

Produkte
 Products


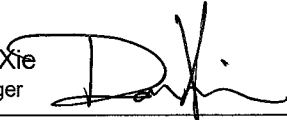
Prüfbericht - Nr.: 14026636 001 <i>Test Report No.:</i>		Seite 1 von 9 <i>Page 1 of 9</i>	
Auftraggeber: <i>Client:</i>	GN Netcom A/S Lautrupbjerg 7 2750 Ballerup Denmark		
Gegenstand der Prüfung: <i>Test Item:</i>	Bluetooth Headset		
Bezeichnung: <i>Identification:</i>	OTE10	Serien-Nr.: <i>Serial No.:</i>	Engineering sample
Wareneingangs-Nr.: <i>Receipt No.:</i>	00110531099-005	Eingangsdatum: <i>Date of Receipt:</i>	06.05.2011
Prüfört: <i>Testing Location:</i>	TÜV Rheinland (Guangdong) Ltd. EMC Laboratory Guangzhou Auto Market, Yuan Gang Section of Guangshan Road, Guangzhou, 510650, P.R. China		
Prüfgrundlage: <i>Test Specification:</i>	FCC Part 15 Subpart C ANSI C63.4-2003 CISPR 22:1997		
Prüfergebnis: <i>Test Results:</i>	Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben genannter Prüfgrundlage. The above mentioned product was tested and passed .		
Prüflaboratorium: <i>Testing Laboratory:</i>	TÜV Rheinland (Guangdong) Ltd. No. 199 Kezhu Road, Guangzhou Science City, Guangzhou, Guangdong, 510663, P.R.China		
geprüft/ tested by:		kontrolliert/ reviewed by:	
06.07.2011	Frank Du Project Engineer	06.07.2011	Liangdong Xie Project Manager
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>
			
Sonstiges: <i>Other Aspects</i>	FCCID: BCE-OTE10		
Abkürzungen:	P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet	Abbreviations:	P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested
<p>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. <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i></p>			

Table of Content

	Page
Cover Page	1
Table of Content	2
Product information	4
Manufacturers declarations	4
Product function and intended use	5
Submitted documents	5
Remark	5
Special accessories and auxiliary equipment	5
List of Test and Measurement Instruments	6
TÜV Rheinland (Guangdong) Ltd. EMC Laboratory	6
Results FCC Part 15 – Subpart C	7
Subclause 15.203 – Antenna Information	Pass..... 7
Subclause 15.204 – Antenna Information	Pass..... 7
Subclause 15.207 – Disturbance Voltage on AC Mains.....	Pass..... 7
Subclause 15.247 (a)(1) – Carrier Frequency Separation.....	Pass..... 8
Subclause 15.247 (a)(1)(iii) – Number of hopping channels	Pass..... 8
Subclause 15.247 (a)(1)(iii) – Time of Occupancy (Dwell Time)	Pass..... 9
Subclause 15.247 (a) – 20 dB Bandwidth.....	Pass..... 9
Subclause 15.247 (a) – Hopping Sequence	Pass..... 10
Subclause 15.247 (a) – Equal Hopping Frequency Use.....	Pass..... 11
Subclause 15.247 (a) – Receiver Input Bandwidth.....	Pass..... 12
Subclause 15.247 (a) – Receiver Hopping Capability	Pass..... 12
Subclause 15.247 (b)(1) – Peak Output Power	Pass..... 12
Subclause 15.247 (d) – Band edge compliance of conducted emissions	Pass..... 13
Subclause 15.205 – Band edge compliance of radiated emissions	Pass..... 13
Subclause 15.247 (d) – Spurious Conducted Emissions	Pass..... 14
Subclause 15.247 (c) – Spurious Radiated Emissions	Pass..... 15
Appendix 1 – Test protocols	18 pages

www.tuv.com

Appendix 2 – Test setup	2 pages
Appendix 3 – Photo documentation	5 pages
Appendix 4 – Product documentation	22 pages

www.tuv.com

Product information

Manufacturers declarations

	Transceiver
Operating frequency range	2402 - 2480 MHz
Type of modulation	FHSS modulation
Number of channels	79
Channel separation	1 MHz
Type of antenna	Integral
Antenna gain (dBi)	0
Power level	fix
Type of equipment	stand alone, plug-in radio device
Connection to public utility power line	No
Nominal voltage	V_{nor} : 3.7 V
Independent Operation Modes	Page scan Inquiry scan Connection state - ACL Link Connection state - SCO Link

www.tuv.com

Product function and intended use

The test item is a Bluetooth 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 μ s, 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
Label Artwork

Remark

-

Special accessories and auxiliary equipment

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

AC/DC Power adaptor
Model number: SSA-5W-05 EU 050060F
Input: 100-240VAC, 50/60Hz, 0.2A
Output: 5VDC 600mA

List of Test and Measurement Instruments

TÜV Rheinland (Guangdong) Ltd. EMC Laboratory

Radiated Emission

Equipment used	Manufacturer	Model No.	S/N	Due Date
FSP30 Spectrum Analyzer	Rohde & Schwarz	FSP30	100286	16-Mar-12
EMI Test Receiver	Rohde & Schwarz	ESCI	100216	16-Mar-12
Trilog-Broadband Antenna	Schwarzbeck	VULB9168	209	21-Aug-11
Trilog-Broadband Antenna	Schwarzbeck	VULB9168	210	27-Jun-11
Double-Ridged Waveguide Horn Antenna	Rohde & Schwarz	HF 906	100385	24-Aug-11
Band Reject Filter	Micro-Tronics	BRM50702	023	16-Mar-12
Pre-Amplifier	MITEQ	AFS42-00101800-25-S-42	1101599	11-Aug-13
Double-Ridged Waveguide Horn Antenna	Rohde & Schwarz	HF 906	100407	24-Aug-11
Horn Antenna	EMCO	3160-09	21642	26-Jun-14
Pre-Amplifier	MITEQ	AFS33-18002650-30-8P-44	1108282	16-Mar-13
Horn Antenna	EMCO	3160-09	21645	24-Aug-14
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100111	16-Mar-13
Triple-Loop Antenna	Rohde & Schwarz	HM020	100021	16-Mar-12
SAC	Albatross Projects GmbH	N/A	9460000.9	17-Jul-13

Conducted Emission

Equipment used	Manufacturer	Model No.	S/N	Due Date
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100316	16-Mar-12
Artificial Mains Network	Rohde & Schwarz	ESH2-Z5	100114	16-Mar-12
Two-Line V-Network	Rohde & Schwarz	ESH3-Z5	100308	16-Mar-12
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100701	16-Mar-12
Voltage Probe	Rohde & Schwarz	ESH2-Z3	100099	16-Mar-12
Current Probe	Rohde & Schwarz	EZ-17	100182	16-Mar-12
4-Wire ISN	Rohde & Schwarz	ENY 41	100152	16-Mar-12
Double 2-Wire ISN	Rohde & Schwarz	ENY 22	100153	16-Mar-12

Results 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					
Results:	Permanent attached antenna					
Verdict:	Pass					
Subclause 15.204 – Antenna Information						Pass
Requirement:	Provide information for every antenna proposed for the use with the EUT					
Results:	a) Antenna type:	Integral				
	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: 100VAC Applicable only to equipment designed to be connected to the public utility power line. Adaptor Model: SSA-5W-05 EU 050060F 1) Mode of operation: Charging + Music playing mode						
Live measurement						
Frequency range (MHz)	Frequency (MHz)	Quasi-peak dB μ V	Average dB μ V	Limit QP (dB μ V)	Limit AV (dB μ V)	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	Average dB μ V	Limit QP (dB μ V)	Limit AV (dB μ V)	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
Results:	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 2-3.					

