Laboratory Test Report

For the

TBAH0 Base Station Transcevier

Tested In accordance with

FCC 47 CFR Parts 22 and 90

Report Revision: 1
Issue Date: 14-July-2006
FCC ID: CASTBA9H0

PREPARED BY: Marcus Ludwig _____
Test Technician

CHECKED & APPROVED BY: M C James _____
Laboratory Test Engineer

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

TABLE OF CONTENTS

REVISION HISTORY

Date	Revision	Comments
14-July-2006	1	Initial test report

INTRODUCTION

The frequency range of the Tait base station equipment type TBAH0 has been extended to now cover 380 to 520 MHz. (Previously 400 to 520 MHz. FCC ID: CASTBA-H0).
This test report details performance of the lower sub band 380 to 420 MHz and should be read in conjunction with test reports 1834,1834D and 2251 which cover the upper sub band 400 to 520 MHz.

FCC CFR47 Part 22 + 90

The 100W version of type TBAH0 equipment is to be assigned the FCC ID: CASTBA9H0

REPORT PREPARED FOR

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

STATEMENT OF COMPLIANCE

The TBAH0 Base Station transceiver as tested in this report was found to conform to the following standards:

FCC CFR 47 Parts 22 & 90

DESCRIPTION OF SAMPLE

Equipment: Base Station Transceiver. 380MHz to 520MHz

Type: TBAH0

Details:

Component:	Type:	Model:	S/N:
Rack	TBAK2	TBA2323-A000	18005538
TB8100 Reciter 1 (Voice/FFSK)	TBA40H4	TBA40H4-0B00	18021105
TB8100 Reciter 2 (Paging)	TBA40H4	TBA40H4-0L00	18022808
TB9100 Reciter 3 (C4FM)	TBA40H4	TBA40H4-PA00	18021109
100W Power Amplifier	TBA90H0	TBA90H0-0000	18022804
Power Management Unit	TBA30A4	TBA30A4-4400	18004266
User Interface	TBA2020	TBA2020	18004611

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	120V ac

MODULATION TYPES AND EMISSION DESIGNATORS

Modulation type:	F3E	Analogue FM
	F1D	FSK Paging (512bps, 1200bps, 2400bps)
	F2D	FFSK Data (1200bps)
	F1E, F7E	Digital Voice C4FM (9600 bps)
	F1D, F7D	Digital Data C4FM (9600 bps)

Channel spacing: 12.5 kHz, 25 kHz

Emission designators:	Analogue FM	11K0F3E, 16K0F3E
	FSK Paging	5K90F1D, 11K3F1D 6K60F1D, 12K0F1D 7K80F1D, 13K2F1D
	FFSK Data	6k60F2D, 9k60F2D
	Digital Voice C4FM	8K10F1E, 10K0F1E 8K10F7E, 10K0F7E
	Digital Data C4FM	8K10F1D, 10K0F1D 8K10F7D, 10K0F7D

TEST RESULTS

TRANSMITTER OUTPUT POWER (CONDUCTED)

SPECIFICATION: FCC 47 CFR 2.1046

GUIDE: TIA/EIA-603C 2.2.1

MEASUREMENT PROCEDURE:
1. Refer Annex 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 sensor connected to the modulation analyser.

MEASUREMENT RESULTS:

Manufacturer's Rated Output Power: Continuously Variable: 10 W to 100 W

410.1 MHz	100 W nominal	10 W nominal
POWER (W)	93.8	10.0
Variation from Nominal (%)	-6.2	0.0
Measurement Uncertainty (dB)	+/-0.6	

LIMIT CLAUSE: FCC 47 CFR 90.205 (r)

Radio Type: Base Station Transceiver
Frequency Band: 380 MHz ~ 520 MHz

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

TRANSMITTER AUDIO FREQUENCY RESPONSE - PRE-EMPHASIS

SPECIFICATION: FCC 47 CFR 2.1047 (a)

GUIDE: TIA/EIA-603C 2.2.6

MEASUREMENT PROCEDURE:
1. Refer Annex A for 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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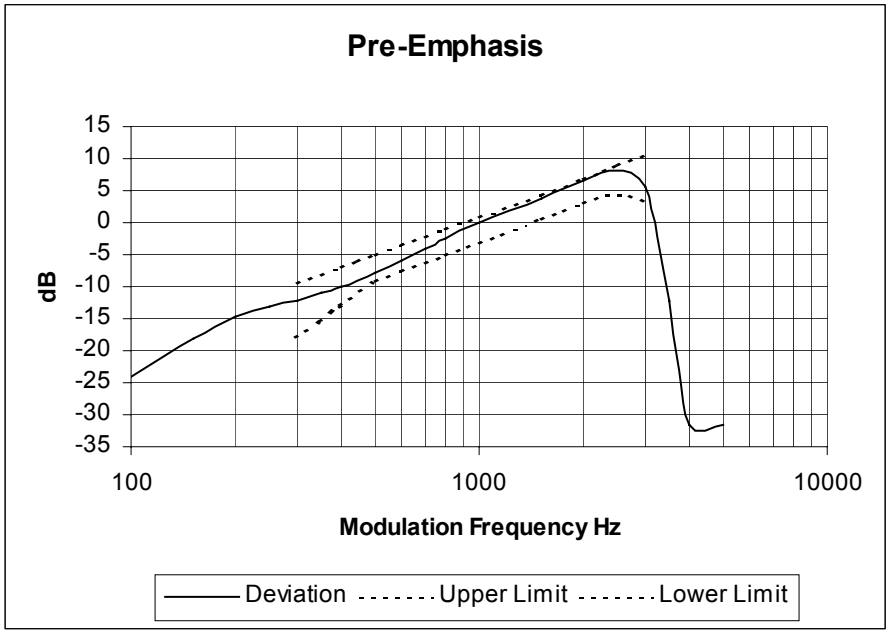
LIMIT CLAUSE: TIA/EIA-603C 3.2.6

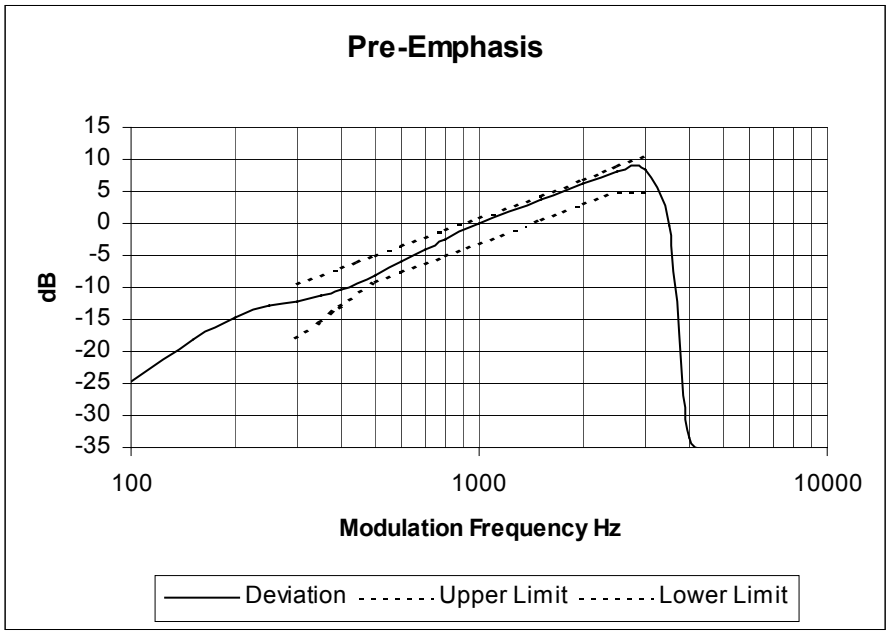
TRANSMITTER AUDIO FREQUENCY RESPONSE - PRE-EMPHASIS

SPECIFICATION: FCC CFR 2.1047 (a)

Tx FREQUENCY: 410.1 MHz 12.5 kHz Channel Spacing



Tx FREQUENCY: 410.1 MHz 25 kHz Channel Spacing



TRANSMITTER MODULATION LIMITING

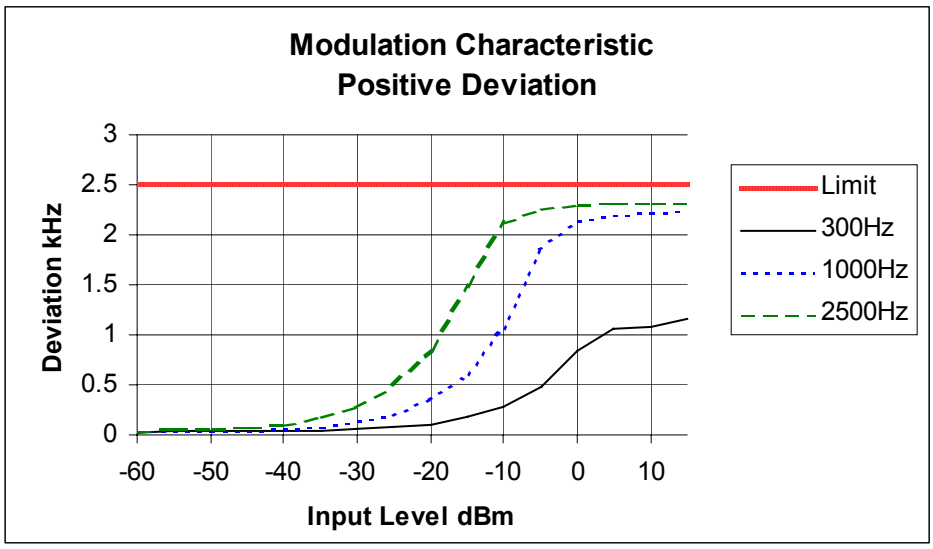
SPECIFICATION: FCC 47 CFR 2.1047 (b)

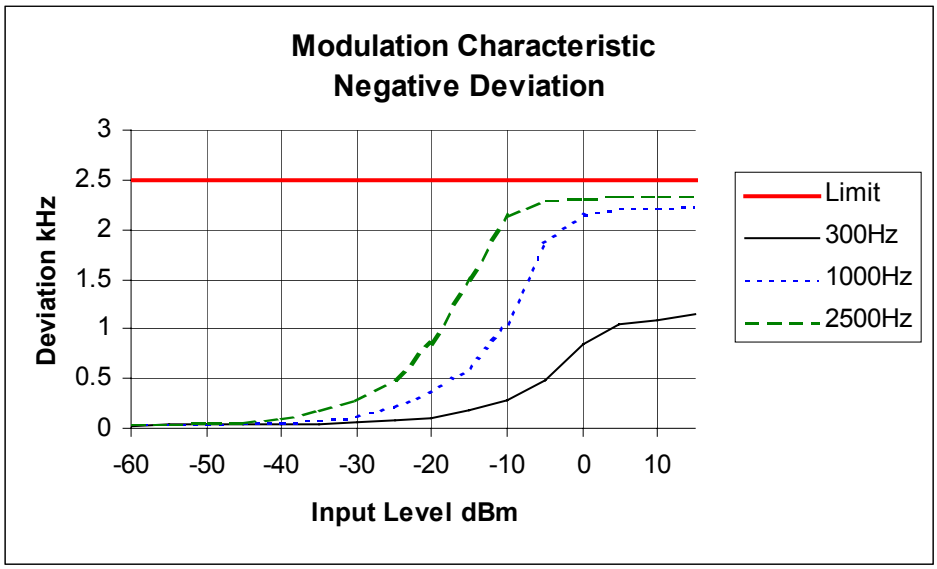
MEASUREMENT PROCEDURE:
1. Refer Annex A for Equipment set up.
2. The modulation response was measured at three audio frequencies while varying the input level.
3. Measurements were made for both Positive and Negative Deviation.

