Test Report of FCC CFR 47 Part 15 Subpart B

On Behalf of

SHENZHEN HAOHUITONG TECHNOLOGY LTD.

6F Jianda Building, 10# Keyuan Road, Nanshan High-Tech Park, Nanshan, Shenzhen, 518053, China

Product Name:	**MVOICE SPEAKERPHONE**
Model/Type No.:	**MVOICE 3000**
Trade Mark:	**MVOICE**
FCC ID:	**2AJJA-MVE3000**
Prepared By:	**Shenzhen Hongcai Testing Technology Co., Ltd.** 1st-3rd Floor, Building C, Shuanghuan Xin Yi Dai Hi-Tech Industrial Park, No.8 Baoqing Road, Baolong Industrial Zone, Longgang District, Shenzhen, Guangdong, China Tel: +86-755-86337020 Fax:+86-755-86337028
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Tested By:	Jerry Zhao/

Reviewed By: Owen.Yang

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Approved By: Tony Wu

EMC Technical Manager

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Tel : +86 755 86337020(60Lines) Fax : +86 755 86337028 Web : www.hct-test.com

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	SHENZHEN HAOHUITONG TECHNOLOGY LTD.
Address of Applicant:	6F Jianda Building,10# Keyuan Road, Nanshan High-Tech Park, Nanshan, Shenzhen, 518053, China
Manufacturer :	SHENZHEN HAOHUITONG TECHNOLOGY LTD.
Address of manufacturer:	6F Jianda Building,10# Keyuan Road, Nanshan High-Tech Park, Nanshan, Shenzhen, 518053, China

General Description of E.U.T

Items	Description
EUT Description:	MVOICE SPEAKERPHONE
Model No.:	MVOICE 3000
Trade Mark:	MVOICE
Rated Voltage:	Input: DC 5V/1A from micro USB

Remark: ** The test data gathered are from the production sample provided by the manufacturer.*

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1.2 Test Standards

The report of EUT is prepared in accordance with FCC Rules and Regulations Part 15 Subpart B , The objective of the manufacturer is to demonstrate compliance with the described above standards.

1.3 Test Facility

All measurement required was performed at laboratory of Shenzhen CTL Testing Technology Co., Ltd. at Floor 1-A,Baisha Technology Park,No.3011,Shahexi Road, Nanshan District, Shenzhen, China 518055.

The test facility is recognized, certified, or accredited by the following organizations:

FCC – Registration No.: 970318

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 970318, December, 2013.

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2. SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 Support Equipments

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

Support equipments or special accessories in test configuration：

AUX Description:	Manufacturer	Model No.	Certificate	CABLE
Laptop	DELL	INSPIRON 3420	CE,FCC	1.5m Unshielded Power Cord with core

2.3 General Test Procedures

Conducted Emissions:The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 7.1 of ANSI C63.4-2009 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak detector mode.

Radiated Emissions: The EUT is a placed on as turntable, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4-2009.

2.4 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Power Line Conducted Emission	+/- 2.3 dB
Radiated Emission	+/- 3.4 dB

Uncertainty figures are valid to a confidence level of 95%.

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2.5 List of Measuring Equipments Used

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	BCT-EMC001	EMI Test Receiver	R&S	ESCI	100687	2016-7-25	2017-8-24
2	BCT-EMC002	EMI Test Receiver	R&S	ESPI	100097	2015-11-1	2016-10-31
3	BCT-EMC003	Amplifier	HP	8447D	1937A02492	2016-7-25	2017-8-24
4	BCT-EMC018	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9163	9163-324	2016-7-25	2017-8-24
5	BCT-EMC021	Triple-Loop Antenna	EVERFINE	LLA-2	711002	2015-11-1	2016-10-31
6	BCT-EMC026	RF POWER AMPLIFIER	FRANKONIA	FLL-75	1020A1109	2016-7-25	2017-8-24
7	BCT-EMC029	6DB Attenuator	FRANKONIA	N/A	1001698	2016-7-25	2017-8-24
8	BCT-EMC032	10dB attenuator	ELECTRO-METRICS	EM-7600	836	2016-7-25	2017-8-24
9	BCT-EMC036	Spectrum Analyzer	R&S	FSP	100397	2015-11-1	2016-10-31
10	BCT-EMC037	Broadband preamplifier	SCH WARZBECK	BBV9718	9718-182	2016-7-25	2017-8-24
11	BCT-EMC039	Horn Antenna	SCHWARZBECK	BBHA 9120D	0437	2016-7-25	2017-8-24
12	BCT-EMC038	Horn Antenna	SCHWARZBECK	BBHA9170	0483	2016-7-25	2017-8-24

