EMISSIONS TEST REPORT FOR A LOW POWER TRANSMITTER

I. GENERAL INFORMATION

Requirement: Federal Communications Commissions

Test Requirements: 15.205, 15.207, 15.209, 15.247

Applicant: BreezeCom Ltd.
Atidim Technological Park, Bldg. #1
Tel Aviv 61131, Israel

Product ID: FCC ID: LKT-IF-24

II. DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

The Breezecom FCC ID: LKT-IF-24 is a frequency hopping spread spectrum (FHSS) transceiver used for WLANs and similar applications.

III. TEST LOCATION

All emissions tests were performed at:

Compliance Certification Services
1366 Bordeaux Drive
Sunnyvale, CA 94089-1005

T.N. Cokenias 3 December 2000
EMC Consultant/Agent for Breezecom

TEST PROCEDURES

Radiated Emissions
Test Requirement: 15.205

Measurement Equipment Used:

HP 8593EM Spectrum Analyzer
HP 8449 Microwave pre-amplifier, 1-26.5 GHz
EMCO 3115 Double Ridged Horn antenna, 1 - 18 GHz

1. The EUT was placed on a wooden table resting on a turntable on the open air test site. The search antenna was placed 3m from the EUT. The EUT antenna was mounted vertically as per normal installation.

2. The turntable was slowly rotated to locate the direction of maximum emission at each emission falling in the restricted bands of 15.205.

3. Radiated emissions were investigated for a LOW channel, a MID channel, and HIGH channel. Emissions were investigated to the 10^{th} harmonic.

4. Careful measurements were made at the restricted bands 2310-2390 MHz and 2483.5 – 2500 MHz for the LOW and HIGH channel respectively. The preamplifier was not used for these measurements.

5. Once maximum direction was determined, the search antenna was raised and lowered in both vertical and horizontal polarizations. The maximum readings so obtained are recorded in the data listed below.

Test Results: The test was repeated with each of the antennas specified for the EUT. Worst case results are presented. Refer to attached data sheets

001116CB

Tom & Thu

Breezecom
OMNI-8 Antenna
EUT
Harmonic's Measurement
Mid Channel set @ 480, Fundamental 2.44GHz

Freq.	Reading	AF	Closs	Pre-amp	Dist	Other	Level	Limit	Margin	Pol	Height	Mark
(MHz)	(dBuV)	(dB)	(dB)	(dB)	dB	dB	(dBuV/m)	FCC_B	(dB)	(H/V)	(Meter)	(P/Q/A)
4880	49.84	32.9	4.2	31.25	9.5	1.00	47.19	74.00	-26.81	V	1.0	P
4880	***46.90***	***32.9***	***4.2***	***31.25***	***9.5***	***1.00***	***44.25***	***54.00***	***-9.75***	***V***	***1.0***	***Av***
7320	46.20	37.0	4.9	31.25	9.5	1.00	48.35	74.00	-25.65	V	1.0	P
7320	***35.50***	***37.0***	***4.9***	***31.25***	***9.5***	***1.00***	***37.65***	***54.00***	***-16.35***	***V***	***1.0***	***Av***
9760	43.52	37.8	6.3	31.25	20.0	0.00	36.37	74.00	-37.63	V	1.0	P
9760	***32.50***	***37.8***	***6.3***	***31.25***	***20.0***	***0.00***	***25.35***	***54.00***	***-28.65***	***V***	***1.0***	***Av***
12200	44.89	39.2	6.7	31.25	20.0	1.00	40.54	74.00	-33.46	V	1.0	P
12200	***33.59***	***39.2***	***6.7***	***31.25***	***20.0***	***1.00***	***29.24***	***54.00***	***-24.76***	***V***	***1.0***	***Av***
14640	48.35	39.0	7.7	31.25	20.0	1.00	44.80	74.00	-29.20	V	1.0	P
14640	***37.00***	***39.0***	***7.7***	***31.25***	***20.0***	***1.00***	***33.45***	***54.00***	***-20.55***	***V***	***1.0***	***Av***
17080	48.50	45.0	9.1	31.25	20.0	0.00	51.35	74.00	-22.65	V	1.0	P
17080	***38.60***	***45.0***	***9.1***	***31.25***	***20.0***	***0.00***	***41.45***	***54.00***	***-12.55***	***V***	***1.0***	***Av***
19520	51.90	32.3	10.0	31.25	20.0	1.00	43.95	74.00	-30.05	V	1.0	P
19520	***41.20***	***32.3***	***10.0***	***31.25***	***20.0***	***1.00***	***33.25***	***54.00***	***-20.75***	***V***	***1.0***	***Av***
21960	54.00	32.5	11.2	31.25	20.0	1.00	47.45	74.00	-26.55	V	1.0	P
21960	***43.50***	***32.5***	***11.2***	***31.25***	***20.0***	***1.00***	***36.95***	***54.00***	***-17.05***	***V***	***1.0***	***Av***
24400	43.80	32.6	11.9	31.25	20.0	0.00	37.05	74.00	-36.95	V	1.0	P
24400	***42.70***	***32.6***	***11.9***	***31.25***	***20.0***	***0.00***	***35.95***	***54.00***	***-18.05***	***V***	***1.0***	***Av***

Total data #: 18
V.2f

Peak: RBW=VBW=1MHz
Average: RBW=1MHz, VBW=10Hz

Other = High Pass Filter
Distance = 20*log(dm/ds)

001116CB

T.Cokenias

Breezecom FCC ID LKT-IF-24
26 dBm into OMNI-8 Antenna
EUT
Harmonic's Measurement
Highest Channel set @ 79, Fundamental 2.479GHz

Freq.	Reading	AF	Closs	Pre-amp	Dist	Other	Level	Limit	Margin	Pol	Height	Mark
(MHz)	(dBuV)	(dB)	(dB)	(dB)	dB	dB	(dBuV/m)	FCC_B	(dB)	(H/V)	(Meter)	(P/Q/A)
4961	44.85	32.9	4.2	31.25	9.5	1.00	42.20	74.00	-31.80	V	1.0	P
4961	***39.60***	***32.9***	***4.2***	***31.25***	***9.5***	***1.00***	***36.95***	***54.00***	***-17.05***	***V***	***1.0***	***Av***
7440	46.16	37.0	4.9	31.25	9.5	1.00	48.31	74.00	-25.69	V	1.0	P
7440	***34.90***	***37.0***	***4.9***	***31.25***	***9.5***	***1.00***	***37.05***	***54.00***	***-16.95***	***V***	***1.0***	***Av***
9199	43.57	37.8	6.3	31.25	20.0	0.00	36.42	74.00	-37.58	V	1.0	P
9199	***32.40***	***37.8***	***6.3***	***31.25***	***20.0***	***0.00***	***25.25***	***54.00***	***-28.75***	***V***	***1.0***	***Av***
12390	44.90	39.2	6.7	31.25	20.0	1.00	40.55	74.00	-33.45	V	1.0	P
12390	***33.48***	***39.2***	***6.7***	***31.25***	***20.0***	***1.00***	***29.13***	***54.00***	***-24.87***	***V***	***1.0***	***Av***

Total data #: 8
V.2f

Peak: RBW=VBW=1MHz
Average: RBW=1MHz, VBW=10Hz

Other = High Pass Filter
Distance = 20*log(dm/ds)

Breezecom
FCC ID: LKT-IF-24
8 dBi OMNI antenna

Compliance Certification Services

1-Dec-00
T.Cokenias

fo = 2401 MHz (LOW Channel)

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Dist dB	Other dB	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Height (Meter)	Mark (P/Q/A)
4802	47.00	32.9	4.2	31.25	20.0	1.00	33.85	74.00	-40.15	V	1.0	P
4802	***42.50***	***32.9***	***4.2***	***31.25***	***20.0***	***1.00***	***29.35***	***54.00***	***-24.65***	***V***	***1.0***	***Av***
7203	45.40	37.0	4.9	31.25	20.0	1.00	37.05	74.00	-36.95	V	1.0	P
7203	***35.80***	***37.0***	***4.9***	***31.25***	***20.0***	***1.00***	***27.45***	***54.00***	***-26.55***	***V***	***1.0***	***Av***
9604	43.75	37.8	6.3	31.25	20.0	0.00	36.60	74.00	-37.40	V	1.0	P
9604	***32.40***	***37.8***	***6.3***	***31.25***	***20.0***	***0.00***	***25.25***	***54.00***	***-28.75***	***V***	***1.0***	***Av***
12000	45.00	39.2	6.7	31.25	20.0	1.00	40.65	74.00	-33.35	V	1.0	P
12000	***35.00***	***39.2***	***6.7***	***31.25***	***20.0***	***1.00***	***30.65***	***54.00***	***-23.35***	***V***	***1.0***	***Av***
14410	48.20	39.0	7.7	31.25	20.0	1.00	44.65	74.00	-29.35	V	1.0	P
14410	***36.74***	***39.0***	***7.7***	***31.25***	***20.0***	***1.00***	***33.19***	***54.00***	***-20.81***	***V***	***1.0***	***Av***
16807	49.10	45.0	9.1	31.25	20.0	0.00	51.95	74.00	-22.05	V	1.0	P
16807	***38.50***	***45.0***	***9.1***	***31.25***	***20.0***	***0.00***	***41.35***	***54.00***	***-12.65***	***V***	***1.0***	***Av***
19210	51.60	32.3	10.0	31.25	20.0	1.00	43.65	74.00	-30.35	V	1.0	P
19210	***41.20***	***32.3***	***10.0***	***31.25***	***20.0***	***1.00***	***33.25***	***54.00***	***-20.75***	***V***	***1.0***	***Av***
21610	53.80	32.5	11.2	31.25	20.0	1.00	47.25	74.00	-26.75	V	1.0	P
21610	***43.40***	***32.5***	***11.2***	***31.25***	***20.0***	***1.00***	***36.85***	***54.00***	***-17.15***	***V***	***1.0***	***Av***
24000	53.85	32.6	11.9	31.25	20.0	0.00	47.10	74.00	-26.90	V	1.0	P
24000	***42.30***	***32.6***	***11.9***	***31.25***	***20.0***	***0.00***	***35.55***	***54.00***	***-18.45***	***V***	***1.0***	***Av***

Total data #: 18
V.2f

Peak: RBW=VBW=1MHz
Average: RBW=1MHz, VBW=10Hz

Other = High Pass Filter
Distance = 20*log(dm/ds)

000821f6

Tom & Thu

Breezecom
16 dBi Panel UNI 16
EUT
Out of Band Emissions
Highest Channel set @ 500, Fundamental 2.46GHz

