

TAF

1190

Report No.: FR843031-01AD



FCC ID : 2AF82-TD0350

Equipment : Panel PC

Brand Name : Qbic

Model Name : TD-035XXX, (where X can be 0-9, A-Z or blank)

Applicant / : Qbic technology Co., Ltd

Manufacturer 26F. -12, No.99, Sec.1, Xintai 5th Rd., Xizhi Dist.,

New Taipei City 221, Taiwan(R.O.C)

Standard : 47 CFR FCC Part 15.247

The product was received on Jun. 22, 2018, and testing was started from Jul. 10, 2018 and completed on Jul. 12, 2018. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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FCC Test Report

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History of this test report

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Report No.	Version	Description	Issued Date
FR843031-01AD	01	Initial issue of report	Jul. 27, 2018

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Summary of Test Result

Report Clause	Ref. Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	FCC 15.203
3.1	15.207	AC Power-line Conducted Emissions	PASS	FCC 15.207
3.2	15.247(a)	20dB Bandwidth	PASS	15.247(a)
3.2	15.247(a)	Carrier Frequency Separation	PASS	15.247(a)
3.3	15.247(b)	Maximum Conducted Output Power	PASS	15.247(b)
3.4	15.247(a)	Number of Hopping Frequencies and Hopping Bandedge	PASS	15.247(a)
3.5	15.247(a)	Time of Occupancy (Dwell Time)	PASS	15.247(a)
3.6	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	15.247(d)
3.7	15.247(d)	Emissions in Restricted Frequency Bands	PASS	Restricted Bands: FCC 15.209

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Reviewed by: Sam Chen

Report Producer: Ann Hou

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1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Bluetooth Version	Ch. Frequency (MHz)	Channel Number
2400-2483.5	BR / EDR	2402-2480	0-78 [79]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	BT-BR(1Mbps)	1	1TX
2.4-2.4835GHz	BT-EDR(2Mbps)	1	1TX

Note:

- Bluetooth BR uses a GFSK (1Mbps).
- Bluetooth EDR uses a combination of $\pi/4$ -DQPSK (2Mbps).
- Bluetooth BR/EDR uses as a system using FHSS modulation.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	-	-	FPC	fixed on board	2

1.1.3 EUT Information

	Operational Condition							
EU.	T Power T	уре	Fro	m AC Adapter				
EU.	T Function	n	\boxtimes	Point-to-multipo	int			Point-to-point
				-	Гуре of	EUT		
\boxtimes	⊠ Stand-alone							
	Combine	d (EUT where	e the	radio part is fully	/ integra	ated within	а	another device)
	Combine	d Equipment	- Bra	and Name / Mode	el No.:			
	Plug-in radio (EUT intended for a variety of host systems)							
	Host System - Brand Name / Model No.:							
	Other:							

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
BT-BR(1Mbps)	0.772	1.124	2.888m	1k
BT-EDR(2Mbps)	0.743	1.29	2.893m	1k

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1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15
- Public Notice DA 00-705
- ANSI C63.10-2013

1.3 Testing Location Information

	Testing Location							
\boxtimes	HWA YA	ADD	:	No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)				
	TEL: 886-3-327-3456 FAX: 886-3-327-0973							
Test site Designation No. TW1190 with FCC.								
	JHUBEI	ADD	:	No.8, Ln. 724, Bo'ai St.	, Zhubei City, Hsinchu County, Taiwan (R.O.C.)			
	TEL: 886-3-656-9065 FAX: 886-3-656-9085							
	Test site Designation No. TW0006 with FCC.							

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Jeremy Lin	22.8°C / 60%	12/Jul/2018
RF Conducted	TH01-HY	Andy Lee	23.5°C / 65%	10/Jul/2018
Radiated	03CH09-HY	Andy Hsu	22.8°C / 59%	10/Jul/2018

1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.0 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.9 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.3 dB	Confidence levels of 95%
Temperature	0.7 °C	Confidence levels of 95%
Humidity	4 %	Confidence levels of 95%

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2 Test Configuration of EUT

2.1 Test Condition

RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	120V

2.2 Test Channel Mode

Test Software Version	Ampak RFTestTool VER:5.4
-----------------------	--------------------------

Mode	Power Setting
BT-BR(1Mbps)	-
2402MHz	0
2441MHz	0
2480MHz	0
BT-EDR(2Mbps)	-
2402MHz	0
2441MHz	0
2480MHz	0

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2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests			
Tests Item	Tests Item AC power-line conducted emissions		
Condition	AC power-line conducted measurement for line and neutral		
Operating Mode CTX			
1 Adapter mode			

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The Worst Case Mode for Following Conformance Tests	
Tests Item	20dB Bandwidth Carrier Frequency Separation Maximum Conducted Output Power Number of Hopping Frequencies Hopping Bandedge Time of Occupancy (Dwell Time) Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests			
Tests Item	Emissions in Restricted Frequency Bands		
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.		
Operating Mode < 1GHz	CTX		
1	Adapter mode		
Operating Mode > 1GHz	z CTX		
	X Plane	Y Plane	Z Plane
Orthogonal Planes of EUT			
Worst Planes of EUT			V

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2.4 Accessories and Support Equipment

	Accessories			
A O A 11 4	Brand Name	SOY	Model Name	SOY-0500200-090
AC Adapter 1	Power Rating	I/P: 100 - 240Vac, 0.5A, O/P: 5Vdc, 2 A		
	Brand Name	PHIHONE	Model Name	PSAF10R-050Q
AC Adapter 1	Power Rating	I/P: 100 - 240Vac, 0.3A, O/P: 5Vdc, 2.0 A		
	Brand Name	NA	Model Name	389G175GZAAFAMOOHF
USB Cable	Signal Line	3 meter, non-shielded ca	able, without ferrit	e core

Reminder: Regarding to more detail and other information, please refer to user manual.

	Support Equipment - RF Conducted			
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5410	DoC
2	Adapter for NB	DELL	HA65NM130	DoC
3	AC Power Source	G.W	APS-9102	-

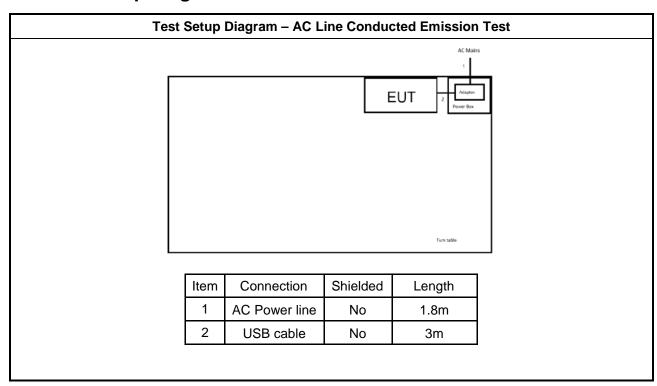
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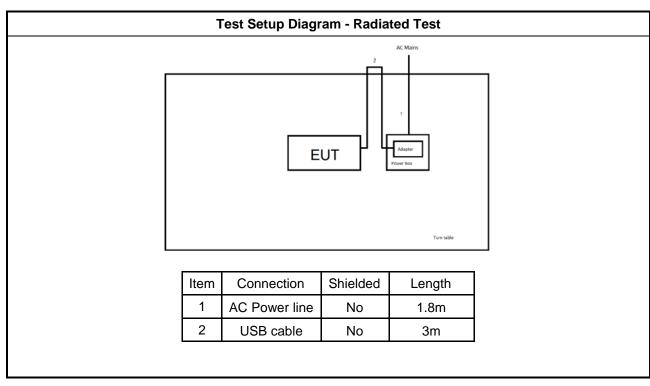
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2.5 **Test Setup Diagram**





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Transmitter Test Result 3

3.1 **AC Power-line Conducted Emissions**

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz) Quasi-Peak Average		
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

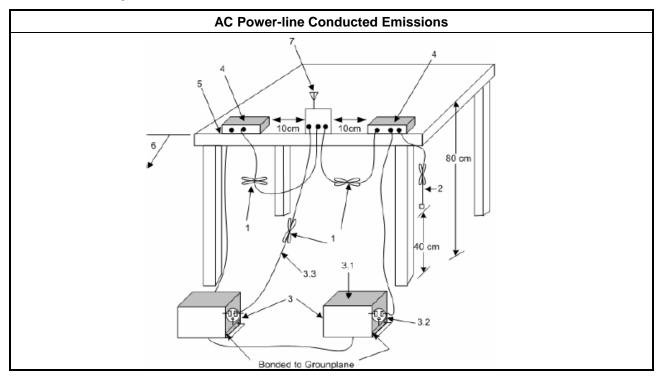
3.1.2 **Measuring Instruments**

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method	
■ Refer as ANSI C63.10-2013, clause 6.2 foray power-line conducted emissions.	

