Alco Communications Limited

Application
For
Certification

2.4GHz Frequency Hopping Spread Spectrum Cordless Phone with Caller ID

(FCC ID: LSEALCOM9025A)

WO# 02129021
WL/Ann Choy
December 9, 2002

FCC ID: LSEALCOM9025A

Intertek Testing Services Hong Kong Ltd.
2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.
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LIST OF EXHIBITS

MEASUREMENT/TECHNICAL REPORT

Alco Communications Limited- MODEL: 9025A
FCC ID: LSEALCOM9025A

This report concerns (check one) Original Grant X Class II Change

Equipment Type: DSS-Part 15 Spread Spectrum Transmitter

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.

Transition Rules Request per 15.37? Yes No X

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [08-20-02 Edition] provision.

Report prepared by:

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Fax: 852-2741-1693

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Test Report	Test Report	report.doc
Operation Description	Technical Description	descri.pdf
Test Setup Photo	Radiated Emission for Base	config photos.doc
Test Setup Photo	Radiated Emission for Handset	config photos.doc
Test Report	Maximum Output Power Plot	bmaxop.pdf, hmaxop.pdf
Test Report	20 dB Bandwidth Plot	b20dB.pdf, h20dB.pdf
Test Report	Minimum Number of Hopping Frequencies	chno.pdf
Test Report	Minimum Hopping Channel Carrier Frequency Separation	bfsepa.pdf, hfsepa.pdf
Test Report	Average Channel Occupancy Time	bavetime.pdf, havetime.pdf
Test Report	Out Band Antenna Conducted Emission Plot	bobantcon.pdf, hobantcon.pdf
Test Report	Duty Cycle Calculation and Measurement	bdcc.pdf, hdcc.pdf
Test Setup Photo	Conducted Emission	config photos.doc
Test Report	Conducted Emission Test Result	conduct.pdf
External Photo	External Photo	external photos.doc
Internal Photo	Internal Photo	internal photos.doc
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
User Manual	FCC Information	FCC information.pdf
RF Exposure Info	RF Safety	RF exposure info.pdf

EXHIBIT 1
SUMMARY OF TEST RESULTS

1.0 Summary of Test

Alco Communications Limited- MODEL: 9025A
FCC ID: LSEALCOM9025A

TEST	REFERENCE	RESULTS
Max. Output Power	15.247(b)	Pass
20 dB Bandwidth	15.247(a)(1)	Pass
Min. No. of Hopping Frequencies	15.247(a)(1)	Pass
Min. Hopping Channel Carrier Frequency Separation	15.247(a)(1)	Pass
Average Time of Occupancy	15.247(a)(1)	Pass
Out of Band Antenna Conducted Emission	15.247(c)	Pass
Radiated Emission in Restricted Bands	15.247(c)	Pass
AC Conducted Emission	15.207	Pass
Radiated Emission from Digital Part	15.109	Pass
Antenna Requirement	15.203	Pass (See Notes)

Notes: The EUT uses a permanent PIFA (Plane inverted-F antenna) antenna which, in accordance to Section 15.203, is considered sufficient to comply with the provisions of this section.

EXHIBIT 2
GENERAL DESCRIPTION

2.0 **General Description**

2.1 Product Description

The 9025A is a 2.4GHz Frequency Hopping Spread Spectrum Cordless Phone with Caller ID. It operates at frequency range of 2403.648 MHz to 2479.680 MHz with total of 45 hopping frequencies. The unit is capable of either tone or pulse dialing. The internal power supply's isolation is accomplished through a power transformer having an adequate dielectric rating. The circuit wiring is consistent under the requirement of part 68.

The handset unit consists of a keypad with twelve standard keys (0,...9,*,#), five function keys (Flash, Mem, Int, R/P, CID). A Phone/Yes key and a No key are provided to control pick and release telephone line in a toggle base.

The base unit has a intercom key, which is used to communicate with handset unit.

The antennas used in base unit and handset are integral, and the test sample is a prototype.

The circuit description and frequency hopping algorithm is saved with filename: descri.pdf

Connection between the device and the telephone network is accomplished through the use of USOC RJ11C in the 2-wire loop calling central office line.

2.2 Related Submittal(s) Grants

This is an application for Certification of a DSS-Part 15 Spread Spectrum Cordless Telephone System. Two transmitters are included in this application. The device is also subject to Part 68 Registration.

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (1992). All measurements were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

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

EXHIBIT 3
SYSTEM TEST CONFIGURATION

3.0 **System Test Configuration**

3.1 Justification

For emission testing, the equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). During testing, all cables were manipulated to produce worst case emissions. The handset was powered by a fully charged battery.

For the measurements, the EUT is attached to a cardboard box if necessary and placed on the wooden turntable. If the base unit attaches to peripherals, they are connected and operational (as typical as possible). The handset is remotely located as far from the antenna and the base as possible to ensure full power transmission from the base. Else, the base is wired to transmit full power without modulation.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Detector function is in peak mode. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1MHz or greater for frequencies above 1000MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9kHz to 25GHz.

3.2 EUT Exercising Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

For emissions testing, the units were setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing.

3.3 Support Equipment List and Description

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system (included inserted cards, which have grants) are:

HARDWARE:

The unit was operated standalone. An AC adapter (provided with the unit) was used to power the device. Its description is listed below.

(1) AC adapter with two meter unshielded power cord permanently affixed.

CABLES:

(1) Telecommunication cable with RJ11C connectors (1m, unshielded), terminated

OTHERS:

(1) There are no special accessories necessary for compliance of this product.

3.4 Equipment Modification

Any modifications installed previous to testing by Alco Communications Limited will be incorporated in each production model sold/leased in the United States.

No modifications were installed by ETL Division, Intertek Testing Services Hong Kong Ltd.

All the items listed under section 2.0 of this report are confirmed by:

Confirmed by:

Tommy Leung
Assistant Supervisor
Intertek Testing Services Hong Kong Ltd.
Agent for Alco Communications Limited

Signature

December 10, 2002 Date

EXHIBIT 4
MEASUREMENT RESULTS

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

4.0 Measurement Results

4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b) :

[ ] The antenna power of the EUT was connected to the input of a power meter. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

[×] The antenna port of the EUT was connected to the input of a spectrum analyzer. The analyzer was set for maximum RES BW and power was read directly in dBm. External attenuation and cable loss were compensated by adding to SA raw reading.

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm).

For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to (GAIN - 6) dBm.

(Base Unit) Antenna Gain = 3 dBi			
Frequency (MHz)		Output in dBm	Output in mWatt
Low Channel:	2403.639	18.7	74.1
Middle Channel:	2441.853	19.3	85.1
High Channel:	2480.117	18.6	72.4

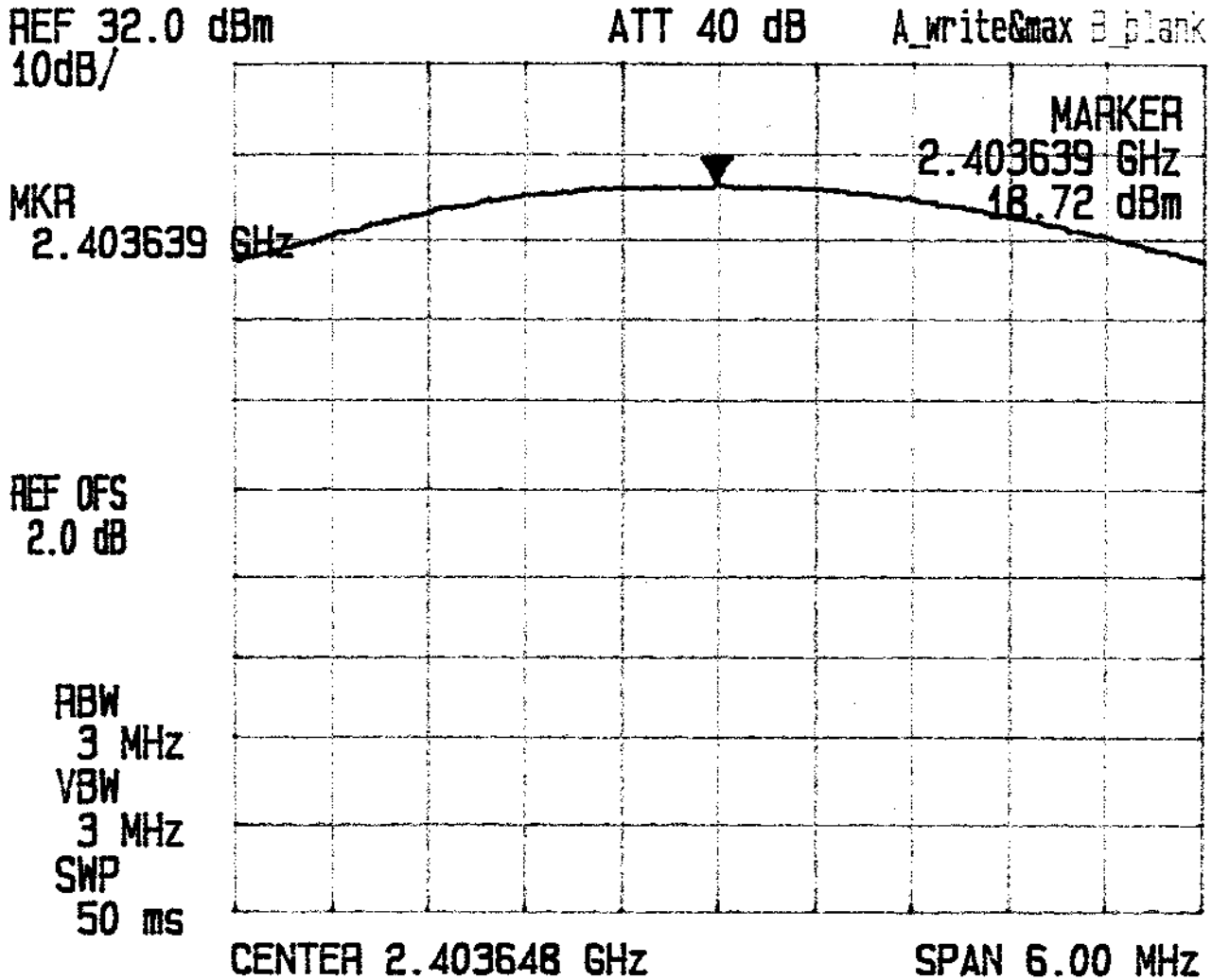
Cable loss: 2 dB External Attenuation : N/A dB

Cable loss, external attenuation: [x] included in OFFSET function
[ ] added to SA raw reading

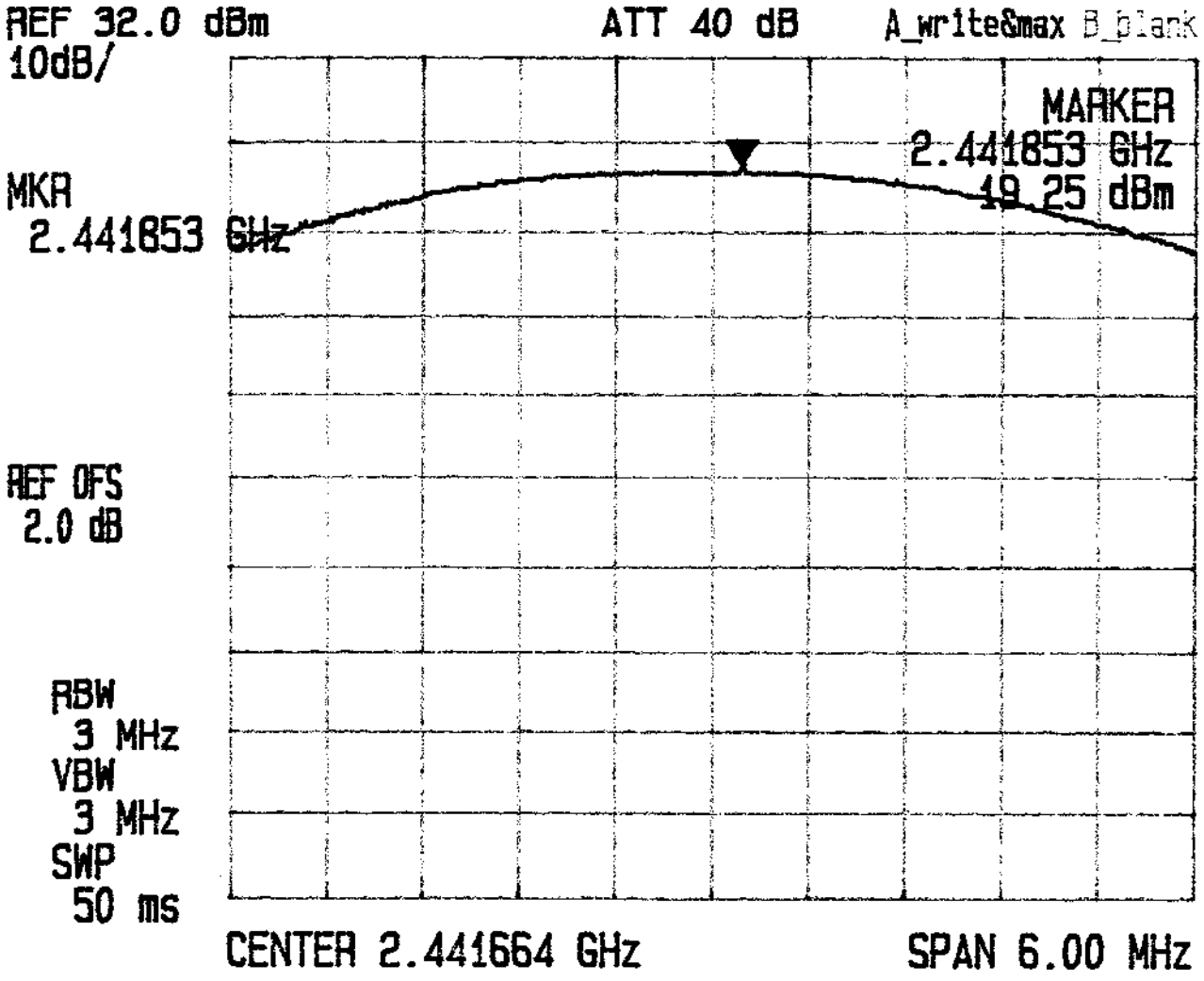
EUT Transmit Antenna Gain(dBi)+dBm maximum output level= 22.3dBm (36 dBm or less)

Please refer to the attached plots for details:

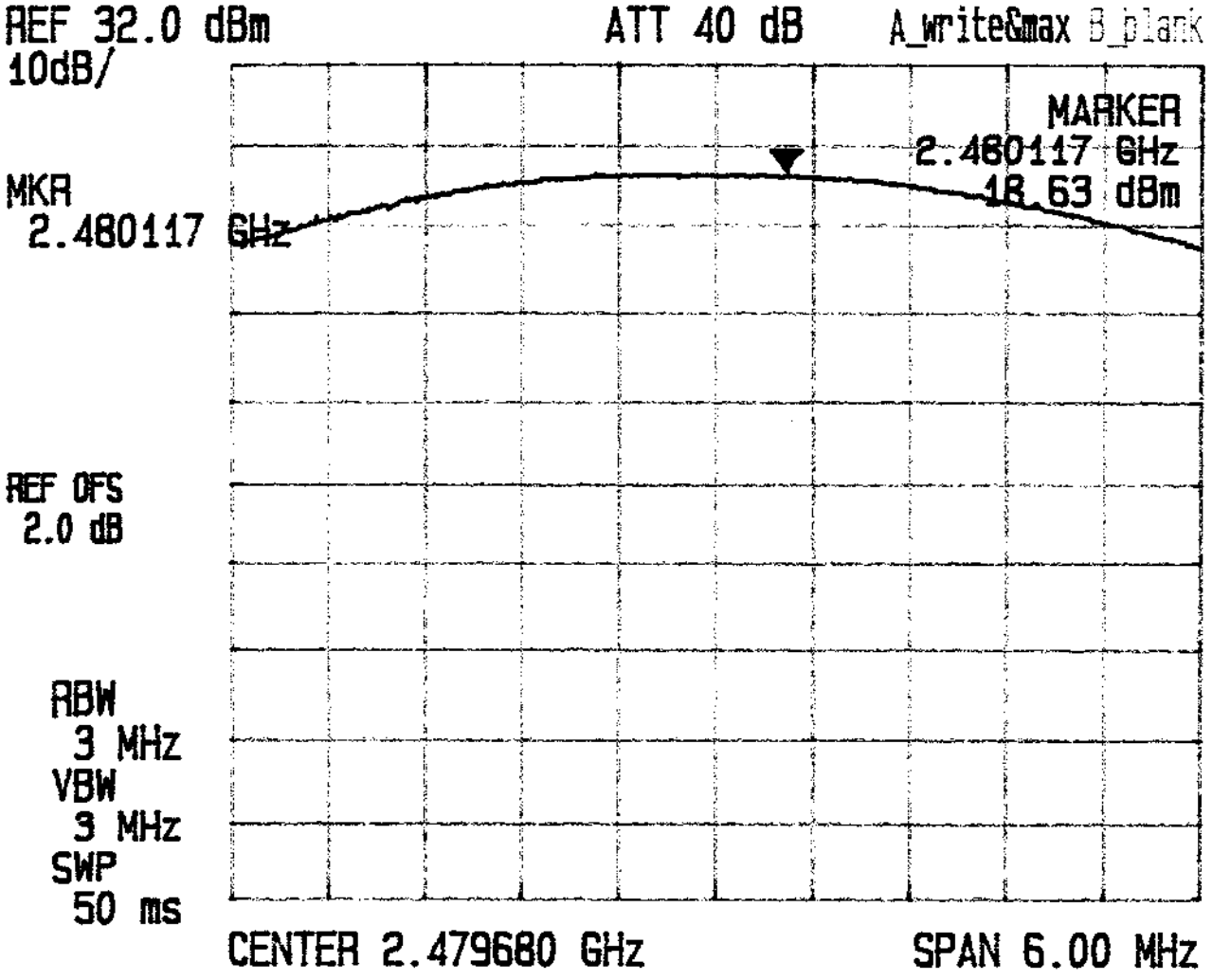
Plot B1a: Low Channel Output Power
Plot B1b: Middle Channel Output Power
Plot B1c: High Channel Output Power


REF 32.0 dBm
ATT 40 dB
A_writeGmax B_blank
10dB/
MARKER
2.403639 GHz
18.72 dBm
MKR
2.403639 GHz
REF OFS
2.0 dB
RBW
3 MHz
VBW
3 MHz
SWP
50 ms
CENTER 2.403648 GHz
SPAN 6.00 MHz

Plot B1a


REF 32.0 dBm
10dB/
ATT 40 dB
A_write&max B_blank
MARKER
2.441853 GHz
19.25 dBm
MKR
2.441853 GHz
REF OFS
2.0 dB
RBW
3 MHz
VBW
3 MHz
SWP
50 ms
CENTER 2.441664 GHz
SPAN 6.00 MHz

Plot B1b.


REF 32.0 dBm
ATT 40 dB
A_write&max B_blank
10dB/
MARKER
2.460117 GHz
18.63 dBm
MKR
2.460117 GHz
REF OFS
2.0 dB
RBW
3 MHz
VBW
3 MHz
SWP
50 ms
CENTER 2.479680 GHz
SPAN 6.00 MHz

Plot B1c

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b) - Continued:

(Handset Unit) Maximum Antenna Gain = 3 dBi			
Frequency (MHz)		Output in dBm	Output in mWatt
Low Channel:	2403.651	18.2	66.1
Middle Channel:	2441.627	19.2	83.2
High Channel:	2479.626	19.6	91.2

Cable loss : 2 dB External Attenuation : N/A dB

Cable loss, external attenuation: [x] included in OFFSET function
[ ] added to SA raw reading

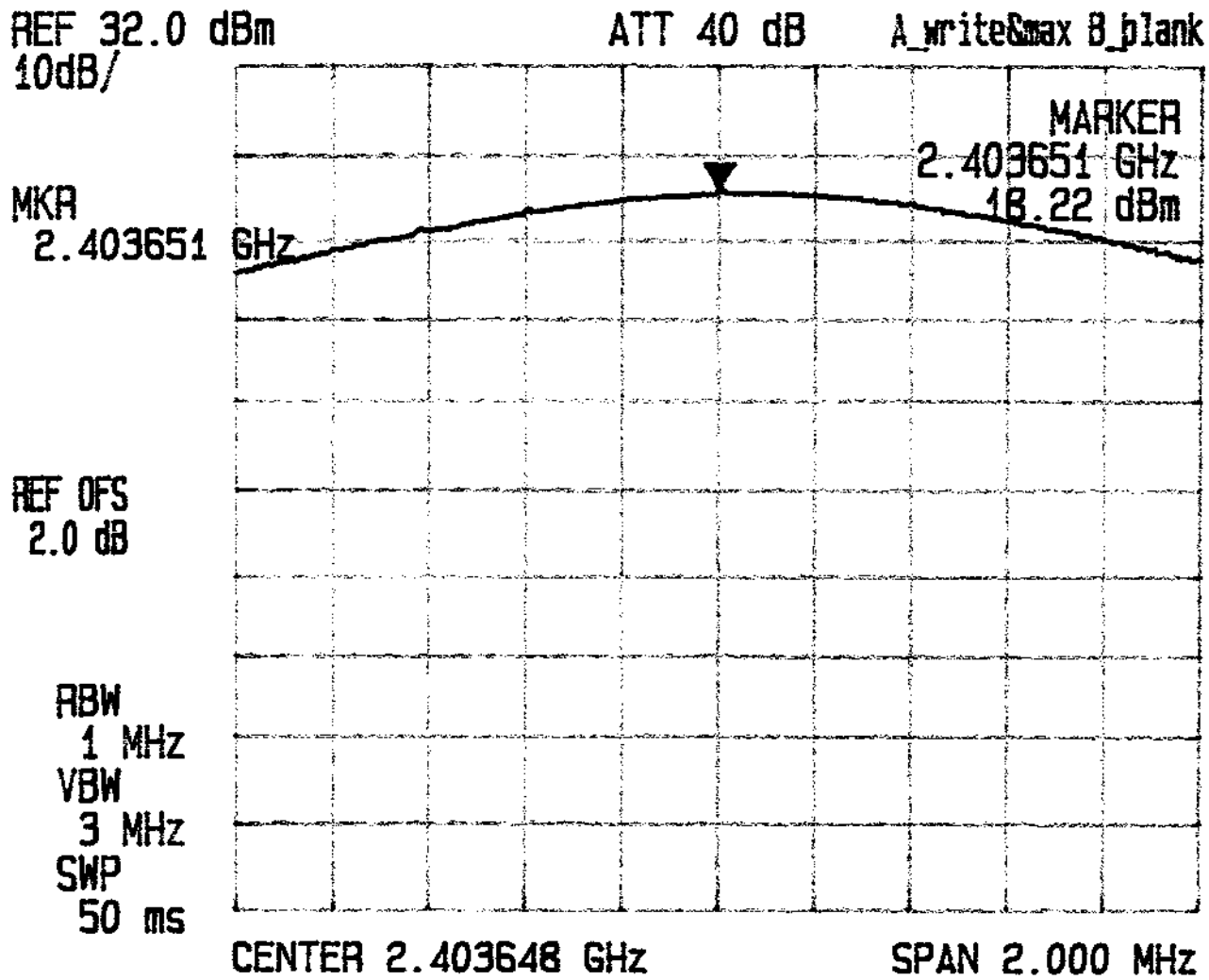
EUT Transmit Antenna Gain(dBi)+dBm maximum output level=22.6dBm (36 dBm or less)

Please refer to the attached plots for details:

