

FCC Test Report

Equipment : Secured Wireless Access Point
Brand Name : Fortinet Inc.
Model No. : FORTIAP-U24JEVxxxxxx, FAP-U24JEVxxxxxx
FCC ID : TVE-121C01
Standard : 47 CFR FCC Part 15.247
Frequency : 2400 MHz – 2483.5 MHz
Function : Point-to-multipoint; Point-to-point
Applicant : Fortinet Inc.
899 Kifer Road, Sunnyvale, CA 94086, USA
Manufacturer : Universal Global Scientific Industrial Co., Ltd.
141, Lane 351, Sec. 1, Taiping Road, Tsaotuen,
Nantou 54261, Taiwan

The product sample received on Apr. 07, 2017 and completely tested on Oct. 31, 2017. We, SPORTON, 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 test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONALINC., the test report shall not be reproduced except in full.


Phoenix Chen / Assistant Manager





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Summary of Test Result

Conformance Test Specifications				
Report Clause	Ref. Std. Clause	Description	Limit	Result
1.1.2	15.203	Antenna Requirement	FCC 15.203	Complied
3.1	15.207	AC Power-line Conducted Emissions	FCC 15.207	Complied
3.2	15.247(a)	DTS Bandwidth	≥500kHz	Complied
3.3	15.247(b)	Maximum Conducted Output Power	Power [dBm]:30	Complied
3.4	15.247(e)	Power Spectral Density	PSD [dBm/3kHz]:8	Complied
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	Non-Restricted Bands: >30 dBc	Complied
3.6	15.247(d)	Emissions in Restricted Frequency Bands	Restricted Bands: FCC 15.209	Complied

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Bluetooth Mode	Ch. Frequency (MHz)	Channel Number
2400-2483.5	LE	2402-2480	0-39 [40]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	BT-LE(1Mbps)	1.0	1TX

Note:

- ♦ Bluetooth LE uses a GFSK (1Mbps) modulation for DSSS.
- ♦ BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector
1	1	Aristotle	RFA-25-AP375-70B-72	PIFA Antenna	I-PEX
2	2	Aristotle	RFA-25-AP513B-70B-56	PIFA Antenna	I-PEX
3	1	Aristotle	RFA-BT-AP375-70-105	PIFA Antenna	I-PEX

Ant.	Gain (dBi)		
	2.4G	5G	BT
1	4	4	-
2	1.41	3.77	-
3	-	-	3.2

Note 1: The EUT has three antennas.

For 2.4GHz function:

For IEEE 802.11 b/g/n mode (2TX/2RX)

Ant. 1 (port 1) and Ant. 2 (port 2) could transmit/receive simultaneously.

For 5GHz function:

For IEEE 802.11 a/n/ac mode (2TX/2RX)

Ant. 1 (port 1) and Ant. 2 (port 2) could transmit/receive simultaneously.

For BT function:

For BT-LE/BR/EDR (1TX/1RX)

Only Ant. 3 (port 1) can be used as transmitting/receiving antenna.



1.1.3 EUT Information

Identify EUT	
RF chip	BCM47452
Operational Condition	
EUT Power Type	From AC Adapter
Type of EUT	
<input checked="" type="checkbox"/>	Stand-alone
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device)
	Combined Equipment - Brand Name / Model No.: ...
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems)
	Host System - Brand Name / Model No.: ...
<input type="checkbox"/>	Other:

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
BT-LE(1Mbps)	0.628	2.02	392.5u	3k

1.1.5 Table for Multiple Listing

The model names in the following table are all refer to the identical product.

Model Name	Description
FORTIAP-U24JEVxxxxxx	Where "x" can be used as "A-Z", or "-0-9", or "-", or blank for software changes or marking purposes only.
FAP-U24JEVxxxxxx	

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
- ◆ ANSI C63.10-2013
- ◆ KDB 558074 D01 v04

1.3 Testing Location Information

Testing Location			
<input checked="" type="checkbox"/>	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.			
<input type="checkbox"/>	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
RF Conducted	TH06-HY	Gary	21.5°C / 64%	31/Oct/2017
Radiated	03CH09-HY	Jeff	21.5°C / 59%	31/Oct/2017
AC Conduction	CO04-HY	Eric	20.9°C / 58%	12/Oct/2017

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 (30MHz ~ 1,000MHz)	2.1 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	2.6 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	2.9 dB	Confidence levels of 95%
Conducted Emission	1.3 dB	Confidence levels of 95%



2 Test Configuration of EUT

2.1 Test Condition

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

2.2 Test Channel Mode



Test Software	DoS
---------------	-----

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	09
2440MHz	09
2480MHz	09

2.3 The Worst Case Measurement Configuration

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

The Worst Case Mode for Following Conformance Tests	
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density 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	CTX	
Orthogonal Planes of EUT	Y Plane	Z Plane
		
Worst Planes of EUT		V

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Operating Mode	Normal Link
1	Bluetooth+WLAN 2.4GHz+WLAN 5GHz
Refer to Sporton Test Report No.: FA732918 for Co-location RF Exposure Evaluation.	



2.4 Support Equipment

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 Source	G.W	APS-9102	-

Support Equipment – Radiated Emission				
No.	Equipment	Brand Name	Model Name	FCC ID
1	AC adapter	UMEC	UP0451H-54PP	-

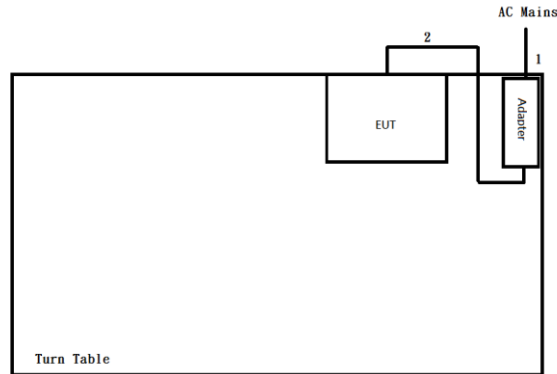
Note: Support equipment No.1 was provided by customer.

Support Equipment – AC Conduction				
No.	Equipment	Brand Name	Model Name	FCC ID
1	AC adapter	UMEC	UP0451H-54PP	-

Note: Support equipment No.1 was provided by customer.

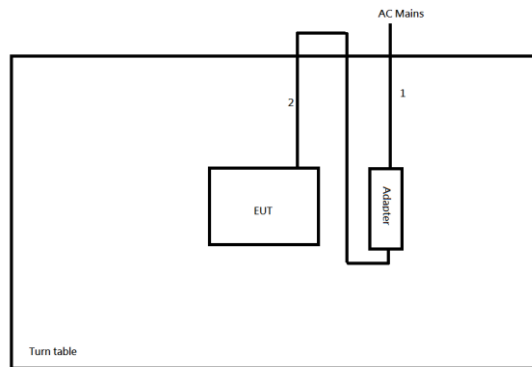
2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length(m)	Remark
1	AC power line	No	1.7	-
2	DC power line	No	1.2	-

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length(m)	Remark
1	AC power line	No	1.7	-
2	DC power line	No	1.2	-

3 Transmitter Test Result

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

Note 1: * Decreases with the logarithm of the frequency.

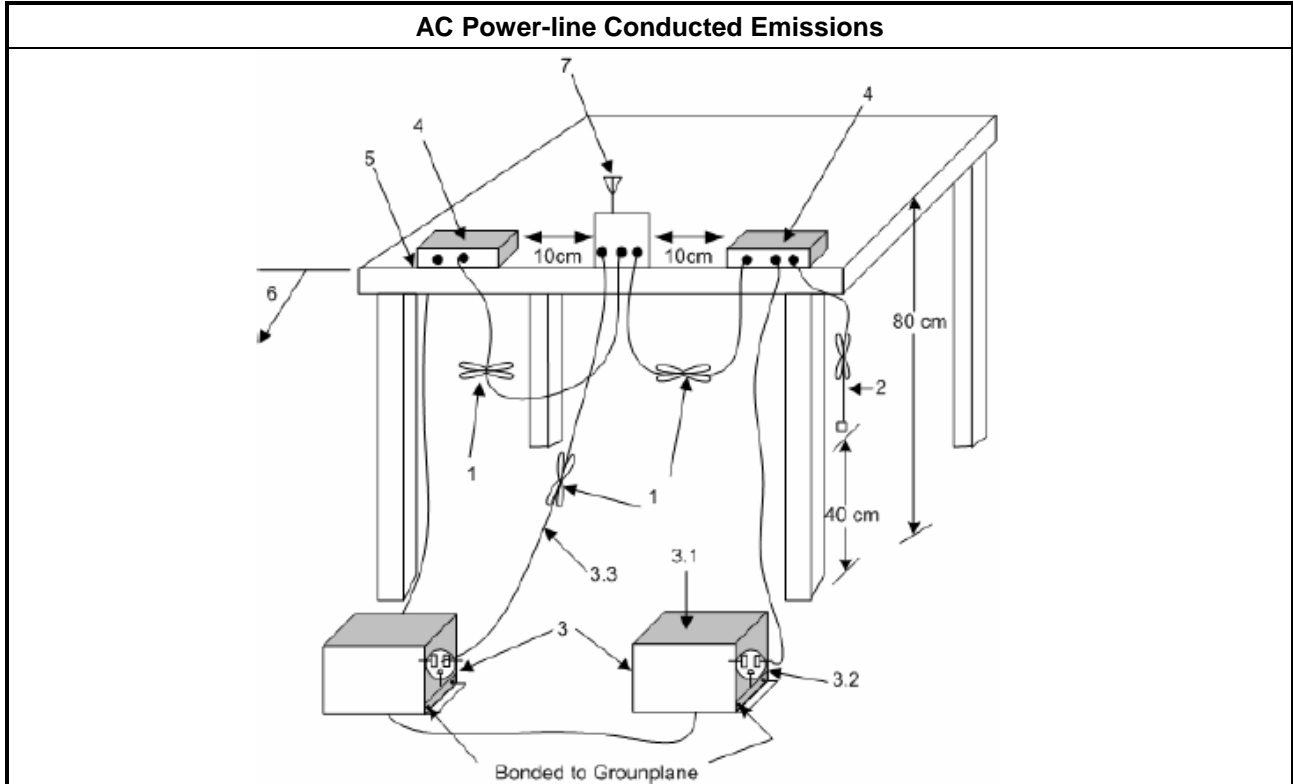
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

Test Method
<ul style="list-style-type: none"> 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

3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit
Systems using digital modulation techniques:
<ul style="list-style-type: none"> ▪ 6 dB bandwidth \geq 500 kHz.

