Intertek ETL SEMKO

Giant Electronics Limited

Application
For
Certification
(FCC ID: K7GT6500)

May 19, 2004

0408191
TL/ Ann Choy
May 19, 2004

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MEASUREMENT/TECHNICAL REPORT

Application	:	**Giant Electronics Limited**
Trade Name/Model No	:	**Giant/ Motorola T6500** **Giant / Motorola T6550** **Giant T6510** **Giant T6520**
Date	:	**May 19, 2004**

This report concerns (check one:)Original Grant__X__ Class II Change_____

Equipment Type: GMRS + FRS

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes_____ No__X__

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Report prepared by:

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Intertek Testing Services
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Exhibit type	File Description	Filename
Operation Description	Technical Description	descri.pdf
Test Report	Bandwidth Plot	bw.pdf
Test Report	Modulation Frequency Response	mfr.pdf
Test Report	Modulation Limit Characteristic	mlc.pdf
Test Report	Spurious Emission	spurious.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated Emission	radiated photos.doc
Internal Photo	Internal Photo	internal photos.doc
External Photo	External Photo	external photos.doc
Test Report	Tune Up Procedure	tuneup.pdf
Test Report	Part List	partlist.pdf
Test Report	Audio Low Pass Filter Response	lpf.pdf
Cover Letter	Confidentiality Request	request.pdf

EXHIBIT 1

GENERAL DESCRIPTION

1.0 General Description

1.1 Product Description

The Equipment Under Test (EUT) is a Two Way Radio with FRS and GMRS operating between 462.5500MHz and 467.7125MHz. The EUT is powered by 4.5 Vd.c. (3 x 1.5V "AA" size alkaline batteries).

Transmitter Portion

(i) Type of Emission : 10K3F3E
(ii) Frequency Range : FRS 7 Channels from 467.5625MHz to 467.7125MHz
GMRS 15 Channels from 462.5500MHz to 462.7250MHz
(iii) Maximum Power Rating: FRS - 0.40W ERP, GMRS - 0.57W ERP
(iv) Antenna Type : Integral

The Model: Giant / Motorola T6550, Giant T6510 and Giant T6520 are the same as the Model: Giant / Motorola T6500 is in hardware aspect. The difference in model number serves as marketing strategy and for cosmetic changes only.

The brief circuit description is saved with filename: descri.pdf

Circuit Description (MODEL T6500)

RF

I) TX Path

1. The antenna port has given GMRS transmitted power and –118dBm sensitivity respectively.
2. There are matching network with TX/RX path switching between the antenna port and PA, it is consist with LC component and pin diode to match the PA to antenna with band pass filtering and isolating TX/RX path.
3. The path switching is consist of D509 and D508, the transmitted power will flow once the dc bias is given to these two diode and there will have 20 dB isolation between TX and RX path.
4. C508, L520, C507, and L505 act as matching network (MN) to match output of PA to be 50 ohm.
5. There have a driver Q502 before the power input to PA from VCO, the power input to driver and PA is 0dBm and +22dBm respectively.
6. L520 is air coil in order to reduce the power dissipation as high power flowing along this path.
7. There is a single VCO solution, VCO acts as carrier generator (~0dBm) in TX mode and local oscillator (~-9dBm) in RX mode respectively.
8. The coil L509 acts as variable inductor for VCO voltage tuning. The VCO sensitivity is ~5MHz/V for both in TX mode and RX mode. The D506 acts as switching diode for 21.4MHz band switching. It is turned on in RX mode and off in TX mode by T4V.
9. Twin transistor Q504 and Q503 is used in VCO, one for VCO and the other for buffer amplifier to give better isolation between VCO and driver amplifier, VCO and the 1st mixer.
10. The modulated signal feeds from R559 and modulated with D506.
11. The loop filter is consist of LC component with 150Hz corner frequency in order to reject the reference frequency 3.125KHz.
12. The feedback frequency from VCO to PLL IC 502 is filtered with C522 and C527 in order to reject the reference frequency 3.125KHz.
13. The Q507 is turned on once the PLL is locked in TX mode.
14. 20.95MHz crystal X501 works with direct compensation circuit to give +/- 2.5ppm over -20C to +55C.
15. IC106 acts as voltage regulator to give stable voltage supply to +3V path.

II) TWO WAY RX Path

1. C549 and L501 were used to match the antenna to 50 ohm input port of saw filter BPF501, the saw filter is used to attenuate the unwanted signal and 1st IF image signal.
2. Q512 acts as LNA between SAW filter and 1st mixer to amplify the wanted signal by 10dB.
3. The Q513 acts as the 1st mixer. The resultant signal of mixer output is two way RX - LO, which is equal to the 1st IF frequency of 21.4MHz.
4. The frequency of 1st LO is injected from VCO to mixer Q513. L519 and C553 act as matching network to match VCO to mixer input port and give better isolation between them in order to improve the problem of malfunction.
5. Q116 acts as switch to turn on the RX path in RX mode in order to save the power consumption and prevent the noise from audio output of IF IC picked up by transmitted carrier.
6. The 1st IF crystal filter BPF502 with +/- 3.75KHz bandwidth provide better adjacent selectivity and 2nd IF image rejection.
7. The FM IF IC IC501 integrate the IF limiter, demodulator, 2 nd mixer and 2nd local oscillator.
8. The 2nd LO frequency is generated from the X501. The 2nd IF filter BPF503 is 4-pole 450KHz filter with +/-3KHz bandwidth (H type) to further enhance the adjacent channel selectivity.
9. Noise detector is used for signal detection which is built with the internal op-amp of IF IC and the level is tuned to 7~14dB SINAD with VR502.

III)Weather Band RX Path

1. Q516 acts as LNA between BPF filter and 1st mixer to amplify the wanted signal by 10dB.
2. The Q515 acts as the 1st mixer. The resultant signal of mixer output is WX RX - LO, which is equal to the 1st IF frequency of 21.4MHz.

BASEBAND

(I) TX Path

1. Mic

   The internal/external mic transfer the sound pressure into electrical signal. About 5mV at 1KHz, when the mic is placed 3 to 4 cm from the lips. This signal will send to the mic amplifier to increase the signal level for compressor IC to process.

2. Mic. Amplifier

The IC103 bias as a multi feedback high pass filter with 2-pole has a roll off at about 300Hz to reduce the hum noise. The voltage gain is about 18.3. The output will send to the input of compressor.

3. Compressor

   The compressor IC104 compresses the audio signal to increase the average modulation level. The standard input level (0dB gain) of the compressor is 100mV. The output of compressor will send to next stage for emphasis.

4. Pre-emphasis

   Pre-emphasis is implement with the IC103 to produce a frequency response of 6dB/octave. This circuit also limit the maximum deviation at 2.5KHz to met the specification (standard deviation ~ 1.5KHz, maximum deviation ~ 2.5KHz). The output will send to next stage for limiting.

(II) RX Path

1. De-emphasis

   The de-emphasis of the demodulated signal from RF section is implemented with IC102. The RC network has 2-pole with 0dB at 1KHz, 3.5dB at 0.5KHz and –20dB at 2.5KHz.

2. Expander

   The expander IC104 expands the audio signal to reduce the noise level. The standard output level for the expander is 100mV. The output will send to the speaker amplifier through volume control.

3. Volume Control

   The VR102 (volume control switch) has two function, the ON/OFF switch and speaker volume control.

4. Speaker Amplifier

   The speaker amplifier IC105 amplifies the expander signal and output to the speaker. The speaker amplifier biases as a multi feedback HPF with 2-pole. The roll off is about 300Hz and the gain is about 39. The speaker amplifier can be mute by CPU through PIN 03 (High MUTE, Low UNMUTE). The maximum power output is about 150mW.

(III) CTCSS/CDCSS

The CTCSS/CDCSS code generated by IC101. TheIC102 acts as CTCSS/CDCSS filter to filter out the CTCSS/CDCSStone from received audio

1.2 Related Submittal(s) Grants

This is an Application for Certification of the transmitter portion of a GMRS + FRS Transceiver. The receiver section of the Transceiver is subject to verification process.

