



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AU0058451(1) Date : 30 Sep 2016

Application No. : LU034109(8)

Applicant : Asian Express Holdings Limited
Room 1702 Sino Centre,
582 - 592 Nathan Road Mongkok Kowloon

Sample Description : One(1) item of submitted sample stated to be

Sample Description	Model No.
Controller of Proton Micro Drone	HS-2419, HS-2420, HS-2421, HS-2422, HS-2423, HS-2424

Sample registration No. : RU039699-001
Radio Frequency : 2405MHz – 2476MHz Transceiver
Rating : 2 x 1.5V AAA size batteries
No. of submitted sample : Two (2) set (s)

Date Received : 23 Sep 2016

Test Period : 12 Sep 2016 to 27 Sep 2016

Test Requested : FCC Part 15 Certification, FCC Part 15 Verification Procedure

Test Method : 47 CFR Part 15 (10-1-15 Edition)
ANSI C63.4 – 2014, ANSI C63.10 – 2013

Test Engineer : Mr. LEUNG Shu-kan, Ken


Test Result : See attached sheet(s) from page 2 to 62.

Conclusion : The submitted sample was found to comply with requirement of FCC Part 15 Subpart B and C.

Remark : All six models are the same in circuitry and components and construction, and therefore model HS-2419 was chosen to be the representative of the test sample. The difference(s) between the tested model and the declared model(s) is outlook

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____


Mr. WONG Lap-pong, Andrew
Manager
Electrical Division

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FCC ID: VLEHS2419T



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1 General Information

1.1 General Description

The equipment under test (EUT) is a controller for Proton Micro Drone. The EUT is power by 2 x 1.5V AAA size batteries. It operates at 2405MHz – 2476MHz. There are buttons and joysticks on the EUT. When the buttons are pressed or the joysticks are moved, the EUT will transmit radio control signal to receiver.

The brief circuit description is listed as follows:

- U1 and its associated circuit act as MCU
- U1 (module) and its associated circuit act as RF circuit
- Y1 and its associated circuit act as oscillator
- K1, K2, K3, K4, K5, K6, K7, K8, K9, K10 and its associated circuit act as copter control



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1.2 Location of the test site

FCC Registered Test Site Number: 552221

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013. A Semi-Anechoic Chamber Testing Site is set up for investigation and located at:

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
Hong Kong.

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.10 – 2013. A shielded room is located at :

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
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1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date	Calibration Period
EMI Test Receiver	R&S	ESCI	100152	27 Sep 2016	1Year
Spectrum Analyzer	R&S	FSV40	100964	09 Feb 2017	1Year
Broadband Antenna	Schaffner	CBL6112B	2718	15 Mar 2017	2Years
Loop Antenna	EMCO	6502	00056620	25 Jan 2018	2Years
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-531	24 Nov 2016	2Years
Broadband Pre-Amplifier	Schwarzbeck	BBV 9718	9718-119	24 Nov 2016	2Years
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170442	02 Aug 2017	2Years
Broadband Pre-Amplifier	Schwarzbeck	BBV 9719	9719-010	02 Aug 2017	2Years
Coaxial Cable	Schaffner	RG 213/U	N/A	18 May 2017	1Year
Coaxial Cable	Suhner	RG 214/U	N/A	18 May 2017	1Year
Coaxial Cable	Suhner	Sucoflex_104	N/A	13 Dec 2016	1Year
LISN	R&S	ENV216	101323	21 Oct 2016	1Year
Coaxial Cable	Tyco Electronics	RG 58C/U	N/A	01 Nov 2016	1Year
TS8997 Testing System					
Spectrum Analyzer	R&S	FSV 40	101190	12 May 2017	1Year
Vector Generator	R&S	SMBV100A	262024	04 May 2017	1Year
Generator	R&S	SMB100A	103230	24 May 2017	1Year
OSP	R&S	OSP	OSP120 V02	06 Jun 2017	1Year



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1.4 Measurement Uncertainty

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a level of confidence of approximately 95%.

Radiated emissions

Frequency	Uncertainty (U_{lab})
30MHz ~ 200MHz (Horizontal)	4.83dB
30MHz ~ 200MHz (Vertical)	4.84dB
200MHz ~1000MHz (Horizontal)	4.87dB
200MHz ~1000MHz (Vertical)	5.94dB
1GHz ~6GHz	4.41dB
6GHz ~18GHz	4.64dB

Conducted emissions

Frequency	Uncertainty (U_{lab})
150kHz~30MHz	2.64dB



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2 Description of the emission test

2.1 Test Procedure

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground for below 1GHz measurement and 1.5m high above the ground for above 1GHz measurement. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is placed 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1 m above the ground.

For 30MHz to 1GHz, broadband antenna with its vertical and horizontal plane is placed 3m from the EUT and rotated about its vertical and horizontal axis for maximum response at each azimuth about the EUT. And the reference point of antenna shall be 1 m above the ground.

For above 1GHz, horn antenna with its vertical and horizontal plane is placed 3m from the EUT and rotated about its vertical and horizontal axis for maximum response at each azimuth about the EUT. Preamplifier and High Pass filter was used for measurements. The reference point of antenna shall be 1 m above the ground.

The device was rotated through three orthogonal to determine which attitude and configuration produce the highest emission during measurement for Radiated Emission measurement.

The EUT will connect to TS 8997 testing system for direct conducted measurement.



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2.2 Conducted Emission Measurement Data

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	28	°C
Relative humidity:	57	%

Summary

Test	Frequency (MHz)	Nominal Power (dBm)	Nominal Bandwidth (MHz)	Result
RF output power	2405.000	0.0	5.000000	PASS
Power Spectral Density	2405.000	0.0	5.000000	PASS
Minimum Emission Bandwidth 6 dB	2405.000	0.0	5.000000	PASS
Band Edge low	2405.000	0.0	5.000000	PASS
Tx Spurious Emission	2405.000	0.0	5.000000	PASS
Rx Spurious Emission	2405.000	0.0	5.000000	PASS
RF output power	2447.000	0.0	5.000000	PASS
Power Spectral Density	2447.000	0.0	5.000000	PASS
Minimum Emission Bandwidth 6 dB	2447.000	0.0	5.000000	PASS
Tx Spurious Emission	2447.000	0.0	5.000000	PASS
Rx Spurious Emission	2447.000	0.0	5.000000	PASS
RF output power	2476.000	0.0	5.000000	PASS
Power Spectral Density	2476.000	0.0	5.000000	PASS
Minimum Emission Bandwidth 6 dB	2476.000	0.0	5.000000	PASS
Band Edge high	2476.000	0.0	5.000000	PASS
Tx Spurious Emission	2476.000	0.0	5.000000	PASS
Rx Spurious Emission	2476.000	0.0	5.000000	PASS



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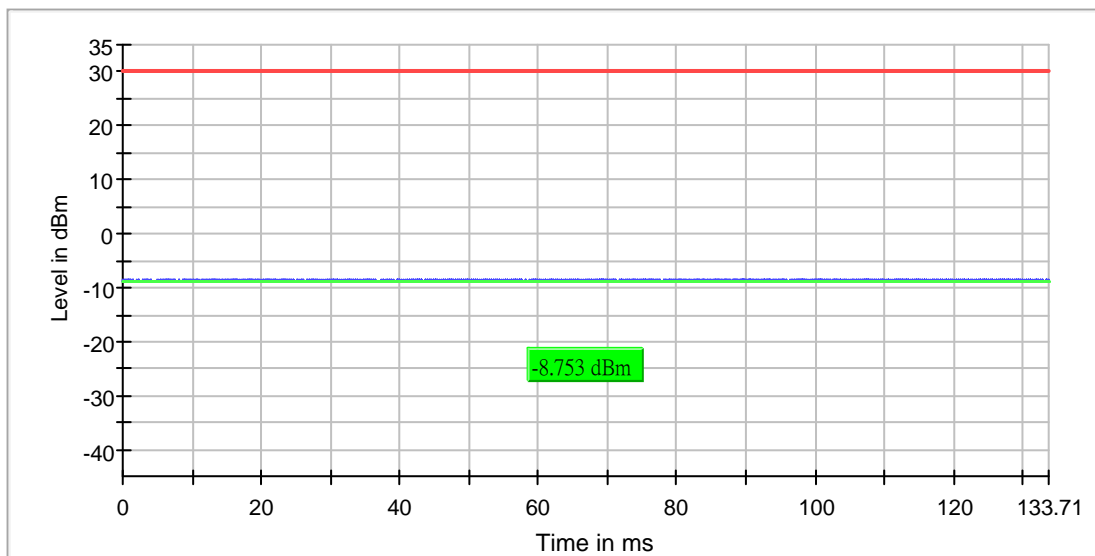
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RF output power (2405 MHz)

Result

DUT Frequency (MHz)	Gated EIRP (dBm)	Limit Max (dBm)	DutyCycle (%)	Result
2405.000000	-8.8	30.0	13.374	PASS





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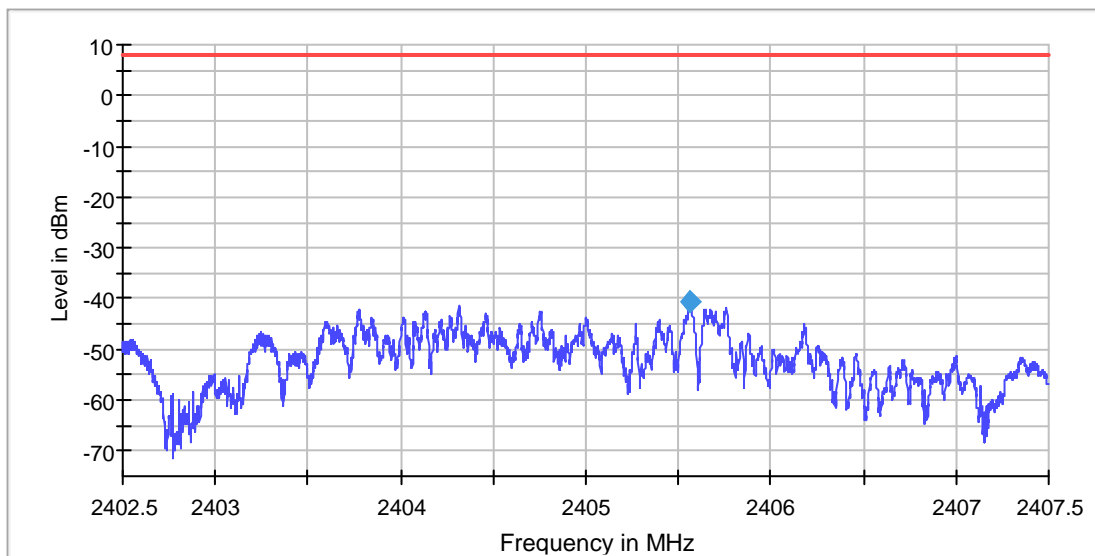
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Power Spectral Density (2405 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2405.000000	2405.566137	-40.456	8.0	PASS



Measurement

Setting	Instrument Value	Target Value	Setting	Instrument Value	Target Value
Start Frequency	2.40250 GHz	2.40250 GHz	Stablemode	Trace	Trace
Stop Frequency	2.40750 GHz	2.40750 GHz	Stablevalue	0.30	0.30
Span	5.000 MHz	5.000 MHz	Run	3 / max. 150	max. 150
RBW	3.000 kHz	<= 3.000 kHz	Stable	3 / 3	3
VBW	10.000 kHz	>= 9.000 kHz			
SweepPoints	3333	~ 3333			
SweepTime	3.340 s	3.333 s			
Reference Level	-10.000 dBm	-10.000 dBm			
Attenuation	10.000 dB	AUTO			
Detector	RMS	RMS			
SweepCount	1	1			
Filter	3 dB	3 dB			
Trace Mode	Max Hold	Max Hold			
SweepType	Sweep	AUTO			
Preamp	off	off			



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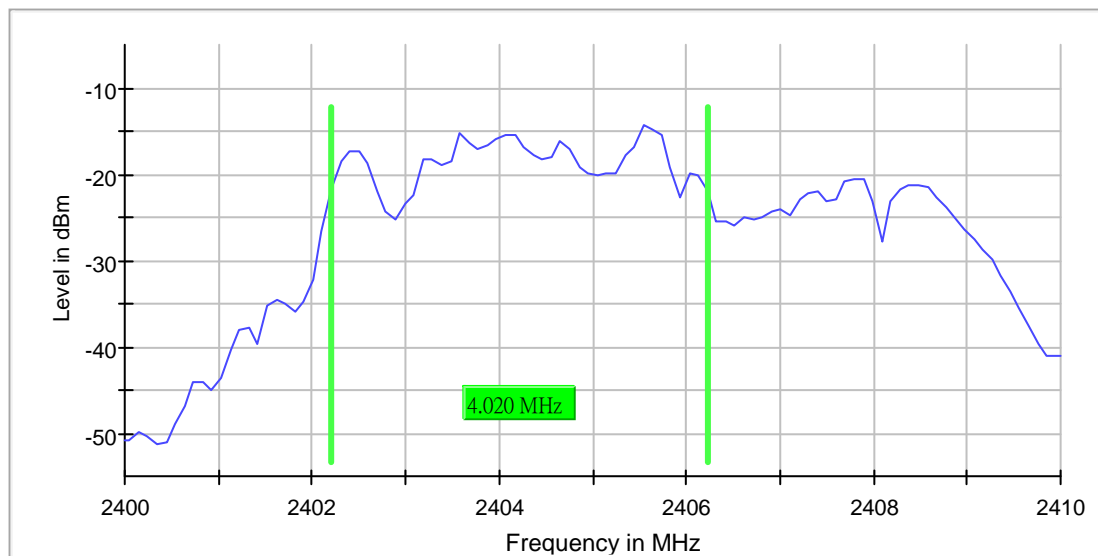
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Minimum Emission Bandwidth 6 dB (2405 MHz)

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2405.000000	4.019608	0.500000	---	2402.205882	2406.225490	-14.3	PASS



Measurement

Setting	Instrument Value	Target Value	Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz	Stablemode	Trace	Trace
Stop Frequency	2.41000 GHz	2.41000 GHz	Stablevalue	0.30	0.30
Span	10.000 MHz	10.000 MHz	Run	40 / max. 150	max. 150
RBW	100.000 kHz	~ 100.000 kHz	Stable	15 / 15	15
VBW	300.000 kHz	~ 300.000 kHz			
SweepPoints	101	~ 100			
SweepTime	37.924 μ s	AUTO			
Reference Level	-10.000 dBm	-10.000 dBm			
Attenuation	10.000 dB	AUTO			
Detector	MaxPeak	MaxPeak			
SweepCount	100	100			
Filter	3 dB	3 dB			
Trace Mode	Max Hold	AUTO Hold			
SweepType	FFT	AUTO			
Preamp	off	off			