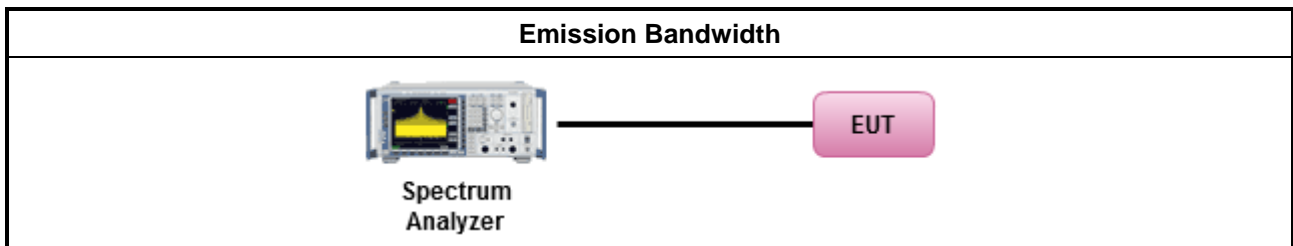
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> ▪ For the emission bandwidth shall be measured using one of the options below: 	
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.
<input type="checkbox"/>	Refer as KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.
<input type="checkbox"/>	Refer as RSS-Gen, clause 6.6 for occupied bandwidth testing.

3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
	<ul style="list-style-type: none"> ▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
	<ul style="list-style-type: none"> ▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	<ul style="list-style-type: none"> ▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> ▪ Smart antenna system (SAS):
	<ul style="list-style-type: none"> - Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> - Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> - Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dBm
e.i.r.p. Power Limit:	
	<ul style="list-style-type: none"> ▪ 2400-2483.5 MHz Band
	<ul style="list-style-type: none"> ▪ Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)
	<ul style="list-style-type: none"> ▪ Point-to-point systems (P2P): $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])$ dBm
	<ul style="list-style-type: none"> ▪ Smart antenna system (SAS)
	<ul style="list-style-type: none"> - Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	<ul style="list-style-type: none"> - Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	<ul style="list-style-type: none"> - Aggregate power on all beams: $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX} + 8])$ dBm
<p>P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.</p>	

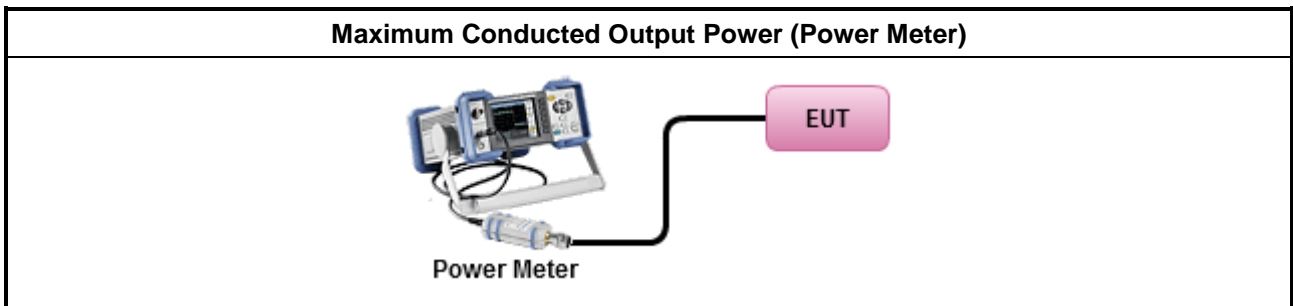
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> ▪ Maximum Peak Conducted Output Power 	
<input type="checkbox"/>	Refer as KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).
<input type="checkbox"/>	Refer as KDB 558074, clause 9.1.2 Option 2 (integrated band power method)
<input type="checkbox"/>	Refer as KDB 558074, clause 9.1.3 Option 3 (peak power meter for VBW ≥ DTS BW)
<ul style="list-style-type: none"> ▪ Maximum Average Conducted Output Power 	
Duty cycle ≥ 98%	
<input type="checkbox"/>	Refer as KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging).
Duty cycle < 98%	
<input type="checkbox"/>	Refer as KDB 558074, clause 9.2.2.5 Method AVGSA-2 Alt. (slow sweep speed)
RF power meter and average over on/off periods with duty factor or gated trigger	
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 9.2.3.1 Method AVGPM (using an RF average power meter).
<ul style="list-style-type: none"> ▪ For conducted measurement. 	
<ul style="list-style-type: none"> ▪ If the EUT supports multiple transmit chains using options given below: Refer as KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them. 	
<ul style="list-style-type: none"> ▪ If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$ 	

3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

Power Spectral Density Limit
<ul style="list-style-type: none"> ▪ Power Spectral Density (PSD) ≤ 8 dBm/3kHz

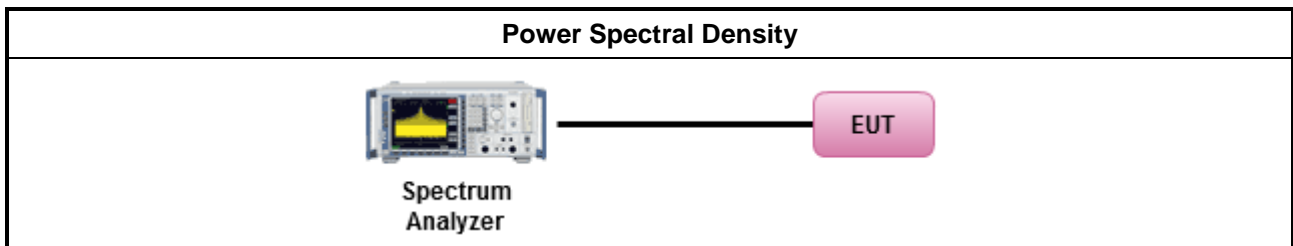
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method	
	<ul style="list-style-type: none"> ▪ Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz; Detector=peak).
	<ul style="list-style-type: none"> ▪ For conducted measurement.
	<ul style="list-style-type: none"> ▪ If The EUT supports multiple transmit chains using options given below:
	<ul style="list-style-type: none"> ▪ Measure and sum the spectra across the outputs. Refer as KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.

3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

3.5 Emissions in Non-restricted Frequency Bands

3.5.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit	
RF output power procedure	Limit (dB)
Peak output power procedure	20
Average output power procedure	30

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.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

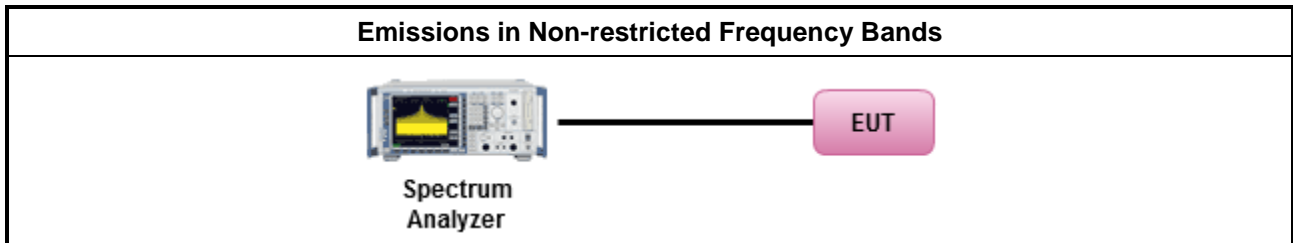
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method
<ul style="list-style-type: none"> Refer as KDB 558074, clause 11 for unwanted emissions into non-restricted bands.

3.5.4 Test Setup



3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

3.6 Emissions in Restricted Frequency Bands

3.6.1 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 below 30 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.

3.6.2 Measuring Instruments

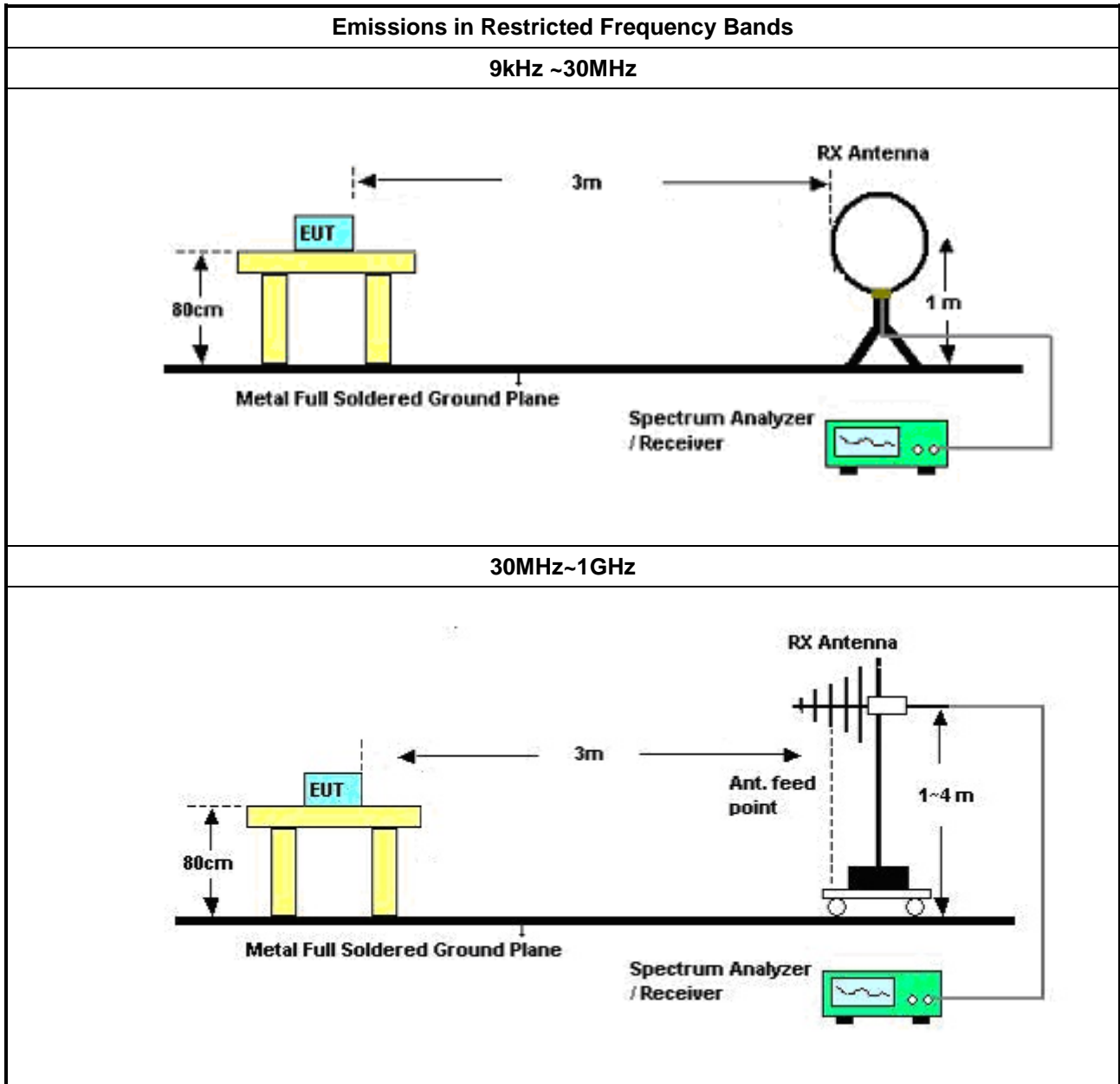
Refer a test equipment and calibration data table in this test report.

