



FCC Test Report

FCC ID : UIDTG4482
Equipment : Wireless Gateway
Brand Name : ARRIS
Model Name : TG4482
Applicant : ARRIS
3871 Lakefield Drive, Suite 300, Suwanee, GA 30024
Manufacturer : ARRIS
3871 Lakefield Drive, Suite 300, Suwanee, GA 30024
Standard : 47 CFR FCC Part 15.247

The product was received on Oct. 14, 2019, and testing was started from Dec. 16, 2019 and completed on Mar. 06, 2020. 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 REPORT	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Information.....	5
1.2 Testing Applied Standards	6
1.3 Testing Location Information	6
1.4 Measurement Uncertainty	6
2 TEST CONFIGURATION OF EUT.....	7
2.1 Test Condition	7
2.2 Test Channel Mode	7
2.3 The Worst Case Measurement Configuration.....	8
2.4 Accessories	9
2.5 Support Equipment.....	9
2.6 Test Setup Diagram	10
3 TRANSMITTER TEST RESULT	11
3.1 AC Power-line Conducted Emissions	11
3.2 DTS Bandwidth.....	13
3.3 Maximum Conducted Output Power	14
3.4 Power Spectral Density	16
3.5 Emissions in Non-restricted Frequency Bands	17
3.6 Emissions in Restricted Frequency Bands.....	18
4 TEST EQUIPMENT AND CALIBRATION DATA.....	22
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	



History of this test report

TEL : 886-3-3273456
FAX : 886-3-3270973
Report Template No.: HE1-C10 Ver3.8
FCC ID: UIDTG4482

Summary of Test Result

Report Clause	Ref.Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.247(a)	DTS Bandwidth	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(e)	Power Spectral Density	PASS	-
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-

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: Sam Tsai

Report Producer: Ann Hou

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Bluetooth Mode	Ch. Frequency (MHz)	Channel Number	Max Output Power (dBm)
2400-2483.5	LE	2402-2480	0-39 [40]	12.23

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

Note:

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

1.1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
7	1	Airgain	N01CPADE	Chip	mini-murata	5.1

For BT function:

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

Ant. 7 (port 1) could transmit/receive.

1.1.3 EUT Information

Operational Condition			
EUT Power Type	From AC Adapter		
EUT Function	☒ Point-to-multipoint	☐ Point-to-point	
Type of EUT			
☒	Stand-alone		
☐	Combined (EUT where the radio part is fully integrated within another device)		
	Combined Equipment - Brand Name / Model No.: ...		
☐	Plug-in radio (EUT intended for a variety of host systems)		
	Host System - Brand Name / Model No.: ...		
☐	Other: ...		

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
BT-LE(1Mbps)	1	0	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)

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
- ◆ KDB 414788 D01 v01r01

1.3 Testing Location Information

Testing Location				
☒	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)		
		TEL : 886-3-327-3456	FAX : 886-3-327-0973	
Test site Designation No. TW1190 with FCC.				
☐	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)		
		TEL : 886-3-656-9065	FAX : 886-3-656-9085	
Test site Designation No. TW0006 with FCC.				
☐	Wen Shan	ADD : No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)		
		TEL : 886-3-318-0787	FAX : 886-3-318-0287	
Test site Designation No. TW1097 with FCC.				

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Edward	19.9~20.4°C / 60~65%	25/Feb/2020
RF Conducted	TH06-HY	Raven	22.4~25.1°C / 61~69%	17/Dec/2019~06/Mar/2020
Radiated	03CH03-HY	Patrick	21.5~26.5°C / 51~58%	16/Dec/2019~06/Mar/2020

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)	0.9 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	2.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.0 dB	Confidence levels of 95%
Temperature	0.41 °C	Confidence levels of 95%
Humidity	3.4 %	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Condition

