

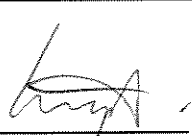
Prüfbericht - Nr.: Test Report No.	14008131 001		Seite 1 von 13 Page 1 of 13	
Auftraggeber: Applicant	i.Tech Dynamic Ltd. Room 1112, Metroplaza, Tower 2 223 Hing Fong Road Kwai Chung, N.T. Hong Kong			
Gegenstand der Prüfung: Test item	i.Tech BlueCON 35			
Bezeichnung: Identification	C51-A04089-XX	Serien-Nr.: Serial No.	Engineering sample	
Wareneingangs-Nr.: Receipt No.	050121034- 050121036	Eingangsdatum: Date of receipt	21.01.2005	
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:		
18.02.2005	Hugo Wan		18.02.2005	Thomas Berns 
Datum Date	Name Name	Unterschrift Signature	Datum Date	Name Name
				Unterschrift Signature
Sonstiges: Other Aspects	FCCID: RKIC51-A04089-XX			
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	On board chip antenna	On board chip antenna
Antenna gain (dBi)	2.0	
Power level	fix	
Type of equipment	plug-in radio device	plug-in radio device
Connection to public utility power line	No	
Nominal voltage	V _{nom} : 1.5 V	V _{nom} : 1.5 V
Independent Operation Modes	Page scan Inquiry scan Connection state - ACL Link Connection state - SCO Link	

Product function and intended use

The test item is a Hi-Fi Dongle 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
User manual

Special accessories and auxiliary equipment

None

List of Test and Measurement Instruments

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

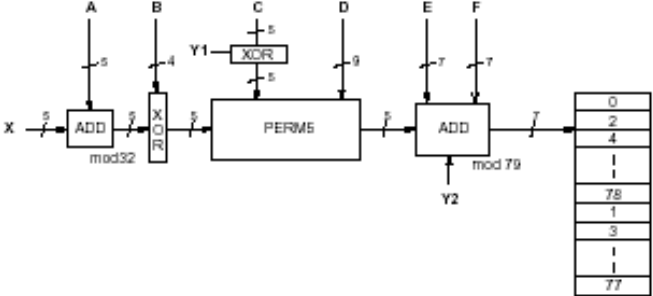
Subclause 15.204 – Antenna Information		Pass
Requirement:	Provide information for every antenna proposed for the use with the EUT	
Result:	a) Antenna type: On board chip antenna soldered to the circuit board b) Manufacturer and model no: N.A. c) Gain with reference to an isotropic radiator: 2.0 dBi	
Verdict:	Pass	

Subclause 15.207 – Disturbance Voltage on AC Mains						N.A.
Test Port: N.A. Applied voltage: N.A. Applicable only to equipment designed to be connected to the public utility power line.						
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	-	-	-	66 - 56	56 - 46	Pass
> 0,5 - 5	-	-	-	56	46	Pass
> 5 - 30	-	-	-	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	-	-	-	66 - 56	56 - 46	Pass
> 0,5 - 5	-	-	-	56	46	Pass
> 5 - 30	-	-	-	60	50	Pass
Result: N.A..						

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 : 1.5V AAA size 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 2.		
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 : 1.5V AAA size battery Temperature : 23°C Humidity : 50%		
Result:	The screenshot in Appendix 1 page 4 shows the occurrence of a channel in a 31.6 s time period. In normal hopping mode Bluetooth is using 79 hopping channels only. The frequency was used 64 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: $0.4 \times 79 = 31.6\text{s}$ Limit calculation: $64 \times 2.936 \times 10^{-3} = 187.9 \times 10^{-3}$ $\leq 400 \times 10^{-3} \text{ s}$	
For test protocols please refer to Appendix 1, page 3-4.		
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 : 1.5V AAA size battery Temperature : 23°C Humidity : 50%			
Results For test protocols refer to Appendix 1, page 5-6.			
Frequency (MHz)	20 dB left (MHz)	20 dB right (MHz)	20dB bandwidth (MHz)
2402	0.464	0.408	0.872
2441	0.464	0.408	0.872
2480	0.464	0.416	0.880

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 |

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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 : 1.5V AAA size 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 7-8.					
Frequency (MHz)	Maximum peak output power (dBm)	Cable attenuation (dB)	Output power (dBm)	Limit (W/dBm)	Verdict
2402	1.96	3.52	5.48	1 / 30.0	Pass
2441	1.59	3.65	5.24	1 / 30.0	Pass
2480	1.00	3.60	4.60	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 : 1.5V AAA size 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 9-10.		

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 : 1.5V AAA size 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 11-17.					
Operating frequency (MHz)	Spurious frequency (MHz)	Spurious Level (dBm)	Reference value (dBm)	Delta (dB)	Verdict
2402	4795.660	-46.42	2.19	-48.61	Pass
2441	4875.420	-46.85	1.39	-48.24	Pass
2480	4955.180	-43.43	0.95	-44.38	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 : 1.5V AAA size 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 18-56.							
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
1602.400	50.65	25.40	1.89	36.17	0.60	42.37	74.0 / P
1601.960	47.76	25.40	1.89	36.17	0.60	39.48	54.0 / A
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
1628.440	52.25	25.40	1.89	36.17	0.60	43.97	74.0 / P
1627.880	47.79	25.40	1.89	36.17	0.60	39.51	54.0 / A

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
1654.000	50.44	25.40	1.89	36.17	0.60	42.16	74.0 / P
1653.920	47.44	25.40	1.89	36.17	0.60	39.16	54.0 / A
4959.840	42.02	33.40	3.53	32.87	0.33	46.41	74.0 / P
4959.840	39.98	33.40	3.53	32.87	0.33	44.37	54.0 / A
2483.920	53.41	28.60	2.49	34.35	0.35	50.50	74.0 / P
2483.920	53.63	28.60	2.49	34.35	0.35	50.72	54.0 / P
2484.320	49.82	28.60	2.49	34.35	0.35	46.91	74.0 / P
2483.880	48.33	28.60	2.49	34.35	0.35	45.42	54.0 / P

Appendix 1

Test results

Carrier Frequency Separation

Date: 3 Feb 2005
 EUT: C51-A04089-XX
 Company: i.Tech Dynamic Ltd.
 Humidity: 50%
 Temperature: 23°C
 Voltage supply: 1.5V AAA size battery
 Test by: Hugo Wan
 Op. mode: Hopping on

Reference frequency (MHz)

2441.000

Channel Separation (MHz)

0.990

**DELTA MARKER 3**

-990 kHz

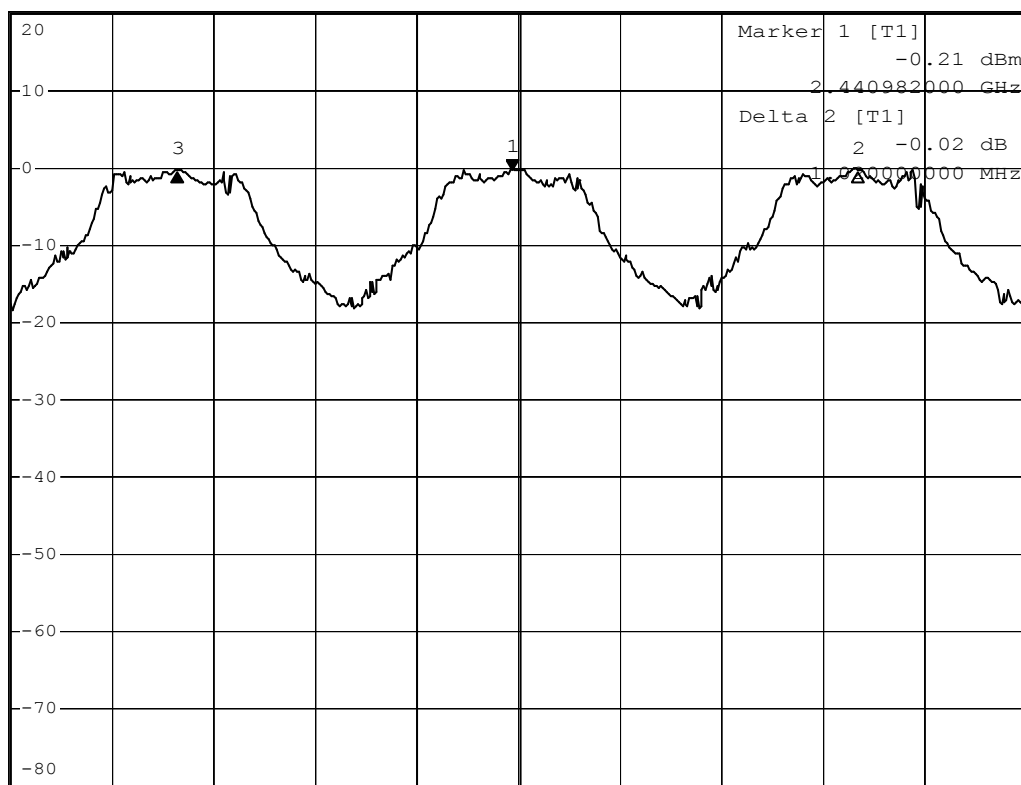
Ref 20 dBm

* Att 30 dB

* RBW 100 kHz Delta 3 [T1]

* VBW 300 kHz -0.16 dB

* SWT 2.5 ms -990.000000000 kHz

1 PK
MAXH

Center 2.441 GHz

300 kHz/

Span 3 MHz

Date: 3.FEB.2005 14:43:27

Dwell Time

Date: 3 Feb 2005
 EUT: C51-A04089-XX
 Company: i.Tech Dynamic Ltd.
 Humidity: 50%
 Temperature: 23°C
 Voltage supply: 1.5V AAA size battery
 Test by: Hugo Wan
 Op. mode: Hopping on

Burst Duration (ms)	Number of hopping	Time of occupancy (s)	Results
2.936	64	$0.002936 \times 64 = 0.1879$	Pass


DELTA MARKER 2

2.936 ms

Ref 20 dBm

*Att 30 dB

RBW 1 MHz

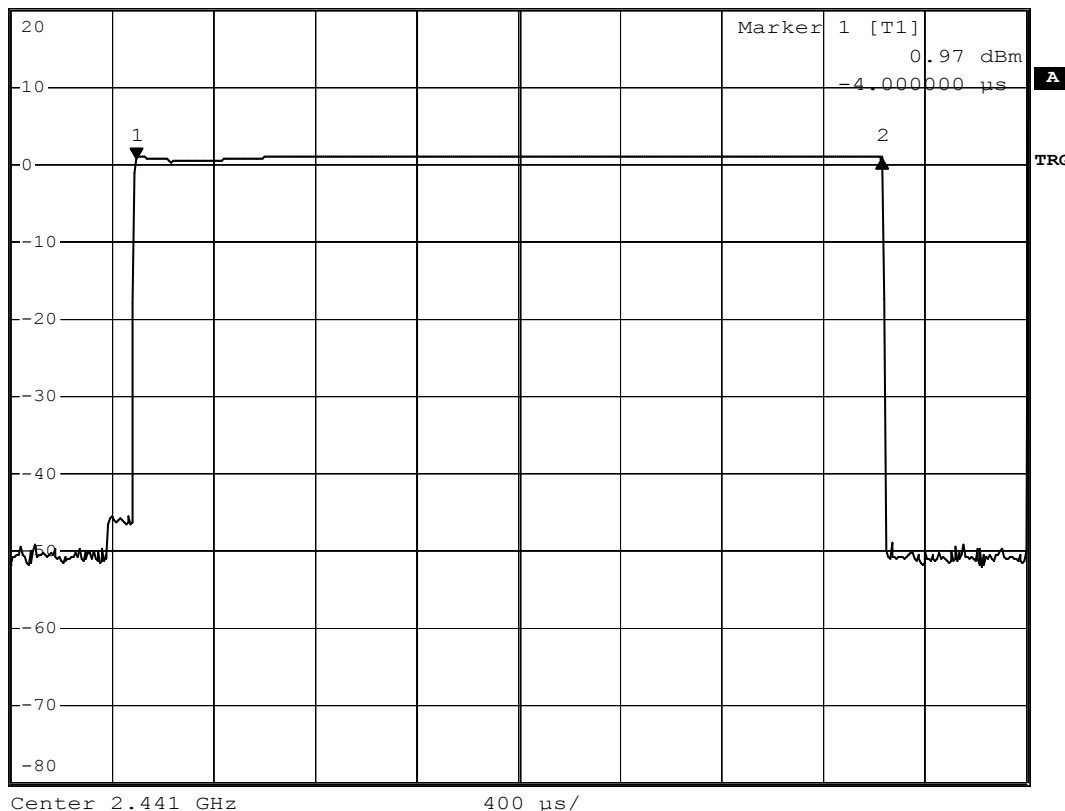
Delta 2 [T1]

*VBW 3 MHz

0.04 dB

SWT 4 ms

2.936000 ms

1 PK
MAXH

Date: 3.FEB.2005 14:51:10



SWEEP TIME

31.6 s

RBW 1 MHz

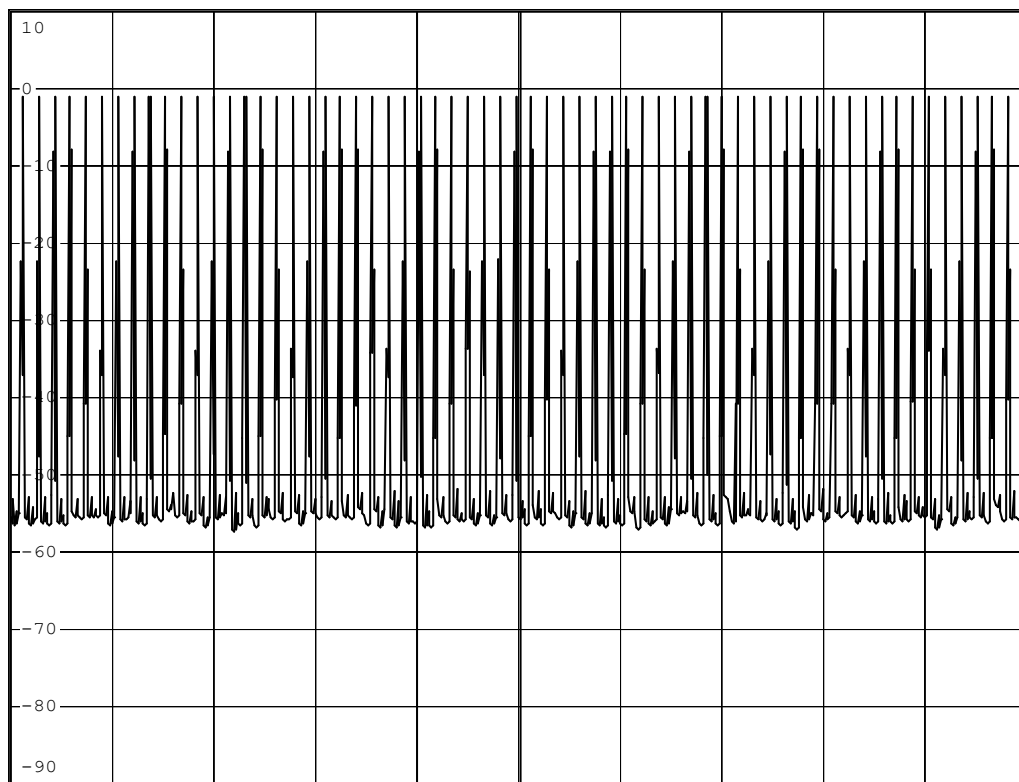
VBW 3 MHz

SWT 31.6 s

Ref 10 dBm

*Att 20 dB

1 PK
MAXH



Center 2.441 GHz

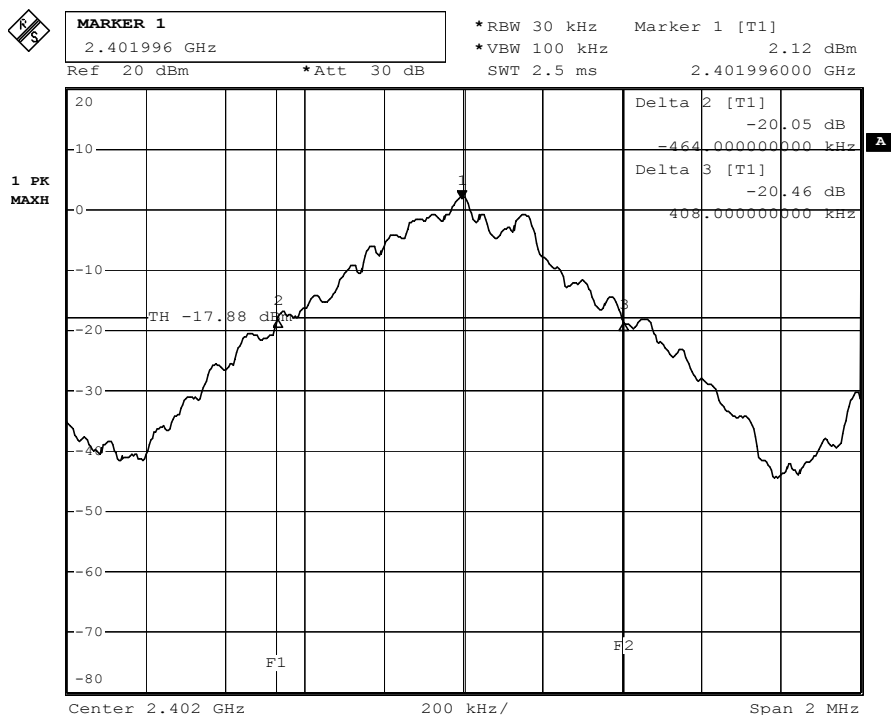
3.16 s/

Date: 8.MAR.2005 10:45:43

20dB Bandwidth

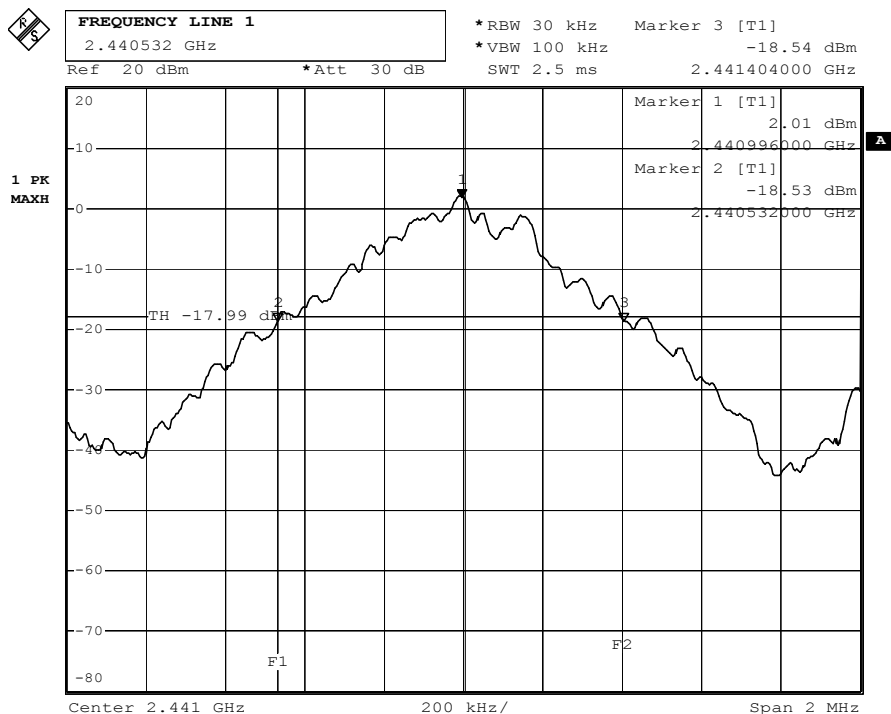
Date: 3 Feb 2005
 EUT: C51-A04089-XX
 Company: i.Tech Dynamic Ltd.
 Humidity: 50%
 Temperature: 23°C
 Voltage supply: 1.5V AAA size battery
 Test by: Hugo Wan
 Op. mode: TX mode, DH5 with PRBS9 payload

