



<b>Prüfbericht-Nr.:</b> <i>Test report no.:</i>	<b>CN20PI77 002</b>	<b>Auftrags-Nr.:</b> <i>Order no.:</i>	<b>168285979</b>	Seite 1 von 13 Page 1 of 13	
<b>Kunden-Referenz-Nr.:</b> <i>Client reference no.:</i>	N/A	<b>Auftragsdatum:</b> <i>Order date:</i>	2020-10-14		
<b>Auftraggeber:</b> <i>Client:</i>	<b>Aptiv Electronics (Suzhou) Co., Ltd.</b> No.123, Changyang Street, Suzhou Industrial Park, Suzhou, China				
<b>Prüfgegenstand:</b> <i>Test item:</i>	Intelligent Connected Infotainment				
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type no.:</i>	GWMV3-(B01)				
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	Test Report				
<b>Prüfgrundlage:</b> <i>Test specification:</i>	47 CFR FCC Part 15.109				
<b>Wareneingangsdatum:</b> <i>Date of sample receipt:</i>	2020-10-20	Refer to Photo Documentation			
<b>Prüfmuster-Nr.:</b> <i>Test sample no.:</i>	A002907010-001 A002907010-002				
<b>Prüfzeitraum:</b> <i>Testing period:</i>	2020-10-22 to 2020-11-02				
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	Dongguan Dongdian Testing Service Co., Ltd.				
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.				
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Pass				
<b>geprüft von:</b> <i>tested by:</i>			<b>genehmigt von:</b> <i>authorized by:</i>		
<b>Datum:</b> <i>Date:</i>	2020-11-17 <small>Signed by: Hardy Suo</small>		<b>Ausstellungsdatum:</b> <i>Issue date:</i>	2020-11-17 <small>Signed by: Sam Lin</small>	
<b>Stellung / Position:</b>	Sachverständige(r) / Expert		<b>Stellung / Position:</b>	Sachverständige(r) / Expert	
<b>Sonstiges / Other:</b>	FCC ID: 2AX7AV3ICCPPLATFORM  This report is for FM operation.				
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>				
<b>* Legende:</b>	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend 3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = ausreichend N/A = nicht anwendbar 4 = sufficient N/A = not applicable	5 = mangelhaft N/T = nicht getestet 5 = poor N/T = not tested
<b>* Legend:</b>	1 = very good P(ass) = passed a.m. test specification(s)	2 = good	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable	5 = poor N/T = not tested
<p><b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b>  <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i></p>					

**Prüfbericht - Nr.: CN20PI77 002**  
*Test Report No.*

**Seite 2 von 13**  
*Page 2 of 13*

## TEST SUMMARY

5.1.1 RADIATED EMISSION  
RESULT: Pass

## CONTENTS

<b>1. GENERAL REMARKS.....</b>	<b>4</b>
1.1 COMPLEMENTARY MATERIALS.....	4
1.2 TEST STANDARD(S).....	4
<b>2. TEST SITES.....</b>	<b>4</b>
2.1 TEST FACILITIES.....	4
2.2 TEST DATE .....	5
2.3 LIST OF TEST AND MEASUREMENT INSTRUMENTS.....	5
2.4 TRACEABILITY .....	6
2.5 CALIBRATION .....	6
2.6 LOCATION OF ORIGINAL DATA .....	6
2.7 STATUS OF FACILITY USED FOR TESTING.....	6
<b>3. GENERAL PRODUCT INFORMATION.....</b>	<b>7</b>
3.1 GENERAL DESCRIPTION.....	7
3.2 RATING AND SYSTEM DETAILS.....	7
3.3 INDEPENDENT OPERATION MODES .....	7
3.4 NOISE GENERATING AND NOISE SUPPRESSING PARTS .....	8
3.5 SUBMITTED DOCUMENTS .....	8
<b>4. TEST SET-UP AND OPERATION MODES.....</b>	<b>9</b>
4.1 PRINCIPLE OF CONFIGURATION SELECTION.....	9
4.2 TEST OPERATION AND TEST SOFTWARE .....	9
4.3 SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT.....	10
4.4 COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE.....	10
4.5 TEST SETUP DIAGRAM.....	11
<b>5. TEST RESULTS.....</b>	<b>12</b>
5.1 ESSENTIAL REQUIREMENTS OF STANDARD .....	12
5.1.1 RADIATED EMISSION .....	12
<b>6. SYSTEM MEASUREMENT UNCERTAINTY .....</b>	<b>13</b>
<b>7. LIST OF TABLES .....</b>	<b>13</b>

