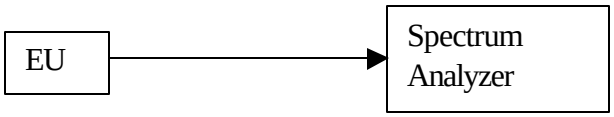
9.6 PEAK POWER SPECTRAL DENSITY

TEST SETUP

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak	☒ 3 kHz	☒ 3 kHz



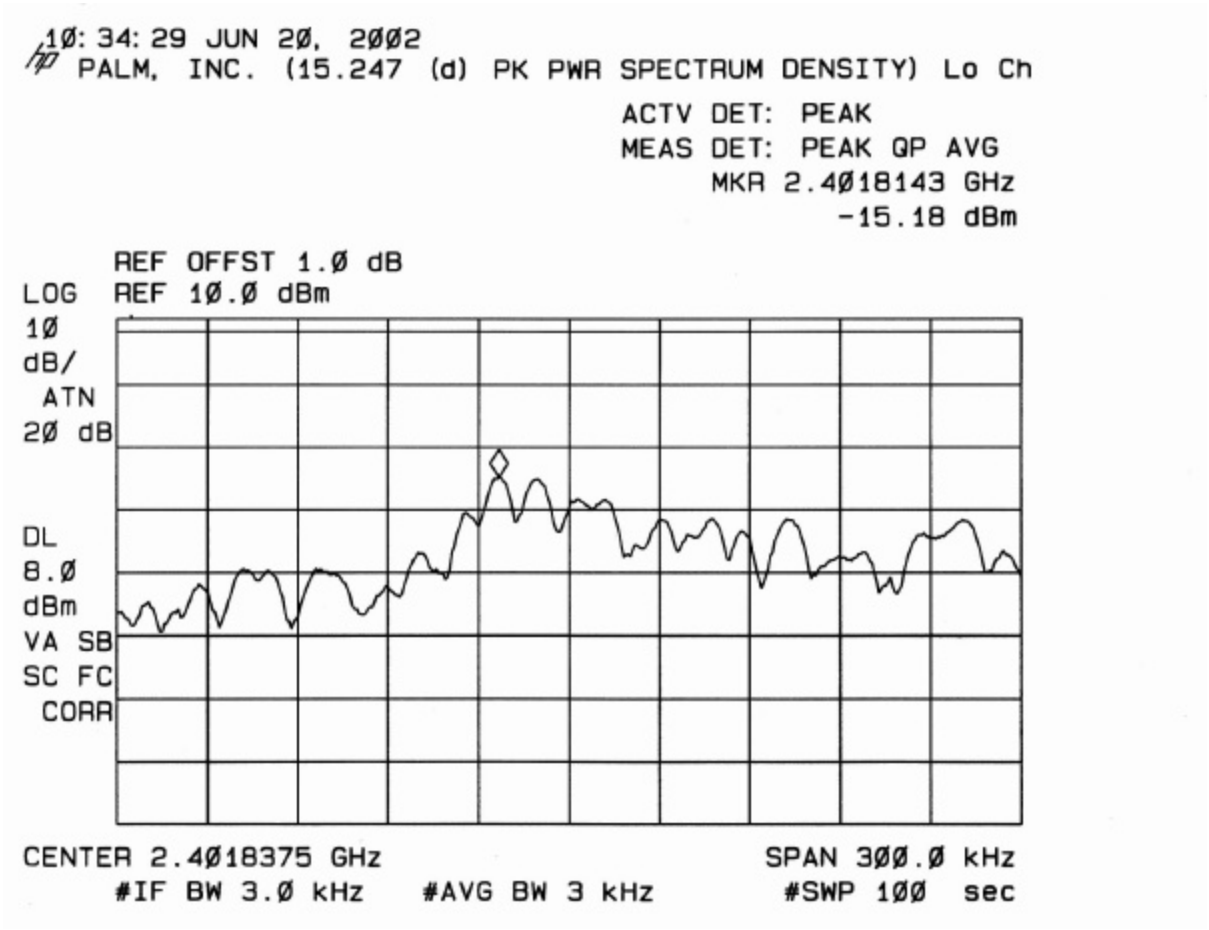
TEST PROCEDURE

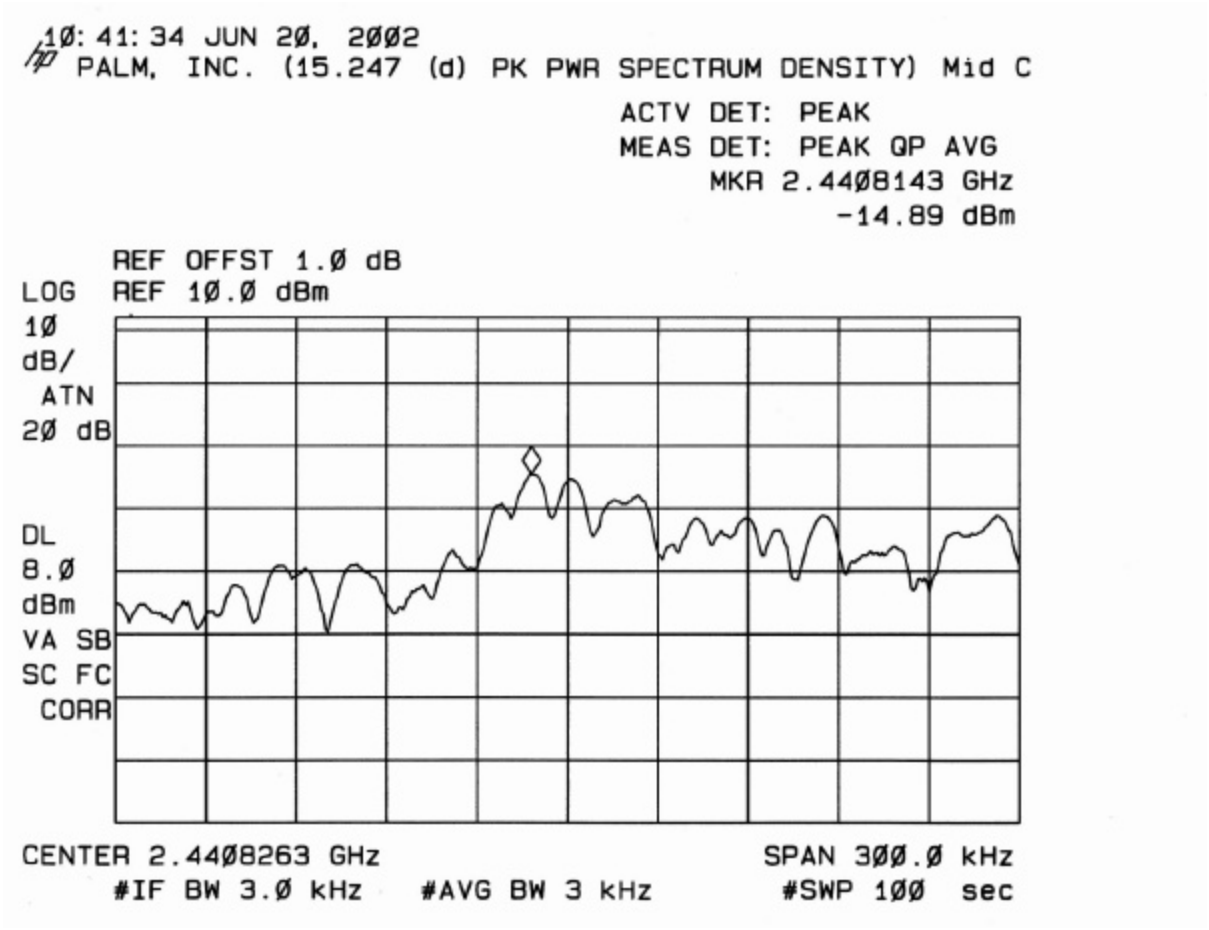
