



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: RU1475/8798

COPY NO: 1.....

ISSUE NO: 1

FCC ID: Q639555

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IRIDIUM SATELLITE LLC
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FCC RULES CFR 47, PART 25
AND
FCC RULES CFR 47, PART 15**

TEST DATE: 15th – 24th September 2008

TESTED BY: D WINSTANLEY

APPROVED BY: J CHARTERS
RADIO SECTION
LEADER

DATE: 25th September 2008

Distribution:

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

THIS DOCUMENT MAY BE REPRODUCED ONLY IN ITS ENTIRETY AND WITHOUT CHANGE

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Notes:	
1. Component failure during test	No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>
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 41K7Q7W

EQUIPMENT UNDER TEST: Iridium Subscriber Unit 9555 (H2)

EQUIPMENT TYPE: Satellite Telephone

PEAK OUTPUT POWER: 12.46dBW, 42.46dBm

MEAN OUTPUT POWER: 2.10dBW, 32.10 dBm

CHANNEL SPACING: 41.667 kHz

NUMBER OF CHANNELS: 252 (240 Transmit Channels)

MODULATION TYPE: Q7W

POWER SOURCE(s): +3.7 Vdc

TEST DATE(s): 15th – 24th September 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

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: 41k7Q7W

4. Temperatures: Ambient (Tnom) 24°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
Matters;
10-1-03 Edition | Code of Federal Regulations, Title 47, Part 2, "Frequency allocations and Radio Telemetry
General Rules and Regulations" |
| 47 CFR 25
10-1-03 Edition | Code of Federal Regulations, Title 47, Part 25, "Sattelite Communications" Subpart C,
"Technical Matters" |
| 47 CFR 15
20-09-07 Edition | Code of Federal Regulations, Title 47, Part 15, "Radio Frequency Devices" Subpart B,
"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" |

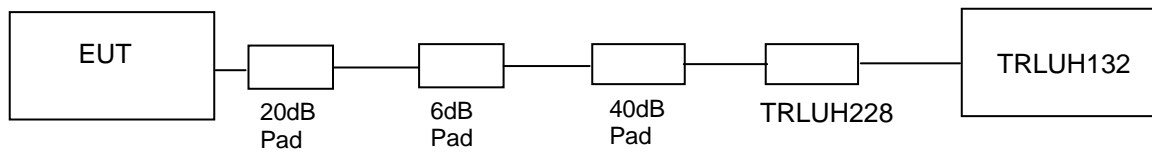
COMPLIANCE TESTS

TRANSMITTER TESTS

RF OUTPUT POWER – CONDUCTED – PART 25.204 (a)

Ambient temperature = 24°C
 Relative humidity = 55%
 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	62.6	-33.52	3	10.36	42.44	12.44	40
Channel 75	62.6	-33.50	3	10.36	42.46	12.46	40
Channel 150	62.6	-33.54	3	10.36	42.42	12.42	40
Channel 240	62.6	-33.53	3	10.36	42.43	12.43	40

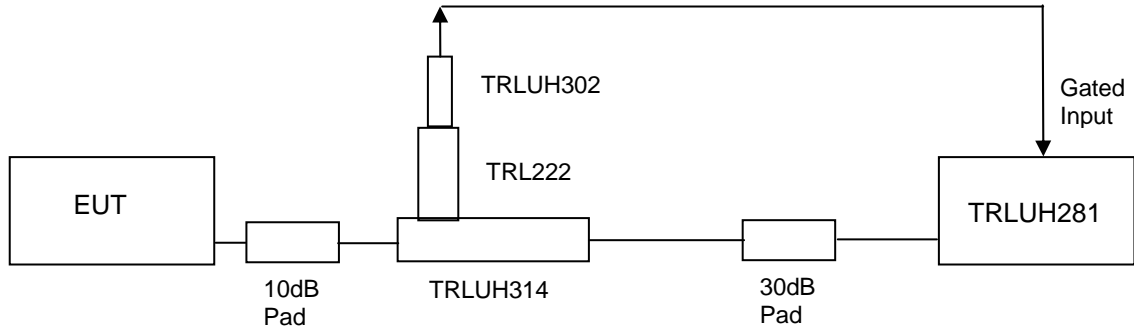
- Notes:
1. Duty Cycle Factor = $10 \times \log(1/X)$ Where $X = (T_{on} / T_{frame})$. See Annex F for duty cycle plots
 2. Correction Factor for dBm to dBW = -30dB
 3. Antenna gain of 3dBi is the worst case gain over an isotropic antenna

TRANSMITTER TESTS

EMISSIONS LIMITATIONS – CONDUCTED – PART 25.202 (f)

Ambient temperature = 20°C
 Relative humidity = 65%
 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.

RESULTS

The H2 handset was found to comply with the limits

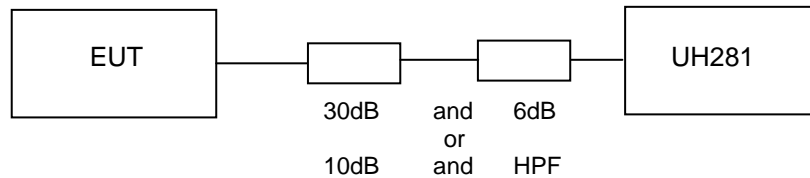
See plots in Annex G.

TRANSMITTER TESTS

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

Ambient temperature = 24°C
 Relative humidity = 60%
 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. 30 dB & 6 dB pads were 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	1576.472	-82.47	33.26	-49.21	-40
	240	1579.870	-82.57	33.26	-49.31	-40
	240	1604.724	-81.83	33.20	-48.57	-40
	1	1604.960	-81.97	33.20	-48.71	-40
1605MHz – 1610MHz	1	1605.000	-81.86	33.20	-48.66	-40
	240	1605.000	-82.04	33.20	-48.84	(Note 4)
1628.5MHz – 16.3 GHz	No Significant emissions within 20 dB of the Limit					-13

Notes :

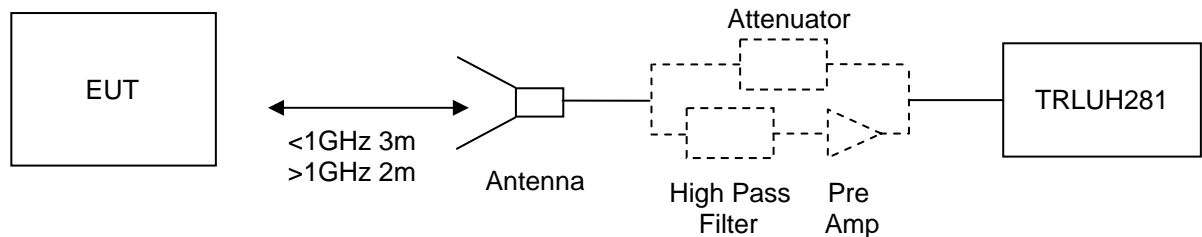
1. Emissions Checked up to 10 times Fc
2. Reference level offset of Scan plots in Annex H already have approximate attenuator losses taken into account
3. Average measurement in a carrier on state were taken in the bands 1599MHz to 1605MHz and 1605MHz -1610MHz. All other scans were peak hold for worst 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	=	20°C
Relative humidity	=	54%
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	3231.964	-38.52	-13
	240	3251.861	-40.22	-13
	1	4847.455	-31.11	-13
	240	4877.871	-32.41	-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.

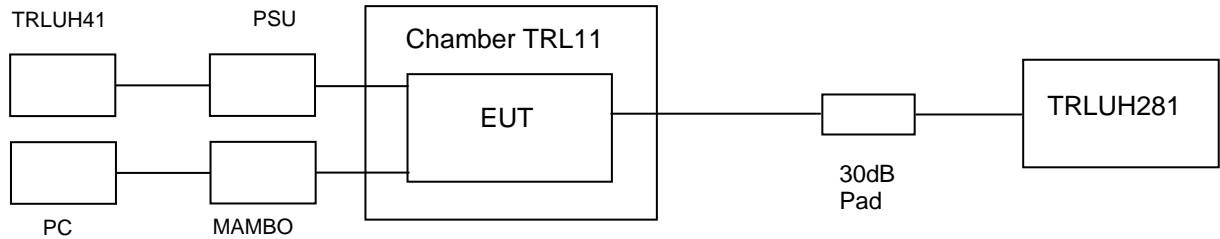
The H2 handset was found to comply with the limits. See annex I for plots

TRANSMITTER TESTS

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

Ambient temperature = 20°C
 Relative humidity = 58%
 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	1616.020720	1619.104090	1622.229123	1625.979130
+50	1616.020896	1619.104206	1622.229186	1625.979170
+40	1616.020890	1619.104180	1622.229220	1625.979216
+30	1616.020936	1619.104296	1622.229867	1625.979300
+20	1616.020716	1619.104173	1622.229166	1625.979156
+10	1616.021156	1619.104463	1622.229440	1625.979440
0	1616.020563	1619.103936	1622.228963	1625.978973
-10	1616.020156	1619.103486	1622.228500	1625.978473
-20	1616.020190	1619.103610	1622.228603	1625.978616
-30	1616.010998	1619.103266	1622.228226	1625.978173

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

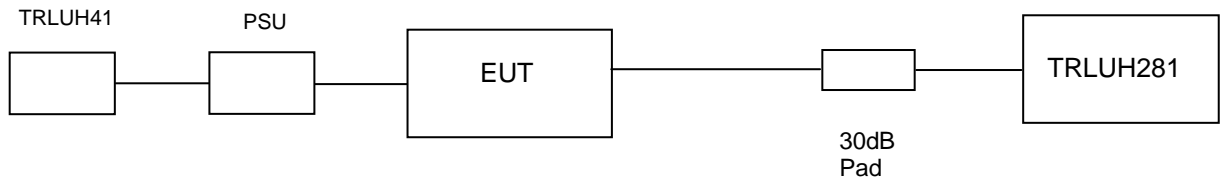
The H2 handset was found to comply with the limits

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 95 % of Vnom			
90				
95	1616.020583	1619.103946	1622.228766	1625.978780
100	1616.020716	1619.104173	1622.229166	1625.979156
105	1616.020836	1619.104226	1622.229253	1625.979256
110	1616.020850	1619.104220	1622.229240	1625.979256
115	1616.020876	1619.104246	1622.229250	1625.979273

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

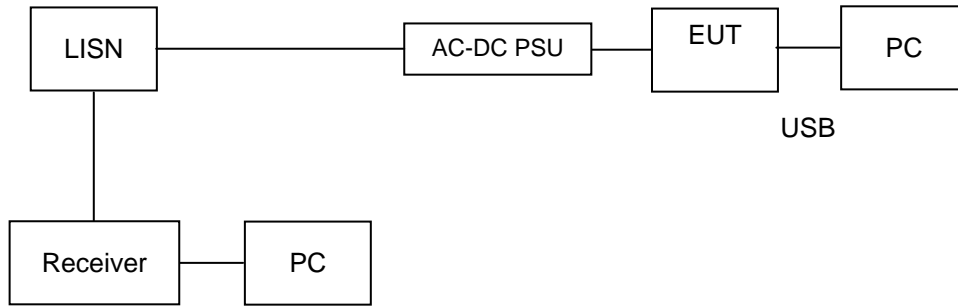
The H2 handset was found to comply with the limits

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)
0.150	46.21	Quasi Peak	Neutral	62.10
0.185	33.66	Average	Neutral	53.21
0.210	38.01	Average	Neutral	53.21
0.240	42.33	Average	Neutral	52.10
2.350	26.96	Average	Neutral	46.00
2.880	27.46	Average	Live	46.00
2.900	27.56	Average	Neutral	46.00
2.985	27.46	Average	Live	46.00
3.625	26.72	Average	Neutral	46.00
3.670	26.56	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	=	17°C(<1GHz)	3m measurements <1GHz	[X]
Relative humidity	=	66% (<1GHz),	3m measurements >1GHz	[X]
Conditions	=	Open Area Test Site (OATS)	3m extrapolated from 1m	[]
Supply voltage	=	+3.7Vdc		

	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	252.00	17.1	2.10	12.00	-	31.2	-	36.31	200
	285.60	16.9	2.25	12.65	-	31.8	-	38.90	200
	302.40	20.9	2.30	13.20	-	36.4	-	66.07	200
	336.00	19.7	2.40	13.90	-	36.0	-	63.10	200
	352.80	22.3	2.50	14.40	-	39.2	-	91.20	200
	386.60	17.2	2.60	15.20	-	35.0	-	56.23	200
	415.20	14.7	2.70	16.50	-	33.9	-	49.54	200
	443.85	20.1	2.80	16.40	-	39.3	-	92.25	200
	458.20	13.6	2.90	16.50	-	33.0	-	44.66	200
472.50	14.2	2.90	16.9	-	34.0	-	50.12	200	
960MHz - 1GHz									Note 4
1GHz - 16.3GHz	1401.000	53.0	0.90	25.40	36.00	43.30	-	146.22	500
	1410.985	52.7	0.90	25.40	36.00	43.00	-	141.25	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 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 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
30dB ATTENUATOR	BIRD	8304-300-N	N/A	220
20dB ATTENUATOR	BIRD	8304-200-N	N/A	221
10 dB ATTENUATOR	BIRD	8304-100-N	N/A	222
6 dB ATTENUATOR	BIRD	8304-0600-N	N/A	246
TEMPERATURE INDICATOR	FLUKE	52 SERIES II	74700044	426
PRE AMPLIFIER	AGILENT	8449B	2118	572
MULTIMETER	AVOMeter	M3004	M3270006	UH41
BILOG ANTENNA	CHASE	CBL6112B	2803	UH93
PSU	THANDOR	PL320QMD	044749	UH100
POWER METER	MARCONI	6960B	237036/001	UH132
RECEIVER	R&S	ESVS 10	841431/014	UH186
RECEIVER	R&S	ESHS 10	841429/012	UH187
LISN	R&S	ESH3-Z5.831.5	8407 31/015	UH195
POWER SENSOR	MARCONI	6920	1564	UH228
SPECTRUM ANALYSER	R&S	FSU 46	200034	UH281
CRYSTAL DETECTOR	HP	8472A	1822Z00897	UH302
DIRECTIONAL COUPLER	SINGER	117310	26	UH314
40 dB ATTENUATOR	NARDA	771-40	24	UH334
SIGNAL GENERATOR	HP	83630B	3722A00588	UH340
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
139	1-18GHz Horn	EMCO	23/05/2007	24	23/05/2009
220	Attenuator	Bird	Calibrate in use		
221	Attenuator	Bird	Calibrate in use		
222	Attenuator	Bird	Calibrate in use		
246	Attenuator	Bird	Calibrate in use		
426	Temperature Indicator	Fluke	22/01/2008	12	22/01/2009
572	Pre Amp	HP	04/07/2008	12	04/07/2009
UH06/07	NSA Calibration	TRL	17/12/2007	12	17/12/2008
UH028	Log Periodic Ant	Schwarbeck	06/05/2008	24	06/05/2010
UH029	Bicone Antenna	Schwarbeck	06/05/2008	24	06/05/2010
UH041	Multimeter	AVometer	15/01/2008	12	15/01/2009
UH093	Bilog	Schaffner	21/05/2007	24	21/05/2009
UH100	Power Supply	Thandar	Use Calibrated Multimeter		
UH132	Power meter	Marconi	15/01/2008	12	15/01/2009
UH186	Receiver	R&S	12/12/2007	12	12/12/2008
UH187	Receiver	R&S	12/12/2007	12	12/12/2008
UH195	LISN	R&S		12	
UH228	Power Sensor	Marconi	16/01/2008	12	16/01/2009
UH281	Spectrum Analyser	R&S	24/10/2007	12	24/10/2008
UH302	Crystal Detector	HP	For Information Only		
UH314	Directional Coupler	Narda	For Information Only		
UH334	Attenuator	Narda	Calibrate in use		
UH340	Signal Generator	HP	06/05/2008	12	06/05/2009
N/A	High Pass Filter	AFL	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