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

2.2 Test Channel Mode

Test Software	Dos
---------------	-----

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	10
2440MHz	10
2480MHz	10

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
	

2.4 Accessories

Accessories				
AC Adapter	Brand Name	ARRIS	Model Name	NBC56A120460VU
	Power Rating	I/P: 100-240Vac, 1.5A, O/P: 12Vdc, 4.6A		
	Power Cord	1.85 meter, non-shielded cable, w/o ferrite core		

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

2.5 Support Equipment

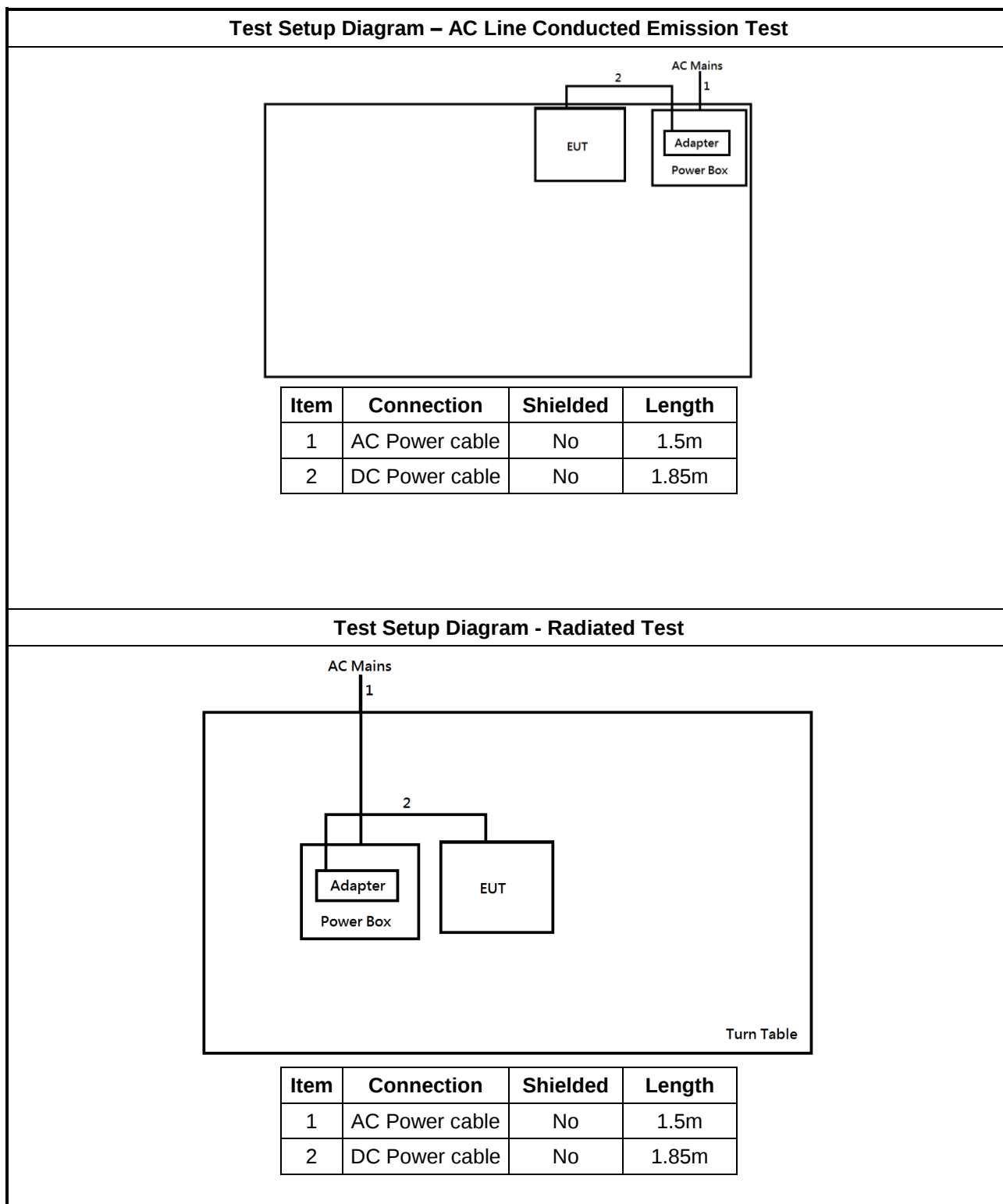
Support Equipment – AC Conduction (Beamforming)					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Notebook	DELL	P73G	-	Remote
2	Adapter for Notebook	DELL	LA65NM130	-	Remote

