

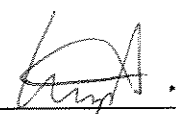
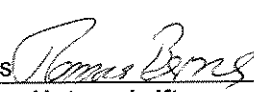
Prüfbericht - Nr.: Test Report No.	14007081 001	Seite 1 von 13 Page 1 of 13	
Auftraggeber: Applicant	ATI Electronics (Shenzhen) Co. Ltd. 4/F. 1 Tower Baolu Industrial Park Shiyan Town Shenzhen, P.R. China		
Gegenstand der Prüfung: Test item	Bluetooth Headset		
Bezeichnung: Identification	BlueXTel H1	Serien-Nr.: Serial No.	Engineering sample
Wareneingangs-Nr.: Receipt No.	041112038 050201072	Eingangsdatum: Date of receipt	12.11.2004
Prüfört: Testing location	TÜV Rheinland Hong Kong Ltd. Room 8, 25th Floor, Skyline Tower, 39 Wang Kwong Road, Kowloon Bay Kowloon, Hong Kong Hong Kong Productivity Council HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong		
Prüfgrundlage: Test specification	FCC Part 15 Subpart C ANSI C63.4-2003 CISPR 22:1997		
Prüfergebnis: Test Result	Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben genannter Prüfgrundlage. The above mentioned product was tested and passed .		
geprüft / tested by:		kontrolliert / reviewed by:	
07.02.2005	Hugo Wan	07.02.2005	Thomas Berns
Datum	Name	Datum	Name
Date	Name	Date	Name
			
	Unterschrift		Unterschrift
	Signature		Signature
Sonstiges: Other Aspects	FCCID: SF4BXH1		
Abkürzungen:	OK, Pass, P Fail, F N/A NT	= entspricht Prüfgrundlage = entspricht nicht Prüfgrundlage = nicht anwendbar = nicht getestet	Abbreviations: OK, Pass, P Fail, F N/A NT = passed = failed = not applicable = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicate in extracts. This test report does not entitle to carry any safety mark on this or similar products.			

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Product information

Manufacturers declarations

	Transmitter	Receiver
Operating frequency range	2402 - 2480 MHz	2402 - 2480 MHz
Type of modulation	FHSS modulation	FHSS modulation
Number of channels	79	79
Channel separation	1 MHz	1 MHz
Type of antenna	Integral Antenna	Integral Antenna
Antenna gain (dBi)	0	
Power level	fix	
Type of equipment	stand alone	stand alone
Connection to public utility power line	Yes	
Nominal voltage	V _{nor} : 3.7 V	V _{nor} : 3.7 V
Independent Operation Modes	Page scan Inquiry scan Connection state - ACL Link Connection state - SCO Link Charging	

Product function and intended use

The test item is a Wireless Headset based on the Bluetooth technology.

Bluetooth is a short-range radio link intended to be a cable replacement between portable and/or fixed electronic devices.

Bluetooth operates in the unlicensed ISM Band at 2.4 GHz. In the US a band of 83.5 MHz width is available. In this band, 79 RF channels spaced 1 MHz apart are defined.

The channel is represented by a pseudo-random hopping sequence through the 79 channels. The channel is divided into time slots, with a nominal slot length of 625 µs, where each slot corresponds to different RF hop frequencies. The nominal hop rate is 1600 hops/s. The symbol rate on the channel is 1 Ms/s.

Submitted documents

Circuit Diagram
Block Diagram
Bill of material
User manual

Special accessories and auxiliary equipment

The product has been tested together with the following additional accessory:

- BlueXTel Charger
Model Number: Nil
Input: 120VAC, 60Hz
Output: 5.4VDC, 190mA

List of Test and Measurement Instruments

	Kind of Equipment	Manufacturer	Type	S/N
<input checked="" type="checkbox"/>	Test Receiver	Rohde & Schwarz	ESH-3	890173/033
<input checked="" type="checkbox"/>	L/I/S/N	Rohde & Schwarz	ESH 3-Z5	849876/026
<input type="checkbox"/>	Oscilloscope	HP	54713B	US34510455
<input type="checkbox"/>	Test Receiver	Rohde & Schwarz	ESVP	882402/033
<input type="checkbox"/>	Absorbing Clamp	Rohde & Schwarz	MDS-21	979 3/4
<input checked="" type="checkbox"/>	Test Receiver	Rohde & Schwarz	ESVS30	842807/009
<input checked="" type="checkbox"/>	Biconical Antenna	Rohde & Schwarz	HK116	841489/015
<input checked="" type="checkbox"/>	Log.-Periodic Antenna	Rohde & Schwarz	HL223	841516/017
<input type="checkbox"/>	Universal Power Analyzer	Voltech	PM3000A	9915
<input type="checkbox"/>	Reference Impedance Network	Voltech	IEC 555 Standard	9946
<input type="checkbox"/>	AC Power Source	California Instr.	4500L	HK51895
<input type="checkbox"/>	Trip-Loop Antenna	Chase	LLA6142	1019
<input checked="" type="checkbox"/>	Double Ridge Horn Antenna	EMCO	3115	9002-3351
<input checked="" type="checkbox"/>	Double Ridge Horn Antenna	EMCO	3115	9002-3347
<input type="checkbox"/>	RF Comms Test Set	HP	8920B	US36492628
<input type="checkbox"/>	Spectrum Analyser + Tracking G.	HP	8596E	3639A00758
<input type="checkbox"/>	Signal Generator	Rohde & Schwarz	SMY 01	844146/024
<input type="checkbox"/>	Signal Generator	Rohde & Schwarz	SMY 01	844146/023
<input type="checkbox"/>	BiLog Antenna	EMCO	3143	9607-1287
<input type="checkbox"/>	Isotropic Field Probe	Holladay	HI-4422	90956
<input type="checkbox"/>	Power Amplifier	Kalmus	757-LC	7620-1
<input type="checkbox"/>	Power Amplifier	Kalmus	122-FC	7620-2
<input type="checkbox"/>	Coupling Clamp	Schaffner	CDN 126	312
<input type="checkbox"/>	Couple Device Network	Fischer	CDN-M2	9604
<input checked="" type="checkbox"/>	Spectrum Analyzer	Rohde & Schwarz	FSP30	1093.4495K30
<input type="checkbox"/>	Temperature Chamber	Binder	MK 240	9020-0028
<input type="checkbox"/>	EFT,ESD,SURGE, DIPS tester	Schaffner	Best 96	IN3796-011
<input type="checkbox"/>	Surge Generator	Schaffner	NSG650	280

Result FCC Part 15 – Subpart C

Subclause 15.203 – Antenna Information		Pass
Requirement:	No antenna other than that furnished by the responsible party shall be used with the device	
Result:	Permanent attached antenna	
Verdict:	Pass	

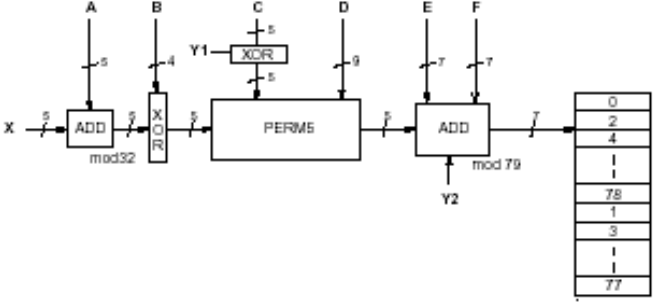
Subclause 15.204 – Antenna Information		Pass
Requirement:	Provide information for every antenna proposed for the use with the EUT	
Result:	a) Antenna type: Integral antenna soldered to the circuit board b) Manufacturer and model no: N.A. c) Gain with reference to an isotropic radiator: 0 dBi	
Verdict:	Pass	

Subclause 15.207 – Disturbance Voltage on AC Mains		Pass				
Test Port: AC mains input port of the charger Applied voltage: 120VAC Applicable only to equipment designed to be connected to the public utility power line. Mode of operation: Charging only						
Live measurement						
Frequency range (MHz)	Frequency (MHz)	Quasi-peak dB μ V/m	Average dB μ V/m	Limit QP (dB μ V/m)	Limit AV (dB μ V/m)	Verdict
0,15 – 0,5	No peak found	-	-	66 - 56	56 - 46	Pass
> 0,5 - 5	No peak found	-	-	56	46	Pass
> 5 - 30	No peak found	-	-	60	50	Pass
Neutral measurement						
Frequency range (MHz)	Frequency (MHz)	Quasi-peak dB μ V/m	Average dB μ V/m	Limit QP (dB μ V/m)	Limit AV (dB μ V/m)	Verdict
0,15 – 0,5	No peak found	-	-	66 - 56	56 - 46	Pass
> 0,5 - 5	No peak found	-	-	56	46	Pass
> 5 - 30	No peak found	-	-	60	50	Pass
Result: The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150kHz to 30MHz does not exceed the limits. For test results plots refer to Appendix 1, page 2-4.						

Subclause 15.247 (a) – Carrier Frequency Separation	Pass
Requirement: Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater.	
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 Mode of operation : Tx mode (hopping on), DH1 packet Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 100 kHz / 300 kHz Supply voltage : 3.7V from rechargeable battery Temperature : 23°C Humidity : 50%	
Result: The centre frequencies of the hopping channels are separated by more than the 20dB bandwidth. For test results plots refer to Appendix 1, page 5.	
Verdict: Pass	

Subclause 15.247 (a) – Time of Occupancy (Dwell Time)	Pass
Requirement: Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.	
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 Mode of operation : Tx mode (hopping on), DH5 packet Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 1 MHz / 3 MHz Supply voltage : 3.7V from rechargeable battery Temperature : 23°C Humidity : 50%	
Result: The screenshot in Appendix 1 page 7 shows the occurrence of a channel in a 12.8 s time period. In inquiry and page scan mode Bluetooth is using 32 hopping channels only. The frequency was used 26 times. The dwell time for the longest supported packet type is about 3 ms. As a result the average time of occupancy will not be greater than 400 ms.	
i.e. Time period calculation: $0.4 \times 32 = 12.8s$	
Limit calculation: $26 \times 2.880 \times 10^{-3} = 74.88 \times 10^{-3}s$ $\leq 400 \times 10^{-3}s$	
For test protocols please refer to Appendix 1, page 6-7.	
Verdict: Pass	

Subclause 15.247 (a) – 20 dB Bandwidth			
Requirement: Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater.			
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz), DH5 packet Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 30 kHz / 100 kHz Supply voltage : 3.7V from rechargeable battery Temperature : 23°C Humidity : 50%			
Results			
For test protocols refer to Appendix 1, page 8-9.			
Frequency (MHz)	20 dB left (MHz)	20 dB right (MHz)	20dB bandwidth (MHz)
2402	0.476	0.480	0.956
2441	0.476	0.484	0.960
2480	0.476	0.488	0.964

Subclause 15.247 (a) – Hopping Sequence	Pass
Requirement: The hopping sequence is generated and provided with an example.	
Hopping sequence The channel is represented by a pseudo-random hopping sequence hopping through the 79 RF channels. The hopping sequence is unique for the piconet and is determined by the Bluetooth device address of the master. The X input determines the phase in the 32-hop segment, whereas Y1 and Y2 selects between master-to-slave and slave-to-master transmission. The inputs A to D determine the ordering within the segment, the inputs E and F determine the mapping onto the hop frequencies.	
	

Example data:

Hop sequence {k} for CONNECTION STATE:
 CLK start: 0x0000010
 ULAP: 0x00000000
 #ticks: 00 02 | 04 06 | 08 0a | 0c 0e | 10 12 | 14 16 | 18 1a | 1c 1e |

0x0000010:	08 66	10 70	12 19	14 23	16 01	18 05	20 33	22 37
0x0000030:	24 03	26 07	28 35	30 39	32 72	34 76	36 25	38 29
0x0000050:	40 74	42 78	44 27	46 31	48 09	50 13	52 41	54 45
0x0000070:	56 11	58 15	60 43	62 47	32 17	36 19	34 49	38 51
0x0000090:	40 21	44 23	42 53	46 55	48 33	52 35	50 65	54 67
0x00000b0:	56 37	60 39	58 69	62 71	64 25	68 27	66 57	70 59
0x00000d0:	72 29	76 31	74 61	78 63	01 41	05 43	03 73	07 75
0x00000f0:	09 45	13 47	11 77	15 00	64 49	66 53	68 02	70 06
0x0000110:	01 51	03 55	05 04	07 08	72 57	74 61	76 10	78 14
0x0000130:	09 59	11 63	13 12	15 16	17 65	19 69	21 18	23 22
0x0000150:	33 67	35 71	37 20	39 24	25 73	27 77	29 26	31 30
0x0000170:	41 75	43 00	45 28	47 32	17 02	21 04	19 34	23 36
0x0000190:	33 06	37 08	35 38	39 40	25 10	29 12	27 42	31 44
0x00001b0:	41 14	45 16	43 46	47 48	49 18	53 20	51 50	55 52
0x00001d0:	65 22	69 24	67 54	71 56	57 26	61 28	59 58	63 60
0x00001f0:	73 30	77 32	75 62	00 64	49 34	51 42	57 66	59 74
0x0000210:	53 36	55 44	61 68	63 76	65 50	67 58	73 03	75 11
0x0000230:	69 52	71 60	77 05	00 13	02 38	04 46	10 70	12 78
0x0000250:	06 40	08 48	14 72	16 01	18 54	20 62	26 07	28 15
0x0000270:	22 56	24 64	30 09	32 17	02 66	06 74	10 19	14 27
0x0000290:	04 70	08 78	12 23	16 31	18 03	22 11	26 35	30 43
0x00002b0:	20 07	24 15	28 39	32 47	34 68	38 76	42 21	46 29
0x00002d0:	36 72	40 01	44 25	48 33	50 05	54 13	58 37	62 45
0x00002f0:	52 09	56 17	60 41	64 49	34 19	36 35	50 51	52 67
0x0000310:	38 21	40 37	54 53	56 69	42 27	44 43	58 59	60 75
0x0000330:	46 29	48 45	62 61	64 77	66 23	68 39	03 55	05 71
0x0000350:	70 25	72 41	07 57	09 73	74 31	76 47	11 63	13 00
0x0000370:	78 33	01 49	15 65	17 02	66 51	70 67	03 04	07 20
0x0000390:	68 55	72 71	05 08	09 24	74 59	78 75	11 12	15 28
0x00003b0:	76 63	01 00	13 16	17 32	19 53	23 69	35 06	39 22
0x00003d0:	21 57	25 73	37 10	41 26	27 61	31 77	43 14	47 30
0x00003f0:	29 65	33 02	45 18	49 34	19 04	21 08	23 20	25 24

Subclause 15.247 (a) – Equal Hopping Frequency Use	Pass
Requirement: Each of the transmitter's hopping channels is used equally on average.	
Equal hopping frequency use	
The EUT complies with the Bluetooth RF specifications. For details refer to the Bluetooth standard.	

Subclause 15.247 (a) – Receiver Input Bandwidth	Pass
Requirement: The associated receiver(s) complies with the requirement that its input bandwidth matches the bandwidth of the transmitted signal.	
Receiver input bandwidth The receiver bandwidth is equal to the receiver bandwidth in the 79 hopping channel mode, which is 1 MHz. The receiver bandwidth was verified during Bluetooth RF conformance testing.	

Subclause 15.247 (a) – Receiver Hopping Capability	Pass
Requirement: The associated receiver has the ability to shift frequencies in synchronisation with the transmitted signals.	
Receiver hopping Capability The EUT complies with the Bluetooth RF specifications. For details refer to the Bluetooth standard.	

Subclause 15.247 (b) – Peak Output Power	Pass																								
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz), DH1 packet Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 1 MHz / 3 MHz Supply voltage : 3.7V from rechargeable battery Temperature : 23°C Humidity : 50%																									
Requirement: For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 Watt. For all other frequency hopping systems in the 2400 – 2483.5 MHz band: 0.125 Watts.																									
Result All three transmit frequency modes comply with the maximum peak output power limit. For test protocols please refer to Appendix 1, page 10-11.																									
<table border="1"> <thead> <tr> <th>Frequency (MHz)</th> <th>Maximum peak output power (dBm)</th> <th>Cable attenuation (dB)</th> <th>Output power (dBm)</th> <th>Limit (W/dBm)</th> <th>Verdict</th> </tr> </thead> <tbody> <tr> <td>2402</td> <td>-2.80</td> <td>3.52</td> <td>0.72</td> <td>1 / 30.0</td> <td>Pass</td> </tr> <tr> <td>2441</td> <td>-3.68</td> <td>3.65</td> <td>-0.03</td> <td>1 / 30.0</td> <td>Pass</td> </tr> <tr> <td>2480</td> <td>-4.58</td> <td>3.60</td> <td>-0.98</td> <td>1 / 30.0</td> <td>Pass</td> </tr> </tbody> </table>	Frequency (MHz)	Maximum peak output power (dBm)	Cable attenuation (dB)	Output power (dBm)	Limit (W/dBm)	Verdict	2402	-2.80	3.52	0.72	1 / 30.0	Pass	2441	-3.68	3.65	-0.03	1 / 30.0	Pass	2480	-4.58	3.60	-0.98	1 / 30.0	Pass	
Frequency (MHz)	Maximum peak output power (dBm)	Cable attenuation (dB)	Output power (dBm)	Limit (W/dBm)	Verdict																				
2402	-2.80	3.52	0.72	1 / 30.0	Pass																				
2441	-3.68	3.65	-0.03	1 / 30.0	Pass																				
2480	-4.58	3.60	-0.98	1 / 30.0	Pass																				

Subclause 15.247 (b) – Band edge compliance		Pass
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz), DH1 packet Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 300 kHz / 1 MHz Supply voltage : 3.7V from rechargeable battery Temperature : 23°C Humidity : 50%		
Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.		
Result There is no peak found outside any 100 kHz bandwidth of the operating frequency band in the three transmit frequency. All three transmit frequency modes comply with the limit stated in subclause 15.247(c). For test protocols refer to Appendix 1, page 12-13.		

