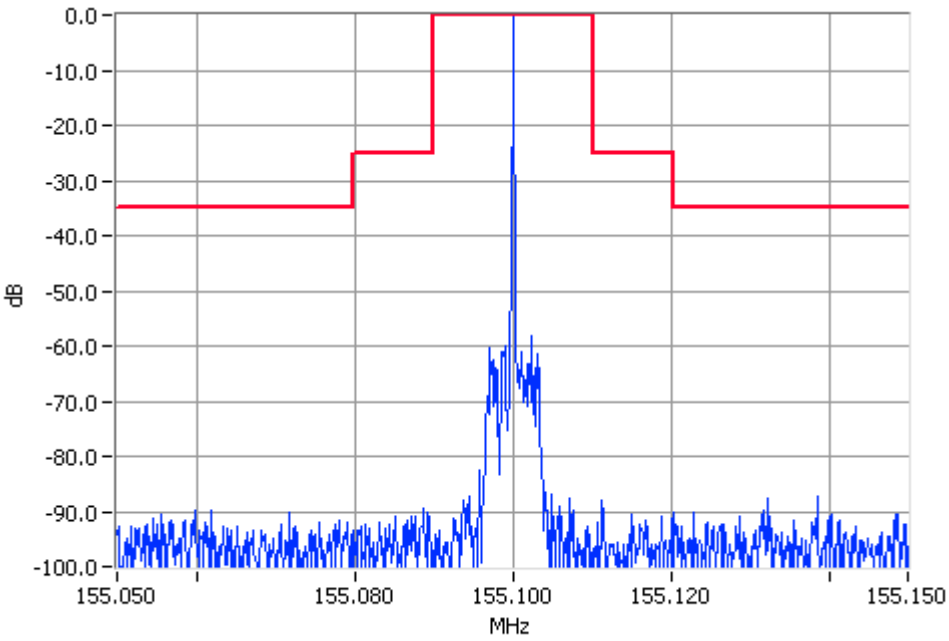


Analogue Modulation 155.1000MHz Mask B 50W Pass

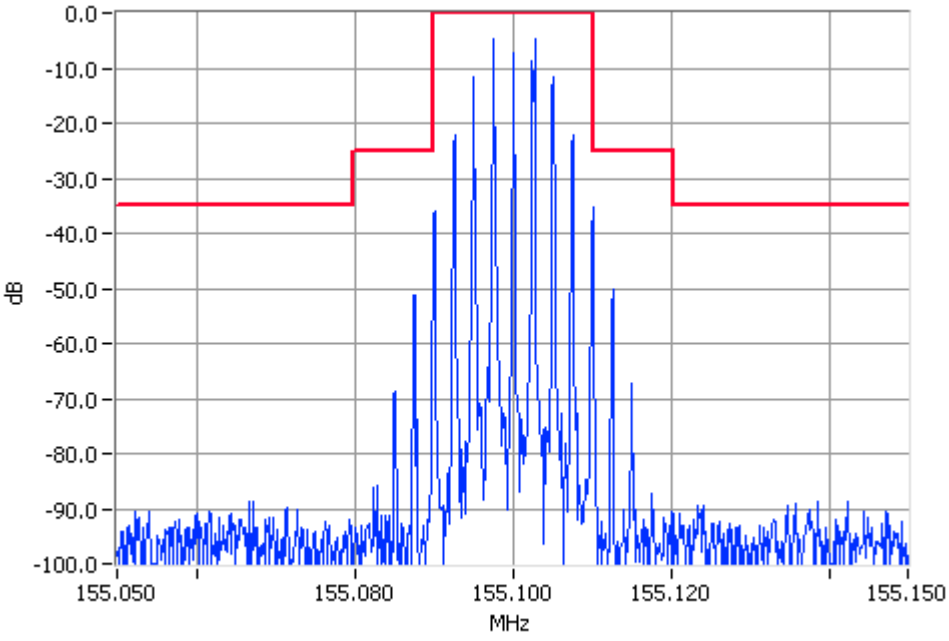
OCCUPIED BANDWIDTH

SPECIFICATION: FCC CFR 2.1049 (c)

Tx FREQUENCY: 155.1 MHz 5 W 25.0 kHz Channel Spacing



Unmodulated 155.1000MHz Mask B 5W Pass



Analogue Modulation 155.1000MHz Mask B 50W Pass

SPURIOUS EMISSIONS (CONDUCTED)

TEST CONDITIONS: 100W	Ambient Temperature	23 °C
	Relative Humidity	49 %
	Standard Voltage	120 V AC

SPECIFICATION: FCC 47 CFR 2.1051

GUIDE: TIA/EIA-603 2.2.13

MEASUREMENT PROCEDURE:
1. Refer Appendix A for the equipment set up.
2. The frequency range examined was from the lowest frequency generated within the EUT, to a frequency higher than the 10th Harmonic: 100kHz to Fc-BW
   Fc+BW to 1.55 GHz
3. Spurious emissions which were attenuated more than 20dB below the limit were not recorded.

MEASUREMENT RESULTS:
See the tables on the following pages.

LIMIT CLAUSE: FCC 47 CFR 90.210

Equipment Used: : 1,62,66,82,85,123

SPURIOUS EMISSIONS (CONDUCTED)

SPECIFICATION: FCC CFR 2.1051

Tx FREQUENCY: 155.1 MHz

155.1 MHz @ 100 W Emission Mask D		
Emission Frequency (MHz)	Level (dBm)	Level (dBc)
127.9999	-37.6	87.6
153.5999	-39.0	89.0
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 $50 + 10 \text{ Log}_{10} (P_{Watts})$	
10 W	-20 dBm	60 dBc
100 W	-20 dBm	70 dBc

SPURIOUS EMISSIONS (CONDUCTED)

SPECIFICATION: FCC CFR 2.1051

Tx FREQUENCY: 155.MHz

155.1 MHz @ 10 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 $50 + 10 \text{ Log}_{10} (P_{Watts})$	
10 W	-20 dBm	60 dBc
100 W	-20 dBm	70 dBc

SPURIOUS EMISSIONS (CONDUCTED)

SPECIFICATION: FCC CFR 2.1051

Tx FREQUENCY: 155.1 MHz

155.1 MHz @ 50 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 $50 + 10 \text{ Log}_{10} (P_{Watts})$	
5 W	-20 dBm	57 dBc
50 W	-20 dBm	67 dBc

SPURIOUS EMISSIONS (CONDUCTED)

