FCC TEST REPORT

Test report
On Behalf of
SPORTident GmbH
For
SPORTident Control Station(Beacon large)
Model No.: BS11-BL

FCC ID: 2AIOJ-BS11BL

Prepared for :	**SPORTident GmbH** **Markt14,D-99310 Arnstadt, Thuringia, Germany**
Prepared By :	**WST Certification & Testing (HK) Limited** **12/F., San Toi Building,137-139 Connaught Road Central, HongKong**
Date of Test:	**May 21, 2016 ~ May 29, 2016**
Date of Report:	**May 30, 2016**
Report Number:	**WST160524107-E**

TEST RESULT CERTIFICATION

Applicant's name	:	SPORTident GmbH
Address	:	Markt14,D-99310 Arnstadt, Thuringia, Germany
Manufacture's Name	:	Smart Ease Industrial Limited
Address	:	Room A03, 2/F, Block A, Pak Fook Industrial Building, 615-617 Tai Nan West Street, Lai Chi Kok, Kowloon, Hong Kong.

Product description

Trade Mark:		SPORTident
Product name	:	SPORTident Control Station(Beacon large)
Model and/or type reference	:	BS11-BL
Standards	:	FCC Rules and Regulations Part 15 Subpart C (Section 15.209), ANSI C63.10: 2013

Date of Test	:	
Date (s) of performance of tests	:	**May 21, 2016 ~ May 27, 2016**
Date of Issue	:	**May 30, 2016**
Test Result	:	**Pass**

Testing Engineer : Eric Xie

(Eric Xie)

Technical Manager : Dora Qin

(Dora Qin)

Authorized Signatory :

(Kait Chen)

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1. TEST SUMMARY

1.1 Description of Test

Description of Test	Result
CONDUCTED EMISSIONS TEST	Compliant
99% BANDWIDTH	Compliant
RADIATED EMISSIONS	Compliant

1.2 Test Location

Test Firm : Shenzhen WST Testing Technology Co., Ltd.
Certificated by FCC, Registration No.: 939433

Address : 1F,No.9 Building,TGK Science & Technology Park,Yangtian Rd.,
NO.72 Bao'an Dist., Shenzhen,Guangdong,China. 518101

1.3 Measurement Uncertainty

Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	=	4.06dB, k=2

2. GENERAL INFORMATION

2.1 General Description of EUT

Equipment	:	SPORTident Control Station(Beacon large)
Model No.	:	BS11-BL
FCC ID	:	2AIOJ-BS11BL
Model Difference	:	N/A
Modulation Type	:	ASK
Antenna Type	:	Internal Antenna
Antenna Gain	:	1.0dBi
Operation frequency	:	125KHz
Number of Channels	:	1
Data Rate	:	/
Power Source :	:	DC Voltage
Power Rating :	:	DC 3.6V from battery
Adapter Model :	:	/

