

TEST REPORT

Applicant: Scosche Industries Inc

Address of Applicant: 1550 Pacific Ave, Oxnard, California 93033, United States

Manufacturer/Factory: Scosche Industries Inc

Address of Manufacturer/Factory: 1550 Pacific Ave, Oxnard, California 93033, United States

Equipment Under Test (EUT)

Product Name: Bluetooth handsfree car kit

Model No.: BTFM8

Trade Mark: Scosche

FCC ID: IKQBTFM8

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.239

Date of sample receipt: December 13, 2022

Date of Test: December 14, 2022-February 09, 2023

Date of report issued: February 09, 2023

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

A red circular stamp with a five-pointed star in the center. The text around the star reads "Global United Technology Services Co., Ltd." and "检验检测专用章" (Inspection/Testing Services). The signature "Rob. Lo" is written across the stamp.

Robinson Lo

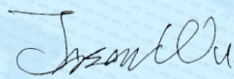
Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	February 09, 2023	Original

Tested By:

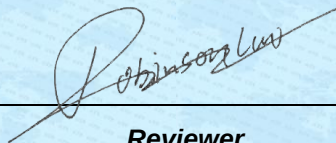


Date:

February 09, 2023

Project Engineer

Check By:



Date:

February 09, 2023

Reviewer

3 Contents

	Page
1 COVER PAGE.....	1
2 VERSION	2
3 CONTENTS	3
4 TEST SUMMARY	4
4.1 MEASUREMENT UNCERTAINTY	4
5 GENERAL INFORMATION.....	5
5.1 GENERAL DESCRIPTION OF EUT	5
5.2 TEST MODE	7
5.3 DESCRIPTION OF SUPPORT UNITS	7
5.4 TEST FACILITY.....	7
5.5 TEST LOCATION	7
5.6 OTHER INFORMATION REQUESTED BY THE CUSTOMER	7
6 TEST INSTRUMENTS LIST	8
7 TEST RESULTS AND MEASUREMENT DATA.....	9
7.1 ANTENNA REQUIREMENT	9
7.2 RADIATED EMISSION METHOD	10
7.2.1 Field Strength of The Fundamental Signal	12
7.2.2 Radiated Spurious Emissions.....	13
7.3 20dB OCCUPY BANDWIDTH	19
8 TEST SETUP PHOTO	21
9 EUT CONSTRUCTIONAL DETAILS	21

4 Test Summary

Test Item	Section	Result
Antenna requirement	47 CFR Part 15, Subpart C 15.203	Pass
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C 15.207	N/A
Field strength of the fundamental signal	47 CFR Part 15, Subpart C 15.239(b)	Pass
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.209 & 15.239 (c)	Pass
20dB Occupied Bandwidth	47 CFR Part 15, Subpart C 15.239(a)	Pass

Remarks:

1. Test according to ANSI C63.10.
2. Pass: The EUT complies with the essential requirements in the standard.
3. N/A: Not applicable

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
Radiated Emission	1GHz-18GHz	4.29dB	(1)
Radiated Emission	18GHz-40GHz	3.30dB	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

5 General Information

5.1 General Description of EUT

Product Name:	Bluetooth handsfree car kit
Model No.:	BTFM8
Test sample(s) ID:	GTS202212000097-1
Sample(s) Status:	Engineer sample
S/N:	N/A
Operation Frequency:	88.1MHz~107.9MHz
Channel numbers:	100
Channel Separation:	200KHz
Modulation Type:	FM
Antenna Type:	Integral antenna
Antenna Gain:	10dBi
Power Supply:	Input: DC 12-24V, 3A Output UABA: DC 5V, 2.4A UABC: DC 5V, 2.4A

Operation Frequency each of Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	88.1	26	93.1	51	98.1	76	103.1
2	88.3	27	93.3	52	98.3	77	103.3
3	88.5	28	93.5	53	98.5	78	103.5
4	88.7	29	93.7	54	98.7	79	103.7
5	88.9	30	93.9	55	98.9	80	103.9
6	89.1	31	94.1	56	99.1	81	104.1
7	89.3	32	94.3	57	99.3	82	104.3
8	89.5	33	94.5	58	99.5	83	104.5
9	89.7	34	94.7	59	99.7	84	104.7
10	89.9	35	94.9	60	99.9	85	104.9
11	90.1	36	95.1	61	100.1	86	105.1
12	90.3	37	95.3	62	100.3	87	105.3
13	90.5	38	95.5	63	100.5	88	105.5
14	90.7	39	95.7	64	100.7	89	105.7
15	90.9	40	95.9	65	100.9	90	105.9
16	91.1	41	96.1	66	101.1	91	106.1
17	91.3	42	96.3	67	101.3	92	106.3
18	91.5	43	96.5	68	101.5	93	106.5
19	91.7	44	96.7	69	101.7	94	106.7
20	91.9	45	96.9	70	101.9	95	106.9
21	92.1	46	97.1	71	102.1	96	107.1
22	92.3	47	97.3	72	102.3	97	107.3
23	92.5	48	97.5	73	102.5	98	107.5
24	92.7	49	97.7	74	102.7	99	107.7
25	92.9	50	97.9	75	102.9	100	107.9

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test Channel:

Channel	Frequency
The lowest channel	88.1MHz
The middle channel	98.1MHz
The Highest channel	107.9MHz

5.2 Test mode

Mode 1	Keep transmit mode
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Per-test mode:

We have verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows:

Axis	X	Y	Z
Field Strength(dBuV/m)	34.15	37.57	33.86

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
GS	Lead-acid battery	S5D26R-MFZ	9442804454

5.4 Test Facility

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

- **FCC —Registration No.: 381383**

Designation Number: CN5029

Global United Technology Services Co., Ltd., Shenzhen 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 files.