SPECIFICATION: FCC CFR 2.1051

Tx FREQUENCY: 155.1 MHz

155.1 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 $50 + 10 \text{Log}_{10} (P_{Watts})$	
5 W	-20 dBm	57 dBc
50 W	-20 dBm	67 dBc

SPURIOUS EMISSIONS (RADIATED)

TEST CONDITIONS: 100W	Ambient Temperature	22.5 ^{o}C
	Relative Humidity	48 %
	Standard Voltage	120 V AC

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^{o} 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

Equipment Used: : 4, 40, 42, 43, 86, 88, 91

SPURIOUS EMISSIONS (RADIATED)

SPECIFICATION: FCC CFR 2.1053

Tx FREQUENCY: 155.1MHz

155.1 MHz @ 100 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 $50 + 10 \text{ Log}_{10} (P_{Watts})$	
10 W	-20 dBm	60 dBc
100 W	-20 dBm	70 dBc

SPURIOUS EMISSIONS (RADIATED)

SPECIFICATION: FCC CFR 2.1053

Tx FREQUENCY: 155.1 MHz

155.1 MHz @ 10 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 $50 + 10 \text{ Log}_{10} (P_{Watts})$	
10 W	-20 dBm	60 dBc
100 W	-20 dBm	70 dBc

SPURIOUS EMISSIONS (RADIATED)

SPECIFICATION: FCC CFR 2.1053

Tx FREQUENCY: 155.1 MHz

155.1 MHz @ 50 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 $50 + 10 \text{ Log}_{10} (P_{Watts})$	
5 W	-20 dBm	57 dBc
50 W	-20 dBm	67 dBc

SPURIOUS EMISSIONS (RADIATED)

SPECIFICATION: FCC CFR 2.1053

Tx FREQUENCY: 155.1 MHz

155.1 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 $50 + 10 \text{ Log}_{10} (P_{Watts})$	
5 W	-20 dBm	57 dBc
50 W	-20 dBm	67 dBc

TRANSMITTER FREQUENCY STABILITY (TEMPERATURE)

TEST CONDITIONS: Ambient Temperature 22.5 °C
Relative Humidity 48 %
Standard Voltage 120 V AC

SPECIFICATION: FCC 47 CFR 2.1055 (a) (1)

GUIDE: TIA/EIA-603 2.2.2

MEASUREMENT PROCEDURE:
1. Refer Appendix A for the equipment set up.
2. The EUT was tested for frequency error from –30 °C to +50°C in 10 °C increments
3. The frequency error was recorded in parts per million (ppm).

MEASUREMENT RESULTS:
See the plots on the following pages for 12.5 kHz & 25.0 kHz channel spacings.

LIMIT CLAUSE: FCC 47 CFR 90.213

Frequency Range: 150MHz – 174 MHz

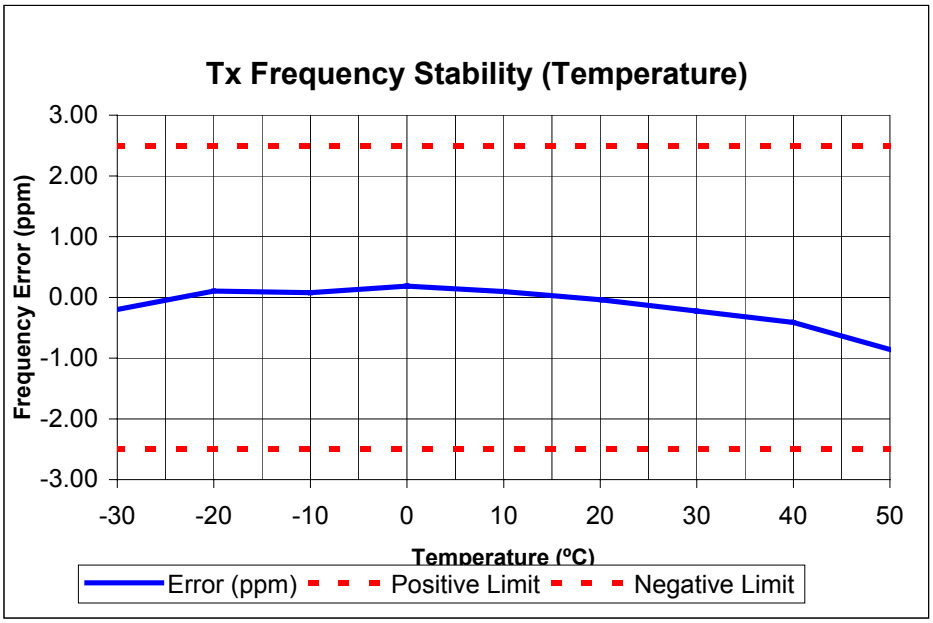
Channel Spacing (kHz)	Frequency Error (ppm)
12.5	2.5
25.0	5.0

Equipment Used: 11, 116, 61, 13, 115, 118

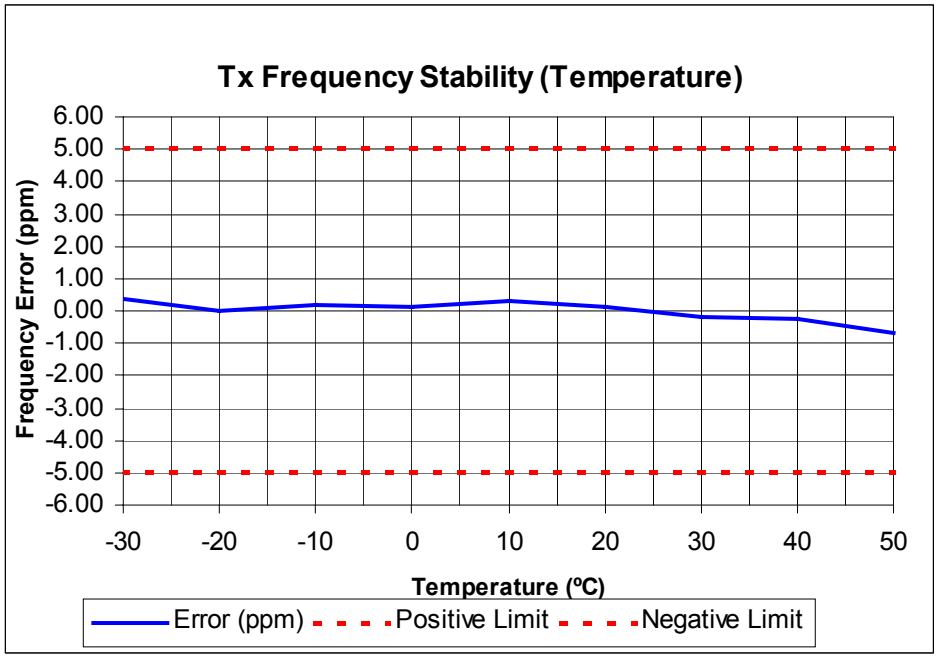
TRANSMITTER FREQUENCY STABILITY (TEMPERATURE)

