

FCC Test Report

FCC ID : SWX-UVCG3B
Equipment : UniFi PROTECT
Brand Name : UBIQUITI
Model Name : UVC-G3-BATTERY
Applicant : Ubiquiti Networks, Inc.
685 Third Avenue, 27th Floor New York,
New York 10017 USA
Manufacturer : Ubiquiti Networks, Inc.
685 Third Avenue, 27th Floor New York,
New York 10017 USA
Standard : 47 CFR FCC Part 15.247

The product was received on Nov. 21, 2018, and testing was started from Nov. 30, 2018 and completed on Jan. 23, 2019. 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.)



Table of Contents

HISTORY OF THIS TEST REPORT3

SUMMARY OF TEST RESULT4

1 GENERAL DESCRIPTION5

1.1 Information.....5

1.2 Testing Applied Standards7

1.3 Testing Location Information7

1.4 Measurement Uncertainty7

2 TEST CONFIGURATION OF EUT.....8

2.1 Test Condition8

2.2 Test Channel Mode8

2.3 The Worst Case Measurement Configuration.....9

2.4 Accessories and Support Equipment10

2.5 Test Setup Diagram11

3 TRANSMITTER TEST RESULT12

3.1 AC Power-line Conducted Emissions12

3.2 DTS Bandwidth.....13

3.3 Maximum Conducted Output Power14

3.4 Power Spectral Density16

3.5 Emissions in Non-restricted Frequency Bands17

3.6 Emissions in Restricted Frequency Bands.....18

4 TEST EQUIPMENT AND CALIBRATION DATA.....21

APPENDIX A. TEST RESULTS OF AC POWER-LINE CONDUCTED EMISSIONS

APPENDIX B. TEST RESULTS OF DTS BANDWIDTH

APPENDIX C. TEST RESULTS OF MAXIMUM CONDUCTED OUTPUT POWER

APPENDIX D. TEST RESULTS OF POWER SPECTRAL DENSITY

APPENDIX E. TEST RESULTS OF EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS

APPENDIX F. TEST RESULTS OF EMISSIONS IN RESTRICTED FREQUENCY BANDS

APPENDIX G. TEST PHOTOS

PHOTOGRAPHS OF EUT V01



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)	DTS Bandwidth	PASS	≥500kHz
3.3	15.247(b)	Maximum Conducted Output Power	PASS	Power [dBm]:30
3.4	15.247(e)	Power Spectral Density	PASS	PSD [dBm/3kHz]:8
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	Non-Restricted Bands: >30 dBc
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	Restricted Bands: FCC 15.209

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and explanations:
None

Reviewed by: Jackson Tsai

Report Producer: Michelle Tsai

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.	Brand	Model Name	Antenna Type	Connector
1	-	-	internal antenna	i-Pex

Ant.	Port	Gain (dBi)		
		2.4G	BT	5G
1	1	3	3	2.5

For 2.4GHz function:

For IEEE 802.11 b/g/n mode (1TX/1RX)

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

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

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

For 5GHz function:

For IEEE 802.11 a/n mode (1TX/1RX)

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



1.1.3 EUT Information

Operational Condition	
EUT Power Type	From Host System
EUT Function	<input checked="" type="checkbox"/> Point-to-multipoint <input type="checkbox"/> Point-to-point
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)	0.642	1.925	412.5u	3k

Note. If DC < 0.98, the DCF was added while measuring Output power and PSD.

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 v05r02

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	TH01-HY	Barry	23.2~24°C / 62~66%	23/Jan/2019
Radiated	03CH02-HY	Patrick	24.7~26.5°C / 53.6~57.9%	11/Dec/2018~08/Jan/2019
AC Conduction	CO04-HY	Jeremy	20.5~25.4°C / 54.5~58.9%	30/Nov/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)	3.54 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	1.6 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%



2 Test Configuration of EUT

2.1 Test Condition

RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	3.64V


2.2 Test Channel Mode

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

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	USB 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	USB Mode
Operating Mode > 1GHz	CTX
Orthogonal Planes of EUT	Z Plane
	

2.4 Accessories and Support Equipment

Accessories				
Battery	Brand Name	-	Model Name	18650-4P
	Power Rating	3.64Vdc,11800mAh	Type	Li-ion
Type C USB Cable	Signal Line	2.0 meter, non-shielded cable, without ferrite core		

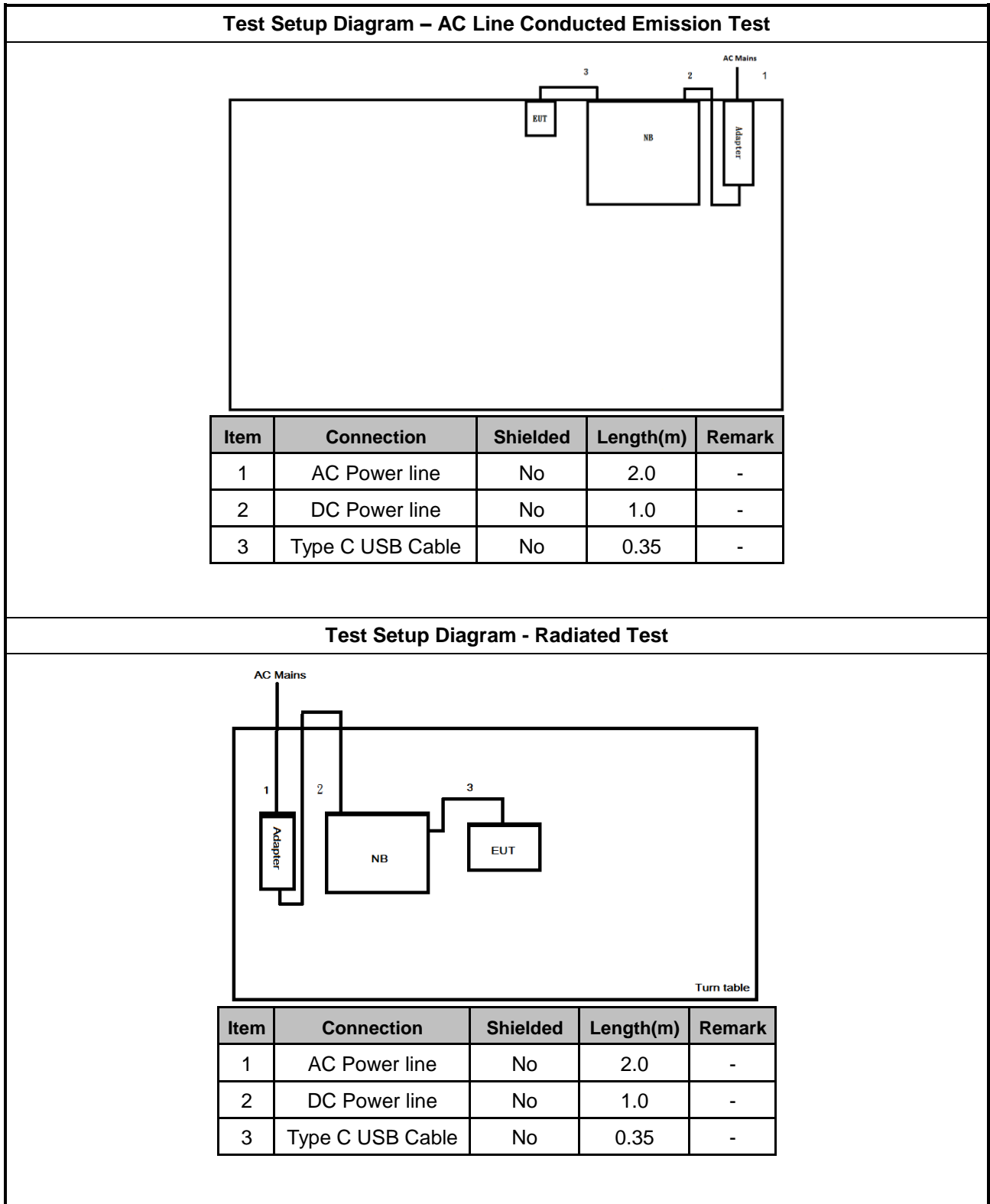
Reminder: Regarding to more detail and other information, please refer to user manual.

Support Equipment – AC Conduction				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E4300	DoC
2	AC Adapter for NB	Dell	LA90PM111	DoC

Support Equipment – Radiated Emission				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	Dell	E5410	DoC
2	AC Adapter for NB	Dell	LA90PM111	DoC

Support Equipment – RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5410	DoC
2	AC Adapter for NB	DELL	HA65NM130	DoC

2.5 Test Setup Diagram



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.

