Shenzhen Asia Test Technology Co., Ltd.

1/6, Bldg.8, Zhonghua Industrial City, Chuangye Rd.,
Nanshan District, Shenzhen, Guangdong, China
Tel: +86)-0755-23284990
Email: att@att-lab.com
Http: www.att-lab.cn

FCC RADIO TEST REPORT
FCC ID: YIZGB01

Product： Bluetooth Car-Kit

Trade Name： N/A

Model Name： GB01

Serial Model： RT431,GT431,HB01,RT-GB01,GT-GB01,RiiGB01,ZW-GB01,ZW-GB01BT,ZW-GB02,ZW-GB03

Prepared for

ShenZhen Riitek Technology Co., Ltd

A1-4,A Zone,Baoyunda Logistic Center, Avenue Xixiang, BaoAn District, Shenzhen, China

Prepared by

Shenzhen Asia Test Technology Co.,Ltd.

1/6, Bldg.8, Zhonghua Industrial City, Chuangye Rd., Nanshan District, Shenzhen, Guangdong, China

Tel: +(86)-0755-23284990 Fax: +(86)-0755-23284990

Http: www.att-lab.net

TEST RESULT CERTIFICATION

Applicant's name	:	ShenZhen Riitek Technology Co., Ltd
Address	:	A1-4,A Zone,Baoyunda Logistic Center, Avenue Xixiang, BaoAn District, Shenzhen, China
Manufacture's Name	:	ShenZhen Riitek Technology Co., Ltd
Address	:	A1-4,A Zone,Baoyunda Logistic Center, Avenue Xixiang, BaoAn District, Shenzhen, China

Product description

Product name	:	Bluetooth Car-Kit
Model and/or type reference	:	GB01
Serial Model：		RT431,GT431,HB01,RT-GB01,GT-GB01,RiiGB01,ZW-GB01,ZW-GB01BT,ZW-GB02,ZW-GB03
Standards	:	FCC Part15.239
Test procedure		ANSI C63.4-2003

This device described above has been tested by ATT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test	:	
Date (s) of performance of tests	:	Jan. 01 2015 ~Jan. 06 2015
Date of Issue	:	Jan. 06 2015
Test Result	:	**Pass**

Tested by: Eric Wang	Reviewed by: Jerry You	Approved by: Jack yu
Eric Wang	Jerry You	Jack yu
Project Leader	Laboratory Supervisor	Technical Director

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C (15.239)			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	N/A	
15.203	Antenna Requirement	Pass	
15.239	Radiated Spurious Emission	Pass	
15.239	Occupied Bandwidth	Pass	

1.1 TEST FACILITY

Shenzhen STONE Testing Technology Co.,Ltd.
Add.: F/6, Bldg.12, Zhongxing Industrial City, Chuangye Rd., Nanshan District Shenzhen P.R. China
FCC Registration No.: 323508; IC Registration No.: 11043A

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

<table>
<tr><td>Equipment</td><td>Bluetooth Car-Kit</td></tr>
<tr><td>Model Name</td><td>GB01</td></tr>
<tr><td>Serial Model</td><td>RT431,GT431,HB01,RT-GB01,GT-GB01,RiiGB01,ZW-GB01,ZW-GB01BT,ZW-GB02,ZW-GB03</td></tr>
<tr><td>Model Difference</td><td>All models are identical except model name.</td></tr>
<tr><td>Product Description</td><td>The EUT is a Bluetooth Car-Kit

<table><tr><td>Product Type</td><td>Low Power Communication Device Transmitter</td></tr><tr><td>Operation Frequency:</td><td>88.1-107.9MHz</td></tr><tr><td>Modulation Type:</td><td>FM</td></tr><tr><td>Number Of Channel</td><td>199CH.</td></tr><tr><td>Antenna Designation:</td><td>Printed antenna</td></tr><tr><td>Antenna Gain(Peak)</td><td>0 dBi</td></tr><tr><td>field strength:</td><td>46.09 dBuV/m@3m (AV Max.)</td></tr></table>
Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.</td></tr>
<tr><td>Channel List</td><td>N/A</td></tr>
<tr><td>Adapter</td><td>N/A</td></tr>
</table>

Note:

1. For a more detailed features description, please refer to the manufacturer’s specifications or the User's Manual.

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	88.1MHz
Mode 2	98.1MHz
Mode 3	107.9MHz

For Conducted Emission	
Final Test Mode	Description
N/A	N/A

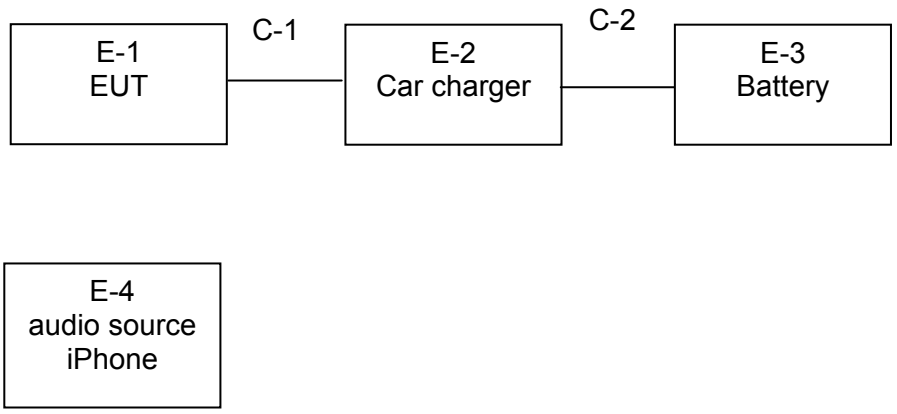
For Radiated Emission	
Final Test Mode	Description
Mode 1	88.1MHz
Mode 2	98.1MHz
Mode 3	107.9MHz

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

(2) During testing, the EUT was actively playing music set to its maximum audio volume in order to generate the worst case emissions (e.g. to generate the maximum bandwidth during bandwidth test). No test tones were used for testing. The tuning range of the EUT was manually verified and the conclusion is that it only works at selected channels within 88.1-107.9MHz, not below and not above this range. EUT was also working after test.

