REPORT ON THE CERTIFICATION TESTING OF A
COMARK Ltd
RF505
WITH RESPECT TO
THE FCC RULES CFR 47, PART 15.247 July 2008
INTENTIONAL RADIATOR SPECIFICATION

TEST REPORT NO: RU1523/8854

COPY NO: 2

ISSUE NO: 1

FCC ID: TVHRF505

REPORT ON THE CERTIFICATION TESTING OF A
COMARK Ltd
RF505
WITH RESPECT TO
THE FCC RULES CFR 47, PART 15.247 July 2008
INTENTIONAL RADIATOR SPECIFICATION

TEST DATE: 14th – 16th October 2008

TESTED BY: Daniel Winstanley Digitally signed by Daniel Winstanley DN: CN = Daniel Winstanley, C = <n Reason: I am the author of this document Date: 2008.10.23 15:49:48 +01'00' D WINSTANLEY

APPROVED BY: John Charters Digitally signed by John Charters DN: CN = John Charters, C = GB, O = TRL Compliance Ltd Reason: I am approving this document Date: 2008.10.23 15:56:54 +01'00' J CHARTERS RADIO SECTION LEADER

DATE: 23rd October 2008

Distribution:

Copy Nos:
1. Comark Ltd
2. TCB: TRL COMPLIANCE Ltd
3. TRL Compliance Ltd

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F +44 (0)1695 557077
E test@trlcompliance.com

CONTENTS

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.

TRL Compliance
part of TRAC global

CERTIFICATE OF CONFORMITY & COMPLIANCE

FCC IDENTITY:	TVHRF505					
PURPOSE OF TEST:	Certification					
TEST SPECIFICATION:	FCC RULES CFR 47, Part 15.247 July 2008					
TEST RESULT:	Compliant to Specification					
EQUIPMENT UNDER TEST:	RF505					
ITU: EMISSION CODE:	1M61F1D					
EQUIPMENT TYPE:	Temperature Monitor					
CARRIER EMISSION:	0.00303 W					
ANTENNA TYPE:	Unique Antenna Connector					
GAIN ANTENNA:	2.1 dBi Maximum Gain antenna					
FREQUENCY OF OPERATION:	2405MHz					
CHANNEL SPACING:	N/A Wideband channel					
NUMBER OF CHANNELS:	1					
FREQUENCY GENERATION:	SAW Resonator	[ ]	Crystal	[ ]	Synthesiser	[X]
MODULATION METHOD:	FHSS	[ ]	DSSS	[X]	Other	[ ]
POWER SOURCE(s):	+4.5Vdc (Via USB)					
TEST DATE(s):	14th -16th October 2008					
ORDER No(s):	S06574					
APPLICANT:	Comark Ltd.					
ADDRESS:	Comark House Gunnels Wood Park Gunnelswood Road Stevenage Heartforshire SG1 2TS United Kingdom					

TESTED BY: Daniel Winstanley — Digitally signed by Daniel Winstanley DN: CN = Daniel Winstanley, C = <n Reason: I am the author of this document Date: 2008.10.23 15:49:38 +01'00' — D WINSTANLEY

APPROVED BY: John Charters — Digitally signed by John Charters DN: CN = John Charters, C = GB, O = TRL Compliance Ltd Reason: I am approving this document Date: 2008.10.23 15:57:06 +01'00' — J CHARTERS RADIO SECTION LEADER

TRAC testing regulatory and compliance

APPLICANT'S SUMMARY

EQUIPMENT UNDER TEST (EUT):	RF505
EQUIPMENT TYPE:	Wireless monitoring system (Survey Tool)
PURPOSE OF TEST:	Certification
TEST SPECIFICATION(s):	FCC RULES CFR 47, Part 15.247 July 2008
TEST RESULT:	COMPLIANT Yes [X] No [ ]
APPLICANT'S CATEGORY:	MANUFACTURER [X] IMPORTER [ ] DISTRIBUTOR [ ] TEST HOUSE [ ] AGENT [ ]
APPLICANT'S ORDER No(s):	S06574
APPLICANT'S CONTACT PERSON(s):	Mr P Morrison
E-mail address:	paulmorrison@comarkltd.com
APPLICANT:	Comark Ltd
ADDRESS:	Comark House Gunnels Wood Park Gunnelswood Road Stevenage Heartforshire SG1 2TS United Kingdom
TEL:	+44 1483 367367
FAX:	+44 1483 367400
EUT(s) COUNTRY OF ORIGIN:	United Kingdom
TEST LABORATORY:	TRL Compliance Ltd
UKAS ACCREDITATION No:	0728
TEST DATE(s):	14th -16th October 2008
TEST REPORT No:	RU1523/8854

EQUIPMENT TEST / EXAMINATIONS REQUIRED

1.

TEST/EXAMINATION	RULE PART	DETECTOR	APPLICABILITY
Intentional Emission Frequency:	15.247	Peak	Yes
Intentional Emission Field Strength:	-	-	No
Intentional Emission Band Occupancy:	15.247(a)1	Peak	Yes
Intentional Emission EIRP (mW):	15.247(b)1	Peak	Yes
Spurious Emissions – Conducted:	15.207	Quasi Peak Average	Yes
Spurious Emissions – Conducted:	15.247	Peak	Yes
Spurious Emissions – Radiated <1000MHz:	15.209 ,15.247	Quasi Peak	Yes
Spurious Emissions – Radiated >1000MHz:	15.247 15.209	Peak average	Yes
Transmitter Carrier Frequency Separation:	15.247(a)(1)	Peak	Yes
Transmitter Maximum Peak Power Output Power:	15.247(b)(1)	Peak	Yes
Transmitter Band Edge Conducted Emissions:	15.247(c)	Peak	Yes
Transmitter Band Edge Radiated Emission:	15.247(c)	Peak	Yes
Extrapolation Factor:	15.31(f)	-	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

2. Product Description : 1M6F1D

3. Temperatures: Ambient (Tnom) 16^{o}C

4. Supply Voltages: Vnom +4.5Vdc

Note: Vnom voltages are as stated above unless otherwise shown on the test report page

5. Equipment Category: Single channel [X]
Multi-channel [ ]

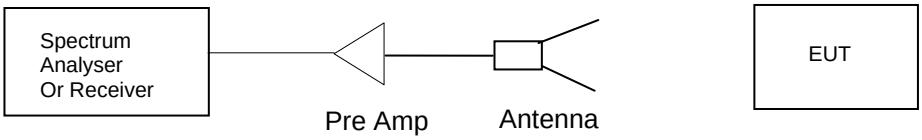
6. Channel spacing: Narrowband [ ]
Wideband [X]

TRANSMITTER TESTS

TRANSMITTER 6dB BANDWIDTH – CONDUCTED - PART 15.247(A)(2)

Ambient temperature = 20^{o}C
Relative humidity = 60%
Conditions = Semi Anechoic Chamber
Supply voltage = +4.5Vdc

Diagram



Frequency	Channel	F_{lower}	F_{Higher}	Measured Bandwidth	Limit
2.405MHz	1	2404.153846 MHz	2405.764423 MHz	1610.577 MHz	>500kHz

Notes: 1 For analyser plots see annex G.