1.3 Test Methodology

Radiated emission measurements were performed according to the procedures in ANSI C63.4 (2001) and ANSI/TIA/EIA-603-1992. All measurement were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. For each scan, the procedure of maximizing emissions in Appendices D and E were followed. All Radiated tests were performed at an antenna the EUT distance of 3 meters, unless stated otherwise in the **"Justification Section"** of this Application.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the emission data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. The test facility and site measurement data have been fully placed on file with the FCC.

EXHIBIT 2

SYSTEM TEST CONFIGURATION

2.0 System Test Configuration

2.1 Justification

The device was configured for testing in a typical fashion (as a customer would normally use it). The device was placed on a turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes. When the radiated emissions are measured.

The device was powered by 3 new 1.5V "AA" alkaline batteries.

The frequency range from 30 MHz to 10^{th} harmonics was searched for spurious emissions from the device. Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

2.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered on, a signal is transmitted.

2.3 Special Accessories

No special accessory is needed for compliance of this device.

A supplied headset is used during the test.

2.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

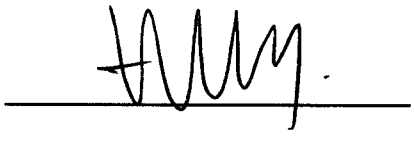
2.5 Equipment Modification

Any modification installed previous to testing by Giant Electronics Limited will be incorporated in each production model sold/leased in the United States.

No modification were installed by Intertek Testing Services.

Confirmed by:

Tommy Leung
Supervisor
Intertek Testing Services
Agent for Giant Electronics Limited



Signature

May 19, 2004 Date

EXHIBIT 3

RF POWER OUTPUT

3.0 RF Power Output (Section 2.1046(a))

A. Equipment Used

Equipment	Brand Name	Model No.
Biconical Antenna	CDI	B300
Test receiver	Rohde & Schwarz	ESVS30
RF Filter	Tailithic	3VF
Tuned Dipole Antenna	CDI	Robert Antenna 4
Signal Generator	Maconi	2024

B. Testing Procedure

1. On a test site, the EUT shall be placed at 1.5m height on a turn table, and in the position closest to normal use as declared by the applicant.

2. The test antenna shall be oriented initially for vertical polarisation located 3m from EUT to correspond to the frequency of the transmitter.

3. The output of the test antenna shall be connected to the measuring receiver and the quasi-peak detector is used for the measurement.

4. The transmitter shall be switched on, if possible, without modulation and the measuring receiver shall be tuned to the frequency of the transmitter under test.

5. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.

6. The transmitter shall then the rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

7. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.

8. The maximum signal level detected by the measuring receiver shall be noted.

9. The transmitter shall be replaced by a tuned dipole (substitution antenna).

10. The substitution antenna shall be orientated for vertical polarisation and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.

11. The substitution antenna shall be connected to a calibrated signal generator.

12. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.

13. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.

14. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring received, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.

15. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.

16. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarisation.

17. The measure of the effective radiated power is the larger of the two levels recorded, at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.

Table 1

Giant Electronics Limited
Giant/ Motorola T6500

Transmission Power

Channel	Frequency (MHz)	Effective Radiated Power		Limit (W)	Margin (W)
		(dBm)	(W)		
1	462.5625	27.5	0.57	2.0	-1.43
2	462.5875	27.5	0.57	2.0	-1.43
3	462.6125	27.5	0.57	2.0	-1.43
4	462.6375	27.5	0.57	2.0	-1.43
5	462.6625	27.5	0.57	2.0	-1.43
6	462.6875	27.5	0.57	2.0	-1.43
7	462.7125	27.5	0.57	2.0	-1.43
8	467.5625	26.0	0.40	0.5	-0.10
9	467.5875	26.0	0.40	0.5	-0.10
10	467.6125	26.0	0.40	0.5	-0.10
11	467.6375	26.0	0.40	0.5	-0.10
12	467.6625	26.0	0.40	0.5	-0.10
13	467.6875	26.0	0.40	0.5	-0.10
14	467.7125	26.0	0.40	0.5	-0.10
15	462.5500	27.5	0.57	2.0	-1.43
16	462.5750	27.5	0.57	2.0	-1.43
17	462.6000	27.5	0.57	2.0	-1.43
18	462.6250	27.5	0.57	2.0	-1.43
19	462.6500	27.5	0.57	2.0	-1.43
20	462.6750	27.5	0.57	2.0	-1.43
21	462.7000	27.5	0.57	2.0	-1.43
22	462.7250	27.5	0.57	2.0	-1.43

Notes: Negative sign in the margin column shows the value below limits.