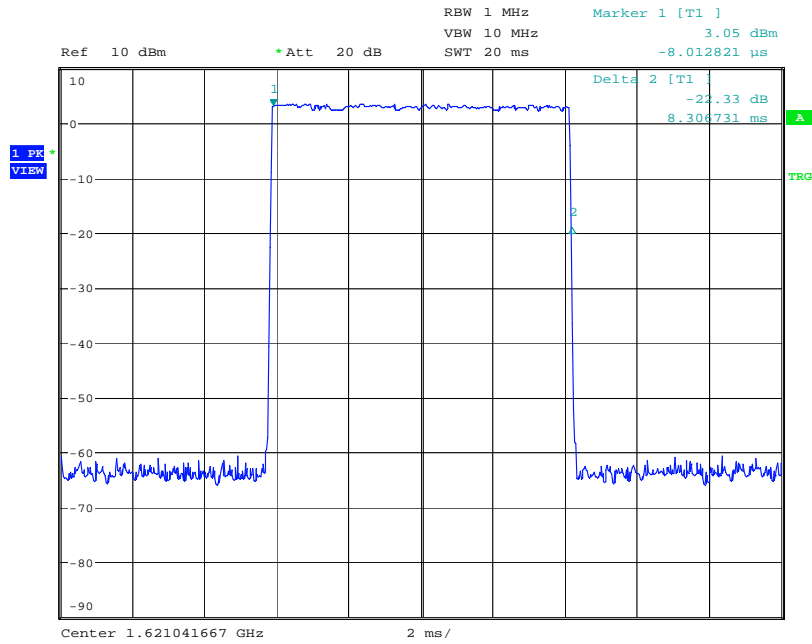
Uncertainty in test result = **3.23dB**

[18] Transmission Time Measurement

Uncertainty in test result = **7.98%**

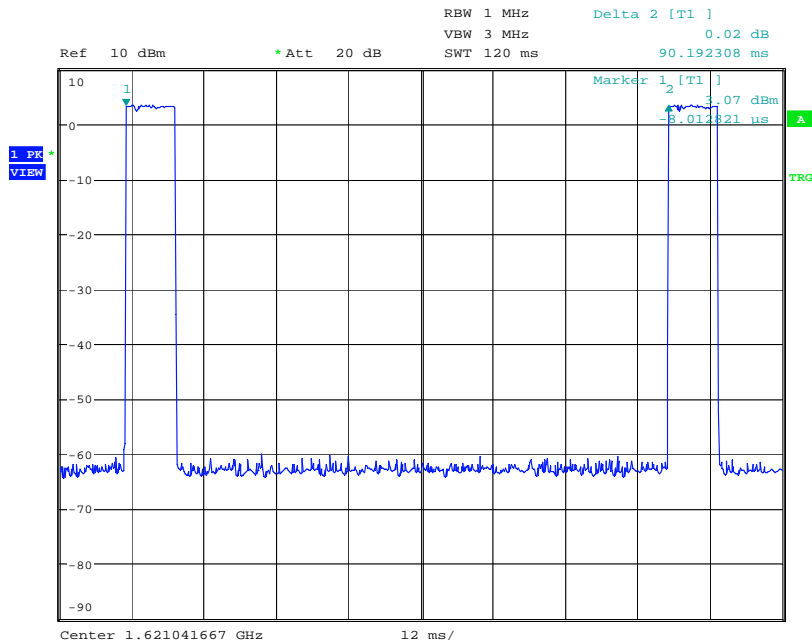
ANNEX F
DUTY CYCLE

Duty Cycle Plots



Date: 18.SEP.2008 15:02:06

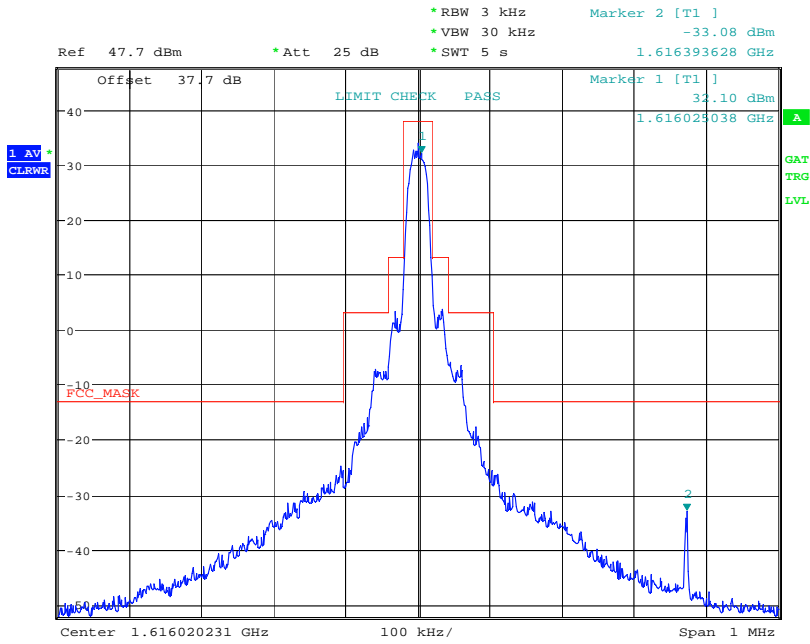
$$T_{on} = 8.30\text{ms}$$



Date: 18.SEP.2008 15:03:53

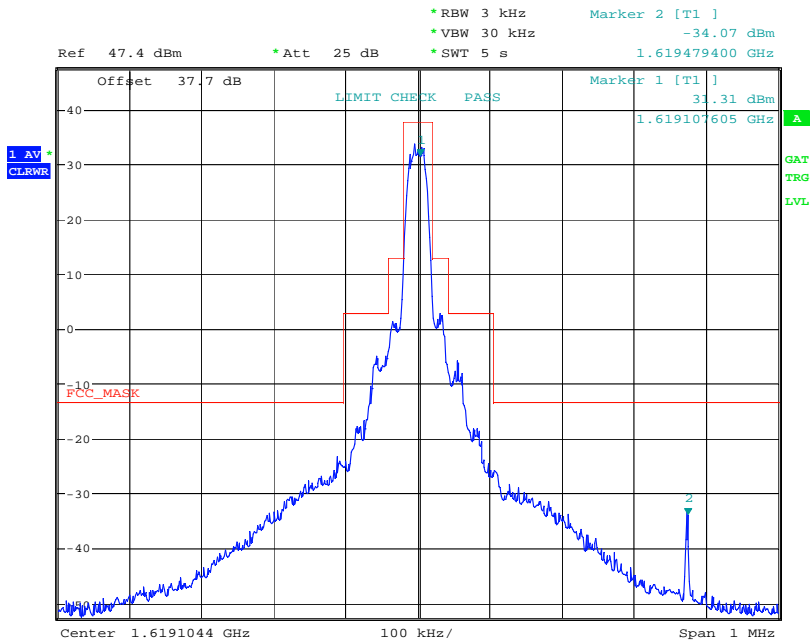
$$T_{frame} = 90\text{ms}$$

ANNEX G
EMISSIONS LIMITATIONS



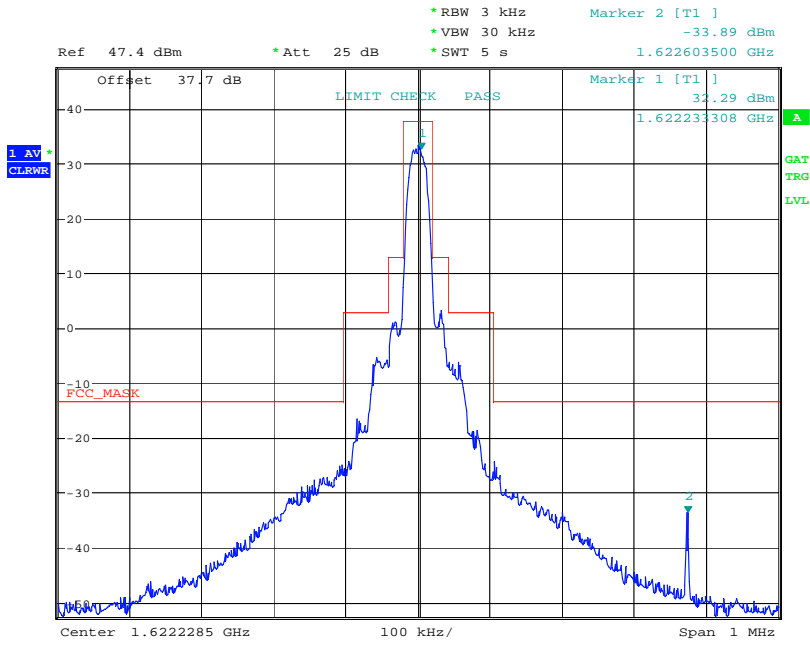
Date: 22.SEP.2008 12:16:17

Channel 1



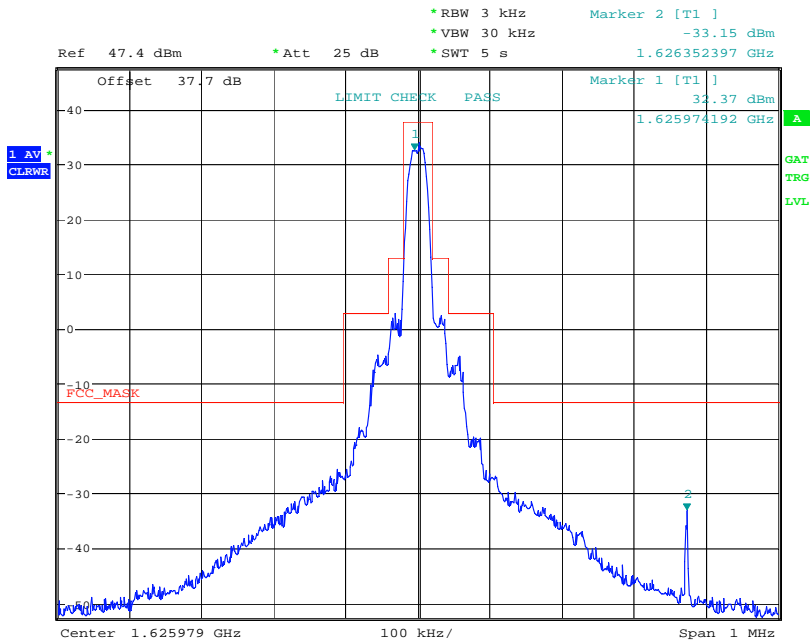
Date: 22.SEP.2008 14:00:50

Channel 75



Date: 22.SEP.2008 14:14:31

Channel 150



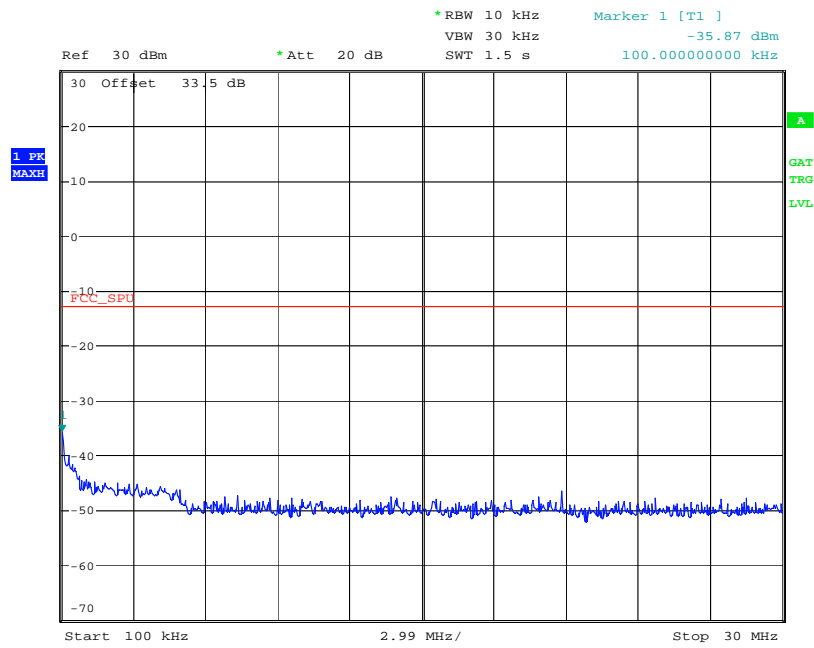
Date: 22.SEP.2008 14:33:10

Channel 240

ANNEX H
TRANSMITTER SPURIOUS EMISSIONS – Conducted

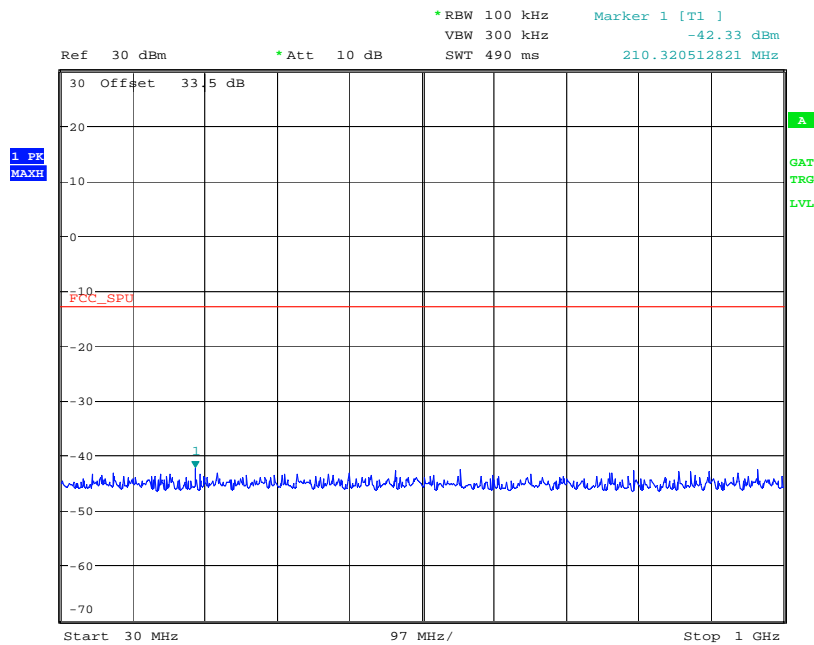
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 1



