



TRL Compliance
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**REPORT ON THE CERTIFICATION TESTING OF AN
IRIDIUM SATELLITE LLC
IRIDIUM SUBSCRIBER UNIT 9555 (H2)
WITH RESPECT TO
FCC RULES CFR 47, PART 25
AND
FCC RULES CFR 47, PART 15**



TEST REPORT NO: RU1461/8620

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IRIDIUM SATELLITE LLC
IRIDIUM SUBSCRIBER UNIT 9555 (H2)
WITH RESPECT TO
FCC RULES CFR 47, PART 25
AND
FCC RULES CFR 47, PART 15**

TEST DATE: 14th May – 2nd June 2008

TESTED BY: D WINSTANLEY

APPROVED BY: J CHARTERS
RADIO SECTION
LEADER

DATE: 6th June 2008

Distribution:

- Copy Nos:
1. Iridium Satellite LLC
 2. TCB: TRL Compliance Limited
 3. TRL Compliance Ltd

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CONTENTS

	PAGE		
CERTIFICATE OF CONFORMITY & COMPLIANCE	4		
APPLICANT'S SUMMARY	5		
EQUIPMENT TEST CONDITIONS	6		
TESTS REQUIRED	6		
PRODUCT DESCRIPTION & STANDARDS REFERENCES	7		
TEST RESULTS – Transmitter			
RF Output Power - Conducted	8		
Emissions Limitations - Conducted	9		
Spurious Emissions - Conducted	10		
Spurious Emissions - Radiated	11		
Frequency Stability -Temperature	12		
Frequency Stability -Voltage	13		
		ANNEX	
PHOTOGRAPHS		A	
APPLICANT'S SUBMISSION OF DOCUMENTATION LIST		B	
TEST EQUIPMENT LIST		C	
EQUIPMENT CALIBRATION		D	
MEASUREMENT UNCERTAINTY		E	
DUTY CYCLE		F	
EMISSIONS LIMITATIONS		G	
TRANSMITTER SPURIOUS EMISSIONS – Conducted		H	
TRANSMITTER SPURIOUS EMISSIONS – Radiated		I	
FREQUENCY STABILITY – Temperature		J	
FREQUENCY STABILITY – Voltage		K	
AC POWEERLINE CONDUCTION		L	
UNINTENTIONAL RADIATED EMISSIONS		M	
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.			



TRL Compliance

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CERTIFICATE OF CONFORMITY & COMPLIANCE

FCC IDENTITY: Q639555

PURPOSE OF TEST: Certification

TEST SPECIFICATION: FCC Rules CFR 47, Part 25 & Part 15

TEST RESULT: Compliant to Specification

ITU EMISSIONS DESIGNATOR 41K7V7E

EQUIPMENT UNDER TEST: Iridium Subscriber Unit 9555 (H2)

EQUIPMENT TYPE: Satellite Telephone

MAXIMUM OUTPUT 10.60dBW, 40.60dBm

CHANNEL SPACING: 41.667 kHz

NUMBER OF CHANNELS: 252 (240 Transmit Channels)

MODULATION TYPE: V7E

POWER SOURCE(s): +3.7 Vdc

TEST DATE(s): 5th May – 2nd June 2008

ORDER No(s): 0649

APPLICANT: Iridium Satellite LLC

ADDRESS: 6707 Democracy Blvd.
Suite 300
Bethesda
United States of America
MD 20817

TESTED BY: _____ D WINSTANLEY

APPROVED BY: _____ J CHARTERS
RADIO SECTION
LEADER

APPLICANT'S SUMMARY

EQUIPMENT UNDER TEST (EUT): Iridium Subscriber Unit 9555 (H2)

EQUIPMENT TYPE: Satellite Telephone

PURPOSE OF TEST: Certification

TEST SPECIFICATION(s): FCC Rules CFR 47, Part 25 & Part 15

TEST RESULT: COMPLIANT Yes
No

APPLICANT'S CATEGORY: MANUFACTURER
IMPORTER
DISTRIBUTOR
TEST HOUSE
AGENT

APPLICANT'S CONTACT PERSON(s): Donna Bethea-Murphy

E-mail address: donna.bethea-murphyl@iridium.com

APPLICANT: Iridium Satellite LLC

ADDRESS: 6707 Democracy Blvd.
Suite 300
Bethesda
United States of America
MD 20817

TEL: +1 301 571 6277

FAX: +1 301 571 6250

MANUFACTURER: Iridium Satellite LLC

DEVELOPMENT AGENT: Cambridge Consultants Limited

DEVELOPMENT AGENTS CONTACT PERSON(s): Mr S Hart

E-mail address: steve.hart@cambridgeconsultants.com

ADDRESS: Science Park
Milton Road
Cambridge
CB4 4DW
United Kingdom

TEL: +44 (0)1223 420024

FAX: +44 (0)1223 423373

EUT(s) COUNTRY OF ORIGIN: United States

TEST LABORATORY: TRL Compliance Ltd

UKAS ACCREDITATION No: 0728

TEST DATE(s): 5th May – 2nd June 2008

TEST REPORT No: RU1461/8620

EQUIPMENT TEST / EXAMINATIONS REQUIRED

1.	TEST/EXAMINATION	FCC Part 2	FCC Part 25	APPLICABILITY	RESULT
	RF Power Output	-	25.204 (a)	YES	PASS
	Emissions Limitations	-	25.202 (f)	YES	PASS
	Spurious Emissions at Antenna Terminals	2.1051	25.202 (f) 25.213	YES	PASS
	Protection of the Radio Navigation Satellite Service	-	25.216(c) 25.216(f)	YES	PASS
	Spurious Emissions Radiated	2.1053	25.202 (f) 25.213	YES	PASS
	Frequency Stability Temperature	2.1055	25.202 (d)	YES	PASS
	Frequency Stability Voltage	2.1055	25.202 (d)	YES	PASS

Note: The Iridium Subscriber Unit 9555 (H2) is subject to FCC Part 25 & Part 2 for FCC Certification for units marketed within the United States. The above tests, as specified in FCC Part 2, with limits as defined in FCC Part 25 were performed on the Iridium Subscriber Unit 9555 (H2).

2. Product Use: Satellite Telephone and Data Communications

3. Emission Designator: 41k7V7E

4. Temperatures: Ambient (Tnom) 16°C

5. Supply Voltages: Vnom +3.7 Vdc

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

6. Equipment Category: Single channel
Two channel
Multi-channel

7. Channel spacing: Narrowband 41.667 kHz
Wideband

8. Test Location: TRL Compliance Limited
Up Holland
Malvern

9. Modifications made during test program: No modifications were performed.

Product Description

The satellite telephone consists of an L-Band Transceiver (LBT) capable of simultaneous transmit and receive (duplex) operation covering the frequency range of 1616MHz to 1626.5MHz. The frequency accesses used for duplex channels are organised into sub-bands each of which contains eight frequency accesses. Each sub-band, therefore occupies 333.33 kHz (i.e. $8 \times 41.667\text{kHz}$). Up to 30 sub-bands containing 240 frequency accesses may be used for duplex channels.

Standard References

- 47 CFR 2 Code of Federal Regulations, Title 47, Part 2, "Frequency allocations and Radio Telemetry Matters;
10-1-03 Edition General Rules and Regulations"
- 47 CFR 25 Code of Federal Regulations, Title 47, Part 25, "Sattelite Communications" Subpart C,
10-1-03 Edition "Technical Matters"
- 47 CFR 15 Code of Federal Regulations, Title 47, Part 15, "Radio Frequency Devices" Subpart B,
20-09-07 Edition "Unintentional Radiators"
- C63.4-2003 American National Standards Institute (ANSI), "Methods of Measurement of Radio Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range 9 kHz to 40 GHz"

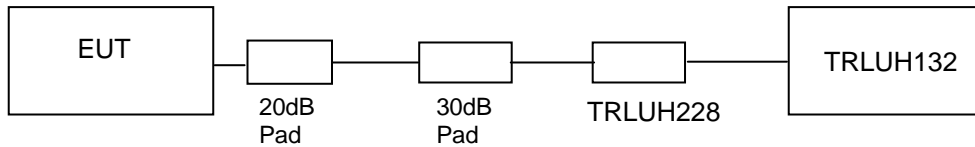
COMPLIANCE TESTS

TRANSMITTER TESTS

RF OUTPUT POWER – CONDUCTED – PART 25.204 (a)

Ambient temperature = 16°C
 Relative humidity = 41%
 Supply voltage = +3.7 Vdc
 Channel number = See test results

Radio Laboratory



See Annex C for full list of test equipment

The test setup was as per the above diagram. The unit was tested on four channels. The unit was put into test mode and set to operate at maximum power and with a random modulating signal using test commands sent from a PC via the MAMBO Box. The antenna gain, included in the table below, represents the highest gain of any antennas that are used with this system.

Frequency MHz	Attenuator and cable loss dB	Level at Power Meter dBm	Antenna Gain dB	Duty Cycle Factor dB (See Annex D)	Carrier power dBm	Carrier power dBW	Limit dBW
Channel 1	48.90	-22.76	4	10.4	40.54	10.54	40
Channel 75	48.90	-22.81	4	10.4	40.49	10.49	40
Channel 150	48.90	-22.76	4	10.4	40.54	10.54	40
Channel 240	48.90	-22.70	4	10.4	40.60	10.60	40

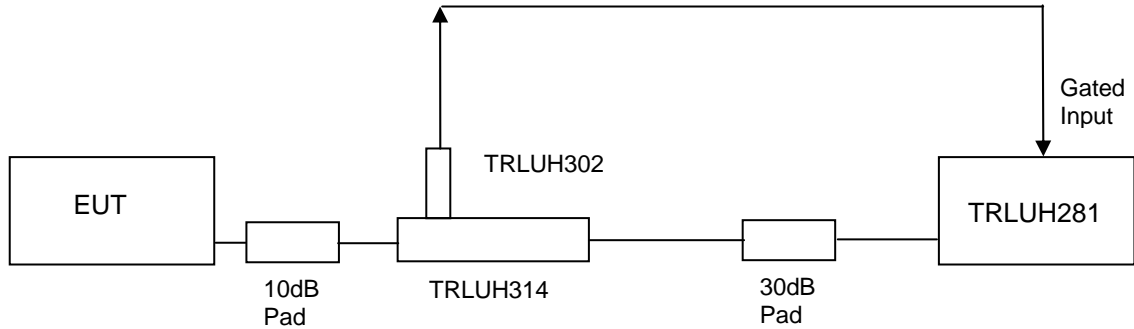
- Notes:
1. Duty Cycle Factor = $10 \times \log(1/X)$ Where $X = (T_{on} / T_{frame})$. See Annex E for duty cycle plots
 2. Correction Factor for dBm to dBW = -30dB
 3. Antenna gain of 3dBi is the worst case gain over an isotropic antenna

TRANSMITTER TESTS

EMISSIONS LIMITATIONS – CONDUCTED – PART 25.202 (f)

Ambient temperature = 19°C
 Relative humidity = 57%
 Supply voltage = +3.7 Vdc

Radio Laboratory



See Annex C for full list of test equipment

The test setup was as per the above diagram. The unit was tested on four channels. The unit was put into test mode and set to operate at maximum power and with a random modulating signal using test commands sent from a PC via the MAMBO Box.

To enable an average measurement to be taken the gated input trigger of the spectrum analyser was used.

The Spurious limit is as follows:

On any frequency removed from the assigned frequency by the following percentage of the authorised bandwidth

±50%	-	100%	-25 dBc
±100%	-	250 %	-35 dBc
> ±250%			At least 43 + 10 log PdB

$$(10\log P_{\text{watts}}) - (43 + 10\log (P_{\text{watts}} * 1000)) = \text{LIMIT} = -13 \text{ dBm}$$

Where the Authorised Bandwidth = 41.667 kHz

Note

1. The 3 kHz to 4 kHz bandwidth correction, cable and attenuator losses and antenna gain have been taken into account in the Ref level offset figure.

The H2 handset was found to comply with the limits

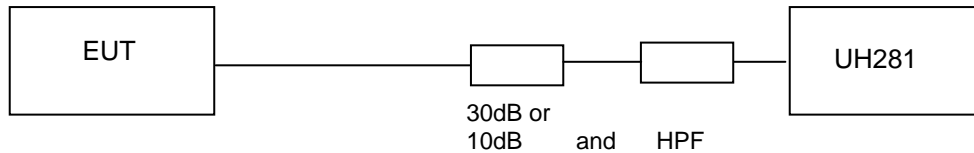
See plots in Annex G.

TRANSMITTER TESTS

SPURIOUS EMISSIONS – CONDUCTED – PART 25.202 (f) & 25.213

Ambient temperature = 21°C
 Relative humidity = 36%
 Supply voltage = +3.7 Vdc

Radio Laboratory



For measurements between 1559 MHz and the band edge of 1610MHz the same test setup as per emissions limitations test was used. For measurements below 1559 MHz and above the band edge of 1628.5MHz the above test setup was used. A 30 dB pad was used for measurements below 3GHz and a 10dB attenuator and high pass filter for measurements above 3GHz.

See Annex C for full list of test equipment

The test setup was as per the above diagram. The unit was tested on four channels. The unit was put into test mode and set to operate at maximum power and with a random modulating signal using test commands sent from a PC via the MAMBO Box.

The Spurious limit was calculated as follows:

On any frequency removed from the assigned frequency by more than 250% of the authorised bandwidth

At least $43 + 10 \log (P)$ dB

$$(10 \log P_{\text{watts}}) - (43 + 10 \log (P_{\text{watts}} * 1000)) = \text{LIMIT} = -13 \text{ dBm}$$

RESULTS

Frequency Range (MHz)	Ch N°	Freq. of Emission	Spectrum Analyser Level (dBm)	Attenuator & Cable Losses (dB)	Spurious Emission Level (dBm)	Limit dBm
30MHz – 1559MHz	No Significant emissions within 20 dB of the Limit					-13
1559MHz – 1605MHz	1	1604.881	-84.86	35.3	-49.54	-40
1605MHz – 1610MHz	1	1605.000	-84.76	35.3	-49.46	-40 (Note 4)
	240	1605.000	-81.70	35.3	-46.40	
1628.5MHz – 16.3 GHz	No Significant emissions within 20 dB of the Limit					-13

Notes :

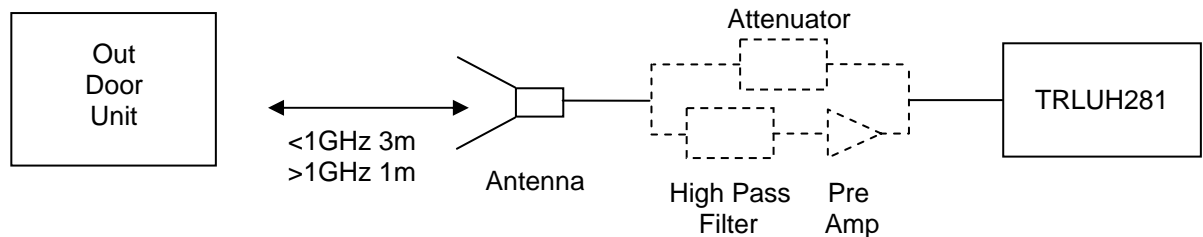
1. Emissions Checked up to 10 times Fc
2. Reference level offset of Scan plots in Annex G already have approximate attenuator losses taken into account
3. Average measurement in a carrier on state were taken in the bands 1599MHz to 1605MHz and 1605MHz -1610MHz. All other scans were peak hold for worst case.
4. -40 to -10 Linearly interpolated in dBm Vs frequency offset.
5. Correction Factor for dBm to dBW = -30dB.
6. Fully charged batteries were used for each channel.

The H2 handset was found to comply with the limits. See Annex H for plots

TRANSMITTER TESTS

SPURIOUS EMISSIONS – RADIATED – PART 25.202 (f) & 25.213

Ambient temperature	=	16°C
Relative humidity	=	43%
Conditions	=	OATS
Supply voltage	=	+3.7 Vdc
Supply Frequency	=	N/A



See Annex C for full list of test equipment

The test setup was as per the above diagram. The unit was tested on four channels. The unit was put into test mode and set to operate at maximum power and with a tone modulating signal using test commands sent from a PC via the MAMBO Box. The unit was mounted on a turntable and rotated through 360° to find the worst case emission.

The Spurious limit was calculated as follows:

On any frequency removed from the assigned frequency by more than 250% of the authorised bandwidth

At least 43 + 10 log PdB

$$(10\log P_{\text{watts}}) - (43 + 10\log (P_{\text{watts}} * 1000)) = \text{LIMIT} = -13 \text{ dBm}$$

RESULTS

FREQUENCY RANGE	CHANNEL NUMBER	FREQ. (MHz)	ERP/EIRP (dBm)	LIMIT (dBm)
30MHz – 1559MHz	No Significant Emissions within 20 dBs of the Limit			-13
1559MHz – 1605MHz	No Significant Emissions within 20 dBs of the Limit			-40
1605MHz – 1610MHz	No Significant Emissions within 20 dBs of the Limit			-40 to 10 Note 4
1628.5MHz – 16.3 GHz	1 240	3232.173 3252.107	-33.44 -32.17	-13 -13

Notes :

1. Emissions Checked up to 10 times Fc.
2. Scan plots of channels 1 & 240 with receive antenna in vertical polarization in annex H.
3. The unit was mounted on a turntable and rotated through 360° and in 3 orthogonal planes to find the worst case emission.
4. -40 to -10 Linearly interpolated in dBm Vs frequency offset.
5. Correction Factor for dBm to dBW = -30dB.
6. Fully charged batteries were used for each channel.