Test Engineer: Ken Sit

Date of Test: May 13, 2004

EXHIBIT 4

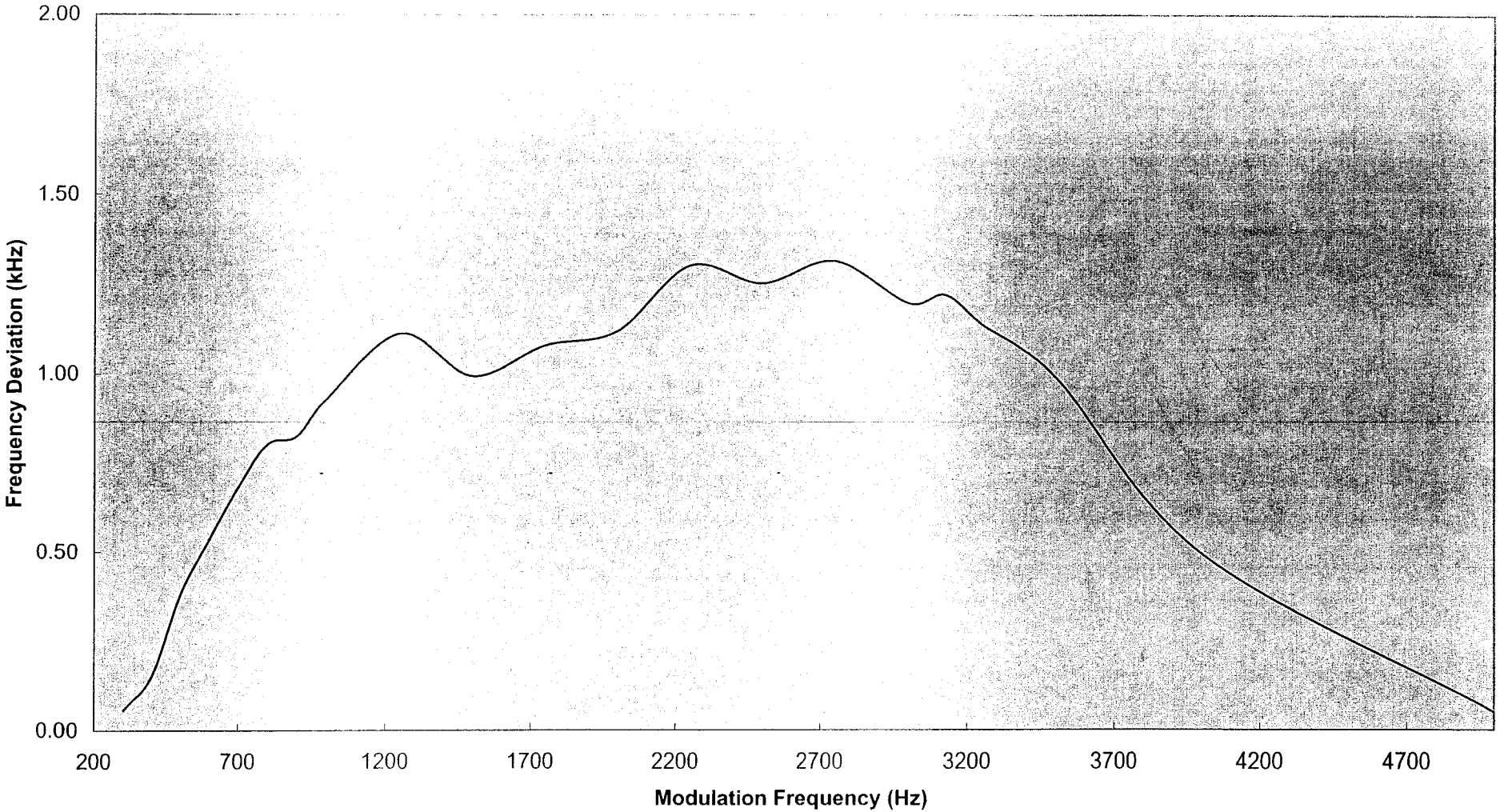
MODULATION CHARACTERISTICS

4.0 Modulation Characteristics

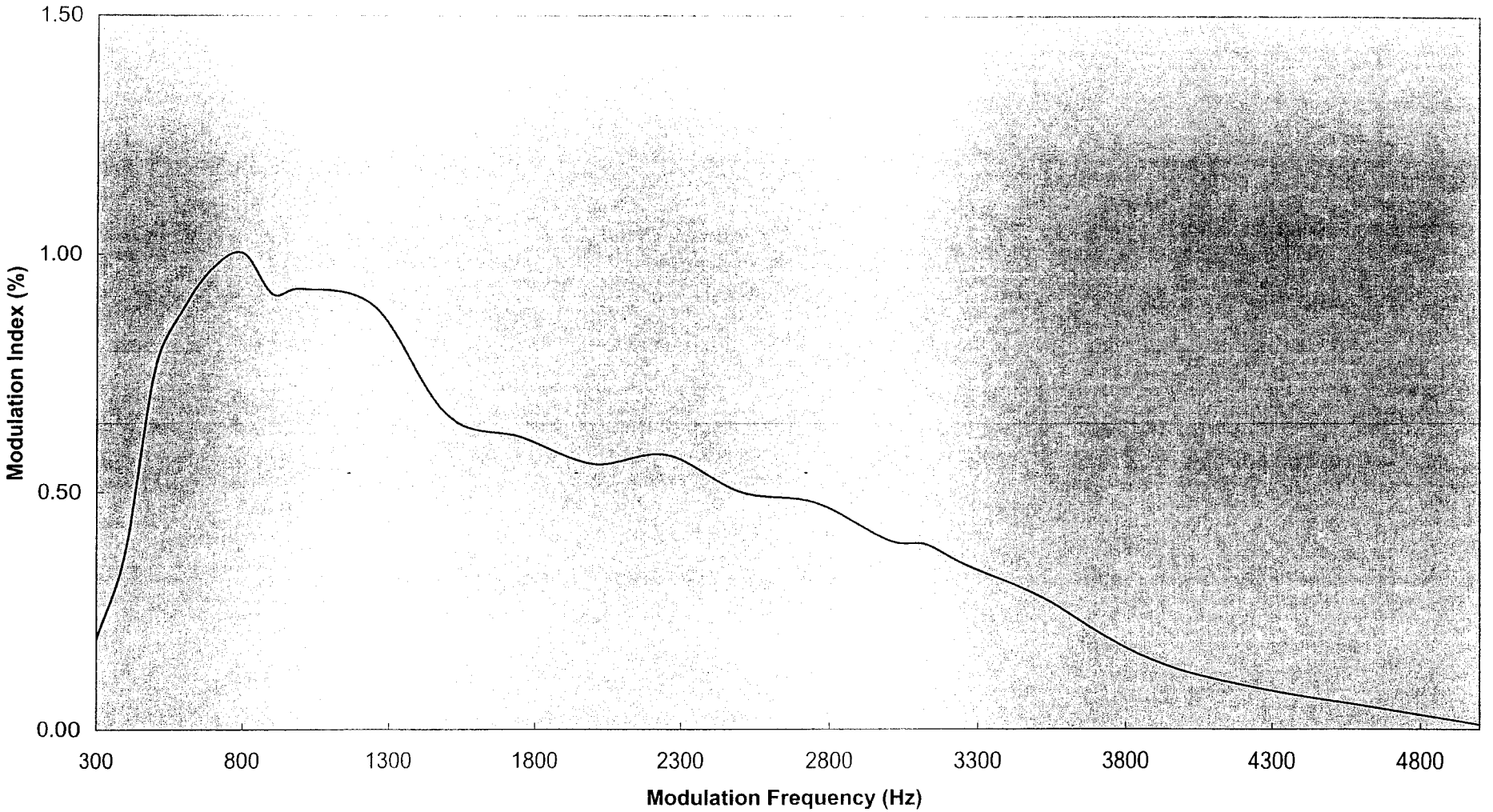
In order to satisfy the 95.637(a) requirement, Modulation Frequency Response and Modulation Limit Characteristics are attached in Exhibit 4.1 & 4.2.