Tx frequency (MHz)	Δf_L (MHz)	Δf_H (MHz)	$ \Delta f_H + \Delta f_L $ (MHz)	Results
2402	0.464	0.408	0.872	Pass
2441	0.464	0.408	0.872	Pass
2480	0.464	0.416	0.880	Pass



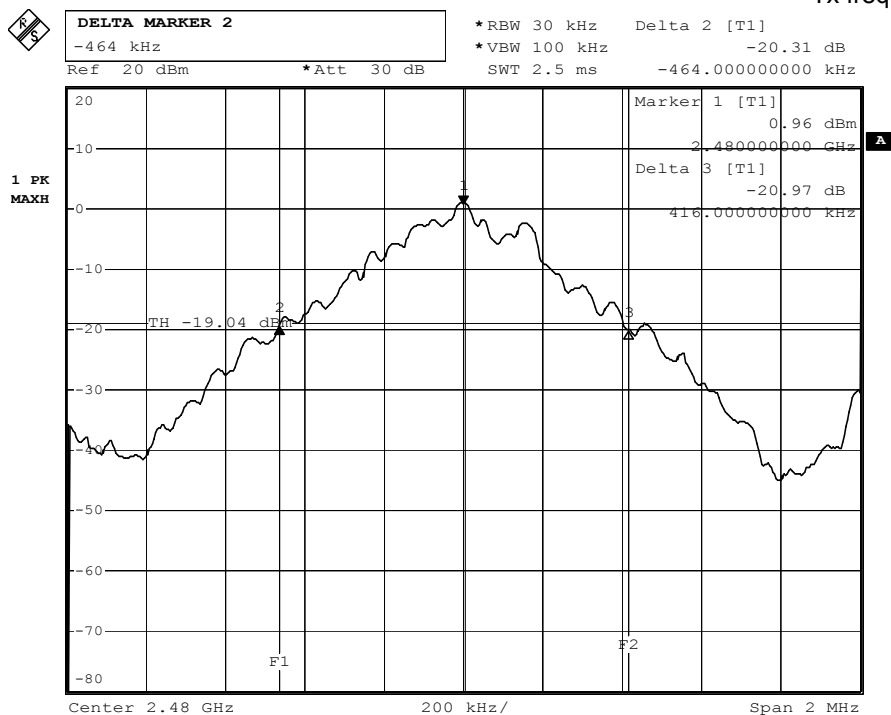
Date: 3.FEB.2005 15:32:55

Tx frequency: 2402MHz



Date: 3.FEB.2005 16:25:31

Tx frequency: 2441MHz



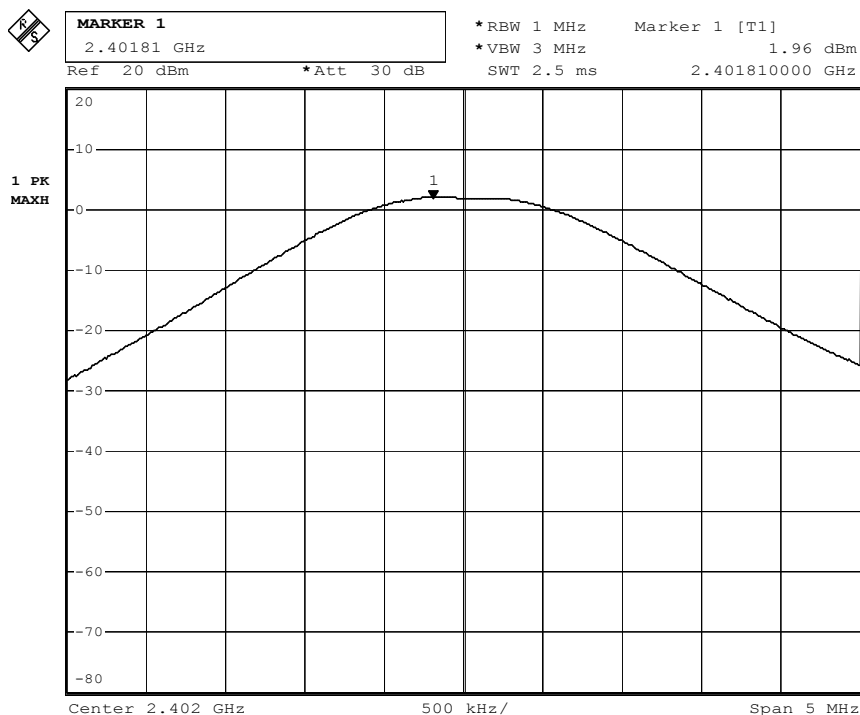
Date: 3.FEB.2005 16:02:09

Tx frequency: 2480MHz

Peak Output Power

Date: 3 Feb 2005
 EUT: C51-A04089-XX
 Company: i.Tech Dynamic Ltd.
 Humidity: 50%
 Temperature: 23°C
 Voltage supply: 1.5V AAA size 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	1.96	3.52	5.48	Pass
2441	1.59	3.65	5.24	Pass
2480	1.00	3.60	4.60	Pass



Date: 3.FEB.2005 16:31:44

Tx frequency: 2402MHz



MARKER 1

2.44082 GHz

Ref 20 dBm

*Att 30 dB

*RBW 1 MHz

*VBW 3 MHz

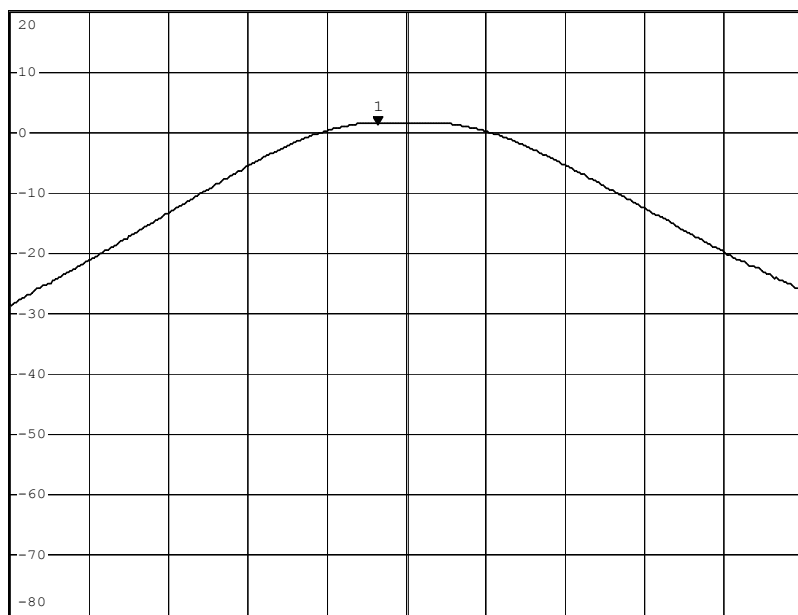
SWT 2.5 ms

Marker 1 [T1]

1.59 dBm

2.440820000 GHz

1 PK
MAXH



Center 2.441 GHz

500 kHz/

Span 5 MHz

Date: 3.FEB.2005 16:34:20

Tx frequency: 2441MHz



MARKER 1

2.47985 GHz

Ref 20 dBm

*Att 30 dB

*RBW 1 MHz

*VBW 3 MHz

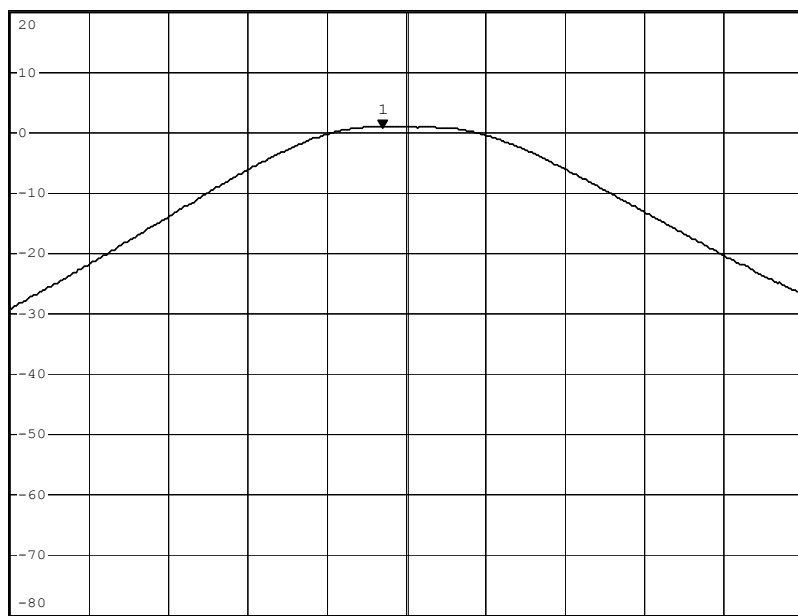
SWT 2.5 ms

Marker 1 [T1]

1.00 dBm

2.479850000 GHz

1 PK
MAXH



Center 2.48 GHz

500 kHz/

Span 5 MHz

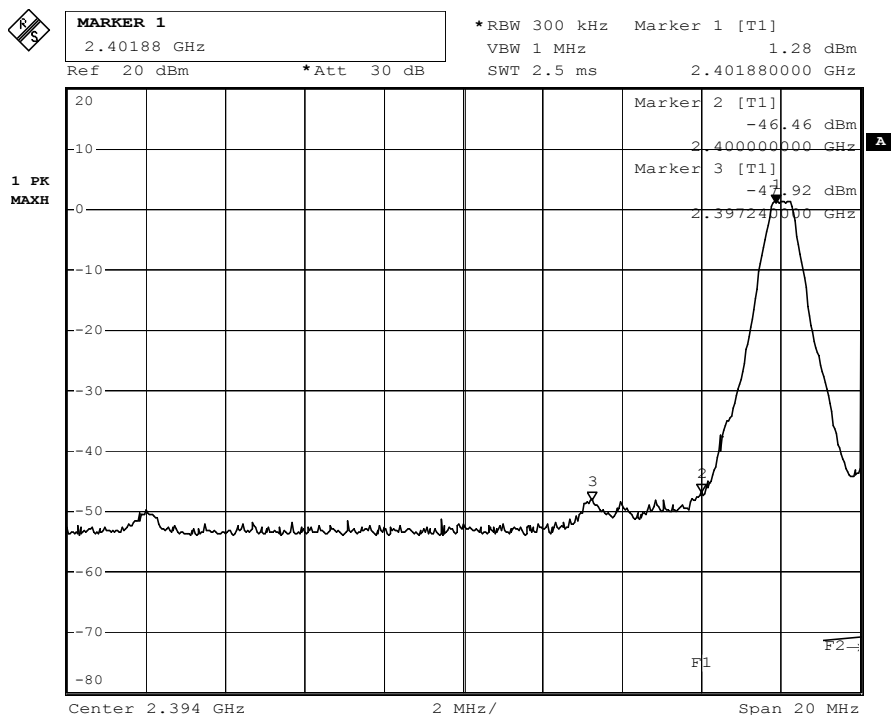
Date: 3.FEB.2005 16:36:10

Tx frequency: 2480MHz

Band Edge Compliance

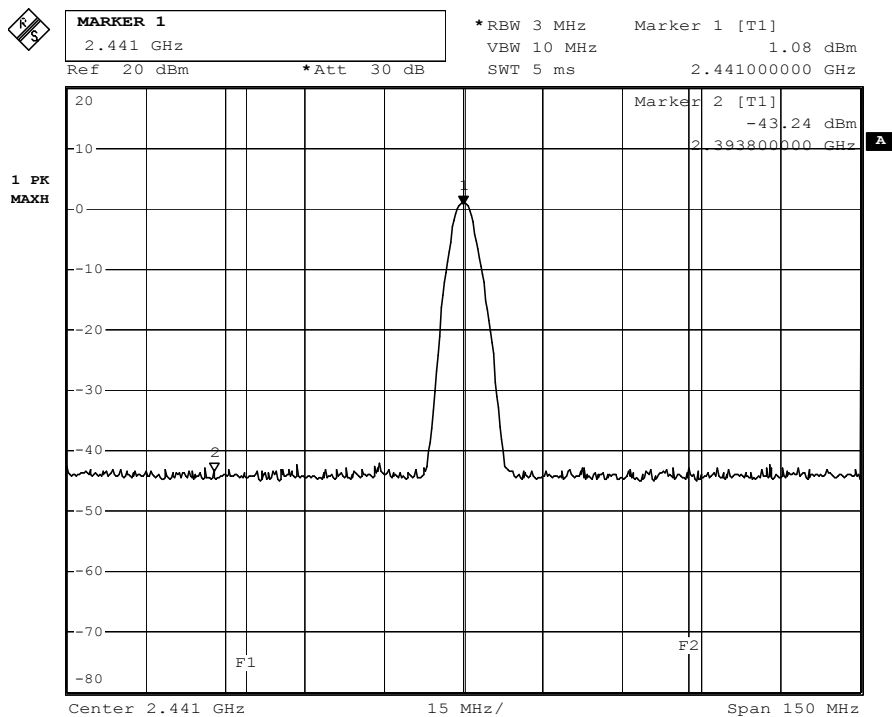
Date: 3 Feb 2005
 EUT: C51-A04089-XX
 Company: i.Tech Dynamic Ltd.
 Humidity: 50%
 Temperature: 23°C
 Voltage supply: 1.5V AAA size battery
 Test by: Hugo Wan
 Op. mode: TX mode, DH1 with PRBS9 payload

Tx Frequency (MHz)	Peak in band Power level (dBm)	RF power outside 100kHz BW (MHz)	RF power difference outside 100kHz BW (dB)	Results
2402	1.28	No Peak	-	Pass
2480	0.52	No Peak	-	Pass



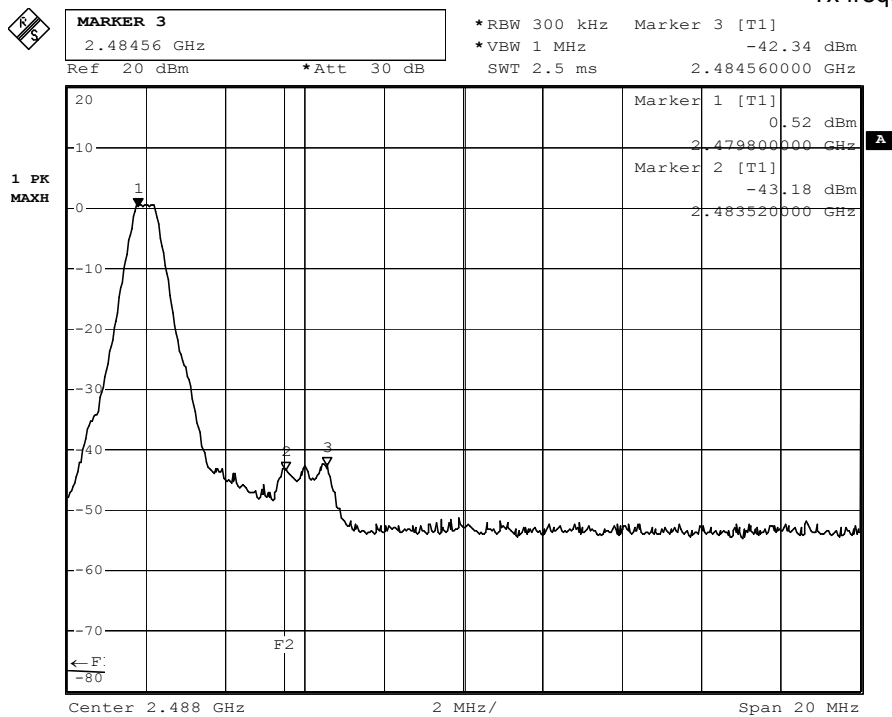
Date: 3.FEB.2005 17:21:26

Tx frequency: 2402MHz



Date: 3.FEB.2005 17:24:50

Tx frequency: 2441MHz



Date: 3.FEB.2005 17:29:35

Tx frequency: 2480MHz

Spurious Emissions - Conducted

Date: 3 Feb 2005
EUT: C51-A04089-XX
Company: i.Tech Dynamic Ltd.
Humidity: 50%
Temperature: 23°C
Voltage supply: 1.5V AAA size battery
Test by: Hugo Wan
Op. mode: TX mode, DH1 with PRBS9 payload

Tx frequency : 2402MHz

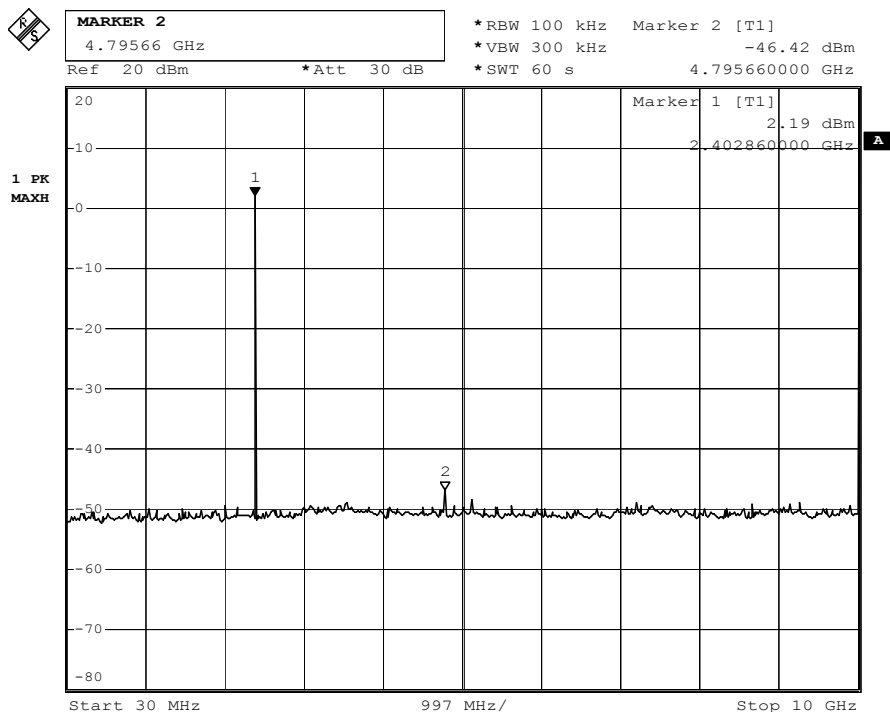
Spurious Frequency (MHz)	Power level (dBm)	Reference value (dBm)	Delta to reference level (dB)	Results
4795.660	-46.42	2.19	-48.61	Pass

Tx frequency : 2441MHz

Spurious Frequency (MHz)	Power level (dBm)	Reference value (dBm)	Delta to reference level (dB)	Results
4875.420	-46.85	1.39	-48.24	Pass

