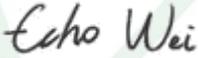




# TEST REPORT

**Report No.** .....: **CHTEW19120173** Report verification :   
**Project No.** .....: **SHT1911014903EW**  
**FCC ID**.....: **2AVGZWF-1V**  
**Applicant's name**.....: **WireFree Ultrasound, LLC**  
**Address**.....: 1400 112th Ave SE, Suite 100, Bellevue, WA 98004, USA  
**Manufacturer**.....: WuHan Youkey Bio-Medical Electronics Co., Ltd.  
**Address**.....: 2nd Floor, Dingxin Industry Park, Jiayuan Road, East Lake Development Zone, 430074, Wuhan, P. R. China  
**Test item description** .....: **Veterinarian Pocket Ultrasound System**  
**Trade Mark** .....:  Wirefree  
**Model/Type reference**.....: WF-1v  
**Listed Model(s)** .....: C5-2v, C5-2Sv, L11-4v, L11-4Sv, E10-4v, C8-5v  
**Standard** .....: **47 CFR FCC Part 15 Subpart B**  
**Date of receipt of test sample**.....: Nov.26, 2019  
**Date of testing**.....: Nov.26, 2019- Dec.24, 2019  
**Date of issue**.....: Dec.25, 2019  
**Result**.....: **Pass**

**Compiled by**  
 ( position+printed name+signature)..: File administrators Echo Wei   
**Supervised by**  
 ( position+printed name+signature)..: Project Engineer Edward Pan   
**Approved by**  
 ( position+printed name+signature)..: RF Manager Hans Hu 

**Testing Laboratory Name** .....: **Shenzhen Huatongwei International Inspection Co., Ltd.**  
**Address**.....: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

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*The test report merely corresponds to the test sample.*

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## 1. TEST STANDARDS AND REPORT VERSION

### 1.1. Test Standards

The tests were performed according to following standards:

[47 CFR FCC Part 15 Subpart B](#) - Unintentional Radiators

[ANSI C63.4: 2014](#) – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz

### 1.2. Report version information

Revision No.	Date of issue	Description
N/A	2019-12-25	Original

## **2. TEST DESCRIPTION**

<b>Test Item</b>	<b>Section in CFR 47</b>	<b>Result</b>	<b>Test Engineer</b>
Conducted Emissions	15.107(a)	PASS	Kang Yang
Radiated Emissions	15.109(a)	PASS	Linshuang Chen

Note: The measurement uncertainty is not included in the test result.

### 3. SUMMARY

#### 3.1. Client Information

Applicant:	WireFree Ultrasound, LLC
Address:	1400 112th Ave SE, Suite 100, Bellevue, WA 98004, USA
Manufacturer:	WuHan Youkey Bio-Medical Electronics Co., Ltd.
Address:	2nd Floor, Dingxin Industry Park, Jiayuan Road, East Lake Development Zone, 430074, Wuhan, P. R. China

#### 3.2. Product Description

Name of EUT:	Veterinarian Pocket Ultrasound System
Trade Mark:	 Wirefree
Model No.:	WF-1v
Listed Model(s)	C5-2v, C5-2Sv, L11-4v, L11-4Sv, E10-4v, C8-5v
Power supply:	DC 7.4V
Adapter information:	Model:GS-551 Input:110-240Va.c., 50/60Hz 0.6A Max Output:5Vd.c., 3A max or 9Vd.c., 2A max or 12Vd.c., 1.5A max

#### 3.3. EUT operation mode

Test mode	Describe
USB data transmission	The EUT works at data transmission with tablet PC via USB cable status .
Charging mode	The EUT works at charging by AC adapter status.

Pre-scan both of USB data transmission and charging mode. Only show the worst case on the report.

#### 3.4. Configuration of Tested System

N/A.

#### 3.5. Support unit used in test configuration

Item	Equipment	Manufacturer	Model No.	CMIIT ID
1	Tablet PC	Lenovo	YT-X703F	2016AJ3408

## **4. TEST ENVIRONMENT**

### **4.1. Address of the test laboratory**

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.

Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

Phone: 86-755-26748019 Fax: 86-755-26748089

### **4.2. Test Facility**

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

#### **CNAS-Lab Code: L1225**

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

#### **A2LA-Lab Cert. No. 3902.01**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

#### **FCC-Registration No.: 762235**

Shenzhen Huatongwei International Inspection Co., Ltd. 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 our files. Registration 762235.

#### **IC-Registration No.: 5377A**

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A.

#### **ACA**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

### 4.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050mba

### 4.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emissions	30~1000MHz	4.90 dB	(1)
Radiated Emissions	1~18GHz	4.96 dB	(1)
Conducted Disturbance	0.15~30MHz	3.02 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=1.96$ .

#### 4.5. Equipments Used during the Test

● Radiated emission-6th test site							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0127	SAC-3m-02	C11121	2018/09/30	2021/09/29
●	EMI Test Receiver	R&S	HTWE0099	ESCI	100900	2019/10/26	2020/10/25
●	Loop Antenna	R&S	HTWE0170	HFH2-Z2	100020	2018/04/02	2021/04/01
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0119	VULB9163	546	2017/04/05	2020/04/04
●	Pre-Amplifier	SCHWARZBECK	HTWE0295	BBV 9742	N/A	2019/11/14	2020/11/13
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-01	N/A	N/A	2019/08/21	2020/08/20
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-02	SUCOFLEX 104	501184/4	2019/05/27	2020/05/26
●	Test Software	R&S	N/A	ES-K1	N/A	N/A	N/A

● Radiated emission-7th test site							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0122	SAC-3m-01	N/A	2018/09/27	2021/09/26
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2019/10/26	2020/10/25
●	Horn Antenna	SCHWARZBECK	HTWE0126	9120D	1011	2017/04/01	2020/03/31
●	Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	25841	2017/03/27	2020/03/26
●	Broadband Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	BBHA9170472	2018/10/11	2021/10/11
●	Pre-amplifier	CD	HTWE0071	PAP-0102	12004	2019/11/14	2020/11/13
●	Broadband Pre-amplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2019/05/23	2020/05/22
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-01	6m 18GHz S Serisa	N/A	2019/05/10	2020/05/09
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-02	6m 3GHz RG Serisa	N/A	2019/05/10	2020/05/09
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-03	6m 3GHz RG Serisa	N/A	2019/05/10	2020/05/09
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-04	6m 3GHz RG Serisa	N/A	2019/05/10	2020/05/09
●	RF Connection Cable	HUBER+SUHNER	HTWE0121-01	6m 18GHz S Serisa	N/A	2019/05/10	2020/05/09
●	Test Software	Audix	N/A	E3	N/A	N/A	N/A

## 5. TEST CONDITIONS AND RESULTS

### 5.1. Conducted Emissions Test

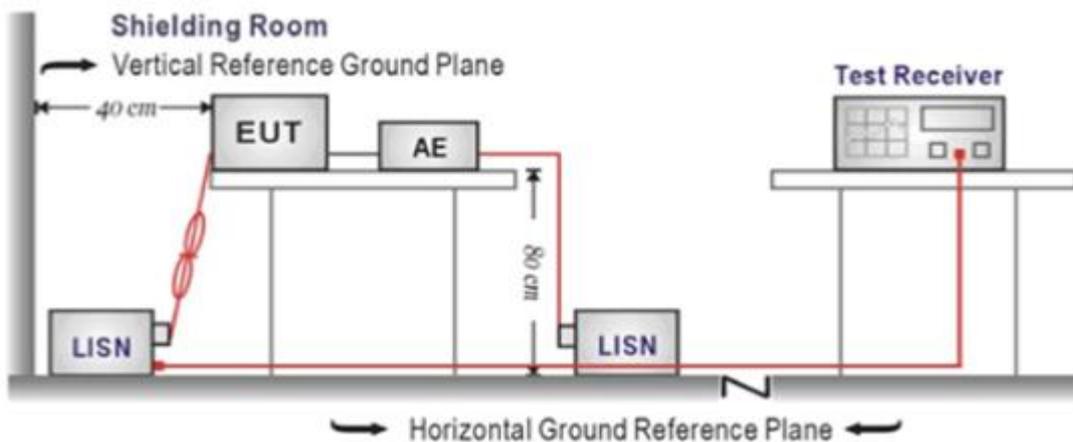
#### LIMIT

FCC CFR Title 47 Part 15 Subpart B Section 15.107:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\* Decreases with the logarithm of the frequency.

#### TEST CONFIGURATION



#### TEST PROCEDURE

1. The EUT was setup according to ANSI C63.4:2014
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50ohm / 50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

#### TEST MODE:

Please refer to the clause 3.3

#### TEST RESULTS

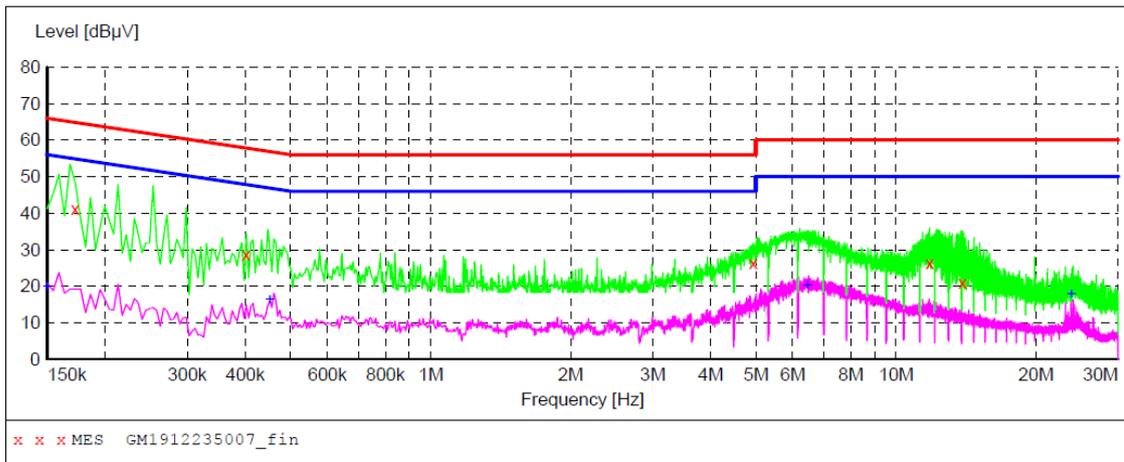
Passed       Not Applicable

Note: When the EUT connect to tablet PC via USB cable. Both the EUT and tablet PC can't connect to the AC adapter. So only the charging mode was test.

