



FCC Part 15.247

RSS-247 Issue 2, Feb 2017; RSS-Gen Issue 5, Mar 2019

TEST REPORT

For

Silicon Labs

9th Floor, Maximus Towers 2B, Raheja Mindspace IT Park, APIIC Software Layout, Madhapur, Hyderabad,
Telangana, India - 500 081

Report Type:	Original Report
Brand Name:	Silicon Labs
FCC Identity:	FCC ID: XF6-B001P4V2P1
IC Identity:	IC: 8407A-B001P4V2P1
Product Name:	WiFi bgn, BT5.0 SIP Module
Model Name:	RS9116-B0014
Report Number:	RLK201108002-00B
Report Date:	2021/01/16
Reviewed By:	Flight Hsieh <i>Flight. Hsieh</i>
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Note: This test report is prepared for the customer shown above and for the device described herein.
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Revision History

Revision	Report Number	Issue Date	Description
1.0	RLK201108002-00B	2021/01/16	Original Report

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1 General Information

1.1 Product Description for Equipment under Test (EUT)

Applicant	Silicon Labs 9th Floor, Maximus Towers 2B, Raheja Mindspace IT Park, APIIC Software Layout, Madhapur, Hyderabad, Telangana, India - 500 081
Manufacturer	Silicon Labs 9th Floor, Maximus Towers 2B, Raheja Mindspace IT Park, APIIC Software Layout, Madhapur, Hyderabad, Telangana, India - 500 081
Brand Name	Silicon Labs
Product (Equipment)	WiFi bgn, BT5.0 SIP Module
Model Name	RS9116-B0014
Frequency Range	2402 - 2480 MHz
Number of Channels	79 Channels
Output Power	<p>Chip Antenna (FR05-S1-N-0-102) with 1.8Vdc BR-1Mbps: 17.20 dBm (0.0525 W) EDR-2Mbps: 17.77 dBm (0.0598 W) EDR-3Mbps: 17.94 dBm (0.0622 W)</p> <p>Chip Antenna (FR05-S1-N-0-102) with 3.3Vdc BR-1Mbps: 20.77 dBm (0.1194 W) EDR-2Mbps: 20.73 dBm (0.1183 W) EDR-3Mbps: 20.79 dBm (0.1199 W)</p> <p>Dipole Antenna (GW.34.5153) with 1.8Vdc BR-1Mbps: 16.72 dBm (0.0470 W) EDR-2Mbps: 17.33 dBm (0.0541 W) EDR-3Mbps: 17.53 dBm (0.0566 W)</p> <p>Dipole Antenna (GW.34.5153) with 3.3Vdc BR-1Mbps: 19.10dBm (0.0813 W) EDR-2Mbps: 20.65 dBm (0.1161 W) EDR-3Mbps: 20.78 dBm (0.1197 W)</p>
Power Operation (Voltage Range)	<input checked="" type="checkbox"/> DC Type <input type="checkbox"/> From Host System: 1.8Vdc/3.3Vdc
Modulation Type	BR-1Mbps: GFSK; EDR-2Mbps: π/4-DQPSK; EDR-3Mbps: 8-DPSK
Related Submittal(s)/Grant(s)	FCC Part 15.247 DSS with FCC ID: XF6-B001P4V2P1 FCC Part 15.247 DTS with FCC ID: XF6-B001P4V2P1
Received Date	2020/11/13
Date of Test	2020/11/27 - 2020/12/10

*All measurement and test data in this report was gathered from production sample serial number: 201108002. Assigned by Bay Area Compliance Laboratories Corp. (Linkou Laboratory)

1.2 Objective and Test Methodology

The Objective of this Test Report was to document the compliance of the Silicon Labs. Appliance (Model: RS9116-B0014) to the requirements of the following Standards:

- Part 2, Subpart J, Part 15, Subparts A and C, section 15.247 of the Federal Communication Commission's rules.
- ANSI C63.10-2013 of the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.
- RSS-Gen Issue 5, Mar 2019— General Requirements for Compliance of Radio Apparatus
- RSS-247 Issue 2, Feb 2017— Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

1.3 Measurement Uncertainty

Parameter	Expanded Measurement uncertainty
RF output power with Power Meter	± 1.488 dB
Occupied Channel Bandwidth	± 453.927 Hz
RF Conducted test with Spectrum	± 2.77 dB
AC Power Line Conducted Emission	± 2.66 dB
Radiated Below 1G	± 3.57 dB
Radiated Above 1G	± 5.32 dB

The test results with statement of conformity, the decision rules are based on the specifications and standards. The test results will not take the measurement uncertainty into account.

1.4 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Linkou Laboratory) to collect test data is located on

No.6, Wende 2Rd., Guishan Dist., Taoyuan City 33382, Taiwan (R.O.C.).

Bay Area Compliance Laboratories Corp. (Linkou Laboratory) Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3546) by Mutual Recognition Agreement (MRA). The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database. The FCC Registration No.: 0027578244. Designation No.: TW3546. The Test Firm Registration No.: 181430.

2 System Test Configuration

2.1 Description of Test Configuration

The system was configured for testing in testing mode which was provided by manufacturer.

No special accessory, No modification was made to the EUT and No special equipment used during test.

For BT (BR/EDR), there are totally 79 channels.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	39	2441
1	2403	--	--
2	2404	--	--
3	2405	76	2478
--	--	77	2479
38	2440	78	2480

For BLE: Channel **0, 39** and **78** were tested.

For Radiated Emission, Conducted Power, Conducted Band Edge had test for four antenna because the power setting is different, the result will be different. For Bandwidth, Conducted Emission, Separation, Dwell Time, Hopping Channel Test only test one result that because the power not affect the result

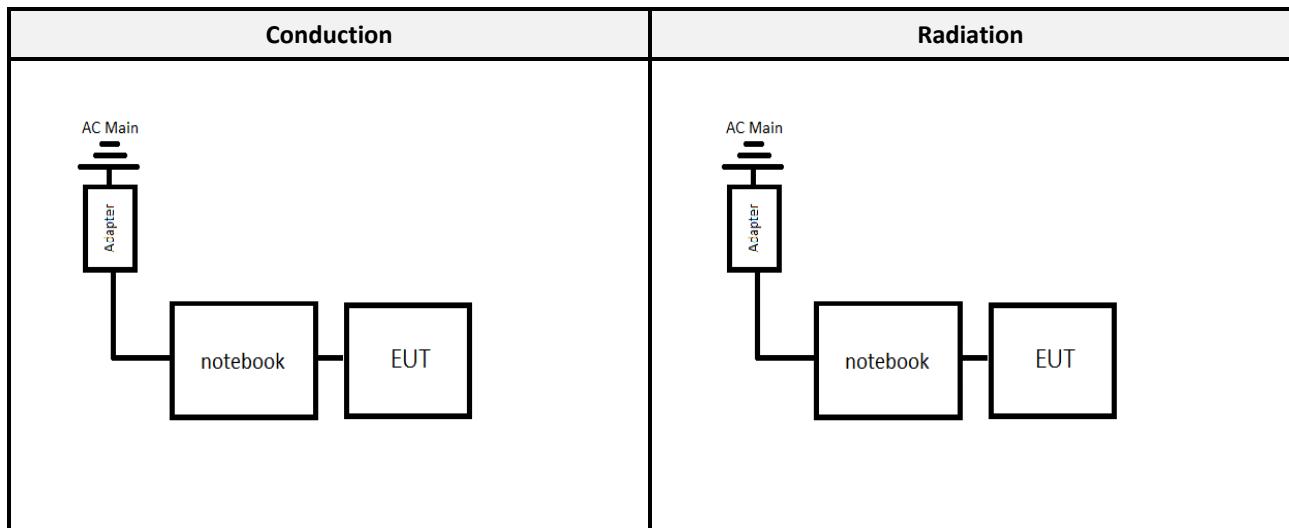
Worst Case of Power Setting				
EUT Exercise Software		PER Test App		
Configuration	N _{TX}	Low CH	Mid CH	High CH
Chip 1.8V BR-1Mbps	1	22	22	22
Chip 1.8V EDR-2Mbps	1	22	22	16
Chip 1.8V EDR-3Mbps	1	22	22	14
Chip 3.3V BR-1Mbps	1	20	20	22
Chip 3.3V EDR-2Mbps	1	17	18	18
Chip 3.3V EDR-3Mbps	1	16	17	17
Dipole 1.8V BR-1Mbps	1	22	22	22
Dipole 1.8V EDR-2Mbps	1	22	22	16
Dipole 1.8V EDR-3Mbps	1	22	22	15
Dipole 3.3V BR-1Mbps	1	20	20	21
Dipole 3.3V EDR-2Mbps	1	17	18	18
Dipole 3.3V EDR-3Mbps	1	16	17	17

2.2 Support Equipment List and Details

No.	Description	Manufacturer	Model Number	Serial Number
A	NoteBook	DELL	Latitude E6410	PP27LA001

No.	Description	Manufacturer	Model Number
1	USB Cable	Tensility International Corp	10-02331

2.3 Block Diagram of Test Setup



2.4 Environmental Conditions and Test Date

Test Site	Test Date	Temperature (°C)	Relative Humidity (% RH)	Test Engineer
Conduction (Con-01)	2020/12/09	24.6	58	Rui Zhan
Radiated (966A)	2020/11/27 - 2020/12/10	19.5 - 21.5	55 - 61	Leo Cheng
Conducted (TH-02)	2020/12/04 - 2020/12/10	22.5 - 23.2	57 - 60	Rui Zhan

3 Summary of Test Results

FCC Rules	Description of Test	Result
§15.247(i), §1.1310, §2.1091	Maximum Permissible Exposure (MPE)	Compliance
ISEDC RSS-102 Sec 2.5.2	Exemption Limits for Routine Evaluation – RF Exposure Evaluation	Compliance
§15.203 ISEDC RSS-Gen Sec 6.8	Antenna Requirement	Compliance
§15.207(a) ISEDC RSS-Gen Sec 8.8	AC Line Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d) ISEDC RSS-247 Sec 5.5 ISED RSS-Gen Sec 8.9 and 8.10	Spurious Emissions	Compliance
§15.247(a)(1) ISEDC RSS-247 Sec 5.1 ISEDC RSS-Gen Sec 6.7	20 dB Emission Bandwidth and Occupied Bandwidth	Compliance
§15.247(a)(1) ISEDC RSS-247 Sec 5.1(b)	Channel Separation Test	Compliance
§15.247(a)(1)(iii) ISEDC RSS-247 Sec 5.1(d)	Time of Occupancy (Dwell Time)	Compliance
§15.247(a)(1)(iii) ISEDC RSS-247 Sec 5.1(b)	Quantity of hopping channel Test	Compliance
§15.247(b)(3) ISEDC RSS-247 Sec 5.1(b) ISEDC RSS-247 Sec 5.4(b)	Maximum Output Power	Compliance
§15.247(d) ISEDC RSS-247 Sec 5.5	100 kHz Bandwidth of Frequency Band Edge	Compliance

4 FCC§15.247(i), §1.1310, § 2.1091 – Maximum Permissible Exposure (MPE)

4.1 Applicable Standard

According to FCC §2.1093 and §1.1307(b) (1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 General RF Exposure Guidance v06

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot$

$[\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

1. $f(\text{GHz})$ is the RF channel transmit frequency in GHz.
2. Power and distance are rounded to the nearest mW and mm before calculation.
3. The result is rounded to one decimal place for comparison.
4. 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.

4.2 RF Exposure Evaluation Result

MPE Evaluation:

Mode	Frequency Range (MHz)	Antenna Gain		Target Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
BLE	2402-2480	5.89	3.8815	22.00	158.4893	20	0.1224	1.0
BR/EDR	2402-2480	5.89	3.8815	21.00	125.8925	20	0.0973	1.0
Wi-Fi 2.4G	2412-2462	5.89	3.8815	23.00	199.5262	20	0.1542	1.0

Note: Wi-Fi and BT can't simultaneously.

Result: MPE evaluation of single and simultaneous transmission meet the requirement of standard.

5 RSS-102 Sec 2.5.2 - Exemption Limits for Routine Evaluation – RF Exposure Evaluation

5.1 Applicable Standard

According to subpart RSS-102 Sec 2.5.2,

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz⁶ and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

5.2 RF Exposure Evaluation Result

BLE Max tune-up conducted output power is 22.00 dBm (158.4893 mW) at 2402 MHz, Antenna Gain = 5.89 dBi, EIRP = 27.89 dBm (0.6152 W), so the maximum conducted and E.I.R.P. source-based, time-averaged output is less than 2.68 W for general public use.

BR/EDR Max tune-up conducted output power is 21.00 dBm (125.8925 mW) at 2402 MHz, Antenna Gain = 5.89 dBi, EIRP = 26.89 dBm (0.4887 W), so the maximum conducted and E.I.R.P. source-based, time-averaged output is less than 2.68 W for general public use.

Wi-Fi 2.4G Max tune-up conducted output power is 23.00 dBm (199.5262 mW) at 2437 MHz, Antenna Gain = 5.89 dBi, EIRP = 28.89 dBm (0.7745 W), so the maximum conducted and E.I.R.P. source-based, time-averaged output is less than 2.70 W for general public use.

Note: Wi-Fi and BT can't simultaneously.

Result: MPE evaluation of single and simultaneous transmission meet the requirement of standard.

6 FCC §15.203 – Antenna Requirements

6.1 Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna does not exceed 6dBi

According to RSS-Gen 6.8: Transmitter Antenna for Licence-Exempt Radio Apparatus

The applicant for equipment certification, as per RSP-100, must provide a list of all antenna types that may be used with the licence-exempt transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna.

Licence-exempt transmitters that have received equipment certification may operate with different types of antennas. However, it is not permissible to exceed the maximum equivalent isotropically radiated power (e.i.r.p.) limits specified in the applicable standard (RSS) for the licence-exempt apparatus.

Testing shall be performed using the highest gain antenna of each combination of licence-exempt transmitter and antenna type, with the transmitter output power set at the maximum level.Footnote8 When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna manufacturer.

User manuals for transmitters equipped with detachable antennas shall also contain the following notice in a conspicuous location:

This radio transmitter (identify the device by certification number) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types approved for use with the transmitter, indicating the maximum permissible antenna gain (in dBi).

6.2 Antenna List and Details

Brand	Model	Antenna Type	Antenna Gain	Result
Fractus	FR05-S1-N-0-102	Chip	1.70 dBi	Compliance
TAOGLAS	GW.34.5153	Dipole	5.89 dBi	Compliance

The EUT have an internal and external antennas arrangement and fulfill the requirement of this section.

7 FCC §15.207 and RSS-Gen Sec 8.8 - AC Line Conducted Emissions

7.1 Applicable Standard

According to FCC §15.207,

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

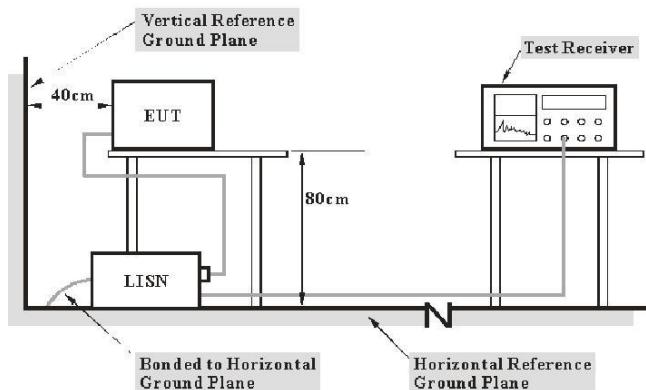
According to RSS-Gen 8.8 Conducted limits:

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56 ^{Note 1}	56 to 46 ^{Note 2}
0.5-5	56	46
5-30	60	50

Note 1: Decreases with the logarithm of the frequency. Note 2: A linear average detector is required

7.2 EUT Setup and Test Procedure



Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 and RSS-Gen limits.

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz. During the conducted emission test, the EMI test receiver was set with the following configurations

Frequency Range	Receiver RBW
150 kHz - 30 MHz	9 kHz

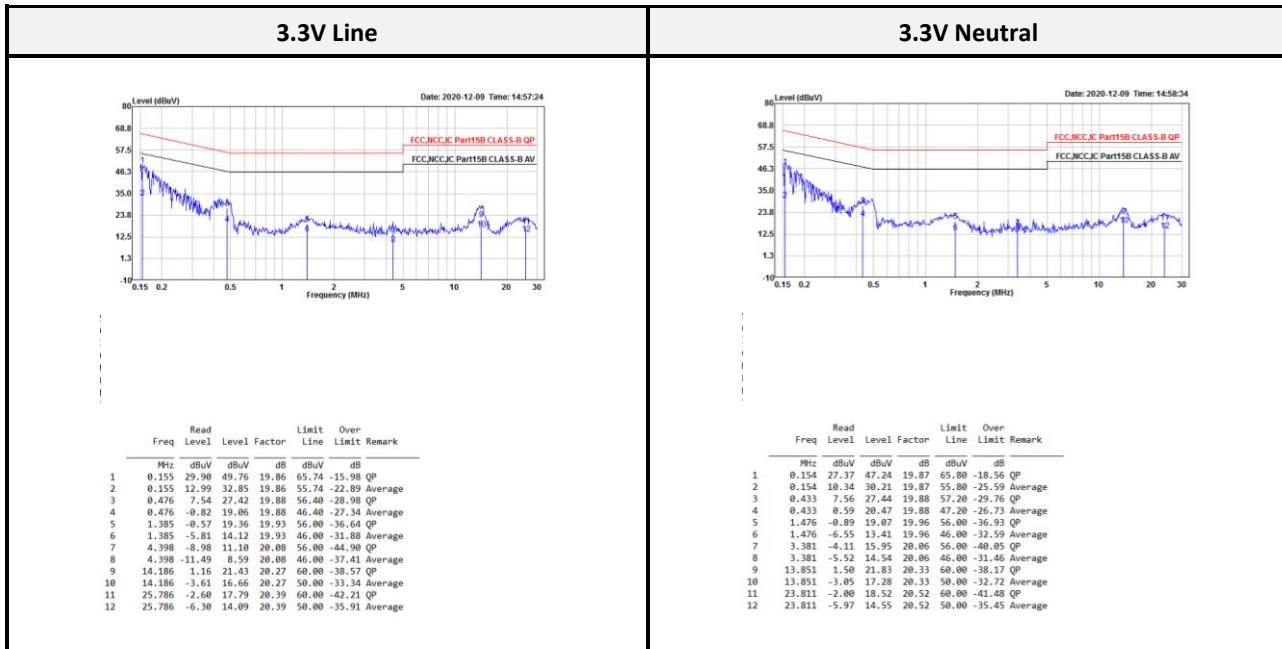
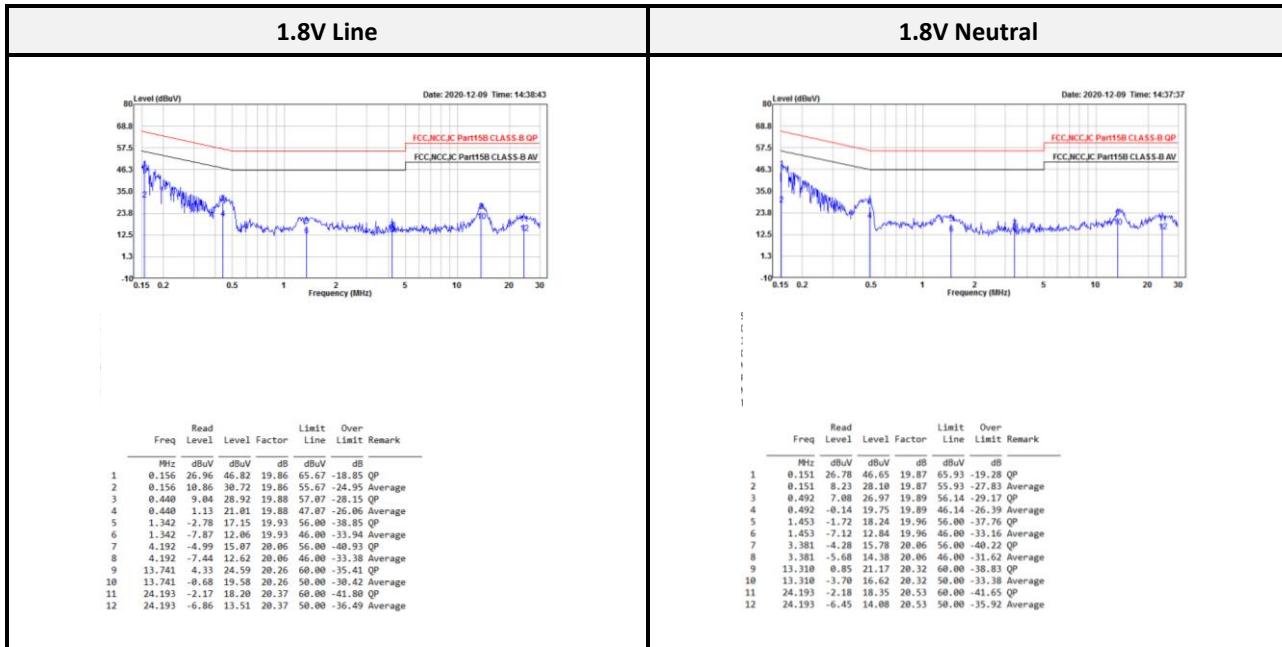
During the conducted emission test, the adapter was connected to the outlet of the LISN. Maximizing procedure was performed on the six (6) highest emissions of the EUT. All data was recorded in the Quasi-peak and average detection mode.

7.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
AC Line Conduction Room (CON-01)					
Two-Line V-Network	Rohde & Schwarz	ENV216	100010	2020/09/14	2021/09/13
Pulse Limiter	SCHWARZBECK	VSTD 9561-F	00432	2020/09/11	2021/09/10
ESR EMI Test Receiver	Rohde & Schwarz	ESR3	102430	2020/05/07	2021/05/06
RF Cable	EMCI	EMCCFD300-BM-BM-8000	180526	2020/08/18	2021/08/17
Software	Audix	e3 v9	E3LK-03	N.C.R	N.C.R

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).

7.4 Test Data and Test Plot



Note:

Level = Read Level + Factor

Over Limit (Margin) = Level – Limit Line

Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss + Attenuator

8 FCC §15.209, §15.205, §15.247(d), RSS-Gen Sec 8.9, 8.10 and RSS-247 Sec 5.5 – Spurious Emissions

8.1 Applicable Standard

As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1MHz.

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	13.36-13.41	399.9-410	4.5-5.15
0.495-0.505	16.42-16.423	608-614	5.35-5.46
2.1735-2.1905	16.69475-16.69525	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6

As per FCC §15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (micro volts/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
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As per FCC §15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

As per RSS-Gen 8.9,

Except when the requirements applicable to a given device state otherwise, emissions from licence-exempt transmitters shall comply with the field strength limits shown in Table 4 and Table 5 below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission.

Table 4 – General Field Strength Limits for Licence-Exempt Transmitters at Frequencies Above 30 MHz

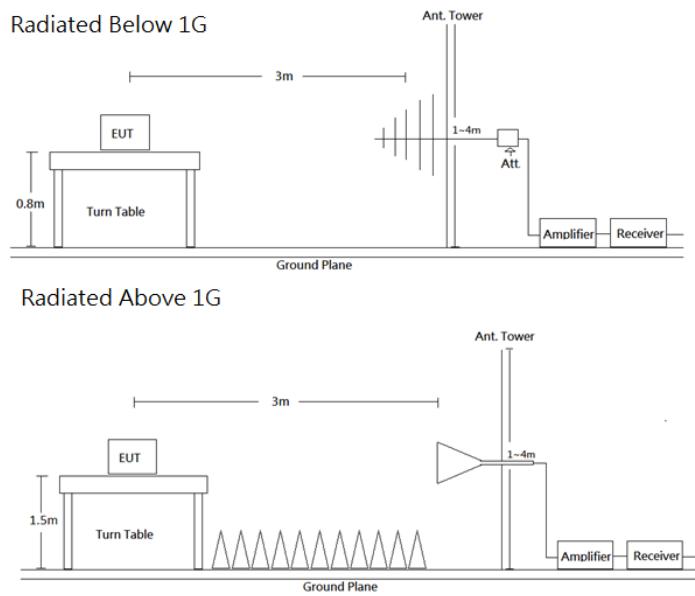
Frequency (MHz)	Field Strength (μV/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960*	500

* Unless otherwise specified, for all frequencies greater than 1 GHz, the radiated emission limits for licence-exempt radio apparatus stated in applicable RSSs (including RSS-Gen) are based on measurements using a linear average detector function having a minimum resolution bandwidth of 1 MHz. If an average limit is specified for the EUT, then the peak emission shall also be measured with instrumentation properly adjusted for such factors as pulse desensitization to ensure the peak emission is less than 20 dB above the average limit.

Note: Transmitting devices are not permitted in restricted frequency bands unless stated otherwise in the specific RSS.

As per RSS-247 §5.5, in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

8.2 EUT Setup and Test Procedure



Radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part 15.209 and FCC 15.247 Limits.

The system was investigated from 30 MHz to 26.5 GHz. During the radiated emission test, the EMI test receiver was set with the following configurations measurement method 6.3 in ANSI C63.10.

