FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

For

Touchscreen Door Lock

MODEL NUMBER: M12

PROJECT NUMBER: 4789061244
REPORT NUMBER: 4789061244-1

FCC ID: 2AT25M12

ISSUE DATE: Aug. 10, 2019

Prepared for

QINGDAO ZEALING ELECTRONIC CO., LTD

Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	8/10/2019	Initial Issue	

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name:	QINGDAO ZEALING ELECTRONIC CO., LTD
Address:	69 GUANGSHENG ROAD, HIGH-TECH ZONE QINGDAO CHINA

Manufacturer Information

Company Name:	QINGDAO ZEALING ELECTRONIC CO., LTD
Address:	69 GUANGSHENG ROAD, HIGH-TECH ZONE QINGDAO CHINA

Factory Information

Company Name:	Qingdao KingForce Smart Technology Co. Ltd..
Address:	No. 69 Guangsheng Road, High-tech Zone, Qingdao
Model:	Touchscreen Door Lock
Brand Name:	M12
Sample Status:	N/A
Sample ID:	2422709
Sample Received Date:	July. 15, 2019
Date of Tested:	July. 20, 2019~ July. 31, 2019

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 FCC PART 15 SUBPART C	PASS

Summary of Test Results			
Clause	Test Items	FCC/IC Rules	Test Results
1	6db DTS Bandwidth	FCC 15.247 (a) (2)	Complied
2	Peak Conducted Power	FCC 15.247 (b) (3)	Complied
3	Power Spectral Density	FCC 15.247 (e)	Complied
4	Conducted Band edge And Spurious emission	FCC 15.247 (d)	Complied
5	Radiated Band edges and Spurious emission	FCC 15.247 (d) FCC 15.209 FCC 15.205	Complied
6	Conducted Emission Test For AC Power Port	FCC 15.207	Complied
7	Antenna Requirement	FCC 15.203	Complied
Remark: 1) The measurement result for the sample received is <Pass> according to < ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15C> when <Accuracy Method> decision rule is applied.			

Prepared By:

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Authorized By:

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Laboratory Leader

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	**A2LA (Certificate No.: 4829.01)** **UL-CCIC COMPANY LIMITED has been assessed and proved to be in compliance with A2LA.** **FCC (FCC Designation No.: CN1247)** **UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.** **IC (IC Designation No.: 25056)** **UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.**

Note 1: All tests measurement facilities use to collect the measurement data are located at No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122, People's Republic of China

Note 2: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. These measurements below 30MHz had been correlated to measurements performed on an OFS.

Note 3: The test anechoic chamber in UL-CCIC COMPANY LIMITED had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognize national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Conduction emission	3.00dB
Radiation Emission test(include Fundamental emission) (9KHz-30MHz)	3.32dB
Radiation Emission test(include Fundamental emission) (30MHz-1GHz)	3.27dB
Radiation Emission test (1GHz to 26GHz)(include Fundamental emission)	3.80dB (1GHz-18Gz)
	4.11dB (18GHz-26.5Gz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

Product Name:	Touchscreen Door Lock	
Model No.:	M12	
Product Description	Operation Frequency	
	Modulation Type	
Product Description Sample Type: Test power grade:	Data Rate	2402 MHz ~ 2480 MHz
	Fixed production	GFSK
	N/A(manufacturer declare)	1Mbps
Test software of EUT:	prodtest (manufacturer declare)	
Antenna Type:	PCB Antenna	
Antenna Gain:	1.0 dBi	
Power Supply	Battery: DC 6V；4*1.5V AAA Battery size.	

5.2. MAXIMUM OUTPUT POWER

Bluetooth Mode	Frequency (MHz)	Channel Number	Max Output Power (dBm)
BLE	2402-2480	0-39[40]	-2.869

5.3. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	11	2424	22	2446	33	2468
1	2404	12	2426	23	2448	34	2470
2	2406	13	2428	24	2450	35	2472
3	2408	14	2430	25	2452	36	2474
4	2410	15	2432	26	2454	37	2476
5	2412	16	2434	27	2456	38	2478
6	2414	17	2436	28	2458	39	2480
7	2416	18	2438	29	2460		
8	2418	19	2440	30	2462		
9	2420	20	2442	31	2464		
10	2422	21	2444	32	2468		

5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
GFSK	CH 0, CH 19, CH 39	2402MHz, 2440MHz, 2480MHz

5.5. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band				
Test Software		prodtest		
Modulation Type	Transmit Antenna Number	Test Channel		
		CH 0	CH 19	CH 39
GFSK	1	N/A	N/A	N/A

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	2402-2480	PCB Antenna	1

Test Mode	Transmit and Receive Mode	Description
GFSK	1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.

5.7. WORST-CASE CONFIGURATIONS

Bluetooth Mode	Modulation Technology	Modulation Type	Data Rate (Mbps)
BLE	DTS	GFSK	1Mbit/s

5.8. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests	
Relative Humidity	50 ~ 60%	
Atmospheric Pressure:	1025Pa	
Temperature	TN	25°C
Voltage :	VL	N/A
	VN	DC 6V
	VH	N/A

Note: VL= Lower Extreme Test Voltage
VN= Nominal Voltage
VH= Upper Extreme Test Voltage
TN= Normal Temperature

5.9. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Description
1	Power Bank	MI	PLM09ZM	Supply By Client
2	Fixed Frequency Board	N/A	N/A	Supply by Client
3	Laptop	ThinkPad	E550c	Supply by UL Lab
4	Adapter (AC to DC)	MASS POWER	NBS10B0502	Supply by UL Lab

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	DC Input Port	Micro USB	Micro USB	1.0	N/A

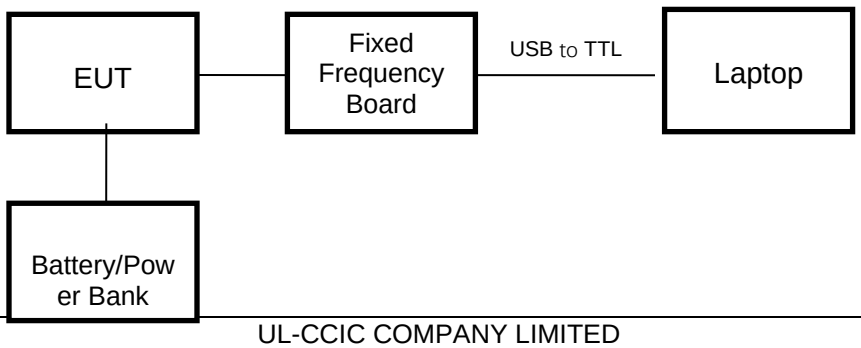
ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	Convertor (USB to TTL)	N/A	N/A	65cm length(Supply by client)

TEST SETUP

The EUT can work in an engineer mode with a software through a PC.

SETUP DIAGRAM FOR TEST



5.10. MEASURING INSTRUMENT AND SOFTWARE USED

Conducted Emissions (Instrument**)**							
Used	Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Next Cal.
☑	EMI Test Receiver	R&S	ESR3	126700	2017-12-14	2018-12-13	2019-12-12
☑	Two-Line V-Network	R&S	ENV216	126701	2017-12-14	2018-12-13	2019-12-12
☑	Artificial Mains Networks	R&S	ENY81	126711	2017-12-14	2018-12-13	2019-12-12
Software							
Used	Description		Manufacturer		Name	Version	
☑	Test Software for Conducted disturbance		R&S		EMC32	Ver. 9.25	
Radiated Emissions (Instrument**)**							
Used	Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Next Cal.
☑	Spectrum Analyzer	Keysight	N9010B	MY57110128	2018-05-30	2019-05-29	2020-05-28
☑	EMI test receiver	R&S	ESR26	1267603	2017-12-14	2018-12-13	2019-12-22
☑	Receiver Antenna (9kHz-30MHz)	Schwarzbeck	FMZB 1513	513-265	2018-06-17	2019-06-16	2020-06-15
☑	Receiver Antenna (30MHz-1GHz)	SunAR RF Motion	JB1	177821	N/A	2019-01-28	2022-01-27
☑	Receiver Antenna (1GHz-18GHz)	R&S	HF907	126705	2018-01-27	2019-01-26	2020-01-26
☑	Receiver Antenna (18GHz-26.5GHz)	Schwarzbeck	BBHA9170	126706	2018-02-07	2019-02-06	2020-02-05
☑	Pre-amplification (To 1GHz)	R&S	SCU-03D	134666	2018-02-07	2019-02-06	2020-02-05
☑	Pre-amplification (To 18GHz)	Compliance Direction System Inc.	PAP-1G18-50	14140-13467	N/A	2019-03-18	2020-03-17
☑	Pre-amplification (To 26.5GHz)	R&S	SCU-26D	134668	2018-02-07	2019-02-06	2020-02-05
☑	Band Reject Filter	Wainwright	WRCJV8-2350-2400-2483.5-2533.5-40SS	1	2018-05-30	2019-05-29	2020-05-28
☑	Highpass Filter	Wainwright	WHKX10-2700-3000-18000-40SS	2	2018-05-30	2019-05-29	2020-05-28
Software							
Used	Description		Manufacturer		Name	Version	
☑	Test Software for Radiated disturbance		Tonscend		JS32	V1.0	

Other instruments							
Used	Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Next Cal.
☑	Spectrum Analyzer	Keysight	N9010B	MY57110128	2018-05-30	2019-05-29	2020-05-28
☑	Power Meter	Keysight	U2021XA	MY57110002	2018-06-13	2019-06-12	2020-06-11

6. MEASUREMENT METHODS

No.	Test Item	KDB Name	Section
1	6 dB Bandwidth	KDB 558074 D01 15.247 Meas Guidance v05r02	8.2
2	Peak Output Power	KDB 558074 D01 15.247 Meas Guidance v05r02	8.3.1.3/8.3.2.3
3	Power Spectral Density	KDB 558074 D01 15.247 Meas Guidance v05r02	8.4
4	Out-of-band emissions in non-restricted bands	KDB 558074 D01 15.247 Meas Guidance v05r02	8.5
5	Out-of-band emissions in restricted bands	KDB 558074 D01 15.247 Meas Guidance v05r02	8.6
6	Band-edge	KDB 558074 D01 15.247 Meas Guidance v05r02	8.7
7	Conducted Emission Test For AC Power Port	ANSI C63.10-2013	6.2

7. ANTENNA PORT TEST RESULTS

7.1. ON TIME AND DUTY CYCLE

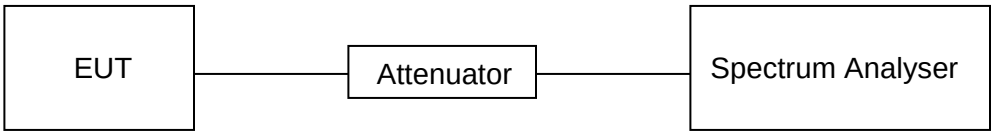
LIMITS

None; for reporting purposes only

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



TEST ENVIRONMENT

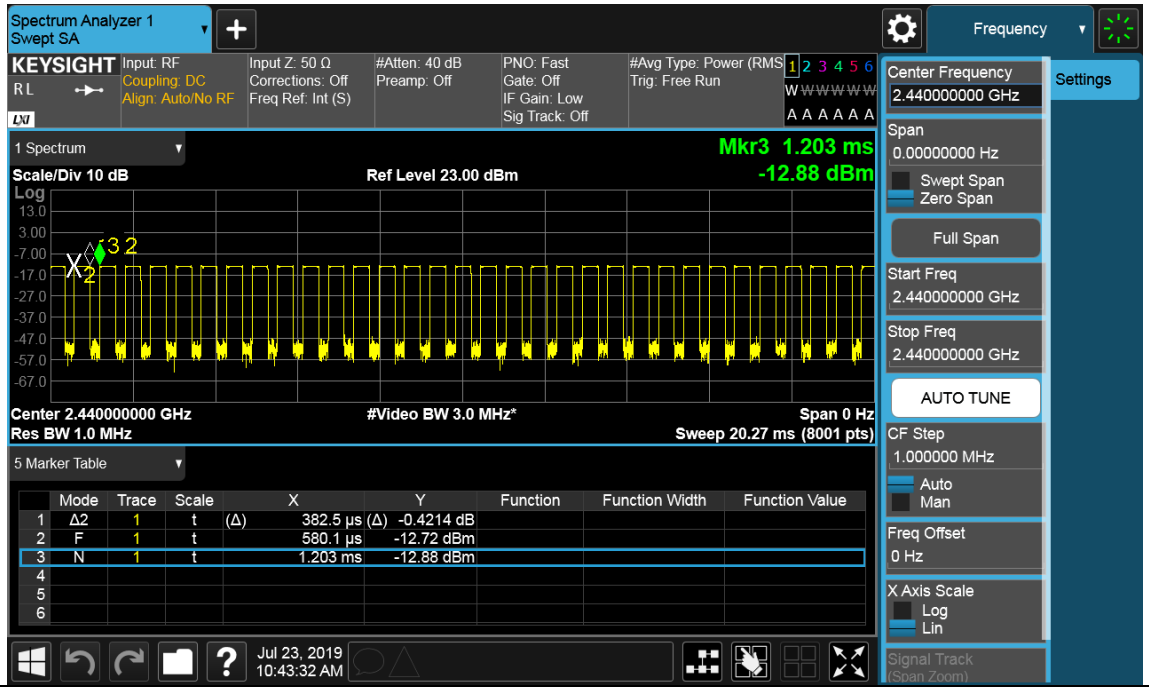
Temperature	22°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	DC 6V

RESULTS

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/T Minimum VBW (KHz)	Final setting For VBW (KHz)
BLE	0.3825	0.6229	0.6141	61.41%	2.12	2.61	3

Note:
Duty Cycle Correction Factor=10log(1/x).
Where: x is Duty Cycle(Linear)
Where: T is On Time (transmit duration)
If that calculated VBW is not available on the analyzer then the next higher value should be used.

ON TIME AND DUTY CYCLE MID CH



7.2. 6 dB DTS BANDWIDTH AND 99% BANDWIDTH

LIMITS

CFR 47FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(a)(2)	6dB Bandwidth	>= 500KHz	2400-2483.5

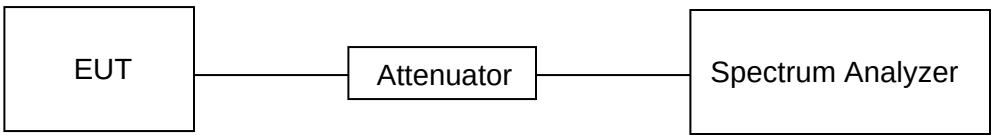
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	For 6 dB Bandwidth :100K
VBW	For 6dB Bandwidth : ≥3 × RBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize and 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.

TEST SETUP



TEST ENVIRONMENT

Temperature	22°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	DC 6V

RESULTS

Channel	6dB bandwidth(MHz)	Result
Low	0.6360	Pass
Middle	0.6725	Pass
High	0.6784	Pass

TEST GRAPHS

6dB BANDWIDTH LOW CH

6dB BANDWIDTH MID CH


6dB BANDWIDTH HIG CH


.

7.3. PEAK CONDUCTED OUTPUT POWER

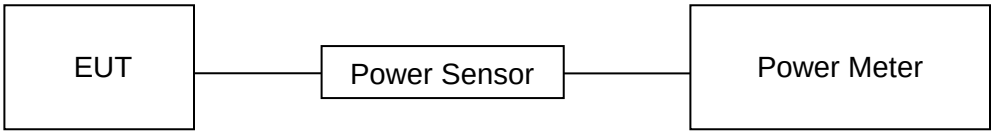
LIMITS

CFR 47 FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5

TEST PROCEDURE

Place the EUT on the table and set it in the transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power sensor.
Measure peak power each channel.

