

TEST REPORT

of

FCC Part 15 Subpart C §15.239/RSS-210 Issue 7
FCC ID/IC Certification: A3LBSP1000 / 649E-BSP1000

Equipment Under Test : Bluetooth Stereo Speaker
Model Name : BSP1000
Serial No. : N/A
Applicant : SAMSUNG ELECTRONICS CO., LTD.
Manufacturer : SAMSUNG ELECTRONICS HUIZHOU CO., LTD.
Date of Test(s) : 2009.05.25 ~ 2009.06.04
Date of Issue : 2009.06.04

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

Tested By:



Date

2009-06-04

Feel Jeong

Approved By



Date

2009-06-04

Charles Kim

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1. General Information

1.1. Testing Laboratory

SGS Testing Korea Co., Ltd.
Wireless Div. 2FL, 18-34, Sanbon-dong, Gunpo-si, Gyeonggi-do, Korea 435-040
www.electrolab.kr.sgs.com
Telephone : +82 +31 428 5700
FAX : +82 +31 427 2371

1.2. Details of Applicant

Applicant : Samsung Electronics Co., Ltd.
Address : 416, Maetan-dong, Yeongtong-gu, Suwon-city, Gyeonggi-do, Korea
Contact Person : Kim, Jin gyeong
Phone No. : +82 +31 301 4187
Fax No. : +82 +31 279 7609

1.3. Description of EUT

Kind of Product	Bluetooth Stereo Speaker
Model Name	BSP1000
Serial Number	N/A
Power Supply	DC 3.7 V
Frequency Range	2402 MHz ~ 2480 MHz(Bluetooth) 88.1 MHz ~ 107.9 MHz(FM Transmitter)
Modulation Technique	FHSS(Bluetooth), FM(FM Transmitter)
Number of Channels	79 CH(Bluetooth), 100 CH(FM Transmitter)
Operating Conditions	-20 °C ~ 50 °C
Antenna Type	Fixed Type(Bluetooth), Special Conducted Type(FM Transmitter)

1.4. Details of modification

-N/A

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1.5. Test Equipment List

Equipment	Manufacturer	Model	Cal Due.
Signal Generator	Agilent	E4438C	Apr. 01, 2010
Spectrum Analyzer	Rohde & Schwarz	FSV30	May 15, 2010
Preamplifier	H.P	8447F	Jul. 03, 2009
Preamplifier	Agilent	8449B	Apr. 01, 2010
Test Receiver	Rohde & Schwarz	ESVS10	Jul. 30, 2009
Ultra-Broadband Antenna	Rohde & Schwarz	HL562	Oct. 02, 2009
Horn Antenna	Electro-Metrics	HF906	Nov. 13, 2009
Anechoic Chamber	SY Corporation	L x W x H (9.6 m x 6.4 m x 6.6 m)	Jan. 31, 2010

1.6. Simulating Equipments

Description	Model	Serial No	Manufacturer
Notebook Computer	LGP1	705KIHS004673	LG Electronics Co., Ltd.
BT Dongle	SBD100	N/A	Samsung Electronics Co., Ltd.

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1.7. Summary of Test Results

The EUT has been tested according to the following specifications:

Applied standard : FCC Part15 subpartC, RSS-210			
Standard section		Test item	Result
15.207	RSS-Gen 7.2.2	Transmitter AC power line conducted emission	N/A
15.205(a) 15.209(a)	RSS-210 A2.8	Transmitter radiated spurious emissions and Conducted spurious emission	Complied
15.239(a) 15.239(b)	RSS-210 A2.8	20 dB Bandwidth, Band Edge and Radiated Emission	Complied

1.8. Test report revision

Revision	Report number	Description
0	F690501/RF-RTL003131	Initial
1	F690501/RF-RTL003131-1	Add band edge test

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2. Transmitter AC power line conducted emission (Not applied)

2.1. Test Setup

2.2. Limit

According to §15.207(a) for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network(LISN).

Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15 – 0.50	66-56*	56-46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

■ Decreases with the logarithm of the frequency.

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2.3. Test procedures

Radiated emissions from the EUT were measured according to the dictates of ANSI C63.4:2003

1. The test procedure is performed in a 6.5m × 3.6m × 3.6m (L×W×H) shielded room. The EUT along with its peripherals were placed on a 1.0m(W)× 1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.
2. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room.
3. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.
4. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

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2.4. Test result (Not applied)

The following table shows the highest levels of conducted emissions on both phase of Hot and Neutral line.