Frequency Range	RBW	VBW	Detector	Measurement method
30-1000 MHz	120 kHz	/	QP	QP
Above 1 GHz	1 MHz	3 MHz	PK	PK
	1 MHz	10 Hz	RMS	Ave

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations. All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

8.3 Test Equipment List and Details

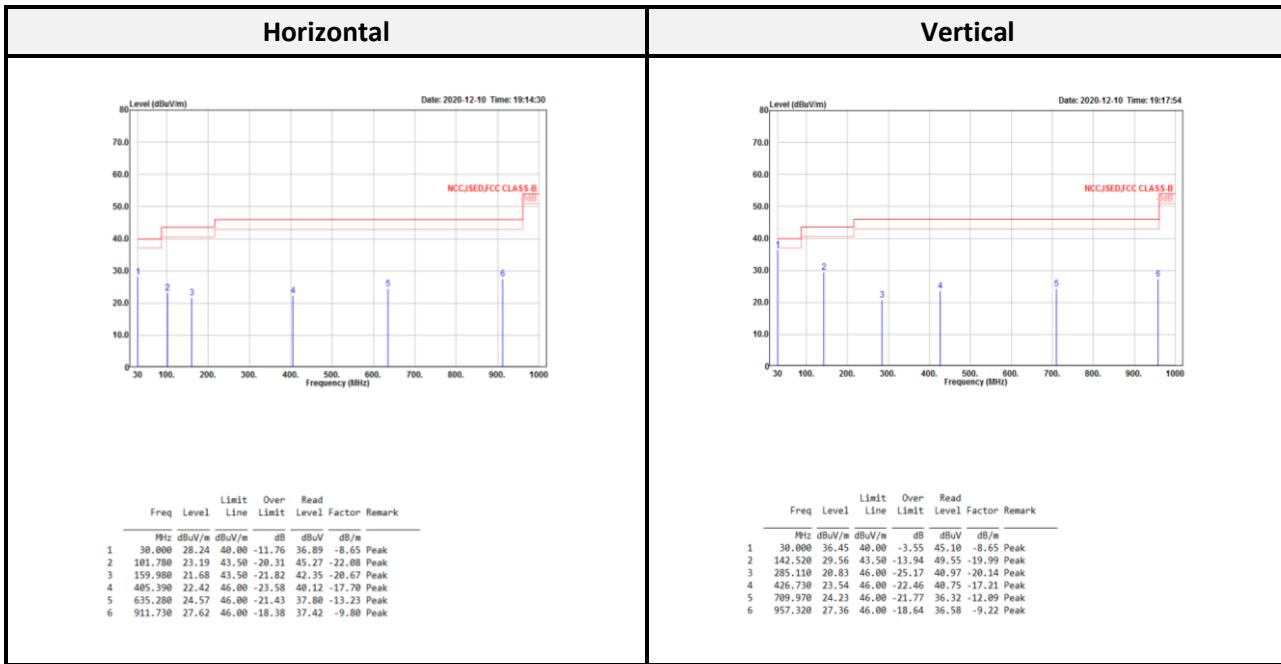
Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Radiation 3M Room (966B)					
Active Loop	EMCO	6502	0001-3322	2020/03/16	2021/03/15
Bilog Antenna/6 dB Attenuator	SUNOL SCIENCES & EMEC /EMCI	JB3/N-6-06	A111513/AT-N0668	2020/03/19	2021/03/18
Signal and Spectrum Analyzer	Rohde & Schwarz	FSV40	101434	2020/05/07	2021/05/06
Horn Antenna	ETS-Lindgren	3115	00109141	2020/07/15	2021/07/14
Horn Antenna	ETS-Lindgren	3160-09	00123852	2020/07/07	2021/07/06
Preamplifier	A.H. Systems	PAM-1840VH	174	2020/03/25	2021/03/24
Preamplifier	A.H. Systems	PAM-0118	478	2020/05/05	2021/05/04
Microflex Cable (1m)	EMCI	EMC102-KM-KM-1000	180524	2020/08/06	2021/08/05
Microflex Cable (2m)	EMCI	EMC106-SM-SM-2000	180516	2020/08/06	2021/08/05
Microflex Cable (8m)	UTIFLEX	UFA210A-1-3149-300300	MFR 64639 232490-002	2020/08/06	2021/08/05
Turn Table	Chaintek	T-200-S-1	003501	N.C.R	N.C.R
Antenna Tower	Chaintek	MBD-400-1	003504	N.C.R	N.C.R
Controller	Chaintek	3000-1	003507	N.C.R	N.C.R
Software	Audix	e3 v9	E3LK-01	N.C.R	N.C.R
Conducted Room(TH-02)					
Spectrum Analyzer	Rohde & Schwarz	FSU26	100406	2020/03/11	2021/03/10
Cable	MTJ	MT40S	620620-MT40S-100	Each Use	-

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).

8.4 Radiated Emission Test Plot and Data

Transmitting mode (Pre-scan with three orthogonal axis, and worse case as Z axis)

Below 1G (30 MHz-1 GHz)



Note:

Level = Read Level + Factor, Over Limit = Level – Limit,

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

Above 1G (1 GHz-26.5 GHz)<Chip Antenna (FR05-S1-N-0-102) with 1.8V_{dc}>

BR-1Mbps Horizontal Low CH							BR-1Mbps Vertical Low CH								
Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read	
MHz	dBuV/m	dBuV/m	dB	dBuV	dBuV/m	MHz	dBuV/m	dBuV/m	dB	dBuV	MHz	dBuV/m	dBuV/m	dB	dBuV
1 ! 2389.800	47.03	54.00	-6.97	54.79	-7.76	Average	1 ! 2388.900	38.03	54.00	-15.97	45.79	-7.76	Average		
2 ! 2389.800	58.90	74.00	-15.10	66.66	-7.76	Peak	2	2388.900	53.56	74.00	-20.44	61.32	-7.76	Peak	
3 * 2402.200	99.62			107.35	-7.73	Average	3 * 2402.200	92.29			100.02	-7.73	Average		
4 * 2402.200	117.90			125.63	-7.73	Peak	4 * 2402.200	110.12			117.85	-7.73	Peak		
1 ! 3202.700	46.57	54.00	-7.43	52.09	-5.52	Average	1 ! 3202.700	41.17	54.00	-12.83	46.69	-5.52	Average		
2	3202.700	50.08	74.00	-23.92	55.60	-5.52	Peak	2	3202.700	43.68	74.00	-30.32	49.20	-5.52	Peak
3 ! 4804.000	38.42	54.00	-15.58	40.10	-1.68	Average	3 ! 4804.000	41.60	54.00	-12.40	43.28	-1.68	Average		
4	4804.000	47.17	74.00	-26.83	48.85	-1.68	Peak	4	4804.000	50.08	74.00	-23.92	51.76	-1.68	Peak
5 ! 7206.000	47.35	54.00	-6.65	41.52	5.83	Average	5 ! 7206.000	48.02	54.00	-5.98	42.19	5.83	Average		
6 ! 7206.000	57.14	74.00	-16.86	51.31	5.83	Peak	6 ! 7206.000	57.97	74.00	-16.03	52.14	5.83	Peak		

BR-1Mbps Horizontal Middle CH							BR-1Mbps Vertical Middle CH								
Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read	
MHz	dBuV/m	dBuV/m	dB	dBuV	dBuV/m	MHz	dBuV/m	dBuV/m	dB	dBuV	MHz	dBuV/m	dBuV/m	dB	dBuV
1 ! 2388.892	49.41	54.00	-4.59	57.17	-7.76	Average	1 ! 2380.664	37.08	54.00	-16.92	44.87	-7.79	Average		
2 ! 2388.892	56.02	74.00	-17.98	63.78	-7.76	Peak	2	2380.664	51.27	74.00	-22.73	59.06	-7.79	Peak	
3 * 2441.164	109.61			117.26	-7.65	Average	3 * 2441.164	103.09			110.74	-7.65	Average		
4 * 2441.164	116.90			124.55	-7.65	Peak	4 * 2441.164	109.86			117.51	-7.65	Peak		
5 ! 2495.614	38.08	54.00	-15.92	45.66	-7.58	Average	5 ! 2533.366	37.44	54.00	-16.56	44.89	-7.45	Average		
6 ! 2495.614	55.71	74.00	-18.29	63.29	-7.58	Peak	6	2533.366	51.99	74.00	-22.01	59.44	-7.45	Peak	
1 ! 3254.700	47.27	54.00	-6.73	52.62	-5.35	Average	1 ! 3254.700	44.37	54.00	-9.63	49.72	-5.35	Average		
2	3254.700	50.07	74.00	-23.93	55.42	-5.35	Peak	2	3254.700	47.73	74.00	-26.27	53.08	-5.35	Peak
3 ! 4882.000	40.02	54.00	-13.98	41.54	-1.52	Average	3 ! 4882.000	44.91	54.00	-9.09	46.43	-1.52	Average		
4	4882.000	48.79	74.00	-25.21	50.31	-1.52	Peak	4	4882.000	53.59	74.00	-20.41	55.11	-1.52	Peak
5 ! 7323.000	48.39	54.00	-5.61	43.09	5.30	Average	5 ! 7323.000	48.93	54.00	-5.07	43.63	5.30	Average		
6 ! 7323.000	58.25	74.00	-15.75	52.95	5.30	Peak	6 ! 7323.000	58.59	74.00	-15.41	53.29	5.30	Peak		

BR-1Mbps Horizontal High CH							BR-1Mbps Vertical High CH								
Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read	
MHz	dBuV/m	dBuV/m	dB	dBuV	dBuV/m	MHz	dBuV/m	dBuV/m	dB	dBuV	MHz	dBuV/m	dBuV/m	dB	dBuV
1 * 2480.168	97.40			105.00	-7.60	Average	1 * 2480.168	91.50			99.10	-7.60	Average		
2 * 2480.168	114.96			122.56	-7.60	Peak	2 * 2480.168	107.57			115.17	-7.60	Peak		
3 ! 2483.530	47.80	54.00	-6.20	55.39	-7.59	Average	3 ! 2483.694	40.50	54.00	-13.50	48.09	-7.59	Average		
4 ! 2483.530	67.30	74.00	-6.70	74.89	-7.59	Peak	4 ! 2483.694	60.11	74.00	-13.89	67.70	-7.59	Peak		
1 ! 3306.700	47.74	54.00	-6.26	52.97	-5.23	Average	1 ! 3306.700	44.57	54.00	-9.43	49.80	-5.23	Average		
2	3306.700	49.97	74.00	-24.03	55.20	-5.23	Peak	2	3306.700	46.80	74.00	-27.20	52.03	-5.23	Peak
3 ! 4960.000	42.06	54.00	-11.94	43.40	-1.34	Average	3 ! 4960.000	47.20	54.00	-6.80	48.54	-1.34	Average		
4	4960.000	50.56	74.00	-23.44	51.90	-1.34	Peak	4 ! 4960.000	55.50	74.00	-18.50	56.84	-1.34	Peak	
5 ! 7440.000	46.59	54.00	-7.41	40.95	5.64	Average	5 ! 7440.000	50.06	54.00	-3.94	44.42	5.64	Average		
6 ! 7440.000	56.27	74.00	-17.73	50.63	5.64	Peak	6 ! 7440.000	59.78	74.00	-14.22	54.14	5.64	Peak		

EDR-2Mbps Horizontal Low CH							EDR-2Mbps Vertical Low CH							
Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read
MHz	dBuV/m	dBuV/m	dB	dBuV	MHz	dBuV/m	dBuV/m	dB	dBuV	MHz	dBuV/m	dBuV/m	dB	dBuV
1 ! 2390.000	45.05	54.00	-8.95	52.81	-7.76	Average	1 ! 2386.200	40.10	54.00	-13.90	47.87	-7.77	Average	
2 ! 2390.000	59.80	74.00	-14.20	67.56	-7.76	Peak	2 2386.200	53.21	74.00	-20.79	60.98	-7.77	Peak	
3 * 2402.300	97.45			105.18	-7.73	Average	3 * 2401.900	91.58			99.31	-7.73	Average	
4 * 2402.300	117.10			124.83	-7.73	Peak	4 * 2401.900	109.68			117.41	-7.73	Peak	
1 ! 3202.700	45.29	54.00	-8.71	50.81	-5.52	Average	1 ! 3202.700	43.01	54.00	-10.99	48.53	-5.52	Average	
2 3202.700	47.70	74.00	-26.30	53.22	-5.52	Peak	2 3202.700	44.95	74.00	-29.05	50.47	-5.52	Peak	
3 ! 4804.000	34.42	54.00	-19.58	36.10	-1.68	Average	3 ! 4804.000	35.97	54.00	-18.03	37.65	-1.68	Average	
4 4804.000	45.83	74.00	-28.17	47.51	-1.68	Peak	4 4804.000	47.02	74.00	-26.98	48.70	-1.68	Peak	
5 ! 7206.000	42.45	54.00	-11.55	36.62	5.83	Average	5 ! 7206.000	42.82	54.00	-11.18	36.99	5.83	Average	
6 ! 7206.000	54.32	74.00	-19.68	48.49	5.83	Peak	6 ! 7206.000	54.23	74.00	-19.77	48.40	5.83	Peak	

EDR-2Mbps Horizontal Middle CH							EDR-2Mbps Vertical Middle CH							
Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read
MHz	dBuV/m	dBuV/m	dB	dBuV	MHz	dBuV/m	dBuV/m	dB	dBuV	MHz	dBuV/m	dBuV/m	dB	dBuV
1 ! 2385.504	40.43	54.00	-13.57	48.20	-7.77	Average	1 ! 2379.454	37.43	54.00	-16.57	45.23	-7.80	Average	
2 ! 2385.504	58.46	74.00	-15.54	66.23	-7.77	Peak	2 2379.454	51.15	74.00	-22.85	58.95	-7.80	Peak	
3 * 2441.164	97.11			104.76	-7.65	Average	3 * 2441.486	91.21			98.86	-7.65	Average	
4 * 2441.164	116.52			124.17	-7.65	Peak	4 * 2441.486	109.15			116.80	-7.65	Peak	
5 ! 2483.514	40.26	54.00	-13.74	47.85	-7.59	Average	5 ! 2494.404	37.85	54.00	-16.15	45.43	-7.58	Average	
6 ! 2483.514	58.08	74.00	-15.92	65.67	-7.59	Peak	6 2494.404	52.20	74.00	-21.80	59.78	-7.58	Peak	
1 ! 3254.700	47.28	54.00	-6.72	52.63	-5.35	Average	1 ! 3254.700	44.17	54.00	-9.83	49.52	-5.35	Average	
2 3254.700	49.64	74.00	-24.36	54.99	-5.35	Peak	2 3254.700	46.91	74.00	-27.09	52.26	-5.35	Peak	
3 ! 4882.000	36.88	54.00	-17.12	38.40	-1.52	Average	3 ! 4882.000	40.34	54.00	-13.66	41.86	-1.52	Average	
4 4882.000	47.78	74.00	-26.22	49.30	-1.52	Peak	4 4882.000	50.46	74.00	-23.54	51.98	-1.52	Peak	
5 ! 7323.000	44.39	54.00	-9.61	39.09	5.30	Average	5 ! 7323.000	45.04	54.00	-8.96	39.74	5.30	Average	
6 ! 7323.000	54.92	74.00	-19.08	49.62	5.30	Peak	6 ! 7323.000	55.67	74.00	-18.33	50.37	5.30	Peak	

EDR-2Mbps Horizontal High CH							EDR-2Mbps Vertical High CH							
Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read
MHz	dBuV/m	dBuV/m	dB	dBuV	MHz	dBuV/m	dBuV/m	dB	dBuV	MHz	dBuV/m	dBuV/m	dB	dBuV
1 * 2480.168	96.00			103.60	-7.60	Average	1 * 2479.922	89.89			97.49	-7.60	Average	
2 * 2480.168	114.91			122.51	-7.60	Peak	2 * 2479.922	107.16			114.76	-7.60	Peak	
3 ! 2483.530	50.64	54.00	-3.36	58.23	-7.59	Average	3 ! 2483.530	44.62	54.00	-9.38	52.21	-7.59	Average	
4 ! 2483.530	73.12	74.00	-0.88	80.71	-7.59	Peak	4 ! 2483.530	64.24	74.00	-9.76	71.83	-7.59	Peak	
1 ! 3306.700	47.23	54.00	-6.77	52.46	-5.23	Average	1 ! 3306.700	43.36	54.00	-10.64	48.59	-5.23	Average	
2 3306.700	50.46	74.00	-23.54	55.69	-5.23	Peak	2 3306.700	45.98	74.00	-28.02	51.21	-5.23	Peak	
3 ! 4960.000	39.49	54.00	-14.51	40.83	-1.34	Average	3 ! 4960.000	42.88	54.00	-11.12	44.22	-1.34	Average	
4 4960.000	49.90	74.00	-24.10	51.24	-1.34	Peak	4 4960.000	53.14	74.00	-20.86	54.48	-1.34	Peak	
5 ! 7440.000	42.06	54.00	-11.94	36.42	5.64	Average	5 ! 7440.000	45.14	54.00	-8.86	39.50	5.64	Average	
6 7440.000	52.98	74.00	-21.02	47.34	5.64	Peak	6 ! 7440.000	55.33	74.00	-18.67	49.69	5.64	Peak	

EDR-3Mbps Horizontal Low CH						EDR-3Mbps Vertical Low CH									
Freq	Level	Limit		Over		Limit		Over		Read					
		Line	Limit	Level	Factor	Line	Limit	Level	Factor	Remark					
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m								
1 !	2387.200	45.06	54.00	-8.94	52.83	-7.77	Average	1 !	2362.000	40.45	54.00	-13.55	48.29	-7.84	Average
2 !	2387.200	58.94	74.00	-15.06	66.71	-7.77	Peak	2 !	2362.000	54.05	74.00	-19.95	61.89	-7.84	Peak
3 *	2402.200	97.60			105.33	-7.73	Average	3 *	2402.200	91.82			99.55	-7.73	Average
4 *	2402.200	117.39			125.12	-7.73	Peak	4 *	2402.200	110.07			117.80	-7.73	Peak
1 !	3202.700	47.72	54.00	-6.28	53.24	-5.52	Average	1 !	3202.700	43.01	54.00	-10.99	48.53	-5.52	Average
2	3202.700	50.29	74.00	-23.71	55.81	-5.52	Peak	2	3202.700	41.02	74.00	-32.98	46.54	-5.52	Peak
3 !	4804.000	34.84	54.00	-19.16	36.52	-1.68	Average	3 !	4804.000	36.26	54.00	-17.74	37.94	-1.68	Average
4	4804.000	45.76	74.00	-28.24	47.44	-1.68	Peak	4	4804.000	47.83	74.00	-26.17	49.51	-1.68	Peak
5 !	7206.000	42.13	54.00	-11.87	36.30	5.83	Average	5 !	7206.000	45.77	54.00	-8.23	39.94	5.83	Average
6 !	7206.000	54.22	74.00	-19.78	48.39	5.83	Peak	6 !	7206.000	54.28	74.00	-19.72	48.45	5.83	Peak

EDR-3Mbps Horizontal Middle CH							EDR-3Mbps Vertical Middle CH						
Freq	Level	Limit	Over	Read	Level	Factor	Limit	Over	Read	Level	Factor	Remark	
		Line	Limit	Level			Line	Limit	Level				
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1 ! 2389.860	40.29	54.00	-13.71	48.05	-7.76	Average	1 ! 2385.988	37.33	54.00	-16.67	45.10	-7.77	Average
2 ! 2389.860	56.29	74.00	-17.71	64.05	-7.76	Peak	2 2385.988	51.81	74.00	-22.19	59.58	-7.77	Peak
3 * 2441.164	97.10			104.75	-7.65	Average	3 * 2441.164	91.46			99.11	-7.65	Average
4 * 2441.164	116.77			124.42	-7.65	Peak	4 * 2441.164	109.60			117.25	-7.65	Peak
5 ! 2538.448	39.87	54.00	-14.13	47.30	-7.43	Average	5 ! 2513.280	37.68	54.00	-16.32	45.21	-7.53	Average
6 ! 2538.448	57.43	74.00	-16.57	64.86	-7.43	Peak	6 2513.280	52.23	74.00	-21.77	59.76	-7.53	Peak
1 ! 3254.700	47.34	54.00	-6.66	52.69	-5.35	Average	1 ! 3254.700	42.74	54.00	-11.26	48.09	-5.35	Average
2 3254.700	49.69	74.00	-24.31	55.04	-5.35	Peak	2 3254.700	47.09	74.00	-26.91	52.44	-5.35	Peak
3 ! 4882.000	37.70	54.00	-16.30	39.22	-1.52	Average	3 ! 4882.000	40.88	54.00	-13.12	42.40	-1.52	Average
4 4882.000	48.98	74.00	-25.02	50.50	-1.52	Peak	4 4882.000	51.78	74.00	-22.22	53.30	-1.52	Peak
5 ! 7323.000	43.74	54.00	-10.26	38.44	5.30	Average	5 ! 7323.000	45.01	54.00	-8.99	39.71	5.30	Average
6 ! 7323.000	55.19	74.00	-18.81	49.89	5.30	Peak	6 ! 7323.000	56.94	74.00	-17.06	51.64	5.30	Peak

EDR-3Mbps Horizontal High CH							EDR-3Mbps Vertical High CH								
Freq	Level	Limit	Over	Read	Freq	Limit	Over	Read	Freq	Level	Limit	Over	Read		
		Line	Limit	Level		Line	Limit	Level			Factor	Remark	Factor	Remark	
		MHz	dBuV/m	dBuV/m		MHz	dBuV/m	dBuV/m							
1 *	2480.168	95.04			102.64	-7.60	Average		1 *	2480.086	88.86			96.46	-7.60 Average
2 *	2480.168	113.98			121.58	-7.60	Peak		2 *	2480.086	106.14			113.74	-7.60 Peak
3 !	2483.500	50.59	54.00	-3.41	58.18	-7.59	Average		3 !	2483.530	43.82	54.00	-10.18	51.41	-7.59 Average
4 !	2483.500	67.26	74.00	-6.74	74.85	-7.59	Peak		4 !	2483.530	59.13	74.00	-14.87	66.72	-7.59 Peak
1 !	3306.700	47.72	54.00	-6.28	52.95	-5.23	Average		1 !	3306.700	43.78	54.00	-10.22	49.01	-5.23 Average
2	3306.700	49.96	74.00	-24.04	55.19	-5.23	Peak		2	3306.700	47.01	74.00	-26.99	52.24	-5.23 Peak
3 !	4960.000	39.76	54.00	-14.24	41.10	-1.34	Average		3 !	4960.000	41.97	54.00	-12.03	43.31	-1.34 Average
4	4960.000	46.86	74.00	-27.14	48.20	-1.34	Peak		4	4960.000	52.36	74.00	-21.64	53.70	-1.34 Peak
5 !	7440.000	40.63	54.00	-13.37	34.99	5.64	Average		5 !	7440.000	44.13	54.00	-9.87	38.49	5.64 Average
6	7440.000	52.93	74.00	-21.07	47.29	5.64	Peak		6 !	7440.000	55.96	74.00	-18.04	50.32	5.64 Peak

<Chip Antenna (FR05-S1-N-0-102) with 3.3V_{dc}>

BR-1Mbps Horizontal Low CH						BR-1Mbps Vertical Low CH							
Freq	Level	Limit	Over	Read	Factor	Freq	Level	Limit	Over	Read	Factor		
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 ! 2362.200	48.75	54.00	-5.25	56.59	-7.84	Average	1 ! 2362.300	43.56	54.00	-10.44	51.40	-7.84	Average
2 ! 2362.200	60.11	74.00	-13.89	67.95	-7.84	Peak	2 ! 2362.300	54.67	74.00	-19.33	62.51	-7.84	Peak
3 * 2402.200	100.78			108.51	-7.73	Average	3 * 2402.200	96.78			104.51	-7.73	Average
4 * 2402.200	119.33			127.06	-7.73	Peak	4 * 2402.200	114.40			122.13	-7.73	Peak
1 ! 3202.700	40.40	54.00	-13.60	45.92	-5.52	Average	1 ! 3202.700	35.97	54.00	-18.03	41.49	-5.52	Average
2 ! 3202.700	47.04	74.00	-26.96	52.56	-5.52	Peak	2 ! 3202.700	43.92	74.00	-30.08	49.44	-5.52	Peak
3 ! 4804.000	42.62	54.00	-11.38	44.30	-1.68	Average	3 ! 4804.000	51.34	54.00	-2.66	53.02	-1.68	Average
4 ! 4804.000	50.98	74.00	-23.02	52.66	-1.68	Peak	4 ! 4804.000	54.01	74.00	-19.99	55.69	-1.68	Peak
5 ! 7206.000	49.42	54.00	-4.58	43.59	5.83	Average	5 ! 7206.000	49.80	54.00	-4.20	43.97	5.83	Average
6 ! 7206.000	59.50	74.00	-14.50	53.67	5.83	Peak	6 ! 7206.000	60.02	74.00	-13.98	54.19	5.83	Peak
7 ! 12010.000	41.31	54.00	-12.69	31.47	9.84	Average	7 ! 12010.000	40.04	54.00	-13.96	30.20	9.84	Average
8 ! 12010.000	54.38	74.00	-19.62	44.54	9.84	Peak	8 ! 12010.000	53.75	74.00	-20.25	43.91	9.84	Peak