**Prüfbericht - Nr.: CN20PI77 002**  
Test Report No.

**Seite 4 von 13**  
Page 4 of 13

## 1. GENERAL REMARKS

### 1.1 COMPLEMENTARY MATERIALS

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results of FM operation mode

Appendix B: Photographs of the Test Set-Up

### 1.2 TEST STANDARD(S)

Applied Rules: 47 CFR FCC Part 15.109  
Test Method: ANSI C63.4:2014

## 2. TEST SITES

### 2.1 TEST FACILITIES

Dongguan Dongdian Testing Service Co., Ltd.  
(FCC Registration No.: 540522 & IC Registration Number: 10288A)

Address: No. 17, Zongbu Road 2, Songshan Lake, Sci&Tech Industry Park, Dongguan City, Guangdong Province, 523808, P.R. China

## 2.2 TEST DATE

Date of test: 2020-10-22 to 2020-11-02

## 2.3 LIST OF TEST AND MEASUREMENT INSTRUMENTS

**Table 1: List of Test and Measurement Equipment**

Radiated emissions test						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
2# chamber Above 1G						
1	Spectrum analyzer	Agilent	E4447A	MY50180031	Jul. 01, 2020	1 Year
3	Double Ridged Horn Antenna	Schwarzbeck	BBHA9120	02108	Jul. 11, 2020	1 Year
4	Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	Apr. 11, 2020	1 Year
5	Pre-amplifier	TERA-MW	TRLA-0040G35	101303	Sep. 28, 2020	1 Year
6	RF Cable	N/A	14+1.5m	06270619	Sep. 28, 2020	1 Year
7	Test software	Audix	E3	V 6.11111b	N/A	N/A
2# chamber Below 1G						
1	Test Receiver	R&S	ESCI	101028	Oct. 15, 2020	1 Year
2	Trilog Broadband Antenna	Schwarzbeck	VULB 9163	9163-994	Nov. 24, 2019	1 Year
3	RF Cable	MI Cable	N/A	DDT-F02-233	Sep. 28, 2020	1 Year
4	RF Cable	MI Cable	N/A	DDT-F02-234	Sep. 28, 2020	1 Year
5	RF Cable	MI Cable	N/A	DDT-F02-235	Sep. 28, 2020	1 Year
6	Test software	Audix	E3	V 6.11111b	N/A	N/A

## 2.4 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

## 2.5 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

## 2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

## 2.7 Status of Facility Used for Testing

The Dongguan Dongdian Testing Service Co., Ltd. facility located at No. 17, Zongbu Road 2, Songshan Lake, Sci&Tech Industry Park, Dongguan City, Guangdong Province, 523808, P.R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

### 3. GENERAL PRODUCT INFORMATION

#### 3.1 GENERAL DESCRIPTION

The EUT is an Intelligent Connected Infotainment which used in vehicle.

For details refer to the User Manual, Technical Description and Circuit Diagram.

#### 3.2 RATING AND SYSTEM DETAILS

**Table 2: Rating of EUT**

General Information of EUT	Description
Kind of Equipment:	Intelligent Connected Infotainment
Type Designation:	GWMV3-(B01)
Operating Voltage:	DC 12 V
Broadcast receiver operating mode:	AM, FM
Radiofrequency operating mode:	Bluetooth classic V2.1+EDR
Operating Temperature Range:	-40°C ~ +85°C
The cables used for EUT as declared by manufacturer is less than 3m, except the cables of speakers and rear camera are more than 3m.	

**Table 3: Technical Specification of EUT**

Characteristic	Description
Operated Modes:	FM
Operational Frequency Band(s):	FM Band
Operating Frequency Range:	88 – 108 MHz
Modulation Type:	FM

#### 3.3 INDEPENDENT OPERATION MODES

The basic operation modes are:

- A. Receiving
  - 1) Low Channel
  - 2) Middle Channel
  - 3) High Channel
- B. Standby
- C. Off

**Prüfbericht - Nr.: CN20PI77 002**  
Test Report No.

**Seite 8 von 13**  
Page 8 of 13

### 3.4 NOISE GENERATING AND NOISE SUPPRESSING PARTS

Refer to the Circuit Diagram.

