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TEST REPORT

Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-31-285-0894 FAX: 82-505-299-8311 www.kctl.co.kr	Report No.: KR22-SRF0205 Page (1) of (14)	eurofins KCTL

1. Client

- Name : BH EVS Co.,Ltd.
- Address : 208,209,210,211,212, 2F, 5, Magokjungang 8-ro 5-gil, Gangseo-gu, Seoul, 00794 Republic of Korea
- Date of Receipt : 2022-09-01

2. Use of Report : Certification

3. Name of Product / Model : Wireless Power Charger / WCGMM00N3C7

4. Manufacturer / Country of Origin : BH EVS Co.,Ltd. / Korea

5. FCC ID : 2A6WXWCGMM00N3C7

6. Date of Test : 2022-09-13 to 2022-11-17

7. Location of Test : ■ Permanent Testing Lab ☐ On Site Testing
(Address:65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea)

8. Test method used : FCC Part 15 Subpart C, 15.209

9. Test Result : Refer to the test result in the test report

Affirmation	Tested by Name : Jungwon Seo (Signature)	Technical Manager Name : Heesu Ahn (Signature)

2022-12-02

Eurofins KCTL Co.,Ltd.

As a test result of the sample which was submitted from the client, this report does not guarantee the whole product quality. This test report should not be used and copied without a written agreement by Eurofins KCTL Co.,Ltd.

REPORT REVISION HISTORY

Date	Revision	Page No
2022-12-02	Originally issued	-

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General remarks for test reports

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

Calculations leading to the reported values are on file with the testing laboratory that conducted the testing.

☒ **Statement not required by the standard or client used for type testing**

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1. General information

Client	:	BH EVS Co.,Ltd.
Address	:	208,209,210,211,212, 2F, 5, Magokjungang 8-ro 5-gil, Gangseo-gu, Seoul, 00794 Republic of Korea
Manufacturer	:	BH EVS Co.,Ltd.
Address	:	208,209,210,211,212, 2F, 5, Magokjungang 8-ro 5-gil, Gangseo-gu, Seoul, 00794 Republic of Korea
Laboratory	:	Eurofins KCTL Co.,Ltd.
Address	:	65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
Accreditations	:	FCC Site Designation No: KR0040, FCC Site Registration No: 687132
		VCCI Registration No. : R-20080, G-20078, C-20059, T-20056
		CAB Identifier: KR0040, ISED Number: 8035A
		KOLAS No.: KT231

2. Device information

Equipment under test	:	Wireless Power Charger
Model	:	WCGMM00N3C7
Modulation technique	:	ASK
Frequency range	:	127.87 ㎑
Power source	:	DC 14 V
Antenna specification	:	Coil Antenna
Software version	:	1.3
Hardware version	:	1.3
Test device serial No.	:	N/A
Operation temperature	:	-10 ℃ ~ 50 ℃

2.1. Accessory information

Equipment	Manufacturer	Model	Serial No.
Phone	Samsung Electronics Co., Ltd.	SM-F711N	R5CR80LXPBL

2.2. Frequency/channel operations

This device contains the following capabilities:
WPT

Frequency (㎑)
127.87

Table 2.2.1. WPT

2.3. Worst-Case configuration and mode

Test Case	Description
1	Charging from EUT to Phone (<10% Power Charging, Normal charging mode)
2	Charging from EUT to Phone (50~55% Power Charging, Normal charging mode)
3	Charging from EUT to Phone (90~95% Power Charging, Normal charging mode)
4	**Charging from EUT to Phone (<10% Power Charging, Fast charging mode)**
5	Charging from EUT to Phone (50~55% Power Charging, Fast charging mode)
6	Charging from EUT to Phone (90~95% Power Charging, Fast charging mode)

According to current client device's battery level, test results are different. Because the test result were worst when the battery level was below 10%, tests were performed when the battery level was below 10%.(Client device)

Test results of case 4 is worst, so this test report described test case 4.

