

**TEST: CONDUCTED SPURIOUS EMISSIONS**

Manufacturer: ITRONIX, Corporation.

Name: IX260 Laptop PC

Model: IX260 with GC82 (WAN), INTEL PRO WM3B2200BG (WLAN), & Mitsumi Electric Co., Ltd, Bluetooth Model: WML-C11NU

**Setup:**

The equipment under test (EUT) was set up in accordance with the provisions of ANSI C63.4-2001, Section 7, on a 1 X 1.5-meter non-conductive test table at our Edmonds, Washington facility. The tabletop is 80 cm above a 2.5 x 2-meter horizontal ground plane and 40 cm forward from a 2.25 X 2.4-meter vertical ground plane. The two ground planes are continuously grounded along the common seam. The two 50 ohm/ 50 uHy Line Impedance Stabilization Networks (LISN) are grounded to the horizontal ground plane. The EUT was placed in a typical operational arrangement following the 10-cm spacing as detailed in Section 6.2 and 11.2, and the power cord of the EUT plugged into the first LISN. The signal output of this LISN was fed to the Agilent E7405 EMC analyzer using a 9 kHz bandwidth, which served as the measuring instrument. The peripheral equipment, if any was powered from a separate LISN.

**Discussion:**

Measurements of the AC power line conducted spurious emissions were made with the ITRONIX IX260 set up in a representative configuration. The frequency range from 150 kHz to 30 MHz was measured in detail. No modifications were made prior to the final compliance test.

Preliminary measurements were made as described in Section 7.2.3. The EUT was set up as an operational system. Measurements were made at the AC power input to the Delta Electronics 75 Watt AC adapter Model: ADP-75FB B, REV0, which powered the IX260. Excess I/O cable lengths were draped .5 m straight down behind the equipment then back up to the device used to terminate the line. The system cables were carefully tuned during the preliminary measurements on all frequencies of significance endeavoring to maximize the emissions observed. The test setup photos in Exhibit 7 detail the exact cable and equipment configuration for this test.

This unit was set up to transmit with the GC82 WAN and Mitsumi, Model: WML

C11NU Bluetooth or the INTEL PRO, Model: WM3B2200BG, WLAN and the Mitsumi, Model: WML-C11NU Bluetooth. The GC82 transmitter and Intel PRO do not transmit simultaneously. Therefore the emission were investigated individually during the conducted measurements. During the preliminary measurements the IX260 was set to transmit on the first the low, then mid and finally the high channels respectively in multiple sets of measurements covering operational range of both transmitters. Note that no significant measurable change in the conducted emissions activity was observed when the transmitters were turned on or off or varied over the channel combinations listed below.

The following channel combinations were individually investigated during the preliminary measurements:

GC82			BT & WLAN	
Channel	Frequency MHz		Channel	Frequency MHz
128	824.2	Or	1	2412
190	836.6	Or	6	2437
251	848.8	Or	11	2462
512	1850.2	Or	1	2412
661	1880.0	Or	6	2437
810	1909.8	Or	11	2462

Final measurements were made as described in Section 7.2.3 while the EUT was fully functional as it would be in normal operation. The final measurements were made with the Bluetooth and WLAN Intentional Radiators set at 2412 MHz for a representative worst case.

The plot on the following page shows the Peak results of the EUT emission profile for reference only. The highest level conducted emissions observed were measured with Quasi-peak and Average detectors during the testing. The emissions results are reported for Line 1 the "hot" conductor and Line 2 the "neutral" conductor, each with respect to ground at the power terminal. Some of the emissions measured with the Average detector exceeded the Average limits however; none of the emissions measured with the Quasi-peak detector exceeded the referenced Quasi-Peak limits.

## Conclusion

The ITRONIX, Corporation IX260 with the transmitters listed above, met the conducted emissions requirements for Class B digital devices under Title 47 CFR, Para.15.107 (a), and for Intentional Radiators under 15.207(a).