TEST SETUP



TEST ENVIRONMENT

Temperature	22°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	DC 6V

RESULTS

Test Channel	Maximum Conducted Output Power(PK)	LIMIT
	(dBm)	dBm
Low	-2.869	30
Middle	-3.607	30
High	-4.813	30

7.4. POWER SPECTRAL DENSITY

LIMITS

CFR 47 FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC §15.247 (e)	Power Spectral Density	8 dBm in any 3 kHz band	2400-2483.5

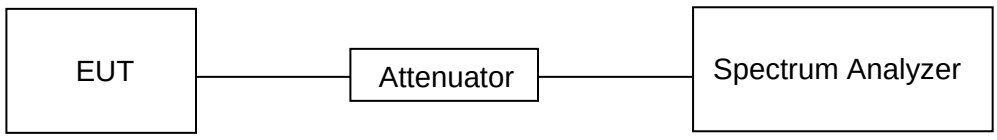
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	3 kHz ≤ RBW ≤ 100 kHz
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

Allow trace to fully stabilize and use the peak marker function to determine the maximum amplitude level within the RBW.
If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST SETUP



TEST ENVIRONMENT

Temperature	22°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	DC 6V

RESULTS TABLE

Test Channel	Power Spectral Density (dBm/100kHz)	Limit (dBm/3kHz)	Result
Low	-3.821	8	PASS
Middle	-4.702	8	PASS
High	-5.503	8	PASS

TEST GRAPHS:

PSD LOW CH

PSD MID CH


PSD HIG CH


7.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

CFR 47 FCC Part15 (15.247) Subpart C		
Section	Test Item	Limit
CFR 47 FCC §15.247 (d)	Conducted Bandedge and Spurious Emissions	at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

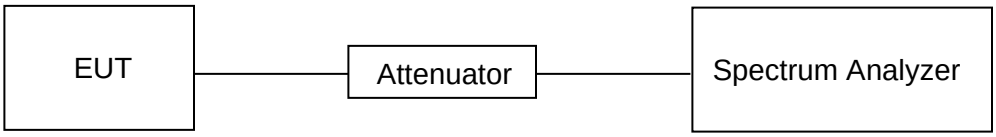
Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	100KHz
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

Use the peak marker function to determine the maximum PSD level.

Span	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100KHz
VBW	≥3 × RBW
measurement points	≥span/RBW
Trace	Max hold
Sweep time	Auto couple.

Use the peak marker function to determine the maximum amplitude level**.**

TEST SETUP



TEST ENVIRONMENT

Temperature	22°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	DC 6V

Part I :CONDUCTED BANDEDGE

RESULTS TABLE

Test Mode	Test Channel	Carrier Power[dBm]	Max. Spurious Level [dBm]	Limit [dBm]	Verdict
BLE	LCH	-3.977	-42.345	-23.98	PASS
	HCH	-5.473	-41.103	-25.47	PASS

TEST GRAPHS

LOW CH BANDEDGE


HIGH CH BANDEDGE


Part I :CONDUCTED SPURIOUS EMISSIONS

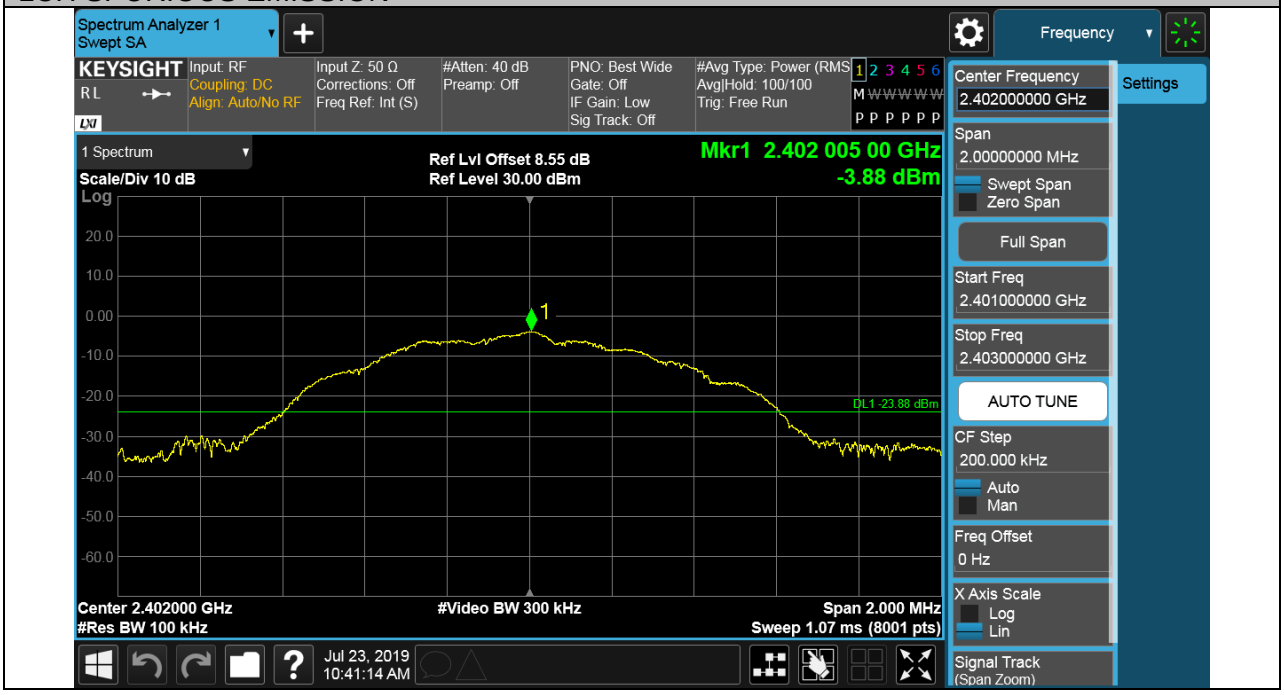
RESULTS TABLE

Test Mode	Channel	Pref(dBm)	Puw(dBm)	Verdict
BLE	LCH	-3.88	<Limit	PASS
	MCH	-4.70	<Limit	PASS
	HCH	-5.52	<Limit	PASS