3.1.4 **Test Setup**



3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

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3.2 20dB Bandwidth and Carrier Frequency Separation

3.2.1 20dB Bandwidth and Carrier Frequency Separation Limit

	20dB Bandwidth and Carrier Frequency Separation Limit for Frequency Hopping Systems		
•	■ 2400-2483.5 MHz Band:		
	■ N ≥75 and ChS ≥ MAX (20 dB bandwidth, 25 kHz).		
	 75>N ≥ 15 and ChS ≥ MAX (20 dB bandwidth 2/3,25 kHz). 		
N:N	N:Number of Hopping Frequencies; ChS: Hopping Channel Separation		

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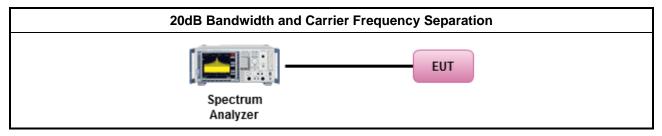
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method ■ Refer as ANSI C63.10-2013, clause 6.9.2 for 20 dB bandwidth measurement. ■ Refer as ANSI C63.10-2013, clause 7.8.2 for carrier frequency separation measurement.

3.2.4 Test Setup



3.2.5 Test Result of 20dB Bandwidth

Refer as Appendix B.1

3.2.6 Test Result of Carrier Frequency Separation

Refer as Appendix B.2

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3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

	Maximum Conducted Output Power Limit		
•	■ 2400-2483.5 MHz Band:		
	■ N ≥ 75; Power 30dBm; EIRP 36dBm		
	■ 75 >N ≥ 15; Power 21dBm; EIRP 27dBm		
N:N	N:Number of Hopping Frequencies		

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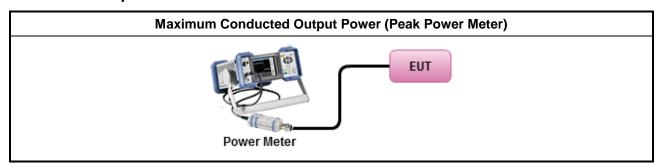
3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

Test Method ■ Refer as ANSI C63.10-2013, clause 7.8.5 for output power measurement.

3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

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3.4 Number of Hopping Frequencies and Hopping Bandedge

3.4.1 Number of Hopping Frequencies Limit

Number of Hopping Frequencies Limit		
■ 2400-2483.5 MHz Band:		
	N ≥ 75 and ChS ≥ MAX (20 dB bandwidth, 25 kHz).	
■ 75 >N ≥ 15 and ChS ≥ MAX (20 dB bandwidth 2/3,25 kHz).		
N:Number of Hopping Frequencies; ChS: Hopping Channel Separation		

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3.4.2 Hopping Bandedge Limit

Refer clause 3.6.1 and clause 3.7.1

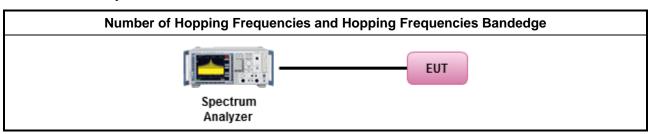
3.4.3 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.4.4 Test Procedures

Test Method ■ Refer as ANSI C63.10-2013, clause 7.8.3 for number of hopping frequencies measurement. ■ Refer as ANSI C63.10-2013, clause 7.8.6 for hopping frequencies Bandedge measurement.

3.4.5 Test Setup



3.4.6 Test Result of Number of Hopping Frequencies

Refer as Appendix D

3.4.7 Test Result of Number of Hopping Frequencies Bandedge

Refer as Appendix D

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3.5 Time of Occupancy (Dwell Time)

3.5.1 Time of Occupancy (Dwell Time) Limit

	Time of Occupancy (Dwell Time) Limit for Frequency Hopping Systems					
•	■ 2400-2483.5 MHz Band:					
	■ N ≥ 75; 0.4s in N x 0.4 period					
	■ 75 >N ≥ 15; 0.4s in N x 0.4 period					
N:N	lumber of Hopping Frequencies					

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3.5.2 Measuring Instruments

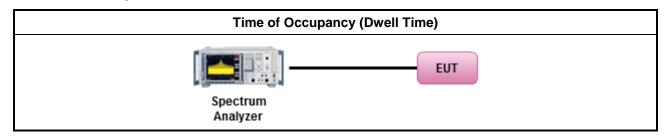
Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

Test Method Refer as ANSI C63.10-2013, clause 7.8.4 for dwell time measurement. Bluetooth ACL packets can be 1, 3, or 5 time slots. Following as dwell time. Operate DH5 at maximum dwell time and maximum duty cycle.

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.DH5 Packet permit maximum 1600/79 / 6 = 3.37 hops per second in each channel.

3.5.4 Test Setup



3.5.5 Test Result of Time of Occupancy (Dwell Time)

Refer as Appendix E

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3.6 Emissions in Non-restricted Frequency Bands

3.6.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit			
RF output power procedure Limit (dB)			
Peak output power procedure	20		

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Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

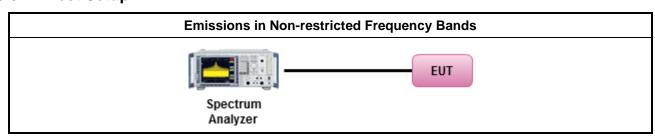
3.6.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

Test Method	
 Refer as ANSI C63.10-2013, clause 7.8.8 for unwanted emissions into non-restricted bands. 	

3.6.4 Test Setup



3.6.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix F

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3.7 Emissions in Restricted Frequency Bands

3.7.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit						
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)			
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300			
0.490~1.705	24000/F(kHz)	33.8 - 23	30			
1.705~30.0	30	29	30			
30~88	100	40	3			
88~216	150	43.5	3			
216~960	200	46	3			
Above 960	500	54	3			

- Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
- Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB / decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.
- Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

3.7.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.7.3 Test Procedures

Test Method

- The average emission levels shall be measured in [hopping duty factor].
- Refer as ANSI C63.10; clause 6.9.2.2 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
- For the transmitter unwanted emissions shall be measured using following options below:
 - Refer as ANSI C63.10, clause 4.1.4.2.1 QP value.
 - Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak.
 - Refer as ANSI C63.10, clause 4.1.4.2.4 average value of hopping pulsed emissions.

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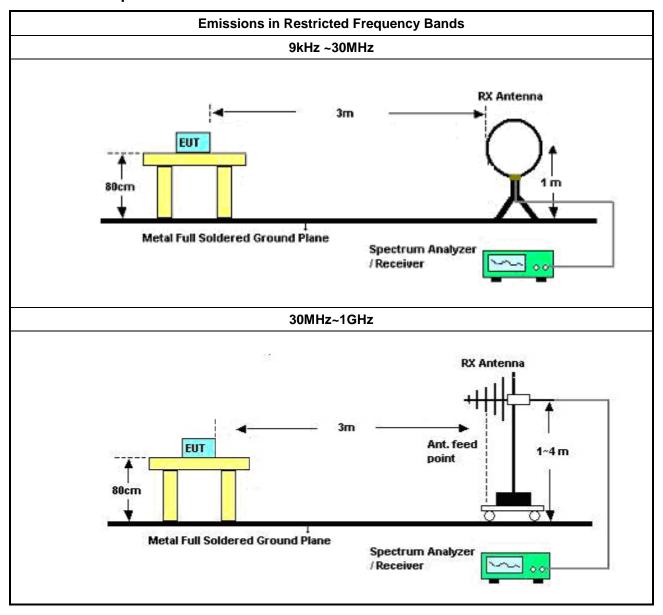
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Test Setup 3.7.4



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Above 1GHz

Spectrum Analyzer

Above 1GHz

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3.7.5 Test Result of Emissions in Restricted Frequency Bands (Below 30MHz)

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

3.7.6 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix G

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Test Equipment and Calibration Data 4

Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMC Receiver	R&S	ESR3	102051	9KHz ~ 3.6GHz	03/May/2018	02/May/2019
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	17/Nov/2017	16/Nov/2018
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz ~ 30MHz	06/Oct/2017	05/Oct/2018
AC POWER	APC	AFC-11005G	F310050055	47Hz~63Hz 5~300V	NCR	NCR
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9 kHz ~ 30 MHz	12/Oct/2017	11/Oct/2018

NCR : Non-Calibration Require

Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	9kHz~40GHz	05/Feb/2018	04/Feb/2019
Loop Antenna	TESEQ	HLA 6120	31244	9 kHz~30 MHz	29/Mar/2018	28/May/2019
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20 ~ 100°C	22/May/2018	21/May/2019