Subclause 15.247 (a)(1) – Carrier Frequency Separation		Pass
Requirement:	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the $2/3 \cdot 20\text{dB}$ 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), GFSK	
Port of testing	: Temporary antenna port	
Detector	: Peak	
RBW/VBW	: 100 kHz / 300 kHz	
Supply voltage	: 3.7VDC from DC power supply	
Temperature	: 23°C	
Humidity	: 50%	
Results:	Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and packet types.	
	The centre frequencies of the hopping channels are separated by more than the $2/3 \cdot 20\text{dB}$ bandwidth. For test Results plots refer to Appendix 1, page 4.	
Verdict:	Pass	

Subclause 15.247 (a)(1)(iii) – Number of hopping channels		Pass
Requirement:	Frequency hopping systems operating in the 2400MHz-2483.5MHz bands shall use at least 15 hopping frequencies.	
Test Specification	: FCC Part 15 Subpart A – Subclause 15.31	
Mode of operation	: Tx mode (hopping on), GFSK	
Port of testing	: Temporary antenna port	
Detector	: Peak	
RBW/VBW	: 1 MHz / 3 MHz	
Supply voltage	: 3.7VDC from DC power supply	
Temperature	: 23°C	
Humidity	: 50%	
Results:	The total number of hopping frequencies is more than 15. For test Results plots refer to Appendix 1, page 5.	
Verdict:	Pass	

Subclause 15.247 (a)(1)(iii) – Time of Occupancy (Dwell Time)		Pass
Requirement:	Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 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	: 3.7VDC from DC power supply	
Temperature	: 23°C	
Humidity	: 50%	
Results:	Time period calculation = $0.4 \times 79 = 31.6\text{s}$ Dwell time = $64 \times 2.912 \times 10^{-3} = 186.37 \times 10^{-3}$ $\leq 400 \times 10^{-3} \text{ s}$	
	For test protocols please refer to Appendix 1, page 6.	
Verdict:	Pass	

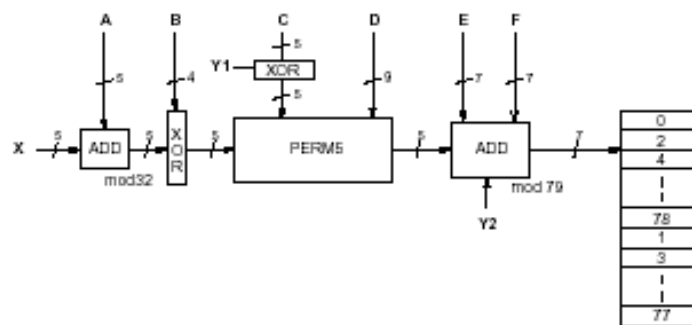
Subclause 15.247 (a) – 20 dB Bandwidth		Pass	
Requirement:	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 2/3*20dB bandwidth of the hopping channel, whichever is greater.		
Test Specification	: FCC Part 15 Subpart A – Subclause 15.31		
Mode of operation	: Tx mode (2402MHz, 2441MHz, 2480MHz), (GFSK)		
Port of testing	: Temporary antenna port		
Detector	: Peak		
RBW/VBW	: 30 kHz / 100 kHz		
Supply voltage	: 3.7VDC from DC power supply		
Temperature	: 23°C		
Humidity	: 50%		
Results:	Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and packet types. For test protocols refer to Appendix 1, page 7-8.		
GFSK Modulation			
Frequency (MHz)	20 dB left (MHz)	20 dB right (MHz)	20dB bandwidth (MHz)
2402	0.408	0.474	0.882
2441	0.462	0.414	0.876
2480	0.414	0.414	0.828

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.



www.tuv.com

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.

www.tuv.com

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)(1) – Peak Output Power	Pass				
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz) Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 3 MHz / 10 MHz Supply voltage : 3.7VDC from DC power supply 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.					
Results: For test protocols please refer to Appendix 1, page 9-10.					
GFSK Modulation					
Frequency (MHz)	Maximum peak output power (dBm)	Cable attenuation (dB)	Output power (dBm)	Limit (W/dBm)	Verdict
2402	-2.49	3.52	1.030	1 / 30.0	Pass
2441	-2.10	3.65	1.550	1 / 30.0	Pass
2480	-0.97	3.60	2.630	1 / 30.0	Pass

Subclause 15.247 (d) – Band edge compliance of conducted emissions		Pass
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 Mode of operation : Tx mode (2402MHz, 2480MHz), GFSK Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 100 kHz / 300 kHz Supply voltage : 3.7VDC from DC power supply 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.	
Results:	Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and packet types. There is no peak found outside any 100 kHz bandwidth of the operating frequency band. For test protocols refer to Appendix 1, page 11-12.	

Subclause 15.205 – Band edge compliance of radiated emissions		Pass
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 Mode of operation : Tx mode (2402MHz, 2480MHz), 8DPSK Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 1 MHz / 3 MHz Supply voltage : 3.7VDC from DC power supply Temperature : 23°C Humidity : 50%		
Requirement:	Radiated emissions which fall in the restricted bands, as defined in 15.205 (a), must also comply with the radiated emission limits specified in 15.209(a).	
Results:	There is no peak found in the restricted bands. For test protocols refer to Appendix 1, page 13-16.	

Subclause 15.247 (d) – Spurious Conducted Emissions					Pass
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz), GFSK Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 100 kHz / 300 kHz Supply voltage : 3.7VDC from DC power supply 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.					
Results: Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and packet types. 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(d). For test protocols refer to Appendix 1, page 17-18.					
Operating frequency (MHz)	Spurious frequency (MHz)	Spurious Level (dBm)	Reference value (dBm)	Delta (dB)	Verdict
2402	4800	-51.4	-3.43	-47.97	Pass
2441	4850	-52.19	-3.55	-48.64	Pass
2480	4950	-54.18	-6.45	-47.73	Pass

Subclause 15.247 (c) – Spurious Radiated Emissions		Pass
Test Specification : ANSI C63.4 – 2003 Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz),GFSK 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 : internal batteries has been activated Temperature : 23°C Humidity : 50%		
Requirement:	In any 100kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in section 15.205(a), must also comply with the radiated emission limits specified in section 15.205(c).	
Results:	Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and packet types. All three transmit frequency modes comply with the field strength within the restricted bands. There is no spurious found below 30MHz.	
Tx frequency 2402MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
1601.000	43.20	54.0 / A
18000.000	59.60	74.0 / P
18000.000	46.70	54.0 / A
Tx frequency 2402MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
208.100	35.70	43.5 / A
215.900	40.50	43.5 / A
1601.000	39.80	54.0 / A
17949.000	59.60	74.0 / P
17949.000	46.50	54.0 / A
Tx frequency 2441MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
1627.00	41.10	54.0 / A
17987.00	59.70	74.0 / P
17987.00	46.80	54.0 / A
Tx frequency 2441MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
212.000	34.30	43.5 / A
215.900	40.40	43.5 / A
17981.000	59.70	74.0 / P
17981.000	46.60	54.0 / A

www.tuv.com

Tx frequency 2480MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
1652.000	43.00	54.0 / A
Tx frequency 2480MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
208.000	36.90	43.5 / A
216.000	40.50	46.0 / A
17968.000	59.40	74.0 / P
17968.000	46.50	54.0 / A

www.tuv.com

Appendix 1

Test Results

Disturbance Voltage on AC Mains

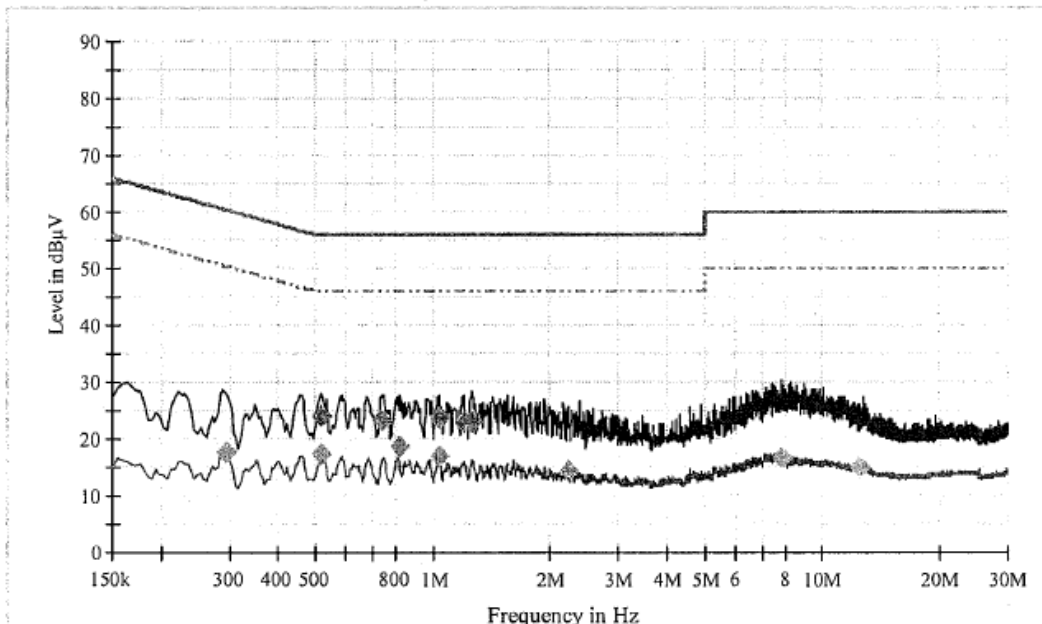
EMC Test Record (EMISSION)

