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Testing of

Electromagnetic Emissions

per

USA:	**CFR Title 47, Part 15.247**	(Emissions)
USA:	**CFR Title 47, Part 2.1091;2.1093**	(Exposure)
Canada:	**ISED RSS-247/GENe**	(Emissions)
Canada:	**ISED RSS-102**	(Exposure)

are herein reported for

DigiBit, LLC
DB-A01

Test Report No.: 20170615-RPTDIGI100033Ar1

Applicant/Provider:
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Data Recorded by: Dr. Joseph Brunett, EMC-002790-NE

Reviewed by: Dr. Joseph Brunett, EMC-002790-NE

Prepared by: Dr. Joseph Brunett, EMC-002790-NE

Date of Issue: June 15, 2017

Results of testing completed on (or before) March 13, 2017 are as follows.

Emissions: The transmitter intentional emissions **COMPLY** with the regulatory limit(s) by no less than 27.2 dB. Transmit chain spurious or harmonic emissions **COMPLY** by no less than 4.7 dB. Unintentional spurious emissions from digital circuitry **COMPLY** with radiated emission limit(s) by at least 20 dB.

Revision History

Rev. No.	Date	Details	Revised By
r0	June 15, 2017	Initial Release.	J. Brunett
r1	July 14, 2017	Correct Typo.	J. Brunett

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1 Test Report Scope and Limitations

1.1 Laboratory Authorization

Test Facility description and attenuation characteristics are on file with the FCC Laboratory, Columbia, Maryland (FCC Reg. No: 688478) and with ISED Canada, Ottawa, ON (File Ref. No: IC8719A-1 and IC22227-1).

1.2 Report Retention

For equipment verified to comply with the regulations herein, the manufacturer is obliged to retain this report with the product records for the life of the product, and no less than ten years. A copy of this Report will remain on file with this laboratory until June 2027.

1.3 Subcontracted Testing

This report does not contain data produced under subcontract.

1.4 Limitation of Results

The test results contained in this report relate only to the item(s) tested. Any electrical or mechanical modification made to the test item subsequent to the test date shall invalidate the data presented in this report. Any electrical or mechanical modification made to the test item subsequent to this test date shall require reevaluation.

1.5 Copyright

1.6 Endorsements

This report shall not be used to claim product endorsement by any accrediting, regulatory, or governmental agency.

1.7 Test Location

The EUT was fully tested by **Willow Run (WR) Test Labs, Inc.**, 7117 Fieldcrest Dr., Brighton, Michigan 48116 USA. Table 1 lists all sites employed herein. Specific test sites utilized are also listed in the test results sections of this report.

Table 1: Test Site List.

Description	Location	Quality Num.
OATS (3 meter)	8501 Beck Rd. Bldg 2227, Belleville MI 48111	OATSA

1.8 Traceability and Equipment Used

Pertinent test equipment used for measurements at this facility is listed in Table 2. The quality system employed at Willow Run (WR) Test Labs, Inc. has been established to ensure all equipment has a clearly identifiable classification, calibration expiry date, and that all calibrations are traceable to the SI through NIST, other recognized national laboratories, accepted fundamental or natural physical constants, ratio type of calibration, or by comparison to consensus standards.

Table 2: Equipment List.

Description	Manufacturer/Model	SN	Quality Num.	Last Cal By / Date Due
Spectrum Analyzer	Rohde & Schwarz / FSV30	101660	RSFSV30001	RS / May-2018
Spectrum Analyzer	Rohde & Schwarz / FSV4	101222	RSFSV4001	RS / Mar-2018
Biconical	EMCO / 93110B	9802-3039	BICEMCO01	Lib. Labs / Aug-2017
Log Periodic Antenna	EMCO / 3146	9305-3614	LOGEMCO01	Lib. Labs / Aug-2017
Quad Ridge Horn	ETS Lind. / 3164-04	00066988	HRNQR316401	Lib. Labs / Aug-2017
Quad Ridge Horn	Singer / A6100	C35200	HQR2TO18S01	Lib. Labs / Aug-2017
K-Band Horn	JEF / NRL Std.	001	HRNK01	WRTL / Jul-2017

2 Test Specifications and Procedures

2.1 Test Specification and General Procedures

The ultimate goal of DigiBit, LLC is to demonstrate that the Equipment Under Test (EUT) complies with the Rules and/or Directives below. Detailed in this report are the results of testing the DigiBit, LLC DB-A01 for compliance to:

Country/Region	Rules or Directive	Referenced Section(s)
United States	Code of Federal Regulations	CFR Title 47, Part 15.247
Canada	ISED Canada	ISED RSS-247/GENe

It has been determined that the equipment under test is subject to the rules and directives above at the date of this testing. In conjunction with these rules and directives, the following specifications and procedures are followed herein to demonstrate compliance (in whole or in part) with these regulations.

ANSI C63.4:2014	"Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz"
ANSI C63.10:2013 (USA)	"American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices"
FCC-KDB 558074 v03r05-2016	"Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247"
FCC-KDB 913591 2007	"Measurement of radiated emissions at the edge of the band for a Part 15 RF Device"
CFR 47 2.1091/1093	"447498 D01 General RF Exposure Guidance v06: RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices"
ISED Canada	"The Measurement of Occupied Bandwidth"
ICES-003; Issue 6 (2016)	"Information Technology Equipment (ITE) Limits and methods of measurement"
ISED Canada RSS-102	"Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)"
ISED Canada SPR-002	"Supplementary Procedure for Assessing Compliance with RSS-102 Nerve Stimulation Exposure Limits."

3 Configuration and Identification of the Equipment Under Test

3.1 Description and Declarations

The EUT is a body worn transceiver. The EUT is approximately 6 x 3.5 x 1.5 cm in dimension, and is depicted in Figure 1. It is powered by 3.7 VDC Lithium-Polymer battery. This device is a wireless motion sensor. Table 3 outlines provider declared EUT specifications.

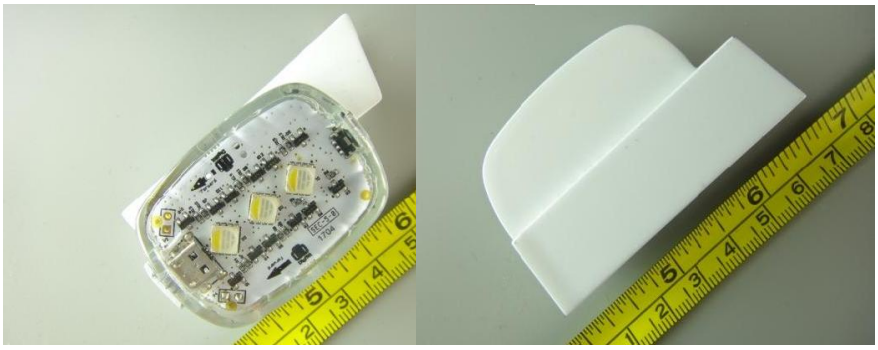


Figure 1: Photos of EUT.