- **IC —Registration No.: 9079A**

CAB identifier: CN0091

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

- **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

5.6 Other Information Requested by the Customer

None.

6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July 02, 2020	July 01, 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	April 22, 2022	April 21, 2023
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	March 21, 2022	March 20, 2023
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June 12, 2022	June 11, 2023
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Coaxial Cable	GTS	N/A	GTS213	April 22, 2022	April 21, 2023
8	Coaxial Cable	GTS	N/A	GTS211	April 22, 2022	April 21, 2023
9	Coaxial cable	GTS	N/A	GTS210	April 22, 2022	April 21, 2023
10	Coaxial Cable	GTS	N/A	GTS212	April 22, 2022	April 21, 2023
11	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	April 22, 2022	April 21, 2023
12	Band filter	Amindeon	82346	GTS219	June 23, 2022	June 22, 2023
13	Splitter	Agilent	11636B	GTS237	June 23, 2022	June 22, 2023
14	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 29, 2022	Nov. 28, 2023
15	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 22, 2022	April 21, 2023
16	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 22, 2022	April 21, 2023

RF Conducted Test:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Spectrum Analyzer	Agilent	E4440A	GTS536	April 22, 2022	April 21, 2023
2	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 22, 2022	April 21, 2023
3	USB RF Power Sensor	DARE	RPR3006W	GTS569	April 22, 2022	April 21, 2023
4	RF Switch Box	Shongyi	RFSW3003328	GTS571	April 22, 2022	April 21, 2023

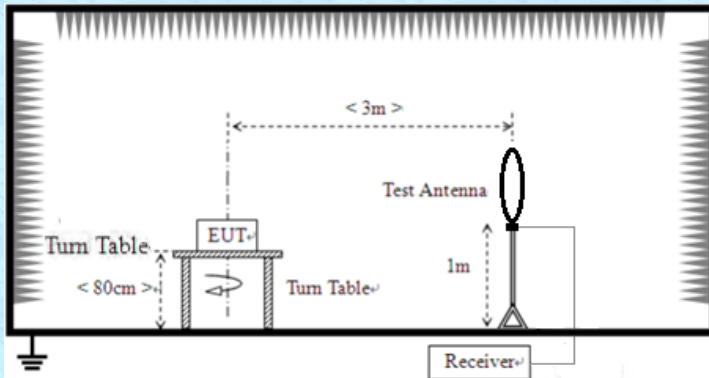
General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	April. 25 2022	April. 24 2023
2	Barometer	ChangChun	DYM3	GTS255	June. 23 2022	June. 22 2023

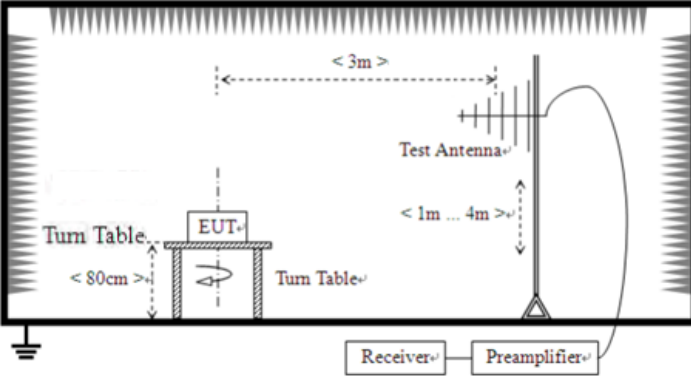
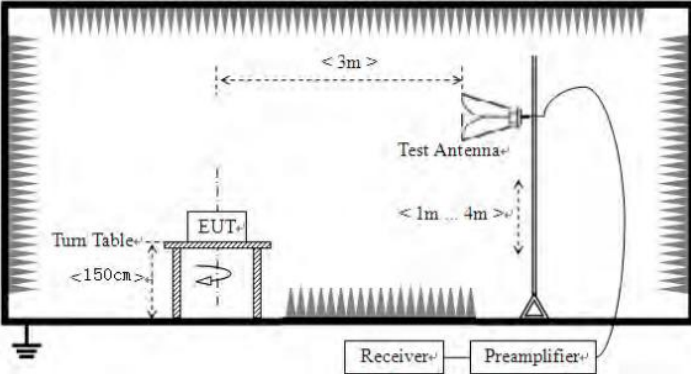
7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement:	47 CFR Part 15, Subpart C 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. The use of a antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of an so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
E.U.T Antenna:	
The antenna is Integral antenna, reference to the appendix II for details.	