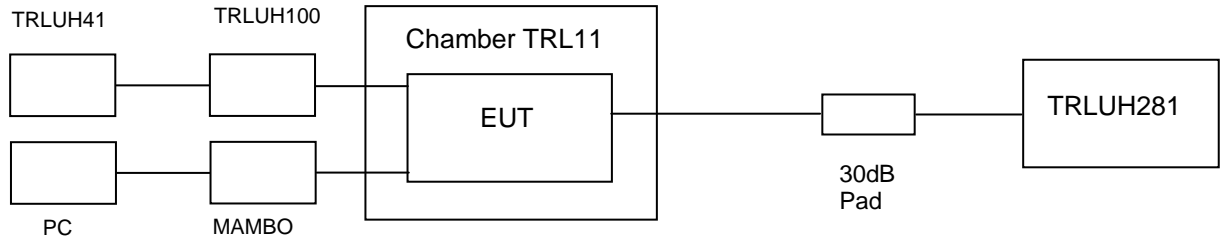
The H2 handset was found to comply with the limits. See annex I for plots

TRANSMITTER TESTS

FREQUENCY STABILITY – CONDUCTED – TEMPERATURE – PART 25.202 (d)

Ambient temperature = 20°C
 Relative humidity = 46%
 Supply voltage = +3.7 Vdc

Radio Laboratory



See Annex C for full list of test equipment

The test setup was as per the above diagram. The unit was tested on four channels. The unit was put into test mode and set to operate at maximum power and with a tone modulating signal using test commands sent from a PC via the MAMBO Box. The Analyser was set to max hold.

RESULTS

TEMP	Frequency (MHz)			
	Channel 1	Channel 75	Channel 150	Channel 240
°C				
+60	1616.021650	1619.104990	1622.229600	1625.979740
+50	1616.021760	1619.105100	1622.230040	1625.980080
+40	1616.021890	1619.105170	1622.230160	1625.980080
+30	1616.021960	1619.105240	1622.230280	1625.980400
+20	1616.022570	1619.105970	1622.231000	1625.980780
+10	1616.022880	1619.105230	1622.230260	1625.980260
0	1616.026240	1619.105500	1622.230700	1625.980400
-10	1616.021100	1619.105000	1622.230300	1625.979800
-20	1616.021500	1619.104900	1622.230640	1625.980300
-30	1616.021700	1619.104700	1622.230100	1625.979700

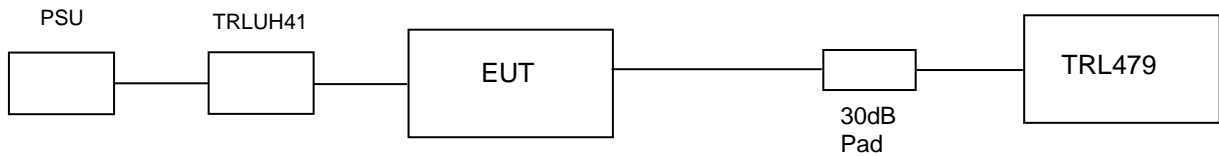
Notes: 1.Limit ± 10ppm (See Annex J for frequency stability plots verses limit)

The H2 handset was found to comply with the limits

TRANSMITTER TESTS

FREQUENCY STABILITY – CONDUCTED – VOLTAGE – PART 25.202 (d)

Ambient temperature = 20°C
 Relative humidity = 62%
 Supply voltage = +3.7 Vdc
 Radio Laboratory



See Annex C for full list of test equipment

The test setup was as per the above diagram. The unit was tested on four channels .The unit was put into test mode and set to operate at maximum power and with a tone modulating signal using test commands sent from a PC via the MAMBO Box. The Analyser was set to max hold.

RESULTS

VOLTAGE	Frequency (MHz)			
	Channel 1	Channel 75	Channel 150	Channel 240
85	EUT Ceases transmission below 90 % of Vnom			
90	1616.02170	1619.10476	1622.22956	1625.97972
95	1616.02180	1619.10524	1622.23024	1625.97992
100	1616.02230	1619.10536	1622.23024	1625.98020
105	1616.02240	1619.10544	1622.23036	1925.98032
110	1616.02240	1619.10544	1622.23044	1625.98032
115	1616.02280	1619.10552	1622.23320	1625.98028

Notes: 1.Limit ± 10ppm (See Annex K for plots verses limit)

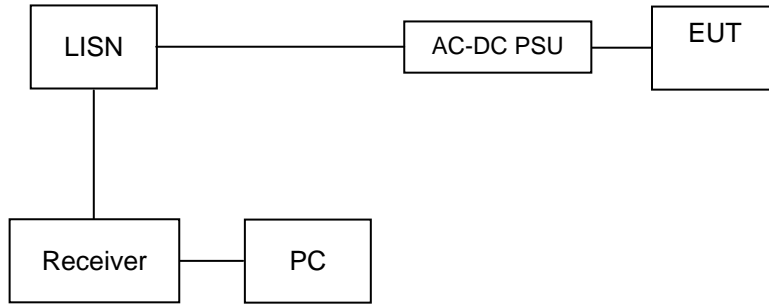
The H2 handset was found to comply with the limits

TRANSMITTER \ UNINTENTIONAL TRANSMITTER TESTS

AC POWER LINE CONDUCTION

Ambient temperature = 17°C
 Relative humidity = 41%
 Supply voltage = +110 Vac

Radio Laboratory



SIGNIFICANT EMISSIONS

FREQUENCY (MHz)	MEASUREMENT RECEIVER READING (dBµV)	DETECTOR	CONDUCTOR (L or N)	LIMIT (dBµV)
0.24	42.14	Average	Live	52.10
2.905	26.13	Average	Live	46.00

- Notes:**
- 1 See plot in Annex L
 - 2 EUT Tested in normal operating mode (receive Mode)
 - 3 EUT tested in Transmit mode.
 - 4 Worst Case emission for either mode is recorded.

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

UNINTENTIONAL TRANSMITTER TESTS

UNINTENTIONAL TRANSMITTER SPURIOUS EMISSIONS – RADIATED – PART 15.109

Ambient temperature	=	11°C(<1GHz)	3m measurements <1GHz	[X]
Relative humidity	=	62% (<1GHz),	1m measurements >1GHz	[X]
Conditions	=	Open Area Test Site (OATS)	3m extrapolated from 1m	[]
Supply voltage	=	+3.3Vdc		

	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 4
0.49MHz - 1.705MHz									Note 4
1.705MHz - 30MHz									Note 4
30MHz - 88MHz									Note 4
88MHz - 216MHz									Note 4
216MHz - 960MHz	252.0	21.03	2.12	12.15	-	35.3	-	58.21	200
	268.8	15.62	2.18	12.60	-	30.4	-	33.11	200
	453.6	21.72	2.83	16.45	-	41.0	-	112.20	200
960MHz - 1GHz									Note 4
1GHz - 16.3GHz	1401.028	54.88	0.9	25.01	35.5	45.29	9.54	61.03	Note 4
	1410.977	55.16	0.9	25.01	35.5	45.57	9.54	63.31	
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 16.3GHz			500µV/m @ 3m					

Notes:

- 1 Emissions were searched to: (x) 1000MHz inclusive, as per Part 15.33a
- 2 Receiver detector <1GHz = CISPR, Quasi-Peak, 120kHz bandwidth
- 3 Receiver detector >1GHz = Average, 1MHz resolution bandwidth
- 4 Only emissions within 20 dB of the limit are recorded.
- 5 Extrapolation factor 9.54dB from 1m to 3m, as per Part 15.31f
- 6 See annex M for emissions plots

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.

ANNEX A
PHOTOGRAPHS

PHOTOGRAPH 1.

RADIATED TEST SETUP



PHOTOGRAPH 2.

OVERVIEW



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	[]
		-	DECLARATION	[]
		-	DRAWINGS	[]
f.	TECHNICAL DESCRIPTION	-		[X]
g.	BLOCK DIAGRAMS	-	Tx	[X]
		-	Rx	[]
		-	PSU	[]
		-	AUX	[]
h.	CIRCUIT DIAGRAMS	-	Tx	[]
		-	Rx	[]
		-	PSU	[]
		-	AUX	[]
i.	COMPONENT LOCATION	-	Tx	[]
		-	Rx	[]
		-	PSU	[]
		-	AUX	[]
j.	PCB TRACK LAYOUT	-	Tx	[]
		-	Rx	[]
		-	PSU	[]
		-	AUX	[]
k.	BILL OF MATERIALS	-	Tx	[]
		-	Rx	[]
		-	PSU	[]
		-	AUX	[]
l.	USER INSTALLATION / OPERATING INSTRUCTIONS	-		[X]

ANNEX C
TEST EQUIPMENT LIST

TYPE OF EQUIPMENT	MAKER/SUPPLIER	MODEL No	SERIAL No	TRL No
ENVIRONMENTAL CHAMBER	SHARTREE	TCC 125-815P	CS 203	11
HORN	EMCO	3115	9010-3580	138
HORN	EMCO	3115	9010-3581	139
20dB ATTENUATOR	BIRD	8304-200-N	N/A	221
10 dB ATTENUATOR	BIRD	8304-100-N	N/A	222
TEMPERATURE INDICATOR	FLUKE	52 SERIES II	74700044	426
SPECTRUM ANALYSER	ANRITSU	MS2665C	MT26089	479
PRE AMPLIFIER	AGILENT	8449B	2118	572
MULTIMETER	AVOMeter	M3004	M3270006	UH41
PSU	THANDOR	PL320QMD	044749	UH00
POWER METER	MARCONI	6960B	237036/001	UH132
POWER SENSOR	MARCONI	6920	1564	UH228
SPECTRUM ANALYSER	R&S	FSU 46	200034	UH281
30dB ATTENUATOR	JFW	50PF-030	N/A	UH301
CRYSTAL DETECTOR	HP	8472A	1822Z00897	UH302
DIRECTIONAL COUPLER	SINGER	117310	26	UH314
HIGH PASS FILTER	AFL	N/A	N/A	N/A

ANNEX D
TEST EQUIPMENT CALIBRATION

TRL Number	Equipment Type	Manufacturer	Last Cal Calibration	Calibration Period	Due For Calibration
11	Temperature Chamber	Shartree	Use Calibrated Temperature Indicator		
138	1-18GHz Horn	EMCO	23/05/2007	24	23/05/2009
222	Attenuator	Bird	Calibrate in use		
246	Attenuator	Bird	Calibrate in use		
308	Cable	Gore	Calibrate in use		
426	Temperature Indicator	Fluke	04/01/2006	12	04/01/2007
572	Pre Amp	HP	01/07/2007	12	01/01/2008
630	Spectrum Analyser	R&S			
UH06/07	NSA Calibration	TRL	17/12/2007	12	17/12/2008
UH028	Log Periodic Ant	Schwarbeck	28/04/2005	24	28/04/2007
UH029	Bicone Antenna	Schwarbeck	27/04/2005	24	27/04/2007
UH041	Multimeter	AVOmeter	20/12/2005	12	20/12/2006
UH093	Bilog	Schaffner	19/08/2005	24	19/08/2007
UH132	Power meter	Marconi	03/01/2006	12	03/01/2007
UH194	Power Supply	Farnell	Use Calibrated Multimeter		
UH179	Power Sensor	Marconi	14/12/2004	12	14/12/2005
UH191	Bilog	York	16/04/2004	24	16/04/2006
UH223	Horn Antenna	Eaton	Use Calibrated Horn For Substitution		
UH226	Bidirectional Coupler	Narda	Calibrate in use		
UH228	Power Sensor	Marconi	03/01/2006	12	03/01/2007
UH302	Crystal Detector	HP	For Information Only		
UH303	Power Splitter/Combiner	HP	Calibrate in use		
UH333	Attenuator	Narda	Calibrate in use		
UH340	Signal Generator	HP	29/06/2006	24	29/06/2008
UH335	Attenuator	Narda	Calibrate in use		
N/A	High Pass Filter	AFL	Calibrate in use		
N/A	Attenuator	Bird	Calibrate in use		

