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APPLICANT: LOYAL TECHNOLOGY CO., LTD.

FCC ID: ICK-FRS-2002

REPORT CONTAINING:

EXHIBITS CONTAINING:

APPLICANT: LOYAL TECHNOLOGY CO., LTD.

FCC ID: ICK-FRS-2002

Equipment List

	DEVICE	MFGR	MODEL	SERNO	CAL/CHAR DATE	DUE DATE or STATUS
X	3-Meter OATS	TEI	N/A	N/A	Listed 12/22/99	12/22/02
	3/10-Meter OATS	TEI	N/A	N/A	Listed 3/26/01	3/26/04
X	Receiver, Beige Tower					
X	Spectrum Analyzer (Tan)	HP	8566B Opt 462	3138A07786 3144A20661	CAL 8/31/01	8/31/02
X	RF Preselector (Tan)	HP	85685A	3221A01400	CAL 8/31/01	8/31/02
X	Quasi-Peak Adapter (Tan)	HP	85650A	3303A01690	CAL 8/31/01	8/31/02
	Receiver, Blue Tower					
	Spectrum Analyzer (Blue)	HP	8568B	2928A04729 2848A18049	CHAR 10/22/01	10/22/02
	RF Preselector (Blue)	HP	85685A	2926A00983	CHAR 10/22/01	10/22/02
	Quasi-Peak Adapter (Blue)	HP	85650A	2811A01279	CHAR 10/22/01	10/22/02
	Biconnical Antenna	Electro-Metrics	BIA-25	1171	CAL 4/26/01	4/26/03
X	Biconnical Antenna	Eaton	94455-1	1096	CAL 10/1/01	10/1/02
	Biconnical Antenna	Eaton	94455-1	1057	CHAR 3/15/00	3/15/01
	BiconiLog Antenna	EMCO	3143	9409-1043		
X	Log-Periodic Antenna	Electro-Metrics	LPA-25	1122	CAL 10/2/01	10/2/02
	Log-Periodic Antenna	Electro-Metrics	EM-6950	632	CHAR 10/15/01	10/15/02
	Log-Periodic Antenna	Electro-Metrics	LPA-30	409	CHAR 10/16/01	10/16/02
	Dipole Antenna Kit	Electro-Metrics	TDA-30/1-4	152	CAL 3/21/01	3/21/02
	Dipole Antenna Kit	Electro-Metrics	TDA-30/1-4	153	CHAR 11/24/00	11/24/01

	DEVICE	MFGR	MODEL	SERNO	CAL/CHAR DATE	DUE DATE or STATUS
X	Double-Ridged Horn Antenna	Electro-Metrics	RGA-180	2319	CAL 12/19/01	12/19/02
	Horn Antenna	Electro-Metrics	EM-6961	6246	CAL 3/21/01	3/21/02
	Horn Antenna	ATM	19-443-6R	None	No Cal Required	
	Passive Loop Antenna	EMC Test Systems	EMCO 6512	9706-1211	CHAR 7/10/01	7/10/02
	Line Impedance Stabilization . . .	Electro-Metrics	ANS-25/2	2604	CAL 10/9/01	10/9/02
	Line Impedance Stabilization . . .	Electro-Metrics	EM-7820	2682	CAL 3/16/01	3/16/02
	Termaline Wattmeter	Bird Electronic Corporation	611	16405	CAL 5/25/99	(5/25/00)
	Termaline Wattmeter	Bird Electronic Corporation	6104	1926	CAL 12/12/01	12/12/02
	Oscilloscope	Tektronix	2230	300572	CHAR 2/1/01	2/1/02
	Temperature Chamber	Tenney Engineering	TTRC	11717-7	CHAR 1/22/02	1/22/03
	AC Voltmeter	HP	400FL	2213A14499	CAL 10/9/01	10/9/02
	AC Voltmeter	HP	400FL	2213A14261	CHAR 10/15/01	10/15/02
	AC Voltmeter	HP	400FL	2213A14728	CHAR 10/15/01	10/15/02
X	Digital Multimeter	Fluke	77	35053830	CHAR 1/8/02	1/8/03
	Digital Multimeter	Fluke	77	43850817	CHAR 1/8/02	1/8/03
	Digital Multimeter	HP	E2377A	2927J05849	CHAR 1/8/02	1/8/03
	Multimeter	Fluke	FLUKE-77-3	79510405	CAL 9/26/01	9/26/02
	Peak Power Meter	HP	8900C	2131A00545	CHAR 1/26/01	1/26/02
	Digital Thermometer	Fluke	2166A	42032	CAL 1/16/02	1/16/03
	Thermometer	Traulsen	SK-128		CHAR 1/22/02	1/22/03
	Temp/Humidity gauge	EXTech	44577F	E000901	CHAR 1/22/02	1/22/03