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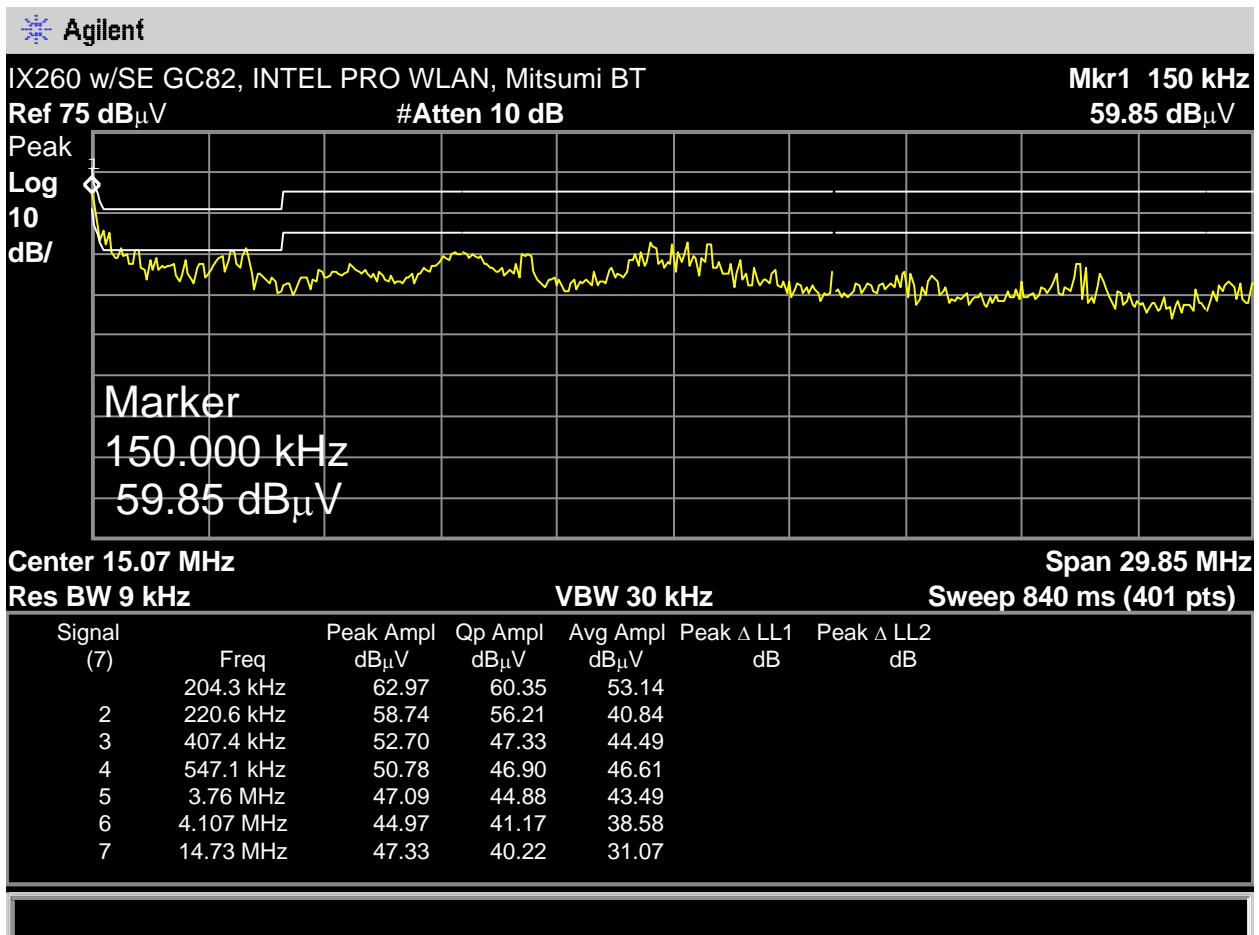
Name: IX260 Laptop PC

