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FCC ID: PE3IBM-3920

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15.214(d) THIS DEVICE COMPLIES WITH THE SECURITY CODE REQUIREMENTS OF 15.214(d)(1)(2) AND (3) BY MEANS OF THE FOLLOWING:

THIS DEVICE HAS 65536 POSSIBLE SECURITY CODES. ONE SECURITY CODE OUT OF 65536 IS PRE-PROGRAMMED WHEN MANUFACTURED AT THE FACTORY. THE CPU CONTROLS THE RF FREQUENCY CHANNEL. AND THE ASIC CONTROLS ADPCM CODEC AND AUDIO SIGNAL SWITCHING ALSO SET UP THE SPREADING CODE. BEFORE THE COMMUNICATION LINK IS ESTABLISHED, THE DEVICE SEARCHES FOR A VACANT RF CHANNEL AND THEN TRANSMITS RF SIGNAL ON THE VACANT CHANNEL.

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TEST EQUIPMENT LIST

1. Spectrum Analyzer: HP 8566B-Opt 462, S/N 3138A07786, w/ preselector HP 85685A, S/N 3221A01400, Quasi-Peak Adapter HP 85650A, S/N 3303A01690 & Preamplifier HP 8449B-OPT H02, S/N 3008A00372 Cal. 8/31/01 Due 8/31/02
2. Biconnical Antenna: Eaton Model 94455-1, S/N 1057, Cal. 10/1/01 Due 10/1/02
3. Biconnical Antenna: Electro-Metrics Model BIA-25, S/N 1171 Cal. 4/26/01 Due 4/26/03
4. Log-Periodic Antenna: Electro-Metrics Model EM-6950, S/N 632 Char. 10/15/01 Due 10/15/02
5. Log-Periodic Antenna: Electro-Metrics Model LPA-30, S/N 409 Char. 10/16/01 Due 10/16/02
6. Log-Periodic Antenna: Electro-Metrics Model LPA-25, S/N 1122 Char. 2/10/01 Due 3/10/02
7. Double-Ridged Horn Antenna: Electro-Metrics Model RGA-180, 1-18 GHz, S/N 2319 Cal. 12/19/01 Due 12/19/02
8. 18-26.3GHz Systron Donner Standard Gain Horn #DBE-520-20 No Cal Required
9. Horn 40-60GHz: ATM Part #19-443-6R No Cal Required
10. Line Impedance Stabilization Network: Electro-Metrics Model EM-7820, w/NEMA Adapter S/N 2682 Cal. 3/16/01 Due 3/16/02
11. Temperature Chamber: Tenney Engineering Model TTRC, S/N 11717-7 Char. 1/27/01 Due 1/27/02
12. Frequency Counter: HP Model 5385A, S/N 3242A07460 Char. 12/11/01 Due 12/11/02
13. Peak Power Meter: HP Model 8900C, S/N 2131A00545 Char. 1/26/01 Due 1/26/02
14. Open Area Test Site #1-3meters Cal. 12/22/99
15. Signal Generator: HP 8640B, S/N 2308A21464 Cal. 11/15/01 Due 11/15/02
16. Passive Loop Antenna: EMCO Model 6512, 9KHz to 30MHz, S/N 9706-1211 Char. 7/10/01 Due 7/10/02
17. Dipole Antenna Kit: Electro-Metrics Model TDA-30/1-4, S/N 152 Cal. 3/21/01 Due 3/21/02
18. AC Voltmeter: HP Model 400FL, S/N 2213A14499 Cal. 10/9/01 Due 10/09/02
19. Digital Multimeter: Fluke Model 77, S/N 35053830 Char. 1/11/01 Due 1/11/02
20. Oscilloscope: Tektronix Model 2230, S/N 300572 Char. 2/1/01 Due 2/1/02

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TEST PROCEDURES

GENERAL: This report shall NOT be reproduced except in full without the written approval of TIMCO ENGINEERING, INC. Shielded interface cables were used in all cases except for cables connecting to the telephone line and the power cords. A test program was run which simulated a normal data transmission on a network.

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-1992 using a 50uH LISN. Both lines were observed. The bandwidth of the spectrum analyzer was 10kHz with an appropriate sweep speed. The ambient temperature of the UUT was 83°F with a humidity of 19%.

BANDWIDTH 6.0dB: The measurements were made with the spectrum analyzer's resolution bandwidth(RBW)=100kHz and the video bandwidth(VBW) =300kHz and the span set as shown on plot. See pages 8-13.

POWER OUTPUT: The RF power output was measured at the antenna feed point by removing the permanent antenna and connecting the UUT to a peak power meter, HP Model No. 8900C.

ANTENNA CONDUCTED EMISSIONS: The RBW=100kHz, VBW > or = RBW and the spectrum was scanned from 30MHz to the 10th Harmonic of the fundamental.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-1992 using a HEWLETT PACKARD spectrum analyzer with a preselector. The bandwidth(RBW) of the spectrum analyzer was 100kHz up to 1GHz and 1.0MHz above 1GHz with an appropriate sweep speed. The VBW above 1.0GHz was = 1.0MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The ambient temperature of the UUT was 83°F with a humidity of 19%.

15.247(d) POWER SPECTRAL DENSITY. The peak within the pass band was located with a RBW set to 30Khz and a span of 5MHz, slightly greater than the 6dB bandwidth, then the emission was centered on the display and the span and RBW reduced. A 1.5MHz span, 3Khz RBW, and a sweep time to sweep time set to 500 seconds. Since spectral line spacing could not be resolved, the noise power density method was used. The reponse was then plotted, a correction factor of measured using the noise power density and adding the correction of 35dB and any attenuation used was added. See pages 20-25.

15.247(e): PROCESSING GAIN, This gain is supplied by the manufacturer of the UUT.