3. SUMMARY OF TEST RESULTS

Standard	Test Items	Result
FCC Part 15 Subpart B	Conduction Emission 0.15MHz to 30MHz	Pass
FCC Part 15 Subpart B	Radiation Emission 30MHz to 1000MHz	Pass

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4. TEST OF AC POWER LINE CONDUCTED EMISSION

4.1 Limit of AC Power Line Conducted Emission

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150～0.500	66～56	56～46
0.500～5.000	56	46
5.000～30.00	60	50

4.2 EUT Setup

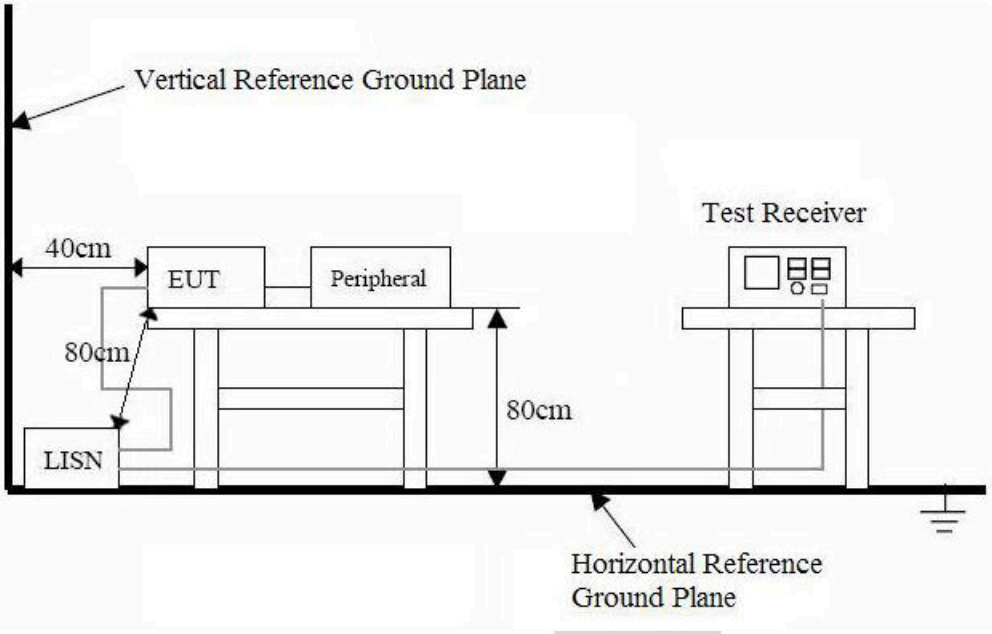
The setup of EUT is according with ANSI C63.4-2009 measurement procedure. The specification used was the FCC Rules and Regulations Part 15 Subpart B limits.

The EUT was placed center and the back edge of the test table.

The AV cables were draped along the test table and bundled to 30-40cm in the middle.

The spacing between the peripherals was 10 cm.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.



Remark: The EUT was connected to a 120VAC/ 60Hz power source.

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4.3 Instrument Setup

The test receiver was set with the following configurations:

Test Receiver Setting:

Frequency Range……150 KHz to 30 MHz
Detector……..Peak & Quasi-Peak & Average
Sweep Speed……Auto
IF Band Width……..9 KHz

4.4 Test Procedure

During the conducted emission test, the EUT power cord was connected to the auxiliary outlet of the first Artificial Mains.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

All data was recorded in the peak detection mode. Quasi-peak and Average readings were only performed when an emission was found to be marginal (within -10 dBμV of specification limits). Quasi-peak readings are distinguished with a "QP". Average readings are distinguished with a "AV".

