Prüfbericht - Nr.: *Test Report No.:*	**14020580 001**		**Seite 1 von 14** *Page 1 of 14*
Auftraggeber: *Client:*	**GN Netcom A/S** **Lautrupbjerg 7** **DK-2750 Ballerup** **Denmark**		
Gegenstand der Prüfung: *Test Item:*	**Bluetooth Stereo Headphone**		
Bezeichnung: *Identification:*	**OTE5**	**Serien-Nr.:** *Serial No.:*	**Engineering sample**
Wareneingangs-Nr.: *Receipt No.:*	**090106003-001,** **090102079-008,** **090309040-001**	**Eingangsdatum:** *Date of Receipt:*	**02.01.2009, 06.01.2009,** **09.03.2009**
Prüfort: *Testing Location:*	**TÜV Rheinland Hong Kong Ltd.** 9-10/F., Emperor International Square, 7 Wang Tai 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 Results:*	**Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben genannter Prüfgrundlage.** The above mentioned product was tested and **passed**.		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland Hong Kong Ltd.** 9-10/F., Emperor International Square , 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong		

geprüft/ *tested by:*			**kontrolliert/** *reviewed by:*		
09.03.2009	Ryan Chen Engineer		09.03.2009	Sharon Li Project Manager	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges: **FCCID: BCE-OTE5**
Other Aspects

Abkürzungen:				*Abbreviations:*			
	P(ass)	=	*entspricht Prüfgrundlage*		*P(ass)*	=	*passed*
	F(ail)	=	*entspricht nicht Prüfgrundlage*		*F(ail)*	=	*failed*
	N/A	=	*nicht anwendbar*		*N/A*	=	*not applicable*
	N/T	=	*nicht getestet*		*N/T*	=	*not tested*

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Table of Content

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Product information

Manufacturers declarations

	Transceiver
Operating frequency range	2402 - 2480 MHz
Type of modulation	GFSK; Pi/4 DQPSK; 8 DPSK
Number of channels	79
Channel separation	1 MHz
Type of antenna	Integrated Antenna
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

Product function and intended use

The test item is a Bluetooth Stereo 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.

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:

AC/DC Power adaptor
Model number: SSA-5W-05 EU 050018F
Input: 100-240VAC, 50/60Hz, 0.2A
Output: 5.0VDC 180mA

List of Test and Measurement Instruments

	Equipment used	Manufacturer	Model No.	S/N	Due Date
☒	Semi-anechoic Chamber	Frankonia	Nil	Nil	28-May-09
☒	Test Receiver	R & S	ESU26	100050	06-Aug-09
☒	Bi-conical Antenna	R & S	HK116	841489/015	22-May-10
☒	Log Periodic Antenna	R & S	HL223	841516/017	21-May-10
☒	Coaxial cable 50ohm	Rosenberger	RTK081-05S-05S-10m	LA2-001-10M / 002	15-May-09
☒	Microwave amplifer 0.5-26.5GHz, 25dB gain	HP	83017A	3950M00241	03-Oct-09
☒	High Pass Filter (cutoff freq. =1000MHz)	Trilithic	23042	9829213	31-Oct-09
☒	Horn Antenna	EMCO	3115	9002-3351	27-Feb-10
☒	Spectrum Analyser	R & S	FSP 30	100416	08-Jun-09
☒	Active Loop Antenna	EMCO	6502	9107-2651	20-Dec-09
☒	Test Receiver	R & S	ESCS 30	100201	22-Dec-09
☒	Artificial Mains Network	R & S	ESH3-Z5	100230	22-Dec-09
☒	Pulse Limiter	R & S	ESH3-Z2	100161	22-Dec-09

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: Integrated Antenna 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 utiliy power line.

1) Mode of operation: Charging (Test Adaptor: SSA-5W-05 EU 050018F)

Live measurement

Frequency range (MHz)	Frequency (MHz)	Quasi-peak dBµV	Average dBµV	Limit QP (dBµV)	Limit AV (dBµV)	Verdict
0,15 – 0,5	0.168	34.1	19.3	66 - 56	56 - 46	Pass
	0.228	33.3	22.6	66 - 56	56 - 46	Pass
	0.348	34.1	22.7	66 - 56	56 - 46	Pass
> 0,5 - 5	0.546	23.8	9.4	56	46	Pass
> 5 - 30	9.078	10.3	1.4	60	50	Pass
	25.806	9.9	1.3	60	50	Pass

Neutral measurement

Frequency range (MHz)	Frequency (MHz)	Quasi-peak dBµV	Average dBµV	Limit QP (dBµV)	Limit AV (dBµV)	Verdict
0,15 – 0,5	0.180	29.0	17.0	66 - 56	56 - 46	Pass
	0.234	31.5	21.4	66 - 56	56 - 46	Pass
> 0,5 - 5	0.546	30.1	15.3	56	46	Pass
> 5 - 30	8.316	13.5	3.0	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*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), GFSK Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 100 kHz / 300 kHz Supply voltage : 3.7VDC from DC power supply Temperature : 23ºC Humidity : 50%	
Results:	The centre frequencies of the hopping channels are separated by more than the 2/3*20dB 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 : 23ºC 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 : 23ºC
Humidity : 50%

Results: **T**ime period calculation = 0.4 x 79 = 31.6s
Dwell time = 64 x 2.904 x 10^{-3} = 185.9 x 10^{-3}
<= 400 x 10^{-3} s

For test protocols please refer to Appendix 1, page 6-7.

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), (8DPSK)
Port of testing : Temporary antenna port
Detector : Peak
RBW/VBW : 30 kHz / 100 kHz
Supply voltage : 3.7VDC from DC power supply
Temperature : 23ºC
Humidity : 50%

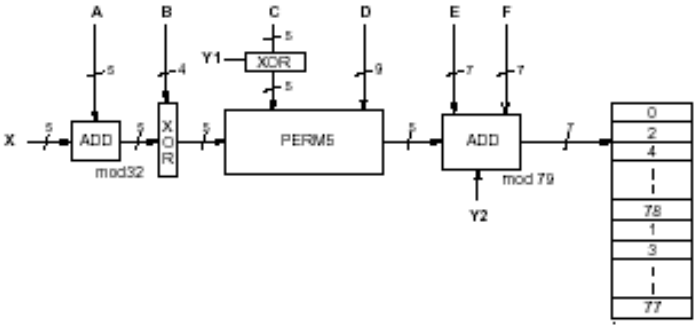
Results: For test protocols refer to Appendix 1, page 8-9.

Frequency (MHz)	**20 dB left (MHz)**	**20 dB right (MHz)**	**20dB bandwidth (MHz)**
2402	0.594	0.624	1.218
2441	0.642	0.618	1.260
2480	0.648	0.612	1.260

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)(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 : 23ºC 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 10-14.

GFSK Modulation

Frequency (MHz)	Maximum peak output power (dBm)	Cable attenuation (dB)	Output power (dBm)	Limit (W/dBm)	Verdict
2402	4.10	3.52	7.620	1 / 30.0	Pass
2441	3.70	3.65	7.350	1 / 30.0	Pass
2480	3.09	3.60	6.690	1 / 30.0	Pass

Pi/4 DQPSK Modulation

Frequency (MHz)	Maximum peak output power (dBm)	Cable attenuation (dB)	Output power (dBm)	Limit (W/dBm)	Verdict
2402	2.39	3.52	5.910	1 / 30.0	Pass
2441	0.25	3.65	3.900	1 / 30.0	Pass

2480	2.02	3.60	5.620	1 / 30.0	Pass
8 DPSK Modulation					
Frequency (MHz)	**Maximum peak output power (dBm)**	**Cable attenuation (dB)**	**Output power (dBm)**	**Limit (W/dBm)**	**Verdict**
2402	2.39	3.52	5.910	1 / 30.0	Pass
2441	2.02	3.65	5.670	1 / 30.0	Pass
2480	1.47	3.60	5.070	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), 8DPSK Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 100 kHz / 300 kHz Supply voltage : 3.7VDC from DC power supply Temperature : 23ºC 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:	There is no peak found outside any 100 kHz bandwidth of the operating frequency band. For test protocols refer to Appendix 1, page 15-16.

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 : 23ºC Humidity : 50%	
Requirement:	Radiated emissions which fall in the restricted bans, 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 17-20.

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), 8DPSK
Port of testing : Temporary antenna port
Detector : Peak
RBW/VBW : 100 kHz / 300 kHz
Supply voltage : 3.7VDC from DC power supply
Temperature : 23 ºC
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: 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 21-22.

Operating frequency (MHz)	Spurious frequency (MHz)	Spurious Level (dBm)	Reference value (dBm)	Delta (dB)	Verdict
2402	1600.000	-46.98	-2.99	-43.99	Pass
2441	1600.000	-46.75	0.01	-46.76	Pass
2480	1650.000	-46.42	-0.43	-45.99	Pass

Subclause 15.247 (c) – Spurious Radiated Emissions	**Pass**

Test Specification : ANSI C63.4 – 2003
Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz), 8DPSK
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 : 23ºC
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 section15.205(a), must also comply with the radiated emission limits specified in section 15.205(c).

Results: 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

191.997	35.00	43.5 / QP
388.670	33.10	43.5 / QP
1601.984	44.43	74.0 / P
1601.984	40.44	54.0 / A
4803.558	47.47	74.0 / P
4804.006	33.45	54.0 / A
Tx frequency 2402MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
191.997	42.60	43.5 / QP
391.910	33.50	43.5 / QP
200.000	42.10	43.5 / QP
1601.907	44.30	74.0 / P
1601.971	40.90	54.0 / A
4804.215	47.84	74.0 / P
4803.958	34.23	54.0 / A
Tx frequency 2441MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
197.331	36.30	43.5 / QP
200.000	34.50	43.5 / QP
418.610	33.20	46 / QP
1626.635	43.80	74.0 / P
1626.635	39.82	54.0 / A
Tx frequency 2441MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
192.000	42.20	43.5 / QP
415.790	36.40	46 / QP
1626.731	41.98	74.0 / P
1626.651	37.11	54.0 / A
Tx frequency 2480MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
192.000	39.40	43.5 / QP
200.001	28.90	43.5 / QP
1652.628	44.62	74.0 / P
1652.644	40.85	54.0 / A
Tx frequency 2480MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
191.997	42.50	43.5 / QP
207.999	32.40	43.5 / QP
416.840	34.00	46 / QP
1652.596	42.01	74.0 / P
1652.644	36.49	54.0 / A

Appendix 1

Test Results

Disturbance Voltage on AC Mains

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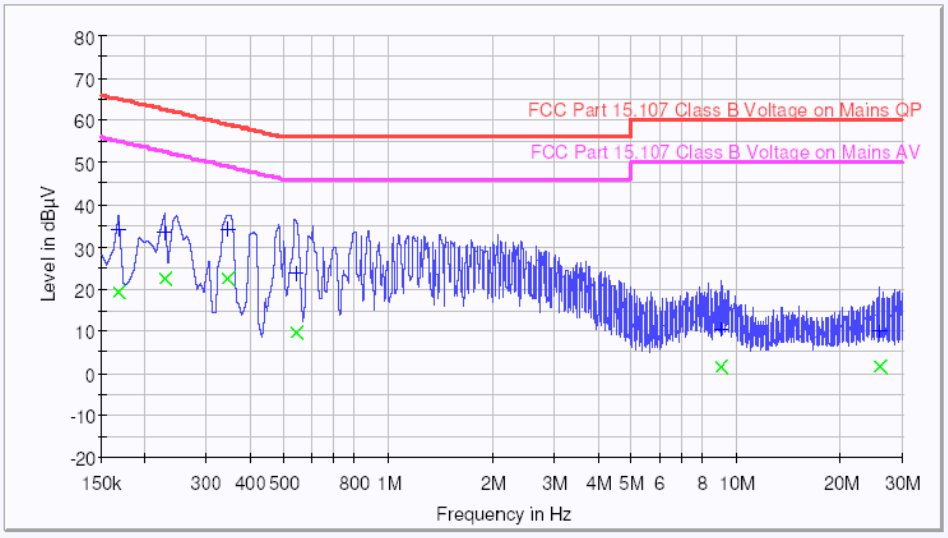
Continuous Disturbance

Test Information

EUT Name:	WKK BT Headphone
Serial Number:	BT650S (090216094-001)
Test Description:	FCC
Operating Conditions:	Charging and Music Playing Mode
Operator Name:	Samuel Ku
Comment:	100V 50Hz
Description	CE L1

Conducted Emission (FCC-P.15) - Class B



Result Table_Single

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)
0.168000	34.1	19.3
0.228000	33.3	22.6
0.348000	34.1	22.7
0.546000	23.8	9.4
9.078000	10.3	1.4
25.806000	9.9	1.3

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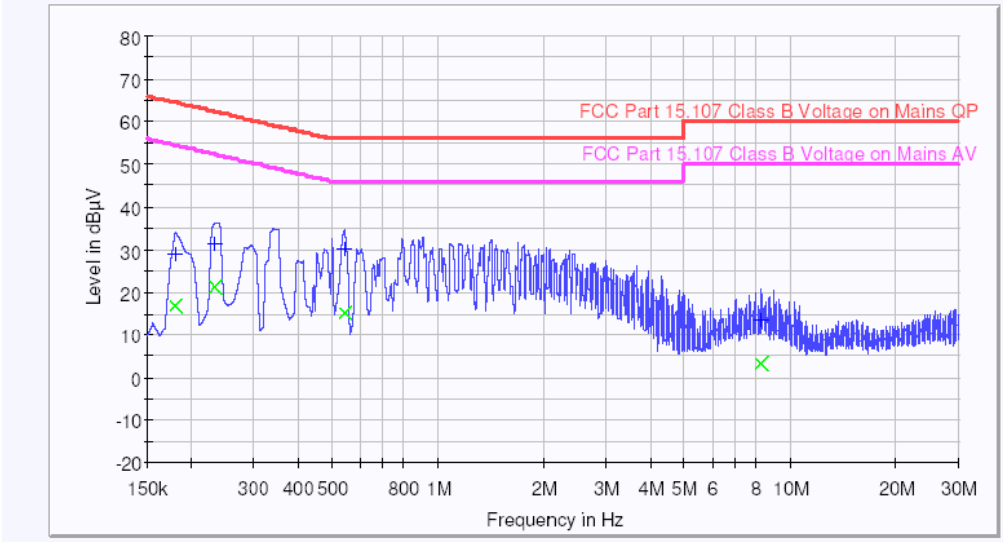
Continuous Disturbance

Test Information

EUT Name:	WKK BT Headphone
Serial Number:	BT650S (090216094-001)
Test Description:	FCC
Operating Conditions:	Charging and Music Playing Mode
Operator Name:	Samuel Ku
Comment:	100V 50Hz
Description	CE N

Conducted Emission (FCC-P.15) - Class B



Result Table_Single

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)
0.180000	29.0	17.0
0.234000	31.5	21.4
0.546000	30.1	15.3
8.316000	13.5	3.0

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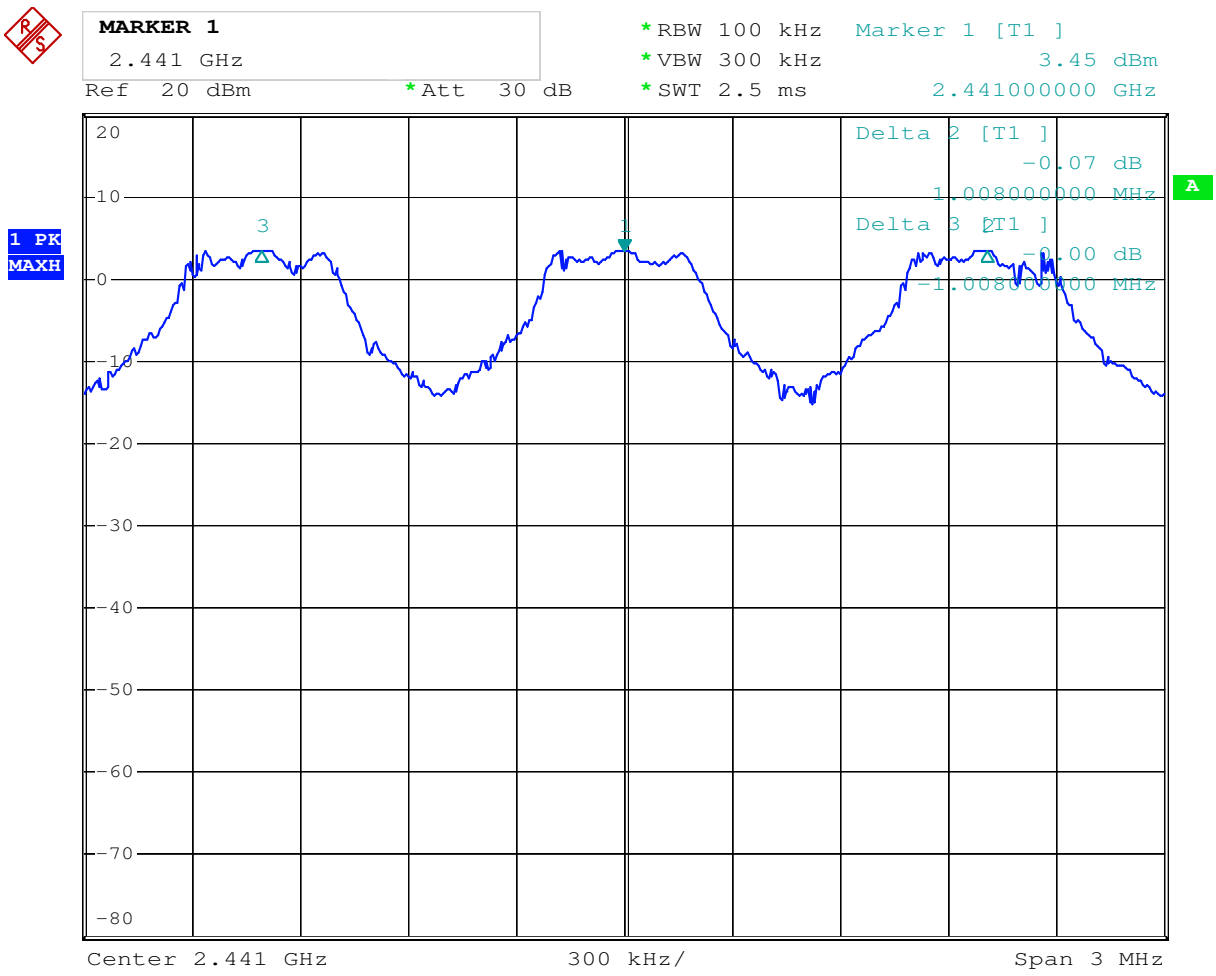
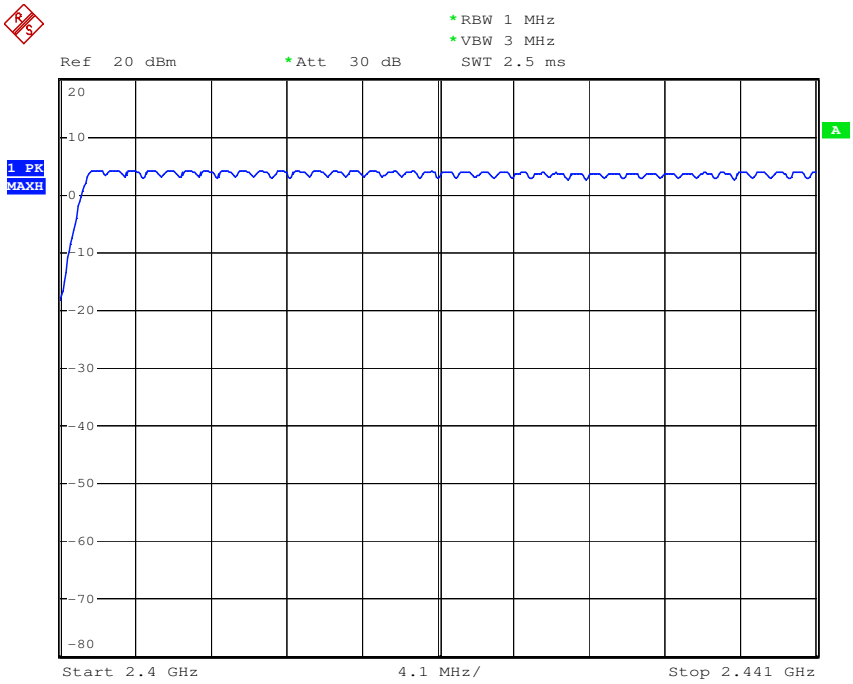
Carrier Frequency Separation

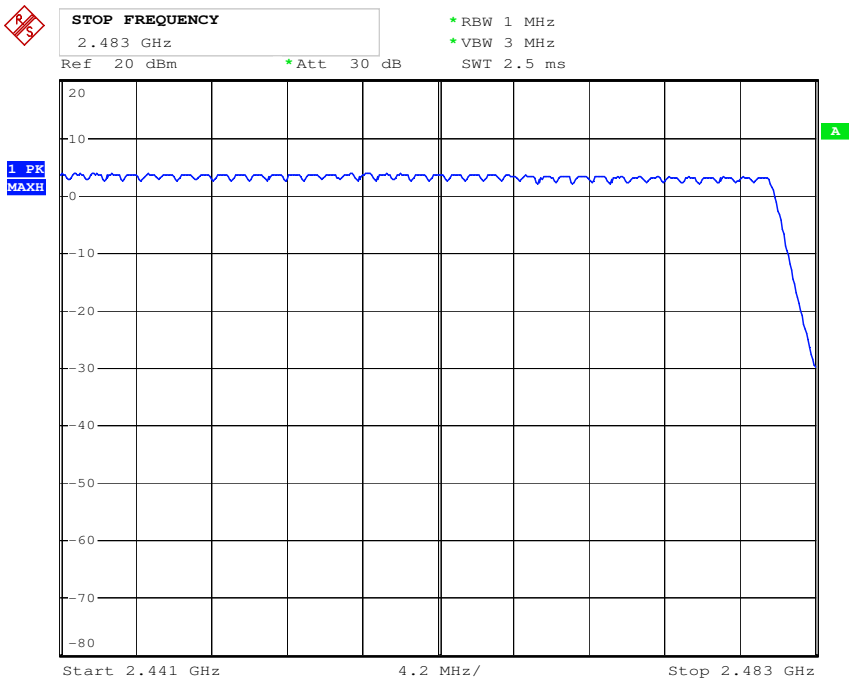


Date: 23.JAN.2009 14:13:08

Number of hopping channels

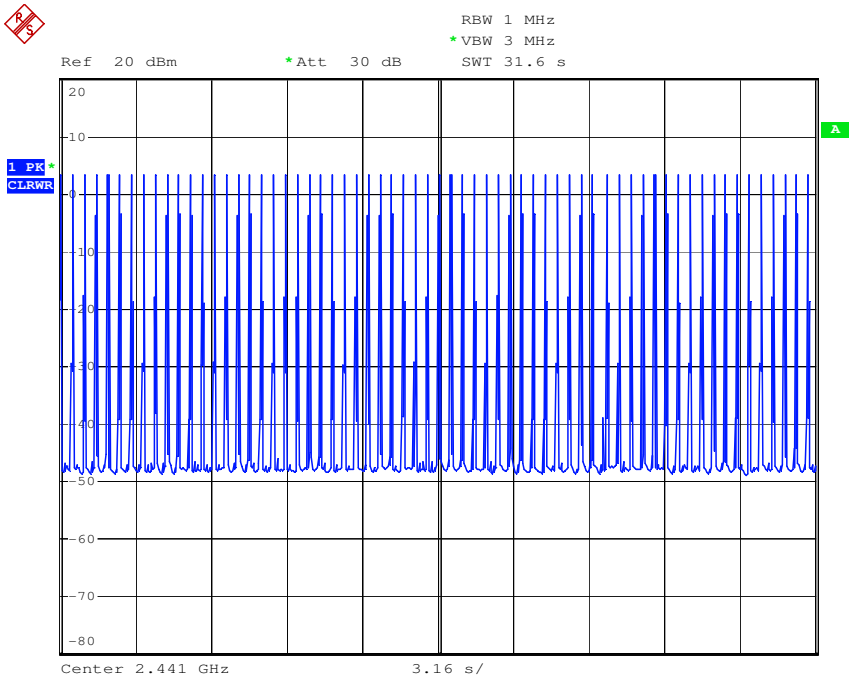


Date: 21.JAN.2009 13:18:19



Date: 21.JAN.2009 13:19:37

Dwell Time


RBW 1 MHz
*VBW 3 MHz
Ref 20 dBm
*Att 30 dB
SWT 31.6 s
1 PK*
CLRWR
A
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.441 GHz
3.16 s/
Date: 22.JAN.2009 09:58:40