TEST GRAPHS

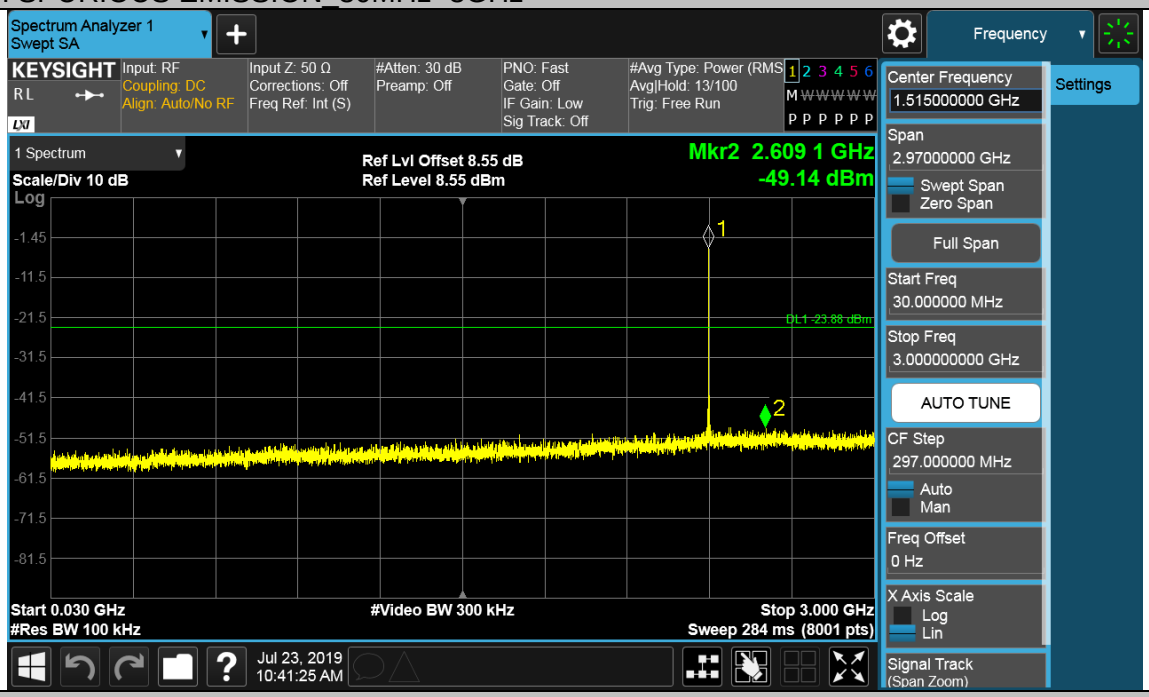
Pref test Plot

LCH SPURIOUS EMISSION

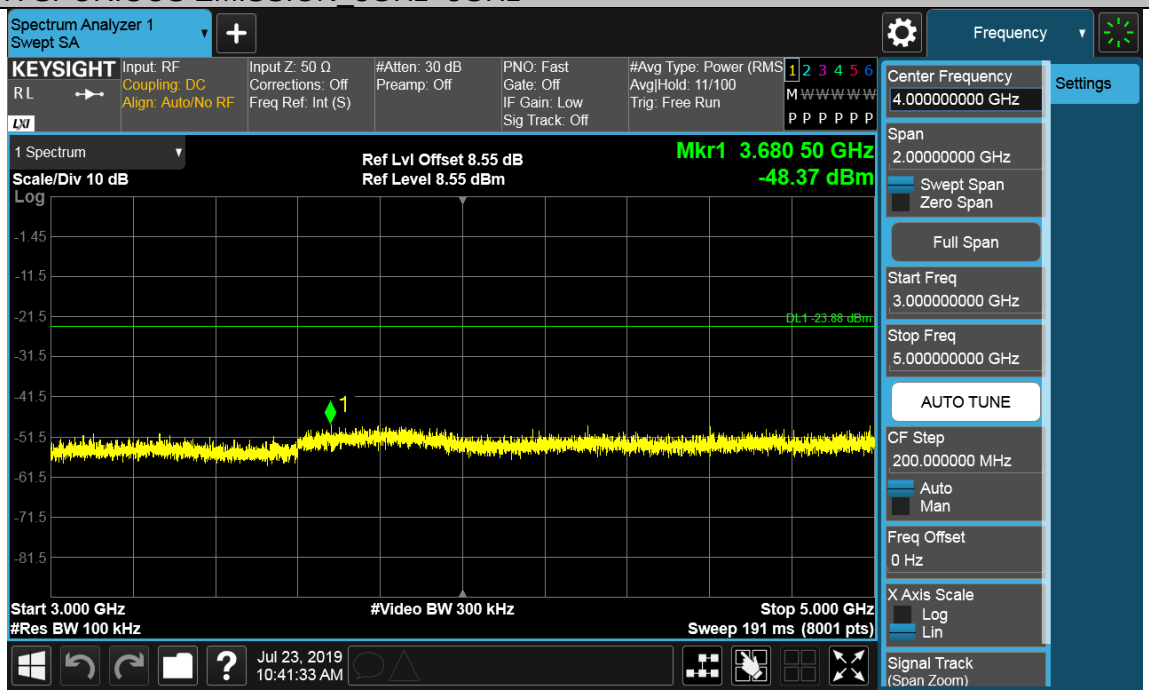


Puw test Plot

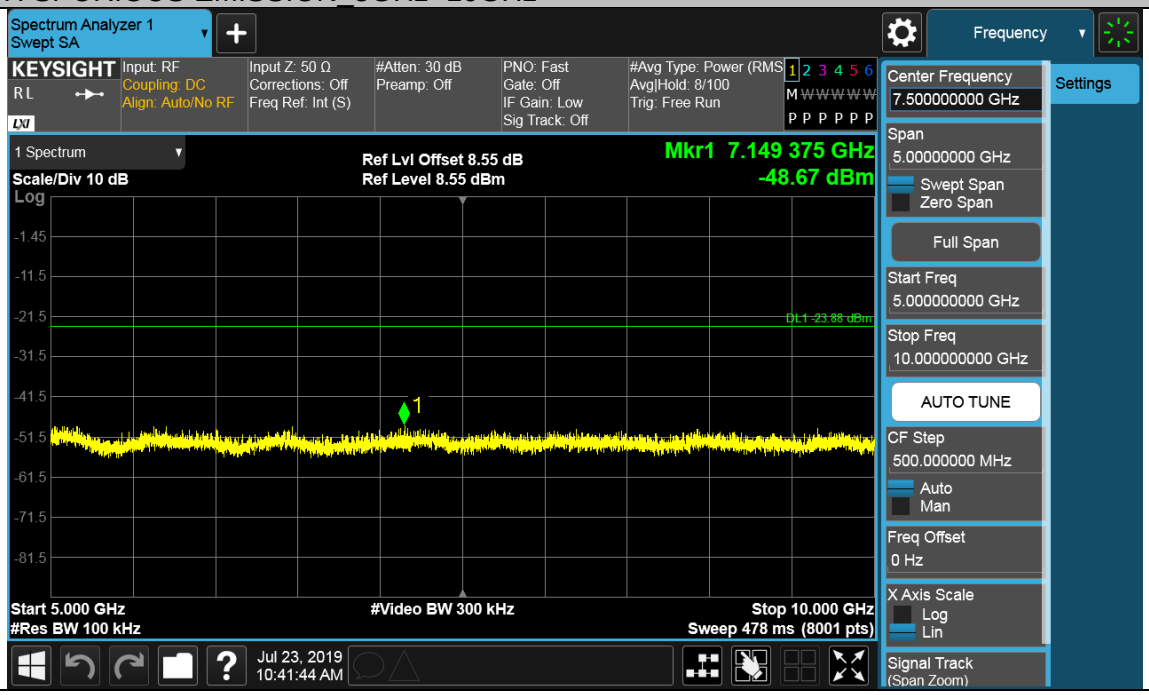
LCH SPURIOUS EMISSION_30MHz~3GHz



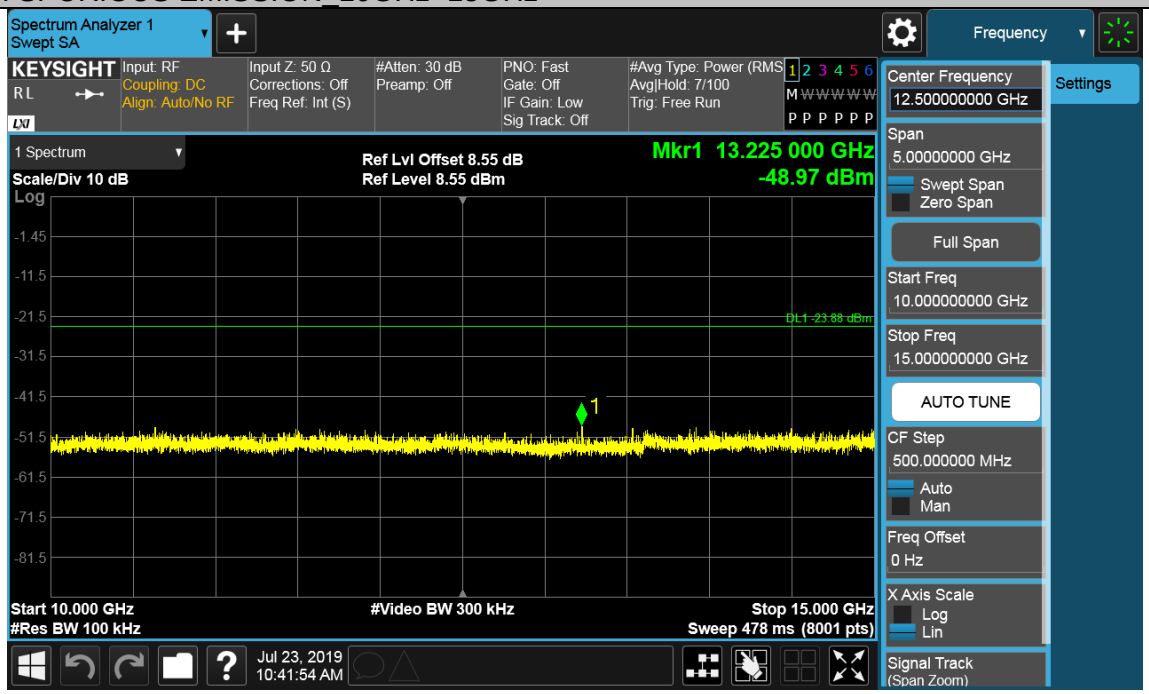
LCH SPURIOUS EMISSION_3GHz~5GHz



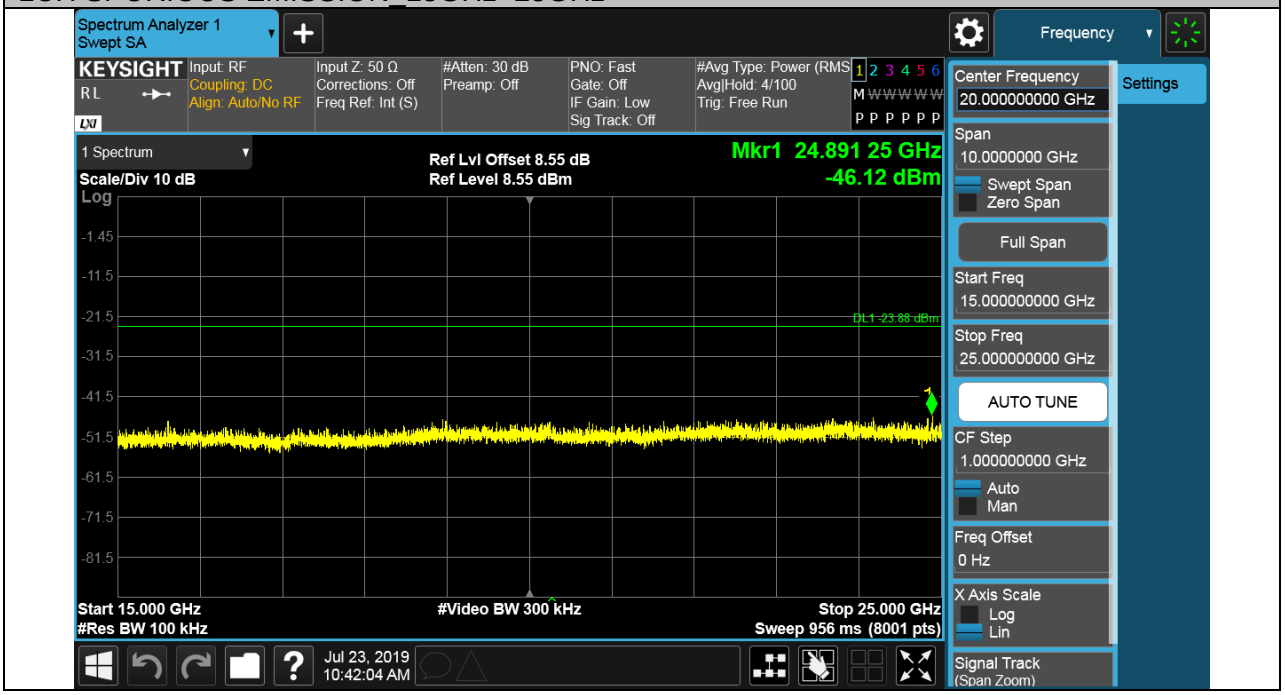
LCH SPURIOUS EMISSION_5GHz~10GHz



LCH SPURIOUS EMISSION_10GHz~15GHz

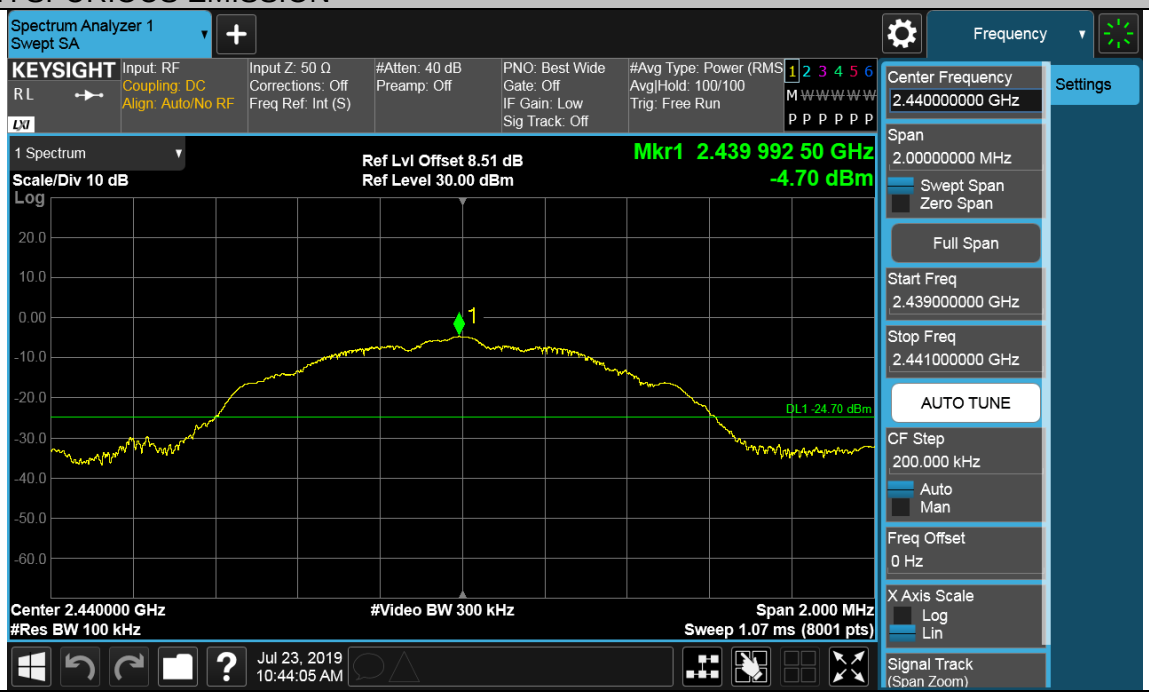


LCH SPURIOUS EMISSION_15GHz~25GHz



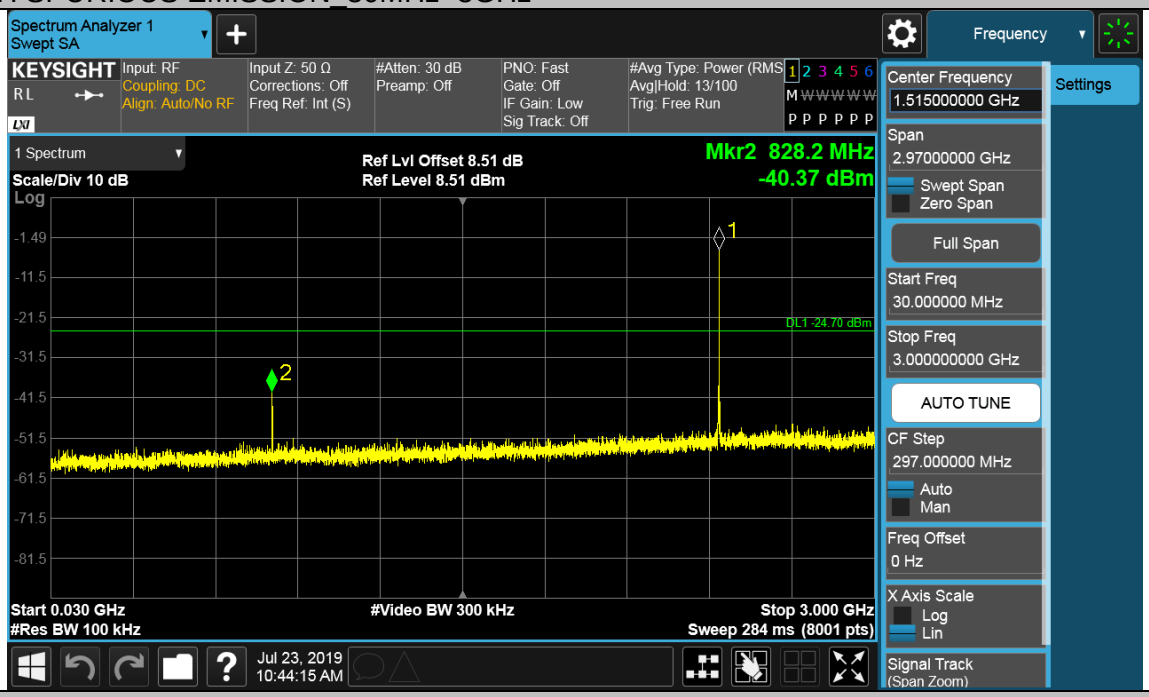
Pref test Plot

MCH SPURIOUS EMISSION

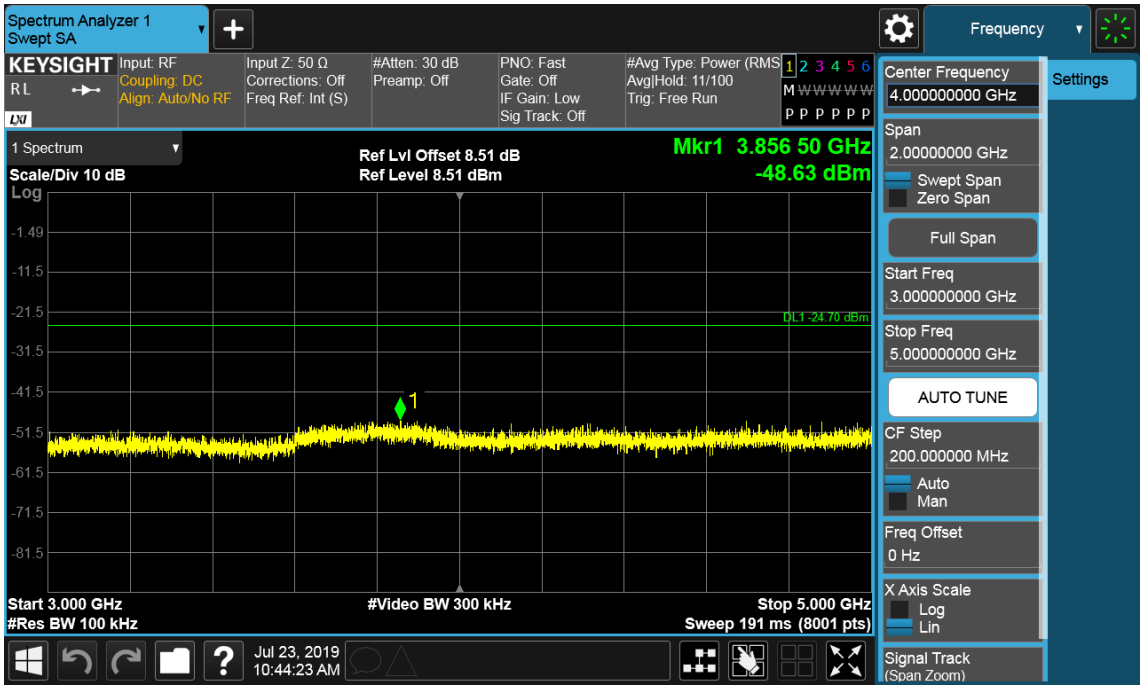


Puw test Plot

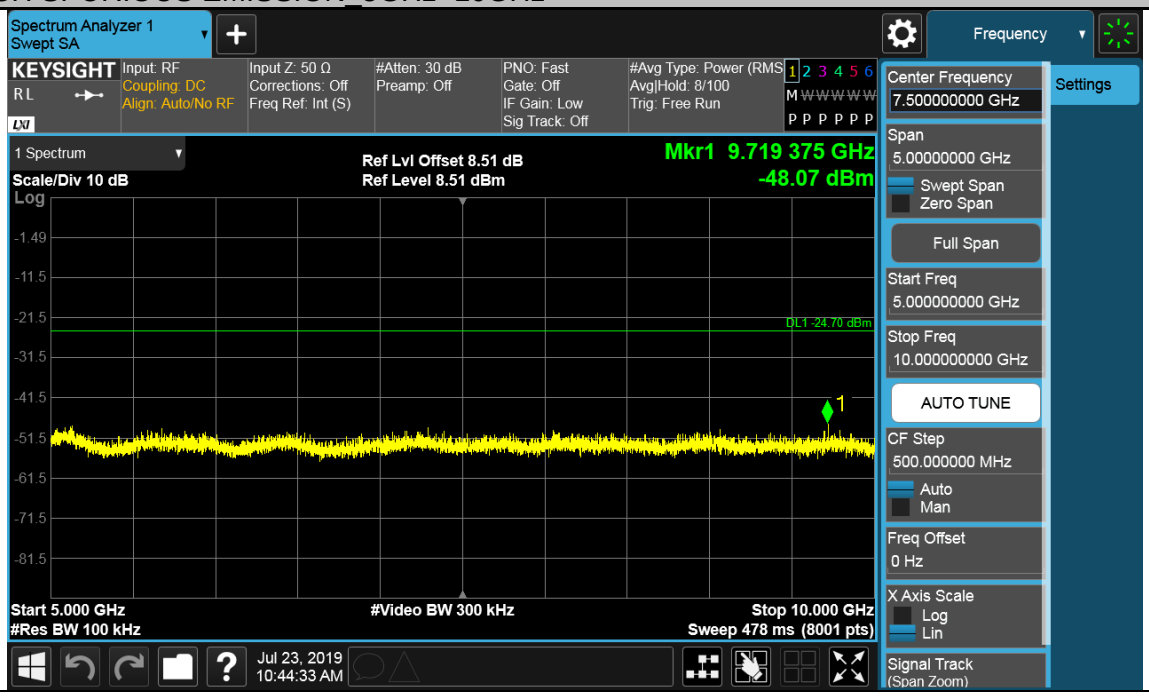
MCH SPURIOUS EMISSION_30MHz~3GHz



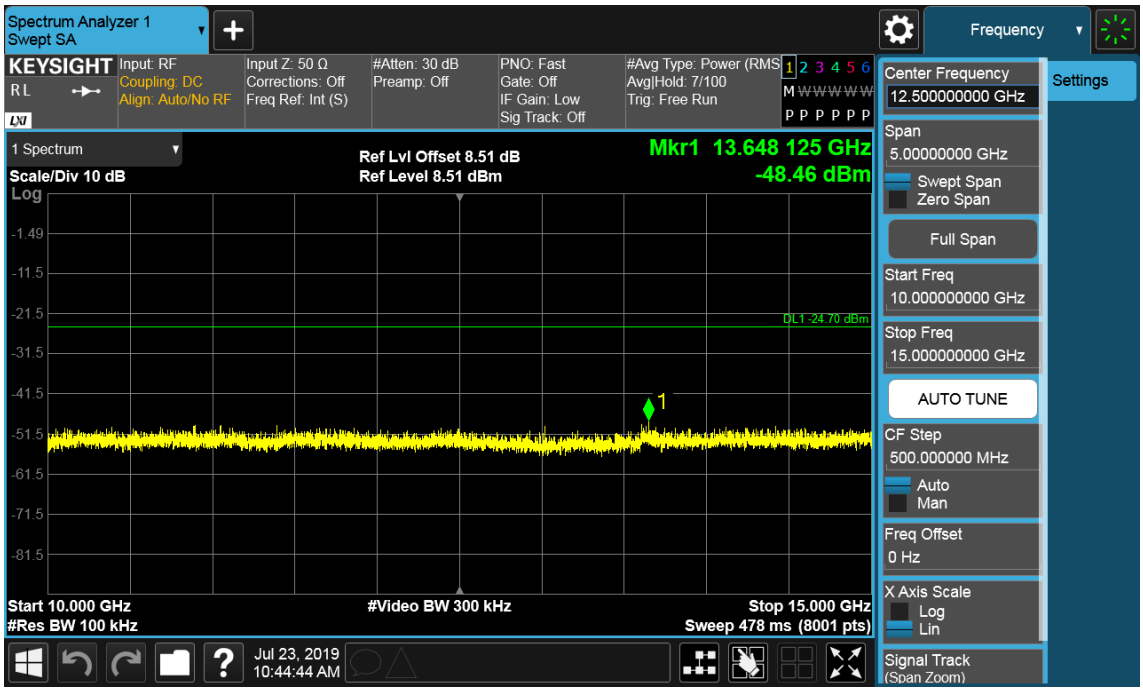
MCH SPURIOUS EMISSION_3GHz~5GHz



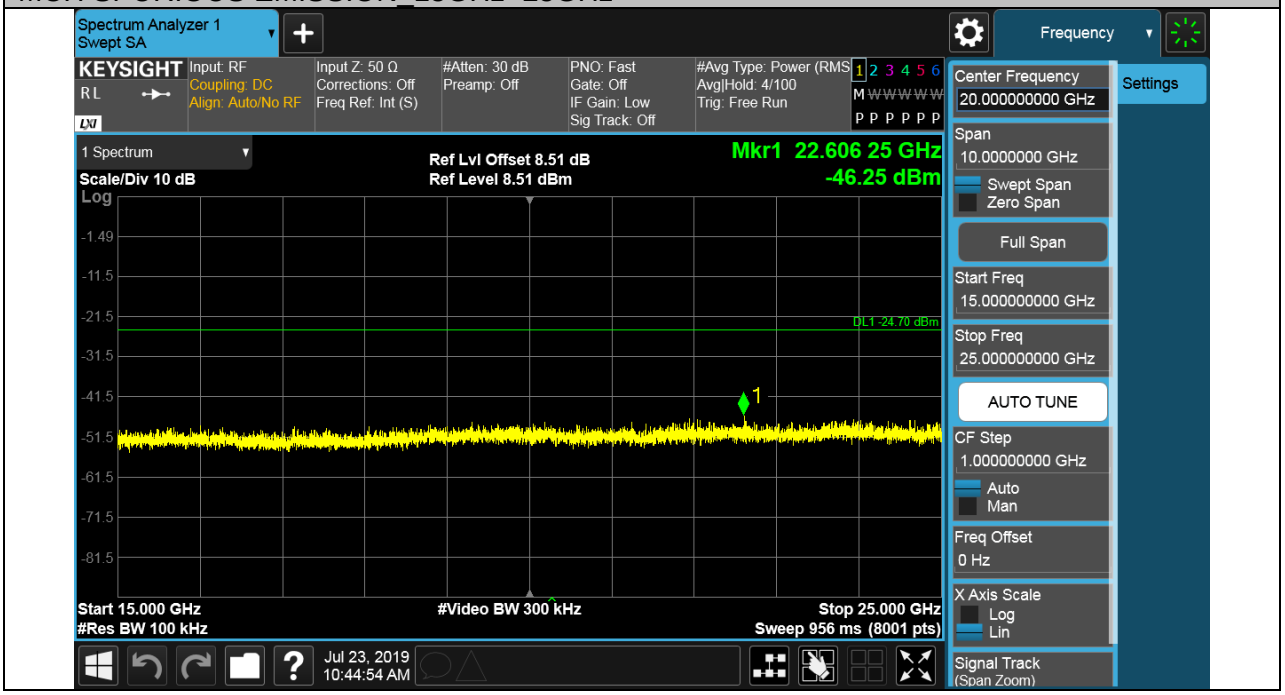
MCH SPURIOUS EMISSION_5GHz~10GHz



MCH SPURIOUS EMISSION_10GHz~15GHz

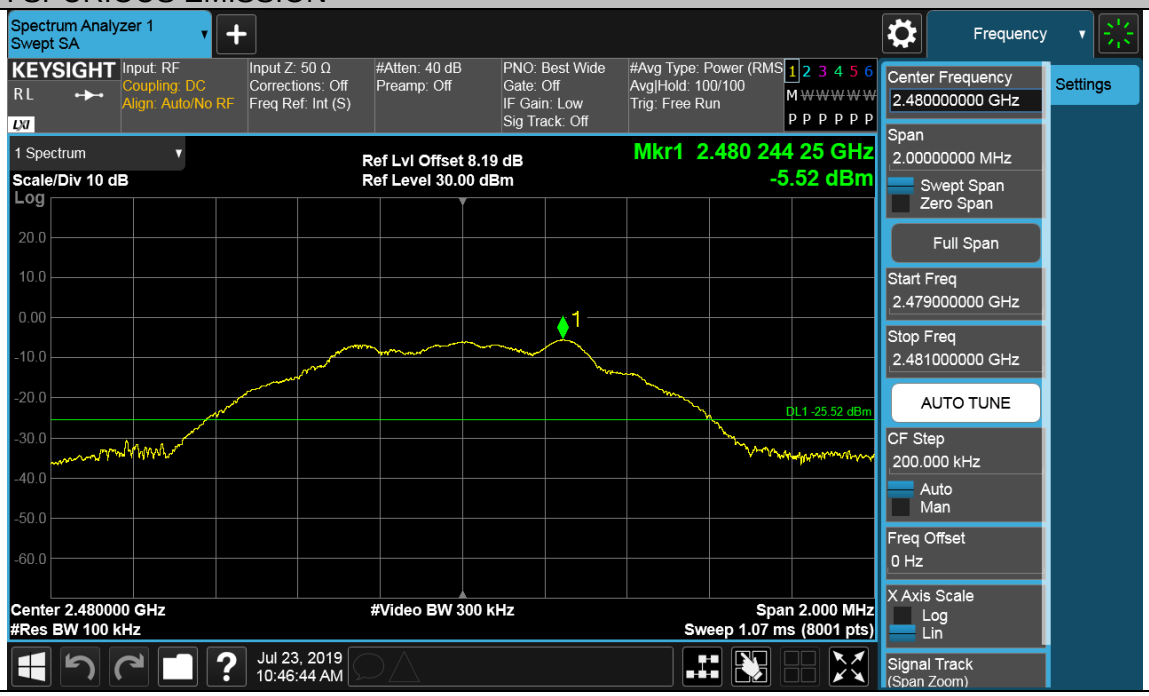


MCH SPURIOUS EMISSION_15GHz~25GHz



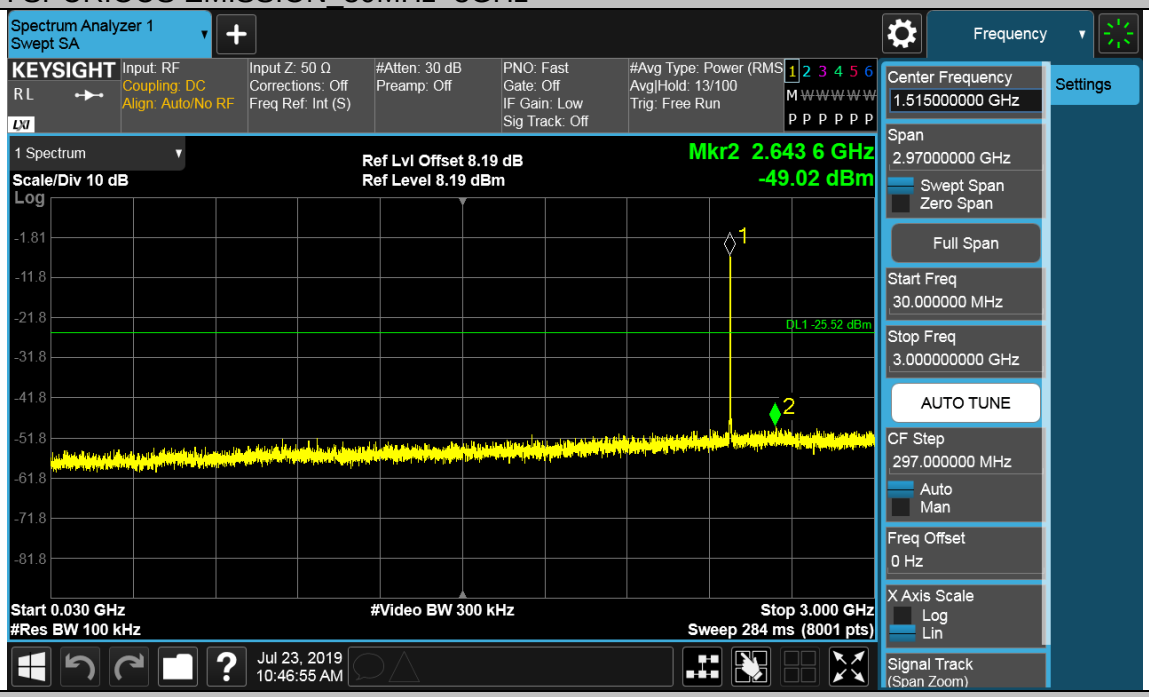
Pref test Plot

HCH SPURIOUS EMISSION

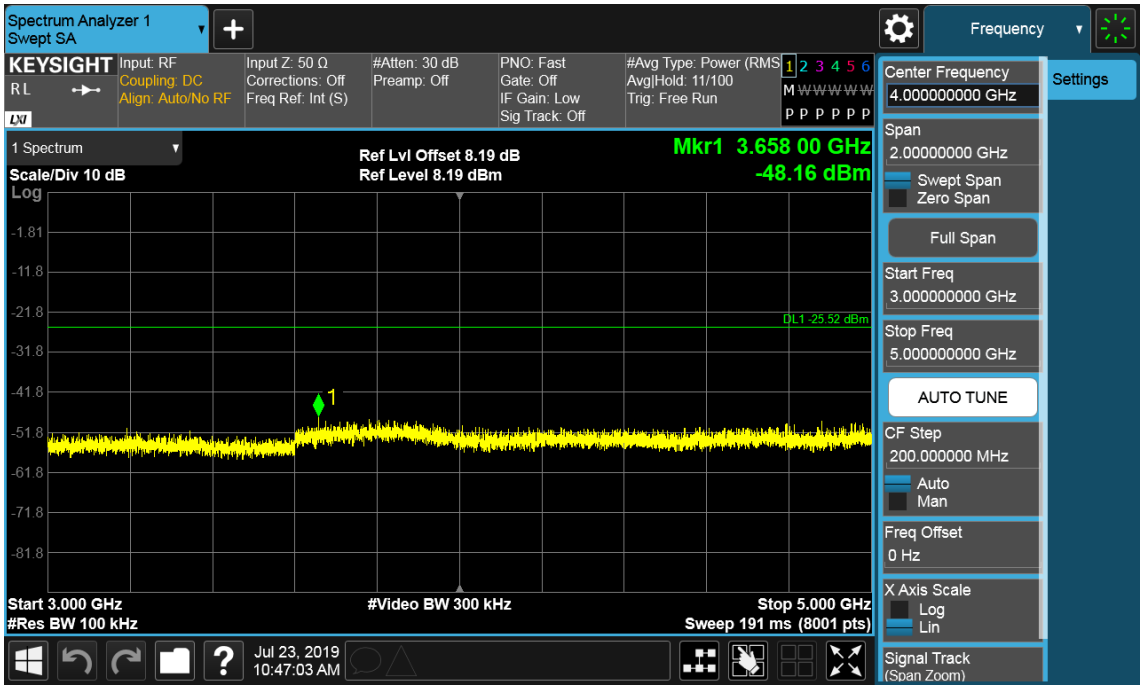


Puw test Plot

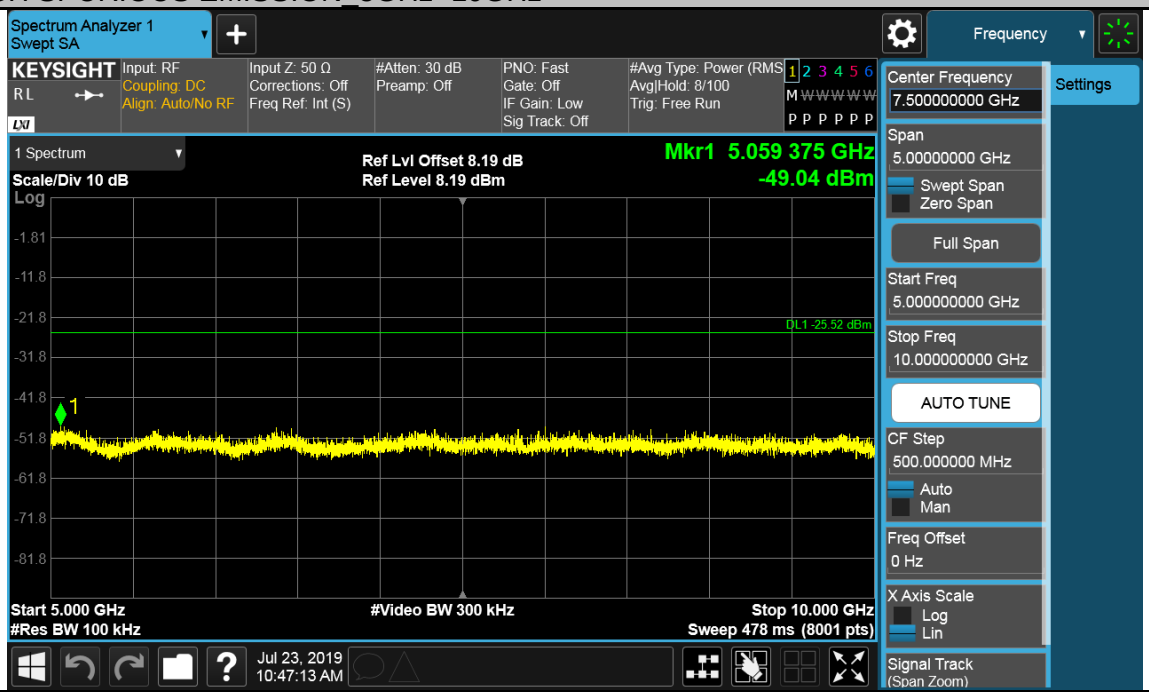
HCH SPURIOUS EMISSION_30MHz~3GHz



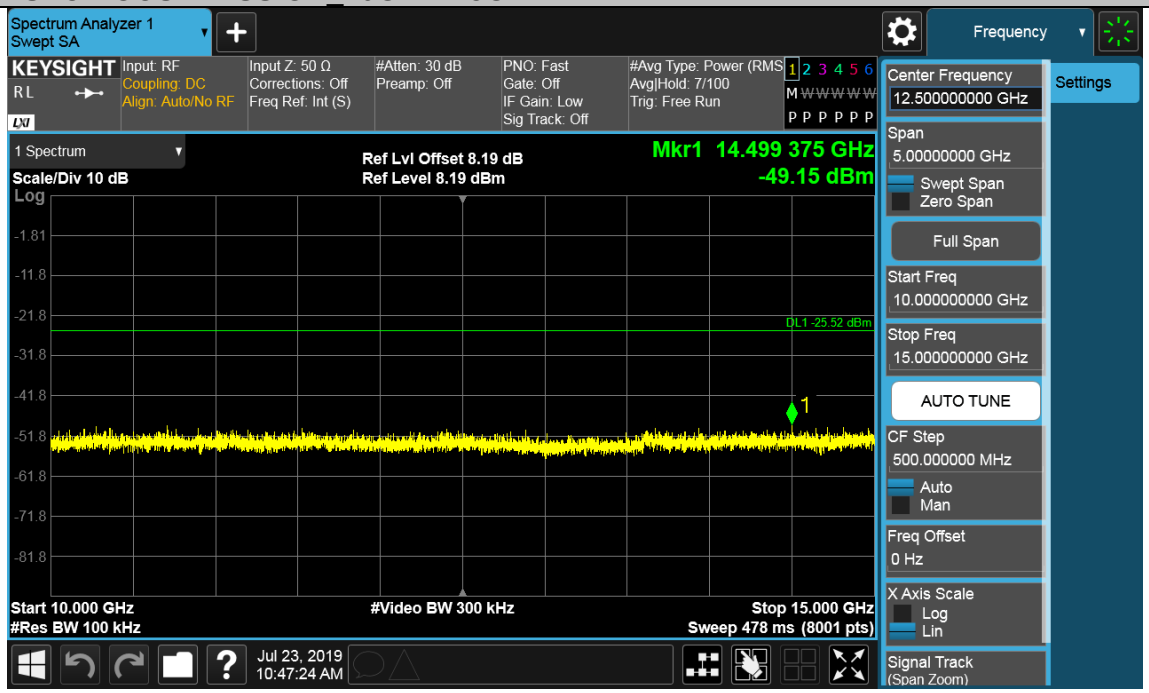
HCH SPURIOUS EMISSION_3GHz~5GHz



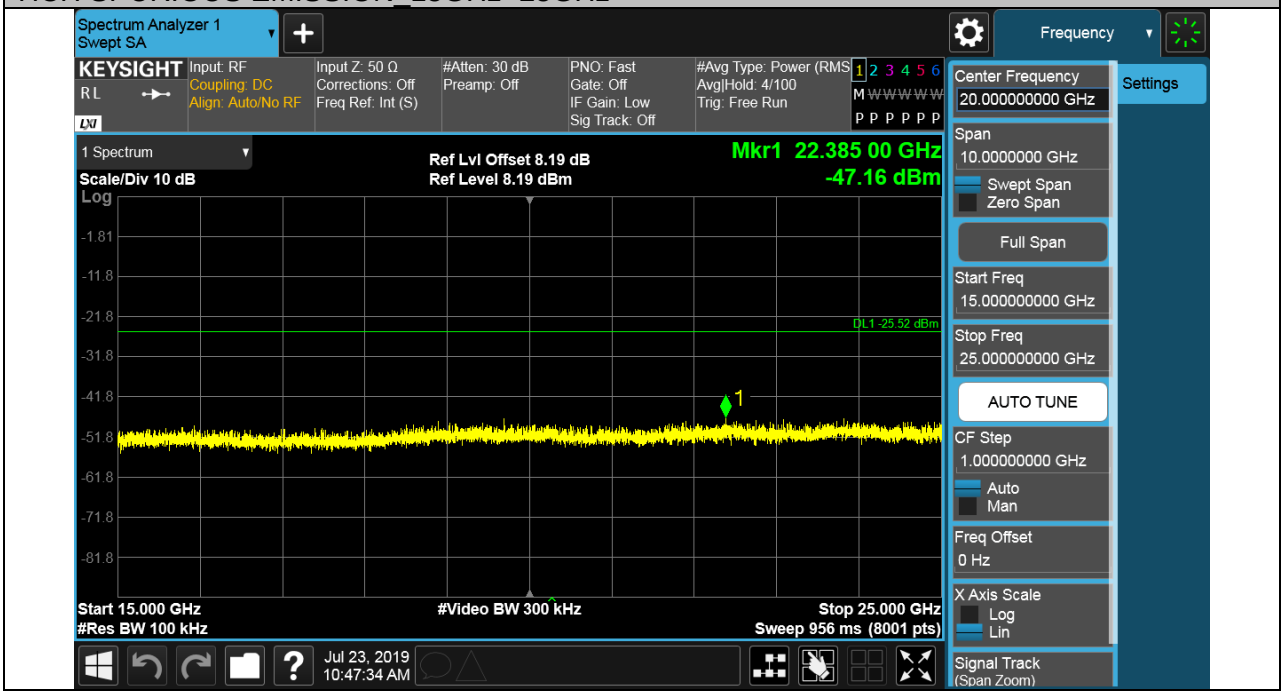
HCH SPURIOUS EMISSION_5GHz~10GHz



HCH SPURIOUS EMISSION_10GHz~15GHz