Plots for each tests are saved with filename: mfr.pdf and mlc.pdf

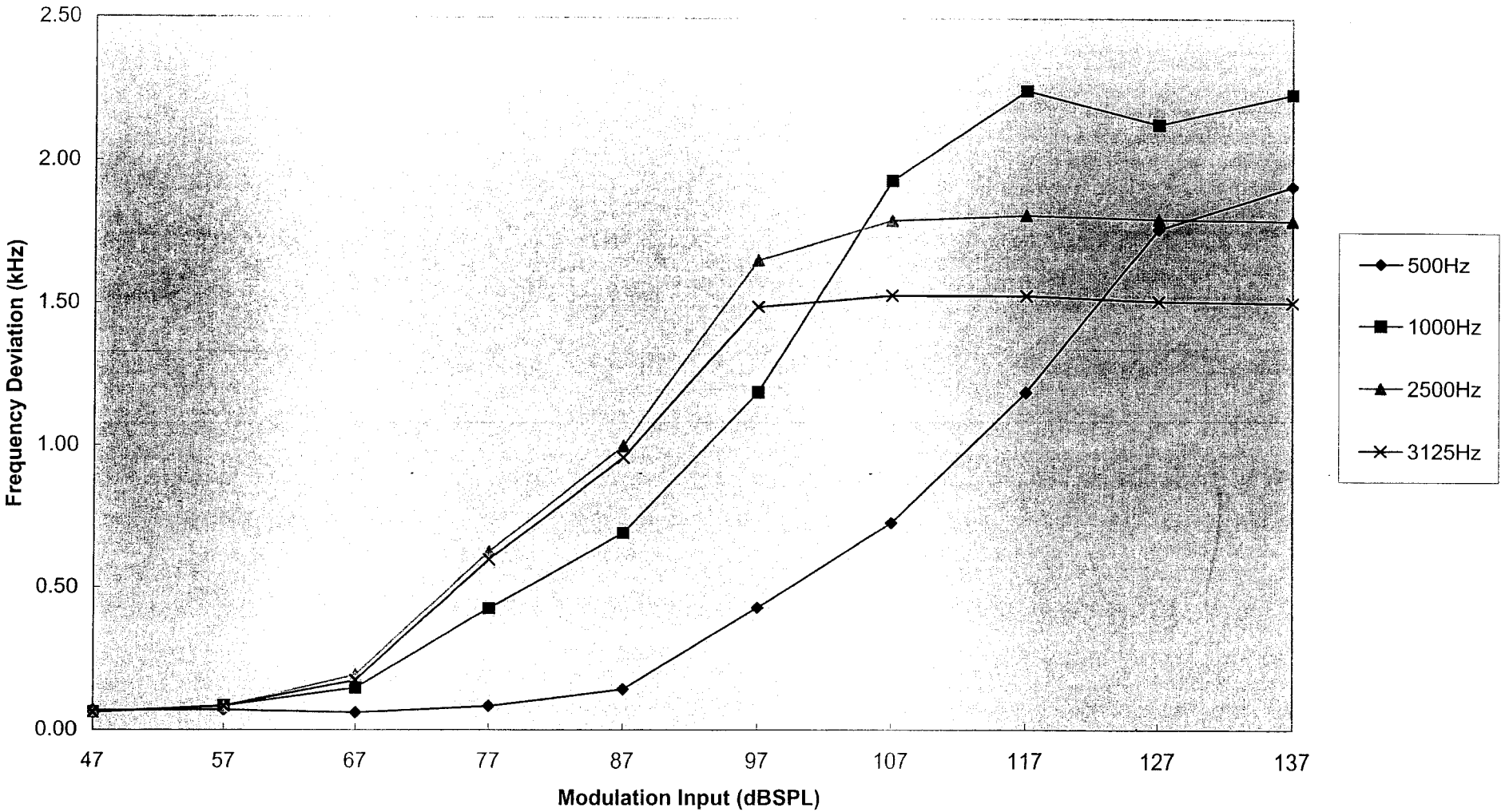
Modulation Frequency Response



Modulation Frequency Response



Modulation Limiting Characteristic



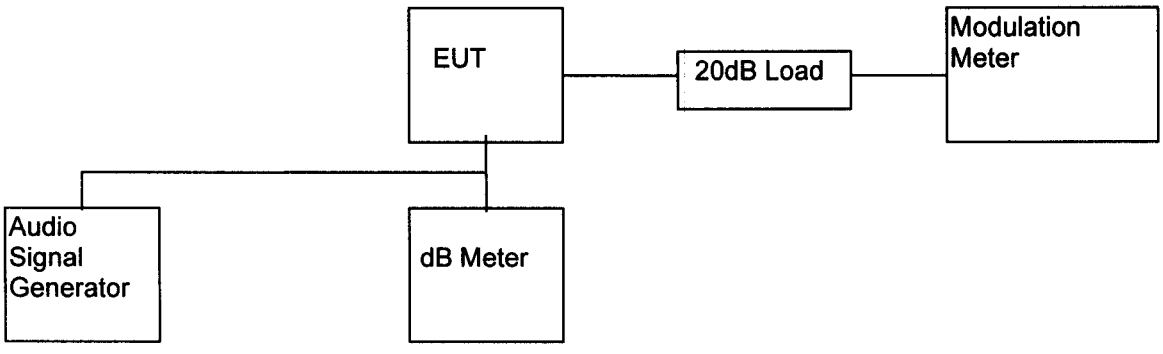
4.1 Modulation Frequency Response

A. Test Equipment

Equipment	Brand Name	Model No.
Audio Signal Generator	Leader	LFG-1300S
dB meter	Leader	LMV-182A
20 dB RF Load	Bird	8304-200-N
Modulation Meter	Marconi Instrument	2945

B. Testing Procedure

1) Set-up the test equipment in the following configuration:



2) Set the audio signal generator frequency to the sound pressure level 97.0dBSPL at the microphone of the EUT.
3) The frequency of the audio signal generator is changed from 300Hz to 5kHz.
4) Record the frequency deviation.

C. Test Result

Table 2

Giant Electronics Limited
Giant/ Motorola T6500

Modulation Frequency Response

Test Channel : 4
Input level = 93.5dBSPL

Modulation Frequency (Hz)	Modulation index (%)
300	0.19
400	0.38
500	0.76
600	0.89
700	0.97
800	1.00
900	0.92
1000	0.93
1250	0.89
1500	0.66
1750	0.62
2000	0.56
2250	0.58
2500	0.50
2750	0.48
3000	0.40
3125	0.39
3250	0.35
3500	0.28
4000	0.12
5000	0.01

Test Engineer: Ken Sit

Date of Test: May 13, 2004

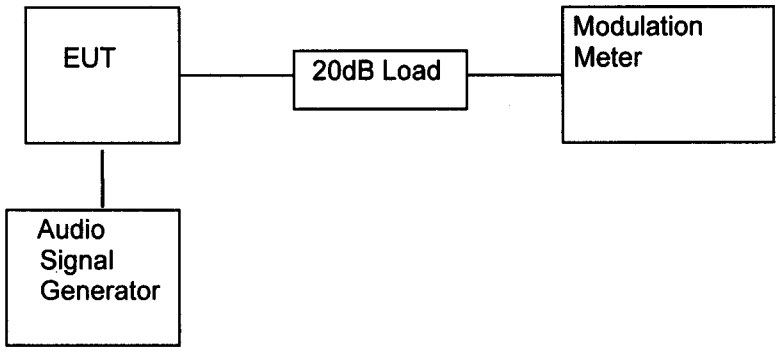
4.2 Modulation Limiting Characteristics (Section 2.1047(b))

A. Test Equipment

Equipment	Brand Name	Model No.
Audio Signal Generator	Leader	LFG-1300S
20 dB RF Load	Bird	8304-200-N
Modulation Meter	Marconi	2950

B. Testing Procedure

1) Set-up the test equipment in the following configuration:



2) Set the frequency of the audio signal generator to 500Hz and adjust the level from 47dBSPL to 127dBSPL.
3) Record the maximum value of plus or minus peak frequency deviation.
4) Repeat the above procedure with frequency 1000Hz, 2500Hz & 3125Hz.

C. Test Result

Table 3

Giant Electronics Limited
Giant/ Motorola T6500

Modulation Limiting Characteristics

Test Channel : 4

Modulation Input (dBSPL)	Peak Frequency Deviation (kHz) at 500Hz	Peak Frequency Deviation (kHz) at 1000Hz	Peak Frequency Deviation (kHz) at 2500Hz	Peak Frequency Deviation (kHz) at 3125Hz
47	0.07	0.06	0.07	0.06
57	0.07	0.09	0.08	0.09
67	0.06	0.15	0.19	0.17
77	0.08	0.43	0.63	0.60
87	0.14	0.69	1.00	0.96
97	0.43	1.19	1.64	1.49
107	0.73	1.93	0.79	1.53
117	1.19	2.25	1.81	1.53
127	1.76	2.13	1.80	1.51
137	1.91	2.24	1.79	1.50

Test Engineer: Ken Sit

Date of Test: May 13, 2004

4.3 Audio Low Pass Filter Response (Section 95.637(b))

A. Test Equipment

Equipment	Brand Name	Model No.
Audio Signal Generator	Leader	LFG-1300S
dB meter	Leader	LMV-182A

B. Testing Procedure

1) Connect the audio signal generator to the input of the post limiter low pass filter and the dB meter to the output of the post limiter low pass filter.
2) Apply a 1000 Hz tone from the audio signal generator and adjust the level per manufacturer's specifications. Record the dB level of the 1000 Hz tone as LEV_{REF}.
3) Set the audio signal generator to the desired test frequency between 3000 Hz and the upper low pass filter limit. Record the dB level at the test frequency as LEV_{FREQ}.
4) Calculate the audio frequency response at the test frequency as:

low pass filter response = LEV_{FREQ} - LEV_{REF}

1) Repeat the above procedure for all the desired test frequencies.

C. Test Result

For electronic filing, the audio low pass frequency response is saved with filename: lpf.pdf.

