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Electrical

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RADIO TEST REPORT

ACCORDING TO 47 CFR Part 15 SUBPART C §15.231, §15.205, §15.209 and SUBPART B;
RSS-210 Issue 5:2001; ICES-003 Issue 3:1997
for

VISONIC Ltd.

EQUIPMENT UNDER TEST:

Pet immune wireless detector
Model: K-980MCW @ 315 MHz

Document ID: visrad_fcc.15174.doc
Date of Issue: July 02

Contents

1 Project information

Description of equipment under test

Test items	: Pet immune wireless detector
Manufacturer	: Visonic Ltd.
Brand name	: K-980MCW
Equipment serial number	: Cat No 0-3637-1
Types (Models)	: K-980MCW @ 315 MHz
Equipment FCC code[1]	: DSC

Applicant information

Applicant's responsible person	: Mr. Arick Elshtein, project manager
Company	: Visonic Ltd.
Address	: 27 Habarzel Street
Postal code	: 69710
City	: Tel Aviv
Country	: Israel
Telephone number	: +972 3 6456714
Telefax number	: +972 3 6456891

Test performance

Project Number:	: 15174
Location	: Hermon Laboratories
Receipt date	: July 1, 2002
Test performed	: July 11, 2002
Purpose of test	: Apparatus compliance verification in accordance with emission requirements
Test specification(s)	: 47CFR Part 15, subpart C, §15.231, §15.205, §15.209, and subpart B §15.109; RSS-210 Issue 5: 2001 and ICES-003 Issue 3: 1997

[1] FCC Equipment codes – see Appendix D

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2 Summary of tests and requirements

Parameter	Subclause	C	NC	NT	NA	Tested by	Date tested	Remarks
Transmitter characteristics, §15.231								
Periodic operation	15.231(a)	**X**				Refer to Installation instructions		
Bandwidth of emission	15.231(c)	**X**				Mrs. E. Pitt, test engineer	July 8, 2002	
Field strength of fundamental	15.231(b)(2)	**X**				Mr. M. Feldman, test engineer	July 1, 2002	
Field strength of spurious radiation	15.231(b)(3)	**X**				Mrs. E. Pitt, test engineer	July 11, 2002	
Unintentional radiation, §15.107, §15.109								
Conducted emissions	15.107				**X**			
Radiated emissions	15.109	**X**				Mrs. E. Pitt, test engineer	July 11, 2002	
General conditions under §15.231, Periodic operation in the band 40.66 - 40.70 MHz and above 70 MHz								
The intentional radiator does not operate in the restricted bands of operation.	15.205	**X**						
The intentional radiator has permanently attached antenna or antenna that uses a unique coupling to the intentional radiator.	15.203	**X**				Refer to Installation instructions		
No antenna other than that furnished by the responsible party can be used with the device.	15.203				**X**			
The intentional radiator has no standard antenna jack or electrical connector.	15.203				**X**	This requirement does not apply to intentional radiators that must be professionally installed		
The intentional radiator must be professionally installed.	15.203				**X**			
The Intentional radiator operates at 315 MHz.	15.231 (a)	**X**						
Intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc.	15.231 (a)	**X**				Refer to Installation instructions		
Radio control of toys is not permitted.	15.231 (a)	**X**				Refer to Installation instructions		

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Parameter	Subclause	C	NC	NT	NA	Tested by	Date tested	Remarks
Continuous transmissions, such as voice or video, and data transmissions are not permitted.	15.231 (a)	**X**				Refer to Installation instructions		
A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.	15.231 (a) (1)				**X**			
A transmitter activated automatically shall cease transmission within 5 seconds after activation.	15.231 (a) (2)	**X**				Refer to Installation instructions		
Periodic transmissions at regular predetermined intervals are not permitted.	15.231 (a) (3)	**X**				Refer to Installation instructions		
The intentional radiator polling or supervision transmissions to determine system integrity of transmitters used in security or safety applications are allowed if the periodic rate of transmission does not exceed one transmission of not more than one second duration per hour for each transmitter.	15.231 (a) (3)	**X**				Refer to Installation instructions		
The intentional radiators, employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.	15.231 (a) (4)	**X**				Refer to Installation instructions		
NOTE: C: The parameter is compliant with the requirements. NC: The parameter is not compliant with the requirements. NT: The parameter is not tested. NA: The test of this parameter is not applicable.								

Test report prepared by: Mrs. V. Mednikov, certification engineer

Test report approved by: Mr. A. Usoskin, QA manager

3 EUT description

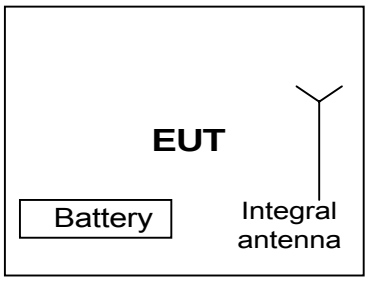
3.1 General description

The K-980MCW is a pet-immune, fully supervised ultra low-current wireless PIR detector, which incorporates a “Power Code” transmitter. Both transmitter and detector circuits are powered by an on-board long life 3.6 V Lithium battery.

3.2 EUT test configuration

Test configuration is provided in Figure 3.2.1.

Figure 3.2.1 EUT test configuration



3.3 Transmitter description

Operating frequency:				315 MHz			
Extreme test conditions[2]:							
	temperature	-10°C; +50°C					
	power supply voltage	3.6 VDC					
Maximum rated output power							
	At transmitter permanent external 50 Ω rf output connector (dBm)						
	Effective radiated power (for equipment with integral antenna) (dBm)			-28			
Transmitter duty cycle (worst case)							
	Tx on (seconds)			0.061			
	Tx off (seconds)			0.039			
Modulation							
	Amplitude						
	Frequency						
✔	Other (specify): ASK (ON/OFF KEYING)						
Can the transmitter be operated without modulation					yes	✔	no
Transmitter power source							
	Battery	**Nominal rated voltage (VDC)**		**3.6**			
	Nickel Cadmium						
✔	Lithium CR 123 A						
	Other: 3.6 V Lithium thionyl chloride ($LiSOCL_2$) battery, size 1/2AA, Tadiran TL-2150						
	DC	**Nominal rated voltage (VDC)**					
	AC mains	**Nominal rated voltage (VAC)**					
Is there common power source for transmitter and receiver					yes		no
Antenna type							
✔	Integral						
	External						
Type of antenna jack[3] - NA							
	standard		connector type		Male		Female
	unique		connector type		Male		Female

[2] Frequency tolerance test for devices operating in the frequency band 40.66 – 40.70 MHz shall be performed in normal and extreme test conditions.
[3] Standard antenna jack use is prohibited excluding devices which must be professionally installed

4 Test results

4.1 Bandwidth of emission according to § 15.231 (c) and RSS-210 § 6.1.1(c)

METHOD OF MEASUREMENT: ANSI 63.4 §13.1.7
DATE: July 8, 2002
RELATIVE HUMIDITY: 43 %
AMBIENT TEMPERATURE: 24 °C
MODULATION: ON
DETECTOR USED: Peak

Carrier frequency MHz	Occupied bandwidth, kHz	Reference to plot in Annex A
315	377	A1
Measurement uncertainty, ppm	0.2	

TEST EQUIPMENT USED:

HL 0465	HL 0521	HL 0589	HL 0604	HL 1004		

LIMIT (§ 15.231 (c))

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

For 315 MHz frequency the specified limit is 787.5 kHz

TEST PROCEDURE
The spectrum trace data around transmitter fundamental frequency was obtained with the spectrum analyzer in “Max Hold” mode. The bandwidth value was determined between two points 20 dBc.

4.2 Field strength of fundamental, § 15.231 and RSS-210 § 6.1.1(b)

METHOD OF MEASUREMENT: ANSI 63.4 §13.1.5
DATE: July 1, 2002
RELATIVE HUMIDITY: 44 %
AMBIENT TEMPERATURE: 24 °C
SITE DESCRIPTION: OATS
MODULATION: ON
DETECTOR USED: Peak

	§ 15.231 (b)	§ 15.231 (e)
The EUT complies with the requirements of	X	

Frequency, MHz	Measured field strength, dB(uV/m)	Average factor, dB	Calculated result, dB(uV/m)	Specification limit, dB(uV/m)	Reference to plot in Annex A
314.97	70.75	-4.25	66.5	75.62	A2
Measurement uncertainty, dB			-5.73 dB/ -5.57 dB		

4.2.1 Average factor calculation, §15.35

Tx ON	Duty cycle	Average factor	Reference to plot in Annex A
61.3	0.613	-4.25	A3 to A5

TEST EQUIPMENT USED:

HL 0034	HL 1430					

LIMIT § 15.231 (b)

Fundamental frequency (MHz)	Field strength of fundamental (b) (mV/m) @ 3 m
260 – 470	3,750 to 12,500

The specified limit for 315 MHz frequency is 75.62 dB(μV/m)

TEST PROCEDURE

The EUT was tested, being placed on a wooden 80 cm height turntable in each of three orthogonal planes in turn. To find maximum radiation the turntable was rotated 360°, measuring antenna height was changed from 1 to 4 m, and the antenna polarization was changed from vertical to horizontal.