Freq.	Reading	AF	Closs	Pre-amp	Dist	Other	Level	Limit	Margin	Pol	Height	Mark
(MHz)	(dBuV)	(dB)	(dB)	(dB)	dB	dB	(dBuV/m)	FCC_B	(dB)	(H/V)	(Meter)	(P/Q/A)
49199	55.20	32.9	4.2	31.25	20.0	1.00	42.05	74.00	-31.95	V	1.0	P
49199	***55.20***	***32.9***	***4.2***	***31.25***	***20.0***	***1.00***	***42.05***	***54.00***	***-11.95***	***V***	***1.0***	***Av***
73799	48.00	37.0	4.9	31.25	20.0	1.00	39.65	74.00	-34.35	V	1.0	P
73799	***43.30***	***37.0***	***4.9***	***31.25***	***20.0***	***1.00***	***34.95***	***54.00***	***-19.05***	***V***	***1.0***	***Av***
98398	45.00	37.8	6.3	31.25	20.0	0.00	37.85	74.00	-36.15	V	1.0	P
98398	***32.20***	***37.8***	***6.3***	***31.25***	***20.0***	***0.00***	***25.05***	***54.00***	***-28.95***	***V***	***1.0***	***Av***
12299	45.00	39.2	6.7	31.25	20.0	1.00	40.65	74.00	-33.35	V	1.0	P
12299	***32.50***	***39.2***	***6.7***	***31.25***	***20.0***	***1.00***	***28.15***	***54.00***	***-25.85***	***V***	***1.0***	***Av***
14759	48.50	39.0	7.7	31.25	20.0	1.00	44.95	74.00	-29.05	V	1.0	P
14759	***36.50***	***39.0***	***7.7***	***31.25***	***20.0***	***1.00***	***32.95***	***54.00***	***-21.05***	***V***	***1.0***	***Av***
17219	49.03	45.0	9.1	31.25	20.0	0.00	51.88	74.00	-22.12	V	1.0	P
17219	***38.60***	***45.0***	***9.1***	***31.25***	***20.0***	***0.00***	***41.45***	***54.00***	***-12.55***	***V***	***1.0***	***Av***
19679	51.66	32.3	10.0	31.25	20.0	1.00	43.71	74.00	-30.29	V	1.0	P
19679	***40.30***	***32.3***	***10.0***	***31.25***	***20.0***	***1.00***	***32.35***	***54.00***	***-21.65***	***V***	***1.0***	***Av***
22139	53.98	32.5	11.2	31.25	20.0	1.00	47.43	74.00	-26.57	V	1.0	P
22139	***43.10***	***32.5***	***11.2***	***31.25***	***20.0***	***1.00***	***36.55***	***54.00***	***-17.45***	***V***	***1.0***	***Av***
24599	53.85	32.6	11.9	31.25	20.0	0.00	47.10	74.00	-26.90	V	1.0	P
24599	***42.57***	***32.6***	***11.9***	***31.25***	***20.0***	***0.00***	***35.82***	***54.00***	***-18.18***	***V***	***1.0***	***Av***

Total data #: 18
V.2f

Peak: RBW=VBW=1MHz
Average: RBW=1MHz, VBW=10Hz

Other = High Pass Filter
Distance = 20*log(dm/ds)

000821f5

Tom & Thu

Breezecom
AN1709 17.5 dB Sectoral Antenna
EUT
Out of Band Emissions
MID channel Fundamental 2.46GHz

Freq.	Reading	AF	Closs	Pre-amp	Dist	Other	Level	Limit	Margin	Pol	Height	Mark
(MHz)	(dBuV)	(dB)	(dB)	(dB)	dB	dB	(dBuV/m)	FCC_B	(dB)	(H/V)	(Meter)	(P/Q/A)
49199	46.86	32.9	4.2	31.25	20.0	1.00	33.71	74.00	-40.29	H	1.0	P
49199	***39.21***	***32.9***	***4.2***	***31.25***	***20.0***	***1.00***	***26.06***	***54.00***	***-27.94***	***H***	***1.0***	***Av***
73799	51.44	37.0	4.9	31.25	20.0	1.00	43.09	74.00	-30.91	V	1.0	P
73799	***46.11***	***37.0***	***4.9***	***31.25***	***20.0***	***1.00***	***37.76***	***54.00***	***-16.24***	***V***	***1.0***	***Av***
98398	45.10	37.8	6.3	31.25	20.0	0.00	37.95	74.00	-36.05	V	1.0	P
98398	***32.00***	***37.8***	***6.3***	***31.25***	***20.0***	***0.00***	***24.85***	***54.00***	***-29.15***	***V***	***1.0***	***Av***
12299	45.20	39.2	6.7	31.25	20.0	1.00	40.85	74.00	-33.15	V	1.0	P
12299	***33.00***	***39.2***	***6.7***	***31.25***	***20.0***	***1.00***	***28.65***	***54.00***	***-25.35***	***V***	***1.0***	***Av***
14759	48.41	39.0	7.7	31.25	20.0	1.00	44.86	74.00	-29.14	V	1.0	P
14759	***36.80***	***39.0***	***7.7***	***31.25***	***20.0***	***1.00***	***33.25***	***54.00***	***-20.75***	***V***	***1.0***	***Av***
17219	48.45	45.0	9.1	31.25	20.0	0.00	51.30	74.00	-22.70	V	1.0	P
17219	***38.20***	***45.0***	***9.1***	***31.25***	***20.0***	***0.00***	***41.05***	***54.00***	***-12.95***	***V***	***1.0***	***Av***
19679	51.64	32.3	10.0	31.25	20.0	1.00	43.69	74.00	-30.31	V	1.0	P
19679	***40.50***	***32.3***	***10.0***	***31.25***	***20.0***	***1.00***	***32.55***	***54.00***	***-21.45***	***V***	***1.0***	***Av***
22139	53.95	32.5	11.2	31.25	20.0	1.00	47.40	74.00	-26.60	V	1.0	P
22139	***43.10***	***32.5***	***11.2***	***31.25***	***20.0***	***1.00***	***36.55***	***54.00***	***-17.45***	***V***	***1.0***	***Av***
24599	53.82	32.6	11.9	31.25	20.0	0.00	47.07	74.00	-26.93	V	1.0	P
24599	***42.56***	***32.6***	***11.9***	***31.25***	***20.0***	***0.00***	***35.81***	***54.00***	***-18.19***	***V***	***1.0***	***Av***

Total data #: 18
V.2f

Peak: RBW=VBW=1MHz
Average: RBW=1MHz, VBW=10Hz

Other = High Pass Filter
Distance = 20*log(dm/ds)

001116CB

Thu

Breezecom
UNI-24 dBi antenna
EUT
Harmonic's Measurement
Lowest Channel set @ 1, Fundamental 2.401GHz

Freq.	Reading	AF	Closs	Pre-amp	Dist	Other	Level	Limit	Margin	Pol	Height	Mark
(MHz)	(dBuV)	(dB)	(dB)	(dB)	dB	dB	(dBuV/m)	FCC_B	(dB)	(H/V)	(Meter)	(P/Q/A)
4802	60.50	32.9	4.2	31.25	9.5	1.00	57.85	74.00	-16.15	V	1.0	P
4802	***56.20***	***32.9***	***4.2***	***31.25***	***9.5***	***1.00***	***53.55***	***54.00***	***-0.45***	***V***	***1.0***	***Av***
7203	45.28	37.0	4.9	31.25	9.5	1.00	47.43	74.00	-26.57	V	1.0	P
7203	***32.80***	***37.0***	***4.9***	***31.25***	***9.5***	***1.00***	***34.95***	***54.00***	***-19.05***	***V***	***1.0***	***Av***
9604	43.06	37.8	6.3	31.25	20.0	0.00	35.91	74.00	-38.09	V	1.0	P
9604	***32.50***	***37.8***	***6.3***	***31.25***	***20.0***	***0.00***	***25.35***	***54.00***	***-28.65***	***V***	***1.0***	***Av***
12000	44.95	39.2	6.7	31.25	20.0	1.00	40.60	74.00	-33.40	V	1.0	P
12000	***34.90***	***39.2***	***6.7***	***31.25***	***20.0***	***1.00***	***30.55***	***54.00***	***-23.45***	***V***	***1.0***	***Av***
14410	48.32	39.0	7.7	31.25	20.0	1.00	44.77	74.00	-29.23	V	1.0	P
14410	***36.80***	***39.0***	***7.7***	***31.25***	***20.0***	***1.00***	***33.25***	***54.00***	***-20.75***	***V***	***1.0***	***Av***
16807	48.66	45.0	9.1	31.25	20.0	0.00	51.51	74.00	-22.49	V	1.0	P
16807	***38.30***	***45.0***	***9.1***	***31.25***	***20.0***	***0.00***	***41.15***	***54.00***	***-12.85***	***V***	***1.0***	***Av***
19210	51.50	32.3	10.0	31.25	20.0	1.00	43.55	74.00	-30.45	V	1.0	P
19210	***40.20***	***32.3***	***10.0***	***31.25***	***20.0***	***1.00***	***32.25***	***54.00***	***-21.75***	***V***	***1.0***	***Av***
21610	53.69	32.5	11.2	31.25	20.0	1.00	47.14	74.00	-26.86	V	1.0	P
21610	***43.20***	***32.5***	***11.2***	***31.25***	***20.0***	***1.00***	***36.65***	***54.00***	***-17.35***	***V***	***1.0***	***Av***
24000	53.76	32.6	11.9	31.25	20.0	0.00	47.01	74.00	-26.99	V	1.0	P
24000	***42.20***	***32.6***	***11.9***	***31.25***	***20.0***	***0.00***	***35.45***	***54.00***	***-18.55***	***V***	***1.0***	***Av***

Total data #: 18
V.2f

Peak: RBW=VBW=1MHz
Average: RBW=1MHz, VBW=10Hz

Other = High Pass Filter
Distance = 20*log(dm/ds)

001116CB

Tom & Thu

Breezecom

UNI-24 Antenna

EUT

Harmonic's Measurement

MID channel, Fundamental 2.46GHz

Freq.	Reading	AF	Closs	Pre-amp	Dist	Other	Level	Limit	Margin	Pol	Height	Mark
(MHz)	(dBuV)	(dB)	(dB)	(dB)	dB	dB	(dBuV/m)	FCC_B	(dB)	(H/V)	(Meter)	(P/Q/A)
4920	53.65	32.9	4.2	31.25	9.5	1.00	51.00	74.00	-23.00	V	1.0	P
4920	***49.00***	***32.9***	***4.2***	***31.25***	***9.5***	***1.00***	***46.35***	***54.00***	***-7.65***	***V***	***1.0***	***Av***
7380	47.87	37.0	4.9	31.25	9.5	1.00	50.02	74.00	-23.98	V	1.0	P
7380	***35.70***	***37.0***	***4.9***	***31.25***	***9.5***	***1.00***	***37.85***	***54.00***	***-16.15***	***V***	***1.0***	***Av***
9840	43.50	37.8	6.3	31.25	20.0	0.00	36.35	74.00	-37.65	V	1.0	P
9840	***32.30***	***37.8***	***6.3***	***31.25***	***20.0***	***0.00***	***25.15***	***54.00***	***-28.85***	***V***	***1.0***	***Av***
12299	45.10	39.2	6.7	31.25	20.0	1.00	40.75	74.00	-33.25	V	1.0	P
12299	***33.50***	***39.2***	***6.7***	***31.25***	***20.0***	***1.00***	***29.15***	***54.00***	***-24.85***	***V***	***1.0***	***Av***
14759	48.50	39.0	7.7	31.25	20.0	1.00	44.95	74.00	-29.05	V	1.0	P
14759	***36.80***	***39.0***	***7.7***	***31.25***	***20.0***	***1.00***	***33.25***	***54.00***	***-20.75***	***V***	***1.0***	***Av***
17219	48.51	45.0	9.1	31.25	20.0	0.00	51.36	74.00	-22.64	V	1.0	P
17219	***38.40***	***45.0***	***9.1***	***31.25***	***20.0***	***0.00***	***41.25***	***54.00***	***-12.75***	***V***	***1.0***	***Av***
19679	51.78	32.3	10.0	31.25	20.0	1.00	43.83	74.00	-30.17	V	1.0	P
19679	***41.00***	***32.3***	***10.0***	***31.25***	***20.0***	***1.00***	***33.05***	***54.00***	***-20.95***	***V***	***1.0***	***Av***
22139	53.85	32.5	11.2	31.25	20.0	1.00	47.30	74.00	-26.70	V	1.0	P
22139	***43.20***	***32.5***	***11.2***	***31.25***	***20.0***	***1.00***	***36.65***	***54.00***	***-17.35***	***V***	***1.0***	***Av***
24599	53.62	32.6	11.9	31.25	20.0	0.00	46.87	74.00	-27.13	V	1.0	P
24599	***42.53***	***32.6***	***11.9***	***31.25***	***20.0***	***0.00***	***35.78***	***54.00***	***-18.22***	***V***	***1.0***	***Av***

Total data #: 18
V.2f

Peak: RBW=VBW=1MHz
Average: RBW=1MHz, VBW=10Hz

Other = High Pass Filter
Distance = 20*log(dm/ds)

AC Line Conducted Emissions
Test Requirement: 15.107, 15.207

Measurement Equipment Used:

Rohde & Schwarz EMI Receiver ESHS-20
Fischer Custom Communication LISN, FCC-LISN-50/250-25-2

Test Procedure

1. The EUT was placed on a wooden table 40 cm from a vertical ground plane and approximately 80 cm above the horizontal ground plane on the floor. The EUT was set to transmit in normally.
2. Line conducted data was recorded for both NEUTRAL and HOT lines.