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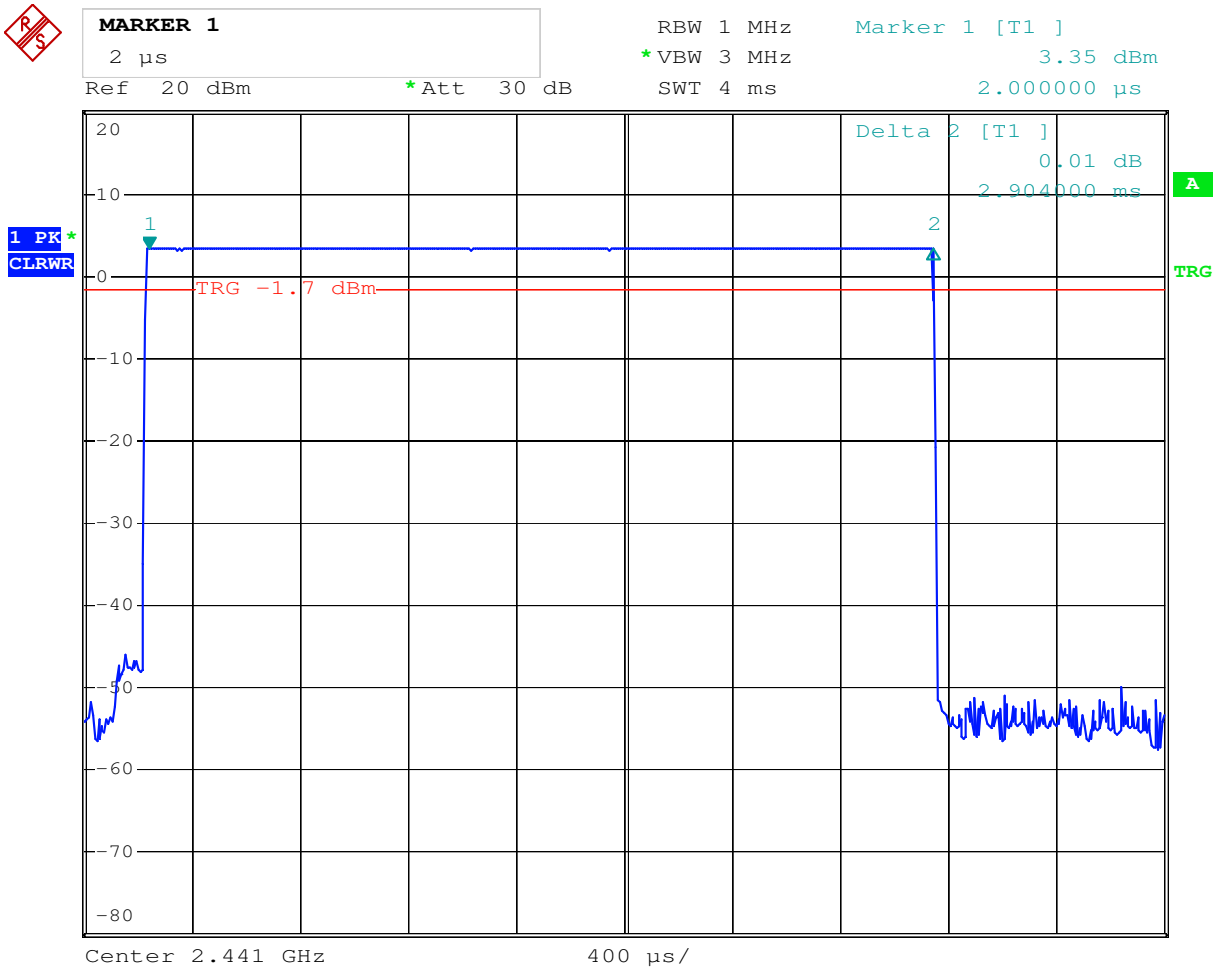
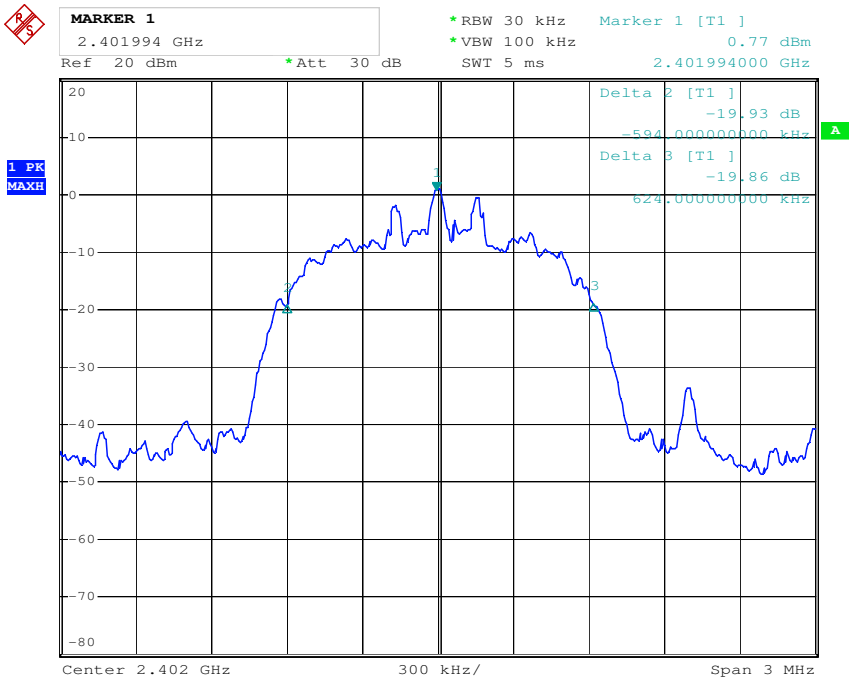


Date: 22.JAN.2009 10:01:59

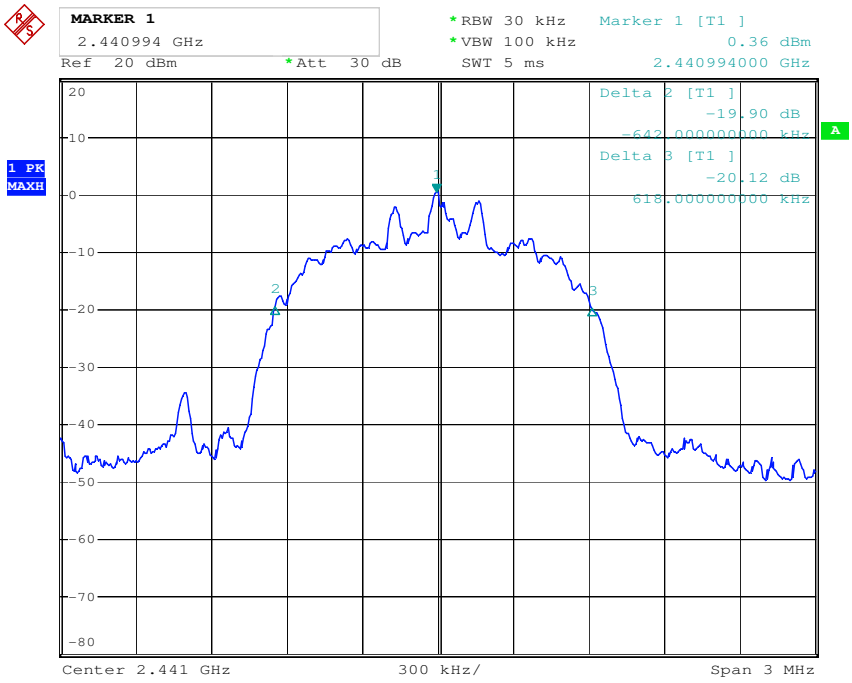
20dB Bandwidth

Tx frequency: 2402MHz



Date: 21.JAN.2009 13:36:54

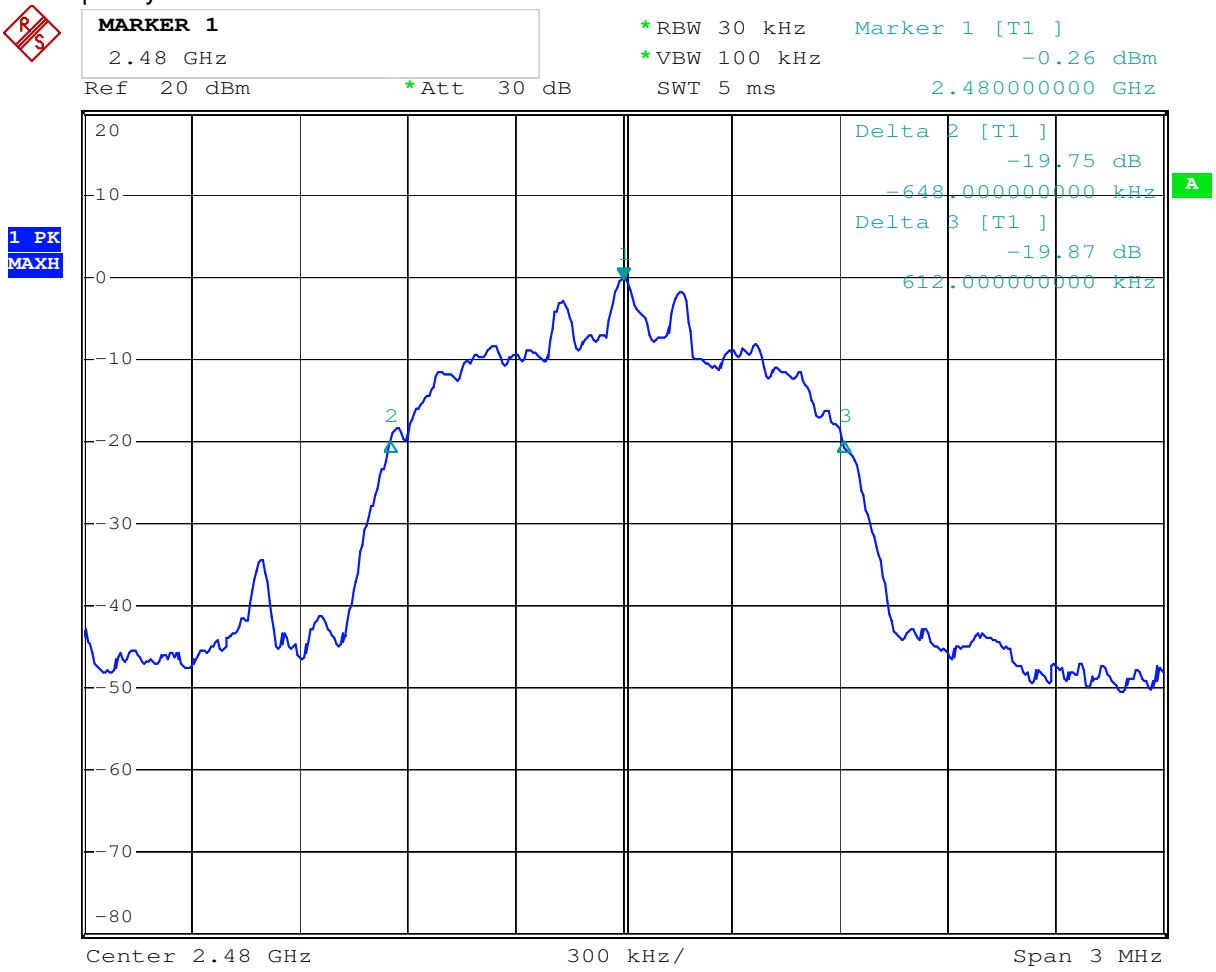
Tx frequency: 2441MHz



Date: 21.JAN.2009 13:35:23

www.tuv.com

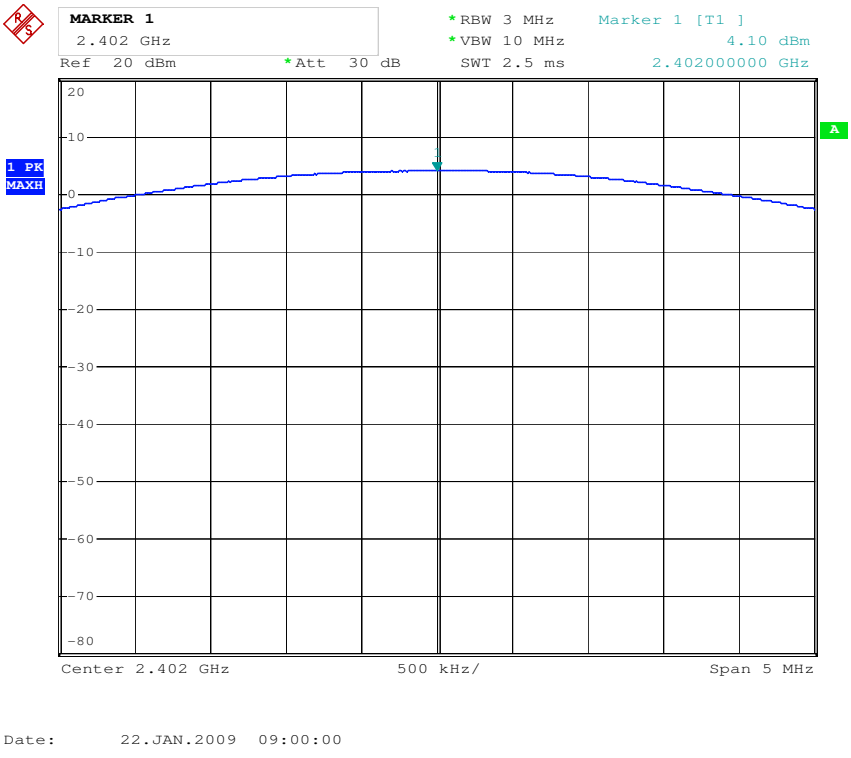
Tx frequency: 2480MHz



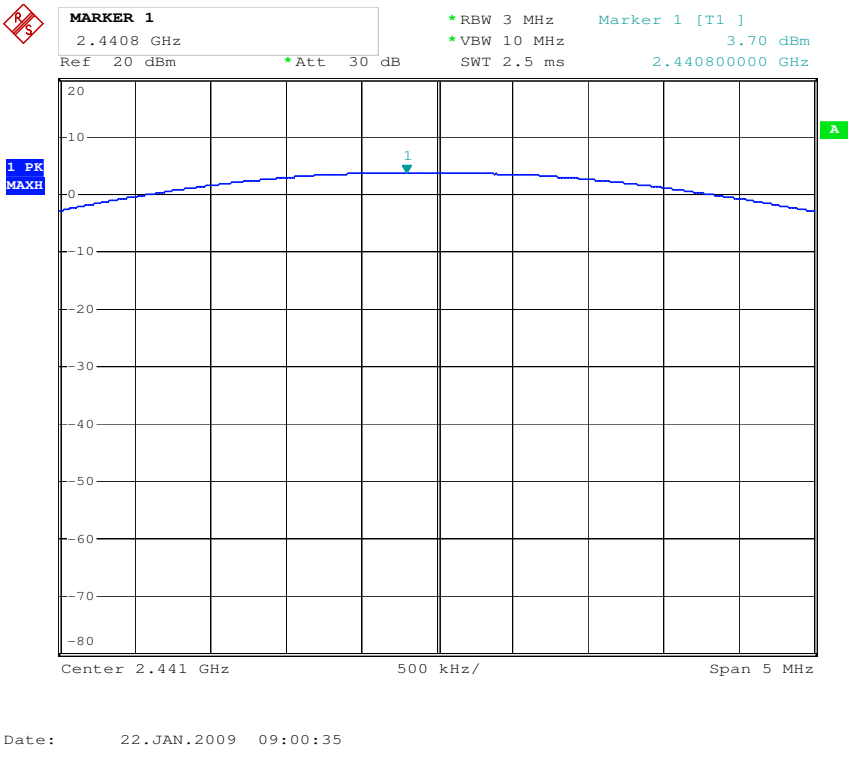
Date: 21.JAN.2009 13:40:39

Peak Output Power

Modulation: GFSK
Tx frequency: 2402MHz

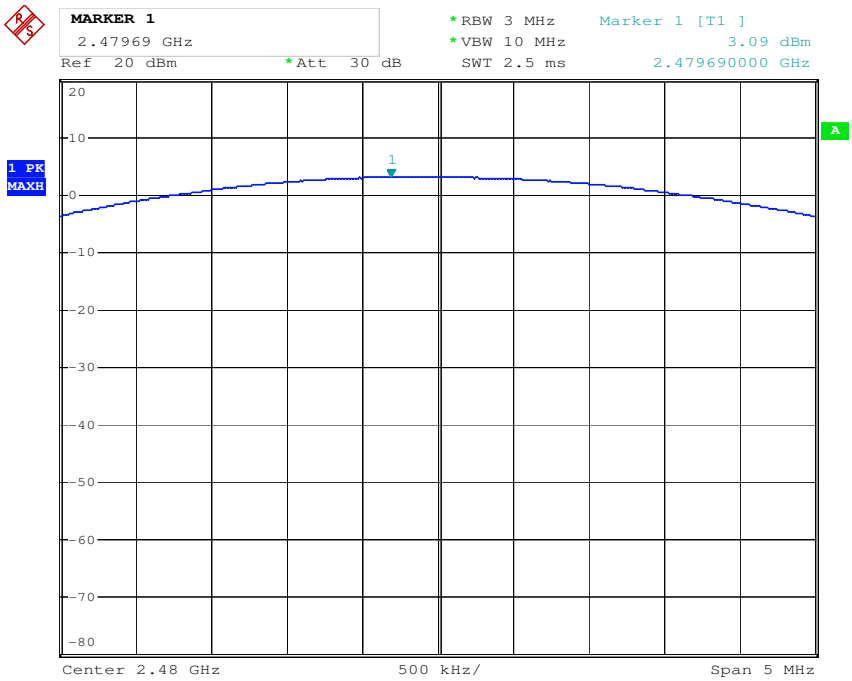


Modulation: GFSK
Tx frequency: 2441MHz

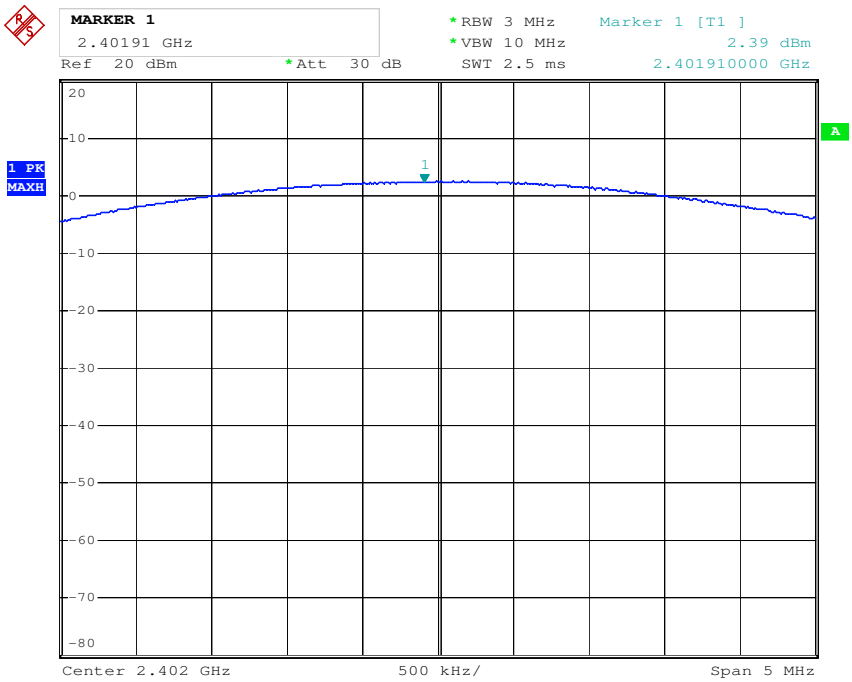


www.tuv.com

Modulation: GFSK
Tx frequency: 2480MHz

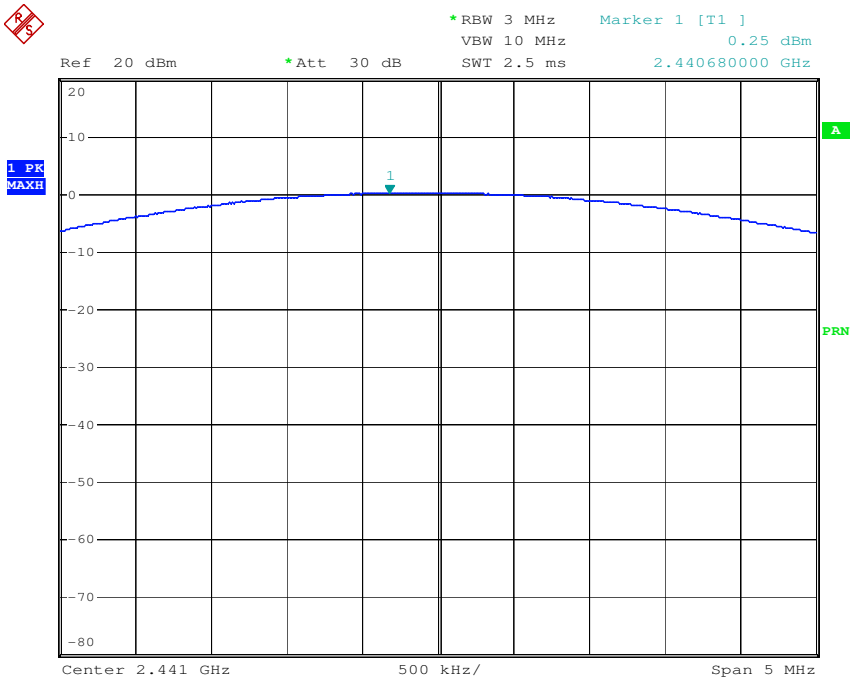


Modulation: Pi/4 DQPSK
Tx frequency: 2402MHz



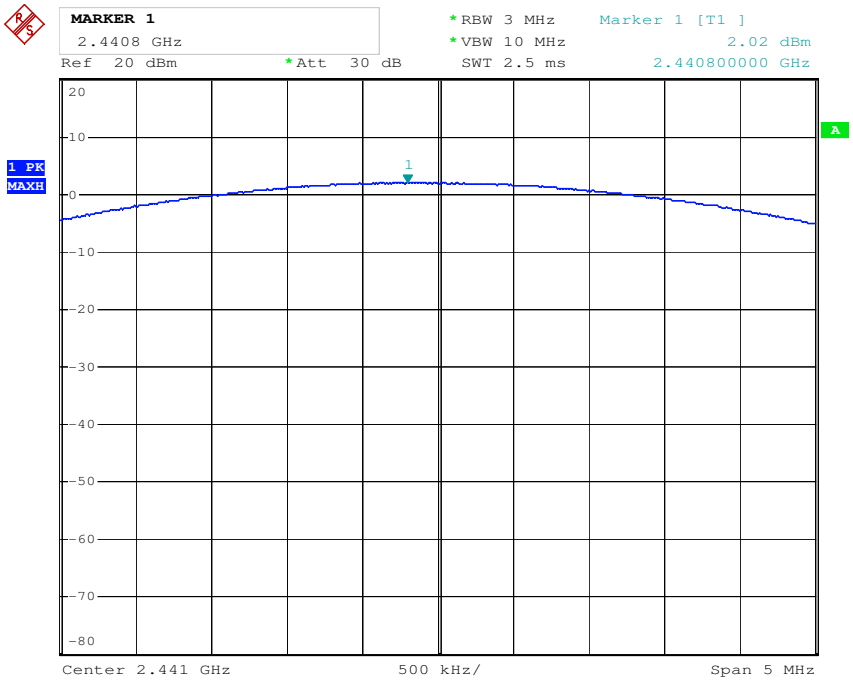
www.tuv.com

Modulation: Pi/4 DQPSK
Tx frequency: 2441MHz



Date: 22.APR.2008 19:06:09

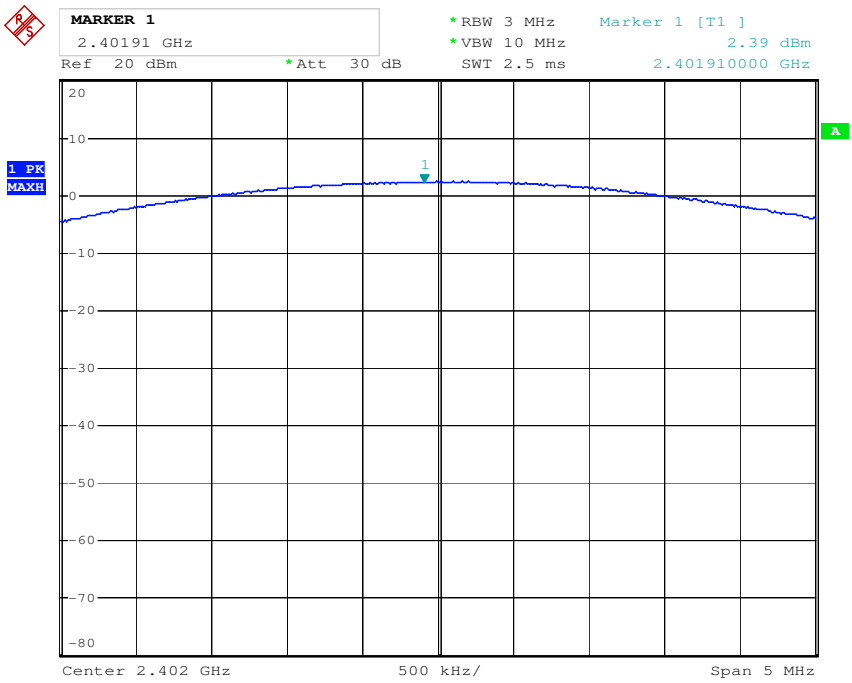
Modulation: Pi/4 DQPSK
Tx frequency: 2480MHz