Model: IX260 with GC82 (WAN), INTEL PRO WM3B2200BG (WLAN), & Mitsumi Electric Co., Ltd, Bluetooth Model: WML-C11NU

	Quasi peak	Average	* decreasing with the log of the frequency
Part 15.107(a) & 15.207(a) limits:	66 -56 dBuV	56 to 46dBuV	* 0.15 to .5 MHz *
	56 dBuV	46 dBuV	.5 to 5 MHz
	60 dBuV	50 dBuV	5 to 30 MHz

The equipment complies with the Quasi-peak limit. The level measured closest to the QP limit was 204.3 kHz with a level of 60.35 dBuV.

Note: Plot below is Line 1 Peak detector for reference only. Quasi-peak and Average values listed below.



Note: IX260 with the Delta Electronics 75 Watt AC adapter Model: ADP-75FB B, REV0.

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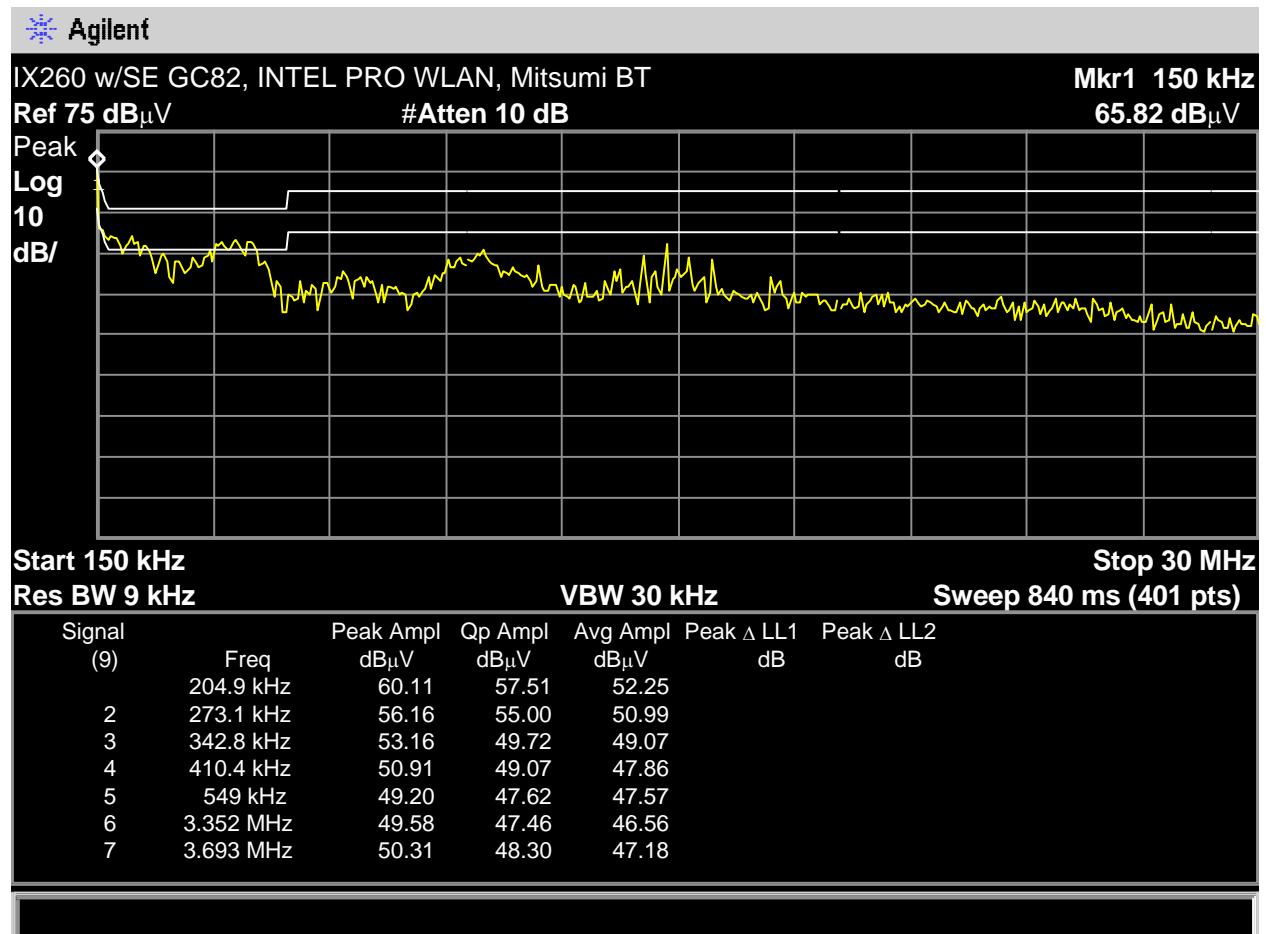
Name: IX260 Laptop PC

