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**REPORT ON THE CERTIFICATION TESTING OF A
NEXTGEN TECHNOLOGY
VENTURI MINI IN CAR MULTI MEDIA DEVICE
WITH RESPECT TO
THE FCC RULES CFR 47, PART 15.239 & 15.247 May 2007
INTENTIONAL RADIATOR SPECIFICATION**



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INTENTIONAL RADIATOR SPECIFICATION**

TEST DATE: 21st September – 12th October 2007

TESTED BY: S HODGKINSON

APPROVED BY: J CHARTERS
RADIO SECTION
LEADER

DATE: 2nd November 2007

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MEASUREMENT UNCERTAINTY	N	
Notes:		
1. Component failure during test	YES	<input type="checkbox"/>
	NO	<input checked="" 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.		
4. The contents of the attached applicants declarations and other supplied information are not covered by the scope of this laboratory's UKAS or FCC accreditations' and is provided in good faith.		



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CERTIFICATE OF CONFORMITY & COMPLIANCE

FCC IDENTITY: VJPFNVMS4001

PURPOSE OF TEST: Certification

TEST SPECIFICATION: FCC RULES CFR 47, Part 15.239 & 15.247 May 2007

TEST RESULT: Compliant to Specification

EQUIPMENT UNDER TEST: Venturi Multi Media In Car Device

ITU: EMISSION CODE: 711K5F7D (Bluetooth)
193K9F3E (FM modulator)

EQUIPMENT TYPE: Bluetooth & FM modulator

PRODUCT USE: In Vehicle entertainment and communications

CARRIER EMISSION: 0.00327 Watts e.i.r.p. Bluetooth
45.7dBµV/m FM modulator

ANTENNA TYPE: Integral

ALTERNATIVE ANTENNA: Not Applicable

BAND OF OPERATION: 2400 MHz – 2483.5 MHz (Bluetooth)
88.1 MHz – 107.9MHz (FM modulator)

CHANNEL SPACING: 1 MHz (Bluetooth)
100kHz (FM modulator)

NUMBER OF CHANNELS: 79 (Bluetooth)
198 (FM modulator)

FREQUENCY GENERATION: SAW Resonator ☐ Crystal ☐ Synthesiser ☒

MODULATION METHOD: FHSS ☒ DSSS ☐ Other ☒

POWER SOURCE(s): +12.0Vdc Vehicle supply

TEST DATE(s): 21st September – 12th October 2007

ORDER No(s): PTC76452

APPLICANT: Sony Tech Approval Services

ADDRESS: Sony Tech Approval Services
Pencoed Technology Centre
Pencoed
CV35 5HZ

MANUFACTURER: NextGen Technology

TESTED BY: _____ S HODGKINSON

APPROVED BY: _____ J CHARTERS
RADIO SECTION
LEADER

APPLICANT'S SUMMARY

EQUIPMENT UNDER TEST (EUT):	Venturi mini In Car Multi Media Device
EQUIPMENT TYPE:	Bluetooth & FM modulator
PURPOSE OF TEST:	Certification
TEST SPECIFICATION(s):	FCC RULES CFR 47, Part 15.239 & 15.247 May 2007
TEST RESULT:	COMPLIANT Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
APPLICANT'S CATEGORY:	MANUFACTURER <input type="checkbox"/> IMPORTER <input type="checkbox"/> DISTRIBUTOR <input type="checkbox"/> TEST HOUSE <input type="checkbox"/> AGENT <input checked="" type="checkbox"/>
APPLICANT'S ORDER No(s):	PTC76452
APPLICANT'S CONTACT PERSON(s):	Mr J Tzimenakis
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APPLICANT:	Sony Tech Approval Services
ADDRESS:	Sony Tech Approval Services Pencoed Technology Centre Pencoed CV35 5HZ
TEL:	01656 - 867563
FAX:	01656 - 861460
MANUFACTURER:	NextGen Technology
ADDRESS:	Technium Kings Road Swansea Waterfront Swansea SA1 8PJ
TEL:	01792 485556
EUT(s) COUNTRY OF ORIGIN:	United Kingdom
TEST LABORATORY:	TRL Compliance Ltd
UKAS ACCREDITATION No:	0728
TEST DATE(s):	21 st September – 12 th October 2007
TEST REPORT No:	RU1331/8164

EQUIPMENT TEST / EXAMINATIONS REQUIRED

1.	TEST/EXAMINATION	RULE PART	DETECTOR	APPLICABILITY
	Intentional Emission Frequency:	15.247 15.239	Peak peak	Yes
	Intentional Emission Field Strength:	15.239	Average	Yes
	Intentional Emission Band Occupancy:	15.247(a)1 15.239	Peak	Yes
	Intentional Emission EIRP (mW):	15.247(b)1	Peak	Yes
	Spurious Emissions – Conducted:	15.207	Quasi Peak Average	NO
	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) 15.239	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 : In Vehicle entertainment and communications
3. Temperatures: Ambient (Tnom) 17°C
4. Supply Voltages: Vnom +12.0Vdc Via Vehicle supply
Note: +12.0Vdc voltages are as stated above unless otherwise shown on the test report page
5. Equipment Category: Single channel []
Multi-channel [X]
6. Channel spacing: Narrowband []
Wideband [X]

TRANSMITTER TESTS

TRANSMITTER CARRIER FREQUENCY SEPARATION – CONDUCTED – Part 15.247(a)(1)

Ambient temperature	=	17°C
Relative humidity	=	60%
Conditions	=	Conducted –Radio Lab
Supply voltage	=	+12.0Vdc

Transmitter Carrier Frequency Separation (kHz)
990.38 kHz
Limit The channels should be separated by at least 25kHz or $\frac{2}{3}$ the 20dB bandwidth which ever is greater.

See spectrum analyser plot – Annex D
See note 1

Notes:

- 1 20dB Bandwidth of one carrier is 711.53 kHz therefore carrier frequency separation must be greater than 474.35kHz.
- 2 Conducted measurements were performed with a temporary antenna connector provided by the client.
- 3 For analyser setting see scan data annex D.

Test Method:

- 1 Test method as per 15.247 and public notice DA 00-705.
- 2 With the unit operating in hopping mode with maximum data rate a graphical plot of two adjacent channels was taken.
- 3 Delta marker function was used to measure the difference between the peak emissions of each channel.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ROHDE & SCHWARZ	FSU 46	200034	UH281	X
ATTENUATOR	BIRD	8304-100-N	N/A	222	X
CABLE	TRL	N/A	N/A	UH358	X

TRANSMITTER TESTS

TRANSMITTER 20dB BANDWIDTH – CONDUCTED – Part 15.247(a)(1)

Ambient temperature	=	17°C
Relative humidity	=	60%
Conditions	=	Conducted –Radio Lab
Supply voltage	=	+12.0Vdc

20dB Bandwidth (kHz)
711.53kHz
Limit >500kHz

See spectrum analyser plot – Annex E

Notes:

- 1 The EUT has hopping channels see annex E.
- 2 Conducted measurements were performed with a temporary antenna connector provided by the client.
- 3 For analyser setting see scan data annex E.

Test Method:

- 1 Test method as per 15.247 and public notice DA 00-705.
- 2 With the unit operating in hopping mode with maximum data rate.
- 3 The analyser centre frequency was tuned to the centre of a hopping channel.
- 4 The peak hold function was used to establish a 20dB band width level.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ROHDE & SCHWARZ	FSU 46	200034	UH281	X
ATTENUATOR	BIRD	8304-100-N	N/A	222	X
CABLE	TRL	N/A	N/A	UH358	X

TRANSMITTER TESTS

TRANSMITTER AVERAGE TIME OF OCCUPANCY – CONDUCTED – Part 15.247(a)(1)(iii)

Ambient temperature = 17°C
 Relative humidity = 60%
 Conditions = Conducted –Radio Lab
 Supply voltage = +12.0Vdc

Packet Width (µs)	Number of Transmissions in 31.6 Seconds	Average time of Occupancy (s)
269.23 µs	320	0.0861
Limit 0.4 seconds		

See spectrum analyser plot – Annex G

Notes:

- 1 Conducted measurements were performed with a temporary antenna connector provided by the client.
- 2 For analyser setting see scan data annex G.
- 3 Average time of occupancy within a period of 0.4 * number of hopping channels
- 4 Number of hopping channels = 79
- 5 $0.4 * 79 = 31.6$

Test Method:

- 1 As per 15.247 and Public Notice DA 00-705.
- 2 The analyser was tuned to the centre frequency of the hopping channel
- 3 With the analyser set to zero span a sweep of 31.62 seconds was performed. The number of transmission was recorded.
- 4 The sweep time was reduced to show the length of one transmission.
 The time occupancy of the system was tested on a single carrier. The maximum packet length was measured and multiplied by the number of transmissions within a 31.6 second period. The result was noted as being the average time of occupancy.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ROHDE & SCHWARZ	FSU 46	200034	UH281	X
ATTENUATOR	BIRD	8304-100-N	N/A	222	X
CABLE	TRL	N/A	N/A	UH358	X

TRANSMITTER TESTS

TRANSMITTER PEAK OUTPUT POWER – CONDUCTED – Part 15.247(b)(1)

Ambient temperature = 17°C
Relative humidity = 60%
Conditions = Conducted –Radio Lab
Supply voltage = +12.0Vdc

Channel Frequency	Measured Level (dBm)	Cable & Attenuator Loss (dB)	Antenna Gain (dBi)	Transmitter Peak Power Output (dBm)	Transmitter Peak Power Output (Watts)	Limit (Watts)
Bottom	-5.39	10.4	0	5.01	0.00316	0.125
Middle	-5.25	10.4	0	5.15	0.00327	0.125
Top	-5.62	10.4	0	4.78	0.00300	0.125

See spectrum analyser plot – Annex H

Notes:

- 1 Number of hopping channels employed is 79 see annex H.
- 2 Conducted measurements were performed with a temporary antenna connector provided by the client.
- 3 For analyser setting see scan data annex H.

Test Method:

- 1 As per 15.247 and Public Notice DA 00-705.
- 2 The analyser was centered on a hopping channel with peak hold enabled.
- 3 Marker to peak function was used to find the peak emission.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ROHDE & SCHWARZ	FSU 46	200034	UH281	X
ATTENUATOR	BIRD	8304-100-N	N/A	222	X
CABLE	TRL	N/A	N/A	UH358	X

TRANSMITTER TESTS

TRANSMITTER BAND EDGE EMISSIONS – CONDUCTED – Part 15.247(c)

Ambient temperature = 19°C
 Relative humidity = 66%
 Conditions = Conducted –Radio Lab
 Supply voltage = +12.0Vdc

Test Result

Measured as compliant see analyser plots

Channel Frequency	EUT Operation	Emission Frequency (MHz)	Emission Level (dBC)	Limit (dBC)
Bottom	Modulated Carrier	2402.033 MHz	No significant emissions within 20dB of the limit	20
All	Hopping	2402.045 MHz	No significant emissions within 20dB of the limit	20
Top	Modulated Carrier	2480.001 MHz	No significant emissions within 20dB of the limit	20
All	Hopping	2480.158 MHz	No significant emissions within 20dB of the limit	20

See spectrum analyser scan plots – Annex I

Notes:

- 1 The EUT was set to bottom operating frequency only with a modulated carrier.
- 2 The EUT was set to top operating frequency only with a modulated carrier.
- 3 The EUT was set in a hopping mode using all hopping channels.
- 4 A temporary antenna connector was used to take the measurement.
- 5 See Annex J for analysers plots.
- 6 Only emissions within 20dB of limit are recorded.

Test Method:

- 1 As per section 15.247 and Public Notice DA 00-705.
- 2 A plot covering the lowest channel and band edge was taken. A marker was set on the peak emission of the lowest channel.
- 3 A plot covering the highest channel and band edge was taken. A marker was set on the peak emission of the highest channel.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ROHDE & SCHWARZ	FSU 46	200034	UH281	X
ATTENUATOR	BIRD	8304-100-N	N/A	222	X
CABLE	TRL	N/A	N/A	UH358	X

TRANSMITTER TESTS

TRANSMITTER CONDUCTED SPURIOUS EMISSIONS – CONDUCTED – Part 15.247(c)

Ambient temperature = 19°C
 Relative humidity = 66%
 Conditions = Conducted –Radio Lab
 Supply voltage = +12.0Vdc

Bottom Channel

Frequency Range	Emission Frequency (MHz)	Emission Level	Cable loss	Level (dBm)	Limit (dBm)
30MHz – 25GHz	No Significant Emissions Within 20 dB of the Limit				-15.52

See spectrum analyser scan plots – Annex J

Middle Channel

Frequency Range	Emission Frequency (MHz)	Emission Level	Cable loss	Level (dBm)	Limit (dBm)
30MHz – 25GHz	No Significant Emissions Within 20 dB of the Limit				-15.52

See spectrum analyser scan plots – Annex J

Top Channel

Frequency Range	Emission Frequency (MHz)	Emission Level	Cable loss	Level (dBm)	Limit (dBm)
30MHz – 25GHz	No Significant Emissions Within 20 dB of the Limit				-15.52

See spectrum analyser scan plots – Annex J

Notes:

- During the scans the unit was operated in the following modes:
 Hopping stopped unit operating on lowest channel
 Hopping stopped unit operating on middle channel
 Hopping stopped unit operating on highest channel
- Section 15.247(c) states that all spurious emissions measured within a 100kHz bandwidth shall be attenuated by at least 20dB below the level of the highest fundamental level measured within a 100kHz bandwidth.
- Only emissions within 20dB of limit are recorded.