7.2 Radiated Emission Method

Test Requirement:	47 CFR Part 15, Subpart C 15.209 & 15.239 (c)				
Test Method:	ANSI C63.10				
Test Frequency Range:	9kHz to 6000MHz				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	9kHz-150kHz	Quasi-peak	200Hz	300Hz	Quasi-peak Value
	150kHz-30MHz	Quasi-peak	9kHz	10kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
Peak		1MHz	10Hz	Average Value	
Limit: (Field strength of the fundamental signal)	Frequency		Limit (dBuV/m @3m)		Remark
	88.1MHz-107.9MHz		48.0		Average Value
			68.0		Peak Value
Limit: (Spurious Emissions)	Frequency		Limit (uV/m)		Remark
	0.009MHz-0.490MHz		2400/F(kHz) @300m		Quasi-peak Value
	0.490MHz-1.705MHz		24000/F(kHz) @30m		Quasi-peak Value
	1.705MHz-30.0MHz		30 @30m		Quasi-peak Value
	30MHz-88MHz		100 @3m		Quasi-peak Value
	88MHz-216MHz		150 @3m		Quasi-peak Value
	216MHz-960MHz		200 @3m		Quasi-peak Value
	960MHz-1GHz		500 @3m		Quasi-peak Value
	Above 1GHz		500 @3m		Average Value
5000 @3m			Peak Value		
Limit: (band edge)	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.				
Test setup:	For radiated emissions from 9kHz to 30MHz				
					
Test setup:	For radiated emissions from 30MHz to1GHz				

	 For radiated emissions above 1GHz 
Test Procedure:	1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test voltage:	DC 12V
Test results:	Pass

Measurement data:

7.2.1 Field Strength of The Fundamental Signal

Peak value:

Frequency (MHz)	Read Level (dBUV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBUV/m)	Limit Line (dBUV/m)	Over Limit (dB)	polarization
88.10	51.86	8.65	1.09	30.00	31.60	48.00	-16.40	Horizontal
88.10	55.48	8.65	1.09	30.00	35.22	48.00	-12.78	Vertical
98.10	51.48	9.50	1.18	30.00	32.16	48.00	-15.84	Horizontal
98.10	55.66	9.50	1.18	30.00	36.34	48.00	-11.66	Vertical
107.90	52.31	10.33	1.26	30.00	33.90	48.00	-14.10	Horizontal
107.90	55.98	10.33	1.26	30.00	37.57	48.00	-10.43	Vertical

Note:

1, The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

2, PK Value under AV limit, then pass for AV value.