ANNEX E
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

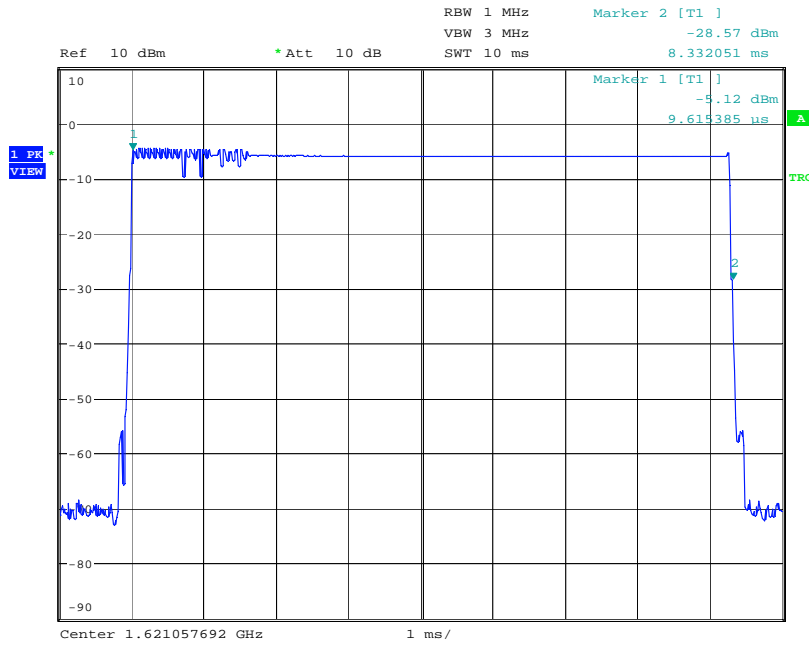
Uncertainty in test result = **3.23dB**

[18] Transmission Time Measurement

Uncertainty in test result = **7.98%**

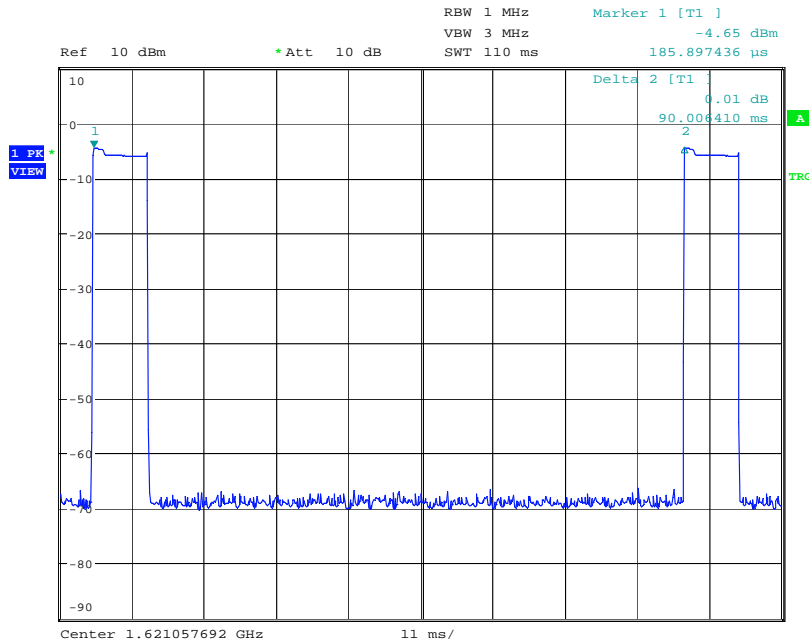
ANNEX F
DUTY CYCLE

Duty Cycle Plots



Date: 5.JUN.2008 15:01:43

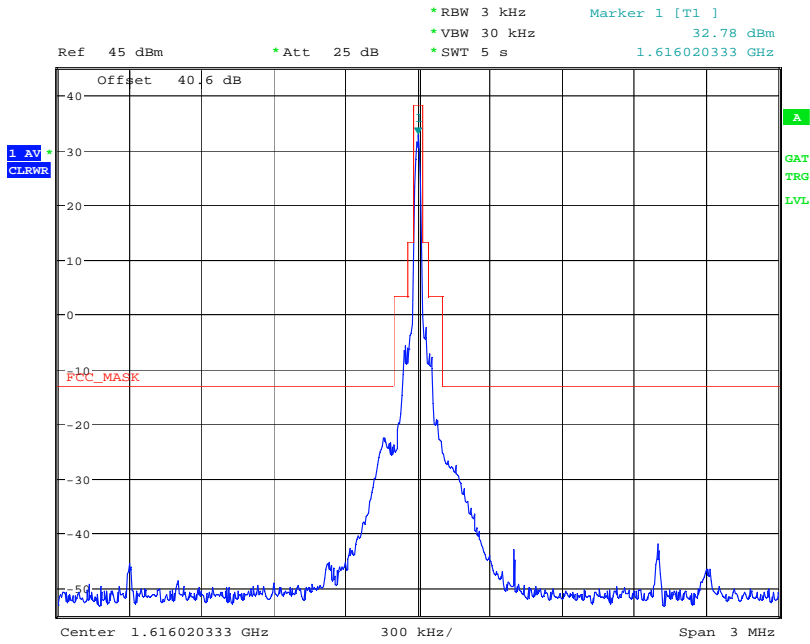
$$T_{on} = 8.33\text{ms}$$



Date: 5.JUN.2008 15:02:35

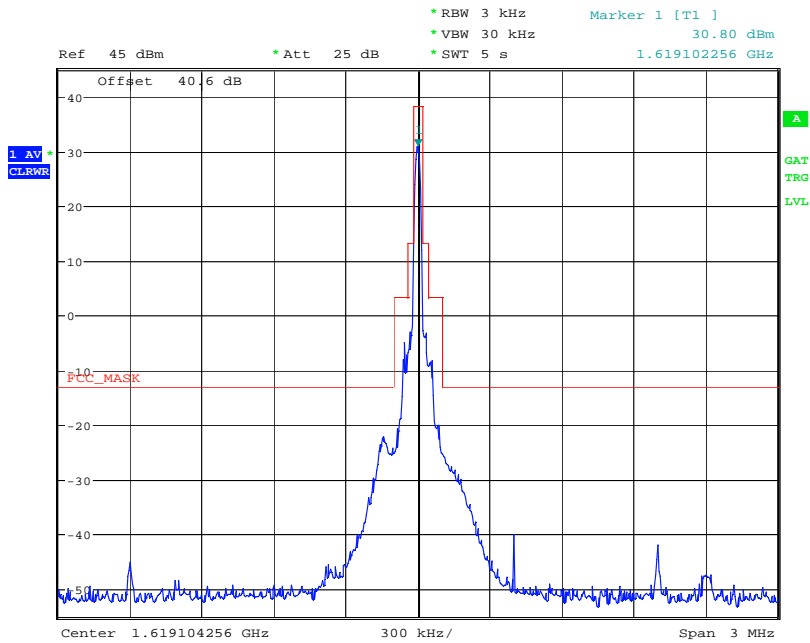
$$T_{frame} = 90\text{ms}$$

ANNEX G
EMISSIONS LIMITATIONS



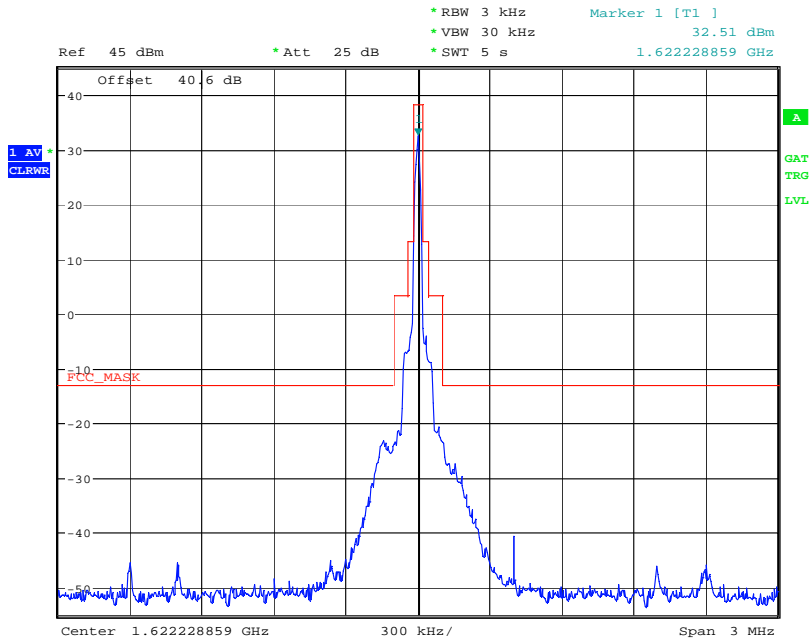
Date: 22.MAY.2008 13:42:07

Channel 1



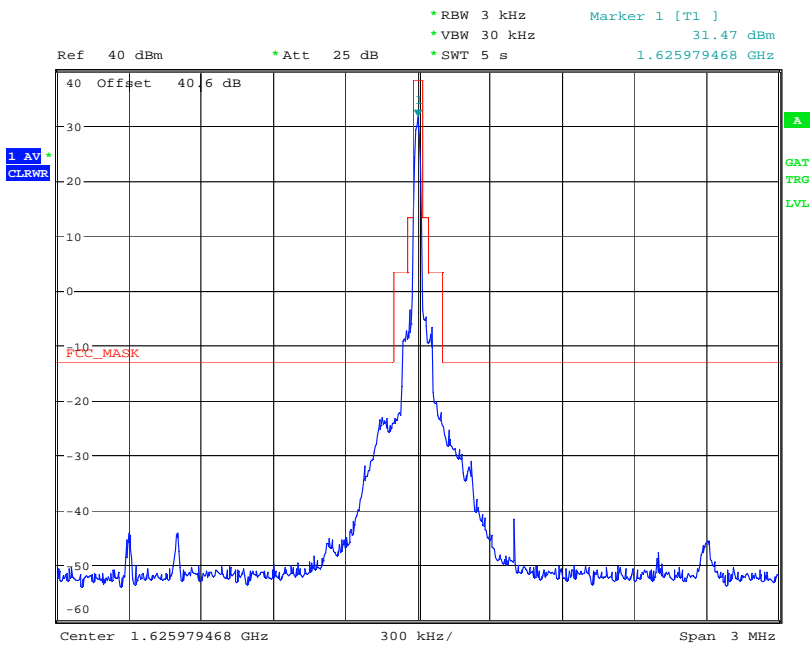
Date: 22.MAY.2008 13:15:59

Channel 75



Date: 22.MAY.2008 12:36:42

Channel 150



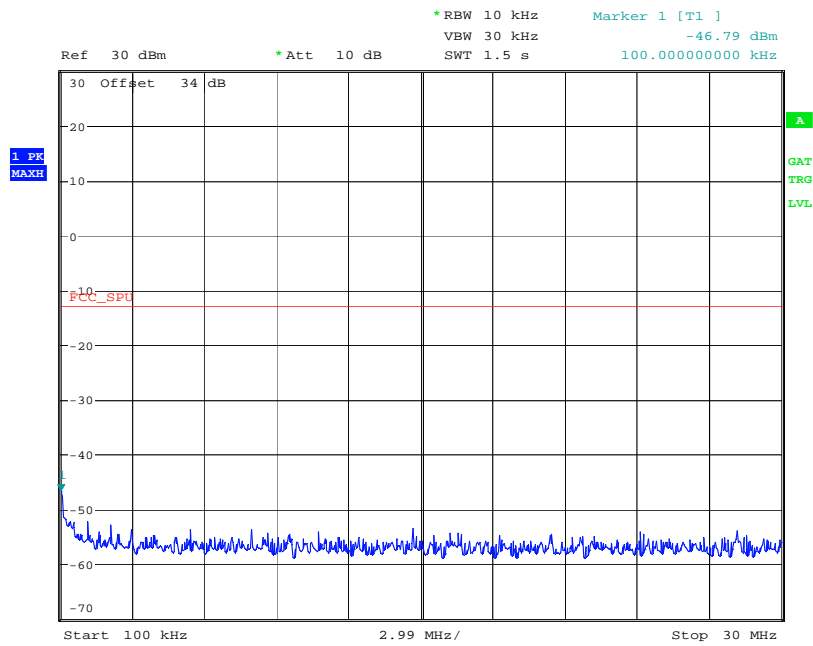
Date: 22.MAY.2008 12:10:53

Channel 240

ANNEX H
TRANSMITTER SPURIOUS EMISSIONS – Conducted

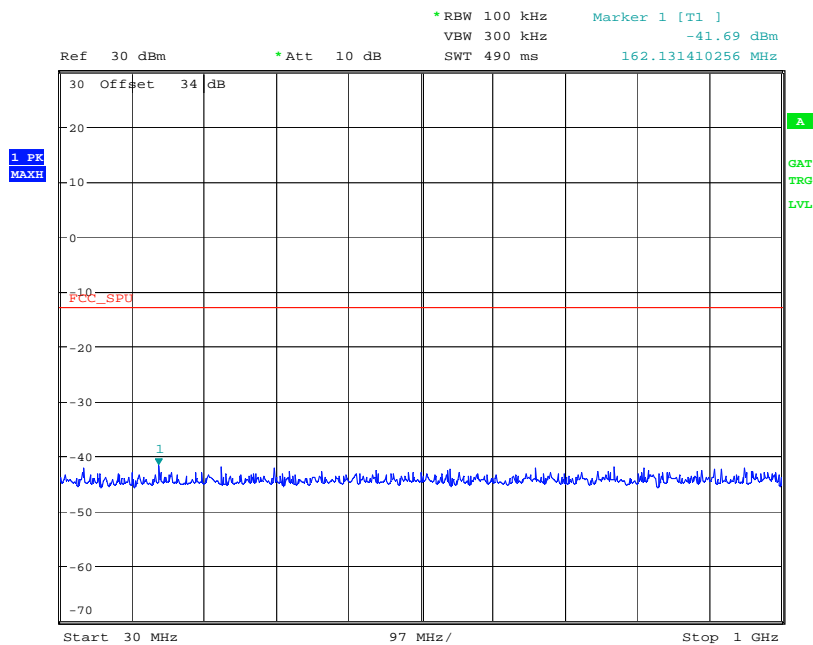
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 1



Date: 21.MAY.2008 10:09:26

100 kHz – 30MHz

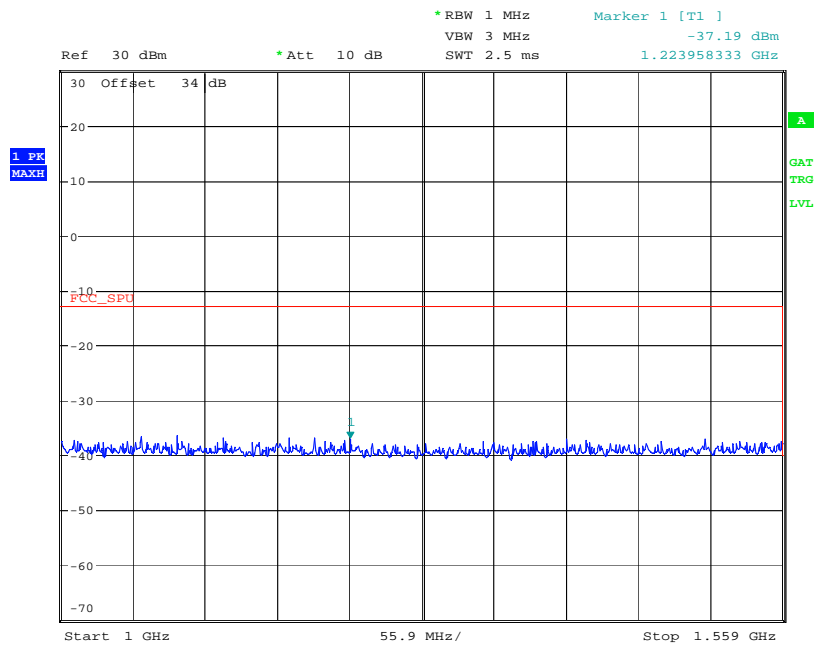


Date: 21.MAY.2008 10:17:34

30MHz – 1000MHz

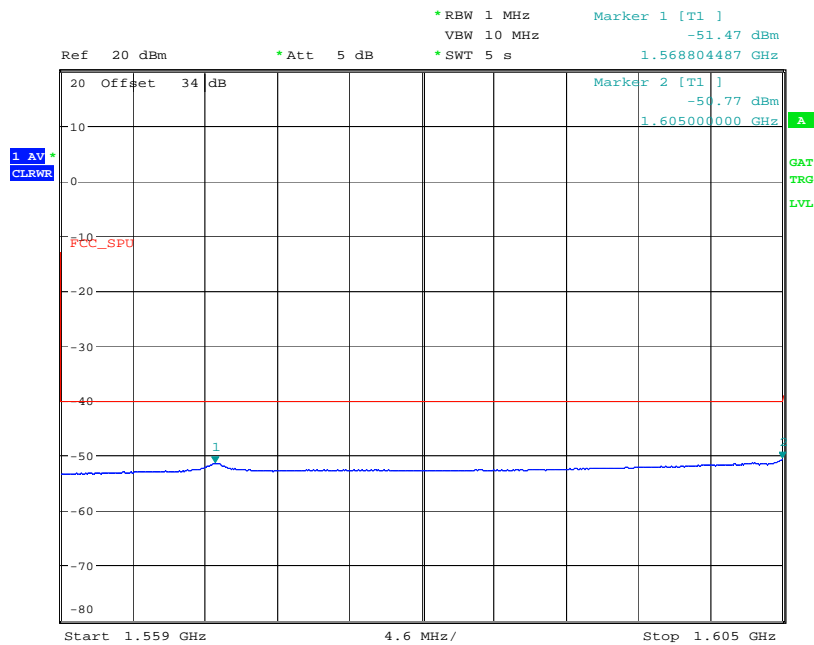
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 1



Date: 21.MAY.2008 10:18:32

1000MHz – 1559MHz

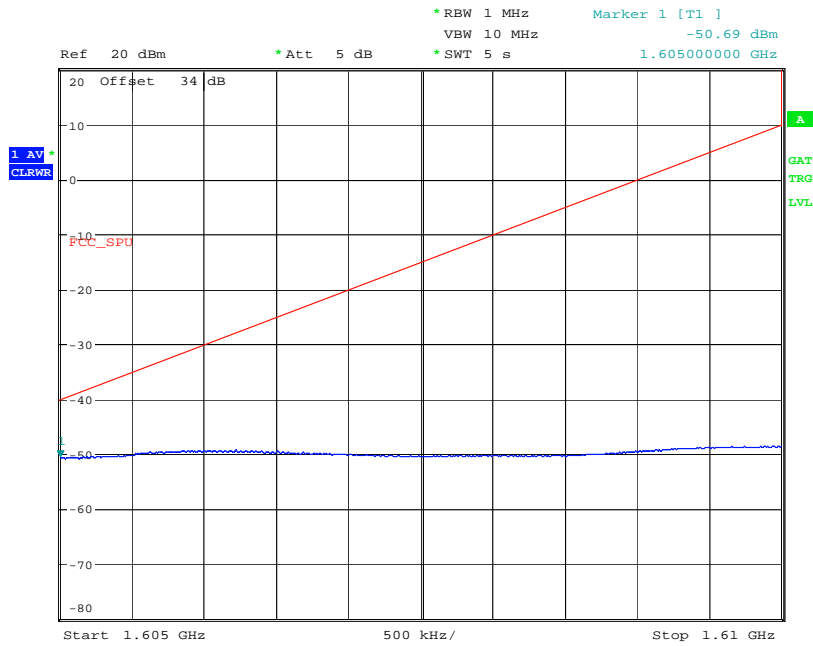


Date: 21.MAY.2008 10:22:46

1559MHz – 1605MHz

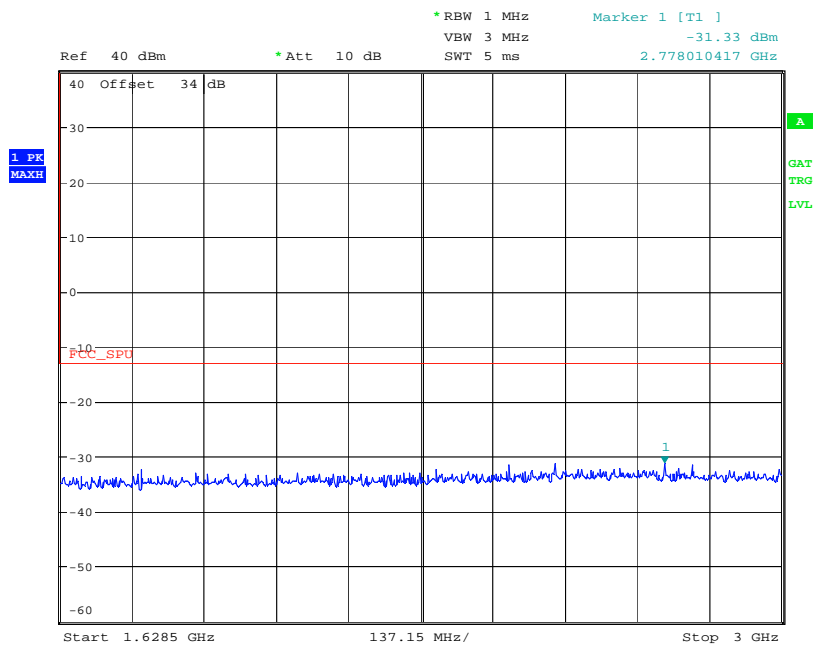
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 1



Date: 21.MAY.2008 10:27:41

1605MHz – 1610MHz

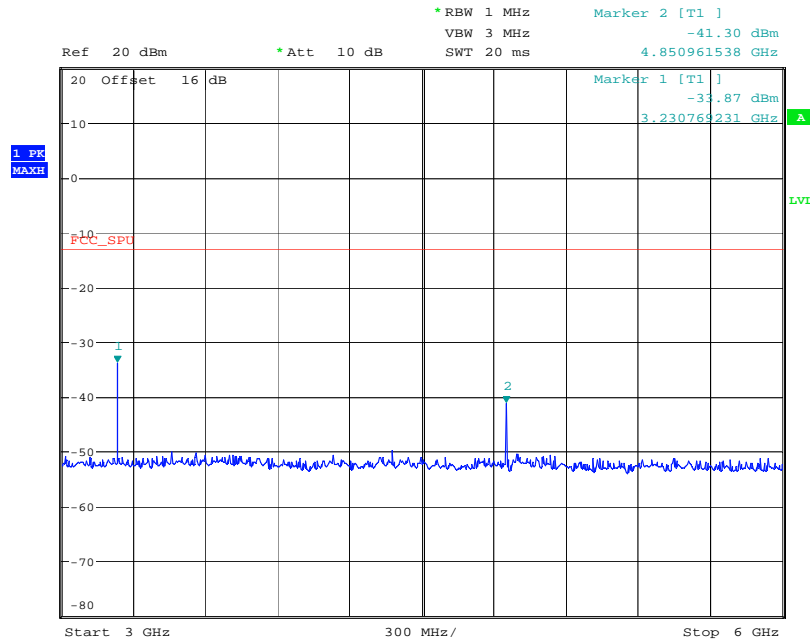


Date: 21.MAY.2008 10:29:07

1628.5MHz – 3000MHz

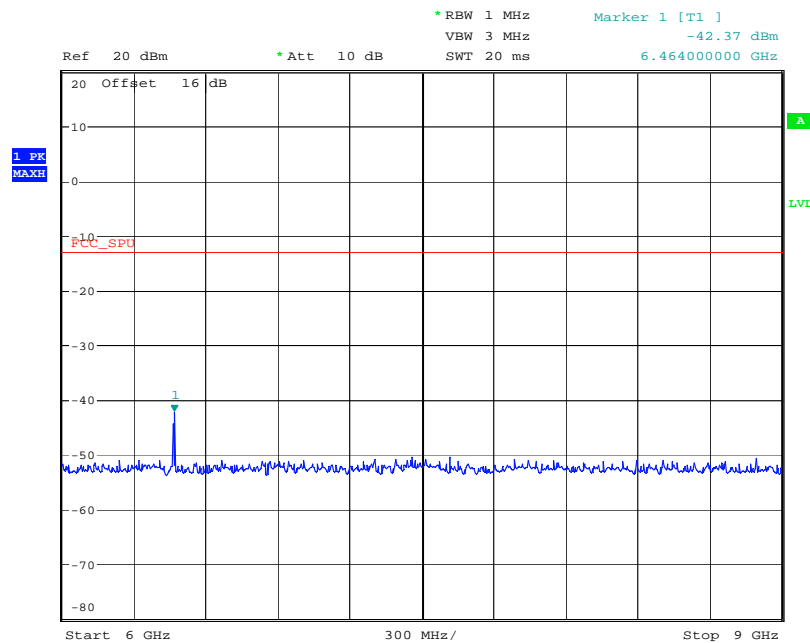
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 1



