FCC 47 CFR PART 90

TEST REPORT

For

Applicant :	**Sure-Response L.L.C.**
Address :	**27063 Meadow Ridge Drive Elko, MN 55020 USA**
Product Name :	**Two-Way Radio**
Model Name :	**Razor**
Brand Name :	**Sure-Response**
FCC ID :	**ZAQ-RAZOR**
Report No. :	**STS110216F1**
Date of Issue :	**March. 1, 2011**

Issued by :	**Shenzhen Super Test Service Technology Co., Ltd.**
Address :	**No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China**
Tel :	**86-755-2795 8522**
Fax :	**86-755-2795 8022**

CONTENTS

1. TEST RESULT CERTIFICATION

Applicant Name:	Sure-Response L.L.C.
Address:	27063 Meadow Ridge Drive Elko, MN 55020 USA
Manufacturer Name:	Allcomm Electronic Company Limited
Address:	Tang Xia Yong Village, SongGang Town, Baoan District, Shenzhen, Guang Dong, PRC
Brand Name:	Sure-Response
Equipment Under Test:	Two-Way Radio
Model Number:	Razor
FCC ID：	ZAQ-RAZOR
Test Standard	FCC 47 CFR Part 90
File Number:	STS110216F1
Date of Test:	February. 18, 2011- March 1, 2011

We (STS) hereby certify that the test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4:2009 and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 90.

The test results of this report relate only to the tested sample identified in this report.

Tested by (+ signature): Petter Ping

Petter Ping March 1, 2011

Review by (+ signature):

July Wen March 1, 2011

Approved by (+ signature): Teo Yang

Terry Yang March 1, 2011

2. Technical Information

Note: the following data is based on the information by the applicant.

2.1 EUT Description

Product	Two-Way Radio
Brand Name	Sure-Response
Model Number	Razor
Series Model Name:	N/A
Series Model Difference description:	N/A
Power Supply	DC 5V by AC/DC Adapter DC 3.7V by battery
Frequency Range	450.000 MHz-470.000 MHz
Modulation Technique	FM
Channel Number	8
Test Frequency	450.125MHz - 460.125MHz – 469.975MHz
Antenna Gain	1.5dBi
Temperature Range	-10℃-50℃

Note:

1. *This submittal(s) (test report) is intended for FCC ID: ZAQ-RAZOR filing to comply with the FCC Part 90, Subpart I Rules.*
2. *Please refer to Appendix B for the photographs of the EUT. For more details, please refer to the User's manual of the EUT.*

2.2 Objective

The tests documented in this report were performed in accordance with ANSI C63.4 (2009) and FCC CFR 47 Rules Part 90 Subpart I.

No.	Identity	Document Title
1	47 CFR Part 2 (10-1-05 Edition)	Radio Frequency Devices
2	47 CFR Part 90 (10-1-09 Edition)	Private Land Mobile Radio Services

2.3 Test Standards and Results

Test items and the results are as bellow:

№	Test Type	Para. Number	Limit	Result
1	Power and Antenna High Limits	2.1046; 90.205	Refer to 90.205	PASS
2	Modulation Characteristic	2.1047; 90.207	Refer to 90.207	PASS
3	Occupied Bandwidth	2.1049; 90.209	Refer to 90.209	PASS
4	Emission Mask	2.1053; 90.210	Refer to 90.210	PASS
5	Frequency Stability vs. Temperature	2.1055; 90.213	Refer to 90.213	PASS
6	Frequency Stability vs. Voltage	2.1055; 90.213	Refer to 90.213	PASS
7	Transmitter Frequency Behavior	90.214	Refer to 90.214	PASS
8	Lined conducted emission	15.109	Refer to 15.109	PASS

2.4 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35ºC
- Humidity: 30-60%
- Atmospheric pressure: 86-106 k Pa

3. Details of Test

3.1 Identification of the Responsible Testing Laboratory

Company:	Shenzhen Super Test Service Technology Co., Ltd.
Address:	No.5, Langshan 2nd Rd., North Hi-Tech Industrial park, Nanshan, Shenzhen, Guangdong, China

3.2 Identification of the Responsible Testing Location

Test Site:	Most Technology Service Co., Ltd.
Location:	No.5, Langshan 2nd Rd., North Hi-Tech Industrial park, Nanshan, Shenzhen, Guangdong, China
Description:	There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2009 and CISPR 16 requirements. The FCC Registration Number is **490827.**
Site Filing:	The site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.
Instrument Tolerance:	All measuring equipment is in accord with ANSI C63.4:2009 and CISPR 16 requirements that meet industry regulatory agency and accreditation agency requirement.
Ground Plane:	Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna.

3.3 List of Test Equipments

No.	Equipment	Manufacturer	Model No.	S/N	Calibration date	Calibration due date
1	Test Receiver	Rohde & Schwarz	ESCI	100492	2011/02/14	2012/02/14
2	L.I.S.N.	Rohde & Schwarz	ENV216	100093	2011/02/14	2012/02/14
3	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2011/02/14	2012/02/14
4	Terminator	Hubersuhner	50Ω	No.1	2011/02/14	2012/02/14
5	RF Cable	SchwarzBeck	N/A	No.1	2011/02/14	2012/02/14
6	Bilog Antenna	Sunol	JB3	A121206	2011/02/14	2012/02/14
7	Cable	Resenberger	N/A	NO.1	2011/02/14	2012/02/14
8	DC Power Filter	DuoJi	DL2×30B	N/A	2011/02/14	2012/02/14
9	Single Phase Power Line Filter	DuoJi	FNF 202B30	N/A	2011/02/14	2012/02/14
10	3 Phase Power Line Filter	DuoJi	FNF 402B30	N/A	2011/02/14	2012/02/14
11	Absorbing Clamp	Luthi	MDS21	3635	2011/02/14	2012/02/14
12	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2011/02/14	2012/02/14
13	AC Power Source	Kikusui	AC40MA	LM003232	2011/02/14	2012/02/14
14	Test Analyzer	Kikusui	KHA1000	LM003720	2011/02/14	2012/02/14
15	Line Impendence Network	Kikusui	LIN40MA-PCR-L	LM002352	2011/02/14	2012/02/14
16	ESD Tester	Kikusui	KES4021	LM003537	2011/02/14	2012/02/14
17	EMCPRO System	EM Test	UCS-500-M4	V0648102026	2011/02/14	2012/02/14
18	Signal Generator	IFR	2032	203002/100	2011/02/14	2012/02/14
19	Amplifier	A&R	150W1000	301584	2011/02/14	2012/02/14
20	CDN	FCC	FCC-801-M3-25	107	2011/02/14	2012/02/14
21	EM Injection Clamp	FCC	F-203I-23mm	403	2011/02/14	2012/02/14
22	Telecommunication Antenna	European Antennas	PSA 75301R/170	0304213	2011/02/14	2012/02/14

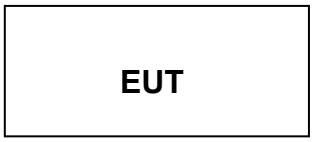
NOTE: Equipments listed above have been calibrated and are in the period of validation.

3.4 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35ºC
- Humidity: 30-60%
- Atmospheric pressure: 86-106 k Pa

3.5 Configuration of Tested System



3.6 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Identifier	Series No.	Note
1	AC Adapter	N/A	N/A	FCC DOC	N/A	EUT

4. Test Methodology

4.1 General Test Procedures

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirement in Section 13.1.4.1 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 and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, 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.

4.2 Description of Test Modes

The EUT has been tested under normal operating condition.

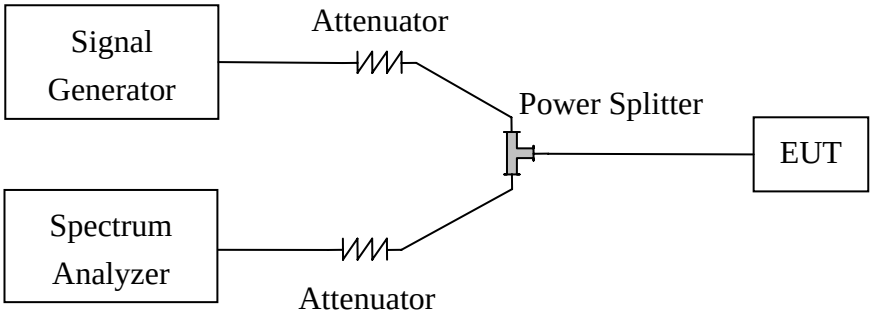
Three channels (The top channel, the middle channel and the bottom channel) are chosen for testing.

