



**Shenzhen Global Test Service Co.,Ltd.**

No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

## FCC PART 15 SUBPART C TEST REPORT

### FCC PART 15.247

**Report Reference No.....:** GTS20210708001-1-10

**FCC ID.....:** 2AG7C-BELL7T

Compiled by

( position+printed name+signature)...: File administrators Peter Xiao

*Peter Xiao*

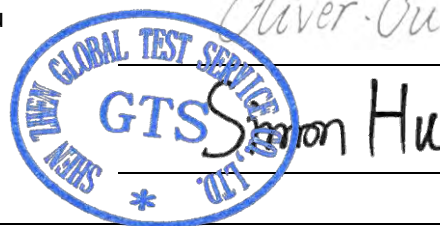
Supervised by

( position+printed name+signature)...: Test Engineer Oliver Ou

*Oliver Ou*

Approved by

( position+printed name+signature)...: Manager Simon Hu



Date of issue.....: Jul.31, 2021

**Representative Laboratory Name.:** Shenzhen Global Test Service Co.,Ltd.

Address .....: No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong, China

**Applicant's name.....:** Hangzhou Meari Technology Co., Ltd.

Address .....: Room 604-605, Building 1, No.768 Jianghong Road, Changhe street, Binjiang District, Hangzhou, Zhejiang, China

**Test specification .....**

Standard .....: **FCC Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz**  
**ANSI C63.10-2013**

TRF Originator.....: Shenzhen Global Test Service Co.,Ltd.

Master TRF.....: Dated 2014-12

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**Test item description .....** **Wireless DoorBell**

Trade Mark .....: N/A

Manufacturer .....: Hangzhou Meari Technology Co., Ltd.

Model/Type reference.....: Bell 7S

Listed Models .....: Bell 7SN, Bell 7T, Bell 7X, Bell 7Q, LV-PDB6

Operation Frequency.....: From 2412MHz to 2462MHz

Hardware Version .....: PCB-BELL7S-T1MB\_GC1 REV1\_0(Version A)  
PCB-BELL7NS-T1MB\_GC1 REV1\_0(Version B)

Software Version .....: N/A

Rating .....: DC 3.6V by battery  
Recharged by DC 5.0V/1.0A  
or AC/DC 12V-24V

Result.....: **PASS**

**TEST REPORT**

<b>Test Report No. :</b> <b>GTS20210708001-1-10</b>	Jul.31, 2021 Date of issue
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Equipment under Test : Wireless DoorBell

Model /Type : Bell 7S

Listed model : Bell 7SN, Bell 7T, Bell 7X, Bell 7Q, LV-PDB6

**Applicant** : **Hangzhou Meari Technology Co., Ltd.**

Address : Room 604-605, Building 1, No.768 Jianghong Road, Changhe street, Binjiang District, Hangzhou, zhejiang, China

**Manufacturer** : **Hangzhou Meari Technology Co., Ltd.**

Address : No. 91 Chutian Road, Xixing Street, Binjiang District, Hangzhou, Zhejiang, China

<b>Test Result:</b>	<b>PASS</b>
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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## 1. TEST STANDARDS

The tests were performed according to following standards:

[FCC Rules Part 15.247](#): Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

[ANSI C63.10-2013](#): American National Standard for Testing Unlicensed Wireless Devices

[KDB558074 D01 DTS Meas Guidance v05r02](#): Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247.

[KDB 662911D01 Multiple Transmitter Output v02r01](#) Emissions Testing of Transmitters with Multiple Outputs in the Same Band

## 2. SUMMARY

### 2.1. General Remarks

Date of receipt of test sample	:	Jul.14, 2021
	:	
Testing commenced on	:	Jul.14, 2021
	:	
Testing concluded on	:	Jul.31, 2021

### 2.2. Product Description

Product Name	Wireless DoorBell
Trade Mark	N/A
Model/Type reference	Bell 7S
List Models	Bell 7SN, Bell 7T, Bell 7X, Bell 7Q, LV-PDB6
Model Declaration	PCB board, structure and internal of these model(s) are the same, Only the model name different , So no additional models were tested.
Power supply:	DC 3.6V by battery Recharged by DC 5.0V/1.0A or AC/DC 12V-24V
Sample ID	GTS20210708001-1-1# & GTS20210708001-1-2#& GTS20210708001-1-3#
WIFI(2.4G Band)	
Frequency Range	2412MHz ~ 2462MHz
Channel Spacing	5MHz
Channel Number	11 Channel for 20MHz bandwidth(2412~2462MHz)
Modulation Type	802.11b: DSSS; 802.11g/n: OFDM
Antenna Description	FPC Antenna, 3.00dBi(Max.)
SRD	
Frequency Range	915MHz
Channel Number	1Channel
Modulation Type	OOK
Antenna Description	FPC Antenna, 1.00dBi(Max.)

### 2.3. Difference description

The difference between Bell 7S is show in the below table:

Bell 7S	Version A	Version B
Main board	The main control of IC is different, the schematic is slightly different	The main control of IC is different, the schematic is slightly different
Frequency bands	The same, support Wi-Fi 2.4G Support SRD 433/915;	The same
Wi-Fi module	Hi3861LV100 802.11b/g/n20 1T1R	The same
Wi-Fi antenna	FPC antenna	The same
SRD module	433 for CE 915 for FCC	The same
SRD antenna	Integral antenna(CE) FPC antenna(FCC)	FPC antenna(CE) FPC antenna(FCC)
Appearance	Slightly different	Slightly different
Dimension	The same	The same
GPU	support	support
Rear camera	Not support	Not support
Front camera	The same	The same
Adapter	GPO GTA92-0501000US I/P: 100-240V ~ 50/60Hz, 0.3A O/P 5V= 1.0A, 5.0W SZTY TPA-46B050100UU I/P: 100-240V ~ 50/60Hz, 0.2A O/P 5V= 1000mA	The same
Battery	Rechargeable Li-ion Battery Model: CM-18650-2P 3.6V,3350mAh 2* Battery TUV SUD CB Certificate NO.:SG-PSB-BT-01712 Report NO.:211-282200068-000	Rechargeable Li-ion Battery Model: CM-18650-2P 3.6V,6700mAh 1* Battery CMC TESTING CB Report NO.:CMC210224001
Accessories	2 USB cables Black White	The same

Note:

Pre-test at both voltage AC/DC 12V-24V and DC 5V to Adapter, but we only recorded the worst case in this report.( DC 5V to Adapter)

## 2.4. Equipment Under Test

### Power supply system utilised

Power supply voltage	:	<input type="radio"/> 230V / 50 Hz	<input type="radio"/> 120V / 60Hz
		<input type="radio"/> 12 V DC	<input type="radio"/> 24 V DC
		<input checked="" type="radio"/> Other (specified in blank below)	

DC 5.0V

## 2.5. Short description of the Equipment under Test (EUT)

This is a Wireless DoorBell .

For more details, refer to the user's manual of the EUT.

## 2.6. EUT operation mode

The application provider specific test software to control sample in continuous TX and RX (Duty Cycle >98%) for testing meet KDB558074 test requirement.

IEEE 802.11b/g/n: Thirteen channels are provided to the EUT.

Antenna	Chain 0		Chain 1		Simultaneously
Bandwidth Mode	20MHz	40MHz	20MHz	40MHz	/
IEEE 802.11b	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IEEE 802.11g	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IEEE 802.11n	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432		
6	2437		
7	2442		

The EUT has been tested under operating condition.

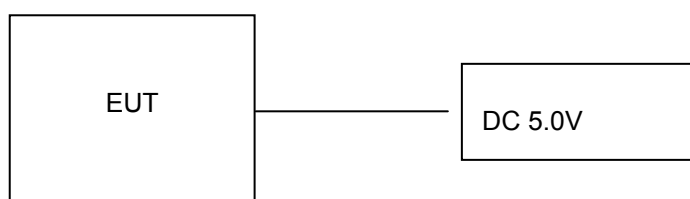
AC main conducted emission pre-test voltage at both AC 120V/60Hz and AC 240V/60Hz, recorded worst case;

AC main conducted emission pre-test at charge from PC modes, recorded worst case;

This test was performed with EUT in X, Y, Z position and the worst case was found when EUT in X position.

Worst-case mode and channel used for 9 KHz-1000 MHz radiated emissions was the mode and channel with the highest output power, that was determined to be IEEE 802.11g mode (MCH).

