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**REPORT ON THE CERTIFICATION TESTING OF A
PRETORIAN TECHNOLOGIES Ltd
2.4GHz 2-WAY RADIO MODULE E080025
WITH RESPECT TO
THE FCC RULES CFR 47, PART 15.249 May 2007
INTENTIONAL RADIATOR SPECIFICATION**



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TEST REPORT NO: RU1356/7975

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PRETORIAN TECHNOLOGIES Ltd
2.4GHz 2-WAY RADIO MODULE E080025
WITH RESPECT TO
THE FCC RULES CFR 47, PART 15.249 May 2007
INTENTIONAL RADIATOR SPECIFICATION**

TEST DATE: 9th – 12th July 2007

TESTED BY: D WINSTANLEY

APPROVED BY: J CHARTERS
RADIO SECTION
LEADER

DATE: 31st August 2007

Distribution:

- Copy Nos:
1. Pretorian Technologies Ltd
 2. FCC EVALUATION LABORATORIES
 3. TRL Compliance Ltd

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Notes:		
1. Component failure during test	YES NO	[] [X]
2. If Yes, details of failure:		
3. The facilities used for the testing of the product contain in this report are FCC Listed.		
4. The contents of the attached applicants declarations and other supplied information are not covered by the scope of this laboratory's UKAS or FCC accreditations' and is provided in good faith.		



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CERTIFICATE OF CONFORMITY & COMPLIANCE

FCC IDENTITY: VKLE080025

PURPOSE OF TEST: Certification

TEST SPECIFICATION: FCC RULES CFR 47, Part 15.249 May 2007

TEST RESULT: Compliant to Specification

EQUIPMENT UNDER TEST: 2.4GHz 2-Way Radio Module E080025

ITU: EMISSION CODE: 1M125F1D

EQUIPMENT TYPE: Radio Transceiver Module

PRODUCT USE: Telemetry

CARRIER EMISSION: 43.7 mV/m @3m

ANTENNA TYPE: Integral

ALTERNATIVE ANTENNA: Not Applicable

BAND OF OPERATION: 2400 MHz – 2483.5 MHz

NUMBER OF CHANNELS: 16

FREQUENCY GENERATION: SAW Resonator ☐ Crystal ☒ Synthesiser ☐

MODULATION METHOD: Amplitude ☐ Digital ☒ Angle ☐

POWER SOURCE(s): +3.3Vdc

TEST DATE(s): 9th – 12th July 2007

ORDER No(s): 14879

APPLICANT: Pretorian Technologies Ltd

ADDRESS: Unit 37
Corringham Road Industrial Estate
Gainsborough
Lincolnshire
DN21 1QB

TESTED BY: _____ D WINSTANLEY

APPROVED BY: _____ J CHARTERS
RADIO SECTION
LEADER

APPLICANT'S SUMMARY

EQUIPMENT UNDER TEST (EUT):	2.4GHz 2-Way Raio Module E080025
EQUIPMENT TYPE:	Radio Transceiver Module
PURPOSE OF TEST:	Certification
TEST SPECIFICATION(s):	FCC RULES CFR 47, Part 15.249 May 2007
TEST RESULT:	COMPLIANT Yes ☒ No ☐
APPLICANT'S CATEGORY:	MANUFACTURER ☒ IMPORTER ☐ DISTRIBUTOR ☐ TEST HOUSE ☐ AGENT ☐
APPLICANT'S ORDER No(s):	14879
APPLICANT'S CONTACT PERSON(s):	Mr D Gilbert
E-mail address:	dave@pretorianuk.com
APPLICANT:	Pretorian Technologies Ltd
ADDRESS:	Unit 37 Corringham Road Industrial Estate Gainsborough Lincolnshire DN21 1QB
TEL:	+44 (0) 1427 678990
FAX:	+44 (0) 1427 678992
EUT(s) COUNTRY OF ORIGIN:	United Kingdom
TEST LABORATORY:	TRL Compliance Ltd
UKAS ACCREDITATION No:	0728
TEST DATE(s):	9 th – 12 th July 2007
TEST REPORT No:	RU1356/7975

EQUIPMENT TEST / EXAMINATIONS REQUIRED

1.	TEST/EXAMINATION	RULE PART	DETECTOR	APPLICABILITY
	Intentional Emission Frequency:	15.249(a)	Quasi Peak	YES
	Intentional Emission Field Strength:	15.249(a)	Quasi Peak	YES
	Intentional Emission Band Occupancy:	15.215	Peak	YES
	Intentional Emission ERP (mW):	N/A	-	NO
	Spurious Emissions – Conducted:	15.207	-	NO
	Spurious Emissions – Radiated <1000MHz:	15.209	Quasi Peak	YES
	Spurious Emissions – Radiated >1000MHz:	15.209 15.249(a)	Average	YES
	Maximum Frequency of Search:	15.33	-	YES
	Antenna Arrangements Integral:	15.203	-	YES
	Antenna Arrangements External Connector:	15.204	-	YES
	Restricted Bands	15.205	-	YES
	Extrapolation Factor	15.31(f)	-	YES
2.	Product Use:	Telemetry		
3.	Emission Designator:	1M125F1D		
4.	Duty Cycle:	<100%		
5.	Transmitter bit or pulse rate and level:	2Mbps		
6.	Temperatures:	Ambient (Tnom)	17°C	
7.	Supply Voltages:	Vnom	+3.3Vdc	
	Note: Vnom voltages are as stated above unless otherwise shown on the test report page			
8.	Equipment Category:	Single channel Two channel Multi-channel	[] [] [X]	
9.	Channel spacing:	Narrowband Wideband	[] [X]	

TRANSMITTER TESTS

TRANSMITTER SPURIOUS EMISSIONS – RADIATED – PART 15.209

Ambient temperature	=	17°C(<1GHz)	3m measurements <1GHz	[X]
Relative humidity	=	62% (<1GHz),	3m measurements >1GHz	[X]
Conditions	=	Open Area Test Site (OATS)	3m extrapolated from 1m	[]
Supply voltage	=	+3.3Vdc		

Bottom Channel	FREQ. (MHz)	MEAS Rx (dBμV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBμV/m)	EXTRAP FACT (dB)	FIELD ST'GH (μV/m)	LIMIT (μV/m)
0.009MHz - 0.49MHz									Note 9.
0.49MHz - 1.705MHz									Note 9.
1.705MHz - 30MHz									Note 9.
30MHz - 88MHz									Note 9.
88MHz - 216MHz									Note 9.
216MHz - 960MHz									Note 9.
960MHz - 1GHz									Note 9.
1GHz - 25GHz	2400.000	46.03	1.1	28.8	36.3	39.63	-	95.83	500
	2747.955	43.45	1.3	29.9	36.3	38.35	-	82.70	500
	4804.448	35.50	2.4	33.6	36.5	35.00	-	56.23	500
	7207.282	34.97	3.0	37.4	36.3	39.07	-	89.84	500
Limits	0.009 MHz to 0.49 MHz		2400/f(kHz) μV/m @ 300m						
	0.49 MHz to 1.705 MHz		24000/f(kHz) μV/m @ 30m						
	1.705MHz to 30MHz		30μV/m @ 30m						
	30MHz to 88MHz		100μV/m @ 3m						
	88MHz to 216MHz		150μV/m @ 3m						
	216MHz to 960MHz		200μV/m @ 3m						
	960MHz to 1GHz		500μV/m @ 3m						
	1GHz to 25GHz		500μV/m @ 3m						

