SAR Test Report

Report No.: AGC02X130201S1

FCC ID	:	PH3DJ-100
IC		3070C-DJ100
Product Designation	:	VHF FM HANDHELD TRANSCEIVER
Brand Name	:	ALINCO
Model Name	:	DJ-100
Client	:	Alinco Incorporated, Electronics Division
Date of Issue	:	May 28, 2013
STANDARD(S)	:	FCC OET65 Supplement C June 2001 IEEE Std.1528-2003 47CFR§2.1093; RSS 102: 2010 IEEE Std. 1528-2003
REPORT VERSION	:	V1.0

Attestation of ***G***lobal ***C***ompliance(Shenzhen) Co., Ltd.

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	May 28, 2013	Valid	Original Report

Test Report Certification

Applicant Name	Alinco Incorporated, Electronics Division
Applicant Address	Yodoyabashi Dai-Bldg 13F, 4-4-9 Koraibashi, Chuo-Ku, Osaka 541-0043, Japan
Manufacturer Name	Alinco Incorporated, Electronics Division
Manufacturer Address	Yodoyabashi Dai-Bldg 13F, 4-4-9 Koraibashi, Chuo-Ku, Osaka 541-0043, Japan
Product Name	VHF FM HANDHELD TRANSCEIVER
Brand Name	ALINCO
Model Name	DJ-100
Difference Description	N/A
EUT Voltage	DC7.4V by battery
Applicable Standard	FCC OET65 Supplement C June 2001 IEEE Std.1528-2003 47CFR§2.1093; RSS 102: 2010 IEEE Std. 1528-2003
Test Date	May 28, 2013
Test Results	MAX SAR MEASUREMENT(1g) (with 50% duty cycle) Head: **0.338** W/Kg Body: **0.375** W/Kg (Maximum Scaling SAR=**0.375** W/Kg)
Performed Location	Attestation of Global Compliance (Shenzhen)Co., Ltd.
	2F, Building 2, No.1-No.4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang Street, Bao'an District, Shenzhen, China
Report Template	AGCRT-EC-PPT4/SAR (2013-03-01)

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TABLE OF CONTENTS

1. General Information

1.1. EUT Description

General Information	
Product Name	VHF FM HANDHELD TRANSCEIVER
Test Model	DJ-100
Hardware Version	V1.00
Software Version	V1.00
Exposure Category:	Occupational/Controlled Exposure
Device Category	FM VHF Portable Transceiver
Modulation Type	FM
TX Frequency Range	136.000 -173.995MHz
Rated Power	5Watt
Maximum Peak Power	36.96dBm
Channel Spacing	12.5 kHz
Antenna Type	Detachable
Antenna Gain	0dBi
Body-Worn Accessories:	Belt Clip with headset
Face-Head Accessories:	None
Battery Type (s) Tested:	DC7.4V by battery

Note: The sample used for testing is end product.

1.2. Test Procedure

1	Setup the EUT for two typical configuration of hold to face and body worn individually
2	Power on the EUT and make it continuously transmitting on required operating channel
3	Make sure the EUT work normally during the test

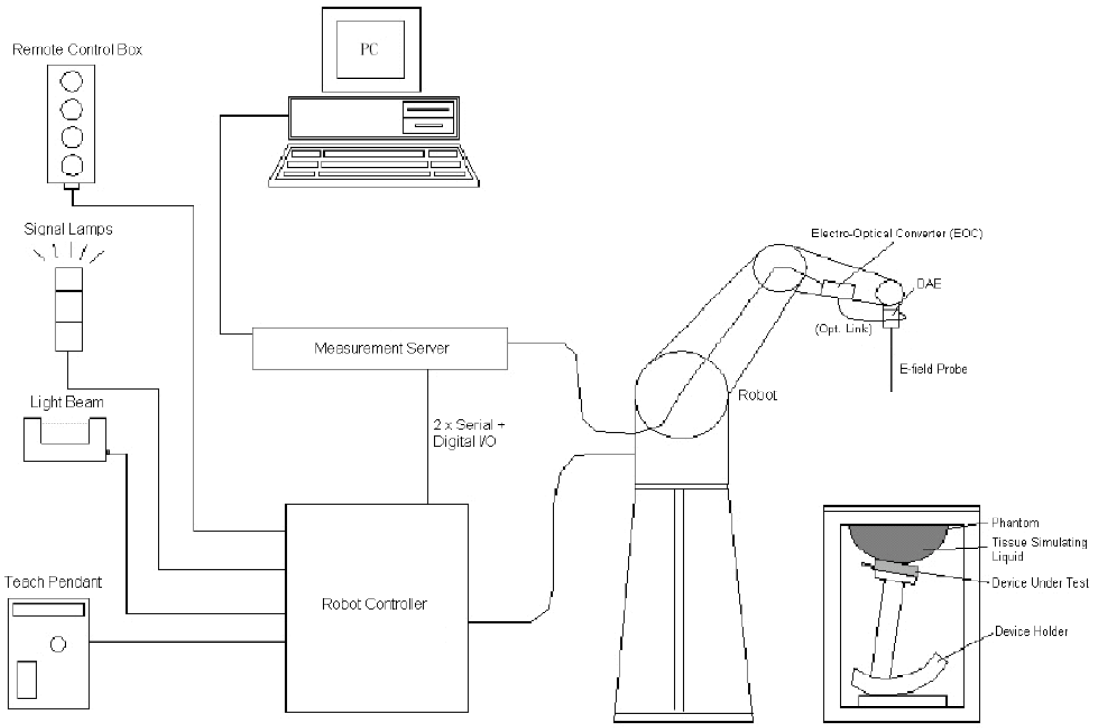
1.3. Test Environment

Ambient conditions in the laboratory:

Items	Required	Actual
Temperature (°C)	18-25	21 ± 2
Humidity (%RH)	30-70	56

2. SAR Measurement System

2.1. COMOSAR System Description



The COMOSAR system for performing compliance tests consists of the following items:

A standard high precision 6-axis robot with controller, teach pendant and software.

An arm extension for accommodating the data acquisition electronics (DAE).

A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection,

collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.

The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.

A computer running WinXP and the Opensar software.

Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.

The phantom, the device holder and other accessories according to the targeted measurement.

2.1.1. Applications

Predefined procedures and evaluations for automated compliance testing with all worldwide standards, e.g., IEEE 1528, OET 65, IEC 62209-1, IEC 62209-2, EN 50360, EN 50383 and others.

2.1.2. Area Scans

Area scans are defined prior to the measurement process being executed with a user
defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a 10mm² step integral, with 1mm interpolation used to locate the peak SAR area used for zoom scan assessments.
When an Area Scan has measured all reachable points, it computes the field maxima found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE 1528-2003, EN 50361 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan).

2.1.3. Zoom Scan (Cube Scan Averaging)

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. A density of 1000 kg/m³ is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1 g cube is 10mm, with the side length of the 10 g cube 21,5mm.
The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications utilize a physical step of 7x7x7 (5mmx5mmx5mm) providing a volume of 30mm in the X & Y axis, and 30mm in the Z axis.

2.1.4. Uncertainty of Inter-/Extrapolation and Averaging

In order to evaluate the uncertainty of the interpolation, extrapolation and averaged SAR calculation algorithms of the Post processor, COMOSAR allows the generation of measurement grids which are artificially predefined by analytically based test functions. Therefore, the grids of area scans and zoom scans can be filled with uncertainty test data, according to the SAR benchmark functions of IEEE 1528.The three analytical functions shown in equations as below are used to describe the possible range of the expected SAR distributions for the tested handsets. The field gradients are covered by the spatially flat distribution f1, the spatially steep distribution f3 and f2 accounts for H-field cancellation on the phantom/tissue surface.

$$f_1(x,y,z) = Ae^{-\frac{z}{2a}}\cos^2\left(\frac{\pi}{2}\frac{\sqrt{x'^2+y'^2}}{5a}\right)$$

$$f_2(x,y,z) = Ae^{-\frac{z}{a}}\frac{a^2}{a^2+x'^2}\left(3-e^{-\frac{2z}{a}}\right)\cos^2\left(\frac{\pi}{2}\frac{y'}{3a}\right)$$

$$f_3(x,y,z) = A\frac{a^2}{\frac{a^2}{4}+x'^2+y'^2}\left(e^{-\frac{2z}{a}}+\frac{a^2}{2(a+2z)^2}\right)$$

2.2. COMOSAR E-Field Probe

The SAR measurement is conducted with the dissymmetric probe manufactured by SPEAG.
The probe is specially designed and calibrated for use in liquid with high permittivity. The dissymmetric probe has special calibration in liquid at different frequency.
SPEAG conducts the probe calibration in compliance with international and national standards (e.g. IEEE 1528, EN62209-1, IEC 62209, etc.) Under ISO17025. The calibration data are in Appendix D.