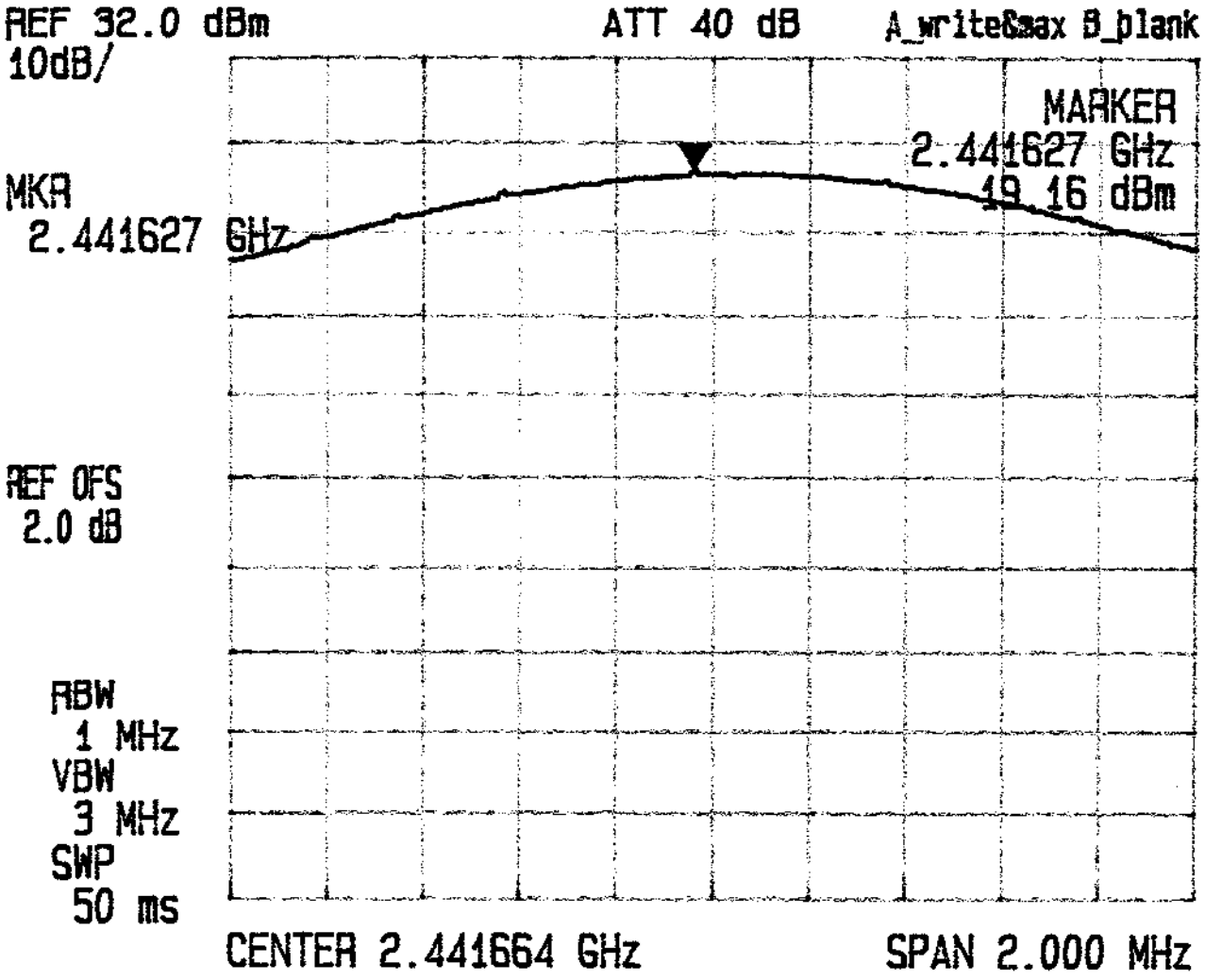
Plot H1a: Low Channel Output Power
Plot H1b: Middle Channel Output Power
Plot H1c: High Channel output Power

For electronic filing, the above plots are saved with filename: bmaxop.pdf, hmaxop.pdf

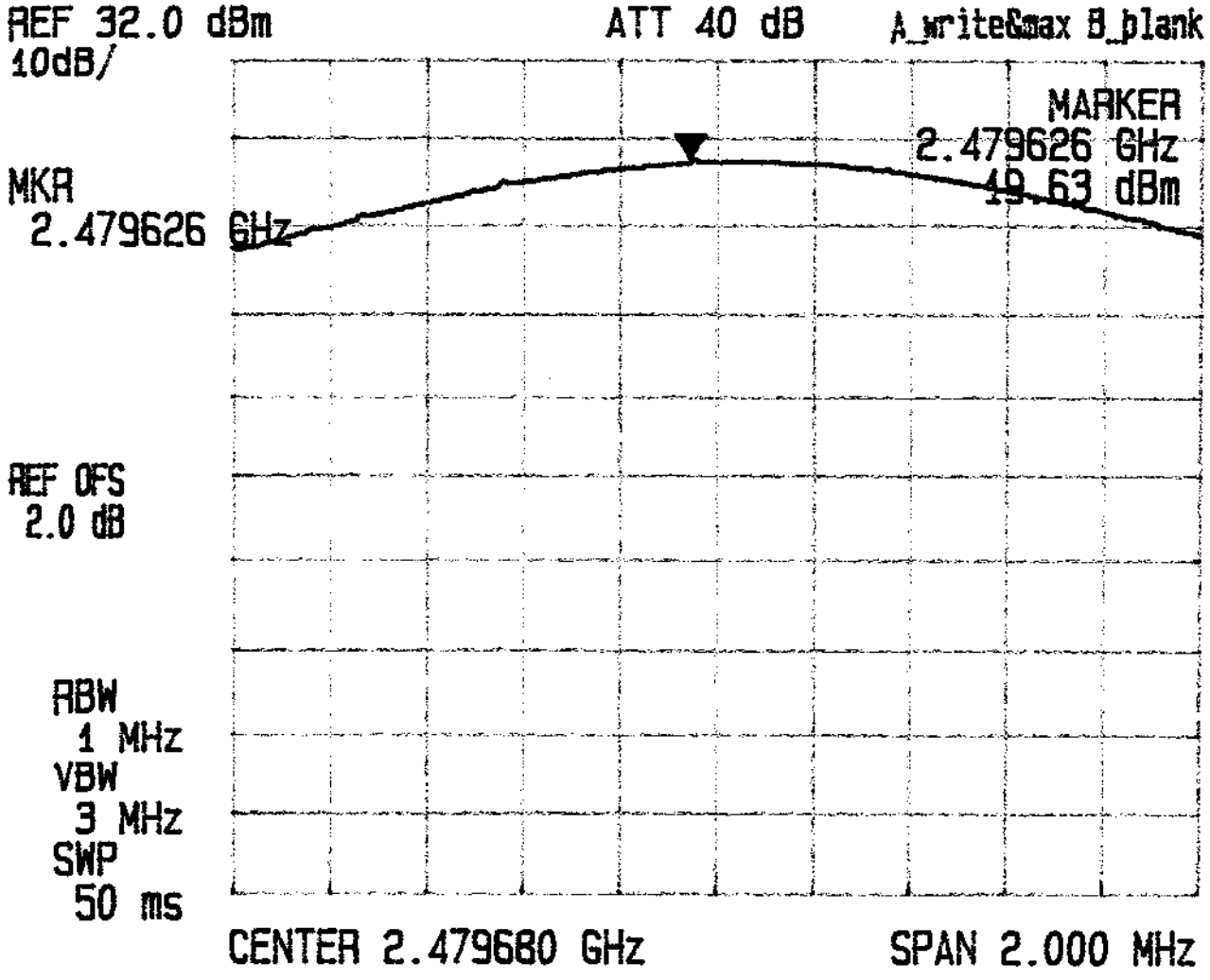
For RF Safety, the information is saved with filename: RF exposure info.doc


REF 32.0 dBm
ATT 40 dB
A_write&max B_blank
10dB/
MARKER
2.403651 GHz
18.22 dBm
MKR
2.403651 GHz
REF OFS
2.0 dB
RBW
1 MHz
VBW
3 MHz
SWP
50 ms
CENTER 2.403648 GHz
SPAN 2.000 MHz

Plot H1a


REF 32.0 dBm
ATT 40 dB
A_write&max B_blank
10dB/
MARKER
2.441627 GHz
19.16 dBm
MKR
2.441627 GHz
REF OFS
2.0 dB
RBW
1 MHz
VBW
3 MHz
SWP
50 ms
CENTER 2.441664 GHz
SPAN 2.000 MHz

Plot H1b


REF 32.0 dBm
ATT 40 dB
A_write&max B_blank
10dB/
MARKER
2.479626 GHz
19.63 dBm
MKR
2.479626 GHz
REF OFS
2.0 dB
RBW
1 MHz
VBW
3 MHz
SWP
50 ms
CENTER 2.479680 GHz
SPAN 2.000 MHz

Plot H1c

Company: Alco Communications Limited Date of Test: November 6-11, 2002
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4.2 Maximum 20 dB RF Bandwidth, FCC Rule 15.247(a)(1):

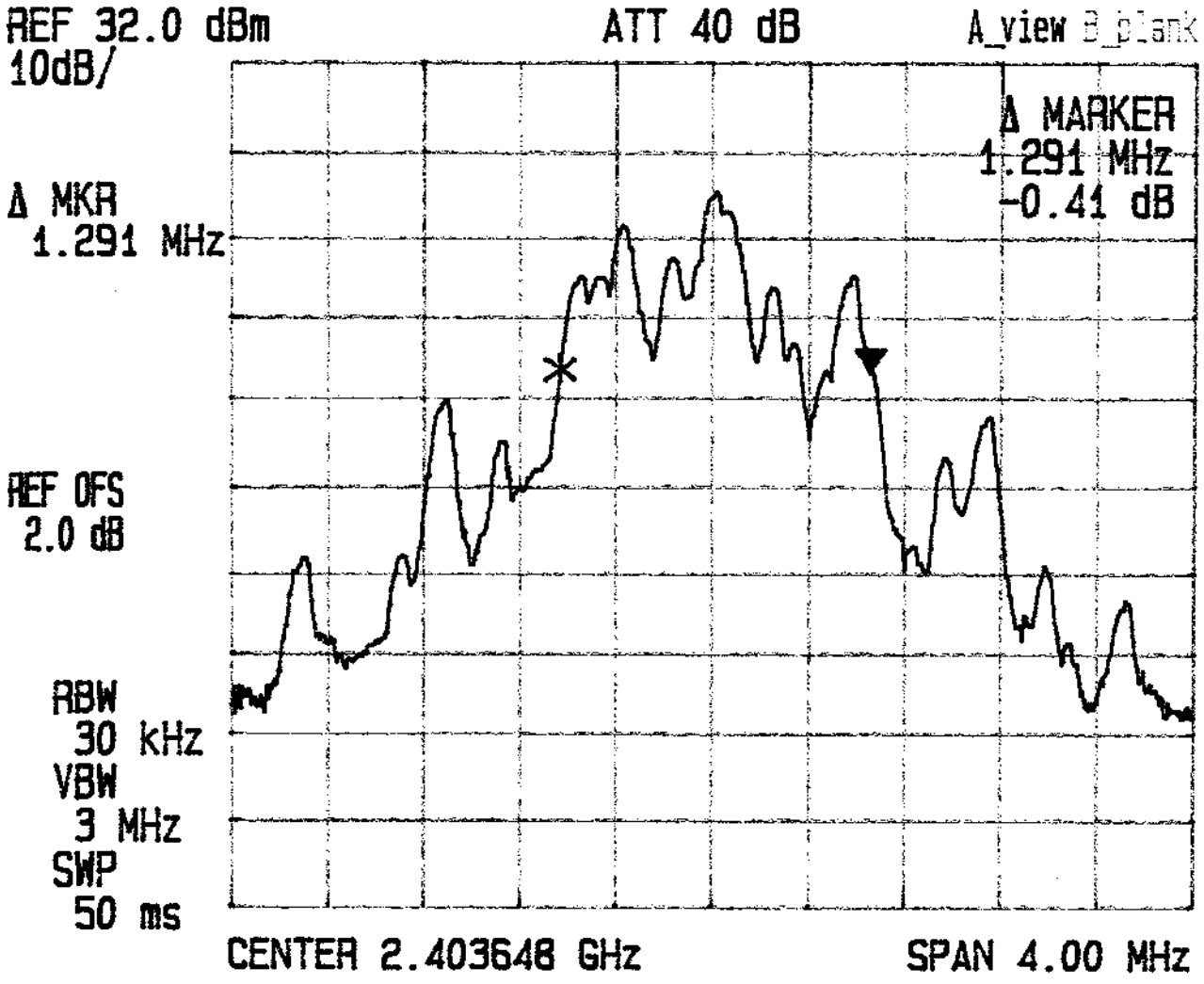
The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was chosen so that the display was a result of the hopping channel modulation. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 20 dB lower than PEAK level. The 20 dB bandwidth was determined from where the channel output spectrum intersected the display line.

(Base Unit)	
Frequency (MHz)	20 dB Bandwidth (kHz)
2403.648	1291

Refer to the following plots for 20 dB bandwidth sharp:

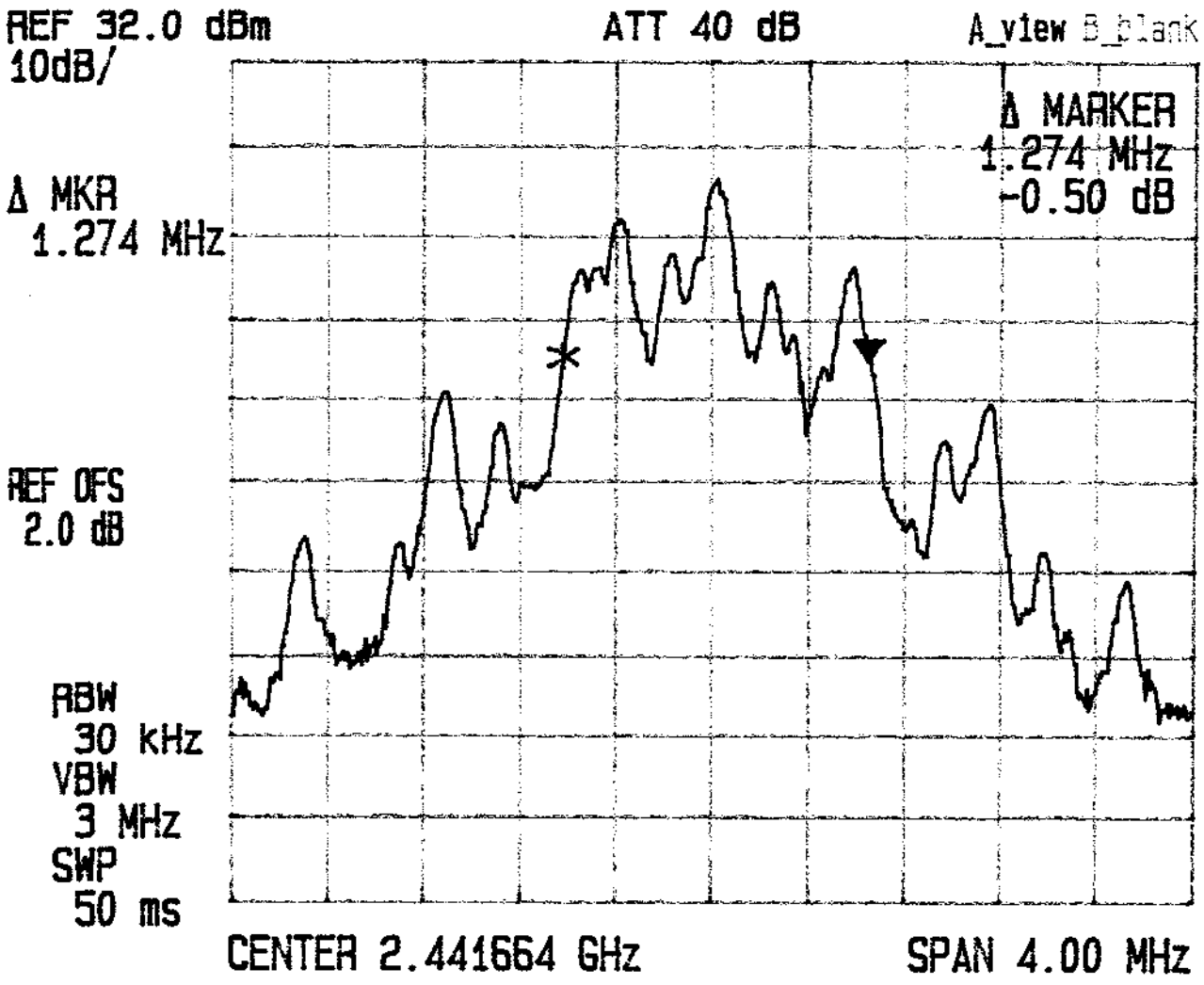
Plot B2a: Low Channel 20 dB RF Bandwidth
Plot B2b: Middle Channel 20 dB RF Bandwidth
Plot B2c: High Channel 20 dB RF Bandwidth

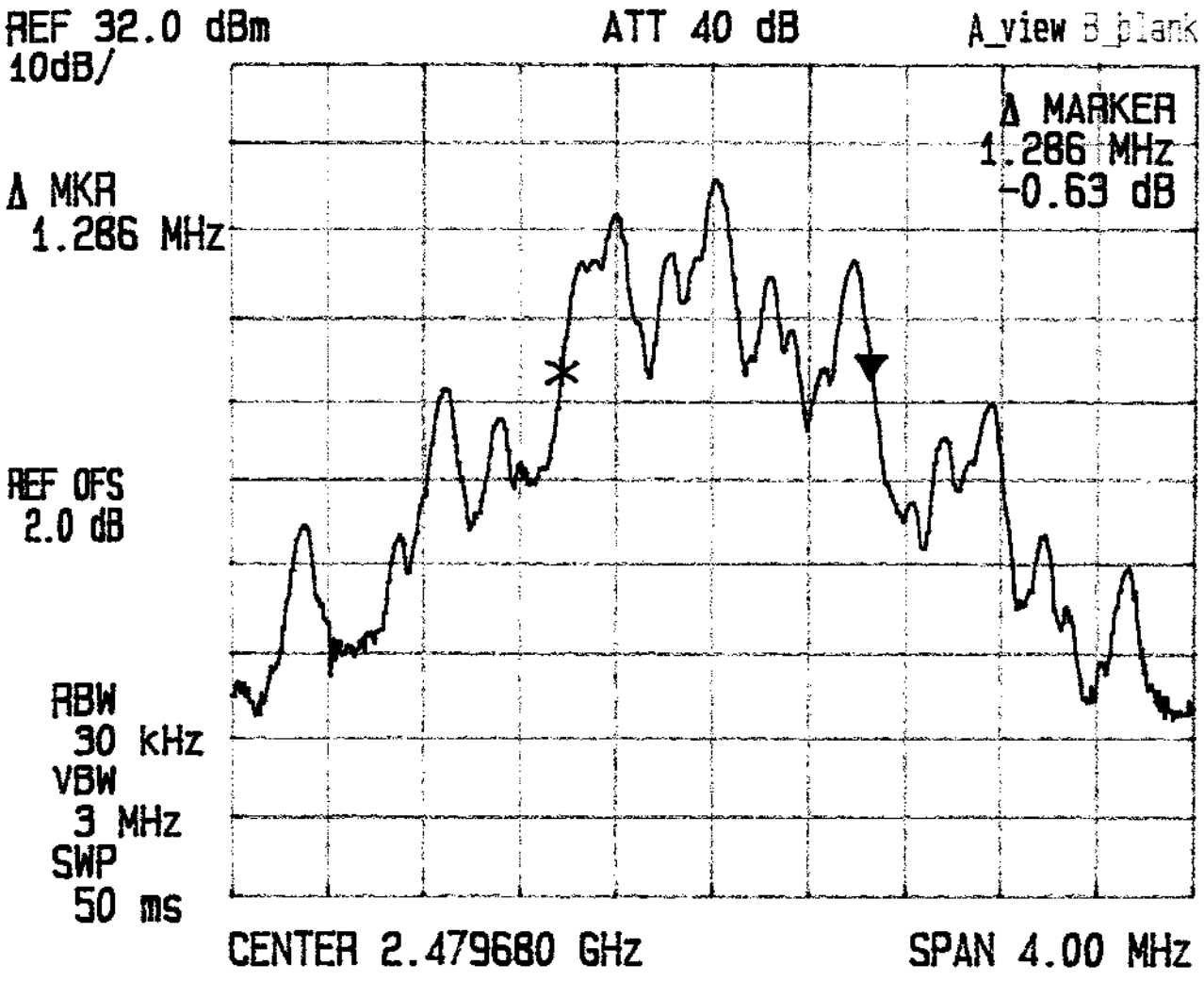
For electronic filing, the above plots are saved with filename: b20dB.pdf


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
Δ MARKER
1.291 MHz
-0.41 dB
Δ MKR
1.291 MHz
REF OFS
2.0 dB
RBW
30 kHz
VBW
3 MHz
SWP
50 ms
CENTER 2.403648 GHz
SPAN 4.00 MHz

Plot B2a

Plot B2b


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
Δ MARKER
1.274 MHz
-0.50 dB
Δ MKR
1.274 MHz
REF OFS
2.0 dB
RBW
30 kHz
VBW
3 MHz
SWP
50 ms
CENTER 2.441664 GHz
SPAN 4.00 MHz


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
Δ MARKER
1.286 MHz
-0.63 dB
Δ MKR
1.286 MHz
REF OFS
2.0 dB
RBW
30 kHz
VBW
3 MHz
SWP
50 ms
CENTER 2.479680 GHz
SPAN 4.00 MHz

Plot B2c

Company: Alco Communications Limited Date of Test: November 6-11, 2002
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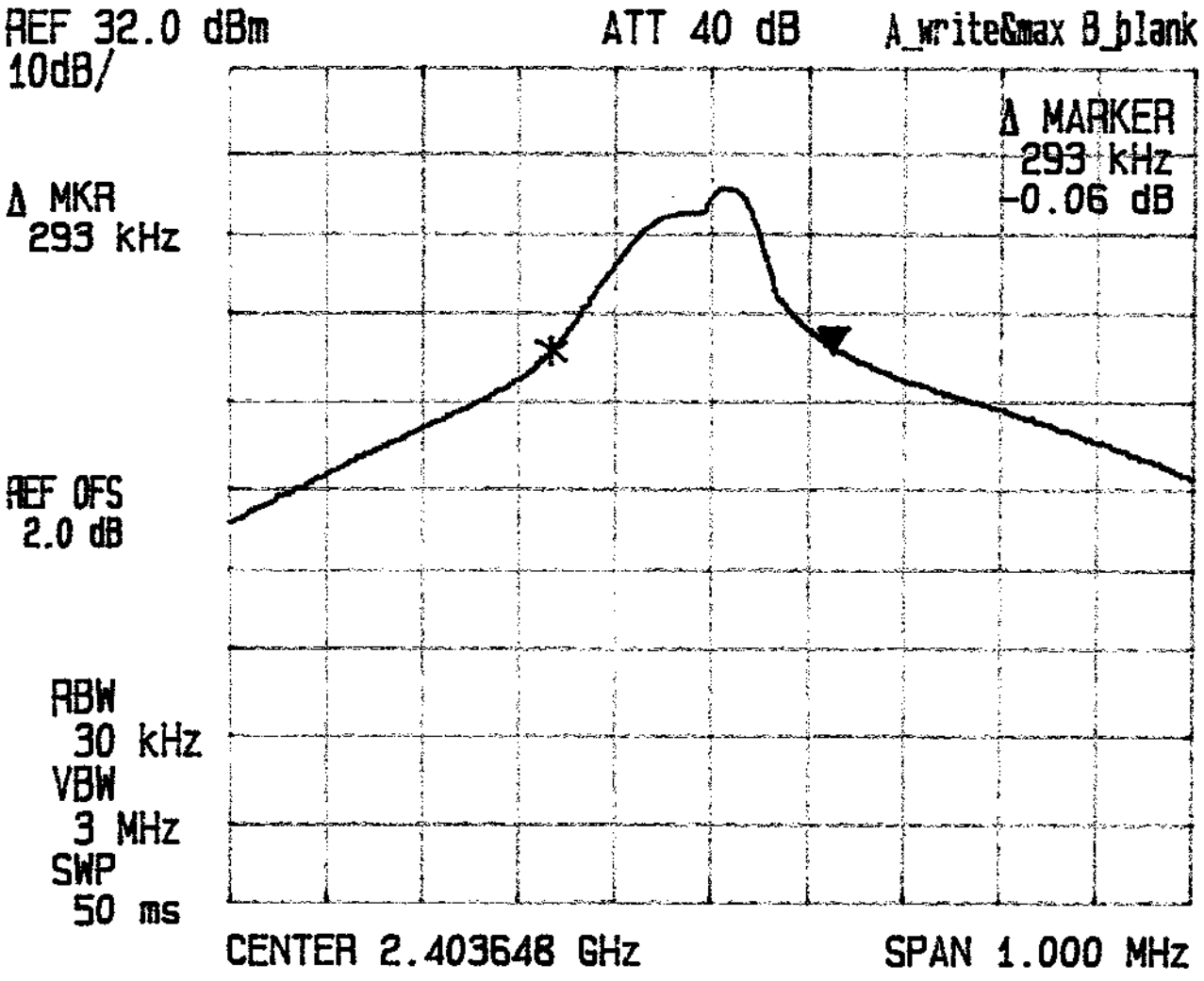
Maximum 20 dB RF Bandwidth, FCC Rule 15.247(a)(1) - Continued:

(Handset Unit)	
Frequency (MHz)	20 dB Bandwidth (kHz)
2403.648	293

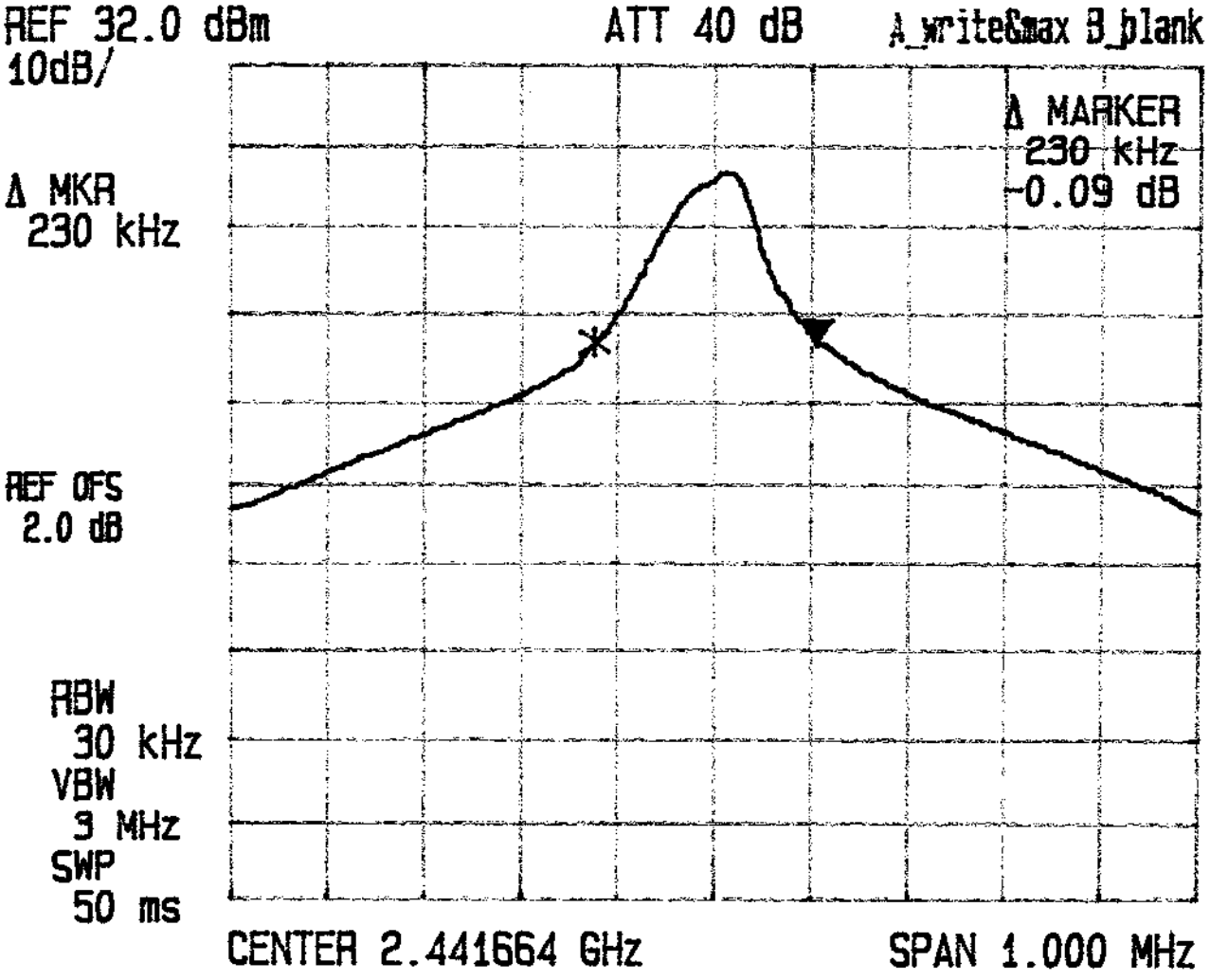
Refer to the following plots for 20 dB bandwidth sharp:

Plot H2a: Low Channel 20 dB RF Bandwidth
Plot H2b: Middle Channel 20 dB RF Bandwidth
Plot H2c: High Channel 20 dB RF Bandwidth

For electronic filing, the above plots are saved with filename: h20dB.pdf

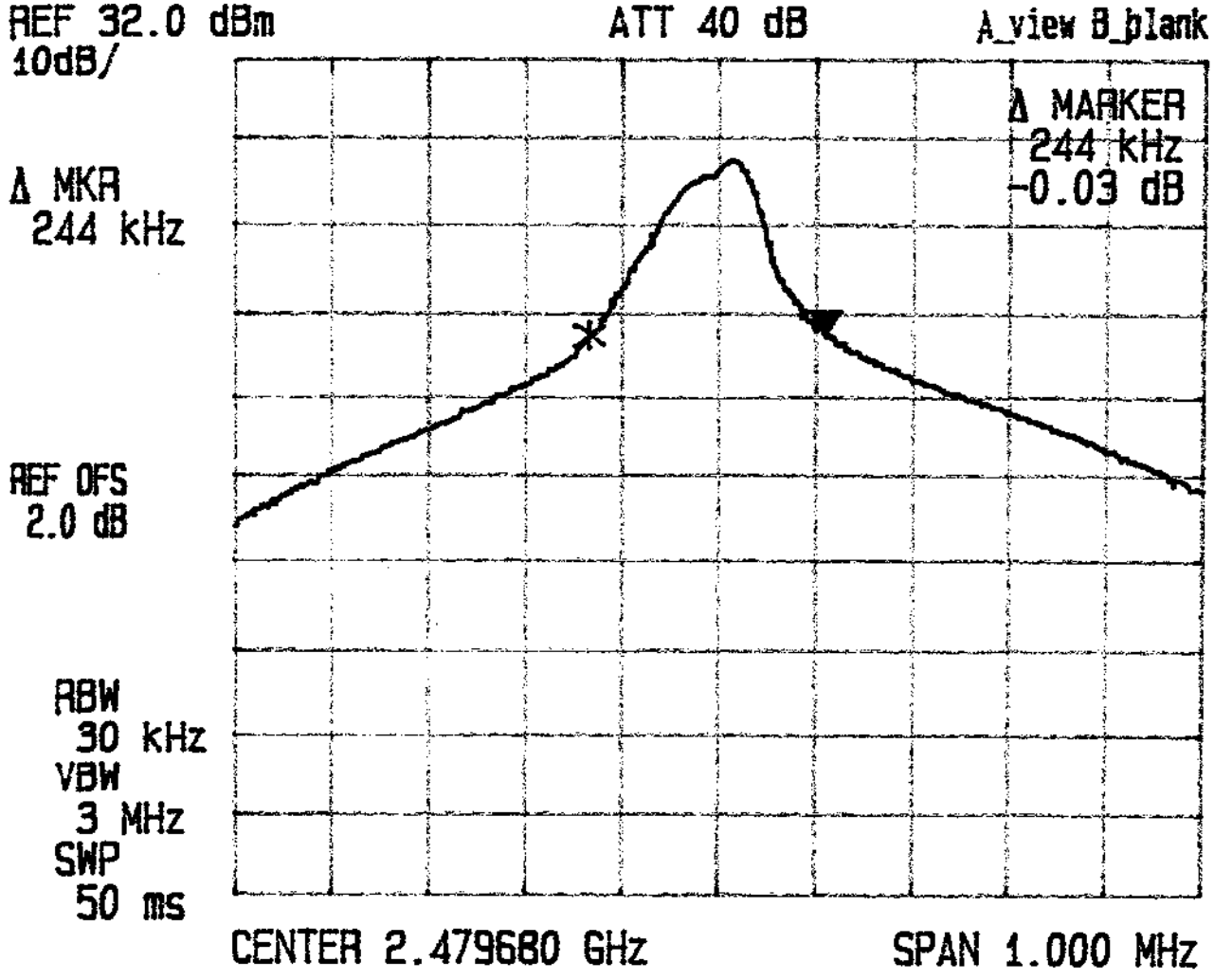

REF 32.0 dBm
10dB/
ATT 40 dB
A_write&max B_blank
Δ MARKER
293 kHz
-0.06 dB
Δ MKR
293 kHz
REF OFS
2.0 dB
RBW
30 kHz
VBW
3 MHz
SWP
50 ms
CENTER 2.403648 GHz
SPAN 1.000 MHz

Plot H2a


REF 32.0 dBm
ATT 40 dB
A_write&max B_blank
10dB/
Δ MKR
230 kHz
Δ MARKER
230 kHz
-0.09 dB
REF OFS
2.0 dB
RBW
30 kHz
VBW
3 MHz
SWP
50 ms
CENTER 2.441664 GHz
SPAN 1.000 MHz

Plot H2b

Plot H2c


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
Δ MARKER
244 kHz
-0.03 dB
Δ MKR
244 kHz
REF OFS
2.0 dB
RBW
30 kHz
VBW
3 MHz
SWP
50 ms
CENTER 2.479680 GHz
SPAN 1.000 MHz

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4.3 Minimum Number of Hopping Frequencies, FCC Rule 15.247(a)(1) :

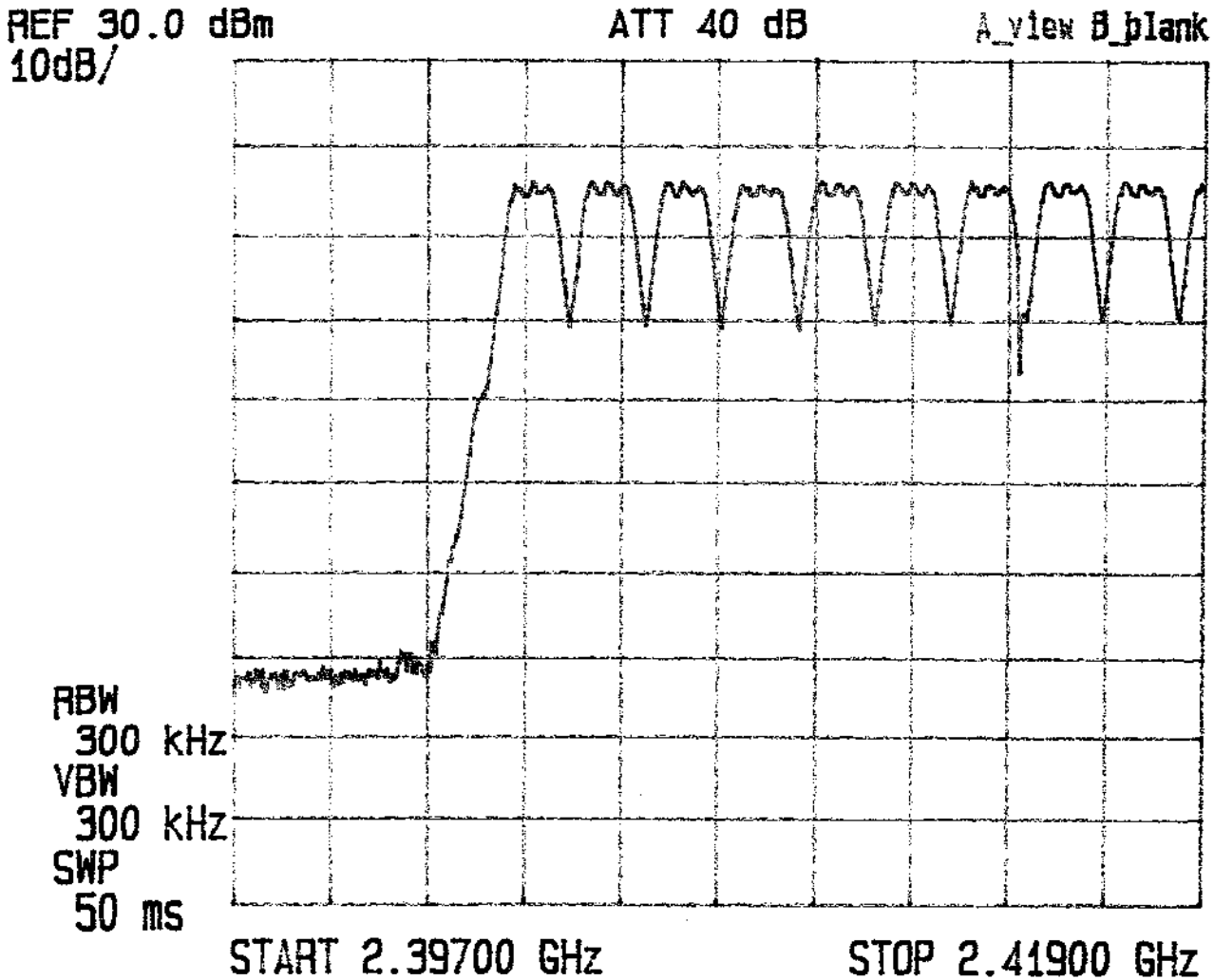
The RF passband of the EUT was divided into 4 approximately equal bands. With the analyzer set to MAX HOLD readings were taken for 2-3 minutes in each band. The channel peaks so recorded were added together, and the total number compared to the minimum number of channels required in the regulation.

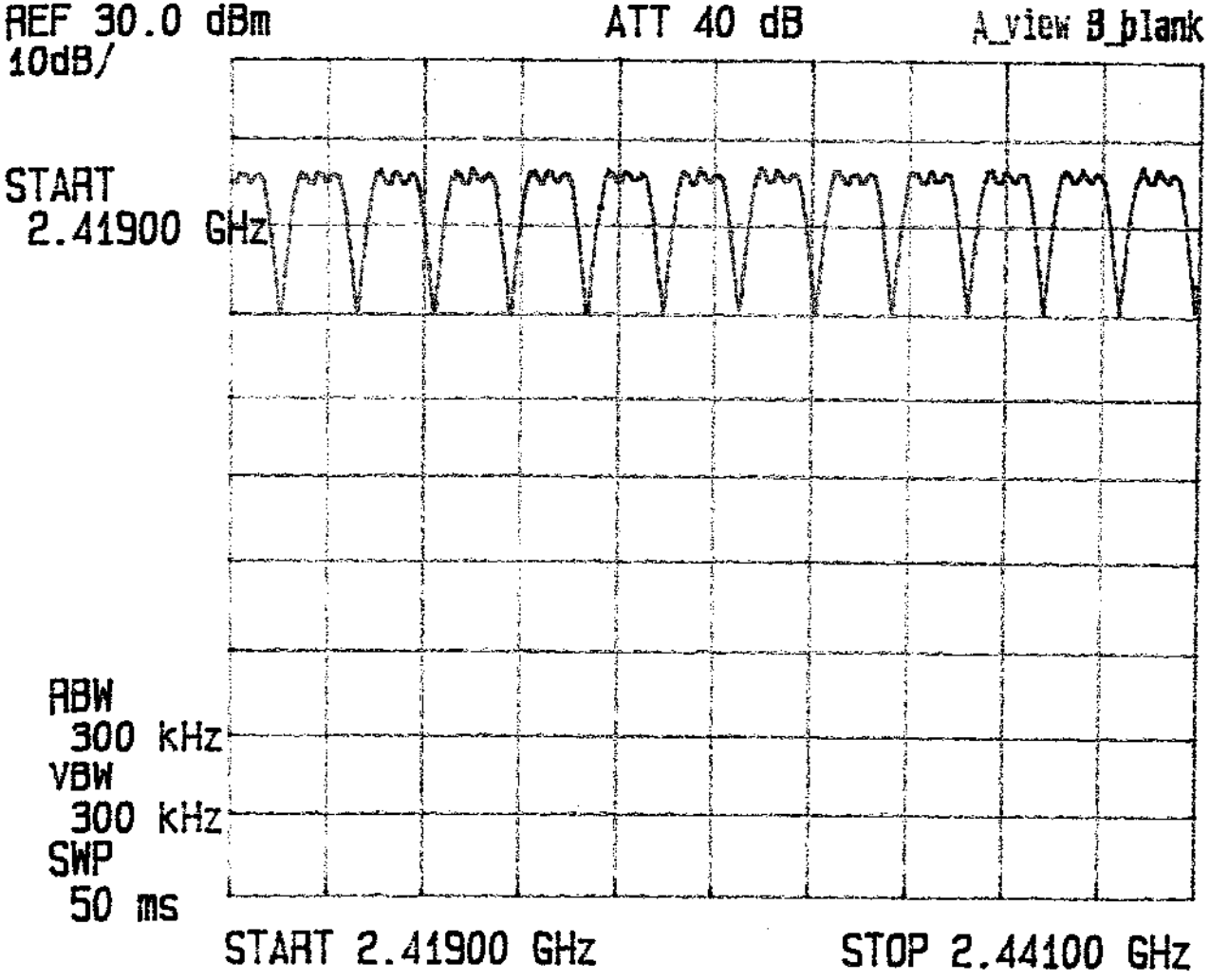
No. of hopping channels	45

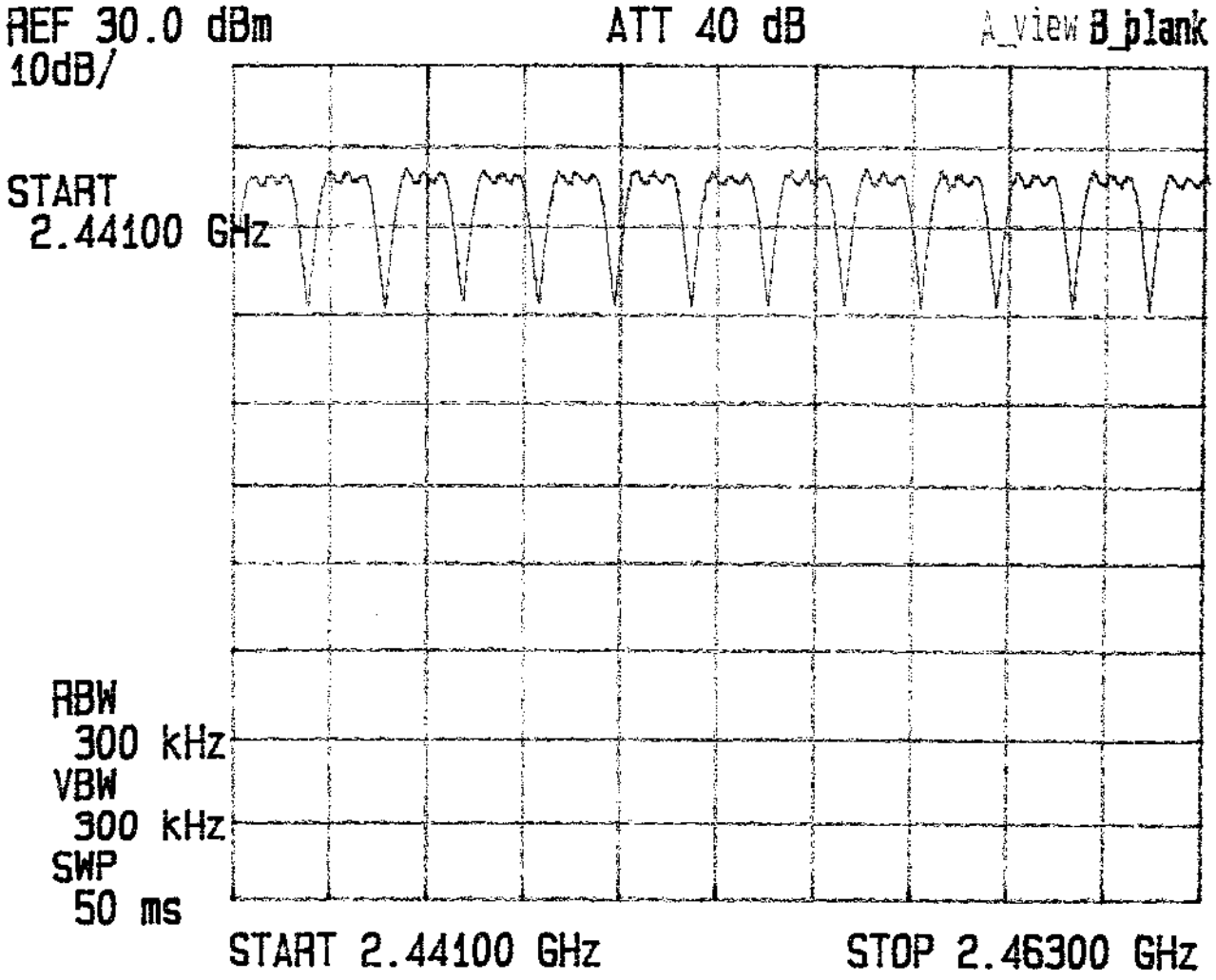
Minimum Requirements: at least 15 non-over lapping channels for 2400-2483.5MHz systems.

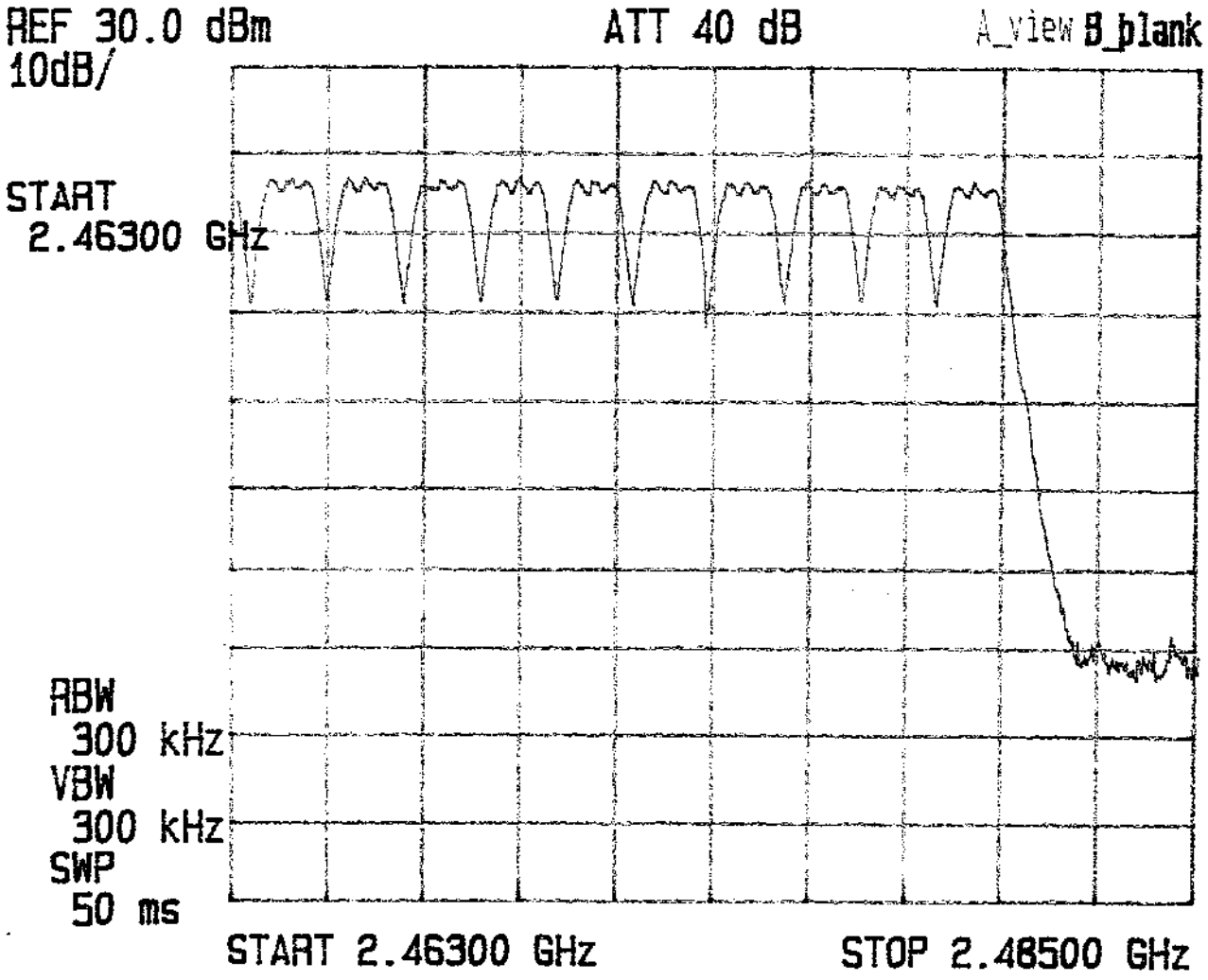
For electronic filing, the above plots are saved with filename: chno.pdf

Plot 3


REF 30.0 dBm
10dB/
ATT 40 dB
A_view B_blank
RBW
300 kHz
VBW
300 kHz
SWP
50 ms
START 2.39700 GHz
STOP 2.41900 GHz


REF 30.0 dBm
10dB/
ATT 40 dB
A_view B_blank
START
2.41900 GHz
RBW
300 kHz
VBW
300 kHz
SWP
50 ms
START 2.41900 GHz
STOP 2.44100 GHz


REF 30.0 dBm
ATT 40 dB
A_view B_blank
10dB/
START
2.44100 GHz
RBW
300 kHz
VBW
300 kHz
SWP
50 ms
START 2.44100 GHz
STOP 2.46300 GHz


REF 30.0 dBm
ATT 40 dB
A_view B_blank
10dB/
START
2.46300 GHz
RBW
300 kHz
VBW
300 kHz
SWP
50 ms
START 2.46300 GHz
STOP 2.48500 GHz

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

4.4 Minimum Hopping Channel Carrier Frequency Separation, FCC Ref: 15.247(a)(1) :

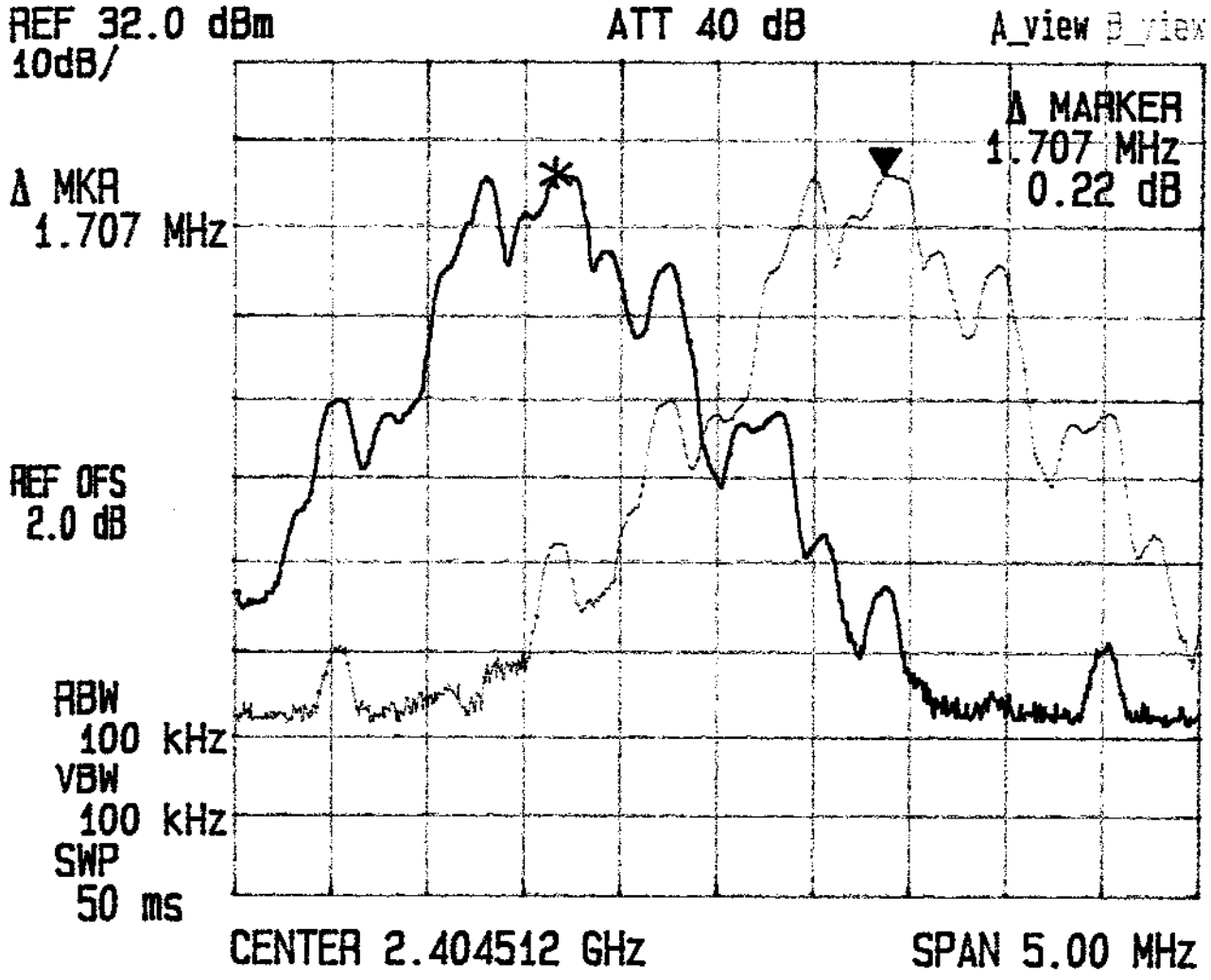
Using the DELTA MARKER function of the analyzer, the frequency separation between two adjacent channels was measured and compared against the limit.