### 3.5 SUBMITTED DOCUMENTS

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> User Manual     | <input checked="" type="checkbox"/> Rating Label   |
| <input checked="" type="checkbox"/> Circuit Diagram | <input type="checkbox"/> PCB Layout                |
| <input checked="" type="checkbox"/> Block Diagram   | <input checked="" type="checkbox"/> Photo Document |
| <input checked="" type="checkbox"/> Schematics      | <input checked="" type="checkbox"/> Parts List     |
| <input type="checkbox"/> Model Difference Letter    |  |



## 4. TEST SET-UP AND OPERATION MODES

### 4.1 PRINCIPLE OF CONFIGURATION SELECTION

**Emission:** The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

### 4.2 TEST OPERATION AND TEST SOFTWARE

Test operation refers to test setup in chapter 5.

**Table 4: Test Environments**

Environment Parameter	Selected Values During Tests		
	Temperature (°C)	Voltage (V) DC	Relative Humidity
Normal (NTNV)	23	12	50%
HTHV	---	---	---
LTHV	---	---	---
HTLV	---	---	---
LTLV	---	---	---

**Prüfbericht - Nr.: CN20PI77 002**  
Test Report No.**Seite 10 von 13**  
Page 10 of 13

## 4.3 SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT

**Table 5: Auxiliary Equipment used during test**

Name	Model	Manufacturer	S/N
-	-	-	-

## 4.4 COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE

The test sample, which has been tested, contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

## 4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test

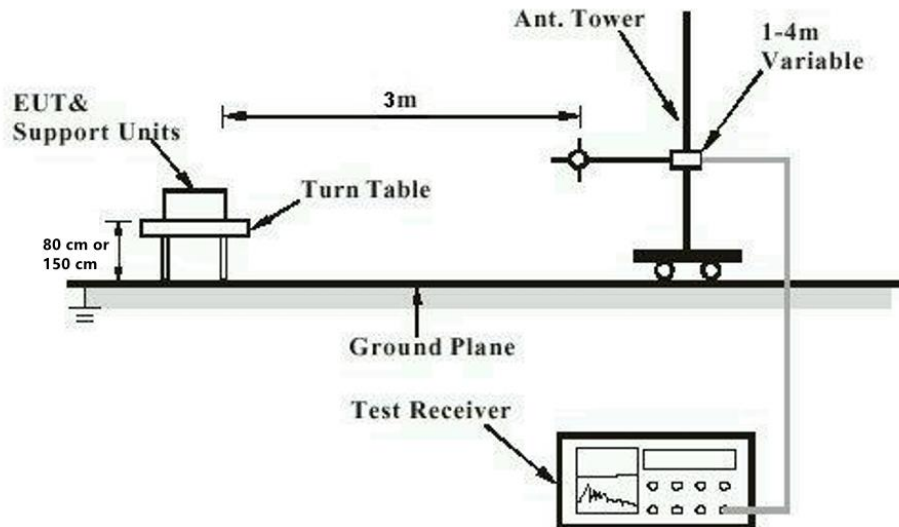
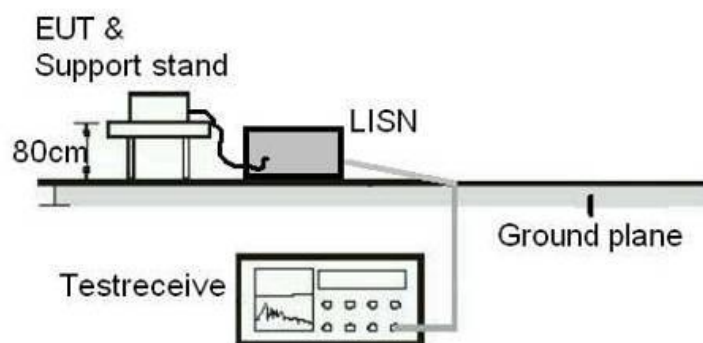