The main unit matching with C5-2Sv transducer

Test Line:

L

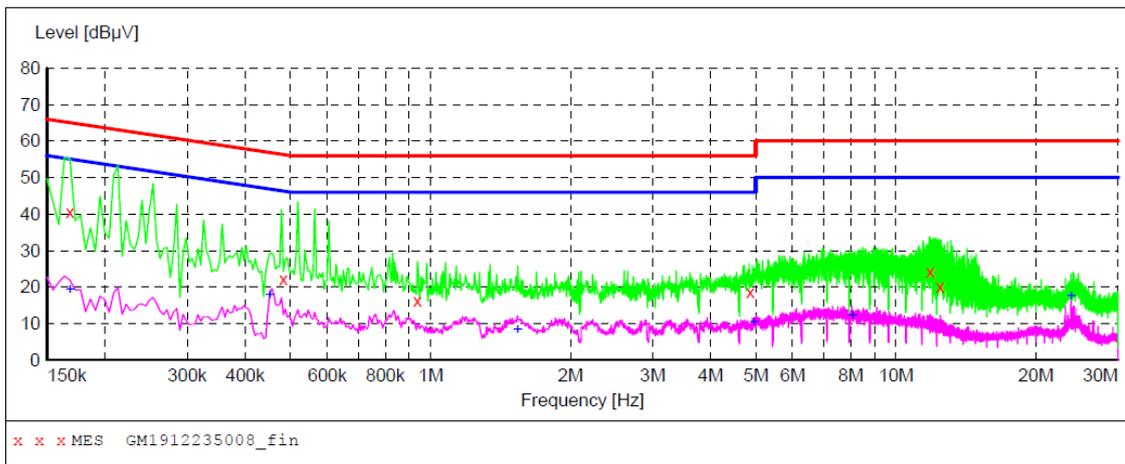


Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.172500	41.30	10.1	65	23.5	QP	L1	GND
0.402000	28.70	10.1	58	29.1	QP	L1	GND
1.099500	16.00	10.1	56	40.0	QP	L1	GND
4.938000	26.40	10.1	56	29.6	QP	L1	GND
11.827500	26.50	10.2	60	33.5	QP	L1	GND
13.920000	20.90	10.2	60	39.1	QP	L1	GND

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	19.80	10.1	56	36.2	AV	L1	GND
0.451500	16.20	10.1	47	30.6	AV	L1	GND
1.828500	8.50	10.1	46	37.5	AV	L1	GND
4.807500	14.80	10.1	46	31.2	AV	L1	GND
6.450000	20.20	10.2	50	29.8	AV	L1	GND
23.784000	17.70	10.2	50	32.3	AV	L1	GND

Test Line:

N

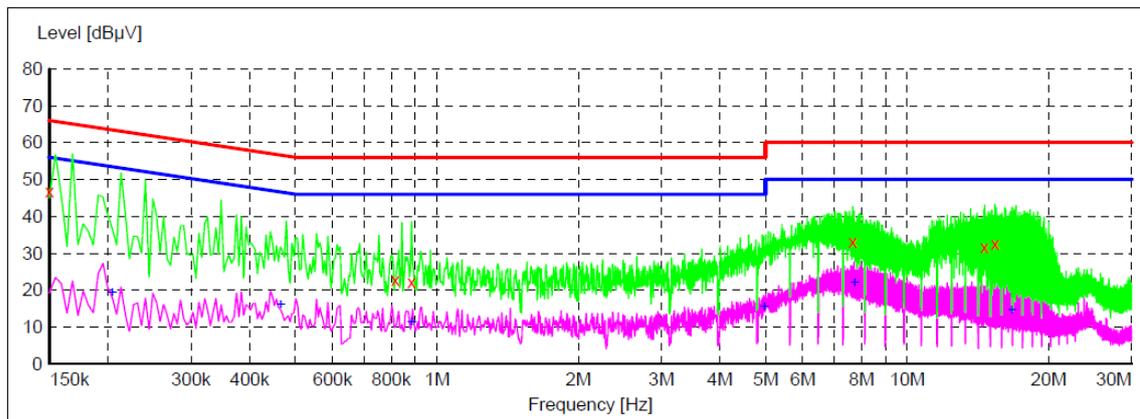


Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.195000	36.60	10.1	64	27.2	QP	L1	GND
0.388500	29.10	10.1	58	29.0	QP	L1	GND
1.176000	19.60	10.1	56	36.4	QP	L1	GND
4.771500	25.10	10.1	56	30.9	QP	L1	GND
7.404000	31.50	10.2	60	28.5	QP	L1	GND
15.234000	30.40	10.2	60	29.6	QP	L1	GND
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.168000	19.60	10.1	55	35.5	AV	L1	GND
0.447000	15.90	10.1	47	31.0	AV	L1	GND
0.924000	9.80	10.1	46	36.2	AV	L1	GND
4.794000	14.30	10.1	46	31.7	AV	L1	GND
7.255500	20.90	10.2	50	29.1	AV	L1	GND
13.609500	13.90	10.2	50	36.1	AV	L1	GND

The main unit matching with C5-2v transducer

Test Line:

L

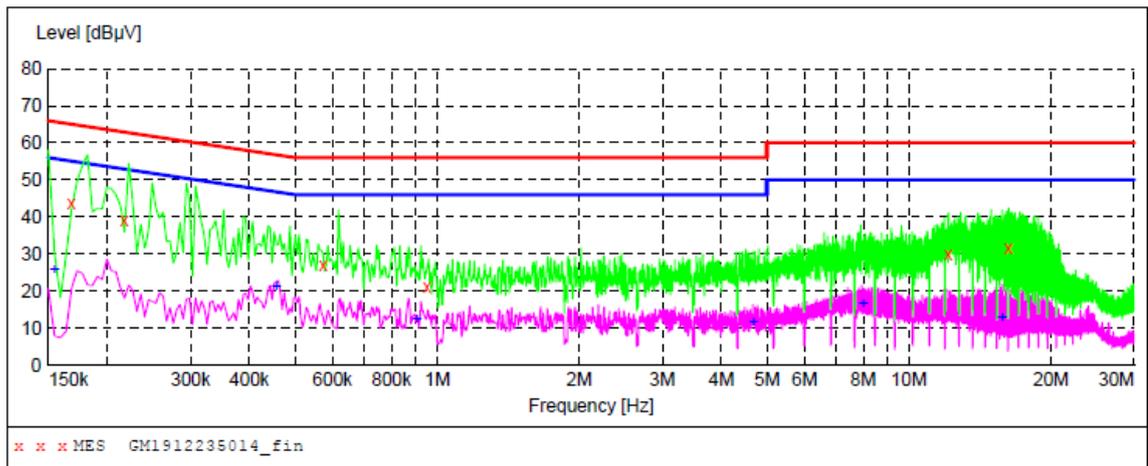


x x x MES GM1912235015\_fin

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	46.70	10.1	66	19.3	QP	L1	GND
0.816000	22.90	10.1	56	33.1	QP	L1	GND
0.883500	22.10	10.1	56	33.9	QP	L1	GND
7.669500	33.10	10.2	60	26.9	QP	L1	GND
14.613000	31.60	10.2	60	28.4	QP	L1	GND
15.378000	32.60	10.2	60	27.4	QP	L1	GND
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.204000	19.10	10.1	53	34.3	AV	L1	GND
0.465000	15.90	10.1	47	30.7	AV	L1	GND
0.883500	11.30	10.1	46	34.7	AV	L1	GND
4.965000	15.30	10.1	46	30.7	AV	L1	GND
7.728000	21.90	10.2	50	28.1	AV	L1	GND
16.674000	14.50	10.2	50	35.5	AV	L1	GND

Test Line:

N

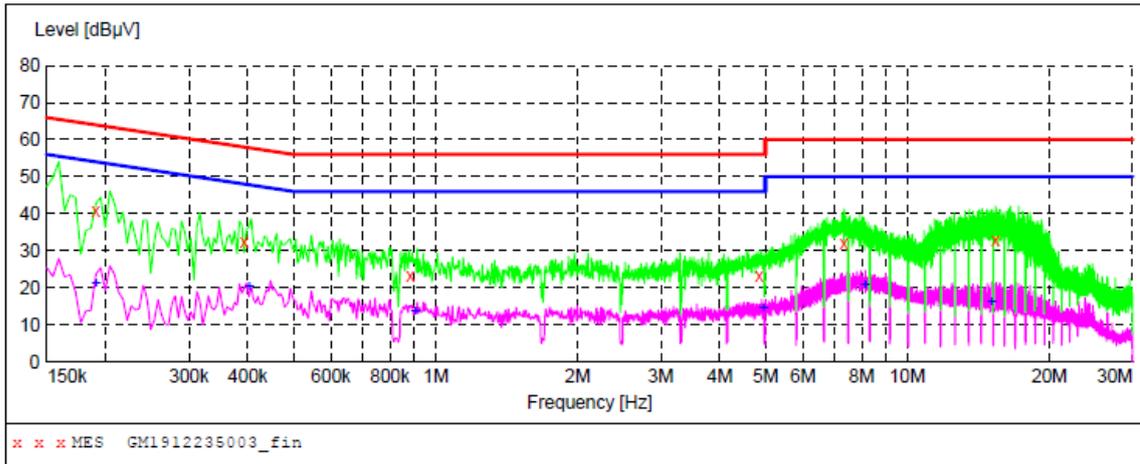


Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.168000	43.60	10.1	65	21.5	QP	N	GND
0.217500	39.20	10.1	63	23.7	QP	N	GND
0.573000	27.10	10.1	56	28.9	QP	N	GND
0.951000	21.20	10.1	56	34.8	QP	N	GND
12.111000	29.90	10.2	60	30.1	QP	N	GND
16.237500	31.60	10.2	60	28.4	QP	N	GND
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.154500	25.90	10.1	56	29.9	AV	N	GND
0.456000	21.30	10.1	47	25.5	AV	N	GND
0.906000	12.20	10.1	46	33.8	AV	N	GND
4.672500	11.70	10.1	46	34.3	AV	N	GND
7.971000	16.50	10.2	50	33.5	AV	N	GND
15.751500	12.70	10.2	50	37.3	AV	N	GND

The main unit matching with C8-5v transducer

Test Line:

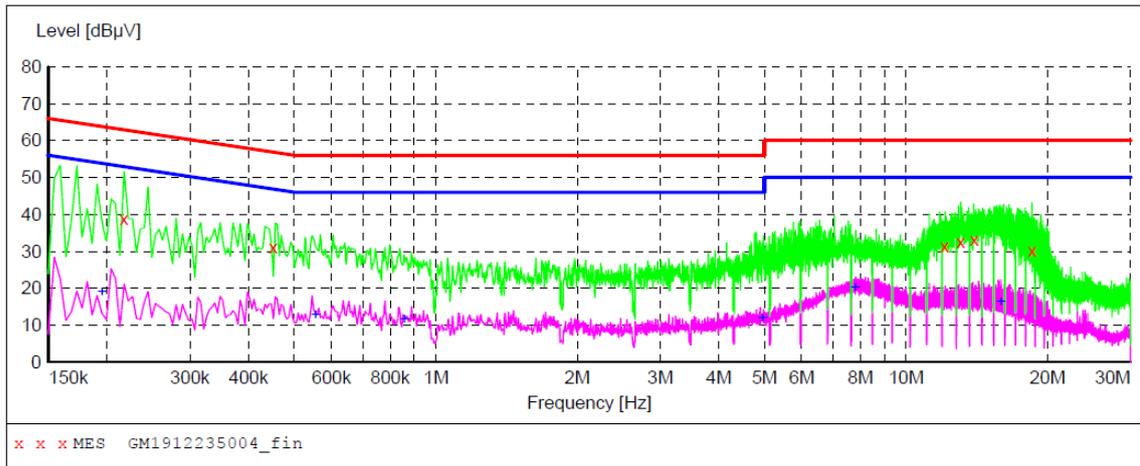
L



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.190500	40.70	10.1	64	23.3	QP	L1	GND
0.393000	32.50	10.1	58	25.5	QP	L1	GND
0.883500	23.30	10.1	56	32.7	QP	L1	GND
4.848000	23.30	10.1	56	32.7	QP	L1	GND
7.332000	32.20	10.2	60	27.8	QP	L1	GND
15.369000	32.90	10.2	60	27.1	QP	L1	GND
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.190500	21.10	10.1	54	32.9	AV	L1	GND
0.402000	20.10	10.1	48	27.7	AV	L1	GND
0.906000	13.60	10.1	46	32.4	AV	L1	GND
4.942500	14.50	10.1	46	31.5	AV	L1	GND
8.119500	20.90	10.2	50	29.1	AV	L1	GND
15.076500	16.10	10.2	50	33.9	AV	L1	GND

Test Line:

N

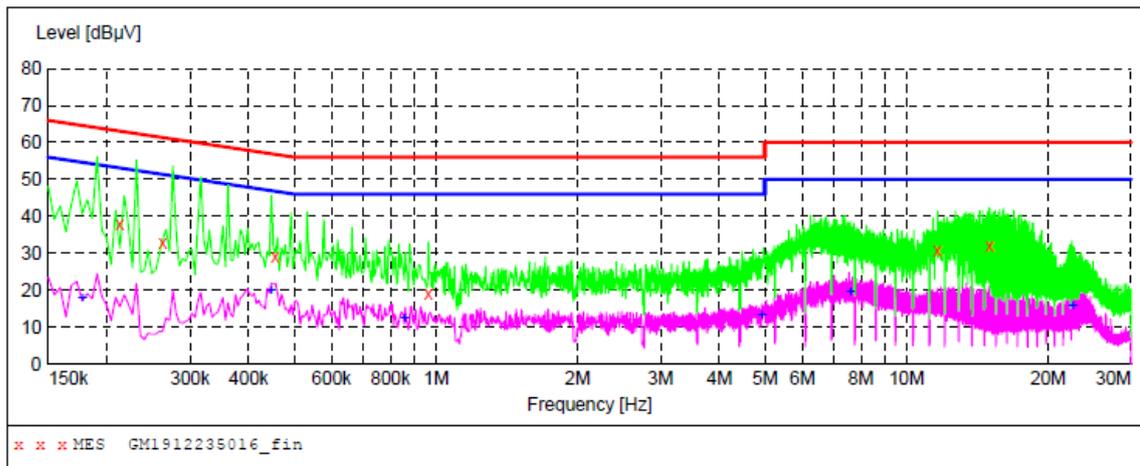


Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.217500	38.70	10.1	63	24.2	QP	N	GND
0.451500	31.20	10.1	57	25.6	QP	N	GND
12.070500	31.30	10.2	60	28.7	QP	N	GND
13.060500	32.60	10.2	60	27.4	QP	N	GND
13.969500	33.30	10.2	60	26.7	QP	N	GND
18.537000	30.30	10.2	60	29.7	QP	N	GND
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.195000	19.00	10.1	54	34.8	AV	N	GND
0.555000	12.70	10.1	46	33.3	AV	N	GND
0.856500	11.60	10.1	46	34.4	AV	N	GND
4.942500	11.90	10.1	46	34.1	AV	N	GND
7.782000	20.10	10.2	50	29.9	AV	N	GND
15.900000	16.20	10.2	50	33.8	AV	N	GND

