

FCC Part 24 Transmitter Certification

Test Report

FCC ID: DNY0B2SCCELL1900

FCC Rule Part: CFR 47 Part 24 Subpart E

ACS Report Number: 05-0272-24E

Manufacturer: EMS Wireless
Equipment Type: PCS Band Bi-Directional Amplifier
Model: SelectaCell-19-S

Test Begin Date: August 03, 2005

Test End Date: August 24, 2005

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FOR THE SCOPE OF ACCREDITATION UNDER LAB Code 200612

Prepared by: 
J. Kirby Munroe
Manager Wireless Certifications
ACS, Inc.

Reviewed by: 
R. Sam Wismer
Engineering Manager
ACS, Inc.

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This report contains **19** pages

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1.0 GENERAL

1.1 Purpose

The purpose of this report is to demonstrate compliance with Part 2 Subpart J and Part 24 Subpart E of the FCC's Code of Federal Regulations.

1.2 Product Description

The SelectaCell™ band or channel selective indoor repeater is designed for offices, small businesses, small retail stores and homes. Small enough to be placed in a window, SelectaCell™ is a compact wireless signal enhancer designed to capture the outside signal and amplify it throughout the building. Targeted for smaller locations (approximately 5,000 sq ft) that are unable to justify the expense involved with installing a complete DAS system, this revolutionary product takes the outside wireless signal and strengthens it indoors, thereby increasing customer's wireless usage.

Detailed photographs of the EUT are filed separately with this filing.

1.3 Technical Specifications

Table 1.3-1: Specifications

Operating Frequency (MHz): PCS		
Band Select Unit	Uplink	Downlink
A	1850 to 1865 MHz	1930 to 1945 MHz
A1	1850 to 1855 MHz	1930 to 1935 MHz
A2	1855 to 1860 MHz	1935 to 1940 MHz
A3	1860 to 1865 MHz	1940 to 1945 MHz
B	1870 to 1885 MHz	1950 to 1965 MHz
B1	1870 to 1875 MHz	1950 to 1955 MHz
B2	1875 to 1880 MHz	1955 to 1960 MHz
B3	1880 to 1885 MHz	1960 to 1965 MHz
C	1895 to 1910 MHz	1975 to 1990 MHz
C3	1895 to 1900 MHz	1975 to 1980 MHz
C4	1900 to 1905 MHz	1980 to 1985 MHz
C5	1905 to 1910 MHz	1985 to 1990 MHz
DEF	1865 to 1870 MHz	1945 to 1950 MHz
E	1885 to 1890 MHz	1965 to 1970 MHz
F	1890 to 1895 MHz	1970 to 1975 MHz
System Gain:	> 79 dB	
Active Gain:	29 to 59 dB	
Gain Flatness:	+/- 2 dB	
Noise Figure:	< 4 dB	
Antenna Azimuth, Donor/Server	33°/ 65°	
Operating Temperature:	0° to +50° C.	
Power Source:	AC to DC External (115 VAC)	
	9 VDC @ 1 amp	
Mechanical Dimensions HxWxD:	9" x 8" x 2.5"	

1.4 EUT Operating Configuration and Test Conditions

The EUT was configured and tested utilizing the maximum input drive level resulting in maximum gain conditions for all tests. If the maximum input drive level is exceeded, internal attenuators are activated to produce a level RF output and eliminate the device from operating beyond the maximum RF output power that is below the saturated RF output power.

2.0 TEST FACILITIES

2.1 Location

The radiated and conducted emissions test sites are located at the following address:

Advanced Compliance Solutions
5015 B.U. Bowman Drive
Buford, GA 30518
Phone: (770) 831-8048
Fax: (770) 831-8598

2.2 Laboratory Accreditations/Recognitions/Certifications

The Semi-Anechoic Chamber Test Site, Open Area Test Site (OATS) and Conducted Emissions Site have been fully described, submitted to, and accepted by the FCC, Industry Canada and the Japanese Voluntary Control Council for Interference by information technology equipment. In addition, ACS is compliant to ISO 17025 as certified by the National Institute of Standards and Technology under their National Voluntary Laboratory Accreditation Program. The following certification numbers have been issued in recognition of these accreditations and certifications:

FCC Registration Number: 89450

Industry Canada Lab Code: IC 4175

VCCI Member Number: 1831

- VCCI OATS Registration Number R-1526
- VCCI Conducted Emissions Site Registration Number: C-1608

NVLAP Lab Code: 200612

2.3 Radiated Emissions Test Site Description

2.3.1 Semi-Anechoic Chamber Test Site

The Semi-Anechoic Chamber Test Site consists of a 20' x 30' x 18' shielded enclosure. The chamber is lined with Toyo Ferrite Grid Absorber, model number FFG-1000. The ferrite tile grid is 101 x 101 x 19mm thick and weighs approximately 550 grams. These tiles are mounted on steel panels and installed directly on the inner walls of the chamber.

The turntable is 150cm in diameter and is located 160cm from the back wall of the chamber. The chamber is grounded via 1 - 8' copper ground rod, installed at the center of the back wall, it is bound to the ground plane using 3/4" stainless steel braided cable.

The turntable is all steel, flush mounted table installed in an all steel frame. The table is remotely operated from inside the control room located 25' from the range. The turntable is electrically bonded to the surrounding ground plane via steel fingers installed on the edge of the turn table. The steel fingers make constant contact with the ground plane during operation.