Date: 21.MAY.2008 14:13:12

3GHz – 6GHz

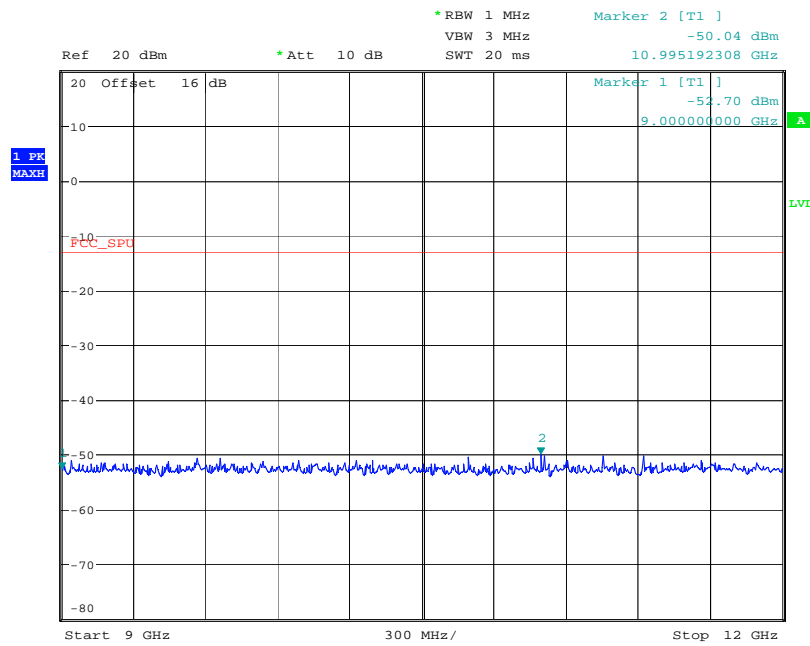


Date: 21.MAY.2008 14:12:57

6GHz – 9GHz

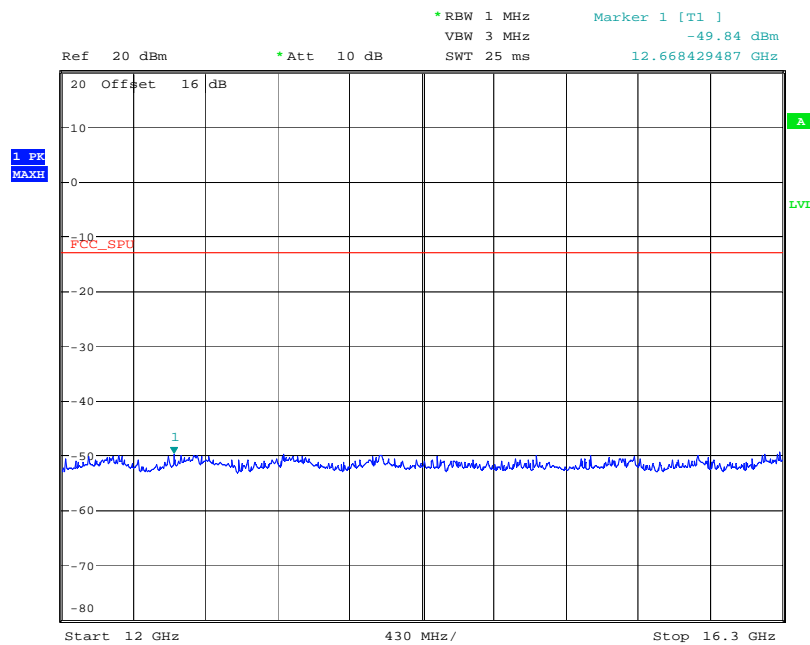
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 1



Date: 21.MAY.2008 14:13:35

9GHz – 12GHz

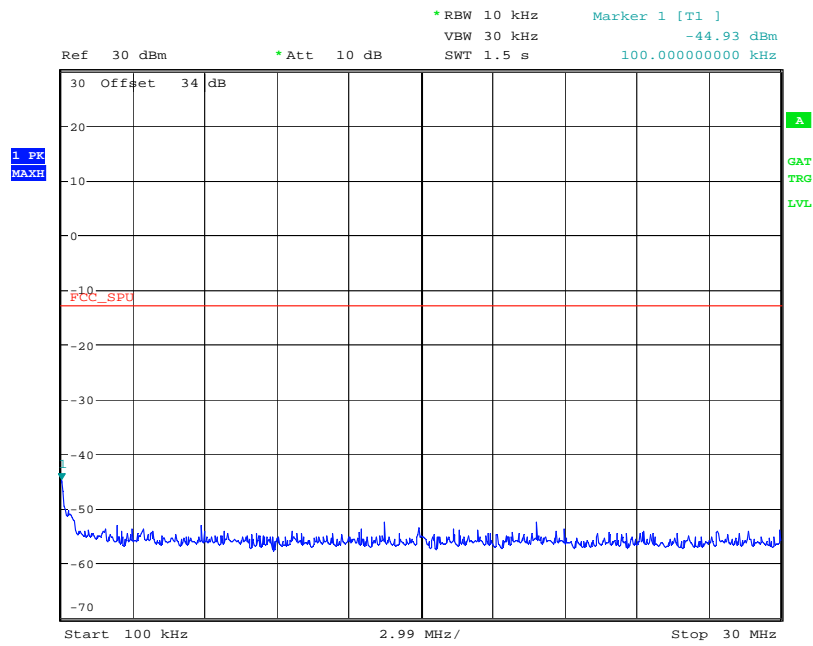


Date: 21.MAY.2008 14:13:55

12GHz – 16.3GHz

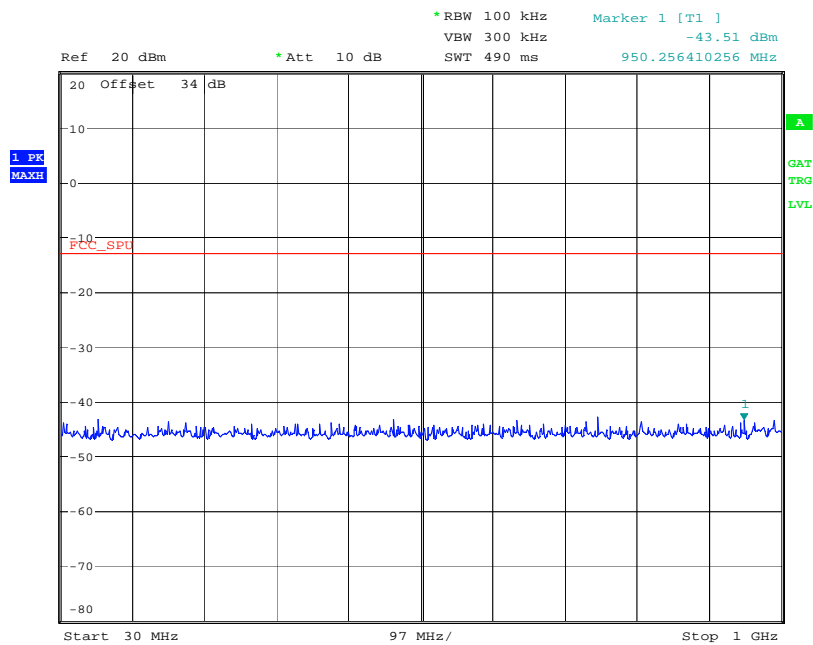
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 240



Date: 21.MAY.2008 10:15:43

100 kHz – 30MHz

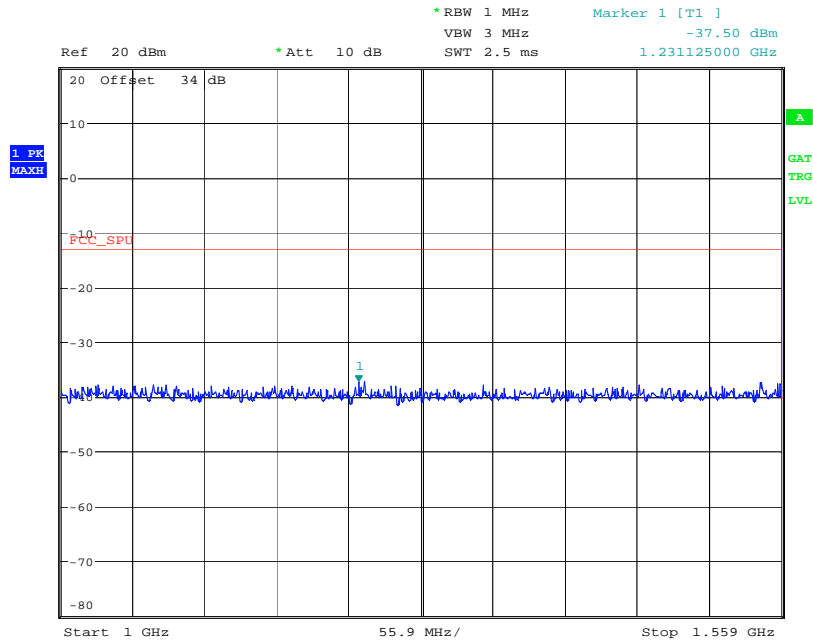


Date: 20.MAY.2008 17:02:55

30MHz – 1000MHz

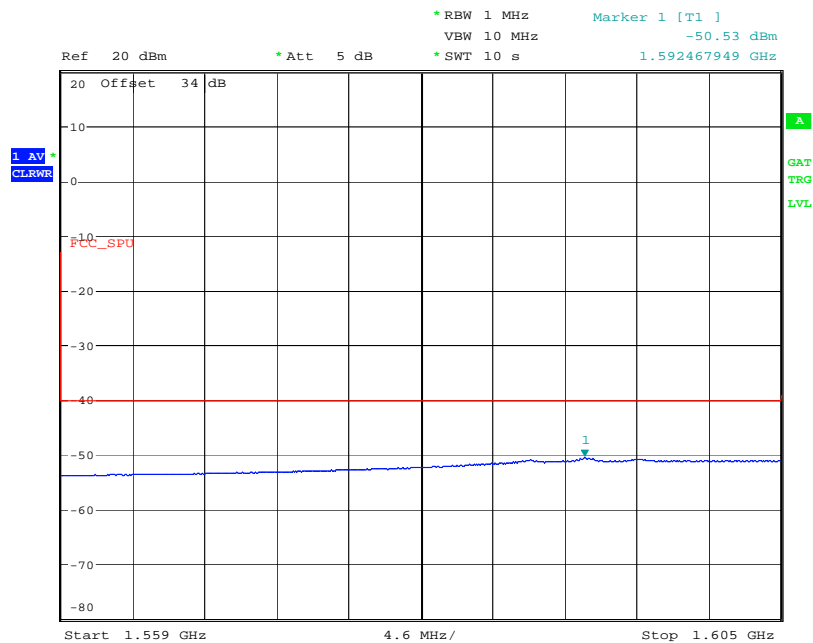
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 240



Date: 20.MAY.2008 17:04:13

1000MHz – 1559MHz

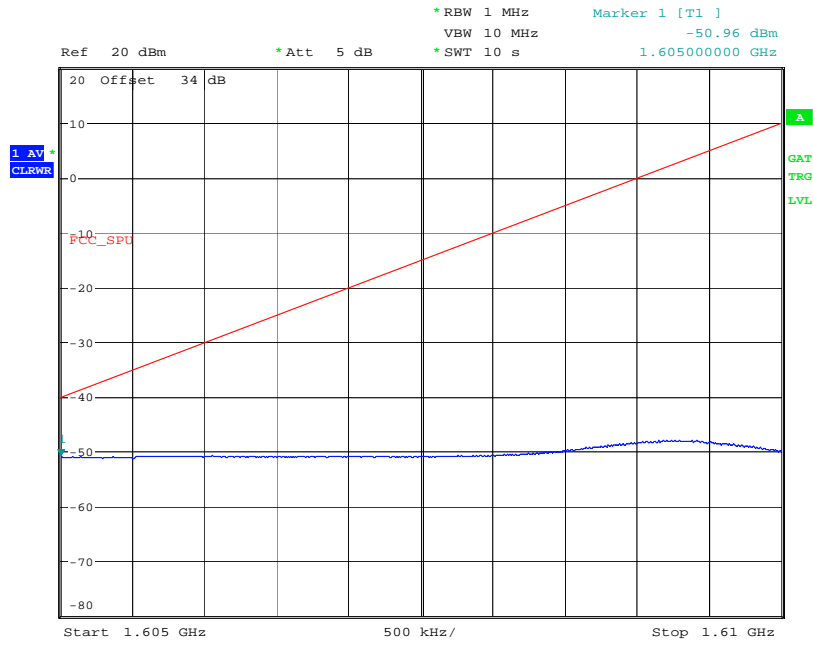


Date: 20.MAY.2008 17:14:39

1559MHz – 1605MHz

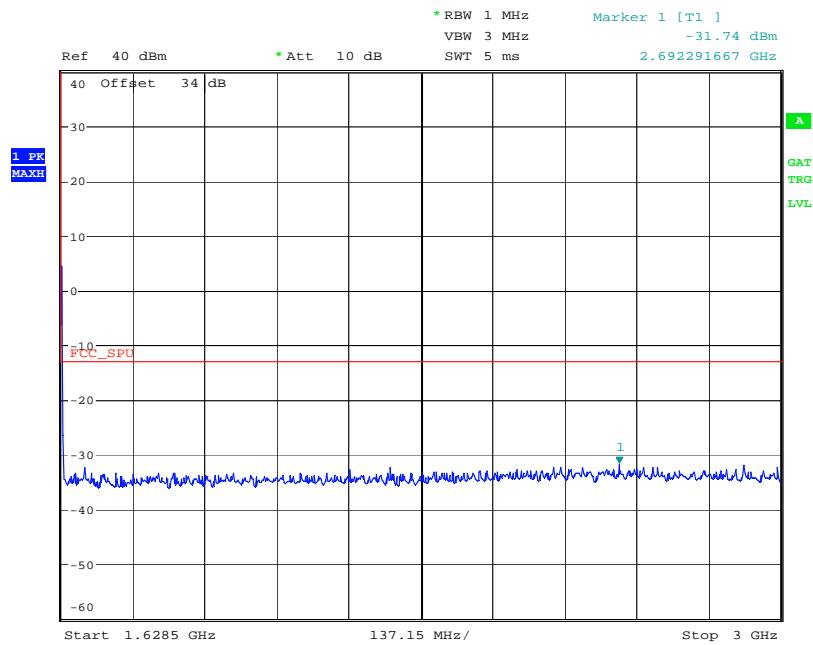
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 240



Date: 20.MAY.2008 17:20:32

1605MHz – 1610MHz

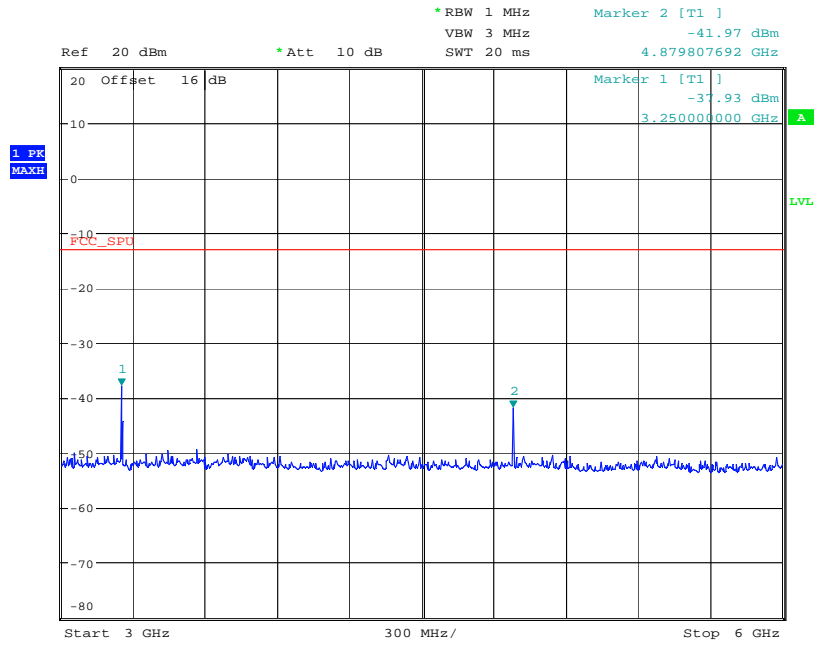


Date: 20.MAY.2008 17:22:14

1628.5MHz – 3000MHz

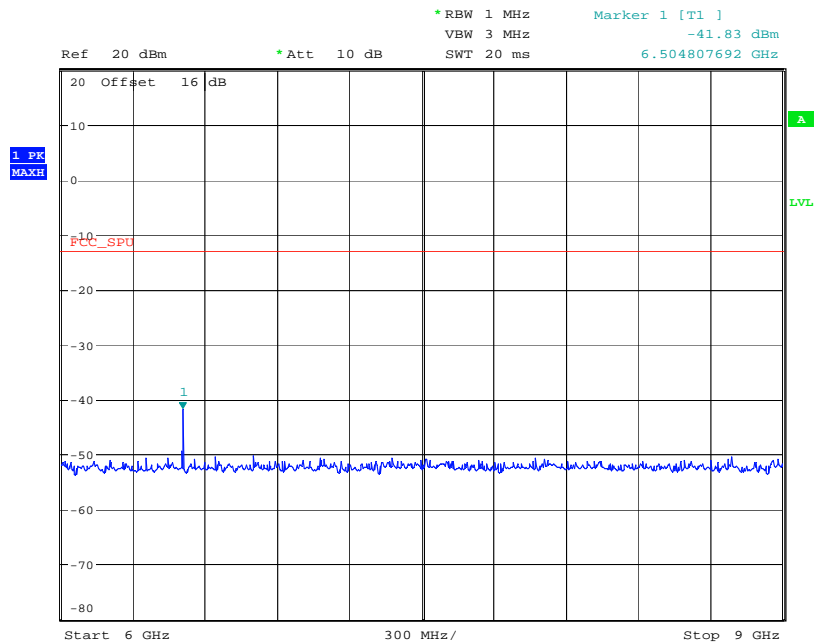
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 240