SPECIFICATION: FCC 47 CFR 2.1055 (a) (1)

Tx FREQUENCY: 155.1 MHz 100 W 12.5 kHz channel Spacing



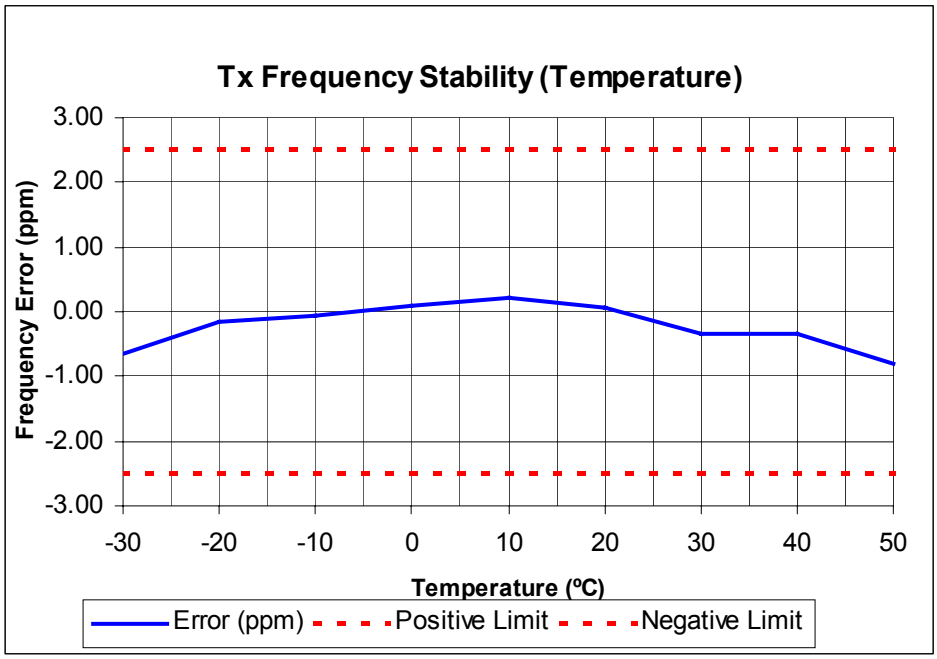
Tx FREQUENCY: 155.1 MHz 100W 25.0 kHz channel Spacing



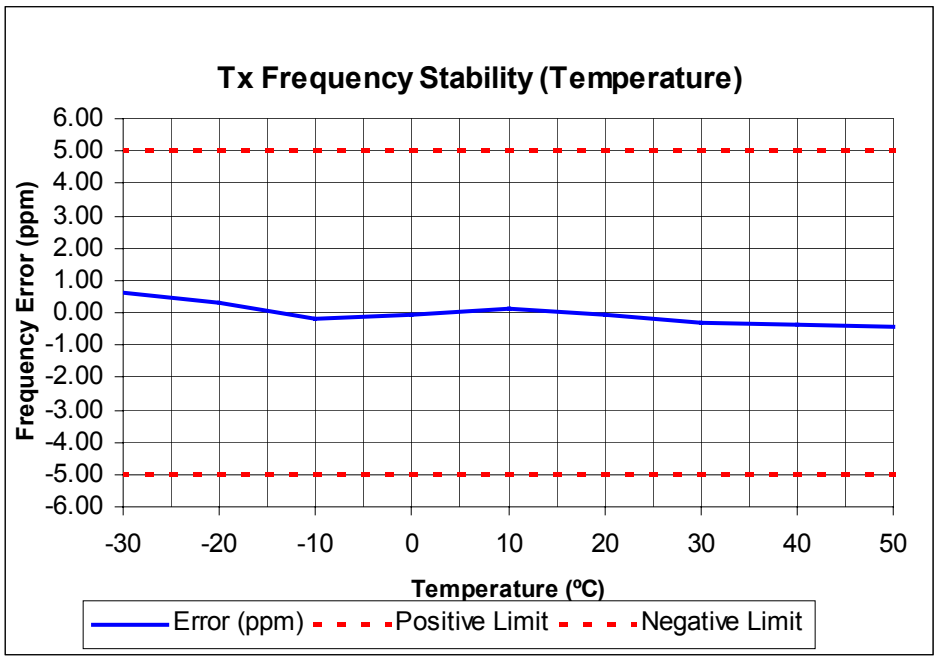
TRANSMITTER FREQUENCY STABILITY (TEMPERATURE)

SPECIFICATION: FCC 47 CFR 2.1055 (a) (1)

Tx FREQUENCY: 155.1 MHz 50 W 12.5 kHz channel Spacing



Tx FREQUENCY: 155.1 MHz 50W 25.0 kHz channel Spacing



TRANSMITTER FREQUENCY STABILITY (VOLTAGE)

TEST CONDITIONS: Ambient Temperature 22.5 °C
Relative Humidity 48 %
Standard Voltage 120 V AC

SPECIFICATION: FCC 47 CFR 2.1055 (d) (1)

GUIDE: TIA/EIA-603 2.2.2

MEASUREMENT PROCEDURE:
1. Refer Appendix A for the equipment set up.
2. The EUT was tested for frequency error at an input voltage to the radio of 85% to 115%.
3. The frequency error was recorded in parts per million (ppm).

MEASUREMENT RESULTS: Frequency Range: 150MHz to 174MHz

Channel Spacing (kHz)	FREQUENCY ERROR (ppm) @ 155.1MHz 100W		
	102 V AC	120 V AC	138 V AC
12.5	-0.17	-0.12	-0.15
25.0	-0.42	-0.46	-0.38

LIMIT CLAUSE: FCC 47 CFR 90.213

Channel Spacing (kHz)	Frequency Error (ppm)
12.5	2.5
25.0	5.0

Equipment Used: 11, 116, 61, 13, 118

TRANSMITTER FREQUENCY STABILITY (VOLTAGE)

TEST CONDITIONS: Ambient Temperature 22.5 °C
Relative Humidity 51 %
Standard Voltage 120 V AC

SPECIFICATION: FCC 47 CFR 2.1055 (d) (1)

GUIDE: TIA/EIA-603 2.2.2

MEASUREMENT PROCEDURE:
4. Refer Appendix A for the equipment set up.
5. The EUT was tested for frequency error at an input voltage to the radio of 85% to 115%.
6. The frequency error was recorded in parts per million (ppm).