**The main unit matching with E10-4v transducer**

Test Line:

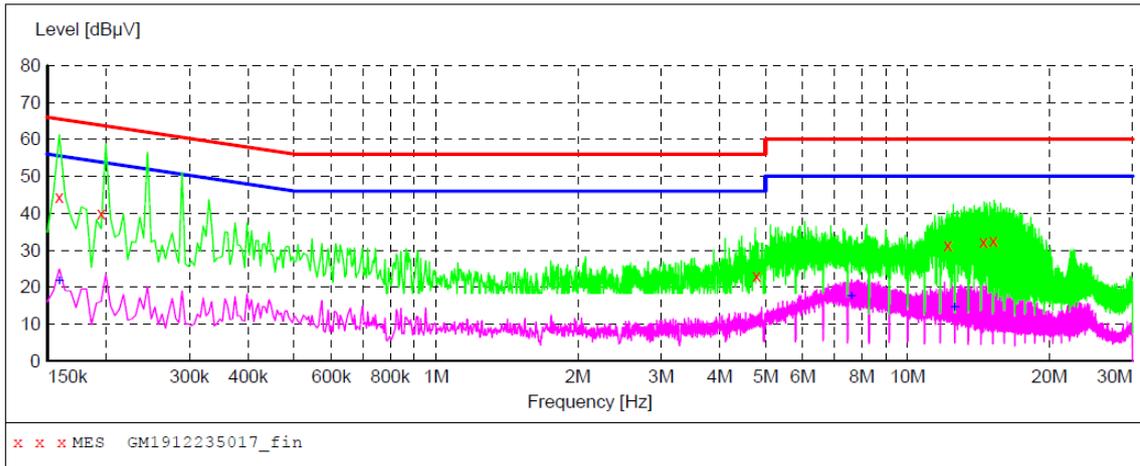
L



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.213000	37.70	10.1	63	25.4	QP	L1	GND
0.262500	32.80	10.1	61	28.6	QP	L1	GND
0.456000	28.90	10.1	57	27.9	QP	L1	GND
0.964500	19.00	10.1	56	37.0	QP	L1	GND
11.625000	30.70	10.2	60	29.3	QP	L1	GND
15.018000	32.10	10.2	60	27.9	QP	L1	GND
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.177000	17.80	10.1	55	36.8	AV	L1	GND
0.447000	20.00	10.1	47	26.9	AV	L1	GND
0.856500	12.50	10.1	46	33.5	AV	L1	GND
4.924500	13.10	10.1	46	32.9	AV	L1	GND
7.579500	19.30	10.2	50	30.7	AV	L1	GND
22.542000	15.70	10.2	50	34.3	AV	L1	GND

Test Line:

N



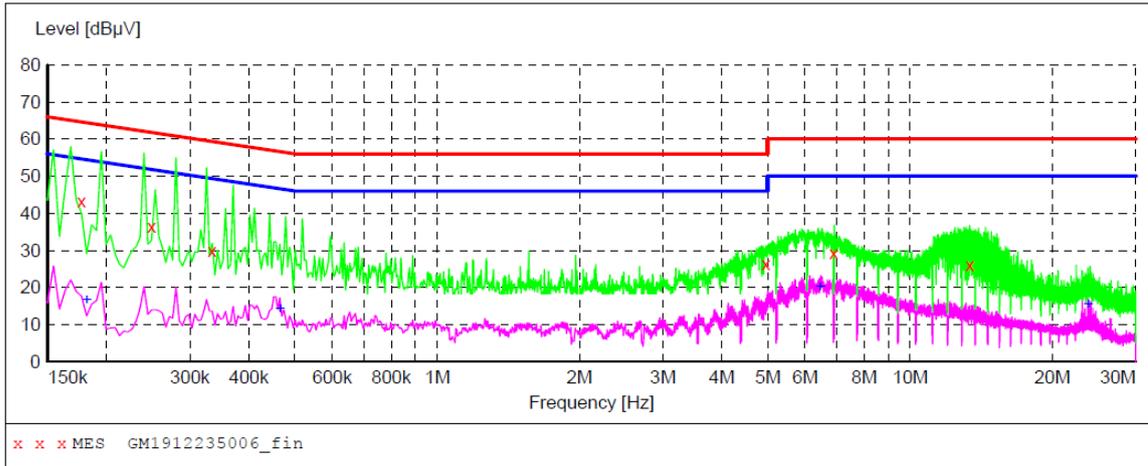
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.159000	44.40	10.1	66	21.1	QP	N	GND
0.195000	40.00	10.1	64	23.8	QP	N	GND
4.789500	23.00	10.1	56	33.0	QP	N	GND
12.192000	31.30	10.2	60	28.7	QP	N	GND
14.496000	32.40	10.2	60	27.6	QP	N	GND
15.229500	32.50	10.2	60	27.5	QP	N	GND

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.159000	21.70	10.1	56	33.8	AV	N	GND
0.559500	11.20	10.1	46	34.8	AV	N	GND
0.924000	9.10	10.1	46	36.9	AV	N	GND
4.911000	11.30	10.1	46	34.7	AV	N	GND
7.597500	17.60	10.2	50	32.4	AV	N	GND
12.592500	14.60	10.2	50	35.4	AV	N	GND

**The main unit matching with L11-4Sv transducer**

Test Line:

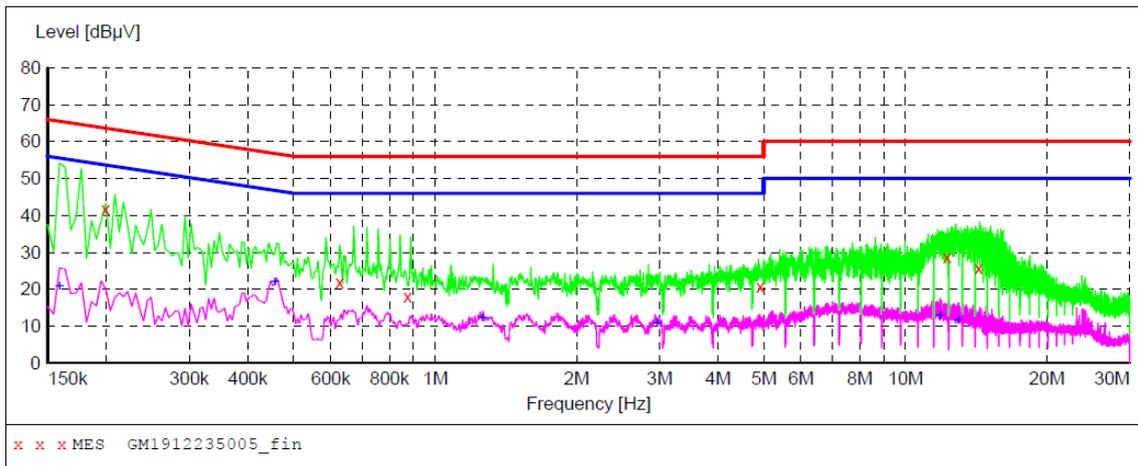
L



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.177000	43.30	10.1	65	21.3	QP	L1	GND
0.249000	36.30	10.1	62	25.5	QP	L1	GND
0.334500	29.90	10.1	59	29.4	QP	L1	GND
4.951500	26.40	10.1	56	29.6	QP	L1	GND
6.904500	29.30	10.2	60	30.7	QP	L1	GND
13.389000	25.90	10.2	60	34.1	QP	L1	GND
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.181500	16.50	10.1	54	37.9	AV	L1	GND
0.465000	14.10	10.1	47	32.5	AV	L1	GND
1.306500	9.00	10.1	46	37.0	AV	L1	GND
4.987500	14.40	10.1	46	31.6	AV	L1	GND
6.445500	20.10	10.2	50	29.9	AV	L1	GND
23.788500	15.40	10.2	50	34.6	AV	L1	GND

Test Line:

N

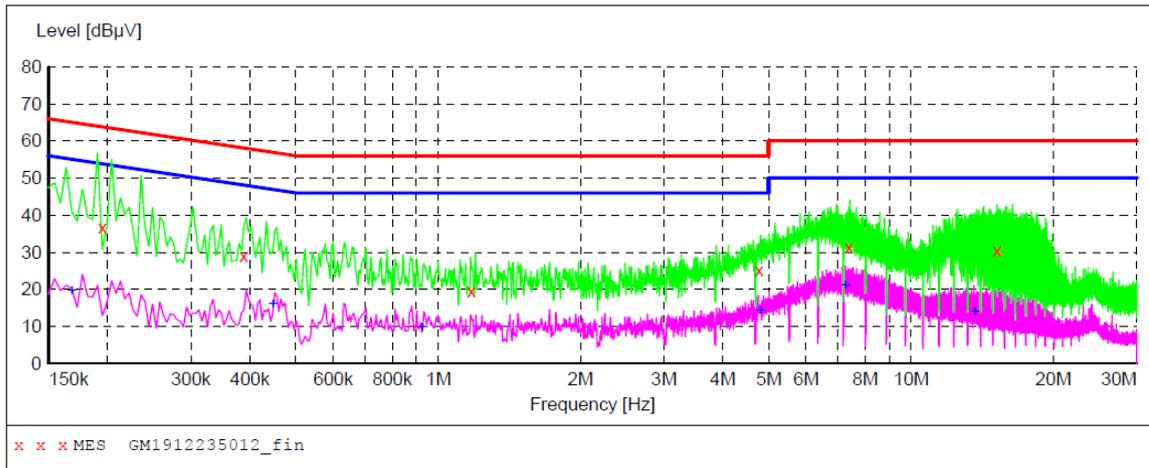


Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.199500	41.80	10.1	64	21.8	QP	N	GND
0.627000	21.90	10.1	56	34.1	QP	N	GND
0.874500	17.90	10.1	56	38.1	QP	N	GND
4.915500	20.60	10.1	56	35.4	QP	N	GND
12.273000	28.60	10.2	60	31.4	QP	N	GND
14.338500	25.70	10.2	60	34.3	QP	N	GND
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.159000	20.60	10.1	56	34.9	AV	N	GND
0.456000	21.80	10.1	47	25.0	AV	N	GND
1.261500	12.10	10.1	46	33.9	AV	N	GND
2.967000	10.50	10.1	46	35.5	AV	N	GND
11.841000	12.60	10.2	50	37.4	AV	N	GND
12.961500	11.50	10.2	50	38.5	AV	N	GND

**The main unit matching with L11-4v transducer**

Test Line:

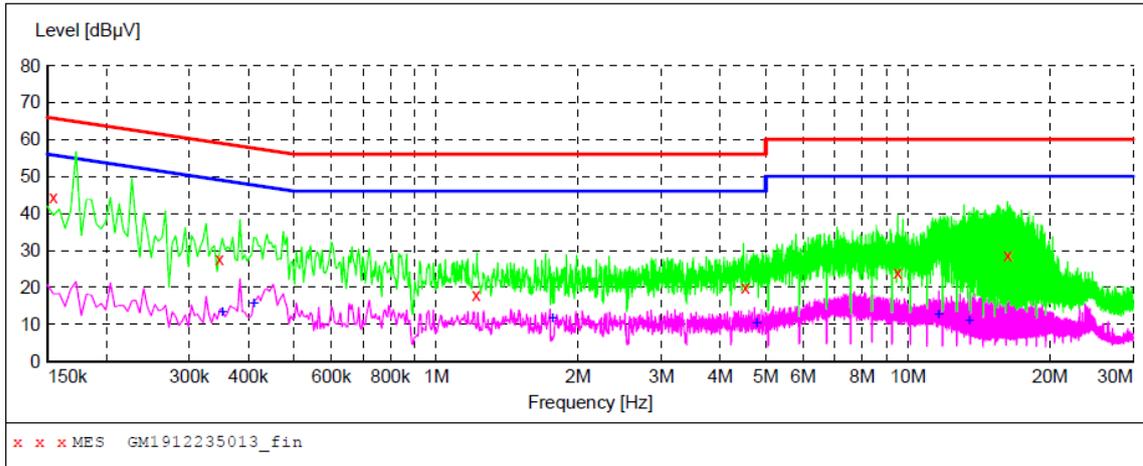
L



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.195000	36.90	10.1	64	27.1	QP	L1	GND
0.388000	29.30	10.1	58	28.8	QP	L1	GND
1.176500	19.50	10.1	56	36.3	QP	L1	GND
4.772500	25.50	10.1	56	30.7	QP	L1	GND
7.414000	31.60	10.2	60	28.8	QP	L1	GND
15.234000	30.70	10.2	60	29.7	QP	L1	GND
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.168500	19.50	10.1	55	35.8	AV	L1	GND
0.447500	15.30	10.1	47	31.6	AV	L1	GND
0.923000	9.50	10.1	46	36.5	AV	L1	GND
4.796000	14.60	10.1	46	31.3	AV	L1	GND
7.255000	20.70	10.2	50	29.5	AV	L1	GND
13.608500	13.30	10.2	50	35.8	AV	L1	GND

Test Line:

N



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.155000	44.70	10.1	66	21.3	QP	N	GND
0.348500	27.50	10.1	59	31.8	QP	N	GND
1.216000	17.70	10.1	56	38.5	QP	N	GND
4.528000	19.40	10.1	56	36.3	QP	N	GND
9.523000	24.30	10.2	60	35.5	QP	N	GND
16.278500	28.50	10.2	60	31.9	QP	N	GND
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.353000	13.80	10.1	49	35.8	AV	N	GND
0.411500	15.60	10.1	48	32.4	AV	N	GND
1.765000	11.30	10.1	46	34.8	AV	N	GND
4.772500	10.70	10.1	46	35.3	AV	N	GND
11.594500	12.60	10.2	50	37.4	AV	N	GND
13.465000	10.40	10.2	50	39.5	AV	N	GND

## 5.2. Radiated Emissions Test

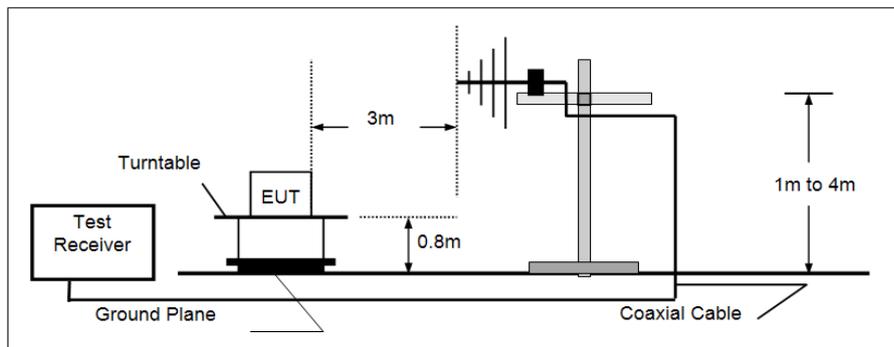
### LIMIT

#### FCC CFR Title 47 Part 15 Subpart B Section 15.109

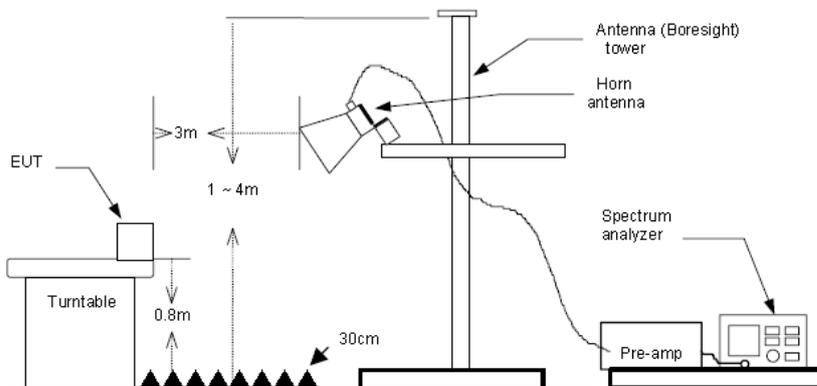
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

### TEST CONFIGURATION

#### ➤ 30MHz ~ 1GHz



#### ➤ Above 1GHz



### TEST PROCEDURE

- The EUT was tested according to ANSI C63.4:2014.
- The EUT is placed on a turn table which is 0.8 meter above ground.
- The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
- The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna.
- Use the following spectrum analyzer settings
  - Span shall wide enough to fully capture the emission being measured;
  - Below 1GHz,
    - RBW=120KHz, VBW=300KHz, Sweep=auto, Detector function=peak, Trace=max hold;
    - If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
  - From 1GHz to 5th harmonic, RBW=1MHz, VBW=3MHz

**TEST MODE:**

Please refer to the clause 3.3

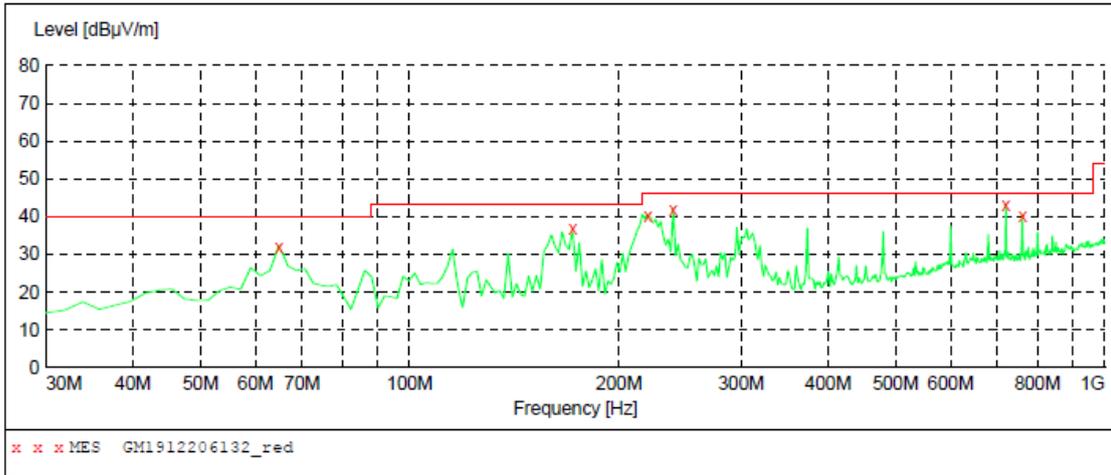
**TEST RESULTS**

**Passed**       **Not Applicable**

Note: Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor  
The emission levels of frequency above 6GHz are very lower than limit and not show in test report.

**The main unit matching with C5-2Sv transducer**

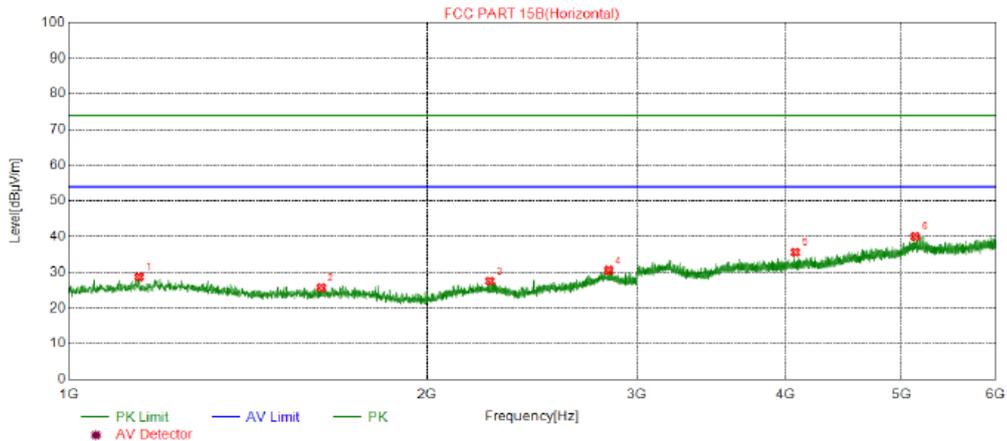
Polarization: Horizontal



**MEASUREMENT RESULT: "GM1912206132\_red"**

12/20/2019 11:28PM

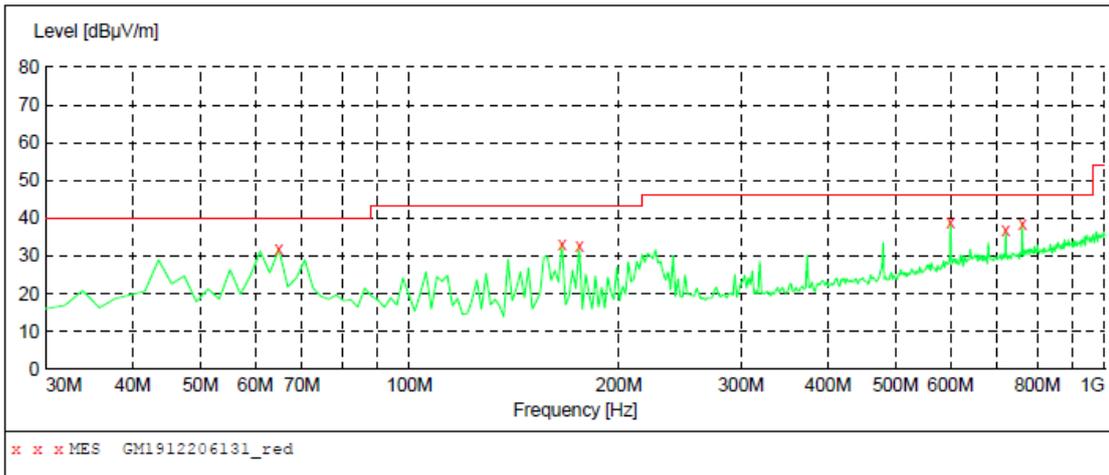
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
64.920000	31.60	-11.0	40.0	8.4	QP	300.0	360.00	HORIZONTAL
171.620000	36.30	-12.5	43.5	7.2	QP	300.0	143.00	HORIZONTAL
220.120000	39.80	-9.4	46.0	6.2	QP	100.0	238.00	HORIZONTAL
239.520000	41.70	-8.5	46.0	4.3	QP	100.0	279.00	HORIZONTAL
720.640000	42.90	3.6	46.0	3.1	QP	100.0	130.00	HORIZONTAL
761.380000	39.80	4.6	46.0	6.2	QP	100.0	118.00	HORIZONTAL



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	1145.625	35.11	-6.41	28.70	74.00	45.30	Horizontal	PK
2	1630.000	31.96	-6.23	25.73	74.00	48.27	Horizontal	PK
3	2256.875	30.18	-2.61	27.57	74.00	46.43	Horizontal	PK
4	2840.000	29.16	1.44	30.60	74.00	43.40	Horizontal	PK
5	4075.000	32.47	3.19	35.66	74.00	38.34	Horizontal	PK
6	5136.875	31.20	8.87	40.07	74.00	33.93	Horizontal	PK

Polarization:

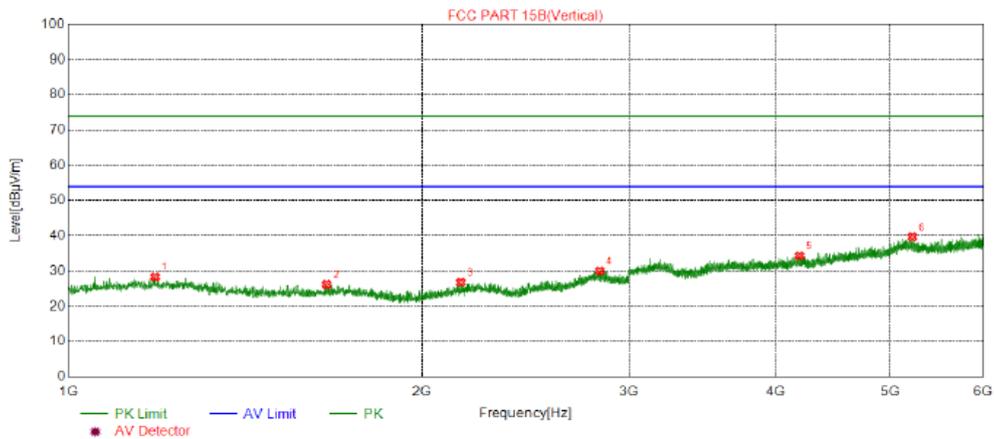
Vertical



**MEASUREMENT RESULT: "GM1912206131\_red"**

12/20/2019 11:25PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
64.920000	31.80	-11.0	40.0	8.2	QP	100.0	221.00	VERTICAL
165.800000	33.30	-12.5	43.5	10.2	QP	100.0	360.00	VERTICAL
175.500000	32.50	-12.3	43.5	11.0	QP	100.0	0.00	VERTICAL
600.360000	39.10	1.7	46.0	6.9	QP	100.0	180.00	VERTICAL
720.640000	36.70	3.6	46.0	9.3	QP	100.0	197.00	VERTICAL
761.380000	38.50	4.6	46.0	7.5	QP	100.0	354.00	VERTICAL

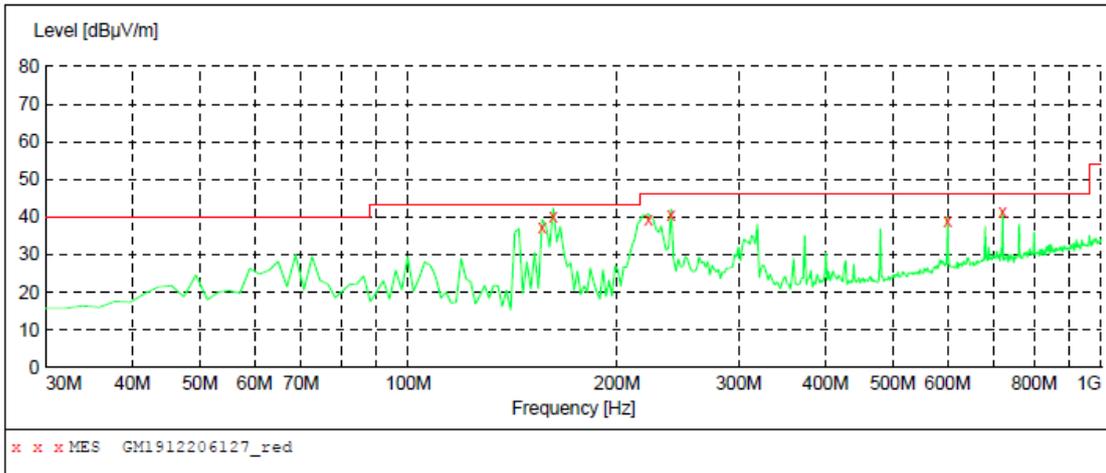


**Suspected Data List**

NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	1185.000	34.35	-5.99	28.36	74.00	45.64	Vertical	PK
2	1658.750	32.39	-6.17	26.22	74.00	47.78	Vertical	PK
3	2157.500	30.22	-3.41	26.81	74.00	47.19	Vertical	PK
4	2831.250	28.47	1.58	30.05	74.00	43.95	Vertical	PK
5	4187.500	30.63	3.75	34.38	74.00	39.62	Vertical	PK
6	5223.750	30.87	8.85	39.72	74.00	34.28	Vertical	PK

The main unit matching with C5-2v transducer

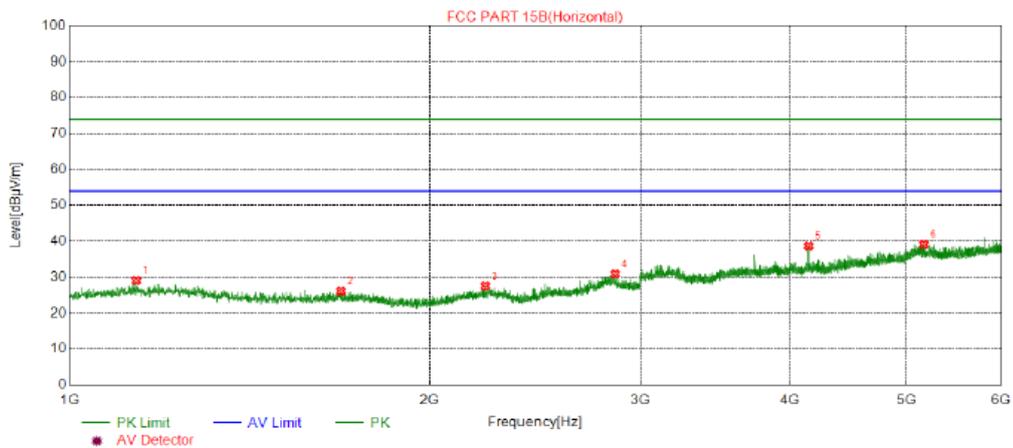
Polarization: Horizontal



MEASUREMENT RESULT: "GM1912206127\_red"

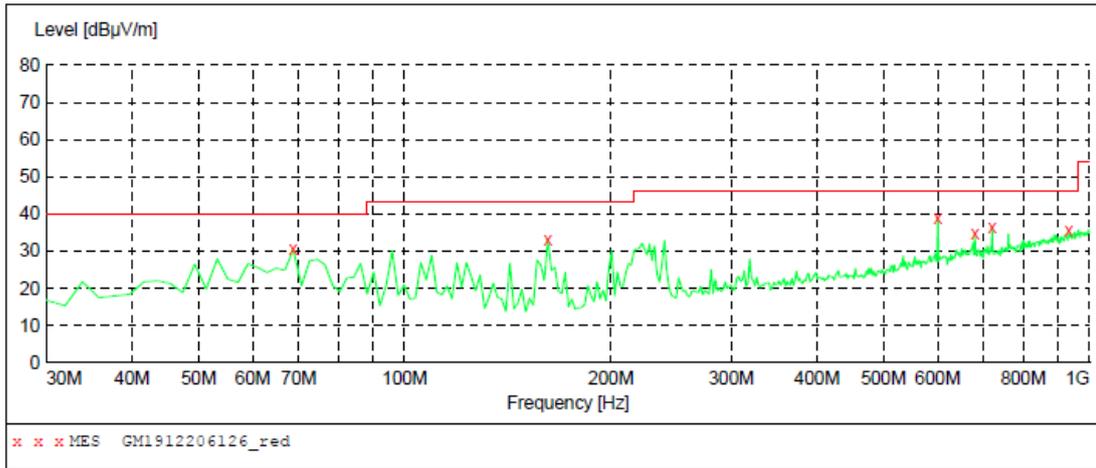
12/20/2019 11:00PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
156.100000	38.40	-13.0	43.5	5.1	QP	300.0	279.00	HORIZONTAL
161.920000	40.30	-12.6	43.5	3.2	QP	300.0	117.00	HORIZONTAL
222.060000	39.10	-9.3	46.0	6.9	QP	100.0	248.00	HORIZONTAL
239.520000	40.80	-8.5	46.0	5.2	QP	100.0	181.00	HORIZONTAL
600.360000	38.70	1.7	46.0	7.3	QP	300.0	217.00	HORIZONTAL
720.640000	41.20	3.6	46.0	4.8	QP	100.0	129.00	HORIZONTAL



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	1136.875	35.56	-6.50	29.06	74.00	44.94	Horizontal	PK
2	1685.625	32.29	-6.13	26.16	74.00	47.84	Horizontal	PK
3	2225.000	30.38	-2.81	27.57	74.00	46.43	Horizontal	PK
4	2856.875	29.76	1.16	30.92	74.00	43.08	Horizontal	PK
5	4144.375	35.21	3.50	38.71	74.00	35.29	Horizontal	PK
6	5171.875	30.20	8.93	39.13	74.00	34.87	Horizontal	PK

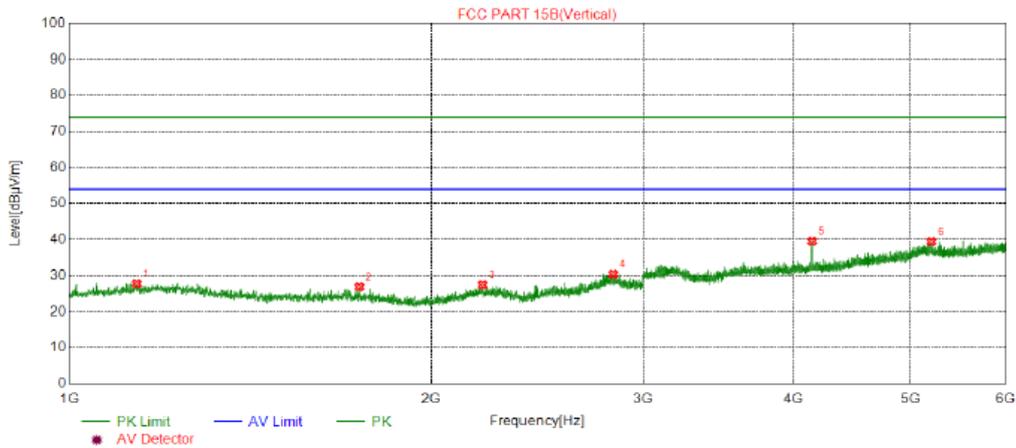
Polarization: Vertical



**MEASUREMENT RESULT: "GM1912206126\_red"**

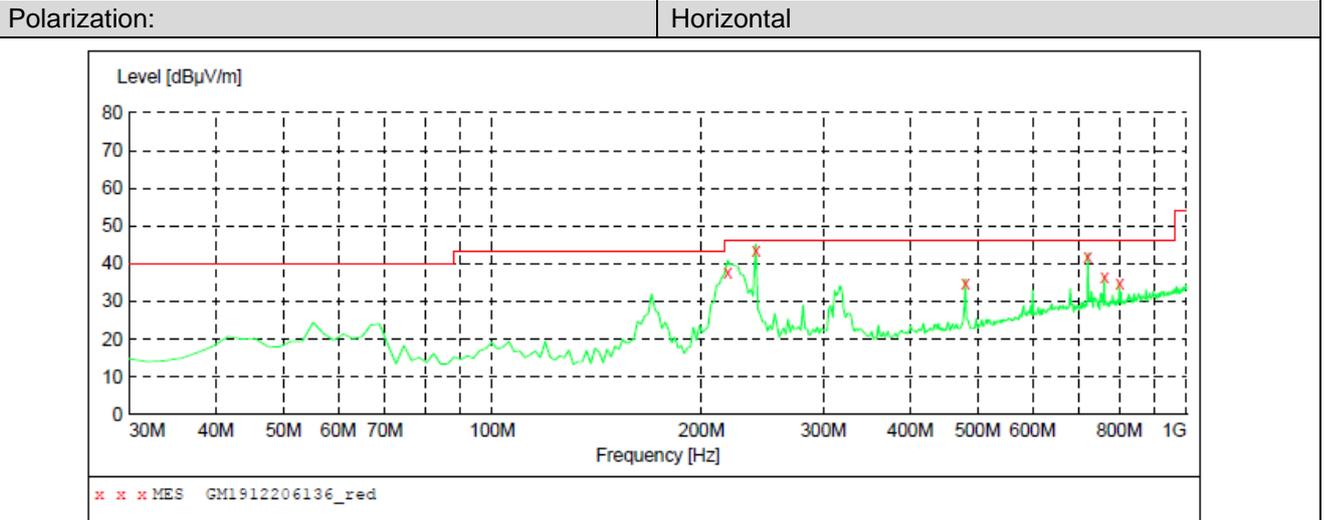
12/20/2019 10:57PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
68.800000	30.40	-12.4	40.0	9.6	QP	100.0	222.00	VERTICAL
161.920000	33.30	-12.6	43.5	10.2	QP	100.0	44.00	VERTICAL
600.360000	38.90	1.7	46.0	7.1	QP	100.0	199.00	VERTICAL
679.900000	34.60	3.1	46.0	11.4	QP	100.0	44.00	VERTICAL
720.640000	36.40	3.6	46.0	9.6	QP	100.0	160.00	VERTICAL
932.100000	35.60	7.8	46.0	10.4	QP	100.0	56.00	VERTICAL