Test Method:

- As per section 15.247 and Public Notice DA 00-705.
- Frequency sweeps were performed to check for spurious emissions.
- Any emissions discovered were checked for compliance with the limit.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
SPECTRUM ANALYSER	ROHDE & SCHWARZ	FSU 46	200034	UH281	X
ATTENUATOR	BIRD	8304-100-N	N/A	222	X
CABLE	TRL	N/A	N/A	UH358	X

TRANSMITTER TESTS

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

Ambient temperature = 16°C
 Relative humidity = 42%
 Conditions = Radiated OATS
 Supply voltage = +12.0Vdc

Bottom Channel 30MHz -25000MHz

	Emission Freq (MHz)	Meas Rx. (dBuV)	Cable loss (dB)	Ant. Factor (dB/m)	Pre Amp Gain (dB)	Duty Cycle Correction factor(dB)	Field Strength (dBμV/m)	Result (μV/m)	Limit (μV/m)
30MHz – 88MHz Restricted bands									100
88MHz – 216MHz Restricted bands									150
216MHz – 960MHz Restricted bands	288.00	18.22	2.23	12.65	-	-	33.10	45.18	200
	294.00	23.55	2.30	12.85	-	-	38.70	86.09	
	312.00	17.72	2.38	13.50	-	-	33.60	47.86	
	336.00	21.10	2.40	13.90	-	-	37.40	74.13	
	360.00	22.43	2.52	14.65	-	-	39.60	95.49	
	372.00	12.67	2.58	14.95	-	-	30.20	32.35	
	384.00	16.65	2.60	15.25	-	-	34.50	53.08	
	516.00	13.50	3.10	17.50	-	-	34.10	50.69	
	540.00	09.47	3.13	18.40	-	-	31.00	35.48	
	564.00	11.22	3.23	18.55	-	-	33.00	44.66	
960MHz – 1GHz Restricted bands									500
1GHz – 25GHz Restricted bands	4003.386	40.29	1.75	32.36	35.2	20	39.20	91.20	500
	4804.019	37.77	2.00	32.95	35.7	20	37.02	70.95	
30MHz -25GHz									1810

Middle Channel 30MHz -25000MHz

	Emission Freq (MHz)	Meas Rx. (dBuV)	Cable loss (dB)	Ant. Factor (dB/m)	Pre Amp Gain (dB)	Duty Cycle Correction factor(dB)	Field Strength (dBμV/m)	Result (μV/m)	Limit (μV/m)
30MHz – 88MHz Restricted bands									100
88MHz – 216MHz Restricted bands									150
216MHz – 960MHz Restricted bands	288.05	18.12	2.23	12.65	-	-	33.00	44.66	200
	294.00	23.55	2.30	12.85	-	-	38.70	86.09	
	312.00	17.72	2.38	13.50	-	-	33.60	47.86	
	324.00	12.82	2.48	13.70	-	-	29.00	28.18	
	336.00	21.40	2.40	13.90	-	-	37.70	76.73	
	360.00	22.03	2.52	14.65	-	-	39.20	91.20	
	372.05	12.67	2.58	14.95	-	-	30.20	32.35	
	384.00	16.65	2.60	15.25	-	-	34.50	50.08	
	516.05	13.50	3.10	17.50	-	-	34.10	50.69	
	564.00	10.12	3.23	18.55	-	-	31.90	39.35	
	612.00	12.95	3.40	18.75	-	-	35.10	56.88	
960MHz – 1GHz Restricted bands									500
1GHz – 25GHz Restricted bands	4884.022	43.39	1.95	33.15	35.6	20	42.89	139.47	500
30MHz -25GHz									1810

TRANSMITTER TESTS

TRANSMITTER EMISSIONS cont. – RADIATED – Part 15.247(c) and 15.209

Top Channel 30MHz -25000MHz

	Emission Freq (MHz)	Meas Rx. (dBuV)	Cable loss (dB)	Ant. Factor (dB/m)	Pre Amp Gain (dB)	Duty Cycle Correction Factor (dB)	Field Strength (dBµV/m)	Result (µV/m)	Limit (µV/m)
30MHz – 88MHz Restricted bands									100
88MHz – 216MHz Restricted bands									150
216MHz – 960MHz Restricted bands	288.00	17.72	2.23	12.65	-	-	32.60	42.65	200
	294.00	24.25	2.30	12.85	-	-	39.40	93.32	
	312.00	17.62	2.38	13.50	-	-	33.50	47.31	
	324.05	12.82	2.48	13.70	-	-	29.00	28.18	
	336.00	21.40	2.40	13.90	-	-	37.70	76.73	
	360.00	22.03	2.52	14.65	-	-	39.20	91.20	
	384.00	16.25	2.60	15.25	-	-	34.10	50.69	
	612.05	12.95	3.40	18.75	-	-	35.10	56.88	
	684.00	10.30	3.60	19.10			33.00	44.66	
960MHz – 1GHz Restricted bands									500
1GHz – 25GHz Restricted bands	4962.043	41.34	2.2	33.23	35.6	20	41.17	114.41	500
30MHz -25GHz									1810

Notes:

- During the scans the unit was operated in the following modes:
Hopping stopped unit operating on lowest channel
Hopping stopped unit operating on middle channel
Hopping stopped unit operating on highest channel
FM modulator enabled mid channel.
USB socket connected to MP3 player (USB charging socket only, no audio)
MP3 player also connected via audio lead.
See test set up photos Annex A.
- Initial pre scans were performed see Annex L for plots.
- Emissions above 1GHz were measured with both a peak and average detectors.
- Measurements <1GHz were performed at 3 meters.
- Measurements >1GHz were initial performed at 3 metres.
- Only emissions with in 20dB of limit are recorded.
- Peak emissions recorded, peak emissions meet the average limit.
- Duty cycle correction factor as per 15.35
 $20 \log(269.23\mu\text{s}/100\text{ms}) = 51.39\text{dB}$ maximum Duty cycle correction factor allowed = 20dB. Duty cycle correction factor taken into account in the field strength result.

Test Method:

- As per section 15.247 and Public Notice DA 00-705.
- Measuring distances as Notes 5 to 6 above.
- EUT 0.8 metre above ground plane.
- 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 orthogonal planes. Maximum results recorded.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ROHDE & SCHWARZ	ESHS 10	841431/014	UH186	X
SPECTRUM ANALYSER	ROHDE & SCHWARZ	FSU46	200034	UH281	X
RANGE 1	TRL	3 METRE	N/A	UH06	X
BILOG ANTENNA	YORK	CBL611/A	1618	UH191	X
HORN ANTENNA	EMCO	3115	9010-3580	138	X
PRE APMLIFIER	AGILENT	8449B	3008A016	572	X

TRANSMITTER TESTS

TRANSMITTER BAND EDGE EMISSIONS – RADIATED – Part 15.247(c)

Ambient temperature = 17°C
Relative humidity = 60%
Conditions = Radiated OATS
Supply voltage = +12.0Vdc

Test Result

Measured as compliant, see analyser plots.

Notes:

- 1 The EUT was set in a hopping mode using all hopping channels.
- 2 See Annex L for analysers plots.

Test Method:

- 1 As per section 15.247 and Public Notice DA 00-705.
- 2 A plot covering the lowest channel and band edge was taken. A marker was set on the peak emission of the lowest channel. The delta marker function was then used to measure the highest out of band emissions. (If no peaks exist outside the band the level is taken at the band edge).
- 3 A plot covering the highest channel and band edge was taken. A marker was set on the peak emission of the highest channel. The delta marker function was then used to measure the highest out of band emissions. (If no peaks exist outside the band the level is taken at the band edge).

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ROHDE & SCHWARZ	ESHS 10	841431/014	UH186	
SPECTRUM ANALYSER	ROHDE & SCHWARZ	FSU46	200034	UH281	X
RANGE 1	TRL	3 METRE	N/A	UH06	
BILOG ANTENNA	CHASE	CBL6112B	2803	UH93	
HORN ANTENNA	EMCO	3115	9010-3580	138	X
PRE AMPLIFIER	AGILENT	8449B	3008A016	572	X

RECEIVER TESTS

RECEIVER EMISSIONS RADIATED – Part 15.109

Ambient temperature = 16°C
 Relative humidity = 42%
 Conditions = Radiated OATS
 Supply voltage = +12.0Vdc

Bottom Channel 30MHz -25000MHz

	Emission Freq (MHz)	Meas Rx. (dBuV)	Cable loss (dB)	Ant. Factor (dB/m)	Pre Amp Gain (dB)	Field Strength (dBµV/m)	Result (µV/m)	Limit (µV/m)
30MHz – 88MHz								100
88MHz – 216MHz	176.45	17.64	1.82	8.64	-	28.10	25.41	150
216MHz – 960MHz					-			200
960MHz – 1GHz					-			500
1GHz – 25GHz	1.60256 2.40345 2.49646 4.98285	54.20 50.00 54.73 49.73	0.97 2.56 2.56 2.20	25.26 28.74 28.80 33.05	35.1 35.0 35.0 35.6	45.33 46.30 51.09 49.38	184.71 206.53 358.50 294.44	500

Middle Channel 30MHz -25000MHz

	Emission Freq (MHz)	Meas Rx. (dBuV)	Cable loss (dB)	Ant. Factor (dB/m)	Pre Amp Gain (dB)	Field Strength (dBµV/m)	Result (µV/m)	Limit (µV/m)
30MHz – 88MHz								100
88MHz – 216MHz	179.05	17.35	1.83	8.32	-	27.50	23.74	150
216MHz – 960MHz	312.00 324.00 336.00 360.00 384.00 408.00 432.00 456.50	17.72 13.02 21.40 22.03 16.39 16.68 20.80 9.15	2.38 2.38 2.38 2.52 2.61 2.72 2.80 2.85	13.40 13.70 13.92 14.65 15.30 16.20 16.40 16.50	- - - - - - - -	33.50 29.10 37.70 39.20 34.30 35.60 40.00 28.50	47.31 28.51 76.73 91.20 51.88 60.25 100.0 26.60	200
960MHz – 1GHz								500
1GHz – 25GHz	1.46794 1.49551 1.62826 2.44237 2.49846 4.98798	53.57 50.47 54.98 49.53 54.80 48.71	0.97 0.97 0.97 2.56 2.56 2.20	25.01 25.11 25.26 28.74 28.80 33.05	35.5 35.5 35.1 35.0 35.0 35.6	44.05 41.05 46.11 45.83 51.16 48.36	159.40 112.85 202.06 195.65 361.41 261.81	500

Top Channel 30MHz -25000MHz

	Emission Freq (MHz)	Meas Rx. (dBuV)	Cable loss (dB)	Ant. Factor (dB/m)	Pre Amp Gain (dB)	Field Strength (dBµV/m)	Result (µV/m)	Limit (µV/m)
30MHz – 88MHz								100
88MHz – 216MHz								150
216MHz – 960MHz	300.00	25.88	2.34	12.98	-	41.20	114.81	200
	312.00	17.72	2.38	13.40	-	33.50	47.31	
	324.05	13.02	2.38	13.70	-	29.10	28.51	
	336.00	21.40	2.38	13.92	-	37.70	76.73	
	360.00	22.17	2.38	14.65	-	39.20	91.20	
	384.00	16.28	2.52	15.30	-	34.10	50.69	
	408.00	16.79	2.61	16.20	-	35.60	60.25	
	432.00	20.88	2.72	16.40	-	40.00	100.0	
	456.00	9.15	2.85	16.50	-	28.50	26.60	
960MHz – 1GHz								500
1GHz – 25GHz	1.46798	53.68	0.97	25.01	35.5	44.16	161.43	500
	1.49976	50.73	0.97	25.11	35.3	41.51	118.98	
	1.65414	54.02	0.97	25.26	35.1	45.15	180.92	
	2.48148	48.45	2.56	28.78	35.0	44.79	173.58	
	2.49852	54.50	2.56	28.80	35.0	50.86	349.14	
	4.98450	48.95	2.20	33.05	35.6	48.60	269.15	

Notes:

- 1 During the scans the unit was operated in the following modes:
Hopping stopped unit operating on lowest channel
Hopping stopped unit operating on middle channel
Hopping stopped unit operating on highest channel
FM modulator disabled.
- 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 initially performed at 3 metres.
- 5 Only emissions with in 20dB of limit are recorded.
- 6 Peak emissions recorded, peak emissions meet the average limit.

Test Method:

- 1 As per section 15.247 and Public Notice DA 00-705.
- 2 Measuring distances as Notes 3 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 >30MHz.
Horizontal and vertical polarisations, of the receive antenna.
EUT orientation in three orthogonal planes. Maximum results recorded.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ROHDE & SCHWARZ	ESHS 10	841431/014	UH186	X
SPECTRUM ANALYSER	ROHDE & SCHWARZ	FSU46	200034	UH281	X
RANGE 1	TRL	3 METRE	N/A	UH06	X
BILOG ANTENNA	YORK	CBL611/A	1618	UH191	X
HORN ANTENNA	EMCO	3115	9010-3580	138	X
PRE APMLIFIER	AGILENT	8449B	3008A016	572	X

TRANSMITTER TESTS

TRANSMITTER OUTPUT POWER – RADIATED – Part 15.239

Ambient temperature = 17°C
 Relative humidity = 60%
 Conditions = radiated
 Supply voltage = +12.0Vdc

Channel Frequency MHz	Measured Level (dBμV)	Cable	Antenna Factor (dB/m)	Field Strength (dBμV/m)	Result (μV/m)	Limit (μV/m)
88.1	32.31	1.37	8.32	42.0	125.89	250
98.1	33.74	1.39	10.07	45.2	181.97	250
107.9	33.05	1.45	11.20	45.7	192.75	250

Notes:

- 1 The Venturi Mini In Car Device FM modulator was tested on the Bottom, Middle, Top channels using CW only, the Bluetooth device was disabled.
- 2 The Venturi Mini In Car Device was connected to the MP3 player via the USB and audio Lead.
- 3 Measurements were performed at 3 meters.

Test Method:

- 1 EUT 0.8 metre above ground plane.
- 2 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 orthogonal planes. Maximum results recorded.
- 3 The emission limit is based upon measurement instrumentation employing an Average detector.

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECIEVER	Rhode and Schwarz	ESVS10	825892/006	TRLUH004	X
CABLE	TRL	N/A	N/A	TRLUH16 & 17	X
BILOG ANTENNA	CHASE	CBL6112B	2803	TRLUH93	X

TRANSMITTER TESTS

TRANSMITTER BAND EDGE EMISSIONS – RADIATED – Part 15.239

Ambient temperature = 17°C
Relative humidity = 60%
Conditions = Radiated
Supply voltage = +12.0Vdc

Test Result

Measured as compliant, see analyser plots.

Notes:

- 1 The Venturi Mini In Car FM modulator was tested on the Bottom, Top channels using an MP3 player, playing an audio track set to maximum volume, the spectrum analyser was set to max hold and the plot of the audio bandwidth was taken after the audio track had completed playing, and the result was compared against the 200KHz spectral mask.
- 2 The Venturi Mini In Car FM modulator was tested on the Bottom, Top channels using a Bluetooth connection via a laptop PC playing the same audio track set to maximum volume via windows media player, the spectrum analyser was set to max hold and the plot of the audio bandwidth was taken after the audio track had completed playing, and the result was compared against the 200KHz spectral mask.
- 3 The limit for of the audio bandwidth was taken at 20dBc from the carrier as per FCC inquiry regarding the dBc limit (tracking number 338486)

Test Method:

- 1 As per section 15.239
- 2 A plot covering the lowest channel and band edge was taken.
Via MP3 player
Bluetooth link via laptop
- 3 A plot covering the highest channel and band edge was taken.
Via MP3 player
Bluetooth link via laptop

Channel Frequency MHz	Limit 200KHz Audio bandwidth via MP3 player	Limit 200KHz Audio bandwidth via Bluetooth
88.1	193.91KHz	184.29KHz
107.9	169.87KHz	193.91KHz

The test equipment used for the tests is shown below:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL No	ACTUAL EQUIPMENT USED
RECEIVER	ROHDE & SCHWARZ	ESHS 10	841431/014	UH186	
SPECTRUM ANALYSER	ROHDE & SCHWARZ	FSU46	200034	UH281	X
RANGE 1	TRL	3 METRE	N/A	UH06	
BICONE ANTENNA	SCHWARBRECK	VHBA 9123	N/A	UH29	X
HORN ANTENNA	EMCO	3115	9010-3580	138	
PRE APMLIFIER	AGILENT	8449B	3008A016	572	