2.1033(b)(4)

ANTENNA AND GROUND SYSTEM:

This unit uses a short, inductively loaded, antenna element for the base unit and the handset. The antenna is permanently attached to the unit and no provision is made for connection to an external antenna.

No ground connection is provided. The only ground in use is the ground plane on the printed circuit board.

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NAME OF TEST: POWER LINE CONDUCTED INTERFERENCE

RULES PART NUMBER: 15.207

MINIMUM REQUIREMENTS: FREQUENCY LEVEL
MHz dBuV

0.450-30	48 dBuV or 250 uV
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TEST PROCEDURE: ANSI STANDARD C63.4-1992

THE HIGHEST EMISSION READ FOR LINE 1 WAS 20.2 uV @ 28.88 MHz.

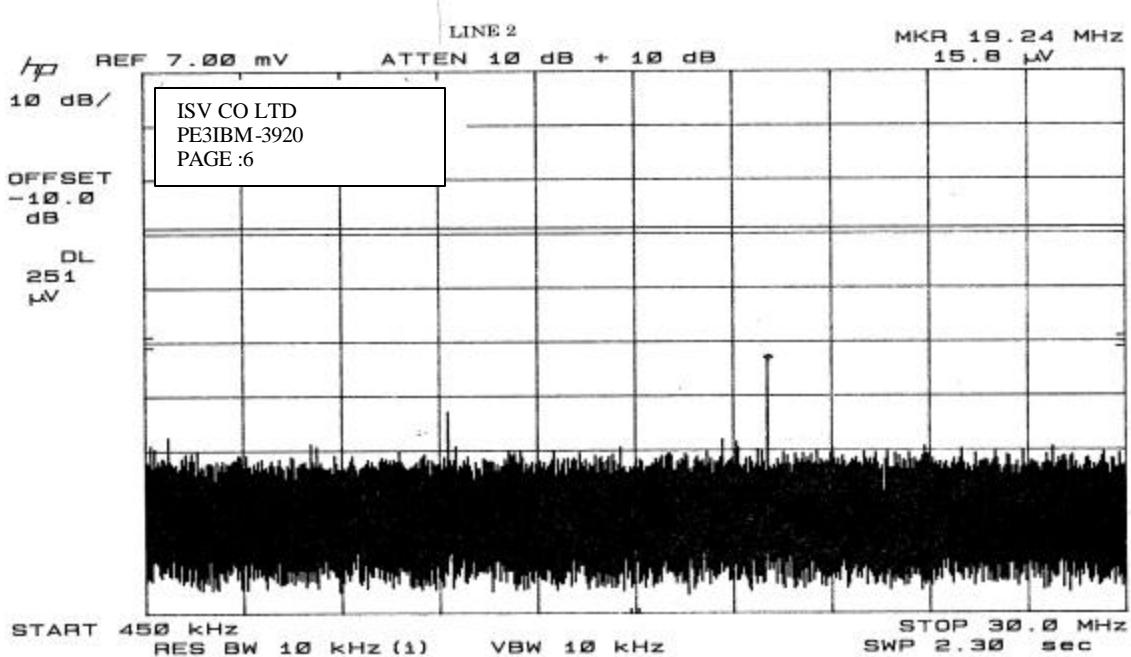
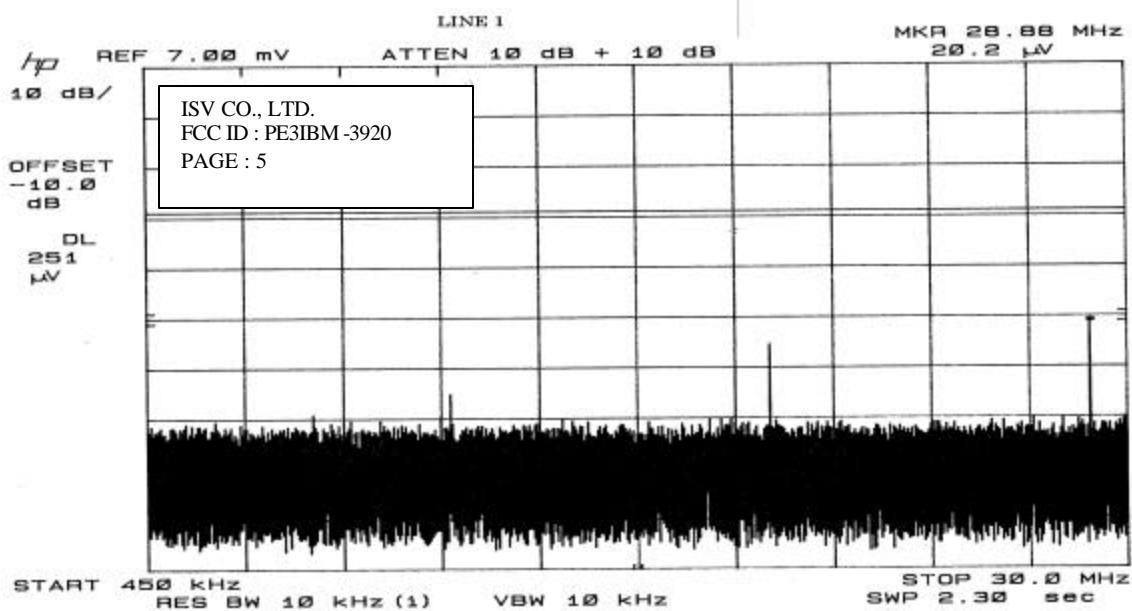
THE HIGHEST EMISSION READ FOR LINE 2 WAS 15.8 uV @ 19.24 MHz.

THE GRAPHS IN PAGES 5-6 REPRESENT THE EMISSIONS READ FOR POWERLINE CONDUCTED FOR THIS DEVICE.