2.2.1. Isotropic E-Field Probe Specification

Model	EP165	
Manufacture	Satimo	
frequency	0.03GHz-3 GHz Linearity:±0.2dB(30 MHz-3 GHz)	
Dynamic Range	0.01W/Kg-100W/Kg Linearity:±0.2dB	
Dimensions	Overall length:330mm Length of individual dipoles:4.5mm Maximum external diameter:8mm Probe Tip external diameter:5mm Distance between dipoles/ \probe extremity:2.7mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 3 GHz with precision of better 30%.	

2.3 Robot

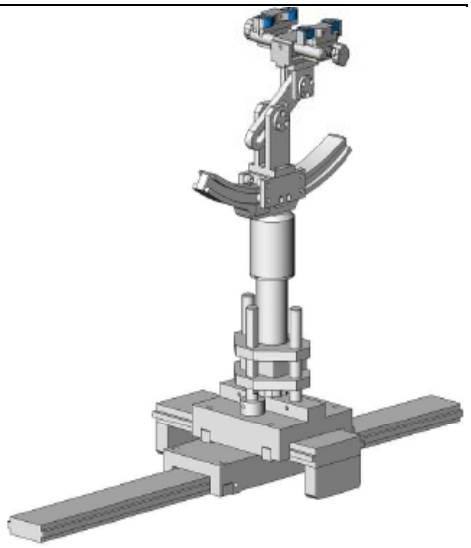
The COMOSAR system uses the high precision robots TX90 XL type out of the newer series from Satimo SA (France).For the 6-axis controller COMOSAR system, the KUKA robot controller version from Satimo is used. The XL robot series have many features that are important for our application: High precision (repeatability 0.02 mm) High reliability (industrial design) Jerk-free straight movements Low ELF interference (the closed metallic construction shields against motor control fields) 6-axis controller	

2.4. Video Positioning System

The video positioning system is used in OpenSAR to check the probe.Which is composed of a camera, LED, mirror and mechanical parts. The camera is piloted by the main computer with firmware link.
During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.
The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.

2.5. Device Holder

The COMOSAR device holder is designed to cope with
different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (EPR).
Thus the device needs no repositioning when changing
the angles.
The COMOSAR device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity εr =3 and loss tangent δ = 0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.



2.6. Elliptic Phantom

The Elliptic Phantom is a fiberglass shell flat phantom with 2mm+/- 0.2 mm shell thickness. It has only one measurement area for Flat phantom	

3. Tissue Simulating Liquid

3.1. The composition of the tissue simulating liquid

Ingredient (% Weight) Tissue Type	300MHz
Water	37.56
Salt (NaCl)	5.95
Sugar	55.32
HEC	0.98
Bactericide	0.19
Triton X-100	0.0
DGBE	0.0

3.2. Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using COMOSAR Dielectric Probe Kit and R&S Network Analyzer ZVL6 .

Head Tissue Stimulant Measurement				
Frequency (MHz)	**Description**	**Dielectric Parameters**		**Tissue Temp** [°C]
300MHz	Reference result ±5% window	εr 45.30 43.035 -47.565	δ[s/m] 0.87 0.8265 - 0.9135	N/A
	May 28, 2013	46.70	0.86	21.0

Body Tissue Stimulant Measurement				
Frequency (MHz)	**Description**	**Dielectric Parameters**		**Tissue Temp** [°C]
300MHz	Reference result ±5% window	εr 45.30 43.035 -47.565	δ[s/m] 0.87 0.8265 - 0.9135	N/A
	May 28, 2013	45.79	0.91	21.0

3.3. Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

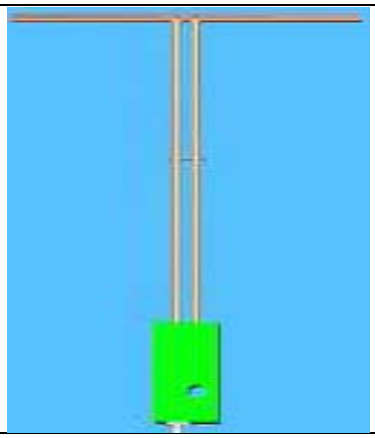
Target Frequency (MHz)	head		body	
	εr	**σ (S/m)**	**εr**	**σ (S/m)**
300	**45.3**	**0.87**	**45.3**	**0.87**
450	43.5	0.87	43.5	0.87
835	41.5	0.90	41.5	0.90
900	41.5	0.97	41.5	0.97
915	41.5	0.98	41.5	0.98
1450	40.5	1.20	40.5	1.20
1610	40.3	1.29	40.3	1.29
1800 – 2000	40.0	1.40	40.0	1.40
2450	39.2	1.80	39.2	1.80
3000	38.5	2.40	38.5	2.40
5800	35.3	5.27	35.3	5.27

(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m3)

4. SAR Measurement Procedure

4.1. SAR System Validation

4.1.1. Validation Dipoles

	The dipoles used is based on the IEEE-1528 standard, and is complied with mechanical and electrical specifications in line with the requirements of both IEEE and FCC Supplement C. the table below provides details for the mechanical and electrical Specifications for the dipoles.

Frequency	L (mm)	h (mm)	d (mm)
300MHz	420	290	6.36

4.1.2. Validation Result

System Performance Check at 300 MHz for Head				
Validation Kit: SN 46/11DIP 0G300-183				
Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp.[°C]
300 MHz	Reference result ± 10% window	2.85 2.565 to 3.135	1.94 1.746 to 2.134	N/A
	May 28, 2013	2.96	1.87	21
Note: All SAR values are normalized to 1W forward power.				

4.2. SAR Measurement Procedure

The COMOSAR calculates SAR using the following equation,

$$SAR = \frac{\sigma |E|^2}{\rho}$$

σ: represents the simulated tissue conductivity
ρ: represents the tissue density

The EUT is set to transmit at the required power in line with product specification, at each frequency relating to the LOW, MID, and HIGH channel settings.

Pre-scans are made on the device to establish the location for the transmitting antenna, using a large area scan in either air or tissue simulation fluid.

The EUT is placed against the Universal Phantom where the maximum area scan dimensions are larger than the physical size of the resonating antenna. When the scan size is not large enough to cover the peak SAR distribution, it is modified by either extending the area scan size in both the X and Y directions, or the device is shifted within the predefined area.

The area scan is then run to establish the peak SAR location (interpolated resolution set at 1mm²) which is then used to orient the center of the zoom scan. The zoom scan is then executed and the 1g and 10g averages are derived from the zoom scan volume (interpolated resolution set at 1mm³).

When multiple peak SAR locations were found during the same configuration or test mode, Zoom scan shall performed on each peak SAR location, only the peak point with maximum SAR value will be reported for the configuration or test mode.

5. SAR Exposure Limits

SAR assessments have been made in line with the requirements of IEEE-1528, FCC Supplement C, and comply with ANSI/IEEE C95.1-1992 “Uncontrolled Environments” limits. These limits apply to a location which is deemed as “Uncontrolled Environment” which can be described as a situation where the general public may be exposed to an RF source with no prior knowledge or control over their exposure.

Limits for General Population/Uncontrolled and Occupational Environment

Type Exposure Limits	General Population / Uncontrolled Environment Limit (W/Kg)	Occupational / Controlled Exposure Environment (W/Kg)
Spatial Average SAR (whole body)	1.60	8.0

6. Test Equipment List

Equipment description	Manufacturer/Model	Identification No.	Current calibration date	Next calibration date
SAR Probe	Satimo	SN 04/13 EP165	01/31/2013	01/30/2014
Phantom	Satimo	SN_4511_SAM90	Validated. No cal required.	Validated. No cal required.
Liquid	Satimo	-	Validated. No cal required.	Validated. No cal required.
Comm Tester	R&S - CMU200	069Y7-158-13-712	02/28/2013	02/27/2014
Comm Tester	Agilent-8960	GB46310822	10/22/2012	10/21/2013
Multimeter	Keithley 2000	1188656	02/28/2013	02/27/2014
Dipole	Satimo SID300	SN 46/11DIP 0G300-183	12/09/2011	12/08/2013
Amplifier	Aethercomm	SN 046	12/08/2012	12/07/2013
Signal Generator	Agilent-E4421B	MY43351603	05/13/2013	05/12/2014
Power Meter	HP E4418A	US38261498	02/28/2013	02/27/2014
Network Analyzer	Rhode & Schwarz ZVA	SN100132	02/28/2013	02/27/2014

Note: Per KDB 50824 Dipole SAR Validation Verification, AGC Lab has adopted 3 years calibration intervals. On annual basis, every measurement dipole has been evaluated and is in compliance with the following criteria:
1. There is no physical damage on the dipole;
2. System validation with specific dipole is within 10% of calibrated value;
3. Return-loss is within 20% of calibrated measurement;
4. Impedance is within 5Ω of calibrated measurement.