4.5 Test Result

Temperature (℃) : 22~23	EUT: MVOICE SPEAKERPHONE
Humidity (%RH): 50~54	M/N: MVOICE 3000
Barometric Pressure (mbar): 950~1000	Operation Condition: Normal operation

PASS

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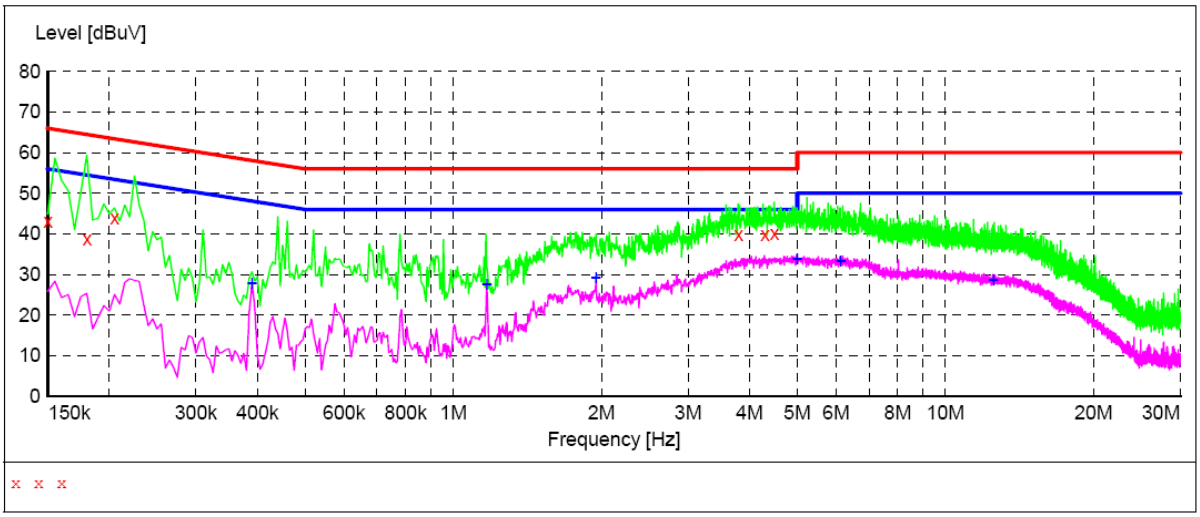
Conducted Emission:

EUT:	MVOICE SPEAKERPHONE
M/N:	MVOICE 3000
Operating Condition:	Normal operation
Test Site:	Shielded Room
Operator:	LV
Test Specification:	DC 5V/1A from micro USB
Comment:	L Line

SCAN TABLE: "Voltage(150K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000	43.10	15.4	66	22.9	QP	L1	GND
0.180000	38.70	15.1	65	25.8	QP	L1	GND
0.205000	43.90	14.8	63	19.5	QP	L1	GND
3.795000	39.70	13.1	56	16.3	QP	L1	GND
4.295000	39.70	13.4	56	16.3	QP	L1	GND
4.490000	40.10	13.4	56	15.9	QP	L1	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.390000	27.90	11.0	48	20.2	AV	L1	GND
1.170000	27.60	11.1	46	18.4	AV	L1	GND
1.950000	29.20	13.2	46	16.8	AV	L1	GND
5.000000	33.70	13.5	46	12.3	AV	L1	GND
6.135000	33.30	12.6	50	16.7	AV	L1	GND
12.525000	28.60	13.2	50	21.4	AV	L1	GND