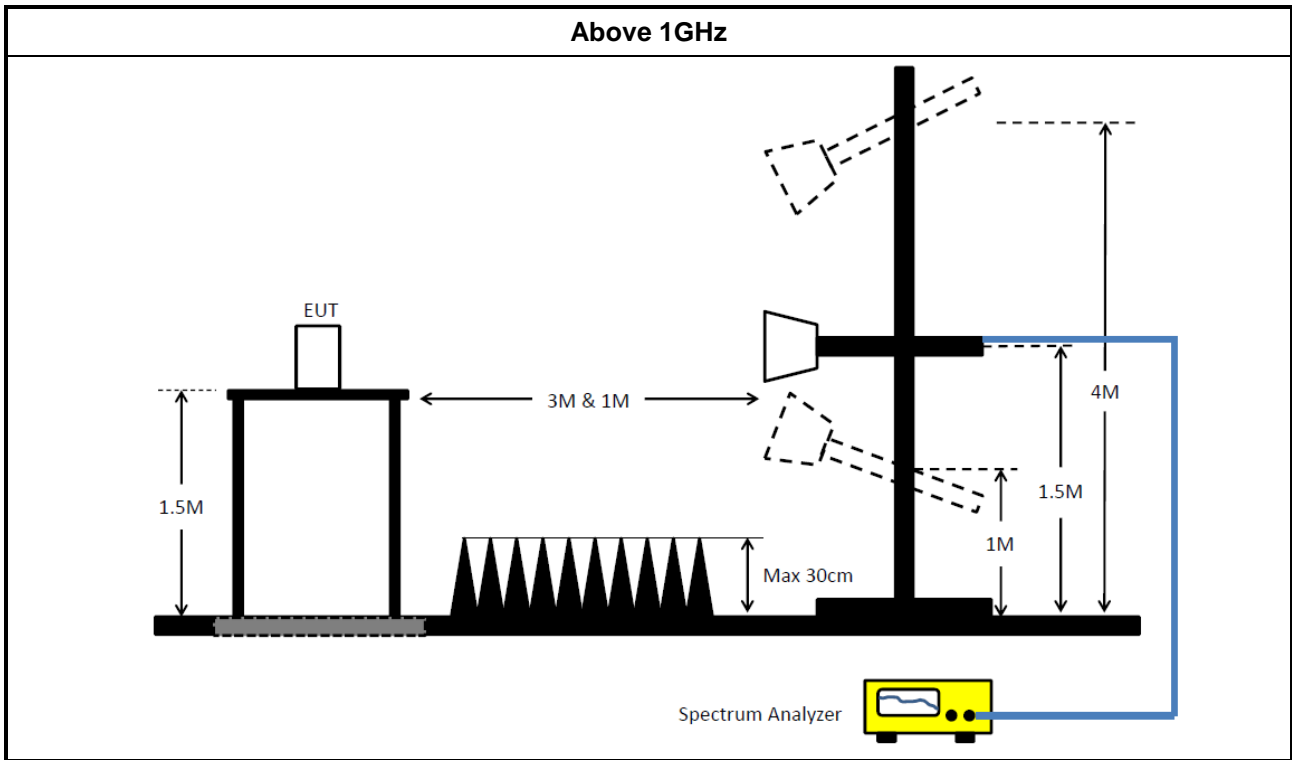


3.6.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> ▪ The average emission levels shall be measured in [duty cycle \geq 98 or duty factor]. 	
<ul style="list-style-type: none"> ▪ Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band. 	
<ul style="list-style-type: none"> ▪ For the transmitter unwanted emissions shall be measured using following options below: 	
	<ul style="list-style-type: none"> ▪ Refer as KDB 558074, clause 12 for unwanted emissions into restricted bands.
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 12.2.5.3 (ANSI C63.10, clause 4.1.4.2.3), Reduced VBW \geq 1/T.
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 12.2.4 measurement procedure peak limit.
<ul style="list-style-type: none"> ▪ For the transmitter band-edge emissions shall be measured using following options below: 	
	<ul style="list-style-type: none"> ▪ Refer as KDB 558074 clause 13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.
	<ul style="list-style-type: none"> ▪ Refer as KDB 558074, clause 13.2 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.
	<ul style="list-style-type: none"> ▪ Refer as KDB 558074, clause 13.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
<ul style="list-style-type: none"> ▪ For conducted and cabinet radiation measurement, refer as KDB 558074, clause 12.2.2. 	
	<ul style="list-style-type: none"> ▪ For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB
	<ul style="list-style-type: none"> ▪ For KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.

3.6.4 Test Setup





3.6.5 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.

3.6.6 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F



4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMC Receiver	R&S	ESR3	102052	9KHz ~ 3.6GHz	29/Apr/2017	28/Apr/2018
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	15/Nov/2017	14/Nov/2018
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz ~ 30MHz	24/Oct/2016	23/Oct/2017
AC POWER	APC	AFC-11005G	F310050055	47Hz~63Hz 5~300V	NCR	NCR
Impuls Begrenzer Pulse Limiter	R&S	ESH3-Z2	100921	10 kHz ~ 30 MHz	21/Oct/2016	20/Oct/2017

NCR : Non-Calibration Require

Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSP40	100305	9KHz - 40GHz	30/Dec/2016	29/Dec/2017
3m Semi Anechoic	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz-1GHz	20/Oct/2017	19/Oct/2018
3m Semi Anechoic	SIDT FRANKONIA	SAC-3M	03CH02-HY	1GHz ~ 18GHz	12/Dec/2016	11/Dec/2017
Amplifier	Agilent	8447D	2944A11149	100KHz-1.3GHz	29/Jun/2017	28/Jun/2018
Amplifier	Ketsight	8449B	3008A02602	1GHz-26.5GHz	19/Sep/2017	18/Sep/2018
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA9120D 01531	1GHz-18GHz	11/May/2017	10/May/2018
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	18GHz-40GHz	06/Feb/2017	05/Feb/2018
Bilog Antenna	SCHAFFNER	CBL6112B	2723	30MHz-1GHz	09/Sep/2017	08/Sep/2018
Loop Antenna	TESEQ	HLA 6120	31244	9KHz-30MHz	02/Mar/2017	01/Mar/2018
RF Cable-high	SUHNER	SUCOFLEX104	MY34918/4	1GHz ~ 40GHz	26/Jan/2017	25/Jan/2018
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz ~ 1GHz	26/Jan/2017	25/Jan/2018
Receiver	R&S	ESU3	102052	9kHz ~ 3.6GHz	29/Apr/2017	28/Apr/2018



Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	10Hz~40GHz	30/Dec/2016	29/Dec/2017
Power Sensor	Anritsu	MA2411B	1027452	300MHz ~ 40GHz	24/Feb/2017	23/Feb/2018
Power Meter	Anritsu	ML2495A	1124009	300MHz ~ 40GHz	24/Feb/2017	23/Feb/2018
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	27/Jul/2017	26/Jul/2018
RF Cable-0.2m	HUBER+SUHNER	SUCOFLEX_104	MY677/3	30MHz ~ 26.5GHz	25/Aug/2017	24/Aug/2018
RF Cable-0.2m	HUBER+SUHNER	SUCOFLEX_104	MY678/3	30MHz ~ 26.5GHz	25/Aug/2017	24/Aug/2018
RF Cable-0.5m	HUBER+SUHNER	SUCOFLEX_104	MY10717/4	30MHz ~ 26.5GHz	25/Aug/2017	24/Aug/2018