MEASUREMENT RESULTS: Frequency Range: 150MHz to 174MHz

Channel Spacing (kHz)	FREQUENCY ERROR (ppm) @ 155.1MHz 50W		
	102 V AC	120 V AC	138 V AC
12.5	-0.37	-0.32	-0.42
25.0	-0.29	-0.25	-0.31

LIMIT CLAUSE: FCC 47 CFR 90.213

Channel Spacing (kHz)	Frequency Error (ppm)
12.5	2.5
25.0	5.0

Equipment Used: 11, 116, 61, 13, 118

TRANSIENT FREQUENCY BEHAVIOR

TEST CONDITIONS:	Ambient Temperature	21.5 ^{o}C
	Relative Humidity	50 %
	Standard Voltage	120 V AC

SPECIFICATION: FCC 47 CFR 90.214

GUIDE: TIA/EIA-603 2.2.19

MEASUREMENT PROCEDURE:
1. Refer Appendix A for the equipment set up.
2. The Equipment Under Test was set up as shown in the following diagram.
3. 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 & 25.0 kHz channel spacings.

LIMIT CLAUSE: FCC 47 CFR 90.214

Equipment Used: 1,11,116,61,13,118,100

TRANSIENT FREQUENCY BEHAVIOUR

SPECIFICATION: FCC 47 CFR 90.214

Tx FREQUENCY: 155.1MHz 100 W 12.5 kHz Channel Spacing

FREQUENCY	155.1MHz @ 100 W Tx	
TRANSIENT RESPONSE PERIOD	CARRIER PEAK VARIATION FROM NORMAL	
	Key ON (kHz)	Key OFF (kHz)
t_1	-2.6	N/A
t_2	0.2	N/A
t_3	N/A	0.4
$t_2 \rightarrow t_3$ ppm	2.3	
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	

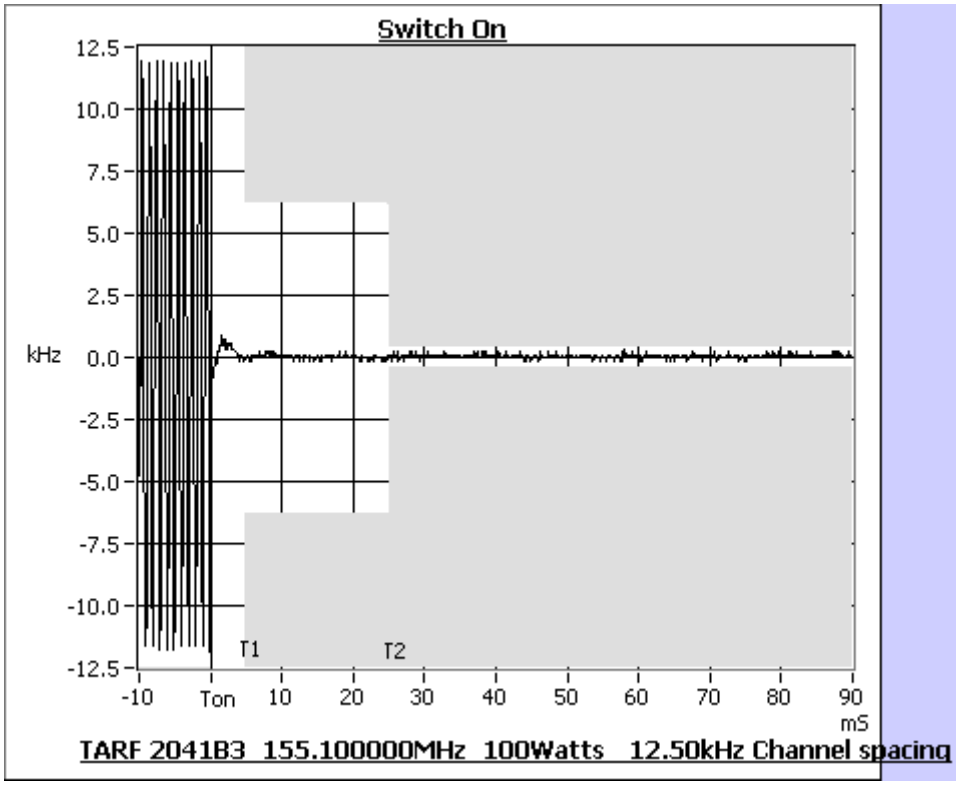
LIMIT:

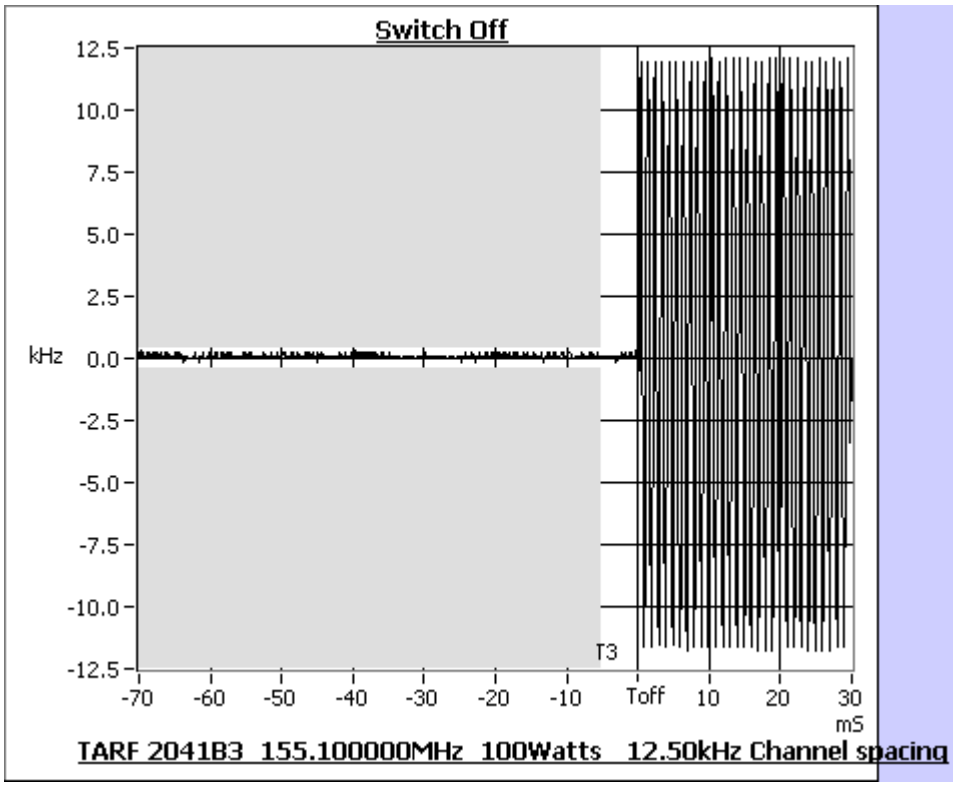
TRANSIENT PERIODS	FREQUENCY RANGE 150MHz – 174 MHz	FREQUENCY RANGE 421MHz – 512 MHz
t_1 (ms)	5 ms	10 ms
t_2 (ms)	20 ms	25 ms
t_3 (ms)	5 ms	10 ms