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 3 kHz VBW, set sweep time=span/3kHz. The power spectral density was measured and recorded.

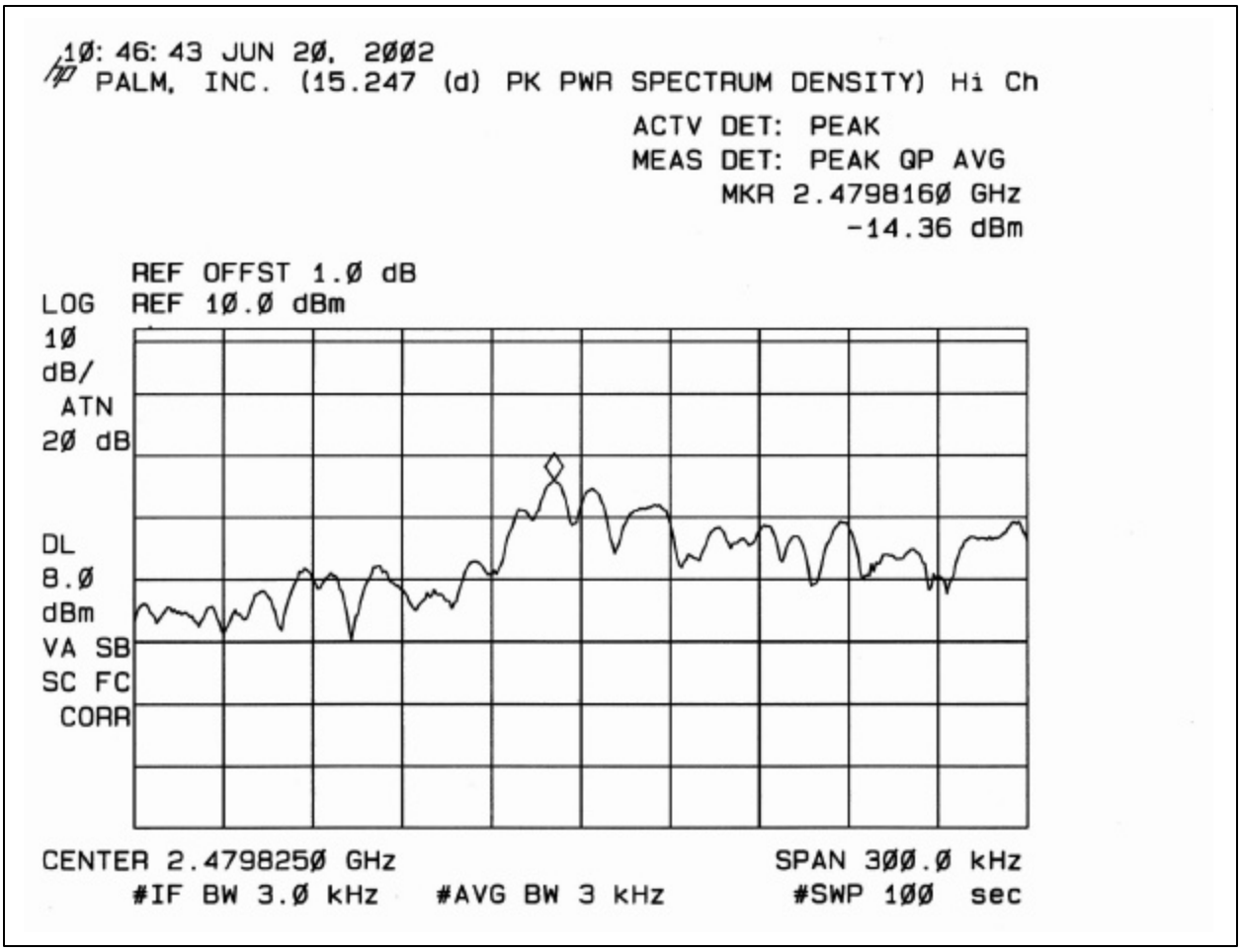
The sweep time is allowed to be longer than span/3KHz for a full response of the mixer in the spectrum analyzer.