[ ] 25 kHz [x] 20 dB bandwidth of hopping channel

Base Unit	
Channel Separation	1707 kHz

Plot B4: Channel 0 and Channel 1

For electronic filing, the above plots are saved with filename: bfsepa.pdf


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_view
Δ MARKER
1.707 MHz
0.22 dB
Δ MKR
1.707 MHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
100 kHz
SWP
50 ms
CENTER 2.404512 GHz
SPAN 5.00 MHz

Plot B4

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

4.4 Minimum Hopping Channel Carrier Frequency Separation, FCC Ref: 15.247(a)(1) - Continued:

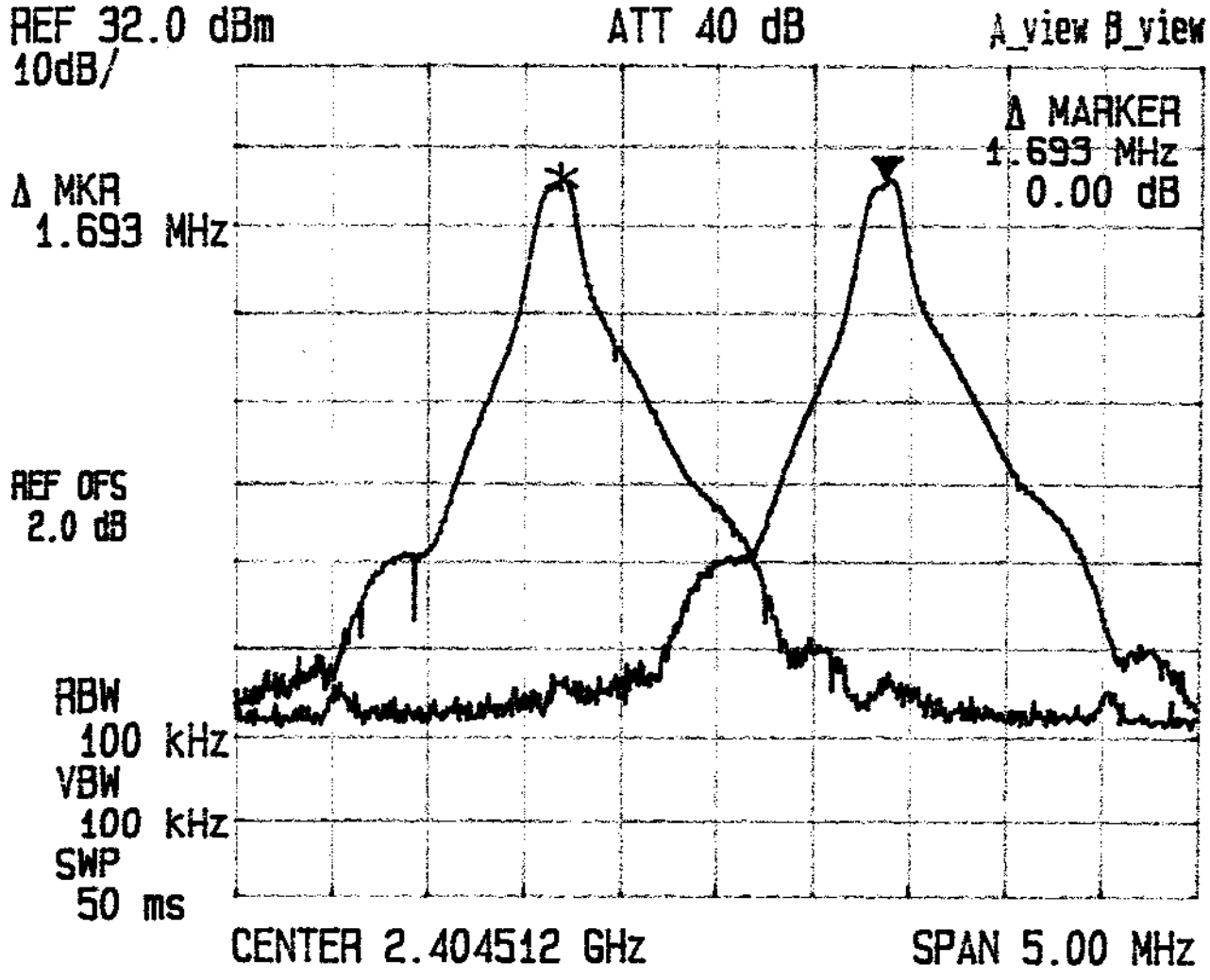
Using the DELTA MARKER function of the analyzer, the frequency separation between two adjacent channels was measured and compared against the limit.

[ ] 25 kHz [x] 20 dB bandwidth of hopping channel

Handset Unit	
Channel Separation	1693 kHz

Plot H4: Channel 0 and Channel 1

For electronic filing, the above plots are saved with filename: hfsepa.pdf


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_view
Δ MARKER
1.693 MHz
0.00 dB
Δ MKR
1.693 MHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
100 kHz
SWP
50 ms
CENTER 2.404512 GHz
SPAN 5.00 MHz

Plot H4

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

4.5 Average Channel Occupancy Time, FCC Ref: 15.247(a)(1)

The spectrum analyzer center frequency was set to one of the known hopping channels. The SWEEP was set to 10ms, the SPAN was set to ZERO SPAN, and the TRIGGER was set to VIDEO. The time duration of the transmission so captured was measured with the MARKER DELTA function.

The SWEEP was then set to the time required by the regulation (20 seconds for 902-928 MHz devices, "0.4 seconds x Number of hopping channels employed" seconds for 2400-2483.5MHz, and 30 seconds for 5725-5850MHz). The analyzer was set to SINGLE SWEEP, the total ON time was added and compared against the limit (0.4 seconds).

Average 0.4 seconds maximum occupancy in 6 seconds (0.4sec x 15), 2400-2483.5MHz.

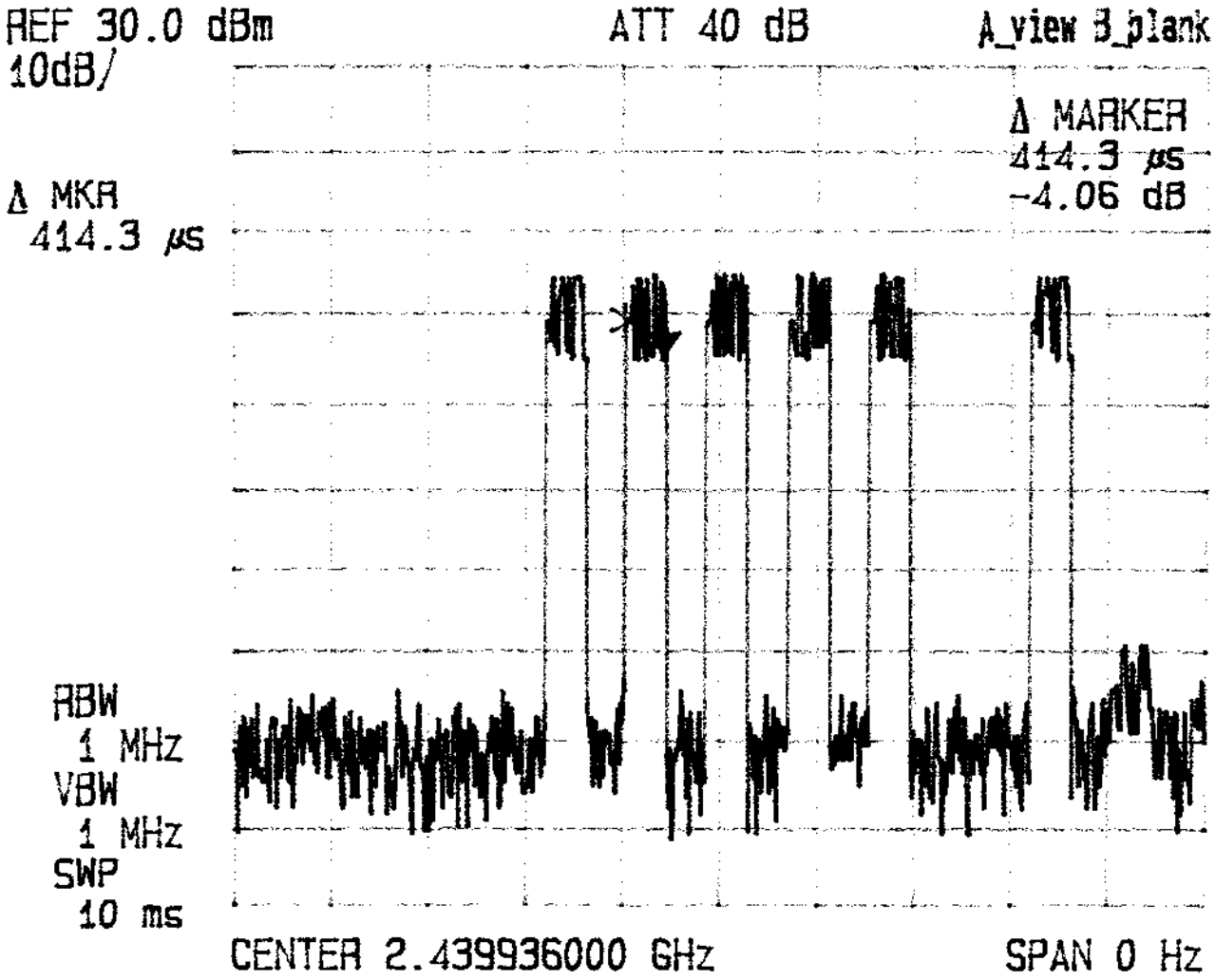
Base Unit	
Average Occupancy Time = 2486μs x 40	99.4 ms

Refer to attached spectrum analyzer Plots B5a-B5b

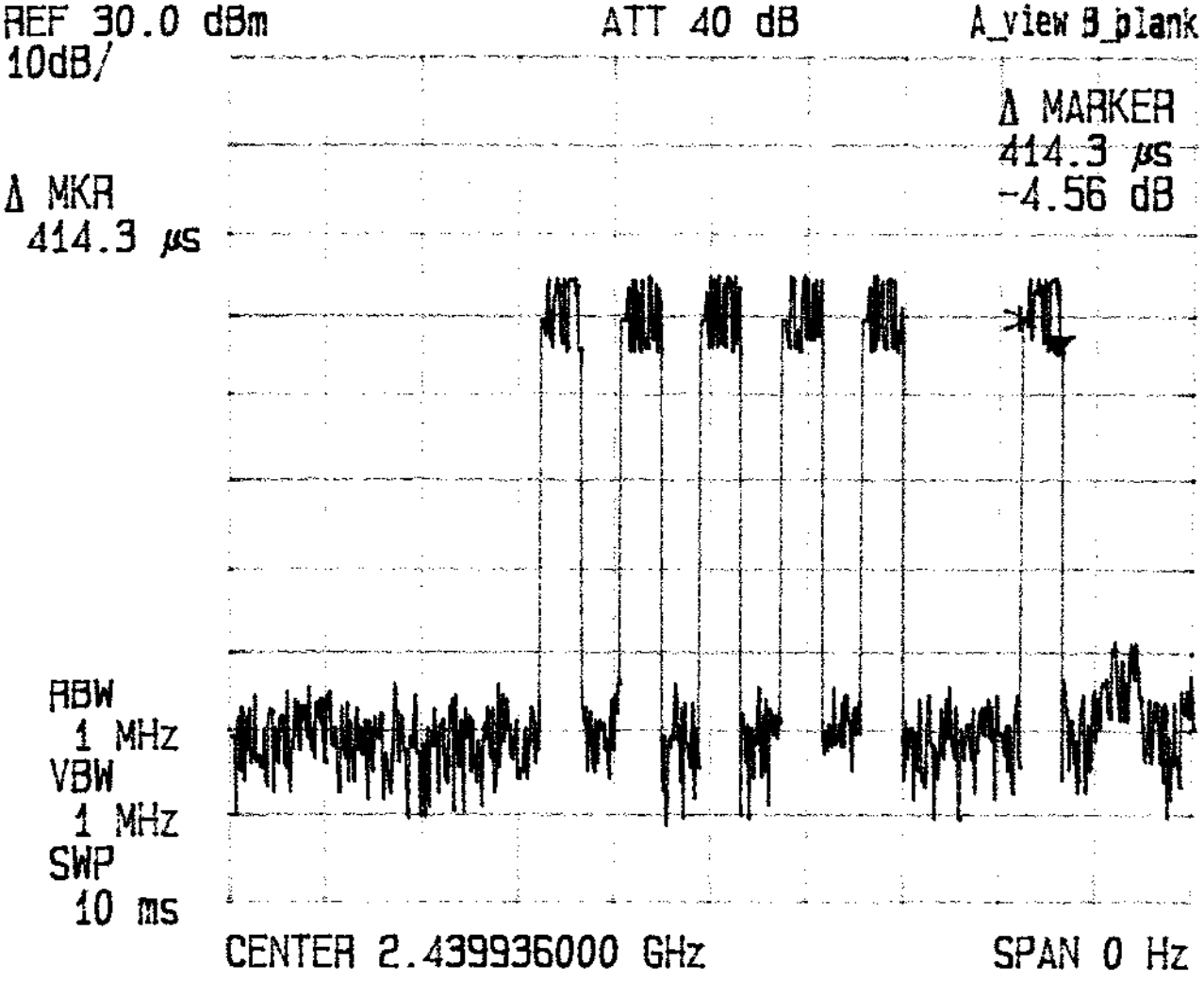
Handset Unit	
Average Occupancy Time = 829μs x 40	33.2 ms

Refer to attached spectrum analyzer Plots H5a-H5b

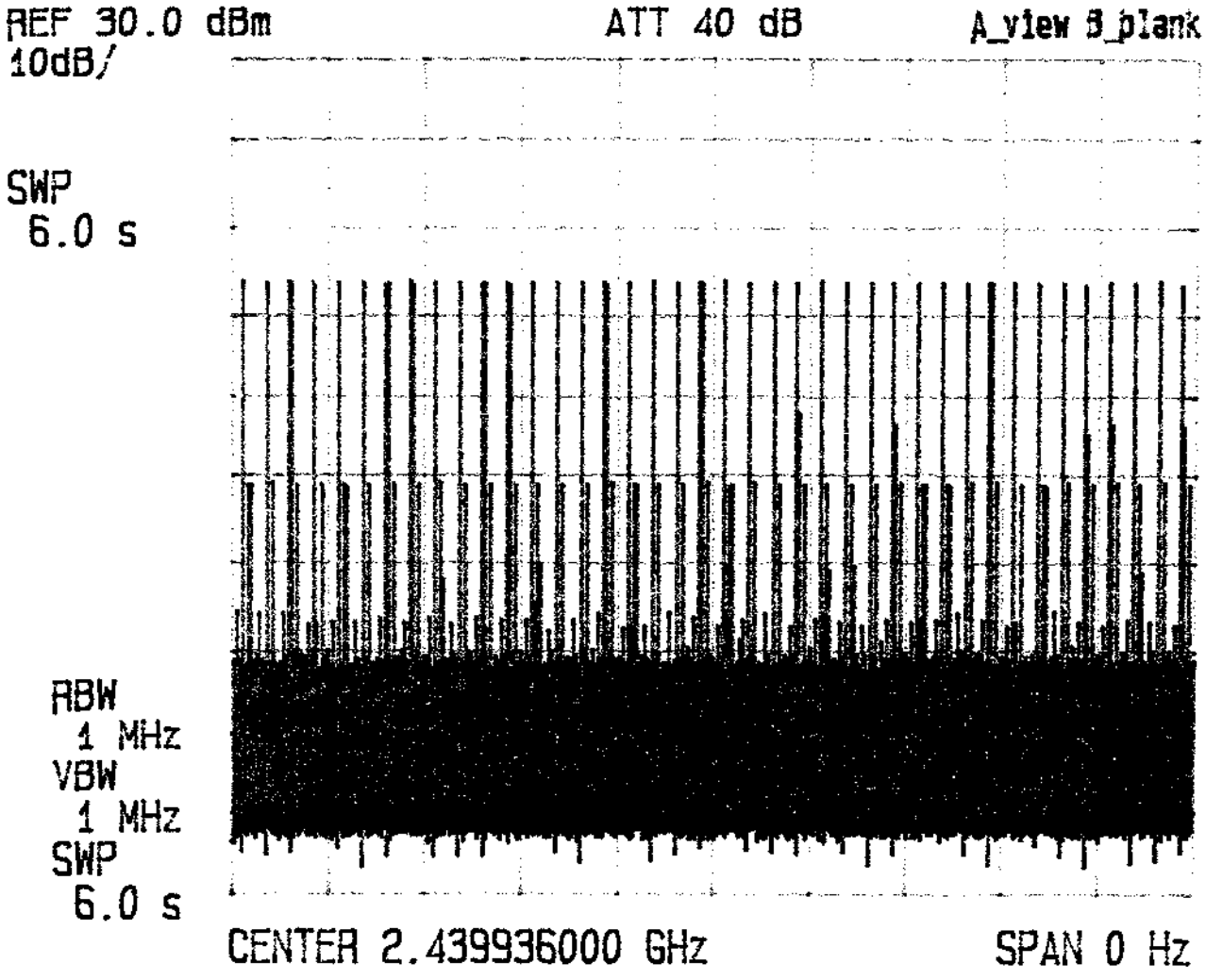
For electronic filing, the above plots are saved with filename: bavetime.pdf and havetime.pdf


REF 30.0 dBm
ATT 40 dB
A_view B_blank
10dB/
Δ MARKER
414.3 µs
-4.06 dB
Δ MKR
414.3 µs
RBW
1 MHz
VBW
1 MHz
SWP
10 ms
CENTER 2.439936000 GHz
SPAN 0 Hz

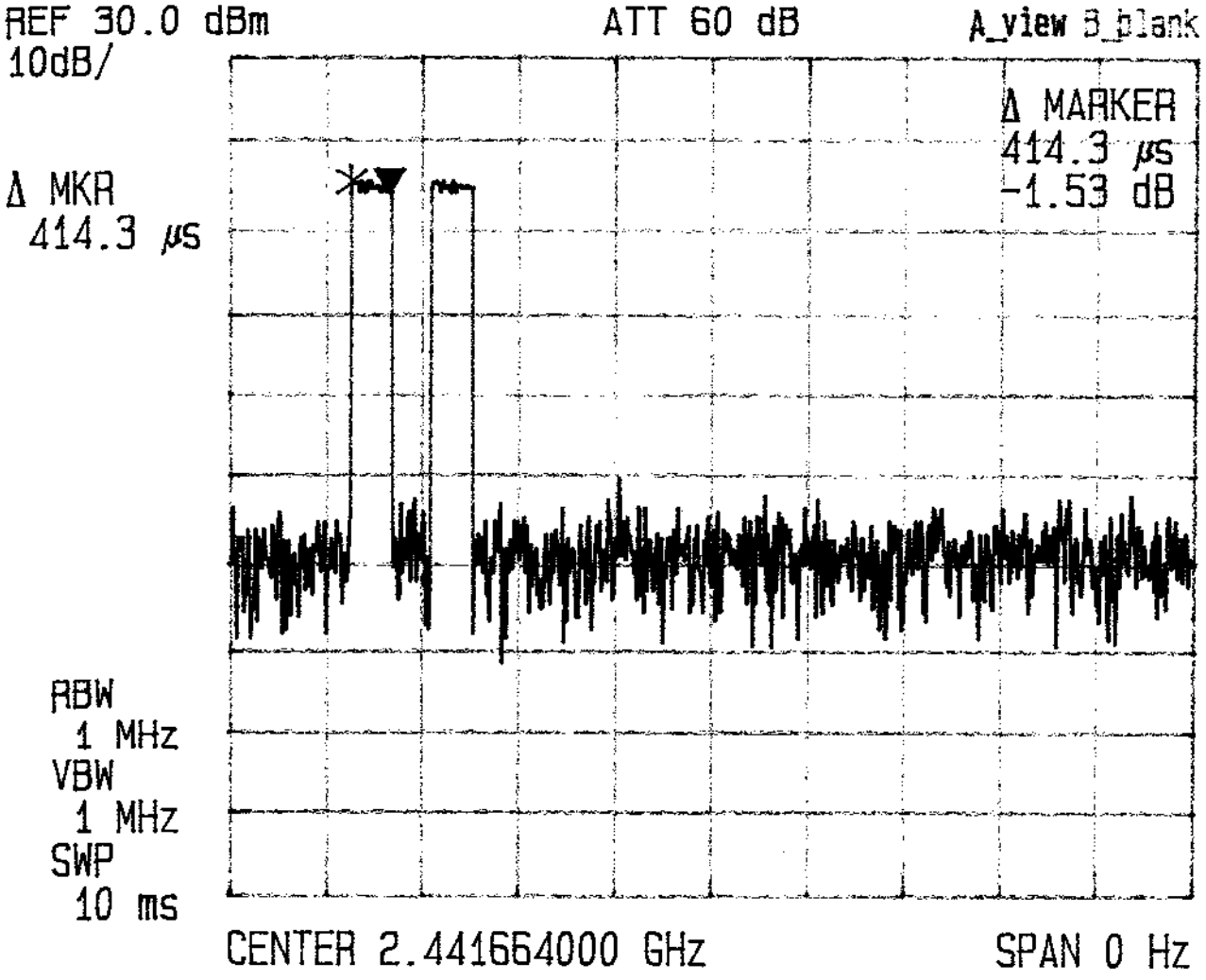
Plot B5a.1


REF 30.0 dBm
10dB/
ATT 40 dB
A_view B_blank
Δ MARKER
414.3 µs
-4.56 dB
Δ MKR
414.3 µs
RBW
1 MHz
VBW
1 MHz
SWP
10 ms
CENTER 2.439936000 GHz
SPAN 0 Hz

