

FCC/ISED

RF

TEST REPORT

ISSUED BY
Shenzhen BALUN Technology Co., Ltd.



FOR

RF 5G Wireless Module (FPC type)

ISSUED TO
SYNCOMM TECHNOLOGY CORP.

10F., No.101, Sec.2 Gongdao 5th Rd., Hsinchu City, Taiwan 300, R.O.C



Tested by:

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(Engineer)

Date

Mar. 28, 2019

Approved by:

Wei Yanquan
(Chief Engineer)

Date

Mar. 28, 2019

Report No.: BL-HK1890416-601

EUT Name: RF 5G Wireless Module (FPC type)

Model Name: IA9QH5-SY5-A24, IA9QH5-SY5-A24-F

Brand Name: Syncomm

Test Standard: 47 CFR Part 15 Subpart E

RSS-Gen (Issue 5, April 2018)

RSS-247 (Issue 2, February 2017)

FCC ID: PJH-IA9QH5SY5A24

ISED Number: 24253-9QH5SY5A24

Test Conclusion: Pass

Test Date: Oct. 11, 2018 ~ Mar. 22, 2019

Date of Issue: Mar. 28, 2019

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Revision History

Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Mar. 25, 2019</u>	<u>Initial Issue</u>
<u>Rev. 02</u>	<u>Mar. 28, 2019</u>	<u>Updated the External and Internal Photos; Add Conducted Emissions data on page 32-33.</u>

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1 ADMINISTRATIVE DATA (GENERAL INFORMATION)

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196. The laboratory is a testing organization accredited by American Association for Laboratory Accreditation(A2LA) according to ISO/IEC 17025.The accreditation certificate is 4344.01. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Laboratory Condition

Ambient Temperature	20°C to 25°C
Ambient Relative Humidity	45% to 55%
Ambient Pressure	100 kPa to 102 kPa

1.4 Announce

- (1) The test report reference to the report template version v4.2.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- (5) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.
- (6) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

2 PRODUCT INFORMATION

2.1 Applicant

Applicant	SYNCOMM TECHNOLOGY CORP.
Address	10F., No.101, Sec.2 Gongdao 5th Rd., Hsinchu City, Taiwan 300, R.O.C

2.2 Manufacturer

Manufacturer	SYNCOMM TECHNOLOGY CORP.
Address	10F., No.101, Sec.2 Gongdao 5th Rd., Hsinchu City, Taiwan 300, R.O.C

2.3 Factory

Factory	SYNCOMM TECHNOLOGY CORP.
Address	10F., No.101, Sec.2 Gongdao 5th Rd., Hsinchu City, Taiwan 300, R.O.C

2.4 General Description for Equipment under Test (EUT)

EUT Name	RF 5G Wireless Module (FPC type)
Model Name Under Test	IA9QH5-SY5-A24, IA9QH5-SY5-A24-F
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	V1.1
Software Version	V1.00E1
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Ancillary Equipment

Note: Not applicable.

2.6 Technical Information

Network and Wireless connectivity	5.2G and 5.8G ISM Band(GFSK modulation)
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The requirement for the following technical information of the EUT was tested in this report:

Frequency Range	Band I: 5160 MHz to 5240 MHz, Band IV: 5735 MHz to 5840 MHz
Product Type	☒ Mobile ☐ Portable ☐ Fix Location
Modulation Type	GFSK
Transfer Rate (Mbps) (Single RF path)	2 Mbps
Number of channel	6 (See note 1)
Tested Channel	Band I: Low Channel (5160 MHz), Middle Channel(5180 MHz), High Channel (5240 MHz) Band IV: Low Channel (5735 MHz), Middle Channel(5790 MHz), High Channel (5840 MHz)
Antenna Type	PCB Antenna
Antenna Gain	2.5 dBi
About the Product	The equipment is RF 5G Wireless Module (FPC type), intended for used with information technology equipment.

Channel List

Band I		Band IV	
Number	Frequency (MHz)	Number	Frequency (MHz)
1	5160(Low)	4	5735(Low)
2	5180(Middle)	5	5790(Middle)
3	5240(High)	6	5840(High)

Note: The above EUT information in section 2.4 and 2.6 was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15 Subpart E	Unlicensed National Information Infrastructure Devices
2	KDB Publication 789033 D02v02r01	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E
3	RSS-Gen (Issue 5, April. 2018)	General Requirements for Compliance of Radio Apparatus
4	RSS-247 (Issue 2, February 2017)	Digital Transmission Systems (DTSS), Frequency Hopping Systems(FHSs) and Licence-Exemp Local Area Network (LE-LAN) Devices
5	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

3.2 Verdict

No.	Description	FCC Part No.	Test Result	Verdict
1	Antenna Requirement	15.203	--	Pass ^{Note1}
2	RF Output Power	15.407(a)	ANNEX A.1	Pass
3	Emission Bandwidth & 99% Occupied Bandwidth	15.407(a)	ANNEX A.2	Pass
4	6 dB bandwidth	15.407(e)	ANNEX A.3	Pass
5	Power Spectral Density	15.407(a)	ANNEX A.4	Pass
6	Conducted Emission	15.207	ANNEX A.5	Pass
7	Conducted Spurious Emission and Band Edge (Authorized-band)	15.407(b) 15.209	ANNEX A.6	Pass
8	Radiated Spurious Emissions and Band Edge (Restricted-band)	15.407(b)	ANNEX A.7	Pass
9	Frequency Stability	15.407(g)	ANNEX A.8	Pass

Note ¹: The EUT has a permanently and irreplaceable attached antenna, which complies with the requirement FCC 15.203.

Note ²: Because EUT is a module, so the Conducted Emission test is not applicable.

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

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

Relative Humidity	45% to 55%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+22°C to +25°C
	LT (Low Temperature)	0°C
	HT (High Temperature)	+55°C
Working Voltage of the EUT	NV (Normal Voltage)	5V
	LV (Low Voltage)	
	HV (High Voltage)	

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-30	103118	2018.06.15	2019.06.14
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2018.11.07	2019.11.06
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2018.06.13	2019.06.12
LISN	SCHWARZBECK	NSLK 8127	8127-687	2018.06.13	2019.06.12
Power Splitter	KMW	DCPD-LDC	1305003215	--	--
Power Sensor	ROHDE&SCHWARZ	NRP-Z21	103971	2018.06.15	2019.06.14
Attenuator (20 dB)	KMW	ZA-S1-201	110617091	--	--
Attenuator (6 dB)	KMW	ZA-S1-61	1305003189	--	--
DC Power Supply	ROHDE&SCHWARZ	HMP2020	018141664	2018.06.14	2019.06.13
Temperature Chamber	ANGELANTIONI SCIENCE	NTH64-40A	1310	2018.06.26	2019.06.25
Test Antenna- Loop(9 kHz-30 MHz)	SCHWARZBECK	FMZB 1519	1519-037	2017.11.09	2019.11.08
Test Antenna- Bi-Log(30 MHz-3 GHz)	SCHWARZBECK	VULB 9163	9163-624	2017.07.22	2019.07.21
Test Antenna- Horn(1-18 GHz)	SCHWARZBECK	BBHA 9120D	9120D-1148	2018.07.11	2020.07.10
Test Antenna- Horn(15-26.5 GHz)	SCHWARZBECK	BBHA 9170	9170-305	2018.06.21	2019.06.20
Test Antenna- Horn (18-40 GHz)	A-INFO	LB- 180400KF	J211060273	2019.01.05	2021.01.04
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.21	2020.02.20
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60 *7.35m	N/A	2017.08.08	2019.08.07
Shielded Enclosure	ChangNing	CN-130701	130703	--	--
Power Amplifier	OPHIR RF	5225F	1037	2019.02.15	2020.02.14
Power Amplifier	OPHIR RF	5273F	1016	2019.02.15	2020.02.14
Directional Coupler	Werlantone	C5982-10	109275	N/A	N/A
Directional Coupler	Werlantone	CHP-273E	S00801z-01	N/A	N/A
Software	BALUN	BL410	--	--	--

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Amplifier	COM-MW	KL_LNA_18-40G-01	N/A	2018.06.26	2019.06.25
RF Cable 1	ROHDE&SCHWARZ	JUNFLON	APR0914004	2018.07.10	2019.10.09
RF Cable 2	Huber&suhner	RG_400_/U	N/A	2018.07.10	2019.10.09
RF Cable 3	Huber&suhner	RG_400_/U	N/A	2018.07.10	2019.10.09
RF Cable 4	Huber&suhner	SX_04172_B-60	N/A	2018.07.10	2019.10.09
RF Cable 5	COM-MW	RFJA360-2.92mm-J/J3M	N/A	2018.07.10	2019.10.09
Note: The calibration period on the Cable is three month.					

4.3 Measurement Uncertainty

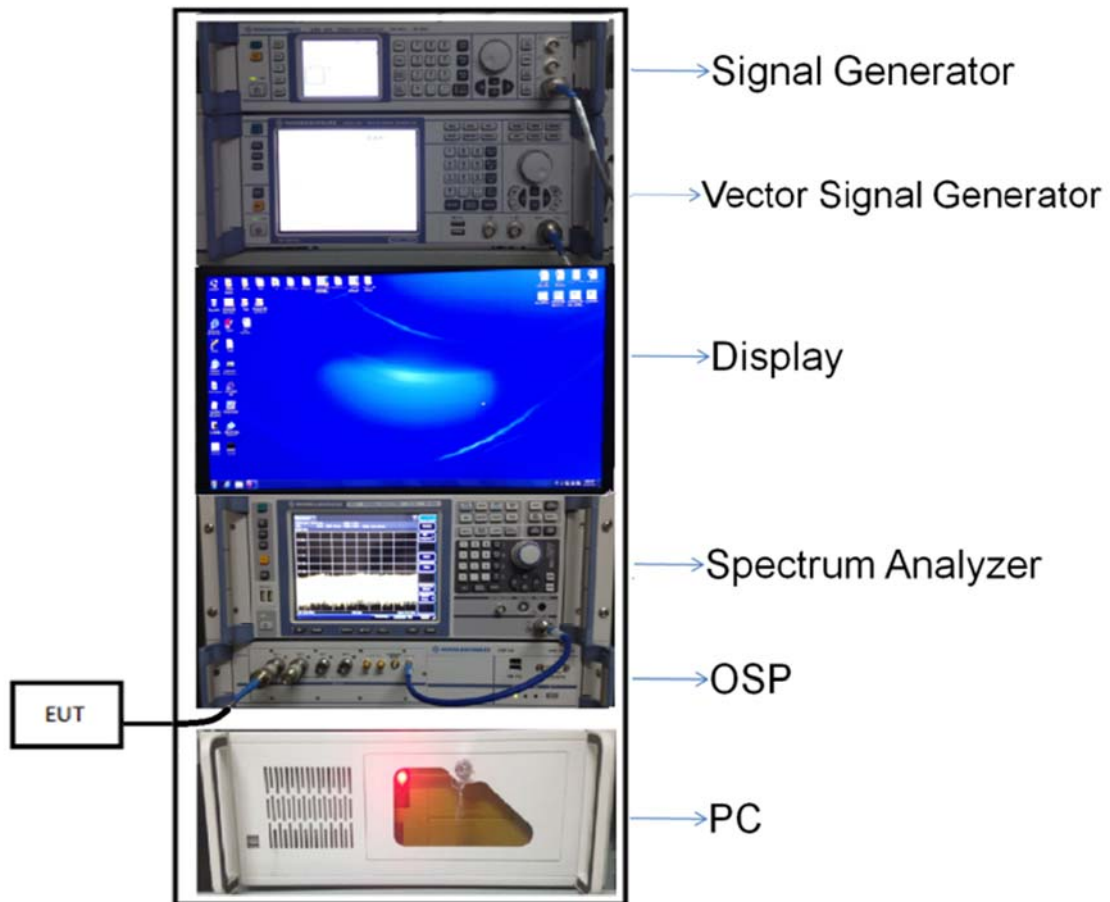
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

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

Measurement	Value
Occupied Channel Bandwidth	±4%
RF output power, conducted	±1.4 dB
Power Spectral Density, conducted	±2.5 dB
Unwanted Emissions, conducted	±2.8 dB
All emissions, radiated	±5.4 dB
Temperature	±1°C
Humidity	±4%

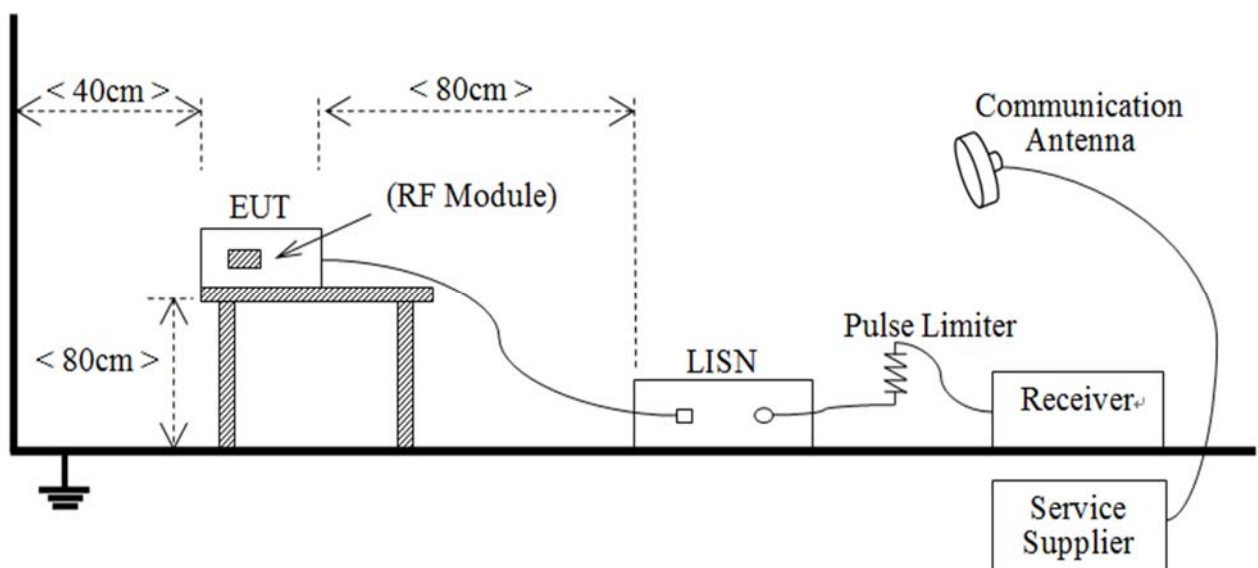
4.4 Description of Test Setup

4.4.1 For Antenna Port Test



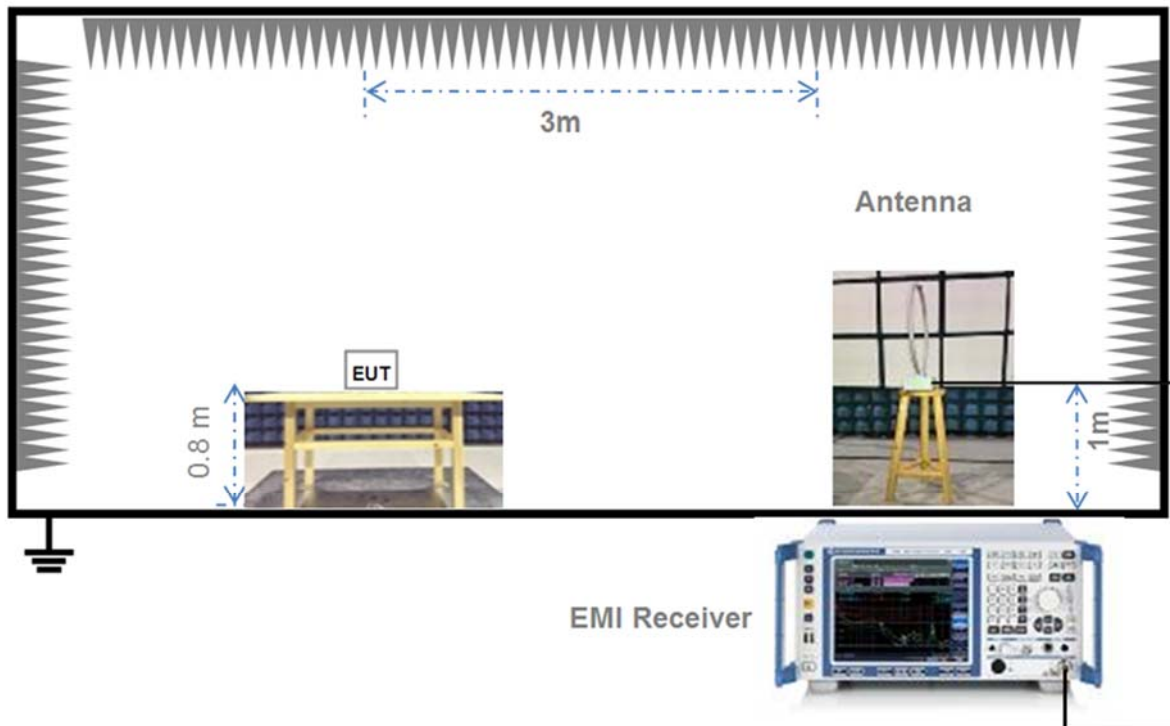
(Diagram 1)