Date: 21.MAY.2008 14:19:50

3GHz – 6GHz

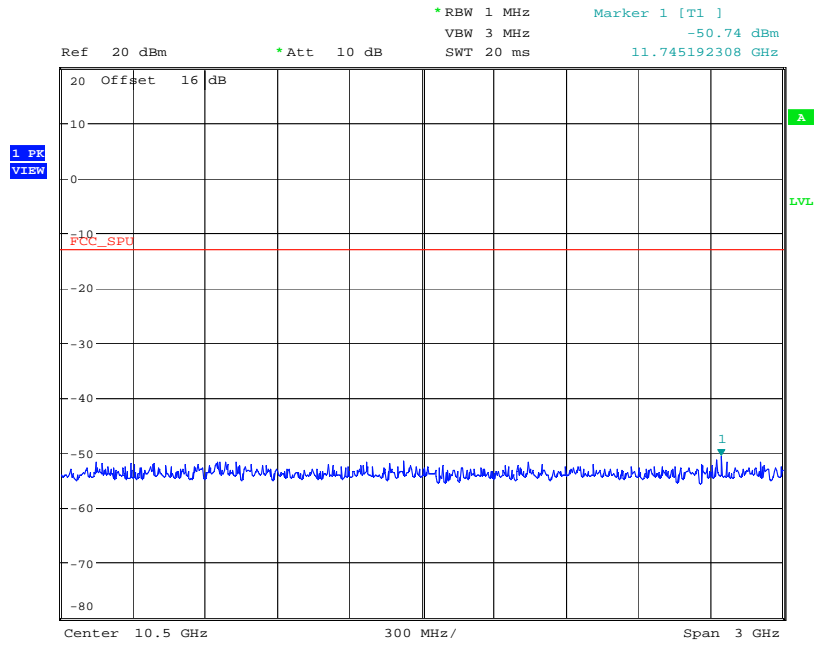


Date: 21.MAY.2008 14:16:33

6GHz – 9GHz

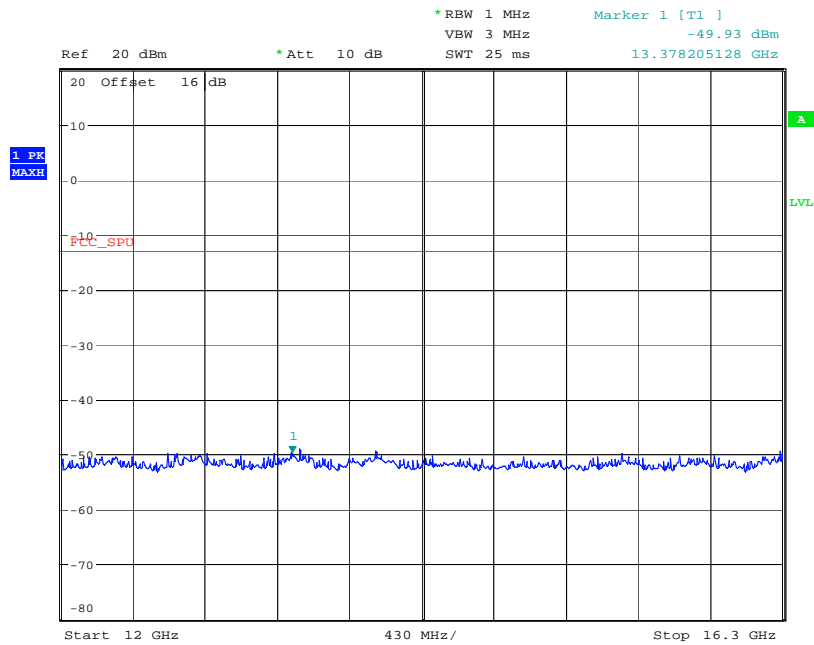
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 240



Date: 21.MAY.2008 14:16:09

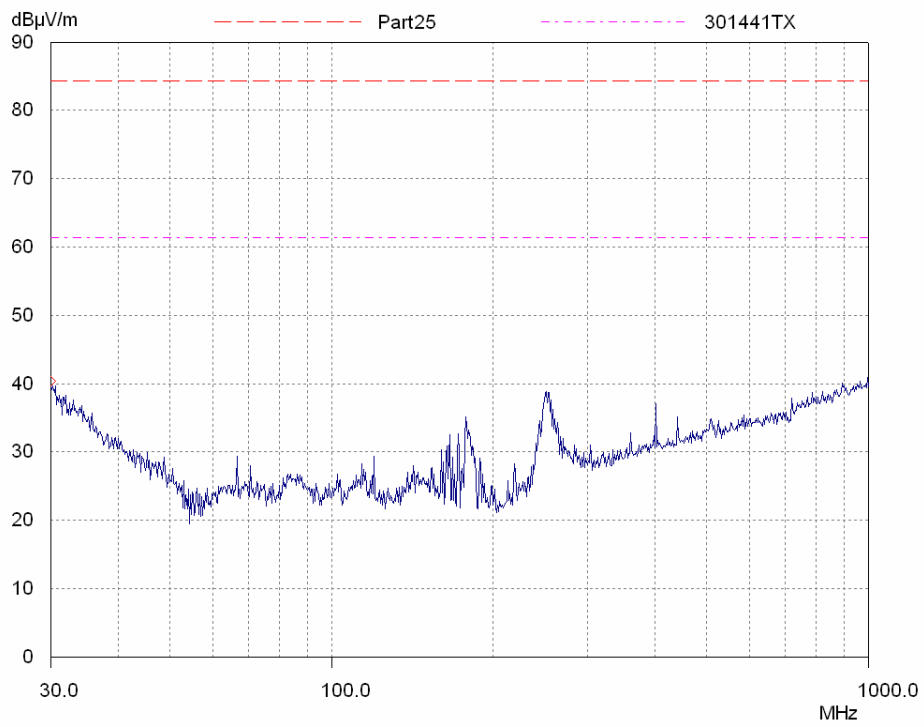
9GHz – 12GHz



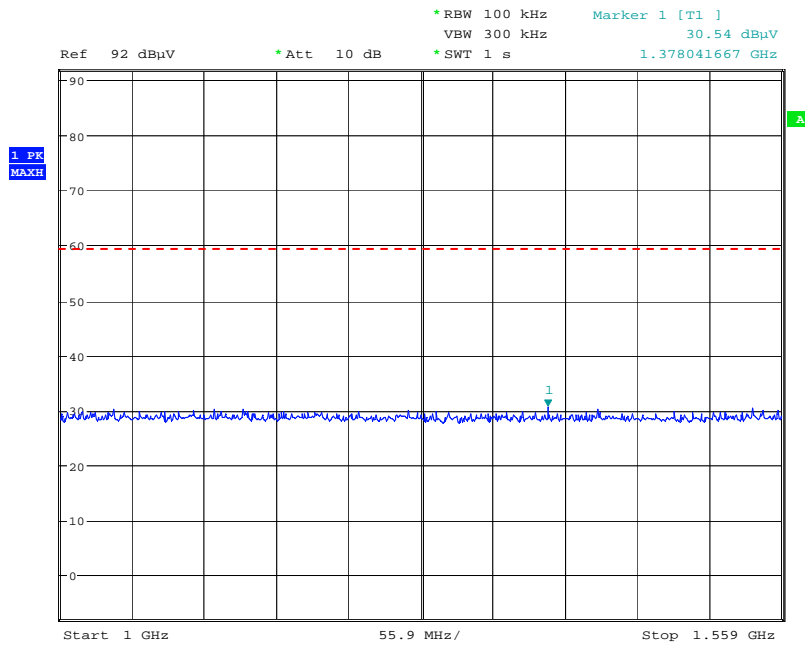
Date: 21.MAY.2008 14:15:00

12GHz – 16.3GHz

ANNEX I
TRANSMITTER SPURIOUS EMISSIONS – Radiated



30MHz – 1000MHz

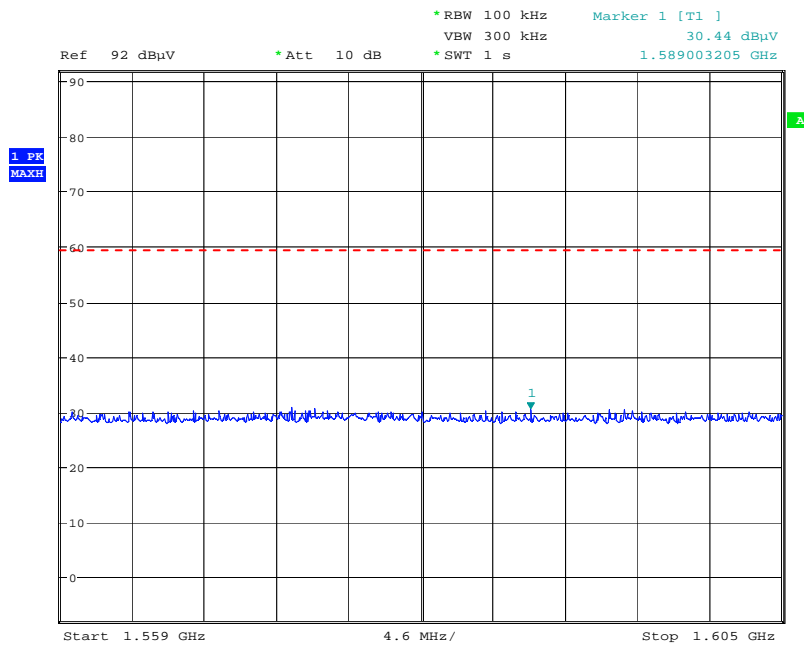


Date: 30.MAY.2008 09:29:52

1000MHz – 1559MHz

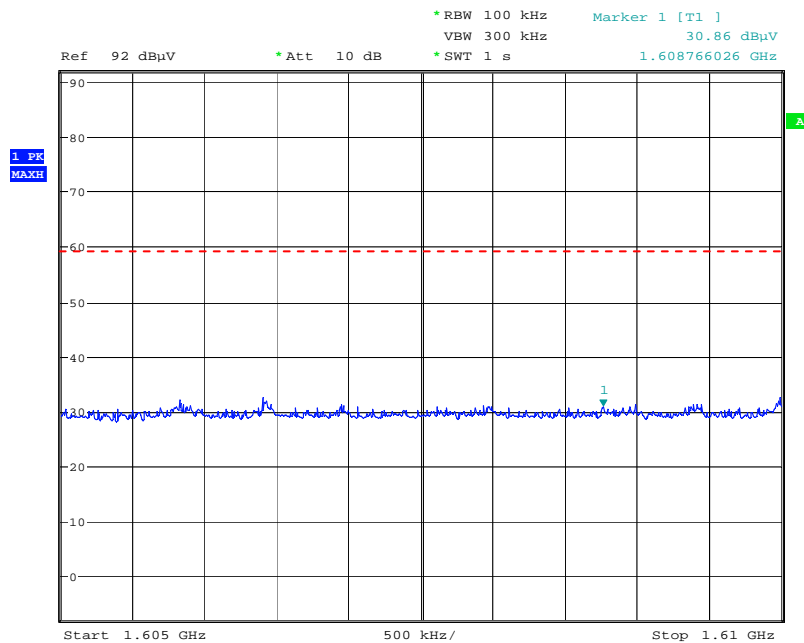
TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 1



Date: 30.MAY.2008 09:34:01

1559MHz – 1605MHz

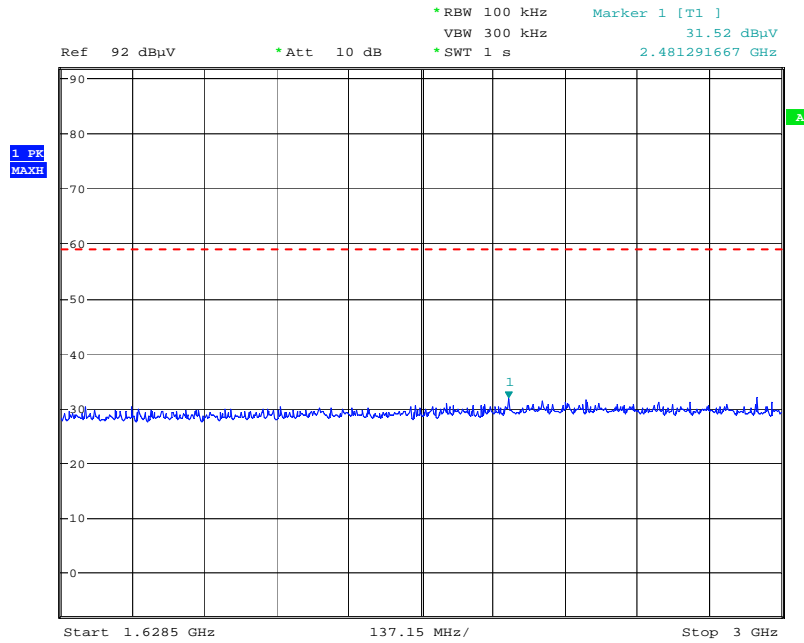


Date: 30.MAY.2008 09:37:48

1605MHz – 1610MHz

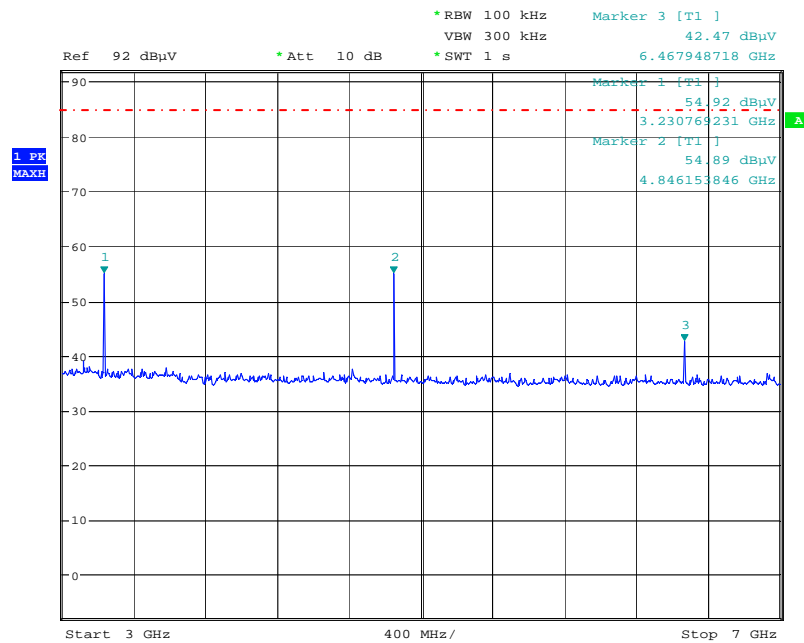
TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 1



Date: 30.MAY.2008 11:44:56

1628.5MHz – 3000MHz

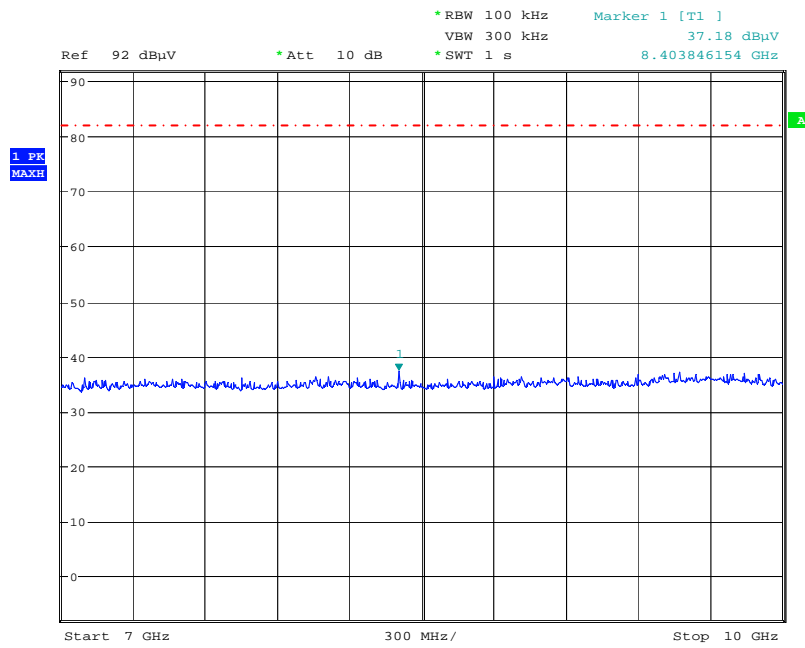


Date: 30.MAY.2008 10:01:57

3GHz – 7GHz

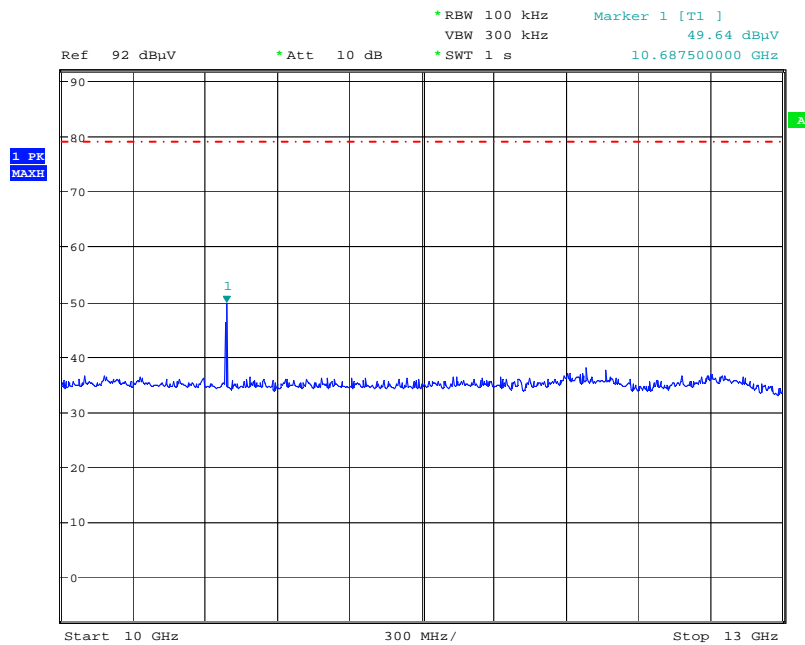
TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 1