Audio Low Pass Filter Response

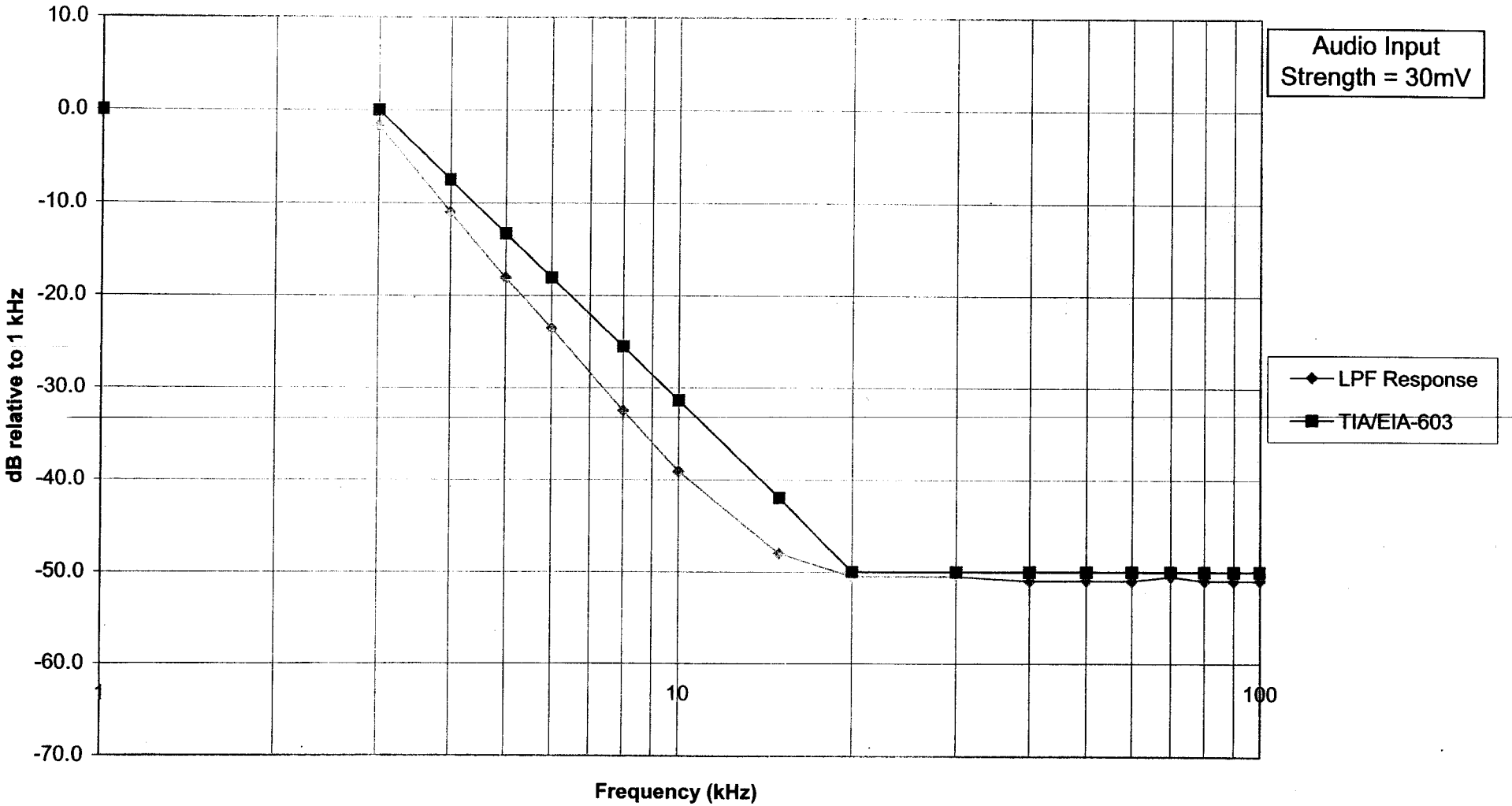


EXHIBIT 5

OCCUPIED BANDWIDTH

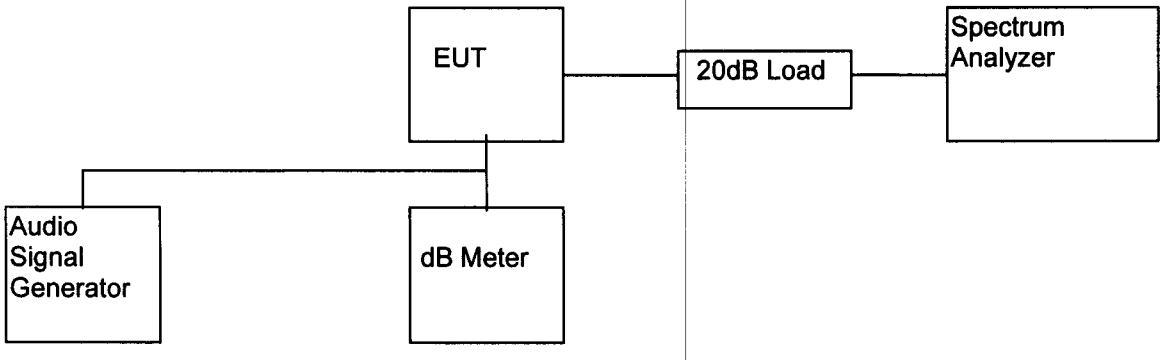
5.0 Occupied Bandwidth (Section 95.633(c))

A. Test Equipment

Equipment	Brand Name	Model No.
Audio Signal Generator	Leader	LFG-1300S
dB meter	Leader	LMV-182A
20 dB RF Load	Bird	8304-200-N
Spectrum Analyzer	Hewlett Packard	8951EM

B. Testing Procedure

1) Set-up the test equipment in the following configuration:



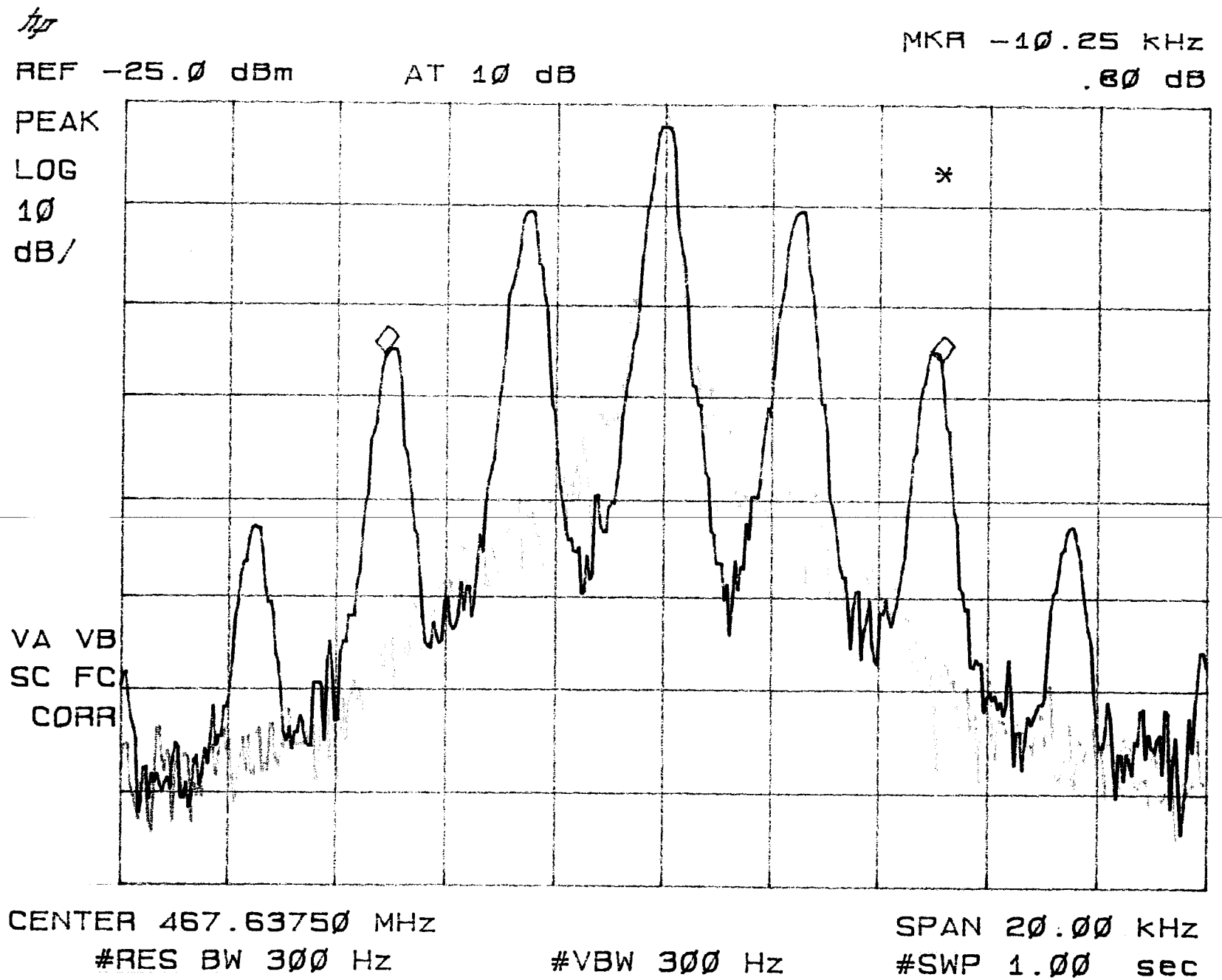
2) Set the level of audio signal generator to obtain 16 dB greater than required for 50% modulation.
3) The occupied bandwidth is measured with the spectrum analyzer set at 5kHz/div scan and 10dB/div.