TRANSIENT FREQUENCY BEHAVIOUR

SPECIFICATION: FCC 47 CFR 90.214

Tx FREQUENCY: 155.1MHz 100 W 12.5 kHz Channel Spacing





TRANSIENT FREQUENCY BEHAVIOUR

SPECIFICATION: FCC 47 CFR 90.214

Tx FREQUENCY: 155.1MHz 100 W 25.0 kHz Channel Spacing

FREQUENCY	155.1 MHz @ 100 W Tx	
TRANSIENT RESPONSE PERIOD	CARRIER PEAK VARIATION FROM NORMAL	
	Key ON (kHz)	Key OFF (kHz)
t_1	-3.1	N/A
t_2	-0.3	N/A
t_3	N/A	0.2
$t_2 \rightarrow t_3$ ppm	2.9	
ERROR LIMIT ($t_2 \rightarrow t_3$) ppm	5.0	

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	

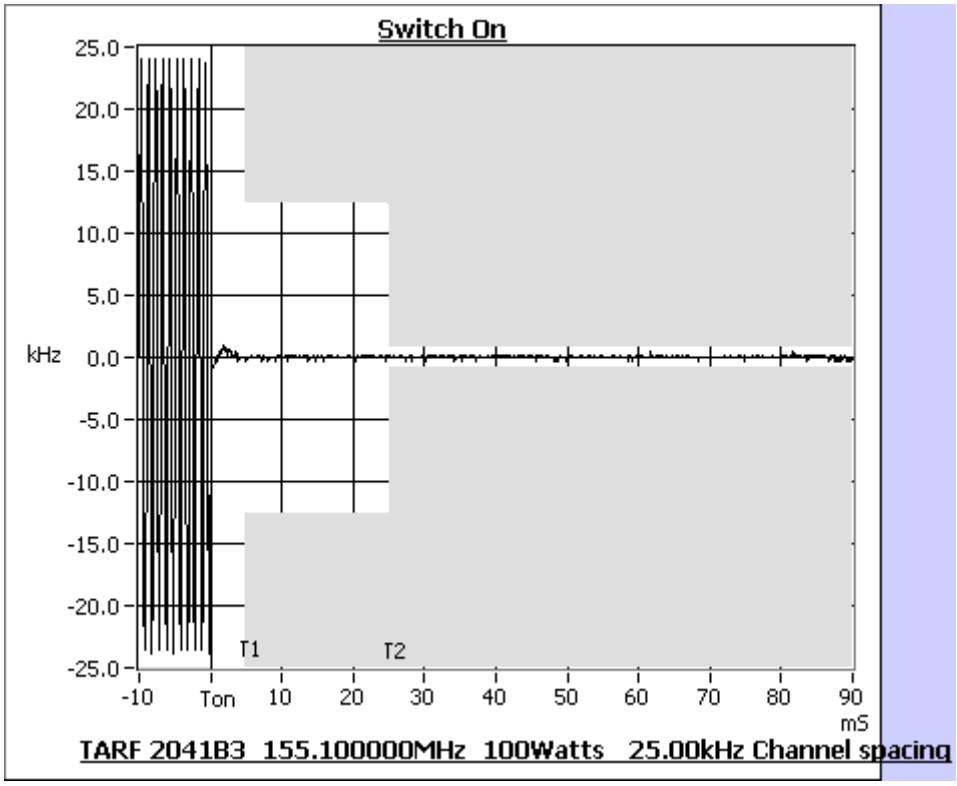
LIMIT:

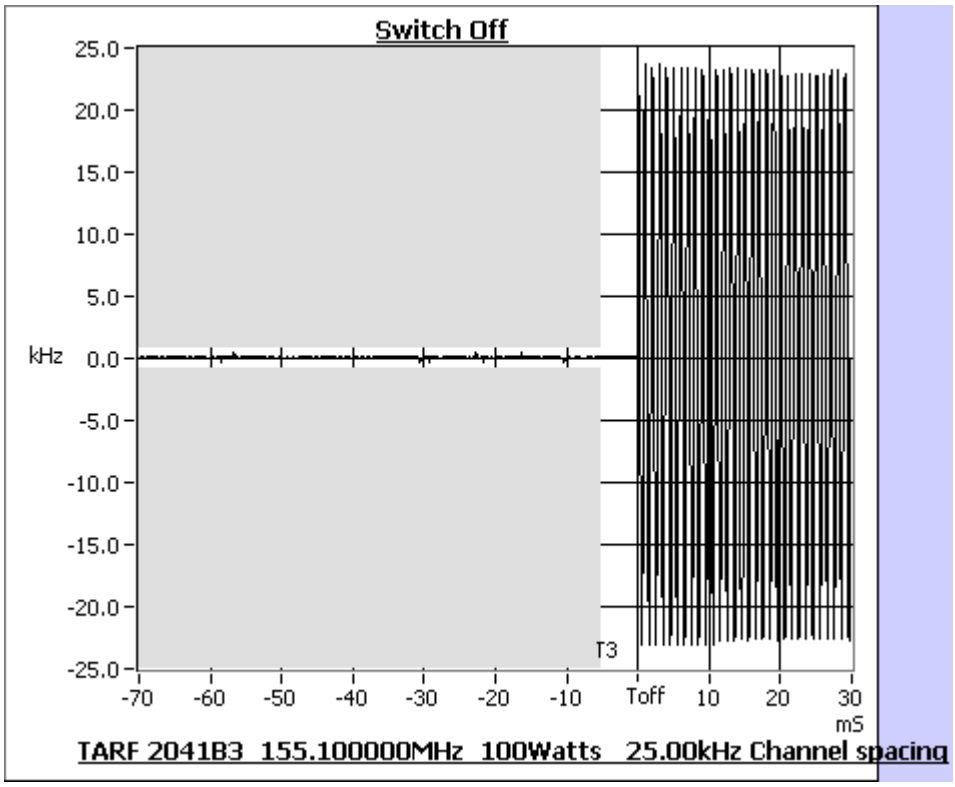
TRANSIENT PERIODS	FREQUENCY RANGE 150MHz – 174 MHz	FREQUENCY RANGE 421MHz – 512 MHz
t_1 (ms)	5 ms	10 ms
t_2 (ms)	20 ms	25 ms
t_3 (ms)	5 ms	10 ms

