

TEST REPORT

According to : FCC 47CFR part 15 subpart C § 15.247

Test Report No.	:	CTK-2014-01170	
Date of Issue	:	2014-09-25	
FCC ID	:	ADMADP-611	
Model/Type No.	:	ADP-611	
Kind of Product	:	Digital Pen	
Applicant	:	Pen Generations, Inc.	
Applicant Address	:	8th Fl.,Pangyotechnovalley SOI Bundang-gu, Seongnam-si, Gy	LID Space, 220 Pangyoyeokro reonggi-do, Korea 463-400
Manufacturer	:	Pen Generations, Inc.	
Manufacturer Address	:	8th Fl.,Pangyotechnovalley SOI Bundang-gu, Seongnam-si, Gy	LID Space, 220 Pangyoyeokro eonggi-do, Korea 463-400
Contact Person	:	Sang Nyeon Cho / Assistant Ma	anager
Telephone	:	+82-31-600-0840	
Received Date	:	2014-09-04	
Test period Test Results	:	Start : 2014-09-19	End : 2014-09-24

The test results presented in this report relate only to the object tested.

Tested by

T. Lee

Young-taek Lee Test Engineer Date: 2014-09-25 Reviewed by

J. Pork

Young-Joon, Park Technical Manager Date: 2014-09-25

Test Report No.: CTK-2014-01170 Date: 2014-09-25 This Report shall not be Page 1 of 34

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REPORT REVISION HISTORY

Date	Revision	Page No
2014-09-25	Issued (CTK-2014-01170)	All

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1.0 General Product Description

Equipment model name	: ADP-611	
Serial number	: Prototype	
EUT condition	: Pre-production, no	ot damaged
Antenna type	: Chip antenna	Gain 1.99 dBi
Frequency Range	: 2402 MHz – 2480	MHz
RF output power	: -4.751 dBm Peak	Conducted
Number of channels	: 40	
Type of Modulation	: GFSK (Bluetooth 4	.0 - LE)
Rated Channel spacing	: 2 MHz	
Power Source	: DC 3.7 V (Recharg	eable Lithium Polymer Battery)

1.1 Tested Frequency

	LOW	MID	HIGH
Frequency (MHz)	2402	2440	2480



1.2 **Duty Cycle**

Duty Cycle		63.9	9%	
Agilent Spectrum Analyzer - Swept SA	AC SENSE:INT	ALIGN AU	TO 03:41:53 PM Sep 20, 2014	
Marker 3 Δ 626.000 μs	Triai Ence Dun	Avg Type: Log-P	WT TRACE 123456	Marker
Input: RF PNO: IFGair	Fast +++ Trig. Free Run n:Low Atten: 20 dB		DET PNNNN	Marker Table
			ΔMkr3 626.0 μs	<u>On</u> Off
10 dB/div Ref 10.00 dBm			0.30 dB	
0.00	<u>24</u> 1	3∆1		Marker Count
-10.0				[Off]
-20.0				
-30.0				Couple
-40.0				Markers
-50.0				0n <u>0n</u>
-60.0	W. Armania and Antonia	M	Mandandanda	
-70.0				
-80.0				
Center 2.402000000 GHz			Span 0 Hz	
Res BW 3.0 MHz	VBW 3.0 MHz	Sweep	2.000 ms (1001 pts)	
MKR MODE TRC SCL X	Y 9.50 dBm	FUNCTION FUNCTION WI	DTH FUNCTION VALUE	
2 Δ1 1 t (Δ) 400.0) μs (Δ) 0.45 dB			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Jµs (Δ) 0.30 dB			All Markers Off
5				
7				
9		1 2		More
				2 of 2
MSG		ST	ATUS	

1.3 Model Differences

Not applicable

1.4 **Device Modifications**

The following modifications were necessary for compliance:

Not applicable

1.5 **Peripheral Devices**

Device	Manufacturer	Model No.	Serial No.
BLUETOOTH TESTER	TESCOM	TC-3000C	3000C000377
Notebook Computer	TOSHIBA CORPORATION	PSL48K-00L00K	Z7037782R
AC/DC ADAPTER	TOSHIBA CORPORATION	ADP-75SB	708W15Y01MK