7.2.2 Radiated Spurious Emissions

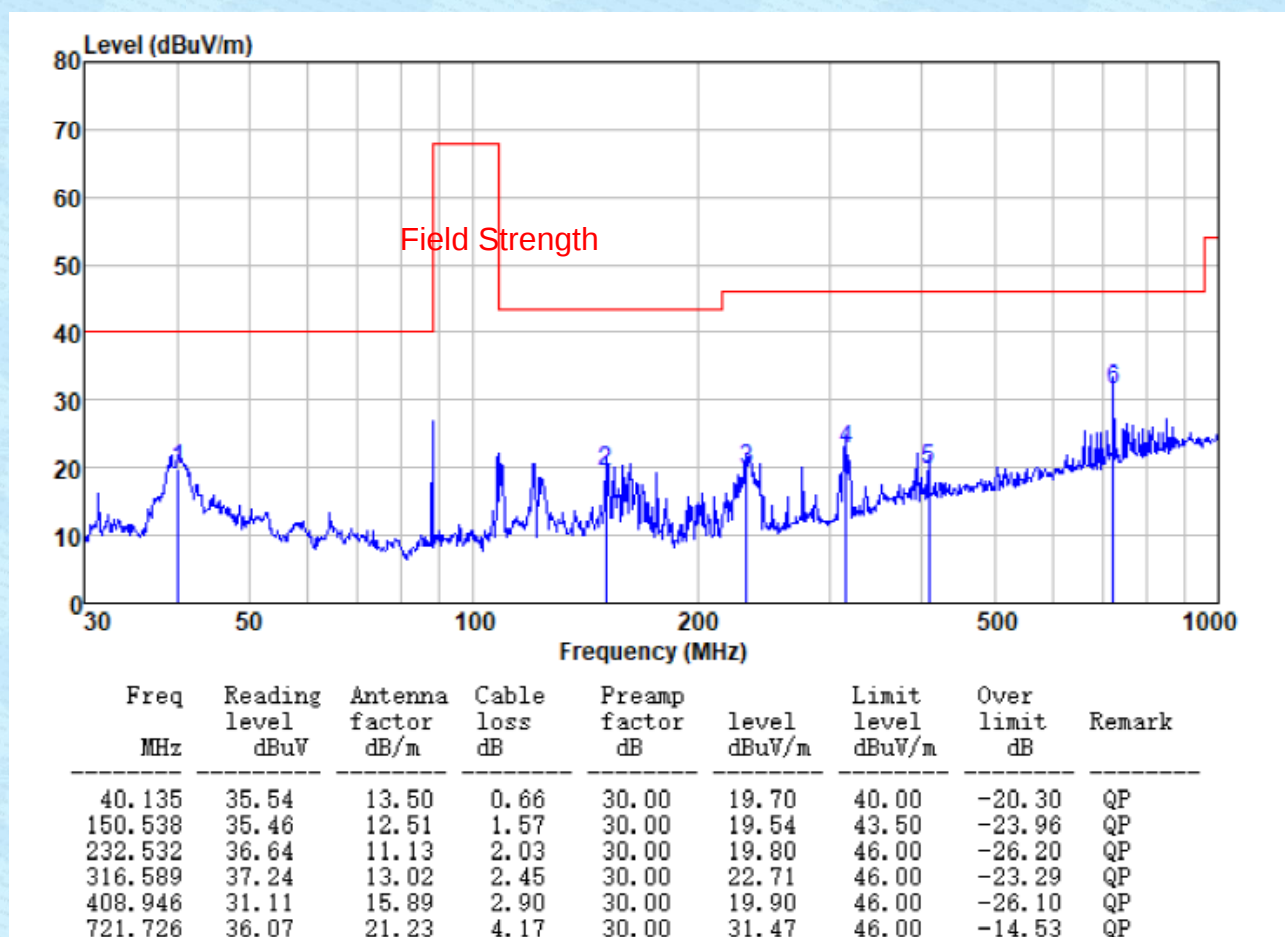
■ 9kHz~30MHz

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

■ 30MHz~1GHz

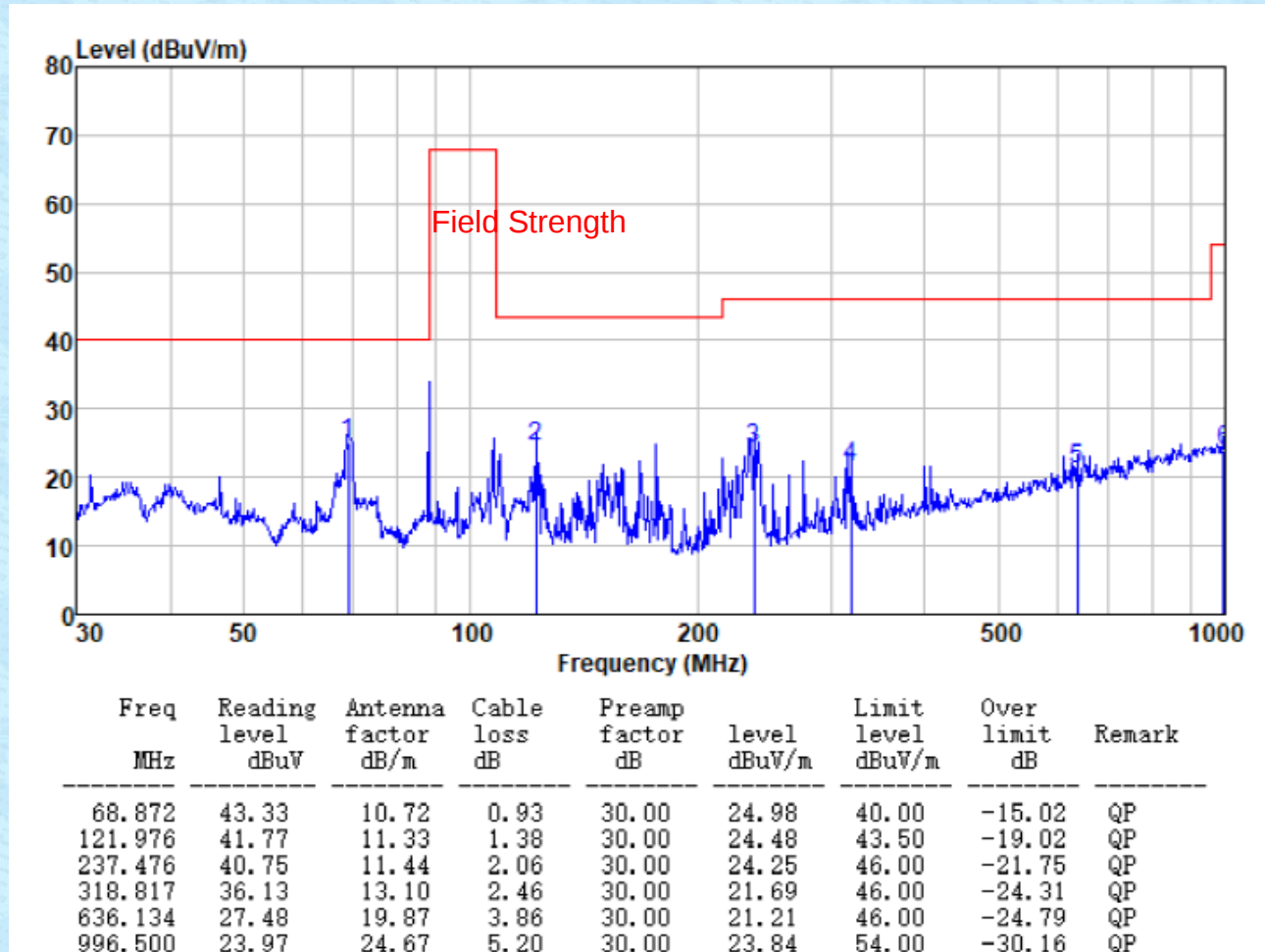
Test mode:	Transmitting	Test channel:	Lowest channel
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Vertical:



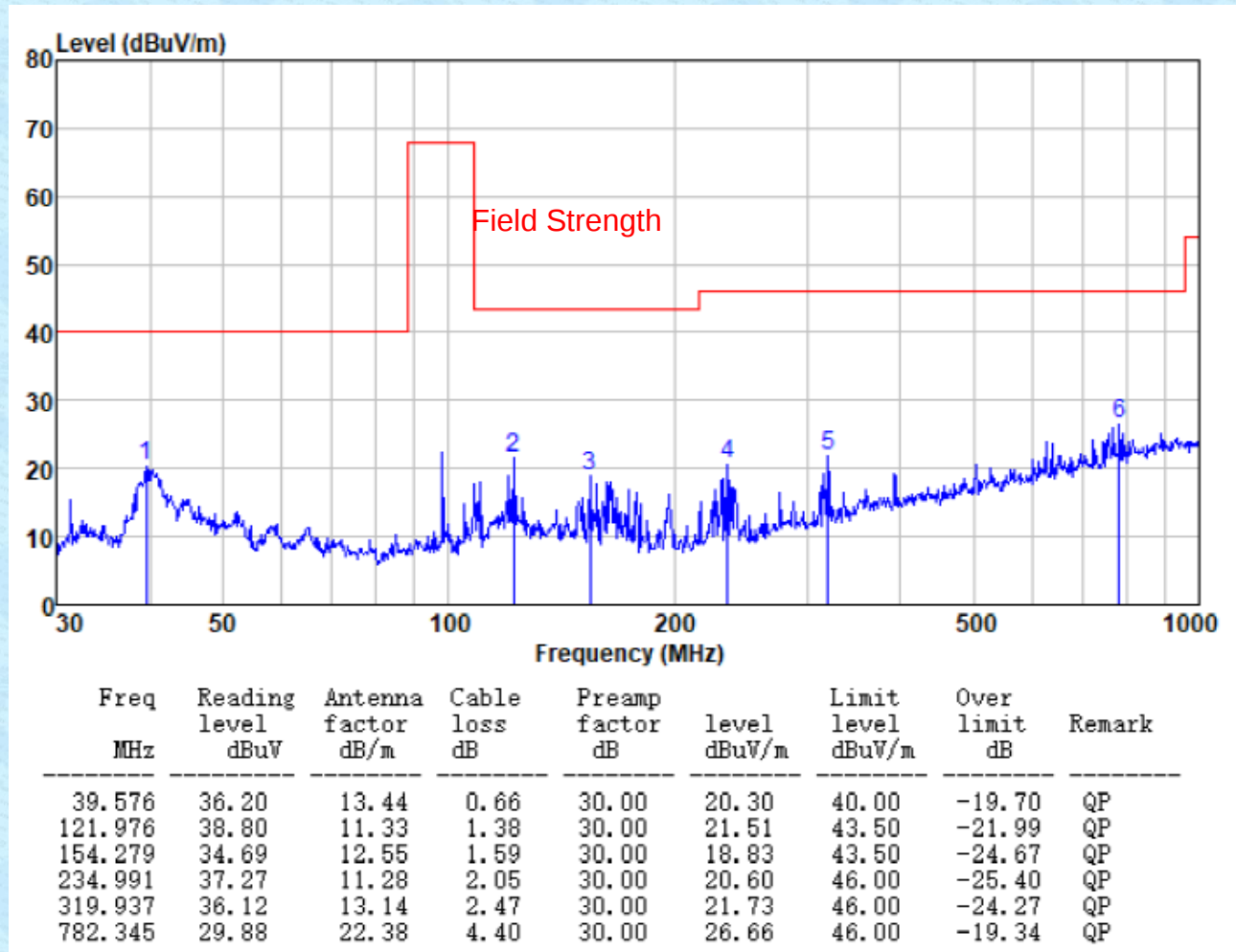
Test mode:	Transmitting	Test channel:	Lowest channel
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Horizontal:



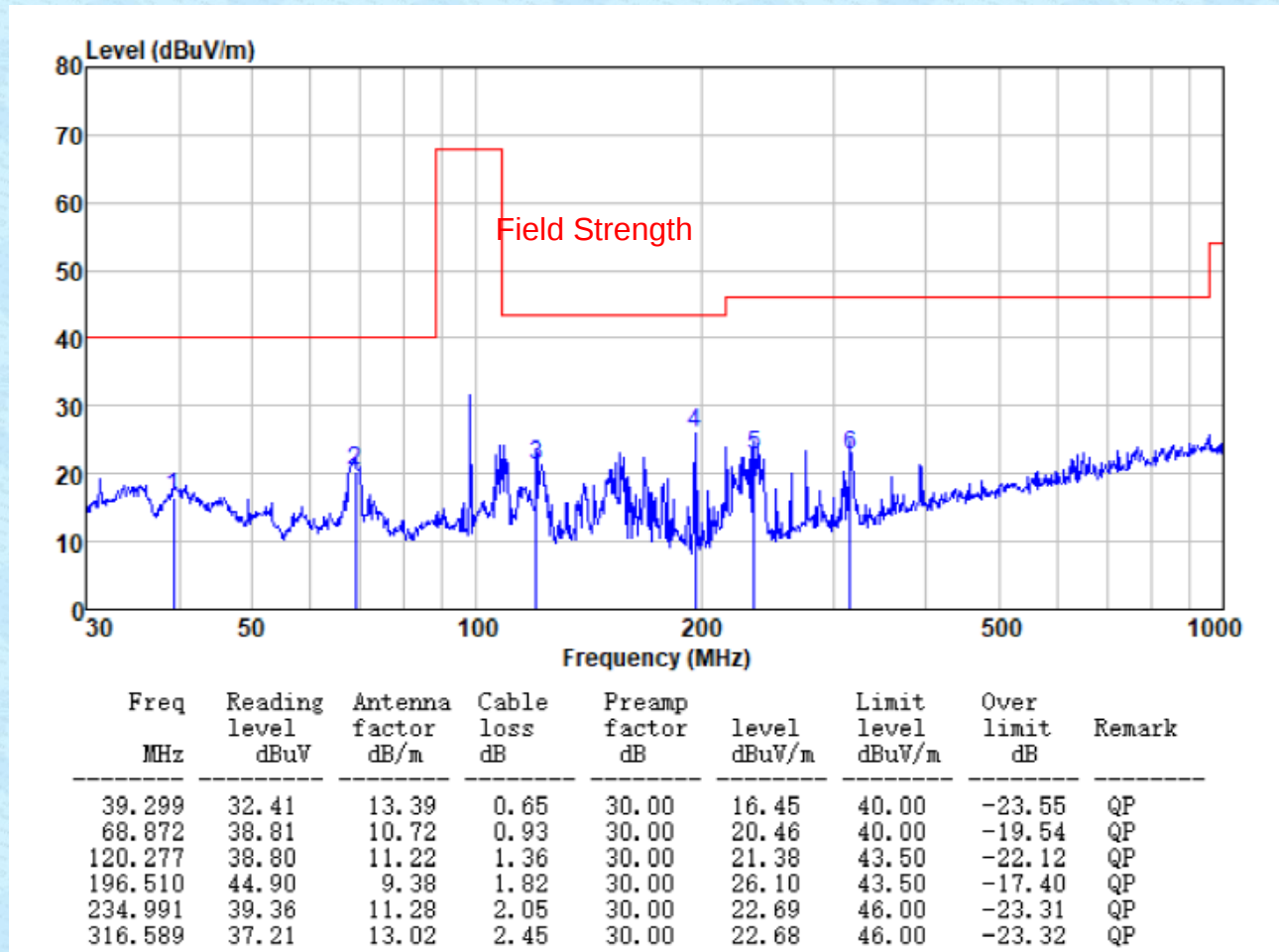
Test mode:	Transmitting	Test channel:	Middle channel
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Vertical:



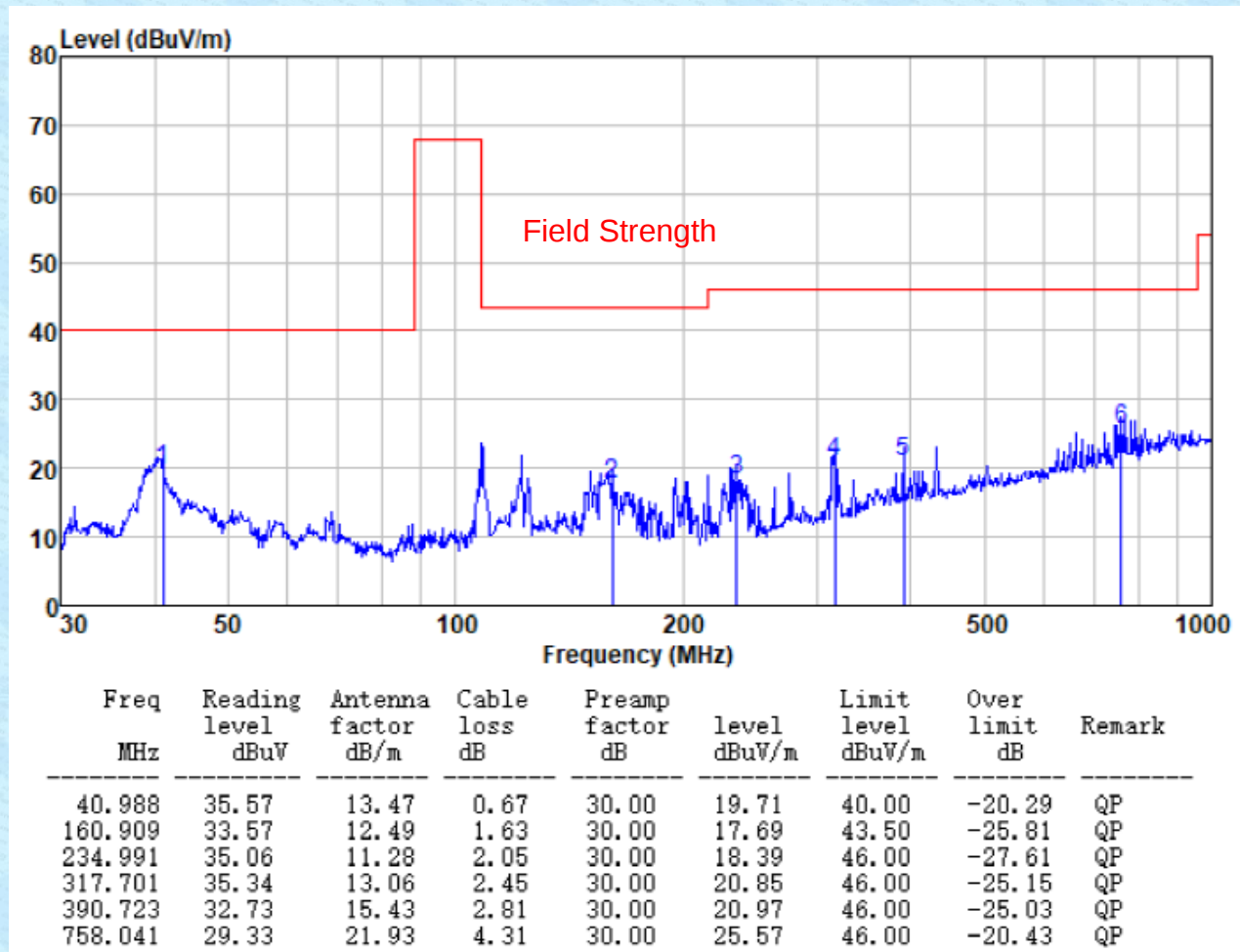
Test mode:	Transmitting	Test channel:	Middle channel
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Horizontal