4.4.2 For AC Power Supply Port Test



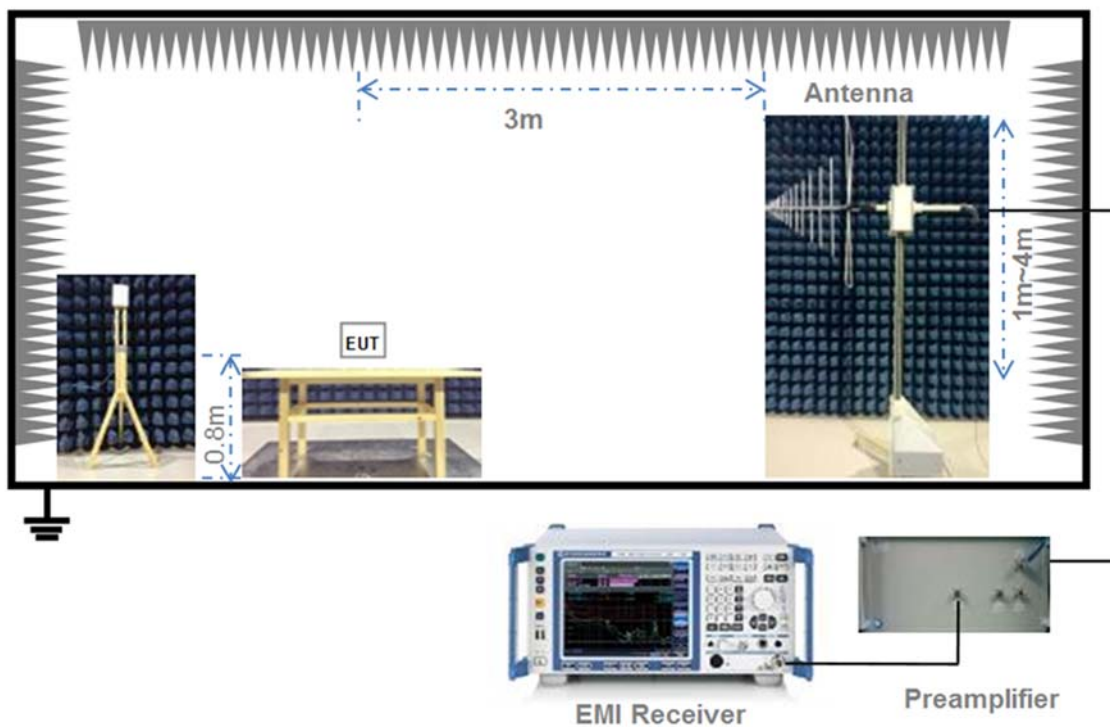
(Diagram 2)

4.4.3 For Radiated Test (Below 30 MHz)



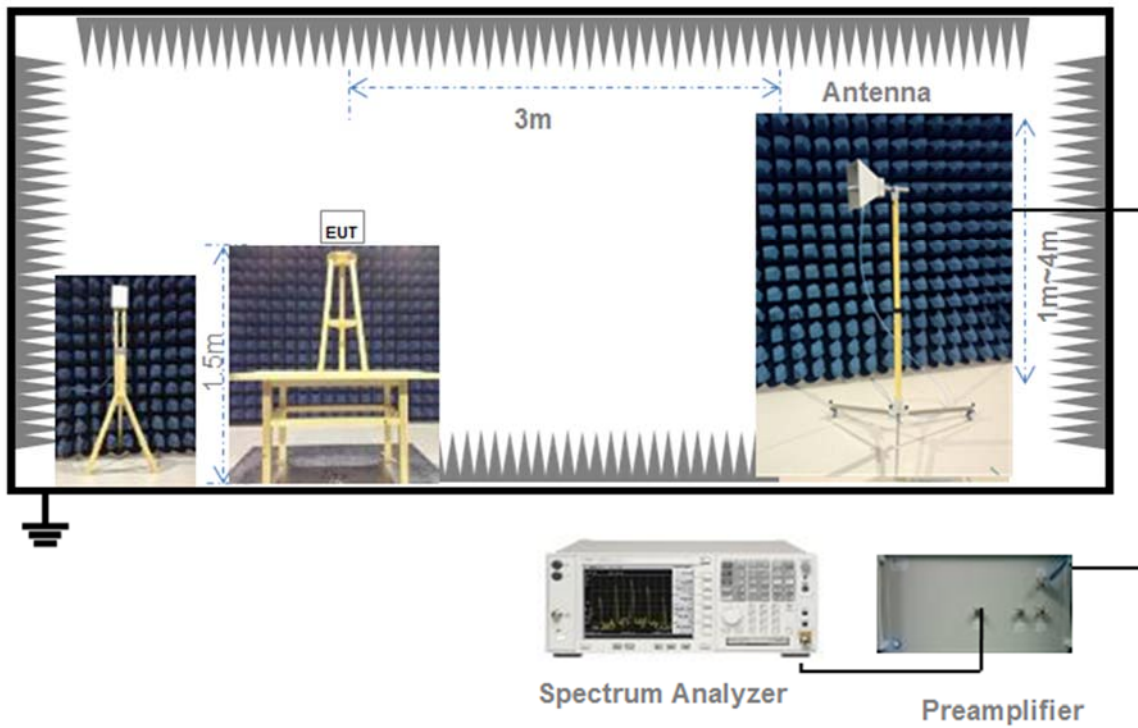
(Diagram 3)

4.4.4 For Radiated Test (30 MHz-1 GHz)



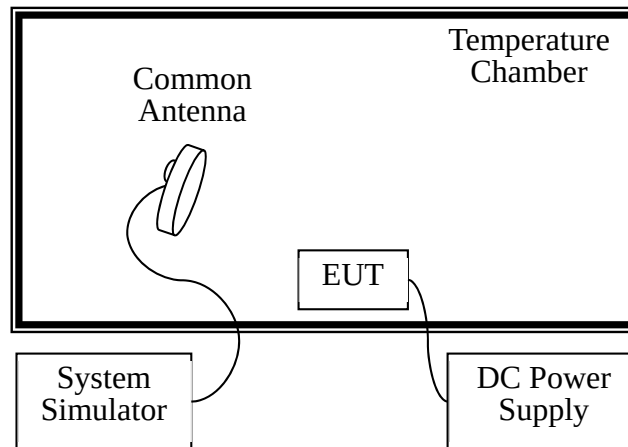
(Diagram 4)

4.4.5 For Radiated Test (Above 1 GHz)



(Diagram 5)

4.4.6 For Frequency Stability Test



(Diagram 6)

5 TEST ITEMS

5.1 RF Output Power

5.1.1 Test Limit

FCC §15.407(a)

The maximum conducted output power should not exceed:

Frequency Band (MHz)	Limit
5160-5240	250 mW
5735-5840	1 W
Note: Where "B" is the 26 dB emissions bandwidth in MHz.	

RSS-247, 6.2

The maximum conducted output power shall not exceed:

Frequency Band (MHz)	Limit
5160-5240	N/A
5735-5840	1 W
Note: Where "B" is the 99% emissions bandwidth in MHz.	

The maximum e.i.r.p. shall not exceed:

Frequency Band (MHz)	Limit
5160-5240	200 mW or 10 dBm + 10log B, whichever is less.
5735-5840	N/A
Note: Where "B" is the 99% emissions bandwidth in MHz.	

5.1.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.1.3 Test Procedure

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

The E.I.R.P used radiated test method. At a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment.

5.1.4 Test Result

Please refer to ANNEX A.1.

5.2 Emission Bandwidth and 6 dB Bandwidth

5.2.1 Limit

FCC §15.407(a), RSS-247, 6.2

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

5.2.2 Test Setup

The test setup photo please refer to 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.2.3 Test Procedure

Emission bandwidth

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set VBW $\geq 3 \times$ RBW,
3. Detector = Peak.
4. Trace mode = Max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission.

Occupied Bandwidth

1. Set Span = 1.5 times to 5.0 times the OBW
2. Set RBW = 1% to 5% of the OBW.
3. Set VBW $\geq 3 \times$ RBW, Detector = Peak.
4. Trace mode = Max hold.
5. Use the 99% power bandwidth function of the instrument.

6 dB bandwidth

1. Set RBW = 100 kHz, VBW = 300 kHz.
2. Detector = Peak. Trace mode = Max hold.
3. Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.2.4 Test Result

Please refer to ANNEX A.2 and ANNEX A.3.

5.3 Power Spectral density (PSD)

5.3.1 Limit

FCC §15.407(a)

The maximum power spectral density should not exceed:

Frequency Band (MHz)	Limit
5160-5240	11 dBm/MHz
5735-5840	30 dBm/500kHz

RSS-247, 6.2

The maximum power spectral density should not exceed:

Frequency Band (MHz)	Limit
5160-5240	N/A
5735-5840	30 dBm/500kHz

The e.i.r.p. spectral density should not exceed:

Frequency Band (MHz)	Limit
5160-5240	10 dBm/MHz
5735-5840	N/A

5.3.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth.

1. Set RBW = 500 kHz/MHz, VBW $\geq 3 \times$ RBW, Sweep time = Auto, Detector = RMS.
2. Allow the sweeps to continue until the trace stabilizes.
3. Use the peak marker function to determine the maximum amplitude level.
4. The E.I.R.P spectral density used radiated test method. At a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment.

5.3.4 Test Result

Please refer to ANNEX A.4.

5.4 Conducted Emission

5.4.1 Limit

FCC §15.207, RSS-GEN, 8.8

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56*	56 to 46*
0.50 - 5	56	46
5 - 30	60	50

5.4.2 Test Setup

The section 4.4.2 (Diagram 2) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

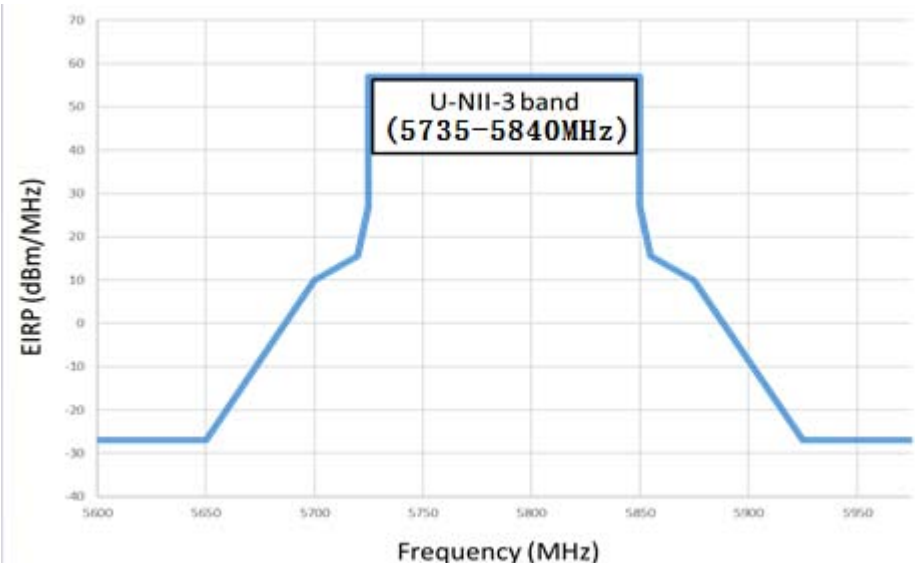
5.4.4 Test Result

Please refer to ANNEX A.5.

5.5 Conducted Spurious Emission and Band Edge (Authorized-band)

5.5.1 Limit

FCC §15.407(b)

Un-restricted band emissions	
Frequency Band (MHz)	Limit
5735 - 5840	All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. 

5.5.2 Test Setup

See section 4.4.2 (Diagram 2) for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize

5.5.4 Test Result

Please refer to ANNEX A.6.

5.6 Radiated Spurious Emissions and Band Edge (Restricted-band)

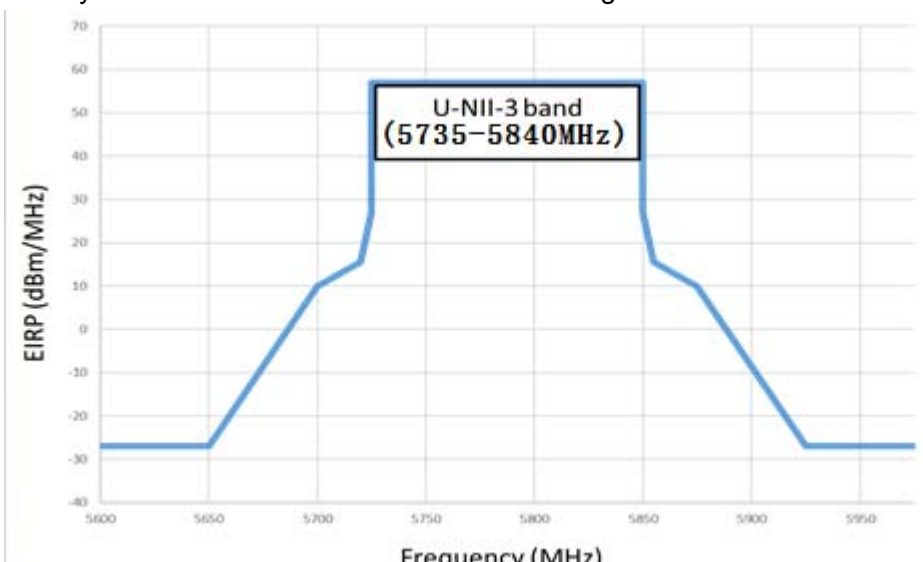
5.6.1 Limit

FCC §15.209 & 15.407(b), RSS-247, 6.2

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

Note¹: The Limit for radiated test was performed according to FCC Part 15C

Note²: The tighter limit applies at the band edge.

Un-restricted band emissions	
Out Operating Band (MHz)	Limit
5735 - 5840	All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. 

Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength.

5.6.2 Test Setup

The section 4.4.3-4.4.5 (Diagram 3 - Diagram 5) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.6.3 Test Procedure

Since the emission limits are specified in terms of radiated field strength levels, measurements performed to demonstrate compliance have traditionally relied on a radiated test configuration. Radiated measurements remain the principal method for demonstrating compliance to the specified limits; however antenna-port conducted measurements are also now acceptable to demonstrate compliance (see below for details). When radiated measurements are utilized, test site requirements and procedures for maximizing and measuring radiated emissions that are described in ANSI C63.10 shall be followed.

Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

General Procedure for conducted measurements in restricted bands

- a) Measure the conducted output power (in dBm) using the detector specified (see guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).
- b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see guidance on determining the applicable antenna gain)
- c) Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).
- d) For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).
- e) Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

$$E = \text{EIRP} - 20\log D + 104.8$$

where:

E = electric field strength in dB μ V/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

- f) Compare the resultant electric field strength level to the applicable limit.
- g) Perform radiated spurious emission test.

Quasi-Peak measurement procedure

The specifications for measurements using the CISPR quasi-peak detector can be found in Publication 16 of the International Special Committee on Radio Frequency Interference (CISPR) of the International Electrotechnical Commission.

As an alternative to CISPR quasi-peak measurement, compliance can be demonstrated to the applicable emission limits using a peak detector.

Peak power measurement procedure

Peak emission levels are measured by setting the instrument as follows:

- a) RBW = as specified in Table 1.
- b) VBW $\geq 3 \times$ RBW.
- c) Detector = Peak.
- d) Sweep time = auto.
- e) Trace mode = max hold.
- f) Allow sweeps to continue until the trace stabilizes. (Note that the required measurement time may be longer for low duty cycle applications).

Table 1—RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

Trace averaging across on and off times of the EUT transmissions followed by duty cycle correction

If continuous transmission of the EUT (i.e., duty cycle ≥ 98 percent) cannot be achieved and the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent), then the following procedure shall be used:

- a) The EUT shall be configured to operate at the maximum achievable duty cycle.
- b) Measure the duty cycle, x , of the transmitter output signal as described in section 6.0.
- c) RBW = 1 MHz (unless otherwise specified).
- d) VBW $\geq 3 \times$ RBW.
- e) Detector = RMS, if $\text{span}/(\# \text{ of points in sweep}) \leq (\text{RBW}/2)$. Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.
- f) Averaging type = power (i.e., RMS).
 - 1) As an alternative, the detector and averaging type may be set for linear voltage averaging.
 - 2) Some instruments require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.
- g) Sweep time = auto.
- h) Perform a trace average of at least 100 traces.
- i) A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:

- 1) If power averaging (RMS) mode was used in step f), then the applicable correction factor is $10 \log(1/x)$, where x is the duty cycle.
- 2) If linear voltage averaging mode was used in step f), then the applicable correction factor is $20 \log(1/x)$, where x is the duty cycle.
- 3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

NOTE: Reduction of the measured emission amplitude levels to account for operational duty factor is not permitted. Compliance is based on emission levels occurring during transmission - not on an average across on and off times of the transmitter.

Determining the applicable transmit antenna gain

A conducted power measurement will determine the maximum output power associated with a restricted band emission; however, in order to determine the associated EIRP level, the gain of the transmitting antenna (in dBi) must be added to the measured output power (in dBm).

Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.

See KDB 662911 for guidance on calculating the additional array gain term when determining the effective antenna gain for a EUT with multiple outputs occupying the same or overlapping frequency ranges in the same band.

Radiated spurious emission test

An additional consideration when performing conducted measurements of restricted band emissions is that unwanted emissions radiating from the EUT cabinet, control circuits, power leads, or intermediate circuit elements will likely go undetected in a conducted measurement configuration. To address this concern, a radiated test shall be performed to ensure that emissions emanating from the EUT cabinet (rather than the antenna port) also comply with the applicable limits.

For these cabinet radiated spurious emission measurements the EUT transmit antenna may be replaced with a termination matching the nominal impedance of the antenna. Procedures for performing radiated measurements are specified in ANSI C63.10. All detected emissions shall comply with the applicable limits.