Subclause 15.247 (c) – Spurious Conducted Emissions		Pass			
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz), DH1 packet Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 100 kHz / 300 kHz Supply voltage : 3.7V from rechargeable battery Temperature : 23 °C Humidity : 50 %					
Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.					
Result There is no peak found outside any 100kHz bandwidth of the operating frequency band in the three transmit frequency. All three transmit frequency modes comply with the limit stated in subclause 15.247(c). For test protocols refer to Appendix 1, page 14-20.					
Operating frequency (MHz)	Spurious frequency (MHz)	Spurious Level (dBm)	Reference value (dBm)	Delta (dB)	Verdict
2402	No peak found	-	-	-	Pass
2441	No peak found	-	-	-	Pass
2480	No peak found	-	-	-	Pass

Subclause 15.247 (c) – Spurious Radiated Emissions							Pass
Test Specification : ANSI C63.4 - 2003 Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz), DH1 packet Port of testing : Enclosure Detector : Peak RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 3.7V from rechargeable battery Temperature : 23°C Humidity : 50%							
Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.							
Result All three transmit frequency modes comply with the field strength within the restricted bands. For test protocols refer to Appendix 1, page 21-51.							
Tx frequency 2402MHz				Vertical Polarization			
Freq MHz	Reading dBuV	AF dB(1/m)	Cable att. dB	Pre-amp dB	Filter att. dB	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	-	-	-	-	-	-	-
Tx frequency 2402MHz				Horizontal Polarization			
Freq MHz	Reading dBuV	AF dB(1/m)	Cable att. dB	Pre-amp dB	Filter att. dB	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	-	-	-	-	-	-	-
Tx frequency 2441MHz				Vertical Polarization			
Freq MHz	Reading dBuV	AF dB(1/m)	Cable att. dB	Pre-amp dB	Filter att. dB	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	-	-	-	-	-	-	-
Tx frequency 2441MHz				Horizontal Polarization			
Freq MHz	Reading dBuV	AF dB(1/m)	Cable att. dB	Pre-amp dB	Filter att. dB	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	-	-	-	-	-	-	-
Tx frequency 2480MHz				Vertical Polarization			
Freq MHz	Reading dBuV	AF dB(1/m)	Cable att. dB	Pre-amp dB	Filter att. dB	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	-	-	-	-	-	-	-

Tx frequency 2480MHz		Horizontal Polarization					
Freq MHz	Reading dBuV	AF dB(1/m)	Cable att. dB	Pre-amp dB	Filter att. dB	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	-	-	-	-	-	-	-

Appendix 1

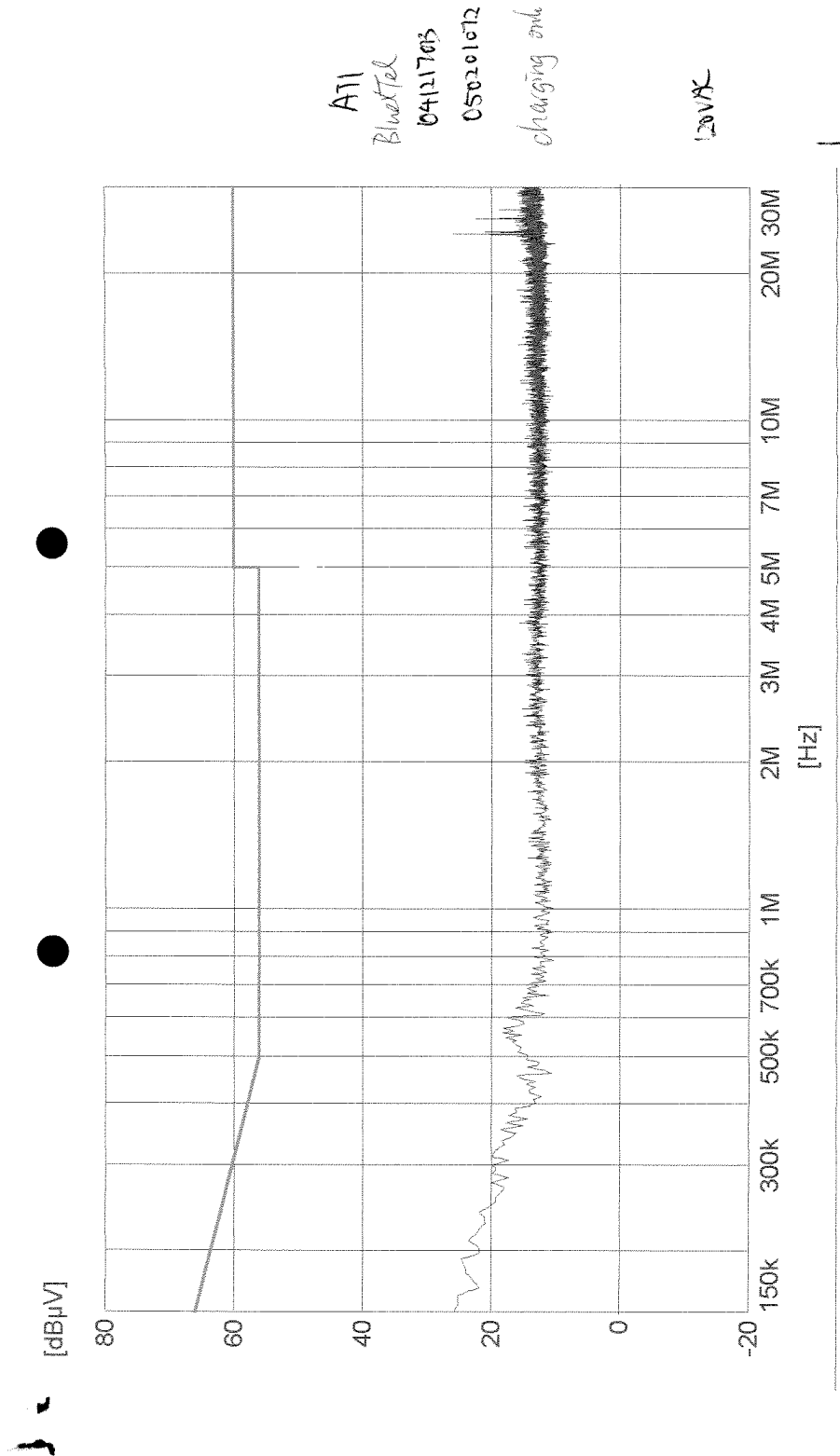
Test results

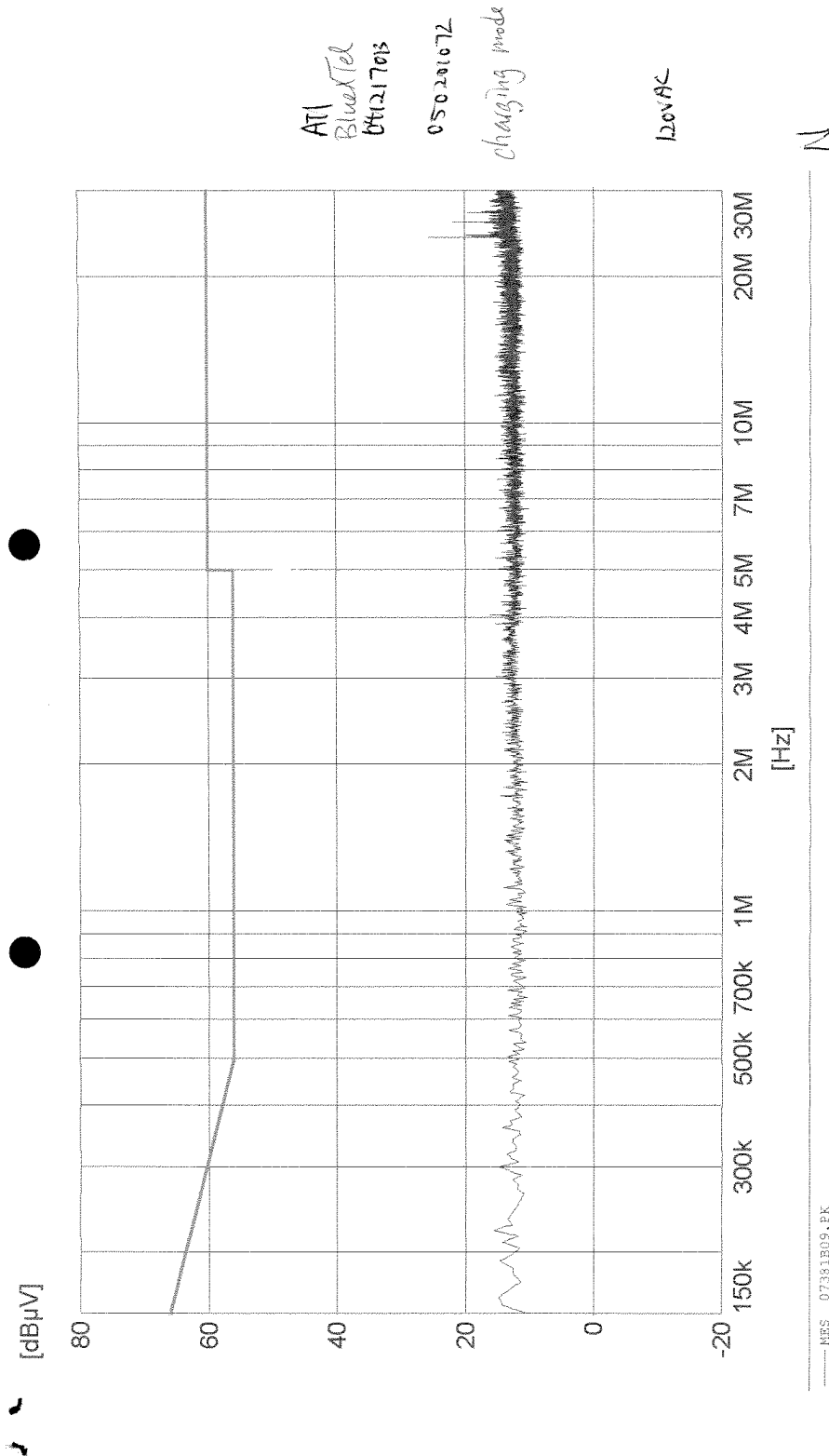
Disturbance Voltage on AC Mains

Date: 3 Feb 2004
EUT: BlueXTel H1
Company: ATI Electronics (Shenzhen) Co. Ltd.
Voltage supply: 120VAC input to charger
Test by: Hugo Wan
Op. mode: Charging

Live measurement			
Frequency (MHz)	QP reading (dB μ V)	Av reading (dB μ V)	Results
No peak found	-	-	Pass

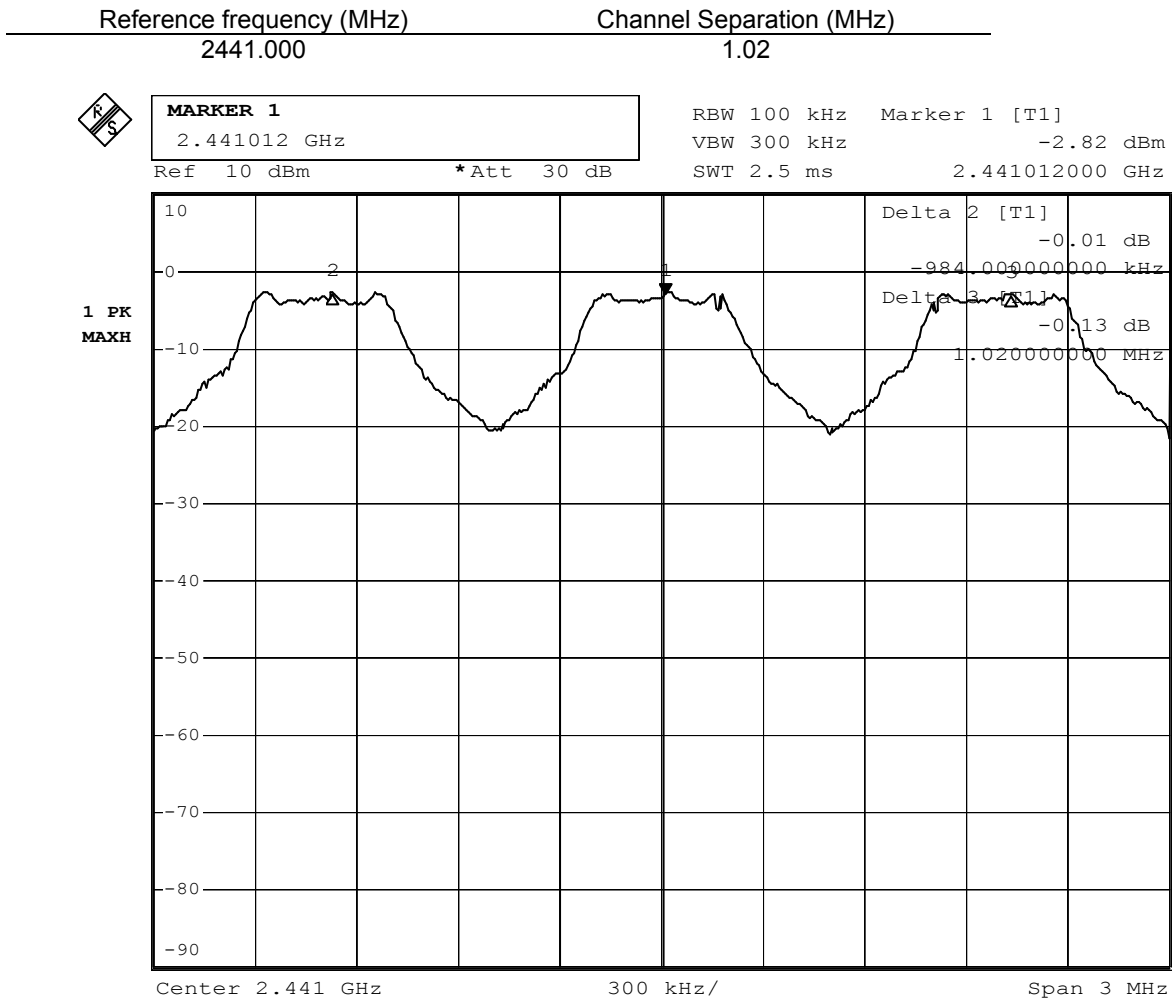
Neutral measurement			
Frequency (MHz)	QP reading (dB μ V)	Av reading (dB μ V)	Results
No peak found	-	-	Pass





Carrier Frequency Separation

Date: 6 Dec 2004
EUT: BlueXTel H1
Company: ATI Electronics (Shenzhen) Co. Ltd.
Humidity: 60%
Temperature: 23°C
Voltage supply: 3.7V from rechargeable battery
Test by: Hugo Wan
Op. mode: Hopping on



Date: 6.DEC.2004 16:31:13

Dwell Time

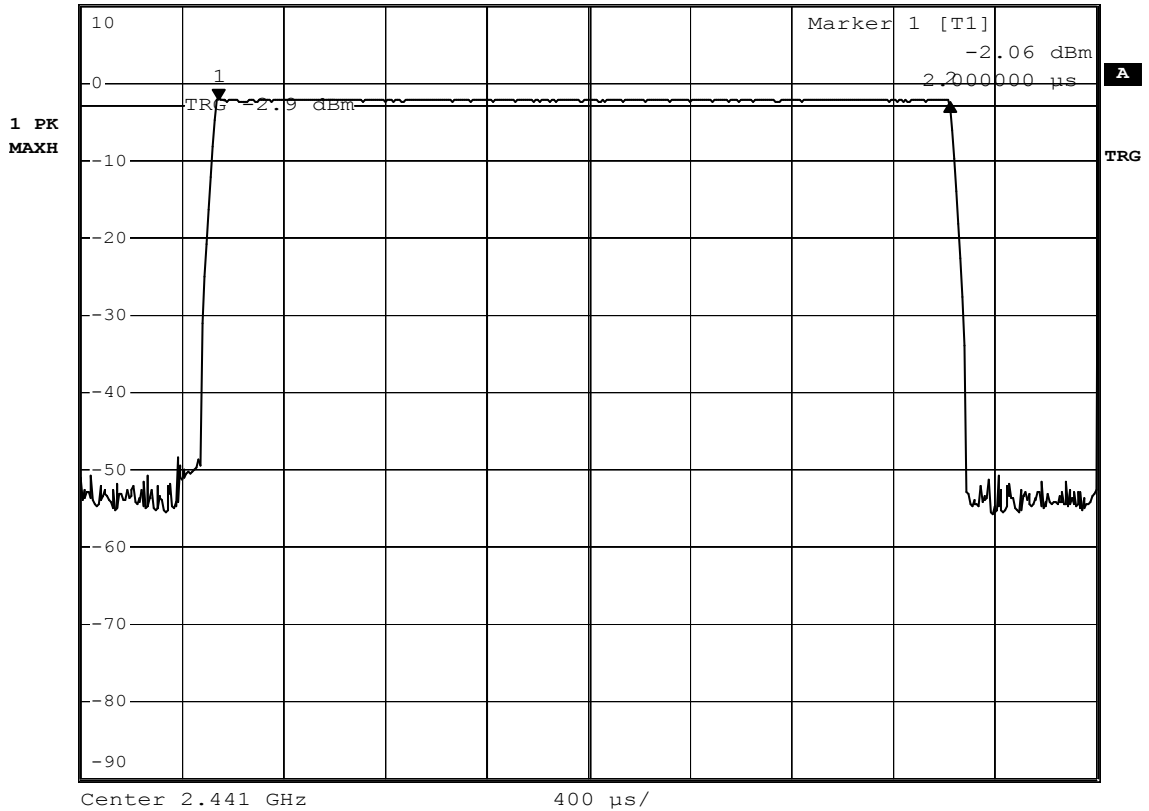
Date: 6 Dec 2004
 EUT: BlueXTel H1
 Company: ATI Electronics (Shenzhen) Co. Ltd.
 Humidity: 60%
 Temperature: 23°C
 Voltage supply: 3.7V from rechargeable battery
 Test by: Hugo Wan
 Op. mode: Hopping on

Burst Duration (ms)	Number of hopping	Time of occupancy (s)	Results
2.880	26	0.002880 x 26 = 0.07488	Pass