C. Test Result

The occupied Bandwidth is measured to be 10.3 kHz.

For the electronic filing, the bandwidth plot is saved with filename: bw.pdf

Test Engineer: Ken Sit Date of Test: May 13, 2004


MKR -10.25 kHz
.00 dB
REF -25.0 dBm
AT 10 dB
PEAK
LOG
10
dB/
VA VB
SC FC
CORR
CENTER 467.63750 MHz
#RES BW 300 Hz
#VBW 300 Hz
SPAN 20.00 kHz
#SWP 1.00 sec

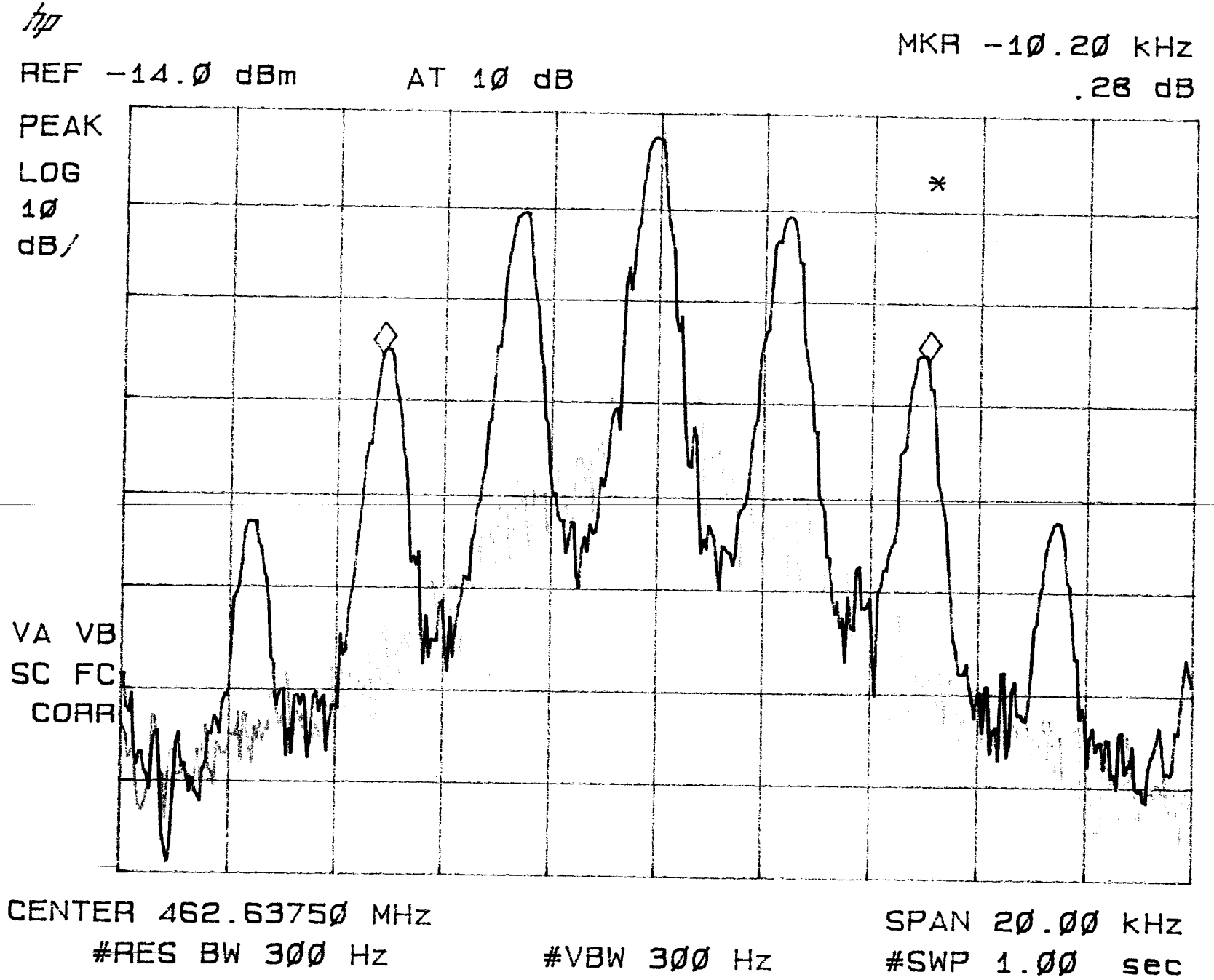

hp
REF -14.Ø dBm
AT 1Ø dB
MKR -1Ø.2Ø kHz
.26 dB
PEAK
LOG
1Ø
dB/
VA VB
SC FC
CORR
CENTER 462.6375Ø MHz
#RES BW 3ØØ Hz
#VBW 3ØØ Hz
SPAN 2Ø.ØØ kHz
#SWP 1.ØØ sec

EXHIBIT 6

SPURIOUS EMISSION

6.0 Spurious Emission (Section 95.635)

In order to satisfy the 95.635 requirement, the spurious emission from the EUT are measured and shown in the Exhibit 6.1.

6.1 Field Strength of Spurious Radiation (Section 95.635)

A. Test Equipment

Equipment	Brand Name	Model No.
Antenna	CDI	B100,B200,B300, Horn
Test receiver	Rohde & Schwarz	ESVS30
RF Filter	Tailithic	3VF

B. Testing Procedure

Radiated emission measurements were performed according to the procedures in ANSI C63.4(2001). All measurements were performed in Open Area Test Sites located at Roof Top of Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.

C. Radiated Emission Configuration Photograph

Worst Case Radiated Emission

For electronic filing, the radiated emission configurations photograph is saved with filename: radiated photos.doc

C. Test Result

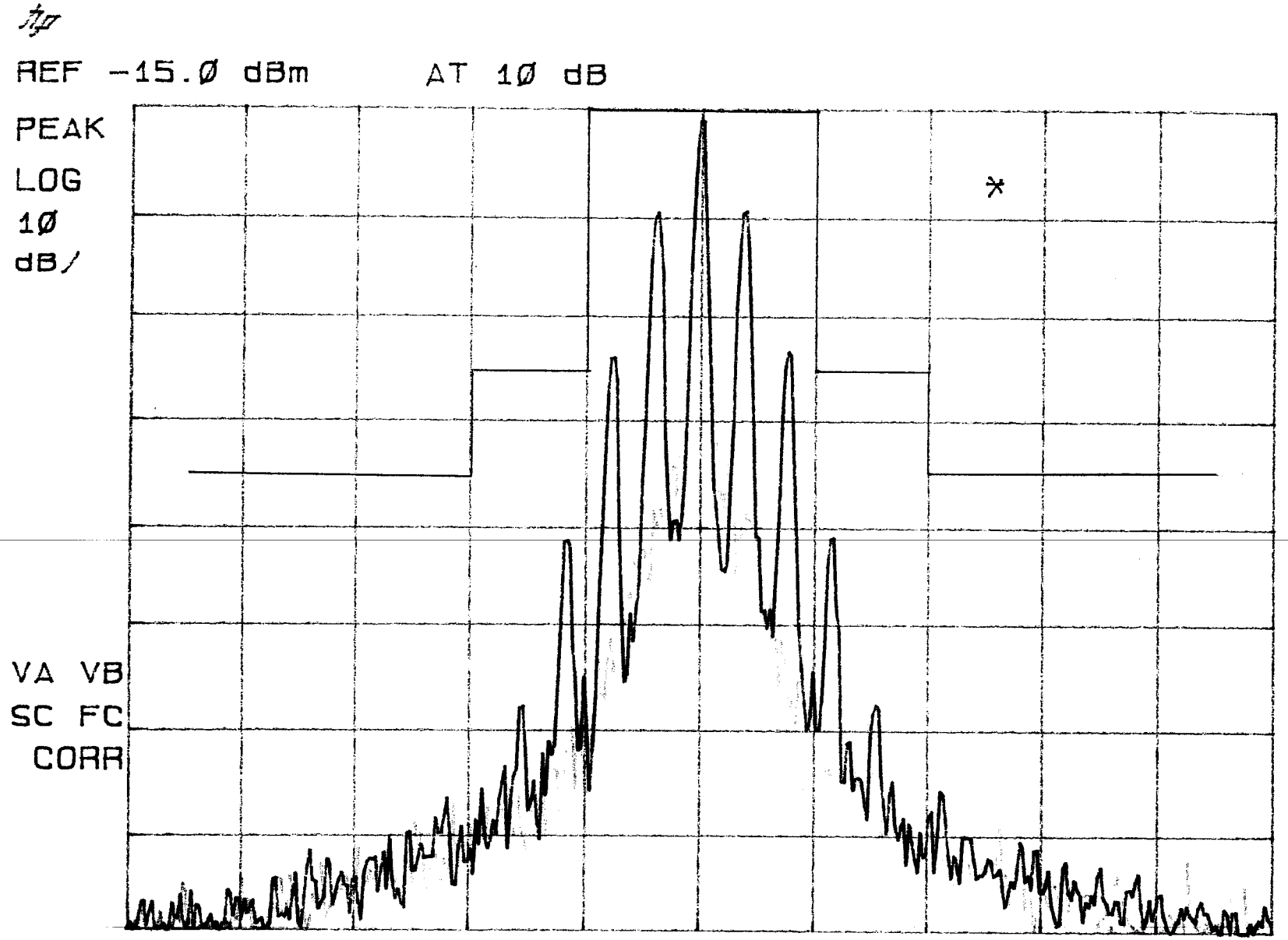
Giant Electronics Limited
Giant/ Motorola T6500