Ambient temperature : °C
Relative humidity : % R.H.

Frequency range : 0.15 MHz – 30 MHz
Measured Bandwidth : 9 kHz

Freq. (MHz)	Level (dBUV)		Line	Limit (dBUV)		Margin (dB)	
	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average

□ Note

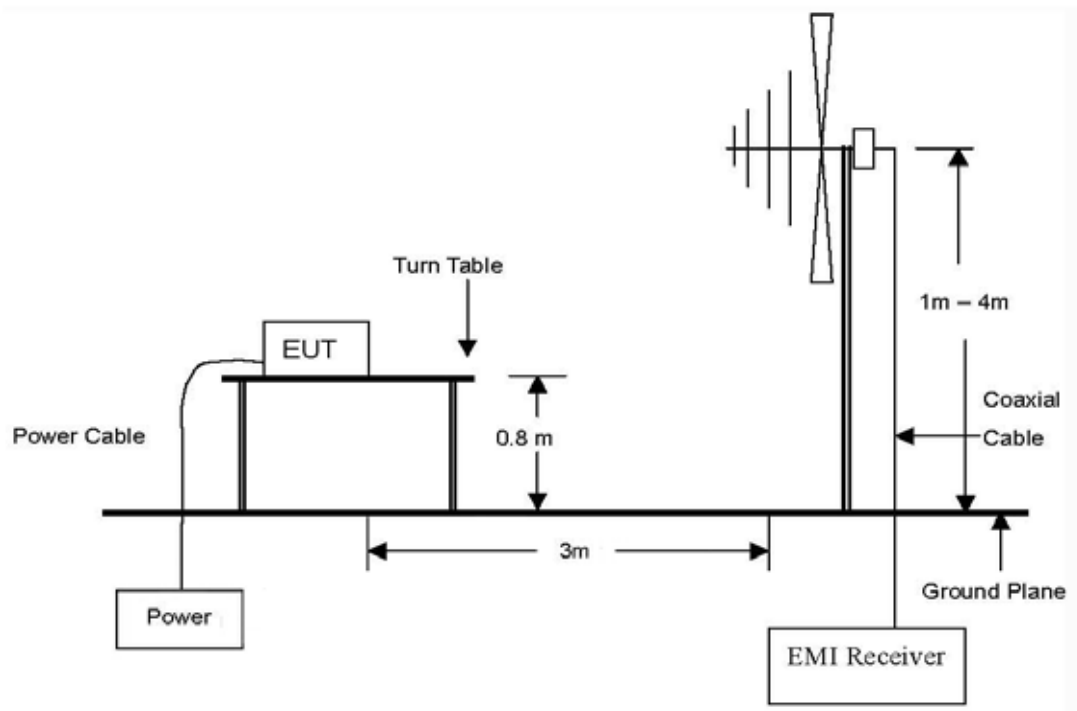
Line (H) : Hot
Line (N) : Neutral

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3. Radiated Emission

3.1. Test Setup for Radiated Emission.

The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz Emissions.



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3.2. Limit

The field strength of any emission within this band (section 15.239 frequency between 88 MHz –108 MHz) shall not exceed 250 microvolts /meter at 3 meters. (48dBuV/m at 3m)

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. The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209(Intentional Radiators general limit), as below.

Frequency (MHz)	Distance (Meters)	Field Strength (dBμV/m)	Field Strength (μV/m)
30 - 88	3	40.0*	100*
88 – 216	3	43.5*	150*
216 – 960	3	46.0*	200*
Above 960	3	54.0	500

Note:

Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

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3.3. Test Procedures

Radiated emissions from the EUT were measured according to the dictates of ANSI C63.4:2003

3.3.1. Test Procedures for Spurious Radiated Emissions

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
2. During performing radiated emission below 1 GHz, 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 is a broadband antenna, and its 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 table was turned from 0 degrees to 360 degrees to find the maximum reading.

NOTE ;

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1 GHz.