1.6 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

1.7 Test Facility

The measurement facility is located at 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggido, Korea. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.8 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Registration Number	Logo
USA	FCC	FCC Part 15 & 18 EMI (Electromagnetic Interference / Emission)	805871	FC
JAPAN	VCCI	VCCI V-3 EMI (Electromagnetic Interference / Emission)	C-986 T-1843 R-3627 G-387	V©I
KOREA	MSIP	EMI (Electromagnetic Interference / Emission) EMS (Electromagnetic Susceptibility / Immunity)	KR0025	



2.0 Summary of tests

FCC Part Section(s)	Parameter	Limit	Test Condition	Status (note 1)
15.247(a)	6 dB Bandwidth	> 500 kHz		С
15.247(b)	Maximum Output Power	< 1 Watt		С
15.247(d)	Conducted Spurious emission	> 20 dBc	Conducted	С
15.247(d)	Band Edge	> 20 dBc		С
15.247(e)	Transmitter Power Spectral	< 8 dBm @ 3 kHz		С
1012 17 (0)	Density			С
15.209	Field Strength of Harmonics	15.209(a)	Radiated	С
15.207	AC Conducted Emissions	15.207(a)	Line Conducted	С

<u>Note 1</u>: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

The sample was tested according to the following specification: - FCC Part 15.247, ANSI C63.4-2003

The tests were performed according to the method of measurements prescribed in 558074 D01 DTS Meas Guidance v03r01.



2.1 Technical Characteristic Test

2.1.1 6dB Bandwidth

Procedure:

The bandwidth at 6dB below the highest in-band spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate frequencies.

After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 6dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 100 kHzVBW = 300 kHz (VBW \ge 3 x RBW) Trace = Max hold

Sweep = autoDetector function = peak

Measurement Data:

Frequency	Test Results	
(MHz)	Measured Bandwidth (MHz)	Result
2402	0.693	Complies
2440	0.687	Complies
2480	0.694	Complies

Test mode : Continuous modulated carrier

Minimum Standard:

6 dB Bandwidth > 500kHz

See next pages for actual measured spectrum plots.



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2402 MHz



2440 MHz

STATUS





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2480 MHz





2.1.2 Maximum peak Conducted Output Power

Test Location

RF Test Room

Test Procedures

Maximum Peak Output Power from the EUT were measured according to the dictates power measurement procedure in section 9.1.1 of KDB 558074.

This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.

- a) Set the RBW \geq DTS bandwidth
- c) Set the span \geq 3 x RBW
- e) Detector = peak
- b) Set the VBW \geq 3 x RBW
- d) Sweep time = auto couple
- e) Trace mode= max hold
- f) Allow trace to fully stabilize.
- q) Use peak marker function to determine the peak amplitude level.

Limit

< 1 W (30 dBm)

Test Results

Fraguanay	Test results				
(MHz)	Reading power(dBm)	Peak output power (mW)	Result		
2402	-7.532	0.177	Complies		
2440	-6.047	0.248	Complies		
2480	-4.751	0.335	Complies		

Test mode : Continuous modulated carrier

See next pages for actual measured spectrum plots.



2402 MHz

CX SD 0 AC SENSE:INT ALIGNAUTO 04:06:13PM 5ep 20, 2014 Peak Marker 1 2.402200000000 GHz Trig: Free Run Input: RF Avg Type: Log-Pwr PND: Fast IFGain:Low Trig: Free Run Atten: 20 dB Avg Type: Log-Pwr Avg Hold>100/100 Trig: Pree Run Atten: 20 dB Avg Type: Log-Pwr Avg Hold>100/100 Trig: Pree Run Det P NNNNN Ref Offset 0.5 dB Mkr1 2.402 20 GHZ Trig: Pree Run Atten: 20 dB Mkr1 2.402 20 GHZ Trig: Pree Run Det P NNNNN	k Search Next Peak
Ref Offset 0.5 dB	Next Peak
10 dB/div Ref 10.00 dBm -7.532 dBm	
	Next Right
-10.0	Next Left
-30.0 -40.0	arker Delta
-50.0 -60.0	Mkr→CF
-70.0	⟨r→RefLvl
Center 2.40200 GHz #Res BW 3.0 MHz VBW 50 MHz Sweep 1.00 ms (1001 pts)	More 1 of 2