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Bluetooth Car-Kit	N/A	GB01	N/A	EUT
E-2	Car charger	N/A	CGG-05001000D	N/A	
E-3	Battery	N/A	12V/100A	N/A	
E-4	iPhone 4S	APPLE	A1387	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	0.8m	
C-2	NO	NO	0.8m	

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2014.07.06	2015.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2014.06.07	2015.06.06	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2014.07.06	2015.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2014.06.07	2015.06.06	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2014.06.07	2015.06.06	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2014.07.06	2015.07.05	1 year
7	Amplifier	EM	EM-30180	060538	2014.12.22	2015.12.21	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2014.06.08	2015.06.07	1 year
9	Test Receiver	R&S	FSU	550062	2014.06.07	2015.06.06	1 year
10	Cable 30-1000MHz	R&S	ATT-R01	201309R001	2014.06.08	2015.06.07	1 year
11	Cable 1-26.5GHz	R&S	ATT-R02	201309R048	2014.06.08	2015.06.07	1 year

3. ANTENNA REQUIREMENT

3.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

3.2 EUT ANTENNA

The EUT antenna is integral Antenna. It comply with the standard requirement.

3.3 CONDUCTED EMISSION MEASUREMENT

3.3.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5			66 - 56 *	56 - 46 *	CISPR
0.50 -5.0			56.00	46.00	CISPR
5.0 -30.0			60.00	50.00	CISPR

0.15 -0.5			66 - 56 *	56 - 46 *	LP002.
0.50 -5.0			56.00	46.00	LP002.
5.0 -30.0			60.00	50.00	LP002.

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

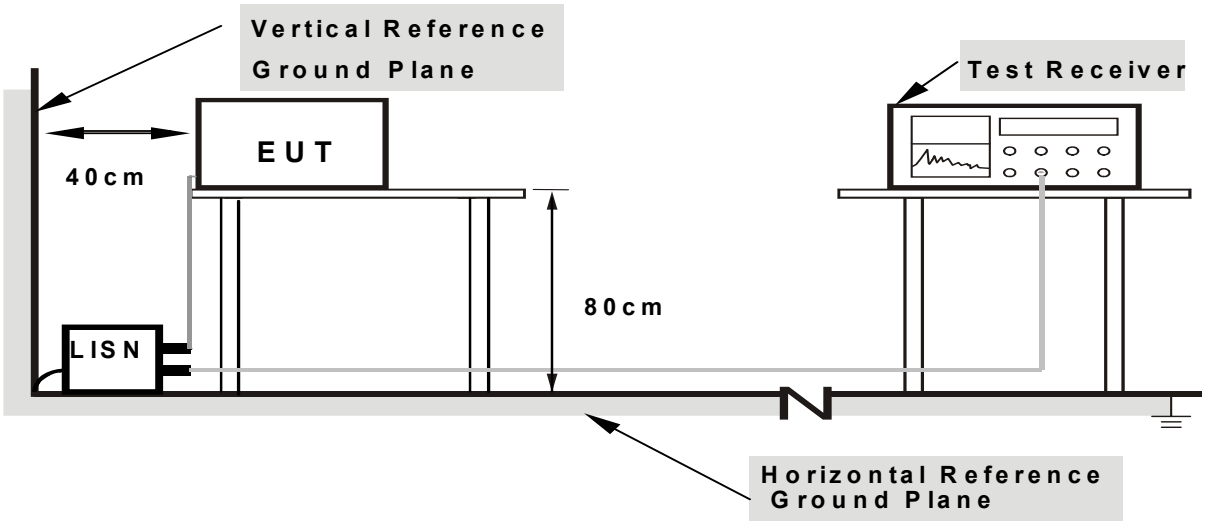
3.3.2 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

3.3.4 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.2.5 TEST RESULT

EUT：	Bluetooth Car-Kit	Model Name. ：	GB01
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N/A
Test Voltage ：	N/A	Test Mode：	N/A - denotes test is not applicable in this test report

Note : Due to this EUT is powered by DC voltage from the car battery only, this test item is not applicable.

3.4 RADIATED EMISSION MEASUREMENT

3.4.1 Radiated Emission Limits (FCC 15.209)

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note:

(1) The tighter limit applies at the band edges.

(2) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.239)

Frequency of Emission (MHz)	Field Strength of fundamental (dBμV/m)	
88-108	Peak	Average
	68	48

Notes:

(1) Fcc part15.239 (b) The field strength of any emissions within the permitted 200 kHz band shall not exceed 250 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emissions apply.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP

Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.4.2 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

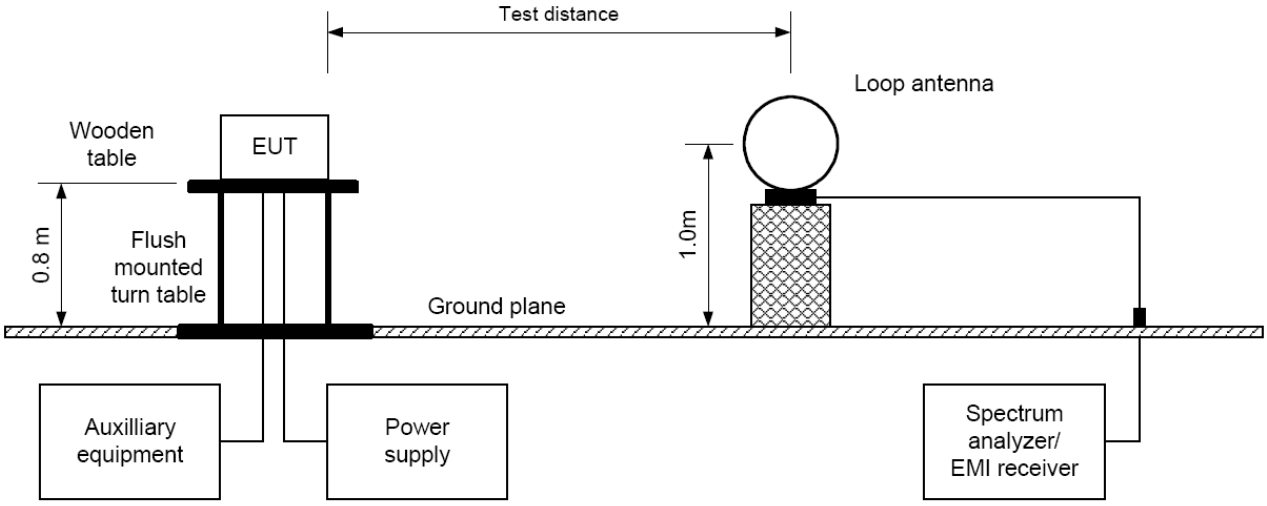
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.4.3 DEVIATION FROM TEST STANDARD