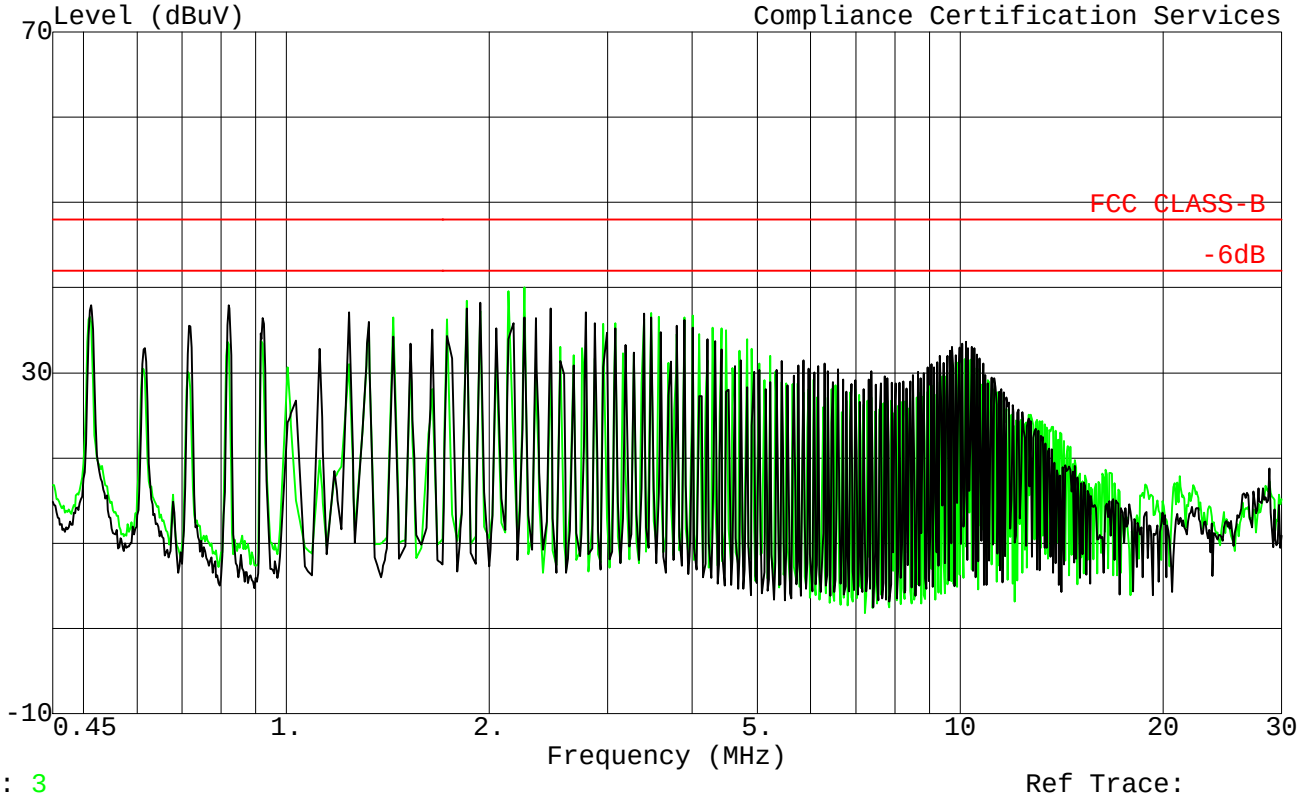
Test Results

Refer to attached graph and tabulated data sheets. Data was from previously tested indoor unit identical to the model used for FCC ID: LKT-IF-24.

COMPLIANCE Engineering Service, Inc.
FCC,VCCI,CISPR,CE
UL,CSA,TUV

1366 Bordeaux Dr.
Sunnyvale, CA 94089-1005 USA
Tel: (408) 752-8166
Fax: (408) 752-8168

Data#: 7 File#: JUAN.EMI Date: 05-30-2000 Time: 16:44:57



Trace: 3 Ref Trace:

Project No.	:	
Report No.	:	000529lc
Test Engr	:	JUAN MARTINEZ
Company	:	Breezecom
EUT	:	2.5 GHz transmitter
Model	:	(M/N: SU-i-1d1v-2.5a) INDOOR unit
Test Configuration	:	EUT ONLY
Type of Test	:	FCC CLASS B
Mode of Operation	:	RECEIVING
	:	PEAK: L1(GREEN), L2(BLACK)
	:	115Vac, 60Hz

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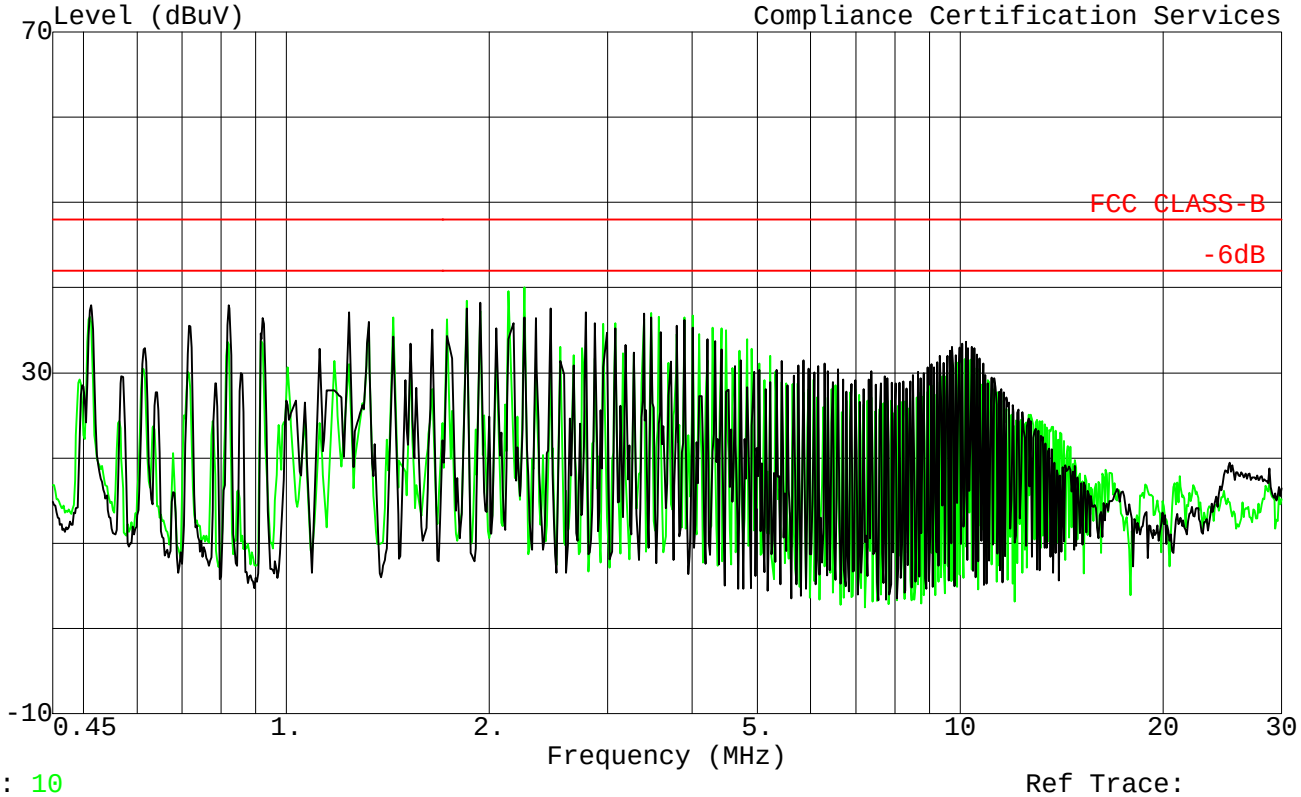
Data#: 14 File#: JUAN.EMI Date: 05-30-2000 Time: 16:44:57



Trace: 10 Ref Trace:

Project No. : 00u0??
Report No. : 000529lc
Test Engr : JUAN MARTINEZ
Company : Breezecom
EUT : 2.5GHz TX (M/N: BS-AU-2.5a) INDOOR
Model : / (M/N: AU-RE-2.5a) OUTDOOR
Test Configuration: EUT ONLY
Type of Test : FCC CLASS B
Mode of Operation : RECEIVING
: PEAK: L1(GREEN), L2(BLACK)
: 115Vac, 60Hz