The measurement frequency range is from 30 MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360° , and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

5.6.4 Test Result

Please refer to ANNEX A.7 and Please refer to ANNEX A.7.

5.7 Frequency Stability

5.7.1 Limit

FCC §15.407(g)

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

5.7.2 Test Setup

The section 4.4.6 (Diagram 6) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.7.3 Test Procedure

The EUT is installed in an environment test chamber with external power source.

Set the chamber to operate at 50 centigrade and external power source to output at nominal voltage of EUT.

A sufficient stabilization period at each temperatures is used prior to each frequency measurement.

When temperature is stabled, measure the frequency stability.

The test shall be performed under -30 to 50 centigrade and 85 to 115 percent of the nominal voltage.

Change setting of chamber and external power source to complete all conditions.

5.7.4 Test Result

Please refer to ANNEX A.8.

ANNEX A TEST RESULT

A.1 RF Output Power

Note ¹: For FCC standard, if transmitting antennas of directional gain greater than 6 dBi are used, all band maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Date

Peak Power Test Data

5160 MHz - 5240 MHz						
Mode	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (mW)	FCC Limit (mW)	Verdict
GFSK	Low	5160	9.68	9.29	250	Pass
	Middle	5180	9.25	8.41	250	Pass
	High	5240	10.36	10.86	250	Pass

5735 MHz - 5840 MHz						
Mode	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (mW)	FCC/IC Limit (W)	Verdict
GFSK	Low	5735	14.82	30.34	1.00	Pass
	Middle	5790	14.64	29.11	1.00	Pass
	High	5840	14.94	31.19	1.00	Pass

EIRP:

5160 MHz - 5240 MHz						
Mode	Channel	Frequency (MHz)	EIRP Power (dBm)	EIRP Power (mW)	IC Limit (mW)	Verdict
GFSK	Low	5160	12.18	16.52	22.18	Pass
	Middle	5180	11.75	14.96	21.10	Pass
	High	5240	12.86	19.32	29.90	Pass

A.2 Emission Bandwidth & 99% Bandwidth

Test Data

Band I (5160 - 5240 MHz)		
Channel	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2.63	2.97
Middle	2.62	2.50
High	2.62	2.75

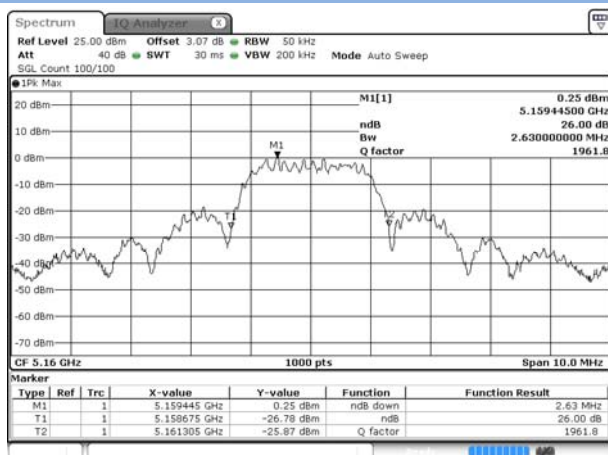
Band IV (5735 - 5840 MHz)		
Channel	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2.63	2.56
Middle	2.62	2.97
High	2.62	3.20

Test plots

26 dB Bandwidth

Band I

LOW CHANNEL



MIDDLE CHANNEL

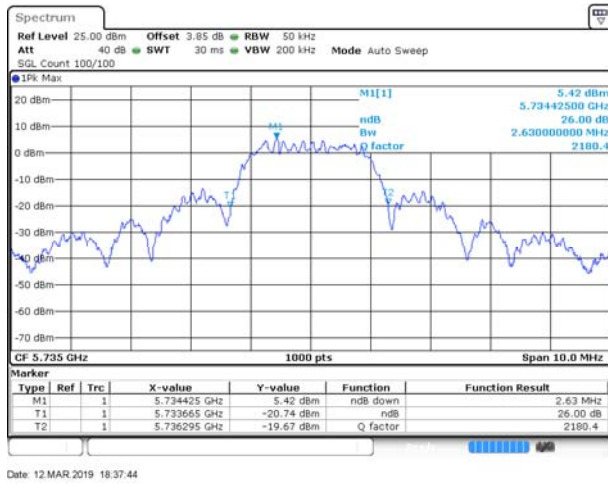


HIGH CHANNEL

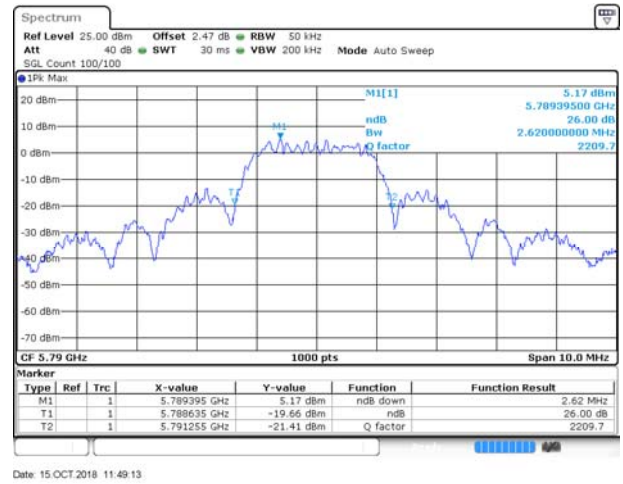


Band IV

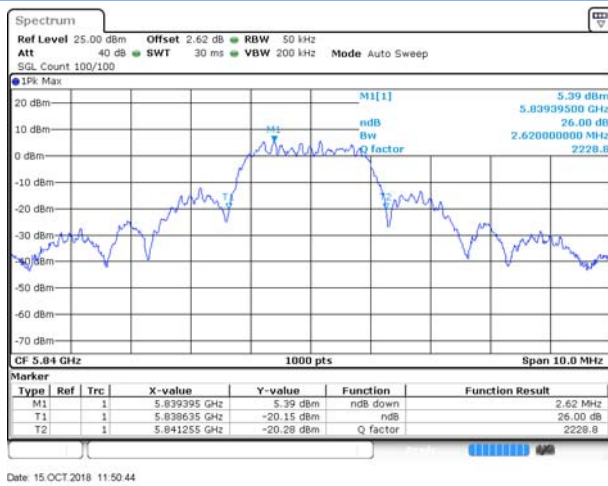
LOW CHANNEL



MIDDLE CHANNEL



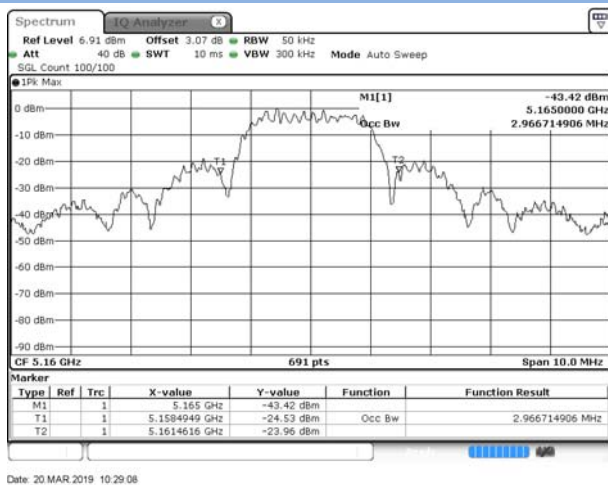
HIGH CHANNEL



99% Bandwidth

Band I

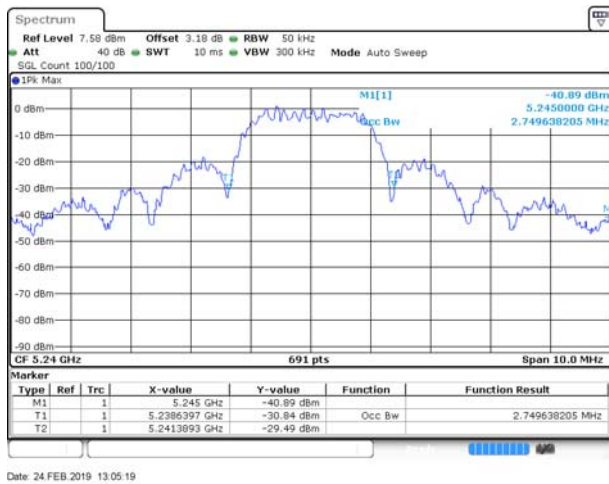
LOW CHANNEL



MIDDLE CHANNEL

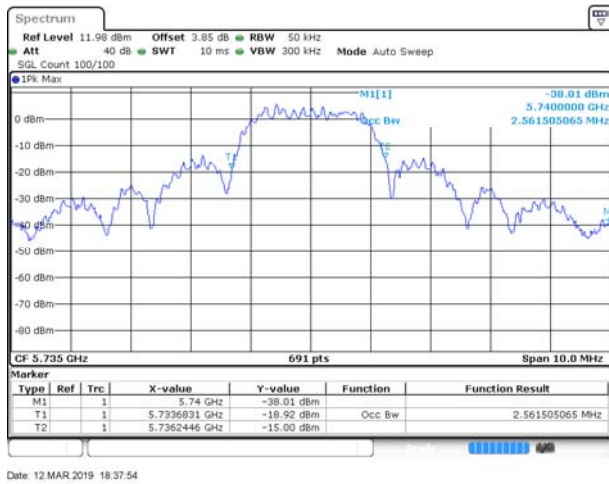


HIGH CHANNEL

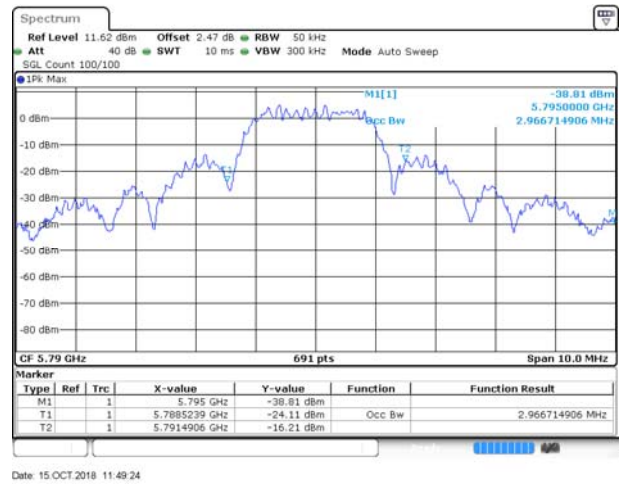


Band IV

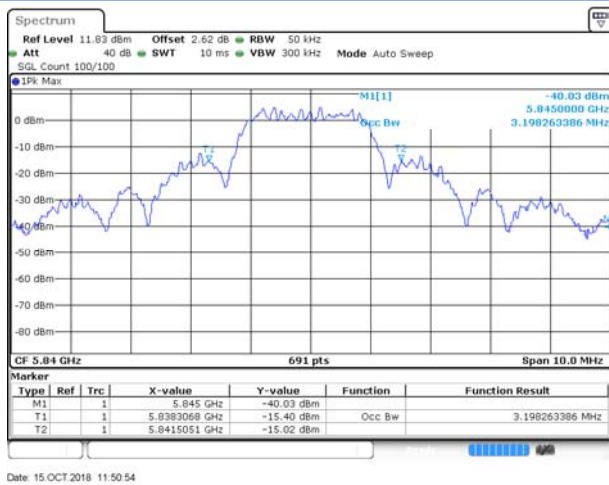
LOW CHANNEL



MIDDLE CHANNEL



HIGH CHANNEL



A.3 6 dB Bandwidth

Test Data

Band I (5160- 5240 MHz)			
Channel	6 dB Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)	Verdict
Low	1.94	≥ 500	Pass
Middle	1.94	≥ 500	Pass
High	1.96	≥ 500	Pass

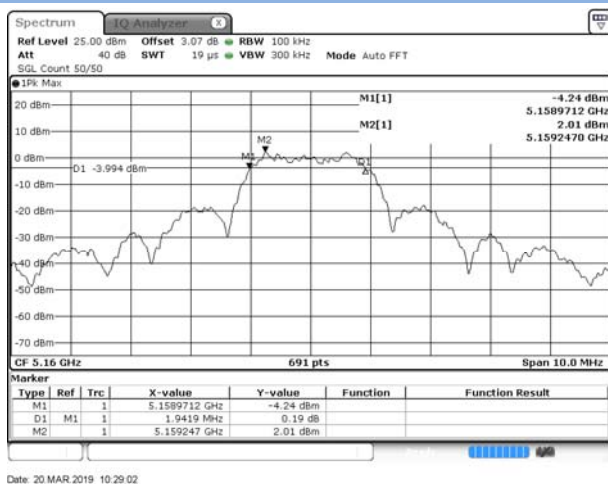
Band IV (5735 - 5840 MHz)			
Channel	6 dB Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)	Verdict
Low	1.99	≥ 500	Pass
Middle	2.03	≥ 500	Pass
High	1.94	≥ 500	Pass

Test plots

6 dB Bandwidth

Band I

LOW CHANNEL



MIDDLE CHANNEL

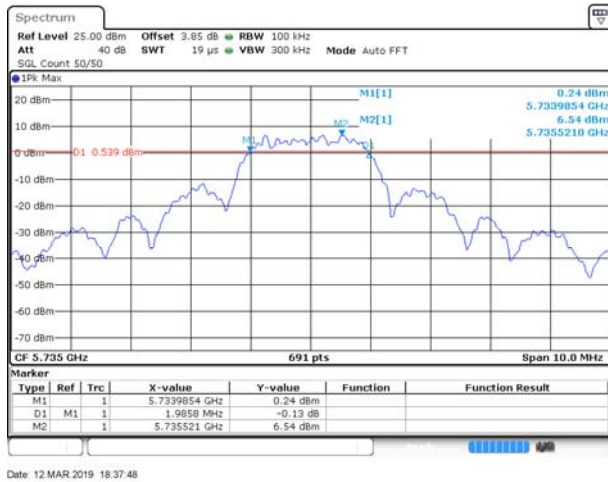


HIGH CHANNEL

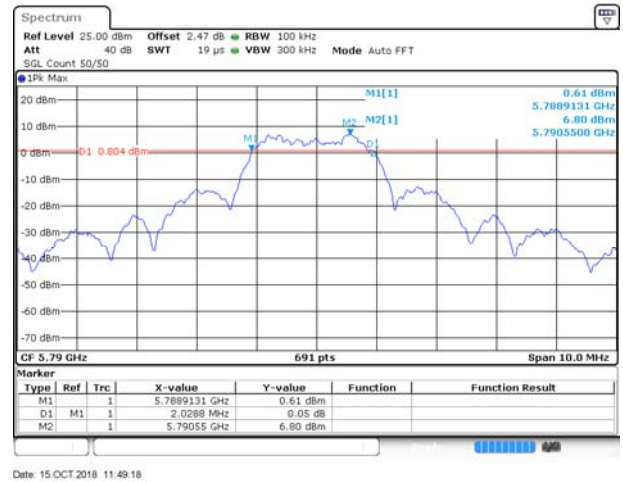


Band IV

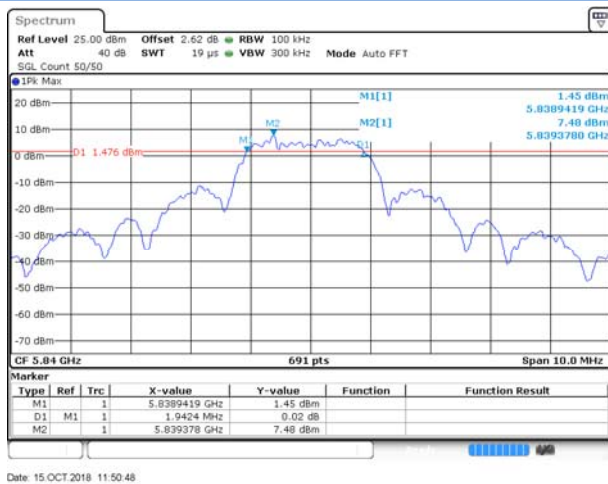
LOW CHANNEL



MIDDLE CHANNEL



HIGH CHANNEL



A.4 Power Spectral Density

Test Data

Conducted PSD:

Band I (5160 - 5240 MHz)			
Channel	PSD (dBm/MHz)	FCC Limit (dBm/MHz)	Verdict
Low	3.53	11	Pass
Middle	2.79	11	Pass
High	4.28	11	Pass

Band IV (5735 - 5840 MHz)			
Channel	PSD (dBm/MHz)	FCC/IC Limit (30dBm/500 kHz)	Verdict
Low	5.65	30	Pass
Middle	3.00	30	Pass
High	3.44	30	Pass

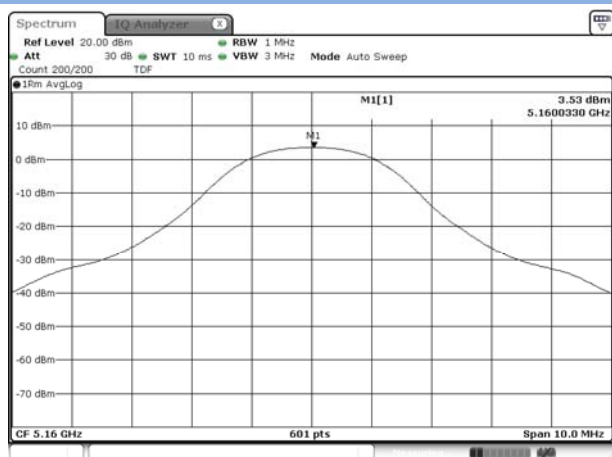
E.I.R.P spectral density:

Band I (5160 - 5240 MHz)			
Channel	PSD (dBm/MHz)	IC Limit (dBm/MHz)	Verdict
Low	6.03	10	Pass
Middle	5.29	10	Pass
High	6.78	10	Pass

Test plots

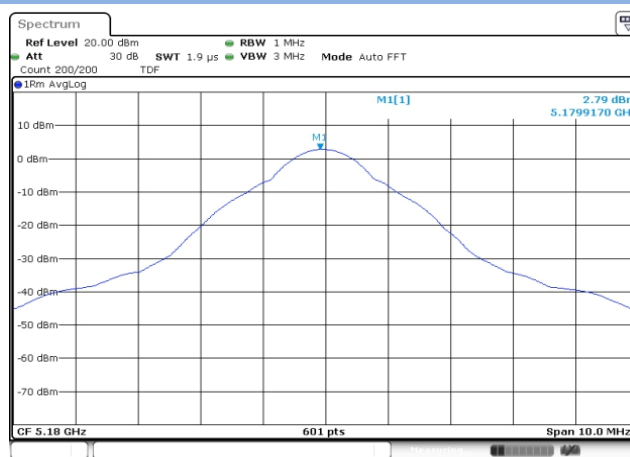
Band I

LOW CHANNEL



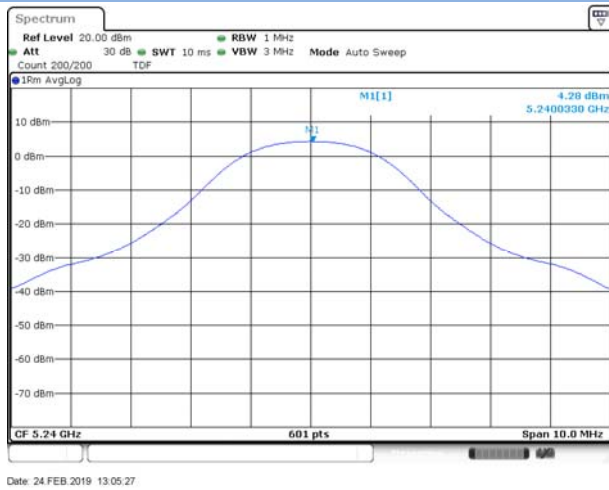
Date: 20 MAR 2019 10:29:18

MIDDLE CHANNEL



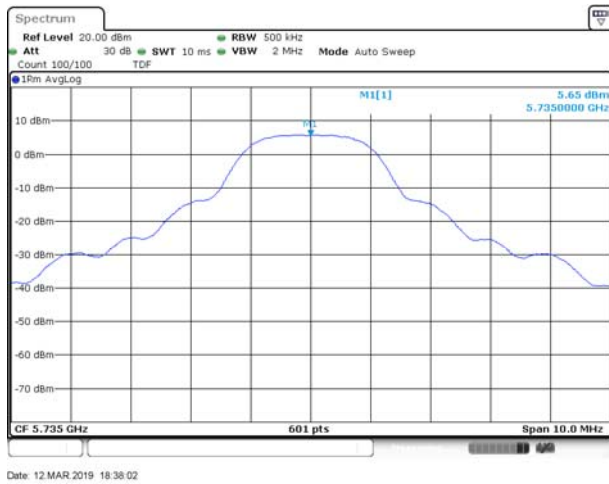
Date: 22 OCT 2018 17:34:18

HIGH CHANNEL

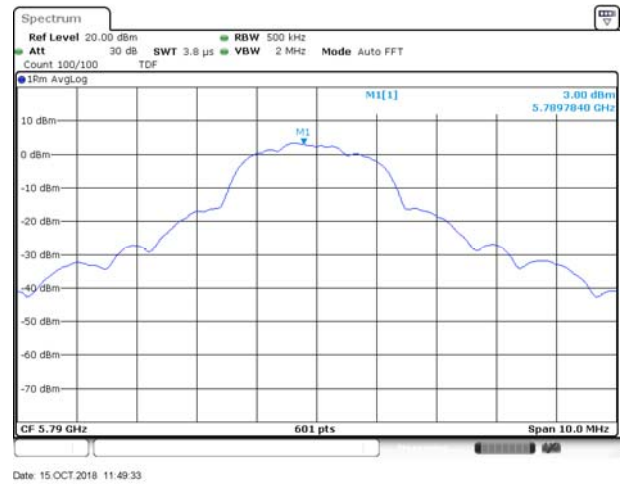


Band IV

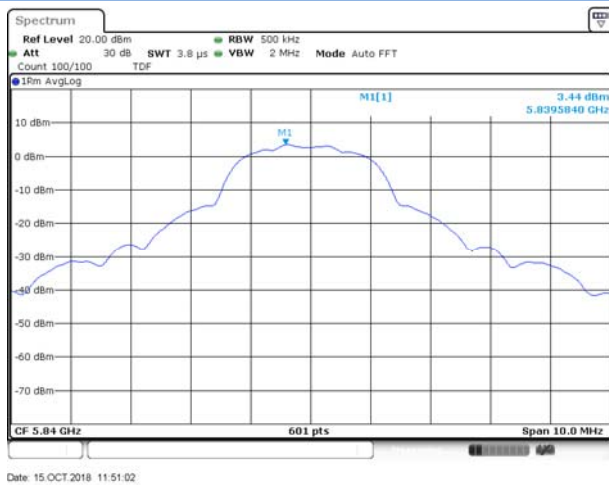
LOW CHANNEL



MIDDLE CHANNEL



HIGH CHANNEL



A.5 Conducted Emissions

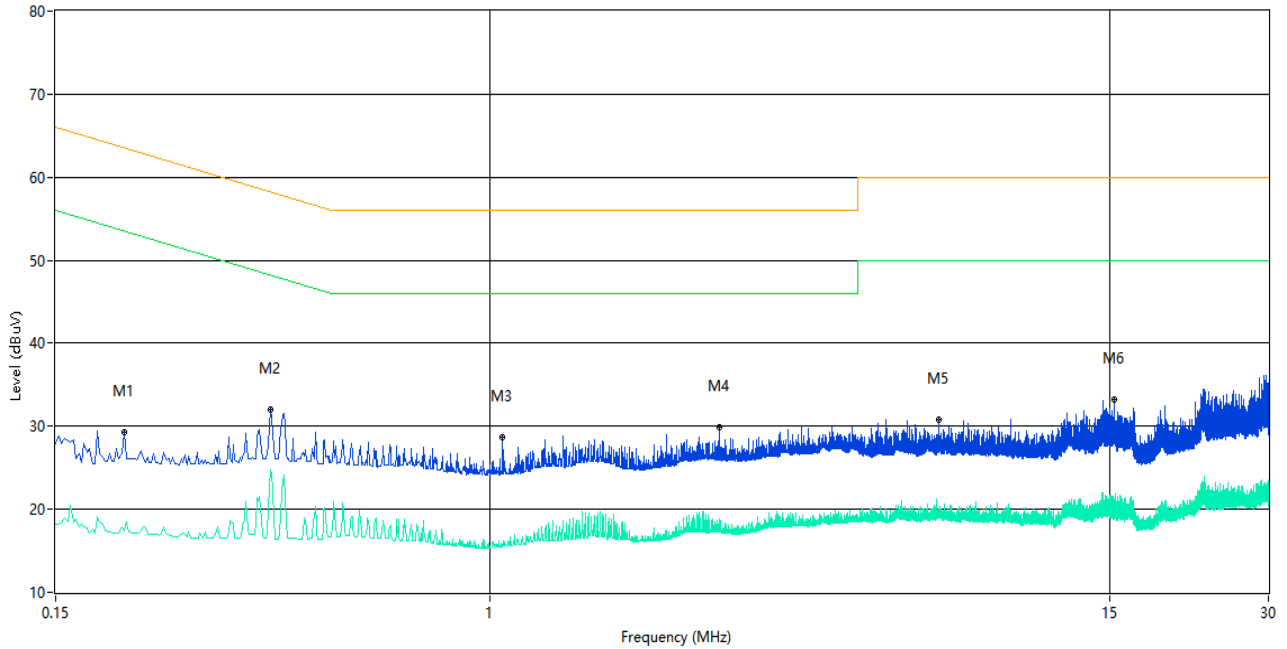
Note¹: The EUT is working in the Normal link mode.

Note²: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 60 Hz and 240 VAC, 50 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz) shown here.

Test Data and Plots

PHASE L

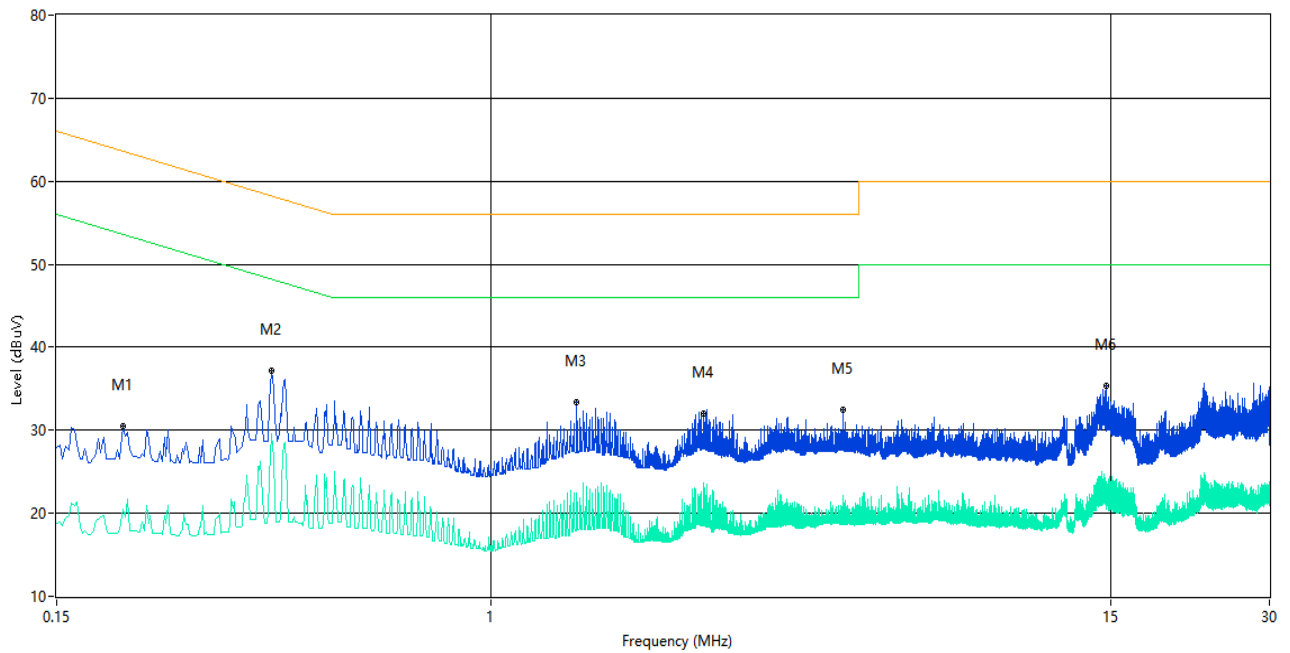
CE Test case_FCC_CE_FCC PART 15B_Class B



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.202	29.3	10.01	63.5	-34.20	Peak	L Line	Pass
1**	0.202	17.5	10.01	53.5	-36.00	AV	L Line	Pass
2	0.384	32.1	10.02	58.2	-26.10	Peak	L Line	Pass
2**	0.384	24.7	10.02	48.2	-23.50	AV	L Line	Pass
3	1.058	28.7	10.03	56.0	-27.30	Peak	L Line	Pass
3**	1.058	15.8	10.03	46.0	-30.20	AV	L Line	Pass
4	2.730	29.8	10.08	56.0	-26.20	Peak	L Line	Pass
4**	2.730	18.8	10.08	46.0	-27.20	AV	L Line	Pass
5	7.120	30.7	10.14	60.0	-29.30	Peak	L Line	Pass
5**	7.120	20.0	10.14	50.0	-30.00	AV	L Line	Pass
6	15.328	33.2	10.21	60.0	-26.80	Peak	L Line	Pass
6**	15.328	20.2	10.21	50.0	-29.80	AV	L Line	Pass

PHASE N

CE Test case_FCC_CE_FCC PART 15B_ Class B



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.200	30.5	10.01	63.6	-33.10	Peak	N Line	Pass
1**	0.200	20.4	10.01	53.6	-33.20	AV	N Line	Pass
2	0.384	37.1	10.02	58.2	-21.10	Peak	N Line	Pass
2**	0.384	29.7	10.02	48.2	-18.50	AV	N Line	Pass
3	1.456	33.3	10.05	56.0	-22.70	Peak	N Line	Pass
3**	1.456	22.5	10.05	46.0	-23.50	AV	N Line	Pass
4	2.530	32.1	10.08	56.0	-23.90	Peak	N Line	Pass
4**	2.530	23.6	10.08	46.0	-22.40	AV	N Line	Pass
5	4.654	32.4	10.11	56.0	-23.60	Peak	N Line	Pass
5**	4.654	22.1	10.11	46.0	-23.90	AV	N Line	Pass
6	14.738	35.3	10.20	60.0	-24.70	Peak	N Line	Pass
6**	14.738	23.8	10.20	50.0	-26.20	AV	N Line	Pass

A.6 Conducted Spurious Emission and Band Edge (Authorized-band)

Test data

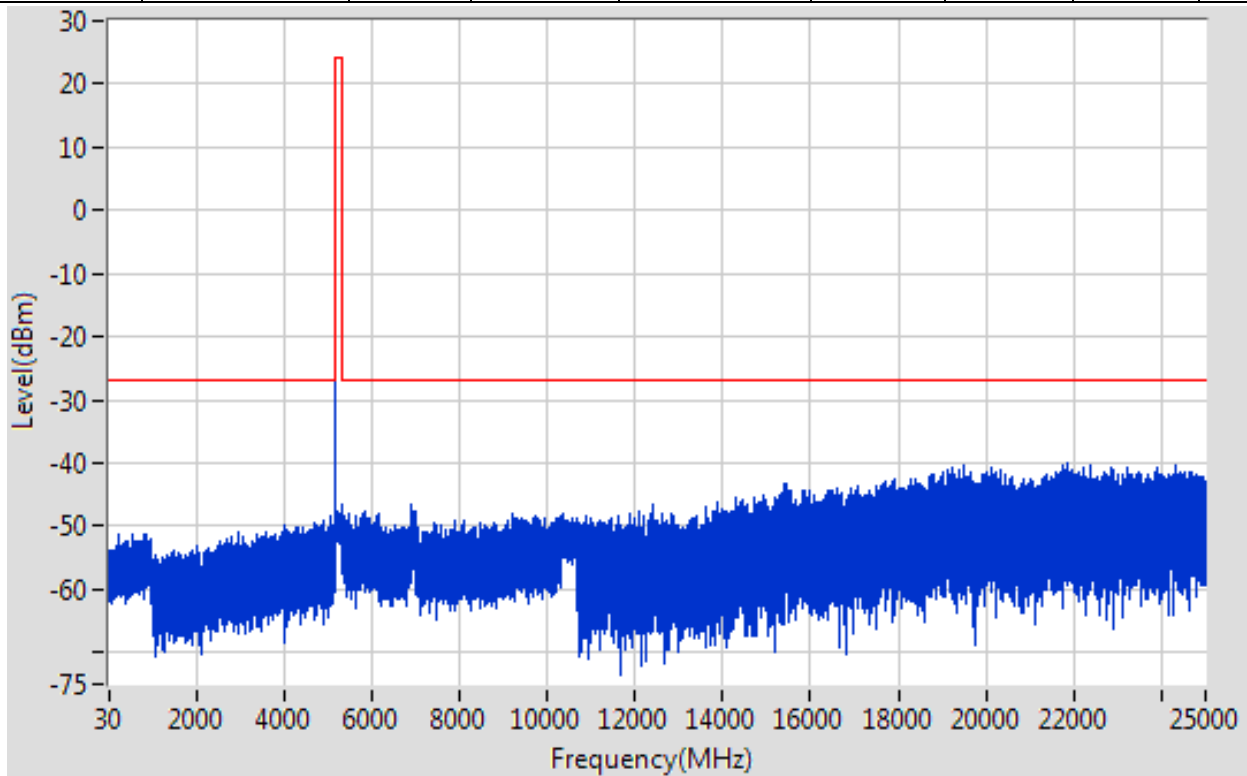
Test Band	Channel	Verdict
Band I (5160 - 5240 MHz)	Low	Pass
	Middle	Pass
	High	Pass
Band IV (5735 - 5840 MHz)	Low	Pass
	Middle	Pass
	High	Pass