Test Method: 1 The EUT was had the highest gain antenna (2.1dBi) to be used with the equipment fitted.
2 The 6dB bandwidth was recorded with the EUT activity transmitting data.
3 Measurement distance of 3m

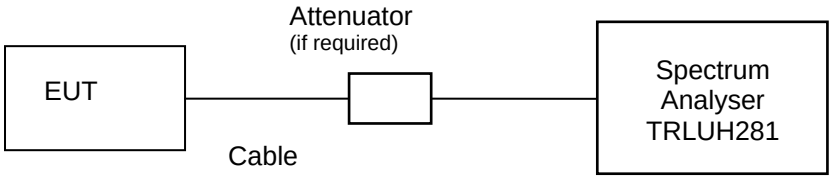
TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	RHODE & SCHWARZ	FSU46	200034	UH281	**X**
HORN ANTENNA	EMCO	3115	9010-3580	138	**X**
PRE AMPLIFIER	AGILENT	8449B	3008A01610	572	**X**

TRANSMITTER TESTS

TRANSMITTER - MAXIMUM PEAK POWER - CONDUCTED - PART 15.247(B)(3)

Ambient temperature = 16°C
Relative humidity = 54%
Conditions = Radio Lab
Supply voltage = +4.5Vdc

Diagram



Frequency MHz	Channel	Peak Power dBm	Peak Power Watts	Antenna Gain dBi	Average Power Watts	Limit Watts
2.405	1	2.71	0.00186	2.1	0.00303	1

Notes:
1 Gain of antenna 2.1dBi, maximum gain antenna supplied by manufacturer.
2 For analyser plots see annex H.

Test Method:
1 The EUT was connected to the spectrum analyser via the unique antenna connector a cable and attenuator - if applicable.
2 The EUT was operated in transmit mode with modulation.
3 The level on the analyser was recorded.
4 The resolution bandwidth of the analyser was set to > than the 6dB bandwidth

Test equipment used for Peak Power measurement:

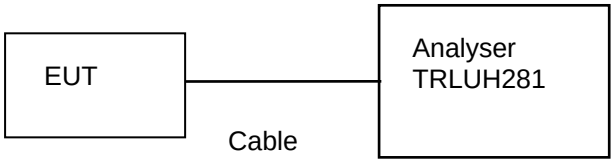
TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	RHODE & SCHWARZ	FSU46	200034	UH281	**X**

TRANSMITTER TESTS

TRANSMITTER POWER SPECTRAL DENSITY – CONDUCTED - PART 15.247(E)

Ambient temperature = 20°C
Relative humidity = 60%
Conditions = Radio Lab
Supply voltage = +4.5Vdc

Diagram



Frequency	Channel	Measured Power Spectral Density	Limit
2.405MHz	1	-9.37 dBm	+8 dBm

Notes: 1 For analyser plots see annex E.

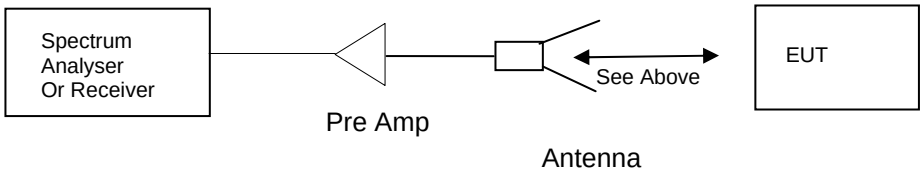
Test Method:
1 The EUT was connected to the analyser via the unique antenna connector & a cable
2 The resolution bandwidth on the analyser was set to 3kHz and trace set to max hold.
3 The span is set to 3MHz
4 The sweep time is 1000 seconds (Span/3kHz).
5 The analyser level is offset to take the antenna gain (2.1dBi) into account.

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	RHODE & SCHWARZ	FSU46	200034	UH281	**X**

TRANSMITTER TESTS

TRANSMITTER SPURIOUS EMISSIONS – RADIATED – Part 15.247(c) and 15.209

Ambient temperature	=	21°C	3m measurements <1GHz	[X]
Relative humidity	=	30%	3m measurements >1GHz	[X]
Conditions	=	Open Area Test Site (OATS)		
Supply voltage	=	+4.5Vdc		



	Emission Frequency (MHz)	Meas. Rx. (dBuV)	Cable loss & Pre Amp Gain (dB)	Ant. Factor (dB/m)	Field Strength (dBµV/m)	Extrap. Factor (dB)	Result (µV/m)	Limit (µV/m)
30MHz – 88MHz Restricted bands	50.00	23.85	1.11	7.74	32.7	-	43.15	100
	60.00	25.08	1.13	5.09	31.3	-	36.73	100
	70.00	16.75	1.21	5.24	23.2	-	14.45	100
	80.00	29.41	1.31	6.68	37.4	-	74.13	100
88MHz – 216MHz Restricted bands	Note 5/6							150
216MHz – 960MHz Restricted bands	Note 5/6							200
960MHz – 1GHz Restricted bands	Note 5/6							500
1GHz – 26GHz Restricted bands	4810.682	37.00	-33.14	32.8	36.66	-	68.07	500
30MHz -26GHz	Note 5/6							-20dBc

See annex E for initial pre scan results.

Notes:

1 Initial pre scans were performed see Annex E for plots.
2 See annex F for radiated bandedge compliance plots.
3 Emissions above 1GHz were measured with both a peak and average detectors.
4 Measurements were performed at 3 meters.
5 Only emissions with in 20dB of limit are recorded.
6 Emissions not directly related to the transmitter are reported under receiver tests.

Test Method:

1 As per section 15.247.
2 Measuring distances as Note 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 >30MHz.
Horizontal and vertical polarisations, of the receive antenna.
EUT orientation in three orthagonal planes. Maximum results recorded.

The test equipment used for the tests is shown overleaf:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
AE, LOOP, Z2, 9kHz - 30MHz	ROHDE & SCHWARZ	HFH2	881058 - 53	07	
HORN ANTENNA	EMCO	3115	9010-3580	138	**X**
HORN ANTENNA	EMCO	3115	9010-3581	139	
RECEIVER	ROHDE & SCHWARZ	ESHS 10	830051/001	UH03	
RECEIVER	ROHDE & SCHWARZ	ESVS 10	844594/003	352	**X**
RANGE 1	TRL	3 METRE	N/A	UH06	**X**
AE, LOOP, Z2, 9kHz - 30MHz	ROHDE & SCHWARZ	HFH2	881058 - 53	07	
BILOG ANTENNA	CHASE	CBL6112	2129	UH93	**X**
SPECTRUM ANALYSER	ROHDE & SCHWARZ	FSU	200034	UH281	**X**
PRE AMPLIFIER	AGILENT	8449B	3008A01610	572	**X**

TRANSMITTER and RECEIVER TESTS

TRANSMITTER CONDUCTED EMISSIONS – AC POWER LINE Parts 15.207 & 15.107

SIGNIFICANT EMISSIONS

FREQUENCY (MHz)	MEASUREMENT RECEIVER READING (dBµV)	DETECTOR	CONDUCTOR (L or N)	LIMIT (dBµV)
0.15	55.65	Quasi Peak	Neutral	66.00
0.19	49.02	Quasi Peak	Neutral	64.04
0.225	53.66	Quasi Peak	Live	62.63
0.23	46.88	Quasi Peak	Neutral	15.57
0.245	38.83	Average	Live	51.92
0.25	55.65	Quasi Peak	Live	61.76
0.375	41.79	Quasi Peak	Live	58.39
0.455	47.20	Quasi Peak	Live	56.78
0.495	26.13	Average	Live	46.08
0.740	36.36	Quasi Peak	Live	56.00

