



Certification Test Report

**FCC ID: 2ADCB-RMODIT3
IC: 6715C-RMODIT3**

**FCC Rule Part: 15.247
ISED Canada's Radio Standards Specification: RSS-247**

TÜV SÜD Report Number: RD72161058.202

**Manufacturer: Acuity Brands Lighting Inc.
Model: RMODIT3**

**Test Begin Date: July 22, 2020
Test End Date: September 23, 2020**

Report Issue Date: September 29, 2020



A2LA Cert. No. 2955.18

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1 GENERAL

1.1 Purpose

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations and Innovation, Science and Economic Development Canada Radio Standards Specification: RSS-247 Certification.

1.2 Product Description

rMODIT3 is the next-generation nLight Air radio module that will be used on all nLight Air products. The module includes a 915MHz proprietary radio as well as a 2.4GHz BLE radio. This report addresses the 915MHz proprietary radio only. The 2.4GHz BLE radio is addressed in a separate report.

Technical Information:

Detail	Description
Frequency Range	904 – 926MHz
Number of Channels	12
Modulation Format	OQPSK DSSS
Data Rates	100kbps
Operating Voltage	3.3Vdc
Antenna Type / Gain	Intermediate-fed Inverted L / -0.9dBi (Host antenna trace design) Inverted F PCB Trace / 2.1dBi (Host antenna trace design) Chip / 1dBi (Combination Chip / Trace antenna) Intermediate-fed Inverted L / -0.6dBi (Host antenna trace design) Monopole / 0dBi (On-board U.FL) Dualband Monopole / 1.5dBi (Host antenna trace design to U.FL) Dipole / 0.8dBi (On-board U.FL)

Manufacturer Information:
Acuity Brands Lighting Inc.
1 Acuity Way
Decatur, GA 30035

EUT Serial Numbers: TUV#7 (Intermediate-fed Inverted L / -0.9dBi), TUV#22 (Inverted F PBC Trace), TUV#1 (Chip), TUV#13 (Intermediate-fed Inverted L / -0.6dBi), TUV#3 (Monopole), TUV#5 (Dualband Monopole – RE), TUV#20 (Dualband Monopole – CE), TUV#9 (Dipole), TUV#23 (Conducted RF Measurements)

Test Sample Condition: The test samples were provided in good working order with no visible defects.

1.3 Test Methodology and Considerations

The module was tested using representative host antenna circuit / trace designs where applicable. This required the use of a representative host PCB in which these antenna circuit / trace designs were implemented.

Software was provided by the customer to configure the device power, channel, and modulation.

The power level setting for the 915MHz radio was 200.

AC power line conducted emissions was evaluated on all antenna configurations with worst case data presented in this report. Worst case configuration utilized the dual band monopole antenna with host trace design to host U.FL connector.

Simultaneous transmission data for the dual band monopole antenna configuration with host trace design to U.FL is included in this report as it is utilized by both the 915MHz and 2.4GHz radios simultaneously. Both conducted emissions at the U.FL port and radiated emissions were performed and data provided in this report.

All samples were assessed in each of the 3 orthogonal axis. The worst-case axis is documented with the data.

2 TEST FACILITIES

2.1 Location

The radiated and conducted emissions test sites are located at the following address:

TÜV SÜD America Inc.
2320 Presidential Drive, Suite 101
Durham, NC 27703
Phone: (919) 748-4615

2.2 Laboratory Accreditations/Recognitions/Certifications

TÜV SÜD America Inc. is accredited to ISO/IEC 17025 by A2LA and has been issued certificate number 2955-18 in recognition of this accreditation. Unless otherwise specified, all test methods described within this report are covered under the ISO/IEC 17025 scope of accreditation.

The Semi-Anechoic Chamber Test Site and Conducted Emissions Site have been fully described, submitted to, and accepted by the FCC and Innovation, Science and Economic Development (ISED) Canada.

FCC Designation Number: US1245
FCC Test Firm Registration Number: 238628
ISED Canada Company Number: 20446

2.3 Radiated Emissions Test Site Description

2.3.1 Semi-Anechoic Chamber Test Site

The Semi-Anechoic Chamber Test Site consists of a 18' x 28' x 18' shielded enclosure. The chamber is lined with Samwha Electronics Co. LTD Ferrite Absorber, model number SFA300 (HSN-1). The ferrite tile is 10cm x 10 cm and weighs approximately 1.4lbs. These tiles are mounted on steel panels and installed directly on the inner walls of the chamber. On top of the ferrite tiles is DMAS HT-45 (Dutch Microwave Absorber Solutions) hybrid absorber on all walls except the wall behind the antenna mast which has a shorter DMAS HT-25 absorber.

The turntable is 1.50m in diameter and is located 150cm from the back wall of the chamber. The chamber is grounded via 1 - 8' copper ground rod, installed at the center of the back wall, it is bound to the ground plane using short #6 copper wire. The turntable is all steel, flush mounted table installed in an all steel frame. The table is remotely operated from inside the control room located 25' from the turntable. The turntable is electrically bonded to the surrounding ground plane via steel fingers installed on the edge of the turn table. The steel fingers make constant contact with the ground plane.

Behind the turntable is a 2' x 6' x 1.5' deep shielded pit used for support equipment if necessary. The pit is equipped with 2 - 4" PVC chase from the turntable to the pit that allow for cabling to the EUT if necessary. The underside of the turntable can be accessed from the pit so cables can be supplied to the EUT from the pit.

A diagram of the Semi-Anechoic Chamber Test Site is shown in Figure 2.3-1 below:

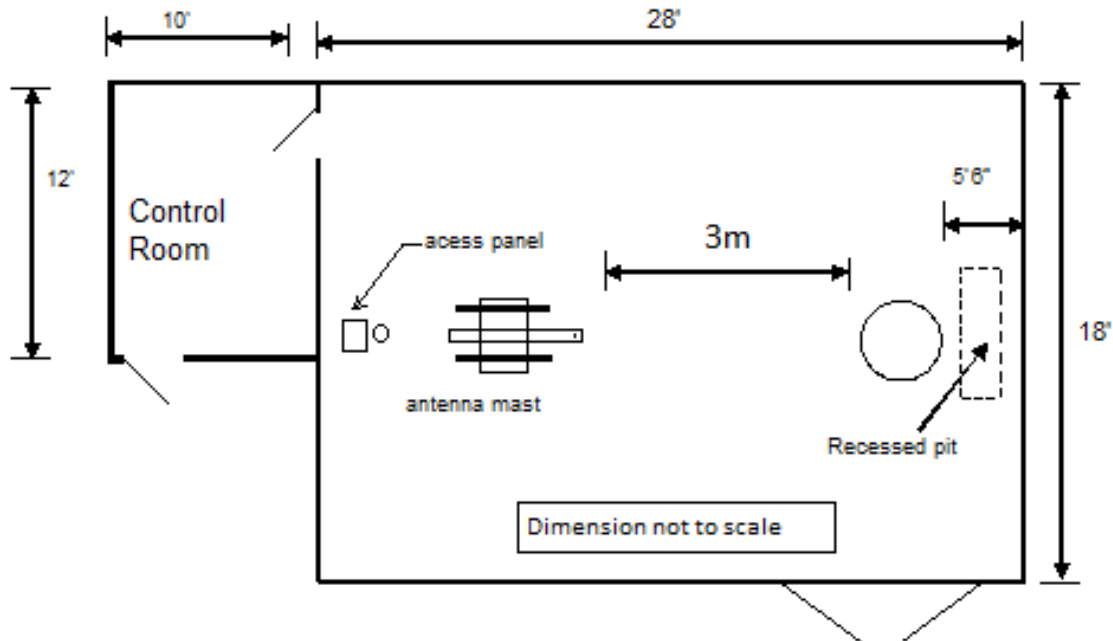


Figure 2.3-1: Semi-Anechoic Chamber Test Site

2.4 Conducted Emissions Test Site Description

The AC mains conducted EMI site is located in the main EMC lab. It consists of an 8' x 10' sheet galvanized steel horizontal ground reference plane (GRP) bonded every 6" to an 8' X 8' aluminum vertical ground plane.

A diagram of the room is shown below in figure 2.4-1:

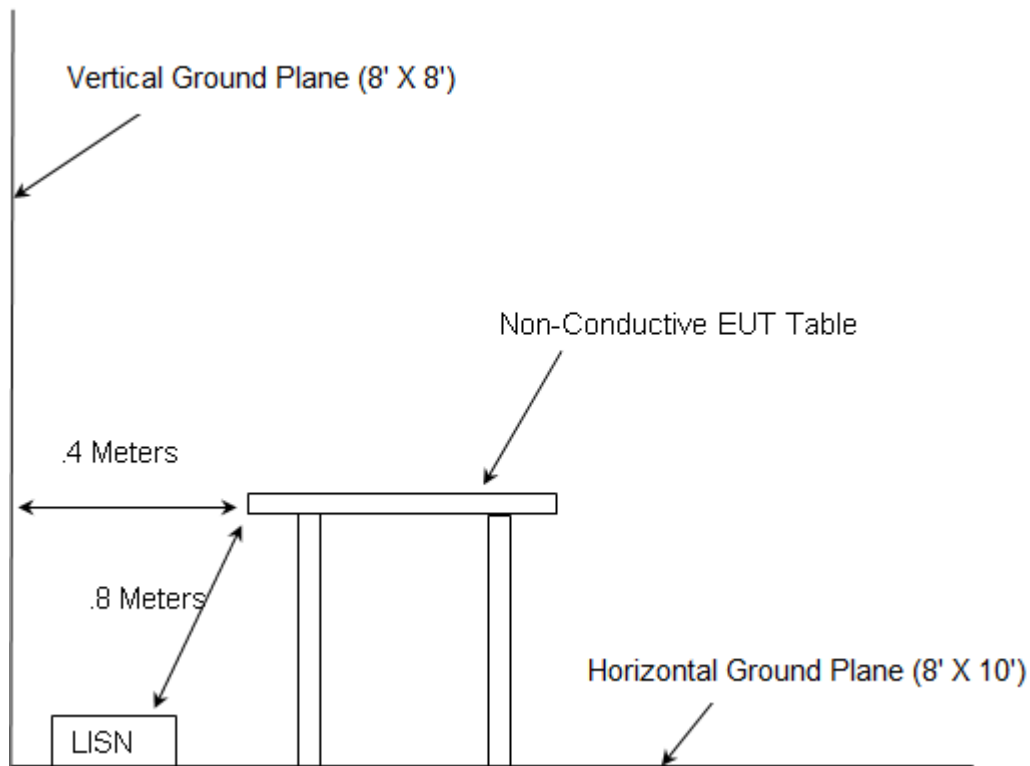


Figure 2.4-1: AC Mains Conducted EMI Site

3 APPLICABLE STANDARD REFERENCES

The following standards were used:

- ❖ ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
- ❖ US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2020
- ❖ US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2020
- ❖ FCC KDB 558074 D01 15.247 Meas Guidance v05r02 - Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating Under §15.247 of the FCC Rules, April 2, 2019
- ❖ ISED Canada Radio Standards Specification: RSS-247, Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices, Issue 2, February 2017
- ❖ ISED Canada Radio Standards Specification: RSS-GEN – General Requirements for Compliance of Radio Apparatus, Issue 5, March 2019, Amendment 1

4 LIST OF TEST EQUIPMENT

The calibration interval of test equipment is annually or the manufacturer's recommendations. Where the calibration interval deviates from the annual cycle based on the instrument manufacturer's recommendations, it shall be stated below.

Table 4-1: Test Equipment

Asset ID	Manufacturer	Model #	Equipment Type	Serial #	Last Calibration Date	Calibration Due Date
DEMC3002	Rohde & Schwarz	ESU40	Receiver	100346	1/22/2020	1/22/2021
DEMC3006	Rohde & Schwarz	TS-PR18	Amplifier	122006	1/23/2020	1/23/2021
DEMC3007	Rohde & Schwarz	TS-PR26	Amplifier	100051	1/23/2020	1/23/2021
DEMC3008	Rohde & Schwarz	NRP2	Meter	103131	2/11/2020	2/11/2021
DEMC3009	Rohde & Schwarz	NRP-Z81	Meter	102397	2/11/2020	2/11/2021
DEMC3012	Rohde & Schwarz	EMC32-EB	Software	100731	NCR	NCR
DEMC3016	Fei Teng Wireless Technology	HA-07M18G-NF	Antenna	2013120203	4/8/2020	4/8/2021
DEMC3027	Micro-Tronics	BRM50702	2.4GHz Notch Filter	175	1/27/2020	1/27/2021
DEMC3029	Micro-Tronics	HPM50108	900MHz HP Filter	134	1/27/2020	1/27/2021
DEMC3036	Hasco, Inc.	HLL142-S1-S1-24	Cable	2450	1/23/2020	1/23/2021
DEMC3038	Florida RF Labs	NMSE-290AW-60.0-NMSE	Cable Set	1448	1/27/2020	1/27/2021
DEMC3039	Florida RF Labs	NMSE-290AW-396.0-NMSE	Cable Set	1447	1/27/2020	1/27/2021
DEMC3046	Aeroflex Inmet	26AH-10	Attenuator	1443	1/23/2020	1/23/2021
DEMC3055	Rohde & Schwarz	3005	Cable	3055	1/23/2020	1/23/2021
DEMC3085	Rohde & Schwarz	FSW43	Spectrum Analyzer	103997	1/22/2020	1/22/2021
DEMC3161	TESEQ	CBL-6112D	Antenna	51323	2/18/2020	2/18/2021
DEMC3178	Micro-Tronics	BRC50722	Filter	G040	3/6/2020	3/6/2021

NCR = No Calibration Required

DMAS MT-25 RF absorber material was used on the floor for all final measurements above 1 GHz.

Asset DEMC3002: Firmware Version: ESU40 is 4.73 SP4

Asset DEMC3012: Software Version: EMC32-B is 10.50.00

5 SUPPORT EQUIPMENT

Table 5-1: Support Equipment

Item	Equipment Type	Manufacturer	Model Number	Serial Number
1	EUT	Acuity Brands Lighting Inc.	RMODIT3	See Section 1.2
2	Wall wart	Volger	KTPS05-03315U-VI	N/A

Notes:

6 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM

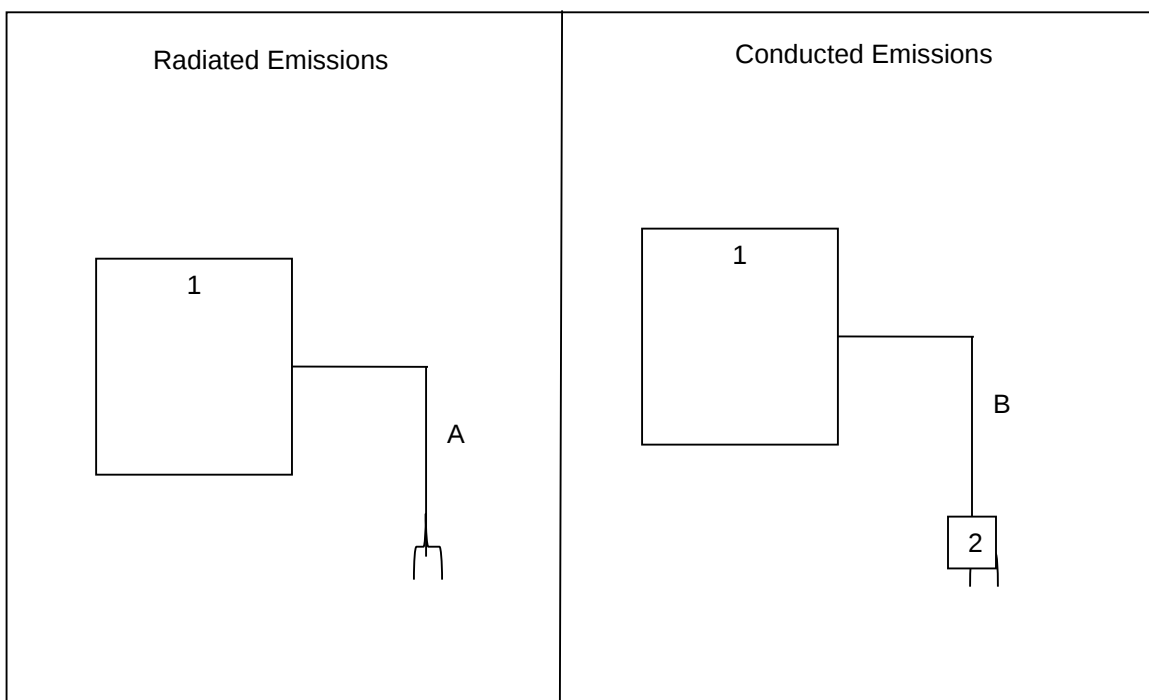


Figure 6-1: Test Setup Block Diagram

Table 6-1: Cable Description

Cable #	Cable Type	Length	Shield	Termination
A	AC Power	1.9m	No	1 to AC
B	DC Power	1.9m	No	1 to 2

7 SUMMARY OF TESTS

Along with the tabular data shown below, plots were taken of all signals deemed important enough to document.