Test plots

Band I

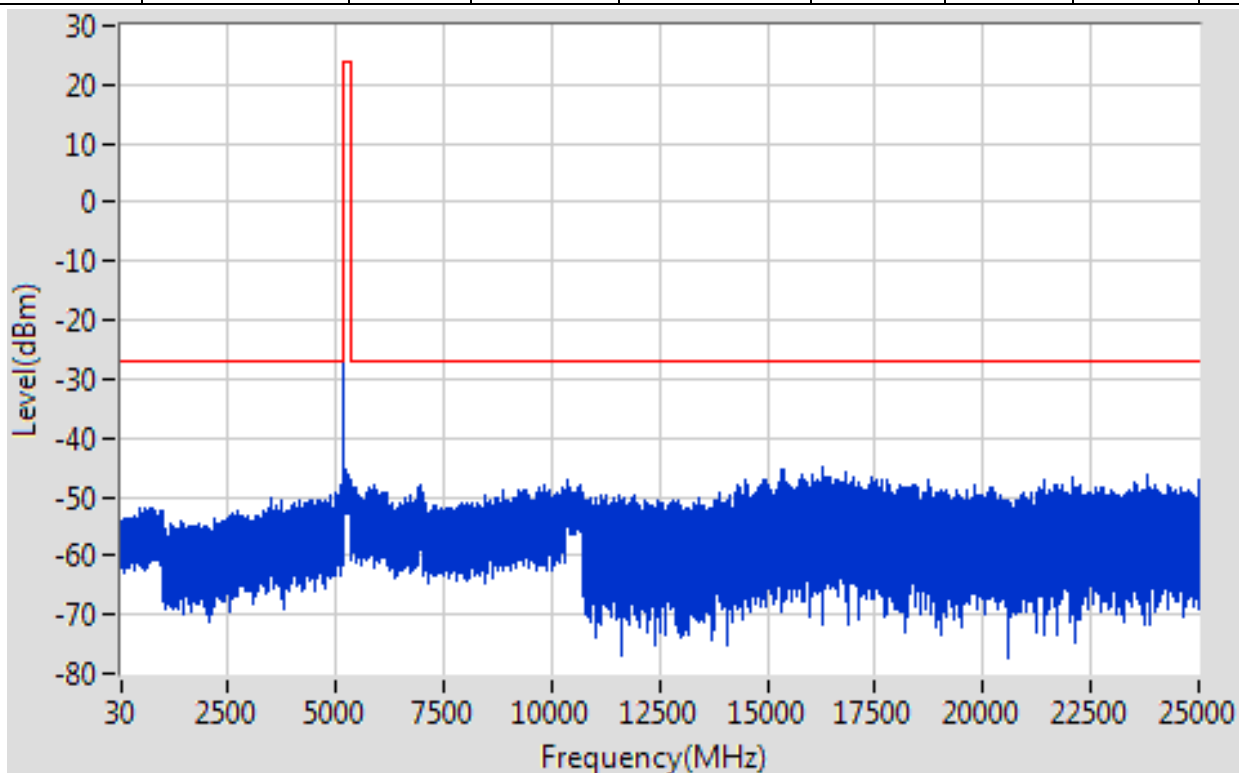
LOW CHANNEL

Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	572.956	-51.23	-27	Pass	9700
1000	5150	0.1	Peak	5060.281	-48.24	-27	Pass	41499
5150	5350	0.1	Peak	5159.405	2.81	24	Pass	2000
5350	10300	0.1	Peak	6918.949	-46.63	-27	Pass	49499
10300	10700	0.1	Peak	10361.015	-47.89	-27	Pass	4000
10700	25000	0.1	Peak	21865.749	-39.98	-27	Pass	142999



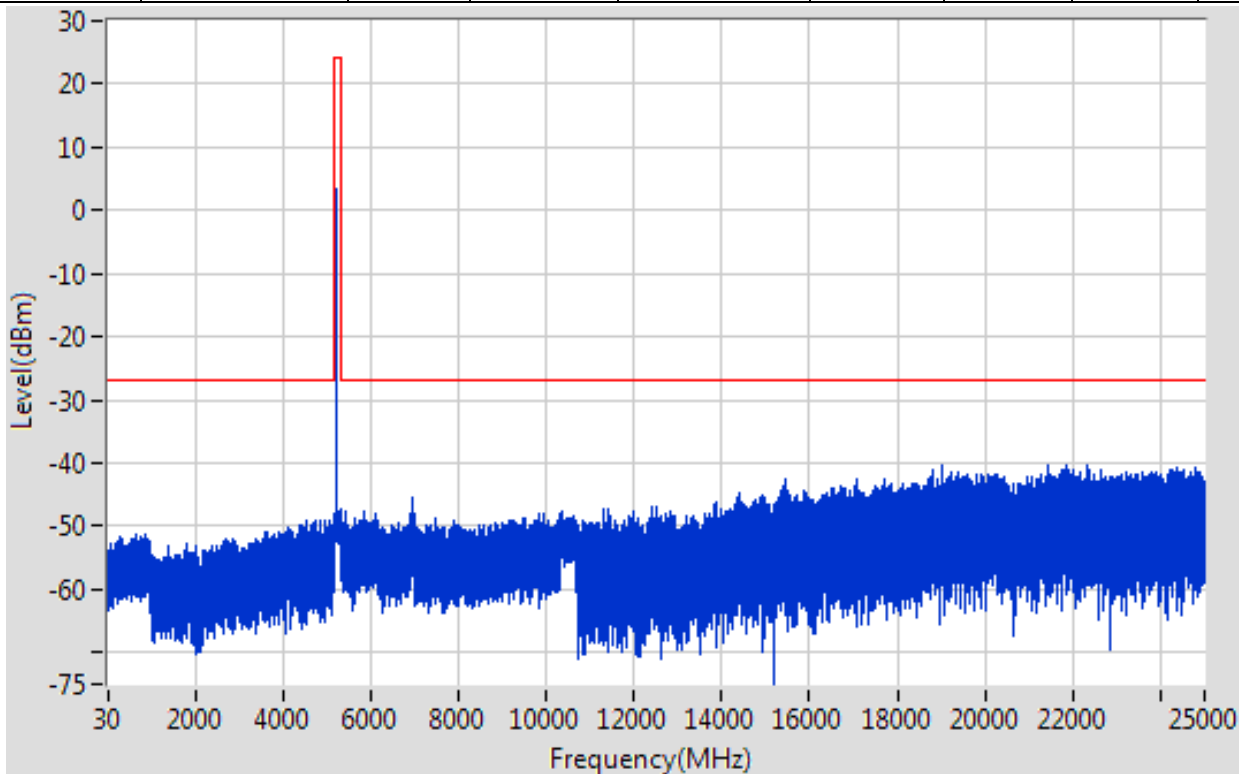
MIDDLE CHANNEL

Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	725.172	-51.8	-27	Pass	9700
1000	5150	0.1	Peak	5084.786	-48.13	-27	Pass	41499
5150	5350	0.1	Peak	5179.315	13.54	24	Pass	2000
5350	10300	0.1	Peak	6940.05	-47.87	-27	Pass	49499
10300	10700	0.1	Peak	10358.715	-47.02	-27	Pass	4000
10700	25000	0.1	Peak	16267.774	-44.97	-27	Pass	142999



HIGH CHANNEL

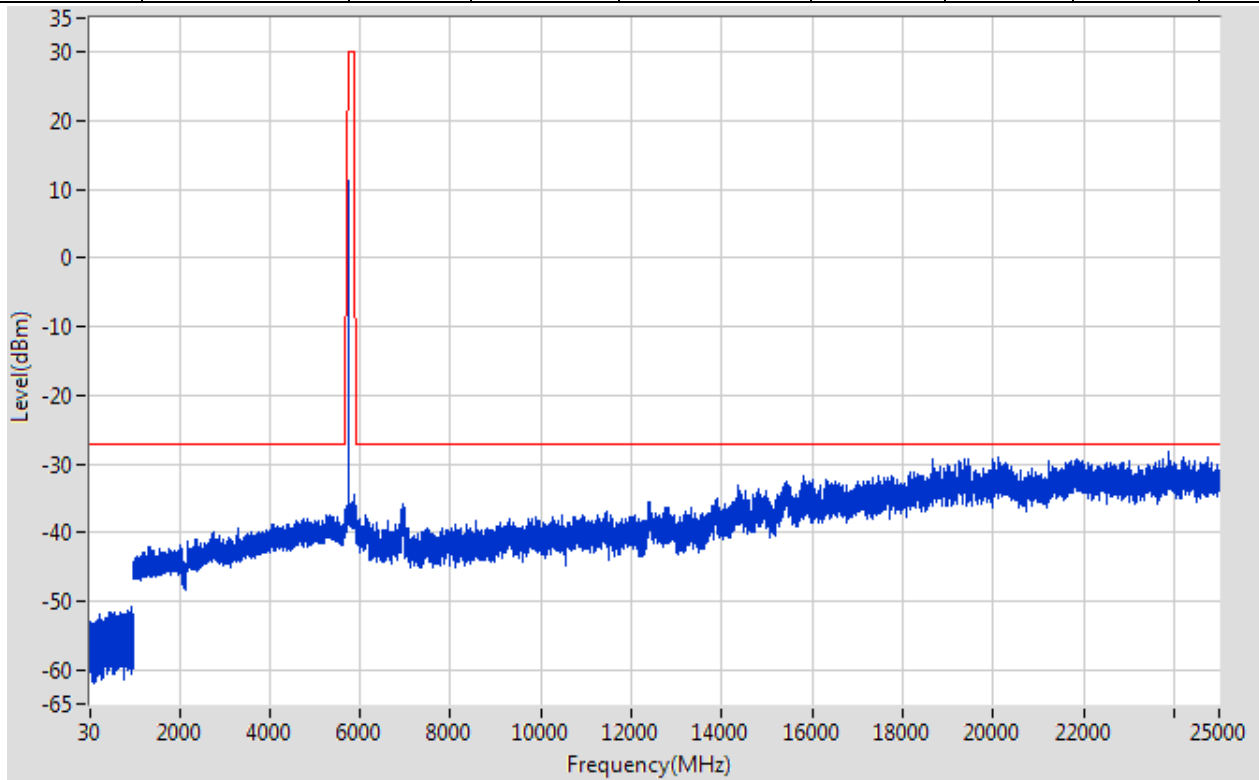
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	887.788	-51.16	-27	Pass	9700
1000	5150	0.1	Peak	4983.965	-48.96	-27	Pass	41499
5150	5350	0.1	Peak	5239.445	3.55	24	Pass	2000
5350	10300	0.1	Peak	6945.85	-45.4	-27	Pass	49499
10300	10700	0.1	Peak	10364.016	-47.83	-27	Pass	4000
10700	25000	0.1	Peak	22340.464	-40.39	-27	Pass	142999



Band IV

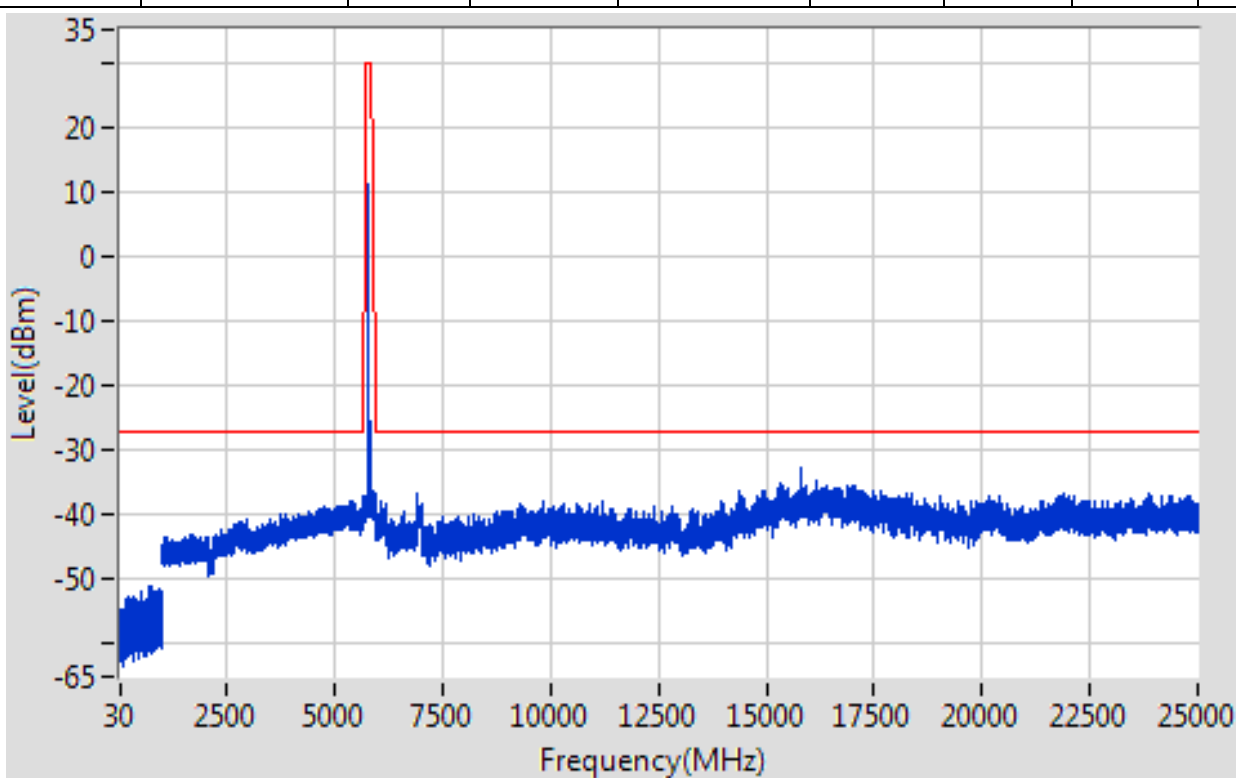
LOW CHANNEL

Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	948.495	-50.79	-27	Pass	9700
1000	5650	1	Peak	5259.916	-37.36	-27	Pass	4650
5650	5700	1	Peak	5650.362	-37.84	-26.73	Pass	691
5700	5720	1	Peak	5700.58	-37.26	10.16	Pass	691
5720	5725	1	Peak	5720.21	-36.2	16.08	Pass	691
5725	5850	1	Peak	5734.42	11.37	30	Pass	691
5850	5855	1	Peak	5854.478	-36.08	16.79	Pass	691
5855	5875	1	Peak	5873.609	-36.08	10.39	Pass	691
5875	5925	1	Peak	5924.638	-37.21	-26.73	Pass	691
5925	25000	1	Peak	23874.941	-28.35	-27	Pass	19075



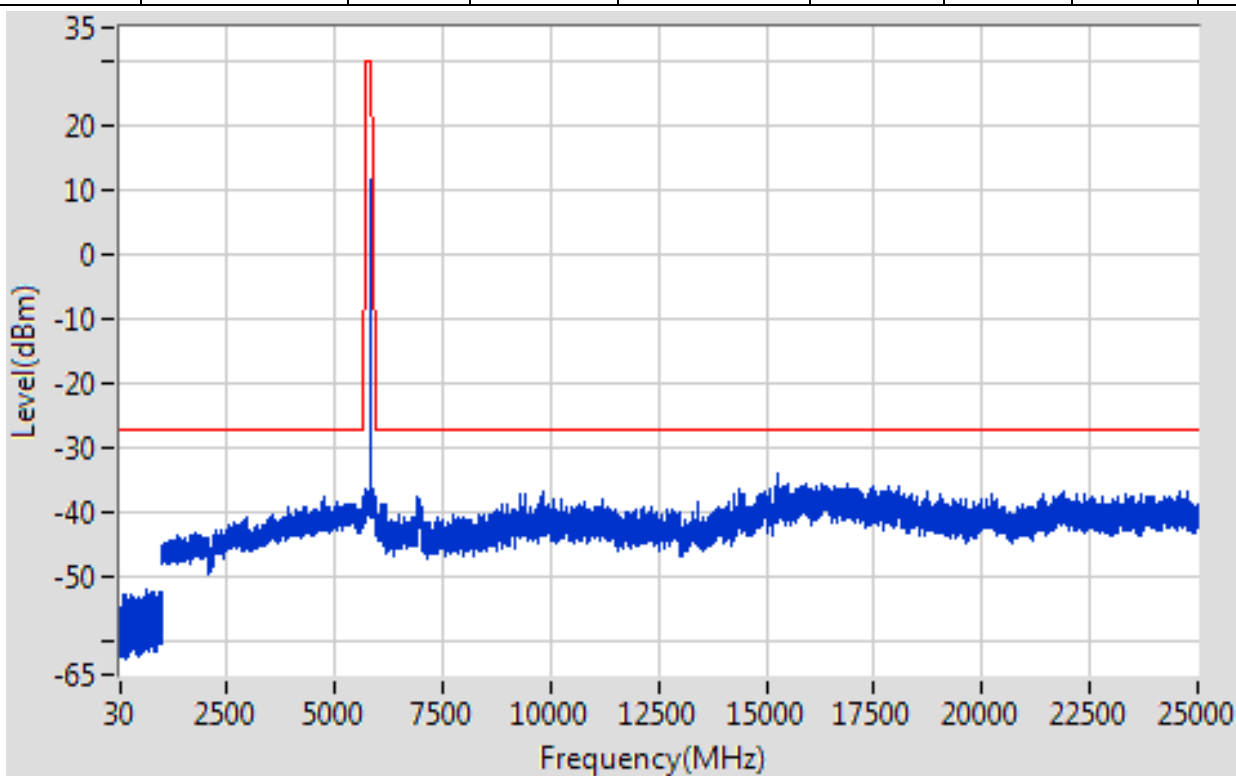
MIDDLE CHANNEL

Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	716.471	-50.99	-27	Pass	9700
1000	5650	1	Peak	5424.952	-37.71	-27	Pass	4650
5650	5700	1	Peak	5650	-39.04	-27	Pass	691
5700	5720	1	Peak	5701.333	-37.63	10.37	Pass	691
5720	5725	1	Peak	5720.043	-37.95	15.7	Pass	691
5725	5850	1	Peak	5790.58	11.25	30	Pass	691
5850	5855	1	Peak	5854.92	-36.88	15.78	Pass	691
5855	5875	1	Peak	5873.928	-36.4	10.3	Pass	691
5875	5925	1	Peak	5924.855	-37.93	-26.89	Pass	691
5925	25000	1	Peak	15817.519	-32.83	-27	Pass	19075