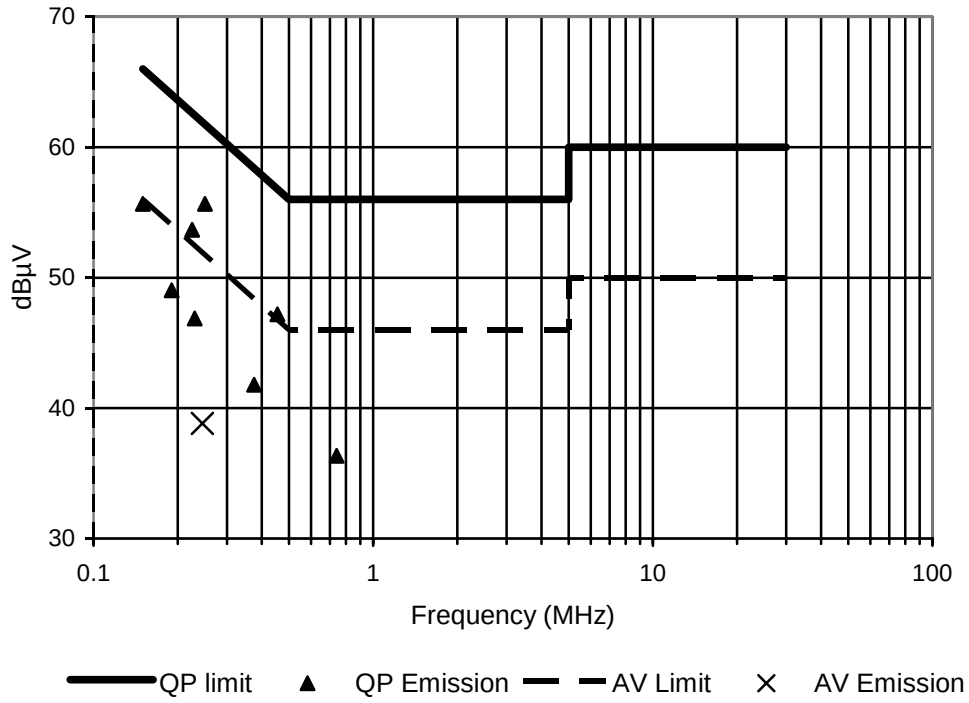
Notes: 1 See attached plot annex D
2 EUT in normal operation mode connected to PC.
3 Worst case result recorded.

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	
LISN/AMN	ROHDE & SCHWARZ	ESH3-Z5	863906/018	UH05	
RECEIVER	ROHDE & SCHWARZ	ESHS 10	841429/012	UH187	**X**
LISN/AMN	ROHDE & SCHWARZ	ESH3-Z5	8407 31/015	UH195	**X**

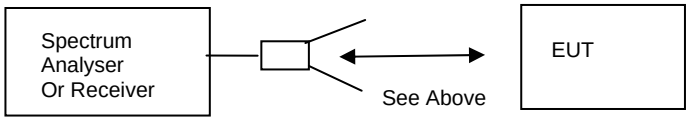
POWER LINE CONDUCTION EMISSIONS



RECEIVER TESTS

RECEIVER SPURIOUS EMISSIONS – RADIATED – PART 15.109

Ambient temperature	=	14^{o}C	3m measurements <1GHz	[X]
Relative humidity	=	43%	3m measurements >1GHz	[X]
Conditions	=	Open Area Test Site (OATS)		
Supply voltage	=	+4.5Vdc		



Antenna

	FREQ. (MHz)	MEAS. Rx. (dBµV)	CABLE LOSS (dB)	ANT FACT. (dB/m)	PRE AMP (dB)	FIELD ST'GH (dBµV/m)	FIELD ST'GH (µV/m)	LIMIT (µV/m)
30MHz – 88MHz	33.05	13.95	0.95	16.4	-	31.3	36.73	100
	64.75	22.05	1.23	4.92	-	28.2	25.70	100
	64.90	21.04	1.23	4.93	-	27.2	22.91	100
	66.30	21.27	1.23	5.00	-	27.5	23.71	100
88MHz – 216MHz	130.35	17.57	1.55	11.48	-	30.6	33.88	150
	132.65	13.43	1.57	11.30	-	26.3	20.65	150
	144.00	18.80	1.70	10.40	-	30.9	35.07	150
	176.80	18.88	1.82	8.60	-	29.3	29.17	150
	187.80	13.67	1.88	8.35	-	23.9	15.67	150
	199.85	12.41	1.92	8.67	-	23.0	14.12	150
216MHz – 960MHz	327.70	13.35	2.35	13.80	-	29.5	29.85	200
	352.00	20.50	2.50	14.40	-	37.4	74.13	200
	357.95	18.88	2.52	14.60	-	36.0	63.09	200
	366.05	11.87	2.55	14.78	-	29.2	28.84	200
	432.05	11.30	2.80	16.40	-	30.5	33.49	200
960MHz – 1.0GHz								
1GHz – 25.0GHz								

Limits	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 5GHz	500µV/m @ 3m

Notes:
1 Initial pre scans were performed see Annex E for plots <1GHz.
2 Emissions above 1GHz were measured with both a peak and average detectors.
3 Measurements <1GHz were performed at 3 meters.
4 Measurements >1GHz were performed at 3 meters
5 Only emissions with in 20dB of 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 orthagonal planes.
Maximum results recorded.

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

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
AE, LOOP, Z2, 9kHz - 30MHz	ROHDE & SCHWARZ	HFH2	881058 - 53	07	
HORN ANTENNA	EMCO	3115	9010-3580	138	**X**
HORN ANTENNA	EMCO	3115	9010-3581	139	
RECEIVER	ROHDE & SCHWARZ	ESHS 10	830051/001	UH03	
RECEIVER	ROHDE & SCHWARZ	ESVS 10	844594/003	352	**X**
RANGE 1	TRL	3 METRE	N/A	UH06	**X**
AE, LOOP, Z2, 9kHz - 30MHz	ROHDE & SCHWARZ	HFH2	881058 - 53	07	
BILOG ANTENNA	CHASE	CBL6112	2129	UH93	**X**
SPECTRUM ANALYSER	ROHDE & SCHWARZ	FSU	200034	UH281	**X**
PRE AMPLIFIER	AGILENT	8449B	3008A01610	572	**X**

ANNEX A

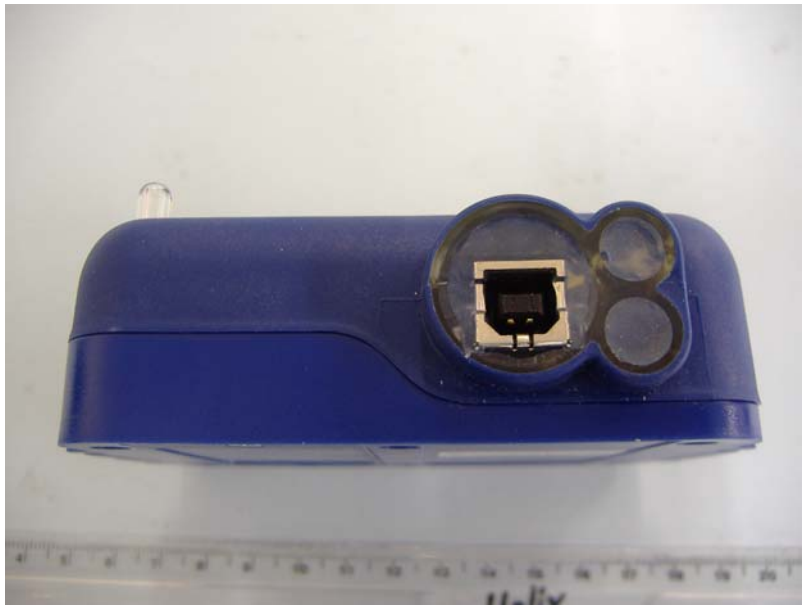
PHOTOGRAPHS

PHOTOGRAPH No. 1 **TEST SETUP**

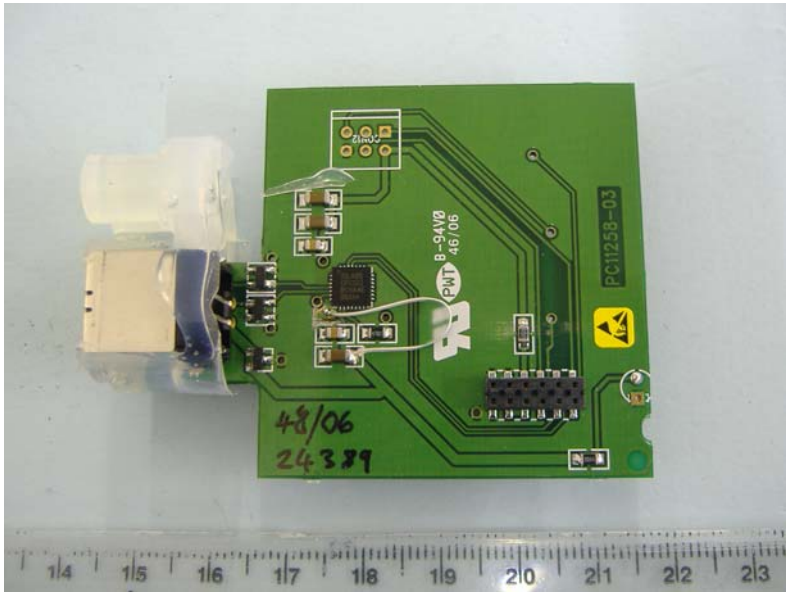
PHOTOGRAPH No. 2 **POWERLINE TEST SETUP**