2.1.1 Carrier Frequency of Channels

Operation Frequency each of channel	
Channel	Frequency
1	125KHz

2.2 Operation of EUT during testing

Operating Mode

The mode is used: Transmitting mode

2.3 Description of Test Setup

Operation of EUT during testing

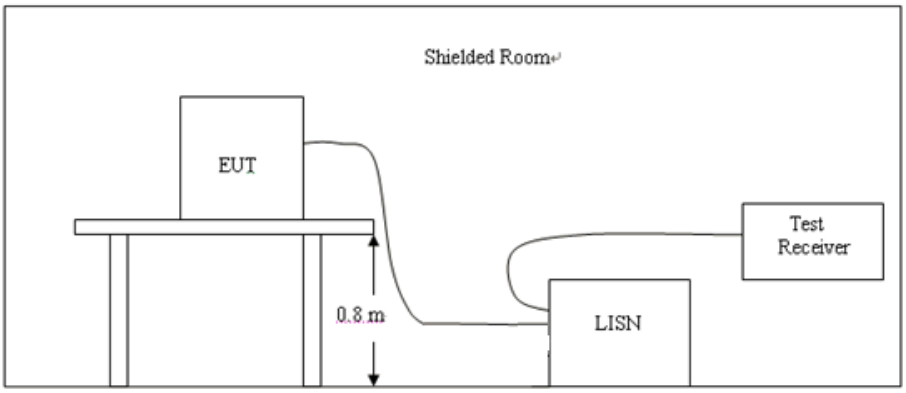
2.4 Measurement Instruments List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Receiver	Rohde & Schwarz	ESCI	100627	May 19, 2016	1 Year
2.	LISN	SchwarzBeck	NSLK 8126	8126377	May 19, 2016	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	May 19, 2016	1 Year
4.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A
5.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	April 19, 2016	1 Year
6.	Trilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	April 17, 2016	1 Year
7.	Pre-amplifier	Compliance Direction	PAP-0203	22008	April 19, 2016	1 Year
8.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
9.	EMI Receiver	Rohde & Schwarz	ESCI	100627	April 19, 2016	1 Year
10.	LISN	SchwarzBeck	NSLK 8126	8126377	April 19, 2016	1 Year
11.	RF Switching Unit	Compliance Direction	RSU-M2	38303	April 19, 2016	1 Year
12.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A
13.	EMI Receiver	Rohde & Schwarz	ESCI	100627	April 19, 2016	1 Year
14.	EMI Receiver	Rohde & Schwarz	ESCI	100627	April 19, 2016	1 Year
15.	LISN	SchwarzBeck	NSLK 8126	8126377	April 19, 2016	1 Year
16.	RF Switching Unit	Compliance Direction	RSU-M2	38303	April 19, 2016	1 Year
17.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A
18.	Programmable AC Power source	SOPH POWER	PAG-1050	630250	April 26, 2016	1 Year
19.	Harmonic and Flicker Analyzer	LAPLACE	AC2000A	272629	April 26, 2016	1 Year
20.	Harmonic and Flicker Test Software AC 2000A	LAPLACE	N/A	N/A	N/A	N/A
21.	ESD Simulators	KIKUSUI	KES4021	LJ003477	April 26, 2016	1 Year
22.	EFT Generator	EMPEK	EFT-4040B	0430928N	April 26, 2016	1 Year
23.	Shielding Room	ChangZhou ZhongYu	JB88	SEL0166	April 26, 2016	1 Year
24.	Signal Generator 9KHz~2.2GHz	R&S	SML02	SEL0143	April 26, 2016	1 Year
25.	Signal Generator 9KHz~1.1GHz	R&S	SML01	SEL0135	April 26, 2016	1 Year
26.	Power Meter	R&S	NRVS	SEL0144	April 26, 2016	1 Year
27.	RF Level Meter		URV35	SEL0137	April 26, 2016	1 Year
28.	Audio Analyzer	R&S	UPL	SEL0136	April 26, 2016	1 Year
29.	RF-Amplifier 150KHz~150MHz	BONN Elektronik	BSA1515-25	SEL0157	April 26, 2016	1 Year
30.	Stripline Test Cell	Erika Fiedler	VDE0872	SEL0167	April 26, 2016	N/A