Behind the turntable is a 3' x 6' x 4' deep shielded pit used for support equipment if necessary. The pit is equipped with 1 - 4" PVC chases from the turntable to the pit that allow for cabling to the EUT if necessary. The underside of the turntable can be accessed from the pit so cables can be supplied to the EUT from the pit.

A diagram of the Semi-Anechoic Chamber Test Site is shown in Figure 2.3-1 below:

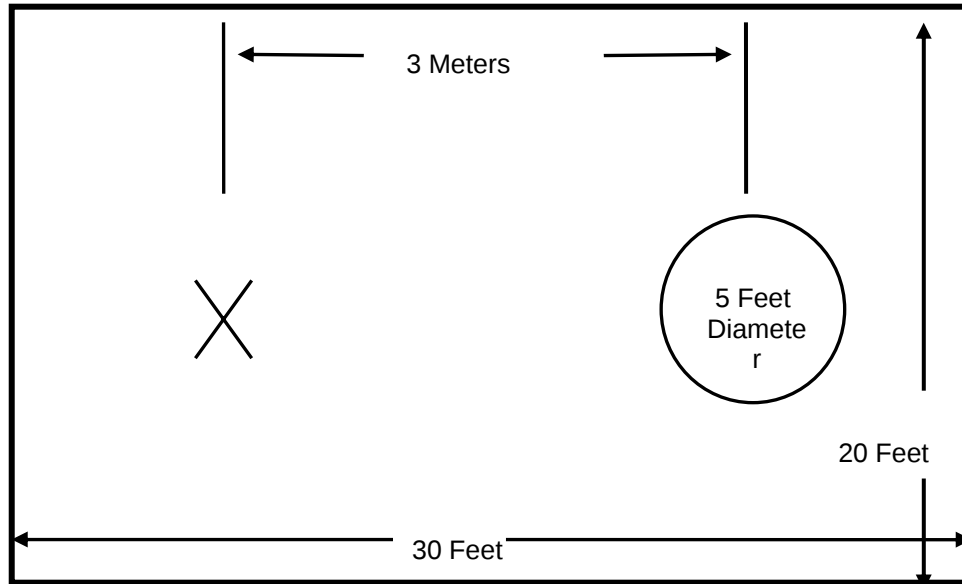


Figure 2.3-1: Semi-Anechoic Chamber Test Site

2.3.2 Open Area Tests Site (OATS)

The open area test site consists of a 40' x 66' concrete pad covered with a perforated electro-plated galvanized sheet metal. The perforations in the sheet metal are 1/8" holes that are staggered every 3/16". The individual sheets are placed to overlap each other by 1/4" and are riveted together to provide a continuous seam. Rivets are spaced every 3" in a 3 x 20 meter perimeter around the antenna mast and EUT area. Rivets in the remaining area are spaced as necessary to properly secure the ground plane and maintain the electrical continuity.

The entire ground plane extends 12' beyond the turntable edge and 16' beyond the antenna mast when set to a 10 meter measurement distance. The ground plane is grounded via 4 - 8' copper ground rods, each installed at a corner of the ground plane and bound to the ground plane using 3/4" stainless steel braided cable.

The turntable is an all aluminum 10' flush mounted table installed in an all aluminum frame. The table is remotely operated from inside the control room located 40' from the range. The turntable is electrically bonded to the surrounding ground plane via steel fingers installed on the edge of the turn table. The steel fingers make constant contact with the ground plane during operation.

Adjacent to the turntable is a 7' x 7' square and 4' deep concrete pit used for support equipment if necessary. The pit is equipped with 5 - 4" PVC chases from the pit to the control room that allow for cabling to the EUT if necessary. The underside of the turntable can be accessed from the pit so cables can be supplied to the EUT from the pit. The pit is covered with 2 sheets of 1/4" diamond style reinforced steel sheets. The sheets are painted to match the perforated steel ground plane; however the underside edges have been masked off to maintain the electrical continuity of the ground plane. All reflecting objects are located outside of the ellipse defined in ANSI C63.4.

A diagram of the Open Area Test Site is shown in Figure 2.3-2 below:

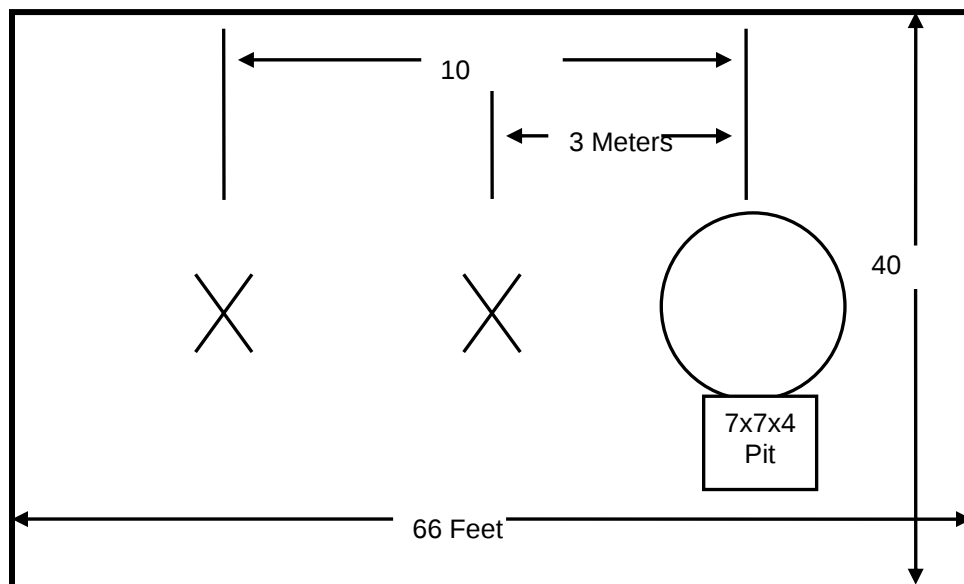


Figure 2.3-2: Open Area Test Site

2.4 Conducted Emissions Test Site Description

The AC mains conducted EMI site is a shielded room with the following dimensions:

- Height: 3.0 Meters
- Width: 3.6 Meters
- Length: 4.9 Meters

The room is manufactured by Rayproof Corporation and installed by Panashield, Inc. Earth ground is provided to the room via an 8' copper ground rod. Each panel of the room is connected electrically at intervals of 4".

Power to the room is filtered to prevent ambient noise from coupling to the EUT and measurement equipment. Filters are models 1B42-60P manufactured by Rayproof Corporation.

The room is of sufficient size to test table top and floor standing equipment in accordance with section 6.1.4 of ANSI C63.4.

A diagram of the room is shown below in figure 2.4-1:

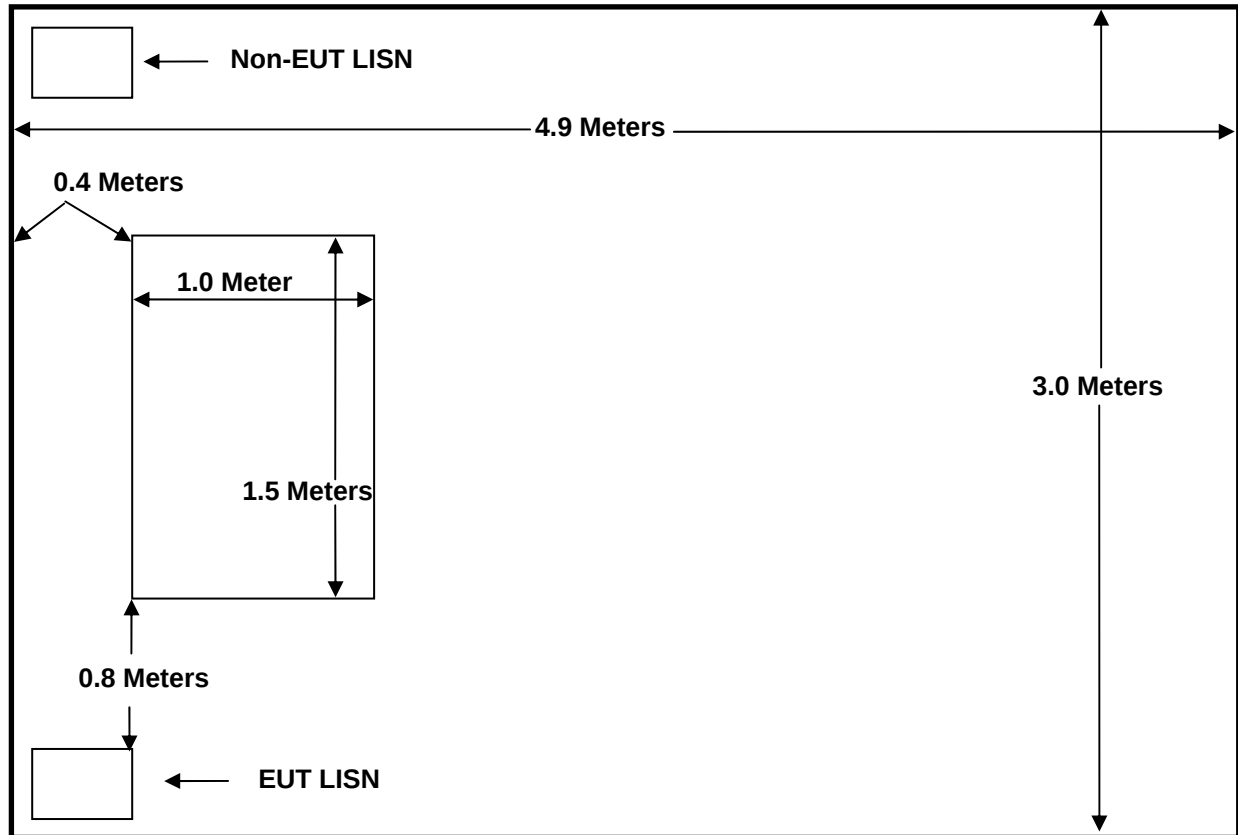


Figure 2.4-1: AC Mains Conducted EMI Site

3.0 APPLICABLE STANDARD REFERENCES

The following standards were used:

- 1 - ANSI C63.4-2003: Method of Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the 9KHz to 40GHz
- 2 - US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures (October 2004)
- 3 - US Code of Federal Regulations (CFR): Title 47, Part 24, Subpart E: Personal Communication Service, Broadband PCS (October 2004)
- 4 - US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart B: Radio Frequency Devices, Unintentional Radiators (October 2004)

4.0 LIST OF TEST EQUIPMENT

All test equipment used for regulatory testing is calibrated yearly or according to manufacturer's specifications.