PHOTOGRAPH No. 3 **OVERVIEW**

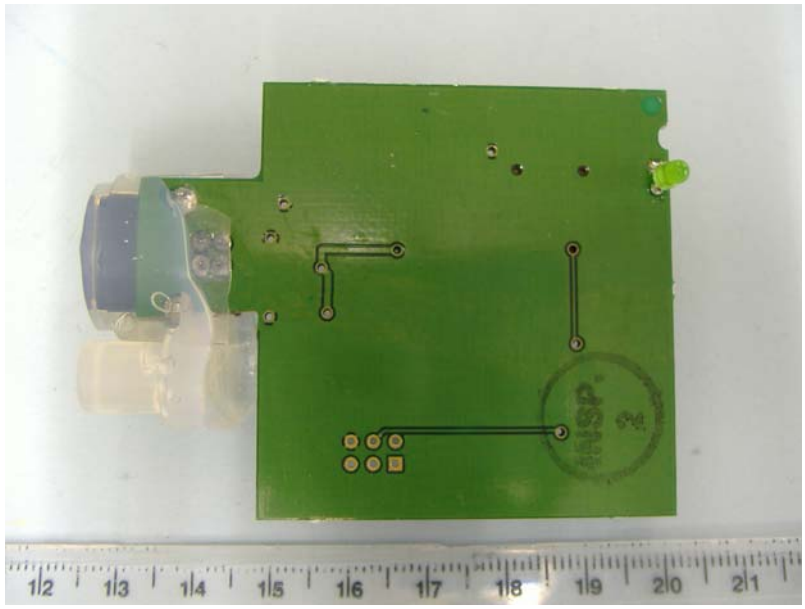
PHOTOGRAPH No. 4 **CONNECTOR OVERVIEW**



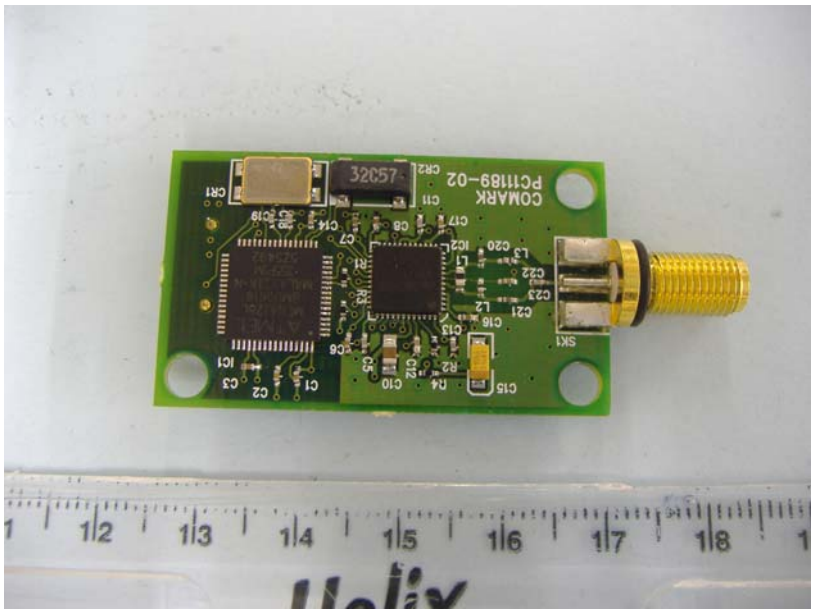
PHOTOGRAPH No. 5 **INTERFACE PCB COMPONENT SIDE**



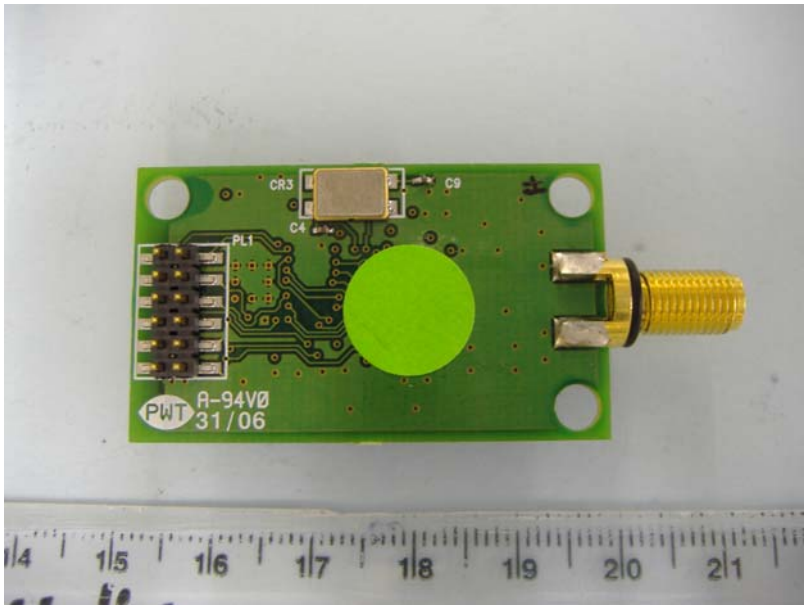
PHOTOGRAPH No. 6 **INTERFACE PCB TRACK SIDE**



PHOTOGRAPH No. 7 **RF PCB TOP**



PHOTOGRAPH No. 7 **RF PCB BOTTOM**



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)	-		[X]
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

EQUIPMENT CALIBRATION DETAILS

EQUIPMENT CALIBRATION

TRL Number	Equipment Type	Manufacturer	Last Cal Calibration	Calibration Period	Due For Calibration
UH06/07	IC OATS Submission	TRL	01/06/2007	24	01/06/2009
UH06/07	NSA Calibration	TRL	17/12/2007	12	17/12/2008
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	06/05/2007	24	06/05/2009
UH041	Multimeter	AVOmeter	15/01/2008	12	15/01/2009
UH093	Bilog Antenna	Chase	21/05/2007	24	21/05/2009
UH122	Oscilloscope	Tektronix	10/12/2007	24	10/12/2009
UH132	Power meter	Marconi	15/01/2008	12	15/01/2009
UH162	ERP Cable Cal	TRL	21/12/2007	12	21/12/2008
UH187	Receiver	R&S	12/12/2007	12	12/12/2008
UH195	LISN	R&S	04/01/2008	12	04/01/2009
UH228	Power Sensor	Marconi	16/01/2008	12	16/01/2009
UH253	1m Cable N type	TRL	30/01/2008	12	30/01/2009
UH254	1m Cable N type	TRL	30/01/2008	12	30/01/2009
UH269	1m Cable N type	TRL	30/01/2008	12	30/01/2009
UH270	1m Cable N type	TRL	30/01/2008	12	30/01/2009
UH271	1.5m Cable N type	TRL	30/01/2008	12	30/01/2009
UH272	1.5m Cable N type	TRL	30/01/2008	12	30/01/2009
UH273	2m Cable N type	TRL	30/01/2008	12	30/01/2009
UH274	2m Cable N type	TRL	30/01/2008	12	30/01/2009
UH281	Spectrum Analyser	R&S	24/10/2007	12	24/10/2008
UH330	K type transition	Maury M'wave	13/06/2008	24	13/06/2010
UH340	Signal Generator	HP	06/05/2008	12	06/05/2009
UH365	Harmonic Mixer	Agilent	16/07/2008	24	16/07/2010
UH366	Harmonic Mixer	Agilent	21/07/2008	24	21/07/2010
UH367	Harmonic Mixer	Agilent	02/07/2008	24	02/07/2010
L005	CMTA	R&S	30/10/2007	12	30/10/2008
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	06/05/2008	12	06/05/2009
L193	Bicone Antenna	Chase	06/05/2008	24	06/05/2010
L203	Log Periodic Ant	Chase	06/05/2008	24	06/05/2010
L263/A	Horn 18-26GHz	Flann	13/06/2008	24	13/06/2010
L300	Horn 18-26GHz	Flann	12/06/2008	24	12/06/2010
L309	SMA Transition		13/06/2008	24	13/06/2010
L352	Receiver	R&S	05/12/2007	12	05/12/2008
L426	Temperature Indicator	Fluke	22/01/2008	12	22/01/2009
L479	Analyser	Anritsu	22/09/2008	12	22/09/2009
L572	Pre Amp	Agilent	04/07/2008	12	04/07/2009