Test Information

Manufacturer:	WKK		
Test Item:	Bluetooth Headset		
Identification:	OTE 10		
Test Standard:	FCC Part 15.247		
Test Detail:	Conducted Emission		
Operation Mode:	Charging+ music playing		
Climate Condition:	23 °C;	50 %RH;	101 kPa.
Test Voltage/ Freq.:	AC 100V/	60 Hz	
Port / Line:	AC Mains/L1&N		
Receipt No.:	/		
Report No.:	/		
Result:	Pass		
Comment:	/		

Hardware Setup:	1phase LISN ESH3-Z5 to ESCS 30
Level Unit:	dB μ V

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCS 30



Final Result 1

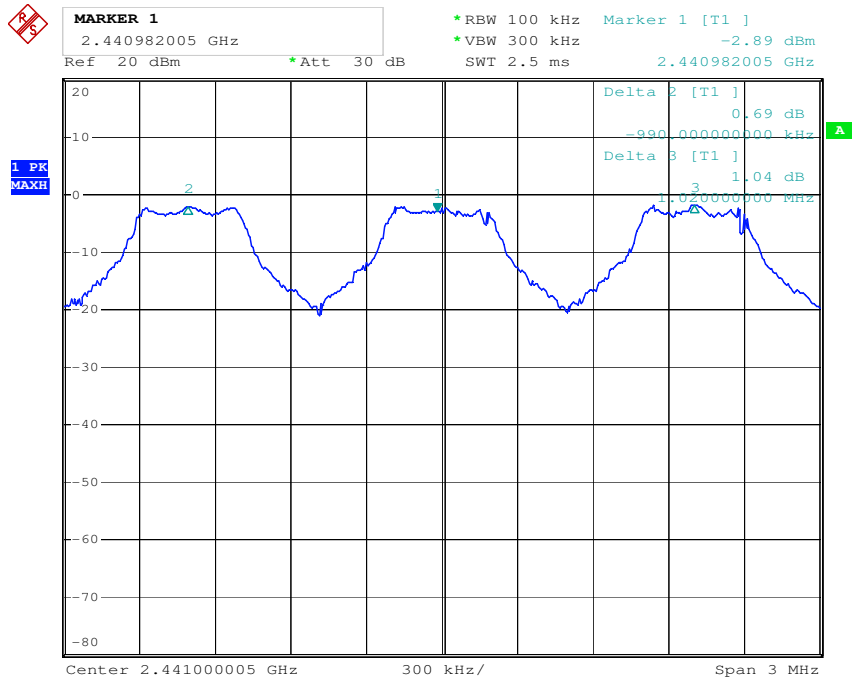
Frequency (MHz)	QuasiPeak (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.514500	24.0	1000.0	9.000	L1	10.1	32.0	56.0	
0.744000	23.2	1000.0	9.000	L1	10.0	32.8	56.0	
0.820500	18.7	1000.0	9.000	N	10.0	37.3	56.0	
1.036500	23.7	1000.0	9.000	L1	10.0	32.3	56.0	
1.198500	23.1	1000.0	9.000	L1	10.1	32.9	56.0	
1.257000	23.0	1000.0	9.000	L1	10.1	33.0	56.0	

Final Result 2

Frequency (MHz)	Average (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.294000	17.8	1000.0	9.000	L1	9.9	32.6	50.4	
0.514500	17.3	1000.0	9.000	L1	10.1	28.7	46.0	
1.041000	16.9	1000.0	9.000	L1	10.0	29.1	46.0	
2.224500	14.4	1000.0	9.000	L1	10.1	31.6	46.0	
7.872000	16.6	1000.0	9.000	L1	10.4	33.4	50.0	
12.412500	14.9	1000.0	9.000	L1	10.7	35.1	50.0	