Result:

No non-compliance noted. See plot below.





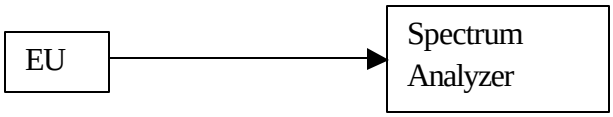


9.7 RESTRICTED BAND EDGE MEASUREMENT

TEST SETUP

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak ☐ Average	☒ 100 KHz ☐ 1 MHz	☒ 100 KHz ☐ 10 Hz



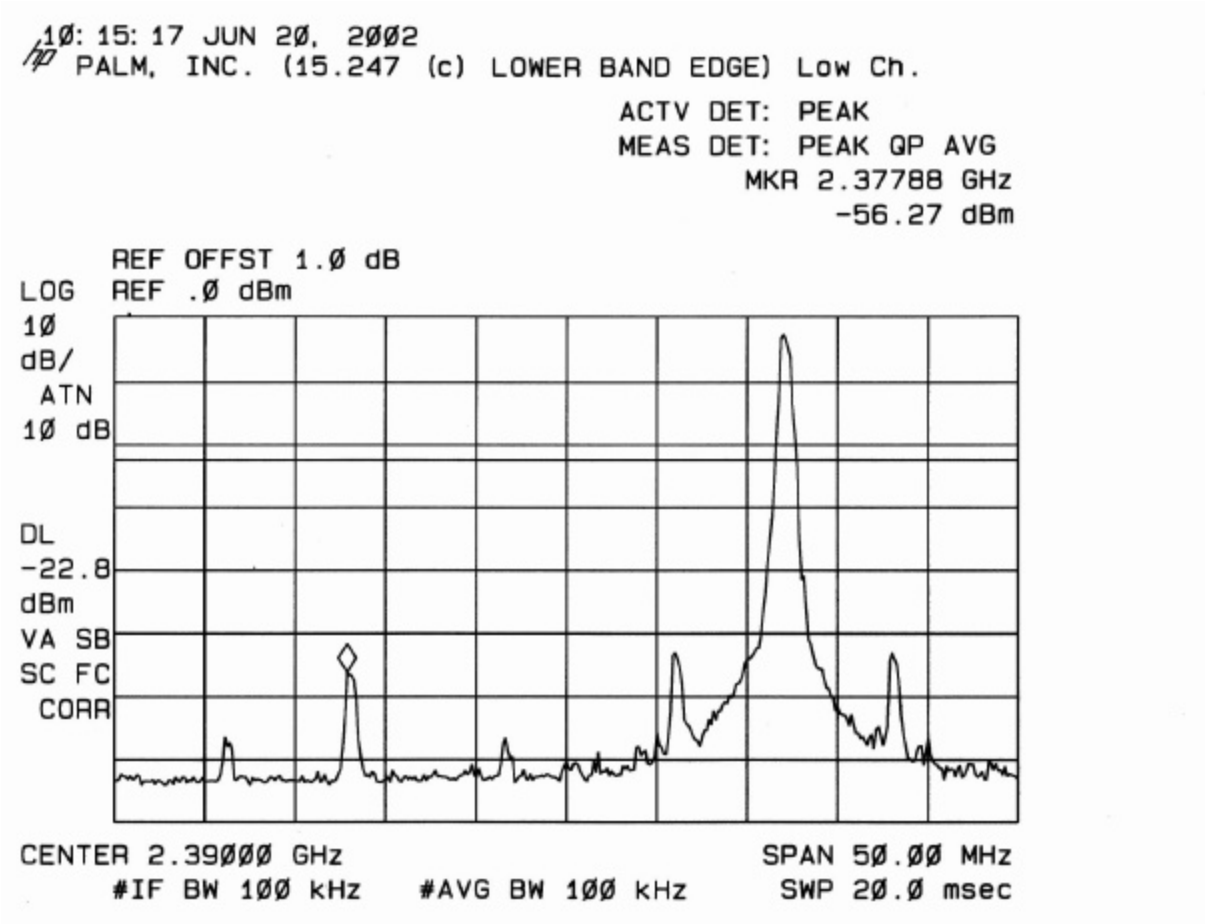