## 2.7. Block Diagram of Test Setup



## 2.8. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: 2AG7C-BELL7T** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

## 2.9. EUT Exercise Software

The system was configured for testing in a continuous transmits condition and change test channels by software (XCOM V2.2) provided by application.

## 2.10. Special Accessories

Manufacturer	Description	Model	Serial Number	Certificate
SHENZHEN TIANYIN ELECTRONICS CO.,LTD.	Adapter	TPA-46B050100UU	--	SDOC
SHENZHEN GREENPOWERONE CO., LTD.	Adapter	GTA92-0501000US	--	SDOC

## 2.11. External I/O Cable

I/O Port Description	Quantity	Cable
USB Port	1	2.0M, Unscreened Cable

## 2.12. Modifications

No modifications were implemented to meet testing criteria.



### 3. TEST ENVIRONMENT

#### 3.1. Address of the test laboratory

**Shenzhen Global Test Service Co.,Ltd.**

No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong, China.

#### 3.2. Test Facility

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

CNAS (No. CNAS L8169)

Shenzhen Global Test Service Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2019 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA (Certificate No. 4758.01)

Shenzhen Global Test Service Co., Ltd. has been assessed by the American Association for Laboratory Accreditation (A2LA). Certificate No. 4758.01.

Industry Canada Registration Number. is 24189.

FCC Designation Number is CN1234.

FCC Registered Test Site Number is 165725.

#### 3.3. Environmental conditions

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

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

#### 3.4. 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 Global Test Service 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 GTS laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10 dB	(1)
Radiated Emission	1~18GHz	4.32 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	3.12 dB	(1)

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

### 3.5. Test Description

Applied Standard: FCC Part 15 Subpart C				
ISED Rules	Description of Test	Test Sample	Result	Remark
/	On Time and Duty Cycle	GTS20210708001-1-1#	/	/
§15.247(b)	Maximum Conducted Output Power	GTS20210708001-1-1#	Compliant	Note 1
§15.247(e)	Power Spectral Density	GTS20210708001-1-1#	Compliant	Note 1
§15.247(a)(2)	6dB Bandwidth	GTS20210708001-1-1#	Compliant	Note 1
§2.1047	99% Occupied Bandwidth	/	N/A	N/A
§15.209, §15.247(d)	Conducted Spurious Emissions	GTS20210708001-1-1#	Compliant	Note 1
§15.209, §15.247(d)	Radiated Spurious Emissions	GTS20210708001-1-1# GTS20210708001-1-2#	Compliant	Note 1
§15.205	Emissions at Restricted Band	GTS20210708001-1-1# GTS20210708001-1-2#	Compliant	Note 1
§15.207(a)	AC Conducted Emissions	GTS20210708001-1-2#	Compliant	Note 1
§15.203 §15.247(c)	Antenna Requirements	GTS20210708001-1-1#	Compliant	Note 1
§15.247(i)§2.1091	RF Exposure	/	Compliant	Note 2

Remark:

1. The measurement uncertainty is not included in the test result.
2. NA = Not Applicable; NP = Not Performed
3. Note 1 – Test results inside test report;
4. Note 2 – Test results in other test report (SAR Report).
5. We tested all test mode and recorded worst case in report

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel
Maximum Peak Conducted Output Power	11b/DSSS	1 Mbps	1/6/11
Power Spectral Density	11g/OFDM	6 Mbps	1/6/11
6dB Bandwidth	11n(20MHz)/OFDM	6.5Mbps	1/6/11
Spurious RF conducted emission			
Radiated Emission 9kHz~1GHz&			
Radiated Emission 1GHz~10 <sup>th</sup> Harmonic			
Band Edge	11b/DSSS	1 Mbps	1/11
	11g/OFDM	6 Mbps	1/11
	11n(20MHz)/OFDM	6.5Mbps	1/11

### 3.6. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	CYBERTEK	EM5040A	E1850400105	2021/07/23	2022/07/22
LISN	R&S	ESH2-Z5	893606/008	2021/07/23	2022/07/22
EMI Test Receiver	R&S	ESPI3	101841-cd	2021/07/23	2022/07/22
EMI Test Receiver	R&S	ESCI7	101102	2020/09/20	2021/09/19
Spectrum Analyzer	Agilent	N9020A	MY48010425	2020/09/20	2021/09/19
Spectrum Analyzer	R&S	FSV40	100019	2021/07/23	2022/07/22
Vector Signal generator	Agilent	N5181A	MY49060502	2021/07/13	2022/07/12
Signal generator	Agilent	N5182A	3610AO1069	2020/09/20	2021/09/19
Climate Chamber	ESPEC	EL-10KA	A20120523	2020/09/20	2021/09/19
Controller	EM Electronics	Controller EM 1000	N/A	N/A	N/A
Horn Antenna	Schwarzbeck	BBHA 9120D	01622	2020/11/08	2021/11/07
Active Loop Antenna	Beijing Da Ze Technology Co.,Ltd.	ZN30900C	15006	2020/10/11	2021/10/10
Bilog Antenna	Schwarzbeck	VULB9163	000976	2021/07/23	2022/07/22
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	791	2020/11/08	2021/11/07
Amplifier	Schwarzbeck	BBV 9743	#202	2021/07/23	2022/07/22
Amplifier	Schwarzbeck	BBV9179	9719-025	2021/07/23	2022/07/22
Amplifier	EMCI	EMC051845B	980355	2021/07/23	2022/07/22
Temperature/Humidity Meter	Gangxing	CTH-608	02	2021/07/23	2022/07/22
High-Pass Filter	K&L	9SH10-2700/X12750-O/O	KL142031	2021/07/23	2022/07/22
High-Pass Filter	K&L	41H10-1375/U12750-O/O	KL142032	2021/07/23	2022/07/22
RF Cable(below 1GHz)	HUBER+SUHNER	RG214	RE01	2021/07/23	2022/07/22
RF Cable(above 1GHz)	HUBER+SUHNER	RG214	RE02	2021/07/23	2022/07/22
Data acquisition card	Agilent	U2531A	TW53323507	2021/07/23	2022/07/22
Power Sensor	Agilent	U2021XA	MY5365004	2021/07/23	2022/07/22
Test Control Unit	Tonscend	JS0806-1	178060067	2021/07/23	2022/07/22
Automated filter bank	Tonscend	JS0806-F	19F8060177	2021/07/23	2022/07/22
EMI Test Software	Tonscend	JS1120-1	Ver 2.6.8.0518	/	/
EMI Test Software	Tonscend	JS1120-3	Ver 2.5.77.0418	/	/
EMI Test Software	Tonscend	JS32-CE	Ver 2.5	/	/
EMI Test Software	Tonscend	JS32-RE	Ver 2.5.1.8	/	/

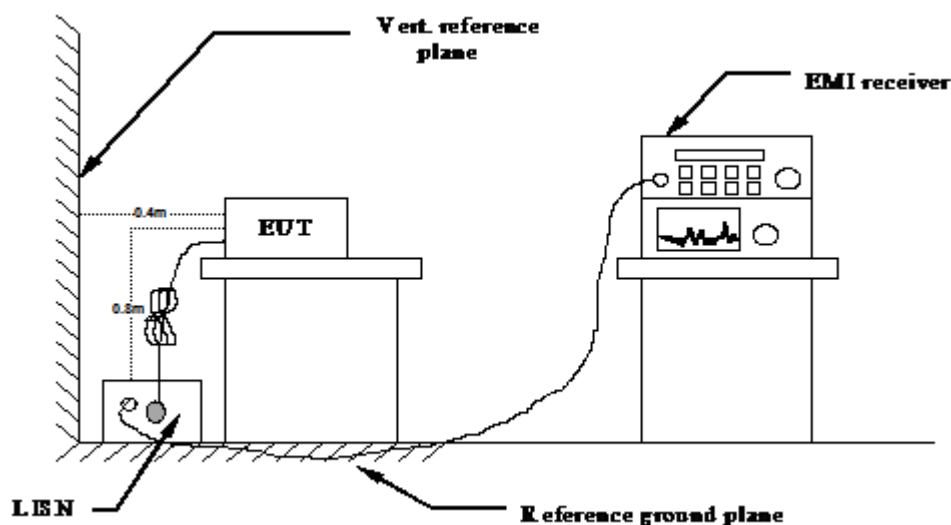
Note: The Cal.Interval was one year.