Date: 22.SEP.2008 14:41:25

100 kHz – 30MHz

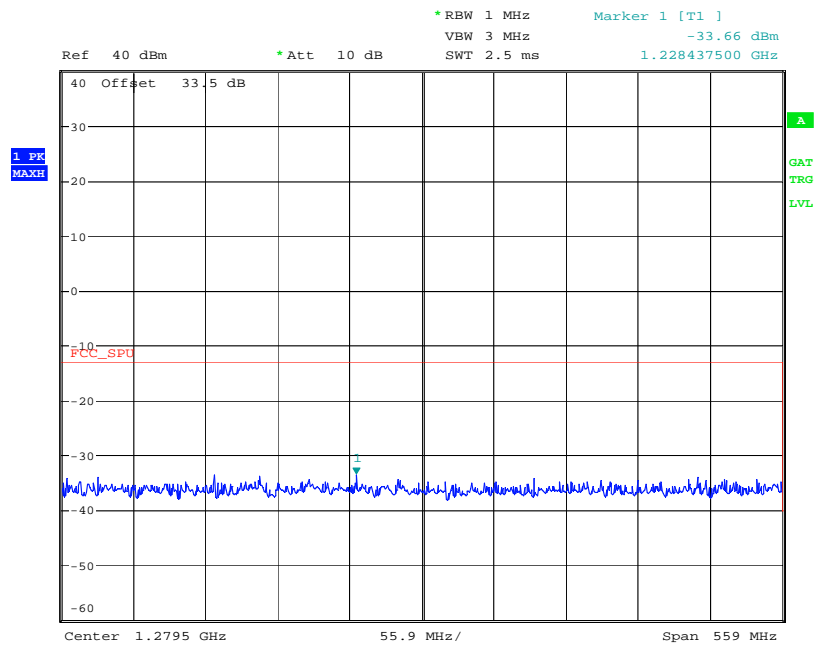


Date: 22.SEP.2008 15:01:04

30MHz – 1000MHz

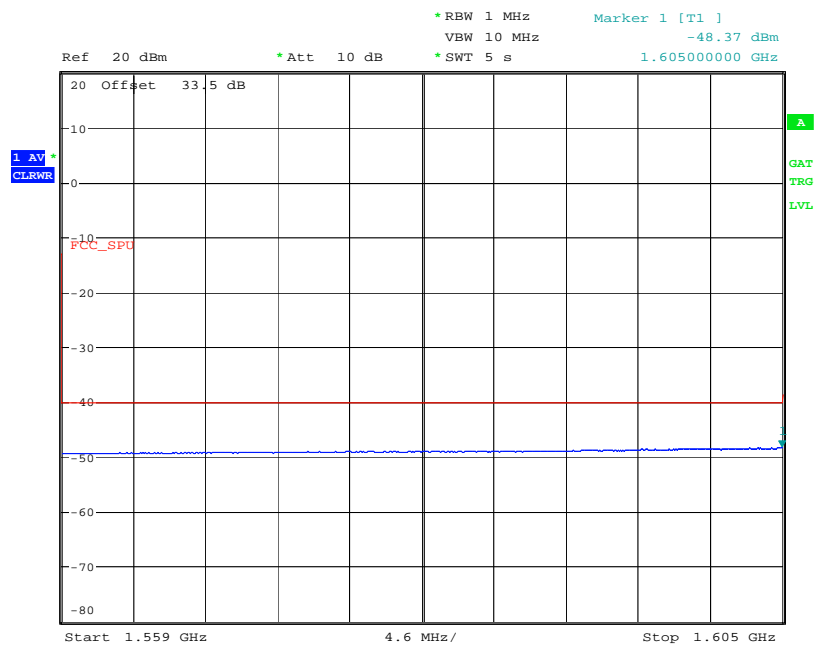
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 1



Date: 22.SEP.2008 15:02:01

1000MHz – 1559MHz

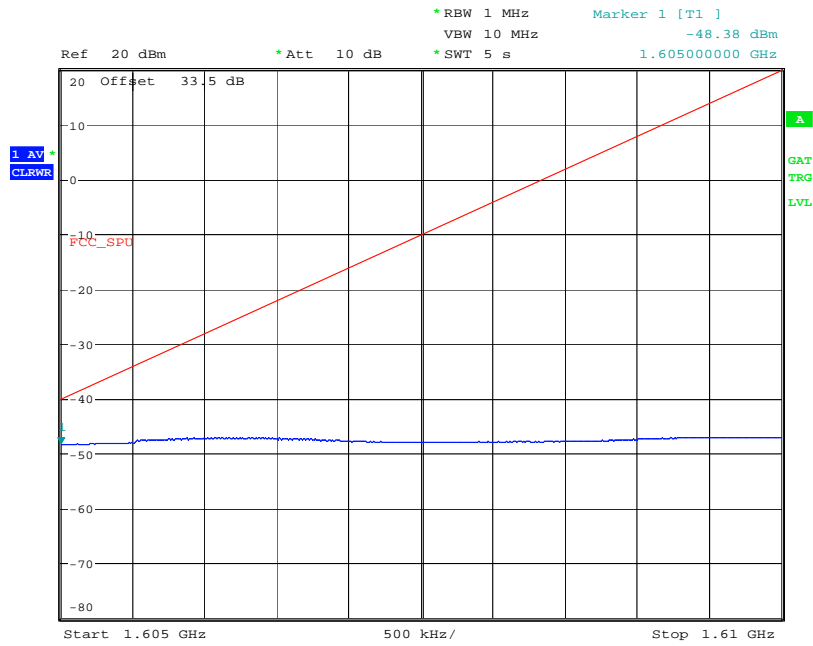


Date: 22.SEP.2008 15:06:05

1559MHz – 1605MHz

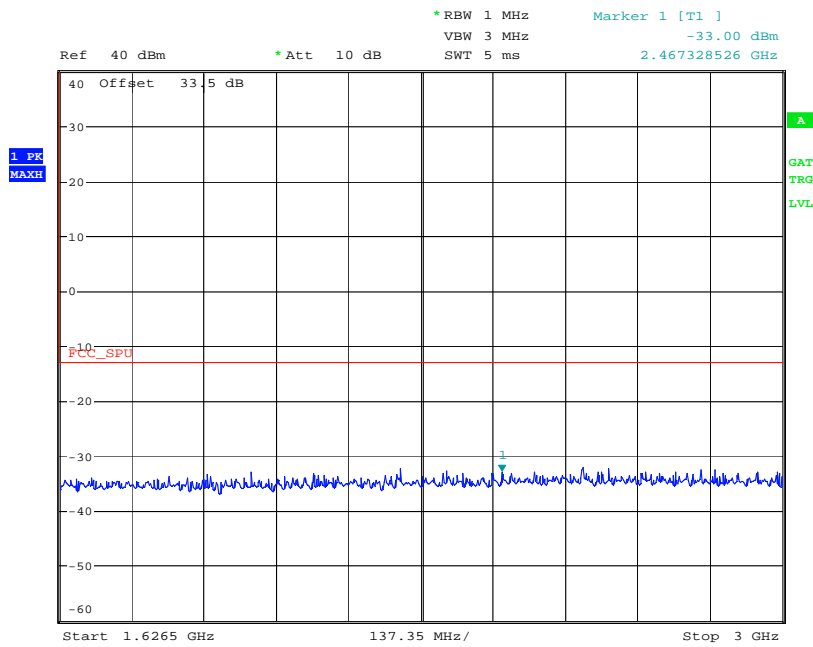
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 1



Date: 22.SEP.2008 15:09:12

1605MHz – 1610MHz

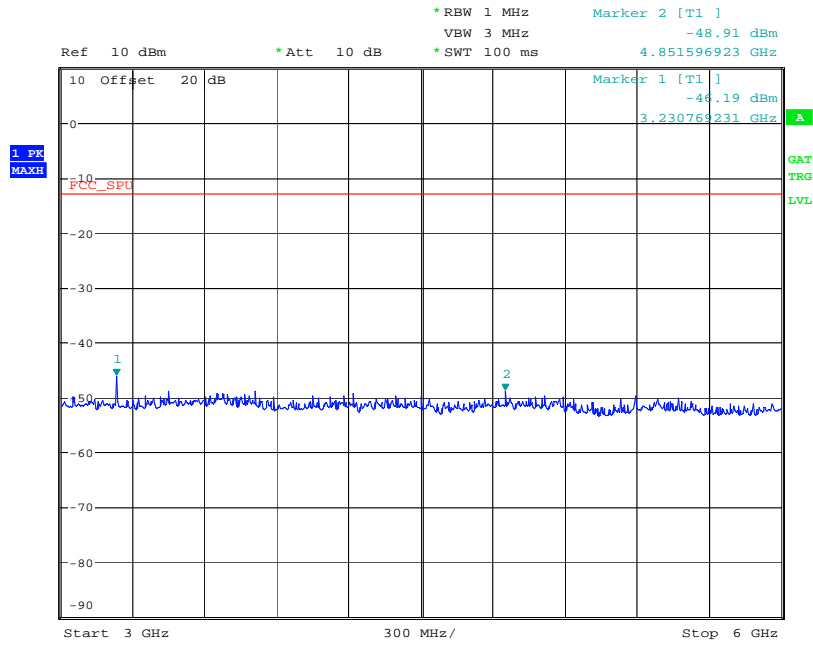


Date: 22.SEP.2008 14:59:08

1626.5MHz – 3000MHz

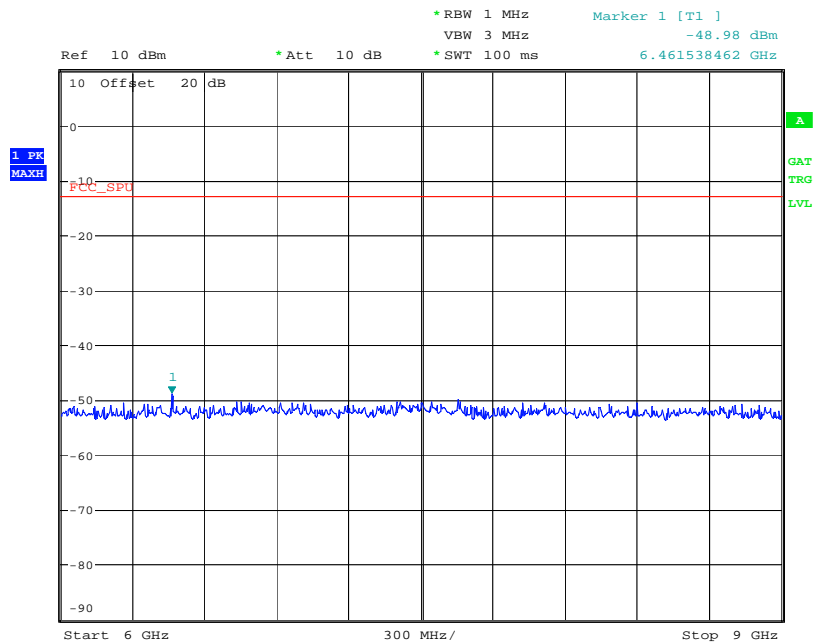
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 1



Date: 23.SEP.2008 09:15:02

3GHz – 6GHz

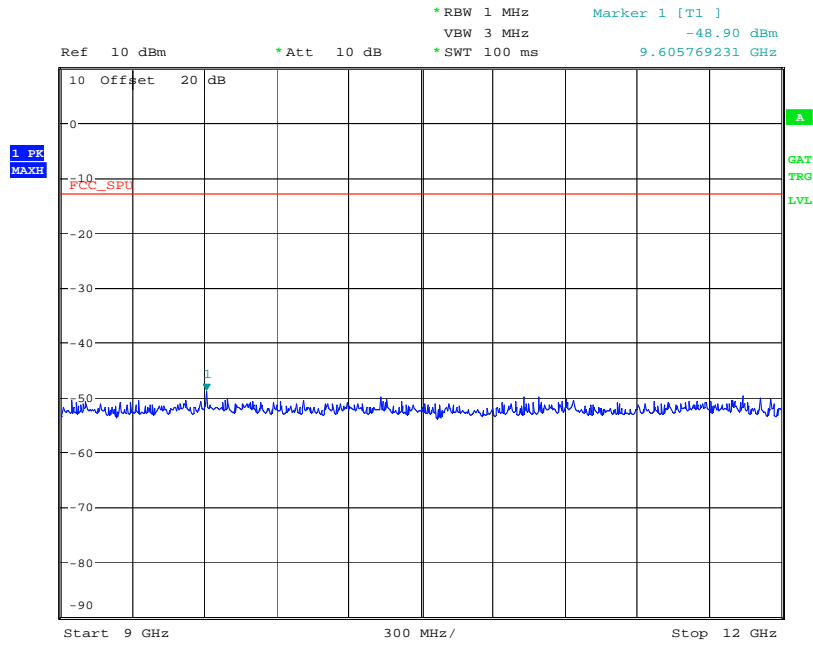


Date: 23.SEP.2008 09:15:20

6GHz – 9GHz

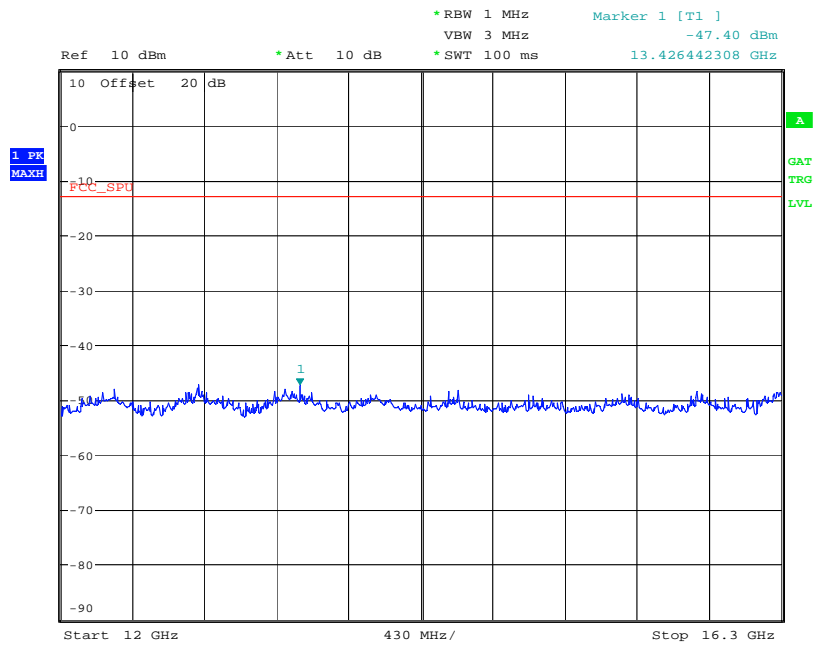
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 1



Date: 23.SEP.2008 09:15:32

9GHz – 12GHz

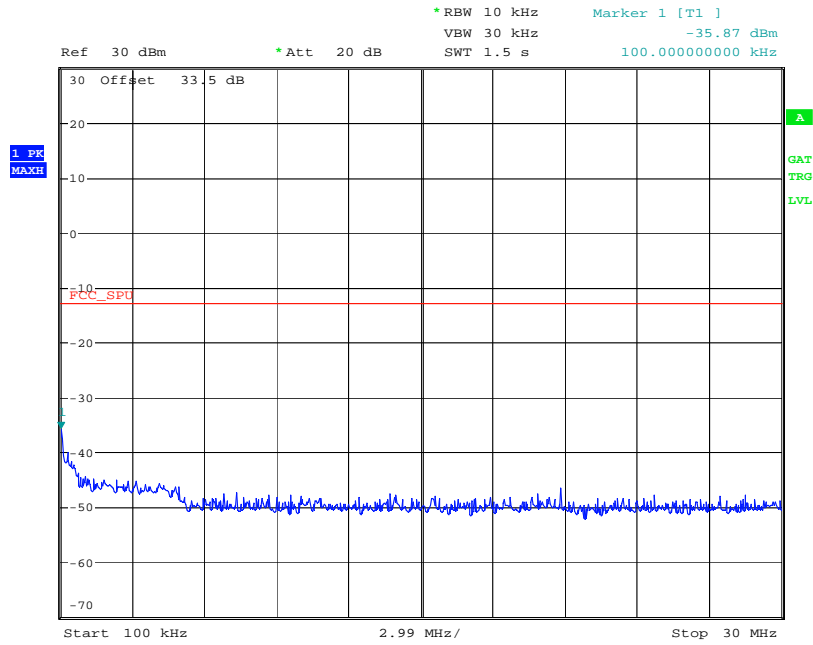


Date: 23.SEP.2008 09:16:02

12GHz – 16.3GHz

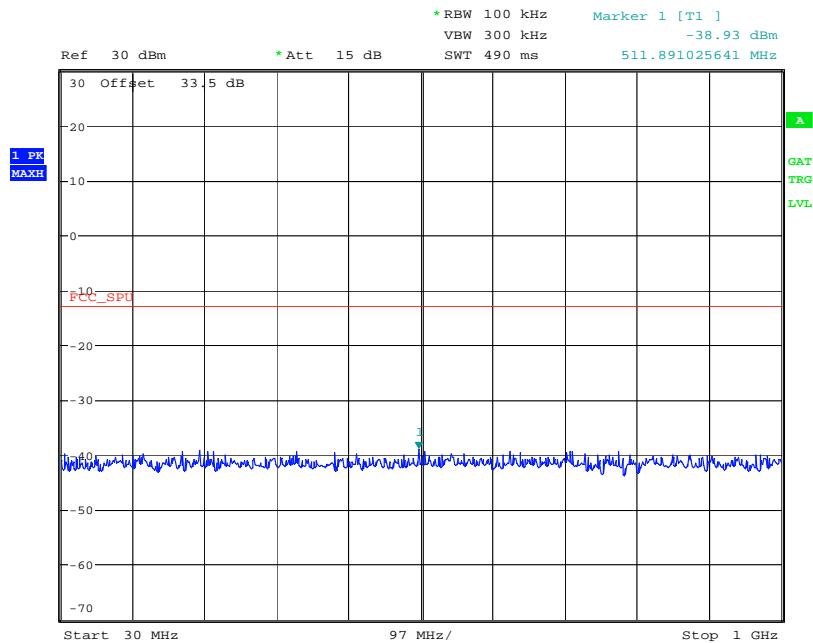
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 240



