FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-247 ISSUE 2

CERTIFICATION TEST REPORT

For

Wireless Multi Sensor

MODEL NUMBER: LRM1761/20

FCC ID: 2AGBW-LRM1761
IC: 20812-LRM1761

REPORT NUMBER: 4788001827-1

ISSUE DATE: August 10, 2017

Prepared for

Philips Lighting (China) Investment Co Ltd

Building 9, Lane 888, Tianlin Road, Minhang district Shanghai 200233 China

Prepared by

UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch
Room 101, Building 10, Innovation Technology Park,
Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China
Tel: +86 769 33817100
Fax: +86 769 33244054
Website: www.ul.com

Revision History

Rev.	Issue Date	Revisions	Revised By
--	08/10/2017	Initial Issue	

Summary of Test Results			
Clause	Test Items	FCC/IC Rules	Test Results
1	6db DTS Bandwidth	FCC 15.247 (a) (2) IC RSS-247 Clause 5.1 (1)	Complied
2	Peak Conducted Power	FCC 15.247 (b) (3) IC RSS-247 Clause 5.4 (4)	Complied
3	Power Spectral Density	FCC 15.247 (3) IC RSS-247 Clause 5.2 (2)	Complied
4	Conducted Band edge And Spurious emission	FCC 15.247 (d) IC RSS-247 Clause 5.5	Complied
5	Radiated Band edges and Spurious emission	FCC 15.247 (d) FCC 15.209 FCC 15.205 IC RSS-247 Clause 5.5 IC RSS-GEN Clause 8.9	Complied
6	Conducted Emission Test For AC Power Port	FCC 15.207 RSS-GEN Clause 8.8	Complied
7	Antenna Requirement	FCC 15.203 RSS-GEN Clause 8.3	Complied

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name:	Philips Lighting (China) Investment Co Ltd
Address:	Building 9,Lane 888,Tianlin Road,Minhang district Shanghai 200233 China

Manufacturer Information

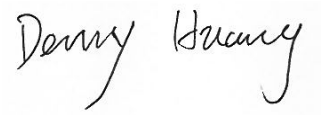
Company Name:	Philips Lighting (China) Investment Co Ltd
Address:	Building 9,Lane 888,Tianlin Road,Minhang district Shanghai 200233 China

EUT Description

Product Name	Wireless Multi Sensor
Brand Name	Philips
Model Name	LRM1761/20
Serial Number	N/A
Model Difference	N/A
Date Tested	July 20, 2017 ~ August 07, 2017

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	PASS
INDUSTRY CANADA RSS-247 Issue 2	PASS
INDUSTRY CANADA RSS-GEN Issue 4	PASS

Tested By:



Denny Huang
Engineer Project Associate

Check By:

Shawn Wen
Laboratory Leader

Approved By:

Stephen Guo

Laboratory Manage

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 558074 D01 V04, KDB414788 D01 Radiated Test Site v01, ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 4, and RSS-247 Issue 2.

3. FACILITIES AND ACCREDITATION

Test Location	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
Address	Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China
Accreditation Certificate	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. The Certificate Registration Number is 4102.01. UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The Designation Number is CN1187. UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been registered and fully described in a report filed with Industry Canada. The Company Number is 21320.

Note: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. had been calibrated and compared to the open field sites.

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 recognized 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
Uncertainty for Conduction emission test	2.90dB
Uncertainty for Radiation Emission test(include Fundamental emission) (30MHz-1GHz)	4.52dB
Uncertainty for Radiation Emission test (1GHz to 26GHz)(include Fundamental emission)	5.04dB(1-6GHz)
	5.30dB (6GHz-18Gz)
	5.23dB (18GHz-26Gz)
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

Equipment	Wireless Multi Sensor	
Model Name	LRM1761/20	
Product Description	Operation Frequency	2400 MHz ~ 2483.5 MHz
	Modulation Technology	Data Rate
	DSSS	250Kbps
Rate Power	DC 3.6V by Battery	
Hardware Version	LRM1761	
Software Version	/20	

5.2. MAXIMUM OUTPUT POWER

Frequency Range (MHz)	Antenna	Mode	Frequency (MHz)	Channel Number	Max EIRP (dBm)
2400-2483.5	1	ZigBee	2405-2480	0-15[16]	4.212
2400-2483.5	2	ZigBee	2405-2480	0-15[16]	4.212

5.3. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2405	4	2425	8	2445	12	2465
1	2410	5	2430	9	2450	13	2470
2	2415	6	2435	10	2455	14	2475
3	2420	7	2440	11	2460	15	2480

5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
ZIGBEE	CH 0, CH 7, CH 15	2405MHz, 2440MHz, 2480MHz

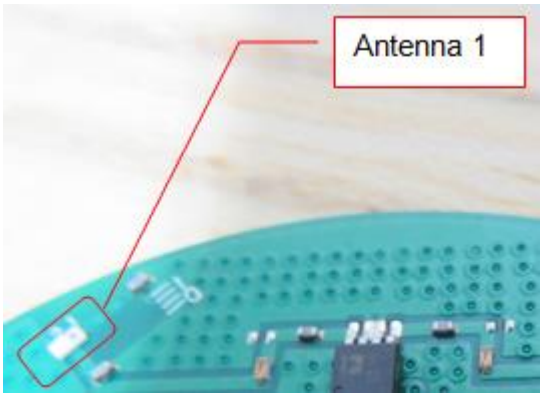
5.5. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band				
Test Software Version		N/A		
Modulation Type	Transmit Antenna Number	SmartRF Studio 7		
		CH 0	CH 7	CH 15
GFSK	1	4.5dBm	4.5dBm	4.5dBm

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

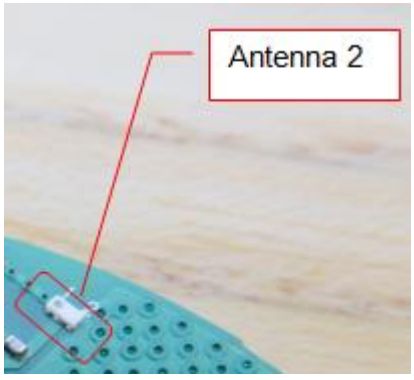
Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	2405-2480	Internal Antenna	1.6

Test Mode	Transmit and Receive Mode	Description
ZigBee	☒1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.



Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
2	2405-2480	Internal Antenna	1.6

Test Mode	Transmit and Receive Mode	Description
ZigBee	☒1TX, 1RX	Antenna 2 can be used as transmitting/receiving antenna.



Note 1: The EUT have 2 antennas, but only 1 antenna active at any moment in time.
Note 2: The circuit before the two difference antenna are the same, so for the conducted test we only perform one output port and for the radiated test we perform both two antennas.

5.7. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests	
Relative Humidity	55 ~ 65%	
Atmospheric Pressure:	1025Pa	
Temperature	TN	23 ~ 28°C
Voltage :	VL	N/A
	VN	DC 3.6V
	VH	N/A

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

5.8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	FCC ID
1	Laptop	ThinkPad	T410	N/A
2	CC Debug	N/A	N/A	N/A

I/O PORT

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	USB	N/A	N/A	N/A

Note: The EUT only use for upgrade.

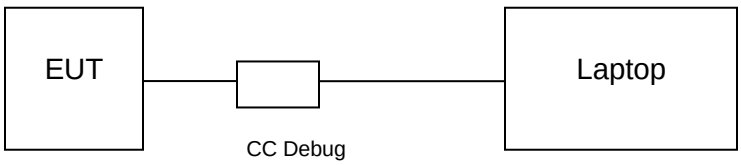
ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	N/A	N/A	N/A	N/A

TEST SETUP

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

SETUP DIAGRAM FOR TESTS



5.9. MEASURING INSTRUMENT AND SOFTWARE USED

Conducted Emissions						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☑	EMI Test Receiver	R&S	ESR3	101961	Dec.20, 2016	Dec.19, 2017
☑	Two-Line V-Network	R&S	ENV216	101983	Dec.20, 2016	Dec.19, 2017
☑	Artificial Mains Networks	Schwarzbeck	NSLK 8126	8126465	Feb.10, 2017	Feb.10, 2018
Software						
Used	Description		Manufacturer	Name	Version	
☑	Test Software for Conducted disturbance		Farad	EZ-EMC	Ver. UL-3A1	
Radiated Emissions						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☑	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Feb. 24, 2017	Feb. 24, 2018
☑	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Jan.09, 2016	Jan.09, 2019
☑	Preamplifier	HP	8447D	2944A09099	Feb. 13, 2017	Feb. 13, 2018
☑	EMI Measurement Receiver	R&S	ESR26	101377	Dec. 20, 2016	Dec. 20, 2017
☑	Horn Antenna	TDK	HRN-0118	130939	Jan. 09, 2016	Jan. 09, 2019
☑	High Gain Horn Antenna	Schwarzbeck	BBHA-9170	691	Jan.06, 2016	Jan.06, 2019
☑	Preamplifier	TDK	PA-02-0118	TRS-305-00066	Jan. 14, 2017	Jan. 14, 2018
☑	Preamplifier	TDK	PA-02-2	TRS-307-00003	Dec. 20, 2016	Dec. 20, 2017
Software						
Used	Description		Manufacturer	Name	Version	
☑	Test Software for Radiated disturbance		Farad	EZ-EMC	Ver. UL-3A1	
Other instruments						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☑	Spectrum Analyzer	Keysight	N9030A	MY55410512	Dec. 20, 2016	Dec. 20, 2017
☑	Power Meter	Keysight	N9031A	MY55416024	Feb. 13, 2017	Feb. 13, 2018
☑	Power Sensor	Keysight	N9323A	MY55440013	Feb. 13, 2017	Feb. 13, 2018
☑	DC Supply	Keysight	E36103A	MY55350020	Feb. 10, 2017	Feb. 10, 2018

6. ANTENNA PORT TEST RESULTS

6.1. ON TIME AND DUTY CYCLE

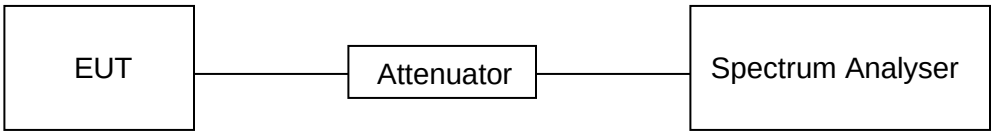
LIMITS

None; for reporting purposes only

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP

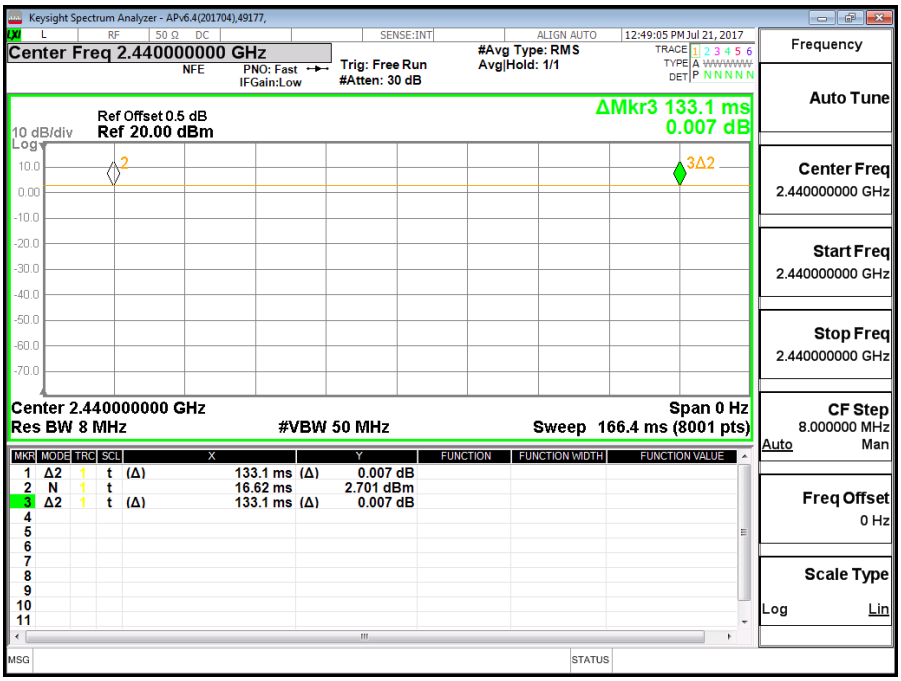


RESULTS

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/B Minimum VBW (KHz)
ZigBee	100	100	1	100	0	0.01

Note: Duty Cycle Correction Factor=10log(1/x).
Where: x is Duty Cycle(Linear)

ON TIME AND DUTY CYCLE MID CH



6.2. 6 dB BANDWIDTH & 99% BANDWIDTH

LIMITS

FCC Part15 (15.247) , Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247 (a) (1)	6dB Bandwidth	>= 500KHz	2400-2483.5

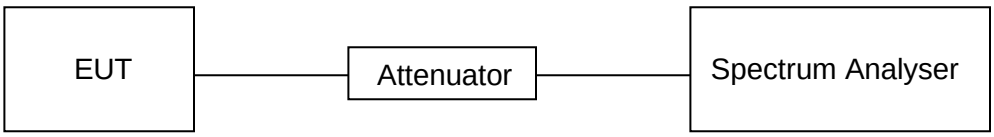
TEST PROCEDURE

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

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	100K
VBW	≥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

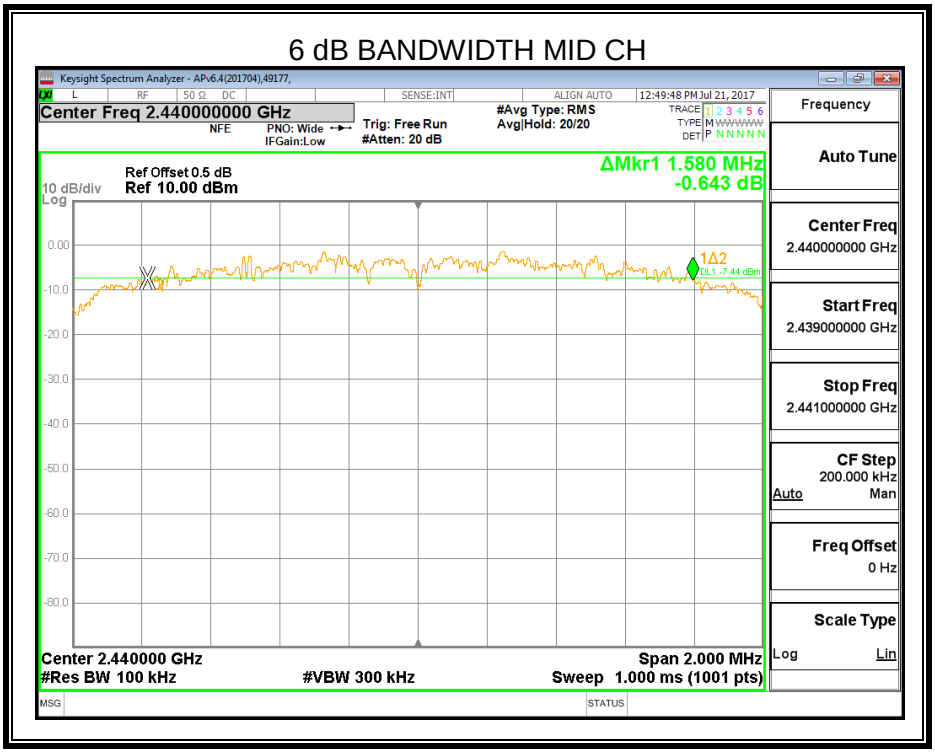


RESULTS

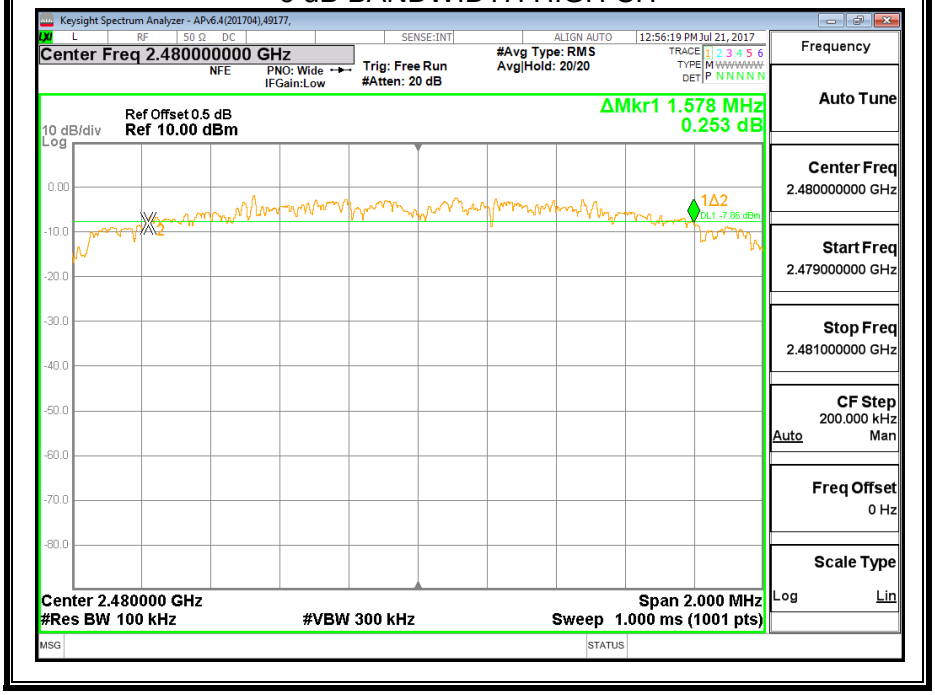
Channel	Frequency (MHz)	6dB bandwidth (MHz)	99% Bandwidth (MHz)	Result
Low	2405	1.614	2.583	Pass
Middle	2440	1.580	2.577	Pass
High	2480	1.578	2.582	Pass

6 dB BANDWIDTH LOW CH

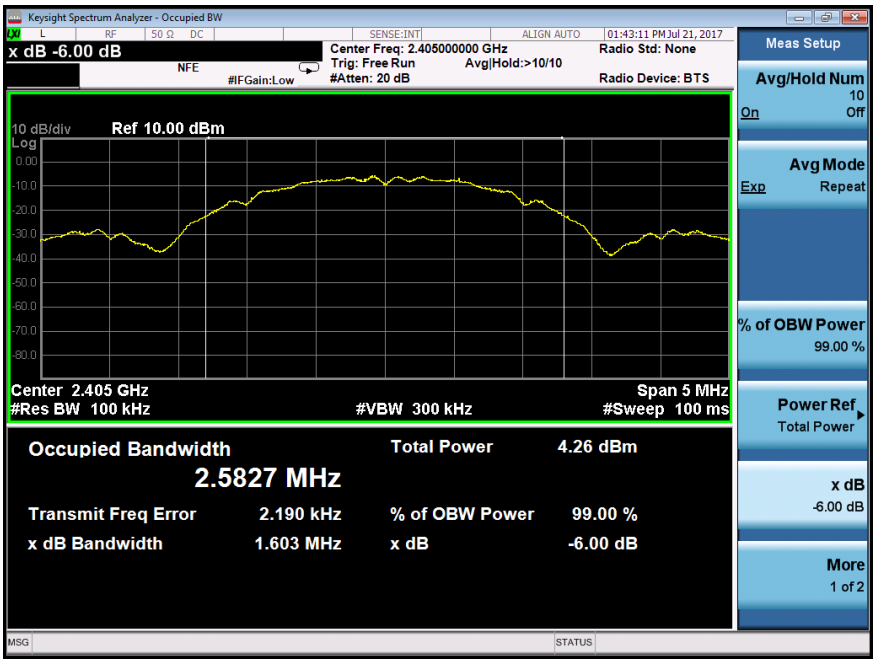
6 dB BANDWIDTH MID CH



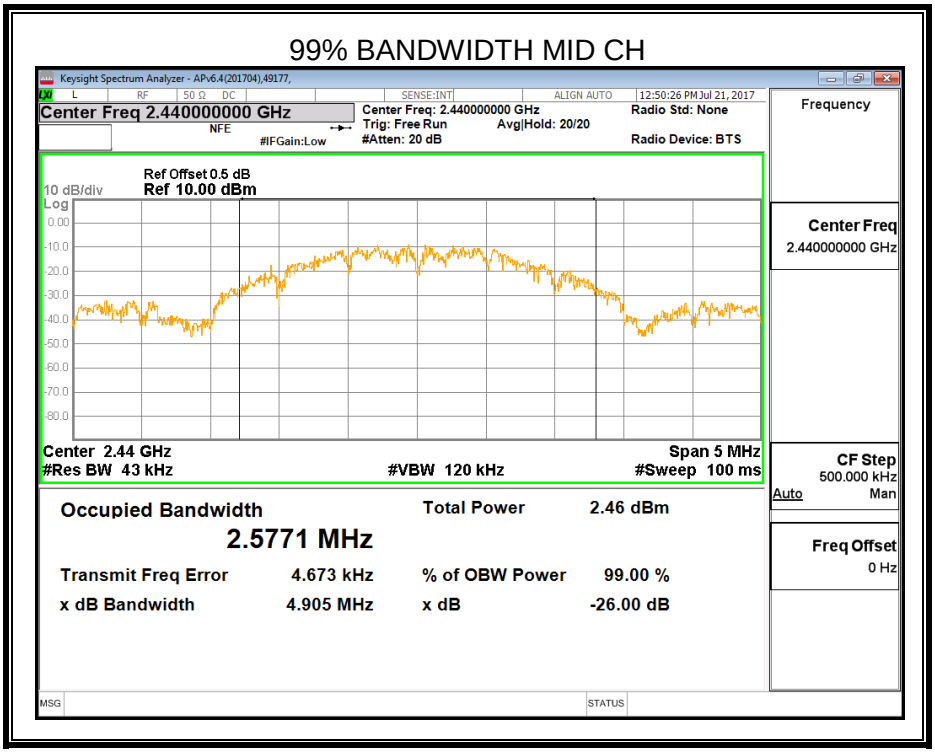
6 dB BANDWIDTH HIGH CH



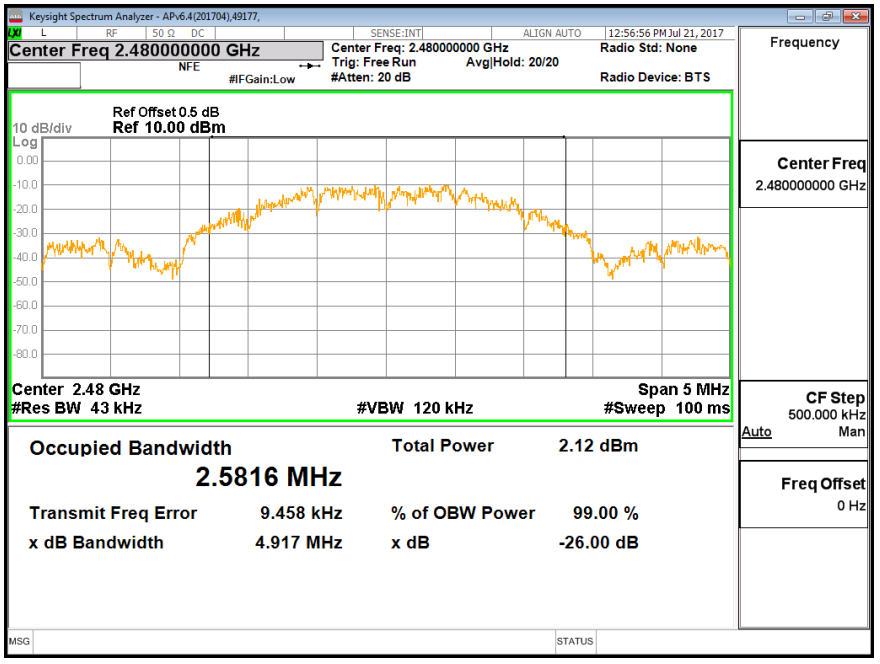
99% BANDWIDTH LOW CH



99% BANDWIDTH MID CH



99% BANDWIDTH HIGH CH



6.3. PEAK CONDUCTED OUTPUT POWER

LIMITS

FCC Part15 (15.247) , Subpart C IC RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247(b)(3) IC RSS-247 5.4 (4)	Peak Output Power	1 watt or 30dBm	2400-2483.5