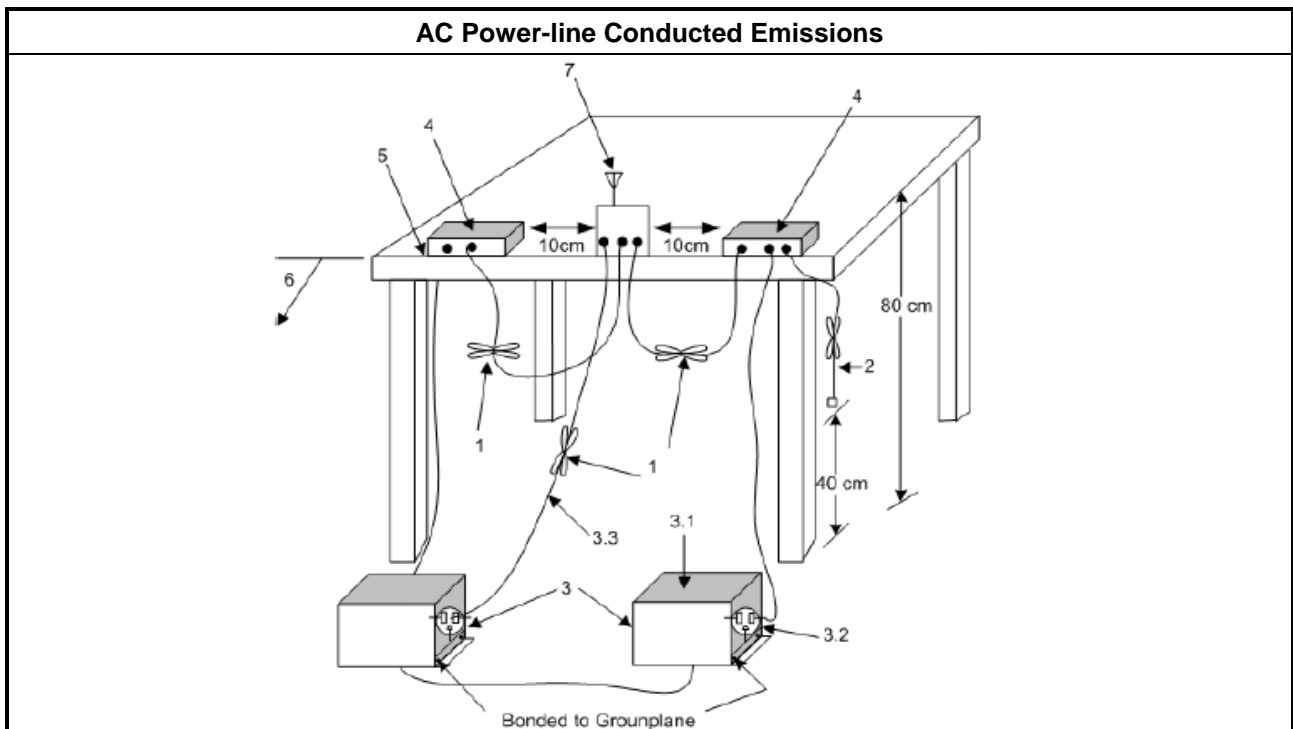
3.1.2 Measuring Instruments

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.

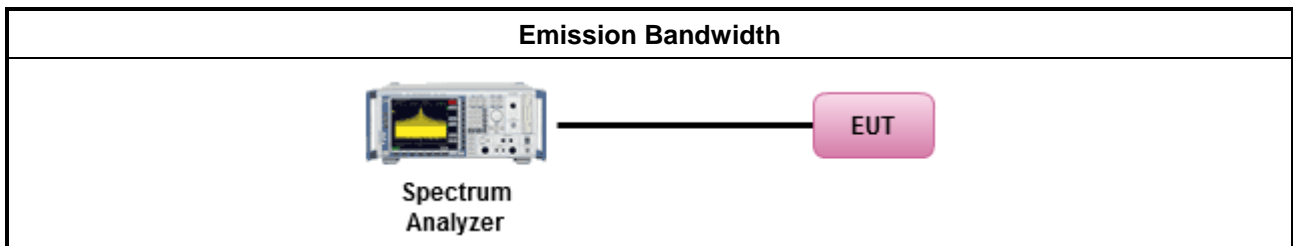
3.2.2 Measuring Instruments

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 8.2 (11.8 of ANSI C63.10) DTS bandwidth measurement.
<input type="checkbox"/> Refer as RSS-Gen, clause 6.7 for for occupied bandwidth testing.
<input type="checkbox"/> Refer as ANSI C63.10, clause 6.9.3 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 $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB 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_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.	

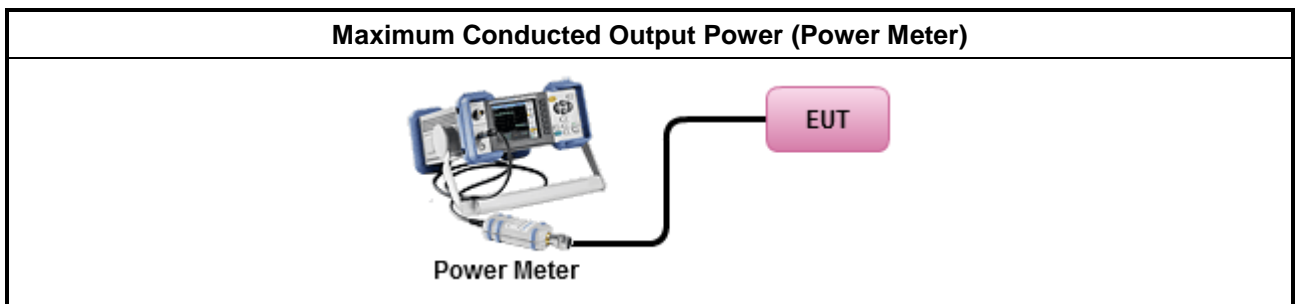
3.3.2 Measuring Instruments

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 8.3.1.1 (11.9.1.1 of ANSI C63.10) RBW ≥ EBW method.
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.1.2 (11.9.1.2 of ANSI C63.10) integrated band power method.
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.1.3 (11.9.1.3 of ANSI C63.10) peak power meter.
<ul style="list-style-type: none"> ▪ Maximum Average Conducted Output Power 	
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.2.2 (11.9.2.2 of ANSI C63.10) using a spectrum analyzer.
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 8.3.2.3 (11.9.2.3 of ANSI C63.10) using a 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

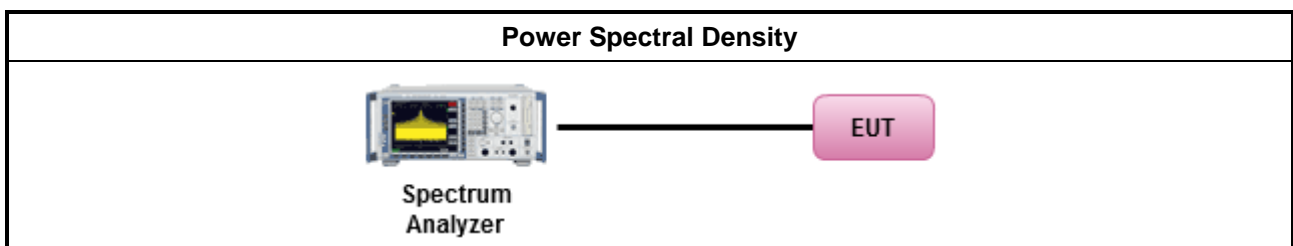
3.4.2 Measuring Instruments

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 8.4 (11.10 of ANSI C63.10) Method PKPSD.
	<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 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 level.

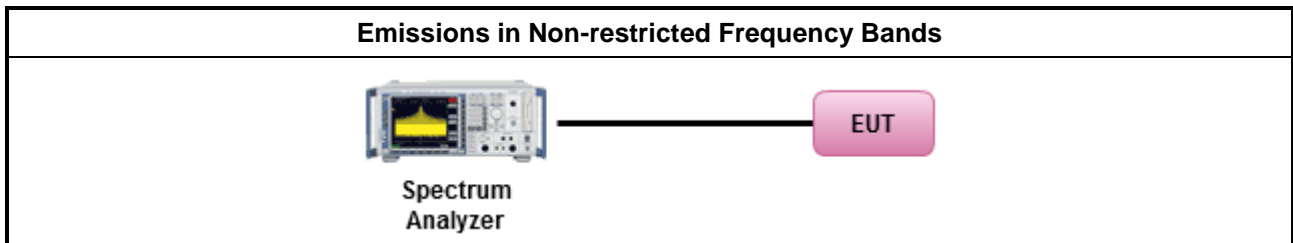
3.5.2 Measuring Instruments

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 8.5 (11.11 of ANSI C63.10) for non-restricted frequency 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.