HCH SPURIOUS EMISSION_15GHz~25GHz



8. RADIATED TEST RESULTS

LIMITS

Please refer to CFR 47 FCC §15.205 and §15.209

Radiation Disturbance Test Limit for FCC (Class B)(9KHz-1GHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
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
960~1000	500	3

Note: 1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). This paragraph (f) shall not apply to Access BPL devices operating below 30 MHz.

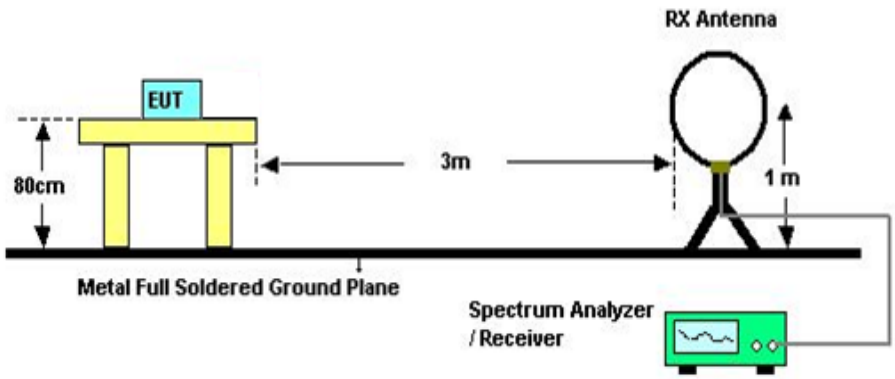
Radiation Disturbance Test Limit for FCC (Above 1G)

Frequency (MHz)	dB(uV/m) (at 3 meters)	
	Peak	Average
Above 1000	74	54

About Restricted bands of operation please refer to FCC §15.205 (a)

TEST SETUP AND PROCEDURE

Below 30MHz



The setting of the spectrum analyser

RBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
VBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
Sweep	Auto
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 1.5m above ground.

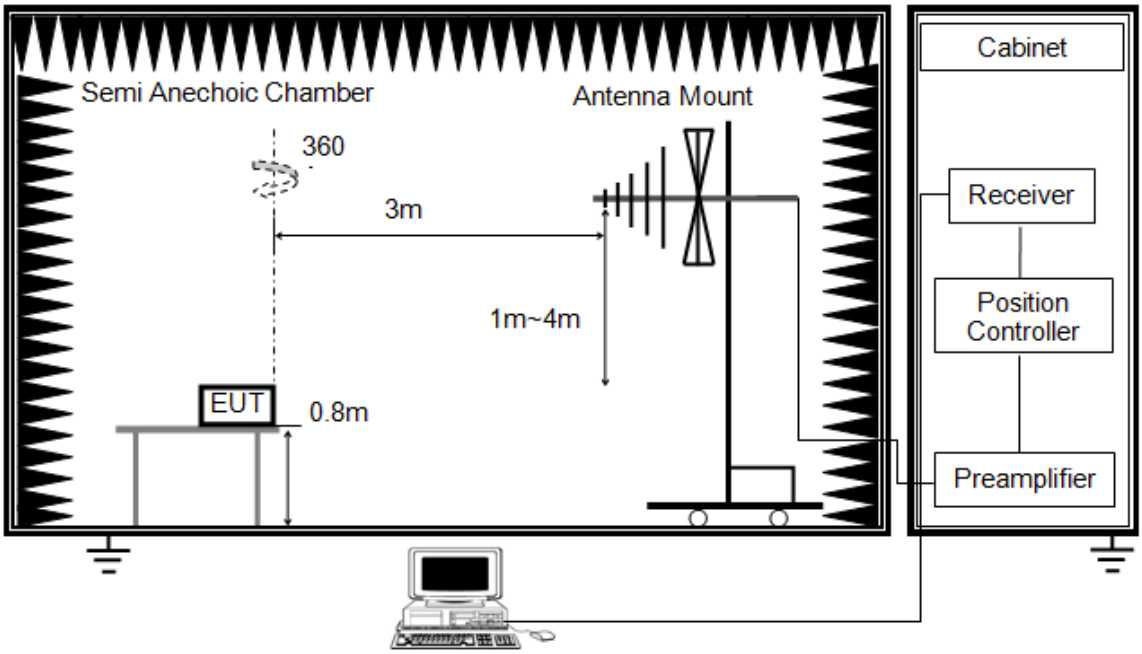
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1m antenna tower.

5. For measurement above 1GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with set VBW ≤RBW/100, but not less than 10Hz video bandwidth with peak detector， max hold to be run for at least 50 traces for average measurements.

8. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

Below 1G and above 30MHz



The setting of the spectrum analyser