Table 4-1: Test Equipment

Equipment Calibration Information					
ACS#	Mfg.	Eq. type	Model	S/N	Cal. Due
26	Chase	Bi-Log Antenna	CBL6111	1044	10/05/05
152	EMCO	LISN	3825/2	9111-1905	01/18/06
153	EMCO	LISN	3825/2	9411-2268	12/20/05
193	ACS	OATS Cable Set	RG8	193	01/07/06
225	Andrew	OATS RF cable	Helix	225	01/06/06
165	ACS	Conducted EMI Cable Set	RG8	165	01/06/06
22	Agilent	Pre-Amplifier	8449B	3008A00526	05/06/06
73	Agilent	Pre-Amplifier	8447D	272A05624	05/18/06
30	Spectrum Technologies	Horn Antenna	DRH-0118	970102	05/09/06
NA	EMCO	Horn Antenna	3115	9512-4636	NA
105	Microwave Circuits	High Pass Filter	H1G810G1	2123-01 DC0225	06/09/06
209	Microwave Circuits	High Pass Filters	H3G020G2	4382-01 DC0421	06/09/06
1	Rohde & Schwarz	Receiver	804.8932.52	833771/007	02/26/06
2	Rohde & Schwarz	Receiver	1032.5640.53	839587/003	02/26/06
3	Rohde & Schwarz	ESMI Receiver	804.8932.52	839379/011	12/15/05
4	Rohde & Schwarz	ESMI Receiver	1032.5640.53	833827/003	12/15/05
168	Hewlett Packard	Pulse Limiter	11947A	3107A02268	01/06/06
93	Chase	EM Clamp	CIC 8101	65	01/06/06
204	ACS	Cable	RG8	204	12/29/05
6	Harbour Industries	HF RF Cable	LL-335	00006	03/16/06
7	Harbour Industries	HF RF Cable	LL-335	00007	03/16/06
208	Harbour Industries	HF RF Cable	LL142	00208	06/24/06
237	Gigatronics	Signal Generator	900	282706	01/03/06
176	Weinschel	30 dB Attenuator	46-30-34	BN4922	1/10/2006
N/A	Termaline	Coaxial Resistor 100W	8164	7655	N/A
167	ACS	Chamber EMI Cable Set	RG6	167	12/29/05
204	ACS	Chamber EMI RF cable	RG8	204	01/07/06

* Note: No calibration required – used for pre-scan data only

5.0 SUPPORT EQUIPMENT

Table 5-1: Support Equipment

Diagram #	Manufacturer	Equipment Type	Model Number	Serial Number	FCC ID
1	Joden	EUT 100-240V / 50-60 Hz Switching Power Supply	JOD-SMU2130	NA	NA
2	Agilent	Signal Generator	E4436B	US39260163	NA
3	Hewlett Parkard	Signal Generator	E4432B	US40053693	NA

6.0 EQUIPMENT UNDER TEST SETUP AND BLOCK DIAGRAM

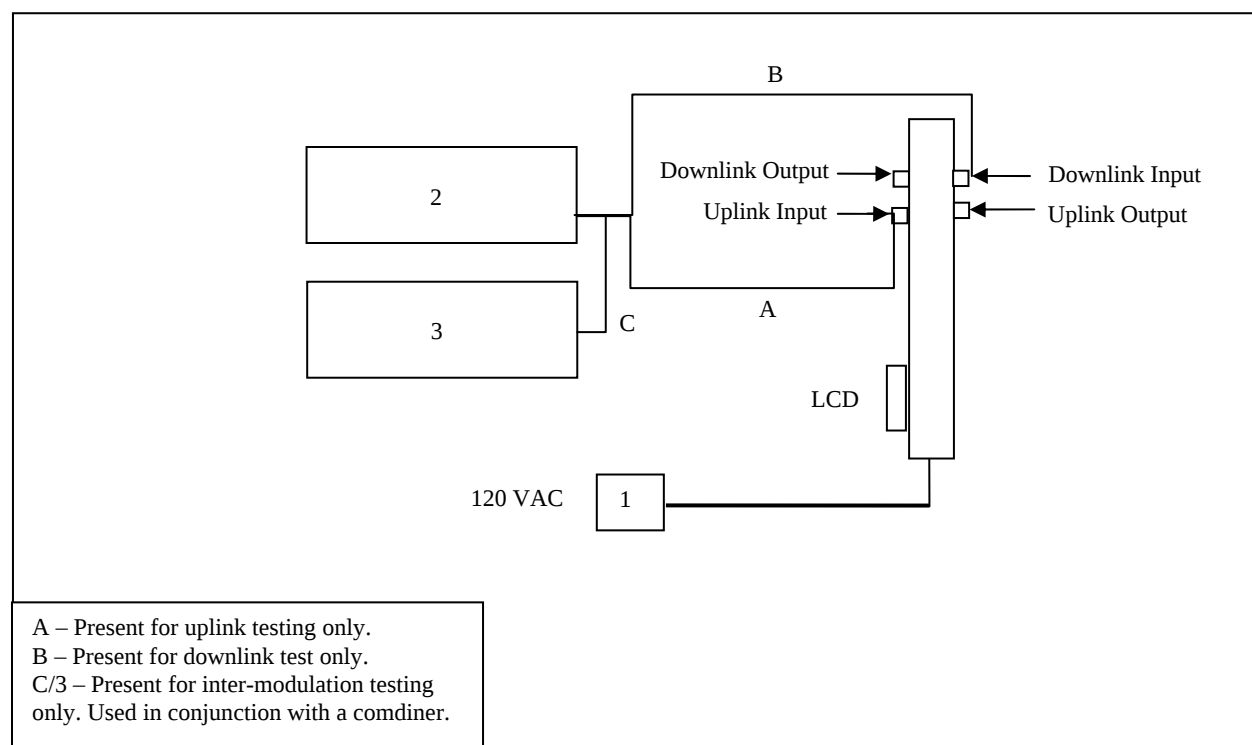


Figure 6-1: EUT Test Setup

7.0 SUMMARY OF TESTS

Along with the tabular data shown below, plots were taken of all signals deemed important enough to document. Data plots can be found in the test report appendix 05-0272-24E-A.