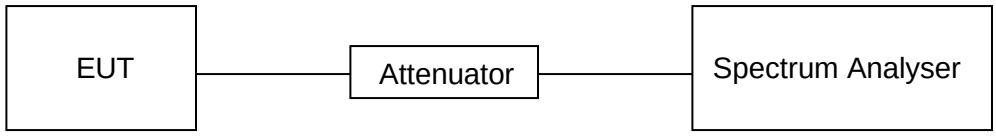
TEST PROCEDURE

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

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	≥DTS bandwidth(e.g. 1 MHz for BLE)
VBW	≥3 × RBW
Span	3 x RBW
Trace	Max hold
Sweep time	Auto couple.

Allow trace to fully stabilize and use peak marker function to determine the peak amplitude level.

TEST SETUP

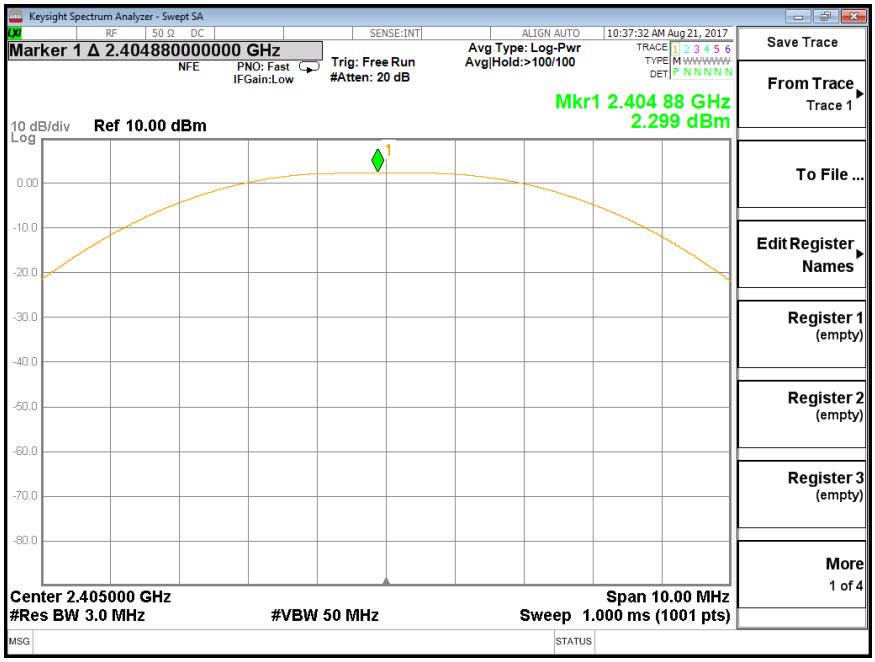


RESULTS

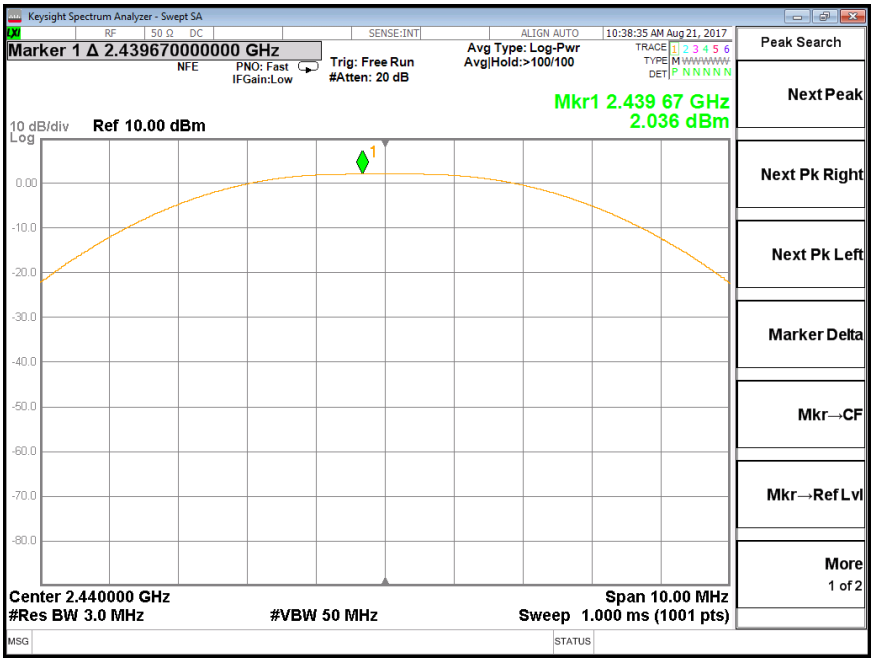
Antenna 1				
Test Channel	Frequency	Maximum Conducted Output Power(PK)	EIRP	LIMIT
	(MHz)	(dBm)	(dBm)	dBm
CH 0	2405	2.299	3.899	30
CH 7	2440	2.036	3.636	30
CH 15	2480	1.857	3.457	30

Antenna 2				
Test Channel	Frequency	Maximum Conducted Output Power(PK)	EIRP	LIMIT
	(MHz)	(dBm)	(dBm)	dBm
CH 0	2405	2.299	3.899	30
CH 7	2440	2.036	3.636	30
CH 15	2480	1.857	3.457	30

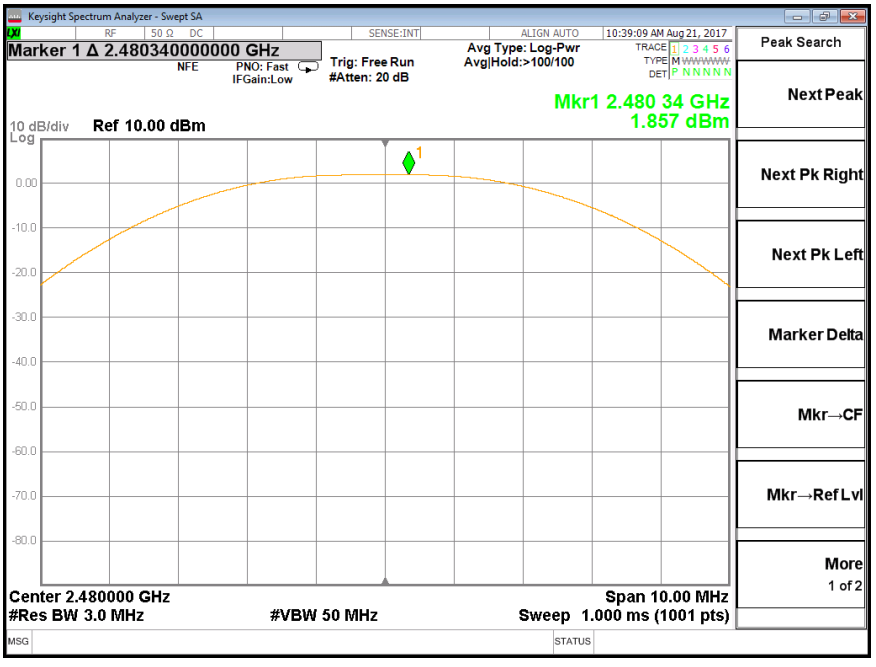
OUTPUT POWER LOW CH



OUTPUT POWER MID CH



OUTPUT POWER HIGH CH



6.4. POWER SPECTRAL DENSITY

LIMITS

FCC Part15 (15.247) , Subpart C IC RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
FCC §15.247 (e) IC RSS-247 5.2 (2)	Power Spectral Density	8 dBm in any 3 kHz band	2400-2483.5

TEST PROCEDURE

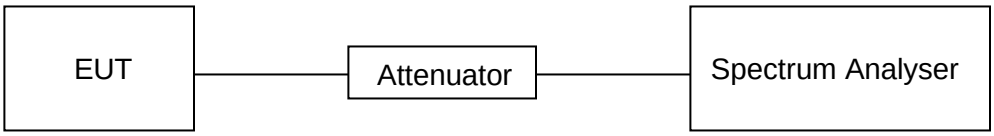
Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The centre 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

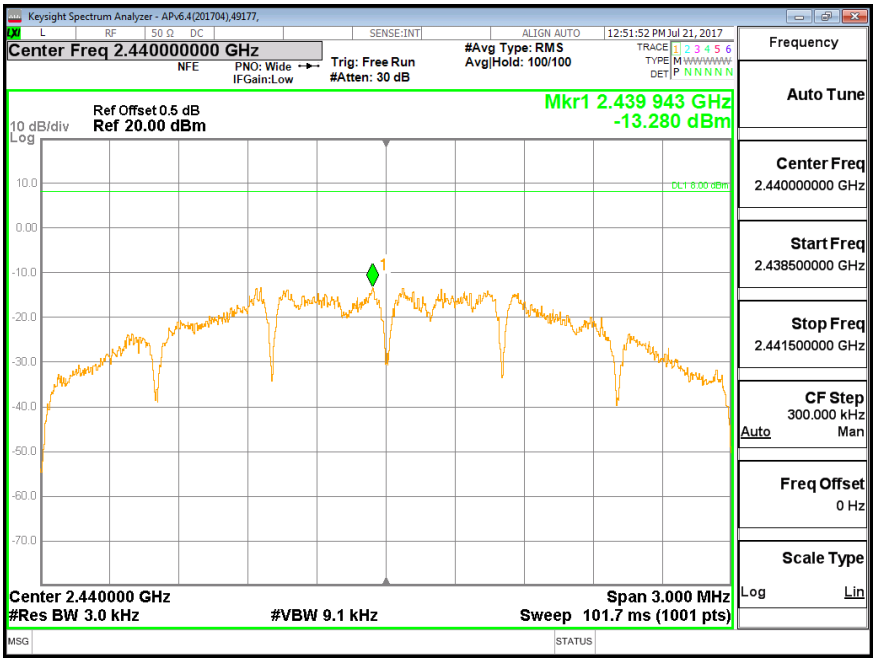


RESULTS

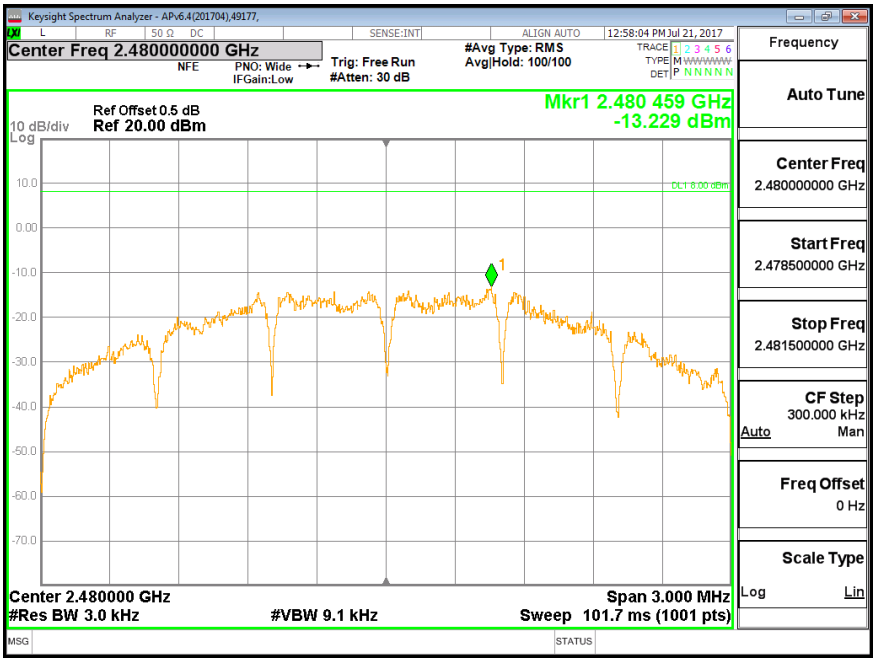
Frequency	Power Spectral Density (dBm)	Limit (dBm)	Result
2405 MHz	-12.727	8	PASS
2440 MHz	-13.280	8	PASS
2480 MHz	-13.229	8	PASS

PSD LOW CH

PSD MID CH



PSD HIGH CH



6.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

FCC Part15 (15.247) , Subpart C IC RSS-247 ISSUE 2		
Section	Test Item	Limit
FCC §15.247 (d) IC RSS-247 5.5	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:

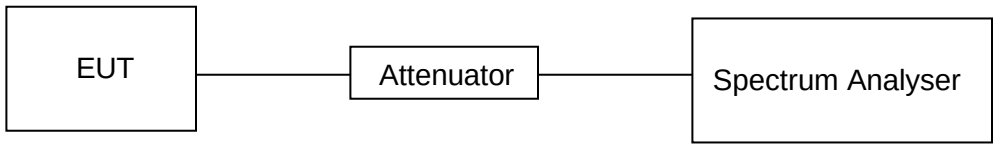
Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	100K
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

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	100K
VBW	≥3 × RBW
measurement points	≥span/RBW
Trace	Max hold
Sweep time	Auto couple.

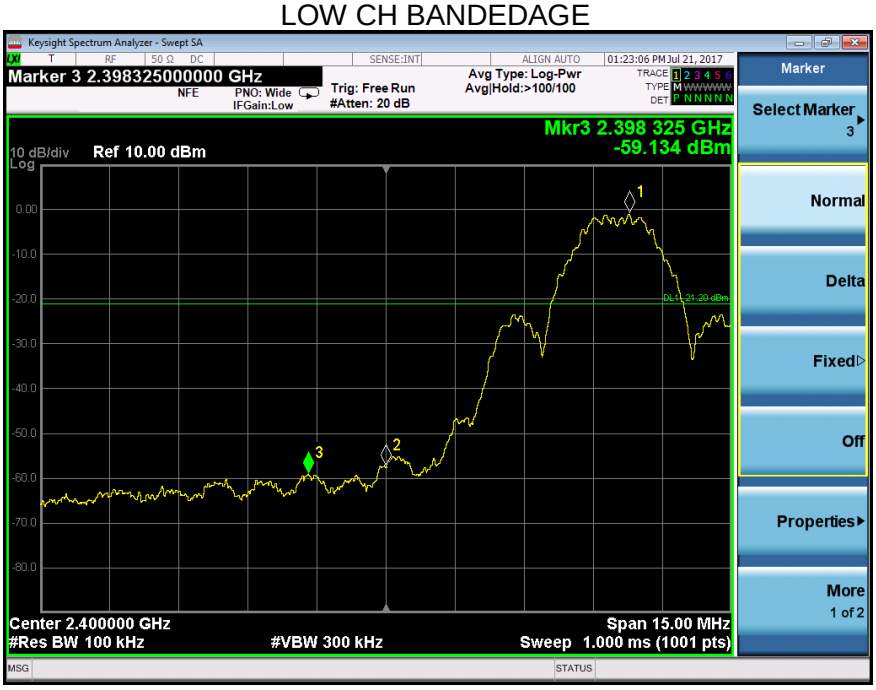
Use the peak marker function to determine the maximum amplitude level**.**