TEST RESULTS: Both lines were observed with the UUT transmitting. The measurements indicate that the unit DOES appear to meet the FCC requirements for this class of equipment.

PERFORMED BY: JOE SCOGLIO DATE: JANUARY 3, 2002

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NAME OF TEST: OCCUPIED BANDWIDTH

RULES PART NUMBER: 15.247

15.247(a)(2)

6dB bandwidth shall be at least 500 kHz. As shown in the accompanying plots. The bandwidth was measured at three places in the band and the narrowest is reported below.

Base 6dB Bandwidth = 1.530 MHz

Handset 6 dB Bandwidth = 1.510 MHz

15.247(B) PEAK POWER OUTPUT

The maximum peak output power shall not exceed 1 watt (30 dBm). If directional transmitting antennas with a gain of more than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Both the base and handset have a maximum power output of less than +30 dBm. Power was measured by disconnecting the antennas and measuring across a 50 ohm load as recommended by the manufacturer using a HP peak power meter Model 8900C. The antennas are non directional and do not exceed 6 dBi gain. The power output was measured at three places in the band highest is reported below.

POWER OUTPUT LIMIT: +30 dBm or 1 Watt.

BASE PEAK POWER OUTPUT = 11dBm or 12.5 mWatts

HANDSET PEAK POWER OUTPUT = 11.2 dBm or 13 mWatts

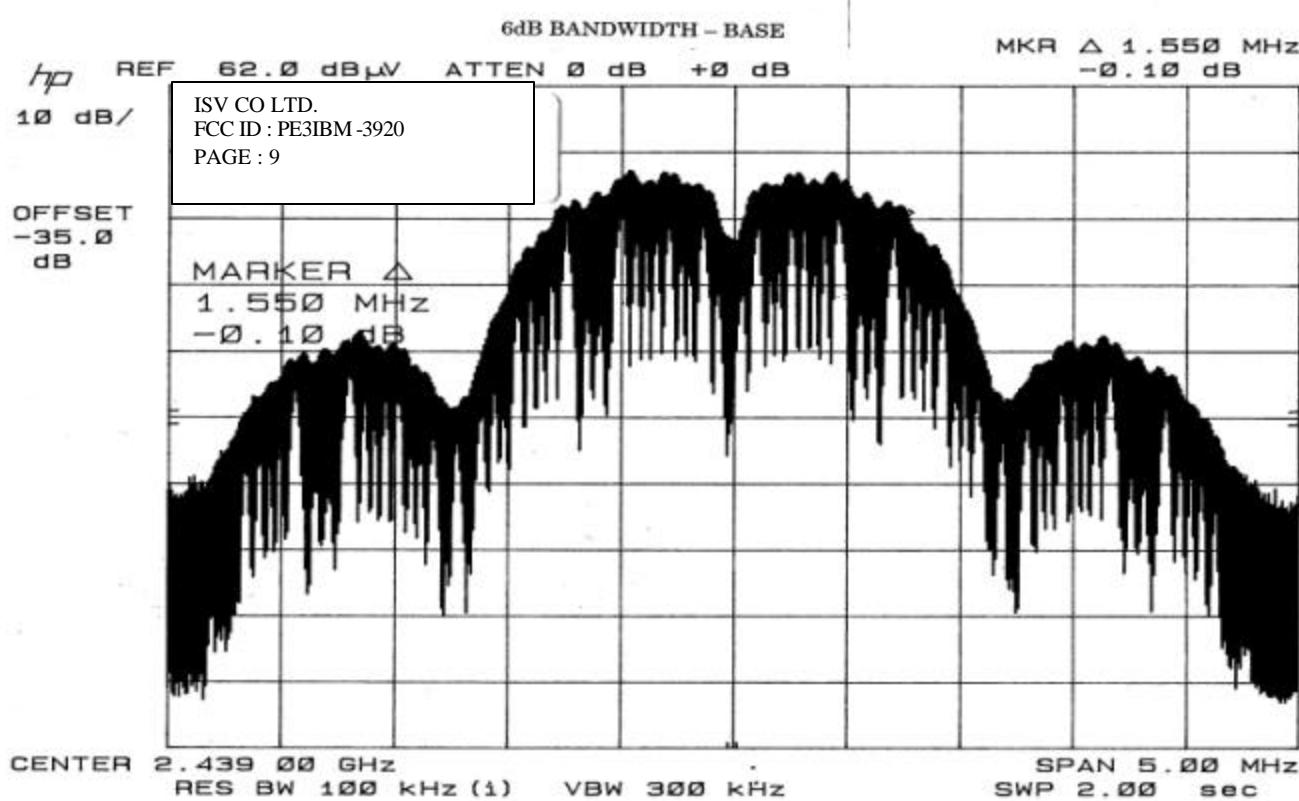
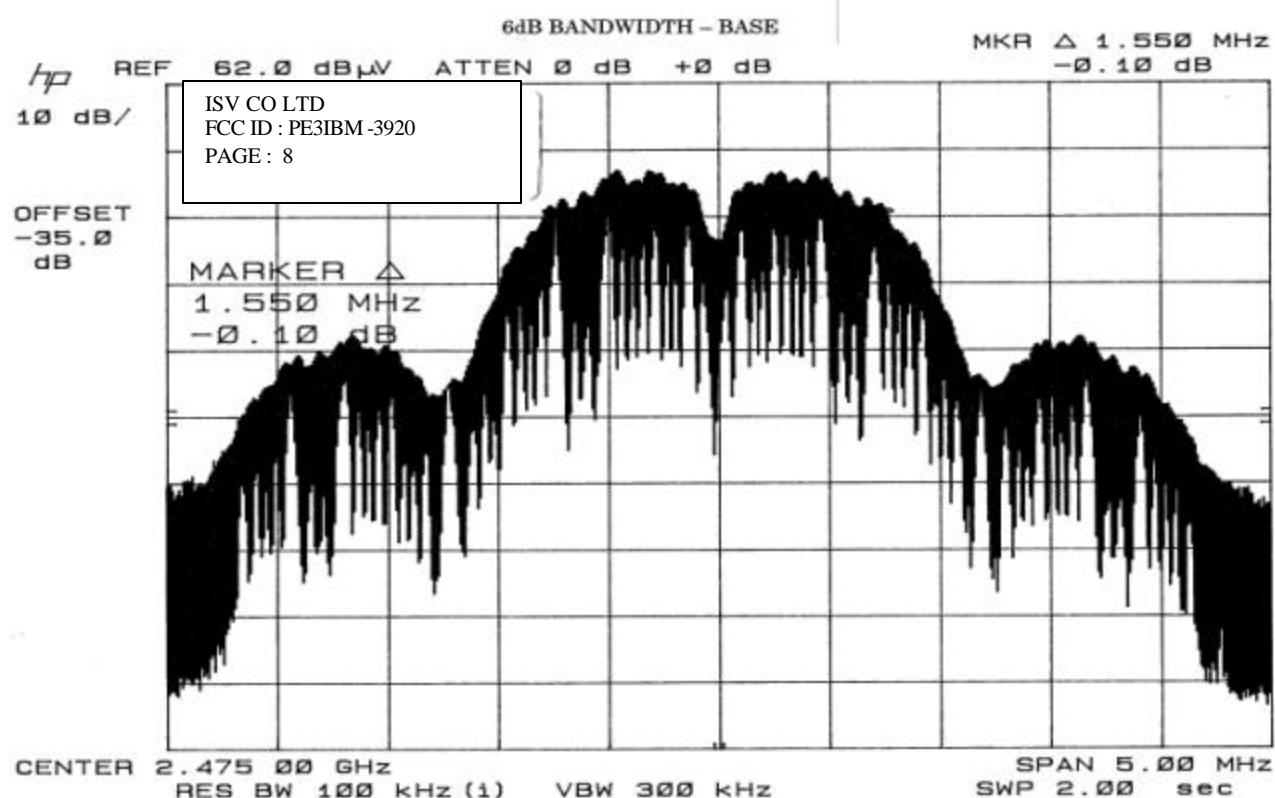
APPLICANT: ISV CO., LTD.