Date: 22.SEP.2008 14:41:25

100 kHz – 30MHz

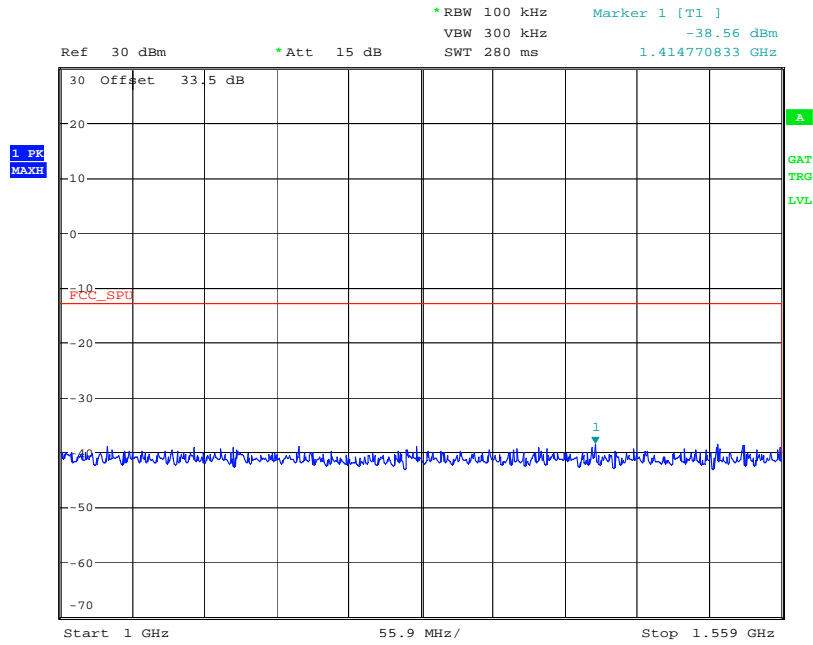


Date: 22.SEP.2008 14:42:19

30MHz – 1000MHz

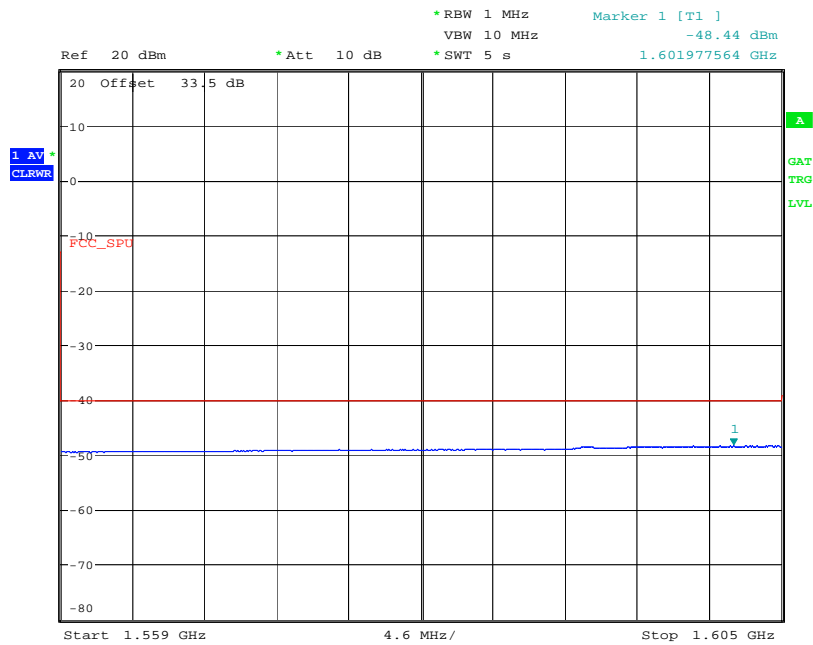
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 240



Date: 22.SEP.2008 14:42:49

1000MHz – 1559MHz

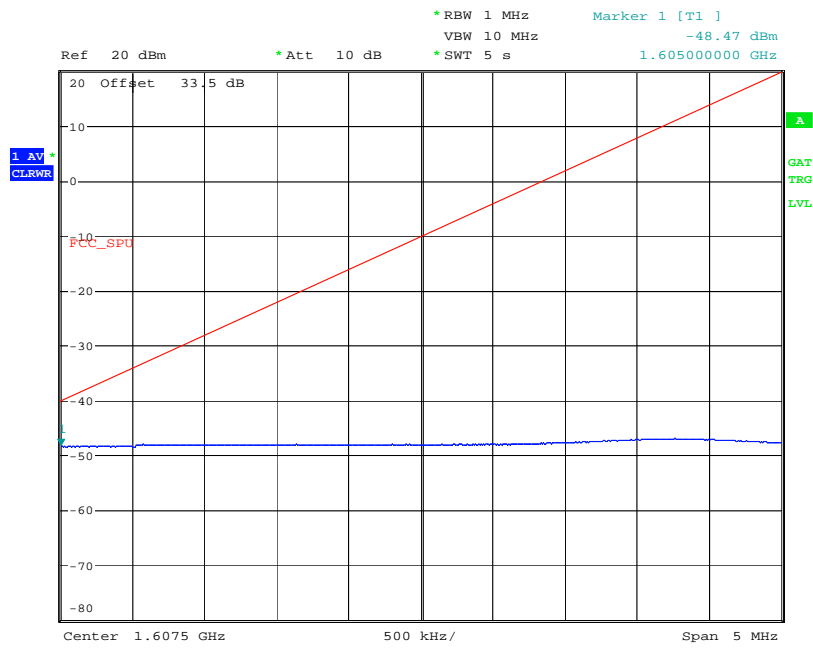


Date: 22.SEP.2008 14:52:58

1559MHz – 1605MHz

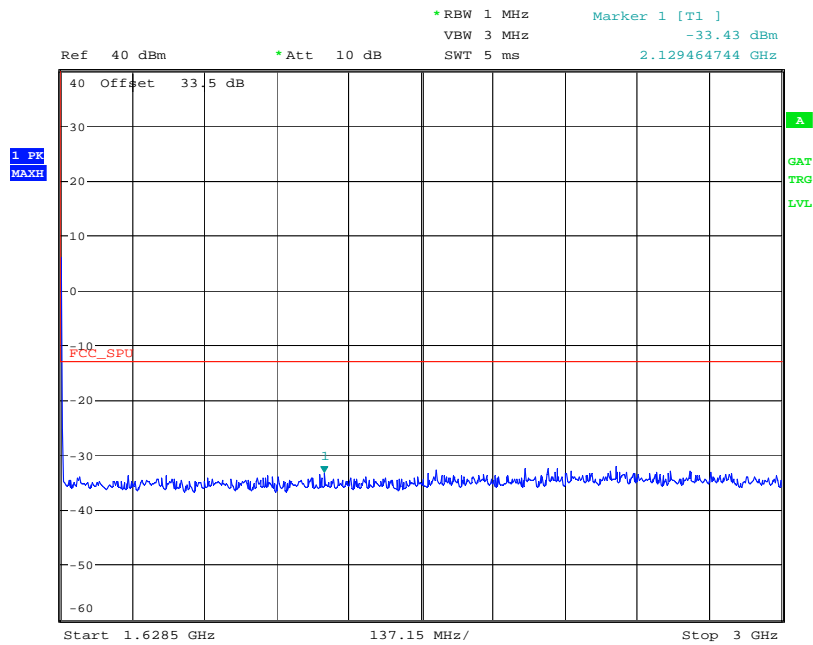
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 240



Date: 22.SEP.2008 14:56:01

1605MHz – 1610MHz

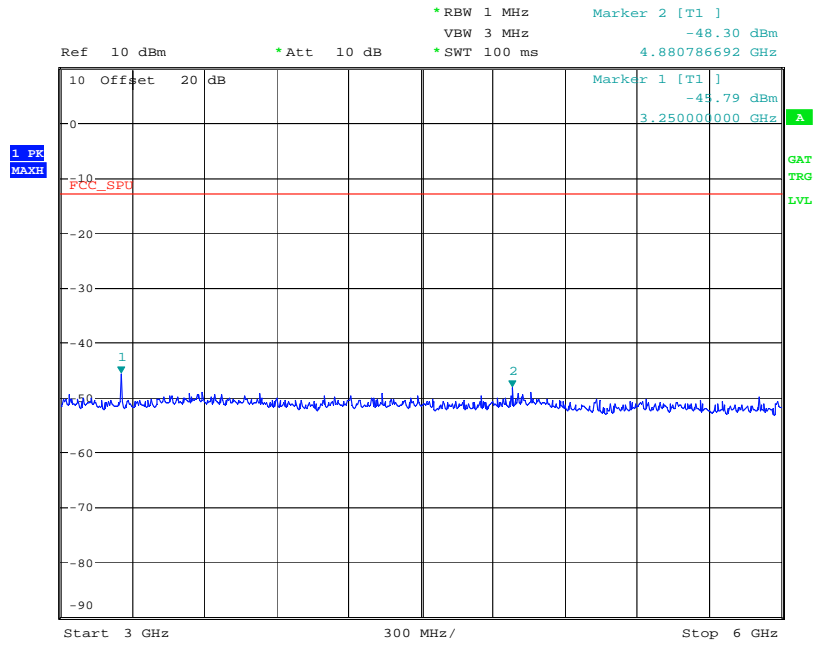


Date: 22.SEP.2008 14:58:12

1626.5MHz – 3000MHz

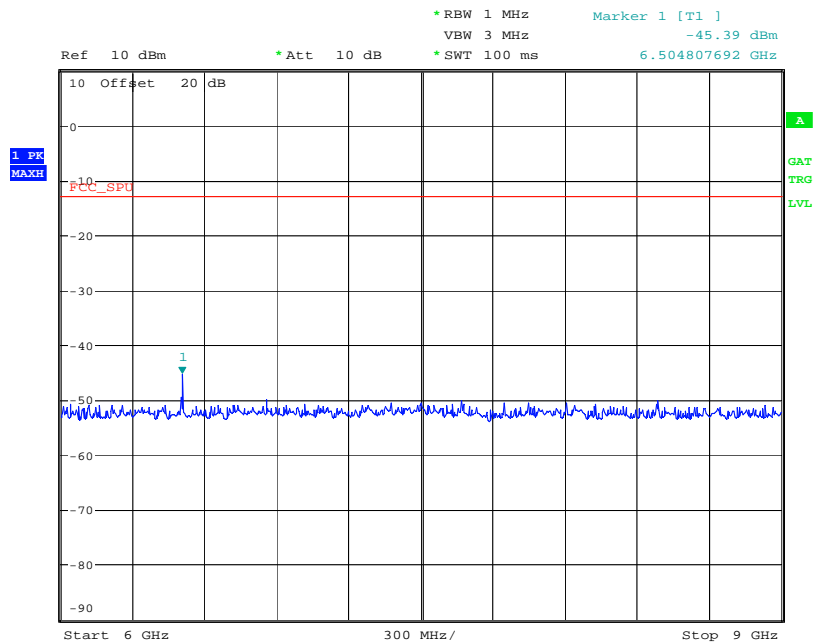
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 240



Date: 23.SEP.2008 09:13:25

3GHz – 6GHz

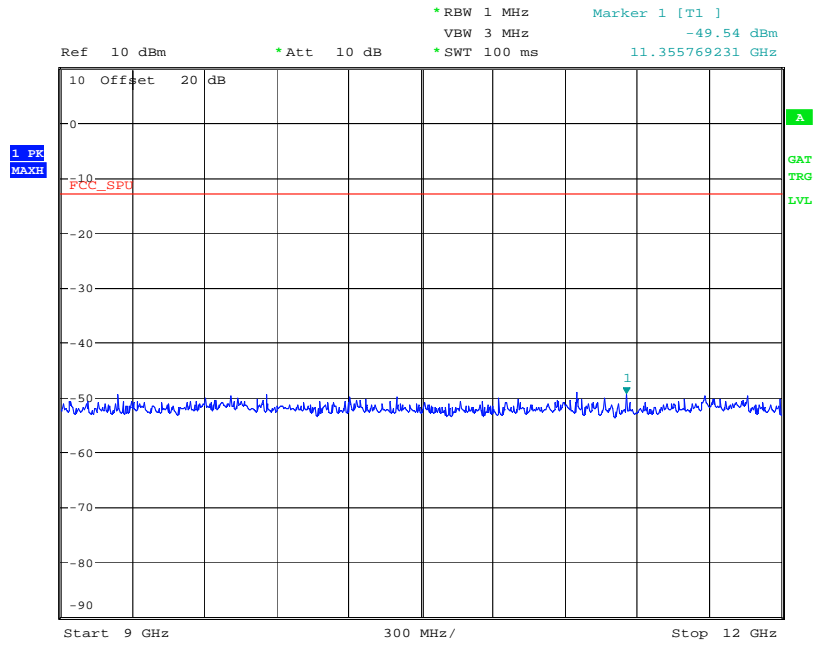


Date: 23.SEP.2008 09:13:39

6GHz – 9GHz

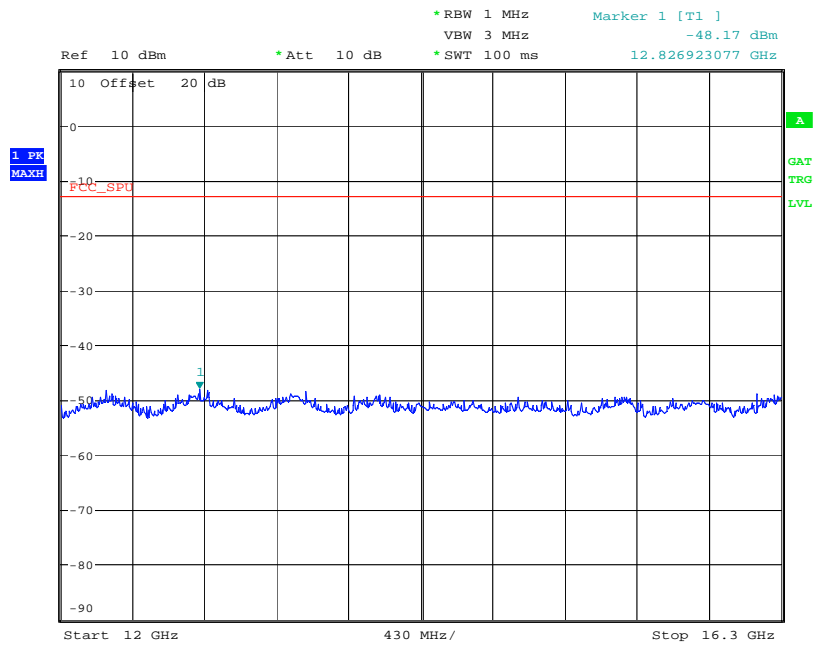
TRANSMITTER SPURIOUS EMISSIONS – Conducted