Table 3: EUT Declarations.

General Declarations			
Equipment Type:	DSS Transceiver	**Country of Origin:**	USA
Nominal Supply:	3.7 VDC	**Oper. Temp Range:**	Not Declared
Frequency Range:	2402 – 2480 MHz	**Antenna Dimension:**	Not Declared
Antenna Type:	PCB Trace	**Antenna Gain:**	Not Declared
Number of Channels:	BLE (40), ANT (79)	**Channel Spacing:**	1 MHz (min)
Alignment Range:	Not Declared	**Type of Modulation:**	GFSK
United States			
FCC ID Number:	2AK88-DB-A01	**Classification:**	DSS
Canada			
IC Number:	22456-DBA01	**Classification:**	Spread Spectrum

3.1.1 EUT Configuration

The EUT is configured for testing as depicted in Figure 2.

3.1.2 Modes of Operation

The EUT is capable of two modulations, BLE GFSK modulation and ANT GFSK modulation. Both are tested herein. When charging the EUT radio does not operate.

3.1.3 Variants

There is only a single variant of the EUT, as tested.

3.1.4 Test Samples

Five samples in total were provided. Three software modified samples capable of continuous transmission on the Low, Middle, and High channels, and two normal operating samples for testing and photographs.

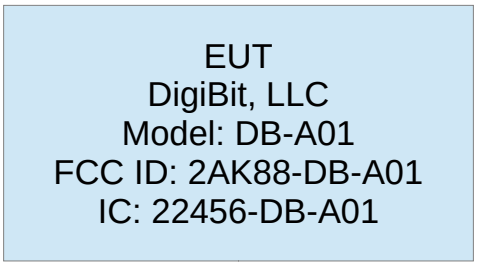


Figure 2: EUT Test Configuration Diagram.

3.1.5 Functional Exerciser

Normal operating EUT functionality was verified by observation of transmitted signal.

3.1.6 Modifications Made

There were no modifications made to the EUT by this laboratory.

3.1.7 Production Intent

The EUT appears to be a production ready sample.

3.1.8 Declared Exemptions and Additional Product Notes

None.

4 Emissions

4.1 General Test Procedures

4.1.1 Radiated Test Setup and Procedures

Radiated electromagnetic emissions from the EUT are first pre-scanned in our shielded anechoic chamber or GTEM test cell. Spectrum and modulation characteristics of all emissions are recorded. Instrumentation, including spectrum analyzers and other test equipment as detailed in Section 1.7 are employed. After pre-scan, emission measurements are made on the test site of record. If the EUT connects to auxiliary equipment and is table or floor standing, the configurations prescribed in relevant test standards are followed. Alternatively, a layout closest to normal use (as declared by the provider) is employed if the resulting emissions appear to be worst-case in such a configuration. See Figure 3. All intentionally radiating elements that are not fixed-mounted in use are placed on the test table lying flat, on their side, and on their end (3-axes) and the resulting worst case emissions are recorded. If the EUT is fixed-mounted in use, measurements are made with the device oriented in the manner consistent with installation and then emissions are recorded.

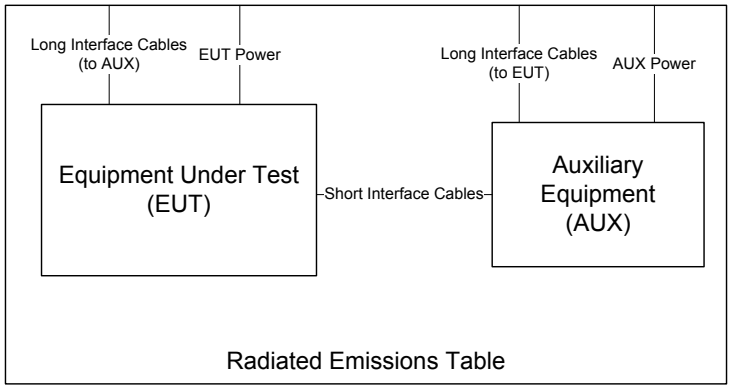


Figure 3: Radiated Emissions Diagram of the EUT.

If the EUT exhibits spurious emissions due to internal receiver circuitry, such emissions are measured with an appropriate carrier signal applied. For devices with intentional emissions below 30 MHz, a shielded loop antenna is used. It is placed at a 1 meter receive height. Emissions between 30 MHz and 1 GHz are measured using tuned dipoles and/or calibrated broadband antennas. For both horizontal and vertical polarizations, the test antenna is raised and lowered from 1 to 4 m in height until a maximum emission level is detected. The EUT is then rotated through 360^o in azimuth until the highest emission is detected. The test antenna is then raised and lowered one last time from 1 to 4 m and the worst case value is recorded. Emissions above 1 GHz are characterized using standard gain horn or broadband ridge-horn antennas on our OATS with a 4×5 m rectangle of H-4 absorber placed over the ground screen covering the OATS ground screen. Care is taken to ensure that test receiver resolution and video bandwidths meet the regulatory requirements, and that the emission bandwidth of the EUT is not reduced. Photographs of the test setup employed are depicted in Figure 4.

Where regulations allow for direct measurement of field strength, power values (dBm) measured on the test receiver / analyzer are converted to dBμV/m at the regulatory distance, using

$$E_{dist} = 107 + P_R + K_A - K_G + K_E - C_F$$

where P_R is the power recorded on spectrum analyzer, in dBm, K_A is the test antenna factor in dB/m, K_G is the combined pre-amplifier gain and cable loss in dB, K_E is duty correction factor (when applicable) in dB, and C_F is a distance conversion (employed only if limits are specified at alternate distance) in dB. This field strength value is then compared with the regulatory limit. If effective isotropic radiated power (EIRP) is computed, it is computed as

$$EIRP(dBm) = E_{3m}(dB\mu V/m) - 95.2.$$

When presenting data at each frequency, the highest measured emission under all possible EUT orientations (3-axes) is reported.

Figure 4: Radiated Emissions Test Setup Photograph(s).

4.1.2 Conducted Emissions Test Setup and Procedures

AC Port Conducted Spurious For this device, AC power line conducted emissions are measured in our screen room. If the EUT connects to auxiliary equipment and is table or floor standing, the configurations prescribed in ANSI C63.4 / CISPR 22 are employed. Alternatively, an on-table layout more representative of actual use may be employed if the resulting emissions appear to be worst-case in such a configuration. See Figure 5.