Date: 21.JAN.2009 13:49:47

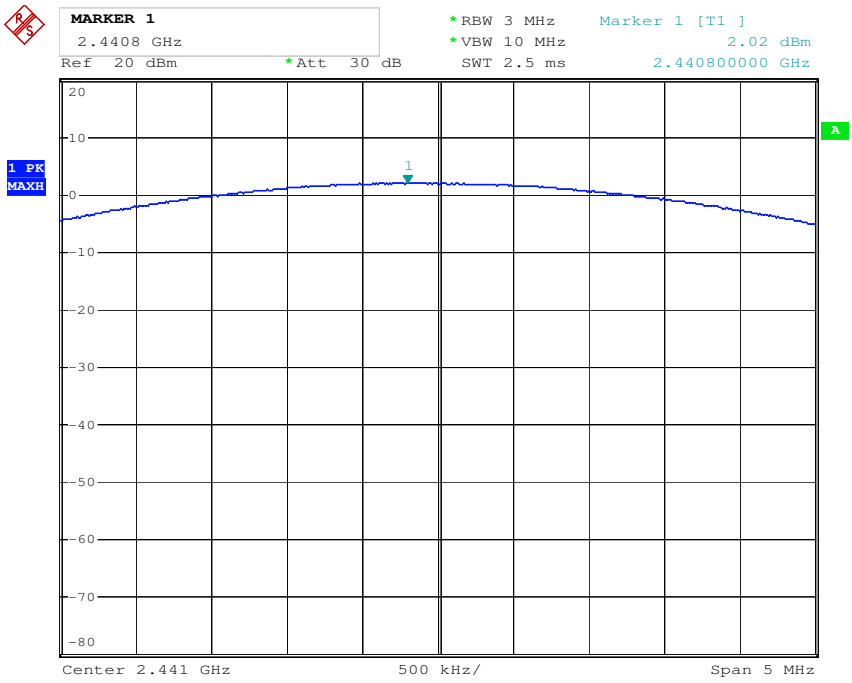
www.tuv.com

Modulation: 8 DPSK
Tx frequency: 2402MHz



Date: 21.JAN.2009 13:49:06

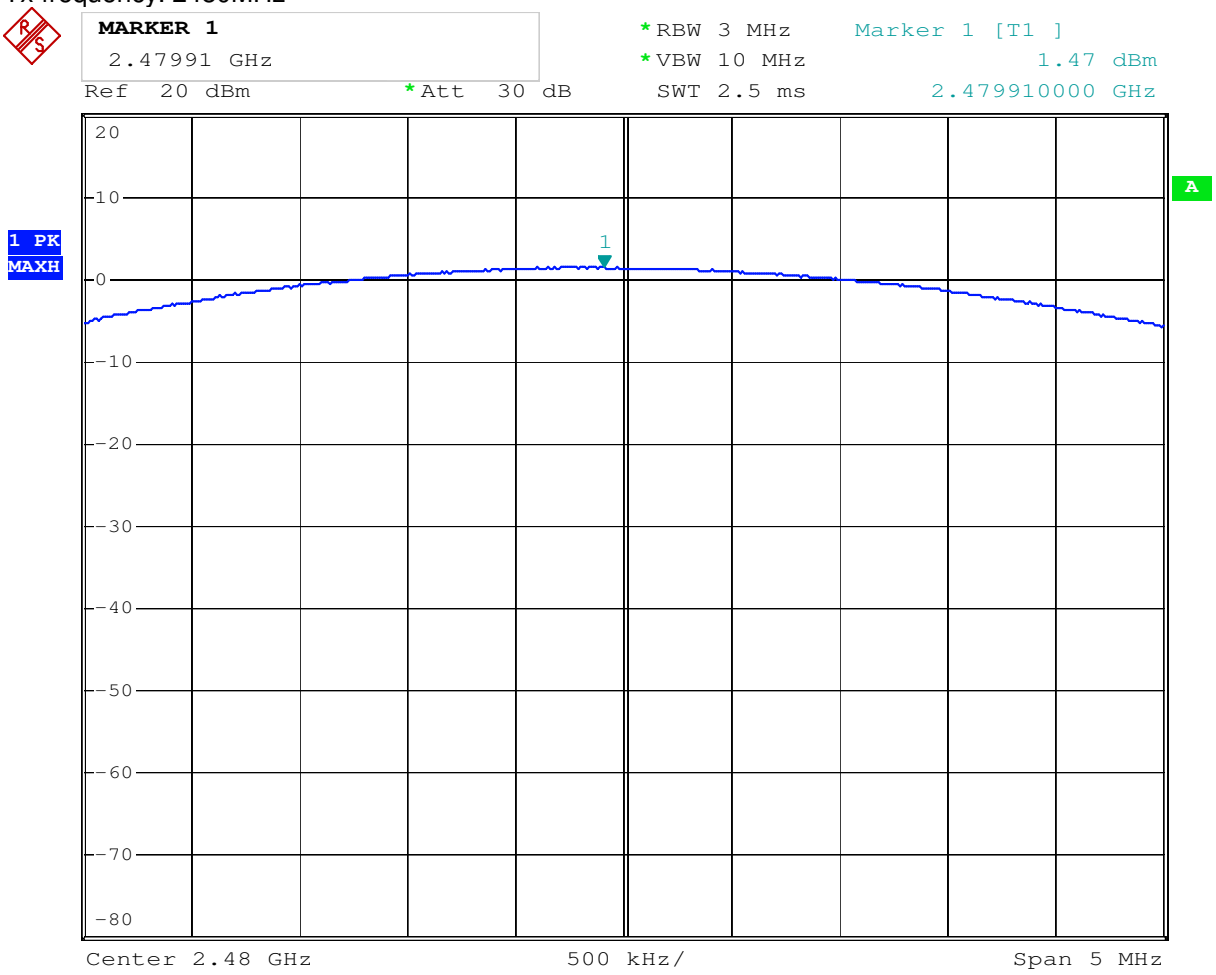
Modulation: 8 DPSK
Tx frequency: 2441MHz



Date: 21.JAN.2009 13:49:47

www.tuv.com

Modulation: 8 DPSK
Tx frequency: 2480MHz

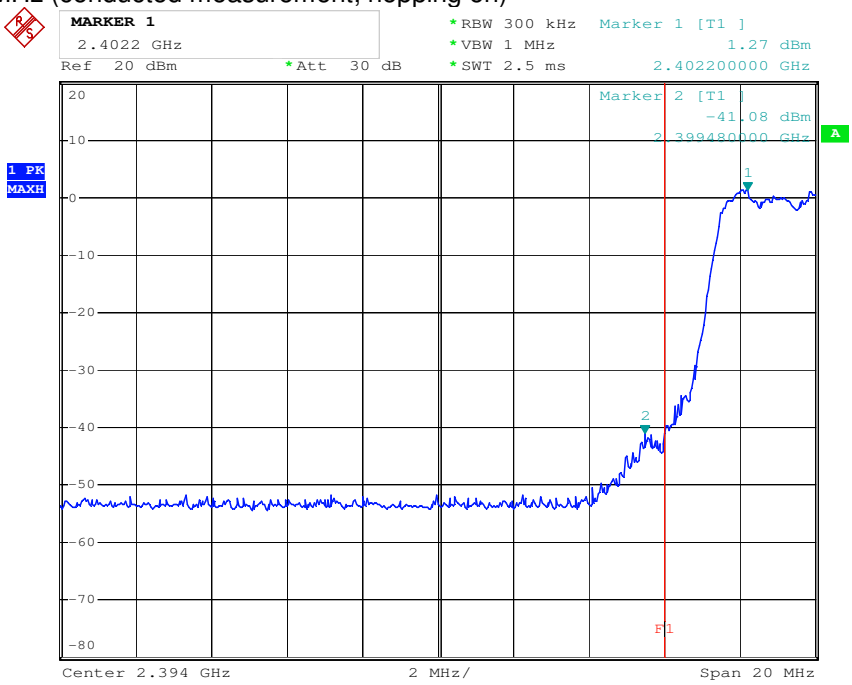


Date: 21.JAN.2009 13:48:11

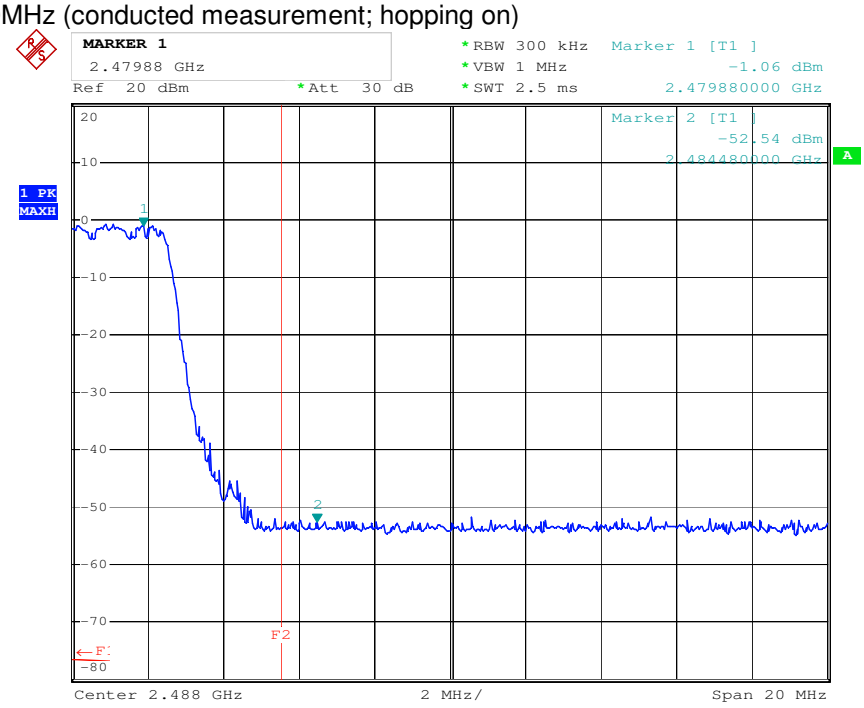
www.tuv.com

Band Edge Compliance

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

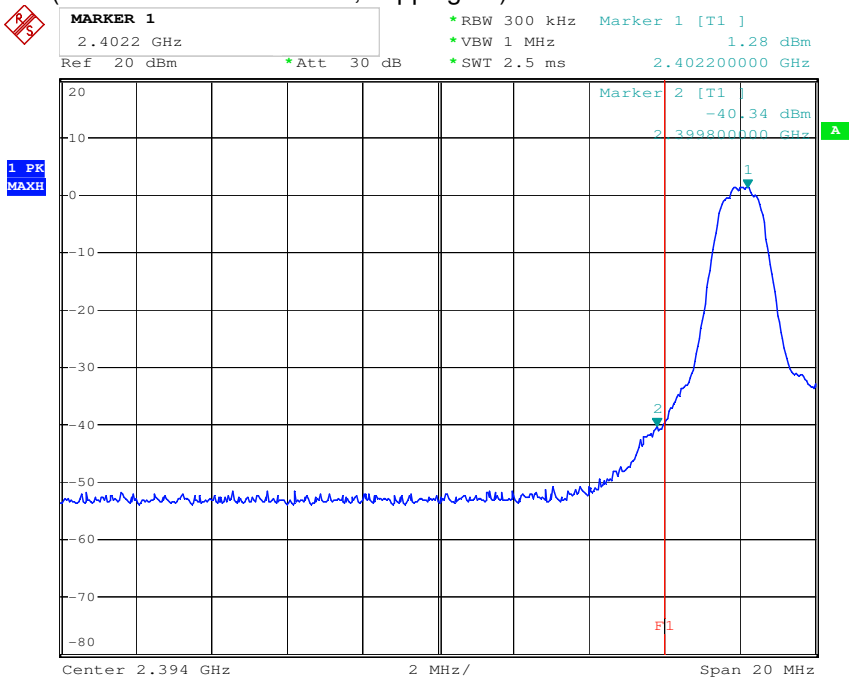


Tx frequency: 2480MHz (conducted measurement; hopping on)



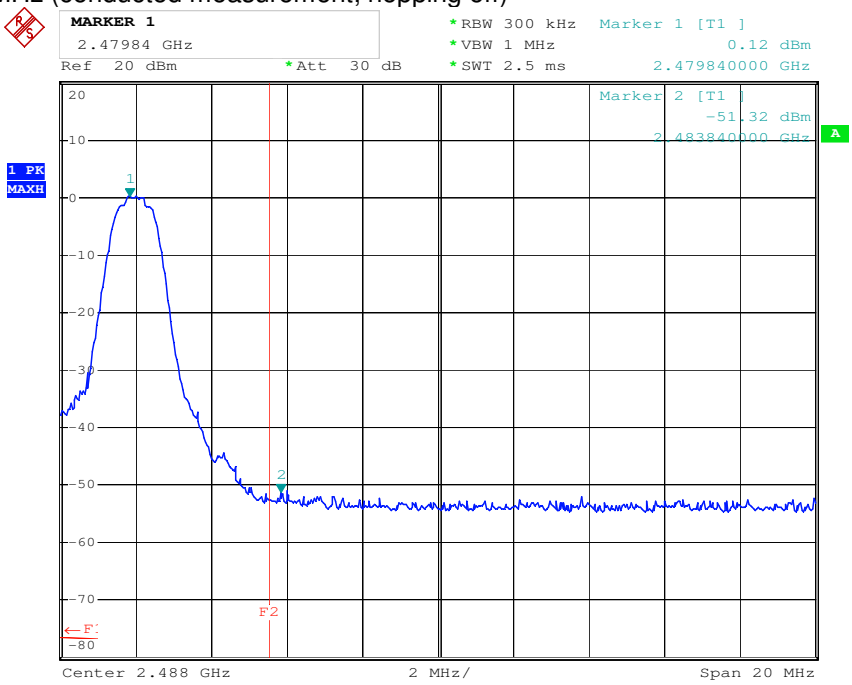
www.tuv.com

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



Date: 22.JAN.2009 10:15:50

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



Date: 22.JAN.2009 10:22:12

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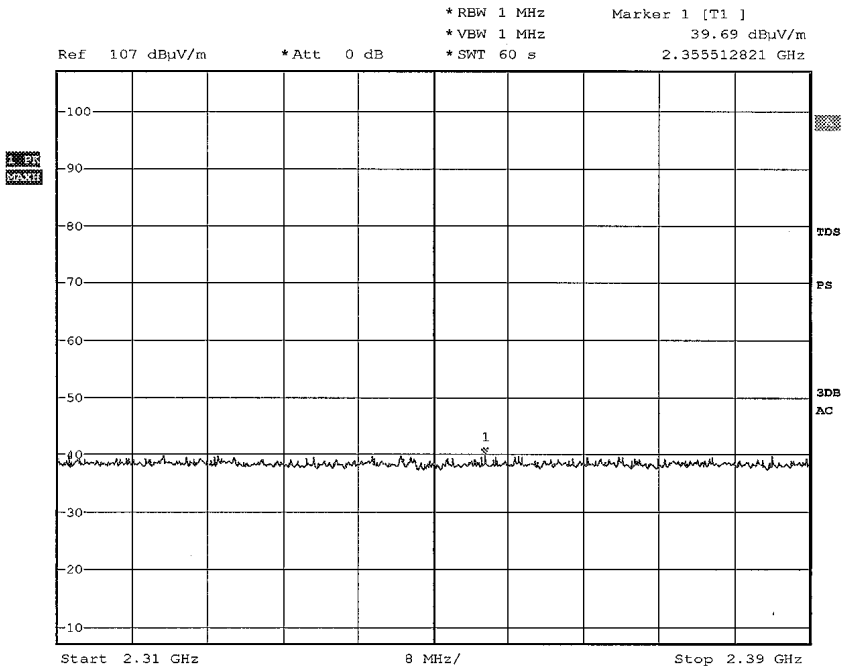
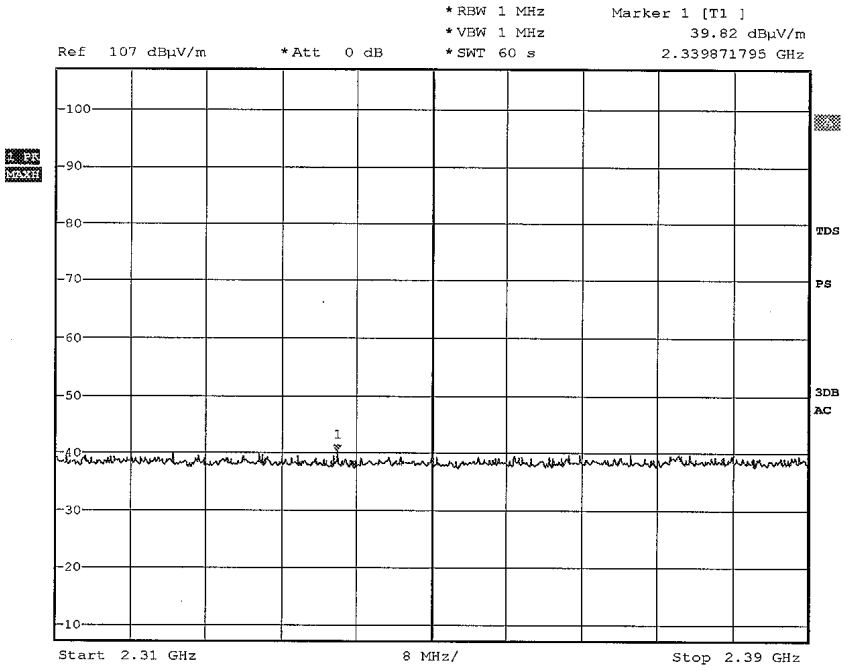
Tx frequency: 2402MHz (radiated measurement)



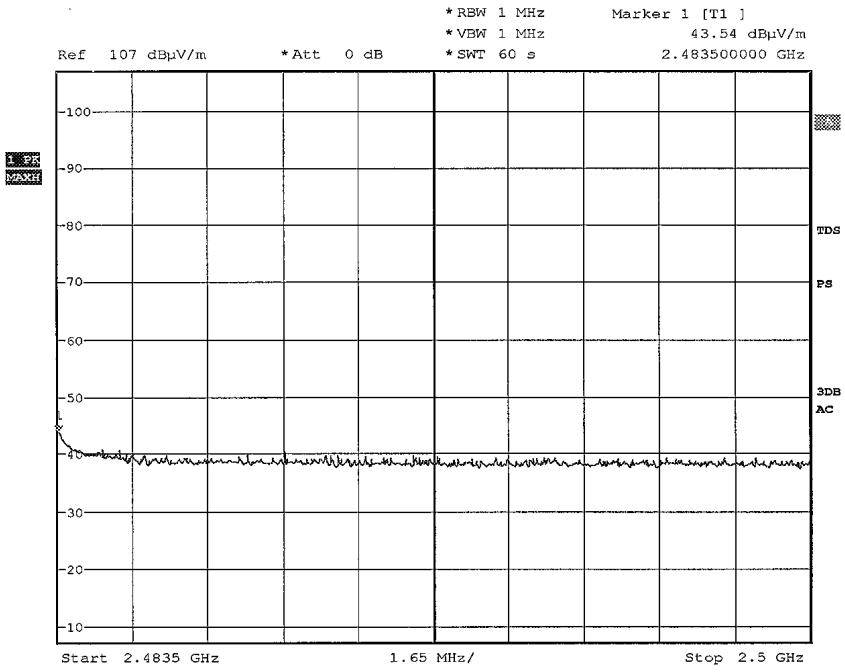
WKK TECH LTD/BT HEADSET BT650S/ 090106003-001/ 2402MHz/VERT.
Date: 8.JAN.2009 10:02:53



WKK TECH LTD/BT HEADSET BT650S/ 090106003-001/ 2402MHz/HORI.
Date: 8.JAN.2009 10:01:29

www.tuv.com

Tx frequency: 2480MHz (radiated measurement)



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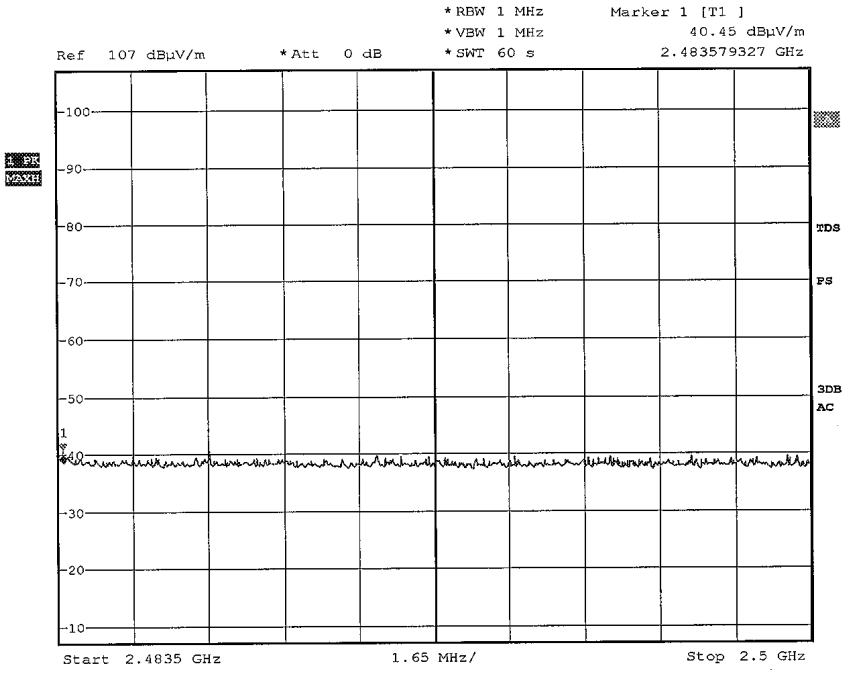

WKK TECH LTD/BT HEADSET BT650S/ 090106003-001/ 2480MHz/HORI.
Date: 8.JAN.2009 10:24:27

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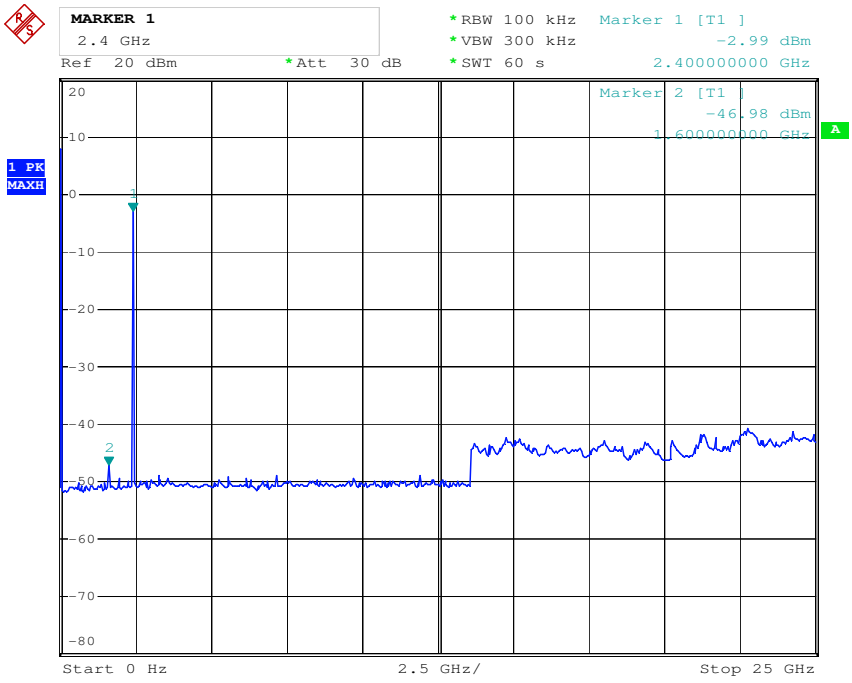
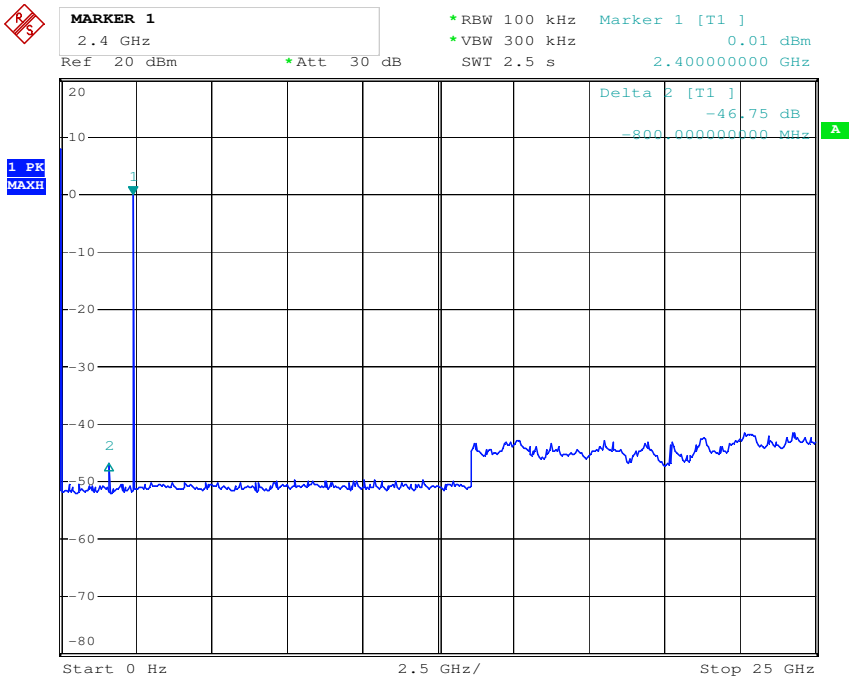
Spurious Emissions - Conducted