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

LIMIT CLAUSE: TIA/EIA-603C 1.3.4.4

Tx FREQUENCY: 410.1 MHz 12.5 kHz Channel Spacing

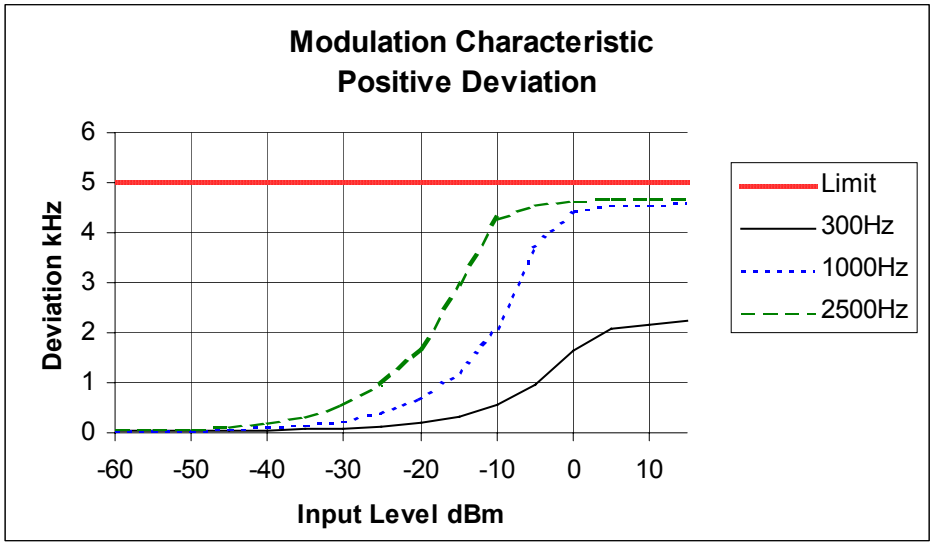


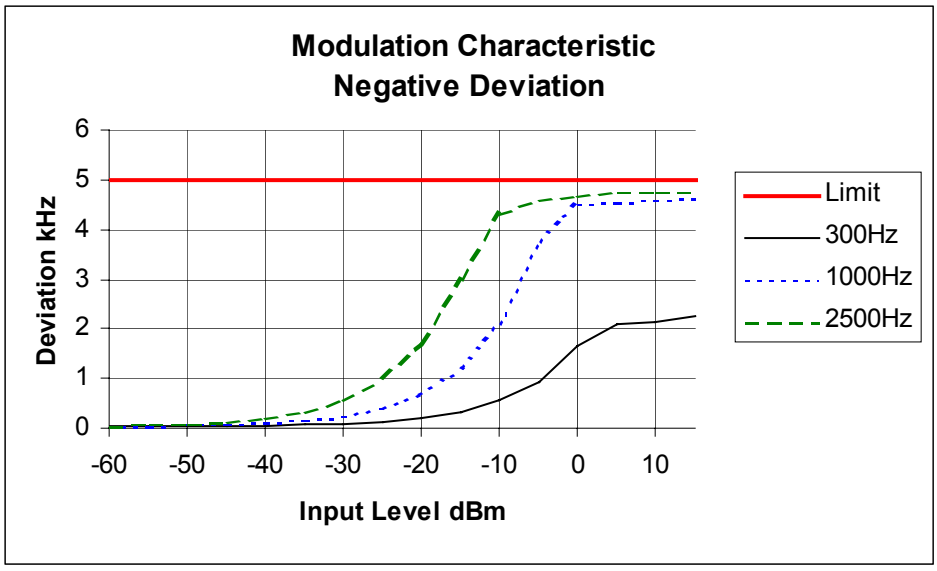


TRANSMITTER MODULATION LIMITING

SPECIFICATION: FCC CFR 2.1047 (b)

Tx FREQUENCY: 410.1 MHz 25.0 kHz Channel Spacing





SIDEBAND SPECTRUM

SPECIFICATION: FCC 47 CFR 2.1049 (c)

GUIDE: TIA/EIA-603C 2.2.11
TIA -102.CAAA - A

MEASUREMENT PROCEDURE:

1. Refer Annex A for 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 FFSK data measurements: The EUT was modulated with an externally generated pseudo random bit sequence at the appropriate Baud rate of 1200 bps producing 60% FM deviation.

   For FSK paging data measurements: The EUT was modulated with an externally generated TTL squarewave at the appropriate Baud rates of 512, 1200 and 2400 bps for POCSAG Paging.

   For C4FM Data measurements: The EUT was modulated with an internally generated bit sequence using the APCO P25 1011Hz test pattern (TIA -102.CAAA - A 2002).

   For C4FM 25 kHz Channel Spacing (Wide Pulse) Data measurements: The EUT was modulated with an internally generated bit sequence using the APCO P25 1011Hz test pattern (TIA -102.CAAA - A 2002).

3. The Sideband Spectrum was measured on the Spectrum Analyser, with bandwidth settings as follows.
   Emission Mask B, C, G, NTIA – Resolution bandwidth = 300Hz, Video Bandwidth = 3 kHz

MEASUREMENT RESULTS:

See the plots on the following pages tested at 410.1 MHz, 100 and 10 Watts, 12.5 kHz & 25.0 kHz channel spacings respectively.

LIMIT CLAUSE: FCC 47 CFR 90.210

EMISSION MASKS:

Emission Mask NTIA	12.5 kHz Channel Spacing	Analogue; FFSK, Digital Voice/Data
Emission Mask B	25.0 kHz Channel Spacing	Analog;
Emission Mask C	25.0 kHz Channel Spacing	FFSK; Digital Voice/Data
Emission Mask G	25 kHz Channel Spacing	FSK

DATA SPEED:

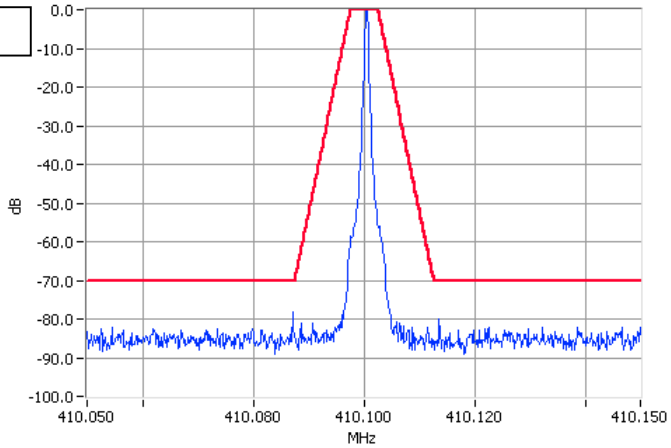
Digital Voice/Data	9600 bps	12.5 kHz Channel Spacing
Digital Voice/Data	9600 bps	25.0 kHz Channel Spacing
FFSK	1200 bps	12.5 kHz Channel Spacing
FSK POCSAG Paging	512, 1200 and 2400 bps	12.5 kHz Channel Spacing
FSK POCSAG Paging	512, 1200 and 2400 bps	25.0 kHz Channel Spacing

SIDEBAND SPECTRUM

SPECIFICATION: FCC CFR 2.1049 (c)

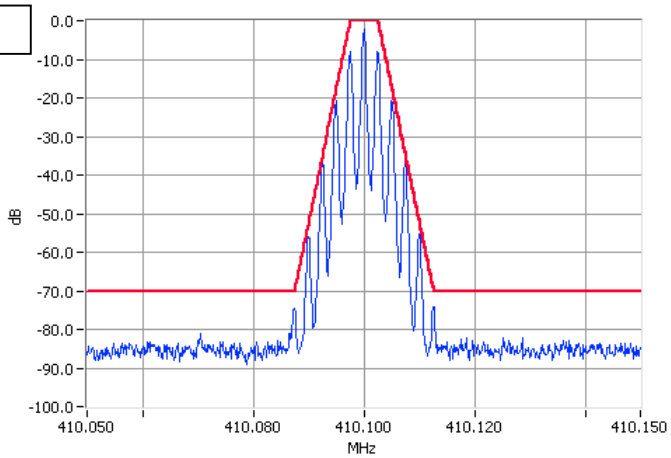
Tx Power: 100W Channel Spacing: 12.5 kHz Mask: NTIA

Unmodulated



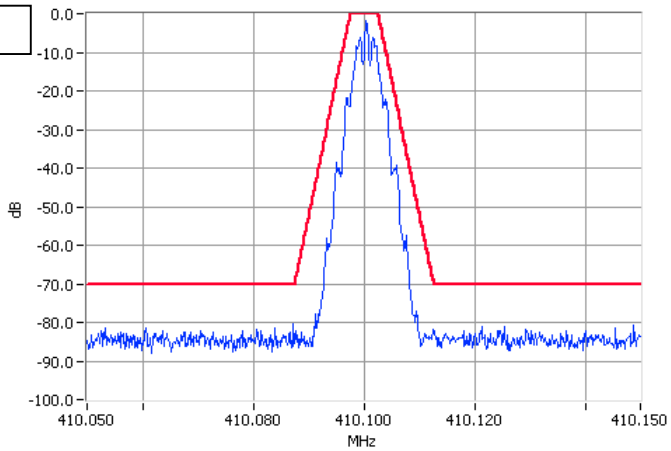
Unmodulated 410.1000MHz Mask NTIA 100W Pass
RBW=300Hz VBW=3000Hz