7.1 RF Power Output - FCC Section 2.1046

7.1.1 Measurement Procedure

The RF output of the equipment under test was directly connected to the input of the Spectrum Analyzer. The resolution and video bandwidths of the spectrum analyzer were set at sufficient levels, >> emission bandwidth, to produce accurate results. The analyzer was set for Max Hold using a peak detector. Results for uplink and downlink configurations for CDMA, TDMA and GSM modulation are shown below in Table 7.1-1.

7.1.2 Measurement Results

Peak output power plots are listed below and are supplied in the test report appendix 05-0272-24-A.

Table 7.1-1: Peak Output Power

Configuration	Modulation	Channel	Frequency (MHz)	RF Power Output (dBm)	Plot Reference
Uplink	CDMA	Low	1851.25	12.6	Figure 1.
Uplink	CDMA	Middle	1880.00	13.2	Figure 2.
Uplink	CDMA	High	1908.75	11.9	Figure 3.
Uplink	TDMA	Low	1850.03	12.0	Figure 4.
Uplink	TDMA	Middle	1878.98	11.7	Figure 5.
Uplink	TDMA	High	1909.97	11.7	Figure 6.
Uplink	GSM	Low	1850.20	11.0	Figure 7.
Uplink	GSM	Middle	1880.00	11.3	Figure 8.
Uplink	GSM	High	1909.80	11.3	Figure 9.
Downlink	CDMA	Low	1931.25	3.7	Figure 10.
Downlink	CDMA	Middle	1960.00	4.0	Figure 11.
Downlink	CDMA	High	1988.75	3.8	Figure 12.
Downlink	TDMA	Low	1930.03	3.5	Figure 13.
Downlink	TDMA	Middle	1958.98	2.9	Figure 14.
Downlink	TDMA	High	1989.97	3.3	Figure 15.
Downlink	GSM	Low	1930.20	4.6	Figure 16.
Downlink	GSM	Middle	1960.00	3.1	Figure 17.
Downlink	GSM	High	1989.8	2.8	Figure 18.

7.2 Occupied Bandwidth (Emission Limits) - FCC Section 2.1049, 24.238

7.2.1 Measurement Procedure

The RF output of the equipment under test was directly connected to the input of the Spectrum Analyzer. The spectrum analyzer resolution and video bandwidths were set to 1% the emission bandwidth. The analyzer was set for Max Hold using a peak detector. Both the input and output bandwidths were evaluated to show similar characteristics of the emissions. Results for uplink and downlink configurations for CDMA, TDMA and GSM modulation are shown below in Table 7.2-1.

7.2.2 Measurement Results

Occupied bandwidth plots are listed below and are supplied in the test report appendix 05-0272-24-A.

Table 7.2-1: Occupied Bandwidth

Configuration	Modulation	Channel	Frequency (MHz)	Plot Reference
Uplink - Input	CDMA	Middle	1880.00	Figure 19.
Uplink - Input	CDMA	Middle	1880.00	Figure 20.
Uplink - Output	TDMA	Middle	1878.98	Figure 21.
Uplink - Input	TDMA	Middle	1878.98	Figure 22.
Uplink - Output	GSM	Middle	1880.00	Figure 23.
Uplink - Input	GSM	Middle	1880.00	Figure 24.
Downlink - Input	CDMA	Middle	1960.00	Figure 25.
Downlink - Output	CDMA	Middle	1960.00	Figure 26.
Downlink - Input	TDMA	Middle	1958.98	Figure 27.
Downlink - Output	TDMA	Middle	1958.98	Figure 28.
Downlink - Input	GSM	Middle	1960.00	Figure 29.
Downlink - Output	GSM	Middle	1960.00	Figure 30.

7.3 Spurious Emissions at Antenna Terminals and Inter-modulation Products - FCC Section 2.1051, 24.238

7.3.1 Measurement Procedure

The RF output of the equipment under test was directly connected to the input of the Spectrum Analyzer. The two tone two test method was used with the device operating at maximum drive levels. Two tones were placed at both lower and upper band-edges and adjusted such that the third order harmonics were maximized and within the operating frequency band.

For in band measurements the spectrum analyzer resolution and video bandwidths were set to 1% the emission bandwidth. For out of band emissions the spectrum analyzer resolution and video bandwidths were set to 1 MHz according to Section 24.238 (b). The spectrum was investigated for the 30 MHz to 20 GHz in accordance to CFR 47 Part 2.1057. The analyzer was set for Max Hold using a peak detector. Data was collected at the lower band-edge and upper band-edge for uplink and downlink configurations and for CDMA, TDMA and GSM modulations.

7.3.2 Measurement Results

Emission plots are listed below and are supplied in the test report appendix 05-0272-24-A.