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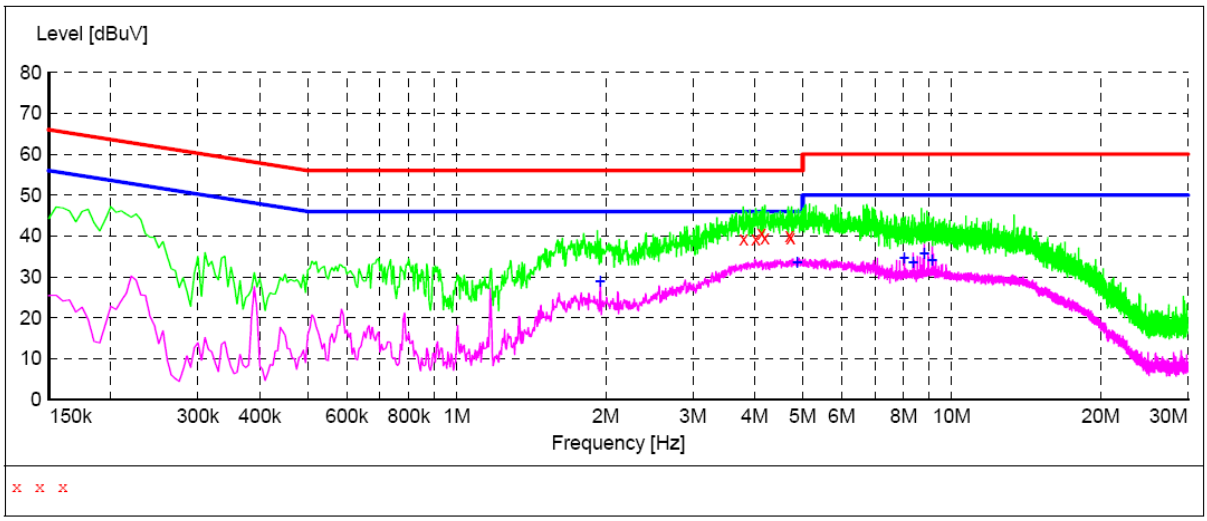
Conducted Emission:

EUT:	MVOICE SPEAKERPHONE
M/N:	MVOICE 3000
Operating Condition:	Normal operation
Test Site:	Shielded Room
Operator:	LV
Test Specification:	DC 5V/1A from micro USB
Comment:	N Line

SCAN TABLE: "Voltage(150K-30M)FIN"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
3.800000	39.20	13.1	56	16.8	QP	N	GND
4.020000	39.40	13.3	56	16.6	QP	N	GND
4.125000	40.60	13.3	56	15.4	QP	N	GND
4.190000	39.50	13.3	56	16.5	QP	N	GND
4.700000	40.00	13.4	56	16.0	QP	N	GND
4.725000	39.60	13.4	56	16.4	QP	N	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
1.950000	28.90	13.2	46	17.1	AV	N	GND
4.880000	33.50	13.5	46	12.5	AV	N	GND
8.025000	34.50	13.6	50	15.5	AV	N	GND
8.360000	33.50	13.6	50	16.5	AV	N	GND
8.805000	35.80	13.6	50	14.2	AV	N	GND
9.140000	34.00	13.5	50	16.0	AV	N	GND

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5 - RADIATED DISTURBANCES

5.1 Limit of Radiated Disturbances

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dBμV/m)
30 ~ 88	3	40
88~216	3	43.5
216 ~ 960	3	46
960 ~ 1000	3	54

Note:
(1) The tighter limit shall apply at the edge between two frequency bands.
(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