RBW	120K
VBW	300K
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

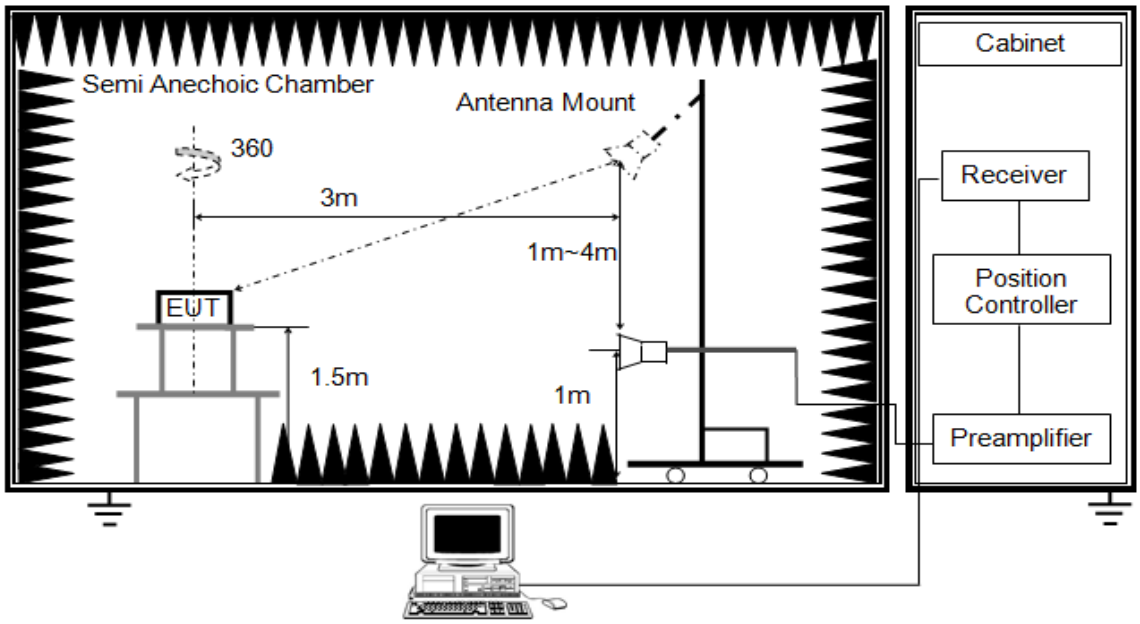
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80cm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

Above 1G



The setting of the spectrum analyser

RBW	1M
VBW	PEAK: 3M AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (1.5 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

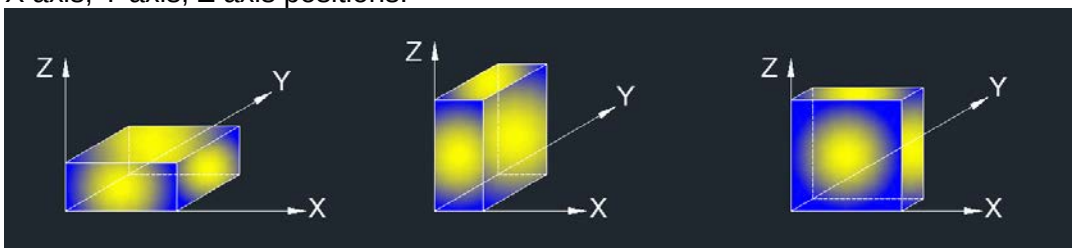
3. The EUT was placed on a turntable with 80cm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement above 1GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector. For the Duty Cycle and Correction Factor please refer to clause 7.1.ON TIME AND DUTY CYCLE.

X axis, Y axis, Z axis positions:



Note 1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (Z axis) data recorded in the report.

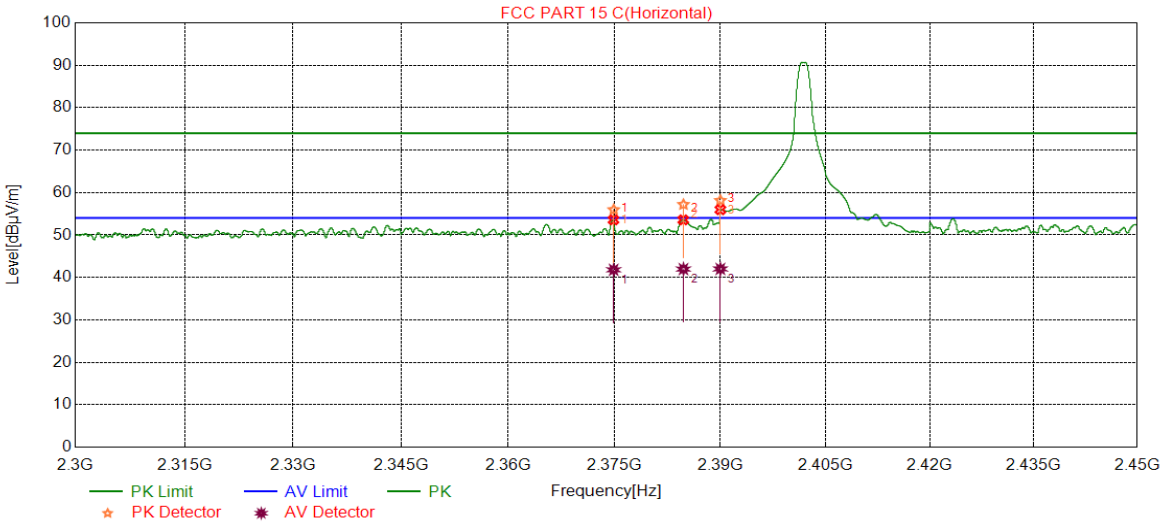
TEST ENVIRONMENT

Temperature	23°C	Relative Humidity	55%
Atmosphere Pressure	101kPa	Test Voltage	DC 6V

RESULTS

8.1. RESTRICTED BANDEDGE

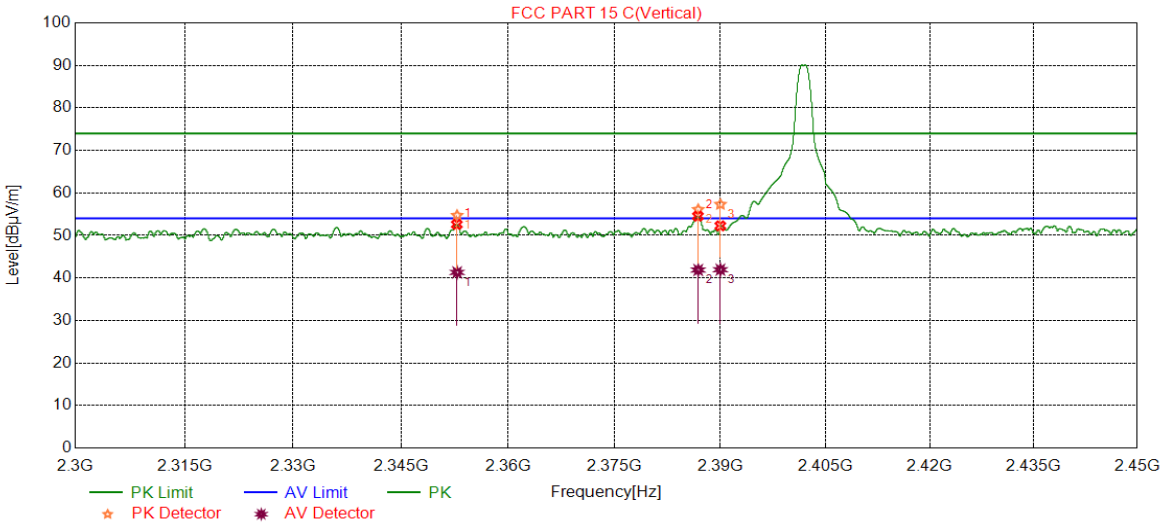
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	2374.8677	42.02	13.93	55.95	74.00	-18.05	peak
		27.86	13.93	41.79	54.00	-12.21	Average
2	2384.7502	43.13	14.05	57.18	74.00	-16.82	peak
		27.91	14.05	41.96	54.00	-12.04	Average
3	2390.0000	44.04	14.09	58.13	74.00	-15.87	peak
		27.91	14.09	42.00	54.00	-12.00	Average