5. FCC Part 90 Requirements

5.1 General Information

5.1.1 Conducted Related Tests

Based on ANSI/TIA-603-C-2004:

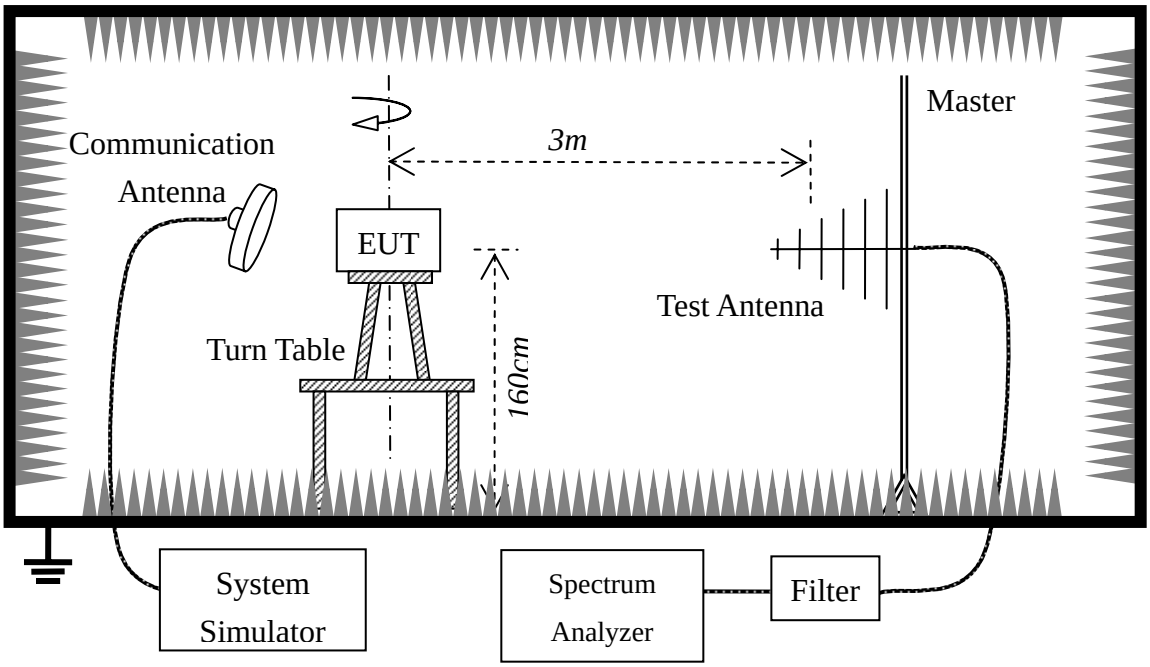


1. The EUT is coupled to the Spectrum Analyzer and the System Simulator with the suitable Attenuators through the Power Splitter; the path loss is calibrated to correct the reading.
2. The EUT is configured here as MS + Battery.
3. Set the spectrum analyzer to measure peak hold with the required settings.
4. Set the signal generator to a known output power and record the path loss in dB (LOSS) for frequencies up to the tenth harmonic of the EUT's carrier frequency. LOSS = Generator Output Power (dBm) – Analyzer reading (dBm).
5. Replace the signal generator with the EUT.
6. Adjust the settings of the Digital Radio communication Tester (DRT) to set the EUT to its maximum power at the required channel.
7. Set the spectrum analyzer to measure peak hold with the required settings. Offset the spectrum analyzer reference level by the path loss measured above.
8. Measure and record all spurious emissions up to the tenth harmonic of the carrier frequency.
9. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.
10. If necessary steps 6 and 7 may be performed with the spectrum analyzer set to average detector.

Note: Step 4 above is performed prior to testing and LOSS is recorded by test software. Steps 3, 7, and 8 above are performed with test software.

5.1.2 Radiated Power and Spurious Emission Tests

Based on ANSI/TIA-603-C-2004



1. The test is performed in a full-Anechoic Chamber, the air loss of the site and the factors of the test system are pre-calibrated using the substitution method.
2. Connect the equipment as shown in the above diagram with the EUT's antenna in a vertical orientation.
3. Adjust the setting of System Simulator to set the EUT to its maximum power at the require channel.
4. Set the Spectrum Analyzer to the channel frequency, set the analyzer to measure peak hold with the required setting.
5. Rotate the EUT 360 degree, recorded the peak level in dBm(LVL).
6. Replace the EUT with a vertically polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
7. Connect the antenna to a signal generator with known output power and record the path loss in dB (Loss), Loss=Generator Output Power(dBm)- Spectrum Analyzer reading Power(dBm).
8. Determine the ERP using the following equation:
   ERP(dBm)=LVL(dBm)+Loss(dB)
9. Determine the EiRP using the following equation:
   EIRP(dBm)= ERP(dBm)+2.14(dB)
10. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.

Note: Steps 6 and 7 above are performed prior to setting and Loss is recorded by test software.

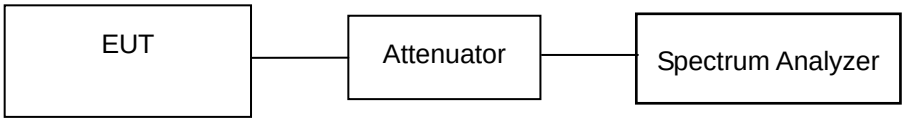
5.2 Power and Antenna High Limits

LIMIT

According to CFR 47 section 90.205, Maximum ERP is dependent upon the station's antenna HAAT and required service area.

5.2.1 CONDUCTED MEASUREMENT

TEST CONFIGURATION



TEST PROCEDURE

The RF output of transceiver was conducted to a spectrum analyzer through an appropriate attenuator.

TEST RESULTS

Freq.	Channel	Reading ®	Total Factor(TF)	Power(CP)
(MHz)		(dBm)	(dB)	(dBm)
450.125	Bottom	7.44	22.11	29.55
460.125	Middle	7.49	22.19	29.68
469.975	Top	6.44	22.21	28.65

** Note:*

Calculation Formula: CP = R + TF (A+L)

CP: The final Conducted Power

TF: Total Factor

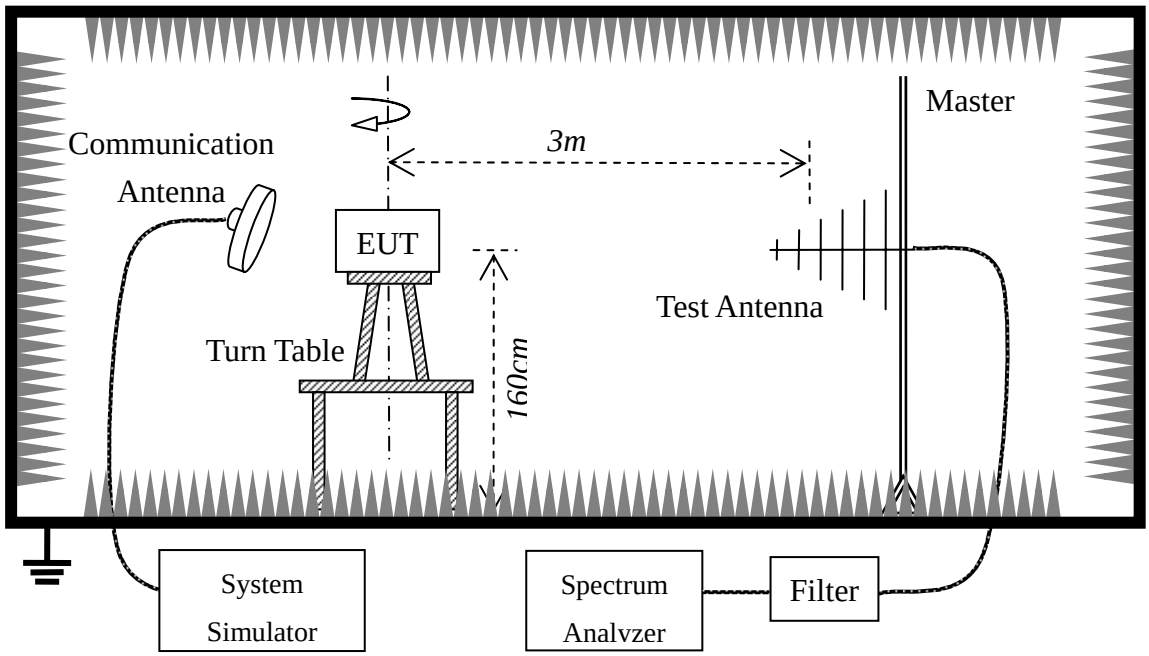
R: The reading value from spectrum analyzer

A: The attenuation value of the used attenuator

L: The loss of all connection cables

5.2.2 Radiated Measurement

TEST CONFIGURATION



TEST PROCEDURE

1. On a test site, the EUT shall be placed on a turntable and in the position closest to the normal use as declared by the user.

2. The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.

3. The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.

4. The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.

5. The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.

6. The transmitter shall than be rotated through 360°in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

7. The test antenna shall be raised and lowered again through the specified range of height until the measuring

receiver detects a maximum signal level.

8. The maximum signal level detected by the measuring receiver shall be noted.

9. The measurement shall be repeated with the test antenna set to horizontal polarization.

10. Replace the antenna with a proper Antenna (substitution antenna).

11. The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.

12. The substitution antenna shall be connected to a calibrated signal generator.

13. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.

14. The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.

15. The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.

16. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.