Diagram of Measurement Equipment Configuration for Conduction Measurement



## 5. TEST RESULTS

### 5.1 ESSENTIAL REQUIREMENTS OF STANDARD

#### 5.1.1 RADIATED EMISSION

**RESULT:****Pass**

Test standard	:	b)
Frequency range	:	30 - 1000MHz, 1- 6GHz
Classification	:	Class B
Test procedure	:	ANSI C63.4:2014
Limits	:	47 CFR FCC Part 15.109(a)
Test procedure	:	ANSI C63.10:2013
Kind of test site	:	3m Semi Anechoic Room

**Test Setup**

Date of testing	:	2020-10-22 to 2020-11-02
Input voltage	:	DC 12V
Test environment	:	<input checked="" type="checkbox"/> Normal test conditions <input type="checkbox"/> Extreme test conditions
Operation mode	:	A
Ambient temperature	:	Refer to test data.
Relative humidity	:	Refer to test data.
Atmospheric pressure	:	101.4 kPa

Refer to attached Appendix A for details of test results.

## 6. SYSTEM MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

**Table 6: System Measurement Uncertainty**

Items		Extended Uncertainty
RE	Radiated emission 9 kHz - 30 MHz	±4.37 dB
	Radiated emission 30 MHz - 1 GHz	±5.30 dB
Remark: 95% Confidence Levels, K=2.		

## 7. LIST OF TABLES

Table 1: List of Test and Measurement Equipment .....	5
Table 2: Rating of EUT .....	7
Table 3: Technical Specification of EUT .....	7
Table 4: Test Environments .....	9
Table 5: Auxiliary Equipment used during test.....	10
Table 6: System Measurement Uncertainty .....	13

# Appendix A

## Test Results of FM operation mode

<b>APPENDIX A.1: TEST RESULTS OF RADIATED EMISSIONS .....</b>	<b>2</b>
<b>RADIATED EMISSIONS BELOW 1 GHz .....</b>	<b>2</b>
<b>RADIATED EMISSIONS ABOVE 1 GHz .....</b>	<b>4</b>

**Appendix A.1: Test Results of Radiated Emissions**

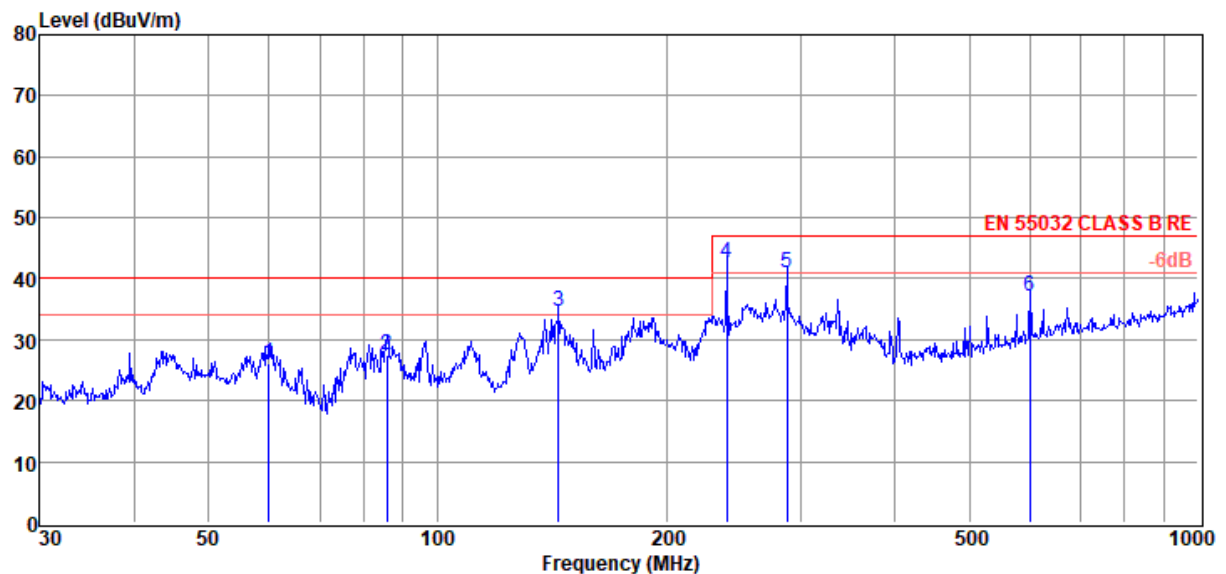
\*Remark: The test data of worst case records in this report.

\*Remark: No significant emissions found above 6GHz, hence did not recorded in this report.