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

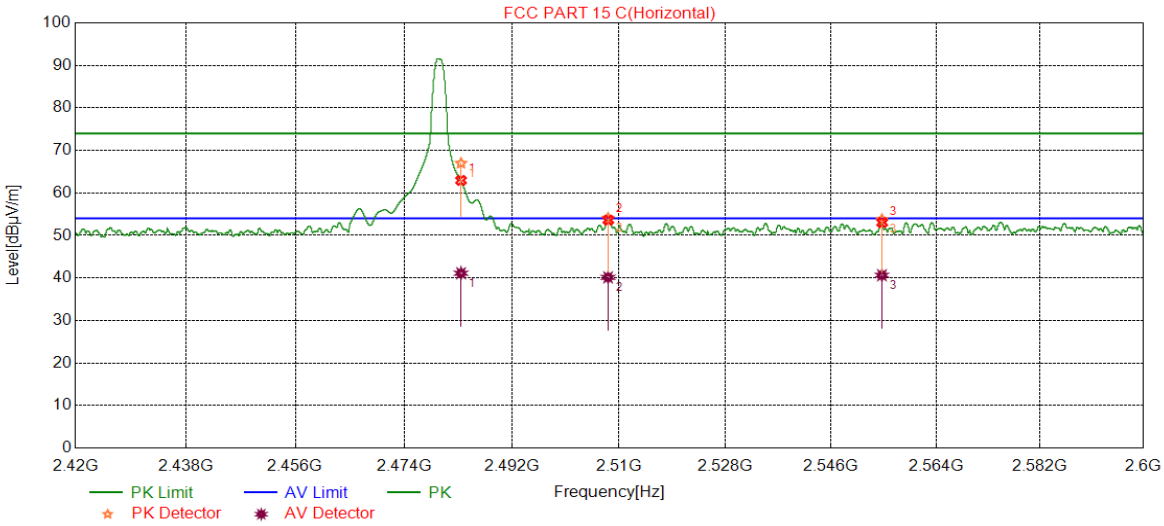
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	2352.8487	41.03	13.68	54.71	74.00	-19.29	peak
		27.63	13.68	41.31	54.00	-12.69	Average
2	2386.8467	42.06	14.04	56.10	74.00	-17.90	peak
		27.83	14.04	41.87	54.00	-12.13	Average
3	2390.0000	43.22	14.09	57.31	74.00	-16.69	peak
		27.85	14.09	41.94	54.00	-12.06	Average

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

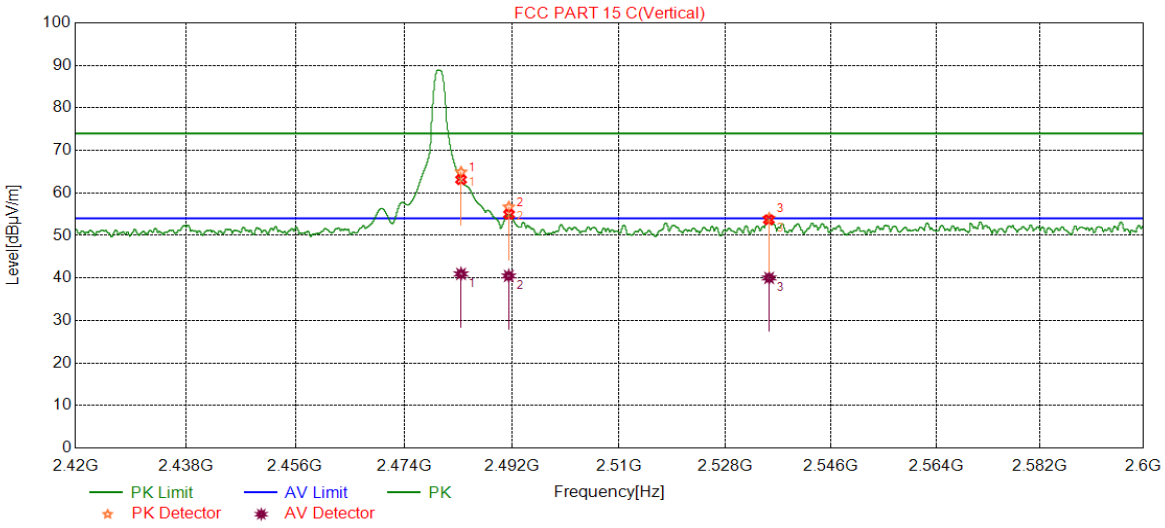
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.5000	53.09	13.88	66.97	74.00	-7.03	peak
		27.23	13.88	41.11	54.00	-12.89	Average
2	2508.1409	39.89	14.18	54.07	74.00	-19.93	peak
		25.95	14.18	40.13	54.00	-13.87	Average
3	2554.7008	39.32	14.46	53.78	74.00	-20.22	peak
		26.18	14.46	40.64	54.00	-13.36	Average

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

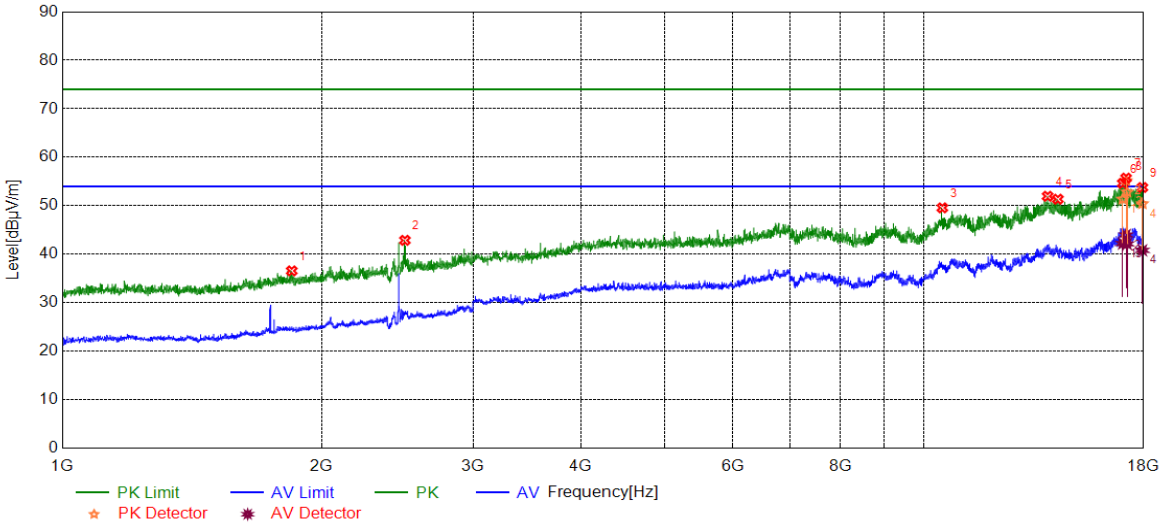


No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.5000	51.02	13.88	64.90	74.00	-9.10	peak
		27.06	13.88	40.94	54.00	-13.06	Average
2	2491.4713	42.73	13.97	56.70	74.00	-17.30	peak
		26.50	13.97	40.47	54.00	-13.53	Average
3	2535.4234	39.77	14.29	54.06	74.00	-19.94	peak
		25.72	14.29	40.01	54.00	-13.99	Average

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

8.2. SPURIOUS EMISSIONS (1~18GHz)

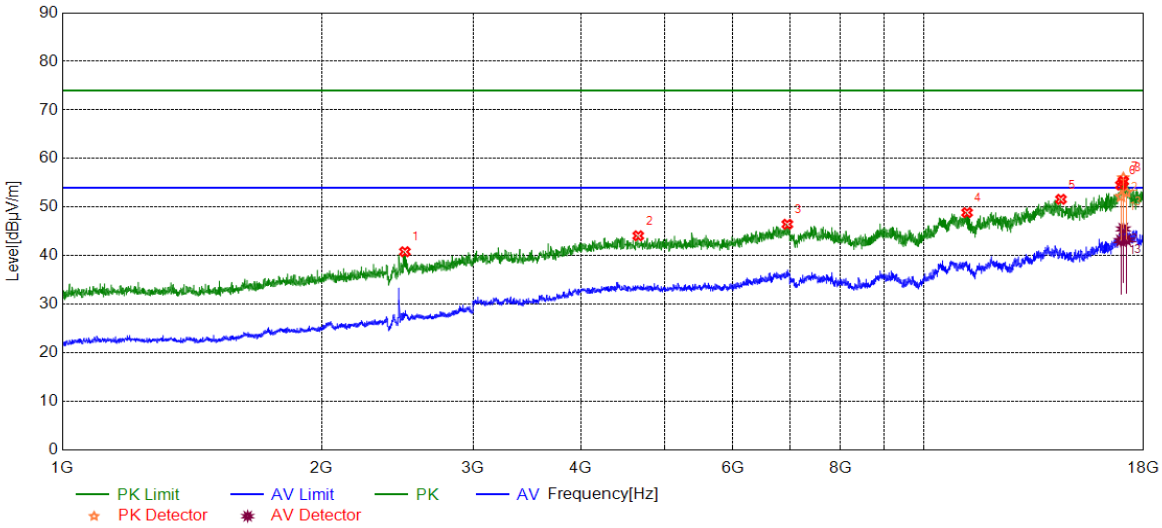
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1846.9490	40.30	-3.73	36.57	74.00	-37.43	peak
2	2499.1664	43.49	-0.62	42.87	74.00	-31.13	peak
3	10511.2519	37.12	12.45	49.57	74.00	-24.43	peak
4	13926.8211	35.90	16.06	51.96	74.00	-22.04	peak
5	16037.1729	36.11	16.98	53.09	74.00	-20.91	peak
6	17022.3371	34.44	20.17	54.61	74.00	-19.39	peak
		31.19	20.17	51.36	74.00	-22.64	Average
7	17174.8625	36.19	19.51	55.70	74.00	-18.30	peak
		24.47	19.51	43.98	54.00	-10.02	Average
8	17222.3704	36.47	18.60	55.07	74.00	-18.93	peak
		23.53	18.60	42.13	54.00	-11.87	Average
9	17939.9900	34.58	19.19	53.77	74.00	-20.23	peak
		21.62	19.19	40.81	54.00	-13.19	Average

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.

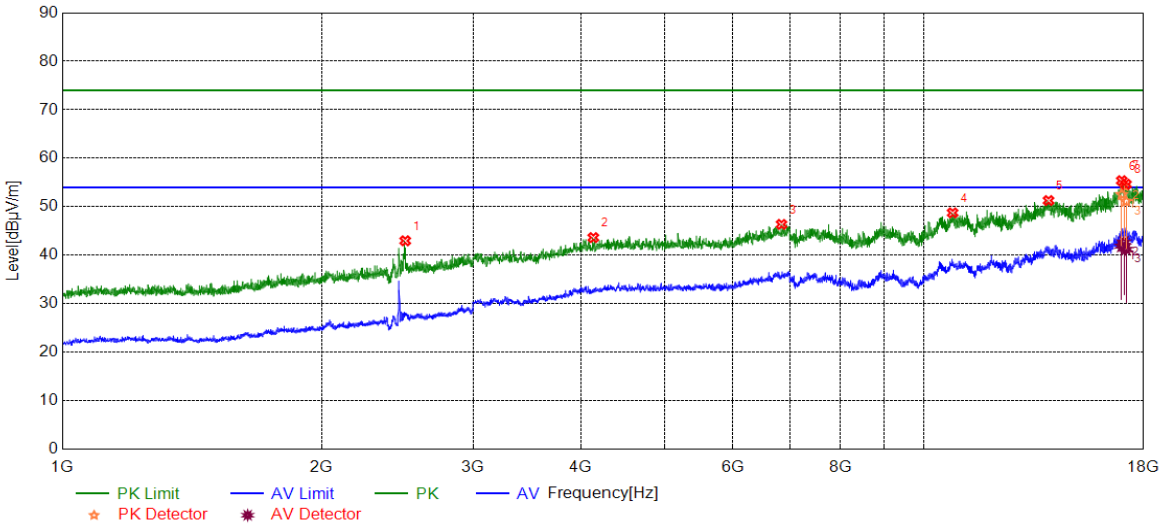
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2499.1664	41.44	-0.62	40.82	74.00	-33.18	peak
2	4662.7771	38.72	5.38	44.10	74.00	-29.90	peak
3	6945.6576	37.78	8.70	46.48	74.00	-27.52	peak
4	11228.8715	36.51	12.36	48.87	74.00	-25.13	peak
5	14431.9053	35.96	15.65	51.61	74.00	-22.39	peak
6	16939.8233	34.47	20.07	54.54	74.00	-19.46	peak
		23.04	20.07	43.11	54.00	-10.89	Average
7	17047.3412	35.14	20.16	55.30	74.00	-18.70	peak
		25.35	20.16	45.51	54.00	-8.49	Average
8	17184.8641	35.58	19.57	55.15	74.00	-18.85	peak
		23.67	19.57	43.24	54.00	-10.76	Average

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.

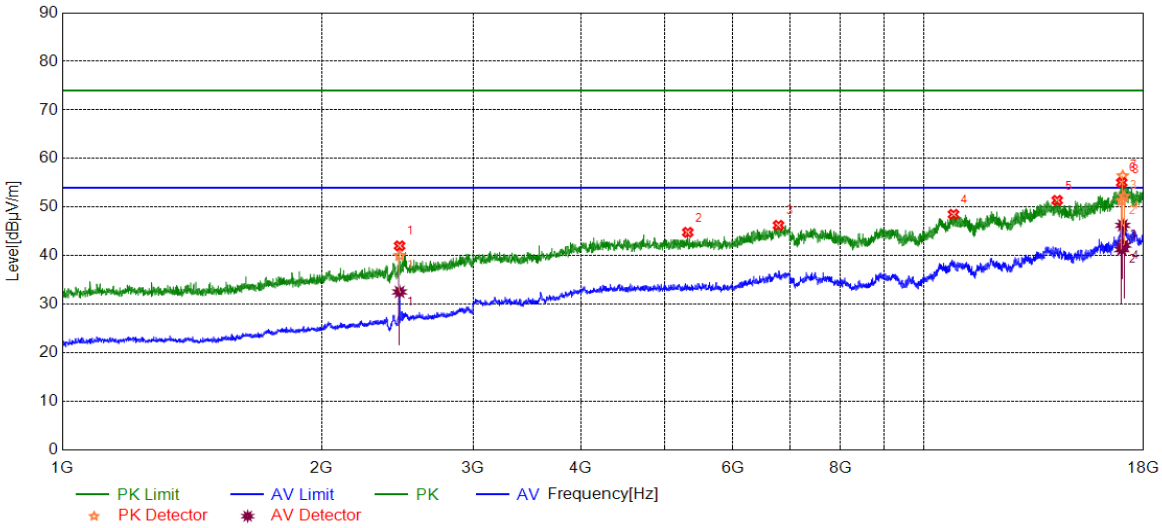
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2501.1671	43.58	-0.60	42.98	74.00	-31.02	peak
2	4135.1892	39.03	4.61	43.64	74.00	-30.36	peak
3	6838.1397	37.89	8.48	46.37	74.00	-27.63	peak
4	10803.8006	35.76	12.98	48.74	74.00	-25.26	peak
5	13959.3266	35.35	15.93	51.28	74.00	-22.72	peak
6	16977.3296	34.91	20.47	55.38	74.00	-18.62	peak
		21.40	20.47	41.87	54.00	-12.13	Average
7	17079.8466	36.06	19.50	55.56	74.00	-18.44	peak
		23.23	19.50	42.73	54.00	-11.27	Average
8	17172.3621	35.17	19.47	54.64	74.00	-19.36	peak
		21.76	19.47	41.23	54.00	-12.77	Average

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.