4.3 Field strength of spurious radiation, § 15.231 and RSS-210 § 6.1.1(b)

METHOD OF MEASUREMENT: ANSI 63.4 §13.1.4
TEST PERFROMED IN: Anechoic chamber
DATE: July 8, 2002
RELATIVE HUMIDITY: 43 %
AMBIENT TEMPERATURE: 24 °C
TEST PERFORMED AT FIELD STRENGTH: 66.5 dB(μV/m)
MODULATION ON
DETECTOR USED: Peak
RANGE OF MEASUREMENTS 9 kHz to 3500 MHz

Frequency, MHz	RBW, kHz	VBW, kHz	Radiated emission (peak), dB(μV/m)	Limit (peak) @ 3 m, dB(μV/m)	Radiated emission, (avrg) dB(μV/m)	Limit (avrg) @ 3 m, dB(μV/m)	Ref. to plot in App. A
944.9	120	300	58.67	75.62	54.42*	55.62	A7, A8
1259.9	1000	1000	46.96	75.62	42.71*	55.62	A9, A10
1574.98	1000	3000	47.00	75.62	42.75*	55.62	A9, A11
2204.8	1000	3000	47.97	75.62	43.72*	55.62	A12, A13
2519.8	1000	3000	48.88	75.62	44.63*	55.62	A12, A14
2834.82	1000	3000	53.42	75.62	48.17*	55.62	A12, A15
Measurement uncertainty, dB				-5.73 dB/ -5.57 dB			

For test results refer to Plots A5 to A15.

*** Radiated emission value was calculated: Peak value + Average factor**
Notes to table:
RBW: resolution bandwidth
VBW: video bandwidth

TEST EQUIPMENT USED:

HL 0041	HL 0446	HL 0465	HL 0521	HL 0589	HL 0604	HL 1004
HL 1947						

LIMIT § 15.231 (b)

Fundamental frequency (MHz)	Field strength of harmonics (b) (mV/m) @ 3 m
260 – 470	375 to 1,250

The specified limit for 315 MHz frequency is 55.62 dB(μV/m)

TEST PROCEDURE

The EUT was tested, being placed on a wooden 80 cm height turntable in each of three orthogonal planes in turn.

9 kHz – 30 MHz frequency range. The loop antenna was positioned with its plane vertical. The loop center was 1 meter above the ground plane. To find maximum radiation the turntable was rotated 360° and the measuring antenna was rotated about its vertical axis.

30 MHz – 9.5 GHz frequency range. To find maximum radiation the turntable was rotated 360°, measuring antenna height was changed from 1 to 4 m, and the antennas polarization was changed from vertical to horizontal.

4.4 Unintentional radiated emissions test according to §15.109 and ICES-003

METHOD OF MEASUREMENT: ANSI 63.4 §11.6 / ANSI 63.4 §12.1.4
TEST PERFORMED IN: Anechoic chamber
DATE: July 8, 2002
RELATIVE HUMIDITY: 43 %
AMBIENT TEMPERATURE: 24 °C
DISTANCE BETWEEN ANTENNA AND EUT: 3 m
THE EUT WAS TESTED AS: Table-top
FREQUENCY RANGE: 30 MHz – 2 GHz
DETECTOR TYPE: Peak
RESOLUTION BANDWIDTH: 120 kHz below 1 GHz, 1 MHz above 1 GHz

The EUT highest used frequency (not including operating frequency), MHz	Upper frequency of measurement range, MHz
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

Frequency, MHz	Antenna polarization	Antenna height, m	Turntable position (°)	Radiated emissions, dB (µV/m)	Specification limit, dB (µV/m)	Ref. to plot in App. A
30 - 2000	**The limit for unintentional radiated emission, class B was used throughout spurious emission measurements in Tx mode. All emissions except carrier and 3rd harmonic were found below the limit**					A7, A9
Measurement uncertainty, dB	-5.73 dB/ -5.57 dB					

Table abbreviations:
Antenna polarization: V = vertical, H = horizontal
Turntable position: 0° = EUT front panel faces the receiving antenna

TEST EQUIPMENT USED:

HL 0465	HL 0521	HL 0589	HL 0604	HL 1004		

LIMIT (§ 15.109)

Frequency, MHz	Class A equipment @ 10 m dB(µV/m)	Class B equipment @ 3 m dB(µV/m)
30 - 88	39.0	40
88 - 216	43.5	43.5
216 - 960	46.4	46
960 - 5000	49.5	54

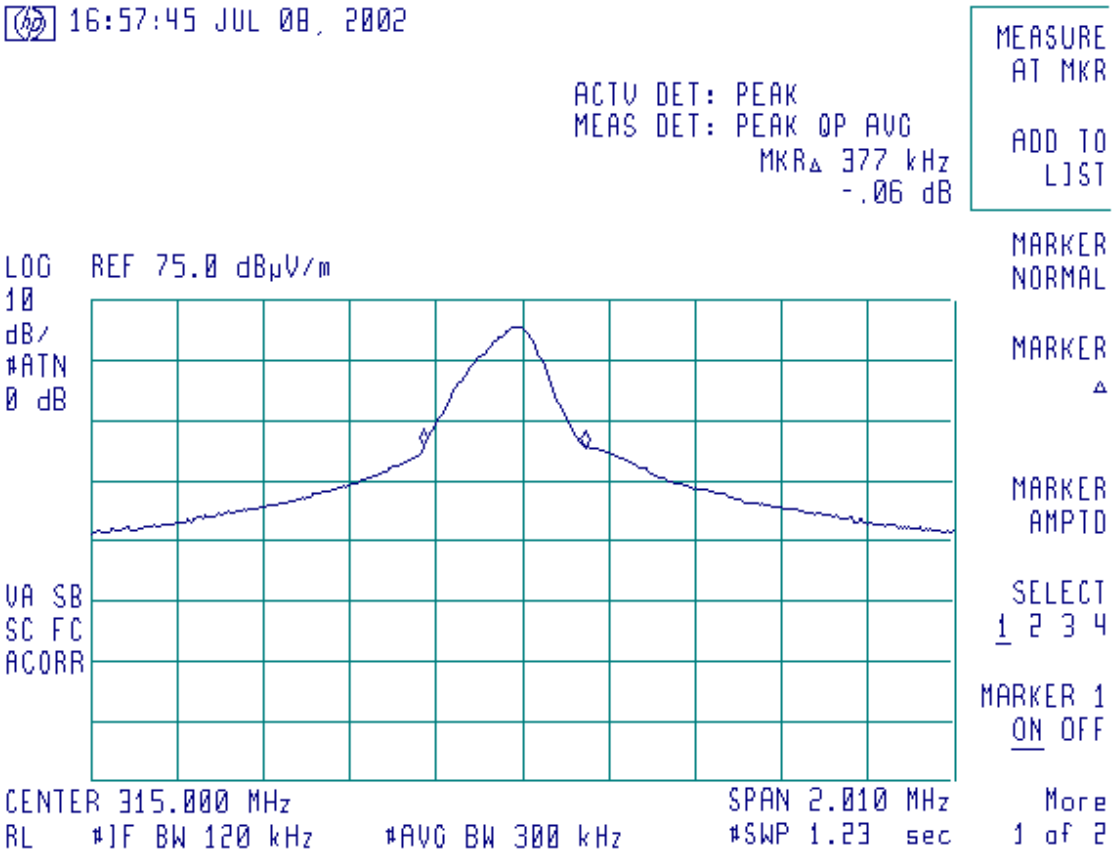
TEST PROCEDURE

The EUT was placed on a wooden 80 cm height turntable. To find maximum radiation the turntable was rotated 360°, measuring antenna height was changed from 1 to 4 m, and the antennas polarization was changed from vertical to horizontal.

Appendix A - Plots

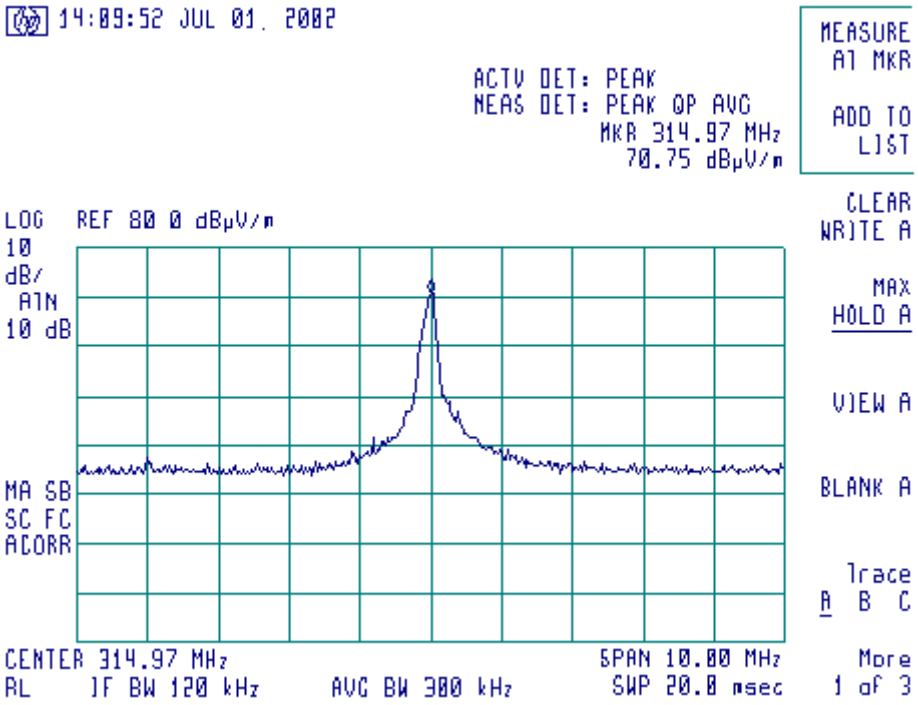
Plot A1

Occupied bandwidth measurements



Plot A2

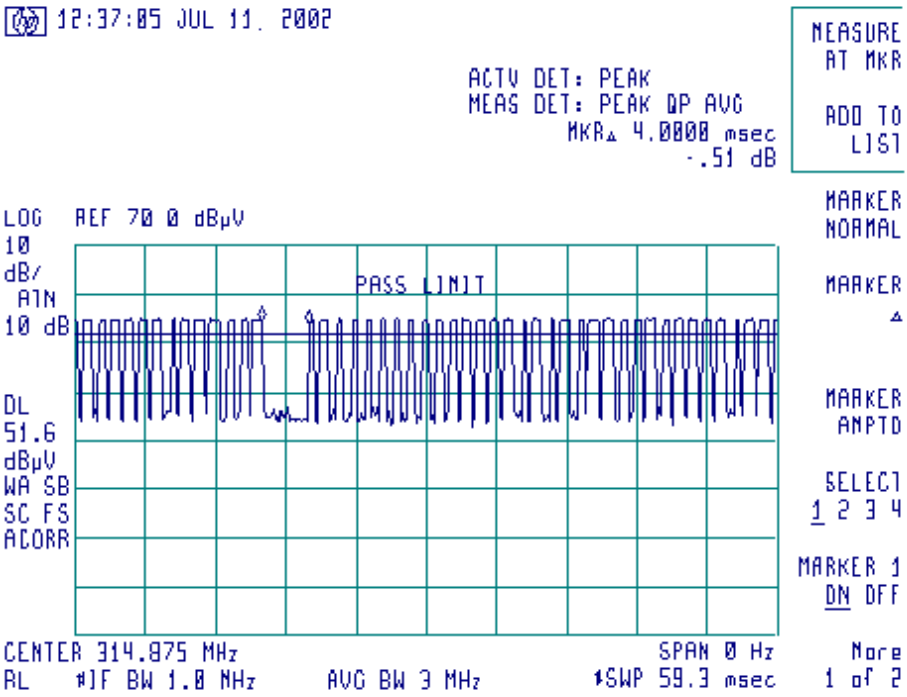
Field strength of fundamental measurements