AC Power-line Conducted Emissions Result																																																																																																																																	
Operating Mode	1	Power Phase	Neutral																																																																																																																														
Operating Function	Adapter mode																																																																																																																																
<div style="display: flex; justify-content: space-between;"> Level (dBuV) Date: 2017-10-12 </div> <p>The graph displays the AC power-line conducted emissions. The y-axis represents the level in dBuV, ranging from 0 to 80. The x-axis represents the frequency in MHz, ranging from 0.150.2 to 30. Two red lines indicate the applicable limits: NCC/IC/FCC-B (upper) and NCC/IC/FCC-B-AV (lower). A blue line shows the measured emission levels, with several peaks marked by vertical lines and numbered 1 through 12. The highest peak is at 1.77162 MHz, reaching 26.21 dBuV.</p>																																																																																																																																	
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Freq</th> <th>Level</th> <th>Over Limit</th> <th>Limit Line</th> <th>Read Level</th> <th>LISN Factor</th> <th>Cable Loss</th> <th>Remark</th> </tr> <tr> <th></th> <th>MHz</th> <th>dBuV</th> <th>dB</th> <th>dBuV</th> <th>dBuV</th> <th>dB</th> <th>dB</th> <th></th> </tr> </thead> <tbody> <tr><td>1</td><td>0.15080</td><td>28.26</td><td>-27.70</td><td>55.96</td><td>18.66</td><td>9.60</td><td>0.00</td><td>Average</td></tr> <tr><td>2</td><td>0.15080</td><td>41.75</td><td>-24.21</td><td>65.96</td><td>32.15</td><td>9.60</td><td>0.00</td><td>QP</td></tr> <tr><td>3</td><td>0.23784</td><td>22.48</td><td>-29.69</td><td>52.17</td><td>12.82</td><td>9.66</td><td>0.00</td><td>Average</td></tr> <tr><td>4</td><td>0.23784</td><td>29.90</td><td>-32.27</td><td>62.17</td><td>20.24</td><td>9.66</td><td>0.00</td><td>QP</td></tr> <tr><td>5</td><td>0.39344</td><td>27.45</td><td>-20.54</td><td>47.99</td><td>17.82</td><td>9.63</td><td>0.00</td><td>Average</td></tr> <tr><td>6</td><td>0.39344</td><td>38.01</td><td>-19.98</td><td>57.99</td><td>28.38</td><td>9.63</td><td>0.00</td><td>QP</td></tr> <tr style="border: 2px solid blue;"><td>7 MAX</td><td>1.77162</td><td>26.21</td><td>-19.79</td><td>46.00</td><td>16.57</td><td>9.64</td><td>0.00</td><td>Average</td></tr> <tr><td>8</td><td>1.77162</td><td>30.53</td><td>-25.47</td><td>56.00</td><td>20.89</td><td>9.64</td><td>0.00</td><td>QP</td></tr> <tr><td>9</td><td>2.22493</td><td>19.31</td><td>-26.69</td><td>46.00</td><td>9.65</td><td>9.66</td><td>0.00</td><td>Average</td></tr> <tr><td>10</td><td>2.22493</td><td>33.06</td><td>-22.94</td><td>56.00</td><td>23.40</td><td>9.66</td><td>0.00</td><td>QP</td></tr> <tr><td>11</td><td>4.13558</td><td>18.80</td><td>-27.20</td><td>46.00</td><td>9.09</td><td>9.71</td><td>0.00</td><td>Average</td></tr> <tr><td>12</td><td>4.13558</td><td>26.22</td><td>-29.78</td><td>56.00</td><td>16.51</td><td>9.71</td><td>0.00</td><td>QP</td></tr> </tbody> </table>					Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark		MHz	dBuV	dB	dBuV	dBuV	dB	dB		1	0.15080	28.26	-27.70	55.96	18.66	9.60	0.00	Average	2	0.15080	41.75	-24.21	65.96	32.15	9.60	0.00	QP	3	0.23784	22.48	-29.69	52.17	12.82	9.66	0.00	Average	4	0.23784	29.90	-32.27	62.17	20.24	9.66	0.00	QP	5	0.39344	27.45	-20.54	47.99	17.82	9.63	0.00	Average	6	0.39344	38.01	-19.98	57.99	28.38	9.63	0.00	QP	7 MAX	1.77162	26.21	-19.79	46.00	16.57	9.64	0.00	Average	8	1.77162	30.53	-25.47	56.00	20.89	9.64	0.00	QP	9	2.22493	19.31	-26.69	46.00	9.65	9.66	0.00	Average	10	2.22493	33.06	-22.94	56.00	23.40	9.66	0.00	QP	11	4.13558	18.80	-27.20	46.00	9.09	9.71	0.00	Average	12	4.13558	26.22	-29.78	56.00	16.51	9.71	0.00	QP
	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark																																																																																																																									
	MHz	dBuV	dB	dBuV	dBuV	dB	dB																																																																																																																										
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<p>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.)</p>																																																																																																																																	



AC Power-line Conducted Emissions Result			
Operating Mode	1	Power Phase	Line
Operating Function	Adapter mode		
<div style="text-align: right;">Date: 2017-10-11</div> <p>The graph displays the AC power-line conducted emissions. The y-axis represents the level in dBuV, ranging from 0 to 80. The x-axis represents the frequency in MHz, ranging from 0.1502 to 30. Two red lines indicate the NCC/IC/FCC-B and NCC/IC/FCC-B-AV limits. A blue line shows the measured emission levels, with several peaks marked by vertical lines and numbered 1 through 12. The highest peak is at 0.38929 MHz, reaching 38.02 dBuV.</p>			
	Freq	Level	Over Limit
	MHz	dBuV	dB
	Line	dBuV	dB
	Read Level	LISN Factor	Cable Loss
	dBuV	dB	dB
	Remark		
1	0.15000	28.00	-28.00
2	0.15000	42.69	-23.31
3	0.18249	24.76	-29.61
4	0.18249	37.22	-27.15
5	0.38929	27.94	-20.14
6 MAX	0.38929	38.02	-20.06
7	0.52376	19.00	-27.00
8	0.52376	24.94	-31.06
9	1.73447	25.28	-20.72
10	1.73447	31.64	-24.36
11	3.66111	20.03	-25.97
12	3.66111	26.46	-29.54
<p>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.)</p>			



Summary

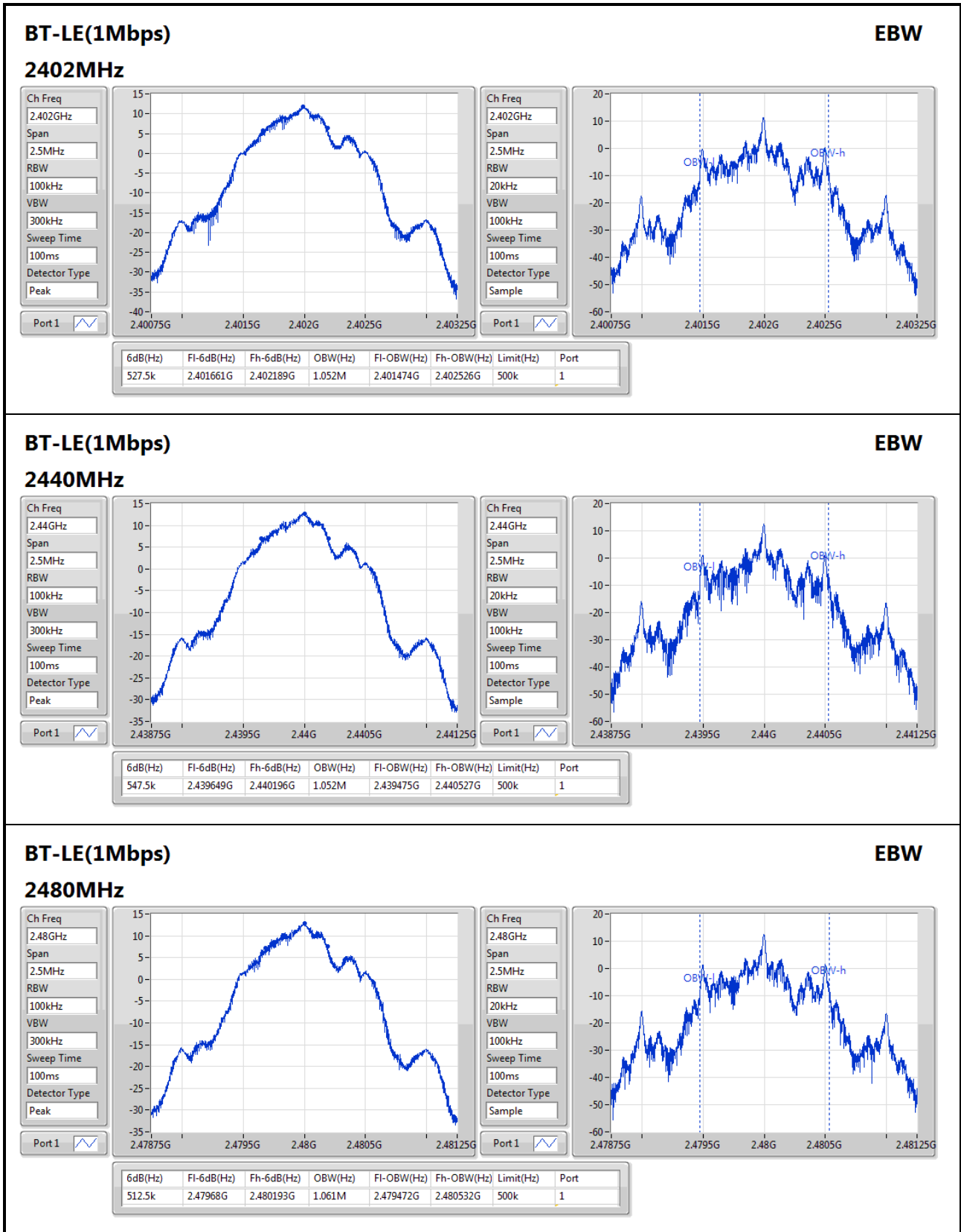
Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-LE(1Mbps)	547.5k	1.061M	1M06F1D	512.5k	1.052M

Max-N dB = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	500k	527.5k	1.052M
2440MHz_TnomVnom	Pass	500k	547.5k	1.052M
2480MHz_TnomVnom	Pass	500k	512.5k	1.061M

Port X-N dB = Port X 6dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;


BT-LE(1Mbps)
EBW

2480MHz

Ch Freq: 2.48GHz
Span: 2.5MHz
RBW: 100kHz
VBW: 300kHz
Sweep Time: 100ms
Detector Type: Peak

Ch Freq: 2.48GHz
Span: 2.5MHz
RBW: 20kHz
VBW: 100kHz
Sweep Time: 100ms
Detector Type: Sample



Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	8.16	0.00655

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	3.20	7.95	30.00
2440MHz_TnomVnom	Pass	3.20	8.16	30.00
2480MHz_TnomVnom	Pass	3.20	8.12	30.00



Summary

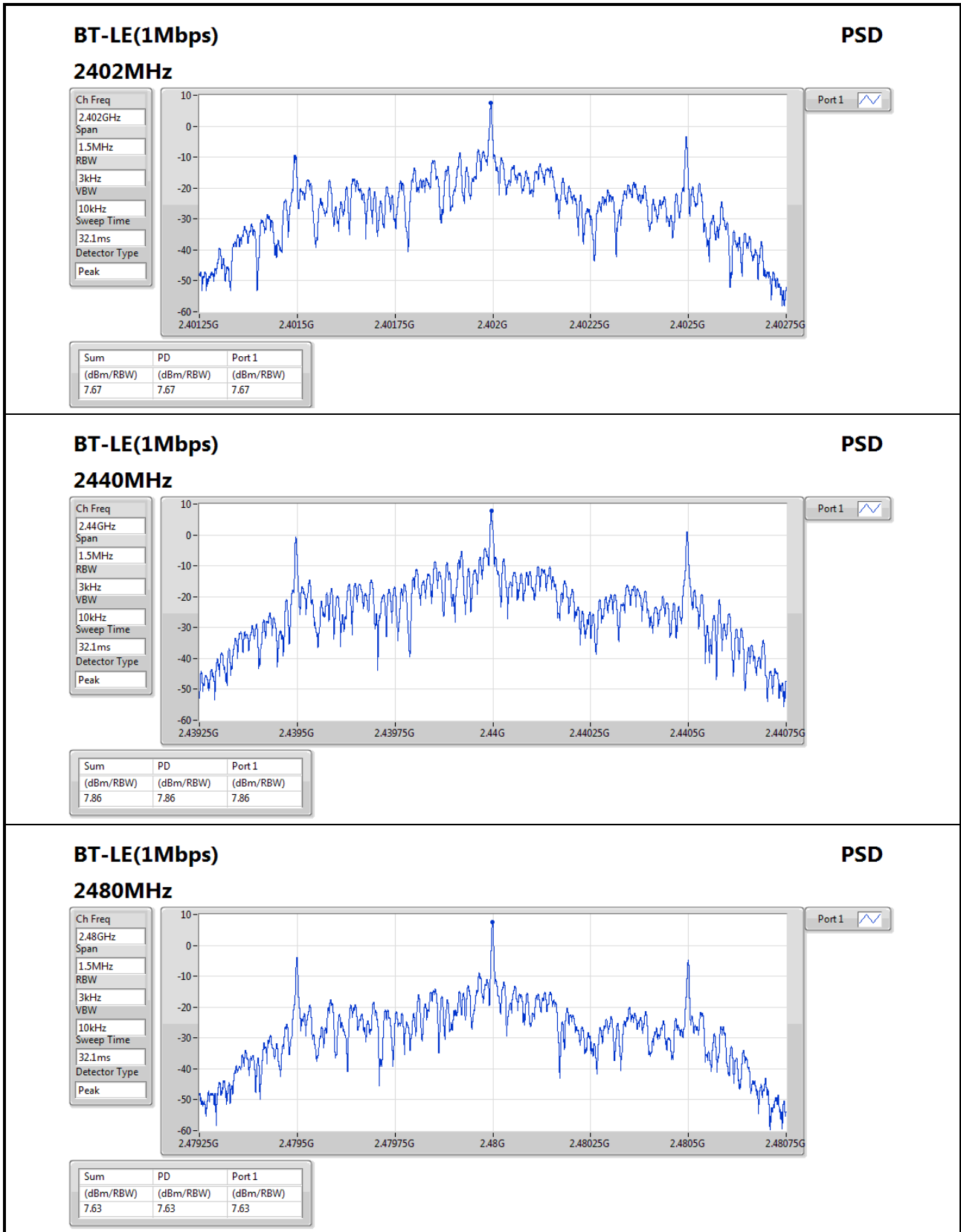
Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	7.86