ANNEX D

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

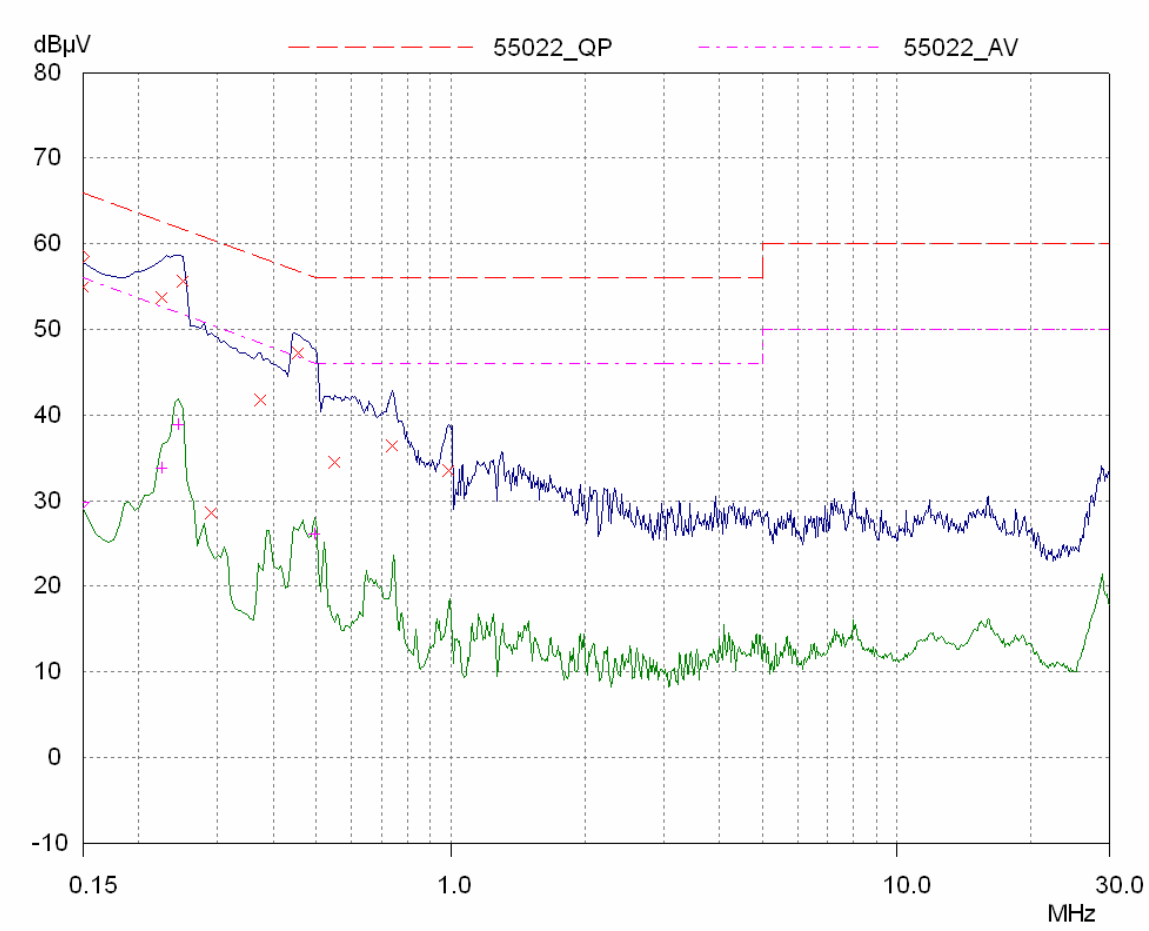
Uncertainty in test result = **3.23dB**

[18] Transmission Time Measurement

Uncertainty in test result = **7.98%**

ANNEX E

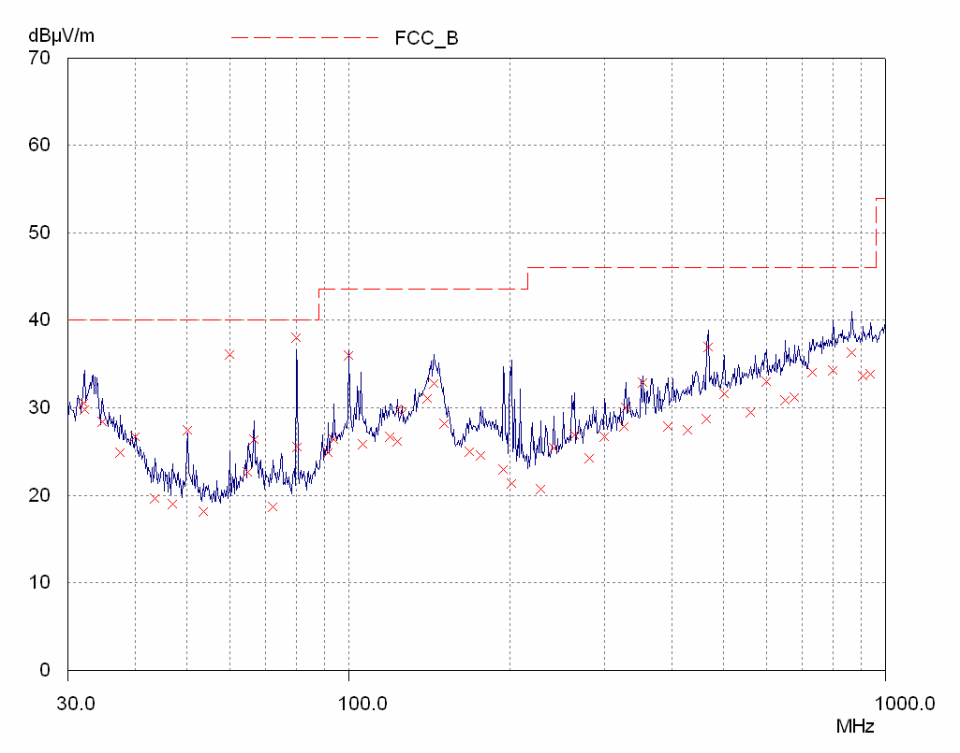
POWER LINE CONDUCTION


dBµV
55022_QP
55022_AV
80
70
60
50
40
30
20
10
0
-10
0.15
1.0
10.0
30.0
MHz

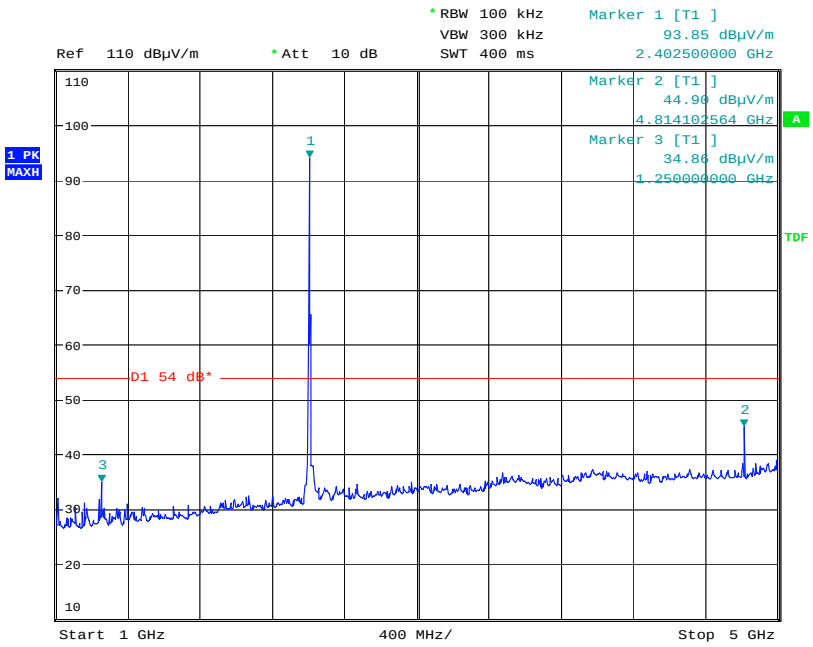
ANNEX F

RADIATED EMISSIONS

RADIATED EMISSIONS 30MHz – 1 GHz

