

MRT Technology (Suzhou) Co., Ltd Phone: +86-512-66308358 Web: www.mrt-cert.com Report No.: 1711RSU01102 Report Version: V01 Issue Date: 01-26-2018

MEASUREMENT REPORT

FCC PART 15.249 / RSS-210

FCC ID: BRWRMTTI01	BRWRMTTI01

IC: 6157A-RMTTI01

APPLICANT: Horizon Hobby, LLC

Application Type: Certification

Product: Remote Receiver

Model No.: SPM9745, SPM9746

Brand Name: Spektrum

FCC Classification: Low Power Communication Device Transmitter (DXX)

FCC Rule Part(s): Part 15.249

IC Rule(s): RSS-210 Issue 9, RSS-GEN Issue 4

Test Procedure(s): ANSI C63.10 - 2013

Test Date: November 14, 2017 ~ January 26, 2018

Reviewed By

(Jame Yuan)

Approved By

Marlinchen (Marlin Chen)



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

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Revision History

Report No.	Version	Description	Issue Date	Note
1711RSU01102	Rev. 01	Initial report	01-26-2018	Valid



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Applicant:	Horizon Hobby, LLC			
Applicant Address:	4105 Fieldstone Rd., Champaign, IL 61822 USA			
Manufacturer:	Horizon Hobby, LLC			
Manufacturer Address:	4105 Fieldstone Rd., Champaign, IL 61822 USA			
Test Site:	MRT Technology (Suzhou) Co., Ltd			
Test Site Address:	D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong			
	Economic Development Zone, Suzhou, China			
FCC Registration No.:	893164			
IC Registration No.:	11384A			
FCC Rule Part(s):	Part 15.249			
IC Rule:	RSS-210 Issue 9, RSS-GEN Issue 4			
FCC ID:	BRWRMTTI01			
IC:	6157A-RMTTI01			
Test Device Serial No.:	N/A Production Pre-Production Engineering			
FCC Classification:	Low Power Communication Device Transmitter (DXX)			

§2.1033 General Information

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- MRT facility is a FCC registered (MRT Reg. No. 893164) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.
- MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.
- MRT facility is a VCCI registered (R-4179, G-814, C-4664, T-2206) test laboratory with the site description on file at VCCI Council.
- MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications and Radio testing for FCC, Industry Canada, EU and TELEC Rules.

lac					
Accre	dited Laboratory				
	A2LA has accredited				
	LOGY (SUZHOU) CO., LTD. Ingsu. People's Republic of China				
for t	lechnical competence in the field of				
	Electrical Testing				
General requirements for the competence technical competence for a defined so	ance with the recognized international Standard ISO/IEC 17025/2005 of testing and calibration laboratories. This accreditation demonstrate cope and the operation of a biotectory quality management system (LAC-MF Communique dated 8 January 2009).				
	Presented this find day of September 2014.				
	Voted to August 31, 2018				



1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2009 on September 30, 2013.





2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name	Remote Receiver			
Model No.	SPM9745, SPM9746			
Model Difference				
SPM9745	• Drawing.			
(Total 62mm length)	A B Exposed Insulated Feed Coaxial Cable Ø C u.FL Connector			
	SymbolValueToleranceA31 mm±1 mmB31 mm±1 mmC1.13 mmNominal			
SPM9746	• Drawing.			
(Total 231mm length)	A B Exposed Insulated Feed Coaxial Cable Ø C U.FL Connector			
	SymbolValueToleranceAo31 mmo±1 mmoBo200 mmo±5 mmoCo1.13 mmoNominalo			
Brand Name	Spektrum			
Frequency Range	2404 ~ 2476 MHz			
Channel Number	23			
Type of Modulation	GFSK			

Note: For radiated emission test, both SPM9745 and SPM9746 have been tested.



Channel	Frequency	Channel	Frequency
01	2404 MHz	02	2412 MHz
03	2416 MHz	04	2418 MHz
05	2422 MHz	06	2424 MHz
07	2426 MHz	08	2428 MHz
09	2430 MHz	10	2432 MHz
11	2434 MHz	12	2438 MHz
13	2440 MHz	14	2444 MHz
15	2452 MHz	16	2460 MHz
17	2462 MHz	18	2464 MHz
19	2466 MHz	20	2468 MHz
21	2470 MHz	22	2472 MHz
23	2476 MHz		

2.2. Operation Frequency and Channel List

2.3. Test Configuration

The EUT was tested as described in this report is in compliance with the requirements limits of FCC Rules Part 15.207,15.209, 15.215 and 15.249. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

2.4. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.



2.5. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

RSP-100 Issue 11 Section 3

The manufacturer, importer or distributor shall meet the labelling requirements set out in this section for every unit:

- (i) prior to marketing in Canada, for products manufactured in Canada
- (ii) prior to importation into Canada, for imported products

For information regarding the e-labelling option, see Notice 2014–DRS1003. The label for the certified product represents the manufacturer's or importer's compliance with Innovation, Science and Economic Development Canada's (ISED) regulatory requirements. Please see attachment for IC label and label location.

2.6. Test Software

The test utility software used during testing was "RF Compliance Mode Setup", and the version was "1.0.0.0".



3. DESCRIPTION OF TEST

3.1. Evaluation Procedure

The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2013), and the requirements provided in FCC 15.207, 15.209, 15.215 and 15.249 were performed in the report of the EUT.

Deviation from measurement procedure.....None

3.2. AC Line Conducted Emissions

The line-conducted facility is located inside an 8'x4'x4' shielded enclosure. A 1m x 2m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, $50\Omega/50$ uH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground-plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the receiver and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The receiver was scanned from 150kHz to 30MHz. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was also maximized by varying: power lines, the mode of operation or data exchange speed, or support equipment whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions are used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

An extension cord was used to connect to a single LISN which powered by EUT. The extension cord was calibrated with LISN, the impedance and insertion loss are compliance with the requirements as stated in ANSI C63.10-2013.



3.3. Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. A MF Model 210SS turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable. For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up for frequencies below 1GHz was placed on top of the 0.8 meter high, 1 x 1.5 meter table; and test set-up for frequencies 1-25GHz was placed on top of the 1.5 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions. According to 3dB Beam-Width of horn antenna, the horn antenna should be always directed to the EUT when rising height.



4. ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antenna of the EUT is **permanently attached**.
- There are no provisions for connection to an external antenna.

Conclusion:

This unit complies with the requirement of §15.203.