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	1137.500	34.27	-6.49	27.78	74.00	46.22	Vertical	PK
2	1741.875	32.86	-5.97	26.89	74.00	47.11	Vertical	PK
3	2205.000	30.39	-2.94	27.45	74.00	46.55	Vertical	PK
4	2831.250	28.83	1.58	30.41	74.00	43.59	Vertical	PK
5	4144.375	36.05	3.50	39.55	74.00	34.45	Vertical	PK
6	5205.000	30.49	8.95	39.44	74.00	34.56	Vertical	PK

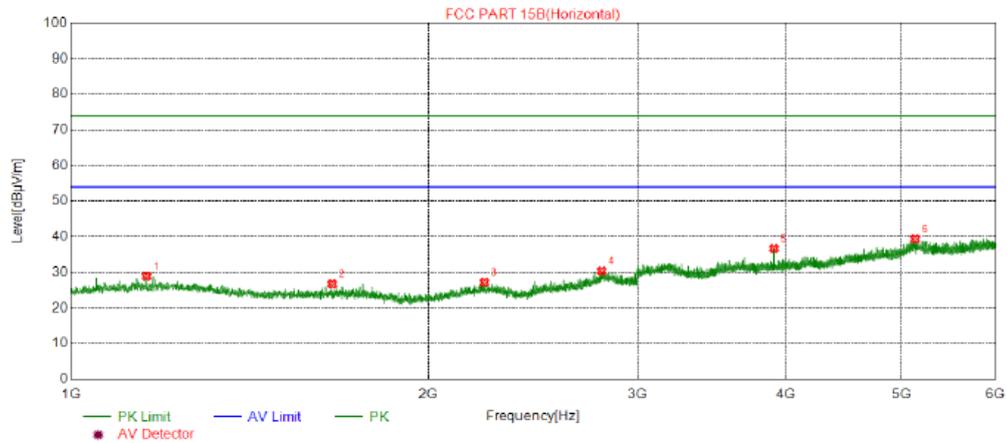
**The main unit matching with C8-5v transducer**



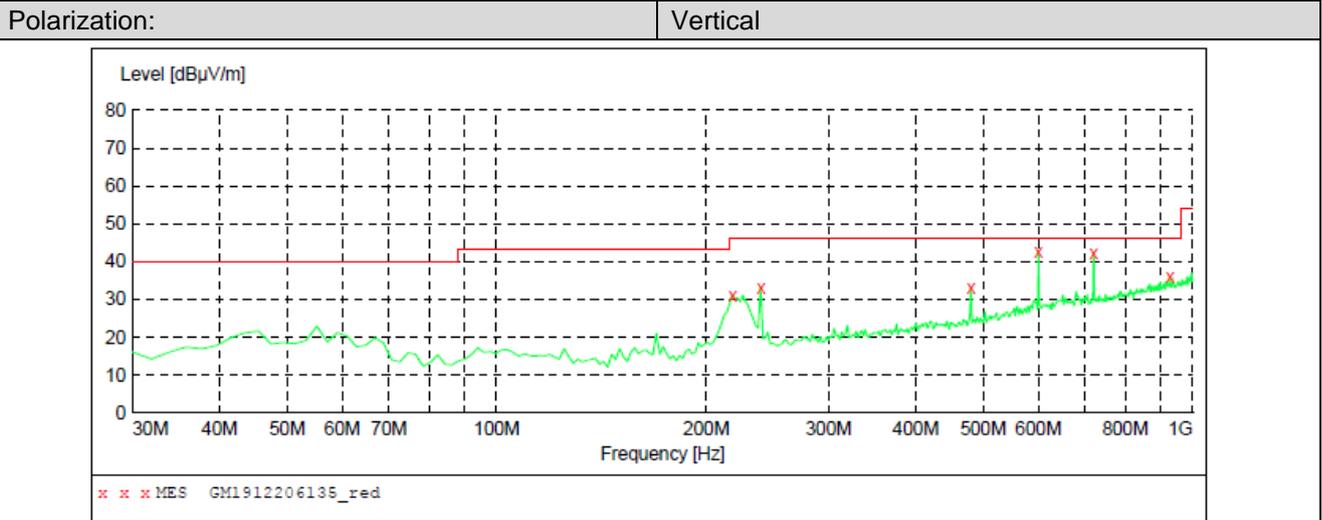
**MEASUREMENT RESULT: "GM1912206136\_red"**

12/20/2019 11:42PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
218.180000	38.20	-9.5	46.0	7.8	QP	100.0	242.00	HORIZONTAL
239.520000	43.00	-8.5	46.0	3.0	QP	100.0	360.00	HORIZONTAL
480.080000	34.60	-2.0	46.0	11.4	QP	100.0	306.00	HORIZONTAL
720.640000	41.30	3.6	46.0	4.7	QP	100.0	105.00	HORIZONTAL
761.380000	35.00	4.6	46.0	11.0	QP	100.0	192.00	HORIZONTAL
800.180000	33.20	5.7	46.0	12.8	QP	100.0	255.00	HORIZONTAL



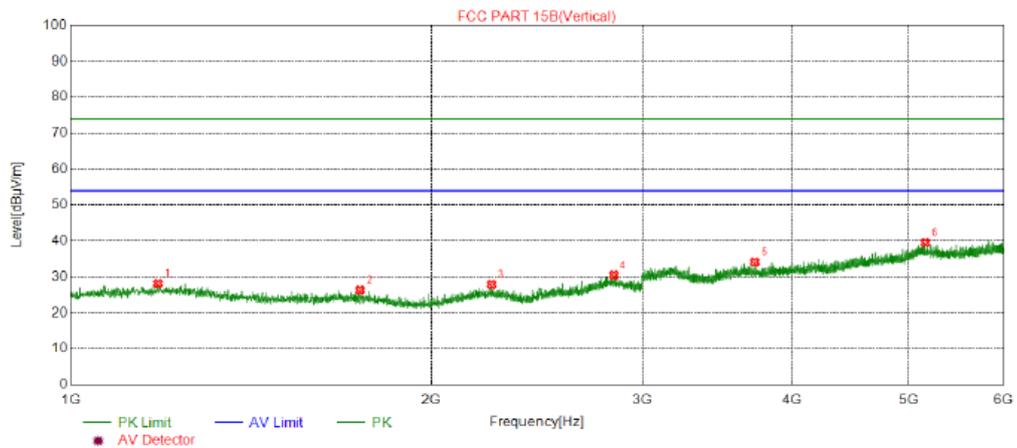
Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	1157.500	35.19	-6.28	28.91	74.00	45.09	Horizontal	PK
2	1659.375	32.94	-6.17	26.77	74.00	47.23	Horizontal	PK
3	2228.750	30.00	-2.79	27.21	74.00	46.79	Horizontal	PK
4	2797.500	28.38	2.05	30.43	74.00	43.57	Horizontal	PK
5	3907.500	34.04	2.70	36.74	74.00	37.26	Horizontal	PK
6	5136.250	30.52	8.87	39.39	74.00	34.61	Horizontal	PK



**MEASUREMENT RESULT: "GM1912206135\_red"**

12/20/2019 11:39PM

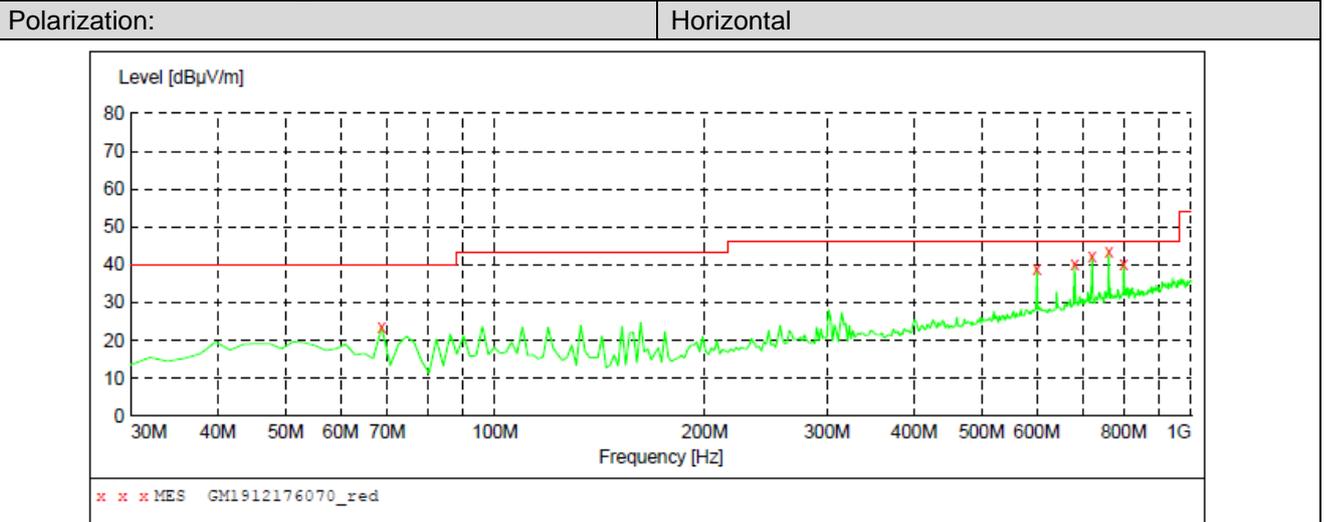
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
218.180000	31.20	-9.5	46.0	14.8	QP	100.0	196.00	VERTICAL
239.520000	33.30	-8.5	46.0	12.7	QP	100.0	301.00	VERTICAL
480.080000	33.20	-2.0	46.0	12.8	QP	100.0	208.00	VERTICAL
600.360000	42.80	1.7	46.0	3.2	QP	100.0	168.00	VERTICAL
720.640000	42.20	3.6	46.0	3.8	QP	100.0	0.00	VERTICAL
926.280000	35.80	7.7	46.0	10.2	QP	100.0	90.00	VERTICAL



**Suspected Data List**

NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	1182.500	34.22	-6.02	28.20	74.00	45.80	Vertical	PK
2	1743.125	32.34	-5.97	26.37	74.00	47.63	Vertical	PK
3	2244.375	30.63	-2.69	27.94	74.00	46.06	Vertical	PK
4	2838.750	29.07	1.46	30.53	74.00	43.47	Vertical	PK
5	3721.875	32.49	1.68	34.17	74.00	39.83	Vertical	PK
6	5163.125	30.66	8.91	39.57	74.00	34.43	Vertical	PK

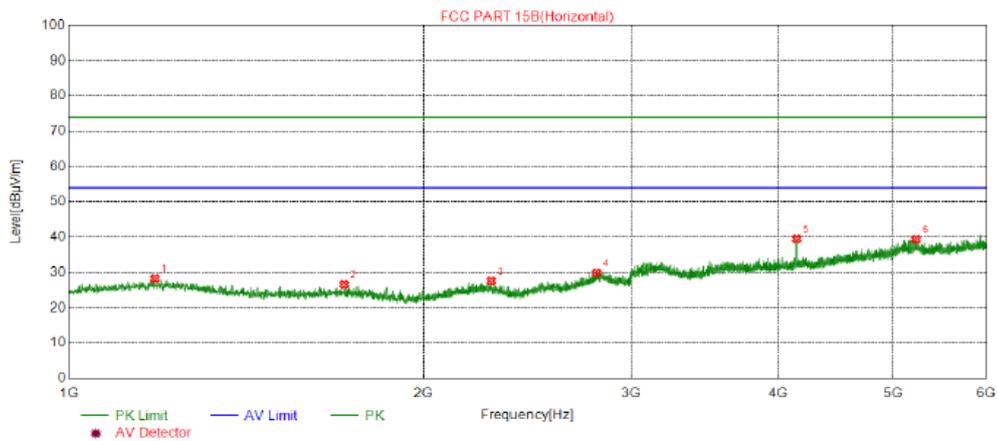
The main unit matching with E10-4v transducer