Analogue



Analogue Modulation 410.1000MHz Mask NTIA 100W Pass
RBW=300Hz VBW=3000Hz

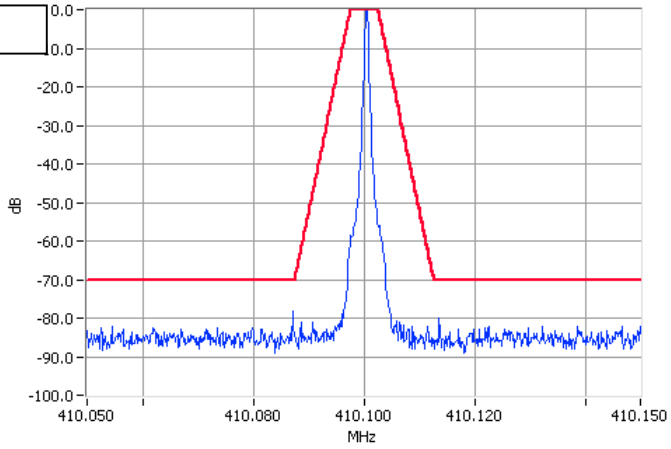
FFSK



Digital Modulation 410.1000MHz Mask NTIA 100W Pass
RBW=300Hz VBW=3000Hz

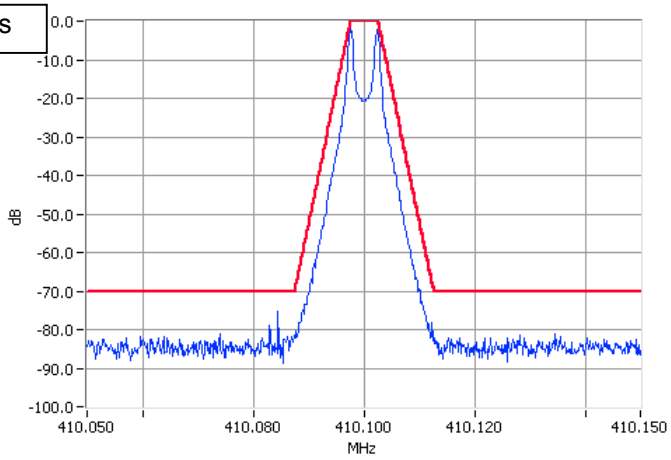
Tx Power: 100W Channel Spacing: 12.5 kHz Mask: NTIA

Unmodulated



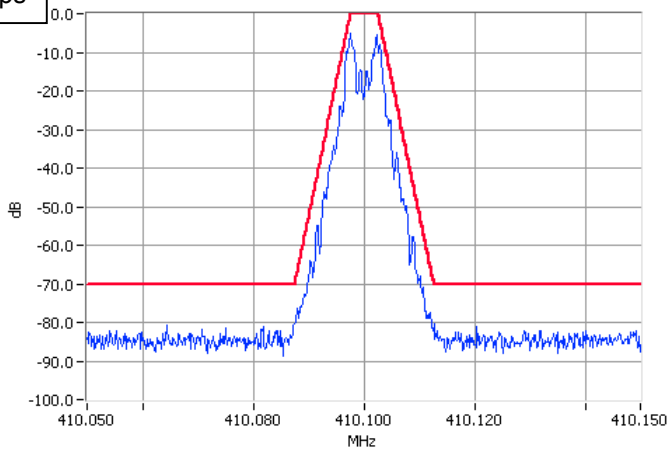
Unmodulated 410.1000MHz Mask NTIA 100W Pass
RBW=300Hz VBW=3000Hz

POCSAG 512bps



Paging Modulation 410.1000MHz Mask NTIA 100W Pass
RBW=300Hz VBW=3000Hz

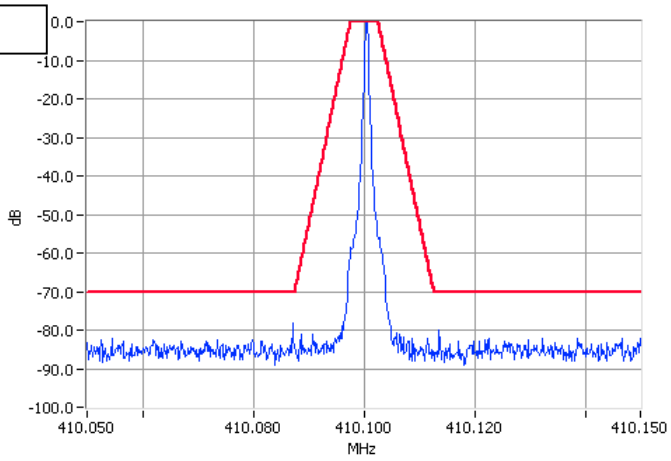
POCSAG 1200bps



Paging Modulation 410.1000MHz Mask NTIA 100W Pass
RBW=300Hz VBW=3000Hz

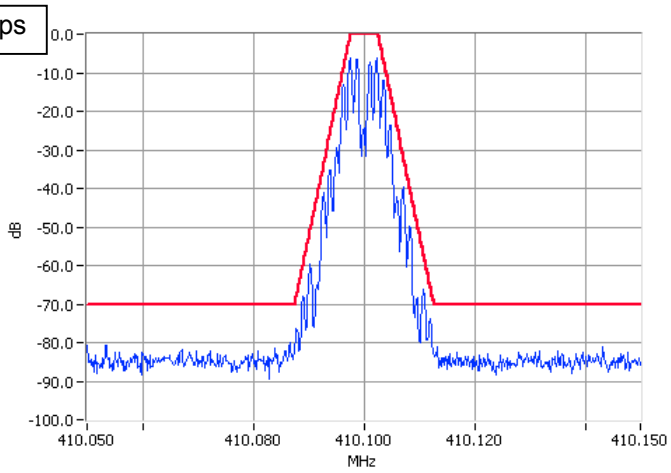
Tx Power: 100W Channel Spacing: 12.5 kHz Mask: NTIA

Unmodulated



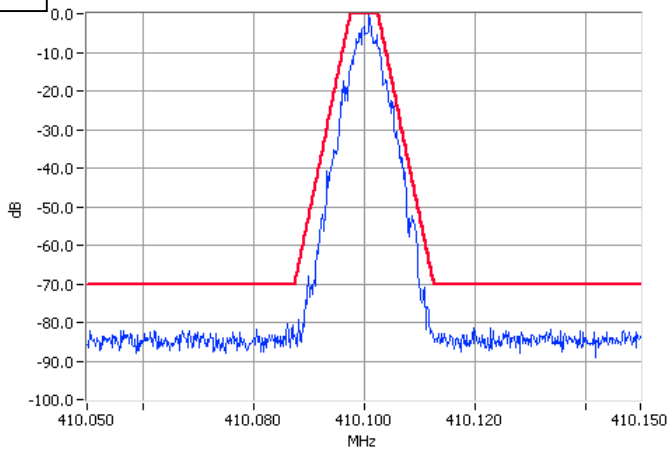
Unmodulated 410.1000MHz Mask NTIA 100W Pass
RBW=300Hz VBW=3000Hz

POCSAG 2400bps



Paging Modulation 410.1000MHz Mask NTIA 100W Pass
RBW=300Hz VBW=3000Hz

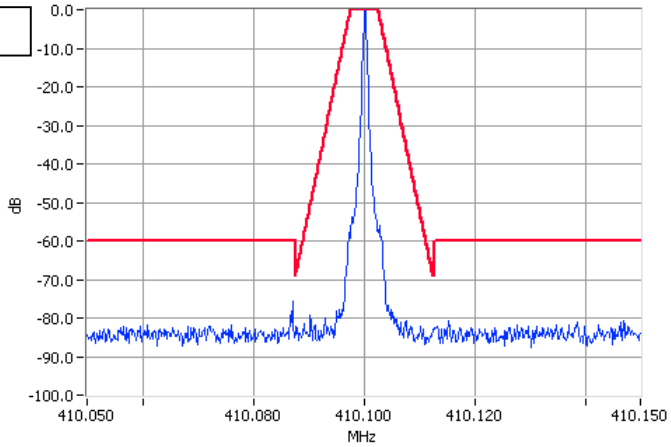
C4FM



Digital Modulation 410.1000MHz Mask NTIA 100W Pass
RBW=300Hz VBW=3000Hz

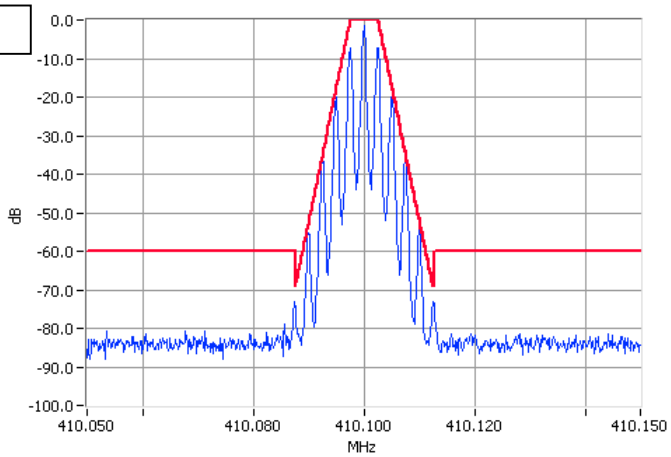
Tx Power: 10W Channel Spacing: 12.5 kHz Mask: NTIA

Unmodulated



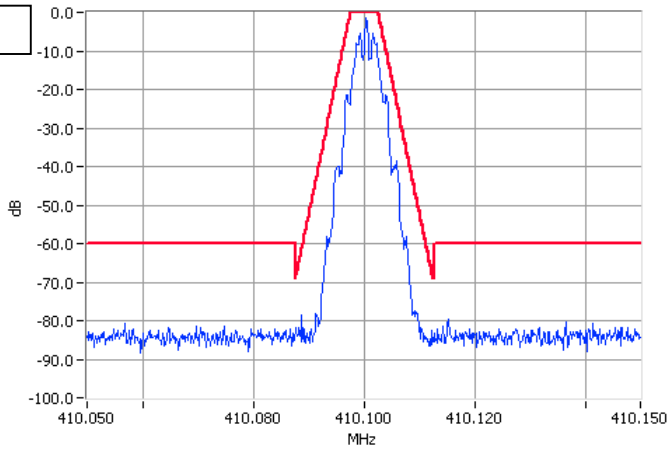
Unmodulated 410.1000MHz Mask NTIA 10W Pass
RBW=300Hz VBW=3000Hz

Analogue



Analogue Modulation 410.1000MHz Mask NTIA 10W Pass
RBW=300Hz VBW=3000Hz

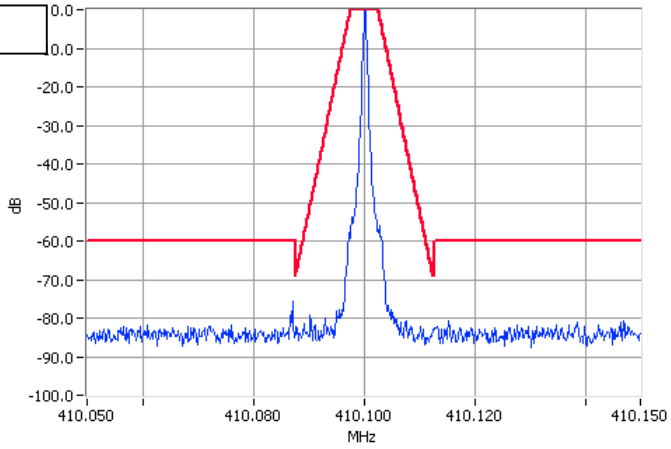
FFSK



Digital Modulation 410.1000MHz Mask NTIA 10W Pass
RBW=300Hz VBW=3000Hz

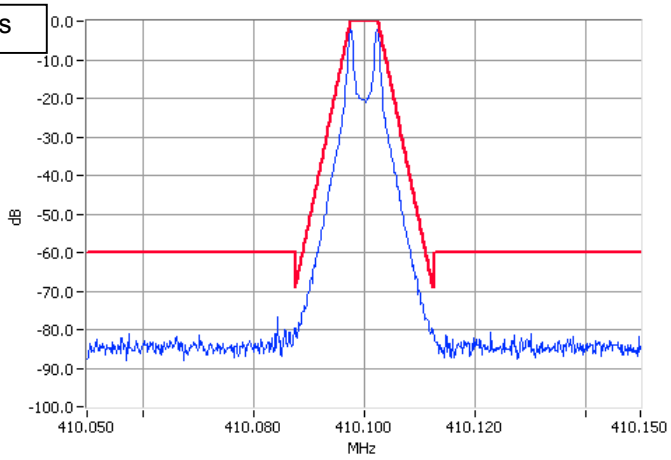
Tx Power: 10W Channel Spacing: 12.5 kHz Mask: NTIA