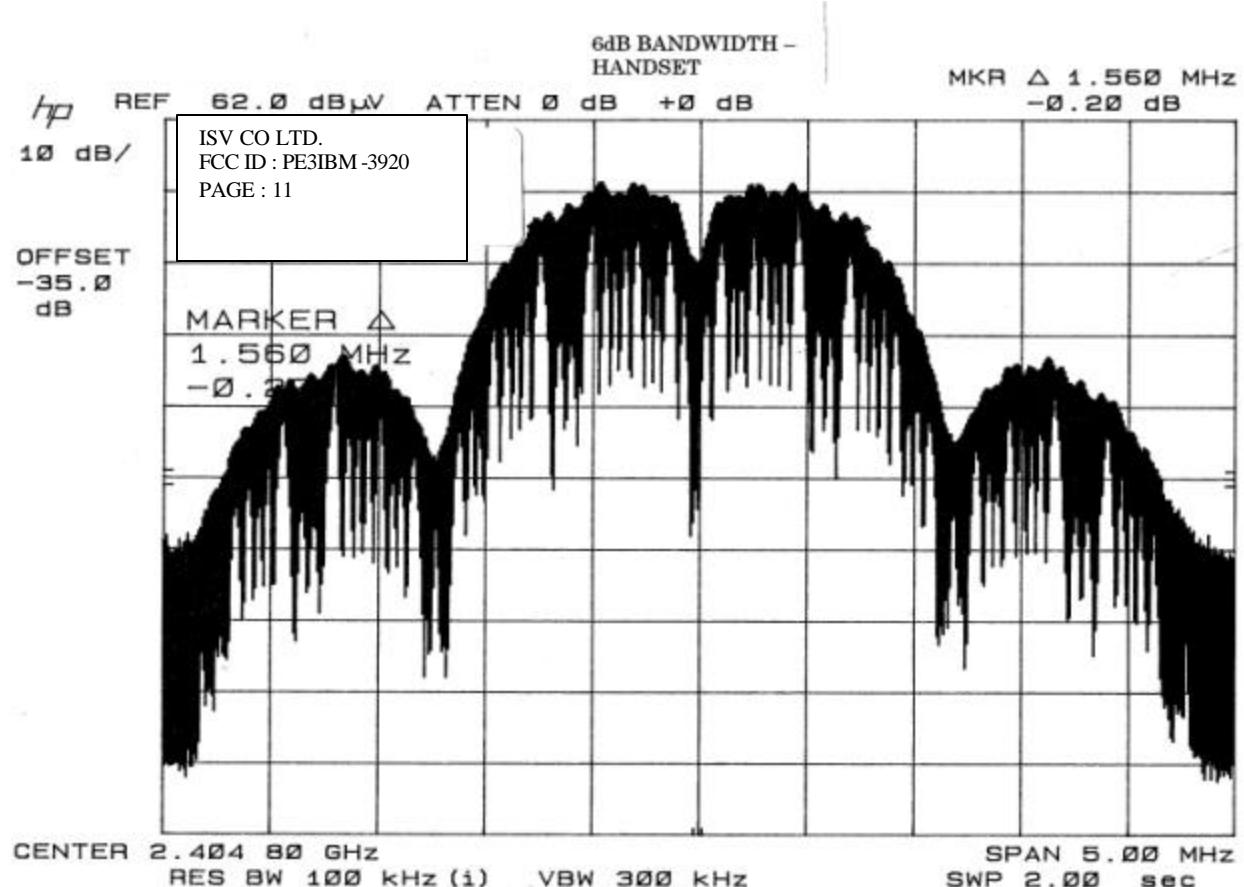
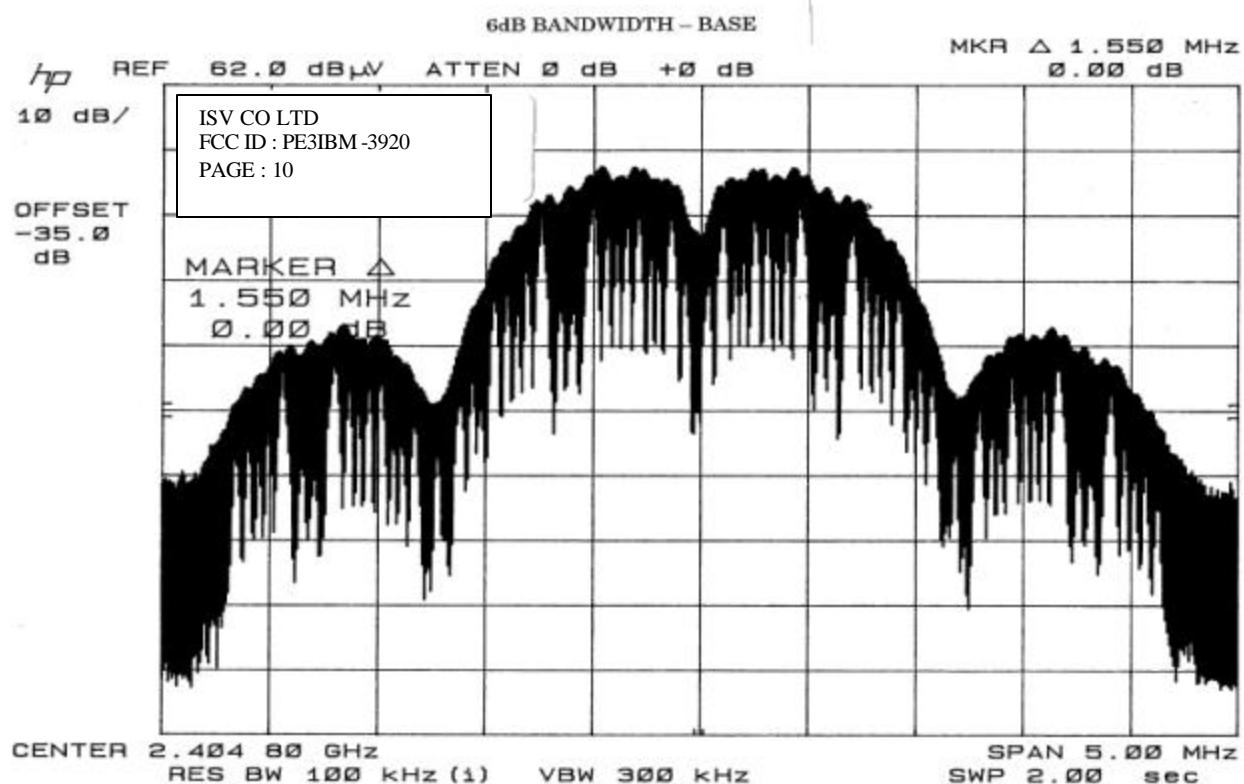
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