ANNEX A
PHOTOGRAPHS

PHOTOGRAPH No. 1

TEST SETUP



PHOTOGRAPH No. 2

FRONT VIEW



SIDE VIEW AUDIO CONNECTORS



SIDE VIEW USB CONNECTOR

PHOTOGRAPH No. 3

FRONT VIEW TOP MOLDING REMOVED



PHOTOGRAPH No. 4 FRONT VIEW SUPPLY LEAD DISCONNECTED

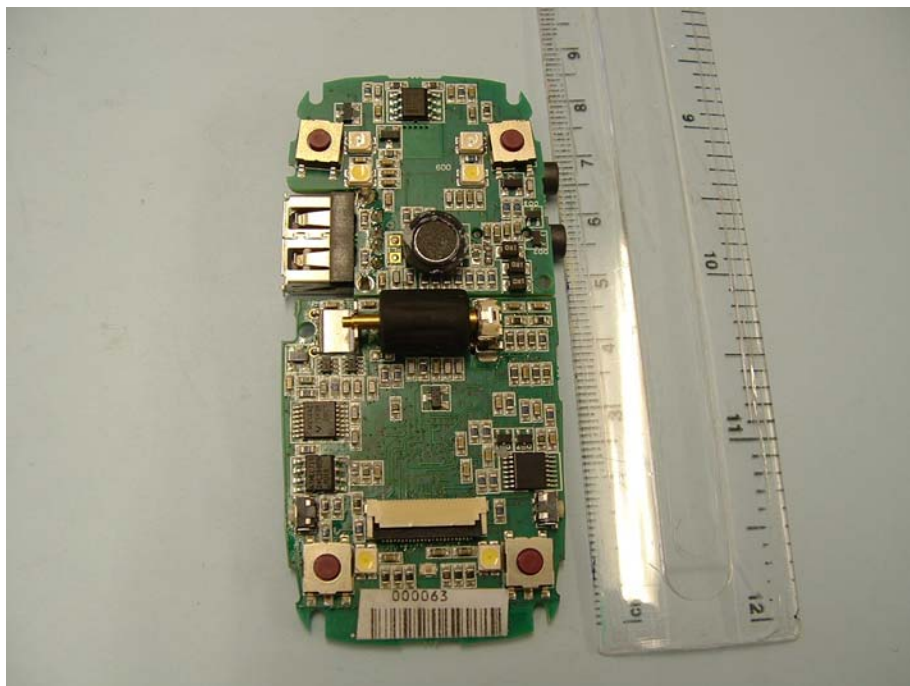


PCB REMOVED FROM FRONT MOLDING

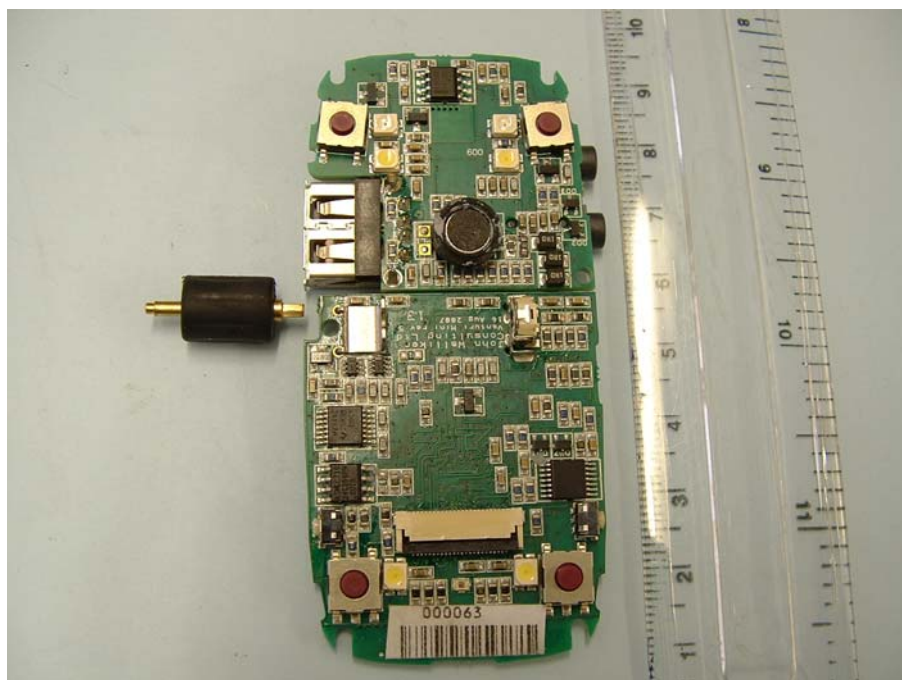


PHOTOGRAPH No. 5

TRANSMITTER PCB TOP SIDE



TRANSMITTER PCB TOP SIDE THUMB CONTROL WHEEL REMOVED



PHOTOGRAPH No. 6

TRANSMITTER PCB UNDERSIDE VIEW



PHOTOGRAPH No. 7

**VENTURI MINI STEM
TOP VIEW OUTER MOLDING REMOVED**



**VENTURI MINI STEM
UNDERSIDE VIEW OF PCB**



ANNEX B
APPLICANT'S SUBMISSION OF DOCUMENTATION LIST

APPLICANT'S SUBMISSION OF DOCUMENTATION LIST

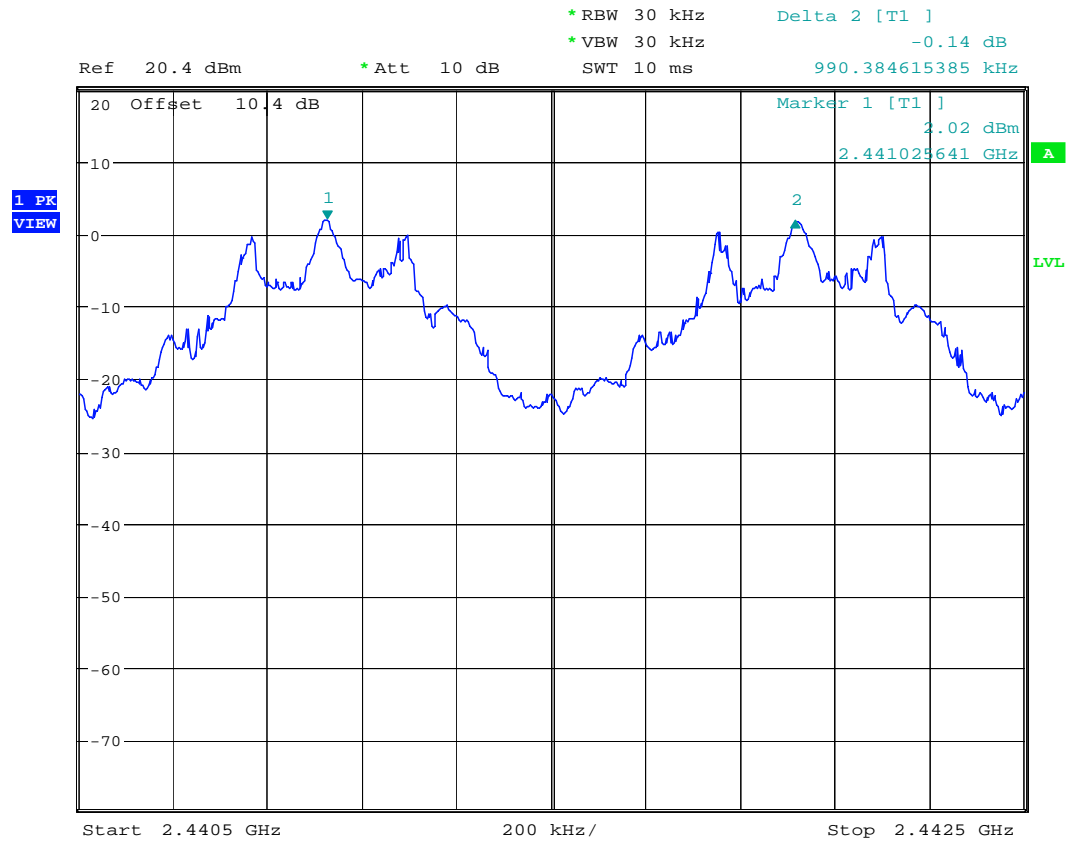
a.	TCB	-	APPLICATION	[X]
		-	FEE	[X]
b.	AGENT'S LETTER OF AUTHORISATION	-		[X]
c.	MODEL(s) vs IDENTITY	-		[]
d.	ALTERNATIVE TRADE NAME DECLARATION(s)	-		[X]
e.	LABELLING	-	PHOTOGRAPHS	[X]
		-	DECLARATION	[]
		-	DRAWINGS	[X]
f.	TECHNICAL DESCRIPTION	-		[X]
g.	BLOCK DIAGRAMS	-	Tx	[X]
		-	Rx	[]
		-	PSU	[]
		-	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

TRL Number	Equipment Type	Manufacturer	Last Cal Calibration	Calibration Period	Due For Calibration
UH003	Receiver	R&S	24/07/2006	12	24/07/2007
UH005	LISN	R&S	11/04/2006	12	11/04/2007
UH006	3m Range ERP CAL	TRL	06/01/2006	12	06/01/2007
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
UH122	Oscilloscope	Tektronix	07/06/2005	24	07/06/2007
UH132	Power meter	Marconi	03/01/2006	12	03/01/2007
UH162	ERP Cable Cal	TRL	06/01/2006	12	06/01/2007
UH187	Receiver	R&S	01/02/2006	12	01/02/2007
UH228	Power Sensor	Marconi	03/01/2006	12	03/01/2007
UH253	1m Cable N type	TRL	23/02/2006	12	23/02/2007
UH254	1m Cable N type	TRL	05/01/2006	12	05/01/2007
UH265	Notch filer	Telonic	24/06/2005	12	24/06/2006
UH271	1m Cable N type	TRL	23/02/2006	12	23/02/2007
UH273	1m Cable N type	TRL	23/02/2006	12	23/02/2007
UH281	Spectrum Analyser	R&S	24/07/2006	12	24/07/2007
UH358	Cable	TRL		Calibrate in use	
L005	CMTA	R&S	05/12/2005	12	05/12/2006
L007	Loop Antenna	R&S	29/03/2005	24	29/03/2007
L138	1-18GHz Horn	EMCO	15/04/2005	24	15/04/2007
L139	1-18GHz Horn	EMCO	03/05/2005	24	03/05/2007
L176	Signal Generator	Marconi	15/02/2006	12	15/02/2007
L193	Bicone Antenna	Chase	12/10/2003	24	12/10/2005
L203	Log Periodic Ant	Chase	21/10/2003	24	21/10/2005
L222	Attenuator	Bird		Calibrate in use	
L280	18GHz Cable	Rosenberger	05/01/2006	12	05/01/2007
L290	Bilog Antenna	Chase	20/10/2005	24	20/10/2007
L343	CCIR Noise Filter	TRL	20/09/2006	12	20/09/2007
L426	Temperature Indicator	Fluke	04/01/2006	12	04/01/2007
L479	Analyser	Anritsu	18/11/2005	12	18/11/2006
L552	Signal Generator	Agilent	24/07/2006	12	24/07/2007
L572	Pre Amp	Agilent	03/02/2006	12	03/02/2007
N/A	High Pass Filter	AFL	23/02/2006	12	23/02/2007