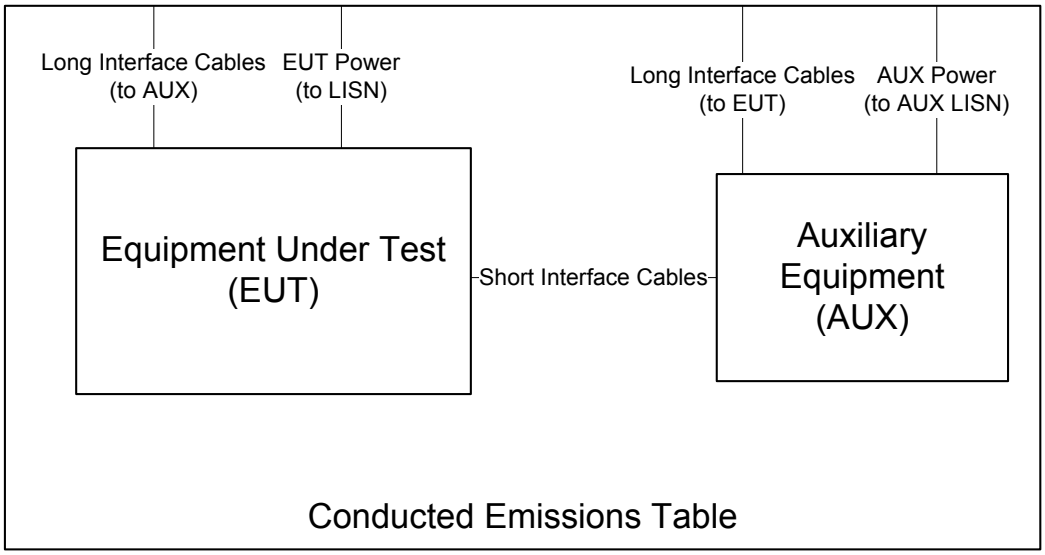


Figure 5: Conducted Emissions Setup Diagram of the EUT.

Conducted emissions are measured and recorded for each AC mains power source over the spectrum 0.15 MHz to 30 MHz for both the ungrounded (HI/PHASE) and grounded (LO/GND) conductors with the EUT placed in its highest current draw operating mode(s). The test receiver is set to peak-hold mode in order to record the peak emissions throughout the course of functional operation. Only if an emission exceeds or is near the limit are quasi-peak and average detection applied. Photographs of the test setup employed are depicted in Figure 6.

Figure 6: Conducted Emissions Test Setup Photograph(s).

Battery Power Conducted Spurious The EUT is not subject to measurement of power line conducted emissions as it is powered solely by its internal battery.

4.1.3 Power Supply Variation

Tests at extreme supply voltages are made if required by the the procedures specified in the test standard, and results of this testing are detailed in this report.

In the case the EUT is designed for operation from a battery power source, the extreme test voltages are evaluated over the range specified in the test standard; no less than ±10% of the nominal battery voltage declared by the manufacturer. For all battery operated equipment, worst case intentional and spurious emissions are re-checked employing a new (fully charged) battery.

4.1.4 Thermal Variation

Tests at extreme temperatures are made if required by the procedures specified in the test standard, and results of this testing are detailed in this report. The provider has declared that the EUT is designed for operation over the temperature range Not Declared. Before any temperature measurements are made, the equipment is allowed to reach a thermal balance in the test chamber, temperature and humidity are recorded, and thermal balance is verified via a thermocouple–based probe.

4.2 Intentional Emissions

4.2.1 Duty and Transmission Cycle, Pulsed Operation

The details and results of testing the EUT for pulsed operation are summarized in Table 4.

Table 4: Pulsed Emission Characteristics (Duty Cycle).

Frequency Range	**Det**	**IFBW**	**VBW**	**Test Date:**	15-Mar-17
f > 1 000 MHz	Pk	3 MHz	5 MHz	**Test Engineer:**	Joseph Brunett
				EUT	Digibit
				Meas. Distance:	Conducted

Pulsed Operation / Duty Cycle								
Transmit Mode	Symbol Rate (Msym/s)	Data Rate (Mbps)	Voltage (V)	Oper. Freq (MHz)	Tx Cycle Time* (ms)	On-Time* (ms)	Duty Cycle (%)	Power Duty Correction (dB)
BLE	1.000	GFSK (1 Mbps)	13.4	2441.0	1.180	1.065	90.3	0.4
ANT	-	GFSK (60 kbps)	13.4	2441.0	2.230	2.115	94.8	0.2

Equipment Used: RSFSV30001

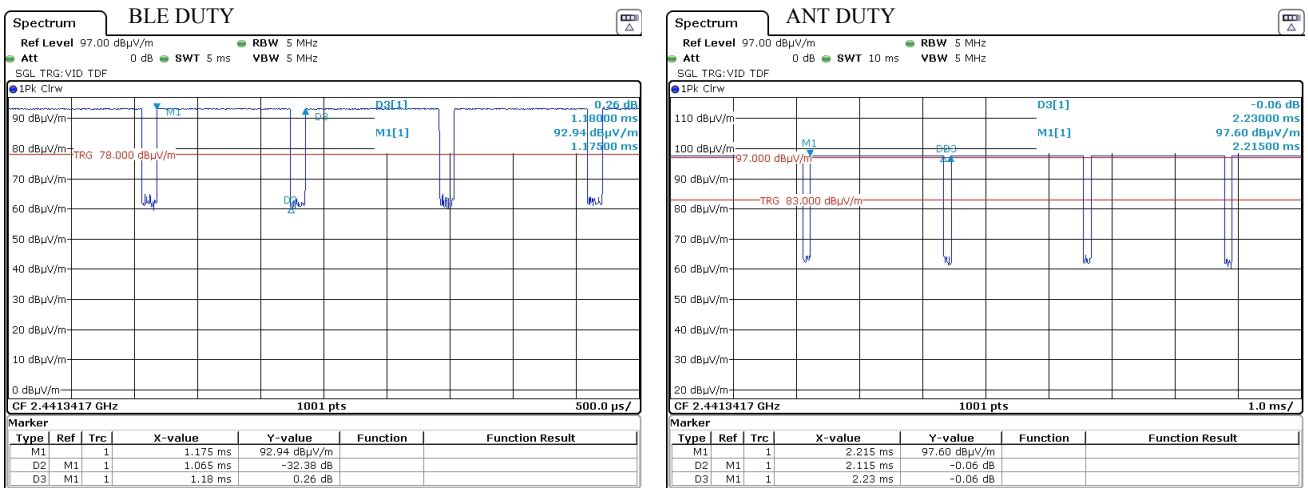


Figure 7: Pulsed Emission Characteristics (Duty Cycle).