31.	TV Test Transmitter	R&S	SFM	SEL0159	April 26, 2016	1 Year
32.	TV Generator PAL	R&S	SGPF	SEL0138	April 26, 2016	1 Year
33.	TV Generator Ntsc	R&S	SGMF	SEL0140	April 26, 2016	1 Year
34.	TV Generator Secam	R&S	SGSF	SEL0139	April 26, 2016	1 Year
35.	TV Test Transmitter 0.3MHz~3300MHz	R&S	SFQ	SEL0142	April 26, 2016	1 Year
36.	MPEG2 Measurement Generator	R&S	DVG	SEL0141	April 26, 2016	1 Year
37.	Spectrum Analyzer	R&S	FSP	SEL0177	April 26, 2016	1 Year
38.	Matching	R&S	RAM	SEL0146	N/A	N/A
39.	Matching	R&S	RAM	SEL0148	N/A	N/A
40.	Absorbing Clamp	R&S	MDS21	SEL0158	April 26, 2016	1 Year
41.	Coupling Set	Erika Fiedler	Rco, Rci, MC, AC, LC	SEL0149	April 26, 2016	N/A
42.	Filters	Erika Fiedler	Sr, LBS	SEL0150	N/A	N/A
43.	Matching Network	Erika Fiedler	MN, T1	SEL0151	N/A	N/A
44.	Fully Anechoic Room	ChangZhou ZhongYu	854	SEL0169	April 26, 2016	1 Year
45.	Signal Generator	R&S	SML03	SEL0068	April 26, 2016	1 Year
46.	RF-Amplifier 30M~1GHz	Amplifier Reasearch	250W1000A	SEL0066	Oct. 24, 2015	1 Year
47.	RF-Amplifier 0.8~3.0GHz	Amplifier Reasearch	60S1G3	SEL0065	Oct. 24, 2015	1 Year
48.	Power Meter	R&S	NRVD	SEL0069	April 26, 2016	1 Year
49.	Power Sensor	R&S	URV5-Z2	SEL0071	April 26, 2016	1 Year
50.	Power Sensor	R&S	URV5-Z2	SEL0072	April 26, 2016	1 Year
51.	Software EMC32	R&S	EMC32-S	SEL0082	April 26, 2016	1 Year
52.	Log-periodic Antenna	Amplifier Reasearch	AT1080	SEL0073	April 26, 2016	1 Year
53.	Antenna Tripod	Amplifier Reasearch	TP1000A	SEL0074	April 26, 2016	1 Year
54.	Active Loop Antenna	SCHWARZBECK	FMZB1519	1519-037	April 26, 2016	1 Year
55.	High Gain Horn Antenna(0.8-5G Hz)	Amplifier Reasearch	AT4002A	SEL0075	April 26, 2016	1 Year

3. CONDUCTED EMISSION TEST

3.1 Block Diagram of Test Setup



3.2 Conducted Power Line Emission Limit

For unintentional device, according to § 15.207 Line Conducted Emission Limits is as following

Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

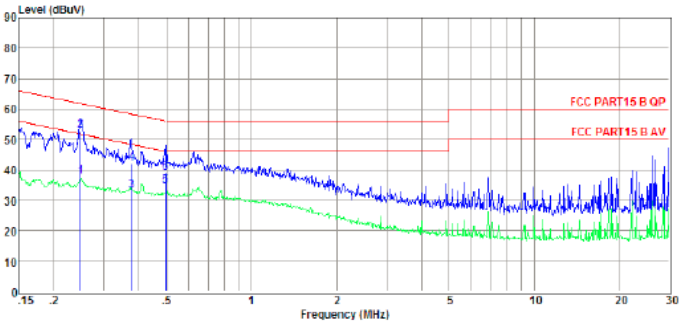
For intentional device, according to §15.207Line Conducted Emission Limit is same as above table.

3.3 Test Procedure

1, The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
2, Support equipment, if needed, was placed as per ANSI C63.10.
3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4, If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5, All support equipments received AC power from a second LISN, if any.
6, The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7, Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes

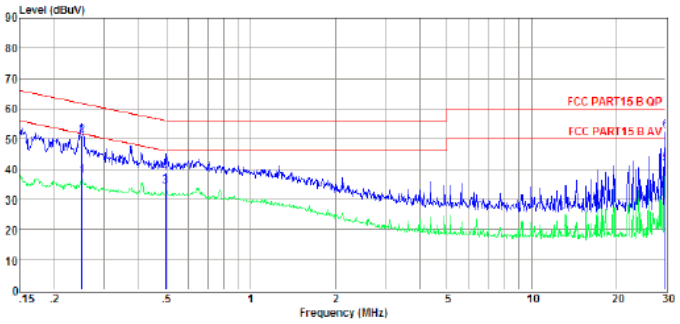
3.4 Test Result

PASS



Item (Mark)	Freq (MHz)	Read Level (dBμV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBμV)	Limit Line (dBμV)	Over Limit (dB)	Detector	Phase
1	0.25	18.27	9.62	0.02	9.85	37.76	51.82	-14.06	Average	LINE
2	0.25	33.26	9.62	0.02	9.85	52.75	61.82	-9.07	QP	LINE
3	0.38	13.57	9.63	0.02	9.86	33.08	48.39	-15.31	Average	LINE
4	0.38	22.61	9.63	0.02	9.86	42.12	58.39	-16.27	QP	LINE
5	0.50	15.18	9.63	0.03	9.87	34.71	46.05	-11.34	Average	LINE
6	0.50	19.52	9.63	0.03	9.87	39.05	56.05	-17.00	QP	LINE

Note: 1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz), Step size: 4 kHz, Scan time: auto.