TEST SETUP

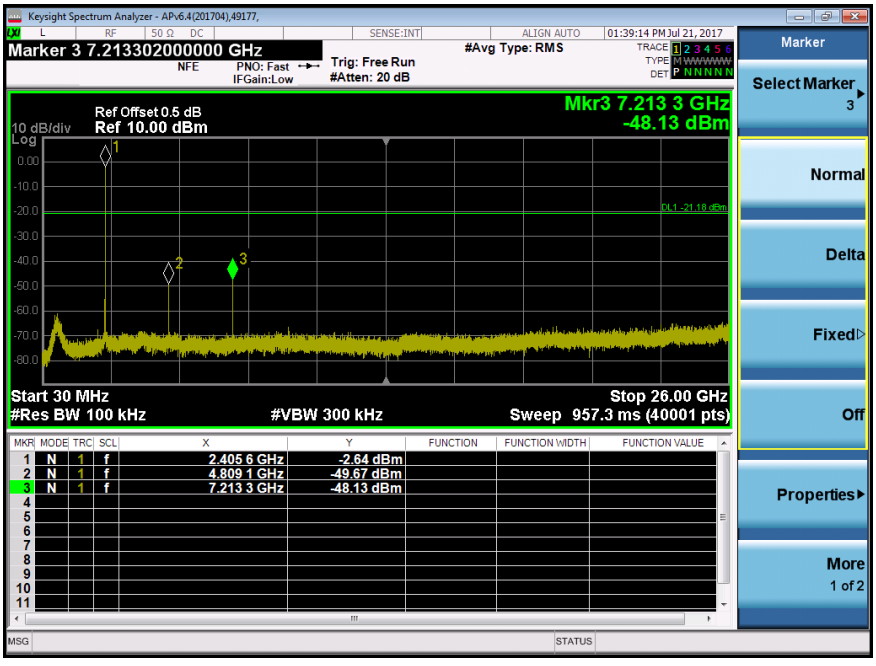


RESULTS

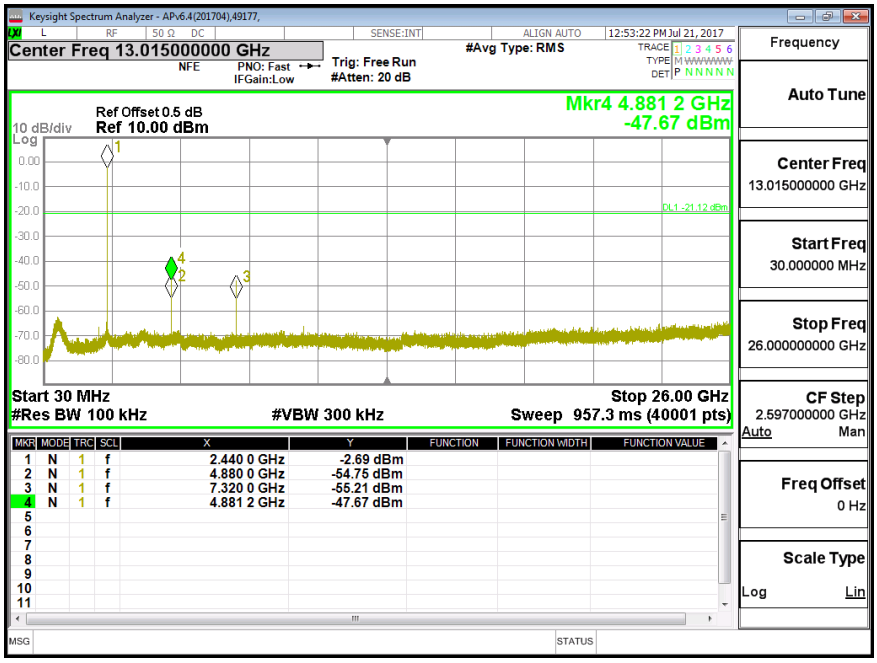
LOW CH BANDEDAGE



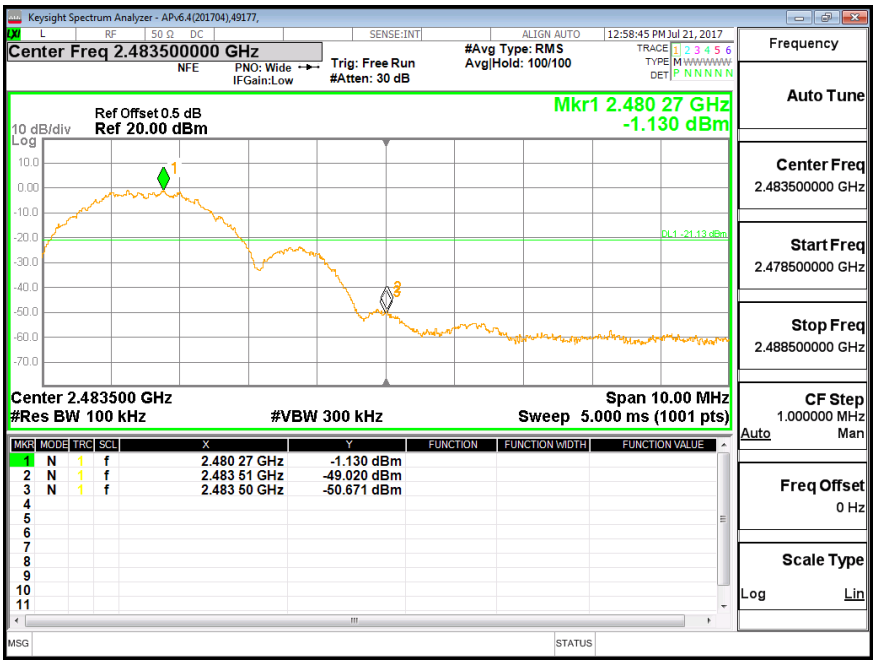
LOW CH SPURIOUS EMISSIONS 30M-26G



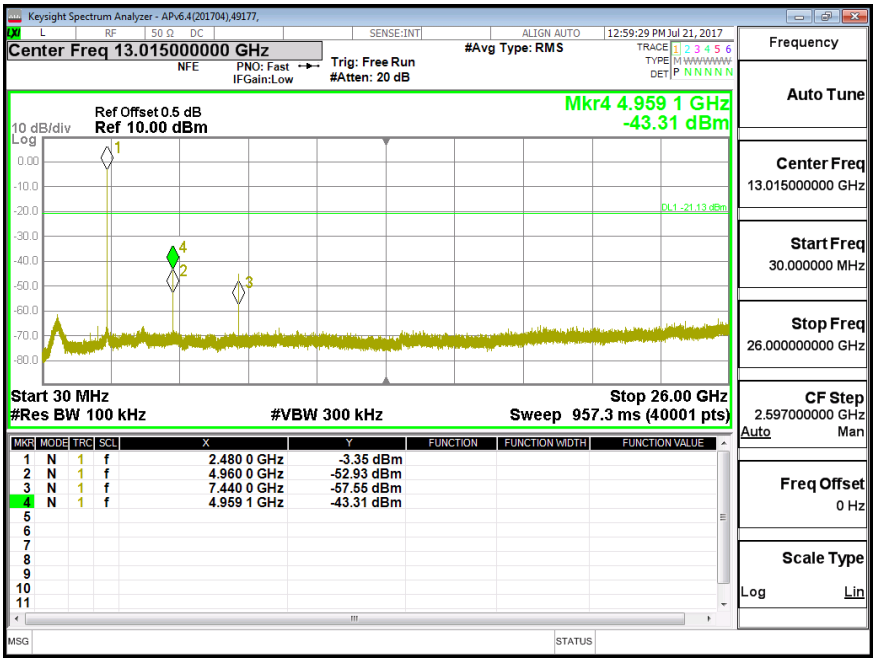
MID CH SPURIOUS EMISSIONS 30M-26G



HIGH CH BANDEDAGE



HIGH CH SPURIOUS EMISSIONS 30M-26G



7. RADIATED TEST RESULTS

7.1. LIMITS AND PROCEDURE

LIMITS

Please refer to FCC §15.205 and §15.209

Please refer to IC RSS-GEN Clause 8.9 (Transmitter)

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).

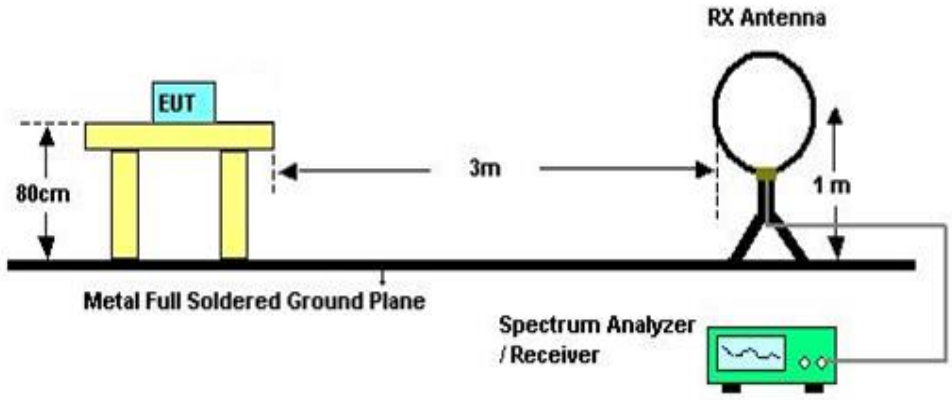
(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 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

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
Detector	Peak/QP/ Average
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 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 0.8 meter above ground.

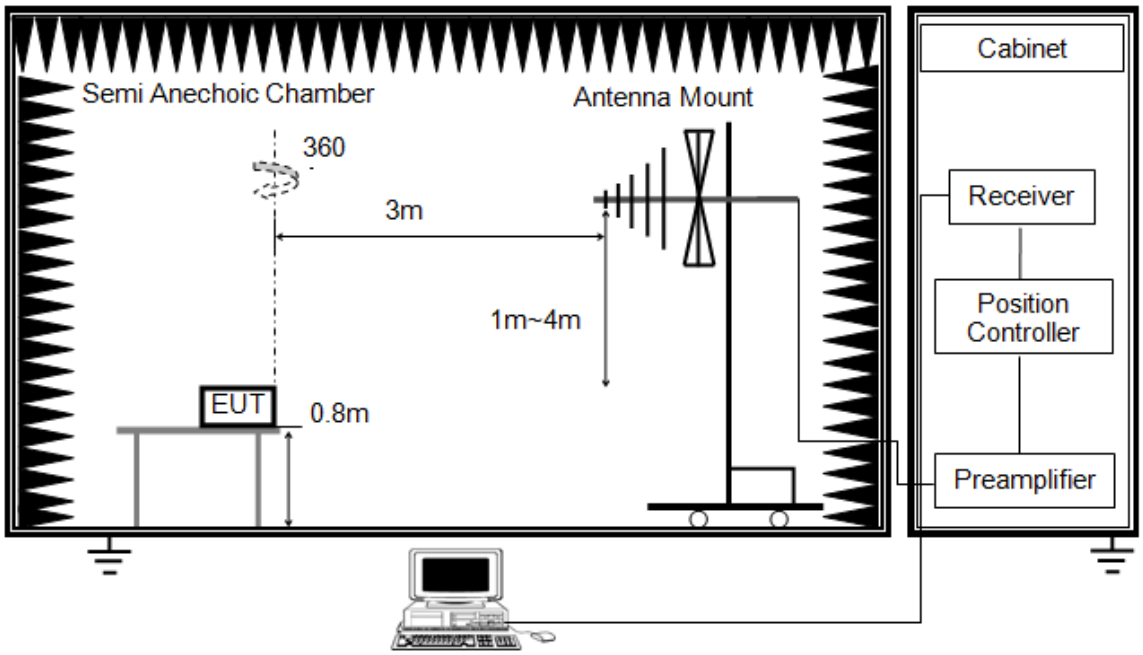
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

6. 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.

7. 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 0.8 meter above ground.

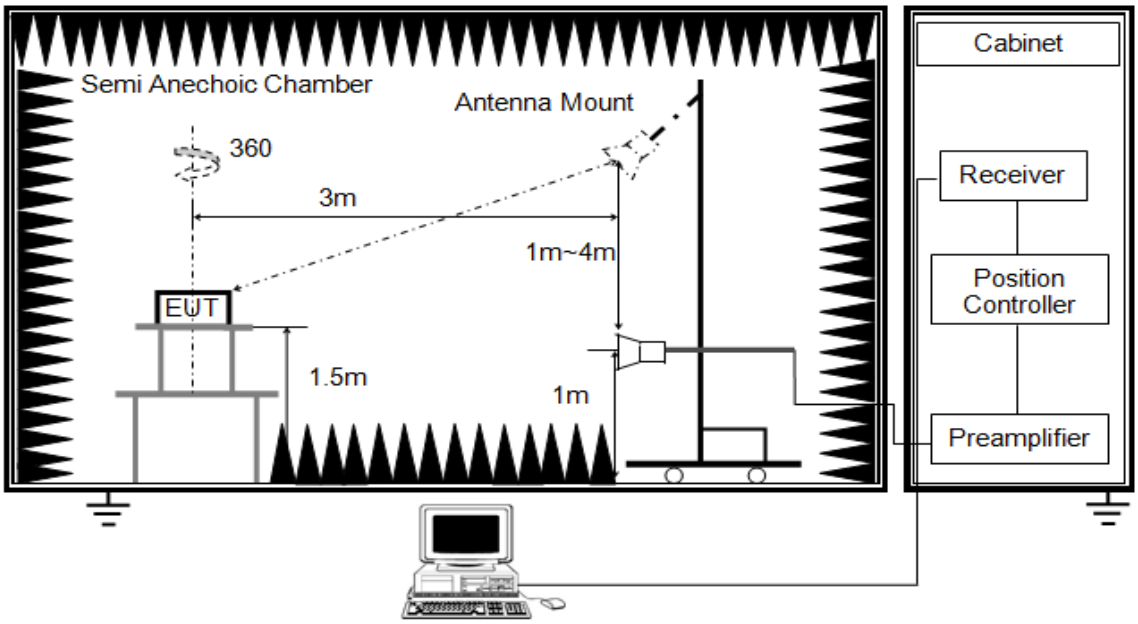
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

6. 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.

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

ABOVE 1G



The setting of the spectrum analyser

RBW	1M
VBW	3M and 10Hz for AVG(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 (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 1.5m above ground.

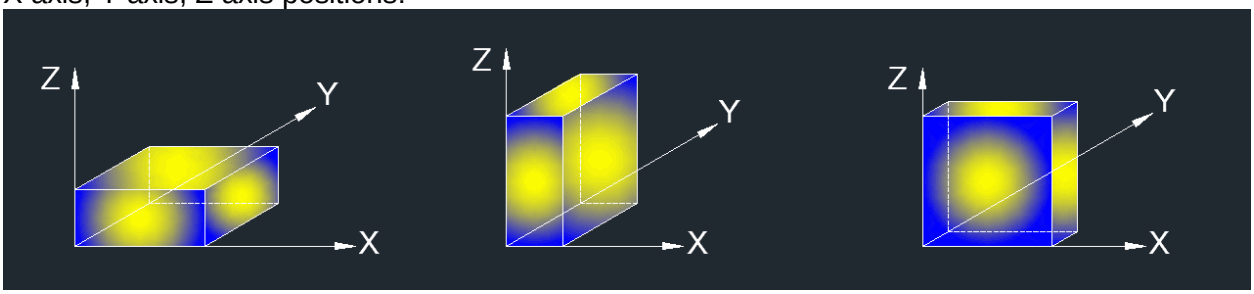
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

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 average power measurement, set the VBW to 10 Hz, while maintaining all of the other instrument settings, if the duty cycle of the EUT is less than 98%, the Duty Cycle Correction Factor shall be added to the measured emission levels. For the Duty Cycle and Correction Factor please refer to clause 6.1.ON TIME AND DUTY CYCLE.

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

X axis, Y axis, Z axis positions:

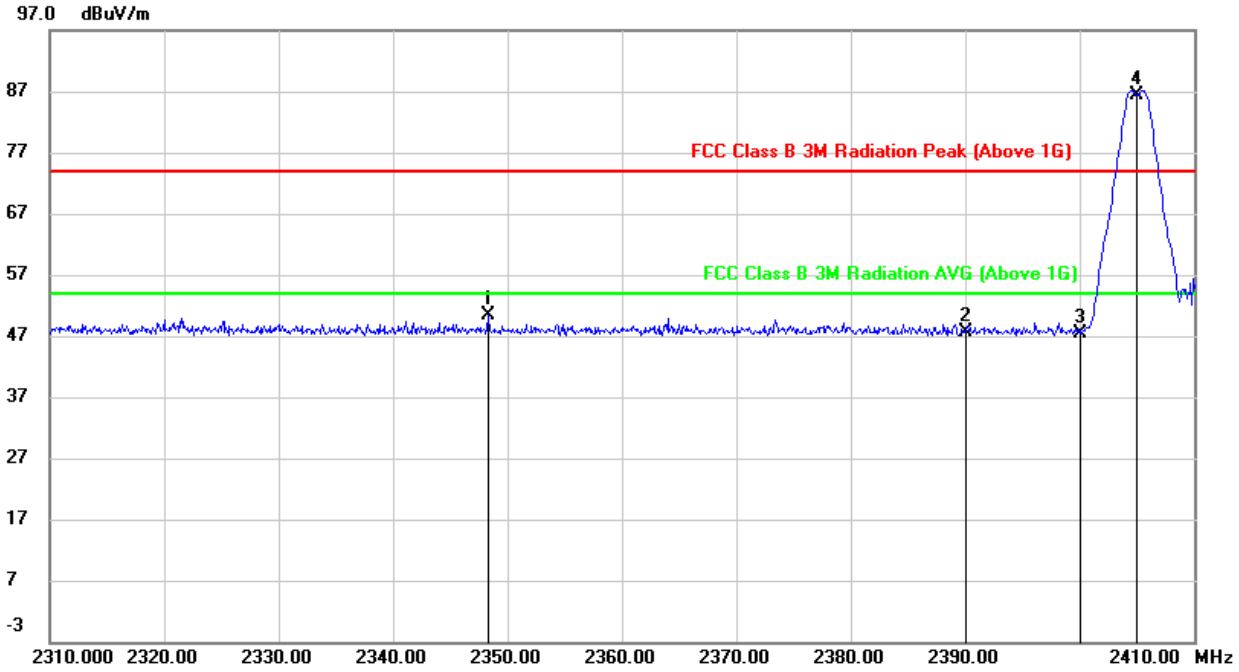


Note: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

7.2. RESTRICTED BANDEDGE

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

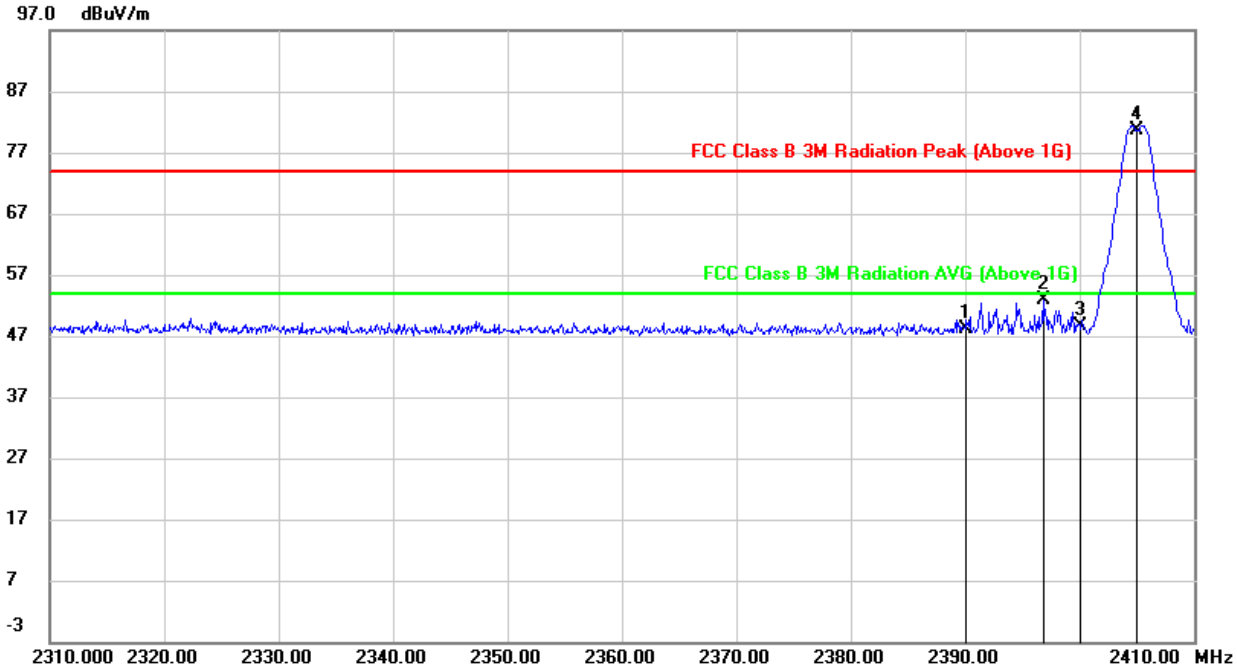
EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	Low Chanel - Antenna 1		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2348.300	16.92	33.44	50.36	74.00	-23.64	peak
2	2390.000	14.49	33.14	47.63	74.00	-26.37	peak
3	2400.000	14.40	33.07	47.47	74.00	-26.53	peak
4	2405.000	53.32	33.04	86.36			peak

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

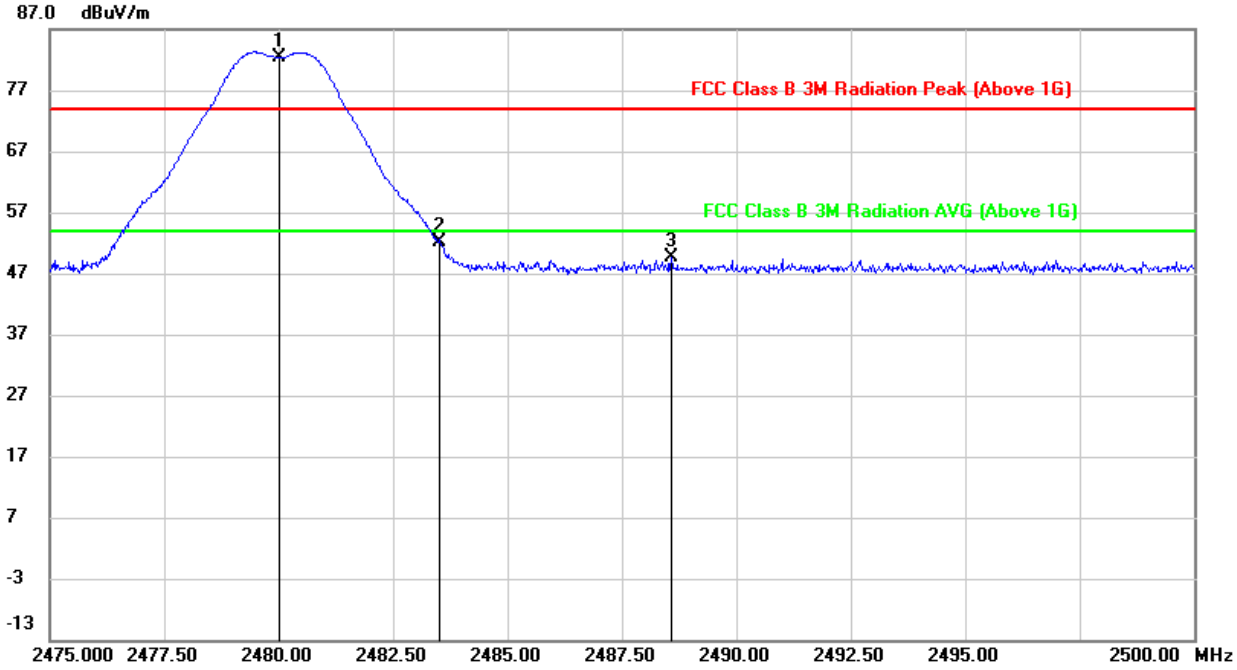
EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	Low Chanel - Antenna 1		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	14.82	33.24	48.06	74.00	-25.94	peak
2	2396.800	19.56	33.20	52.76	74.00	-21.24	peak
3	2400.000	15.58	33.17	48.75	74.00	-25.25	peak
4	2405.000	47.47	33.14	80.61			peak