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Band Edge low (2405 MHz)

Result

DUT Frequency (MHz)	Result
2405.000000	PASS

Inband Peak

Frequency (MHz)	Level (dBm)
2405.671604	-29.1

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.575236	-61.7	12.6	-49.1	PASS
2399.625208	-61.8	12.7	-49.1	PASS
2399.525264	-62.7	13.6	-49.1	PASS
2399.825097	-63.4	14.3	-49.1	PASS
2399.325375	-63.4	14.3	-49.1	PASS
2399.675180	-63.5	14.4	-49.1	PASS
2399.775125	-63.6	14.5	-49.1	PASS
2399.875069	-63.8	14.7	-49.1	PASS
2399.225430	-63.9	14.8	-49.1	PASS
2399.275403	-63.9	14.8	-49.1	PASS
2399.075514	-64.0	14.9	-49.1	PASS
2399.475292	-64.0	14.9	-49.1	PASS
2399.725153	-64.2	15.1	-49.1	PASS
2397.076624	-64.4	15.3	-49.1	PASS
2397.176569	-64.5	15.4	-49.1	PASS



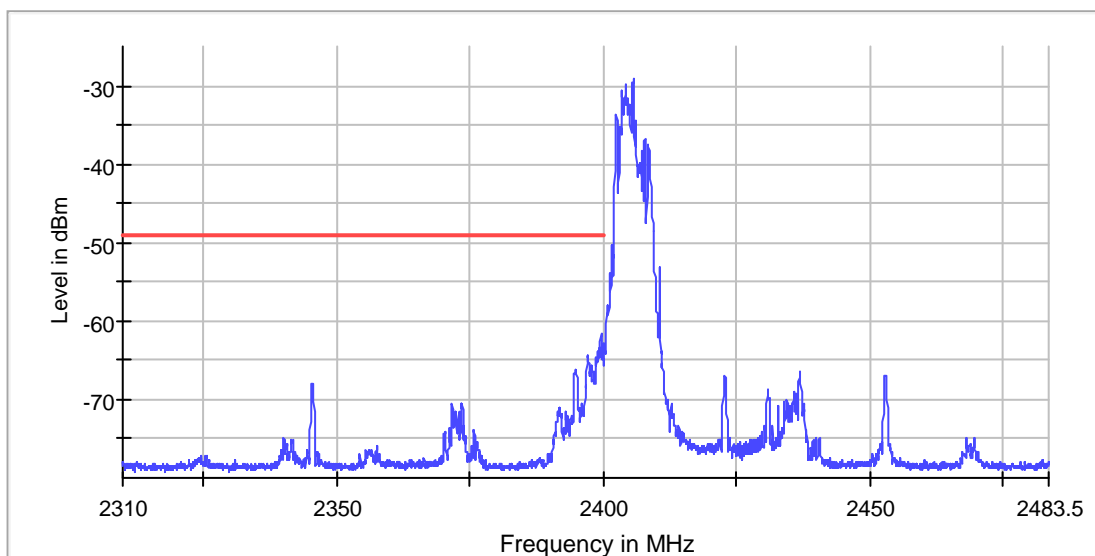
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Measurement 1

Measurement 2

Setting	Instrument Value	Target Value	Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz	RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz	VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670	SweepPoints	1800	~ 1800
SweepTime	1.670 s	1.670 s	SweepTime	1.800 s	1.800 s
Reference Level	-10.000 dBm	-10.000 dBm	Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO	Attenuation	10.000 dB	AUTO
Detector	RMS	RMS	Detector	RMS	RMS
SweepCount	3	3	SweepCount	3	3
Filter	3 dB	3 dB	Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO	SweepType	Sweep	AUTO
Preamp	off	off	Preamp	off	off
Stablemode	Trace	Trace	Stablemode	Trace	Trace
Stablevalue	0.30	0.30	Stablevalue	0.30	0.30
Run	3 / max. 15	max. 15	Run	3 / max. 15	max. 15
Stable	3 / 3	3	Stable	3 / 3	3



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Tx Spurious Emission (2405 MHz)

Result

DUT Frequency (MHz)	Result
2405.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
2258.300607	-40.9	-59.6	-41.2	18.4	PASS
2346.269190	-41.1	-64.0	-41.2	22.8	PASS
2373.759372	-46.6	-65.2	-41.2	24.0	PASS
4806.992777	-27.1	-46.9	-41.2	5.6	PASS
4815.991781	-28.6	-51.2	-41.2	9.9	PASS
4819.491394	-37.9	-65.4	-41.2	24.2	PASS

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4806.992777	-27.1	-14.2	-41.2
4808.492611	-27.1	-14.1	-41.2
4811.492279	-27.1	-14.1	-41.2
4808.992556	-27.2	-14.1	-41.2
4811.992224	-27.5	-13.7	-41.2
4806.492833	-27.6	-13.7	-41.2
4804.992999	-27.6	-13.6	-41.2
4810.992335	-27.7	-13.5	-41.2
4807.992667	-27.9	-13.3	-41.2
4810.492390	-28.0	-13.2	-41.2
4804.493054	-28.1	-13.2	-41.2
4805.492943	-28.3	-13.0	-41.2
4812.492168	-28.5	-12.7	-41.2
4815.991781	-28.6	-12.6	-41.2
4807.492722	-28.8	-12.4	-41.2

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	1000.000000	1	1
1000.000000	2400.000000	2	2
2400.000000	2483.500000	2	2
2483.500000	7000.000000	2	2
7000.000000	26000.000000	2	2



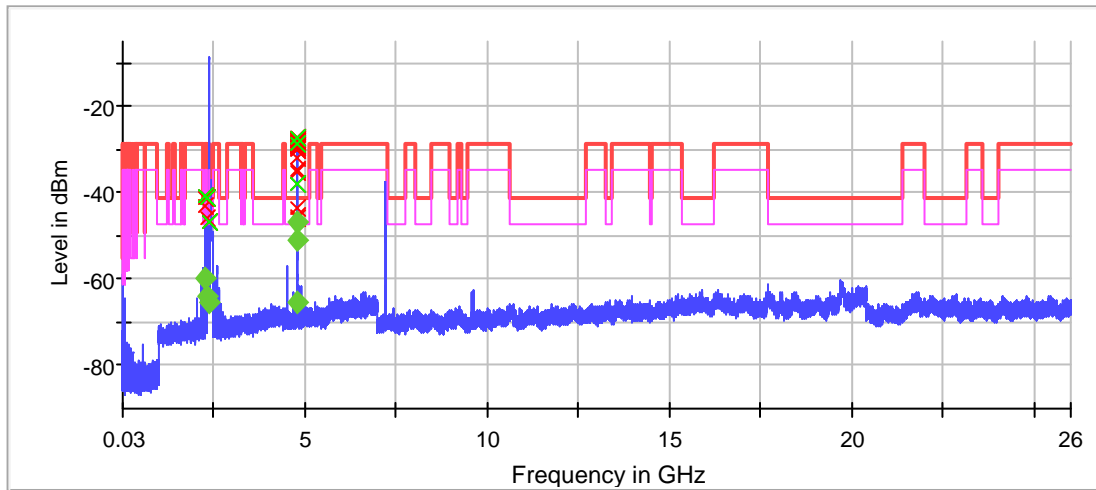
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x Limit [limit.Result:1] x Sum Level [trace.Result:1]
◆ Threshold [limit.2.Result:1] ◆ Critical [Over Limit.Result:1]

Pre Measurement 1

Pre Measurement 2

Setting	Instrument Value	Target Value	Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz	RBW	1.000 MHz	<= 1.000 MHz
VBW	300.000 kHz	>= 300.000 kHz	VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	19400	~ 19400	SweepPoints	2800	~ 2800
SweepTime	19.400 ms	AUTO	SweepTime	2.800 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm	Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO	Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak	Detector	MaxPeak	MaxPeak
SweepCount	30	30	SweepCount	30	30
Filter	3 dB	3 dB	Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO	Sweeptype	Sweep	AUTO
Preamp	off	off	Preamp	off	off
Stablemode	Trace	Trace	Stablemode	Trace	Trace
Stablevalue	0.30	0.30	Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150	Run	3 / max. 150	max. 150
Stable	3 / 3	3	Stable	3 / 3	3



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Final Measurement 2

Setting	Instrument Value	Target Value
Span	ZeroSpan	ZeroSpan
RBW	1.000 MHz	~ 1.000 MHz
VBW	3.000 MHz	~ 3.000 MHz
SweepPoints	10001	~ 10001
SweepTime	1.000 s	1.000 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	0.000 dB
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Clear Write	Clear Write
SweepType	Sweep	AUTO
Preamp	off	off



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Rx Spurious Emission (2405 MHz)

Result

DUT Frequency (MHz)	Result
2405.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
32.049789	-59.2	-57.6	-55.2	2.4	PASS

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
32.049789	-59.2	4.0	-55.2
31.949799	-60.4	5.2	-55.2
64.046490	-62.5	7.3	-55.2
63.946500	-64.0	8.8	-55.2
2136.310615	-55.0	13.8	-41.2
31.849809	-69.1	13.9	-55.2
32.149778	-69.8	14.6	-55.2
64.146480	-70.4	15.1	-55.2
48.048139	-70.6	15.4	-55.2
2137.310448	-56.7	15.4	-41.2
96.043191	-67.8	16.1	-51.7
47.948150	-72.0	16.7	-55.2
2135.310782	-58.5	17.3	-41.2
19738.829535	-59.1	17.9	-41.2
40.048964	-73.5	18.2	-55.2

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	1000.000000	1	1
1000.000000	7000.000000	2	2
7000.000000	26000.000000	2	2



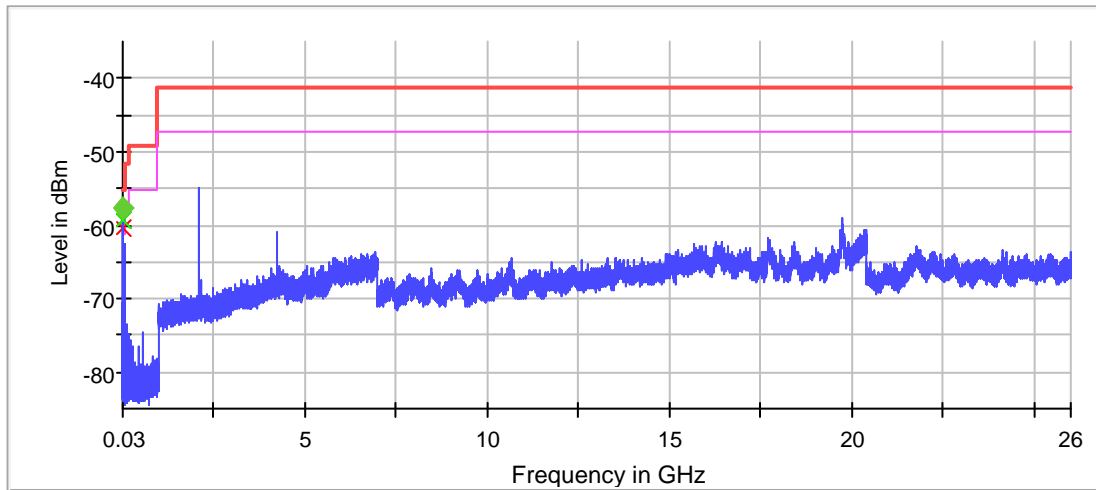
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— Limit [limit.Result:1] x Threshold [limit 2.Result:1]
◆ Critical [Over Limit.Result:1] ◆ Sum Level [trace.Result:1]

Pre Measurement 1

Pre Measurement 2

Setting	Instrument Value	Target Value	Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz	RBW	1.000 MHz	<= 1.000 MHz
VBW	300.000 kHz	>= 300.000 kHz	VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	9700	~ 9700	SweepPoints	6000	~ 6000
SweepTime	9.700 ms	AUTO	SweepTime	6.000 ms	AUTO
Reference Level	-67.000 dBm	-67.000 dBm	Reference Level	-67.000 dBm	-67.000 dBm
Attenuation	0.000 dB	AUTO	Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak	Detector	MaxPeak	MaxPeak
SweepCount	100	100	SweepCount	100	100
Filter	3 dB	3 dB	Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO	Sweeptype	Sweep	AUTO
Preamp	off	off	Preamp	off	off
Stablemode	Trace	Trace	Stablemode	Trace	Trace
Stablevalue	0.30	0.30	Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150	Run	3 / max. 150	max. 150
Stable	3 / 3	3	Stable	3 / 3	3



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Final Measurement 2

Setting	Instrument Value	Target Value
Span	ZeroSpan	ZeroSpan
RBW	1.000 GHz	~ 100.000 kHz
VBW	3.000 MHz	~ 300.000 kHz
SweepPoints	10001	~ 10001
SweepTime	1.000 s	50.000 ms
Reference Level	20.000 dBm	-37.000 dBm
Attenuation	AUTO	0.000 dB
Detector	MaxPeak	QuasiPeak
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Clear Write	Clear Write
SweepType	Sweep	AUTO
Preamp	off	off



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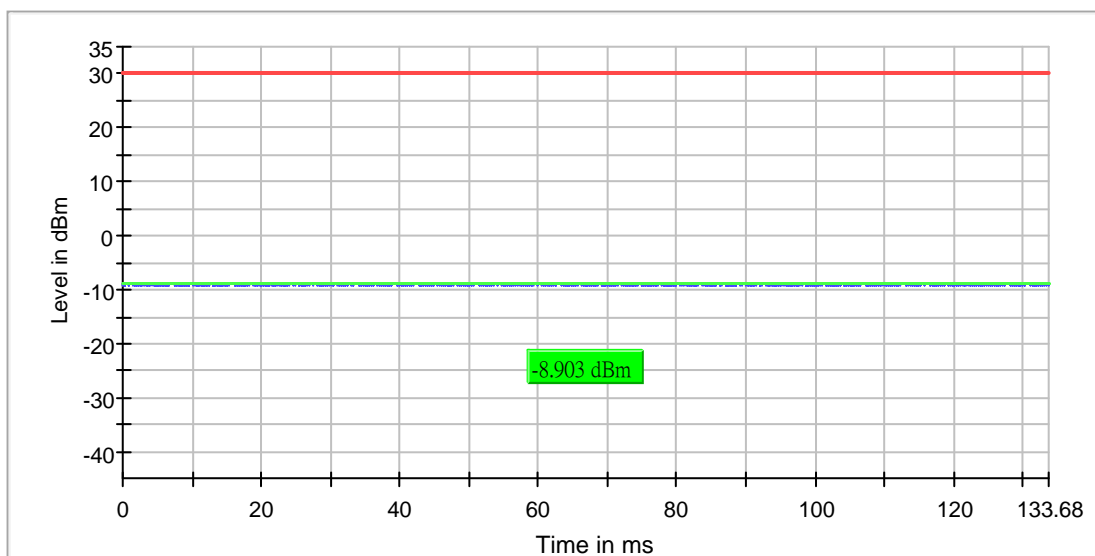
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RF output power (2447 MHz)