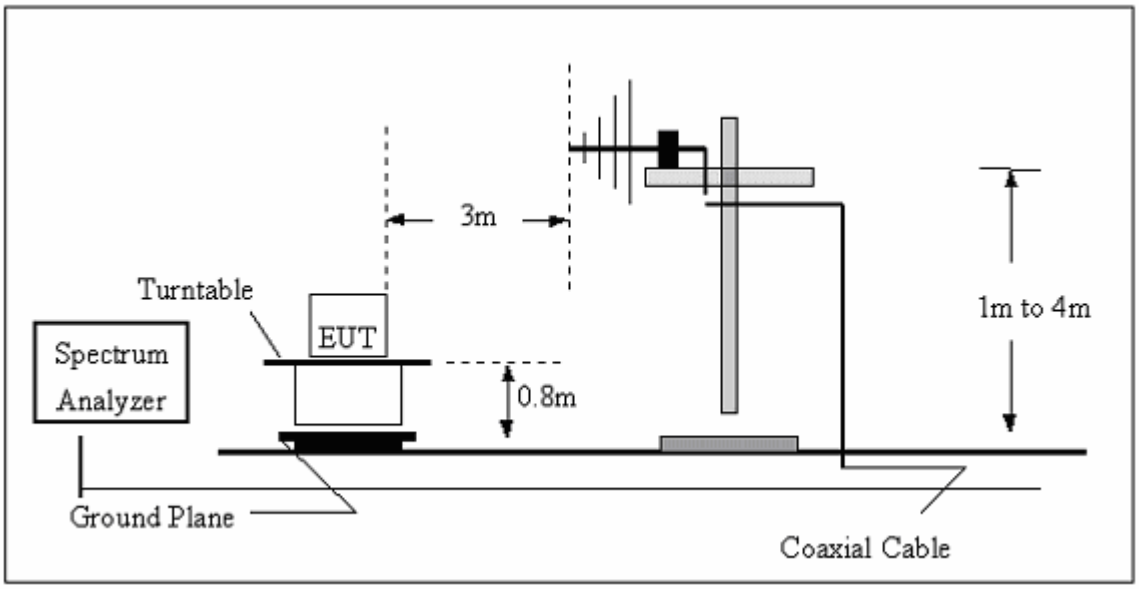
No deviation

3.4.4 TEST SETUP

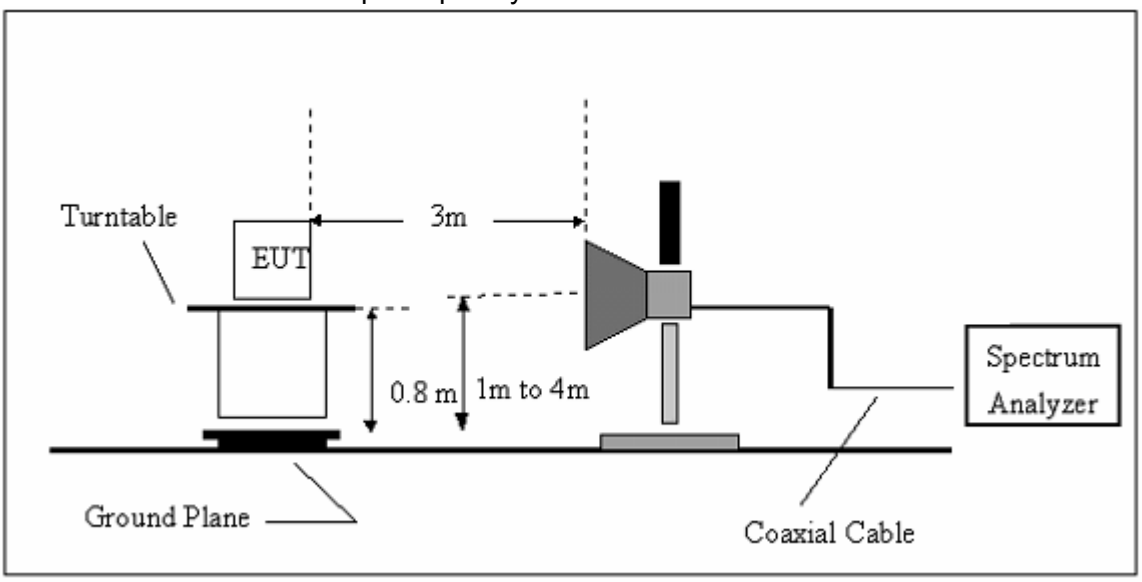
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.4.5 TEST RESULTS (BLOW 30MHz)

EUT：	Bluetooth Car-Kit	Model Name. ：	GB01
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 12V
Test Mode ：	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