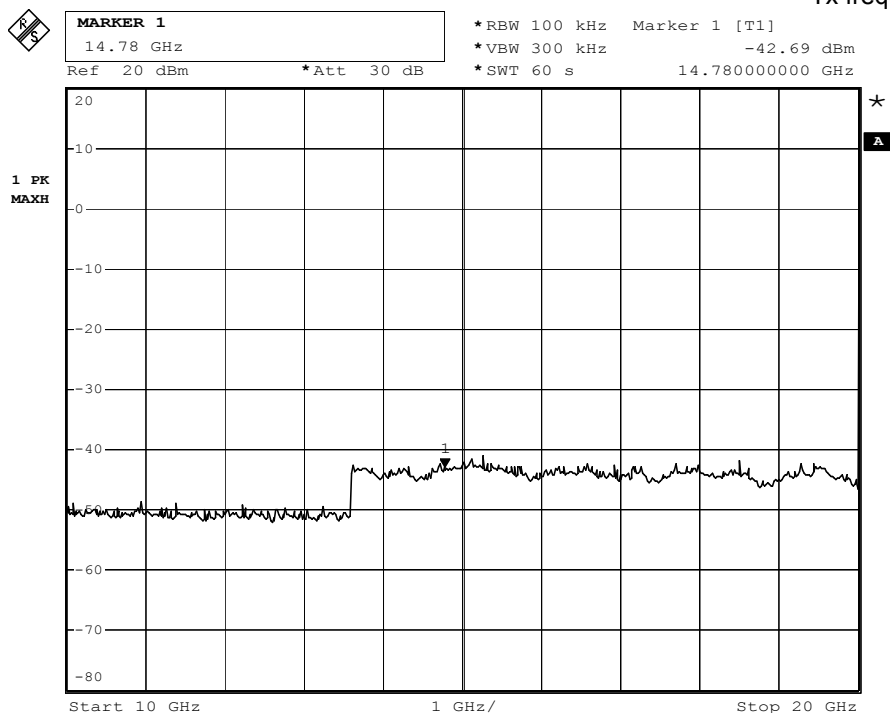
Tx frequency : 2480MHz

Spurious Frequency (MHz)	Power level (dBm)	Reference value (dBm)	Delta to reference level (dB)	Results
4955.180	-43.43	0.95	-44.38	Pass



Date: 3.FEB.2005 17:37:24

Tx frequency: 2402MHz



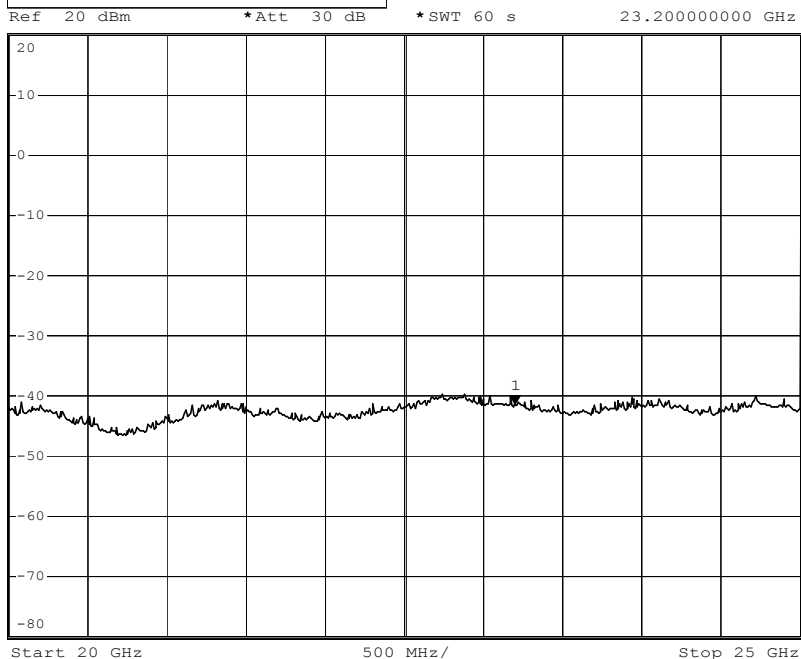
Date: 3.FEB.2005 17:39:56

Tx frequency: 2402MHz



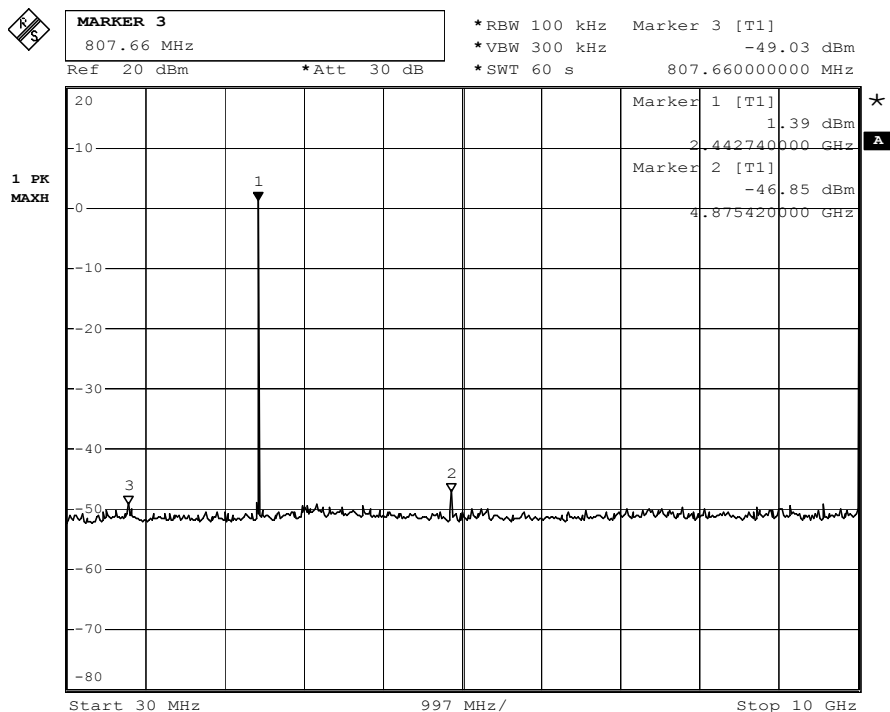
MARKER 1
23.2 GHz

*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz -41.09 dBm
*SWT 60 s 23.200000000 GHz



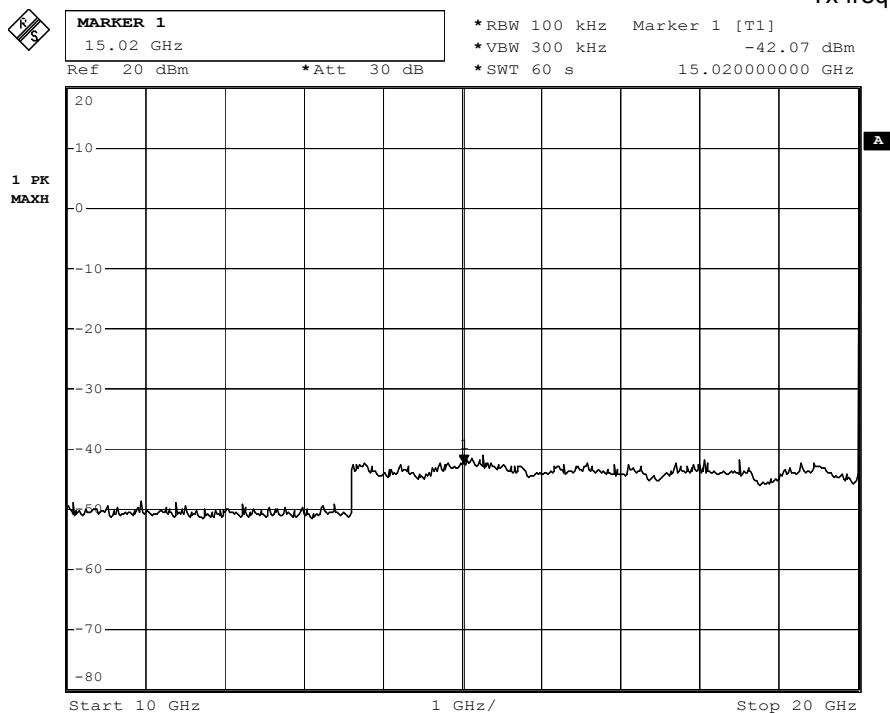
Date: 3.FEB.2005 17:45:41

Tx frequency: 2402MHz



Date: 3.FEB.2005 17:47:52

Tx frequency: 2441MHz



Date: 3.FEB.2005 17:40:56

Tx frequency: 2441MHz



MARKER 1

22.69 GHz

Ref 20 dBm

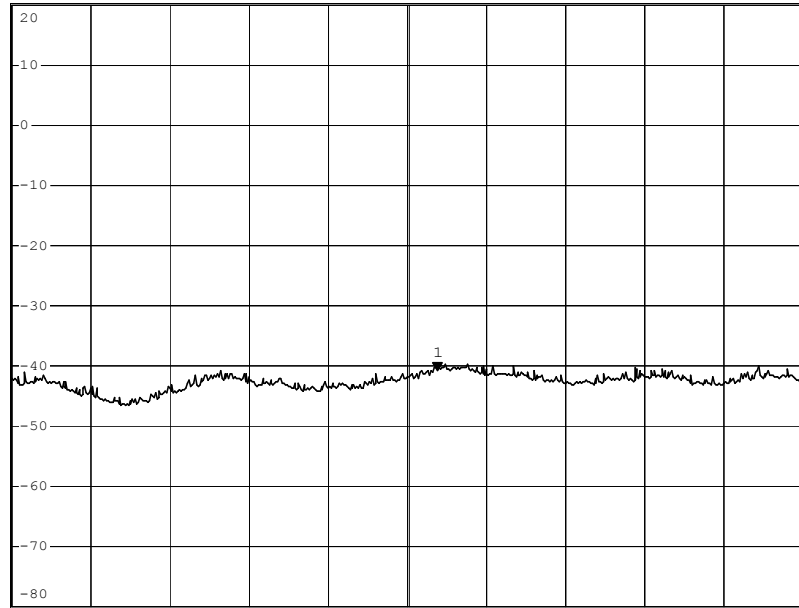
*Att 30 dB

*RBW 100 kHz Marker 1 [T1]

*VBW 300 kHz -40.38 dBm

*SWT 60 s 22.69000000 GHz

1 PK
MAXH



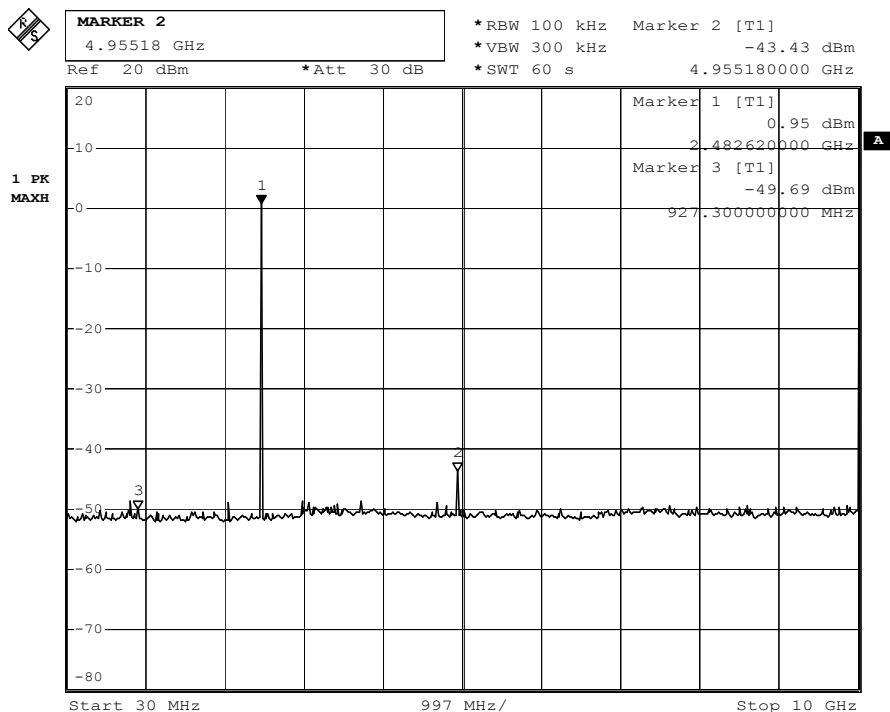
Start 20 GHz

500 MHz/

Stop 25 GHz

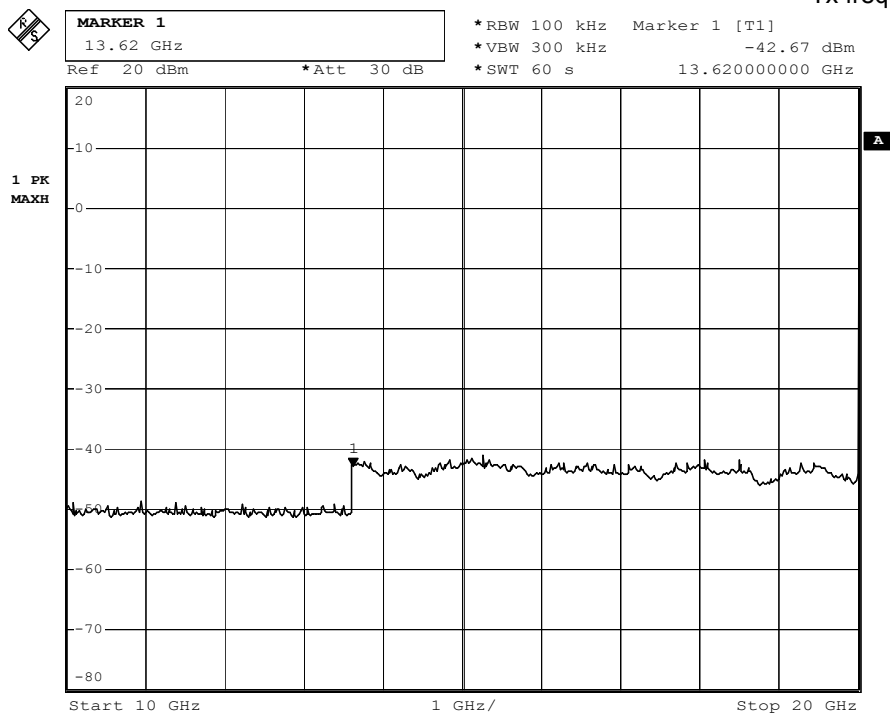
Date: 3.FEB.2005 17:45:20

Tx frequency: 2441MHz



Date: 3.FEB.2005 17:51:13

Tx frequency: 2480MHz



Date: 3.FEB.2005 17:41:44

Tx frequency: 2480MHz



MARKER 1

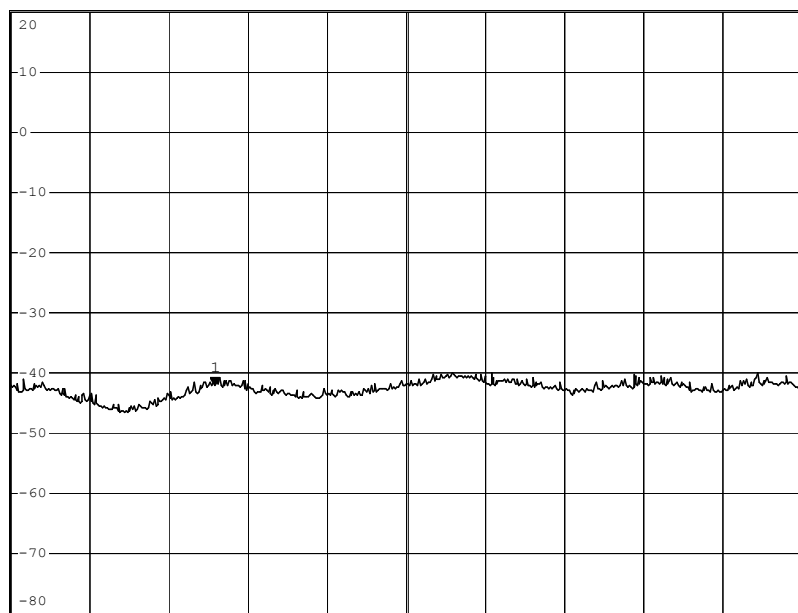
21.29 GHz

*RBW 100 kHz Marker 1 [T1]
 *VBW 300 kHz -41.90 dBm
 *SWT 60 s 21.290000000 GHz

Ref 20 dBm

*Att 30 dB

1 PK
MAXH



Start 20 GHz

500 MHz/

Stop 25 GHz

Date: 3.FEB.2005 17:44:53

Tx frequency: 2480MHz

Spurious Emissions - Radiated

Date: 24 Jan 2005

EUT: C51-A04089-XX

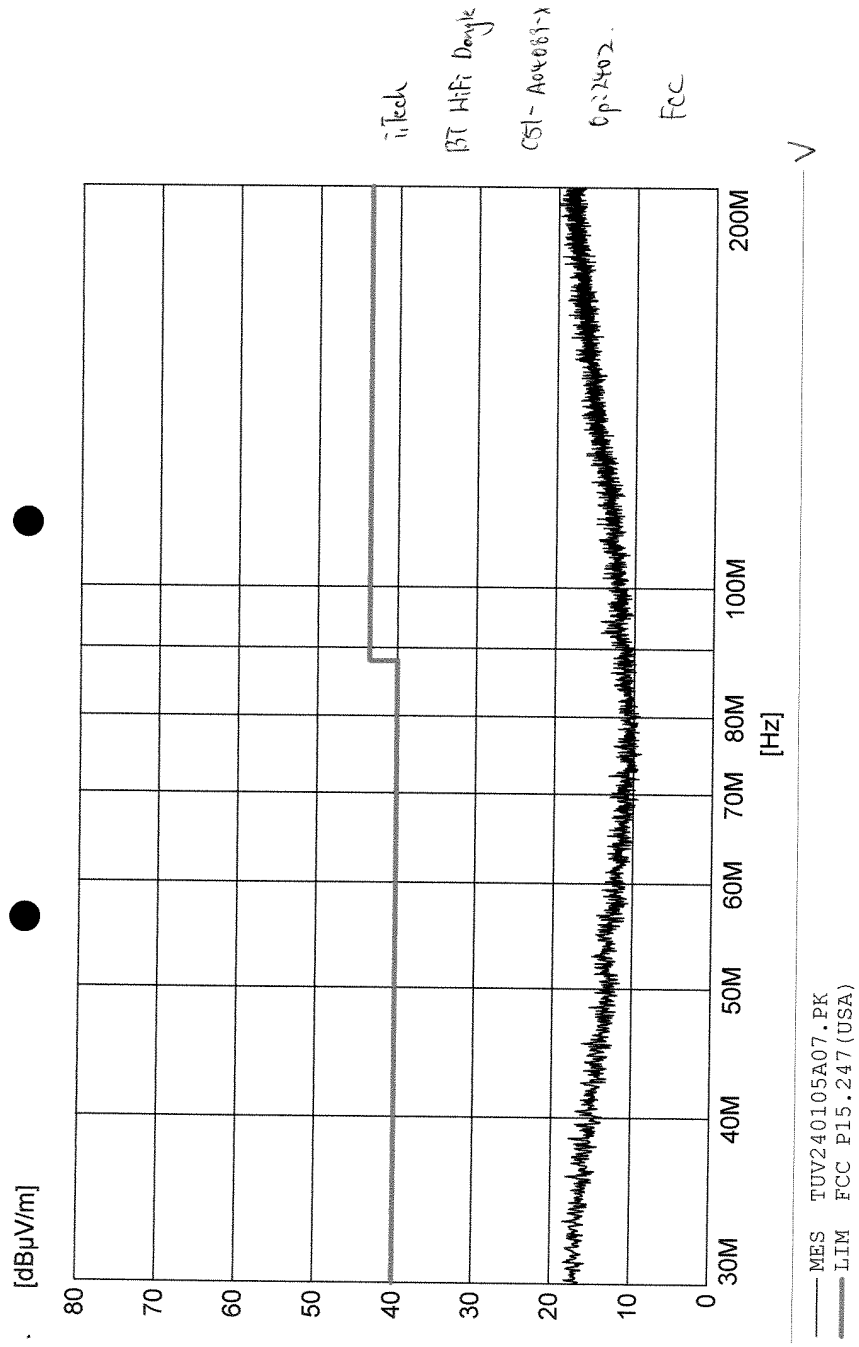
Company: i.Tech Dynamic Ltd.