Result

DUT Frequency (MHz)	Gated EIRP (dBm)	Limit Max (dBm)	DutyCycle (%)	Result
2447.000000	-8.9	30.0	13.372	PASS





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TEST REPORT

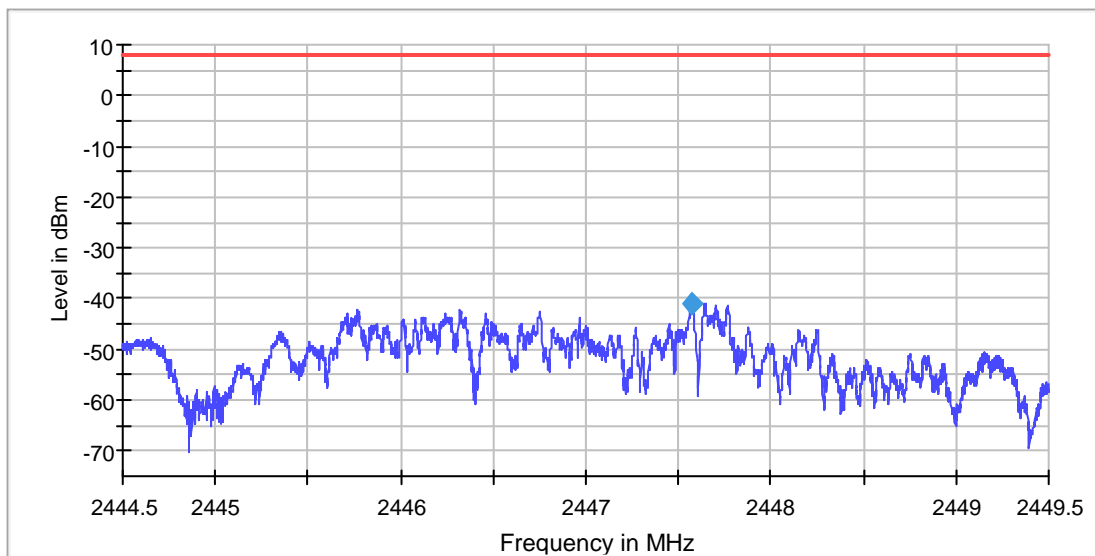
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Power Spectral Density (2447 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2447.000000	2447.570636	-40.950	8.0	PASS



Measurement

Setting	Instrument Value	Target Value	Setting	Instrument Value	Target Value
Start Frequency	2.44450 GHz	2.44450 GHz	Stablemode	Trace	Trace
Stop Frequency	2.44950 GHz	2.44950 GHz	Stablevalue	0.30	0.30
Span	5.000 MHz	5.000 MHz	Run	3 / max. 150	max. 150
RBW	3.000 kHz	<= 3.000 kHz	Stable	3 / 3	3
VBW	10.000 kHz	>= 9.000 kHz			
SweepPoints	3333	~ 3333			
SweepTime	3.340 s	3.333 s			
Reference Level	-10.000 dBm	-10.000 dBm			
Attenuation	10.000 dB	AUTO			
Detector	RMS	RMS			
SweepCount	1	1			
Filter	3 dB	3 dB			
Trace Mode	Max Hold	Max Hold			
SweepType	Sweep	AUTO			
Preamp	off	off			



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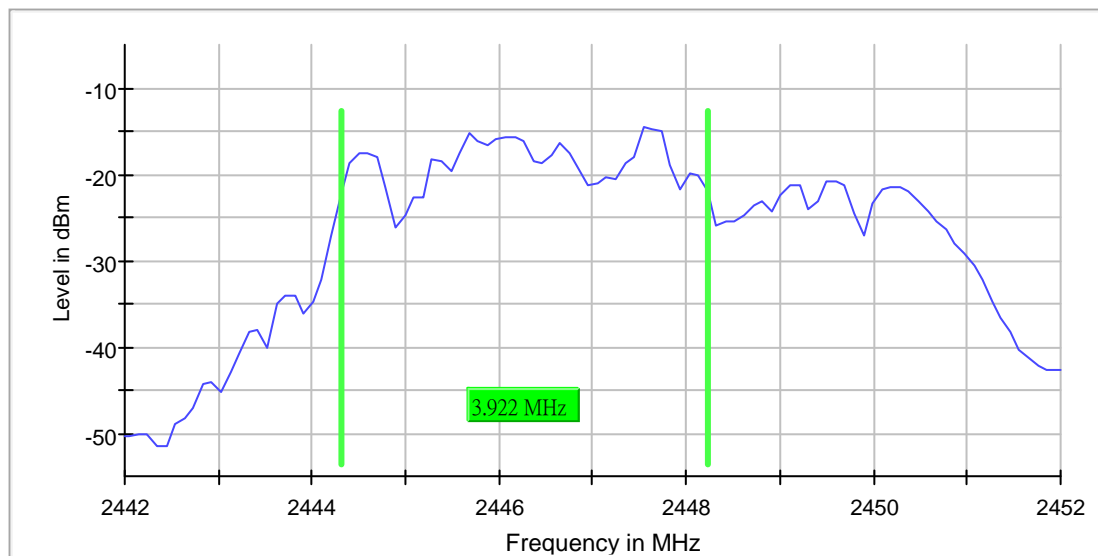
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Minimum Emission Bandwidth 6 dB (2447 MHz)

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2447.000000	3.921568	0.500000	---	2444.303922	2448.225490	-14.6	PASS



Measurement

Setting	Instrument Value	Target Value	Setting	Instrument Value	Target Value
Start Frequency	2.44200 GHz	2.44200 GHz	Stablemode	Trace	Trace
Stop Frequency	2.45200 GHz	2.45200 GHz	Stablevalue	0.30	0.30
Span	10.000 MHz	10.000 MHz	Run	41 / max. 150	max. 150
RBW	100.000 kHz	~ 100.000 kHz	Stable	15 / 15	15
VBW	300.000 kHz	~ 300.000 kHz			
SweepPoints	101	~ 100			
SweepTime	37.924 μ s	AUTO			
Reference Level	-10.000 dBm	-10.000 dBm			
Attenuation	10.000 dB	AUTO			
Detector	MaxPeak	MaxPeak			
SweepCount	100	100			
Filter	3 dB	3 dB			
Trace Mode	Max Hold	Max Hold			
SweepType	FFT	AUTO			
Preamp	off	off			



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Tx Spurious Emission (2447 MHz)

Result

DUT Frequency (MHz)	Result
2447.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
2257.800785	-41.0	-60.4	-41.2	19.2	PASS
2345.269547	-39.2	-62.5	-41.2	21.3	PASS
4891.983368	-27.7	-44.3	-41.2	3.0	PASS
4899.482538	-29.8	-51.9	-41.2	10.7	PASS
4902.482206	-34.8	-60.7	-41.2	19.5	PASS
7338.119493	-39.1	-57.1	-41.2	15.9	PASS
7352.368602	-40.8	-65.9	-41.2	24.7	PASS

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4891.983368	-27.7	-13.5	-41.2
4895.482981	-27.9	-13.3	-41.2
4891.483424	-28.0	-13.2	-41.2
4890.983479	-28.0	-13.2	-41.2
4892.983258	-28.3	-13.0	-41.2
4892.483313	-28.3	-12.9	-41.2
4889.483645	-28.3	-12.9	-41.2
4895.982926	-28.4	-12.8	-41.2
4894.983036	-28.5	-12.7	-41.2
4894.483092	-28.8	-12.4	-41.2
4899.482538	-29.8	-11.4	-41.2
4896.482870	-29.9	-11.4	-41.2
4897.982704	-30.0	-11.3	-41.2
4897.482760	-30.0	-11.2	-41.2
4890.483534	-30.7	-10.5	-41.2

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	1000.000000	1	1
1000.000000	2400.000000	2	2
2400.000000	2483.500000	2	2
2483.500000	7000.000000	2	2
7000.000000	26000.000000	2	2



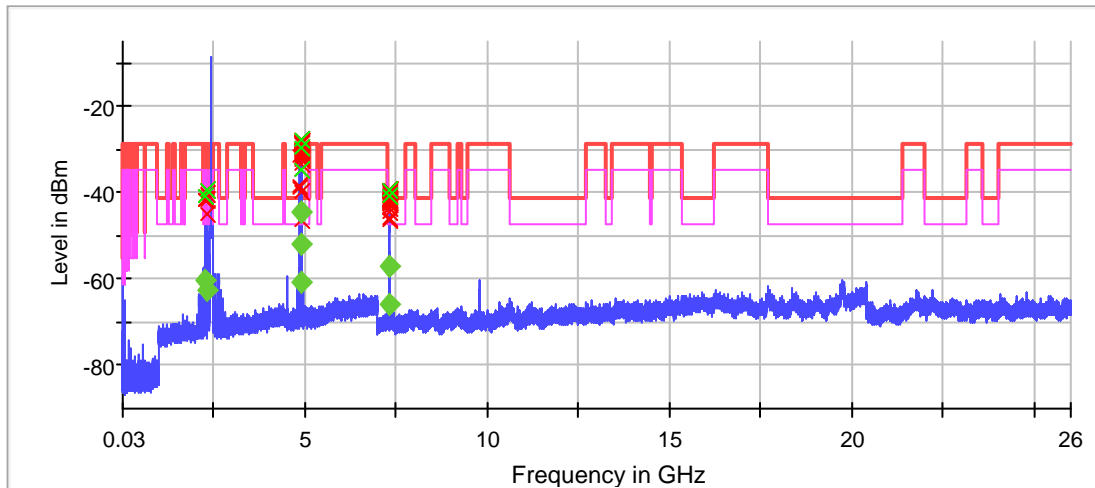
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X Limit [limit.Result:1] X Sum Level [trace.Result:1]
◆ Threshold [limit.2.Result:1] ◆ Critical [Over Limit.Result:1]

Pre Measurement 1

Pre Measurement 2

Setting	Instrument Value	Target Value	Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz	RBW	1.000 MHz	<= 1.000 MHz
VBW	300.000 kHz	>= 300.000 kHz	VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	19400	~ 19400	SweepPoints	2800	~ 2800
SweepTime	19.400 ms	AUTO	SweepTime	2.800 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm	Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO	Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak	Detector	MaxPeak	MaxPeak
SweepCount	30	30	SweepCount	30	30
Filter	3 dB	3 dB	Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO	Sweeptype	Sweep	AUTO
Preamp	off	off	Preamp	off	off
Stablemode	Trace	Trace	Stablemode	Trace	Trace
Stablevalue	0.30	0.30	Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150	Run	3 / max. 150	max. 150
Stable	3 / 3	3	Stable	3 / 3	3



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Final Measurement 2

Setting	Instrument Value	Target Value
Span	ZeroSpan	ZeroSpan
RBW	1.000 MHz	~ 1.000 MHz
VBW	3.000 MHz	~ 3.000 MHz
SweepPoints	10001	~ 10001
SweepTime	1.000 s	1.000 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	0.000 dB
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Clear Write	Clear Write
SweepType	Sweep	AUTO
Preamp	off	off



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Rx Spurious Emission (2447 MHz)

Result

DUT Frequency (MHz)	Result
2447.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
32.049789	-59.2	-57.6	-55.2	2.4	PASS

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
32.049789	-59.2	3.9	-55.2
31.949799	-60.4	5.2	-55.2
64.046490	-62.8	7.6	-55.2
63.946500	-64.5	9.2	-55.2
32.149778	-69.0	13.8	-55.2
2173.304449	-55.3	14.1	-41.2
2174.304283	-55.5	14.3	-41.2
64.146480	-70.0	14.8	-55.2
48.048139	-71.2	15.9	-55.2
96.043191	-68.2	16.5	-51.7
31.849809	-72.1	16.9	-55.2
47.948150	-72.3	17.1	-55.2
32.249768	-72.6	17.4	-55.2
31.749820	-74.3	19.1	-55.2
19713.830851	-60.5	19.3	-41.2

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	1000.000000	1	1
1000.000000	7000.000000	2	2
7000.000000	26000.000000	2	2



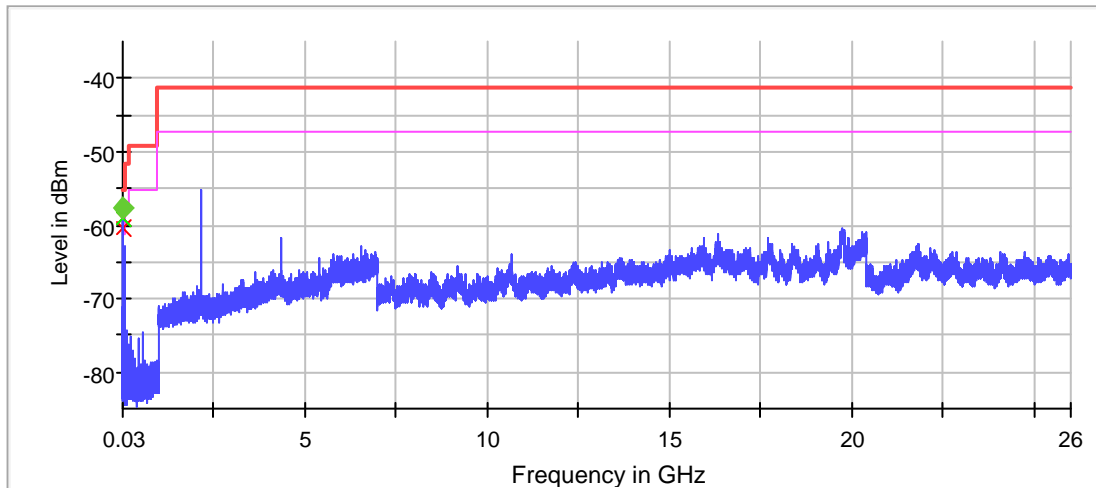
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— Limit [limit.Result:1] x Threshold [limit 2.Result:1]
◆ Critical [Over Limit.Result:1] ◆ Sum Level [trace.Result:1]

Pre Measurement 1

Pre Measurement 2

Setting	Instrument Value	Target Value	Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz	RBW	1.000 MHz	<= 1.000 MHz
VBW	300.000 kHz	>= 300.000 kHz	VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	9700	~ 9700	SweepPoints	6000	~ 6000
SweepTime	9.700 ms	AUTO	SweepTime	6.000 ms	AUTO
Reference Level	-67.000 dBm	-67.000 dBm	Reference Level	-67.000 dBm	-67.000 dBm
Attenuation	0.000 dB	AUTO	Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak	Detector	MaxPeak	MaxPeak
SweepCount	100	100	SweepCount	100	100
Filter	3 dB	3 dB	Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO	Sweeptype	Sweep	AUTO
Preamp	off	off	Preamp	off	off
Stablemode	Trace	Trace	Stablemode	Trace	Trace
Stablevalue	0.30	0.30	Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150	Run	3 / max. 150	max. 150
Stable	3 / 3	3	Stable	3 / 3	3



