

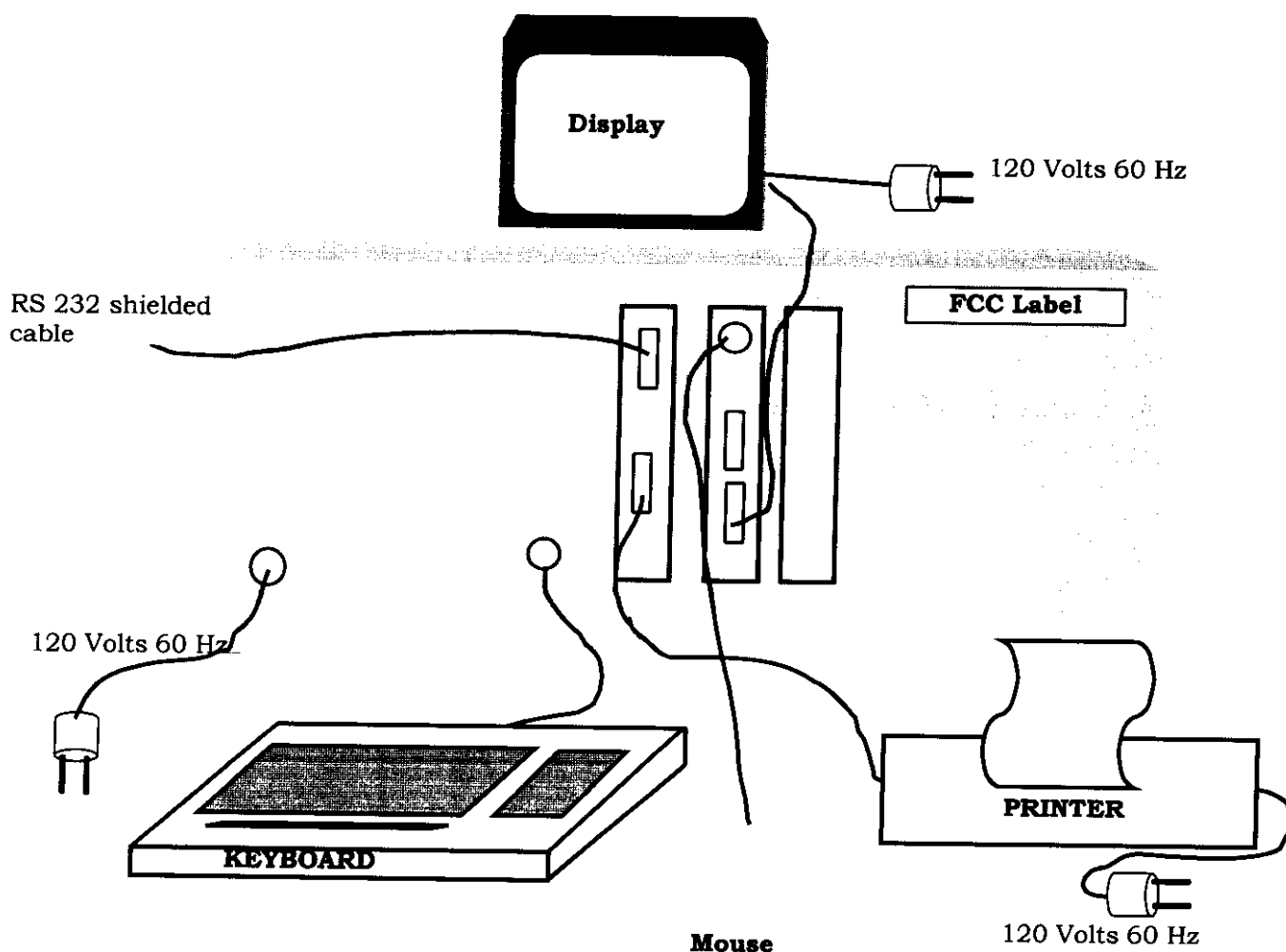
3. SYSTEM TEST CONFIGURATION

3.1 Justification

Even if, for this specific use the computer is not using the keyboard, mouse, printer and display, because the PCI card, used for the vocal server, is bought on the shelves by the final customer. The system was configured for testing in a standard configuration, as a customer would normally use it in order to verify all possible external connections behavior.