www.tuv.com

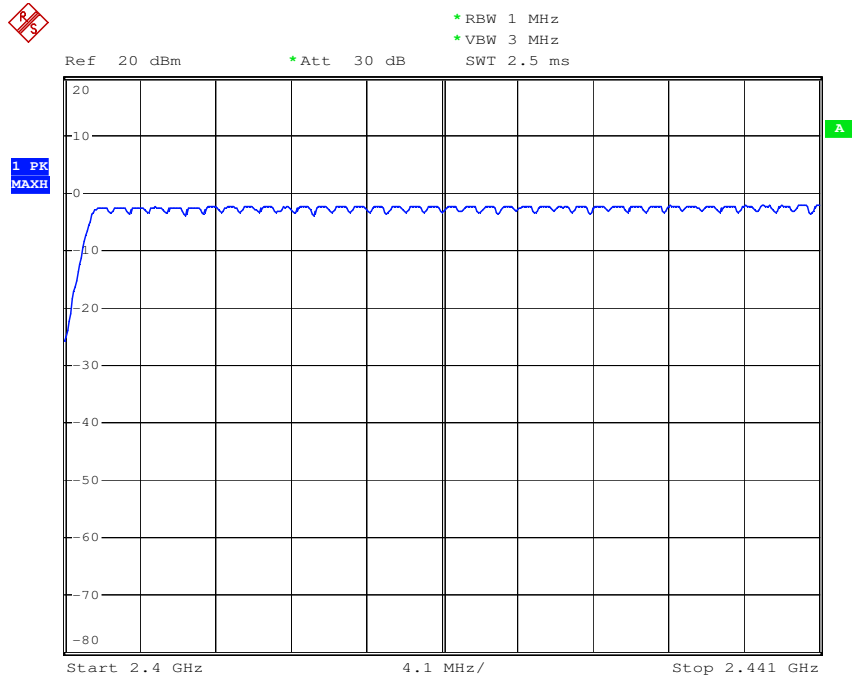
Carrier Frequency Separation



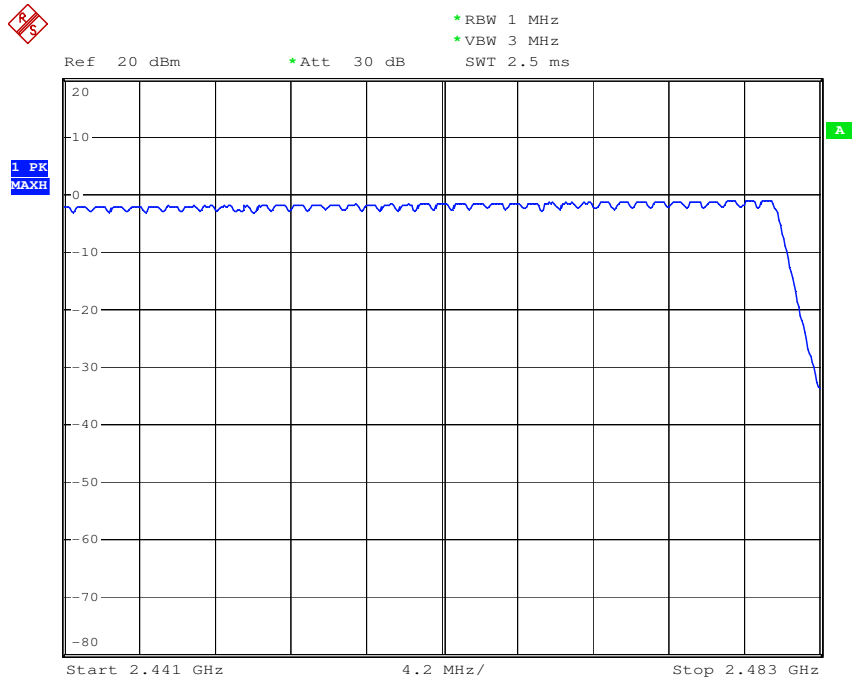
Date: 8.JUN.2011 18:52:05

www.tuv.com

Number of hopping channels



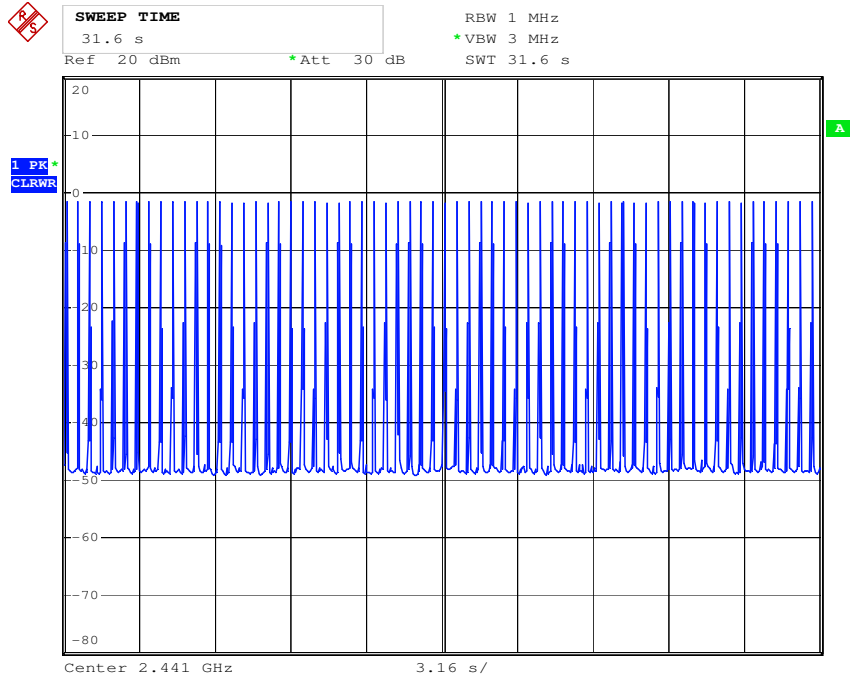
Date: 8.JUN.2011 18:57:22



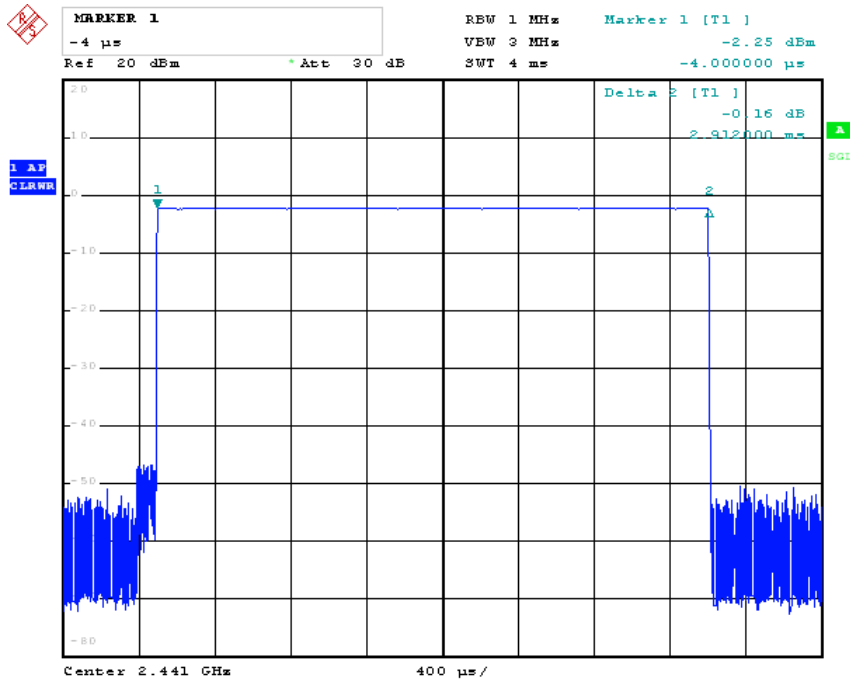
Date: 8.JUN.2011 18:58:38

www.tuv.com

Dwell Time



Date: 8 JUN. 2011 19:11:44



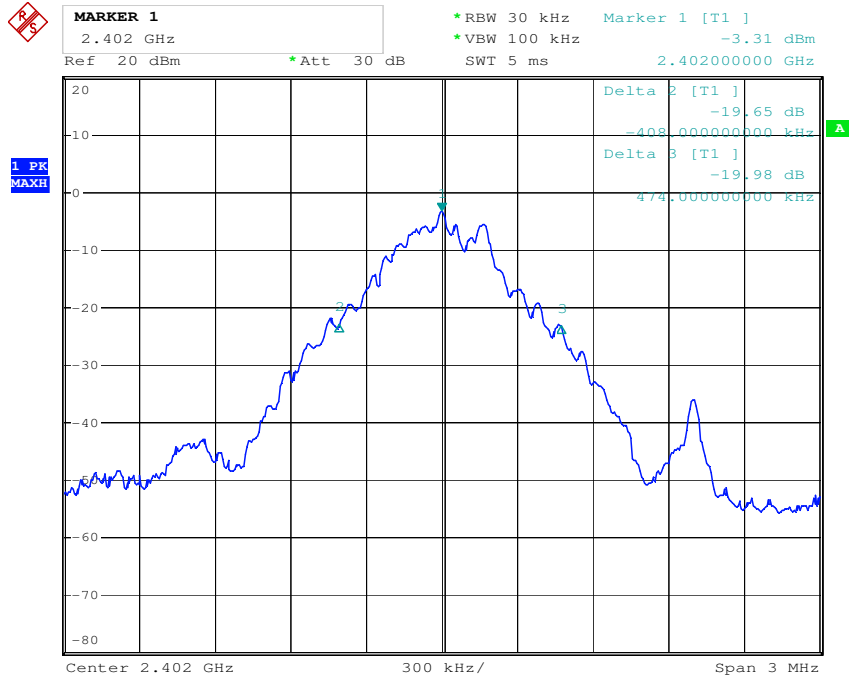
Date: 8 JUN. 2011 19:28:40

www.tuv.com

20dB Bandwidth

Modulation: GFSK

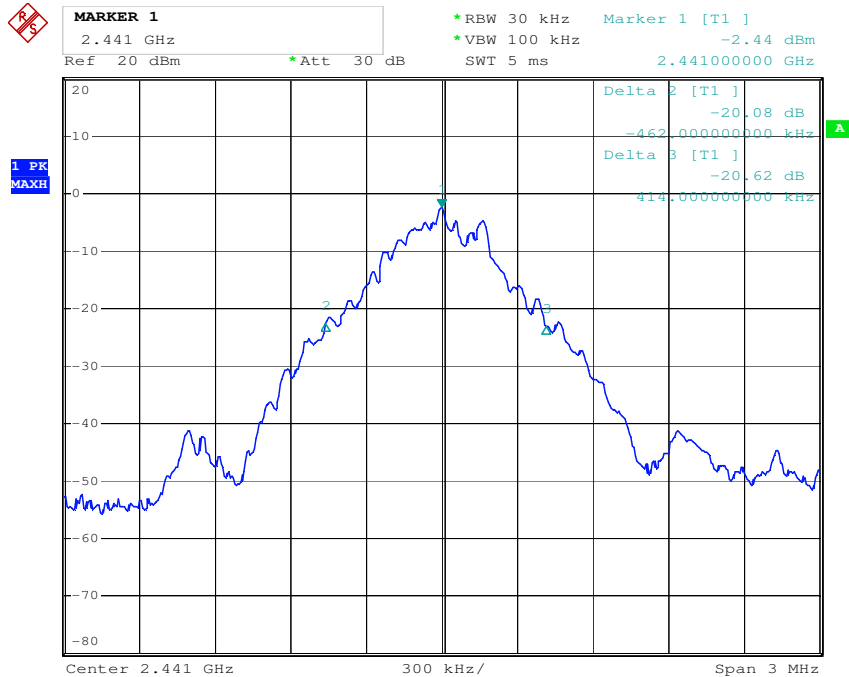
Tx frequency: 2402MHz



Date: 8.JUN.2011 19:32:29

Modulation: GFSK