**MEASUREMENT RESULT: "GM1912176070\_red"**

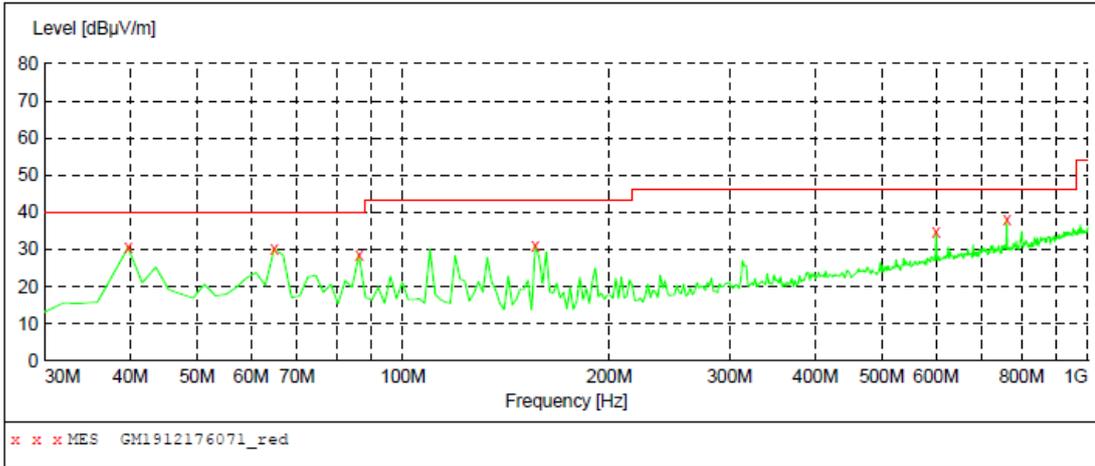
12/17/2019 2:28PM

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
68.800000	23.50	-12.4	40.0	16.5	QP	300.0	75.00	HORIZONTAL
600.360000	39.10	1.7	46.0	6.9	QP	100.0	91.00	HORIZONTAL
679.900000	40.30	3.1	46.0	5.7	QP	100.0	91.00	HORIZONTAL
720.640000	42.20	3.6	46.0	3.8	QP	100.0	117.00	HORIZONTAL
761.380000	43.50	4.6	46.0	2.5	QP	100.0	140.00	HORIZONTAL
800.180000	40.30	5.7	46.0	5.7	QP	100.0	129.00	HORIZONTAL



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBuV/m]	Factor [dB]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Polarity	Detector
1	1183.125	34.32	-6.01	28.31	74.00	45.69	Horizontal	PK
2	1711.875	32.65	-6.06	26.59	74.00	47.41	Horizontal	PK
3	2281.250	30.08	-2.45	27.63	74.00	46.37	Horizontal	PK
4	2803.125	27.87	2.04	29.91	74.00	44.09	Horizontal	PK
5	4144.375	36.04	3.50	39.54	74.00	34.46	Horizontal	PK
6	5231.875	30.54	8.81	39.35	74.00	34.65	Horizontal	PK

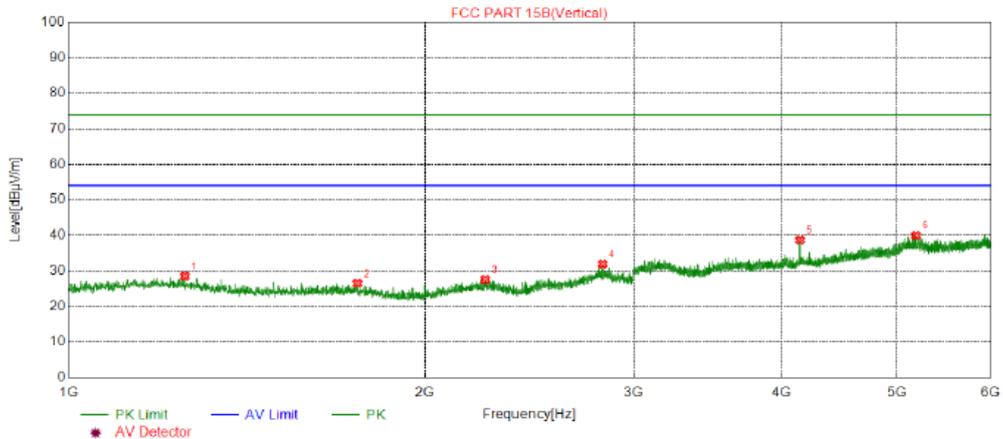
Polarization: Vertical



**MEASUREMENT RESULT: "GM1912176071\_red"**

12/17/2019 2:31PM

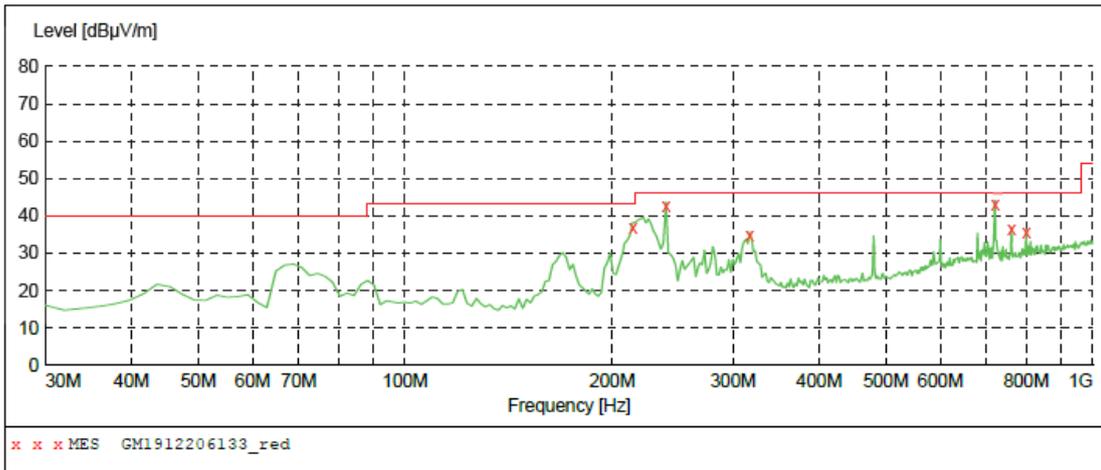
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
39.700000	30.50	-9.8	40.0	9.5	QP	100.0	174.00	VERTICAL
64.920000	30.20	-11.0	40.0	9.8	QP	100.0	186.00	VERTICAL
86.260000	28.50	-13.4	40.0	11.5	QP	100.0	174.00	VERTICAL
156.100000	31.20	-13.0	43.5	12.3	QP	100.0	152.00	VERTICAL
600.360000	34.60	1.7	46.0	11.4	QP	100.0	174.00	VERTICAL
761.380000	38.00	4.6	46.0	8.0	QP	100.0	0.00	VERTICAL



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	1253.750	34.19	-5.69	28.50	74.00	45.50	Vertical	PK
2	1753.125	32.44	-5.94	26.50	74.00	47.50	Vertical	PK
3	2247.500	30.26	-2.67	27.59	74.00	46.41	Vertical	PK
4	2823.750	30.25	1.70	31.95	74.00	42.05	Vertical	PK
5	4144.375	35.16	3.50	38.66	74.00	35.34	Vertical	PK
6	5191.250	31.06	8.96	40.02	74.00	33.98	Vertical	PK

The main unit matching with L11-4Sv transducer

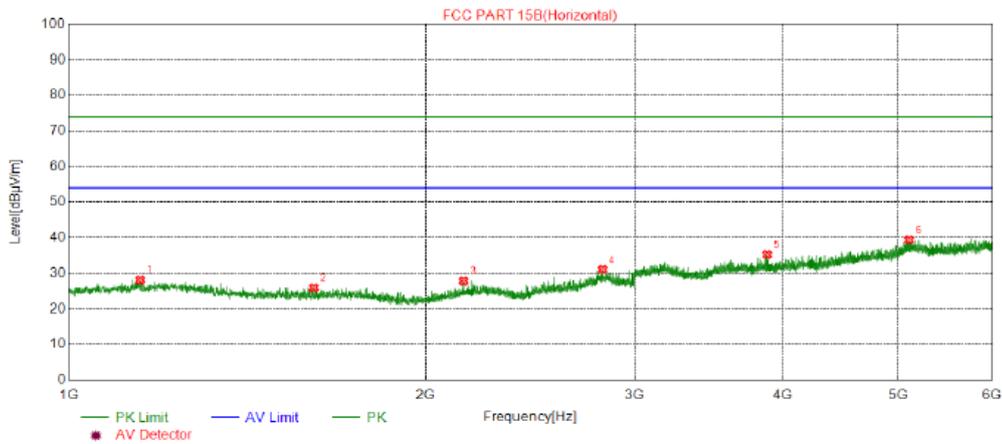
Polarization: Horizontal



MEASUREMENT RESULT: "GM1912206133\_red"

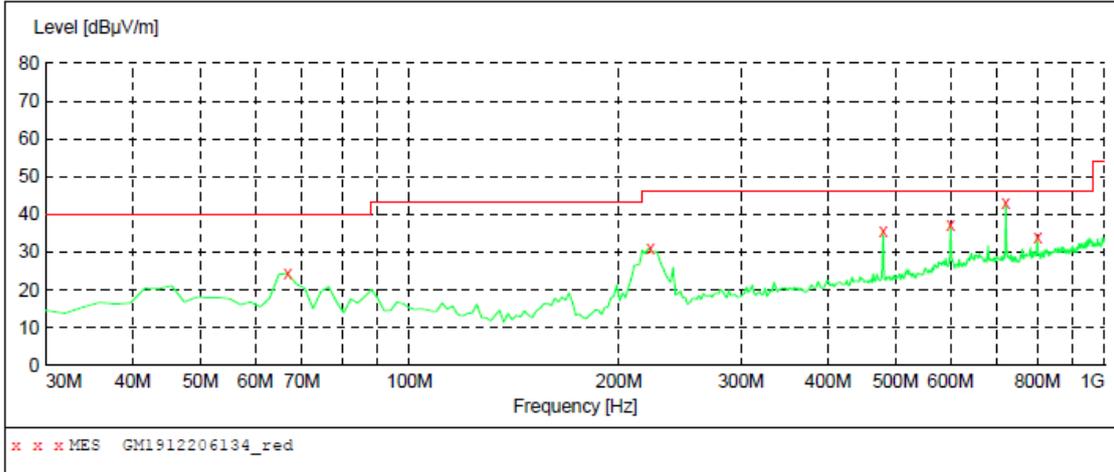
12/20/2019 11:33PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
214.300000	36.90	-9.7	43.5	7.6	QP	100.0	237.00	HORIZONTAL
239.520000	42.30	-8.5	46.0	3.7	QP	100.0	3.00	HORIZONTAL
317.120000	33.60	-6.1	46.0	12.4	QP	100.0	106.00	HORIZONTAL
720.640000	42.80	3.6	46.0	3.2	QP	100.0	78.00	HORIZONTAL
761.380000	36.20	4.6	46.0	9.8	QP	100.0	180.00	HORIZONTAL
800.180000	35.40	5.7	46.0	10.6	QP	100.0	276.00	HORIZONTAL



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	1148.750	34.52	-6.37	28.15	74.00	45.85	Horizontal	PK
2	1609.375	32.22	-6.26	25.96	74.00	48.04	Horizontal	PK
3	2151.875	31.36	-3.47	27.89	74.00	46.11	Horizontal	PK
4	2818.750	29.30	1.78	31.08	74.00	42.92	Horizontal	PK
5	3878.750	32.72	2.53	35.25	74.00	38.75	Horizontal	PK
6	5108.750	30.58	8.82	39.40	74.00	34.60	Horizontal	PK