All devices whose calibration expired on July 23, 2021 were calibrated from July 24, 2020 to July 23, 2021.

## 4. TEST CONDITIONS AND RESULTS

### 4.1. AC Power Conducted Emission

#### TEST CONFIGURATION



#### 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 C63.10-2013.
- 2 Support equipment, if needed, was placed as per ANSI C63.10-2013.
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2013.
- 4 The EUT received DC 5V power, the adapter received AC120V/60Hz or AC 240V/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.
- 8 During the above scans, the emissions were maximized by cable manipulation.

#### AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following :

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 RESULTS

Remark: We measured Conducted Emission at 802.11b/802.11g/802.11n HT20 mode from 150 KHz to 30MHz in AC120V and the worst case was recorded.

Temperature	25°C	Humidity	60%
Test Engineer	Oliver Ou	Configurations	IEEE 802.11g (MCH)

Version A  
Adapter: TPA-46B050100UU

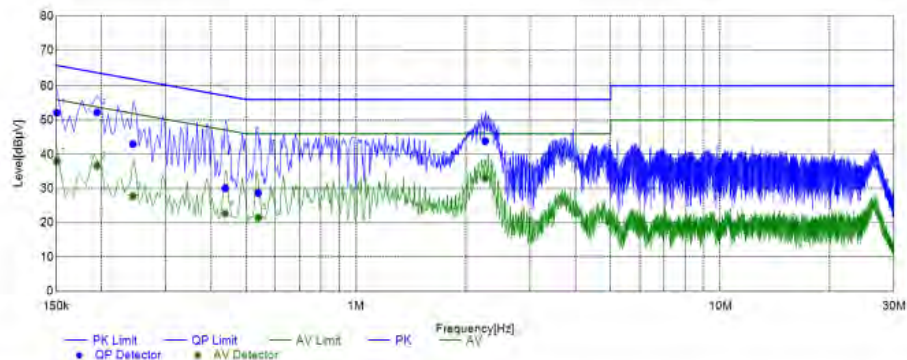
Power supply:

AC 120V/60Hz

Polarization

L

Test Graph



Final Data List

NO	Frequency [MHz]	QP Reading [dBμV]	AVG Reading [dBμV]	Factor [dB]	QP Result [dBμV]	AVG Result [dBμV]	QP Limit [dBμV]	AVG Limit [dBμV]	QP Margin [dB]	AVG Margin [dB]	Line	Remark
1	0.1510	42.10	27.91	10.05	52.15	37.96	65.94	55.94	13.79	17.98	L1	PASS
2	0.1944	42.20	26.68	10.06	52.26	36.64	63.85	53.85	11.59	17.21	L1	PASS
3	0.2440	32.98	17.75	10.02	43.00	27.77	61.96	51.96	18.96	24.19	L1	PASS
4	0.4371	20.08	12.64	10.04	30.12	22.68	57.12	47.12	27.00	24.44	L1	PASS
5	0.5385	18.66	11.47	10.06	28.72	21.53	56.00	46.00	27.28	24.47	L1	PASS
6	2.2631	33.70	22.94	10.18	43.88	33.12	56.00	46.00	12.12	12.88	L1	PASS

Note: 1. Result (dBμV) = Reading (dBμV) + Factor (dB).

2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

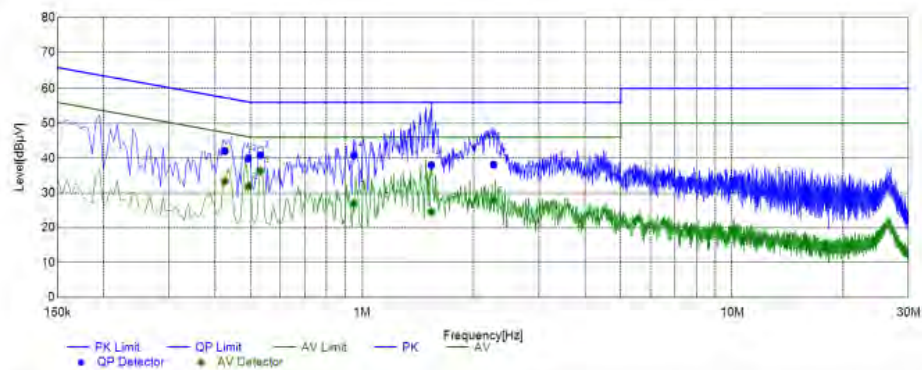
Power supply:

AC 120V/60Hz

Polarization

N

Test Graph



Final Data List

NO.	Frequency [MHz]	QP Reading [dBμV]	AVG Reading [dBμV]	Factor [dB]	QP Result [dBμV]	AVG Result [dBμV]	QP Limit [dBμV]	AVG Limit [dBμV]	QP Margin [dB]	AVG Margin [dB]	Line	Remark
1	0.4249	32.01	23.31	10.03	42.04	33.34	57.35	47.35	15.31	14.01	N	PASS
2	0.4910	29.85	21.79	10.06	39.91	31.85	56.15	46.15	16.24	14.30	N	PASS
3	0.5302	30.76	26.30	10.06	40.82	36.36	56.00	46.00	15.18	9.64	N	PASS
4	0.9497	30.66	16.92	10.06	40.72	26.98	56.00	46.00	15.28	19.02	N	PASS
5	1.5376	27.88	14.46	10.11	37.99	24.57	56.00	46.00	18.01	21.43	N	PASS
6	2.2656	27.92	17.71	10.18	38.10	27.89	56.00	46.00	17.90	18.11	N	PASS

Note: 1. Result (dBμV) = Reading (dBμV) + Factor (dB).

2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).



## Adapter: GTA92-0501000US

Power supply:	AC 120V/60Hz	Polarization	L
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**Test Graph**

**Final Data List**

NO.	Frequency [MHz]	QP Reading [dBμV]	AVG. Reading [dBμV]	Factor [dB]	QP Result [dBμV]	AVG. Result [dBμV]	QP Limit [dBμV]	AVG. Limit [dBμV]	QP Margin [dB]	AVG. Margin [dB]	Line	Remark
1	0.4967	33.50	23.68	10.06	43.56	33.74	56.06	46.06	12.50	12.32	L1	PASS
2	0.6010	23.14	15.51	10.06	33.20	25.57	56.00	46.00	22.80	20.43	L1	PASS
3	0.9930	27.11	17.12	10.07	37.18	27.19	56.00	46.00	18.82	18.81	L1	PASS
4	1.5566	26.95	17.16	10.12	37.07	27.28	56.00	46.00	18.93	18.72	L1	PASS
5	2.4877	25.85	15.64	10.22	36.07	25.86	56.00	46.00	19.93	20.14	L1	PASS
6	6.4049	27.53	14.88	10.57	38.10	25.45	60.00	50.00	21.90	24.55	L1	PASS

Note: 1. Result (dBμV) = Reading (dBμV) + Factor (dB).  
2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

Power supply:	AC 120V/60Hz	Polarization	N
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**Test Graph**

**Final Data List**

NO.	Frequency [MHz]	QP Reading [dBμV]	AVG. Reading [dBμV]	Factor [dB]	QP Result [dBμV]	AVG. Result [dBμV]	QP Limit [dBμV]	AVG. Limit [dBμV]	QP Margin [dB]	AVG. Margin [dB]	Line	Remark
1	0.4720	35.31	28.36	10.05	45.36	38.41	56.48	46.48	11.12	8.07	N	PASS
2	0.5035	33.26	26.70	10.06	43.32	36.76	56.00	46.00	12.68	9.24	N	PASS
3	0.8752	27.90	20.20	10.06	37.96	30.26	56.00	46.00	18.04	15.74	N	PASS
4	1.5607	38.23	24.67	10.12	48.35	34.79	56.00	46.00	7.65	11.21	N	PASS
5	2.5228	29.75	18.67	10.23	39.98	28.90	56.00	46.00	16.02	17.10	N	PASS
6	3.3069	27.13	16.23	10.33	37.46	26.56	56.00	46.00	18.54	19.44	N	PASS

Note: 1. Result (dBμV) = Reading (dBμV) + Factor (dB).  
2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