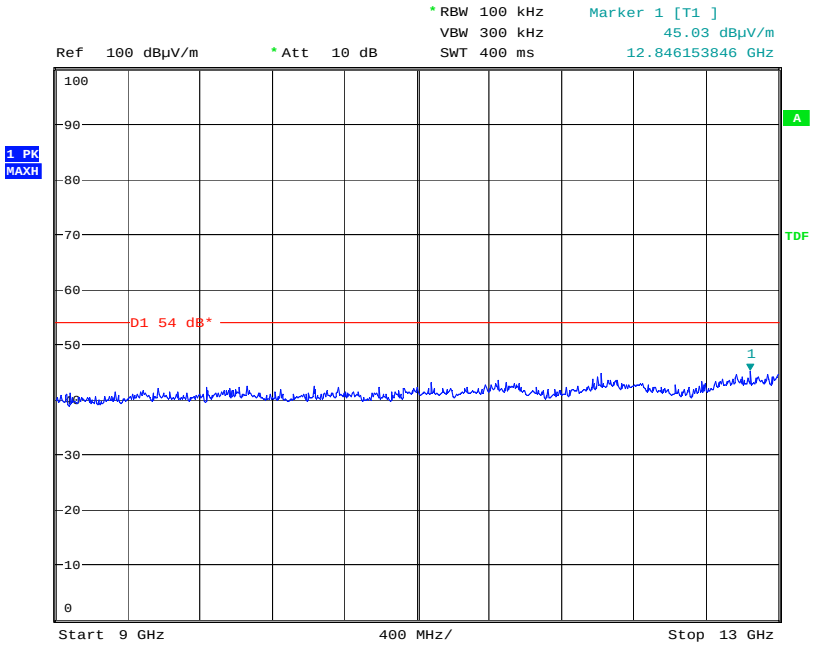


RADIATED EMISSIONS 1GHz –5GHz



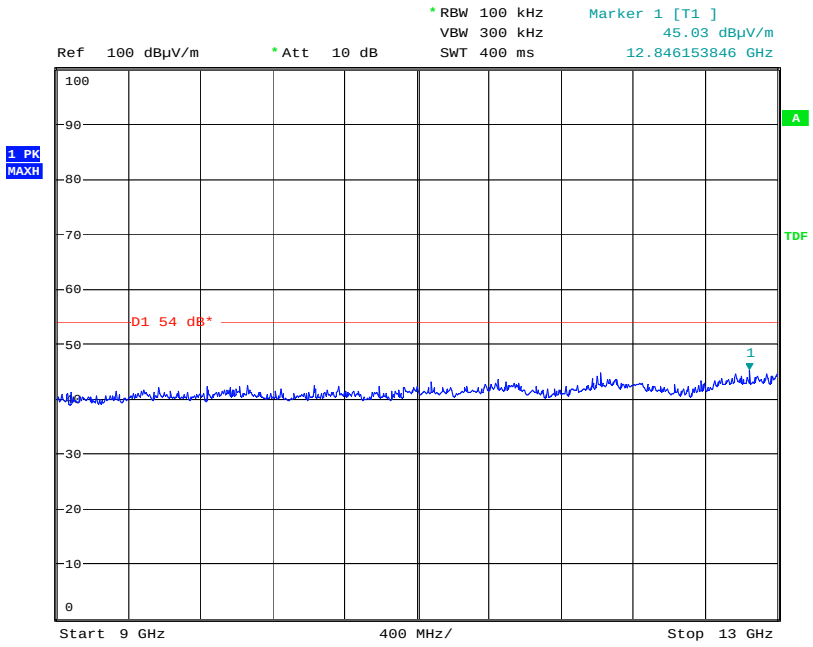
Date: 14.OCT.2008 15:25:14

RADIATED EMISSIONS 5GHz –9GHz



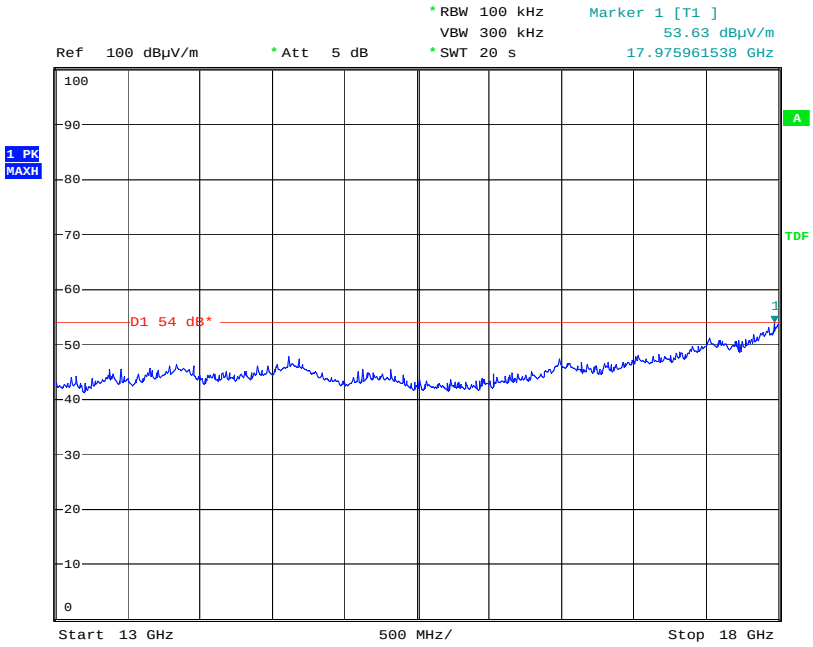
Date: 14.OCT.2008 15:28:32

RADIATED EMISSIONS 9GHz – 13GHz



Date: 14.OCT.2008 15:28:32

RADIATED EMISSIONS 13GHz – 18GHz



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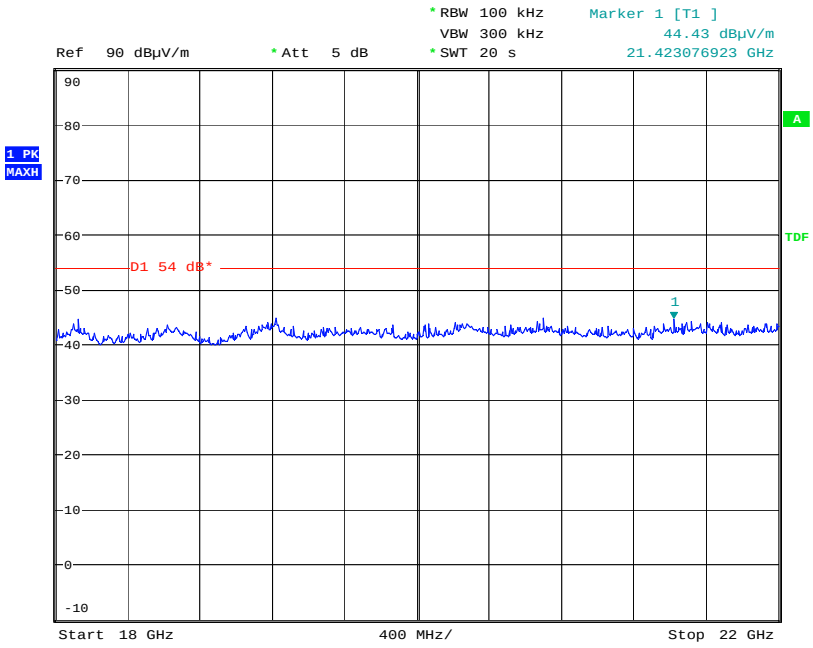
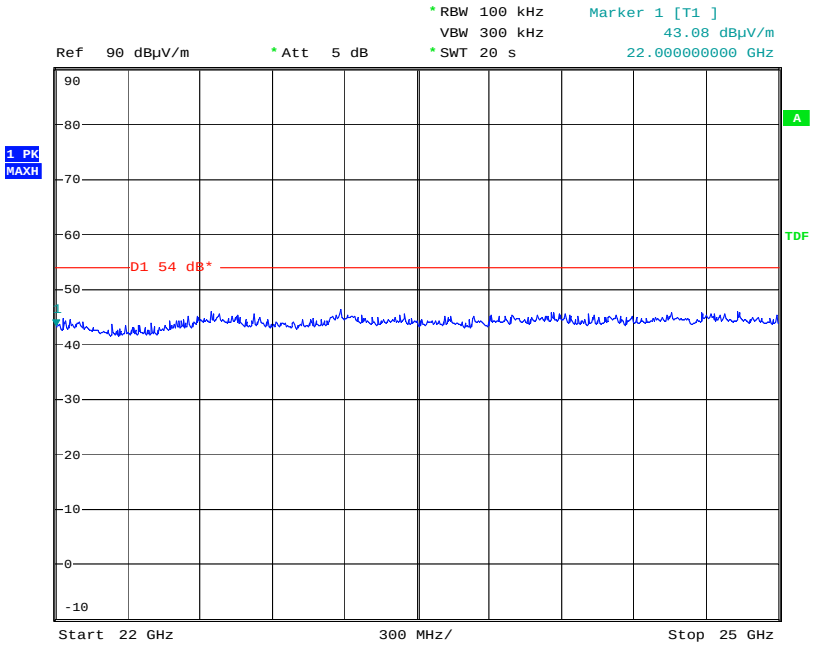
RADIATED EMISSIONS 18GHz – 22GHz