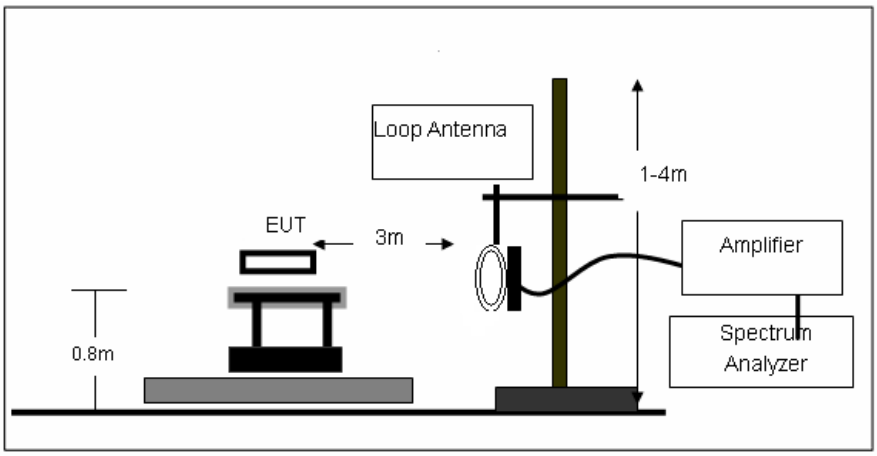


Item (Mark)	Freq (MHz)	Read Level (dBμV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBμV)	Limit Line (dBμV)	Over Limit (dB)	Detector	Phase
1	0.25	18.42	9.59	0.02	9.85	37.88	51.73	-13.85	Average	NEUTRAL
2	0.25	31.42	9.59	0.02	9.85	50.88	61.73	-10.85	QP	NEUTRAL
3	0.50	14.81	9.61	0.03	9.87	34.32	46.05	-11.73	Average	NEUTRAL
4	0.50	19.11	9.61	0.03	9.87	38.62	56.05	-17.43	QP	NEUTRAL
5	30.00	21.44	10.13	0.18	10.00	41.75	50.00	-8.25	Average	NEUTRAL
6	30.00	32.23	10.13	0.18	10.00	52.54	60.00	-7.46	QP	NEUTRAL

Note: 1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz), Step size: 4 kHz, Scan time: auto.