7.1 Antenna Requirement – FCC: 15.203

The antennas is are either integral to the device and cannot be removed replaced by the end user or are connected via a U.FL connector.

7.2 Power Line Conducted Emissions – FCC: 15.207; ISED Canada: RSS-Gen 8.8

7.2.1 Measurement Procedure

ANSI C63.10-2013 section 6 was the guiding document for this evaluation. Conducted emissions were performed from 150kHz to 30MHz with the spectrum analyzer's resolution bandwidth set to 9kHz and the video bandwidth set to 30kHz. The calculation for the conducted emissions is as follows:

Corrected Reading = Analyzer Reading + LISN Loss + Cable Loss

Margin = Applicable Limit - Corrected Reading

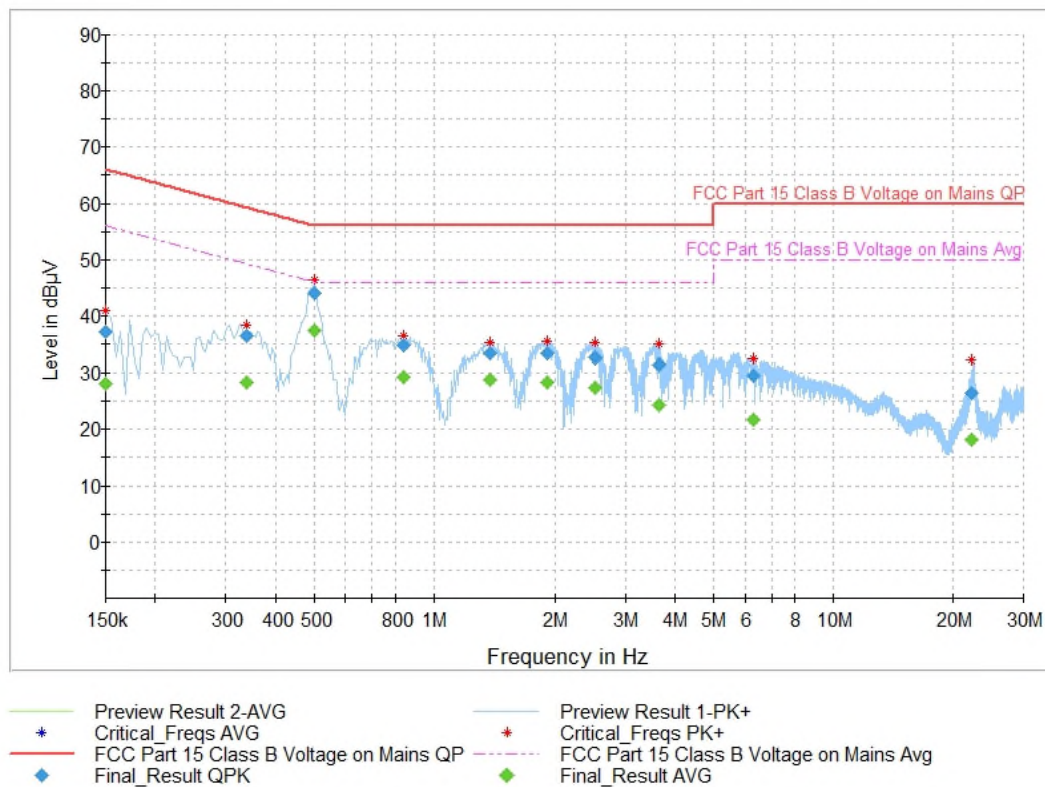
7.2.2 Measurement Results

Performed by: Chris Gormley

Table 7.2.2-1: Conducted EMI Results – Line and Neutral

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	37.19	---	66.00	28.81	N	OFF	9.6
0.150000	---	28.09	56.00	27.91	N	OFF	9.6
0.339000	36.34	---	59.23	22.89	N	OFF	9.7
0.339000	---	28.32	49.23	20.91	N	OFF	9.7
0.501000	44.13	---	56.00	11.87	L1	OFF	9.6
0.501000	---	37.50	46.00	8.50	L1	OFF	9.6
0.843000	34.75	---	56.00	21.25	L1	OFF	9.6
0.843000	---	29.24	46.00	16.76	L1	OFF	9.6
1.387500	33.42	---	56.00	22.58	N	OFF	9.7
1.387500	---	28.78	46.00	17.22	N	OFF	9.7
1.905000	33.38	---	56.00	22.62	L1	OFF	9.8
1.905000	---	28.37	46.00	17.63	L1	OFF	9.8
2.517000	32.69	---	56.00	23.31	N	OFF	9.8
2.517000	---	27.55	46.00	18.45	N	OFF	9.8
3.637500	31.50	---	56.00	24.50	N	OFF	9.8
3.637500	---	24.45	46.00	21.55	N	OFF	9.8
6.292500	29.49	---	60.00	30.51	N	OFF	9.9
6.292500	---	21.87	50.00	28.13	N	OFF	9.9
22.308000	26.49	---	60.00	33.51	L1	OFF	10.2
22.308000	---	18.13	50.00	31.87	L1	OFF	10.2

Figure 7.2.2-1: Conducted Emissions Profile



7.3 6dB / 99% Bandwidth – FCC: 15.247(a)(2); ISED Canada: RSS-247 5.2(a)

7.3.1 Measurement Procedure

The 6dB bandwidth was measured in accordance with the FCC KDB 558074 D01 15.247 Meas Guidance v05r02. The Resolution Bandwidth (RBW) of the spectrum analyzer was set to 100 kHz. The Video Bandwidth (VBW) was set to ≥ 3 times the RBW. The trace was set to max hold with a peak detector active. The marker-delta function of the spectrum analyzer was utilized to determine the 6 dB bandwidth of the emission.

The occupied bandwidth measurement function of the spectrum analyzer was used to measure the 99% bandwidth. The span of the analyzer was set to capture all products of the modulation process, including the emission sidebands. The resolution bandwidth was set to 1% to 5% of the occupied bandwidth. The video bandwidth was set to 3 times the resolution bandwidth.

7.3.2 Measurement Results

Performed by: Chris Gormley

Table 7.3.2-1: 6dB / 99% Bandwidth

Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
904	0.68138	0.924947
914	0.69013	0.921515
926	0.65560	0.923453

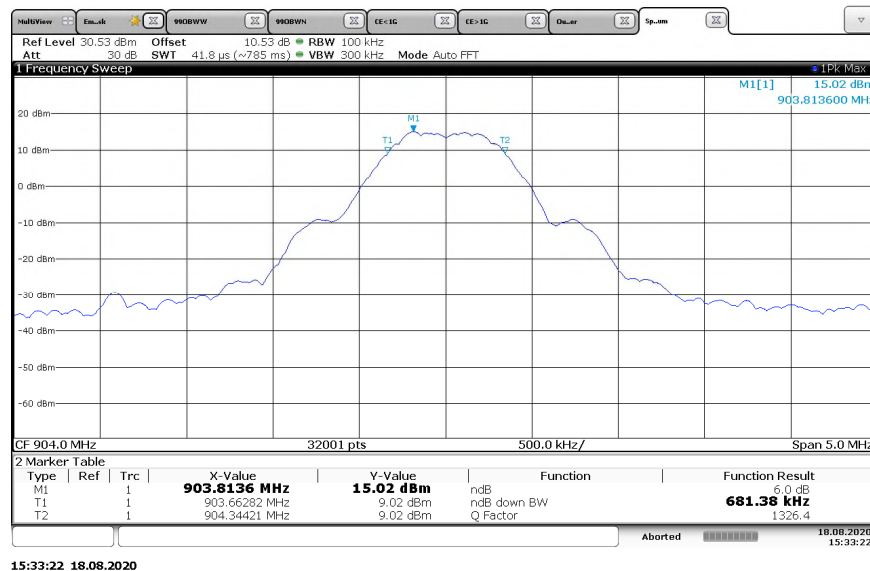


Figure 7.3.2-1: 6dB Bandwidth Low Channel

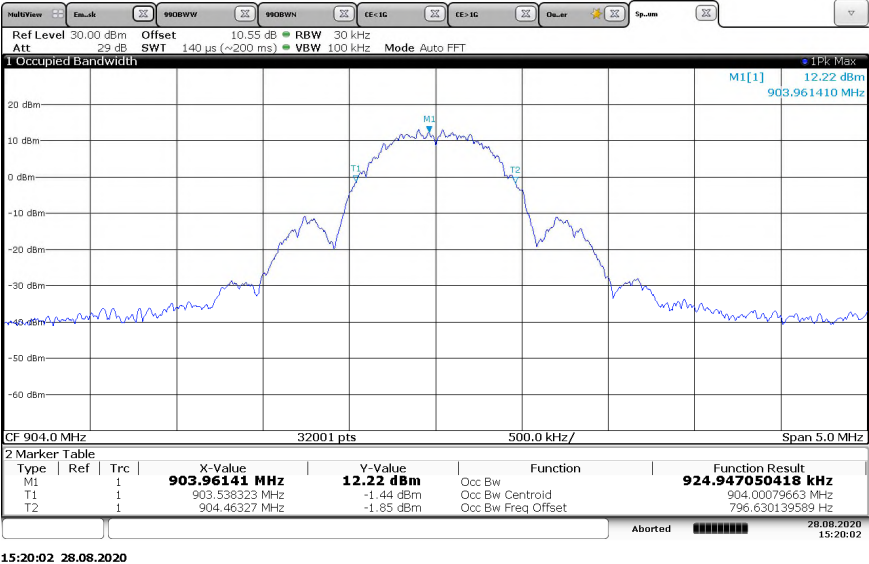


Figure 7.3.2-2: 99% Bandwidth Low Channel

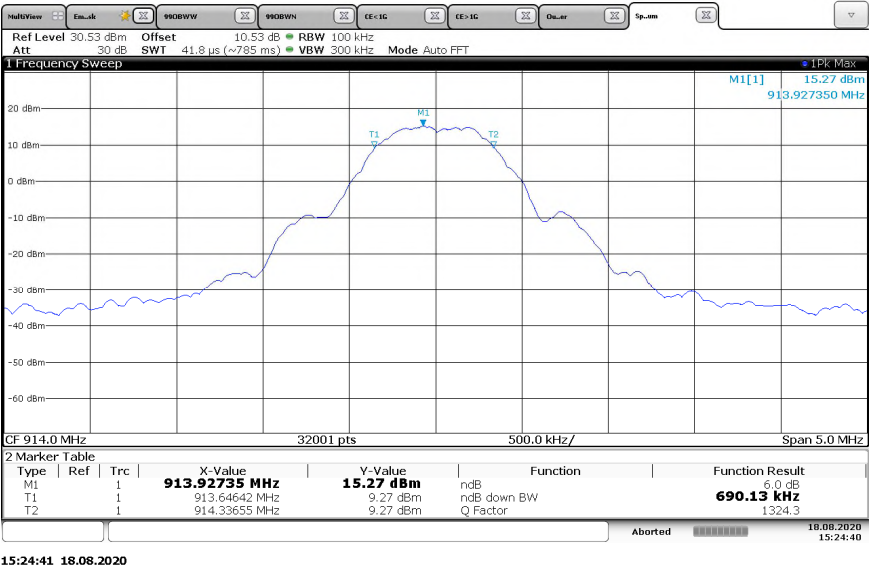


Figure 7.3.2-3: 6dB Bandwidth Mid Channel

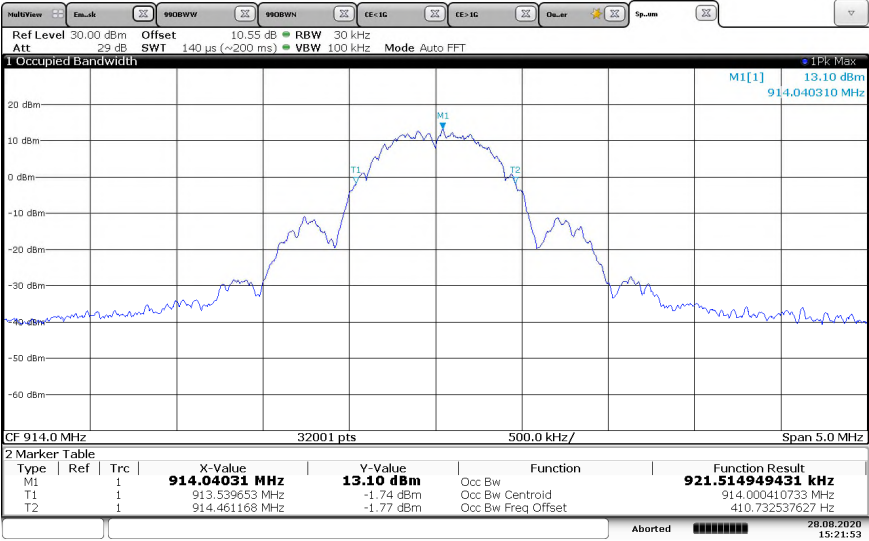


Figure 7.3.2-4: 99% Bandwidth Mid Channel

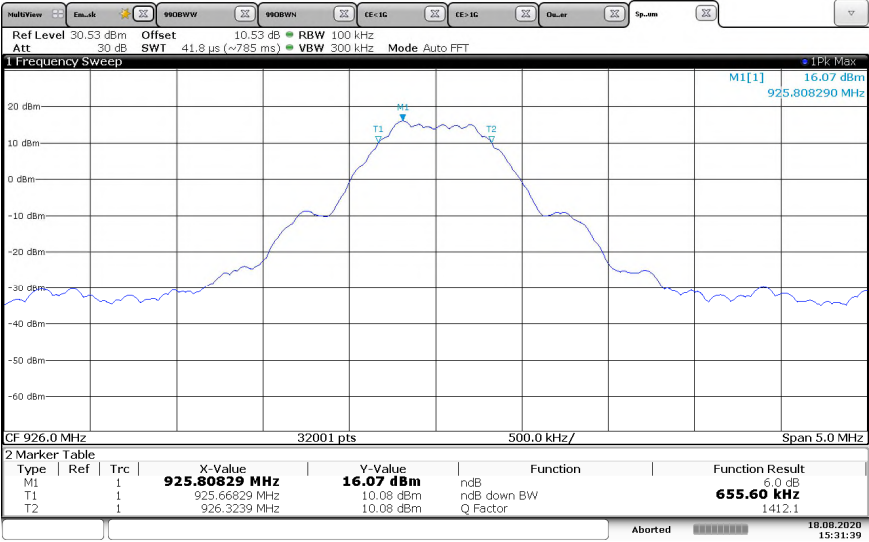
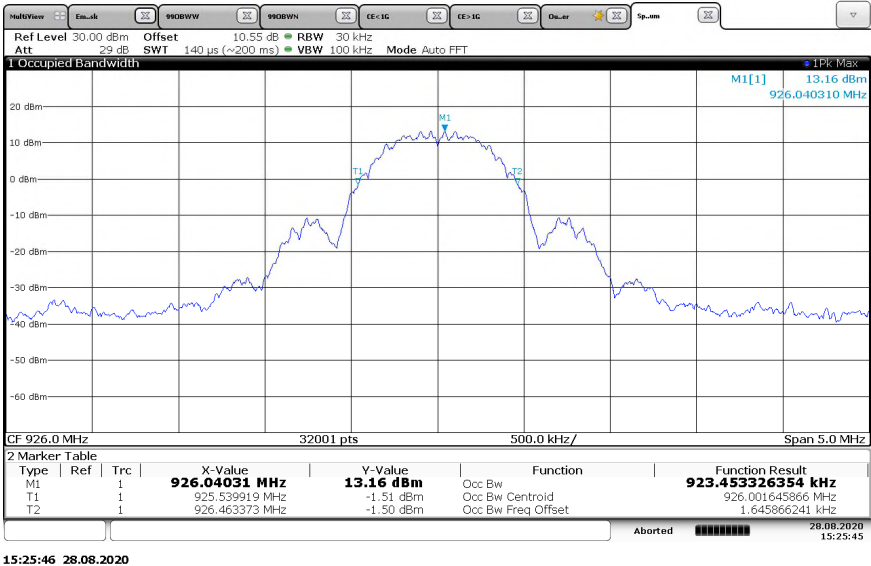


Figure 7.3.2-5: 6dB Bandwidth High Channel



7.4 Fundamental Emission Output Power – FCC: 15.247(b)(3); ISED Canada: RSS-247 5.4(d)**7.4.1 Measurement Procedure**

The maximum peak conducted output power was measured in accordance with FCC KDB 558074 D01 15.247 Meas Guidance v05r02 utilizing the PKPM1 Peak power meter method. The RF output of the equipment under test was directly connected to the input of the peak power meter applying suitable attenuation.