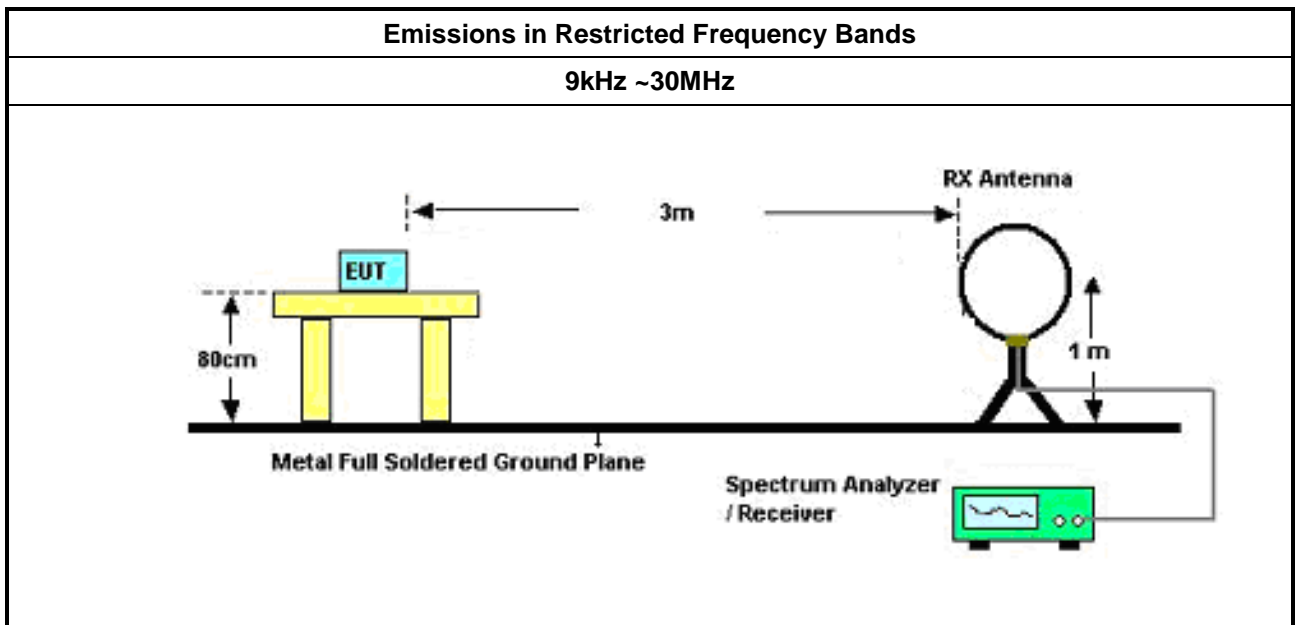
3.6.2 Measuring Instruments

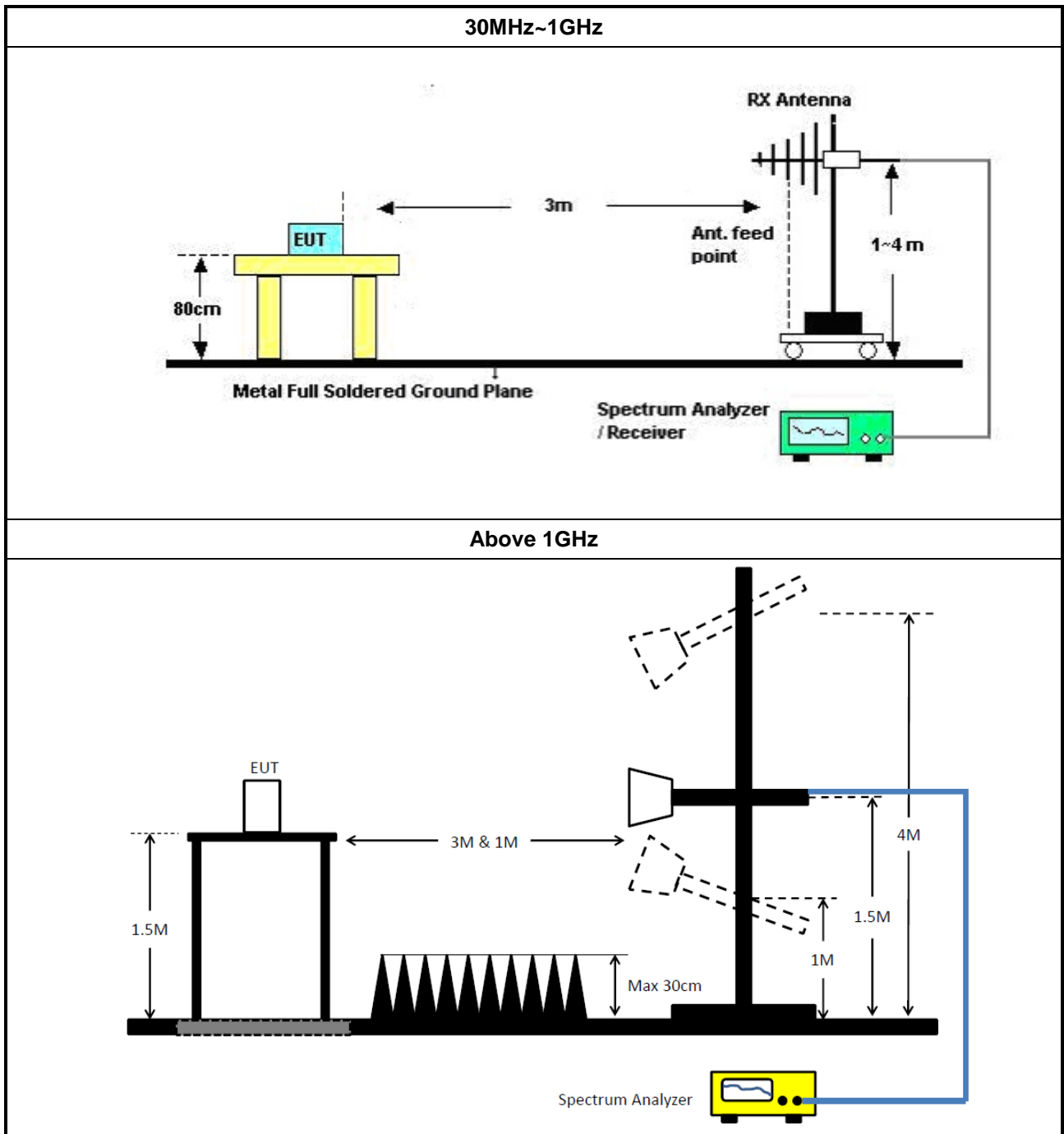
Refer a test equipment and calibration data table in this test report.

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 8.6 (11.12 of ANSI C63.10) for restricted frequency bands. 	
<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 8.7.1, 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. Refer as KDB 558074, clause 8.7.2 (6.10.6 of ANSI C63.10) for marker-delta method for band-edge measurements. Refer as KDB 558074, clause 8.7.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels. 	
<ul style="list-style-type: none"> Use the following spectrum analyzer settings: <ul style="list-style-type: none"> Set RBW=100 kHz for $f < 1$ GHz; VBW=3 * RBW; Sweep = auto; Detector function = peak; Trace = max hold. Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement. For average measurement, refer as 1.1.4. 	

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	ESR	102051	9KHz ~ 3.6GHz	03/May/2018	02/May/2019
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	08/Nov/2018	07/Nov/2019
RF Cable-CON	MTJ	RG142	CB002-CO	9kHz ~ 200MHz	17/Sep/2018	16/Sep/2019
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/2018	11/Oct/2019

NCR : Non-Calibration Require

Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	19/Oct/2018	18/Oct/2019
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	1GHz ~ 18GHz 3m	17/Oct/2018	16/Oct/2019
Amplifier	Agilent	8447D	2944A11149	100kHz ~ 1.3GHz	27Jul/2018	02/Jul/2019
Microwave Preamplifier	Agilent	8449B	3008A02373	1GHz ~ 26.5GHz	23/Oct/2018	22/Oct/2019
Signal Analyzer	R&S	FSV40	101500	10Hz ~ 40GHz	18/Jul/2018	17/Jul/2019
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz ~ 1GHz	19/Jan/2018	18/Jan/2019
RF Cable-high	SUHNER	SUCOFLEX104	MY34918/4	1GHz ~ 40GHz	19/Jan/2018	18/Jan/2019
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112B / MTJ6102-05	2723 / 2	30MHz ~ 1GHz	08/Sep/2018	07/Sep/2019
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz ~ 40GHz	24/Aug/2018	23/Aug/2019
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	10/Apr/2018	09/Apr/2019
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	29/Mar/2018	28/Mar/2019
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	15GHz ~ 40GHz	12/Mar/2018	11/Mar/2019
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 01543	1GHz ~ 18GHz	11/May/2018	10/May/2019



Instrument for Conducted Test

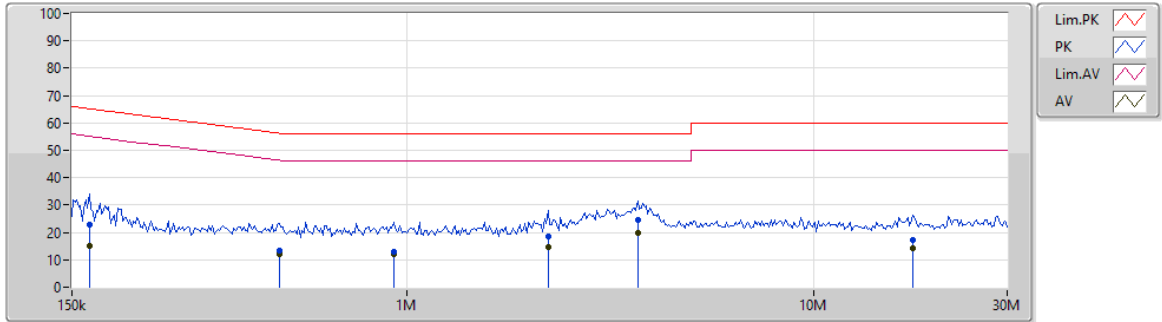
Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101029	10Hz~40GHz	11/Sep/2018	10/Sep/2019
Pulse Power Sensor	Anritsu	MA2411B	1339407	300MHz ~ 40GHz	17/Nov/2018	16/Nov/2019
Power Meter	Anritsu	ML2495A	1517010	300MHz ~ 40GHz	17/Nov/2018	16/Nov/2019
Cable 0.2m	HUBER	MY10710/4	RF Cable - 01	30MHz ~18G	10/Jan/2019	09/Jan/2020
Cable 0.2m	HUBER	MY10711/4	RF Cable - 02	30MHz ~18G	10/Jan/2019	09/Jan/2020
Cable 1.5m	HUBER	MY33066/4	RF Cable – 30	30MHz ~18G	10/Jan/2019	09/Jan/2020
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	10/Nov/2020



AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Neutral
Operating Function	USB Mode		

30/11/2018



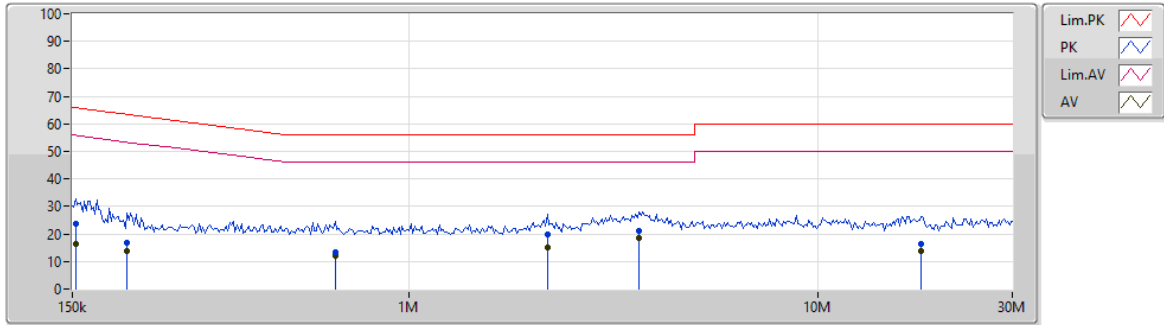
Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	165.693k	22.71	65.18	-42.47	19.65	Neutral	-	3.06	9.63	0.02	10.00
AV	165.693k	15.10	55.18	-40.08	19.65	Neutral	-	-4.55	9.63	0.02	10.00
QP	485.303k	13.40	56.25	-42.85	19.69	Neutral	-	-6.29	9.61	0.08	10.00
AV	485.303k	12.07	46.25	-34.18	19.69	Neutral	-	-7.62	9.61	0.08	10.00
QP	926.622k	12.99	56.00	-43.01	19.63	Neutral	-	-6.64	9.62	0.01	10.00
AV	926.622k	11.90	46.00	-34.10	19.63	Neutral	-	-7.73	9.62	0.01	10.00
QP	2.224M	18.62	56.00	-37.38	19.64	Neutral	-	-1.02	9.63	0.01	10.00
AV	2.224M	14.71	46.00	-31.29	19.64	Neutral	-	-4.93	9.63	0.01	10.00
QP	3.695M	24.39	56.00	-31.61	19.72	Neutral	-	4.67	9.64	0.08	10.00
AV	3.695M	19.67	46.00	-26.33	19.72	Neutral	"Worst"	-0.05	9.64	0.08	10.00
QP	17.621M	17.05	60.00	-42.95	19.83	Neutral	-	-2.78	9.71	0.12	10.00
AV	17.621M	14.27	50.00	-35.73	19.83	Neutral	-	-5.56	9.71	0.12	10.00



AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	USB Mode		

30/11/2018



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	153.015k	23.85	65.83	-41.98	19.66	Line	-	4.19	9.62	0.04	10.00
AV	153.015k	16.59	55.83	-39.24	19.66	Line	-	-3.07	9.62	0.04	10.00
QP	204.199k	16.88	63.44	-46.56	19.63	Line	-	-2.75	9.62	0.01	10.00
AV	204.199k	13.66	53.44	-39.78	19.63	Line	-	-5.97	9.62	0.01	10.00
QP	660.657k	13.41	56.00	-42.59	19.66	Line	-	-6.25	9.61	0.05	10.00
AV	660.657k	11.99	46.00	-34.01	19.66	Line	-	-7.67	9.61	0.05	10.00
QP	2.18M	19.86	56.00	-36.14	19.63	Line	-	0.23	9.62	0.01	10.00
AV	2.18M	15.05	46.00	-30.95	19.63	Line	-	-4.58	9.62	0.01	10.00
QP	3.658M	21.07	56.00	-34.93	19.71	Line	-	1.36	9.63	0.08	10.00
AV	3.658M	18.33	46.00	-27.67	19.71	Line	"Worst"	-1.38	9.63	0.08	10.00
QP	17.975M	16.28	60.00	-43.72	19.76	Line	-	-3.48	9.63	0.13	10.00
AV	17.975M	13.94	50.00	-36.06	19.76	Line	-	-5.82	9.63	0.13	10.00



Summary

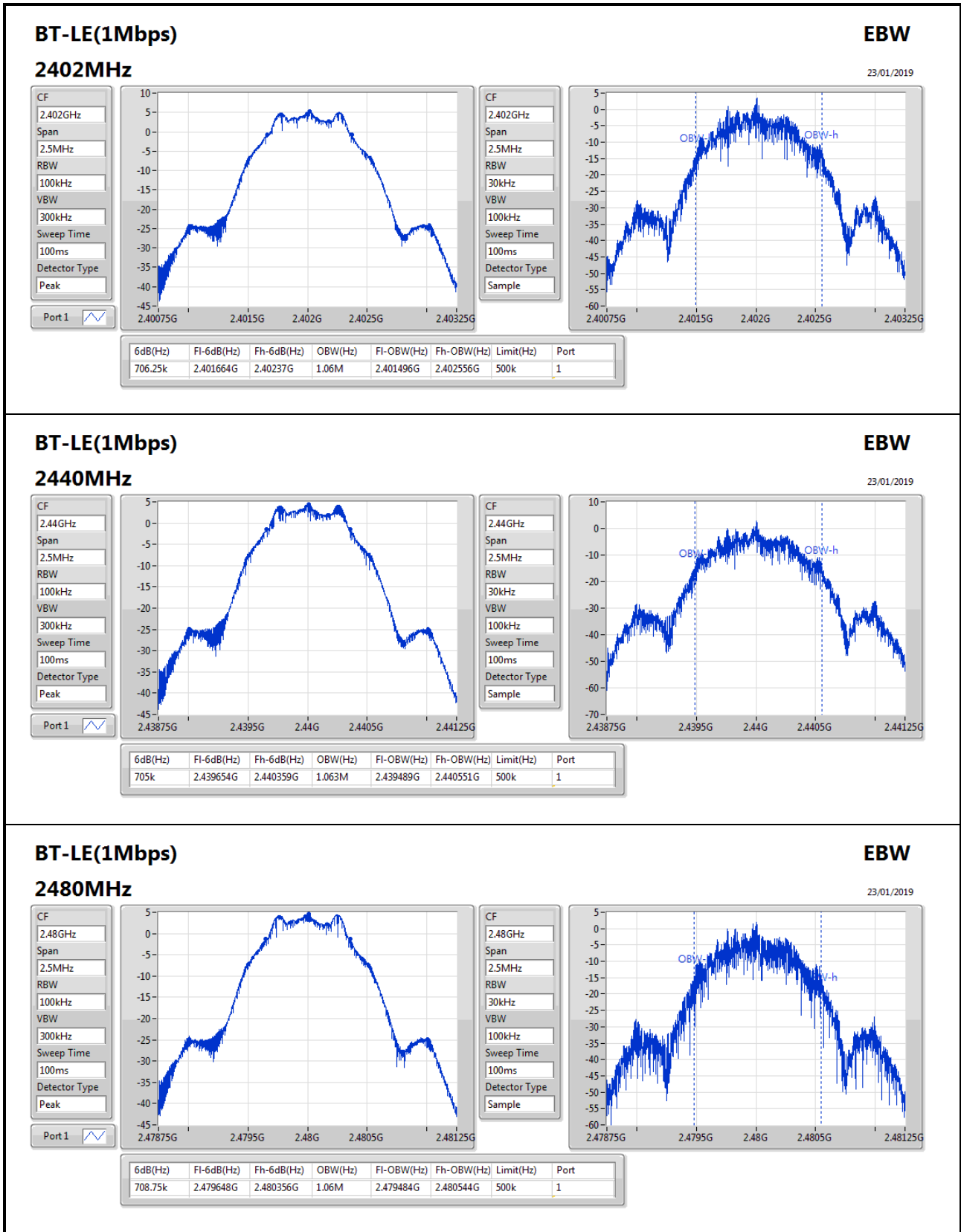
Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-LE(1Mbps)	708.75k	1.063M	1M06F1D	705k	1.06M

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	706.25k	1.06M
2440MHz_TnomVnom	Pass	500k	705k	1.063M
2480MHz_TnomVnom	Pass	500k	708.75k	1.06M

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





Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	5.31	0.00340

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	3.00	5.31	30.00
2440MHz_TnomVnom	Pass	3.00	4.45	30.00
2480MHz_TnomVnom	Pass	3.00	4.78	30.00