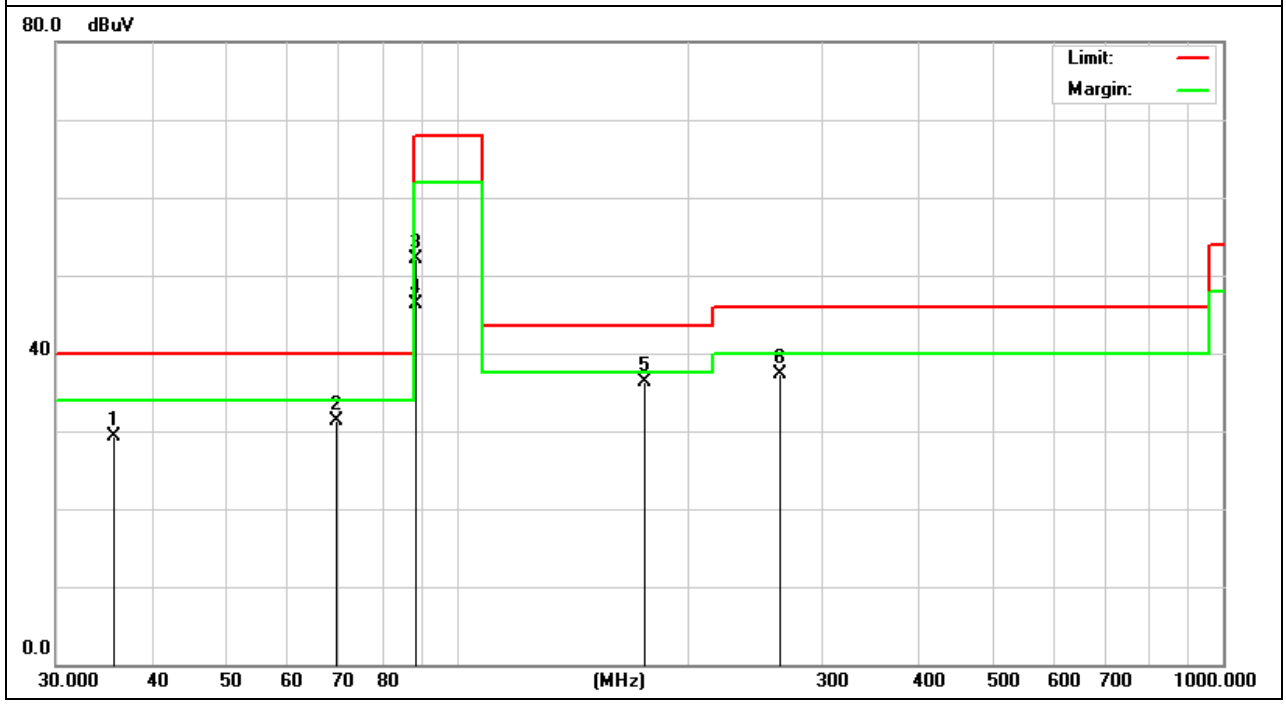
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =20 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

3.4.6 TEST RESULTS (BETWEEN 30 – 1000 MHZ)

EUT：	Bluetooth Car-Kit	Model Name ：	GB01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 12V
Test Mode ：	88.1MHz	Polarization：	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
35.6699	16.79	12.65	29.44	40	-10.56	QP
69.45	20.75	10.35	31.1	40	-8.9	QP
88.1	42.97	9.26	52.23	68	-15.77	peak
88.1	36.69	9.26	45.95	48	-2.05	AVG
176.2	25.78	9.57	35.35	43.5	-8.15	QP
264.3	24.62	12.73	37.35	46	-8.65	QP

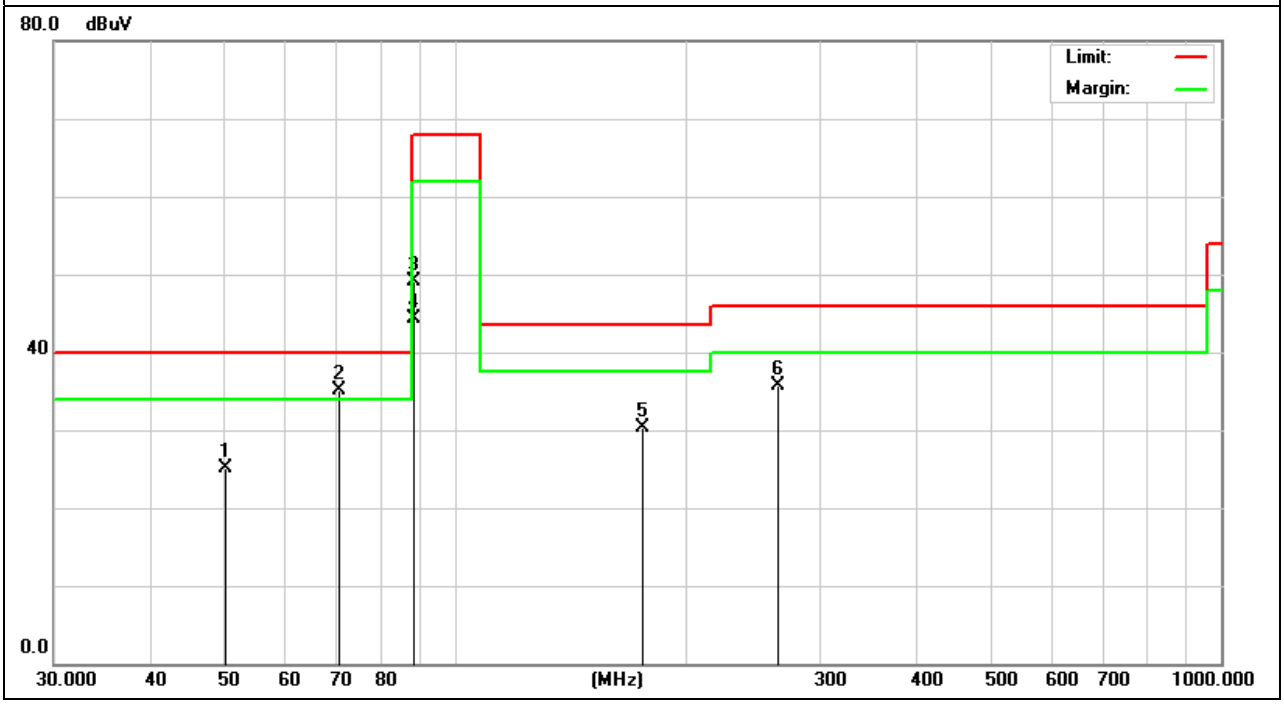
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	Bluetooth Car-Kit	Model Name ：	GB01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 12V
Test Mode ：	88.1MHz	Polarization：	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
50.12	13.74	11.63	25.37	40	-14.63	QP
70.45	25.25	10.86	36.11	40	-3.89	QP
88.1	40.22	9.11	49.33	68	-18.67	peak
88.1	35.31	9.11	44.42	48	-3.58	AVG
176.2	19.68	10.16	29.84	43.5	-13.66	QP
264.3	22.75	11.97	34.72	46	-11.28	QP