7.4.2 Measurement Results

Performed by: Chris Gormley

Table 7.4.2-1: Maximum Peak Conducted Output Power

Frequency (MHz)	Output Power (dBm)
904	19.38
914	19.32
926	19.3

7.5 Emission Levels – FCC: 15.247(d), 15.205, 15.209; ISED Canada RSS-247 5.5, RSS-Gen 8.9/8.10

7.5.1 Emissions into Non-restricted Frequency Bands

7.5.1.1 Measurement Procedure

The unwanted emissions into non-restricted bands were measured conducted in accordance with FCC KDB 558074 D01 15.247 Meas Guidance v05r02. The RF output of the equipment under test was directly connected to the input of the spectrum analyzer applying suitable attenuation. The Resolution Bandwidth (RBW) of the spectrum analyzer was set to 100 kHz. The Video Bandwidth (VBW) was set to ≥ 300 kHz. Span was set to 1.5 times the DTS bandwidth. The trace was set to max hold with a peak detector active. The resulting spectrum analyzer peak level was used to determine the reference level with respect to the 20 dBc limit. The spectrum span was then adjusted for the measurement of spurious emissions from 30 MHz to 10GHz, 10 times the highest fundamental frequency. Additionally, a prescan was performed from 9 kHz or the lowest frequency generated to 30 MHz.

Band-edge compliance was determined using the conducted marker-delta method in which the radio frequency power that is produced by the EUT is at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of desired power.

7.5.1.2 Measurement Results

Performed by: Chris Gormley

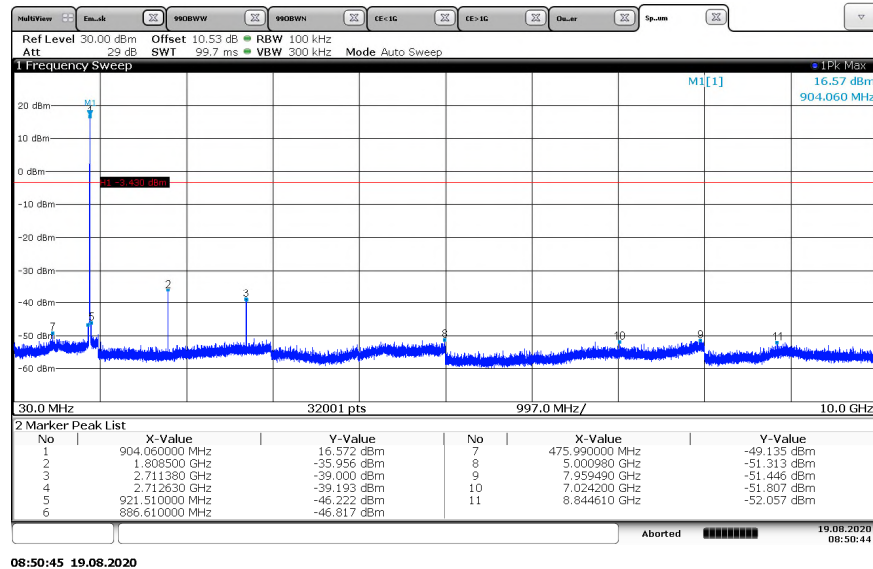


Figure 7.5.1.2-1: 30 MHz – 10 GHz – LCH

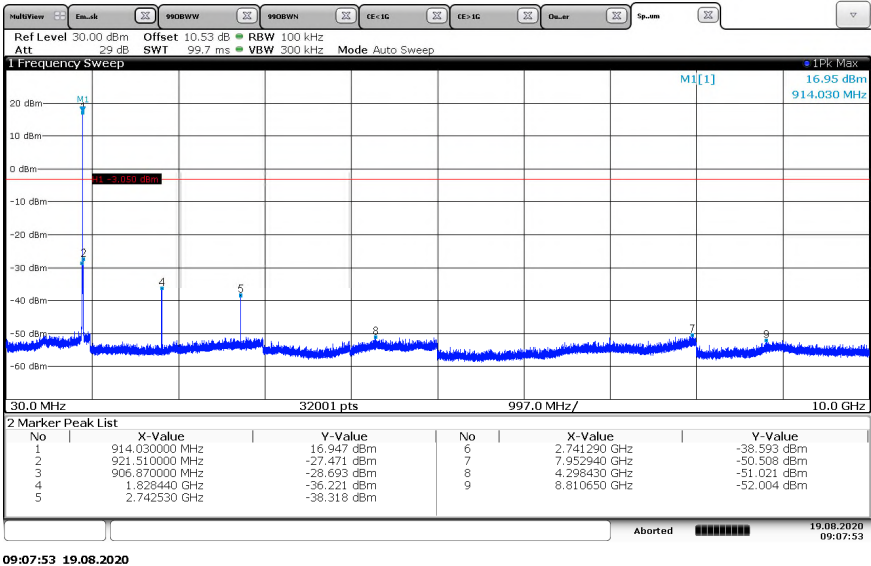


Figure 7.5.1.2-2: 30 MHz – 10 GHz – MCH

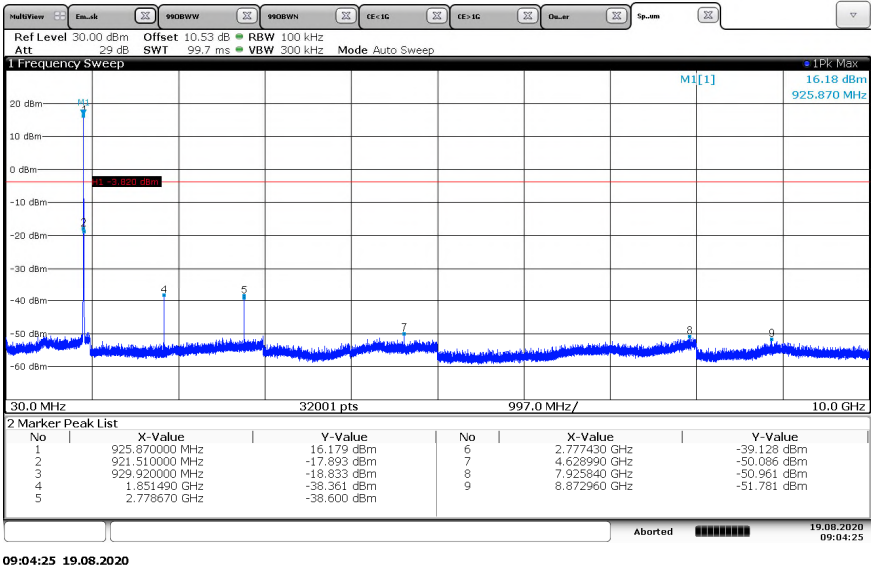


Figure 7.5.1.2-3: 30 MHz – 10 GHz – HCH

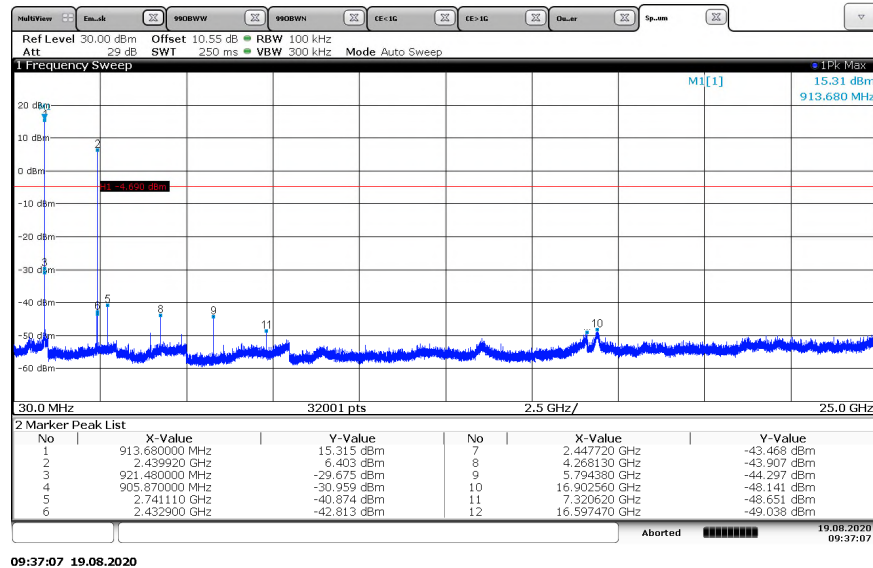


Figure 7.5.1.2-4: Dual band Monopole Intermodulation Products

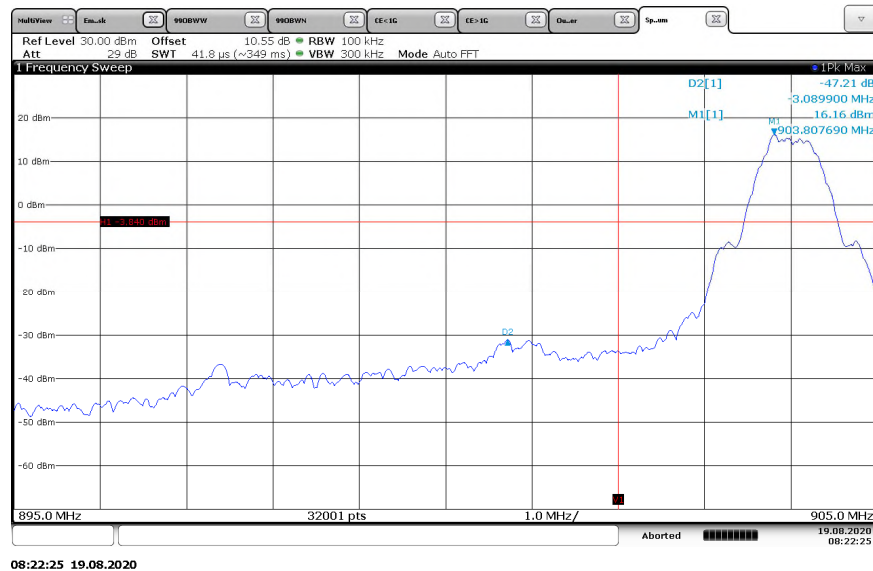


Figure 7.5.1.2-5: Lower Band-edge – LCH

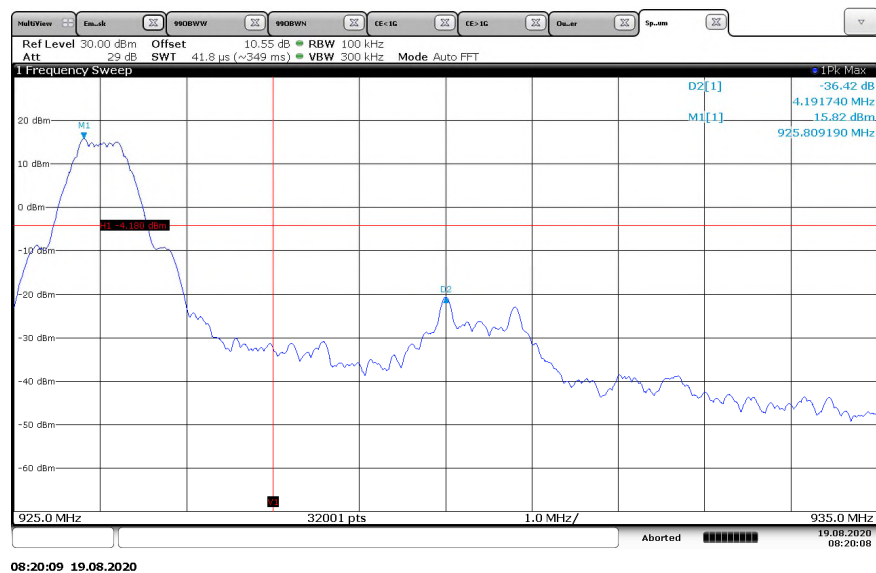


Figure 7.5.1.2-6: Upper Band-edge - HCH

7.5.2 Emissions into Restricted Frequency Bands

7.5.2.1 Measurement Procedure

The unwanted emissions into restricted bands were measured radiated over the frequency range of 30MHz to 25GHz, 10 times the highest fundamental frequency.

The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. For frequencies below 1000MHz, quasi-peak measurements were made using a RBW of 120 kHz and a VBW of 300 kHz. For frequencies above 1000MHz, peak and average measurements were made with RBW and VBW of 1 MHz and 3 MHz respectively.

Each emission found to be in a restricted band as defined by section 15.205, including any emission at the operational band-edge, was compared to the radiated emission limits as defined in section 15.209.

The worst-case orientation for each of the samples is listed in the table below.

Table 7.5.2.1-1: Worst-case Orientation

Sample ID	Antenna Type	Worst-case Orientation
TUV#7	Intermediate-fed Inverted L (-0.9dBi)	X
TUV#22	Inverted F PCB Trace	Y
TUV#1	Chip	Y
TUV#13	Intermediate-fed Inverted L (-0.6dBi)	Y
TUV#3	Monopole	Y
TUV#5	Dualband Monopole	Y
TUV#9	Dipole	Z

7.5.2.2 Duty Cycle Correction

For average radiated measurements, using a 30.48% duty cycle, the measured level was reduced by a factor 10.32dB. The duty cycle correction factor is determined using the formula: $20\log(30.48/100) = -10.32\text{dB}$.

A detailed analysis of the duty cycle timing is provided in the Theory of Operation accompanying the application for certification.

7.5.2.3 Measurement Results

Performed by: Chris Gormley

Table 7.5.2.3-1: Radiated Spurious Emissions Tabulated Data – Intermediate-fed Inverted L (-0.9dBi)

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Turntable Position (o)	Antenna Height (cm)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg					pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel												
901.06	42.88	-----	H	194	100	26.38	69.26	-----	92.0	-----	22.74	-----
2712	43.40	33.50	H	35	100	-2.51	40.89	20.67	74.0	54.0	33.11	33.33
2712	43.60	34.40	V	290	100	-2.51	41.09	21.57	74.0	54.0	32.91	32.43
3616	39.70	26.00	H	224	143	0.58	40.28	16.26	74.0	54.0	33.72	37.74
3616	39.80	26.30	V	250	100	0.58	40.38	16.56	74.0	54.0	33.62	37.44
4520	38.10	24.60	H	0	100	3.32	41.42	17.60	74.0	54.0	32.58	36.40
4520	37.60	24.40	V	0	100	3.32	40.92	17.40	74.0	54.0	33.08	36.60
5424	40.60	27.50	H	30	100	3.76	44.36	20.94	74.0	54.0	29.64	33.06
5424	40.00	26.80	V	134	100	3.76	43.76	20.24	74.0	54.0	30.24	33.76
8136	37.10	23.90	H	0	100	9.46	46.56	23.04	74.0	54.0	27.44	30.96
8136	37.50	23.80	V	0	100	9.46	46.96	22.94	74.0	54.0	27.04	31.06
9040	36.90	23.30	H	0	100	10.49	47.39	23.47	74.0	54.0	26.61	30.53
9040	36.90	23.30	V	0	100	10.49	47.39	23.47	74.0	54.0	26.61	30.53
Mid Channel												
2742	44.00	35.30	H	32	100	-2.41	41.59	22.57	74.0	54.0	32.41	31.43
2742	44.50	36.00	V	278	100	-2.41	42.09	23.27	74.0	54.0	31.91	30.73
3656	39.50	25.90	H	127	174	0.71	40.21	16.29	74.0	54.0	33.79	37.71
3656	39.90	26.50	V	241	100	0.71	40.61	16.89	74.0	54.0	33.39	37.11
4570	39.20	25.30	H	259	100	3.35	42.55	18.33	74.0	54.0	31.45	35.67
4570	38.10	24.60	V	0	100	3.35	41.45	17.63	74.0	54.0	32.55	36.37
7312	37.30	24.00	H	0	100	8.18	45.48	21.86	74.0	54.0	28.52	32.14
7312	36.80	23.90	V	0	100	8.18	44.98	21.76	74.0	54.0	29.02	32.24
8226	37.50	23.70	H	0	100	9.87	47.37	23.25	74.0	54.0	26.63	30.75
8226	37.10	23.60	V	0	100	9.87	46.97	23.15	74.0	54.0	27.03	30.85
9140	37.20	23.90	H	0	100	10.27	47.47	23.85	74.0	54.0	26.53	30.15
9140	37.60	23.80	V	0	100	10.27	47.87	23.75	74.0	54.0	26.13	30.25
High Channel												
930.06	56.37	-----	H	196	100	26.20	82.57	-----	96.4	-----	13.83	-----
2778	46.60	39.30	H	32	100	-2.30	44.30	26.68	74.0	54.0	29.70	27.32
2778	48.70	41.80	V	213	143	-2.30	46.40	29.18	74.0	54.0	27.60	24.82
3704	39.70	26.50	H	133	160	0.87	40.57	17.05	74.0	54.0	33.43	36.95
3704	40.00	26.40	V	226	217	0.87	40.87	16.95	74.0	54.0	33.13	37.05
4630	41.70	28.80	H	163	187	3.37	45.07	21.85	74.0	54.0	28.93	32.15
4630	38.80	24.90	V	153	100	3.37	42.17	17.95	74.0	54.0	31.83	36.05
7408	36.60	22.90	H	0	100	8.60	45.20	21.19	74.0	54.0	28.80	32.81
7408	36.80	23.00	V	0	100	8.60	45.40	21.29	74.0	54.0	28.60	32.71
8334	36.80	23.50	H	0	100	10.36	47.16	23.54	74.0	54.0	26.84	30.46
8334	37.20	23.40	V	0	100	10.36	47.56	23.44	74.0	54.0	26.44	30.56

Note: All emissions not listed were related to the unintentional circuitry of the carrier board.