Summary

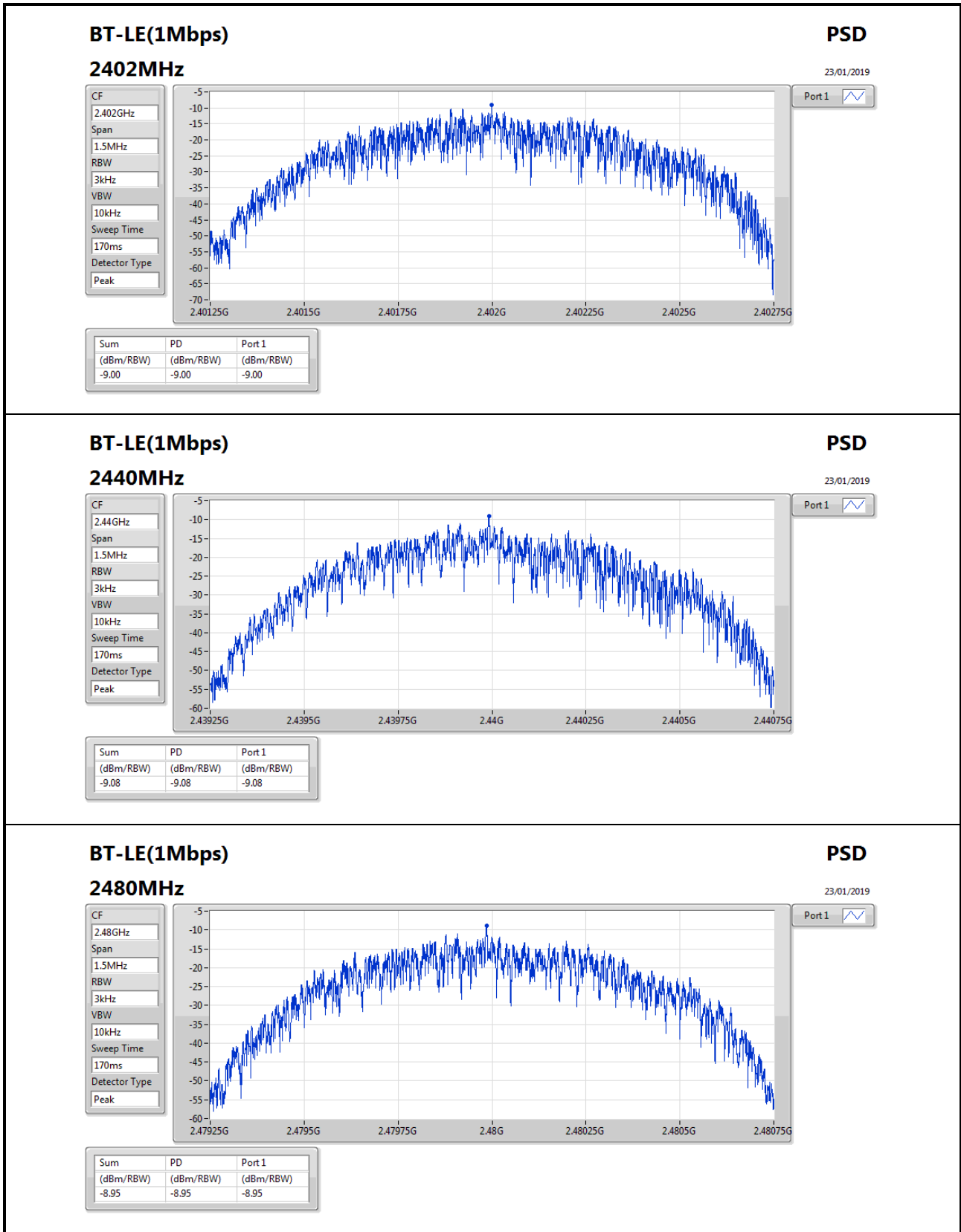
Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-8.95

RBW=3kHz.

Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	3.00	-9.00	8.00
2440MHz_TnomVnom	Pass	3.00	-9.08	8.00
2480MHz_TnomVnom	Pass	3.00	-8.95	8.00

RBW=3kHz.



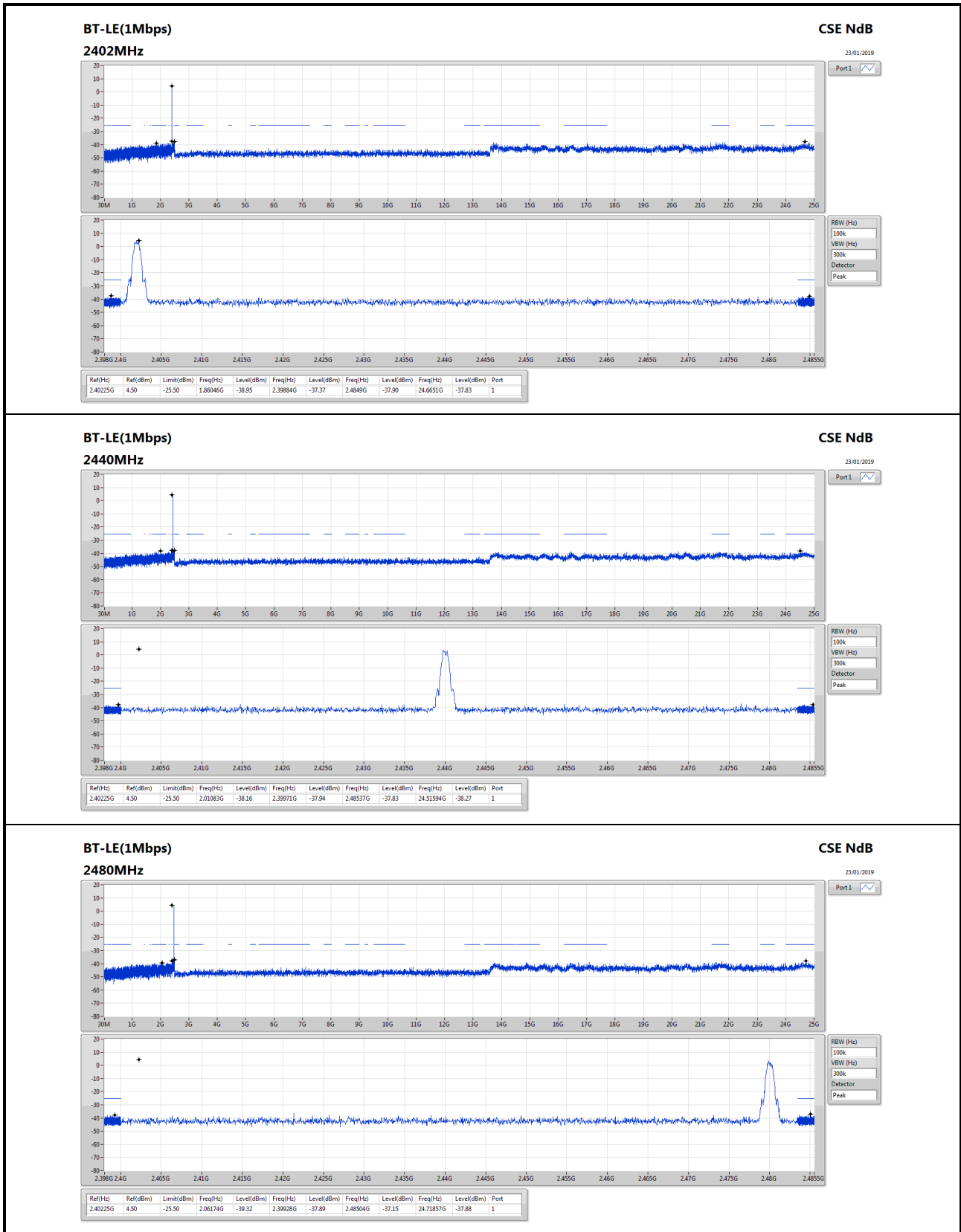


Summary

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	2.40225G	4.50	-25.50	2.06174G	-39.32	2.39928G	-37.89	2.48504G	-37.15	24.71857G	-37.88	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	2.40225G	4.50	-25.50	1.86046G	-38.95	2.39884G	-37.37	2.4849G	-37.90	24.6651G	-37.83	1
2440MHz_TnomVnom	Pass	2.40225G	4.50	-25.50	2.01083G	-38.16	2.39971G	-37.94	2.48537G	-37.83	24.51594G	-38.27	1
2480MHz_TnomVnom	Pass	2.40225G	4.50	-25.50	2.06174G	-39.32	2.39928G	-37.89	2.48504G	-37.15	24.71857G	-37.88	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	QP	891.36M	43.92	46.00	-2.08	2.51	3	Horizontal	89	1.85	-

Remark :

Page No. : F1 of F4

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)



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	189.08M	38.23	43.50	-5.27	-10.92	3	Vertical	0	1.00	-
2440MHz	Pass	PK	266.68M	36.83	46.00	-9.17	-6.04	3	Vertical	0	1.00	-
2440MHz	Pass	PK	404.42M	41.40	46.00	-4.60	-3.33	3	Vertical	0	1.00	-
2440MHz	Pass	PK	513.06M	42.89	46.00	-3.11	-2.27	3	Vertical	0	1.00	-
2440MHz	Pass	PK	891.36M	42.87	46.00	-3.13	2.51	3	Vertical	0	1.00	-
2440MHz	Pass	QP	115.36M	40.22	43.50	-3.28	-8.90	3	Vertical	302	1.95	-
2440MHz	Pass	PK	239.52M	42.87	46.00	-3.13	-8.07	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	276.38M	36.83	46.00	-9.17	-6.24	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	404.42M	42.46	46.00	-3.54	-3.33	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	567.38M	42.14	46.00	-3.86	-0.89	3	Horizontal	360	1.00	-
2440MHz	Pass	QP	123.12M	41.38	43.50	-2.12	-8.83	3	Horizontal	245	1.31	-
2440MHz	Pass	QP	891.36M	43.92	46.00	-2.08	2.51	3	Horizontal	89	1.85	-

Remark :