Unmodulated



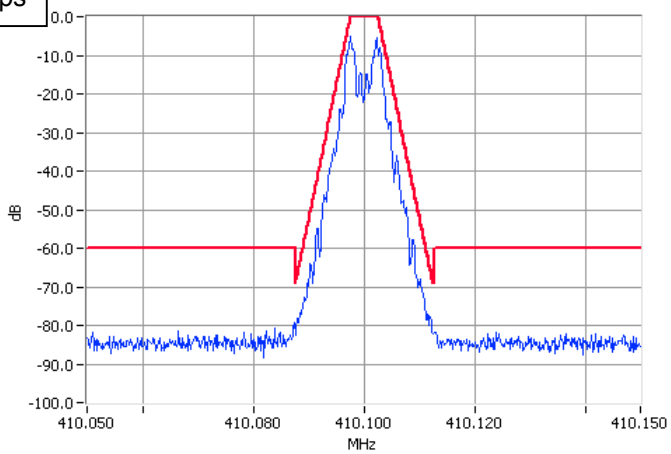
Unmodulated 410.1000MHz Mask NTIA 10W Pass
RBW=300Hz VBW=3000Hz

POCSAG 512bps



Paging Modulation 410.1000MHz Mask NTIA 10W Pass
RBW=300Hz VBW=3000Hz

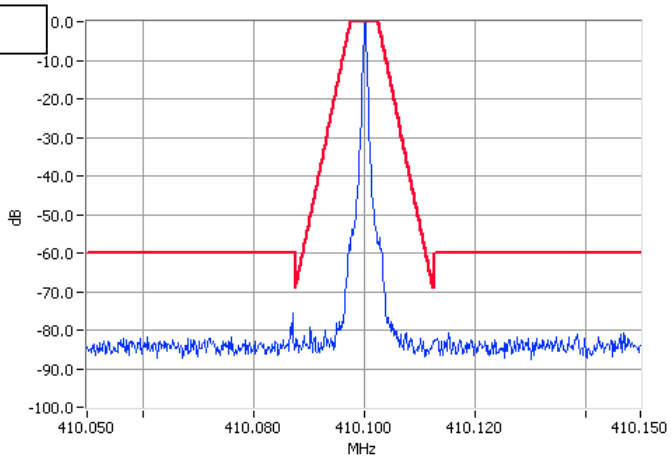
POCSAG 1200bps



Paging Modulation 410.1000MHz Mask NTIA 10W Pass
RBW=300Hz VBW=3000Hz

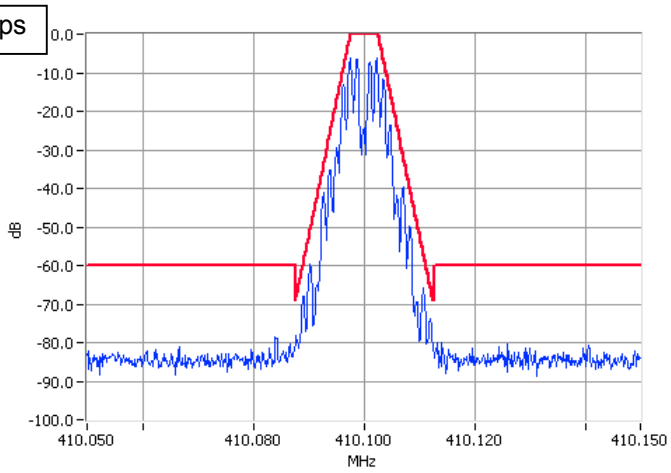
Tx Power: 10W Channel Spacing: 12.5 kHz Mask: NTIA

Unmodulated



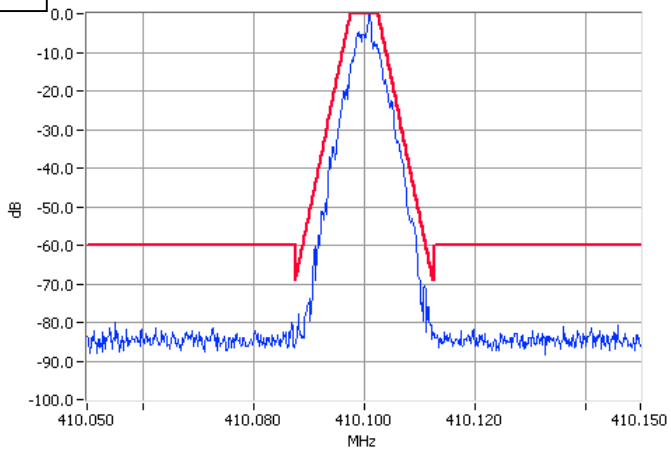
Unmodulated 410.1000MHz Mask NTIA 10W Pass
RBW=300Hz VBW=3000Hz

POCSAG 2400bps



Paging Modulation 410.1000MHz Mask NTIA 10W Pass
RBW=300Hz VBW=3000Hz

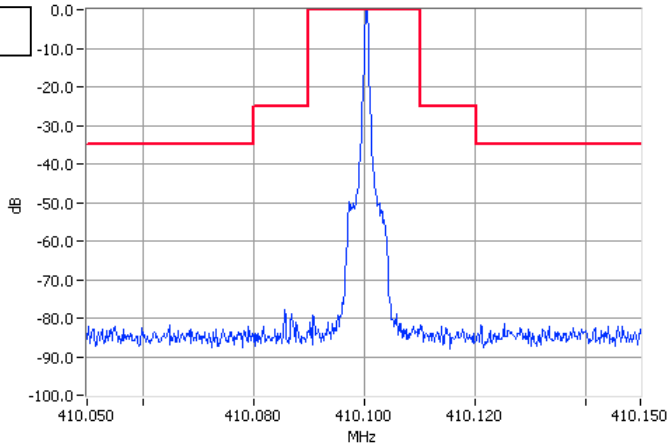
C4FM



Digital Modulation 410.1000MHz Mask NTIA 10W Pass
RBW=300Hz VBW=3000Hz

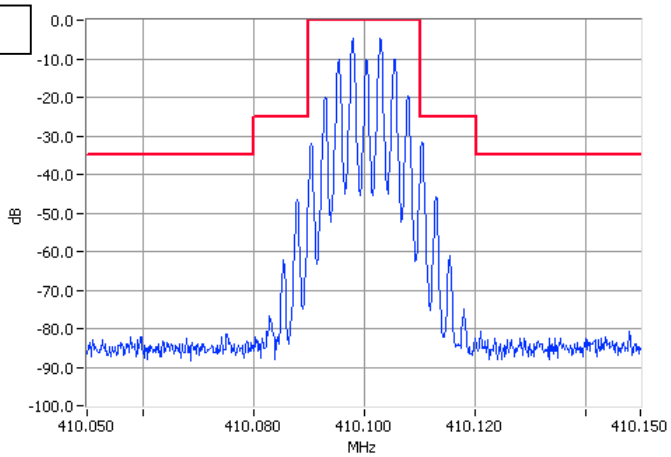
Tx Power: 100W Channel Spacing: 25 kHz Mask: B

Unmodulated



Unmodulated 410.1000MHz Mask B 100W Pass
RBW=300Hz VBW=3000Hz

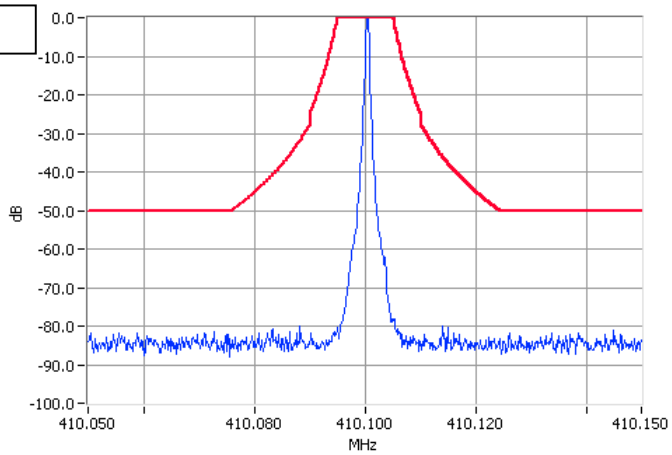
Analogue



Analogue Modulation 410.1000MHz Mask B 100W Pass
RBW=300Hz VBW=3000Hz

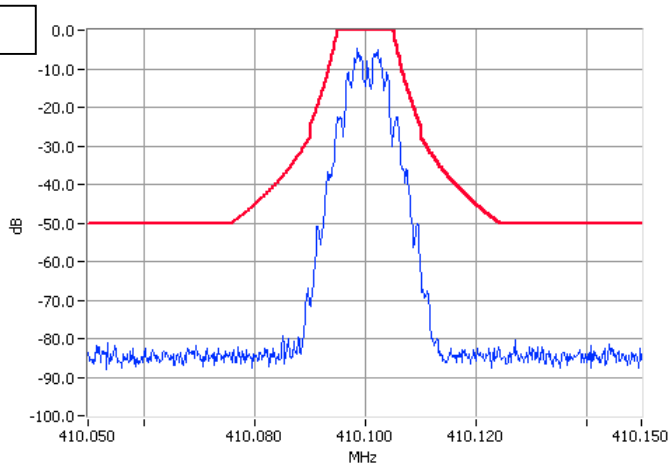
Tx Power: 100W Channel Spacing: 25 kHz Mask: C

Unmodulated



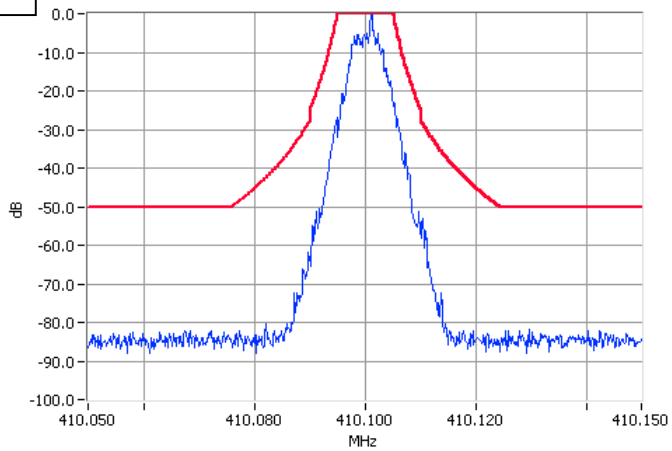
Unmodulated 410.1000MHz Mask C 100W Pass
RBW=300Hz VBW=3000Hz