Table 7.5.2.3-2: Radiated Spurious Emissions Tabulated Data – Inverted F PCB Trace

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Turntable Position (o)	Antenna Height (cm)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg					pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel												
900.98	41.25	-----	V	0	123	26.38	67.63	-----	93.6	-----	25.97	-----
2712	41.80	30.50	H	345	100	-2.51	39.29	17.67	74.0	54.0	34.71	36.33
2712	39.90	27.70	V	206	100	-2.51	37.39	14.87	74.0	54.0	36.61	39.13
3616	41.70	29.40	H	321	245	0.58	42.28	19.66	74.0	54.0	31.72	34.34
3616	40.70	26.50	V	232	181	0.58	41.28	16.76	74.0	54.0	32.72	37.24
4520	38.20	24.60	H	219	167	3.32	41.52	17.60	74.0	54.0	32.48	36.40
4520	38.30	24.60	V	84	100	3.32	41.62	17.60	74.0	54.0	32.38	36.40
5424	39.40	26.00	H	169	162	3.76	43.16	19.44	74.0	54.0	30.84	34.56
5424	39.30	25.80	V	140	100	3.76	43.06	19.24	74.0	54.0	30.94	34.76
8136	37.30	23.90	H	0	100	9.46	46.76	23.04	74.0	54.0	27.24	30.96
8136	37.30	23.80	V	0	100	9.46	46.76	22.94	74.0	54.0	27.24	31.06
9040	37.50	23.30	H	0	100	10.49	47.99	23.47	74.0	54.0	26.01	30.53
9040	37.60	23.30	V	0	100	10.49	48.09	23.47	74.0	54.0	25.91	30.53
Mid Channel												
2742	41.40	30.50	H	342	100	-2.41	38.99	17.77	74.0	54.0	35.01	36.23
2742	40.40	28.20	V	208	112	-2.41	37.99	15.47	74.0	54.0	36.01	38.53
3656	41.90	29.60	H	319	243	0.71	42.61	19.99	74.0	54.0	31.39	34.01
3656	39.90	25.90	V	35	115	0.71	40.61	16.29	74.0	54.0	33.39	37.71
4570	37.70	24.50	H	0	100	3.35	41.05	17.53	74.0	54.0	32.95	36.47
4570	38.20	24.40	V	0	100	3.35	41.55	17.43	74.0	54.0	32.45	36.57
7312	37.70	23.90	H	0	100	8.18	45.88	21.76	74.0	54.0	28.12	32.24
7312	37.80	23.80	V	0	100	8.18	45.98	21.66	74.0	54.0	28.02	32.34
8226	37.40	23.70	H	0	100	9.87	47.27	23.25	74.0	54.0	26.73	30.75
8226	37.40	23.70	V	0	100	9.87	47.27	23.25	74.0	54.0	26.73	30.75
7312	37.70	23.90	H	0	100	8.18	45.88	21.76	74.0	54.0	28.12	32.24
7312	37.80	23.80	V	0	100	8.18	45.98	21.66	74.0	54.0	28.02	32.34
High Channel												
930	49.69	-----	V	24	116	26.20	75.89	-----	93.4	-----	17.51	-----
2778	41.70	30.60	H	90	211	-2.30	39.40	17.93	74.0	54.0	34.60	36.07
2778	40.00	28.20	V	206	100	-2.30	37.70	15.53	74.0	54.0	36.30	38.47
3704	42.40	29.70	H	320	100	0.87	43.27	20.20	74.0	54.0	30.73	33.80
3704	40.40	27.40	V	325	158	0.87	41.27	17.90	74.0	54.0	32.73	36.10
4630	38.50	24.30	H	0	100	3.37	41.87	17.30	74.0	54.0	32.13	36.70
4630	37.80	24.20	V	0	100	3.37	41.17	17.20	74.0	54.0	32.83	36.80
7408	36.90	22.80	H	0	100	8.60	45.50	21.03	74.0	54.0	28.50	32.97
7408	36.60	22.80	V	0	100	8.60	45.20	21.03	74.0	54.0	28.80	32.97
8334	37.70	23.40	H	0	100	10.36	48.06	23.38	74.0	54.0	25.94	30.62
8334	37.60	23.50	V	0	100	10.36	47.96	23.48	74.0	54.0	26.04	30.52

Note: All emissions not listed were related to the unintentional circuitry of the carrier board.

Table 7.5.2.3-3: Radiated Spurious Emissions Tabulated Data – Chip

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Turntable Position	Antenna Height	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg					(H/V)	(o)	(cm)	(dB)	pk	Qpk/Avg
Low Channel												
901	25.63	-----	H	92	100	26.38	52.01	-----	78.5	-----	26.49	-----
2712	52.40	46.80	H	121	132	-2.51	49.89	33.97	74.0	54.0	24.11	20.03
2712	47.00	39.90	V	310	130	-2.51	44.49	27.07	74.0	54.0	29.51	26.93
3616	48.20	38.20	H	278	100	0.58	48.78	28.46	74.0	54.0	25.22	25.54
3616	41.90	29.00	V	82	100	0.58	42.48	19.26	74.0	54.0	31.52	34.74
4520	38.80	24.60	H	317	100	3.32	42.12	17.60	74.0	54.0	31.88	36.40
4520	37.80	24.30	V	0	100	3.32	41.12	17.30	74.0	54.0	32.88	36.70
5424	42.60	29.70	H	33	107	3.76	46.36	23.14	74.0	54.0	27.64	30.86
5424	42.20	28.80	V	147	100	3.76	45.96	22.24	74.0	54.0	28.04	31.76
8136	37.50	23.80	H	0	100	9.46	46.96	22.94	74.0	54.0	27.04	31.06
8136	37.80	23.80	V	0	100	9.46	47.26	22.94	74.0	54.0	26.74	31.06
9040	36.80	23.30	H	0	100	10.49	47.29	23.47	74.0	54.0	26.71	30.53
9040	36.80	23.20	V	0	100	10.49	47.29	23.37	74.0	54.0	26.71	30.63
Mid Channel												
2742	51.80	45.70	H	126	133	-2.41	49.39	32.97	74.0	54.0	24.61	21.03
2742	46.30	38.70	V	276	215	-2.41	43.89	25.97	74.0	54.0	30.11	28.03
3656	47.60	37.30	H	280	100	0.71	48.31	27.69	74.0	54.0	25.69	26.31
3656	41.40	28.30	V	57	100	0.71	42.11	18.69	74.0	54.0	31.89	35.31
4570	39.00	24.90	H	227	210	3.35	42.35	17.93	74.0	54.0	31.65	36.07
4570	38.60	24.40	V	0	100	3.35	41.95	17.43	74.0	54.0	32.05	36.57
7312	38.10	24.00	H	0	100	8.18	46.28	21.86	74.0	54.0	27.72	32.14
7312	37.50	23.90	V	0	100	8.18	45.68	21.76	74.0	54.0	28.32	32.24
8226	37.60	23.70	H	0	100	9.87	47.47	23.25	74.0	54.0	26.53	30.75
8226	37.10	23.70	V	0	100	9.87	46.97	23.25	74.0	54.0	27.03	30.75
9140	37.70	23.90	H	0	100	10.27	47.97	23.85	74.0	54.0	26.03	30.15
9140	38.40	23.90	V	0	100	10.27	48.67	23.85	74.0	54.0	25.33	30.15
High Channel												
930	45.98	-----	H	252	116	26.20	72.18	-----	82.5	-----	10.32	-----
2778	50.40	44.10	H	135	131	-2.30	48.10	31.48	74.0	54.0	25.90	22.52
2778	47.20	39.70	V	273	206	-2.30	44.90	27.08	74.0	54.0	29.10	26.92
3704	46.10	35.60	H	278	100	0.87	46.97	26.15	74.0	54.0	27.03	27.85
3704	47.10	29.10	V	306	100	0.87	47.97	19.65	74.0	54.0	26.03	34.35
4630	38.60	25.00	H	234	100	3.37	41.97	18.05	74.0	54.0	32.03	35.95
4630	38.50	24.40	V	0	100	3.37	41.87	17.45	74.0	54.0	32.13	36.55
7408	36.30	22.90	H	0	100	8.60	44.90	21.19	74.0	54.0	29.10	32.81
7408	37.00	22.90	V	0	100	8.60	45.60	21.19	74.0	54.0	28.40	32.81
8334	37.40	23.50	H	0	100	10.36	47.76	23.54	74.0	54.0	26.24	30.46
8334	36.60	23.50	V	0	100	10.36	46.96	23.54	74.0	54.0	27.04	30.46

Note: All emissions not listed were related to the unintentional circuitry of the carrier board.

Table 7.5.2.3-4: Radiated Spurious Emissions Tabulated Data – Intermediate-fed Inverted L (-0.6dBi)

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Turntable Position	Antenna Height	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg					(H/V)	(o)	(cm)	(dB)	pk	Qpk/Avg
Low Channel												
902	35.30	-----	H	355	100	26.36	61.66	-----	87.5	-----	25.84	-----
2712	42.30	31.50	H	35	166	-2.51	39.79	18.67	74.0	54.0	34.21	35.33
2712	40.20	28.60	V	200	100	-2.51	37.69	15.77	74.0	54.0	36.31	38.23
3616	39.40	26.30	H	0	100	0.58	39.98	16.56	74.0	54.0	34.02	37.44
3616	42.70	29.80	V	0	192	0.58	43.28	20.06	74.0	54.0	30.72	33.94
4520	38.50	24.40	H	0	100	3.32	41.82	17.40	74.0	54.0	32.18	36.60
4520	37.80	24.30	V	0	100	3.32	41.12	17.30	74.0	54.0	32.88	36.70
5424	43.50	31.00	H	39	226	3.76	47.26	24.44	74.0	54.0	26.74	29.56
5424	42.50	28.70	V	196	187	3.76	46.26	22.14	74.0	54.0	27.74	31.86
8136	37.60	23.90	H	0	100	9.46	47.06	23.04	74.0	54.0	26.94	30.96
8136	37.10	23.90	V	0	100	9.46	46.56	23.04	74.0	54.0	27.44	30.96
9040	37.90	23.40	H	0	100	10.49	48.39	23.57	74.0	54.0	25.61	30.43
9040	36.20	23.30	V	0	100	10.49	46.69	23.47	74.0	54.0	27.31	30.53
Mid Channel												
2742	40.80	27.30	H	146	100	-2.41	38.39	14.57	74.0	54.0	35.61	39.43
2742	39.50	26.60	V	244	107	-2.41	37.09	13.87	74.0	54.0	36.91	40.13
3656	39.30	25.80	H	231	100	0.71	40.01	16.19	74.0	54.0	33.99	37.81
3656	40.40	27.10	V	0	100	0.71	41.11	17.49	74.0	54.0	32.89	36.51
4570	38.20	24.40	H	0	100	3.35	41.55	17.43	74.0	54.0	32.45	36.57
4570	38.00	24.30	V	0	100	3.35	41.35	17.33	74.0	54.0	32.65	36.67
7312	37.50	24.00	H	0	100	8.18	45.68	21.86	74.0	54.0	28.32	32.14
7312	37.60	23.90	V	0	100	8.18	45.78	21.76	74.0	54.0	28.22	32.24
8226	38.40	23.80	H	0	100	9.87	48.27	23.35	74.0	54.0	25.73	30.65
8226	37.20	23.70	V	0	100	9.87	47.07	23.25	74.0	54.0	26.93	30.75
9140	38.20	24.00	H	0	100	10.27	48.47	23.95	74.0	54.0	25.53	30.05
9140	38.10	23.90	V	0	100	10.27	48.37	23.85	74.0	54.0	25.63	30.15
High Channel												
930	50.51	-----	H	0	100	26.20	76.71	-----	90.2	-----	13.49	-----
2778	41.30	30.30	H	155	154	-2.30	39.00	17.68	74.0	54.0	35.00	36.32
2778	39.90	27.70	V	52	100	-2.30	37.60	15.08	74.0	54.0	36.40	38.92
3704	40.00	26.10	H	152	145	0.87	40.87	16.65	74.0	54.0	33.13	37.35
3704	39.80	26.10	V	331	100	0.87	40.67	16.65	74.0	54.0	33.33	37.35
4630	37.70	24.40	H	0	100	3.37	41.07	17.45	74.0	54.0	32.93	36.55
4630	38.40	24.40	V	0	100	3.37	41.77	17.45	74.0	54.0	32.23	36.55
7408	37.10	23.10	H	0	100	8.60	45.70	21.39	74.0	54.0	28.30	32.61
7408	36.50	22.90	V	0	100	8.60	45.10	21.19	74.0	54.0	28.90	32.81
8334	37.60	23.50	H	0	100	10.36	47.96	23.54	74.0	54.0	26.04	30.46
8334	37.00	23.50	V	0	100	10.36	47.36	23.54	74.0	54.0	26.64	30.46

Note: All emissions not listed were related to the unintentional circuitry of the carrier board.

Table 7.5.2.3-5: Radiated Spurious Emissions Tabulated Data – Monopole

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Turntable Position (o)	Antenna Height (cm)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg					pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel												
901	34.76	-----	H	0	100	26.38	61.14	-----	90.1	-----	28.96	-----
2712	48.10	34.00	H	188	100	-2.51	45.59	21.17	74.0	54.0	28.41	32.83
2712	50.40	41.90	V	0	130	-2.51	47.89	29.07	74.0	54.0	26.11	24.93
3616	41.40	27.10	H	313	100	0.58	41.98	17.36	74.0	54.0	32.02	36.64
3616	39.80	26.20	V	172	218	0.58	40.38	16.46	74.0	54.0	33.62	37.54
4520	37.80	24.60	H	0	100	3.32	41.12	17.60	74.0	54.0	32.88	36.40
4520	38.80	25.50	V	0	100	3.32	42.12	18.50	74.0	54.0	31.88	35.50
5424	41.10	28.10	H	309	100	3.76	44.86	21.54	74.0	54.0	29.14	32.46
5424	40.90	27.80	V	281	100	3.76	44.66	21.24	74.0	54.0	29.34	32.76
8136	37.40	23.90	H	0	100	9.46	46.86	23.04	74.0	54.0	27.14	30.96
8136	37.60	23.80	V	0	100	9.46	47.06	22.94	74.0	54.0	26.94	31.06
9040	37.10	23.30	H	0	100	10.49	47.59	23.47	74.0	54.0	26.41	30.53
9040	37.20	23.20	V	0	100	10.49	47.69	23.37	74.0	54.0	26.31	30.63
Mid Channel												
2742	45.30	34.00	H	86	127	-2.41	42.89	21.27	74.0	54.0	31.11	32.73
2742	50.30	42.40	V	0	100	-2.41	47.89	29.67	74.0	54.0	26.11	24.33
3656	41.10	26.60	H	319	100	0.71	41.81	16.99	74.0	54.0	32.19	37.01
3656	40.00	26.50	V	29	146	0.71	40.71	16.89	74.0	54.0	33.29	37.11
4570	38.80	24.90	H	51	100	3.35	42.15	17.93	74.0	54.0	31.85	36.07
4570	40.00	26.50	V	155	100	3.35	43.35	19.53	74.0	54.0	30.65	34.47
7312	37.60	24.00	H	0	100	8.18	45.78	21.86	74.0	54.0	28.22	32.14
7312	37.80	24.00	V	0	100	8.18	45.98	21.86	74.0	54.0	28.02	32.14
8226	38.10	23.70	H	0	100	9.87	47.97	23.25	74.0	54.0	26.03	30.75
8226	37.60	23.70	V	0	100	9.87	47.47	23.25	74.0	54.0	26.53	30.75
9140	37.10	23.90	H	0	100	10.27	47.37	23.85	74.0	54.0	26.63	30.15
9140	37.40	23.90	V	0	100	10.27	47.67	23.85	74.0	54.0	26.33	30.15
High Channel												
925.78	46.16	-----	V	0	153	26.16	72.32	-----	90.6	-----	18.28	-----
2778	43.70	34.30	H	90	108	-2.30	41.40	21.68	74.0	54.0	32.60	32.32
2778	50.40	42.90	V	0	100	-2.30	48.10	30.28	74.0	54.0	25.90	23.72
3704	40.70	27.90	H	158	223	0.87	41.57	18.45	74.0	54.0	32.43	35.55
3704	40.00	26.90	V	20	259	0.87	40.87	17.45	74.0	54.0	33.13	36.55
4630	38.10	24.90	V	0	100	3.37	41.47	17.95	74.0	54.0	32.53	36.05
4630	40.60	27.10	V	38	118	3.37	43.97	20.15	74.0	54.0	30.03	33.85
7408	36.70	22.90	H	0	100	8.60	45.30	21.19	74.0	54.0	28.70	32.81
7408	35.90	22.90	V	0	100	8.60	44.50	21.19	74.0	54.0	29.50	32.81
8334	37.70	23.50	H	0	100	10.36	48.06	23.54	74.0	54.0	25.94	30.46
8334	37.60	23.40	V	0	100	10.36	47.96	23.44	74.0	54.0	26.04	30.56

Note: All emissions not listed were related to the unintentional circuitry of the carrier board.