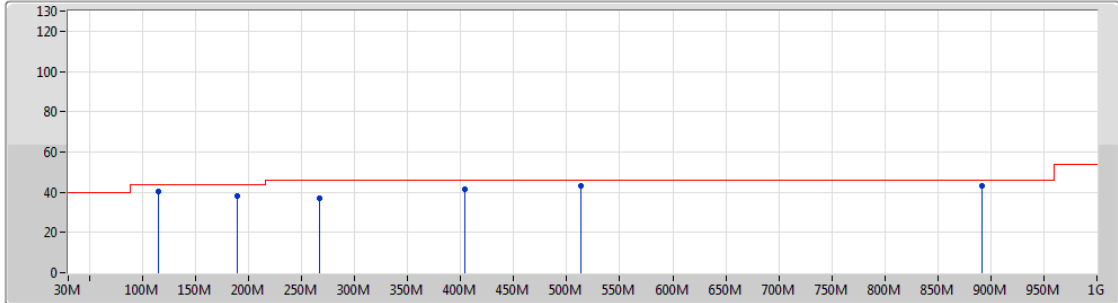
Page No. : F2 of F4

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

BT-LE(1Mbps)

2440MHz_USB

08/01/2019



Lim.PK
 PK
 Lim.AV
 AV

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
PK	189.08M	38.23	43.50	-5.27	-10.92	3	Vertical	0	1.00	-
PK	266.68M	36.83	46.00	-9.17	-6.04	3	Vertical	0	1.00	-
PK	404.42M	41.40	46.00	-4.60	-3.33	3	Vertical	0	1.00	-
PK	513.06M	42.89	46.00	-3.11	-2.27	3	Vertical	0	1.00	-
PK	891.36M	42.87	46.00	-3.13	2.51	3	Vertical	0	1.00	-
QP	115.36M	40.22	43.50	-3.28	-8.90	3	Vertical	302	1.95	-

Remark :

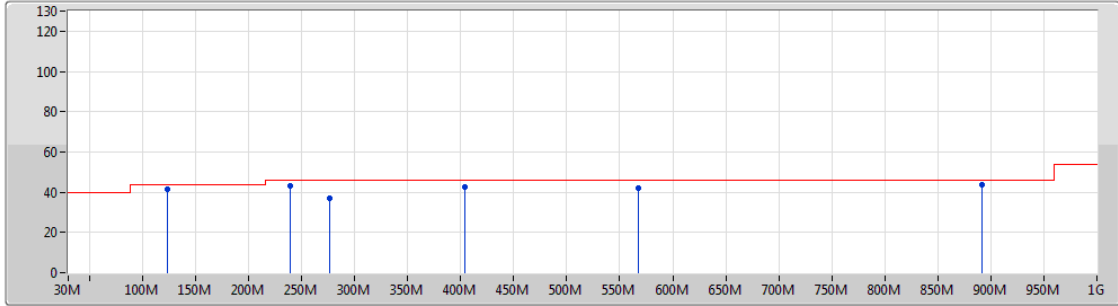
Page No. : F3 of F4





Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

BT-LE(1Mbps)

2440MHz_USB

08/01/2019



Lim.PK 
 PK 
 Lim.AV 
 AV 

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
PK	239.52M	42.87	46.00	-3.13	-8.07	3	Horizontal	360	1.00	-
PK	276.38M	36.83	46.00	-9.17	-6.24	3	Horizontal	360	1.00	-
PK	404.42M	42.46	46.00	-3.54	-3.33	3	Horizontal	360	1.00	-
PK	567.38M	42.14	46.00	-3.86	-0.89	3	Horizontal	360	1.00	-
QP	123.12M	41.38	43.50	-2.12	-8.83	3	Horizontal	245	1.31	-
QP	891.36M	43.92	46.00	-2.08	2.51	3	Horizontal	89	1.85	-

Remark :

Page No. : F4 of F4

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)



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	2.4928G	46.30	54.00	-7.70	31.14	3	Vertical	309	1.20	-

Remark :

Page No. : F1 of F14

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)



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	2.3874G	45.45	54.00	-8.55	30.76	3	Vertical	282	1.10	-
2402MHz	Pass	AV	2.4022G	98.01	Inf	-Inf	30.82	3	Vertical	282	1.10	-
2402MHz	Pass	PK	2.3848G	55.82	74.00	-18.18	30.76	3	Vertical	282	1.10	-
2402MHz	Pass	PK	2.4018G	98.61	Inf	-Inf	30.82	3	Vertical	282	1.10	-
2402MHz	Pass	AV	2.3874G	45.51	54.00	-8.49	30.76	3	Horizontal	320	2.23	-
2402MHz	Pass	AV	2.4022G	94.60	Inf	-Inf	30.82	3	Horizontal	320	2.23	-
2402MHz	Pass	PK	2.3794G	56.16	74.00	-17.84	30.74	3	Horizontal	320	2.23	-
2402MHz	Pass	PK	2.4018G	95.11	Inf	-Inf	30.82	3	Horizontal	320	2.23	-
2402MHz	Pass	AV	4.80646G	33.77	54.00	-20.23	2.08	3	Vertical	134	1.29	-
2402MHz	Pass	PK	4.8112G	42.65	74.00	-31.35	2.10	3	Vertical	134	1.29	-
2402MHz	Pass	AV	4.7944G	31.02	54.00	-22.98	2.06	3	Horizontal	154	1.66	-
2402MHz	Pass	PK	4.80586G	42.59	74.00	-31.41	2.08	3	Horizontal	154	1.66	-
2440MHz	Pass	AV	2.34G	45.76	54.00	-8.24	30.60	3	Vertical	309	1.20	-
2440MHz	Pass	AV	2.44G	95.79	Inf	-Inf	30.95	3	Vertical	309	1.20	-
2440MHz	Pass	AV	2.4928G	46.30	54.00	-7.70	31.14	3	Vertical	309	1.20	-
2440MHz	Pass	PK	2.3888G	55.32	74.00	-18.68	30.77	3	Vertical	309	1.20	-
2440MHz	Pass	PK	2.4396G	96.30	Inf	-Inf	30.95	3	Vertical	309	1.20	-
2440MHz	Pass	PK	2.4948G	56.36	74.00	-17.64	31.16	3	Vertical	309	1.20	-
2440MHz	Pass	AV	2.3848G	45.44	54.00	-8.56	30.76	3	Horizontal	316	1.50	-
2440MHz	Pass	AV	2.44G	93.37	Inf	-Inf	30.95	3	Horizontal	316	1.50	-
2440MHz	Pass	AV	2.496G	46.09	54.00	-7.91	31.16	3	Horizontal	316	1.50	-
2440MHz	Pass	PK	2.352G	55.85	74.00	-18.15	30.65	3	Horizontal	316	1.50	-
2440MHz	Pass	PK	2.4396G	93.91	Inf	-Inf	30.95	3	Horizontal	316	1.50	-
2440MHz	Pass	PK	2.4956G	55.98	74.00	-18.02	31.16	3	Horizontal	316	1.50	-
2440MHz	Pass	AV	4.87502G	33.82	54.00	-20.18	2.26	3	Vertical	146	1.35	-
2440MHz	Pass	PK	4.86722G	42.50	74.00	-31.50	2.24	3	Vertical	146	1.35	-
2440MHz	Pass	AV	4.8875G	31.48	54.00	-22.52	2.29	3	Horizontal	179	1.55	-
2440MHz	Pass	PK	4.87256G	42.15	74.00	-31.85	2.25	3	Horizontal	179	1.55	-
2480MHz	Pass	AV	2.4802G	95.73	Inf	-Inf	31.09	3	Vertical	301	1.01	-
2480MHz	Pass	AV	2.4876G	46.14	54.00	-7.86	31.13	3	Vertical	301	1.01	-
2480MHz	Pass	PK	2.4802G	96.23	Inf	-Inf	31.09	3	Vertical	301	1.01	-
2480MHz	Pass	PK	2.4894G	56.31	74.00	-17.69	31.13	3	Vertical	301	1.01	-
2480MHz	Pass	AV	2.48G	95.67	Inf	-Inf	31.09	3	Horizontal	139	1.06	-
2480MHz	Pass	AV	2.4884G	46.24	54.00	-7.76	31.13	3	Horizontal	139	1.06	-
2480MHz	Pass	PK	2.4798G	96.21	Inf	-Inf	31.09	3	Horizontal	139	1.06	-
2480MHz	Pass	PK	2.4884G	56.00	74.00	-18.00	31.13	3	Horizontal	139	1.06	-
2480MHz	Pass	AV	4.96036G	33.58	54.00	-20.42	2.47	3	Vertical	159	1.21	-
2480MHz	Pass	PK	4.96018G	42.43	74.00	-31.57	2.47	3	Vertical	159	1.21	-
2480MHz	Pass	PK	4.95004G	42.21	74.00	-31.79	2.45	3	Horizontal	163	1.50	-
2480MHz	Pass	AV	4.95634G	31.60	54.00	-22.40	2.46	3	Horizontal	163	1.50	-

Remark :