TRIGGER LEVEL
 87.1 %
 Ref 10 dBm *Att 30 dB

RBW 1 MHz Delta 2 [T1]
 VBW 3 MHz -0.23 dB
 SWT 4 ms 2.880000 ms

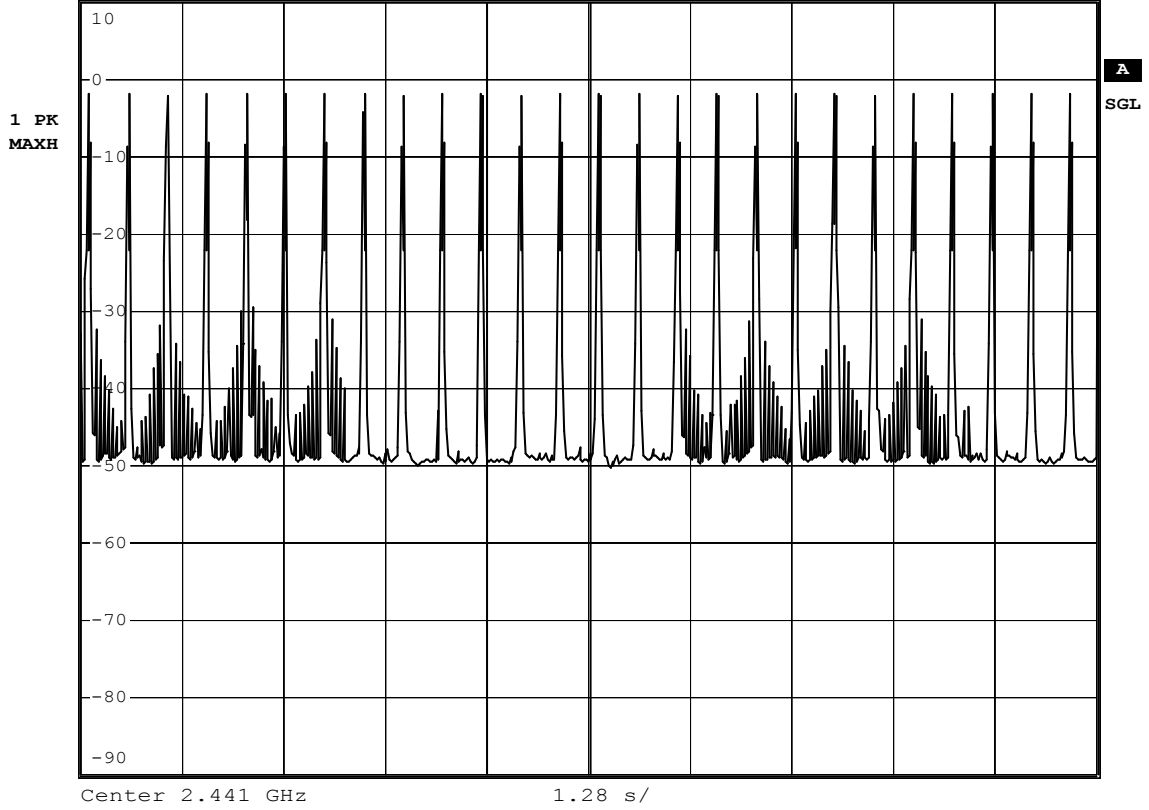


Date: 6.DEC.2004 16:46:50



RBW 1 MHz
VBW 3 MHz
SWT 12.8 s

Ref 10 dBm *Att 30 dB

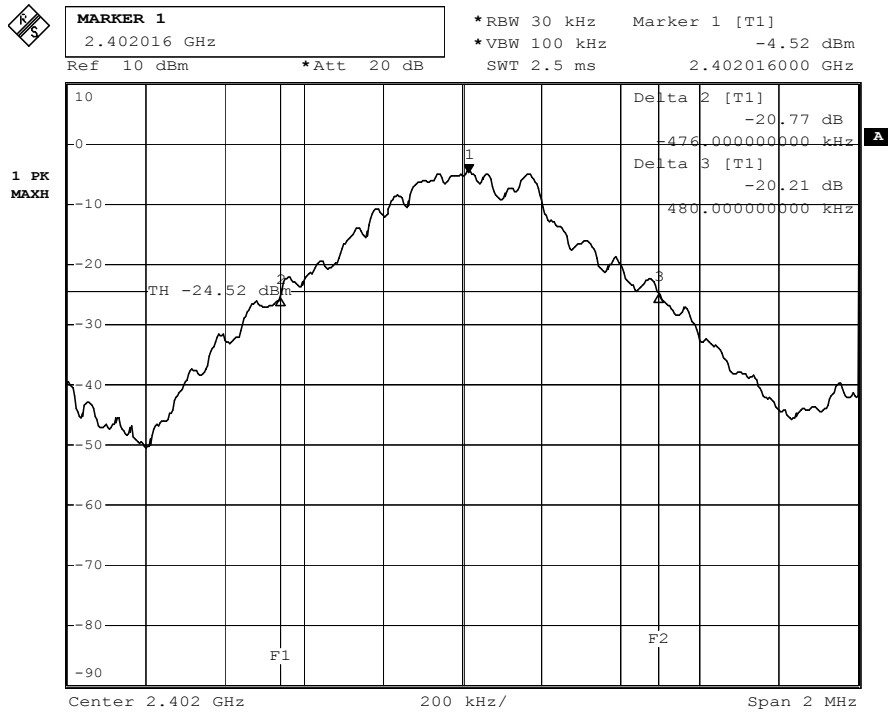


Date: 6.DEC.2004 16:55:29

20dB Bandwidth

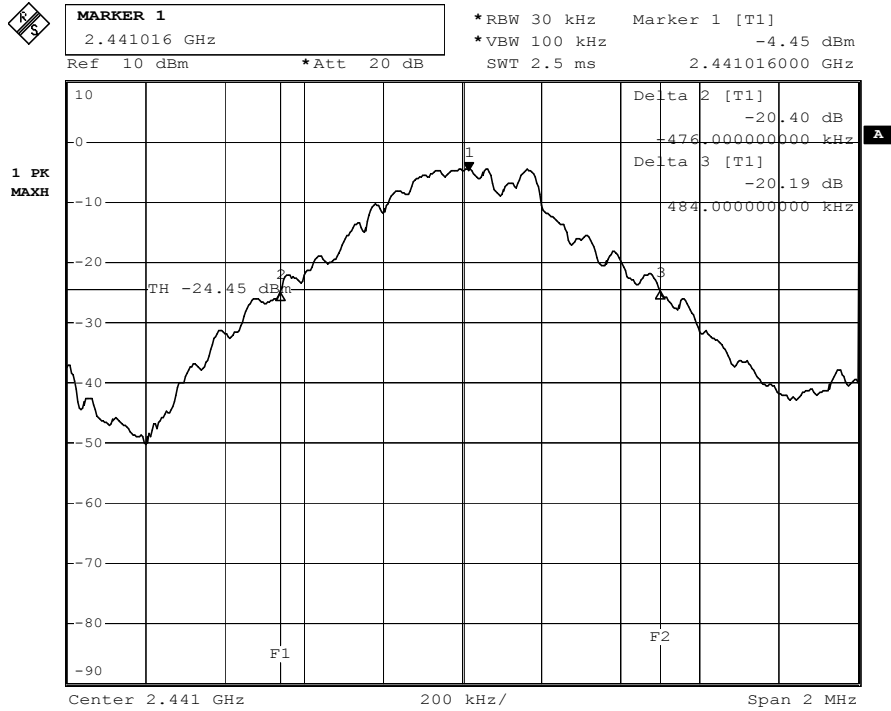
Date: 4 Jan 2005
 EUT: BlueXTel H1
 Company: ATI Electronics (Shenzhen) Co. Ltd.
 Humidity: 60%
 Temperature: 23°C
 Voltage supply: 3.7V from rechargeable battery
 Test by: Hugo Wan
 Op. mode: TX mode, DH5 with PRBS9 payload

Tx frequency (MHz)	Δf_L (MHz)	Δf_H (MHz)	$ \Delta f_H + \Delta f_L $ (MHz)	Results
2402	0.476	0.480	0.956	Pass
2441	0.476	0.484	0.960	Pass
2480	0.476	0.488	0.964	Pass



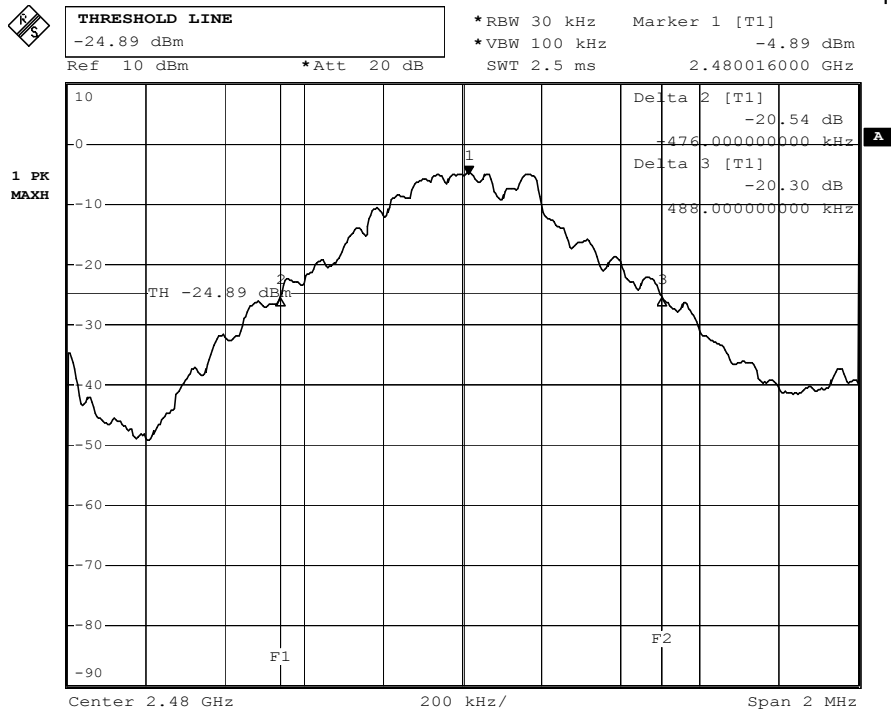
Date: 4.JAN.2005 19:34:32

Tx frequency: 2402MHz



Date: 4.JAN.2005 19:28:25

Tx frequency: 2441MHz



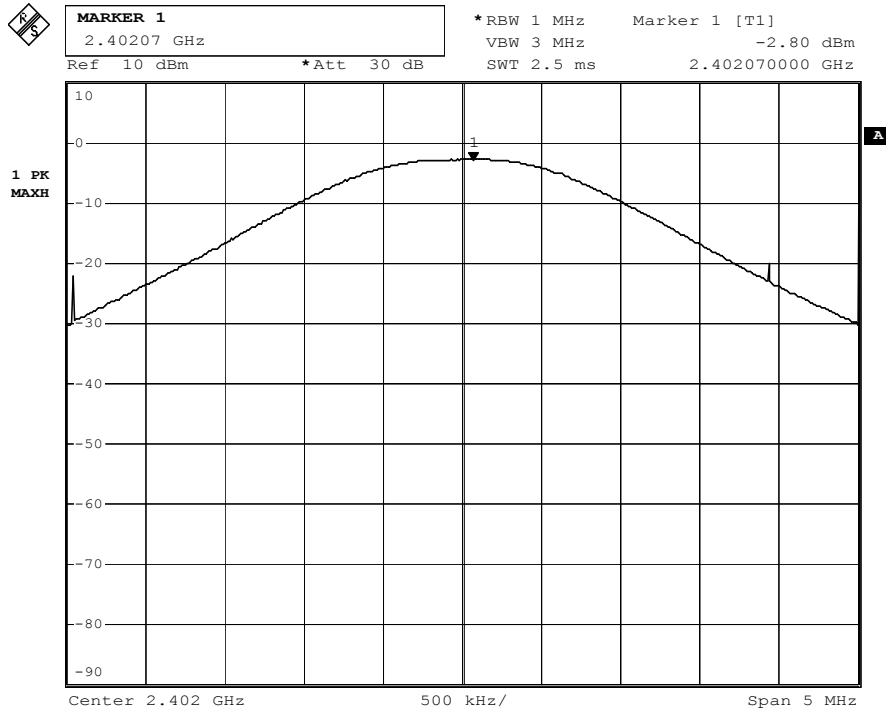
Date: 4.JAN.2005 19:38:23

Tx frequency: 2480MHz

Peak Output Power

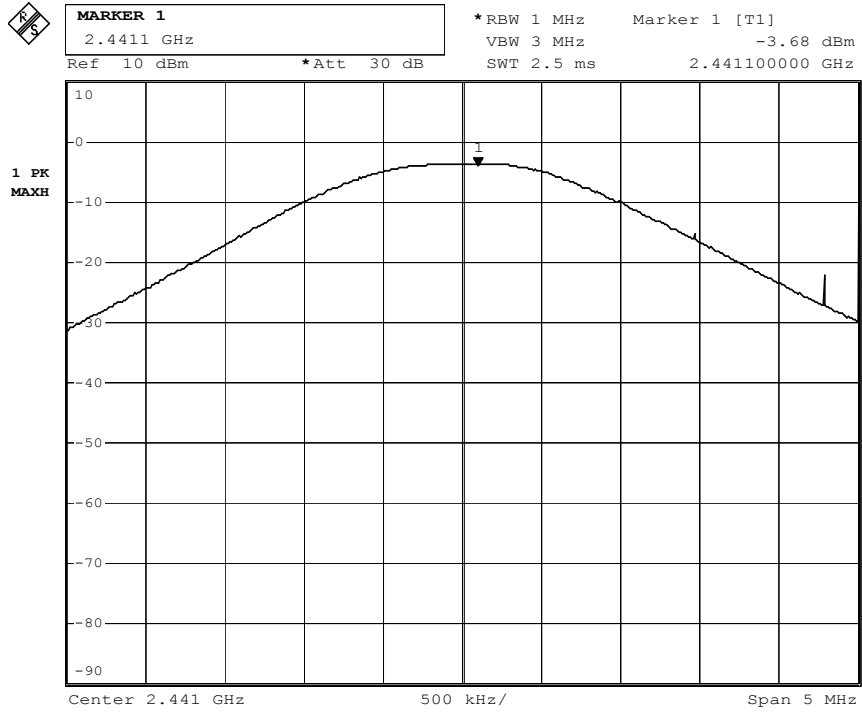
Date: 6 Dec 2004
 EUT: BlueXTel H1
 Company: ATI Electronics (Shenzhen) Co. Ltd.
 Humidity: 60%
 Temperature: 23°C
 Voltage supply: 3.7V from rechargeable battery
 Test by: Hugo Wan
 Op. mode: TX mode, DH1 with PRBS9 payload

Tx Frequency (MHz)	Power P _{PK} (dBm)	Cable Attenuation (dB)	Actual Peak Power (dBm)	Results
2402	-2.80	3.52	0.72	Pass
2441	-3.68	3.65	-0.03	Pass
2480	-4.58	3.60	-0.98	Pass