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Final Measurement 2

Setting	Instrument Value	Target Value
Span	ZeroSpan	ZeroSpan
RBW	1.000 GHz	~ 100.000 kHz
VBW	3.000 MHz	~ 300.000 kHz
SweepPoints	10001	~ 10001
SweepTime	1.000 s	50.000 ms
Reference Level	20.000 dBm	-37.000 dBm
Attenuation	AUTO	0.000 dB
Detector	MaxPeak	QuasiPeak
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Clear Write	Clear Write
SweepType	Sweep	AUTO
Preamp	off	off



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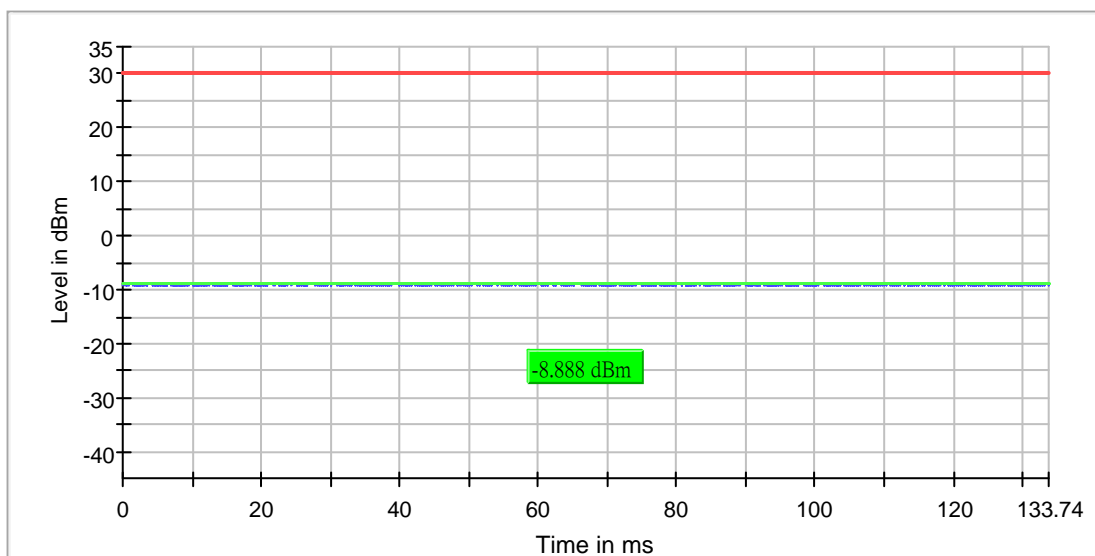
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RF output power (2476 MHz)

Result

DUT Frequency (MHz)	Gated EIRP (dBm)	Limit Max (dBm)	DutyCycle (%)	Result
2476.000000	-8.9	30.0	13.377	PASS





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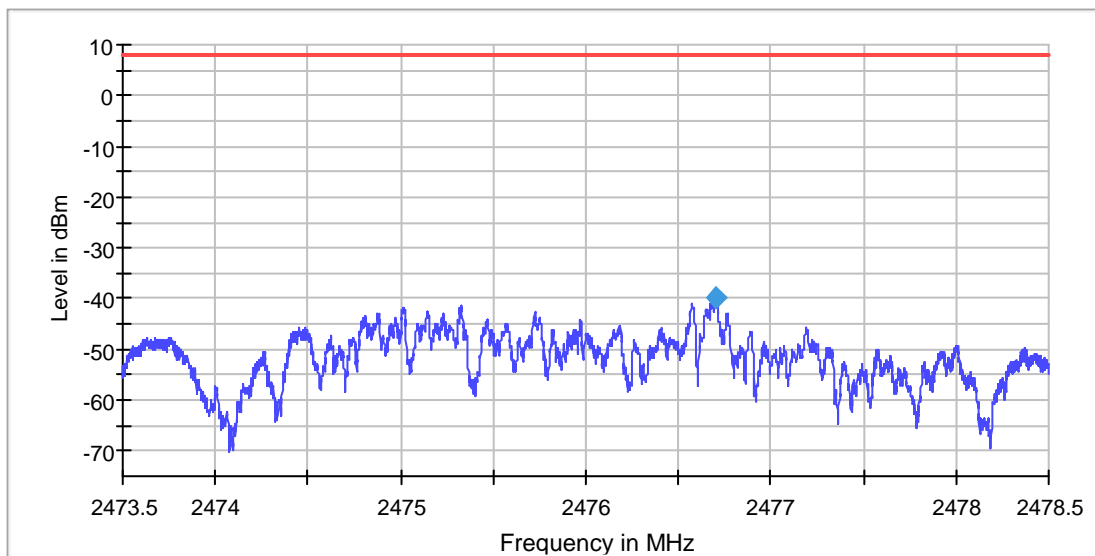
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Power Spectral Density (2476 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2476.000000	2476.702609	-39.921	8.0	PASS



Measurement

Setting	Instrument Value	Target Value	Setting	Instrument Value	Target Value
Start Frequency	2.47350 GHz	2.47350 GHz	Stablemode	Trace	Trace
Stop Frequency	2.47850 GHz	2.47850 GHz	Stablevalue	0.30	0.30
Span	5.000 MHz	5.000 MHz	Run	3 / max. 150	max. 150
RBW	3.000 kHz	<= 3.000 kHz	Stable	3 / 3	3
VBW	10.000 kHz	>= 9.000 kHz			
SweepPoints	3333	~ 3333			
SweepTime	3.340 s	3.333 s			
Reference Level	-10.000 dBm	-10.000 dBm			
Attenuation	10.000 dB	AUTO			
Detector	RMS	RMS			
SweepCount	1	1			
Filter	3 dB	3 dB			
Trace Mode	Max Hold	Max Hold			
SweepType	Sweep	AUTO			
Preamp	off	off			



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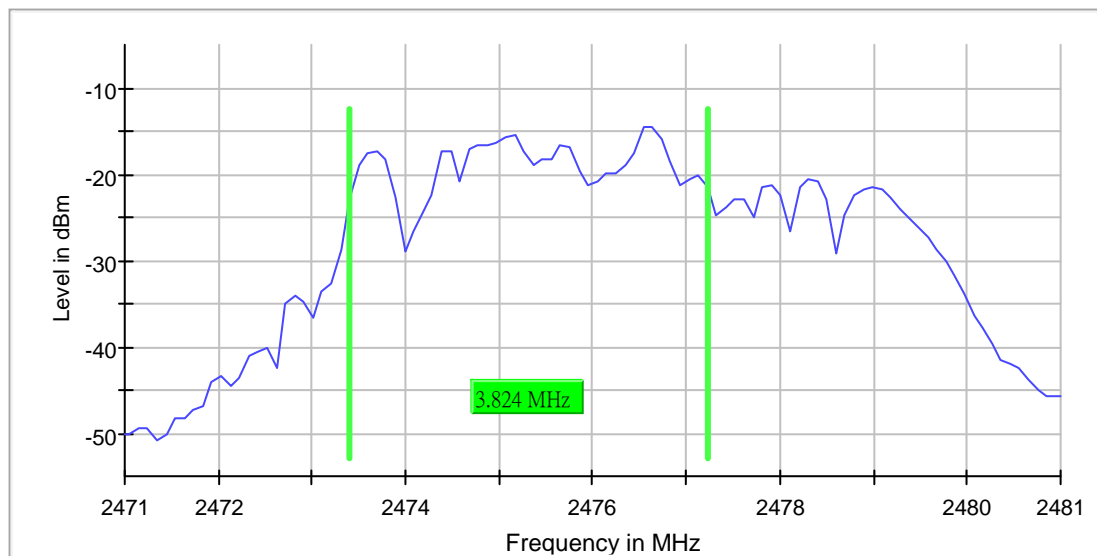
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Minimum Emission Bandwidth 6 dB (2476 MHz)

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2476.000000	3.823529	0.500000	---	2473.401961	2477.225490	-14.4	PASS



Measurement

Setting	Instrument Value	Target Value	Setting	Instrument Value	Target Value
Start Frequency	2.47100 GHz	2.47100 GHz	Stablemode	Trace	Trace
Stop Frequency	2.48100 GHz	2.48100 GHz	Stablevalue	0.30	0.30
Span	10.000 MHz	10.000 MHz	Run	44 / max. 150	max. 150
RBW	100.000 kHz	~ 100.000 kHz	Stable	15 / 15	15
VBW	300.000 kHz	~ 300.000 kHz			
SweepPoints	101	~ 100			
SweepTime	37.924 μ s	AUTO			
Reference Level	-10.000 dBm	-10.000 dBm			
Attenuation	10.000 dB	AUTO			
Detector	MaxPeak	MaxPeak			
SweepCount	100	100			
Filter	3 dB	3 dB			
Trace Mode	Max Hold	Max Hold			
SweepType	FFT	AUTO			
Preamp	off	off			



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Band Edge high (2476 MHz)

Result

DUT Frequency (MHz)	Result
2476.000000	PASS

Inband Peak

Frequency (MHz)	Level (dBm)
2476.629114	-28.0

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.724320	-71.3	23.3	-48.0	PASS
2483.674471	-71.5	23.5	-48.0	PASS
2483.774169	-71.5	23.6	-48.0	PASS
2484.023414	-71.6	23.6	-48.0	PASS
2483.973565	-71.7	23.7	-48.0	PASS
2483.624622	-72.0	24.0	-48.0	PASS
2483.923716	-72.1	24.2	-48.0	PASS
2483.824018	-72.4	24.4	-48.0	PASS
2483.574773	-72.4	24.5	-48.0	PASS
2484.172961	-72.5	24.5	-48.0	PASS
2484.222810	-72.5	24.5	-48.0	PASS
2484.272659	-72.6	24.6	-48.0	PASS
2483.873867	-72.7	24.7	-48.0	PASS
2484.123112	-72.9	24.9	-48.0	PASS
2484.322508	-73.1	25.2	-48.0	PASS



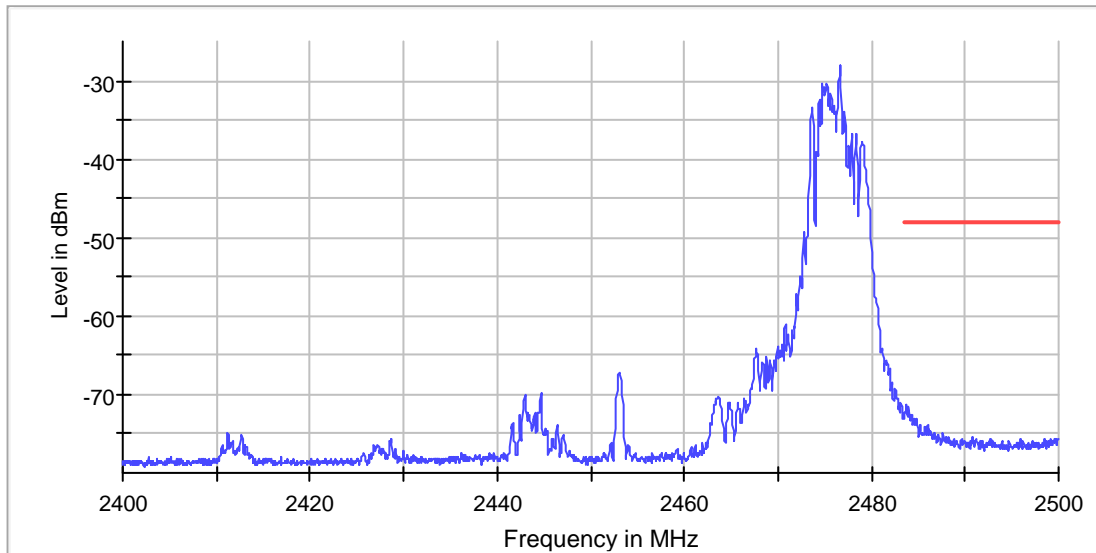
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Measurement 1

Measurement 2

Setting	Instrument Value	Target Value	Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz	RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz	VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670	SweepPoints	330	~ 330
SweepTime	1.670 s	1.670 s	SweepTime	330.000 ms	330.000 ms
Reference Level	-10.000 dBm	-10.000 dBm	Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO	Attenuation	10.000 dB	AUTO
Detector	RMS	RMS	Detector	RMS	RMS
SweepCount	3	3	SweepCount	3	3
Filter	3 dB	3 dB	Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO	Sweeptype	Sweep	AUTO
Preamp	off	off	Preamp	off	off
Stablemode	Trace	Trace	Stablemode	Trace	Trace
Stablevalue	0.30	0.30	Stablevalue	0.30	0.30
Run	3 / max. 15	max. 15	Run	3 / max. 15	max. 15
Stable	3 / 3	3	Stable	3 / 3	3



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Tx Spurious Emission (2476 MHz)

Result

DUT Frequency (MHz)	Result
2476.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
2483.749972	-39.6	-61.9	-41.2	20.6	PASS
2494.748755	-47.2	-72.2	-41.2	30.9	PASS
4947.477225	-28.0	-49.0	-41.2	7.8	PASS
7420.645585	-42.8	-63.1	-41.2	21.8	PASS
7430.144991	-40.5	-57.0	-41.2	15.8	PASS

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4947.477225	-28.0	-13.2	-41.2
4950.476893	-28.1	-13.2	-41.2
4949.976948	-28.1	-13.1	-41.2
4952.976616	-28.3	-12.9	-41.2
4950.976838	-28.4	-12.8	-41.2
4946.977280	-28.6	-12.6	-41.2
4953.976505	-29.1	-12.1	-41.2
4954.476450	-29.2	-12.0	-41.2
4958.476007	-29.4	-11.8	-41.2
4949.477004	-29.6	-11.6	-41.2
4953.476561	-29.9	-11.3	-41.2
4957.476118	-29.9	-11.3	-41.2
4957.976063	-30.0	-11.2	-41.2
4955.976284	-30.0	-11.2	-41.2
4956.976173	-30.1	-11.2	-41.2

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	1000.000000	1	1
1000.000000	2400.000000	2	2
2400.000000	2483.500000	2	2
2483.500000	7000.000000	2	2
7000.000000	26000.000000	2	2