Table 4(a)

1) Unwanted emission from CARRIER ±6.25kHz to CARRIER ±31.25kHz

(Refer to the plots which is saved with filename: spurious.pdf)

Region	Unwanted emission	
	Channel 4	Channel 11
CARRIER ±6.25kHz to ±12.5kHz	<25dB	<25dB
CARRIER ±12.5kHz to ±31.25kHz	<35dB	<35dB


REF -15.Ø dBm
AT 1Ø dB
PEAK
LOG
1Ø
dB/
VA VB
SC FC
CORR
CENTER 462.63750 MHz
SPAN 65.ØØ kHz
#RES BW 3ØØ Hz
#VBW 3ØØ Hz
#SWP 2.17 sec

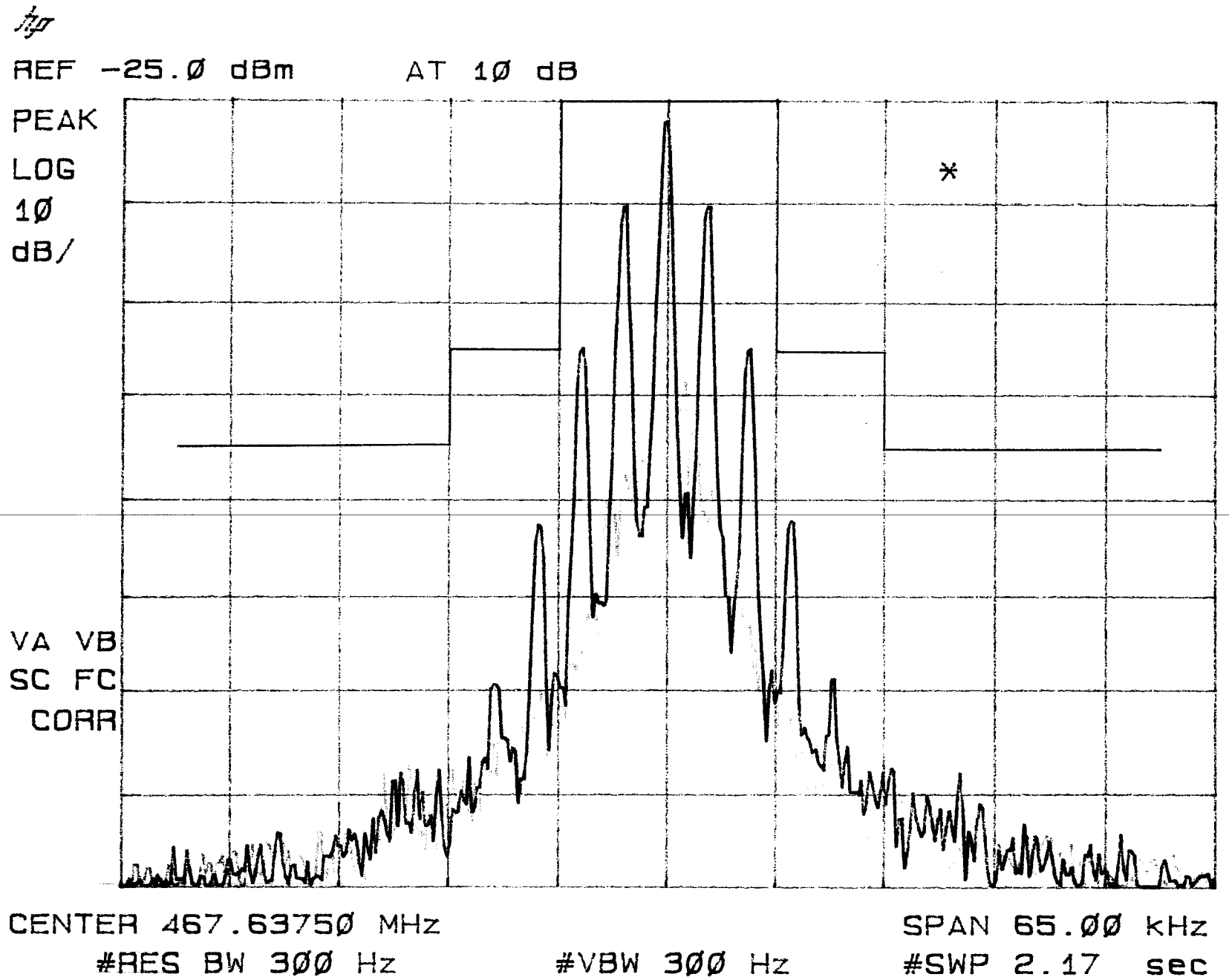

REF -25.Ø dBm
AT 1Ø dB
PEAK
LOG
1Ø
dB/
VA VB
SC FC
CORR
CENTER 467.63750 MHz
SPAN 65.ØØ kHz
#RES BW 3ØØ Hz
#VBW 3ØØ Hz
#SWP 2.17 sec

Table 4(b): Channel 4

Frequency (MHz)	Effective Radiated Power (dBm)	Transmission Power (dBm)	Attenuation (dB)	Limit (dB)	Margin (dB)
925.274	-26.4	27.5	53.9	40.5	13.4
1387.872	-50.4	27.5	77.9	40.5	37.4
1850.560	-53.4	27.5	80.9	40.5	40.4
2313.120	-45.4	27.5	72.9	40.5	32.4
2775.800	-36.8	27.5	64.3	40.5	23.8
3238.368	-50.8	27.5	78.3	40.5	37.8
3701.104	-51.6	27.5	79.1	40.5	38.6
4163.709	-59.8	27.5	87.3	40.5	46.8

Remark: 1. Transmission power is 27.5 dBm or -2.5 dB(W).

2. According to Section 95.635(b7), the unwanted emission should be attenuated below TP by at least 43 + 10 $\log_{10}$ (TP) dB or 40.5 dB.