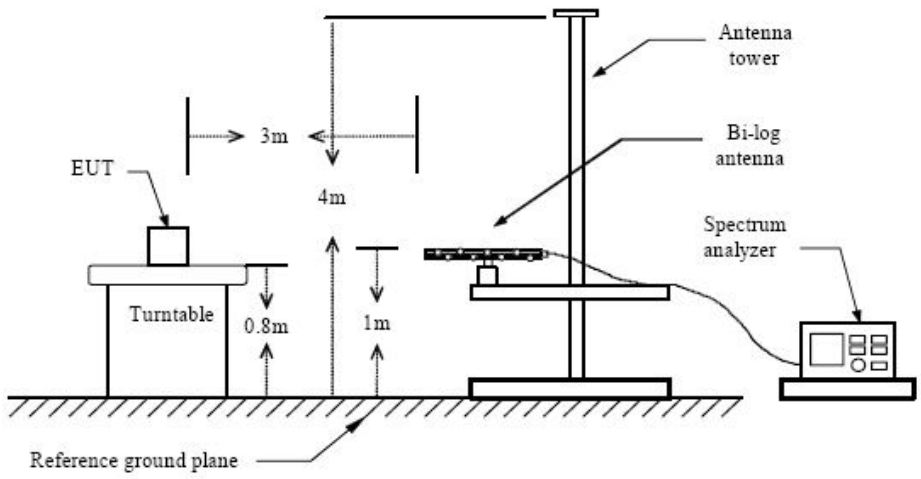
5.2 EUT Setup

The radiated emission tests were performed in the in the 3-meter anechoic chamber, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC Part 15 Subpart B limits.

The EUT was placed on the center of the test table.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

Below 1 GHz



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5.3 Test Receiver Setup

According to FCC Part 15 rule, the frequency was investigated from 30 to 1000 MHz. During the radiated emission test, the test receiver was set with the following configurations:

Test Receiver Setting:

Detector……..Peak & Quasi-Peak
IF Band Width……..120KHz
Frequency Range……30MHz to 1000MHz
Turntable Rotated……0 to 360 degrees

Antenna Position:

Height……1m to 4m
Polarity……...Horizontal and Vertical

5.4 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings performed only when an emission was found to be marginal (within -10 dBμV of specification limits), and are distinguished with a "QP" in the data table.

5.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBμV means the emission is 7dBμV below the maximum limit for Subpart B. The equation for margin calculation is as follows:

Margin = Limit – Corr. Ampl.

5.6 Radiated Emissions Test Result

Temperature (℃) : 22~23	EUT: MVOICE SPEAKERPHONE
Humidity (%RH): 50~54	M/N: MVOICE 3000
Barometric Pressure (mbar): 950~1000	Operation Condition: Normal operation

PASS

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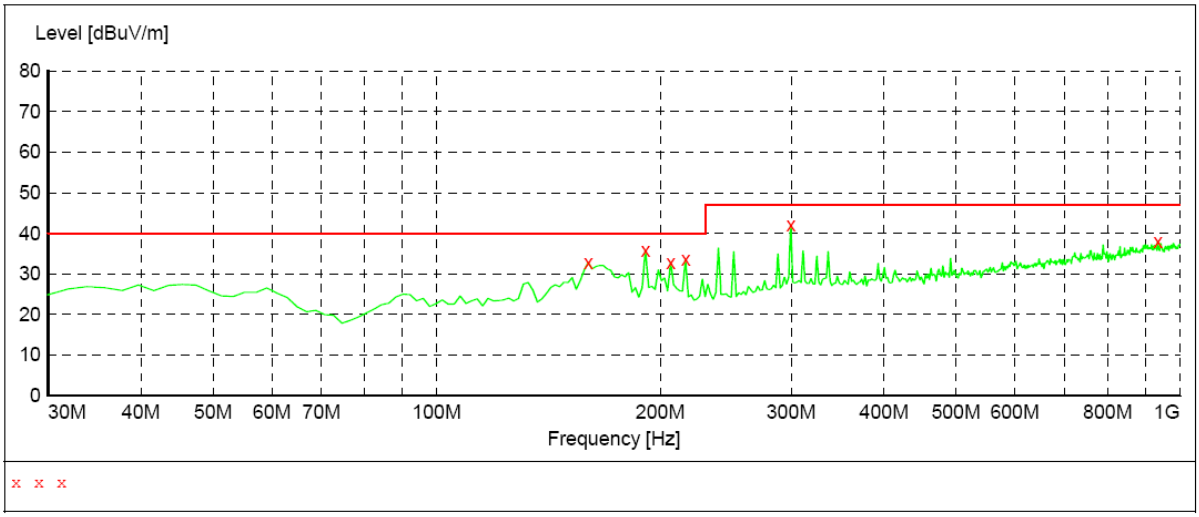
Radiated Emission Test Data (30~1000M):