Middle Channel	FREQ. (MHz)	MEAS Rx (dBμV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBμV/m)	EXTRAP FACT (dB)	FIELD ST'GH (μV/m)	LIMIT (μV/m)
0.009MHz - 0.49MHz									Note 9.
0.49MHz - 1.705MHz									Note 9.
1.705MHz - 30MHz									Note 9.
30MHz - 88MHz									Note 9.
88MHz - 216MHz									Note 9.
216MHz - 960MHz									Note 9.
960MHz - 1GHz									Note 9.
1GHz - 25GHz	4875.282 7312.169	36.49 35.47	2.5 3.0	33.3 37.4	36.5 36.3	35.79 39.57	- -	61.56 95.17	500 500
Limits	0.009 MHz to 0.49 MHz		2400/f(kHz) μV/m @ 300m						
	0.49 MHz to 1.705 MHz		24000/f(kHz) μV/m @ 30m						
	1.705MHz to 30MHz		30μV/m @ 30m						
	30MHz to 88MHz		100μV/m @ 3m						
	88MHz to 216MHz		150μV/m @ 3m						
	216MHz to 960MHz		200μV/m @ 3m						
	960MHz to 1GHz		500μV/m @ 3m						
	1GHz to 25GHz		500μV/m @ 3m						

Top Channel	FREQ. (MHz)	MEAS Rx (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBµV/m)	EXTRAP FACT (dB)	FIELD ST'GH (µV/m)	LIMIT (µV/m)
0.009MHz - 0.49MHz									Note 9.
0.49MHz - 1.705MHz									Note 9.
1.705MHz - 30MHz									Note 9.
30MHz - 88MHz									Note 9.
88MHz - 216MHz									Note 9.
216MHz - 960MHz									Note 9.
960MHz - 1GHz									Note 9.
1GHz - 25GHz	2833.627	38.70	1.4	36.4	36.4	40.10	-	101.15	500
	4954.769	34.94	2.7	34.4	36.6	35.44	-	59.16	500
	7432.362	37.22	2.3	38.2	36.1	41.62	-	120.50	500
Limits	0.009 MHz to 0.49 MHz		2400/f(kHz) µV/m @ 300m						
	0.49 MHz to 1.705 MHz		24000/f(kHz) µV/m @ 30m						
	1.705MHz to 30MHz		30µV/m @ 30m						
	30MHz to 88MHz		100µV/m @ 3m						
	88MHz to 216MHz		150µV/m @ 3m						
	216MHz to 960MHz		200µV/m @ 3m						
	960MHz to 1GHz		500µV/m @ 3m						
	1GHz to 25GHz		500µV/m @ 3m						

Notes:

- 1 Results quoted are extrapolated as indicated
- 2 Emissions were searched to: (x) 1000MHz inclusive, as per Part 15.33a
- 3 Extrapolation factor 9.5dB from 1m to 3m, as per Part 15.31f
- 4 Measurements >1GHz @ 1m as per Part 15.31f(1)
- 5 Receiver detector <1GHz = CISPR, Quasi-Peak, 120kHz bandwidth
- 6 Receiver detector >1GHz = Average, 1MHz resolution bandwidth
- 7 New batteries used for battery powered products.
- 8 See Annex F for emissions plot(s) 30MHz 1GHz.
- 9 Only emissions within 20 dB of the limit are recorded.

Test Method:

- 1 As per Radio – Noise Emissions, ANSI C63.4: 2003
- 2 Measuring distances as Notes 1 to 4 above
- 3 EUT 0.8 metre above ground plane
- 4 Emissions maximised by rotation of EUT, on an automatic turntable.
Raising and lowering the receiver antenna between 1m & 4m.
Horizontal and vertical polarisations, of the receive antenna.
EUT orientation in three orthogonal planes.
Maximum results recorded.

The test equipment used for the Transmitter Spurious Emissions – Radiated – Part 15.209 tests is shown overleaf:

TYPE OF EQUIPMENT	MAKER/SUPPLIER	MODEL No	SERIAL No	TRL No	EQUIPMENT USED
RADIO COMMUNICATIONS ANALYSER	R & S	CMTA 52	894715 / 003	05	
LOOP ANTENNA	R & S	HFH2	881058-53	07	
ENVIRONMENTAL CHAMBER (temp)	SHARETREE	TCC125 - 815P	CS 203	11	
HORN ANTENNA	EMCO	3115	9010 - 3580	138	
HORN ANTENNA	EMCO	3115	9010 - 3581	139	X
RF SIGNAL GEN	MARCONI	2042	119388 / 080	176	
TEMPERATURE INDICATOR	FLUKE	52 Series II	74700044	426	
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	
RF SIGNAL GEN	AGILENT	8341B	2819A02239	552	
PRE AMPLIFIER	AGILENT	8449B	3008A016	572	X
RECEIVER	R & S	ESHS 10	830051/001	UH03	X
RECEIVER	R & S	ESVS 10	825892/003	UH04	
RANGE 1	TRL	3 METRE	N/A	UH06	X
MULTIMETER	AVOmeter	M3004	M3270006	UH41	
BILOG ANTENNA	CHASE	CBL6112	2129	UH93	
POWER SUPPLY	THANDOR	PL320QMD	044749	UH100	
OSCILLOSCOPE	TEKTRONIX	TDS520B	B020491	UH122	
POWER METER	MARCONI	6960B	237036/001	UH132	
RECEIVER	R & S	ESVS 10	841431/014	UH186	
RECEIVER	R & S	ESHS 10	841429/012	UH187	
BILOG ANTENNA	YORK	CBL611/A	1618	UH191	X
500W AUDIO AMPLIFIER	PRO POWER	STA-162	688200474	UH196	
POWER SENSOR	MARCONI	6920	1564	UH228	
SPECTRUM ANALYSER	R & S	FSU	200034	UH281	X
RF SIGNAL GEN	HP	83630B	3722A00588	UH340	

TRANSMITTER TESTS

TRANSMITTER INTENTIONAL EMISSION – RADIATED – Part 15.249 May 2007

Ambient temperature	=	17°C(<1GHz),	3m measurements @ fc	[X]
Relative humidity	=	67%(<1GHz),	10m measurements @ fc	[]
Conditions	=	Open Area Test Site (OATS)	30m measurements @ fc	[]
Supply voltage	=	+3.3Vdc	30m extrapolated from 3m	[]
Channel number	=	1	30m extrapolated from 10m	[]