3. Antenna requirement

Requirement of FCC part section 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 permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

- The transmitter has permanently attached Coil antenna(Internal antenna) on board.

4. Summary of tests

FCC Part section(s)	Parameter	Test mode	Test results
15.203	Antenna requirement	Conducted	Pass
15.209(a)	Field Strength of Fundamental and Spurious Emission	Radiated	Pass
2.1049	20dB Bandwidth		Pass
15.207(a)	AC Conducted Emission		N/A(note4)

Notes: (N/T: Not Tested, N/A: Not Applicable)

1. The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z. It was determined that X orientation was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in Z orientation.
2. The test procedure(s) in this report were performed in accordance as following.
   - ANSI C63.10-2013
3. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.
4. This test was not applicable because the EUT only support the DC power line.

5. Measurement uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of k=2 to indicated a 95 % level of confidence. The measurement data shown herein meets of exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and thus, can be compared directly to specified limits to determine compliance.

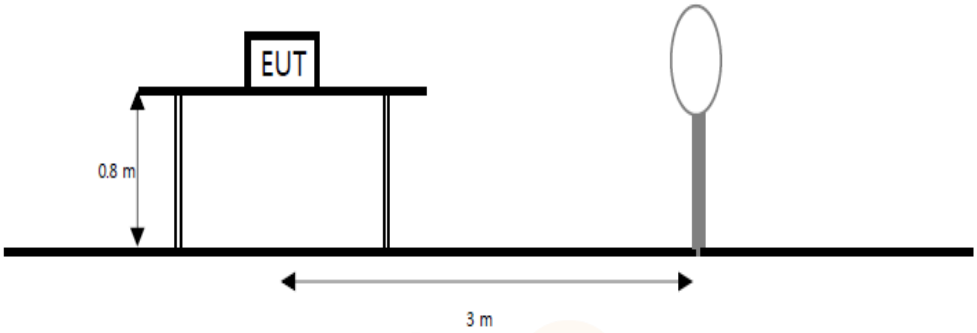
Parameter	Expanded uncertainty (±)	
Radiated spurious emissions	9 ㎑ ~ 30 ㎒	2.4 dB
Conducted emissions	9 ㎑ ~ 150 ㎑	1.6 dB
	150 ㎑ ~ 30 ㎒	1.7 dB

6. Test results

6.1. Field Strength of Fundamental and Spurious Emission

Test setup

The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒ Emissions



Limit

According to section 15.209(a). Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (㎒)	Field strength (㎶/m)	Measurement distance (m)
0.009 - 0.490	2 400/F(㎑)	300
0.490 - 1.705	24 000/F(㎑)	30
1.705 - 30	30	30
30 - 88	100**	3
88 - 216	150**	3
216 - 960	200**	3
Above 960	500	3

**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 ㎒, 76–88 ㎒, 174–216 ㎒ or 470–806 ㎒. However, operation within these frequency bands is permitted under other sections of this part, e.g., Section15.231 and 15.241.

Test procedure
ANSI C63.10-2013

Test settings
Test Procedures for emission from 9 ㎑ to 30 ㎒

a. 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.
b. Then antenna is a loop antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both parallel and perpendicular of the antenna are set to make the measurement.
c. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 degrees to find the maximum reading.
d. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode.
e. Below 30 ㎒ frequency range, all orientations about parallel, perpendicular, and ground-parallel were investigated then reported and the worse orientations of Face-on and Face-off were set for final test.
   - Face-on = Parallel, Face-off = Perpendicular

Notes:

1. *f* <30 ㎒, extrapolation factor of 40 ㏈/decade of distance. $F_d = 40\log(D_m/Ds)$
   Where:
   F_d = Distance factor in ㏈
   D_m = Measurement distance in meters
   D_s = Specification distance in meters
2. The test measurement distance is 3 meter
3. Limit (㏈(㎶/m)) = For 0.009 ㎒ - 0.490 ㎒, 20*log(2 400/F(㎑)) ㏈(㎶/m)
   For 0.490 ㎒ - 1.705 ㎒, 20*log(24 000/F(㎑)) ㏈(㎶/m)
   For 1.705 ㎒ - 30 ㎒, 20*log(30) = 29.54 ㏈(㎶/m)

Test results

Left
Radiated Emissions Fundamental & 9 ㎑ to 30 ㎒

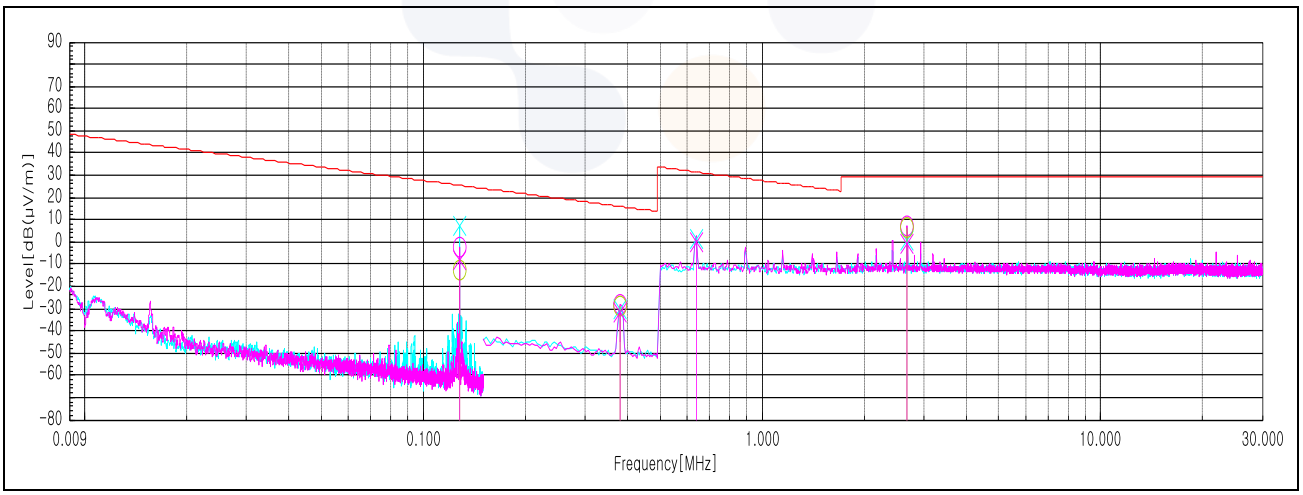
[Face-on]

Frequency	Reading	Detector	Ant. Factor	Amp. + Cable	Distance factor	Result	Limit	Margin
(㎒)	(dB(㎶))	Mode	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
0.13	79.70	AV	19.99	-32.42	80.00	-12.73	25.46	38.19
0.38	60.30	AV	19.90	-32.25	80.00	-32.05	15.99	48.04
2.68	57.90	QP	20.08	-31.79	40.00	6.19	29.54	23.35

[Face-off]

Frequency	Reading	Detector	Ant. Factor	Amp. + Cable	Distance factor	Result	Limit	Margin
(㎒)	(dB(㎶))	Mode	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
0.13	84.20	AV	19.99	-32.42	80.00	-8.23	25.46	33.69
0.38	60.30	AV	19.90	-32.25	80.00	-32.05	15.99	48.04
0.64	52.10	QP	19.93	-32.20	40.00	-0.17	31.49	31.66
2.68	50.50	QP	20.08	-31.79	40.00	-1.21	29.54	30.75

Note.
1) -80 is distance factor = 40*log(3/300), -40 is distance factor = 40*log(3/30)