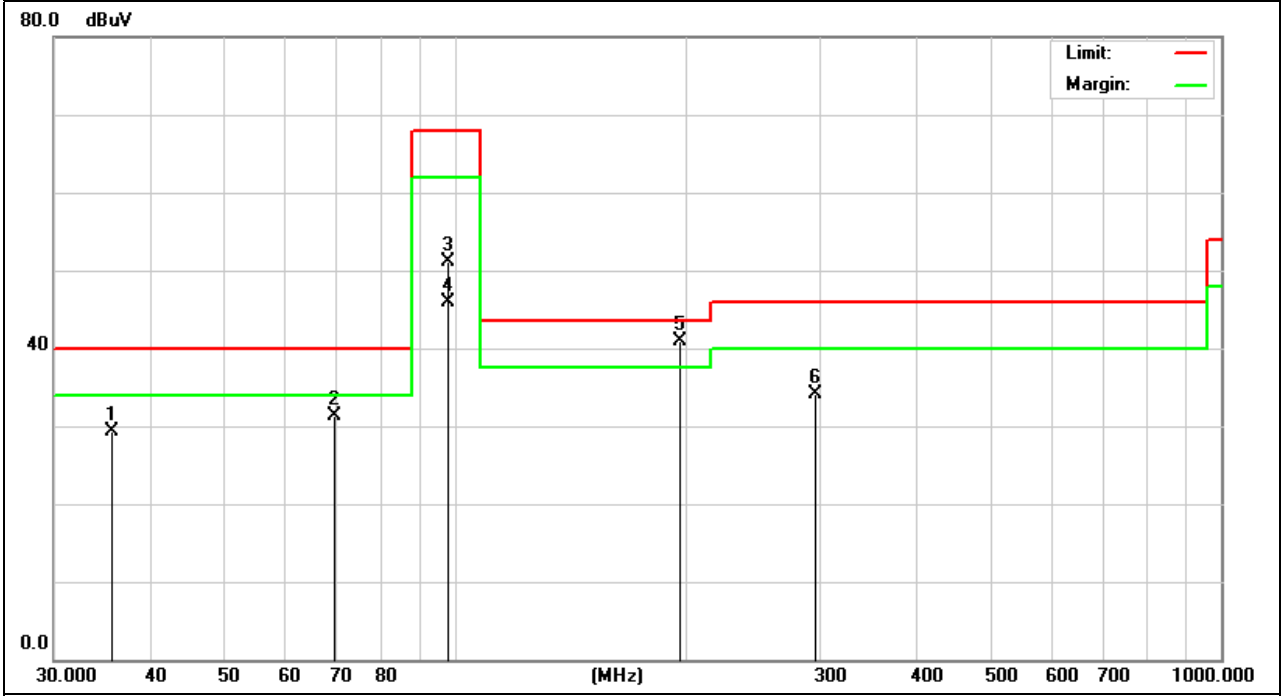
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	Bluetooth Car-Kit	Model Name ：	GB01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 12V
Test Mode ：	98.1MHz	Polarization：	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
34.87	16.78	12.64	29.42	40	-10.58	QP
69.33	20.43	11.72	32.15	40	-7.85	QP
98.1	41.37	9.56	50.93	68	-17.07	peak
98.1	35.11	9.56	44.67	48	-3.33	AVG
196.2	30.17	10.7	40.87	43.5	-2.63	QP
294.3	22.73	11.47	34.2	46	-11.8	QP