RBW=3kHz.

Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	3.20	7.67	8.00
2440MHz_TnomVnom	Pass	3.20	7.86	8.00
2480MHz_TnomVnom	Pass	3.20	7.63	8.00

RBW=3kHz.


BT-LE(1Mbps)
PSD

2480MHz

Ch Freq
2.48GHz

Span
1.5MHz

RBW
3kHz

VBW
10kHz

Sweep Time
32.1ms

Detector Type
Peak

Port1

Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
7.63	7.63	7.63

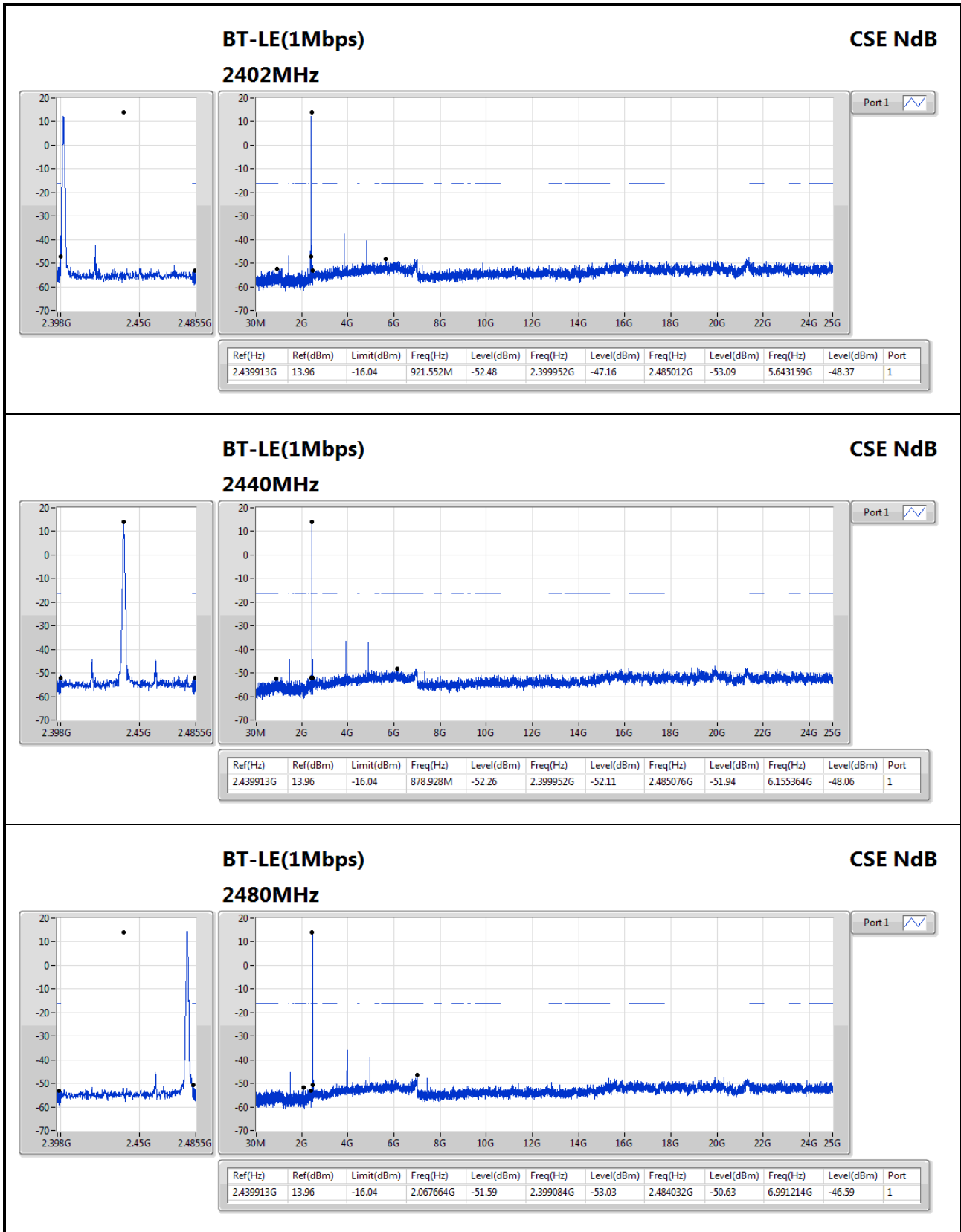


Summary

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-LE(1Mbps)	Pass	2.439913G	13.96	-16.04	2.067664G	-51.59	2.399084G	-53.03	2.484032G	-50.63	6.991214G	-46.59	1

Result

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
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz_TnomVnom	Pass	2.439913G	13.96	-16.04	921.552M	-52.48	2.399952G	-47.16	2.485012G	-53.09	5.643159G	-48.37	1
2440MHz_TnomVnom	Pass	2.439913G	13.96	-16.04	878.928M	-52.26	2.399952G	-52.11	2.485076G	-51.94	6.155364G	-48.06	1
2480MHz_TnomVnom	Pass	2.439913G	13.96	-16.04	2.067664G	-51.59	2.399084G	-53.03	2.484032G	-50.63	6.991214G	-46.59	1





Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	PK	33.88M	35.08	40.00	-4.92	-14.67	3	Vertical	0	1.00	-

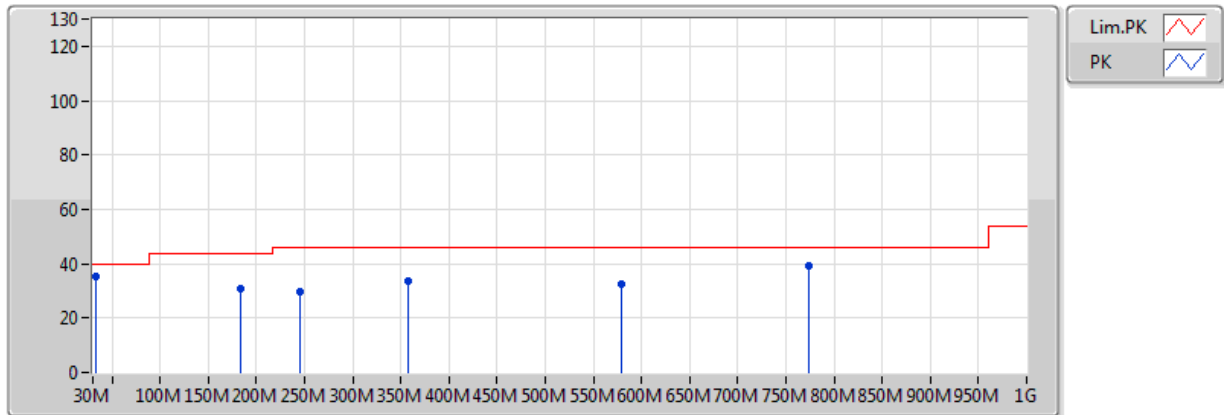


Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	57.16M	25.76	40.00	-14.24	-24.57	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	181.32M	34.38	43.50	-9.12	-20.16	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	284.14M	35.35	46.00	-10.65	-15.49	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	375.32M	32.26	46.00	-13.74	-13.10	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	773.02M	38.79	46.00	-7.21	-5.40	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	953.44M	37.14	46.00	-8.86	-1.74	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	33.88M	35.08	40.00	-4.92	-14.67	3	Vertical	0	1.00	-
2440MHz	Pass	PK	183.26M	30.56	43.50	-12.94	-20.18	3	Vertical	0	1.00	-
2440MHz	Pass	PK	245.34M	29.67	46.00	-16.33	-16.54	3	Vertical	0	1.00	-
2440MHz	Pass	PK	357.86M	33.66	46.00	-12.34	-13.60	3	Vertical	0	1.00	-
2440MHz	Pass	PK	579.02M	32.24	46.00	-13.76	-8.50	3	Vertical	0	1.00	-
2440MHz	Pass	PK	773.02M	39.04	46.00	-6.96	-5.40	3	Vertical	0	1.00	-