ANNEX D

CARRIER FREQUENCY SEPARATION

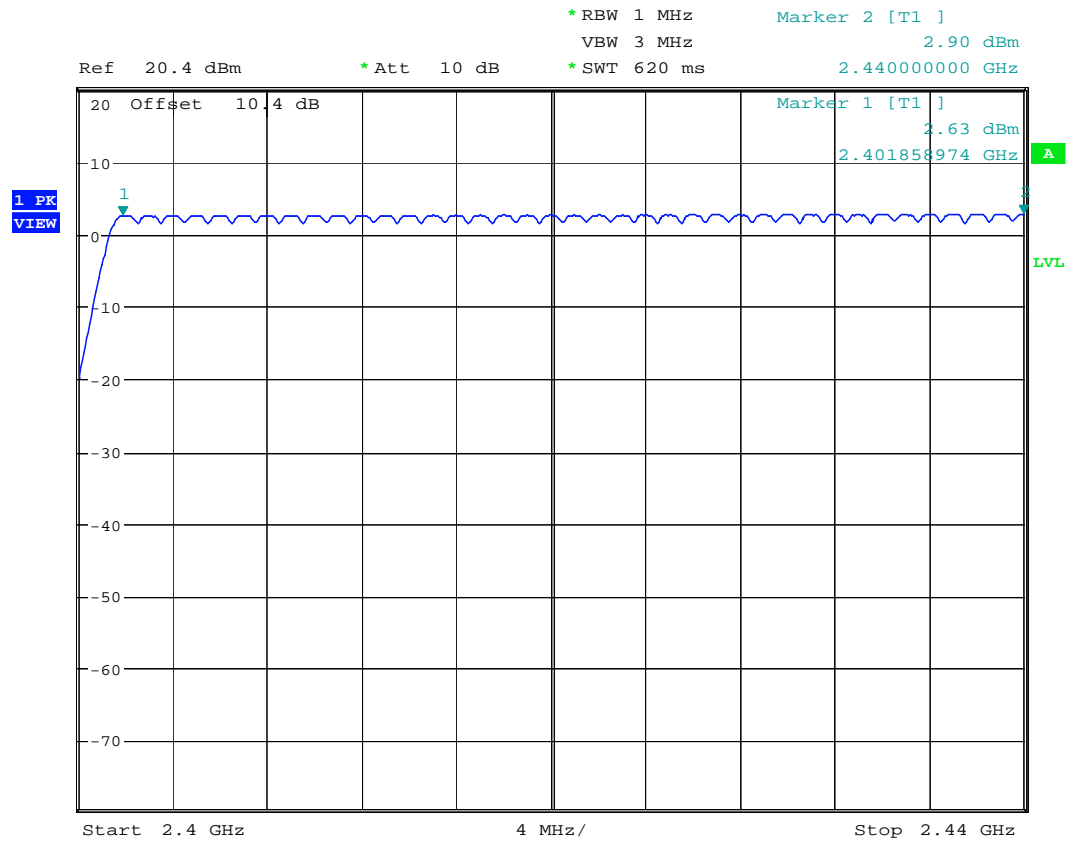


Date: 20.SEP.2007 11:09:51

ANNEX E

NUMBER OF HOPPING CHANNELS

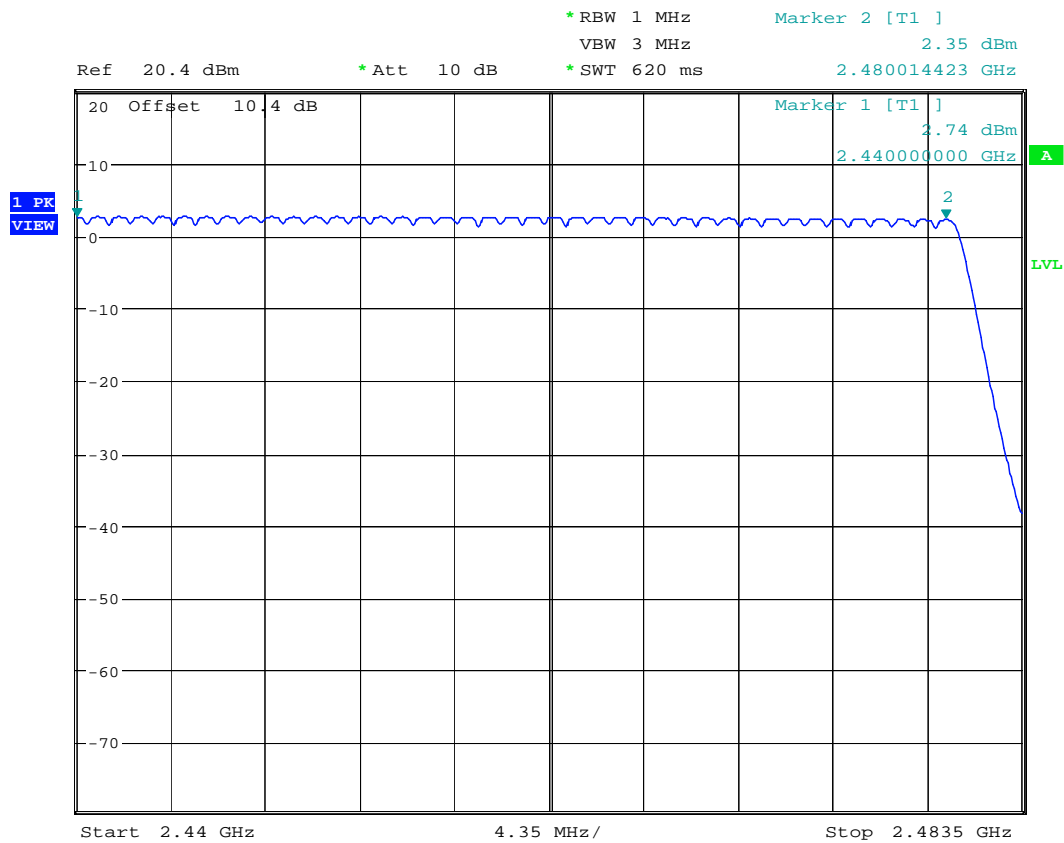
NUMBER OF HOPPING FREQUENCIES BOTTOM CHANNEL TO MIDDLE CHANNEL



Date: 20.SEP.2007 10:39:02

NUMBER OF HOPPING FREQUENCIES

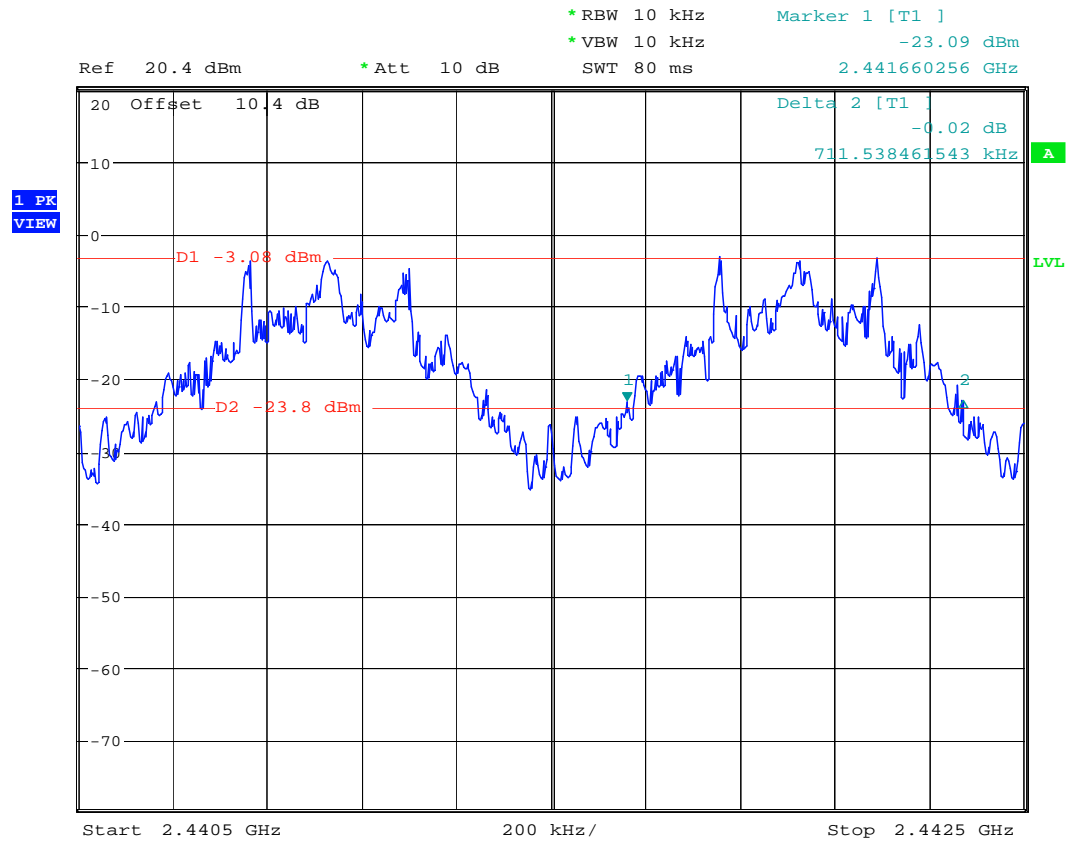
MIDDLE CHANNEL TO TOP CHANNEL



Date: 20.SEP.2007 10:53:25

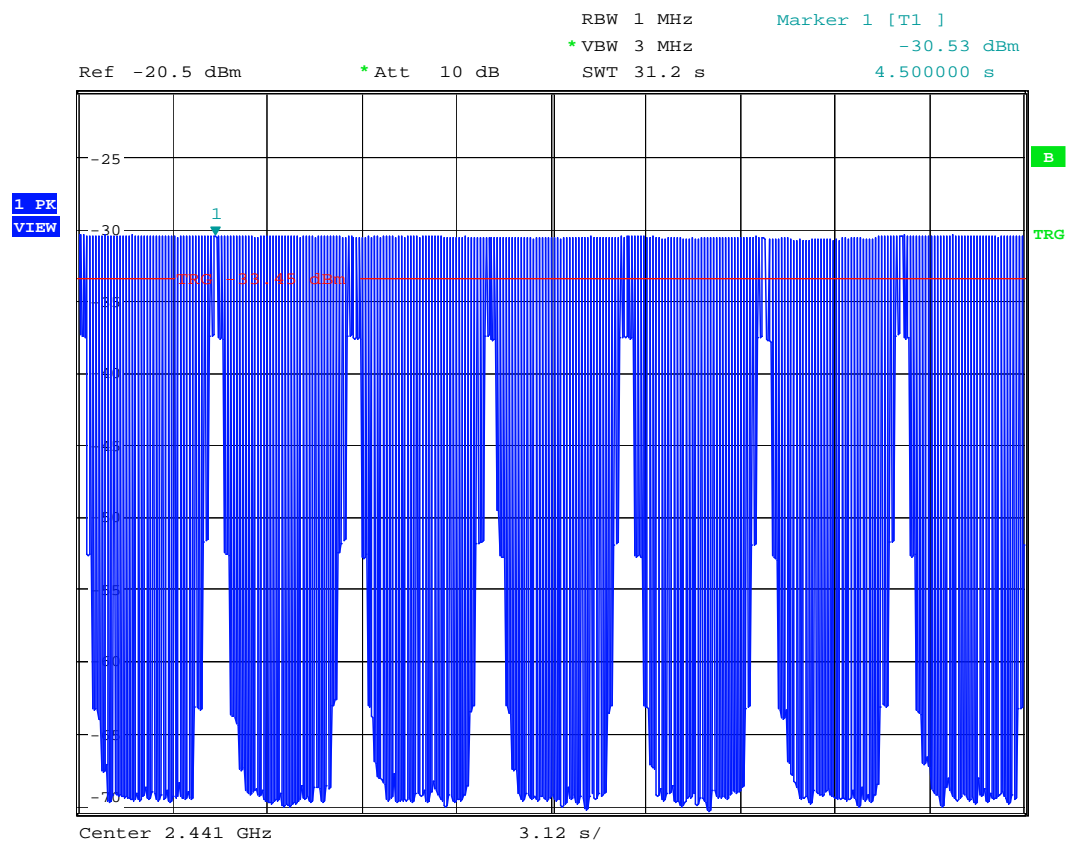
TOTAL CHANNELS = 79

ANNEX F
20dB BANDWIDTH



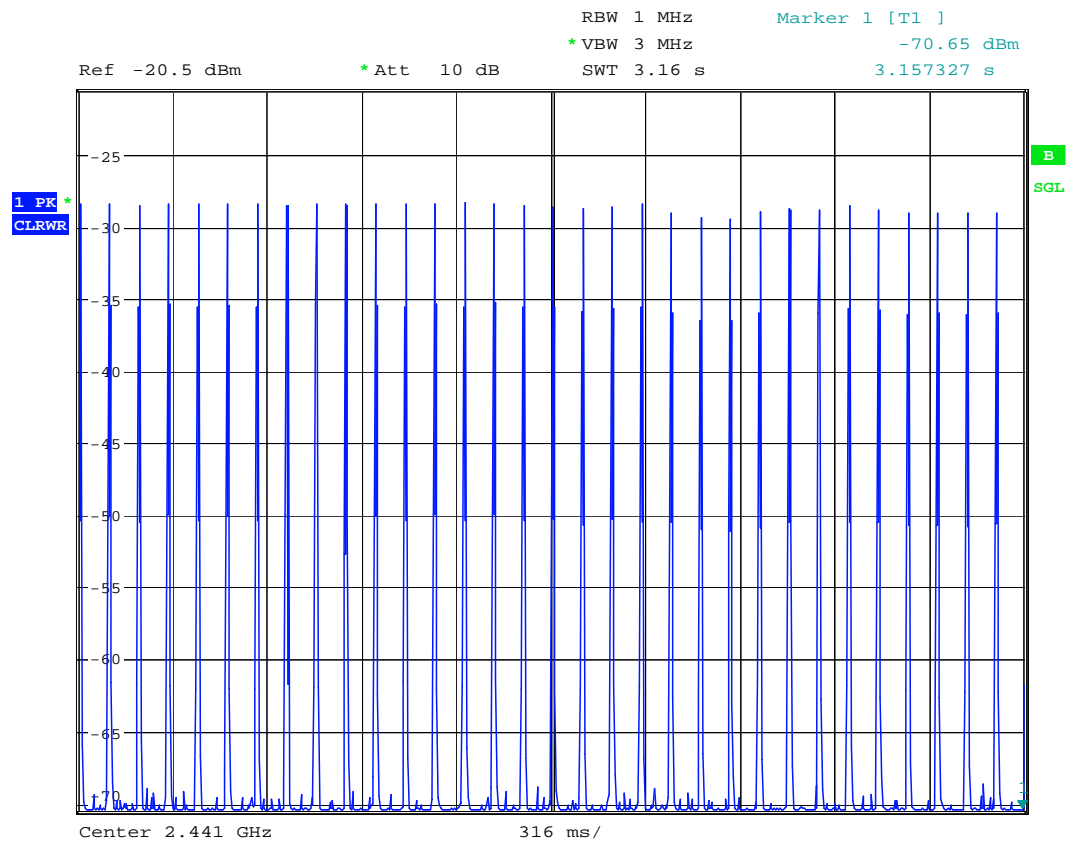
Date: 20.SEP.2007 11:32:47

ANNEX G
AVERAGE TIME OF OCCUPANCY



Date: 3.OCT.2007 15:56:22

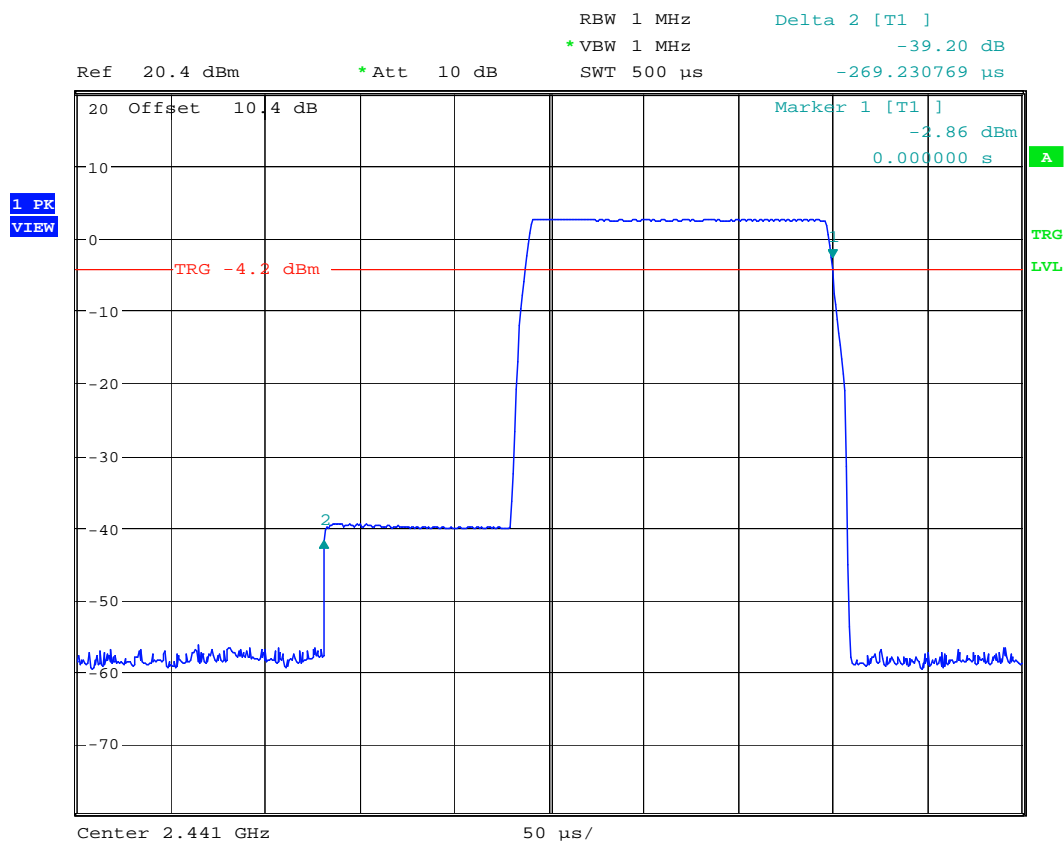
Number of transmissions made within 31.2 seconds



Date: 3.OCT.2007 16:15:17

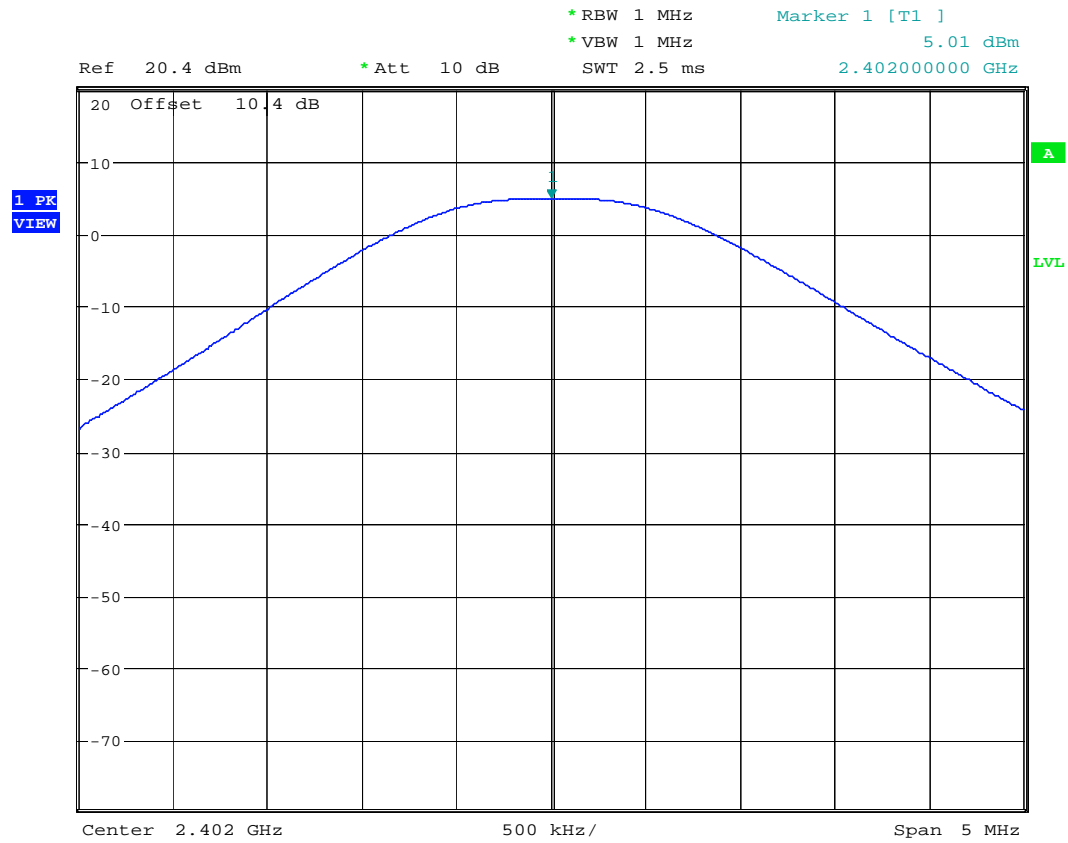
Number of transmissions made within 3.16 seconds