4. 99% BANDWIDTH

4.1 Block Diagram of Test Setup



4.2 Rules and specifications

CFR 47 Part 15.215(c)
ANSI C63.10-2013

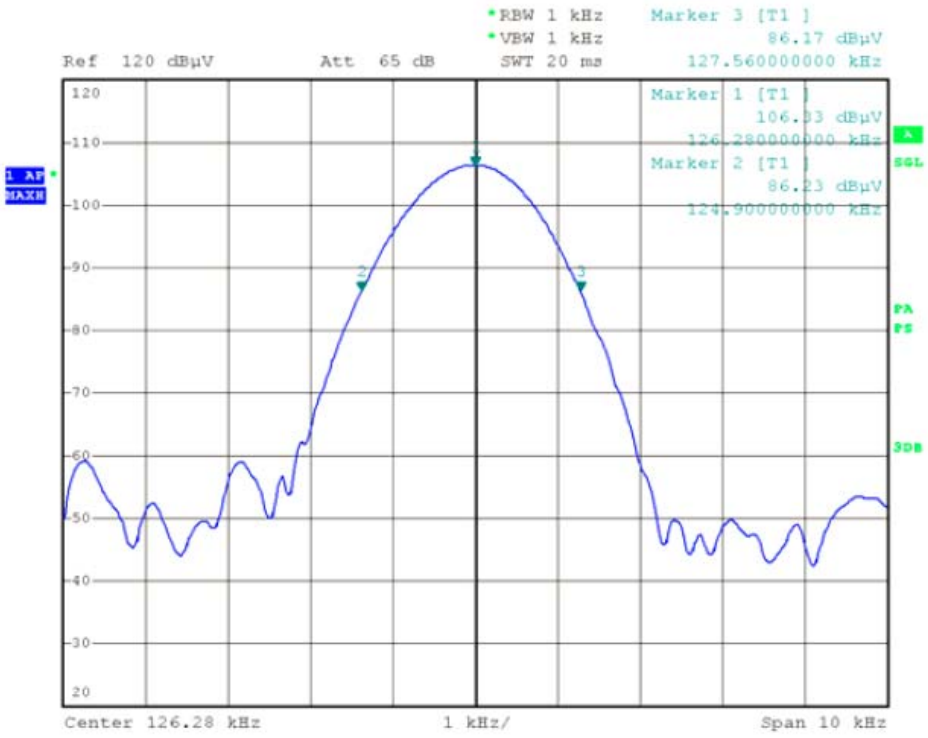
4.3 Test Procedure

The EUT was placed non-metallic table, 0.8 meters above the ground plane, on a remote-controlled turntable in chamber. The test distance was 3 meters, the transmitter unit operated with normal modulation The EMI receiver was set to 1kHz resolution BW, The spectrum bandwidth of transmitter unit was measured And recorded, the test was performed to measure the transmitter occupied bandwidth, the EUT was set up As shown in 4.1, and its proper operation was checked, the transmitter occupied bandwidth was measured With the EMI received as frequency delta between reference points on modulation envelope. The EUT was Test at 125KHz

4.4 Test Result

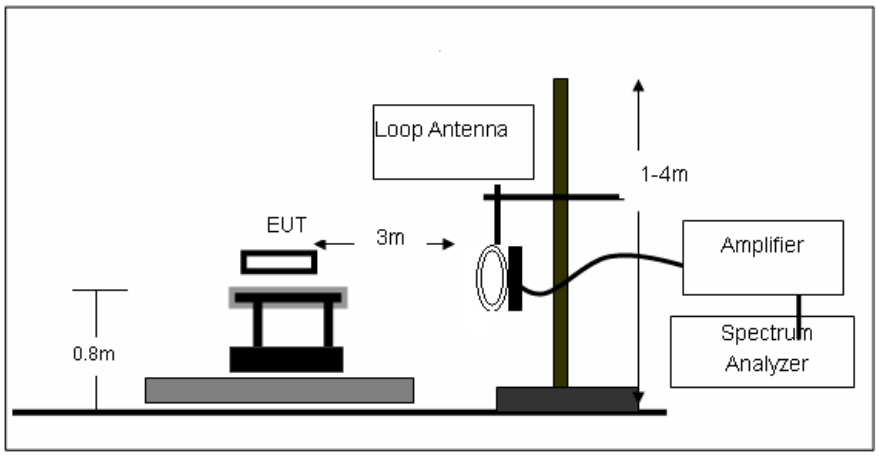
PASS

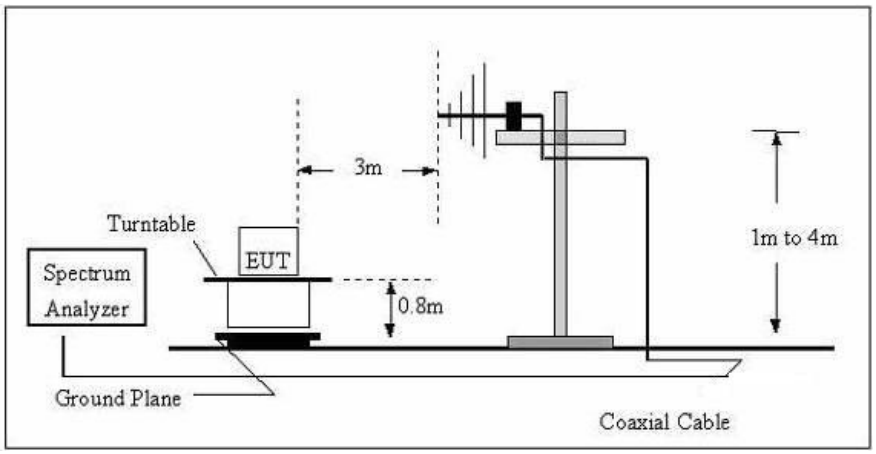
Frequency(KHz)	Measured Conducted 99% Occupied Bandwidth
125KHz	2.66KHz