Table 7.3-1: Spurious Emissions

Configuration	Modulation	Channel	Frequency Range (MHz)	Plot Reference
Uplink	CDMA	Low	In Band	Figure 31.
Uplink	CDMA	Low	30 – 2900	Figure 32.
Uplink	CDMA	Low	2900 - 20000	Figure 33.
Uplink	CDMA	Middle	30 – 2900	Figure 34.
Uplink	CDMA	Middle	2900 - 20000	Figure 35.
Uplink	CDMA	High	In Band	Figure 36.
Uplink	CDMA	High	30 – 2900	Figure 37.
Uplink	CDMA	High	2900 - 20000	Figure 38.
Uplink	TDMA	Low	In Band	Figure 39.
Uplink	TDMA	Low	30 – 2900	Figure 40.
Uplink	TDMA	Low	2900 - 20000	Figure 41.
Uplink	TDMA	Middle	30 – 2900	Figure 42.
Uplink	TDMA	Middle	2900 - 20000	Figure 43.
Uplink	TDMA	High	In Band	Figure 44.
Uplink	TDMA	High	30 – 2900	Figure 45.
Uplink	TDMA	High	2900 - 20000	Figure 46.
Uplink	GSM	Low	In Band	Figure 47.
Uplink	GSM	Low	30 – 2900	Figure 48.
Uplink	GSM	Low	2900 - 20000	Figure 49.
Uplink	GSM	Middle	30 – 2900	Figure 50.
Uplink	GSM	Middle	2900 - 20000	Figure 51.
Uplink	GSM	High	In Band	Figure 52.
Uplink	GSM	High	30 – 2900	Figure 53.
Uplink	GSM	High	2900 - 20000	Figure 54.

Configuration	Modulation	Channel	Frequency Range (MHz)	Plot Reference
Downlink	CDMA	Low	In Band	Figure 55.
Downlink	CDMA	Low	30 – 2900	Figure 56.
Downlink	CDMA	Low	2900 - 20000	Figure 57.
Downlink	CDMA	Middle	30 – 2900	Figure 58.
Downlink	CDMA	Middle	2900 - 20000	Figure 59.
Downlink	CDMA	High	In Band	Figure 60.
Downlink	CDMA	High	30 – 2900	Figure 61.
Downlink	CDMA	High	2900 - 20000	Figure 62.
Downlink	TDMA	Low	In Band	Figure 63.
Downlink	TDMA	Low	30 – 2900	Figure 64.
Downlink	TDMA	Low	2900 - 20000	Figure 65.
Downlink	TDMA	Middle	30 – 2900	Figure 66.
Downlink	TDMA	Middle	2900 - 20000	Figure 67.
Downlink	TDMA	High	In Band	Figure 68.
Downlink	TDMA	High	30 – 2900	Figure 69.
Downlink	TDMA	High	2900 - 20000	Figure 70.
Downlink	GSM	Low	In Band	Figure 71.
Downlink	GSM	Low	30 – 2900	Figure 72.
Downlink	GSM	Low	2900 - 20000	Figure 73.
Downlink	GSM	Middle	30 – 2900	Figure 74.
Downlink	GSM	Middle	2900 - 20000	Figure 75.
Downlink	GSM	High	In Band	Figure 76.
Downlink	GSM	High	30 – 2900	Figure 77.
Downlink	GSM	High	2900 - 20000	Figure 78.

7.4 Band-edge Compliance - FCC Section 24.238

7.4.1 Measurement Procedure

The RF output of the equipment under test was directly connected to the input of the Spectrum Analyzer. The spectrum analyzer resolution and video bandwidths were set to 1% the emission bandwidth. The analyzer was set for Max Hold using a peak detector. The center frequency was set to both the upper and lower PCS frequency block edges. Uplink and downlink configurations for CDMA, TDMA and GSM modulations were evaluated.

7.4.2 Measurement Results

Band-edge plots in are listed in Table 7.4-1below and are supplied in the test report appendix 05-0272-24-A.

Table 7.4-1: Band-edge

Configuration	Modulation	Channel	Frequency (MHz)	Plot Reference
Uplink	CDMA	Low	1851.25	Figure 79.
Uplink	CDMA	High	1908.75	Figure 80.
Uplink	TDMA	Low	1850.03	Figure 81.
Uplink	TDMA	High	1909.97	Figure 82.
Uplink	GSM	Low	1850.20	Figure 83.
Uplink	GSM	High	1909.80	Figure 84.
Downlink	CDMA	Low	1931.25	Figure 85.
Downlink	CDMA	High	1988.75	Figure 86.
Downlink	TDMA	Low	1930.03	Figure 87.
Downlink	TDMA	High	1989.97	Figure 88.
Downlink	GSM	Low	1930.20	Figure 89.
Downlink	GSM	High	1989.8	Figure 90.

7.5 Field Strength of Spurious Emissions - FCC Section 2.1053, 24.238

7.5.1 Measurement Procedure

The equipment under test is placed on the Open Area Test Site (described in section 2.1) on a wooden table at the turntable center. For each spurious emission, the antenna mast is raised and lowered from one (1) to four (4) meters and the turntable is rotated 360° and the maximum reading on the spectrum analyzer is recorded. This repeated for both horizontal and vertical polarizations of the receive antenna.

The equipment under test is then replaced with a substitution antenna fed by a signal generator. The signal generator's frequency is set to that of the spurious emission recorded from the equipment under test. The antenna mast is raised and lowered from one (1) to four (4) meters to obtain a maximum reading on the spectrum analyzer. The output of the signal generator is then adjusted until the reading on the spectrum analyzer matches that obtained from the equipment under test. The signal generator level is recorded.