Date: 30.MAY.2008 10:04:26

7GHz – 10GHz

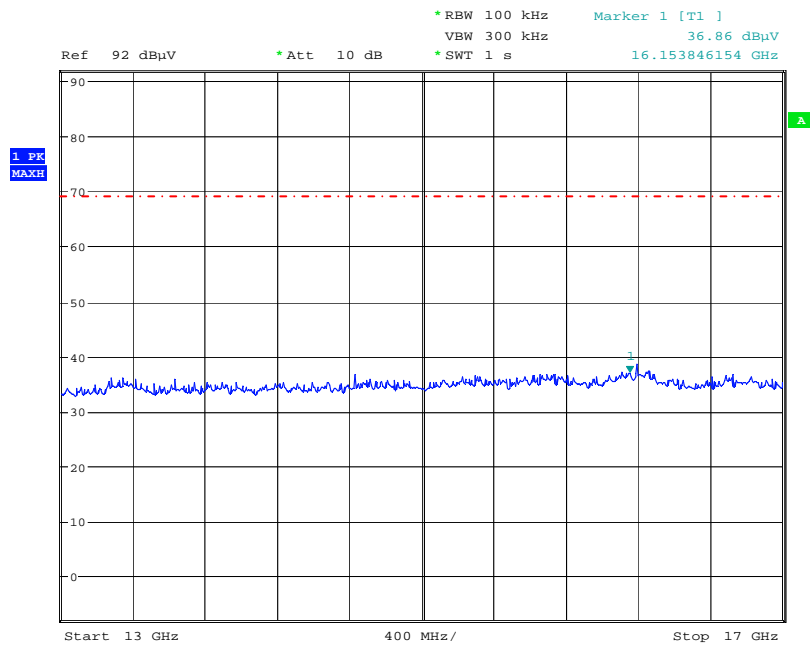


Date: 30.MAY.2008 10:05:42

10GHz – 13GHz

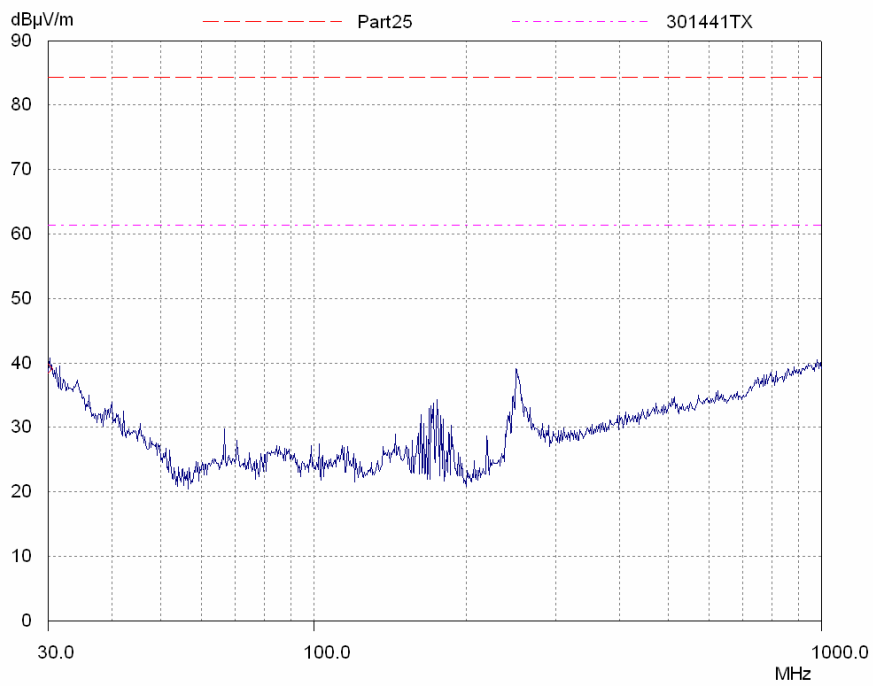
TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 1

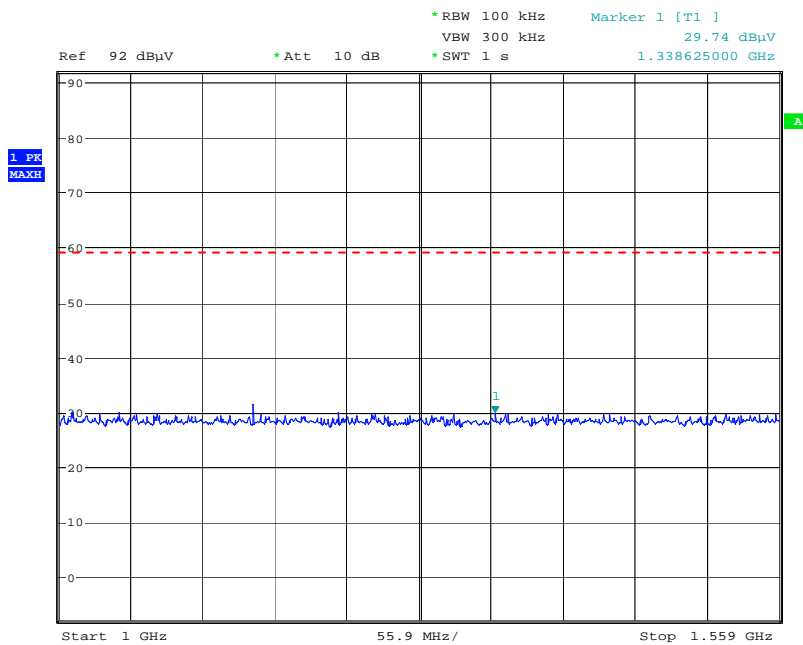


Date: 30.MAY.2008 10:06:29

13GHz – 17GHz



30MHz – 1000MHz

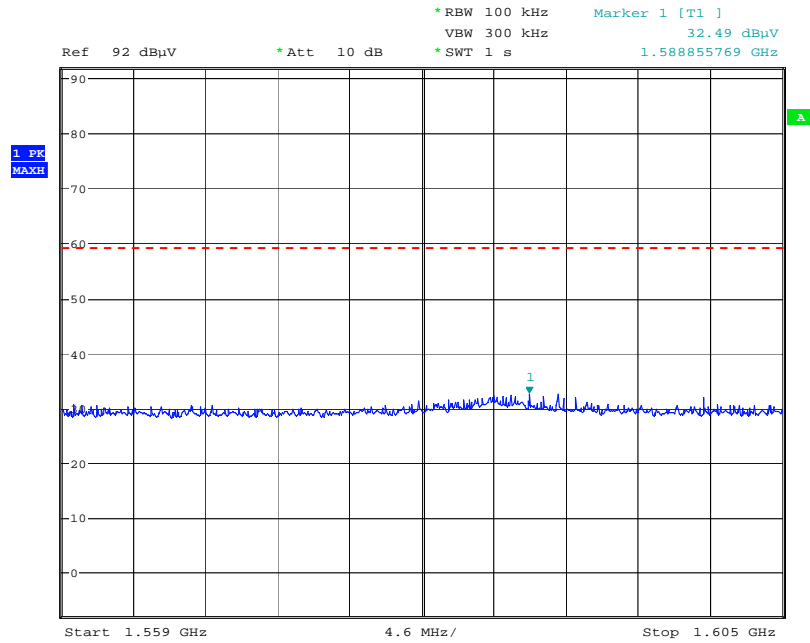


Date: 30.MAY.2008 11:00:26

1000MHz – 1559MHz

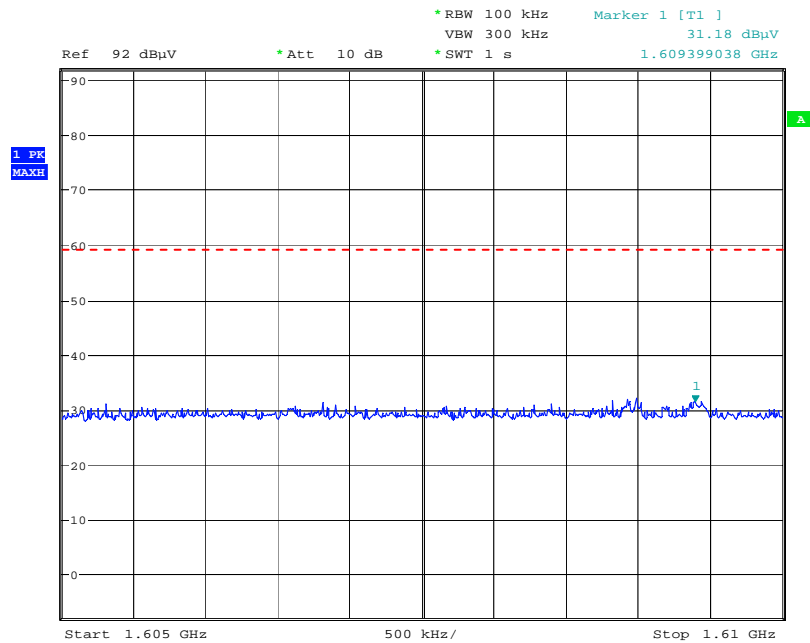
TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 240



Date: 30.MAY.2008 11:03:42

1559MHz – 1605MHz

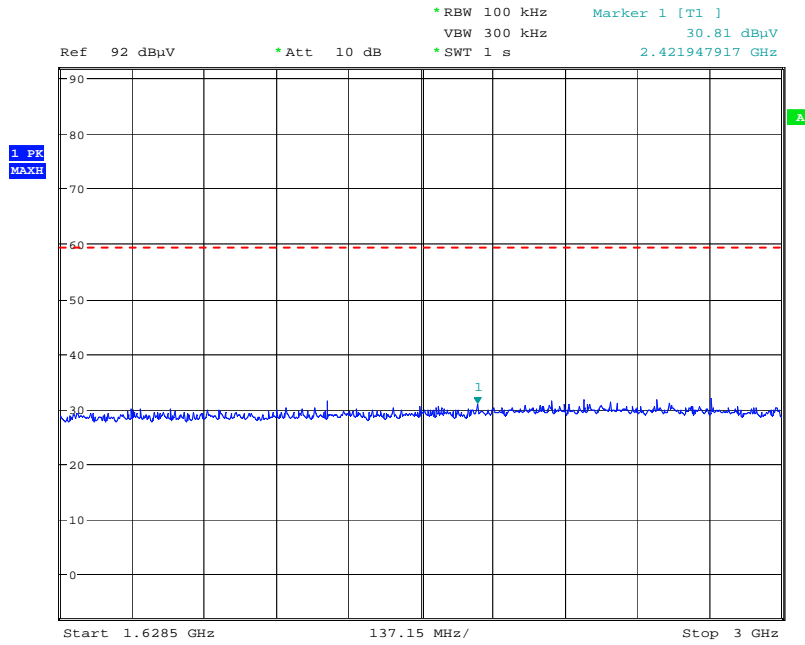


Date: 30.MAY.2008 11:05:18

1605MHz – 1610MHz

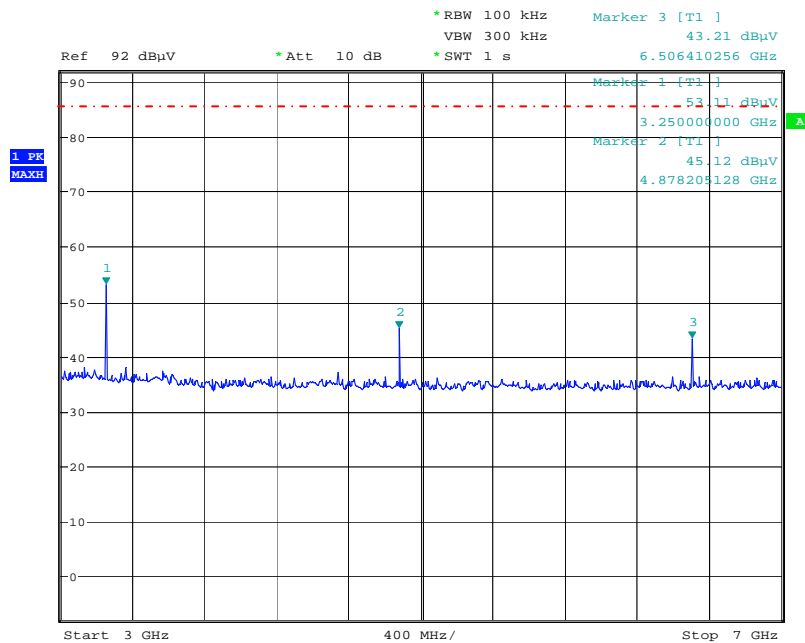
TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 240



Date: 30.MAY.2008 11:06:16

1628.5MHz – 3000MHz

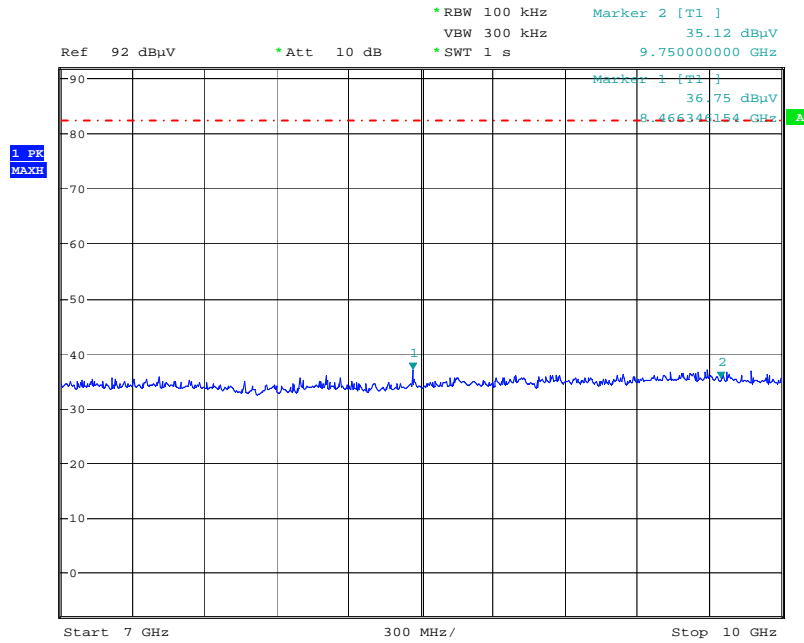


Date: 30.MAY.2008 11:12:07

3GHz – 7GHz

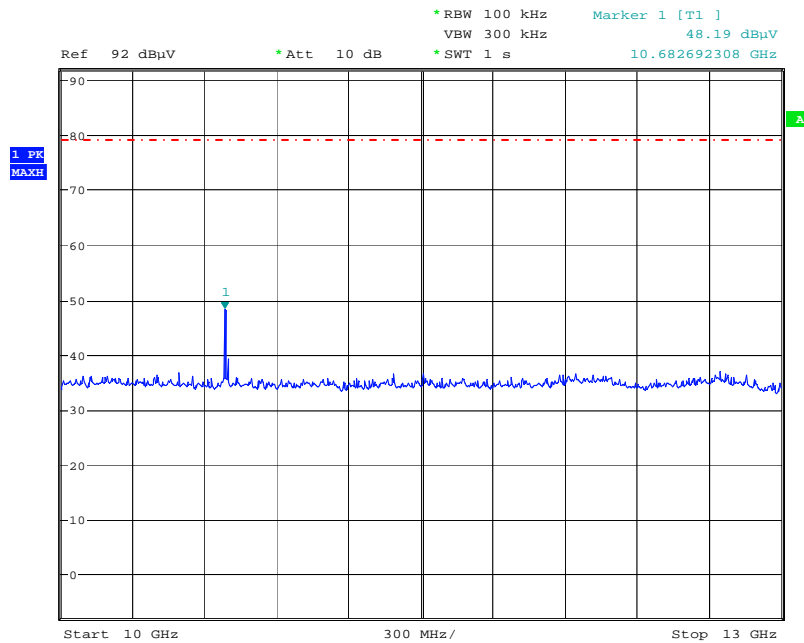
TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 240