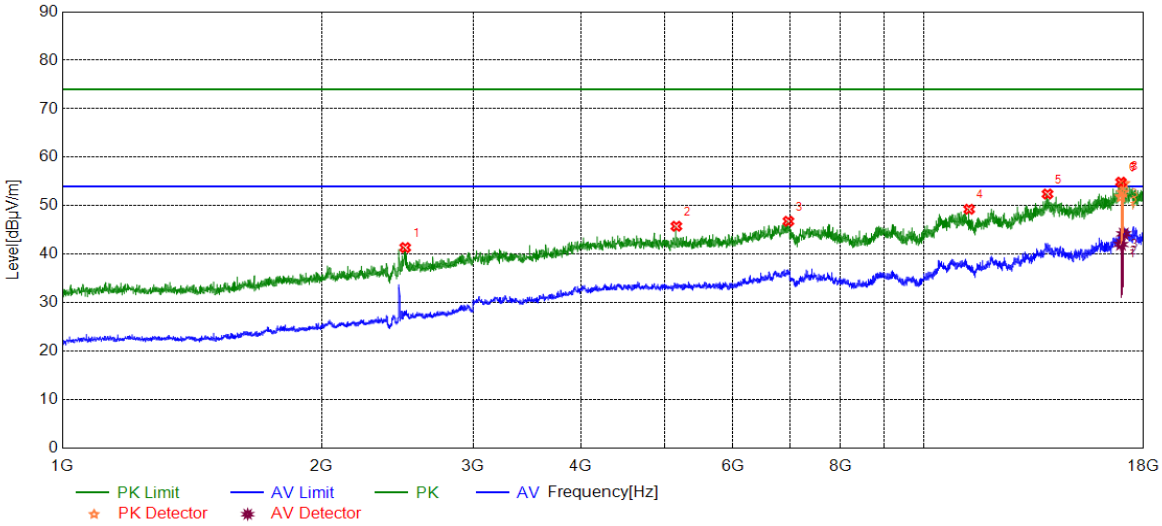
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2463.8213	42.90	-0.87	42.03	74.00	-31.97	peak
2	5322.8871	39.36	5.45	44.81	74.00	-29.19	peak
3	6783.1305	37.76	8.49	46.25	74.00	-27.75	peak
4	10828.8048	35.84	12.67	48.51	74.00	-25.49	peak
5	14286.8811	35.73	15.67	51.40	74.00	-22.60	peak
6	16977.3296	34.59	20.47	55.06	74.00	-18.94	peak
		20.79	20.47	41.26	54.00	-12.74	Average
7	17022.3371	35.46	20.17	55.63	74.00	-18.37	peak
		26.08	20.17	46.25	54.00	-7.75	Average
8	17077.3462	34.87	19.76	54.63	74.00	-19.37	peak
		22.43	19.76	42.19	54.00	-11.81	Average

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.

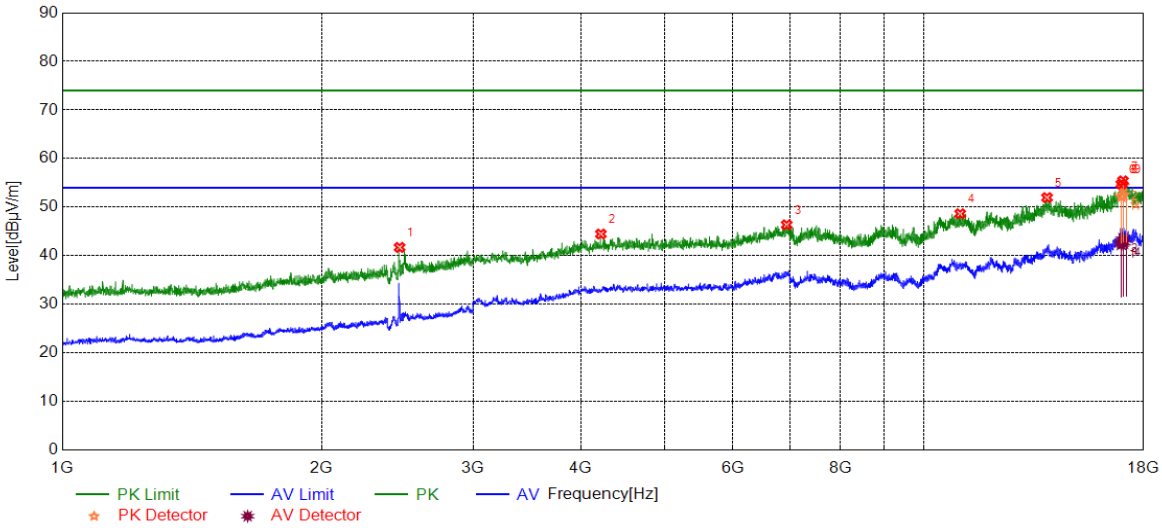
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2501.1671	41.97	-0.60	41.37	74.00	-32.63	peak
2	5162.8605	40.61	5.16	45.77	74.00	-28.23	peak
3	6965.6609	38.16	8.64	46.80	74.00	-27.20	peak
4	11291.3819	36.95	12.33	49.28	74.00	-24.72	peak
5	13921.8203	36.35	16.07	52.42	74.00	-21.58	peak
6	16944.8241	34.67	20.52	55.19	74.00	-18.81	peak
		22.05	19.97	42.02	54.00	-11.98	Average
7	17017.3362	34.81	19.98	54.79	74.00	-19.21	peak
		22.63	19.98	42.61	54.00	-11.39	Average
8	17067.3446	34.67	20.52	55.19	74.00	-18.81	peak
		23.68	20.52	44.20	54.00	-9.80	Average

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)

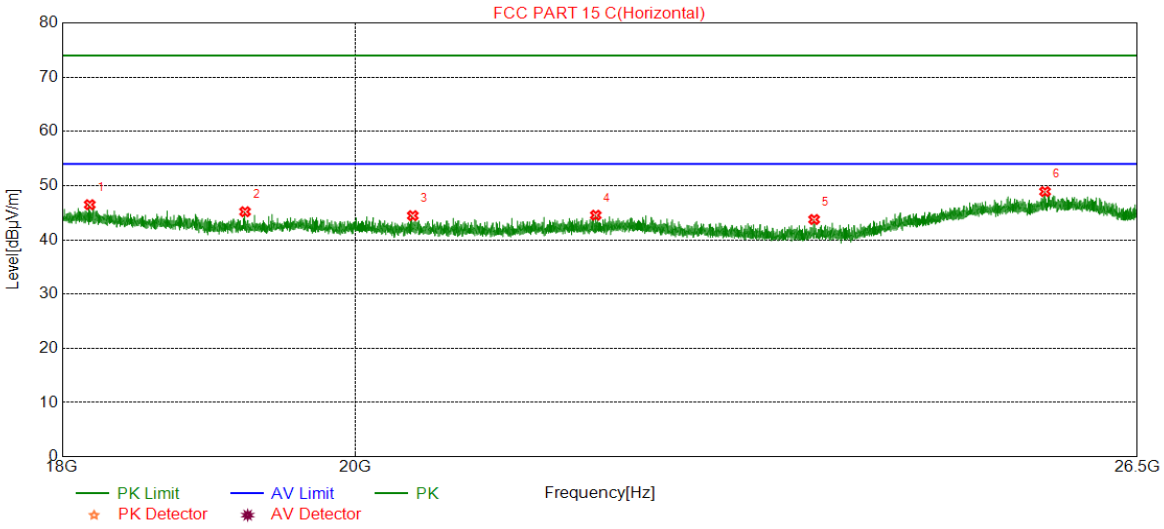


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2463.8213	42.58	-0.87	41.71	74.00	-32.29	peak
2	4220.2034	39.80	4.67	44.47	74.00	-29.53	peak
3	6933.1555	37.92	8.44	46.36	74.00	-27.64	peak
4	11023.8373	35.58	13.06	48.64	74.00	-25.36	peak
5	13904.3174	36.11	15.85	51.96	74.00	-22.04	peak
6	16959.8266	34.50	20.23	54.73	74.00	-19.27	peak
		22.14	20.23	42.37	54.00	-11.63	Average
7	17034.8391	35.64	19.77	55.41	74.00	-18.59	peak
		23.65	19.77	43.42	54.00	-10.58	Average
8	17054.8425	34.29	20.49	54.78	74.00	-18.59	peak
		22.15	20.49	42.64	54.00	-11.36	Average
9	17177.3629	35.20	19.55	54.75	74.00	-10.58	peak
		23.09	19.55	42.64	54.00	-11.36	Average

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.

8.4. SPURIOUS EMISSIONS 18G ~ 26GHz

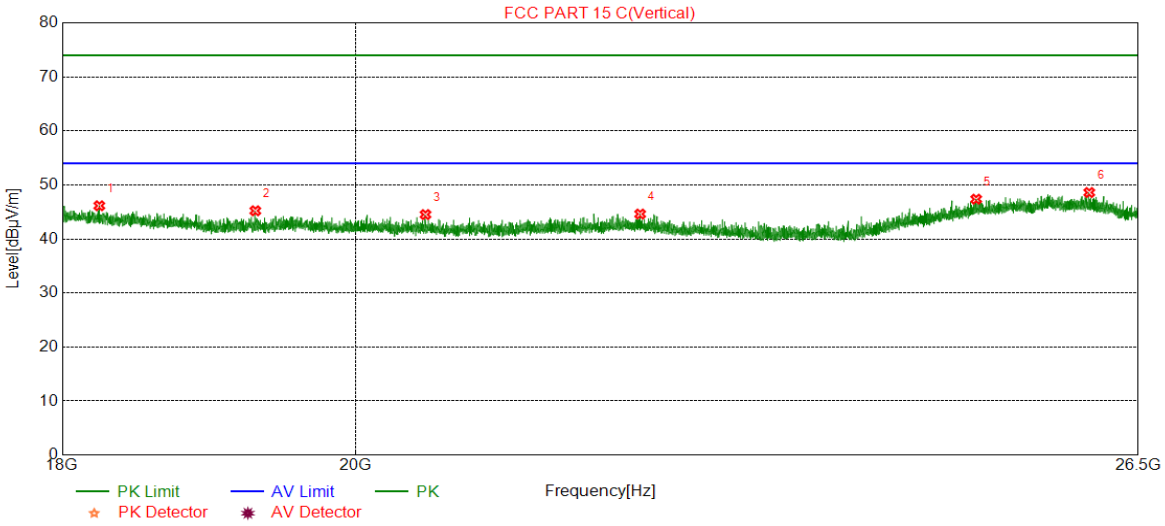
SPURIOUS EMISSIONS (LCH CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	18179.3679	45.33	1.15	46.48	74.00	-27.52	peak
2	19224.1224	44.38	0.80	45.18	74.00	-28.82	peak
3	20420.1920	42.94	1.52	44.46	74.00	-29.54	peak
4	21810.0810	42.74	1.80	44.54	74.00	-29.46	peak
5	23592.7093	42.56	1.19	43.75	74.00	-30.25	peak
6	25637.1637	43.12	5.77	48.89	74.00	-25.11	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Pre-test all LCH,MCH and HCH then choose the worst case: LCH as final result.

SPURIOUS EMISSIONS (LCH CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)

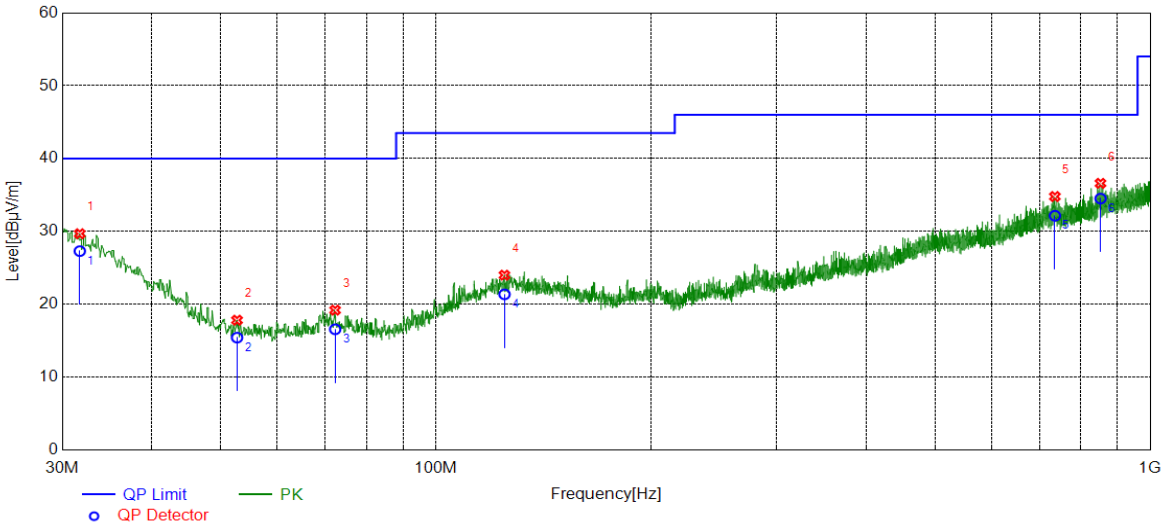


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	18241.4241	45.02	1.12	46.14	74.00	-27.86	peak
2	19293.8294	44.33	0.88	45.21	74.00	-28.79	peak
3	20511.1511	43.00	1.51	44.51	74.00	-29.49	peak
4	22156.9157	42.67	1.94	44.61	74.00	-29.39	peak
5	25002.1502	42.62	4.74	47.36	74.00	-26.64	peak
6	26040.1040	42.23	6.36	48.59	74.00	-25.41	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Pre-test all LCH,MCH and HCH then choose the worst case: LCH as final result.

8.5. SPURIOUS EMISSIONS 30M ~ 1 GHz

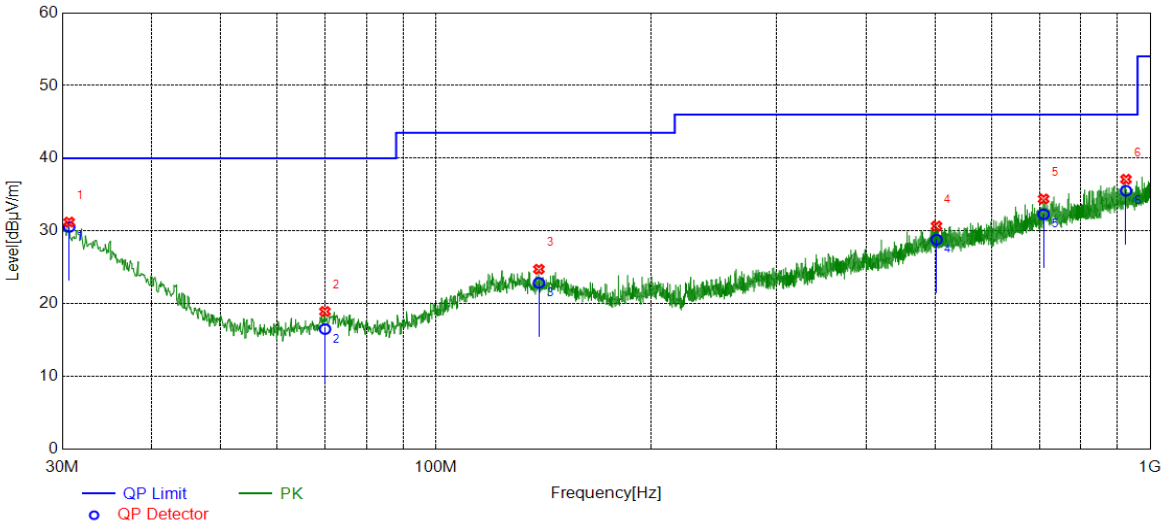
SPURIOUS EMISSIONS (LCH CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	31.7462	1.26	26.04	27.30	40.00	-12.70	QP
2	52.7003	1.03	14.40	15.43	40.00	-24.57	QP
3	72.2962	1.92	14.65	16.57	40.00	-23.43	QP
4	124.7785	1.13	20.24	21.37	43.50	-22.13	QP
5	735.4545	3.19	28.97	32.16	46.00	-13.84	QP
6	851.9632	4.06	30.45	34.51	46.00	-11.49	QP

Note: 1. Result Level = Read Level + Correct Factor.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.
4. Pre-test all LCH,MCH and HCH then choose the worst case: LCH as final result.