5. TEST EQUIPMENT CALIBRATION DATE

Conducted Emissions - SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2018/06/20
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2018/06/20
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2018/06/20
				1 year	2017/12/20
Temperature/Humidity Meter	Yuhuaze	HTC-2	MRTSUE06181	1 year	2018/12/20
Shielding Anechoic Chamber	Mikebang	Chamber-SR2	MRTSUE06214	1 year	2018/05/10

Radiated Emission - AC2

Instrument	Manufacturer	Туре No.	Asset No.	Cali. Interval	Cal. Due Date
MXE EMI Receiver	Agilent	N9038A	MRTSUE06125	1 year	2018/08/03
Broadband Coaxial	O alta and a sta			1 year	2017/12/10
Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06176	1 year	2018/12/10
Leen Antonne	O alta and a sha			1 year	2017/11/21
Loop Antenna	Schwarzbeck	FMZB1519	MRTSUE06025	1 year	2018/11/21
TRILOG Antenna	Schwarzbeck	VULB9162	MRTSUE06022	1 year	2018/10/22
Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06023	1 year	2018/10/21
Broadband Horn Antenna	O a huna an-h a a h	BBHA9170	MRTSUE06024	1 year	2018/01/04
	Schwarzbeck			1 year	2019/01/04
Digitial Thermometer &	N 4'	ETUEOO		1 year	2017/11/30
Hygrometer	Minggao	ETH529	MRTSUE06170	1 year	2018/11/30
RF Cable	HUBER+SUH NER	Cable 01	MRTSUE06055-1	1 year	2018/03/29
RF Cable	HUBER+SUH NER	Cable 02	MRTSUE06055-2	1 year	2018/03/29
Anechoic Chamber	RIKEN	Chamber-AC2	MRTSUE06213	1 year	2018/05/10



Conducted Test Equipment - TR3

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
MXE EMI Receiver	Agilent	N9038A	MRTSUE06125	1 year	2018/08/03
RF Cable	HUBER+SUH NER	Cable 03	MRTSUE06055-3	1 year	2018/03/29
Attenuator	Woken	WATT-218FS- 15	MRTSUE06220	1 year	2018/03/29
DC Block	Woken	00900A1A2A1 01A	MRTSUE06221	1 year	2018/03/29
Temperature/Humidity Meter	Yuhuaze	HTC-2	MRTSUE06180	1 year 1 year	2017/12/20 2018/12/20

Software	Version	Function
e3	V8.3.5	EMI Test Software



6. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

AC Conducted Emission Measurement - SR2
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):
150kHz~30MHz: 3.46dB
Radiated Emission Measurement - AC2
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):
9kHz ~ 1GHz: 4.18dB
1GHz ~ 25GHz: 4.76dB
20dB Spectrum Bandwidth - TR3
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):
0.28%



7. TEST RESULT

7.1. Summary

Company Name:	<u>Horizon Hobby, LLC</u>
Product:	Remote Receiver

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 7.2
15.209 15.249	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209	Radiated	Pass	Section 7.3 & 7.4
15.215(c)	20dB Spectrum Bandwidth	20 dB bandwidth of the emission in the specific band	Conducted	Pass	Section 7.5

RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
RSS-Gen	AC Conducted Emissions	< RSS-Gen Clause 8.8	Line	Deee	Section
Clause 8.8	150kHz - 30MHz	limits	Conducted	Pass	7.2
RSS-210	General Field Strength	Emissions in restricted			
Clause 8.9	Limits (Restricted Bands	bands must meet the	Dedicted	Deee	Section
Annex	and Radiated Emission	radiated limits detailed in	Radiated	Pass	7.3 & 7.4
A2.9	Limits)	clause 8.10			
RSS-GEN		N1/A	O a ra divisita d	Dees	Section
Clause 6.6	99% Occupied Bandwidth	N/A	Conducted	Pass	7.6

Notes:

- All modes of operation and data rates were investigated. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer.

The correction table was used to account for the losses of the cables and attenuators used as part of the

system to connect the EUT to the analyzer at all frequencies of interest.



7.2. Conducted Emission

7.2.1. Test Limit

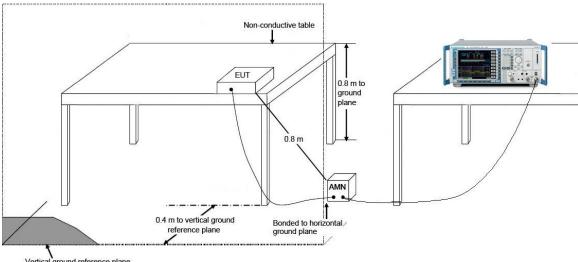
FCC Part 15 Subpart C Paragraph 15.207 Limits						
Frequency (MHz)	QP (dBuV)	AV (dBuV)				
0.15 - 0.50	66 - 56	56 - 46				
0.50 - 5.0	56	46				
5.0 - 30	60	50				

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5

MHz.

7.2.2. Test Setup



Vertical ground reference plane



7.2.3. Test Result

	2.01								
Site	Site: SR2					ime: 2017/11	/21 - 14:54		
Limi	it: FCC	_Part15	.207_CE_AC	Power	E	Engineer: Polly Zong			
Prol	be: EN	V216_1	01683_Filter	On	F	Polarity: Line			
EUT: Remote Receiver					F	Power: AC 120	0V/60Hz		
Worst Case Mode: Transmit at channel 2404MHz									
Level(rdBuW)	10 0 -10 -20	1 * *	vmuh		in have been a second				
	0.15			1		ncy(MHz)		10	30
No	Flag	Mark	Frequency	Measure	Reading	Over Limit	Limit	Factor	Туре
			(MHz)	Level	Level	(dB)			
						(uD)	(dBuV)	(dB)	
1				(dBuV)	(dBuV)		(dBuV)	(dB)	
			0.186	(dBuV) 41.719	(dBuV) 31.681	-22.494	(dBuV) 64.213	(dB) 10.039	QP
2			0.186 0.186	. ,	. ,				QP AV
2 3				41.719	31.681	-22.494	64.213	10.039	
		*	0.186	41.719 24.454	31.681 14.416	-22.494 -29.759	64.213 54.213	10.039 10.039	AV
3		*	0.186 0.450	41.719 24.454 38.308	31.681 14.416 28.182	-22.494 -29.759 -18.567	64.213 54.213 56.875	10.039 10.039 10.126	AV QP
3 4		*	0.186 0.450 0.450	41.719 24.454 38.308 35.027	31.681 14.416 28.182 24.901	-22.494 -29.759 -18.567 -11.848	64.213 54.213 56.875 46.875	10.039 10.039 10.126 10.126	AV QP AV
3 4 5		*	0.186 0.450 0.450 0.610	41.719 24.454 38.308 35.027 27.493	31.681 14.416 28.182 24.901 17.383	-22.494 -29.759 -18.567 -11.848 -28.507	64.213 54.213 56.875 46.875 56.000	10.039 10.039 10.126 10.126 10.126 10.110	AV QP AV QP
3 4 5 6		*	0.186 0.450 0.450 0.610 0.610	41.719 24.454 38.308 35.027 27.493 16.961	31.681 14.416 28.182 24.901 17.383 6.852	-22.494 -29.759 -18.567 -11.848 -28.507 -29.039	64.213 54.213 56.875 46.875 56.000 46.000	10.039 10.039 10.126 10.126 10.126 10.110 10.110	AV QP AV QP AV
3 4 5 6 7		*	0.186 0.450 0.450 0.610 0.610 1.014	41.719 24.454 38.308 35.027 27.493 16.961 28.228	31.681 14.416 28.182 24.901 17.383 6.852 18.319	-22.494 -29.759 -18.567 -11.848 -28.507 -29.039 -27.772	64.213 54.213 56.875 46.875 56.000 46.000 56.000	10.039 10.039 10.126 10.126 10.110 10.110 9.909	AV QP AV QP AV QP
3 4 5 6 7 8		*	0.186 0.450 0.450 0.610 0.610 1.014 1.014	41.719 24.454 38.308 35.027 27.493 16.961 28.228 20.614	31.681 14.416 28.182 24.901 17.383 6.852 18.319 10.705	-22.494 -29.759 -18.567 -11.848 -28.507 -29.039 -27.772 -25.386	64.213 54.213 56.875 46.875 56.000 46.000 56.000 46.000	10.039 10.039 10.126 10.126 10.110 10.110 9.909 9.909	AV QP AV QP AV QP AV QP AV
3 4 5 6 7 8 9		*	0.186 0.450 0.450 0.610 0.610 1.014 1.014 4.146	41.719 24.454 38.308 35.027 27.493 16.961 28.228 20.614 22.649	31.681 14.416 28.182 24.901 17.383 6.852 18.319 10.705 12.676	-22.494 -29.759 -18.567 -11.848 -28.507 -29.039 -27.772 -25.386 -33.351	64.213 54.213 56.875 46.875 56.000 46.000 56.000 46.000 56.000	10.039 10.039 10.126 10.126 10.110 9.909 9.909 9.973	AV QP AV QP