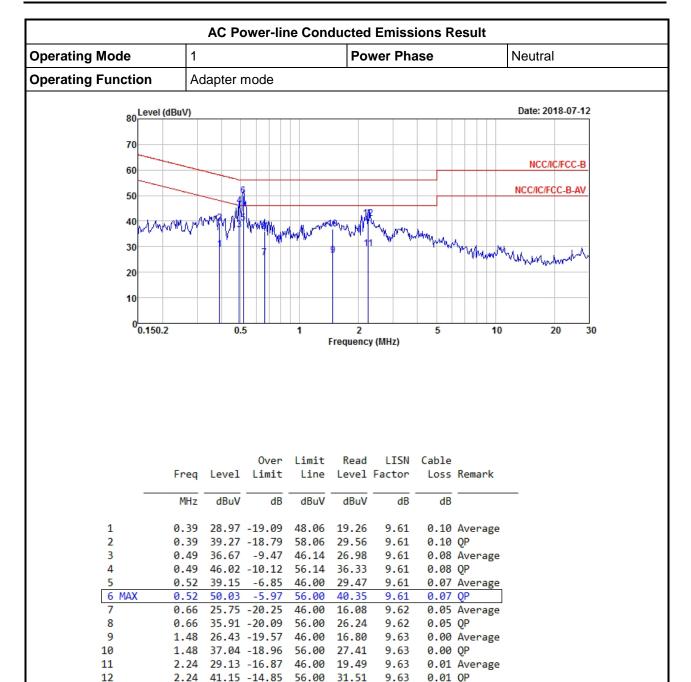
Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz ~ 1GHz	23/Apr/2018	22/Apr/2019
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz ~ 18GHz	14/Jun/2018	13/Jun/2019
Microwave Preamplifier	Agilent	8449B	3008A02096	1GHz~26.5GHz	10/May/2018	09/May/2019
Amplifier	EMC	EMC9135	980232	9KHz~1GHz	27/Apr/2018	26/Apr/2019
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200885	10Hz ~ 44GHz	20/Jul/2017	19/Jul/2018
Bilog Antenna & 5dB Attenuator	TESEQ & MTJ	CBL6111D & MTJ6102-05	35418 / 3	30MHz~1GHz	09/Sep/2017	08/Sep/2018
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA9120 D 1534	1GHz~18GHz	30/Apr/2018	29/Apr/2019
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170614	18GHz~40GHz	09/Feb/2018	08/Feb/2019
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz~40GHz	24/Aug/2017	23/Aug/2018
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	29/Mar/2018	28/Mar/2019
RF Cable-R03m	Jye Bao	RG142	CB031	9kHz ~ 1GHz	1/Feb/2018	31/Jan/2019
RF Cable-high	HUBER+SUHNER	SUCOFLEX104	SN 556626/4 + 556627	1GHz ~ 40GHz	14/Mar/2018	13/Mar/2019

TEL: 886-3-3273456 Page Number. : 20 of 20 : Jul. 27, 2018 FAX: 886-3-3270973 Issued Date

Report Template No.: HE1-C9 Ver2.0 Report Version : 01



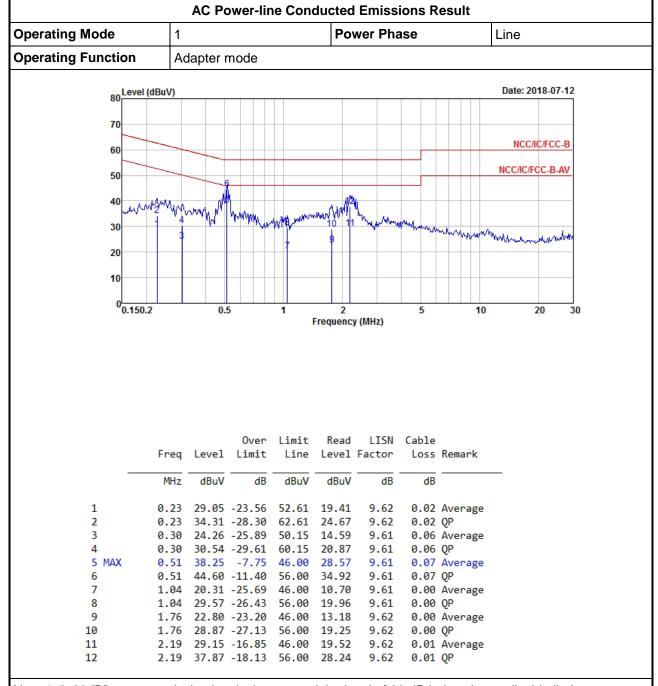


Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

TEL: 886-3-3273456 FAX: 886-3-3270973





Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

SPORTON INTERNATIONAL INC.

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EBW-FS Result Appendix B.1

Summary

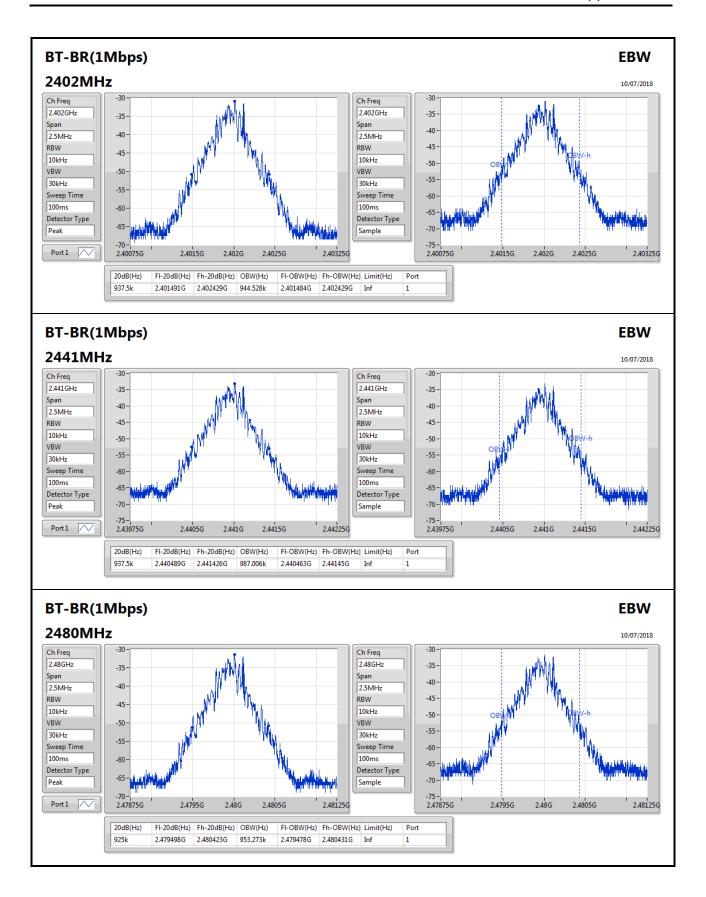
Mode	Max-N dB	Max-OBW	ITU-Code	Min-N dB	Min-OBW
	(Hz)	(Hz)		(Hz)	(Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-BR(1Mbps)	937.5k	987.006k	987KF1D	925k	944.528k
BT-EDR(2Mbps)	1.335M	1.367M	1M37G1D	1.33M	1.266M

Max-N dB = Maximum 20dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth; Min-N dB = Minimum 20dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth;

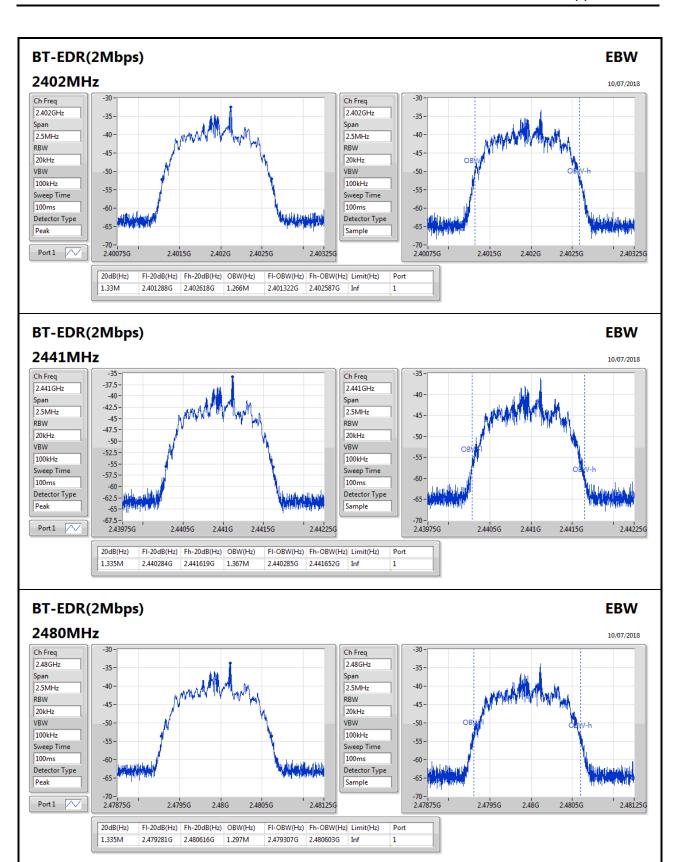
Result

Mode	Result	Limit	Port 1-N dB	Port 1-OBW
		(Hz)	(Hz)	(Hz)
BT-BR(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	Inf	937.5k	944.528k
2441MHz_TnomVnom	Pass	Inf	937.5k	987.006k
2480MHz_TnomVnom	Pass	Inf	925k	953.273k
BT-EDR(2Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	Inf	1.33M	1.266M
2441MHz_TnomVnom	Pass	Inf	1.335M	1.367M
2480MHz_TnomVnom	Pass	Inf	1.335M	1.297M