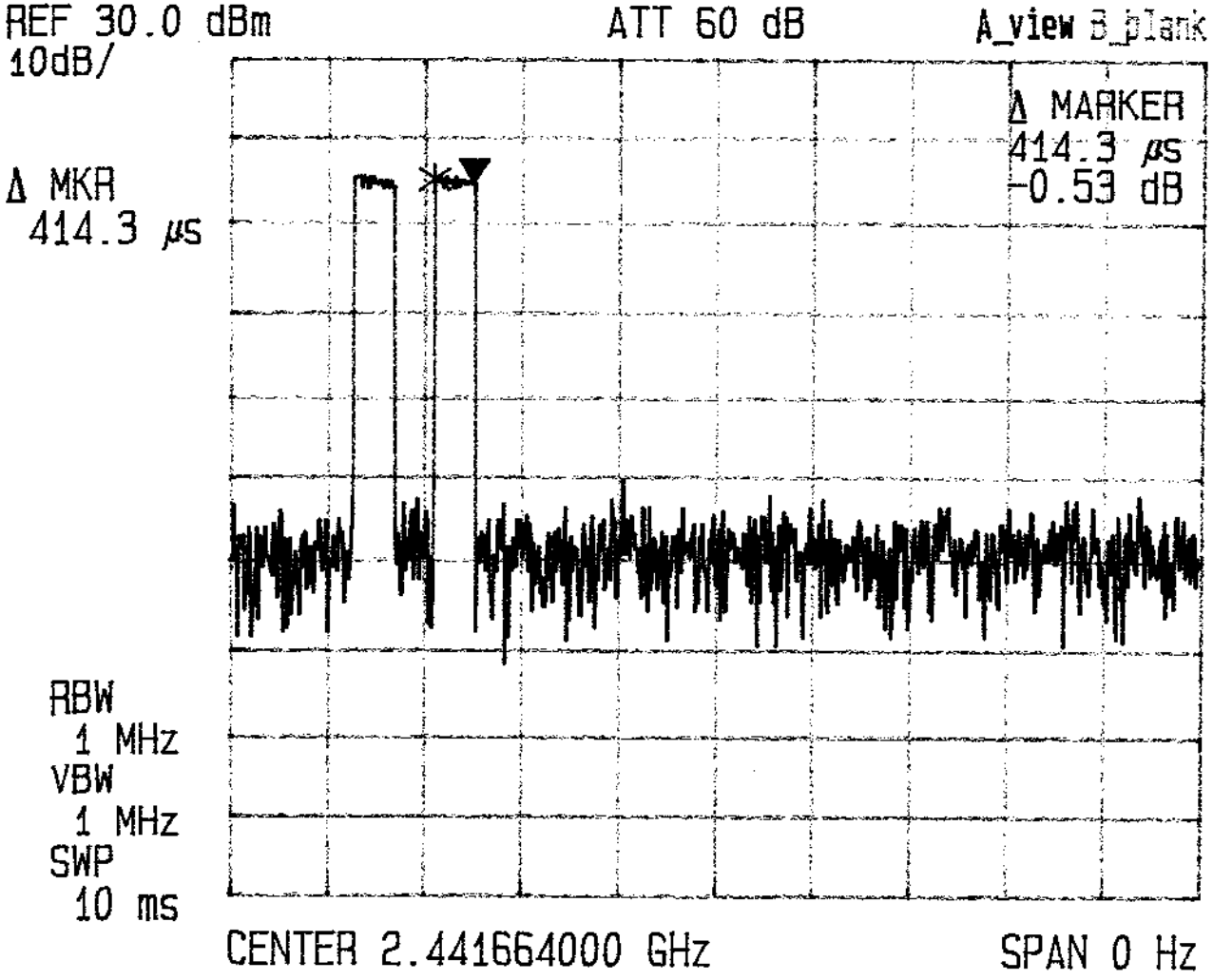
Plot B5a.2


REF 30.0 dBm
ATT 40 dB
A_view B_blank
10dB/
SWP
6.0 s
RBW
1 MHz
VBW
1 MHz
SWP
6.0 s
CENTER 2.439936000 GHz
SPAN 0 Hz

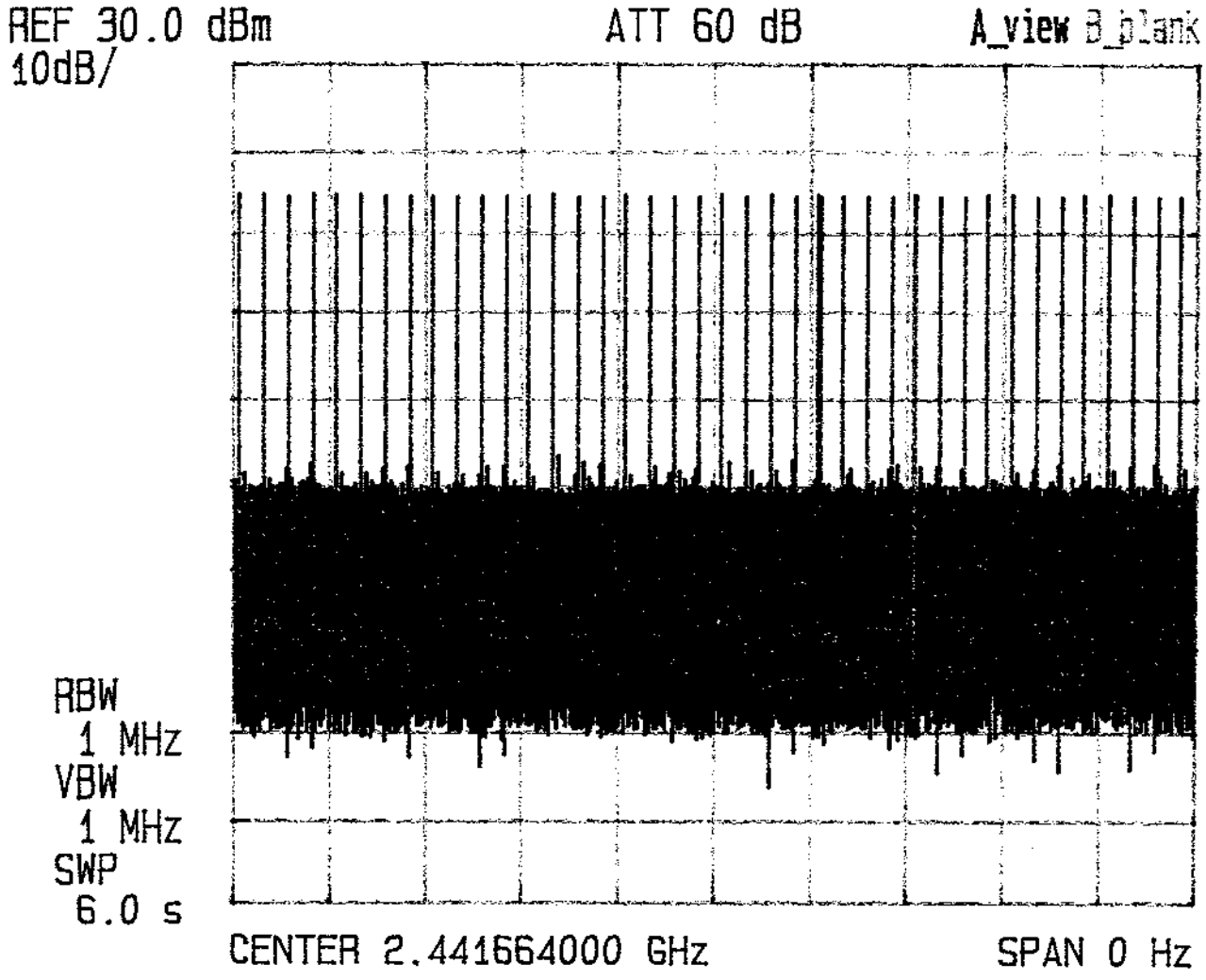
Plot B5b


REF 30.0 dBm
10dB/
ATT 60 dB
A_view B_blank
Δ MARKER
414.3 µs
-1.53 dB
Δ MKR
414.3 µs
RBW
1 MHz
VBW
1 MHz
SWP
10 ms
CENTER 2.441664000 GHz
SPAN 0 Hz

Plot H5a.1


REF 30.0 dBm
10dB/
ATT 60 dB
A_view B_blank
Δ MARKER
414.3 µs
-0.53 dB
Δ MKR
414.3 µs
RBW
1 MHz
VBW
1 MHz
SWP
10 ms
CENTER 2.441664000 GHz
SPAN 0 Hz

Plot H5a.2


REF 30.0 dBm
10dB/
ATT 60 dB
A_view B_blank
RBW
1 MHz
VBW
1 MHz
SWP
6.0 s
CENTER 2.441664000 GHz
SPAN 0 Hz

Plot H5b

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

4.6 Out of Band Radiated Emissions, FCC Rule 15.247(c):

In any 100 kHz bandwidth outside the EUT passband, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, or else shall meet the gereral limits for radiated emissions at frequencies outside the passband, whichever results in lower attenuation.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

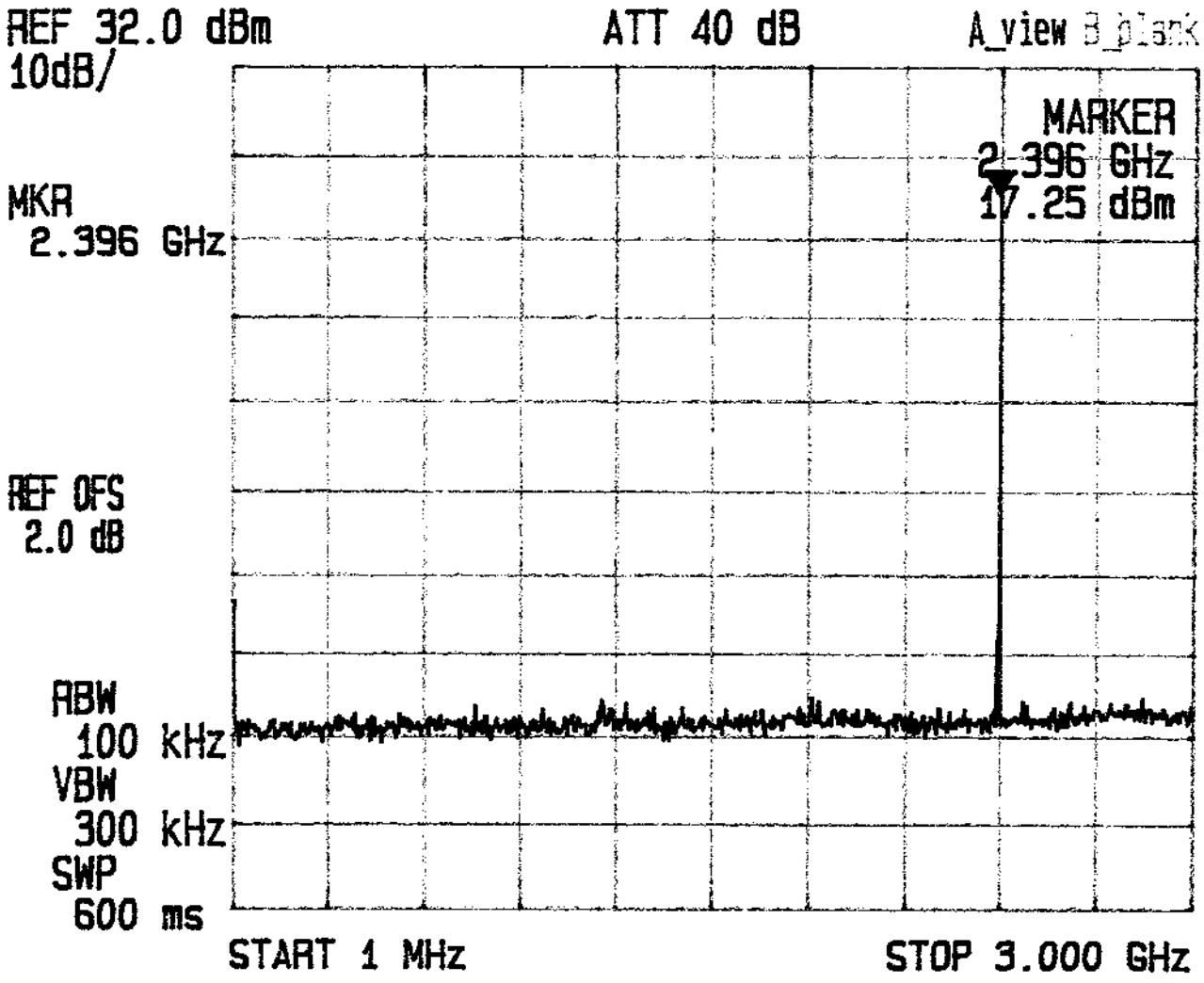
Refer to the following plots for out of band conducted emissions data:

Plot B6a.1 - B6a.2: Low Channel Emissions
Plot B6b.1 - B6b.2: Middle Channel Emissions
Plot B6c.1 - B6c.2: High Channel Emissions
Plot B6d.1 - B6d.2: Modulation Products Emissions
Plot H6a.1 - H6a.2: Low Channel Emissions
Plot H6b.1 - H6b.2: Middle Channel Emissions
Plot H6c.1 - H6c.2: High Channel Emissions
Plot H6d.1 - H6d.2: Modulation Products Emissions

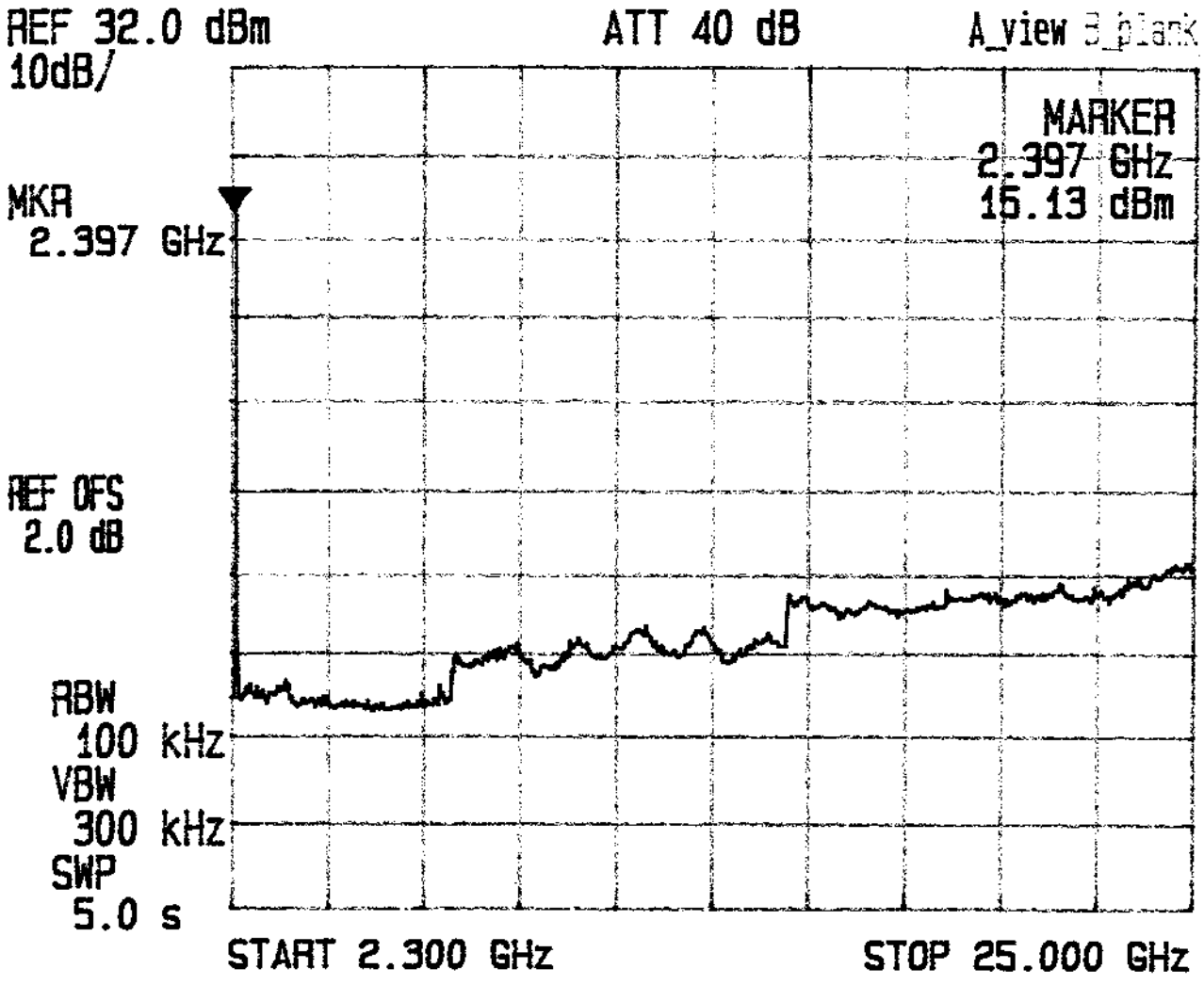
The plots showed the 2nd harmonic and modulation products at the band edges of 2400 MHz and 2483.5 MHz. In addition, all spurious emission and up to the tenth harmonic was measured and they were found to be at least 26 dB below the highest level of the desired power in the passband.

Furthermore, delta measurement technique for measuring bandedge emissions was incorported in the test of the edge at 2483.5MHz.

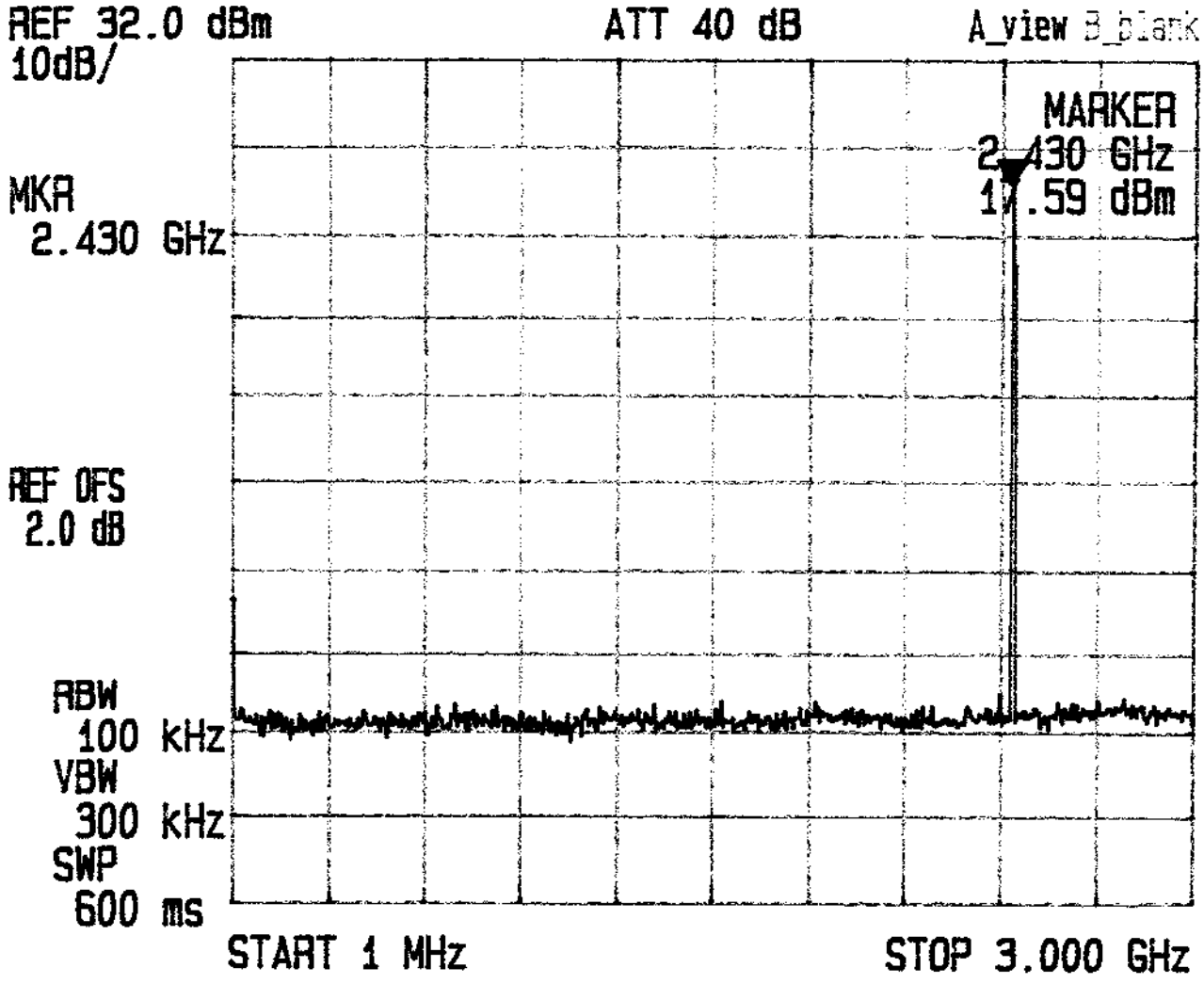
For electronic filing, the above plots are saved with filenames: bobantcon.pdf, hobantcon.pdf


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
MARKER
2.396 GHz
17.25 dBm
MKR
2.396 GHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
600 ms
START 1 MHz
STOP 3.000 GHz

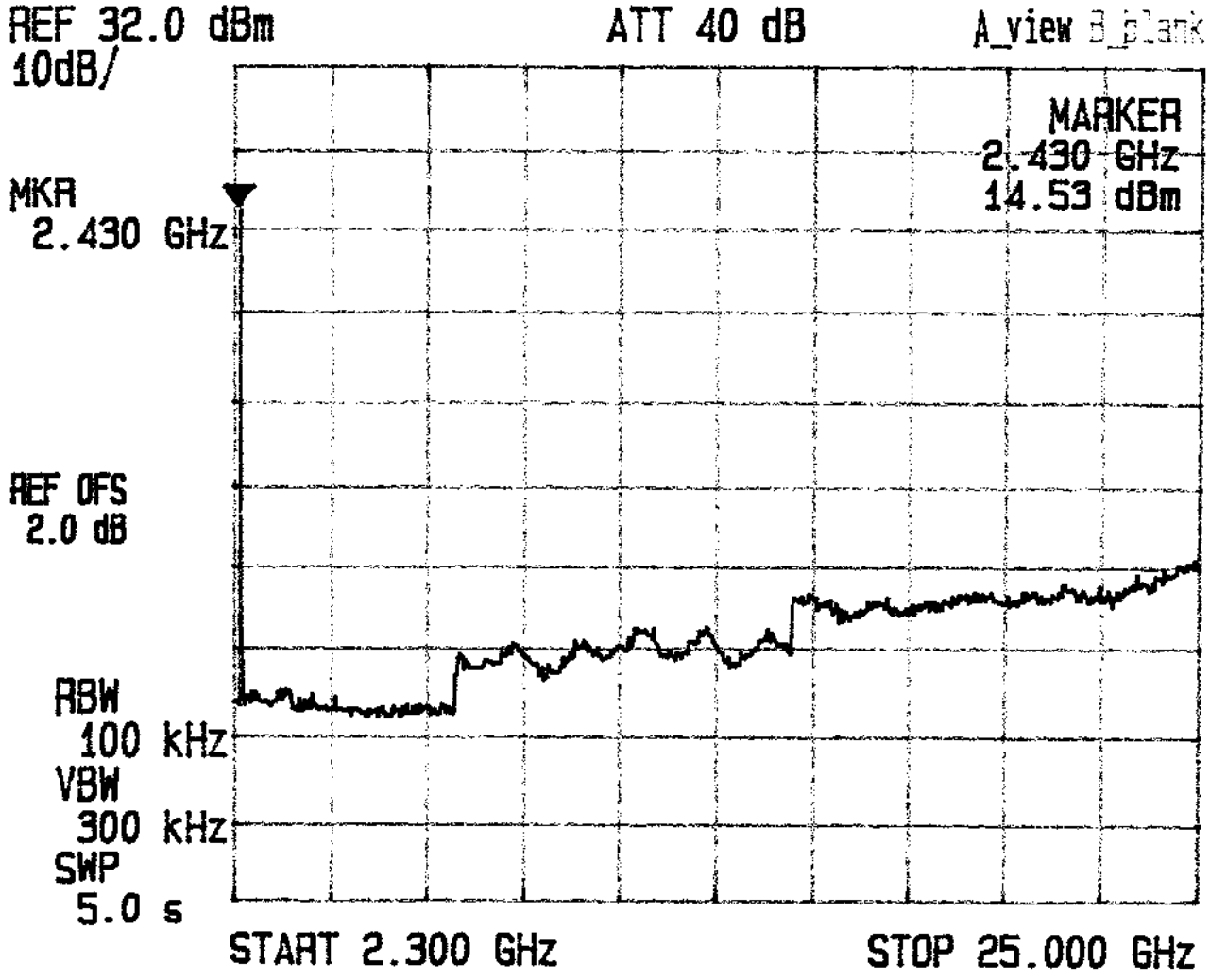
Plot B6a.1


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
MARKER
2.397 GHz
15.13 dBm
MKR
2.397 GHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
5.0 s
START 2.300 GHz
STOP 25.000 GHz