17. The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

TEST RESULTS

Chan	Freq.	Antenna	Reading	S.G	Cable Loss	AntennaGain	E.R.P
	(MHz)	Polarity	(dBm)	(dBm)	(dB)	(dB)	(dBm)
Low	450.125	V	5.21	34.2	5.59	1.11	29.72
	450.125	H	5.14	33.4	5.59	1.11	28.92
Middle	460.125	V	5.35	33.8	5.63	1.12	29.29
	460.125	H	5.52	34.5	5.63	1.12	29.89
High	469.975	V	5.76	33.9	5.66	1.13	29.37
	469.975	H	5.48	34.1	5.66	1.13	29.57

Note:

E.R.P(dBm) = SG output power (dBm) – Cable losses (dB) + Antenna gain (dB)

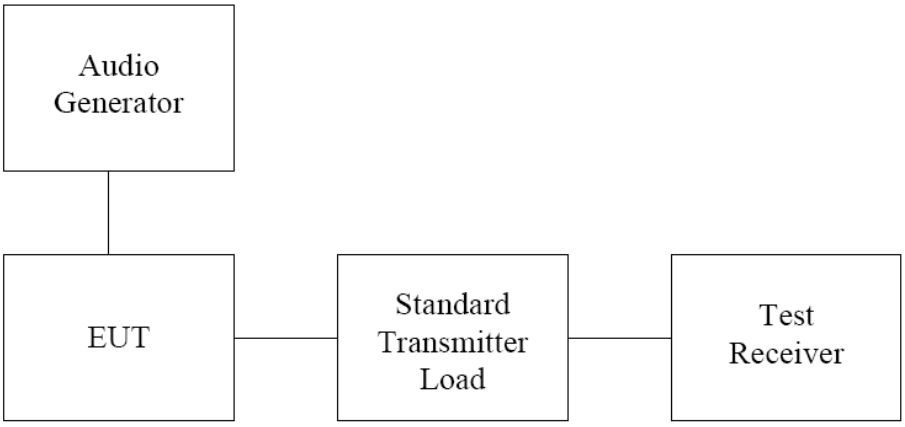
5.3 Modulation Characteristic

LIMIT

According to CFR 47 section 2.1047 a, for Voice modulation communication equipment, the frequency response of the audio modulation circuit over a range of 100 to 5000 Hz shall be measured.

According to CFR 47 section 90.205, Equipment which employs modulation limiting, a curve showing the percentage of modulation versus the modulation input voltage shall be supplied.

TEST CONFIGURATION



TEST PROCEDURE

Modulation limits is the transmitter circuit's ability to limit the transmitter form producing deviations in excess of rated system deviation.

The audio signal generator is connected to the audio input of the EUT with its full rating.

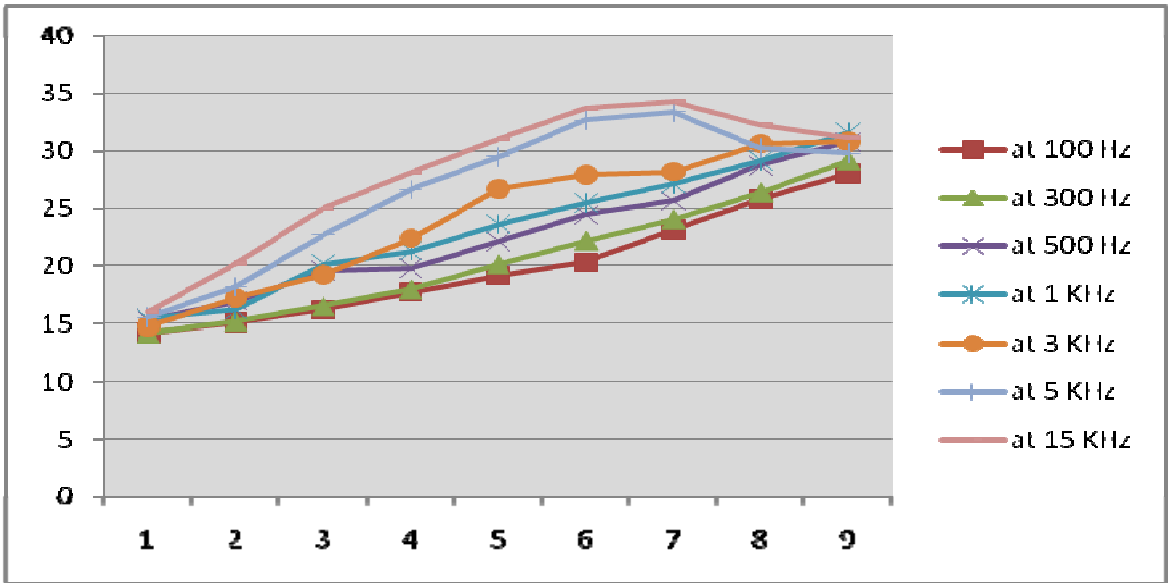
The modulation response is measured at certain modulation frequencies, related to 1000 Hz reference signal.

Tests are performed for positive and negative modulation.

TEST RESULTS

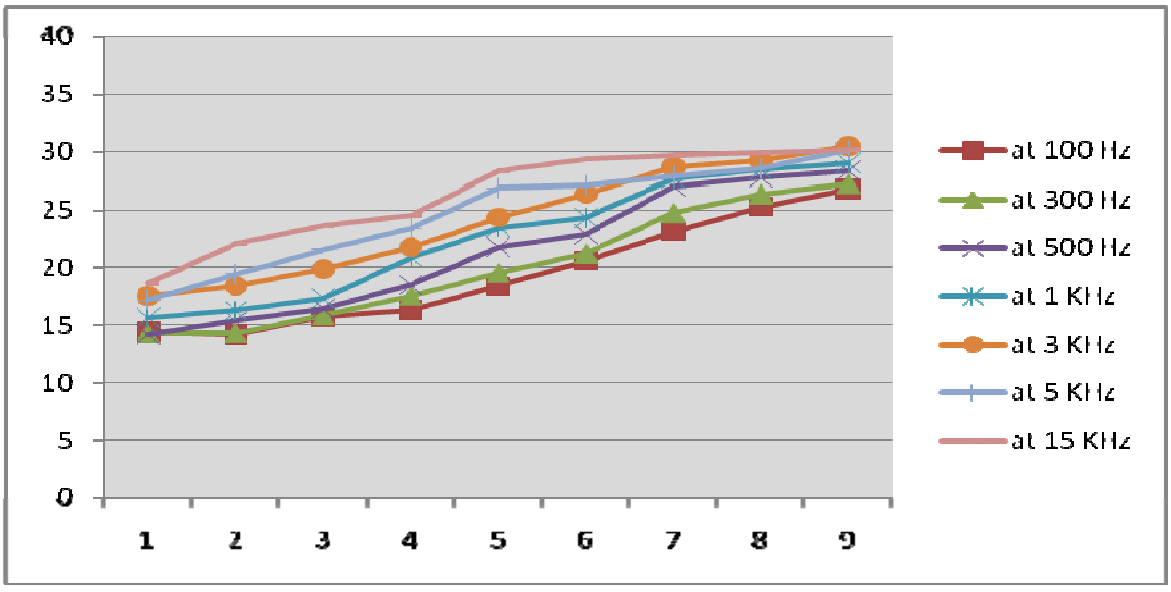
The Low Channel (450.125 MHz)

Modulation Level (dB)	Peak Frequency Deviation						
	at 100 Hz	at 300 Hz	at 500 Hz	at 1 KHz	at 3 KHz	at 5 KHz	at 15 KHz
-20	14.39	14.25	14.16	15.62	17.49	17.21	18.58
-15	14.15	14.29	15.33	16.24	18.41	19.46	22.04
-10	15.68	15.79	16.42	17.32	19.85	21.59	23.63
-5	16.28	17.51	18.46	20.92	21.76	23.43	24.54
0	18.36	19.51	21.75	23.48	24.33	26.85	28.33
+5	20.56	21.17	22.82	24.34	26.33	27.14	29.34
+10	23.14	24.69	26.95	27.65	28.63	27.92	29.65
+15	25.24	26.28	27.72	28.45	29.15	28.56	29.83
+20	26.78	27.19	28.31	29.02	30.42	30.12	30.07



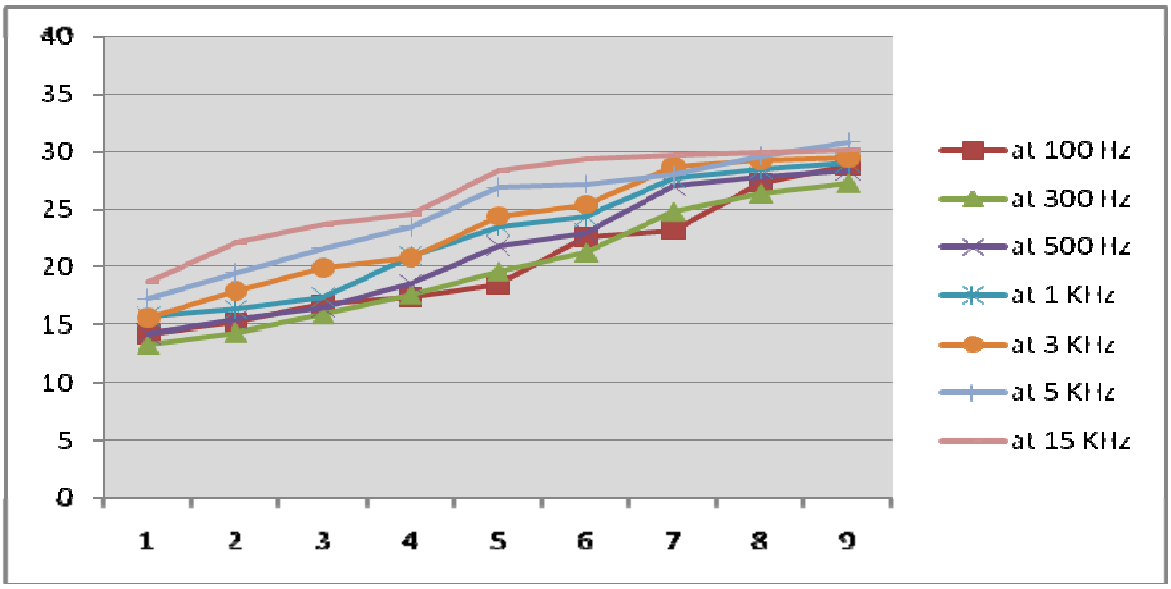
The Middle Channel (460.125 MHz)