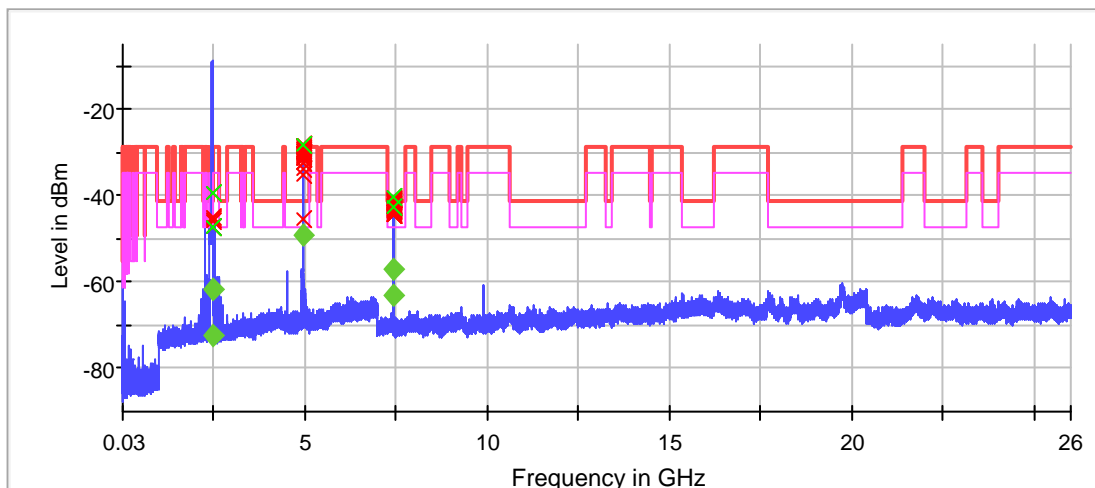
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- x Limit [limit.Result:1]
- ◆ Threshold [limit.2.Result:1]
- x Sum Level [trace.Result:1]
- ◆ Critical [Over Limit.Result:1]

Pre Measurement 1

Pre Measurement 2

Setting	Instrument Value	Target Value	Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz	RBW	1.000 MHz	<= 1.000 MHz
VBW	300.000 kHz	>= 300.000 kHz	VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	19400	~ 19400	SweepPoints	2800	~ 2800
SweepTime	19.400 ms	AUTO	SweepTime	2.800 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm	Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO	Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak	Detector	MaxPeak	MaxPeak
SweepCount	30	30	SweepCount	30	30
Filter	3 dB	3 dB	Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO	Sweeptype	Sweep	AUTO
Preamp	off	off	Preamp	off	off
Stablemode	Trace	Trace	Stablemode	Trace	Trace
Stablevalue	0.30	0.30	Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150	Run	3 / max. 150	max. 150
Stable	3 / 3	3	Stable	3 / 3	3



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Final Measurement 2

Setting	Instrument Value	Target Value
Span	ZeroSpan	ZeroSpan
RBW	1.000 MHz	~ 1.000 MHz
VBW	3.000 MHz	~ 3.000 MHz
SweepPoints	10001	~ 10001
SweepTime	1.000 s	1.000 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	0.000 dB
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Clear Write	Clear Write
SweepType	Sweep	AUTO
Preamp	off	off



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Date : 30 Sep 2016

Rx Spurious Emission (2476 MHz)

Result

DUT Frequency (MHz)	Result
2476.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
32.049789	-59.3	-57.6	-55.2	2.4	PASS

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
32.049789	-59.3	4.1	-55.2
31.949799	-60.5	5.3	-55.2
64.046490	-62.3	7.1	-55.2
63.946500	-63.8	8.6	-55.2
2199.300117	-55.2	14.0	-41.2
31.849809	-69.9	14.6	-55.2
32.149778	-70.0	14.8	-55.2
64.146480	-70.0	14.8	-55.2
2200.299950	-56.2	15.0	-41.2
96.043191	-67.6	15.9	-51.7
48.048139	-71.5	16.2	-55.2
47.948150	-71.9	16.7	-55.2
32.249768	-72.7	17.4	-55.2
40.048964	-73.2	18.0	-55.2
56.047315	-73.8	18.5	-55.2

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	1000.000000	1	1
1000.000000	7000.000000	2	2
7000.000000	26000.000000	2	2



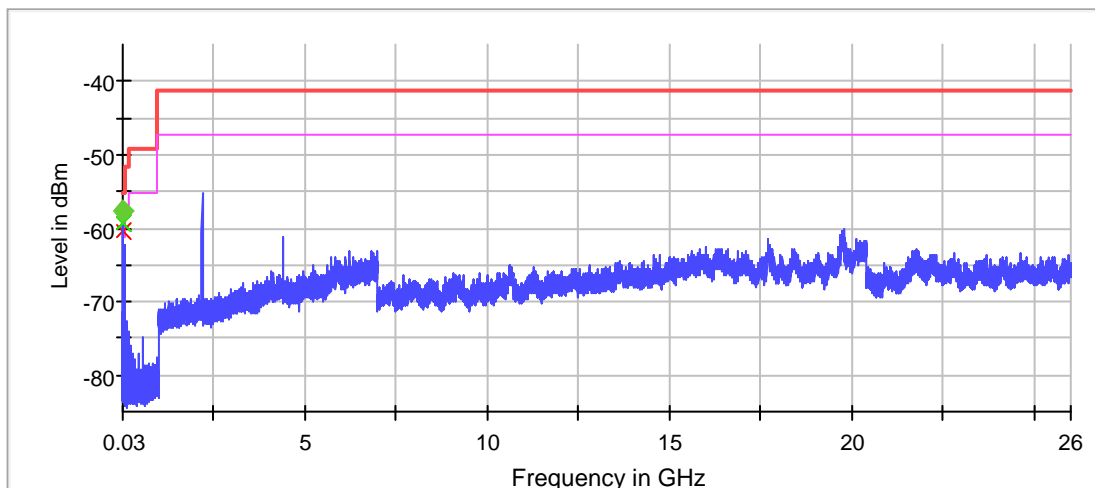
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TEST REPORT

Report No. : AU0058451(1)

Date : 30 Sep 2016



— Limit [limit.Result:1] x Threshold [limit 2.Result:1]
◆ Critical [Over Limit.Result:1] ◆ Sum Level [trace.Result:1]

Pre Measurement 1

Pre Measurement 2

Setting	Instrument Value	Target Value	Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz	RBW	1.000 MHz	<= 1.000 MHz
VBW	300.000 kHz	>= 300.000 kHz	VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	9700	~ 9700	SweepPoints	6000	~ 6000
SweepTime	9.700 ms	AUTO	SweepTime	6.000 ms	AUTO
Reference Level	-67.000 dBm	-67.000 dBm	Reference Level	-67.000 dBm	-67.000 dBm
Attenuation	0.000 dB	AUTO	Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak	Detector	MaxPeak	MaxPeak
SweepCount	100	100	SweepCount	100	100
Filter	3 dB	3 dB	Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO	Sweeptype	Sweep	AUTO
Preamp	off	off	Preamp	off	off
Stablemode	Trace	Trace	Stablemode	Trace	Trace
Stablevalue	0.30	0.30	Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150	Run	3 / max. 150	max. 150
Stable	3 / 3	3	Stable	3 / 3	3



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Final Measurement 2

Setting	Instrument Value	Target Value
Span	ZeroSpan	ZeroSpan
RBW	1.000 GHz	~ 100.000 kHz
VBW	3.000 MHz	~ 300.000 kHz
SweepPoints	10001	~ 10001
SweepTime	1.000 s	50.000 ms
Reference Level	20.000 dBm	-37.000 dBm
Attenuation	AUTO	0.000 dB
Detector	MaxPeak	QuasiPeak
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Clear Write	Clear Write
SweepType	Sweep	AUTO
Preamp	off	off



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TEST REPORT

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Date : 30 Sep 2016

2.3 Radiated Emission Measurement Data

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	26	° C
Relative humidity:	61	%

Testing frequency range: 9kHz to 26GHz Mode: Transmission

Measurement: Quasi-peak (9kHz – 1GHz), Peak and Average(above 1GHz)

RBW: 9kHz (below 30MHz), 120KHz (30MHz – 1GHz), 1MHz (above 1GHz)

VBW: 30kHz (below 30MHz), 300kHz (30MHz – 1GHz), 3MHz (above 1GHz, Peak measurement), 10Hz (above 1GHz, Average measurement)

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB μ V)	Transducer Factor (dB/m)	Field Strength at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)	Measurement (Peak/Average)
2405.739	H	79.2	- 4.2	75.0	114.0	- 39.0	Peak
2405.600	V	72.1	- 4.2	67.9	114.0	- 46.1	Peak
2444.332	H	79.3	- 4.2	75.1	114.0	- 38.9	Peak
2447.689	V	69.6	- 4.2	65.4	114.0	- 48.6	Peak
2473.423	H	78.7	- 4.3	74.4	114.0	- 39.6	Peak
2474.931	V	69.7	- 4.3	65.4	114.0	- 48.6	Peak
4811.476	H	65.6	3.7	69.3	74.0	- 4.7	Peak
4809.959	H	29.4	3.7	33.1	54.0	- 20.9	Average
4811.421	V	66.6	3.7	70.3	74.0	- 3.7	Peak
4809.922	V	33.0	3.7	36.7	54.0	- 17.3	Average
7892.223	H	62.6	3.7	66.3	74.0	- 7.7	Peak
4893.381	H	27.5	3.7	31.2	54.0	- 22.8	Average
4888.845	V	66.6	3.7	70.3	74.0	- 3.7	Peak
4893.915	V	32.8	3.7	36.5	54.0	- 17.5	Average
4953.259	H	60.6	4.0	64.6	74.0	- 9.4	Peak
4951.890	H	26.8	4.0	30.8	54.0	- 23.2	Average
4953.398	V	66.0	4.0	70.0	74.0	- 4.0	Peak
4951.919	V	32.5	4.0	36.5	54.0	- 17.5	Average



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TEST REPORT

Report No. : AU0058451(1)

Date : 30 Sep 2016

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB μ V)	Transducer Factor (dB/m)	Field Strength at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)	Measurement (Peak/Average)
7206.874	H	52.5	11.5	64.0	74.0	- 10.0	Peak
7212.612	H	24.1	11.5	35.6	54.0	- 18.4	Average
7216.958	V	53.8	11.5	65.3	74.0	- 8.7	Peak
7212.672	V	24.3	11.5	35.8	54.0	- 18.2	Average
7343.218	H	53.3	11.5	64.8	74.0	- 9.2	Peak
7338.672	H	24.5	11.5	36.0	54.0	- 18.0	Average
7337.963	V	53.0	11.5	64.5	74.0	- 9.5	Peak
7338.752	V	24.5	11.5	36.0	54.0	- 18.0	Average
7426.182	H	51.8	11.5	63.3	74.0	- 10.7	Peak
7426.012	H	24.3	11.5	35.8	54.0	- 18.2	Average
7429.660	V	50.4	11.5	61.9	74.0	- 12.1	Peak
7425.902	V	24.1	11.5	35.6	54.0	- 18.4	Average

Remark: Other emissions more than 20dB below the limit are not reported.

If Peak measurement values are lower than average limit, average measurement is not necessary.



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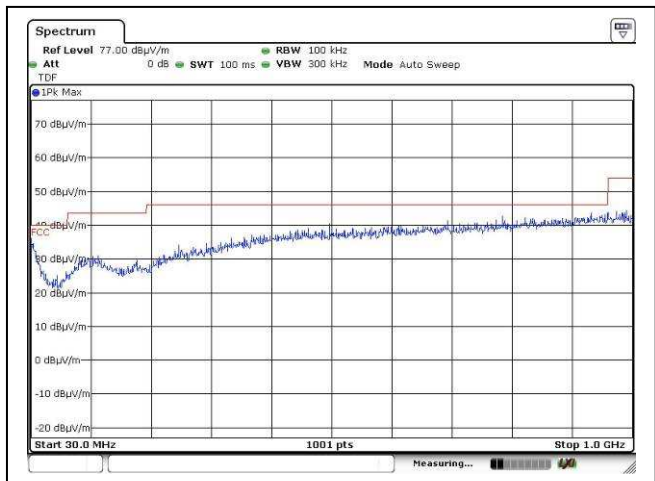
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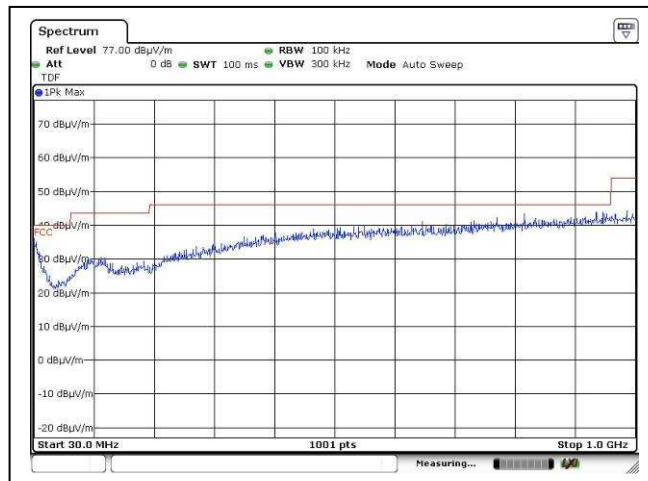
Report No. : AU0058451(1)

Date : 30 Sep 2016

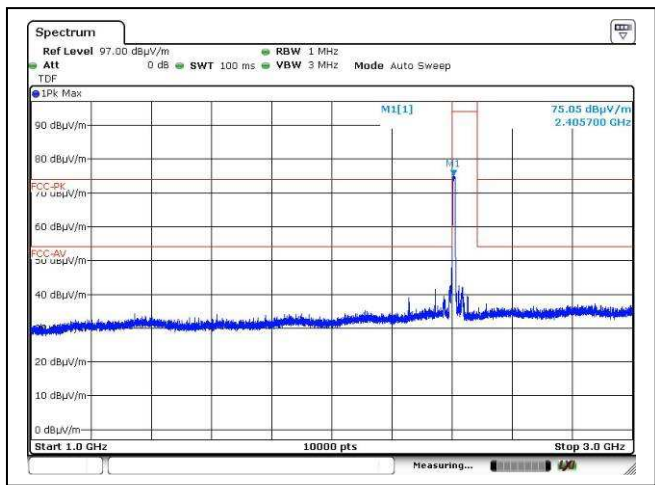
2.3 Radiated Emission Measurement Data (Con't)