Model: IX260 with GC82 (WAN), INTEL PRO, WM3B2200BG (WLAN), & Mitsumi Electric Co., Ltd, Bluetooth Model: WML-C11NU

	<u>Quasi peak</u>	<u>Average</u>	* decreasing with the log of the frequency
Part 15.107(a) & 15.207(a) limits:	66 -56 dBuV	56 to 46dBuV	0.15 to .5 MHz
	56 dBuV	46 dBuV	.5 to 5 MHz
	60 dBuV	50 dBuV	5 to 30 MHz

The equipment complies with the Quasi-peak limit. The level measured closest to the QP limit was 204.9 MHz with a level of 57.51 dBuV.

Note: Plot below is Line 2 Peak detector for *reference* only. Quasi-peak and Average values listed below.



Note: IX260 with the Delta Electronics 75 Watt AC adapter Model: ADP-75FB B, REV0.

**TEST:** FIELD STRENGTH OF RADIATED EMISSIONS

**Manufacturer:** ITRONIX, Corporation.

**Name:** IX260 Laptop PC

**Model:** IX260 with GC82 (WAN), INTEL PRO, WM3B2200BG (WLAN), & Mitsumi Electric Co., Ltd, Bluetooth Model: WML-C11NU

**Setup:**

The equipment under test (EUT) was configured and operated in accordance with the applicable provisions of ANSI C63.4-2001, Section 6 and 8. The EUT was placed on an 80 cm height, 1 X 1.5 m non-metallic turntable that sits above the 15 X 30 meter ground plane at Spectrum's Open Area Test Site. The antennas (dipoles, bi-conical or log-periodic) were mounted on a tower spaced at a 3 meters distance, and arranged for adjustment in height (1-4 meters) and V/H orientation to maximize the emissions levels when combined with turntable rotation of the EUT. An Agilent E7405 EMC analyzer, using 120 kHz bandwidth and its internal amplifier were used for the making the measurements.

**Discussion:**

Measurements of the radiated spurious emissions were made with the ITRONIX IX260 set up in a representative configuration. The frequency range from 30 to 1000 MHz was measured in detail. No modifications were made prior to the final compliance test.

Preliminary measurements were made as described in Section 8.3.1.1. The EUT was set up as an operational system. The system cables were carefully tuned during the preliminary measurements on all frequencies of significance endeavoring to maximize the emissions observed. During the preliminary measurements the IX260 was set up at the OATS facility with the receive antenna in close proximity, about 1.0 meter distance. The transmitters in the IX260 were operated on the frequencies listed on the following page in an attempt to identify any measurable emission frequencies.

During the preliminary measurements the IX260 was set to transmit on the first the low, then mid and finally the high channels respectively in multiple preliminary sets of measurements covering operational range of both transmitters. Note that no measurable change in the radiated emissions activity was observed when the transmitters were turned on or off or varied over the channel combinations listed below.