*RBW 1 kHz
*VBW 1 kHz
SWT 20 ms
Marker 3 [T1]
86.17 dBµV
127.560000000 kHz
Ref 120 dBµV
Att 65 dB
Marker 1 [T1]
106.33 dBµV
126.280000000 kHz
Marker 2 [T1]
86.23 dBµV
124.900000000 kHz
1 AP
MAXH
SGL
PA
PS
3DB
120
110
100
90
80
70
60
50
40
30
20
Center 126.28 kHz
1 kHz/
Span 10 kHz

5. RADIATED EMISSIONS

5.1 Block Diagram of Test Setup





5.2 Rules and specifications

CFR 47 Part 15, section 15.205

Only spurious emissions are permitted in any of the frequency bands listed the tables in these sections.

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
\1\ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293.	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(\2\)
13.36-13.41			

CFR 47 Part 15, section 15.209

The emissions from an intentional radiator shall not exceed the limits in the tables in these sections using an average detector

Frequency (MHz)	Field strength (microvolts/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

Limit calculation and transfer to 3m distance as showed in the following table:

Frequency (MHz)	Limit (dBuV/m)	Distance (m)
0.009-0.490	20log(2400/F(KHz))+40log(300/3)	3
0.490-1.705	20log(2400/F(KHz))+40log(300/3)	3
1.705-30.0	69.5	3
30-88	40.0	3
88-216	43.5	3
216-960	46.0	3
Above 960	54.0	3

CFR 47 Part 15, section 15.35

When average radiated emission measurements are specified, the limit on the peak level of the radio Frequency emission is 20dB above the maximum permitted average emission limit.

Transmitter Spurious Emissions 9KHz-30MHz			
	9-150KHz	150-490KHz	490KHz-30MHz
Resolution Bandwidth	200Hz	9KHz	9KHz
Video Bandwidth	2KHz	100KHz	100KHz
Detector	Peak	Peak	Peak
Trace Mode	Max Hold	Max Hold	Max Hold
Sweep Time	Auto	Auto	Auto

5.3 Test Procedure

Measurement distance 3m
For the measurement range up to 30MHz in the following plots the field strength result from 3m Distance measurement are extrapolated to 300m and 30m distance respectively, by 40dB/decade, According to part 15.31(f)(2), per antenna factor scaling.
Measurements below 1000MHz are performed with a peak detector and compared to average limits, Measurements with an average detector are not required.

Note:

For battery operated equipment, the equipment tests shall be performed using a new battery.