	DEVICE	MFGR	MODEL	SERNO	CAL/CHAR DATE	DUE DATE or STATUS
	Frequency Counter	HP	5352B	2632A00165	CAL 11/28/01	11/28/02
	Power Sensor	Agilent Technologies	84811A	2551A02705	CAL 1/26/01	1/26/02
	Injection Probe	Fischer Custom Communications	F-120-9A	270	CAL 6/1/01	6/1/02
	Service Monitor	IFR	FM/AM 500A	5182	CAL 11/22/00	11/22/01
	Comm. Serv. Monitor	IFR	FM/AM 1200S	6593	CAL 11/12/99	11/12/00
	Signal Generator	HP	8640B	2308A21464	CAL 11/15/01	11/15/02
	Modulation Analyzer	HP	8901A	3435A06868	CAL 9/5/01	9/5/02
	Power Line Coupling/ Decoupling Network	Fischer Custom Communications	FCC-801-M2-16A	01048	CAL 8/29/01	8/29/02
	Power Line Coupling/ Decoupling Network	Fischer Custom Communications	FCC-801-M3-16A	01060	CAL 8/29/01	8/29/02
	VHF/UHF Current Probe	Fischer Custom Communications	F-52	130	CAL 8/30/01	8/30/02
	Passive Impedance Adapter	Fischer Custom Communications	FCC-801-150-50-CDN	01117 & 01118	CAL 8/29/01	8/29/02
	Radiating Field Coil	Fischer Custom Communications	F-1000-4-8/9/10-L-1M	9859	CAL 10/15/98	10/15/99
	Near Field Probe	HP	HP11940A	2650A02748	CHAR 2/1/01	2/1/02
	BandReject Filter	Lorch Microwave	5BR4-2400/ 60-N	Z1	CHAR 3/2/01	3/2/02
	BandReject Filter	Lorch Microwave	6BR6-2442/ 300-N	Z1	CHAR 3/2/01	3/2/02
	BandReject Filter	Lorch Microwave	5BR4-10525/ 900-S	Z1	CHAR 3/2/01	3/2/02
	High Pas Filter	Microlab	HA-10N		CHAR 10/4/01	10/4/02
	Audio Oscillator	HP	653A	832-00260	CHAR 3/1/01	3/1/02
	Frequency Counter	HP	5382A	1620A03535	CHAR 3/2/01	3/2/02
	Frequency Counter	HP	5385A	3242A07460	CHAR 12/11/01	12/11/02

	DEVICE	MFGR	MODEL	SERNO	CAL/CHAR DATE	DUE DATE or STATUS
	Preamplifier	HP	8449B-H02	3008A00372	CHAR 3/4/01	3/4/02
	Amplifier	HP	11975A	2738A01969	CHAR 3/1/01	3/1/02
	Egg Timer	Unk			CHAR 2/28/01	2/28/02
	Measuring Tape, 20M	Kraftixx	0631-20		CHAR 2/28/01	2/28/02
	Measuring Tape, 7.5M	Kraftixx	7.5M PROFI		CHAR 2/28/01	2/28/02
	EMC Immunity Test System	Keytek	CEMASTER	9810210		
	AC Power Source	California Instruments	1251RP	L05865		
	AC Power Source	California Instruments	PACS-1	X71484		
	Isotropic Field Probe	Amplifier Research	FP5000	22839		
	Isotropic Field Probe	Amplifier Research	FP5000	300103		
	Capacitor Clamp	Keytek	CM-CCL	9811359	No Cal Required	
	Amplifier	Amplifier Research	10W1000B	23117	No Cal Required	
	Field Monitor	Amplifier Research	FM5004	22288	No Cal Required	
	ELF Meter	F. W. Bell	4060	Not serialized		
	Coaxial Cable #51	Insulated Wire Inc.	NPS 2251-2880	Timco #51	CHAR 1/23/02	1/23/03
	Coaxial Cable #64	Semflex Inc.	60637	Timco #64	CHAR 1/24/02	1/24/03
	Coaxial Cable #65	General Cable Co.	E9917 RG233/U	Timco #65	CHAR 1/23/02	1/23/03
	Coaxial Cable #106	Unknown	Unknown	Timco #106	CHAR 1/23/02	1/23/03