Note: Measure Level (dB μ V) = Reading Level (dB μ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)



Site: SR2					۲	Time: 2017/11/21 - 15:04			
Limi	t: FCC	_Part15	5.207_CE_AC	Power	E	Engineer: Polly Zong			
Prob	e: EN	V216_1	01683_Filter	On	F	Polarity: Neutral			
EUT: Remote Receiver					F	Power: AC 120	0V/60Hz		
Wor	st Cas	e Mode	e: Transmit at	channel 240	94MHz				
Level(dBuV)	80 70 60 50 . 40 20 10 0	1 * * *	num fin			united and and and and and and and and and an			
	-10								
No	-20 0.15	Mark	Frequency	1 Measure	Freque	ncy(MHz)	Limit	10 Eactor	30 Type
No	-20	Mark	Frequency (MHz)	1 Measure Level (dBuV)		ncy(MHz) Over Limit (dB)	Limit (dBuV)	10 Factor (dB)	30 Type
No 1	-20 0.15	Mark		Measure Level	Freque Reading Level	Over Limit		Factor	
	-20 0.15	Mark	(MHz)	Measure Level (dBuV)	Freque Reading Level (dBuV)	Over Limit (dB)	(dBuV)	Factor (dB)	Туре
1	-20 0.15	Mark	(MHz) 0.202	Measure Level (dBuV) 40.594	Freque Reading Level (dBuV) 30.586	Over Limit (dB) -22.934	(dBuV) 63.528	Factor (dB) 10.008	Type QP
1 2	-20 0.15	Mark	(MHz) 0.202 0.202	Measure Level (dBuV) 40.594 23.114	Freque Reading Level (dBuV) 30.586 13.106	Over Limit (dB) -22.934 -30.414	(dBuV) 63.528 53.528	Factor (dB) 10.008 10.008	Type QP AV
1 2 3 4	-20 0.15		(MHz) 0.202 0.202 0.430	Measure Level (dBuV) 40.594 23.114 35.646	Freque Reading Level (dBuV) 30.586 13.106 25.511	Over Limit (dB) -22.934 -30.414 -21.607	(dBuV) 63.528 53.528 57.253	Factor (dB) 10.008 10.008 10.135	Type QP AV QP
1 2 3 4 5	-20 0.15		(MHz) 0.202 0.202 0.430 0.430	Measure Level (dBuV) 40.594 23.114 35.646 27.071	Freque Reading Level (dBuV) 30.586 13.106 25.511 16.936	Over Limit (dB) -22.934 -30.414 -21.607 -20.182	(dBuV) 63.528 53.528 57.253 47.253	Factor (dB) 10.008 10.008 10.135 10.135	Type QP AV QP AV QP
1 2 3 4 5 6	-20 0.15		(MHz) 0.202 0.202 0.430 0.430 0.594	Measure Level (dBuV) 40.594 23.114 35.646 27.071 32.740	Freque Reading Level (dBuV) 30.586 13.106 25.511 16.936 22.605	Over Limit (dB) -22.934 -30.414 -21.607 -20.182 -23.260	(dBuV) 63.528 53.528 57.253 47.253 56.000	Factor (dB) 10.008 10.008 10.135 10.135 10.134	Type QP AV QP AV QP QP
1 2 3 4 5 6 7	-20 0.15		(MHz) 0.202 0.202 0.430 0.430 0.594 0.594	Measure Level (dBuV) 40.594 23.114 35.646 27.071 32.740 21.724	Freque Reading Level (dBuV) 30.586 13.106 25.511 16.936 22.605 11.589	Over Limit (dB) -22.934 -30.414 -21.607 -20.182 -23.260 -24.276	(dBuV) 63.528 53.528 57.253 47.253 56.000 46.000	Factor (dB) 10.008 10.008 10.135 10.135 10.134 10.134	Type QP AV QP AV QP AV AV QP AV QP
1 2 3 4 5 6 7 8	-20 0.15		(MHz) 0.202 0.202 0.430 0.430 0.594 0.594 1.762	Measure Level (dBuV) 40.594 23.114 35.646 27.071 32.740 21.724 23.100	Freque Reading Level (dBuV) 30.586 13.106 25.511 16.936 22.605 11.589 13.219	Over Limit (dB) -22.934 -30.414 -21.607 -20.182 -23.260 -24.276 -32.900	(dBuV) 63.528 53.528 57.253 47.253 56.000 46.000 56.000	Factor (dB) 10.008 10.135 10.135 10.134 10.134 10.134 9.882	TypeQPAVQPAVQPAVQPQPQPQPQPQP
1 2 3 4 5 6 7 8	-20 0.15		(MHz) 0.202 0.202 0.430 0.430 0.594 0.594 1.762 1.762	Measure Level (dBuV) 40.594 23.114 35.646 27.071 32.740 21.724 23.100 16.928	Freque Reading Level (dBuV) 30.586 13.106 25.511 16.936 22.605 11.589 13.219 7.046	Over Limit (dB) -22.934 -30.414 -21.607 -20.182 -23.260 -24.276 -32.900 -29.072	(dBuV) 63.528 53.528 57.253 47.253 56.000 46.000 56.000 46.000	Factor (dB) 10.008 10.008 10.135 10.135 10.134 10.134 9.882 9.882	TypeQPAVQPAVQPAVQPAVAVQPAVQPAV
1 2 3 4 5 6 7 8 9	-20 0.15		(MHz) 0.202 0.202 0.430 0.430 0.594 0.594 1.762 1.762 4.386	Measure Level (dBuV) 40.594 23.114 35.646 27.071 32.740 21.724 23.100 16.928 22.097	Freque Reading Level (dBuV) 30.586 13.106 25.511 16.936 22.605 11.589 13.219 7.046 12.107	Over Limit (dB) -22.934 -30.414 -21.607 -20.182 -23.260 -24.276 -32.900 -29.072 -33.903	(dBuV) 63.528 53.528 57.253 47.253 56.000 46.000 56.000 56.000	Factor (dB) 10.008 10.008 10.135 10.135 10.134 10.134 9.882 9.882 9.882 9.990	TypeQPAVQPAVQPAVQPAVQPAVQPQPQPQPQPQPQPQPQPQPQPQPQPQP

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)



7.3. Radiated Emission

7.3.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.209						
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (uV/m)				
0.009-0.490	2400/F(kHz)	300				
0.490-1.705	24000/F(kHz)	30				
1.705-30.0	30	30				
30-80	100**	3				
80-216	150**	3				
216-960	200**	3				
Above 960	500	3				

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the

closed point of any part of the device or system.

Note 3: E field strength $(dBuV/m) = 20 \log E$ field strength (uV/m).