LIMIT=75.6 dBuV/m @3m

Plot A3

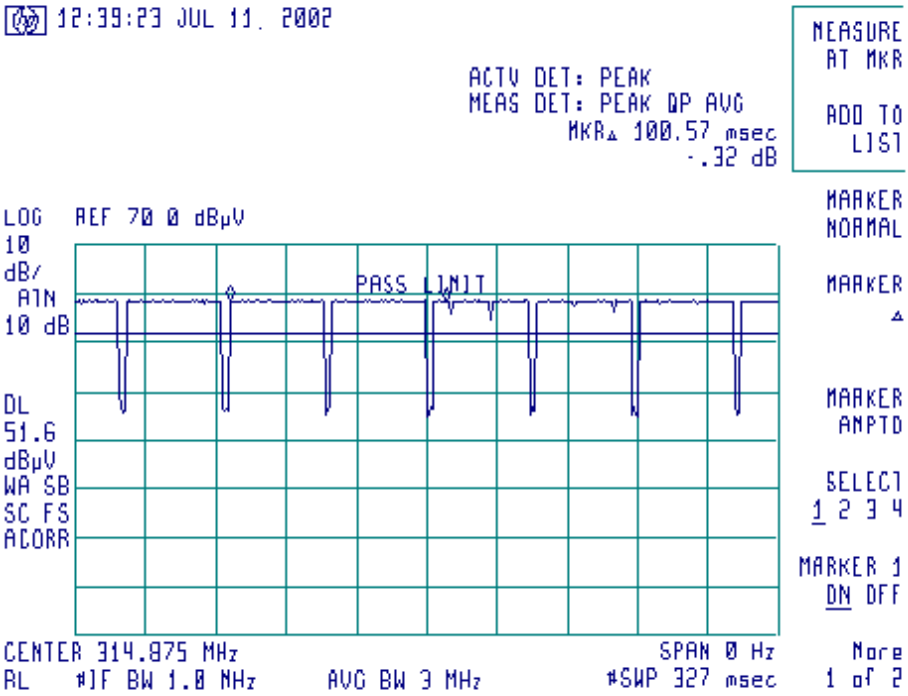
Time between two successive transmissions



The time between the end of one transmission and the beginning of the other one is 4 ms.

Plot A4

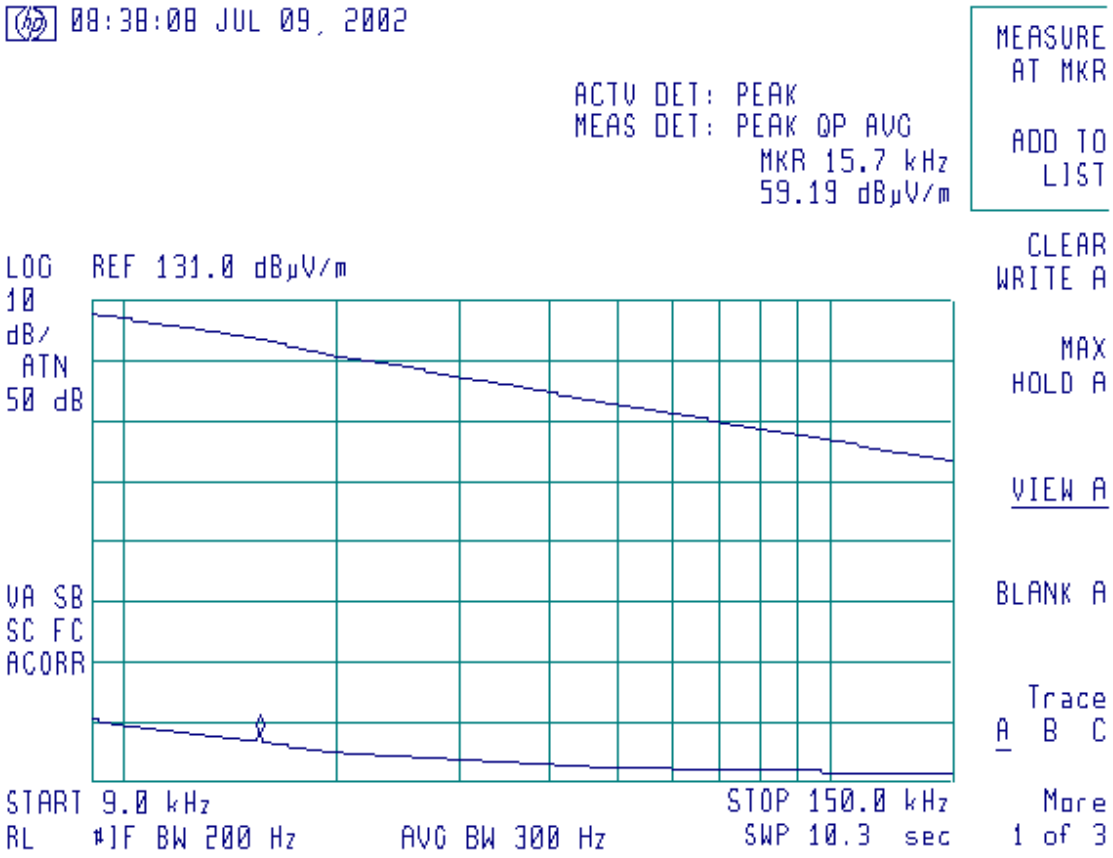
100 ms interval



"Power code" means transmission of a sequence of "0" (1/3 ON; 2/3 OFF) or "1" (2/3 ON; 1/3 OFF). The worst case is when all "1" are transmitted.
Tx ON in 100 ms interval = (100 – 2x4) x 2/3 = 61.3 ms.