FREQ. (MHz)	MEASUREMENT Rx. READING (dBµV)	CABLE LOSS (dB)	ANT FACTOR (dB/m)	PRE AMP (dB)	FIELD STRENGTH (dBµV/m)	FIELD STRENGTH (mV/m)
2402.570	23.92	1.1	28.8	36.3	90.12	32.1
2437.660	25.85	1.1	28.9	36.3	92.15	40.5
2477.650	26.41	1.1	29.0	36.3	92.81	43.7
Limit value @ fc			50 (mV/m)			
Band occupancy @ -20 dBc			f lower		f higher	
2402.570 MHz			2401.913462 MHz		2403.024038 MHz	
2437.660 MHz			2436.918269 MHz		2438.043269 MHz	
2477.650 MHz			2476.937500 MHz		2478.043269 MHz	

See spectrum analyser plot – Annex E

Notes:

- 1 Results quoted are extrapolated as indicated
- 2 Receiver detector @ fc = Peak 1Mz bandwidth
- 3 When battery powered the EUT was powered with new batteries

Test Method:

- 1 As per Radio – Noise Emissions, ANSI C63.4: 2003
- 2 Measuring distances 3m
- 3 EUT 0.8 metre above ground plane
- 4 Emissions maximised by rotation of EUT, on an automatic turntable.
Raising and lowering the receiver antenna between 1m & 4m.
Horizontal and vertical polarisations, of the receive antenna.
EUT orientation in three orthogonal planes.
Maximum results recorded

The test equipment used for the Transmitter Intentional Emission – Radiated – Part 15.249 tests is shown overleaf:

TYPE OF EQUIPMENT	MAKER/SUPPLIER	MODEL No	SERIAL No	TRL No	EQUIPMENT USED
RADIO COMMUNICATIONS ANALYSER	R & S	CMTA 52	894715 / 003	05	
LOOP ANTENNA	R & S	HFH2	881058-53	07	
ENVIRONMENTAL CHAMBER (temp)	SHARETREE	TCC125 - 815P	CS 203	11	
AE, DRG HORN, 1GHz - 18GHz	EMCO	3115	9010 - 3580	138	
AE, DRG HORN, 1GHz - 18GHz	EMCO	3115	9010 - 3581	139	X
RF SIGNAL GEN	MARCONI	2042	119388 / 080	176	
TEMPERATURE INDICATOR	FLUKE	52 Series II	74700044	426	
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	
RF SIGNAL GEN	AGILENT	8341B	2819A02239	552	
PRE AMPLIFIER	AGILENT	8449B	3008A016	572	X
RECEIVER	R & S	ESHS 10	830051/001	UH03	
RECEIVER	R & S	ESVS 10	825892/003	UH04	
RANGE 1	TRL	3 METRE	N/A	UH06	
MULTIMETER	AVOmeter	M3004	M3270006	UH41	
BILOG ANTENNA	CHASE	CBL6112	2129	UH93	
POWER SUPPLY	THANDOR	PL320QMD	044749	UH100	
OSCILLOSCOPE	TEKTRONIX	TDS520B	B020491	UH122	
POWER METER	MARCONI	6960B	237036/001	UH132	
RECEIVER	R & S	ESVS 10	841431/014	UH186	
RECEIVER	R & S	ESHS 10	841429/012	UH187	
BILOG ANTENNA	YORK	CBL611/A	1618	UH191	
500W AUDIO AMPLIFIER	PRO POWER	STA-162	688200474	UH196	
POWER SENSOR	MARCONI	6920	1564	UH228	
SPECTRUM ANALYSER	R & S	FSU	200034	UH281	X
RF SIGNAL GEN	HP	83630B	3722A00588	UH340	

TRANSMITTER TESTS

TRANSMITTER CONDUCTED EMISSIONS – AC POWER LINE Part 15.207

Ambient temperature = 17°C(<1GHz),
Relative humidity = 68%(<1GHz),
Conditions = Power Line Laboratory
Supply voltage = 110V AC
Supply Frequency = 60Hz

SIGNIFICANT EMISSIONS

FREQUENCY (MHz)	MEASUREMENT RECEIVER READING (dBµV)	DETECTOR	CONDUCTOR (L or N)	LIMIT (dBµV)
0.155	46.76	Quasi Peak	Live	65.73
0.240	33.50	Average	Live	52.10
0.325	32.24	Average	Neutral	49.58
0.380	35.93	Average	Neutral	48.28
0.870	26.81	Average	Neutral	46.00
1.470	26.85	Average	Live	46.00
4.790	26.20	Average	Neutral	46.00
10.345	32.39	Average	Neutral	50.00
10.385	34.87	Average	Neutral	50.00
15.845	33.29	Average	Neutral	50.00
16.770	35.65	Average	Neutral	50.00

Notes:

- 1 See attached plot in Annex G.
- 2 The EUT was tested operating with a permanently modulated carrier and normal mode.
- 3 The worst case emission from either mode is recorded.
- 4 Only emissions within 20 dB of the limit are recorded.

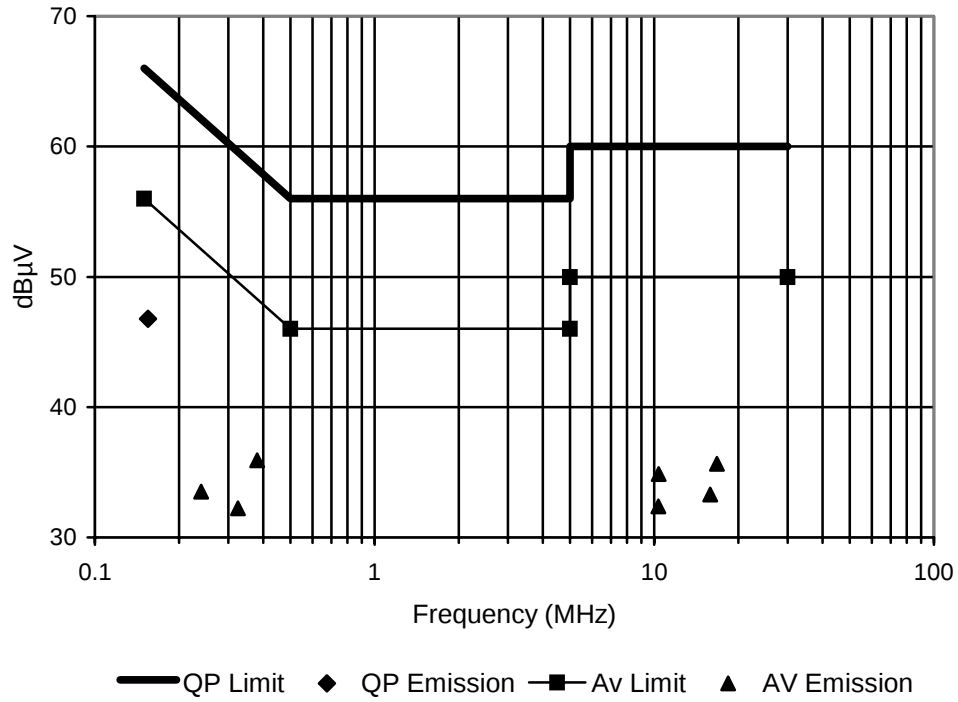
Test Method: 1 As per Radio – Noise Emissions, ANSI C63.4: 2003