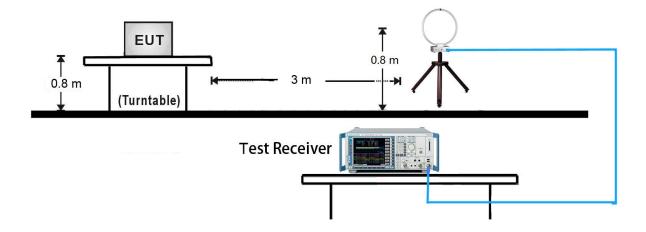


FCC Part 15 Subpart C Paragraph 15.249						
Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)				
902-928(MHz)	50	500				
2400-2483.5(MHz)	50	500				
5725-5875(MHz)	50	500				
24.0-24.25(GHz)	250	2500				

FCC Part 15.249 (d), Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

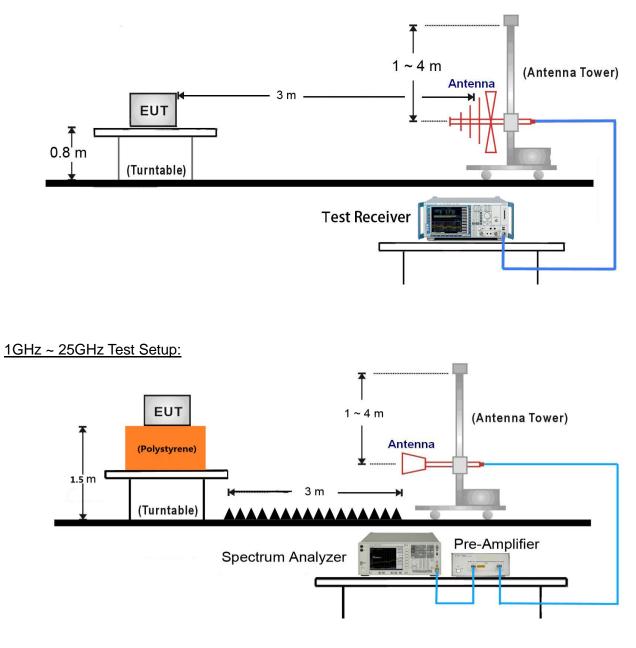
7.3.2. Test Setup

<u>9kHz ~ 30MHz Test Setup:</u>





30MHz ~ 1GHz Test Setup:





7.3.3. Test Result

Time On	One Period	Duty Cycle	Duty Cycle Factor
(ms)	(ms)	(%)	(dB)
1.43	24.58	5.82	-24.7

Note: Duty Cycle Factor = 20*Log (Duty Cycle)

🎉 Agilent Spec	trum Analyzer - Swept SA						
<mark>x</mark> Marker 3	RF 50 Ω AC Δ 11.0250 ms	PNO: Fast ↔	Trig: Free Run	Avg	ALIGN AUTO	03:17:35 PM Nov 20, 2017 TRACE 1 2 3 4 5 6 TYPE WWWWWW DET P N N N N	Marker
10 dB/div	Ref Offset 21 dB Ref 21.00 dBm	IFGain:Low	Atten: 10 dB		Δ	Mkr3 11.03 ms -0.14 dB	Select Marker
Log 11.0			v ◊ ^{1Δ}	2	3∆4		Normal
-19.0 -29.0 -39.0			N2	iettenjärnigtander ⁴ iletj			Delta
-49.0 -59.0 -69.0							Fixed⊳
Center 2.4 Res BW 8		#VBW	1 50 MHz	FUNCTION	Sweep 50	Span 0 Hz 0.00 ms (2001 pts)	Off
1 Δ2 1 2 F 1 3 Δ4 1 4 F 1 5 6	t (Δ) t t (Δ) t	1.425 ms (Δ) 24.58 ms 11.03 ms (Δ) 24.58 ms	-0.13 dB -10.58 dBm -0.14 dB -10.58 dBm			=	Properties►
7 8 9 9 10 11							More 1 of 2
MSG					STATUS	•	



Test Mode:	Transmission	Test Site:	AC2
Remark:	Fundamental Radiated Emission	Test Engineer:	Snake Ni
Model No.:	SPM9745		

Frequency	Reading	Factor	Duty Cycle	Measure	Limit	Margin	Detector	Polarization
(MHz)	Level	(dB)	Factor	Level	(dBµV/m)	(dB)		
	(dBµV)		(dB)	(dBµV/m)				
	67.0	32.3	N/A	99.3	114.0	-14.7	PK	Horizontal
2404	67.0	32.3	-24.7	74.6	94.0	-19.4	AV	Horizontal
2404	63.4	32.3	N/A	95.7	114.0	-18.3	PK	Vertical
	63.4	32.3	-24.7	71.0	94.0	-23.0	AV	Vertical
	66.7	32.2	N/A	98.9	114.0	-15.1	PK	Horizontal
2440	66.7	32.2	-24.7	74.2	94.0	-19.8	AV	Horizontal
2440	61.6	32.2	N/A	93.8	114.0	-20.2	PK	Vertical
	61.6	32.2	-24.7	69.1	94.0	-24.9	AV	Vertical
	67.2	32.3	N/A	99.5	114.0	-14.5	PK	Horizontal
2476	67.2	32.3	-24.7	74.8	94.0	-19.2	AV	Horizontal
2476	62.5	32.3	N/A	94.8	114.0	-19.2	PK	Vertical
	62.5	32.3	-24.7	70.1	94.0	-23.9	AV	Vertical

Average Measure Level = Peak Measure Level + Duty Cycle Factor

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: All readings below 1GHz are peak, above 1GHz are performed with peak and/or average measurements as necessary.



Test Mode:	Transmission	Test Site:	AC2
Frequency	2404MHz	Test Engineer:	Snake Ni
Remark:	General Radiated Emission		
Model No.:	SPM9745		

Frequency (MHz)	Reading Level (dBµV)	Factor (dB)	Measure Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Polarization
179.9	22.8	10.9	33.7	43.5	-9.8	QP	Horizontal
192.0	22.6	11.9	34.5	43.5	-9.0	QP	Horizontal
55.3	18.6	14.6	33.2	40.0	-6.8	QP	Vertical
60.1	16.3	13.9	30.2	40.0	-9.8	QP	Vertical
3856.0	37.8	-0.6	37.2	74.0 (Note 2)	-36.8	PK	Horizontal
4808.0	45.3	2.7	48.0	74.0 (Note 2)	-26.0	PK	Horizontal
7213.5	37.1	10.6	47.7	74.0 (Note 2)	-26.3	PK	Horizontal
9126.0	33.1	12.5	45.6	74.0 (Note 2)	-28.4	PK	Horizontal
4502.0	37.6	1.6	39.2	74.0 (Note 2)	-34.8	PK	Vertical
4808.0	47.3	2.7	50.0	74.0 (Note 2)	-24.0	PK	Vertical
7213.5	36.6	10.6	47.2	74.0 (Note 2)	-26.8	PK	Vertical
9755.0	34.0	13.0	47.0	74.0 (Note 2)	-27.0	PK	Vertical

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre Amplifier Gain (dB)

Note 2: Average measurement was not performed when the peak level lower than average limit.