4.2.2 Fundamental Emission Bandwidth

Emission bandwidth (EBW) of the EUT is measured with the device placed in the test mode(s) with the shortest available packet length and minimum packet spacing. Radiated emissions are recorded following the test procedures listed in Section 2.1. The 6 dB bandwidth is measured for the lowest, middle, and highest channels available. The 99% emission bandwidth per IC test procedures is also reported.The results of this testing are summarized in Table 5. Plots showing measurements employed obtain the emission bandwidths reported are provided in Figure 8.

Table 5: Intentional Emission Bandwidth.

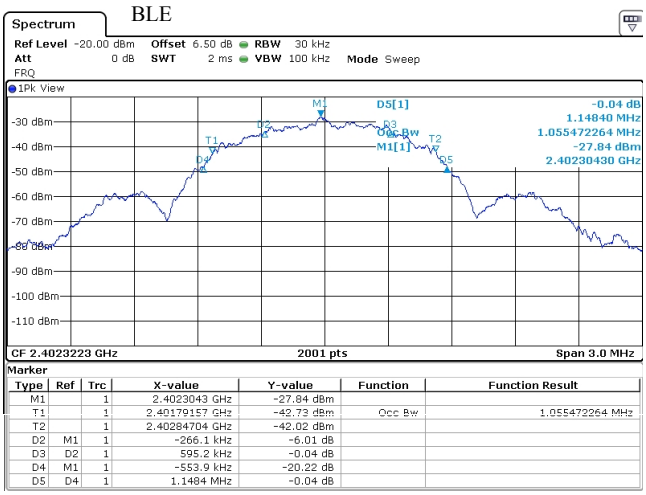
Frequency Range	**Det**	**IFBW**	**VBW**		
f > 1 000 MHz	Pk	30 kHz	100 kHz	**Test Date:**	03/15/17
f > 1 000 MHz	Pk	30 kHz	100 kHz	**Test Engineer:**	Joseph Brunett
				EUT	Digibit
				Meas. Distance:	60 cm

Occupied Bandwidth									
Transmit Mode	Symbol Rate (Msym/s)	Data Rate* (Mbps)	Voltage (V)	Oper. Freq (MHz)	6 dB BW (MHz)	6 dB BW Limit (MHz)	99% OBW (MHz)	20 dB BW (MHz)	Pass/Fail
ANT	-	0.06	13.4	2402.0	0.557	0.500	1.819	1.882	Pass
				2441.0	0.605	0.500	1.782	1.842	Pass
				2480.0	0.615	0.500	1.812	1.857	Pass
BLE	1	1.0	13.4	2402.0	0.595	0.500	1.055	1.148	Pass
				2441.0	0.561	0.500	1.061	1.162	Pass
				2480.0	0.615	0.500	1.058	1.180	Pass

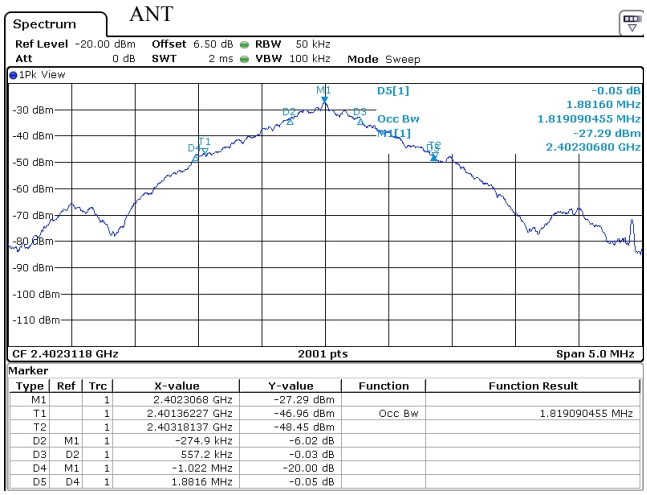
* Over all modes of operation, the worst case (highest data rate) in each form of modulation was tested to demonstrate compliance. For GFSK, worst test pattern employed the PN15 dataset.