TEST PROCEDURES

GENERAL: This report shall NOT be reproduced except in full without the written approval of TIMCO ENGINEERING, INC.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-1992 using a HEWLETT PACKARD spectrum analyzer with a preselector. In the frequency range 10 kHz to 30 MHz the RBW was 10 kHz and from 30-1000 MHz the RBW of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz. The ambient temperature of the UUT was 82°F with a humidity of 40%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3 m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

Example:

Freq (MHz)	METER READING + ACF = FS
33	20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

APPLICANT: LOYAL TECHNOLOGY CO., LTD.

FCC ID: ICK-FRS-2002

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NO.15.109(a) and 15.209

REQUIREMENTS: CARRIER FREQUENCY WILL NOT EXCEED 2400/F(kHz) AT 300 Meters.

OUT-OF-BAND EMISSIONS SHALL NOT EXCEED THE LEVEL OF THE FUNDAMENTAL.

9 to 490 kHz: 2400/F(kHz) uV/m @ 300 METERS

490 to 1705 kHz: 24000/F(kHz) uV/m @ 30 METERS
1705 to 30 MHz: 29.54 dBuV/M @ 30 METERS
30 to 88 MHz: 40.00 dBuV/M @ 3 METERS
88 to 216 MHz: 43.50 dBuV/M
216 to 960 MHz: 46.02 dBuV/M
ABOVE 960 MHz: 54.00 dBuV/M

TEST CONFIGURATION: The INTENTIONAL RADIATOR was connected to an ignition switch and a harness simulator cable box. The device was tested in both transmitting modes.

TEST DATA:

Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
462.60	**8.4**	**v**	**2.99**	**17.20**	**28.59**	**17.41**
462.60	**11.4**	**H**	**2.99**	**17.20**	**31.59**	**14.41**

THE MEASUREMENTS WERE MADE AT 3 meters.

The spectrum was scanned from 10 kHz to 1000 MHz.

SAMPLE CALCULATION: FSdBuV/m = MR(dBuV) + ACFdB.

APPLICANT: LOYAL TECHNOLOGY CO., LTD.

FCC ID: ICK-FRS-2002

NAME OF TEST: RADIATION INTERFERENCE

TEST PROCEDURE: ANSI C63.4-1992 Section 8.2.1. The EUT was placed on a non-conducting table 80 cm above the ground plane with the EUT located in the center of the table. With the antenna vertical a preliminary scan was done at 1 meters distance, the EUT was moved to a 3.0 meter distance and the antenna height varied and also placed in a horizontal position. The frequency was scanned from 9.0 kHz to 1.0 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The EUT was measured in three(3) orthogonal planes. The unit was measured at TIMCO ENGINEERING, INC. located at 849 N.W. State Road 45 Newberry, Florida 32669.

TEST RESULTS: THE UNIT DOES MEET THE FCC REQUIREMENTS.

PERFORMED BY: JOE SCOGLIO DATE: 4/23/02

APPLICANT: LOYAL TECHNOLOGY CO., LTD.