Test Mode:	Transmission	Test Site:	AC2
Frequency	2440MHz	Test Engineer:	Snake Ni
Remark:	General Radiated Emission		
Model No.:	SPM9745		

Frequency (MHz)	Reading Level (dBµV)	Factor (dB)	Measure Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Polarization
180.4	16.9	11.0	27.9	43.5	-15.6	QP	Horizontal
192.0	18.6	11.9	30.5	43.5	-13.0	QP	Horizontal
54.3	20.5	14.8	35.3	40.0	-4.7	QP	Vertical
60.1	21.2	13.9	35.1	40.0	-4.9	QP	Vertical
3822.0	37.6	-0.6	37.0	74.0 (Note 2)	-37.0	PK	Horizontal
4880.0	45.1	2.6	47.7	74.0 (Note 2)	-26.3	PK	Horizontal
7320.0	35.2	10.6	45.8	74.0 (Note 2)	-28.2	PK	Horizontal
9760.0	35.6	12.8	48.4	74.0 (Note 2)	-25.6	PK	Horizontal
3686.0	35.8	-0.9	34.9	74.0 (Note 2)	-39.1	PK	Vertical
4880.0	46.3	2.6	48.9	74.0 (Note 2)	-25.1	PK	Vertical
7320.0	34.7	10.7	45.4	74.0 (Note 2)	-28.6	PK	Vertical
12200.0	31.5	17.0	48.5	74.0 (Note 2)	-25.5	PK	Vertical

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre Amplifier Gain (dB)

Note 2: Average measurement was not performed when the peak level lower than average limit.



Test Mode:	Transmission	Test Site:	AC2
Frequency	2476MHz	Test Engineer:	Snake Ni
Remark:	General Radiated Emission		
Model No.:	SPM9745		

Frequency (MHz)	Reading Level (dBµV)	Factor (dB)	Measure Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Polarization
179.9	20.2	10.9	31.1	43.5	-12.4	QP	Horizontal
192.5	21.6	11.9	33.5	43.5	-10.0	QP	Horizontal
55.2	20.3	14.6	34.9	40.0	-5.1	QP	Vertical
59.9	17.5	13.9	31.4	40.0	-8.6	QP	Vertical
3635.0	36.2	-1.1	35.1	74.0 (Note 2)	-38.9	PK	Horizontal
4952.5	47.5	2.7	50.2	74.0 (Note 2)	-23.8	PK	Horizontal
7426.0	37.4	10.7	48.1	74.0 (Note 2)	-25.9	PK	Horizontal
9908.0	34.6	13.5	48.1	74.0 (Note 2)	-25.9	PK	Horizontal
3924.0	36.1	-0.7	35.4	74.0 (Note 2)	-38.6	PK	Vertical
4952.5	48.8	2.7	51.5	74.0 (Note 2)	-22.5	PK	Vertical
7426.0	35.7	10.7	46.4	74.0 (Note 2)	-27.6	PK	Vertical
9908.0	32.6	13.5	46.1	74.0 (Note 2)	-27.9	PK	Vertical

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre Amplifier Gain (dB)

Note 2: Average measurement was not performed when the peak level lower than average limit.



Test Mode:	Transmission	Test Site:	AC2
Remark:	Fundamental Radiated Emission	Test Engineer:	Snake Ni
Model No.:	SPM9746		

Frequency	Reading	Factor	Duty Cycle	Measure	Limit	Margin	Detector	Polarization
(MHz)	Level	(dB)	Factor	Level	(dBµV/m)	(dB)		
	(dBµV)		(dB)	(dBµV/m)				
	58.8	32.3	N/A	91.1	114.0	-22.9	PK	Horizontal
2404	58.8	32.3	-24.7	66.4	94.0	-27.6	AV	Horizontal
2404	65.6	32.3	N/A	97.9	114.0	-16.1	PK	Vertical
	65.6	32.3	-24.7	73.2	94.0	-20.8	AV	Vertical
	59.9	32.2	N/A	92.1	114.0	-21.9	PK	Horizontal
2440	59.9	32.2	-24.7	67.4	94.0	-26.6	AV	Horizontal
2440	63.9	32.2	N/A	96.1	114.0	-17.9	PK	Vertical
	63.9	32.2	-24.7	71.4	94.0	-22.6	AV	Vertical
	58.8	32.3	N/A	91.1	114.0	-22.9	PK	Horizontal
2476	58.8	32.3	-24.7	66.4	94.0	-27.6	AV	Horizontal
2476	63.4	32.3	N/A	95.7	114.0	-18.3	PK	Vertical
	63.4	32.3	-24.7	71.0	94.0	-23.0	AV	Vertical

Average Measure Level = Peak Measure Level + Duty Cycle Factor

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: All readings below 1GHz are peak, above 1GHz are performed with peak and/or average measurements as necessary.



Test Mode:	Transmission	Test Site:	AC2
Frequency	2404MHz	Test Engineer:	Snake Ni
Remark:	General Radiated Emission		
Model No.:	SPM9746		

Frequency (MHz)	Reading Level (dBµV)	Factor (dB)	Measure Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Polarization
55.2	9.7	14.6	24.3	40.0	-15.7	QP	Horizontal
204.1	18.7	12.3	31.0	43.5	-12.5	QP	Horizontal
98.9	21.4	12.8	34.2	43.5	-9.3	QP	Vertical
108.1	22.0	13.0	35.0	43.5	-8.5	QP	Vertical
3799.0	38.7	2.8	41.5	74.0 (Note 2)	-32.5	PK	Horizontal
4808.0	43.5	2.7	46.2	74.0 (Note 2)	-27.8	PK	Horizontal
6121.0	36.7	8.2	44.9	74.0 (Note 2)	-29.1	PK	Horizontal
7212.0	36.9	10.6	47.5	74.0 (Note 2)	-26.5	PK	Horizontal
1597.0	46.4	-4.2	42.2	74.0 (Note 2)	-31.8	PK	Vertical
4808.0	44.2	2.7	46.9	74.0 (Note 2)	-27.1	PK	Vertical
6475.0	36.9	9.9	46.8	74.0 (Note 2)	-27.2	PK	Vertical
7212.0	38.0	10.6	48.6	74.0 (Note 2)	-25.4	PK	Vertical

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre Amplifier Gain (dB)

Note 2: Average measurement was not performed when the peak level lower than average limit.



Test Mode:	Transmission	Test Site:	AC2
Frequency	2440MHz	Test Engineer:	Snake Ni
Remark:	General Radiated Emission		
Model No.:	SPM9746		

Frequency (MHz)	Reading Level (dBµV)	Factor (dB)	Measure Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Polarization
60.1	11.0	13.9	24.9	40.0	-15.1	QP	Horizontal
216.2	21.3	12.6	33.9	43.5	-9.6	QP	Horizontal
35.8	22.3	13.1	35.4	40.0	-4.6	QP	Vertical
108.1	22.9	13.0	35.9	43.5	-7.6	QP	Vertical
3787.0	38.7	2.7	41.4	74.0 (Note 2)	-32.6	PK	Horizontal
4880.0	40.1	2.6	42.7	74.0 (Note 2)	-31.3	PK	Horizontal
6559.0	36.9	10.2	47.1	74.0 (Note 2)	-26.9	PK	Horizontal
8072.0	35.5	13.8	49.3	74.0 (Note 2)	-24.7	PK	Horizontal
4000.0	38.9	3.3	42.2	74.0 (Note 2)	-31.8	PK	Vertical
4880.0	44.0	2.6	46.6	74.0 (Note 2)	-27.4	PK	Vertical
6226.0	37.0	8.6	45.6	74.0 (Note 2)	-28.4	PK	Vertical
9432.0	35.2	14.9	50.1	74.0 (Note 2)	-23.9	PK	Vertical

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre Amplifier Gain (dB)

Note 2: Average measurement was not performed when the peak level lower than average limit.