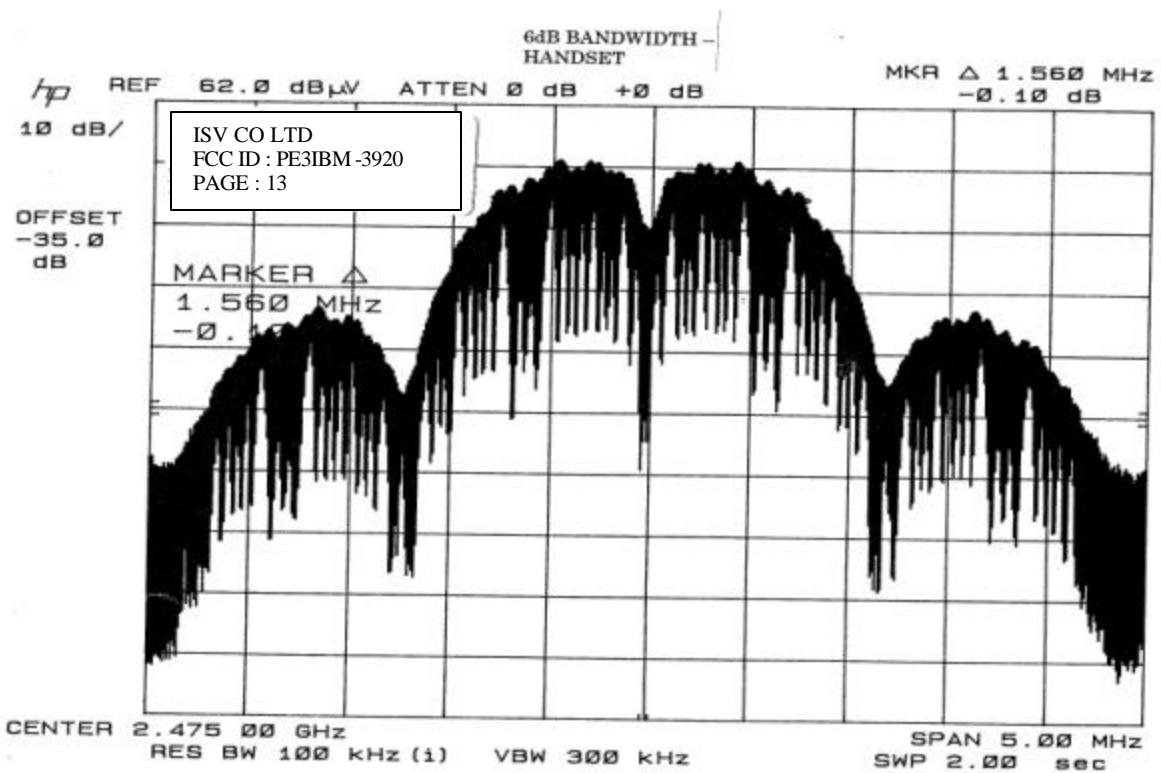
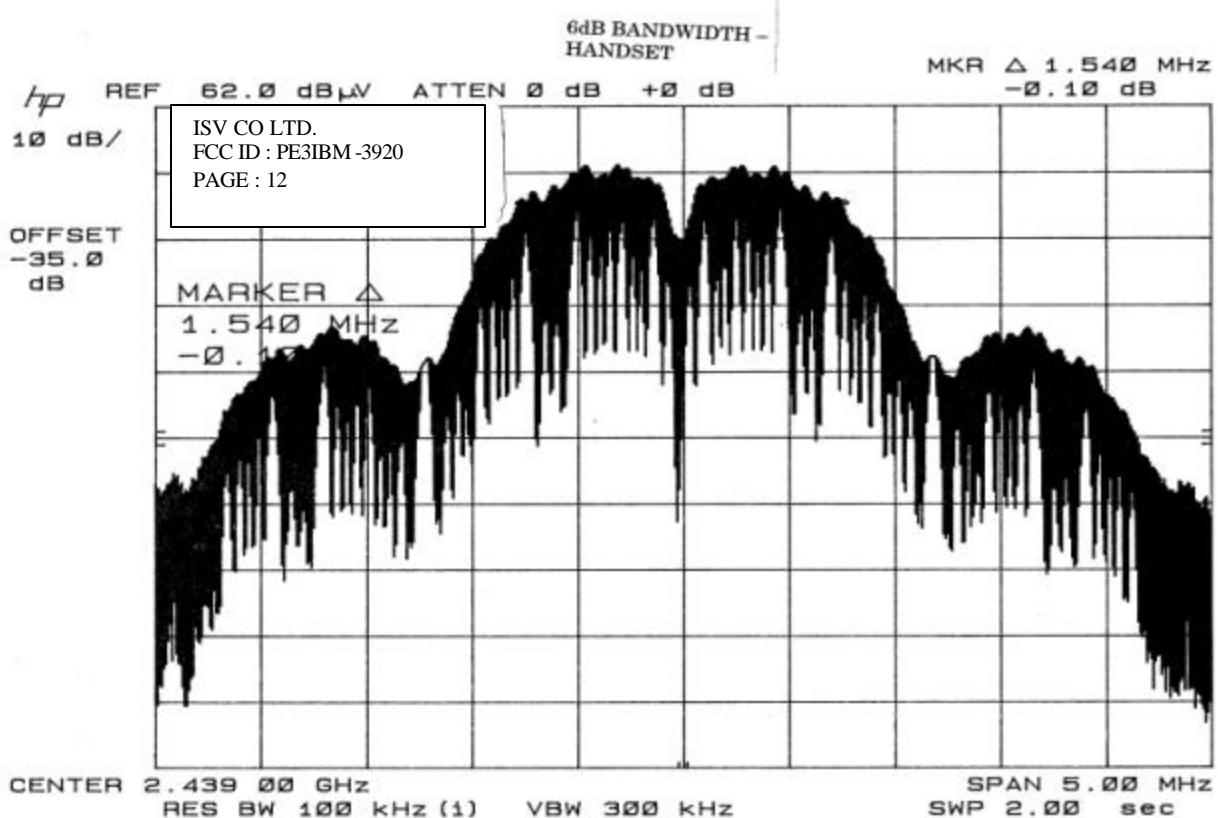
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APPLICANT: ISV CO., LTD.