Port X-N dB = Port X 20dB down bandwidth; Port X-OBW = Port X 99% occupied bandwidth;



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Channel Separation-FS Result

Appendix B.2

Summary

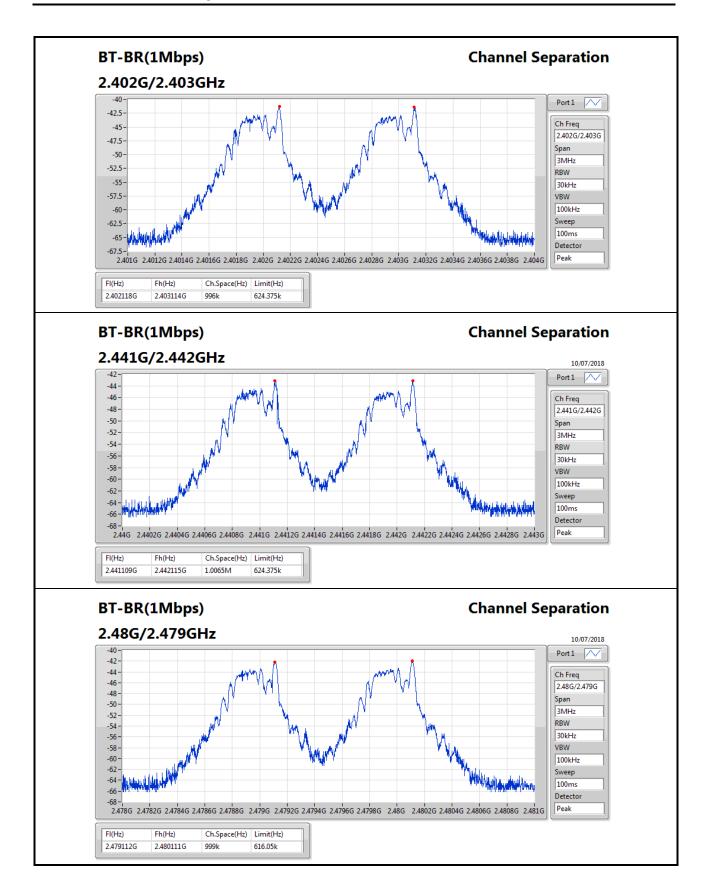
	Mode	Max-Space	Min-Space
		(Hz)	(Hz)
2	2.4-2.4835GHz	-	-
E	BT-BR(1Mbps)	1.0065M	996k
В	BT-EDR(2Mbps)	1.0035M	997.5k

Result

Mode	Result	FI	Fh	Ch.Space	Limit
		(Hz)	(Hz)	(Hz)	(Hz)
BT-BR(1Mbps)	-	-	-	-	-
2402MHz_TnomVnom	Pass	2.402118G	2.403114G	996k	624.375k
2441MHz_TnomVnom	Pass	2.441109G	2.442115G	1.0065M	624.375k
2480MHz_TnomVnom	Pass	2.479112G	2.480111G	999k	616.05k
BT-EDR(2Mbps)	-	-	-	-	-
2402MHz_TnomVnom	Pass	2.402116G	2.403114G	997.5k	885.78k
2441MHz_TnomVnom	Pass	2.441112G	2.442115G	1.0035M	889.11k
2480MHz_TnomVnom	Pass	2.479113G	2.480112G	999k	889.11k

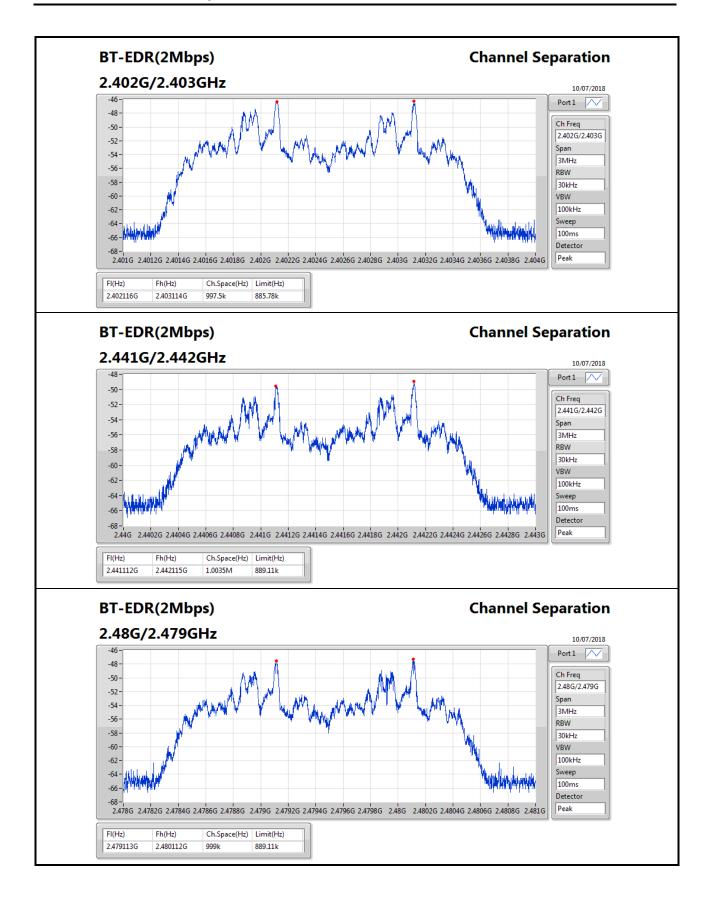
SPORTON INTERNATIONAL INC. Page No. : B1 of B3





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PKPower Result Appendix C.1

Summary

Mode	Power	Power
	(dBm)	(W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	15.41	0.03475
BT-EDR(2Mbps)	15.58	0.03614

Mode	Result	Gain	Power	Power Limit		
		(dBi)	(dBm)	(dBm)		
BT-BR(1Mbps)	-	-	-	-		
2402MHz_TnomVnom	Pass	2.00	14.02	21.00		
2441MHz_TnomVnom	Pass	2.00	14.02	21.00		
2480MHz_TnomVnom	Pass	2.00	15.41	21.00		
BT-EDR(2Mbps)	-	-	-	-		
2402MHz_TnomVnom	Pass	2.00	14.02	21.00		
2441MHz_TnomVnom	Pass	2.00	15.58	21.00		
2480MHz_TnomVnom	Pass	2.00	14.01	21.00		



AV Power-FS Result

Appendix C.2

Summary

Mode	Mode Power				
	(dBm)	(W)			
2.4-2.4835GHz	-	-			
BT-BR(1Mbps)	BT-BR(1Mbps) 11.45				
BT-EDR(2Mbps)	11.45	0.01396			

Mode	Result	Gain	Power	Power Limit	
		(dBi)	(dBm)	(dBm)	
BT-BR(1Mbps)	-	-	-	-	
2402MHz_TnomVnom	Pass	2.00	11.45	30.00	
2441MHz_TnomVnom	Pass	2.00	11.45	30.00	
2480MHz_TnomVnom	Pass	2.00	11.45	30.00	
BT-EDR(2Mbps)	-	-	-	-	
2402MHz_TnomVnom	Pass	2.00	11.44	30.00	
2441MHz_TnomVnom Pass		2.00	11.45	30.00	
2480MHz_TnomVnom	Pass	2.00	11.45	30.00	