All of the following individual channels were investigated during the preliminary measurements:

GC82			BT & WLAN	
Channel	Frequency MHz		Channel	Frequency MHz
128	824.2	Or	1	2412
190	836.6	Or	6	2437
251	848.8	Or	11	2462
512	1850.2	Or	1	2412
661	1880.0	Or	6	2437
810	1909.8	Or	11	2462

Preliminary measurements were made while the system was investigated operating in the following modes:

- 1) IX260 operating digital device active only, no transmitters turned on.
- 2) IX260 operating with the WLAN and Bluetooth transmitters on low, mid and high channels respectively.
- 3) IX260 operating with the GC82 transmitting on the high mid and low channels in the Cellular and PCS bands respectively with the transmitter output fed to a resistive coaxial termination.

For the final measurements, the IX260 was fully operational transmitting on the low channel 2412 MHz and considered representative of the worst case based on the similar results observed between frequencies previously during the preliminary measurements.

The final OATS test configuration is shown in photographs included in Exhibit 7 of this report. Final digital device measurements were made from 30 - 1000 MHz as specified in Section 8.3.1.2 and were made at three meters.

### **Conclusion:**

The ITRONIX, Inc. IX260, when operated as discussed above meets the radiated emissions requirements for a receivers and Class B digital devices under Title 47 CFR, Parts 15.109(a) and 15.209(a).

## EXHIBIT 6 TEST: FIELD STRENGTH OF SPURIOUS RADIATED EMISSIONS

FCC ID: KBCIX260-PROG82BT

Applicant: ITRONIX Corp.

Model: IX260 with GC82, (WAN), and a INTEL PRO, WM3B2200BG, (WLAN)

Minimum Standard Specified: Part 15.109(a), 15.209(a)

Frequency Range Observed: 30 to 1 GHz

Date: 7/27/04

Test Setup: See block diagram and photos following.

NOTE: The highest level radiated emissions observed within 10dB of the limit are reported below.

Frequency GHz	Max. SA Rdg. dBu/V	Ant. Vert. or Horz.	Peak or Average Detector	Antenna Factor dB & cable loss	Amp Gain	Corrected Reading dBuV/m	Limit dBu/V	Margin in dB below LIMIT
119.00	15.16	H	Peak	15.5	-inc.-	30.66	43.5	12.84
119.00	22.87	V	Peak	15.5	-inc.-	38.37	43.5	5.13
259.80	21.14	H	Peak	16.3	-inc.-	37.44	46.0	8.56
259.80	16.96	V	Peak	16.3	-inc.-	33.26	46.0	12.74
270.30	24.74	H	Peak	16.7	-inc.-	41.44	46.0	4.56
270.30	19.51	V	Peak	16.7	-inc.-	36.21	46.0	9.79
302.50	19.54	H	Peak	18.6	-inc.-	38.14	46.0	7.86
302.50	17.32	V	Peak	18.6	-inc.-	35.92	46.0	10.08
320.50	16.46	H	Peak	17.9	-inc.-	34.36	46.0	11.64
320.50	17.06	V	Peak	17.9	-inc.-	34.96	46.0	11.04
325.00	17.00	H	Peak	17.9	-inc.-	34.90	46.0	11.10
325.00	17.06	V	Peak	17.9	-inc.-	34.96	46.0	11.04
375.60	13.44	H	Peak	19.0	-inc.-	32.44	46.0	13.56
375.60	17.93	V	Peak	19.0	-inc.-	36.93	46.0	9.07
435.50	7.43	H	Peak	21.3	-inc.-	28.73	46.0	17.27
435.50	16.93	V	Peak	21.3	-inc.-	38.23	46.0	7.77
715.00	5.22	H	Peak	26.9	-inc.-	32.12	46.0	13.88
715.00	10.74	V	Peak	26.9	-inc.-	37.64	46.0	8.36
922.00	<noise flr.	H	Peak	29.9	-inc.-	----	46.0	----
922.00	14.3	V	Peak	29.9	-inc.-	44.2	46.0	1.8