HIGH CHANNEL

Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	647.464	-51.91	-27	Pass	9700
1000	5650	1	Peak	4757.808	-37.66	-27	Pass	4650
5650	5700	1	Peak	5650	-38.81	-27	Pass	691
5700	5720	1	Peak	5705.942	-36.48	11.66	Pass	691
5720	5725	1	Peak	5720.268	-36.98	16.21	Pass	691
5725	5850	1	Peak	5839.312	11.44	30	Pass	691
5850	5855	1	Peak	5854.884	-36.77	15.86	Pass	691
5855	5875	1	Peak	5873.203	-36.63	10.5	Pass	691
5875	5925	1	Peak	5924.928	-38.81	-26.95	Pass	691
5925	25000	1	Peak	15265.49	-33.98	-27	Pass	19075



A.7 Radiated Spurious Emissions and Band Edge (Restricted-band)

A.7.1 Radiated Spurious Emissions

Test Data

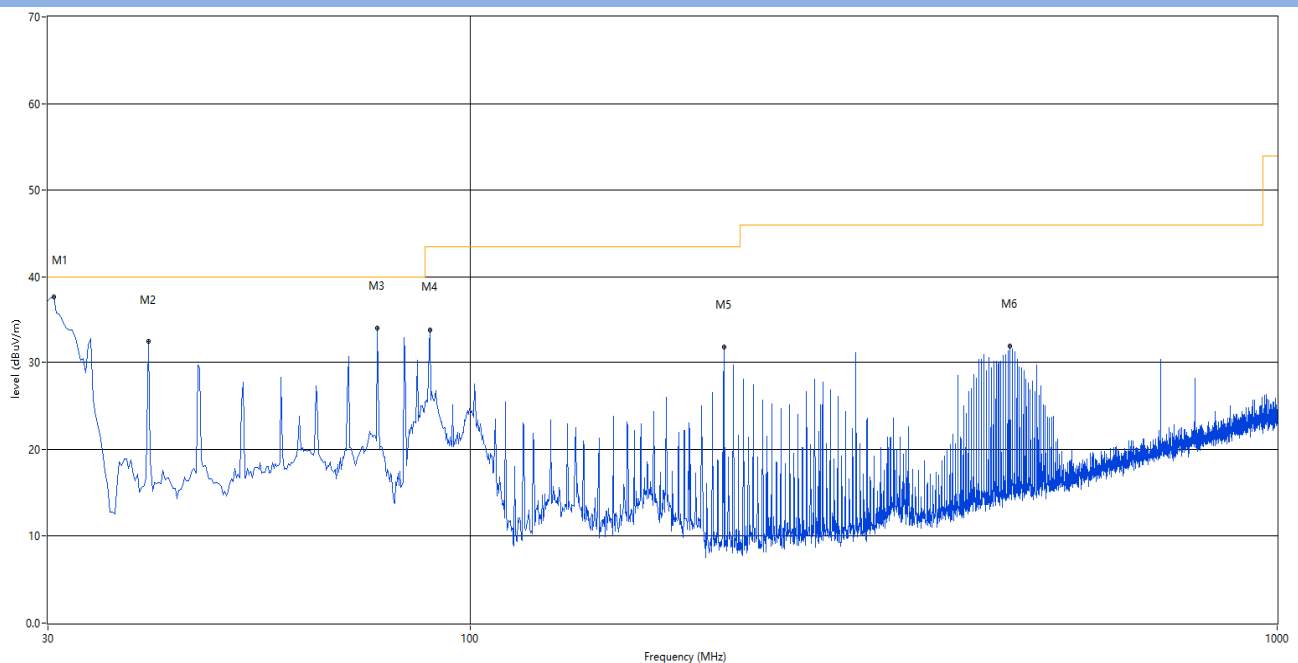
Note¹: The symbol of “--” in the table which means not application.

Note²: For the test data above 1 GHz, According the ANSI C63.4, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note³: The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

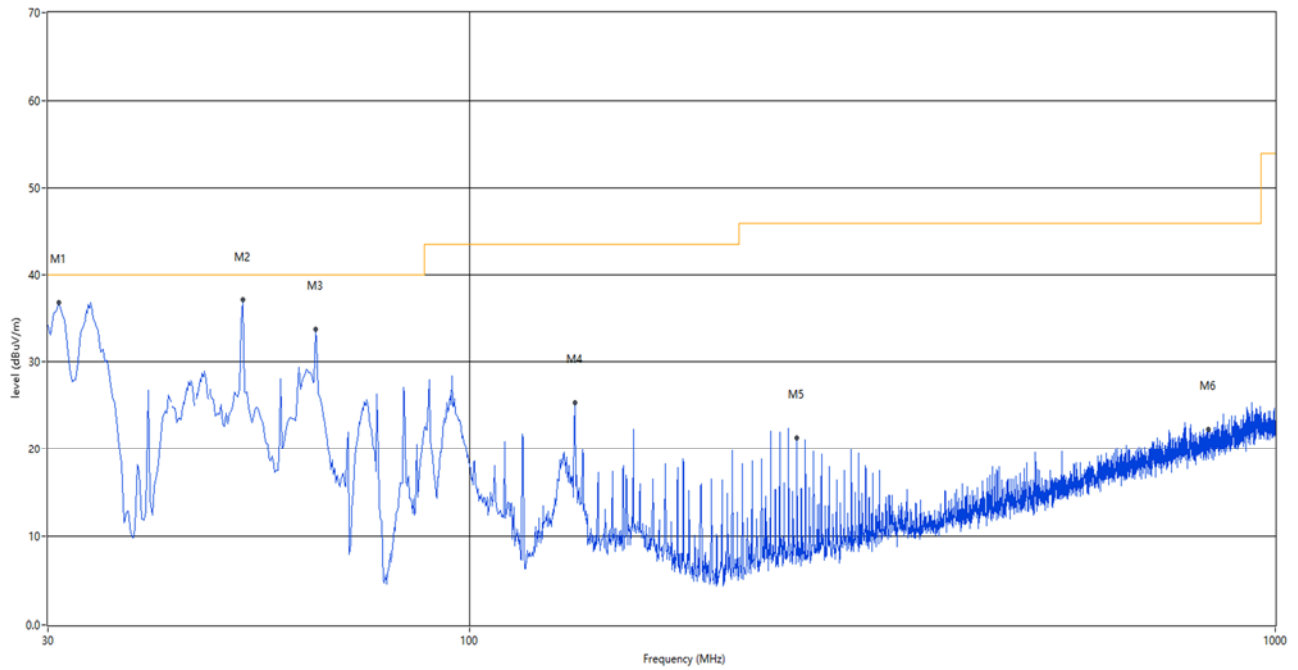
Note⁴: The EUT is working in the Normal link mode below 1 GHz.

30 MHz to 1 GHz, ANT H



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	30.485	37.67	-26.79	40.0	-2.33	Peak	360.00	100	Horizontal	Pass
2	39.943	32.39	-26.06	40.0	-7.61	Peak	197.00	100	Horizontal	Pass
3	76.802	34.03	-29.58	40.0	-5.97	Peak	181.00	100	Horizontal	Pass
4	89.170	33.85	-29.57	43.5	-9.65	Peak	204.00	100	Horizontal	Pass
5	206.540	31.75	-27.95	43.5	-11.75	Peak	250.00	100	Horizontal	Pass
6	466.985	31.87	-19.95	46.0	-14.13	Peak	246.00	100	Horizontal	Pass

30 MHz to 1 GHz, ANT V



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	30.970	36.76	-26.78	40.0	-3.24	Peak	13.00	100	Vertical	Pass
2	52.310	37.09	-26.64	40.0	-2.91	Peak	13.00	100	Vertical	Pass
3	64.435	33.74	-27.61	40.0	-6.26	Peak	0.00	100	Vertical	Pass
4	135.245	25.38	-25.49	43.5	-18.12	Peak	22.00	100	Vertical	Pass
5	255.040	21.34	-25.85	46.0	-24.66	Peak	31.00	100	Vertical	Pass
6	825.642	22.30	-12.00	46.0	-23.70	Peak	4.00	100	Vertical	Pass

Note 1: The marked spikes near 5.2 GHz or 5.8 GHz with circle should be ignored because they are WIFI carrier frequency.

Note 2: The test result of 18~40 GHz is less than 20dB, so it only shown 1 GHz to 18 GHz in this report.

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Band I

1 GHz to 18 GHz, ANT H, Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1383.500	29.01	-14.26	54.0	-24.99	AV	56.00	150	Horizontal	Pass
1	1383.500	40.34	-14.26	74.0	-33.66	Peak	56.00	150	Horizontal	Pass
2**	4469.000	44.22	2.73	--	44.22	AV	13.00	150	Horizontal	N/A
2	4469.000	54.95	2.73	68.2	-13.25	Peak	13.00	150	Horizontal	Pass
3**	5159.000	78.46	8.21	--	78.46	AV	13.00	150	Horizontal	N/A
3	5159.000	100.31	8.21	--	87.31	Peak	13.00	150	Horizontal	N/A
4**	10429.875	37.98	0.48	--	37.98	AV	12.00	150	Horizontal	N/A
4	10429.875	49.29	0.48	68.2	-18.91	Peak	12.00	150	Horizontal	Pass
5**	13628.063	40.46	1.68	--	40.46	AV	2.00	150	Horizontal	N/A
5	13628.063	51.98	1.68	68.2	-16.22	Peak	2.00	150	Horizontal	Pass
6**	17435.625	44.38	4.34	--	44.38	AV	338.00	150	Horizontal	N/A
6	17435.625	54.49	4.34	68.2	-13.71	Peak	338.00	150	Horizontal	Pass

1 GHz to 18 GHz, ANT V, Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1202.500	28.44	-14.71	54.0	-25.56	AV	80.00	150	Vertical	Pass
1	1202.500	39.75	-14.71	74.0	-34.25	Peak	80.00	150	Vertical	Pass
2**	4477.000	44.58	3.33	--	44.58	AV	68.00	150	Vertical	N/A
2	4477.000	54.24	3.33	68.2	-13.96	Peak	68.00	150	Vertical	Pass
3**	5159.000	78.34	8.21	--	78.34	AV	14.00	150	Vertical	N/A
3	5159.000	100.37	8.21	--	86.37	Peak	14.00	150	Vertical	N/A
4**	6742.000	51.29	9.95	--	51.29	AV	14.00	150	Vertical	N/A
4	6742.000	61.46	9.95	68.2	-6.74	Peak	14.00	150	Vertical	Pass
5**	11998.188	39.19	1.45	54.0	-14.81	AV	265.00	150	Vertical	Pass
5	11998.188	50.26	1.45	74.0	-23.74	Peak	265.00	150	Vertical	Pass
6**	17431.687	44.30	4.49	--	44.30	AV	147.00	150	Vertical	N/A
6	17431.687	54.31	4.49	68.2	-13.89	Peak	147.00	150	Vertical	Pass

1 GHz to 18 GHz, ANT H, Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1464.500	26.44	-15.00	54.0	-27.56	AV	342.00	150	Horizontal	Pass
1	1464.500	36.62	-15.00	74.0	-37.38	Peak	342.00	150	Horizontal	Pass
2**	2800.500	30.41	-9.24	54.0	-23.59	AV	165.00	150	Horizontal	Pass
2	2800.500	41.01	-9.24	74.0	-32.99	Peak	165.00	150	Horizontal	Pass
3**	3950.000	34.78	-4.88	54.0	-19.22	AV	135.00	150	Horizontal	Pass
3	3950.000	44.97	-4.88	74.0	-29.03	Peak	135.00	150	Horizontal	Pass
4**	5179.000	87.29	-0.97	--	87.29	AV	306.00	150	Horizontal	N/A
4	5179.000	109.30	-0.97	--	-196.70	Peak	306.00	150	Horizontal	N/A
5**	10360.875	50.32	17.63	--	50.32	AV	202.00	150	Horizontal	Pass
5	10360.875	57.50	17.63	68.2	-10.70	Peak	202.00	150	Horizontal	Pass
6**	12038.438	39.62	20.44	54.0	-14.38	AV	350.00	150	Horizontal	Pass
6	12038.438	50.21	20.44	74.0	-23.79	Peak	350.00	150	Horizontal	Pass

1 GHz to 18 GHz, ANT V, Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1552.500	26.61	-15.21	54.0	-27.39	AV	-1.00	150	Vertical	Pass
1	1552.500	36.39	-15.21	74.0	-37.61	Peak	-1.00	150	Vertical	Pass
2**	2753.500	30.84	-9.53	54.0	-23.16	AV	274.00	150	Vertical	Pass
2	2753.500	41.18	-9.53	74.0	-32.82	Peak	274.00	150	Vertical	Pass
3**	3997.000	34.70	-4.25	54.0	-19.30	AV	88.00	150	Vertical	Pass
3	3997.000	45.24	-4.25	74.0	-28.76	Peak	88.00	150	Vertical	Pass
4**	5181.000	100.37	-0.96	--	100.37	AV	78.00	150	Vertical	N/A
4	5181.000	103.94	-0.96	--	25.94	Peak	78.00	150	Vertical	N/A
5**	10358.000	37.33	17.63	--	37.33	AV	303.00	150	Vertical	Pass
5	10358.000	58.78	17.63	68.2	-9.42	Peak	303.00	150	Vertical	Pass
6**	12065.750	39.17	20.55	54.0	-14.83	AV	360.00	150	Vertical	Pass
6	12065.750	49.59	20.55	74.0	-24.41	Peak	360.00	150	Vertical	Pass

1 GHz to 18 GHz, ANT H, High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1264.500	25.61	-14.93	--	25.61	AV	14.00	150	Horizontal	N/A
1	1264.500	37.14	-14.93	68.2	-31.06	Peak	14.00	150	Horizontal	Pass
2**	2620.000	34.83	-10.05	--	34.83	AV	90.00	150	Horizontal	N/A
2	2620.000	42.61	-10.05	68.2	-25.59	Peak	90.00	150	Horizontal	Pass
3**	5241.000	105.14	-0.89	--	105.14	AV	224.00	150	Horizontal	N/A
3	5241.000	109.35	-0.89	--	-114.65	Peak	224.00	150	Horizontal	Pass
4**	10478.750	38.72	17.95	--	38.72	AV	46.00	150	Horizontal	N/A
4	10478.750	55.73	17.95	68.2	-12.47	Peak	46.00	150	Horizontal	Pass
5**	15721.500	39.12	25.71	54.0	-14.88	AV	91.00	150	Horizontal	Pass
5	15721.500	52.19	25.71	68.2	-16.01	Peak	91.00	150	Horizontal	Pass
6**	17610.187	38.20	29.51	--	38.20	AV	-1.00	150	Horizontal	N/A
6	17610.187	47.78	29.51	68.2	-20.42	Peak	-1.00	150	Horizontal	Pass

1 GHz to 18 GHz, ANT V, High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1416.000	25.84	-15.16	54.0	-28.16	AV	69.00	150	Vertical	Pass
1	1416.000	36.19	-15.16	68.2	-32.01	Peak	69.00	150	Vertical	Pass
2**	2990.000	31.60	-8.34	--	31.60	AV	254.00	150	Vertical	N/A
2	2990.000	44.46	-8.34	68.2	-23.74	Peak	254.00	150	Vertical	Pass
3**	5239.000	83.35	-0.89	--	83.35	AV	94.00	150	Vertical	N/A
3	5239.000	105.24	-0.89	--	11.24	Peak	94.00	150	Vertical	N/A
4**	10481.625	52.14	17.94	--	52.14	AV	164.00	150	Vertical	N/A
4	10481.625	61.27	17.94	68.2	-6.93	Peak	164.00	150	Vertical	Pass
5**	15721.500	41.91	25.71	54.0	-12.09	AV	93.00	150	Vertical	Pass
5	15721.500	56.04	25.71	68.2	-12.16	Peak	93.00	150	Vertical	Pass
6**	17649.562	38.04	29.35	--	38.04	AV	118.00	150	Vertical	N/A
6	17649.562	48.13	29.35	68.2	-20.07	Peak	118.00	150	Vertical	Pass

Band IV

1 GHz to 18 GHz, ANT H, Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1521.000	25.70	-15.02	54.0	-28.30	AV	256.00	150	Horizontal	Pass
1	1521.000	37.19	-15.02	68.2	-31.01	Peak	256.00	150	Horizontal	Pass
2**	2996.500	30.39	-8.06	--	30.39	AV	256.00	150	Horizontal	N/A
2	2996.500	44.44	-8.06	68.2	-23.76	Peak	256.00	150	Horizontal	Pass
3**	5735.000	79.72	-0.25	--	79.72	AV	192.00	150	Horizontal	N/A
3	5735.000	86.73	-0.25	--	-105.27	Peak	192.00	150	Horizontal	Pass
4**	9886.500	35.07	17.82	--	35.07	AV	35.00	150	Horizontal	N/A
4	9886.500	45.67	17.82	68.2	-22.53	Peak	35.00	150	Horizontal	Pass
5**	11470.625	48.07	19.20	54.0	-5.93	AV	280.00	150	Horizontal	Pass
5	11470.625	55.98	19.20	68.2	-12.22	Peak	280.00	150	Horizontal	Pass
6**	17608.874	30.71	29.52	--	30.71	AV	252.00	150	Horizontal	N/A
6	17608.874	46.73	29.52	68.2	-21.47	Peak	252.00	150	Horizontal	Pass