BT-LE(1Mbps) 2440MHz_Adapter

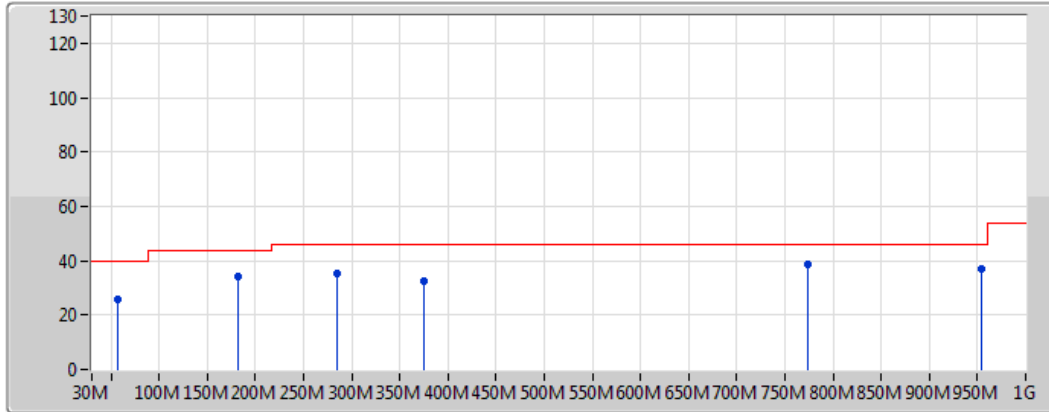
31/10/2017





Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	33.88M	35.08	40.00	-4.92	-14.67	3	Vertical	0	1.00	-	49.75	21.64	0.99	37.30
PK	183.26M	30.56	43.50	-12.94	-20.18	3	Vertical	0	1.00	-	50.74	14.05	2.22	36.45
PK	245.34M	29.67	46.00	-16.33	-16.54	3	Vertical	0	1.00	-	46.21	17.33	2.54	36.41
PK	357.86M	33.66	46.00	-12.34	-13.60	3	Vertical	0	1.00	-	47.26	19.79	3.14	36.54
PK	579.02M	32.24	46.00	-13.76	-8.50	3	Vertical	0	1.00	-	40.74	24.54	4.09	37.14
PK	773.02M	39.04	46.00	-6.96	-5.40	3	Vertical	0	1.00	-	44.44	27.33	4.71	37.44

BT-LE(1Mbps)
2440MHz_Adapter

31/10/2017



Legend:
 Lim.PK 
 PK 

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	57.16M	25.76	40.00	-14.24	-24.57	3	Horizontal	360	1.00	-	50.33	11.30	1.23	37.10
PK	181.32M	34.38	43.50	-9.12	-20.16	3	Horizontal	360	1.00	-	54.54	14.09	2.21	36.45
PK	284.14M	35.35	46.00	-10.65	-15.49	3	Horizontal	360	1.00	-	50.84	18.09	2.85	36.43
PK	375.32M	32.26	46.00	-13.74	-13.10	3	Horizontal	360	1.00	-	45.36	20.25	3.22	36.57
PK	773.02M	38.79	46.00	-7.21	-5.40	3	Horizontal	360	1.00	-	44.19	27.33	4.71	37.44
PK	953.44M	37.14	46.00	-8.86	-1.74	3	Horizontal	360	1.00	-	38.88	30.14	5.44	37.32



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	AV	2.4838G	50.22	54.00	-3.78	33.40	3	Vertical	112	1.15	-



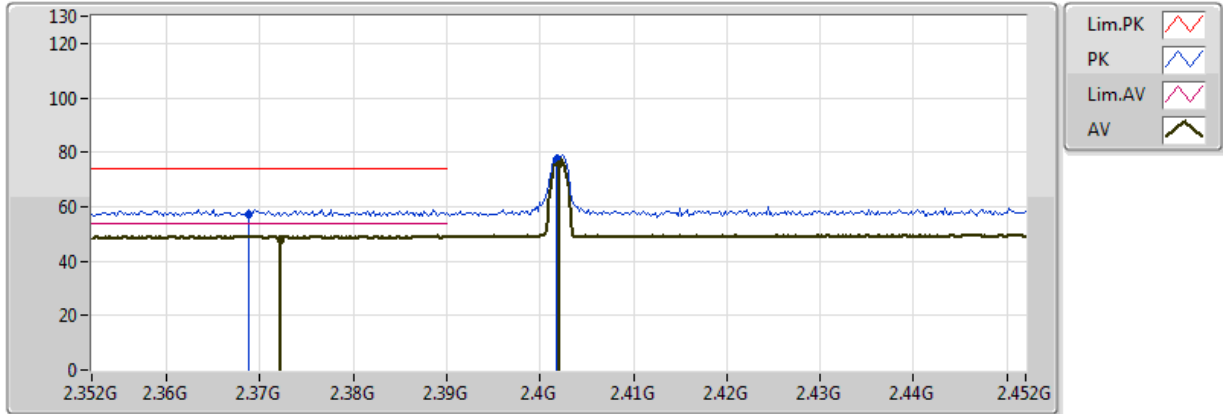
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3698G	47.58	54.00	-6.42	32.97	3	Horizontal	168	1.45	-
2402MHz	Pass	AV	2.402G	101.92	Inf	-Inf	33.09	3	Horizontal	168	1.45	-
2402MHz	Pass	PK	2.3616G	59.33	74.00	-14.67	32.94	3	Horizontal	168	1.45	-
2402MHz	Pass	PK	2.4022G	103.17	Inf	-Inf	33.09	3	Horizontal	168	1.45	-
2402MHz	Pass	AV	2.354G	47.09	54.00	-6.91	32.91	3	Vertical	115	1.00	-
2402MHz	Pass	AV	2.402G	95.96	Inf	-Inf	33.09	3	Vertical	115	1.00	-
2402MHz	Pass	PK	2.3656G	59.78	74.00	-14.22	32.95	3	Vertical	115	1.00	-
2402MHz	Pass	PK	2.4024G	97.15	Inf	-Inf	33.09	3	Vertical	115	1.00	-
2440MHz	Pass	AV	2.3444G	47.07	54.00	-6.93	32.87	3	Horizontal	163	1.10	-
2440MHz	Pass	AV	2.44G	101.08	Inf	-Inf	33.23	3	Horizontal	163	1.10	-
2440MHz	Pass	AV	2.4928G	48.30	54.00	-5.70	33.43	3	Horizontal	163	1.10	-
2440MHz	Pass	PK	2.3784G	59.20	74.00	-14.80	33.00	3	Horizontal	163	1.10	-
2440MHz	Pass	PK	2.4404G	102.34	Inf	-Inf	33.23	3	Horizontal	163	1.10	-
2440MHz	Pass	PK	2.4884G	60.39	74.00	-13.61	33.42	3	Horizontal	163	1.10	-
2440MHz	Pass	AV	2.3408G	47.09	54.00	-6.91	32.86	3	Vertical	106	1.01	-
2440MHz	Pass	AV	2.44G	94.69	Inf	-Inf	33.23	3	Vertical	106	1.01	-
2440MHz	Pass	AV	2.4884G	48.11	54.00	-5.89	33.42	3	Vertical	106	1.01	-
2440MHz	Pass	PK	2.3708G	59.02	74.00	-14.98	32.97	3	Vertical	106	1.01	-
2440MHz	Pass	PK	2.4404G	96.00	Inf	-Inf	33.23	3	Vertical	106	1.01	-
2440MHz	Pass	PK	2.4912G	59.79	74.00	-14.21	33.43	3	Vertical	106	1.01	-
2480MHz	Pass	AV	2.48G	103.33	Inf	-Inf	33.38	3	Horizontal	197	1.09	-
2480MHz	Pass	AV	2.4976G	50.02	54.00	-3.98	33.45	3	Horizontal	197	1.09	-
2480MHz	Pass	PK	2.4798G	104.60	Inf	-Inf	33.38	3	Horizontal	197	1.09	-
2480MHz	Pass	PK	2.4842G	62.58	74.00	-11.42	33.40	3	Horizontal	197	1.09	-
2480MHz	Pass	AV	2.48G	98.18	Inf	-Inf	33.38	3	Vertical	112	1.15	-
2480MHz	Pass	AV	2.4838G	50.22	54.00	-3.78	33.40	3	Vertical	112	1.15	-
2480MHz	Pass	PK	2.4798G	99.45	Inf	-Inf	33.38	3	Vertical	112	1.15	-
2480MHz	Pass	PK	2.4984G	62.13	74.00	-11.87	33.45	3	Vertical	112	1.15	-

BT-LE(1Mbps)

2402MHz_TX

31/10/2017

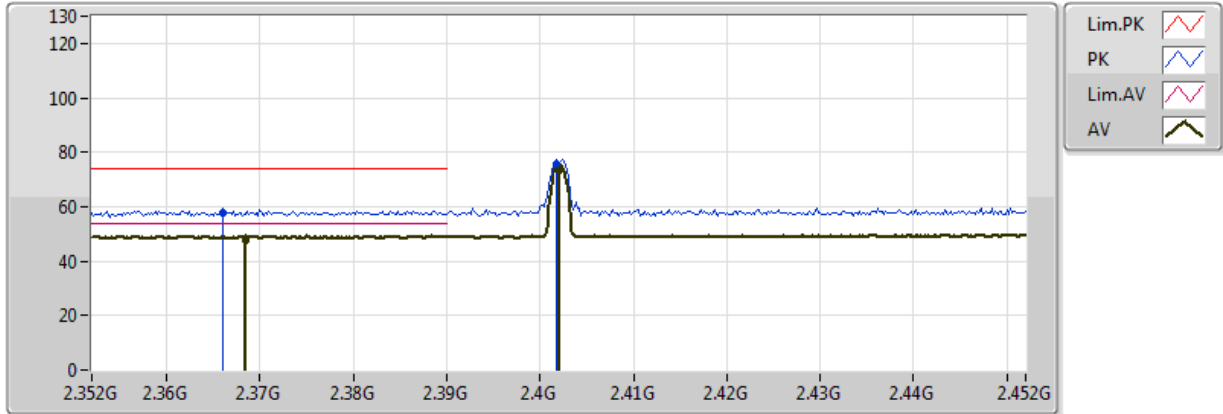


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3722G	47.64	54.00	-6.36	32.65	3	Vertical	108	1.15	-	14.99	26.94	5.71	-
AV	2.402G	75.52	Inf	-Inf	32.77	3	Vertical	108	1.15	-	42.75	27.03	5.74	-
PK	2.3688G	57.25	74.00	-16.75	32.64	3	Vertical	108	1.15	-	24.61	26.93	5.71	-
PK	2.4018G	77.36	Inf	-Inf	32.77	3	Vertical	108	1.15	-	44.59	27.03	5.74	-

BT-LE(1Mbps)