Date: 30.MAY.2008 11:14:51

7GHz – 10GHz

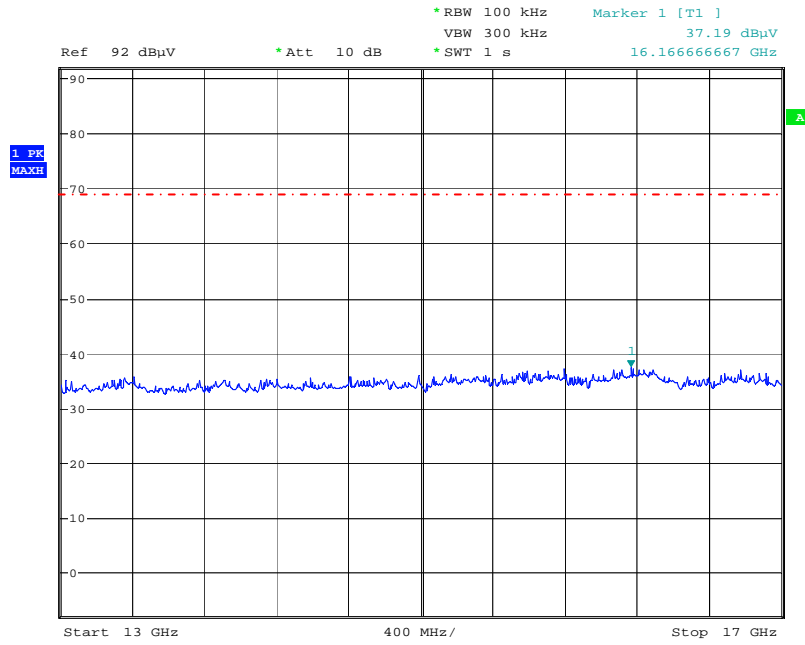


Date: 30.MAY.2008 11:16:03

10GHz – 13GHz

TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 240

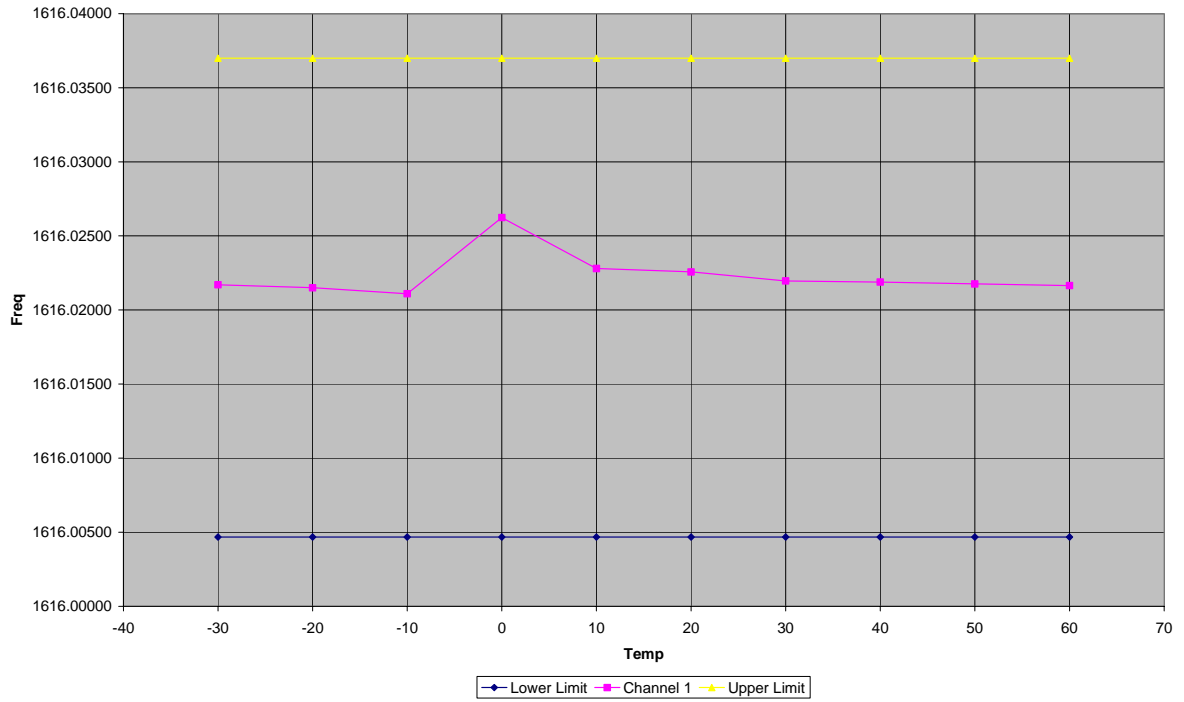


Date: 30.MAY.2008 11:17:03

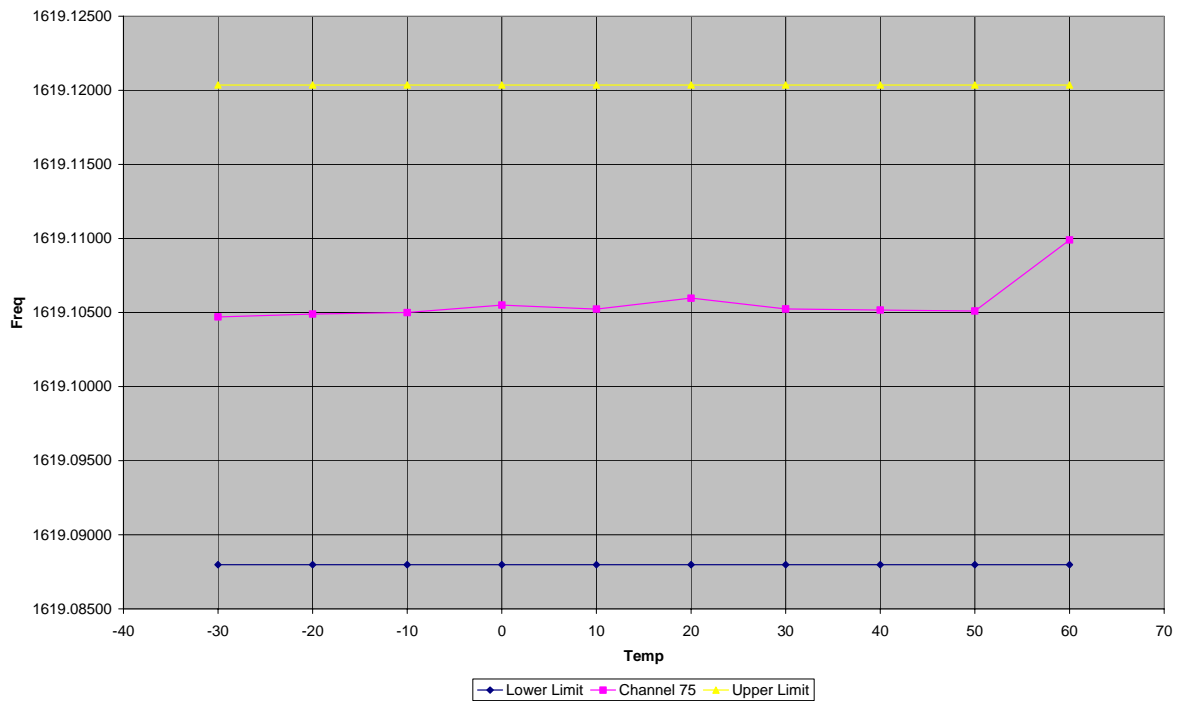
13GHz – 16.3GHz

ANNEX J
FREQUENCY STABILITY – Temperature

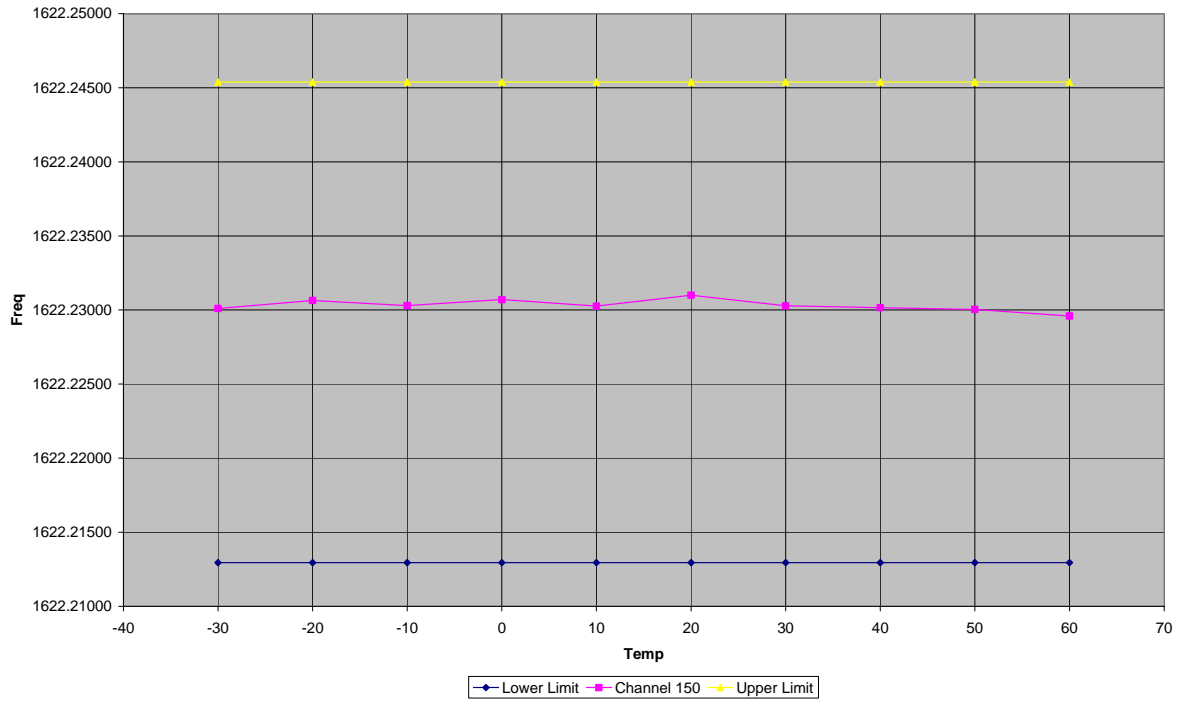
Channel 1 Frequency Stability - Temperature



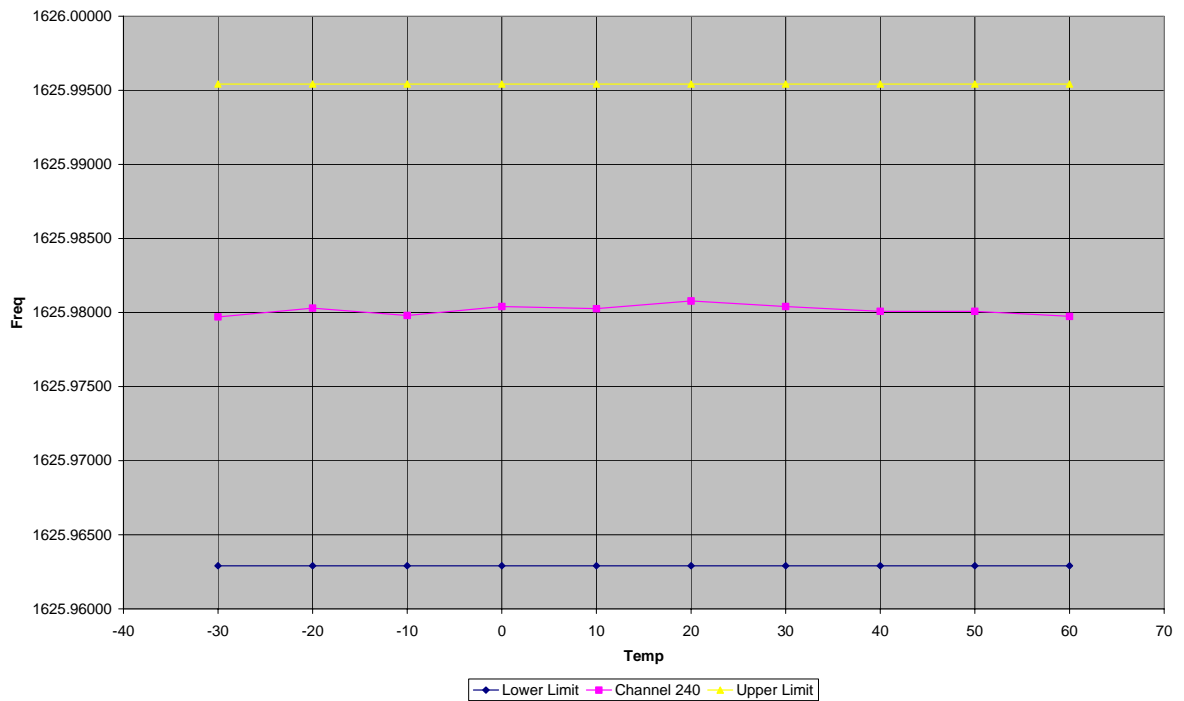
Channel 75 Frequency Stability - Temperature