2440 MHz





2480 MHz

🍺 Agilent Spe	ctrum Analyze	r - Swept SA								
Marker 1	^{50 Ω} 2.47970	000000	GHz	AC SE	NSE:INT	Avg Type	ALIGNAUTO : Log-Pwr >100/100	04:04:45P TRAC TYI	M Sep 20, 2014 CE 1 2 3 4 5 6 PE M WWWWWWW	Peak Search
10 dB/div	Ref Offset Ref 10.0	0.5 dB 0 dBm	FGain:Low	Atten: 20	dB		Mkr	1 2.479 -4.7	70 GHz 51 dBm	Next Peak
0.00										Next Right
-10.0										Next Left
-30.0 -40.0	all and a second									Marker Delta
-50.0										Mkr→CF
-70.0										Mkr→RefLvl
Center 2.4 #Res BW	48000 GHz 3.0 MHz		VBW	50 MHz			Sweep	Span 2 1.00 ms (0.00 MHz 1001 pts)	More 1 of 2
MSG							STATUS			



2.1.3 Power Spectral Density

Procedure:

Power Spectral Density from the EUT were measured according to the dictates PKPSD measurement procedure in section 10.2 of KDB 558074.

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance.

a) Set analyzer center frequency to DTS channel center frequecy.

- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set the RBW to : 3 kHz \leq RBW \leq 100 kHz
- d) Set the VBW \geq 3 x RBW
- f) Sweep time = auto couple
- e) Detector = peak

g) Trace mode = max hold

h) Allow trace to fully stabilize

i) Use the peak marker function to determine the maximum amplitude level within the RBW.

j) If measured value exceed limit, reduce RBW(no less than 3 kHz) and repeat.

Test mode : Continuous modulated carrier

Frequency	Test Results			
(MHz)	dBm	Result		
2402	-8.115	Complies		
2440	-6.857	Complies		
2480	-5.276	Complies		

Minimum Standard:

Power Spectral Density	< 8dBm @ 3 kHz BW
------------------------	-------------------

See next pages for actual measured spectrum plots.



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Power Density Measurement

2402 MHz



2440 MHz

D Agile	ent Spec	trum Analyze	r - Swept SA							
<mark>.xı</mark> Mark	(er 1	^{50 Ω} 2.44000	6000000	GHz	AC SENSE:IN	Avg Typ	ALIGNAUTO e: Log-Pwr	04:03:44 PM S TRACE	Sep 20, 2014	Peak Search
10 dB	div.	Ref Offset Ref 10.0	Input: RF 0.5 dB 0 dBm	PNO: Far G IFGain:Low	Atten: 20 dB		Mkr1 2.	440 006 -6.857	0 GHz 7 dBm	Next Peak
0.00					1					Next Right
-10.0 - -20.0 -										Next Left
-30.0 - -40.0 -	and the second s									Marker Delta
-50.0 -										Mkr→CF
-70.0 -										Mkr→RefLvl
Cent #Res	er 2.4 BW 1	400000 G 100 kHz	iHz	#VBV	v 300 kHz		Sweep	Span 1.5 1.00 ms (10	00 MHz 001 pts)	More 1 of 2
MSG							STATUS	·		





2480 MHz



2.1.4 Band - edge

Procedure:

The bandwidth at 20dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate frequencies.

After the trace being stable, Use the marker-to-peak function to measure 20 dB down both sides of the intentional emission.

The spectrum analyzer is set to:

Center frequency = the highest,	, middle and the lowest channels
RBW = 100 kHz	VBW = 300 kHz (VBW \ge 3 x RBW)
Span = 50 MHz	Detector function = peak
Trace = Max hold	Sweep = auto

Measurement Data: Complies

- All conducted emission in any 100kHz bandwidth outside of the spread spectrum band was at least 20dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.

Minimum Standard:	> 20 dBc

See next pages for actual measured spectrum plots.





Band-edge Measurements







Band – edge (at 20 dB blow) – Low channel Frequency Range = 30 MHz \sim 10th harmonic





Band – edge (at 20 dB blow) – Mid channel Frequency Range = 30 MHz $\sim 10^{th}$ harmonic





Band – edge (at 20 dB blow) – High channel Frequency Range = 30 MHz $\sim 10^{th}$ harmonic





2.1.5 Field Strength of Emissions

Test Location

 \boxtimes 10 m SAC (test distance : \square 10 m, \boxtimes 3 m) \boxtimes 3 m SAC (test distance : 3 m)

Configuration



Test Procedures

- 1) In the frequency range of 9 kHz to 30 MHz, magnetic field is measured with Loop Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.
- 2) In the frequency rage above 30 MHz, Bi-Log Test Antenna(30 MHz to 1 GHz) and Horn Test Antenna(above 1 GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is carried from 1m to 4m above the ground to determine the maximum value of the field strength. The emissions levels at both horizontal and vertical polarizations should be tested.