Two conducted lines perturbations measurements are performed, one on power supply of the P.C and one on the display and printer connected together. The radiated measurements are performed with P.C, display and printer in the field measurement.

3.2 EUT CONFIGURATION



3.3 EUT exciser software

In order to reflect the final utilization, the APLUS ligne 19 PC was using Windows NT 4.0 creating disk access and printing sequence:

3.4 Required Signatures

Applicant Signature:

Date 23/10/98

Typed/printed Name: G. LENAOUR

Position: Director



Test Lab. manager Signature:

Date: 10/21/1998

Typed/printed Name: JL. CANDELON

Position: Lab. manager



Staff test

Test Signature:

Date 10/21/1998

Typed/printed Name: A.LEQUIER



5. POWER LINE CONDUCTED EMISSION

5.1 Test results measurements

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data pages, and then are measured with quasi-peak detector.

SUMMARY OF 6 HIGHEST SIGNALS PER WIRE MEASURED ON THE CONFIGURATION

Product	Result	MINIMUM MARGIN				Data and Plot on following Pages
		WIRE LINE		NEUTRAL LINE		
		dB μ V	MHz	dB μ V	MHz	
E.U.T PEN0798 17500 DISPLAY+PRINTER	Pass	-5.0	15.850	-4.8	15.270	34 and 36
		-13.7	0.457	-12.0	2.677	
		-13.8	6.066	-12.9	2.350	
		-15.0	4.466	-14.4	0.457	
		-15.7	3.575	-15.7	1.374	
		-17.1	2.340	-15.8	6.041	
	Pass	-5.9	15.270	-5.2	15.080	35 and 37
		-12.5	1.095	-5.7	0.459	
		-12.8	0.753	-9.0	0.527	
		-14.4	0.479	-11.7	-14.4	
		-14.4	7.968	-14.4	-0.880	
		-17.2	3.153	-15.7	2.263	

CISPR RECEPTIVE CHAIN H.P 8574A CONFIGURATION		
Quasi-Peak Adapter	Normal mode	
	Band With = 9 kHz	
Spectrum Analyzer	Resolution Band With = 100 kHz	
	Video Band With = 300 kHz	
	Sweep min	Peak measurement : 100 ms/MHz Quasi-peak measurement : 200s/MHz
Pre-selector	Normal mode	
	Internal preamplifier : 20 dB	

All readings are quasi-peak unless stated otherwise.

EQUIPMENT FCC ID :N6HRACKCE9514**5.2 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (LINE WIRE)**

REPORT NUMBER : 984-215-01/e
PRODUCT NAME : APLUS Ligne 19
SERIAL NUMBER : PEN079817500
STANDARD : FCC CFR 47 PART 15/1995 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED PHASE
CONDITIONS : 120V/60Hz
DATE : 07/21/1998
MEASUREMENTS DONE BY : A.LEQUIER