**Radiated Emissions below 1 GHz****Horizontal, below 1 GHz**

**Test Site** : DDT 3m Chamber 1# **D:\2020 RE 1# Report data\Q20101915-1E\RE.EM6**  
**Test Date** : 2020-11-02 **Tested By** : Junchang Du  
**EUT** : Intelligent Connected Infotainment **Model Number** : GWMV3-(B01)  
**Power Supply** : DC 12V **Test Mode** : FM mode  
**Condition** : TEMP:24.5°C, RH:55.4%, BP:101.4kPa **Antenna/Distance** : 2019 VULB 9163 1#/3m/HORIZONTAL  
**Memo** :

Data: 9



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	FCC Limit (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	60.07	9.14	12.97	4.09	26.20	40.0	13.8	QP	HORIZONTAL
2	85.90	13.07	10.19	4.30	27.56	40.0	12.44	QP	HORIZONTAL
3	144.34	21.40	8.41	4.71	34.52	43.5	8.98	QP	HORIZONTAL
4	239.99	24.87	12.61	5.24	42.72	46.0	3.28	QP	HORIZONTAL
5	287.99	21.54	13.83	5.47	40.84	46.0	5.16	QP	HORIZONTAL
6	601.43	11.24	19.21	6.74	37.19	46.0	8.81	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

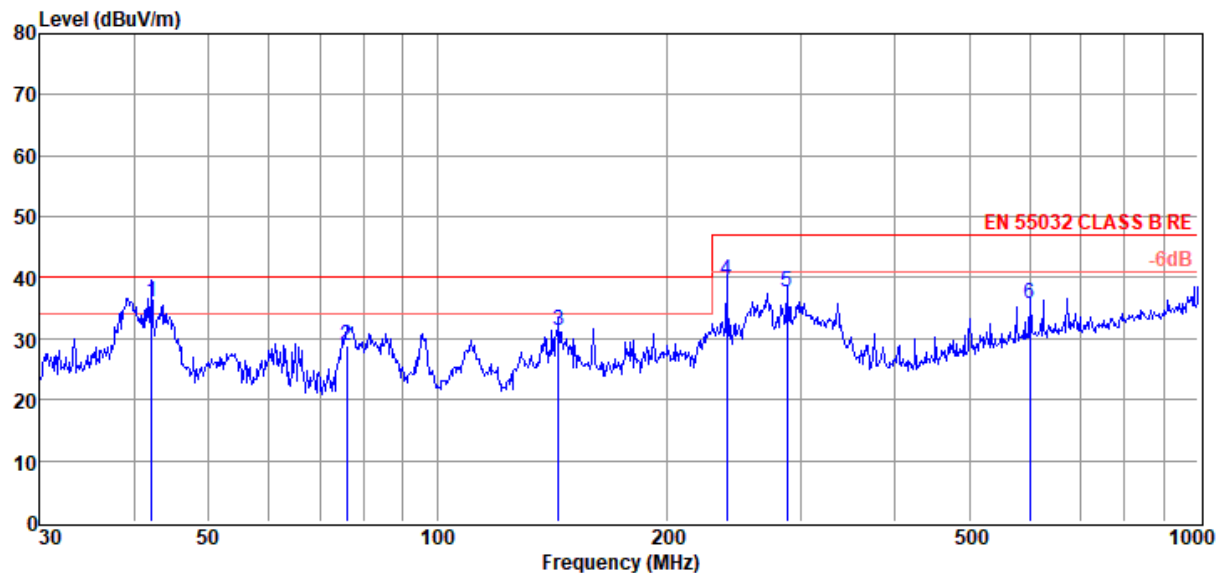
## Vertical, below 1 GHz

**Test Site** : DDT 3m Chamber 1#

D:\2020 RE 1# Report data\Q20101915-1E\RE.EM6

**Test Date** : 2020-11-02**Tested By** : Junchang Du**EUT** : Intelligent Connected Infotainment**Model Number** : GWMV3-(B01)**Power Supply** : DC 12V**Test Mode** : FM mode**Condition** : TEMP:24.5°C, RH:55.4%, BP:101.4kPa**Antenna/Distance** : 2019 VULB 9163 1#/3m/VERTICAL**Memo** :

Data: 10



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	FCC Limit (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	42.15	18.40	13.82	3.92	36.14	40.0	3.86	QP	VERTICAL
2	75.98	15.48	9.29	4.22	28.99	40.0	11.01	QP	VERTICAL
3	144.34	18.12	8.41	4.71	31.24	43.5	12.26	QP	VERTICAL
4	239.99	21.67	12.61	5.24	39.52	46.0	6.48	QP	VERTICAL
5	287.99	18.33	13.83	5.47	37.63	46.0	8.37	QP	VERTICAL
6	601.43	9.92	19.21	6.74	35.87	46.0	10.13	QP	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.