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

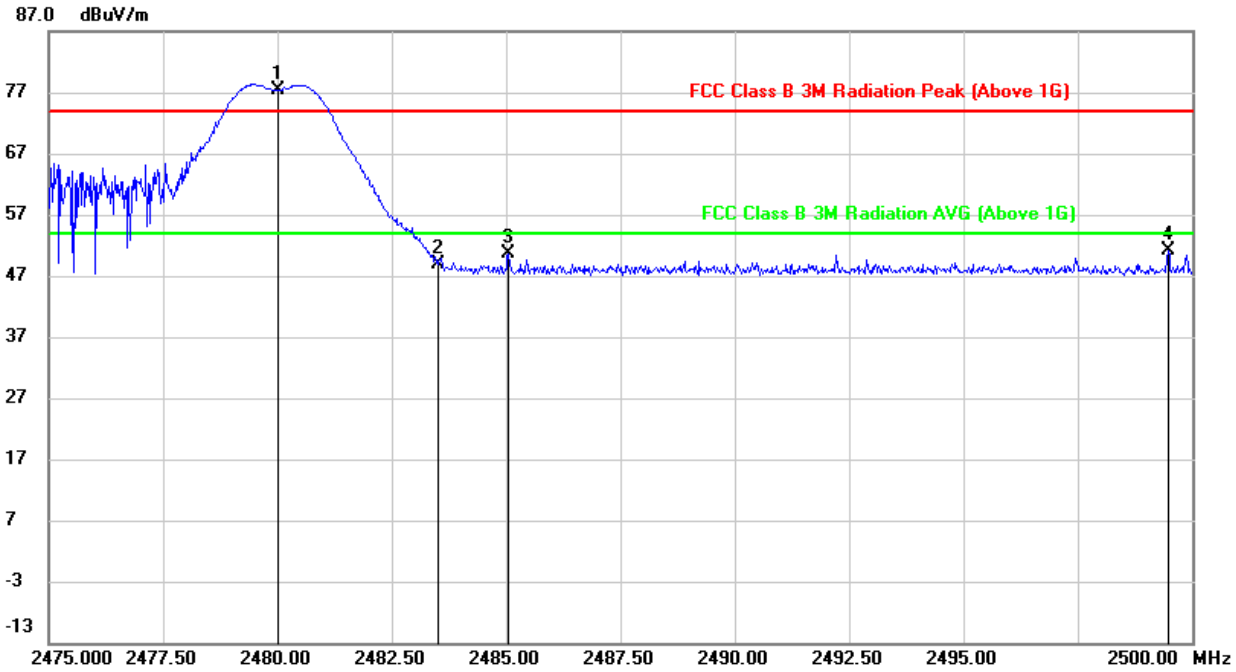
EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	High Chanel - Antenna 1		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2480.000	49.56	32.79	82.35			peak
2	2483.500	19.41	32.78	52.19	74.00	-21.81	peak
3	2488.575	16.87	32.78	49.65	74.00	-24.35	peak

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

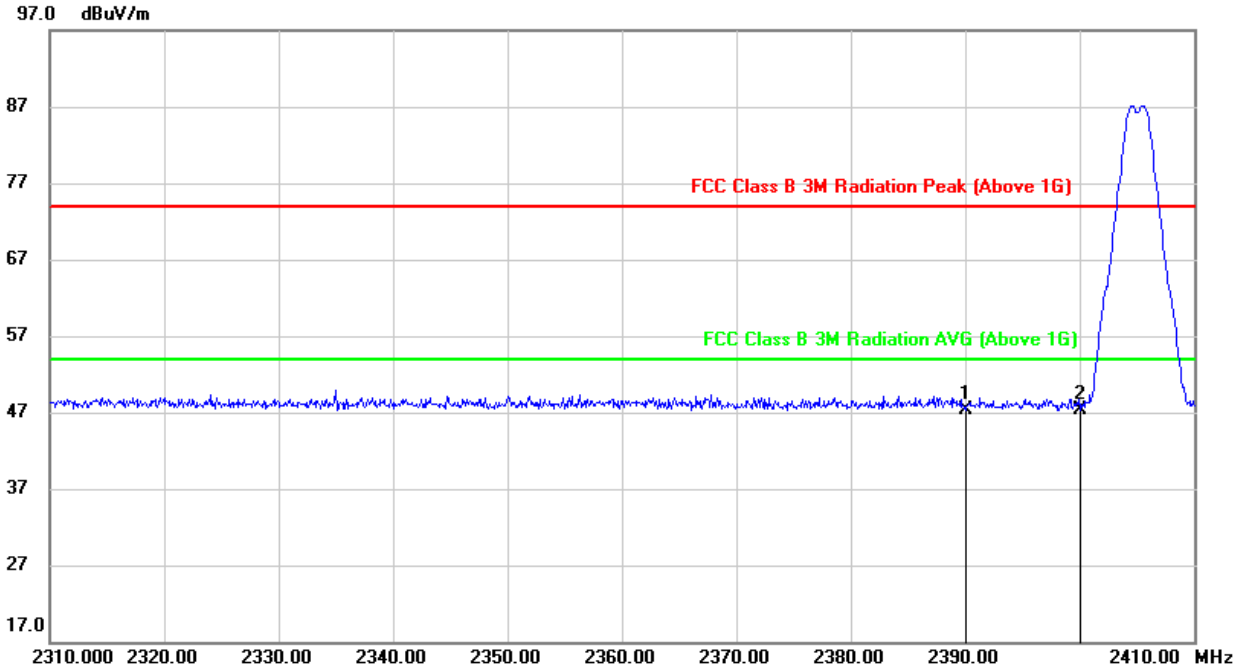
EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	High Chanel - Antenna 1		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	44.37	32.89	77.26			peak
2	2483.500	16.06	32.88	48.94	74.00	-25.06	peak
3	2485.050	17.71	32.88	50.59	74.00	-23.41	peak
4	2499.475	18.31	32.87	51.18	74.00	-22.82	peak

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

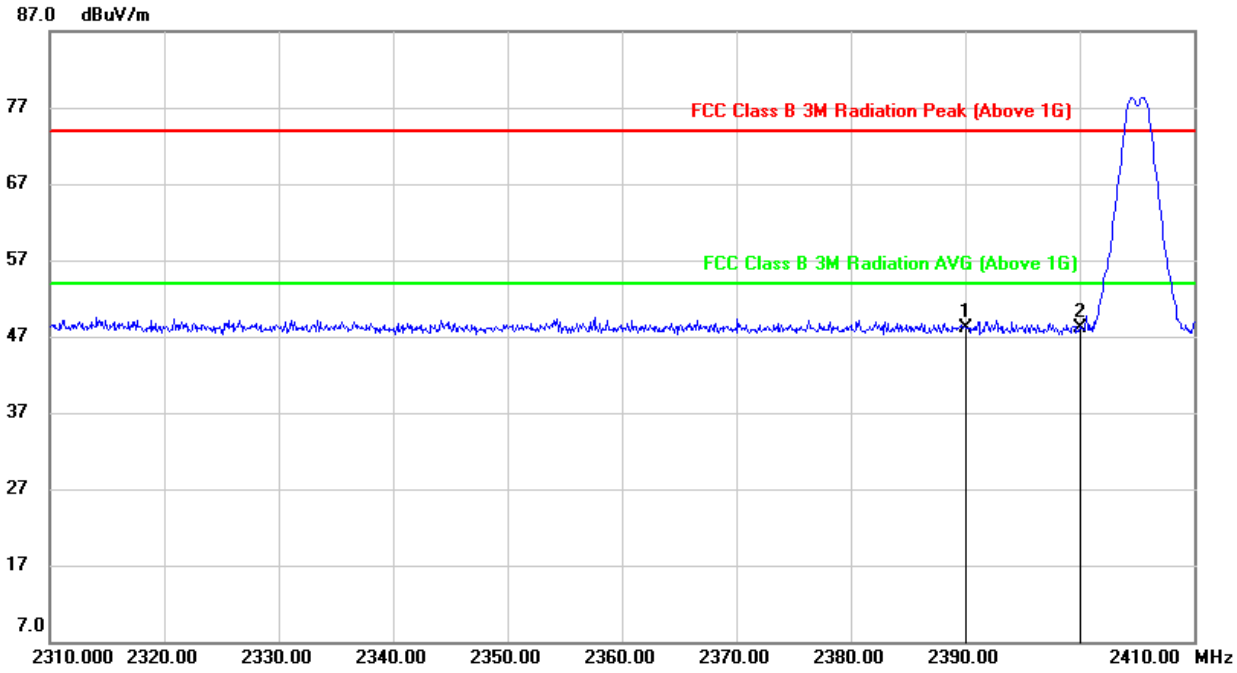
EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	Low Chanel - Antenna 2		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	14.24	33.14	47.38	74.00	-26.62	peak
2	2400.000	14.25	33.07	47.32	74.00	-26.68	peak

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

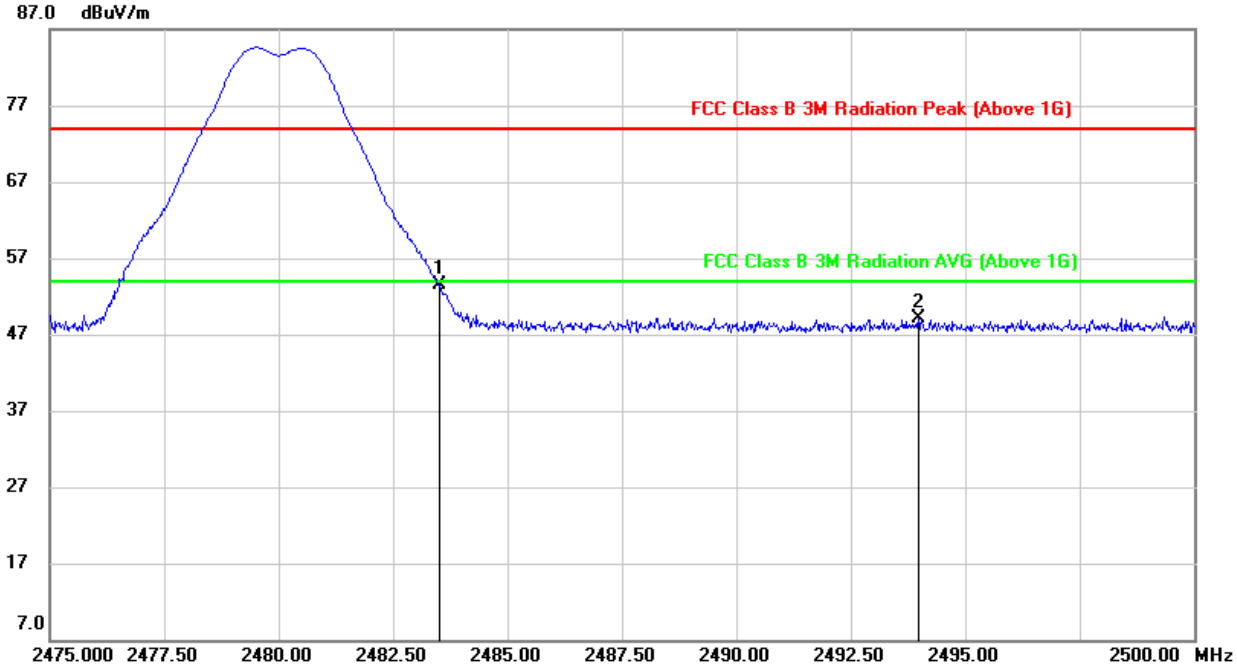
EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	Low Chanel - Antenna 2		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2390.000	14.92	33.24	48.16	74.00	-25.84	peak
2	2400.000	14.90	33.17	48.07	74.00	-25.93	peak

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

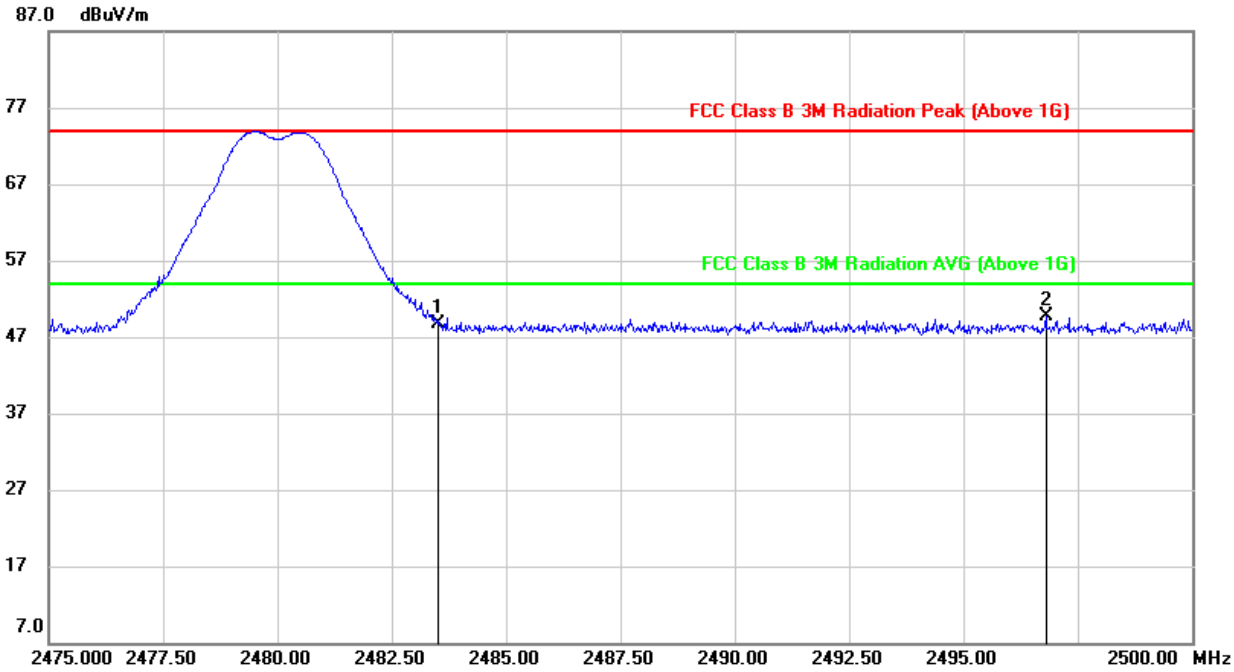
EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	High Chanel - Antenna 2		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	20.77	32.78	53.55	74.00	-20.45	peak
2	2493.975	16.40	32.77	49.17	74.00	-24.83	peak

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	High Chanel - Antenna 2		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	15.74	32.88	48.62	74.00	-25.38	peak
2	2496.800	16.81	32.88	49.69	74.00	-24.31	peak

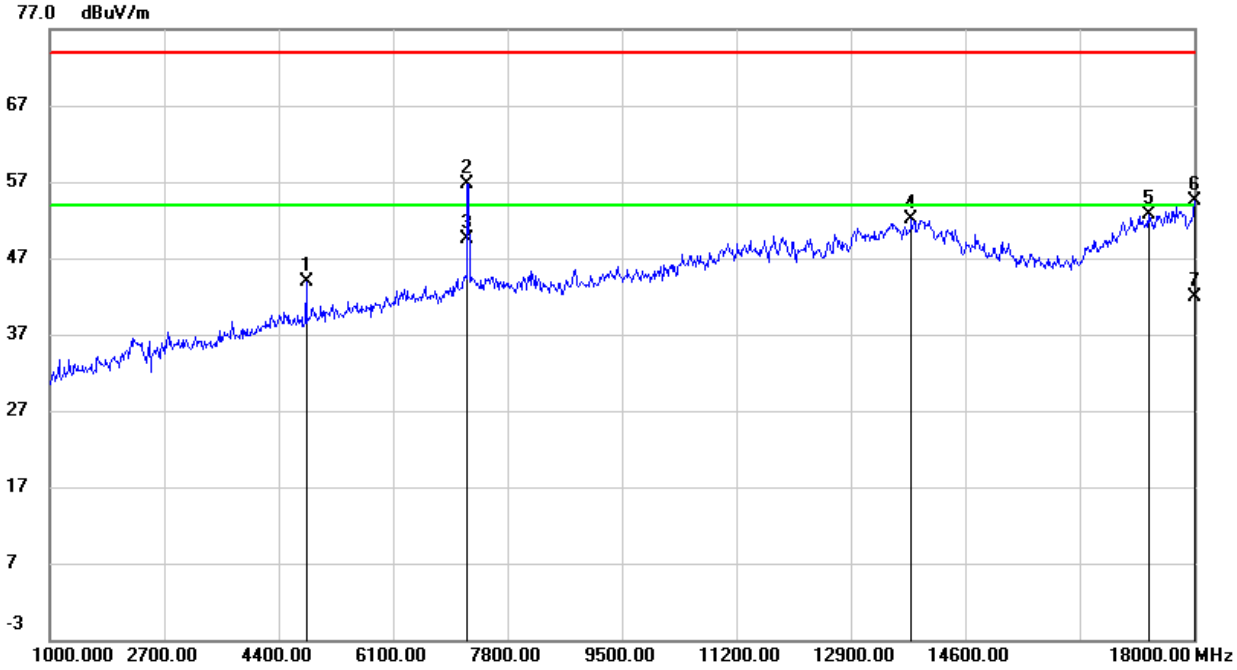
Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

Note: EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

7.3. SPURIOUS EMISSIONS (1GHz~18GHz)

HARMONICS AND SPURIOUS EMISSIONS

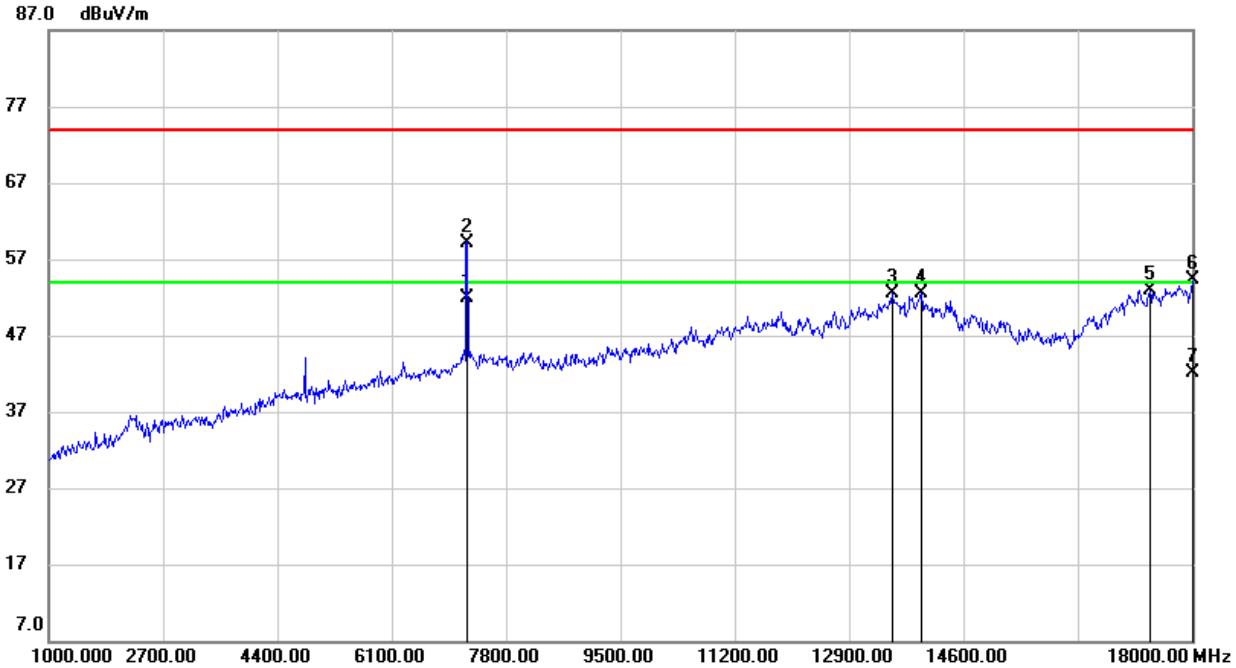
EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	Low Chanel - Antenna 1		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4808.000	45.69	-1.73	43.96	74.00	-30.04	peak
2	7205.000	50.98	5.82	56.80	74.00	-17.20	peak
3	7213.972	43.75	5.85	49.60	54.00	-4.40	AVG
4	13801.000	33.04	18.99	52.03	74.00	-21.97	peak
5	17320.000	30.81	21.82	52.63	74.00	-21.37	peak
6	18000.000	27.95	26.65	54.60	74.00	-19.40	peak
7	18000.000	15.33	26.65	41.98	54.00	-12.02	AVG

Note: 1. Result = Reading + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. For average power measurement, set the VBW to Minimum VBW=10 Hz (For more information, please refer to clause 7.1.ON TIME AND DUTY CYCLE).