LENGTH OF ONE PACKET



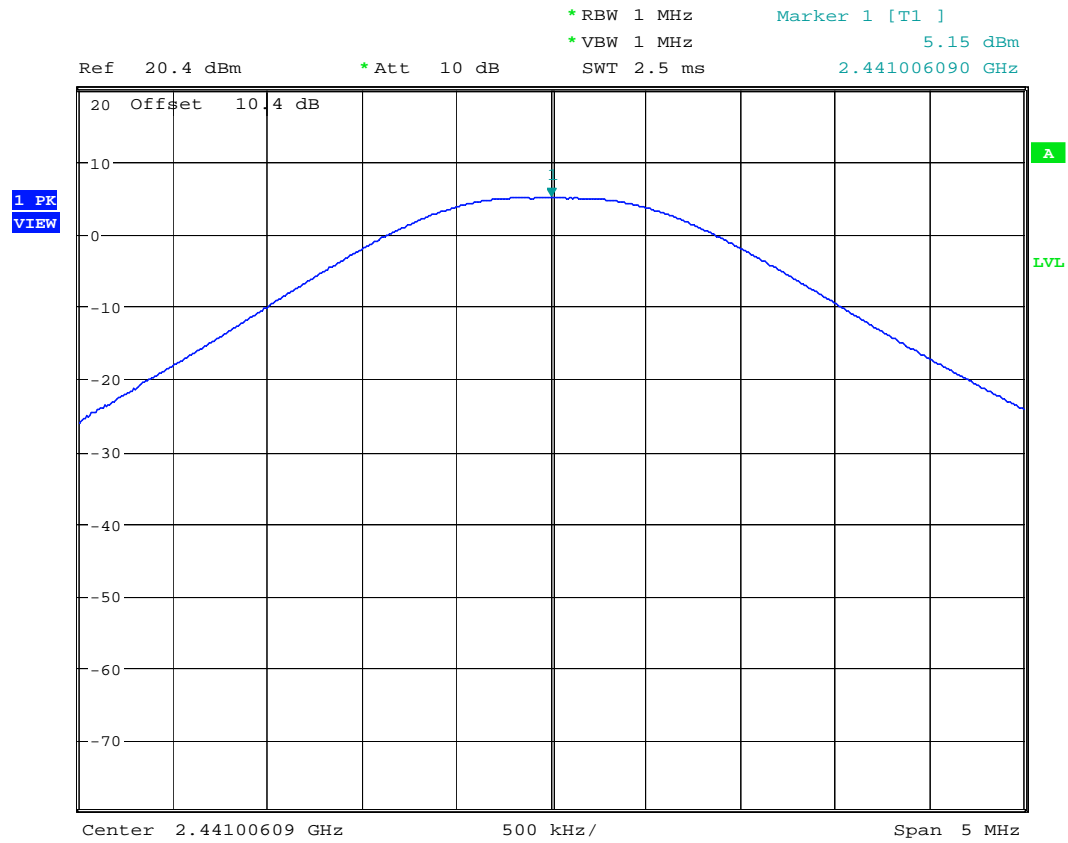
Date: 20.SEP.2007 11:52:48

ANNEX H
PEAK POWER CONDUCTED



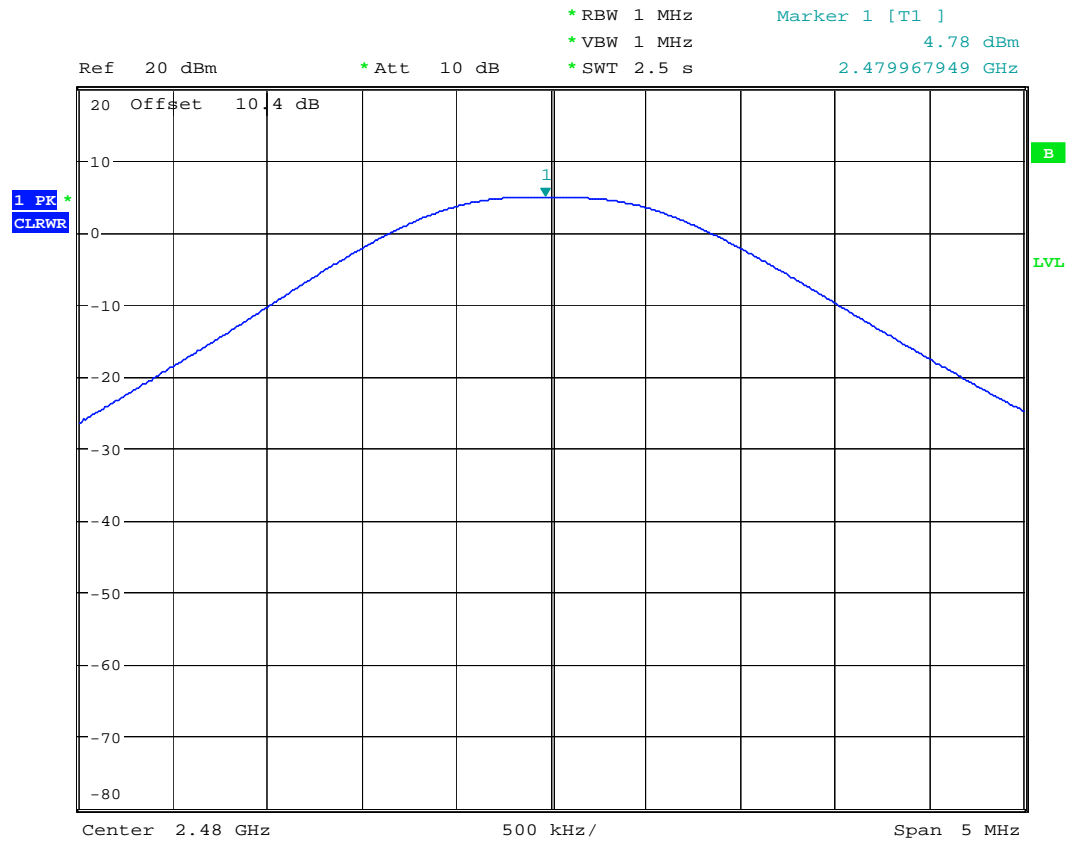
Date: 20.SEP.2007 12:07:49

PEAK POWER LOW CHANNEL



Date: 20.SEP.2007 12:08:57

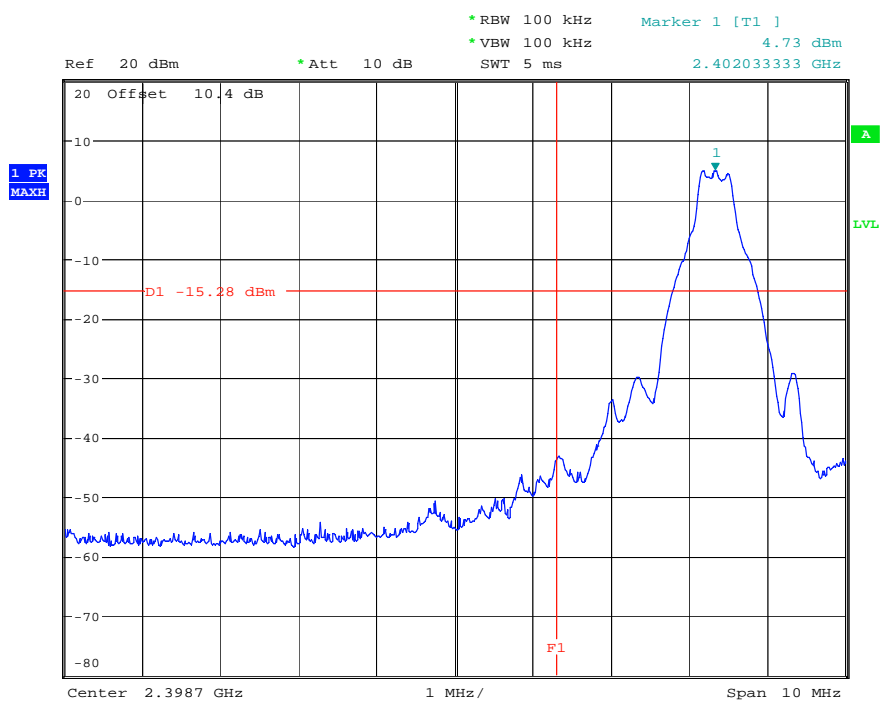
PEAK POWER MID CHANNEL



Date: 28.SEP.2007 15:56:33

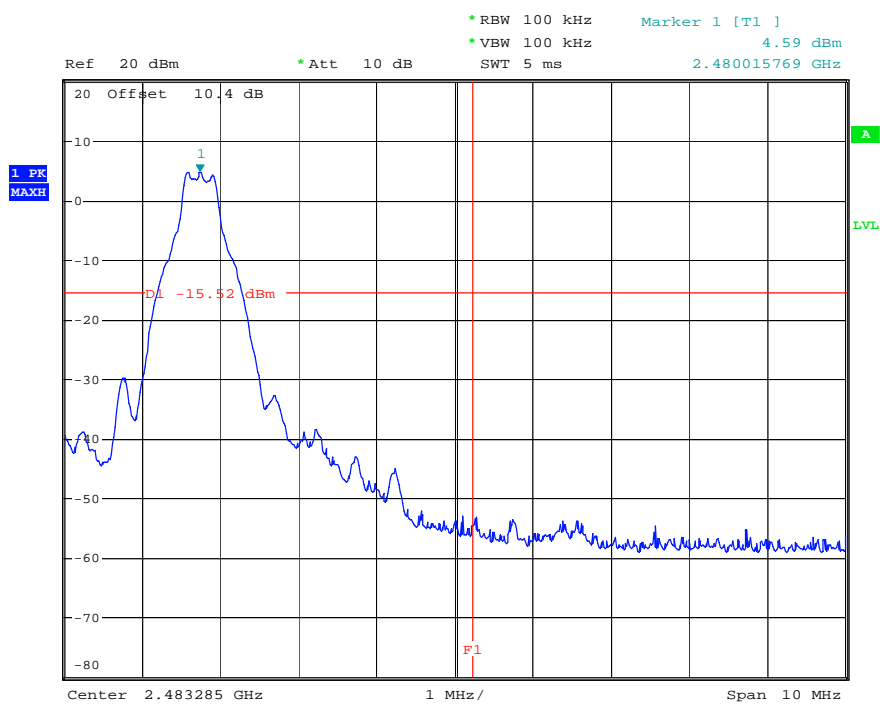
PEAK POWER HIGH CHANNEL

ANNEX I
BAND EDGE CONDUCTED EMISSION



Date: 24.SEP.2007 13:36:38

Lower band edge



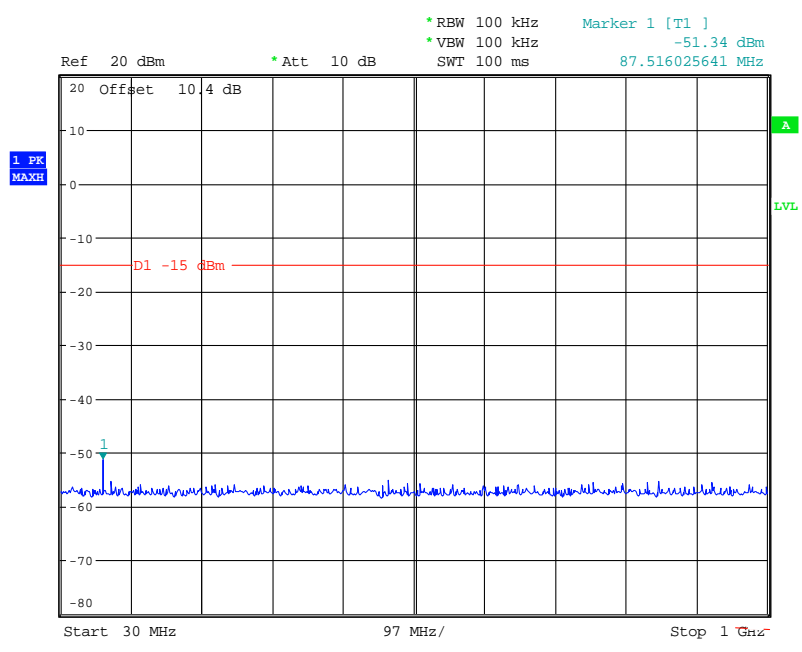
Date: 24.SEP.2007 13:32:20

Higher band edge

ANNEX J
CONDUCTED SPURIOUS EMISSION

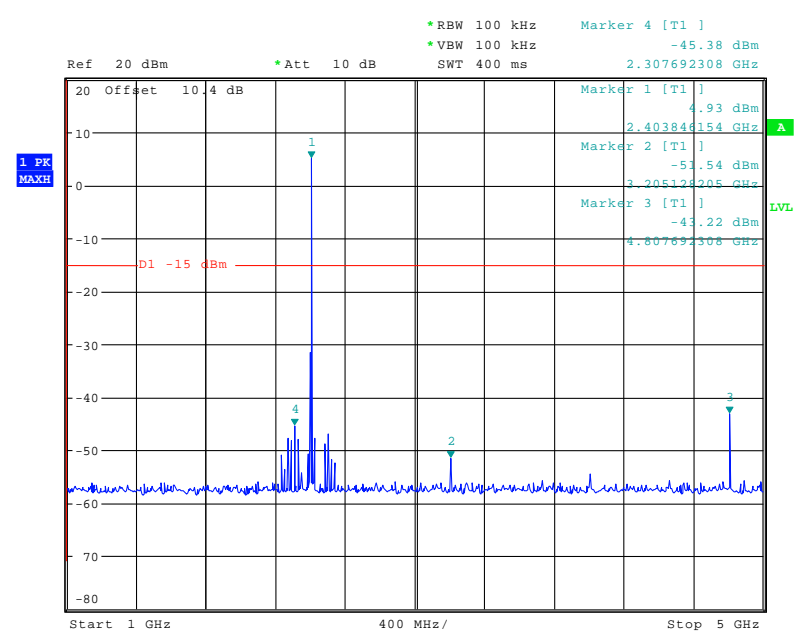
Bottom Channel

30 MHz – 1 GHz



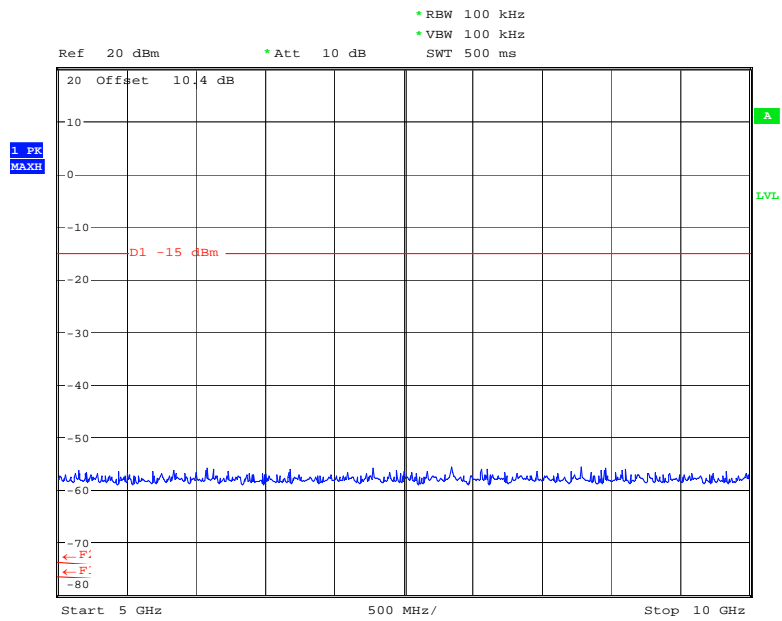
Bottom Channel

1 GHz – 5 GHz



Bottom Channel

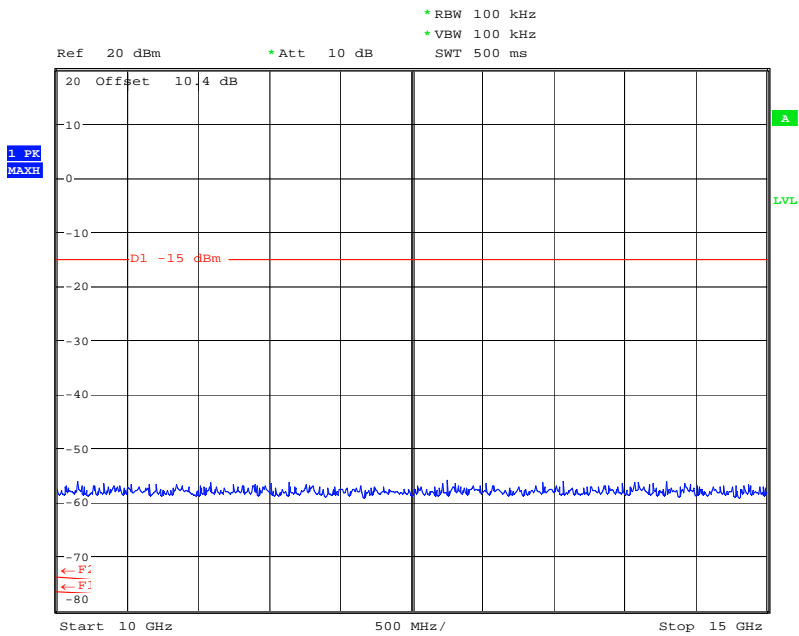
5 GHz – 10 GHz



Date: 24.SEP.2007 13:47:47

Bottom Channel

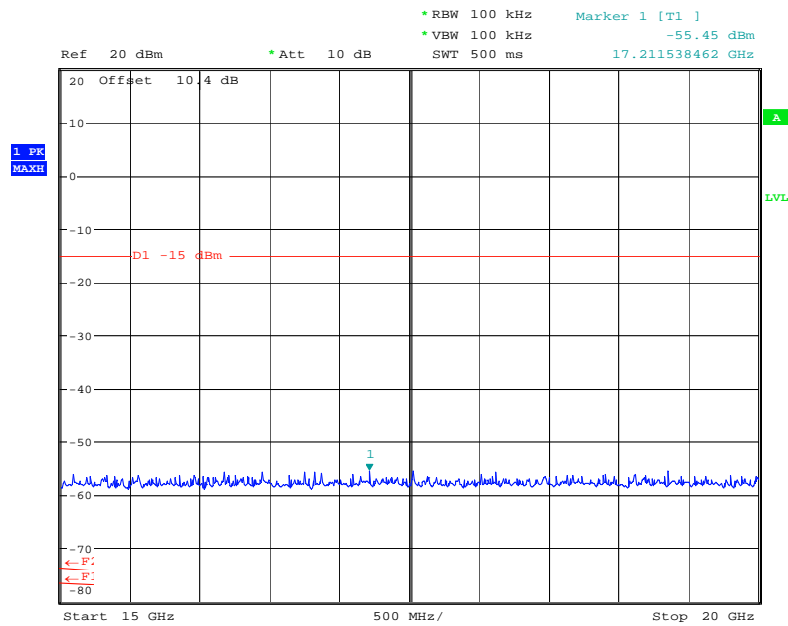
10 GHz – 15 GHz



Date: 24.SEP.2007 13:48:19

Bottom Channel

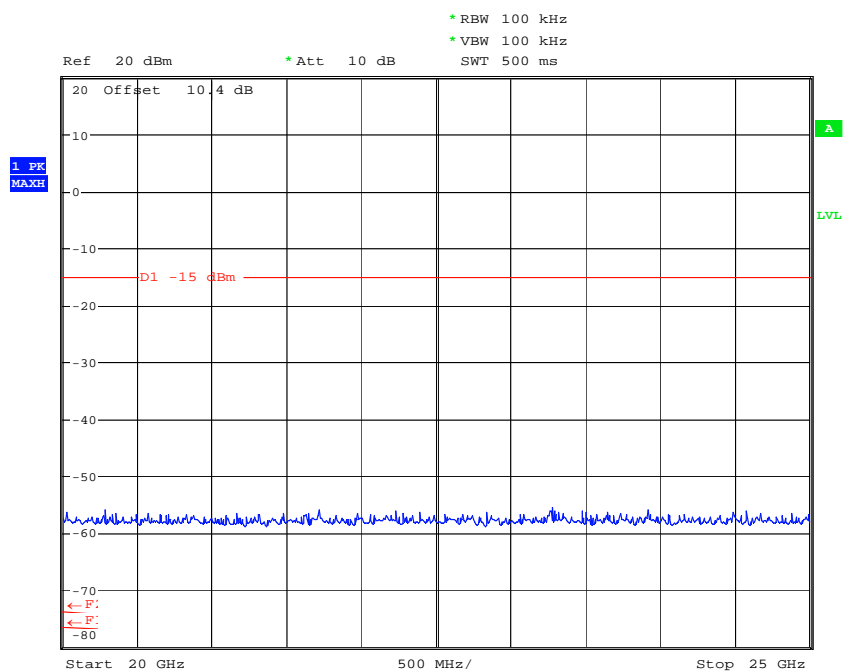
15 GHz – 20 GHz