2402MHz_TX

31/10/2017

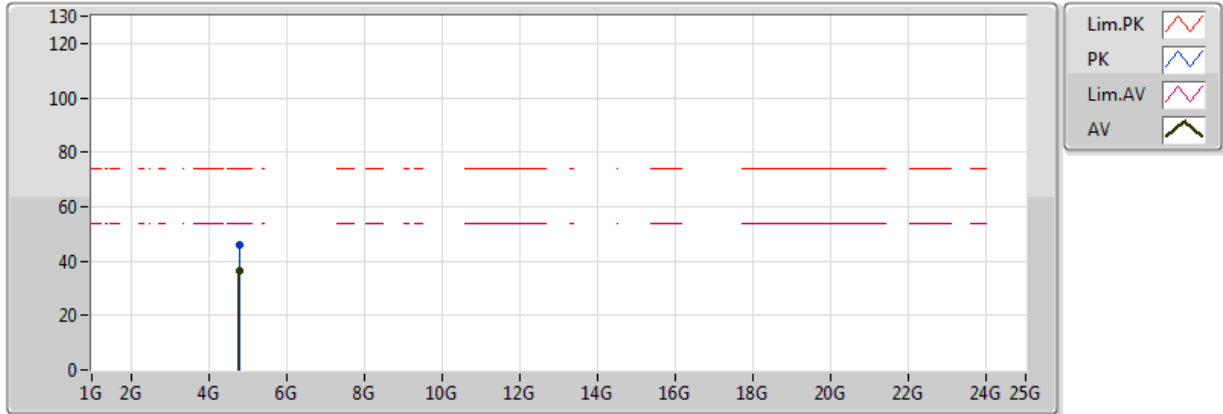


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3684G	47.59	54.00	-6.41	32.64	3	Horizontal	197	1.07	-	14.95	26.93	5.71	-
AV	2.402G	73.56	Inf	-Inf	32.77	3	Horizontal	197	1.07	-	40.79	27.03	5.74	-
PK	2.366G	57.58	74.00	-16.42	32.63	3	Horizontal	197	1.07	-	24.95	26.92	5.70	-
PK	2.4018G	75.58	Inf	-Inf	32.77	3	Horizontal	197	1.07	-	42.81	27.03	5.74	-

BT-LE(1Mbps)

2402MHz_TX

31/10/2017

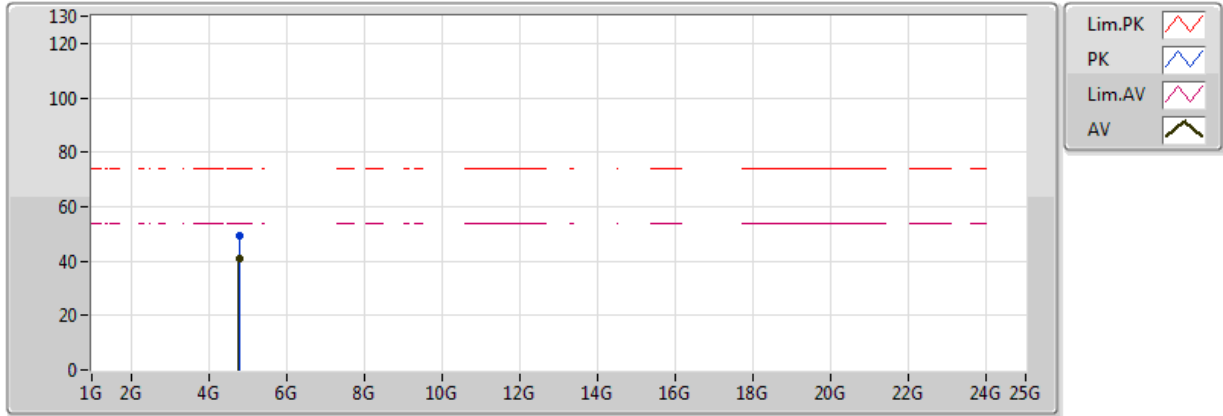


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80388G	36.66	54.00	-17.34	4.10	3	Vertical	0	1.50	-	32.56	31.19	8.08	35.17
PK	4.80458G	46.06	74.00	-27.94	4.10	3	Vertical	0	1.50	-	41.96	31.19	8.09	35.17

BT-LE(1Mbps)

2402MHz_TX

31/10/2017

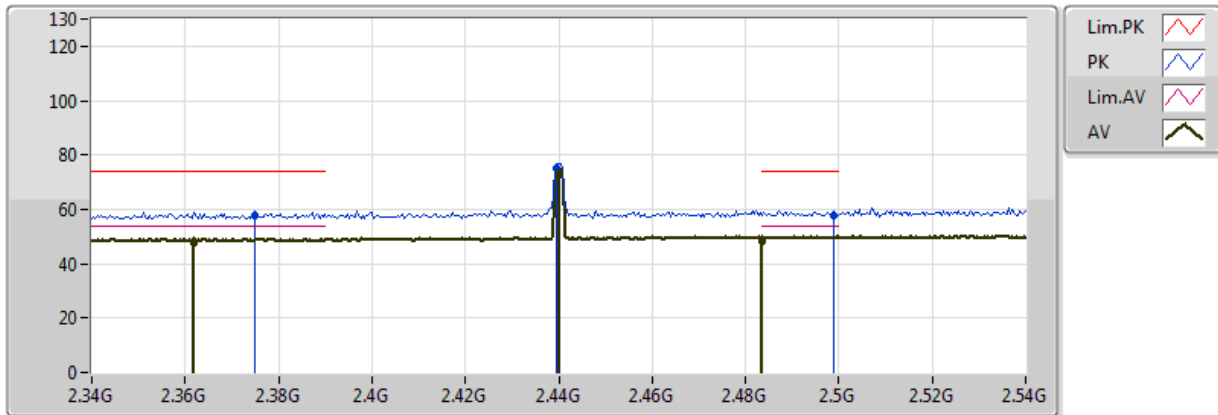


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80394G	40.94	54.00	-13.06	4.10	3	Horizontal	360	1.50	-	36.84	31.19	8.08	35.17
PK	4.80356G	49.04	74.00	-24.96	4.10	3	Horizontal	360	1.50	-	44.94	31.19	8.08	35.17

BT-LE(1Mbps)

2440MHz_TX

31/10/2017

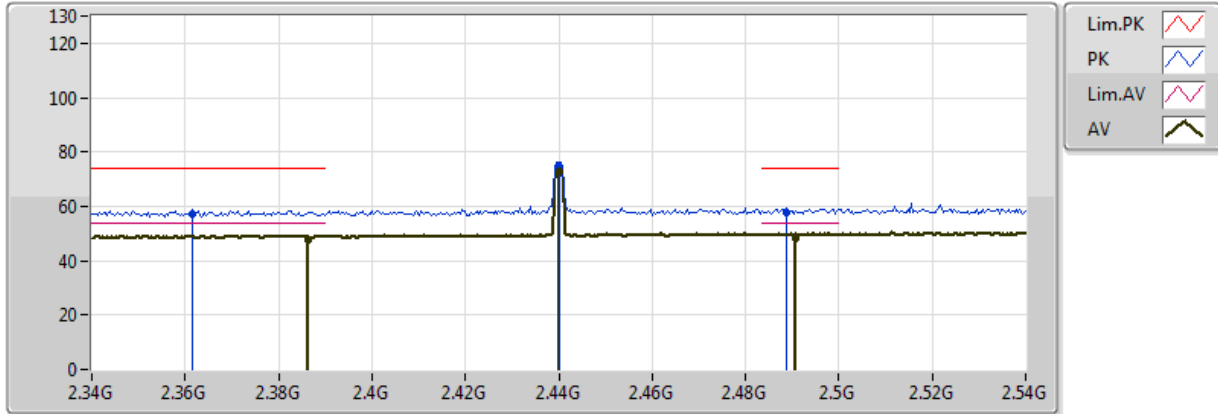


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.362G	47.51	54.00	-6.49	32.61	3	Vertical	96	1.14	-	14.90	26.91	5.70	-
AV	2.44G	73.28	Inf	-Inf	32.92	3	Vertical	96	1.14	-	40.36	27.13	5.79	-
AV	2.4836G	48.45	54.00	-5.55	33.09	3	Vertical	96	1.14	-	15.36	27.25	5.84	-
PK	2.3748G	57.73	74.00	-16.27	32.66	3	Vertical	96	1.14	-	25.07	26.95	5.71	-
PK	2.4396G	75.35	Inf	-Inf	32.92	3	Vertical	96	1.14	-	42.43	27.13	5.79	-
PK	2.4988G	57.74	74.00	-16.26	33.16	3	Vertical	96	1.14	-	24.58	27.30	5.86	-

BT-LE(1Mbps)

2440MHz_TX

31/10/2017



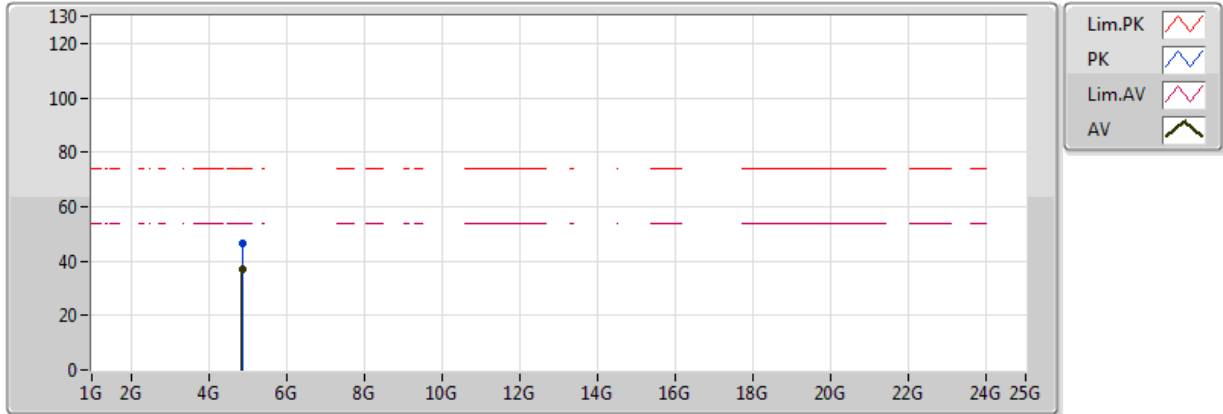
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AV	2.3864G	47.35	54.00	-6.65	32.71	3	Horizontal	165	1.11	-	14.64	26.98	5.73	-
AV	2.44G	72.66	Inf	-Inf	32.92	3	Horizontal	165	1.11	-	39.74	27.13	5.79	-
AV	2.4908G	48.41	54.00	-5.59	33.12	3	Horizontal	165	1.11	-	15.29	27.27	5.85	-
PK	2.3616G	57.27	74.00	-16.73	32.61	3	Horizontal	165	1.11	-	24.66	26.91	5.70	-
PK	2.44G	74.70	Inf	-Inf	32.92	3	Horizontal	165	1.11	-	41.78	27.13	5.79	-
PK	2.4888G	57.83	74.00	-16.17	33.12	3	Horizontal	165	1.11	-	24.71	27.27	5.85	-