BR-1Mbps Horizontal Middle CH						BR-1Mbps Vertical Middle CH							
Freq	Level	Limit	Over	Read	Factor	Freq	Level	Limit	Over	Read	Factor		
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 ! 2385.988	41.67	54.00	-12.33	49.44	-7.77	Average	1 ! 2383.326	37.62	54.00	-16.38	45.40	-7.78	Average
2 ! 2385.988	55.14	74.00	-18.86	62.91	-7.77	Peak	2 ! 2383.326	51.82	74.00	-22.18	59.60	-7.78	Peak
3 * 2441.164	100.22			107.87	-7.65	Average	3 * 2441.164	95.55			103.20	-7.65	Average
4 * 2441.164	118.55			126.20	-7.65	Peak	4 * 2441.164	112.78			120.43	-7.65	Peak
5 ! 2499.486	38.95	54.00	-15.05	46.53	-7.58	Average	5 ! 2531.188	37.74	54.00	-16.26	45.20	-7.46	Average
6 ! 2499.486	54.32	74.00	-19.68	61.90	-7.58	Peak	6 ! 2531.188	52.19	74.00	-21.81	59.65	-7.46	Peak
1 ! 3254.700	41.23	54.00	-12.77	46.58	-5.35	Average	1 ! 3254.700	39.27	54.00	-14.73	44.62	-5.35	Average
2 ! 3254.700	47.69	74.00	-26.31	53.04	-5.35	Peak	2 ! 3254.700	46.58	74.00	-27.42	51.93	-5.35	Peak
3 ! 4882.000	43.18	54.00	-10.82	44.70	-1.52	Average	3 ! 4882.000	47.69	54.00	-6.31	49.21	-1.52	Average
4 ! 4882.000	51.68	74.00	-22.32	53.20	-1.52	Peak	4 ! 4882.000	56.22	74.00	-17.78	57.74	-1.52	Peak
5 ! 7323.000	53.66	54.00	-0.34	48.36	5.30	Average	5 ! 7323.000	49.25	54.00	-4.75	43.95	5.30	Average
6 ! 7323.000	64.16	74.00	-9.84	58.86	5.30	Peak	6 ! 7323.000	59.36	74.00	-14.64	54.06	5.30	Peak
7 ! 12205.000	42.61	54.00	-11.39	32.78	9.83	Average	7 ! 12205.000	43.13	54.00	-10.87	33.30	9.83	Average
8 ! 12205.000	56.04	74.00	-17.96	46.21	9.83	Peak	8 ! 12205.000	56.37	74.00	-17.63	46.54	9.83	Peak

BR-1Mbps Horizontal High CH						BR-1Mbps Vertical High CH							
Freq	Level	Limit	Over	Read	Factor	Freq	Level	Limit	Over	Read	Factor		
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 * 2480.168	99.91			107.51	-7.60	Average	1 * 2480.086	95.26			102.86	-7.60	Average
2 * 2480.168	118.12			125.72	-7.60	Peak	2 * 2480.086	112.28			119.88	-7.60	Peak
3 ! 2483.776	49.38	54.00	-4.62	56.97	-7.59	Average	3 ! 2483.530	44.25	54.00	-9.75	51.84	-7.59	Average
4 ! 2483.776	69.28	74.00	-4.72	76.87	-7.59	Peak	4 ! 2483.530	62.45	74.00	-11.55	70.04	-7.59	Peak
1 ! 3306.700	40.91	54.00	-13.09	46.14	-5.23	Average	1 ! 3306.700	40.87	54.00	-13.13	46.10	-5.23	Average
2 ! 3306.700	47.36	74.00	-26.64	52.59	-5.23	Peak	2 ! 3306.700	47.86	74.00	-26.14	53.09	-5.23	Peak
3 ! 4960.000	48.37	54.00	-5.63	49.71	-1.34	Average	3 ! 4960.000	48.87	54.00	-5.13	50.21	-1.34	Average
4 ! 4960.000	56.83	74.00	-17.17	58.17	-1.34	Peak	4 ! 4960.000	59.29	74.00	-14.71	60.63	-1.34	Peak
5 ! 7440.000	49.63	54.00	-4.37	43.99	5.64	Average	5 ! 7440.000	53.15	54.00	-0.85	47.51	5.64	Average
6 ! 7440.000	59.91	74.00	-14.09	54.27	5.64	Peak	6 ! 7440.000	63.60	74.00	-10.40	57.96	5.64	Peak
7 ! 12400.000	41.74	54.00	-12.26	32.63	9.11	Average	7 ! 12400.000	43.85	54.00	-10.15	34.74	9.11	Average
8 ! 12400.000	54.80	74.00	-19.20	45.69	9.11	Peak	8 ! 12400.000	57.84	74.00	-16.16	48.73	9.11	Peak

EDR-2Mbps Horizontal Low CH							EDR-2Mbps Vertical Low CH								
Freq	Level	Limit	Over	Read	Level	Factor	Remark	Freq	Level	Limit	Over	Read	Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m			MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 ! 2384.000	46.41	54.00	-7.59	54.19	-7.78	Average		1 ! 2387.800	42.09	54.00	-11.91	49.86	-7.77	Average	
2 ! 2384.000	59.44	74.00	-14.56	67.22	-7.78	Peak		2 ! 2387.800	55.07	74.00	-18.93	62.84	-7.77	Peak	
3 * 2402.200	98.38			106.11	-7.73	Average		3 * 2402.200	94.12			101.85	-7.73	Average	
4 * 2402.200	118.53			126.26	-7.73	Peak		4 * 2402.200	113.73			121.46	-7.73	Peak	
1 ! 3202.700	40.70	54.00	-13.30	46.22	-5.52	Average		1 ! 3202.700	35.57	54.00	-18.43	41.09	-5.52	Average	
2 ! 3202.700	47.28	74.00	-26.72	52.80	-5.52	Peak		2 ! 3202.700	43.95	74.00	-30.05	49.47	-5.52	Peak	
3 ! 4804.000	39.59	54.00	-14.41	41.27	-1.68	Average		3 ! 4804.000	41.55	54.00	-12.45	43.23	-1.68	Average	
4 ! 4804.000	50.46	74.00	-23.54	52.14	-1.68	Peak		4 ! 4804.000	52.04	74.00	-21.96	53.72	-1.68	Peak	
5 ! 7206.000	52.59	54.00	-1.41	46.76	5.83	Average		5 ! 7206.000	46.04	54.00	-7.96	40.21	5.83	Average	
6 ! 7206.000	59.44	74.00	-14.56	53.61	5.83	Peak		6 ! 7206.000	57.75	74.00	-16.25	51.92	5.83	Peak	

EDR-2Mbps Horizontal Middle CH							EDR-2Mbps Vertical Middle CH								
Freq	Level	Limit	Over	Read	Level	Factor	Remark	Freq	Level	Limit	Over	Read	Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m			MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 ! 2359.852	40.36	54.00	-13.64	48.22	-7.86	Average		1 ! 2384.536	38.44	54.00	-15.56	46.21	-7.77	Average	
2 ! 2359.852	55.42	74.00	-18.58	63.28	-7.86	Peak		2 ! 2384.536	53.02	74.00	-20.98	60.79	-7.77	Peak	
3 * 2440.922	98.15			105.80	-7.65	Average		3 * 2441.164	93.16			100.81	-7.65	Average	
4 * 2440.922	118.27			125.92	-7.65	Peak		4 * 2441.164	112.41			120.06	-7.65	Peak	
5 ! 2500.696	41.27	54.00	-12.73	48.85	-7.58	Average		5 ! 2487.386	38.51	54.00	-15.49	46.10	-7.59	Average	
6 ! 2500.696	57.30	74.00	-16.70	64.88	-7.58	Peak		6 ! 2487.386	53.00	74.00	-21.00	60.59	-7.59	Peak	
1 ! 3254.700	41.05	54.00	-12.95	46.40	-5.35	Average		1 ! 3254.700	39.39	54.00	-14.61	44.74	-5.35	Average	
2 ! 3254.700	47.78	74.00	-26.22	53.13	-5.35	Peak		2 ! 3254.700	46.36	74.00	-27.64	51.71	-5.35	Peak	
3 ! 4882.000	43.21	54.00	-10.79	44.73	-1.52	Average		3 ! 4882.000	44.40	54.00	-9.60	45.92	-1.52	Average	
4 ! 4882.000	54.20	74.00	-19.80	55.72	-1.52	Peak		4 ! 4882.000	55.18	74.00	-18.82	56.70	-1.52	Peak	
5 ! 7323.000	47.64	54.00	-6.36	42.34	5.30	Average		5 ! 7323.000	46.18	54.00	-7.82	40.88	5.30	Average	
6 ! 7323.000	59.46	74.00	-14.54	54.16	5.30	Peak		6 ! 7323.000	57.69	74.00	-16.31	52.39	5.30	Peak	
7 ! 12205.000	44.67	54.00	-9.33	34.84	9.83	Average		7 ! 12205.000	49.74	54.00	-4.26	39.91	9.83	Average	
8 ! 12205.000	56.31	74.00	-17.69	46.48	9.83	Peak		8 ! 12205.000	55.60	74.00	-18.40	45.77	9.83	Peak	

EDR-2Mbps Horizontal High CH							EDR-2Mbps Vertical High CH								
Freq	Level	Limit	Over	Read	Level	Factor	Remark	Freq	Level	Limit	Over	Read	Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m			MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 * 2480.168	97.84			105.44	-7.60	Average		1 * 2479.840	92.93			100.53	-7.60	Average	
2 * 2480.168	117.68			125.28	-7.60	Peak		2 * 2479.840	111.64			119.24	-7.60	Peak	
3 ! 2483.530	51.83	54.00	-2.17	59.42	-7.59	Average		3 ! 2483.612	46.91	54.00	-7.09	54.50	-7.59	Average	
4 ! 2483.530	72.37	74.00	-1.63	79.96	-7.59	Peak		4 ! 2483.612	65.11	74.00	-8.89	72.70	-7.59	Peak	
1 ! 3306.700	41.28	54.00	-12.72	46.51	-5.23	Average		1 ! 3306.700	41.27	54.00	-12.73	46.50	-5.23	Average	
2 ! 3306.700	47.44	74.00	-26.56	52.67	-5.23	Peak		2 ! 3306.700	47.86	74.00	-26.14	53.09	-5.23	Peak	
3 ! 4960.000	45.75	54.00	-8.25	47.09	-1.34	Average		3 ! 4960.000	47.96	54.00	-6.04	49.30	-1.34	Average	
4 ! 4960.000	56.47	74.00	-17.53	57.81	-1.34	Peak		4 ! 4960.000	59.30	74.00	-14.70	60.64	-1.34	Peak	
5 ! 7440.000	47.66	54.00	-6.34	42.02	5.64	Average		5 ! 7440.000	50.77	54.00	-3.23	45.13	5.64	Average	
6 ! 7440.000	58.86	74.00	-15.14	53.22	5.64	Peak		6 ! 7440.000	62.19	74.00	-11.81	56.55	5.64	Peak	
7 ! 12400.000	44.05	54.00	-9.95	34.94	9.11	Average		7 ! 12400.000	41.92	54.00	-12.08	32.81	9.11	Average	
8 ! 12400.000	57.78	74.00	-16.22	48.67	9.11	Peak		8 ! 12400.000	56.25	74.00	-17.75	47.14	9.11	Peak	

EDR-3Mbps Horizontal Low CH							EDR-3Mbps Vertical Low CH								
Freq		Limit		Over		Read		Freq		Limit		Over		Read	
	Level	Line	Limit	Level	Factor	Remark		Level	Line	Limit	Level	Factor	Remark		dB/m
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m			
1 ! 2388.400	46.67	54.00	-7.33	54.44	-7.77	Average	1 ! 2388.900	42.30	54.00	-11.70	50.06	-7.76	Average		
2 ! 2388.400	59.36	74.00	-14.64	67.13	-7.77	Peak	2 ! 2388.900	54.59	74.00	-19.41	62.35	-7.76	Peak		
3 * 2402.200	98.48			106.21	-7.73	Average	3 * 2402.100	94.49			102.22	-7.73	Average		
4 * 2402.200	118.74			126.47	-7.73	Peak	4 * 2402.100	114.19			121.92	-7.73	Peak		
1 ! 3202.700	41.14	54.00	-12.86	46.66	-5.52	Average	1 ! 3202.700	35.94	54.00	-18.06	41.46	-5.52	Average		
2 3202.700	47.85	74.00	-26.15	53.37	-5.52	Peak	2 3202.700	43.81	74.00	-30.19	49.33	-5.52	Peak		
3 ! 4804.000	43.00	54.00	-11.00	44.68	-1.68	Average	3 ! 4804.000	42.49	54.00	-11.51	44.17	-1.68	Average		
4 ! 4804.000	54.11	74.00	-19.89	55.79	-1.68	Peak	4 4804.000	53.00	74.00	-21.00	54.68	-1.68	Peak		
5 ! 7206.000	47.76	54.00	-6.24	41.93	5.83	Average	5 ! 7206.000	46.37	54.00	-7.63	40.54	5.83	Average		
6 ! 7206.000	60.58	74.00	-13.42	54.75	5.83	Peak	6 ! 7206.000	59.08	74.00	-14.92	53.25	5.83	Peak		

EDR-3Mbps Horizontal Middle CH							EDR-3Mbps Vertical Middle CH								
Freq		Limit		Over		Read		Freq		Limit		Over		Read	
	Level	Line	Limit	Level	Factor	Remark		Level	Line	Limit	Level	Factor	Remark		dB/m
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m			
1 ! 2386.956	40.39	54.00	-13.61	48.16	-7.77	Average	1 ! 2381.148	37.76	54.00	-16.24	45.55	-7.79	Average		
2 ! 2386.956	57.52	74.00	-16.48	65.29	-7.77	Peak	2 2381.148	51.89	74.00	-22.11	59.68	-7.79	Peak		
3 * 2441.406	98.46			106.11	-7.65	Average	3 * 2441.406	94.17			101.82	-7.65	Average		
4 * 2441.406	118.62			126.27	-7.65	Peak	4 * 2441.406	113.60			121.25	-7.65	Peak		
5 ! 2487.144	41.06	54.00	-12.94	48.65	-7.59	Average	5 ! 2489.080	38.11	54.00	-15.89	45.70	-7.59	Average		
6 ! 2487.144	58.05	74.00	-15.95	65.64	-7.59	Peak	6 2489.080	52.49	74.00	-21.51	60.08	-7.59	Peak		
1 ! 3254.700	41.39	54.00	-12.61	46.74	-5.35	Average	1 ! 3254.700	39.55	54.00	-14.45	44.90	-5.35	Average		
2 3254.700	48.12	74.00	-25.88	53.47	-5.35	Peak	2 3254.700	47.23	74.00	-26.77	52.58	-5.35	Peak		
3 ! 4882.000	44.16	54.00	-9.84	45.68	-1.52	Average	3 ! 4882.000	44.16	54.00	-9.84	45.68	-1.52	Average		
4 ! 4882.000	55.12	74.00	-18.88	56.64	-1.52	Peak	4 ! 4882.000	55.06	74.00	-18.94	56.58	-1.52	Peak		
5 ! 7323.000	52.34	54.00	-1.66	47.04	5.30	Average	5 ! 7323.000	49.53	54.00	-4.47	44.23	5.30	Average		
6 ! 7323.000	60.18	74.00	-13.82	54.88	5.30	Peak	6 ! 7323.000	60.83	74.00	-13.17	55.53	5.30	Peak		

EDR-3Mbps Horizontal High CH							EDR-3Mbps Vertical High CH								
Freq		Limit		Over		Read		Freq		Limit		Over		Read	
	Level	Line	Limit	Level	Factor	Remark		Level	Line	Limit	Level	Factor	Remark		dB/m
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m			
1 * 2480.168	97.88			105.48	-7.60	Average	1 * 2480.004	92.73			100.33	-7.60	Average		
2 * 2480.168	117.80			125.40	-7.60	Peak	2 * 2480.004	111.66			119.26	-7.60	Peak		
3 ! 2483.530	50.85	54.00	-3.15	58.44	-7.59	Average	3 ! 2483.530	45.68	54.00	-8.32	53.27	-7.59	Average		
4 ! 2483.530	70.34	74.00	-3.66	77.93	-7.59	Peak	4 ! 2483.530	63.76	74.00	-10.24	71.35	-7.59	Peak		
1 ! 3306.700	40.79	54.00	-13.21	46.02	-5.23	Average	1 ! 3306.700	43.27	54.00	-10.73	48.50	-5.23	Average		
2 3306.700	47.10	74.00	-26.90	52.33	-5.23	Peak	2 3306.700	46.95	74.00	-27.05	52.18	-5.23	Peak		
3 ! 4960.000	44.39	54.00	-9.61	45.73	-1.34	Average	3 ! 4960.000	46.69	54.00	-7.31	48.03	-1.34	Average		
4 ! 4960.000	54.80	74.00	-19.20	56.14	-1.34	Peak	4 ! 4960.000	57.43	74.00	-16.57	58.77	-1.34	Peak		
5 ! 7440.000	45.83	54.00	-8.17	40.19	5.64	Average	5 ! 7440.000	49.33	54.00	-4.67	43.69	5.64	Average		
6 ! 7440.000	57.80	74.00	-16.20	52.16	5.64	Peak	6 ! 7440.000	61.52	74.00	-12.48	55.88	5.64	Peak		

< Dipole Antenna (GW.34.5153) with 1.8V_{dc}>

BR-1Mbps Horizontal Low CH						BR-1Mbps Vertical Low CH									
Freq	Level	Line	Limit	Over	Read	Freq	Level	Limit	Over	Read	Freq				
			MHz	dBuV/m	dBuV/m			MHz	dBuV/m	dBuV/m					
1 !	2361.800	39.89	54.00	-14.11	47.73	-7.84	Average	1 !	2389.900	49.25	54.00	-4.75	57.01	-7.76	Average
2	2361.800	51.13	74.00	-22.87	58.97	-7.84	Peak	2 !	2389.900	58.89	74.00	-15.11	66.65	-7.76	Peak
3 *	2402.300	103.32			111.05	-7.73	Average	3 *!	2402.200	115.91			123.64	-7.73	Average
4 *	2402.300	104.39			112.12	-7.73	Peak	4 *!	2402.200	117.01			124.74	-7.73	Peak
1 !	3202.700	41.60	54.00	-12.40	47.12	-5.52	Average	1 !	3202.700	38.07	54.00	-15.93	43.59	-5.52	Average
2	3202.700	46.25	74.00	-27.75	51.77	-5.52	Peak	2	3202.700	43.28	74.00	-30.72	48.80	-5.52	Peak
3 !	4804.000	43.36	54.00	-10.64	45.04	-1.68	Average	3 !	4804.000	44.03	54.00	-9.97	45.71	-1.68	Average
4	4804.000	48.80	74.00	-25.20	50.48	-1.68	Peak	4	4804.000	48.42	74.00	-25.58	50.10	-1.68	Peak
5 !	7206.000	47.63	54.00	-6.37	41.80	5.83	Average	5 !	7206.000	50.88	54.00	-3.12	45.05	5.83	Average
6	7206.000	52.95	74.00	-21.05	47.12	5.83	Peak	6 !	7206.000	59.92	74.00	-14.08	54.09	5.83	Peak

BR-1Mbps Horizontal Middle CH						BR-1Mbps Vertical Middle CH									
Freq	Level	Line	Limit	Over	Read	Freq	Level	Limit	Over	Read	Freq				
			MHz	dBuV/m	dBuV/m			MHz	dBuV/m	dBuV/m					
1 !	2333.958	37.02	54.00	-16.98	44.93	-7.91	Average	1 !	2389.376	39.71	54.00	-14.29	47.47	-7.76	Average
2	2333.958	50.67	74.00	-23.33	58.58	-7.91	Peak	2	2389.376	53.91	74.00	-20.09	61.67	-7.76	Peak
3 *	2441.164	104.37			112.02	-7.65	Average	3 *!	2441.164	115.35			123.00	-7.65	Average
4 *	2441.164	105.44			113.09	-7.65	Peak	4 *!	2441.164	116.48			124.13	-7.65	Peak
5 !	2545.708	37.96	54.00	-16.04	45.35	-7.39	Average	5 !	2499.486	38.26	54.00	-15.74	45.84	-7.58	Average
6	2545.708	51.14	74.00	-22.86	58.53	-7.39	Peak	6	2499.486	52.67	74.00	-21.33	60.25	-7.58	Peak
1 !	3254.700	42.80	54.00	-11.20	48.15	-5.35	Average	1 !	3254.700	42.46	54.00	-11.54	47.81	-5.35	Average
2	3254.700	48.44	74.00	-25.56	53.79	-5.35	Peak	2	3254.700	46.62	74.00	-27.38	51.97	-5.35	Peak
3 !	4882.000	43.04	54.00	-10.96	44.56	-1.52	Average	3 !	4882.000	41.71	54.00	-12.29	43.23	-1.52	Average
4	4882.000	47.67	74.00	-26.33	49.19	-1.52	Peak	4	4882.000	50.75	74.00	-23.25	52.27	-1.52	Peak
5 !	7323.000	47.10	54.00	-6.90	41.80	5.30	Average	5 !	7323.000	48.97	54.00	-5.03	43.67	5.30	Average
6	7323.000	53.06	74.00	-20.94	47.76	5.30	Peak	6 !	7323.000	58.05	74.00	-15.95	52.75	5.30	Peak

BR-1Mbps Horizontal High CH						BR-1Mbps Vertical High CH									
Freq	Level	Line	Limit	Over	Read	Freq	Level	Limit	Over	Read	Freq				
			MHz	dBuV/m	dBuV/m			MHz	dBuV/m	dBuV/m					
1 *!	2480.004	103.73			111.33	-7.60	Average	1 *!	2480.168	114.16			121.76	-7.60	Average
2 *!	2480.004	104.72			112.32	-7.60	Peak	2 *!	2480.168	115.26			122.86	-7.60	Peak
3 !	2483.940	40.52	54.00	-13.48	48.11	-7.59	Average	3 !	2483.530	50.35	54.00	-3.65	57.94	-7.59	Average
4 !	2483.940	57.29	74.00	-16.71	64.88	-7.59	Peak	4 !	2483.530	67.67	74.00	-6.33	75.26	-7.59	Peak
1 !	3306.700	44.33	54.00	-9.67	49.56	-5.23	Average	1 !	3306.700	43.81	54.00	-10.19	49.04	-5.23	Average
2	3306.700	48.82	74.00	-25.18	54.05	-5.23	Peak	2	3306.700	48.86	74.00	-25.14	54.09	-5.23	Peak
3 !	4960.000	44.34	54.00	-9.66	45.68	-1.34	Average	3 !	4960.000	45.53	54.00	-8.47	46.87	-1.34	Average
4	4960.000	49.92	74.00	-24.08	51.26	-1.34	Peak	4	4960.000	49.51	74.00	-24.49	50.85	-1.34	Peak
5 !	7440.000	45.28	54.00	-8.72	39.64	5.64	Average	5 !	7440.000	48.58	54.00	-5.42	42.94	5.64	Average
6	7440.000	47.79	74.00	-26.21	42.15	5.64	Peak	6	7440.000	51.97	74.00	-22.03	46.33	5.64	Peak

EDR-2Mbps Horizontal Low CH							EDR-2Mbps Vertical Low CH																									
Freq	Level	Limit	Over	Read	Line	Limit	Over	Read	Line	Limit	Over	Read	Level	Factor	Remark	Freq	Level	Limit	Over	Read	Line	Limit	Over	Read	Level	Factor	Remark					
		MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m									MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m									
1 !	2325.300	36.28	54.00	-17.72	44.20	-7.92	Average		1 !	2385.600	43.34	54.00	-10.66	51.11	-7.77	Average	1 !	2385.600	43.34	54.00	-10.66	51.11	-7.77	Average								
2	2325.300	51.40	74.00	-22.60	59.32	-7.92	Peak		2 !	2385.600	58.20	74.00	-15.80	65.97	-7.77	Peak		2 !	2385.600	58.20	74.00	-15.80	65.97	-7.77	Peak							
3 *	2402.200	81.08			88.81	-7.73	Average		3 * !	2402.300	96.50			104.23	-7.73	Average		3 * !	2402.300	96.50		104.23										
4 *	2402.200	96.57			104.30	-7.73	Peak		4 * !	2402.300	116.00			123.73	-7.73	Peak		4 * !	2402.300	116.00		123.73										
1 !	3202.700	41.59	54.00	-12.41	47.11	-5.52	Average		1 !	3202.700	38.70	54.00	-15.30	44.22	-5.52	Average		1 !	3202.700	38.70	54.00	-15.30	44.22	-5.52	Average							
2	3202.700	45.75	74.00	-28.25	51.27	-5.52	Peak		2	3202.700	42.66	74.00	-31.34	48.18	-5.52	Peak		2	3202.700	42.66	74.00	-31.34	48.18	-5.52	Peak							
3 !	4804.000	38.87	54.00	-15.13	40.55	-1.68	Average		3 !	4804.000	39.86	54.00	-14.14	41.54	-1.68	Average		3 !	4804.000	39.86	54.00	-14.14	41.54	-1.68	Average							
4	4804.000	46.49	74.00	-27.51	48.17	-1.68	Peak		4	4804.000	46.68	74.00	-27.32	48.36	-1.68	Peak		4	4804.000	46.68	74.00	-27.32	48.36	-1.68	Peak							
5 !	7206.000	42.98	54.00	-11.02	37.15	5.83	Average		5 !	7206.000	46.70	54.00	-7.30	40.87	5.83	Average		5 !	7206.000	46.70	54.00	-7.30	40.87	5.83	Average							
6	7206.000	48.04	74.00	-25.96	42.21	5.83	Peak		6 !	7206.000	54.45	74.00	-19.55	48.62	5.83	Peak		6 !	7206.000	54.45	74.00	-19.55	48.62	5.83	Peak							