Test Mode:	Transmission	Test Site:	AC2
Frequency	2476MHz	Test Engineer:	Snake Ni
Remark:	General Radiated Emission		
Model No.:	SPM9746		

Frequency (MHz)	Reading Level (dBµV)	Factor (dB)	Measure Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Polarization
54.3	10.9	14.8	25.7	40.0	-14.3	QP	Horizontal
215.8	15.3	12.6	27.9	43.5	-15.6	QP	Horizontal
108.1	23.2	13.0	36.2	43.5	-7.3	QP	Vertical
311.8	17.2	14.9	32.1	46.0	-13.9	QP	Vertical
3961.0	38.4	3.1	41.5	74.0 (Note 2)	-32.5	PK	Horizontal
4952.0	38.3	2.7	41.0	74.0 (Note 2)	-33.0	PK	Horizontal
6271.0	36.6	8.6	45.2	74.0 (Note 2)	-28.8	PK	Horizontal
8055.0	35.9	13.7	49.6	74.0 (Note 2)	-24.4	PK	Horizontal
4015.0	38.1	3.4	41.5	74.0 (Note 2)	-32.5	PK	Vertical
4952.0	42.3	2.7	45.0	74.0 (Note 2)	-29.0	PK	Vertical
5941.0	34.9	7.8	42.7	74.0 (Note 2)	-31.3	PK	Vertical
7783.0	36.4	13.1	49.5	74.0 (Note 2)	-24.5	PK	Vertical

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre Amplifier Gain (dB)

Note 2: Average measurement was not performed when the peak level lower than average limit.



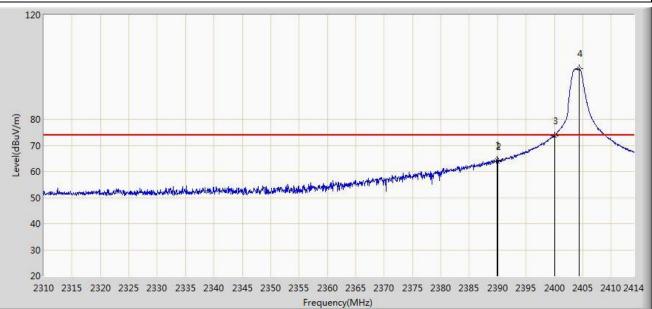
7.4. Radiated Restricted Band Edge Measurement

7.4.1. Test Result

For SPM9745:

Site: AC2	Time: 2017/11/15 - 04:08
Limit: FCC_Part15.209_RE(3m)	Engineer: Snake Ni
Probe: BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Remote Receiver	Power: DC 3.3V
EUI: Remote Receiver	Power: DC 3.3V

Test Mode: Transmit at low channel 2404MHz



No	Flag	Mark	Frequency	Measure	Reading	Over	Limit	Factor	Duty Cycle	Туре
			(MHz)	Level	Level	Limit	(dBuV/m)	(dB)	Factor	
				(dBuV/m)	(dBuV)	(dB)			(dB)	
1			2389.872	64.307	32.030	-9.693	74.000	32.277	N/A	PK
			2389.872	39.607	32.030	-14.393	54.000	32.277	-24.700	AV
2			2390.000	63.718	31.440	-10.282	74.000	32.278	N/A	PK
			2390.000	39.018	31.440	-14.982	54.000	32.278	-24.700	AV
3			2400.000	73.757	41.477	-0.243	74.000	32.281	N/A	PK
			2400.000	49.057	41.477	-4.943	54.000	32.281	-24.700	AV
4			2404.328	99.296	67.030	N/A	N/A	32.266	N/A	PK

Note: Peak Measure Level $(dB\mu V/m)$ = Reading Level $(dB\mu V)$ + Factor (dB)

Average Measure Level = Peak Measure Level + Duty Cycle Factor



Site	AC2					Time: 2	017/11/15 -	04:15		
Limi	t: FCC	_Part15	.209_RE(3m))		Engine	er: Snake Ni			
Prob	e: BBI	HA9120	D_1-18GHz			Polarity	: Vertical			
EUT	Remo	ote Rec	eiver			Power:	DC 3.3V			
Test	Mode:	Transn	nit at low cha	nnel 2404MI	Ηz					
	120									
Level(dBuV/m)	80 70 60 50 40 30 20 2310	2315 232	20 2325 2330 2	335 2340 2345	2350 2355		2370 2375 2380		2	5 2410 2414
No	Flag	Mark	Frequency	Measure	Reading	Over	Limit	Factor	Duty Cycle	Туре
			(MHz)	Level	Level	Limit	(dBuV/m)	(dB)	Factor	
				(dBuV/m)	(dBuV)	(dB)			(dB)	
1			2390.000	60.887	28.609	-13.113	74.000	32.278	N/A	PK
			2390.000	36.187	28.609	-17.813	54.000	32.278	-24.700	AV
2			2400.000	70.427	38.147	-3.573	74.000	32.281	N/A	PK
			2400.000	45.727	38.147	-8.273	54.000	32.281	-24.700	AV
3			2403.704	95.625	63.357	N/A	N/A	32.268	N/A	PK

Average Measure Level = Peak Measure Level + Duty Cycle Factor



Site	: AC2					Time: 2	017/11/15 -	04:22		
		Part15	.209_RE(3m)			er: Snake Ni			
)		-				
			D_1-18GHz				: Horizontal			
EUT	: Remo	ote Rece	eiver			Power:	DC 3.3V			
Test	Mode:	Transm	nit at high cha	annel 2476M	lHz					
Level(dBuV/m)	120 80 70 60 50 40 30 20 2473 2	474 2	476 2478	2480 2482		2486 2484 juency(MHz)	8 2490	2492 2494	4 2496 24	ph ^{an} yuunluur 98 2500
No	Flag	Mark	Frequency	Measure	Reading	Over	Limit	Factor	Duty Cycle	Туре
			(MHz)	Level	Level	Limit	(dBuV/m)	(dB)	Factor	
			· · ·	(dBuV/m)	(dBuV)	(dB)		· · ·	(dB)	
1			2475.713	99.453	67.193	N/A	N/A	32.261	N/A	PK
2			2483.500	68.186	35.905	-5.814	74.000	32.282	N/A	PK
			2483.500	43.486	35.905	-10.514	54.000	32.282	-24.700	AV

Average Measure Level = Peak Measure Level + Duty Cycle Factor



Site	: AC2					Time: 2	017/11/15 -	04:29		
Lim	it: FCC	_Part15	.209_RE(3m))		Engine	er: Snake Ni			
Prol	be: BBH	HA9120	D_1-18GHz			Polarity	: Vertical			
EUT	: Remo	ote Reco	eiver			Power:	DC 3.3V			
Test	Mode:	Transn	nit at high cha	annel 2476M	lHz					
Level(dBuV/m)	120 80 70 60 50 40 30 20 2473 2		476 2478	2480 2482		2486 248 quency(MHz)	8 2490	2492 2494	••••••••••••••••••••••••••••••••••••••	
No	Flag	Mark	Frequency	Measure	Reading	Over	Limit	Factor	Duty Cycle	Туре
			(MHz)	Level	Level	Limit	(dBuV/m)	(dB)	Factor	
				(dBuV/m)	(dBuV)	(dB)			(dB)	
							N1/A	00.000		
1			2475.916	94.745	62.485	N/A	N/A	32.260	N/A	PK
1 2			2475.916 2483.500	94.745 64.498	62.485 32.217	N/A -9.502	N/A 74.000	32.260 32.282	N/A N/A	PK PK

Average Measure Level = Peak Measure Level + Duty Cycle Factor



For SPM9746:

Site										
Onto	: AC2					Time: 2	018/01/26 -	02:55		
Limi	t: FCC	Part15	5.209_RE(3m)		Engine	er: Snake Ni			
Prob	be: BB	HA9120	D_1-18GHz			Polarity	: Horizontal			
EUT	: Rem	ote Rec	eiver			Power:	DC 3.3V			
Test	Mode	: Transn	nit at low cha	nnel 2404MI	Hz					
Level(dBuV/m)	130 80 70 60	liferer i naar faar tig waar	hiteryn refner y fwr yn ref	net ye de la la la la la constant de	ng ta batter y 18 Meterson albed	Sy Analistantika filosofilo	lajirin and she with a wy is s	san farme a depart of	1 2 3	4
	30 2310	2315 23	20 2325 2330	2335 2340 23		55 2360 236 quency(MHz)	55 2370 2375	2380 2385	2390 2395 240	0 240
No	30	2315 23 Mark	20 2325 2330 Frequency	2335 2340 23 Measure			55 2370 2375 Limit	2380 2385 Factor	2390 2395 240 Duty Cycle	0 240 Type
No	30 2310				Fre	quency(MHz)				
No	30 2310		Frequency	Measure	Fre Reading	^{quency(MHz)} Over	Limit	Factor	Duty Cycle	
No 1	30 2310		Frequency	Measure Level	Fre Reading Level	^{quency(MHz)} Over Limit	Limit	Factor	Duty Cycle Factor	
	30 2310		Frequency (MHz)	Measure Level (dBuV/m)	Fre Reading Level (dBuV)	quency(MHz) Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Duty Cycle Factor (dB)	Туре
	30 2310		Frequency (MHz) 2387.567	Measure Level (dBuV/m) 59.581	Fre Reading Level (dBuV) 27.251	over Limit (dB) -14.419	Limit (dBuV/m) 74.000	Factor (dB) 32.330	Duty Cycle Factor (dB) N/A	Type PK
1	30 2310		Frequency (MHz) 2387.567 2387.567	Measure Level (dBuV/m) 59.581 34.881	Fre Reading Level (dBuV) 27.251 27.251	quency(MHz) Over Limit (dB) -14.419 -19.119	Limit (dBuV/m) 74.000 54.000	Factor (dB) 32.330 32.330	Duty Cycle Factor (dB) N/A -24.700	Type PK AV
1	30 2310		Frequency (MHz) 2387.567 2387.567 2390.000	Measure Level (dBuV/m) 59.581 34.881 57.373	Fre Reading Level (dBuV) 27.251 27.251 25.046	quency(MHz) Over Limit (dB) -14.419 -19.119 -16.627	Limit (dBuV/m) 74.000 54.000 74.000	Factor (dB) 32.330 32.330 32.327	Duty Cycle Factor (dB) N/A -24.700 N/A	Type PK AV PK
1	30 2310		Frequency (MHz) 2387.567 2387.567 2390.000 2390.000	Measure Level (dBuV/m) 59.581 34.881 57.373 32.673	Fre Reading Level (dBuV) 27.251 27.251 25.046 25.046	quency(MHz) Over Limit (dB) -14.419 -19.119 -16.627 -21.327	Limit (dBuV/m) 74.000 54.000 74.000 54.000	Factor (dB) 32.330 32.330 32.327 32.327	Duty Cycle Factor (dB) N/A -24.700 N/A -24.700	Type PK AV PK AV

Note: Peak Measure Level $(dB\mu V/m)$ = Reading Level $(dB\mu V)$ + Factor (dB)

Average Measure Level = Peak Measure Level + Duty Cycle Factor



Site	: AC2					Time: 2	018/01/26 -	03:15		
Limi	it: FCC	_Part15	.209_RE(3m)		Engine	er: Snake Ni			
Prol	be: BB	HA9120	D_1-18GHz			Polarity	: Vertical			
EUT	T: Rem	ote Rec	eiver			Power:	DC 3.3V			
Test	t Mode	: Transn	nit at low cha	nnel 2404MI	Ηz					
Level(dBuV/m)	130 80 70 60 50 40 30 2310	2315 23			345 2350 233		55 2370 2375	2380 2385	3 1 2 2390 2395 240	4 4 0 2408
No	Flag	Mark	Frequency	Measure		Over	Limit	Factor	Duty Cycle	Туре
No	Flag	Mark	Frequency (MHz)	Measure Level	Reading Level				Duty Cycle Factor	Туре
No	Flag	Mark	Frequency (MHz)		Reading	Over	Limit (dBuV/m)	Factor (dB)		Туре
No 1	Flag	Mark		Level	Reading Level	Over Limit			Factor	Туре
	Flag	Mark	(MHz)	Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	(dBuV/m)	(dB)	Factor (dB)	
	Flag	Mark	(MHz) 2388.743	Level (dBuV/m) 63.891	Reading Level (dBuV) 31.562	Over Limit (dB) -10.109	(dBuV/m) 74.000	(dB) 32.329	Factor (dB) N/A	РК
1	Flag	Mark	(MHz) 2388.743 2388.743	Level (dBuV/m) 63.891 39.191	Reading Level (dBuV) 31.562 31.562	Over Limit (dB) -10.109 -14.809	(dBuV/m) 74.000 54.000	(dB) 32.329 32.329	Factor (dB) N/A -24.700	PK AV
1	Flag	Mark	(MHz) 2388.743 2388.743 2390.000	Level (dBuV/m) 63.891 39.191 62.356	Reading Level (dBuV) 31.562 31.562 30.029	Over Limit (dB) -10.109 -14.809 -11.644	(dBuV/m) 74.000 54.000 74.000	(dB) 32.329 32.329 32.327	Factor (dB) N/A -24.700 N/A	PK AV PK
1	Flag	Mark	(MHz) 2388.743 2388.743 2390.000 2390.000	Level (dBuV/m) 63.891 39.191 62.356 37.656	Reading Level (dBuV) 31.562 31.562 30.029 30.029	Over Limit (dB) -10.109 -14.809 -11.644 -16.344	(dBuV/m) 74.000 54.000 74.000 54.000	(dB) 32.329 32.329 32.327 32.327	Factor (dB) N/A -24.700 N/A -24.700	PK AV PK AV

Average Measure Level = Peak Measure Level + Duty Cycle Factor



Site	: AC2					Time: 2	018/01/26 -	03:26		
Lim	it: FCC	_Part15	.209_RE(3m))		Engine	er: Snake Ni			
Pro	be: BBI	HA9120	D_1-18GHz			Polarity	: Horizontal			
EUT	T: Remo	ote Rec	eiver			Power:	DC 3.3V			
Tes	t Mode:	Transn	nit at high cha	annel 2476M	lHz					
evel(dBuV/m)	80		1							
level	70 60 50 40 30 2472	2474	2476 2478	2480 24	182 2484		488 2490	Минарания 2492 249	1999 (1994) 194 2496 24	198 2500
No	60 50 40 30	2474 Mark	2476 2478 Frequency	2480 24 Measure	182 2484	2486 24			94 2496 24 Duty Cycle	198 2500 Type
	60 50 40 30 2472				182 2484 Free	2486 24 quency(MHz)	488 2490	2492 249		
	60 50 40 30 2472		Frequency	Measure	182 2484 Free Reading	2486 24 quency(MHz) Over	488 2490 Limit	2492 249 Factor	Duty Cycle	
	60 50 40 30 2472		Frequency	Measure Level	Reading Level	2486 24 quency(MHz) Over Limit	488 2490 Limit	2492 249 Factor	Duty Cycle Factor	
No	60 50 40 30 2472	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	2486 24 quency(MHz) Over Limit (dB)	488 2490 Limit (dBuV/m)	2492 249 Factor (dB)	Duty Cycle Factor (dB)	Туре
No 1	60 50 40 30 2472	Mark	Frequency (MHz) 2475.906	Measure Level (dBuV/m) 91.066	Reading Level (dBuV) 58.752	2486 24 quency(MHz) Over Limit (dB) N/A	488 2490 Limit (dBuV/m) N/A	2492 249 Factor (dB) 32.314	Duty Cycle Factor (dB) N/A	Type PK
No 1	60 50 40 30 2472	Mark	Frequency (MHz) 2475.906 2483.500	Measure Level (dBuV/m) 91.066 61.317	Reading Level (dBuV) 58.752 28.978	2486 24 quency(MHz) Over Limit (dB) N/A -12.683	488 2490 Limit (dBuV/m) N/A 74.000	2492 249 Factor (dB) 32.314 32.340	Duty Cycle Factor (dB) N/A N/A	Type PK PK