Version B  
Adapter: TPA-46B050100UU

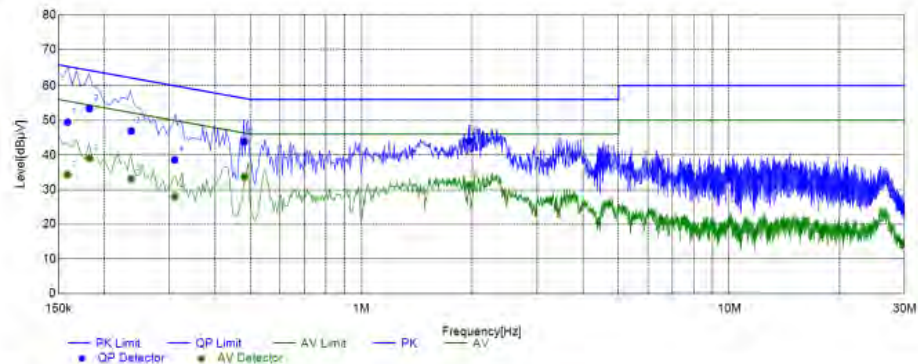
Power supply:

AC 120V/60Hz

Polarization

L

Test Graph



Final Data List

NO.	Frequency [MHz]	QP Reading [dBμV]	AVG. Reading [dBμV]	Factor [dB]	QP Result [dBμV]	AVG. Result [dBμV]	QP Limit [dBμV]	AVG. Limit [dBμV]	QP Margin [dB]	AVG. Margin [dB]	Line	Remark
1	0.1589	39.40	24.22	10.05	49.45	34.27	65.52	55.52	16.07	21.25	L1	PASS
2	0.1821	43.34	28.98	10.06	53.40	39.04	64.39	54.39	10.99	15.35	L1	PASS
3	0.2366	36.89	23.08	10.03	46.92	33.11	62.21	52.21	15.29	19.10	L1	PASS
4	0.3105	28.62	18.02	9.98	38.60	28.00	59.96	49.96	21.36	21.96	L1	PASS
5	0.4804	33.76	23.61	10.05	43.81	33.66	56.33	46.33	12.52	12.67	L1	PASS
6	1.9626	33.87	21.15	10.15	44.02	31.30	56.00	46.00	11.98	14.70	L1	PASS

Note: 1. Result (dBμV) = Reading (dBμV) + Factor (dB).

2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

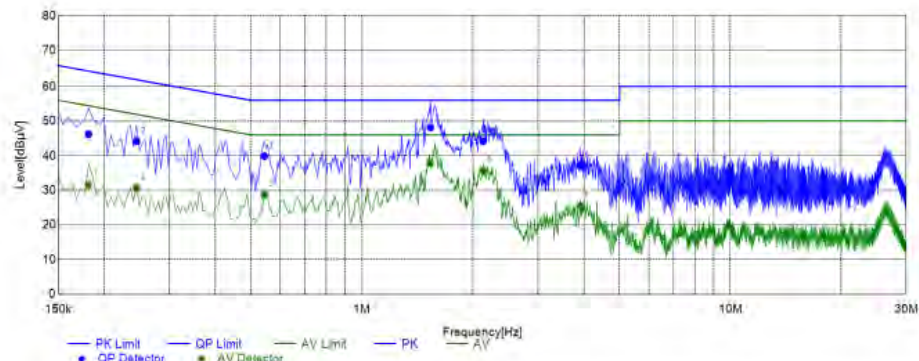
Power supply:

AC 120V/60Hz

Polarization

N

Test Graph



Final Data List

NO.	Frequency [MHz]	QP Reading [dBμV]	AVG. Reading [dBμV]	Factor [dB]	QP Result [dBμV]	AVG. Result [dBμV]	QP Limit [dBμV]	AVG. Limit [dBμV]	QP Margin [dB]	AVG. Margin [dB]	Line	Remark
1	0.1811	36.13	21.56	10.06	46.19	31.62	64.44	54.44	18.25	22.82	N	PASS
2	0.2445	34.21	20.69	10.02	44.23	30.71	61.94	51.94	17.71	21.23	N	PASS
3	0.5434	29.84	18.65	10.06	39.90	28.71	56.00	46.00	16.10	17.29	N	PASS
4	1.5339	38.06	27.74	10.11	48.17	37.85	56.00	46.00	7.83	8.15	N	PASS
5	2.1329	34.00	25.69	10.18	44.18	35.87	56.00	46.00	11.82	10.13	N	PASS
6	3.9104	26.76	15.09	10.40	37.16	25.49	56.00	46.00	18.84	20.51	N	PASS

Note: 1. Result (dBμV) = Reading (dBμV) + Factor (dB).

2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).



## Adapter: GTA92-0501000US

Power supply:	AC 120V/60Hz	Polarization	L
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**Test Graph**

**Final Data List**

NO.	Frequency [MHz]	QP Reading [dBμV]	AVG. Reading [dBμV]	Factor [dB]	QP Result [dBμV]	AVG. Result [dBμV]	QP Limit [dBμV]	AVG. Limit [dBμV]	QP Margin [dB]	AVG. Margin [dB]	Line	Remark
1	0.4762	38.81	26.10	10.05	48.86	36.15	56.41	46.41	7.55	10.26	L1	PASS
2	0.5311	38.47	26.28	10.06	48.53	36.34	56.00	46.00	7.47	9.66	L1	PASS
3	0.9950	32.24	18.60	10.07	42.31	28.67	56.00	46.00	13.69	17.33	L1	PASS
4	1.5961	33.06	22.76	10.12	43.18	32.88	56.00	46.00	12.82	13.12	L1	PASS
5	2.5868	31.75	20.80	10.24	41.99	31.04	56.00	46.00	14.01	14.96	L1	PASS
6	3.8003	28.95	17.66	10.37	39.32	28.03	56.00	46.00	16.68	17.97	L1	PASS

Note: 1. Result (dBμV) = Reading (dBμV) + Factor (dB).  
2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

Power supply:	AC 120V/60Hz	Polarization	N
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**Test Graph**

**Final Data List**

NO.	Frequency [MHz]	QP Reading [dBμV]	AVG. Reading [dBμV]	Factor [dB]	QP Result [dBμV]	AVG. Result [dBμV]	QP Limit [dBμV]	AVG. Limit [dBμV]	QP Margin [dB]	AVG. Margin [dB]	Line	Remark
1	0.1546	41.65	26.03	10.05	51.70	36.08	65.75	55.75	14.05	19.67	N	PASS
2	0.5394	34.64	20.31	10.06	44.70	30.37	56.00	46.00	11.30	15.63	N	PASS
3	0.9782	31.92	14.82	10.07	41.99	24.89	56.00	46.00	14.01	21.11	N	PASS
4	1.5363	42.31	29.52	10.11	52.42	39.63	56.00	46.00	3.58	6.37	N	PASS
5	2.6055	32.82	19.66	10.24	43.06	29.90	56.00	46.00	12.94	16.10	N	PASS
6	3.5976	30.33	17.23	10.37	40.70	27.60	56.00	46.00	15.30	18.40	N	PASS

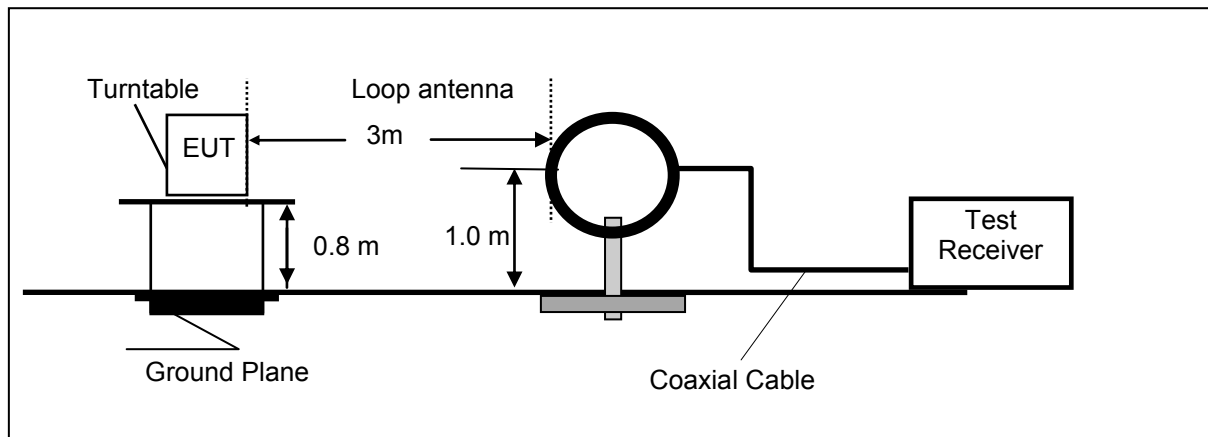
Note: 1. Result (dBμV) = Reading (dBμV) + Factor (dB).  
2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).