Table 7.5.2.3-6: Radiated Spurious Emissions Tabulated Data – Dual band Monopole

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Turntable Position (o)	Antenna Height (cm)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg					pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel												
902	35.23	-----	H	204	100	26.36	61.59	-----	92.2	-----	30.61	-----
2712	57.60	51.30	H	302	242	-2.51	55.09	38.47	74.0	54.0	18.91	15.53
2712	65.00	59.00	V	213	258	-2.51	62.49	46.17	74.0	54.0	11.51	7.83
3616	42.30	29.00	H	271	110	0.58	42.88	19.26	74.0	54.0	31.12	34.74
3616	47.00	31.80	V	187	315	0.58	47.58	22.06	74.0	54.0	26.42	31.94
4520	39.50	25.80	H	316	100	3.32	42.82	18.80	74.0	54.0	31.18	35.20
4520	40.00	25.90	V	304	100	3.32	43.32	18.90	74.0	54.0	30.68	35.10
5424	44.50	32.40	H	216	100	3.76	48.26	25.84	74.0	54.0	25.74	28.16
5424	43.90	23.70	V	307	100	3.76	47.66	17.14	74.0	54.0	26.34	36.86
8136	37.40	23.80	H	0	100	9.46	46.86	22.94	74.0	54.0	27.14	31.06
8136	37.10	23.80	V	0	100	9.46	46.56	22.94	74.0	54.0	27.44	31.06
9040	37.10	23.30	H	0	100	10.49	47.59	23.47	74.0	54.0	26.41	30.53
9040	36.70	23.30	V	0	100	10.49	47.19	23.47	74.0	54.0	26.81	30.53
Mid Channel												
2742	55.60	48.50	H	186	122	-2.41	53.19	35.77	74.0	54.0	20.81	18.23
2742	60.50	54.40	V	212	137	-2.41	58.09	41.67	74.0	54.0	15.91	12.33
3656	41.60	27.00	H	324	100	0.71	42.31	17.39	74.0	54.0	31.69	36.61
3656	42.20	27.50	V	323	100	0.71	42.91	17.89	74.0	54.0	31.09	36.11
4570	40.70	27.40	H	321	100	3.35	44.05	20.43	74.0	54.0	29.95	33.57
4570	41.10	26.90	V	311	100	3.35	44.45	19.93	74.0	54.0	29.55	34.07
7312	37.90	24.00	H	0	100	8.18	46.08	21.86	74.0	54.0	27.92	32.14
7312	37.00	23.90	V	0	100	8.18	45.18	21.76	74.0	54.0	28.82	32.24
8226	37.40	23.70	H	0	100	9.87	47.27	23.25	74.0	54.0	26.73	30.75
8226	37.30	23.60	V	0	100	9.87	47.17	23.15	74.0	54.0	26.83	30.85
9140	37.20	24.00	H	0	100	10.27	47.47	23.95	74.0	54.0	26.53	30.05
9140	36.70	23.90	V	0	100	10.27	46.97	23.85	74.0	54.0	27.03	30.15
High Channel												
930.01	47.97	-----	H	200	100	26.20	74.17	-----	87.9	-----	13.73	-----
2778	53.30	46.10	H	187	100	-2.30	51.00	33.48	74.0	54.0	23.00	20.52
2778	59.20	53.00	V	205	276	-2.30	56.90	40.38	74.0	54.0	17.10	13.62
3704	40.70	26.70	H	270	100	0.87	41.57	17.25	74.0	54.0	32.43	36.75
3704	42.10	27.50	V	325	100	0.87	42.97	18.05	74.0	54.0	31.03	35.95
4630	39.80	26.70	H	217	100	3.37	43.17	19.75	74.0	54.0	30.83	34.25
4630	41.80	28.10	V	219	114	3.37	45.17	21.15	74.0	54.0	28.83	32.85
7408	36.70	23.20	H	0	100	8.60	45.30	21.49	74.0	54.0	28.70	32.51
7408	36.10	22.90	V	0	100	8.60	44.70	21.19	74.0	54.0	29.30	32.81
8334	37.10	23.50	H	0	100	10.36	47.46	23.54	74.0	54.0	26.54	30.46
8334	37.10	23.40	V	0	100	10.36	47.46	23.44	74.0	54.0	26.54	30.56

Note: All emissions not listed were related to the unintentional circuitry of the carrier board.

Table 7.5.2.3-7: Radiated Spurious Emissions Tabulated Data – Dipole

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Turntable Position (o)	Antenna Height (cm)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg					pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel												
901.02	44.73	-----	H	168	100	26.38	71.11	-----	90.6	-----	19.49	-----
2712	46.30	38.60	H	155	133	-2.51	43.79	25.77	74.0	54.0	30.21	28.23
2712	48.70	42.00	V	120	195	-2.51	46.19	29.17	74.0	54.0	27.81	24.83
3616	44.80	33.30	H	75	111	0.58	45.38	23.56	74.0	54.0	28.62	30.44
3616	43.80	31.70	V	282	124	0.58	44.38	21.96	74.0	54.0	29.62	32.04
4520	39.40	25.90	H	88	100	3.32	42.72	18.90	74.0	54.0	31.28	35.10
4520	39.20	25.60	V	188	150	3.32	42.52	18.60	74.0	54.0	31.48	35.40
5424	40.40	26.80	H	197	100	3.76	44.16	20.24	74.0	54.0	29.84	33.76
5424	39.50	25.70	V	146	100	3.76	43.26	19.14	74.0	54.0	30.74	34.86
8136	37.70	23.80	H	0	100	9.46	47.16	22.94	74.0	54.0	26.84	31.06
8136	37.40	23.80	V	0	100	9.46	46.86	22.94	74.0	54.0	27.14	31.06
9040	37.50	23.40	H	0	100	10.49	47.99	23.57	74.0	54.0	26.01	30.43
9040	37.20	23.30	V	0	100	10.49	47.69	23.47	74.0	54.0	26.31	30.53
Mid Channel												
2742	46.70	39.30	H	158	130	-2.41	44.29	26.57	74.0	54.0	29.71	27.43
2742	48.10	41.20	V	127	234	-2.41	45.69	28.47	74.0	54.0	28.31	25.53
3656	42.30	30.20	H	79	100	0.71	43.01	20.59	74.0	54.0	30.99	33.41
3656	43.40	31.80	V	277	122	0.71	44.11	22.19	74.0	54.0	29.89	31.81
4570	38.70	25.10	H	82	100	3.35	42.05	18.13	74.0	54.0	31.95	35.87
4570	39.00	25.30	V	205	100	3.35	42.35	18.33	74.0	54.0	31.65	35.67
7312	37.40	24.00	H	0	100	8.18	45.58	21.86	74.0	54.0	28.42	32.14
7312	37.20	23.90	V	0	100	8.18	45.38	21.76	74.0	54.0	28.62	32.24
8226	37.90	23.70	H	0	100	9.87	47.77	23.25	74.0	54.0	26.23	30.75
8226	37.60	23.70	V	0	100	9.87	47.47	23.25	74.0	54.0	26.53	30.75
9140	37.40	23.90	H	0	100	10.27	47.67	23.85	74.0	54.0	26.33	30.15
9140	37.20	23.90	V	0	100	10.27	47.47	23.85	74.0	54.0	26.53	30.15
High Channel												
930	47.18	-----	V	258	110	26.20	73.38	-----	87.6	-----	14.22	-----
2778	45.90	38.30	H	141	133	-2.30	43.60	25.68	74.0	54.0	30.40	28.32
2778	45.70	37.70	V	136	154	-2.30	43.40	25.08	74.0	54.0	30.60	28.92
3704	42.40	30.20	H	271	134	0.87	43.27	20.75	74.0	54.0	30.73	33.25
3704	42.30	29.80	V	268	100	0.87	43.17	20.35	74.0	54.0	30.83	33.65
4630	38.30	24.70	H	80	100	3.37	41.67	17.75	74.0	54.0	32.33	36.25
4630	38.10	24.80	V	197	100	3.37	41.47	17.85	74.0	54.0	32.53	36.15
7408	37.30	22.90	H	0	100	8.60	45.90	21.19	74.0	54.0	28.10	32.81
7408	36.40	22.90	V	0	100	8.60	45.00	21.19	74.0	54.0	29.00	32.81
8334	37.30	23.50	H	0	100	10.36	47.66	23.54	74.0	54.0	26.34	30.46
8334	37.30	23.50	V	0	100	10.36	47.66	23.54	74.0	54.0	26.34	30.46

Note: All emissions not listed were related to the unintentional circuitry of the carrier board.

**Table 7.5.2.3-8: Radiated Spurious Emissions Tabulated Data – Dual band Monopole
Simultaneous Transmission Data (915MHz / 2.4GHz radios)**

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Turntable Position (o)	Antenna Height (cm)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg					pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
	2.4GHz radio MCH – 915MHz radio MCH											
1216	43.20	30.80	H	353	120	8.64	51.84	39.44	74.0	54.0	22.16	14.56
1216	50.00	37.80	V	166	100	8.64	58.64	46.44	74.0	54.0	15.36	7.56
1526	46.80	37.20	H	320	112	-11.62	35.18	25.58	74.0	54.0	38.82	28.42
1526	53.60	45.30	V	347	131	-11.62	41.98	33.68	74.0	54.0	32.02	20.32
3353.6	44.40	33.40	H	0	100	0.66	45.06	34.06	74.0	54.0	28.94	19.94
3353.6	51.10	40.60	V	112	100	0.66	51.76	41.26	74.0	54.0	22.24	12.74
4267	45.50	32.50	H	324	107	5.97	51.47	38.47	74.0	54.0	22.53	15.53
4267	52.70	40.80	V	314	100	5.97	58.67	46.77	74.0	54.0	15.33	7.23
4879	41.70	29.50	H	178	100	7.57	49.27	37.07	74.0	54.0	24.73	16.93
4879	46.20	32.70	V	81	126	7.57	53.77	40.27	74.0	54.0	20.23	13.73

Note: All emissions not listed were related to the unintentional circuitry of the carrier board.

7.5.2.4 Sample Calculation:

$$R_c = R_u + CF_T$$

Where:

- CF_T = Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)
 R_u = Uncorrected Reading
 R_c = Corrected Level
 AF = Antenna Factor
 CA = Cable Attenuation
 AG = Amplifier Gain
 DC = Duty Cycle Correction Factor

Example Calculation: Peak

Corrected Level: $43.4 + -2.51 = 40.89\text{dBuV/m}$
 Margin: $74\text{dBuV/m} - 40.89\text{dBuV/m} = 33.11\text{dB}$

Example Calculation: Average

Corrected Level: $33.5 + -2.51 - 10.32 = 20.67\text{dBuV}$
 Margin: $54\text{dBuV} - 20.67\text{dBuV} = 33.33\text{dB}$

7.5.2.5 Emission Profiles

Figure 7.5.2.5-1: Emission Profile – Below 1GHz – Intermediate-fed Inverted L (-0.9dBi)
Full Spectrum

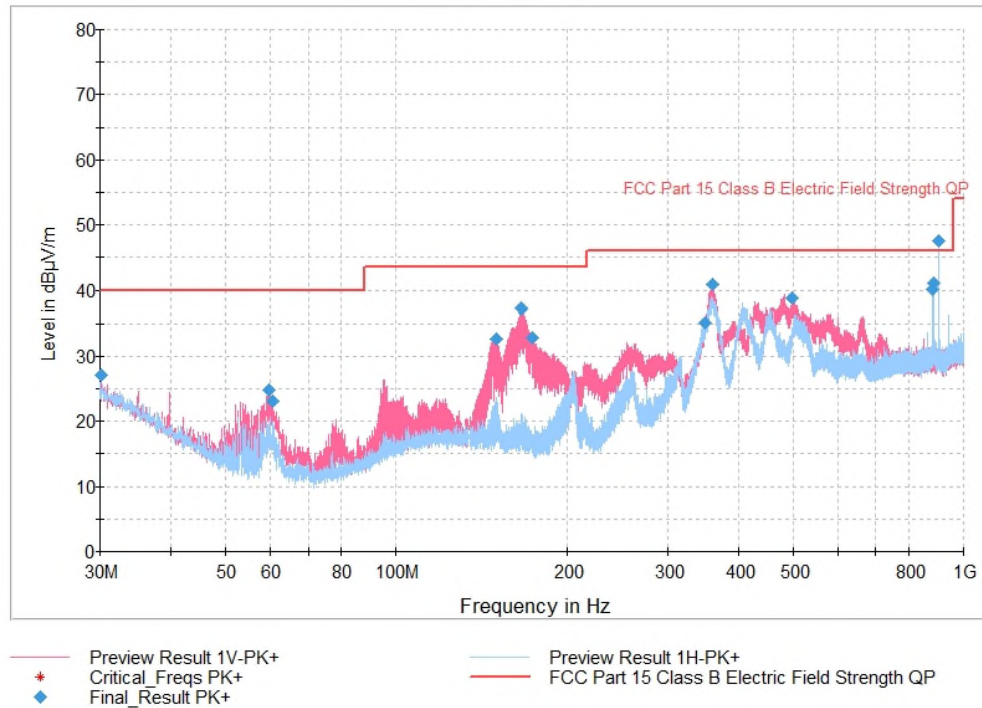


Figure 7.5.2.5-2: Emission Profile – Above 1GHz – Intermediate-fed Inverted L (-0.9dBi)
Full Spectrum