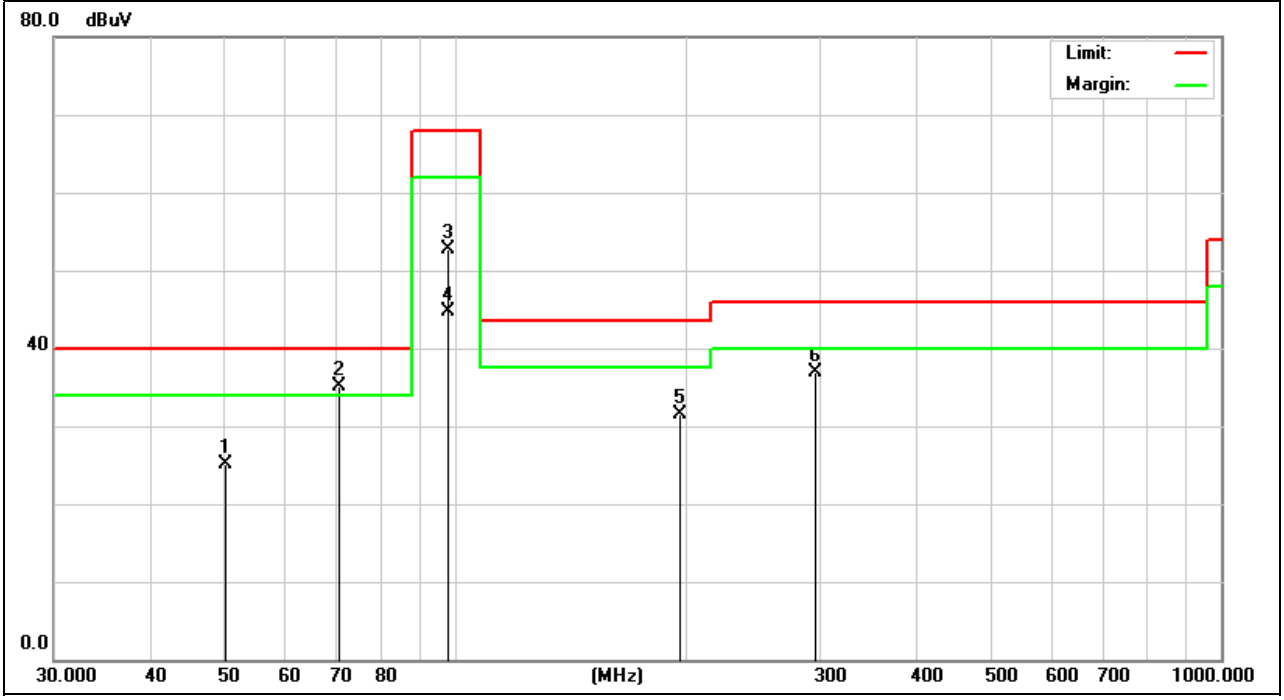
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	Bluetooth Car-Kit	Model Name ：	GB01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 12V
Test Mode ：	98.1MHz	Polarization：	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
50.24	14.8	10.97	25.77	40	-14.23	QP
70.31	25.84	9.73	35.57	40	-4.43	QP
98.1	43.64	9.26	52.9	68	-15.1	peak
98.1	35.72	9.26	44.98	48	-3.02	AVG
196.2	20.25	10.66	30.91	43.5	-12.59	QP
294.3	24.6	11.45	36.05	46	-9.95	QP

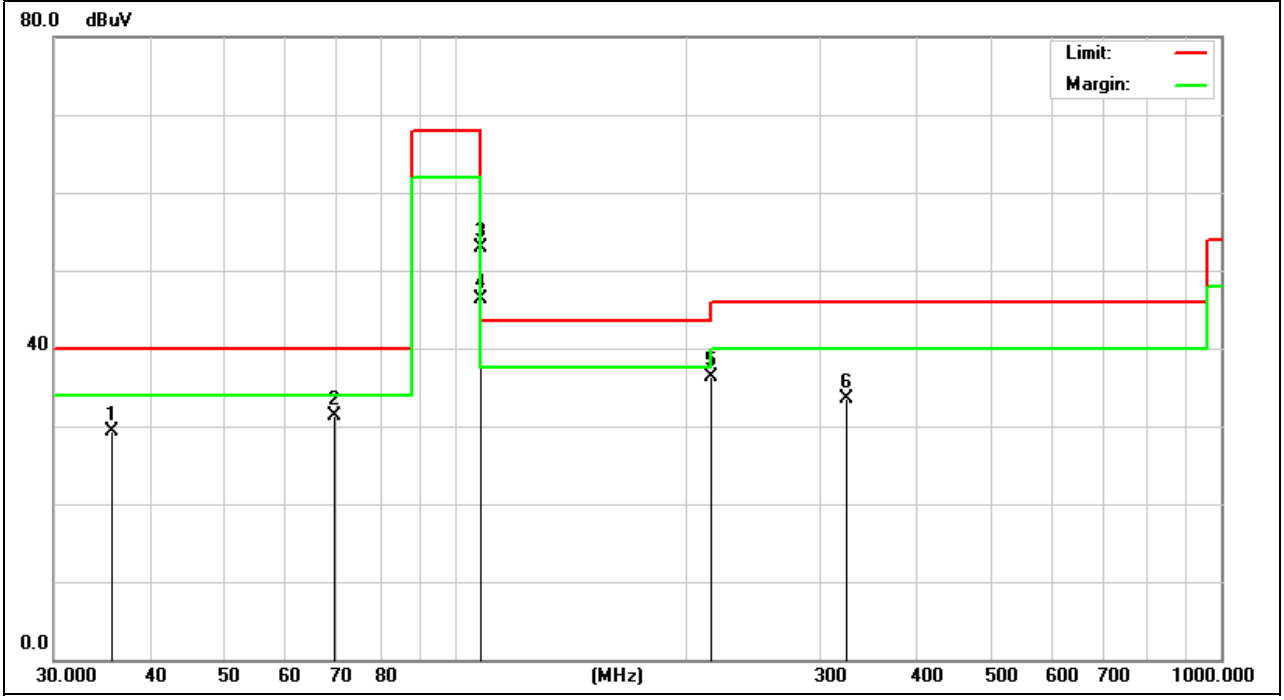
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	Bluetooth Car-Kit	Model Name ：	GB01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 12V
Test Mode ：	107.9MHz	Polarization：	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
35.21	16.511	12.75	29.261	40	-10.739	QP
69.27	20.39	11.47	31.86	40	-8.14	QP
107.9	41.23	10.46	51.69	68	-16.31	peak
107.9	35.63	10.46	46.09	48	-1.91	AVG
215.8	23.74	11.85	35.59	43.5	-7.91	QP
323.7	19.82	12.97	32.79	46	-13.21	QP