7. Measurement Uncertainty

Satimo Uncertainty Measurement uncertainty for 300 MHz to 6 GHz averaged over 1 gram / 10 gram.									
Error Description	Sec	Tol (±%)	Prob. Dist.	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g) (±%)	Std. Unc. (10g)(±%)	(Vi) Veff
Measurement System									
Probe Calibration	E.2.1	6	N	1	1	1	6	6	∞
Axial Isotropy	E.2.2	3	R	$\sqrt{3}$	$(1\text{-}c_p)^{1/2}$	$(1\text{-}c_p)^{1/2}$	1.22474	1.22474	∞
Hemispherical Isotropy	E.2.2	5	R	$\sqrt{3}$	$\sqrt{C_p}$	$\sqrt{C_p}$	2.04124	2.04124	∞
Boundary Effects	E.2.3	1	R	$\sqrt{3}$	1	1	0.57735	0.57735	∞
Linearity	E.2.4	5	R	$\sqrt{3}$	1	1	2.88675	2.88675	∞
System Detection Limits	E.2.5	1	R	$\sqrt{3}$	1	1	0.57735	0.57735	∞
Readout Electronics	E.2.6	0.5	N	1	1	1	0.5	0.5	∞
Response Time	E.2.7	0.2	R	$\sqrt{3}$	1	1	0.11547	0.11547	∞
Integration Time	E.2.8	2	R	$\sqrt{3}$	1	1	1.1547	1.1547	∞
RF Ambient Noise	E.6.1	3	R	$\sqrt{3}$	1	1	1.73205	1.73205	∞
Probe Positioner Mechanical Tolerance	E.6.2	2	R	$\sqrt{3}$	1	1	1.1547	1.1547	∞
Probe Positioning with Respect to Phantom Shell	E.6..3	1	R	$\sqrt{3}$	1	1	0.57735	0.57735	∞
Extrapolation,interpolation and Integration Algorithms for Max. SAR Evaluation	E.5.2	1.5	R	$\sqrt{3}$	1	1	0.89603	0.89603	∞
Dipole									
Device Positioning	8,E.4.2	1	N	$\sqrt{3}$	1	1	0.57735	0.57735	N-1
Power Drift	8.6.6.2	2	R	$\sqrt{3}$	1	1	1.1547	1.1547	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4	R	$\sqrt{3}$	1	1	2.3094	2.3094	∞
Liquid Conductivity (target)	E.3.2	5	R	$\sqrt{3}$	0.64	0.43	1.84752	1.2413	∞
Liquid Conductivity (meas.)	E.3.3	2.5	N	1	0.64	0.43	1.6	1.075	∞
Liquid Permittivity (target)	E.3.2	3	R	$\sqrt{3}$	0.6	0.49	1.03923	0.8487	∞
Liquid Permittivity (meas.)	E.3.3	2.5	N	1	0.6	0.49	1.5	1.225	M
Combined Standard Uncertainty			RSS				8.09272	7.9296	
Expanded Uncertainty (95%CONFIDENCE INTERVAL)			k				16.18544	15.8594	

8. Conducted Power Measurement

Frequency (MHz)	Channel Spacing	Measured Conducted Output power	
		Max. Peak Power (dBm)	**Avg. Power** (dBm)
136.000	12.5KHz	**36.96**	35.74
155.000		36.95	35.72
173.995		36.94	35.70

9. Test Results

9.1. SAR Test Results Summary

9.1.1. Test position and configuration

Head SAR was performed with the device configured in the positions according to KDB 643646
and Body SAR was performed with the device configurated with all accessories close to the Flat Phantom.

9.1.2. Operation Mode

Set the EUT to maximum output power level and transmit on lower, middle and top channel with 100% duty cycle individually during SAR measurement.

9.1.3. Co-located SAR

The following KDB was used for assessing this device.
KDB 447498, KDB 643646 and KDB450824

9.1.4. Test Result

SAR MEASUREMENT							
Ambient Temperature (°C) : 21 ±2				Relative Humidity (%): 52			
Liquid Temperature (°C) : 21 ±2				Depth of Liquid (cm):>15			
Product: VHF FM HANDHELD TRANSCEIVER							
Test Mode: Hold to Face with 2.5 cm separation(VHF)							
Test Position	Frequency			Power Drift (±5%)	SAR 1g with 100% duty Cycle (W/kg)	SAR 1g with 50% duty cycle (W/Kg)	Limit (W/kg)
	channel	MHz	Separation (KHz)				
Face Up	Low	136.000	12.5	0.15	0.235	0.118	8.0
Face Up	Middle	155.000	12.5	2.13	**0.675**	**0.338**	8.0
Face Up	Top	173.995	12.5	-1.08	0.597	0.299	8.0
Note: when the 1-g SAR of middle channel is ≤ 3.5 W/kg, testing for other channel is optional. refer to KDB 643646.							

SAR MEASUREMENT							
Ambient Temperature (°C) : 21 ±2				Relative Humidity (%): 52			
Liquid Temperature (°C) : 21 ±2				Depth of Liquid (cm):>15			
Product: VHF FM HANDHELD TRANSCEIVER							
Test Mode: Body worn with all accessories(VHF)							
Test Position	Frequency			Power Drift (±5%)	SAR 1g with 100% duty Cycle (W/kg)	SAR 1g with 50% duty cycle (W/Kg)	Limit (W/kg)
	channel	MHz	Separation (KHz)				
Back Touch	Low	136.000	12.5	1.62	0.596	0.298	8.0
Back Touch	Middle	155.000	12.5	0.84	**0.749**	**0.375**	8.0
Back Touch	Top	173.995	12.5	-2.32	0.697	0.349	8.0
Note: when the 1-g SAR of middle channel is ≤ 3.5 W/kg, testing for other channel is optional. refer to KDB 643646.							

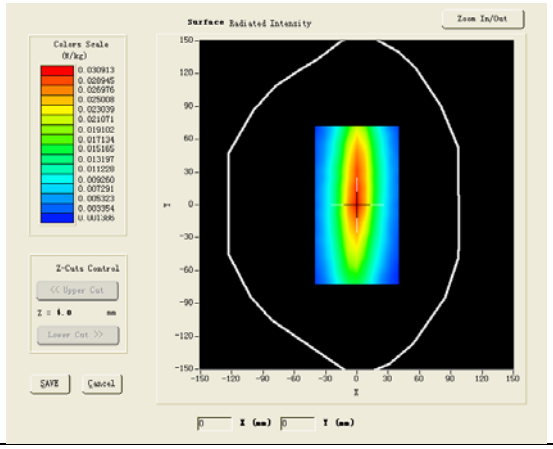
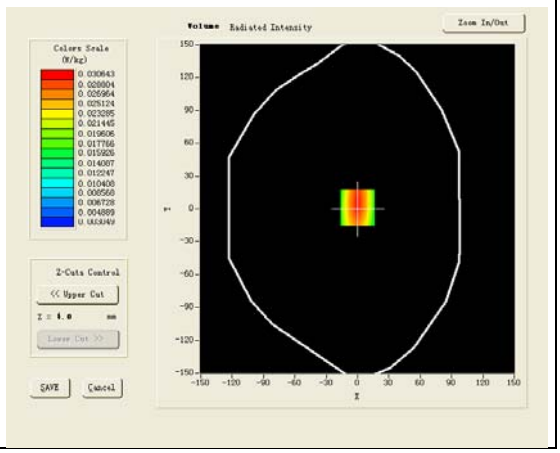
Appendix A. SAR System Validation Data

Test Laboratory: AGC Lab **Test date: May 28, 2013**
System Check Head 300MHz
DUT: Dipole 300 MHz Type: SID 300
Communication System: CW; Communication System Band: CW 300MHz; Duty Cycle: 1:1; Conv.F=4.58
Frequency: 300MHz; Medium parameters used: f = 300MHz; σ=0.86 mho/m; εr =46.70; ρ = 1000 kg/m³ ;
Phantom Type: Elliptical Phantom; Input Power=20dBm
Ambient temperature (℃): 21.0, Liquid temperature (℃): 21.0

Satimo Configuration:
Probe: EP165; Calibrated: 01/31/2013

- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: Flat Phantom; Type: Elliptical Phantom
- Measurement SW: OpenSAR V4_02_0

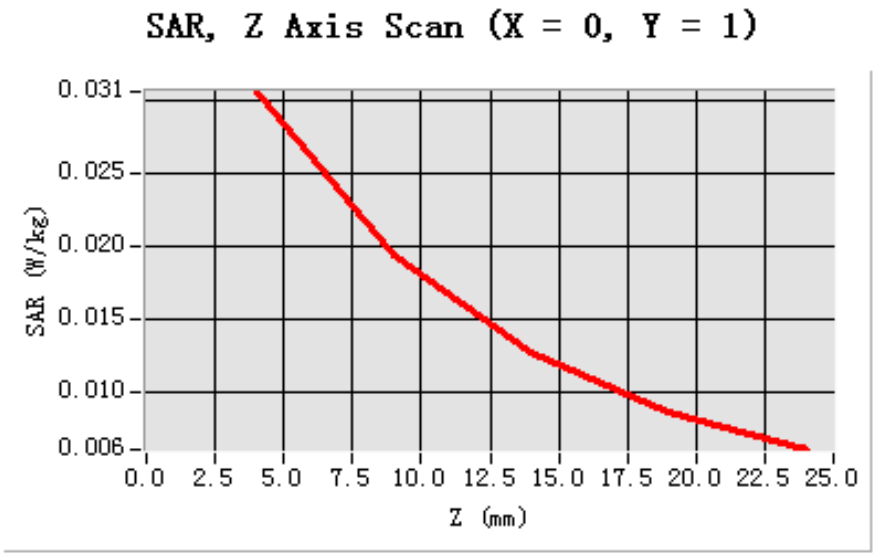
Configuration/System Check CW 300MHz Head/Area Scan: Measurement grid: dx=8mm,dy=8mm
Configuration/System Check CW 300MHz Head/Zoom Scan : Measurement grid: dx=8mm, dy=8mm, dz=5mm