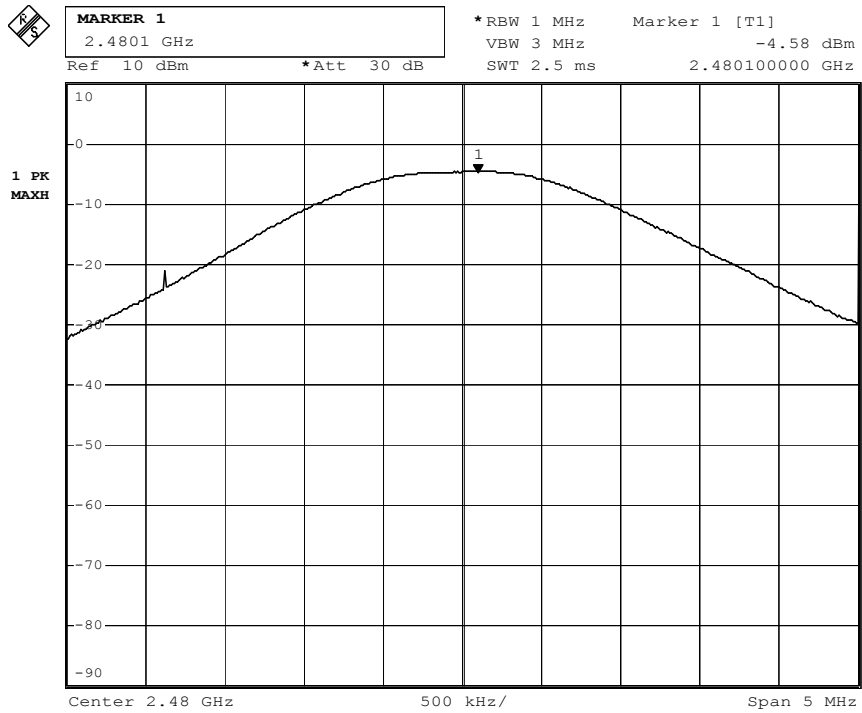
Date: 6.DEC.2004 19:12:19

Tx frequency: 2402MHz



Date: 6.DEC.2004 19:13:02

Tx frequency: 2441MHz



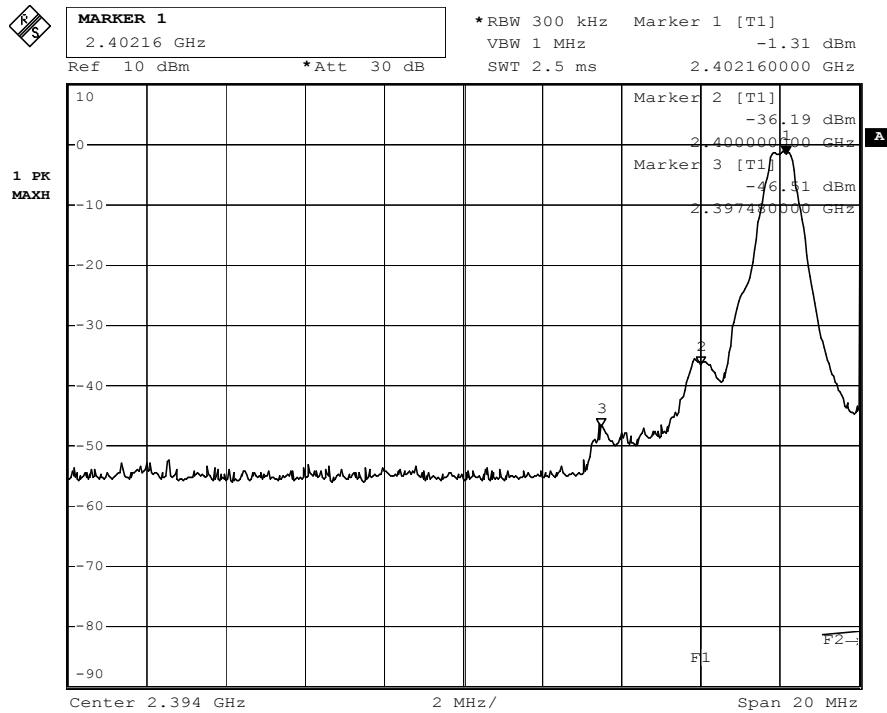
Date: 6.DEC.2004 19:13:33

Tx frequency: 2480MHz

Band Edge Compliance

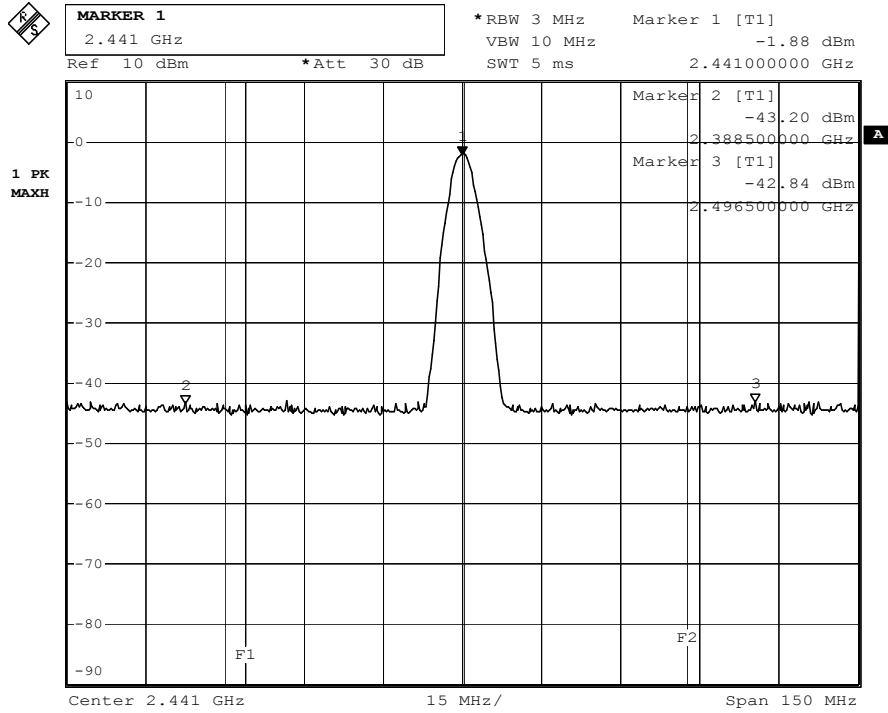
Date: 6 Dec 2004
 EUT: BlueXTel H1
 Company: ATI Electronics (Shenzhen) Co. Ltd.
 Humidity: 60%
 Temperature: 23°C
 Voltage supply: 3.7V from rechargeable battery
 Test by: Hugo Wan
 Op. mode: TX mode, DH1 with PRBS9 payload

Tx Frequency (MHz)	Peak in band Power level (dBm)	RF power outside 100kHz BW (MHz)	RF power difference outside 100kHz BW (dB)	Results
2402	-1.31	No Peak	-	Pass
2480	-3.34	No Peak	-	Pass



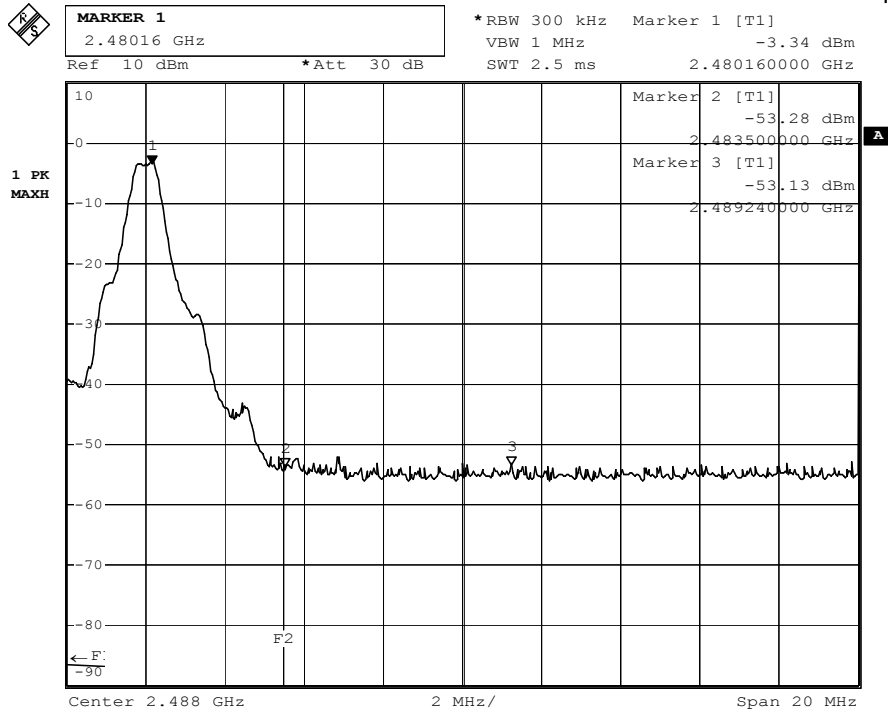
Date: 6.DEC.2004 20:08:41

Tx frequency: 2402MHz



Date: 6.DEC.2004 20:07:32

Tx frequency: 2441MHz



Date: 6.DEC.2004 20:10:21

Tx frequency: 2480MHz

Spurious Emissions - Conducted

Date: 6 Dec 2004
 EUT: BlueXTel H1
 Company: ATI Electronics (Shenzhen) Co. Ltd.
 Humidity: 60%
 Temperature: 23°C
 Voltage supply: 3.7V from rechargeable battery
 Test by: Hugo Wan
 Op. mode: TX mode, DH1 with PRBS9 payload

Tx frequency : 2402MHz

Spurious Frequency (MHz)	Power level (dBm)	Reference value (dBm)	Delta to reference level (dB)	Results
No peak found	-	-	-	Pass

Tx frequency : 2441MHz

Spurious Frequency (MHz)	Power level (dBm)	Reference value (dBm)	Delta to reference level (dB)	Results
No peak found	-	-	-	Pass

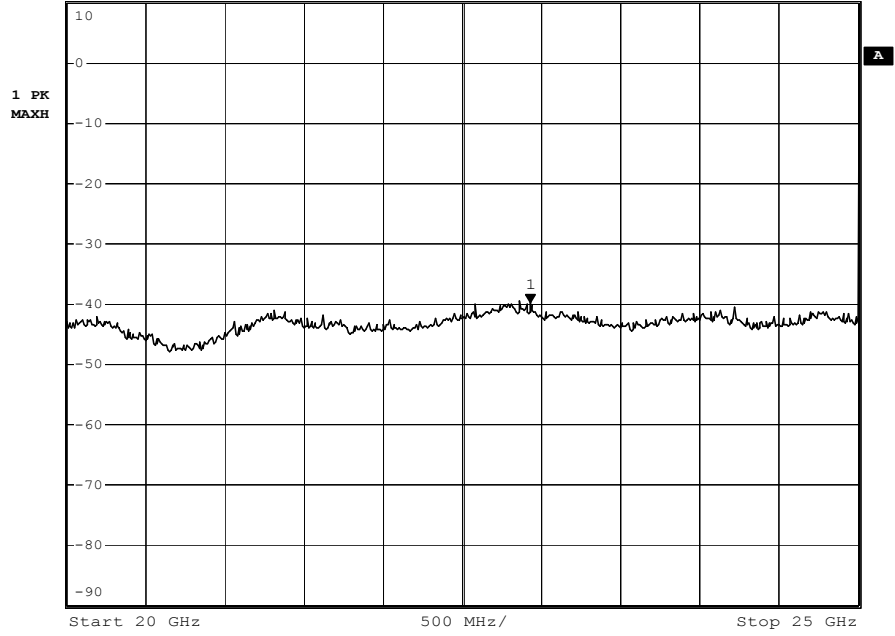
Tx frequency : 2480MHz

Spurious Frequency (MHz)	Power level (dBm)	Reference value (dBm)	Delta to reference level (dB)	Results
No peak found	-	-	-	Pass



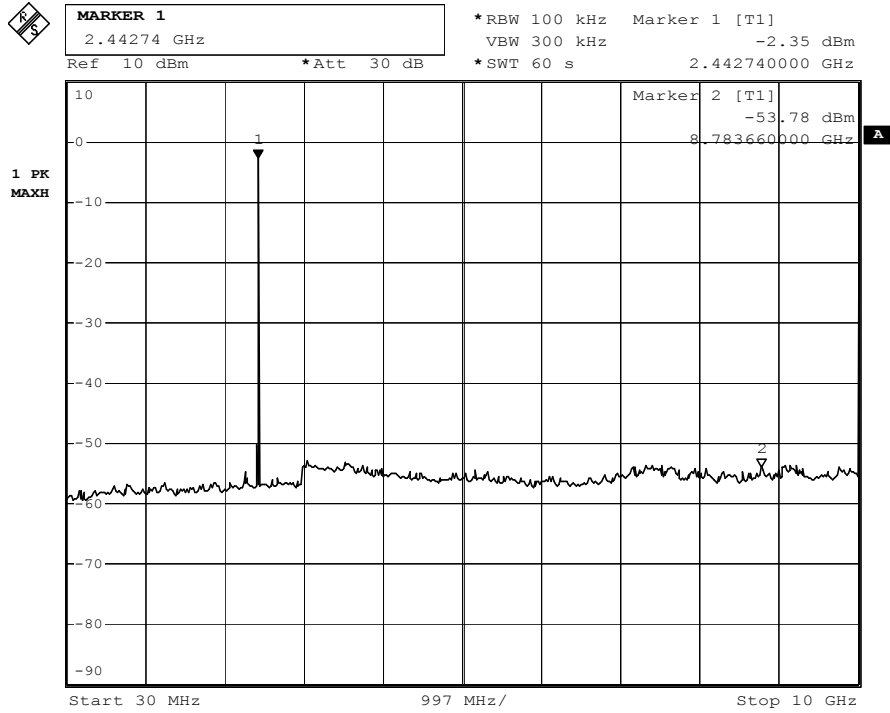
MARKER 1
22.93 GHz

*RBW 100 kHz Marker 1 [T1]
VBW 300 kHz -39.59 dBm
*Att 30 dB
*SWT 60 s 22.93000000 GHz



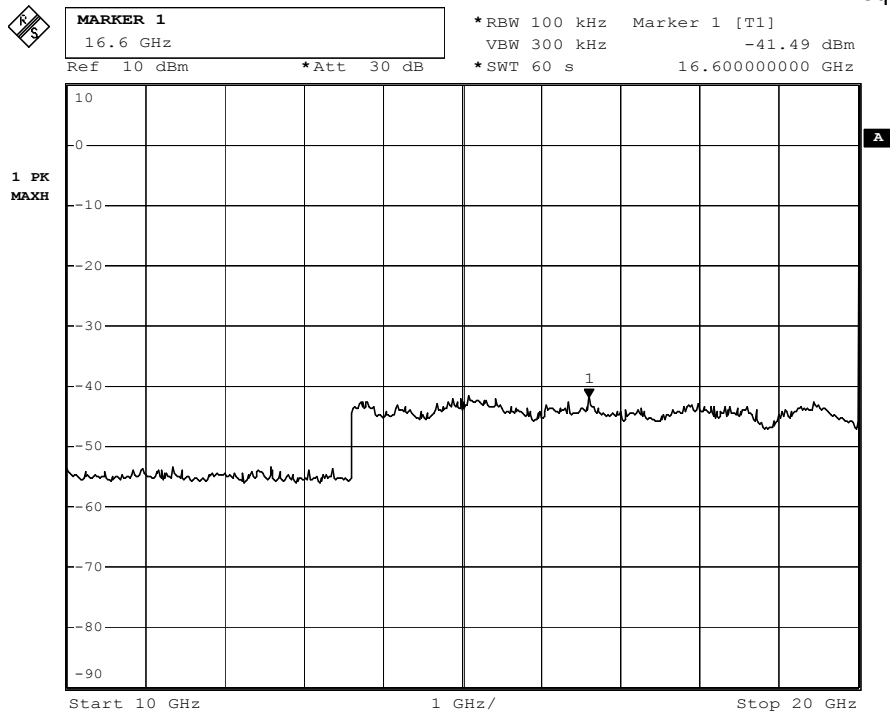
Date: 6.DEC.2004 19:45:03

Tx frequency: 2402MHz



Date: 6.DEC.2004 20:03:59

Tx frequency: 2441MHz



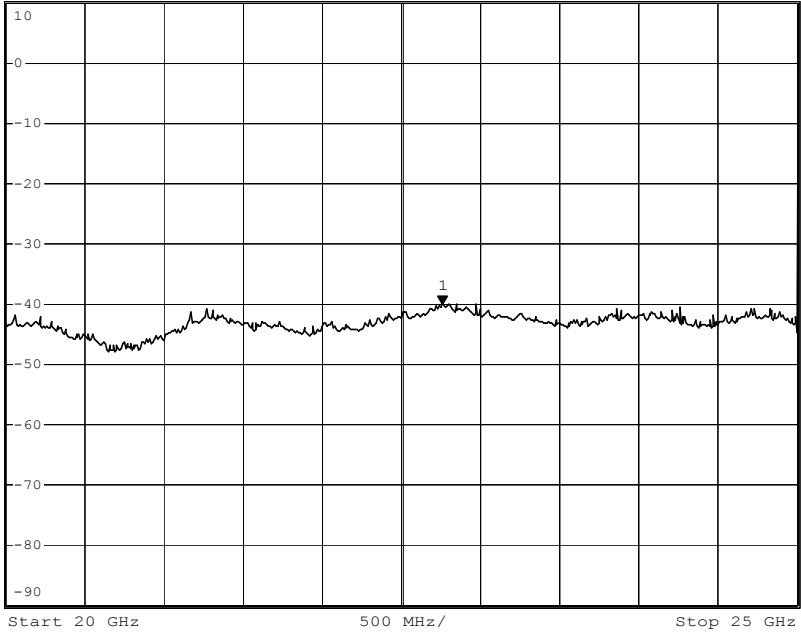
Date: 6.DEC.2004 19:53:58

Tx frequency: 2441MHz



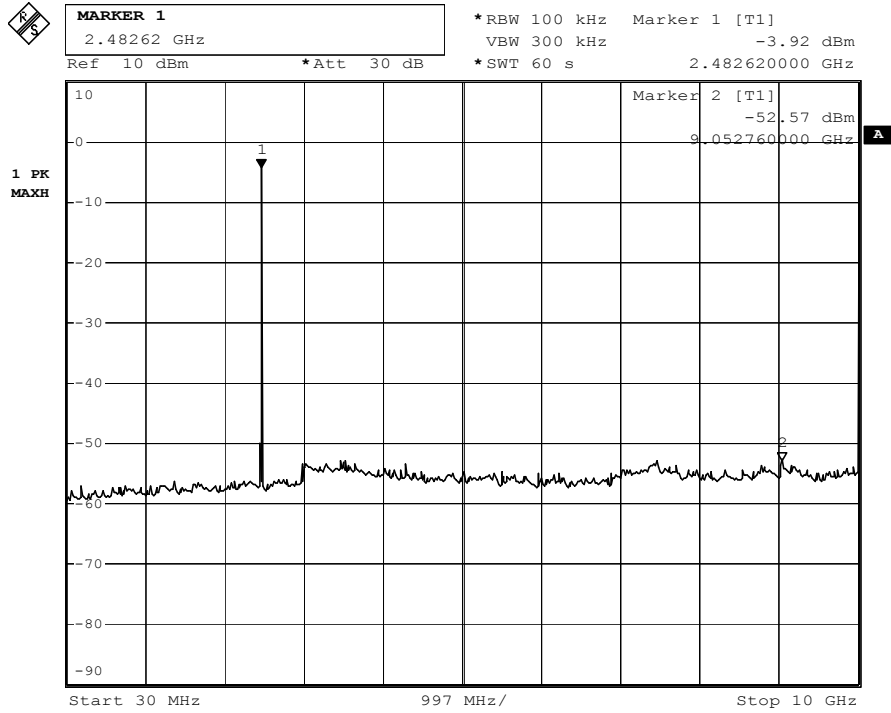
MARKER 1
22.76 GHz

*RBW 100 kHz Marker 1 [T1]
VBW 300 kHz -39.73 dBm
*Att 30 dB
*SWT 60 s 22.76000000 GHz