Minimum 20 dB Bandwidth for FHSS
Test Requirement: 15.247

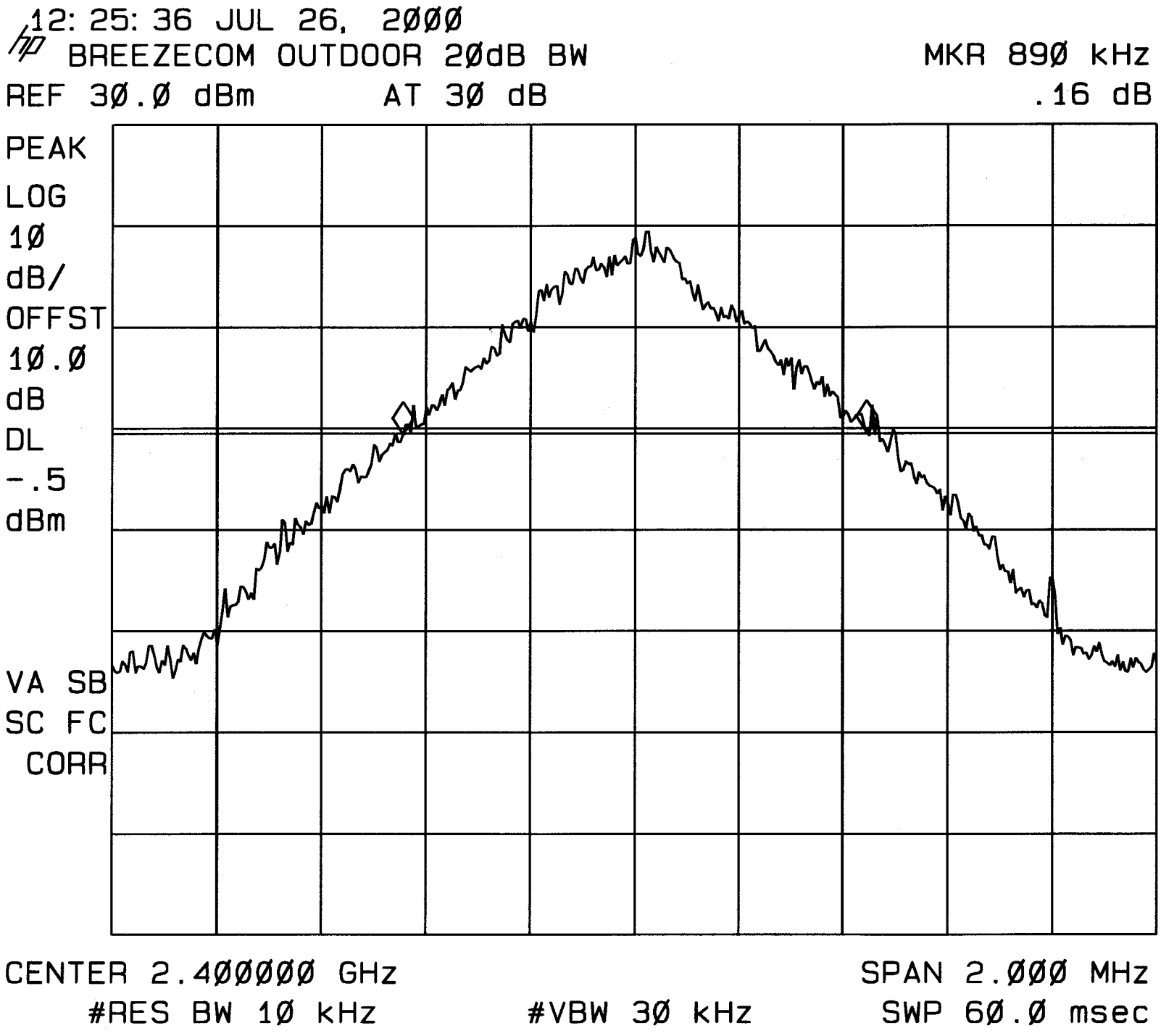
Measurement Equipment Used:

HP 8593EM Spectrum Analyzer
6' length low loss coaxial cable

Test Procedures

The EUT was configured on a test bench. The EUT's hopping function was stopped, transmission was continuous at 2.400 GHz (LOW channel). While the transmitter broadcast a steady stream of digital data, the analyzer MAX HOLD function was used to capture the envelope of the transmission occupied bandwidth.

Test Results: Refer to attached spectrum analyzer charts. Data taken with RES BW of 10 kHz shows 20 dB BW of approximately 890 kHz, below the 1 MHz limit in the Rules.


12: 25: 36 JUL 26, 2ØØØ
BREEZECOM OUTDOOR 2ØdB BW
MKR 89Ø kHz
REF 3Ø.Ø dBm
AT 3Ø dB
.16 dB
PEAK
LOG
1Ø
dB/
OFFST
1Ø.Ø
dB
DL
-.5
dBm
VA SB
SC FC
CORR
CENTER 2.4ØØØØØ GHz
SPAN 2.ØØØ MHz
#RES BW 1Ø kHz
#VBW 3Ø kHz
SWP 6Ø.Ø msec

RF Power Output
Test Requirement: 15.247

Measurement Equipment Used:

HP 8593EM Spectrum Analyzer
2 ft length low loss A coaxial RF cable

Test Procedures

1. The EUT was configured on a test bench. The cable was connected between the EUT antenna port and the spectrum analyzer input port.

The EUT's hopping function was stopped, transmission was continuous at the LOW channel. While the transmitter broadcast a steady stream of digital data, the analyzer MAX HOLD function was used to capture the envelope of the transmission.

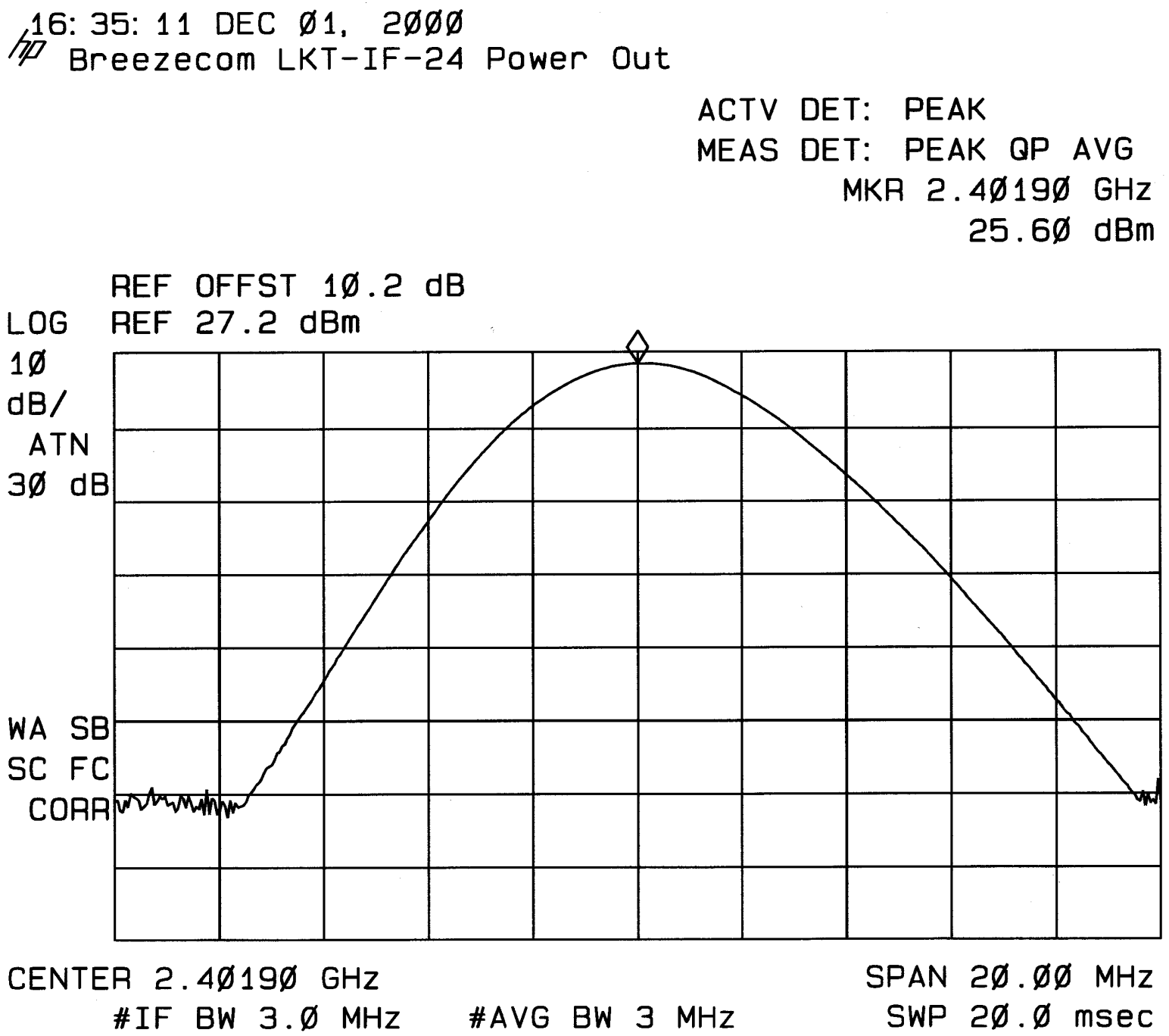
2. The process in (1) was repeated for MID channel and HIGH channel.

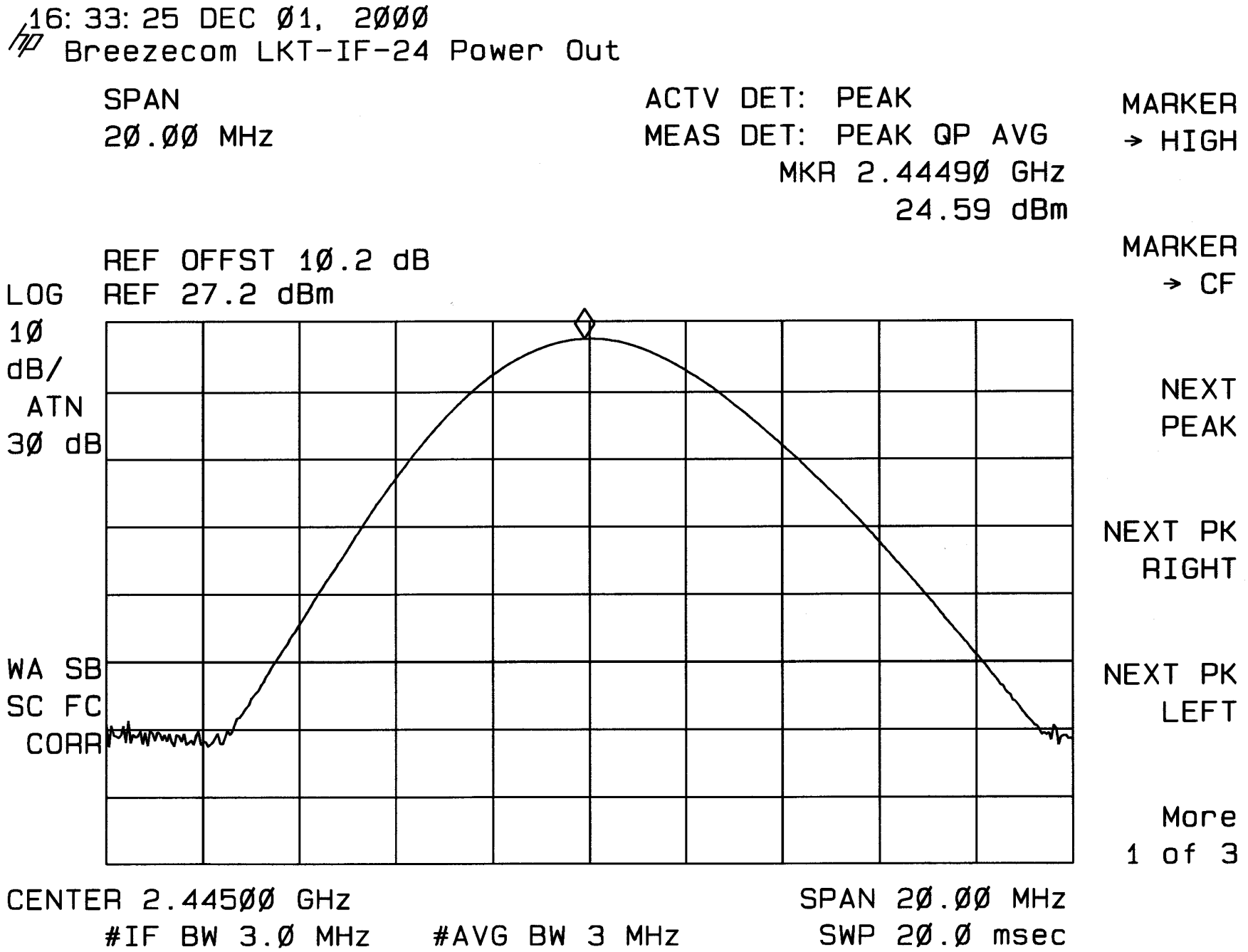
Test Results

Power level readings converted to dBm are shown below. Refer also to spectrum analyzer graphs. Reference level offset corrects for external attenuation and cable loss.