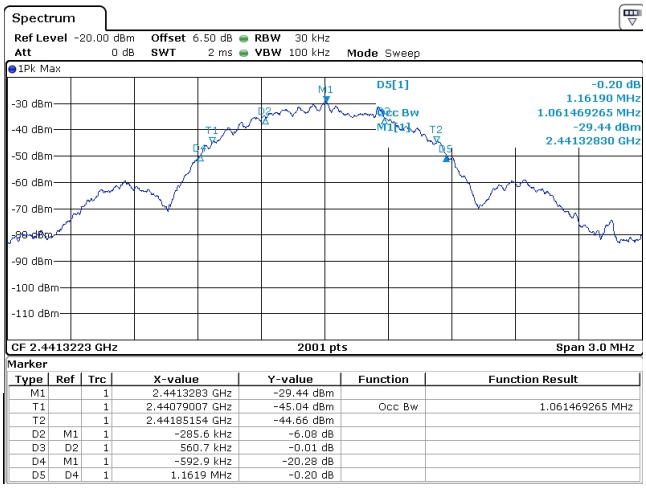
Equipment Used: RSFSV30001

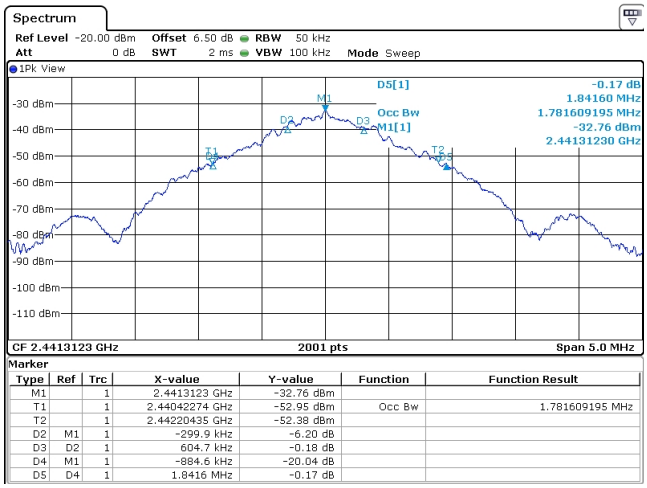
BLE

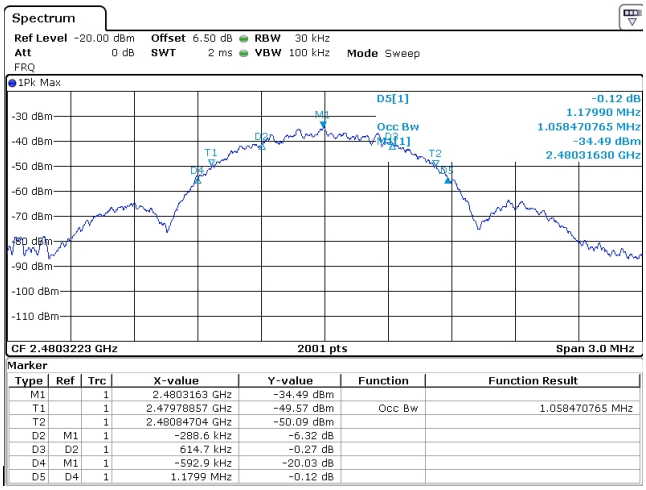


ANT









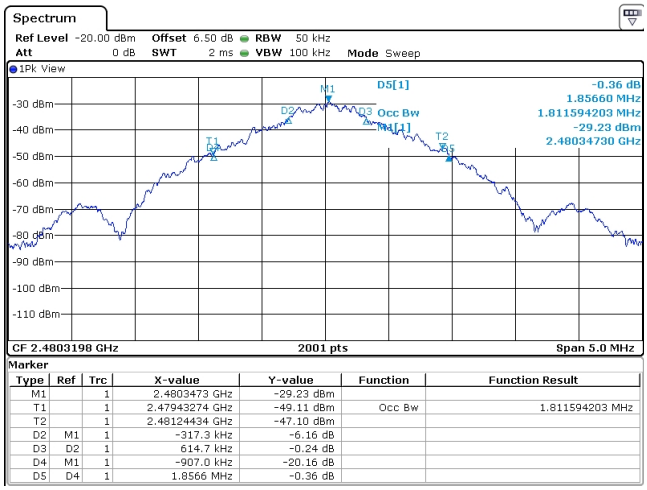


Figure 8: Intentional Emission Bandwidth.

4.2.3 Effective Isotropic Radiated Power

The EUT's radiated power is computed from field strength measurements made at 3 meters from the EUT. The test receiver bandwidth was set to be greater than the measured emission bandwidth of the EUT to capture the true peak. The results of this testing are summarized in Table 6.

Table 6: Effective Isotropic Radiated Power Results.

Frequency Range	**Det**	**IF Bandwidth**	**Video Bandwidth**	**Test Date:**	1-Apr-17
25 MHz ≤ f ≤ 1 000 MHz	Pk/QPk	120 kHz	300 kHz	**Test Engineer:**	Joseph Brunett
f > 1 000 MHz	Pk/Avg	3 MHz	3 MHz	**EUT:**	Digibit
Equipment Used: HRN15001, RSFSV30001				**Meas. Distance:**	3m

FCC/IC

#	Mode	Channel	Freq. MHz	Ant. Used	Ant. Pol.	Pr (Pk)** (dBm)	Ka (dB/m)	Kg (dB)	EIRP (Pk) (dBm)	Pout* (Pk) (dBm)	Ant Gain (dBi)	EIRP (Avg) Limit (dBm)	Pass (dB)
1	ANT	L	2402.0	HRNQR316401	H/V	-41.5	32.2	-0.3	2.8	3.0	-0.2	30.0	**27.2**
2		M	2441.0	HRNQR316401	H/V	-43.1	32.5	-0.3	1.5	3.0	-1.5	30.0	28.5
3		H	2480.0	HRNQR316401	H/V	-44.8	32.8	-0.3	.1	3.0	-2.9	30.0	29.9
4	LE	L	2402.0	HRNQR316401	H/V	-41.5	32.2	-0.3	2.8	3.0	-0.2	30.0	27.2
5		M	2441.0	HRNQR316401	H/V	-43.1	32.5	-0.3	1.5	3.0	-1.5	30.0	28.5
6		H	2480.0	HRNQR316401	H/V	-44.8	32.8	-0.3	.1	3.0	-2.9	30.0	29.9
7													
#	Mode	Channel	Freq. MHz	Supply Voltage	Ant. Pol.	Pr ** dBm	Ka dB/m	Kg dB	EIRP (Pk) dBm				
8	LE	M	2402.0	3.9	H/V	-41.5	32.2	-0.3	2.8				
9			2402.0	3.7	H/V	-41.5	32.2	-0.3	2.8				
10			2402.0	3.5	H/V	-41.5	32.2	-0.3	2.8				
11			2402.0	3.2	H/V	-41.5	32.2	-0.3	2.8				
12													

*Manufacturer Declared

** Measured radiated at 3 meter distance. Peak power measured with IFBW > OBW per DTS Procedures 9.1.1 RBW = DTS bandwidth

4.2.4 Power Spectral Density

For this test, field strength emissions are made at 3 meters with the EUT oriented for maximum emission. The spectrum is first scanned for maximum spectral peaks, the span and receiver bandwidth are then reduced until the power spectral density in field strength is measured in the prescribed receiver bandwidth. A sweep time of 100 seconds is maintained to ensure peak signals are captured in each frequency bin. The results of this testing are summarized in Table 7. Plots showing how these measurements were made are depicted in Figure 9.

Table 7: Power Spectral Density Results.

Frequency Range	**Detector**	**IF Bandwidth**	**Video Bandwidth**	**Test Date:**	3-Mar-17
2400-2483.5	Pk	20 kHz	100 kHz	**Test Engineer:**	Joseph Brunett
				EUT:	Digibit
	Equipment Used: RSFSV30001			**Meas. Distance:**	3 m

							FCC/IC
Mode	Channel	Frequency (MHz)	Ant. Used	E3 (meas)* (dBuV/m >3kHz)	EIRP PSD (meas)* (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass By (dB)
Continuous Tx. ANT	L	2402	HRNQR316401	96.2	1.0	8.00	7.0
	M	2441.0	HRNQR316401	95.6	0.4	8.00	7.6
	H	2480.0	HRNQR316401	94.9	-0.3	8.00	8.3
Continuous Tx. LE	L	2402.0	HRNQR316401	94.4	-0.8	8.00	8.8
	M	2441.0	HRNQR316401	93.2	-2.0	8.00	10.0
	H	2480.0	HRNQR316401	93.0	-2.2	8.00	10.2

* PSD measured radiated at 3 meters following FCC DTS PKPSD procedure.