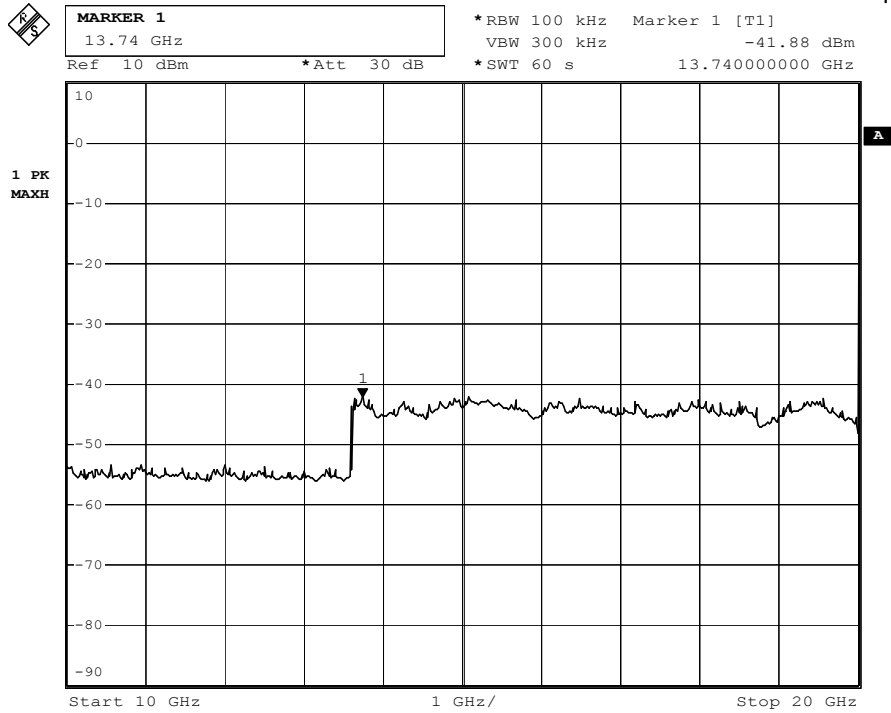
Date: 6.DEC.2004 19:50:05

Tx frequency: 2441MHz



Date: 6.DEC.2004 19:58:55

Tx frequency: 2480MHz



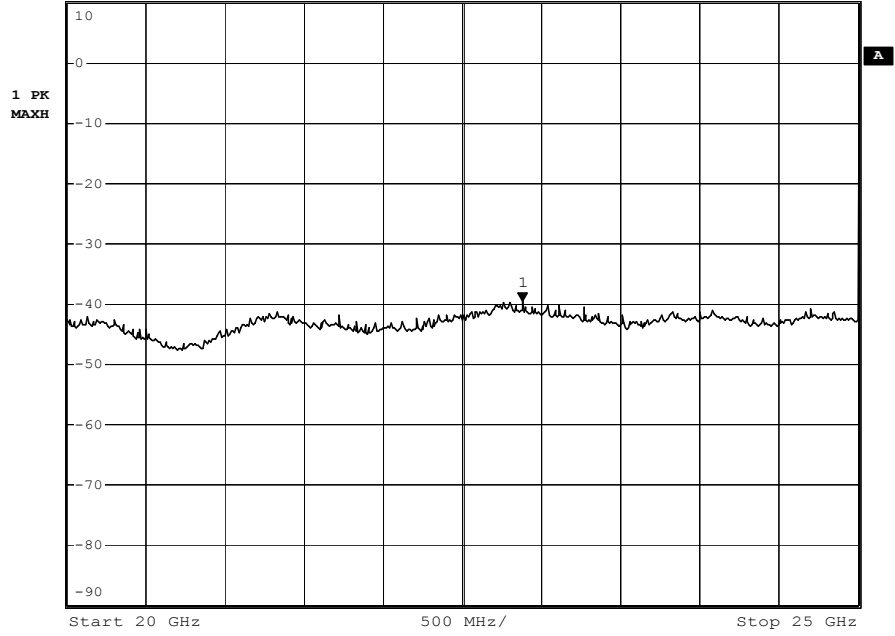
Date: 6.DEC.2004 19:56:12

Tx frequency: 2480MHz



MARKER 1
22.88 GHz

*RBW 100 kHz Marker 1 [T1]
VBW 300 kHz -39.12 dBm
*Att 30 dB
*SWT 60 s 22.88000000 GHz



Date: 6.DEC.2004 19:47:51

Tx frequency: 2480MHz

Spurious Emissions - Radiated

Date: 29 Dec 2004

EUT: BlueXTel H1

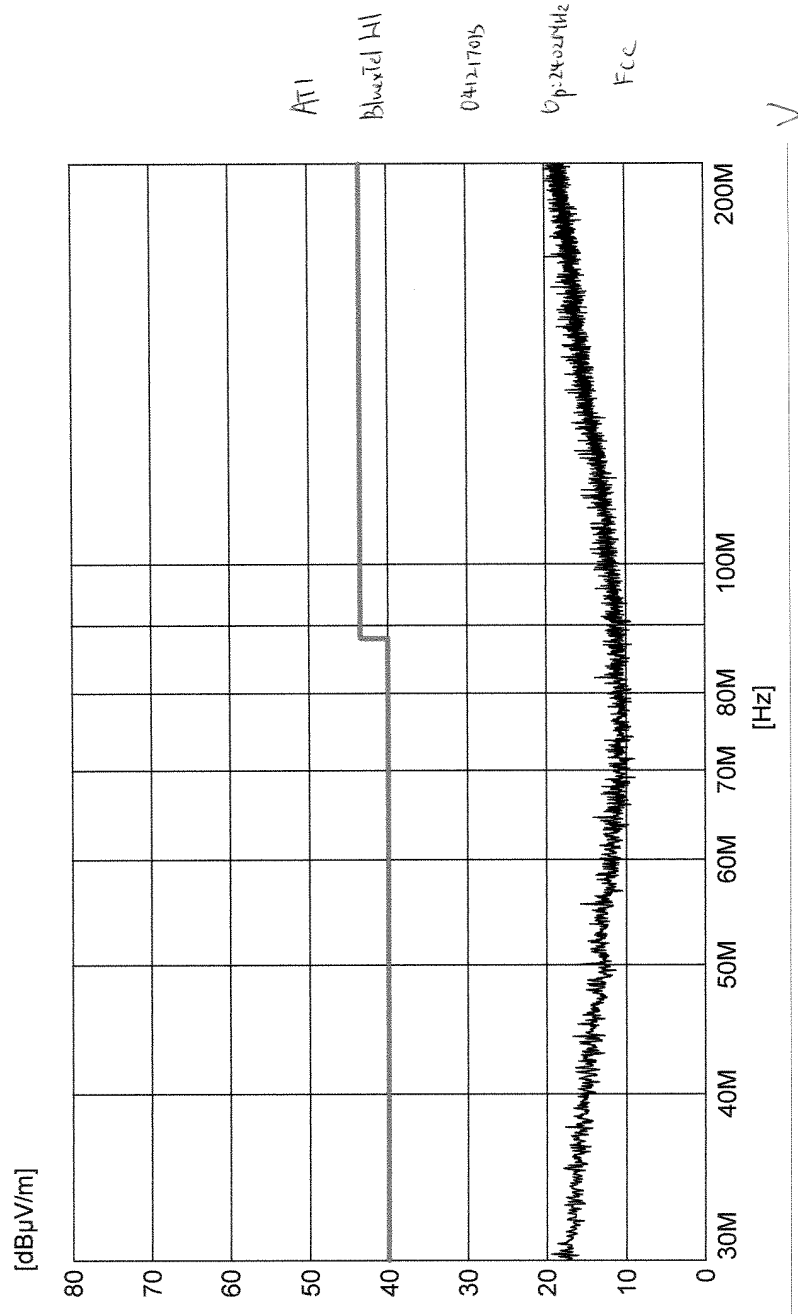
Company: ATI Electronics (Shenzhen) Co. Ltd.

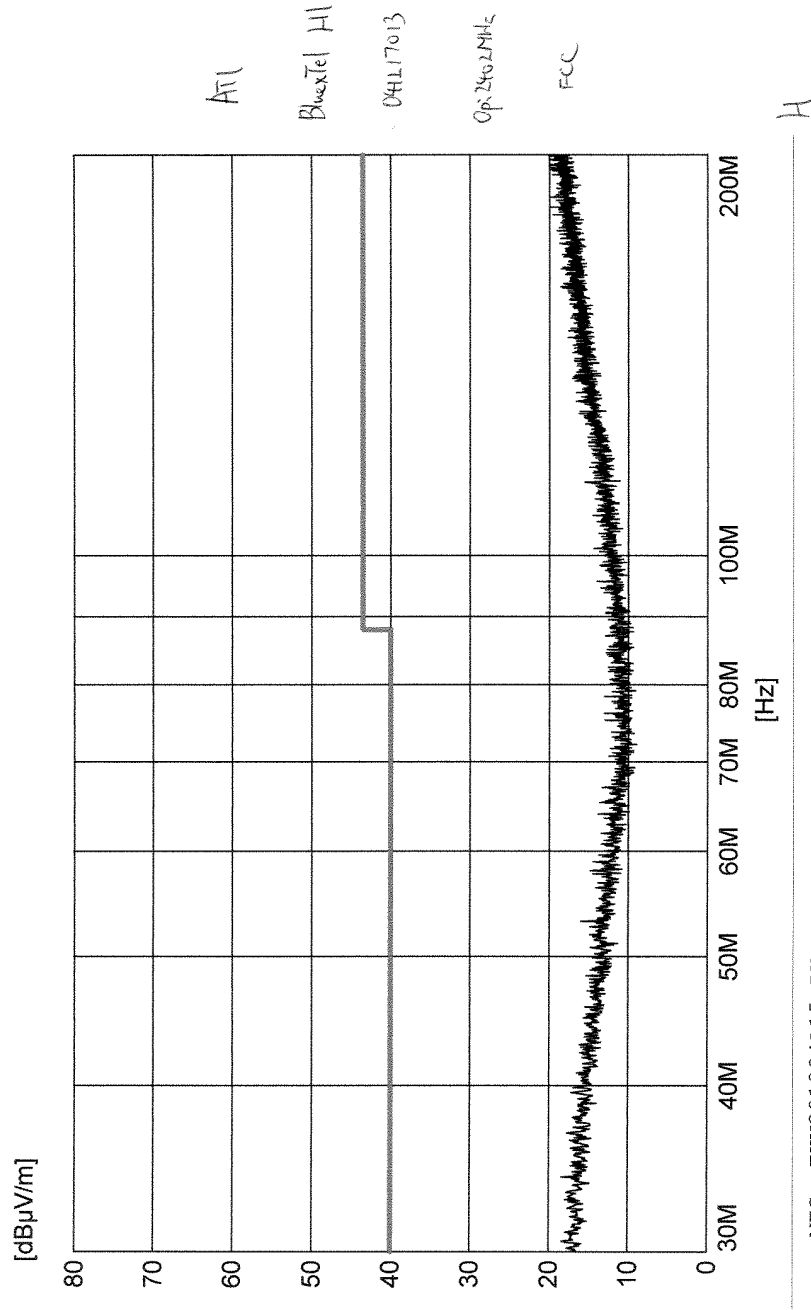
Voltage supply: 3.7V from rechargeable battery

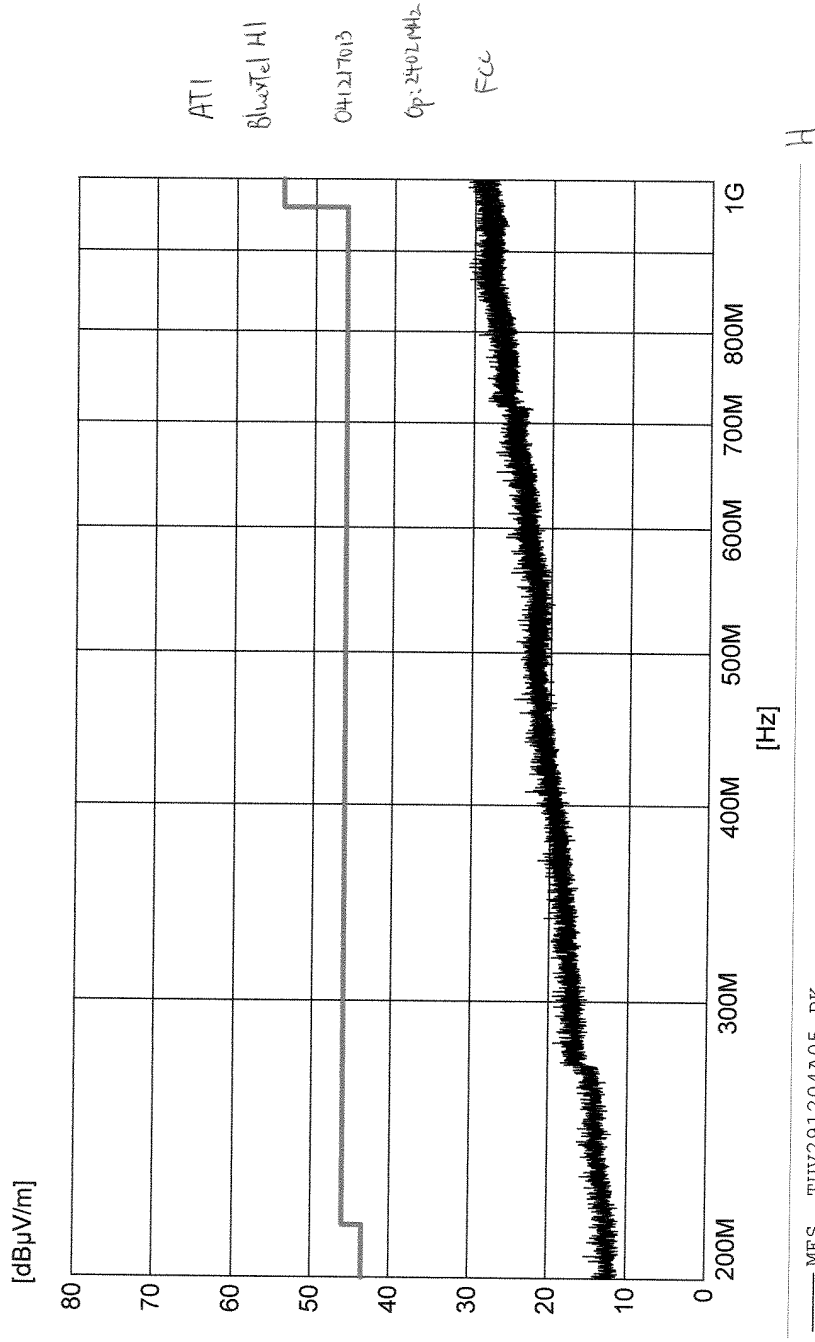
Test by: Hugo Wan

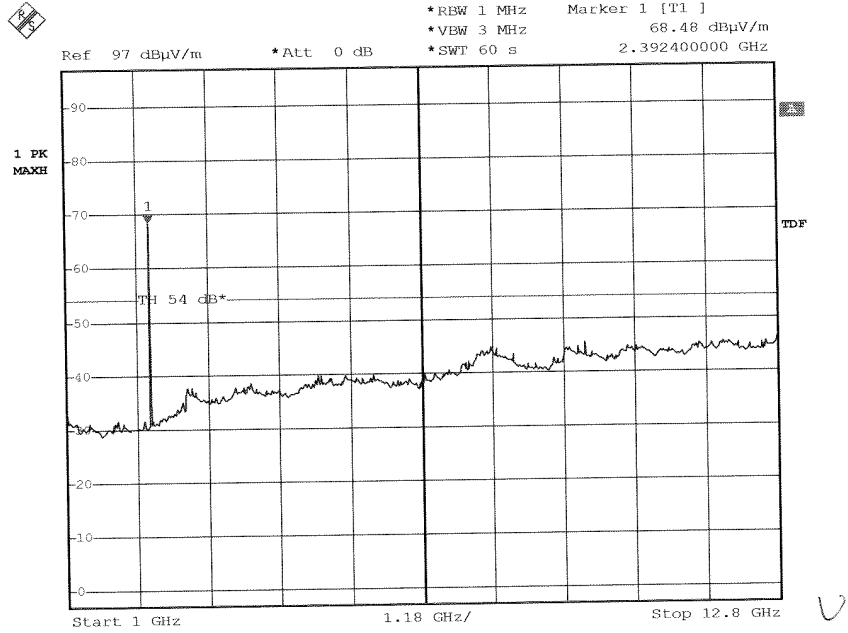
Op. mode: TX mode, DH1 with PRBS9 payload

Tx frequency (MHz)	Polarization	Spurious Frequency (MHz)	Power Level (dBuV/m)	Detector (P/QP/A)
2402	V	No peak found	-	-
Tx frequency (MHz)	Polarization	Spurious Frequency (MHz)	Power Level (dBuV/m)	Detector (P/QP/A)
2441	V	No peak found	-	-
Tx frequency (MHz)	Polarization	Spurious Frequency (MHz)	Power Level (dBuV/m)	Detector (P/QP/A)
2480	V	No peak found	-	-