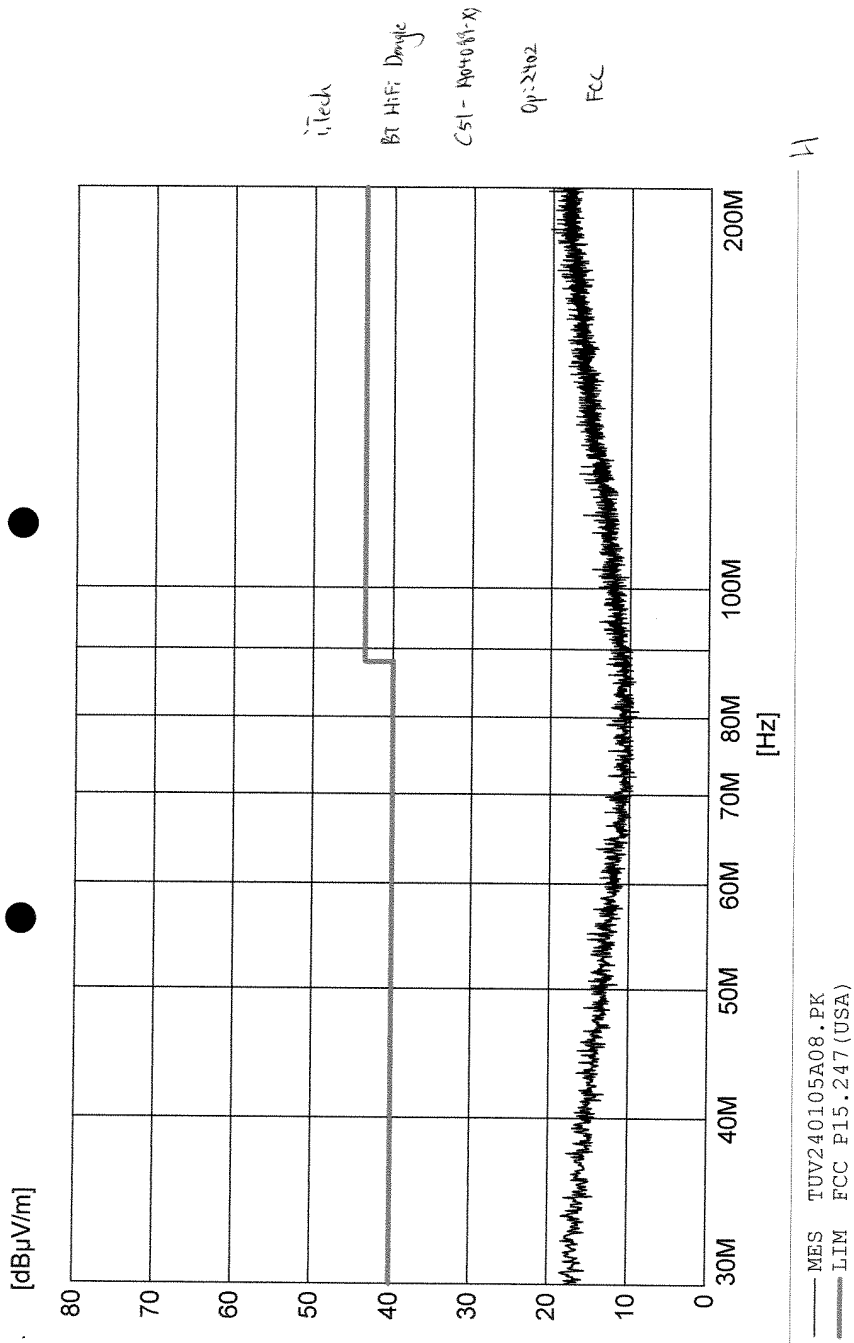
Voltage supply: 1.5V AAA size battery

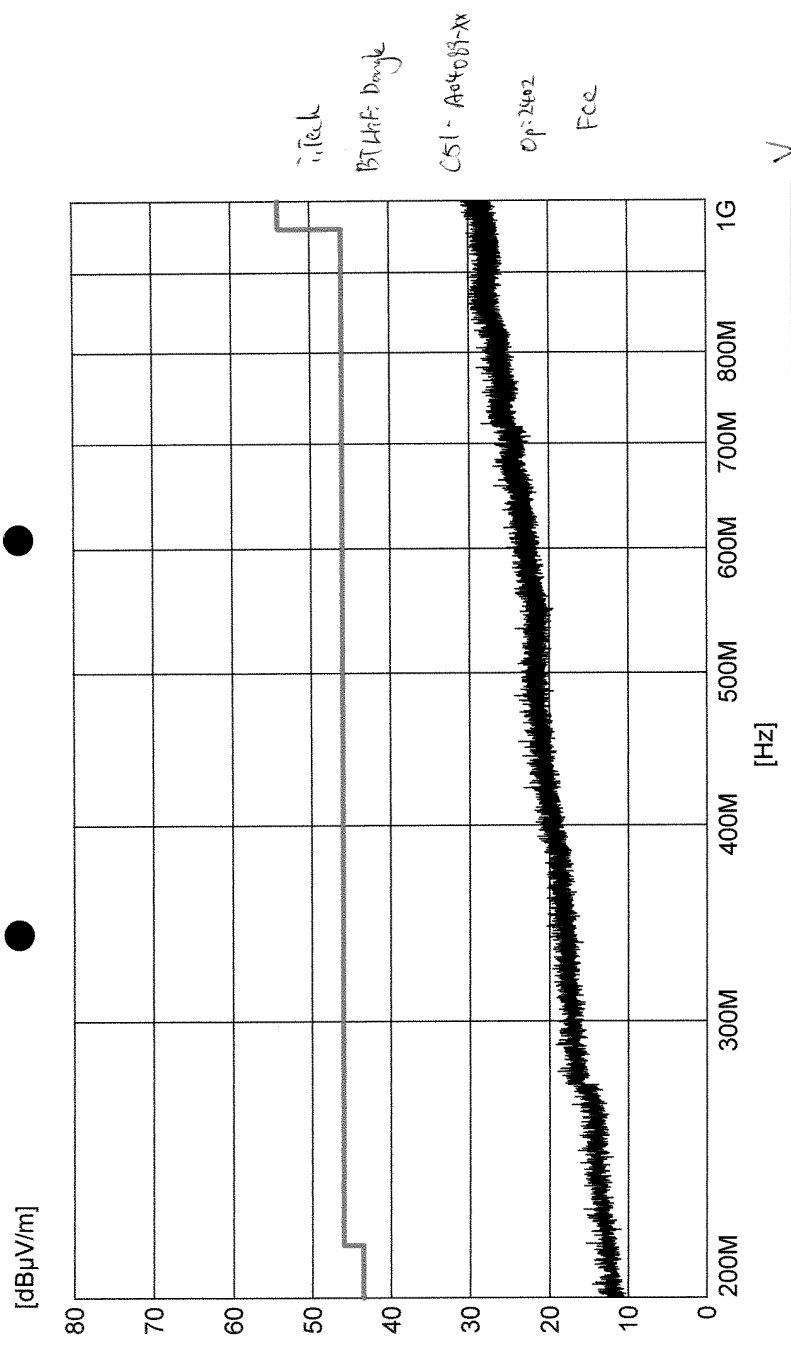
Test by: Hugo Wan

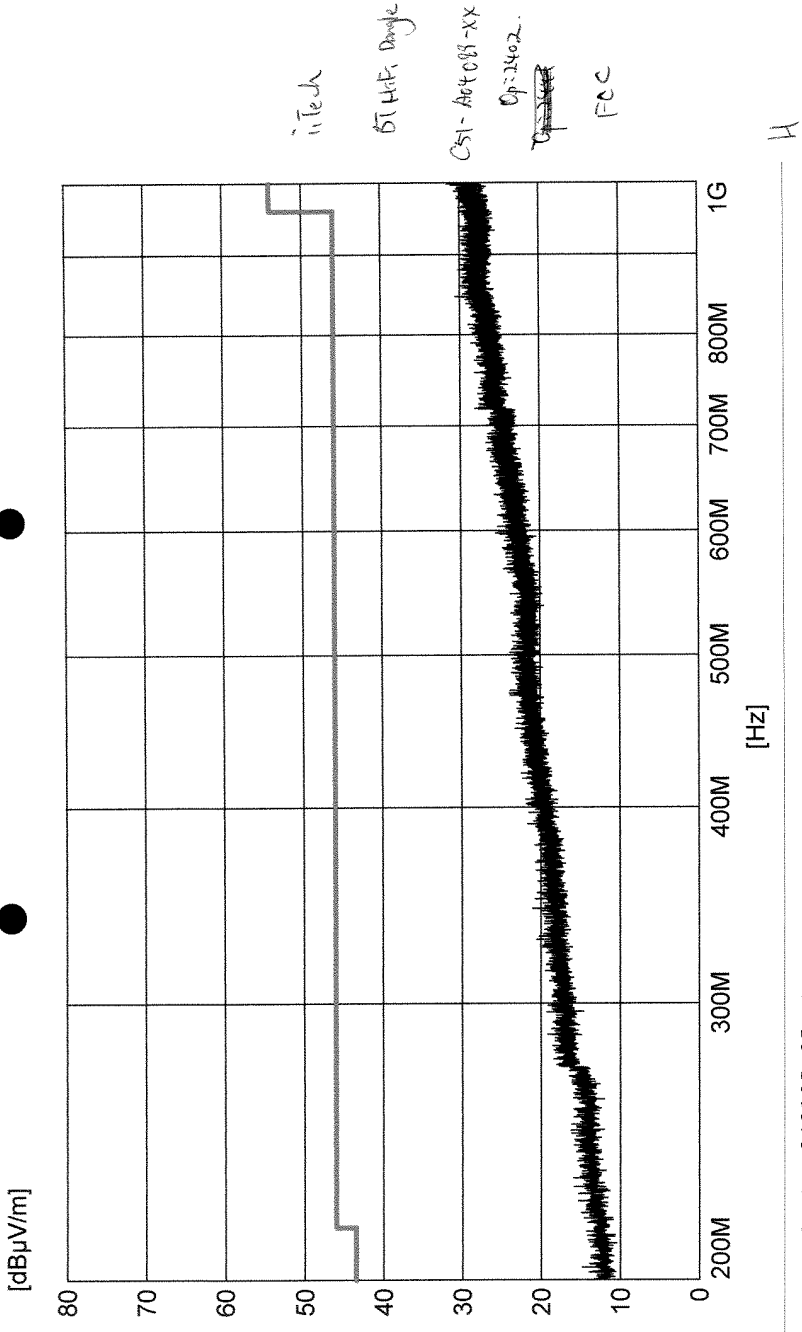
Op. mode: TX mode, DH1 with PRBS9 payload

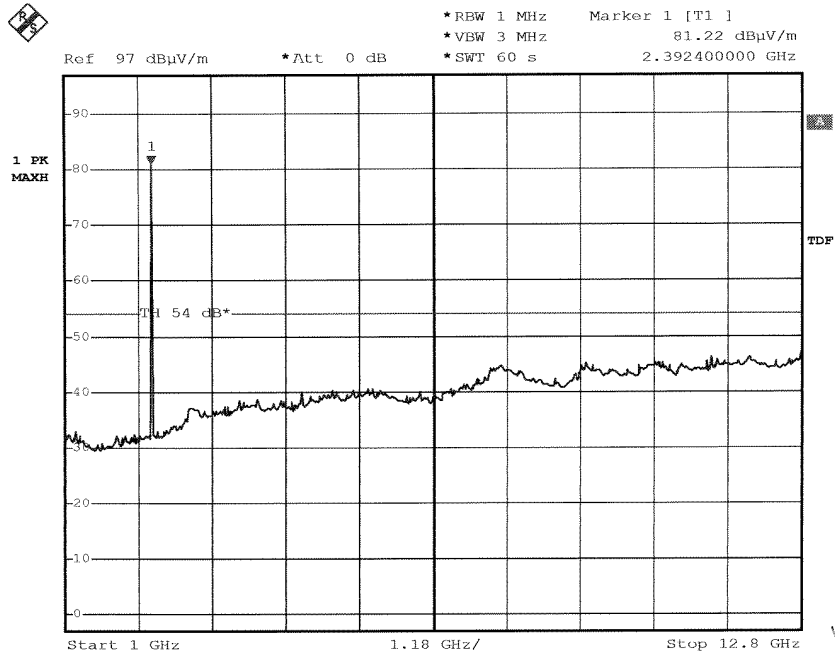
Tx frequency (MHz)	Polarization	Spurious Frequency (MHz)	Power Level (dBuV/m)	Detector (P/QP/A)
2402	H	1602.400	42.37	P
2402	H	1601.960	39.48	A
Tx frequency (MHz)	Polarization	Spurious Frequency (MHz)	Power Level (dBuV/m)	Detector (P/QP/A)
2441	H	1628.440	43.97	P
2441	H	1627.880	39.51	A
Tx frequency (MHz)	Polarization	Spurious Frequency (MHz)	Power Level (dBuV/m)	Detector (P/QP/A)
2480	H	1654.000	42.16	P
2480	H	1653.920	39.16	A
2480	H	4959.840	46.41	P
2480	H	4959.840	44.37	A
2480	V	2483.920	50.50	P
2480	V	2483.920	50.72	A
2480	H	2484.320	46.91	P
2480	H	2483.880	45.42	A