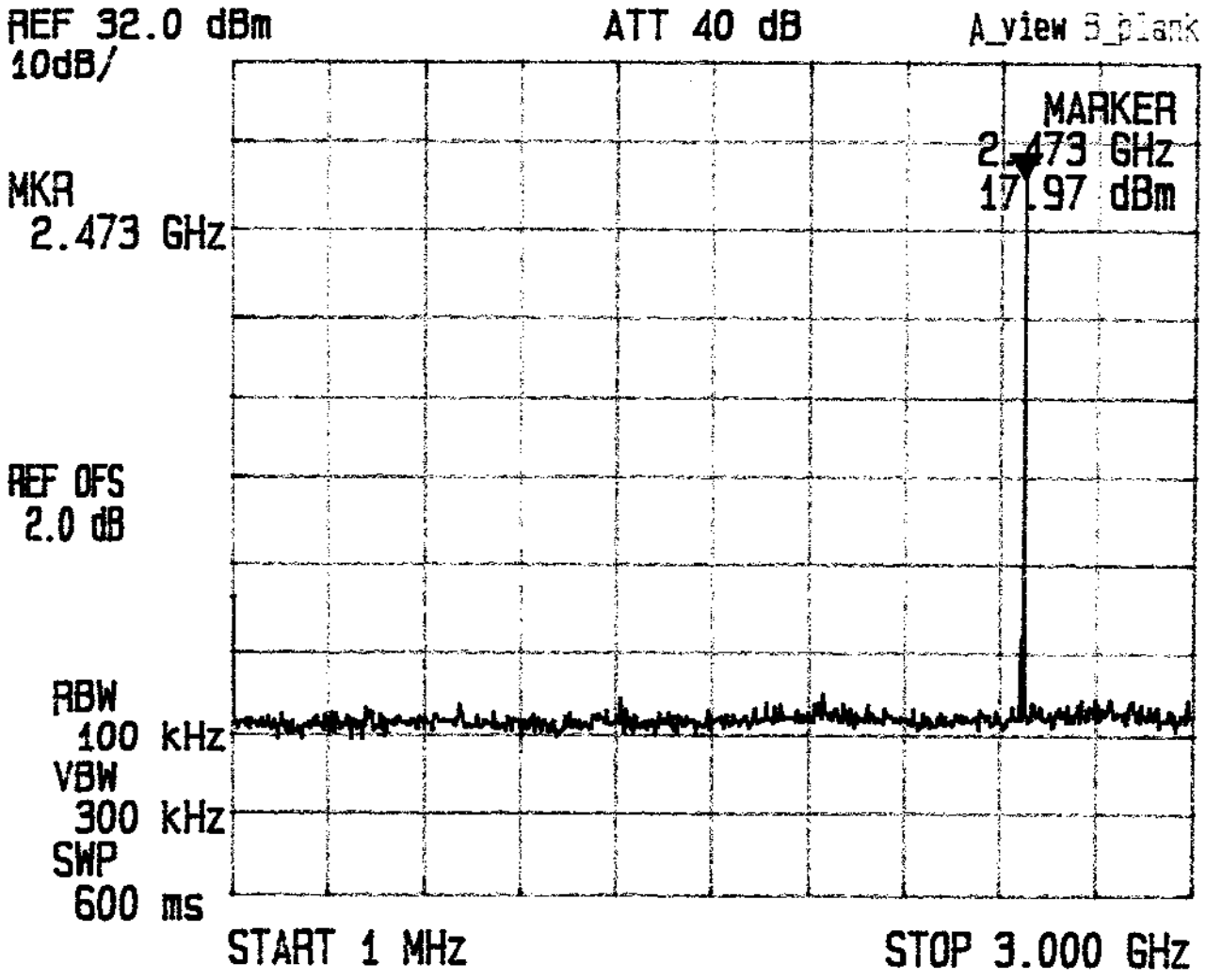
Plot B6a.2


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
MARKER
2.430 GHz
17.59 dBm
MKR
2.430 GHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
600 ms
START 1 MHz
STOP 3.000 GHz

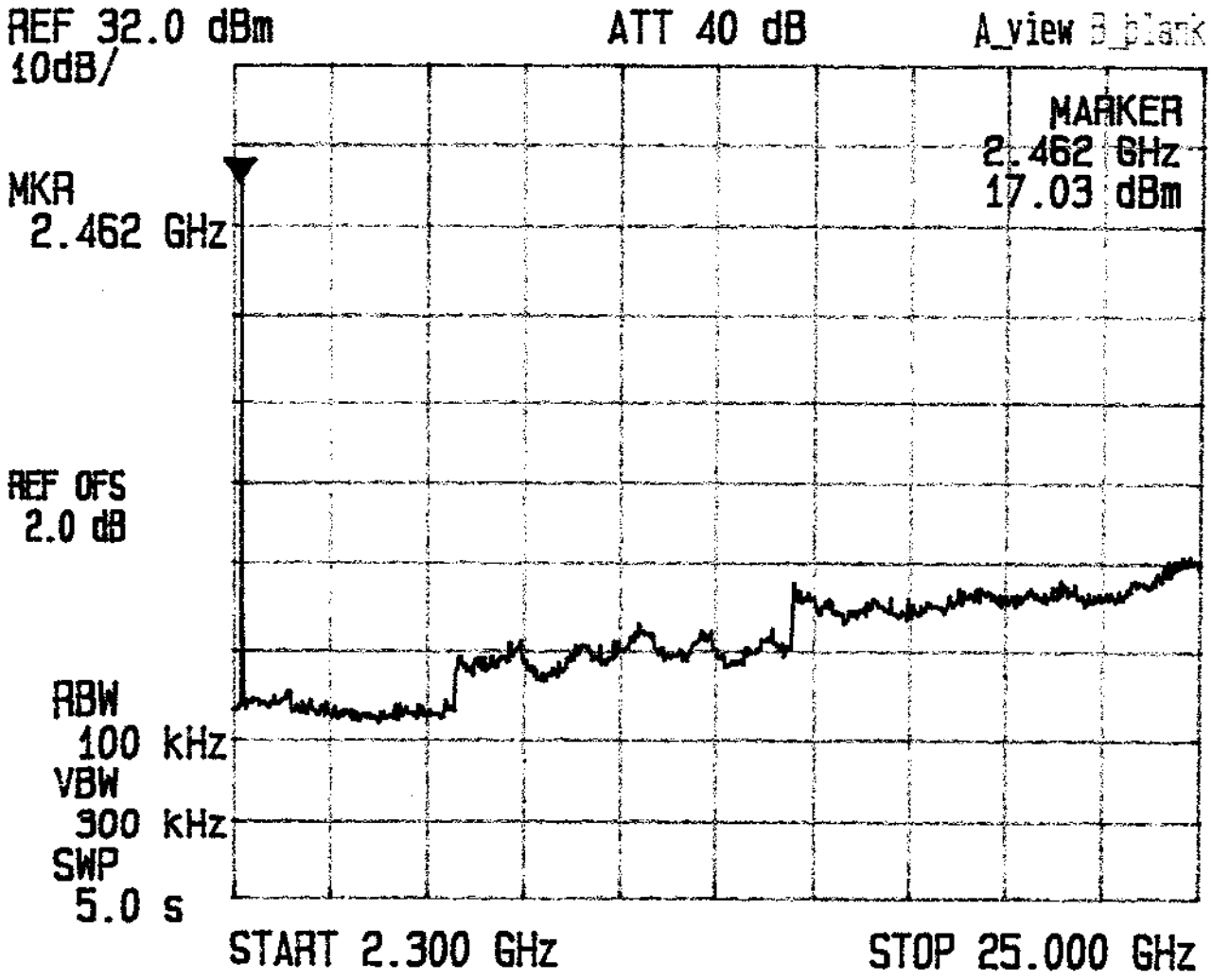
Plot B6b.1


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
MARKER
2.430 GHz
14.53 dBm
MKR
2.430 GHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
5.0 s
START 2.300 GHz
STOP 25.000 GHz

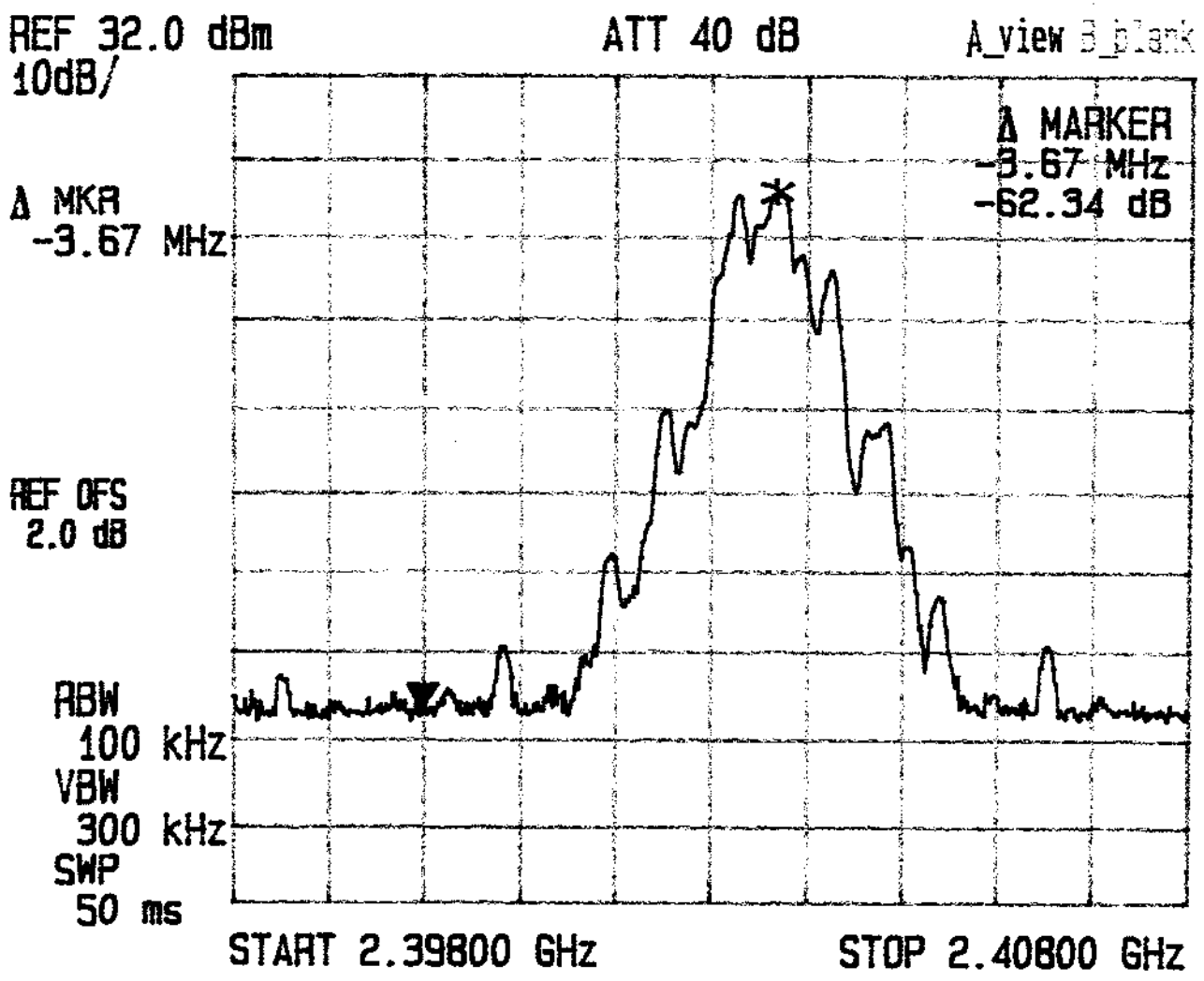
Plot B6b.2


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
MARKER
2.473 GHz
17.97 dBm
MKR
2.473 GHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
600 ms
START 1 MHz
STOP 3.000 GHz

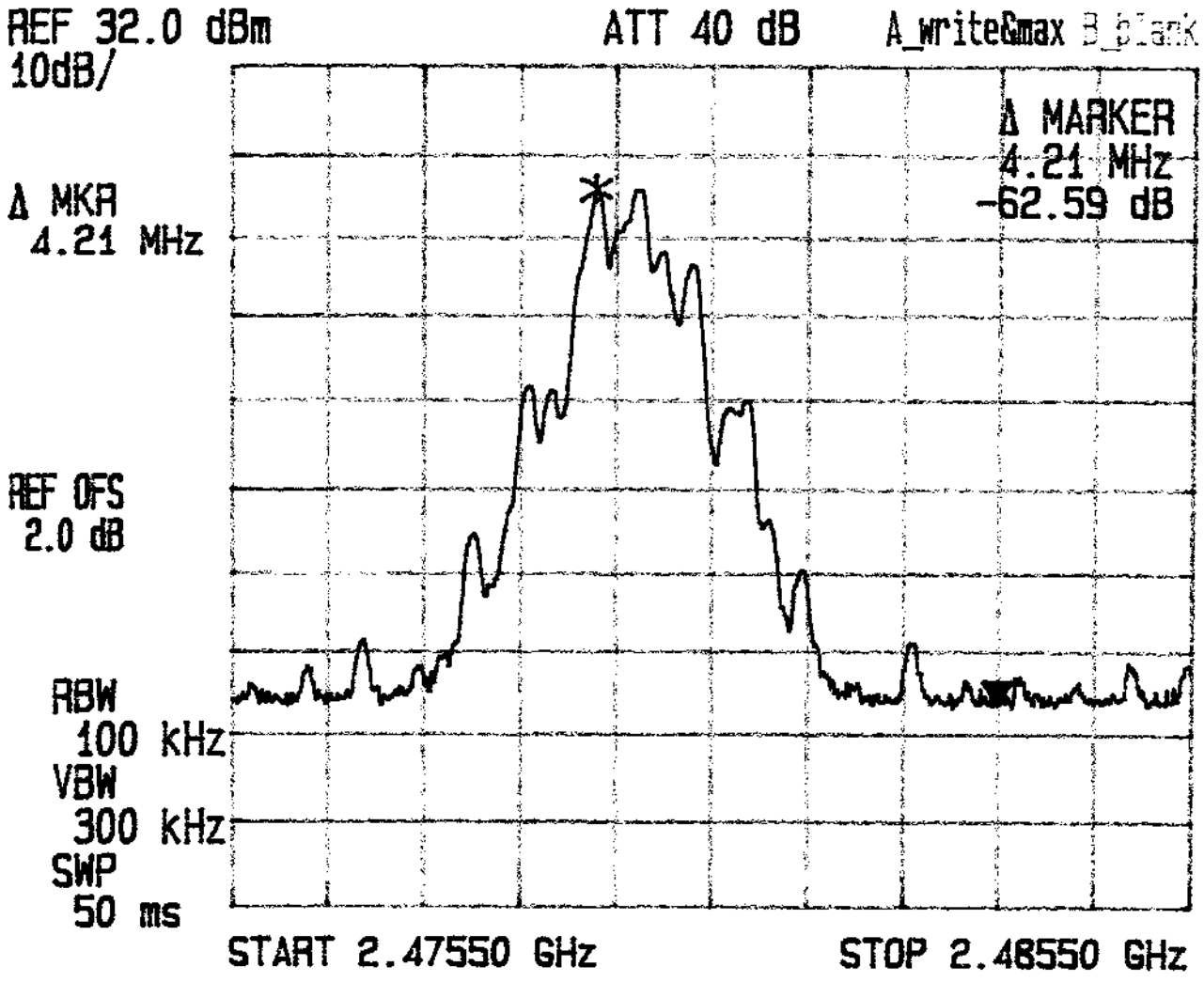
Plot B6c.1


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
MARKER
2.462 GHz
17.03 dBm
MKR
2.462 GHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
5.0 s
START 2.300 GHz
STOP 25.000 GHz

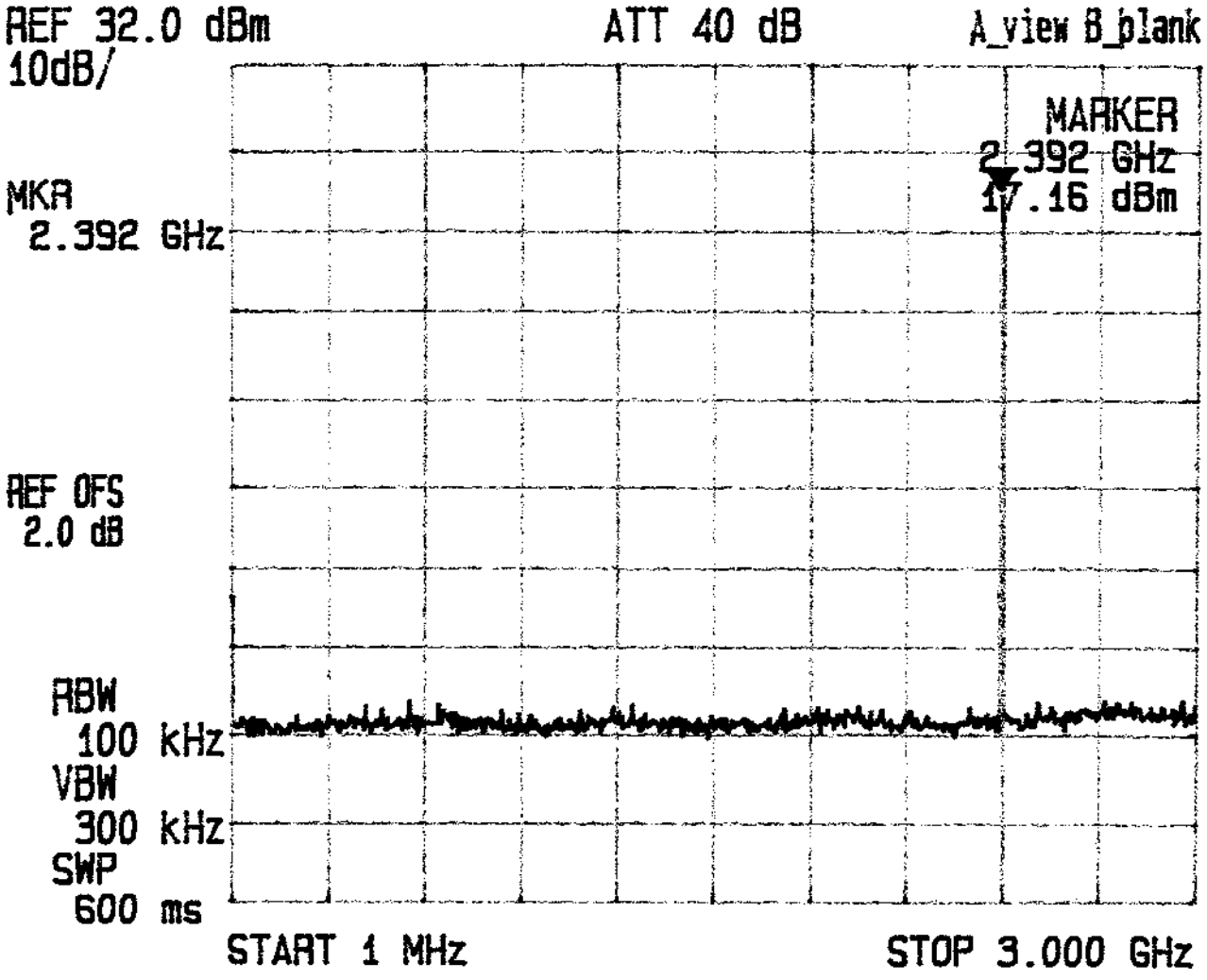
Plot B6c.2


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
Δ MARKER
-3.67 MHz
-62.34 dB
Δ MKR
-3.67 MHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
50 ms
START 2.39800 GHz
STOP 2.40800 GHz

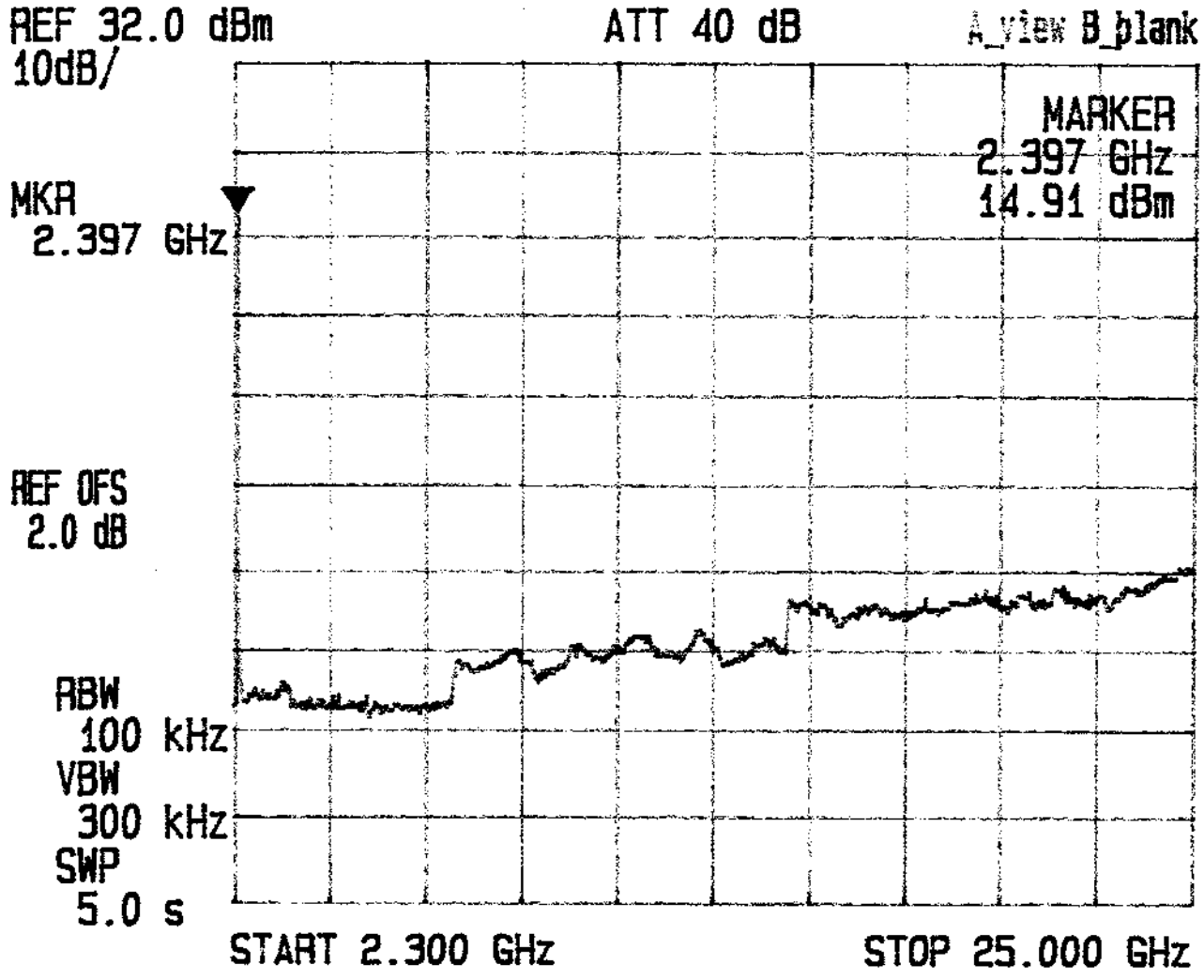
Plot B6d.1


REF 32.0 dBm
ATT 40 dB
A_writeGmax B_blank
10dB/
Δ MARKER
4.21 MHz
-62.59 dB
Δ MKR
4.21 MHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
50 ms
START 2.47550 GHz
STOP 2.48550 GHz

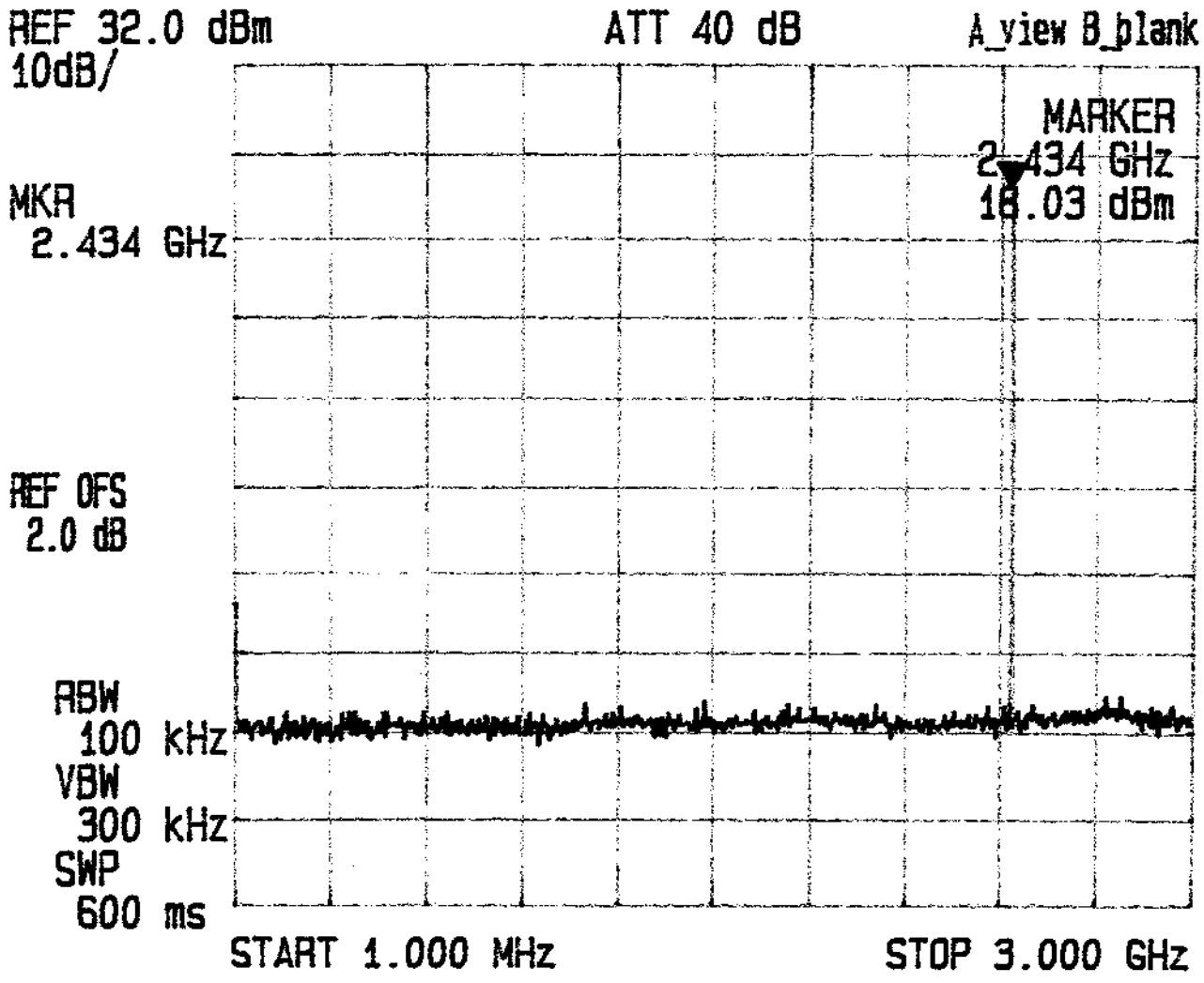
Plt B6d.2


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
MARKER
2.392 GHz
17.16 dBm
MKR
2.392 GHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
600 ms
START 1 MHz
STOP 3.000 GHz