Date: 14.OCT.2008 16:38:57

RADIATED EMISSIONS 22GHz – 25GHz

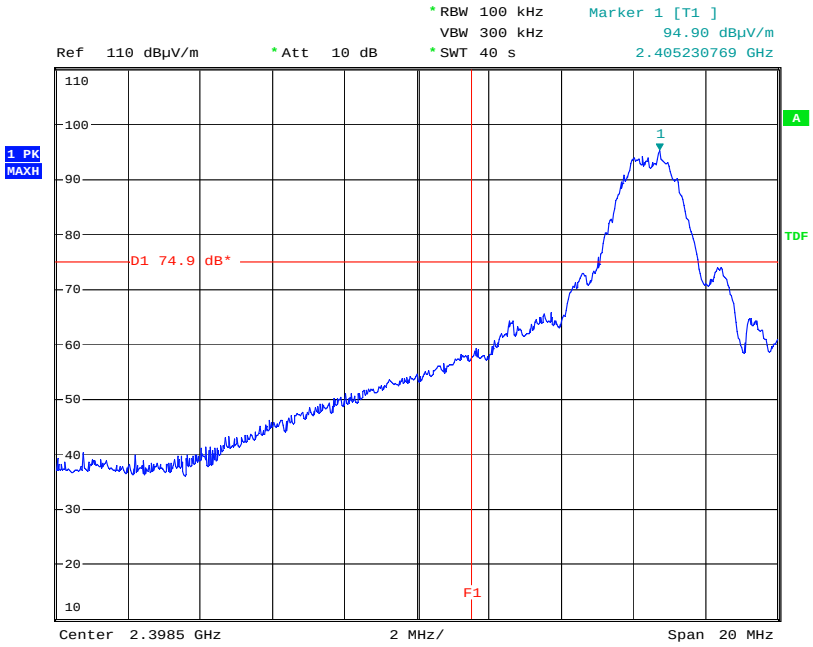


Date: 14.OCT.2008 16:40:13

ANNEX G

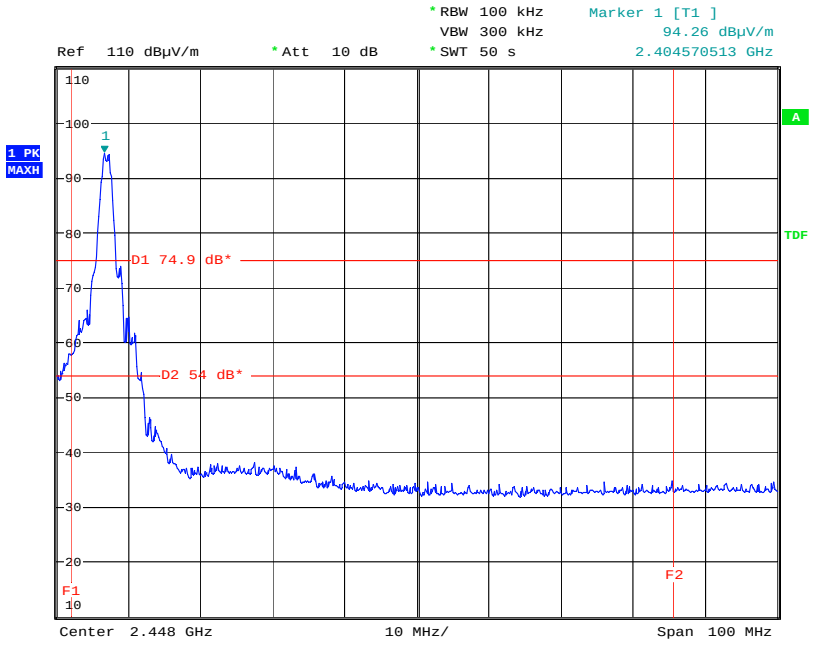
RADIATED BANDEDGE COMPLIANCE

RADIATED LOWER BAND EDGE



Date: 14.OCT.2008 15:47:14

RADIATED UPPER BAND EDGE

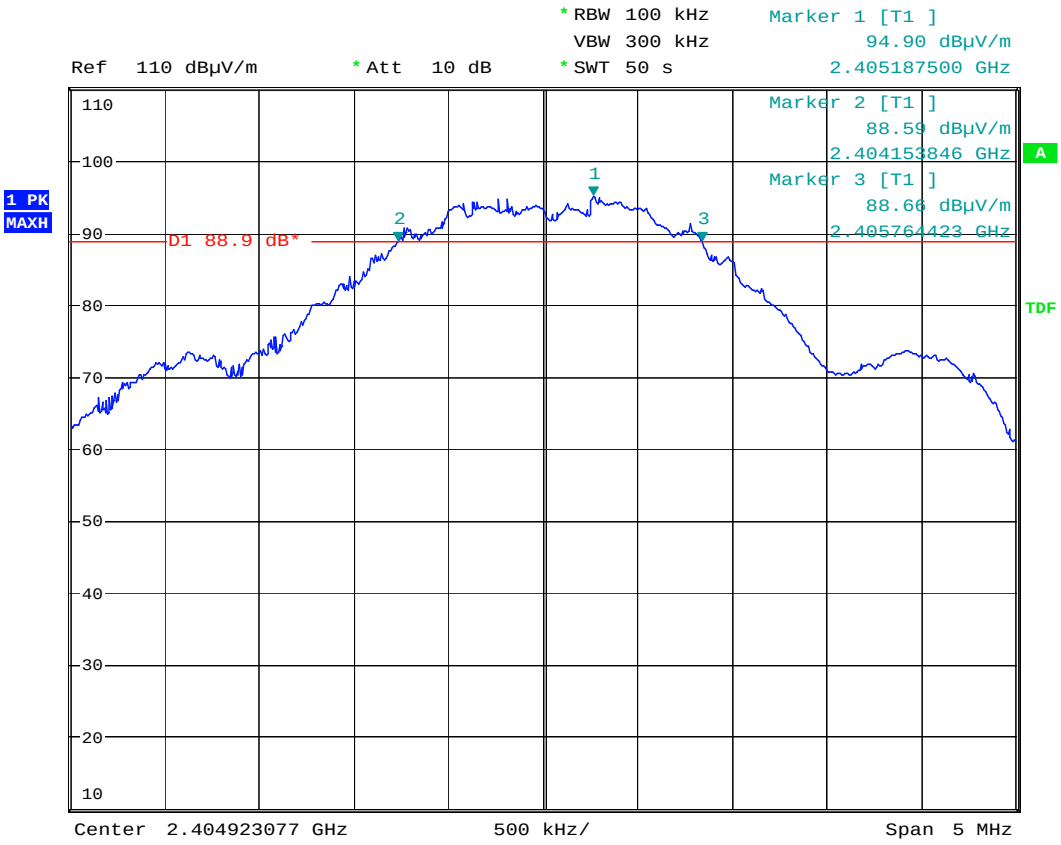


Date: 14.OCT.2008 15:51:10

ANNEX H

6dB BANDWIDTH