1 GHz to 18 GHz, ANT V, Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict	Verdict
1**	1249.500	24.83	-14.92	--	24.83	AV	346.00	150	Vertical	N/A	Pass
1	1249.500	36.55	-14.92	68.2	-31.65	Peak	346.00	150	Vertical	Pass	Pass
2**	3726.000	33.82	-4.76	54.0	-20.18	AV	200.00	150	Vertical	Pass	Pass
2	3726.000	45.59	-4.76	68.2	-22.61	Peak	200.00	150	Vertical	Pass	Pass
3**	5734.000	65.02	-0.24	--	65.02	AV	189.00	150	Vertical	N/A	Pass
3	5734.000	86.69	-0.24	--	-102.31	Peak	189.00	150	Vertical	Pass	Pass
4**	11470.625	48.86	19.20	54.0	-5.14	AV	277.00	150	Vertical	Pass	N/A
4	11470.625	55.17	19.20	68.2	-13.03	Peak	277.00	150	Vertical	Pass	N/A
5**	15287.063	31.16	25.65	--	31.16	AV	249.00	150	Vertical	N/A	Pass
5	15287.063	47.14	25.65	68.2	-21.06	Peak	249.00	150	Vertical	Pass	Pass
6**	17648.251	29.81	29.39	--	29.81	AV	0.00	150	Vertical	N/A	Pass
6	17648.251	44.58	29.39	68.2	-23.62	Peak	0.00	150	Vertical	Pass	Pass

1 GHz to 18 GHz, ANT H, Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1569.500	25.77	-15.48	54.0	-28.23	AV	360.00	150	Horizontal	Pass
1	1569.500	36.51	-15.48	74.0	-37.49	Peak	360.00	150	Horizontal	Pass
2**	2772.500	31.20	-9.02	54.0	-22.80	AV	90.00	150	Horizontal	Pass
2	2772.500	42.24	-9.02	74.0	-31.76	Peak	90.00	150	Horizontal	Pass
3**	4025.000	35.01	-4.78	54.0	-18.99	AV	45.00	150	Horizontal	Pass
3	4025.000	45.05	-4.78	74.0	-28.95	Peak	45.00	150	Horizontal	Pass
4**	5789.000	86.48	0.38	--	86.48	AV	83.00	150	Horizontal	N/A
4	5789.000	108.27	0.38	--	25.27	Peak	83.00	150	Horizontal	N/A
5**	11582.750	49.90	19.87	54.0	-4.10	AV	118.00	150	Horizontal	Pass
5	11582.750	47.75	19.87	74.0	-26.25	Peak	118.00	150	Horizontal	Pass
6**	15582.375	43.65	27.19	54.0	-10.35	AV	97.00	150	Horizontal	Pass
6	15582.375	54.11	27.19	74.0	-19.89	Peak	97.00	150	Horizontal	Pass

1 GHz to 18 GHz, ANT V, Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1510.000	26.04	-15.24	54.0	-27.96	AV	5.00	150	Vertical	Pass
1	1510.000	36.41	-15.24	74.0	-37.59	Peak	5.00	150	Vertical	Pass
2**	2750.500	31.02	-9.44	54.0	-22.98	AV	78.00	150	Vertical	Pass
2	2750.500	41.43	-9.44	74.0	-32.57	Peak	78.00	150	Vertical	Pass
3**	4046.000	35.34	-4.37	54.0	-18.66	AV	236.00	150	Vertical	Pass
3	4046.000	45.85	-4.37	74.0	-28.15	Peak	236.00	150	Vertical	Pass
4**	5789.000	78.52	0.38	--	78.52	AV	26.00	150	Vertical	N/A
4	5789.000	99.38	0.38	--	73.38	Peak	26.00	150	Vertical	N/A
5**	11582.750	50.96	19.87	54.0	-3.04	AV	212.00	150	Vertical	Pass
5	11582.750	48.17	19.87	74.0	-25.83	Peak	212.00	150	Vertical	Pass
6**	15579.750	44.38	27.35	54.0	-9.62	AV	267.00	150	Vertical	Pass
6	15579.750	54.34	27.35	74.0	-19.66	Peak	267.00	150	Vertical	Pass

1 GHz to 18 GHz, ANT H, High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1522.500	26.05	-15.04	54.0	-27.95	AV	217.00	150	Horizontal	Pass
1	1522.500	37.01	-15.04	74.0	-36.99	Peak	217.00	150	Horizontal	Pass
2**	2772.500	30.99	-9.02	54.0	-23.01	AV	358.00	150	Horizontal	Pass
2	2772.500	41.84	-9.02	74.0	-32.16	Peak	358.00	150	Horizontal	Pass
3**	3891.000	34.49	-4.88	54.0	-19.51	AV	360.00	150	Horizontal	Pass
3	3891.000	45.39	-4.88	74.0	-28.61	Peak	360.00	150	Horizontal	Pass
4**	5839.000	87.33	1.03	--	87.33	AV	67.00	150	Horizontal	N/A
4	5839.000	109.66	1.03	--	42.66	Peak	67.00	150	Horizontal	N/A
5**	11680.500	49.41	20.40	54.0	-4.59	AV	224.00	150	Horizontal	Pass
5	11680.500	56.05	20.40	74.0	-17.95	Peak	224.00	150	Horizontal	Pass
6**	15780.563	43.67	25.21	54.0	-10.33	AV	260.00	150	Horizontal	Pass
6	15780.563	53.18	25.21	74.0	-20.82	Peak	260.00	150	Horizontal	Pass

1 GHz to 18 GHz, ANT V, High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1590.500	26.23	-15.33	54.0	-27.77	AV	75.00	150	Vertical	Pass
1	1590.500	37.14	-15.33	74.0	-36.86	Peak	75.00	150	Vertical	Pass
2**	2833.000	31.43	-8.49	54.0	-22.57	AV	6.00	150	Vertical	Pass
2	2833.000	42.21	-8.49	74.0	-31.79	Peak	6.00	150	Vertical	Pass
3**	4026.000	35.11	-4.79	54.0	-18.89	AV	265.00	150	Vertical	Pass
3	4026.000	45.36	-4.79	74.0	-28.64	Peak	265.00	150	Vertical	Pass
4**	5841.000	97.38	1.13	--	97.38	AV	32.00	150	Vertical	N/A
4	5841.000	101.99	1.13	--	69.99	Peak	32.00	150	Vertical	N/A
5**	11680.500	50.92	20.40	54.0	-3.08	AV	36.00	150	Vertical	Pass
5	11680.500	57.69	20.40	74.0	-16.31	Peak	36.00	150	Vertical	Pass
6**	15680.812	43.01	25.71	54.0	-10.99	AV	218.00	150	Vertical	Pass
6	15680.812	53.63	25.71	74.0	-20.37	Peak	218.00	150	Vertical	Pass

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Band I

1 GHz to 18 GHz, ANT H, Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1413.000	29.50	-14.09	54.0	-24.50	AV	190.00	150	Horizontal	Pass
1	1413.000	40.21	-14.09	74.0	-33.79	Peak	190.00	150	Horizontal	Pass
2**	2224.500	34.85	-8.67	54.0	-19.15	AV	305.00	150	Horizontal	Pass
2	2224.500	45.02	-8.67	74.0	-28.98	Peak	305.00	150	Horizontal	Pass
3**	3910.000	43.40	1.49	54.0	-10.60	AV	177.00	150	Horizontal	Pass
3	3910.000	52.43	1.49	74.0	-21.57	Peak	177.00	150	Horizontal	Pass
4**	5159.000	78.45	8.21	--	78.45	AV	14.00	150	Horizontal	N/A
4	5159.000	100.13	8.21	--	86.13	Peak	14.00	150	Horizontal	N/A
5**	10485.937	38.42	-0.38	--	38.42	AV	251.00	150	Horizontal	N/A
5	10485.937	48.71	-0.38	68.2	-19.49	Peak	251.00	150	Horizontal	Pass
6**	17152.125	43.67	3.11	--	43.67	AV	105.00	150	Horizontal	N/A
6	17152.125	54.10	3.11	68.2	-14.10	Peak	105.00	150	Horizontal	Pass

1 GHz to 18 GHz, ANT V, Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1375.500	29.19	-14.15	54.0	-24.81	AV	300.00	150	Vertical	Pass
1	1375.500	39.70	-14.15	74.0	-34.30	Peak	300.00	150	Vertical	Pass
2**	2187.500	34.69	-9.16	--	34.69	AV	24.00	150	Vertical	N/A
2	2187.500	46.09	-9.16	68.2	-22.11	Peak	24.00	150	Vertical	Pass
3**	3686.000	41.74	0.29	54.0	-12.26	AV	342.00	150	Vertical	Pass
3	3686.000	51.30	0.29	74.0	-22.70	Peak	342.00	150	Vertical	Pass
4**	5161.000	95.89	8.23	--	95.89	AV	18.00	150	Vertical	N/A
4	5161.000	100.00	8.23	--	82.00	Peak	18.00	150	Vertical	N/A
5**	10419.812	38.72	0.65	--	38.72	AV	134.00	150	Vertical	N/A
5	10419.812	49.53	0.65	68.2	-18.67	Peak	134.00	150	Vertical	Pass
6**	17440.874	43.56	4.10	--	43.56	AV	208.00	150	Vertical	N/A
6	17440.874	54.22	4.10	68.2	-13.98	Peak	208.00	150	Vertical	Pass

1 GHz to 18 GHz, ANT H, Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1110.500	28.23	-18.40	54.0	-25.77	AV	220.00	150	Horizontal	Pass
1	1110.500	41.28	-18.40	74.0	-32.72	Peak	220.00	150	Horizontal	Pass
2**	1483.000	28.31	-17.45	54.0	-25.69	AV	216.00	150	Horizontal	Pass
2	1483.000	39.44	-17.45	74.0	-34.56	Peak	216.00	150	Horizontal	Pass
3**	5181.000	98.51	-2.66	--	98.51	AV	62.00	150	Horizontal	N/A
3	5181.000	102.18	-2.66	--	40.18	Peak	62.00	150	Horizontal	N/A
4**	8099.687	38.91	-1.37	54.0	-15.09	AV	69.00	150	Horizontal	Pass
4	8099.687	48.38	-1.37	74.0	-25.62	Peak	69.00	150	Horizontal	Pass
5**	11886.063	39.66	2.03	54.0	-14.34	AV	352.00	150	Horizontal	Pass
5	11886.063	51.12	2.03	74.0	-22.88	Peak	352.00	150	Horizontal	Pass
6**	15989.250	43.18	1.31	54.0	-10.82	AV	357.00	150	Horizontal	Pass
6	15989.250	54.37	1.31	74.0	-19.63	Peak	357.00	150	Horizontal	Pass

1 GHz to 18 GHz, ANT V, Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1111.500	31.62	-18.31	54.0	-22.38	AV	182.00	150	Vertical	Pass
1	1111.500	42.93	-18.31	74.0	-31.07	Peak	182.00	150	Vertical	Pass
2**	1558.000	31.47	-17.39	54.0	-22.53	AV	153.00	150	Vertical	Pass
2	1558.000	45.57	-17.39	74.0	-28.43	Peak	153.00	150	Vertical	Pass
3**	5179.000	68.82	-2.92	--	68.82	AV	29.00	150	Vertical	N/A
3	5179.000	90.72	-2.92	--	61.72	Peak	29.00	150	Vertical	N/A
4**	8206.063	37.33	-1.78	54.0	-16.67	AV	288.00	150	Vertical	Pass
4	8206.063	49.41	-1.78	74.0	-24.59	Peak	288.00	150	Vertical	Pass
5**	12357.562	39.97	1.63	54.0	-14.03	AV	141.00	150	Vertical	Pass
5	12357.562	51.38	1.63	74.0	-22.62	Peak	141.00	150	Vertical	Pass
6**	15627.000	43.86	2.50	54.0	-10.14	AV	200.00	150	Vertical	Pass
6	15627.000	54.06	2.50	74.0	-19.94	Peak	200.00	150	Vertical	Pass

1 GHz to 18 GHz, ANT H, High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1398.500	25.69	-15.07	54.0	-28.31	AV	196.00	150	Horizontal	Pass
1	1398.500	36.60	-15.07	68.2	-31.60	Peak	196.00	150	Horizontal	Pass
2**	2620.500	37.10	-10.04	--	37.10	AV	90.00	150	Horizontal	N/A
2	2620.500	42.48	-10.04	68.2	-25.72	Peak	90.00	150	Horizontal	Pass
3**	5239.000	87.62	-0.89	--	87.62	AV	148.00	150	Horizontal	N/A
3	5239.000	109.37	-0.89	--	-38.63	Peak	148.00	150	Horizontal	Pass
4**	10478.750	38.81	17.95	--	38.81	AV	180.00	150	Horizontal	N/A
4	10478.750	55.49	17.95	68.2	-12.71	Peak	180.00	150	Horizontal	Pass
5**	15717.562	36.72	25.69	54.0	-17.28	AV	210.00	150	Horizontal	Pass
5	15717.562	49.71	25.69	68.2	-18.49	Peak	210.00	150	Horizontal	Pass
6**	17611.500	37.34	29.50	--	37.34	AV	360.00	150	Horizontal	N/A
6	17611.500	47.13	29.50	68.2	-21.07	Peak	360.00	150	Horizontal	Pass

1 GHz to 18 GHz, ANT V, High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1400.500	25.86	-15.18	54.0	-28.14	AV	150.00	150	Vertical	Pass
1	1400.500	36.19	-15.18	68.2	-32.01	Peak	150.00	150	Vertical	Pass
2**	2620.000	33.02	-10.05	--	33.02	AV	134.00	150	Vertical	N/A
2	2620.000	41.47	-10.05	68.2	-26.73	Peak	134.00	150	Vertical	Pass
3**	5239.000	83.59	-0.89	--	83.59	AV	101.00	150	Vertical	N/A
3	5239.000	105.28	-0.89	--	4.28	Peak	101.00	150	Vertical	N/A
4**	10478.750	44.21	17.95	--	44.21	AV	157.00	150	Vertical	N/A
4	10478.750	61.78	17.95	68.2	-6.42	Peak	157.00	150	Vertical	Pass
5**	15717.562	37.43	25.69	54.0	-16.57	AV	102.00	150	Vertical	Pass
5	15717.562	55.48	25.69	68.2	-12.72	Peak	102.00	150	Vertical	Pass
6**	17611.500	37.82	29.50	--	37.82	AV	114.00	150	Vertical	N/A
6	17611.500	47.04	29.50	68.2	-21.16	Peak	114.00	150	Vertical	Pass

Band IV

1 GHz to 18 GHz, ANT H, Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1481.000	25.42	-15.28	54.0	-28.58	AV	36.00	150	Horizontal	Pass
1	1481.000	36.28	-15.28	68.2	-31.92	Peak	36.00	150	Horizontal	Pass
2**	2191.000	29.65	-10.93	--	29.65	AV	136.00	150	Horizontal	N/A
2	2191.000	40.35	-10.93	68.2	-27.85	Peak	136.00	150	Horizontal	Pass
3**	5734.000	69.88	-0.24	--	69.88	AV	321.00	150	Horizontal	N/A
3	5734.000	91.74	-0.24	--	-229.26	Peak	321.00	150	Horizontal	Pass
4**	9153.375	36.66	18.10	54.0	-17.34	AV	307.00	150	Horizontal	Pass
4	9153.375	47.05	18.10	68.2	-21.15	Peak	307.00	150	Horizontal	Pass
5**	11470.625	47.12	19.20	54.0	-6.88	AV	229.00	150	Horizontal	Pass
5	11470.625	55.06	19.20	68.2	-13.14	Peak	229.00	150	Horizontal	Pass
6**	16211.063	32.66	27.32	--	32.66	AV	87.00	150	Horizontal	N/A
6	16211.063	48.38	27.32	68.2	-19.82	Peak	87.00	150	Horizontal	Pass

1 GHz to 18 GHz, ANT V, Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1350.000	25.34	-14.99	54.0	-28.66	AV	72.00	150	Vertical	Pass
1	1350.000	36.38	-14.99	68.2	-31.82	Peak	72.00	150	Vertical	Pass
2**	4011.000	33.95	-4.52	54.0	-20.05	AV	194.00	150	Vertical	Pass
2	4011.000	44.77	-4.52	68.2	-23.43	Peak	194.00	150	Vertical	Pass
3**	5734.000	70.99	-0.24	--	70.99	AV	323.00	150	Vertical	N/A
3	5734.000	92.31	-0.24	--	-230.69	Peak	323.00	150	Vertical	Pass
4**	11470.625	47.07	19.20	54.0	-6.93	AV	223.00	150	Vertical	Pass
4	11470.625	55.21	19.20	68.2	-12.99	Peak	223.00	150	Vertical	Pass
5**	14372.250	35.88	23.92	--	35.88	AV	168.00	150	Vertical	N/A
5	14372.250	48.23	23.92	68.2	-19.97	Peak	168.00	150	Vertical	Pass
6**	17669.249	30.14	29.13	--	30.14	AV	0.00	150	Vertical	N/A
6	17669.249	46.22	29.13	68.2	-21.98	Peak	0.00	150	Vertical	Pass