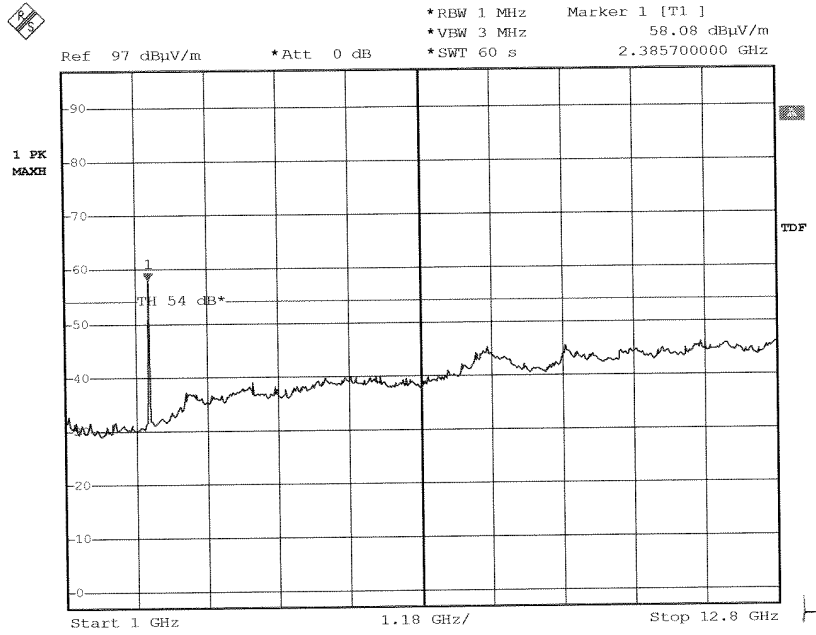






Date: 30.DEC.2004 08:45:12

ATI
BluxTel HI
041217013
Op: 2402 MHz
FCC



Date: 30.DEC.2004 07:53:43

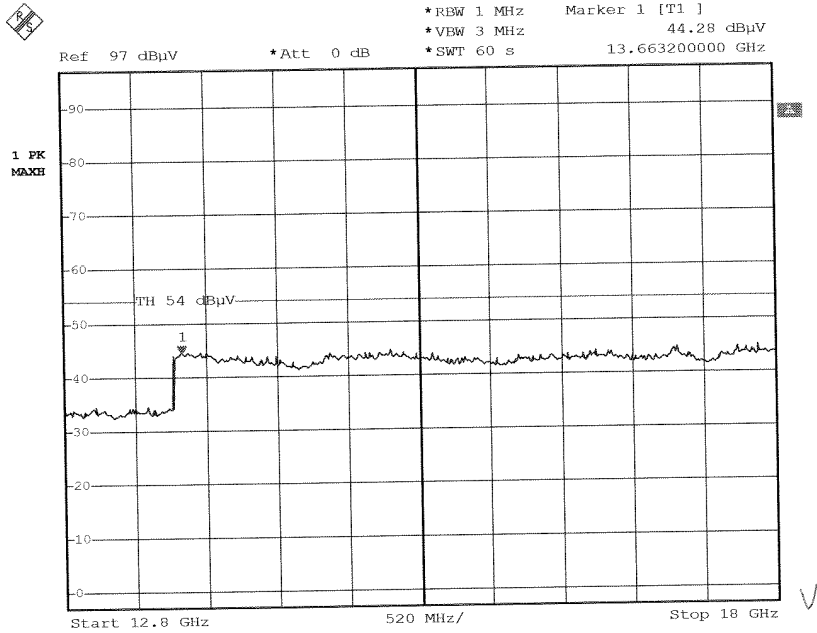
ATI

BlueTel HI

041217015

Op: 2402 MHz

FCC



Date: 30.DEC.2004 08:10:43

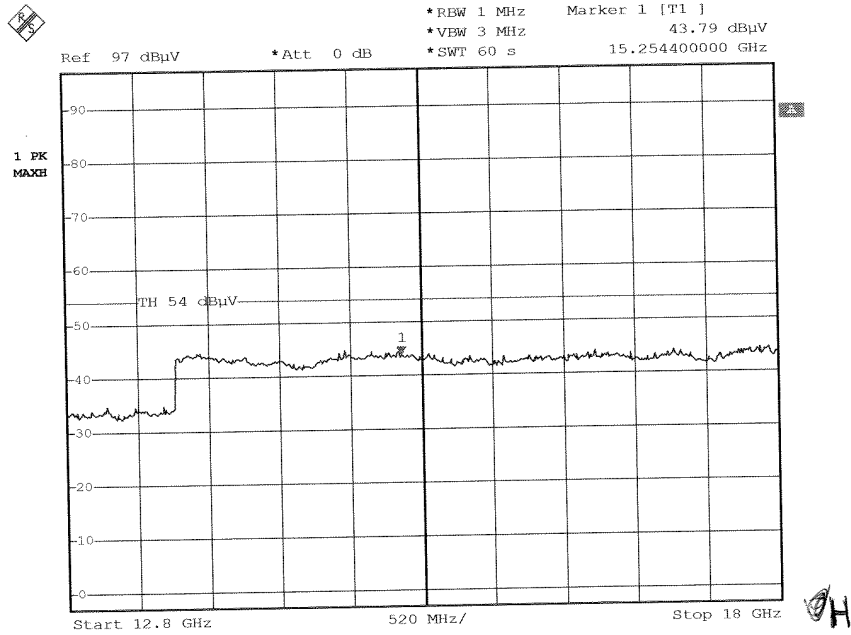
ATI

BluxTel H1

041217013

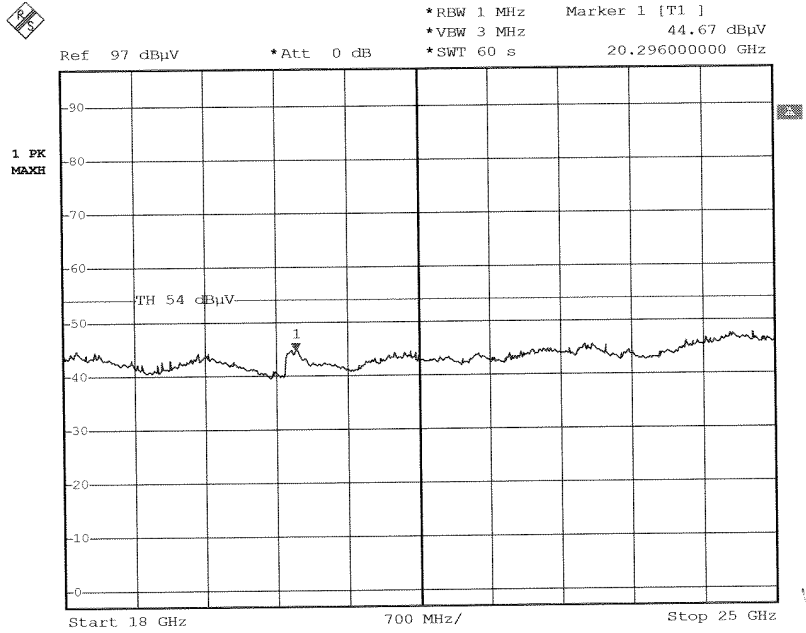
Op: 2402MHz

FCC



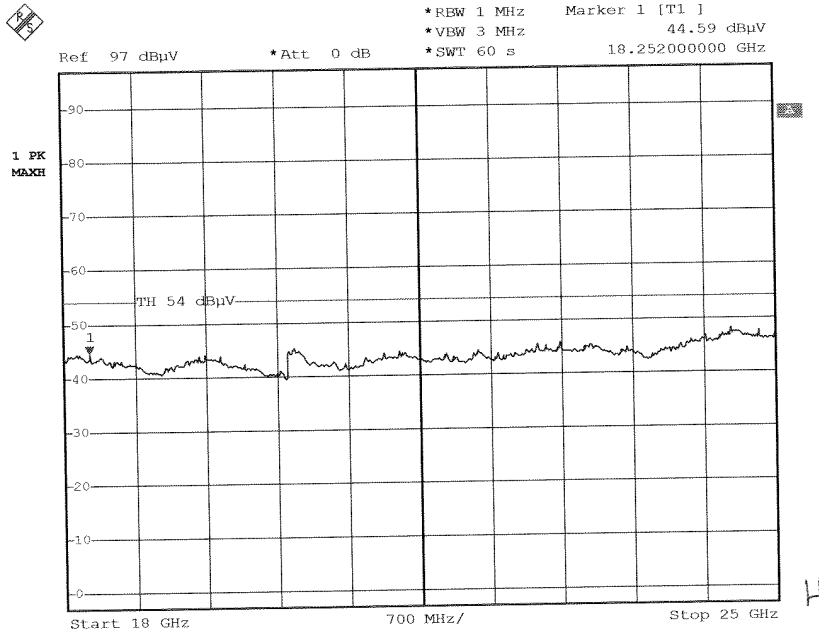
Date: 30.DEC.2004 08:15:19

ATI
BluxTel H1
CA(217013)
Op: 2402 MHz
FCC



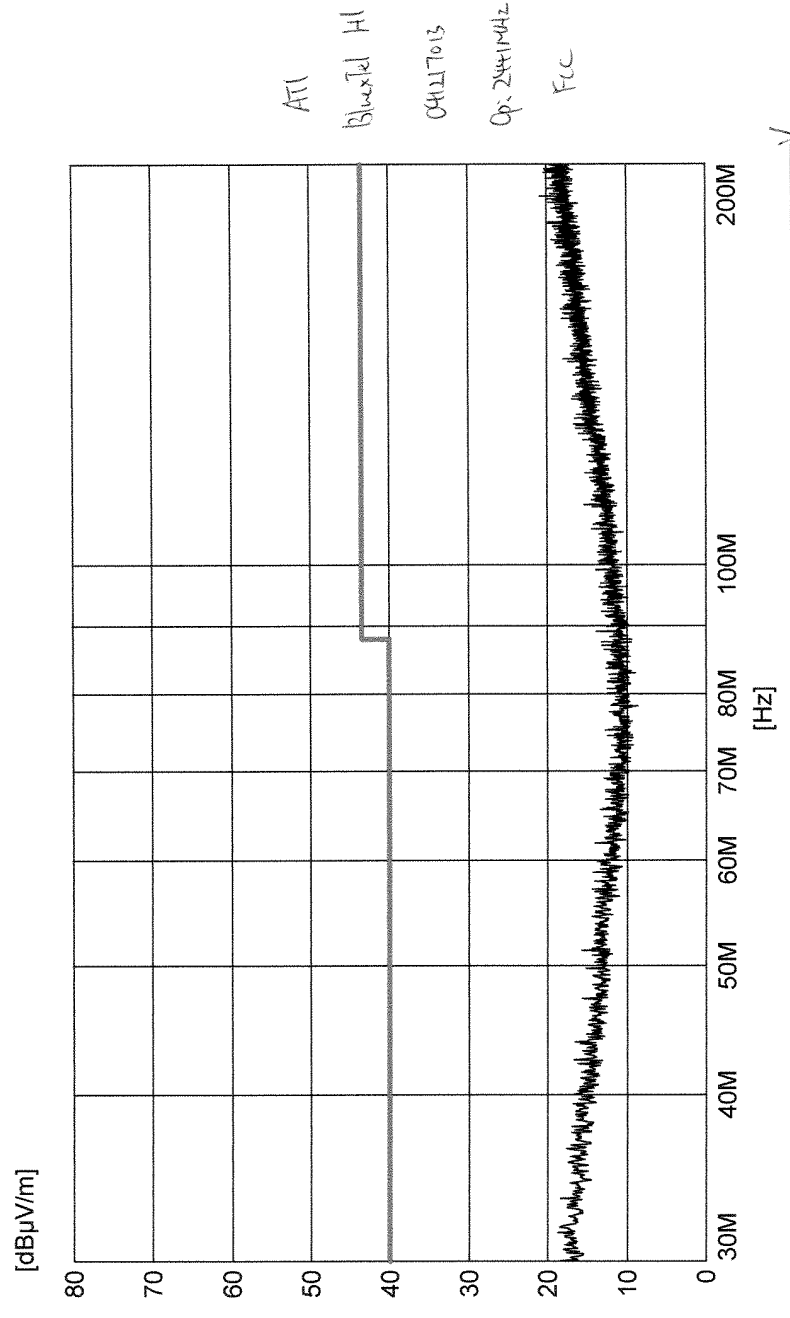
Date: 30.DEC.2004 08:41:19

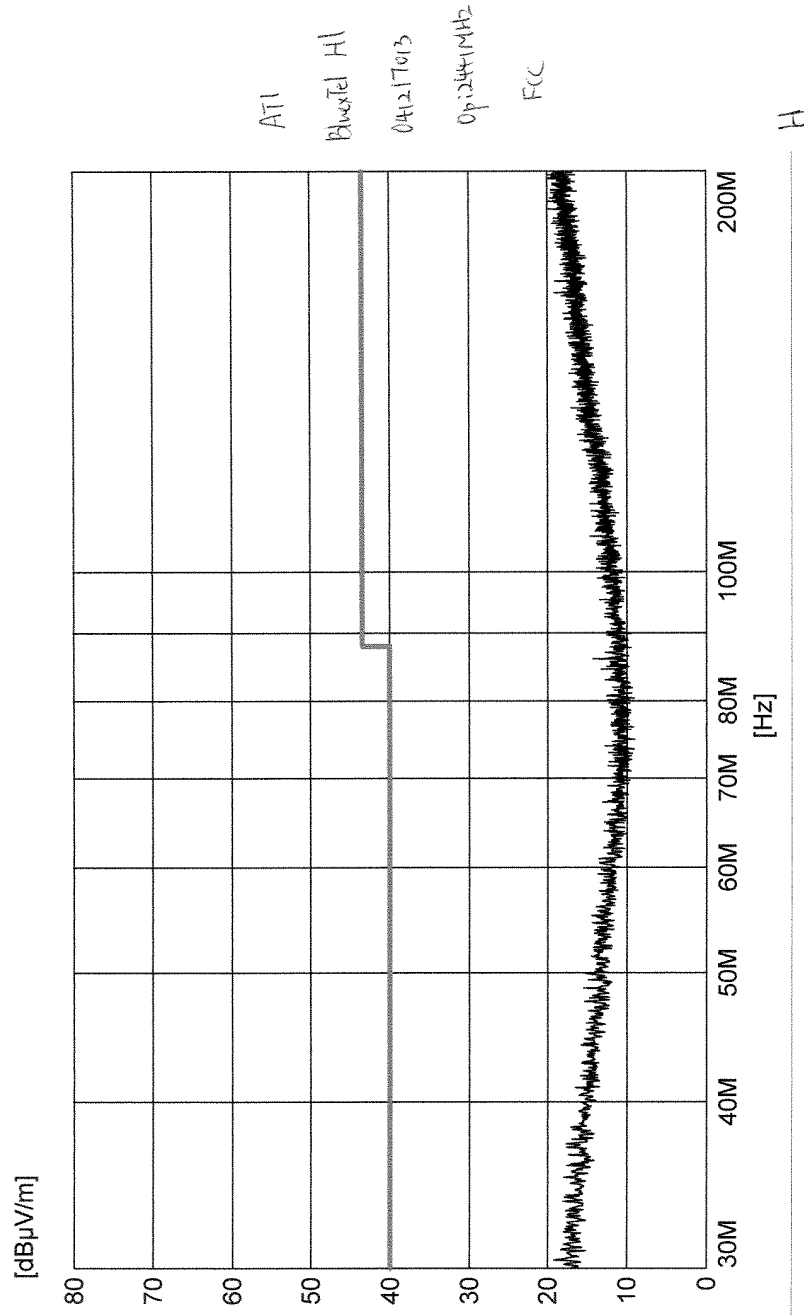
ATI
Bluetooth H1
041217013
Op: 2402MHz
FCC