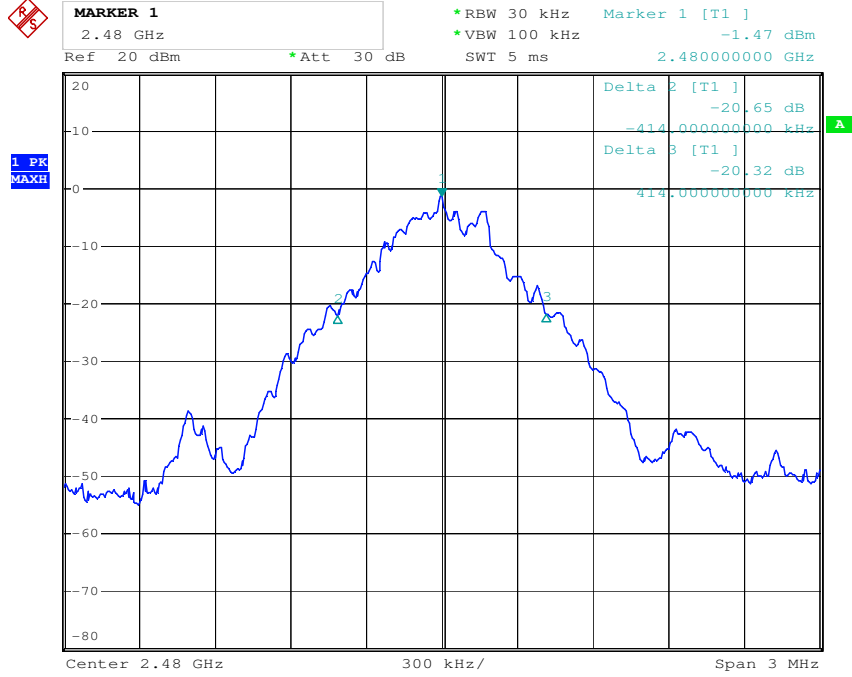
Tx frequency: 2441MHz



Date: 8.JUN.2011 19:34:25

www.tuv.com

Modulation: GFSK
Tx frequency: 2480MHz

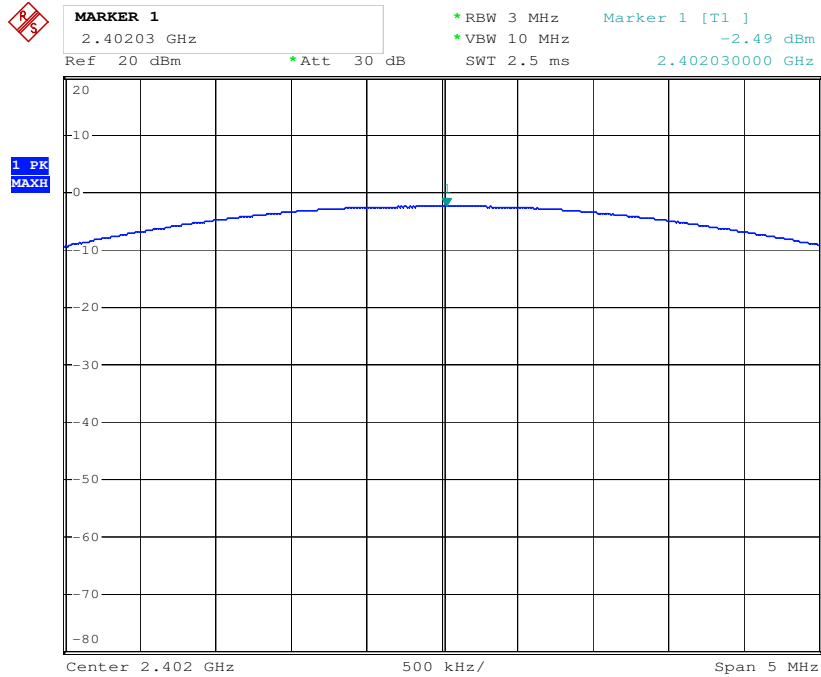


Date: 8.JUN.2011 19:36:26

www.tuv.com

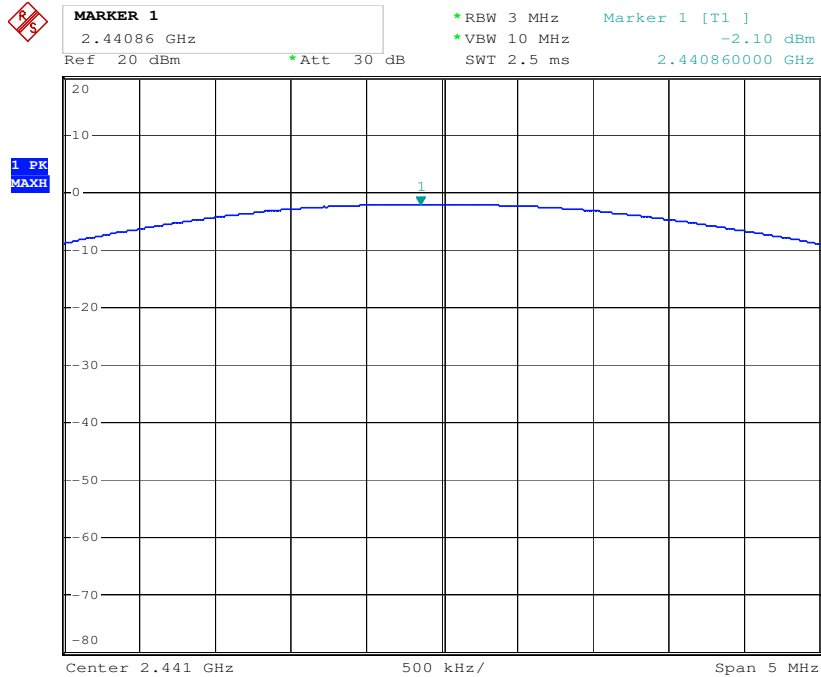
Peak Output Power

Modulation: GFSK
Tx frequency: 2402MHz



Date: 8.JUN.2011 19:39:21

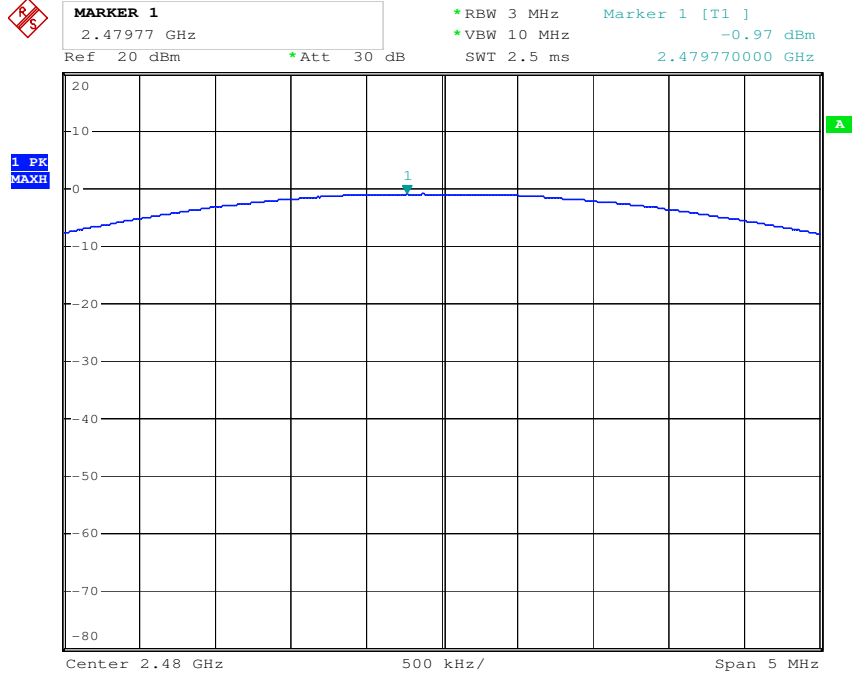
Modulation: GFSK
Tx frequency: 2441MHz



Date: 8.JUN.2011 19:40:06

www.tuv.com

Modulation: GFSK
Tx frequency: 2480MHz

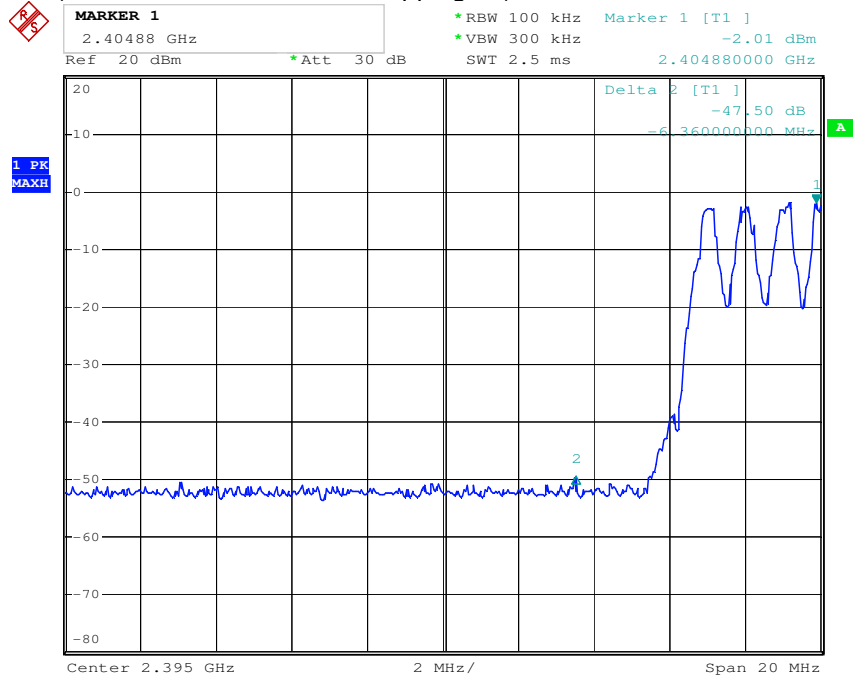


Date: 8.JUN.2011 19:40:50

www.tuv.com