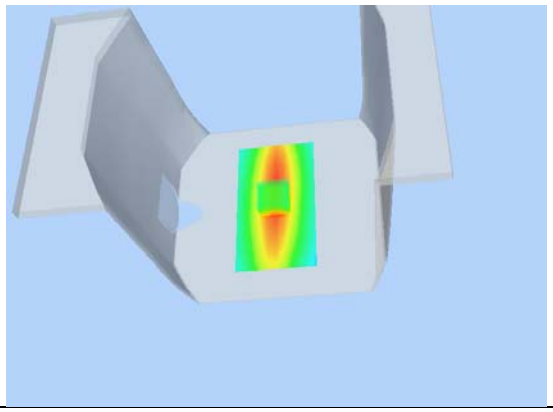
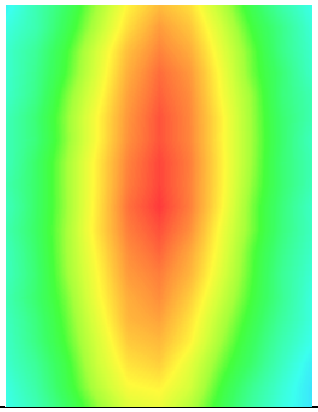
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=1.00

SAR 10g (W/Kg)	0.018655
SAR 1g (W/Kg)	0.029619

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.0314	0.0199	0.0136	0.0092



3D screen shot	Hot spot position
	

Appendix B. SAR measurement Data

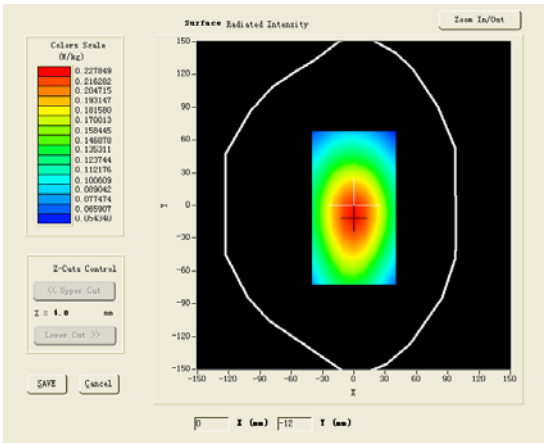
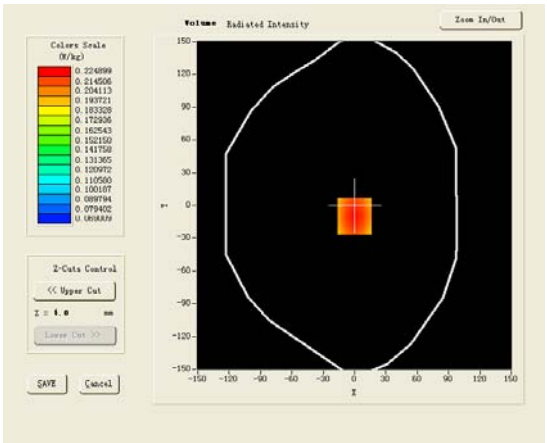
Test Laboratory: AGC Lab **Date: May 28, 2013**
CW300Low-face up 2.5cm (12.5 KHz)
DUT: VHF FM HANDHELD TRANSCEIVER; Type: DJ-100

Communication System: CW; Communication System Band: CW 300MHz; Duty Cycle: 1:1; Conv.F=4.58
Frequency: 136.000 MHz; Medium parameters used: f = 300MHz; σ=0.86 mho/m; εr =46.70; ρ= 1000 kg/m³ ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

Satimo Configuration:
Probe: EP165; Calibrated: 01/31/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: Flat Phantom; Type: Elliptical Phantom
- Measurement SW: OpenSAR V4_02_0

Configuration/CW 300 for Low head/Area Scan (6x8x1): Measurement grid: dx=20mm, dy=20mm
Configuration/CW 300 for Low head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm,dz=5mm;

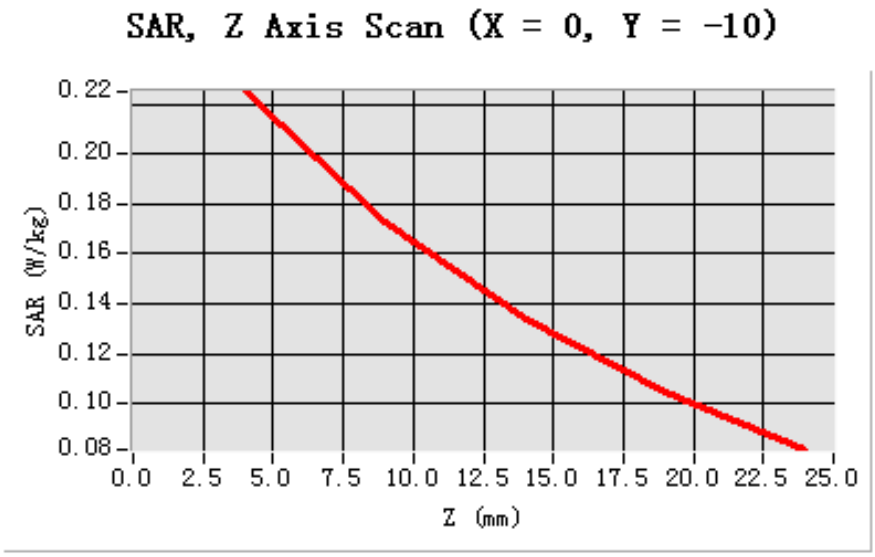
Area Scan	ep_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Elliptical Phantom
Device Position	Face up 2.5 cm separation to Phantom
Band	CW 300
Channels	Low
Signal	Crest factor: 1

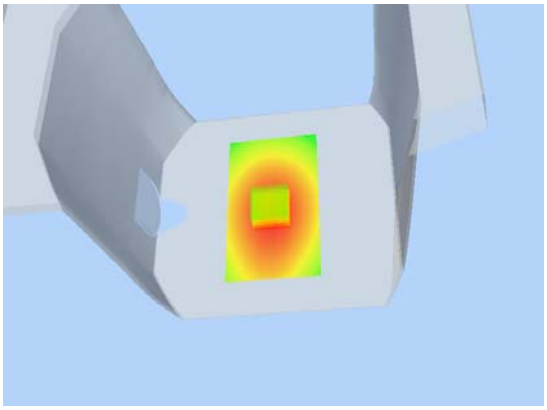
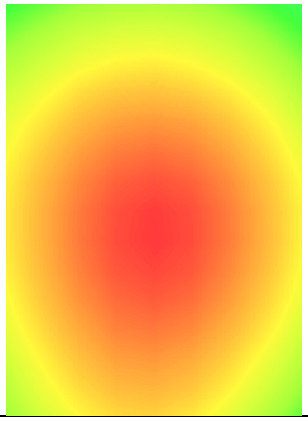
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=-10.00

SAR 10g (W/Kg)	0.176201
SAR 1g (W/Kg)	0.235068

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.2249	0.1724	0.1336	0.1048



3D screen shot	Hot spot position
	

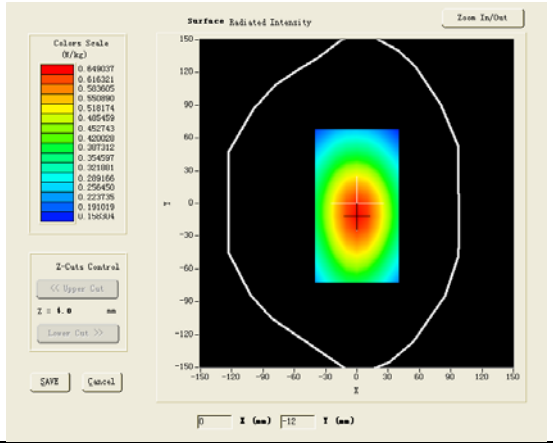
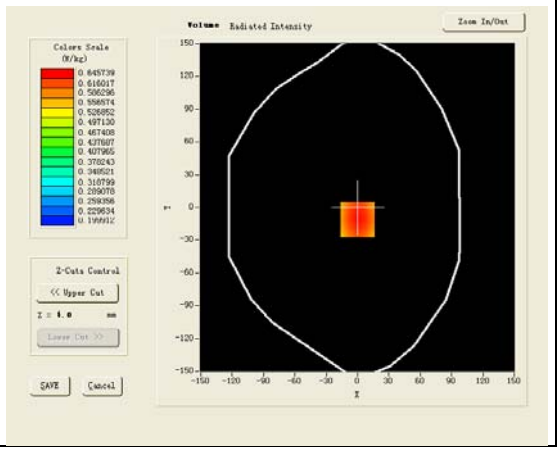
Test Laboratory: AGC Lab **Date: May 28, 2013**
CW300Mid- face up 2.5cm (12.5 KHz)
DUT: VHF FM HANDHELD TRANSCEIVER; Type: DJ-100