1 GHz to 18 GHz, ANT H, Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1111.000	28.99	-18.36	54.0	-25.01	AV	339.00	150	Horizontal	Pass
1	1111.000	40.91	-18.36	74.0	-33.09	Peak	339.00	150	Horizontal	Pass
2**	1482.500	28.71	-17.49	54.0	-25.29	AV	196.00	150	Horizontal	Pass
2	1482.500	39.17	-17.49	74.0	-34.83	Peak	196.00	150	Horizontal	Pass
3**	3674.000	36.46	-5.28	54.0	-17.54	AV	40.00	150	Horizontal	Pass
3	3674.000	46.64	-5.28	74.0	-27.36	Peak	40.00	150	Horizontal	Pass
4**	5789.000	86.17	-1.95	--	86.17	AV	23.00	150	Horizontal	N/A
4	5789.000	108.46	-1.95	--	85.46	Peak	23.00	150	Horizontal	N/A
5**	11578.438	39.49	0.00	54.0	-14.51	AV	106.00	150	Horizontal	Pass
5	11578.438	54.04	0.00	74.0	-19.96	Peak	106.00	150	Horizontal	Pass
6**	15871.126	43.22	1.27	54.0	-10.78	AV	78.00	150	Horizontal	Pass
6	15871.126	53.97	1.27	74.0	-20.03	Peak	78.00	150	Horizontal	Pass

1 GHz to 18 GHz, ANT V, Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1110.500	31.46	-18.40	54.0	-22.54	AV	185.00	150	Vertical	Pass
1	1110.500	42.70	-18.40	74.0	-31.30	Peak	185.00	150	Vertical	Pass
2**	1556.000	32.28	-17.35	54.0	-21.72	AV	160.00	150	Vertical	Pass
2	1556.000	43.83	-17.35	74.0	-30.17	Peak	160.00	150	Vertical	Pass
3**	3991.000	37.13	-3.95	54.0	-16.87	AV	360.00	150	Vertical	Pass
3	3991.000	47.65	-3.95	74.0	-26.35	Peak	360.00	150	Vertical	Pass
4**	5789.000	76.07	-1.95	--	76.07	AV	205.00	150	Vertical	N/A
4	5789.000	98.06	-1.95	--	-106.94	Peak	205.00	150	Vertical	N/A
5**	11582.750	47.24	0.06	54.0	-6.76	AV	240.00	150	Vertical	Pass
5	11582.750	48.35	0.06	74.0	-25.65	Peak	240.00	150	Vertical	Pass
6**	15972.187	43.23	1.33	54.0	-10.77	AV	330.00	150	Vertical	Pass
6	15972.187	54.62	1.33	74.0	-19.38	Peak	330.00	150	Vertical	Pass

1 GHz to 18 GHz, ANT H, High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1113.500	29.01	-18.59	54.0	-24.99	AV	341.00	150	Horizontal	Pass
1	1113.500	41.26	-18.59	74.0	-32.74	Peak	341.00	150	Horizontal	Pass
2**	1480.000	28.64	-17.60	54.0	-25.36	AV	200.00	150	Horizontal	Pass
2	1480.000	39.10	-17.60	74.0	-34.90	Peak	200.00	150	Horizontal	Pass
3**	3971.000	35.72	-5.05	54.0	-18.28	AV	163.00	150	Horizontal	Pass
3	3971.000	47.82	-5.05	74.0	-26.18	Peak	163.00	150	Horizontal	Pass
4**	5842.000	101.69	-1.79	--	101.69	AV	0.00	150	Horizontal	N/A
4	5842.000	95.25	-1.79	--	95.25	Peak	0.00	150	Horizontal	N/A
5**	11679.062	40.62	0.56	54.0	-13.38	AV	24.00	150	Horizontal	Pass
5	11679.062	51.86	0.56	74.0	-22.14	Peak	24.00	150	Horizontal	Pass
6**	15619.125	43.42	2.58	54.0	-10.58	AV	360.00	150	Horizontal	Pass
6	15619.125	53.66	2.58	74.0	-20.34	Peak	360.00	150	Horizontal	Pass

1 GHz to 18 GHz, ANT V, High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	1111.500	31.74	-18.31	54.0	-22.26	AV	191.00	150	Vertical	Pass
1	1111.500	44.33	-18.31	74.0	-29.67	Peak	191.00	150	Vertical	Pass
2**	1553.000	29.13	-17.42	54.0	-24.87	AV	164.00	150	Vertical	Pass
2	1553.000	44.18	-17.42	74.0	-29.82	Peak	164.00	150	Vertical	Pass
3**	4607.000	38.56	-3.26	54.0	-15.44	AV	71.00	150	Vertical	Pass
3	4607.000	48.74	-3.26	74.0	-25.26	Peak	71.00	150	Vertical	Pass
4**	5840.000	91.36	-1.74	--	91.36	AV	203.00	150	Vertical	N/A
4	5840.000	97.48	-1.74	--	-105.52	Peak	203.00	150	Vertical	N/A
5**	11679.062	43.40	0.56	54.0	-10.60	AV	238.00	150	Vertical	Pass
5	11679.062	55.97	0.56	74.0	-18.03	Peak	238.00	150	Vertical	Pass
6**	15814.688	43.35	2.52	54.0	-10.65	AV	238.00	150	Vertical	Pass
6	15814.688	54.28	2.52	74.0	-19.72	Peak	238.00	150	Vertical	Pass

A.7.2 Band Edge (Restricted-band)

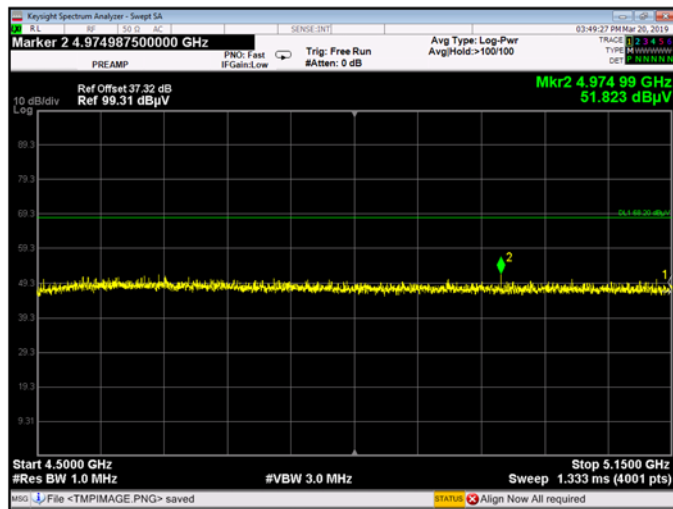
Test Band	Channel	Verdict
Band I (5160 - 5240 MHz)	Low	Pass
	High	Pass
Band IV (5735 - 5840 MHz)	Low	Pass
	High	Pass

Test Plots

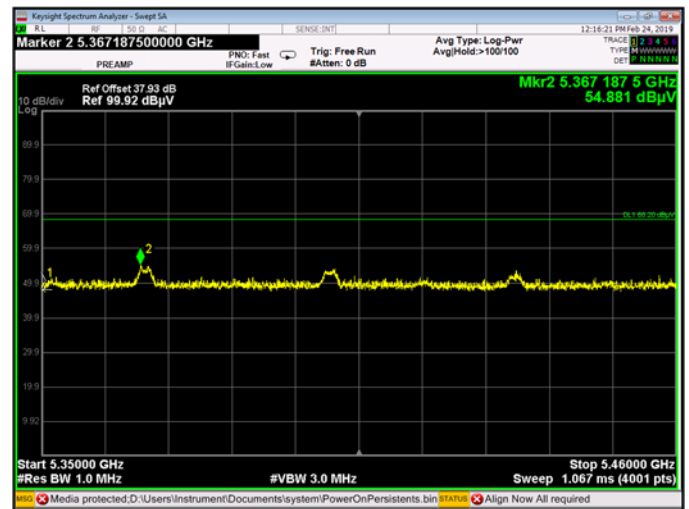
IA9QH5-SY5-A24

Band I

LOW CHANNEL

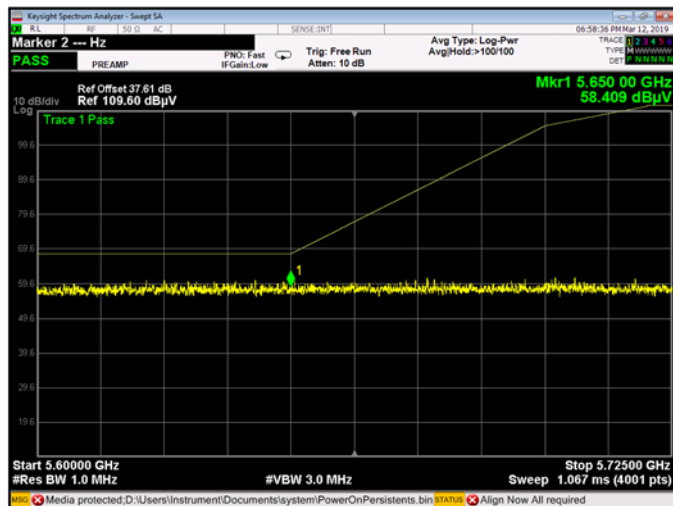


HIGH CHANNEL

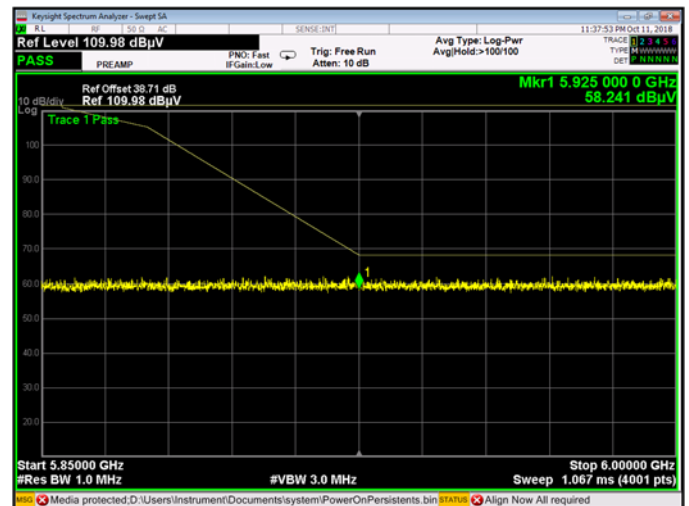


Band IV

LOW CHANNEL



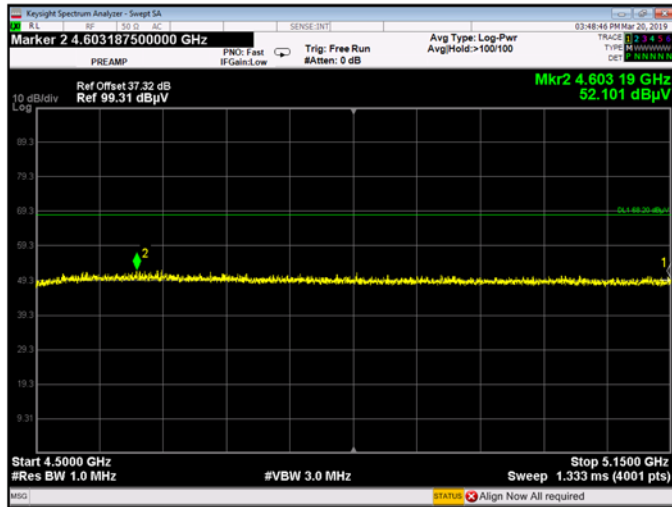
HIGH CHANNEL



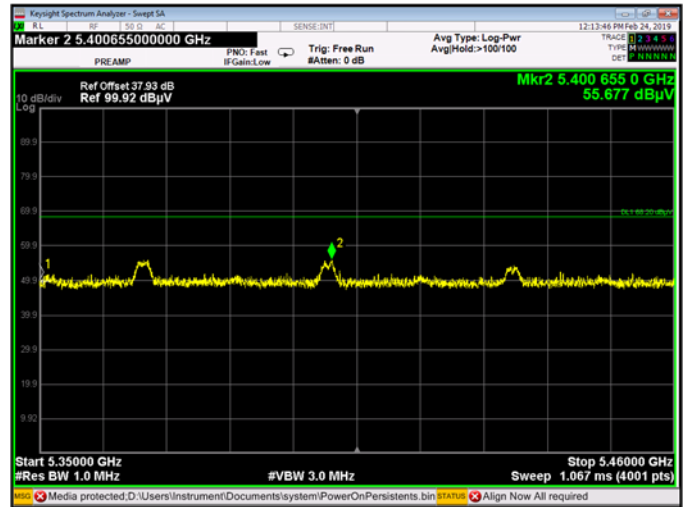
IA9QH5-SY5-A24-F

Band I

LOW CHANNEL

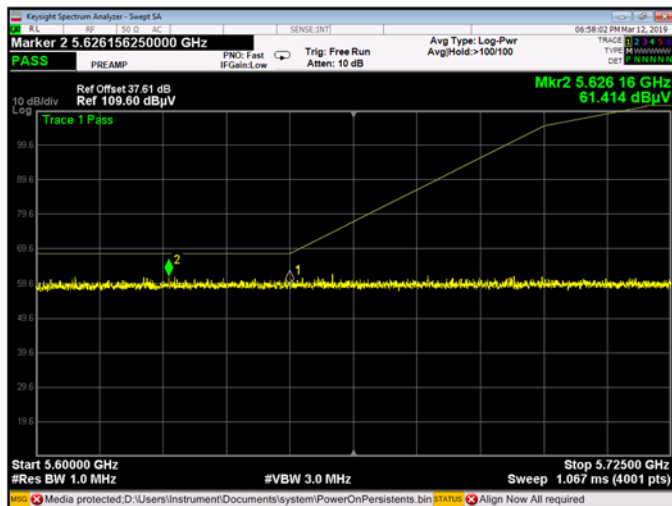


HIGH CHANNEL

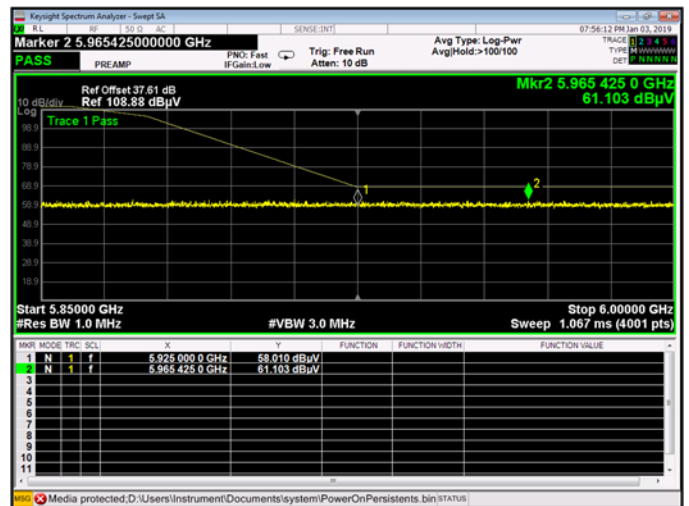


Band IV

LOW CHANNEL



HIGH CHANNEL



A.8 Frequency Stability

Band I

Temperature vs. Frequency Stability

Test Conditions		Test Frequency (MHz)	0 Minute		2 Minute		5 Minute		10Minute	
Voltage (VDC)	TEMP. (°C)		Measurement Frequency (MHz)	Max. Deviation (ppm)	Measurement Frequency (MHz)	Max. Deviation (ppm)	Measurement Frequency (MHz)	Max. Deviation (ppm)	Measurement Frequency (MHz)	Max. Deviation (ppm)
5	0	LOW CHANNEL	5160.0464	8.9977	5160.0453	8.7797	5160.0102	1.9727	5160.0355	6.8820
	10		5160.0224	4.3374	5160.0307	5.9525	5160.0224	4.3355	5160.0156	3.0141
	20		5160.0389	7.5298	5160.0095	1.8376	5160.0476	9.2304	5160.0305	5.9118
	30		5160.0265	5.1337	5160.0424	8.2188	5160.0124	2.3938	5160.0387	7.4973
	40		5160.0101	1.9663	5160.0217	4.2064	5160.0455	8.8227	5160.0082	1.5911
	50		5160.0234	4.5308	5160.0316	6.1174	5160.0428	8.2946	5160.0230	4.4527
	55		5160.0368	7.1287	5160.0098	1.8967	5160.0474	9.1812	5160.0010	0.1977

Band IV

Temperature vs. Frequency Stability

Test Conditions		Test Frequency (MHz)	0 Minute		2 Minute		5 Minute		10Minute	
Voltage (VDC)	TEMP. (°C)		Measurement Frequency (MHz)	Max. Deviation (ppm)	Measurement Frequency (MHz)	Max. Deviation (ppm)	Measurement Frequency (MHz)	Max. Deviation (ppm)	Measurement Frequency (MHz)	Max. Deviation (ppm)
5	0	LOW CHANNEL	5735.0204	3.5527	5735.0179	3.1130	5735.0059	1.0234	5735.0410	7.1468
	10		5735.0480	8.3681	5735.0237	4.1275	5735.0396	6.9022	5735.0467	8.1350
	20		5735.0416	7.2535	5735.0260	4.5266	5735.0235	4.0969	5735.0132	2.2942
	30		5735.0178	3.0969	5735.0416	7.2497	5735.0246	4.2861	5735.0265	4.6251
	40		5735.0414	7.2227	5735.0213	3.7194	5735.0315	5.4959	5735.0260	4.5391
	50		5735.0283	4.9421	5735.0257	4.4830	5735.0184	3.2051	5735.0222	3.8776
	55		5735.0262	4.5663	5735.0490	8.5388	5735.0335	5.8497	5735.0036	0.6288

ANNEX B TEST SETUP PHOTOS

Please refer the document "BL-HK1890416-AR.PDF".

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document "BL-HK1890416-AW.PDF".

ANNEX D EUT INTERNAL PHOTOS

Please refer the document "BL-HK1890416-AI.PDF".

--END OF REPORT--