The test equipment used for the Transmitter Conducted Emissions – AC Power Line Part 15.207 test was:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ROHDE & SCHWARZ	ESHS 10	830051/001	UH03	X
LISN/AMN	ROHDE & SCHWARZ	ESH3-Z5	863906/018	UH05	
RECEIVER	ROHDE & SCHWARZ	ESHS 10	841429/012	UH187	
LISN/AMN	ROHDE & SCHWARZ	ESH3-Z5	8407 31/015	UH195	X

POWER LINE CONDUCTION EMISSIONS

Limits Part 15.207
(Levels below the limit are only displayed if within 20dB of the limit)



RECEIVER TESTS

RECEIVER SPURIOUS EMISSIONS – RADIATED – PART 15.109

Ambient temperature	=	17°C(<1GHz)	3m measurements <1GHz	[X]
Relative humidity	=	62% (<1GHz),	3m measurements >1GHz	[X]
Conditions	=	Open Area Test Site (OATS)	3m extrapolated from 1m	[]
Supply voltage	=	+3.3Vdc		

Bottom Channel	FREQ. (MHz)	MEAS Rx (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBµV/m)	EXTRAP FACT (dB)	FIELD ST'GH (µV/m)	LIMIT (µV/m)
0.009MHz - 0.49MHz									Note 9.
0.49MHz - 1.705MHz									Note 9.
1.705MHz - 30MHz									Note 9.
30MHz - 88MHz									Note 9.
88MHz - 216MHz									Note 9.
216MHz - 960MHz									Note 9.
960MHz - 1GHz									Note 9.
1GHz - 25GHz									Note 9.
Limits	0.009 MHz to 0.49 MHz		2400/f(kHz) µV/m @ 300m						
	0.49 MHz to 1.705 MHz		24000/f(kHz) µV/m @ 30m						
	1.705MHz to 30MHz		30µV/m @ 30m						
	30MHz to 88MHz		100µV/m @ 3m						
	88MHz to 216MHz		150µV/m @ 3m						
	216MHz to 960MHz		200µV/m @ 3m						
	960MHz to 1GHz		500µV/m @ 3m						
	1GHz to 25GHz		500µV/m @ 3m						

Notes:

- 1 Results quoted are extrapolated as indicated
- 2 Emissions were searched to: (x) 1000MHz inclusive, as per Part 15.33a
- 3 Extrapolation factor 9.5dB from 1m to 3m, as per Part 15.31f
- 4 Measurements >1GHz @ 1m as per Part 15.31f(1)
- 5 Receiver detector <1GHz = CISPR, Quasi-Peak, 120kHz bandwidth
- 6 Receiver detector >1GHz = Average, 1MHz resolution bandwidth
- 7 New batteries used for battery powered products.
- 8 Only emissions within 20 dB of the limit are recorded.

Test Method:

- 1 As per Radio – Noise Emissions, ANSI C63.4: 2003
- 2 Measuring distances as Notes 1 to 4 above
- 3 EUT 0.8 metre above ground plane
- 4 Emissions maximised by rotation of EUT, on an automatic turntable.
Raising and lowering the receiver antenna between 1m & 4m.
Horizontal and vertical polarisations, of the receive antenna.
EUT orientation in three orthogonal planes.
Maximum results recorded.

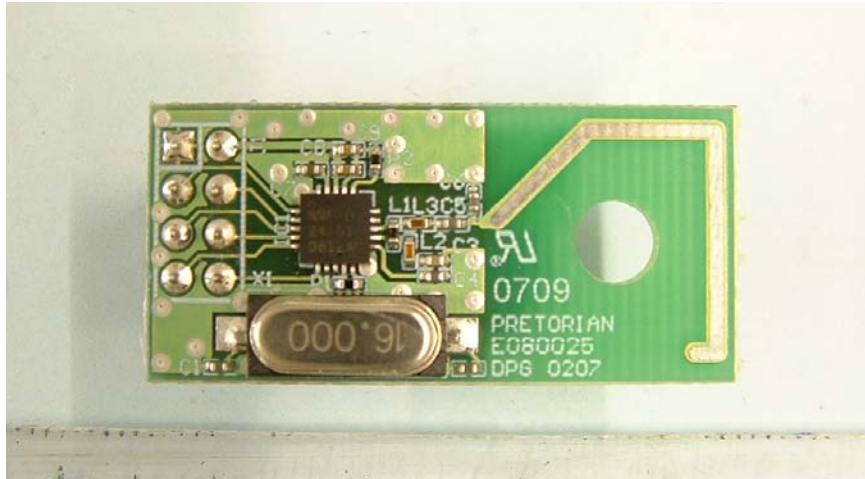
The test equipment used for the Transmitter Spurious Emissions – Radiated – Part 15.209 tests is shown overleaf:

TYPE OF EQUIPMENT	MAKER/SUPPLIER	MODEL No	SERIAL No	TRL No	EQUIPMENT USED
RADIO COMMUNICATIONS ANALYSER	R & S	CMTA 52	894715 / 003	05	
LOOP ANTENNA	R & S	HFH2	881058-53	07	
ENVIRONMENTAL CHAMBER (temp)	SHARETREE	TCC125 - 815P	CS 203	11	
HORN ANTENNA	EMCO	3115	9010 - 3580	138	
HORN ANTENNA	EMCO	3115	9010 - 3581	139	X
RF SIGNAL GEN	MARCONI	2042	119388 / 080	176	
TEMPERATURE INDICATOR	FLUKE	52 Series II	74700044	426	
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479	
RF SIGNAL GEN	AGILENT	8341B	2819A02239	552	
PRE AMPLIFIER	AGILENT	8449B	3008A016	572	X
RECEIVER	R & S	ESHS 10	830051/001	UH03	X
RECEIVER	R & S	ESVS 10	825892/003	UH04	
RANGE 1	TRL	3 METRE	N/A	UH06	X
MULTIMETER	AVOmeter	M3004	M3270006	UH41	
BILOG ANTENNA	CHASE	CBL6112	2129	UH93	
POWER SUPPLY	THANDOR	PL320QMD	044749	UH100	
OSCILLOSCOPE	TEKTRONIX	TDS520B	B020491	UH122	
POWER METER	MARCONI	6960B	237036/001	UH132	
RECEIVER	R & S	ESVS 10	841431/014	UH186	
RECEIVER	R & S	ESHS 10	841429/012	UH187	
BILOG ANTENNA	YORK	CBL611/A	1618	UH191	X
500W AUDIO AMPLIFIER	PRO POWER	STA-162	688200474	UH196	
POWER SENSOR	MARCONI	6920	1564	UH228	
SPECTRUM ANALYSER	R & S	FSU	200034	UH281	X
RF SIGNAL GEN	HP	83630B	3722A00588	UH340	