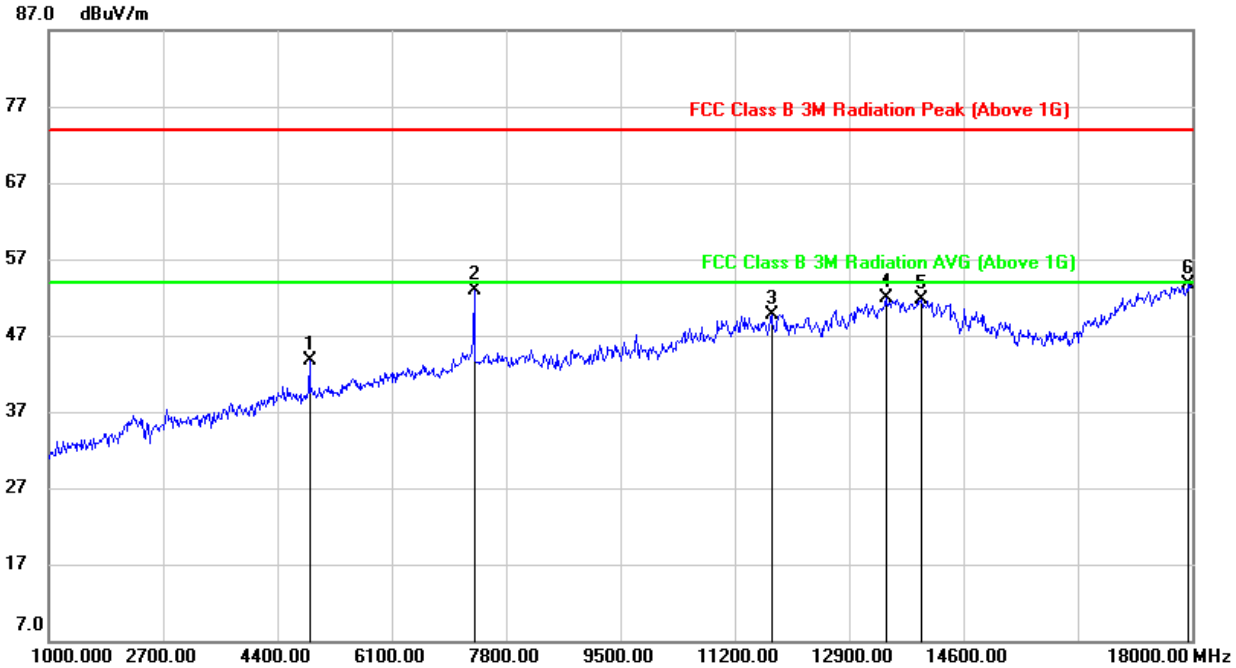
EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	Low Chanel - Antenna 1		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7213.949	45.95	5.89	51.84	54.00	-2.16	AVG
2	7222.000	53.32	5.88	59.20	74.00	-14.80	peak
3	13546.000	33.14	19.38	52.52	74.00	-21.48	peak
4	13971.000	33.52	19.03	52.55	74.00	-21.45	peak
5	17371.000	30.39	22.47	52.86	74.00	-21.14	peak
6	18000.000	28.05	26.25	54.30	74.00	-19.70	peak
7	18000.000	15.87	26.25	42.12	54.00	-11.88	AVG

Note: 1. Result = Reading + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. For average power measurement, set the VBW to Minimum VBW=10 Hz (For more information, please refer to clause 7.1.ON TIME AND DUTY CYCLE).

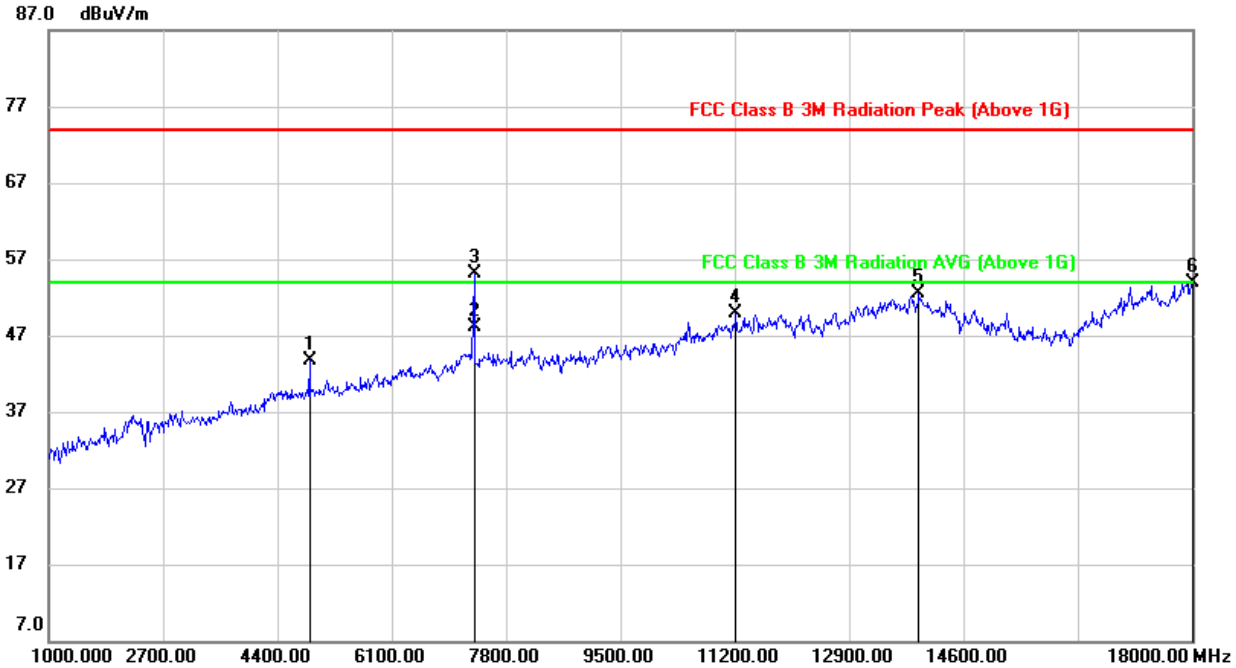
EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	Middle Chanel - Antenna 1		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4876.000	44.67	-0.93	43.74	74.00	-30.26	peak
2	7324.000	47.09	5.72	52.81	74.00	-21.19	peak
3	11744.000	34.86	14.89	49.75	74.00	-24.25	peak
4	13444.000	33.31	18.56	51.87	74.00	-22.13	peak
5	13971.000	32.85	18.93	51.78	74.00	-22.22	peak
6	17932.000	27.47	26.28	53.75	74.00	-20.25	peak

Note: 1. Result = Reading + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

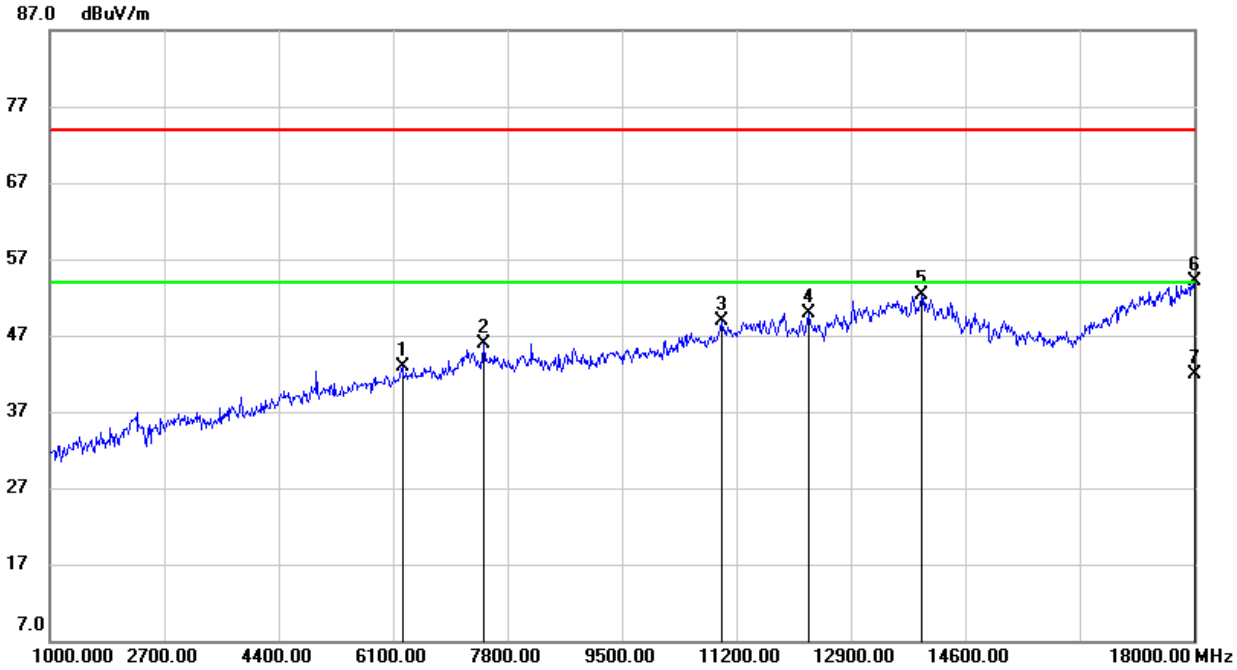
EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	Middle Chanel - Antenna 1		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	4876.000	44.60	-0.98	43.62	74.00	-30.38	peak
2	7318.985	42.22	5.82	48.04	54.00	-5.96	AVG
3	7324.000	49.34	5.77	55.11	74.00	-18.89	peak
4	11217.000	36.18	13.76	49.94	74.00	-24.06	peak
5	13937.000	33.39	19.10	52.49	74.00	-21.51	peak
6	18000.000	27.60	26.25	53.85	74.00	-20.15	peak

Note: 1. Result = Reading + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. For average power measurement, set the VBW to Minimum VBW=10 Hz (For more information, please refer to clause 7.1.ON TIME AND DUTY CYCLE).

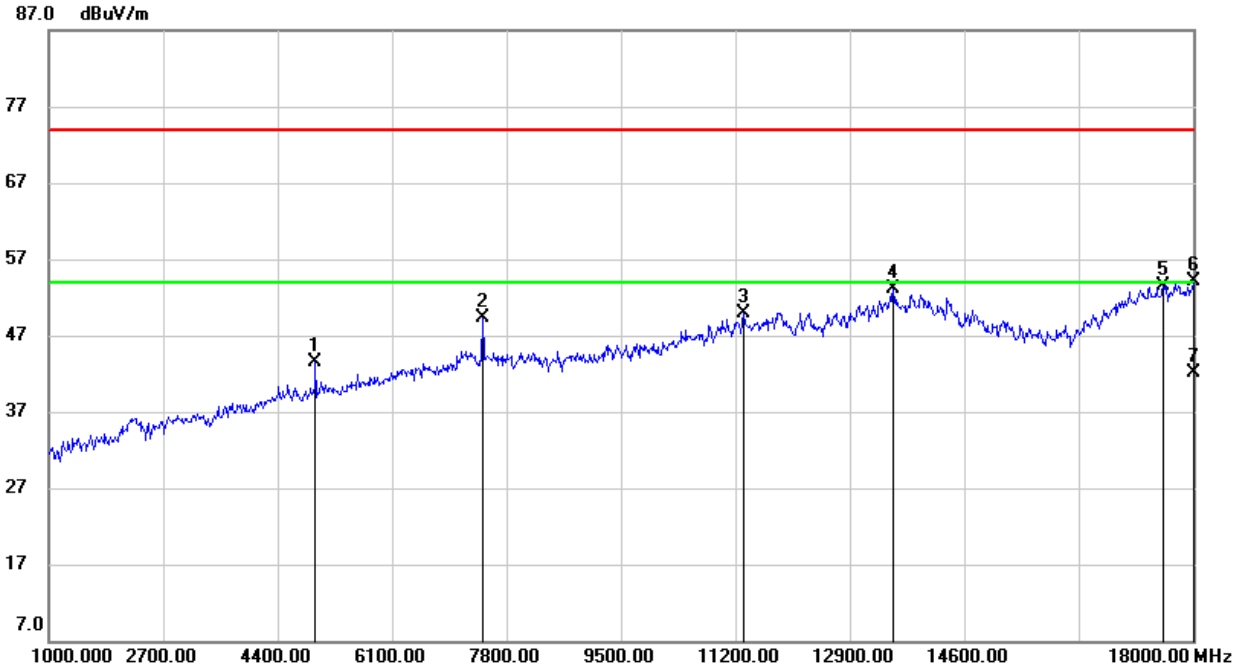
EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	High Chanel - Antenna 1		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	6236.000	40.07	2.82	42.89	74.00	-31.11	peak
2	7443.000	40.14	5.69	45.83	74.00	-28.17	peak
3	10979.000	35.96	12.89	48.85	74.00	-25.15	peak
4	12271.000	35.24	14.75	49.99	74.00	-24.01	peak
5	13954.000	33.27	18.96	52.23	74.00	-21.77	peak
6	18000.000	27.42	26.65	54.07	74.00	-19.93	peak
7	18000.000	15.28	26.65	41.93	54.00	-12.07	AVG

Note: 1. Result = Reading + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. For average power measurement, set the VBW to Minimum VBW=10 Hz (For more information, please refer to clause 7.1.ON TIME AND DUTY CYCLE).

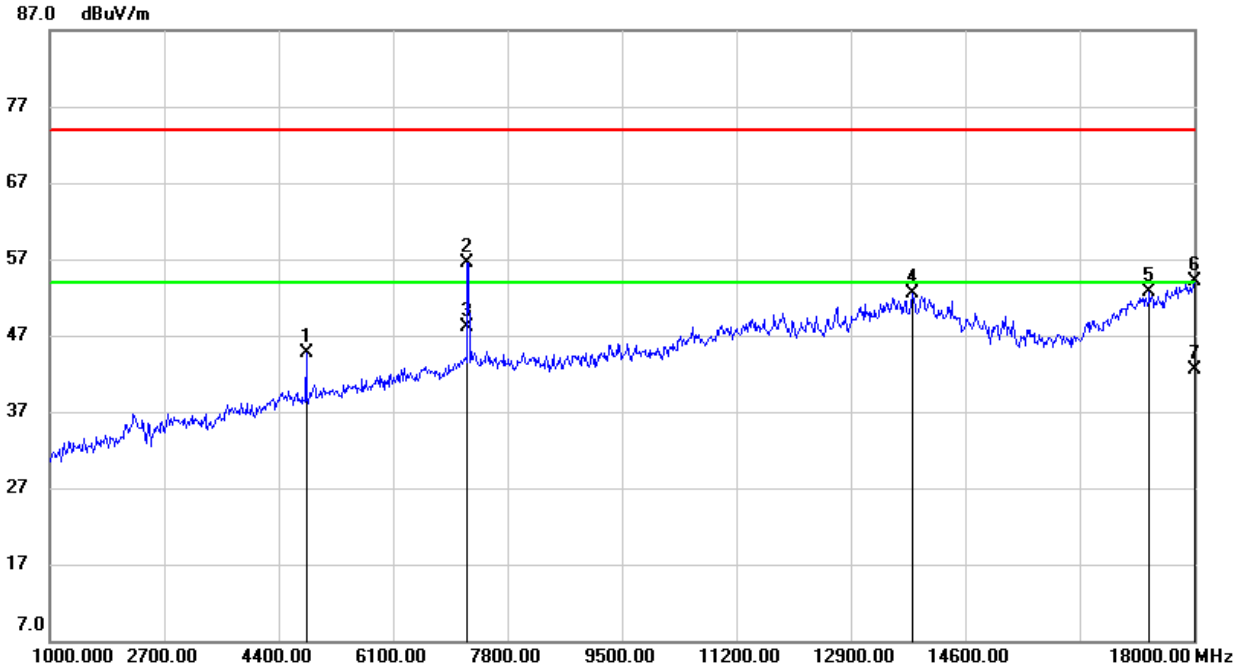
EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	High Chanel - Antenna 1		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4961.000	44.36	-0.76	43.60	74.00	-30.40	peak
2	7443.000	43.61	5.78	49.39	74.00	-24.61	peak
3	11319.000	36.27	13.65	49.92	74.00	-24.08	peak
4	13546.000	33.66	19.38	53.04	74.00	-20.96	peak
5	17558.000	29.97	23.56	53.53	74.00	-20.47	peak
6	18000.000	27.91	26.25	54.16	74.00	-19.84	peak
7	18000.000	15.76	26.25	42.01	54.00	-11.99	AVG

Note: 1. Result = Reading + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

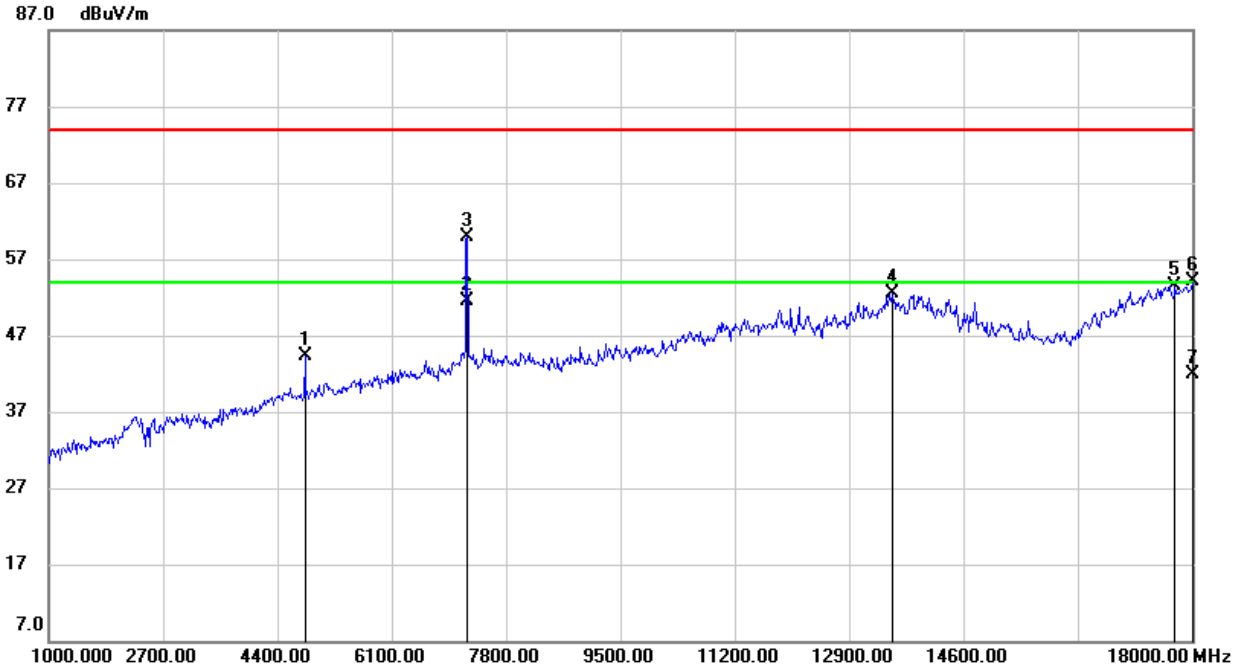
EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	Low Chanel - Antenna 2		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	4808.000	46.39	-1.73	44.66	74.00	-29.34	peak
2	7205.000	50.70	5.82	56.52	74.00	-17.48	peak
3	7214.011	42.34	5.85	48.19	54.00	-5.81	AVG
4	13818.000	33.46	19.01	52.47	74.00	-21.53	peak
5	17337.000	30.77	21.91	52.68	74.00	-21.32	peak
6	18000.000	27.39	26.65	54.04	74.00	-19.96	peak
7	18000.000	15.94	26.65	42.59	54.00	-11.41	AVG

Note: 1. Result = Reading + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. For average power measurement, set the VBW to Minimum VBW=10 Hz (For more information, please refer to clause 7.1.ON TIME AND DUTY CYCLE).

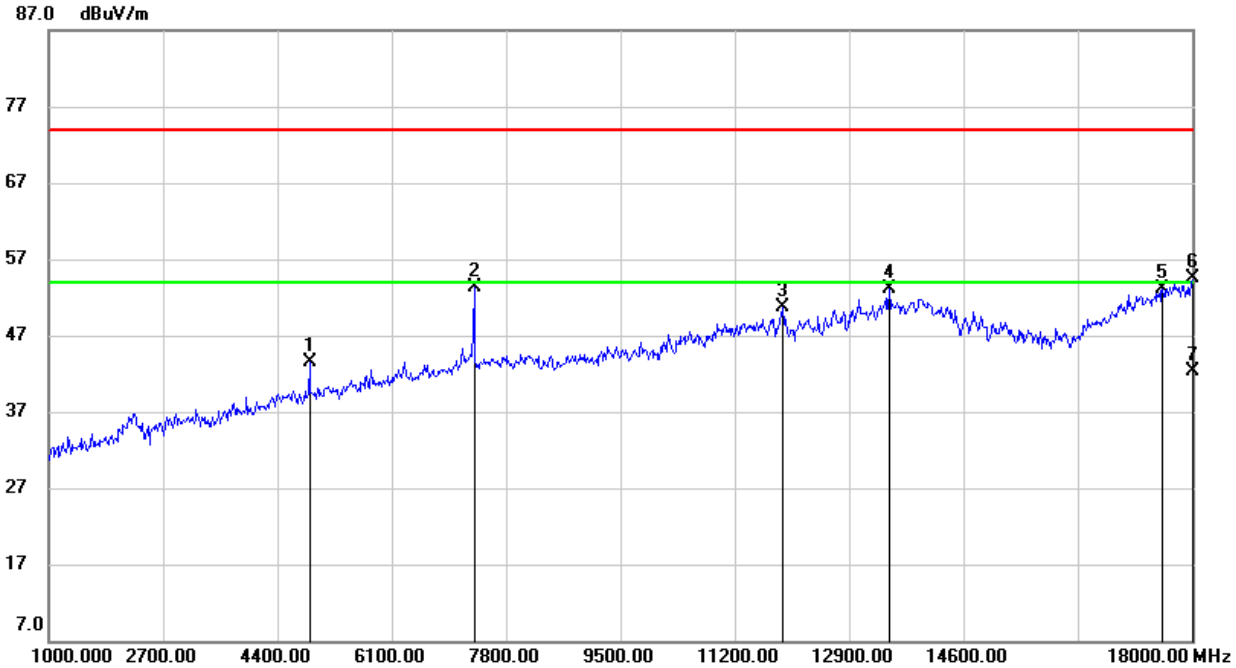
EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	Low Chanel - Antenna 2		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4808.000	45.96	-1.64	44.32	74.00	-29.68	peak
2	7214.028	45.71	5.89	51.60	54.00	-2.40	AVG
3	7222.000	53.96	5.88	59.84	74.00	-14.16	peak
4	13546.000	33.13	19.38	52.51	74.00	-21.49	peak
5	17745.000	28.01	25.51	53.52	74.00	-20.48	peak
6	18000.000	27.78	26.25	54.03	74.00	-19.97	peak
7	18000.000	15.70	26.25	41.95	54.00	-12.05	AVG

Note: 1. Result = Reading + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. For average power measurement, set the VBW to Minimum VBW=10 Hz (For more information, please refer to clause 7.1.ON TIME AND DUTY CYCLE).