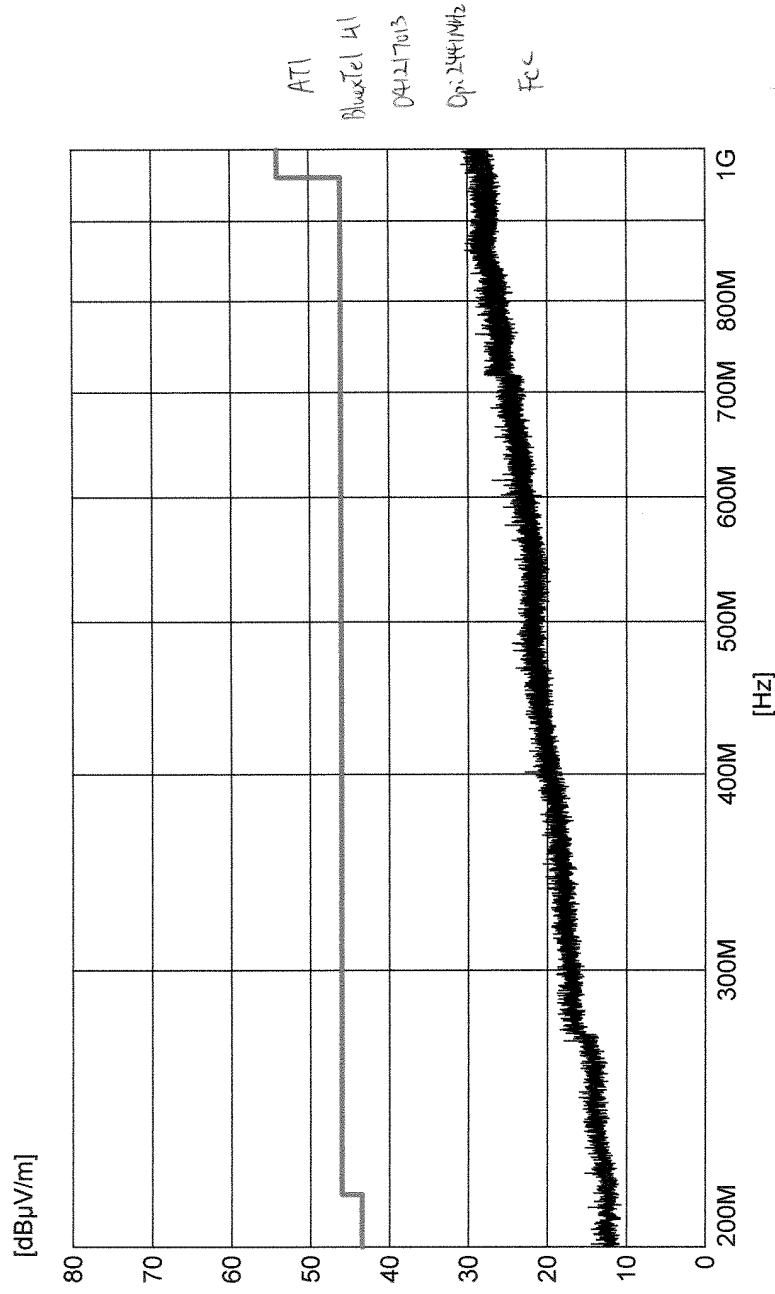


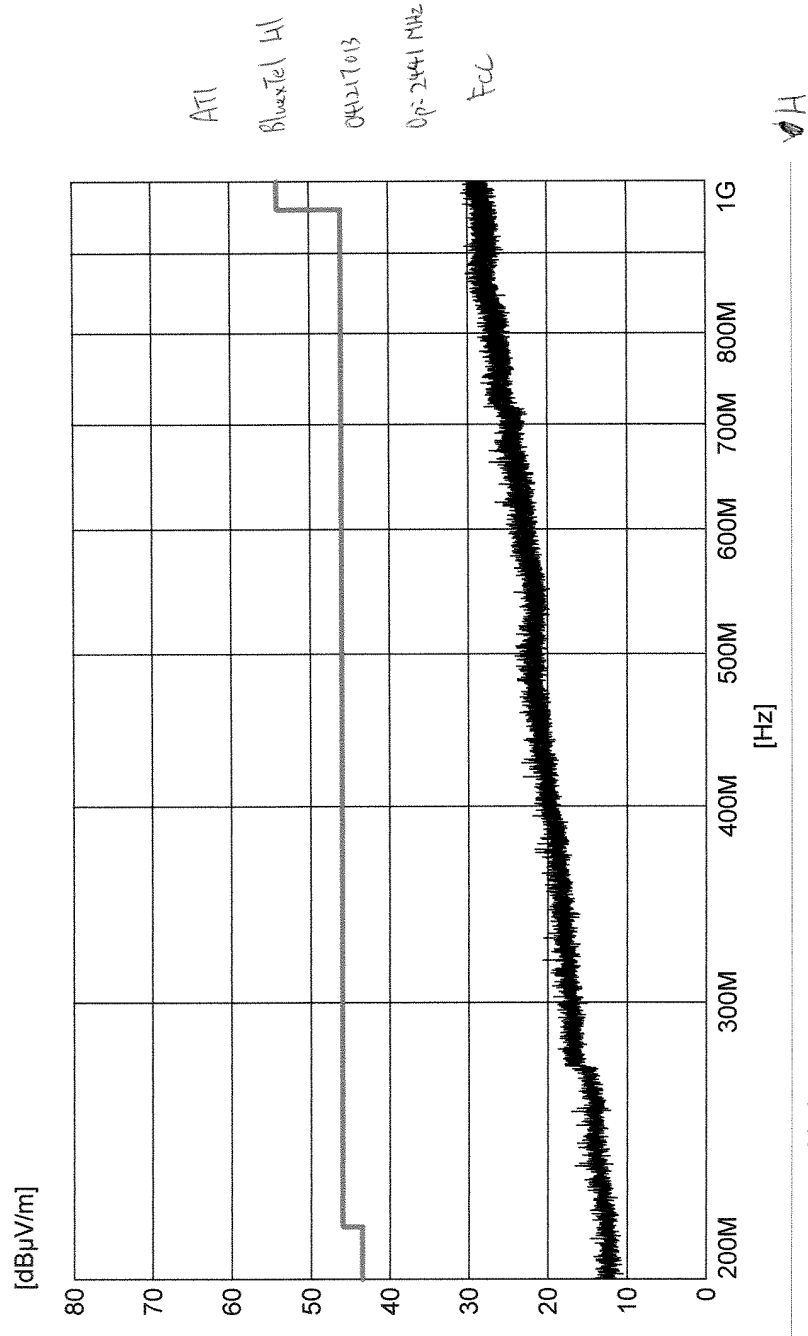
Date: 30.DEC.2004 08:36:57

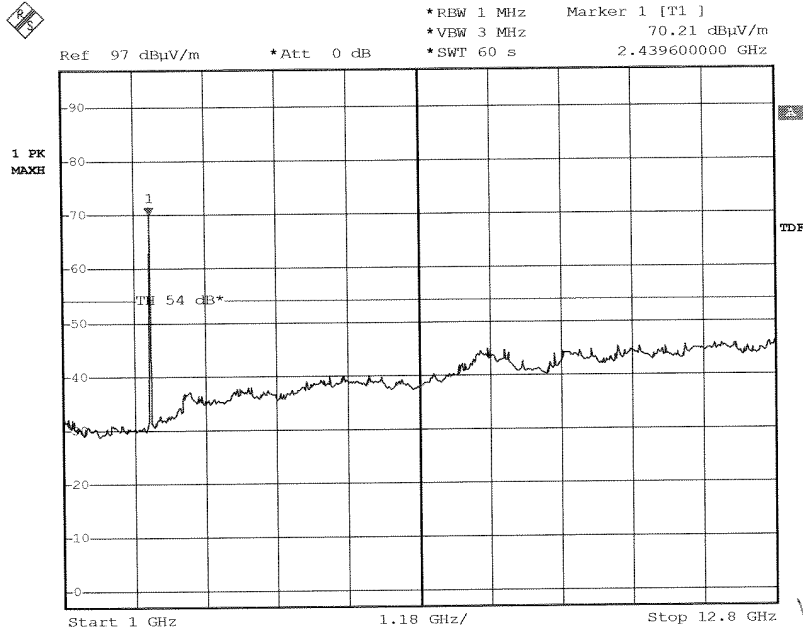
ATI
Bluxtel H1
041217013
Op: 2402 MHz
FCC