EDR-2Mbps Horizontal Middle CH							EDR-2Mbps Vertical Middle CH																									
Freq	Level	Limit	Over	Read	Line	Limit	Over	Read	Line	Limit	Over	Read	Level	Factor	Remark	Freq	Level	Limit	Over	Read	Line	Limit	Over	Read	Level	Factor	Remark					
		MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m									MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m									
1 !	2367.354	36.37	54.00	-17.63	44.20	-7.83	Average		1 !	2386.230	39.66	54.00	-14.34	47.43	-7.77	Average		1 !	2386.230	39.66	54.00	-14.34	47.43	-7.77	Average							
2	2367.354	50.71	74.00	-23.29	58.54	-7.83	Peak		2 !	2386.230	54.93	74.00	-19.07	62.70	-7.77	Peak		2 !	2386.230	54.93	74.00	-19.07	62.70	-7.77	Peak							
3 *	2440.922	85.76			93.41	-7.65	Average		3 * !	2441.164	97.00			104.65	-7.65	Average		3 * !	2441.164	97.00		104.65										
4 *	2440.922	102.21			109.86	-7.65	Peak		4 * !	2441.164	116.42			124.07	-7.65	Peak		4 * !	2441.164	116.42		124.07										
5 !	2544.982	37.46	54.00	-16.54	44.87	-7.41	Average		5 !	2501.180	40.28	54.00	-13.72	47.86	-7.58	Average		5 !	2501.180	40.28	54.00	-13.72	47.86	-7.58	Average							
6	2544.982	51.82	74.00	-22.18	59.23	-7.41	Peak		6 !	2501.180	58.50	74.00	-15.50	66.08	-7.58	Peak		6 !	2501.180	58.50	74.00	-15.50	66.08	-7.58	Peak							
1 !	3254.700	43.60	54.00	-10.40	48.95	-5.35	Average		1 !	3254.700	41.69	54.00	-12.31	47.04	-5.35	Average		1 !	3254.700	41.69	54.00	-12.31	47.04	-5.35	Average							
2	3254.700	47.08	74.00	-26.92	52.43	-5.35	Peak		2	3254.700	48.39	74.00	-25.63	53.74	-5.35	Peak		2	3254.700	48.39	74.00	-25.63	53.74	-5.35	Peak							
3 !	4882.000	39.37	54.00	-14.63	40.89	-1.52	Average		3 !	4882.000	41.86	54.00	-12.14	43.38	-1.52	Average		3 !	4882.000	41.86	54.00	-12.14	43.38	-1.52	Average							
4	4882.000	46.15	74.00	-27.85	47.67	-1.52	Peak		4	4882.000	48.41	74.00	-25.59	49.93	-1.52	Peak		4	4882.000	48.41	74.00	-25.59	49.93	-1.52	Peak							
5 !	7320.000	42.67	54.00	-11.33	37.37	5.30	Average		5 !	7323.000	46.38	54.00	-7.62	41.08	5.30	Average		5 !	7323.000	46.38	54.00	-7.62	41.08	5.30	Average							
6	7320.000	48.44	74.00	-25.56	43.14	5.30	Peak		6 !	7323.000	54.02	74.00	-19.98	48.72	5.30	Peak		6 !	7323.000	54.02	74.00	-19.98	48.72	5.30	Peak							

EDR-2Mbps Horizontal High CH							EDR-2Mbps Vertical High CH																									
Freq	Level	Limit	Over	Read	Line	Limit	Over	Read	Line	Limit	Over	Read	Level	Factor	Remark	Freq	Level	Limit	Over	Read	Line	Limit	Over	Read	Level	Factor	Remark					
		MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m									MHz	dBuV/m	dBuV/m		dB	dBuV	dB/m									
1 * !	2480.168	85.61			93.21	-7.60	Average		1 * !	2480.168	95.87			103.47	-7.60	Average		1 * !	2480.168	95.87		103.47										
2 * !	2480.168	101.86			109.46	-7.60	Peak		2 * !	2480.168	114.94			122.54	-7.60	Peak		2 * !	2480.168	114.94		122.54										
3 !	2483.530	40.78	54.00	-13.22	48.37	-7.59	Average		3 !	2483.500	49.87	54.00	-4.13	57.46	-7.59	Average		3 !	2483.500	49.87	54.00	-4.13	57.46	-7.59	Average							
4 !	2483.530	58.37	74.00	-15.63	65.96	-7.59	Peak		4 !	2483.500	73.27	74.00	-0.73	80.86	-7.59	Peak		4 !	2483.500	73.27	74.00	-0.73	80.86	-7.59	Peak							
1 !	3306.700	44.27	54.00	-9.73	49.50	-5.23	Average		1 !	3306.700	43.75	54.00	-10.25	48.98	-5.23	Average		1 !	3306.700	43.75	54.00	-10.25	48.98	-5.23	Average							
2	3306.700	48.03	74.00	-25.97	53.26	-5.23	Peak		2	3306.700	48.18	74.00	-25.82	53.41	-5.23	Peak		2	3306.700	48.18	74.00	-25.82	53.41	-5.23	Peak							
3 !	4960.000	40.77	54.00	-13.23	42.11	-1.34	Average		3 !	4960.000	42.05	54.00	-11.95	43.39	-1.34	Average		3 !	4960.000	42.05	54.00	-11.95	43.39	-1.34	Average							
4	4960.000	46.87	74.00	-27.13	48.21	-1.34	Peak		4	4960.000	48.17	74.00	-25.83	49.51	-1.34	Peak		4	4960.000	48.17	74.00	-25.83	49.51	-1.34	Peak							
5 !	7440.000	40.78	54.00	-13.22	35.14	5.64	Average		5 !	7440.000	43.91	54.00	-10.09	38.27	5.64	Average		5 !	7440.000	43.91	54.00	-10.09	38.27	5.64	Average							
6	7440.000	46.09	74.00	-27.91	40.45	5.64	Peak		6	7440.000	47.64	74.00	-26.36	42.00	5.64	Peak		6	7440.000	47.64	74.00	-26.36	42.00</									

EDR-3Mbps Horizontal Low CH							EDR-3Mbps Vertical Low CH								
Freq		Limit		Over		Read		Freq		Limit		Over		Read	
		Level	Line	Limit	Level	Factor	Remark			Level	Line	Limit	Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m			MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 ! 2389.400	36.59	54.00	-17.41	44.35	-7.76	Average		1 ! 2388.200	43.54	54.00	-10.46	51.31	-7.77	Average	
2 2389.400	51.93	74.00	-22.07	59.69	-7.76	Peak		2 ! 2388.200	57.65	74.00	-16.35	65.42	-7.77	Peak	
3 * 2402.300	83.91			91.64	-7.73	Average		3 * 2402.200	96.65			104.38	-7.73	Average	
4 * 2402.300	99.83			107.56	-7.73	Peak		4 * 2402.200	116.28			124.81	-7.73	Peak	
1 ! 3202.700	41.52	54.00	-12.48	47.04	-5.52	Average		1 ! 3202.700	40.84	54.00	-13.16	46.36	-5.52	Average	
2 3202.700	45.57	74.00	-28.43	51.09	-5.52	Peak		2 3202.700	44.57	74.00	-29.43	50.09	-5.52	Peak	
3 ! 4884.000	39.18	54.00	-14.82	40.86	-1.68	Average		3 ! 4804.000	40.39	54.00	-13.61	42.07	-1.68	Average	
4 4884.000	46.32	74.00	-27.68	48.00	-1.68	Peak		4 4804.000	47.28	74.00	-26.72	48.96	-1.68	Peak	
5 ! 7206.000	42.73	54.00	-11.27	36.90	5.83	Average		5 ! 7206.000	46.44	54.00	-7.56	40.61	5.83	Average	
6 7206.000	49.83	74.00	-24.17	44.00	5.83	Peak		6 ! 7206.000	54.95	74.00	-19.05	49.12	5.83	Peak	

EDR-3Mbps Horizontal Middle CH							EDR-3Mbps Vertical Middle CH								
Freq		Limit		Over		Read		Freq		Limit		Over		Read	
		Level	Line	Limit	Level	Factor	Remark			Level	Line	Limit	Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m			MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 ! 2311.210	36.39	54.00	-17.61	44.33	-7.94	Average		1 ! 2385.262	39.04	54.00	-14.96	46.81	-7.77	Average	
2 2311.210	50.73	74.00	-23.27	58.67	-7.94	Peak		2 2385.262	53.92	74.00	-20.08	61.69	-7.77	Peak	
3 * 2441.164	86.10			93.75	-7.65	Average		3 * 2441.164	96.92			104.57	-7.65	Average	
4 * 2441.164	102.83			110.48	-7.65	Peak		4 * 2441.164	116.52			124.17	-7.65	Peak	
5 ! 2551.032	37.19	54.00	-16.81	44.57	-7.38	Average		5 ! 2488.596	39.84	54.00	-14.16	47.43	-7.59	Average	
6 2551.032	51.02	74.00	-22.98	58.40	-7.38	Peak		6 ! 2488.596	58.39	74.00	-15.61	65.98	-7.59	Peak	
1 ! 3254.700	47.61	54.00	-6.39	52.96	-5.35	Average		1 ! 3254.700	44.63	54.00	-9.37	49.98	-5.35	Average	
2 3254.700	48.96	74.00	-25.04	54.31	-5.35	Peak		2 3254.700	46.92	74.00	-27.08	52.27	-5.35	Peak	
3 ! 4882.000	38.98	54.00	-15.02	40.50	-1.52	Average		3 ! 4882.000	42.24	54.00	-11.76	43.76	-1.52	Average	
4 4882.000	51.24	74.00	-22.76	52.76	-1.52	Peak		4 4882.000	52.68	74.00	-21.32	54.20	-1.52	Peak	
5 ! 7323.000	42.64	54.00	-11.36	37.34	5.30	Average		5 ! 7323.000	43.68	54.00	-10.32	38.38	5.30	Average	
6 ! 7323.000	54.80	74.00	-19.20	49.50	5.30	Peak		6 ! 7323.000	56.35	74.00	-17.65	51.05	5.30	Peak	

EDR-3Mbps Horizontal High CH							EDR-3Mbps Vertical High CH								
Freq		Limit		Over		Read		Freq		Limit		Over		Read	
		Level	Line	Limit	Level	Factor	Remark			Level	Line	Limit	Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m			MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 * 2480.168	84.90			92.50	-7.60	Average		1 * 2479.922	95.66			103.26	-7.60	Average	
2 * 2480.168	101.18			108.78	-7.60	Peak		2 * 2479.922	114.73			122.33	-7.60	Peak	
3 ! 2483.530	40.54	54.00	-13.46	48.13	-7.59	Average		3 ! 2483.500	49.77	54.00	-4.23	57.36	-7.59	Average	
4 ! 2483.530	59.52	74.00	-14.48	67.11	-7.59	Peak		4 ! 2483.500	73.79	74.00	-0.21	81.38	-7.59	Peak	
1 ! 3306.700	48.06	54.00	-5.94	53.29	-5.23	Average		1 ! 3306.700	46.85	54.00	-7.15	52.08	-5.23	Average	
2 3306.700	51.78	74.00	-22.22	57.01	-5.23	Peak		2 3306.700	49.08	74.00	-24.92	54.31	-5.23	Peak	
3 ! 4960.000	43.41	54.00	-10.59	44.75	-1.34	Average		3 ! 4960.000	41.61	54.00	-12.39	42.95	-1.34	Average	
4 4960.000	49.45	74.00	-24.55	50.79	-1.34	Peak		4 4960.000	52.41	74.00	-21.59	53.75	-1.34	Peak	
5 ! 7440.000	41.84	54.00	-12.16	36.20	5.64	Average		5 ! 7440.000	41.39	54.00	-12.61	35.75	5.64	Average	
6 7440.000	46.61	74.00	-27.39	40.97	5.64	Peak		6 ! 7440.000	54.00	74.00	-20.00	48.36	5.64	Peak	

< Dipole Antenna (GW.34.5153) with 3.3V_{dc}>

BR-1Mbps Horizontal Low CH						BR-1Mbps Vertical Low CH																	
Freq	Level	Limit		Over		Read		Freq	Level	Limit		Over		Read		Freq	Level						
		Line	Limit	Line	Limit	Level	Factor			MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB							
1 ! 2361.000	39.04	54.00	-14.96	46.90	-7.86	Average		1 ! 2389.200	48.88	54.00	-5.12	56.64	-7.76	Average		1 ! 2389.200	60.54	74.00	-13.46	68.30	-7.76	Peak	
2 ! 2361.000	51.48	74.00	-22.52	59.34	-7.86	Peak		3 * 2402.300	100.40				108.13	-7.73	Average		3 * 2402.300	119.08			126.81	-7.73	Peak
3 * 2402.200	89.83			97.56	-7.73	Average		1 ! 3202.700	38.46	54.00	-15.54	43.98	-5.52	Average		2 ! 3202.700	45.53	74.00	-28.47	51.05	-5.52	Peak	
4 * 2402.200	106.55			114.28	-7.73	Peak		3 ! 4804.000	47.43	54.00	-6.57	49.11	-1.68	Average		3 ! 4804.000	55.93	74.00	-18.07	57.61	-1.68	Peak	
1 ! 3202.700	40.63	54.00	-13.37	46.15	-5.52	Average		4 ! 4804.000	55.93	74.00	-2.18	45.99	5.83	Average		5 ! 7206.000	51.82	54.00	-11.72	56.45	5.83	Peak	
2 ! 3202.700	47.19	74.00	-26.81	52.71	-5.52	Peak		6 ! 7206.000	62.28	74.00	-11.10	33.06	9.84	Average		7 ! 12010.000	42.90	54.00	-11.10	33.06	9.84	Average	
3 ! 4804.000	46.20	54.00	-7.80	47.88	-1.68	Average		8 ! 12010.000	55.88	74.00	-18.12	46.04	9.84	Peak									
4 ! 4804.000	54.55	74.00	-19.45	56.23	-1.68	Peak																	
5 ! 7206.000	49.12	54.00	-4.88	43.29	5.83	Average																	
6 ! 7206.000	59.25	74.00	-14.75	53.42	5.83	Peak																	

BR-1Mbps Horizontal Middle CH						BR-1Mbps Vertical Middle CH																
Freq	Level	Limit		Over		Read		Freq	Level	Limit		Over		Read		Freq	Level					
		Line	Limit	Line	Limit	Level	Factor			MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB						
1 ! 2361.062	37.22	54.00	-16.78	45.08	-7.86	Average		1 ! 2385.262	42.90	54.00	-11.10	50.67	-7.77	Average		2 ! 2385.262	53.61	74.00	-20.39	61.38	-7.77	Peak
2 ! 2361.062	51.21	74.00	-22.79	59.07	-7.86	Peak		3 * 2441.164	103.07			110.72	-7.65	Average		3 * 2441.164	119.69			127.34	-7.65	Peak
3 * 2441.164	90.83			98.48	-7.65	Average		4 * 2441.164	114.11	-7.65	Peak				5 ! 2485.208	41.21	54.00	-12.79	48.80	-7.59	Average	
4 * 2441.164	106.46							6 ! 2485.208	56.67	74.00	-17.33	64.26	-7.59	Peak		1 ! 3254.700	40.94	54.00	-13.06	46.29	-5.35	Average
5 ! 2527.800	38.51	54.00	-15.49	45.98	-7.47	Average		2 ! 3254.700	47.77	74.00	-26.23	53.12	-5.35	Peak		3 ! 4882.000	49.01	54.00	-4.99	50.53	-1.52	Average
6 ! 2527.800	51.18	74.00	-22.82	58.65	-7.47	Peak		4 ! 4882.000	57.61	74.00	-16.39	59.13	-1.52	Peak		5 ! 7323.000	52.49	54.00	-1.51	47.19	5.30	Average
1 ! 3254.700	43.00	54.00	-11.00	48.35	-5.35	Average		6 ! 7323.000	62.81	74.00	-11.19	57.51	5.30	Peak		7 ! 12200.000	45.12	54.00	-8.88	35.28	9.84	Average
2 ! 3254.700	49.34	74.00	-24.66	54.69	-5.35	Peak		8 ! 12200.000	58.60	74.00	-15.40	48.76	9.84	Peak								
3 ! 4882.000	46.61	54.00	-7.39	48.13	-1.52	Average																
4 ! 4882.000	54.96	74.00	-19.04	56.48	-1.52	Peak																
5 ! 7323.000	51.74	54.00	-2.26	46.44	5.30	Average																
6 ! 7323.000	56.95	74.00	-17.05	51.65	5.30	Peak																

BR-1Mbps Horizontal High CH						BR-1Mbps Vertical High CH																
Freq	Level	Limit		Over		Read		Freq	Level	Limit		Over		Read		Freq	Level					
		Line	Limit	Line	Limit	Level	Factor			MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB						
1 * 2480.168	88.11			95.71	-7.60	Average		1 * 2480.086	100.24			107.84	-7.60	Average								
2 * 2480.168	102.82			110.42	-7.60	Peak		2 * 2480.086	116.18			123.78	-7.60	Peak								
3 ! 2519.774	35.67	54.00	-18.33	43.18	-7.51	Average		3 ! 2483.448	51.60	54.00	-2.40	59.19	-7.59	Average		4 ! 2483.448	63.68	74.00	-10.32	71.27	-7.59	Peak
4 ! 2519.774	52.82	74.00	-21.18	60.33	-7.51	Peak		1 ! 3306.700	41.89	54.00	-12.11	47.12	-5.23	Average		2 ! 3306.700	48.64	74.00	-25.36	53.87	-5.23	Peak
1 ! 3306.700	40.13	54.00	-13.87	45.36	-5.23	Average		3 ! 4960.000	49.54	54.00	-4.46	50.88	-1.34	Average		3 ! 4960.000	58.24	74.00	-15.76	59.58	-1.34	Peak
2 ! 3306.700	48.23	74.00	-25.77	53.46	-5.23	Peak		4 ! 4960.000	58.24	74.00	-15.76	59.58	-1.34	Peak		5 ! 7440.000	50.83	54.00	-3.17	45.19	5.64	Average
3 ! 4960.000	48.81	54.00	-5.19	50.15	-1.34	Average		6 ! 7440.000	60.76	74.00	-13.24	55.12	5.64	Peak		7 ! 12400.000	44.56	54.00	-9.44	35.45	9.11	Average
4 ! 4960.000	57.34	74.00	-16.66	58.68	-1.34	Peak		8 ! 12400.000	58.31	74.00	-15.69	49.20	9.11	Peak								
5 ! 7440.000	48.11	54.00	-5.89	42.47	5.64	Average																
6 ! 7440.000	57.82	74.00	-16.18	52.18	5.64	Peak																

EDR-2Mbps Horizontal Low CH							EDR-2Mbps Vertical Low CH							
Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read
MHz	dBuV/m	dBuV/m	dB	dBuV	MHz	dBuV/m	dBuV/m	dB	dBuV	MHz	dBuV/m	dBuV/m	dB	dBuV
1 ! 2361.900	39.52	54.00	-14.48	47.36	-7.84	Average	1 ! 2362.200	46.11	54.00	-7.89	53.95	-7.84	Average	
2 2361.900	52.20	74.00	-21.80	60.04	-7.84	Peak	2 ! 2362.200	58.98	74.00	-15.02	66.82	-7.84	Peak	
3 * 2402.000	90.21			97.94	-7.73	Average	3 * 2401.900	102.65			110.38	-7.73	Average	
4 * 2402.000	106.01			113.74	-7.73	Peak	4 * 2401.900	118.81			126.54	-7.73	Peak	
1 ! 3202.700	40.72	54.00	-13.28	46.24	-5.52	Average	1 ! 3202.700	37.19	54.00	-16.81	42.71	-5.52	Average	
2 3202.700	47.11	74.00	-26.89	52.63	-5.52	Peak	2 3202.700	44.41	74.00	-29.59	49.93	-5.52	Peak	
3 ! 4804.000	42.16	54.00	-11.84	43.84	-1.68	Average	3 ! 4804.000	43.13	54.00	-10.87	44.81	-1.68	Average	
4 4804.000	52.69	74.00	-21.31	54.37	-1.68	Peak	4 4804.000	53.86	74.00	-20.14	55.54	-1.68	Peak	
5 ! 7206.000	45.49	54.00	-8.51	39.66	5.83	Average	5 ! 7206.000	48.84	54.00	-5.16	43.01	5.83	Average	
6 ! 7206.000	57.44	74.00	-16.56	51.61	5.83	Peak	6 ! 7206.000	60.93	74.00	-13.07	55.10	5.83	Peak	

EDR-2Mbps Horizontal Middle CH							EDR-2Mbps Vertical Middle CH							
Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read
MHz	dBuV/m	dBuV/m	dB	dBuV	MHz	dBuV/m	dBuV/m	dB	dBuV	MHz	dBuV/m	dBuV/m	dB	dBuV
1 ! 2345.332	37.44	54.00	-16.56	45.33	-7.89	Average	1 ! 2379.696	41.83	54.00	-12.17	49.62	-7.79	Average	
2 2345.332	51.40	74.00	-22.60	59.29	-7.89	Peak	2 ! 2379.696	57.05	74.00	-16.95	64.84	-7.79	Peak	
3 * 2440.922	88.90			96.55	-7.65	Average	3 * 2441.164	102.52			110.17	-7.65	Average	
4 * 2440.922	104.50			112.15	-7.65	Peak	4 * 2441.164	119.42			127.07	-7.65	Peak	
5 ! 2529.010	38.59	54.00	-15.41	46.06	-7.47	Average	5 ! 2491.500	44.33	54.00	-9.67	51.92	-7.59	Average	
6 2529.010	51.57	74.00	-22.43	59.04	-7.47	Peak	6 ! 2491.500	58.98	74.00	-15.02	66.57	-7.59	Peak	
1 ! 3254.700	42.94	54.00	-11.06	48.29	-5.35	Average	1 ! 3254.700	40.80	54.00	-13.20	46.15	-5.35	Average	
2 3254.700	49.37	74.00	-24.63	54.72	-5.35	Peak	2 3254.700	47.18	74.00	-26.82	52.53	-5.35	Peak	
3 ! 4882.000	43.15	54.00	-10.85	44.67	-1.52	Average	3 ! 4882.000	46.14	54.00	-7.86	47.66	-1.52	Average	
4 4882.000	53.66	74.00	-20.34	55.18	-1.52	Peak	4 ! 4882.000	57.21	74.00	-16.79	58.73	-1.52	Peak	
5 ! 7323.000	45.72	54.00	-8.28	40.42	5.30	Average	5 ! 7323.000	49.50	54.00	-4.50	44.20	5.30	Average	
6 ! 7323.000	56.81	74.00	-17.19	51.51	5.30	Peak	6 ! 7323.000	61.09	74.00	-12.91	55.79	5.30	Peak	
7 112205.000	42.84	54.00	-11.16	33.01			7 112205.000	42.84	54.00	-11.16	33.01	9.83	Average	
8 112205.000	57.29	74.00	-16.71	47.46			8 112205.000	57.29	74.00	-16.71	47.46	9.83	Peak	

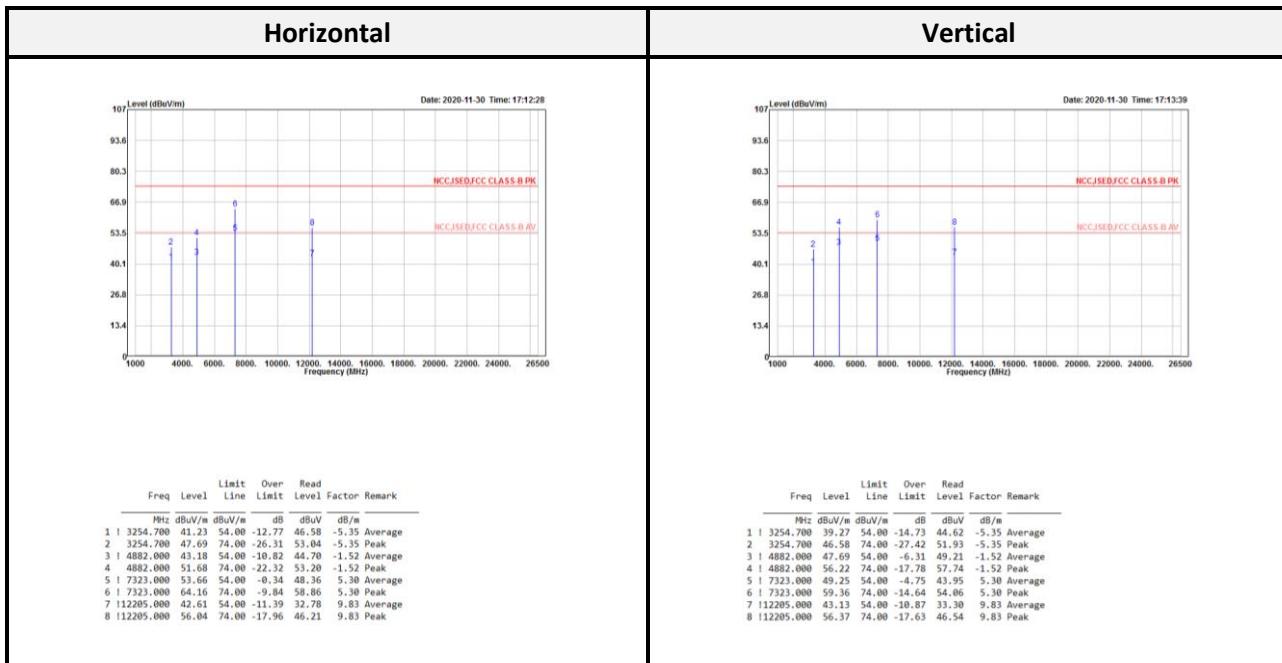
EDR-2Mbps Horizontal High CH							EDR-2Mbps Vertical High CH							
Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read	Freq	Level	Limit	Over	Read
MHz	dBuV/m	dBuV/m	dB	dBuV	MHz	dBuV/m	dBuV/m	dB	dBuV	MHz	dBuV/m	dBuV/m	dB	dBuV
1 * 2480.168	84.23			91.83	-7.60	Average	1 * 2480.168	97.91			105.51	-7.60	Average	
2 * 2480.168	102.19			109.79	-7.60	Peak	2 * 2480.168	116.82			124.42	-7.60	Peak	
3 ! 2483.448	41.04	54.00	-12.96	48.63	-7.59	Average	3 ! 2483.612	52.85	54.00	-1.15	60.44	-7.59	Average	
4 2483.448	52.77	74.00	-21.23	60.36	-7.59	Peak	4 ! 2483.612	64.43	74.00	-9.57	72.02	-7.59	Peak	
1 3306.700	43.37	54.00	-10.63	48.60	-5.23	Average	1 ! 3306.700	41.73	54.00	-12.27	46.96	-5.23	Average	
2 3306.700	49.49	74.00	-24.51	54.72	-5.23	Peak	2 3306.700	48.63	74.00	-25.37	53.86	-5.23	Peak	
3 ! 4960.000	45.99	54.00	-8.01	47.33	-1.34	Average	3 ! 4960.000	46.28	54.00	-7.72	47.62	-1.34	Average	
4 ! 4960.000	56.63	74.00	-17.37	57.97	-1.34	Peak	4 ! 4960.000	57.60	74.00	-16.40	58.94	-1.34	Peak	
5 ! 7440.000	45.48	54.00	-8.52	39.84	5.64	Average	5 ! 7440.000	48.07	54.00	-5.93	42.43	5.64	Average	
6 ! 7440.000	56.12	74.00	-17.88	50.48	5.64	Peak	6 ! 7440.000	58.96	74.00	-15.04	53.32	5.64	Peak	
7 112400.000	42.96	54.00	-11.04	33.85			7 112400.000	42.96	54.00	-11.04	33.85	9.11	Average	
8 112400.000	56.97	74.00	-17.03	47.86			8 112400.000	56.97	74.00	-17.03	47.86	9.11	Peak	