Channel 240



Date: 23.SEP.2008 09:14:05

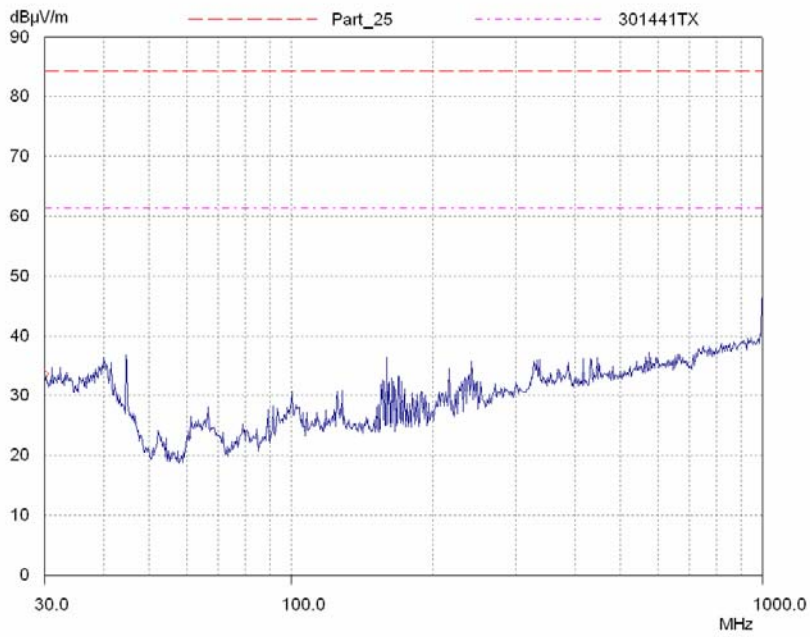
9GHz – 12GHz



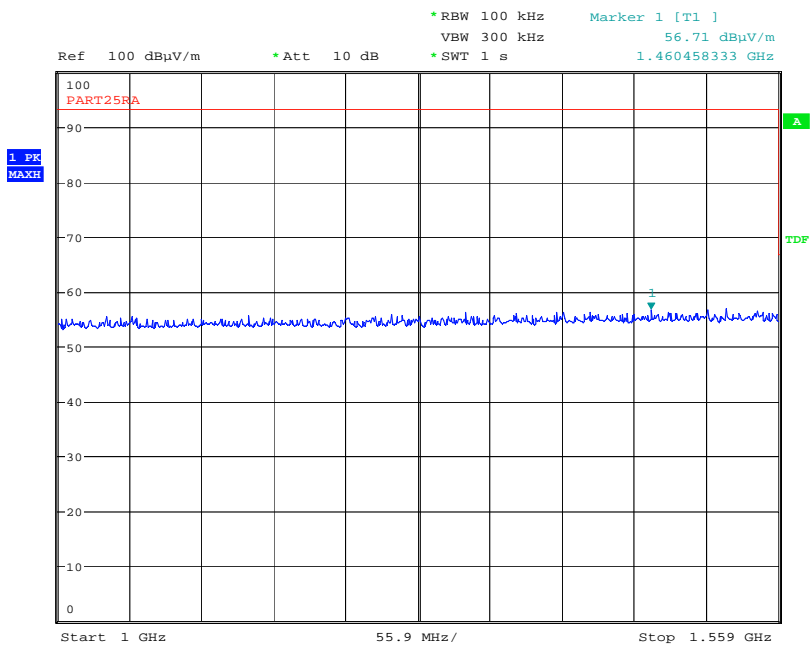
Date: 23.SEP.2008 09:14:22

12GHz – 16.3GHz

ANNEX I
TRANSMITTER SPURIOUS EMISSIONS – Radiated



30MHz – 1000MHz

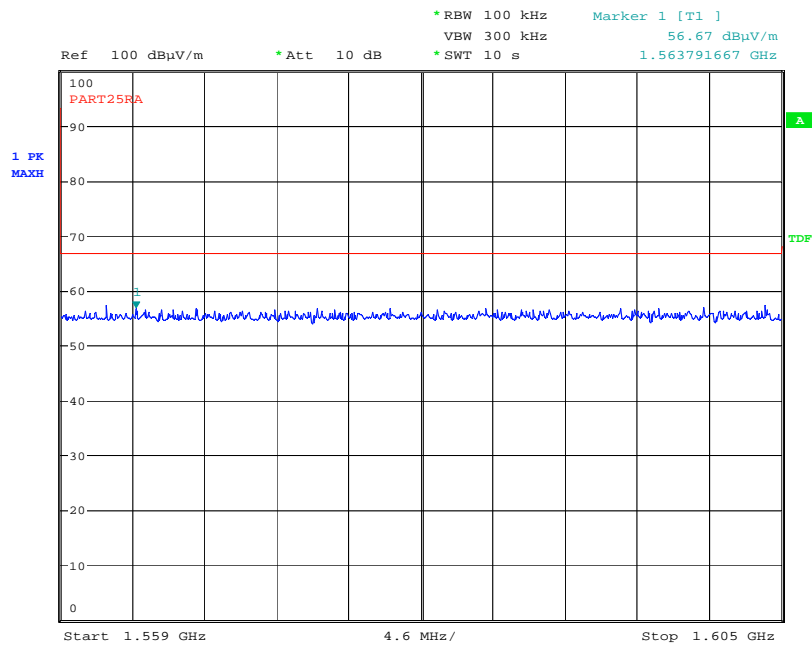


Date: 16.SEP.2008 13:15:57

1000MHz – 1559MHz

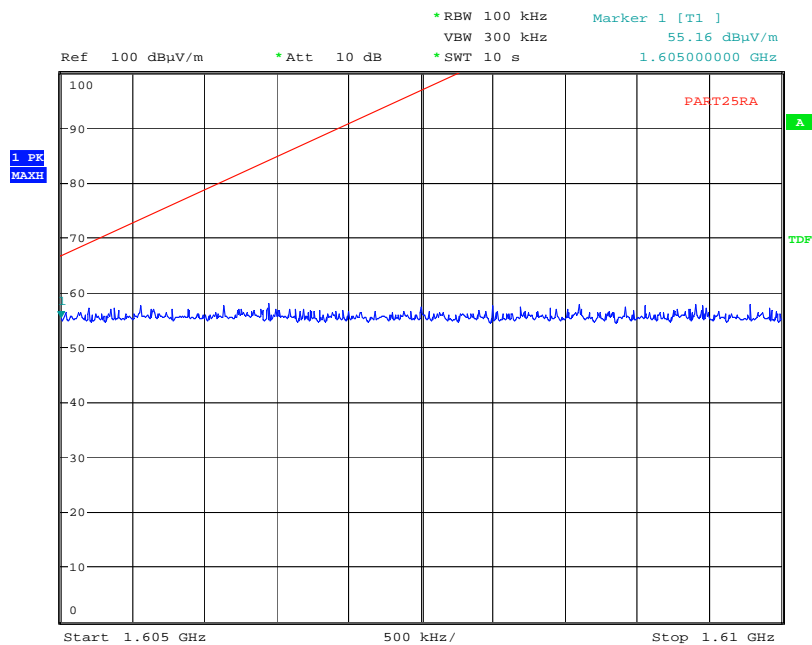
TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 1



Date: 16.SEP.2008 13:16:51

1559MHz – 1605MHz

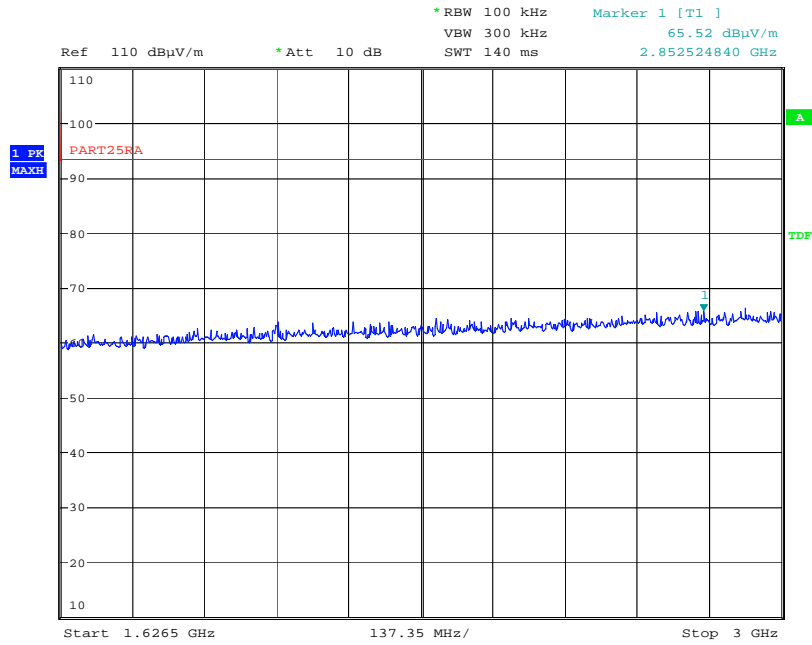


Date: 16.SEP.2008 13:17:36

1605MHz – 1610MHz

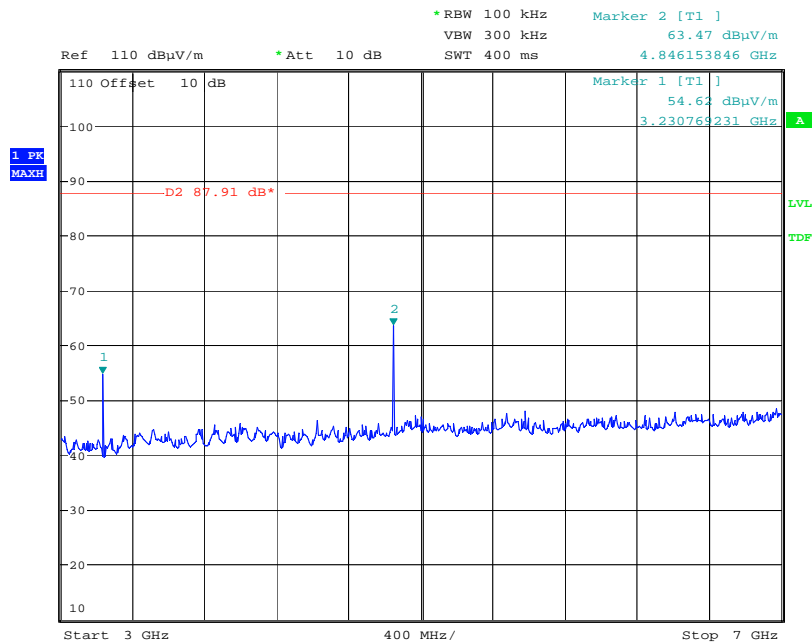
TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 1



Date: 16.SEP.2008 13:18:05

1626.5MHz – 3000MHz

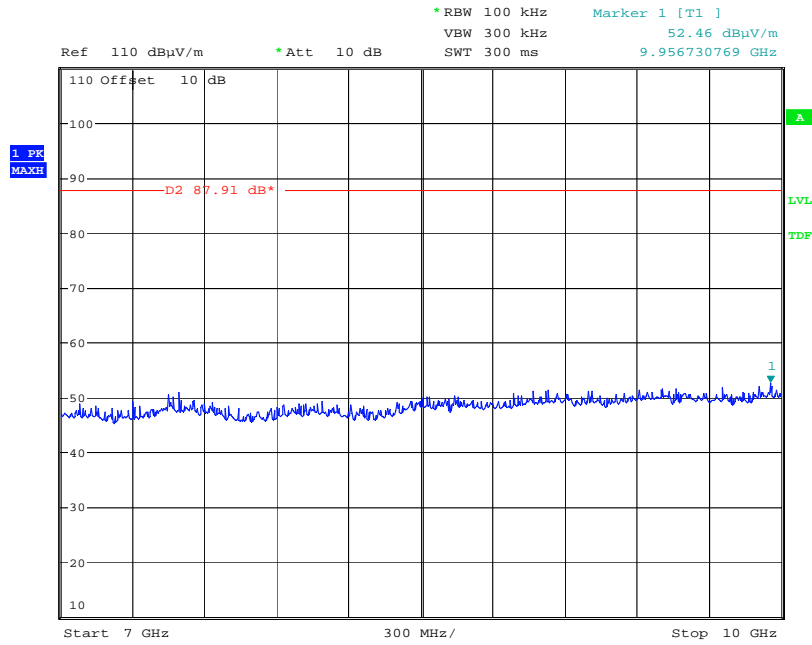


Date: 16.SEP.2008 14:11:15

3GHz – 7GHz

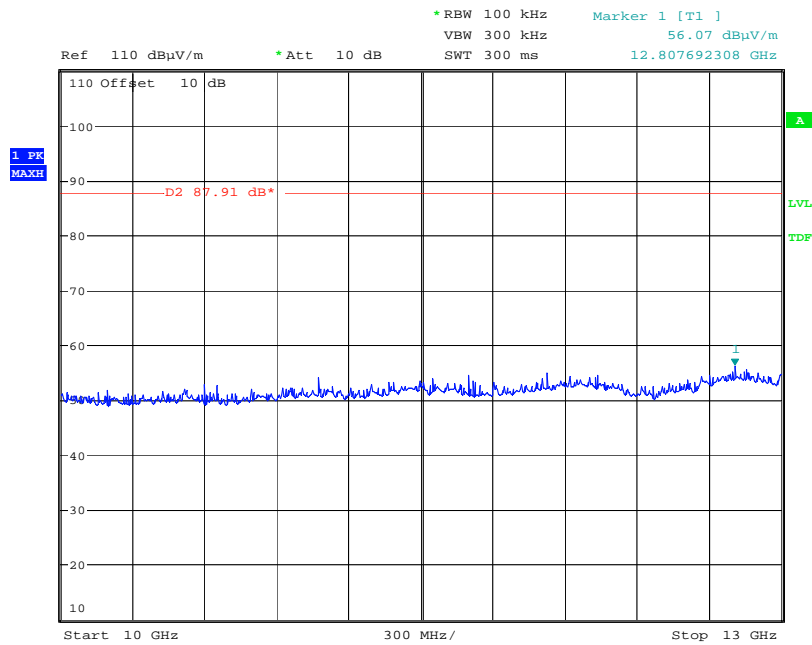
TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 1



Date: 16.SEP.2008 14:11:34

7GHz – 10GHz

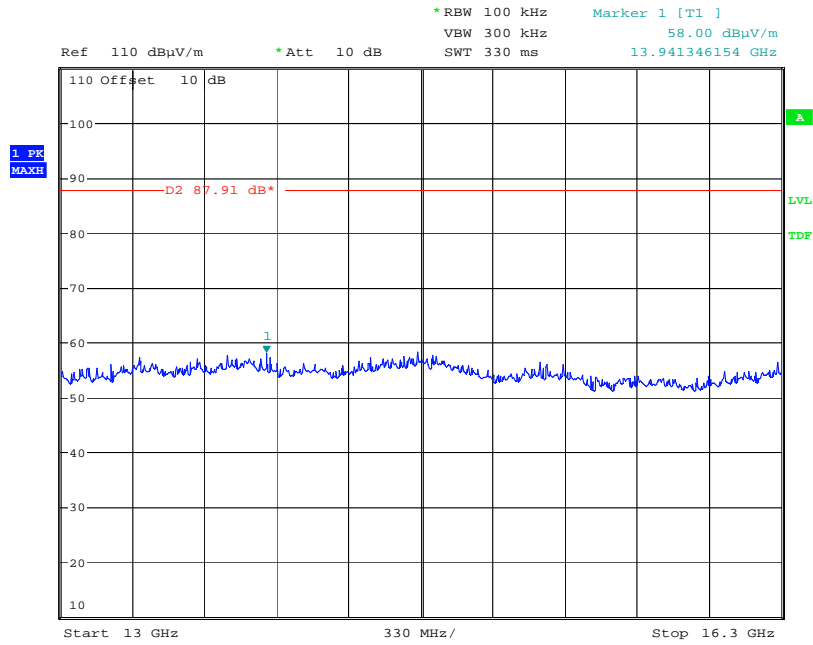


Date: 16.SEP.2008 14:11:49

10GHz – 13GHz

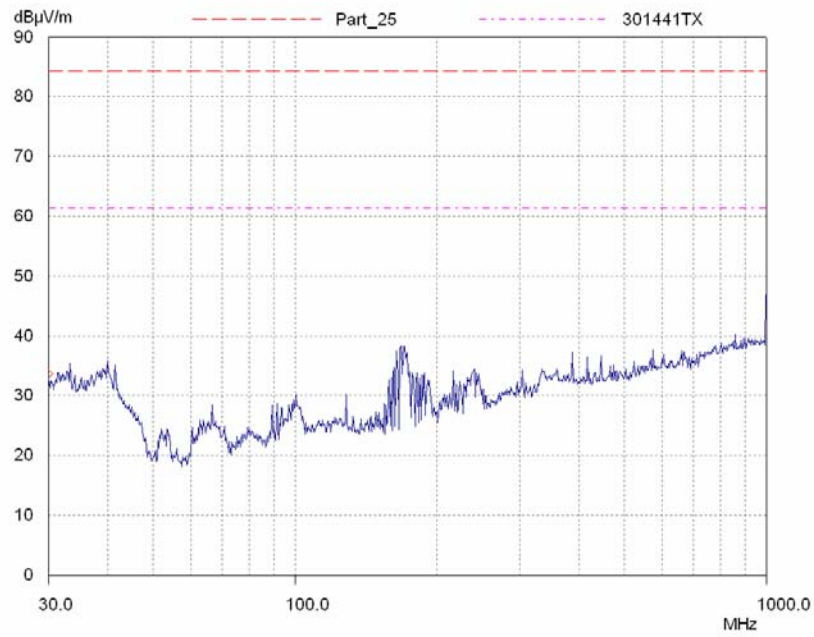
TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 1