Communication System: CW; Communication System Band: CW 300MHz; Duty Cycle: 1:1; Conv.F=4.58
Frequency:155.000 MHz; Medium parameters used: f = 300MHz; σ=0.86 mho/m; εr =46.70; ρ= 1000 kg/m^3 ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

Satimo Configuration:
Probe: EP165; Calibrated: 01/31/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: Flat Phantom; Type: Elliptical Phantom
- Measurement SW: OpenSAR V4_02_0

Configuration/CW 300 for Mid head/Area Scan (6x8x1): Measurement grid: dx=20mm, dy=20mm
Configuration/CW 300 for Mid head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm,dz=5mm;

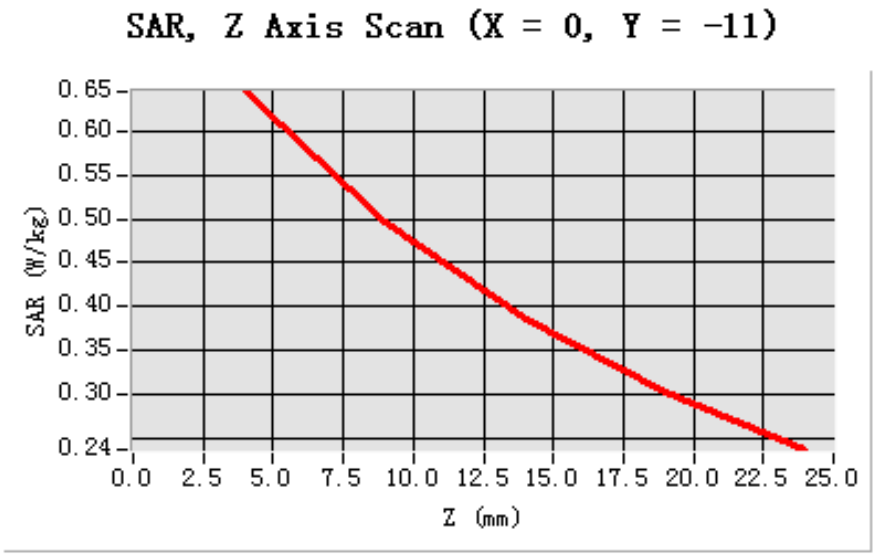
Area Scan	ep_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Elliptical Phantom
Device Position	Face up 2.5 cm separation to Phantom
Band	CW 300
Channels	Middle
Signal	Crest factor: 1

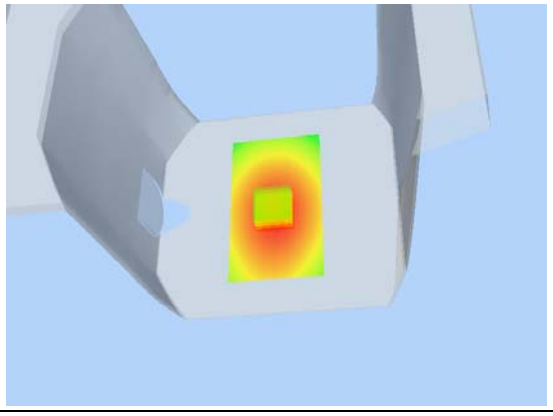
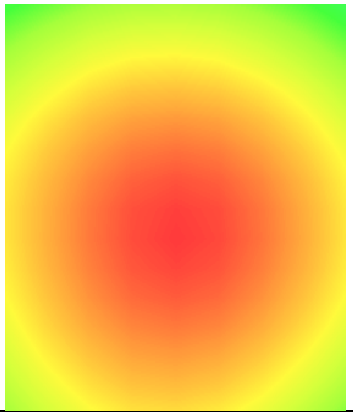
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=0.00, Y=-11.00

SAR 10g (W/Kg)	0.507506
SAR 1g (W/Kg)	0.675061

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.6457	0.4960	0.3850	0.3024



3D screen shot	Hot spot position
	

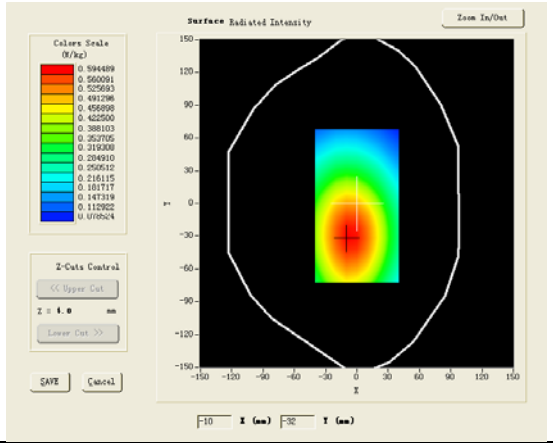
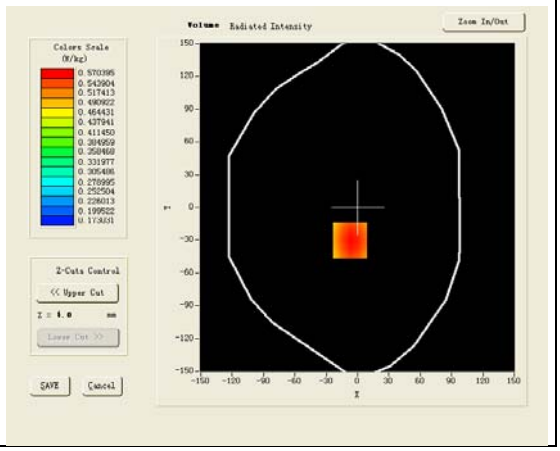
Test Laboratory: AGC Lab **Date: May 28, 2013**
CW300High- face up 2.5cm (12.5 KHz)
DUT: VHF FM HANDHELD TRANSCEIVER; Type: DJ-100

Communication System: CW; Communication System Band: CW 300MHz; Duty Cycle: 1:1; Conv.F=4.58
Frequency: 173.995MHz; Medium parameters used: f = 300MHz; σ=0.86 mho/m; εr =46.70; ρ= 1000 kg/m^3 ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

Satimo Configuration:
Probe: EP165; Calibrated: 01/31/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: Flat Phantom; Type: Elliptical Phantom
- Measurement SW: OpenSAR V4_02_0

Configuration/CW 300 for High head/Area Scan (6x8x1): Measurement grid: dx=20mm, dy=20mm
Configuration/CW 300 for High head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm,dz=5mm;

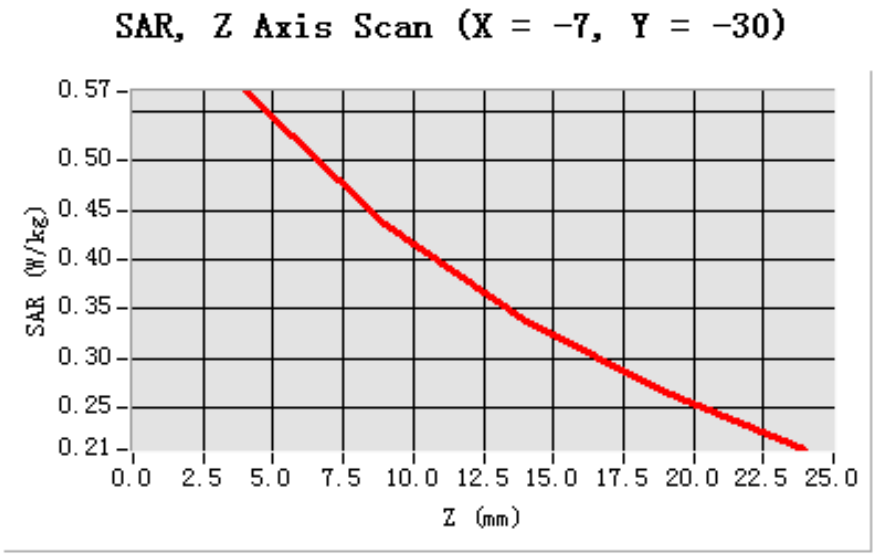
Area Scan	ep_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Elliptical Phantom
Device Position	Face up 2.5 cm separation to Phantom
Band	CW 300
Channels	High
Signal	Crest factor: 1