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3.4. Test Results

Ambient temperature : 22 °C
Relative humidity : 49 % R.H.

a. Low Frequency

Radiated Emissions			Ant	Correction Factors		Total	FCC Limit	
Frequency (MHz)	Reading (dBuV)	Detect Mode	Pol.	AF (dB/m)	Cable Loss (dB)	Actual (dBuV/m)	Limit (dBuV/m)	Margin (dB)
88.00	8.70	AVG	V	8.47	1.06	18.23	43.50	25.27
88.10	21.0	AVG	V	8.48	1.06	30.54	48.00	17.46
107.60	9.6	AVG	V	7.83	1.47	18.90	43.50	24.60
Above 110	Not Detected							

b. Middle Frequency

Radiated Emissions			Ant	Correction Factors		Total	FCC Limit	
Frequency (MHz)	Reading (dBuV)	Detect Mode	Pol.	AF (dB/m)	Cable Loss (dB)	Actual (dBuV/m)	Limit (dBuV/m)	Margin (dB)
98.90	27.4	AVG	V	9.10	1.13	37.63	48.00	10.37
197.80	15.3	AVG	V	7.46	1.55	24.31	43.50	19.19
Above 200	Not Detected							

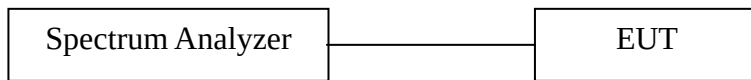
c. High Frequency

Radiated Emissions			Ant	Correction Factors		Total	FCC Limit	
Frequency (MHz)	Reading (dBuV)	Detect Mode	Pol.	AF (dB/m)	Cable Loss (dB)	Actual (dBuV/m)	Limit (dBuV/m)	Margin (dB)
107.90	33.2	AVG	V	9.46	1.18	43.84	48.00	4.16
108.00	10.1	AVG	V	9.46	1.18	20.74	43.50	22.76
182.78	16.8	AVG	V	8.00	1.62	26.42	43.50	17.08
Above 200	Not Detected							

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4. 20 dB Bandwidth, Band Edge, 99% bandwidth

4.1. Test Setup



4.2. Limit

According to §15.239(a), emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

4.3. Test Procedure

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 5 kHz, VBW = RBW, Span = 500 kHz , Sweep = auto.
4. Mark the peak frequency and 20 dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

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4.4. Test Results

Ambient temperature : 22 °C

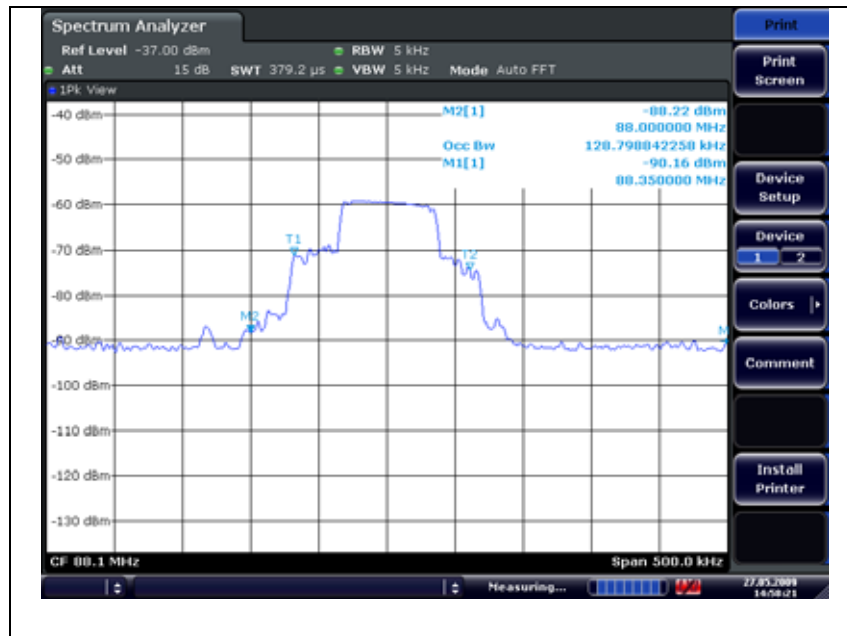
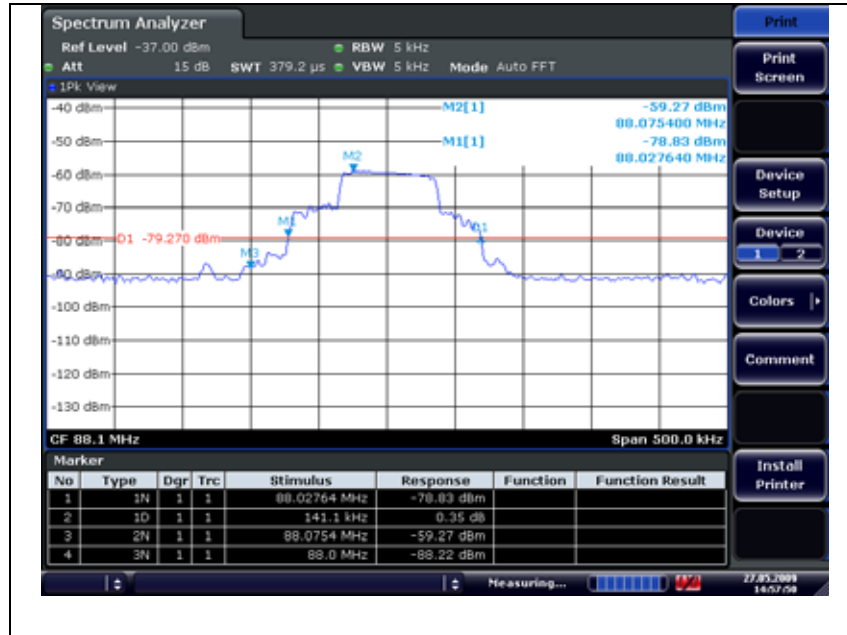
Relative humidity : 48 %