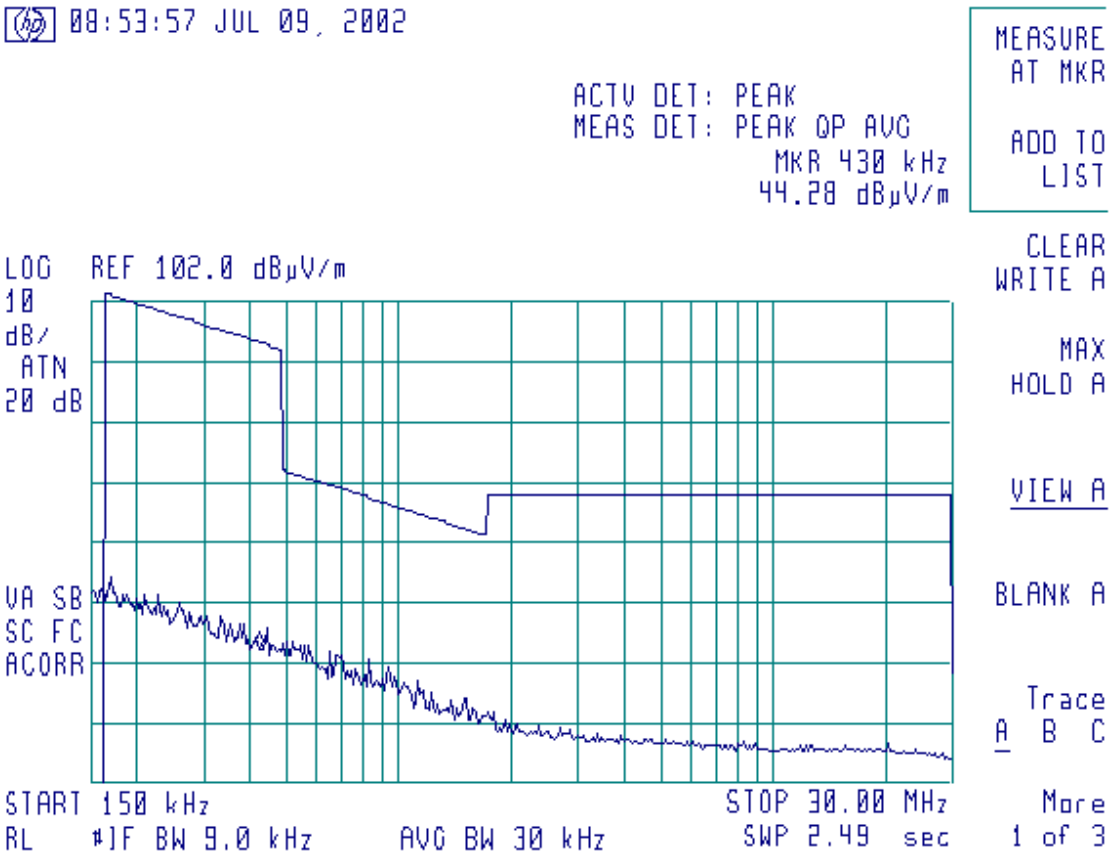
Plot A5

Spurious emission measurements
9 kHz – 150 kHz frequency range



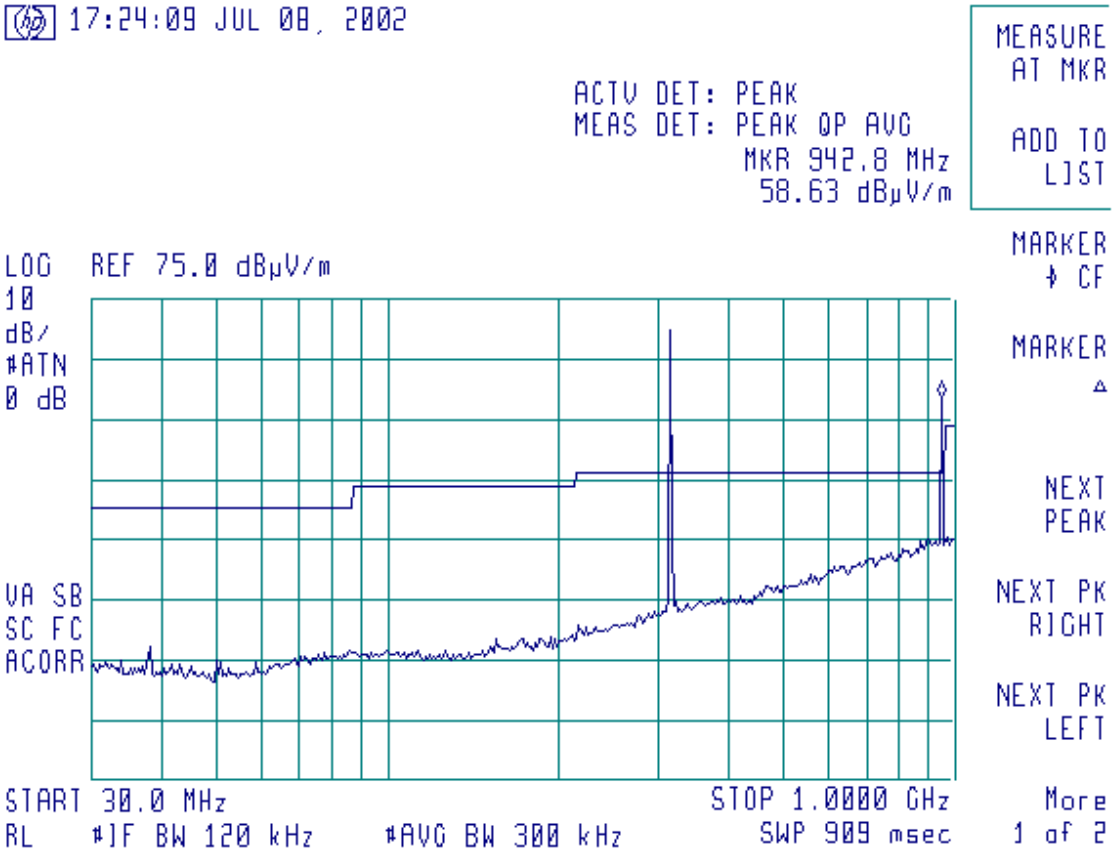
Plot A6

Spurious emission measurements
150 kHz – 30 MHz frequency range



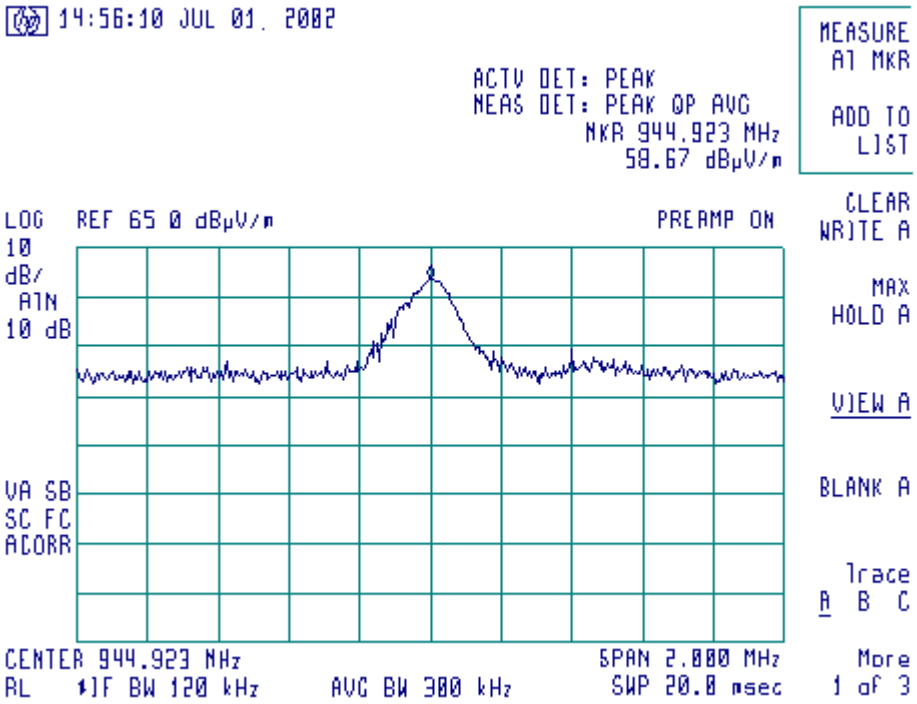
Plot A7

Spurious emission measurements
30 MHz – 1000 MHz frequency range



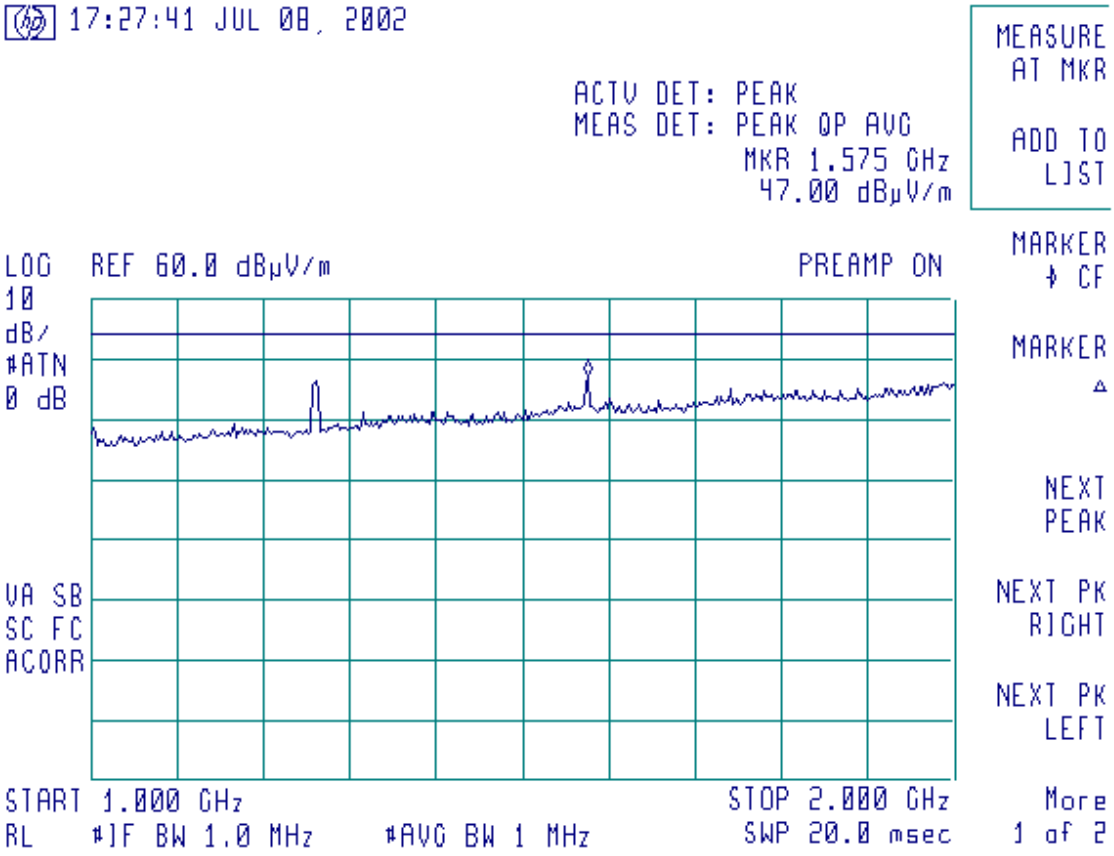
Plot A8

Field strength of 3rd harmonic



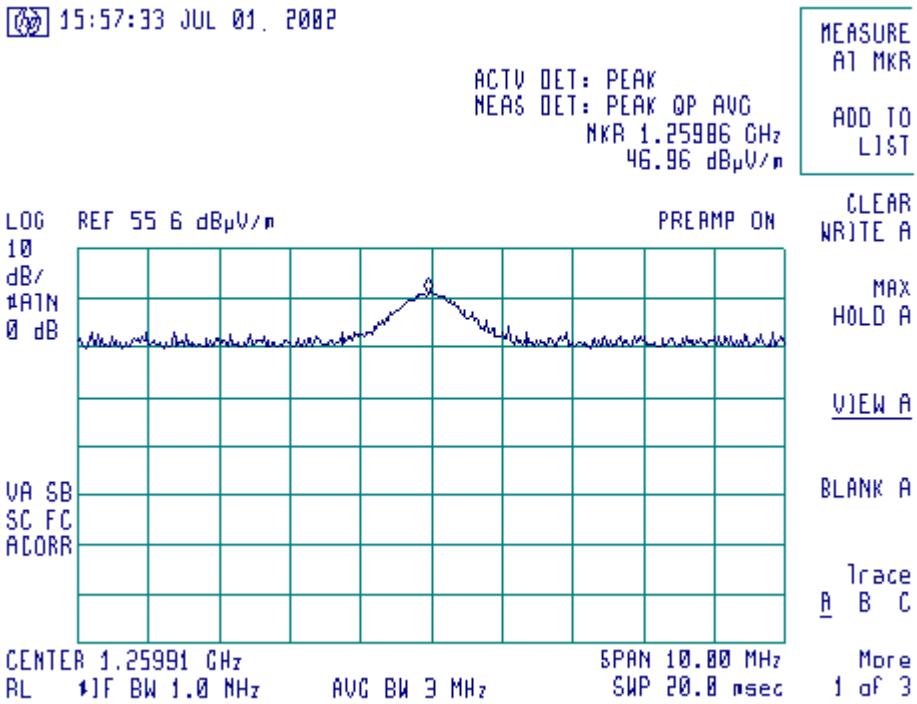
Plot A9

Spurious emission measurements
1 – 2 GHz frequency range



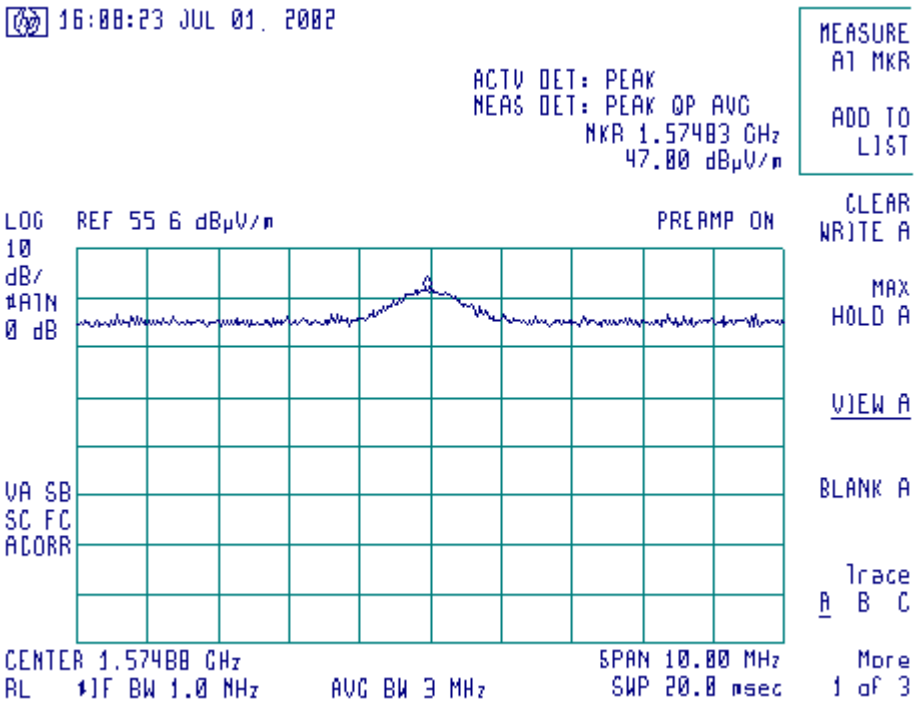
Plot A10

Field strength of 4th harmonic



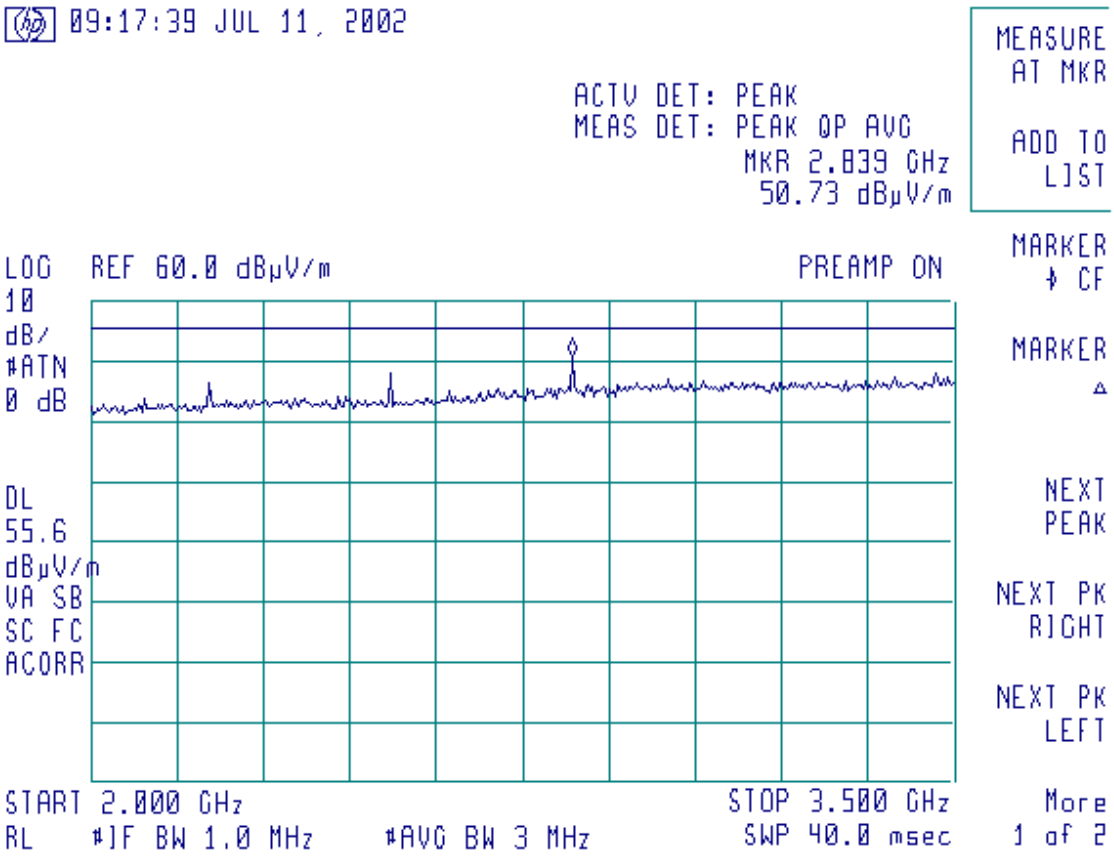
Plot A11