ANNEX A
PHOTOGRAPHS







ANNEX B
APPLICANT'S SUBMISSION OF DOCUMENTATION LIST

APPLICANT'S SUBMISSION OF DOCUMENTATION LIST

a.	TCB	-	APPLICATION	[X]
		-	FEE	[X]
b.	AGENT'S LETTER OF AUTHORISATION	-		[X]
c.	MODEL(s) vs IDENTITY	-		[]
d.	ALTERNATIVE TRADE NAME DECLARATION(s)	-		[]
e.	LABELLING	-	PHOTOGRAPHS	[X]
		-	DECLARATION	[]
		-	DRAWINGS	[X]
f.	TECHNICAL DESCRIPTION	-		[X]
g.	BLOCK DIAGRAMS	-	Tx	[X]
		-	Rx	[]
		-	PSU	[]
		-	AUX	[]
h.	CIRCUIT DIAGRAMS	-	Tx	[X]
		-	Rx	[]
		-	PSU	[]
		-	AUX	[]
i.	COMPONENT LOCATION	-	Tx	[X]
		-	Rx	[]
		-	PSU	[]
		-	AUX	[]
j.	PCB TRACK LAYOUT	-	Tx	[X]
		-	Rx	[]
		-	PSU	[]
		-	AUX	[]
k.	BILL OF MATERIALS	-	Tx	[X]
		-	Rx	[]
		-	PSU	[]
		-	AUX	[]
l.	USER INSTALLATION / OPERATING INSTRUCTIONS	-		[X]

ANNEX C
MEASUREMENT UNCERTAINTY

Radio Testing – General Uncertainty Schedule

All statements of uncertainty are expanded standard uncertainty using a coverage factor of 1.96 to give a 95% confidence where no required test level exists.

[1] Adjacent Channel Power

Uncertainty in test result = **1.86dB**

[2] Carrier Power

Uncertainty in test result (Equipment - TRLUH120) = **2.18dB**

Uncertainty in test result (Equipment – TRL05) = **1.08dB**

Uncertainty in test result (Equipment – TRL479) = **2.48dB**

[3] Effective Radiated Power

Uncertainty in test result = **4.71dB**

[4] Spurious Emissions

Uncertainty in test result = **4.75dB**

[5] Maximum frequency error

Uncertainty in test result (Equipment - TRLUH120) = **119ppm**

Uncertainty in test result (Equipment – TRL05) = **0.113ppm**

Uncertainty in test result (Equipment – TRL479) = **0.265ppm**

[6] Radiated Emissions, field strength OATS 14kHz-18GHz Electric Field

Uncertainty in test result (14kHz – 30MHz) = **4.8dB**, Uncertainty in test result (30MHz – 1GHz) = **4.6dB**,
Uncertainty in test result (1GHz-18GHz) = **4.7dB**

[7] Frequency deviation

Uncertainty in test result = **3.2%**

[8] Magnetic Field Emissions

Uncertainty in test result = **2.3dB**

[9] Conducted Spurious

Uncertainty in test result (Equipment TRL479) Up to 8.1GHz = **3.31dB**

Uncertainty in test result (Equipment TRL479) 8.1GHz – 15.3GHz = **4.43dB**

Uncertainty in test result (Equipment TRL479) 15.3GHz – 21GHz = **5.34dB**

Uncertainty in test result (Equipment TRLUH120) Up to 26GHz = **3.14dB**

[10] Channel Bandwidth

Uncertainty in test result = **15.5%**

[11] Amplitude and Time Measurement – Oscilloscope

Uncertainty in overall test level = **2.1dB**, Uncertainty in time measurement = **0.59%**, Uncertainty in Amplitude measurement = **0.82%**

[11] Power Line Conduction

Uncertainty in test result = **3.4dB**

[12] Spectrum Mask Measurements

Uncertainty in test result = **2.59% (frequency)**
Uncertainty in test result = **1.32dB (amplitude)**