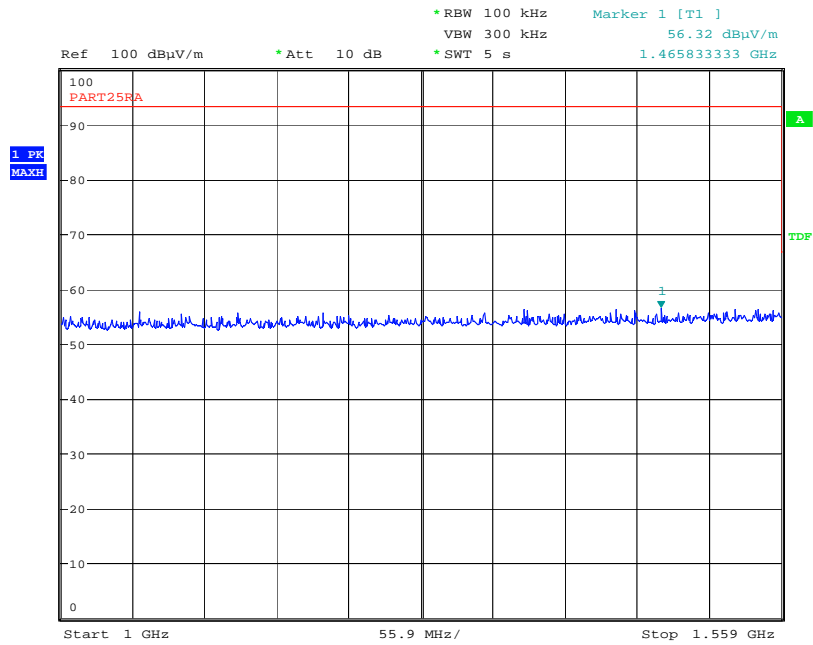


Date: 16.SEP.2008 14:12:06

13GHz – 16.3GHz



30MHz – 1000MHz

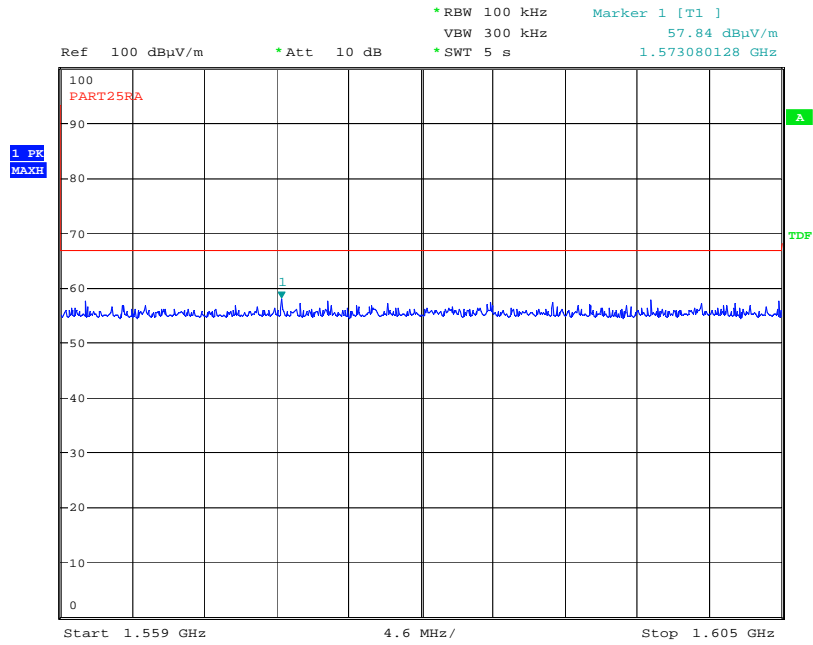


Date: 16.SEP.2008 13:36:43

1000MHz – 1559MHz

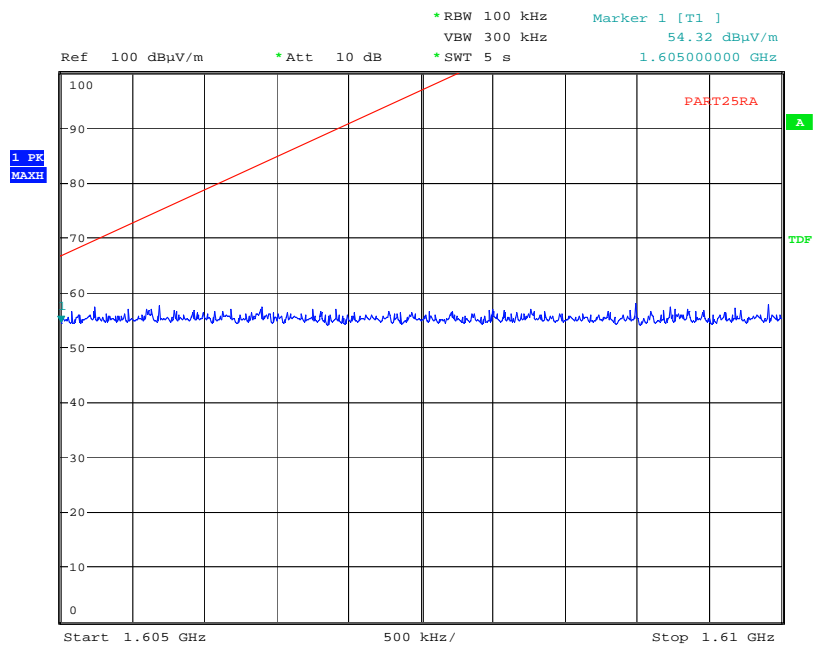
TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 240



Date: 16.SEP.2008 13:35:07

1559MHz – 1605MHz

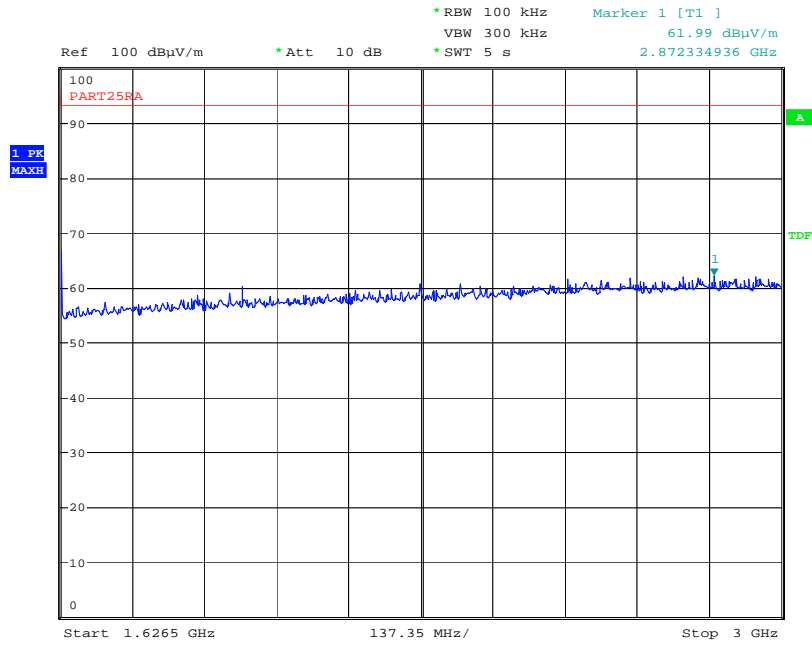


Date: 16.SEP.2008 13:36:17

1605MHz – 1610MHz

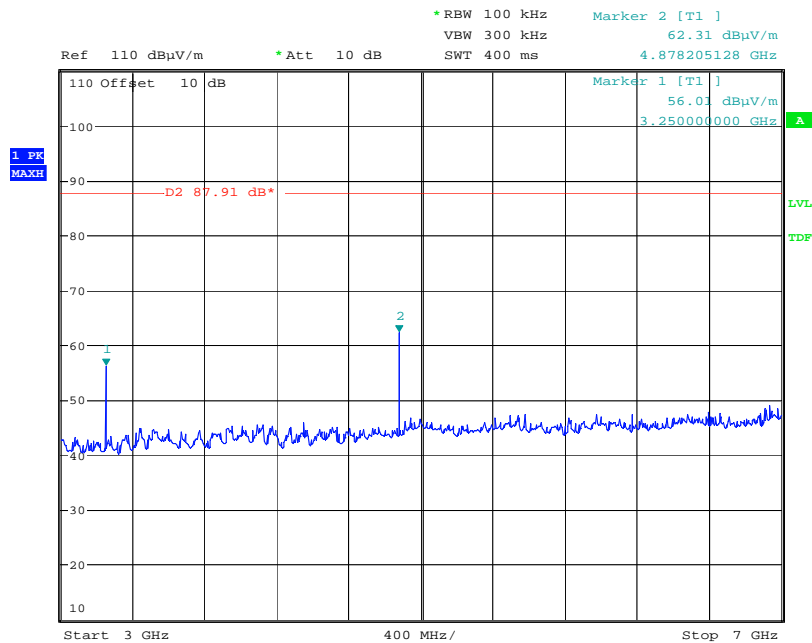
TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 240



Date: 16.SEP.2008 13:37:39

1626.5MHz – 3000MHz

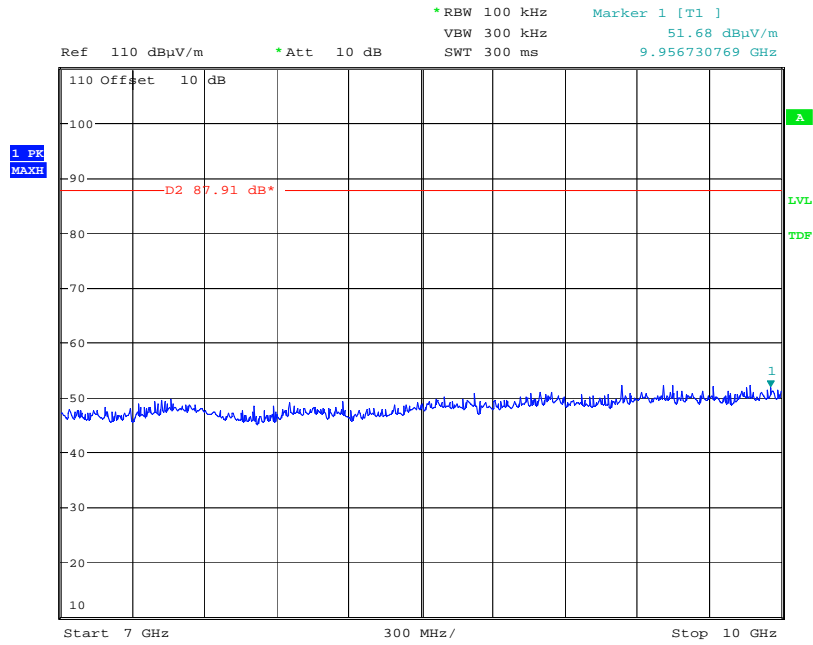


Date: 16.SEP.2008 14:07:57

3GHz – 7GHz

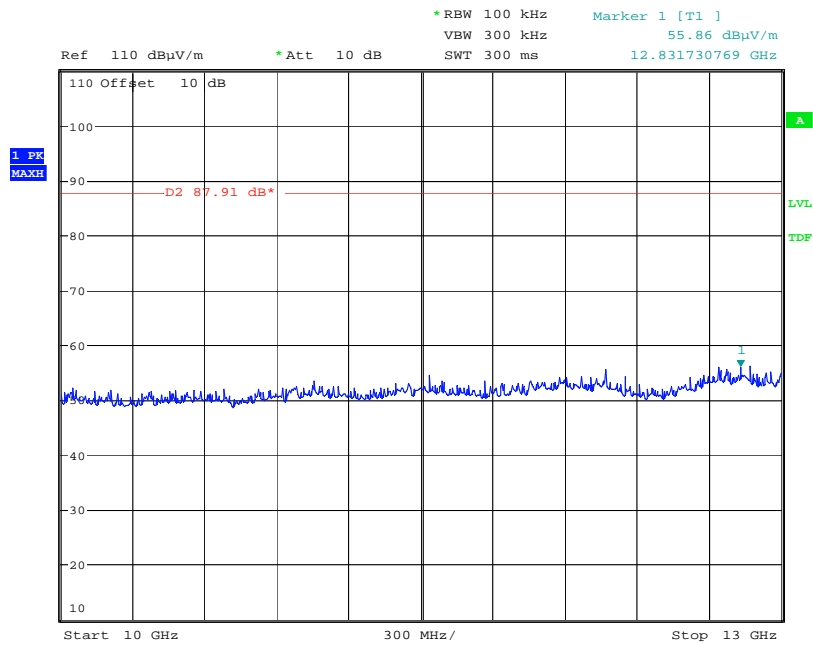
TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 240