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NAME OF TEST: RADIATED SPURIOUS EMISSIONS - HANDSET

RULES PART NUMBER: 15.247(c)

REQUIREMENTS: Emissions that fall in the restricted bands (15.205). These emissions must be less than or equal to 500 uV/m (54 dBuV/m). Spurious not in a restricted band must be 20dBc.

The searches were made to the tenth harmonic.

TEST DATA:

Tuned Frequency	Emission Frequency	Meter Reading	Ant. Polarity	Coax Loss	Field Strength	FCC LIMIT	Margin
MHz	MHz	dBuv		dB	dBuV/m		dB
2,404.80	2,404.80	67.4	H	3.70	29.25	100.35	127.34
2,404.80	4,809.60	11.0	H	5.70	34.13	50.83	80.35
2,404.80	7,214.40	12.2	V	7.50	36.94	56.64	80.35
2,439.00	2,439.00	66.7	H	3.70	29.25	99.65	127.34
2,439.00	4,878.00	13.6	H	5.70	34.13	53.43	79.65
2,439.00	7,317.00	10.4	H	7.50	36.94	54.84	79.65
2,475.00	2,475.00	65.8	H	3.70	29.25	98.75	127.34
2,475.00	4,950.00	15.1	V	5.70	34.13	54.93	78.75
2,475.00	7,425.00	9.5	H	7.50	36.94	53.94	78.75

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NAME OF TEST: RADIATED SPURIOUS EMISSIONS - BASE

TEST DATA CONTD.:

Tuned Frequency	Emission Frequency	Meter Reading	Ant. Polarity	Coax Loss	Field Strength	FCC LIMIT	Margin
MHz	MHz	dBuv		dB	Factor	dBuv/m	dB
2,404.80	2,404.80	71.8	V	3.70	29.25	104.75	127.34
2,404.80	4,809.60	3.3	V	5.70	34.13	43.13	84.75
2,404.80	7,214.40	1.7	V	7.50	36.94	46.14	84.75
2,439.00	2,439.00	72.4	V	3.70	29.25	105.35	127.34
2,439.00	4,878.00	3.1	V	5.70	34.13	42.93	85.35
2,439.00	7,317.00	2.7	V	7.50	36.94	47.14	85.35
2,475.00	2,475.00	71.5	V	3.70	29.25	104.45	127.34
2,475.00	4,950.00	3.5	V	5.70	34.13	43.33	84.75
2,475.00	7,425.00	3.5	V	7.50	36.94	47.94	84.75