TRANSIENT FREQUENCY BEHAVIOUR

SPECIFICATION: FCC 47 CFR 90.214

Tx FREQUENCY: 155.1 MHz 100 W 25.0 kHz Channel Spacing





TRANSIENT FREQUENCY BEHAVIOUR

SPECIFICATION: FCC 47 CFR 90.214

Tx FREQUENCY: 155.1 MHz 50 W 12.5 kHz Channel Spacing

FREQUENCY	155.1 MHz @ 50 W Tx	
TRANSIENT RESPONSE PERIOD	CARRIER PEAK VARIATION FROM NORMAL	
	Key ON (kHz)	Key OFF (kHz)
t_1	-3.0	N/A
t_2	-0.2	N/A
t_3	N/A	0.3
$t_2 \rightarrow t_3$ ppm	-1.5	
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	

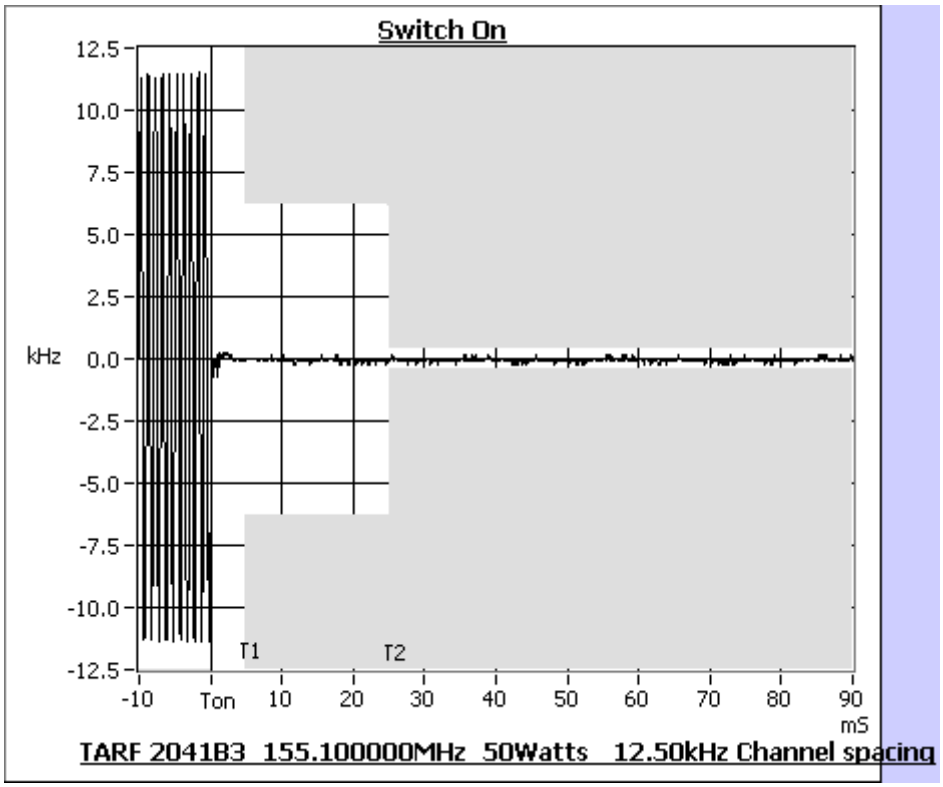
LIMIT:

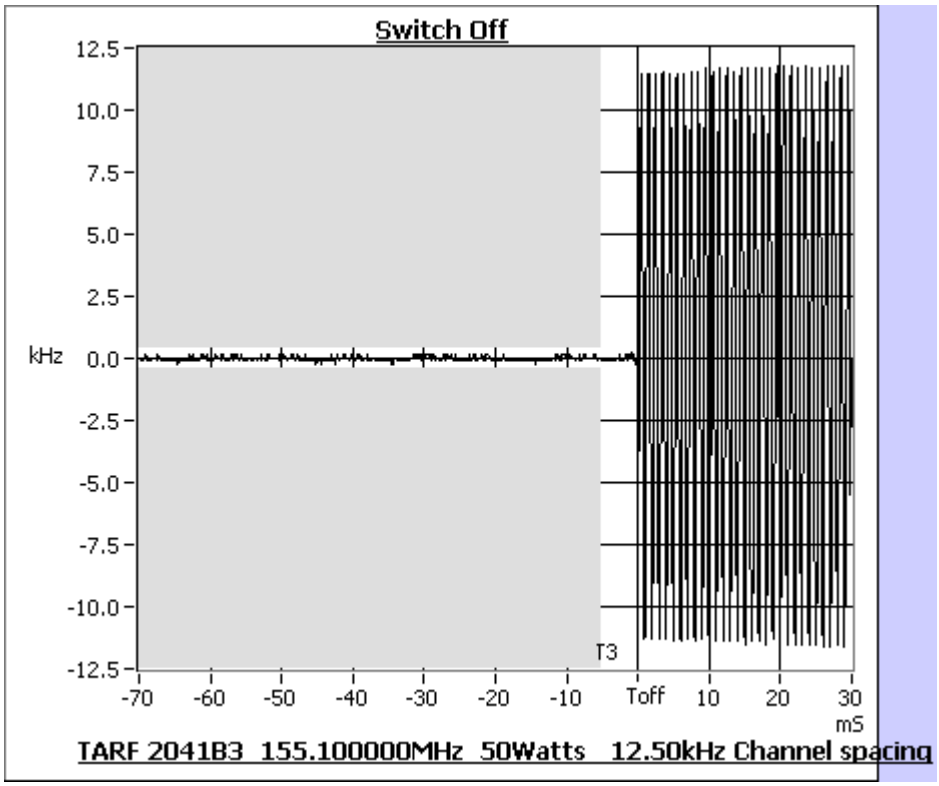
TRANSIENT PERIODS	FREQUENCY RANGE 150MHz – 174 MHz	FREQUENCY RANGE 421MHz – 512 MHz
t_1 (ms)	5 ms	10 ms
t_2 (ms)	20 ms	25 ms
t_3 (ms)	5 ms	10 ms