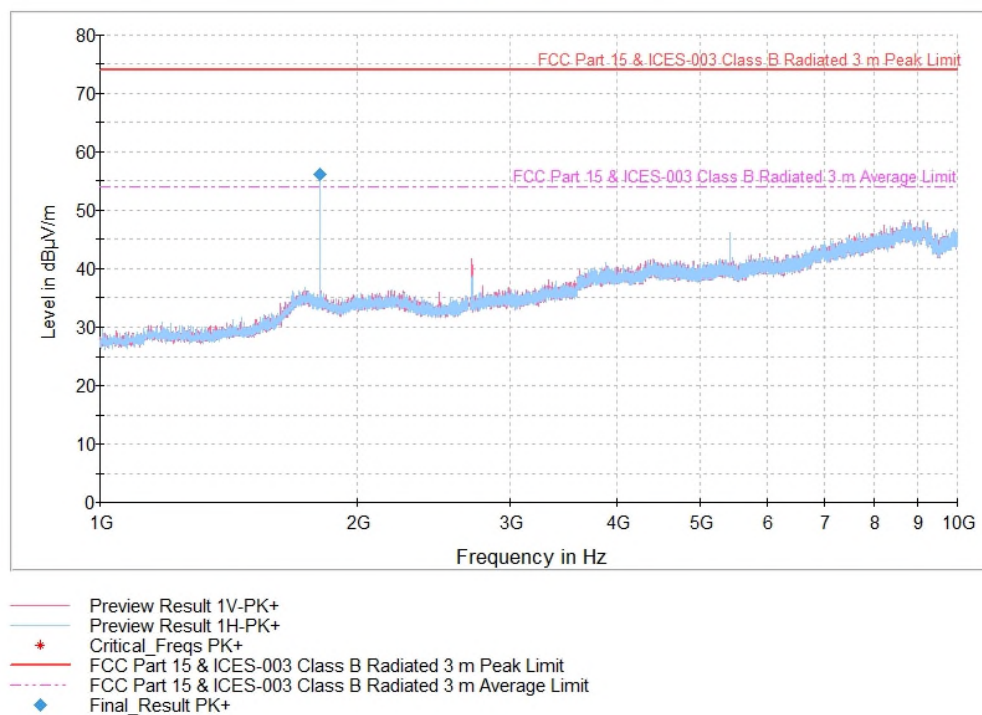
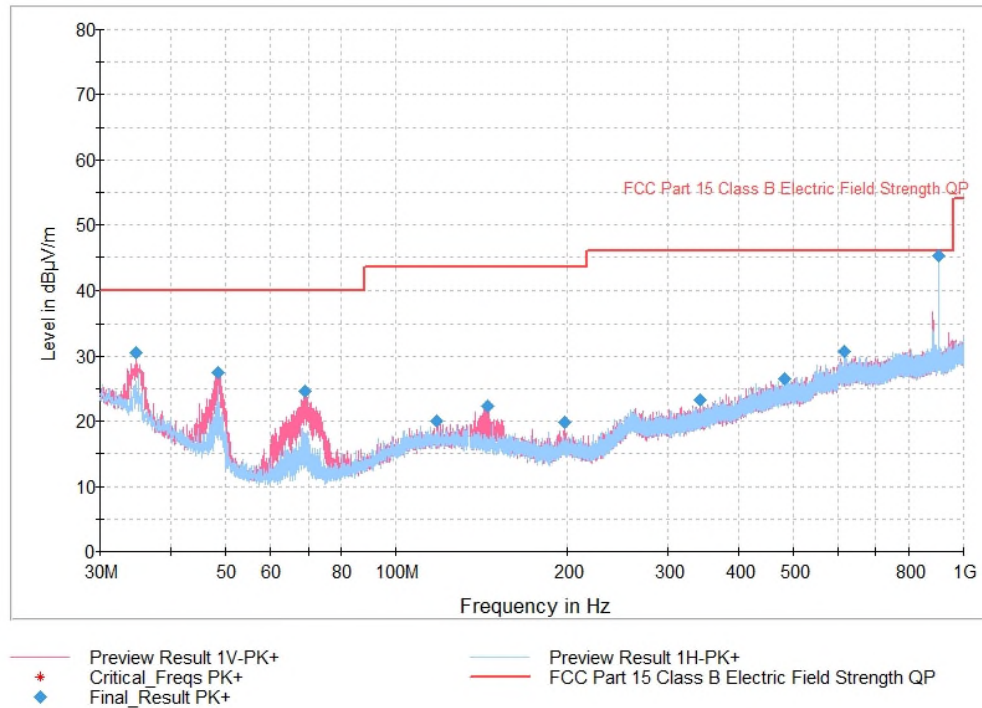


Figure 7.5.2.5-3: Emission Profile – Below 1GHz – Inverted F PCB Trace

Full Spectrum

**Figure 7.5.2.5-4: Emission Profile – Above 1GHz – Inverted F PCB Trace**

Full Spectrum

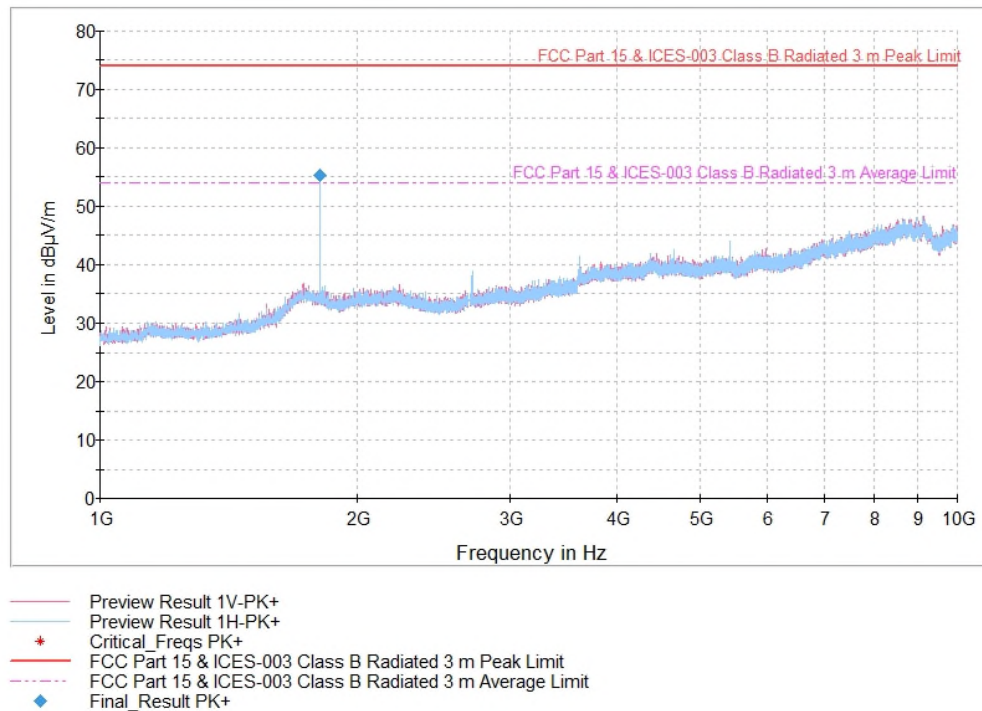


Figure 7.5.2.5-5: Emission Profile – Below 1GHz – Chip

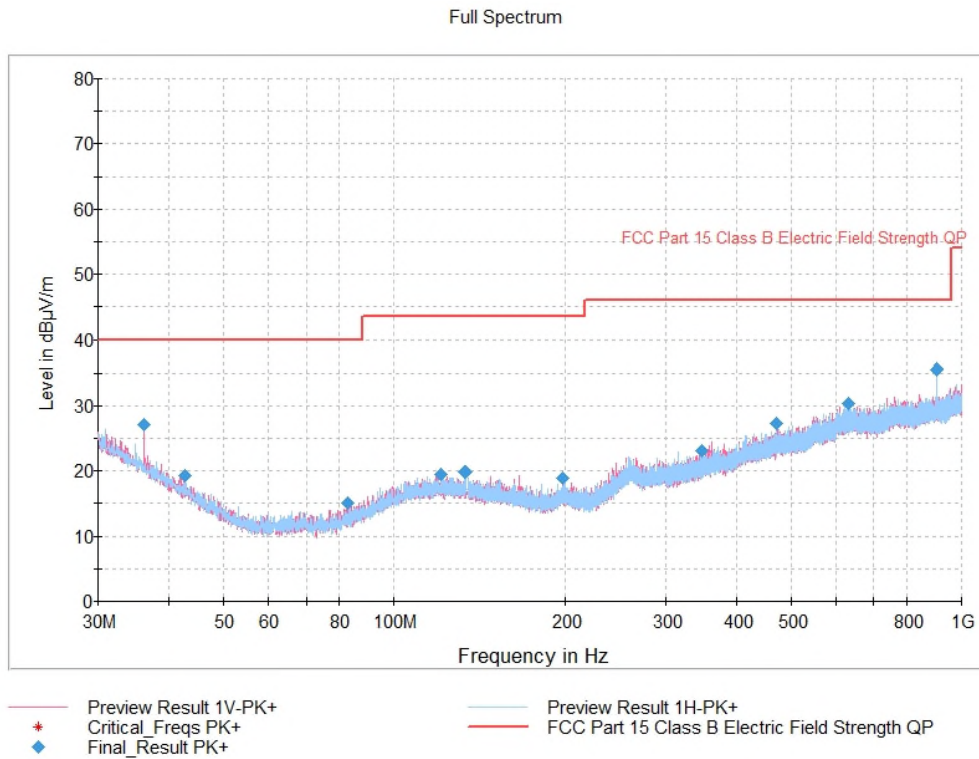


Figure 7.5.2.5-6: Emission Profile – Above 1GHz – Chip

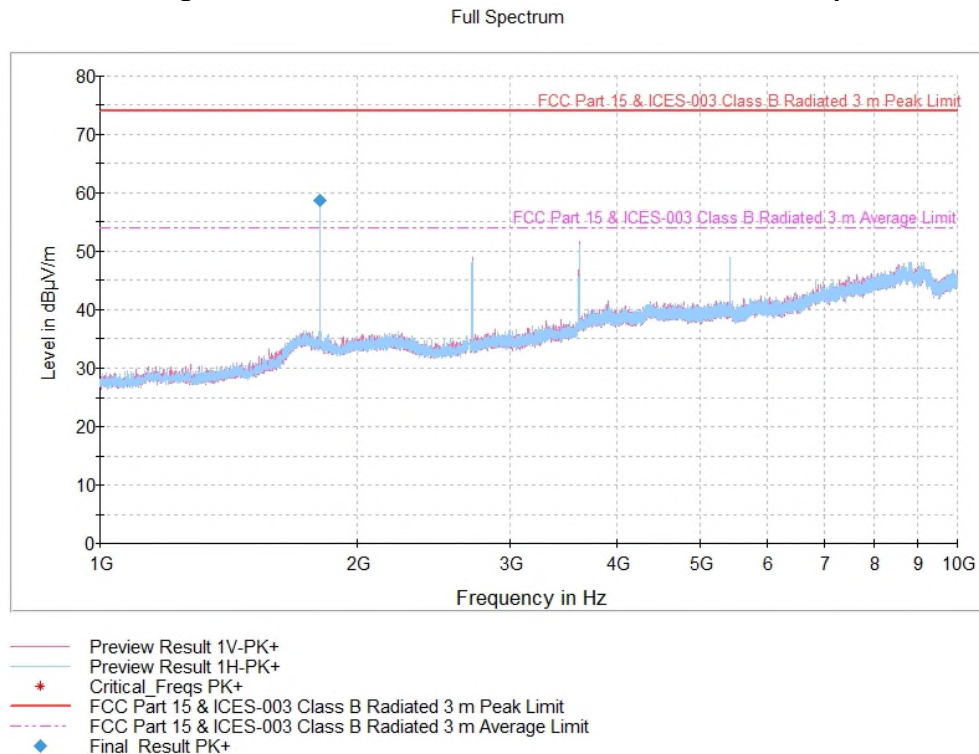


Figure 7.5.2.5-7: Emission Profile – Below 1GHz – Intermediate-fed Inverted L (-0.6dBi)
Full Spectrum

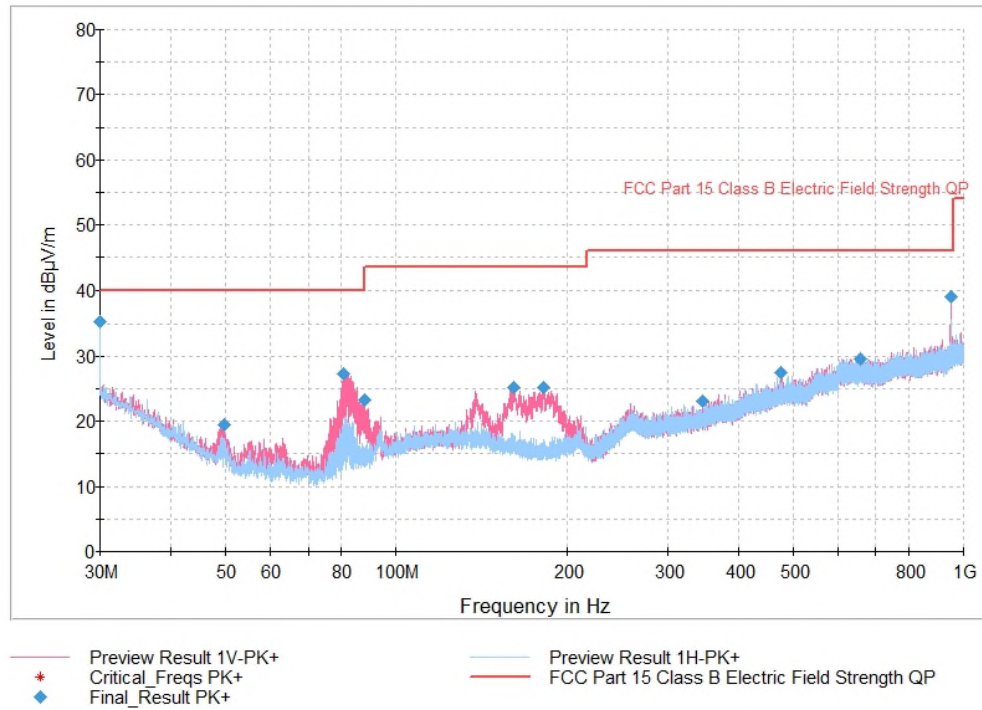


Figure 7.5.2.5-8: Emission Profile – Above 1GHz – Intermediate-fed Inverted L (-0.6dBi)
Full Spectrum

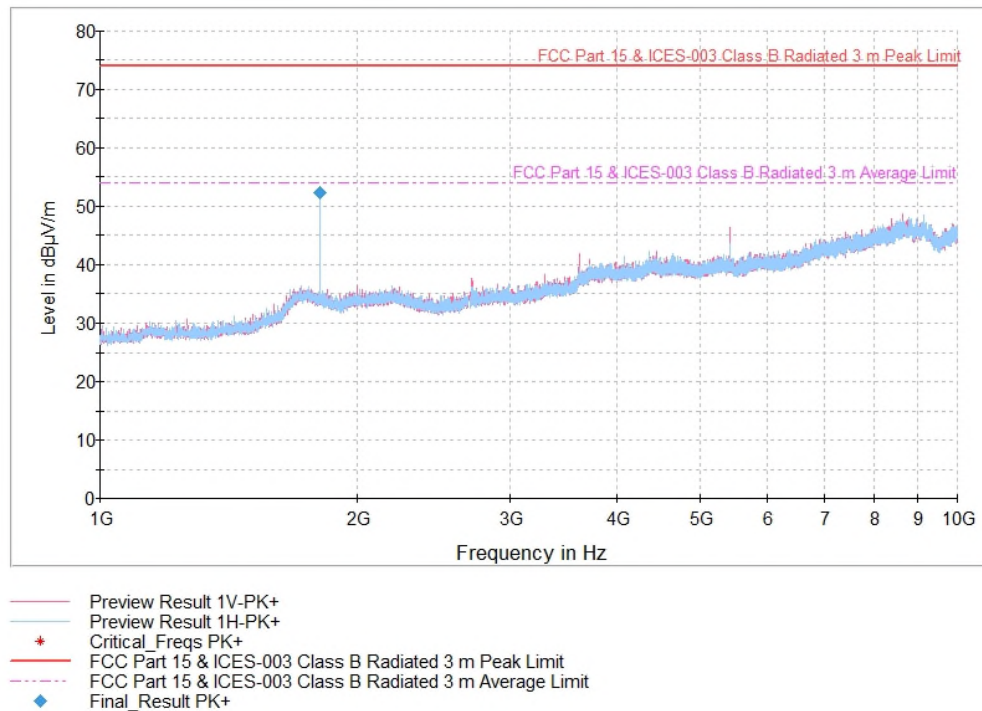
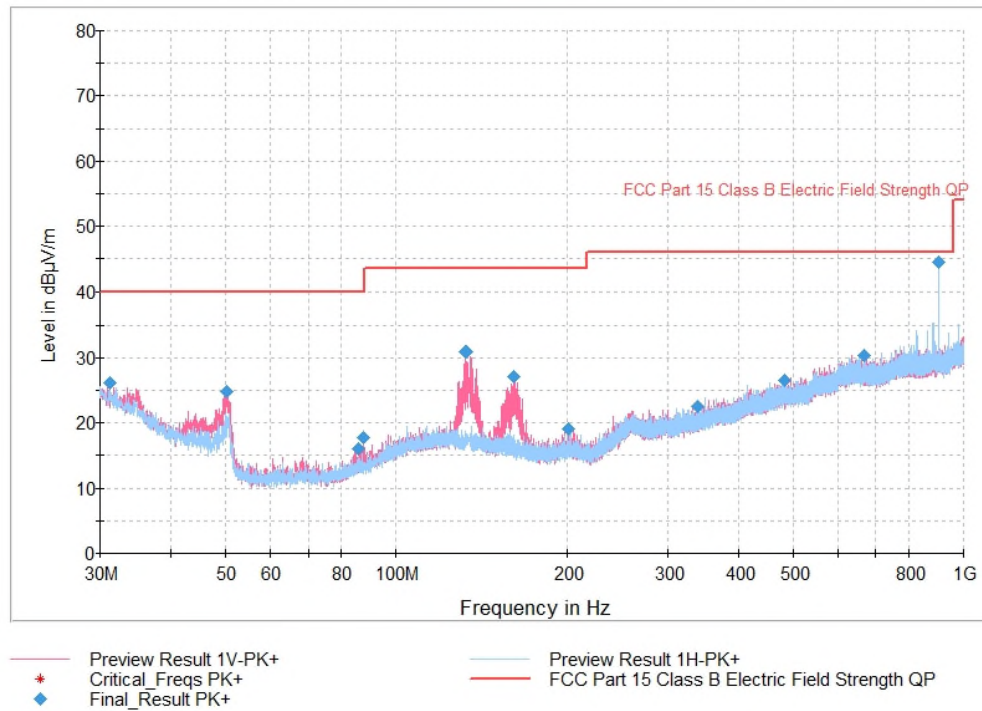