Tx frequency: 2402MHz



Date: 22.JAN.2009 09:48:01

Tx frequency: 2441MHz



Date: 22.JAN.2009 09:43:19

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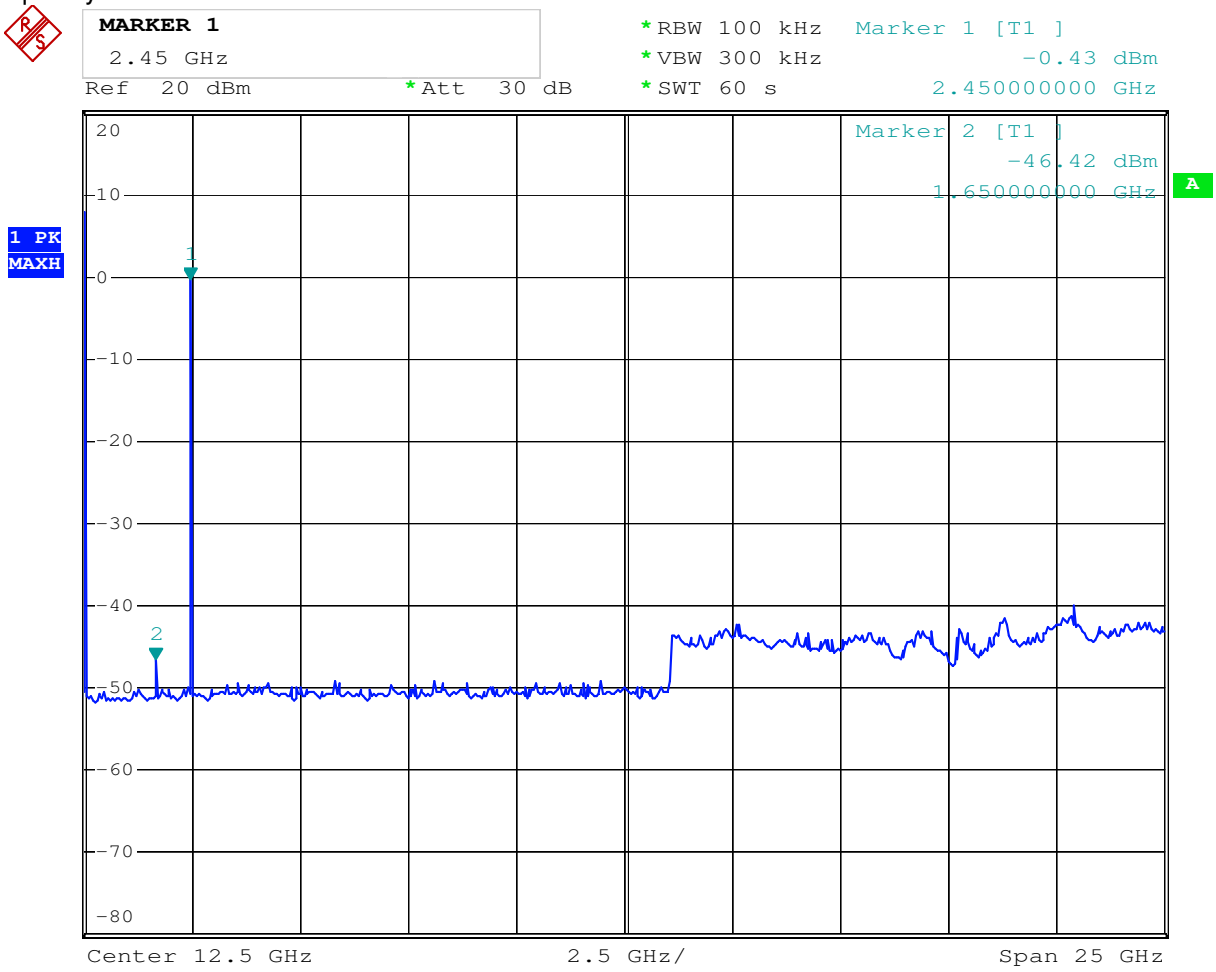
Tx frequency: 2480MHz

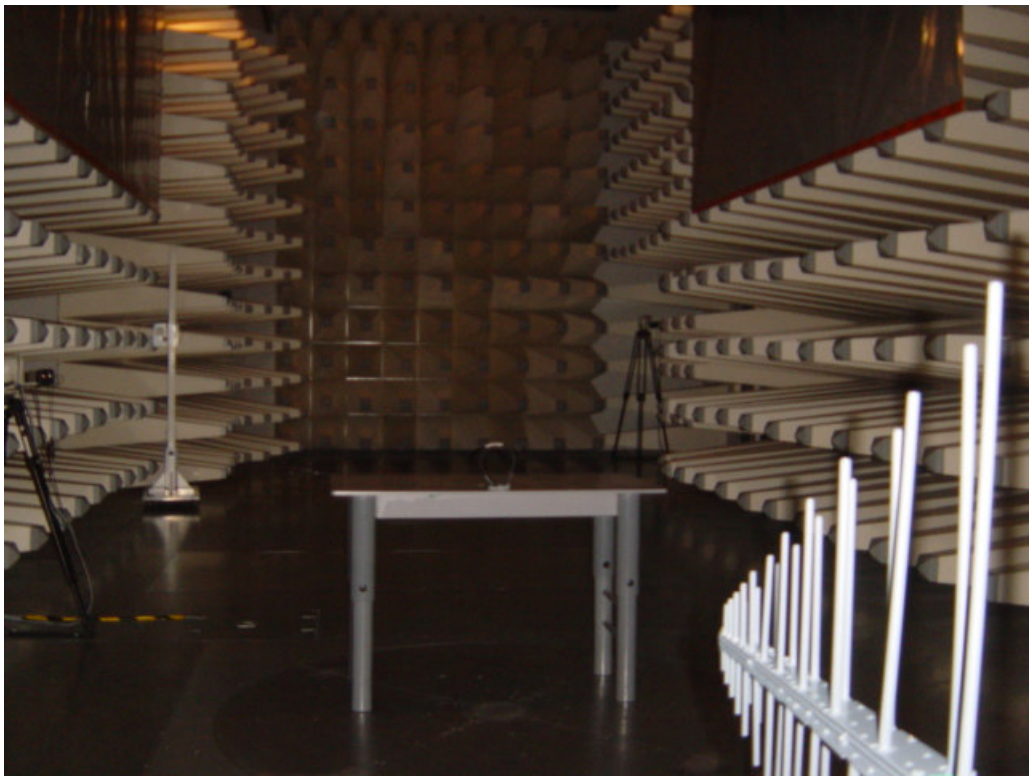


Date: 22.JAN.2009 09:52:24

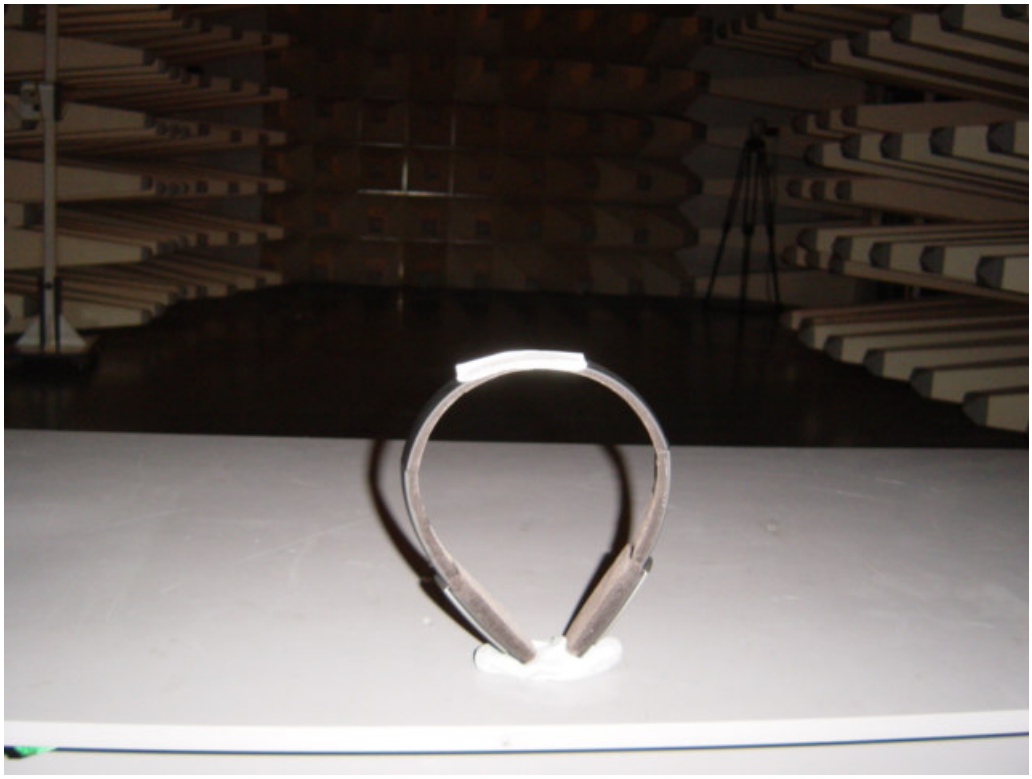
Appendix 2

Test Setup Photos

Set-up for Radiation Emission (Transceiver)



Set-up for Radiation Emission (Transceiver)



Set-up for Radiation Emission (Transceiver)