Channel	Frequency, MHz	Output Power, dBm	Limit, dBm
Low	2401.995	25.6	30.0
Mid	2445.0	24.6	30.0
High	2479.95	25.1	30.0

Maximum output power output is within 0.4 dBm of design maximum 26 dBm.

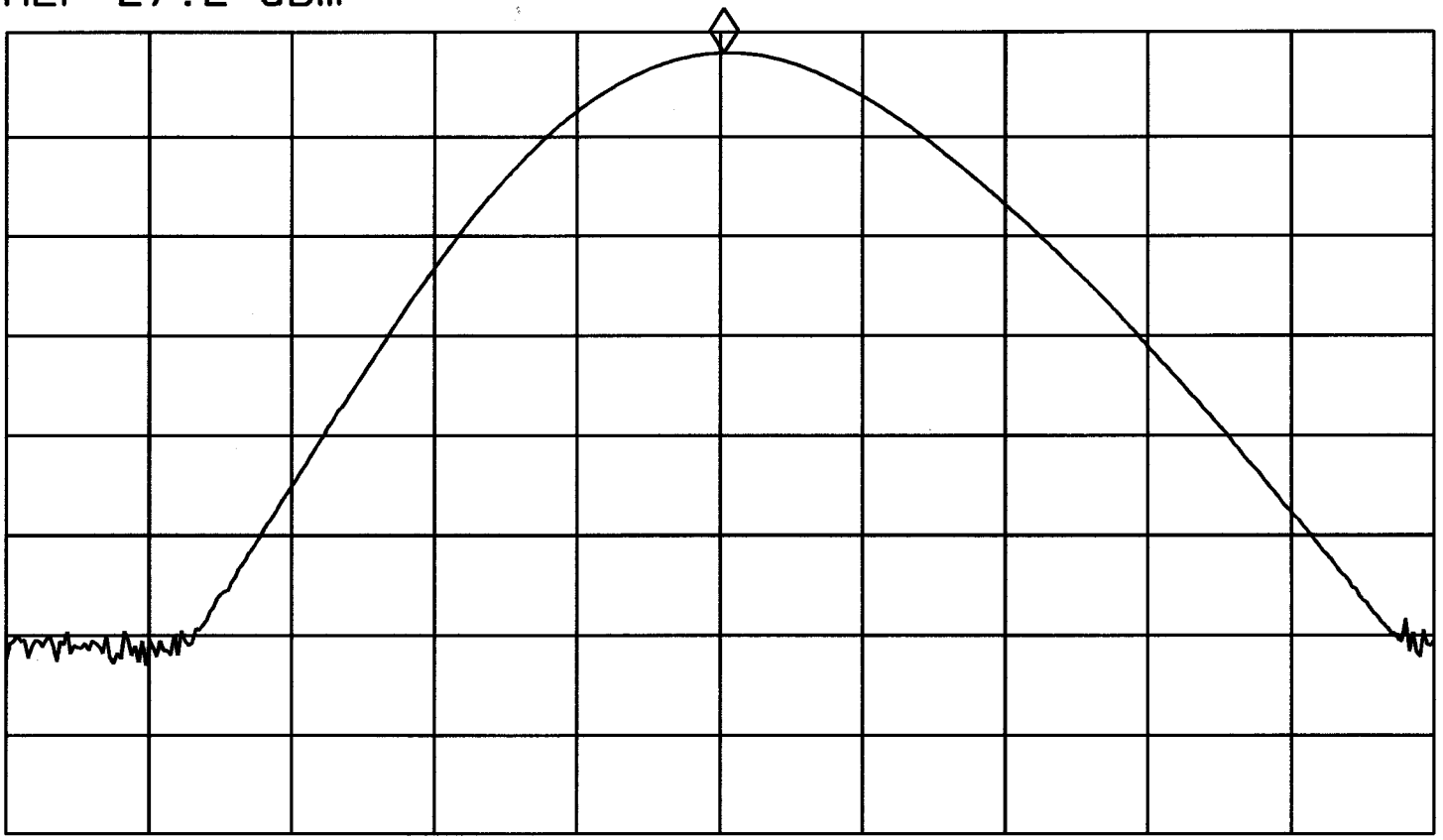

16: 35: 11 DEC Ø1, 2ØØØ
Breezecom LKT-IF-24 Power Out
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 2.4Ø19Ø GHz
25.6Ø dBm
REF OFFST 1Ø.2 dB
LOG REF 27.2 dBm
1Ø
dB/
ATN
3Ø dB
WA SB
SC FC
CORR
CENTER 2.4Ø19Ø GHz
SPAN 2Ø.ØØ MHz
#IF BW 3.Ø MHz
#AVG BW 3 MHz
SWP 2Ø.Ø msec


16: 33: 25 DEC Ø1, 2ØØØ
Breezecom LKT-IF-24 Power Out
SPAN
2Ø.ØØ MHz
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 2.4449Ø GHz
24.59 dBm
MARKER
→ HIGH
REF OFFST 1Ø.2 dB
LOG REF 27.2 dBm
1Ø
dB/
ATN
3Ø dB
MARKER
→ CF
NEXT
PEAK
NEXT PK
RIGHT
WA SB
SC FC
CORR
NEXT PK
LEFT
More
1 of 3
CENTER 2.445ØØ GHz
SPAN 2Ø.ØØ MHz
#IF BW 3.Ø MHz
#AVG BW 3 MHz
SWP 2Ø.Ø msec

16: 32: Ø7 DEC Ø1, 2ØØØ
Breezecom LKT-IF-24 Power Out

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 2.47995 GHz
25.1Ø dBm

REF OFFST 1Ø.2 dB
LOG REF 27.2 dBm
1Ø
dB/
ATN
3Ø dB



WA SB
SC FC
CORR

CENTER 2.4799Ø GHz
SPAN 2Ø.ØØ MHz
#IF BW 3.Ø MHz #AVG BW 3 MHz
SWP 2Ø.Ø msec

Out of Band Measurements
Test Requirement: 15.247

Measurement Equipment Used:

HP 8593EM Spectrum Analyzer
2 ft length low loss A coaxial RF cable

Test Procedure

1. The EUT was configured on a test bench. The cable was connected between the EUT antenna port and the spectrum analyzer input port.

Spectrum analyzer RES BW was set to 100 kHz. The EUT's hopping function was stopped, transmission was continuous at the LOW channel. While the transmitter broadcast a steady stream of digital data, the analyzer MAX HOLD function was used to capture the envelope of the transmission.

Readings were taken out to 10fo.

2. The process in (1) was repeated for MID channel and HIGH channel.

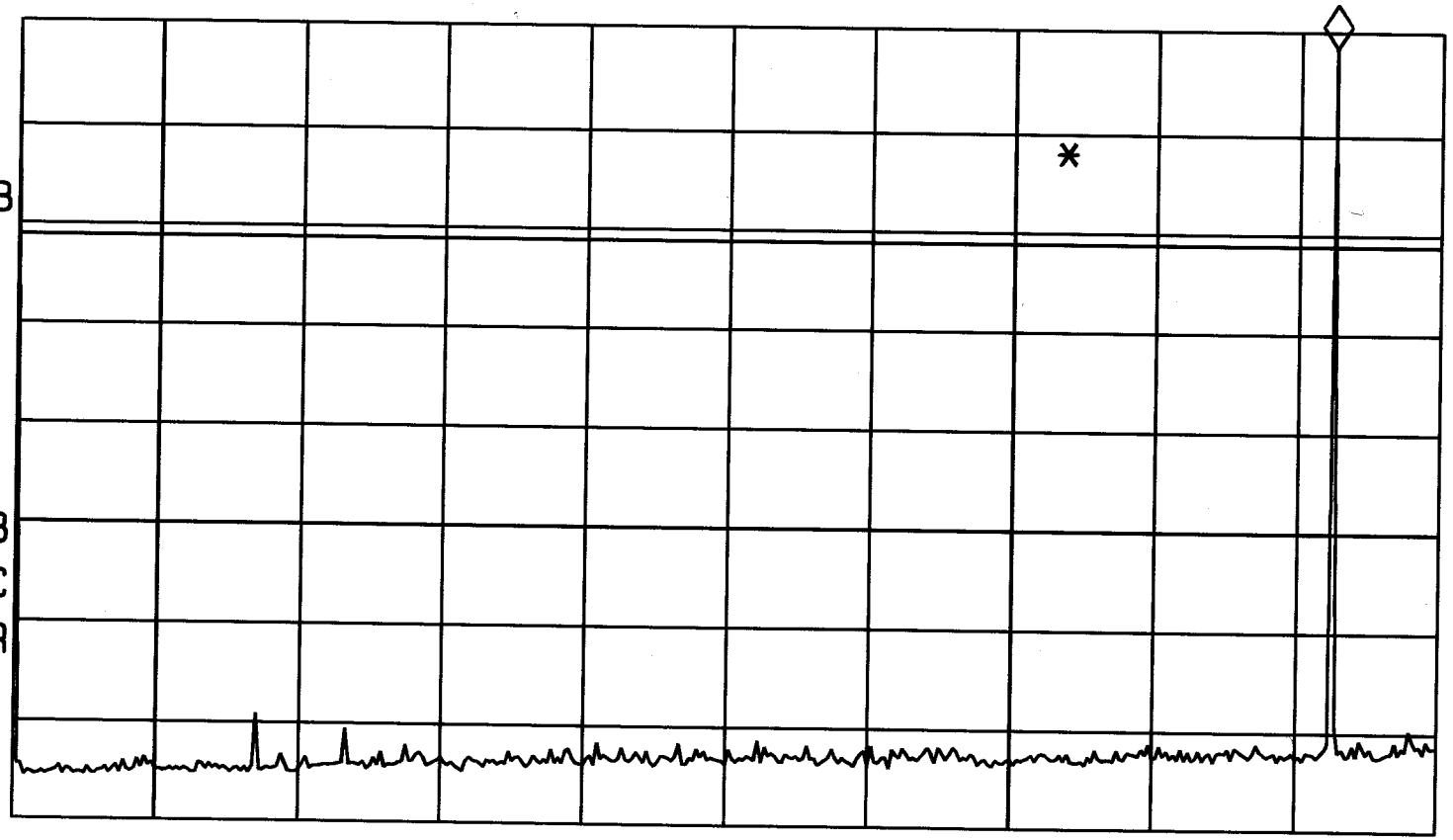
Test Results

Refer to attached data sheets. Data shows out of band emissions are suppressed well below the -20 dBc minimum required by the Rules.