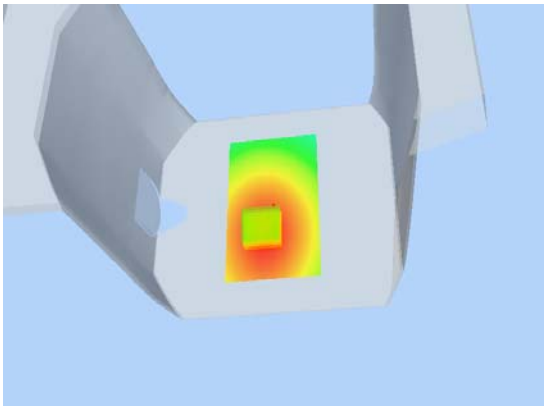
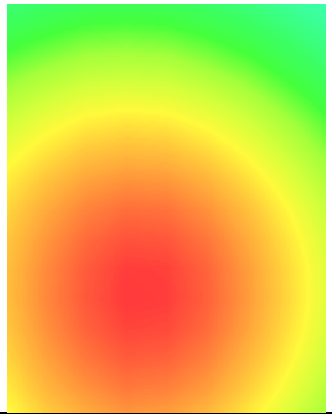
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-7.00, Y=-30.00

SAR 10g (W/Kg)	0.447820
SAR 1g (W/Kg)	0.596873

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.5704	0.4365	0.3380	0.2654



3D screen shot	Hot spot position
	

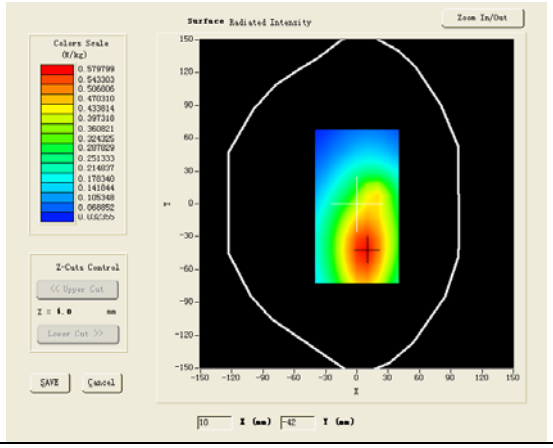
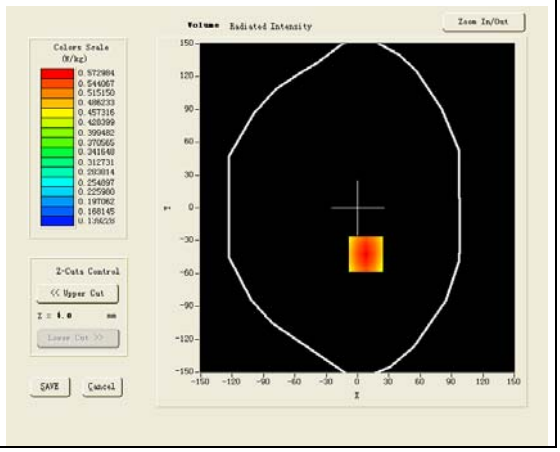
Test Laboratory: AGC Lab **Date: May 28, 2013**
CW300 Low -Body -Touch (12.5 KHz)
DUT: VHF FM HANDHELD TRANSCEIVER; Type: DJ-100

Communication System: CW; Communication System Band: CW 300.000 MHz; Duty Cycle: 1:1; Conv.F=4.58 Frequency:136.000MHz; Medium parameters used: f = 300 MHz; σ=0.91 mho/m; εr =45.79; ρ= 1000 kg/m³ ; Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.5, Liquid temperature(℃): 21.0

Satimo Configuration:
Probe: EP165; Calibrated: 01/31/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: Flat Phantom; Type: Elliptical Phantom
- Measurement SW: OpenSAR V4_02_0

Configuration/CW 300 for Low Touch/Area Scan: Measurement grid: dx=20mm, dy=20mm
Configuration/CW 300 for Low Touch/Zoom Scan: Measurement grid: dx=8mm, dy=8mm, dz=5mm,

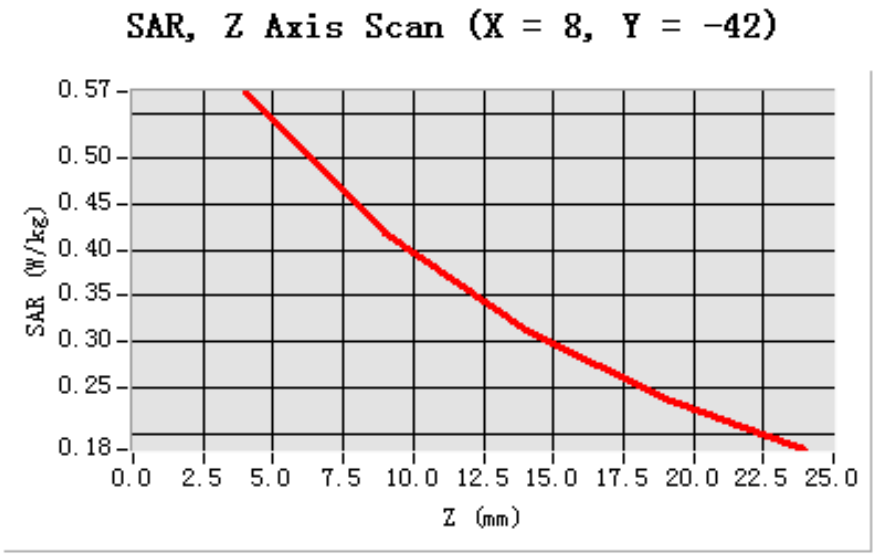
Area Scan	ep_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Elliptical Phantom
Device Position	Back close to Phantom with Accessories
Band	CW 300
Channels	Low
Signal	Crest factor: 1

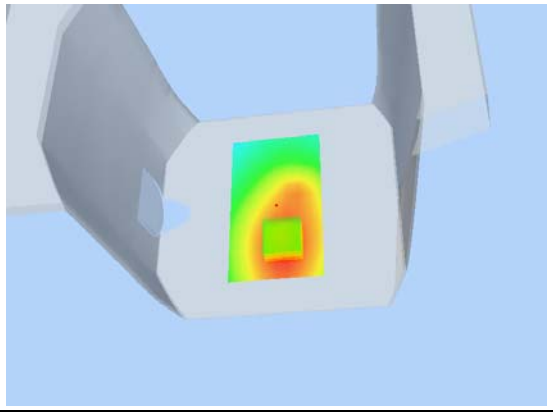
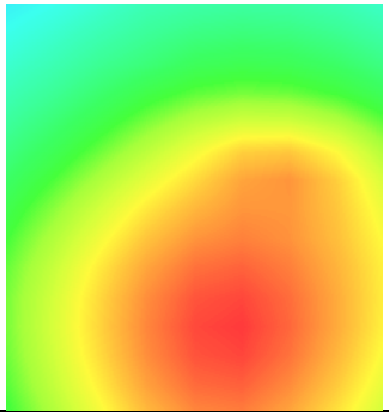
SURFACE SAR	VOLUME SAR
	

Maximum location: X=8.00, Y=-42.00

SAR 10g (W/Kg)	0.426646
SAR 1g (W/Kg)	0.595616

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.5730	0.4183	0.3116	0.2382



3D screen shot	Hot spot position
	

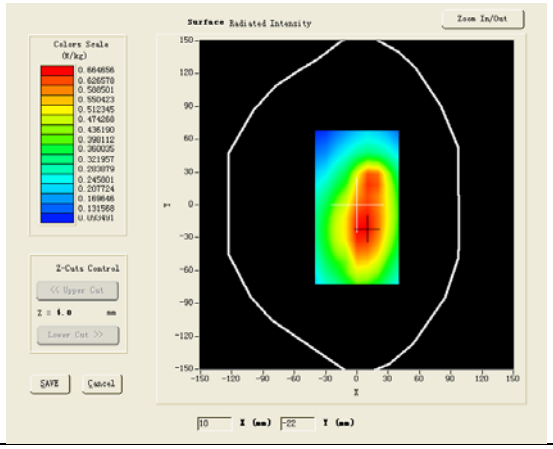
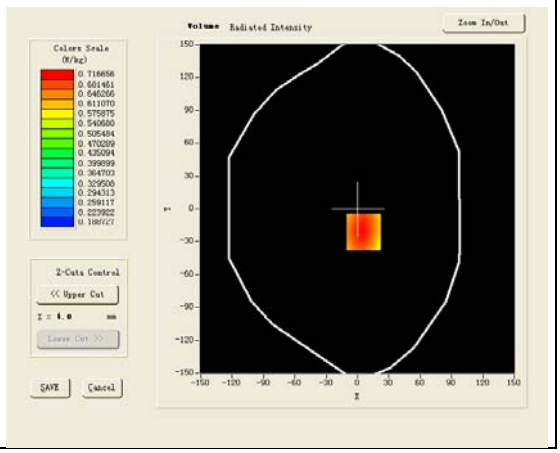
Test Laboratory: AGC Lab **Date: May 28, 2013**
CW300 Mid -Body –Touch (12.5 KHz)
DUT: VHF FM HANDHELD TRANSCEIVER; Type: DJ-100