## EXHIBIT 6G TEST: FIELD STRENGTH OF SPURIOUS RADIATION EMISSIONS

FCC ID: KBCIX260-PROG82BT  
 Applicant: ITRONIX Corp.  
 Model: IX260 with Sony Ericsson GC82, Intel PRO WLAN, & Bluetooth  
 Minimum Standard Specified: Part 15.247(c)  
 Test Results: Equipment complies with standard  
 Authorization Procedure: Part 2.1053  
 Test Equipment Set Up: See Block Diagram in Exhibit 7 Date: 7/29/04  
 Frequency Range Observed: 0 to 25 GHz

NOTE: **Simultaneous co-location transmit on the identical RF channels with the Intel PRO, (WLAN) and the Mitsusi, (Bluetooth) Intentional Radiators. Transmitters @ High Power**

RADIATED HARMONIC AND SPURIOUS EMISSIONS & RESTRICTED BANDS									
Frequency GHz	Max. SA Rdg. dBu/V	Ant. Vert. or Horz.	Peak or Average Detector	Antenna Factor dB	Cable & filter loss dB	Amp Gain	Corrected Reading dBuV/m	Limit 74 Peak 54 Avg dBu/V	Margin in dB below LIMIT
<b>Fo - 2.412</b>									
4.824	27.11	✓	Peak	32.45	9.27	23.2	45.63	74	28.37
4.824	25.95	✓	Average	32.45	9.27	23.2	44.47	54	9.53
7.236	31.69	✓	Peak	36.77	13.08	25.9	55.64	74	18.36
7.236	24.47	✓	Average	36.77	13.08	25.9	48.42	54	5.58
9.648	30.84	✓	Peak	37.55	15.96	24.5	59.85	74	14.15
9.648	21.18	✓	Average	37.55	15.96	24.5	49.19	54	4.81
<b>Fo - 2.437</b>									
4.874	27.74	✓	Peak	32.45	9.27	23.2	46.26	74	27.74
4.874	26.08	✓	Average	32.45	9.27	23.2	44.60	54	9.40
7.311	31.77	✓	Peak	36.77	13.08	25.9	55.72	74	18.28
7.311	18.85	✓	Average	36.77	13.08	25.9	42.80	54	11.02
9.746	31.26	✓	Peak	37.55	15.96	24.7	60.07	74	13.93
9.746	18.36	✓	Average	37.55	15.96	24.7	47.17	54	6.83
<b>Fo - 2.462</b>									
4.924	28.13	✓	Peak	32.45	9.27	23.2	46.65	74	27.35
4.924	13.87	✓	Average	32.45	9.27	23.2	32.39	54	21.61
7.386	32.86	✓	Peak	36.77	13.08	25.9	56.81	74	17.19
7.386	19.24	✓	Average	36.77	13.08	25.9	43.19	54	10.81
9.848	32.13	✓	Peak	37.55	15.96	24.7	60.94	74	13.06
9.848	17.87	✓	Average	37.55	15.96	24.7	46.68	54	7.32
<b>Harmonic emissions on all three channels (low, mid &amp; high) 5Fo - 10Fo at or below noise floor</b>									
Channel	Frequency in GHz	Harmonics Observed				Limit 74 dBuV/m Peak & 54 dBuV/m Average			
Low Ch.	2.412								
<b>5Fo - 10Fo</b>	<b>12.060 - 24.120</b>	None -at or < noise floor @3m				All emissions < 54 dBuV/m			
Mid Ch.	2.441								
<b>5Fo - 10Fo</b>	<b>12.205 - 24.410</b>	None -at or < noise floor @3m				All emissions < 54 dBuV/m			
High Ch.	2.480								
<b>5Fo - 10Fo</b>	<b>12.400 - 24.800</b>	None -at or < noise floor @3m				All emissions < 54 dBuV/m			