Modulation Level (dB)	Peak Frequency Deviation						
	at 100 Hz	at 300 Hz	at 500 Hz	at 1 KHz	at 3 KHz	at 5 KHz	at 15 KHz
-20	14.17	13.25	14.16	15.62	16.49	17.21	18.58
-15	14.15	14.29	15.33	16.24	18.41	19.46	22.04
-10	15.68	15.79	16.42	17.32	19.85	21.59	23.63
-5	16.28	17.51	18.46	20.92	21.76	23.43	24.54
0	18.36	19.51	21.75	23.48	24.33	26.85	28.33
+5	20.56	21.17	22.82	24.34	26.33	27.14	29.34
+10	23.14	24.69	26.95	27.65	28.63	27.92	29.65
+15	25.24	26.28	27.72	28.45	29.15	28.56	29.83
+20	26.78	27.19	28.31	29.02	29.42	30.12	30.07



The High Channel (469.975 MHz)

Modulation Level (dB)	Peak Frequency Deviation						
	at 100 Hz	at 300 Hz	at 500 Hz	at 1 KHz	at 3 KHz	at 5 KHz	at 15 KHz
-20	14.17	13.25	14.16	15.62	15.49	17.21	18.58
-15	15.15	14.29	15.33	16.24	17.85	19.46	22.04
-10	16.68	15.79	16.42	17.32	19.85	21.59	23.63
-5	17.28	17.51	18.46	20.92	20.76	23.43	24.54
0	18.36	19.51	21.75	23.48	24.33	26.85	28.33
+5	22.56	21.17	22.82	24.34	25.33	27.14	29.34
+10	23.14	24.69	26.95	27.65	28.63	27.92	29.65
+15	27.24	26.28	27.72	28.45	29.15	29.56	29.83
+20	28.78	27.19	28.31	29.02	29.42	30.75	30.07

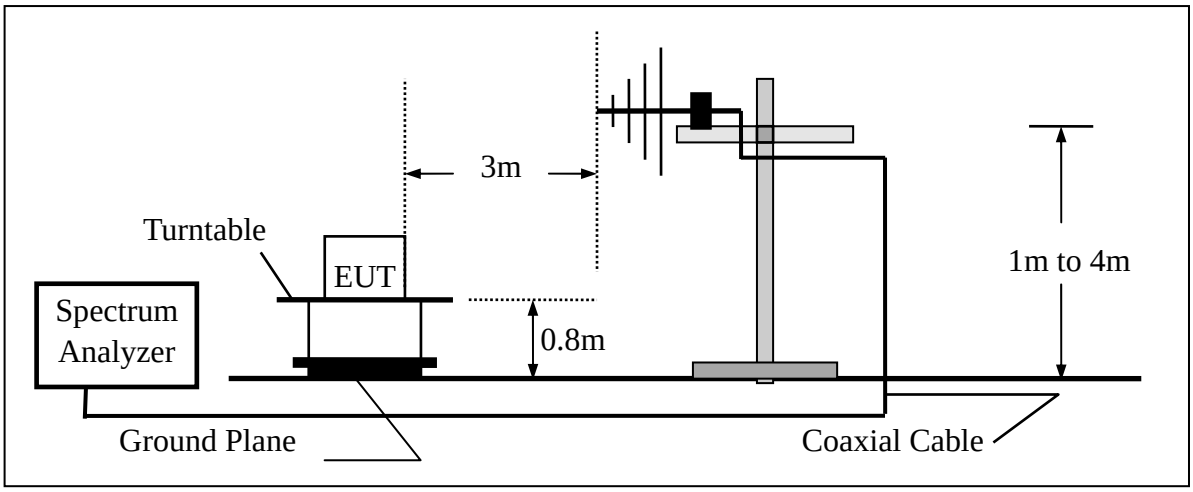


5.4 Occupied Bandwidth

LIMIT

According to FCC CFR 47 Part 90 Section 90.209, for other types of emissions, the maximum authorized bandwidth shall not be more than that normally authorized for voice operations.

TEST CONFIGURATION

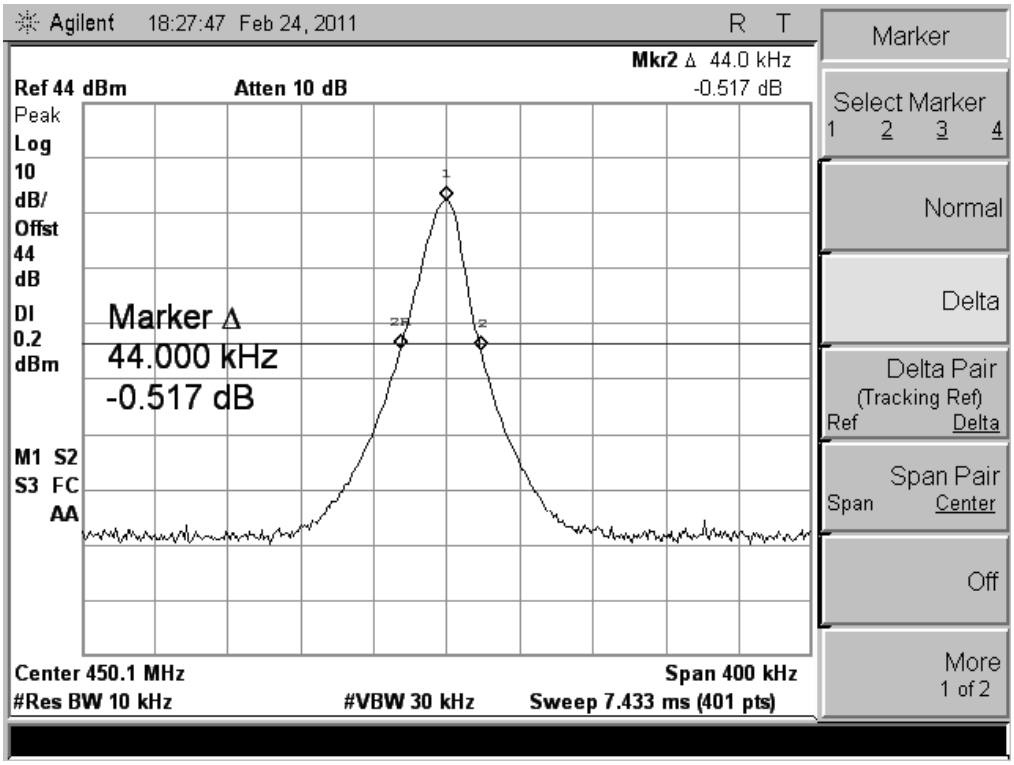


TEST PROCEDURE

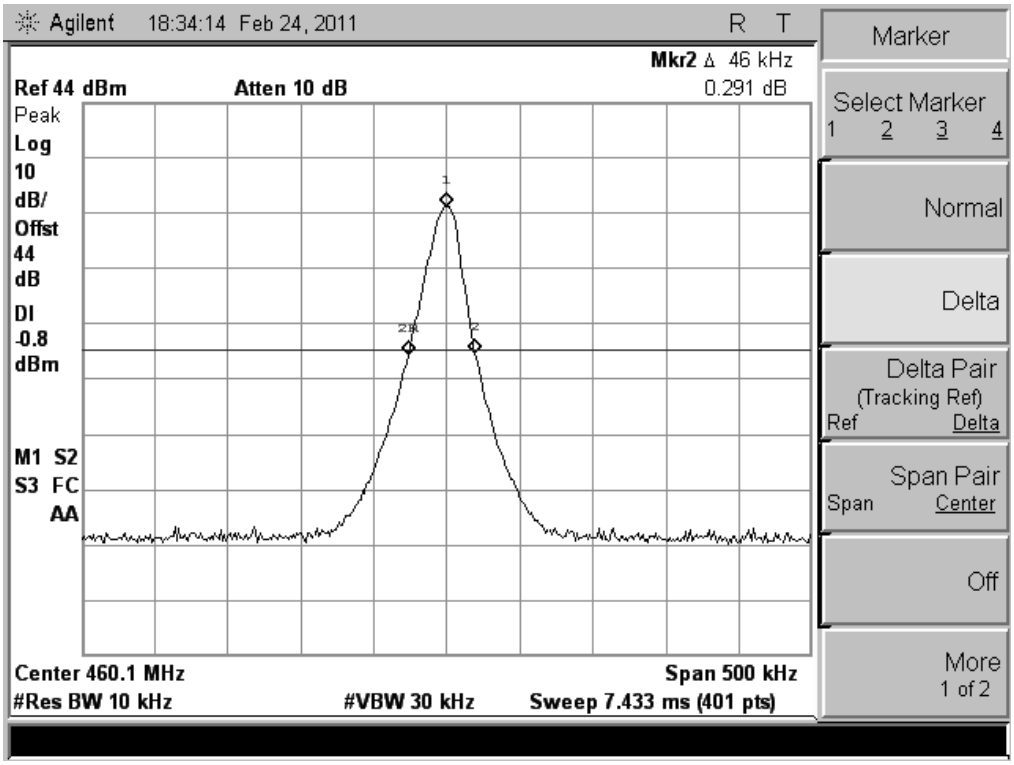
1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. Set EUT as normal operation.
3. Set SPA center frequency=fundamental frequency, RBW=10 KHz, VBW=30 KHz, Span=200 KHz.
4. Set SPA max. Hold. Mark peak, -26dB.