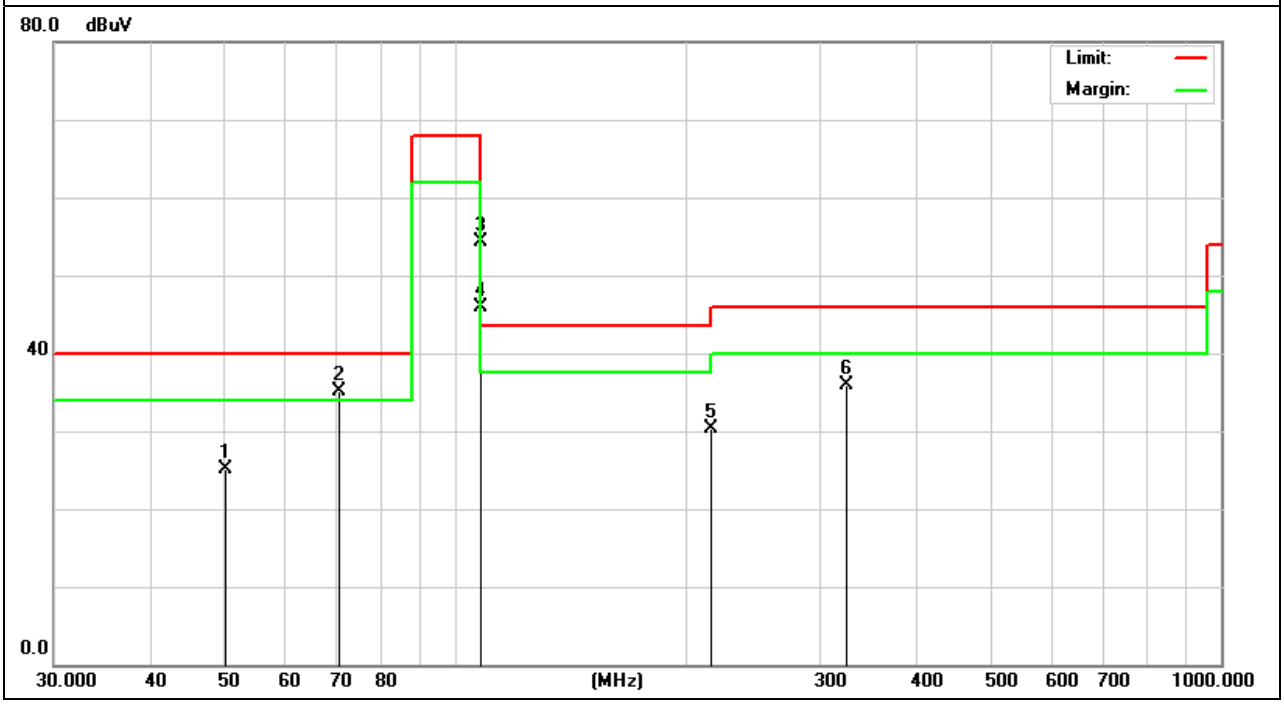
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	Bluetooth Car-Kit	Model Name ：	GB01
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 12V
Test Mode ：	107.9MHz	Polarization：	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
50.35	12.74	12.74	25.48	40	-14.52	QP
70.14	23.75	11.64	35.39	40	-4.61	QP
107.9	43.78	10.05	53.83	68	-14.17	peak
107.9	35.82	10.05	45.87	48	-2.13	AVG
215.8	18.98	11.6	30.58	43.5	-12.92	QP
323.7	22.5	12.85	35.35	46	-10.65	QP

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Note:The amplitude of spurious emissions from 1GHz to 10th harmonica of highest operating frequency which are attenuated by more than 20dB below the permissible value has no need to be reported, so test recorded up to 1g.

4. BANDWIDTH TEST

4.1 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 10KHz, VBW≧RBW, Sweep time = Auto.

4.2 DEVIATION FROM STANDARD

No deviation.