Figure 7.5.2.5-9: Emission Profile – Below 1GHz – Monopole

Full Spectrum

**Figure 7.5.2.5-10: Emission Profile – Above 1GHz – Monopole**

Full Spectrum

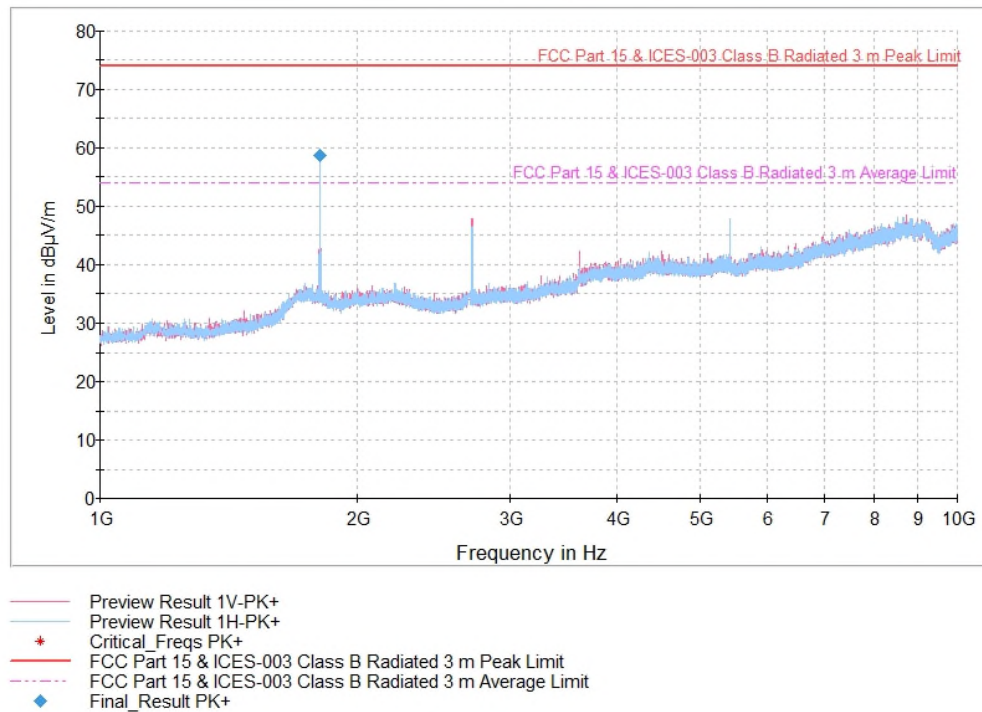
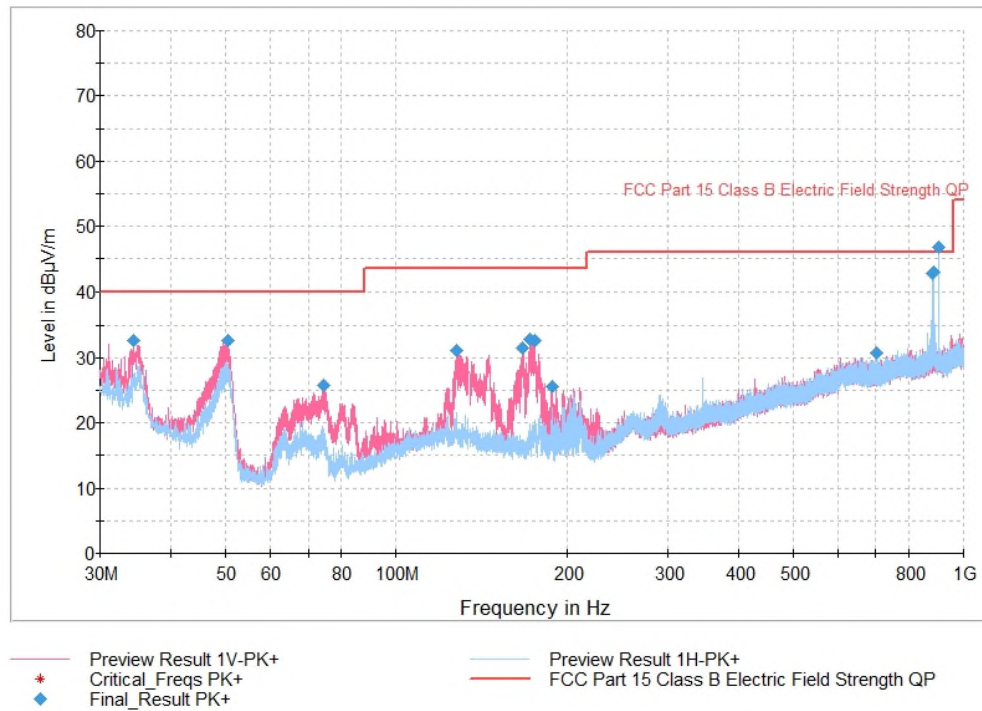


Figure 7.5.2.5-11: Emission Profile – Below 1GHz – Dual band Dipole

Full Spectrum

**Figure 7.5.2.5-12: Emission Profile – Above 1GHz – Dual band Dipole**

Full Spectrum

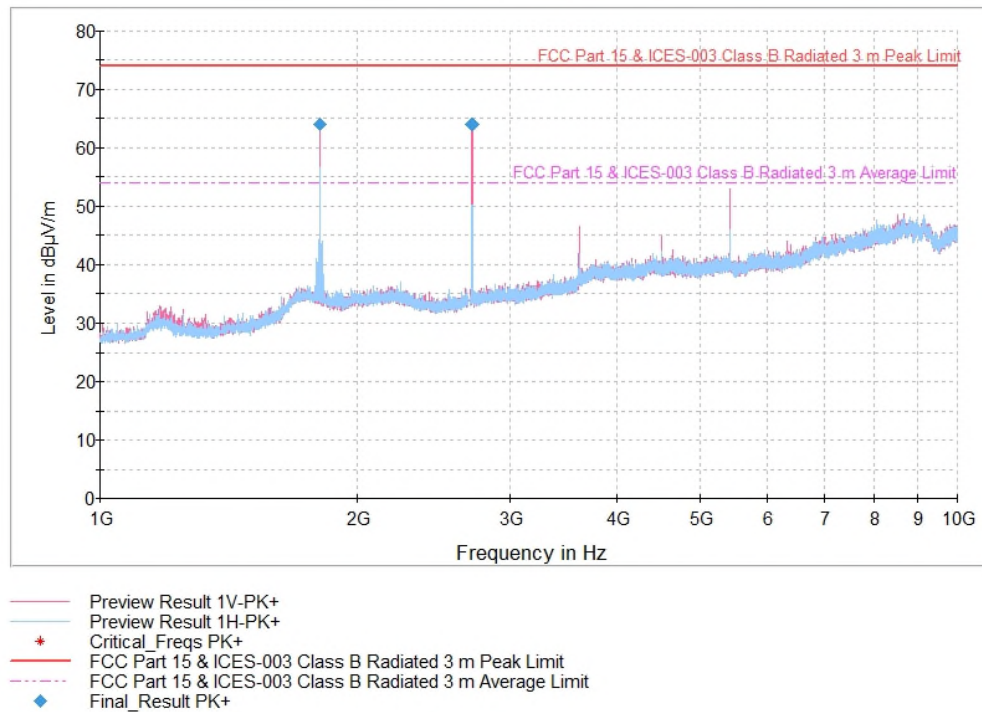
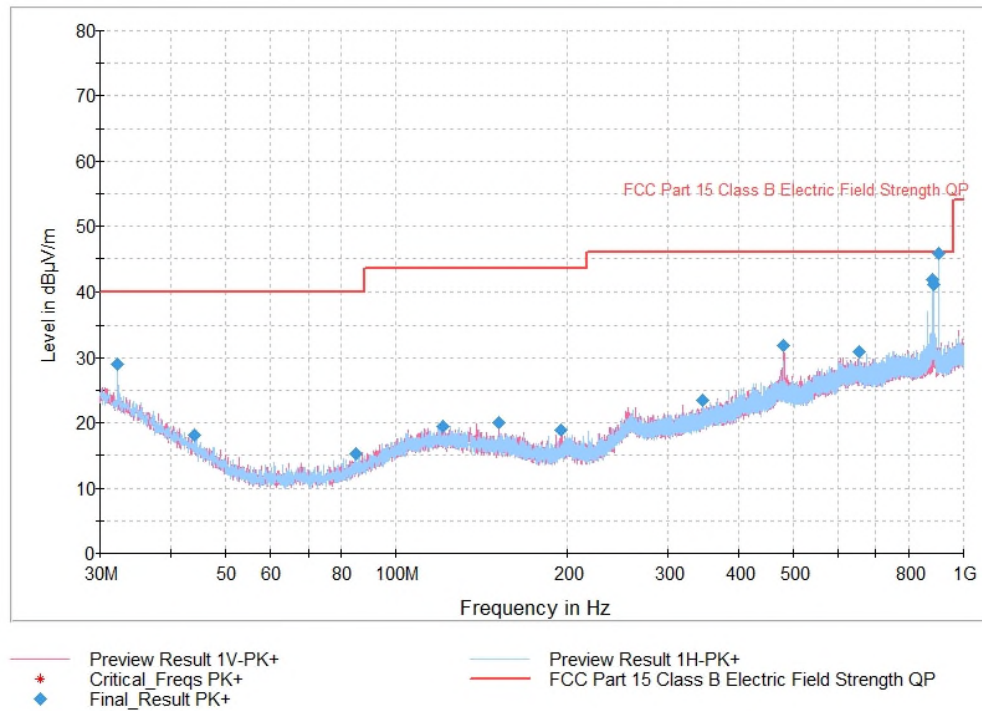


Figure 7.5.2.5-13: Emission Profile – Below 1GHz – Dipole

Full Spectrum

**Figure 7.5.2.5-14: Emission Profile – Above 1GHz – Dipole**

Full Spectrum

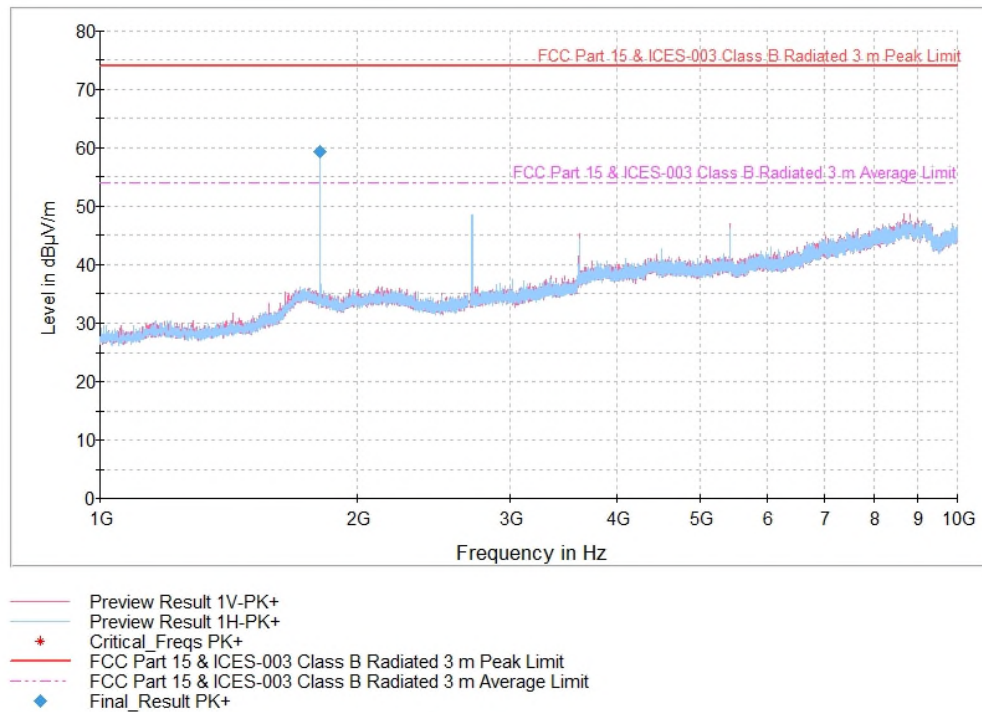
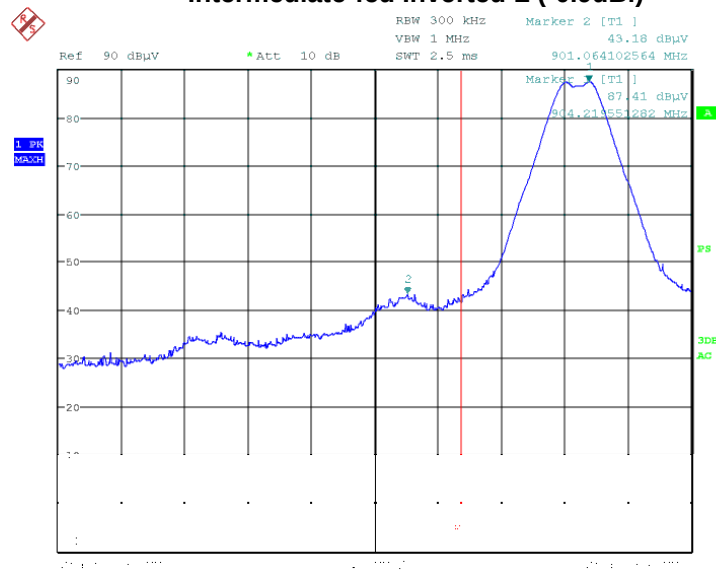
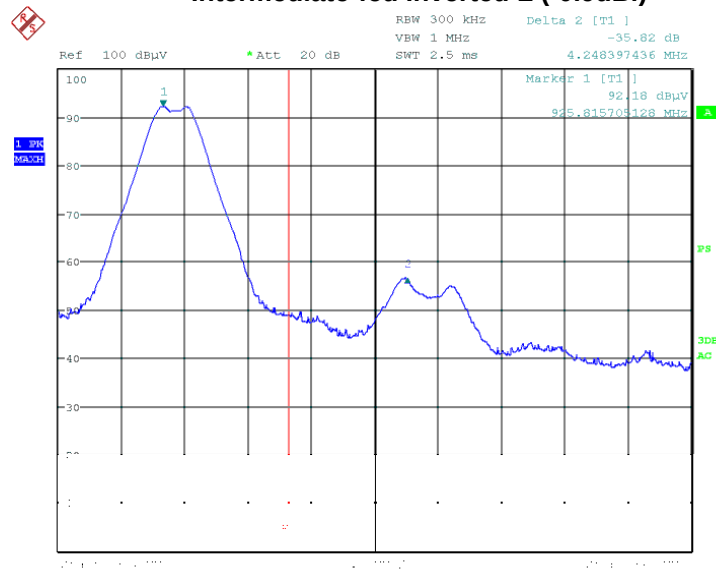


Figure 7.5.2.5-15: Emission Profile – Low Channel Band Edge – Intermediate-fed Inverted L (-0.9dBi)



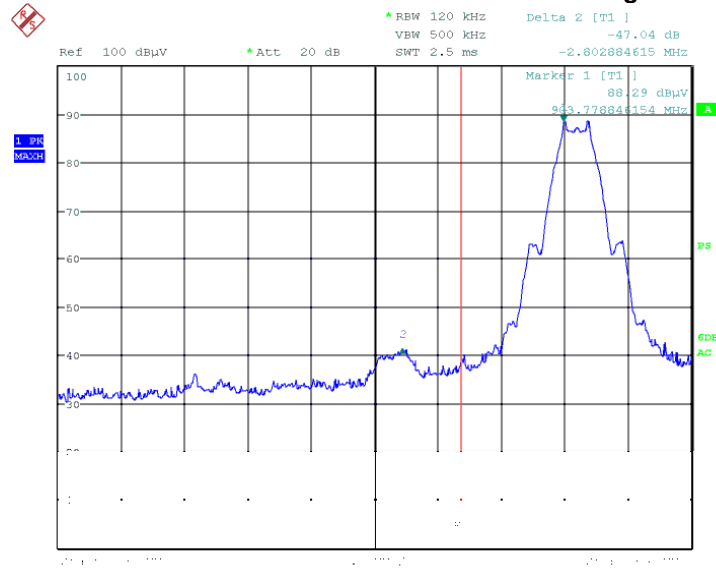
Antenna: Loop (10dBi)

Figure 7.5.2.5-16: Emission Profile – High Channel Band Edge – Intermediate-fed Inverted L (-0.9dBi)