FCC ID: ICK-FRS-2002

NAME OF TEST: Occupied Bandwidth

RULES PART NO.: 15.209

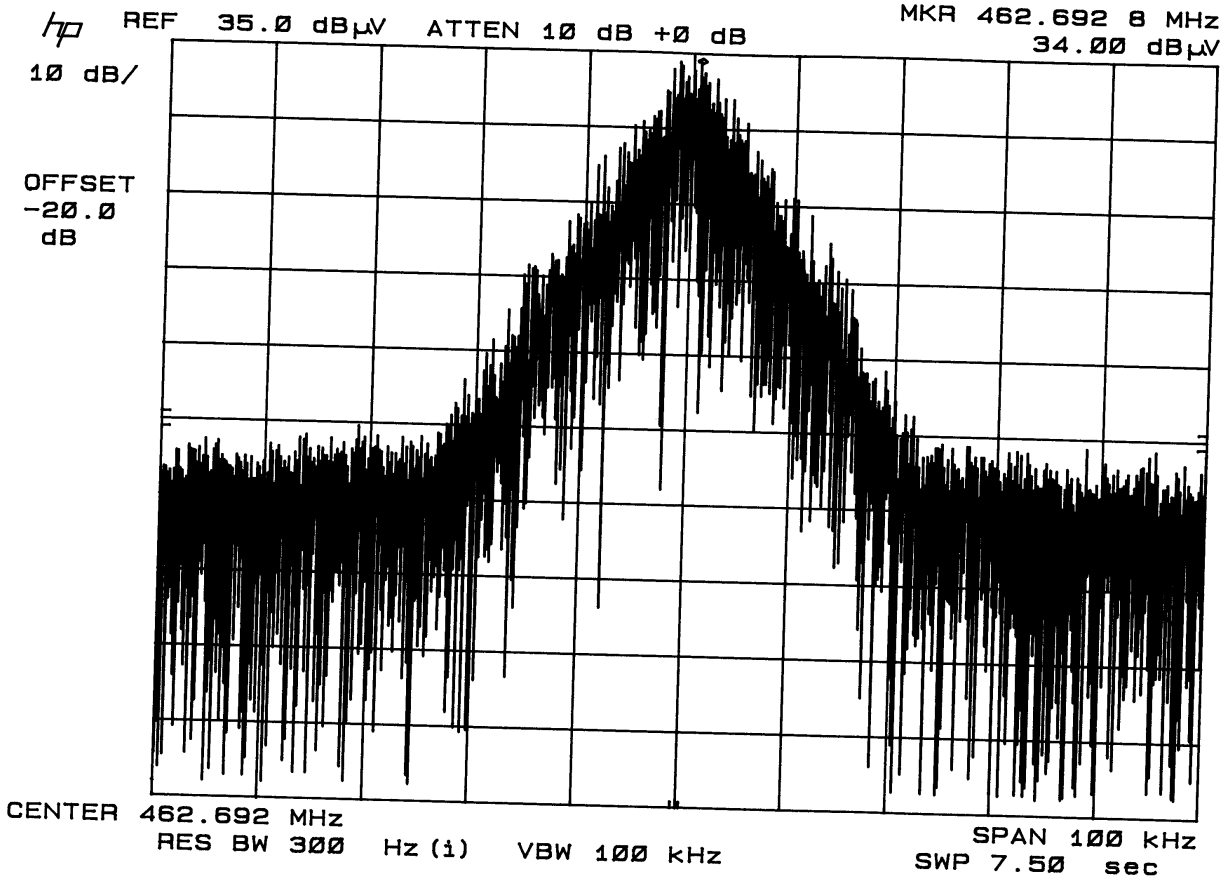
REQUIREMENTS: The field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits of 15.209, whichever permits the higher emission levels.

THE GRAPH ON THE FOLLOWING PAGES REPRESENTS THE EMISSIONS TAKEN FOR THE DEVICE.

METHOD OF MEASUREMENT: A small sample of the transmitter output was fed into the spectrum analyzer and the above photo was taken. The vertical scale is set to -10 dBm per division.The horizontal scale is set to 10 kHz per division.

TEST RESULTS: The unit DOES meet the FCC requirements.

PERFORMED BY: JOE SCOGLIO 4/23/02


REF 35.0 dBµV
ATTEN 10 dB +0 dB
MKR 462.692 8 MHz
34.00 dBµV
10 dB/
OFFSET
-20.0
dB
CENTER 462.692 MHz
RES BW 300 Hz (i)
VBW 100 kHz
SPAN 100 kHz
SWP 7.50 sec