TEST PROCEDURE

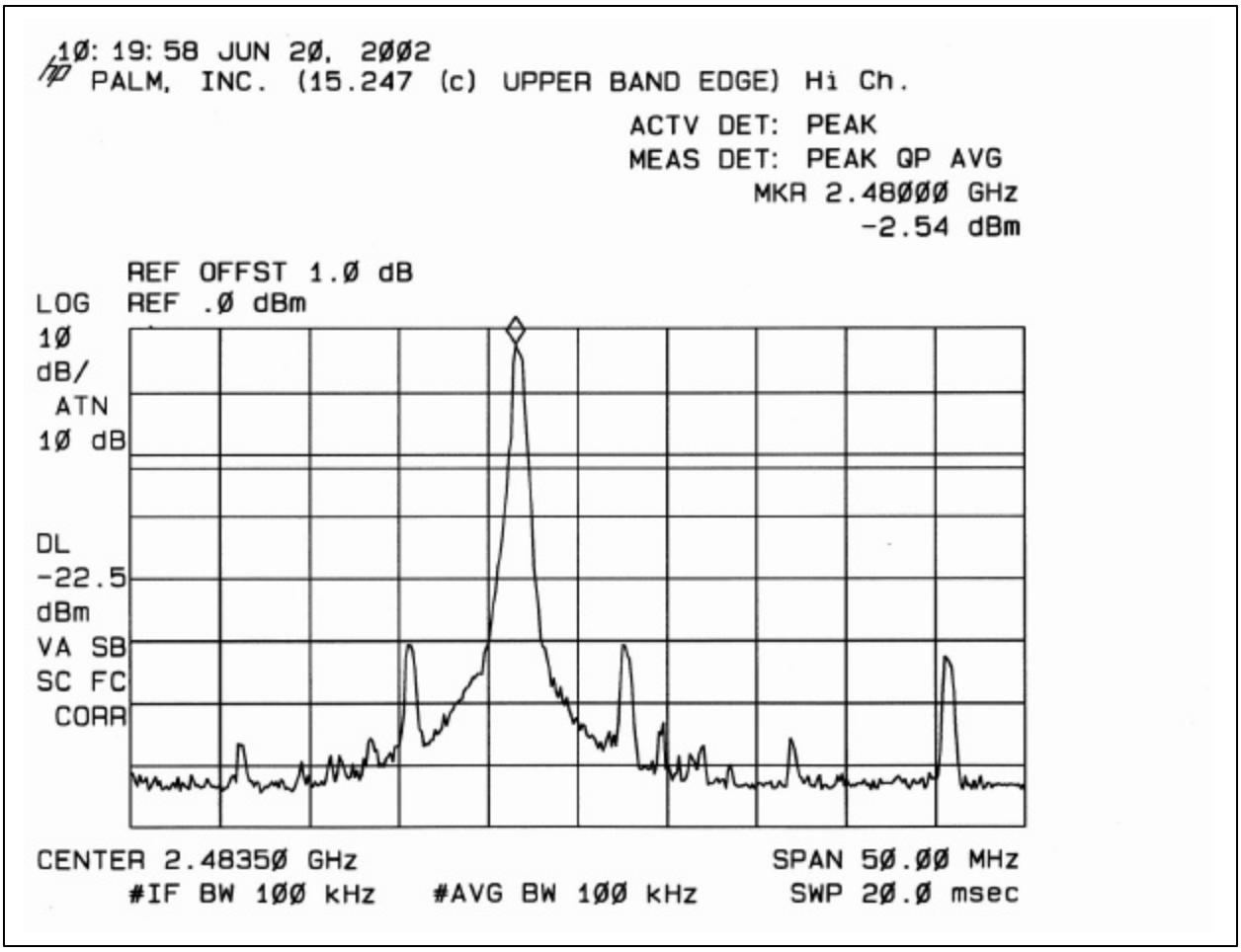
The transmitter output was connected to the spectrum analyzer through an attenuator; the lower and upper band edge of the EUT is investigated.
The resolutions and video bandwidth were set to 100kHz.