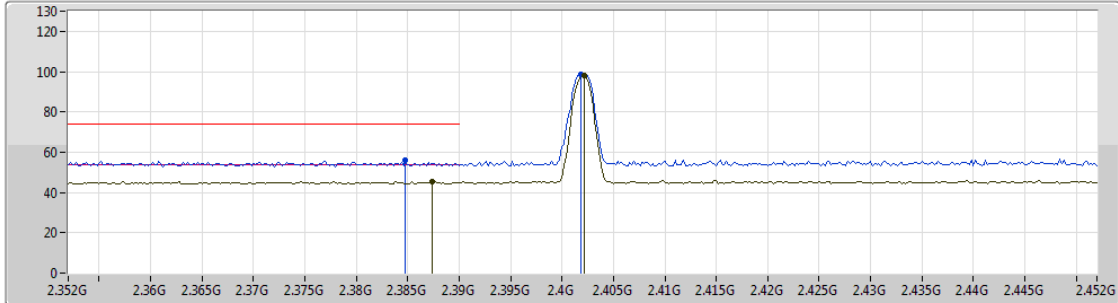
Page No. : F2 of F14

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

BT-LE(1Mbps)

2402MHz_TX

11/12/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3874G	45.45	54.00	-8.55	30.76	3	Vertical	282	1.10	-
AV	2.4022G	98.01	Inf	-Inf	30.82	3	Vertical	282	1.10	-
PK	2.3848G	55.82	74.00	-18.18	30.76	3	Vertical	282	1.10	-
PK	2.4018G	98.61	Inf	-Inf	30.82	3	Vertical	282	1.10	-

Remark :

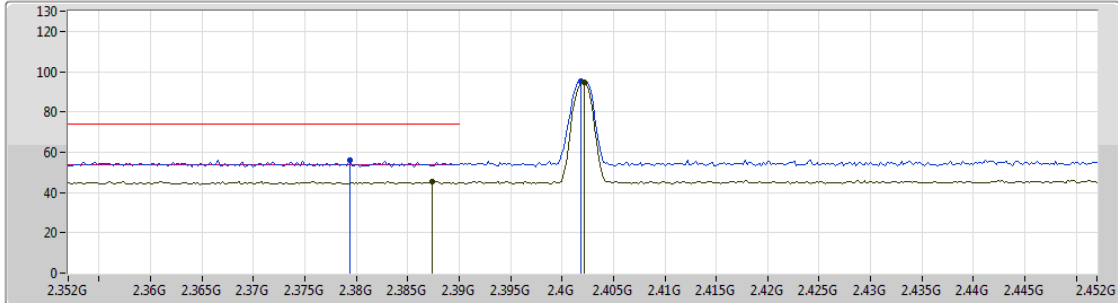
Page No. : F3 of F14





Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

BT-LE(1Mbps)

2402MHz_TX

11/12/2018



Lim.PK 
 PK 
 Lim.AV 
 AV 

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3874G	45.51	54.00	-8.49	30.76	3	Horizontal	320	2.23	-
AV	2.4022G	94.60	Inf	-Inf	30.82	3	Horizontal	320	2.23	-
PK	2.3794G	56.16	74.00	-17.84	30.74	3	Horizontal	320	2.23	-
PK	2.4018G	95.11	Inf	-Inf	30.82	3	Horizontal	320	2.23	-

Remark :

Page No. : F4 of F14

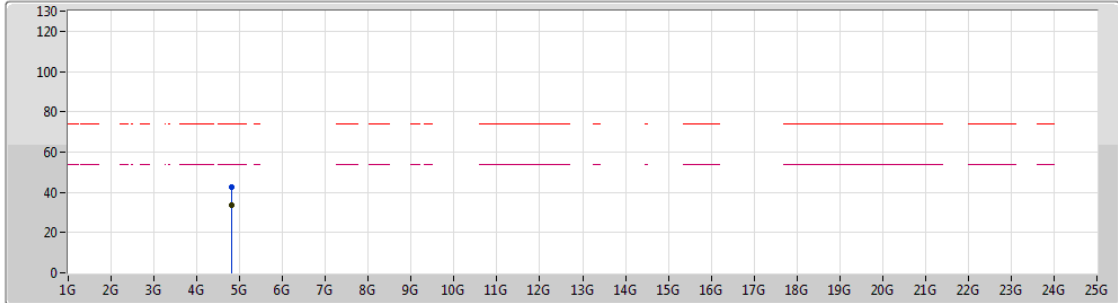
Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

562424-04

BT-LE(1Mbps)

2402MHz_TX

11/12/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.80646G	33.77	54.00	-20.23	2.08	3	Vertical	134	1.29	-
PK	4.8112G	42.65	74.00	-31.35	2.10	3	Vertical	134	1.29	-

Remark :

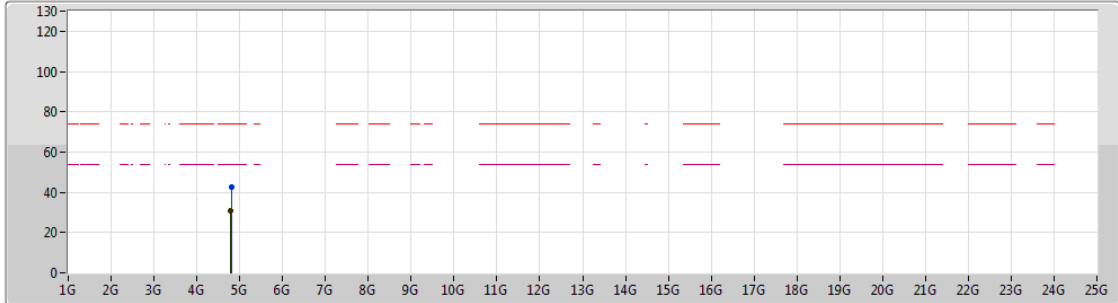
Page No. : F5 of F14

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

BT-LE(1Mbps)

2402MHz_TX

11/12/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.7944G	31.02	54.00	-22.98	2.06	3	Horizontal	154	1.66	-
PK	4.80586G	42.59	74.00	-31.41	2.08	3	Horizontal	154	1.66	-

Remark :

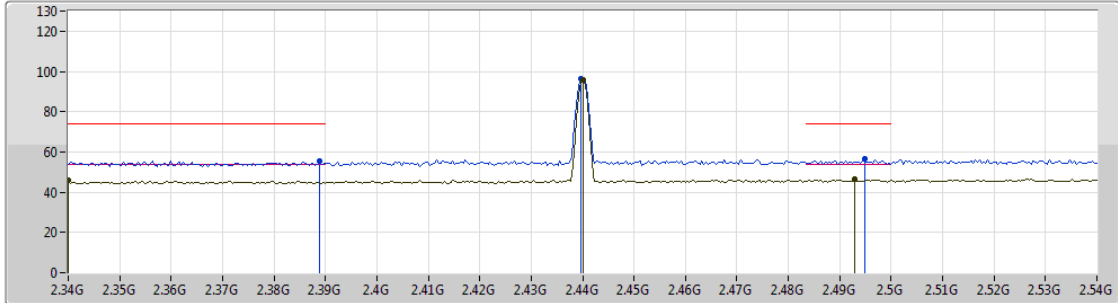
Page No. : F6 of F14

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

BT-LE(1Mbps)

2440MHz_TX

11/12/2018



- Lim.PK
- PK
- Lim.AV
- AV

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.34G	45.76	54.00	-8.24	30.60	3	Vertical	309	1.20	-
AV	2.44G	95.79	Inf	-Inf	30.95	3	Vertical	309	1.20	-
AV	2.4928G	46.30	54.00	-7.70	31.14	3	Vertical	309	1.20	-
PK	2.3888G	55.32	74.00	-18.68	30.77	3	Vertical	309	1.20	-
PK	2.4396G	96.30	Inf	-Inf	30.95	3	Vertical	309	1.20	-
PK	2.4948G	56.36	74.00	-17.64	31.16	3	Vertical	309	1.20	-

Remark :

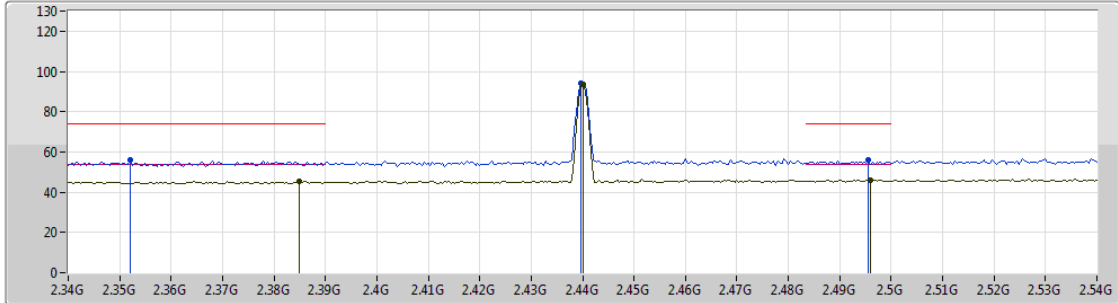
Page No. : F7 of F14

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

BT-LE(1Mbps)

2440MHz_TX

11/12/2018



Type	Freq [Hz]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Factor [dB]	Dist [m]	Condition	Azimuth [°]	Height [m]	Comments
AV	2.3848G	45.44	54.00	-8.56	30.76	3	Horizontal	316	1.50	-
AV	2.44G	93.37	Inf	-Inf	30.95	3	Horizontal	316	1.50	-
AV	2.496G	46.09	54.00	-7.91	31.16	3	Horizontal	316	1.50	-
PK	2.352G	55.85	74.00	-18.15	30.65	3	Horizontal	316	1.50	-
PK	2.4396G	93.91	Inf	-Inf	30.95	3	Horizontal	316	1.50	-
PK	2.4956G	55.98	74.00	-18.02	31.16	3	Horizontal	316	1.50	-