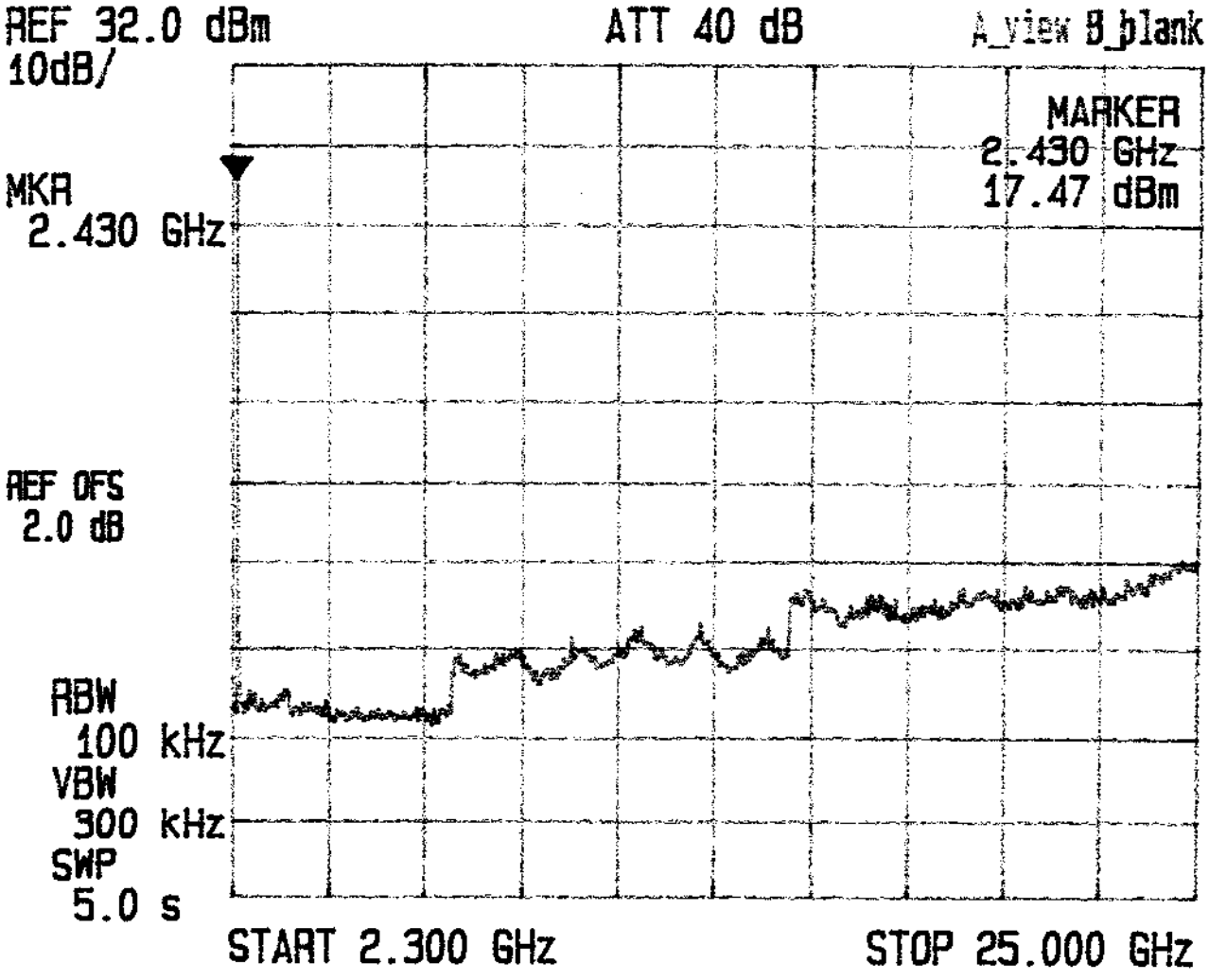
Plot H6a.1


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
MARKER
2.397 GHz
14.91 dBm
MKR
2.397 GHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
5.0 s
START 2.300 GHz
STOP 25.000 GHz

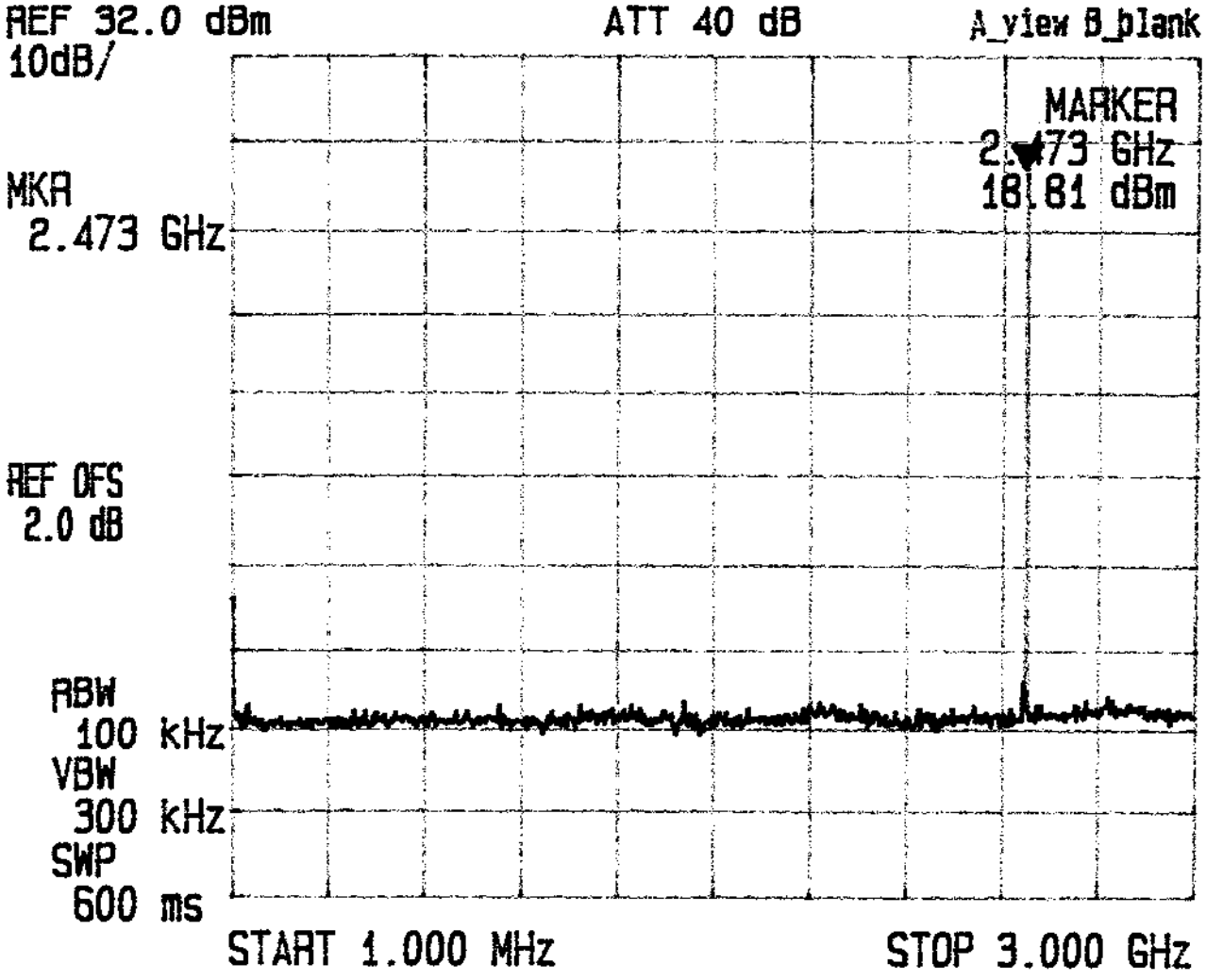
Plot H6a.2


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
MARKER
2.434 GHz
16.03 dBm
MKR
2.434 GHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
600 ms
START 1.000 MHz
STOP 3.000 GHz

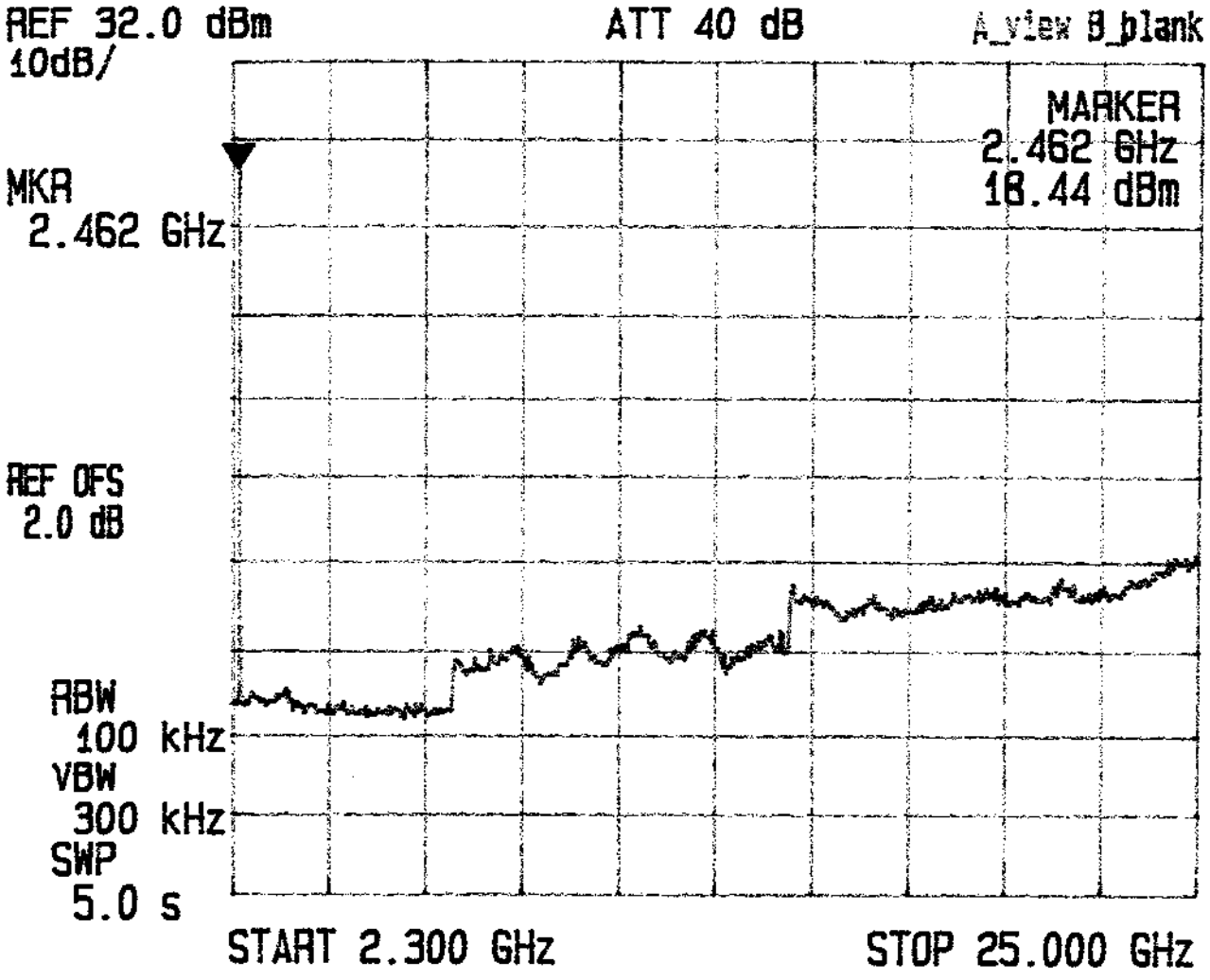
Plot H66.1


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
MARKER
2.430 GHz
17.47 dBm
MKR
2.430 GHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
5.0 s
START 2.300 GHz
STOP 25.000 GHz

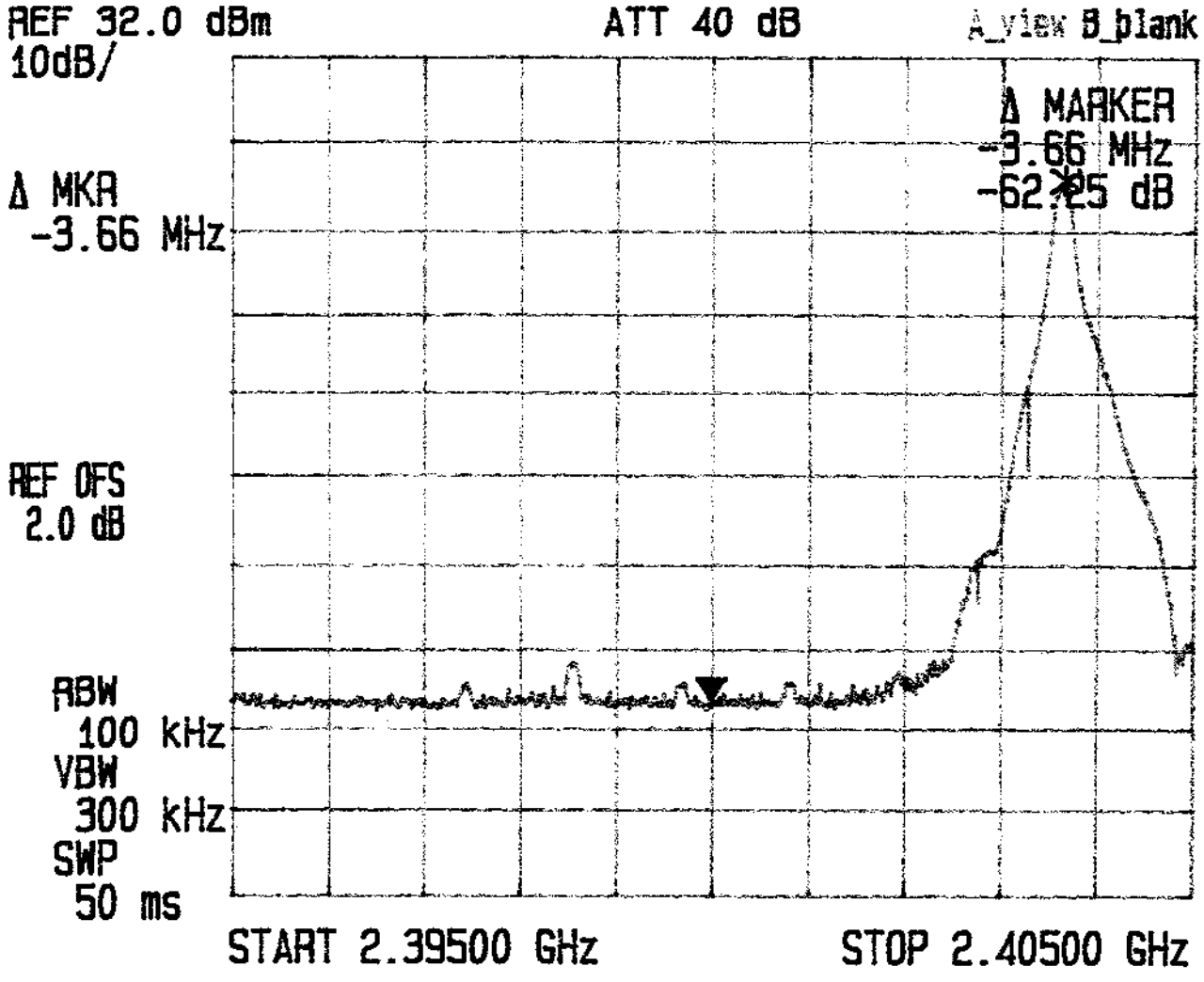
Plot H6b.2


REF 32.0 dBm
ATT 40 dB
A_view B_blank
10dB/
MARKER
2.473 GHz
18.81 dBm
MKR
2.473 GHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
600 ms
START 1.000 MHz
STOP 3.000 GHz

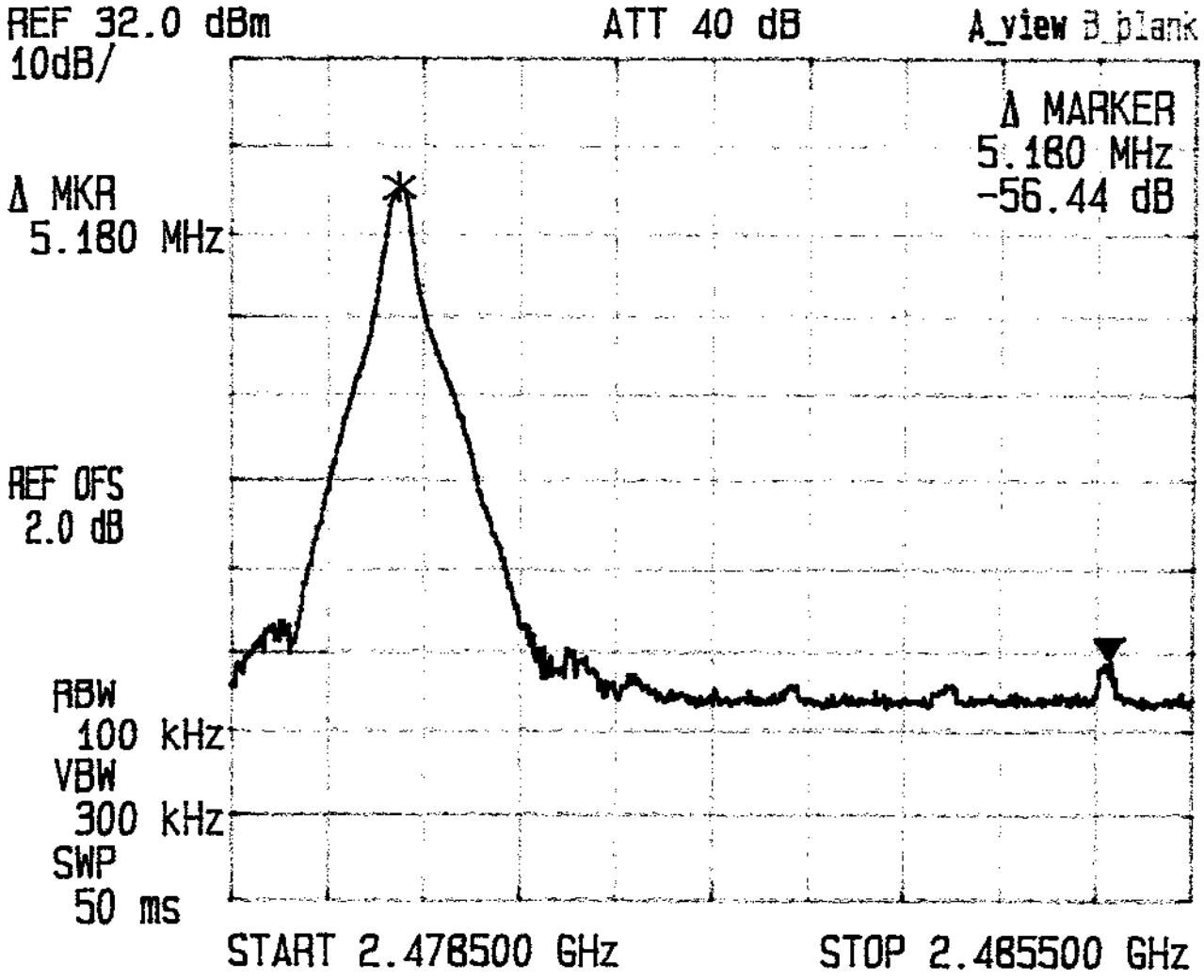
Plot H6c.1


REF 32.0 dBm
ATT 40 dB
A_view B_blank
10dB/
MARKER
2.462 GHz
18.44 dBm
MKR
2.462 GHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
5.0 s
START 2.300 GHz
STOP 25.000 GHz

Plot H6 C.2


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
Δ MARKER
-3.66 MHz
-62.25 dB
Δ MKR
-3.66 MHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
50 ms
START 2.39500 GHz
STOP 2.40500 GHz

Plot H6d.1


REF 32.0 dBm
10dB/
ATT 40 dB
A_view B_blank
Δ MARKER
5.180 MHz
-56.44 dB
Δ MKR
5.180 MHz
REF OFS
2.0 dB
RBW
100 kHz
VBW
300 kHz
SWP
50 ms
START 2.476500 GHz
STOP 2.485500 GHz

Plot H6d.2

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

4.7 Out of Band Radiated Emissions (for emissions in 4.6 above that are less than 26 dB below carrier), FCC Rule 15.247(c):

For out of band emissions that are close to or that exceed the 20dB attenuation requirement described in the specification, radiated measurements were performed at a 3m separation distance to determine whether these emissions complied with the general radiated emission requirement.

[×] Not required
[ ] See attached data sheet

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

4.8 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b), (c):

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified.

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

4.9 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD + AV

where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB
PD = Pulse Desensitization in dB
AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

FS = RA + AF + CF - AG + PD + AV

Example
Assume a receiver reading of 62.0 dBμV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0 dB
AV = -10 dB
FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 dBμV/m

Level in mV/m = Common Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

4.10 Radiated Emission Configuration Photograph - Base Unit

Worst Case Radiated Emission
at
7439.040MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: config photos.doc

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

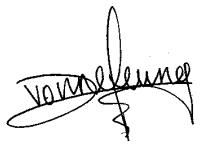
4.11 Radiated Emission Data - Base Unit

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Judgement : Passed by 2.2 dB

****

TEST PERSONNEL:



Tester Signature

Yvonne Leung, Engineer
Typed/Printed Name

December 9, 2002
Date

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A
Mode : TX-Channel 0

Table 1, Base Unit

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Average Factor (-dB)	Net 3m at (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	*4807.296	55.8	34.0	34	12.1	43.7	54.0	-10.3

NOTES: 1. Peak Detector data

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1 GHz also meet corresponding 20 dB permitted peak limit with a peak detector function.

Test Engineer: Yvonne Leung

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A
Mode : TX-Channel 22

Table 2, Base unit

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Average Factor (-dB)	Net 3m at (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	*4883.328	53.2	34.0	34	12.1	41.1	54	-12.9
V	*7324.992	60.5	37.0	34	12.1	51.4	54	-2.6

NOTES: 1. Peak Detector data

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1 GHz also meet corresponding 20 dB permitted peak limit with a peak detector function.

Test Engineer: Yvonne Leung

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A
Mode : TX-Channel 44

Table 3, Base unit

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Average Factor (-dB)	Net 3m at (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	**2479.680	121.6	29.1	34	12.1	104.6	---	---
V	*4959.360	55.0	34.0	34	12.1	42.9	54	-11.1
V	*7439.040	60.9	37.0	34	12.1	51.8	54	-2.2

NOTES: 1. Peak Detector data

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1 GHz also meet corresponding 20 dB permitted peak limit with a peak detector function.

** Fundamental emission was measured for determining band-edge compliance of using delta measurement technique.

Test Engineer: Yvonne Leung

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

4.12 Radiated Emission Configuration Photograph - Handset

Worst Case Radiated Emission
at
7439.040MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: config photos.doc

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

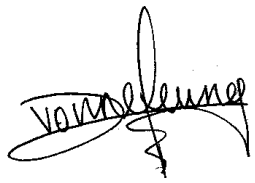
4.13 Radiated Emission Data - Handset

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Judgement : Passed by 9.3 dB

****

TEST PERSONNEL:



Tester Signature

Yvonne Leung, Engineer
Typed/Printed Name

December 9, 2002
Date

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A
Mode : TX-Channel 0

Table 4, Handset

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Average Factor (-dB)	Net 3m at (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	*4807.296	63.5	34.0	34	21.6	41.9	54	-12.1
H	*12018.240	49.7	40.2	34	21.6	34.3	54	-19.7

NOTES: 1. Peak Detector data

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1 GHz also meet corresponding 20 dB permitted peak limit with a peak detector function.

Test Engineer: Yvonne Leung

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A
Mode : TX-Channel 22

Table 5, Handset

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Average Factor (-dB)	Net 3m at (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
H	*4883.328	59.6	34.0	34	21.6	38.0	54	-16.0
H	*7324.992	60.6	37.0	34	21.6	42.0	54	-12.0
H	*12208.320	50.1	40.2	34	21.6	34.7	54	-19.3

NOTES: 1. Peak Detector data

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1 GHz also meet corresponding 20 dB permitted peak limit with a peak detector function.

Test Engineer: Yvonne Leung

Company: Alco Communications Limited
Model: 9025A
Mode : TX-Channel 44

Date of Test: November 6-11, 2002

Table 6, Handset

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Average Factor (-dB)	Net 3m at (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	**2479.680	124.6	29.1	34	21.6	98.1	---	---
V	*4959.360	54.8	34.0	34	21.6	33.2	54	-20.8
H	*7439.040	63.3	37.0	34	21.6	44.7	54	-9.3
H	*12398.400	50.6	40.2	34	21.6	35.2	54	-18.8

NOTES: 1. Peak Detector data

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1 GHz also meet corresponding 20 dB permitted peak limit with a peak detector function.