TEST RESULTS

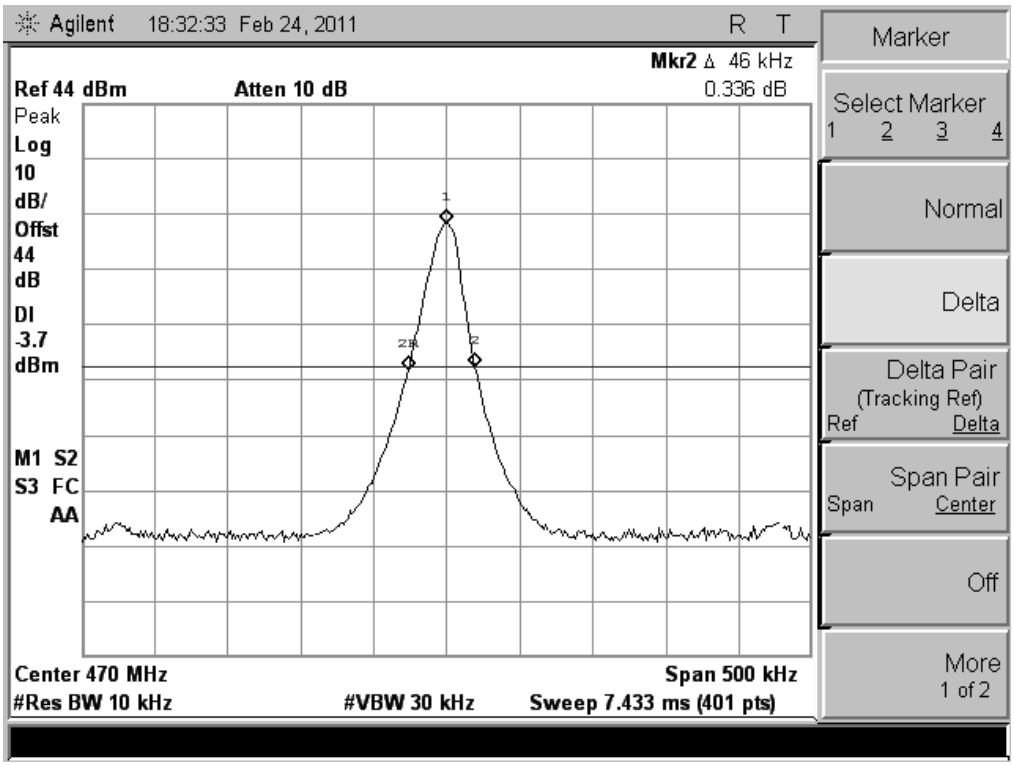
Channel	Frequency	Occupied Bandwidth	Result
Bottom	450.125 MHz	44.00 KHz	PASS
Middle	460.125 MHz	46.00 KHz	PASS
Top	469.975 MHz	46.00 KHz	PASS



(The Low Channel: 450.125 MHz)



(The Middle Channel: 460.125 MHz)



(The High Channel: 469.975 MHz)

5.5 Emission Mask

LIMIT

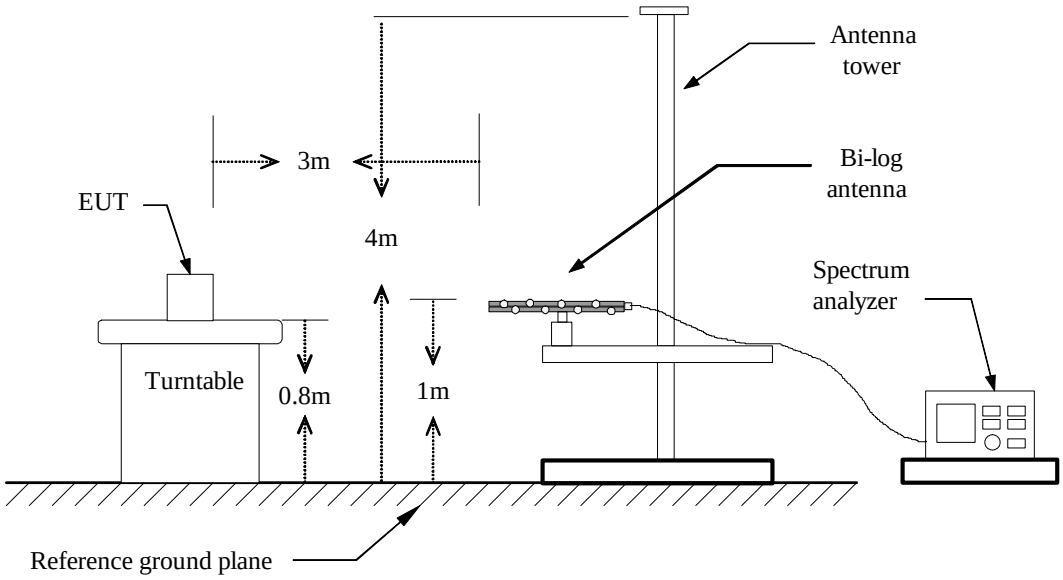
According to CFR 47 section 90.210, the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

(1) On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB;

(2) On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB;

(3) On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least 43+10log $_{10}$ *(mean output power in watts) dB;

TEST CONFIGURATION



TEST PROCEDURE

1. On a test site, the EUT shall be placed on a turntable and in the position closest to the normal use as declared by the user.

2. The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.

3. The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.

4. The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.

5. The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.

6. The transmitter shall than be rotated through 360°in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

7. The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.

8. The maximum signal level detected by the measuring receiver shall be noted.

9. The measurement shall be repeated with the test antenna set to horizontal polarization.

10. Replace the antenna with a proper Antenna (substitution antenna).

11. The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.

12. The substitution antenna shall be connected to a calibrated signal generator.

13. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.

14. The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.

15. The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.

16. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.

17. The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

TEST RESULTS

The Unwanted Radiated Emission

The Low Channel (450.125 MHz)

Frequency (MHz)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
900.03	V	-17.37	10.69	8.31	-19.75	-13	-6.75
Other	V	--	--	--	--	-13	> 10 dB
--	V	--	--	--	--	-13	> 10 dB
--	V	--	--	--	--	-13	> 10 dB
900.07	H	-21.34	10.69	8.31	-23.72	-13	-10.72
Other	H	--	--	--	--	-13	> 10 dB
--	H	--	--	--	--	-13	> 10 dB
--							

Notes:

(1) "--" in the table above means that the emissions are too small to be measured and are at least 10 dB below the limit.

(2) Emisiion Level=S.G ourput power(dBm)-Cable loss(db)+Antenna Gain(dBi)

The Middle Channel (460.125 MHz)

Frequency (MHz)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
920.08	V	-18.95	10.72	8.35	-21.32	-13	-8.32
0ther	V	--	--	--	--	-13	> 10 dB
--	V	--	--	--	--	-13	> 10 dB
--	V	--	--	--	--	-13	> 10 dB
--	V	--	--	--	--	-13	> 10 dB
--	V	--	--	--	--	-13	> 10 dB
920.11	H	-23.72	10.72	8.35	-26.09	-13	-13.09
Other	H	--	--	--	--	-13	> 10 dB
--	H	--	--	--	--	-13	> 10 dB
--	H	--	--	--	--	-13	> 10 dB
--	H	--	--	--	--	-13	> 10 dB
--							

Notes:

(1) "--" in the table above means that the emissions are too small to be measured and are at least 10 dB below the limit.

(2) Emisiion Level=S.G ourput power(dBm)-Cable loss(db)+Antenna Gain(dBi)

The High Channel (469.975 MHz)

Frequency (MHz)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
940.13	V	-17.94	10.90	8.69	-20.15	-13	-7.15
Other	V	--	--	--	--	-13	> 10 dB
--	V	--	--	--	--	-13	> 10 dB
--	V	--	--	--	--	-13	> 10 dB
940.15	H	-21.31	10.90	8.69	-23.52	-13	-10.52
Other	H	--	--	--	--	-13	> 10 dB
--	H	--	--	--	--	-13	> 10 dB
--	H	--	--	--	--	-13	> 10 dB
--	H	--	--	--	--	-13	> 10 dB
--							

Notes:

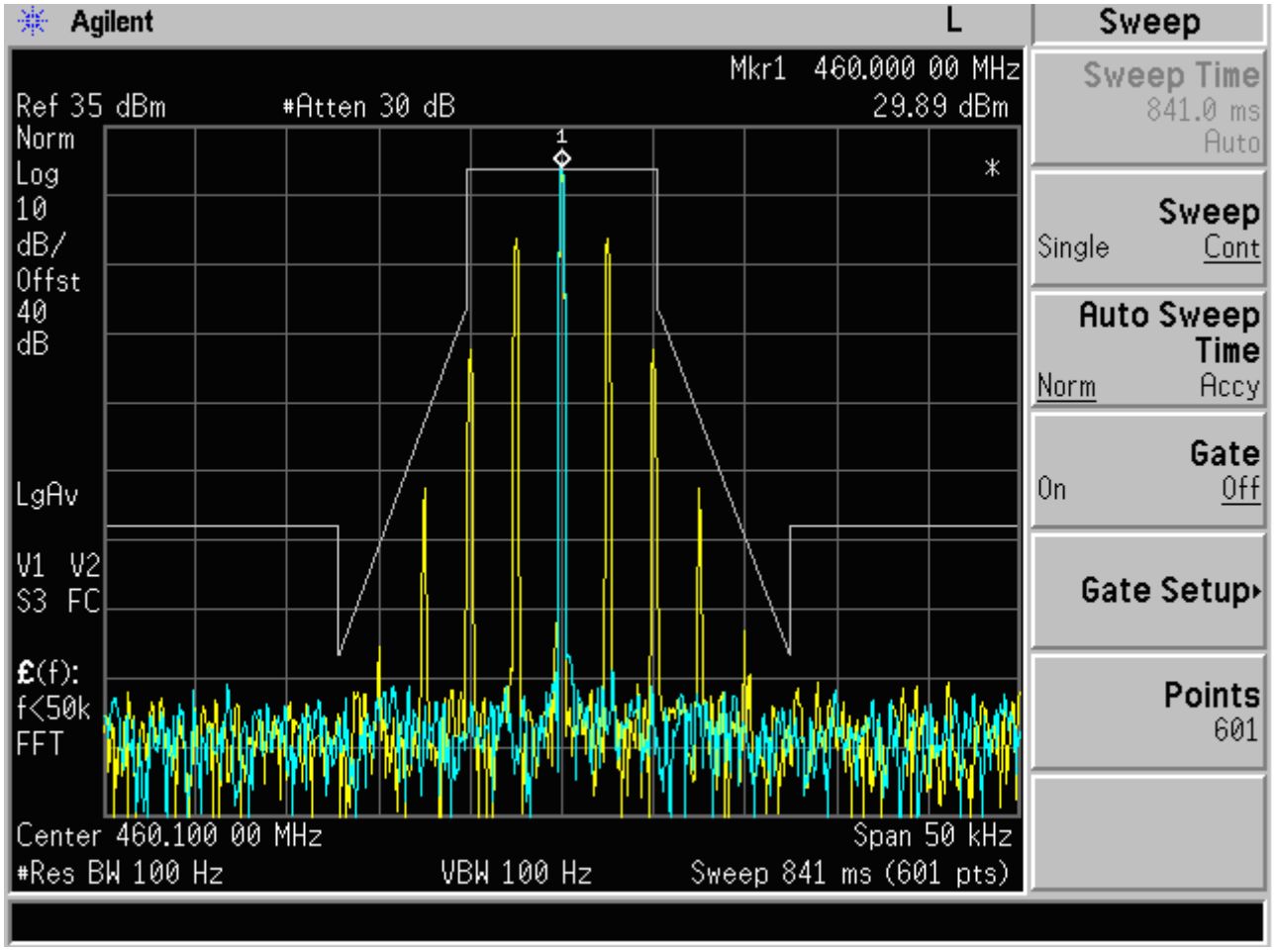
(1) "--" in the table above means that the emissions are too small to be measured and are at least 10 dB below the limit.

(2) Emisiion Level=S.G ourput power(dBm)-Cable loss(db)+Antenna Gain(dBi)

Maximum Transmitter Power (P)	29.89 dBm
Require attenuation	$43+10\log_{10}$ (0.975)= 42.89 dB
Emission Limits	P-[$43+10\log_{10}$ (0.975)]= -13 dBm

Emission Mask:

The Middle Channel (460.125 MHz)



5.6 Frequency Stability vs. Temperature

LIMIT

a). According to FCC Part 2 Section 2.1055(a)(1), the frequency stability shall be measured with variation of ambient temperature from －30℃ to +50℃ centigrade.

b). According to FCC Part 2 Section 2.1055(d)(1), vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

c). According to FCC Part 90 Section 90.213, for output power > 2Wats, the limits is 2.5 ppm.

TEST PROCEDURE

The EUT power was supplied by DC power supply and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber. The DC leads and the RF output cable, exited the chamber through an opening made for that purpose.

After the temperature stabilized the frequency output was recorded form the counter.

RESULTS

The Low Channel (450.125 MHz)

Temperature (℃)	Frequency Error (K Hz)	Frequency Error (%)	Frequency Error (ppm)	Limit (ppm)
-30	-7.432	-0.000017	-0.17	±2.5
-20	-5.150	-0.000013	-0.13	±2.5
-10	4.859	0.000012	0.12	±2.5
0	1.524	0.000003	0.03	±2.5
10	5.650	0.000013	0.13	±2.5
20	7.237	0.000016	0.16	±2.5
30	-6.550	-0.000016	-0.16	±2.5
40	-7.831	-0.000019	-0.19	±2.5
50	-8.579	-0.000020	-0.20	±2.5

The Middle Channel (460.125 MHz)

Temperature (℃)	Frequency Error (K Hz)	Frequency Error (%)	Frequency Error (ppm)	Limit (ppm)
-30	-7.062	-0.000016	-0.16	±2.5
-20	-5.156	-0.000012	-0.12	±2.5
-10	3.525	0.000008	0.08	±2.5
0	1.309	0.000003	0.03	±2.5
10	3.580	0.000008	0.08	±2.5
20	4.561	0.000010	0.10	±2.5
30	5.090	-0.000011	-0.11	±2.5
40	-6.650	-0.000015	-0.15	±2.5
50	-7.150	-0.000016	-0.16	±2.5

The High Channel (469.975 MHz)

Temperature (℃)	Frequency Error (K Hz)	Frequency Error (%)	Frequency Error (ppm)	Limit (ppm)
-30	-6.510	-0.000014	-0.14	±2.5
-20	-5.360	-0.000011	-0.11	±2.5
-10	-1.895	0.000004	0.04	±2.5
0	2.535	0.000005	0.05	±2.5
10	2.869	0.000006	0.06	±2.5
20	3.175	0.000007	0.07	±2.5
30	-3.695	0.000008	-0.08	±2.5
40	4.295	0.000009	0.09	±2.5
50	5.350	0.000011	0.11	±2.5

5.7 Frequency Stability vs. Voltage

LIMIT

a). According to FCC Part 2 Section 2.1055(a)(1), the frequency stability shall be measured with variation of ambient temperature from －30℃ to +50℃ centigrade.

b). According to FCC Part 2 Section 2.1055(d)(1), vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

c). According to FCC Part 90 Section 90.213, for output power > 2Wats, the limits is 2.5 ppm.

TEST PROCEDURE

An external variable DC power supply was connected to the EUT.

For hand carried, The DC power equipment primary supply voltage was reduced to the end point as specified by the manufacturer. The output frequency was recorded for highest and lowest voltage.

RESULTS

The Low Channel (450.125 MHz)

Voltage (V)	Frequency Error (Hz)	Frequency Error (%)	Frequency Error (ppm)	Limit (%)
3.6	4023	0.000009	0.09	±2.5
3.7	3605	0.000008	0.08	±2.5
4.2	4560	0.000010	0.10	±2.5

The Middle Channel (460.125 MHz)

Voltage (V)	Frequency Error (Hz)	Frequency Error (%)	Frequency Error (ppm)	Limit (%)
3.6	4065	0.000009	0.09	±2.5
3.7	4550	0.000010	0.10	±2.5
4.2	5152	0.000012	0.12	±2.5

The High Channel (469.975 MHz)

Voltage (V)	Frequency Error (Hz)	Frequency Error (%)	Frequency Error (ppm)	Limit (%)
3.6	3750	0.000008	0.08	±2.5
3.7	2963	0.000006	0.06	±2.5
4.2	4865	0.000010	0.10	±2.5