SPURIOUS EMISSIONS (LCH CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



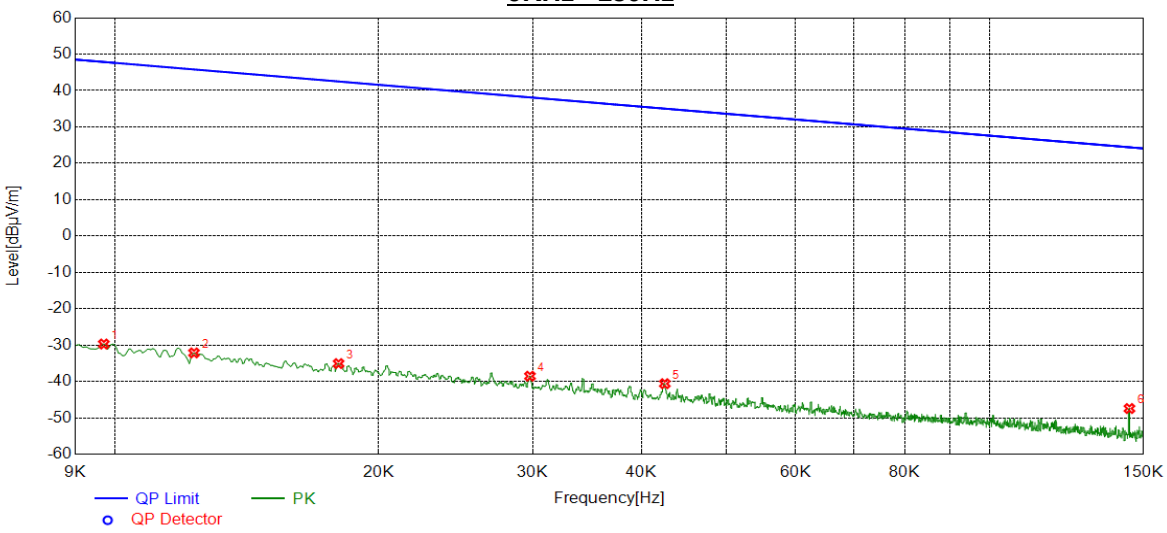
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.6791	3.84	26.72	30.56	40.00	-9.44	QP
2	69.9680	1.77	14.75	16.52	40.00	-23.48	QP
3	139.4269	2.93	19.94	22.87	43.50	-20.63	QP
4	502.2432	3.06	25.75	28.81	46.00	-17.19	QP
5	709.2619	3.65	28.64	32.29	46.00	-13.71	QP
6	924.9145	4.14	31.39	35.53	46.00	-10.47	QP

Note: 1. Result Level = Read Level + Correct Factor.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto
4. Pre-test all LCH,MCH and HCH then choose the worst case: LCH as final result.

8.6. SPURIOUS EMISSIONS BELOW 30M

SPURIOUS EMISSIONS (LCH CHANNEL, WORST-CASE CONFIGURATION, FACE ON)

9KHz~ 150Hz

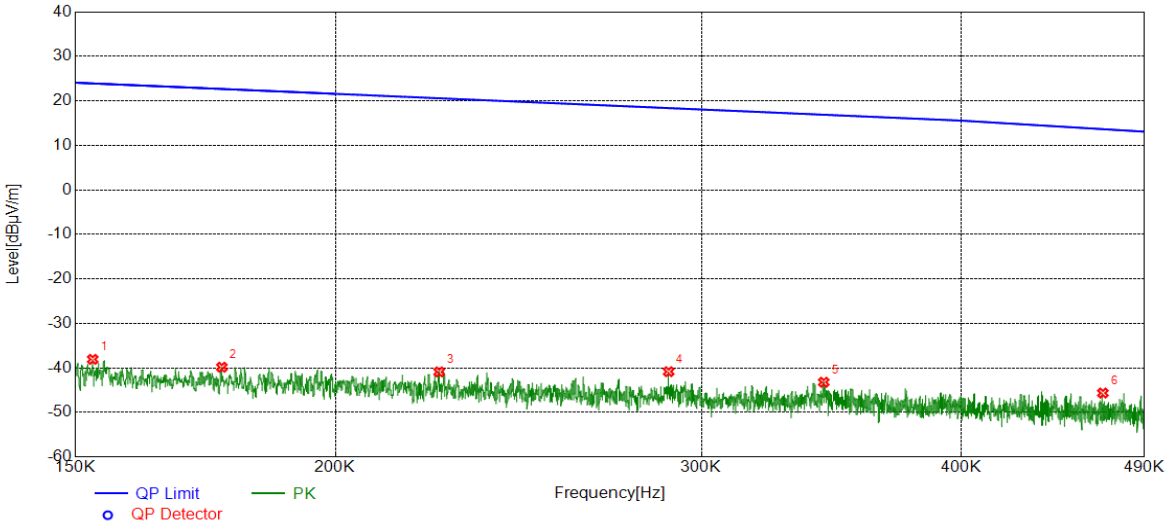


Suspected Data List							
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	0.0097	31.62	-61.32	-29.70	47.86	-77.56	FACE ON
2	0.0123	29.04	-61.19	-32.15	45.81	-77.96	FACE ON
3	0.0180	25.94	-61.02	-35.08	42.50	-77.58	FACE ON
4	0.0298	22.47	-61.02	-38.55	38.11	-76.66	FACE ON
5	0.0425	20.50	-61.11	-40.61	35.04	-75.65	FACE ON
6	0.1445	13.94	-61.38	-47.44	24.40	-71.84	FACE ON

Note: 1. Measurement = Reading Level + Correct Factor.
2. All the modes had been tested, but only the worst data were recorded in the report.
3. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to
4. Pre-test all LCH,MCH and HCH then choose the worst case: LCH as final result.

SPURIOUS EMISSIONS (LCH CHANNEL, WORST-CASE CONFIGURATION, FACE ON)

150KHz~ 490Hz

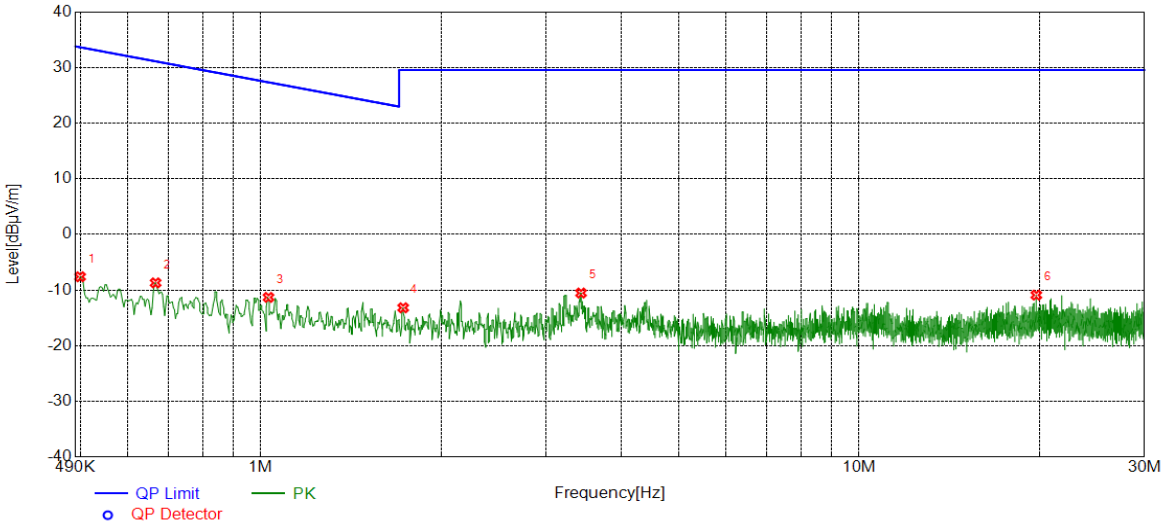


Suspected Data List							
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	0.1529	23.37	-61.44	-38.07	23.91	-61.98	FACE ON
2	0.1764	21.48	-61.32	-39.84	22.68	-62.52	FACE ON
3	0.2244	20.18	-61.07	-40.89	20.58	-61.47	FACE ON
4	0.2893	20.07	-60.91	-40.84	18.37	-59.21	FACE ON
5	0.3435	17.65	-60.86	-43.21	16.88	-60.09	FACE ON
6	0.4679	15.11	-60.75	-45.64	13.64	-59.28	FACE ON

Note: 1. Measurement = Reading Level + Correct Factor.
2. All the modes had been tested, but only the worst data were recorded in the report.
3. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to
4. Pre-test all LCH,MCH and HCH then choose the worst case: LCH as final result. comply with AV limit.

SPURIOUS EMISSIONS (LCH CHANNEL, WORST-CASE CONFIGURATION, FACE ON)

490KHz~ 30MHz



Suspected Data List							
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	0.4989	13.12	-20.73	-7.61	33.64	-41.25	FACE ON
2	0.6671	12.07	-20.78	-8.71	31.12	-39.83	FACE ON
3	1.0301	9.17	-20.49	-11.32	27.34	-38.66	FACE ON
4	1.7295	7.18	-20.37	-13.19	29.54	-42.73	FACE ON
5	3.4295	9.87	-20.41	-10.54	29.54	-40.08	FACE ON
6	19.7797	6.61	-17.52	-10.91	29.54	-40.45	FACE ON

Note: 1. Measurement = Reading Level + Correct Factor.
2. All the modes had been tested, but only the worst data were recorded in the report.
3. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to
4. Pre-test all LCH,MCH and HCH then choose the worst case: LCH as final result. comply with AV limit.

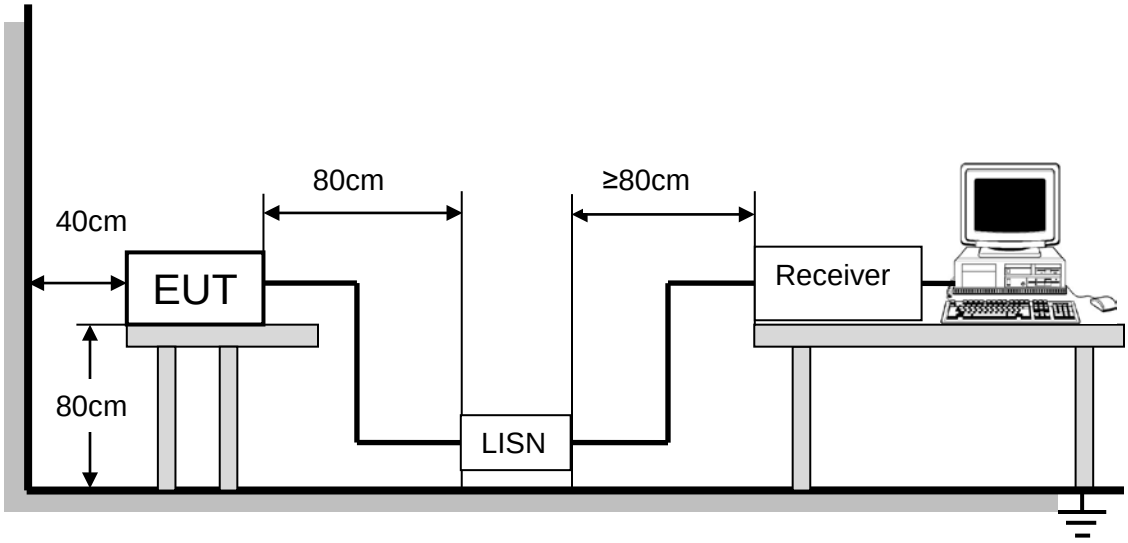
9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

Please refer to CFR 47 FCC §15.207 (a).

FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

TEST SETUP AND PROCEDURE

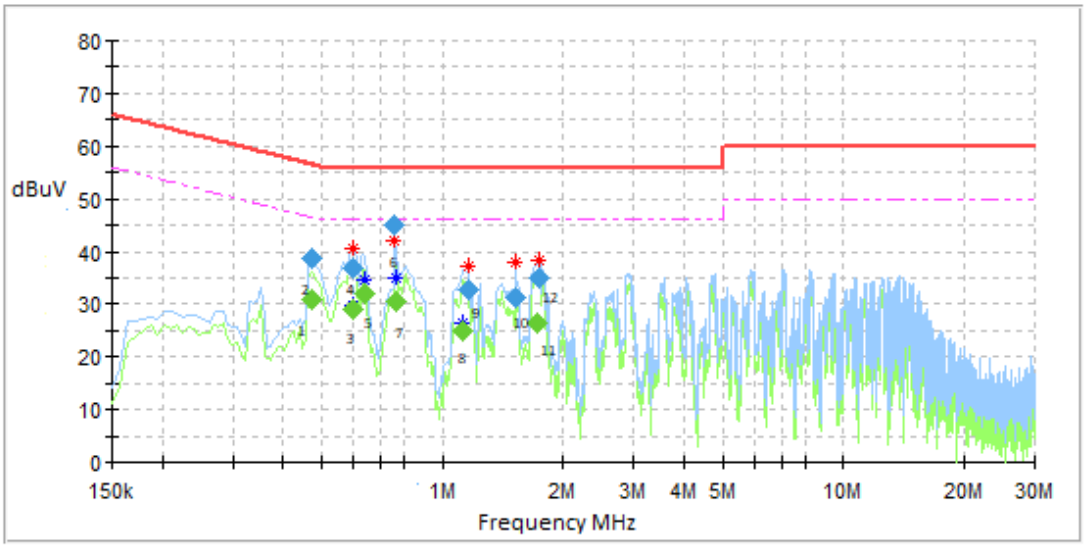


The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10-2013.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9kHz.

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

TEST RESULTS (WORST-CASE CONFIGURATION)

LCH



Ch.	Frequency (MHz)	Quasi Pe	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
1	0.470888	---	30.81	46.50	15.69	1000.0	9.000	N	OFF	9.6
2	0.470888	38.	---	56.50	17.96	1000.0	9.000	N	OFF	9.6
3	0.597750	---	29.09	46.00	16.91	1000.0	9.000	L1	OFF	9.6
4	0.597750	36.	---	56.00	19.20	1000.0	9.000	L1	OFF	9.6
5	0.642525	---	32.00	46.00	14.00	1000.0	9.000	L1	OFF	9.6
6	0.761925	45.	---	56.00	10.97	1000.0	9.000	N	OFF	9.6
7	0.769388	---	30.64	46.00	15.36	1000.0	9.000	N	OFF	9.6
8	1.127588	---	24.93	46.00	21.07	1000.0	9.000	L1	OFF	9.6
9	1.164900	32.	---	56.00	23.12	1000.0	9.000	L1	OFF	9.6
10	1.523100	31.	--	56.00	24.83	1000.0	9.000	L1	OFF	9.6
11	1.724588	---	26.55	46.00	19.45	1000.0	9.000	N	OFF	9.6
12	1.739513	35.	---	56.00	20.90	1000.0	9.000	N	OFF	9.6

Note: 1. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
3. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.
4. The extension cord/outlet strip was calibrated with the LISN as required by ANSI C63.10:2013 Clause 6.2.2.
5. Pre-testing all test modes and channels, and find the LCH channel which is the worst case, so only the worst case is included in this test report.

10. ANTENNA REQUIREMENTS

Applicable requirements

Please refer to FCC §15.203
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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 manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Please refer to FCC §15.247(b)(4)
The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

RESULTS

Complies

END OF REPORT