Date: 24.SEP.2007 13:49:06

Bottom Channel

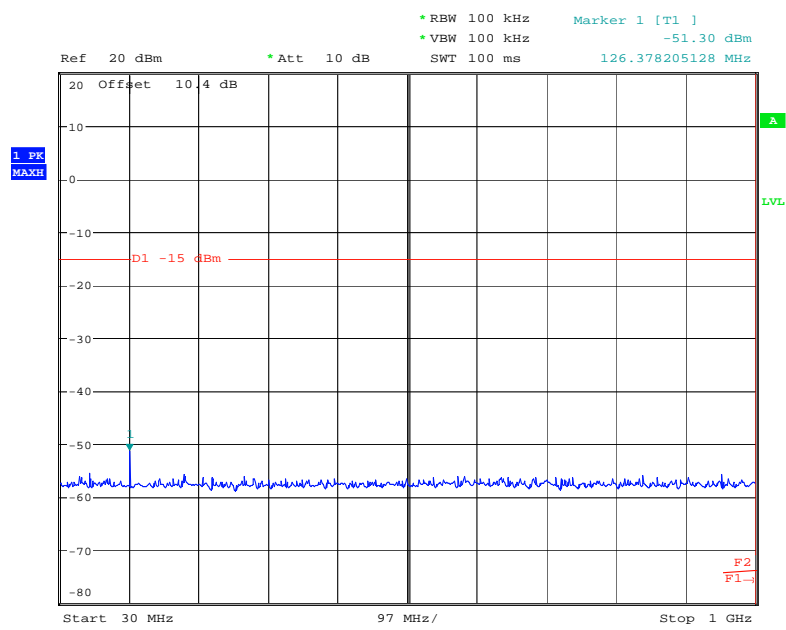
20 GHz – 25 GHz



Date: 24.SEP.2007 13:49:51

Middle Channel

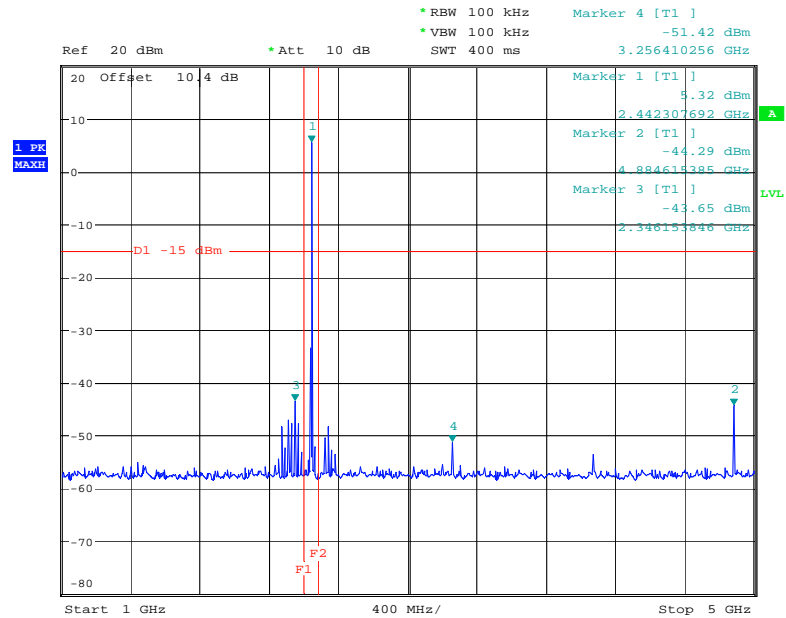
30 MHz – 1 GHz



Date: 24.SEP.2007 13:53:40

Middle Channel

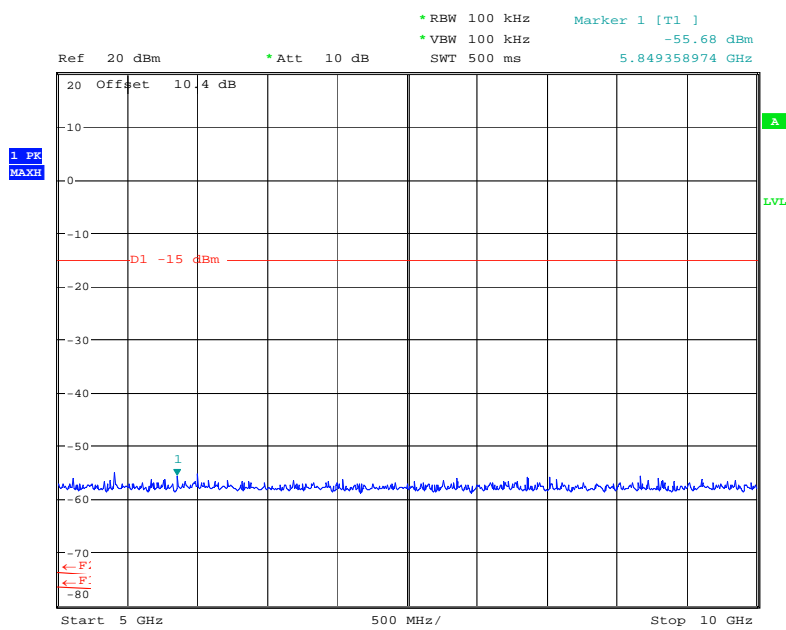
1 GHz – 5 GHz



Date: 24.SEP.2007 13:55:11

Middle Channel

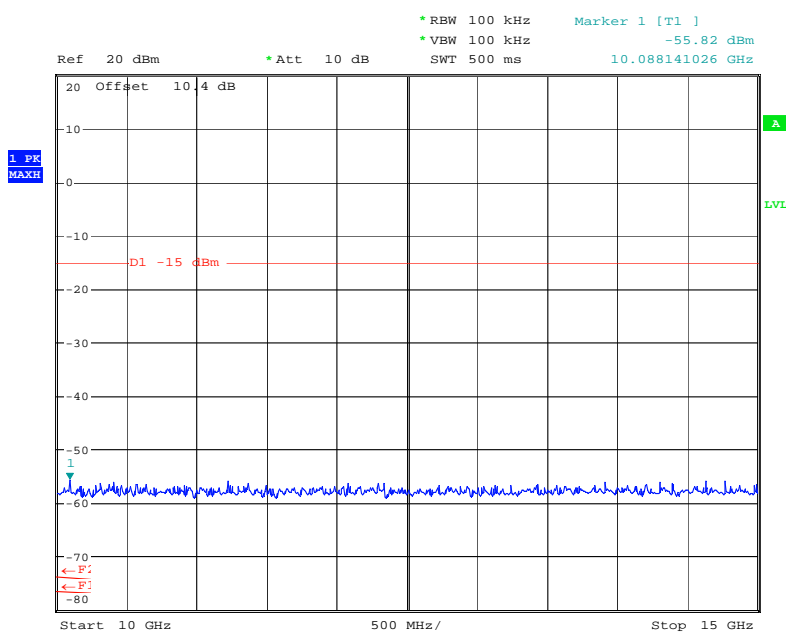
5 GHz – 10 GHz



Date: 24.SEP.2007 13:56:09

Middle Channel

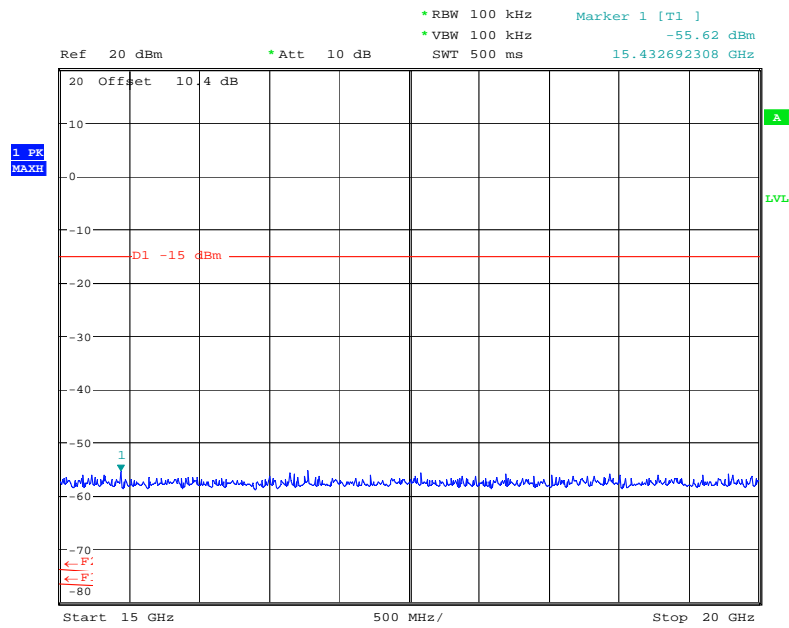
10 GHz – 15 GHz



Date: 24.SEP.2007 13:56:55

Middle Channel

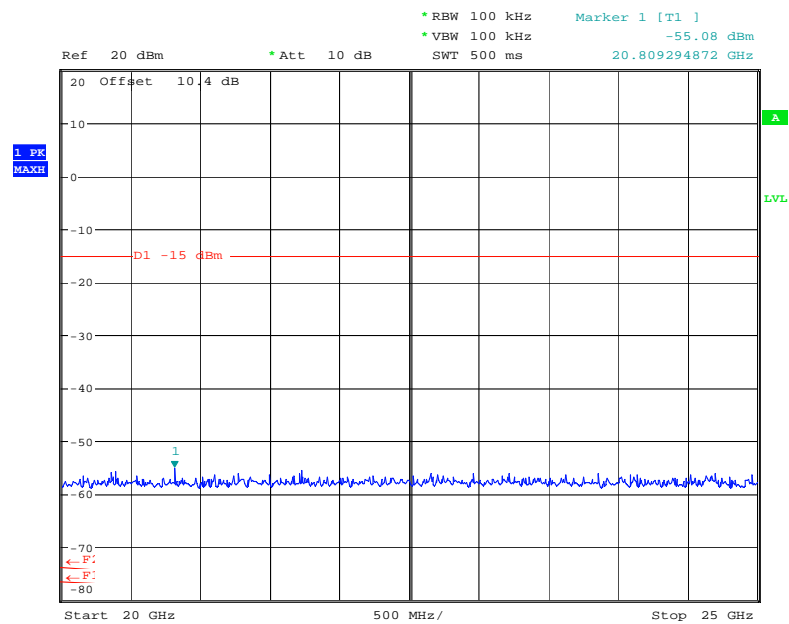
15 GHz – 20 GHz



Date: 24.SEP.2007 13:57:49

Middle Channel

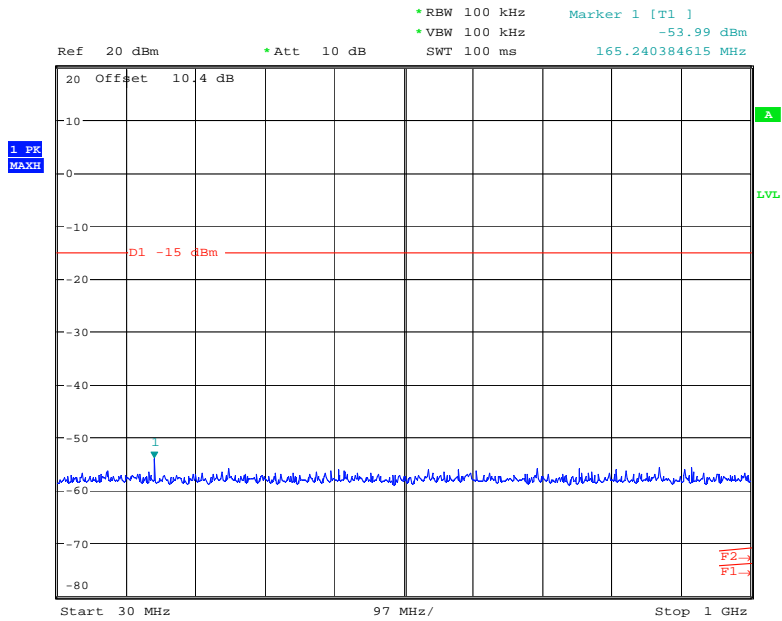
20 GHz – 25 GHz



Date: 24.SEP.2007 13:58:25

Top Channel

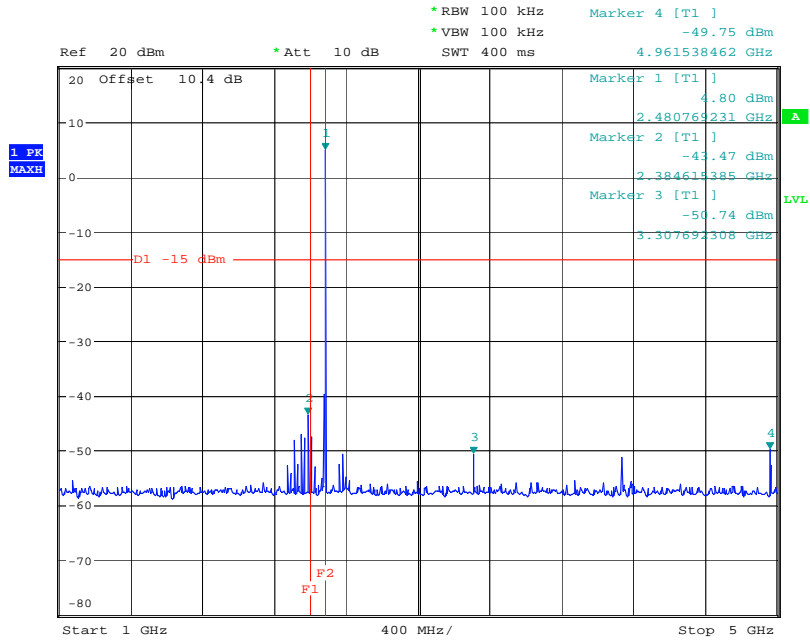
30 MHz – 1 GHz



Date: 24.SEP.2007 14:00:57

Top Channel

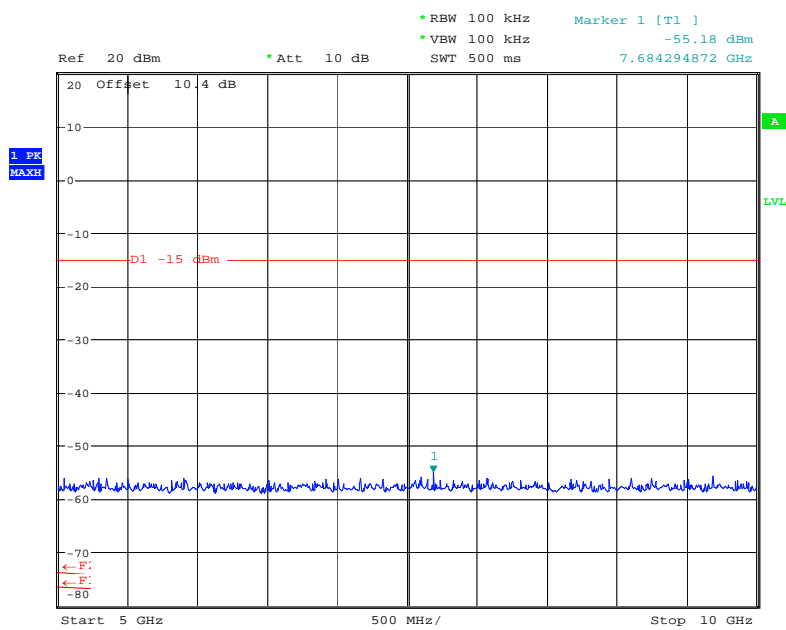
1 GHz – 5 GHz



Date: 24.SEP.2007 14:03:30

Top Channel

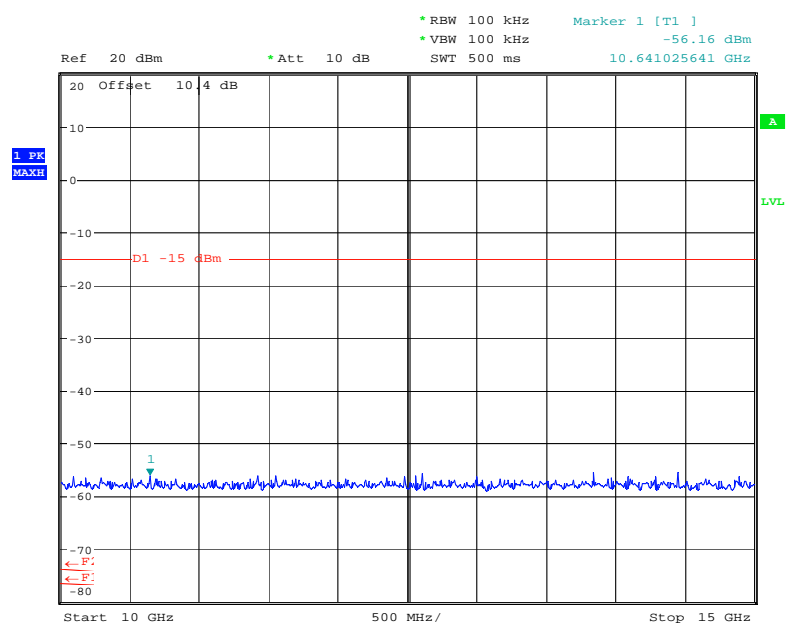
5 GHz – 10 GHz



Date: 24.SEP.2007 14:04:15