Communication System: CW; Communication System Band: CW 300.000 MHz; Duty Cycle: 1:1; Conv.F=4.58
Frequency:155.000 MHz; Medium parameters used: f = 300 MHz; σ=0.91 mho/m; εr =45.79; ρ= 1000 kg/m³ ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.5, Liquid temperature(℃): 21.0

Satimo Configuration:
Probe: EP165; Calibrated: 01/31/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: Flat Phantom; Type: Elliptical Phantom
- Measurement SW: OpenSAR V4_02_0

Configuration/CW 300 for Mid Touch/Area Scan: Measurement grid: dx=20mm, dy=20mm
Configuration/CW 300 for Mid Touch/Zoom Scan: Measurement grid: dx=8mm, dy=8mm, dz=5mm,

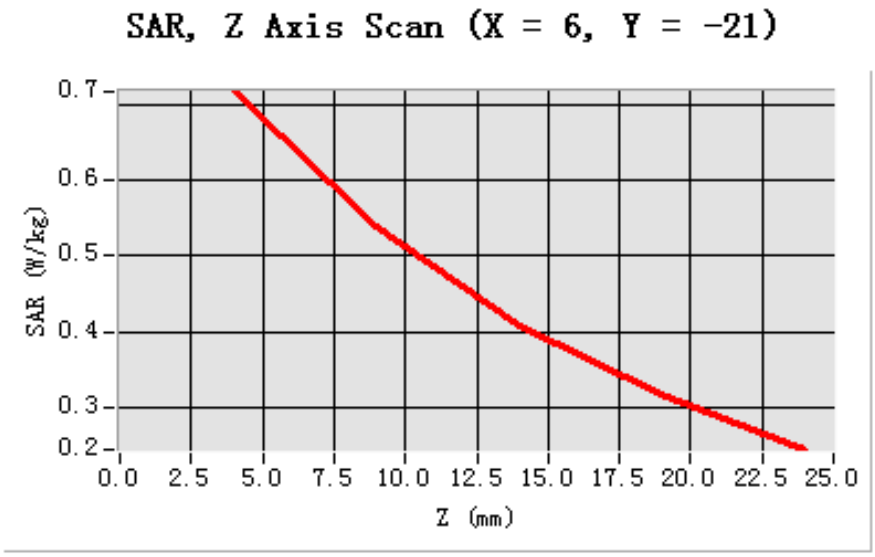
Area Scan	ep_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Elliptical Phantom
Device Position	Back close to Phantom with Accessories
Band	CW 300
Channels	Middle
Signal	Crest factor: 1

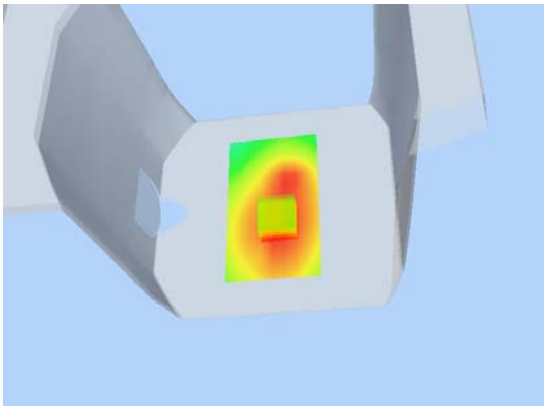
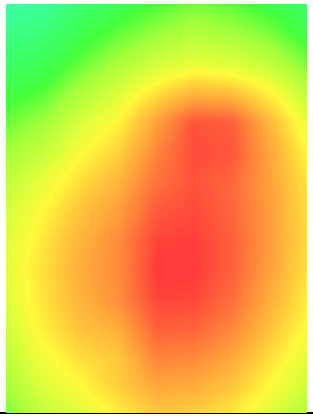
SURFACE SAR	VOLUME SAR
	

Maximum location: X=6.00, Y=-21.00

SAR 10g (W/Kg)	0.550506
SAR 1g (W/Kg)	0.748846

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.7167	0.5380	0.4096	0.3174



3D screen shot	Hot spot position
	

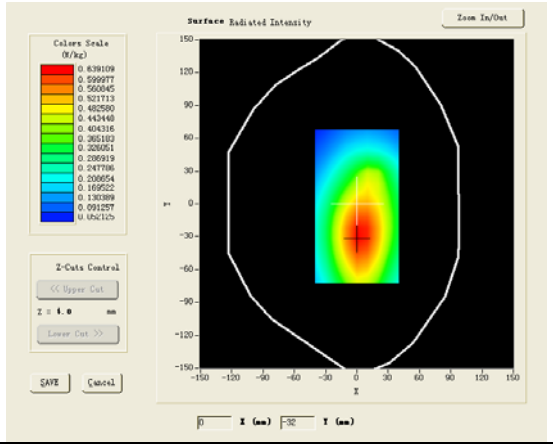
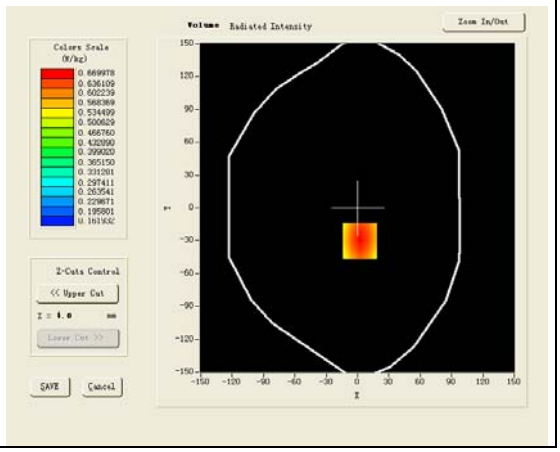
Test Laboratory: AGC Lab **Date: May 28, 2013**
CW300 High -Body –Touch (12.5 KHz)
DUT: VHF FM HANDHELD TRANSCEIVER; Type: DJ-100

Communication System: CW; Communication System Band: CW 300.000 MHz; Duty Cycle: 1:1; Conv.F=4.58
Frequency: 173.995MHz; Medium parameters used: f = 300 MHz; σ=0.91 mho/m; εr =45.79; ρ= 1000 kg/m³ ;
Phantom Type: Elliptical Phantom
Ambient temperature (℃): 21.5, Liquid temperature(℃): 21.0

Satimo Configuration:
Probe: EP165; Calibrated: 01/31/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: Flat Phantom; Type: Elliptical Phantom
- Measurement SW: OpenSAR V4_02_0

Configuration/CW 300 for High Touch/Area Scan: Measurement grid: dx=20mm, dy=20mm
Configuration/CW 300 for High Touch/Zoom Scan: Measurement grid: dx=8mm, dy=8mm, dz=5mm,

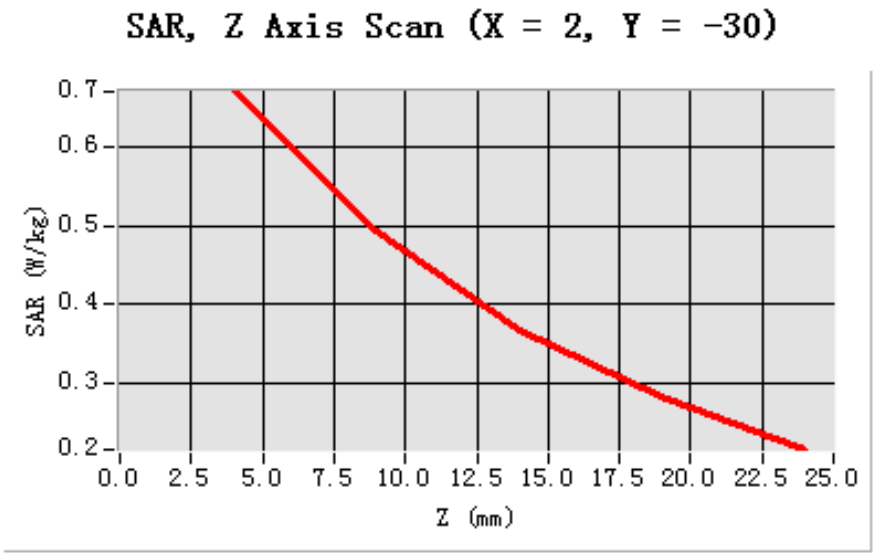
Area Scan	ep_direct_droit2_surf8mm.txt
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm,Very fast
Phantom	Elliptical Phantom
Device Position	Back close to Phantom with Accessories
Band	CW 300
Channels	High
Signal	Crest factor: 1

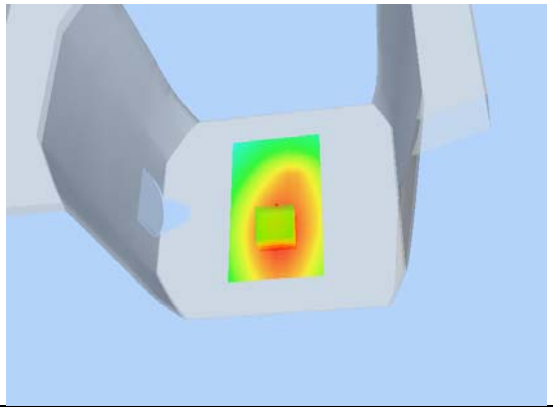
SURFACE SAR	VOLUME SAR
	

Maximum location: X=2.00, Y=-30.00

SAR 10g (W/Kg)	0.501373
SAR 1g (W/Kg)	0.697043

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.0000	0.6700	0.4921	0.3680	0.2817