Middle
Radiated Emissions Fundamental & 9 ㎑ to 30 ㎒

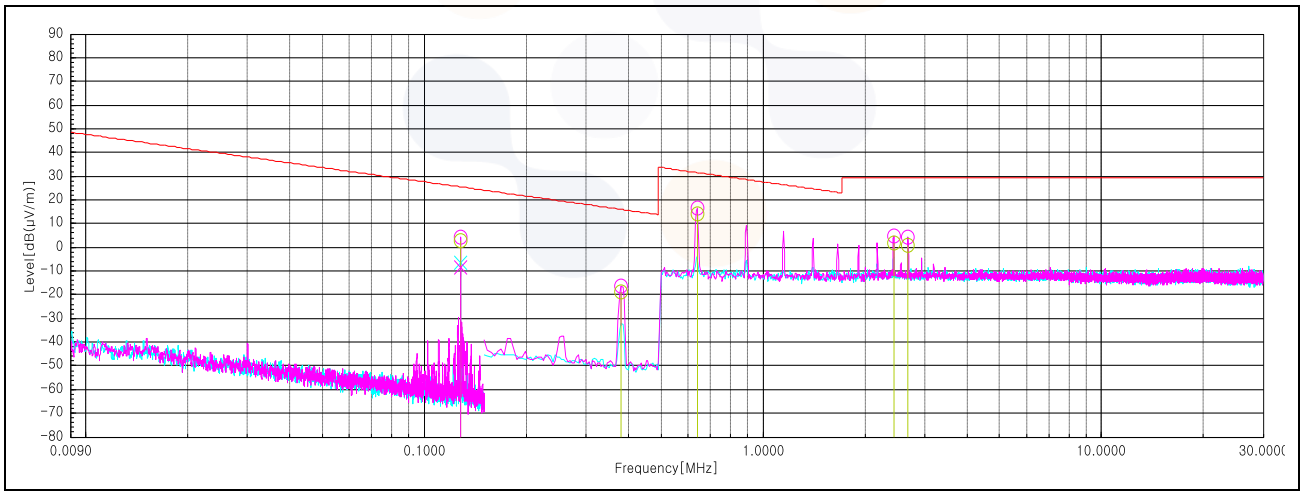
[Face-on]

Frequency	Reading	Detector	Ant. Factor	Amp. + Cable	Distance factor	Result	Limit	Margin
(㎒)	(dB(㎶))	Mode	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
0.13	95.10	AV	19.99	-32.42	80.00	2.67	25.46	22.79
0.38	73.30	AV	19.90	-32.25	80.00	-19.05	15.99	35.04
0.64	65.80	QP	19.93	-32.20	40.00	13.53	31.49	17.96
2.43	53.30	QP	20.07	-31.81	40.00	1.56	29.54	27.98
2.68	52.50	QP	20.08	-31.79	40.00	0.79	29.54	28.75

[Face-off]

Frequency	Reading	Detector	Ant. Factor	Amp. + Cable	Distance factor	Result	Limit	Margin
(㎒)	(dB(㎶))	Mode	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
0.13	83.90	AV	19.99	-32.42	80.00	-8.53	25.46	33.99

Note.
1) -80 is distance factor = 40*log(3/300), -40 is distance factor = 40*log(3/30)