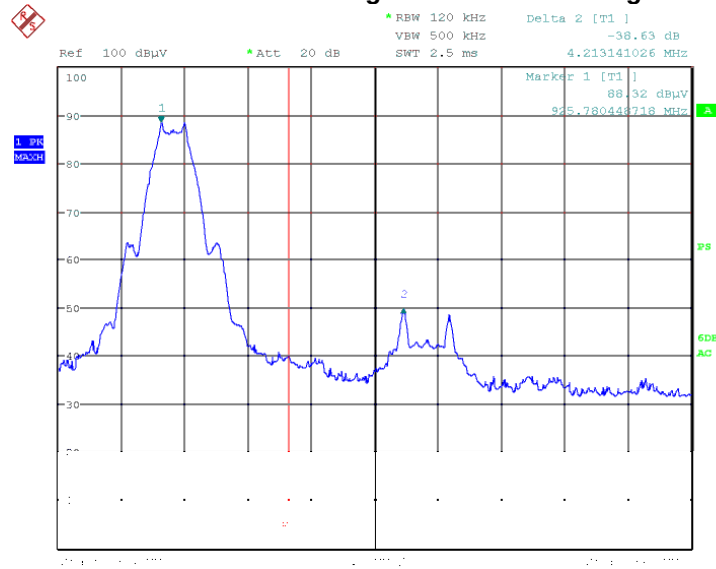
Antenna: Loop (10dBi)

Figure 7.5.2.5-17: Emission Profile – Low Channel Band Edge – Inverted F PCB Trace



Data File Name: 17-0011

Figure 7.5.2.5-18: Emission Profile – High Channel Band Edge – Inverted F PCB Trace

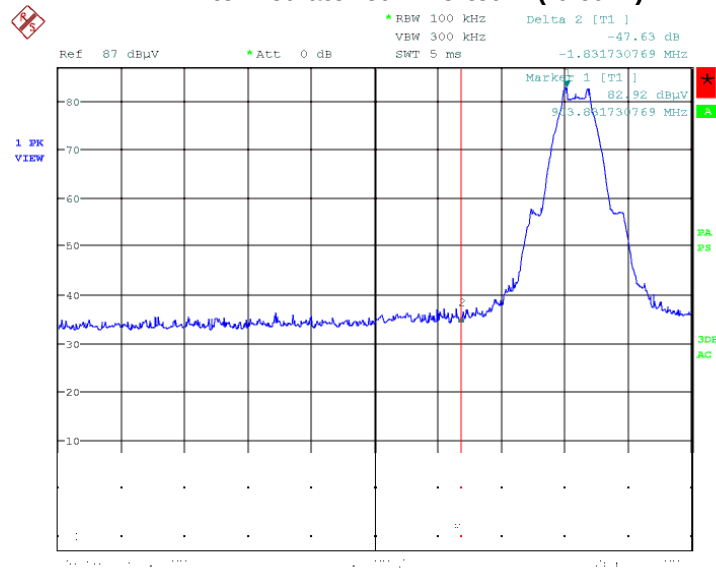


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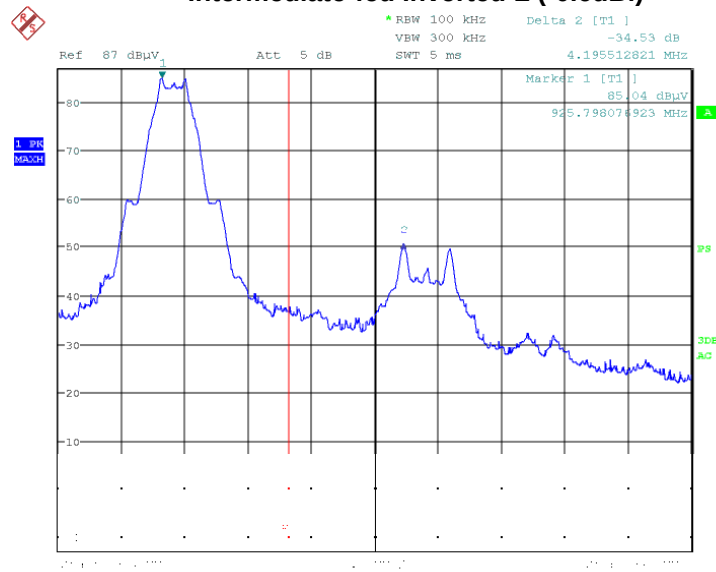
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Figure 7.5.2.5-21: Emission Profile – Low Channel Band Edge – Intermediate-fed Inverted L (-0.6dBi)



Antenna Factor: 10.0 dBi

Figure 7.5.2.5-22: Emission Profile – High Channel Band Edge – Intermediate-fed Inverted L (-0.6dBi)



Antenna Factor: 10.0 dBi

Figure 7.5.2.5-23: Emission Profile – Low Channel Band Edge – Monopole

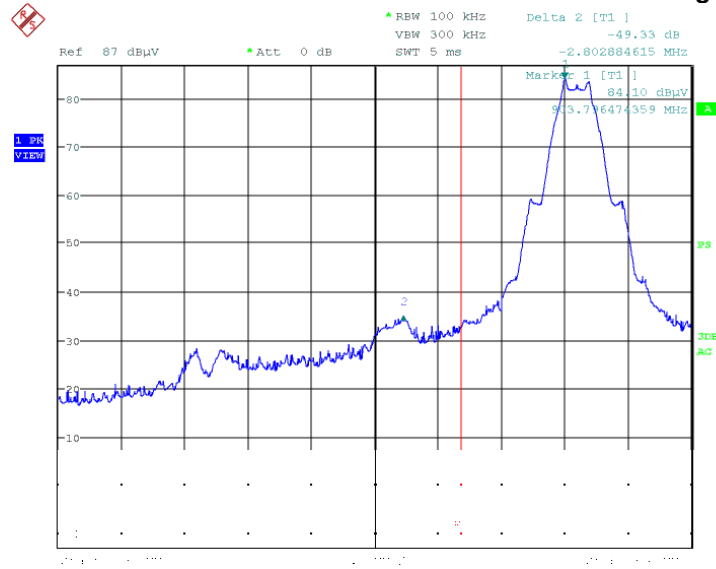


Figure 7.5.2.5-24: Emission Profile – High Channel Band Edge – Monopole

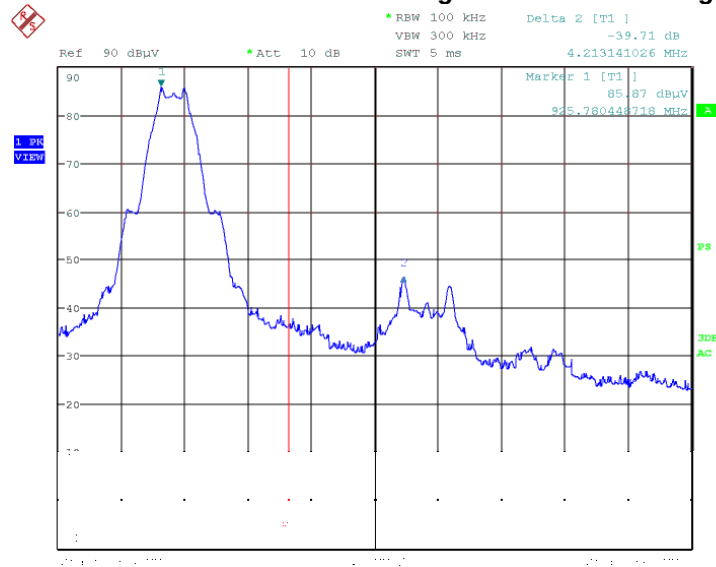
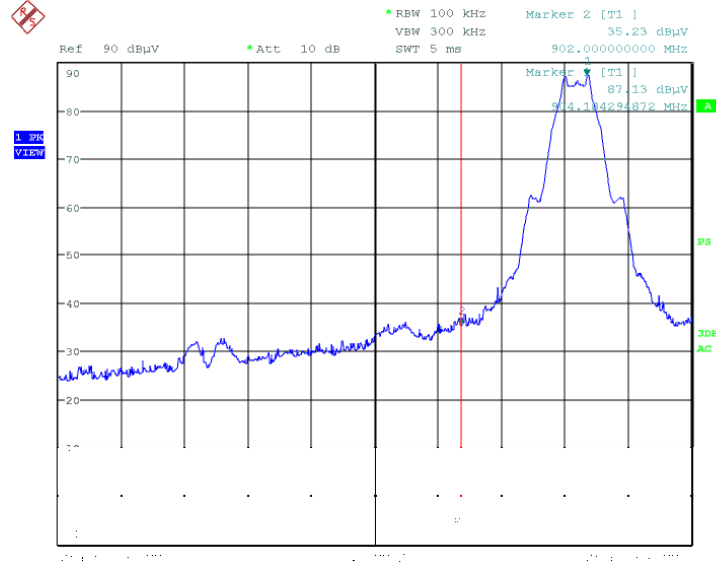
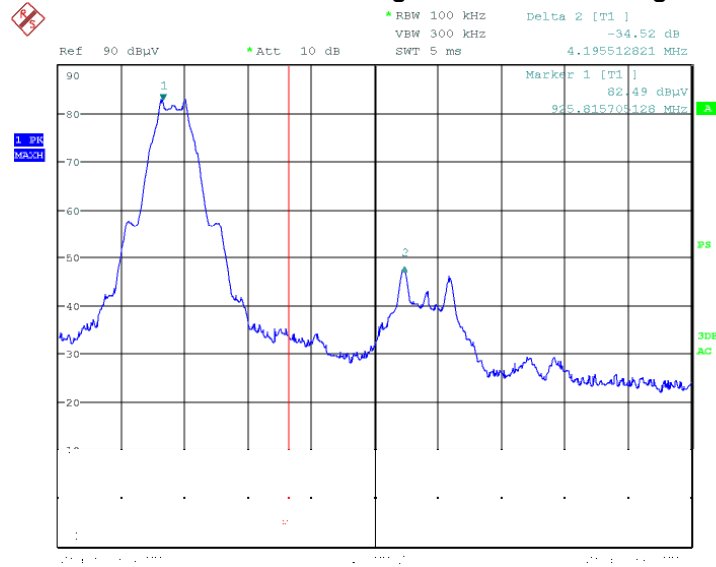


Figure 7.5.2.5-25: Emission Profile – Low Channel Band Edge – Dual band Dipole



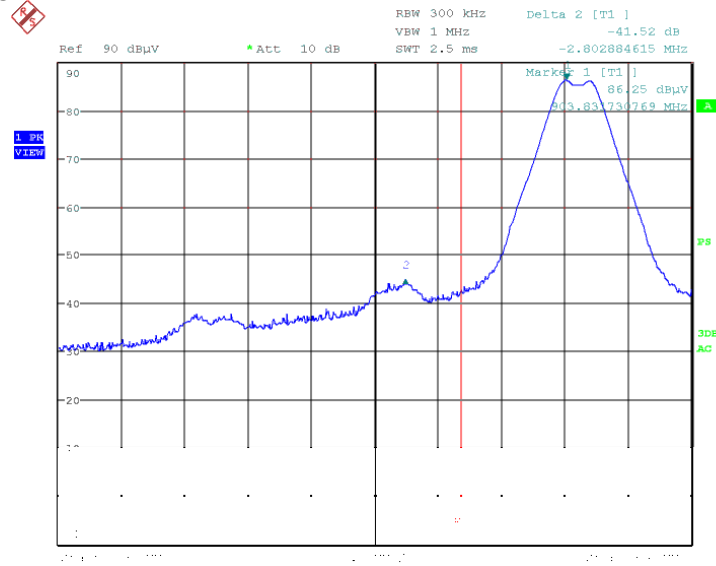
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Figure 7.5.2.5-26: Emission Profile – High Channel Band Edge – Dual band Dipole



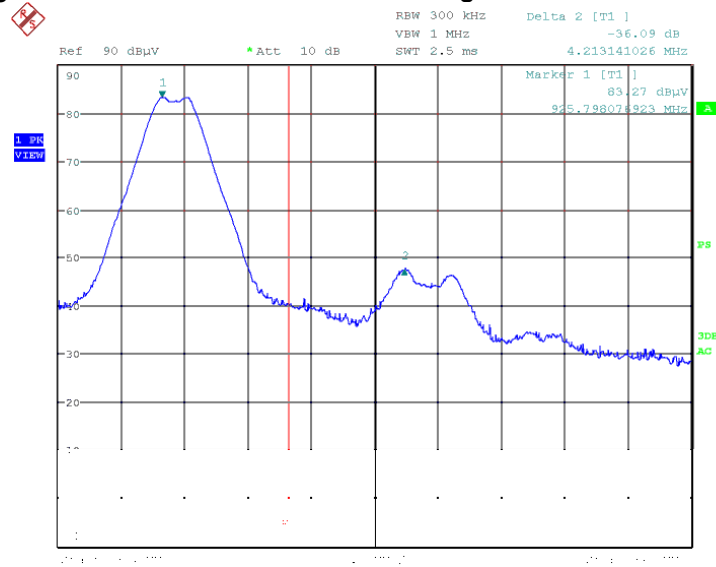
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Figure 7.5.2.5-27: Emission Profile – Low Channel Band Edge – Dipole



Data File: 20230111_011111

Figure 7.5.2.5-28: Emission Profile – High Channel Band Edge – Dipole



Data File: 20230111_011111

7.6 Power Spectral Density – FCC: 15.247(e); ISED Canada: RSS-247 5.2(b)

7.6.1 Measurement Procedure

The power spectral density was measured in accordance with the FCC KDB 558074 D01 15.247 Meas Guidance v05r02 utilizing the PKPSD (peak PSD) method. The RF output of the equipment under test was directly connected to the input of the spectrum analyzer applying suitable attenuation. The Resolution Bandwidth (RBW) of the spectrum analyzer was set to 5 kHz. The Video Bandwidth (VBW) was set to 20 kHz. Span was set to 1.5 times the DTS bandwidth. The trace was set to max hold with a peak detector active.

7.6.2 Measurement Results

Performed by: Chris Gormley

Table 7.6.2-1: Peak Power Spectral Density

Frequency (MHz)	PSD Level (dBm)
904	7.14
914	7.16
926	7.10

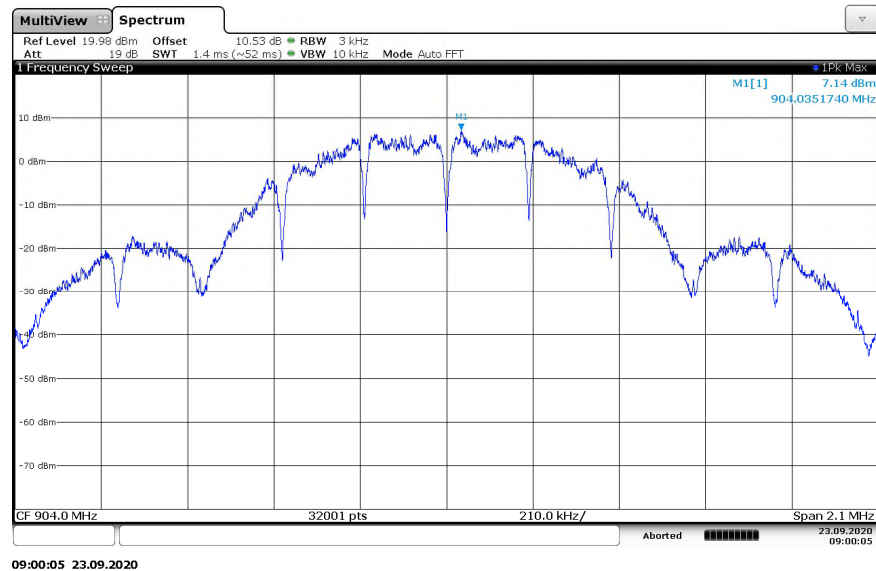


Figure 7.6.2-1: PSD Plot –LCH

8 MEASUREMENT UNCERTAINTY

The expanded laboratory measurement uncertainty figures (U_{Lab}) provided below correspond to an expansion factor (coverage factor) $k = 1.96$ which provide confidence levels of 95%.

Parameter	U_{lab}
Occupied Channel Bandwidth	$\pm 0.004\%$
RF Conducted Output Power	$\pm 0.689 \text{ dB}$
Power Spectral Density	$\pm 0.5 \text{ dB}$
Antenna Port Conducted Emissions	$\pm 2.717 \text{ dB}$
Radiated Emissions	$\pm 5.877 \text{ dB}$
Temperature	$\pm 0.860 \text{ }^{\circ}\text{C}$
Radio Frequency	$\pm 2.832 \times 10^{-8}$
AC Power Line Conducted Emissions	± 2.85

9 CONCLUSION

In the opinion of TÜV SÜD America Inc. the RMODIT3, manufactured by Acuity Brands Lighting Inc. meets the requirements of FCC Part 15 subpart C and ISED Canada Radio Standards Specification: RSS-247 for the tests documented herein.

END REPORT