FFSK



Digital Modulation 410.1000MHz Mask C 100W Pass
RBW=300Hz VBW=3000Hz

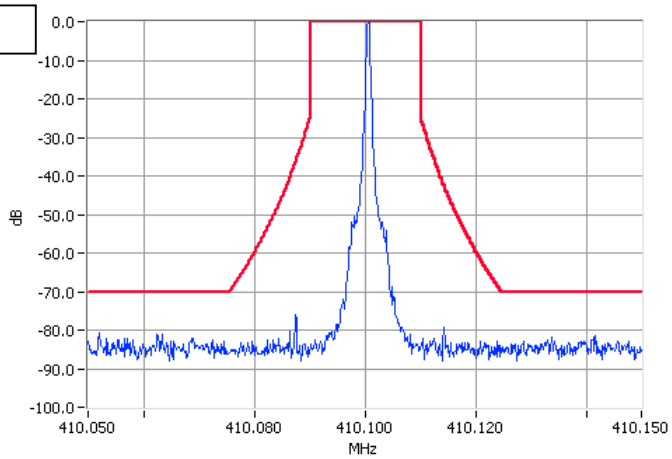
C4FM



Digital Modulation 410.1000MHz Mask C 100W Pass
RBW=300Hz VBW=3000Hz

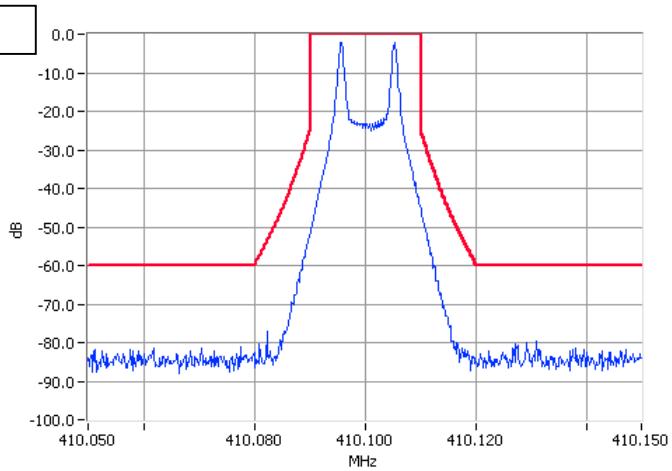
Tx Power: 100W Channel Spacing: 25 kHz Mask: G

Unmodulated



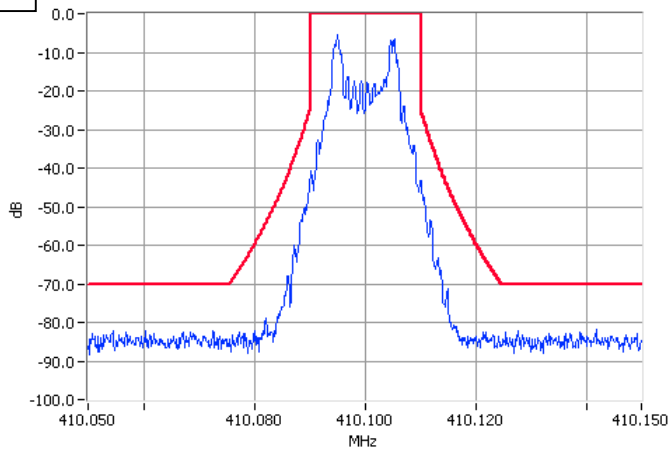
Unmodulated 410.1000MHz Mask G 100W Pass
RBW=300Hz VBW=3000Hz

POCSAG 512bps



Paging Modulation 410.1000MHz Mask G 10W Pass
RBW=300Hz VBW=3000Hz

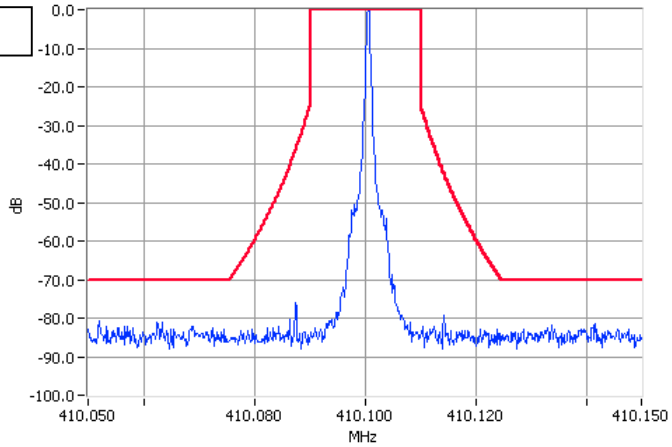
POCSAG 1200bps



Paging Modulation 410.1000MHz Mask G 100W Pass
RBW=300Hz VBW=3000Hz

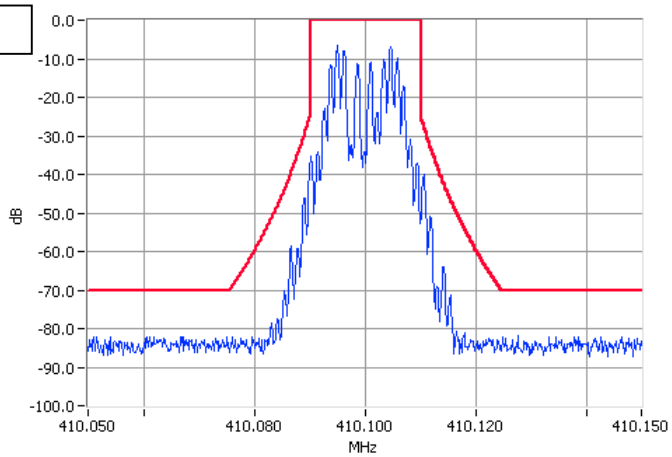
Tx Power: 100W Channel Spacing: 25 kHz Mask: G

Unmodulated



Unmodulated 410.1000MHz Mask G 100W Pass
RBW=300Hz VBW=3000Hz

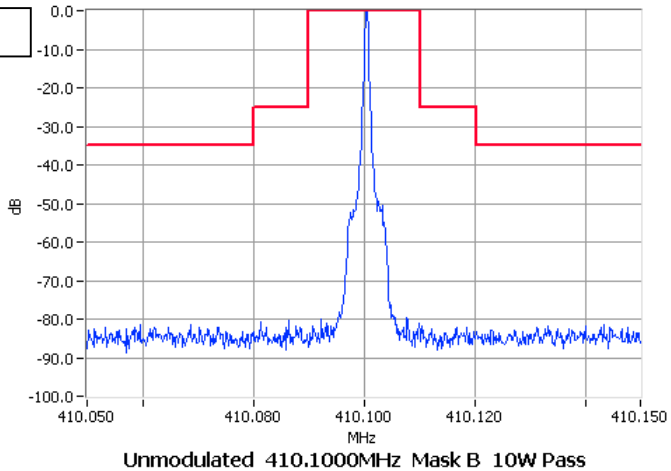
POCSAG 2400bps



Paging Modulation 410.1000MHz Mask G 100W Pass
RBW=300Hz VBW=3000Hz

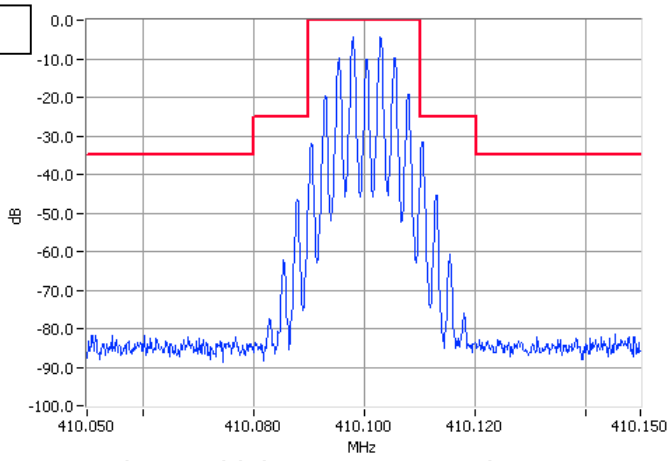
Tx Power: 10W Channel Spacing: 25 kHz Mask: G

Unmodulated



Unmodulated 410.1000MHz Mask B 10W Pass
RBW=300Hz VBW=3000Hz

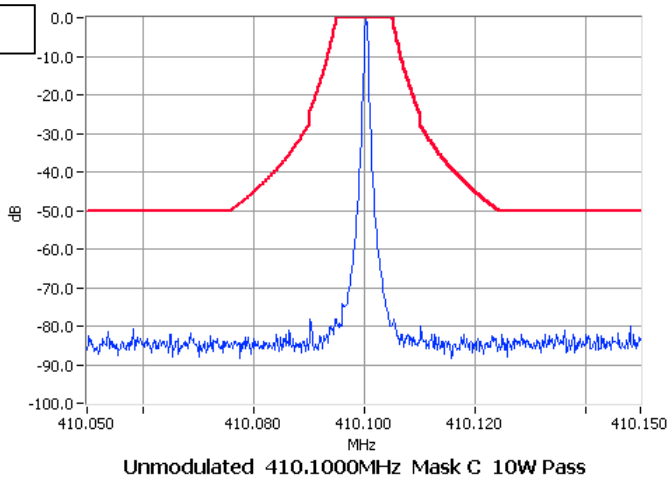
Analogue



Analogue Modulation 410.1000MHz Mask B 10W Pass
RBW=300Hz VBW=3000Hz

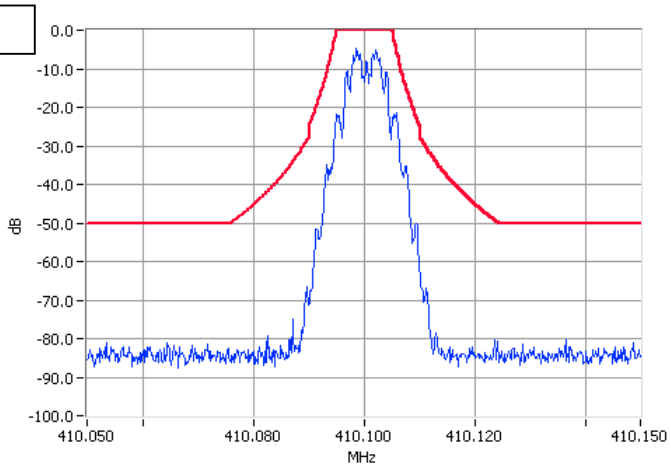
Tx Power: 10W Channel Spacing: 25 kHz Mask: C

Unmodulated



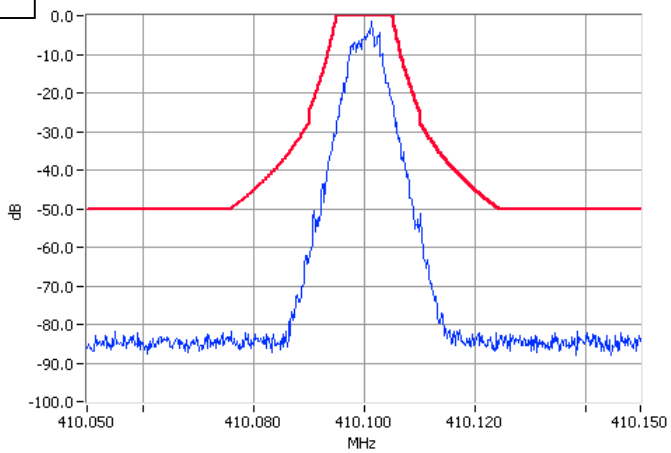
Unmodulated 410.1000MHz Mask C 10W Pass
RBW=300Hz VBW=3000Hz