16: 39: 16 DEC Ø1, 2ØØØ
Breezecom LKT-IF-24 Antenna Port Out LOW

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 2.4Ø5 GHz
25.57 dBm

REF OFFST 1Ø.2 dB
LOG REF 27.2 dBm
1Ø
dB/
ATN
3Ø dB



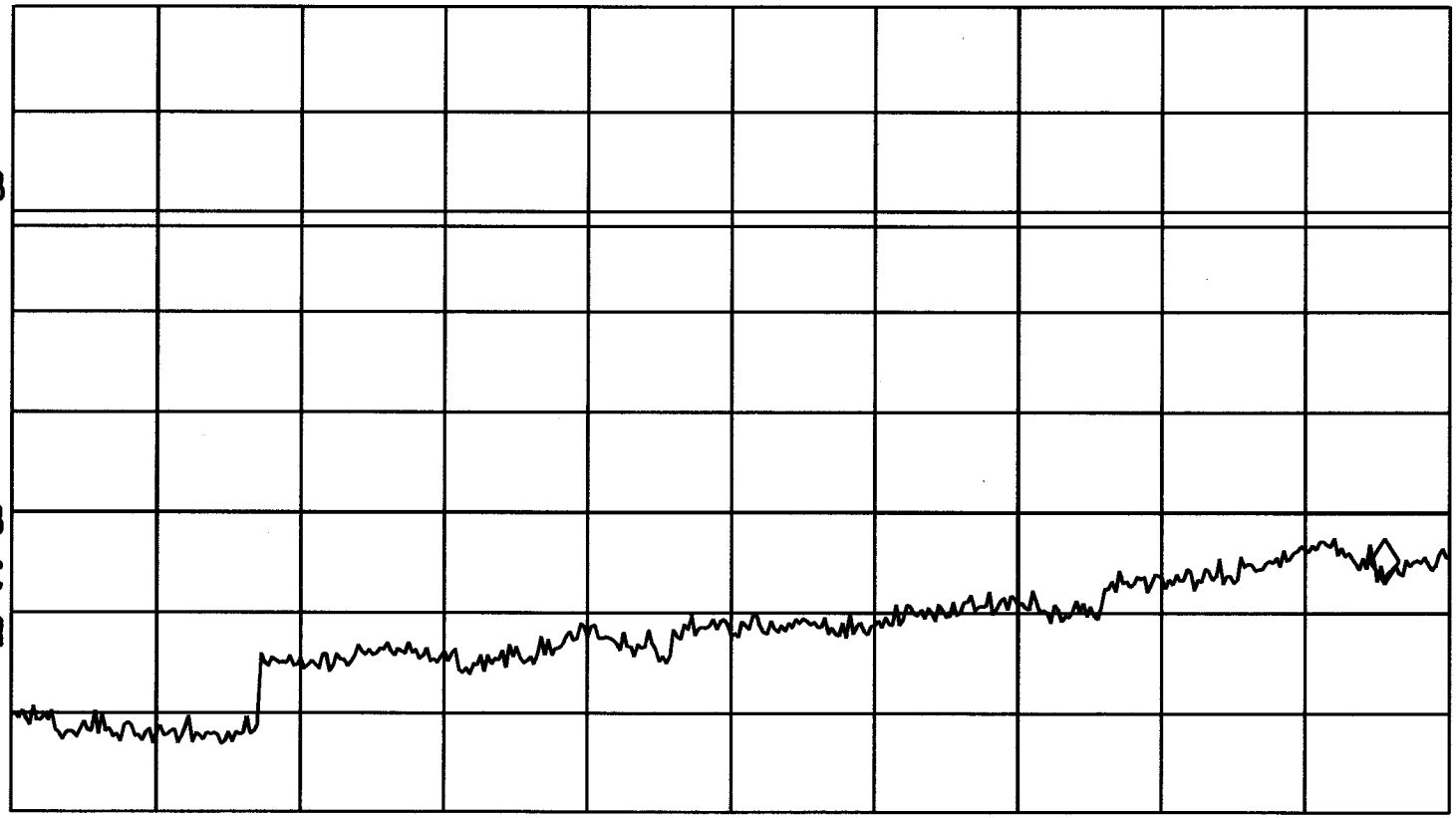
DL
5.7
dBm
VA SB
SC FC
CORR

START 1.Ø MHz
#IF BW 1ØØ kHz #AVG BW 1ØØ kHz
STOP 2.6ØØ GHz
SWP 78Ø msec

16: 44: 56 DEC Ø1, 2ØØØ
Breezecom LKT-IF-24 Antenna Port Out LOW

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 23.84 GHz
-29.96 dBm

REF OFFST 1Ø.2 dB
LOG REF 27.2 dBm



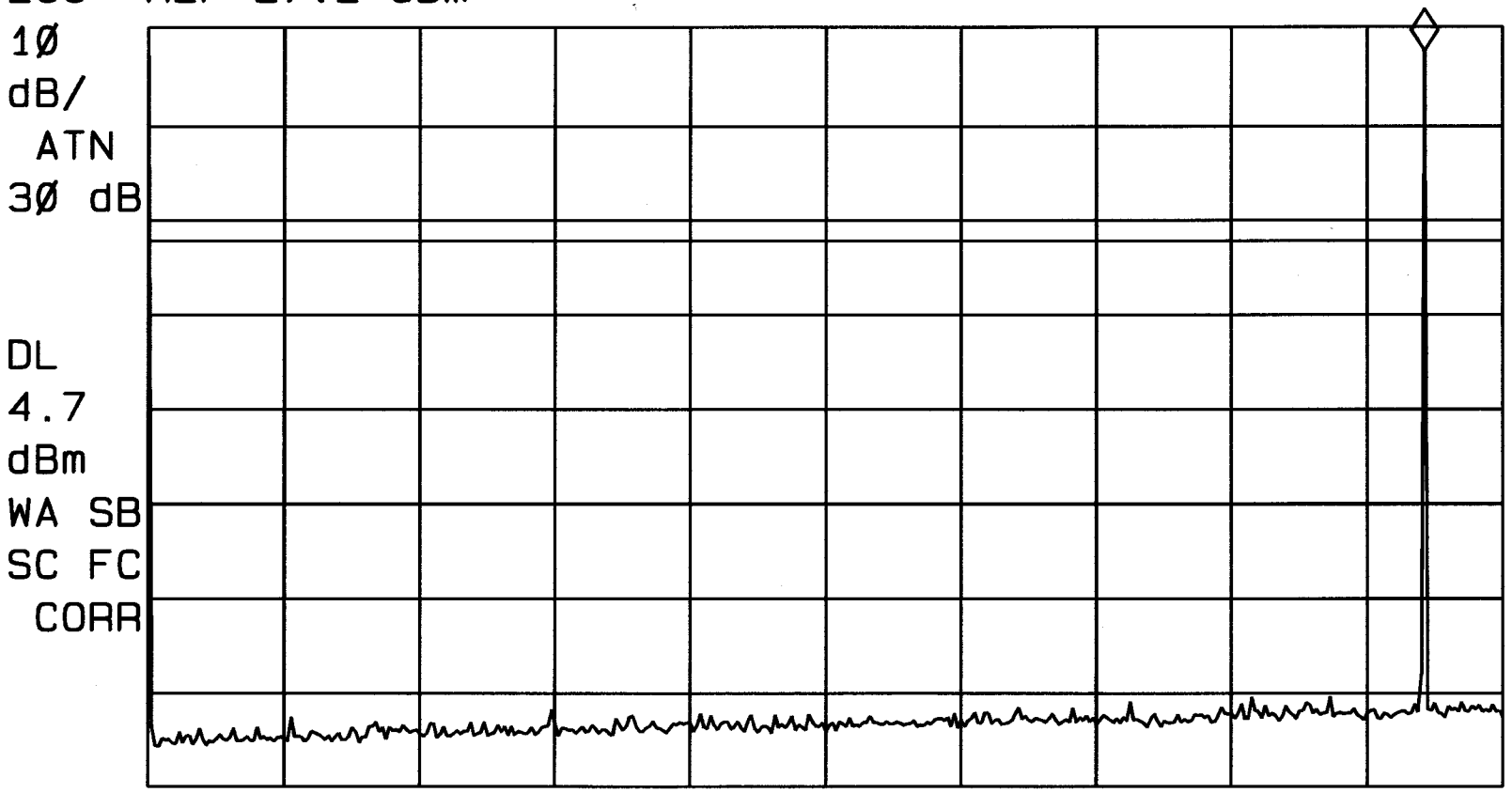
START 2.68 GHz
STOP 24.84 GHz
#IF BW 1ØØ kHz
#AVG BW 1ØØ kHz
SWP 6.65 sec