Field strength of 5th harmonic



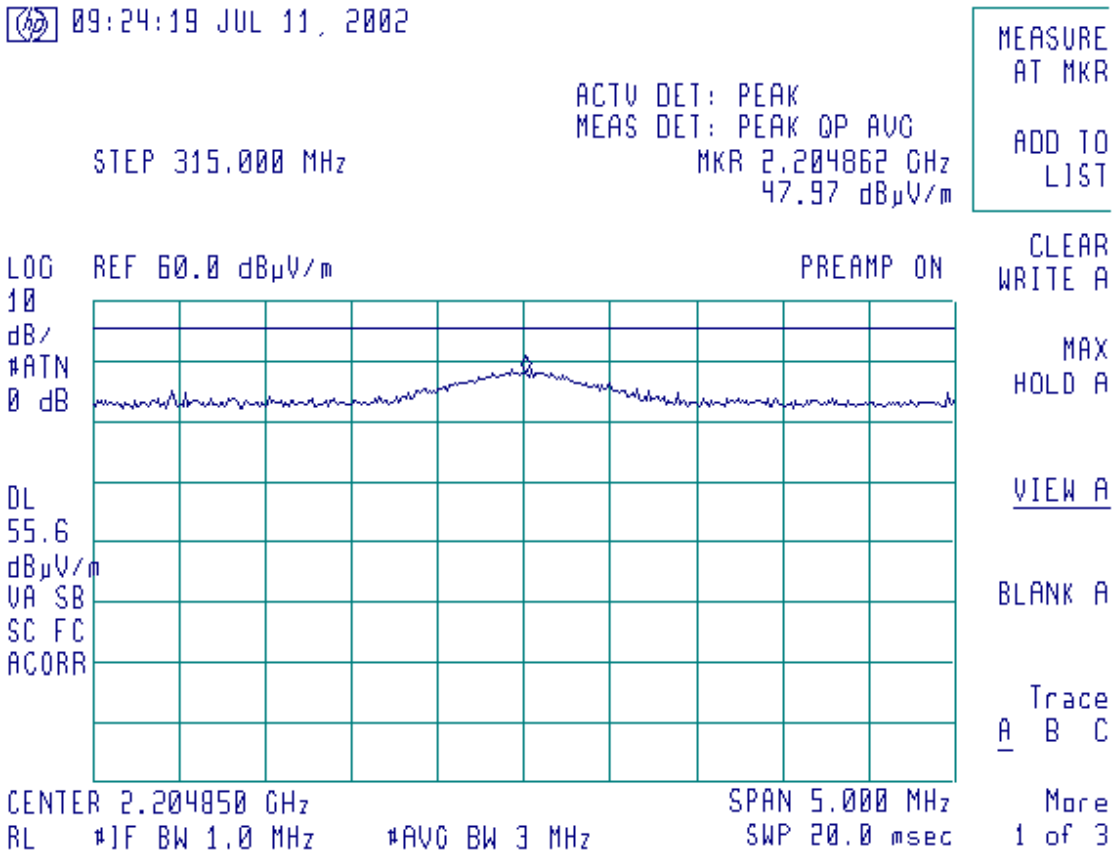
Plot A12

Spurious emission measurements
2 – 3.5 GHz frequency range



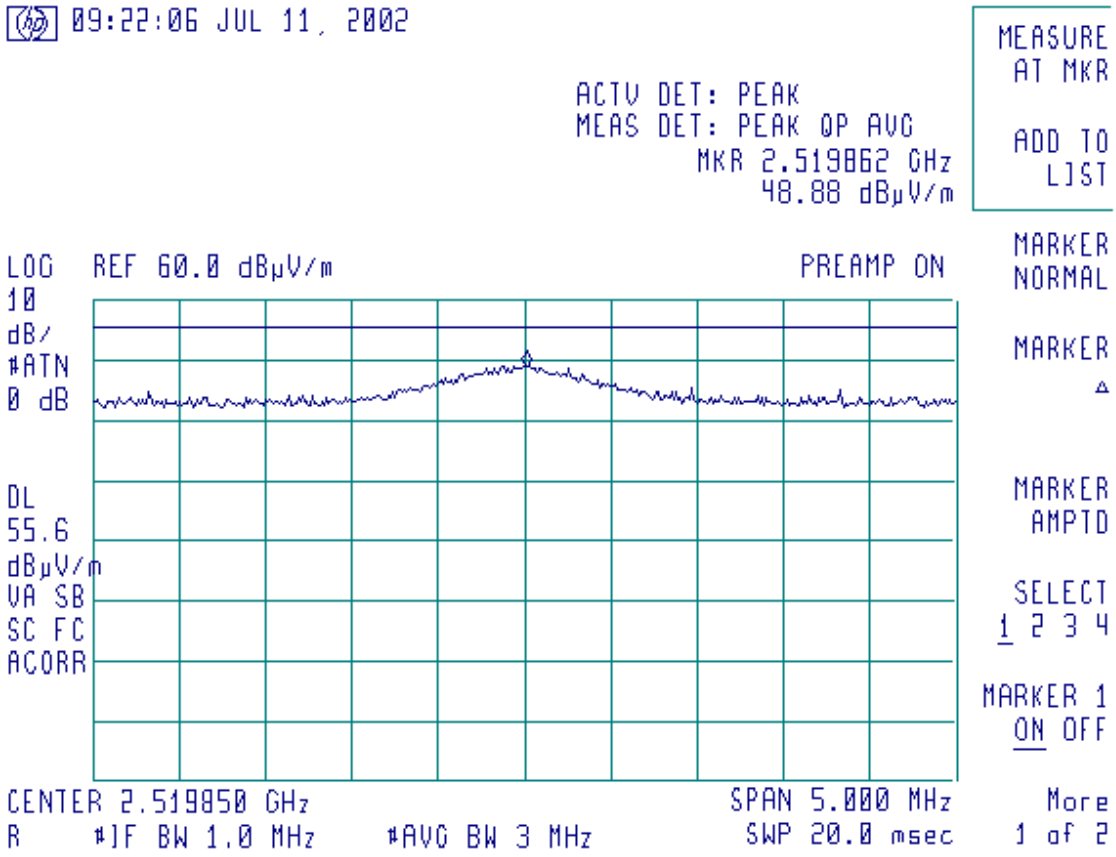
Plot A13

Field strength of 7th harmonic



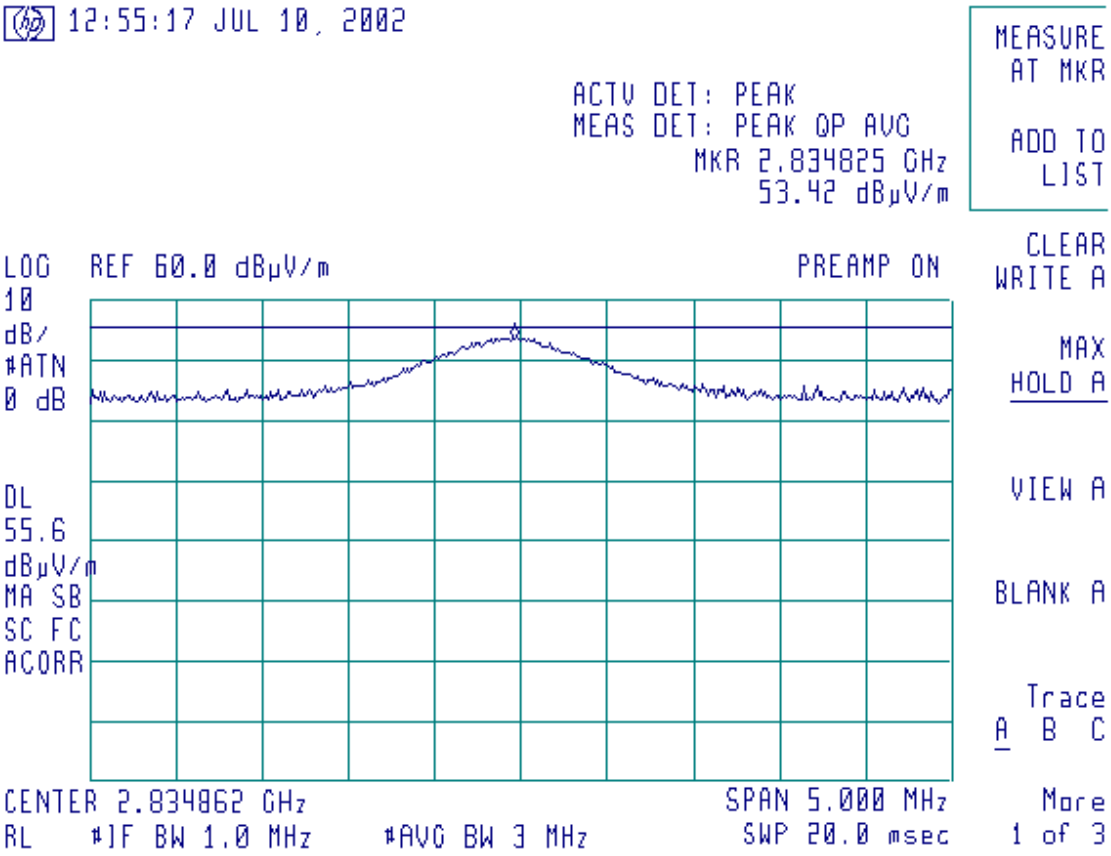
Plot A14

Field strength of 8th harmonic



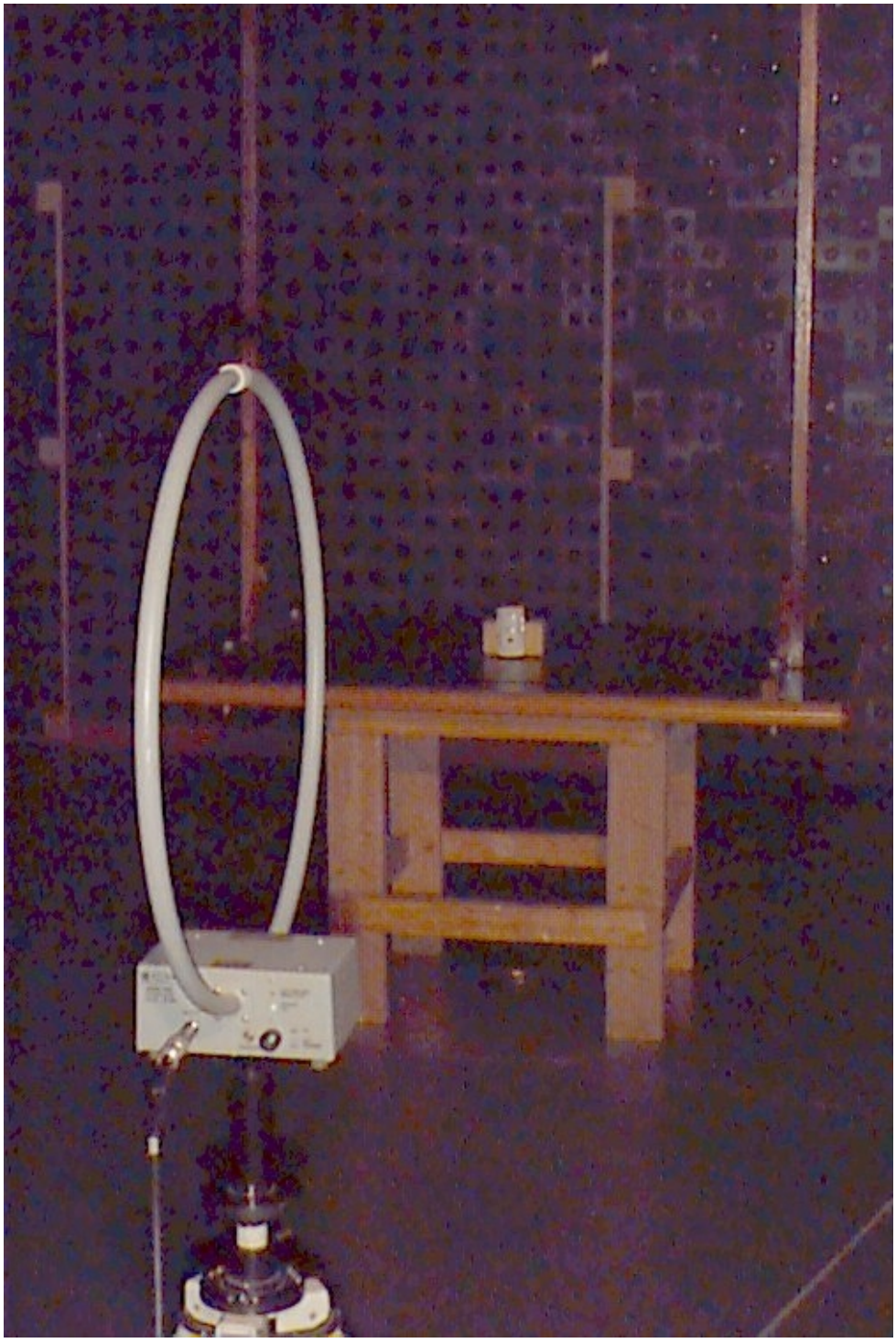
Plot A15

Field strength of 9th harmonic

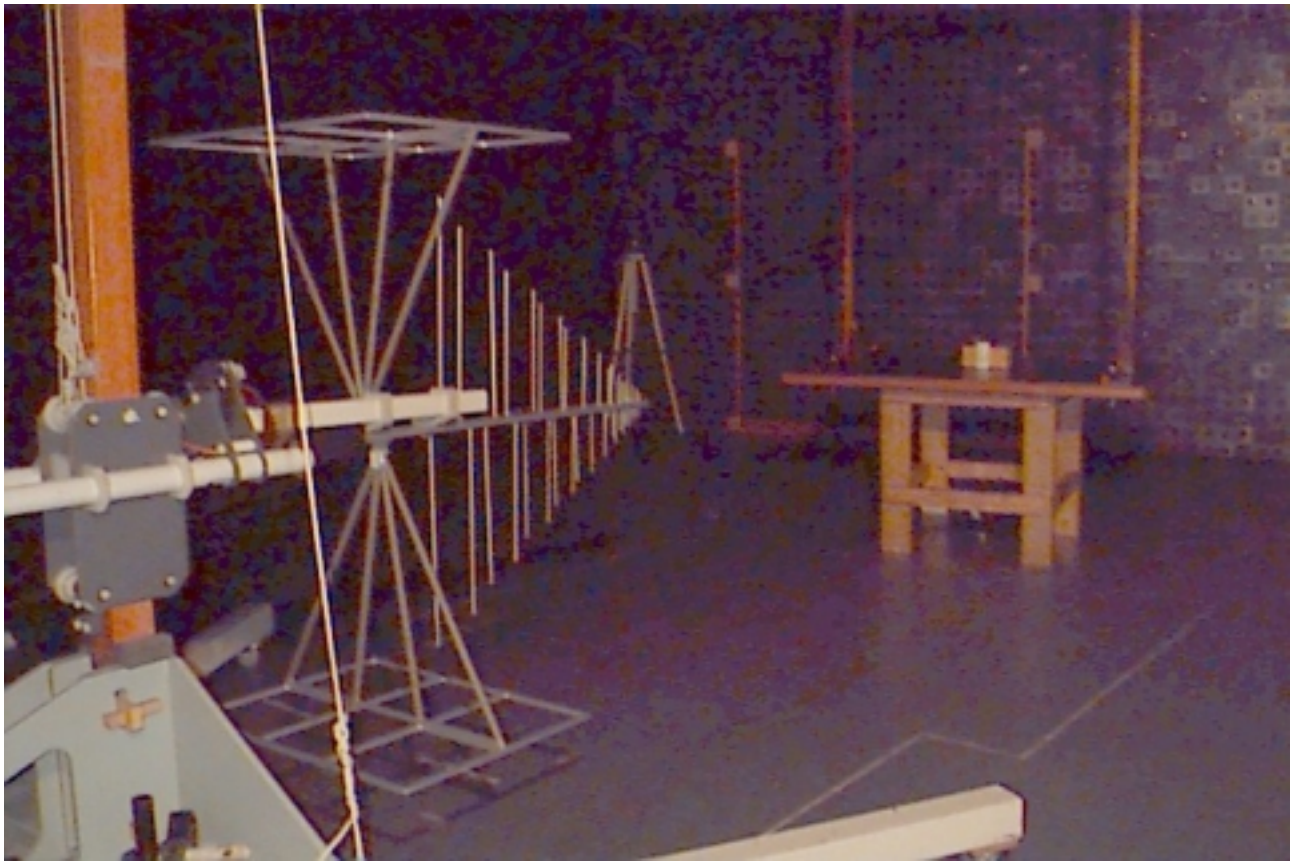


Appendix B – Test setup photographs

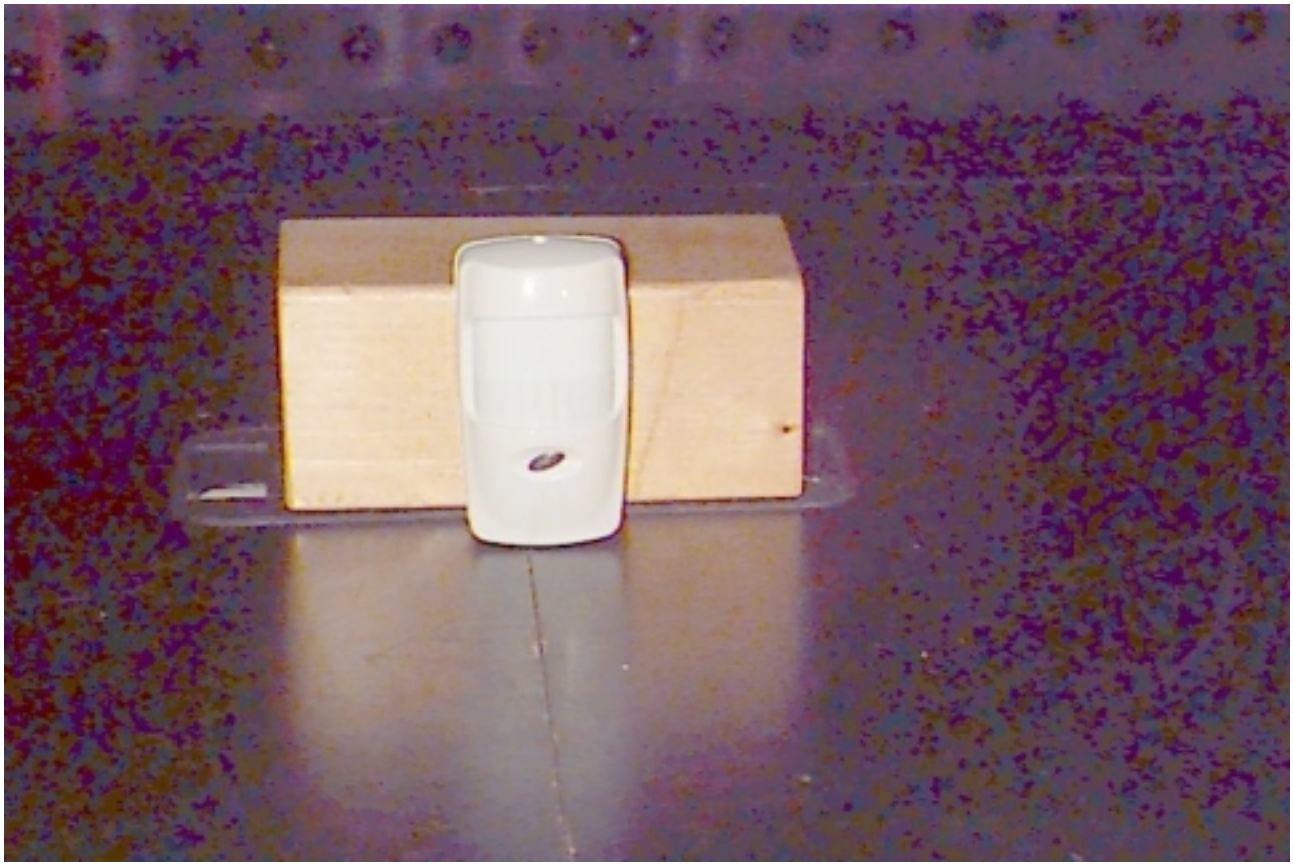
RADIATED EMISSION MEASUREMENT SETUP



RADIATED EMISSION MEASUREMENT SETUP



RADIATED EMISSION MEASUREMENT SETUP



Appendix C - Test equipment used for tests