APPENDIX:1-1

21 Jul 1998 10:19:52

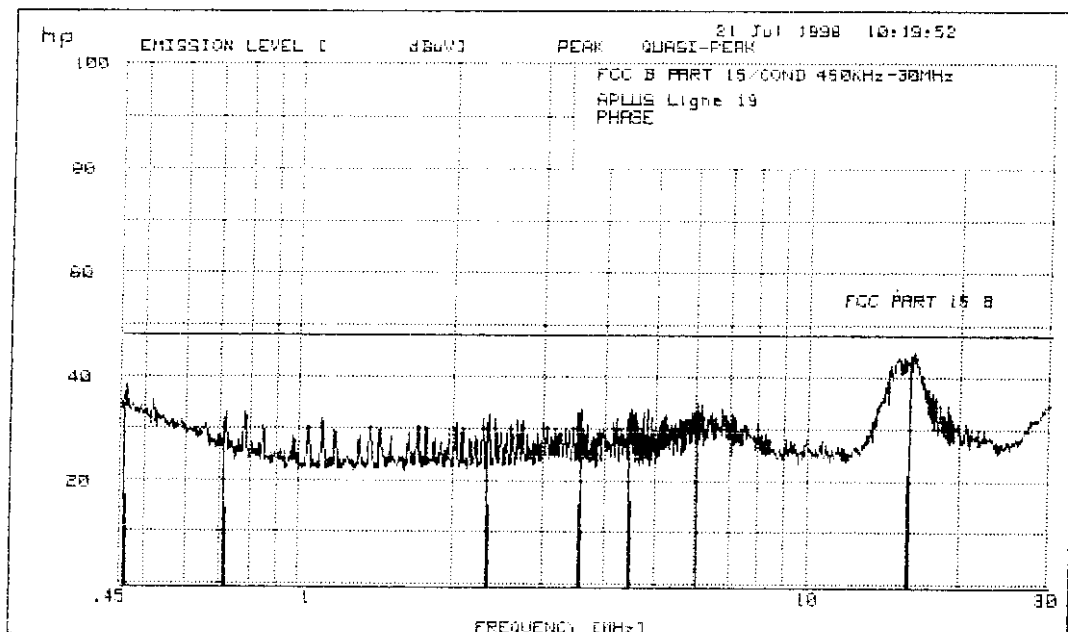
1. SETUP

1.1 FCC B PART 15/COND 450KHz-30MHz

APLUS Ligne 19
PHASE

Quasi-Peaks above -30 dB of Limit Line #1
peak criteria = 6 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	.4576	34.3	-13.7
2	.7169	29.5	-19.5
3	2.34	30.9	-17.1
4	3.575	32.3	-15.7
5	4.456	33	-15.0
6	6.066	34.2	-13.8
7	15.85	43	-5.0



EQUIPMENT FCC ID :N6HRACKCE9514**5.2 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (LINE WIRE cont'd)**

REPORT NUMBER : 984-215-01/e
PRODUCT NAME : PRINTER H.P 2277A + DISPLAY ZENITH ZDS-1426-XT
SERIAL NUMBER : 2906A15132 and MYE5018002086
STANDARD : FCC CFR 47 PART 15/1995 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED PHASE
CONDITIONS : 120V/60Hz
DATE : 07/21/1998
MEASUREMENTS DONE BY : A.LEQUIER