FFSK



Digital Modulation 410.1000MHz Mask C 10W Pass
RBW=300Hz VBW=3000Hz

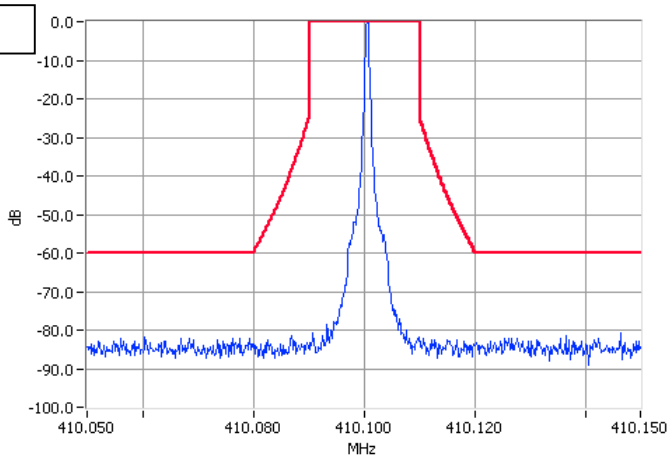
C4FM



Digital Modulation 410.1000MHz Mask C 10W Pass
RBW=300Hz VBW=3000Hz

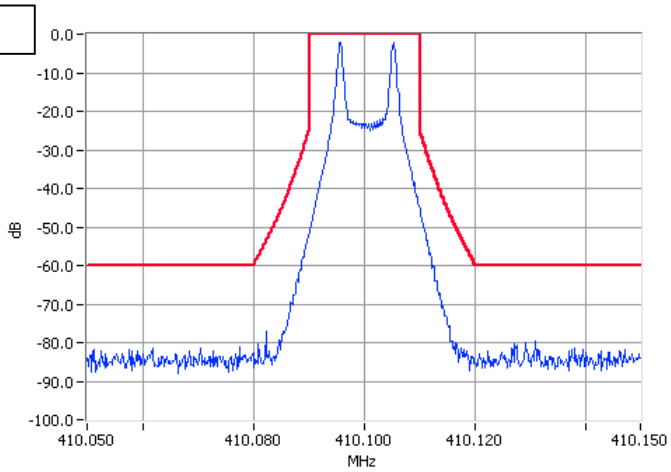
Tx Power: 10W Channel Spacing: 25 kHz Mask: G

Unmodulated



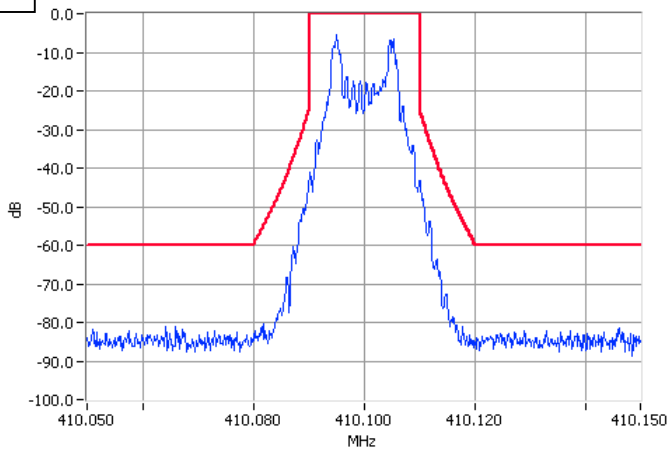
Unmodulated 410.1000MHz Mask G 10W Pass
RBW=300Hz VBW=3000Hz

POCSAG 512bps



Paging Modulation 410.1000MHz Mask G 10W Pass
RBW=300Hz VBW=3000Hz

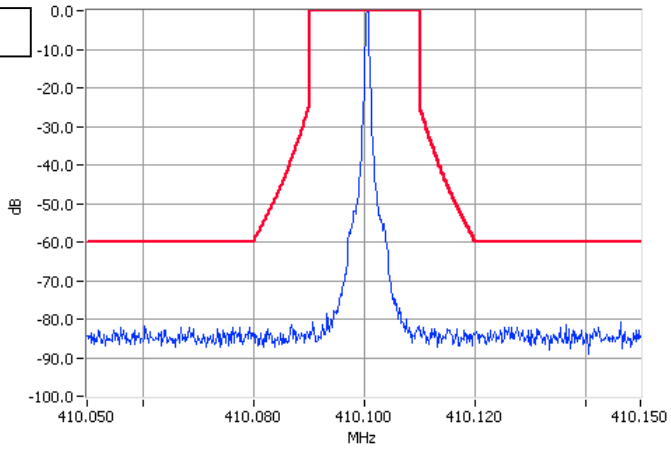
POCSAG 1200bps



Paging Modulation 410.1000MHz Mask G 10W Pass
RBW=300Hz VBW=3000Hz

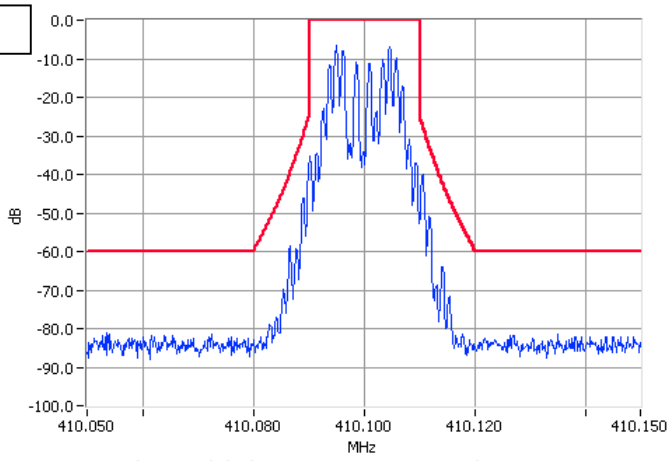
Tx Power: 10W Channel Spacing: 25 kHz Mask: G

Unmodulated



Unmodulated 410.1000MHz Mask G 10W Pass
RBW=300Hz VBW=3000Hz

POCSAG 2400bps



Paging Modulation 410.1000MHz Mask G 10W Pass
RBW=300Hz VBW=3000Hz

SPURIOUS EMISSIONS (CONDUCTED)

SPECIFICATION: FCC 47 CFR 2.1051

GUIDE: TIA/EIA-603C 2.2.13

MEASUREMENT PROCEDURE:

1. Refer Annex A for 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 4.1 GHz
3. A Pre-scan is performed with a resolution bandwidth of 1 kHz, and a video bandwidth of 3 kHz. If any emissions are found to be within 20dB of the limit a second measurement is made with the carrier modulated, and a resolution bandwidth of 10 kHz, and a video bandwidth of 30kHz.
4. Spurious emissions which were attenuated more than 20dB below the limit were not recorded.

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

LIMIT CLAUSE: FCC 47 CFR 90.210

MEASUREMENT UNCERTAINTY: +/-3.0 dB

SPURIOUS EMISSIONS (CONDUCTED)

SPECIFICATION: FCC CFR 2.1051

Tx FREQUENCY: 410.1 MHz

12.5 kHz Channel Spacing	410.1 MHz @ 100 W	Emission Mask NTIA
Emission Frequency (MHz)	Level (dBm)	Level (dBc)
2870.6996	-35.0	-85.0
No other emissions were detected at a level greater than 20 dB below the limit.		

LIMITS:

Carrier Output Power Watts	Emission Mask NTIA 12.5 kHz Channel Spacing $52 + 10 \text{Log}_{10} (P_{Watts})$	
100 W	-22 dBm	72 dBc
10 W	-22 dBm	62 dBc

SPURIOUS EMISSIONS (CONDUCTED)

SPECIFICATION: FCC CFR 2.1051

Tx FREQUENCY: 410.1 MHz

12.5 kHz Channel Spacing	410.1 MHz @ 10 W	Emission Mask NTIA
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 NTIA 12.5 kHz Channel Spacing $52 + 10 \text{Log}_{10} (P_{Watts})$	
100 W	-22 dBm	72 dBc
10 W	-22 dBm	62 dBc

SPURIOUS EMISSIONS (RADIATED)

SPECIFICATION: FCC 47 CFR 2.1053

GUIDE: TIA/EIA-603C 2.2.12

MEASUREMENT PROCEDURE:

1. Refer Annex A for Equipment set up.
2. Initial Scan
    a) The EUT is placed in S-Line TEM cell and emissions are measured from 30MHz to 1000MHz.
    Any emission within 10dB of the limit is them re-tested on the OATS along with measurements from 1000MHz to the 10^{th} harmonic of the fundamental frequency.
3. OATS Measurement
    a) 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.
    b) The test antenna was raised from 1m to 4m to obtain a maximum reading, the turntable was then rotated through 360^{o} to obtain the maximum response of each spurious emission. Valid emissions were determined by switching the EUT on and off.
    c) The EUT was then 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

MEASUREMENT UNCERTAINTY: +/-4.6 dB

SPURIOUS EMISSIONS (RADIATED)

SPECIFICATION: FCC CFR 2.1053

Tx FREQUENCY: 410.1 MHz

12.5 kHz Channel Spacing	410.1 MHz @ 100 W	Emission Mask NTIA
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 NTIA 12.5 kHz Channel Spacing $52 + 10 \text{Log}_{10} (P_{Watts})$	
100 W	-22 dBm	72 dBc
10 W	-22 dBm	62 dBc

SPURIOUS EMISSIONS (RADIATED)

SPECIFICATION: FCC CFR 2.1053

Tx FREQUENCY: 410.1 MHz

12.5 kHz Channel Spacing	410.1 MHz @ 10 W	Emission Mask NTIA
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 NTIA 12.5 kHz Channel Spacing $52 + 10 \text{Log}_{10} (P_{Watts})$	
100 W	-22 dBm	72 dBc
10 W	-22 dBm	62 dBc

TRANSMITTER FREQUENCY STABILITY (TEMPERATURE)

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

GUIDE: TIA/EIA-603C 2.2.2

MEASUREMENT PROCEDURE:
1. Refer Annex A for 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: 380 MHz to 512 MHz