Date: 24.JAN.2005 07:29:09

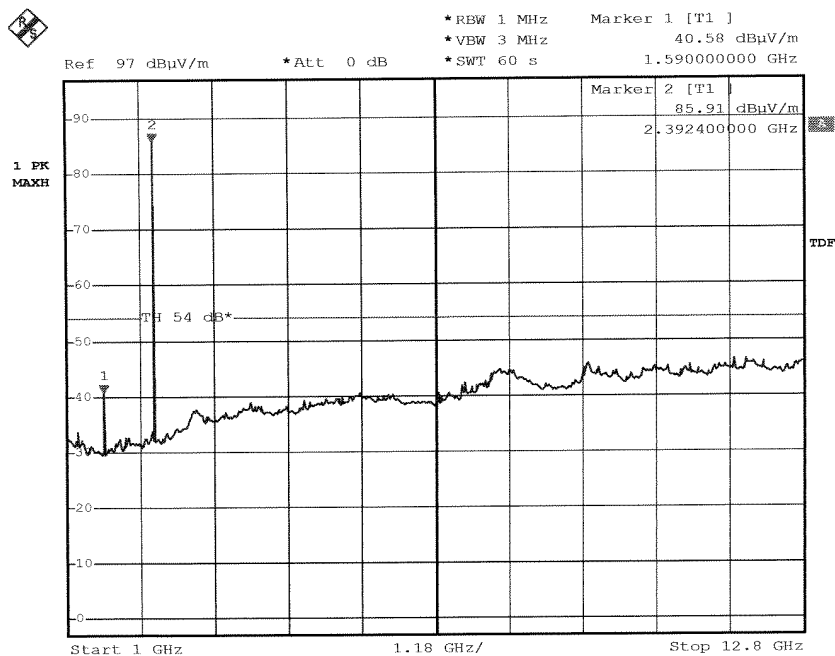
i.Tech

BT HiFi dongle

CS1-A04069-XX

Op:2402MHz

FCC



Date: 24.JAN.2005 07:19:22

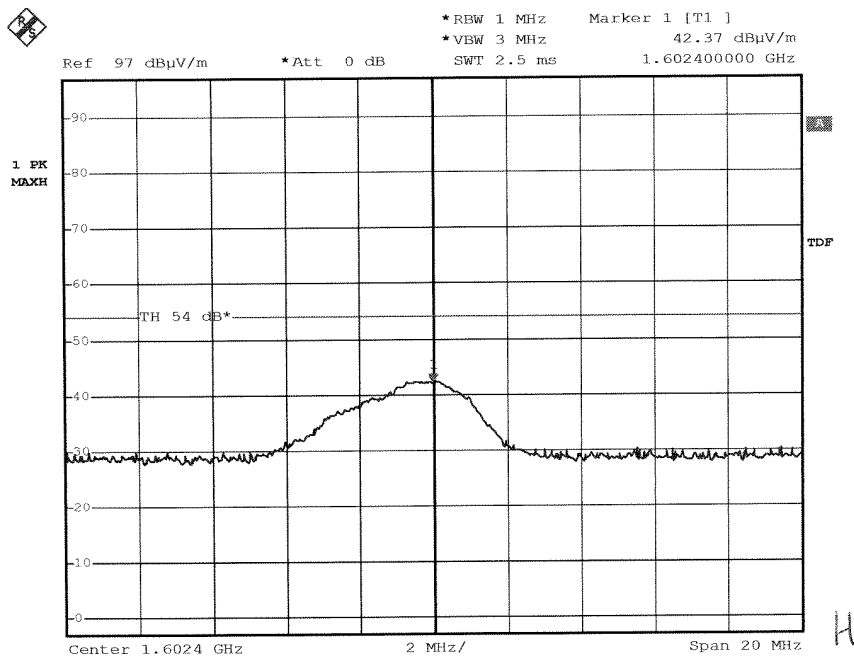
3. Tech

BT HiFi dongle

C51-A04089-XX

Op: 2402 MHz

FCC



Date: 24.JAN.2005 07:22:34

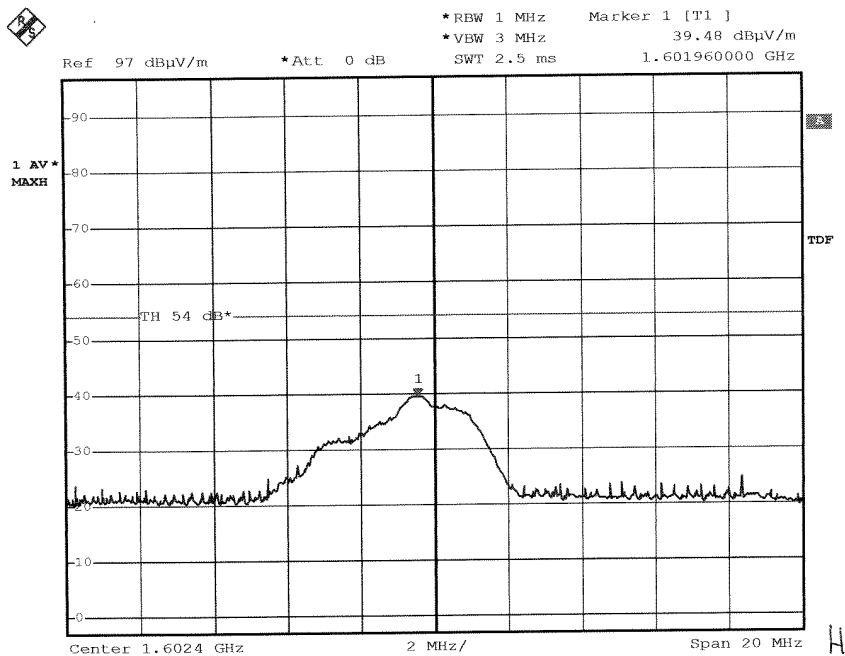
iTech

BT WiFi Dongle

CS1-A04089-XX

Op: 2402MHz

FCC



Date: 24.JAN.2005 07:24:14

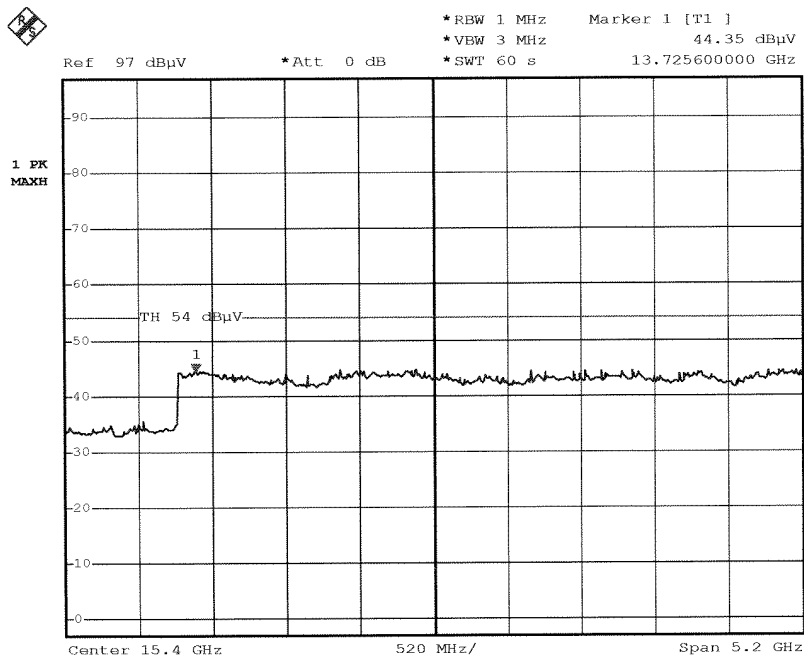
iTech

BT WiFi Dongle

C51-A04089-XX

Op: 2.402 MHz

FCC



Date: 24.JAN.2005 09:02:14

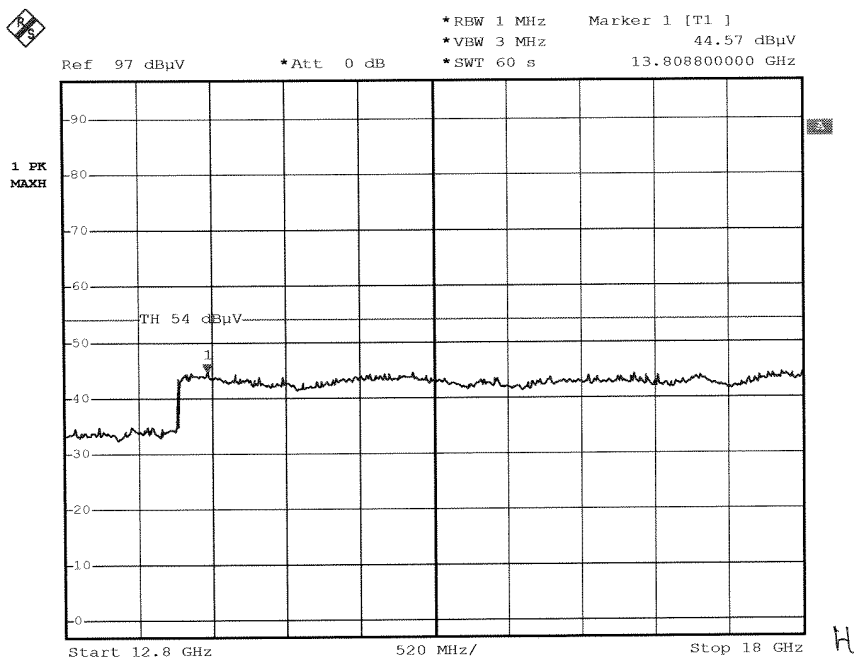
i.Tech

BT-HiFi Dongle

C51-A040 89-XX

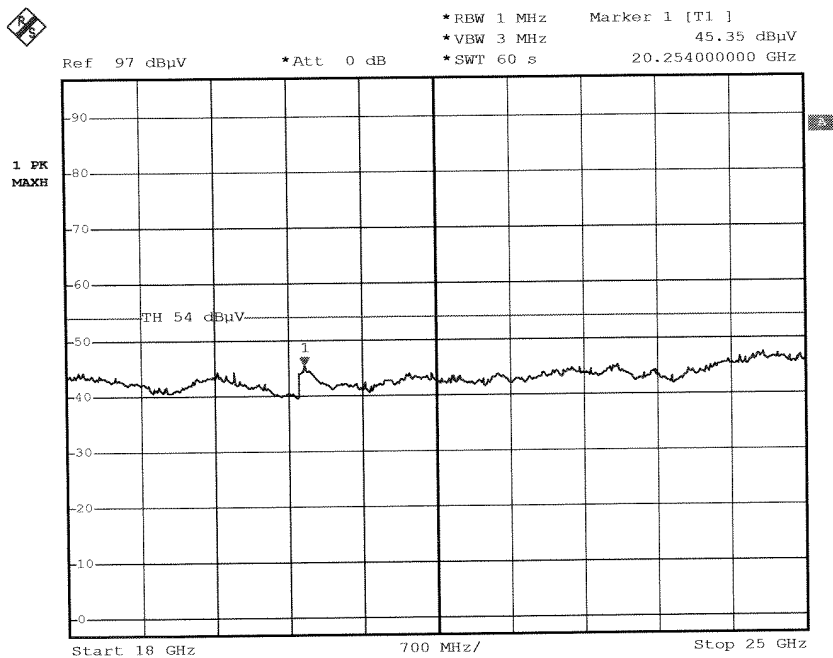
Op:2402

FCC



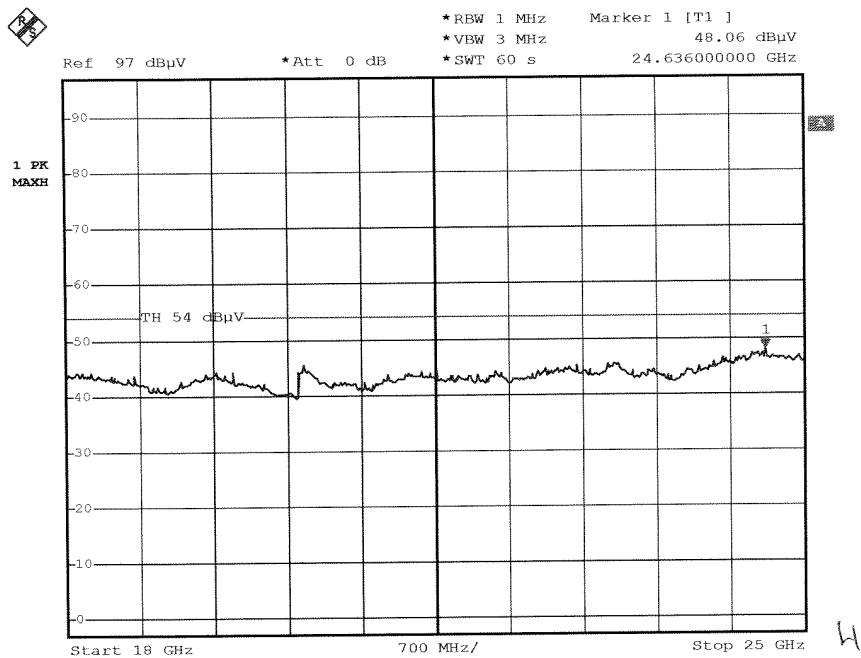
Date: 24.JAN.2005 08:58:29

iTech
BT-HiFi Dongle
CS1-A04089-XX
Qp2402
Fcc