APPENDIX:1-3

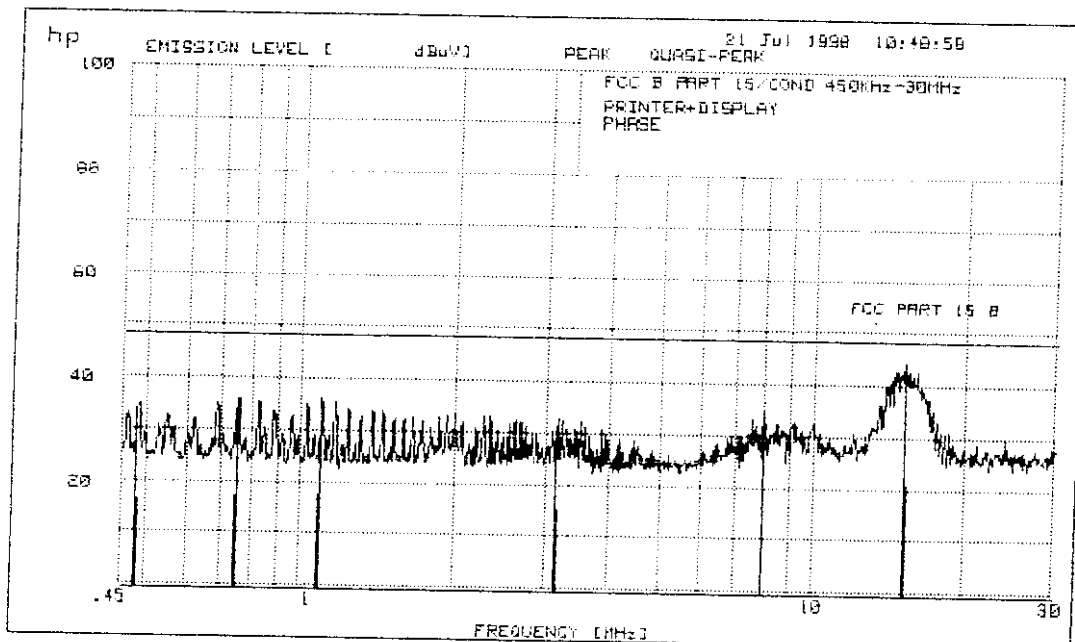
21 Jul 1998 10:48:58

1. SETUP

1.1 FCC B PART 15/COND 450KHz-30MHz

PRINTER+DISPLAY
PHASEQuasi-Peaks above -30 dB of Limit Line #1
peak criteria = 6 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	.4792	33.6	-14.4
2	.7539	35.2	-12.8
3	1.095	35.5	-12.5
4	3.153	30.8	-17.2
5	7.968	33.6	-14.4
6	15.27	42.1	-5.9



EQUIPMENT FCC ID :N6HRACKCE9514**5.3 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (NEUTRAL WIRE)**

REPORT NUMBER : 984-215-01/e
PRODUCT NAME : APLUS Ligne 19
SERIAL NUMBER : PEN079817500
STANDARD : FCC CFR 47 PART 15/1995 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED NEUTRAL
CONDITIONS : 120V/60Hz
DATE : 07/21/1998
MEASUREMENTS DONE BY : A.LEQUIER

APPENDIX:1-2

21 Jul 1998 10:38:25

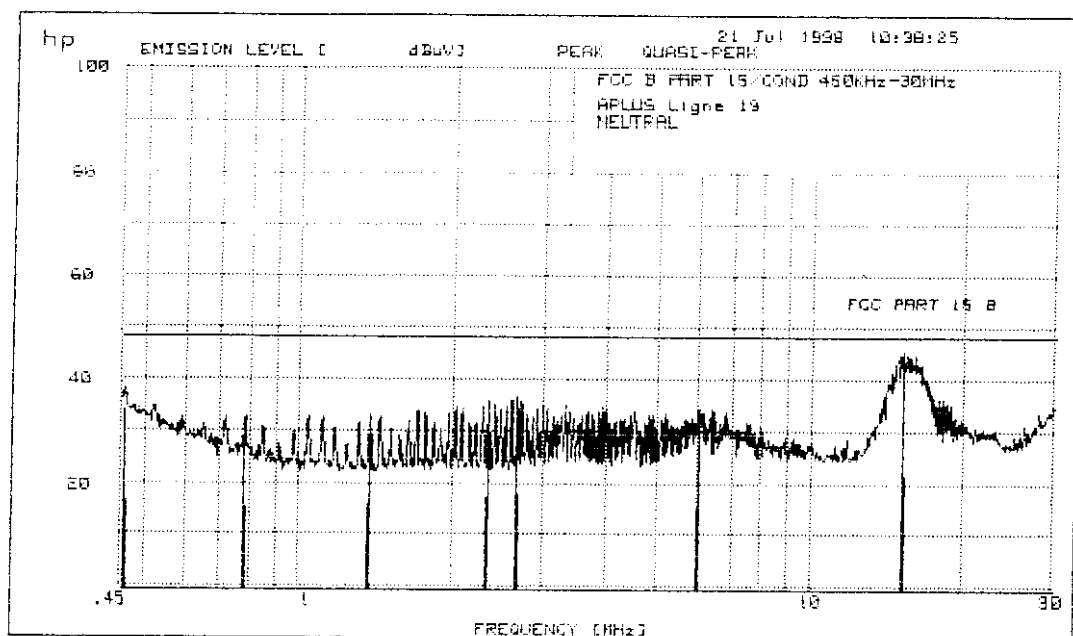
1. SETUP

1.1 FCC B PART 15/COND 450KHz-30MHz

APLUS Ligne 19
NEUTRAL

Quasi-Peaks above -30 dB of Limit Line #1
peak criteria = 6 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	.4576	33.6	-14.4
2	.7829	31.1	-16.9
3	1.374	32.3	-15.7
4	2.35	35.1	-12.9
5	2.677	36	-12.0
6	6.041	32.2	-15.8
7	15.27	43.2	-4.8