EUT:	MVOICE SPEAKERPHONE
M/N:	MVOICE 3000
Operating Condition:	Normal operation
Test Site:	3m CHAMBER
Operator:	Chen
Test Specification:	DC 5V/1A from micro USB
Comment:	Polarization: Horizontal

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	9163-2015



MEASUREMENT RESULT:

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
159.980000	32.90	12.9	40.0	7.1	QP	100.0	0.00	HORIZONTAL
191.020000	35.90	13.6	40.0	4.1	QP	100.0	0.00	HORIZONTAL
206.540000	32.90	14.1	40.0	7.1	QP	100.0	0.00	HORIZONTAL
216.240000	33.70	12.3	40.0	6.3	QP	100.0	0.00	HORIZONTAL
299.660000	42.20	14.5	47.0	4.8	QP	100.0	0.00	HORIZONTAL
934.040000	38.00	25.7	47.0	9.0	QP	100.0	0.00	HORIZONTAL

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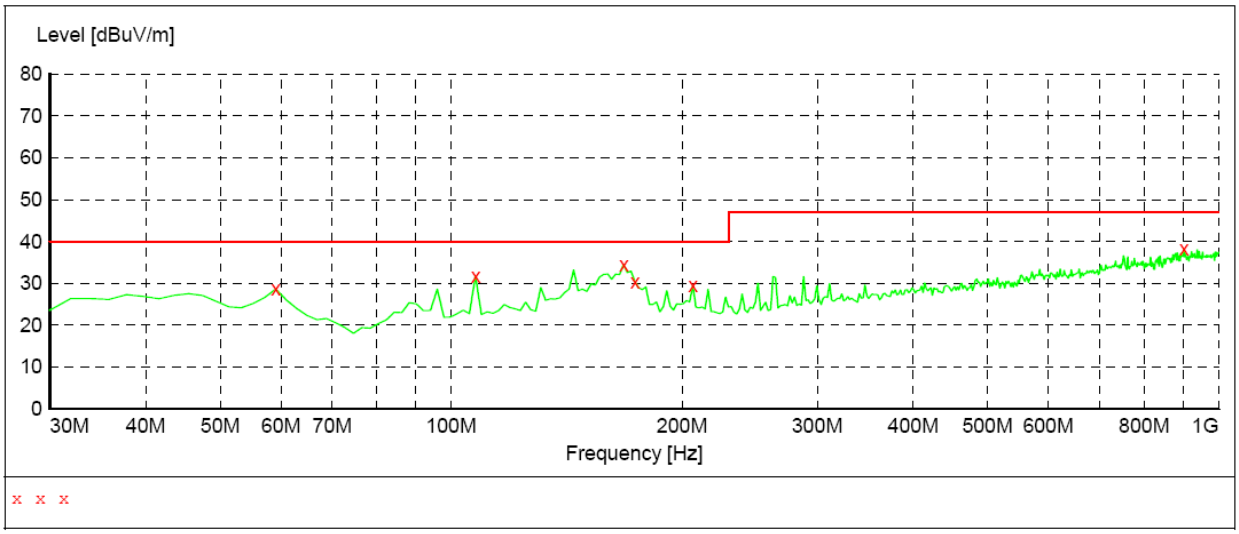
Radiated Emission Test Data (30~1000M):

EUT:	MVOICE SPEAKERPHONE
M/N:	MVOICE 3000
Operating Condition:	Normal operation
Test Site:	3m CHAMBER
Operator:	Chen
Test Specification:	DC 5V/1A from micro USB
Comment:	Polarization: Vertical

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	9163-2015



MEASUREMENT RESULT:

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
59.100000	28.60	15.7	40.0	11.4	QP	100.0	0.00	VERTICAL
107.600000	31.80	12.2	40.0	8.2	QP	100.0	0.00	VERTICAL
167.740000	34.50	12.7	40.0	5.5	QP	100.0	0.00	VERTICAL
173.560000	30.40	12.4	40.0	9.6	QP	100.0	0.00	VERTICAL
206.540000	29.50	14.1	40.0	10.5	QP	100.0	0.00	VERTICAL
901.060000	38.10	25.8	47.0	8.9	QP	100.0	0.00	VERTICAL

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