Date: 24.JAN.2005 09:06:25

iTech
BT HiFi Dongle
C51-A04089-AX
Op: 2402
FCC



Date: 24.JAN.2005 09:09:01

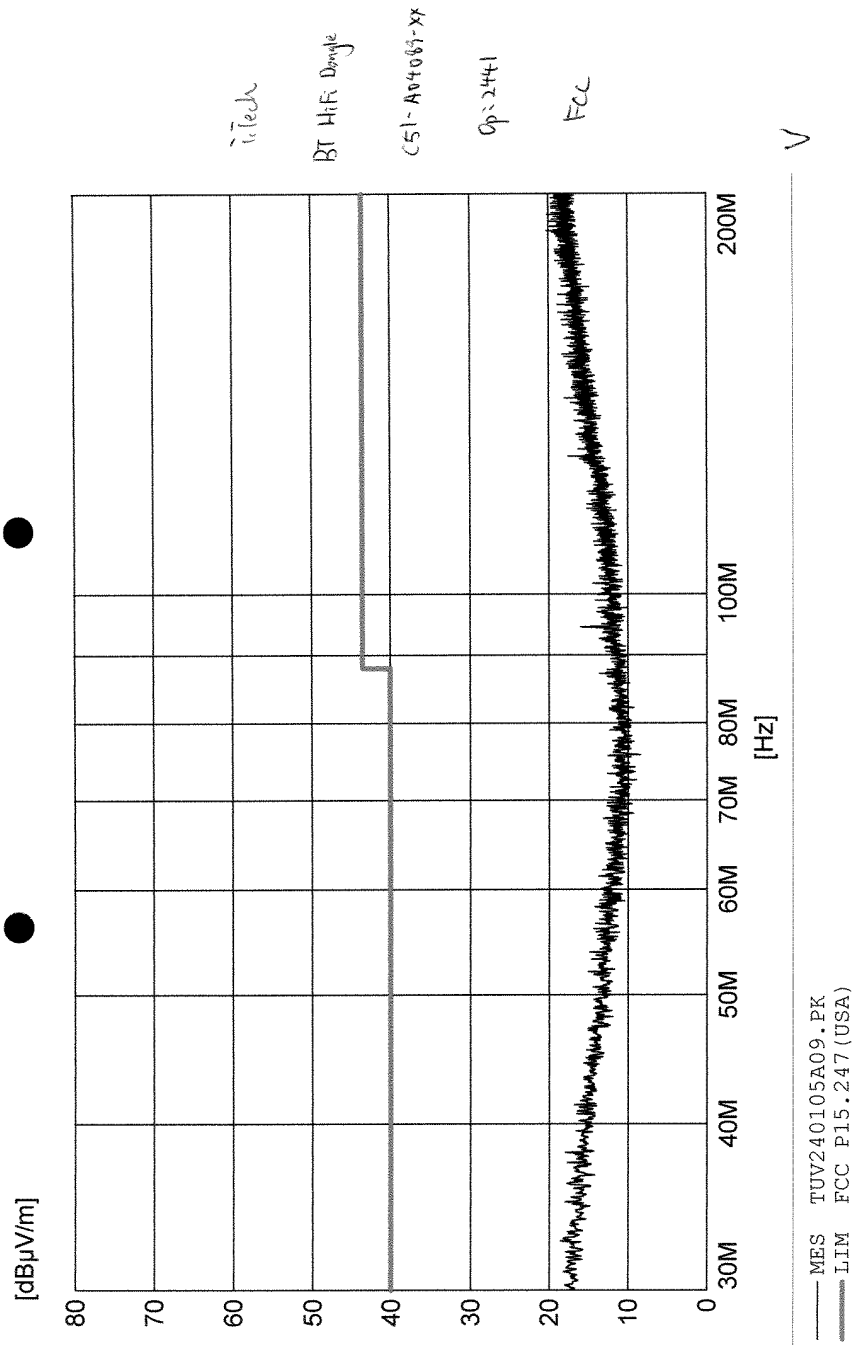
iTech

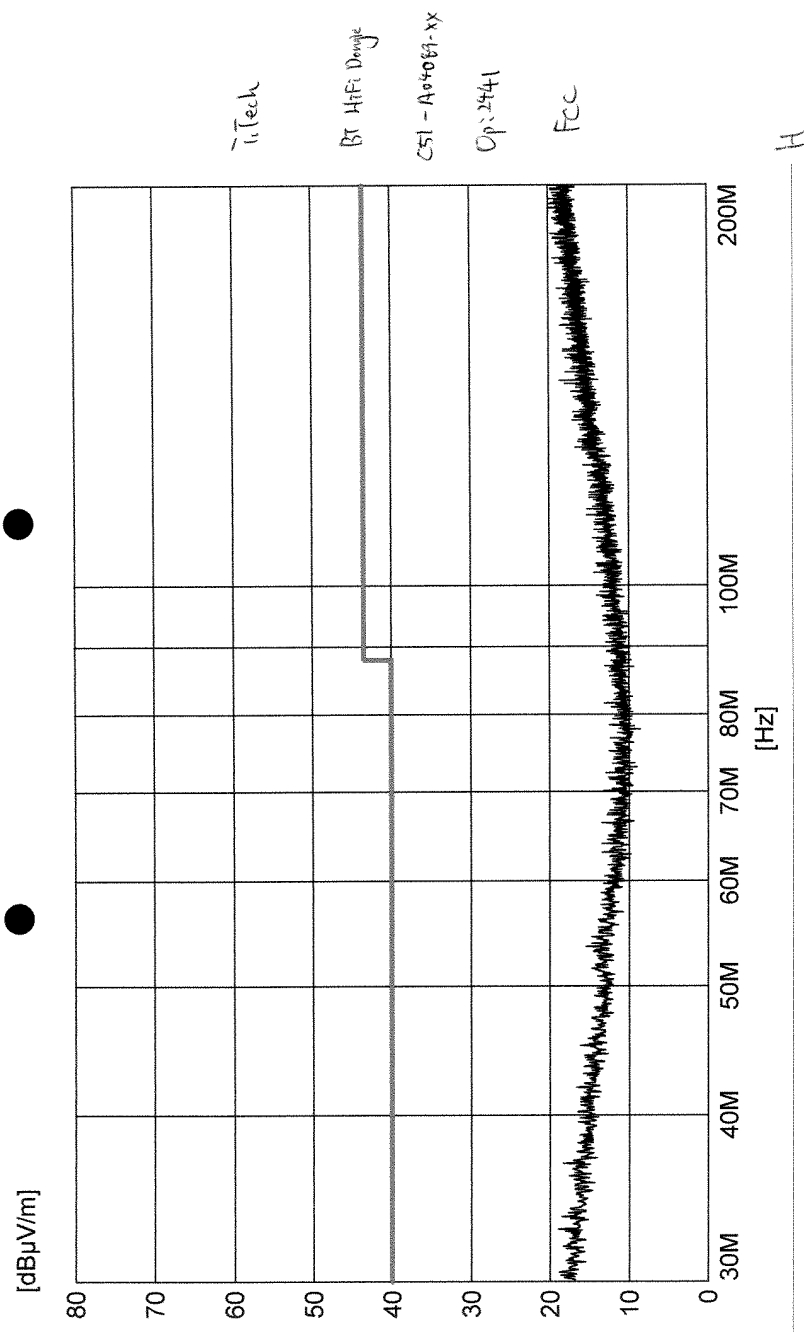
BT HiFi Dongle

C51-A04089-KX

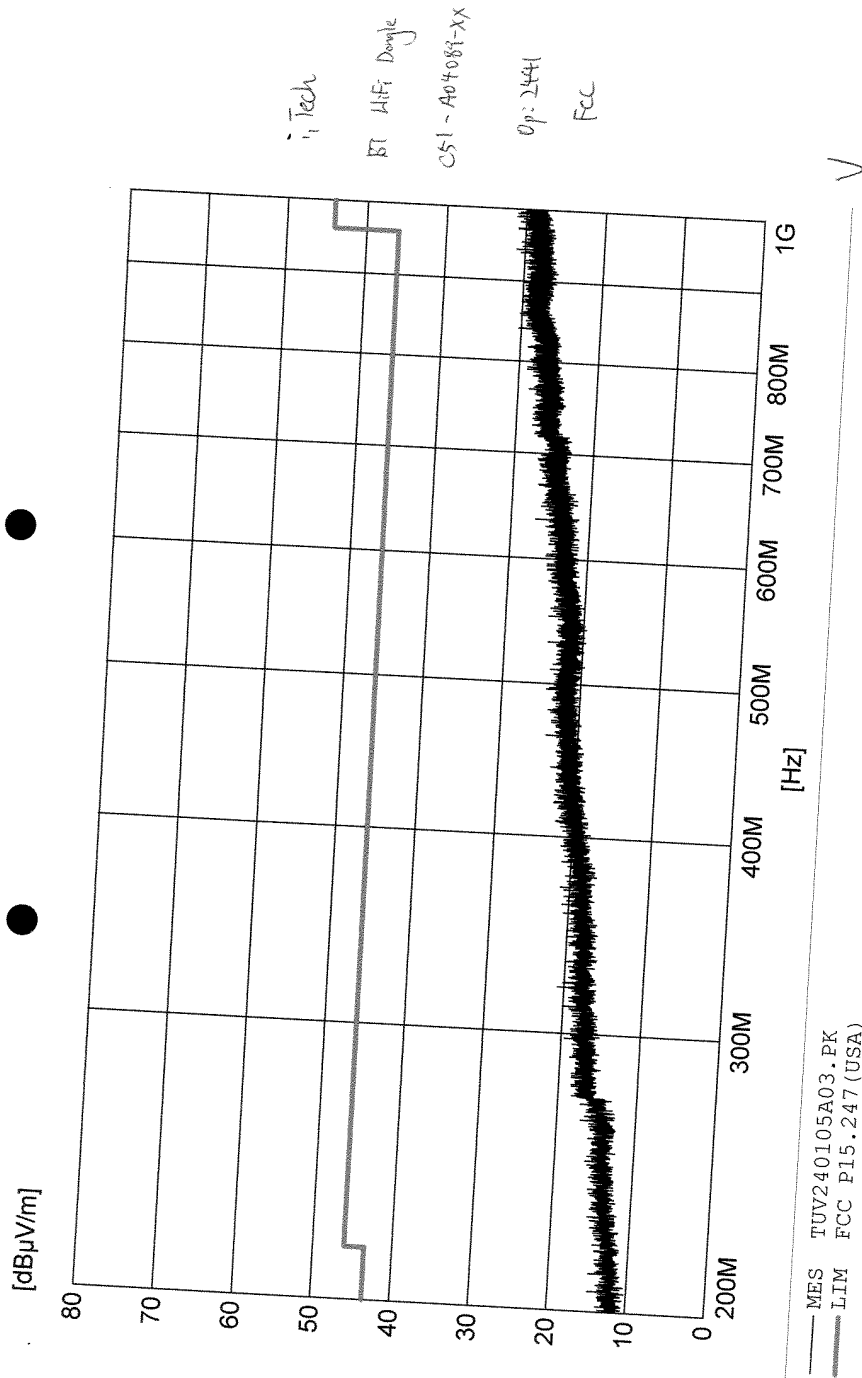
Op: 2402

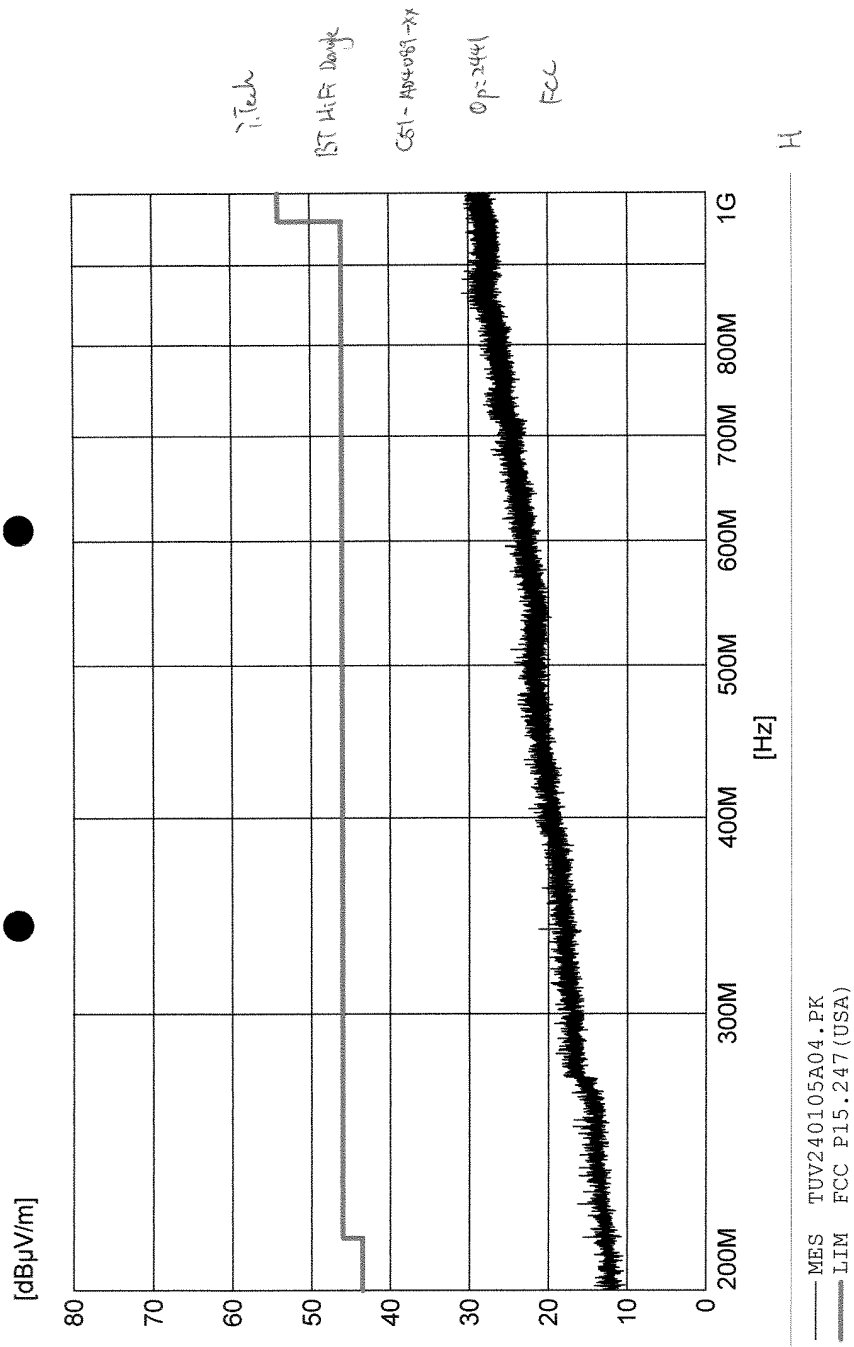
FCC

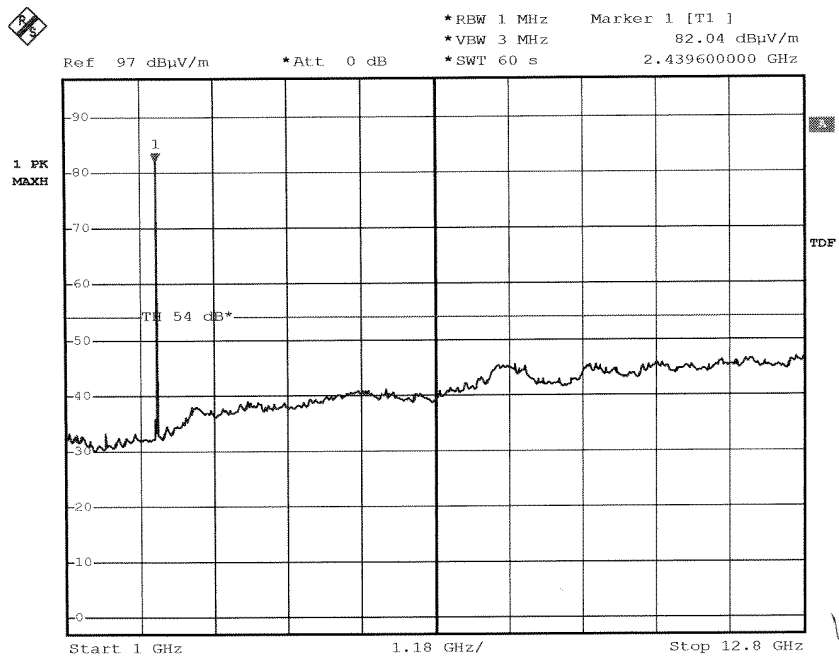




MES TUV240105A10.PK
LIM FCC P15.247 (USA)

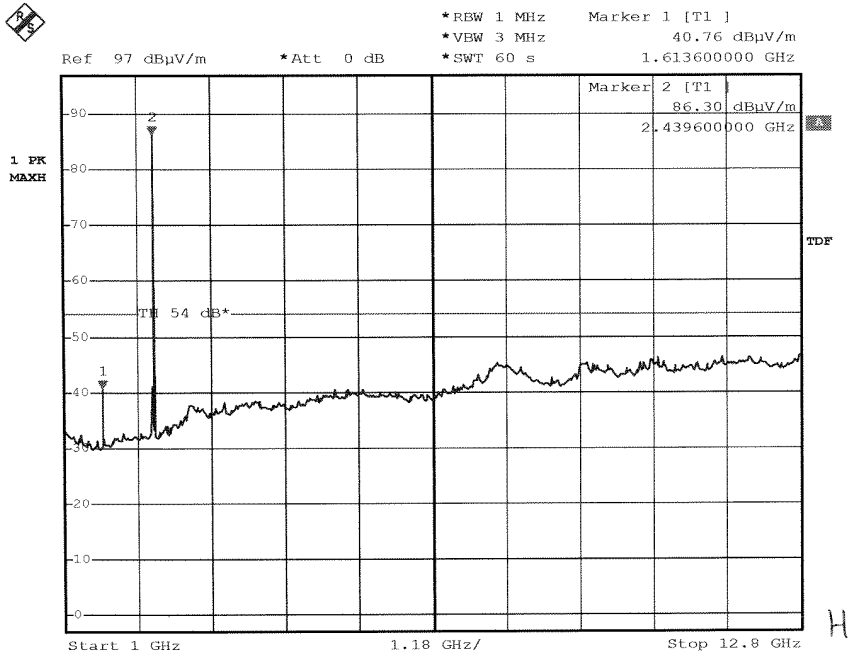






Date: 24.JAN.2005 06:44:47

i.Tech
 BT HiFi dongle
 C51-A04089 - XX
 Op: 2441 MHz
 Fee



Date: 24.JAN.2005 06:47:42

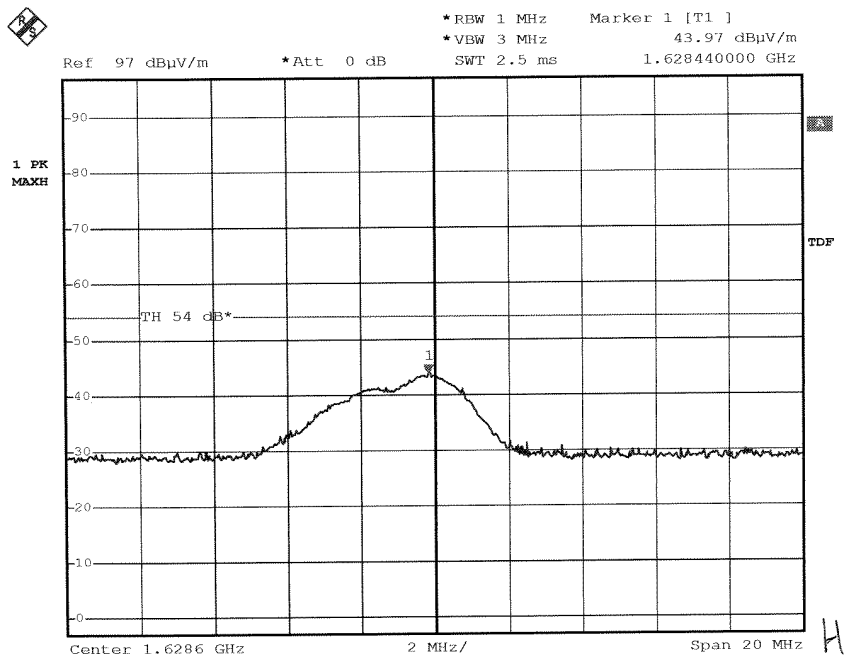
iTech

BT4Fi dongle

C51-A04089-XX

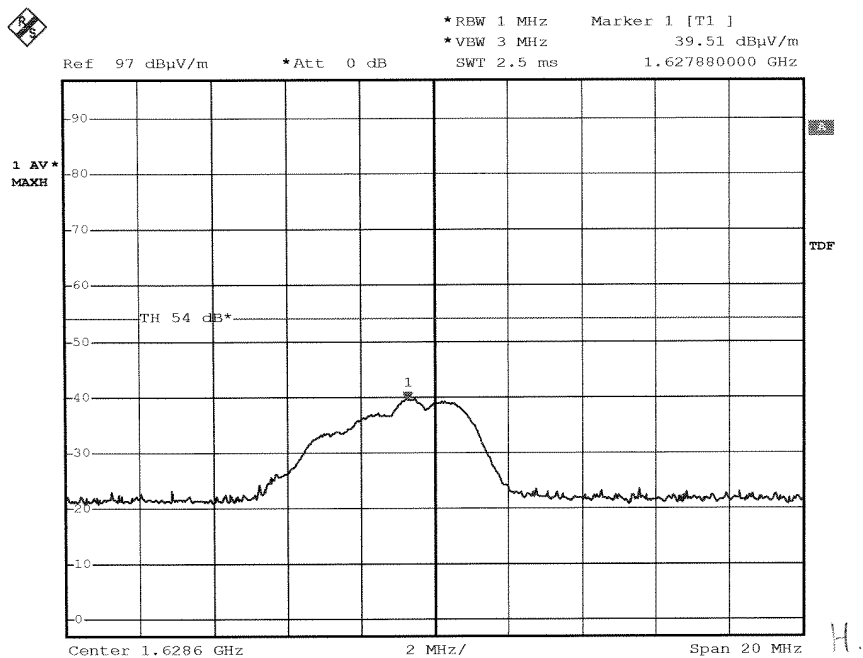
Op: 2441 MHz

FCC



Date: 24.JAN.2005 06:53:16

i.Tech
 BT HiFi dongle
 C51-A04089-XX
 Op:2441MHz
 FCC.