Date: 16.SEP.2008 14:07:37

7GHz – 10GHz

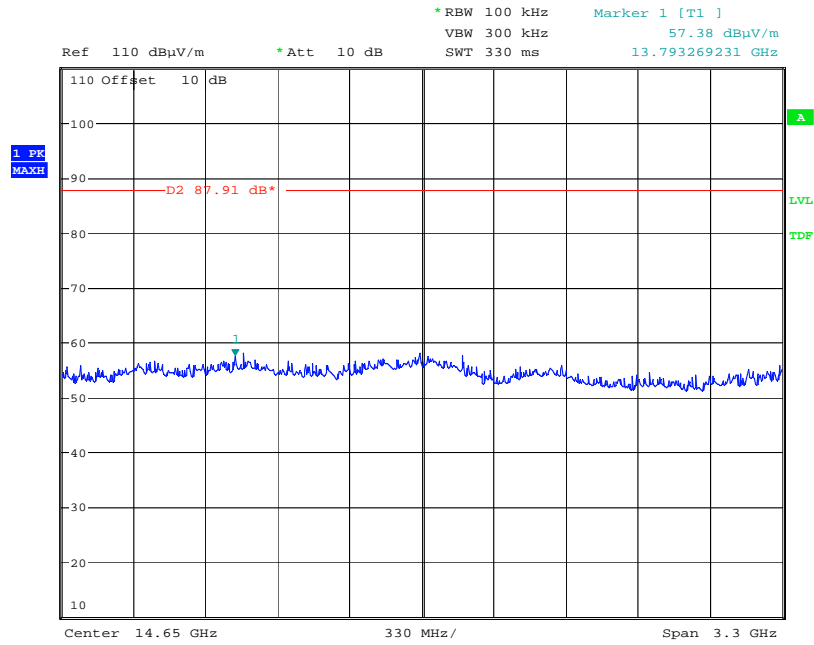


Date: 16.SEP.2008 14:07:21

10GHz – 13GHz

TRANSMITTER SPURIOUS EMISSIONS – Radiated

Channel 240

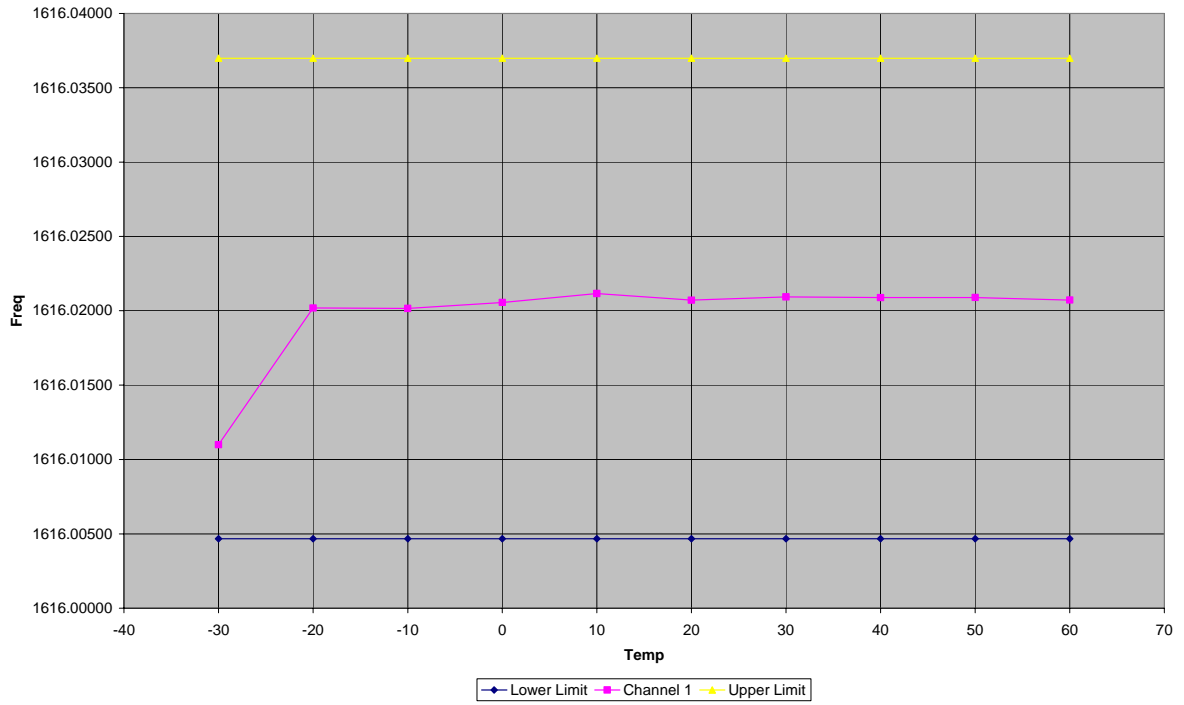


Date: 16.SEP.2008 14:07:08

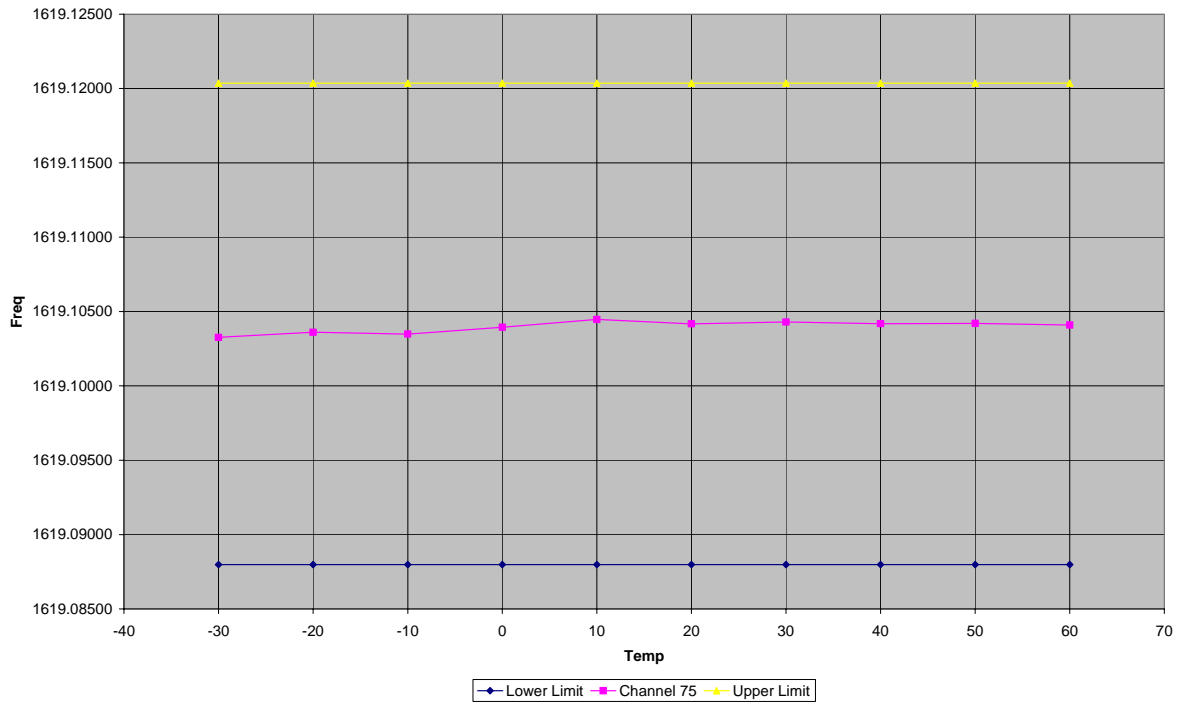
13GHz – 16.3GHz

ANNEX J
FREQUENCY STABILITY – Temperature

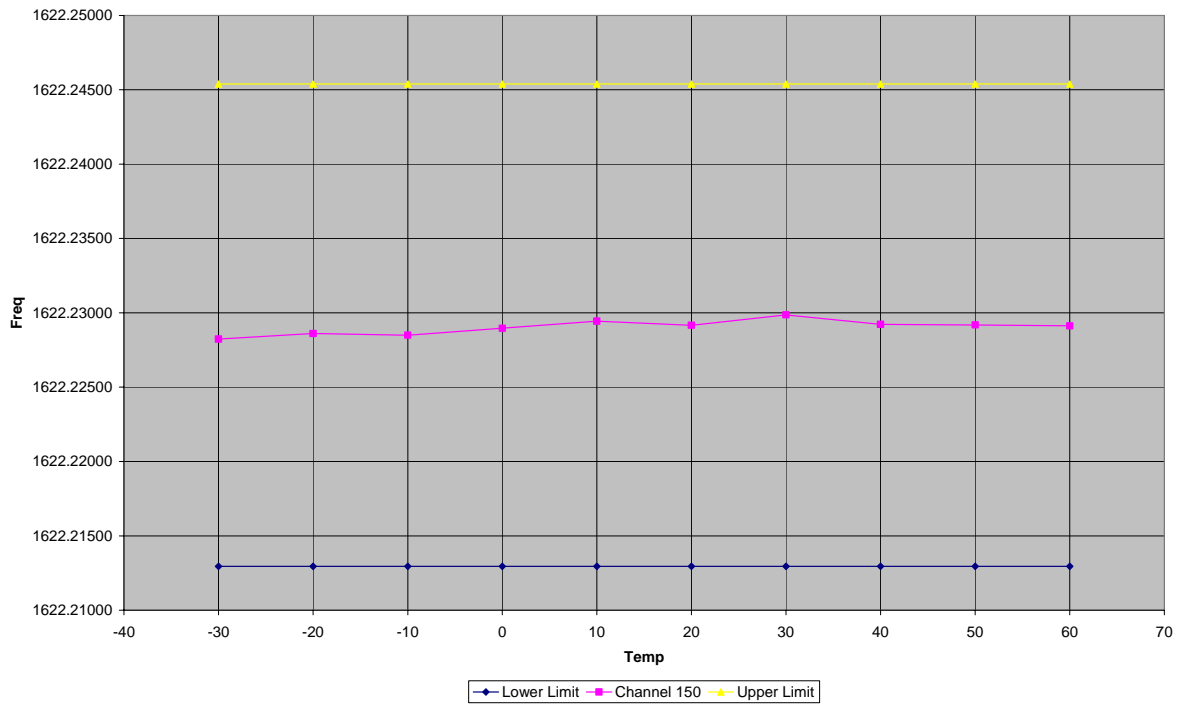
Channel 1 Frequency Stability - Temperature



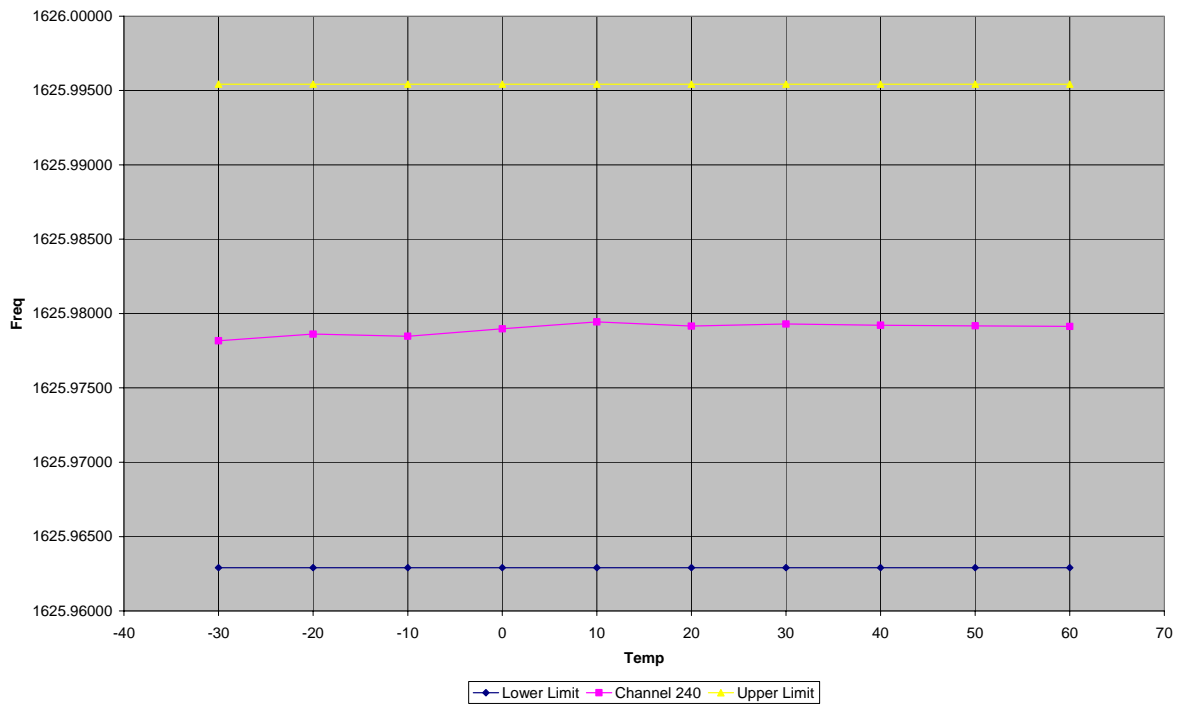
Channel 75 Frequency Stability - Temperature