3D screen shot	Hot spot position
	

Appendix C. TEST SETUP PHOTOGRAPHS &EUT PHOTOGRAPHS

Test Setup Photographs

Body Front 25mm

Body back with Headset

DEPTH OF THE LIQUID IN THE PHANTOM—ZOOM IN

Note：The position used in the measurement were according to IEEE 1528-2003

EUT PHOTOGRAPHS

ALL VIEW OF EUT

TOP VIEW OF EUT

BOTTOM VIEW OF EUT

FRONT VIEW OF EUT

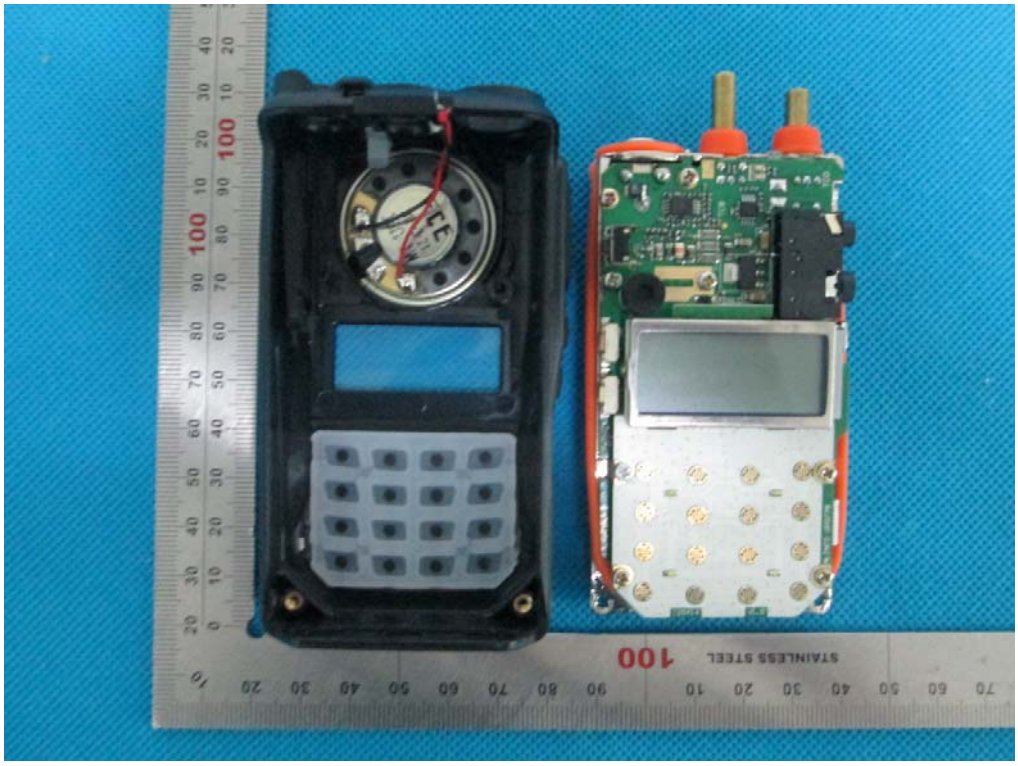
BACK VIEW OF EUT

LEFT VIEW OF EUT

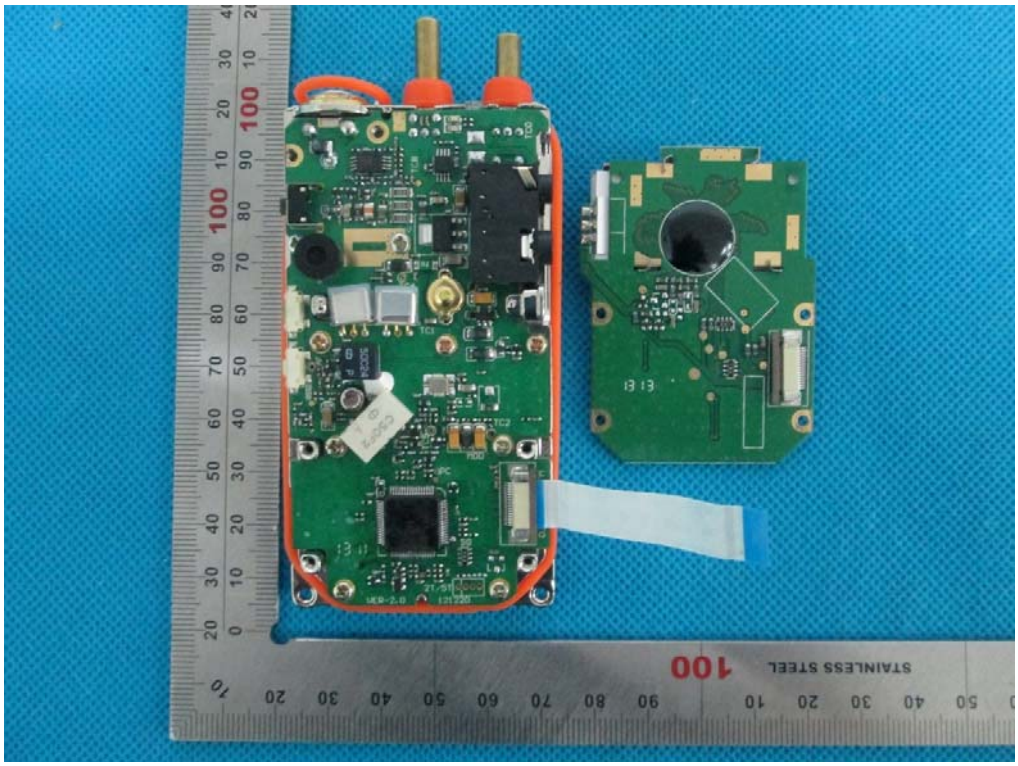
RIGHT VIEW OF EUT

OPEN VIEW OF EUT-1

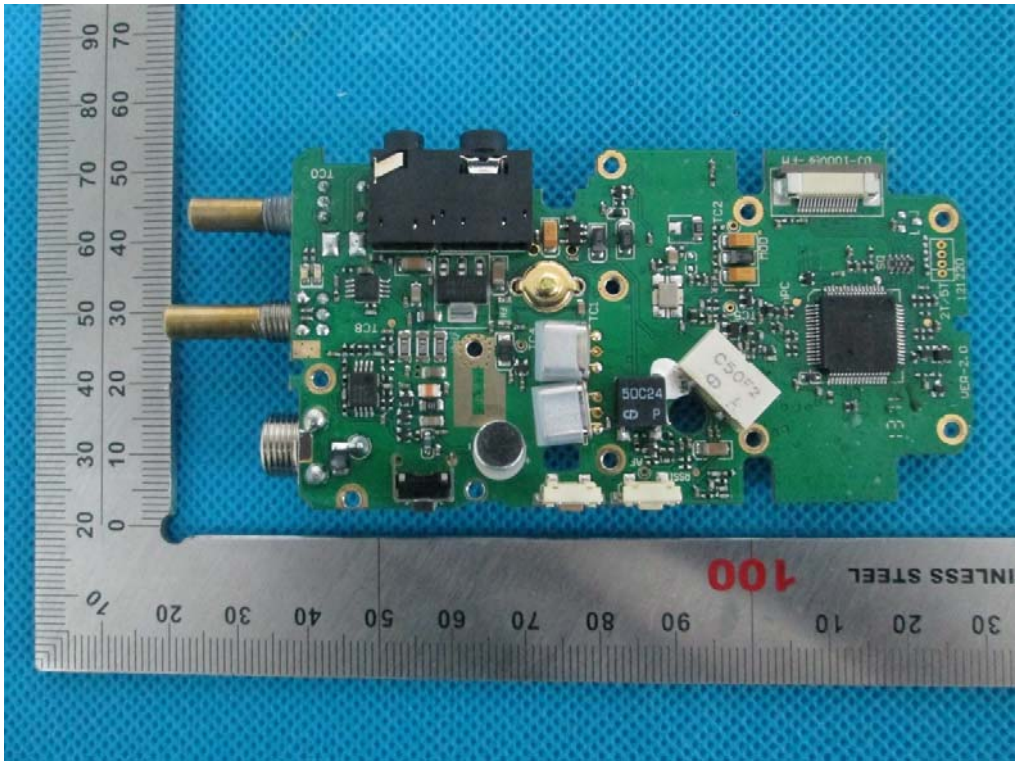
OPEN VIEW OF EUT-2



OPEN VIEW OF EUT-3



INTERNAL VIEW OF EUT-1



INTERNAL VIEW OF EUT-2