Top Channel

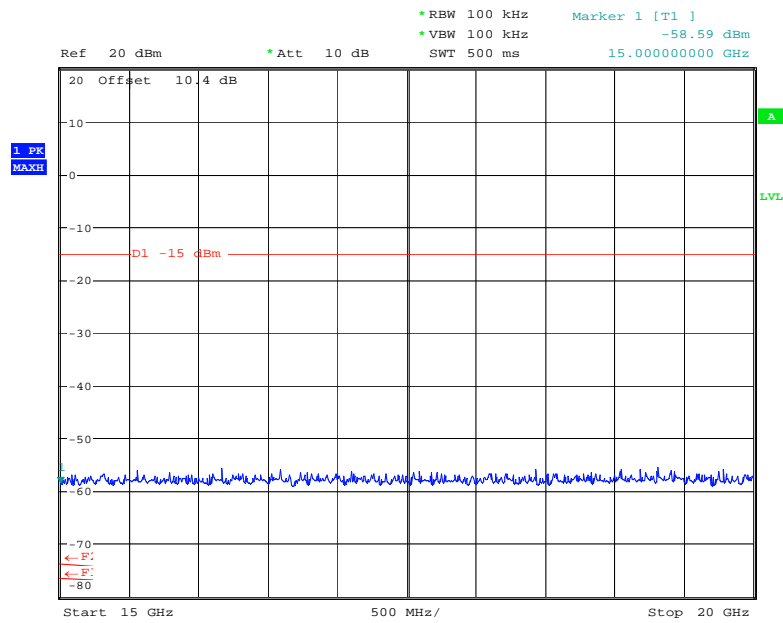
10 GHz – 15 GHz



Date: 24.SEP.2007 14:04:53

Top Channel

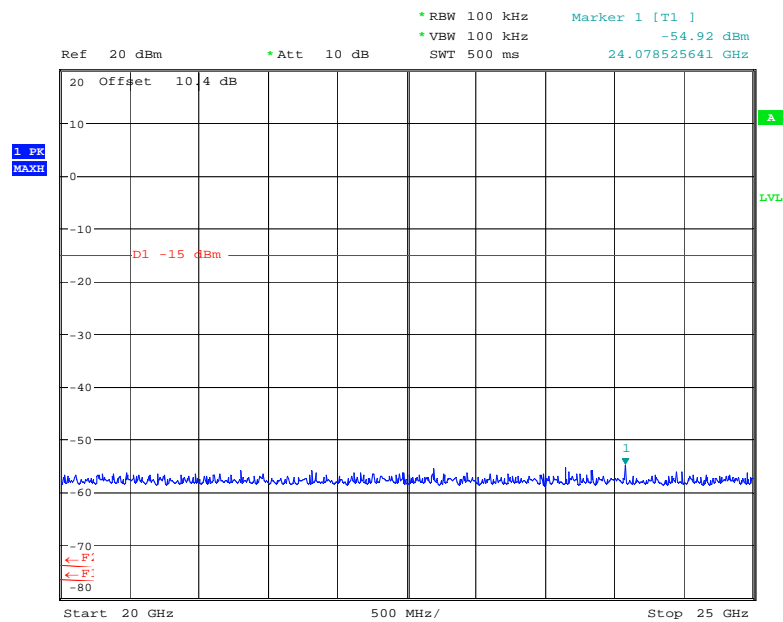
15 GHz – 20 GHz



Date: 24.SEP.2007 14:05:34

Top Channel

20 GHz – 25 GHz

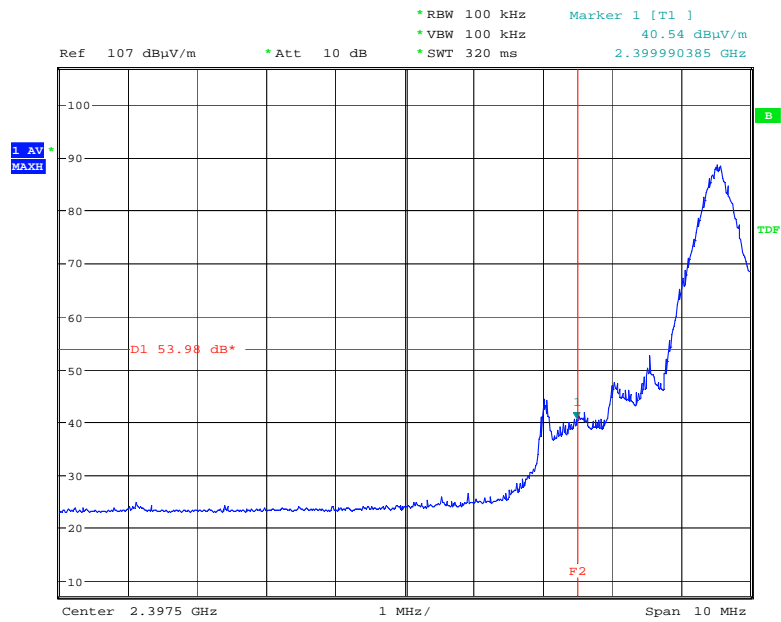


Date: 24.SEP.2007 14:06:11

ANNEX K

BAND EDGE EMISSIONS RADIATED 15.247

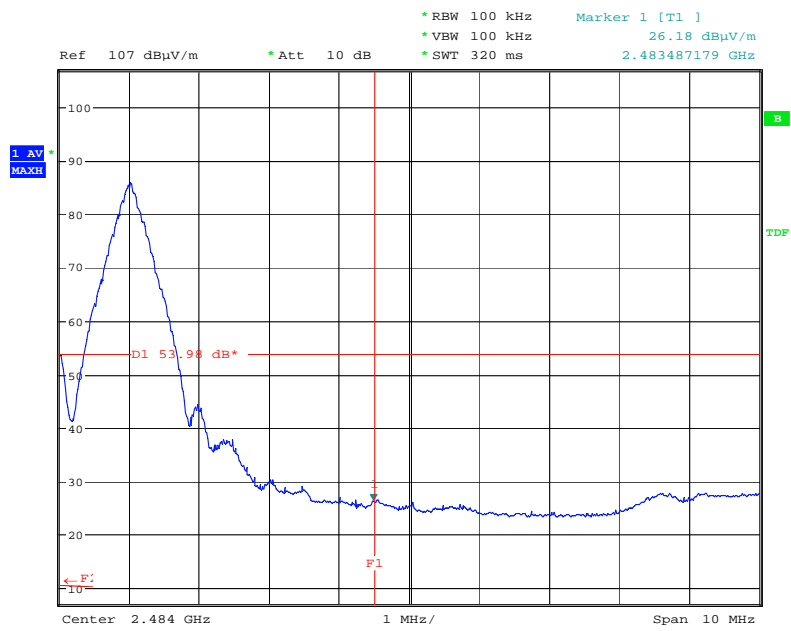
PART 15.247



Date: 1.OCT.2007 17:34:59

Radiated lower band edge

PART 15.247



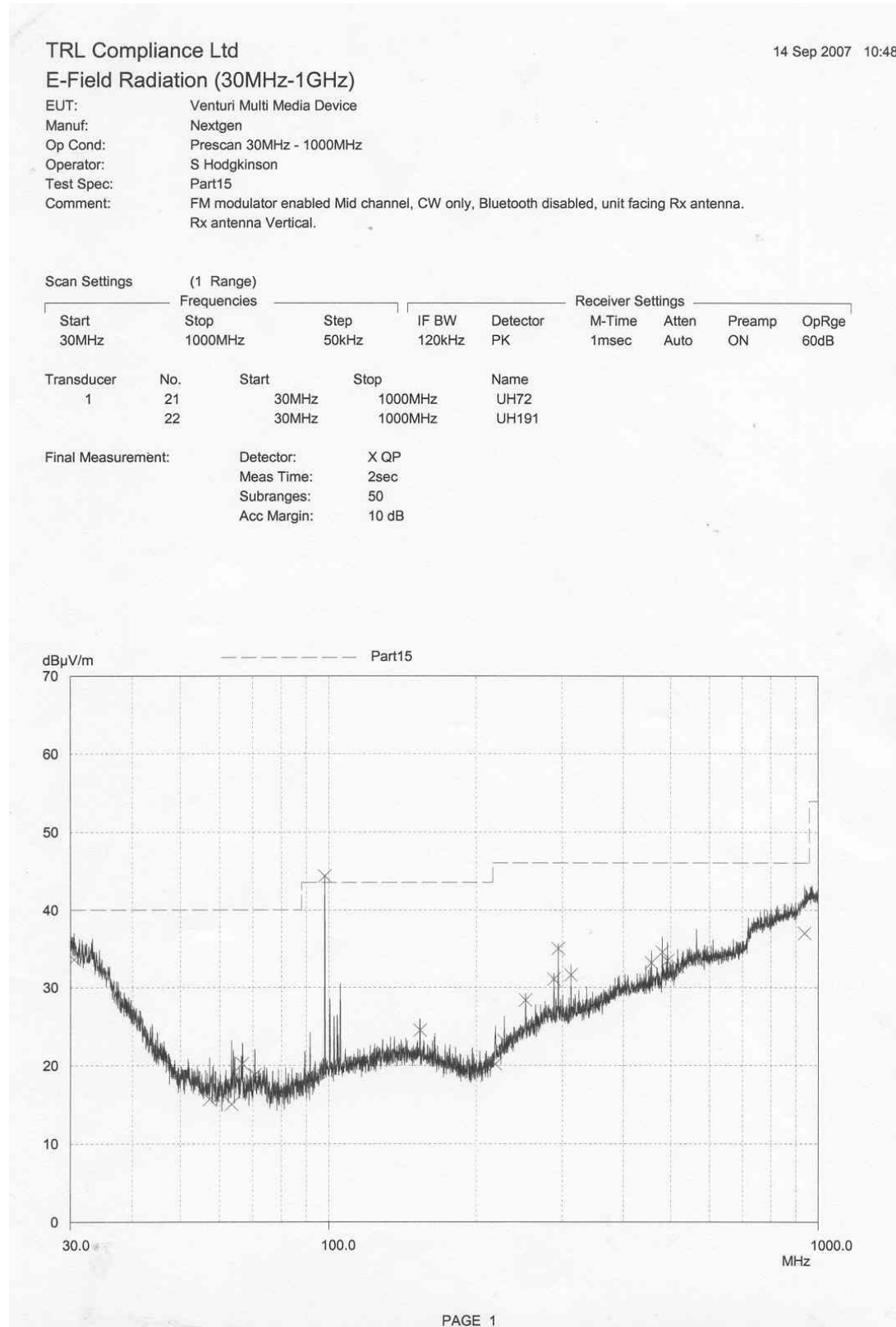
Date: 1.OCT.2007 17:37:41

Radiated higher band edge

ANNEX L
TRANSMITTER PRE SCAN PLOTS

TRANSMITTER TESTS

TRANSMITTER PRE SCAN INFORMATION PART 15.239 FM MODULATOR ONLY



TRANSMITTER TESTS

TRANSMITTER PRE SCAN INFORMATION PART 15.239 & 15.247 FM MODULATOR AND BLUETOOTH DEVICE ENABLED

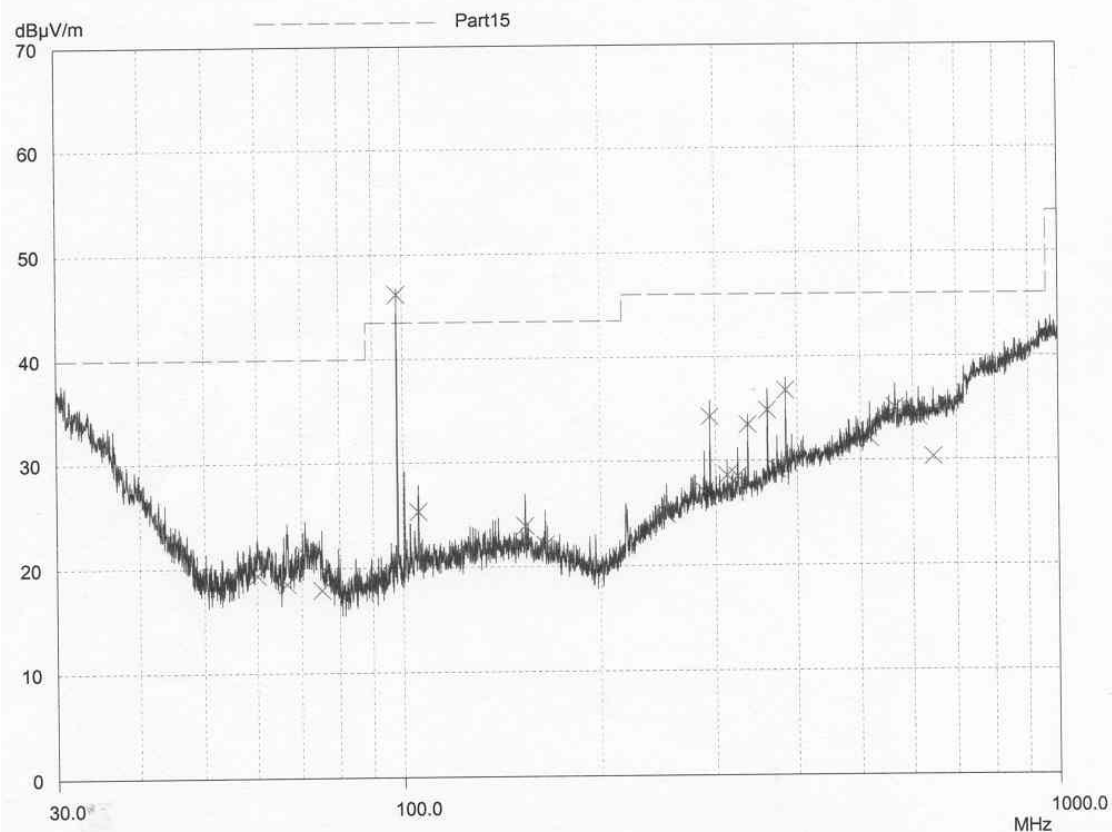
TRL Compliance Ltd

21 Sep 2007 10:07

E-Field Radiation (30MHz-1GHz)

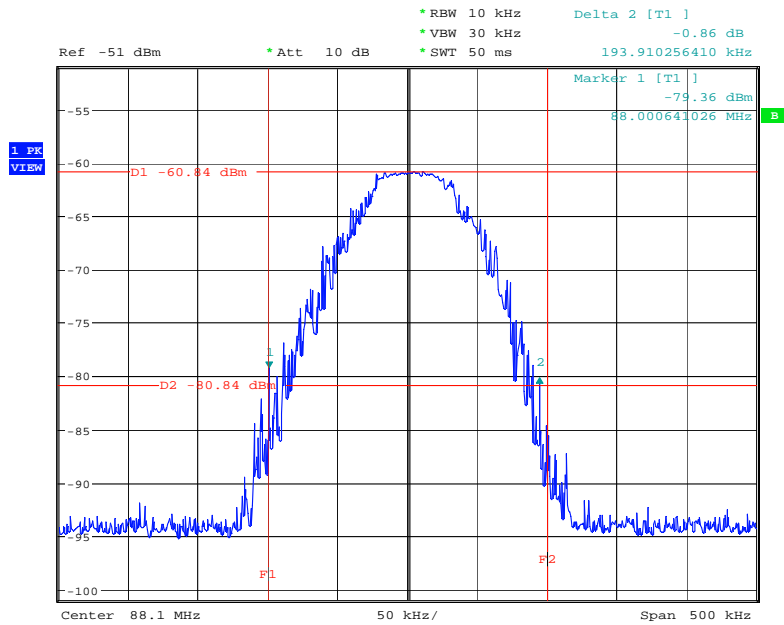
EUT: Venturi Multi Media
Manuf: Nextgen
Op Cond: Prescan 30MHz - 1000MHz