RESULT

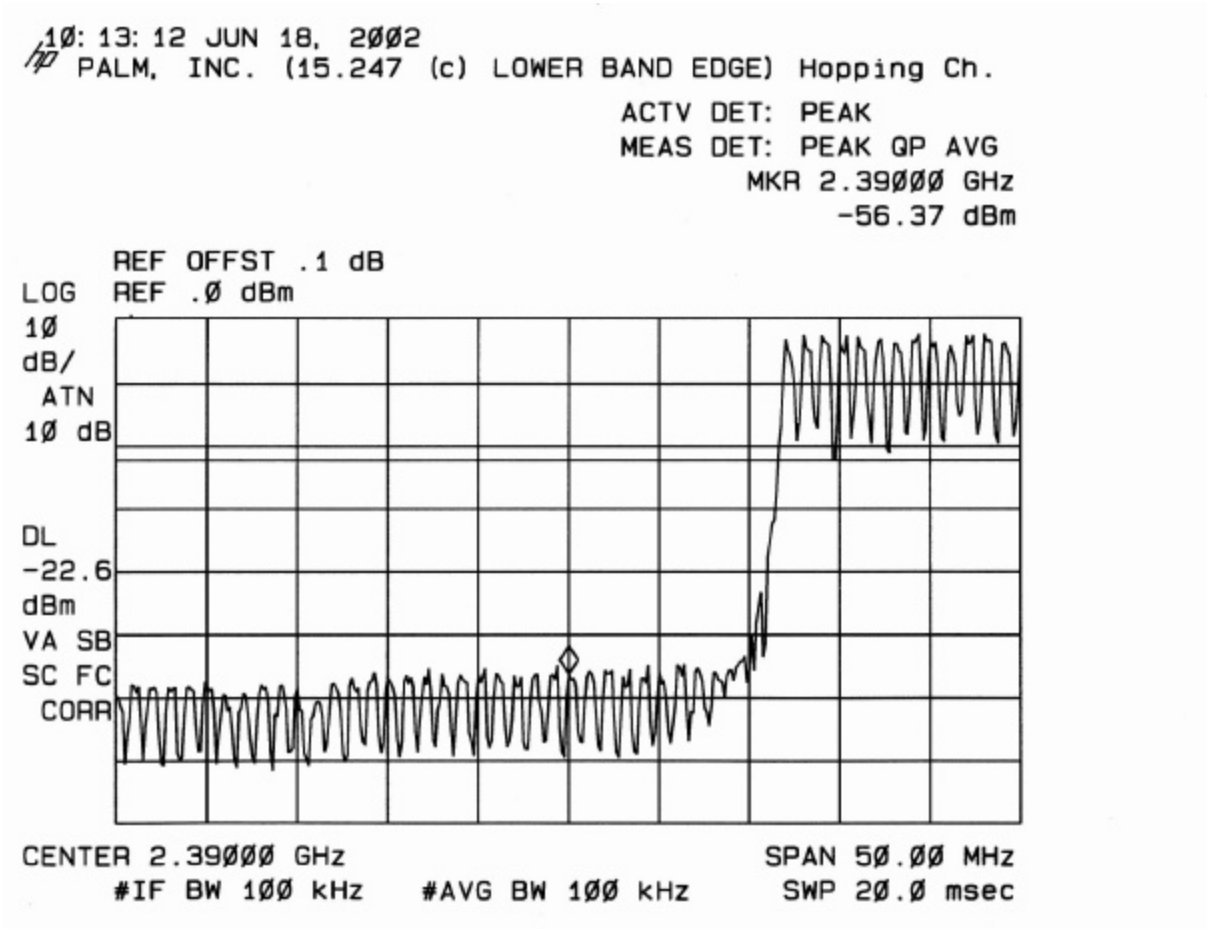
No non-compliance noted. See plots below.

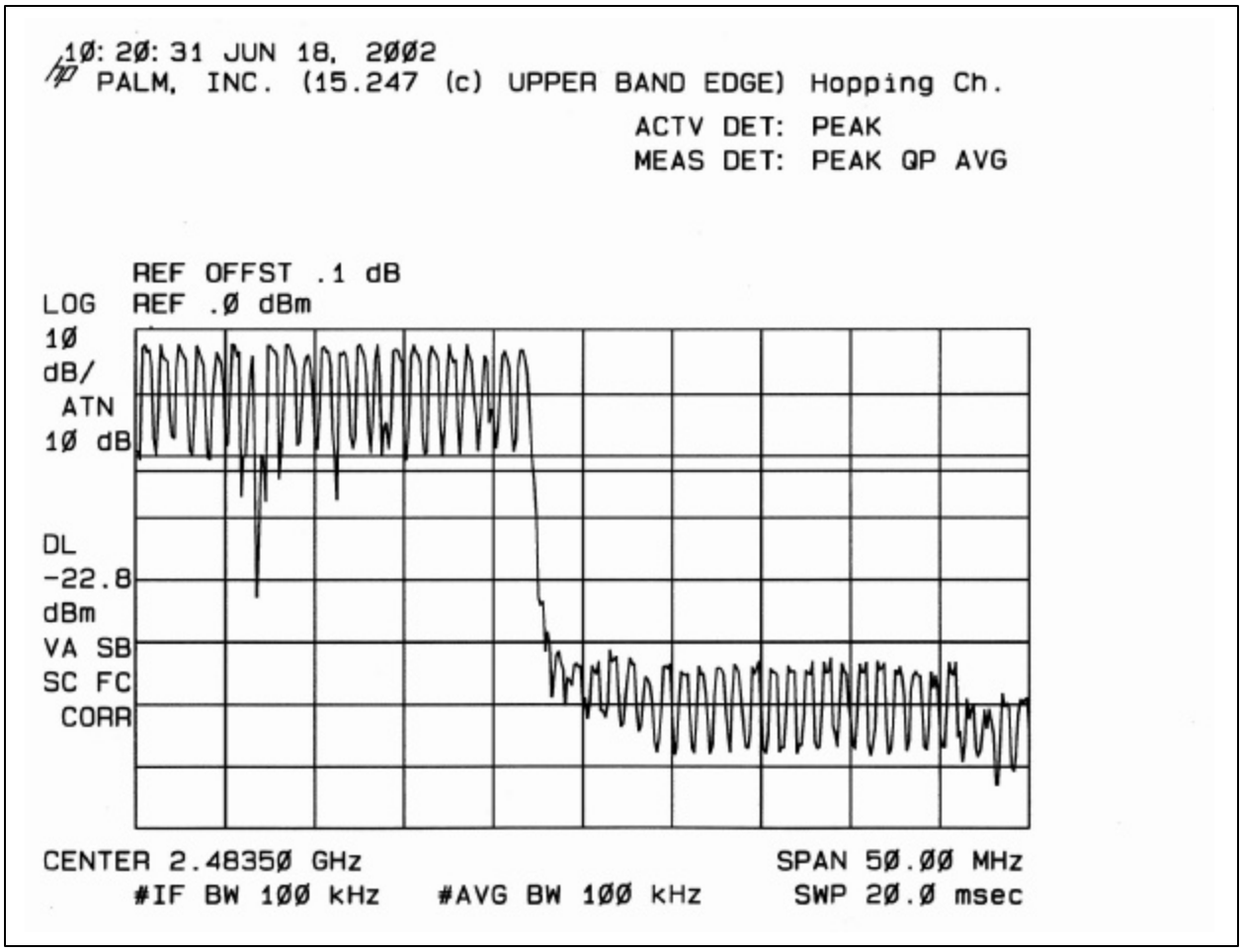
Fixed Tx Mode:





Hopping Tx Mode:





9.8 RADIATED EMISSION

RADIATED EMISSION AND RESTRICTED BANDS

TEST SETUP

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	☒ Peak ☒ Quasi Peak	☒ 100 KHz ☒ 1 MHz	☒ 100 KHz ☒ 1 MHz
Above 1000	☒ Peak ☒ Average	☒ 1 MHz ☒ 1 MHz	☒ 1 MHz ☒ 10 Hz

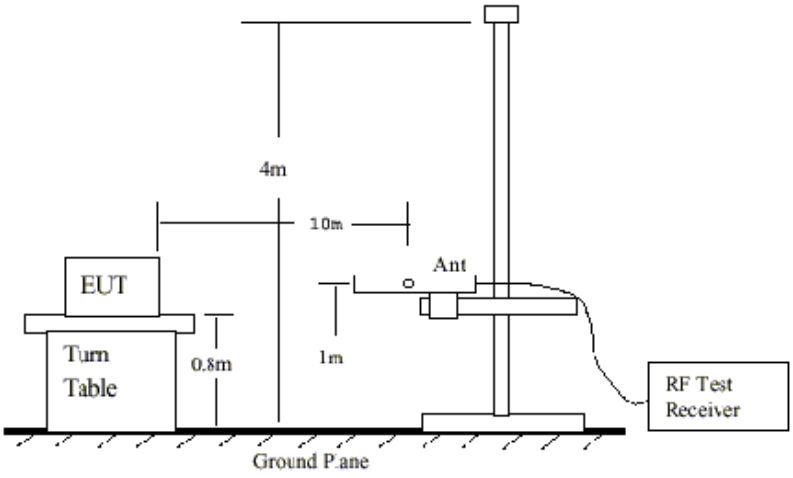


Fig 1: Radiated Emission Measurement 30 to 1000 MHz

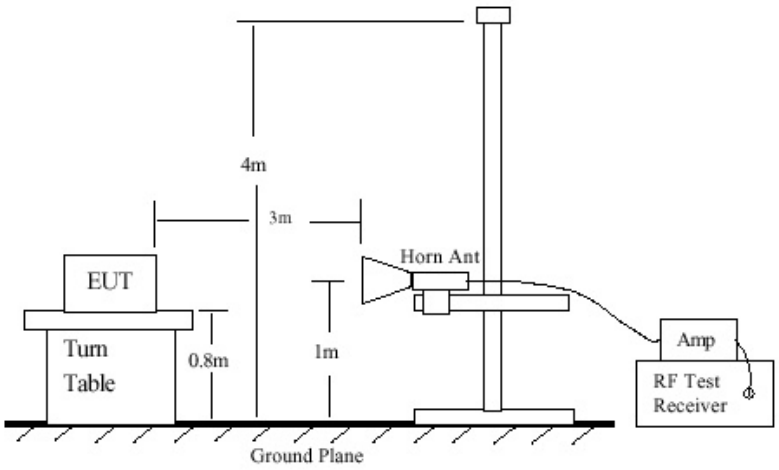


Fig 2: Radiated Emission Above 1000 MHz

TEST PROCEDURE

1. The EUT was placed on the turntable 0.8 meter above ground in 3 meter open area test site.
2. Set the resolution bandwidth to 100KHz in the test receiver and select Peak function to scan the frequency below 1 GHz.
3. Shift the interference-receiving antenna located in antenna tower upwards and downwards between 1 and 4 meters above ground and find out the local peak emission on frequency domain.
4. Locate the interference-receiving antenna at the position where the local peak reach the maximum emission.
5. Rotate the turntable and stop at the angle where the measurement device has maximum reading.
6. Shift the interference-receiving antenna again to detect the maximum emission of the local peak.
7. If the reading of the local peak under Peak function is lower than limit by 6dB, then

Quasi Peak detection is not needed and this reading should be recorded. And if it is higher than Peak limit, then the test is fail. Others, switch the receiver to Quasi Peak function, set the resolution bandwidth to 100kHz and repeat the procedures (3)~(6). If the reading is lower than limit, this reading should be recorded, otherwise, the test is fail.
8. Set the resolution and video bandwidth of the spectrum analyzer to 1MHz and repeat procedures (3)~(6) for frequency band from 1 GHz to 10 times carrier frequency.
9. If the reading for the local peak is lower than the Average limit, no further testing is needed in this local peak and this reading should be recorded. If it is higher than Average limit but lower than Peak limit, then set the resolution bandwidth to 1MHz and video bandwidth to 10Hz. Repeat procedures (3)~(6). If the maximum reading is lower than Average limit, then this reading should be recorded. If it is higher, then the test is fail.