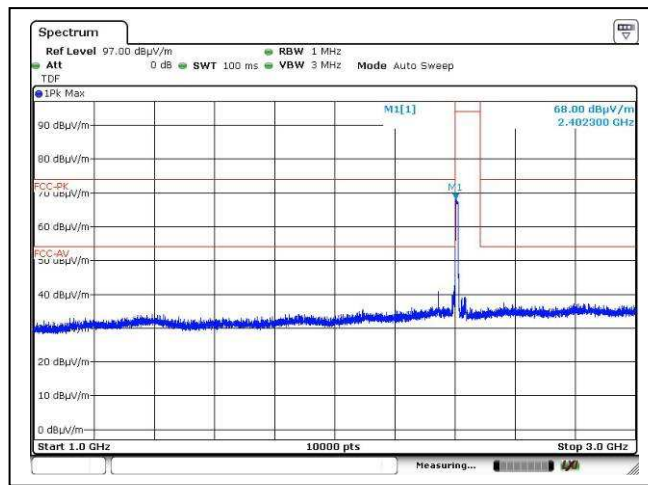
Lower channel, 30MHz – 1GHz, Horizontal



Lower channel, 30MHz – 1GHz, Vertical



Lower channel, 1GHz – 3GHz, Horizontal



Lower channel, 1GHz – 3GHz, Vertical



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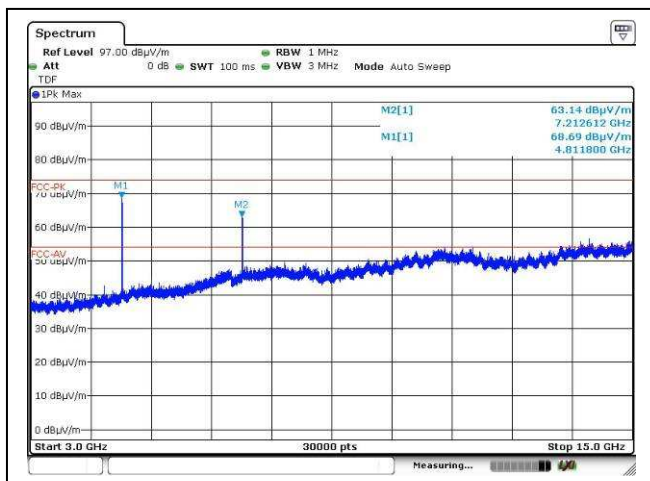
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TEST REPORT

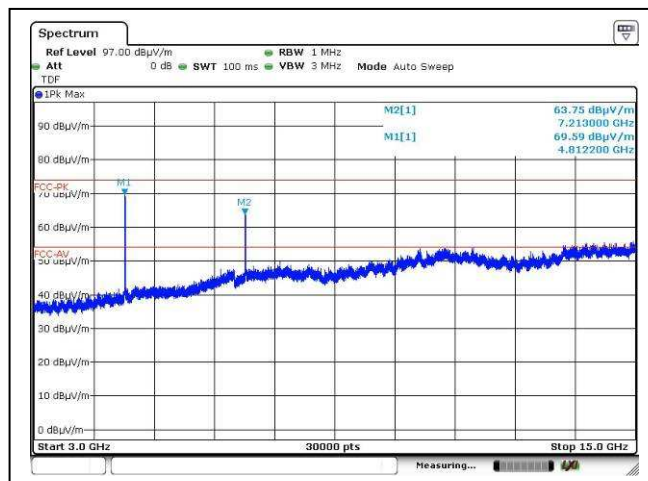
Report No. : AU0058451(1)

Date : 30 Sep 2016

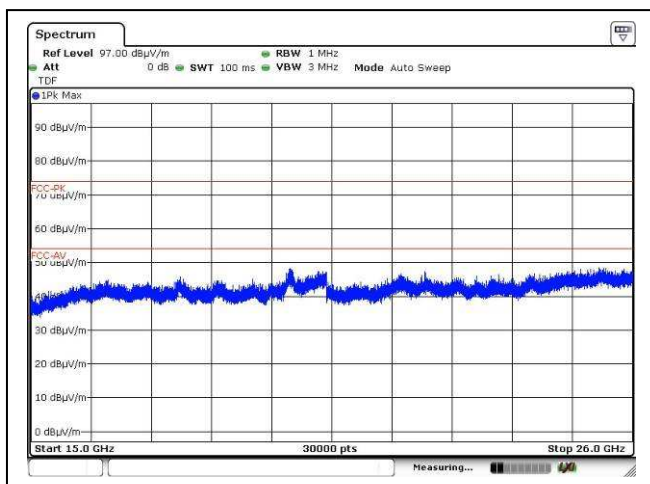
2.3 Radiated Emission Measurement Data (Con't)



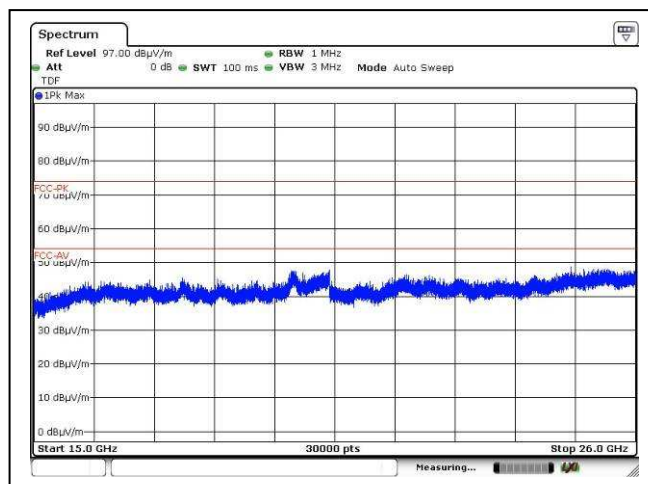
Lower channel, 3GHz – 15GHz, Horizontal



Lower channel, 3GHz – 15GHz, Vertical



Lower channel, 15GHz – 26GHz, Horizontal



Lower channel, 15GHz – 26GHz, Vertical



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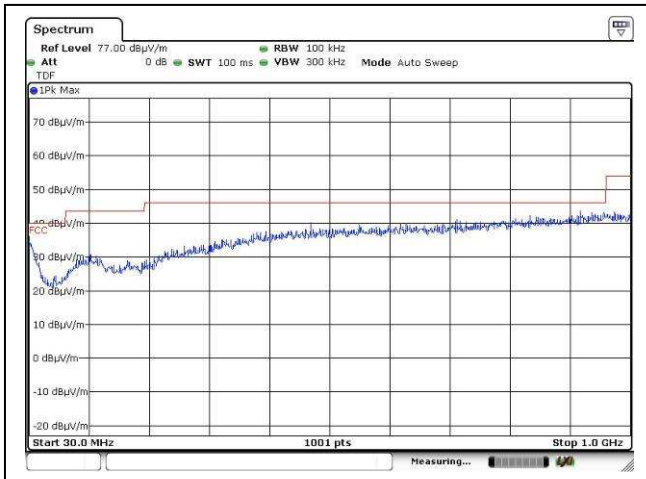
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TEST REPORT

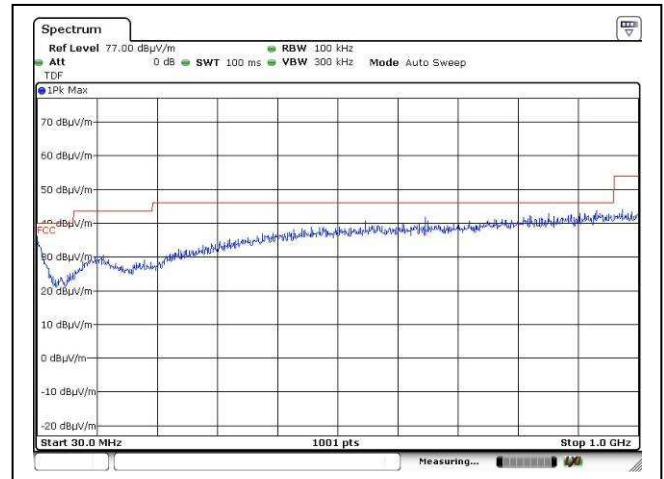
Report No. : AU0058451(1)

Date : 30 Sep 2016

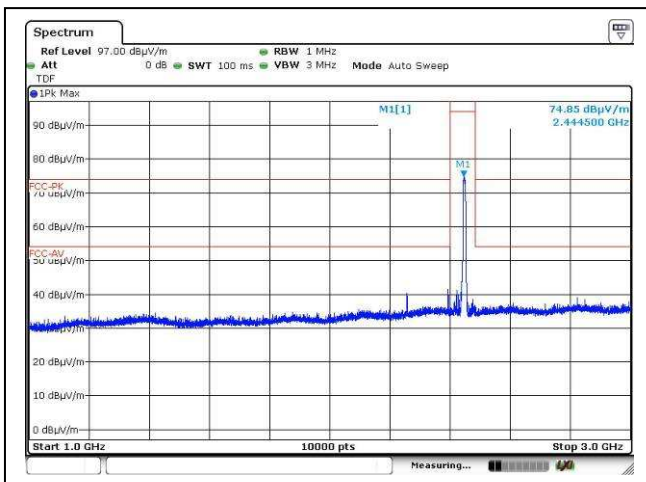
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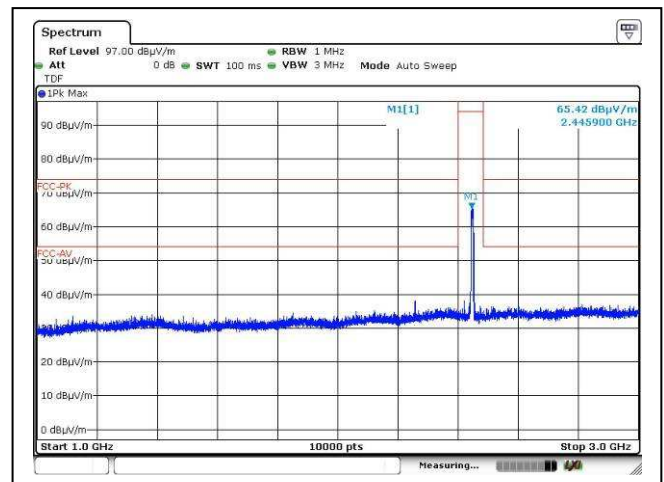
Middle channel, 30MHz – 1GHz, Horizontal



Middle channel, 30MHz – 1GHz, Vertical



Middle channel, 1GHz – 3GHz, Horizontal



Middle channel, 1GHz – 3GHz, Vertical



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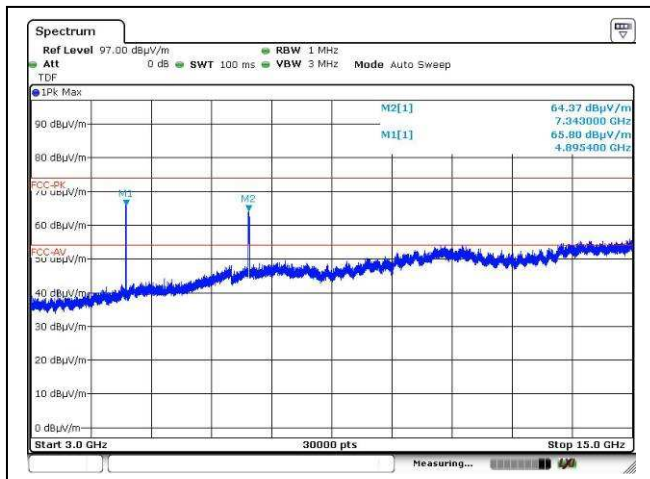
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TEST REPORT

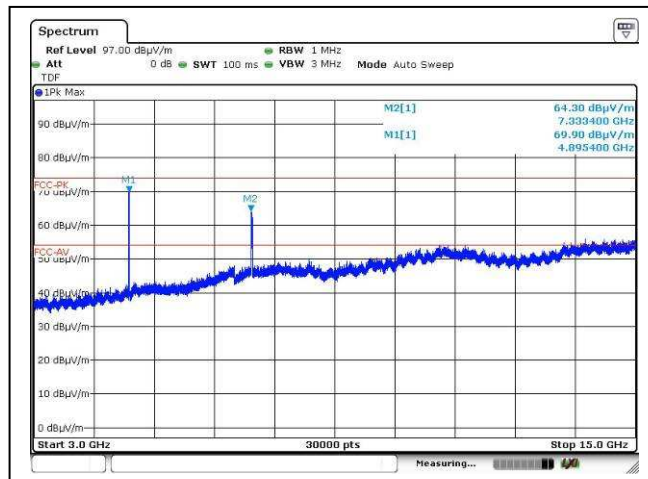
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Date : 30 Sep 2016

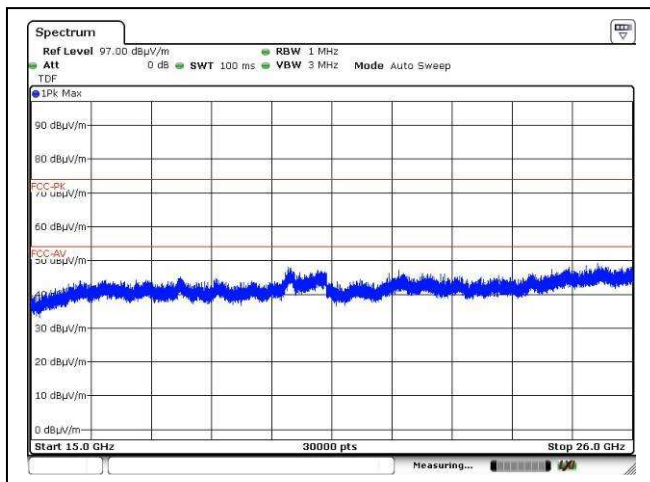
2.3 Radiated Emission Measurement Data (Con't)



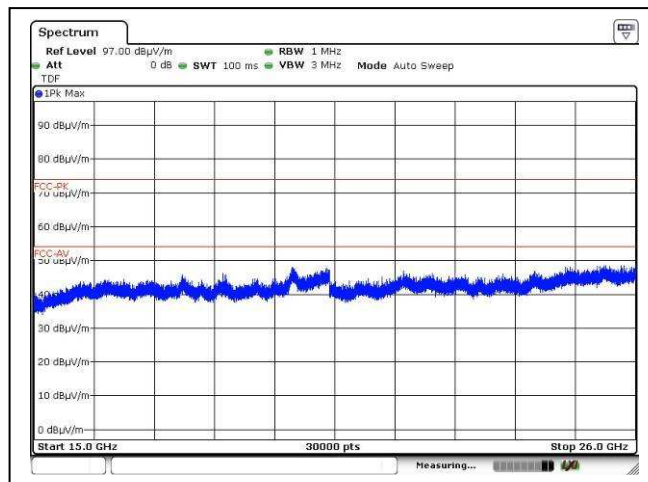
Middle channel, 3GHz – 15GHz, Horizontal