Support Equipment – Conducted (Non-Beamforming)					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Notebook	DELL	E5410	DoC	-
2	Adapter for Notebook	DELL	HA65NM130	DoC	-

Support Equipment – Conducted (Beamforming)					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Notebook	DELL	P73G	-	-
2	Adapter for Notebook	DELL	LA65NM130	DoC	-

Support Equipment – Radiated (Beamforming)					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Notebook	DELL	P73G	-	Remote
2	Adapter for Notebook	DELL	LA65NM130	-	Remote

2.6 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.		

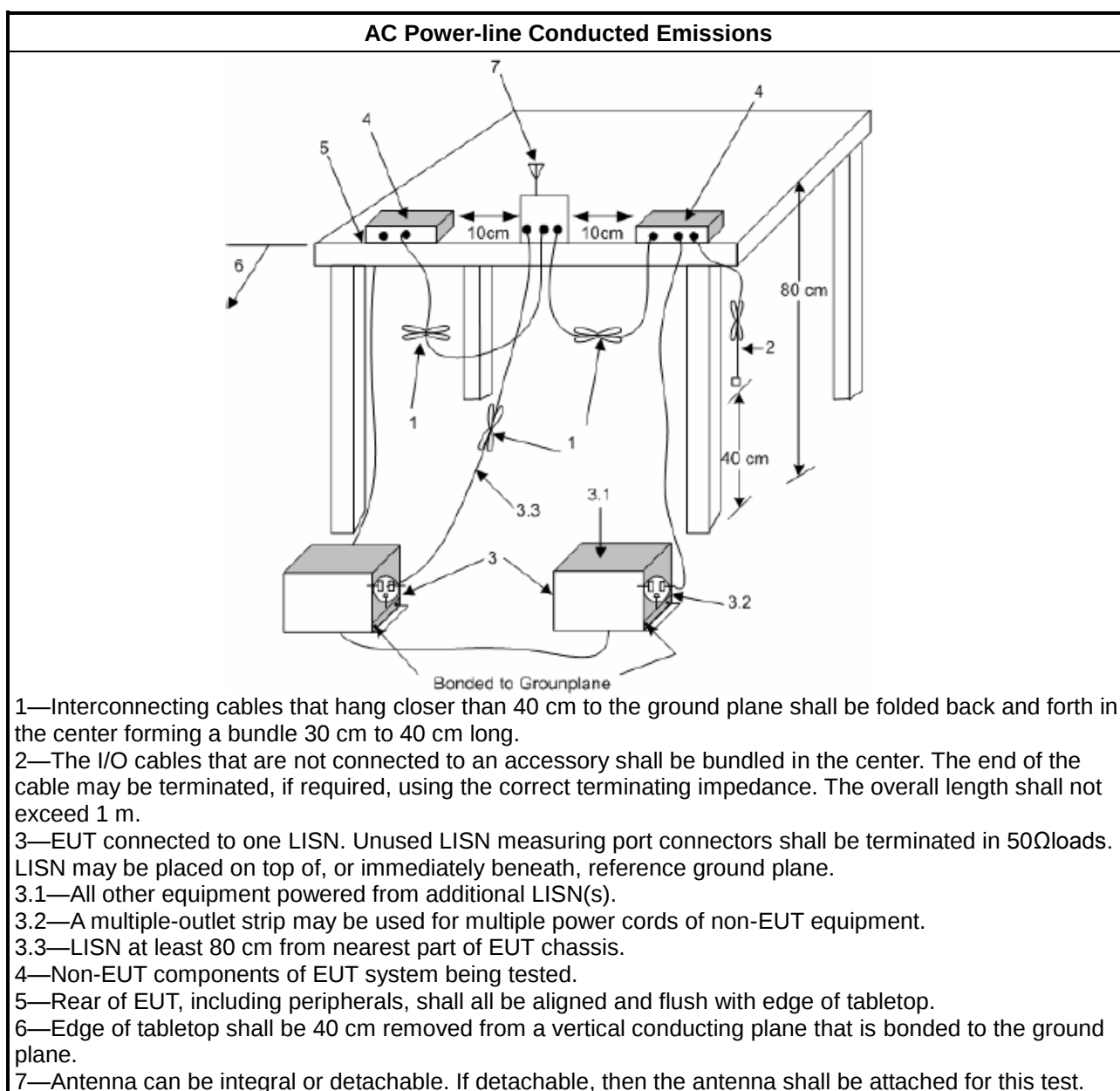
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