[13] Adjacent Sub Band Selectivity

Uncertainty in test result = **1.24dB**

[14] Receiver Blocking – Listen Mode, Radiated

Uncertainty in test result = **3.42dB**

[15] Receiver Blocking – Talk Mode, Radiated

Uncertainty in test result = **3.36dB**

[16] Receiver Blocking – Talk Mode, Conducted

Uncertainty in test result = **1.24dB**

[17] Receiver Threshold

Uncertainty in test result = **3.23dB**

[18] Transmission Time Measurement

Uncertainty in test result = **7.98%**

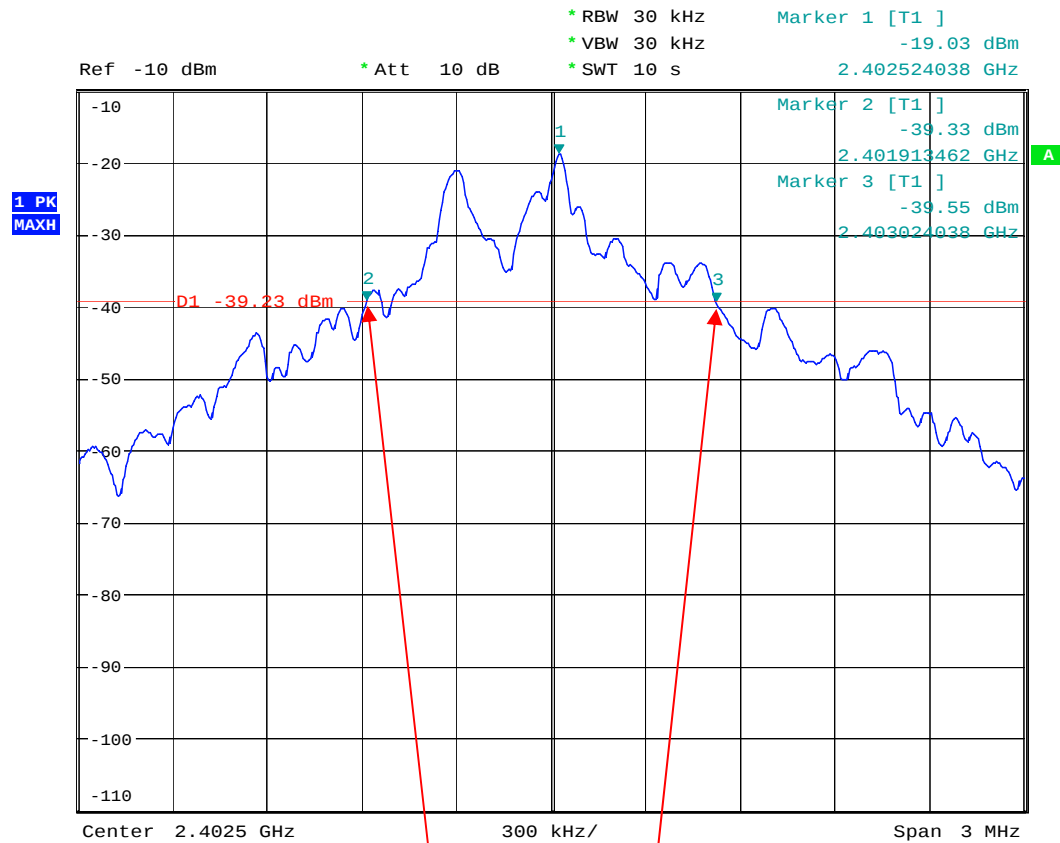
ANNEX D
TEST EQUIPMENT CALIBRATION

TRL Number	Equipment Type	Manufacturer	Last Cal Calibration	Calibration Period	Due For Calibration
UH003	Receiver	R&S	24/07/2006	12	24/07/2007
UH06/07	IC OATS Submission	TRL	01/06/2007	24	01/06/2009
UH006	3m Range ERP CAL	TRL	08/12/2006	12	08/12/2007
UH028	Log Periodic Ant	Schwarbeck	30/05/2007	24	30/05/2009
UH029	Bicone Antenna	Schwarbeck	22/05/2007	24	22/05/2009
UH041	Multimeter	AVOmeter	04/01/2007	12	04/01/2008
UH122	Oscilloscope	Tektronix	07/06/2005	24	07/06/2007
UH132	Power meter	Marconi	10/01/2007	12	10/01/2008
UH162	ERP Cable Cal	TRL	02/01/2007	12	02/01/2008
UH191	Bilog Antenna	York	11/08/2006	24	11/08/2008
UH195	LISN	R&S	09/01/2007	12	09/01/2008
UH228	Power Sensor	Marconi	15/01/2007	12	15/01/2008
UH253	1m Cable N type	TRL	07/12/2006	12	07/12/2007
UH254	1m Cable N type	TRL	07/12/2006	12	07/12/2007
UH265	Notch filer	Telonic	11/01/2006	24	11/01/2008
UH269	1m Cable N type	TRL	07/12/2006	12	07/12/2007
UH270	1m Cable N type	TRL	07/12/2006	12	07/12/2007
UH271	1.5m Cable N type	TRL	07/12/2006	12	07/12/2007
UH272	1.5m Cable N type	TRL	07/12/2006	12	07/12/2007
UH273	2m Cable N type	TRL	07/12/2006	12	07/12/2007
UH274	2m Cable N type	TRL	07/12/2006	12	07/12/2007
UH281	Spectrum Analyser	R&S	24/07/2006	12	24/07/2007
UH340	Signal Generator	HP	29/06/2006	12	29/06/2007
L005	CMTA	R&S	10/01/2007	12	10/01/2008
L007	Loop Antenna	R&S	22/05/2007	24	22/05/2009
L138	1-18GHz Horn	EMCO	23/05/2007	24	23/05/2009
L139	1-18GHz Horn	EMCO	23/05/2007	24	23/05/2009
L176	Signal Generator	Marconi	01/03/2007	12	01/03/2008
L193	Bicone Antenna	Chase	12/10/2003	24	12/10/2005
L203	Log Periodic Ant	Chase	21/10/2003	24	21/10/2005
L343	CCIR Noise Filter	TRL	20/09/2006	12	20/09/2007
L426	Temperature Indicator	Fluke	09/01/2007	12	09/01/2008
L479	Analyser	Anritsu	09/01/2007	12	09/01/2008
L552	Signal Generator	Agilent	24/07/2006	12	24/07/2007
L572	Pre Amplifier	Agilent		Calibrate in use	

ANNEX E
BANDWIDTH PLOT

BANDWIDTH PLOT

Bottom Operating Frequency



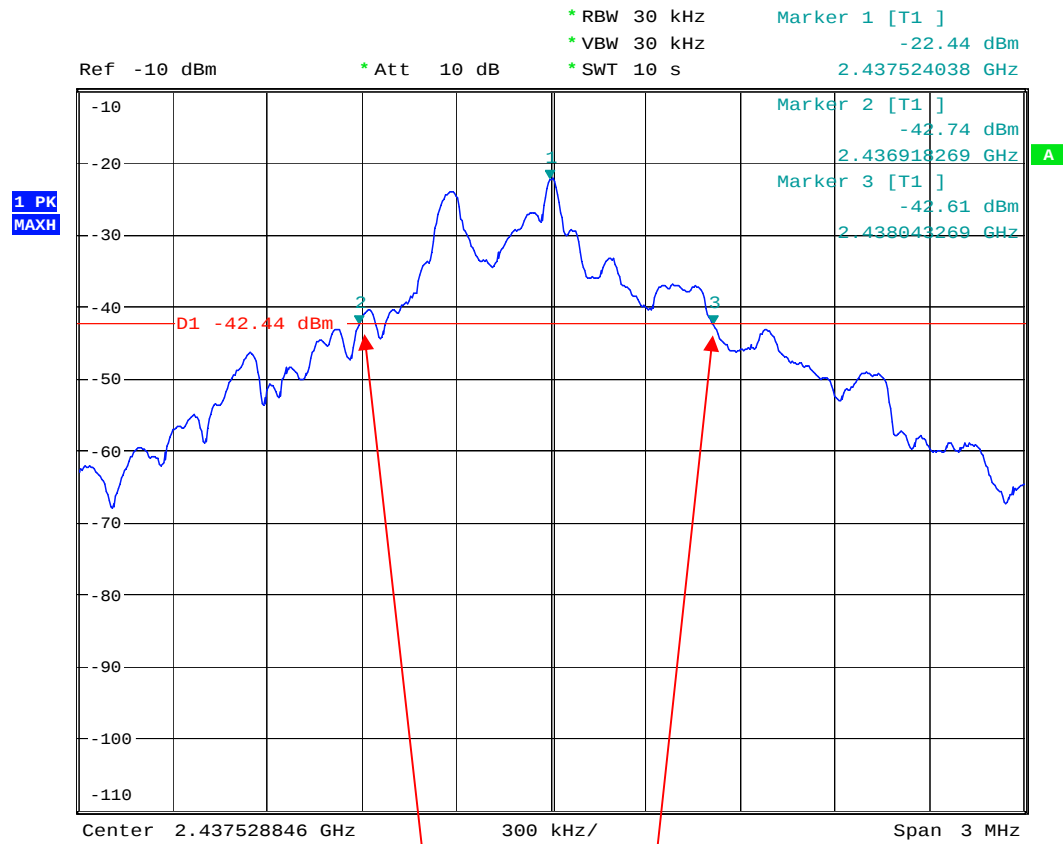
Date: 10.JUL.2007 16:18:48

f_{Lower}

f_{Higher}

f_{Lower} = 2401.913462 MHz
 f_{Higher} = 2403.024038 MHz
 Occupied Bandwidth = 1.110 MHz