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Appendix 3

Construction Photos

1.1 External view

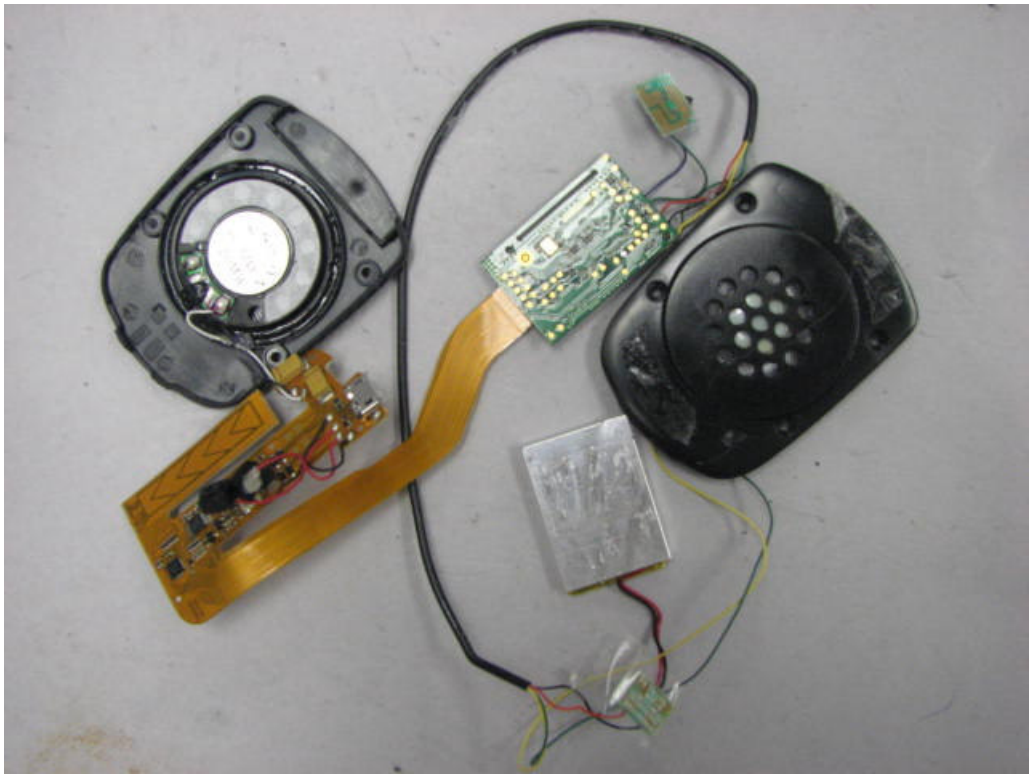
1.1.1 Front view

1.1.2 Rear view 1

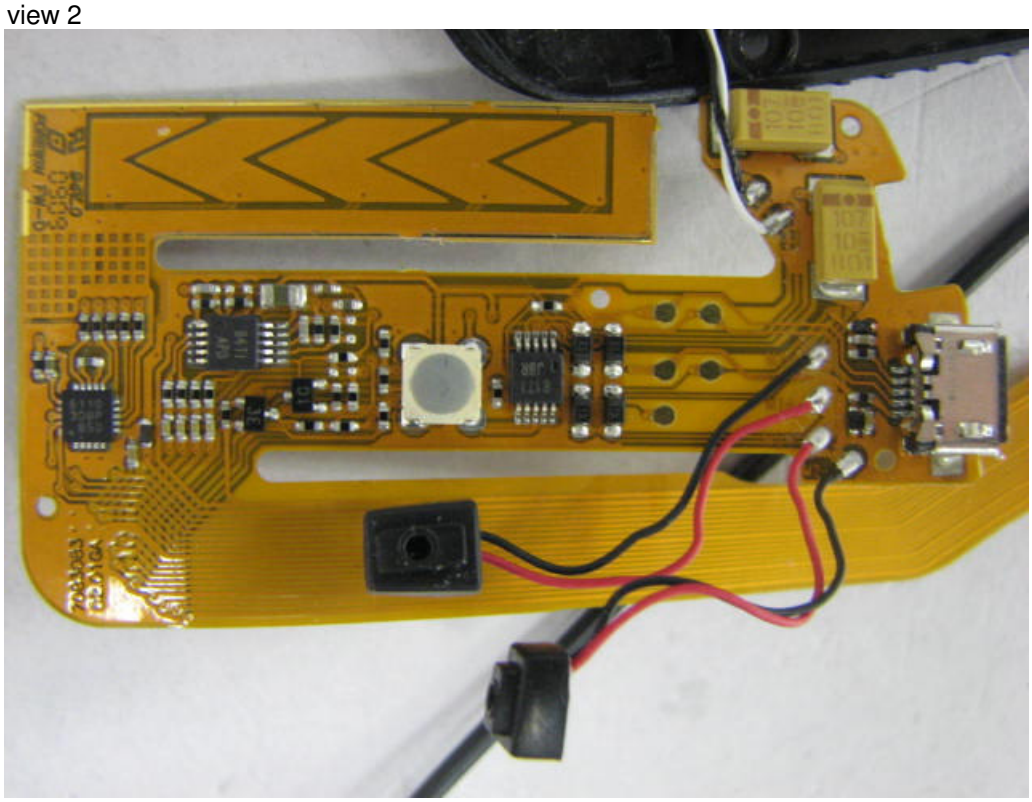
1.1.3 Rear view 2

Internal view

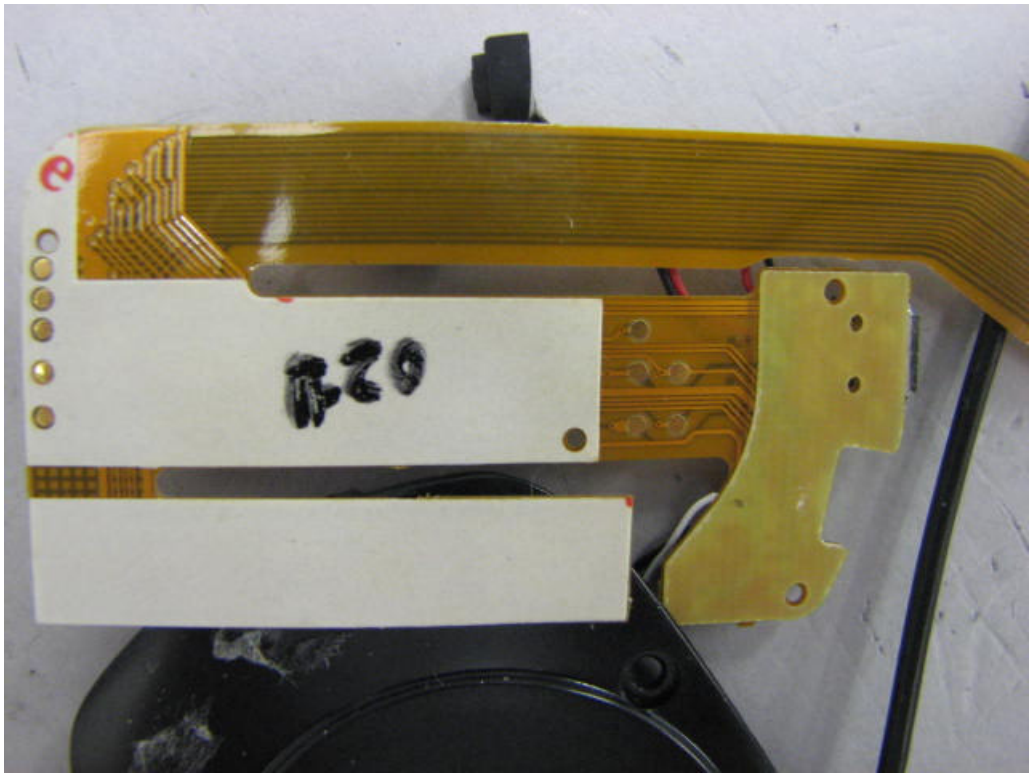
1.1.4 Side view 1



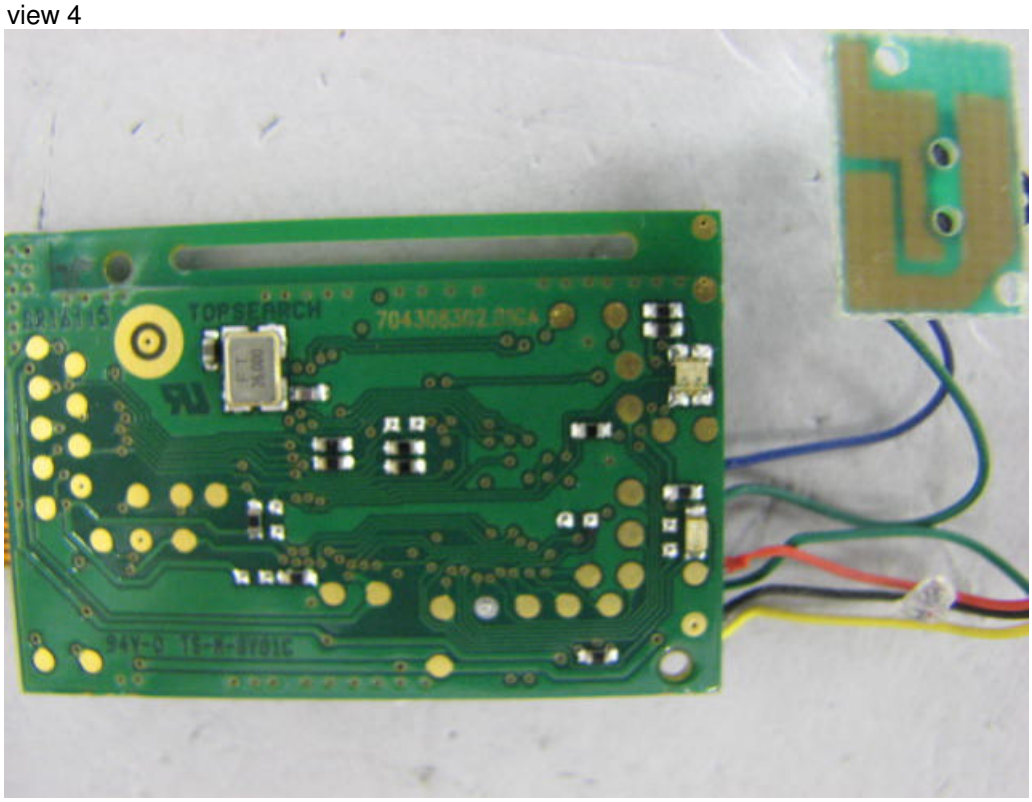
1.1.5 Side view 2



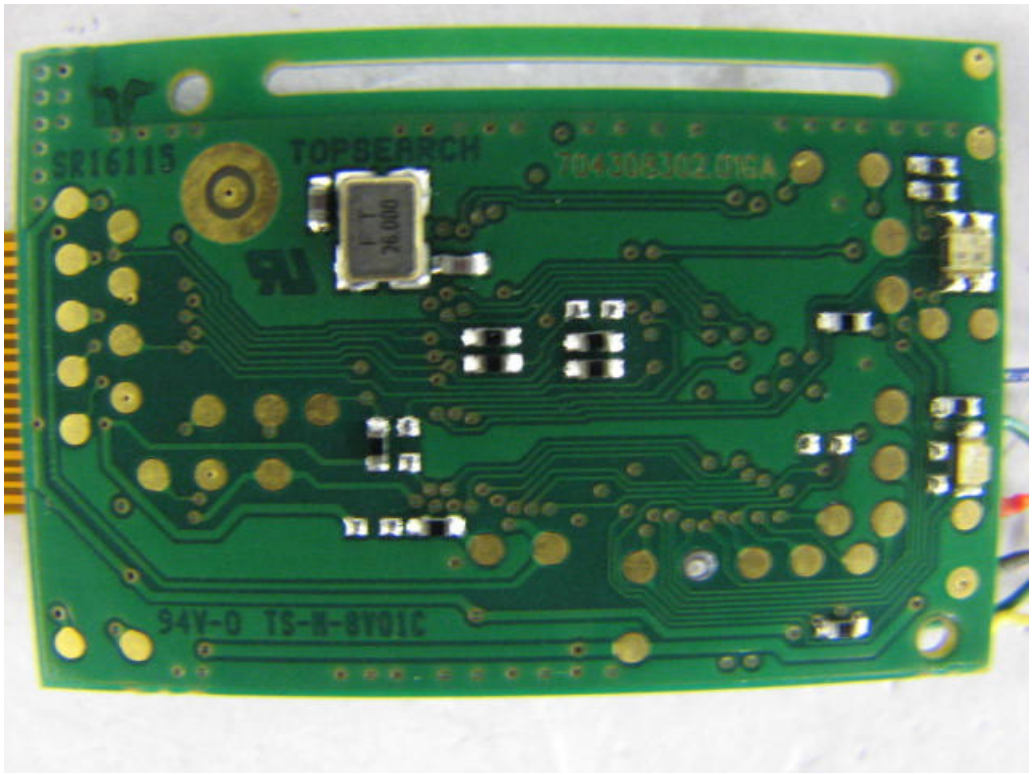
1.1.6 Side view 3



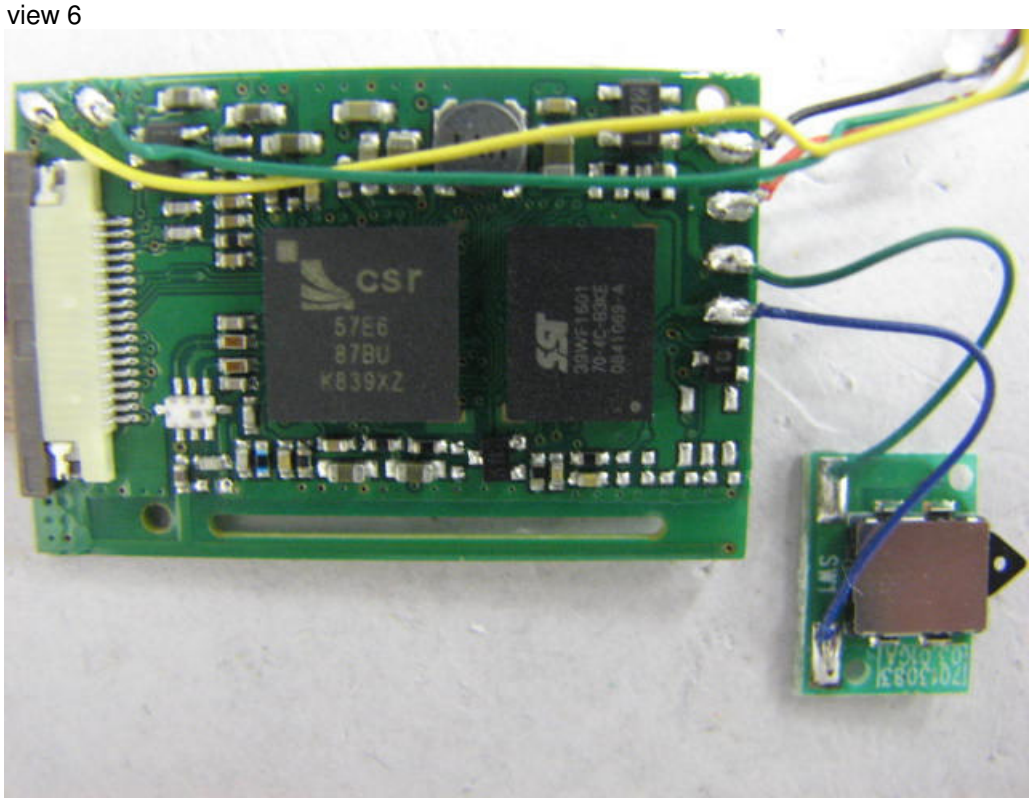
1.1.7 Side view 4



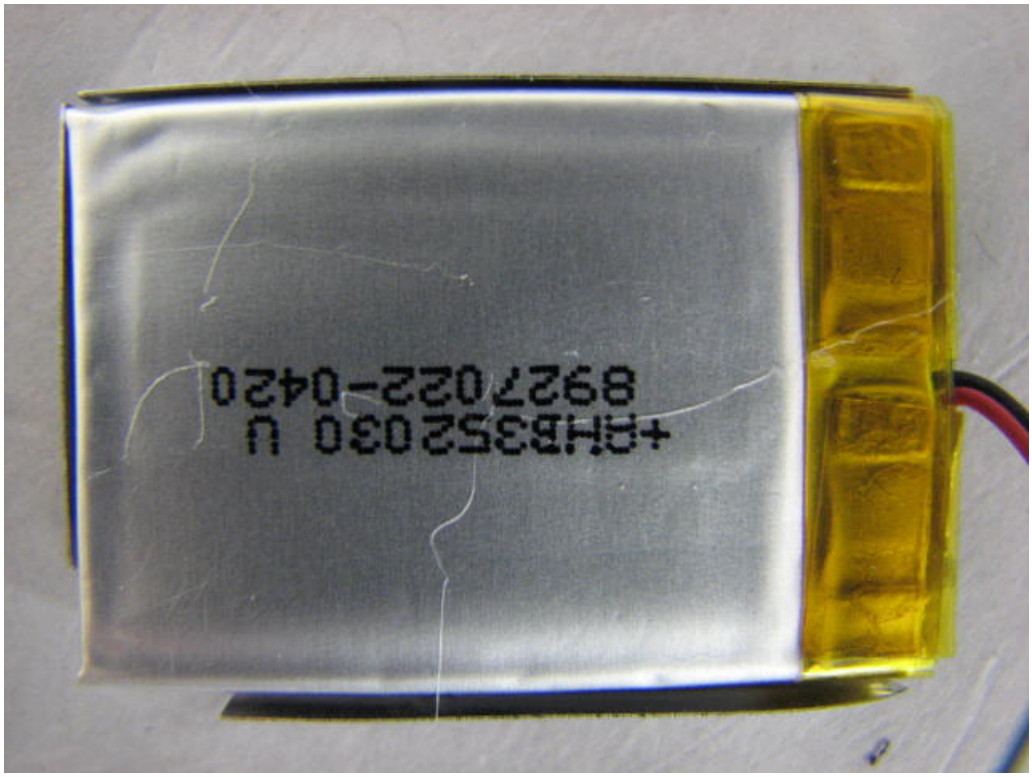
1.1.8 Side view 5



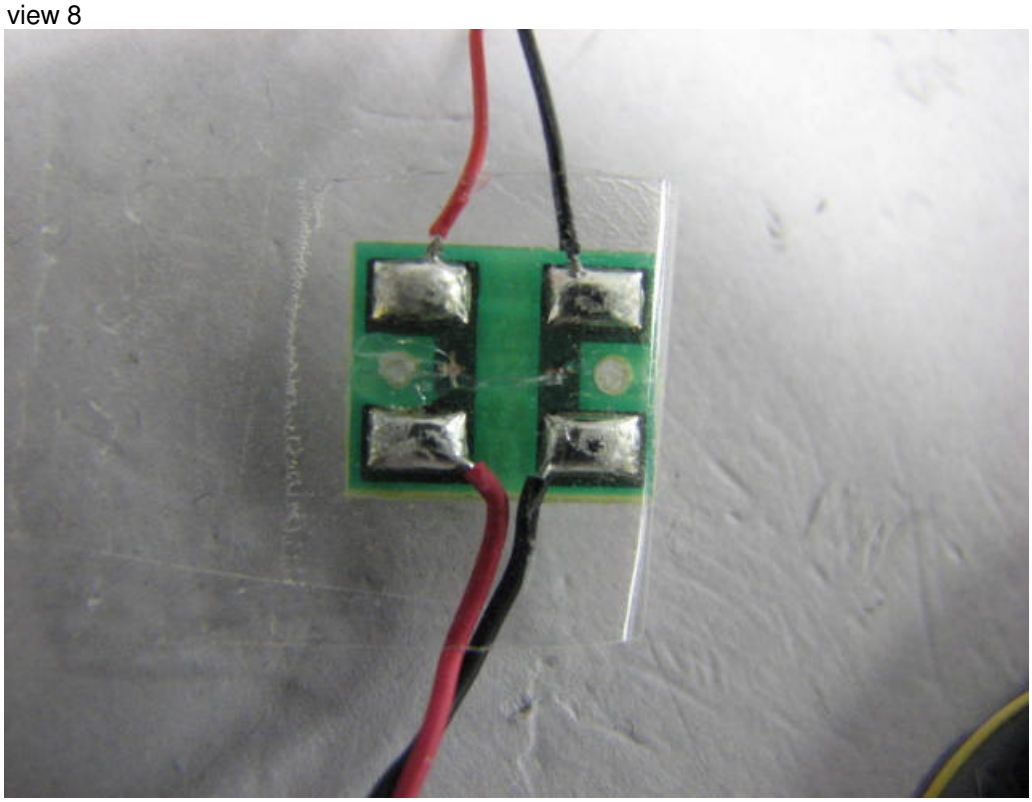
1.1.9 Side view 6



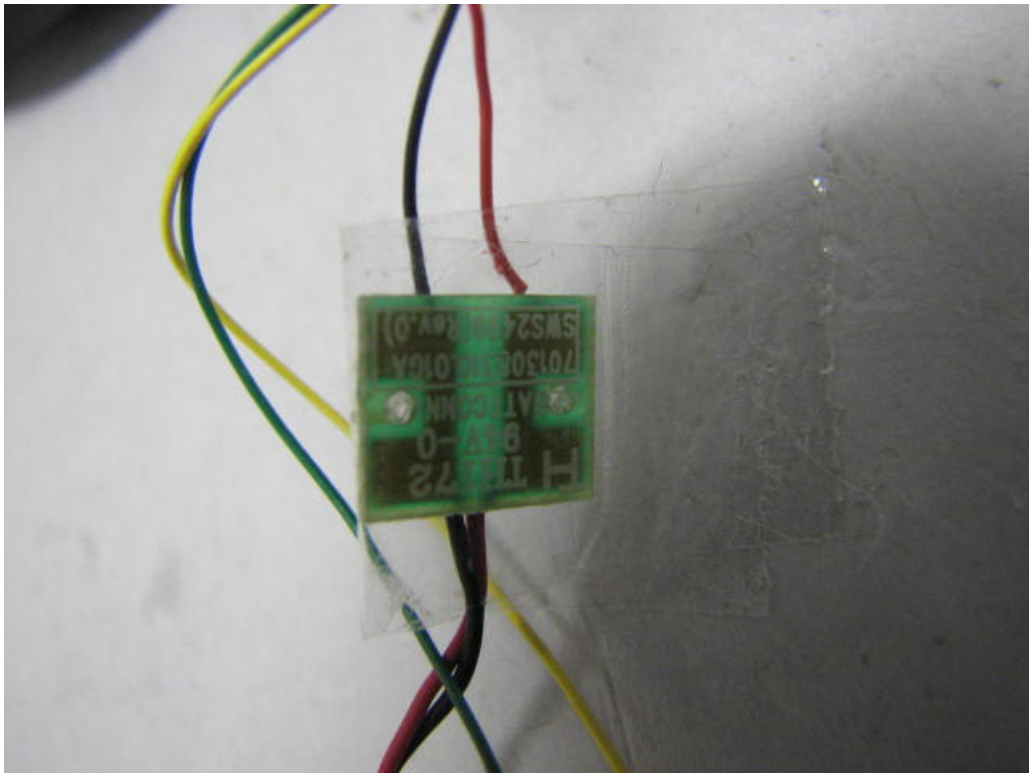
1.1.10 Side view 7



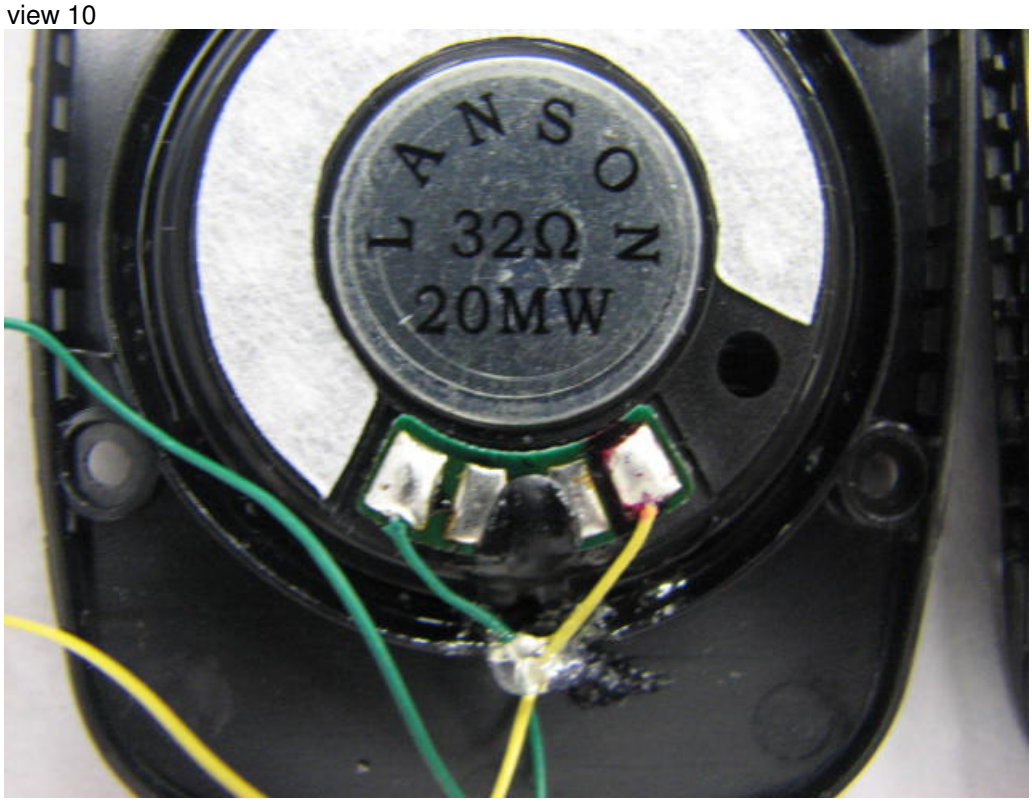
1.1.11 Side view 8



1.1.12 Side view 9



1.1.13 Side view 10



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Appendix 4

Technical Documents

1.1 FCCID Label Artwork

The yellow oval shows the location of the Rating Label.

1.2 Operational Descriptions

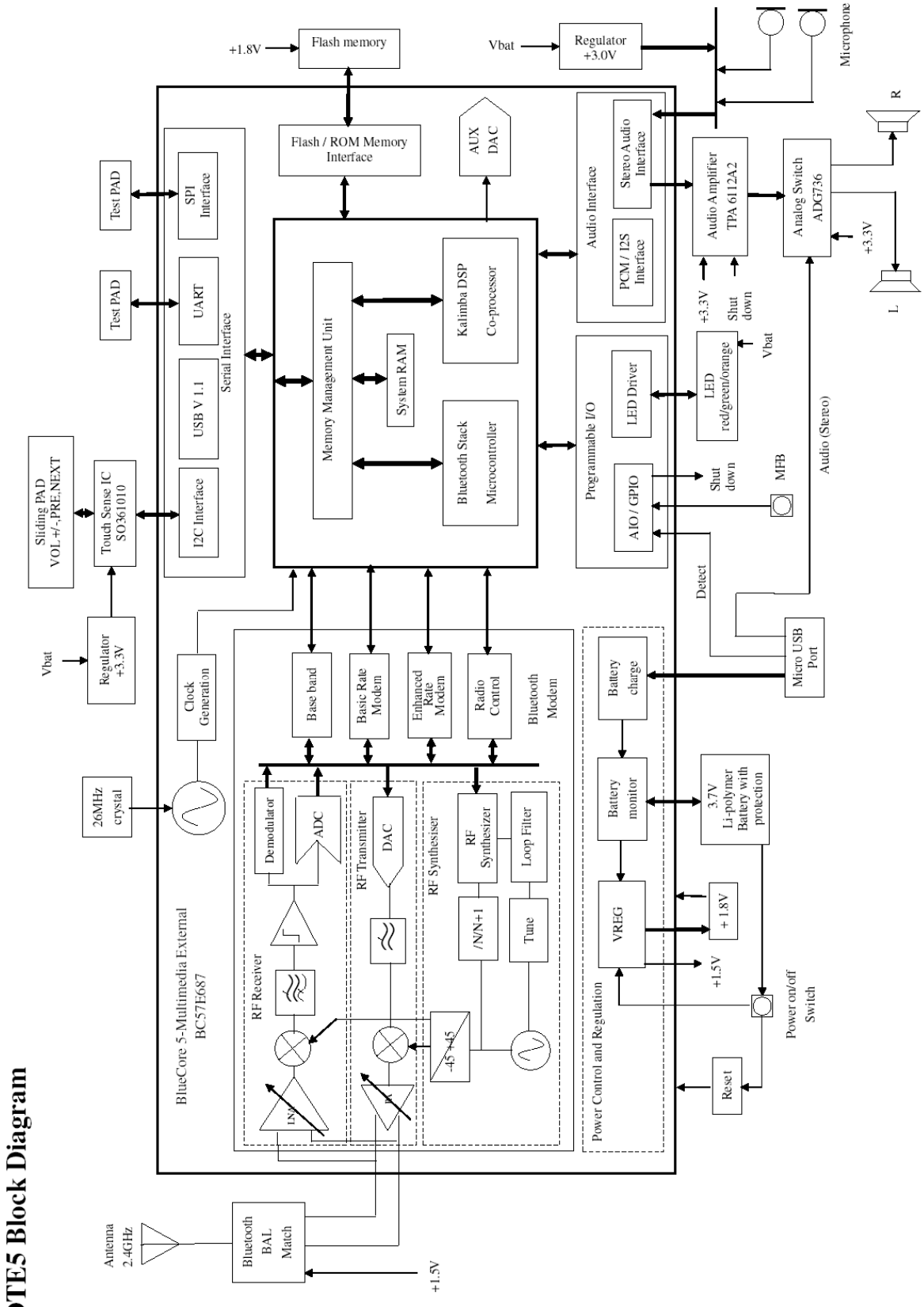
1.2.1 Product Descriptions

The test item is a wireless headphone based on the Bluetooth technology. It transfers the audio signal to and from a corresponding Bluetooth Audio Gateway such as mobile phone wirelessly.
Bluetooth is a short-range radio link intended to be a cable replacement between portable and/or fixed electronic devices.

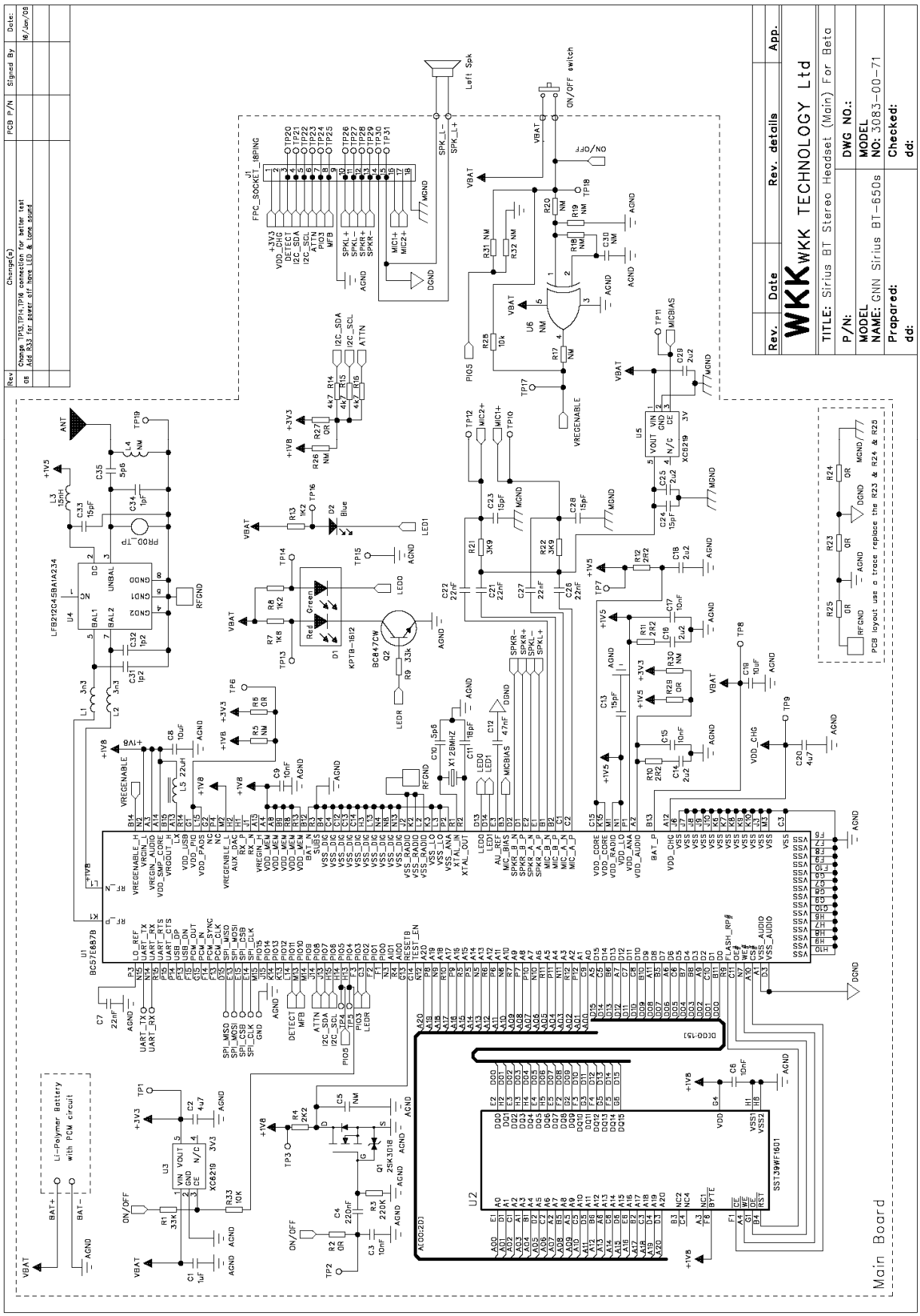
1.2.2 Technical Background of the Wireless Technology

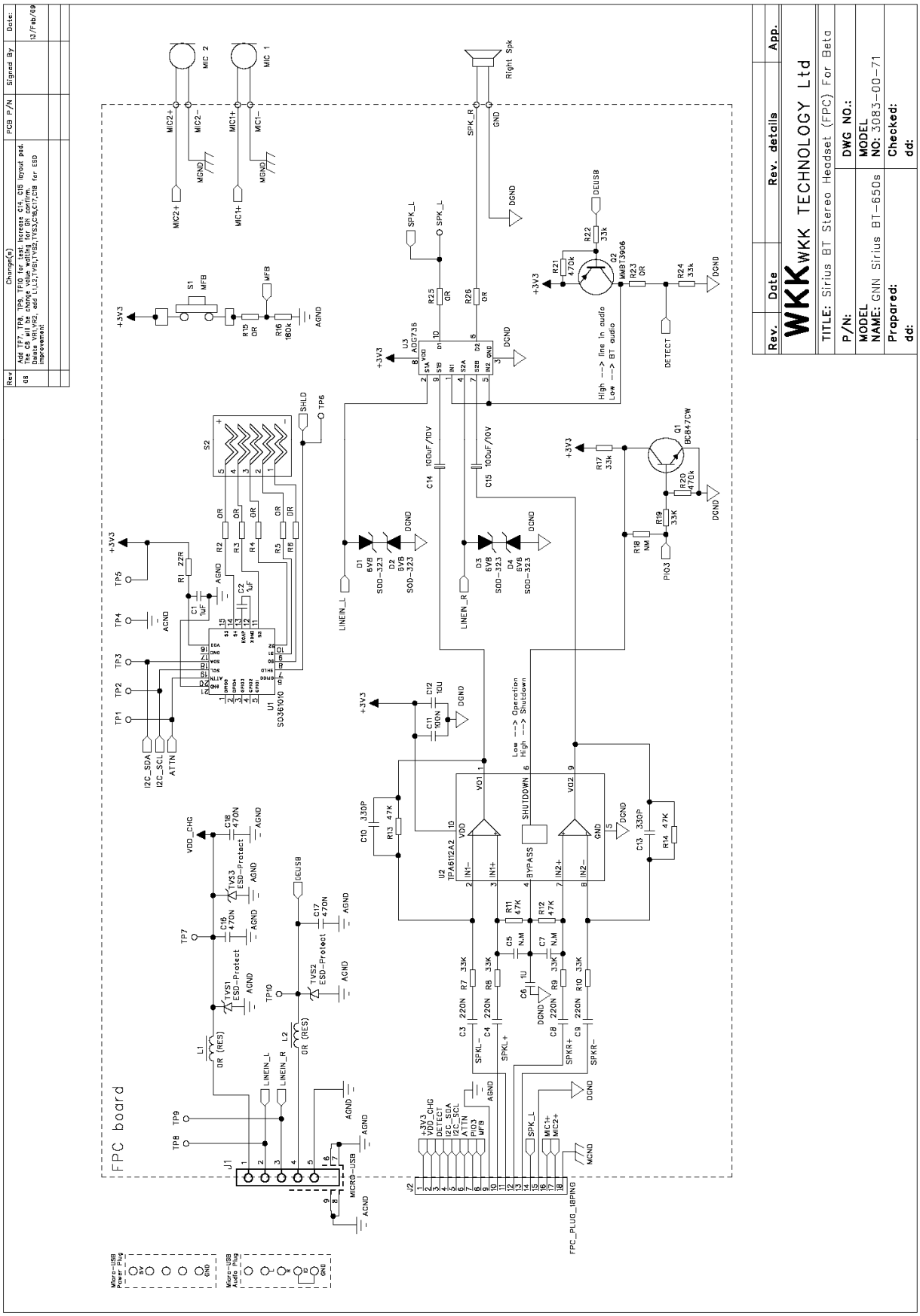
Bluetooth operates in the unlicensed ISM band at 2.4 GHz. A frequency hop transceiver is applied to combat interference and fading. A shaped, binary FM modulation is applied to minimize transceiver complexity. The symbol rate is 1 Ms/s. A slotted channel is applied with a nominal slot length of 625 μs. For full duplex transmission, a Time-Division Duplex (TDD) scheme is used. On the channel, information is exchanged through packets. Each packet is transmitted on a different hop frequency. A packet nominally covers a single slot, but can be extended to cover up to five slots. The Bluetooth protocol uses a combination of circuit and packet switching. Slots can be reserved for synchronous packets. Bluetooth can support an asynchronous data channel, up to three simultaneous synchronous voice channels, or a channel which simultaneously supports asynchronous data and synchronous voice. Each voice channel supports a 64 kb/s synchronous (voice) channel in each direction. The asynchronous channel can support maximal 723.2 kb/s asymmetric (and still up to 57.6 kb/s in the return direction), or 433.9 kb/s symmetric. The Bluetooth system consists of a radio unit, a link control unit, and a support unit for link management and host terminal interface functions.