## Radiated Emissions above 1 GHz

### Horizontal, above 1 GHz

**Test Site** : DDT 3m Chamber 2# **D:\2020 RE2# Report Data\Q20101915-1E\1022 RE-H.EM6**

**Test Date** : 2020-10-22 **Tested By** : Vic Xie

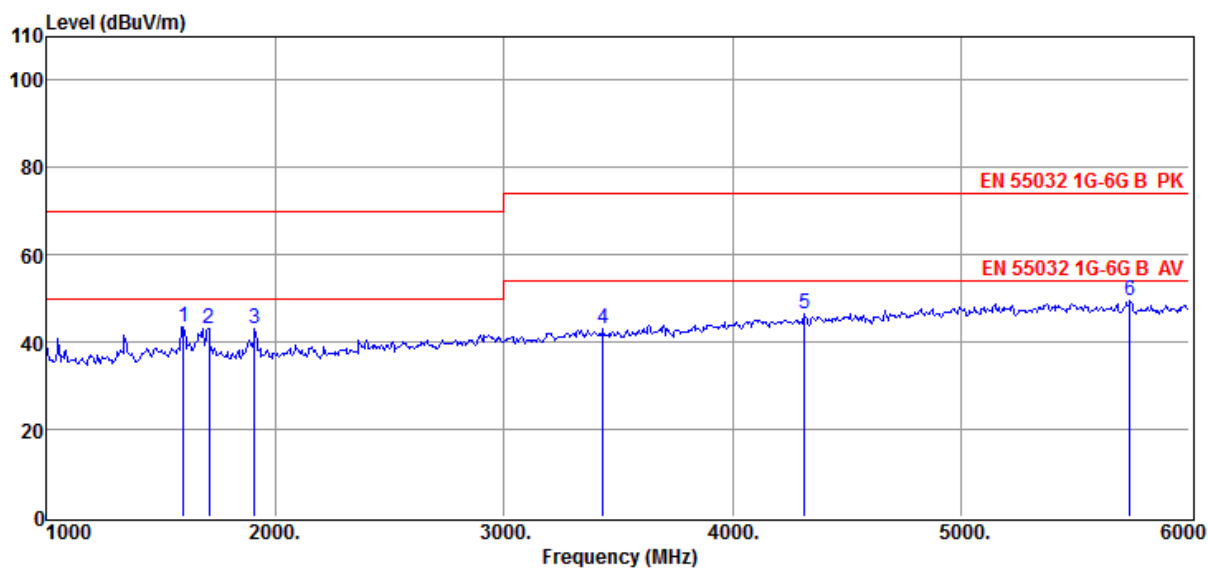
**EUT** : Intelligent Connected Infotainment **Model Number** : GWMV3-(B01)

**Power Supply** : DC 12V **Test Mode** : FM mode

**Condition** : Temp:26.1°C,Humi:59%,Press:101.4kPa **Antenna/Distance** : 2019 BBHA9120D/3m/HORIZONTAL

**Memo** :

Data: 2



Item (Mark)	Freq. (MHz)	Read Level (dBμV )	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	FCC Limit (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	1600.00	56.83	25.74	42.32	3.15	43.40	74.0	30.6	Peak	HORIZONTAL
2	1710.00	56.48	26.00	42.53	3.29	43.24	74.0	30.76	Peak	HORIZONTAL
3	1910.00	55.77	26.48	42.86	3.54	42.93	74.0	31.07	Peak	HORIZONTAL
4	3435.00	52.24	29.27	43.62	5.09	42.98	74.0	31.02	Peak	HORIZONTAL
5	4315.00	52.76	31.36	43.67	5.87	46.32	74.0	27.68	Peak	HORIZONTAL
6	5740.00	52.87	32.94	43.18	6.79	49.42	74.0	24.58	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.  
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.  
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## Vertical, above 1 GHz