5.8 Transmitter Frequency Behavior

Provisions Applicable

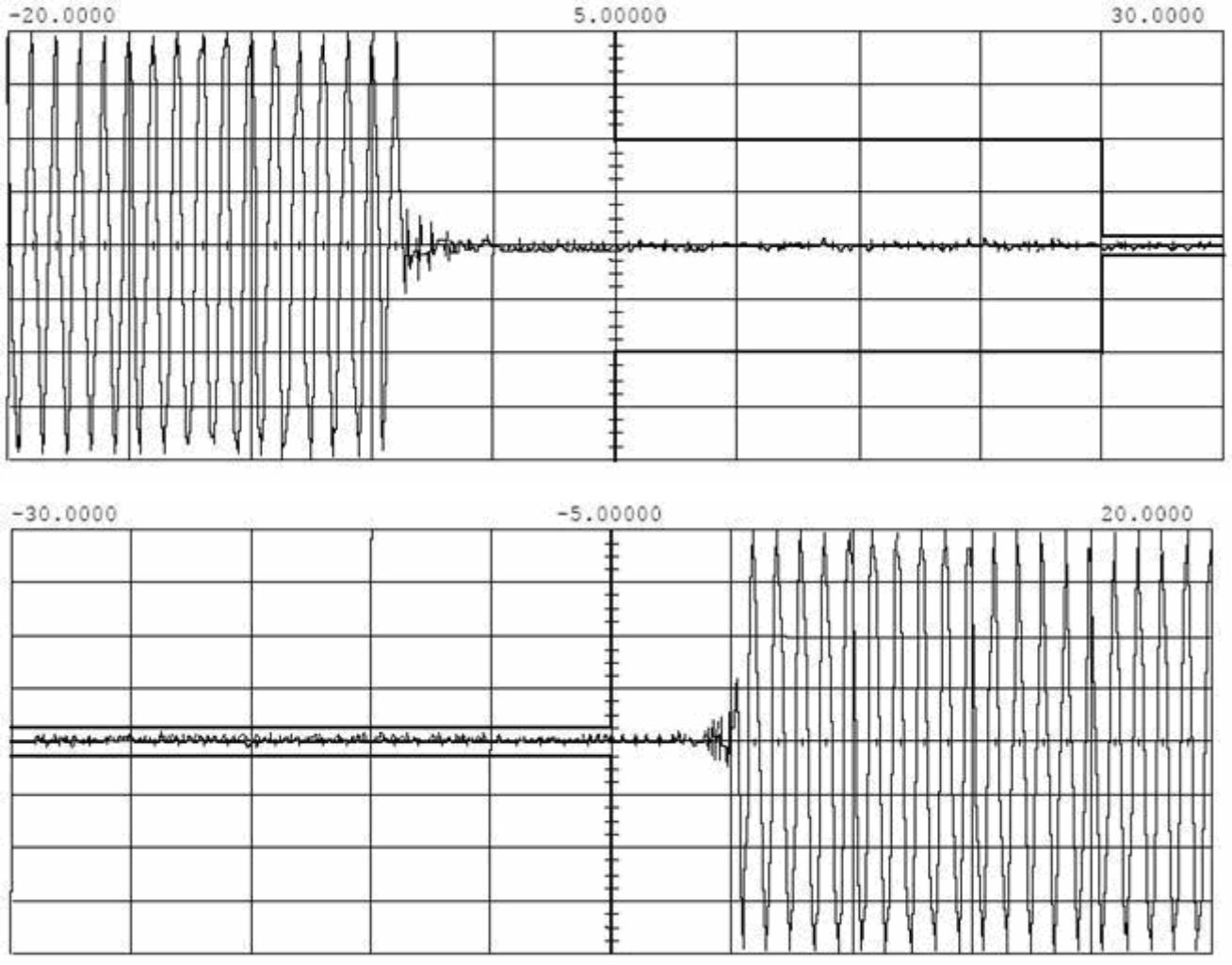
Section 90.214

TEST PROCEDURE

TIA/EIA-603 2.2.19

RESULTS

Please refer to the test plot.