The power in dBm of each spurious emission is calculated by correcting the signal generator level for the cable loss and gain of the substitution antenna referenced to a dipole. The spectrum was investigated in accordance to CFR 47 Part 2.1057. A CW was used for both uplink and downlink for low, middle and high channels. The worst case emissions are reported of both uplink and downlink configurations. All emissions not reported were below the noise floor of the measurement equipment.

The spectrum analyzer resolution bandwidth was adjusted to 30 kHz.

Results of the test are shown below in Table 7.5-1.

7.5.2 Measurement Results

Frequency (MHz)	Spectrum Analyzer Level (dBm)	Generator Level (dBm)	Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBm)	Limit (dBm)	Margin (dB)
3700	-77.40	-70	H	5.84	-64.16	-13.00	51.16
3700	-76.13	-69	V	5.84	-63.16	-13.00	50.16
3760	-74.12	-67	H	5.79	-61.21	-13.00	48.21
3760	-75.88	-70	V	5.79	-64.21	-13.00	51.21
3820	-77.35	-72	H	5.73	-66.27	-13.00	53.27
3820	-76.56	-71	V	5.73	-65.27	-13.00	52.27

Table 7.5.-1: Field Strength of Spurious Emissions

7.6 Frequency Stability - FCC Section 2.1055, 24.235

The device performs no frequency translation therefore frequency stability requirements are not applicable.

7.7 Radiated Emissions (Unintentional Radiators) - FCC Section 15.109

7.7.1 Measurement Procedure

The equipment under test is placed on the Open Area Test Site (described in section 2.1) on a wooden table at the turntable center. For each radiated emission, the antenna mast is raised and lowered from one (1) to four (4) meters and the turntable is rotated 360° to obtain a maximum peak reading on the spectrum analyzer. The radiated emissions are then measured using an EMI receiver employing a CISPR quasi-peak detector for frequencies below 1000 MHz and an Average detector function for frequencies above 1000 MHz. This repeated for both horizontal and vertical polarizations of the receive antenna.

The field strength of each radiated emission is calculated by correcting the EMI receiver level for cable loss, amplifier gain, and antenna correction factors.

Field Strength (dBuV/m) = EMI Receiver Level (dBuV) + Cable Loss (dB) – Amplifier Gain (dB) + Antenna Correction Factor (1/m)

Results of the test are shown below in Table 7.7.-1.

7.7.2 Measurement Results

Table 7.7-1: Radiated Emissions Tabulated Data

Frequency (MHz)	Antenna Polarity (H/V)	Antenna Height (cm)	Turntable Position (°)	Corrected Reading (dBμV)	Limit (dBμV)	Margin (dB)
30.08	V	100	122	37.5	40	2.5
55.28	V	100	346	35.0	40	5.0
84.48	V	130	332	34.9	40	5.1
85.92	V	130	189	30.3	40	9.7
127.92	H	290	327	28.9	43.5	14.6
178.8	H	369	355	12.4	43.5	31.1
351.04	H	130	355	18.5	46	27.5
481.44	H	110	0	24.6	46	21.4
657.92	H	190	22	27.7	46	18.3
960.00	H	330	33	33.3	46	12.7
2272.00	V	100	0	50.32	54	3.68

7.8 Power Line Conducted Emissions - FCC Section 15.107

7.8.1 Measurement Procedure

Conducted emissions were performed from 150kHz to 30MHz with the spectrum analyzer's resolution bandwidth set to 9kHz and the video bandwidth set to 30kHz. The calculation for the conducted emissions is as follows:

Corrected Reading = Analyzer Reading + LISN Loss + Cable Loss

Margin = Applicable Limit - Corrected Reading

Results of the test are shown below in and Tables 7.8-1 through 7.8-4 and Figure 7.8-1 through 7.8-2

7.8.2 Measurement Results

Table 7.8-1: Line 1 Conducted EMI Results (Quasi-Peak)

Frequency MHz	Level dBμV	Transducer dB	Limit dBμV	Margin dB	Line	PE
0.186	39.1	9.9	64.2	25.1	L1	GND
0.726	15.8	9.9	56	40.1	L1	GND
0.918	28.2	9.9	56	27.7	L1	GND
1.458	15.8	10.0	56	40.1	L1	GND
2.208	25.5	10.0	56	30.4	L1	GND
3.414	13.6	10.0	56	42.4	L1	GND
3.492	18.0	10.0	56	37.9	L1	GND
4.368	18.6	10.0	56	37.3	L1	GND
25.632	17.6	10.4	60	42.3	L1	GND
26.196	13.5	10.3	60	46.4	L1	GND

Table 7.8-2: Line 1 Conducted EMI Results (Average)

Frequency MHz	Level dBμV	Transducer dB	Limit dBμV	Margin dB	Line	PE
0.186	35.1	9.9	54.2	19.0	L1	GND
0.642	14.0	9.9	46	31.9	L1	GND
0.918	24.5	9.9	46	21.4	L1	GND
1.458	18.0	10.0	46	27.9	L1	GND
2.202	20.1	10.0	46	25.8	L1	GND
3.414	9.4	10.0	46	36.5	L1	GND
3.576	13.0	10.0	46	32.9	L1	GND
4.356	15.6	10.0	46	30.3	L1	GND
25.626	13.3	10.4	50	36.6	L1	GND
26.172	13.0	10.3	50	36.9	L1	GND

Table 7.8-3: Line 2 Conducted EMI Results (Quasi-Peak)