SAMPLE CALCULATION: $FS_{dBuV/m} = MR_{(dBuV)} + ACF_{dB} + COAX_{+} C.F.$

METHOD OF MEASUREMENT: The procedure used was ANSI STANDARD C63.4-1992. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The spectrum was scanned from 30 MHz to 10 GHz using a Hewlett Packard Model 8566B Spectrum Analyzer, Hewlett Packard Model 85685A Preselector, Hewlett Packard Model 85650A Quasi-Peak Adaptor, and an appropriate antenna. Low loss coax was used above 1 GHz. Measurements were made at Timco Engineering, Inc. 849 NW State Road 45 Newberry, Fl.

TEST RESULTS: The unit DOES meet the FCC requirements.

PERFORMED BY: Joseph Scoglio

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NAME OF TEST: RADIATED SPURIOUS EMISSIONS INTO ADJACENT RESTRICTED BAND

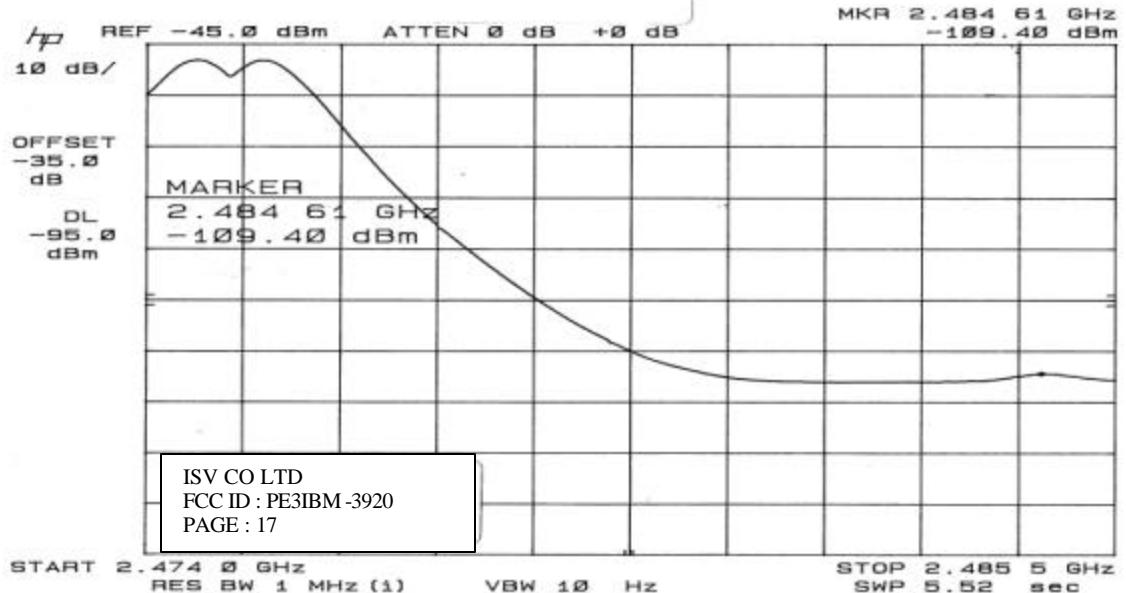
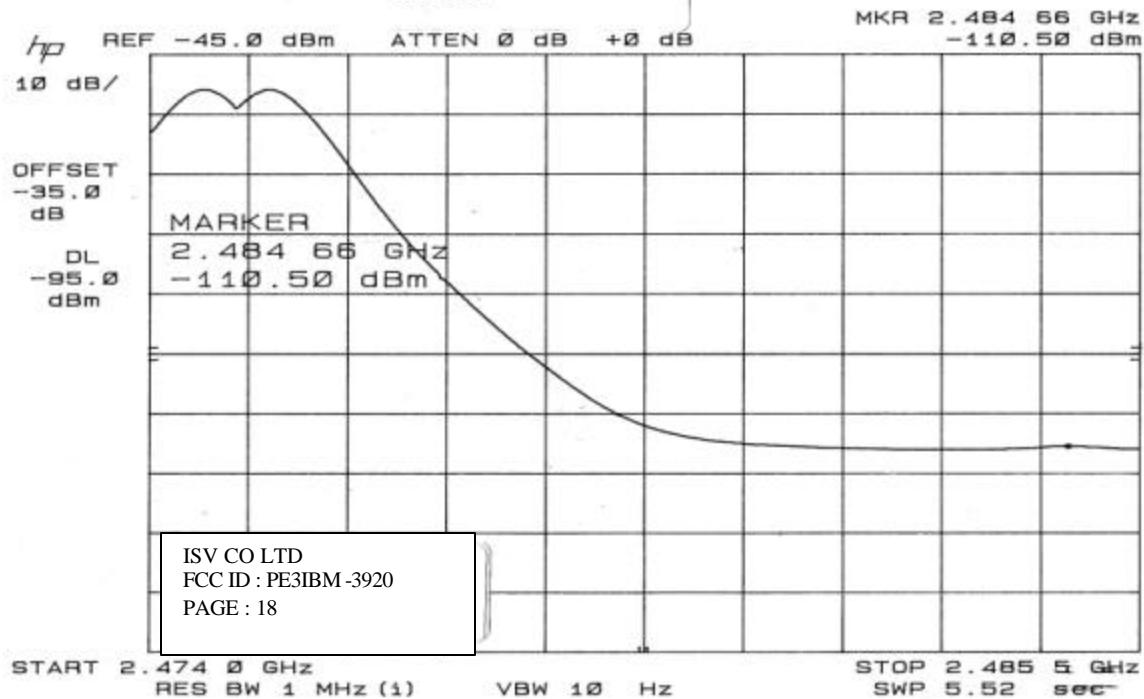
REQUIREMENTS: Emissions that fall in the restricted bands (15.205). These emissions must be less than or equal to 500 uV/m (54 dBuV/m).