16: 40: 26 DEC 01, 2000

Breezecom LKT-IF-24 Antenna Port Out MID

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 2.451 GHz
24.66 dBm

REF OFFST 10.2 dB
LOG REF 27.2 dBm

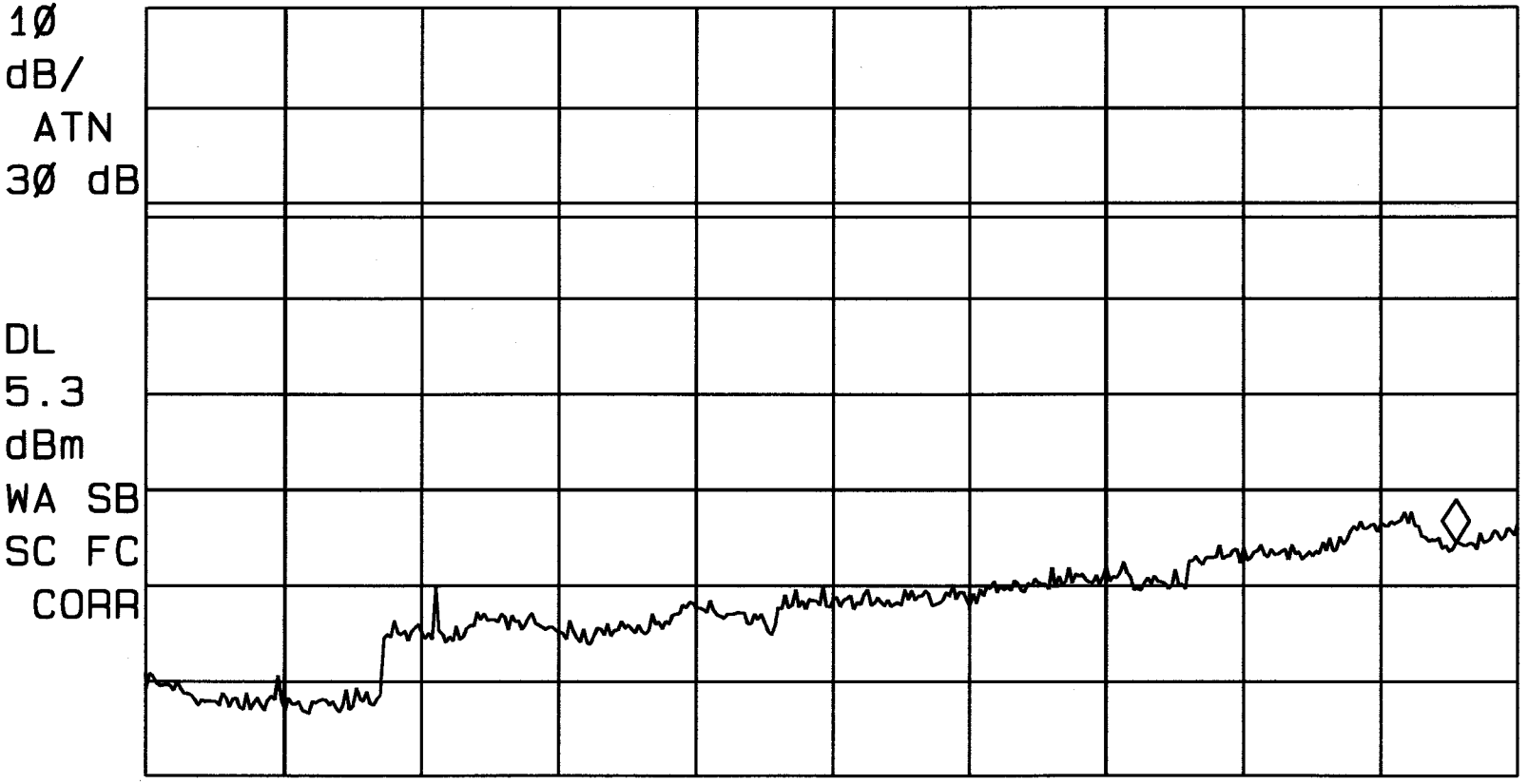


START 1.0 MHz
STOP 2.600 GHz
#IF BW 100 kHz
#AVG BW 100 kHz
SWP 780 msec

16: 43: Ø6 DEC Ø1, 2ØØØ
Breezecom LKT-IF-24 Antenna Port Out MID

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 23.84 GHz
-28.44 dBm

REF OFFST 1Ø.2 dB
LOG REF 27.2 dBm



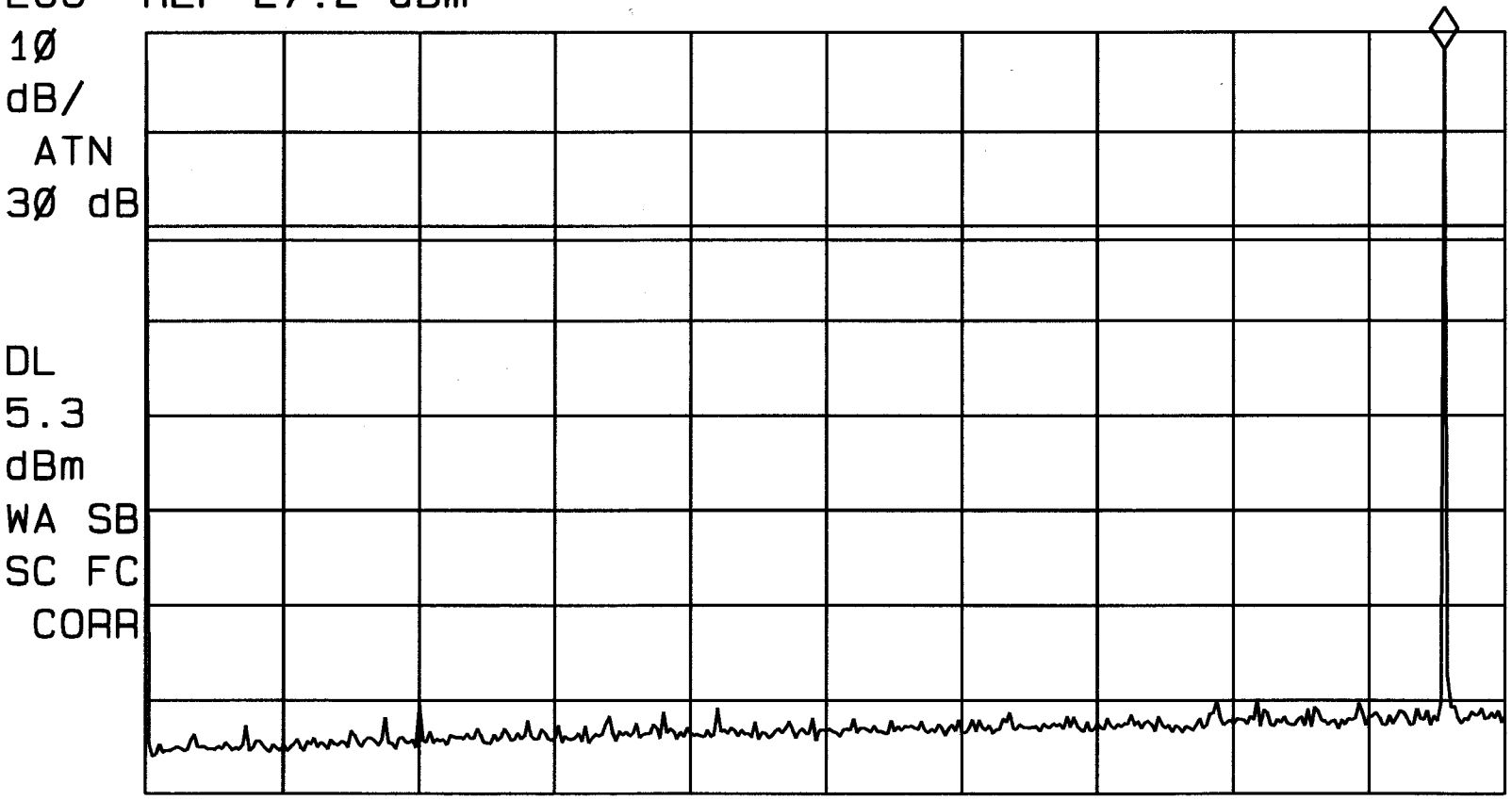
START 2.68 GHz
STOP 24.84 GHz
#IF BW 1ØØ kHz #AVG BW 1ØØ kHz SWP 6.65 sec

16: 41: 17 DEC Ø1, 2ØØØ
Breezecom LKT-IF-24 Antenna Port Out HIGH

DISPLAY LINE
5.3 dBm

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 2.483 GHz
25.36 dBm

REF OFFST 1Ø.2 dB
LOG REF 27.2 dBm



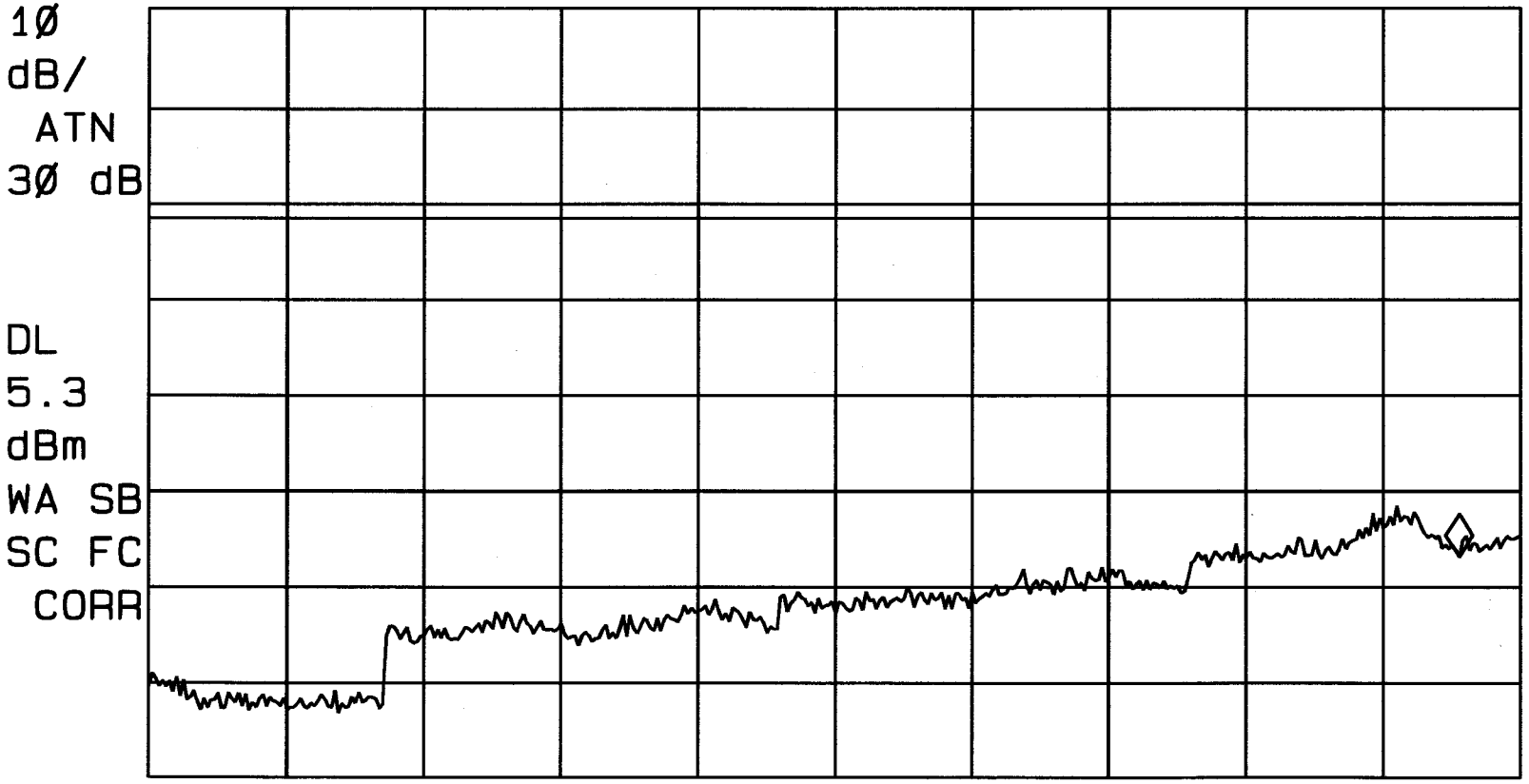
START 1.Ø MHz
STOP 2.6ØØ GHz
#IF BW 1ØØ kHz
#AVG BW 1ØØ kHz
SWP 78Ø msec

16: 42: 13 DEC Ø1, 2ØØØ

Breezecom LKT-IF-24 Antenna Port Out HIGH

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 23.84 GHz
-29.77 dBm

REF OFFST 1Ø.2 dB
LOG REF 27.2 dBm



START 2.68 GHz
STOP 24.84 GHz
#IF BW 1ØØ kHz #AVG BW 1ØØ kHz SWP 6.65 sec

Minimum Number of Hopping Channels
Test Requirement: 15.247(a)(1)(ii)

Measurement Equipment Used:

HP 8593EM Spectrum Analyzer
2 ft length low loss A coaxial RF cable

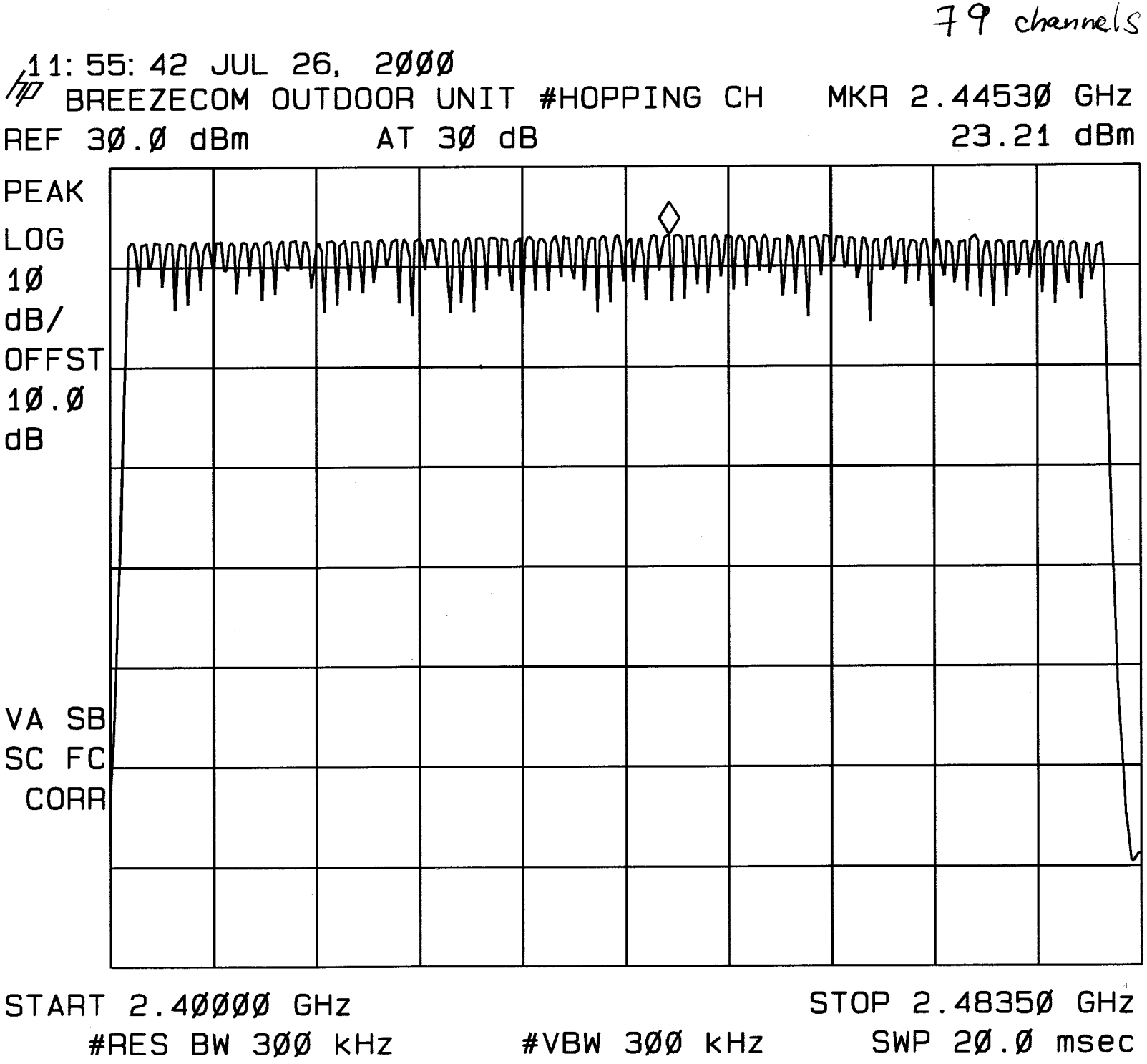
Test Procedure

The EUT was set to transmit in normal hopping mode. The spectrum analyzer was set to MAX HOLD and swept continuously for 5 - 10 minutes so as to capture all the hopping channels.

Test Results

A total of 79 hopping channels were counted. This corresponds to design. Refer to attached data sheet.

79 channels


11: 55: 42 JUL 26, 2ØØØ
BREEZECOM OUTDOOR UNIT #HOPPING CH
MKR 2.4453Ø GHz
REF 3Ø.Ø dBm
AT 3Ø dB
23.21 dBm
PEAK
LOG
1Ø
dB/
OFFST
1Ø.Ø
dB
VA SB
SC FC
CORR
START 2.4ØØØØ GHz
STOP 2.4835Ø GHz
#RES BW 3ØØ kHz
#VBW 3ØØ kHz
SWP 2Ø.Ø msec

Average Time of Channel Occupancy
Test Requirement: 15.247

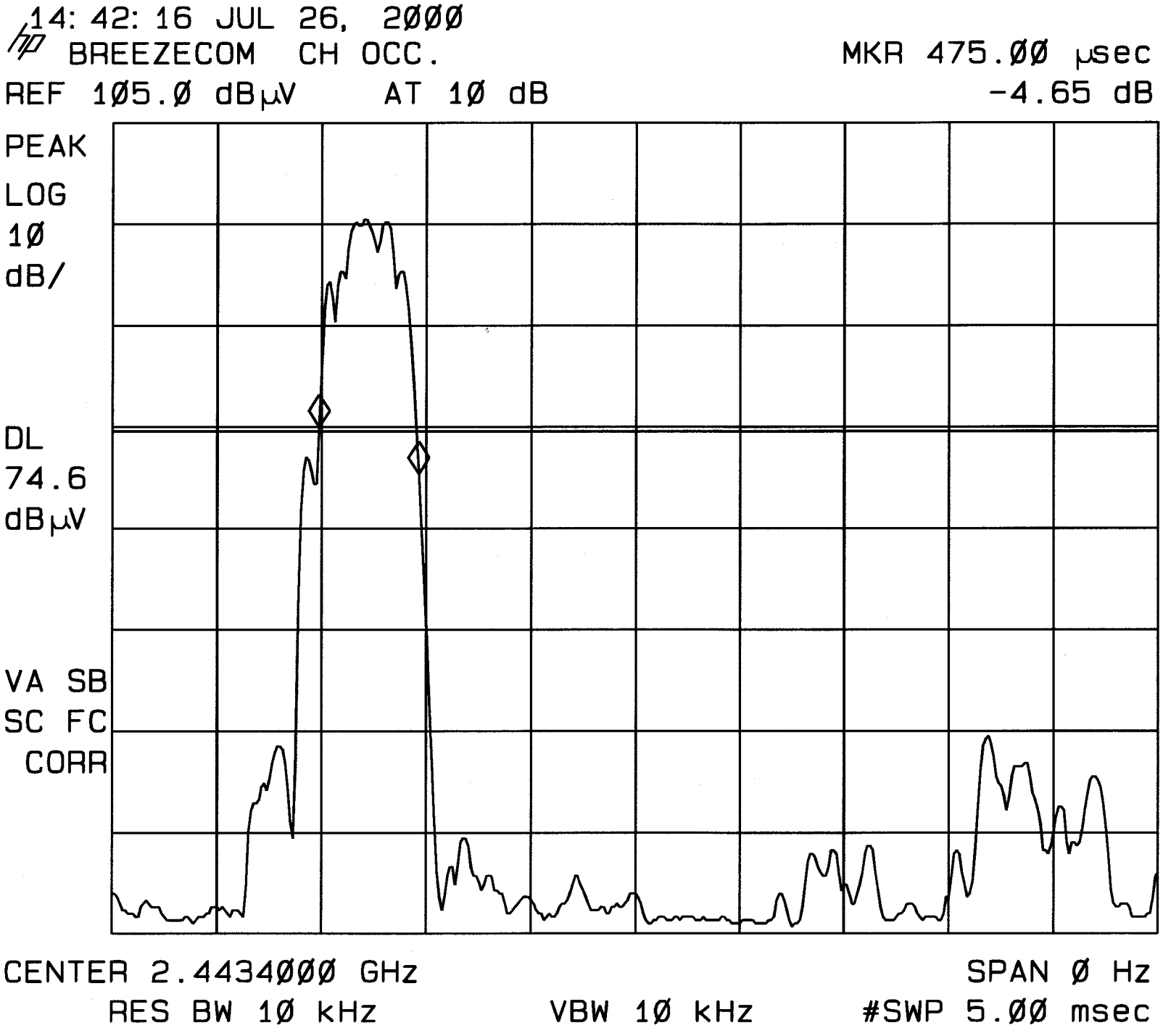
Measurement Equipment Used:

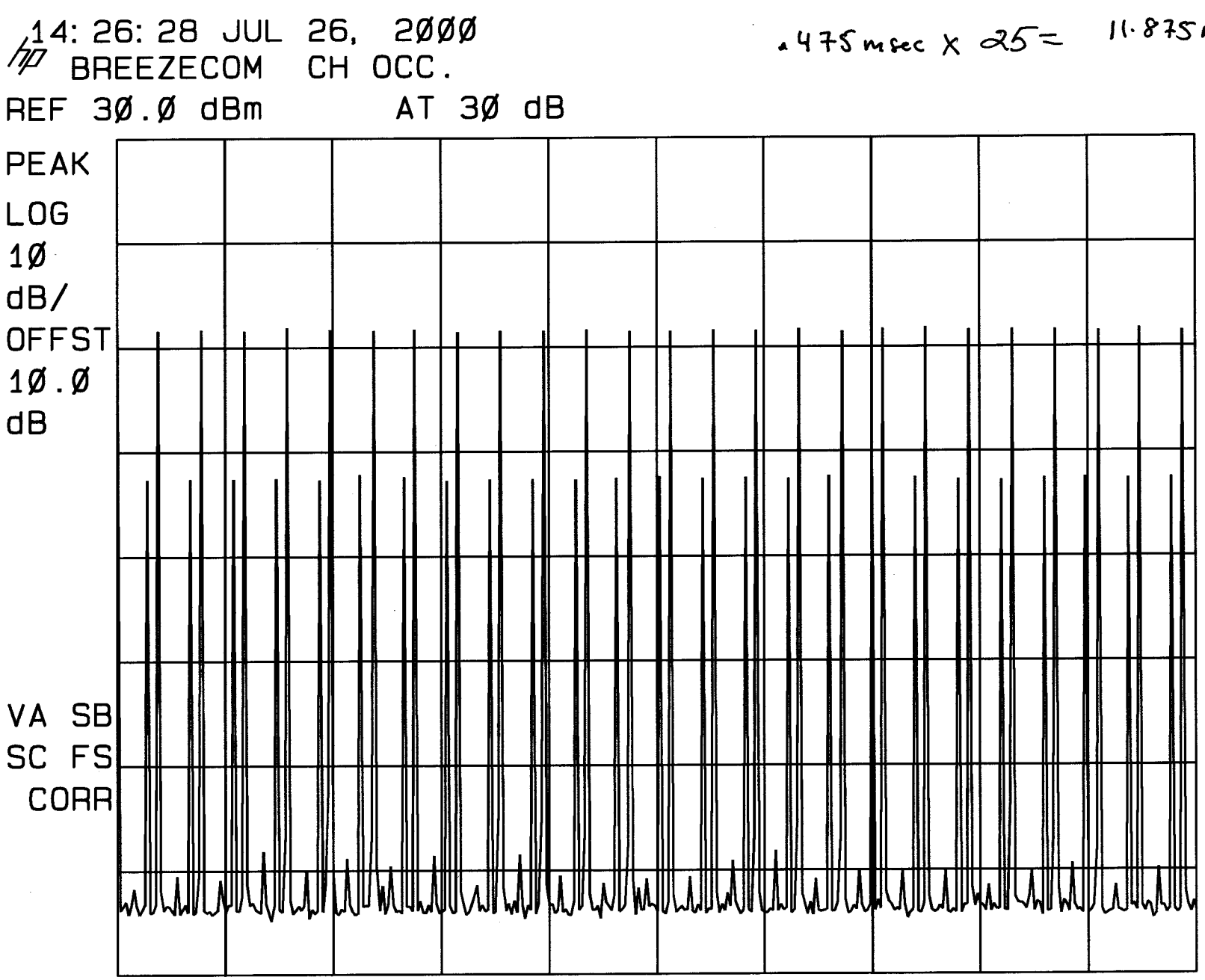
HP 8593EM Spectrum Analyzer
2 ft length low loss A coaxial RF cable

Test Procedure

1. The EUT was set to transmit in normal hopping mode.
2. The analyzer was center tuned to 2443.4 MHz. Analyzer frequency SPAN was set to ZERO SPAN. SWEEP TIME was set to 30 seconds, MAX HOLD function was engaged.
3. A total of 10 different 30 second sweeps were performed and the maximum time of channel occupancy was determined by the maximum number of transmissions detected in any 30 second period, times the duration of each transmission.

Test Results
Maximum channel occupancy time was determined to be .475msec x 25 sec = 11.9 msec, well below the 400 msec (0.4 sec) maximum allowed. Refer to attached spectrum analyzer charts.


14: 42: 16 JUL 26, 2000
BREEZECOM CH OCC.
MKR 475.00 µsec
REF 105.0 dBµV
AT 10 dB
-4.65 dB
PEAK
LOG
10
dB/
DL
74.6
dBµV
VA SB
SC FC
CORR
CENTER 2.4434000 GHz
SPAN 0 Hz
RES BW 10 kHz
VBW 10 kHz
#SWP 5.00 msec



.475 msec X 25 = 11.875 msec/30 sec