Operator: S Hodgkinson
Test Spec: Part15
Comment: FM modulator enabled mid channel, Bluetooth device in Tx mid channel mode, MP3 player connected via USB and audio Rx antenna Vertical.

Scan Settings		(1 Range)			Receiver Settings			
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	UH191				
Final Measurement:		Detector:	X QP					
		Meas Time:	1sec					
		Peaks:	8					
		Acc Margin:	10 dB					



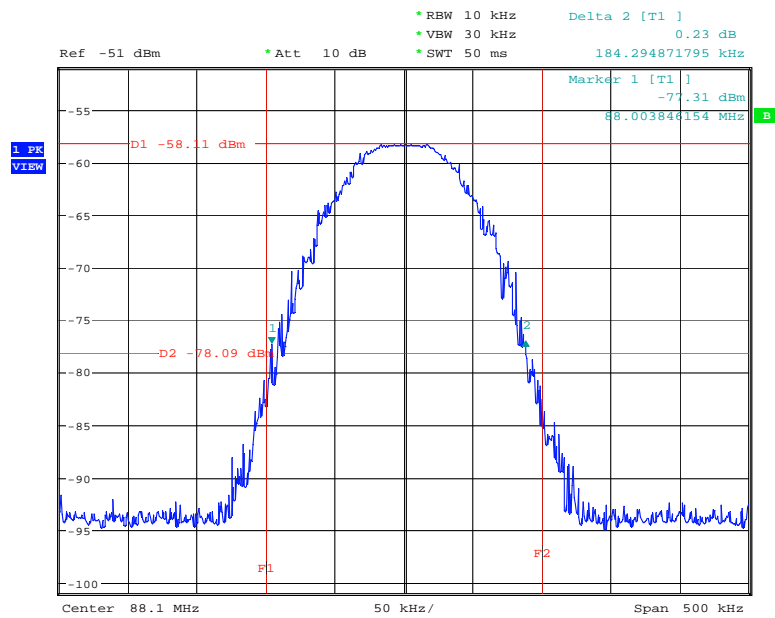
ANNEX M
20dB BANDWIDTH
(FM MODULATOR)

PART 15.239



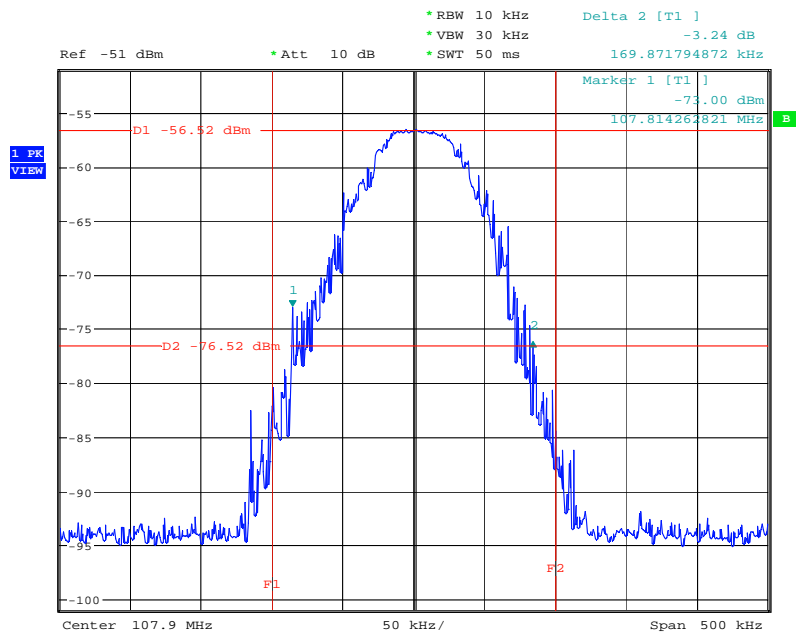
Date: 12.OCT.2007 11:50:46

RADIATED LOWER BANDEDGE AUDIO TRACK VIA MP3 PLAYER VOLUME SET TO MAX



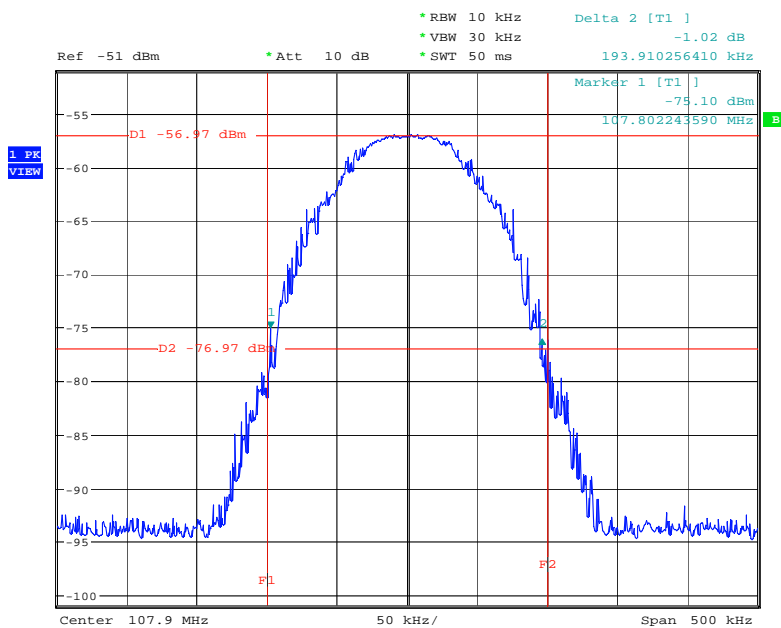
Date: 12.OCT.2007 11:10:27

RADIATED LOWER BANDEDGE AUDIO TRACK VIA BLUETOOTH LINK VOLUME SET TO MAX



Date: 12.OCT.2007 11:36:59

RADIATED HIGHER BANDEDGE AUDIO TRACK VIA MP3 PLAYER VOLUME SET TO MAX



Date: 12.OCT.2007 11:29:26

RADIATED LOWER BANDEDGE AUDIO TRACK VIA BLUETOOTH LINK VOLUME SET TO MAX

ANNEX N
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%**