HL Serial No.	Description	Manufacturer information			Due Calibration Month/ year
		Name	Model No.	Serial No.	
0034	Log periodic antenna, 200 - 1000 MHz	Electro-Metrics	LPA 25/30	1988	1/03
0041	Double ridged guide antenna, 1-18 GHz	Electro-Metrics	RGA 50/60	2811	8/02
0446	Active Loop Antenna 10 kHz-30 MHz	Electro-Mechanics	6502	2857	10/02
0465	Anechoic Chamber 9 (L) x 6.5 (W) x 5.5 (H) m	Hermon Labs	AC-1	023	3/03
0521	Spectrum Analyzer with RF filter section (EMI Receiver 9 kHz - 6.5 GHz)	Hewlett Packard	8546A	0319	7/03
0589	Cable Coaxial, GORE A2POL118.2, 3m	Hermon Labs	GORE-3	589	11/02
0604	Antenna Biconilog Log-Periodic/T Bow-Tie, 26 - 2000 MHz	EMCO	3141	9611-1011	01/03
1004	Cable coaxial, ANDREW PSWJ4, 6 m	Hermon Labs	ANDREW-6	163	12/02
1430	EMI Receiver System, 9 kHz - 2.9 GHz	Agilent Technologies	8542E	3807A00262	9/02
1947	Cable 18 GHz, 6.5 m, blue	Rhophase Microwave Ltd	NPS-1803A-6500-NPS	T4974	10/02

Appendix E Test equipment correction factors

Antenna factor, Active Loop Antenna
Model 6502
S/N 2857

Frequency, MHz	Antenna Factor, dB
0.009	-32.8
0.010	-33.8
0.020	-38.3
0.050	-41.1
0.075	-41.3
0.100	-41.6
0.150	-41.7
0.250	-41.6
0.500	-41.8
0.750	-41.9
1.000	-41.4
2.000	-41.5
3.000	-41.4
4.000	-41.4
5.000	-41.5
10.000	-41.9
15.000	-41.9
20.000	-42.2
25.000	-42.8
30.000	-44.0

Antenna factor is to be added to receiver meter reading in dB(μV) to convert to field intensity in dB(μV)/meter