Middle Operating Frequency



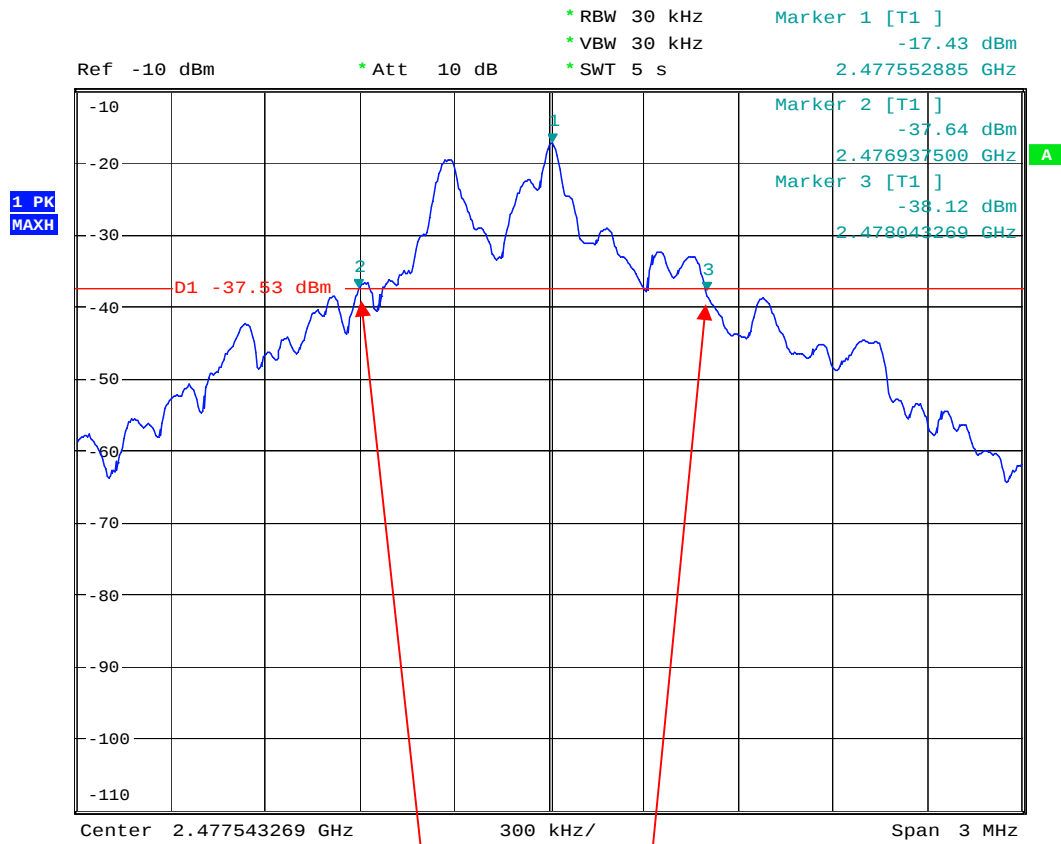
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f_{Lower}

f_{Higher}

f_{Lower} = 2436.918269 MHz
 f_{Higher} = 2438.043269 MHz
 Occupied Bandwidth = 1.125 MHz

Top Operating Frequency



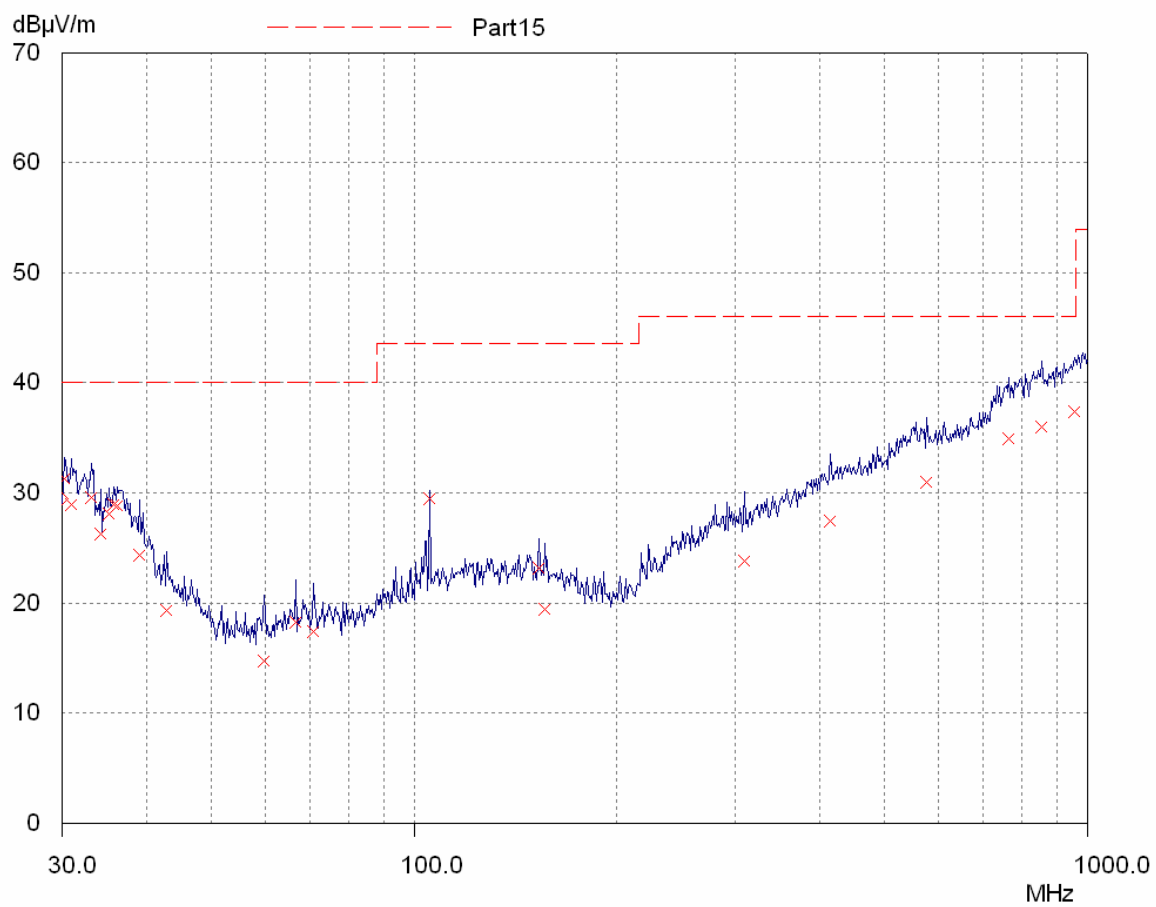
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f_{Lower}