EQUIPMENT FCC ID :N6HRACKCE9514**5.3 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (NEUTRAL WIRE cont'd)**

REPORT NUMBER : 984-215-01/e
PRODUCT NAME : PRINTER H.P 2277A + DISPLAY ZENITH ZDS-1426-XT
SERIAL NUMBER : 2906A16132 and MYE5018002086
STANDARD : FCC CFR 47 PART 15/1995 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED NEUTRAL
CONDITIONS : 120V/60Hz
DATE : 07/21/1998
MEASUREMENTS DONE BY : A.LEQUIER

APPENDIX:1-4

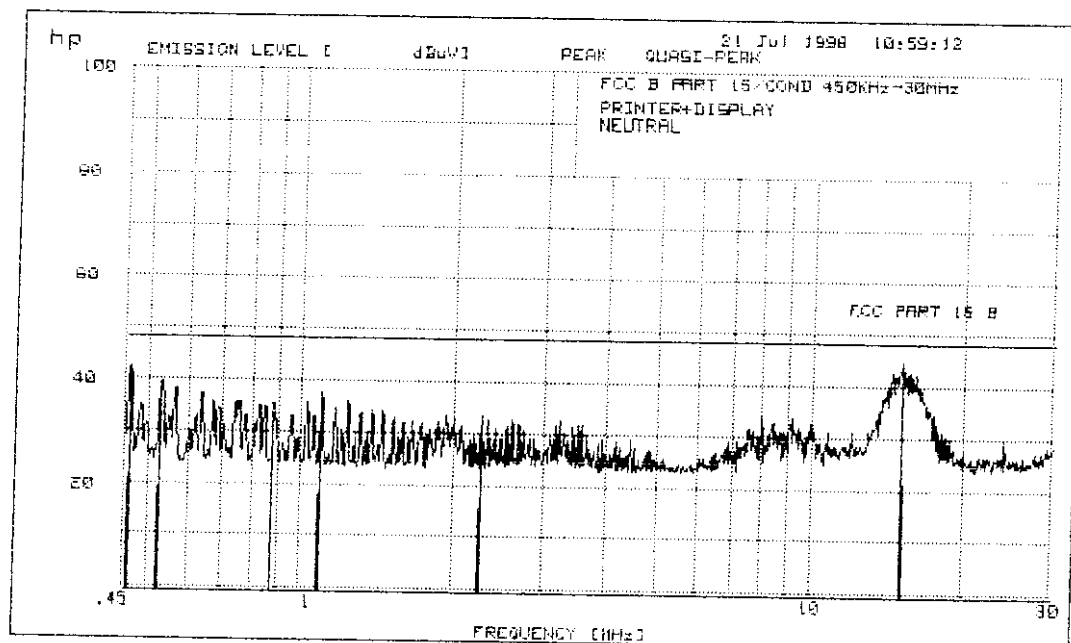
21 Jul 1998 10:59:12

1. SETUP

1.1 FCC B PART 15/COND 450KHz-30MHz

PRINTER+DISPLAY
NEUTRALQuasi-Peaks above -30 dB of Limit Line #1
peak criteria = 6 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	.4595	42.3	-5.7
2	.5278	39	-8.0
3	.8805	33.6	-14.4
4	1.095	36.3	-11.7
5	2.263	32.3	-15.7
6	15.08	42.8	-5.2



6. OPEN FIELD RADIATED EMISSION**6.1 Test results measurements**

The following data pages lists the significant emission frequencies, measured level, correction factor (includes cable and antenna corrections), corrected reading and the limit. The highest peaks are measured in quasi-peak detection mode. Explanation of the Correction Factor is given in paragraph 6.4.