Antenna Factor
Biconilog Antenna EMCO Model 3141
Ser.No.1011

Frequency, MHz	Antenna Factor, dB(1/m)	Frequency, MHz	Antenna Factor, dB(1/m)
26	7.8	940	24.0
28	7.8	960	24.1
30	7.8	980	24.5
40	7.2	1000	24.9
60	7.1	1020	25.0
70	8.5	1040	25.2
80	9.4	1060	25.4
90	9.8	1080	25.6
100	9.7	1100	25.7
110	9.3	1120	26.0
120	8.8	1140	26.4
130	8.7	1160	27.0
140	9.2	1180	27.0
150	9.8	1200	26.7
160	10.2	1220	26.5
170	10.4	1240	26.5
180	10.4	1260	26.5
190	10.3	1280	26.6
200	10.6	1300	27.0
220	11.6	1320	27.8
240	12.4	1340	28.3
260	12.8	1360	28.2
280	13.7	1380	27.9
300	14.7	1400	27.9
320	15.2	1420	27.9
340	15.4	1440	27.8
360	16.1	1460	27.8
380	16.4	1480	28.0
400	16.6	1500	28.5
420	16.7	1520	28.9
440	17.0	1540	29.6
460	17.7	1560	29.8
480	18.1	1580	29.6
500	18.5	1600	29.5
520	19.1	1620	29.3
540	19.5	1640	29.2
560	19.8	1660	29.4
580	20.6	1680	29.6
600	21.3	1700	29.8
620	21.5	1720	30.3
640	21.2	1740	30.8
660	21.4	1760	31.1
680	21.9	1780	31.0
700	22.2	1800	30.9
720	22.2	1820	30.7
740	22.1	1840	30.6
760	22.3	1860	30.6
780	22.6	1880	30.6
800	22.7	1900	30.6
820	22.9	1920	30.7
840	23.1	1940	30.9
860	23.4	1960	31.2
880	23.8	1980	31.6
900	24.1	2000	32.0
920	24.1		

Antenna factor is to be added to receiver meter reading in dB(μV) to convert to field intensity in dB(μV/meter).

Antenna factor
Log periodic antenna
Electro-Metrics, model LPA-25/30
Ser.No.1988

Frequency MHz	Antenna Factor dB(1/m)	Frequency MHz	Antenna Factor dB(1/m)
200	12.6	625	20.4
225	12.2	650	20.9
250	13.4	675	22.0
275	14.3	700	22.2
300	15.2	725	22.7
325	15.7	750	22.5
350	15.9	775	22.7
375	16.4	800	22.8
400	17.0	825	23.2
425	17.4	850	23.5
450	17.9	875	23.9
475	18.6	900	24.0
500	19.1	925	24.0
525	19.3	950	24.2
550	19.6	975	24.7
575	19.8	1000	25.1
600	20.0		

Antenna factor is to be added to receiver meter reading in dB(μV) to convert to field intensity in dB(μV/meter)

Antenna Factor
Double Ridged Guide Antenna
Model RGA-50/60
S/N 2811

Frequency, MHz	Antenna Factor, dB
1000	24.3
1500	25.4
2000	28.4
2500	29.2
3000	30.5
3500	31.6
4000	33.7
4500	32.2
5000	34.5
5500	34.5
6000	34.6
6500	35.3
7000	35.5
7500	35.9
8000	36.6
8500	37.3
9000	37.7
9500	37.7
10000	38.2
10500	38.5
11000	39.0
11500	40.1
12000	40.2
12500	39.3
13000	39.9
13500	40.6
14000	41.1
14500	40.5
15000	39.9
15500	37.8
16000	39.1
16500	41.1
17000	41.7
17500	45.1
18000	44.3

Antenna factor is to be added to receiver meter reading in dB(μV) to convert to field intensity in dB(μV)/meter

Cable Coaxial, GORE A2P01POL118, 2.3 m, model:GORE-3, s/n 176 (HL 0589)
+ Cable Coaxial, ANDREW PSWJ4, 6m, model: ANDREW-6, s/n 163 (HL 1004)
Calibration data

No.	Parameter	SET, MHz	Measured, dB	Deviation, dB	Tolerance (Specification), dB	Meas. Uncert., dB	Notes
1	Insertion	30	0.33	-			
2	Loss	50	0.40	-			
3		100	0.57	-			
4		300	0.97	-			
5		500	1.25	-			
6		800	1.59	-			
7		1000	1.81	-			
8		1200	1.97	-	≤ 6.5	±0.12	
9		1400	2.15	-			
10		1600	2.28	-			
11		1800	2.43	-			
12		2000	2.61	-			
13		2200	2.75	-			
14		2400	2.89	-			
15		2600	2.97	-			
16	Insertion	2800	3.21	-	≤ 6.5	±0.12	
17	Loss	3000	3.32	-			
18		3300	3.47	-			
19		3600	3.62	-			
20		3900	3.84	-			
21		4200	3.92	-		±0.17	
22		4500	4.07	-			
23		4800	4.36	-			
24		5100	4.62	-			
25		5400	4.78	-			
26		5700	5.16	-			
27		6000	5.67	-			
28		6500	5.99	-			

Cable 18GHz, 6.5 m, blue, model: NPS-1803A-6500-NPS, s/n T4974 (HL 1947)
Calibration data

Frequency, GHz	Insertion Loss, dB
	HL1947
0.03	0.30
0.05	0.38
0.10	0.53
0.20	0.74
0.30	0.91
0.40	1.05
0.50	1.18
0.60	1.29
0.70	1.40
0.80	1.50
0.90	1.59
1.00	1.68
1.10	1.77
1.20	1.86
1.30	1.94
1.40	2.01
1.50	2.08
1.60	2.16
1.70	2.22
1.80	2.29
1.90	2.36
2.00	2.42
2.10	2.48
2.20	2.54
2.30	2.60
2.40	2.66
2.50	2.71
2.60	2.77
2.70	2.83
2.80	2.89
2.90	2.95
3.10	3.06
3.30	3.17
3.50	3.28
3.70	3.39
3.90	3.51
4.10	3.62
4.30	3.76
4.50	3.87
4.70	4.01
4.90	4.10
5.10	4.21
5.30	4.31
5.50	4.43
5.70	4.56
5.90	4.71

Frequency, GHz	Insertion Loss, dB
	HL1947
6.10	4.87
6.30	4.95
6.50	4.94
6.70	4.88
6.90	4.87
7.10	4.83
7.30	4.85
7.50	4.86
7.70	4.91
7.90	4.96
8.10	5.03
8.30	5.08
8.50	5.13
8.70	5.21
8.90	5.22
9.10	5.34
9.30	5.35
9.50	5.52
9.70	5.51
9.90	5.66
10.10	5.70
10.30	5.78
10.50	5.79
10.70	5.82
10.90	5.86
11.10	5.94
11.30	6.06
11.50	6.21
11.70	6.44
11.90	6.61
12.10	6.76
12.40	6.68
13.00	6.66
13.50	6.81
14.00	6.90
14.50	6.90
15.00	6.97
15.50	7.17
16.00	7.28
16.50	7.27
17.00	7.38
17.50	7.68
18.00	7.92

Appendix E - General information

Test facility description

Tests were performed at Hermon Laboratories Ltd., which is a fully independent, private EMC, Safety and Telecommunication testing facility. Hermon Laboratories is listed by the Federal Communications Commission (USA) for all parts of Code of Federal Regulations 47 (CFR 47) and by Industry Canada for electromagnetic emissions (file numbers IC 2186-1 for OATS and IC 2186-2 for anechoic chamber), certified by VCCI, Japan (the registration numbers are R-808 for OATS, R-1082 for anechoic chamber, C-845 for conducted emissions site), assessed by TNO Certification EP&S (Netherlands) for a number of EMC, Telecommunications, Safety standards, and by AMTAC (UK) for safety of Medical Devices. The laboratory is accredited by American Association for Laboratory Accreditation (USA) according to ISO/IEC 17025 for Electromagnetic Compatibility, Product Safety, Telecommunications Testing and Environmental Simulation (for exact scope please refer to Certificate No. 839.01).

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Abbreviations and acronyms

The following abbreviations and acronyms are applicable to this test report:

AC	alternating current
AE	auxiliary equipment
cm	centimeter
dB	decibel
dBm	decibel referred to one milliwatt
dB(μV)	decibel referred to one microvolt
dB(μV/m)	decibel referred to one microvolt per meter
EMC	electromagnetic compatibility
EUT	equipment under test
GHz	gigahertz
H	height
Hz	hertz
kHz	kilohertz
kV	kilovolt
L	length
LISN	line impedance stabilization network
m	meter
MHz	megahertz
NA	not applicable
QP	quasi-peak
RF	radio frequency
RE	radiated emission
rms	root mean square
s	second
V	volt
W	width

Specification references

47CFR part 15: 2001	Radio Frequency Devices
ANSI C63.2:96	American National Standard for Instrumentation-Electromagnetic Noise and Field Strength, 10 kHz to 40 GHz-Specifications.
ANSI C63.4:92	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

FCC Equipment codes and descriptions

CYY	Communications Receiver used w/ P.15 transmitter
DCD	Part 15 Low Power transmitter Below 1705 kHz
DSC	Part 15 Security/Remote Control Transmitter
DSR	Part 15 Remote Control/Security Device Transceiver
DSS	Part 15 Spread Spectrum Transmitter
DXX	Part 15 Low Power Communication Device Transmitter
EAV	Part 15 Automatic Vehicle Identification System
ETB	Part 15 Cordless Telephone Base Transceiver
ETR	Part 15 Cordless Telephone Remote Transceiver
ETS	Part 15 Cordless telephone system
FAP	Part 15 Anti-Pilferage Device
FDS	Part 15 Field Disturbance Sensor
GAT	Part 15 Auditory Assistance Device (Transmitter)
HID	Part 15 TV Interface Device
JBC	Part 15 Class B Computing Device/ Personal Computer
JBP	Part 15 Class B Computing Device Peripheral
PUB	Part 15 Unlicensed PCS base station
PUE	Part 15 Unlicensed PCS portable Tx held to ear
PUF	Part 15 Unlicensed PCS portable Tx held to face
PUT	Part 15 Unlicensed PCS portable Tx worn on body