Right
Radiated Emissions Fundamental & 9 ㎑ to 30 ㎒

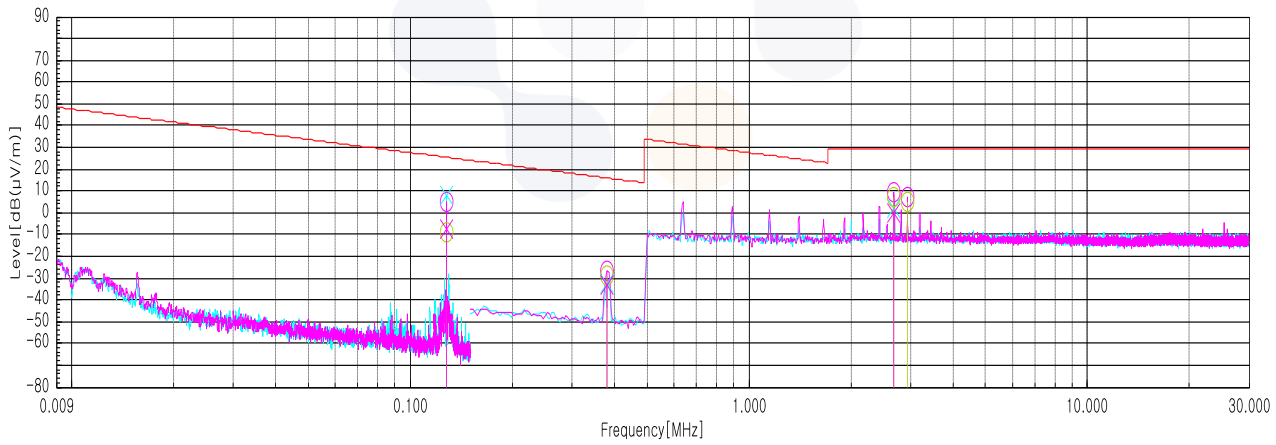
[Face-on]

Frequency	Reading	Detector	Ant. Factor	Amp. + Cable	Distance factor	Result	Limit	Margin
(㎒)	(dB(㎶))	Mode	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
0.13	77.90	AV	19.99	-32.42	80.00	-14.53	25.46	39.99
0.38	57.10	AV	19.90	-32.25	80.00	-35.25	15.99	51.24
2.68	61.50	QP	20.08	-31.79	40.00	9.79	29.54	19.75
2.94	56.00	QP	20.10	-31.77	40.00	4.33	29.54	25.21

[Face-off]

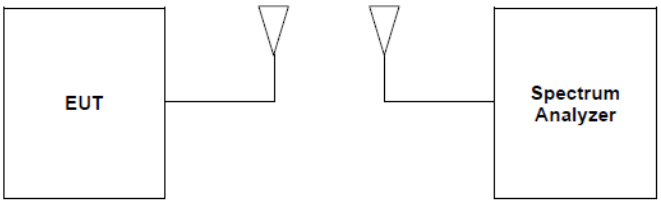
Frequency	Reading	Detector	Ant. Factor	Amp. + Cable	Distance factor	Result	Limit	Margin
(㎒)	(dB(㎶))	Mode	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
0.13	84.10	AV	19.99	-32.42	80.00	-8.33	25.46	33.79
0.38	70.30	AV	19.90	-32.25	80.00	-22.05	15.99	38.04
2.43	59.10	QP	20.08	-31.79	40.00	7.39	29.54	22.15

Note.
1) -80 is distance factor = 40*log(3/300), -40 is distance factor = 40*log(3/30)



6.2. 20dB Bandwidth

Test setup



Limit

For reporting purpose only

Test settings

The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

A peak, or peak hold, may be used in place of the sampling detector as this may produce a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold may be necessary to determine the occupied bandwidth if the device is not transmitting continuously.

The trace data points are recovered and are directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded.