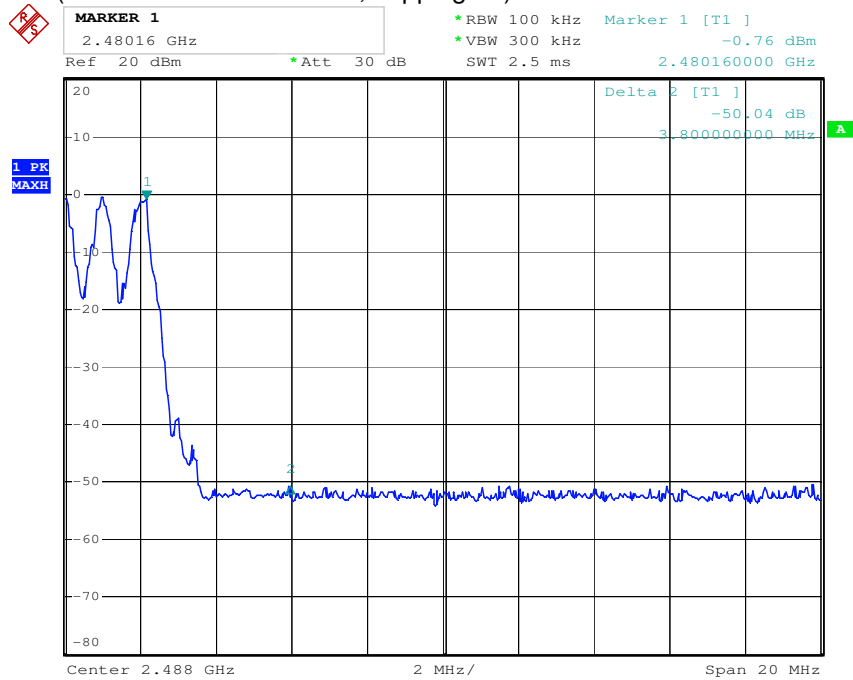
Band Edge Compliance

Tx frequency: 2402MHz (conducted measurement; hopping on)



Date: 8.JUN.2011 19:50:33

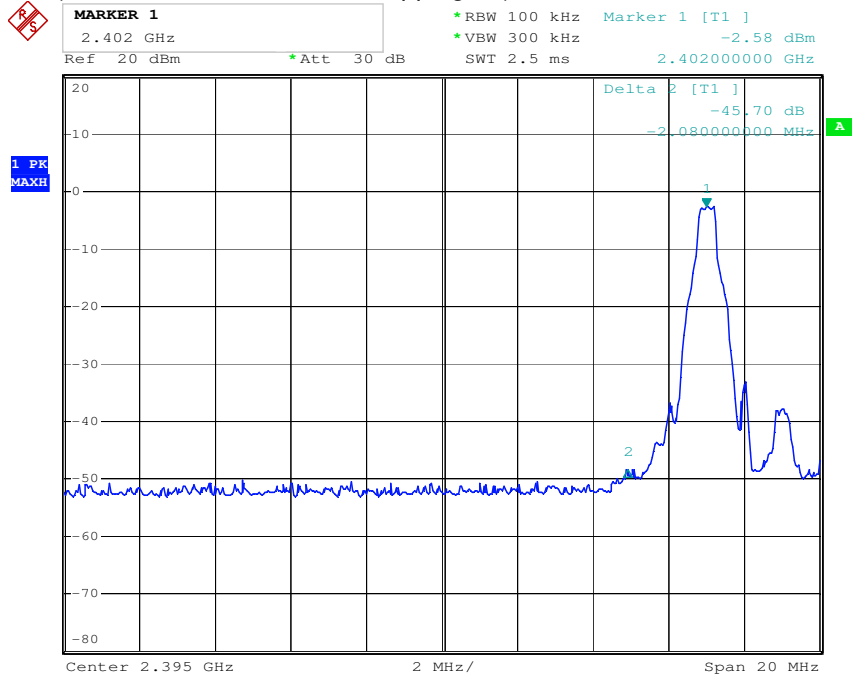
Tx frequency: 2480MHz (conducted measurement; hopping on)



Date: 8.JUN.2011 19:53:22

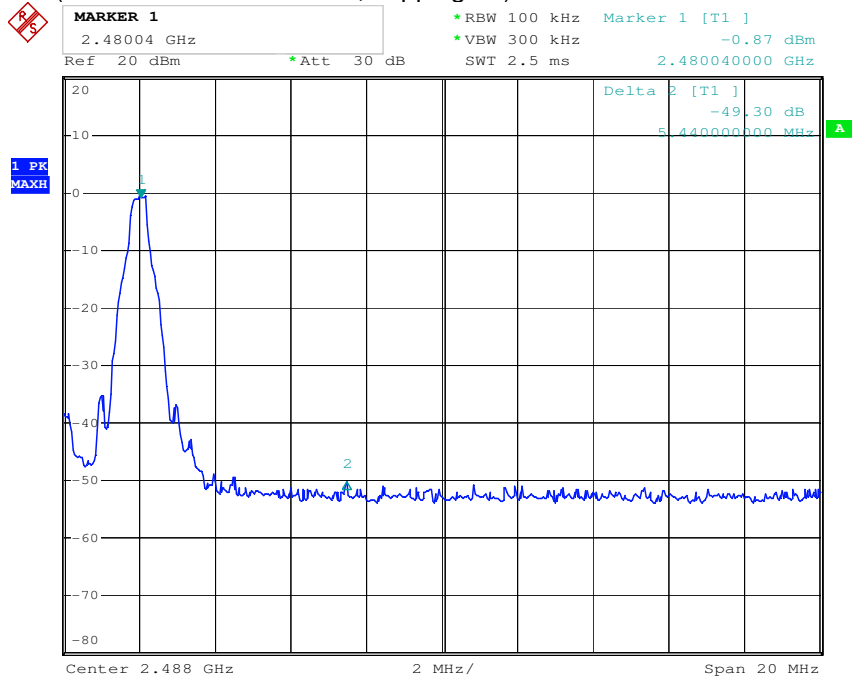
www.tuv.com

Tx frequency: 2402MHz (conducted measurement; hopping off)



Date: 8.JUN.2011 19:47:25

Tx frequency: 2480MHz (conducted measurement; hopping off)



Date: 8.JUN.2011 19:54:34

www.tuv.com

Tx frequency: 2402MHz (radiated measurement)

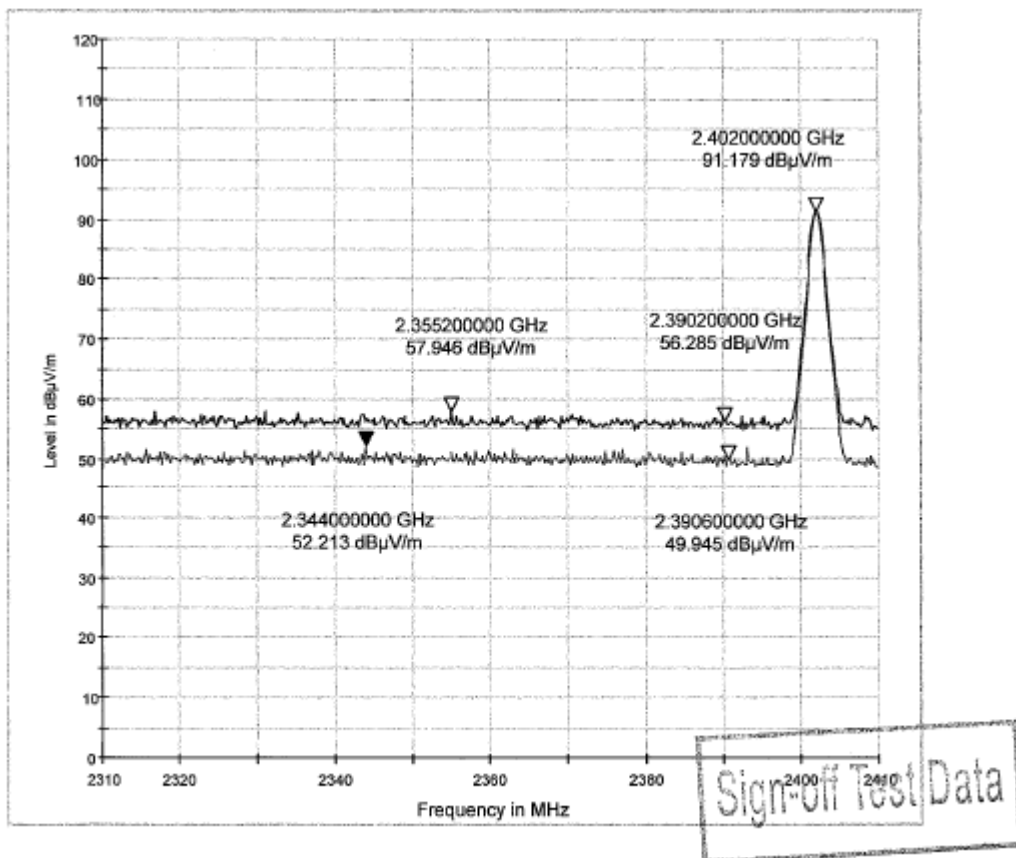
EMC Test Record (Emission)