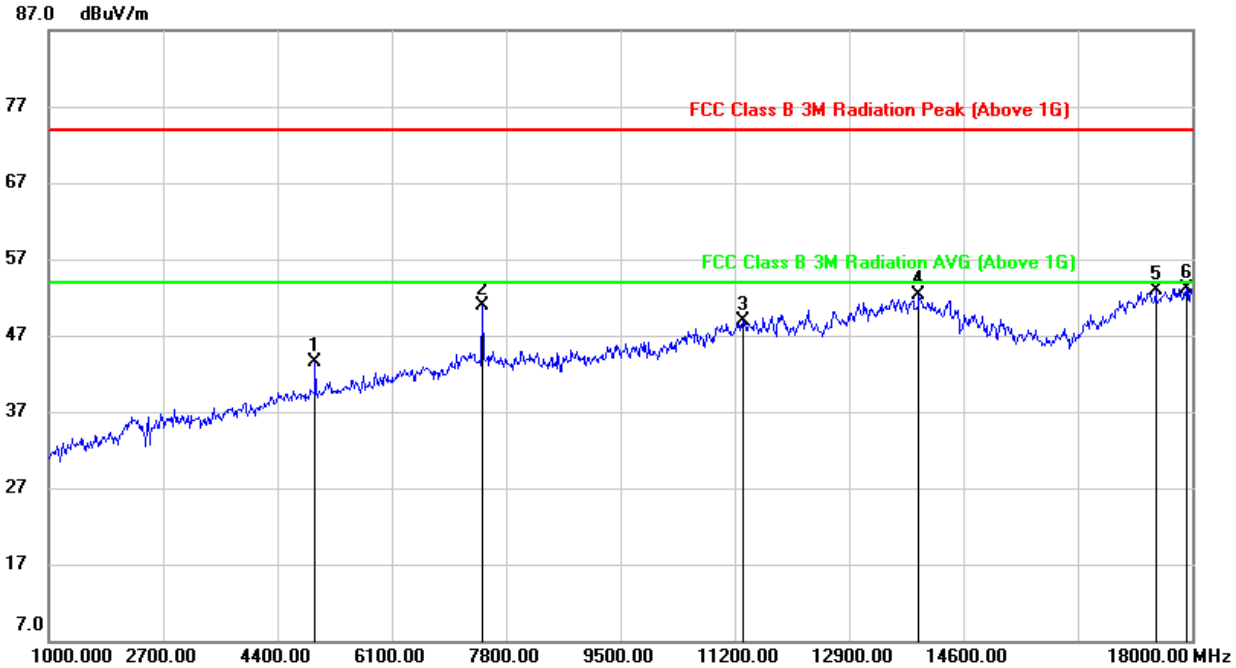
EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	Middle Chanel - Antenna 2		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4876.000	44.48	-0.93	43.55	74.00	-30.45	peak
2	7324.000	47.52	5.72	53.24	74.00	-20.76	peak
3	11914.000	35.26	15.37	50.63	74.00	-23.37	peak
4	13495.000	34.51	18.59	53.10	74.00	-20.90	peak
5	17558.000	29.59	23.53	53.12	74.00	-20.88	peak
6	18000.000	27.85	26.65	54.50	74.00	-19.50	peak
7	18000.000	15.67	26.65	42.32	54.00	-11.68	AVG

Note: 1. Result = Reading + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. For average power measurement, set the VBW to Minimum VBW=10 Hz (For more information, please refer to clause 7.1.ON TIME AND DUTY CYCLE).

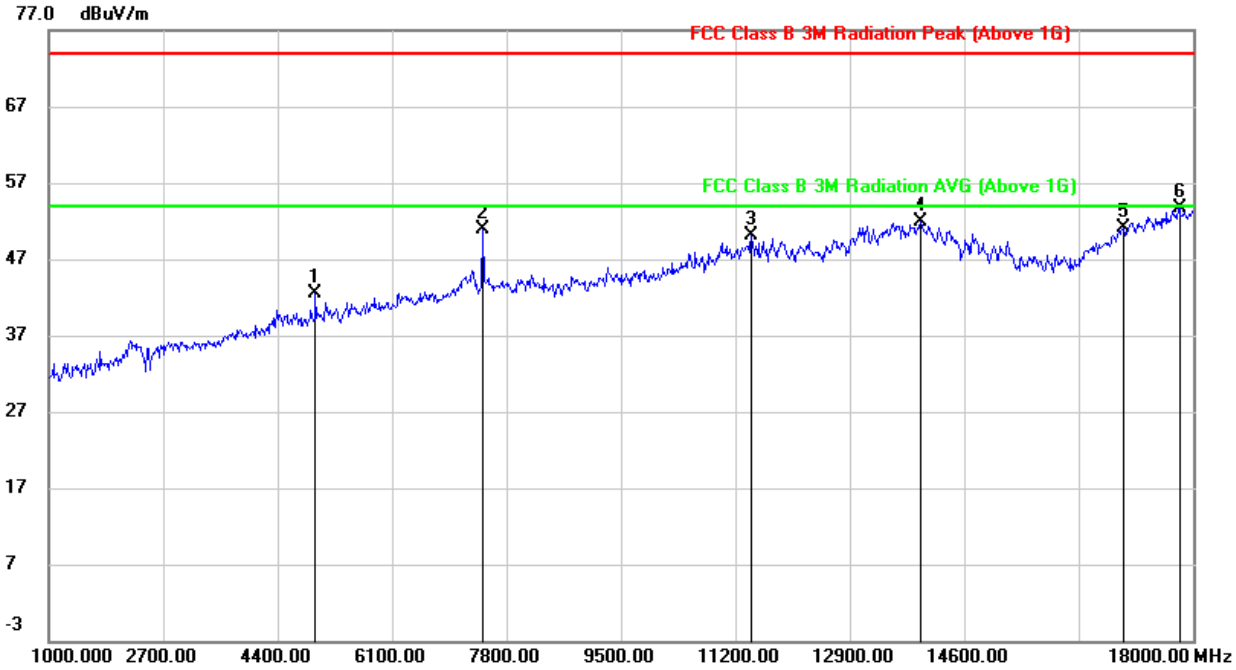
EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	Middle Chanel - Antenna 2		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	4961.000	44.34	-0.78	43.56	74.00	-30.44	peak
2	7443.000	45.14	5.69	50.83	74.00	-23.17	peak
3	11319.000	35.08	13.73	48.81	74.00	-25.19	peak
4	13937.000	33.37	18.97	52.34	74.00	-21.66	peak
5	17456.000	30.46	22.49	52.95	74.00	-21.05	peak
6	17915.000	27.21	25.98	53.19	74.00	-20.81	peak

Note: 1. Result = Reading + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

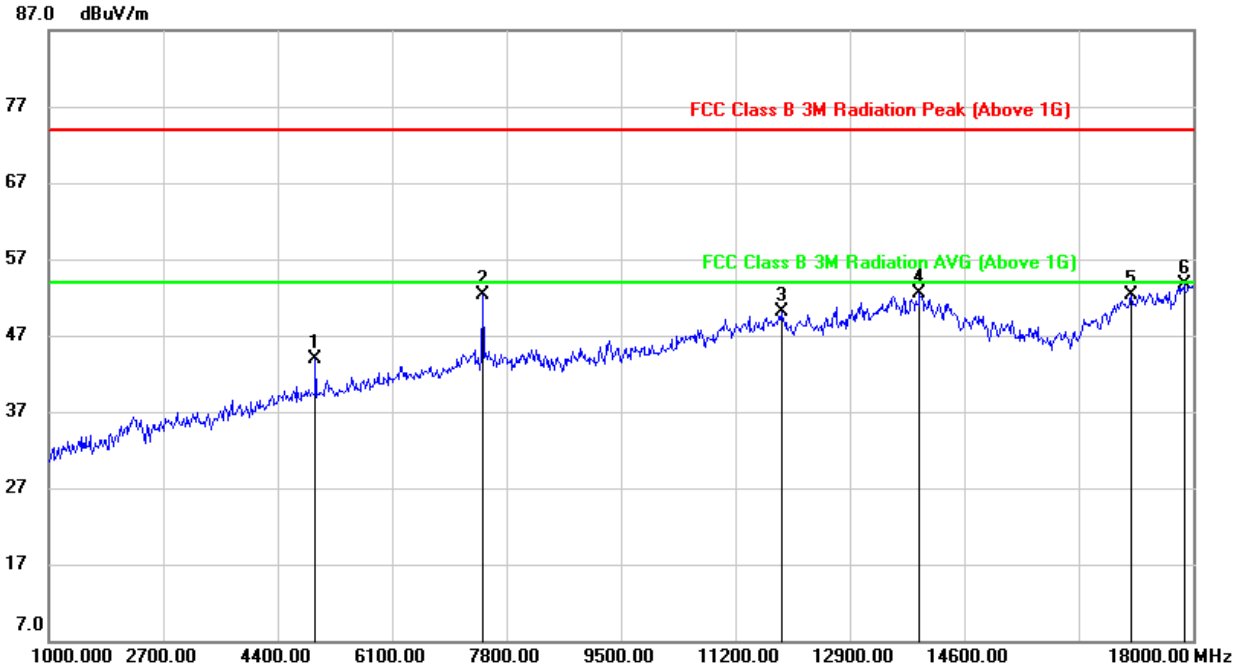
EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	High Chanel - Antenna 2		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4961.000	43.34	-0.78	42.56	74.00	-31.44	peak
2	7443.000	45.25	5.69	50.94	74.00	-23.06	peak
3	11438.000	35.90	14.11	50.01	74.00	-23.99	peak
4	13954.000	33.02	18.96	51.98	74.00	-22.02	peak
5	16963.000	30.82	20.28	51.10	74.00	-22.90	peak
6	17796.000	27.95	25.84	53.79	74.00	-20.21	peak

Note: 1. Result = Reading + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	High Chanel - Antenna 2		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4961.000	44.61	-0.76	43.85	74.00	-30.15	peak
2	7443.000	46.48	5.78	52.26	74.00	-21.74	peak
3	11880.000	35.12	15.08	50.20	74.00	-23.80	peak
4	13937.000	33.35	19.10	52.45	74.00	-21.55	peak
5	17082.000	30.69	21.57	52.26	74.00	-21.74	peak
6	17864.000	28.01	25.69	53.70	74.00	-20.30	peak

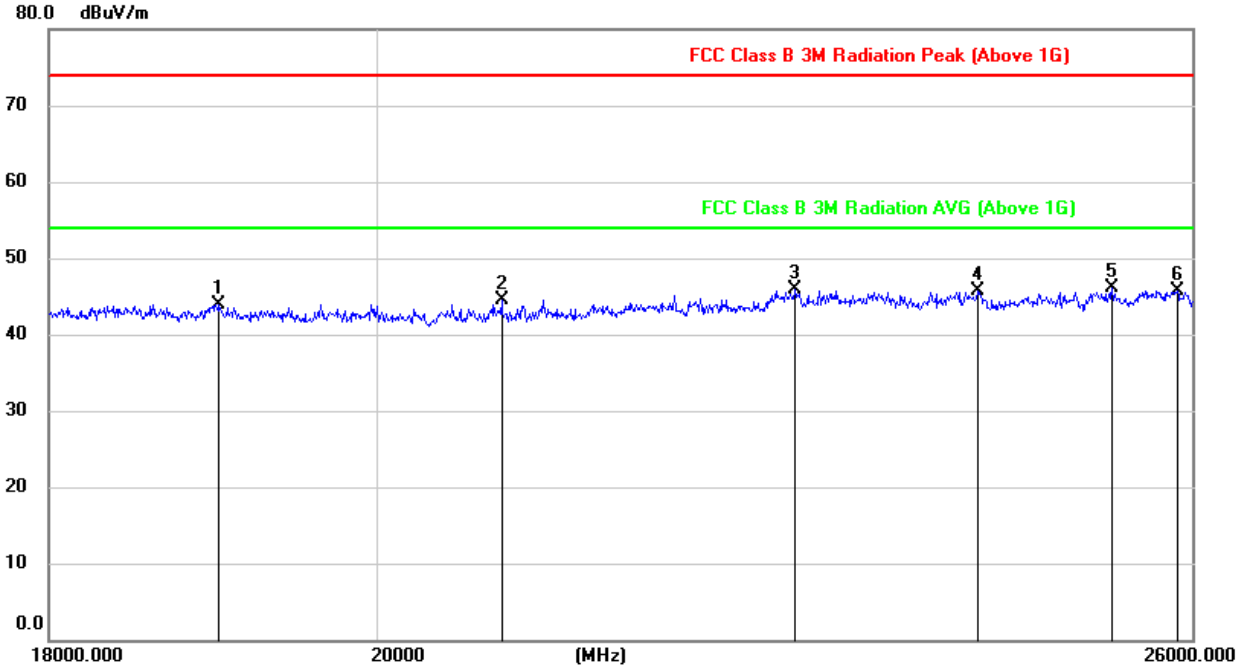
Note: 1. Result = Reading + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

Note: EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

7.4. SPURIOUS EMISSIONS 18G ~ 26GHz

SPURIOUS EMISSIONS 18GHz TO 26GHz (WORST-CASE CONFIGURATION)

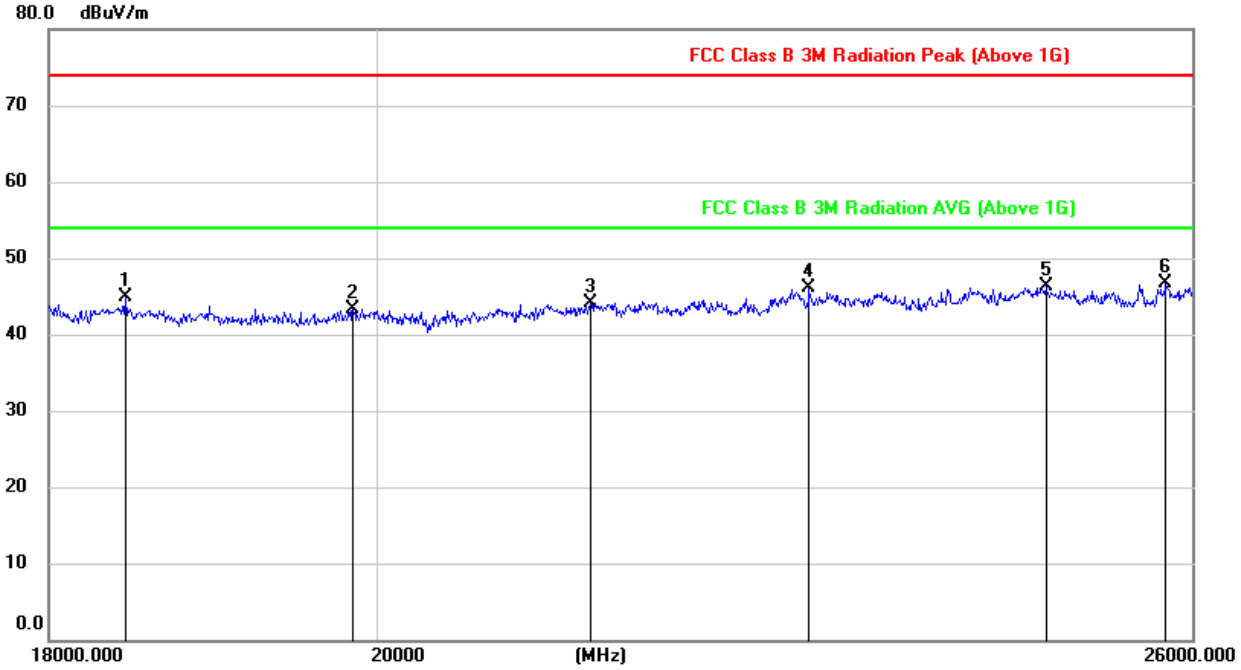
EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	Middle Channel - Antenna 1		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	19013.757	49.12	-5.23	43.89	74.00	-30.11	peak
2	20821.597	49.47	-5.04	44.43	74.00	-29.57	peak
3	22885.329	49.42	-3.55	45.87	74.00	-28.13	peak
4	24263.284	48.61	-2.81	45.80	74.00	-28.20	peak
5	25339.281	47.77	-1.70	46.07	74.00	-27.93	peak
6	25876.006	46.52	-0.84	45.68	74.00	-28.32	peak

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

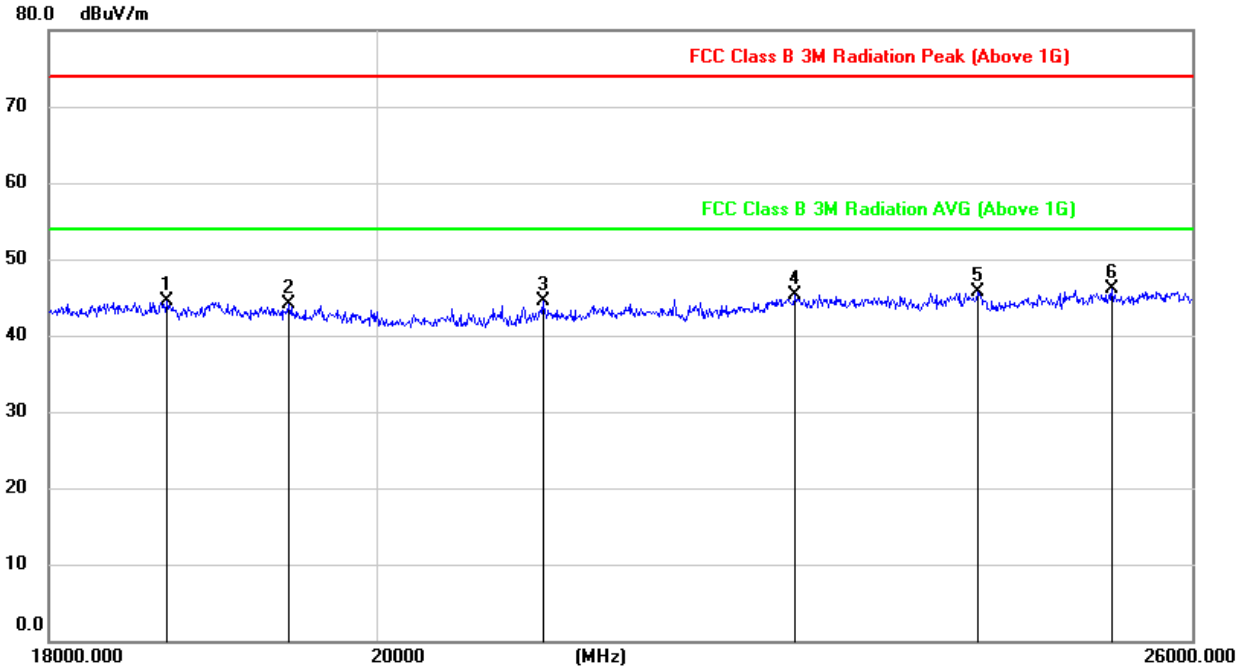
EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	Middle Channel - Antenna 1		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18448.984	50.27	-5.32	44.95	74.00	-29.05	peak
2	19849.654	48.59	-5.33	43.26	74.00	-30.74	peak
3	21427.461	48.86	-4.71	44.15	74.00	-29.85	peak
4	22986.538	49.62	-3.45	46.17	74.00	-27.83	peak
5	24804.566	48.55	-2.27	46.28	74.00	-27.72	peak
6	25781.028	47.35	-0.66	46.69	74.00	-27.31	peak