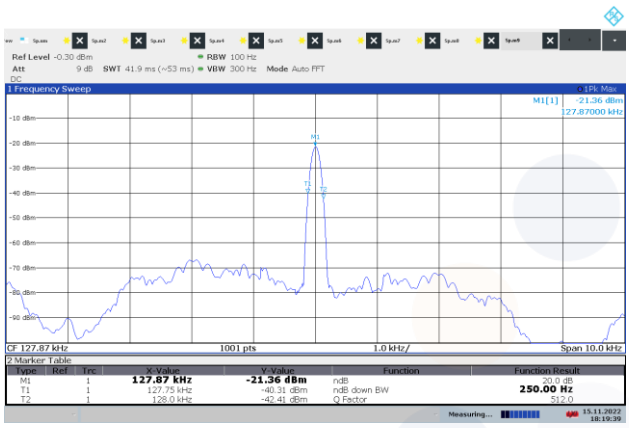
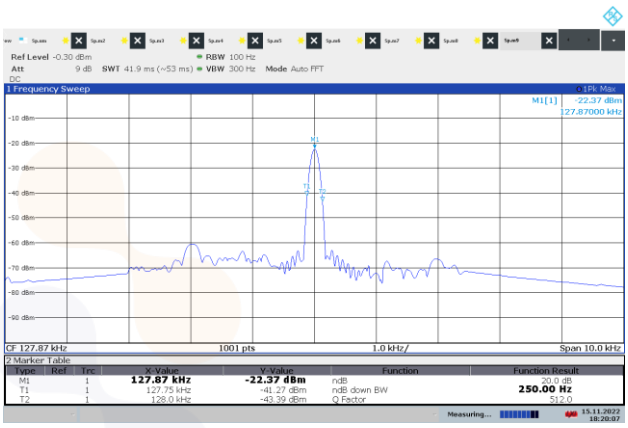
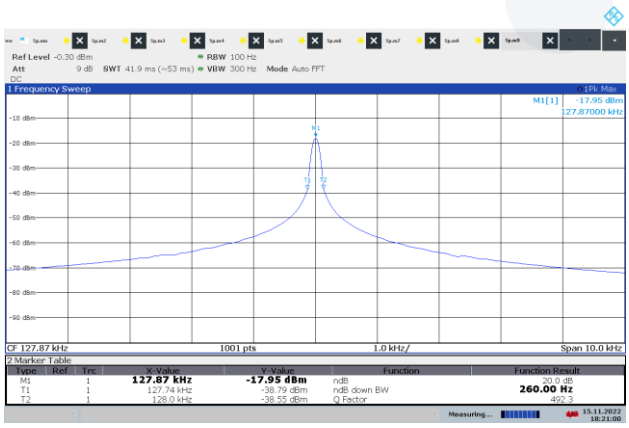
The difference between the two recorded frequencies is the 99% occupied bandwidth.

Test results

20dB Bandwidth

Mode	Frequency (㎑)	20dB Bandwidth (㎑)	Limit
LEFT	127.87	0.25	Reporting purpose only
MIDDLE	127.87	0.25	
RIGHT	127.87	0.26	

Test Plots

20dB Bandwidth_LEFT	20dB Bandwidth_MIDDLE
127.87 ㎑	127.87 ㎑
	
20dB Bandwidth_RIGHT	
127.87 ㎑	
	Blank

Note. Because the measured signal is CW/CW-like, adjusting the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.

7. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
Vector Signal Generator	R&S	SMBV100A	1407.6004K02	23.07.11
Signal Generator	R&S	SMB100A	176206	23.01.19
Signal & Spectrum Analyzer	R&S	FSV3030	1330.5000K30-101711-nf	22.12.02
Spectrum Analyzer	R&S	FSW50	101013	23.07.04
Spectrum Analyzer	R&S	FSV40-N	101462	23.01.06
DC Power Supply	AGILENT	E3632A	KR73001026	23.03.28
Temp & Humid Chamber	ESPEC CORP.	SH-661	92004048	22.12.21
EMI TEST RECEIVER	R&S	ESCI7	101408	23.03.04
Bilog Antenna	Teseq GmbH	CBL 6143A	35039	23.05.13
Attenuator	Weinschel ENGINEERING	10	AJ1239	23.05.03
LOOP Antenna	R&S	HFH2-Z2	100355	24.08.10
Amplifier	SONOMA INSTRUMENT	310N	284608	23.08.18
Antenna Mast	Innco Systems	MA4000-EP	303	N/A
Turn Table	Innco Systems	DT2000	79	N/A

End of test report