Common Information

Manufacturer:	WKK
Test Item:	Bluetooth Headset
Identification:	OTE 10
Test Standard:	FCC Part 15
Test Detail:	RE
Operation Mode:	Tx @ Low channel
Climate Condition:	23 °C; 50 %RH; 101 kPa.
Test Voltage/ Freq:	Built-in battery
Receipt No:	
Report No:	
Result:	Pass
Comment:	Test distance is 3m, Vertical

Subrange 1	
Frequency Range:	2GHz-3GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF906/ TUV FSP30-TUV SAC HF906

Pre TUV 1 to 18G HF906



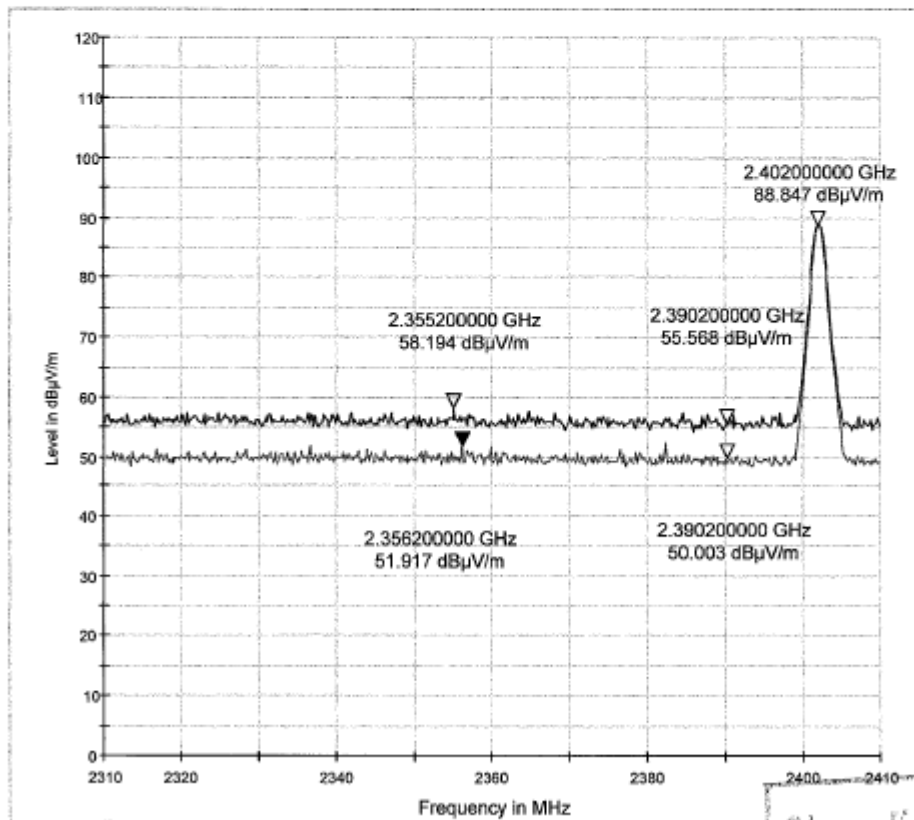
EMC Test Record (Emission)

Common Information

Manufacturer:	WKK
Test Item:	Bluetooth Headset
Identification:	OTE 10
Test Standard:	FCC Part 15
Test Detail:	RE
Operation Mode:	Tx @ Low channel
Climate Condition:	23 °C; 50 %RH; 101 kPa.
Test Voltage/ Freq:	Built-in battery
Receipt No:	
Report No:	
Result:	Pass
Comment:	Test distance is 3m, Horizontal

Subrange 1	
Frequency Range:	2GHz-3GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF906/ TUV FSP30-TUV SAC HF906

Pre TUV 1 to 18G HF906



Sign-off Test Data

www.tuv.com

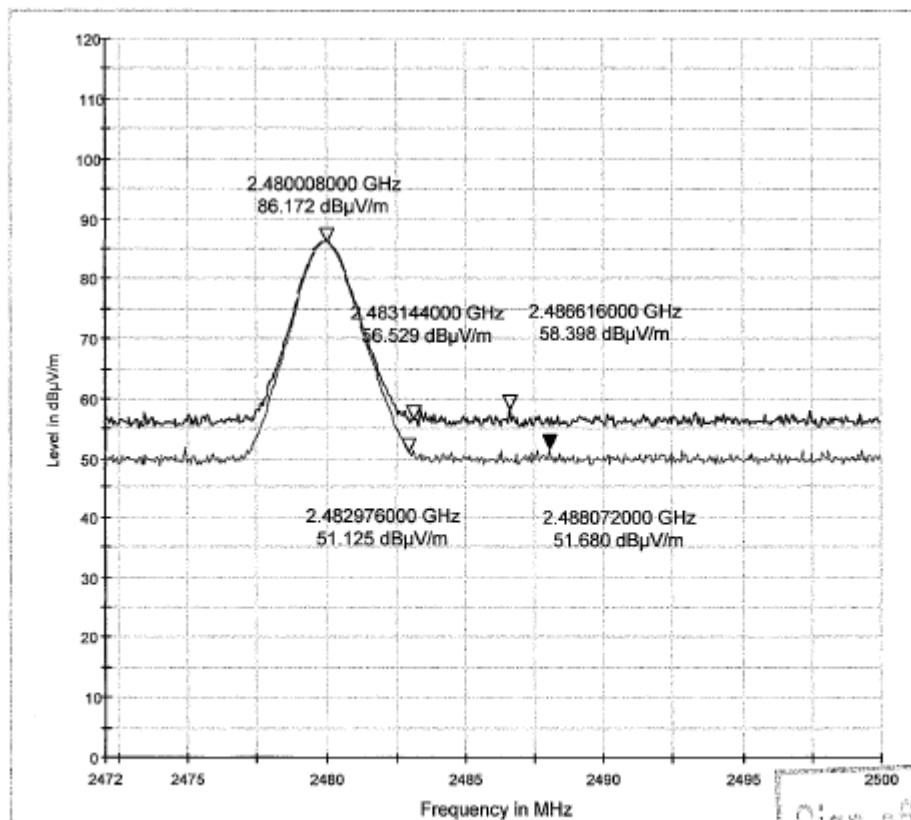
Tx frequency: 2480MHz (radiated measurement)

EMC Test Record (Emission)

Common Information

Manufacturer:	WKK
Test Item:	Bluetooth Headset
Identification:	OTE 10
Test Standard:	FCC Part 15
Test Detail:	RE
Operation Mode:	Tx @ High channel
Climate Condition:	23 °C; 50 %RH; 101 kPa.
Test Voltage/ Freq:	Built-in battery
Receipt No:	
Report No:	
Result:	Pass
Comment:	Test distance is 3m, Horizontal
Subrange 1	
Frequency Range:	2GHz-3GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF906/ TUV FSP30-TUV SAC HF906