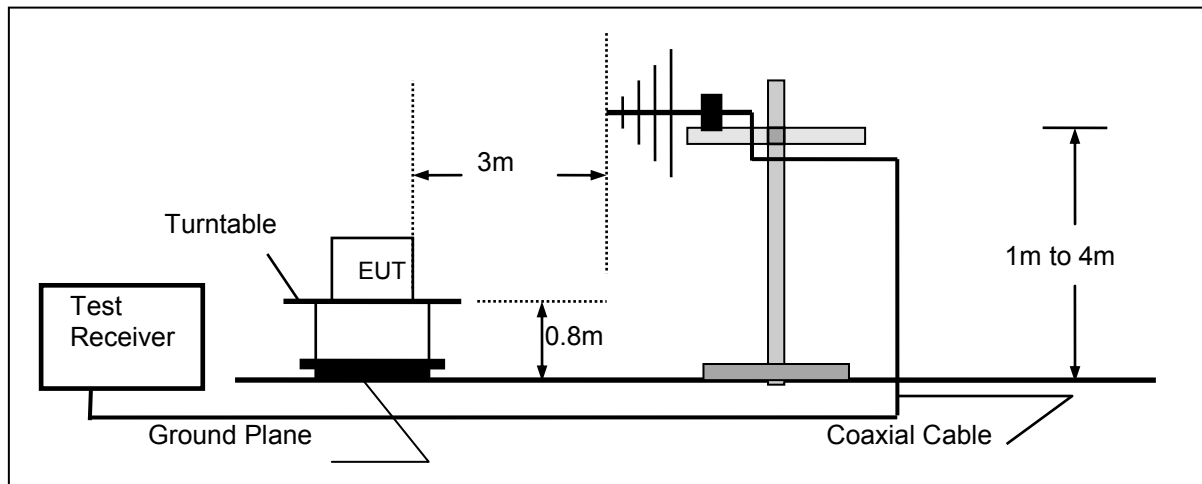
## 4.2. Radiated Emission

### TEST CONFIGURATION

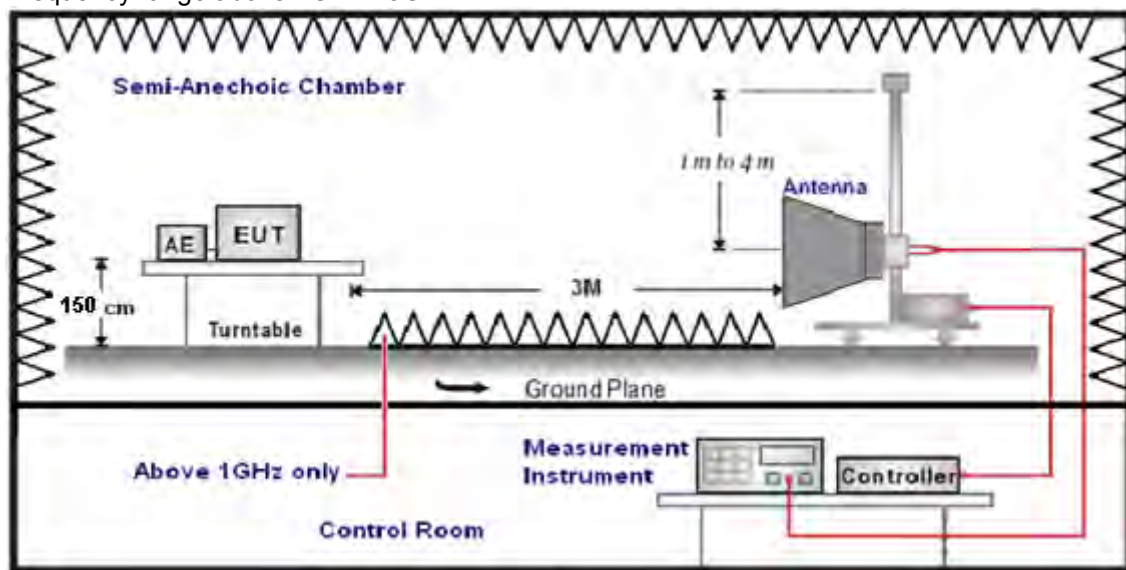
Frequency range 9 KHz – 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



**TEST PROCEDURE**

1. The EUT was placed on a turn table which is 0.8m above ground plane when testing frequency range 30MHz –1GHz;the EUT was placed on a turn table which is 1.5m above ground plane when testing frequency range 1GHz – 25GHz.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. Radiated emission test frequency band from 30MHz to 25GHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Ultra-Broadband Antenna	3
1GHz-18GHz	Double Ridged Horn Antenna	3
18GHz-25GHz	Horn Antenna	1

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

**Field Strength Calculation**

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

$$\text{Transd}=AF +CL-AG$$

**RADIATION LIMIT**

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table. According to § 15.247(d), in any 100kHz bandwidth outside the frequency band in which the EUT is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the100kHz bandwidth within the band that contains the highest level of desired power.

The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos.

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	$20\log(2400/F(KHz))+40\log(300/3)$	$2400/F(KHz)$
0.49-1.705	3	$20\log(24000/F(KHz))+40\log(30/3)$	$24000/F(KHz)$
1.705-30	3	$20\log(30)+40\log(30/3)$	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

**TEST RESULTS**

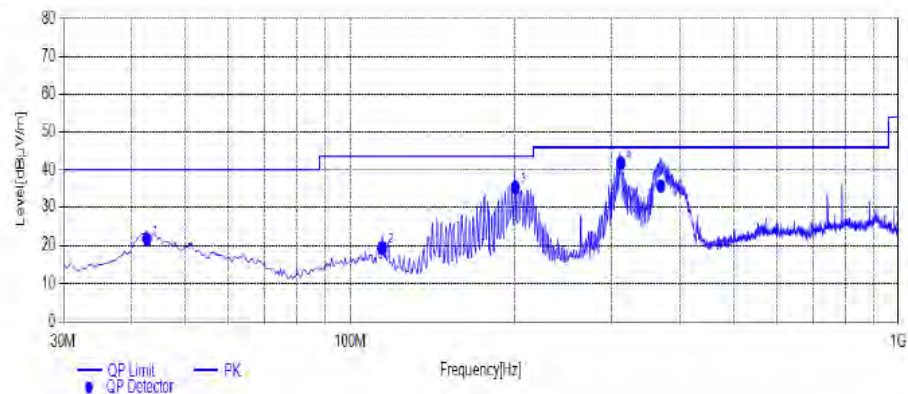
Remark: We measured Radiated Emission at 802.11b/802.11g/802.11n HT20 mode from 30 MHz to 25GHz in AC120V and the worst case was recorded.