Channel 150 Frequency Stability - Temperature

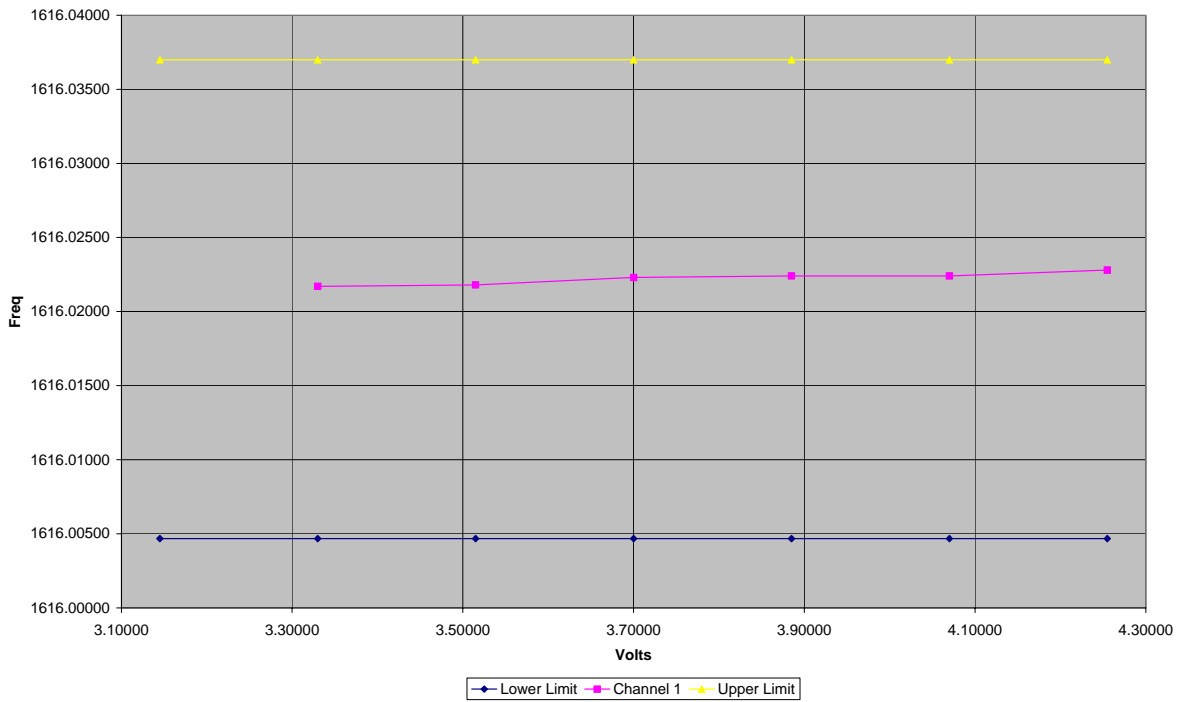


Channel 240 Frequency Stability - Temperature

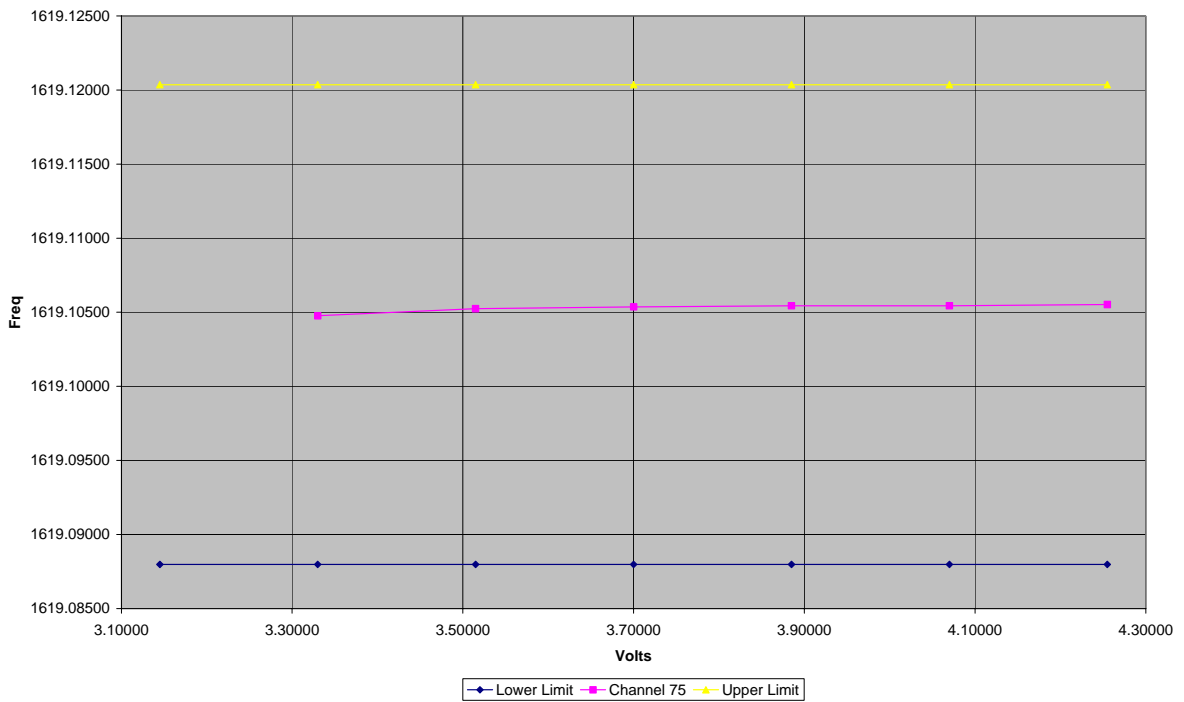


ANNEX K
FREQUENCY STABILITY – Voltage

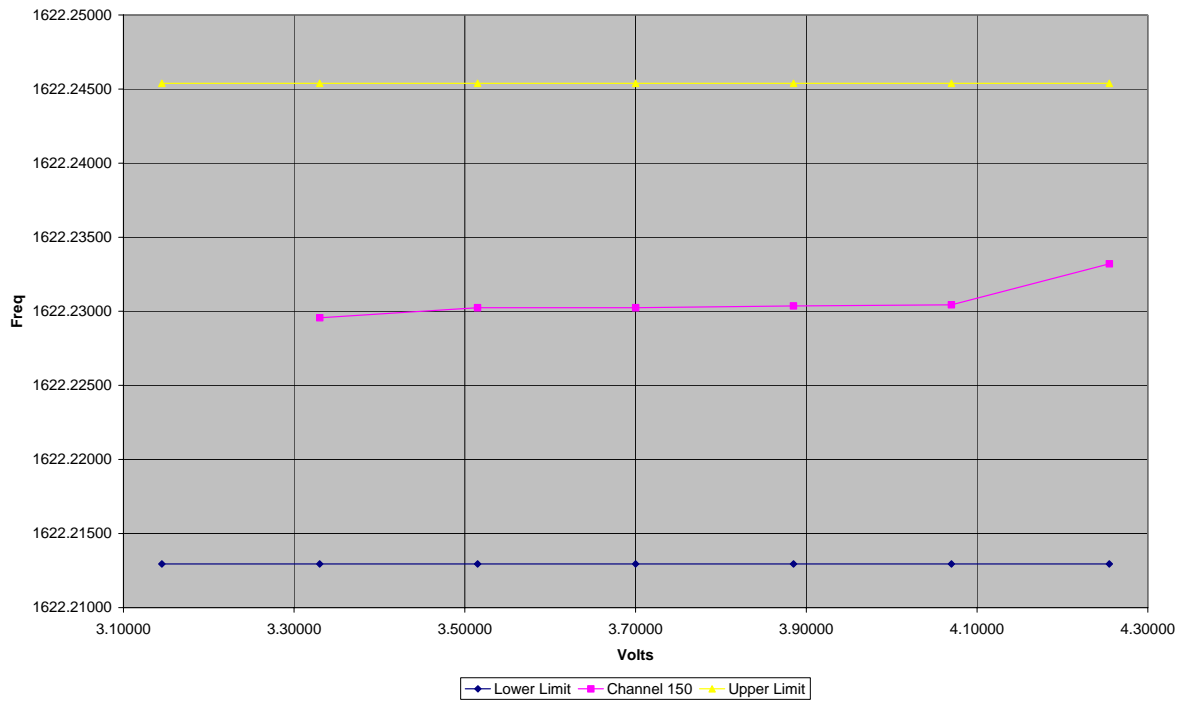
Channel 1 Frequency Stability - Voltage



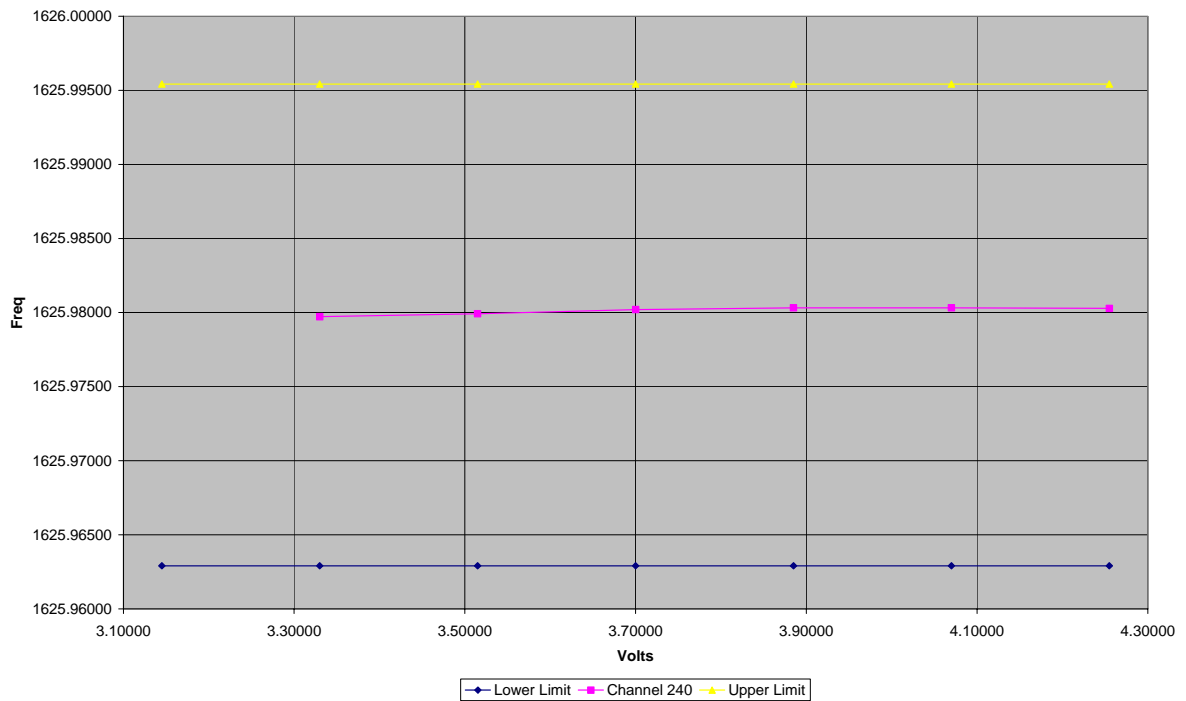
Channel 75 Frequency Stability - Voltage



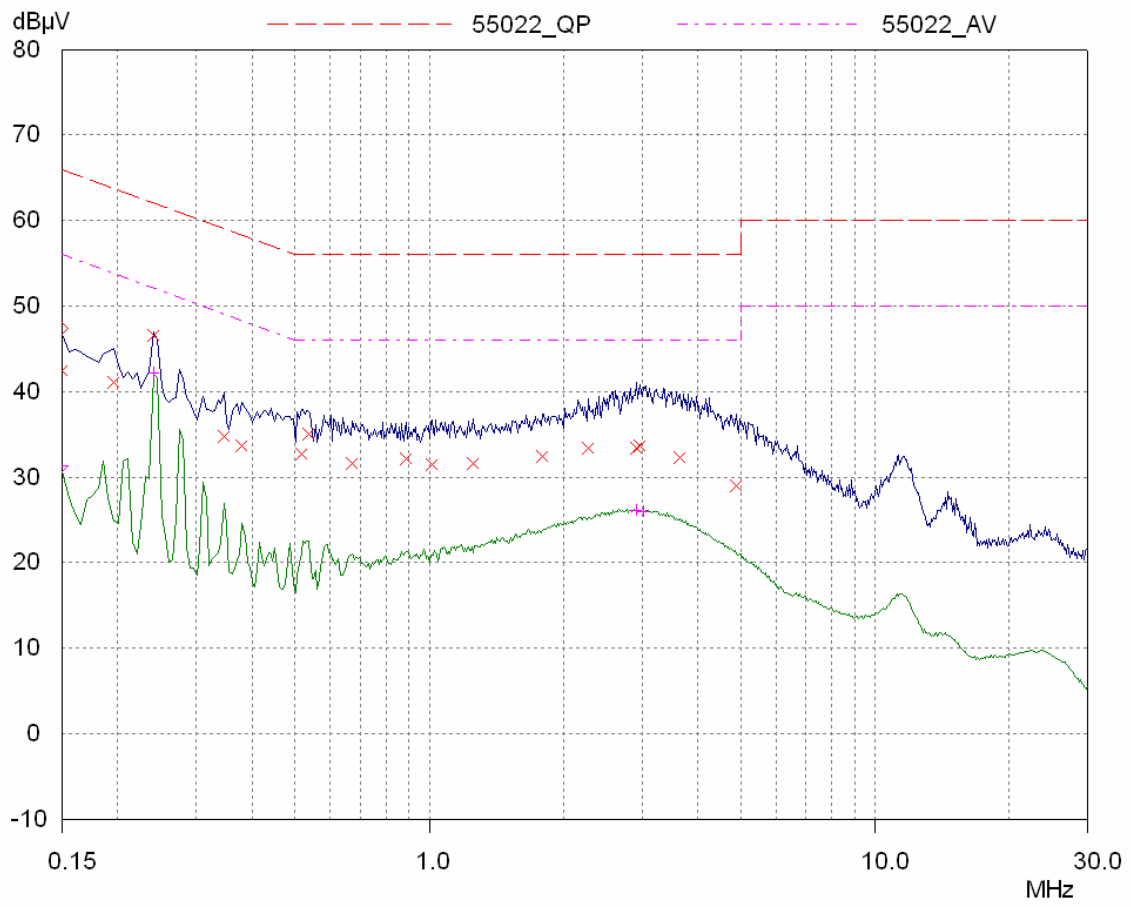
Channel 150 Frequency Stability - Voltage



Channel 240 Frequency Stability - Voltage



ANNEX L
AC POWERLINE CONDUCTION



ANNEX M

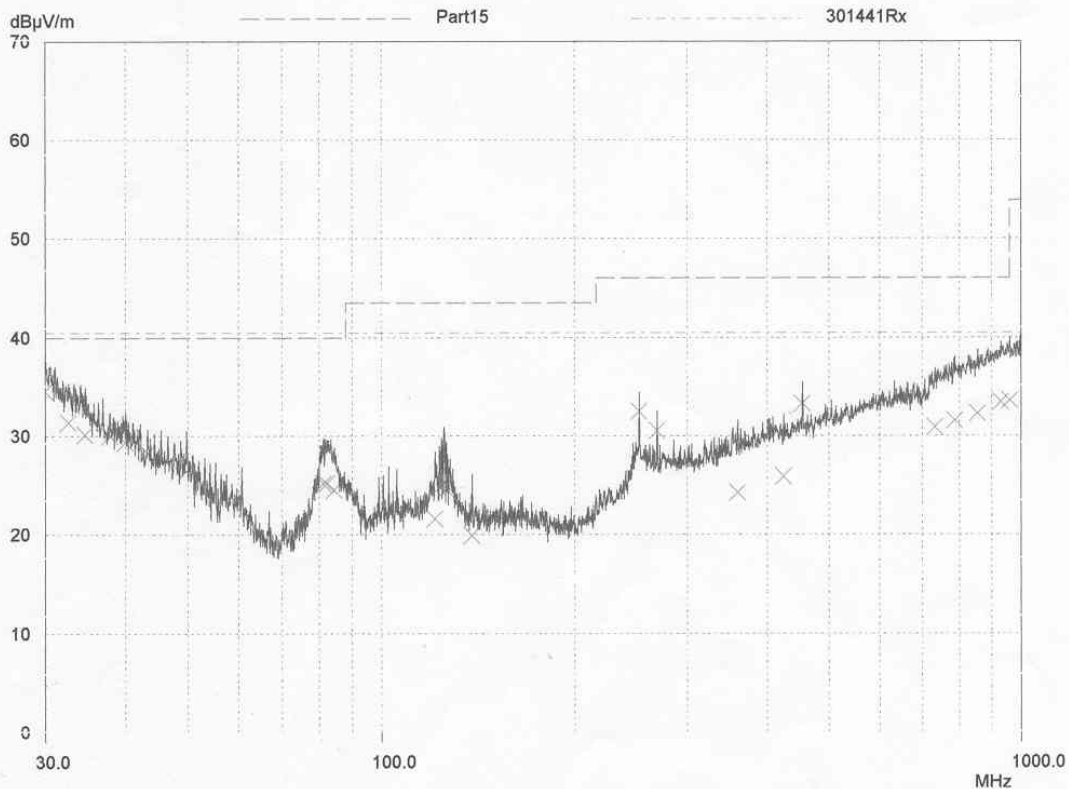
UNINTENTIONAL TRANSMITTER SPURIOUS EMISSIONS – Radiated

TRL Compliance Ltd
E-Field Radiation (30MHz-1GHz)

27 May 2008 10:04

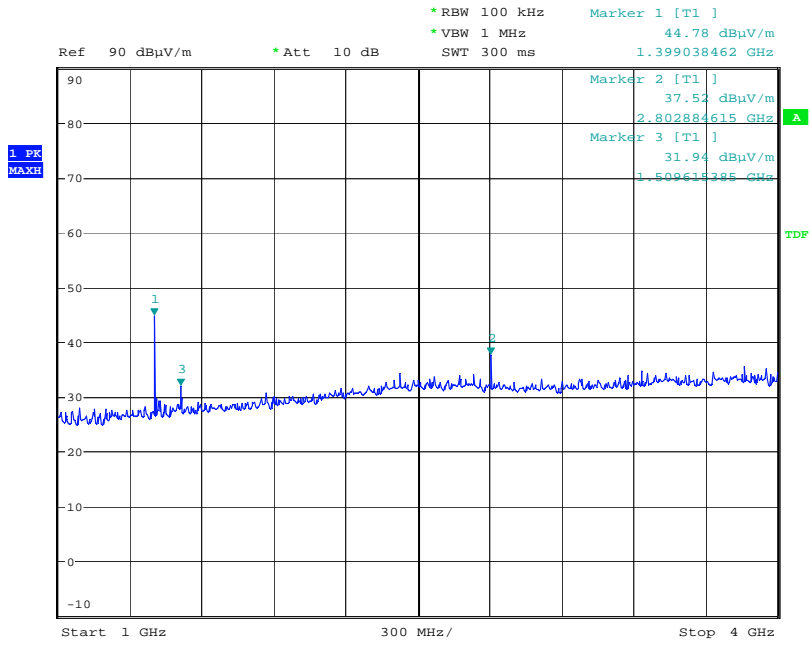
EUT: H2 Handset
 Manuf: Iridium
 Op Cond: Prescan 30MHz - 1000MHz
 Operator: S Hodgkinson
 Test Spec: Part15
 Comment: EUT on in Rx mode bottom channel. Antenna up.
 Rx antenna Vertical.

Scan Settings				Receiver Settings				
(1 Range)								
Frequencies		Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
Start	Stop							
30MHz	1000MHz	50kHz	120kHz	PK	1msec	Auto	ON	60dB
Transducer	No.	Start	Stop	Name				
1	21	30MHz	1000MHz	UH72				
	22	30MHz	1000MHz	UH93				
Final Measurement:		Detector:	X QP					
		Meas Time:	2sec					
		Subranges:	50					
		Acc Margin:	10 dB					



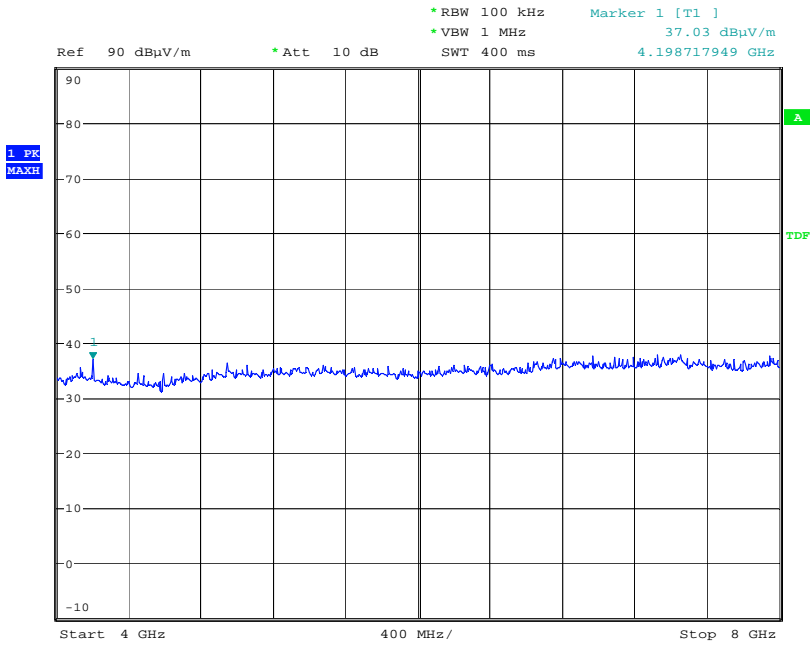
PAGE 1

30MHz – 1000MHz



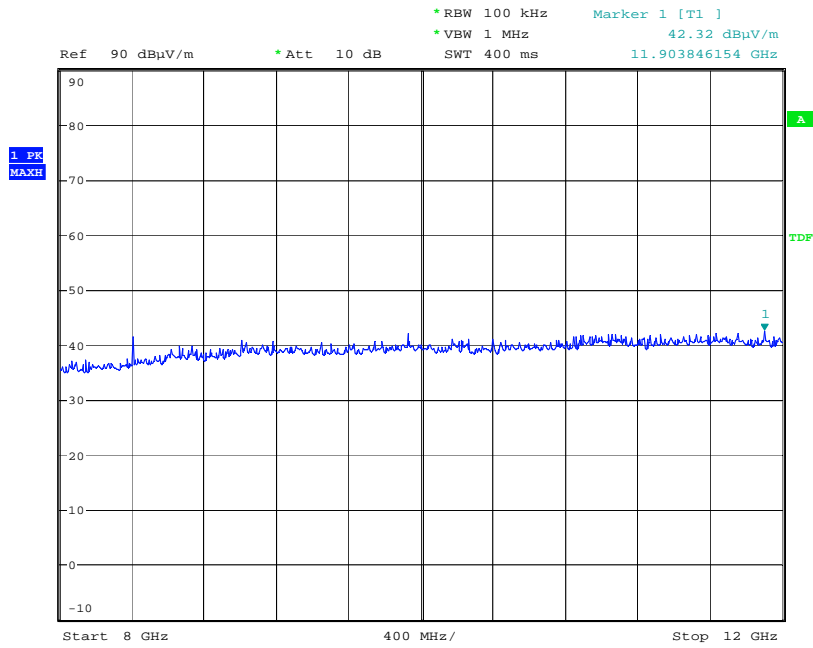
Date: 2.JUN.2008 10:12:29

1GHz – 4GHz



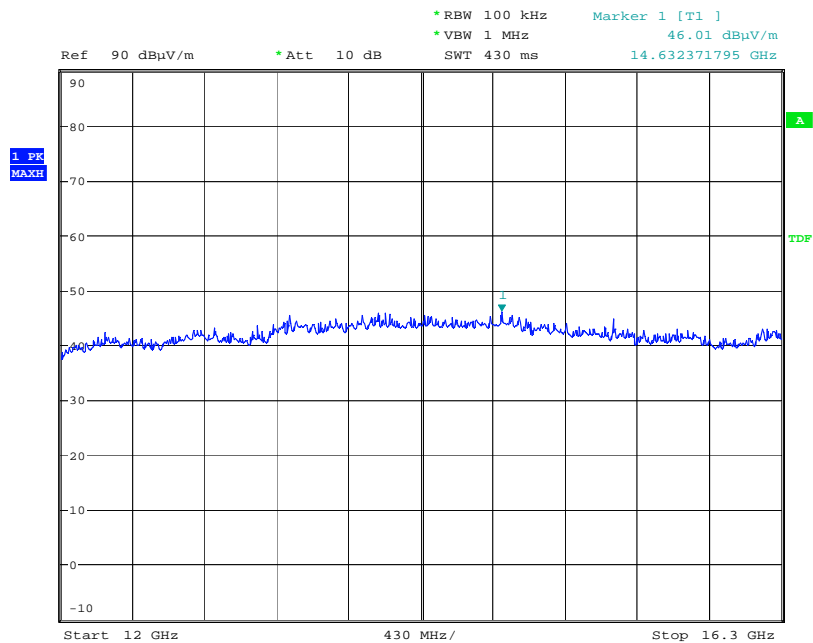
Date: 2.JUN.2008 10:11:14

4GHz – 8GHz



Date: 2.JUN.2008 10:10:02

8GHz – 12GHz



Date: 2.JUN.2008 10:09:27

12GHz – 16.3GHz