Pre TUV 1 to 18G HF906



Sign-off Test Data

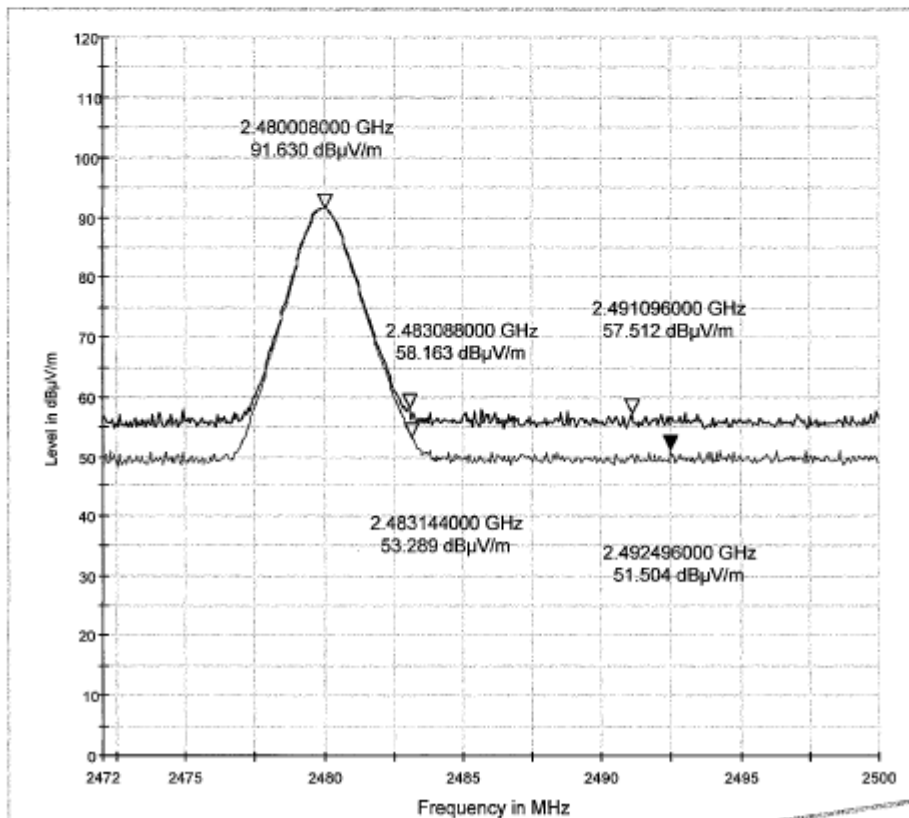
EMC Test Record (Emission)

Common Information

Manufacturer:	WKK	
Test Item:	Bluetooth Headset	
Identification:	OTE 10	
Test Standard:	FCC Part 15	
Test Detail:	RE	
Operation Mode:	Tx @ High channel	
Climate Condition:	23 °C; 50 %RH;	101 kPa.
Test Voltage/ Freq:	Built-in battery	
Receipt No:		
Report No:		
Result:	Pass	
Comment:	Test distance is 3m, Vertical	

Subrange 1	
Frequency Range:	2GHz-3GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF906/ TUV FSP30-TUV SAC HF906

Pre TUV 1 to 18G HF906

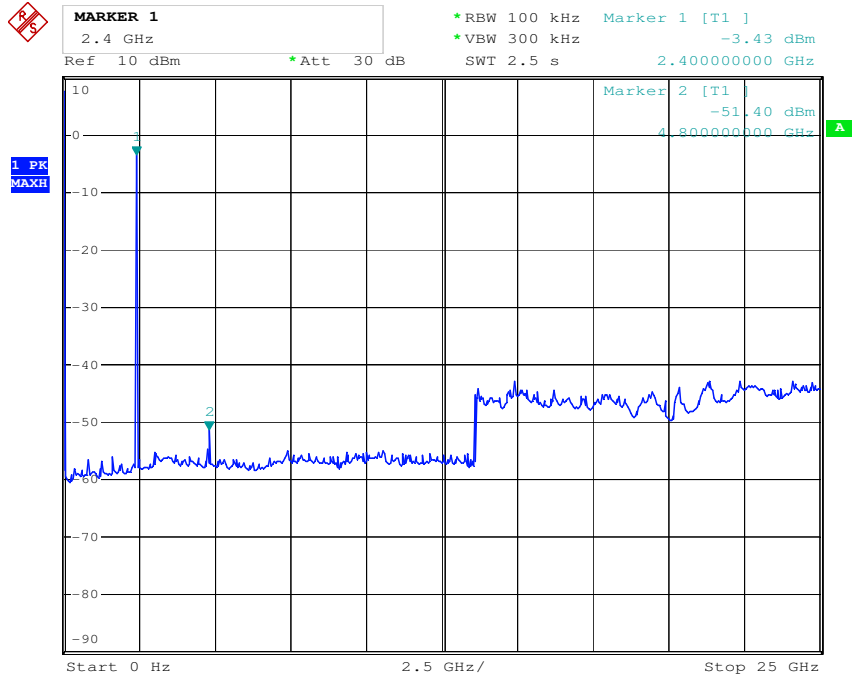


Sign-off Test Data

www.tuv.com

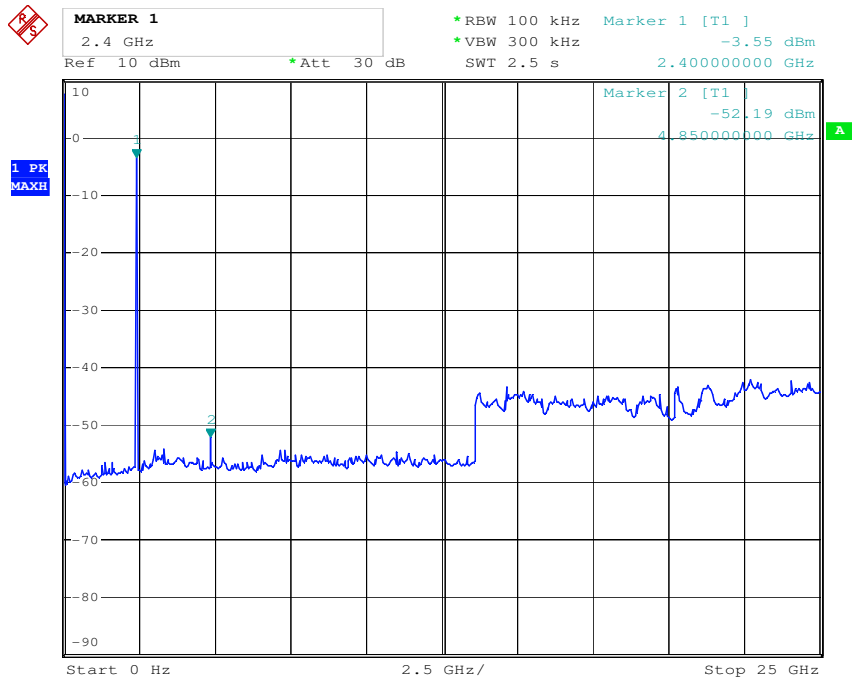
Spurious Emissions - Conducted

Tx frequency: 2402MHz



Date: 17.JUN.2011 12:47:01

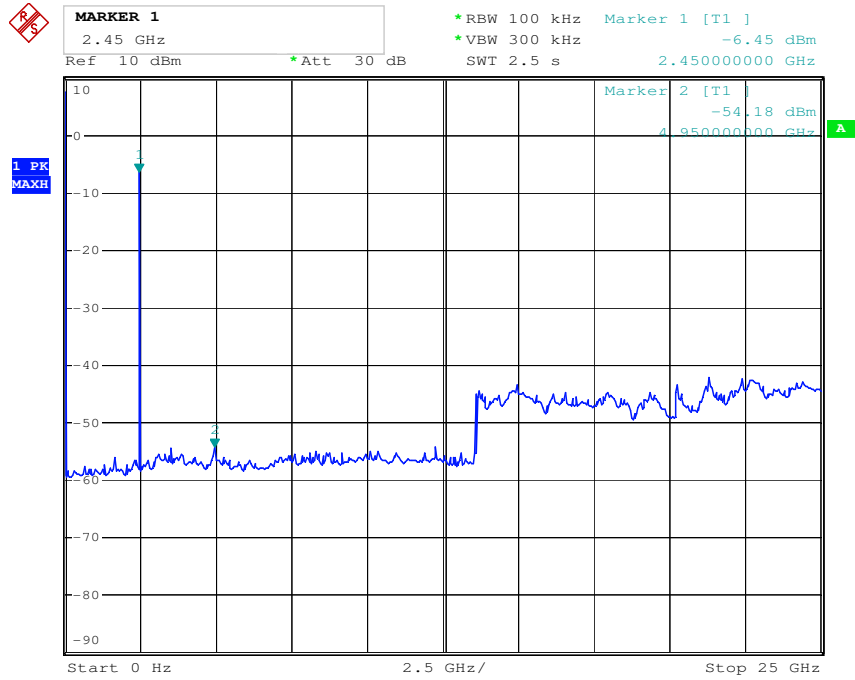
Tx frequency: 2441MHz



Date: 17.JUN.2011 12:49:19

www.tuv.com

Tx frequency: 2480MHz



Date: 17.JUN.2011 12:50:54

www.tuv.com

Appendix 2

Test Setup Photos