TRANSIENT FREQUENCY BEHAVIOUR

SPECIFICATION: FCC 47 CFR 90.214

Tx FREQUENCY: 155.1 MHz 50 W 12.5 kHz Channel Spacing





TRANSIENT FREQUENCY BEHAVIOUR

SPECIFICATION: FCC 47 CFR 90.214

Tx FREQUENCY: 155.1 MHz 50 W 25.0 kHz Channel Spacing

FREQUENCY	155.1 MHz @ 50 W Tx	
TRANSIENT RESPONSE PERIOD	CARRIER PEAK VARIATION FROM NORMAL	
	Key ON (kHz)	Key OFF (kHz)
t_1	-3.1	N/A
t_2	-0.6	N/A
t_3	N/A	-0.8
$t_2 \rightarrow t_3$ ppm	-3.6	
ERROR LIMIT ($t_2 \rightarrow t_3$) ppm	5.0	

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	

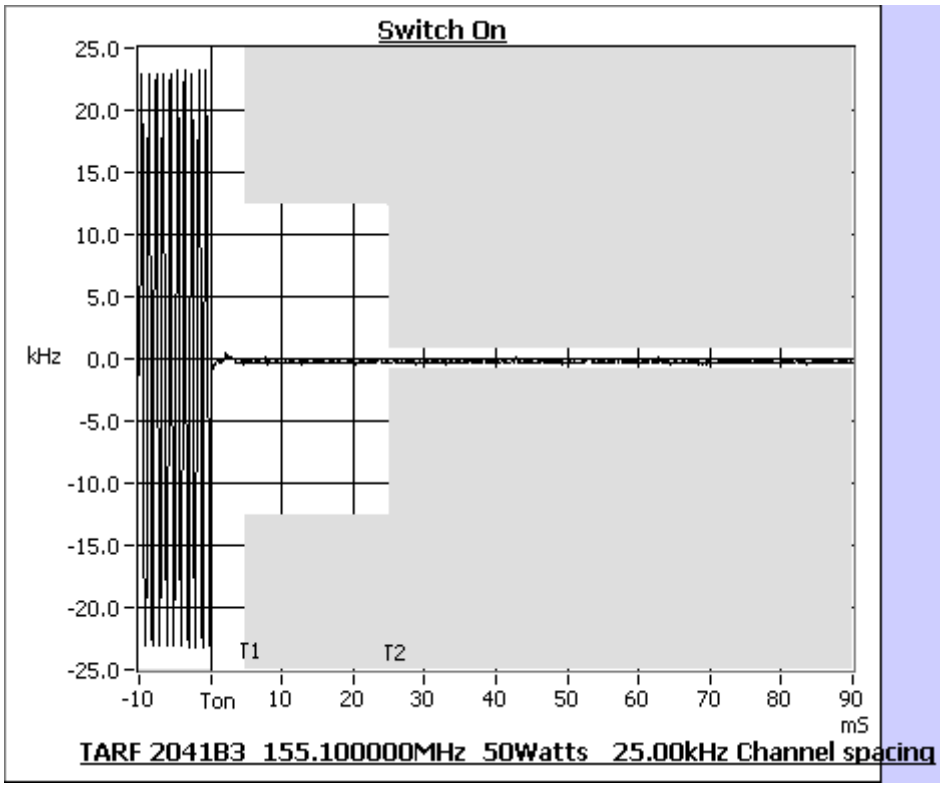
LIMIT:

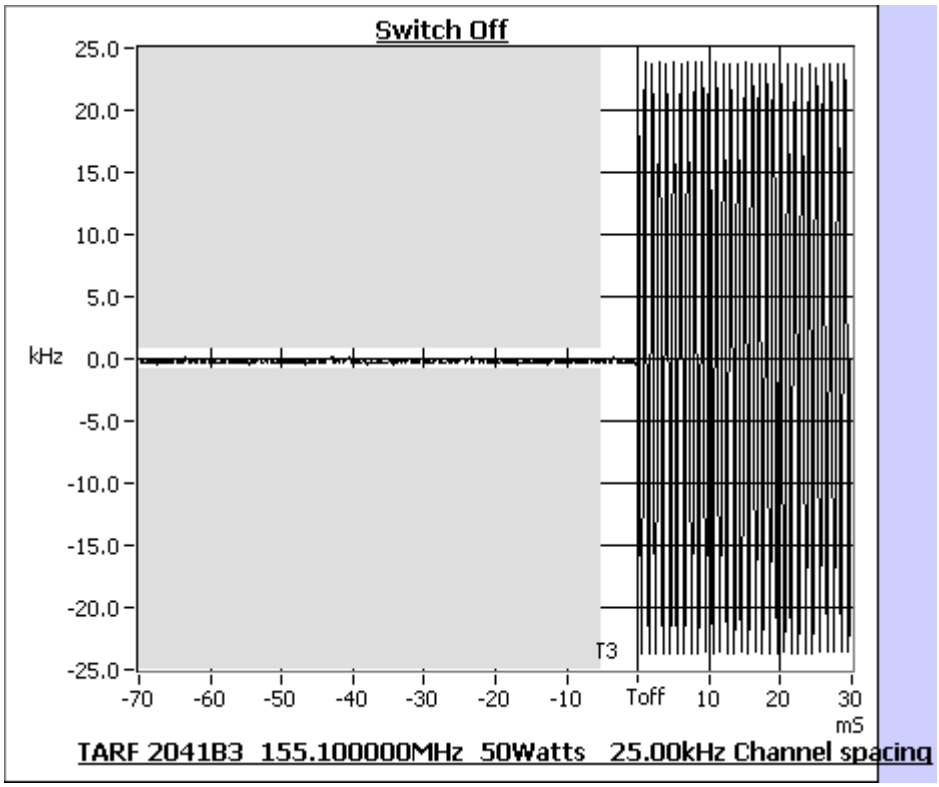
TRANSIENT PERIODS	FREQUENCY RANGE 150MHz – 174 MHz	FREQUENCY RANGE 421MHz – 512 MHz
t_1 (ms)	5 ms	10 ms
t_2 (ms)	20 ms	25 ms
t_3 (ms)	5 ms	10 ms