3. The test is performed according to ANSI/TIA/EIA-603-1992.

Test Engineer: Ken Sit

Date of Test: May 13, 2004

Table 4(b): Channel 11

Frequency (MHz)	Effective Radiated Power (dBm)	Transmission Power (dBm)	Attenuation (dB)	Limit (dB)	Margin (dB)
935.275	-26.7	26.0	52.7	39.0	13.7
1402.874	-51.6	26.0	77.6	39.0	38.6
1870.464	-53.4	26.0	79.4	39.0	40.4
2338.104	-40.5	26.0	66.5	39.0	27.5
2805.766	-38.1	26.0	64.1	39.0	25.1
3273.406	-49.2	26.0	75.2	39.0	36.2
3741.046	-50.8	26.0	76.8	39.0	37.8
4208.686	-58.6	26.0	84.6	39.0	45.6

Remark: 1. Transmission power is 26 dBm or -4 dB(W).

2. According to Section 95.635(b7), the unwanted emission should be attenuated below TP by at least 43 + 10 $\log_{10}$ (TP) dB or 39 dB.

3. The test is performed according to ANSI/TIA/EIA-603-1992.

Test Engineer: Ken Sit

Date of Test: May 13, 2004

EXHIBIT 7

FREQUENCY STABILITY

7.0 Frequency Stability

The frequency tolerance was tested in normal condition & over extreme ambient conditions with respect to voltage and temperature variation.

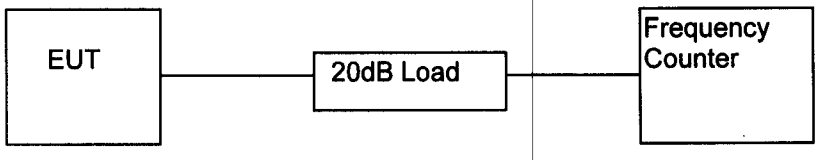
7.1 Frequency Tolerance (Section 95.627)

A. Test Equipment

Equipment	Brand Name	Model No.
Regulated Power Supply	PAD	30-35L
20 dB RF Load	Bird	8304-200-N
Frequency Counter	Phillips	PM6668

B. Testing Procedure

1) Set-up the test equipment in the following configuration:



2) Measure all transmit channel frequencies in MHz.

C. Test Result

Table 5

Giant Electronics Limited
Giant/ Motorola T6500

Frequency Tolerance

Channel	Frequency (MHz)	Measured Frequency (MHz)	Tolerance (%)
1	462.5625	462.56260	0.000022
2	462.5875	462.58756	0.000013
3	462.6125	462.61254	0.000009
4	462.6375	462.63753	0.000006
5	462.6625	462.66252	0.000004
6	462.6875	462.68753	0.000006
7	462.7125	462.71253	0.000006
8	467.5625	467.56252	0.000004
9	467.5875	467.58751	0.000002
10	467.6125	467.61251	0.000002
11	467.6375	467.63751	0.000002
12	467.6625	467.66250	0.000000
13	467.6875	467.68750	0.000000
14	467.7125	467.71251	0.000002
15	462.5500	462.55001	0.000002
16	462.5750	462.57500	0.000000
17	462.6000	462.59999	-0.000002
18	462.6250	462.62499	-0.000002
19	462.6500	462.64999	-0.000002
20	462.6750	462.67496	-0.000009
21	462.7000	462.69995	-0.000011
22	462.7250	462.72494	-0.000013

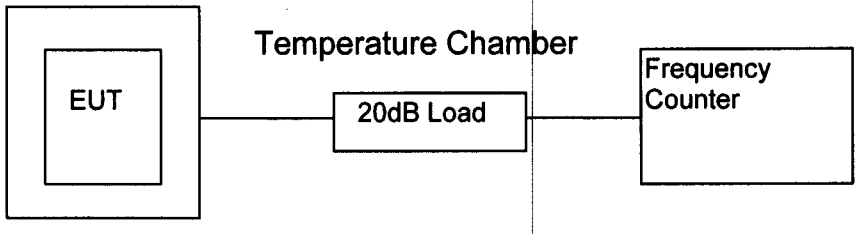
7.2 Frequency Stability - Temperature (Section 2.1055)

A. Test Equipment

Equipment	Brand Name	Model No.
20 dB RF Load	Bird	8304-200-N
Frequency Counter	Phillips	PM6668

B. Testing Procedure

1) Set-up the test equipment in the following configuration:



2) Set the Temperature Chamber to -20°C and stabilize the EUT temperature for one hour. Set transmitter ON for two minutes.
3) Measure the channel frequency of channel 4, 11 in MHz.
4) Turn the EUT OFF.
5) Repeat the above procedure from -20°C to 50°C with 10°C increment.

C. Test Result

Table 6(a)

Giant Electronics Limited
Giant/ Motorola T6500

Frequency Deviation with Temperature Variation

Channel : 4

Temperature (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	% Deviation
-20	462.6375	462.63663	-0.000188
-10	462.6375	462.63732	-0.000039
0	462.6375	462.63775	0.000054
10	462.6375	462.63782	0.000069
20	462.6375	462.63753	0.000006
30	462.6375	462.63731	-0.000041
40	462.6375	462.63712	-0.000082
50	462.6375	462.63759	0.000019

Test Engineer: Ken Sit

Date of Test: May 13, 2004

C. Test Result

Table 6(b)

Giant Electronics Limited
Giant/ Motorola T6500

Frequency Deviation with Temperature Variation

Channel : 11

Temperature (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	% Deviation
-20	467.6375	467.63670	-0.000171
-10	467.6375	467.63739	-0.000024
0	467.6375	467.63780	0.000064
10	467.6375	467.63780	0.000064
20	467.6375	467.63751	0.000002
30	467.6375	467.63730	-0.000043
40	467.6375	467.63713	-0.000079
50	467.6375	467.63759	0.000019

Test Engineer: Ken Sit

Date of Test: May 13, 2004

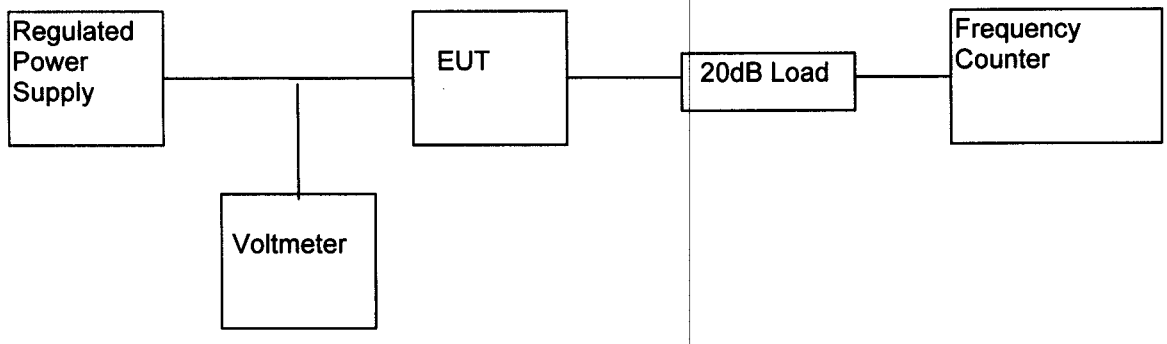
7.3 Frequency Stability - Voltage (Section 2.995)

A. Test Equipment

Equipment	Brand Name	Model No.
Regulated Power Supply	PAD	30-35L
20 dB RF Load	Bird	8304-200-N
Voltage meter	Fluke	87
Frequency Counter	Phillips	PM6668

B. Testing Procedure

1) Set-up the test equipment in the following configuration:



2) Vary the level of regulated power supply to the manufacturer specified battery end point of the EUT.
3) Measure the channel frequency of channel 4 and 11 in MHz.

C. Test Result

Table 7

Giant Electronics Limited
Giant/ Motorola T6500

Frequency Deviation with Voltage Variation

The manufacturer specified battery end point 3.50V

Channel	Frequency (MHz)	Measured Frequency (MHz)	Tolerance (%)
4	462.6375	462.63740	-0.000022
11	467.6375	467.63741	-0.000019

EXHIBIT 8

TECHNICAL SPECIFICATIONS

8.0 Technical Specifications

8.1 Block Diagram

For electronic filing, the block diagram of the FRS is saved with filename: block.pdf

Figure 8.1 Block Diagram