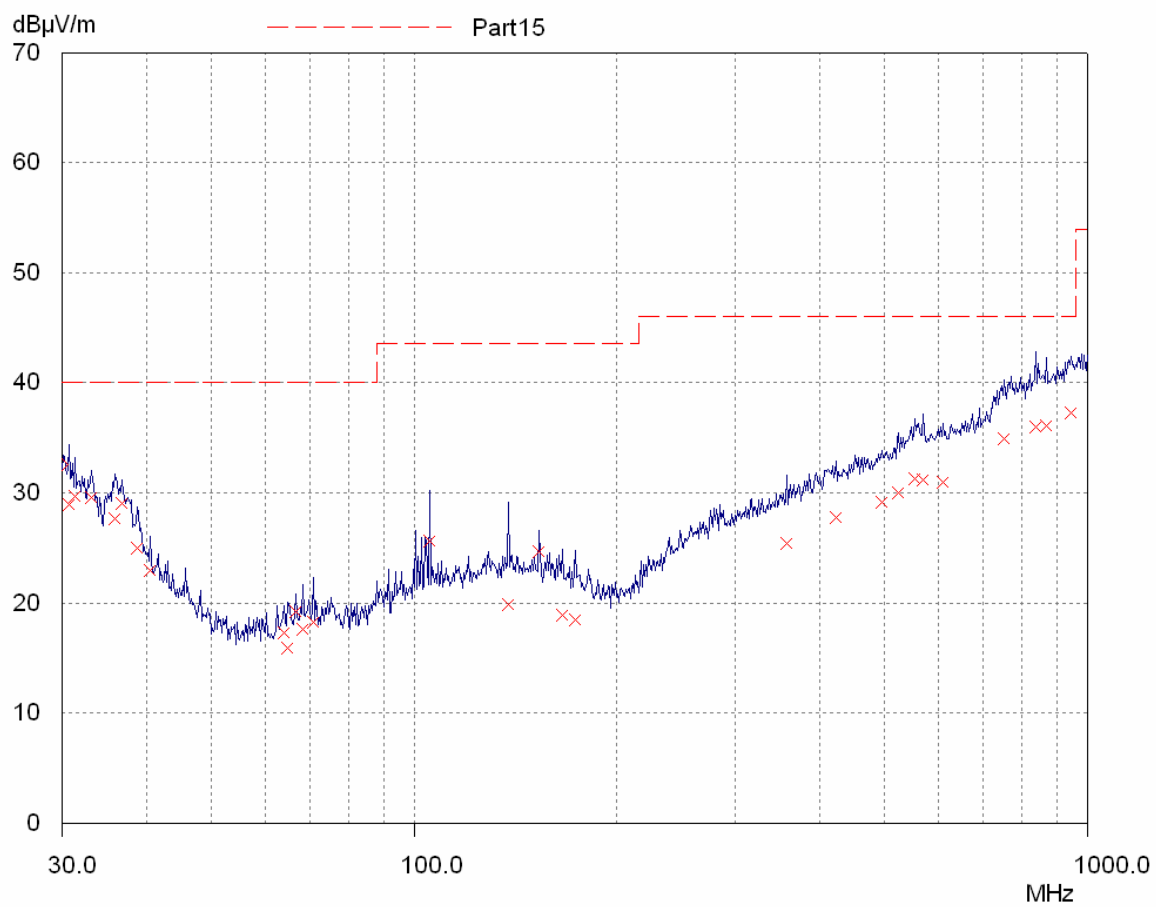
f_{Higher}

f_{Lower} = 2476.937500 MHz
 f_{Higher} = 2478.043269 MHz
 Occupied Bandwidth = 1.105 MHz

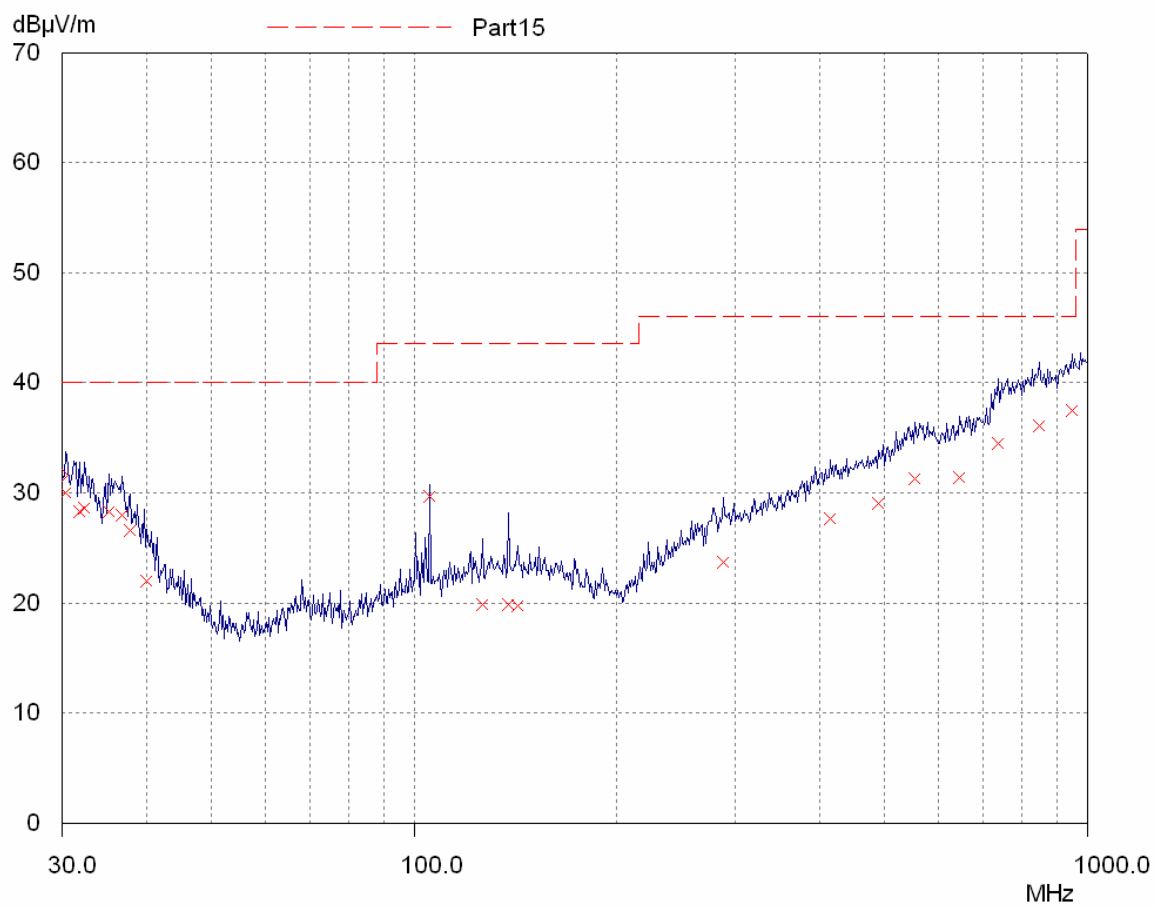
ANNEX F
EMISSIONS GRAPH(s)



Bottom Operating Frequency



Middle Operating Frequency



Top Operating Frequency

ANNEX F

AC POWERLINE CONDUCTION GRAPH(s)