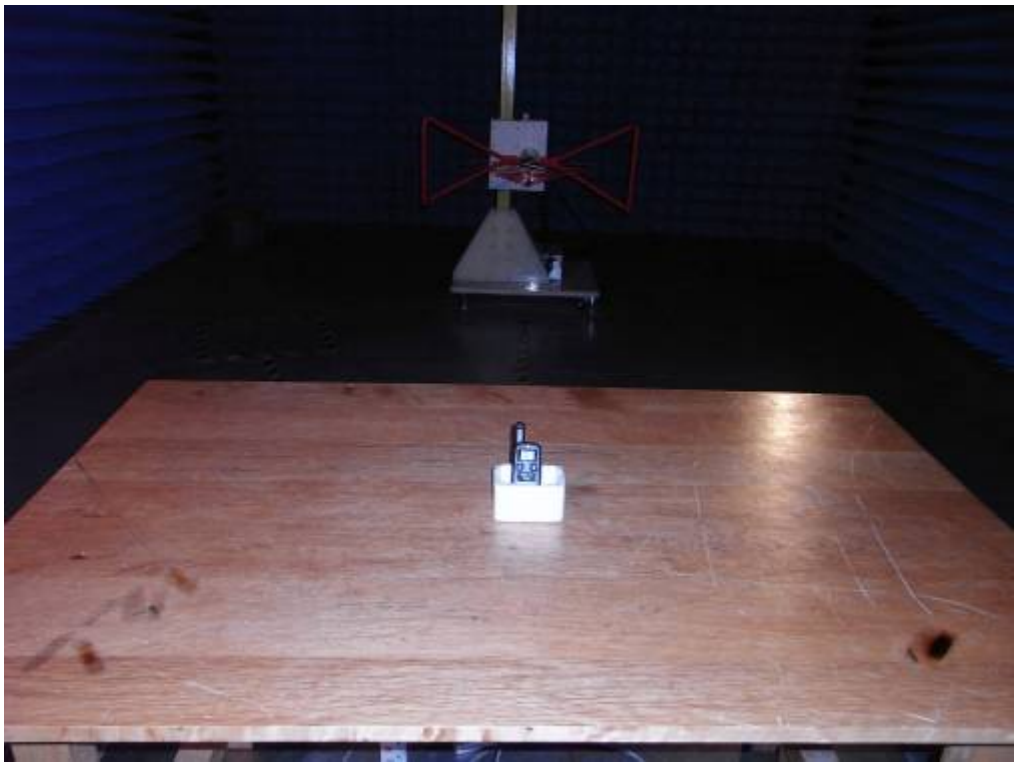
No non-compliance noted

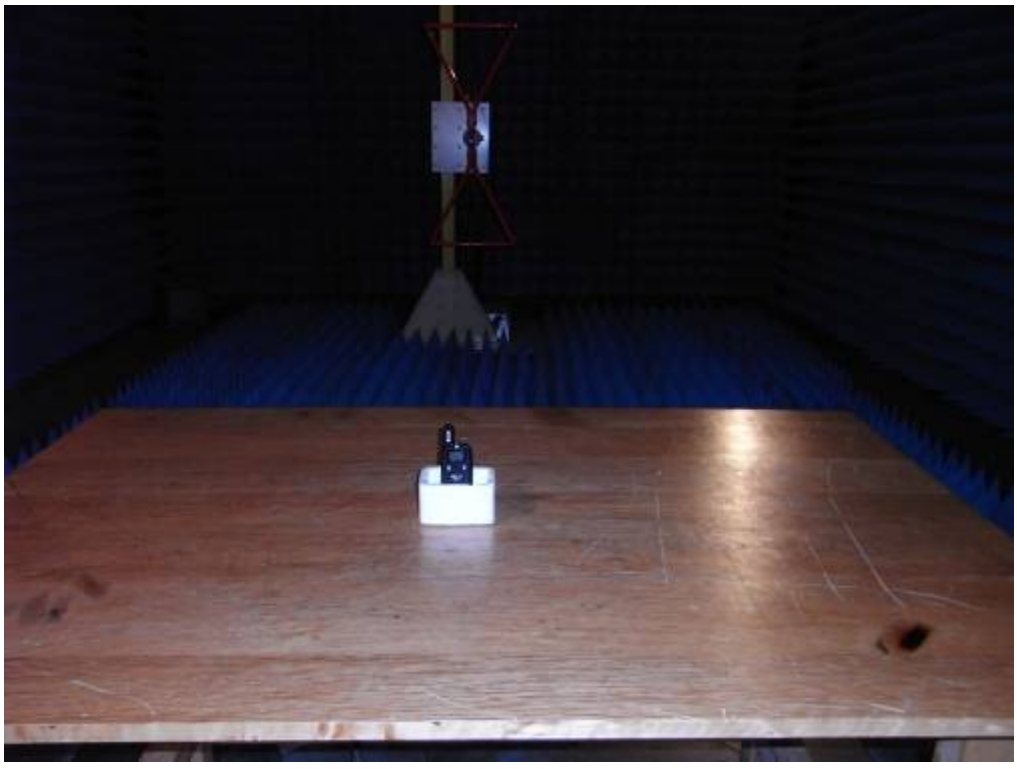
Conclusion: PASS

Annex A

Photographs of the Test Setup

Radiated Emission Setup Photo





Annex B

Photographs of the EUT

FRONT VIEW OF SAMPLE

BACK VIEW OF SAMPLE

LEFT VIEW OF SAMPLE

RIGHT VIEW OF SAMPLE

UP VIEW OF SAMPLE

DOWN VIEW OF SAMPLE

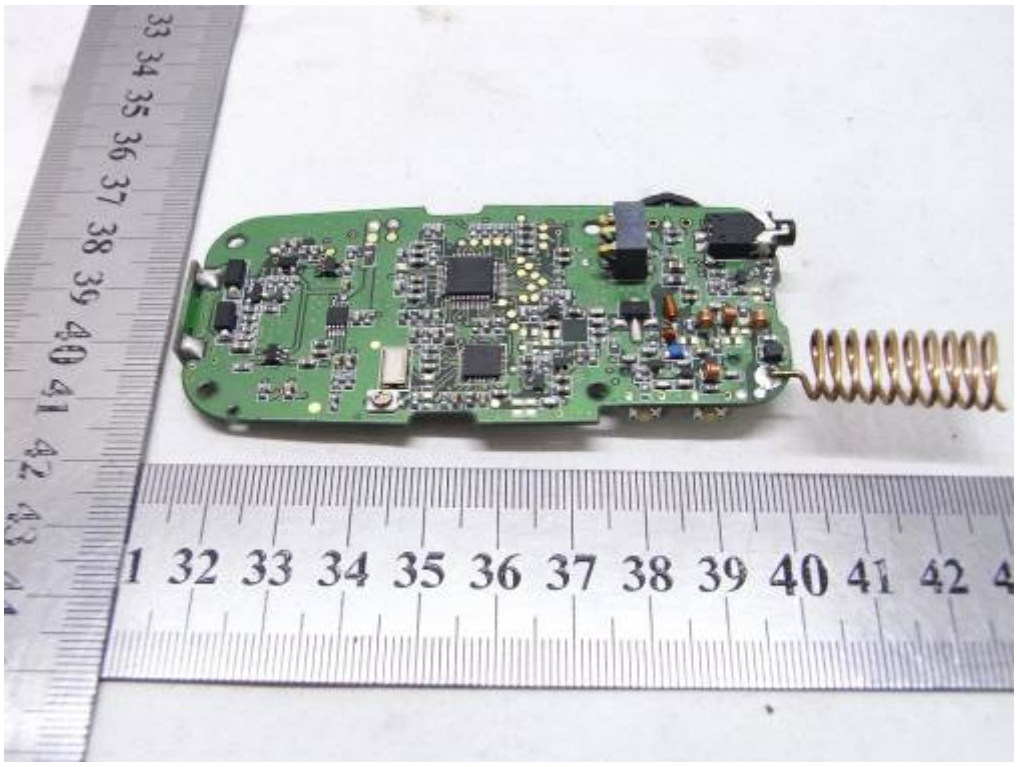
PHOTO OF POWER CABLE

PHOTO OF BATTERY

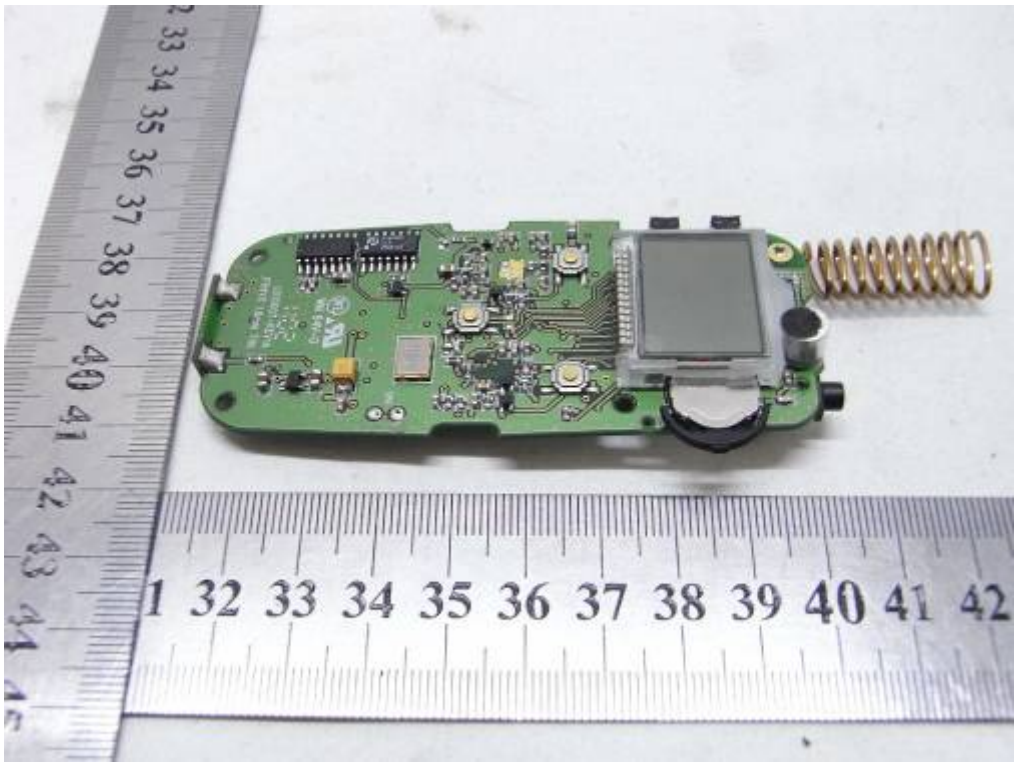
PHOTO OF THE ENTIRE SAMPLE

INTERNAL PHOTO OF SAMPLE-1

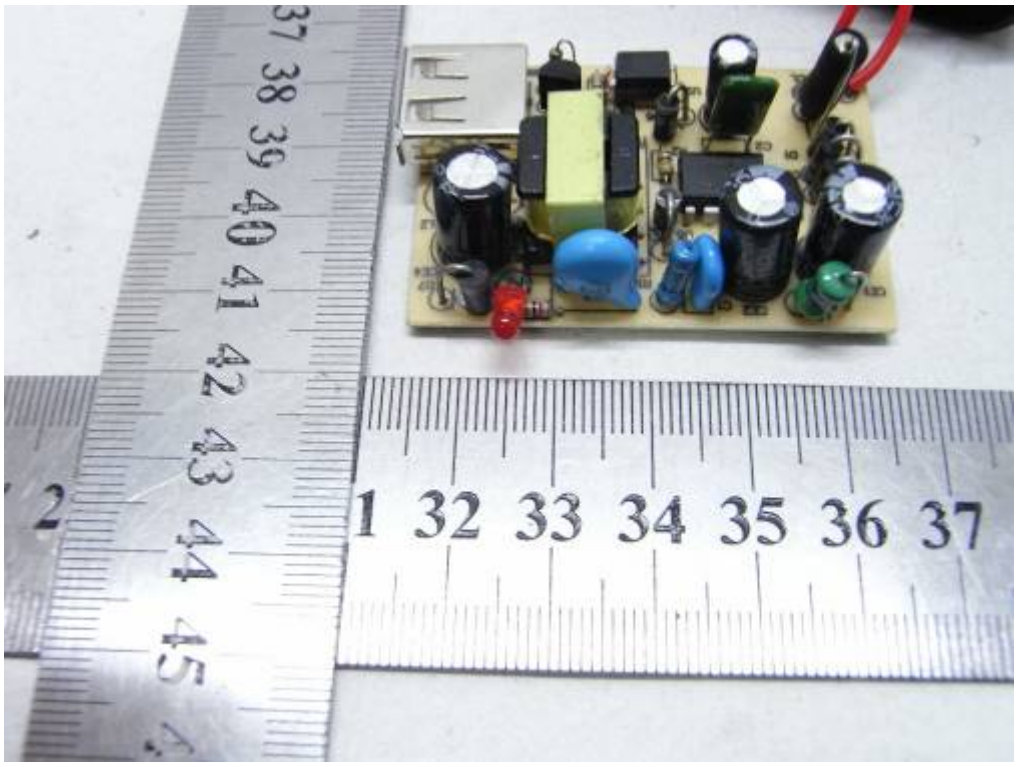
INTERNAL PHOTO OF SAMPLE-2



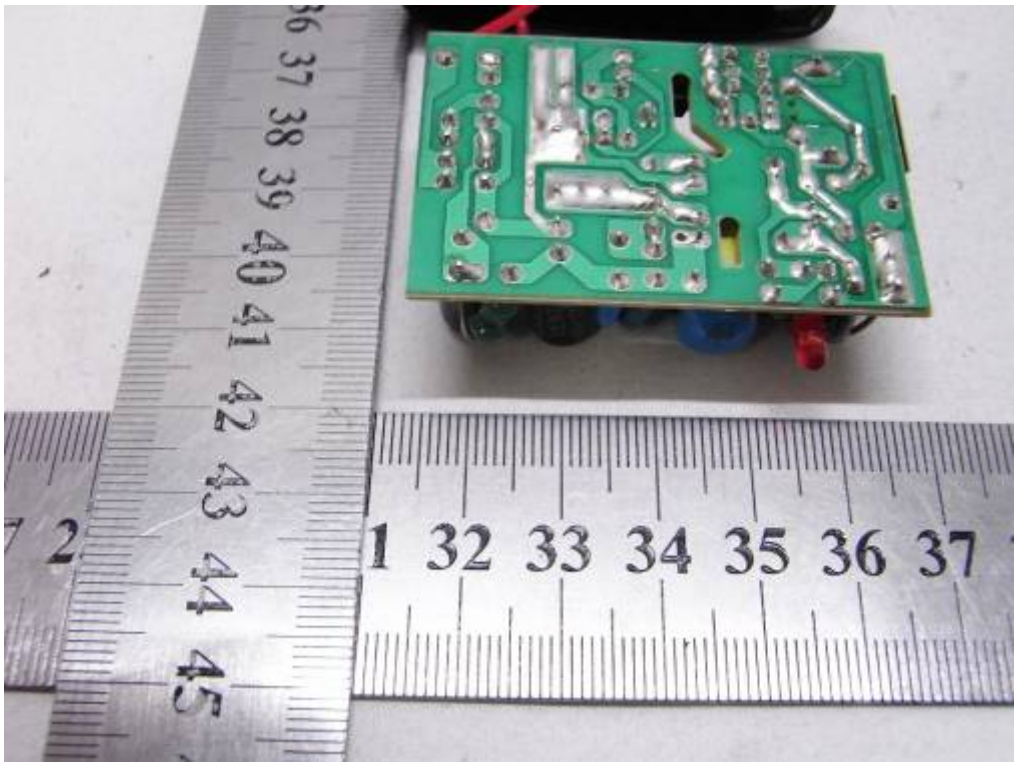
INTERNAL PHOTO OF SAMPLE-3



INTERNAL PHOTO OF POWER SUPPLY-1



INTERNAL PHOTO OF POWER SUPPLY -5



*** End of the Reports***