Test Site : DDT 3m Chamber 2#

D:\2020 RE2# Report Data\Q20101915-1E\1022 RE-H.EM6

Test Date : 2020-10-22

Tested By : Vic Xie

EUT : Intelligent Connected Infotainment

Model Number : GWMV3-(B01)

Power Supply : DC 12V

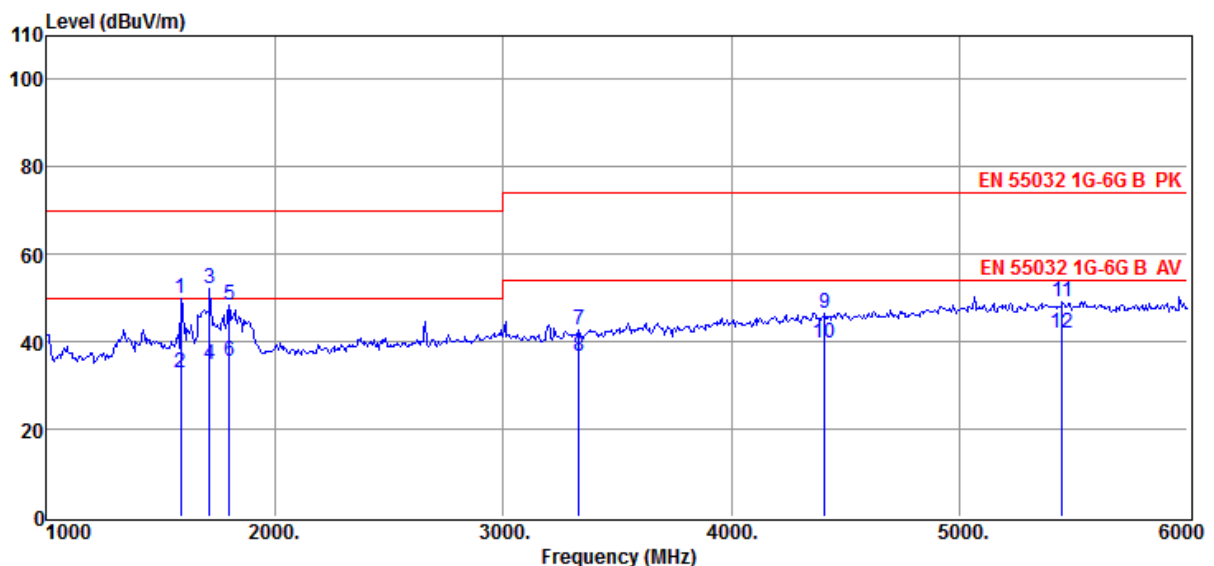
Test Mode : FM mode

Condition : Temp:26.1°C,Humi:59%,Press:101.4kPa

Antenna/Distance : 2019 BBHA9120D/3m/VERTICAL

Memo :

Data: 1



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	FCC Limit (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	1590.00	63.23	25.72	42.30	3.14	49.79	74.0	24.21	Peak	VERTICAL
2	1590.00	46.29	25.72	42.30	3.14	32.85	54.0	21.15	Average	VERTICAL
3	1715.00	65.25	26.02	42.53	3.30	52.04	74.0	21.96	Peak	VERTICAL
4	1715.00	47.99	26.02	42.53	3.30	34.78	54.0	19.22	Average	VERTICAL
5	1800.00	61.49	26.22	42.68	3.40	48.43	74.0	25.57	Peak	VERTICAL
6	1800.00	48.49	26.22	42.68	3.40	35.43	54.0	18.57	Average	VERTICAL
7	3335.00	52.23	29.23	43.59	4.98	42.85	74.0	31.15	Peak	VERTICAL
8	3335.00	46.23	29.23	43.59	4.98	36.85	54.0	17.15	Average	VERTICAL
9	4410.00	52.73	31.58	43.63	5.93	46.61	74.0	27.39	Peak	VERTICAL
10	4410.00	45.73	31.58	43.63	5.93	39.61	54.0	14.39	Average	VERTICAL
11	5450.00	53.12	32.68	43.27	6.59	49.12	74.0	24.88	Peak	VERTICAL
12	5450.00	46.12	32.68	43.27	6.59	42.12	54.0	11.88	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.