TRANSIENT FREQUENCY BEHAVIOUR

SPECIFICATION: FCC 47 CFR 90.214

Tx FREQUENCY: 155.1 MHz 50 W 25.0 kHz Channel Spacing





TEST EQUIPMENT LIST

TELTEST LABORATORIES Test Equipment List

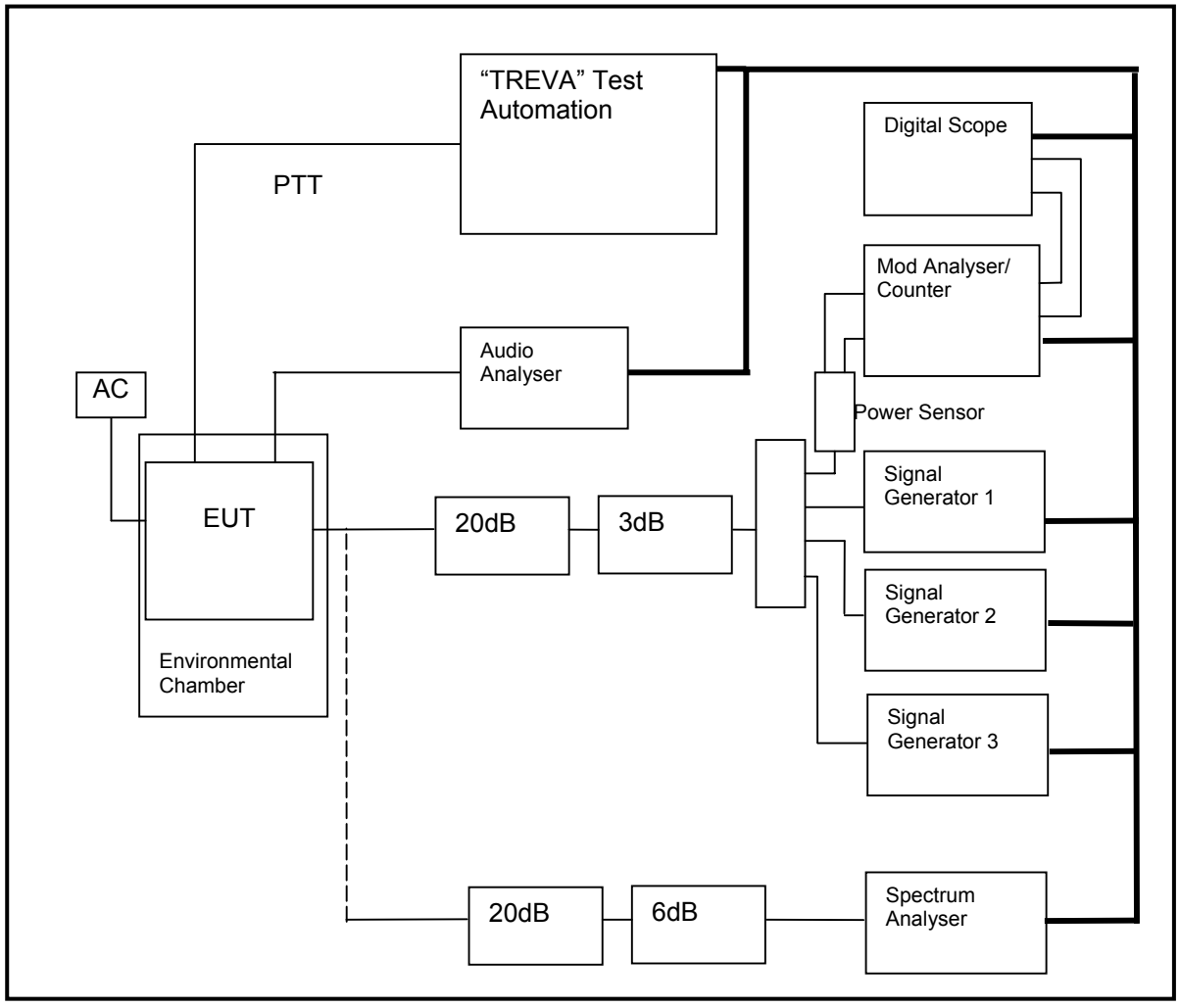
To facilitate inclusion on each page, the Test Equipment used is numbered and listed against the related test in the Report.

No#	Equipment	Manufacturer	Model No	Serial No#	Tait ID	Cal Due
1	Signal Generator	Hewlett Packard	HP8642B (Opt 001)	2512A00176	E3064	18-Feb-05
4	Signal Generator	Hewlett Packard	HP8648C	3443U00543	E3558	11-Sep-05
11	Modulation Analyser	Hewlett Packard	HP8901B (Opt 002)	2441A00393	E3073	05-Aug-04
13	Audio Analyser	Hewlett Packard	HP8903A	2308A02597	E3074	15-Oct-04
14	Power Head	Hewlett Packard	HP11722A	2320A00688	E3307	15-Oct-04
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
45	Corner 400-1000 MHz	Ailtech	DM105A-T3	J1418-108	E3036	On Use
61	RF Attenuator 150W	Weinschel	40-20-33	CJ404	E3387	11-Aug-04
62	RF Attenuator 150W	Weinschel	57-10-34	LB590	E3674	09-Jul-04
66	RF Attenuator 25W	Weinschel	33-20-33	BD5871	E3673	09-Jul-04
82	3m Coax Cable BLUE)	Suhner	Sucoflex 104A	25033/4A	E3694	11-Aug-04
85	1m Coax Cable (BLUE)	Suhner	Sucoflex 104A	25004/4A	E3691	09-Jul-04
86	1m Coax Cable (BLUE)	Suhner	Sucoflex 104A	25003/4A	E3690	11-Aug-04
87	Audio Analyser	Hewlett Packard	HP8903B	2818A04275	E3710	25-Nov-04
88	Spectrum Analyser	Hewlett Packard	HP8562E	3821A00779	E3715	06-Jan-05
100	Oscilloscope	Tektronics	TDS380	B017095	E3782	16-Oct-04
111	Modulation Analyser	Hewlett Packard	HP8901B (Opt 002)	3704A05837	E3786	15-Oct-04
114	Signal Generator	Rohde & Schwarz	SML03 1090.3000.13		E4050	28-Nov-04
115	Environ. Chamber	Contherm	5400 RHSLT.M		E4051	04-Mar-05
116	Power Head	Hewlett Packard	HP11722A	2716A02037		08-Aug-04
118	RF Attenuator	Weinschel	Model 1	BL9958	E4081	On Use
119	RF Attenuator 150W Treva	Weinschel	40-20-23	MF817	E4082	09-Jul-04
123	Spectrum Analyser	Agilent	E4445A	MY42510072	E4139	23-Apr-05

APPENDIX A

TEST SETUP DETAILS

Testing is performed using the **T**eltest **R**adio **EVA**luation 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.



TEST SETUP DETAILS

The Equipment set up for Radiated Emissions testing is as shown in the following diagram.