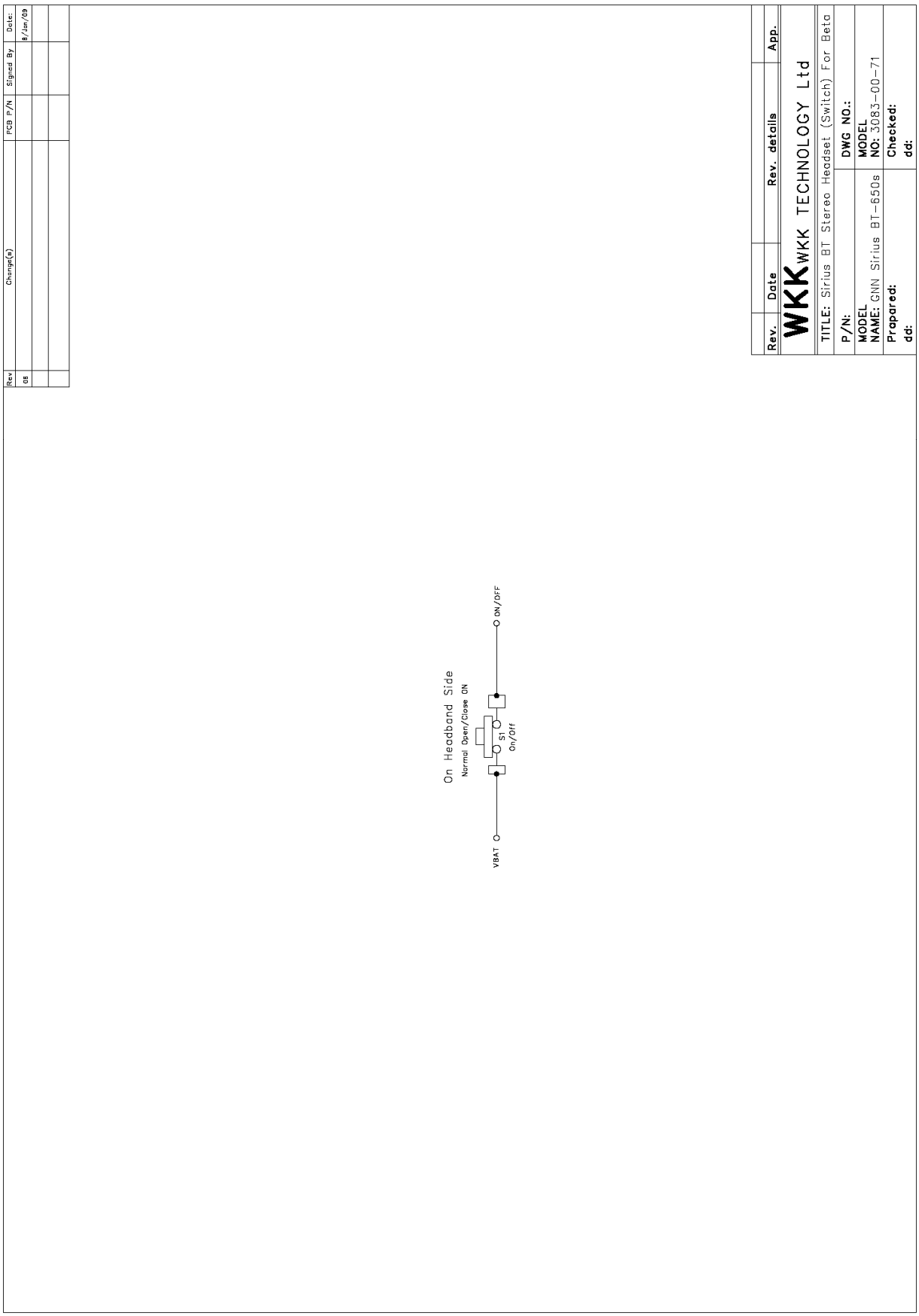
1.3 Block Diagram


OTE5 Block Diagram
+1.8V
Flash memory
Vbat
Regulator +3.0V
Microphone
R
L
Flash / ROM Memory Interface
AUX DAC
Audio Interface
Stereo Audio Interface
PCM / I2S Interface
Audio Amplifier TPA 6112A2
Analog Switch ADG736
+3.3V
Shut down
Test PAD
SPI Interface
Test PAD
UART
USB V 1.1
I2C Interface
Serial Interface
Memory Management Unit
System RAM
Kalimba DSP Co-processor
Bluetooth Stack Microcontroller
Programmable I/O
LED Driver
LED red/green/orange
AIO / GPIO
MFB
Audio (Stereo)
Detect
Micro USB Port
Sliding PAD VOL+/-,PRE,NEXT
Touch Sense IC SO361010
Vbat
Regulator +3.3V
Clock Generation
26MHz crystal
Base band
Basic Rate Modem
Enhanced Rate Modem
Radio Control
Bluetooth Modem
Demodulator
ADC
RF Receiver
RF Transmitter
DAC
RF Synthesiser
RF Synthesizer
Loop Filter
/N/N+1
Tune
-45 +45
BlueCore 5-Multimedia External BC57E687
Battery charge
Battery monitor
3.7V Li-polymer Battery with protection
VREG
+ 1.8V
+1.5V
Power Control and Regulation
Power on/off Switch
Reset
Antenna 2.4GHz
Bluetooth BAL Match
+1.5V

1.4 Schematics


WKK TECHNOLOGY Ltd
TITLE: Sirius BT Stereo Headset (Main) For Beta
P/N:
DWG NO.:
MODEL NAME: GNN Sirius BT-650s
MODEL NO: 3083-00-71
Prepared:
Checked:
dd:
Rev. details
Date
App.
Change(e)
FCB P/N
Signed By
Date:
Change TP13,TP14,TP16 connection for better test
Add R33 for power off there LED & tone sound
Main Board
Li-Polymer Battery with PCM circuit
ON/OFF switch
Lofi Spk
PCB layout use a trace replace the R23 & R24 & R25


Rev.
Change(s)
PCB P/N
Signed By
Date:
Rev.
Date
Rev. details
App.
WKK TECHNOLOGY Ltd
TITLE: Sirius BT Stereo Headset (FPC) For Beta
P/N:
DWG NO.:
MODEL NAME: GNN Sirius BT-650s
MODEL NO: 3083-00-71
Prapared:
dd:
Checked:
dd:
FPC board
MIC 2
MIC 1
Right Spk
S1
S2
U1
U2
U3
Q1
Q2
J1
J2
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
I2C_SDA
I2C_SCL
ATTN
SHLD
MFB
DETECT
LINEIN_L
LINEIN_R
SPKL_
SPKL+
SPKR+
SPKR_
VDD_CHG
MICRO-USB
FPC_PLUG_18PING
Micro-USB Power Plug
Micro-USB Audio Plug
AGND
DGND
+3V3


Rev.
Change(s)
PCB P/N
Signed By
Date:
GS
8/Jan/09
Rev.
Date
Rev. details
App.
WKK TECHNOLOGY Ltd
TITLE: Sirius BT Stereo Headset (Switch) For Beta
P/N:
DWG NO.:
MODEL NAME: GNN Sirius BT-650s
MODEL NO: 3083-00-71
Prepared:
dd:
Checked:
dd:
On Headband Side
Normal Open/Close ON
S1
On/Off
ON/OFF
VBAT

1.5 Bill of Materials

Level	Sub-Assembly	Part#	Alt.Part#	Part Description	Req. Qty	Cust.Ref	Location	Mfr Name	Mfr Part#	AVL Status
				Effective Date:(20/02/09)						
				Date Format :(DD/MM/YY)						
				MODEL# From:3083-00-71						
				MODEL# To:3083-00-71						
				Customer Code:GNN						
	3083-00-71			GNN,JABRA,BT-650S,SIRIUS,EMEA						
1	3083-00-71	528308302.01G		AC ADAPTOR,5V/180MA,MICRO-USB,5P,EU,ROHS	1			SUNSTRONG	SIL16SEUF19B1001	RB
1	3083-00-71	578020307.01G		MULTI-CON,CB,2 WAYS,USB CORD,ROHS	1			ACC	ALD-TX-DC307	RB
1	3083-00-71	578030306.01G		MULTI-CON CB,3 WAYS,AUDIO CORD,ROHS	1			ACC	ALD-TX-DC306	RB
1	3083-00-71	603083100.01G		MANUAL,3083,QUICK START MANUAL	1	81-02939		CHING YEE	603083100.01G	RB
1	3083-00-71	606066201.01G		SECURE LABEL FOR CLAM SHELL,SMALL	2	80-01178_REVA		PHOENIX PACKAGING	80-01178	RB
1	3083-00-71	606066201.01G		SECURE LABEL FOR CLAM SHELL,SMALL		80-01178_REVA		YUENCHANG	606066201.01G	FA
1	3083-00-71	606120112.01G		MANUAL,WARNING LEAFLET EMEA	1	81-01694		GOODYEAR	81-01694	FA
1	3083-00-71	606120112.01G		MANUAL,WARNING LEAFLET EMEA		81-01694		KIM PRINTING	81-01694	C1
1	3083-00-71	606120112.01G		MANUAL,WARNING LEAFLET EMEA		81-01694		LINCHUN	81-01694	C1
1	3083-00-71	606120114.01G		MANUAL,WARRANTY EMEA	1	81-02912-REV.A		KIM PRINTING	81-02912	FA
1	3083-00-71	606120114.01G		MANUAL,WARRANTY EMEA		81-02912-REV.A		LINCHUN	81-02912	C1
1	3083-00-71	613083500.01G		PACKING,SHPG CTN,3083	0.2			WINCO	613083500.01G	RB
1	3083-00-71	613083600.02G		PACKING,GIFT BOX,3083	1			CHING YEE	613083600.02G	RB
1	3083-00-71	613083900.02G		PACKING,INSERT TOWER,3083	1			CHING YEE	613083900.02G	RB
1	3083-00-71	913083000G		M,ASSY,3083,SIRIUS,BT,JABRA BT650S	1					
1	3083-00-71	990018G		CONSUM,SOLDER WIRE,RMA98 SUPER P3 0.6MM	0.0002			SENJU	RMA98 SUPER P3 0.6MM	FA
1	3083-00-71	990230G		CONSUM,SOLDER PASTE TLF-204-MDS	0.0005			TAMURA	TLF-204-MDS	FA
1	3083-00-71	993303G		CONSUM,ADHES,GLUE,1521 ADHESIVE	0.006	S-189		THREE BOND	1521	RB
1	3083-00-71	999901G		CONSUM,GLUE,TR-6060	0.006			JUNPIN TRADING	TR-6060	FA
2	913083000G	803083021.02G		TAPE,DOUBLF-SIDED,WITH 29MM	2			KEEN TIME	803083021.02G	RB
2	913083000G	803083200.02G		FOAM,TOP HEADBAND,3083	1			LEXING ELECTRONICS	803083200.02G	RB
2	913083000G	803083201.02G		FOAM,SIDE HEADBAND LEFT,3083	1			LEXING ELECTRONICS	803083201.02G	RB
2	913083000G	803083202.02G		FOAM,SIDE HEADBAND RIGHT,3083	1			LEXING ELECTRONICS	803083202.02G	RB
2	913083000G	803083203.02G		EAR PAD LEFT,WITH EAR,FRAME,LEFT,3083	1			LEXING ELECTRONICS	803083203.02G	RB
2	913083000G	803083204.02G		EAR PAD RIGHT WITH EAR FRAME RIGHT	1			LEXING ELECTRONICS	803083204.02G	RB
2	913083000G	923083000G		P,ASSY,3083,HOUSING	1					
3	923083000G	411721700.01G		SCREW,S-TAP AB,M1.7X3.8,FLAT,ZN PLATED	16			ZHONGCHANG	411721700.01G	RB
3	923083000G	561032013.01G		TRANSDUCER,SPEAKER,32 OHM,20MW,EDX32-0	2		SPKL	LANSON ELECTRONICS	EDX32A032013<A>-R1028K	RB
3	923083000G	561032013.01G		TRANSDUCER,SPEAKER,32 OHM,20MW,EDX32-013			SPKR			
3	923083000G	733083320.02G		SIDE HEADBAND HOUSING OUTER LEFT,3083	1			HOP NGAI	733083320.02G	RB
3	923083000G	733083321.02G		SIDE HEADBAND HOUSING OUTER RIGHT,3083	1			HOP NGAI	733083321.02G	RB
3	923083000G	733083324.02G		SPEAKER HOUSING LEFT,3083	1			HOP NGAI	733083324.02G	RB
3	923083000G	733083325.02G		SPEAKER HOUSING RIGHT,3083	1			HOP NGAI	733083325.02G	RB
3	923083000G	923083001G		P,ASSY,3083,TOP HEADBAND	1					
3	923083000G	923083002G		P,ASSY,3083,SIDE HEADBAND INNER RIGHT	1					
3	923083000G	923083003G		P,ASSY,3083,SIDE HEADBAND INNER LEFT	1					
3	923083000G	923083004G		P,ASSY,3083,FRONT HOUSING RIGHT	1					
3	923083000G	923083005G		P,ASSY,3083,FRONT HOUSING LEFT	1					
4	923083001G	460901200.02G		SHAFT,KNURLING END,DIA1.2,L=20.2MM,S.S	2			ZHONGCHANG	460901200.02G	RB
4	923083001G	572451002.01G		WIRE,450MM,BLK,4 WAYS,ROHS	1			HONEST WILL INTL LTD	HW-GN0165	RB
4	923083001G	733083080.02G		HINGE SLIDING BLOCK LEFT,3083	1			HOP NGAI	733083080.02G	RB
4	923083001G	733083081.02G		HINGE SLIDING BLOCK RIGHT,3083	1			HOP NGAI	733083081.02G	RB
4	923083001G	733083990.02G		TOP HEADBAND,3083	1			HOP NGAI	733083990.02G	RB
4	923083002G	403083010.01G		STEEL PLATE,3083	1			TIN PING	403083010.01G	RB
4	923083002G	403083021.01G		SPRING PLATE,RIGHT,3083	1			TIN PING	403083021.01G	RB
4	923083002G	572300502.01G		WIRE,30MM,GREEN,1 WAY,ROHS	1			HONEST WILL INTL LTD	HW-GN0141	RB
4	923083002G	572300602.01G		WIRE,30MM,BLUE,1 WAY,ROHS	1			HONEST WILL INTL LTD	HW-GN0142	RB
4	923083002G	733083300.02G		LENS,3083	1			HOP NGAI	733083300.02G	RB

Level	Sub-Assembly	Part#	Alt.Part#	Part Description	Req. Qty	Cust.Ref	Location	Mfr Name	Mfr Part#	AVL Status
4	923083002G	733083323.02G		SIDE HEADBAN HOUSING INNER RIGHT,3083	1			HOP NGAI	733083323.02G	RB
4	923083002G	943083100G		PCB SUB-ASSY,3083,SIRIUS,BT,MAIN,ROHS	1					
4	923083002G	943083102G		PCB SUB-ASSY,3083,SIRIUS,BT,SWITCH,ROSH	1					
4	923083003G	403083000.01G		BATTERY SHIELD,3083	1			TIN PING	403083000.01G	RB
4	923083003G	403083010.01G		STEEL PLATE,3083	1			TIN PING	403083010.01G	RB
4	923083003G	403083020.01G		SPRING PLATE,LEFT,3083	1			TIN PING	403083020.01G	RB
4	923083003G	538352030.01G		BATTERY,3.7V,160MAH,AHB352030PA,ROHS	1			SYNERGY	AHB352030PA	RB
4	923083003G	701308310.01GA		PCB,1LAYER,10X8X0.8MM,FR4	1			TAI HING	701308310.01GA	RB
4	923083003G	701308310.01GA	701308310.02GA	PCB,1LAYER,10X8X0.8MM,FR4				LUEN TAI	701308310.02GA	C1
4	923083003G	733083322.02G		SIDE HEADBAND HOUSING INNER LEFT,3083	1			HOP NGAI	733083322.02G	RB
4	923083004G	567401536.01G		TRANSDUCER,MIC,4X1.5MM,-36DB,ROHS	2		MIC1	HORN AUDIO	EM4015L-36BC10&33-G	RB
4	923083004G	567401536.01G		TRANSDUCER,MIC,4X1.5MM,-36DB,ROHS			MIC2			
4	923083004G	572400902.01G		WIRE,40MM,BLK,1 WAY,ROHS	1			HONEST WILL INTL LTD	HW-GN0144	RB
4	923083004G	572400902.01G		WIRE,40MM,WHITE,1 WAY,ROHS	1			HONEST WILL INTL LTD	HW-GN0143	RB
4	923083004G	733083011.02G		FRONT HOUSING RIGHT,3083	1			HOP NGAI	733083011.02G	RB
4	923083004G	733083200.02G		MULTI FUNCTION BUTTON,3083	1			HOP NGAI	733083200.02G	RB
4	923083004G	733083410.02G		MIC BOOT SIDE,3083	1			HOP NGAI	733083410.02G	RB
4	923083004G	733083411.02G		MIC BOOT BOTTOM,3083	1			HOP NGAI	733083411.02G	RB
4	923083004G	733083821.02G		FACE PLATE RIGHT,3083	1			HOP NGAI	733083821.02G	RB
4	923083004G	803083022.01G		TAPE,ESD TAPE	1			TBA	803083022.01G	C1
4	923083004G	803083022.01G		TAPE,ESD TAPE				XINDA	803083022.01G	RB
4	923083004G	943083101G		PCB SUB-ASSY,3083,SIRIUS,BT,FPC,ROHS	1					
4	923083005G	733083010.02G		FRONT HOUSING LEFT,3083	1			HOP NGAI	733083010.02G	RB
4	923083005G	733083820.02G		FACE PLATE LEFT,3083	1			HOP NGAI	733083820.02G	RB
5	943083100G	100000526.01G		RES,CF,SMT,0 OHM,5%,1/16W,0402,ROHS	4	21-00023	R2	RALEC	RTT02 000JTP	FA
5	943083100G	100000526.01G		RES,CF,SMT,0 OHM,5%,1/16W,0402,ROHS		01250000	R27	ROHM	MCR01MZPJ 000	FA
5	943083100G	100000526.01G		RES,CF,SMT,0 OHM,5%,1/16W,0402,ROHS		21-00023	R29	YAGEO	RC0402JR-07 0RL	FA
5	943083100G	100000526.01G		RES,CF,SMT,0 OHM,5%,1/16W,0402,ROHS		21-00023	R6			
5	943083100G	100103521.13G		RES,CF,SMT,10K OHM,5%,1/16W,0402,ROHS	2	21-00104	R28	RALEC	RTT02 103JTP	FA
5	943083100G	100103521.13G		RES,CF,SMT,10K OHM,5%,1/16W,0402,ROHS		01254100	R33	ROHM	MCR01MZPJ 103	FA
5	943083100G	100103521.13G		RES,CF,SMT,10K OHM,5%,1/16W,0402,ROHS		21-00104		YAGEO	RC0402JR-07 10KL	FA
5	943083100G	100122521.04G		RES,CF,SMT,1.2K OHM,5%,1/16W,0402,ROHS	2	21-00078	R13	RALEC	RTT02 122JTP	FA
5	943083100G	100122521.04G		RES,CF,SMT,1.2K OHM,5%,1/16W,0402,ROHS		1253120	R8	ROHM	MCR01MZPJ 122	FA
5	943083100G	100122521.04G		RES,CF,SMT,1.2K OHM,5%,1/16W,0402,ROHS		21-00078		YAGEO	RC0402JR-07 1K2L	FA
5	943083100G	100182521.02G		RES,CF,SMT,1.8K OHM,5%,1/16W,0402	1	21-00079	R7	RALEC	RTT02 182JTH	FA
5	943083100G	100182521.02G		RES,CF,SMT,1.8K OHM,5%,1/16W,0402		21-00079		ROHM	MCR01MZPJ182	FA
5	943083100G	100182521.02G		RES,CF,SMT,1.8K OHM,5%,1/16W,0402		21-00079		YAGEO	RC0402JR-07 1K8L	FA
5	943083100G	100222526.01G		RES,CF,SMT,2.2K,5%,1/16W,0402,ROHS	1	21-00066	R4	RALEC	RTT02 222JTP	FA
5	943083100G	100222526.01G		RES,CF,SMT,2.2K,5%,1/16W,0402,ROHS		01253220		ROHM	MCR01MZPJ 222	FA
5	943083100G	100222526.01G		RES,CF,SMT,2.2K,5%,1/16W,0402,ROHS		21-00066		YAGEO	RC0402JR-07 2K2L	FA
5	943083100G	100224521.08G		RES,CF,SMT,220K OHM,5%,1/16W,0402,ROHS	1	21-00105	R3	RALEC	RTT02 224JTP	FA
5	943083100G	100224521.08G		RES,CF,SMT,220K OHM,5%,1/16W,0402,ROHS		01255220		ROHM	MCR01MZPJ 224	FA
5	943083100G	100224521.08G		RES,CF,SMT,220K OHM,5%,1/16W,0402,ROHS		21-00105		YAGEO	RC0402JR-07 220KL	FA
5	943083100G	100228523.01G		RES,CF,SMT,2.2 OHM,5%,1/16W,0402,ROHS	3	21-00070	R10	RALEC	RTT02 2R2JTP	FA
5	943083100G	100228523.01G		RES,CF,SMT,2.2 OHM,5%,1/16W,0402,ROHS		21-00070	R11	ROHM	MCR01MZPJ 2R2	FA
5	943083100G	100228523.01G		RES,CF,SMT,2.2 OHM,5%,1/16W,0402,ROHS		21-00070	R12	YAGEO	RC0402JR-07 2R2L	FA
5	943083100G	100333526.01G		RES,CF,SMT,33K,5%,1/16W,0402,ROHS	2	21-00081	R1	RALEC	RTT02 333JTP	FA
5	943083100G	100333526.01G		RES,CF,SMT,33K,5%,1/16W,0402,ROHS		21-00081	R9	ROHM	MCR01MZPJ 333	FA
5	943083100G	100333526.01G		RES,CF,SMT,33K,5%,1/16W,0402,ROHS		21-00081		YAGEO	RC0402JR-07 33KL	FA
5	943083100G	100392523.01G		RES,CF,SMT,3.9K OHM,+/-5%,1/16W	2	21-00322	R21	RALEC	RTT02 392JTP	FA
5	943083100G	100392523.01G		RES,CF,SMT,3.9K OHM,+/-5%,1/16W		21-00322	R22	ROHM	MCR01MZPJ 392	FA
5	943083100G	100392523.01G		RES,CF,SMT,3.9K OHM,+/-5%,1/16W		21-00322		YAGEO	RC0402JR-07 3K9L	FA
5	943083100G	100472521.07G		RES,CF,SMT,4.7K OHM,5%,1/16W,0402,ROHS	3	21-00025	R14	RALEC	RTT02 472JTP	FA
5	943083100G	100472521.07G		RES,CF,SMT,4.7K OHM,5%,1/16W,0402,ROHS		01253470	R15	ROHM	MCR01MZPJ 472	FA