The spectrum analyzer is set to:

```
Frequency Range = 9 kHz ~ 25 GHz (2.4 GHz 10^{th} harmonic)
RBW = 1 MHz for f \geq 1 GHz, 100 kHz for f < 1 GHz, 9 kHz for f < 30 MHz
VBW \geq RBW
Sweep = auto
```



Limit

§ 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	MHz	MHz	GHz
0.09-0.11	8.37626-8.38675	73-74.6	399.9-410	2690-2900	10.6-12.7
¹ 0.495-0.505	8.41425-8.41475	74.8-75.2	608-614	3260-3267	13.25-13.4
2.1735-2.1905	12.29-12.293	108-121.94	960-1240	3332-3339	14.47-14.5
4.125-4.128	12.51975-12.52025	123-138	1300-1427	3345.8-3358	15.35-16.2
4.17725-4.17775	12.57675-12.57725	149.9-150.05	1435-1626.5	3600-4400	17.7-21.4
4.20725-4.20775	13.36-13.41	156.52475- 156.52525	1645.5-1646.5	4500-5150	22.01-23.12
6.215-6.218	16.42-16.423	156.7-156.9	1660-1710	5350-5460	23.6-24
6.26775-6.26825	16.69475-16.69525	162.0125-167.17	1718.8-1722.2	7250-7750	31.2-31.8
6.31175-6.31225	16.80425-16.80475	167.72-173.2	2200-2300	8025-8500	36.43-36.5
8.291-8.294	25.5-25.67	240-285	2310-2390	9000-9200	² Above 38.6
8.362-8.366	37.5-38.25	322-335.4	2483.5-2500	9300-9500	

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

§ 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown is Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



§ 15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table :

Frequency(MHz)	Field Strength	Field Strength dBuV/m@3m	Deasurement Distance (meters)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705-30	30	-	30
30-88	100**	40	3
88-216	150**	43.5	3
216-960	200**	46	3
Above 960	500	54	3

** Except as provided in 15.209(g).fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72MHz, 76-88MHz, 174-216MHz, 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g.15.231 and 15.241.

Note :

- 1) For above 1 GHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
- 2) For above 1 GHz, limit field strength of harmonics : 54 dBuV/m@3m (AV) and 74 dBuV/m@3m (PK)
- For measurement above 1GHz, the resolution bandwidth is set to 1 MHz and video bandwidth is set to 1 MHz for peak measurement and 10 Hz for average measurement.(Duty Cycle is > 98%,)
- 4) Duty Cycle is < 98%, VBW setting will need to > 1/T.







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Test Results

1) 9 kHz to 30 MHz

EUT	Digital Pen	Measurement Detail		
Model	ADP-611	Frequency Range	9 kHz – 30 MHz	
Test mode	Continuous modulated carrier	Detector function	Quasi-Peak	

The requirements are:

 \boxtimes Complies

Frequency	Measured Data	Margin	Remark
(MHz)	(dBuV/m)	(dB)	
-	-	-	See note

Note :

The amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

Distance extrapolation factor = 40 log (specific distance / test distance) (dB)



2) 30 MHz to 1 GHz

Test mode : Continuous modulated carrier, High Channel(2480 MHz)

EUT	Digital Pen	Measurement Detail	
Model	ADP-611	Frequency Range	Below 1000MHz
Mode	Continuous modulated carrier	Detector function	Quasi-Peak

The requirements are:

⊠ Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
837.283	41.7	4.3	Peak



No.	Frequency	(P)	Reading	c.f	Result	Limit	Margin	Height	Angle
1927	[MHz]	640	[dB(uV)]	[dB(1/m)]	PK [dB(uV/m)]	QP [dB(uV/m)]	QP [dB]	[cm]	[deg]
1	35.941	V	29.8	-9.0	20.8	40.0	19.2	205.0	233.0
2	61.161	V	32.9	-18.7	14.2	40.0	25.8	100.0	201.0
3	63.950	V	37.2	-18.6	18.6	40.0	21.4	100.0	89.0
4	64.556	V	33.4	-18.6	14.8	40.0	25.2	205.0	308.0
5	89.776	V	30.8	-15.4	15.4	43.5	28.1	100.0	89.0
6	837.283	Н	38.2	3.5	41.7	46.0	4.3	400.0	313.0

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3) above 1 GHz

EUT	Digital Pen	Measurement Detail	
Model	ADP-611	Frequency Range	1-25GHz
Channel	Low (2402 MHz)	Detector function	Average / Peak

Remarks

We have tested three mode (X, Y, Z). The worst mode (X axis) for final test.