Hopping Channel and Bandedge-FS Result

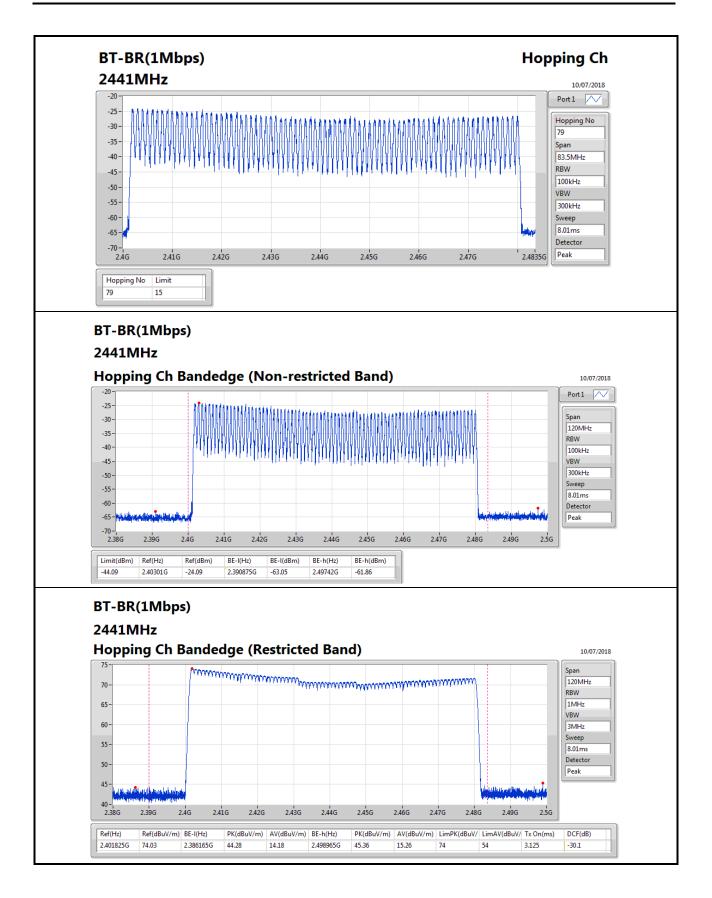
Appendix D

Summary

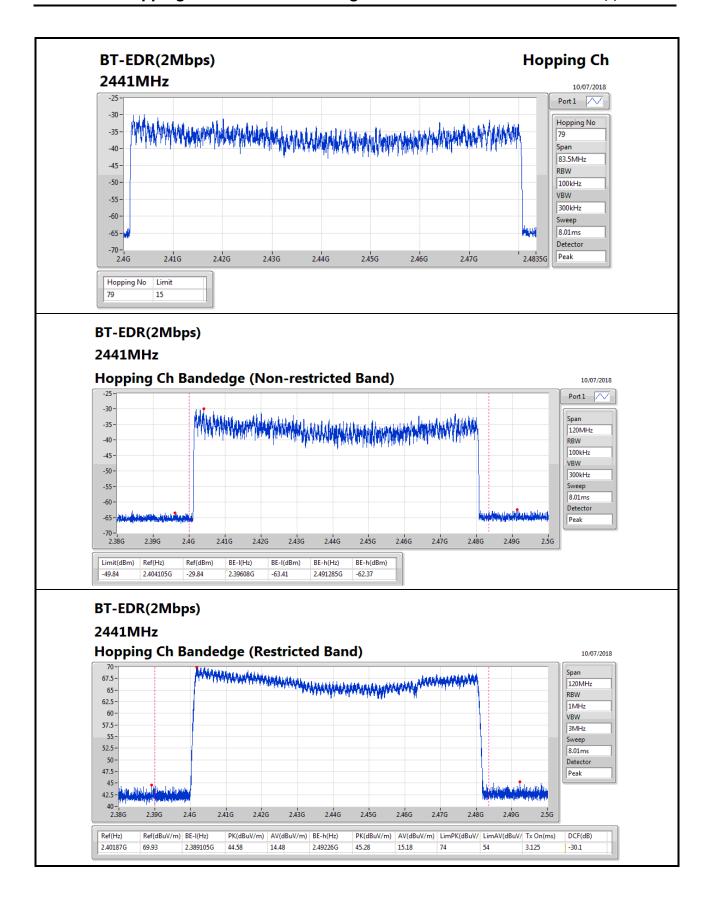
Mode	Max-Hop No
2.4-2.4835GHz	-
BT-BR(1Mbps)	79
BT-EDR(2Mbps)	79

Mode	Result	Hopping No	Limit
BT-BR(1Mbps)	-	-	-
2441MHz_TnomVnom	Pass	79	15
BT-EDR(2Mbps)	-	-	-
2441MHz_TnomVnom	Pass	79	15











Dwell Time-FS Result

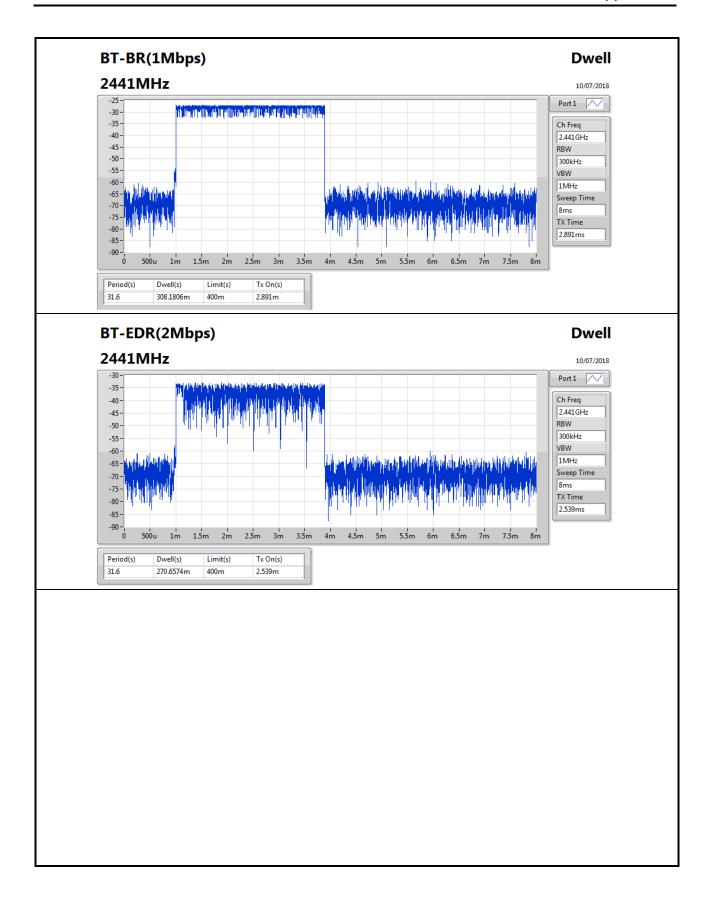
Appendix E

Summary

Mode	Max-Dwell
	(s)
2.4-2.4835GHz	-
BT-BR(1Mbps)	308.1806m
BT-EDR(2Mbps)	270.6574m

Mode	Result	Period	Dwell	Limit	Tx On
		(s)	(s)	(s)	(s)
BT-BR(1Mbps)	-	-	-	-	-
2441MHz_TnomVnom	Pass	31.6	308.1806m	400m	2.891m
BT-EDR(2Mbps)	-	-	-	-	-
2441MHz_TnomVnom	Pass	31.6	270.6574m	400m	2.539m