Average Measure Level = Peak Measure Level + Duty Cycle Factor



0.00	: AC2					Time: 2	018/01/26 -	03:32		
Limi	t: FCC	_Part15	.209_RE(3m))		Engine	er: Snake Ni			
Prob	be: BBH	HA9120	D_1-18GHz			Polarity	: Vertical			
EUT	Remo	ote Rec	eiver			Power:	DC 3.3V			
Test	Mode:	Transn	nit at high cha	annel 2476M	lHz					
Level(dBuV/m)	130 80 70		1		2 3					
	60 50 40 30 2472	2474	2476 2478	2480 24	182 2484		488 2490	2492 249	94 2496 24	Hearlann 198 2500
No	50 40 30	2474 Mark	2476 2478 Frequency	2480 24 Measure	182 2484	2486 24	488 2490 Limit		94 2496 24 Duty Cycle	
No	50 40 30 2472				182 2484 Free	2486 24 quency(MHz)	488 2490	2492 249	94 2496 24	498 2500
No	50 40 30 2472		Frequency	Measure	182 2484 Free Reading	2486 24 quency(MHz) Over	488 2490 Limit	2492 249 Factor	94 2496 24 Duty Cycle	498 2500
No 1	50 40 30 2472		Frequency	Measure Level	182 2484 Free Reading Level	2486 24 quency(MHz) Over Limit	488 2490 Limit	2492 249 Factor	94 2496 24 Duty Cycle Factor	498 2500
	50 40 30 2472	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	2486 24 quency(MHz) Over Limit (dB)	488 2490 Limit (dBuV/m)	2492 249 Factor (dB)	94 2496 24 Duty Cycle Factor (dB)	⁴⁹⁸ 2500 Type
1	50 40 30 2472	Mark	Frequency (MHz) 2476.144	Measure Level (dBuV/m) 95.691	Reading Level (dBuV) 63.377	2486 24 quency(MHz) Over Limit (dB) N/A	488 2490 Limit (dBuV/m) N/A	2492 249 Factor (dB) 32.314	94 2496 24 Duty Cycle Factor (dB) N/A	⁴⁹⁸ 2500 Type PK
1	50 40 30 2472	Mark	Frequency (MHz) 2476.144 2483.500	Measure Level (dBuV/m) 95.691 65.373	Reading Level (dBuV) 63.377 33.034	2486 24 quency(MHz) Over Limit (dB) N/A -8.627	488 2490 Limit (dBuV/m) N/A 74.000	2492 249 Factor (dB) 32.314 32.340	94 2496 24 Duty Cycle Factor (dB) N/A N/A	⁴⁹⁸ 2500 Type PK PK

Average Measure Level = Peak Measure Level + Duty Cycle Factor



7.5. 20dB Spectrum Bandwidth Measurement

7.5.1. Test Limit

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emission in the

specific band (2404 ~ 2476).

7.5.2. Test Procedure used

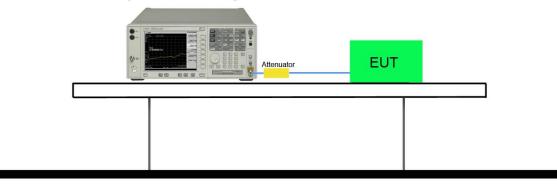
ANSI C63.10 Clause 6.9.2

7.5.3. Test Setting

- 1. Set the spectrum span range to overlap the nominal center frequency
- 2. Set RBW = 100 kHz
- 3. VBW \geq 3 × RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple
- 7. Allow the trace was allowed to stabilize and marker the highest level.
- 8. Determine the display level (the highest level 20dB) and place two markers, one at the lowest frequency and the other at the highest frequency.

7.5.4. Test Setup

Spectrum Analyzer





7.5.5. Test Result

Frequency (MHz)	Frequency Range (MHz)	Frequency Range (MHz)	Result
2404	2403.193		Pass
2476		2476.630	Pass





7.6. 99% Bandwidth Measurement

7.6.1. Test Limit

N/A

7.6.2. Test Procedure used

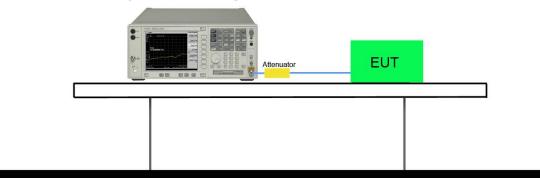
ANSI C63.10 Section 6.9

7.6.3. Test Setting

- The analyzers' automatic bandwidth measurement capability was used to perform the 99% bandwidth measurement. The bandwidth measurement was not influenced by any intermediated power nulls in the fundamental emission.
- 2. RBW = approximately 1% to 5% of the OBW.
- 3. VBW \geq 3 × RBW.
- 4. Detector = Peak.
- 5. Trace mode = max hold.

7.6.4. Test Setup

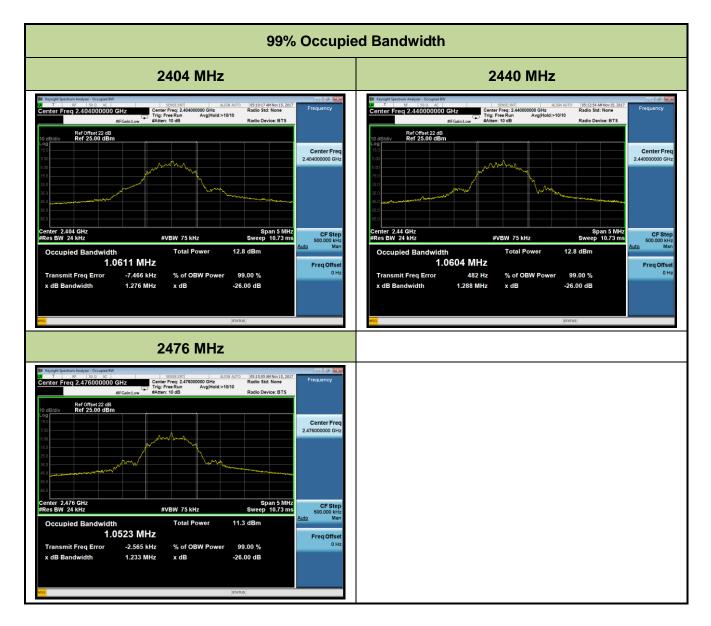
Spectrum Analyzer





7.6.5. Test Result

Frequency (MHz)	99% Bandwidth (MHz)	
2404	1.06	
2440	1.06	
2476	1.05	





8. CONCLUSION

The data collected relate only the item(s) tested and show that the **Remote Receiver FCC ID**:

BRWRMTTI01 is in compliance with Part 15C of the FCC Rules and RSS Rules.

The End