Date: 24.JAN.2005 06:57:20

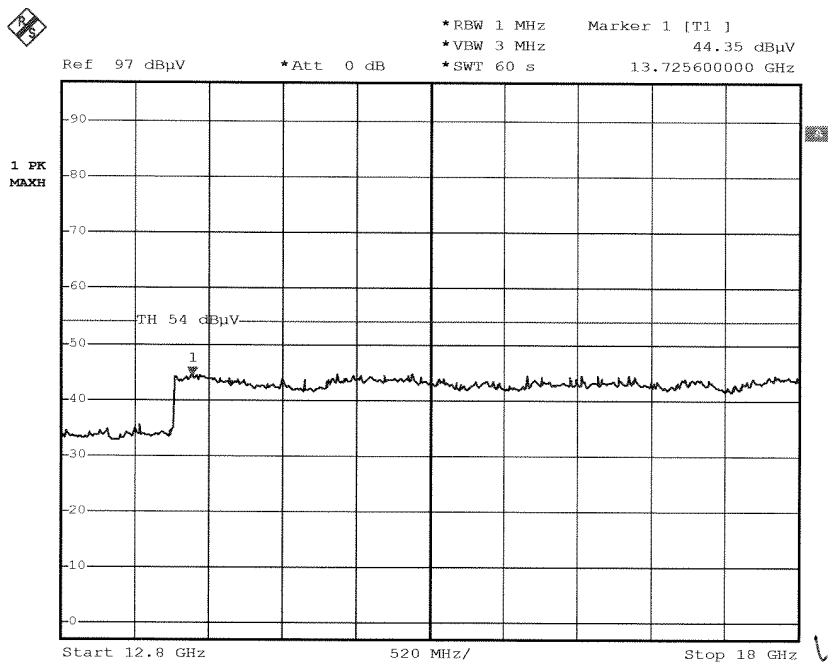
iTech

BT HiFi dongle

C51-A04089-xx

Op: 2441MHz

FCC



Date: 24.JAN.2005 08:37:04

iTech

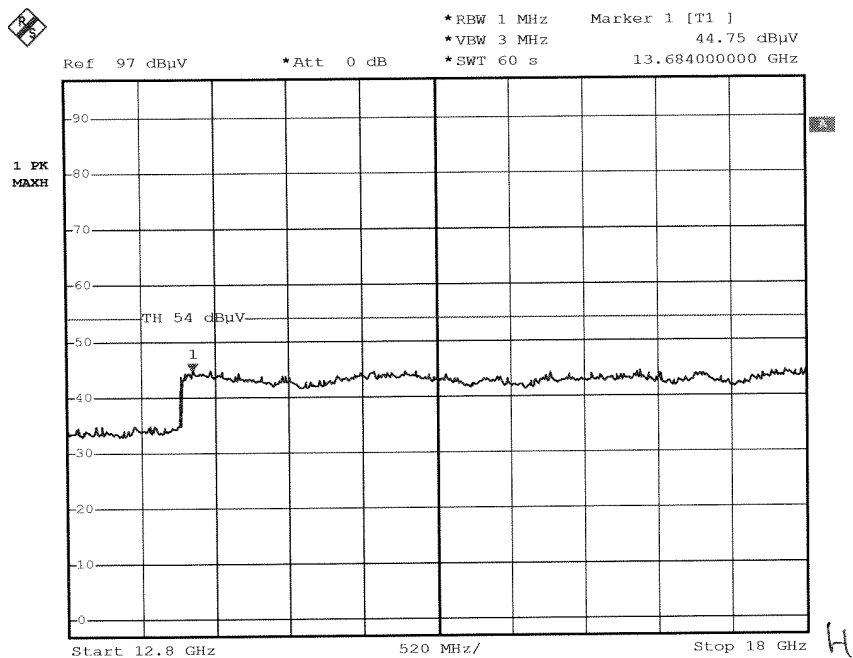
BT-HiFi Dongle

C51-A04089-XX

~~Q-2480~~

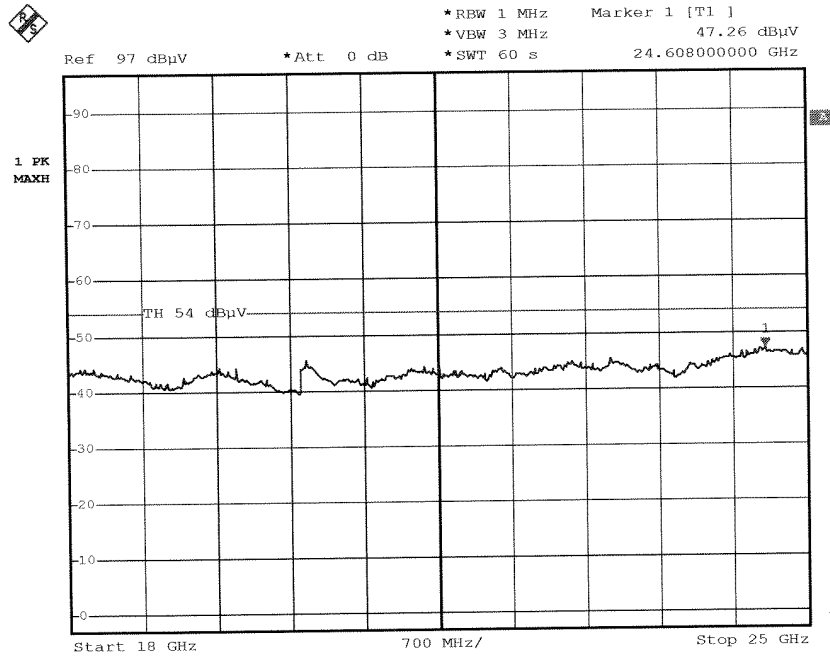
Op:2881

FCC



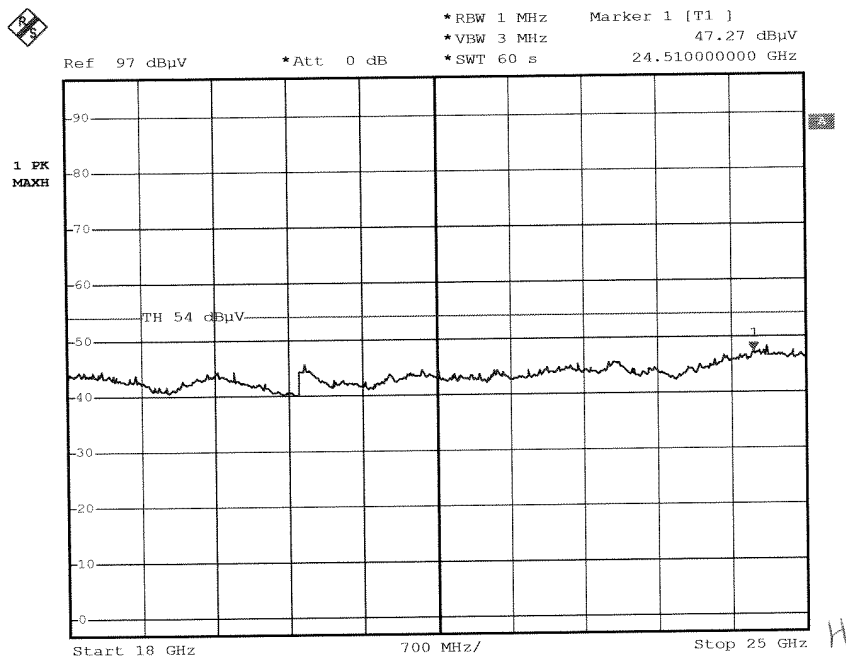
Date: 24.JAN.2005 08:33:38

iTech
 BT-HiFi Dongle
 CS1-A04089-xx
 Cp: 2841
 FCC



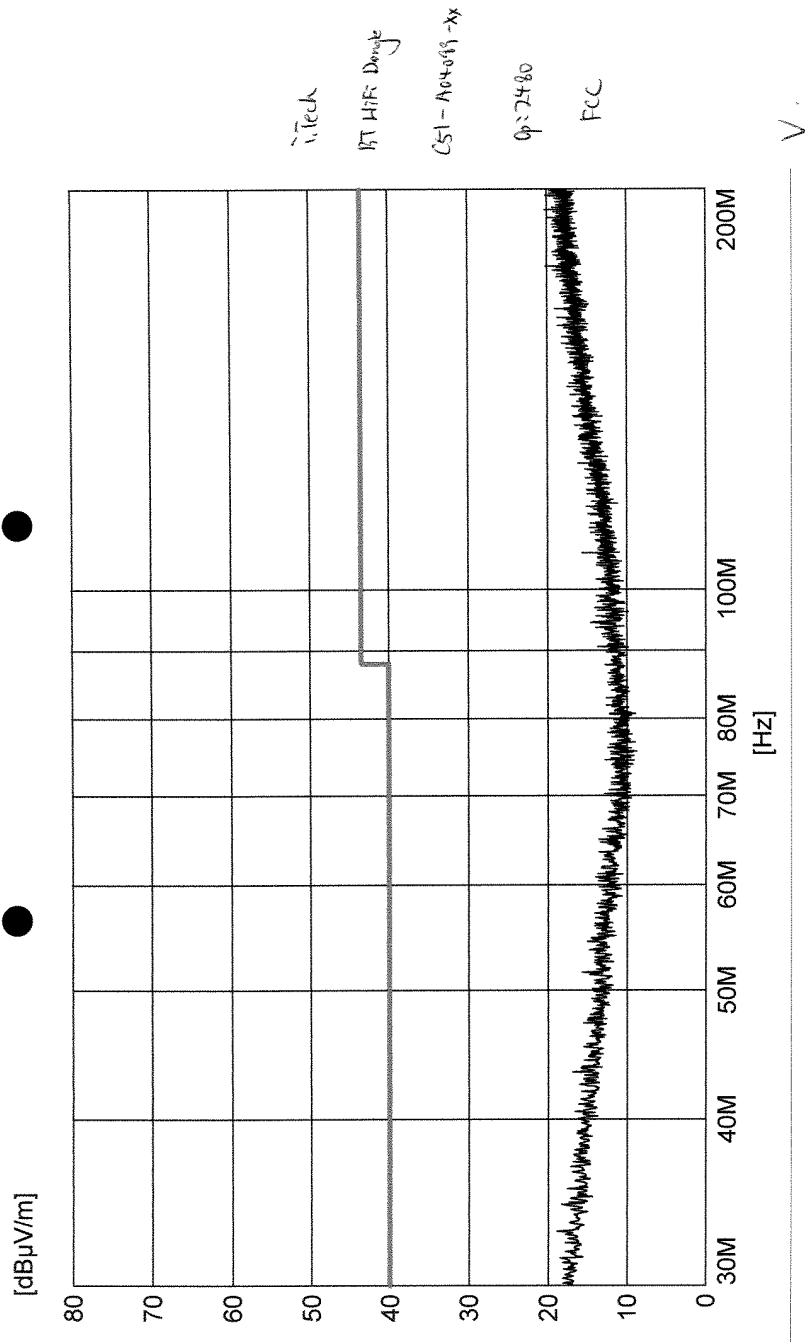
Date: 24.JAN.2005 09:07:14

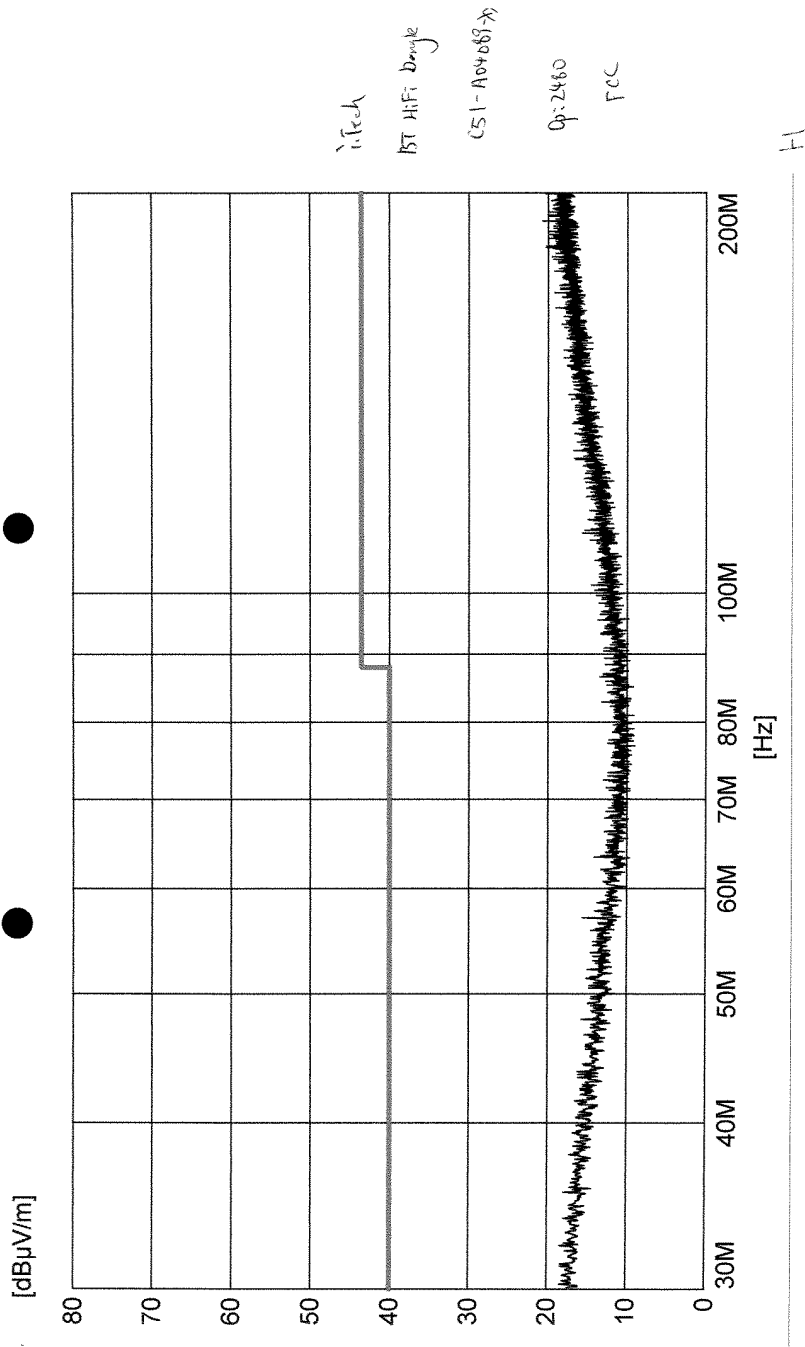
gitech
BT HiFi Dongle
CS1-A04089-XY
Op: 2441
FCC

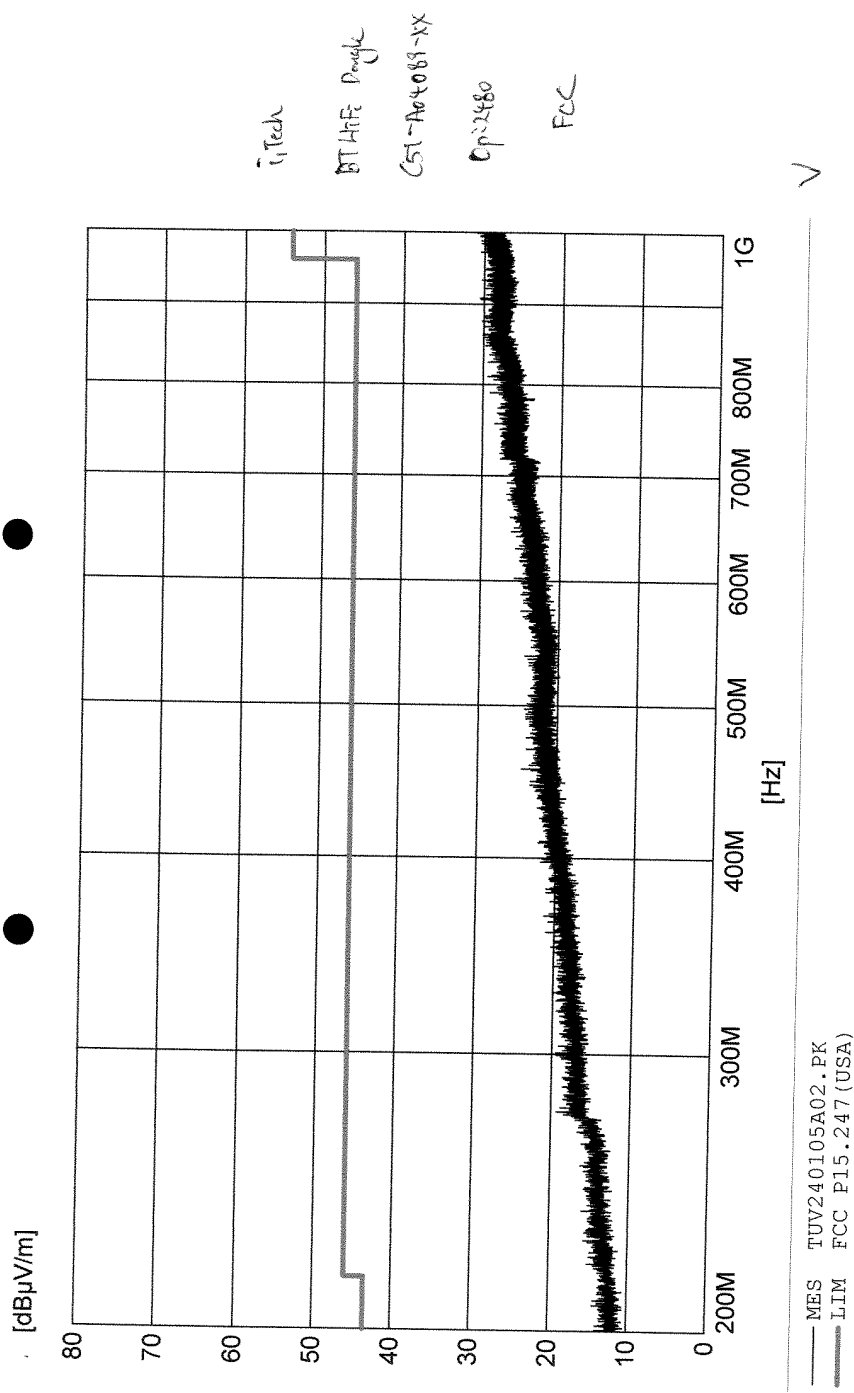


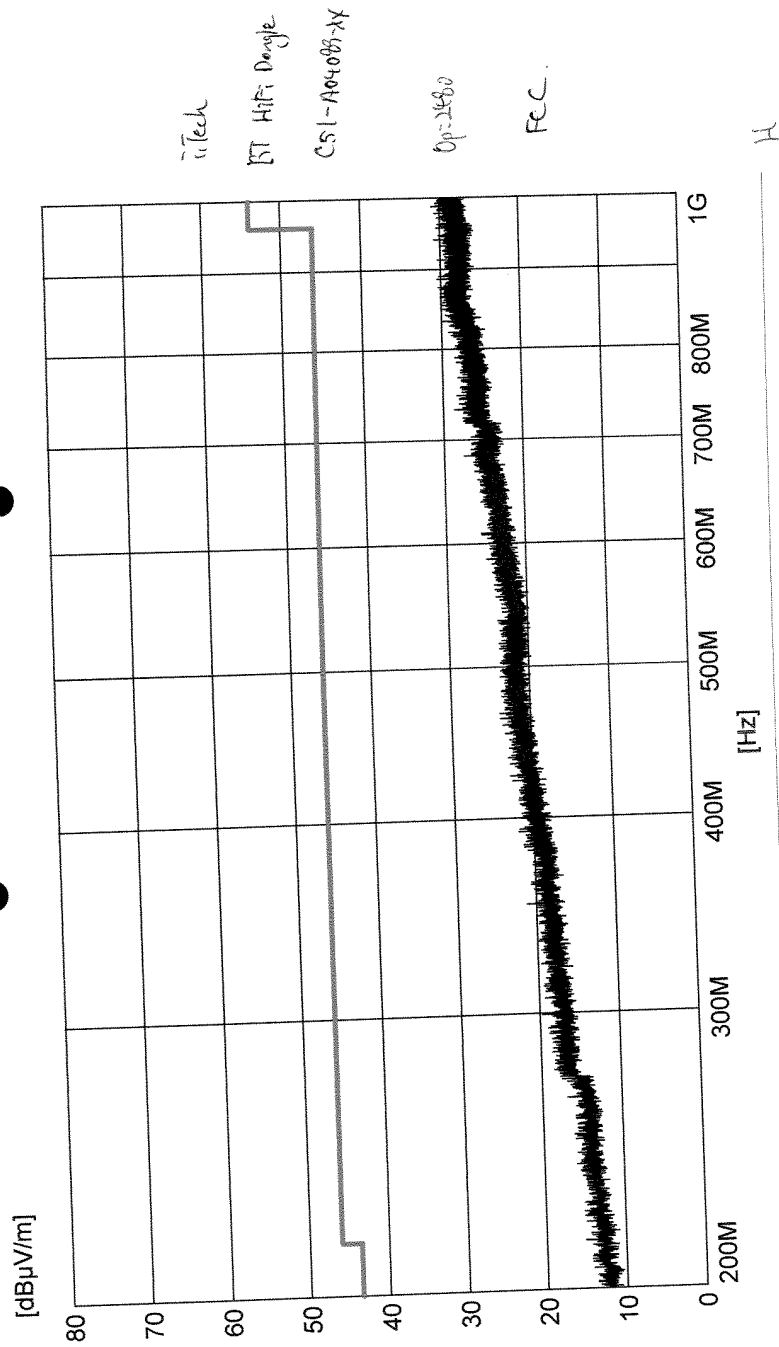
Date: 24.JAN.2005 09:10:57

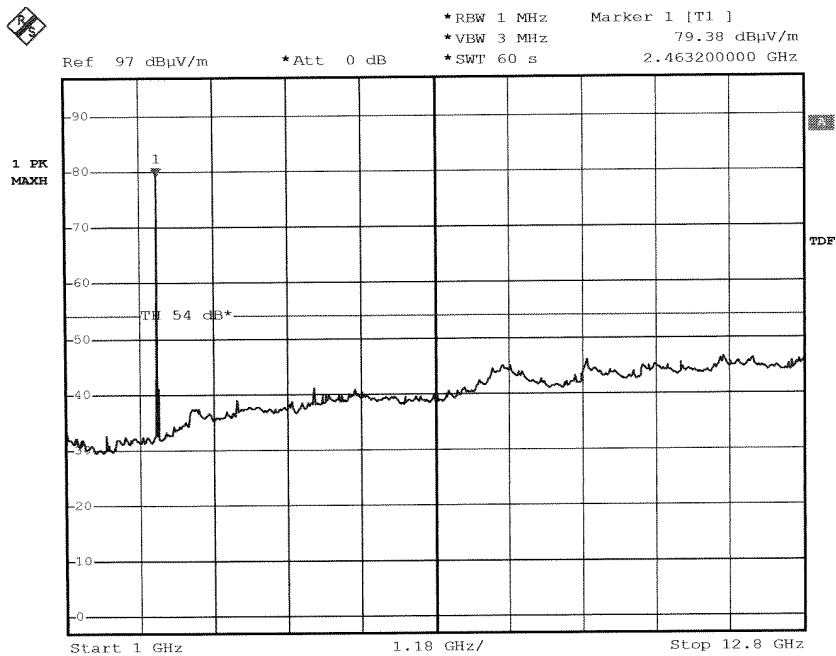
iTech
BT HiFi Dongle
CS1-A04089-xx
Op:2441
Fcc.











