

[LEAD FREE] MSL Level 1

Approval Sheet

Product	Dielectric Chip Antenna			
Customer	F1 Media			
Model	Bluetooth Stereo Head	dset PEUGEO		
Customer Code				
Supplier	MicroRF Co., LTD.			
Supplier Code	ADSBTF0702-A02			
Customer	Designed by	Checked by	Approved by	
MicroRF	Designed by	By checked	By approved	
	an	7 letter.	7 hod	
	R&D	QC	R&D	
	Myoungsoo,Kim	Sunmo,Kang	Seungyun,Kim	

2009. 4. 17

MicroRF Co., Ltd.

TEL. 82-2-6406-5590 FAX. 82-2-6406-5591



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SPECIFICATION

Model: ADSBTF0702-A02

DIELECTRIC CHIP ANTENNA

Designed by	Approved by	Approved by
a	7 letter	Throad
R&D	QC	R&D
Myungsoo,Kim	Sunmo,Kang	Seungyun,Kim
090402	090402	090402

2009. 4. 17

MicroRF Co., Ltd.

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1. Revision History

Product	Dielectric Chip Antenna	Model	Bluetooth headset
		CODE NO.	ADSBTF0702-A02

Rev	Date	Name	Page	Item	Revision Issue
No.					
1.0	090402	M.S.Kim			lssued
2.0	090417	M.S.Kim	3~5	VSWR, Smith chart,	Revised (PCB revised)
				Radiation pattern data	



2. FEATURES AND APPLICATIONS

This ceramic chip antenna is applied to 2.4 GHz ISM band applications, i.e. wireless LAN, Bluetooth, Zigbee, etc..

3. CODE NO.

CODE NO. : ADSBTF0702-A02 CUSTOMER PART NO. :

4. ELECTRICAL SPECIFICATIONS

4-1.

- * All items are measured in room temperature (25°C).
- * All items are measured at customer set condition.

No.	ITEM	Specification	Typical Data
1	Frequency	2400 ~ 2500 MHz	2400 ~ 2484 MHz
2	VSWR	4.0 max	3.3 Max
3	Total Gain(Peak)	Peak Gain:0 dBi min	0 dBi
4	Impedance	50 Ω	50 Ω
5	Polarization	Linear	Linear



4-2 VSWR data (S11 of SET condition)







4-3 Radiation Patterns

Peak Value(Beam Peak :dBi)

	Azimuth Plane	Elevation 1	Elevation 2
2.4 GHz	-5.290	-3.616	0.864
2.45 GHz	-2.702	-0.252	2.356
2.5 GHz	-4.736	-1.393	-0.145

(a) Azimuth Plane (XY) - Horizontal Polarization





(b) Elevation1 Plane (ZX) - Vertical Polarization



(c) Elevation2 Plane (YZ) - Vertical Polarization





5. MECHANICAL DIMENSIONS



6. Measurement Method and Conditions

The measurement of antenna performance is measurement of gain, radiation pattern using ORBIT/FR apparatus in Anechoic chamber and measurement of VSWR using Network analyzer.

6-1. The measurement of Frequency and VSWR



<Measurement Method>

1) As seen the above, network analyzer is set up for S11 measurement.

2) The measurement frequency range is to set up from 2 GHz to 3 GHz.

3) Perform S11 one port full calibration.

4) Measure the VSRW of three points of Bluetooth frequency range such as 2400 MHz, 2450 MHz, and 2500 MHz.



6-2. The measurement of Gain and Radiation Patterns



<Measurement Method>

1) As seen the above, network analyzer is to set up in Anechoic chamber.

2)As seen the beneath, for the measurement planes as Azimuth, Elevation1, and Elevation2, measure Gain data of vertical polarization and horizontal polarization for each plane.



7. ENVIRONMENTAL SPECIFICATIONS

No.	Items	Specifications
1	Material	Pb-free system
2	Operating Temperature Range	−30 ~ +85 °C
3	Operating Humidity Range	45 ~ 85 % RH



8. ENVIRONMENTAL TESTS

No.	Item	Test Conditions
1	High	Leave for 72 \pm 2 hours in a test bath retaining 85 \pm 2 \degree .
	Temperature	After then, leave on the test conditions for 1.5 hours.
	Storage	
2	Low	Leave for 72 \pm 2 hours in a test bath retaining -30 \pm 2 $^{\circ}$ C.
	Temperature	After then, leave on the test condition for 1.5 hours.
	Storage	
3	Static Humidity	Leave for 24±2 hours in a test bath retaining 90~95% RH /
		50 \pm 3 $^{\circ}$ C. After then, leave in the test condition for 1.5 hours.
4	Thermal Shock	Cool from 25 $^\circ C$ down to -30 $\pm 2 ^\circ C$ and leave for 30 minutes.
		After that, heat up to +85 $\pm2^\circ$ C and leave for 30 minutes.
		After then, cool down to 25℃.
		Repeat the cycle 15 times and leave on the test conditions for
		1.5 hours.
5	Drop Shock	Drop 150g weight onto steel floor from the height of 152cm,
		19 times and 120cm, 12 times.
6	Vibration	With 5g of the whole acceleration at 20 to 2000 Hz, apply a
		vibration for 2 hours for each of 3 directions.
7	Solder Proof	No reaching after reflow for 5±1 sec at 260℃.
8	Soldering	230±5℃ / 5±1 sec for Sn/Pb soldering system
	Conditions	245±5℃ / 2±1 sec for Pb-free soldering system