Middle channel, 3GHz – 15GHz, Vertical



Middle channel, 15GHz – 26GHz, Horizontal



Middle channel, 15GHz – 26GHz, Vertical



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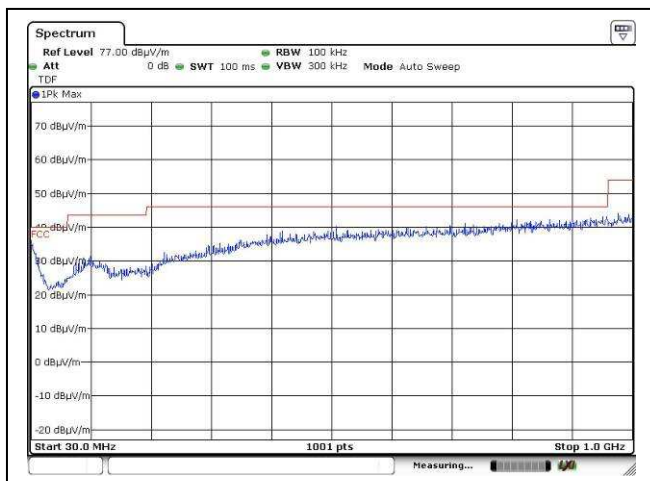
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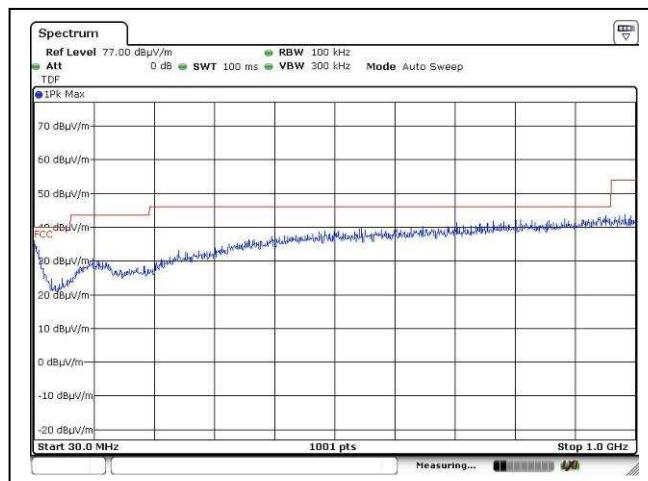
Report No. : AU0058451(1)

Date : 30 Sep 2016

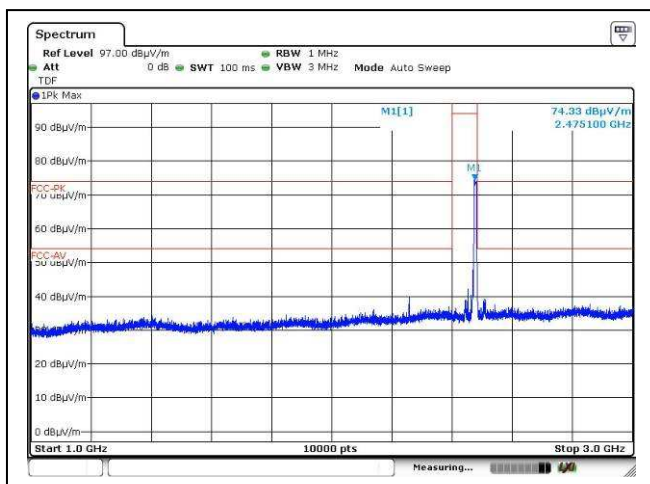
2.3 Radiated Emission Measurement Data (Con't)



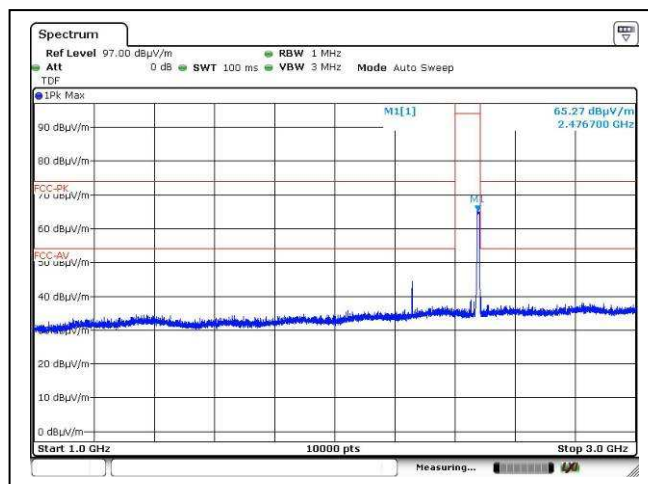
Higher channel, 30MHz – 1GHz, Horizontal



Higher channel, 30MHz – 1GHz, Vertical



Higher channel, 1GHz – 3GHz, Horizontal



Higher channel, 1GHz – 3GHz, Vertical



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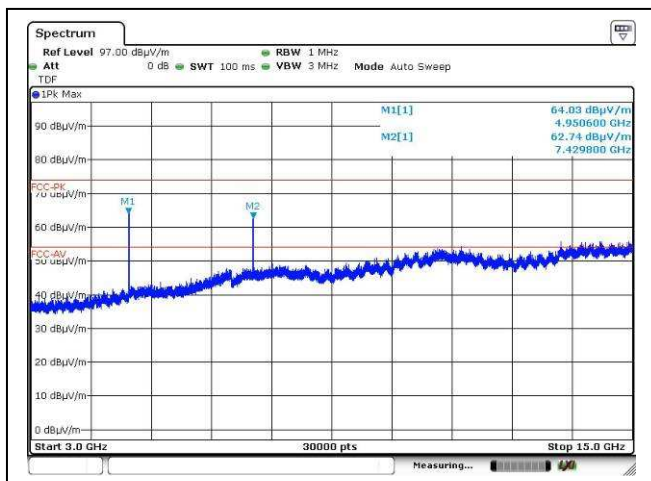
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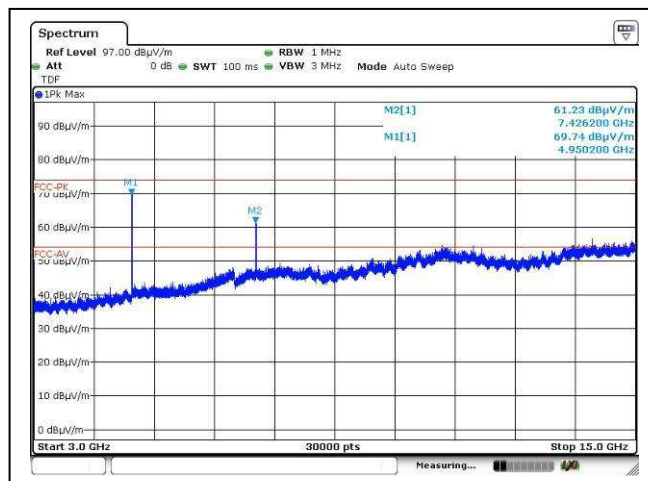
Report No. : AU0058451(1)

Date : 30 Sep 2016

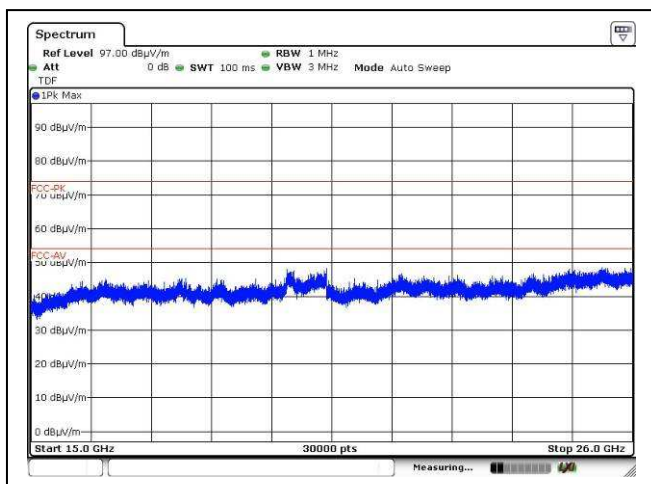
2.3 Radiated Emission Measurement Data (Con't)



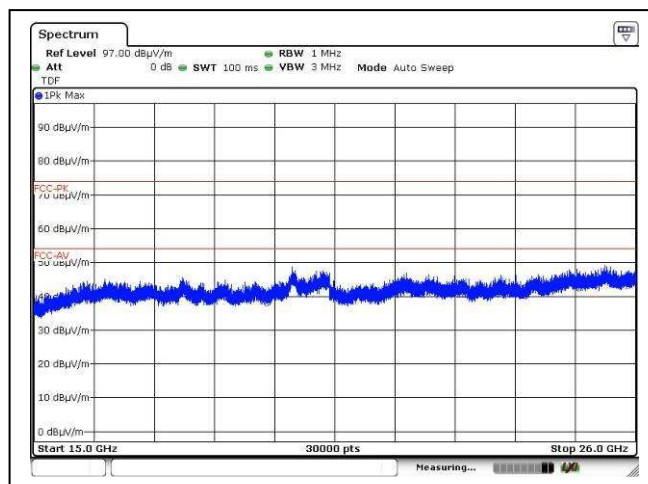
Higher channel, 3GHz – 15GHz, Horizontal



Higher channel, 3GHz – 15GHz, Vertical



Higher channel, 15GHz – 26GHz, Horizontal



Higher channel, 15GHz – 26GHz, Vertical



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TEST REPORT

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Date : 30 Sep 2016

2.3 Radiated Emission Measurement Data (Con't)

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	26	° C
Relative humidity:	61	%

Testing frequency range: 9kHz to 26GHz Mode: Receiving

Measurement: Quasi-peak (9kHz – 1GHz), Peak (above 1GHz)

RBW: 9kHz (below 30MHz), 120KHz (30MHz – 1GHz), 1MHz (above 1GHz)

VBW: 30kHz (below 30MHz), 300kHz (30MHz – 1GHz), 3MHz (above 1GHz)

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBµV)	Transducer Factor (dB/m)	Field Strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)

Remark: No specified emission found



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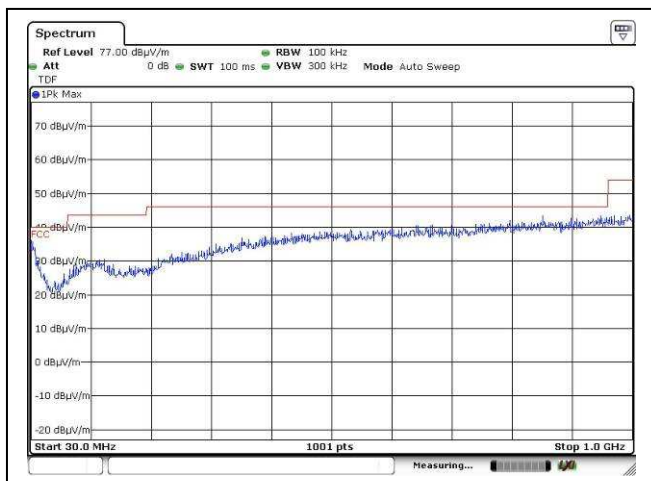
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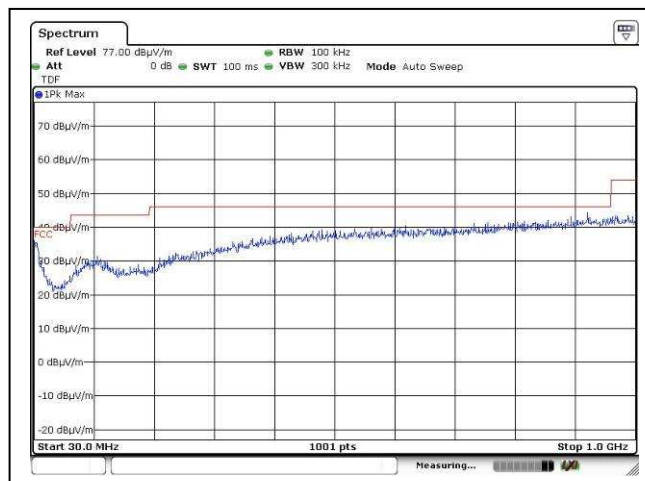
Report No. : AU0058451(1)

Date : 30 Sep 2016

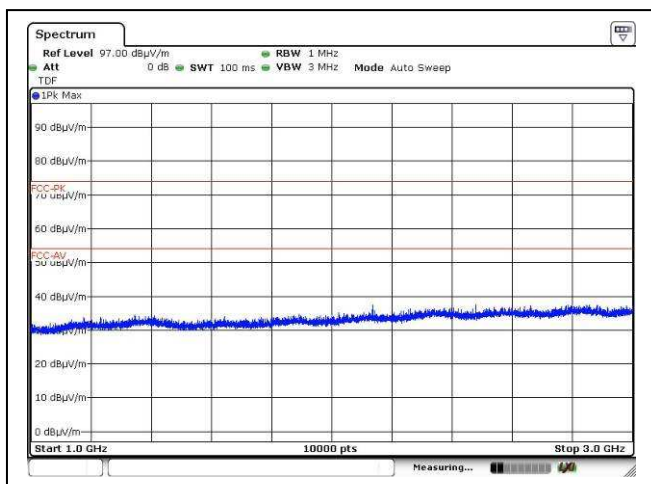
2.3 Radiated Emission Measurement Data (Con't)



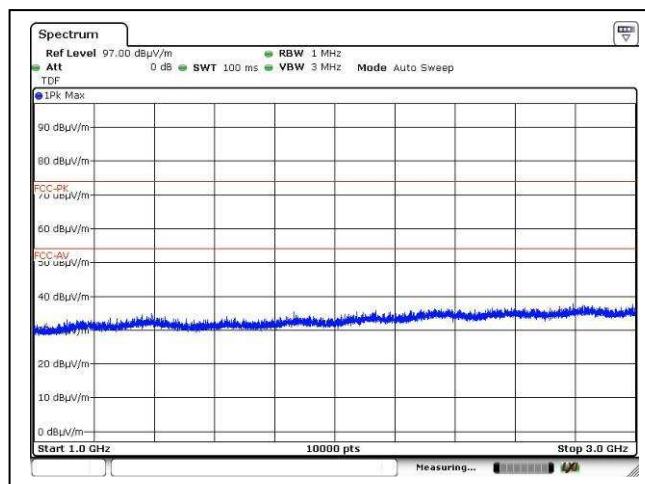
Receiving mode, 30MHz – 1GHz, Horizontal