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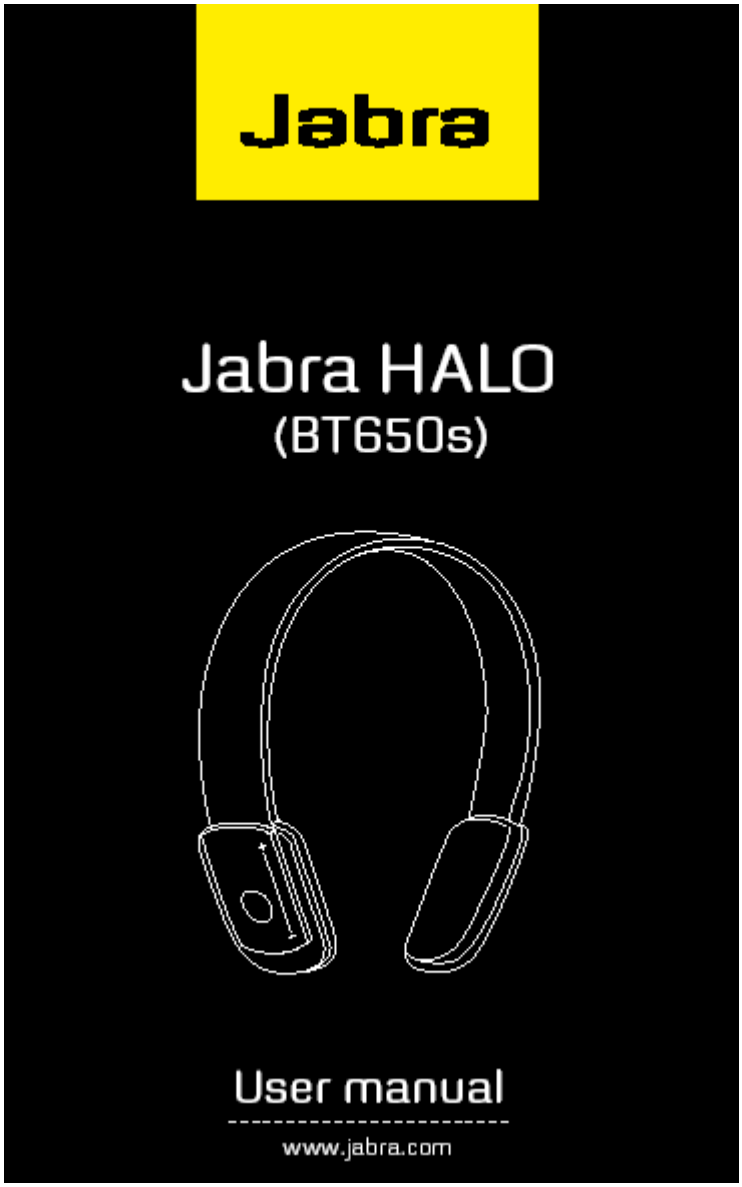
Level	Sub-Assembly	Part#	Alt.Part#	Part Description	Req. Qty	Cust.Ref	Location	Mfr Name	Mfr Part#	AVL Status
5	943083100G	100472521.07G		RES,CF,SMT,4.7K OHM,5%,1/16W,0402,ROHS		21-00025	R16	YAGEO	RC0402JR-07 4K7L	FA
5	943083100G	2010102202.01G		CAP,CER,TC,SMT,1P,+/-0.25PF,50V,0402,NPO	1		C34	EYANG TECHNOLOGY	C0402COG1R0C500NT	FA
5	943083100G	2010102202.01G		CAP,CER,TC,SMT,1P,+/-0.25PF,50V,0402,NPO				MURATA	GRM1555C1H1R0CZ01D	FA
5	943083100G	2010102202.01G		CAP,CER,TC,SMT,1P,+/-0.25PF,50V,0402,NPO				TAIYO YUDEN	UMK105CG010CW-F	FA
5	943083100G	2010102202.01G		CAP,CER,TC,SMT,1P,+/-0.25PF,50V,0402,NPO				TDK	C1005COG1H1R0CT	FA
5	943083100G	2011282201.01G		CAP,CER,TC,SMT,1.2PF,50V,0.25P,0402,C0G	2	20-00143	C31	MURATA	GJM1555C1H1R2CB01D	FA
5	943083100G	2011282201.01G		CAP,CER,TC,SMT,1.2PF,50V,0.25P,0402,C0G		20-00143	C32	MURATA	GJM1555C1H1R2CZ01D	FA
5	943083100G	2011282201.01G		CAP,CER,TC,SMT,1.2PF,50V,0.25P,0402,C0G		20-00143		TAIYO YUDEN	UMK105CG1R2CW-F	FA
5	943083100G	2011282201.01G		CAP,CER,TC,SMT,1.2PF,50V,0.25P,0402,C0G		20-00143		TDK	C1005C0G1H1R2CT	FA
5	943083100G	201150209.09G		CAP,COG,15PF,0402,50V,+/-10%	5		C13	EYANG TECHNOLOGY	C0402COG150J500NT	FA
5	943083100G	201150209.09G		CAP,COG,15PF,0402,50V,+/-10%			C23	MURATA	GRM1555C1H150JZ01D	FA
5	943083100G	201150209.09G		CAP,COG,15PF,0402,50V,+/-10%			C24	TDK	C1005COG1H150JT	FA
5	943083100G	201150209.09G		CAP,COG,15PF,0402,50V,+/-10%			C28	YAGEO	CC0402JRNP09BN150	FA
5	943083100G	201150209.09G		CAP,COG,15PF,0402,50V,+/-10%			C33			
5	943083100G	201180208.02G		CAP,CER,TC,SMT,18PF,5%,50V,0402,NPO ROHS	1	20-00083	C11	MURATA	GRM1555C1H180JZ01D	FA
5	943083100G	201180208.02G		CAP,CER,TC,SMT,18PF,5%,50V,0402,NPO ROHS		20-00083		TAIYO YUDEN	UMK105CG180JV-F	FA
5	943083100G	201180208.02G		CAP,CER,TC,SMT,18PF,5%,50V,0402,NPO ROHS		20-00083		TAIYO YUDEN	UMK105CG180JW-F	FA
5	943083100G	201180208.02G		CAP,CER,TC,SMT,18PF,5%,50V,0402,NPO ROHS		20-00083		TAIYO YUDEN	UMK105CG180JW-T	FA
5	943083100G	201180208.02G		CAP,CER,TC,SMT,18PF,5%,50V,0402,NPO ROHS		20-00083		TDK	C1005C0G1H180JT	FA
5	943083100G	201568204.01G		CAP,CER,TC,SMT,5.6PF,+-0.25PF,50V,0402	2	20-00019	C10	MURATA	GRM1555C1H5R6CZ01D	FA
5	943083100G	201568204.01G		CAP,CER,TC,SMT,5.6PF,+-0.25PF,50V,0402		20-00019	C35	TAIYO YUDEN	UMK105 CG5R6CW-F	FA
5	943083100G	201568204.01G		CAP,CER,TC,SMT,5.6PF,+-0.25PF,50V,0402		20-00019		TAIYO YUDEN	UMK105CG5R6CW-T	FA
5	943083100G	201568204.01G		CAP,CER,TC,SMT,5.6PF,+-0.25PF,50V,0402		20-00019		TDK	C1005COG1H5R6CT	FA
5	943083100G	202103243.08G		CAP,CER,HD,SMT,0.01UF,10%,25V,0402,X7R	5		C15	EYANG TECHNOLOGY	C0402X7R103K160NT	FA
5	943083100G	202103243.08G		CAP,CER,HD,SMT,0.01UF,10%,25V,0402,X7R			C17	MURATA	GRM155R71E103KA01D	FA
5	943083100G	202103243.08G		CAP,CER,HD,SMT,0.01UF,10%,25V,0402,X7R			C3	TDK	C1005X7R1E103KT	FA
5	943083100G	202103243.08G		CAP,CER,HD,SMT,0.01UF,10%,25V,0402,X7R			C6	YAGEO	CC0402KRX7R8BB103	FA
5	943083100G	202103243.08G		CAP,CER,HD,SMT,0.01UF,10%,25V,0402,X7R			C9			
5	943083100G	202105254.01G		CAP,CER,HD,SMT,1UF,10%,6.3V,0402,X5R	1	20-00051	C1	MURATA	GRM155R60J105KE19D	FA
5	943083100G	202105254.01G		CAP,CER,HD,SMT,1UF,10%,6.3V,0402,X5R		02556100		SAMSUNG	CL05A105KO5NNNC	FA
5	943083100G	202105254.01G		CAP,CER,HD,SMT,1UF,10%,6.3V,0402,X5R		20-00051		TAIYO YUDEN	JMK105BJ105KV-F	FA
5	943083100G	202105254.01G		CAP,CER,HD,SMT,1UF,10%,6.3V,0402,X5R	2	20-00051		TDK	C1005X5R0J105KT	FA
5	943083100G	202106210.04G		CAP,X5R,10UF,0805,6.3V,+/-20%			C19	EYANG TECHNOLOGY	C0805X5R106M6R3NT	FA
5	943083100G	202106210.04G		CAP,X5R,10UF,0805,6.3V,+/-20%			C8	MURATA	GRM21BR60J106ME01L	FA
5	943083100G	202106210.04G		CAP,X5R,10UF,0805,6.3V,+/-20%				TAIYO YUDEN	JMK212BJ106MG-T	FA
5	943083100G	202106210.04G		CAP,X5R,10UF,0805,6.3V,+/-20%				TDK	C2012X5R0J106MT	FA
5	943083100G	202223243.07G		CAP,X7R,22NF,0402,16V,+/-10%	5		C21	EYANG TECHNOLOGY	C0402X7R223K160NT	FA
5	943083100G	202223243.07G		CAP,X7R,22NF,0402,16V,+/-10%			C22	MURATA	GRM155R71C223KA01D	FA
5	943083100G	202223243.07G		CAP,X7R,22NF,0402,16V,+/-10%			C26	TAIYO YUDEN	EMK105BJ223KV-F	FA
5	943083100G	202223243.07G		CAP,X7R,22NF,0402,16V,+/-10%			C27	TDK	C1005X7R1C223KT	FA
5	943083100G	202223243.07G		CAP,X7R,22NF,0402,16V,+/-10%			C7			
5	943083100G	202224230.03G		CAP,CER,HD,SMT,220NF,X5R,6.3V,10%,0402	1	20-00068	C4	MURATA	GRM155R60J224KE01D	FA
5	943083100G	202224230.03G		CAP,CER,HD,SMT,220NF,X5R,6.3V,10%,0402		20-00068		TAIYO YUDEN	JMK105BJ224KV-T	FA
5	943083100G	202224230.03G		CAP,CER,HD,SMT,220NF,X5R,6.3V,10%,0402		20-00068		TDK	C1005X5R0J224KT	FA
5	943083100G	202225201.11G		CAP,X5R,2.2UF,0603,6.3V,+/-10%	5		C14	EYANG TECHNOLOGY	C0603X5R225K6R3NT	FA
5	943083100G	202225201.11G		CAP,X5R,2.2UF,0603,6.3V,+/-10%			C16	MURATA	GRM188R61A225KA01D	FA
5	943083100G	202225201.11G		CAP,X5R,2.2UF,0603,6.3V,+/-10%			C18	TAIYO YUDEN	LMK107BJ225KA-T	FA
5	943083100G	202225201.11G		CAP,X5R,2.2UF,0603,6.3V,+/-10%			C25	TDK	C1608X5R1A225KT	FA
5	943083100G	202225201.11G		CAP,X5R,2.2UF,0603,6.3V,+/-10%			C29			
5	943083100G	202473226.01G		CAP,CER,HD,SMT,47NF,10%,10V,X7R,0402	1	20-00048	C12	MURATA	GRM155R71A473KA01D	FA
5	943083100G	202473226.01G		CAP,CER,HD,SMT,47NF,10%,10V,X7R,0402		20-00048		TAIYO YUDEN	LMK105BJ473KV-F	FA
5	943083100G	202473226.01G		CAP,CER,HD,SMT,47NF,10%,10V,X7R,0402		20-00048		TDK	C1005X7R1A473KT	FA
5	943083100G	202475224.01G		CAP,CER,HD,SMT,4.7UF,10%,6.3V,0603,ROHS	2	20-00139	C2	MURATA	GRM188R60J475KE19D	FA
5	943083100G	202475224.01G		CAP,CER,HD,SMT,4.7UF,10%,6.3V,0603,ROHS		20-00139	C20	TAIYO YUDEN	JMK107BJ475KA-T	FA

Level	Sub-Assembly	Part#	Alt.Part#	Part Description	Req. Qty	Cust.Ref	Location	Mfr Name	Mfr Part#	AVL Status
5	943083100G	20247524.01G		CAP,CER,HD,SMT,4.7UF,10%,6.3V,0603,ROHS		20-00139		TDK	C1608X5R0J475KT	FA
5	943083100G	305768791.01G		IC,DIG,HYBR,BC57E687B,TFBGA,ROHS	1		U1	CSR	BC57E687B-ITB-E4	FA
5	943083100G	310621921.02G		IC,LIN,MONO,XC6209,SMT,SOT-23 REG,ROHS	1	23-00058	U3	ON SEMICONDUCTOR	MC78PC33NTRG	FA
5	943083100G	310621921.02G		IC,LIN,MONO,XC6209,SMT,SOT-23 REG,ROHS		23-00085		TOREX	XC6209B332MR	FA
5	943083100G	310621921.02G		IC,LIN,MONO,XC6209,SMT,SOT-23 REG,ROHS		23-00058		TOREX	XC6219B332MR	FA
5	943083100G	310622122.01G		IC,LIN,MONO,LDO REG,3V,SOT23-5,ROHS	1		U5	SEIKO INSTRUMENTS	S-1112B30MC-L6PTFG	FA
5	943083100G	310622122.01G		IC,LIN,MONO,LDO REG,3V,SOT23-5,ROHS				TOREX	XC6221A302MR	FA
5	943083100G	321084728.01G		TR,NPN,SOT-323,BC847W,ROHS	1		Q2	SEMTECH	BC847CW	RB
5	943083100G	323029070.01G		TR,FET,SMT,SOT-323,N-CH,ROHS	1	26-00072	Q1	PHILIPS	PMF290XN	FA
5	943083100G	323029070.01G		TR,FET,SMT,SOT-323,N-CH,ROHS		26-00147		ROHM	2SK3018 T106	FA
5	943083100G	334161220.01G		DIODE,LED,SMT,R-G,1612,ROHS	1		D1	KINGBRIGHT	KPTB-1612LSURKFGKC	RB
5	943083100G	334306820.01G		DIODE,LED,SMT,BLUE,0603,TAPE,ROHS	1		D2	KINGBRIGHT	KPT-1608QBC-C	FA
5	943083100G	363916791.01G		IC,PROG,16MBIT,1.8V,TFBGA48,ROHS,70NS	1		U2	SST	SST39WF1601-70-4C-B3KE	FA
5	943083100G	502018225.01G		CONN,FPC,SMT,18PIN,P=0.5MM,H=1.2MM,ROHS	1		J1	GREENCONN	GSAC110-1822A05-T	RB
5	943083100G	521000316.01G		FIXED COIL,SMT,15NH,5%,0402,LQW15A,ROHS	1	26-00033	L3	MURATA	LQW15AN15NJ00D	FA
5	943083100G	521001502.01G		FIXED COIL,SMT,3N3H,+/-0.2NH,0402,ROHS	2	26-00068	L1	MURATA	LQP15MN3N3C02D	FA
5	943083100G	521001502.01G		FIXED COIL,SMT,3N3H,+/-0.2NH,0402,ROHS		26-00068	L2			
5	943083100G	521381122.01G		FIXED,INDUCTOR,22UH,20%,4X3.8X1.2,ROHS	1		L5	SUMIDA	CDH38D11DLDNP-220MC	FA
5	943083100G	551258864.01G		CRYSTAL,SMT,26MHZ,ROHS,3225	1		X1	FRONTER ELECTRONIC	FTX26.000M9SM3	FA
5	943083100G	551258864.01G		CRYSTAL,SMT,26MHZ,ROHS,3225				GOLLEDGE	MA05768	FA
5	943083100G	553000049.01G		FILTER,RF,SMT,LFB212G45BA1A234,ROHS	1	26-00229	U4	MURATA	LFB212G45BA1A234	FA
5	943083100G	704308302.01GA		PCB,4 LAYERS,32X21X1MM,LASER DRILL,IMMEF	1			TOPSEARCH	704308302.01GA	RB
5	943083100G	704308302.01GA	704308302.02GA	PCB,4 LAYERS,32X21X1MM,LASER DRILL,IMMER				TECHWISE	704308302.02GA	C1
5	943083101G	100000526.01G		RES,CF,SMT,0 OHM,5%,1/16W,0402,ROHS	11	21-00023	L1	RALEC	RTT02 000JTP	FA
5	943083101G	100000526.01G		RES,CF,SMT,0 OHM,5%,1/16W,0402,ROHS		01250000	L2	ROHM	MCR01MZPJ 000	FA
5	943083101G	100000526.01G		RES,CF,SMT,0 OHM,5%,1/16W,0402,ROHS		21-00023	R15	YAGEO	RC0402JR-07 0RL	FA
5	943083101G	100000526.01G		RES,CF,SMT,0 OHM,5%,1/16W,0402,ROHS		21-00023	R2			
5	943083101G	100000526.01G		RES,CF,SMT,0 OHM,5%,1/16W,0402,ROHS		21-00023	R23			
5	943083101G	100000526.01G		RES,CF,SMT,0 OHM,5%,1/16W,0402,ROHS		21-00023	R25			
5	943083101G	100000526.01G		RES,CF,SMT,0 OHM,5%,1/16W,0402,ROHS		21-00023	R26			
5	943083101G	100000526.01G		RES,CF,SMT,0 OHM,5%,1/16W,0402,ROHS		21-00023	R3			
5	943083101G	100000526.01G		RES,CF,SMT,0 OHM,5%,1/16W,0402,ROHS		21-00023	R4			
5	943083101G	100000526.01G		RES,CF,SMT,0 OHM,5%,1/16W,0402,ROHS		21-00023	R5			
5	943083101G	100000526.01G		RES,CF,SMT,0 OHM,5%,1/16W,0402,ROHS		21-00023	R6			
5	943083101G	100184523.01G		RES,CF,SMT,180K,5%,1/16W,0402,ROHS	1	21-00067	R16	RALEC	RTT02 184JTP	FA
5	943083101G	100184523.01G		RES,CF,SMT,180K,5%,1/16W,0402,ROHS		21-00067		ROHM	MCR01MZPJ 184	FA
5	943083101G	100184523.01G		RES,CF,SMT,180K,5%,1/16W,0402,ROHS		21-00067		YAGEO	RC0402JR-07 180KL	FA
5	943083101G	100220526.01G		RES,CF,SMT,22 OHM,5%,1/16W,0402,ROHS	1	21-00086	R1	RALEC	RTT02 220JTP	FA
5	943083101G	100220526.01G		RES,CF,SMT,22 OHM,5%,1/16W,0402,ROHS		01251220		ROHM	MCR01MZPJ 220	FA
5	943083101G	100220526.01G		RES,CF,SMT,22 OHM,5%,1/16W,0402,ROHS		21-00086		YAGEO	RC0402JR-07 22RL	FA
5	943083101G	100333526.01G		RES,CF,SMT,33K,5%,1/16W,0402,ROHS	8	21-00081	R10	RALEC	RTT02 333JTP	FA
5	943083101G	100333526.01G		RES,CF,SMT,33K,5%,1/16W,0402,ROHS		21-00081	R17	ROHM	MCR01MZPJ 333	FA
5	943083101G	100333526.01G		RES,CF,SMT,33K,5%,1/16W,0402,ROHS		21-00081	R19	YAGEO	RC0402JR-07 33KL	FA
5	943083101G	100333526.01G		RES,CF,SMT,33K,5%,1/16W,0402,ROHS		21-00081	R22			
5	943083101G	100333526.01G		RES,CF,SMT,33K,5%,1/16W,0402,ROHS		21-00081	R24			
5	943083101G	100333526.01G		RES,CF,SMT,33K,5%,1/16W,0402,ROHS		21-00081	R7			
5	943083101G	100333526.01G		RES,CF,SMT,33K,5%,1/16W,0402,ROHS		21-00081	R8			
5	943083101G	100333526.01G		RES,CF,SMT,33K,5%,1/16W,0402,ROHS		21-00081	R9			
5	943083101G	100473522.01G		RES,CF,SMT,47K OHM,5%,1/16W,0402,ROHS	4	21-00056	R11	RALEC	RTT02473JTP	FA
5	943083101G	100473522.01G		RES,CF,SMT,47K OHM,5%,1/16W,0402,ROHS		21-00056	R12	ROHM	MCR01MZSJ473	FA
5	943083101G	100473522.01G		RES,CF,SMT,47K OHM,5%,1/16W,0402,ROHS		21-00056	R13	YAGEO	RC0402JR-07 47K L	FA
5	943083101G	100473522.01G		RES,CF,SMT,47K OHM,5%,1/16W,0402,ROHS		21-00056	R14			
5	943083101G	100474521.06G		RES,CF,SMT,470K OHM,5%,1/16W,0402,ROHS	2	21-00124	R20	RALEC	RTT02 474JTP	FA
5	943083101G	100474521.06G		RES,CF,SMT,470K OHM,5%,1/16W,0402,ROHS		01255470	R21	ROHM	MCR01MZPJ 474	FA

Level	Sub-Assembly	Part#	Alt.Part#	Part Description	Req. Qty	Cust.Ref	Location	Mfr Name	Mfr Part#	AVL Status
5	943083101G	100474521.06G		RES,CF,SMT,470K OHM,5%,1/16W,0402,ROHS		21-00124		YAGEO	RC0402JR-07 470KL	FA
5	943083101G	202104243.09G		CAP,CER,HD,SMT,0.1UF,10%,10V,0402,X5R	1		C11	EYANG TECHNOLOGY	C0402X5R104K100NT	FA
5	943083101G	202104243.09G		CAP,CER,HD,SMT,0.1UF,10%,10V,0402,X5R				MURATA	GRM155R61A104KA01D	FA
5	943083101G	202104243.09G		CAP,CER,HD,SMT,0.1UF,10%,10V,0402,X5R				TDK	C1005X5R1A104KT	FA
5	943083101G	202104243.09G		CAP,CER,HD,SMT,0.1UF,10%,10V,0402,X5R				YAGEO	CC0402KRX7R6BB104	FA
5	943083101G	202105254.01G		CAP,CER,HD,SMT,1UF,10%,6.3V,0402,X5R	3	20-00051	C1	MURATA	GRM155R60J105KE19D	FA
5	943083101G	202105254.01G		CAP,CER,HD,SMT,1UF,10%,6.3V,0402,X5R		02556100	C2	SAMSUNG	CL05A105KQ5NNNC	FA
5	943083101G	202105254.01G		CAP,CER,HD,SMT,1UF,10%,6.3V,0402,X5R		20-00051	C6	TAIYO YUDEN	JMK105BJ105KV-F	FA
5	943083101G	202105254.01G		CAP,CER,HD,SMT,1UF,10%,6.3V,0402,X5R		20-00051		TDK	C1005X5R0J105KT	FA
5	943083101G	202106210.04G		CAP,X5R,10UF,0805,6.3V,+/-20%	1		C12	EYANG TECHNOLOGY	C0805X5R106M6R3NT	FA
5	943083101G	202106210.04G		CAP,X5R,10UF,0805,6.3V,+/-20%				MURATA	GRM21BR60J106ME01L	FA
5	943083101G	202106210.04G		CAP,X5R,10UF,0805,6.3V,+/-20%				TAIYO YUDEN	JMK212BJ106MG-T	FA
5	943083101G	202106210.04G		CAP,X5R,10UF,0805,6.3V,+/-20%				TDK	C2012X5R0J106MT	FA
5	943083101G	202224230.03G		CAP,CER,HD,SMT,220NF,X5R,6.3V,10%,0402	4	20-00068	C3	MURATA	GRM155R60J224KE01D	FA
5	943083101G	202224230.03G		CAP,CER,HD,SMT,220NF,X5R,6.3V,10%,0402		20-00068	C4	TAIYO YUDEN	JMK105BJ224KV-T	FA
5	943083101G	202224230.03G		CAP,CER,HD,SMT,220NF,X5R,6.3V,10%,0402		20-00068	C8	TDK	C1005X5R0J224KT	FA
5	943083101G	202224230.03G		CAP,CER,HD,SMT,220NF,X5R,6.3V,10%,0402		20-00068	C9			
5	943083101G	202331208.01G		CAP,CER,HD,SMT,330PF,5%,50V,0402,ROHS	2		C10	EYANG TECHNOLOGY	C0402C0G331J500NT	FA
5	943083101G	202331208.01G		CAP,CER,HD,SMT,330PF,5%,50V,0402,ROHS			C13	MURATA	GRM1555C1H331JA01D	FA
5	943083101G	202331208.01G		CAP,CER,HD,SMT,330PF,5%,50V,0402,ROHS				TAIYO YUDEN	UMK105CG331JW-F	FA
5	943083101G	202331208.01G		CAP,CER,HD,SMT,330PF,5%,50V,0402,ROHS				TDK	C1005C0G1H331JT	FA
5	943083101G	202474282.01G		CAP,CER,HD,SMT,470NF,X5R,6.3V,10%,0402	3		C16	EYANG TECHNOLOGY	C0402X5R474K6R3NT	FA
5	943083101G	202474282.01G		CAP,CER,HD,SMT,470NF,X5R,6.3V,10%,0402			C17	MURATA	GRM155R60J474KE19D	FA
5	943083101G	202474282.01G		CAP,CER,HD,SMT,470NF,X5R,6.3V,10%,0402			C18	TAIYO YUDEN	JMK105BJ474KV-F	FA
5	943083101G	202474282.01G		CAP,CER,HD,SMT,470NF,X5R,6.3V,10%,0402				TDK	C1005X5R0J474KT	FA
5	943083101G	231072003.03G		CAP,TAN,SMT,100UF,6.3V,20%,6X3.2MM,ROHS	2	20-00057	C14	EPCOS	B45197-A1107-M30 9	FA
5	943083101G	231072003.03G		CAP,TAN,SMT,100UF,6.3V,20%,6X3.2MM,ROHS		20-00057	C15	KEMET	T494C107M010AT	FA
5	943083101G	300073620.01G		IC,DIG,MONO,COMS,LOW VOLTAGE,ADG736 RO	1	23-00067	U3	ANALOG DEVICES	ADG736BRMZ	FA
5	943083101G	300073620.01G		IC,DIG,MONO,COMS,LOW VOLTAGE,ADG736 ROHS		05370110		TI	TS5A23157DGSRG4	FA
5	943083101G	303610141.01G		IC,DIG,CAP SENSING,20QFN,SO3610101O,ROHS	1		U1	SYNAPTICS	SO3610101-20QFN-01	FA
5	943083101G	303610141.01G		IC,DIG,CAP SENSING,20QFN,SO3610101O,ROHS		23-01225				
5	943083101G	310611221.01G		IC,LIN,MONO,SMT,STEREO,AUDIO,MSOP10,ROH	1	23-00068	U2	TI	TPA6112A2DGQRG4	FA
5	943083101G	321084728.01G		TR,NPN,SOT-323,BC847W,ROHS	1		Q1	SEMTECH	BC847CW	RB
5	943083101G	322390629.01G		TR,PNP,SMT,MMBT3906W,SOT-323,ROHS	1		Q2	SEMTECH	MMBT3906W	RB
5	943083101G	333846871.01G		DIODE,ZENER,6V8,SOD-323,ROHS	4		D1	SEMTECH	MM3Z6V8	RB
5	943083101G	333846871.01G		DIODE,ZENER,6V8,SOD-323,ROHS			D2			
5	943083101G	333846871.01G		DIODE,ZENER,6V8,SOD-323,ROHS			D3			
5	943083101G	333846871.01G		DIODE,ZENER,6V8,SOD-323,ROHS			D4			
5	943083101G	339972020.01G		DIODE,ESD,TVS,ESD9X7V-2/TR,WBFBP-02C	3		TVS1	WILL SEMICONDUCTOR	ESD9X7V-2/TR	C1
5	943083101G	339972020.01G		DIODE,ESD,TVS,ESD9X7V-2/TR,WBFBP-02C			TVS2			
5	943083101G	339972020.01G		DIODE,ESD,TVS,ESD9X7V-2/TR,WBFBP-02C			TVS3			
5	943083101G	502710017.01G		CONN,RECEP,5P,USB MICRO-B,ROHS	1	26-02367	J1	HIROSE	ZX62-B-5PA	FA
5	943083101G	502710017.01G		CONN,RECEP,5P,USB MICRO-B,ROHS		26-02367		HOSIDEN	CMS1511-010020WB	RB
5	943083101G	502710017.01G		CONN,RECEP,5P,USB MICRO-B,ROHS		26-02367		MITSUMI	H48N-005-210-ACGMA	FA
5	943083101G	502710017.01G		CONN,RECEP,5P,USB MICRO-B,ROHS		26-02367		MITSUMI	R41-9637A	RB
5	943083101G	511100122.02G		TACT,SWITCH,SKRMAAE010,ROHS	1	26-00060	S1	ALPS	SKRMAAE010	FA
5	943083101G	708308302.01GA		PCB,FLEXIBLE,2 LAYERS,94X30X0.2MM	1			FOREWIN SPEED	708308302.01GA	RB
5	943083102G	511110100.01G		TACT SWITCH,SMT,SPVL110100,ROHS	1		S1	ALPS	SPVL110100	RB
5	943083102G	701308303.01GA		PCB,1 LAYER,11.6X9X0.8MM,FR4,SWITCH	1			TAI HING	701308303.01GA	RB