## EXHIBIT 6G TEST: FIELD STRENGTH OF SPURIOUS RADIATION EMISSIONS

FCC ID: KBCIX260-PROG82BT  
 Applicant: ITRONIX Corp.  
 Model: IX260 with Sony Ericsson GC82, Intel PRO WLAN, & Bluetooth  
 Minimum Standard Specified: Part 15.247(c)  
 Test Results: Equipment complies with standard  
 Authorization Procedure: Part 2.1053  
 Test Equipment Set Up: See Block Diagram in Exhibit 7 Date: 7/29/04  
 Frequency Range Observed: 0 to 25 GHz

NOTE: **Simultaneous co-location transmit on the identical RF channels with the Intel PRO, (WLAN) and the Mitsumi, (Bluetooth) Intentional Radiators. Transmitters @ High Power.**

RADIATED HARMONIC AND SPURIOUS EMISSIONS & RESTRICTED BANDS									
Frequency GHz	Max. SA Rdg. dBuV	Ant. Vert. or Horz.	Peak or Average Detector	Antenna Factor dB	Cable & filter loss dB	Amp Gain	Corrected Reading dBuV/m	Limit 74 Peak 54 Avg dBuV	Margin in dB below LIMIT
<b>Fo - 2.412</b>									
4.824	27.88	H	Peak	32.45	9.27	23.2	46.40	74	27.60
4.824	14.19	H	Average	32.45	9.27	23.2	32.71	54	21.29
7.236	32.00	H	Peak	36.77	13.08	25.9	55.95	74	18.05
7.236	18.95	H	Average	36.77	13.08	25.9	42.90	54	11.10
9.648	31.61	H	Peak	37.55	15.96	24.5	60.62	74	13.38
9.648	18.41	H	Average	37.55	15.96	24.5	47.42	54	6.58
<b>Fo - 2.437</b>									
4.874	27.69	H	Peak	32.45	9.27	23.2	46.21	74	27.79
4.874	13.96	H	Average	32.45	9.27	23.2	32.48	54	21.52
7.311	32.26	H	Peak	36.77	13.08	25.9	56.21	74	17.79
7.311	19.00	H	Average	36.77	13.08	25.9	42.95	54	11.05
9.746	31.42	H	Peak	37.55	15.96	24.7	60.23	74	13.07
9.746	18.03	H	Average	37.55	15.96	24.7	46.84	54	7.16
<b>Fo - 2.462</b>									
4.924	27.28	H	Peak	32.45	9.27	23.2	45.80	74	28.20
4.924	14.29	H	Average	32.45	9.27	23.2	32.81	54	21.19
7.386	33.04	H	Peak	36.77	13.08	25.9	56.99	74	17.01
7.386	19.21	H	Average	36.77	13.08	25.9	43.16	54	10.84
9.848	31.76	H	Peak	37.55	15.96	24.7	60.57	74	13.43
9.848	17.85	H	Average	37.55	15.96	24.7	46.66	54	7.34
<b>Harmonic emissions on all three channels (low, mid &amp; high) 5Fo - 10Fo at or below noise floor</b>									
Channel	Frequency in GHz	Harmonics Observed				Limit 74 dBuV/m Peak & 54 dBuV/m Average			
Low Ch.	2.412								
<b>5Fo - 10Fo</b>	<b>12.060 - 24.120</b>	None -at or < noise floor @3m				All emissions < 54 dBuV/m			
Mid Ch.	2.441								
<b>5Fo - 10Fo</b>	<b>12.205 - 24.410</b>	None -at or < noise floor @3m				All emissions < 54 dBuV/m			
High Ch.	2.480								
<b>5Fo - 10Fo</b>	<b>12.400 - 24.800</b>	None -at or < noise floor @3m				All emissions < 54 dBuV/m			