6dB BANDWIDTH



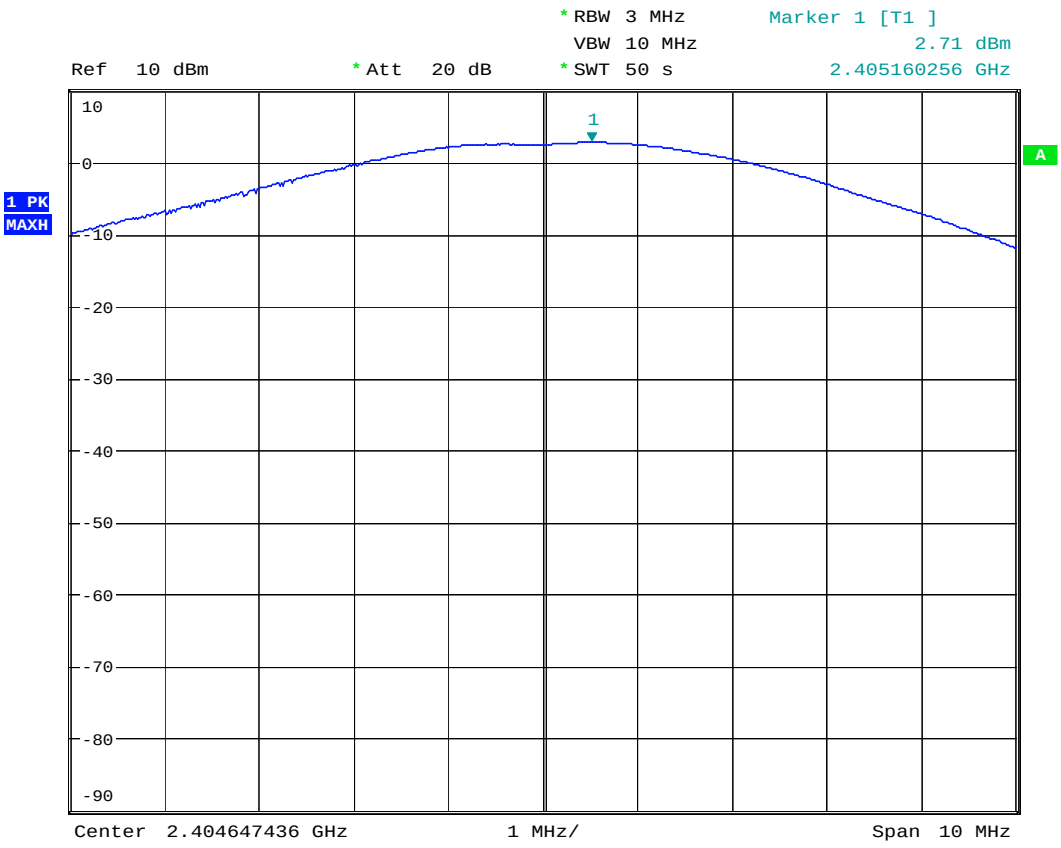
Date: 14.OCT.2008 15:58:46

f_{lower} = 2404.153846 MHz
f_{higher} = 2405.764423 MHz
6dB Bandwidth = 1610.577 MHz

ANNEX I

PEAK OUTPUT POWER

OUTPUT POWER

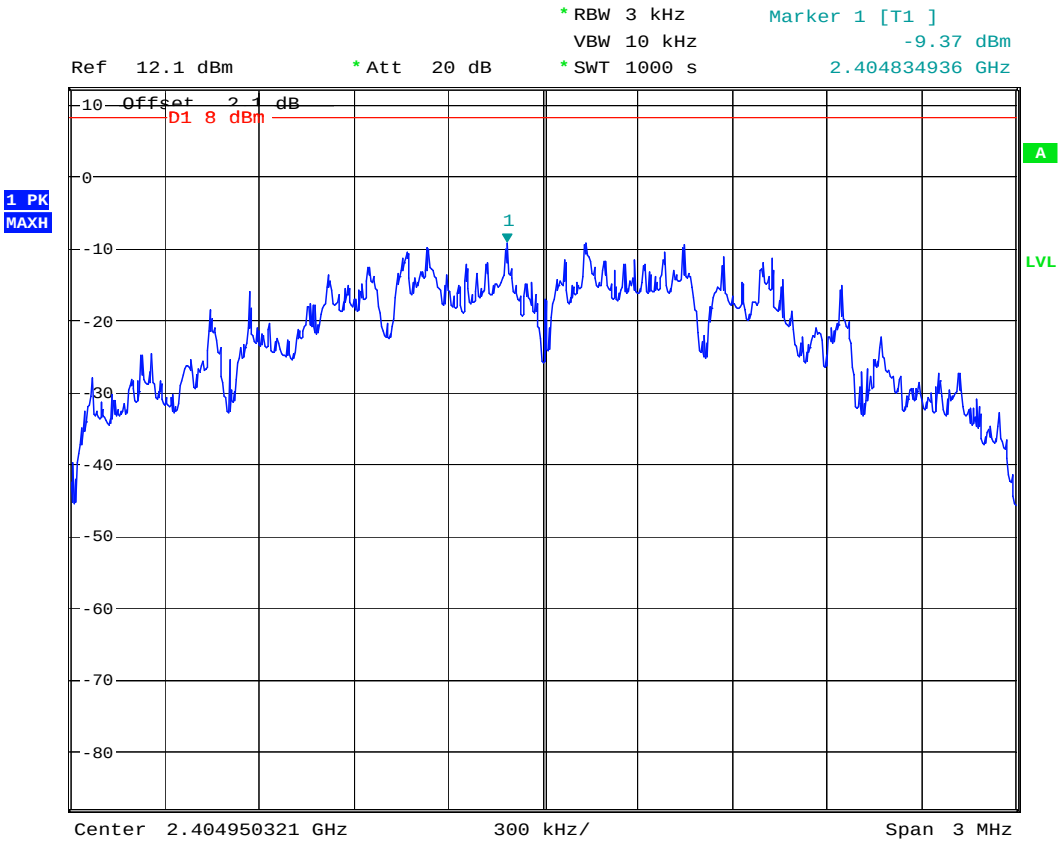


Date: 15.OCT.2008 16:12:01

ANNEX J

POWER SPECTRAL DENSITY

POWER SPECTRAL DENSITY



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