Date: 24.JAN.2005 07:47:58

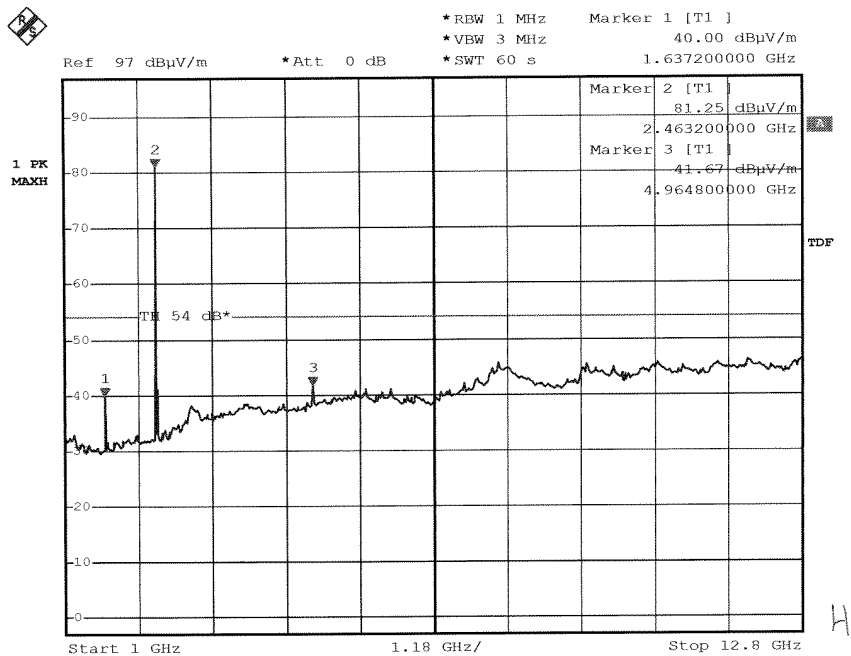
i.Tech

BT HiFi dongle

C51-A04089-XX

Op:2480MHz

Fcc



Date: 24.JAN.2005 07:51:51

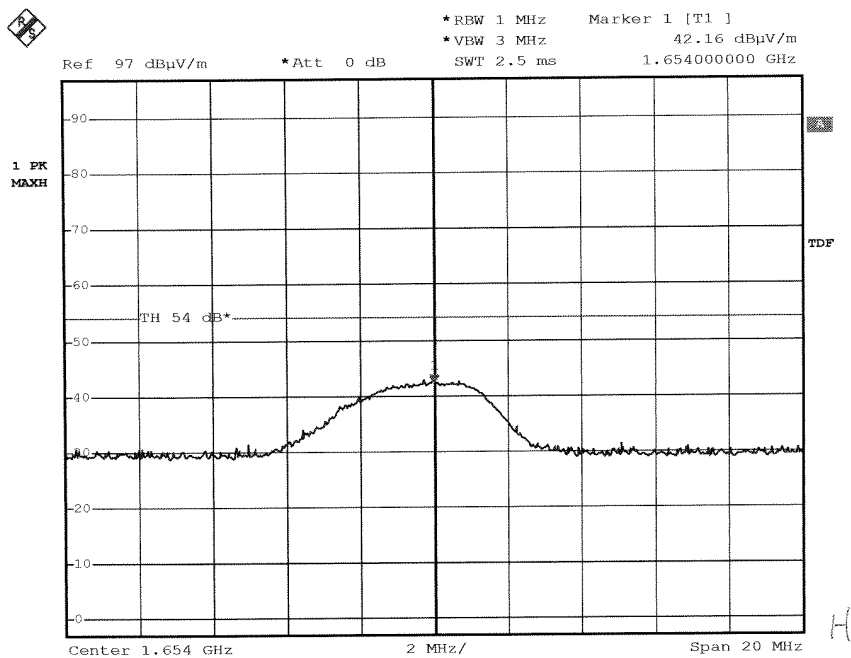
iTech

BT HiFi Dongle

C51-A04089-XX

Op: 2460 MHz

FCC



Date: 24.JAN.2005 07:56:17

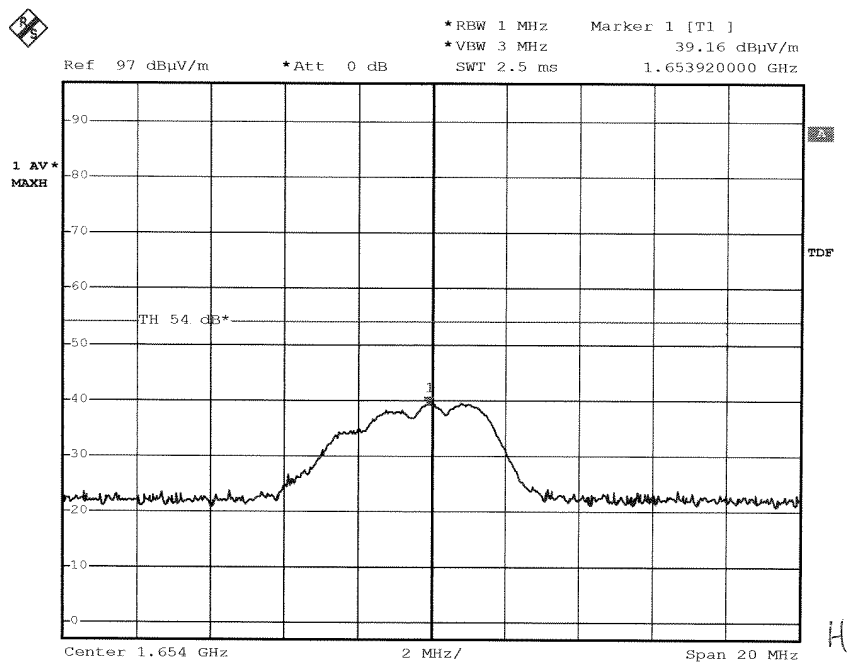
iTech

BT HiFi Dongle

CSL-A04089-XX

Op: 2480 MHz

FCC



Date: 24.JAN.2005 07:58:03

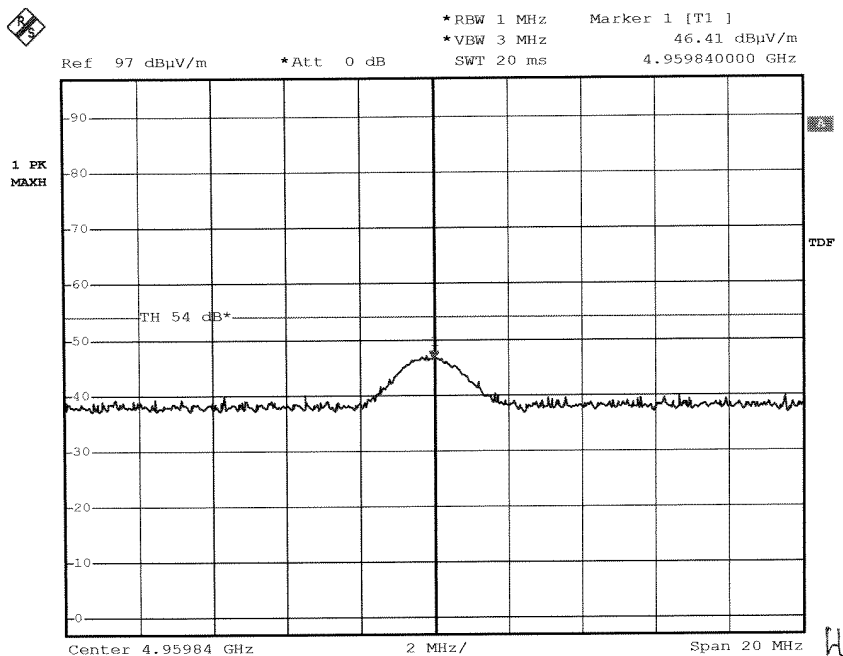
i.Tech

BT Hi-Fi Dongle

C51-A64089-XX

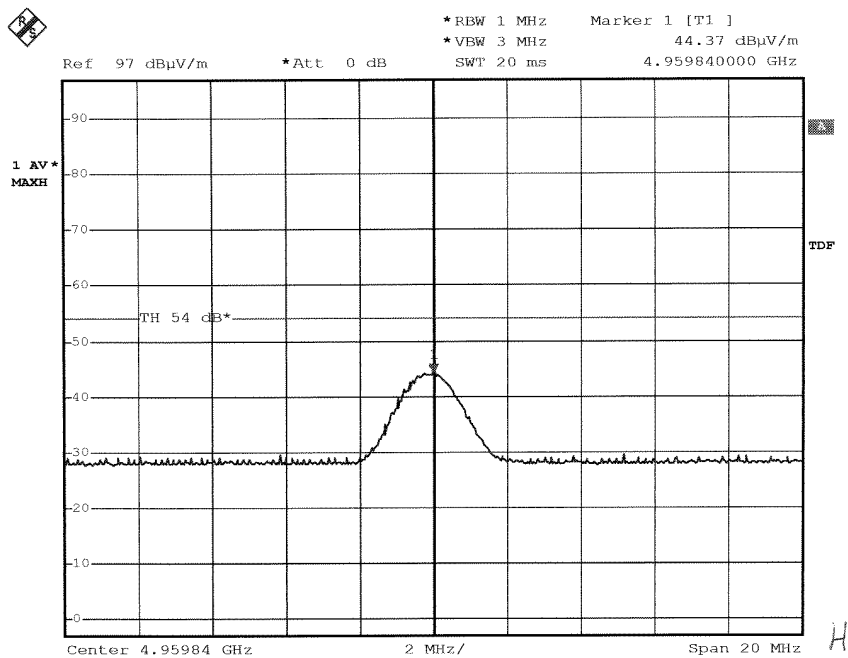
Op: 2480 MHz

FCC



Date: 24.JAN.2005 08:05:35

iTech
 BT HiFi Dongle
 CSI-A04089-KK
 01:2460 MHz
 FCC.



Date: 24.JAN.2005 08:04:02

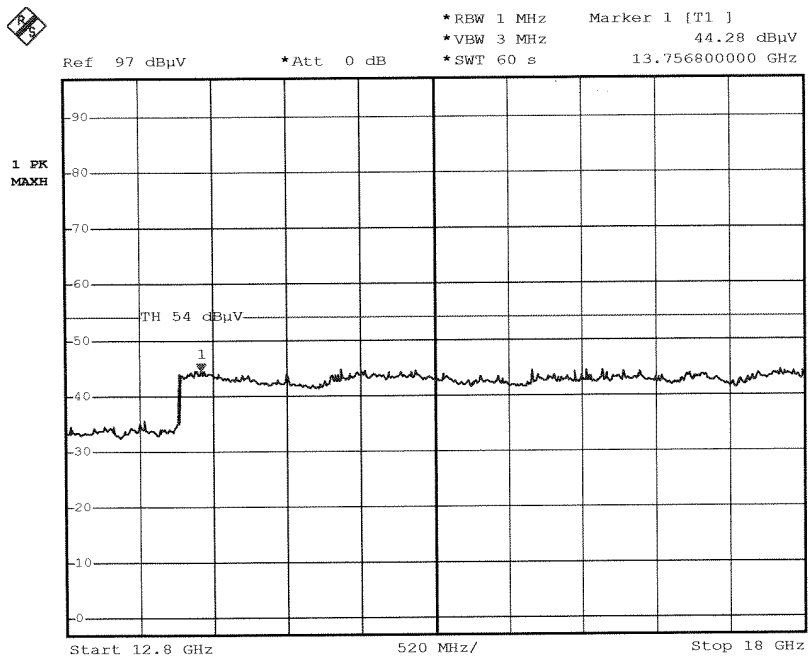
iTech

BT HiFi Dongle

CS1-A04089-XX

Op: 2480 MHz

FCC



Date: 24.JAN.2005 08:14:28

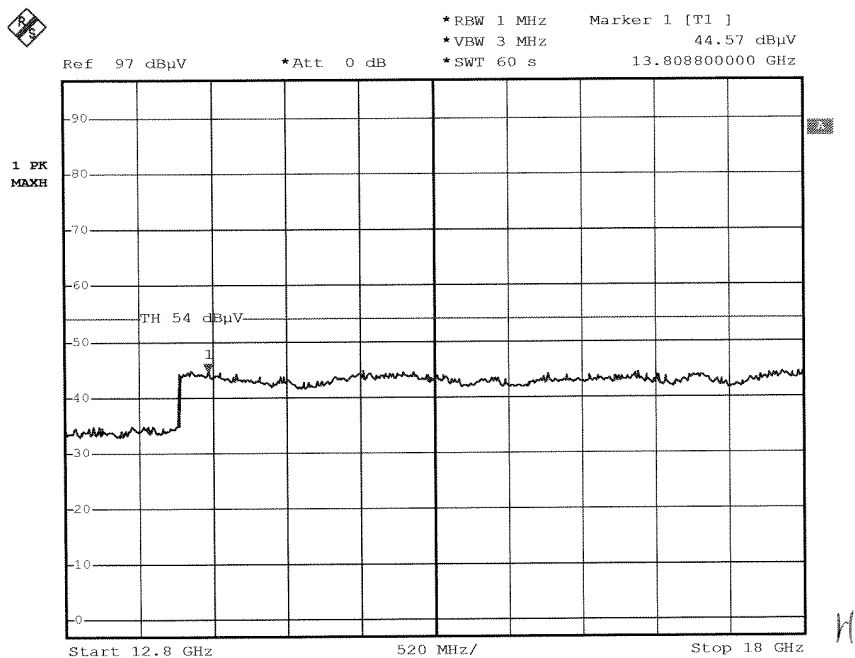
i.Tech

BT - HiFi Dongle

C51-A04089-XX

Op: 2880

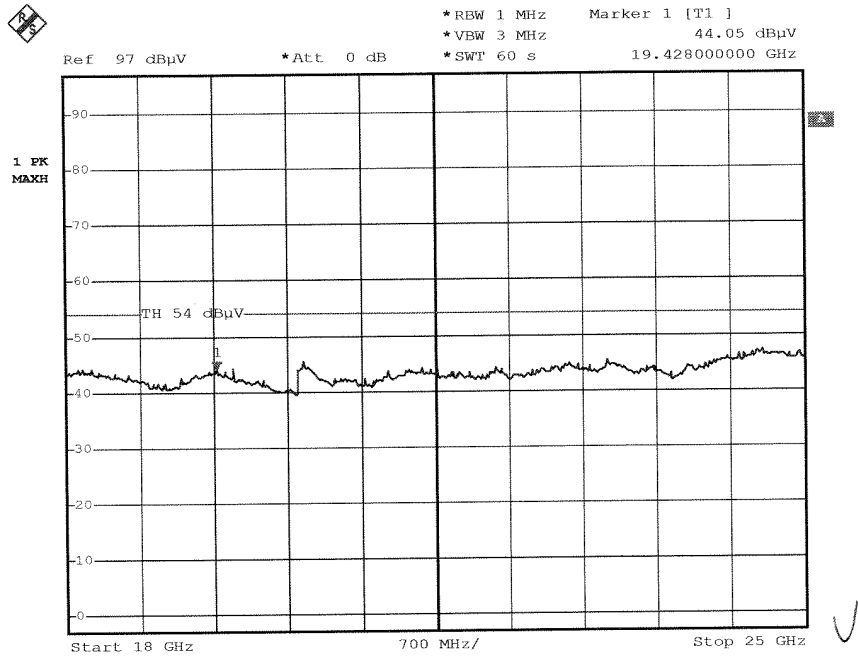
FCC



Date: 24.JAN.2005 08:11:34

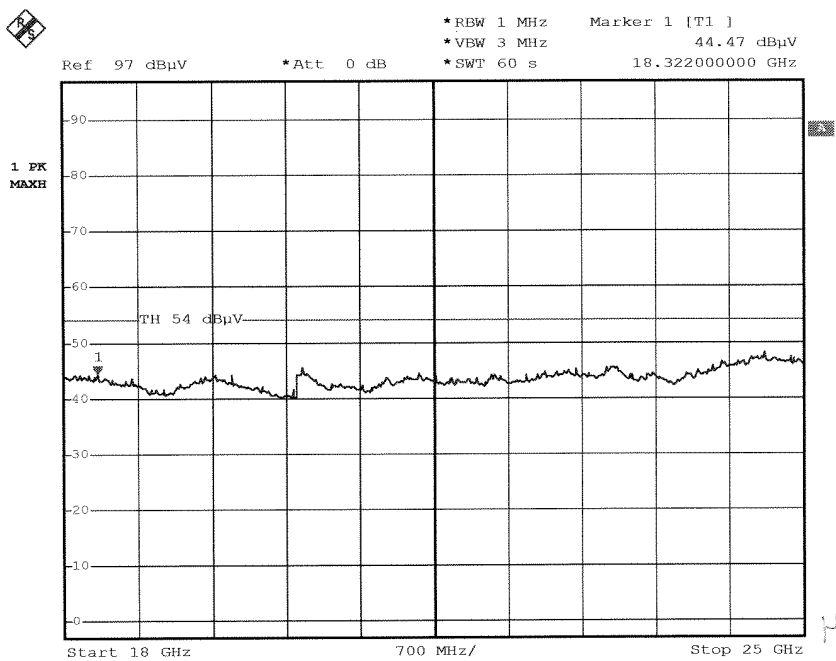
i.Tech
 BT - HTP Dringk
 CS1-A04089-ty

Op 12480
 FCC



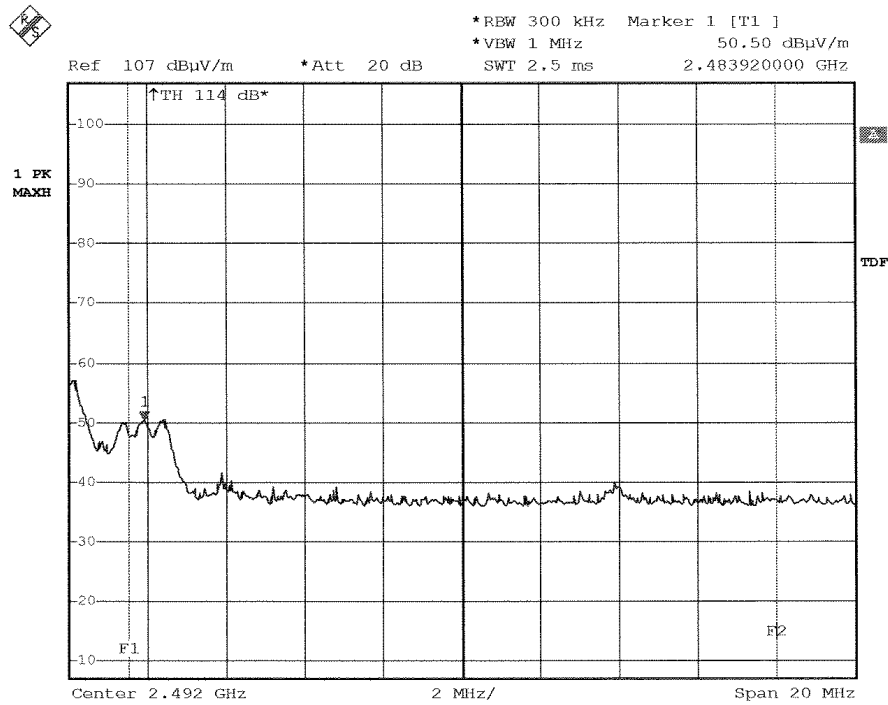
Date: 24.JAN.2005 09:07:36

liTech
BT HiFi Anlage
CS1-A04089-XX
Op: 2480
FCL



Date: 24.JAN.2005 09:11:37

iTech
 BT HiFi Dongle
 CSI-A04089-XY
 Op:2480
 FCC



Date: 10.MAR.2005 10:14:10

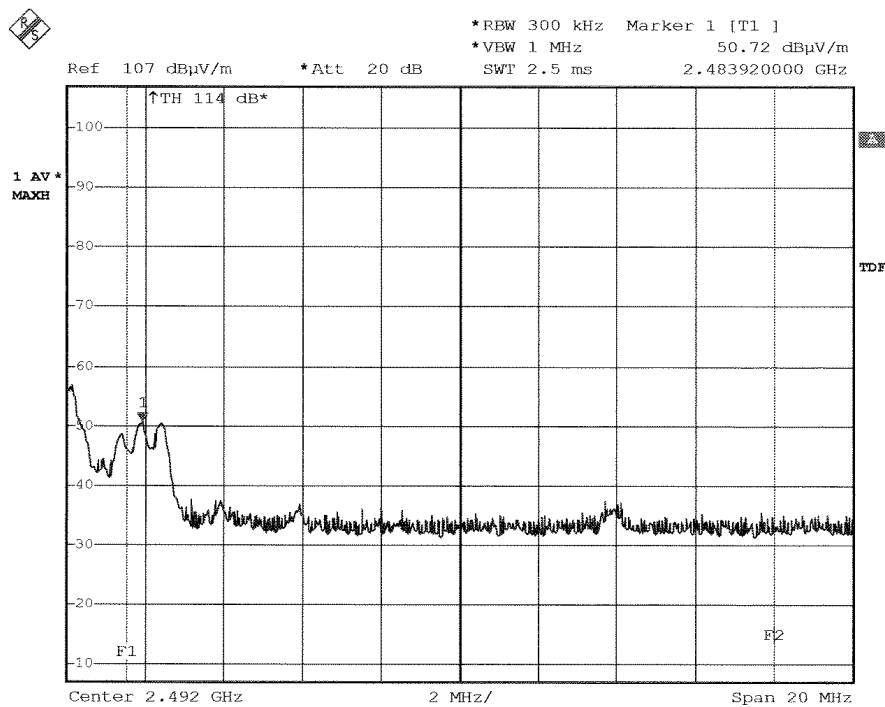
iTech (HiFi-Dongle)

C51-A04069-XX

050119024

2460MHz.

FCC



Date: 10.MAR.2005 10:09:40

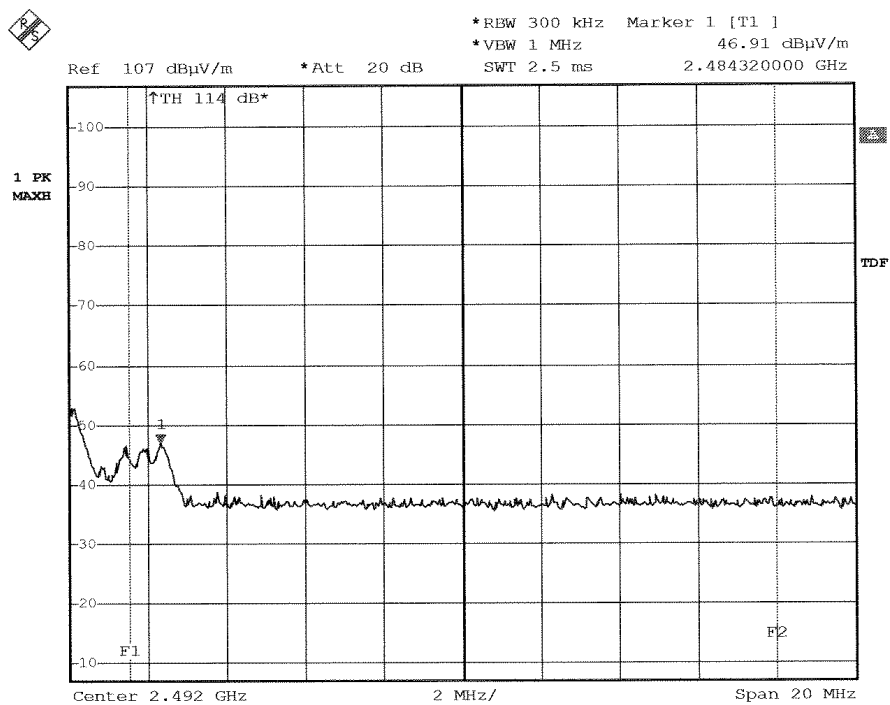
iTech (HiFi-Dongle)

C51-A04089-Xx

05019024

2480 MHz

FCC



Date: 10.MAR.2005 10:49:37

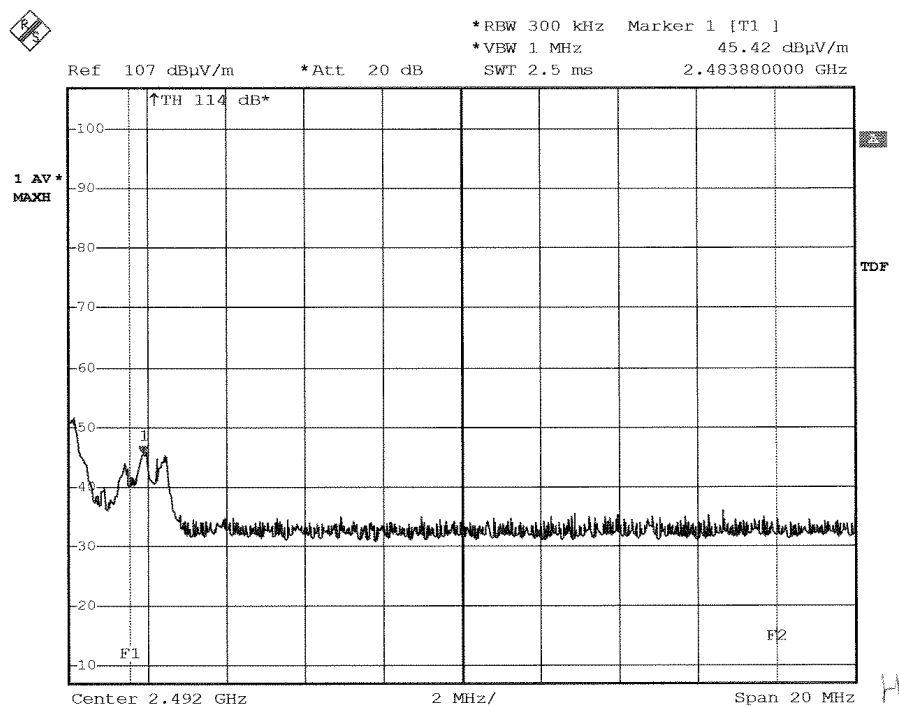
iTech (HFi-Dynle)

C51-A04089-xx

050119024

2480MHz

FEC



Date: 10.MAR.2005 10:45:29

i.Tech (HFi-Dongle)

CS1-A04089-XX

050119024

2490 MHz

FCC