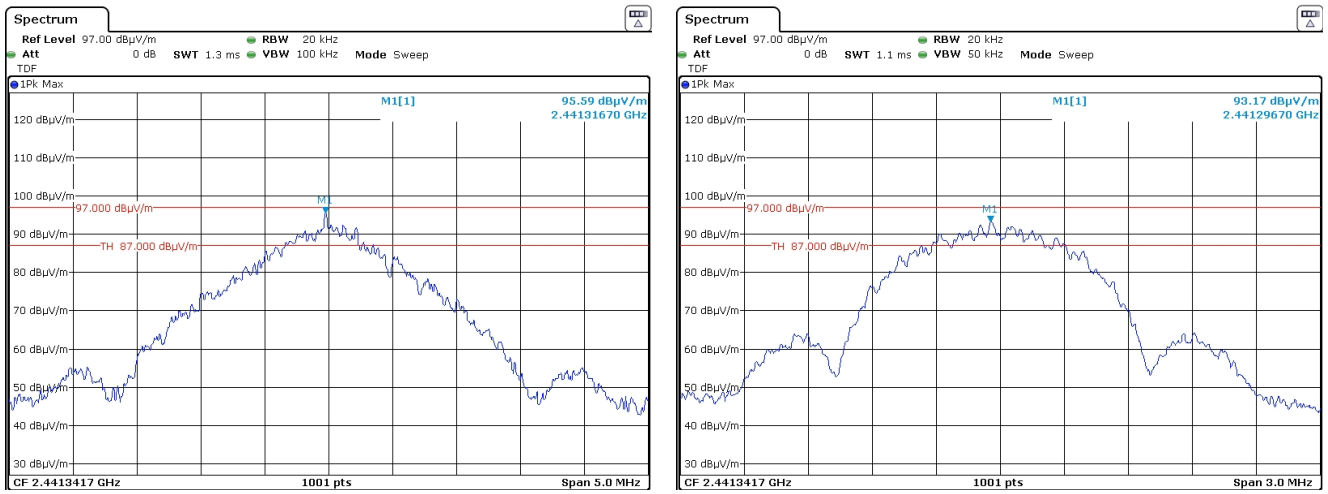


Figure 9: Power Spectral Density Plots.

4.2.5 Exposure and Potential Health Hazard

To demonstrate compliance with with regulations that place limitations on human electromagnetic field exposure for both the general public and for workers, we compute EIRP from measured emission data. These levels are compared with limits placed by the directives and recommendations detailed in Section 2.1. Table 8 details the results of these computations.

Table 8: Electromagnetic Field Exposure.

USA REF: 2.1091/1093, 447498 D01 General RF Exposure Guidance v06
IC REF: RSS-102 Issue 5
Min. Sep. Distance: <5mm

Test Date: 1-Apr-17
Test Engineer: Joseph Brunett
EUT: Digibit
EUT Mode: Cont. Modulated
Meas. Distance: 3 meters

Freq. MHz	EIRP (Pk) dBm	Duty Factor dB	EIRP (Avg) dBm	EIRP(Avg)** mW	
2402.00	2.8	.0	2.8	1.90	
2441.00	1.5	.0	1.5	1.41	
2480.00	.1	.0	.1	1.02	

Canada			USA		
Calculated SAR Threshold (Avg) mW	1-g SAR Body Power Threshold Exclusion Limit (Avg) mW	10-g SAR Extremity Power Threshold Exclusion Limit (Avg) mW	Calculated SAR Threshold (Avg)	1-g SAR Body Power Threshold Exclusion Limit (Avg)	10-g SAR Extremity Power Threshold Exclusion Limit (Avg)
1.899	4.000	10.000	0.59	3.0	7.5
1.409	4.000	10.000	0.44	3.0	7.5
1.024	4.000	10.000	0.32	3.0	7.5

*As Measured / Computed from highest fundamental emission, see fundamental emission section of this report.
**Only RMS level is required, RMS/6min << Pk, Peak emission employed to demonstrate compliance.

4.3 Unintentional Emissions

4.3.1 Transmit Chain Spurious Emissions

The results for the measurement of transmit chain spurious emissions at the nominal voltage and temperature are provided in Table 9. Measurements are performed to 10 times the highest fundamental operating frequency.

Table 9: Transmit Chain Spurious Emissions.

Frequency Range	Det	IF Bandwidth	Video Bandwidth		
25 MHz ≤ f ≤ 1 000 MHz	Pk/QPk	120 kHz	300 kHz	**Test Date:**	1-Apr-17
f > 1 000 MHz	Pk/Avg	1 MHz	3 MHz	**Test Engineer:**	Joseph Brunett
				EUT:	Digibit
				Mode:	Modulated (all modes)
				Meas. Distance:	3m

												FCC/IC
#	Freq. Start MHz	Freq. Stop MHz	Ant. Used	Ant. Pol.	Pr (Pk) dBm	Pr (Avg)* dBm	Ka dB/m	Kg dB	E3(Pk) dBµV/m	E3(Avg) dBµV/m	E3 Avg Lim dBµV/m	Pass dB	Comments
1	Fundamental Restricted Band Edge (Low Side)												
2	2390.0	2390.0	HRNQR316401	H/V	-94.9	-104.0	32.1	-0.3	44.5	35.4	54.0	18.6	all channels; max all modulations; noise
3	Fundamental Restricted Band Edge (High Side)												
4	2483.5	2483.5	HRNQR316401	H/V	-82.6	-100.5	32.8	-0.3	57.5	39.6	54.0	14.4	all channels; max all modulations
5	Harmonic / Spurious Emissions												
6	4804.0	4804.0	HRNQR316401	H/V	-84.2	-91.0	32.8	-0.5	56.1	49.3	54.0	**4.7**	
7	4882.0	4805.0	HRNQR316401	H/V	-85.8	-92.0	32.8	-0.5	54.5	48.3	54.0	5.7	
8	4960.0	4806.0	HRNQR316401	H/V	-87.5	-94.0	32.8	-0.5	52.8	46.3	54.0	7.7	
9	4000.0	6000.0	HRNQR316401	H/V	-84.2	-91.0	32.8	-0.5	56.1	49.3	54.0	4.7	all channels; max all modulations
10	7206.0	7206.0	HQR2TO18S01	H/V	-86.3	-92.4	33.3	-0.7	54.6	48.6	54.0	5.4	
11	7323.0	7323.0	HQR2TO18S01	H/V	-84.4	-91.2	33.4	-0.7	56.6	49.9	54.0	4.1	
12	7440.0	7440.0	HQR2TO18S01	H/V	-86.6	-93.2	33.5	-0.7	54.6	48.0	54.0	6.0	
13	6000.0	8400.0	HQR2TO18S01	H/V	-84.2	-91.2	32.8	-0.8	56.4	49.4	54.0	4.6	
14	8400.0	12500.0	HQR2TO18S01	H/V	-97.6	-103.7	34.3	-1.1	44.8	38.7	54.0	15.3	all channels; max all modulations; noise
15	12500.0	18000.0	HQR2TO18S01	H/V	-94.9	-101.8	35.6	-1.6	49.3	42.4	54.0	11.6	all channels; max all modulations; noise
16	18000.0	26000.0	Horn K	H/V	-95.1	-101.9	33.6	-3.9	49.4	42.6	54.0	11.4	all channels; max all modulations; noise
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													

*Avg measurements made employing RMS average detector.