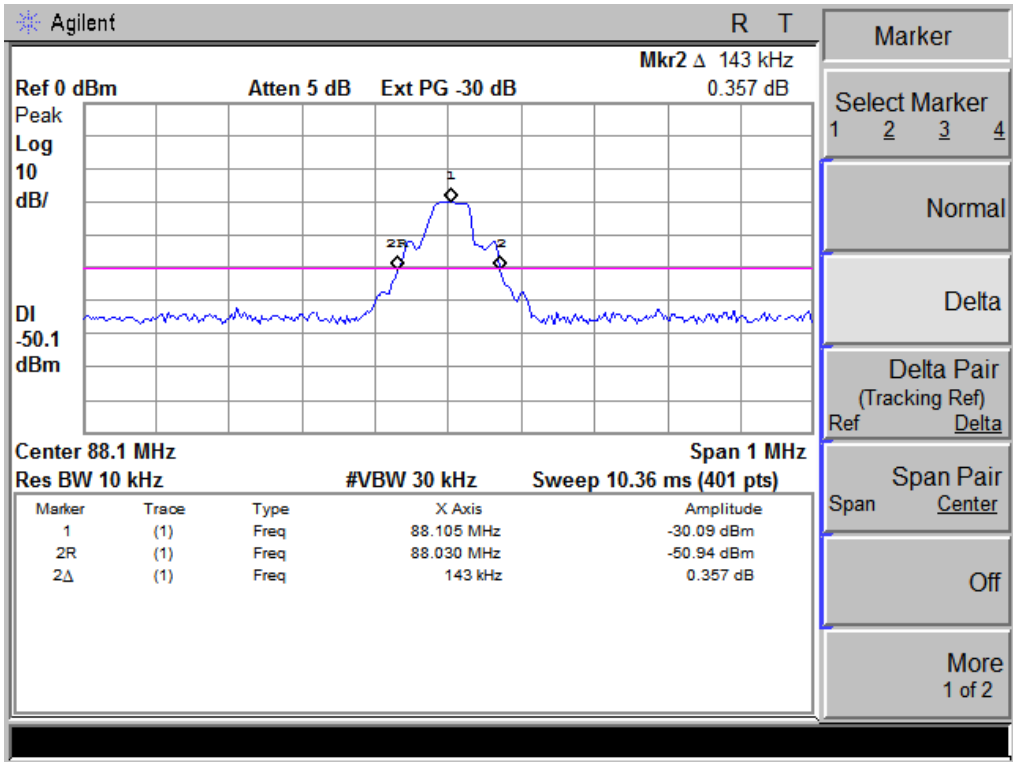
4.3 TEST SETUP

4.4 TEST RESULTS

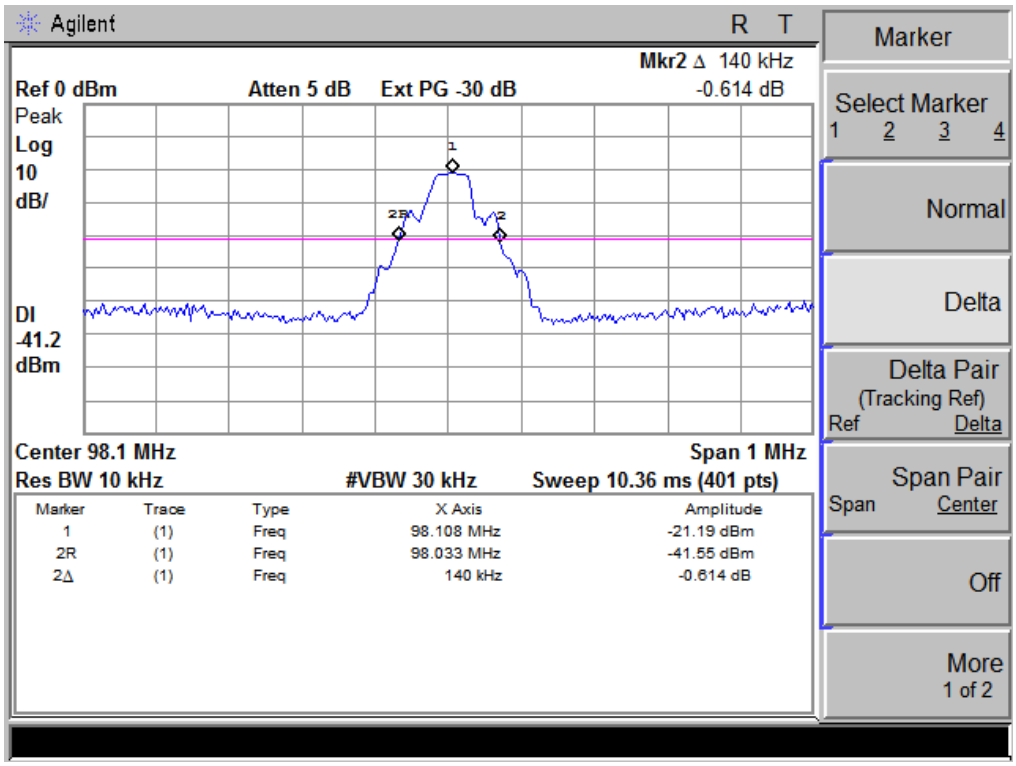
EUT：	Bluetooth Car-Kit	Model Name ：	GB01
Temperature：	26 ℃	Relative Humidity：	53%
Pressure：	1020 hPa	Test Power ：	DC 12V
Test Mode ：	TX		

Test Channel	Frequency (MHz)	20 dBc Bandwidth (KHz)	Limit (KHz)
Low	88.1	143	200
Mid	98.1	140	200
High	107.9	138	200

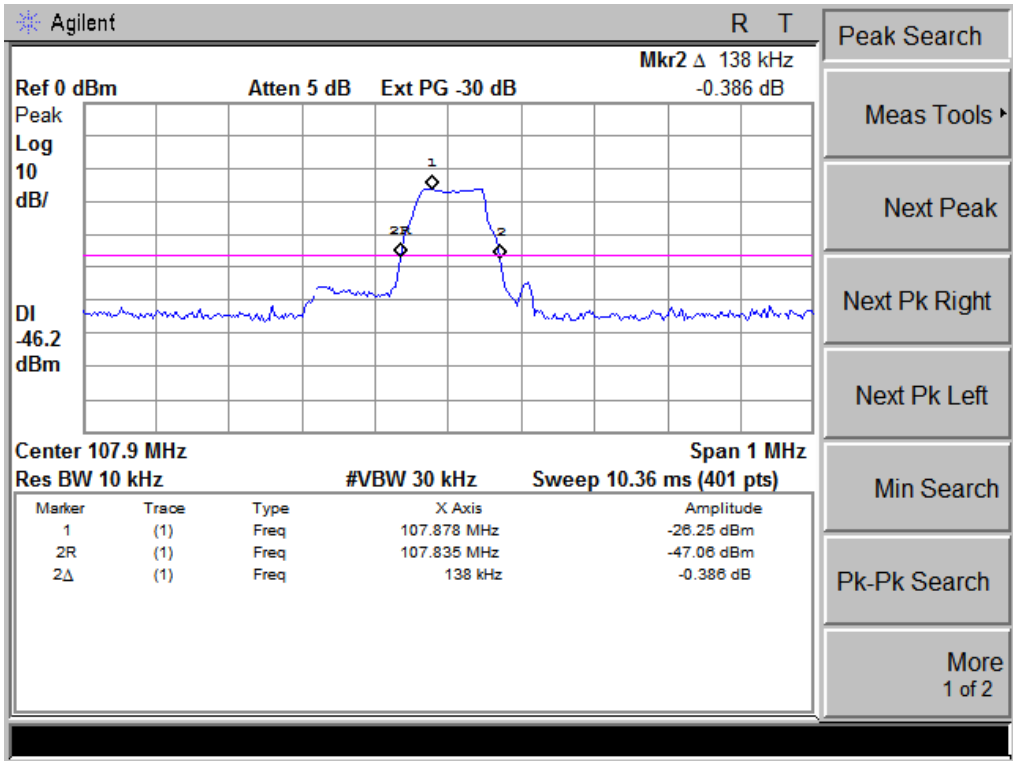
The Lowest Channel:88.1MHz



The Middle Channel: 98.1MHz



The High Channel:107.9MHz



5. EUT TEST PHOTO

Radiated Measurement Photos