SUMMARY OF 6 HIGHEST SIGNALS MEASURED ON THE CONFIGURATION

Product	Result	MINIMUM MARGIN		Data and Plot on following Pages
		dB μ V	MHz	
P.C+ DISPLAY + PRINTER + KEYBOARD +MOUSE+ RS232 cable	Pass	-2.5 -4.0 -4.3 -5.6 -6.5 -6.6	233.919 39.060 200.460 601.464 334.112 300.689	41

CISPR RECEPTIVE CHAIN H.P 8574A CONFIGURATION		
Quasi-Peak Adapter	Normal mode Band With = 120 kHz	
Spectrum Analyzer	Resolution Band With = 1 MHz Video Band With = 3 MHz	
	Sweep min	Peak measurement : 1 ms/MHz Quasi-peak measurement : 20s/MHz
Pre-selector	Normal mode Internal preamplifier : 20 dB	

All readings are quasi-peak unless stated otherwise.

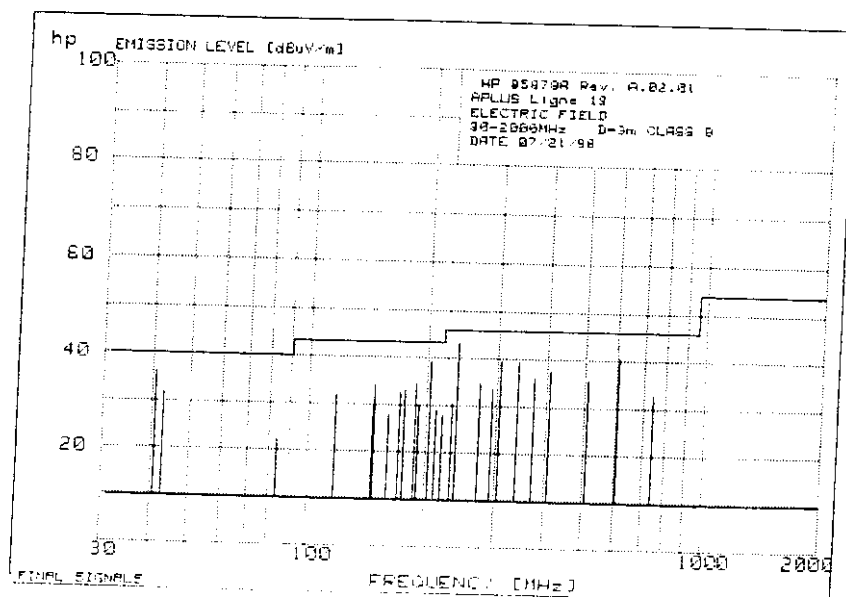
EQUIPMENT FCC ID :N6HRACKCE9514

6.2 OPEN FIELD EMISSION DATA AND PLOTTING

REPORT : 984-215-01/e
PRODUCT NAME : APLUS Ligne 19
SERIAL NUMBER : PEN079817500
STANDARD : FCC CFR 47 PART 15 1997 CLASS B
MEASUREMENT : ELECTRIC FIELD 30-2000 MHz
CONDITIONS : 120V/60Hz
DATE : 07/21/1998
MEASUREMENT DONE BY : A.LEQUIER
APPENDIX 2
CONFIGURATION ON APPENDIX A
PRODUCT EMISSIONS