EDR-3Mbps Horizontal Low CH						EDR-3Mbps Vertical Low CH							
Freq		Limit		Over Read		Freq		Limit		Over Read			
	Level	Line	Limit	Level	Factor		Level	Line	Limit	Level	Factor		
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 ! 2380.700	37.19	54.00	-16.81	44.98	-7.79	Average	1 ! 2362.200	46.07	54.00	-7.93	53.91	-7.84	Average
2 ! 2380.700	52.12	74.00	-21.88	59.91	-7.79	Peak	2 ! 2362.200	57.81	74.00	-16.19	65.65	-7.84	Peak
3 * 2402.100	87.97			95.70	-7.73	Average	3 * 2402.200	98.48			106.21	-7.73	Average
4 * 2402.100	106.07			113.80	-7.73	Peak	4 * 2402.200	118.69			126.42	-7.73	Peak
1 ! 3202.700	40.39	54.00	-13.61	45.91	-5.52	Average	1 ! 3202.700	37.11	54.00	-16.89	42.63	-5.52	Average
2 ! 3202.700	47.18	74.00	-26.82	52.70	-5.52	Peak	2 ! 3202.700	44.32	74.00	-29.68	49.84	-5.52	Peak
3 ! 4804.000	42.34	54.00	-11.66	44.02	-1.68	Average	3 ! 4804.000	43.55	54.00	-10.45	45.23	-1.68	Average
4 ! 4804.000	53.23	74.00	-20.77	54.91	-1.68	Peak	4 ! 4804.000	54.30	74.00	-19.70	55.98	-1.68	Peak
5 ! 7206.000	44.91	54.00	-9.09	39.08	5.83	Average	5 ! 7206.000	48.86	54.00	-5.14	43.03	5.83	Average
6 ! 7206.000	58.12	74.00	-15.88	52.29	5.83	Peak	6 ! 7206.000	61.93	74.00	-12.07	56.10	5.83	Peak

EDR-3Mbps Horizontal Middle CH						EDR-3Mbps Vertical Middle CH							
Freq		Limit		Over Read		Freq		Limit		Over Read			
	Level	Line	Limit	Level	Factor		Level	Line	Limit	Level	Factor		
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 ! 2382.842	36.62	54.00	-17.38	44.40	-7.78	Average	1 ! 2383.326	40.13	54.00	-13.87	47.91	-7.78	Average
2 ! 2382.842	50.83	74.00	-23.17	58.61	-7.78	Peak	2 ! 2383.326	55.36	74.00	-18.64	63.14	-7.78	Peak
3 * 2441.164	87.91			95.56	-7.65	Average	3 * 2441.164	99.32			106.97	-7.65	Average
4 * 2441.164	105.67			113.32	-7.65	Peak	4 * 2441.164	119.54			127.19	-7.65	Peak
5 ! 2505.052	37.21	54.00	-16.79	44.76	-7.55	Average	5 ! 2497.308	41.29	54.00	-12.71	48.87	-7.58	Average
6 ! 2505.052	51.81	74.00	-22.19	59.36	-7.55	Peak	6 ! 2497.308	59.15	74.00	-14.85	66.73	-7.58	Peak
1 ! 3254.700	42.80	54.00	-11.20	48.15	-5.35	Average	1 ! 3254.700	40.91	54.00	-13.09	46.26	-5.35	Average
2 ! 3254.700	49.18	74.00	-24.82	54.53	-5.35	Peak	2 ! 3254.700	47.36	74.00	-26.64	52.71	-5.35	Peak
3 ! 4882.000	43.05	54.00	-10.95	44.57	-1.52	Average	3 ! 4882.000	46.10	54.00	-7.90	47.62	-1.52	Average
4 ! 4882.000	53.53	74.00	-20.47	55.05	-1.52	Peak	4 ! 4882.000	57.07	74.00	-16.93	58.59	-1.52	Peak
5 ! 7323.000	45.44	54.00	-8.56	40.14	5.30	Average	5 ! 7323.000	49.42	54.00	-4.58	44.12	5.30	Average
6 ! 7323.000	57.54	74.00	-16.46	52.24	5.30	Peak	6 ! 7323.000	62.68	74.00	-11.32	57.38	5.30	Peak

EDR-3Mbps Horizontal High CH						EDR-3Mbps Vertical High CH							
Freq		Limit		Over Read		Freq		Limit		Over Read			
	Level	Line	Limit	Level	Factor		Level	Line	Limit	Level	Factor		
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 * 2479.840	86.17			93.77	-7.60	Average	1 * 2480.168	97.91			105.51	-7.60	Average
2 * 2479.840	103.39			110.99	-7.60	Peak	2 * 2480.168	117.93			125.53	-7.60	Peak
3 ! 2483.530	40.72	54.00	-13.28	48.31	-7.59	Average	3 ! 2483.500	51.60	54.00	-2.40	59.19	-7.59	Average
4 ! 2483.530	56.08	74.00	-17.92	63.67	-7.59	Peak	4 ! 2483.500	72.11	74.00	-1.89	79.70	-7.59	Peak
1 ! 3306.700	43.24	54.00	-10.76	48.47	-5.23	Average	1 ! 3306.700	42.31	54.00	-11.69	47.54	-5.23	Average
2 ! 3306.700	49.68	74.00	-24.32	54.91	-5.23	Peak	2 ! 3306.700	48.87	74.00	-25.13	54.10	-5.23	Peak
3 ! 4960.000	45.40	54.00	-8.60	46.74	-1.34	Average	3 ! 4960.000	46.03	54.00	-7.97	47.37	-1.34	Average
4 ! 4960.000	56.08	74.00	-17.92	57.42	-1.34	Peak	4 ! 4960.000	57.04	74.00	-16.96	58.38	-1.34	Peak
5 ! 7440.000	45.74	54.00	-8.26	40.10	5.64	Average	5 ! 7440.000	44.42	54.00	-9.58	38.78	5.64	Average
6 ! 7440.000	52.30	74.00	-21.70	46.66	5.64	Peak	6 ! 7440.000	56.94	74.00	-17.06	51.30	5.64	Peak

Above 1G (1 GHz-26.5 GHz): The worst mode is Chip Antenna with 3.3V_{dc} for BR-1M middle CH.



Level = Read Level + Factor

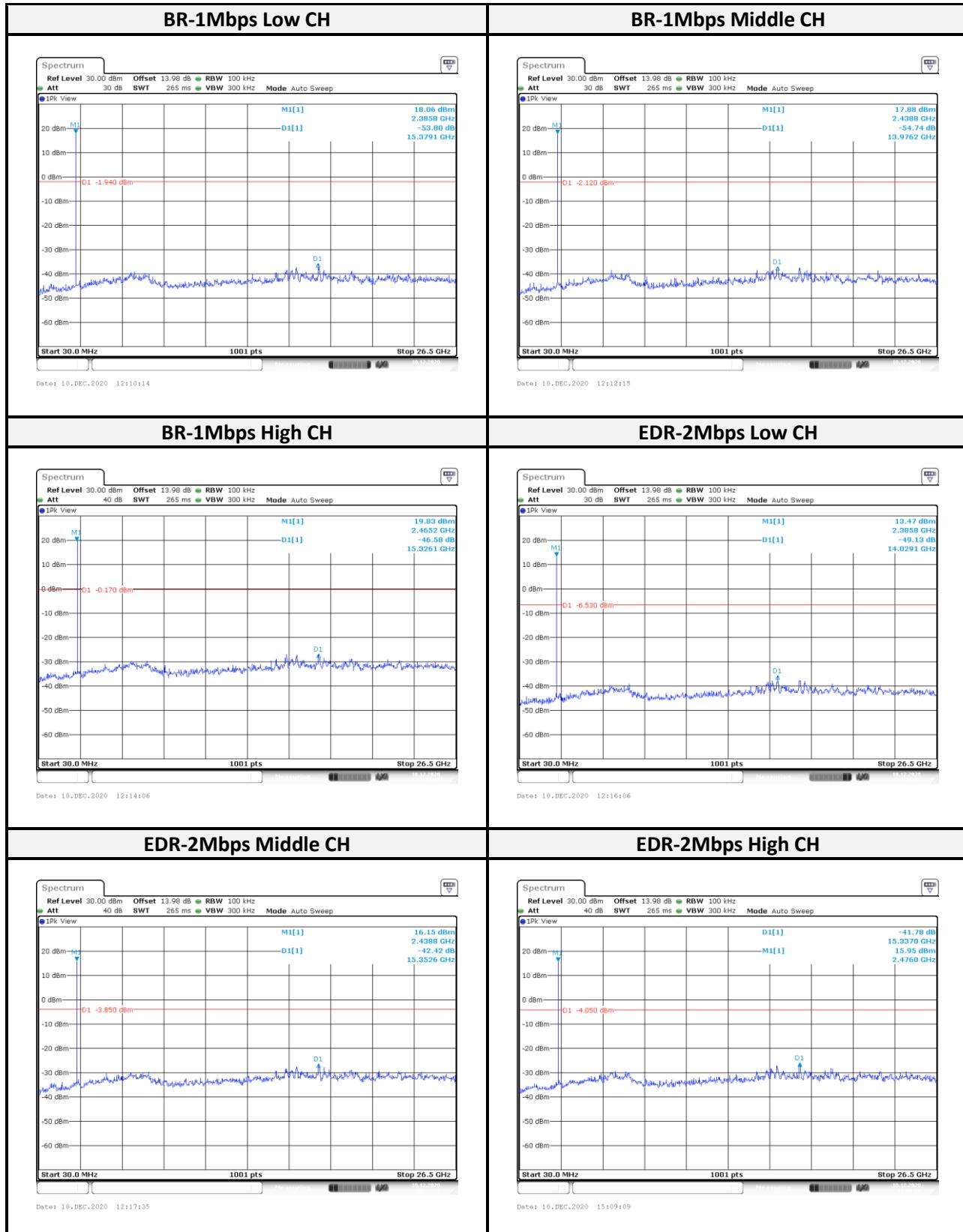
Over Limit = Level – Limit

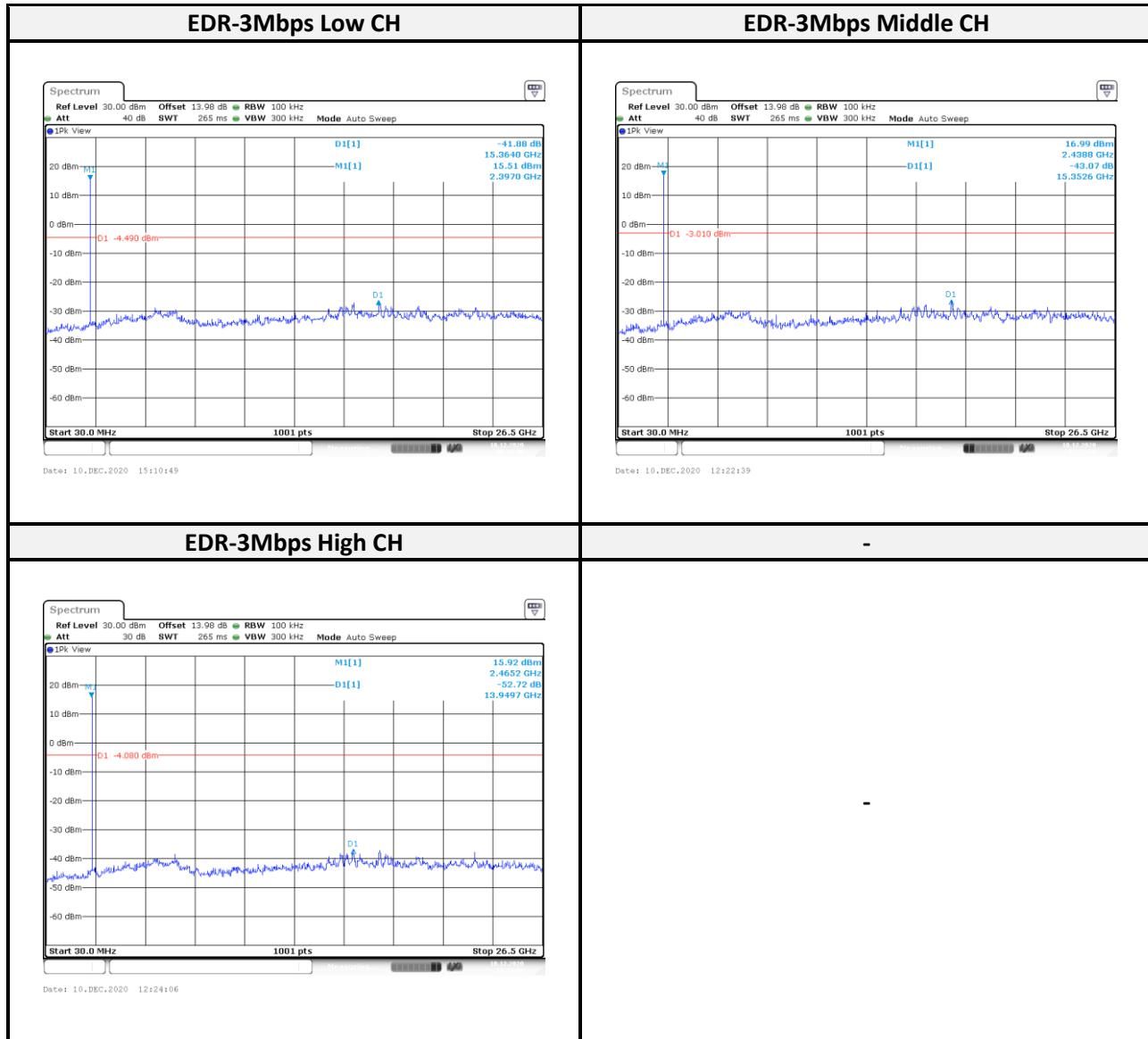
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

Conducted Spurious Emissions:

Configuration	Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
BLE-1Mbps	Low	2402	53.80	≥ 20	Compliance
	Mid	2440	54.74	≥ 20	Compliance
	High	2480	46.58	≥ 20	Compliance
BLE-2Mbps	Low	2402	49.13	≥ 20	Compliance
	Mid	2440	42.42	≥ 20	Compliance
	High	2480	41.78	≥ 20	Compliance
BLE-3Mbps	Low	2402	41.88	≥ 20	Compliance
	Mid	2440	43.07	≥ 20	Compliance
	High	2480	52.72	≥ 20	Compliance





9 FCC §15.247(a)(1) and RSS-Gen Sec 6.7– 20 dB Emission Bandwidth and 99% OBW

9.1 Applicable Standard

According to FCC §15.247(a) (1) the maximum 20 dB bandwidth of the hopping channel shall be presented.

According to RSS-247 §5.1

The bandwidth of a frequency hopping channel is the 20 dB emission bandwidth, measured with the hopping stopped. The system's radio frequency (RF) bandwidth is equal to the channel bandwidth multiplied by the number of channels in the hopset. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. The system receivers shall have input bandwidths that match the hopping

channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals

According to RSS-Gen §6.7,

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

In some cases, the “x dB bandwidth” is required, which is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated x dB below the maximum in-band power level of the modulated signal, where the two points are on the outskirts of the in-band emission.

The following conditions shall be observed for measuring the occupied bandwidth and x dB bandwidth:

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.
- The detector of the spectrum analyzer shall be set to “Sample”. However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or “Max Hold”) may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.

- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99% emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99% emission bandwidth).

9.2 Test Procedure

20dB Bandwidth:

- (1) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- (2) Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- (3) Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
- (4) Repeat above procedures until all frequencies measured were complete.

99% Emission Bandwidth

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

The following procedure shall be used for measuring 99% power bandwidth:

- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.5.2.

d) Step a) through step c) might require iteration to adjust within the specified range.

e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

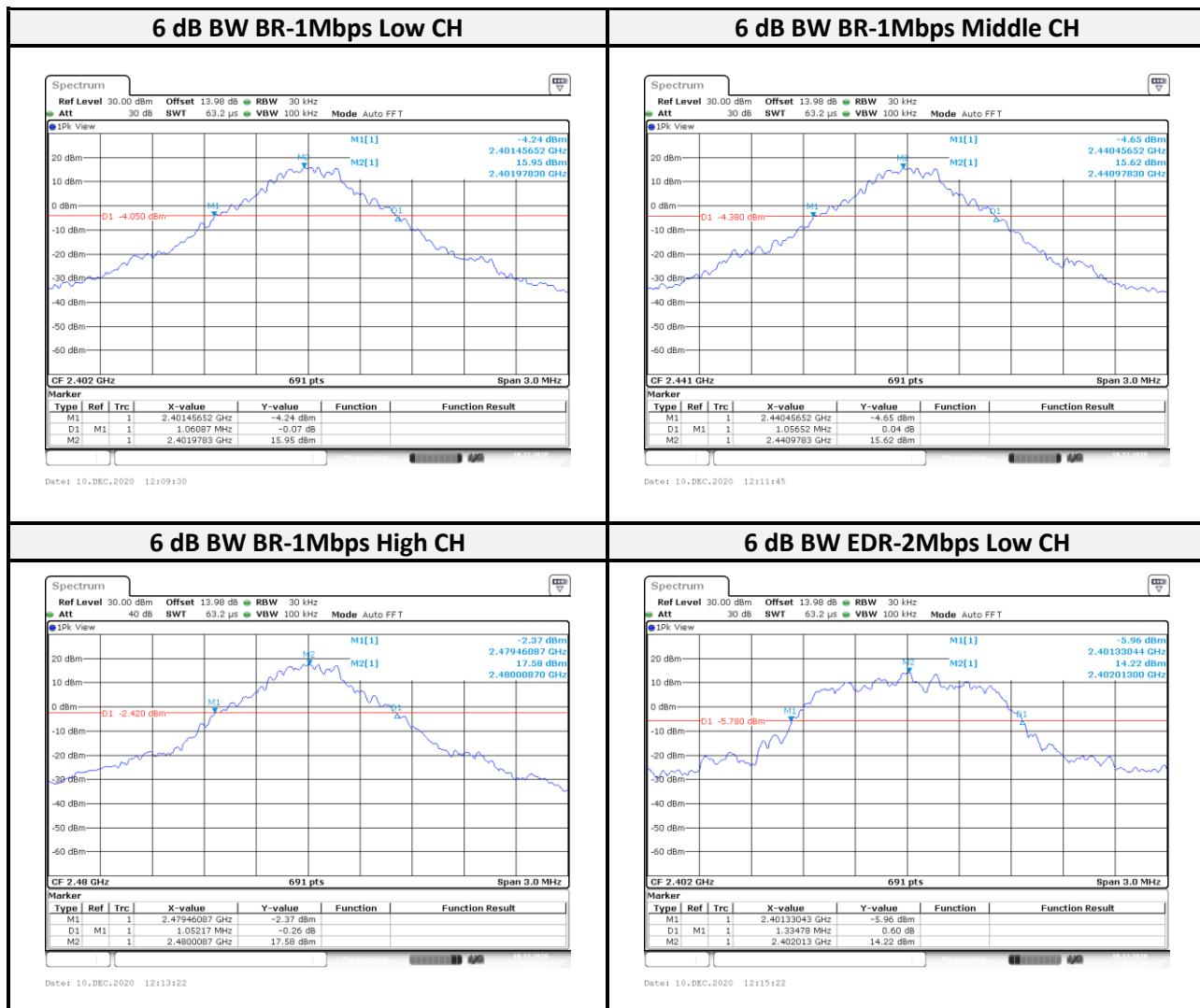
9.3 Test Equipment List and Details

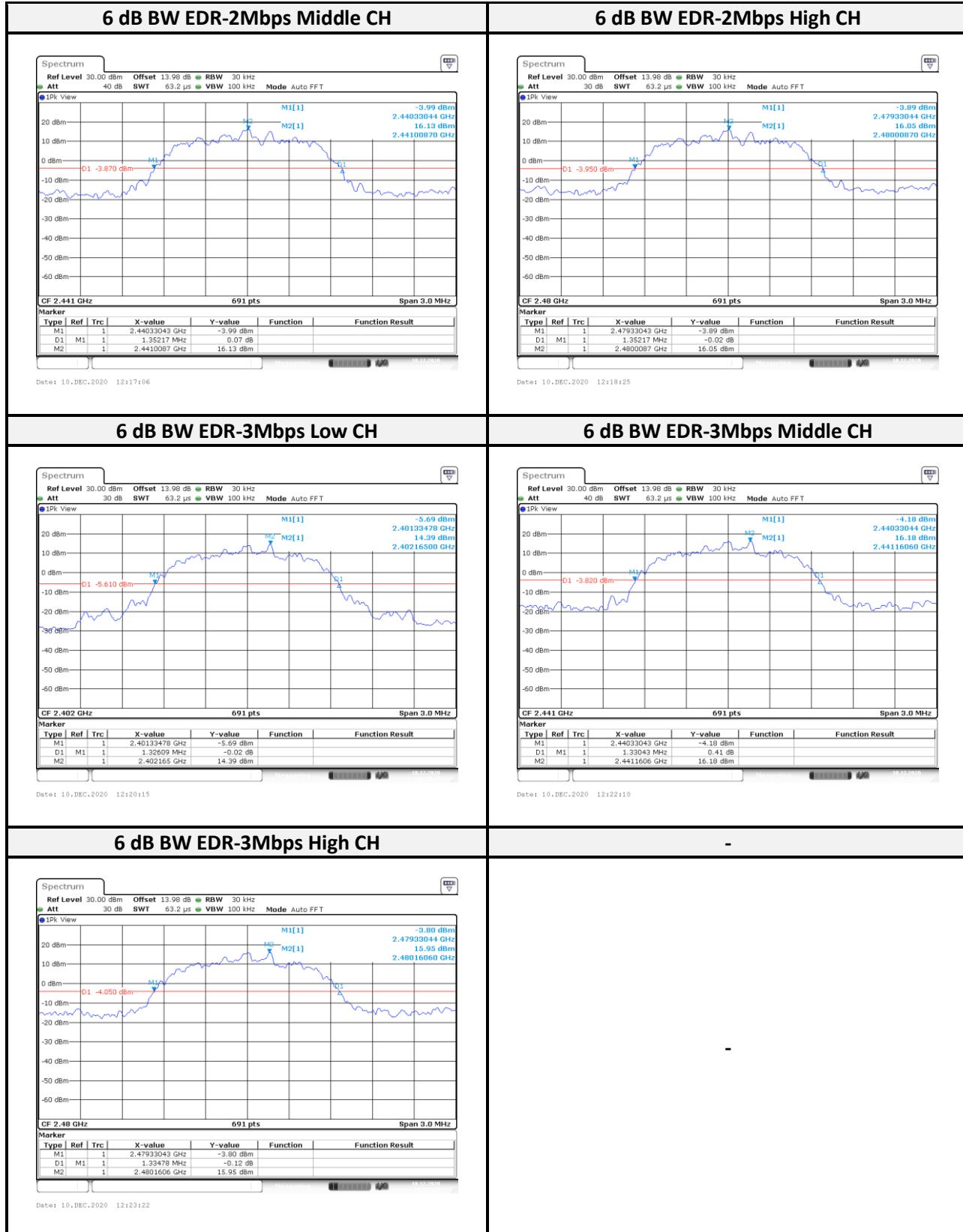
Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room(TH-02)					
Spectrum Analyzer	Rohde & Schwarz	FSU26	100406	2020/03/11	2021/03/10
Cable	MTJ	MT40S	620620-MT40S-100	Each use	-
SMA 10dB Fixed Attenuator	MVE	2W 6GHz	N/A	Each use	-

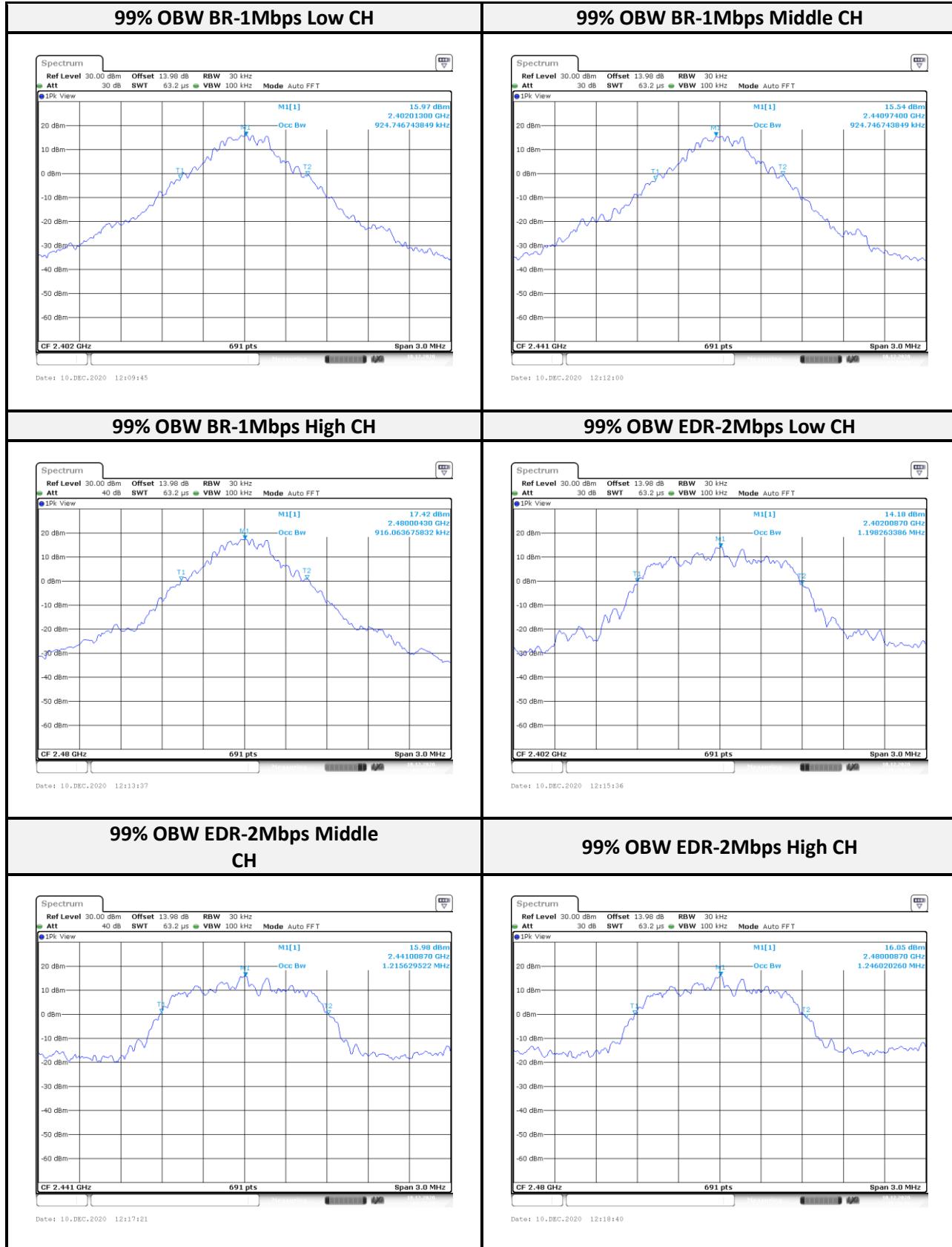
***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).