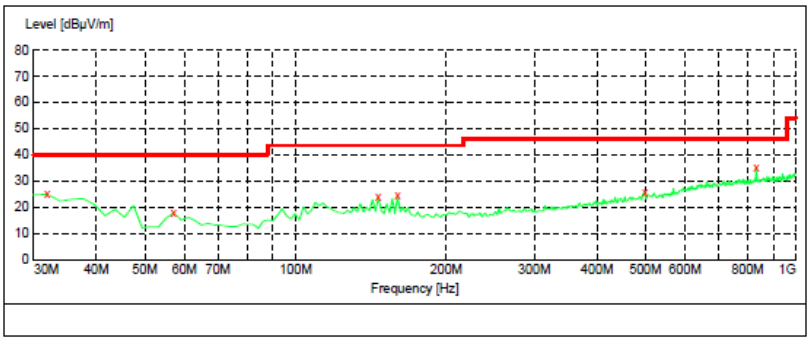
5.4 Test Result

PASS

For 9KHz-30MHz

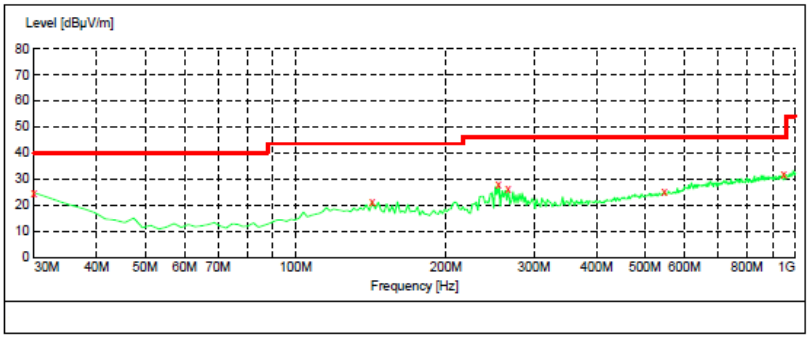
Frequency	Receiver		Factor (dB(1/m))	Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude @ 3m (dBμV/m)	Limit @ 3m (dBμV/m)	Margin (dB)
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)						
0.125	30.1	AV	64.75	0.02	0.00	94.87	105.70	10.83
0.667	20.4	QP	49.83	0.05	0.00	70.28	71.96	0.84*
1.948	16.3	QP	41.08	0.13	0.00	57.51	69.5	11.99
3.007	17.7	QP	38.58	0.16	0.00	56.44	69.5	13.06
3.16	18.8	QP	38.25	0.16	7.00	50.21	69.5	19.29
3.227	18.3	QP	38.10	0.17	8.00	48.57	69.5	20.93

For 30MHz-1GHz



MEASUREMENT RESULT:

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
31.940000	24.90	19.2	40.0	15.1	---	0.0	0.00	VERTICAL
57.160000	17.80	8.0	40.0	22.2	---	0.0	0.00	VERTICAL
146.400000	23.80	14.0	43.5	19.7	---	0.0	0.00	VERTICAL
159.980000	24.50	13.6	43.5	19.0	---	0.0	0.00	VERTICAL
499.480000	25.80	20.2	46.0	20.2	---	0.0	0.00	VERTICAL
833.160000	35.40	25.0	46.0	10.6	---	0.0	0.00	VERTICAL



MEASUREMENT RESULT:

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	24.70	20.8	40.0	15.3	---	0.0	0.00	HORIZONTAL
142.520000	21.20	14.2	43.5	22.3	---	0.0	0.00	HORIZONTAL
255.040000	28.10	14.3	46.0	17.9	---	0.0	0.00	HORIZONTAL
266.680000	26.00	14.9	46.0	20.0	---	0.0	0.00	HORIZONTAL
547.980000	25.00	20.9	46.0	21.0	---	0.0	0.00	HORIZONTAL
949.560000	32.10	26.5	46.0	13.9	---	0.0	0.00	HORIZONTAL

6 ANTENNA REQUIREMENT

Standard Applicable
For intentional device, according to FCC 47 CFR 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.

Refer to statement below for compliance.
The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction
The antenna used in this product is a Internal Antenna, The directional gains of antenna used for transmitting is 1dBi.

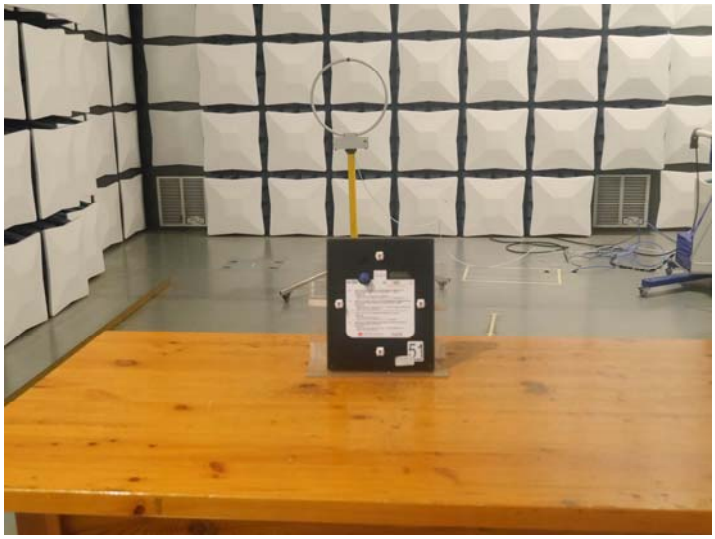
ANTENNA

Note:

The two antennas one is transmitting antenna, and the other one is the receive antenna.

7. PHOTOGRAPH OF TEST

7.1 Radiated Emission



7.2 Conducted Emission Test