The requirements are:

 \boxtimes Complies

Frequency	Measured Data	Margin	Remark
(MHz)	(dBuV/m)	(dB)	
4804	25.7	28.3	Average

Test Data

Frequency	Frequency Reading [dBuV/m] Pol. Heig		Height	Correction Factor	Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
[MHz]	AV / Peak		[m]	Antenna + Amp. Gain + Cable	AV / Peak	AV / Peak	AV / Peak
4804.00	12.8 22.9	V	1.0	12.9	54.0 74.0	25.7 35.8	28.3 38.2

Restricted band edge test data

Measured frequency range : 2310-2390 MHz, 2483.5-2500 MHz

Frequency	Reading [dBuV/m]	Pol.	ol. Height	Correction Factor	Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
[MHz]	AV / Peak		[m]	Antenna + Amp. Gain + Cable	AV / Peak	AV / Peak	AV / Peak
		No emis	sions were d	letected at a level greater than 20dB	below limit.		



EUT	Digital Pen	Measurement Detail	
Model	ADP-611	Frequency Range	1-25GHz
Channel	Mid (2440 MHz)	Detector function	Average / Peak

Remarks

We have tested three mode (X, Y, Z). The worst mode (X axis) for final test.

The requirements are:

⊠ Complies

Frequency	Measured Data	Margin	Remark
(MHz)	(dBuV/m)	(dB)	
4880	27.6	26.4	Average

Test Data

Frequency	Reading		Hoight	Correction	Limits	Result	Margin
Frequency	[dBuV/m]	Pol.	neight	Factor	[dBuV/m]	[dBuV/m]	[dB]
[MHz]	AV / Peak		[m]	Antenna + Amp. Gain + Cable	AV / Peak	AV / Peak	AV / Peak
4880.00	14.8 24.6	V	1.0	12.8	54.0 74.0	27.6 37.4	26.4 36.6



EUT	Digital Pen	Measurement Detail	
Model	ADP-611	Frequency Range	1-25GHz
Channel	High (2480 MHz)	Detector function	Average / Peak

Remarks

We have tested three mode (X, Y, Z). The worst mode (X axis) for final test.

The requirements are:

 \boxtimes Complies

Frequency	Measured Data	Margin	Remark
(MHz)	(dBuV/m)	(dB)	
4960	28.3	25.7	Average

Test Data

Frequency	Reading [dBuV/m]	Pol.	Height	Correction Factor	Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
[MHz]	AV / Peak		[m]	Antenna + Amp. Gain + Cable	AV / Peak	AV / Peak	AV / Peak
4960.00	15.5 25.6	V	1.0	12.8	54.0 74.0	28.3 38.4	25.7 35.6

Restricted band edge test data

Measured frequency range : 2310-2390 MHz, 2483.5-2500 MHz

Frequency	Reading		Hoight	Correction	Limits	Result	Margin			
	[dBuV/m]	Pol.	Height	Factor	[dBuV/m]	[dBuV/m]	[dB]			
[MHz]	AV / Peak		[m]	Antenna + Amp. Gain + Cable	AV / Peak	AV / Peak	AV / Peak			
	No omissions were detected at a lovel greater than 20dP below limit									

No emissions were detected at a level greater than 20dB below limit.



2.1.6 AC Conducted Emissions

Test Location

Shielded Room

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Procedures

The EUT was placed on a non-metallic table 0.8m above the metallic, grounded floor and 0.4m from the reference ground plane wall. The distance to other metallic surfaces was at least 0.8m.

Amplitude measurements were performed with a quasi-peak detector and an average detector.