Test Method
▪ 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:	
▪	6 dB bandwidth $\geq$ 500 kHz.

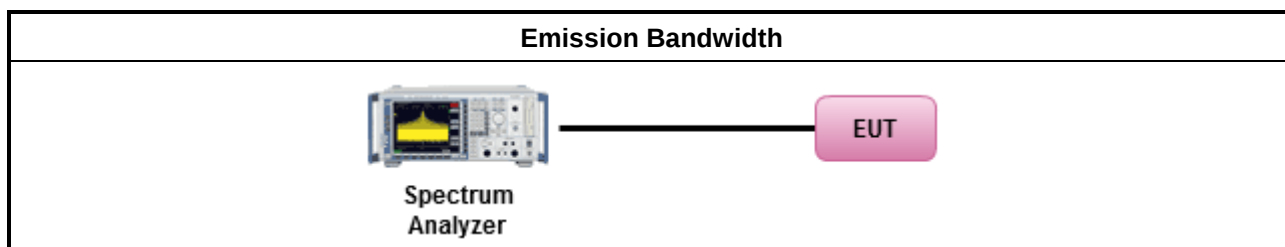
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
▪ For the emission bandwidth shall be measured using one of the options below:	
☒	Refer as KDB 558074, clause 8.2 (11.8 of ANSI C63.10) DTS bandwidth measurement.
☐	Refer as RSS-Gen, clause 6.7 for occupied bandwidth testing.
☐	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	
	If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
	Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	Smart antenna system (SAS):
	- Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	- Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	- 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:	
	2400-2483.5 MHz Band
	Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)
	Point-to-point systems (P2P): $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])$ dBm
	Smart antenna system (SAS)
	- Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	- Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	- 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.	

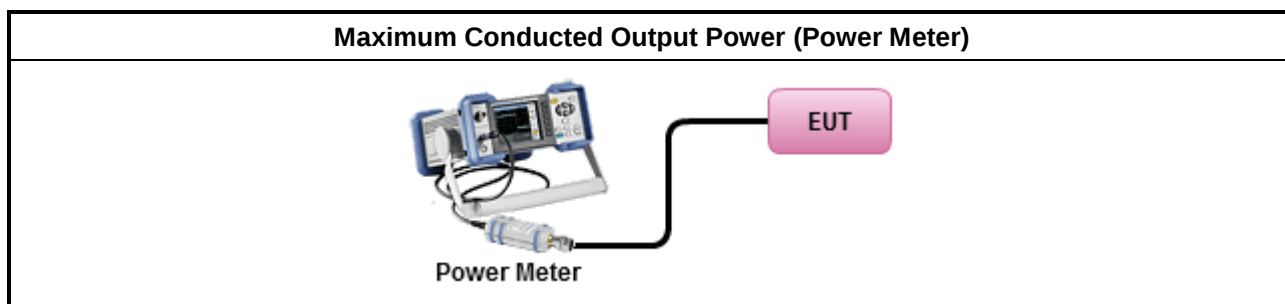
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
Maximum Peak Conducted Output Power	
☐	Refer as KDB 558074, clause 8.3.1.1 (11.9.1.1 of ANSI C63.10) RBW ≥ EBW method.
☐	Refer as KDB 558074, clause 8.3.1.2 (11.9.1.2 of ANSI C63.10) integrated band power method.
☐	Refer as KDB 558074, clause 8.3.1.3 (11.9.1.3 of ANSI C63.10) peak power meter.
Maximum Average Conducted Output Power	
☐	Refer as KDB 558074, clause 8.3.2.2 (11.9.2.2 of ANSI C63.10) using a spectrum analyzer.
☒	Refer as KDB 558074, clause 8.3.2.3 (11.9.2.3 of ANSI C63.10) using a power meter.
For conducted measurement.	
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.	
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
Power Spectral Density (PSD) ≤ 8 dBm/3kHz