9. RECOMMENDED SOLDERING PATTERNS





10. PACKAGING

- 10-1. Reel Taping Quantity
 - 10,000 pcs / 1 reel
- 10-2. Reel Dimensions
- : Reel Hall Direction should be same as Input Dot Direction of Antenna.



11. USAGE AND CAUTIONS

- Safe-keeping conditions: 3 months in $20\pm15\,^\circ$ and less than 60% RH



12 .RoHS Data

한국산업기술시험원 Korea Testing Laboratory	Report No. : 08 - 1435 - 0061-1 1 page of 3 pages
TES	ST REPORT
1. Applicant	
Name	: MICRO RF
Address	: 810,811,Venture Incubating Center,Suwon Univ.
	San 2-2, Wawoori, Bongdam-eup, Hwaseong-si Gyunggi-do, Korea.
2. Products	43 BO
Name	: ADSBT****
Model/Type	:***
Manufacturer	:***
3. Test Standard/Method	: Refer to the attached sheet.
4. Test Results	Refer to the attached sheet.
5. Use of Report	: Q.C
6. Date of Application	: JUN. 09. 2008.
	· UNL 00 0000

The test results contained apply only to the test sample(s) supplied by the applicant, and this test report shall not be reproduced in full or in part without approval of the KTL in advance.

Tested by

Kyung-Mee Lee Material Testing Team

Approved by Jin-Sook Lee

Technical Supervisor

Korea Testing Laboratory

222-13, Guro3-Dong Guro-Gu Seoul 152-718, Korea. http://www.ktl.re.kr

FP204-01-01

Tel. : +82-2-860-1648 Fax. : +82-2-860-1649





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TEST RESULT

1. Test Conditions : (22 \pm 2) °C, less than 55 %R.H.

2. Quantitative Analysis Results

1) Analysis of Heavy Metals

(Unit : mg/kg)

Element	Test Method	Detection Limit 1)	Result
Pb	Refer to KS L 3418:2005	8.4	Not detected
Cd	Refer to KS L 3418:2005	0.54	Not detected
Hg	Refer to EPA 7473	1.2	Not detected
Cr ^{6+ 2)}	Refer to KS D 1662:2005	2.5	Not detected

 $^{\rm 1)}$ Detection limits are calculated by detection limit of test instrument. $^{\rm 2)}$ Unit : $\mu {\rm g}/{\rm ea.}$

2) Analysis of Brominated Flame Retardants

(Unit : mg/kg)

Element	Test Method	Detection Limit 3)	Result
Total PBBs	GC-MS	1	Not detected
Mono-BB	п.	μ	л
Di-BB	и	н	
Tri-BB	н.	н	н
Tetra-BB	н	ш	н
Penta-BB	11	Ш	н
Hexa-BB	н	Ш	н
Hepta-BB	и	п	'n
Octa-BB	U	н	н
Nona-BB	u.	н	н
Deca-BB	11	н	U

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and the state of the second	A south a literature		(Unit : mg/kg)
Element	Test Method	Detection Limit 3)	Result
Total PBDEs	GC-MS	1 =	Not detected
Mono-BDE	н	Ш	н
Di-BDE	II	ц	n
Tri-BDE	.0.	11	н
Tetra-BDE	н	Ш	п
Penta-BDE	0	П	п
Hexa-BDE	II.	II.	н
Hepta-BDE	II	н	11
Octa-BDE	П		н
Nona-BDE	u	п	.11
Deca-BDE	11		'n

³⁾ Detection limits are detection limit of test instrument.

3) Analysis of Halogen Elements

		(Unit : mg/kg)	
Element	Test Method	Detection Limit	Result
CI	Refer to EN 14582:2007	30	Not detected
T-Br	Refer to EN 14582:2007	30	Not detected

3. Test Instruments

Instrument	Maker	Model
ICP-AES	PERKIN ELMER	OPTIMA 4300
AAS	ThermoElectron Co.	SOLAAR Series
Mercury Analyzer	MILESTONE	DMA-80
UV/Vis Spectrophotometer	VARIAN	CARY 300
GC-MS	Agilent Technologies	6890N GC/5973N MSD
WD-XRF	RIGAKU	ZSX 100e
IC/AQF-100	DIONEX/MITSUBISHI CHEMICAL Co.	ICS-2000/AQF-100

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THE END.