CSE Non-restricted Band-FS Result

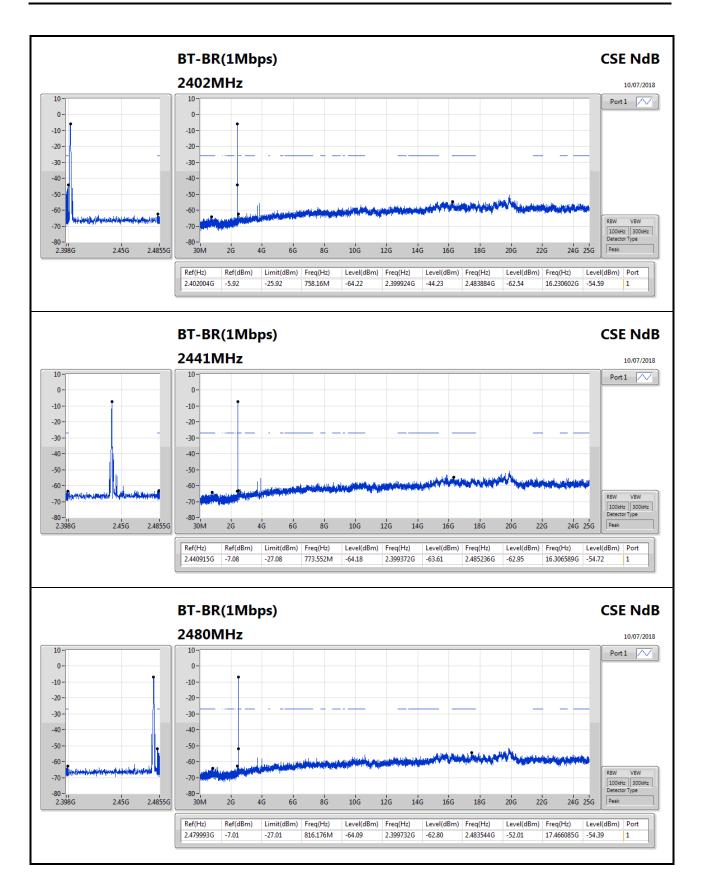
Appendix F

Summary

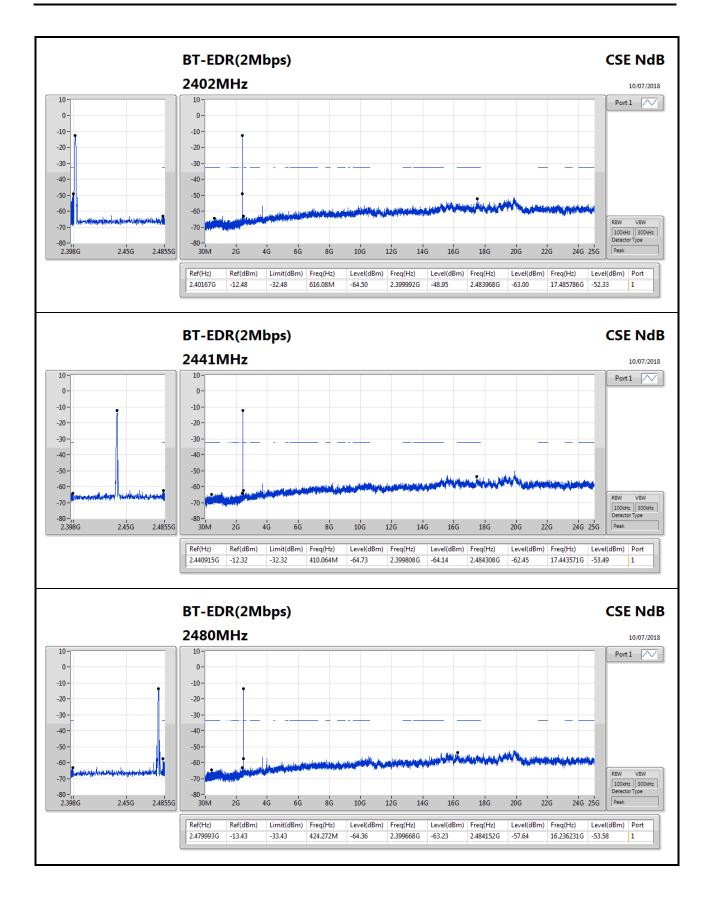
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-BR(1Mbps)	Pass	2.402004G	-5.92	-25.92	758.16M	-64.22	2.399924G	-44.23	2.483884G	-62.54	16.230602G	-54.59	1
BT-EDR(2Mbps)	Pass	2.40167G	-12.48	-32.48	616.08M	-64.50	2.399992G	-48.95	2.483968G	-63.00	17.485786G	-52.33	1

Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
BT-BR(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.402004G	-5.92	-25.92	758.16M	-64.22	2.399924G	-44.23	2.483884G	-62.54	16.230602G	-54.59	1
2441MHz	Pass	2.440915G	-7.08	-27.08	773.552M	-64.18	2.399372G	-63.61	2.485236G	-62.95	16.306589G	-54.72	1
2480MHz	Pass	2.479993G	-7.01	-27.01	816.176M	-64.09	2.399732G	-62.80	2.483544G	-52.01	17.466085G	-54.39	1
BT-EDR(2Mbps)	-		-		٠	-			•			-	
2402MHz	Pass	2.40167G	-12.48	-32.48	616.08M	-64.50	2.399992G	-48.95	2.483968G	-63.00	17.485786G	-52.33	1
2441MHz	Pass	2.440915G	-12.32	-32.32	410.064M	-64.73	2.399808G	-64.14	2.484308G	-62.45	17.443571G	-53.49	1
2480MHz	Pass	2.479993G	-13.43	-33.43	424.272M	-64.36	2.399668G	-63.23	2.484152G	-57.64	16.236231G	-53.58	1











RSE TX below 1GHz Result

Appendix G.1

Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
BT-BR(1Mbps)	Pass	PK	480.08M	38.23	46.00	-7.77	-12.38	3	Vertical	360	1.00	-

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RSE TX below 1GHz Result

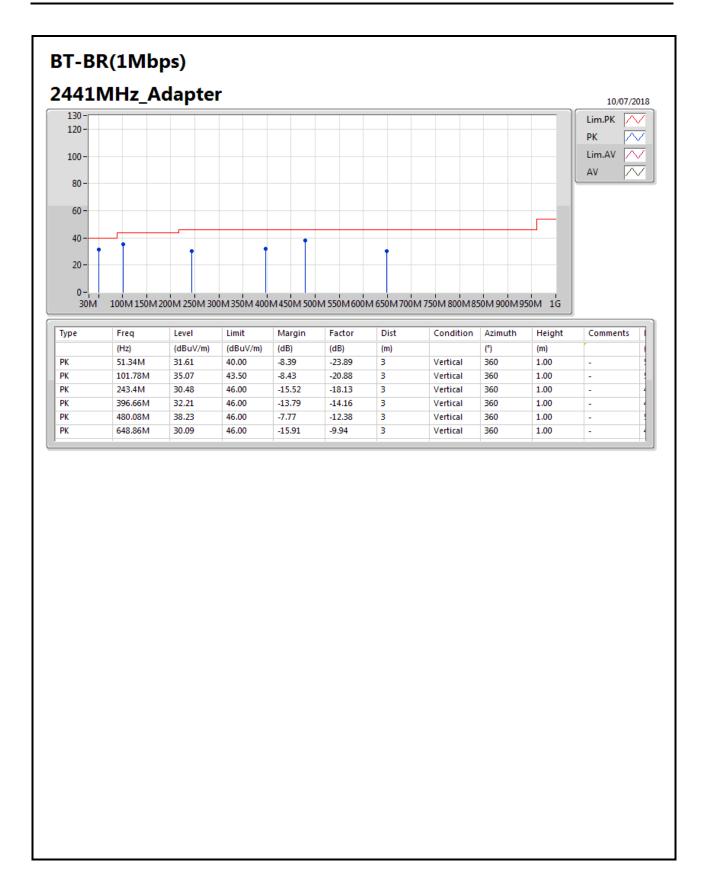
Appendix G.1

Result

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
BT-BR(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2441MHz	Pass	PK	51.34M	31.61	40.00	-8.39	-23.89	3	Vertical	360	1.00	-
2441MHz	Pass	PK	101.78M	35.07	43.50	-8.43	-20.88	3	Vertical	360	1.00	-
2441MHz	Pass	PK	243.4M	30.48	46.00	-15.52	-18.13	3	Vertical	360	1.00	-
2441MHz	Pass	PK	396.66M	32.21	46.00	-13.79	-14.16	3	Vertical	360	1.00	-
2441MHz	Pass	PK	480.08M	38.23	46.00	-7.77	-12.38	3	Vertical	360	1.00	-
2441MHz	Pass	PK	648.86M	30.09	46.00	-15.91	-9.94	3	Vertical	360	1.00	-
2441MHz	Pass	PK	101.78M	32.97	43.50	-10.53	-20.88	3	Horizontal	0	1.00	-
2441MHz	Pass	PK	132.82M	31.60	43.50	-11.90	-19.19	3	Horizontal	0	1.00	-
2441MHz	Pass	PK	179.38M	31.27	43.50	-12.23	-21.28	3	Horizontal	0	1.00	-
2441MHz	Pass	PK	480.08M	35.53	46.00	-10.47	-12.38	3	Horizontal	0	1.00	-
2441MHz	Pass	PK	648.86M	34.79	46.00	-11.21	-9.94	3	Horizontal	0	1.00	-
2441MHz	Pass	PK	771.08M	36.06	46.00	-9.94	-8.18	3	Horizontal	0	1.00	-