Temperature	25°C	Humidity	60%
Test Engineer	Oliver Ou	Configurations	IEEE 802.11g (MCH)

**Version A**

Adapter: TPA-46B050100UU

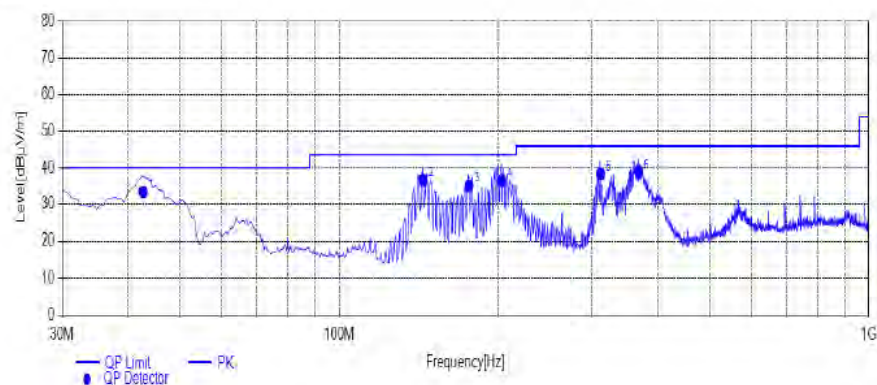
For 30MHz-1GHz

**Horizontal****Test Graph****Quasi-peak Final Data List**

NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Remark
1	42.6100	29.45	-7.83	21.62	40.00	18.38	100	292	Horizontal	PASS
2	114.3900	28.78	-9.32	19.46	43.50	24.04	100	3	Horizontal	PASS
3	200.2350	44.11	-8.69	35.42	43.50	8.08	100	53	Horizontal	PASS
4	311.7850	48.56	-6.80	41.76	46.00	4.24	100	91	Horizontal	PASS
5	369.0150	41.25	-5.63	35.62	46.00	10.38	100	101	Horizontal	PASS

Note: 1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

**Vertical****Test Graph****Quasi-peak Final Data List**

NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Remark
1	42.6100	41.25	-7.83	33.42	40.00	6.58	100	275	Vertical	PASS
2	143.9750	48.45	-11.80	36.65	43.50	6.85	100	40	Vertical	PASS
3	175.9850	45.78	-10.68	35.10	43.50	8.40	100	87	Vertical	PASS
4	202.6600	45.21	-8.73	36.48	43.50	7.02	100	90	Vertical	PASS
5	311.7850	45.11	-6.80	38.31	46.00	7.69	100	222	Vertical	PASS
6	367.5600	44.52	-5.60	38.92	46.00	7.08	100	140	Vertical	PASS

Note: 1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

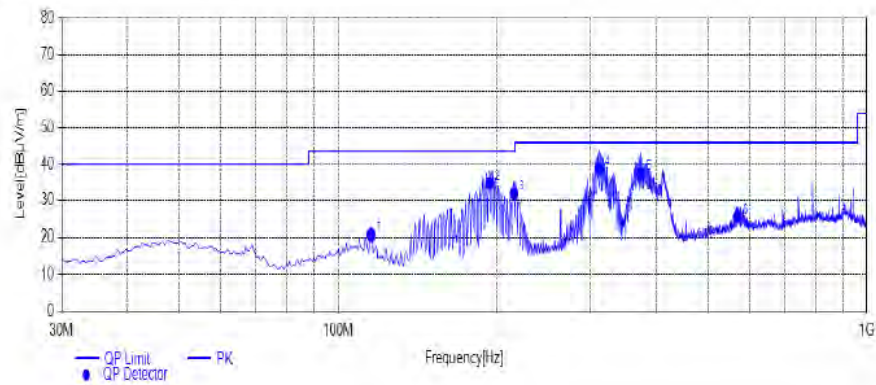
2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Adapter: GTA92-0501000US

For 30MHz-1GHz

## Horizontal

Test Graph



Quasi-peak Final Data List

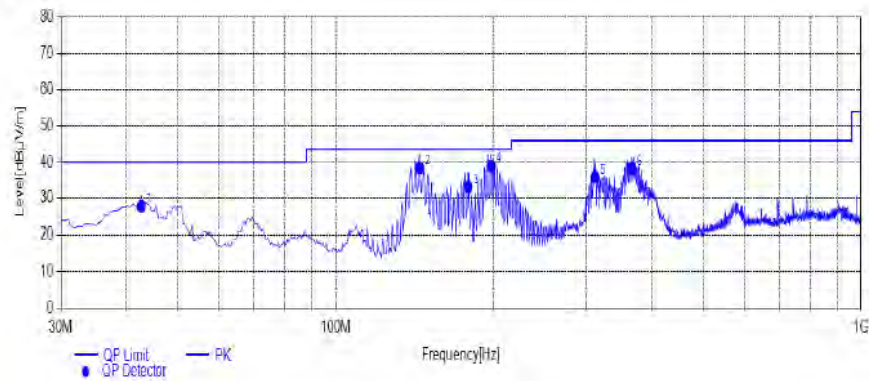
NO.	Frequency [MHz]	Reading [dBμV/m]	Factor [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Remark
1	115.3600	30.12	-9.43	20.69	43.50	22.81	100	358	Horizontal	PASS
2	193.4450	44.21	-9.63	34.58	43.50	8.92	100	84	Horizontal	PASS
3	215.2700	41.25	-9.31	31.94	43.50	11.56	100	12	Horizontal	PASS
4	312.2700	45.65	-6.81	38.84	46.00	7.16	100	74	Horizontal	PASS
5	374.3500	43.29	-5.80	37.49	46.00	8.51	100	87	Horizontal	PASS
6	568.8350	27.32	-1.80	25.52	46.00	20.48	100	238	Horizontal	PASS

Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB).

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

## Vertical

Test Graph



Quasi-peak Final Data List

NO.	Frequency [MHz]	Reading [dBμV/m]	Factor [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Remark
1	42.6100	35.56	-7.83	27.73	40.00	12.27	100	40	Vertical	PASS
2	144.4600	50.36	-11.93	38.43	43.50	5.07	100	34	Vertical	PASS
3	178.8950	44.25	-11.14	33.11	43.50	10.39	100	78	Vertical	PASS
4	197.8100	47.89	-8.95	38.94	43.50	4.56	100	106	Vertical	PASS
5	311.7850	42.69	-6.80	35.89	46.00	10.11	100	125	Vertical	PASS
6	366.5900	43.77	-5.59	38.18	46.00	7.82	100	154	Vertical	PASS

Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB).

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).



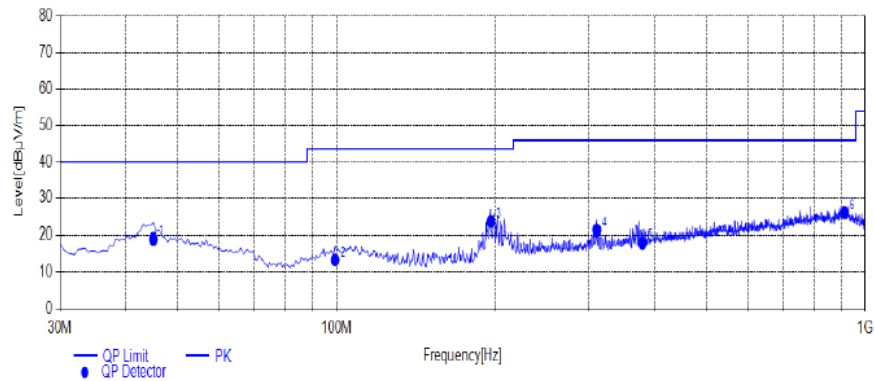
## Version B

Adapter: TPA-46B050100UU

For 30MHz-1GHz

## Horizontal

Test Graph



Quasi-peak Final Data List

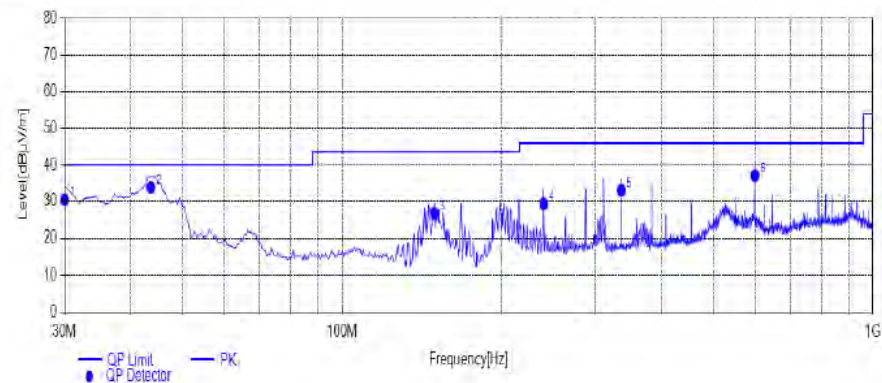
NO.	Frequency [MHz]	Reading [dBμV/m]	Factor [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Remark
1	45.0350	25.56	-6.51	19.05	40.00	20.95	100	256	Horizontal	PASS
2	99.3550	21.78	-8.40	13.38	43.50	30.12	100	184	Horizontal	PASS
3	195.8700	32.89	-9.28	23.61	43.50	19.89	100	92	Horizontal	PASS
4	310.8150	28.46	-7.14	21.32	46.00	24.68	100	118	Horizontal	PASS
5	379.2000	24.12	-6.14	17.98	46.00	28.02	100	86	Horizontal	PASS
6	914.1550	22.45	3.51	25.96	46.00	20.04	100	10	Horizontal	PASS

Note: 1. Result (dBμV/m) = Reading (dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

## Vertical

Test Graph



Quasi-peak Final Data List

NO.	Frequency [MHz]	Reading [dBμV/m]	Factor [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Remark
1	30.0000	40.21	-9.76	30.45	40.00	9.55	100	56	Vertical	PASS
2	43.5800	40.56	-6.73	33.83	40.00	6.17	100	2	Vertical	PASS
3	149.3100	39.54	-12.81	26.73	43.50	16.77	100	91	Vertical	PASS
4	240.0050	37.89	-8.62	29.27	46.00	16.73	100	6	Vertical	PASS
5	336.0350	39.47	-6.47	33.00	46.00	13.00	100	2	Vertical	PASS
6	599.8750	38.74	-1.63	37.11	46.00	8.89	100	28	Vertical	PASS

Note: 1. Result (dBμV/m) = Reading (dBμV/m) + Factor (dB) .