Channel Spacing (kHz)	Frequency Error (ppm)
12.5	1.5
25.0	2.5

LIMIT CLAUSE: Tait Electronics Ltd. Specifications

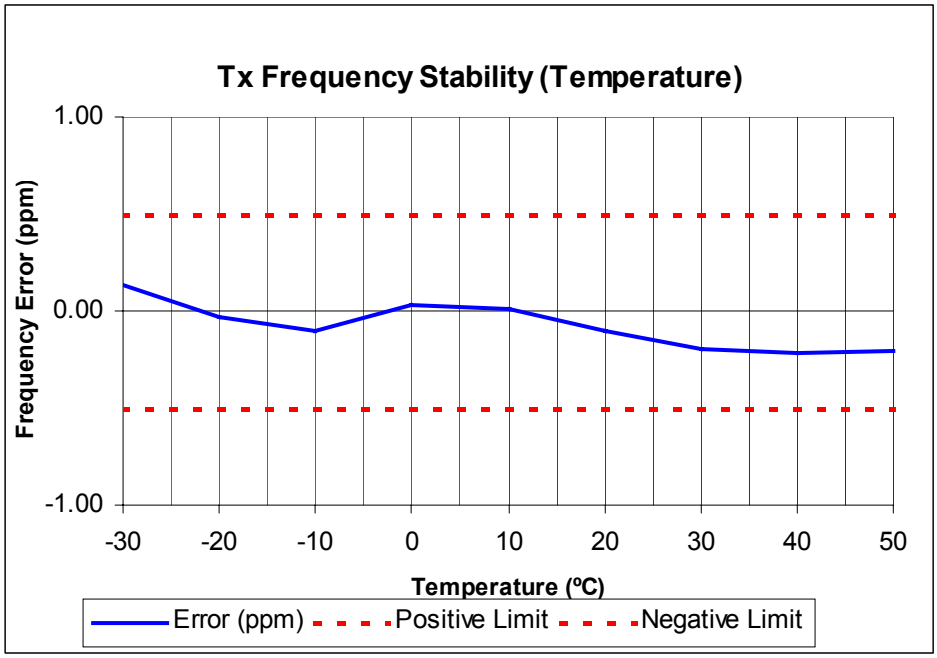
Channel Spacing (kHz)	Frequency Error (ppm)
12.5	0.5
25.0	0.5

Measurement Uncertainty	+/- 50 Hz

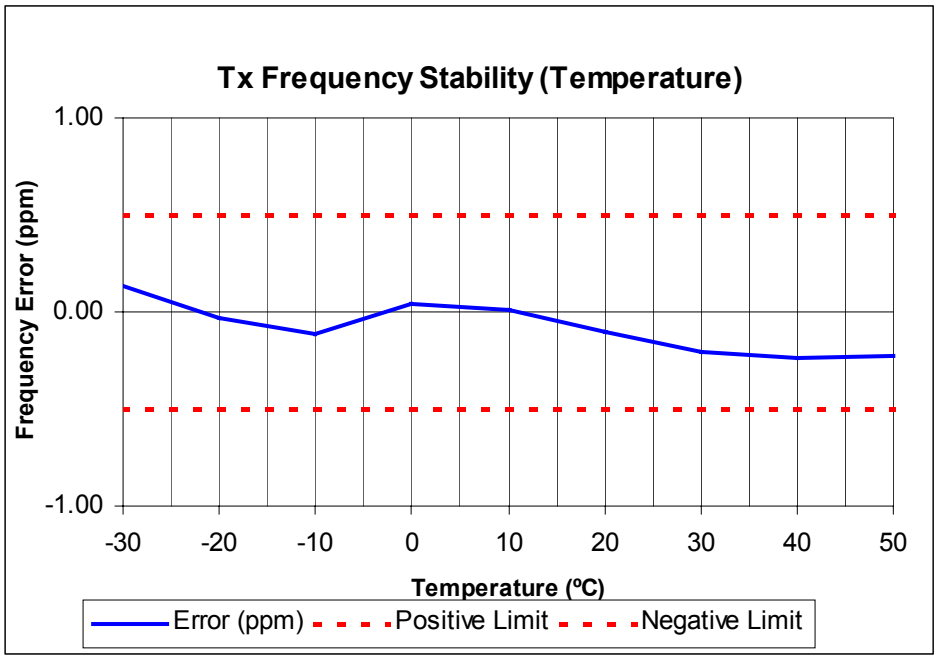
TRANSMITTER FREQUENCY STABILITY (TEMPERATURE)

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

Tx FREQUENCY: 410.1 MHz 100 W 12.5 kHz channel Spacing



Tx FREQUENCY: 410.1 MHz 100 W 25.0 kHz channel Spacing



TRANSMITTER FREQUENCY STABILITY (VOLTAGE)

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

GUIDE: TIA/EIA-603C 2.2.2

MEASUREMENT PROCEDURE:
1. Refer Annex A for 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: 380 MHz ~ 520 MHz

Channel Spacing (kHz)	FREQUENCY ERROR (ppm) @ 410.1 MHz		
	102 V ac	120 V ac	138 V ac
12.5	-0.06	-0.06	-0.06
25.0	-0.11	-0.12	-0.12

LIMIT CLAUSE: FCC 47 CFR 90.213

Channel Spacing (kHz)	Frequency Error (ppm)
12.5	1.5
25.0	2.5

LIMIT CLAUSE: Tait Electronics Ltd. Specifications

Channel Spacing (kHz)	Frequency Error (ppm)
12.5	0.5
25.0	0.5

Measurement Uncertainty	+/- 50 Hz

TRANSIENT FREQUENCY BEHAVIOR

SPECIFICATION: FCC 47 CFR 90.214

GUIDE: TIA/EIA-603C 2.2.19

MEASUREMENT PROCEDURE:
1. Refer Annex 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 & 25.0 kHz channel spacings.

LIMIT CLAUSE: FCC 47 CFR 90.214

TRANSIENT FREQUENCY BEHAVIOUR

SPECIFICATION: FCC 47 CFR 90.214

Tx FREQUENCY: 410.1 MHz 100 W 12.5 kHz Channel Spacing

FREQUENCY	410.1 MHz @ 100 W Tx	
TRANSIENT RESPONSE PERIOD	CARRIER PEAK VARIATION FROM NORMAL	
	Key ON (kHz)	Key OFF (kHz)
t_1	0.8	N/A
t_2	-0.3	N/A
t_3	N/A	0.2
$t_2 \rightarrow t_3$ ppm	-0.7	
ERROR LIMIT ($t_2 \rightarrow t_3$) ppm	1.5	

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:

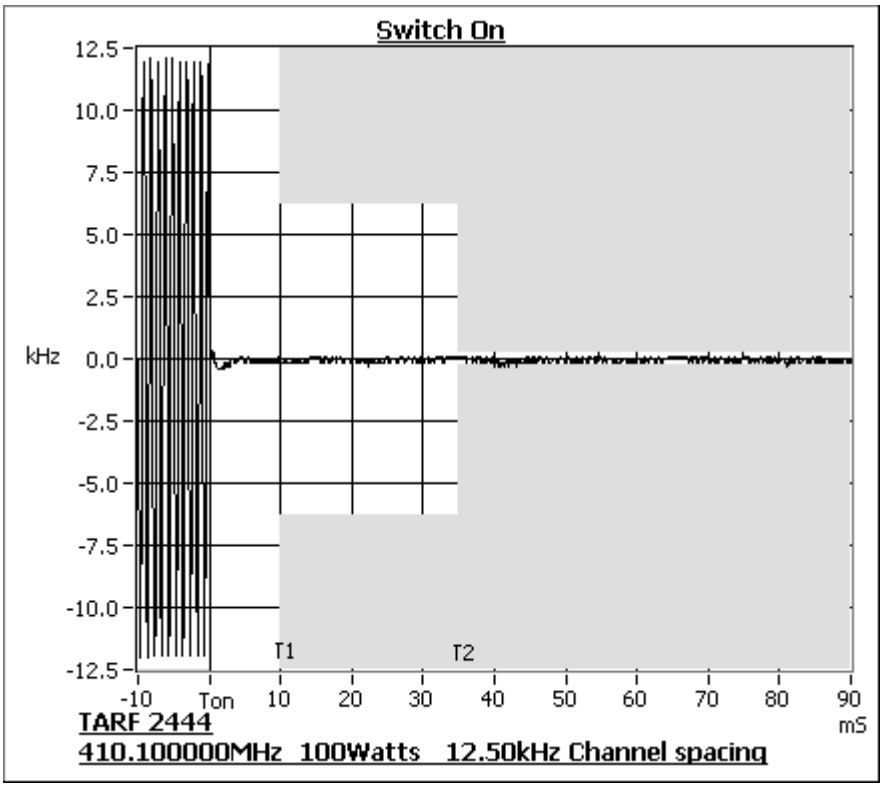
TRANSIENT PERIODS	FREQUENCY RANGE 150MHz – 174 MHz	FREQUENCY RANGE 421MHz – 512 MHz
t_1 (ms)	5 ms	10 ms
t_2 (ms)	20 ms	25 ms
t_3 (ms)	5 ms	10 ms

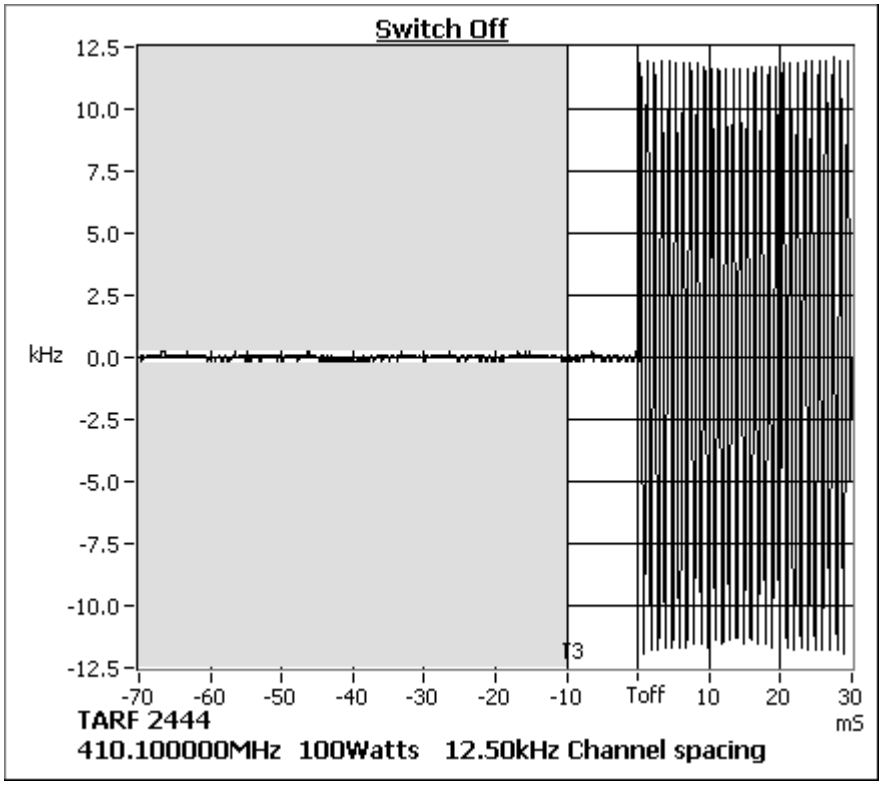
Measurement Uncertainty	+/- 130 Hz

TRANSIENT FREQUENCY BEHAVIOUR

SPECIFICATION: FCC 47 CFR 90.214

Tx FREQUENCY: 410.1 MHz 100 W 12.5 kHz Channel Spacing





TRANSIENT FREQUENCY BEHAVIOUR

SPECIFICATION: FCC 47 CFR 90.214

Tx FREQUENCY: 410.1 MHz 100 W 25.0 kHz Channel Spacing

FREQUENCY	410.1 MHz @ 100 W Tx	
TRANSIENT RESPONSE PERIOD	CARRIER PEAK VARIATION FROM NORMAL	
	Key ON (kHz)	Key OFF (kHz)
t_1	-2.0	N/A
t_2	-0.3	N/A
t_3	N/A	-0.5
$t_2 \rightarrow t_3$ ppm	-0.6	
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:

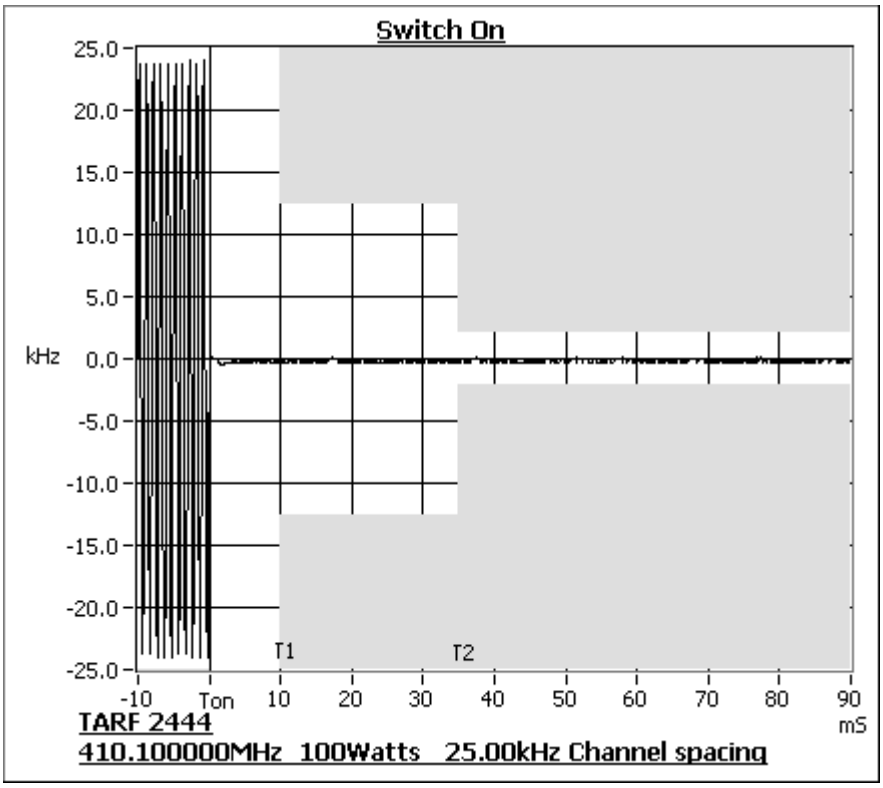
TRANSIENT PERIODS	FREQUENCY RANGE 150MHz – 174 MHz	FREQUENCY RANGE 421MHz – 512 MHz
t_1 (ms)	5 ms	10 ms
t_2 (ms)	20 ms	25 ms
t_3 (ms)	5 ms	10 ms

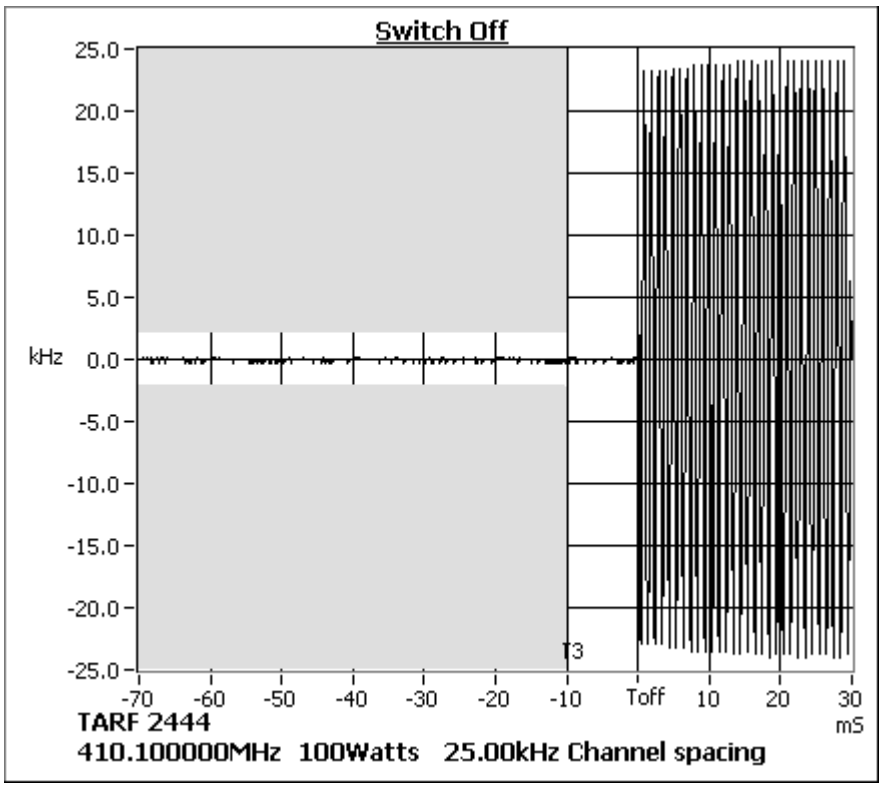
Measurement Uncertainty	+/- 130 Hz

TRANSIENT FREQUENCY BEHAVIOUR

SPECIFICATION: FCC 47 CFR 90.214

Tx FREQUENCY: 410.1 MHz 100 W 25.0 kHz Channel Spacing





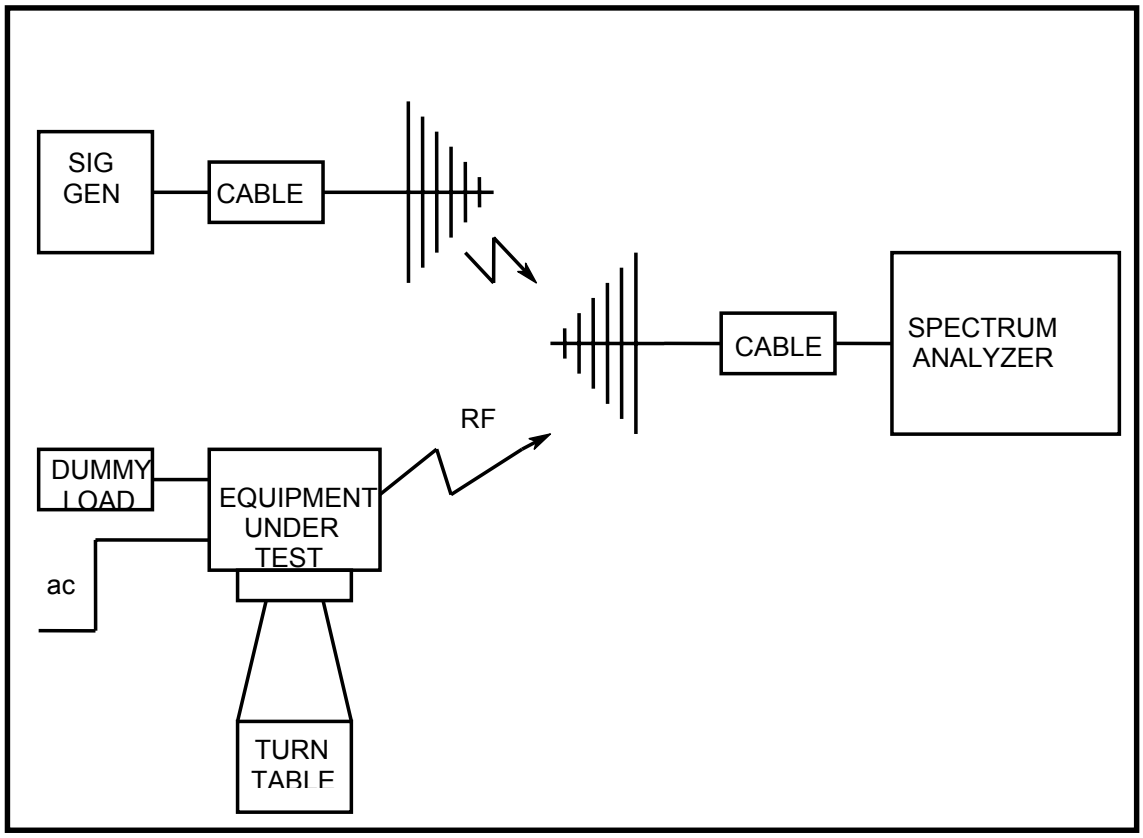
TEST EQUIPMENT USED

No#	Equipment	Manufacturer	Model No	Serial No#	Tait ID	Cal Due
1	Signal Generator	Hewlett Packard	HP8642B (Opt 001)	2512A00176	E3064	26-Nov-06
4	Signal Generator	Hewlett Packard	HP8648C	3443U00543	E3558	25-Nov-06
11	Modulation Analyser	Hewlett Packard	HP8901B (Opt 002)	2441A00393	E3073	26-Nov-06
13	Audio Analyser	Hewlett Packard	HP8903A	2308A02597	E3074	28-Nov-06
22	Oscilloscope	Tektronics	TDS340	B013611	E3585	26-Nov-06
43	Horn Antenna	Emco	DRG3115	2084	E3076	27-Sep-06
46	S-LINE TEM CELL	Rohde & Schwarz	1089.9296.02	338232/003	E3636	
61	RF Attenuator 150W	Weinschel	40-20-33	CJ404	E3387	26-Nov-06
65	RF Attenuator 50W	Weinschel	24-20-44	AW1266	E3562	24-Nov-06
70	RF Load 150W	Bird	8166	524	E3625	28-Nov-06
81	2m Coax Cable	Intelcom	RG213/U-50	CBL02	E3658	
88	Spectrum Analyser	Hewlett Packard	HP8562E	3821A00779	E3715	25-Nov-06
115	Environ. Chamber	Contherm	5400 RHSLT.M	1416	E4051	
116	Power Head	Hewlett Packard	HP11722A	2716A02037	E1575	26-Nov-06
118	RF Attenuator	Weinschel	Model 1	BL9958	E4081	18-Jan-07
120	RF Splitter Combiner	Minicircuits	ZFSC-4-1	-	E4083	18-Jan-07
123	Spectrum Analyser	Agilent	E4445A	MY42510072	E4139	4-Jul-07
137	1m Multiflex Cable	Suhner	MF141	TT007	E4443	25-Nov-06
138	1m Multiflex Cable	Suhner	MF141	TT086	E4444	25-Nov-06
144	AC Voltmeter	Tait				5-Apr-07

ANNEX A

TEST SETUP DETAILS

Radiated Emissions Set up.



The Spectrum Analyser is connected to the EUT via a 30dB attenuator for Conducted Emissions testing.
For Transmitter Unwanted Emissions testing, the Spectrum Analyser is connected to the combiner in place of Signal Generator 3.