HP 85879A Rev. A.02.01 Data File: ELECTRIC FIELD 21 Jul 1998 12:48

EMISSION No	FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS			SITE			CORR FACTOR dB	COMMENTS
			ABS	DLIM	MODE	POL	HGT cm	AZM deg		
1	39.050	40.0	35.0	-4.0	QP	V	130	185	12.1	DISPLAY
2	41.250	40.0	31.9	-8.1	QP	V	130	185	11.3	
3	81.052	40.0	22.1	-17.9	PK	V	130	180	6.3	
4	114.553	43.5	32.0	-11.5	PK	V	110	250	11.4	
5	143.194	43.5	30.0	-13.5	PK	H	130	0	14.1	
6	144.031	43.5	34.0	-9.5	QP	H	310	275	14.2	
7	144.047	43.5	34.1	-9.4	QP	H	300	280	14.2	
8	157.510	43.5	27.9	-15.6	PK	H	130	255	15.1	
9	167.030	43.5	32.7	-10.8	PK	H	150	85	15.5	
10	172.035	43.5	33.7	-9.8	QP	H	150	255	15.7	
11	184.053	43.5	34.6	-8.9	QP	H	150	255	16.1	
12	188.194	43.5	29.9	-13.6	PK	H	150	0	16.3	
13	200.450	43.5	39.2	-4.3	QP	H	140	70	16.8	
14	208.050	43.5	28.9	-14.6	PK	H	140	335	17.2	
15	214.790	43.5	27.9	-15.6	PK	H	150	85	17.5	
16	228.788	46.0	30.3	-15.7	PK	H	140	360	18.1	
17	233.919	46.0	43.5	-2.5	QP	H	170	280	18.3	
18	267.272	46.0	34.8	-11.2	PK	H	180	0	19.6	
19	288.071	46.0	33.7	-12.3	PK	H	180	315	20.3	
20	300.689	46.0	39.4	-6.6	QP	H	130	345	17.7	
21	334.112	46.0	39.5	-6.5	QP	H	150	55	18.4	
22	367.531	46.0	36.3	-9.7	QP	H	150	355	19.1	
23	400.948	46.0	37.5	-8.5	QP	H	210	170	19.8	
24	501.188	46.0	35.9	-10.1	PK	H	180	360	21.4	
25	601.464	46.0	40.4	-5.6	QP	H	180	135	22.3	
26	735.074	46.0	33.0	-13.0	PK	H	200	105	24.5	



6.3 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and cable loss, and subtracting the preamplifier gain (if any) from the measured reading. The basic equation with a sample calculation is as follows :

$$FS = RA + AF + CF - PG$$

FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable loss

PG = Preamplifier Gain (Pre-selector)

Assume a receiver reading. The antenna factor and the cable loss are added. The internal pre-selector gain of 20 dB is subtracted, giving the field strength.

REMS software performs calculation and result of table in column ABS (MEASUREMENTS) is FIELD STRENGTH.

6.4 ANTENNA FACTORS AND CABLE LOSS FOR 3m DISTANCE MEASUREMENT

6-4-1 Cable loss

E field 3 meters cable losses

FREQUENCY F (MHz)	LOSS (dB)
30	0.4
40	0.8
50	1.1
100	1.1
120	1.3
160	1.8
200	1.7
250	2.3
300	2.7
400	3
500	3.4
600	3.3
700	3.6
800	4.3
900	4.3
1000	4.6
1100	4.6
1200	5.2
1300	5.6
1400	5.8
1500	5.9
1600	6.2
1700	6.3
1800	6.8
1900	7
2000	7.2

EQUIPMENT FCC ID :N6HRACKCE9514

6-4-2 Antenna factor: BICONIC BBA9106 30-300MHz; LOG PERIODIC UHALP9107 300-1000MHz;
 BILOG CBL6112 30-2000 MHz (3m)

BICONIC BBA9106

Frequency (MHz)	Factor antenna (dB)
30	13.8
35	12.5
40	11.0
45	9.0
50	7.7
60	5.5
70	4.0
80	5.0
90	6.5
100	8.6
125	11.2
150	13.0
175	14.0
200	15.1
250	16.7
300	18.0

BILOG CBL6112

Frequency (MHz)	Factor antenna (dB)
30	19.4
35	16.9
40	14.3
45	11.9
50	9.5
55	7.7
60	6.7
65	6.4
70	6.7
75	7.6
80	8.6
90	10.5
100	11.9
150	11.9
200	10.1
250	13.7
300	14.4
400	17.1
500	19.0
600	20.2
700	20.4
800	21.3
900	21.8
1000	22.6
1100	23.4
1200	24.3
1300	24.8
1400	25.7
1500	26.6
1600	26.9
1700	28.0
1800	28.1
1900	28.6
2000	29.2

LOG PERIODIC UHALP9107

Frequency (MHz)	Factor antenna (dB)
300	15.0
400	16.8
500	18.0
600	19.0
700	20.2
800	21.5
900	22.7
1000	24.0