*** END ***

1.6 User Manual


Jabra
Jabra HALO
(BT650s)
User manual
www.jabra.com

CONTENTS

THANK YOU

Thank you for purchasing the Jabra HALO Bluetooth® headset. We hope you enjoy it! This instruction manual will get you started and ready to make the most of your headset.

ABOUT YOUR JABRA HALO

1 **Answer/End or Play/Pause button**
2 **Volume Control or Track Change touch sensor**
3 **Hinges for folding of headset**
4 **Battery indicator**
5 **Bluetooth connectivity indicator**

WHAT YOUR HEADSET DOES

The Jabra HALO lets you listen to stereo music through your Bluetooth enabled mobile phone or music player, while ensuring that you never miss a call.

- Play your music wirelessly
- Answer or end phone calls
- Reject incoming calls
- Last number redialing
- MultiUse™ – be connected to two Bluetooth devices at the same time (for instance your PC and mobile)
- Use 3.5mm music cable for wired music listening from e.g. your mp3 player or PC

Specifications

Music:

- Music time up to 8 hours, standby time up to 13 days
- Track changes (next or previous track) on touch control (AVRCP)
- A2DP (Advanced Audio Distribution Profile) for streaming music

Call:

- Talk time up to 8 hours
- Dual Microphone solution for **Noise Blackout™**
- Digital sound enhancement via DSP technology
- Noise reduction on transmitted and received audio
- Noise dependent volume control*
- Automatic volume adjustment on received audio
- Acoustic shock protection
- Qualified for Bluetooth Specification version 2.0 + EDR (enhanced data rate), supporting Headset and Hands-free Profiles for phone conversations and Advanced Audio Distribution Profile (A2DP) for streaming music
- e-SCO for enhanced audio quality
- 128-bit encryption

* Refer to phone's user manual

The device:

- Rechargeable battery with Micro-USB charging option from AC power supply, PC via USB cable or car charger (not included)
- Colored LED-lights for Bluetooth status and battery indicator
- Size Unfolded: H 165mm - 190mm x W 136mm x D 45mm
- Size Folded: H 78mm x W 132mm x D 45mm
- Weight: 80 grams
- Operating range up to 10 meters (approximately 33 feet)

Please note that your Jabra HALO can withstand a short rain shower but is not waterproof and cannot be submerged. If your device gets wet, it should be wiped clean of any traces of water in order to protect it from potential damage.

GETTING STARTED

Follow these three steps before using your headset:

1. **Charge your headset (approximately 2 hours)**
2. **Activate Bluetooth on your mobile phone (refer to the manual for your mobile phone)**
3. **Pair your headset to your mobile phone**

CHARGING YOUR JABRA HALO

Make sure that your Jabra HALO is fully charged before you start using it for the first time.While charging, the battery indicator changes from red to green, when fully charged. Charging time is approximately 2h. You can use the Jabra HALO during recharge.

Please note: The lifetime of the battery will be significantly reduced if your device is left uncharged for a long period. Jabra therefore recommends that you recharge your device at least once a month.

TURNING YOUR JABRA HALO ON AND OFF

Unfolding the headset will turn it on.

Folding the headset will turn it off.

- To fold: Carefully extend the headset at the hinges (3) and fold. The headset will now conveniently fold into a compact size.
- To unfold: Carefully unfold the headset and lock the hinges into place.

The headset will automatically turn off after 10 minutes if not connected to a device.

PAIRING YOUR JABRA HALO TO A PHONE OR OTHER DEVICE

Headsets are connected to phones or other Bluetooth devices using a procedure called 'pairing'. By following a few simple steps, pairing can be done in a matter of seconds.

1. Put the headset in pairing mode

1.a. First time pairing

- Fold and Unfold the headset and the Jabra HALO will automatically enter pairing mode (indicator light (5) is solid blue) and start searching for a device.

1.b. Later pairing

- Press and hold the Answer/End button (1) until the indicator light (5) is solid blue (approximately 4 seconds).

2. Set your Bluetooth phone or device to search for the Jabra HALO

- Follow your phone's instruction guide. First make sure that Bluetooth is activated on your mobile phone. Then set your phone to search for the headset. This usually involves going to a 'setup,'' connect' or 'Bluetooth' menu on your phone and selecting the option to search for or 'add' a Bluetooth device.*

3. Your phone will find the Jabra HALO

- The phone will find the headset under name "Jabra HALO".
- Your phone then asks if you want to pair with the headset.
- Accept by pressing 'Yes' or 'OK' on the phone and confirm with the passkey or PIN = 0000 (4 zeros). Your phone will confirm when pairing is complete.

* Refer to phone's user manual

WEARING STYLE

Please note the left/right wearing indicators inside the headband. Alternatively always wear the Jabra HALO with the Answer/end button on you right.

Adapt the size of your Jabra HALO by extending the length of the headband by the speakers.

HOW TO

The Jabra HALO is easy to operate. The Answer/End button performs different functions depending on how long you press them:

Instruction	Duration of press
Tap	Press briefly
Double tap	Touch briefly two times within 0,5 seconds
Press	Approximately: 1 second
Press and hold	Approximately: 4 seconds

Play music (Some phones may require you to start a media player first)*

- Tap the Answer/End button (1)

Pause music

- Tap the Answer/End button – tap again to resume playing

Stop music

- Press the Answer/End button

Answer a call when playing music

- When listening to music and receiving a call, the music will pause and you will hear your ringtone
- Tap the Answer/End button and the music will be paused and the call will be connected

End a call

- Tap the Answer/End button to end an active call - when you end the call, your music will start again**

* Refer to phone's user manual
** Device dependent

Skip one track forward

- Double Tap on the + end of the touch control (2) - continue tapping to skip several tracks forward

Skip one track back

- Double Tap on the – end of the touch control (2) - continue tapping to skip several tracks backward

Answer a call

- Tap the Answer/End button (1) to answer a call

End a call

- Tap the Answer/End button (1) to end an active call

Reject a call**

- Press and hold the Answer/End button when the phone rings to reject an incoming call. Depending on your phone settings, the person who called you will either be forwarded to voice mail or hear the busy signal.

Make a call**

- When your Jabra HALO is connected to your phone, all calls made from your phone will automatically be transferred to your headset. (subject to phone settings)

Redial last number**

- Double tap the Answer/End button

Adjust sound and volume*

- Touch and slide your finger along the touch control (2) to turn volume up or down

Mute microphone when on a phone call

- Double Tap on − or + on the touch control (2). Tap the touch control to un-mute

Using your Jabra HALO with the 3.5mm music cable (not Bluetooth)

- Insert the 3.5mm music cable into the micro-USB socket and connect the 3.5mm jack to the device. **Please note that the Bluetooth features (including receiving calls and touch control) are disabled when using the Jabra HALO with the cable.**
- Using your Jabra HALO with the 3.5mm music cable is not possible if the battery is completely discharged, so make sure that it is at least partly charged

* Refer to phone's user manual
** Device dependent

WHAT THE DISPLAY MEANS

On the right inside of Jabra HALO two display icons indicate different states of the product:

Bluetooth Icon (only Blue)	
Solid	In pairing mode – see "Pair Jabra HALO to a phone or other device"
Slow Single Flash	Connected to phone and in standby mode[A]
Single Flash	Connected to phone and active on call[A]
Quick Double Flash	Incoming call
Three slow flashes	Not connected to phone and standby mode[A]
Solid (+ Battery Indicator Solid Orange)	In alternative pairing mode – see "Troubleshooting & FAQ"

Battery Indicator Icon:	
Solid Red	Charging
Solid Green	Fully charged
Single Red Flash	Low Battery
Solid Orange (+ Bluetooth Icon Solid Blue)	In Special Pairing mode – see "Troubleshooting & FAQ"

[A]Jabra HALO Display icons turn off after 30 seconds of non-activity. Headset is still active, and light will flash again after a tap on the Answer/end button or any call activity.

Communication by sound alerts

Your Jabra HALO employs sound alerts to communicate diffe-rent actions or information. One important alert is "Low Battery", which is two short beeps, and indicates 5 minutes of battery time remains.

USING YOUR JABRA HALO WITH TWO MOBILE DEVICES

The Jabra HALO is capable of having two mobile phones (or Bluetooth devices) connected to the headset at the same time. This will give you the freedom of having only one headset to operate both of your mobile phones. Please note that Last Number Redial will dial the number from the last outgoing call, independent of the mobile phone.

If the headset is connected to two phones please note that Play/Pause and Next/Previous track will be sent to the phone that was the last connected phone (Last connected AVRC profile).

TROUBLESHOOTING & FAQ

I hear crackling noises

- Bluetooth is a radio technology which means it is sensitive to objects between the headset and the device it is connected to. You should be able to have up to 10 meters (33 feet) of distance between the headset and the connected device when there are no major objects in the way (walls, etc.).

I cannot hear the phone call in the headset

- Increase the volume on the Jabra HALO.
- Make sure your phone is connected to the headset by i.e. tapping the Answer/End button, or viewing the Bluetooth icon in the Display.

I have pairing problems

- You may have deleted the pairing connection in your mobile phone – follow the pairing instructions in 'Pair Your Headset to a Phone or other Device'.

I cannot use Reject call, Call on hold or Redial

- These features are dependent on your phone supporting them; please consult your phone's manual for details.

I cannot hear music in the headset

- Ensure that the headset is connected to your Bluetooth enabled device.
- You may have been out-of-range (10 meters) to your Bluetooth enabled device or the headset might have experienced an ESD (Electrostatic discharge) incidence. Press the Multi Function Button to re-establish the Bluetooth audio link.

- Increase the volume on your device.
- Make sure that the Jabra HALO is charged.

The music I hear sounds very poor

Make sure the other device supports Bluetooth 1.1 or higher including the Advanced Audio Distribution Profile (A2DP) for music streaming.

If the above procedure did not help then it is possible that your phone is using the stereo audio connection in a different way. You can enable this mode on Jabra HALO by performing pairing in the following way:

- Remove the Bluetooth connection to Jabra HALO on your phone
- Make sure the headset is on (un-folded)
- Press and hold the answer / end button for more than 5 seconds until the both Display icons are solid Blue and solid Orange
- Go through the regular steps in pairing the headset to a Bluetooth device.

Be aware that standby time of the Jabra HALO can be lower when using this pairing.

NEED MORE HELP?

1. **Web:** www.jabra.com/nasupport
2. **Phone:** 1 (800) 489-4199 (Canada)

TAKING CARE OF YOUR HEADSET

- Always store the Jabra HALO with the power off and safely protected
- Avoid storage at extreme temperatures (above 45°C/113°F – including direct sunlight – or below -10°C/14°F). This can shorten battery life and may affect operation. High temperatures may also degrade performance.
- Do not expose the Jabra HALO to rain or other liquids.

WARNING!

PERMANENT HEARING LOSS MAY RESULT FROM LONG-TERM EXPOSURE TO SOUND AT HIGH VOLUMES. USE AS LOW A VOLUME AS POSSIBLE.

Headsets are capable of delivering sounds at loud volumes and high pitched tones. Under certain circumstances, exposure to such sounds can result in permanent hearing loss damage. The volume level may vary based on conditions such as the phone you are using, its reception and volume settings, and the environment. Avoid prolonged use of the headset at excessive sound pressure levels. Please read the Safety Guidelines below prior to using this headset.

You Can Reduce the Risk of Hearing Damage by Following These Safety Guidelines

1. **Prior to using this product follow these steps**

- Before putting on the headset, turn the volume control to its lowest level;
- Put the headset on; and then
- Slowly adjust the volume control to a comfortable level.

2. **During the use of this product**

- Keep the volume at the lowest level possible and avoid using the headset in noisy environments where you may be inclined to turn up the volume;
- If increased volume is necessary, adjust the volume control slowly;
- Ringing in the ears may indicate that the sound levels are too high;
- If you experience discomfort or ringing in your ears, immediately discontinue using the headset and consult a physician; and
- Stop using the headset if it causes great discomfort.

With continued use at high volume, your ears may become accustomed to the sound level, which may result in permanent damage to your hearing without any noticeable discomfort.

SAFETY INFORMATION!

- Use of a headset will impair your ability to hear other sounds. Use caution while using your headset when you are engaging in any activity that requires your full attention.
- If you have a pacemaker or other electrical medical devices, you should consult your physician before using this product.
- This package contains small parts that may be hazardous to children and should be kept out of reach from children. This product is not a toy – never allow children to play with this product. Always store the product out of reach from children. The bags themselves or the many small parts they contain may cause choking if ingested.
- Never try to dismantle the product yourself, or push objects of any kind into the products, as this may cause short circuits which could result in a fire or electric shock.
- None of the components can be replaced or repaired by users. Only authorized dealers or service centers may open the product. If any parts of your product require replacement for any reason, including normal wear and tear or breakage, contact your dealer.
- Avoid exposing your product to rain, moisture or other liquids to protect against damage to the product or injury to you.
- If the product has ear tips, the ear tips should rest against, but not enter the ear canal.
- Keep all products, cords, and cables away from operating machinery.
- Observe all signs and instructions that require an electrical device or RF radio product to be switched off in designated areas such as hospitals, blasting areas, potentially explosive atmospheres, or aircrafts.
- If the product overheats, if the product has been dropped or damaged, if the product has a damaged cord or plug, or if the product has been dropped in a liquid, discontinue use and contact GN Netcom, Inc.
- Never mount or store the product over any airbag deployment area, as serious injury may result when an airbag deploys.
- Dispose of the product according to local standards and regulations.

Remember: Always drive safely, avoid distractions and follow local laws!

Using the headset while operating a motor vehicle, motorcycle, watercraft or bicycle may be dangerous, and is illegal in some jurisdictions, just as use of this headset with both ears covered while driving is not permitted in certain jurisdictions. Check your local laws. Use caution while using your headset when you are engaging in any activity that requires your full attention. While engaging in any such activity, removing the headset from your ear or turning off your headset will keep you from being distracted, so as to avoid accident or injury. Do not take notes or read documents while driving.

BUILT-IN BATTERY CARE:

- Your product is powered by a rechargeable battery.
- The full performance of a new battery is achieved only after two or three complete charge and discharge cycles.
- The battery can be charged and discharged hundreds of times, but will eventually wear out.
- Unplug the charger from the electrical plug and the product when not in use. Do not leave a fully charged battery connected to a charger, since overcharging may shorten its lifetime.
- If left unused, a fully charged battery will lose its charge over time.
- Leaving the product in hot or cold places, such as in a closed car in the summer and winter conditions, will reduce the capacity and lifetime of the battery.
- Always try to keep the battery between 15°C and 25°C (59°F and 77°F). A product with a hot or cold battery may not work temporarily, even when the battery is fully charged. Battery performance is particularly limited in temperatures well below freezing.

Battery warning!

- "Caution" – The battery used in this product may present a risk of fire or chemical burn if mistreated.
- Do not attempt to open the product or replace the battery. It is built-in and not changeable. Use of other batteries may present a risk of fire or explosion and the warranty will be terminated.

- Only recharge your battery with the provided approved chargers designated for this product.
- Dispose of batteries according to local regulations. Please recycle when possible. Do not dispose as household waste or in a fire as they may explode.
- Batteries may explode if damaged.

CHARGER CARE:

- Do not attempt to charge your headset with anything other than the AC adapter provided. The use of any other types may damage or destroy the headset and could be dangerous. Use of other chargers may invalidate any approval or warranty. For availability of approved enhancements, please check with your dealer.
- Charge the product according to the instructions supplied with the product.

Important: Please refer to the user manual for a description of the charging status indicator lights. Some headsets cannot be used while charging.

Charger warning!

- When you disconnect the power cord or any enhancement, grasp and pull the plug, not the cord. Never use a charger that is damaged.
- Do not attempt to disassemble the charger as it may expose you to dangerous electric shock. Incorrect reassembly can cause electric shock or fire when the product is subsequently used.
- Avoid charging your headset in extremely high or low temperatures and do not use the charger outdoors or in damp areas.

WARRANTY

Limited One (1) -year Warranty:

GN Netcom, Inc. warrants this product to be free from defects in materials and workmanship (subject to the terms set forth below) for a period of one (1) year from the date of purchase ("Warranty Period"). During the Warranty Period, GN will repair or replace (at GN's discretion) this product or any defective parts ("Warranty Service"). If repair or replacement is not commercially practicable

or cannot be timely made, GN may choose to refund to you the purchase price paid for the affected product. Repair or replacement under the terms of this warranty does not give right to any extension or a new beginning of the period of warranty.

Claims under the Warranty:

To obtain Warranty Service, please contact the GN dealer from which you purchased this product or visit www.jabra.com for further information about customer support. You will need to return this Product to the dealer or ship it to the dealer or to GN (if so indicated on www.jabra.com) in either its original packaging or packaging affording an equal degree of protection. You will bear the cost of shipping the product to GN. If the Product is covered by the warranty, GN will bear the cost of shipping product back to you after the completion of service under this warranty. Return shipping will be charged to you for products not covered by the warranty or requiring no warranty repair. The Following information must be presented to obtain Warranty Service: (a) the product, and (b) proof of purchase, which clearly indicates the name and address of the seller, the date of purchase and the product type, which is evidence that this product is within the Warranty Period. Please further include (c) your return address, (d) daytime telephone number, and (e) a detailed reason for return. As part of GN/Jabra's efforts to reduce environmental waste you understand that the product may consist of reconditioned equipment that contains used components, some of which have been reworked. The used components all live up to GN/Jabra's high quality standards and comply with the GN product performance and reliability specifications. You understand that replaced parts or components will become the property of GN.

Limitation of Warranty:

This warranty is only valid for the original purchaser and will automatically terminate prior to expiration if this product is sold or otherwise transferred to another party. The warranty provided by GN in this statement applies only to products purchased for use, and not for resale. It does not apply to open box purchases, which are sold "as is" and without any warranty. Specifically exempt from warranty are limited-life consumable components subject to normal wear and tear, such as microphone windscreens, ear cushions, modular plugs, ear tips, decorative finishes, batteries, and other accessories. This warranty is invalid if the factory-applied serial number, date code label, or product label has been altered

or removed from this product. This Warranty does not cover defects or damages that result from: (a) improper storage, misuse or abuse, accident or neglect, such as physical damage (cracks, scratches, etc.) to the surface of the product resulting from misuse; (b) contact with liquid, water, rain, extreme humidity or heavy perspiration, sand, dirt or the like, extreme heat, or food; (c) use of the products or accessories for commercial purposes or subjecting the product or accessories to abnormal usage or conditions; or (d) other acts which are not the fault of GN.

This Warranty does not cover damage due to improper operation, maintenance or installation, or attempted repair by anyone other than GN or a GN dealer which is authorized to do GN warranty work. Any unauthorized repairs will void this Warranty. This Warranty does not cover defects or damages that result from the use of non-GN branded or certified products, accessories, or other peripheral equipment.

REPAIRS OR REPLACEMENTS AS PROVIDED UNDER THIS WARRANTY ARE THE EXCLUSIVE REMEDY OF THE CONSUMER. GN SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY ON THIS PRODUCT. EXCEPT TO THE EXTENT PROHIBITED BY LAW, THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES WHATSOEVER, INCLUDING BUT NOT LIMITED TO THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PRACTICAL PURPOSE.

NOTE! This warranty gives you specific legal rights. You may have other rights which vary from location to location. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages or implied warranties, so the above exclusions may not apply to you. This warranty does not affect your legal (statutory) rights under your applicable national or local laws.

CERTIFICATION AND SAFETY APPROVALS

FCC:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Users are not permitted to make changes or modify the device in any way. Changes or modifications not expressly approved by Jabra (GN Netcom, Inc.) will void the user's

authority to operate the equipment. See 47 CFR Sec. 15.21. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment of and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The device and its antenna must not be co-loaded or operating in conjunction with any other antenna or transmitter.

Industry Canada Operation is subject to the following two conditions: (1) This device may not cause interference and (2) This device must accept any interference, including interference that may cause undesired operation of the device. See RSS-GEN 7.1.5. The term "IC:" before the certification/registration number only signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

CE:

This product is CE marked according to the provisions of the R & TTE Directive (99/5/EC). Hereby, GN Netcom A/S, declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. For further information please consult http://www.jabra.com

Bluetooth:

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GLOSSARY

1. **Bluetooth** is a radio technology that connects devices, such as mobile phones and headsets, without wires or cords over a short distance approx. 33 feet (10 meters). Get more information at www.bluetooth.com
2. **Bluetooth profiles** are the different ways that Bluetooth devices communicate with other devices. Bluetooth phones support either the headset profile, the hands-free profile or both. In order to support a certain profile, a phone manufacturer must implement certain mandatory features within the phone's software.
3. **Pairing** creates a unique and encrypted link between two Bluetooth devices and lets them communicate with each other. Bluetooth devices will not work if the devices have not been paired.
4. **Passkey or PIN** is a code that you enter on your mobile phone to pair it with your Jabra HALO. This makes your phone and the Jabra HALO recognize each other and automatically work together.
5. **Standby mode** is when the Jabra HALO is passively waiting for a call. When you 'end' a call on your mobile phone, the headset goes into standby mode.

Dispose of the product according to local standards and regulations.
www.jabra.com/weee


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