4.3.2 Relative Transmit Chain Spurious Emissions

The results for the measurement of transmit chain spurious emissions relative to the fundamental in a 100 kHz receiver bandwidth (at the nominal voltage and temperature) are provided in Figure 10 below.

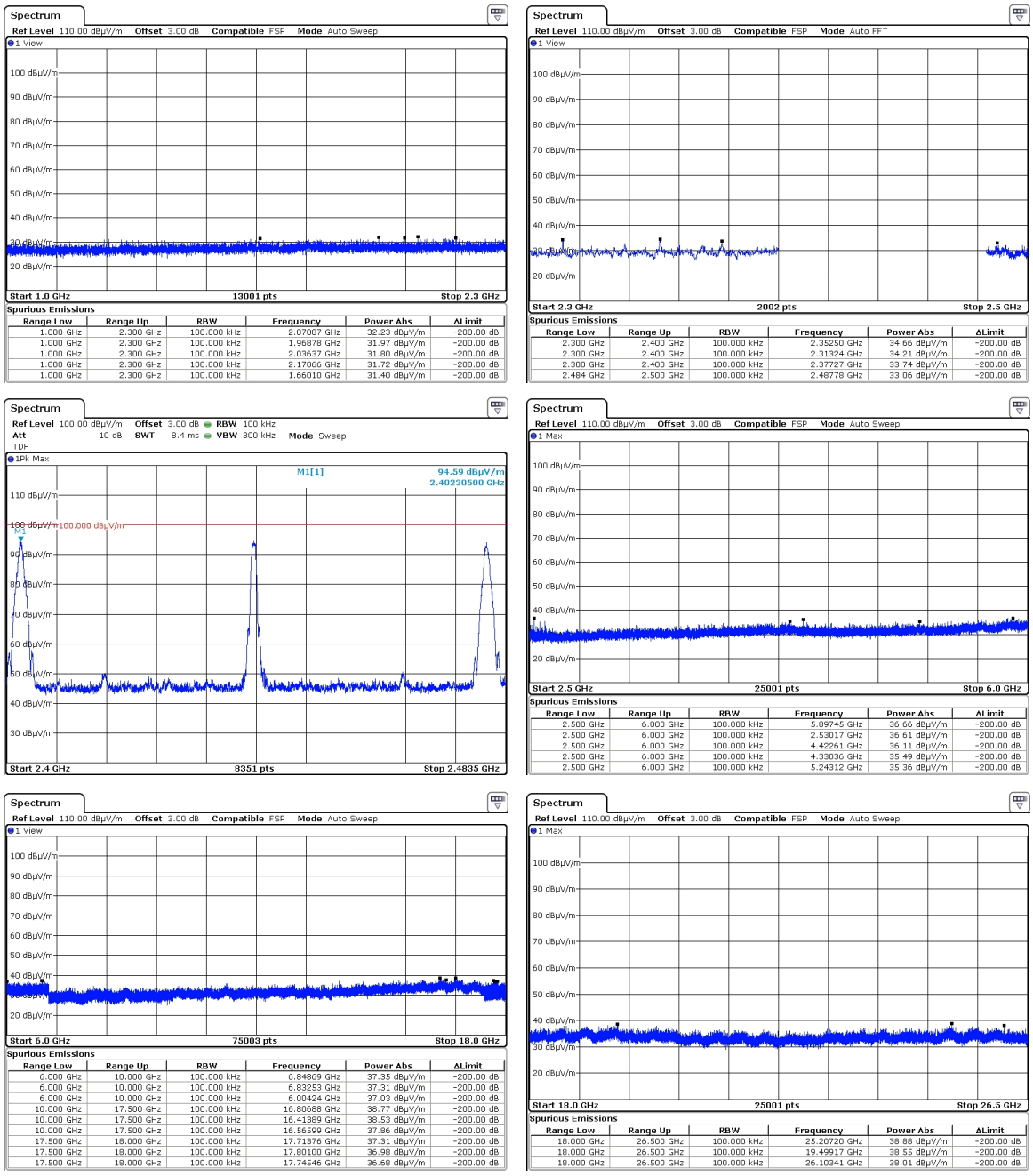


Figure 10: Conducted Transmitter Emissions Measured.

4.3.3 Radiated Digital Spurious

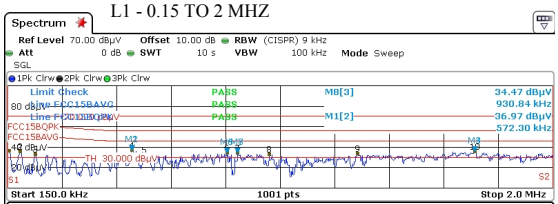
The results for the measurement of digital spurious emissions are not reported herein as all digital emissions were greater than 20 dB below the regulatory limit. Radiation from digital components was measured to 4 GHz, or to five times the maximum digital component operating frequency, whichever is greater.

4.3.4 Conducted Emissions Test Results - AC Power Port(s)

The results of emissions from the EUT's AC mains power port(s) are reported in Table 10.

Table 10: AC Mains Power Conducted Emissions Results.

L1 - 0.15 TO 2 MHZ



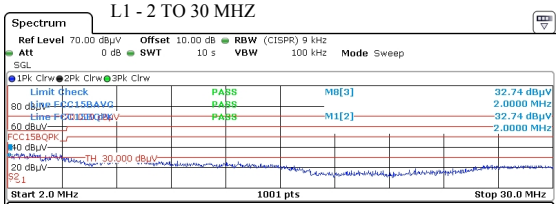
EMI Measurement Marker

Type	Ref	Trace	Frequency	Level	Final Test	ΔLimit	Final Result
N1		2	572.3 kHz	36.97 dBµV	Average	---,-19.03 dB	26.97 dBµV
N2		3	572.3 kHz	36.97 dBµV	Quasi Peak	-24.17 dB ,---	31.83 dBµV
N3		2	1.73479 MHz	36.10 dBµV	Average	---,-18.43 dB	27.57 dBµV
N4		3	1.73479 MHz	36.10 dBµV	Quasi Peak	-23.09 dB ,---	32.91 dBµV
N5		2	893.88 kHz	34.53 dBµV	Average	---,-25.62 dB	20.38 dBµV
N6		3	893.88 kHz	34.53 dBµV	Quasi Peak	-27.38 dB ,---	28.62 dBµV
N7		2	930.84 kHz	34.47 dBµV	Average	---,-23.58 dB	22.42 dBµV
N8		3	930.84 kHz	34.47 dBµV	Quasi Peak	-27.81 dB ,---	28.19 dBµV