BT-LE(1Mbps)

2440MHz_TX

31/10/2017

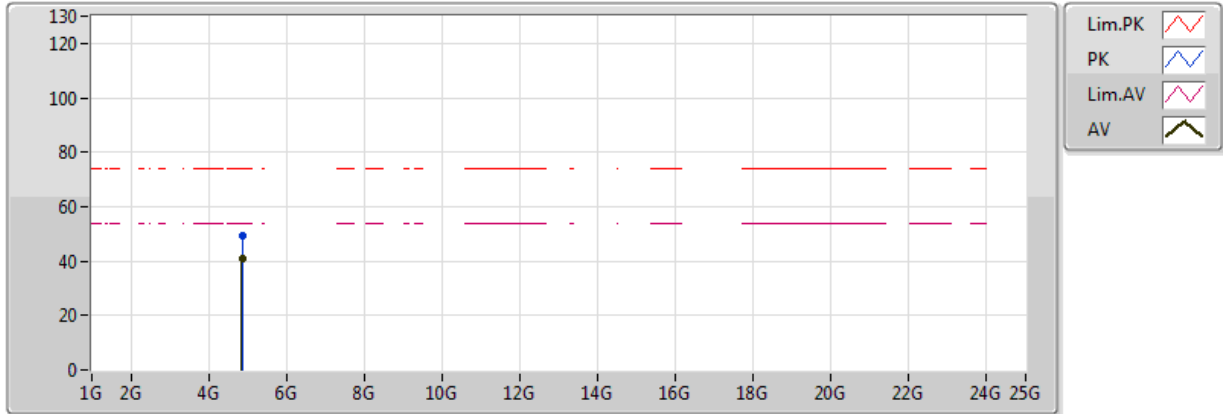


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87996G	36.84	54.00	-17.16	4.29	3	Vertical	360	1.50	-	32.55	31.31	8.18	35.19
PK	4.87958G	46.45	74.00	-27.55	4.29	3	Vertical	360	1.50	-	42.16	31.31	8.18	35.19

BT-LE(1Mbps)

2440MHz_TX

31/10/2017

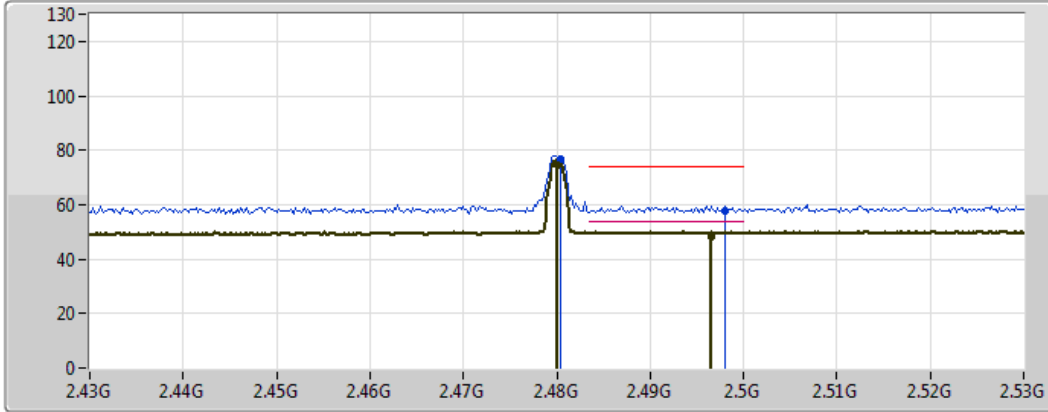


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87986G	40.65	54.00	-13.35	4.29	3	Horizontal	0	1.50	-	36.36	31.31	8.18	35.19
PK	4.87976G	49.16	74.00	-24.84	4.29	3	Horizontal	0	1.50	-	44.87	31.31	8.18	35.19

BT-LE(1Mbps)

2480MHz_TX

31/10/2017

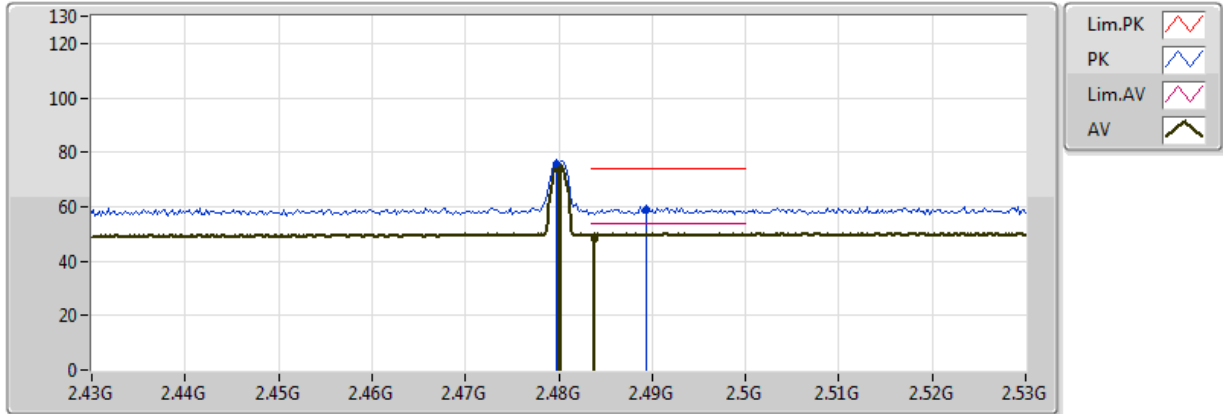


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.4966G	48.42	54.00	-5.58	33.15	3	Vertical	196	1.09	-	15.27	27.29	5.86	-
AV	2.48G	74.64	Inf	-Inf	33.08	3	Vertical	196	1.09	-	41.56	27.24	5.84	-
PK	2.498G	57.85	74.00	-16.15	33.15	3	Vertical	196	1.09	-	24.70	27.29	5.86	-
PK	2.4804G	76.60	Inf	-Inf	33.08	3	Vertical	196	1.09	-	43.52	27.25	5.84	-

BT-LE(1Mbps)

2480MHz_TX

31/10/2017

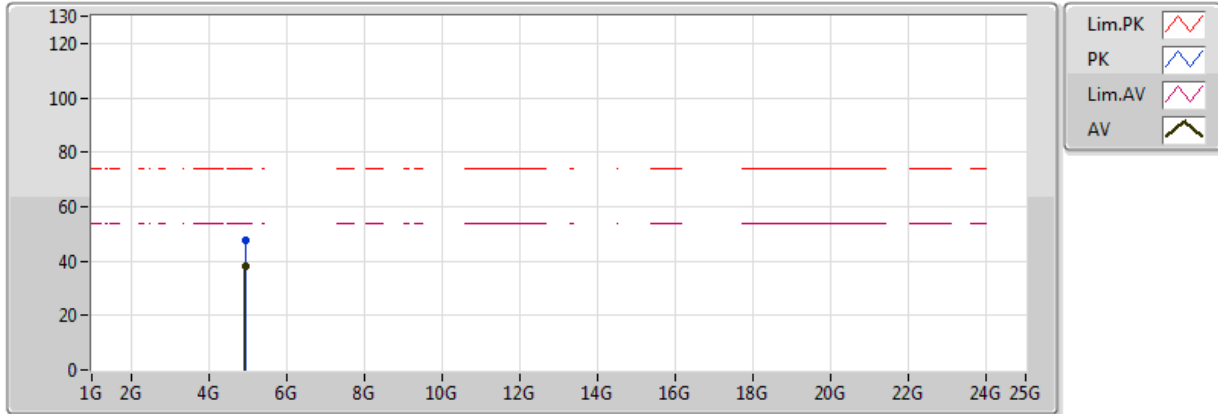


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.4838G	48.26	54.00	-5.74	33.10	3	Horizontal	167	1.07	-	15.16	27.25	5.84	-
AV	2.48G	73.30	Inf	-Inf	33.08	3	Horizontal	167	1.07	-	40.22	27.24	5.84	-
PK	2.4894G	58.75	74.00	-15.25	33.12	3	Horizontal	167	1.07	-	25.63	27.27	5.85	-
PK	2.4798G	75.49	Inf	-Inf	33.08	3	Horizontal	167	1.07	-	42.41	27.24	5.84	-

BT-LE(1Mbps)

2480MHz_TX

31/10/2017

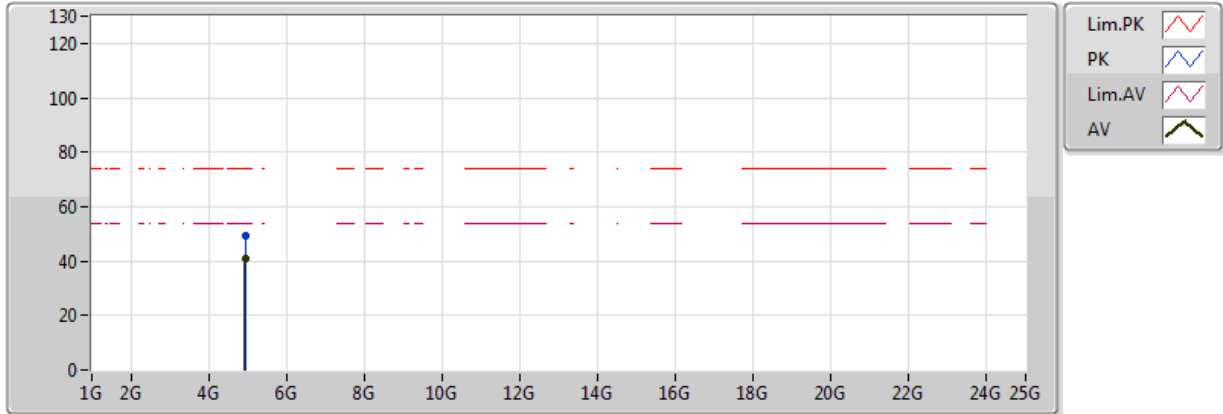


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.9599G	38.38	54.00	-15.62	4.49	3	Vertical	0	1.50	-	33.89	31.44	8.27	35.21
PK	4.96034G	47.69	74.00	-26.31	4.49	3	Vertical	0	1.50	-	43.20	31.44	8.27	35.21

BT-LE(1Mbps)

2480MHz_TX

31/10/2017



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.95984G	40.86	54.00	-13.14	4.49	3	Horizontal	360	1.50	-	36.37	31.44	8.27	35.21
PK	4.95948G	49.27	74.00	-24.73	4.49	3	Horizontal	360	1.50	-	44.78	31.44	8.27	35.21