Receiving mode, 30MHz – 1GHz, Vertical



Receiving mode, 1GHz – 3GHz, Horizontal



Receiving mode, 1GHz – 3GHz, Vertical



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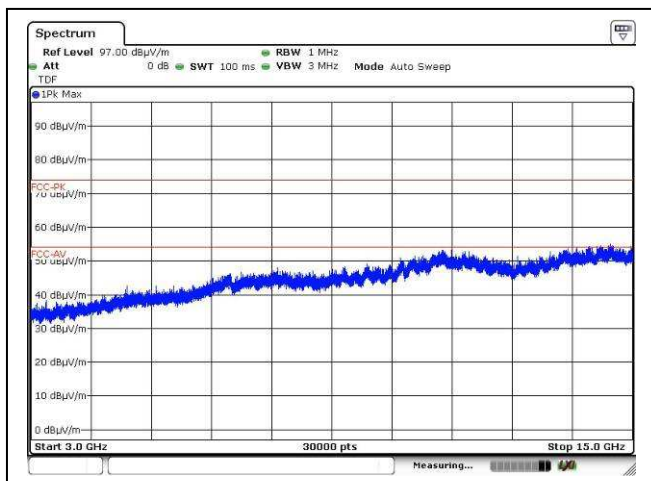
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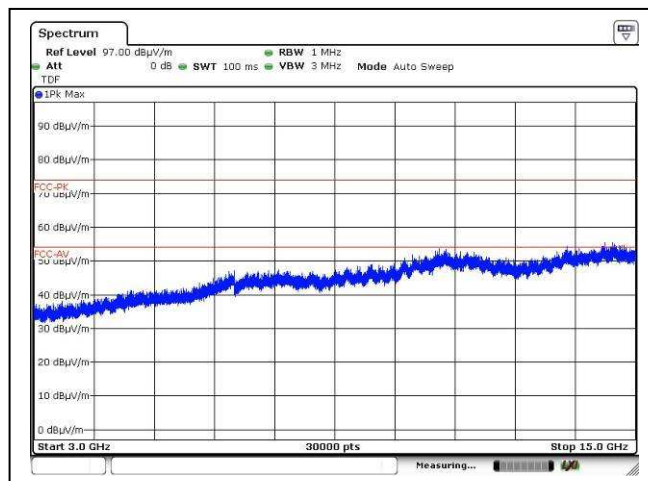
Report No. : AU0058451(1)

Date : 30 Sep 2016

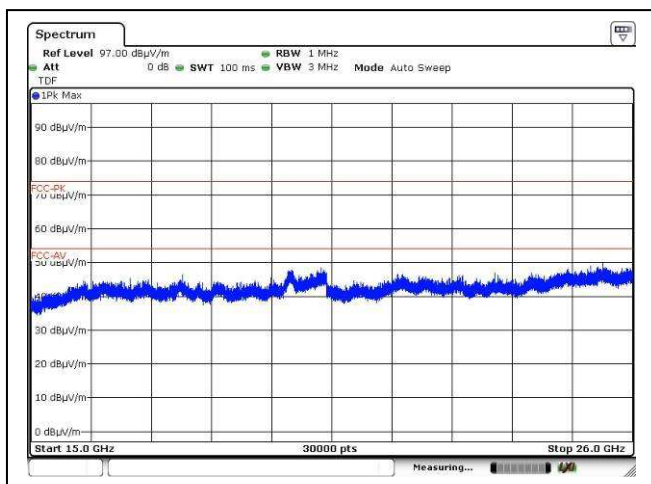
2.3 Radiated Emission Measurement Data (Con't)



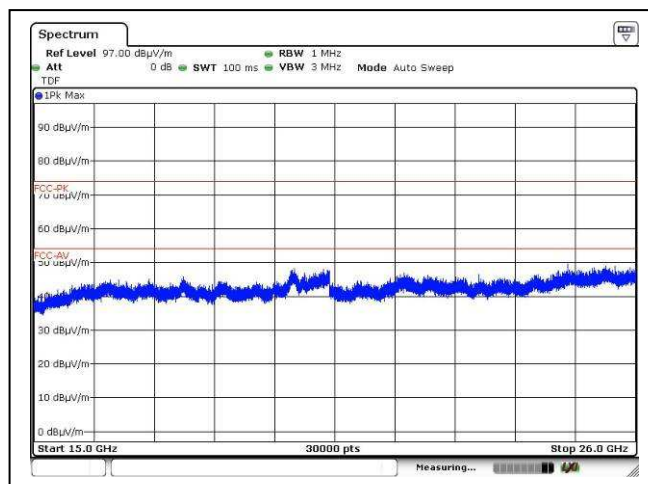
Receiving mode, 3GHz – 15GHz, Horizontal



Receiving mode, 3GHz – 15GHz, Vertical



Receiving mode, 15GHz – 26GHz, Horizontal



Receiving mode, 15GHz – 26GHz, Vertical



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3 Description of the Line-conducted Test

3.1 Test Procedure

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.10 – 2013. The EUT was setup as described in the procedures, and both lines were measured.

3.2 Test Result

No measurement is required as the EUT is a battery-operated product.



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Date : 30 Sep 2016

4 Photograph

4.1 Photographs of the Test Setup for Radiated Emission and Conducted Emission

For electronic filing, the photos are saved with filename VLEHS2419T TSup.pdf.

4.2 Photographs of the External and Internal Configurations of the EUT

For electronic filing, the photos are saved with filename VLEHS2419T ExPho.pdf and VLEHS2419T InPho.pdf.

4.3 Antenna requirement

Appendices A4 shows the antenna is permanently attached and cannot be changed. Therefore it fulfils the section 15.203 requirement



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TEST REPORT

Report No. : AU0058451(1)

Date : 30 Sep 2016

5 Appendices

A1	Photos of the set-up of Radiated Emissions	2	pages
A2	Photos of the set-up of Conducted Emissions	1	page
A3	Photos of External Configurations	2	pages
A4	Photos of Internal Configurations	3	pages
A5	ID Label/Location	1	page



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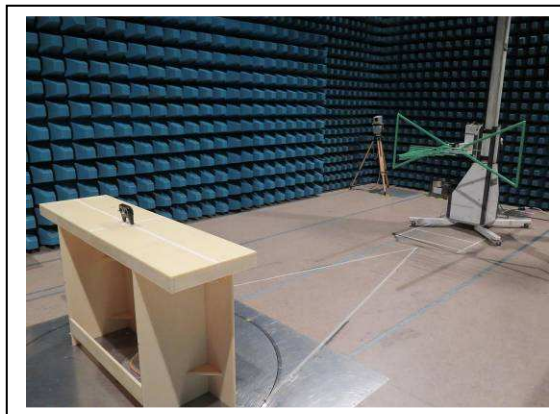
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TEST REPORT

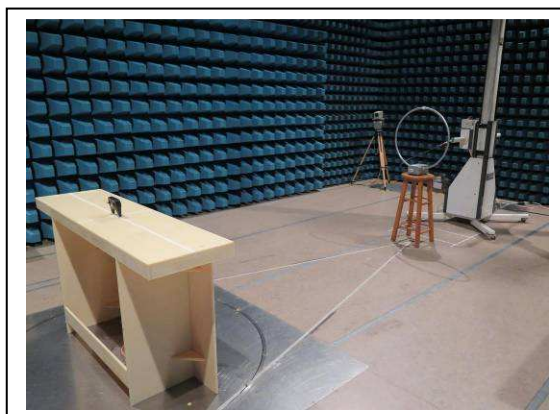
Report No. : AU0058451(1)

Date : 30 Sep 2016

A1. Photos of the set-up of Radiated Emissions



30MHz – 1GHz



9kHz – 30MHz

Tested by:

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew

FCC ID: VLEHS2419T

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Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: <http://www.cmatcl.com>



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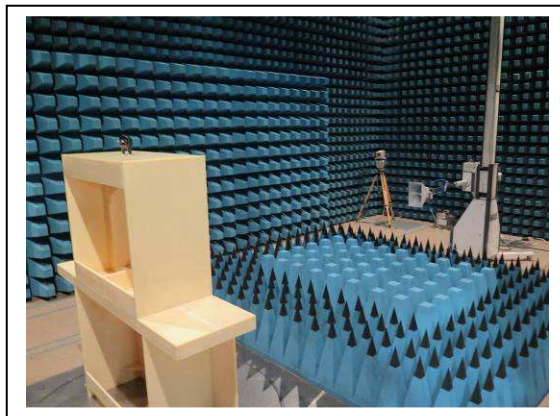
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TEST REPORT

Report No. : AU0058451(1)

Date : 30 Sep 2016

A1. Photos of the set-up of Radiated Emissions



1GHz – 26GHz

Tested by:

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew



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TEST REPORT

Report No. : AU0058451(1)

Date : 30 Sep 2016

A2. Photos of the set-up of Conducted Emissions



Tested by:

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew



CMA Testing and Certification Laboratories

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TEST REPORT

Report No. : AU0058451(1)

Date : 30 Sep 2016

A3 Photos of External Configurations



External Configuration 1



External Configuration 2

Tested by:

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew

FCC ID: VLEHS2419T

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TEST REPORT

Report No. : AU0058451(1)

Date : 30 Sep 2016

A3 Photos of External Configurations



External Configuration 3



External Configuration 4

Tested by:

Handwritten signature of Mr. LEUNG Shu-kan, Ken.

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Handwritten signature of Mr. WONG Lap-pong, Andrew.

Mr. WONG Lap-pong, Andrew

FCC ID: VLEHS2419T

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TEST REPORT

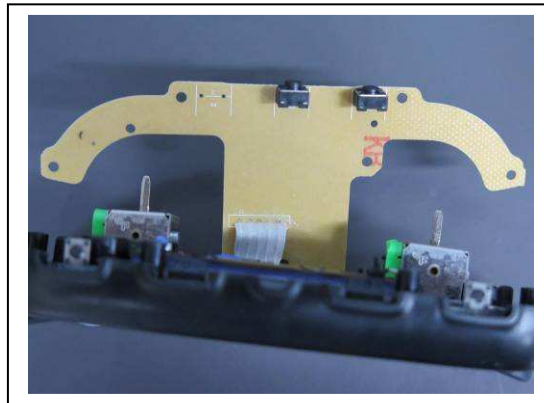
Report No. : AU0058451(1)

Date : 30 Sep 2016

A4 Photos of Internal Configurations



Internal Configuration 1



Internal Configuration 2

Tested by:

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew

FCC ID: VLEHS2419T

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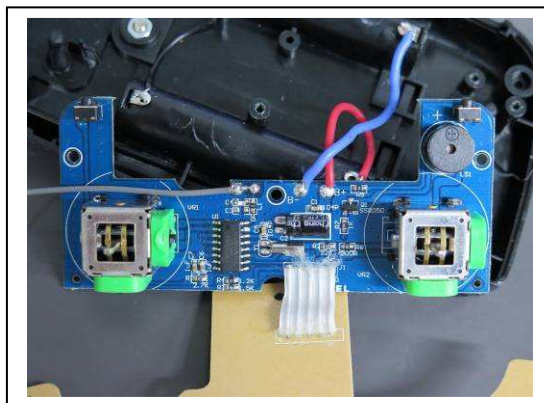
廠商會檢定中心

TEST REPORT

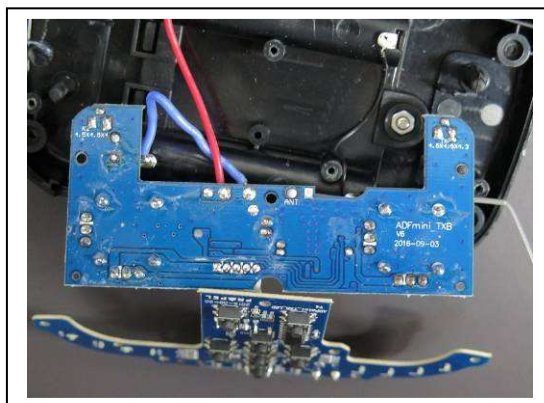
Report No. : AU0058451(1)

Date : 30 Sep 2016

A4 Photos of Internal Configurations



Internal Configuration 3



Internal Configuration 4

Tested by:

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew

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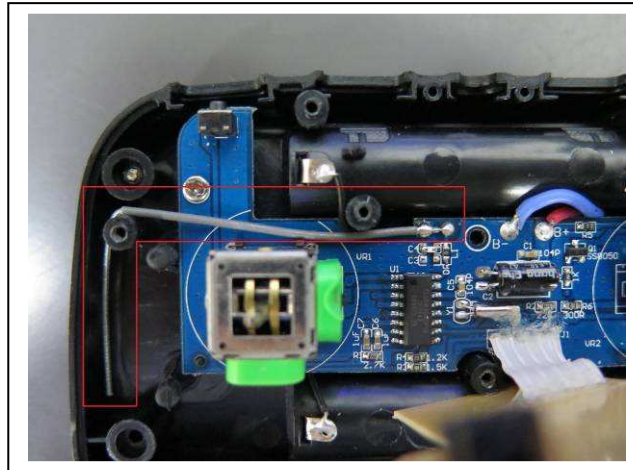
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TEST REPORT

Report No. : AU0058451(1)

Date : 30 Sep 2016

A4 Photos of Internal Configurations



EUT Antenna

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TEST REPORT

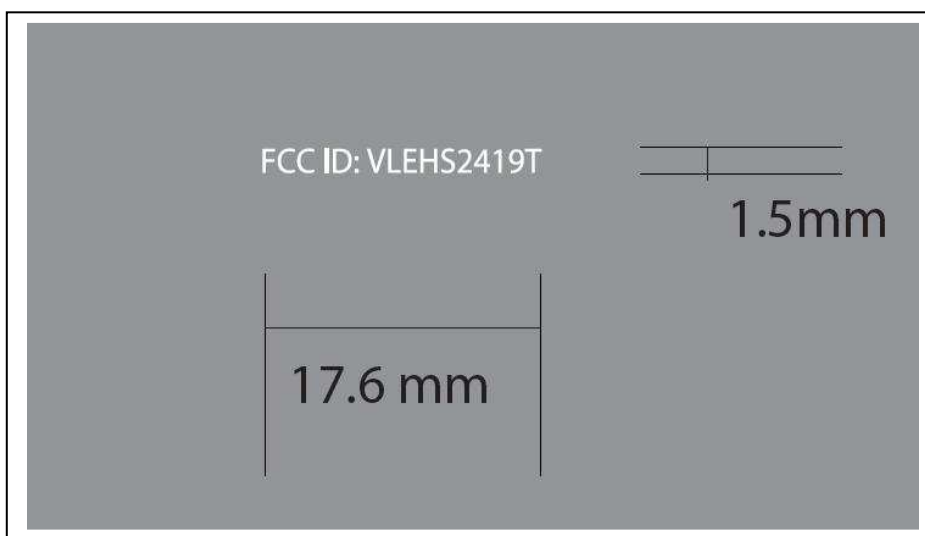
Report No. : AU0058451(1)

Date : 30 Sep 2016

A5 ID Label / Location



ID Label 1



***** End of Report *****

Tested by:

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew

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