Remark :

Page No. : F8 of F14

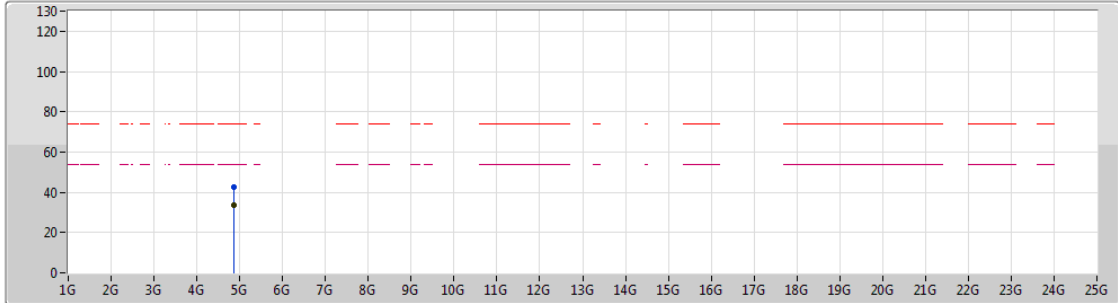
Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

562424-04



BT-LE(1Mbps)

2440MHz_TX

11/12/2018



Legend for plot:

- Lim.PK 
- PK 
- Lim.AV 
- AV 

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.87502G	33.82	54.00	-20.18	2.26	3	Vertical	146	1.35	-
PK	4.86722G	42.50	74.00	-31.50	2.24	3	Vertical	146	1.35	-

Remark :

Page No. : F9 of F14

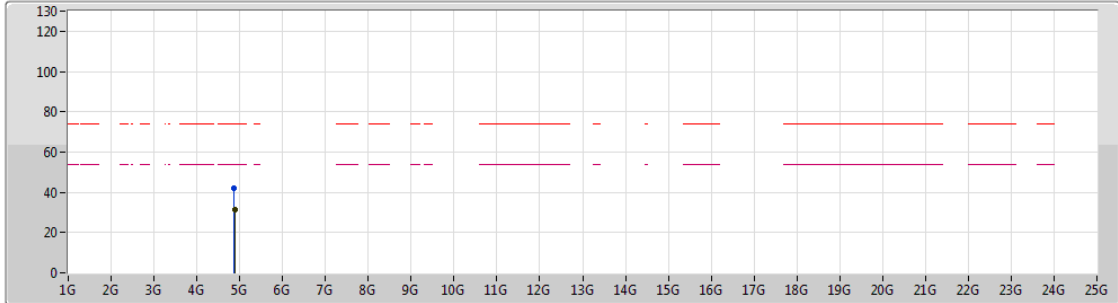
Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)



BT-LE(1Mbps)

2440MHz_TX

11/12/2018



Legend for the plot:

- Lim.PK (Red dashed line)
- PK (Blue line with dot)
- Lim.AV (Magenta dashed line)
- AV (Black line with dot)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.8875G	31.48	54.00	-22.52	2.29	3	Horizontal	179	1.55	-
PK	4.87256G	42.15	74.00	-31.85	2.25	3	Horizontal	179	1.55	-

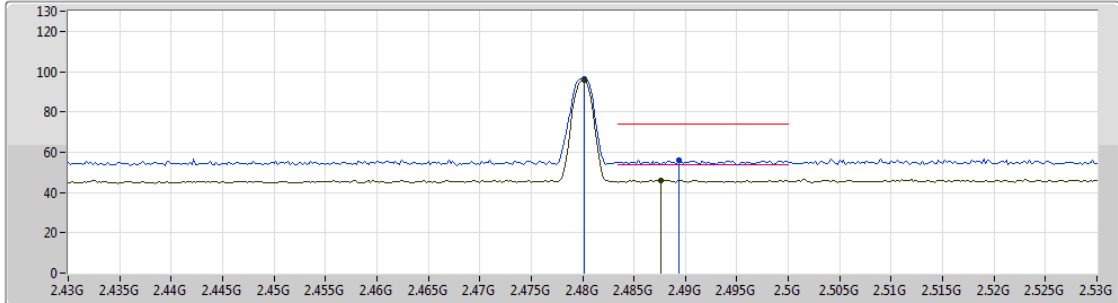
Remark :



Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

BT-LE(1Mbps)

2480MHz_TX

11/12/2018



Lim.PK 
 PK 
 Lim.AV 
 AV 

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.4802G	95.73	Inf	-Inf	31.09	3	Vertical	301	1.01	-
AV	2.4876G	46.14	54.00	-7.86	31.13	3	Vertical	301	1.01	-
PK	2.4802G	96.23	Inf	-Inf	31.09	3	Vertical	301	1.01	-
PK	2.4894G	56.31	74.00	-17.69	31.13	3	Vertical	301	1.01	-

Remark :

Page No. : F11 of F14

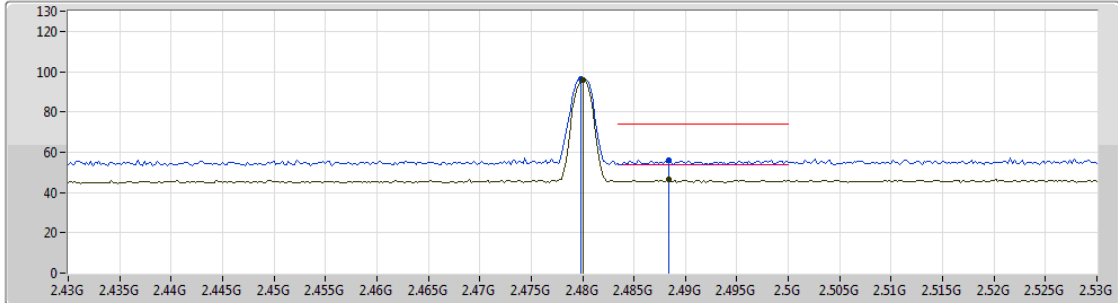
Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

562424-04

BT-LE(1Mbps)

2480MHz_TX

11/12/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.48G	95.67	Inf	-Inf	31.09	3	Horizontal	139	1.06	-
AV	2.4884G	46.24	54.00	-7.76	31.13	3	Horizontal	139	1.06	-
PK	2.4798G	96.21	Inf	-Inf	31.09	3	Horizontal	139	1.06	-
PK	2.4884G	56.00	74.00	-18.00	31.13	3	Horizontal	139	1.06	-

Remark :

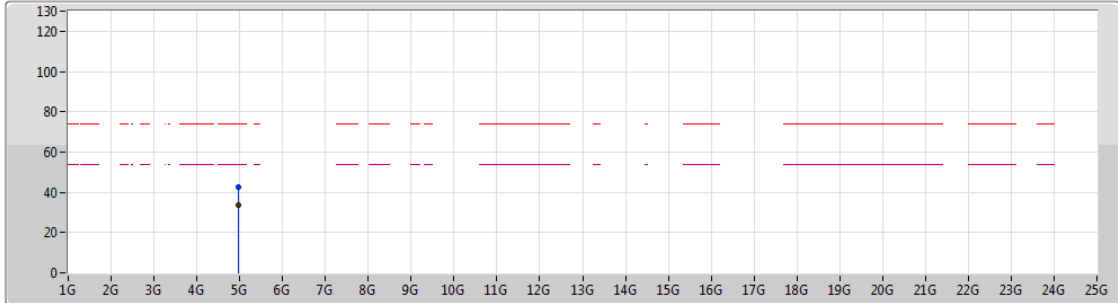
Page No. : F12 of F14

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)



BT-LE(1Mbps)

2480MHz_TX

11/12/2018



Legend for graph:

- Lim.PK 
- PK 
- Lim.AV 
- AV 

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.96036G	33.58	54.00	-20.42	2.47	3	Vertical	159	1.21	-
PK	4.96018G	42.43	74.00	-31.57	2.47	3	Vertical	159	1.21	-

Remark :

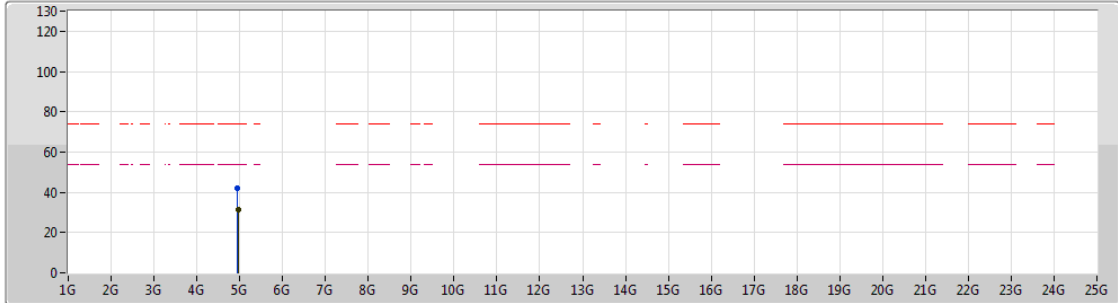
Page No. : F13 of F14

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

BT-LE(1Mbps)

2480MHz_TX

11/12/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
PK	4.95004G	42.21	74.00	-31.79	2.45	3	Horizontal	163	1.50	-
AV	4.95634G	31.60	54.00	-22.40	2.46	3	Horizontal	163	1.50	-

Remark :

Page No. : F14 of F14

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)