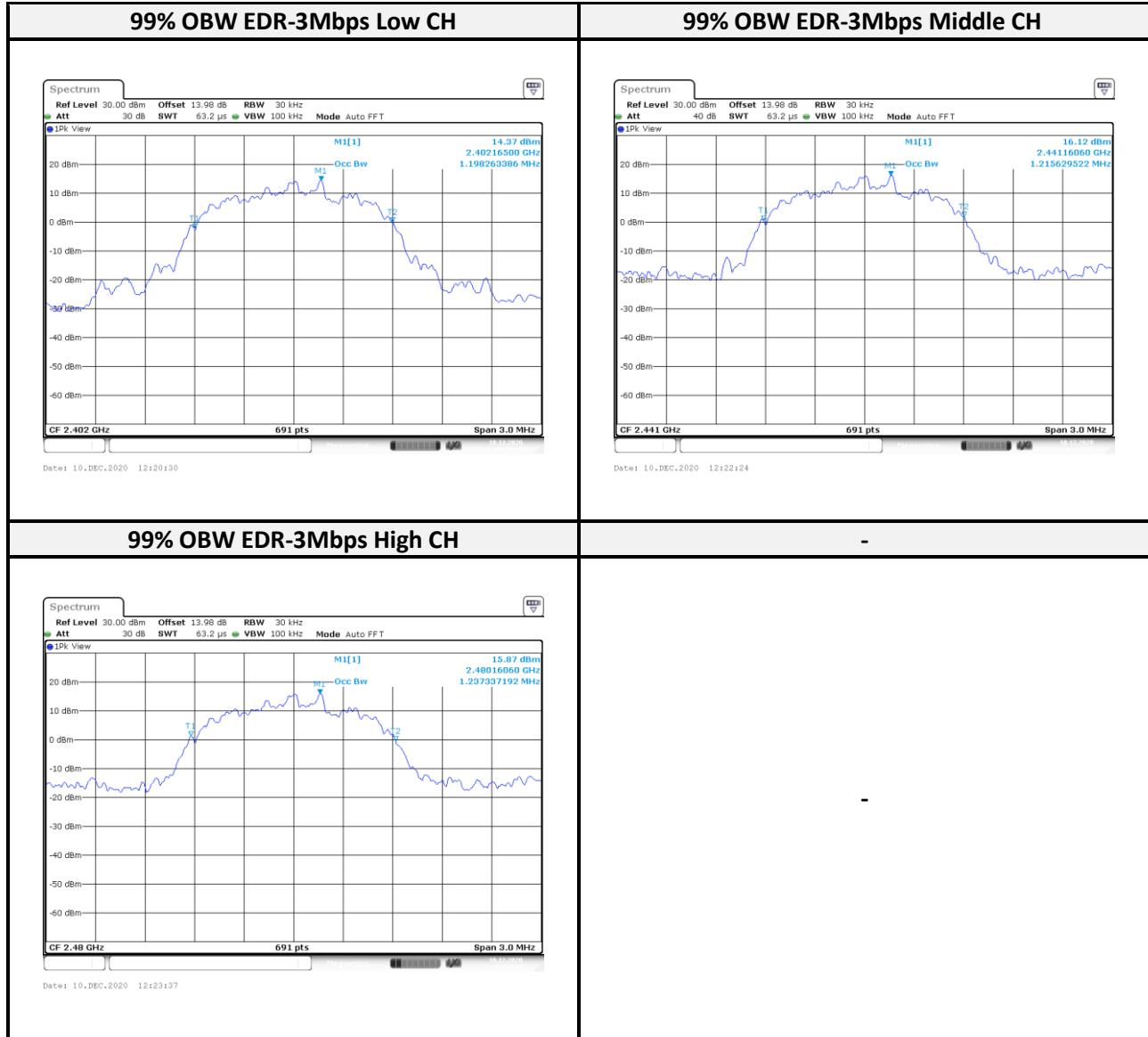
9.4 Test Results

Configuration	Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
BR-1Mbps	Low	2402	1.06	0.92
	Middle	2441	1.06	0.92
	High	2480	1.05	0.91
EDR-2Mbps	Low	2402	1.33	1.20
	Middle	2441	1.35	1.22
	High	2480	1.35	1.25
EDR-3Mbps	Low	2402	1.33	1.20
	Middle	2441	1.33	1.22
	High	2480	1.33	1.24









10 FCC §15.247(a)(1) and RSS-247 Sec 5.1(b)– Channel Separation Test

10.1 Applicable Standard

According to FCC §15.247(a) (1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

According to RSS-247 Sec 5.1(b):

FHSs shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, FHSs operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.

10.2 Test Procedure

Span = wide enough to capture the peaks of two adjacent channels

Resolution (or IF) Bandwidth (RBW) \approx 30% of the channel spacing, adjust as necessary to best identify the center of each individual channel. Video (or Average) Bandwidth (VBW) \geq RBW. Sweep = auto

Detector function = peak Trace = max hold

10.3 Test Equipment List and Details

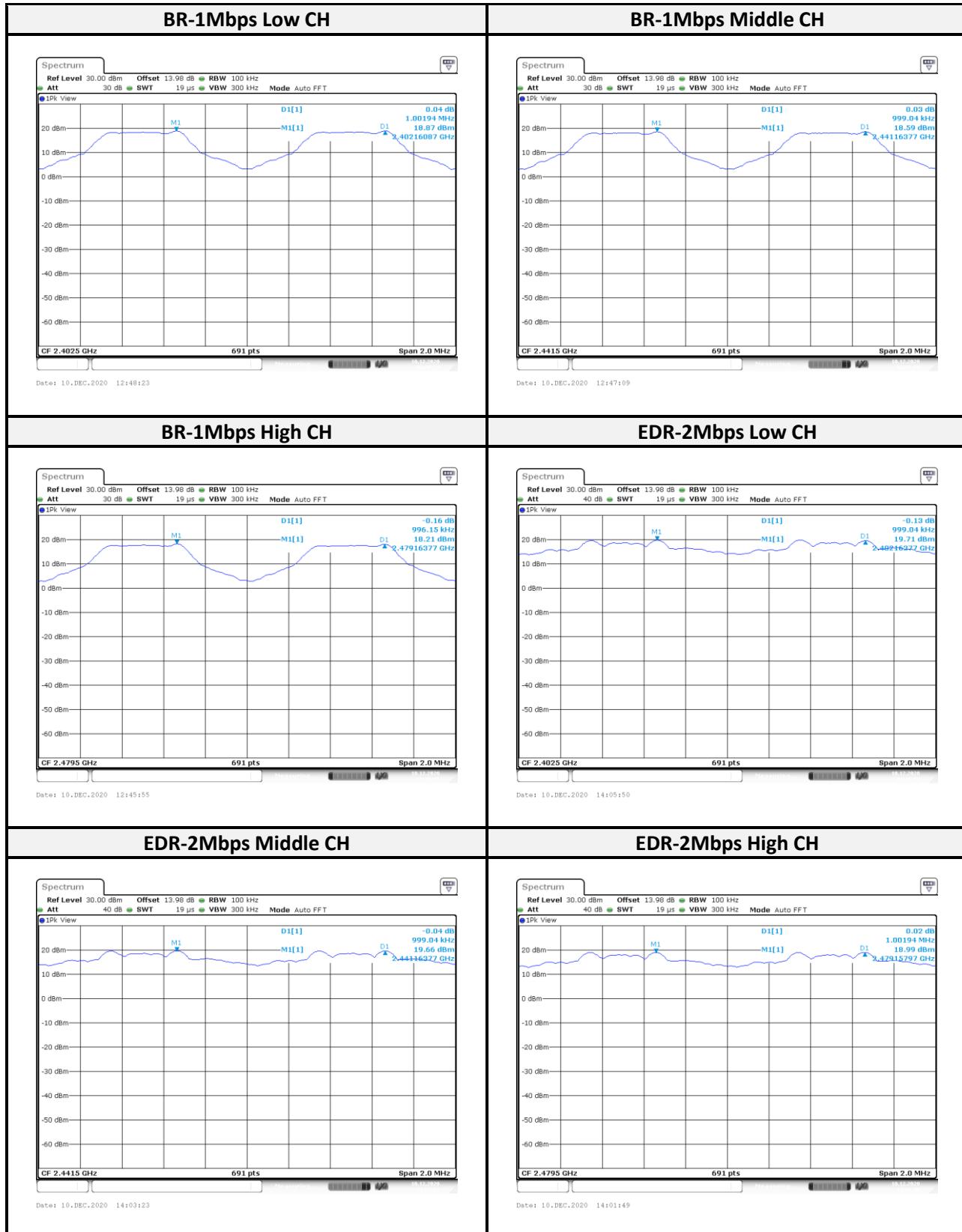
Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room(TH-02)					
Spectrum Analyzer	Rohde & Schwarz	FSU26	100406	2020/03/11	2021/03/10
Cable	MTJ	MT40S	620620-MT40S-100	Each use	-
SMA 10dB Fixed Attenuator	MVE	2W 6GHz	N/A	Each use	-

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).

10.4 Test Results

Mode	Channel	Frequency (MHz)	20 dBc BW (MHz)	Channel Separation (MHz)	Limit (MHz)	Result
BR-1Mbps	Low	2402	1.06	1.00	0.707	Compliance
	Middle	2441	1.06	1.00	0.704	Compliance
	High	2480	1.05	1.00	0.701	Compliance
EDR-2Mbps	Low	2402	1.33	1.00	0.890	Compliance
	Middle	2441	1.35	1.00	0.901	Compliance
	High	2480	1.35	1.00	0.901	Compliance
EDR-3Mbps	Low	2402	1.33	1.00	0.884	Compliance
	Middle	2441	1.33	1.00	0.887	Compliance
	High	2480	1.33	1.00	0.890	Compliance

Note: Limit is >two-thirds of the 20 dB bandwidth





11 FCC §15.247(a)(1)(iii) and RSS-247 Sec 5.1(d)– Time of Occupancy (Dwell Time)

11.1 Applicable Standard

According to FCC §15.247(a)(1)(iii),

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

According to RSS-247 Sec 5.1(d),

FHSS operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds, multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that at least 15 hopping channels are used.

11.2 Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel

RBW \leq channel spacing and where possible RBW should be set $\gg 1/T$, where T is the expected dwell time per channel

Sweep = as necessary to capture the entire dwell time per hopping channel Detector function = peak

Trace = max hold

Use the marker-delta function to determine the transmit time per hop. If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in transmit time.

Repeat the measurement using a longer sweep time to determine the number of hops over the period specified in the requirements. The sweep time shall be equal to, or less than, the period specified in the requirements.

Determine the number of hops over the sweep time and calculate the total number of hops in the period specified in the requirements, using the following equation:

(Number of hops in the period specified in the requirements) = (number of hops on spectrum analyzer) x (period specified in the requirements / analyzer sweep time)

The average time of occupancy is calculated from the transmit time per hop multiplied by the number of hops in the period specified. If the number of hops in a specific time varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation.

11.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room(TH-02)					
Spectrum Analyzer	Rohde & Schwarz	FSU26	100406	2020/03/11	2021/03/10
Cable	MTJ	MT40S	620620-MT40S-100	Each use	-
SMA 10dB Fixed Attenuator	MVE	2W 6GHz	N/A	Each use	-

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).

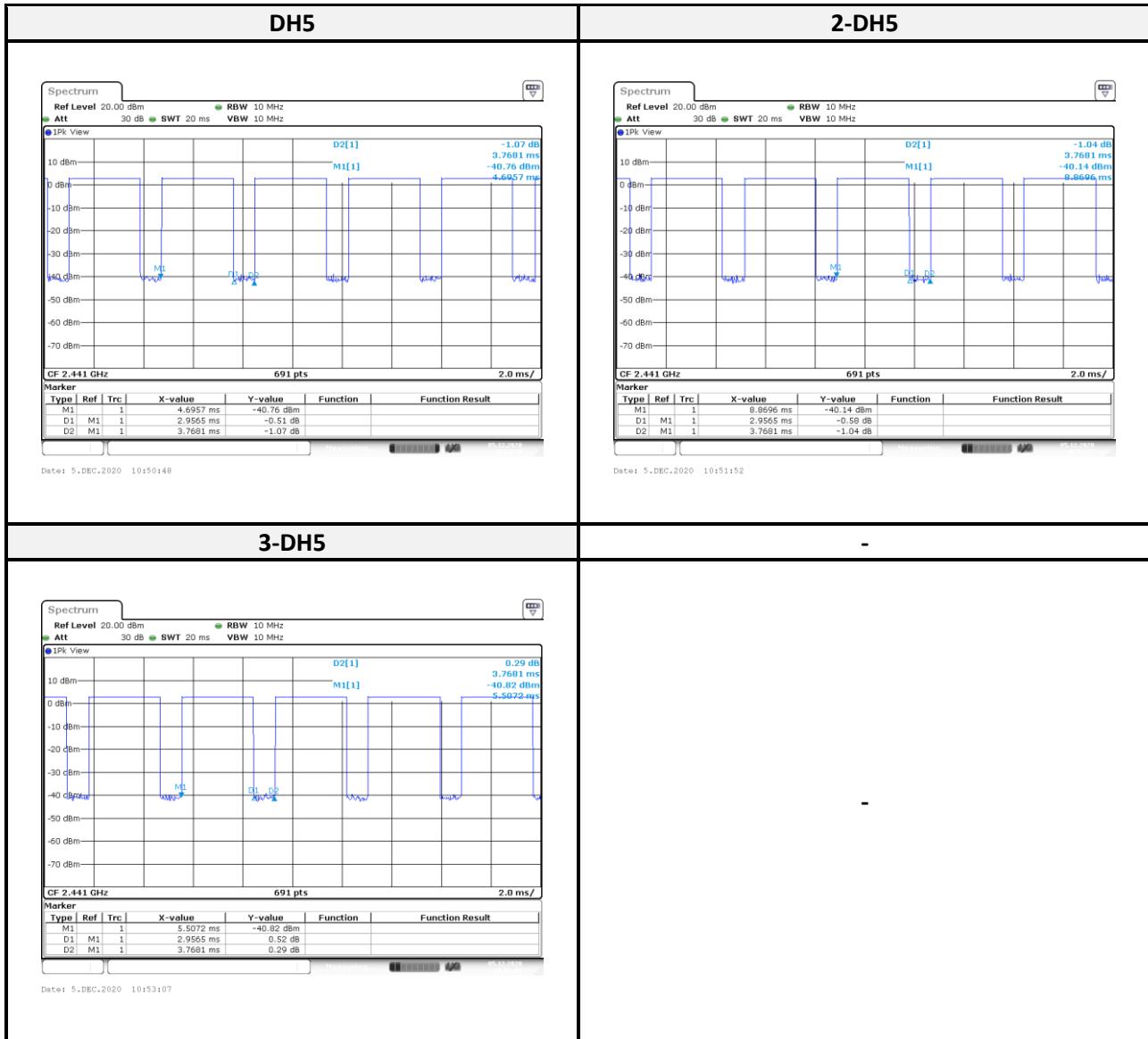
11.4 Test Results

Modulation Mode	Pulse Time per Hop (ms)	Number of Pulse in [0.4 x N sec]	Dwell Time in [0.4 x N sec] (s)	Dwell Time Limits (s)
BR-1Mbps	2.93	106.7	0.312	0.4
EDR-2Mbps	2.93	106.7	0.312	0.4
EDR-3Mbps	2.96	106.7	0.315	0.4

Note1: Number of Pulse in [0.4 x N sec] = 1600/79/6*(0.4*79)

Note2: Dwell Time in [0.4 x N sec] = (Pulse Time * Number of Pulse in [0.4 x N sec])/1000

Note3: Bluetooth ACL packets can be 1, 3, or 5 time slots. The DH1 packet can cover a single time slot. The DH3 packet can cover up to 3 time slots. The DH5 packet can cover up to 5 time slots. Operate DH5 at maximum dwell time and maximum duty cycle. A maximum length packet has duration of 5 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is 5/1600 seconds, or 3.125ms.



12 FCC §15.247(a)(1)(iii) and RSS-247 Sec 5.1(b)–Quantity of hopping channel Test

12.1 Applicable Standard

According to FCC §15.247(a)(1)(iii),

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

According to RSS-247 Sec 5.1(b):

FHSs shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, FHSs operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.

12.2 Test Procedure

Span = the frequency band of operation.

RBW < 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller VBW ≥ RBW.

Sweep = auto. Detector function = peak Trace = max hold.

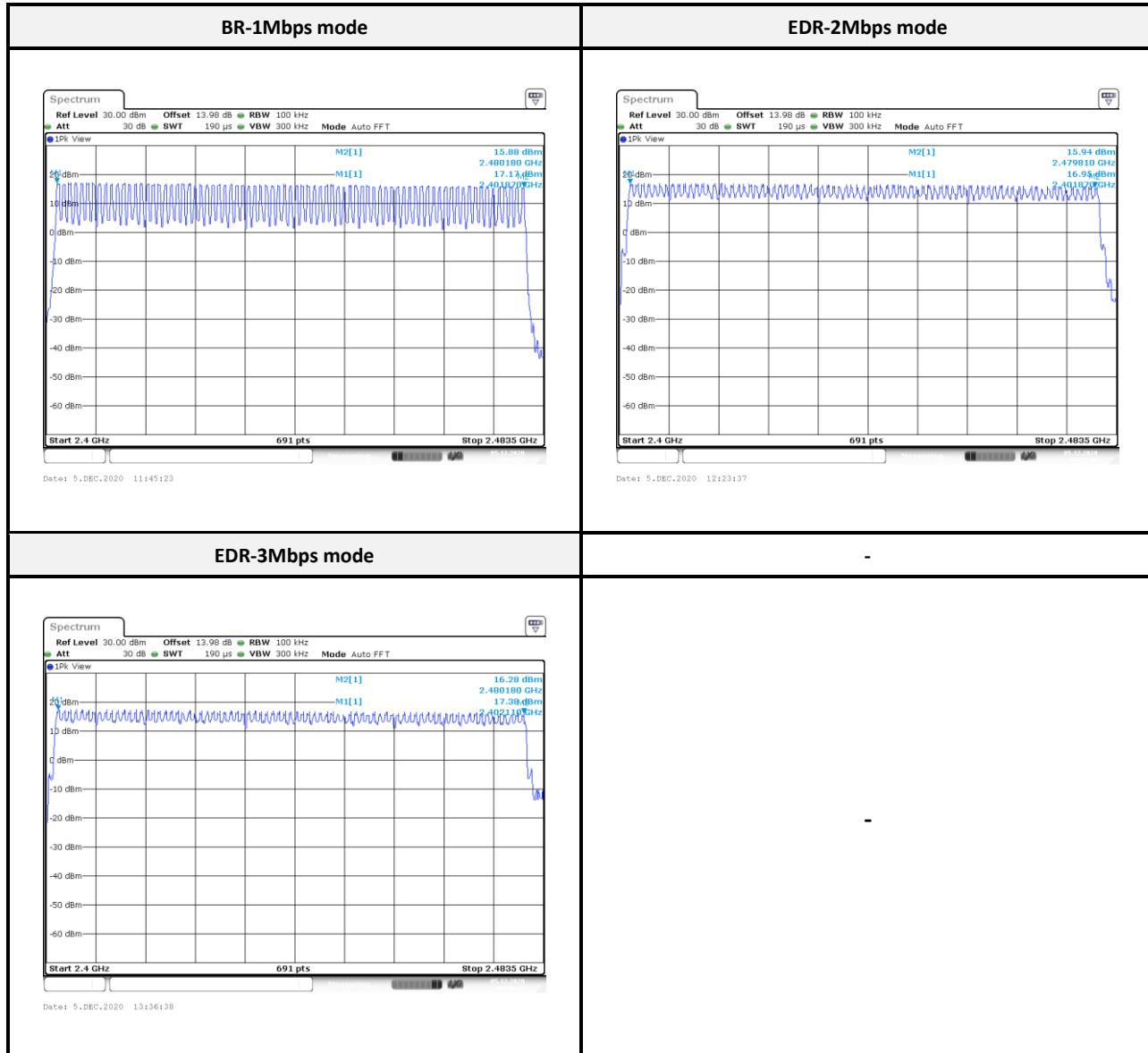
12.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room(TH-02)					
Spectrum Analyzer	Rohde & Schwarz	FSU26	100406	2020/03/11	2021/03/10
Cable	MTJ	MT40S	620620-MT40S-100	Each use	-
SMA 10dB Fixed Attenuator	MVE	2W 6GHz	N/A	Each use	-

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).

12.4 Test Results

Mode	Frequency Range (MHz)	Number of Hopping Channel	Limit (CH)	Result
BR-1Mbps	2402-2480	79	>15	Compliance
EDR-2Mbps	2402-2480	79	>15	Compliance
EDR-3Mbps	2402-2480	79	>15	Compliance



13 FCC §15.247(b)(1) and RSS-247 Sec 5.1(b) and Sec 5.4(b) – Maximum Output Power

13.1 Applicable Standard

According to FCC §15.247(b) (1): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

13.2 Test Procedure

Place the EUT on a bench and set it in transmitting mode.

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Power sensor.

13.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room(TH-02)					
Spectrum Analyzer	Rohde & Schwarz	FSU26	100406	2020/03/11	2021/03/10
USB Wideband Power Sensor	Agilent	U2021XA	MY56120026	2020/09/14	2021/09/13
Cable	MTJ	MT40S	620620-MT40S-100	Each use	-

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).