Channel	Channel Frequency (MHz)	20 dB Bandwidth (kHz)	99% bandwidth (kHz)
Low	88.1	141.1	128.8
Middle	98.9	140.4	117.2
High	107.9	127.4	111.4

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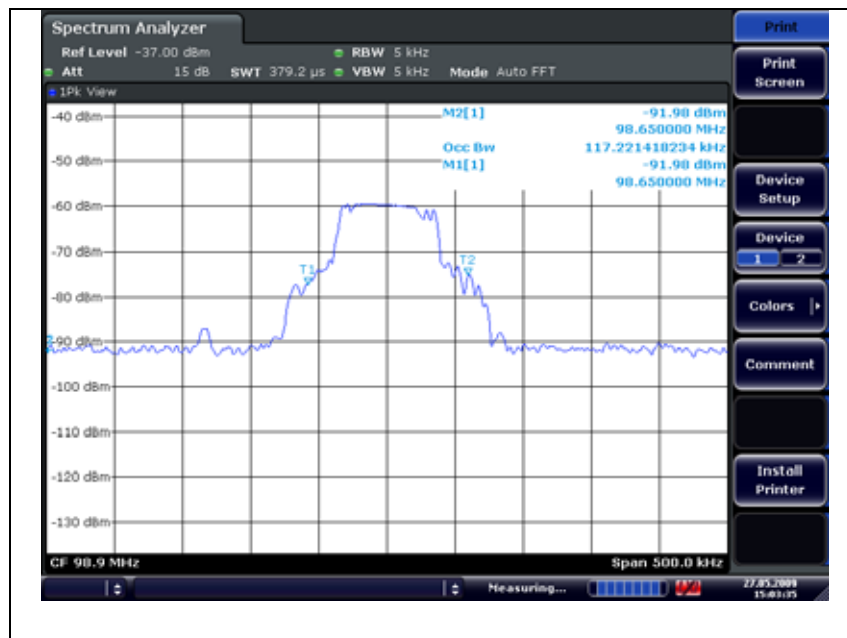
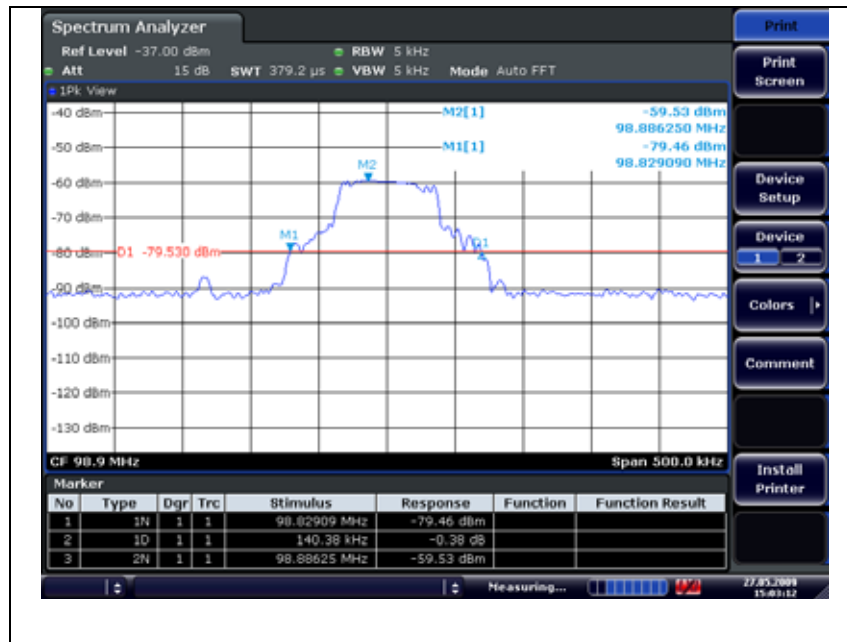
20 dB Bandwidth, Band Edge, 99% bandwidth