** Fundamental emission was measured for determining band-edge compliance of using delta measurement technique.

Test Engineer: Yvonne Leung

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

4.14 AC Line Conducted Emission, FCC Rule 15.207:

[ ] Not required; battery operation only

[×] Test data attached

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

4.15 Line Conducted Configuration Photograph - Base

Worst Case Line-Conducted Configuration

For electronic filing, the worst case line conducted configuration photographs are saved with filename: config photos.doc

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

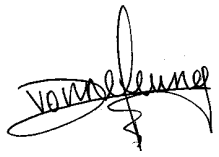
4.16 Line Conducted Emission Data

The data on the following pages list the significant emission frequencies, the limit, and the margin of compliance.

Judgement : Passed by more than 20 dB margin

For electronic filing, the worst case line conducted emission data are saved with filename: conduct.pdf

TEST PERSONNEL:



Tester Signature

Yvonne Leung, Engineer
Typed/Printed Name

December 9, 2002
Date

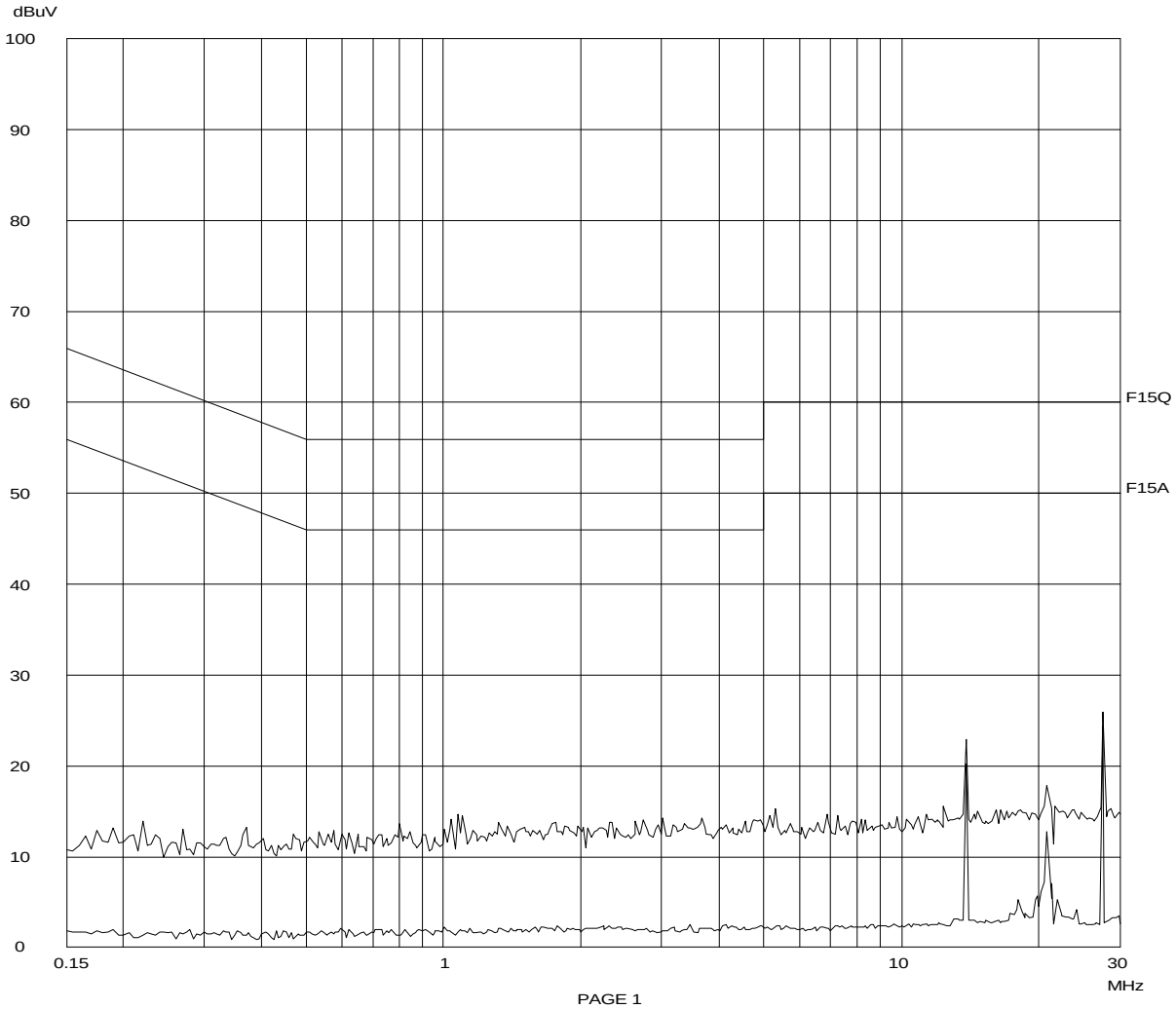
Report No.: 02129021
Talk Mode

Tested By:Hong, Report No.:02129021
Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	30M	5k	10k	PK+AV	10ms	AUTO	LN OFF	60dB

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 16
Acc Margin: 20dB

Transducer No.	Start	Stop	Name
21	9k	30M	EW0698



Ctrl No.: N/A

Tested By:Hong, Report No.:02129021

Scan Settings (1 Range)

|--------- Frequencies ----------||---------- Receiver Settings ----------|

Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	30M	5k	10k	PK+AV	10ms	AUTO	LN OFF	60dB

Final Measurement

no Results

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

4.17 Radiated Emissions from Digital Section of Transceiver (Transmitter), FCC Ref: 15.109

[ ] Not required - No digital part

[×] Test results are attached

[ ] Included in the separated DOC report.

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

Table 7, Base

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit (dBµV/m)	Magin (dB)
V	55.848	34.8	11.0	16	29.8	40	-10.2
H	61.298	37.0	9.9	16	30.9	40	-9.1
H	138.481	35.1	11.9	16	31.0	40	-9.0
H	145.694	34.6	11.6	16	30.2	40	-9.8
H	290.846	35.3	13.3	16	32.6	40	-7.4

NOTES: 1. Quasi-peak detector is used for the emission below or equal to 1000MHz.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna and average detector are used for the emission over 1000MHz.

Test Engineer: Yvonne Leung

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

Table 8, Handset

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit (dBµV/m)	Magin (dB)
V	55.289	34.6	11.0	16	29.6	40	-10.4
H	61.376	36.9	9.9	16	30.8	40	-9.2
H	138.826	35.3	11.9	16	31.2	40	-8.8
H	145.729	35.2	11.6	16	30.8	40	-9.2
H	290.331	35.8	13.3	16	33.1	40	-6.9

NOTES: 1. Quasi-peak detector is used for the emission below or equal to 1000MHz.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna and average detector are used for the emission over 1000MHz.

Test Engineer: Yvonne Leung

Company: Alco Communications Limited Date of Test: November 6-11, 2002
Model: 9025A

4.18 Transmitter Duty Cycle Calculation and Measurements, FCC Rule 15.35(b), (c)

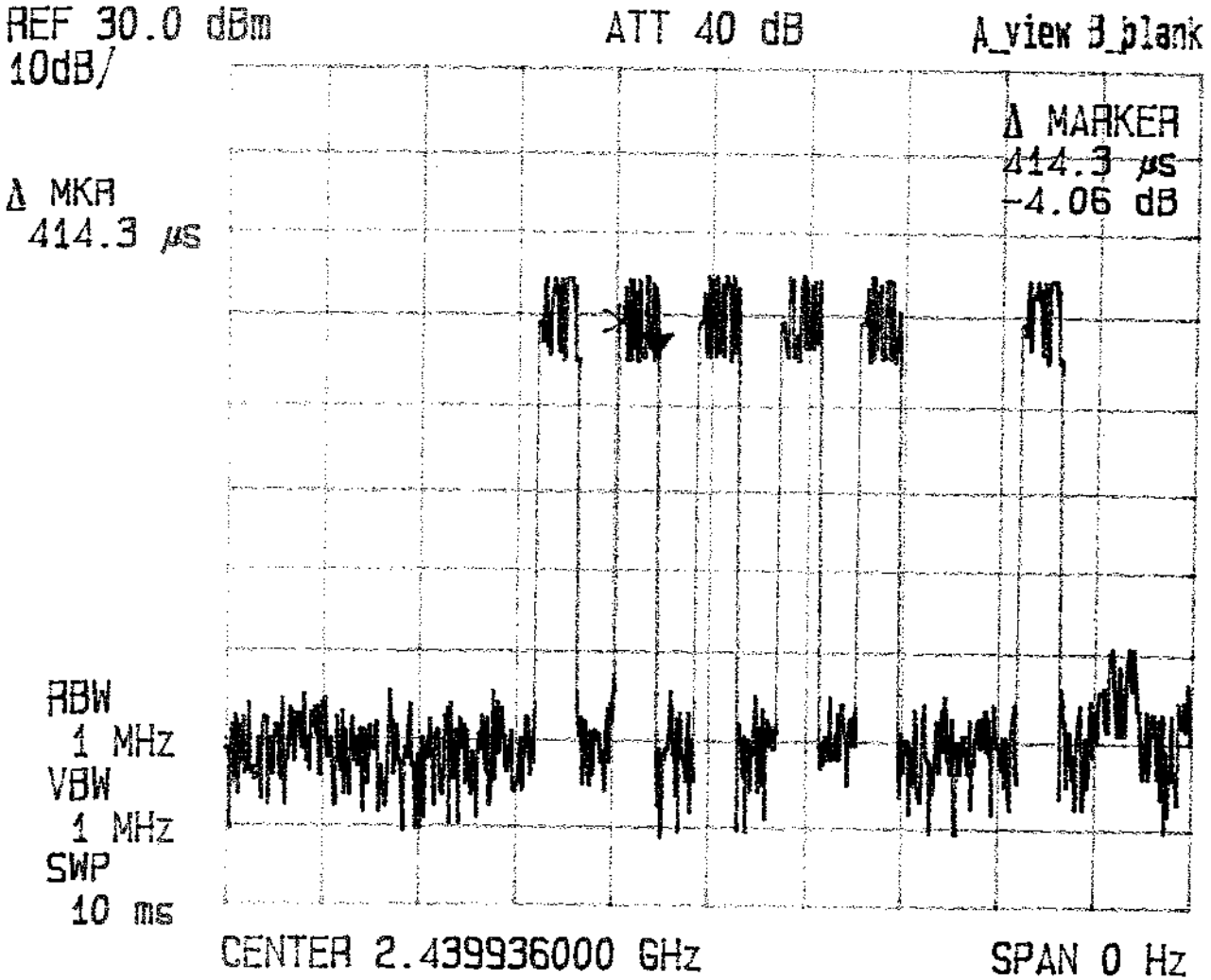
The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SWEP function on the analyzer was set to ZERO SPAN. The transmitter ON time was determined from the resultant time-amplitude display:

Duty cycle = Maximum ON time in 10 msec/10

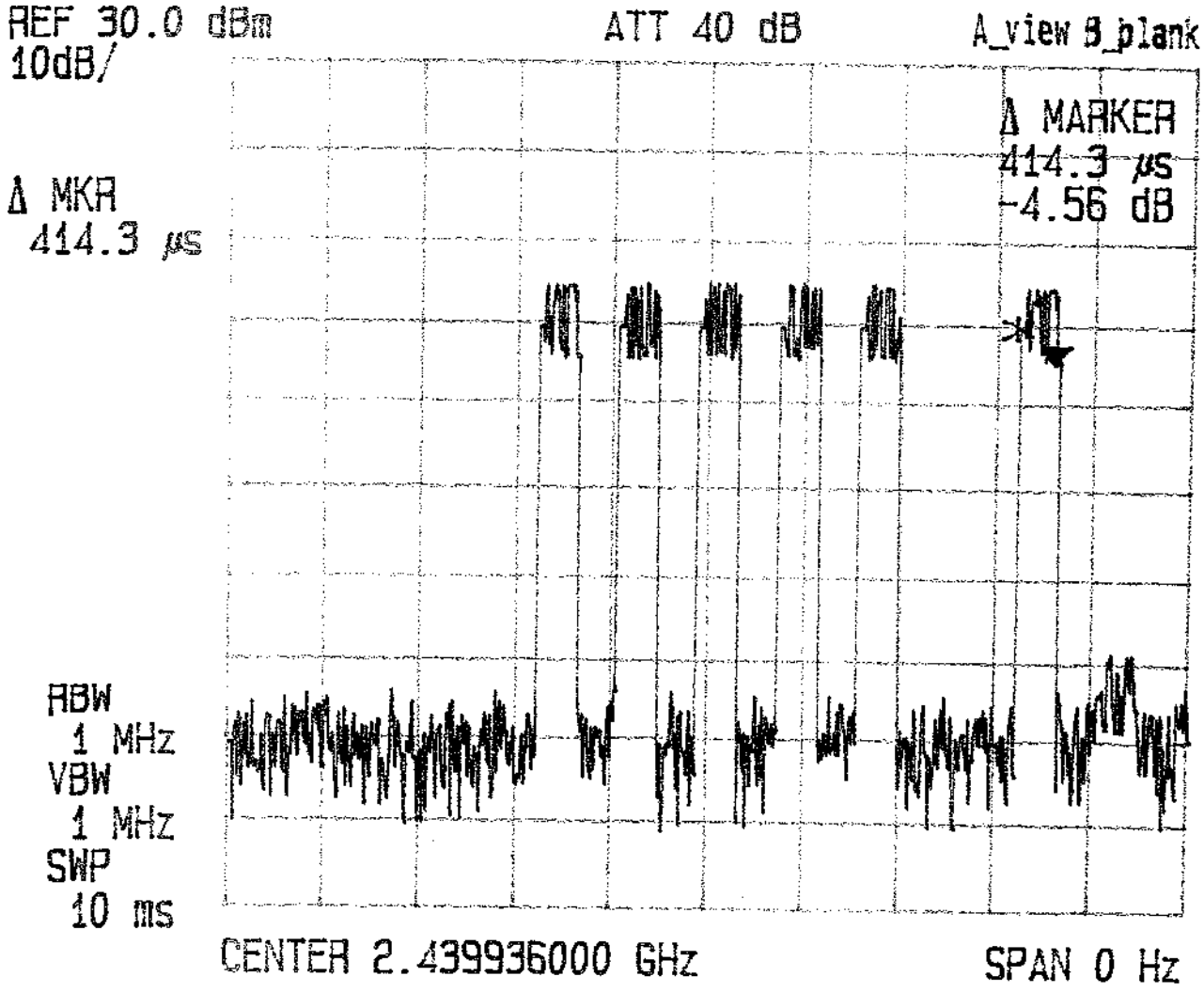
Base Unit: Duty cycle correction, dB = 20*log (DC)=20*log (2.486ms/10ms)=-12.1dB
Handset: Duty cycle correction, dB=20*log (DC)=20*log (0.829ms/10ms)=-21.6dB

✓	See attached spectrum analyzer chart (s) for transmitter timing (Base unit: Plot B7a, Handset: Plot H7a)
	See transmitter timing diagram provided by manufacturer
	Not applicable, duty cycle was not used.

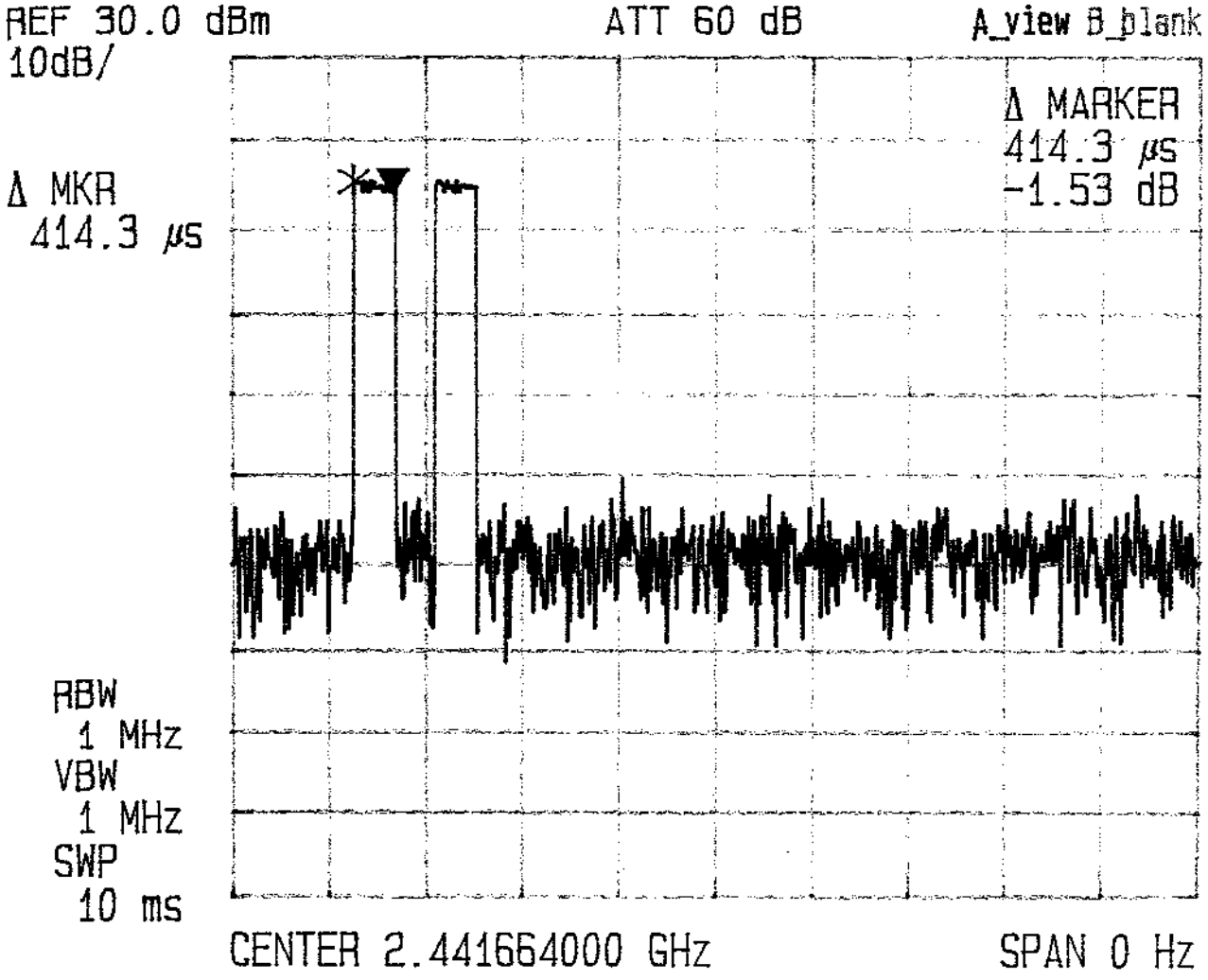
For electronic filing, the above plots are saved with filenames: bdcc.pdf and hdcc.pdf.


REF 30.0 dBm
10dB/
ATT 40 dB
A_view B_blank
Δ MARKER
414.3 µs
-4.06 dB
Δ MKR
414.3 µs
RBW
1 MHz
VBW
1 MHz
SWP
10 ms
CENTER 2.439936000 GHz
SPAN 0 Hz

Plot B7a.1


REF 30.0 dBm
10dB/
ATT 40 dB
A_view B_blank
Δ MARKER
414.3 µs
-4.56 dB
Δ MKR
414.3 µs
RBW
1 MHz
VBW
1 MHz
SWP
10 ms
CENTER 2.439936000 GHz
SPAN 0 Hz

Plot B7a.2


REF 30.0 dBm
10dB/
ATT 60 dB
A_view B_blank
Δ MARKER
414.3 µs
-1.53 dB
Δ MKR
414.3 µs
RBW
1 MHz
VBW
1 MHz
SWP
10 ms
CENTER 2.441664000 GHz
SPAN 0 Hz

Plot H7a.1

Plot H7a.2

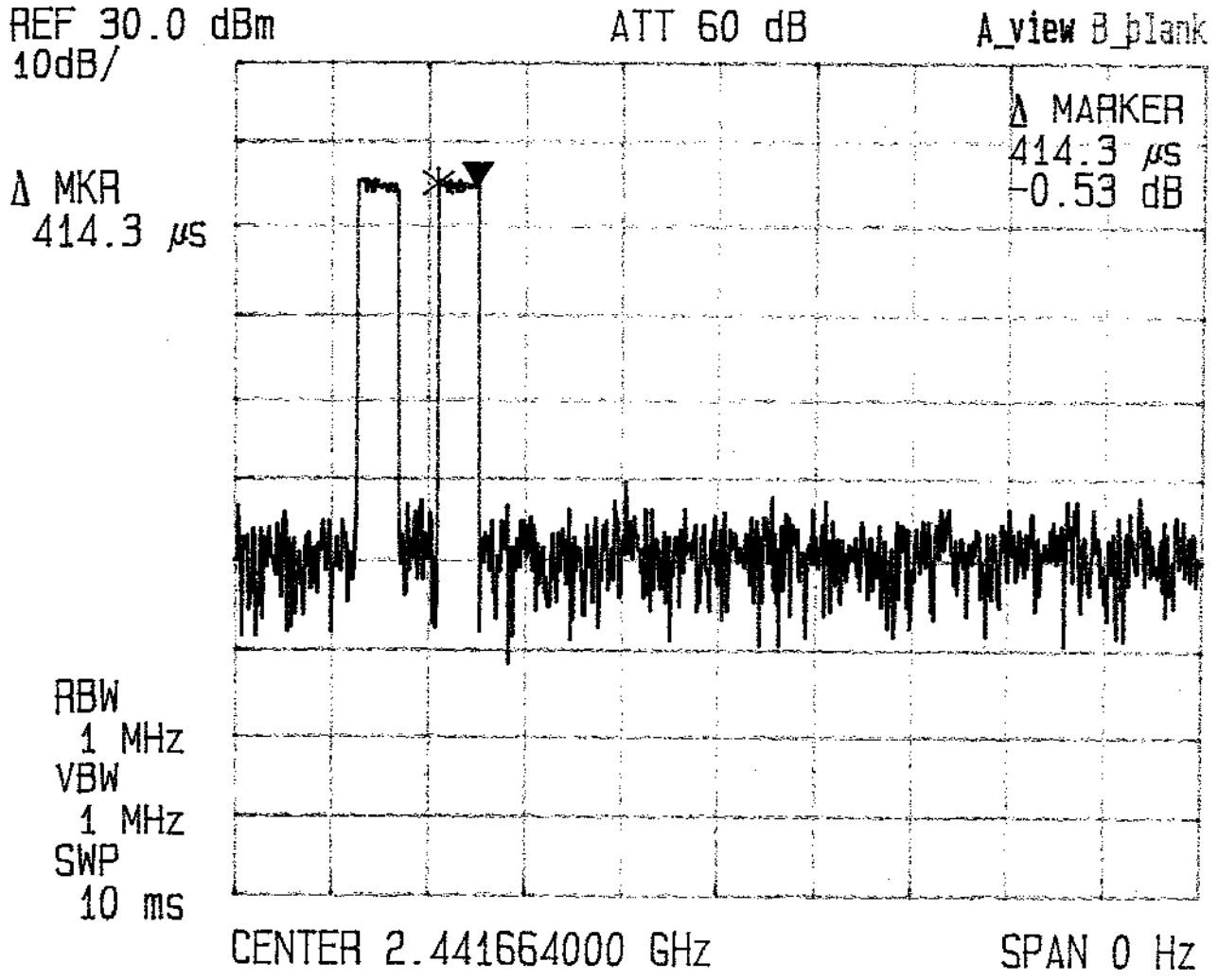

REF 30.0 dBm
10dB/
ATT 60 dB
A_view B_blank
Δ MARKER
414.3 µs
-0.53 dB
Δ MKR
414.3 µs
RBW
1 MHz
VBW
1 MHz
SWP
10 ms
CENTER 2.441664000 GHz
SPAN 0 Hz

EXHIBIT 5
EQUIPMENT PHOTOGRAPHS

5.0 **Equipment Photographs**

For electronic filing, the photographs are saved with filename: external photos.doc & internal photos.doc

EXHIBIT 6
PRODUCT LABELLING

6.0 **Product Labelling**

For electronic filing, the FCC ID label artwork and location is saved with filename: label.pdf

EXHIBIT 7
TECHNICAL SPECIFICATIONS

7.0 **Technical Specifications**

For electronic filing, the block diagram and circuit diagram are saved with filename: block.pdf, and circuit.pdf respectively.

EXHIBIT 8
INSTRUCTION MANUAL

8.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

Please note that the required FCC Information to the User is saved with filename: FCC information.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

EXHIBIT 9
SECURITY CODE INFORMATION

9.0 Security code information

For security code information, ID code, total 65535 * 65535 (Equipment Manufacturer's Code & Serial No.) combinations for both handset & base unit. It will only be entered at production stage and the security code will be varied continuously or randomly as each package is produced.

In this model, each base and each handset has its own unique ID. This ID is assigned in the mass production stage. It is just like the engine number in every car.
In this model, there are two operation modes, one is subscription mode, and other is normal mode. In subscription mode, the handset will send its ID to the base, and the base will record this ID as a legal ID. The subscription is done in the mass production stage or if you want to add the two extra handsets.
For example, you buy one base and two handsets [A, B] first. The IDs of handset A and handset B are recorded into the base in production stage. Then you buy another two extra handsets. You can set the base into subscription mode, now the two extra handsets will send their IDs to the base for subscription.
In normal operation, the base will check the handset ID. If it is illegal, the base will deny the connection request from this illegal handset.