TEST PROCEDURE: An in band field strength measurement of the fundamental emissions using the RBW and detector function required by C63.4-2000 and FCC rules. The procedure was repeated with an average detector and a plot made. The calculated field strength in the adjacent restricted band is presented below.

BASE	HANDSET
-110.50 dBm - from Plot	-109.40 dBm - from Plot
+ 29.21 dB - ACF	+ 29.21 dB - ACF
+ 1.1 dB - Coax Loss	+ 1.1 dB - Coax Loss
+ 10.0 dB -	+ 10.0 dB -
<hr/>	<hr/>
- 70.19 dBm	- 69.09 dBm
+107.00	+107.00
<hr/>	<hr/>
36.81 dBuV	37.91 dBuV

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BANDEDGE PLOT - BASE

BANDEDGE PLOT -
HANDSET

APPLICANT: ISV CO., LTD.

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NAME OF TEST: POWER SPECTRAL DENSITY

RULES PART NUMBER: 15.247(d)

REQUIREMENTS: The power spectral density averaged over any 1 second interval shall not be greater than 8 dBm in any 3 kHz bandwidth within these bands.

TEST DATA:

The spectrum line spacing could not be resolved so the noise power density was measured.

Measurement Method:

Starting from the settings that were used for the 6 dB bandwidth the peak signal was located and the span was reduced and the sweep time increased in a manner to maintain calibration and to keep the peak emission in the display, then the sweep time was increased to 500seconds at 1.5MHz span and a RBW changed to 3 kHz. The spectrum analyzer was put into the noise power mode and the plots made.

	<u>BASE</u>	<u>HANDSET</u>
10.6 dBuV		6.5 dBuV
50 dB ATTN		50 dB ATTN
35 dB CF		35 dB CF
Total	95.6 dBuV	91.5 dBuV
	95.6 dBuV-107=	-11.4 dBm
		91.5 dBuV-107=
		-15.5 dBm

NAME OF TEST: PROCESSING GAIN

RULES PART NUMBER: 15.247(e)

REQUIREMENTS: The processing gain shall be at least 10 dB.

TEST DATA:

The processing gain of this unit is at least 12.1dB . This information was provided by the manufacturer, and data included as in exhibits 12A - 12C.

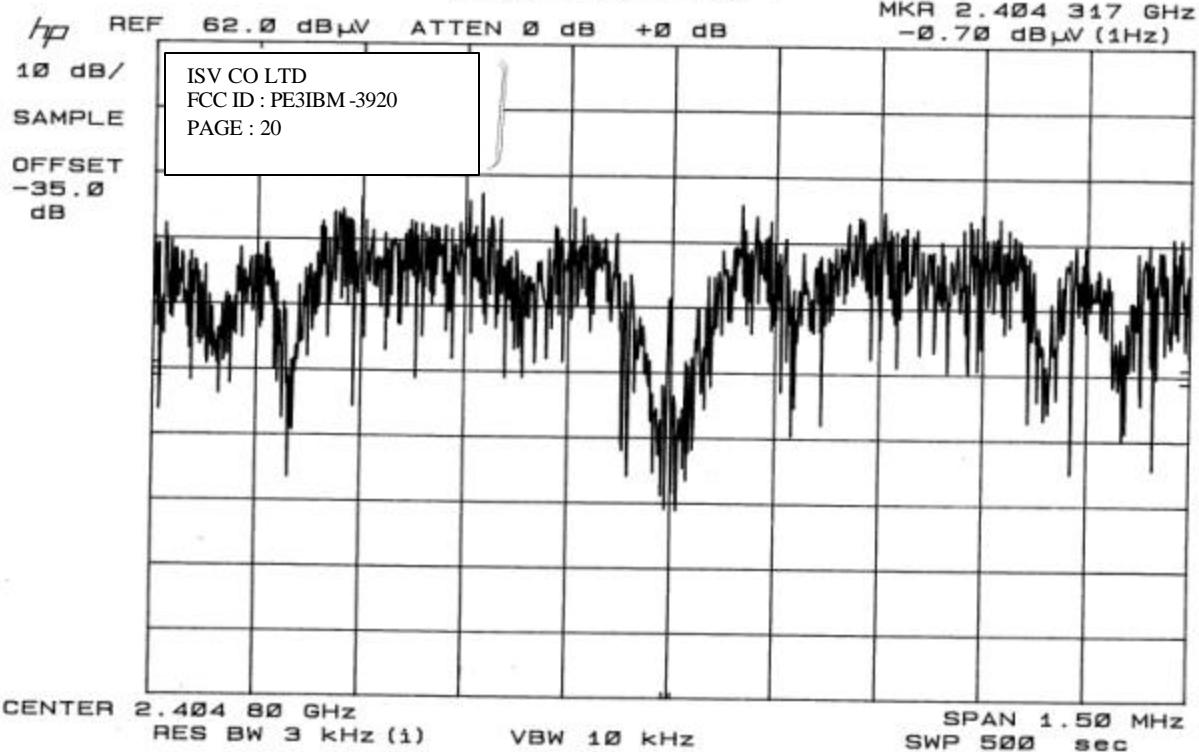
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SPECTRAL DENSITY - BASE



SPECTRAL DENSITY - BASE

MKR 2.438 552 GHz
 -0.80 dB μ V (1Hz)