Low channel



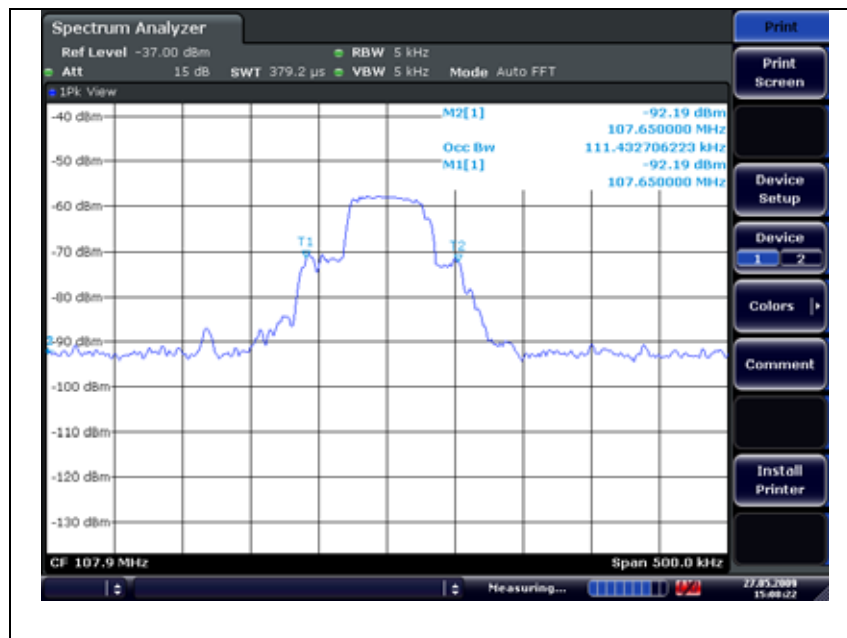
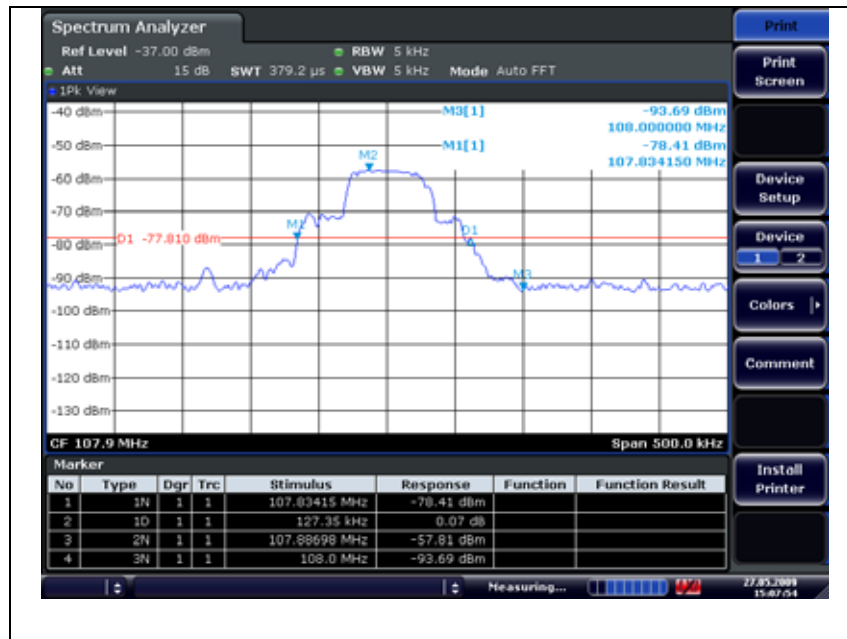
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Middle channel



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High channel



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