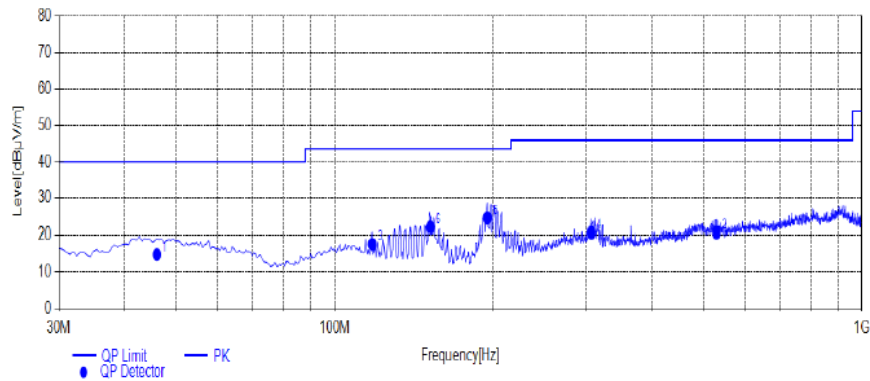
2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Adapter: GTA92-0501000US

For 30MHz-1GHz

## Horizontal

Test Graph



Quasi-peak Final Data List

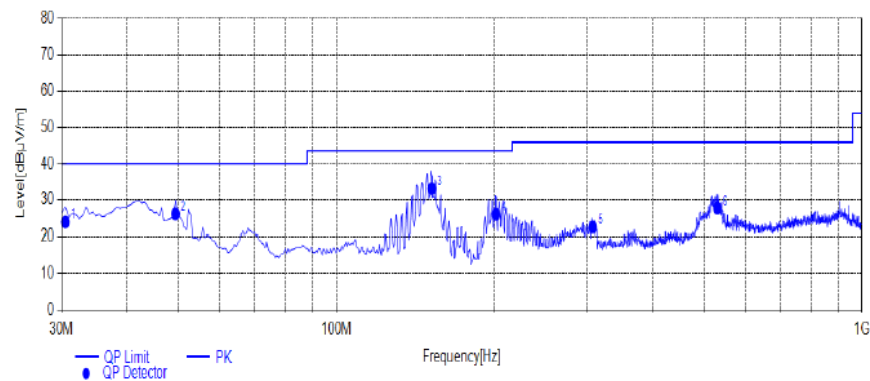
NO.	Frequency [MHz]	Reading [dBμV/m]	Factor [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Remark
1	46.0050	21.23	-6.37	14.86	40.00	25.14	100	308	Horizontal	PASS
2	530.0350	23.78	-3.09	20.69	46.00	25.31	100	128	Horizontal	PASS
3	117.7850	27.56	-9.86	17.70	43.50	25.80	100	3	Horizontal	PASS
4	306.9350	27.89	-7.24	20.65	46.00	25.35	100	121	Horizontal	PASS
5	194.9000	34.11	-9.47	24.64	43.50	18.86	100	73	Horizontal	PASS
6	151.7350	34.78	-12.68	22.10	43.50	21.40	100	358	Horizontal	PASS

Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

## Vertical

Test Graph



Quasi-peak Final Data List

NO.	Frequency [MHz]	Reading [dBμV/m]	Factor [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Remark
1	30.4850	33.56	-9.67	23.89	40.00	16.11	100	69	Vertical	PASS
2	49.4000	32.78	-6.63	26.15	40.00	13.85	100	18	Vertical	PASS
3	151.7350	45.78	-12.68	33.10	43.50	10.40	100	75	Vertical	PASS
4	201.2050	34.89	-8.86	26.03	43.50	17.47	100	138	Vertical	PASS
5	307.4200	29.78	-7.22	22.56	46.00	23.44	100	195	Vertical	PASS
6	531.0050	30.77	-3.08	27.69	46.00	18.31	100	2	Vertical	PASS

Note: 1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

**Version A:**  
**For 1GHz to 25GHz**

IEEE 802.11b

Channel 1 / 2412 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4824.00	49.37	32.44	30.25	7.95	59.51	74.00	-14.49	Peak	Horizontal
4824.00	36.20	32.44	30.25	7.95	46.34	54.00	-7.66	Average	Horizontal
4824.00	53.63	32.44	30.25	7.95	63.77	74.00	-10.23	Peak	Vertical
4824.00	35.31	32.44	30.25	7.95	45.45	54.00	-8.55	Average	Vertical

Channel 6 / 2437 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4874.00	50.88	32.52	30.31	8.12	61.21	74.00	-12.79	Peak	Horizontal
4874.00	37.16	32.52	30.31	8.12	47.49	54.00	-6.51	Average	Horizontal
4874.00	50.82	32.52	30.31	8.12	61.15	74.00	-12.85	Peak	Vertical
4874.00	35.77	32.52	30.31	8.12	46.10	54.00	-7.90	Average	Vertical

Channel 11 / 2462 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4924.00	51.73	32.68	30.27	7.88	62.02	74.00	-11.98	Peak	Horizontal
4924.00	36.48	32.68	30.27	7.88	46.77	54.00	-7.23	Average	Horizontal
4924.00	49.35	32.68	30.27	7.88	59.64	74.00	-14.36	Peak	Vertical
4924.00	32.23	32.68	30.27	7.88	42.52	54.00	-11.48	Average	Vertical

IEEE 802.11g

Channel 1 / 2412 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4824.00	49.65	32.44	30.25	7.95	59.79	74.00	-14.21	Peak	Horizontal
4824.00	36.50	32.44	30.25	7.95	46.64	54.00	-7.36	Average	Horizontal
4824.00	54.44	32.44	30.25	7.95	64.58	74.00	-9.42	Peak	Vertical
4824.00	35.03	32.44	30.25	7.95	45.17	54.00	-8.83	Average	Vertical

Channel 6 / 2437 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4874.00	49.02	32.52	30.31	8.12	59.35	74.00	-14.65	Peak	Horizontal
4874.00	37.31	32.52	30.31	8.12	47.64	54.00	-6.36	Average	Horizontal
4874.00	51.16	32.52	30.31	8.12	61.49	74.00	-12.51	Peak	Vertical
4874.00	36.09	32.52	30.31	8.12	46.42	54.00	-7.58	Average	Vertical

## Channel 11 / 2462 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4924.00	50.20	32.68	30.27	7.88	60.49	74.00	-13.51	Peak	Horizontal
4924.00	35.04	32.68	30.27	7.88	45.33	54.00	-8.67	Average	Horizontal
4924.00	49.50	32.68	30.27	7.88	59.79	74.00	-14.21	Peak	Vertical
4924.00	30.76	32.68	30.27	7.88	41.05	54.00	-12.95	Average	Vertical

## IEEE802.11 n HT20

## Channel 1 / 2412 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4824.00	50.63	32.44	30.25	7.95	60.77	74.00	-13.23	Peak	Horizontal
4824.00	36.52	32.44	30.25	7.95	46.66	54.00	-7.34	Average	Horizontal
4824.00	53.88	32.44	30.25	7.95	64.02	74.00	-9.98	Peak	Vertical
4824.00	36.26	32.44	30.25	7.95	46.40	54.00	-7.60	Average	Vertical