Limit

- 15.207(a)

Frequency	Conducted Limit (dBuV)					
(MHz)	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

The requirements are:

 \boxtimes Complies

Test mode : Continuous modulated carrier, High Channel(2480 MHz)

Frequency	Measured Data	Margin	Remark
(MHz)	(dBuV/m)	(dB)	
0.4785	44.6	11.7	Quasi-peak



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Test Data



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.478500	42.3	1000.0	9.000	On	L1	9.9	14.1	56.4
1.792500	41.6	1000.0	9.000	On	L1	9.7	14.4	56.0
2.319000	40.0	1000.0	9.000	On	L1	9.7	16.0	56.0
3.709500	41.3	1000.0	9.000	On	L1	9.7	14.7	56.0
8.349000	44.8	1000.0	9.000	On	L1	9.8	15.2	60.0
9.244500	45.5	1000.0	9.000	On	L1	9.8	14.5	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.234500	30.3	1000.0	9.000	On	L1	9.7	15.7	46.0
1.549500	30.7	1000.0	9.000	On	L1	9.7	15.3	46.0
2.233500	31.2	1000.0	9.000	On	L1	9.7	14.8	46.0
4.087500	31.4	1000.0	9.000	On	L1	9.7	14.6	46.0
8.389500	37.3	1000.0	9.000	On	L1	9.8	12.7	50.0
9.240000	38.1	1000.0	9.000	On	L1	9.8	11.9	50.0



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Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.478500	44.6	1000.0	9.000	On	N	9.9	11.7	56.4
2.103000	40.1	1000.0	9.000	On	N	9.7	15.9	56.0
2.602500	41.0	1000.0	9.000	On	N	9.7	15.0	56.0
4.668000	39.4	1000.0	9.000	On	Ν	9.7	16.6	56.0
8.304000	44.7	1000.0	9.000	On	N	9.8	15.3	60.0
9.267000	44.8	1000.0	9.000	On	Ν	9.8	15.2	60.0

Final Result 2

Frequency	CAverage	Meas.	Bandwidth	Filter	Line	Corr.	Margin	Limit
(MHz)	(dBµV)	Time	(kHz)			(dB)	(dB)	(dBµV)
		(ms)						
0.474000	30.1	1000.0	9.000	On	Ν	9.9	16.4	46.4
1.540500	27.8	1000.0	9.000	On	N	9.7	18.2	46.0
1.959000	27.2	1000.0	9.000	On	Ν	9.7	18.8	46.0
4.051500	31.1	1000.0	9.000	On	Ν	9.7	14.9	46.0
8.344500	36.7	1000.0	9.000	On	Ν	9.8	13.3	50.0
9.267000	37.2	1000.0	9.000	On	Ν	9.8	12.8	50.0

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APPENDIX A – Test Equipment Used For Tests

	Name of Equipment	Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date
1	Signal Analyzer	Agilent	N9020A	MY48011598	2013-11-08	2014-11-08
2	EMI Test Receiver	Rohde & Schwarz	ESCI7	100814	2013-12-06	2014-12-06
3	EMI Test Receiver	Rohde & Schwarz	ESR	101088	2014-07-29	2015-07-29
4	EMI Test Receiver	Rohde & Schwarz	ESU40	100336	2014-05-15	2015-05-15
5	Bilog Antenna	Schaffner	CBL6111C	2551	2014-05-08	2016-05-08
6	Double Ridged Guide Antenna	ETS-Lindgren	3117	00154525	2013-07-03	2015-07-03
7	Double Ridged Guide Antenna	ETS-Lindgren	3116	00062916	2013-03-20	2015-03-20
8	Active Loop Antenna	SCHWARZBECK	FMZB 1513	1513-126	2014-05-19	2016-05-19
9	Attenuator	Rohde & Schwarz	DNF	272.4110.50-1	2013-11-12	2014-11-12
10	PREAMPLIFIER	Agilent	8449B	3008A02307	2013-11-08	2014-11-08
11	AMPLIFIER	Sonoma Instrument Co.	310	291721	2013-03-21	2015-02-06
12	Band Reject Filter	Wainwright Instruments GmbH	WRCGV 2400/2483- 2375/2505- 50/10EE	2	2014-08-25	2015-08-25
13	Signal Generator	Agilent	E4432B	US40054094	2013-11-08	2014-11-08
14	Signal Generator	HP	8341B	2819A01563	2013-11-08	2014-11-08
15	DC Power Supply	Topward	6303D	711196	2014-03-20	2015-03-20
16	LISN	Rohde & Schwarz	ENV216	101151	2013-11-08	2014-11-08
17	BLUETOOTH TESTER	TESCOM	TC-3000C	3000C000377	2013-11-08	2014-11-08