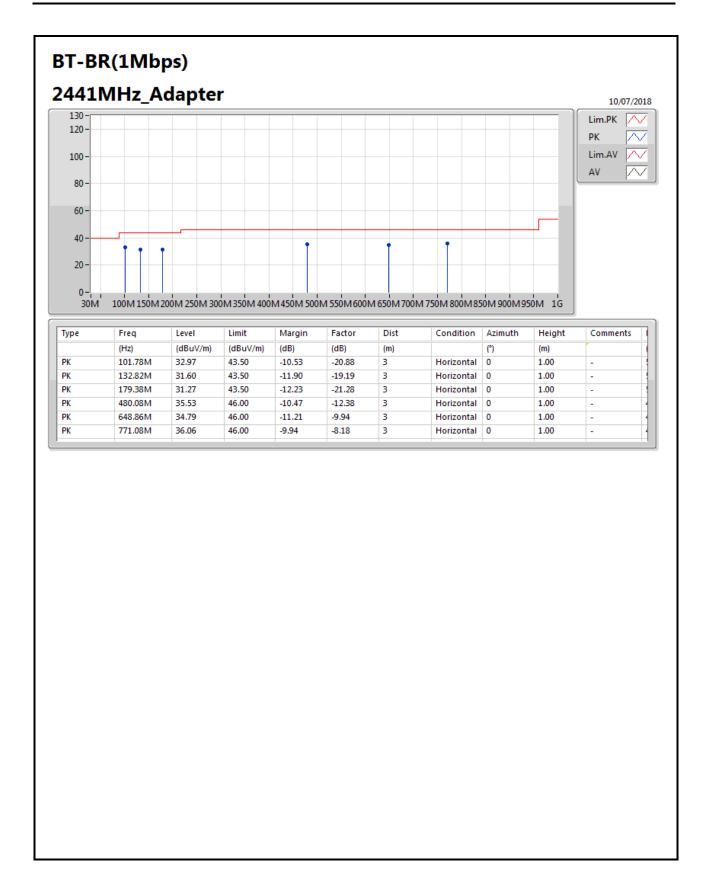
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RSE TX above 1GHz Result

Appendix G.2

Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
BT-BR(1Mbps)	Pass	AV	2.4946G	43.61	54.00	-10.39	31.15	3	Vertical	67	2.48	-