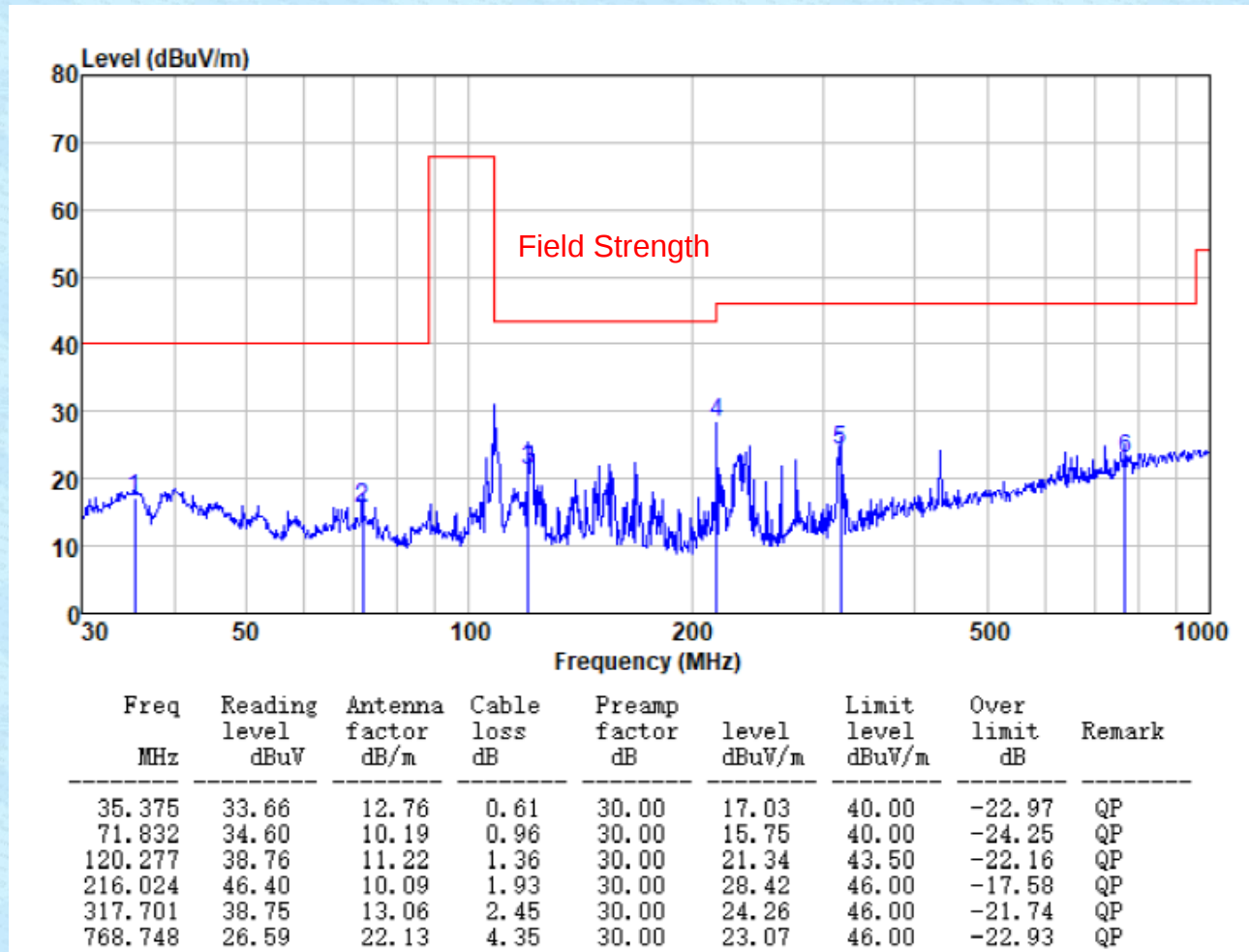
Test mode:	Transmitting	Test channel:	Highest channel
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Vertical:



Test mode:	Transmitting	Test channel:	Highest channel
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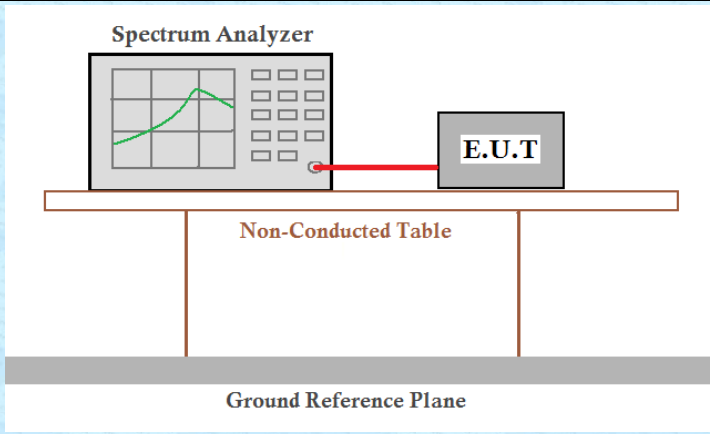
Horizontal



Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

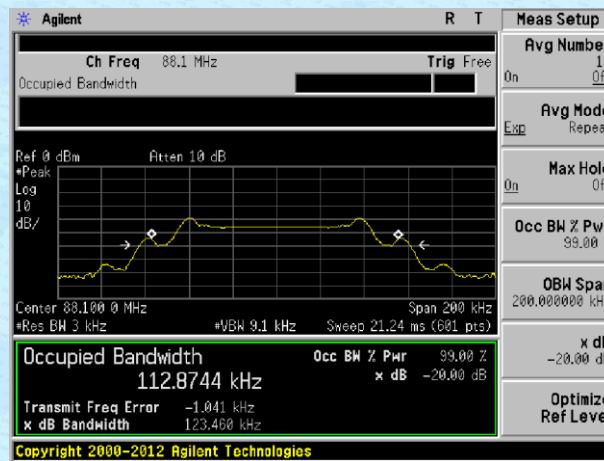
7.3 20dB Occupy Bandwidth

Test Requirement:	47 CFR Part 15, Subpart C 15.239(a)
Test Method:	ANSI C63.10
Receiver setup:	RBW=3KHz, VBW=9.1KHz, detector: Peak
Limit:	<200 kHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

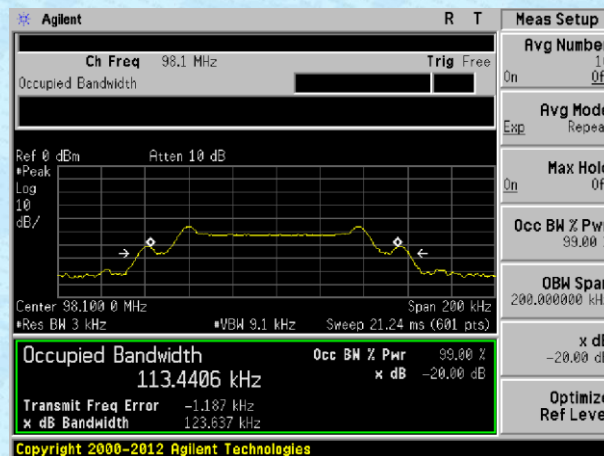
Measurement Data:

Test channel	20dB bandwidth(kHz)	Limit(kHz)
Lowest	123.460	200
Middle	123.637	
Highest	123.382	

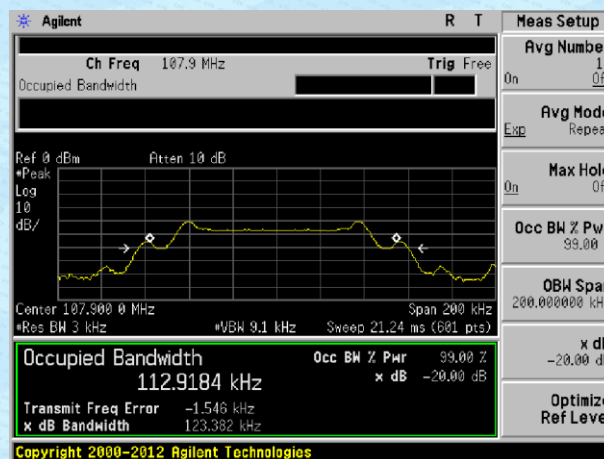
Test plot as follows:



Lowest channel



Middle channel



Highest channel

8 Test Setup Photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

----- End -----