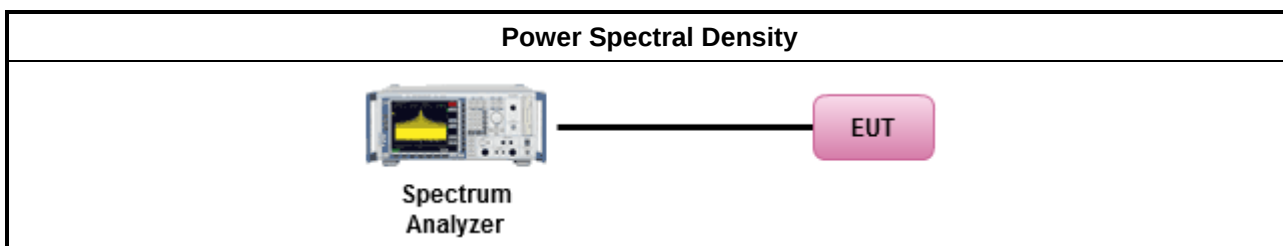
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method
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).
☒ Refer as KDB 558074, clause 8.4 (11.10 of ANSI C63.10) Method PKPSD.
For conducted measurement.
If The EUT supports multiple transmit chains using options given below:
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.	

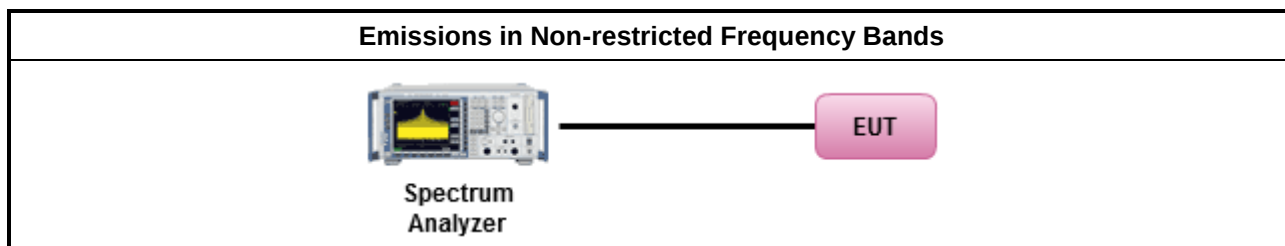
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method
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.