Marker Peak List

No	X-value	Y-value	No	X-value	Y-value
1	156.500000 kHz	36.590 dBµV	6	893.900000 kHz	34.534 dBµV
2	193.400000 kHz	35.481 dBµV	7	930.800000 kHz	34.470 dBµV
3	245.200000 kHz	33.203 dBµV	8	1.038000 MHz	33.116 dBµV
4	572.300000 kHz	36.967 dBµV	9	1.337400 MHz	33.643 dBµV
5	614.800000 kHz	32.642 dBµV	10	1.734800 MHz	36.101 dBµV

L1 - 2 TO 30 MHZ



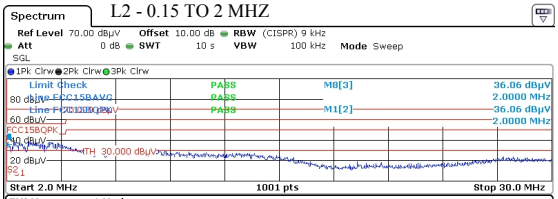
EMI Measurement Marker

Type	Ref	Trace	Frequency	Level	Final Test	ΔLimit	Final Result
N1		2	2.0 MHz	32.74 dBµV	Average	---,-26.65 dB	19.35 dBµV
N2		3	2.0 MHz	32.74 dBµV	Quasi Peak	-26.74 dB ,---	29.26 dBµV
N3		2	2.0 MHz	32.74 dBµV	Average	---,-26.26 dB	19.74 dBµV
N4		3	2.0 MHz	32.74 dBµV	Quasi Peak	-25.24 dB ,---	30.76 dBµV
N5		2	2.0 MHz	32.74 dBµV	Average	---,-22.66 dB	23.34 dBµV
N6		3	2.0 MHz	32.74 dBµV	Quasi Peak	-24.51 dB ,---	31.49 dBµV
N7		2	2.0 MHz	32.74 dBµV	Average	---,-26.32 dB	19.68 dBµV
N8		3	2.0 MHz	32.74 dBµV	Quasi Peak	-26.82 dB ,---	29.18 dBµV

Marker Peak List

No	X-value	Y-value	No	X-value	Y-value
1	2.014000 MHz	32.736 dBµV	2	---	---

L2 - 0.15 TO 2 MHZ



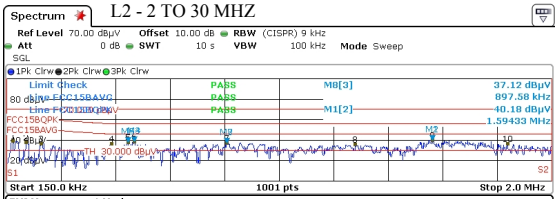
EMI Measurement Marker

Type	Ref	Trace	Frequency	Level	Final Test	ΔLimit	Final Result
N1		2	2.0 MHz	36.06 dBµV	Average	---,-22.42 dB	23.58 dBµV
N2		3	2.0 MHz	36.06 dBµV	Quasi Peak	-21.75 dB ,---	34.25 dBµV
N3		2	2.0 MHz	36.06 dBµV	Average	---,-21.78 dB	24.22 dBµV
N4		3	2.0 MHz	36.06 dBµV	Quasi Peak	-19.11 dB ,---	36.89 dBµV
N5		2	2.0 MHz	36.06 dBµV	Average	---,-23.37 dB	22.63 dBµV
N6		3	2.0 MHz	36.06 dBµV	Quasi Peak	-23.28 dB ,---	32.72 dBµV
N7		2	2.0 MHz	36.06 dBµV	Average	---,-25.79 dB	20.21 dBµV
N8		3	2.0 MHz	36.06 dBµV	Quasi Peak	-23.26 dB ,---	32.74 dBµV

Marker Peak List

No	X-value	Y-value	No	X-value	Y-value
1	2.014000 MHz	36.058 dBµV	2	---	---

L2 - 2 TO 30 MHZ



EMI Measurement Marker

Type	Ref	Trace	Frequency	Level	Final Test	ΔLimit	Final Result
N1		2	1.59433 MHz	40.18 dBµV	Average	---,-24.72 dB	21.28 dBµV
N2		3	1.59433 MHz	40.18 dBµV	Quasi Peak	-24.92 dB ,---	31.08 dBµV
N3		2	583.39 kHz	38.22 dBµV	Average	---,-18.33 dB	27.67 dBµV
N4		3	583.39 kHz	38.22 dBµV	Quasi Peak	-19.06 dB ,---	36.94 dBµV
N5		2	563.06 kHz	38.01 dBµV	Average	---,-29.82 dB	16.18 dBµV
N6		3	563.06 kHz	38.01 dBµV	Quasi Peak	-23.63 dB ,---	32.37 dBµV
N7		2	897.58 kHz	37.12 dBµV	Average	---,-19.33 dB	26.67 dBµV
N8		3	897.58 kHz	37.12 dBµV	Quasi Peak	-21.07 dB ,---	34.93 dBµV

Marker Peak List

No	X-value	Y-value	No	X-value	Y-value
1	171.300000 kHz	38.903 dBµV	6	583.400000 kHz	38.221 dBµV
2	217.500000 kHz	38.118 dBµV	7	897.600000 kHz	37.125 dBµV
3	267.400000 kHz	36.367 dBµV	8	1.331900 MHz	35.883 dBµV
4	505.800000 kHz	36.158 dBµV	9	1.594300 MHz	40.183 dBµV
5	563.100000 kHz	38.006 dBµV	10	1.849400 MHz	36.186 dBµV

5 Measurement Uncertainty

The maximum values of measurement uncertainty for the laboratory test equipment and facilities associated with each test are given in the table below. This uncertainty is computed for a 95.45% confidence level based on a coverage factor of $k = 2$.

Table 11: Measurement Uncertainty.

Measured Parameter	**Measurement Uncertainty**[†]
Radio Frequency	$\pm(f_{Mkr}/10^7 + RBW/10 + (SPN/(PTS-1))/2 + 1\,\text{Hz})$
Conducted Emm. Amplitude	$\pm 1.8\,\text{dB}$
Radiated Emm. Amplitude $(30 - 200\,\text{MHz})$	$\pm 2.7\,\text{dB}$
Radiated Emm. Amplitude $(200 - 1000\,\text{MHz})$	$\pm 2.5\,\text{dB}$
Radiated Emm. Amplitude $(f > 1000\,\text{MHz})$	$\pm 3.7\,\text{dB}$
DC and Low Frequency Voltages	$\pm 2\%$
Temperature	$\pm 0.5°\text{C}$
Humidity	$\pm 5\%$

[†]Ref: CISPR 16-4-2:2011+A1:2014