13.4 Test Results

<Chip Antenna (FR05-S1-N-0-102) with 1.8V_{dc}>

Mode	CH	Freq. (MHz)	Peak Output Power		Ant Gain (dBi)	EIRP Peak Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	17.20	0.0525	1.70	18.90	0.0776	21	36
	Middle	2440	16.70	0.0468	1.70	18.40	0.0692	21	36
	High	2480	15.99	0.0397	1.70	17.69	0.0587	21	36
EDR-2Mbps	Low	2402	17.77	0.0598	1.70	19.47	0.0885	21	36
	Middle	2440	17.20	0.0525	1.70	18.90	0.0776	21	36
	High	2480	16.31	0.0428	1.70	18.01	0.0632	21	36
EDR-3Mbps	Low	2402	17.94	0.0622	1.70	19.64	0.0920	21	36
	Middle	2440	17.35	0.0543	1.70	19.05	0.0804	21	36
	High	2480	15.33	0.0341	1.70	17.03	0.0505	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm

Mode	CH	Freq. (MHz)	Average Output Power		Ant Gain (dBi)	EIRP Average Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	17.11	0.0514	1.70	18.81	0.0760	21	36
	Middle	2440	16.60	0.0457	1.70	18.30	0.0676	21	36
	High	2480	15.88	0.0387	1.70	17.58	0.0573	21	36
EDR-2Mbps	Low	2402	16.72	0.0470	1.70	18.42	0.0695	21	36
	Middle	2440	16.35	0.0432	1.70	18.05	0.0638	21	36
	High	2480	15.51	0.0356	1.70	17.21	0.0526	21	36
EDR-3Mbps	Low	2402	16.94	0.0494	1.70	18.64	0.0731	21	36
	Middle	2440	16.51	0.0448	1.70	18.21	0.0662	21	36
	High	2480	14.33	0.0271	1.70	16.03	0.0401	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm.

Note2: Duty Cycle is 78.46% and Duty Factor is 1.05 dB, and the Average Output Power is already adding duty factor.

<Chip Antenna (FR05-S1-N-0-102) with 3.3V_{dc}>

Mode	CH	Freq. (MHz)	Peak Output Power		Ant Gain (dBi)	EIRP Peak Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	19.15	0.0822	1.70	20.85	0.1216	21	36
	Middle	2440	18.82	0.0762	1.70	20.52	0.1127	21	36
	High	2480	20.77	0.1194	1.70	22.47	0.1766	21	36
EDR-2Mbps	Low	2402	19.76	0.0946	1.70	21.46	0.1400	21	36
	Middle	2440	20.73	0.1183	1.70	22.43	0.1750	21	36
	High	2480	20.23	0.1054	1.70	21.93	0.1560	21	36
EDR-3Mbps	Low	2402	19.93	0.0984	1.70	21.63	0.1455	21	36
	Middle	2440	20.79	0.1199	1.70	22.49	0.1774	21	36
	High	2480	20.28	0.1067	1.70	21.98	0.1578	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm

Mode	CH	Freq. (MHz)	Average Output Power		Ant Gain (dBi)	EIRP Average Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	18.87	0.0771	1.70	20.57	0.1140	21	36
	Middle	2440	18.57	0.0719	1.70	20.27	0.1064	21	36
	High	2480	20.60	0.1148	1.70	22.30	0.1698	21	36
EDR-2Mbps	Low	2402	17.13	0.0516	1.70	18.83	0.0764	21	36
	Middle	2440	18.93	0.0782	1.70	20.63	0.1156	21	36
	High	2480	18.76	0.0752	1.70	20.46	0.1112	21	36
EDR-3Mbps	Low	2402	16.98	0.0499	1.70	18.68	0.0738	21	36
	Middle	2440	18.78	0.0755	1.70	20.48	0.1117	21	36
	High	2480	18.61	0.0726	1.70	20.31	0.1074	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm.

Note2: Duty Cycle is 78.46% and Duty Factor is 1.05 dB, and the Average Output Power is already adding duty factor.

< Dipole Antenna (GW.34.5153) with 1.8V_{dc}>

Mode	CH	Freq. (MHz)	Peak Output Power		Ant Gain (dBi)	EIRP Peak Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	16.72	0.0470	5.89	22.61	0.1824	21	36
	Middle	2440	16.16	0.0413	5.89	22.05	0.1603	21	36
	High	2480	15.58	0.0361	5.89	21.47	0.1403	21	36
EDR-2Mbps	Low	2402	17.33	0.0541	5.89	23.22	0.2099	21	36
	Middle	2440	16.79	0.0478	5.89	22.68	0.1854	21	36
	High	2480	15.93	0.0392	5.89	21.82	0.1521	21	36
EDR-3Mbps	Low	2402	17.53	0.0566	5.89	23.42	0.2198	21	36
	Middle	2440	16.93	0.0493	5.89	22.82	0.1914	21	36
	High	2480	15.95	0.0394	5.89	21.84	0.1528	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm

Mode	CH	Freq. (MHz)	Average Output Power		Ant Gain (dBi)	EIRP Average Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	16.60	0.0457	5.89	22.49	0.1774	21	36
	Middle	2440	16.06	0.0404	5.89	21.95	0.1567	21	36
	High	2480	15.47	0.0352	5.89	21.36	0.1368	21	36
EDR-2Mbps	Low	2402	16.34	0.0431	5.89	22.23	0.1671	21	36
	Middle	2440	15.98	0.0396	5.89	21.87	0.1538	21	36
	High	2480	15.13	0.0326	5.89	21.02	0.1265	21	36
EDR-3Mbps	Low	2402	16.56	0.0453	5.89	22.45	0.1758	21	36
	Middle	2440	16.12	0.0409	5.89	22.01	0.1589	21	36
	High	2480	15.08	0.0322	5.89	20.97	0.1250	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm.

Note2: Duty Cycle is 78.46% and Duty Factor is 1.05 dB, and the Average Output Power is already adding duty factor.

< Dipole Antenna (GW.34.5153) with 3.3V_{dc}>

Mode	CH	Freq. (MHz)	Peak Output Power		Ant Gain (dBi)	EIRP Peak Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	19.10	0.0813	5.89	24.99	0.3155	21	36
	Middle	2440	18.78	0.0755	5.89	24.67	0.2931	21	36
	High	2480	20.58	0.1143	5.89	26.47	0.4436	21	36
EDR-2Mbps	Low	2402	19.77	0.0948	5.89	25.66	0.3681	21	36
	Middle	2440	20.65	0.1161	5.89	26.54	0.4508	21	36
	High	2480	20.11	0.1026	5.89	26.00	0.3981	21	36
EDR-3Mbps	Low	2402	19.91	0.0979	5.89	25.80	0.3802	21	36
	Middle	2440	20.78	0.1197	5.89	26.67	0.4645	21	36
	High	2480	20.21	0.1050	5.89	26.10	0.4074	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm

Mode	CH	Freq. (MHz)	Average Output Power		Ant Gain (dBi)	EIRP Average Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	18.83	0.0764	5.89	24.72	0.2965	21	36
	Middle	2440	18.53	0.0713	5.89	24.42	0.2767	21	36
	High	2480	20.37	0.1089	5.89	26.26	0.4227	21	36
EDR-2Mbps	Low	2402	17.17	0.0521	5.89	23.06	0.2023	21	36
	Middle	2440	18.93	0.0782	5.89	24.82	0.3034	21	36
	High	2480	18.67	0.0736	5.89	24.56	0.2858	21	36
EDR-3Mbps	Low	2402	16.99	0.0500	5.89	22.88	0.1941	21	36
	Middle	2440	18.83	0.0764	5.89	24.72	0.2965	21	36
	High	2480	18.59	0.0723	5.89	24.48	0.2805	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm.

Note2: Duty Cycle is 78.46% and Duty Factor is 1.05 dB, and the Average Output Power is already adding duty factor.

14 FCC §15.247(d) – 100 kHz Bandwidth of Frequency Band Edge

14.1 Applicable Standard

According to FCC §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emissions limits specified in §15.209(a) see §15.205(c)

14.2 Test Procedure

Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation.

RBW = 100 kHz VBW = 300 kHz.

Sweep = coupled. Detector function = peak Trace = max hold.

14.3 Test Equipment List and Details

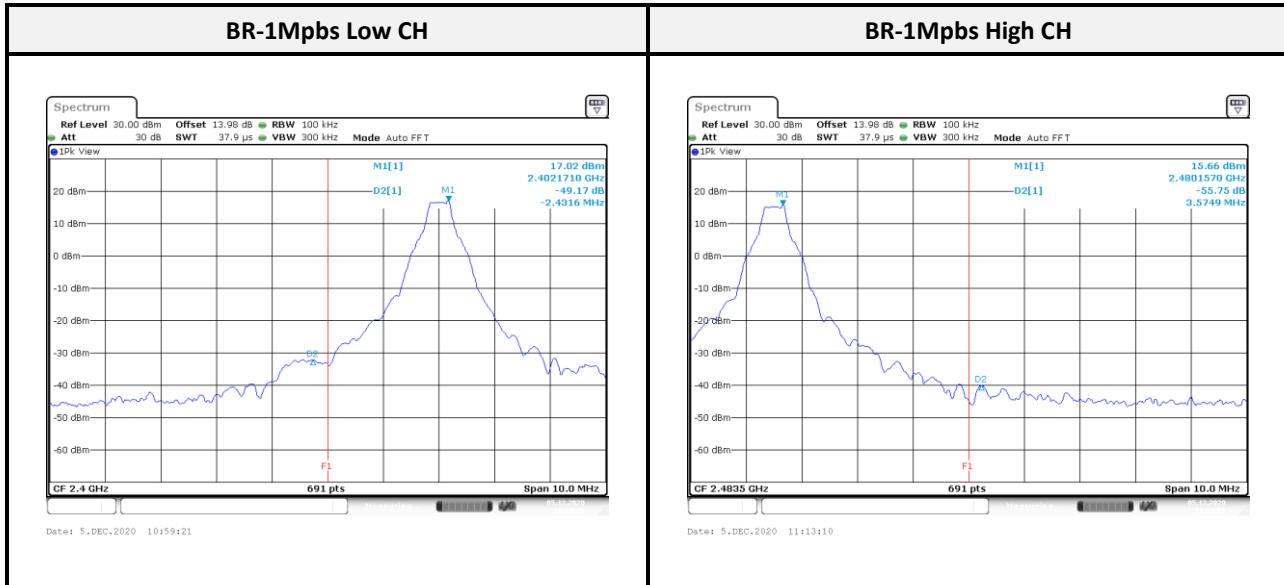
Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room(TH-02)					
Spectrum Analyzer	Rohde & Schwarz	FSU26	100406	2020/03/11	2021/03/10
Cable	MTJ	MT40S	620620-MT40S-100	Each use	-
SMA 10dB Fixed Attenuator	MVE	2W 6GHz	N/A	Each use	-

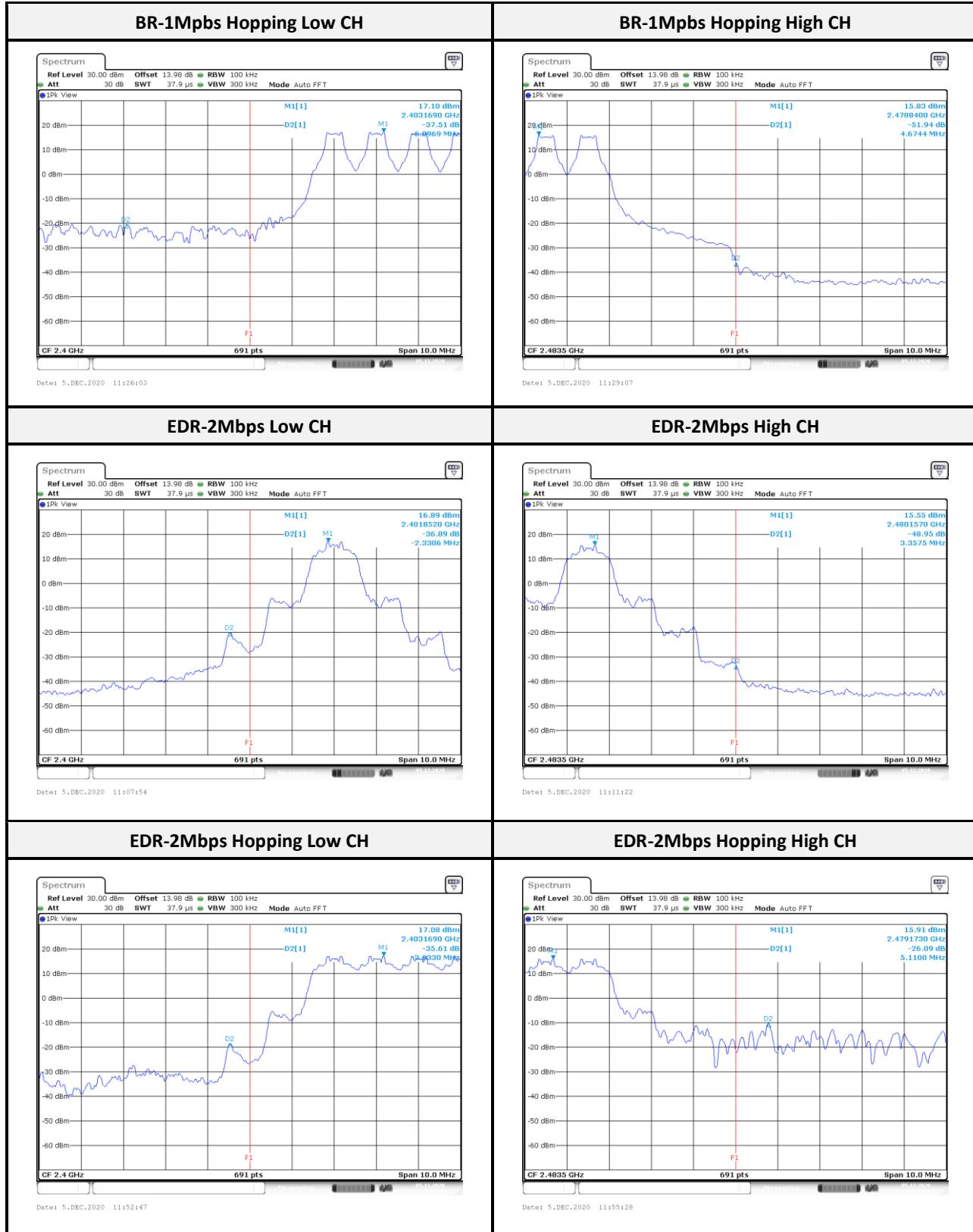
***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).

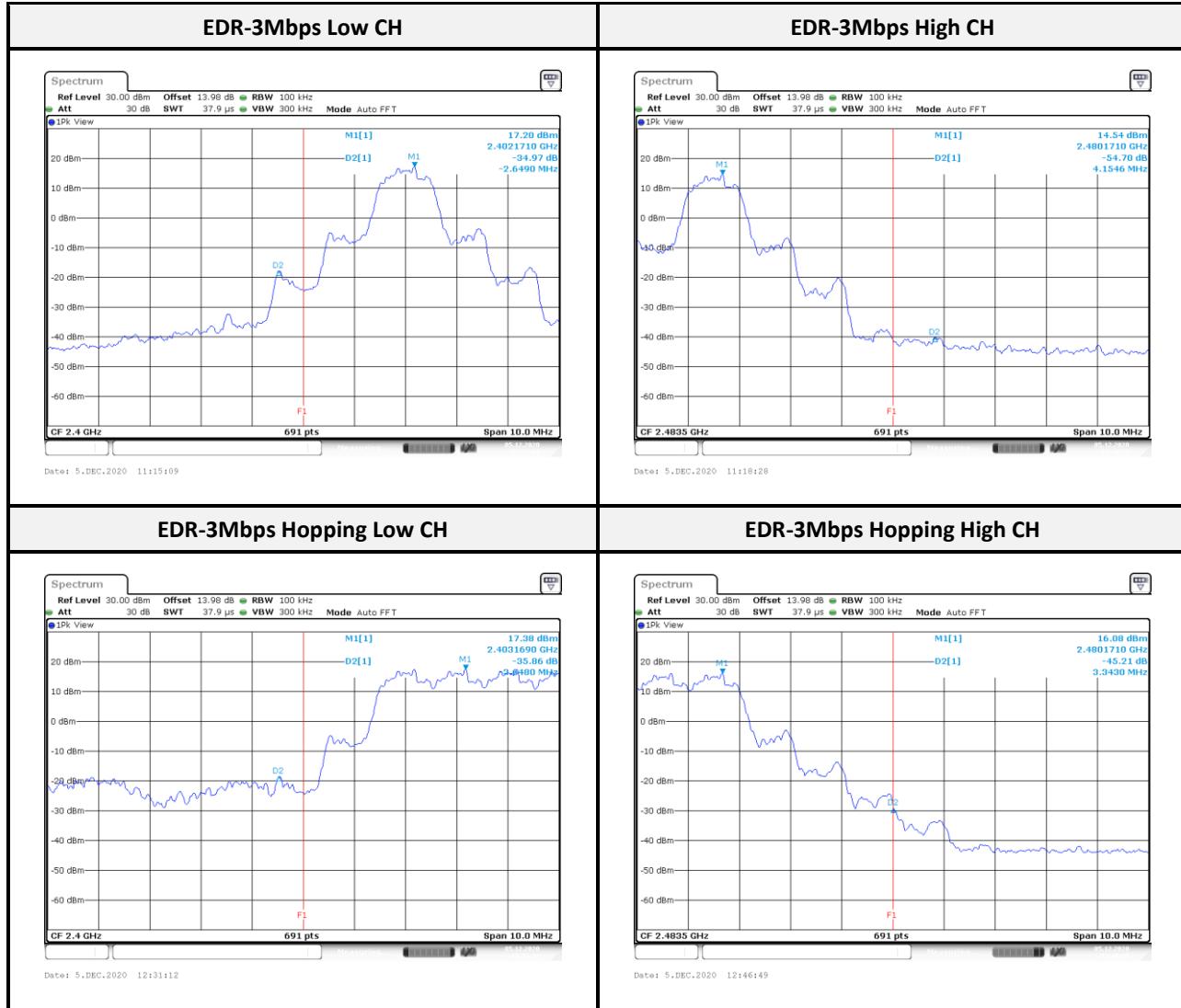
14.4 Test Results

<Chip Antenna (FR05-S1-N-0-102) with 1.8V_{dc}>

Mode	Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
BR-1Mbps	Low	2402	49.17	≥ 20	Compliance
	High	2480	55.75	≥ 20	Compliance
BR-1Mbps Hopping	Low	2402	37.51	≥ 20	Compliance
	High	2480	51.94	≥ 20	Compliance
EDR-2Mbps	Low	2402	36.89	≥ 20	Compliance
	High	2480	48.95	≥ 20	Compliance
EDR-2Mbps Hopping	Low	2402	35.61	≥ 20	Compliance
	High	2480	26.09	≥ 20	Compliance
EDR-3Mbps	Low	2402	34.97	≥ 20	Compliance
	High	2480	54.70	≥ 20	Compliance
EDR-3Mbps Hopping	Low	2402	35.86	≥ 20	Compliance
	High	2480	45.21	≥ 20	Compliance