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

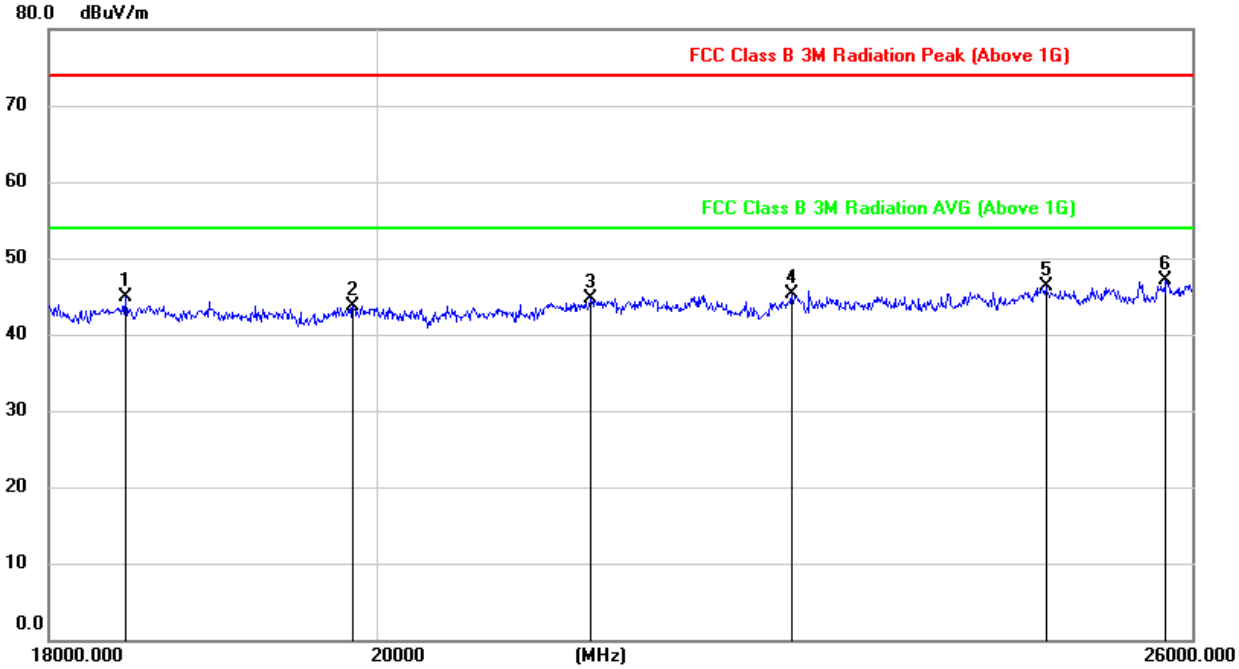
EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	Middle Channel - Antenna 2		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18694.837	49.83	-5.38	44.45	74.00	-29.55	peak
2	19445.078	49.59	-5.56	44.03	74.00	-29.97	peak
3	21099.068	49.32	-4.83	44.49	74.00	-29.51	peak
4	22885.329	48.92	-3.55	45.37	74.00	-28.63	peak
5	24263.284	48.61	-2.81	45.80	74.00	-28.20	peak
6	25339.281	47.77	-1.70	46.07	74.00	-27.93	peak

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	Middle Channel - Antenna 2		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	18448.984	50.27	-5.32	44.95	74.00	-29.05	peak
2	19849.654	49.09	-5.33	43.76	74.00	-30.24	peak
3	21427.461	49.36	-4.71	44.65	74.00	-29.35	peak
4	22860.096	48.90	-3.58	45.32	74.00	-28.68	peak
5	24804.566	48.55	-2.27	46.28	74.00	-27.72	peak
6	25781.028	47.85	-0.66	47.19	74.00	-26.81	peak

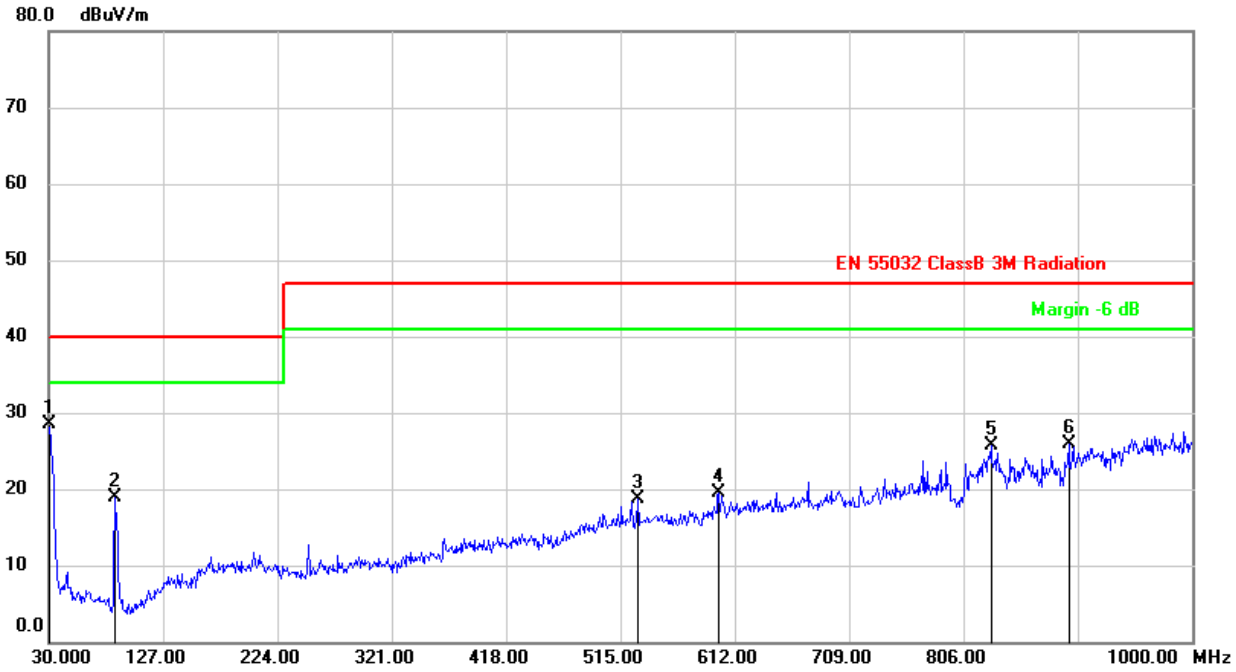
Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

Note: EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

7.5. SPURIOUS EMISSIONS 30M ~ 1GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)

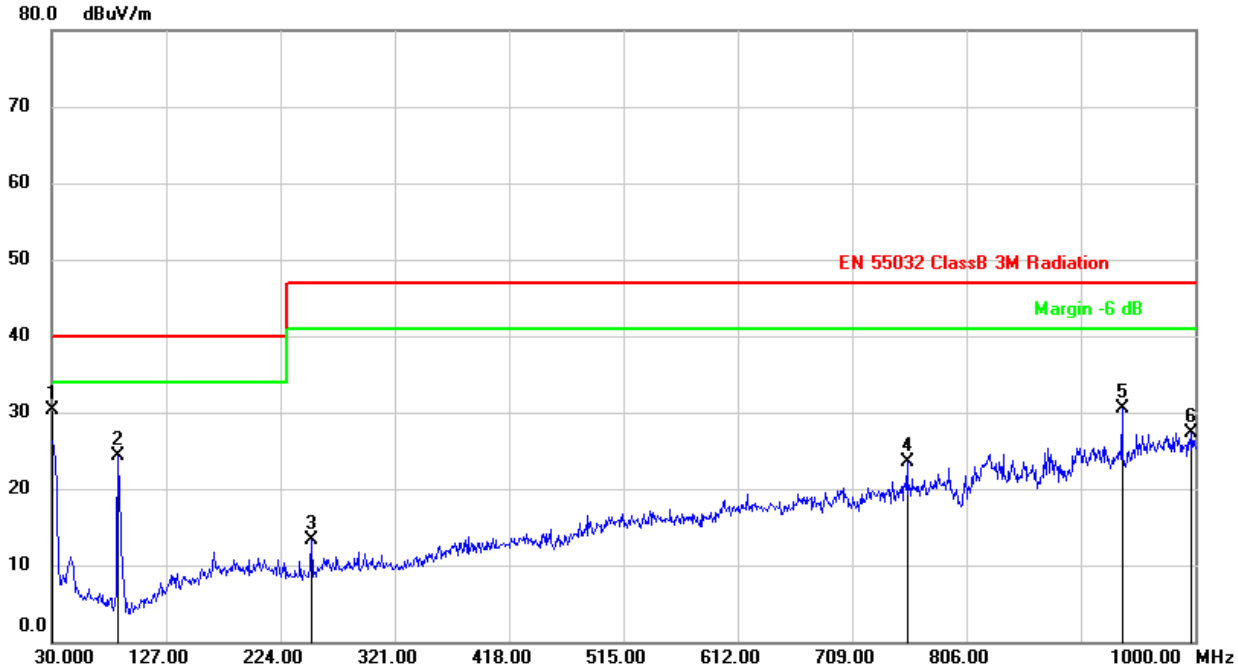
EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	Middle Channel - Antenna 1		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.0000	42.82	-14.33	28.49	40.00	-11.51	QP
2	86.2600	37.14	-18.15	18.99	40.00	-21.01	QP
3	529.5500	26.18	-7.56	18.62	47.00	-28.38	QP
4	598.4200	25.68	-6.08	19.60	47.00	-27.40	QP
5	829.2800	0.59	25.12	25.71	47.00	-21.29	QP
6	895.2400	1.13	24.75	25.88	47.00	-21.12	QP

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
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.

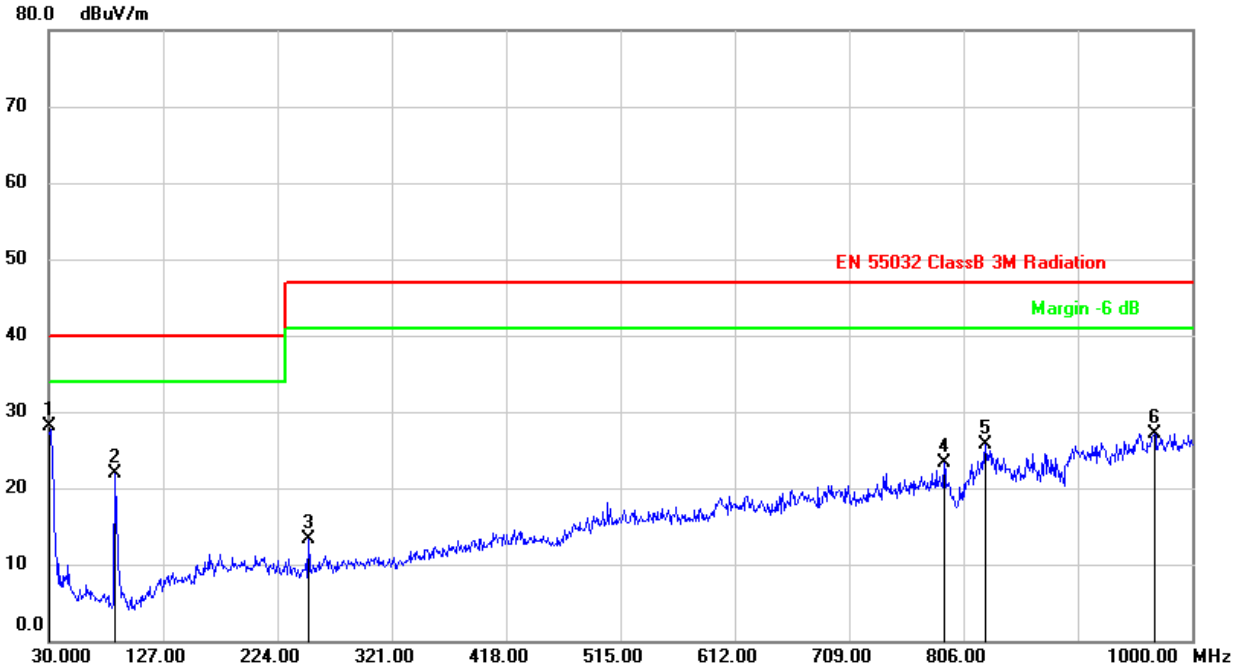
EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	Middle Channel - Antenna 1		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.0000	44.66	-14.33	30.33	40.00	-9.67	QP
2	86.2600	42.38	-18.15	24.23	40.00	-15.77	QP
3	250.1900	26.52	-13.31	13.21	47.00	-33.79	QP
4	755.5600	0.25	23.26	23.51	47.00	-23.49	QP
5	937.9200	5.09	25.37	30.46	47.00	-16.54	QP
6	997.0900	0.78	26.46	27.24	47.00	-19.76	QP

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
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.

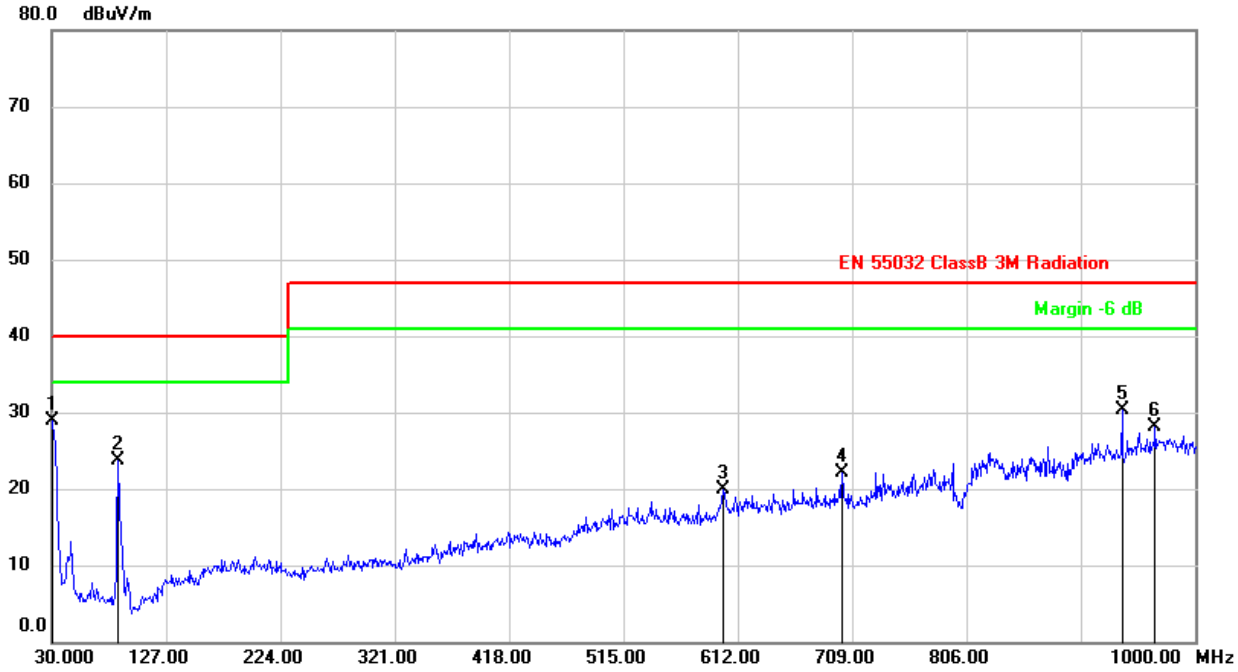
EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	Middle Channel - Antenna 2		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.0000	42.43	-14.33	28.10	40.00	-11.90	QP
2	86.2600	40.09	-18.15	21.94	40.00	-18.06	QP
3	250.1900	26.65	-13.31	13.34	47.00	-33.66	QP
4	789.5100	-0.57	23.80	23.23	47.00	-23.77	QP
5	824.4300	0.72	25.00	25.72	47.00	-21.28	QP
6	967.9900	0.80	26.40	27.20	47.00	-19.80	QP

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
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.

EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	Middle Channel - Antenna 2		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.9700	43.26	-14.44	28.82	40.00	-11.18	QP
2	86.2600	41.93	-18.15	23.78	40.00	-16.22	QP
3	599.3900	25.79	-5.93	19.86	47.00	-27.14	QP
4	700.2700	-0.67	22.82	22.15	47.00	-24.85	QP
5	937.9200	4.90	25.37	30.27	47.00	-16.73	QP
6	966.0500	1.83	26.37	28.20	47.00	-18.80	QP

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
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

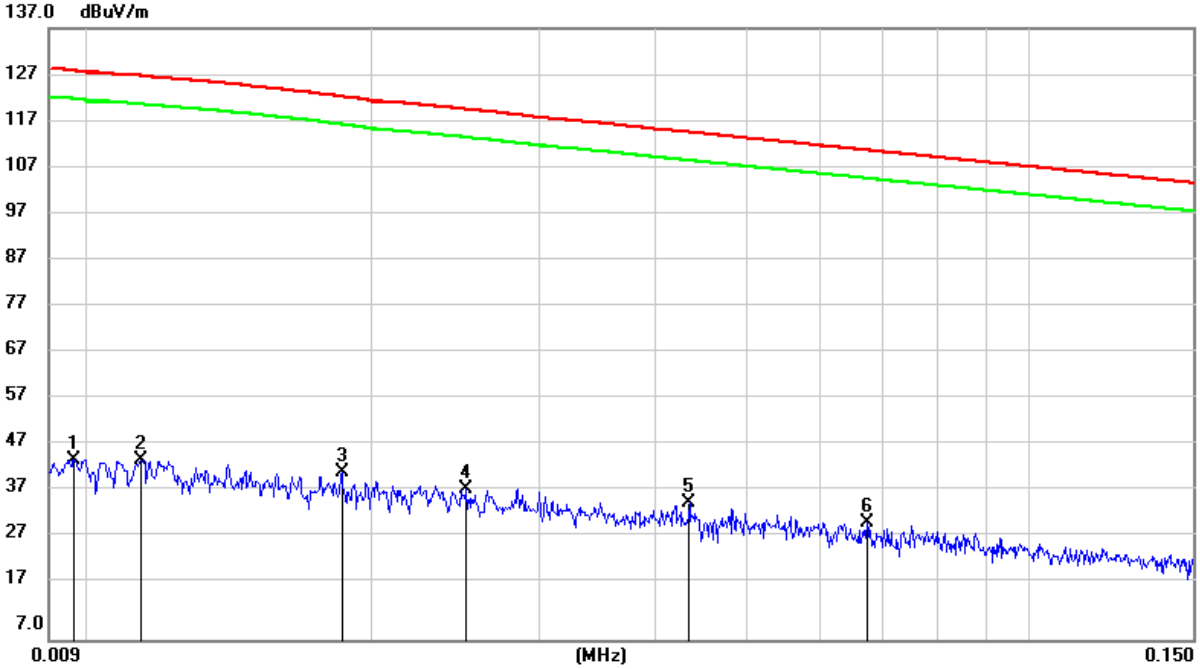
Note 1: All the channels had been tested, but only the worst data recorded in the report.

Note 2: EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

7.6. SPURIOUS EMISSIONS BELOW 30M

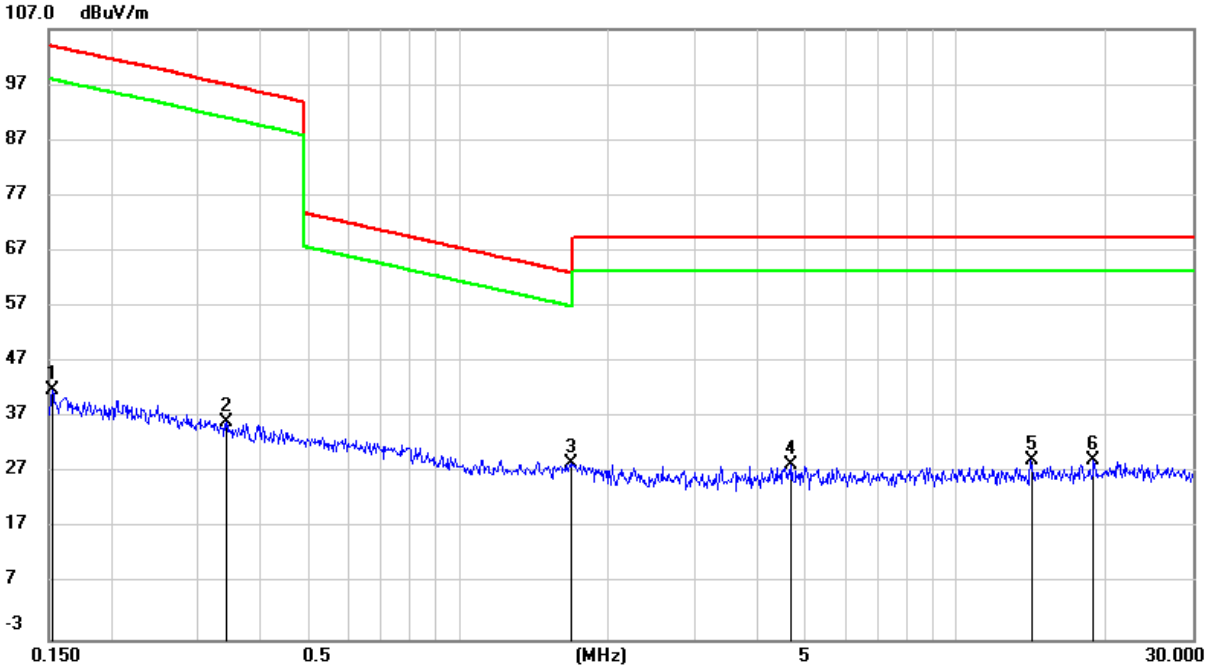
SPURIOUS EMISSIONS Below 30MHz (WORST-CASE CONFIGURATION)

EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	Middle Channel - Antenna 1		