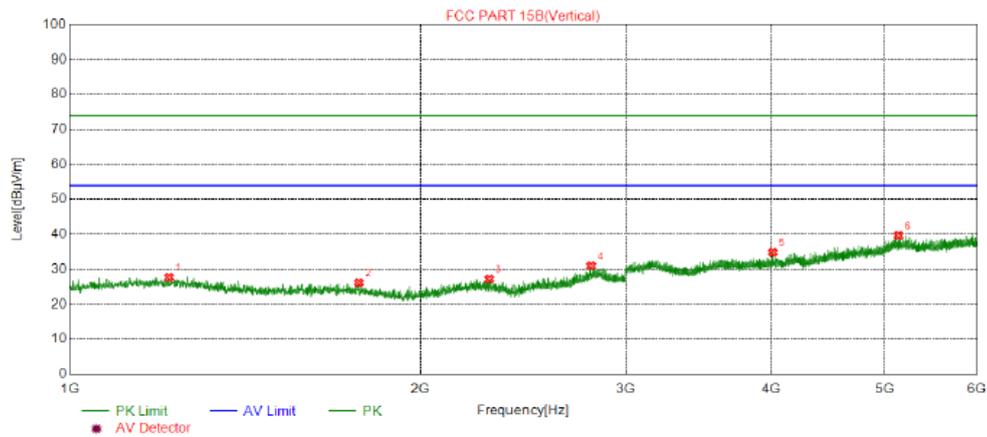
Polarization: Vertical



**MEASUREMENT RESULT: "GM1912206134\_red"**

12/20/2019 11:36PM

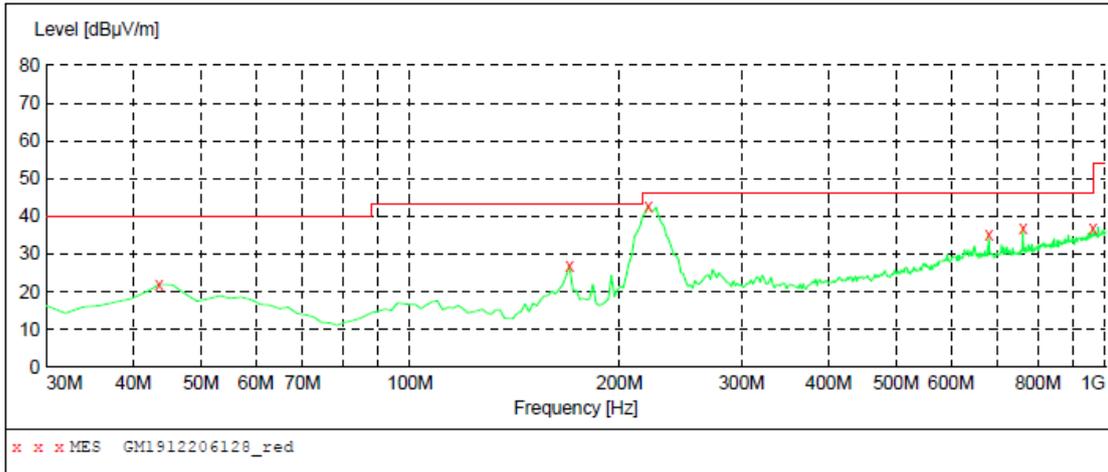
Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
66.860000	24.40	-11.7	40.0	15.6	QP	100.0	283.00	VERTICAL
222.060000	30.90	-9.3	46.0	15.1	QP	100.0	179.00	VERTICAL
480.080000	35.40	-2.0	46.0	10.6	QP	100.0	155.00	VERTICAL
600.360000	37.10	1.7	46.0	8.9	QP	100.0	179.00	VERTICAL
720.640000	42.90	3.6	46.0	3.1	QP	100.0	0.00	VERTICAL
800.180000	33.80	5.7	46.0	12.2	QP	100.0	13.00	VERTICAL



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBuV/m]	Factor [dB]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Polarity	Detector
1	1216.250	33.52	-5.79	27.73	74.00	46.27	Vertical	PK
2	1770.000	32.10	-5.89	26.21	74.00	47.79	Vertical	PK
3	2290.625	29.61	-2.39	27.22	74.00	46.78	Vertical	PK
4	2800.625	28.94	2.08	31.02	74.00	42.98	Vertical	PK
5	4010.000	31.83	3.04	34.87	74.00	39.13	Vertical	PK
6	5140.625	30.85	8.87	39.72	74.00	34.28	Vertical	PK

**The main unit matching with L11-4v transducer**

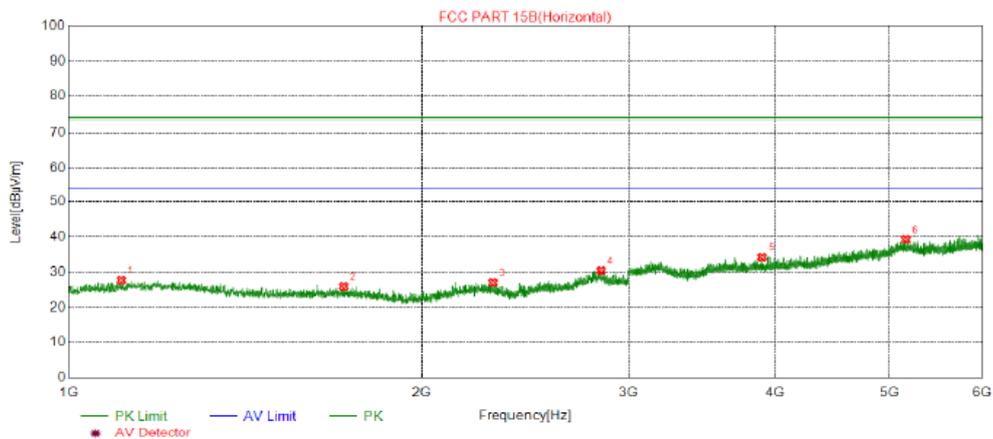
Polarization: Horizontal



**MEASUREMENT RESULT: "GM1912206128\_red"**

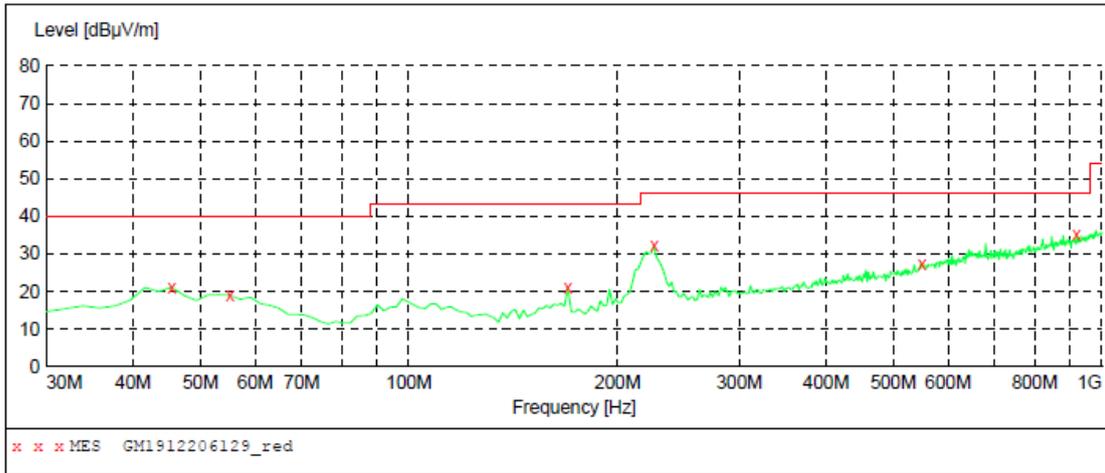
12/20/2019 11:17PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
43.580000	21.90	-8.7	40.0	18.1	QP	300.0	327.00	HORIZONTAL
169.680000	26.80	-12.5	43.5	16.7	QP	100.0	253.00	HORIZONTAL
220.120000	42.80	-9.4	46.0	3.2	QP	100.0	87.00	HORIZONTAL
679.900000	35.30	3.1	46.0	10.7	QP	100.0	278.00	HORIZONTAL
761.380000	37.00	4.6	46.0	9.0	QP	100.0	99.00	HORIZONTAL
959.260000	36.80	8.4	46.0	9.2	QP	100.0	136.00	HORIZONTAL



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	1108.750	34.52	-6.80	27.72	74.00	46.28	Horizontal	PK
2	1715.000	32.04	-6.06	25.98	74.00	48.02	Horizontal	PK
3	2297.500	29.40	-2.35	27.05	74.00	46.95	Horizontal	PK
4	2841.875	29.05	1.41	30.46	74.00	43.54	Horizontal	PK
5	3897.500	31.64	2.65	34.29	74.00	39.71	Horizontal	PK
6	5164.375	30.38	8.92	39.30	74.00	34.70	Horizontal	PK

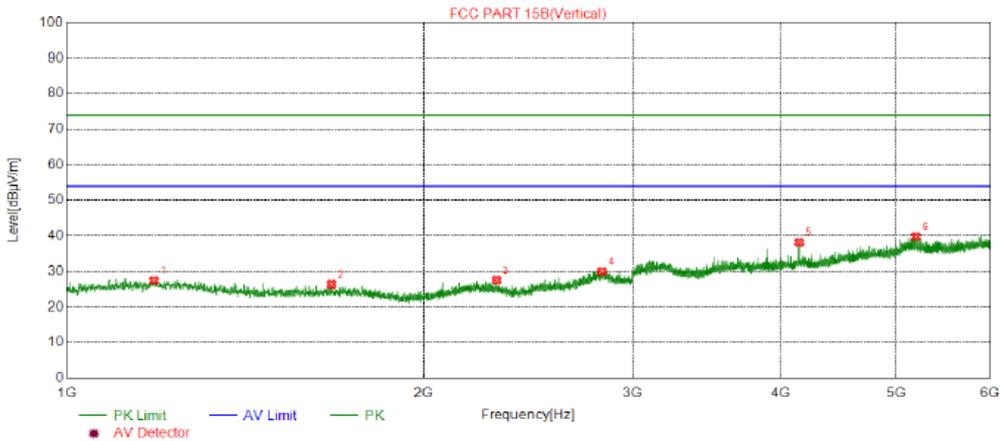
Polarization: Vertical



**MEASUREMENT RESULT: "GM1912206129\_red"**

12/20/2019 11:20PM

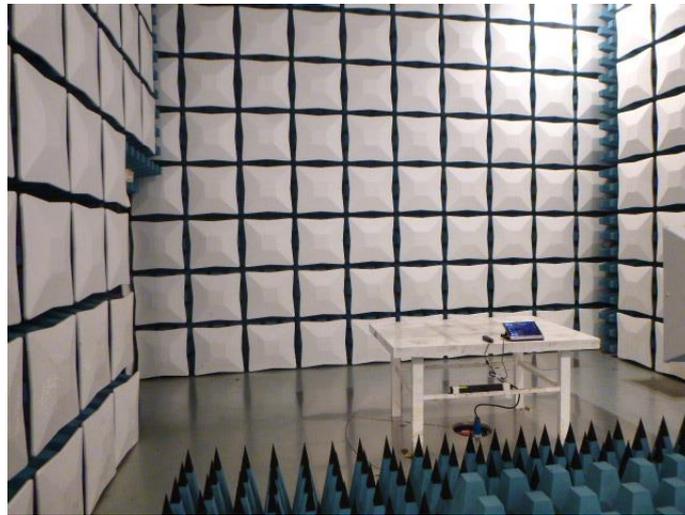
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
45.520000	21.20	-8.4	40.0	18.8	QP	100.0	68.00	VERTICAL
55.220000	19.00	-8.4	40.0	21.0	QP	100.0	131.00	VERTICAL
169.680000	21.10	-12.5	43.5	22.4	QP	100.0	119.00	VERTICAL
225.940000	32.10	-9.1	46.0	13.9	QP	100.0	170.00	VERTICAL
549.920000	27.40	0.2	46.0	18.6	QP	100.0	52.00	VERTICAL
918.520000	35.00	7.6	46.0	11.0	QP	100.0	182.00	VERTICAL



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Detector
1	1184.375	33.45	-6.00	27.45	74.00	46.55	Vertical	PK
2	1671.875	32.54	-6.15	26.39	74.00	47.61	Vertical	PK
3	2302.500	29.91	-2.33	27.58	74.00	46.42	Vertical	PK
4	2825.000	28.34	1.68	30.02	74.00	43.98	Vertical	PK
5	4144.375	34.72	3.50	38.22	74.00	35.78	Vertical	PK
6	5196.250	30.84	8.97	39.81	74.00	34.19	Vertical	PK

## 6. TEST SETUP PHOTOS OF THE EUT

Radiated Emissions



Conducted Emission



## **7. EXTERNAL AND INTERNAL PHOTOS OF THE EUT**

Reference to the test report No.: CHTEW19120171

-----End of Report-----