RESULT

No non-compliance noted. See data below.

FCC 15.209 @3M Radiated Emissions 30MHz - 1GHz:

COMPLIANCE Certification Services

FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001
PHONE: (408) 463-0885 FAX: (408) 463-0888

Project #:	02U1357-1
Report #:	020625A2
Date& Time:	06/25/02 2:18 PM
Test Engr:	Skip Doyle
Company:	Palm,Inc.
EUT Description:	2.4 GHz Handheld Unit M/N: M550
Test Configuration :	EUT/Charger/PC/Mouse/Printer/Monitor/Modem
Type of Test:	FCC Class B
Mode of Operation:	Transmitting

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
672.00	45.30	20.74	4.29	28.59	41.74	46.00	-4.26	3mH	45.00	2.50	P
696.00	43.80	21.31	4.37	28.60	40.87	46.00	-5.13	3mH	45.00	2.50	P
648.00	44.80	20.17	4.21	28.58	40.61	46.00	-5.39	3mH	45.00	2.50	P
672.00	43.80	20.74	4.29	28.59	40.24	46.00	-5.76	3mV	45.00	1.00	P
648.00	42.40	20.17	4.21	28.58	38.21	46.00	-7.79	3mV	45.00	1.00	P
600.00	43.60	19.04	4.06	28.56	38.14	46.00	-7.86	3mH	45.00	2.50	P
No signals detected from EUT, data points from previous max scan taken.											
6 Worst Data											

Low Channel:

06/14/02 **FCC Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1357
Company: Palm, Inc.
EUT Descrip.: 2.4GHZ Bluetooth Handheld Unit
EUT M/N: M550
Test Target: FCC 15.247

Equipment for 1-26.5 GHz:
HP8593EM Analyzer
Miteq NSP2600-44 Preamp
EMCO 3115 Horn Antenna
ARA MWH 1826/B
Cable: 15.0 feet

Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:
1MHz Resolution Bandwidth
10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Low Channel:															
Fundamental:															
2.402	3.3	49.0	29.0	28.9	3.1	0.0	-9.5	0.0	71.5	51.5	115.0	95.0	-43.5	-43.5	V (Fixed Channel)
2.402	3.3	46.5	28.3	28.9	3.1	0.0	-9.5	0.0	69.0	50.8	115.0	95.0	-46.0	-44.2	H (Fixed Channel)
Bottom Bandedge:															
2.384	3.3	38.6	24.3	28.8	3.1	0.0	-9.5	0.0	61.1	46.8	74.0	54.0	-12.9	-7.2	V
2.390	3.3	38.5	24.3	28.9	3.1	0.0	-9.5	0.0	61.0	46.8	74.0	54.0	-13.0	-7.2	H
Harmonic & Spurious:															
4.804	3.3	64.0	38.7	33.8	5.7	-36.1	-9.5	1.0	58.8	33.6	74.0	54.0	-15.2	-20.4	V
7.206	3.3	48.4	35.7	37.0	7.2	-36.3	-9.5	1.0	47.8	35.1	74.0	54.0	-26.2	-18.9	V
9.608	3.3	47.0	34.6	39.7	8.5	-35.4	-9.5	1.0	51.2	38.8	74.0	54.0	-22.8	-15.2	V (Noise Floor)
12.000	3.3	47.1	36.3	39.5	9.5	-36.3	-9.5	1.0	51.3	40.5	74.0	54.0	-22.7	-13.5	V (Noise Floor)
14.412	3.3	50.0	37.0	41.7	10.7	-38.0	-9.5	1.0	55.9	42.9	74.0	54.0	-18.1	-11.1	V (Noise Floor)
16.814	3.3	51.0	38.0	41.0	12.2	-38.8	-9.5	1.0	56.9	43.9	74.0	54.0	-17.1	-10.1	V (Noise Floor)
19.216	3.3	51.0	40.5	32.0	13.5	-39.1	-9.5	1.0	48.9	38.4	74.0	54.0	-25.1	-15.6	V (Noise Floor)
21.618	3.3	55.0	42.0	32.2	14.7	-38.7	-9.5	1.0	54.7	41.7	74.0	54.0	-19.3	-12.3	V (Noise Floor)
24.020	3.3	55.0	42.0	33.1	16.4	-39.4	-9.5	1.0	56.6	43.6	74.0	54.0	-17.4	-10.4	V (Noise Floor)
4.804	3.3	61.9	38.0	33.8	5.7	-36.1	-9.5	1.0	56.8	32.9	74.0	54.0	-17.2	-21.1	H
7.206	3.3	48.0	36.0	37.0	7.2	-36.3	-9.5	1.0	47.4	35.4	74.0	54.0	-26.6	-18.6	H
9.608	3.3	46.0	34.0	39.7	8.5	-35.4	-9.5	1.0	50.2	38.2	74.0	54.0	-23.8	-15.8	H (Noise Floor)
12.000	3.3	47.1	35.0	39.5	9.5	-36.3	-9.5	1.0	51.3	39.2	74.0	54.0	-22.7	-14.8	H (Noise Floor)
14.412	3.3	50.0	37.0	41.7	10.7	-38.0	-9.5	1.0	55.9	42.9	74.0	54.0	-18.1	-11.1	H (Noise Floor)
16.814	3.3	51.0	38.0	41.0	12.2	-38.8	-9.5	1.0	56.9	43.9	74.0	54.0	-17.1	-10.1	H (Noise Floor)
19.216	3.3	51.0	40.5	32.0	13.5	-39.1	-9.5	1.0	48.9	38.4	74.0	54.0	-25.1	-15.6	H (Noise Floor)
21.618	3.3	55.0	42.0	32.2	14.7	-38.7	-9.5	1.0	54.7	41.7	74.0	54.0	-19.3	-12.3	H (Noise Floor)
24.020	3.3	55.0	42.0	33.1	16.4	-39.4	-9.5	1.0	56.6	43.6	74.0	54.0	-17.4	-10.4	H (Noise Floor)