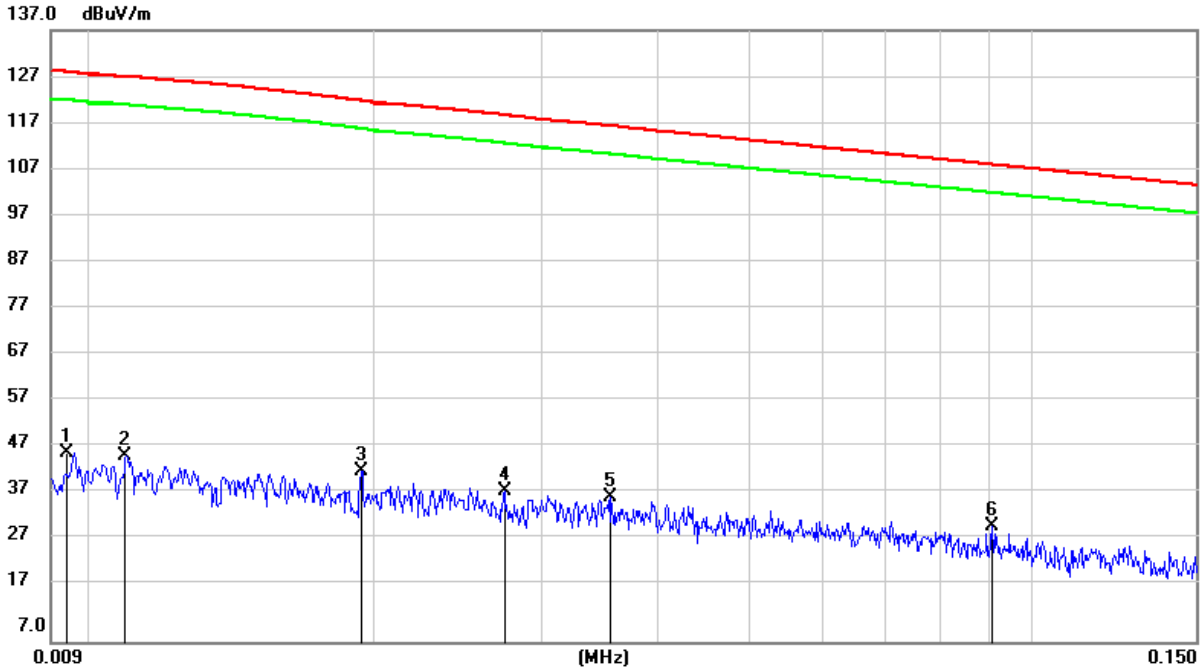
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	0.0095	25.02	20.26	45.28	128.02	-82.74	QP
2	0.0112	25.02	20.22	45.24	126.88	-81.64	QP
3	0.0184	22.38	20.29	42.67	122.54	-79.87	QP
4	0.0251	18.58	20.31	38.89	119.78	-80.89	QP
5	0.0434	15.63	20.31	35.94	114.90	-78.96	QP
6	0.0674	11.71	20.31	32.02	111.05	-79.03	QP

EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	Middle Channel - Antenna 1		



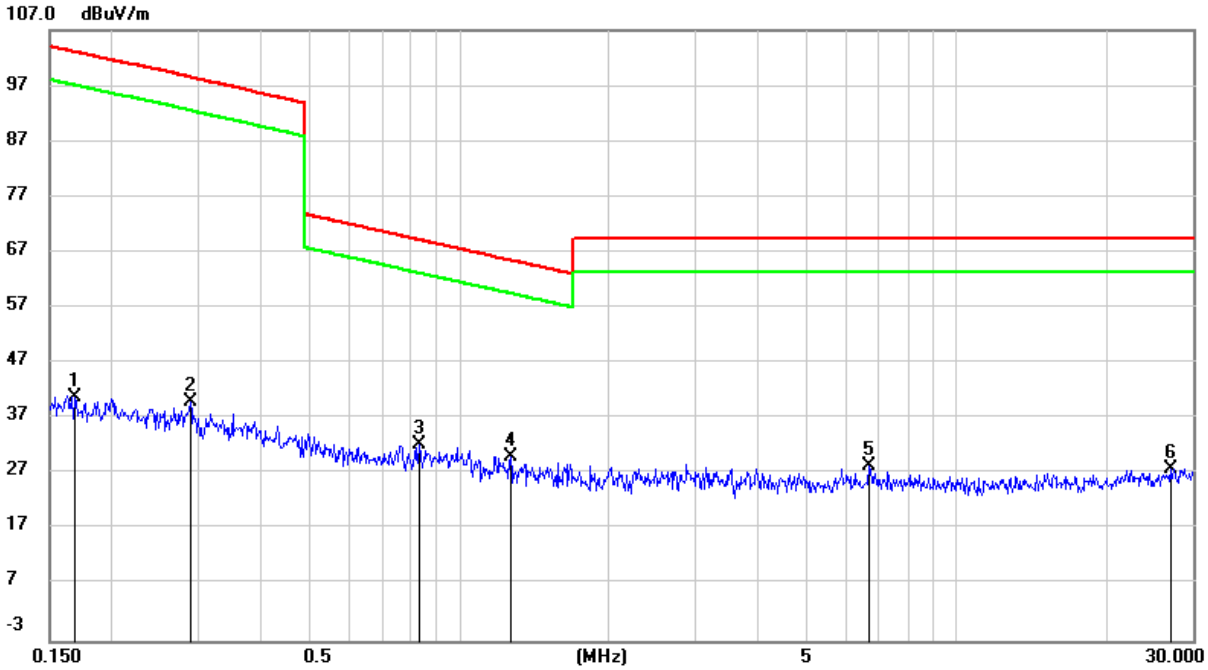
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1524	21.66	20.42	42.08	103.95	-61.87	QP
2	0.3410	15.95	20.29	36.24	97.03	-60.79	QP
3	1.6800	8.07	20.61	28.68	63.10	-34.42	QP
4	4.6714	7.55	20.90	28.45	69.54	-41.09	QP
5	14.2126	8.41	20.95	29.36	69.54	-40.18	QP
6	19.0209	8.35	21.02	29.37	69.54	-40.17	QP

EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	Middle Channel - Antenna 1		



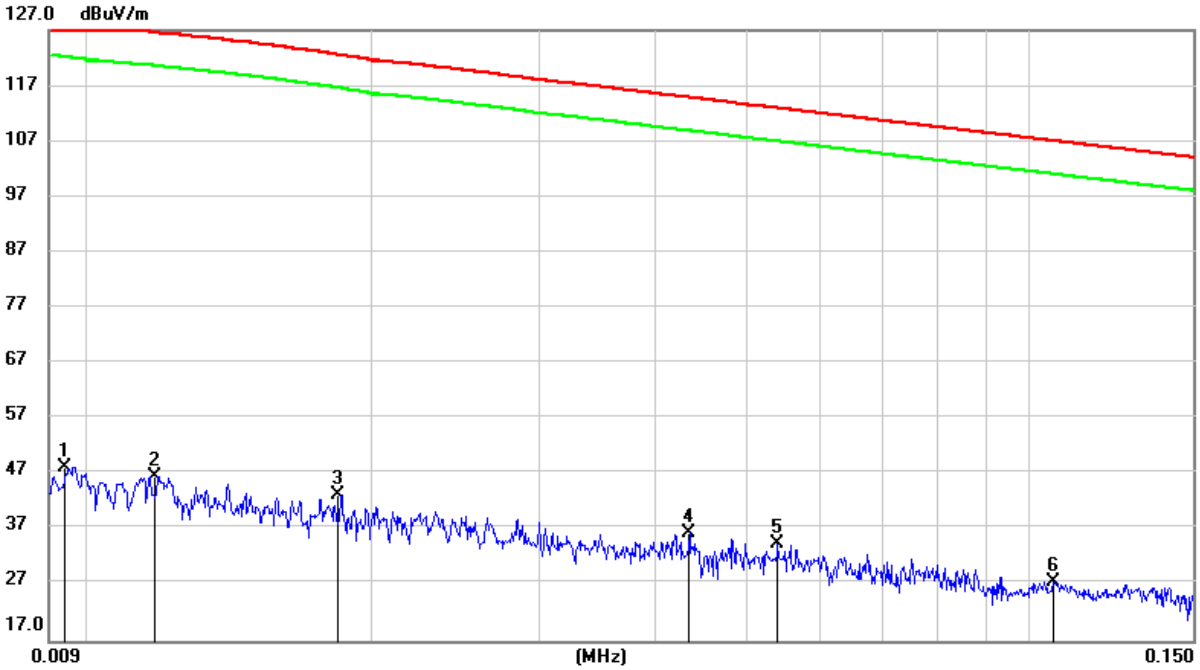
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	0.0094	26.91	20.26	47.17	128.10	-80.93	QP
2	0.0108	26.24	20.22	46.46	127.12	-80.66	QP
3	0.0193	22.96	20.30	43.26	122.00	-78.74	QP
4	0.0274	18.60	20.31	38.91	118.98	-80.07	QP
5	0.0355	17.47	20.31	37.78	116.69	-78.91	QP
6	0.0909	11.35	20.26	31.61	108.44	-76.83	QP

EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	Middle Channel - Antenna 1		



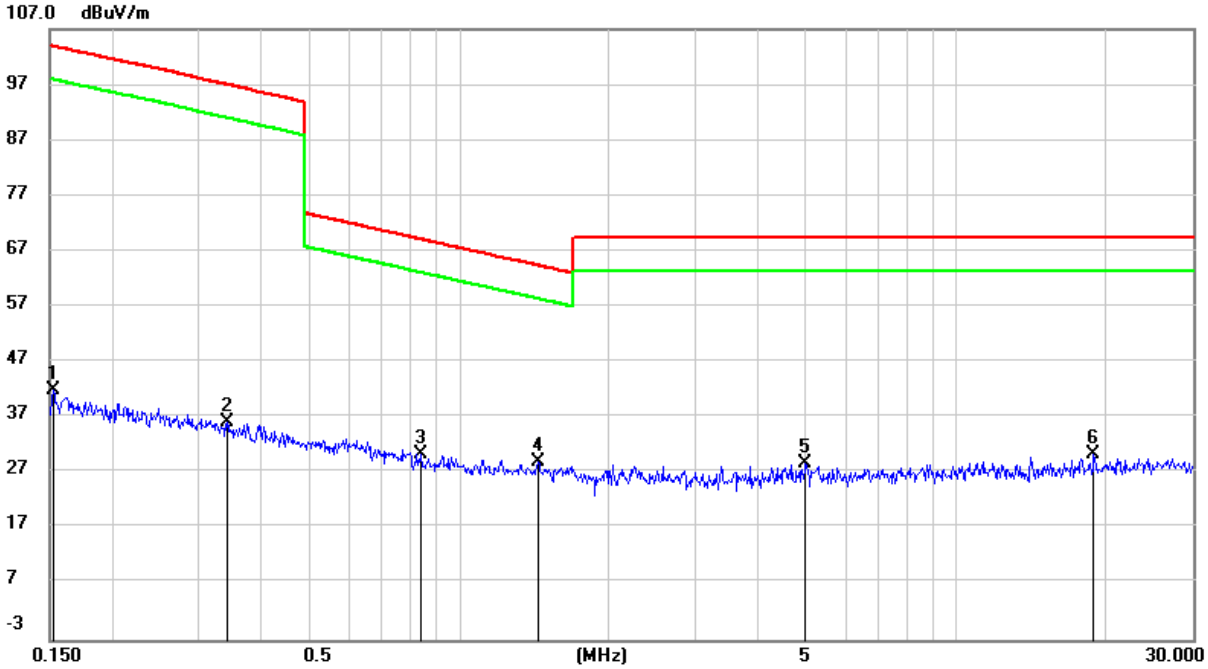
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1685	20.43	20.40	40.83	103.08	-62.25	QP
2	0.2878	19.66	20.31	39.97	98.49	-58.52	QP
3	0.8346	12.04	20.36	32.40	69.19	-36.79	QP
4	1.2684	9.69	20.47	30.16	65.55	-35.39	QP
5	6.6977	7.71	20.90	28.61	69.54	-40.93	QP
6	26.9833	6.19	21.74	27.93	69.54	-41.61	QP

EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	Middle Channel - Antenna 2		



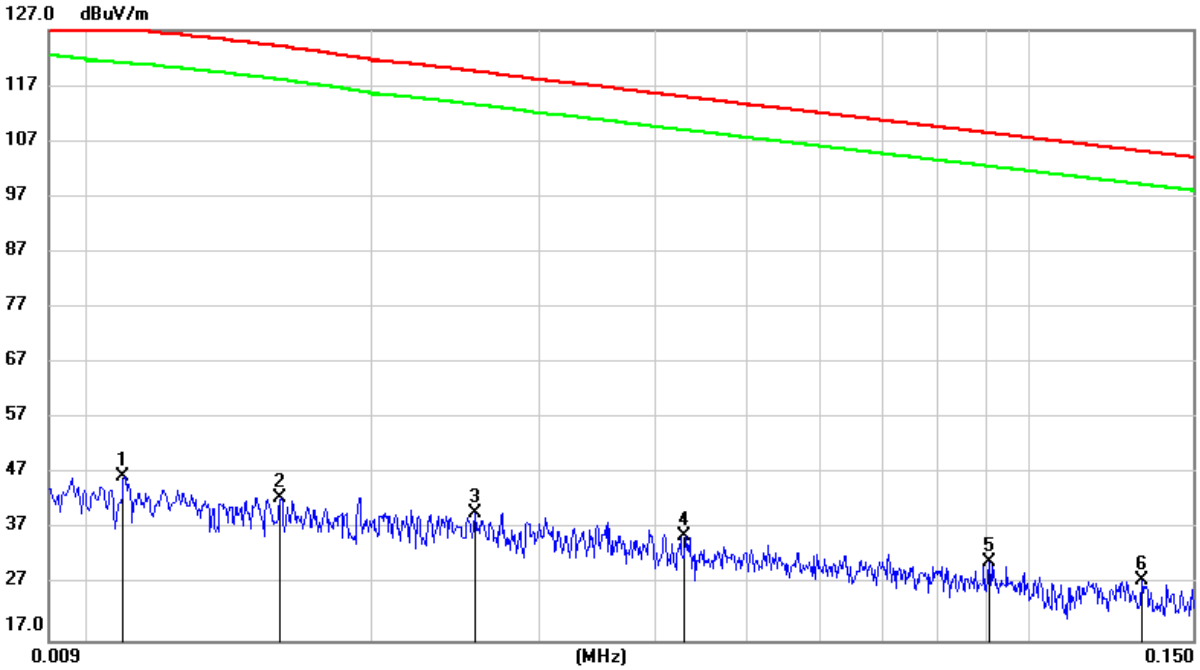
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	0.0094	28.02	20.26	48.28	128.10	-79.82	QP
2	0.0117	26.29	20.23	46.52	126.58	-80.06	QP
3	0.0183	22.88	20.29	43.17	122.60	-79.43	QP
4	0.0434	16.13	20.31	36.44	114.90	-78.46	QP
5	0.0539	14.13	20.31	34.44	113.00	-78.56	QP
6	0.1063	7.44	20.25	27.69	107.08	-79.39	QP

EUT:	Wireless Multi Sensor	Polarization :	Horizontal
Test Mode:	Middle Channel - Antenna 2		



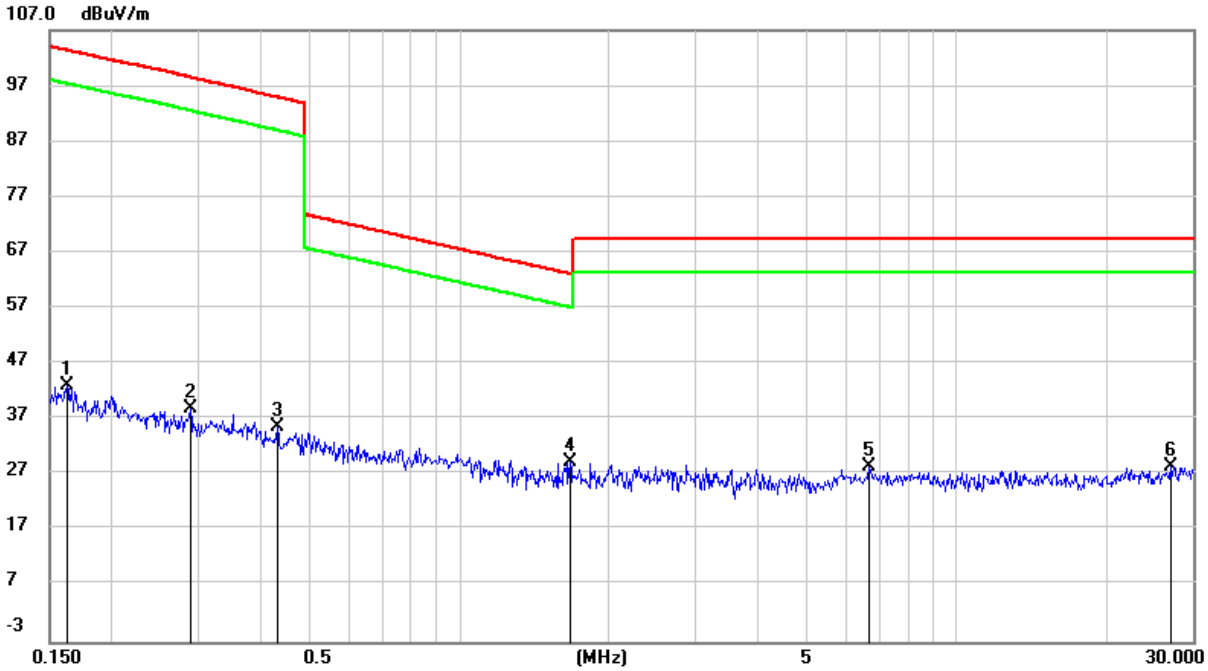
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1524	21.66	20.42	42.08	103.95	-61.87	QP
2	0.3410	15.95	20.29	36.24	97.03	-60.79	QP
3	0.8393	10.16	20.36	30.52	69.14	-38.62	QP
4	1.4409	8.45	20.53	28.98	64.43	-35.45	QP
5	4.9782	7.82	20.83	28.65	69.54	-40.89	QP
6	19.0209	9.35	21.02	30.37	69.54	-39.17	QP

EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	Middle Channel - Antenna 2		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	0.0108	26.24	20.22	46.46	127.12	-80.66	QP
2	0.0159	22.49	20.27	42.76	124.05	-81.29	QP
3	0.0257	19.71	20.31	40.02	119.57	-79.55	QP
4	0.0429	15.53	20.31	35.84	115.00	-79.16	QP
5	0.0908	10.85	20.26	31.11	108.45	-77.34	QP
6	0.1322	7.61	20.35	27.96	105.19	-77.23	QP

EUT:	Wireless Multi Sensor	Polarization :	Vertical
Test Mode:	Middle Channel - Antenna 2		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1621	22.61	20.41	43.02	103.41	-60.39	QP
2	0.2878	18.66	20.31	38.97	98.49	-59.52	QP
3	0.4304	15.43	20.27	35.70	94.97	-59.27	QP
4	1.6713	8.73	20.61	29.34	63.15	-33.81	QP
5	6.6977	7.71	20.90	28.61	69.54	-40.93	QP
6	26.9832	6.69	21.74	28.43	69.54	-41.11	QP

Note 1: All the channels had been tested, but only the worst data recorded in the report.

Note 2: EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

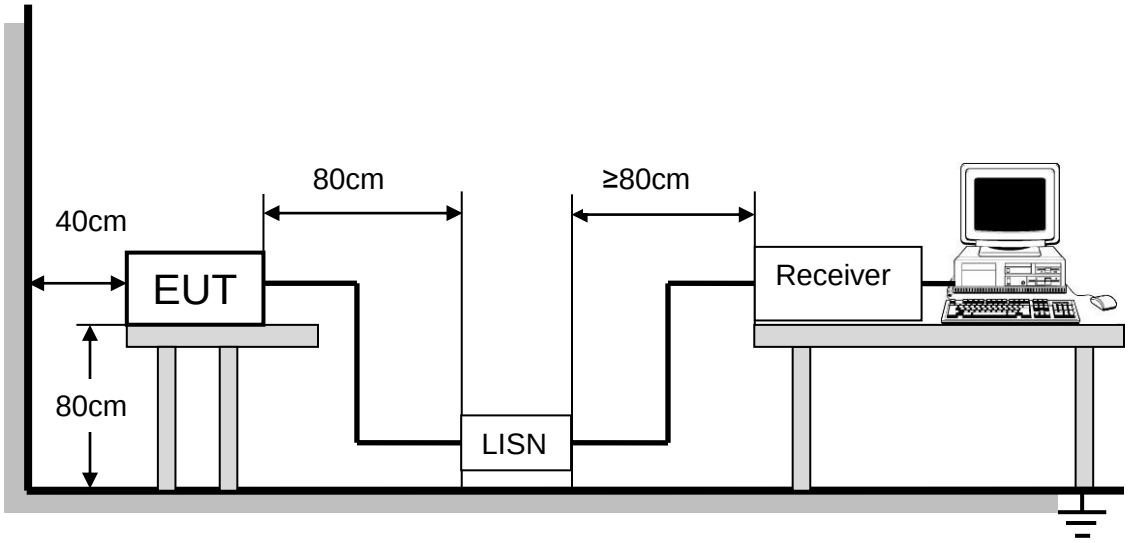
8. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

Please refer to FCC §15.207 (a) and RSS-Gen Clause 8.8

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	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 7 and 13 of ANSI C63.4-2014.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

N/A

9. ANTENNA REQUIREMENTS

APPLICABLE REQUIREMENTS

Please refer to FCC §15.203

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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 FCC rule.

ANTENNA CONNECTOR

EUT has a chip antenna without antenna connector.

ANTENNA GAIN

The antenna gain of EUT is less than 6 dBi.

END OF REPORT