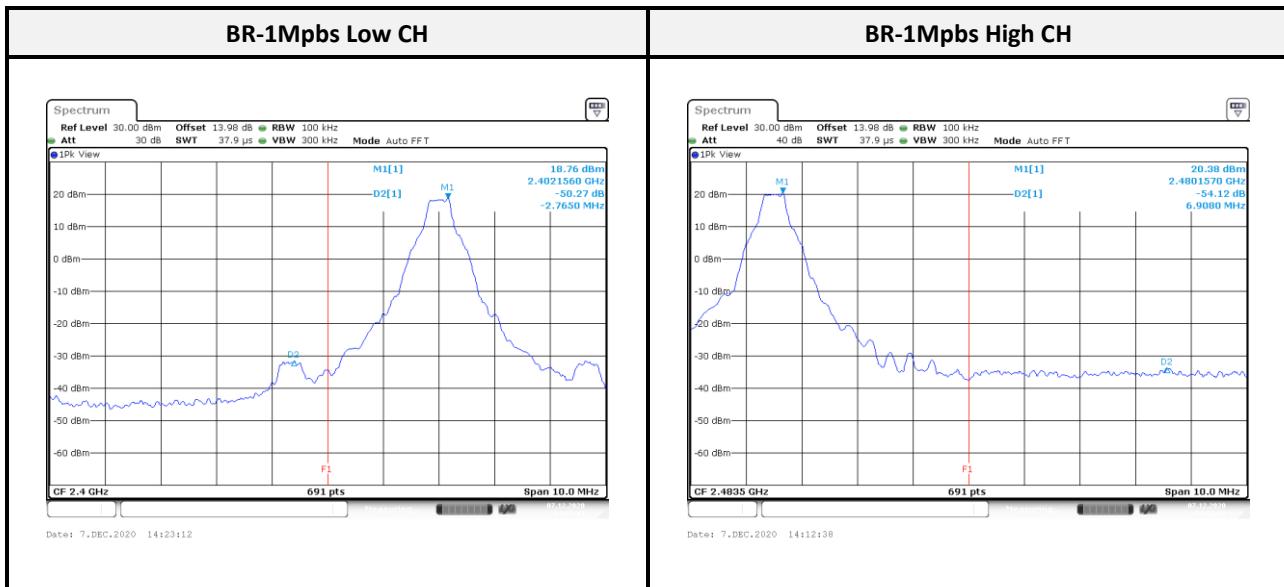


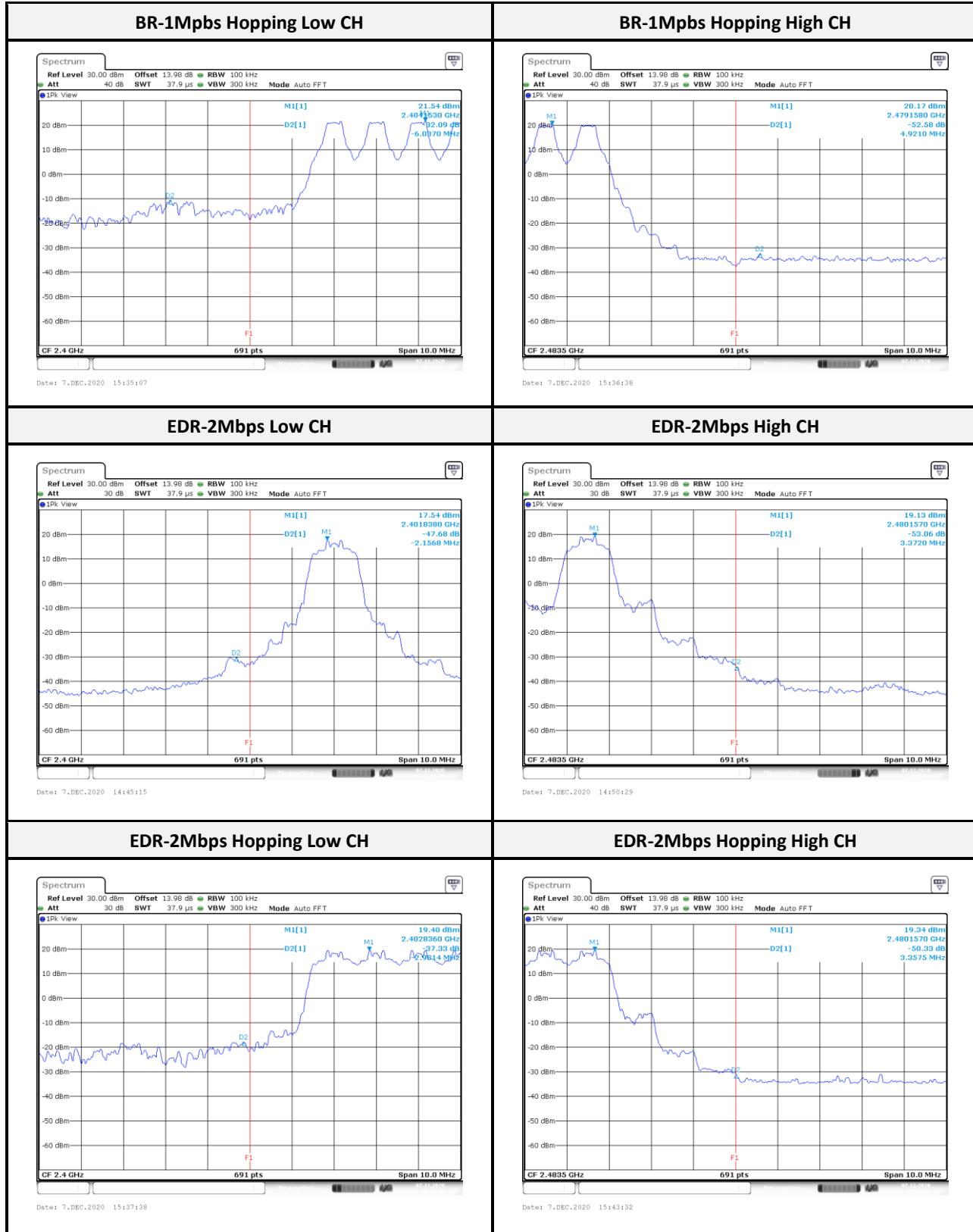


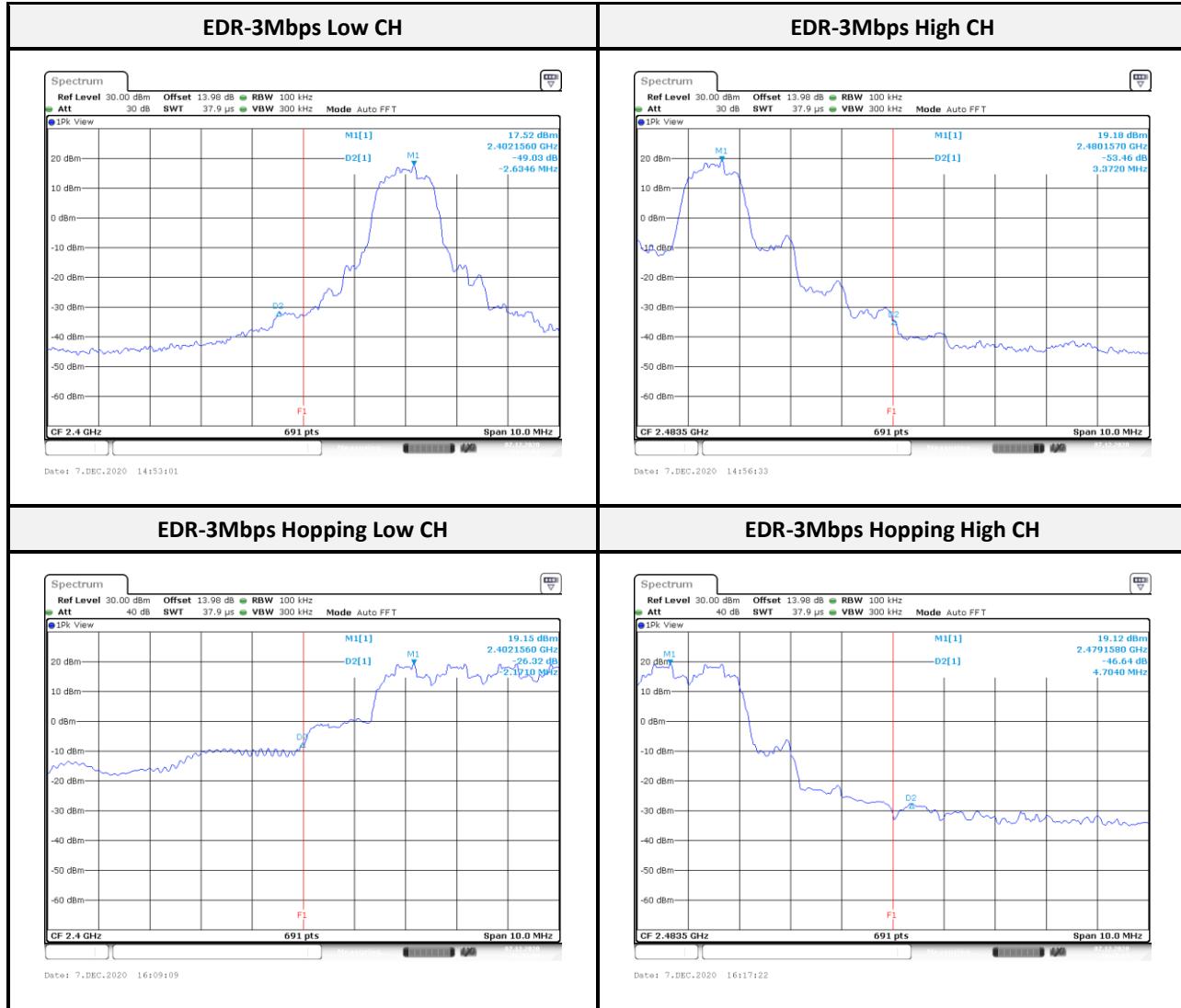


<Chip Antenna (FR05-S1-N-0-102) with 3.3V_{dc}>

Mode	Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
BR-1Mbps	Low	2402	50.27	≥ 20	Compliance
	High	2480	54.12	≥ 20	Compliance
BR-1Mbps Hopping	Low	2402	32.09	≥ 20	Compliance
	High	2480	52.58	≥ 20	Compliance
EDR-2Mbps	Low	2402	47.68	≥ 20	Compliance
	High	2480	53.06	≥ 20	Compliance
EDR-2Mbps Hopping	Low	2402	37.33	≥ 20	Compliance
	High	2480	50.33	≥ 20	Compliance
EDR-3Mbps	Low	2402	49.03	≥ 20	Compliance
	High	2480	53.46	≥ 20	Compliance
EDR-3Mbps Hopping	Low	2402	26.32	≥ 20	Compliance
	High	2480	46.64	≥ 20	Compliance

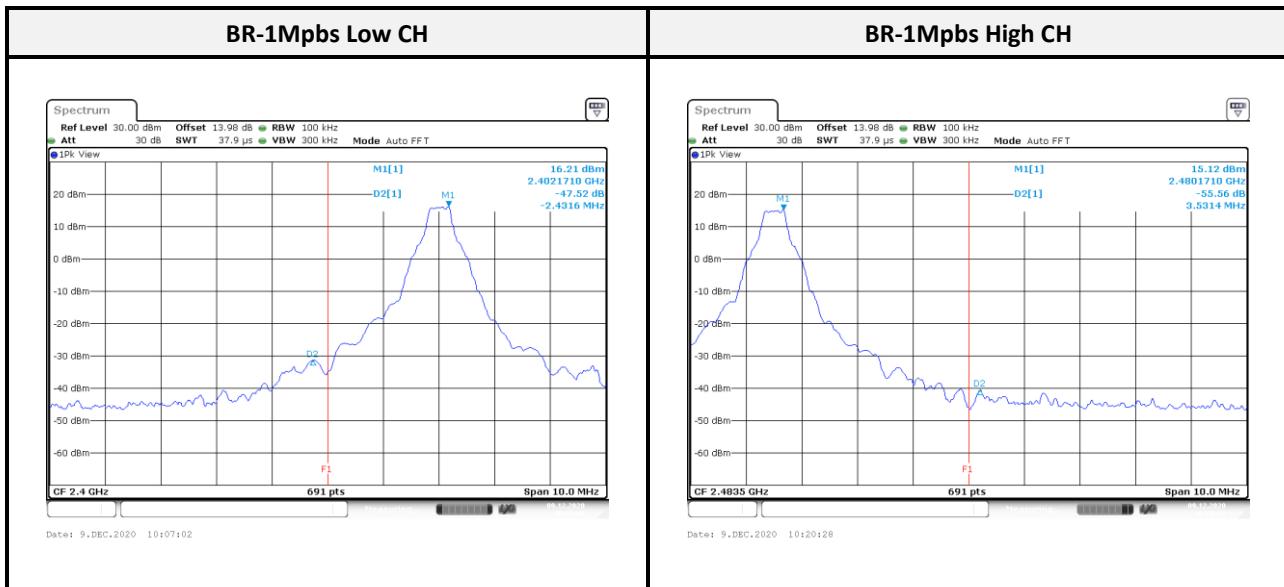


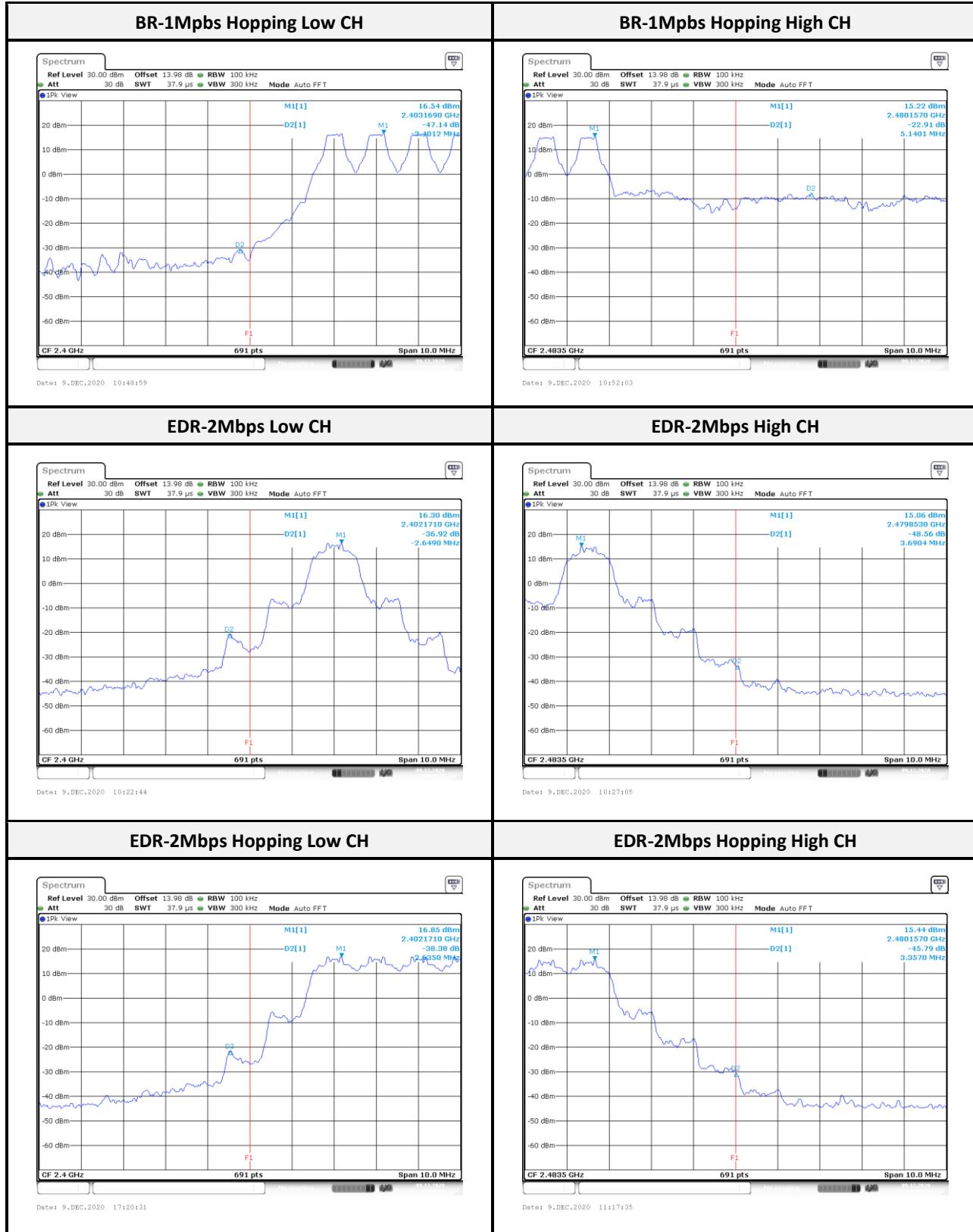


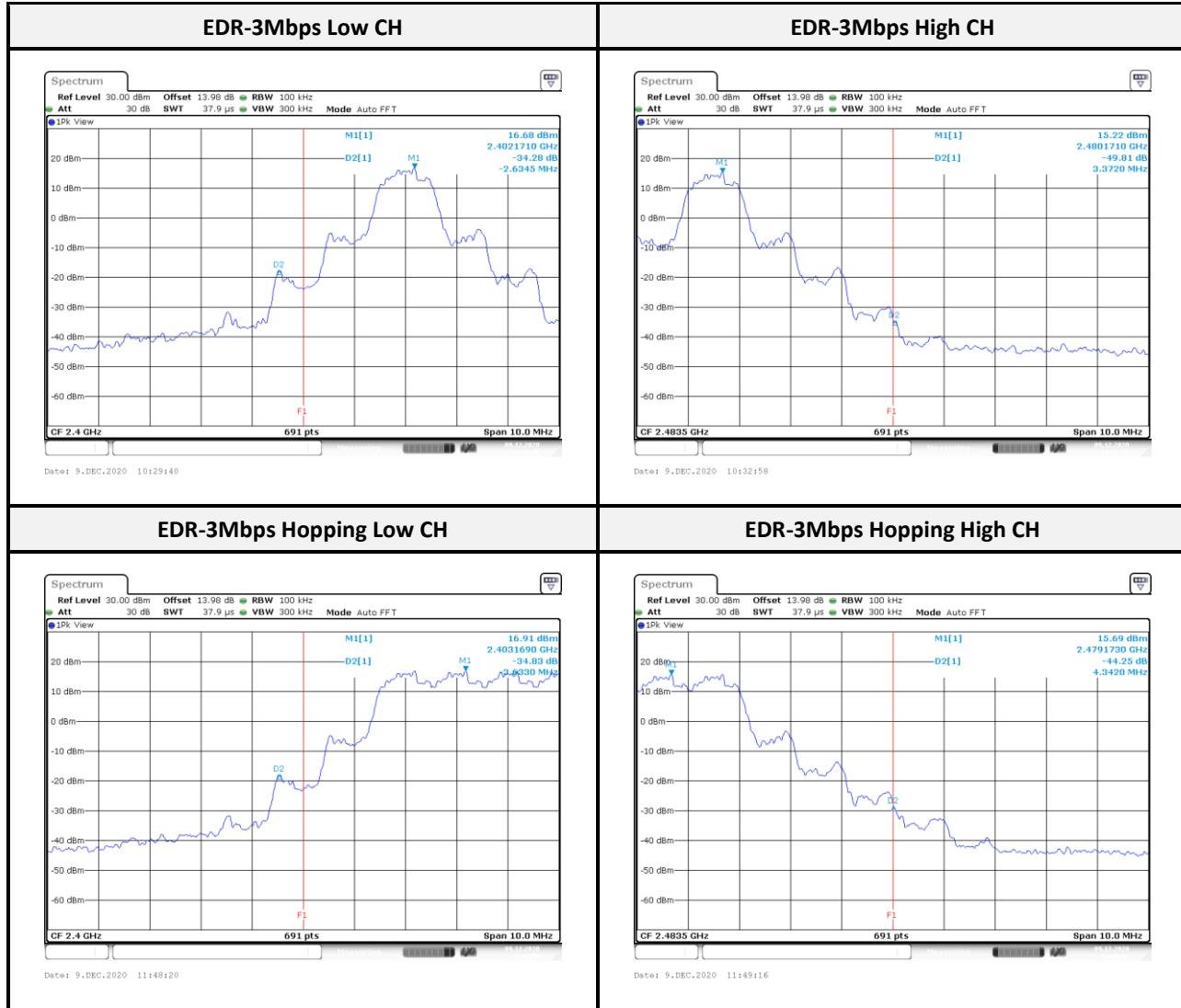


< Dipole Antenna (GW.34.5153) with 1.8V_{dc}>

Mode	Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
BR-1Mbps	Low	2402	47.52	≥ 20	Compliance
	High	2480	55.56	≥ 20	Compliance
BR-1Mbps Hopping	Low	2402	47.14	≥ 20	Compliance
	High	2480	22.91	≥ 20	Compliance
EDR-2Mbps	Low	2402	36.92	≥ 20	Compliance
	High	2480	48.56	≥ 20	Compliance
EDR-2Mbps Hopping	Low	2402	38.38	≥ 20	Compliance
	High	2480	45.79	≥ 20	Compliance
EDR-3Mbps	Low	2402	34.28	≥ 20	Compliance
	High	2480	49.81	≥ 20	Compliance
EDR-3Mbps Hopping	Low	2402	34.83	≥ 20	Compliance
	High	2480	44.25	≥ 20	Compliance

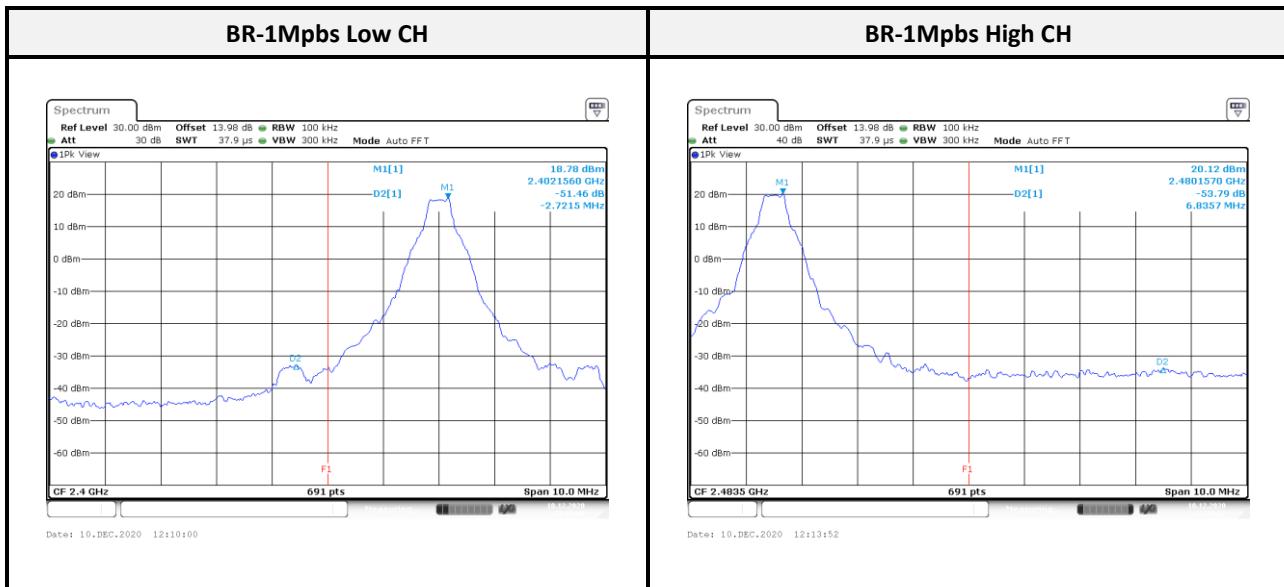


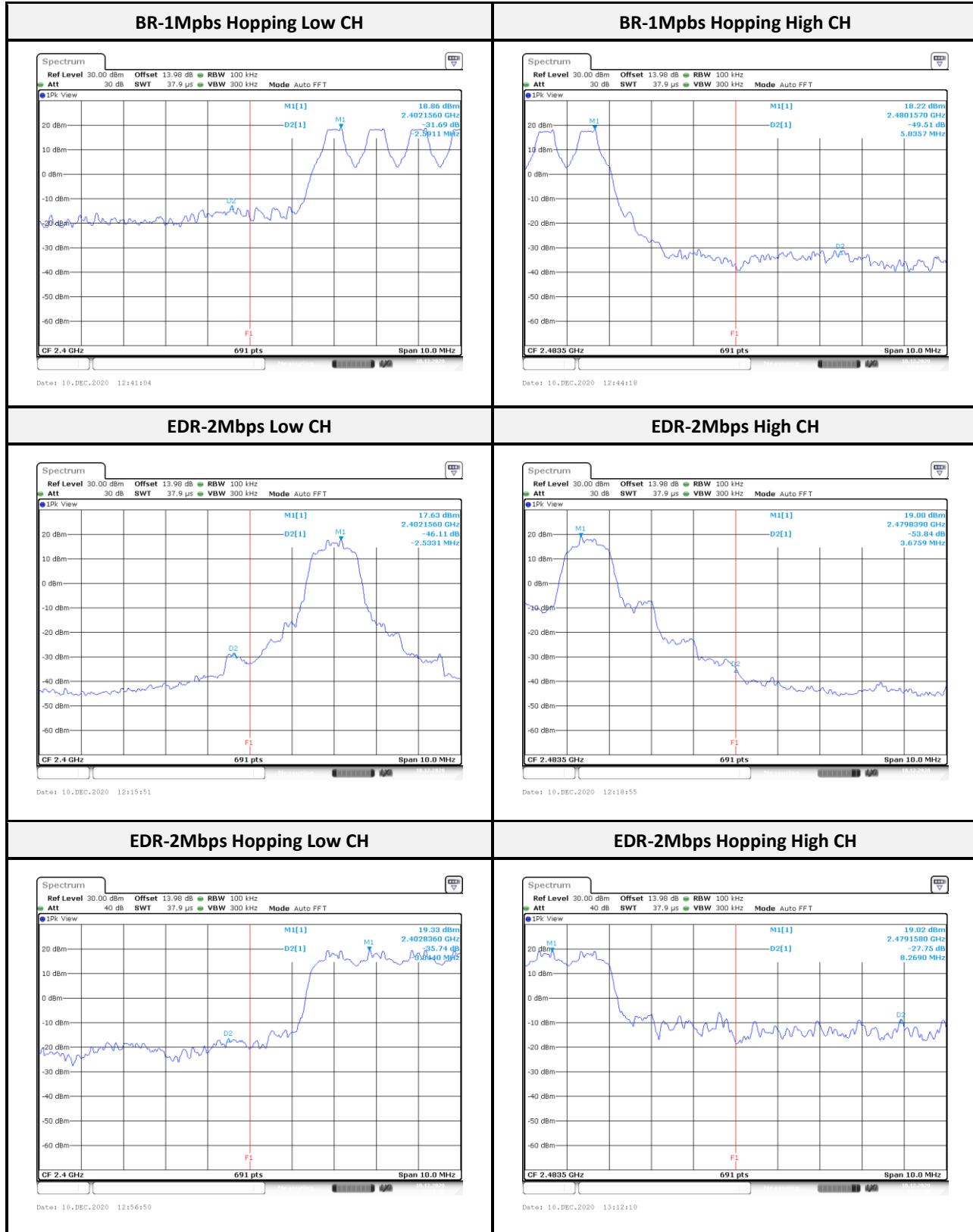


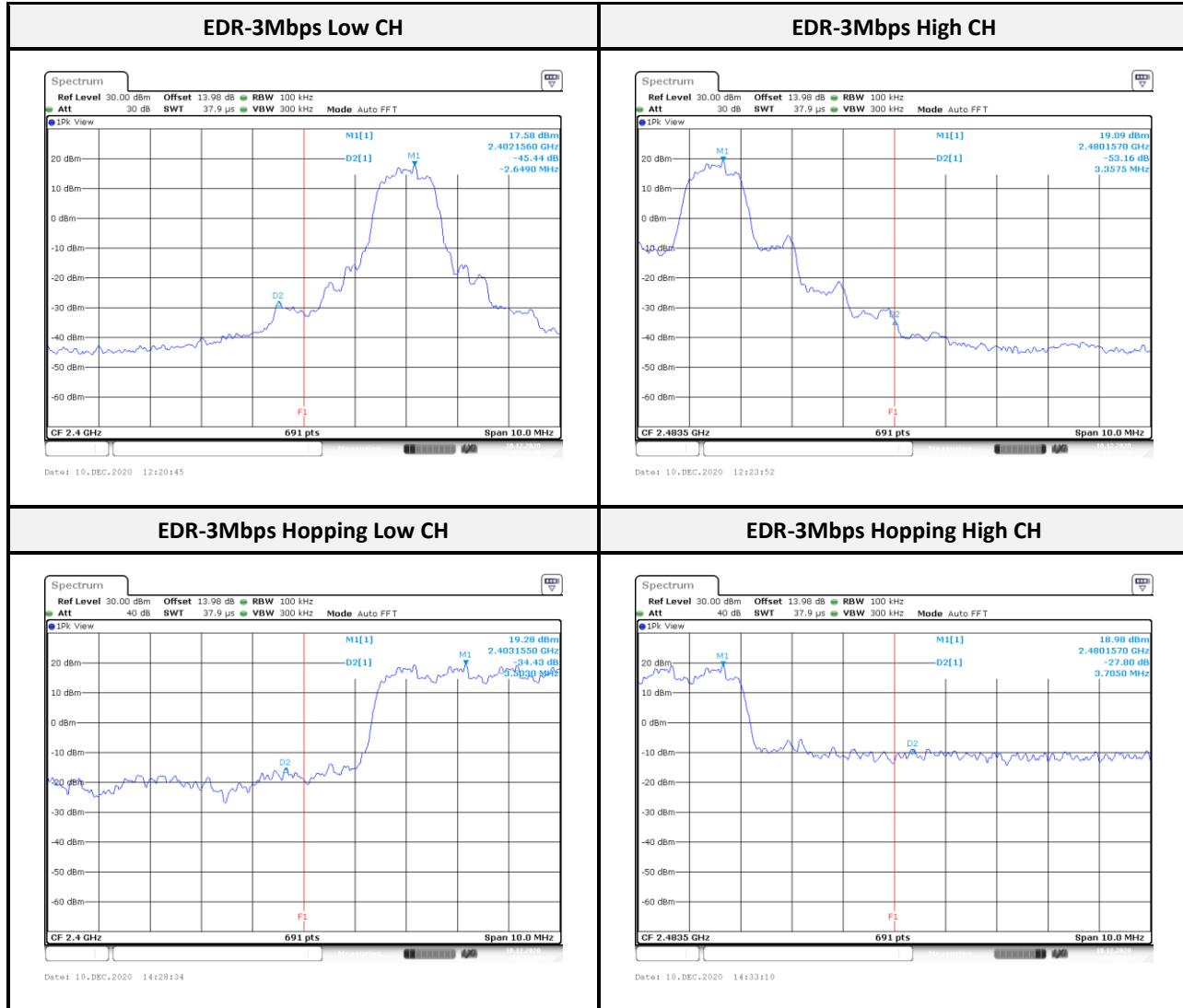


< Dipole Antenna (GW.34.5153) with 3.3V_{dc}>

Mode	Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
BR-1Mbps	Low	2402	51.46	≥ 20	Compliance
	High	2480	53.79	≥ 20	Compliance
BR-1Mbps Hopping	Low	2402	31.69	≥ 20	Compliance
	High	2480	49.51	≥ 20	Compliance
EDR-2Mbps	Low	2402	46.11	≥ 20	Compliance
	High	2480	53.84	≥ 20	Compliance
EDR-2Mbps Hopping	Low	2402	35.74	≥ 20	Compliance
	High	2480	27.75	≥ 20	Compliance
EDR-3Mbps	Low	2402	45.44	≥ 20	Compliance
	High	2480	53.16	≥ 20	Compliance
EDR-3Mbps Hopping	Low	2402	34.43	≥ 20	Compliance
	High	2480	27.80	≥ 20	Compliance







----- END OF REPORT -----