Frequency MHz	Level dB μ V	Transducer dB	Limit dB μ V	Margin dB	Line	PE
0.732	32.1	9.9	56	23.8	L2	GND
0.912	33.2	9.9	56	22.7	L2	GND
1.464	31.8	10.0	56	24.1	L2	GND
1.644	32.3	10.0	56	23.6	L2	GND
2.010	31.7	10.0	56	24.2	L2	GND
2.196	32.9	10.0	56	23.0	L2	GND
2.448	26.5	10.0	56	29.4	L2	GND
2.742	27.8	10.0	56	28.1	L2	GND
3.018	25.0	10.0	56	30.9	L2	GND
26.682	23.8	10.3	60	36.1	L2	GND

Table 7.8-4: Line 2 Conducted EMI Results (Average)

Frequency MHz	Level dB μ V	Transducer dB	Limit dB μ V	Margin dB	Line	PE
0.738	27.4	9.9	46	18.5	L2	GND
0.918	29.7	9.9	46	16.2	L2	GND
1.458	26.0	10.0	46	19.9	L2	GND
1.644	27.4	10.0	46	18.5	L2	GND
2.016	25.0	10.0	46	20.9	L2	GND
2.196	28.5	10.0	46	17.4	L2	GND
2.430	18.9	10.0	46	27.0	L2	GND
2.742	22.9	10.0	46	23.0	L2	GND
3.000	18.4	10.0	46	27.5	L2	GND
26.652	18.7	10.3	50	31.2	L2	GND

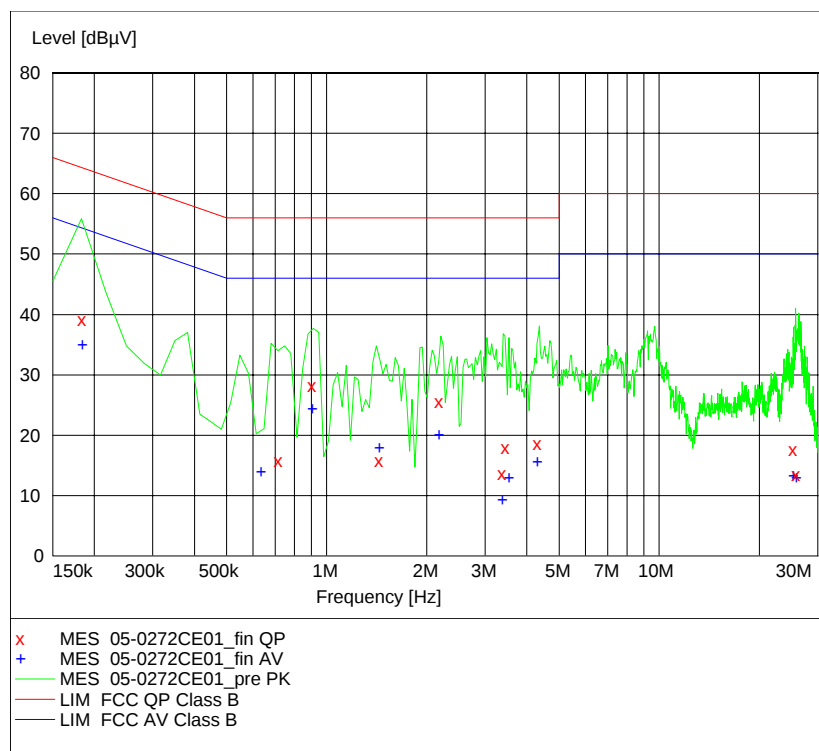


Figure 7.8-1: Conducted Emissions Graph – Line 1

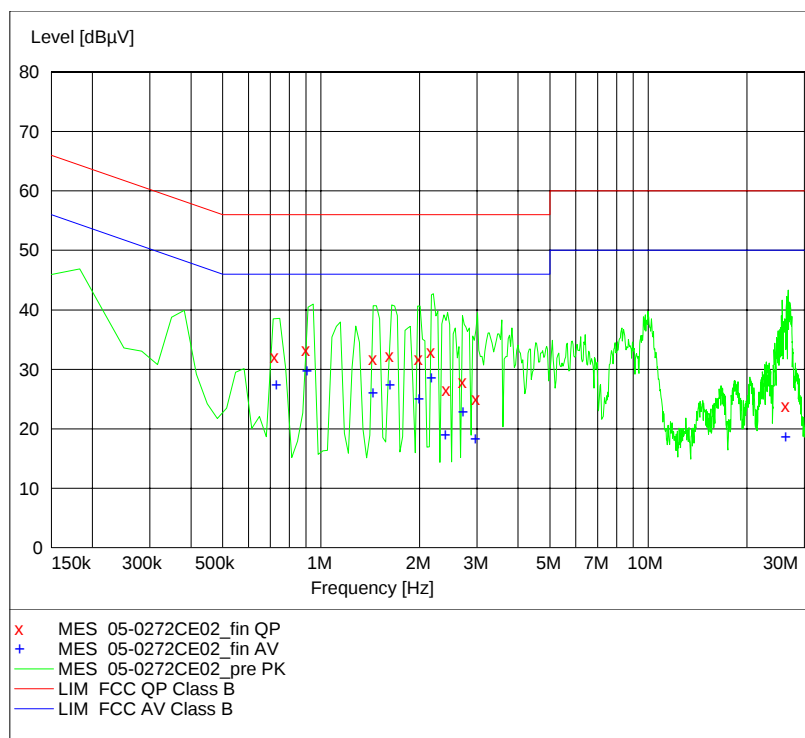


Figure 7.8-2: Conducted Emissions Graph – Line 2

END Report