## Channel 6 / 2437 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4874.00	50.12	32.52	30.31	8.12	60.45	74.00	-13.55	Peak	Horizontal
4874.00	37.57	32.52	30.31	8.12	47.90	54.00	-6.10	Average	Horizontal
4874.00	51.09	32.52	30.31	8.12	61.42	74.00	-12.58	Peak	Vertical
4874.00	36.27	32.52	30.31	8.12	46.60	54.00	-7.40	Average	Vertical

## Channel 11 / 2462 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4924.00	50.13	32.68	30.27	7.88	60.42	74.00	-13.58	Peak	Horizontal
4924.00	35.71	32.68	30.27	7.88	46.00	54.00	-8.00	Average	Horizontal
4924.00	49.27	32.68	30.27	7.88	59.56	74.00	-14.44	Peak	Vertical
4924.00	32.07	32.68	30.27	7.88	42.36	54.00	-11.64	Average	Vertical



**Version B:**

IEEE 802.11b

Channel 1 / 2412 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4824.00	49.55	32.44	30.25	7.95	59.69	74.00	-14.31	Peak	Horizontal
4824.00	36.20	32.44	30.25	7.95	46.34	54.00	-7.66	Average	Horizontal
4824.00	54.69	32.44	30.25	7.95	64.83	74.00	-9.17	Peak	Vertical
4824.00	36.30	32.44	30.25	7.95	46.44	54.00	-7.56	Average	Vertical

Channel 6 / 2437 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4874.00	49.79	32.52	30.31	8.12	60.12	74.00	-13.88	Peak	Horizontal
4874.00	36.74	32.52	30.31	8.12	47.07	54.00	-6.93	Average	Horizontal
4874.00	52.18	32.52	30.31	8.12	62.51	74.00	-11.49	Peak	Vertical
4874.00	36.15	32.52	30.31	8.12	46.48	54.00	-7.52	Average	Vertical

Channel 11 / 2462 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4924.00	51.71	32.68	30.27	7.88	62.00	74.00	-12.00	Peak	Horizontal
4924.00	36.96	32.68	30.27	7.88	47.25	54.00	-6.75	Average	Horizontal
4924.00	50.20	32.68	30.27	7.88	60.49	74.00	-13.51	Peak	Vertical
4924.00	31.98	32.68	30.27	7.88	42.27	54.00	-11.73	Average	Vertical

IEEE 802.11g

Channel 1 / 2412 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4824.00	50.26	32.44	30.25	7.95	60.40	74.00	-13.60	Peak	Horizontal
4824.00	35.36	32.44	30.25	7.95	45.50	54.00	-8.50	Average	Horizontal
4824.00	52.87	32.44	30.25	7.95	63.01	74.00	-10.99	Peak	Vertical
4824.00	34.61	32.44	30.25	7.95	44.75	54.00	-9.25	Average	Vertical

Channel 6 / 2437 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4874.00	49.80	32.52	30.31	8.12	60.13	74.00	-13.87	Peak	Horizontal
4874.00	36.85	32.52	30.31	8.12	47.18	54.00	-6.82	Average	Horizontal
4874.00	51.85	32.52	30.31	8.12	62.18	74.00	-11.82	Peak	Vertical
4874.00	35.70	32.52	30.31	8.12	46.03	54.00	-7.97	Average	Vertical

## Channel 11 / 2462 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4924.00	51.23	32.68	30.27	7.88	61.52	74.00	-12.48	Peak	Horizontal
4924.00	36.00	32.68	30.27	7.88	46.29	54.00	-7.71	Average	Horizontal
4924.00	49.49	32.68	30.27	7.88	59.78	74.00	-14.22	Peak	Vertical
4924.00	31.47	32.68	30.27	7.88	41.76	54.00	-12.24	Average	Vertical

## IEEE802.11 n HT20

## Channel 1 / 2412 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4824.00	51.25	32.44	30.25	7.95	61.39	74.00	-12.61	Peak	Horizontal
4824.00	35.88	32.44	30.25	7.95	46.02	54.00	-7.98	Average	Horizontal
4824.00	54.20	32.44	30.25	7.95	64.34	74.00	-9.66	Peak	Vertical
4824.00	34.53	32.44	30.25	7.95	44.67	54.00	-9.33	Average	Vertical

## Channel 6 / 2437 MHz

Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4874.00	50.52	32.52	30.31	8.12	60.85	74.00	-13.15	Peak	Horizontal
4874.00	36.66	32.52	30.31	8.12	46.99	54.00	-7.01	Average	Horizontal
4874.00	51.65	32.52	30.31	8.12	61.98	74.00	-12.02	Peak	Vertical
4874.00	35.48	32.52	30.31	8.12	45.81	54.00	-8.19	Average	Vertical

## Channel 11 / 2462 MHz

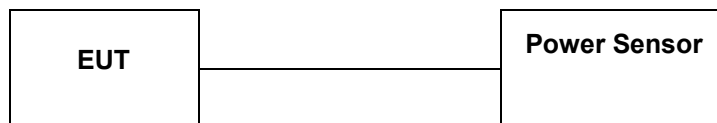
Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4924.00	51.37	32.68	30.27	7.88	61.66	74.00	-12.34	Peak	Horizontal
4924.00	36.59	32.68	30.27	7.88	46.88	54.00	-7.12	Average	Horizontal
4924.00	50.24	32.68	30.27	7.88	60.53	74.00	-13.47	Peak	Vertical
4924.00	32.45	32.68	30.27	7.88	42.74	54.00	-11.26	Average	Vertical

## REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Factor
3. Margin value = Limit value - Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. The other emission levels were very low against the limit.

### 4.3. Maximum Peak Output Power

#### TEST CONFIGURATION



#### TEST PROCEDURE

According to KDB558074 D01 DTS Measurement Guidance Section 9.1 Maximum peak conducted output power, 9.1.2. and Average conducted output power, 9.2.3.1.

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

The maximum Average conducted output power may be measured using a wideband RF power meter with a thermocouple detector or equivalent. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

#### LIMIT

The Maximum Peak Output Power Measurement is 30dBm.

#### TEST RESULTS

Temperature	23.4°C	Humidity	52.7%
Test Engineer	Oliver Ou	Configurations	IEEE 802.11b/g/n

##### **Version A:**

Type	Channel	Output power PK (dBm)	Output power AV (dBm)	Limit (dBm)	Result
802.11b	01	17.46	14.38	30.00	Pass
	06	17.17	14.15		
	11	17.16	14.45		
802.11g	01	17.54	14.00	30.00	Pass
	06	18.08	14.77		
	11	17.86	14.66		
802.11n(HT20)	01	18.07	14.44	30.00	Pass
	06	18.78	14.87		
	11	18.67	14.03		

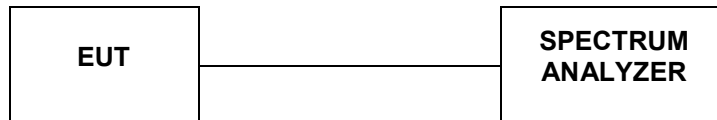
##### **Version B:**

Type	Channel	Output power PK (dBm)	Output power AV (dBm)	Limit (dBm)	Result
802.11b	01	17.25	14.15	30.00	Pass
	06	17.34	14.20		
	11	17.29	14.38		
802.11g	01	17.41	14.14	30.00	Pass
	06	17.89	14.59		
	11	17.96	14.74		
802.11n(HT20)	01	18.12	14.39	30.00	Pass
	06	18.34	14.41		
	11	18.45	14.15		

Note: 1. The test results including the cable loss.  
Duty cycle used in all test items: 100%

#### 4.4. Power Spectral Density

##### TEST CONFIGURATION



##### TEST PROCEDURE

According to KDB 558074 D01 Method PKPSD (peak PSD) This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance, and is optional if the maximum conducted (average) output power was used to demonstrate compliance.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
4. Set the VBW  $\geq 3 \text{ RBW}$ .
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

##### LIMIT

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

##### TEST RESULTS

Temperature	23.4°C	Humidity	52.7%
Test Engineer	Oliver Ou	Configurations	IEEE 802.11b/g/n

Type	Channel	Power Spectral Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
802.11b	01	-12.88	8.00	Pass
	06	-11.77		
	11	-7.01		
802.11g	01	-14.99	8.00	Pass
	06	-13.3		
	11	-6.96		
802.11n(HT20)	01	-15.14	8.00	Pass
	06	-13.51		
	11	-6.35		