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	FSY High Pass Filter (4.57 GHz S/N: 003)		

Mid Channel:

06/14/02 **FCC Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Thu Chan
Project #: 02U1357
Company: Palm. Inc.
EUT Descrip.: 2.4GHZ Bluetooth Handheld Unit
EUT M/N: M550
Test Target: FCC 15.247

Equipment for 1-26.5 GHz:
HP8593EM Analyzer
Miteq NSP2600-44 Preamp
EMCO 3115 Horn Antenna
ARA MWH 1826/B
Cable: 15.0 feet

Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:
1MHz Resolution Bandwidth
10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Mid Channel:															
Fundamental:															
2.441	3.3	50.0	29.5	29.0	3.1	0.0	-9.5	0.0	72.6	52.1	115.0	95.0	-42.4	-42.9	V (Fixed Channel)
2.441	3.3	49.7	29.5	29.0	3.1	0.0	-9.5	0.0	72.3	52.1	115.0	95.0	-42.7	-42.9	H (Fixed Channel)
Harmonic & Spurious:															
4.882	3.3	65.0	38.0	34.0	5.8	-36.1	-9.5	1.0	60.2	33.2	74.0	54.0	-13.8	-20.8	V
7.323	3.3	50.8	34.5	37.2	7.3	-36.3	-9.5	1.0	50.6	34.3	74.0	54.0	-23.4	-19.7	V
9.764	3.3	46.2	34.0	39.9	8.6	-35.5	-9.5	1.0	50.7	38.5	74.0	54.0	-23.3	-15.5	V (Noise Floor)
12.205	3.3	47.0	35.0	39.3	9.6	-36.4	-9.5	1.0	51.0	39.0	74.0	54.0	-23.0	-15.0	V (Noise Floor)
14.646	3.3	50.0	37.5	41.3	10.9	-38.2	-9.5	1.0	55.4	42.9	74.0	54.0	-18.6	-11.1	V (Noise Floor)
17.087	3.3	51.0	38.5	42.5	12.4	-38.8	-9.5	1.0	58.5	46.0	74.0	54.0	-15.5	-8.0	V (Noise Floor)
19.528	3.3	51.0	40.5	32.1	13.6	-39.0	-9.5	1.0	49.2	38.7	74.0	54.0	-24.8	-15.3	V (Noise Floor)
21.969	3.3	55.0	42.0	32.0	14.8	-38.8	-9.5	1.0	54.5	41.5	74.0	54.0	-19.5	-12.5	V (Noise Floor)
24.410	3.3	55.0	42.0	32.8	16.6	-39.5	-9.5	1.0	56.4	43.4	74.0	54.0	-17.6	-10.6	V (Noise Floor)
4.882	3.3	62.0	36.0	34.0	5.8	-36.1	-9.5	1.0	57.2	31.2	74.0	54.0	-16.8	-22.8	H
7.323	3.3	48.6	34.5	37.2	7.3	-36.3	-9.5	1.0	48.4	34.3	74.0	54.0	-25.6	-19.7	H
9.764	3.3	46.0	34.0	39.9	8.6	-35.5	-9.5	1.0	50.5	38.5	74.0	54.0	-23.5	-15.5	H (Noise Floor)
12.205	3.3	47.1	35.0	39.3	9.6	-36.4	-9.5	1.0	51.1	39.0	74.0	54.0	-22.9	-15.0	H (Noise Floor)
14.646	3.3	50.0	38.4	41.3	10.9	-38.2	-9.5	1.0	55.4	43.8	74.0	54.0	-18.6	-10.2	H (Noise Floor)
17.087	3.3	51.0	39.0	42.5	12.4	-38.8	-9.5	1.0	58.5	46.5	74.0	54.0	-15.5	-7.5	H (Noise Floor)
19.528	3.3	51.0	40.5	32.1	13.6	-39.0	-9.5	1.0	49.2	38.7	74.0	54.0	-24.8	-15.3	H (Noise Floor)
21.969	3.3	55.0	42.0	32.0	14.8	-38.8	-9.5	1.0	54.5	41.5	74.0	54.0	-19.5	-12.5	H (Noise Floor)
24.410	3.3	55.0	42.0	32.8	16.6	-39.5	-9.5	1.0	56.4	43.4	74.0	54.0	-17.6	-10.6	H (Noise Floor)

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	FSY High Pass Filter (4.57 GHz S/N: 003)		