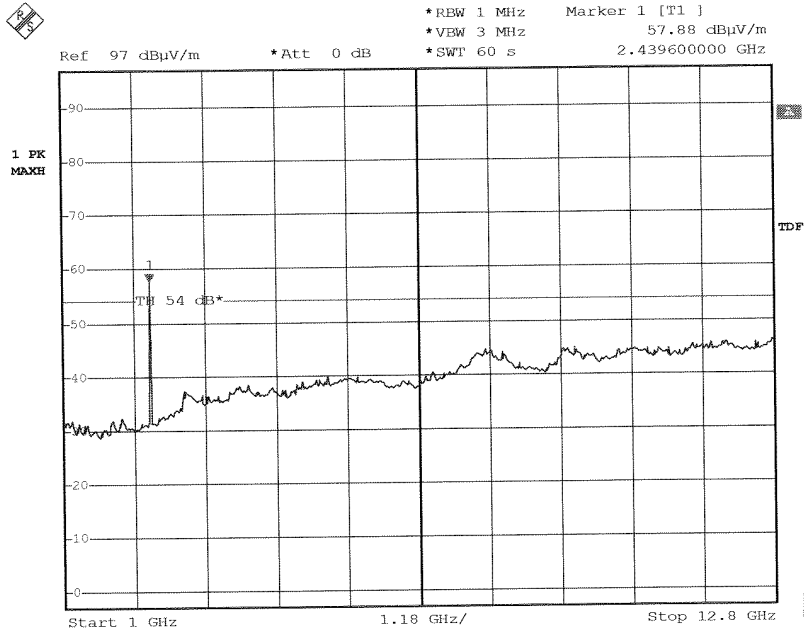






Date: 30.DEC.2004 07:58:07

ATI
BluesTel H1
041217013
Op: 2441MHz
FCC



Date: 30.DEC.2004 08:01:05

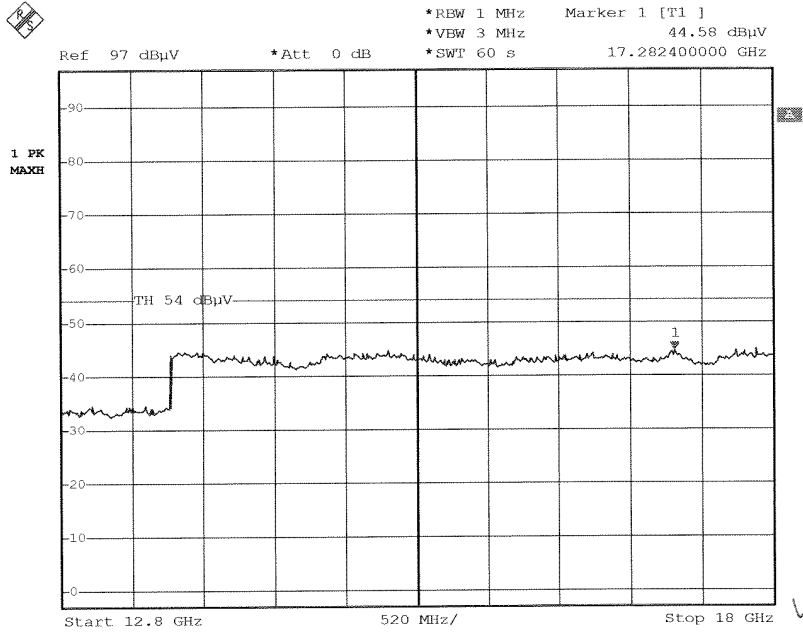
ATI

BluxTel H1

041217013

Op: 2441 MHz

FCC



Date: 30.DEC.2004 08:17:18

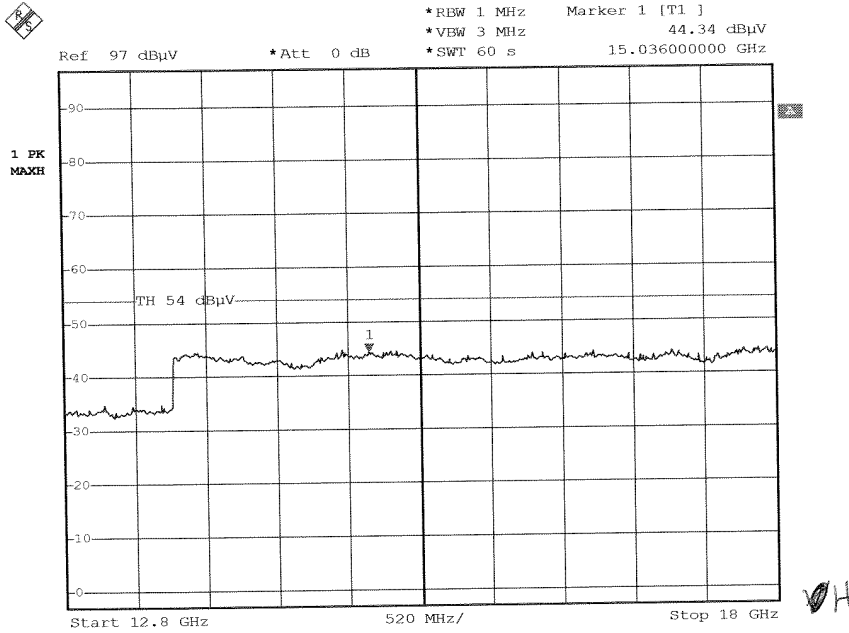
ATI

Bluxel H1

041217013

Op: 244 MHz

FCC



Date: 30.DEC.2004 08:22:06

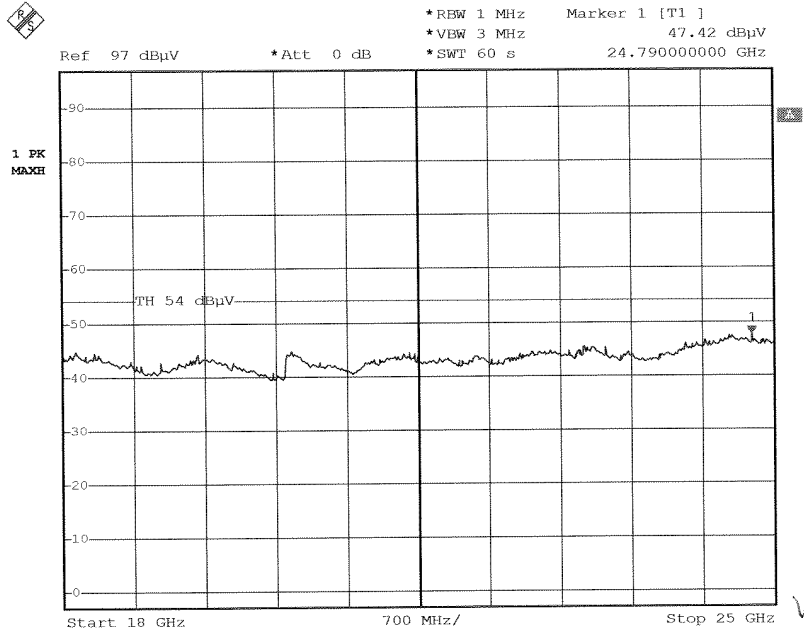
ATI

BluxTel H1

041217013

Op: 2441 MHz

FCC



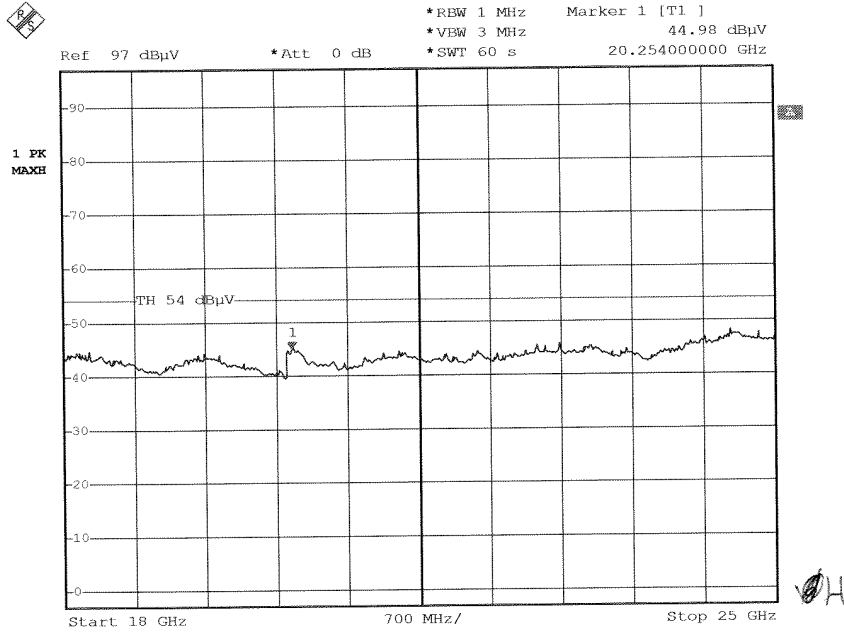
Date: 30.DEC.2004 08:40:40

AT1

BluxTel H1

041217013

~~Op: 2441 MHz~~ (llg)
Op: 2441 MHz
FCC



Date: 30.DEC.2004 08:36:23

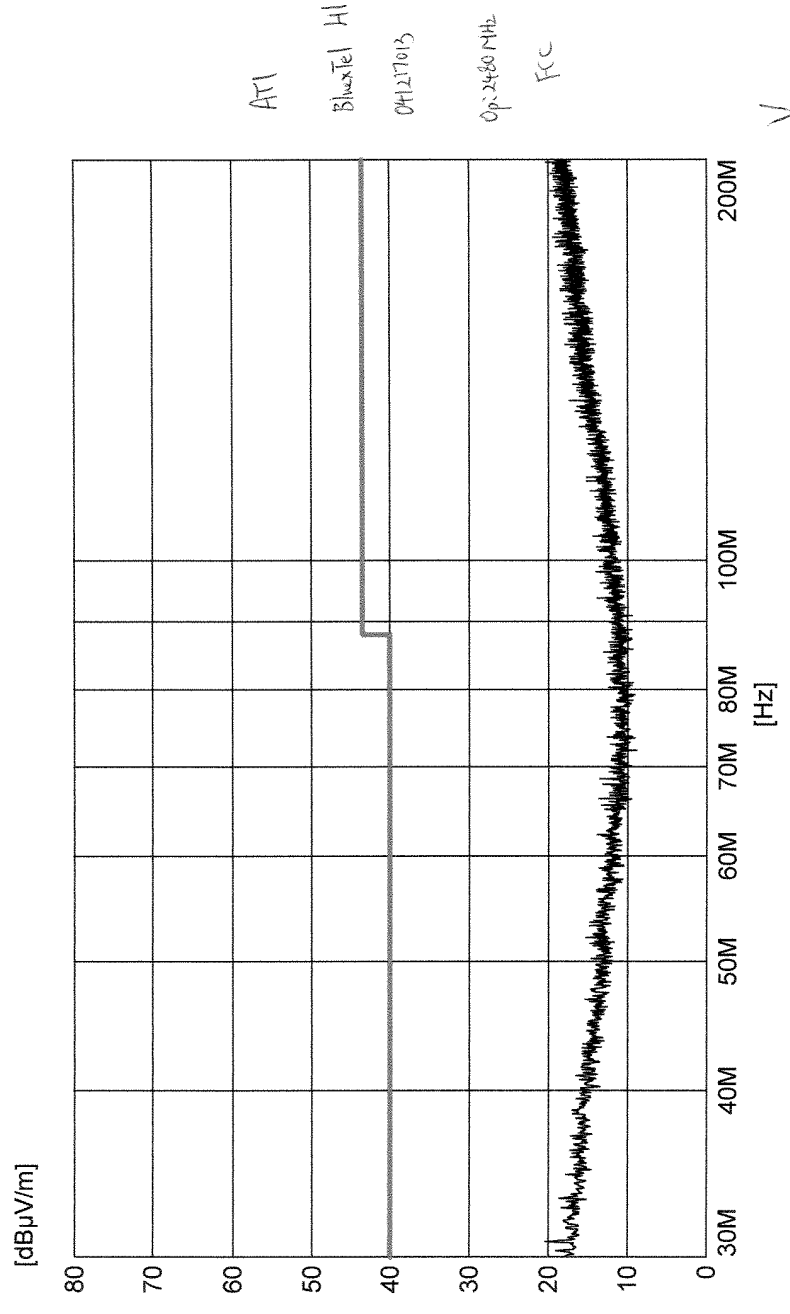
AT1

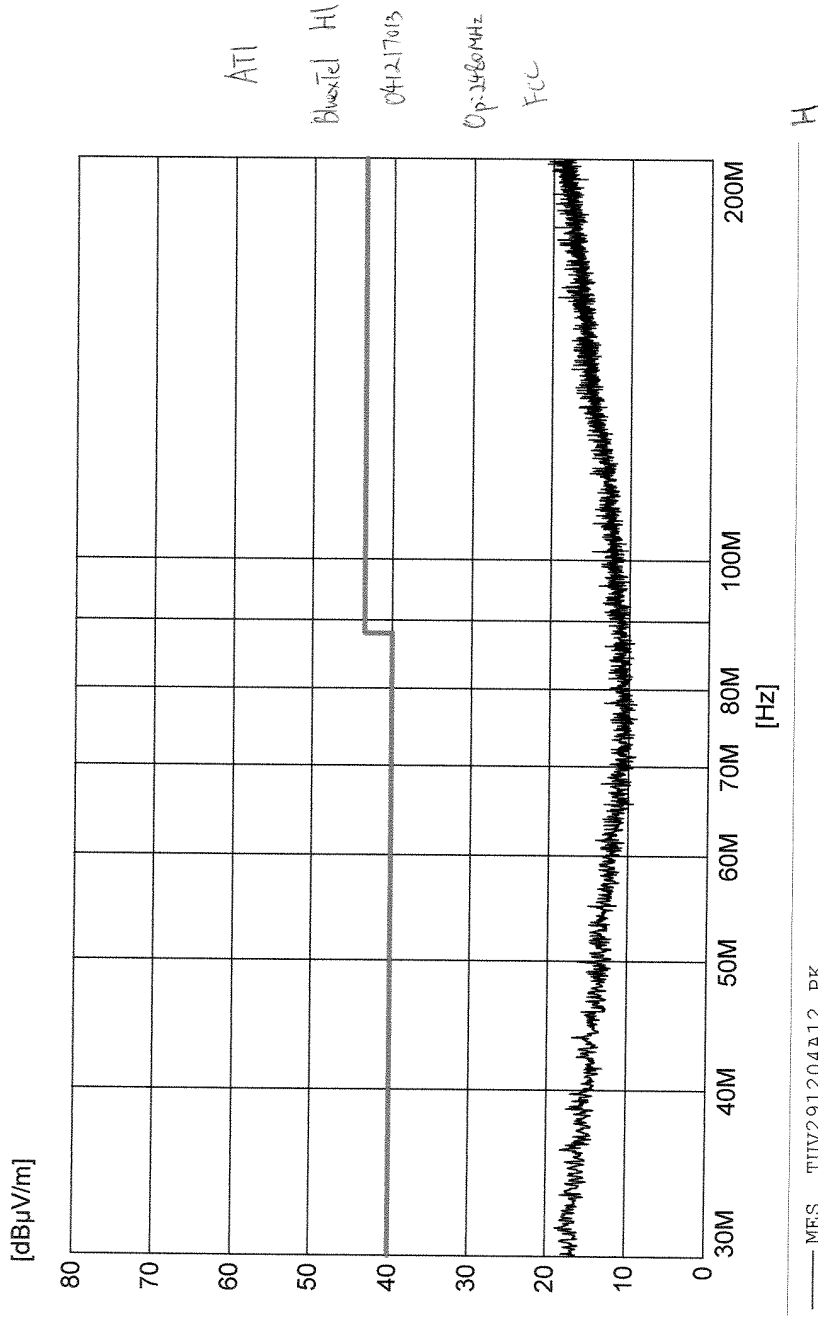
Bluetooth H1

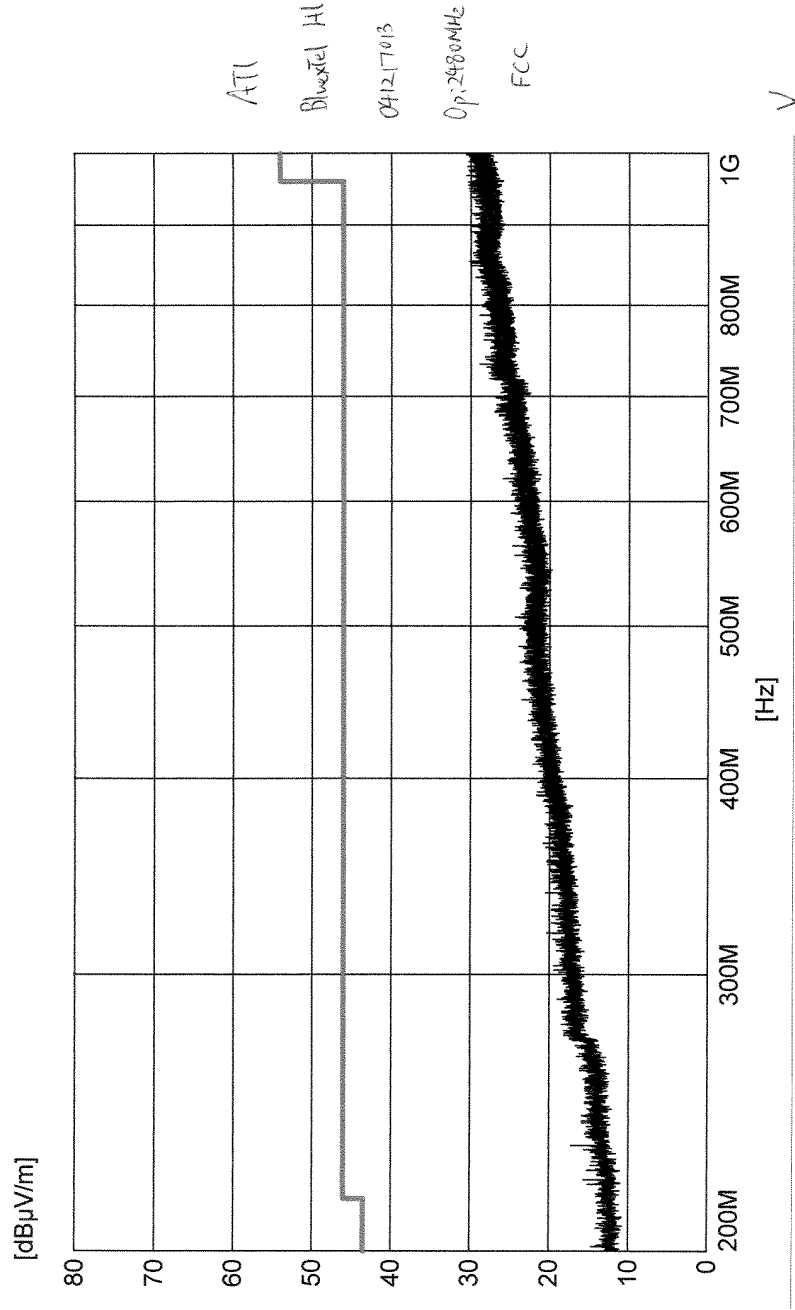
041217013

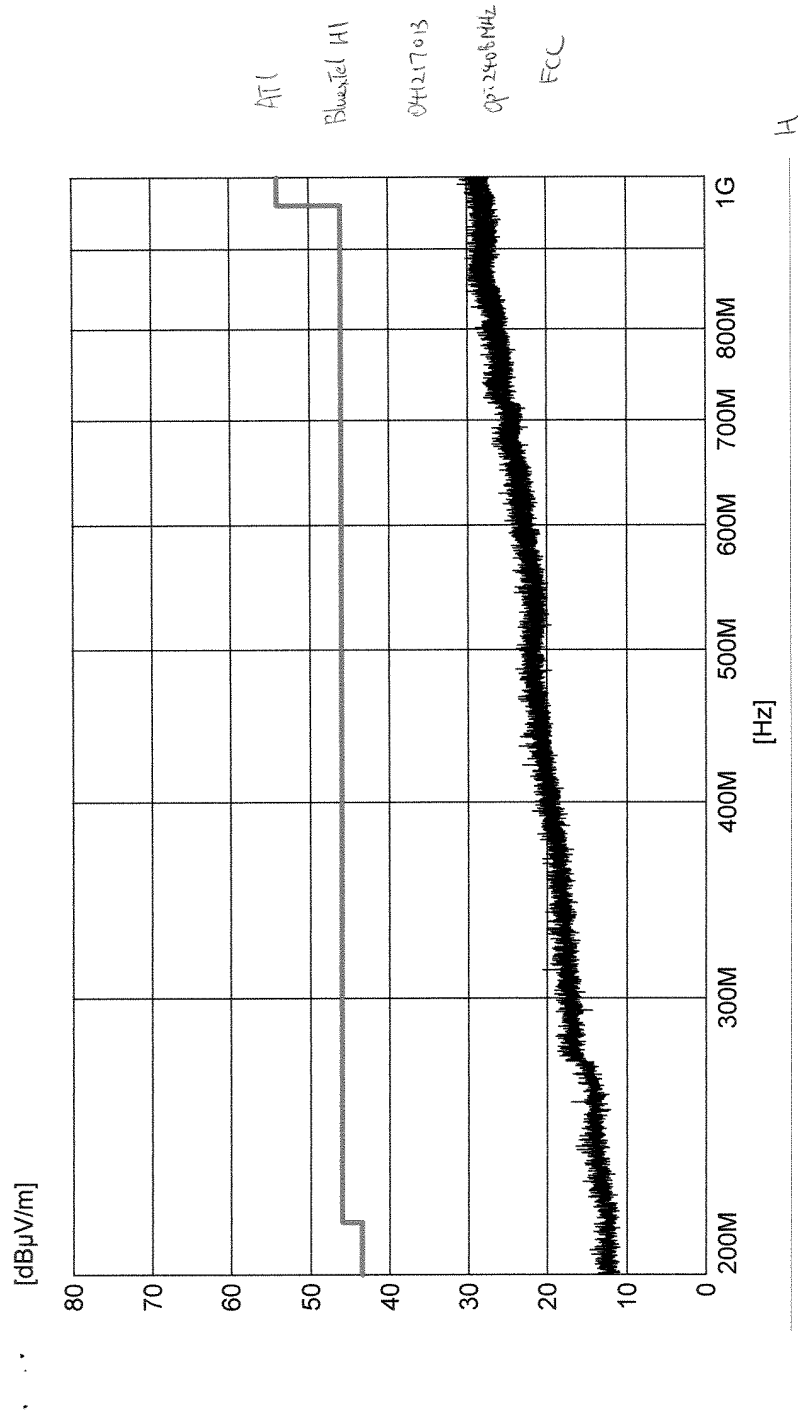
Op. 244 1MHz

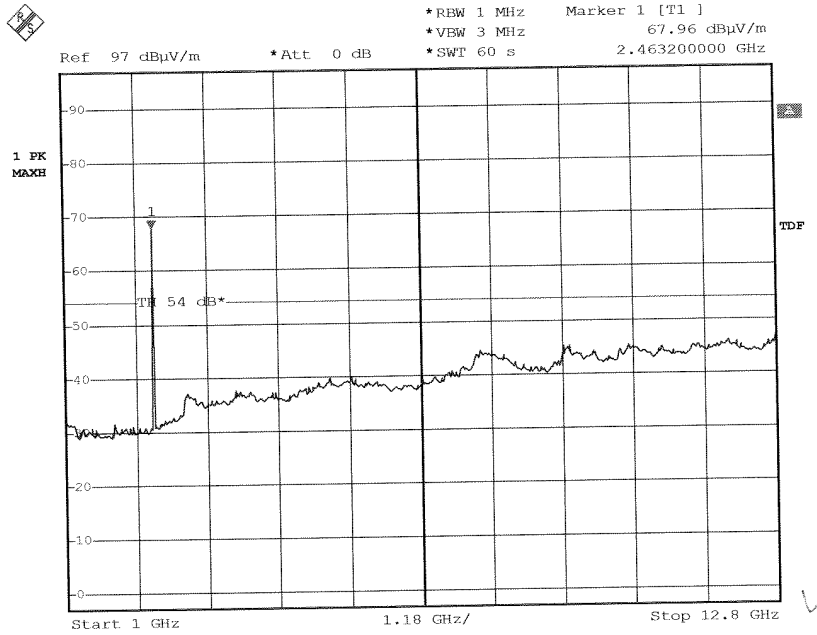
FCC





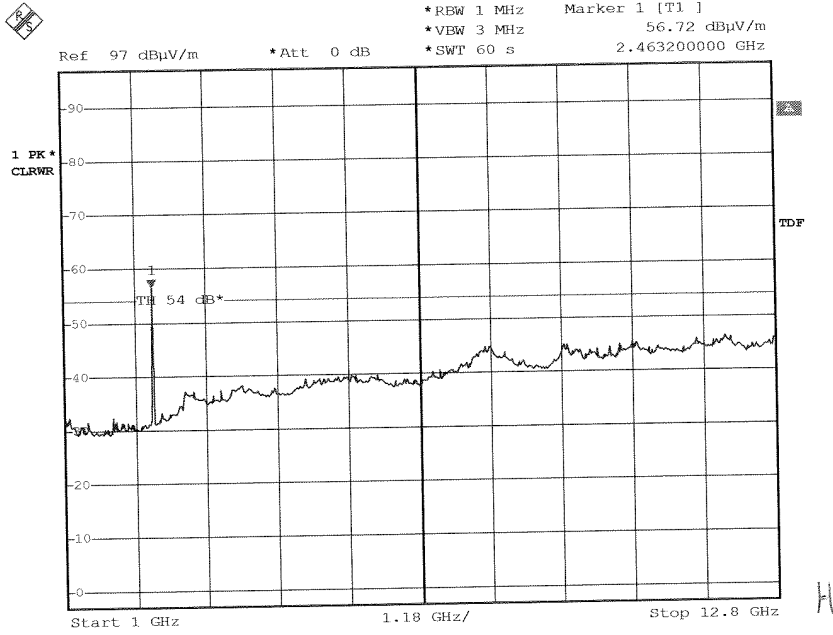






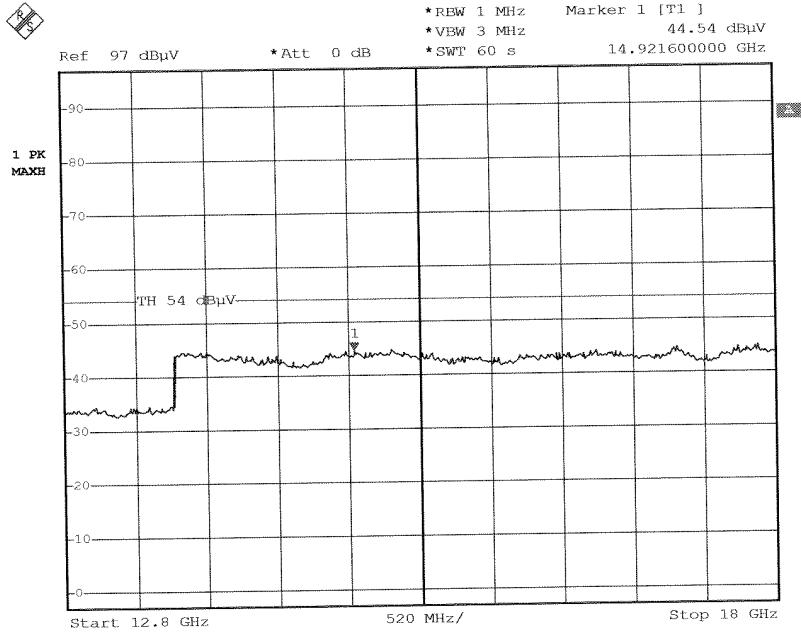
Date: 30.DEC.2004 08:06:48

ATI
BluxTel H1
041217013
Op:2460MHz
FCC



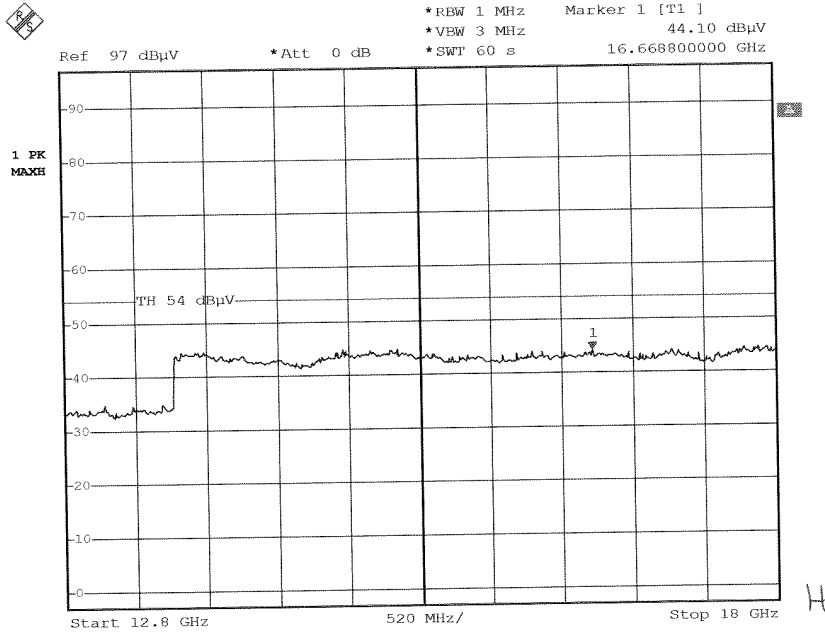
Date: 30.DEC.2004 08:04:12

ATI
BlueTel H1
041217013
Op: 2480 MHz
FCC



Date: 30.DEC.2004 08:23:31

AT1
BluxTel H1
041217013
Op: 2480 MHz
FCC.



Date: 30.DEC.2004 08:26:39

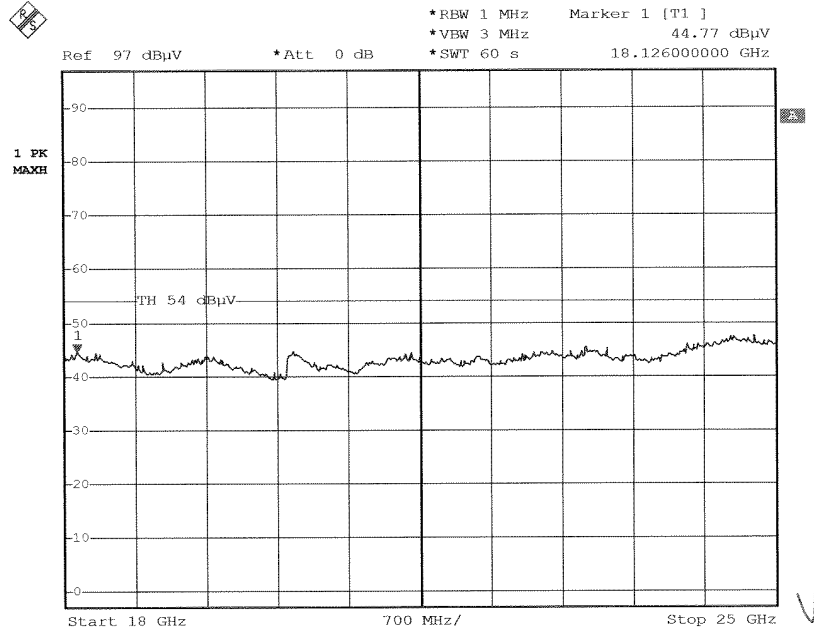
ATI

Buxtel H1

041217013

Op: 2480MHz

FCC



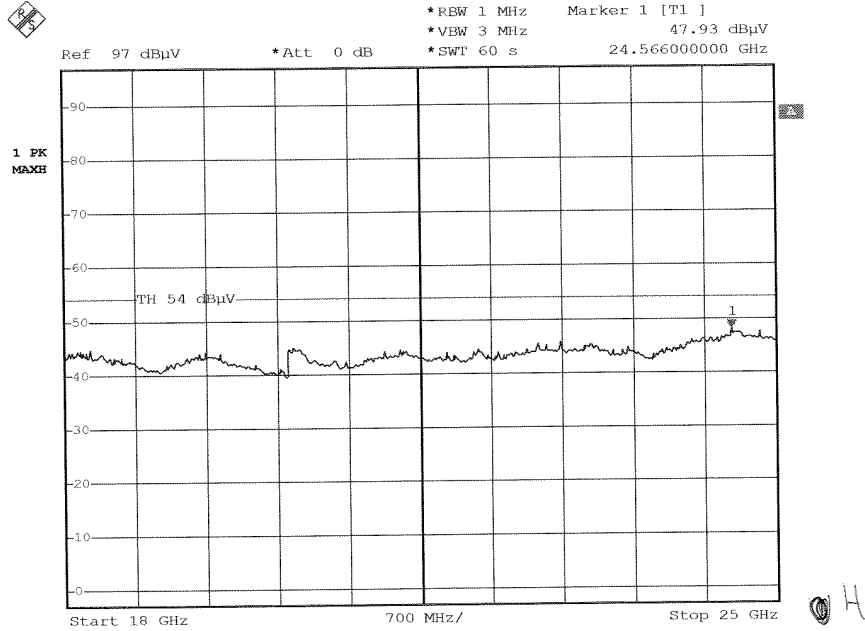
Date: 30.DEC.2004 08:39:40

ATI

Bluxtel H1

041217013

~~Op: 2420/442~~ (Uly)
Op: 2420/442
Fcc.



Date: 30.DEC.2004 08:35:30

ATI
Bluetel H1
041217013
Up: 2480MHz
FCC