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RSE TX above 1GHz Result

Result

Mode Result Type Freq Level Limit Margin Factor Dist Condition Azimuth Height C (BbuVlm) (dBbuVlm) (dB) (dB) (m) C (
BT-BR(IMbps)	
2402MHz	
2402MHz	
2402MHz	
2402MHz	-
2402MHz Pass PK 2.402G 76.06 Inf Inf 30.82 3 Vertical 76 1.42 2402MHz Pass PK 2.4964G 56.27 74.00 -17.73 31.16 3 Vertical 76 1.42 2402MHz Pass AV 2.386G 42.73 54.00 -11.27 30.76 3 Horizontal 23 1.80 2402MHz Pass AV 2.4988G 43.53 54.00 -10.47 31.17 3 Horizontal 23 1.80 2402MHz Pass AV 2.4988G 43.53 54.00 -10.47 31.17 3 Horizontal 23 1.80 2402MHz Pass PK 2.3532G 56.01 74.00 -17.99 30.65 3 Horizontal 23 1.80 2402MHz Pass PK 2.402G 80.48 Inf -Inf 30.82 3 Horizontal 23 1.80	-
2402MHz Pass PK 2.4964G 56.27 74.00 -17.73 31.16 3 Vertical 76 1.42 2402MHz Pass AV 2.386G 42.73 54.00 -11.27 30.76 3 Horizontal 23 1.80 2402MHz Pass AV 2.4988G 43.53 54.00 -10.47 31.17 3 Horizontal 23 1.80 2402MHz Pass AV 2.4988G 43.53 54.00 -10.47 31.17 3 Horizontal 23 1.80 2402MHz Pass PK 2.3532G 56.01 74.00 -17.99 30.65 3 Horizontal 23 1.80 2402MHz Pass PK 2.402G 80.48 Inf -Inf 30.82 3 Horizontal 23 1.80 2402MHz Pass PK 2.486G 56.53 74.00 -17.47 31.12 3 Horizontal 23 1.80	-
2402MHz Pass AV 2.386G 42.73 54.00 -11.27 30.76 3 Horizontal 23 1.80 2402MHz Pass AV 2.402G 79.48 Inf -Inf 30.82 3 Horizontal 23 1.80 2402MHz Pass AV 2.4986G 43.53 54.00 -10.47 31.17 3 Horizontal 23 1.80 2402MHz Pass PK 2.3532G 56.01 74.00 -17.99 30.65 3 Horizontal 23 1.80 2402MHz Pass PK 2.402G 80.48 Inf -Inf 30.82 3 Horizontal 23 1.80 2402MHz Pass PK 2.486G 56.53 74.00 -17.47 31.12 3 Horizontal 23 1.80 2402MHz Pass AV 4.80382G 31.04 54.00 -22.96 2.08 3 Vertical 142 1.50 <t< td=""><td>-</td></t<>	-
2402MHz Pass AV 2.402G 79.48 Inf -Inf 30.82 3 Horizontal 23 1.80 2402MHz Pass AV 2.4988G 43.53 54.00 -10.47 31.17 3 Horizontal 23 1.80 2402MHz Pass PK 2.3532G 56.01 74.00 -17.99 30.65 3 Horizontal 23 1.80 2402MHz Pass PK 2.402G 80.48 Inf -Inf 30.82 3 Horizontal 23 1.80 2402MHz Pass PK 2.486G 56.53 74.00 -17.47 31.12 3 Horizontal 23 1.80 2402MHz Pass AV 4.80382G 31.04 54.00 -22.96 2.08 3 Vertical 142 1.50 2402MHz Pass PK 4.79836G 44.67 74.00 -29.33 2.07 3 Vertical 142 1.50 <t< td=""><td>-</td></t<>	-
2402MHz Pass AV 2.4988G 43.53 54.00 -10.47 31.17 3 Horizontal 23 1.80 2402MHz Pass PK 2.3532G 56.01 74.00 -17.99 30.65 3 Horizontal 23 1.80 2402MHz Pass PK 2.402G 80.48 Inf -Inf 30.82 3 Horizontal 23 1.80 2402MHz Pass PK 2.486G 56.53 74.00 -17.47 31.12 3 Horizontal 23 1.80 2402MHz Pass AV 4.80382G 31.04 54.00 -22.96 2.08 3 Vertical 142 1.50 2402MHz Pass PK 4.79836G 44.67 74.00 -29.33 2.07 3 Vertical 142 1.50 2402MHz Pass AV 4.80436G 30.54 54.00 -23.46 2.08 3 Horizontal 95 1.50	-
2402MHz Pass PK 2.3532G 56.01 74.00 -17.99 30.65 3 Horizontal 23 1.80 2402MHz Pass PK 2.402G 80.48 Inf -Inf 30.82 3 Horizontal 23 1.80 2402MHz Pass PK 2.486G 56.53 74.00 -17.47 31.12 3 Horizontal 23 1.80 2402MHz Pass AV 4.80382G 31.04 54.00 -22.96 2.08 3 Vertical 142 1.50 2402MHz Pass PK 4.79836G 44.67 74.00 -29.33 2.07 3 Vertical 142 1.50 2402MHz Pass AV 4.80436G 30.54 54.00 -23.46 2.08 3 Horizontal 95 1.50 2402MHz Pass PK 4.8046G 43.94 74.00 -30.06 2.07 3 Horizontal 95 1.50	- - -
2402MHz Pass PK 2.402G 80.48 Inf -Inf 30.82 3 Horizontal 23 1.80 2402MHz Pass PK 2.486G 56.53 74.00 -17.47 31.12 3 Horizontal 23 1.80 2402MHz Pass AV 4.80382G 31.04 54.00 -22.96 2.08 3 Vertical 142 1.50 2402MHz Pass PK 4.79836G 44.67 74.00 -29.33 2.07 3 Vertical 142 1.50 2402MHz Pass AV 4.80436G 30.54 54.00 -23.46 2.08 3 Horizontal 95 1.50 2402MHz Pass PK 4.80046G 43.94 74.00 -30.06 2.07 3 Horizontal 95 1.50 2441MHz Pass AV 2.3762G 42.64 54.00 -11.36 30.72 3 Vertical 67 2.48	
2402MHz Pass PK 2.486G 56.53 74.00 -17.47 31.12 3 Horizontal 23 1.80 2402MHz Pass AV 4.80382G 31.04 54.00 -22.96 2.08 3 Vertical 142 1.50 2402MHz Pass PK 4.79836G 44.67 74.00 -29.33 2.07 3 Vertical 142 1.50 2402MHz Pass AV 4.80436G 30.54 54.00 -23.46 2.08 3 Horizontal 95 1.50 2402MHz Pass PK 4.80046G 43.94 74.00 -30.06 2.07 3 Horizontal 95 1.50 2441MHz Pass AV 2.3762G 42.64 54.00 -11.36 30.72 3 Vertical 67 2.48 2441MHz Pass AV 2.441G 81.39 Inf -Inf 30.96 3 Vertical 67 2.48 <	-
2402MHz Pass AV 4.80382G 31.04 54.00 -22.96 2.08 3 Vertical 142 1.50 2402MHz Pass PK 4.79836G 44.67 74.00 -29.33 2.07 3 Vertical 142 1.50 2402MHz Pass AV 4.80436G 30.54 54.00 -23.46 2.08 3 Horizontal 95 1.50 2402MHz Pass PK 4.80046G 43.94 74.00 -30.06 2.07 3 Horizontal 95 1.50 2441MHz Pass AV 2.3762G 42.64 54.00 -11.36 30.72 3 Vertical 67 2.48 2441MHz Pass AV 2.441G 81.39 Inf -Inf 30.96 3 Vertical 67 2.48 2441MHz Pass AV 2.4946G 43.61 54.00 -10.39 31.15 3 Vertical 67 2.48 <t< td=""><td></td></t<>	
2402MHz Pass PK 4.79836G 44.67 74.00 -29.33 2.07 3 Vertical 142 1.50 2402MHz Pass AV 4.80436G 30.54 54.00 -23.46 2.08 3 Horizontal 95 1.50 2402MHz Pass PK 4.80046G 43.94 74.00 -30.06 2.07 3 Horizontal 95 1.50 2441MHz Pass AV 2.3762G 42.64 54.00 -11.36 30.72 3 Vertical 67 2.48 2441MHz Pass AV 2.441G 81.39 Inf -Inf 30.96 3 Vertical 67 2.48 2441MHz Pass AV 2.4946G 43.61 54.00 -10.39 31.15 3 Vertical 67 2.48 2441MHz Pass PK 2.357G 55.91 74.00 -18.09 30.66 3 Vertical 67 2.48	
2402MHz Pass AV 4.80436G 30.54 54.00 -23.46 2.08 3 Horizontal 95 1.50 2402MHz Pass PK 4.80046G 43.94 74.00 -30.06 2.07 3 Horizontal 95 1.50 2441MHz Pass AV 2.3762G 42.64 54.00 -11.36 30.72 3 Vertical 67 2.48 2441MHz Pass AV 2.441G 81.39 Inf -Inf 30.96 3 Vertical 67 2.48 2441MHz Pass AV 2.4946G 43.61 54.00 -10.39 31.15 3 Vertical 67 2.48 2441MHz Pass PK 2.357G 55.91 74.00 -18.09 30.66 3 Vertical 67 2.48 2441MHz Pass PK 2.441G 82.87 Inf -Inf 30.96 3 Vertical 67 2.48	-
2402MHz Pass PK 4.80046G 43.94 74.00 -30.06 2.07 3 Horizontal 95 1.50 2441MHz Pass AV 2.3762G 42.64 54.00 -11.36 30.72 3 Vertical 67 2.48 2441MHz Pass AV 2.441G 81.39 Inf -Inf 30.96 3 Vertical 67 2.48 2441MHz Pass AV 2.4946G 43.61 54.00 -10.39 31.15 3 Vertical 67 2.48 2441MHz Pass PK 2.357G 55.91 74.00 -18.09 30.66 3 Vertical 67 2.48 2441MHz Pass PK 2.441G 82.87 Inf -Inf 30.96 3 Vertical 67 2.48 2441MHz Pass PK 2.4858G 56.79 74.00 -17.21 31.12 3 Vertical 67 2.48	-
2441MHz Pass AV 2.3762G 42.64 54.00 -11.36 30.72 3 Vertical 67 2.48 2441MHz Pass AV 2.441G 81.39 Inf -Inf 30.96 3 Vertical 67 2.48 2441MHz Pass AV 2.4946G 43.61 54.00 -10.39 31.15 3 Vertical 67 2.48 2441MHz Pass PK 2.357G 55.91 74.00 -18.09 30.66 3 Vertical 67 2.48 2441MHz Pass PK 2.441G 82.87 Inf -Inf 30.96 3 Vertical 67 2.48 2441MHz Pass PK 2.4858G 56.79 74.00 -17.21 31.12 3 Vertical 67 2.48	-
2441MHz Pass AV 2.441G 81.39 Inf -Inf 30.96 3 Vertical 67 2.48 2441MHz Pass AV 2.4946G 43.61 54.00 -10.39 31.15 3 Vertical 67 2.48 2441MHz Pass PK 2.357G 55.91 74.00 -18.09 30.66 3 Vertical 67 2.48 2441MHz Pass PK 2.441G 82.87 Inf -Inf 30.96 3 Vertical 67 2.48 2441MHz Pass PK 2.4858G 56.79 74.00 -17.21 31.12 3 Vertical 67 2.48	-
2441MHz Pass AV 2.4946G 43.61 54.00 -10.39 31.15 3 Vertical 67 2.48 2441MHz Pass PK 2.357G 55.91 74.00 -18.09 30.66 3 Vertical 67 2.48 2441MHz Pass PK 2.441G 82.87 Inf -Inf 30.96 3 Vertical 67 2.48 2441MHz Pass PK 2.4858G 56.79 74.00 -17.21 31.12 3 Vertical 67 2.48	-
2441MHz Pass PK 2.357G 55.91 74.00 -18.09 30.66 3 Vertical 67 2.48 2441MHz Pass PK 2.441G 82.87 Inf -Inf 30.96 3 Vertical 67 2.48 2441MHz Pass PK 2.4858G 56.79 74.00 -17.21 31.12 3 Vertical 67 2.48	-
2441MHz Pass PK 2.441G 82.87 Inf -Inf 30.96 3 Vertical 67 2.48 2441MHz Pass PK 2.4858G 56.79 74.00 -17.21 31.12 3 Vertical 67 2.48	-
2441MHz Pass PK 2.4858G 56.79 74.00 -17.21 31.12 3 Vertical 67 2.48	-
	-
2441MHz Pass AV 2.3834G 42.66 54.00 -11.34 30.75 3 Horizontal 142 1.27	-
	-
2441MHz Pass AV 2.441G 87.92 Inf -Inf 30.96 3 Horizontal 142 1.27	-
2441MHz Pass AV 2.4986G 43.43 54.00 -10.57 31.17 3 Horizontal 142 1.27	-
2441MHz Pass PK 2.3458G 55.93 74.00 -18.07 30.62 3 Horizontal 142 1.27	-
2441MHz Pass PK 2.441G 88.98 Inf -Inf 30.96 3 Horizontal 142 1.27	-
2441MHz Pass PK 2.4882G 56.23 74.00 -17.77 31.13 3 Horizontal 142 1.27	-
2441MHz Pass AV 4.88352G 29.53 54.00 -24.47 2.28 3 Vertical 148 1.50	-
2441MHz Pass PK 4.88676G 43.34 74.00 -30.66 2.29 3 Vertical 148 1.50	-
2441MHz Pass AV 4.8836G 29.66 54.00 -24.34 2.28 3 Horizontal 295 1.50	-
2441MHz Pass PK 4.8857G 43.05 74.00 -30.95 2.28 3 Horizontal 295 1.50	-
2480MHz Pass AV 2.376G 42.76 54.00 -11.24 30.72 3 Vertical 70 2.49	-
2480MHz Pass AV 2.48G 84.37 Inf -Inf 31.10 3 Vertical 70 2.49	-
2480MHz Pass AV 2.4848G 43.47 54.00 -10.53 31.12 3 Vertical 70 2.49	-
2480MHz Pass PK 2.3488G 56.01 74.00 -17.99 30.63 3 Vertical 70 2.49	-
2480MHz Pass PK 2.48G 85.37 Inf -Inf 31.10 3 Vertical 70 2.49	-
2480MHz Pass PK 2.4856G 57.16 74.00 -16.84 31.12 3 Vertical 70 2.49	-
2480MHz Pass AV 2.3728G 42.62 54.00 -11.38 30.71 3 Horizontal 138 1.09	-
2480MHz Pass AV 2.48G 87.92 Inf -Inf 31.10 3 Horizontal 138 1.09	-
2480MHz Pass AV 2.4928G 43.53 54.00 -10.47 31.14 3 Horizontal 138 1.09	-
2480MHz Pass PK 2.3368G 55.56 74.00 -18.44 30.59 3 Horizontal 138 1.09	-
2480MHz Pass PK 2.48G 89.78 Inf -Inf 31.10 3 Horizontal 138 1.09	-
2480MHz Pass PK 2.4928G 55.86 74.00 -18.14 31.14 3 Horizontal 138 1.09	-
2480MHz Pass AV 4.96274G 29.40 54.00 -24.60 2.48 3 Vertical 150 1.50	-
2480MHz Pass PK 4.964G 42.87 74.00 -31.13 2.48 3 Vertical 150 1.50	
2480MHz Pass AV 4.9637G 29.43 54.00 -24.57 2.48 3 Horizontal 272 1.50	-



RSE TX above 1GHz Result

Appendix G.2

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
2480MHz	Pass	PK	4.96118G	42.79	74.00	-31.21	2.47	3	Horizontal	272	1.50	-

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