Channel 150 Frequency Stability - Temperature

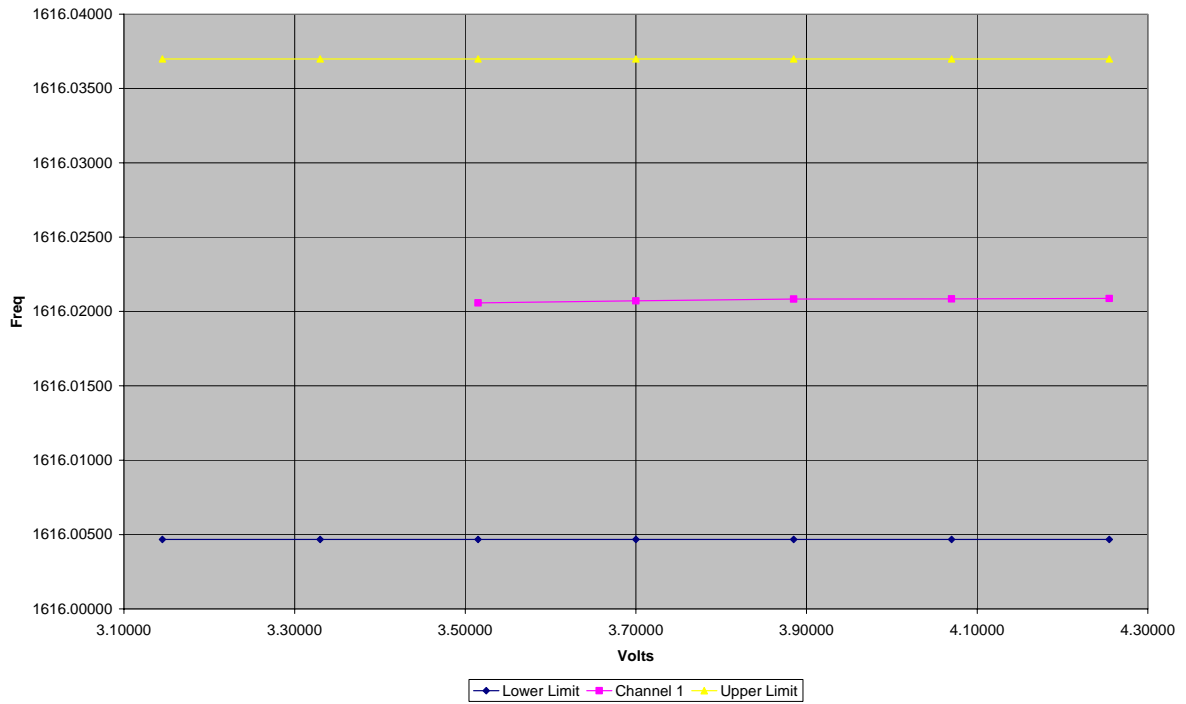


Channel 240 Frequency Stability - Temperature



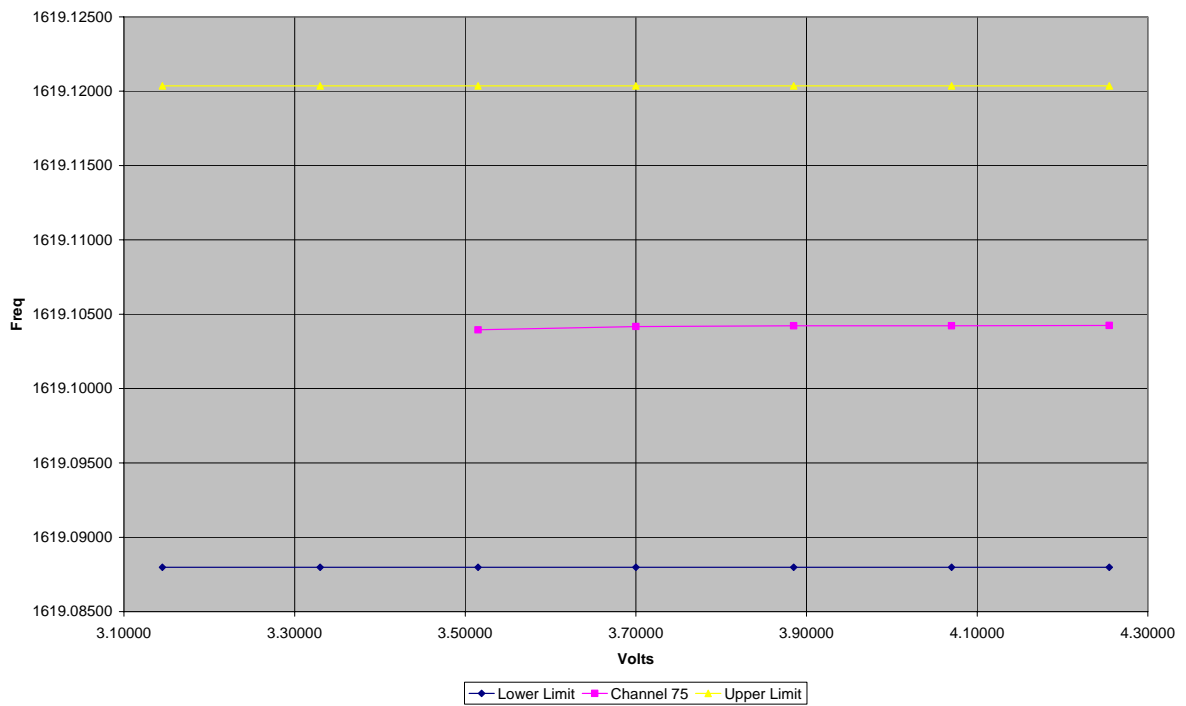
ANNEX K
FREQUENCY STABILITY – Voltage

Channel 1 Frequency Stability - Voltage



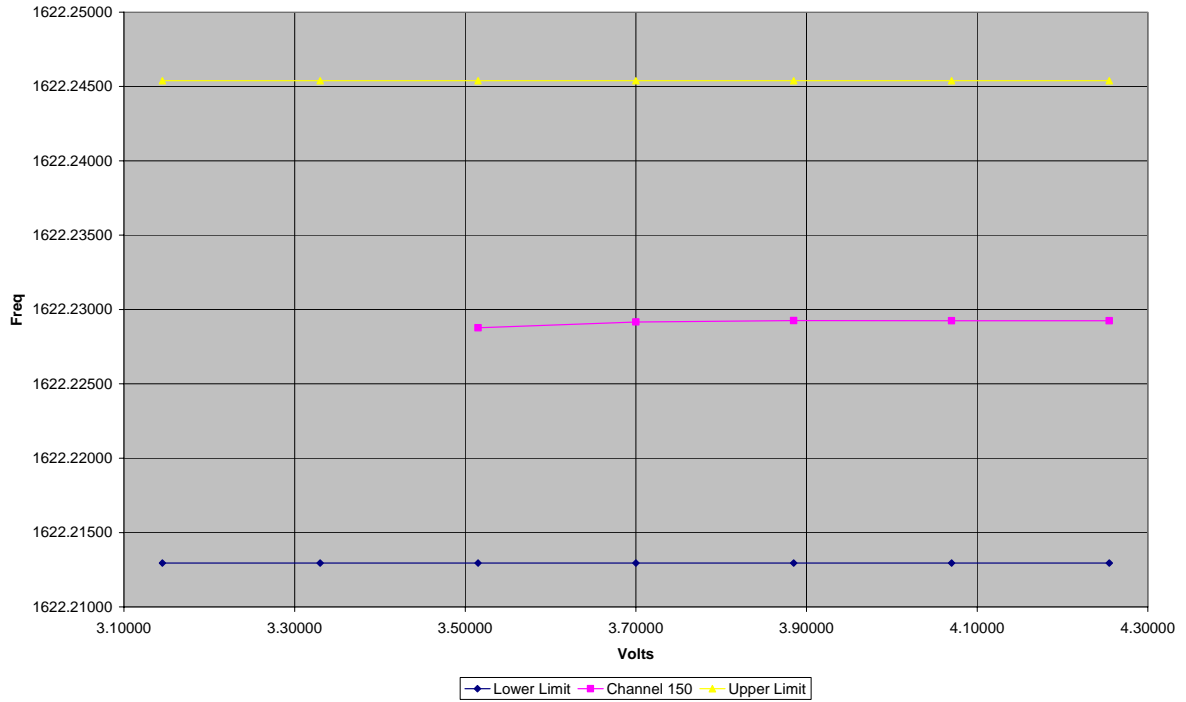
Note:- EUT Ceases transmission below 95 % of Vnom

Channel 75 Frequency Stability - Voltage



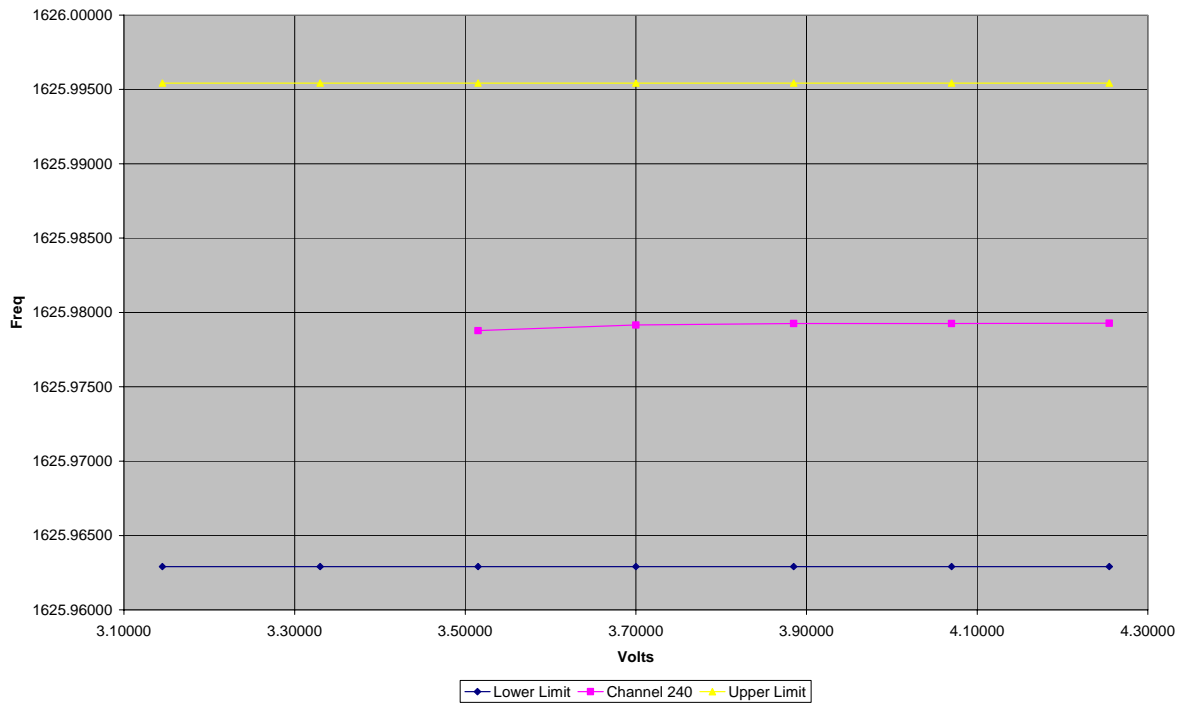
Note:- EUT Ceases transmission below 95 % of Vnom

Channel 150 Frequency Stability - Voltage



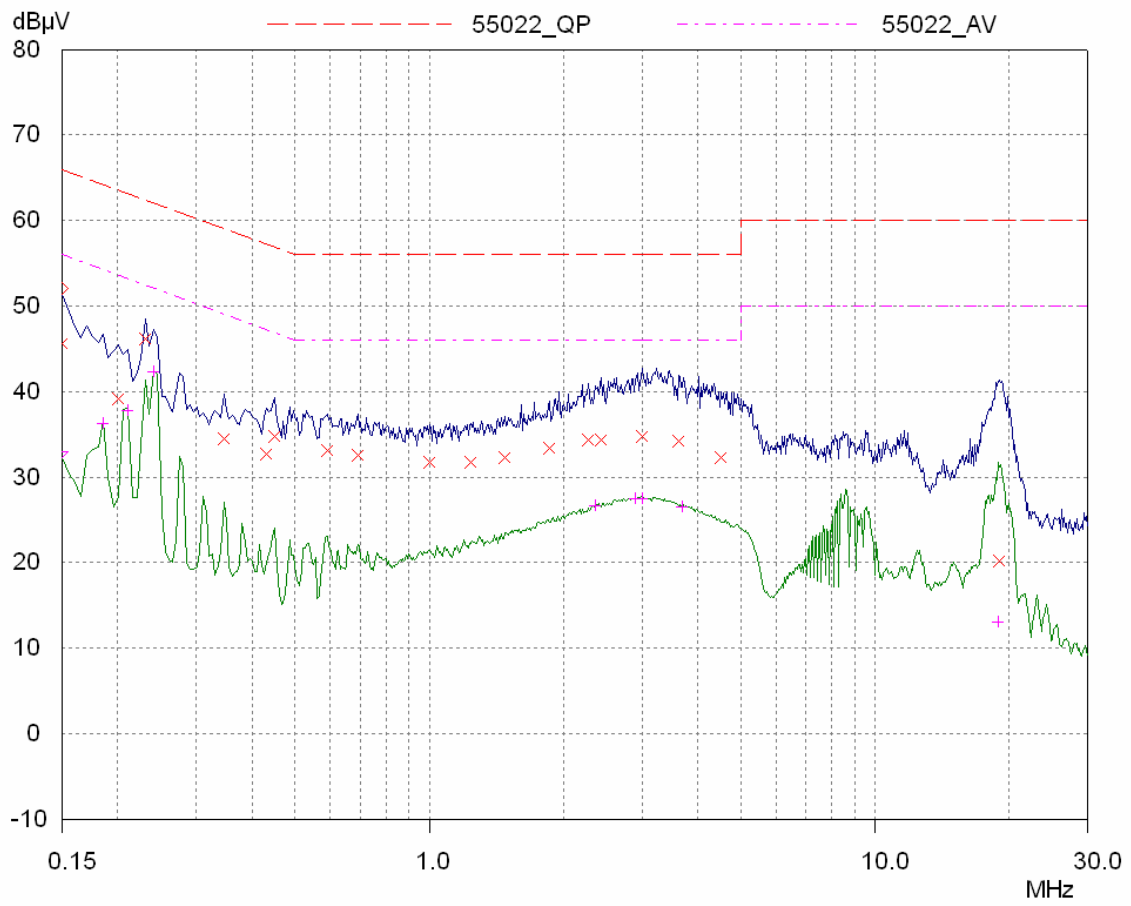
Note:- EUT Ceases transmission below 95 % of Vnom

Channel 240 Frequency Stability - Voltage



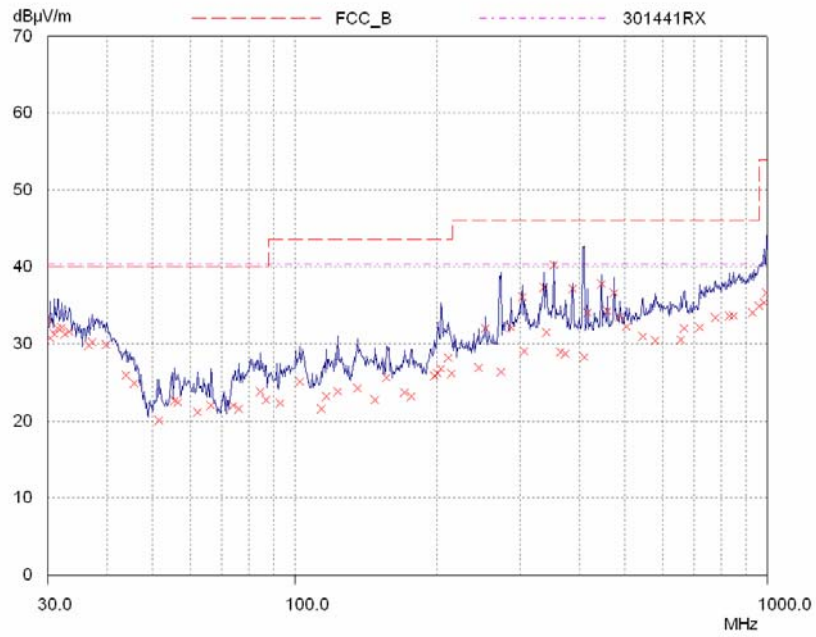
Note:- EUT Ceases transmission below 95 % of Vnom

ANNEX L
AC POWERLINE CONDUCTION

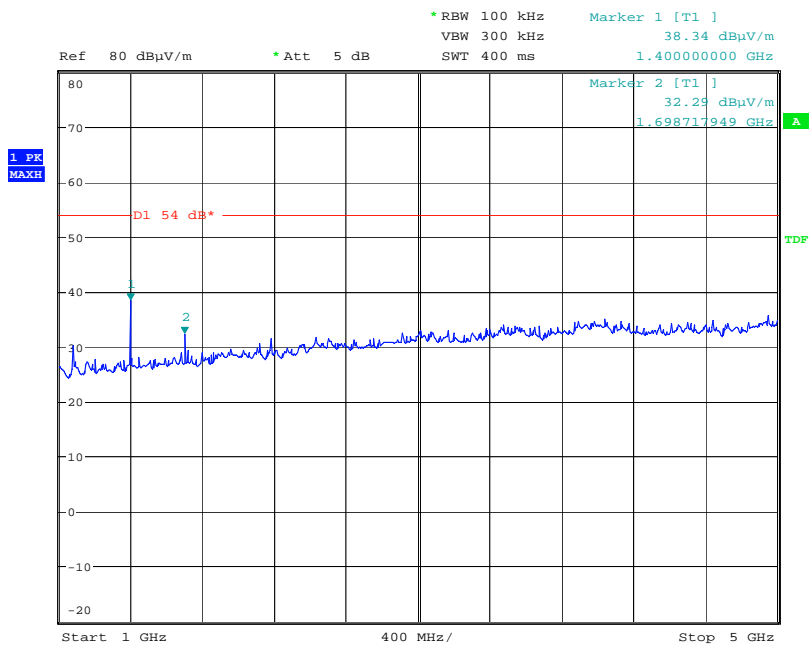


ANNEX M

UNINTENTIONAL TRANSMITTER SPURIOUS EMISSIONS – Radiated

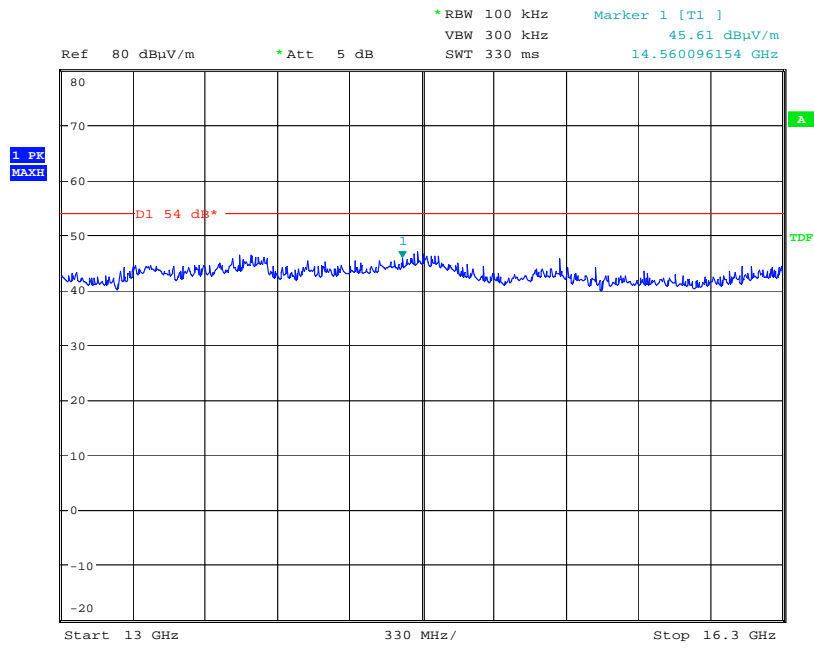


30MHz – 1000MHz



Date: 16.SEP.2008 11:55:31

1GHz – 5GHz



Date: 16.SEP.2008 11:57:14

13GHz – 16.3GHz