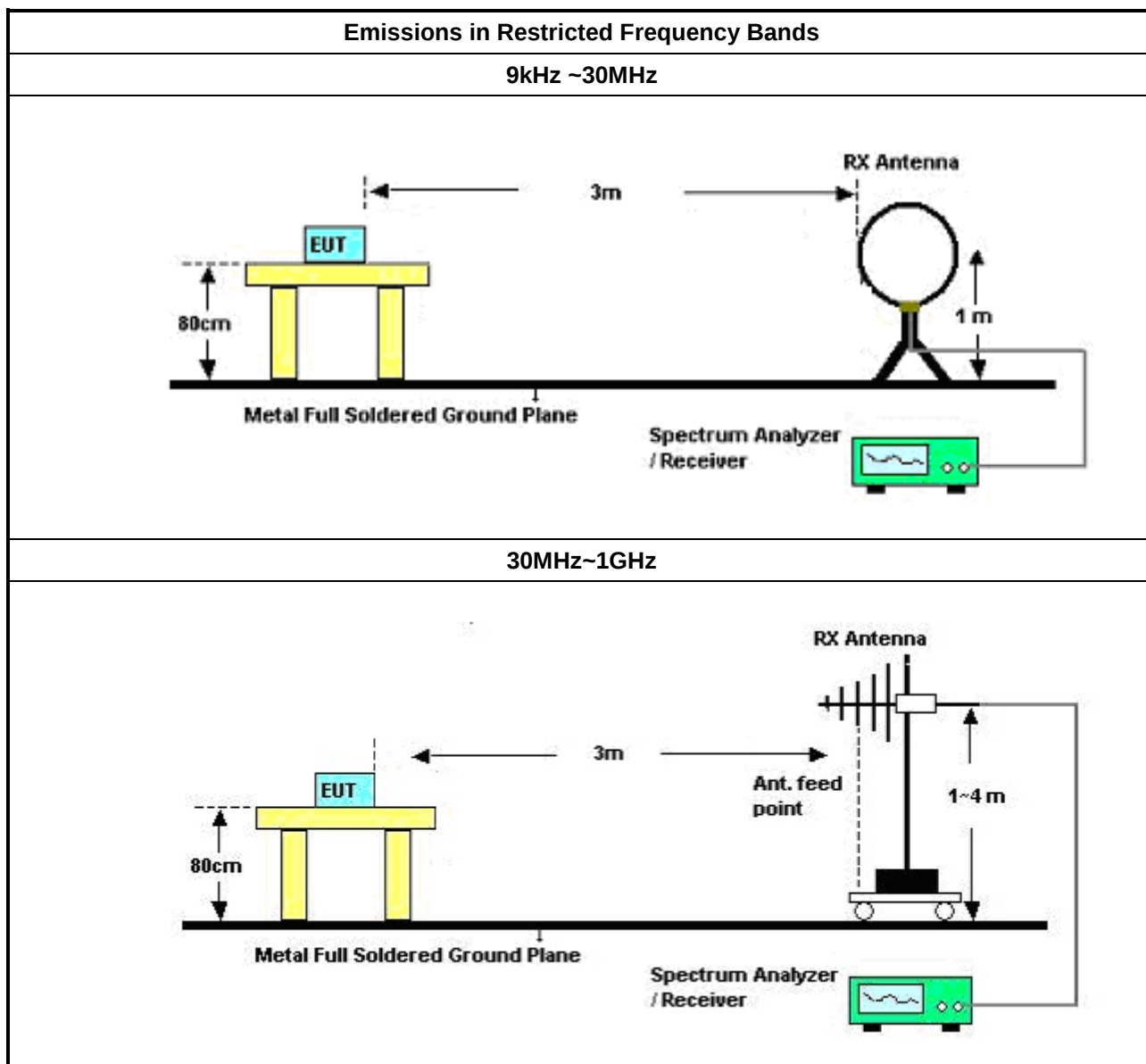
3.6.2 Measuring Instruments

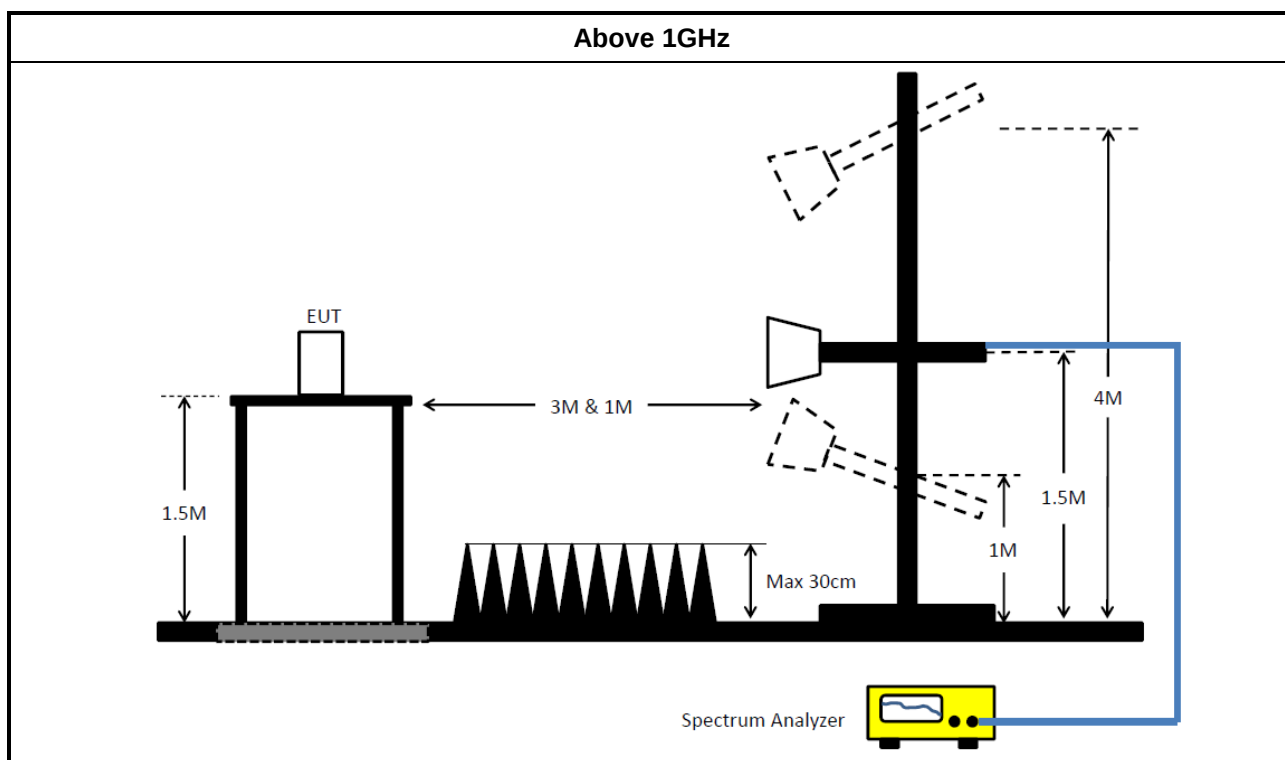
Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

Test Method	
The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].	
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.	
For the transmitter unwanted emissions shall be measured using following options below:	
	Refer as KDB 558074, clause 8.6 (11.12 of ANSI C63.10) for restricted frequency bands.
For the transmitter band-edge emissions shall be measured using following options below:	
	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.
Use the following spectrum analyzer settings:	
	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.
KDB 414788 Open-Field Test Sites and Chamber Correlation Justification.	
	Based on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in regulations; however, an attempt should be made to avoid making measurements in the near field.
	Open-field site and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

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	09/Apr/2019	08/Apr/2020
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	04/Nov/2019	05/Nov/2020
RF Cable-CON	MTJ	RG142	CB002-CO	9kHz ~ 200MHz	12/Sep/2019	11/Sep/2020
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	24/Sep/2019	23/Sep/2020

NCR: Non-Calibration Require

Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101029	10kHz ~ 40GHz	01/Oct/2019	30/Sep/2020
Pulse Power Sensor	Anritsu	MA2411B	1027452	300MHz ~ 40GHz	14/Mar/2019	13/Mar/2020
Power Meter	Anritsu	ML2495A	1124009	300MHz ~ 40GHz	14/Mar/2019	13/Mar/2020
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	10/Nov/2020
CABLE 0.2m	HUBER	329022/4	RF Cable - 02	30 to 1000MHz 1 to 18GHz	02/Apr/2019	01/Apr/2020
CABLE 0.2m	HUBER	329013/3	RF Cable - 18	30 to 1000MHz 1 to 18GHz	02/Apr/2019	01/Apr/2020
CABLE 0.5m	HUBER	MY39476/4	RF Cable - 47	30 to 1000MHz 1 to 18GHz	02/Apr/2019	01/Apr/2020

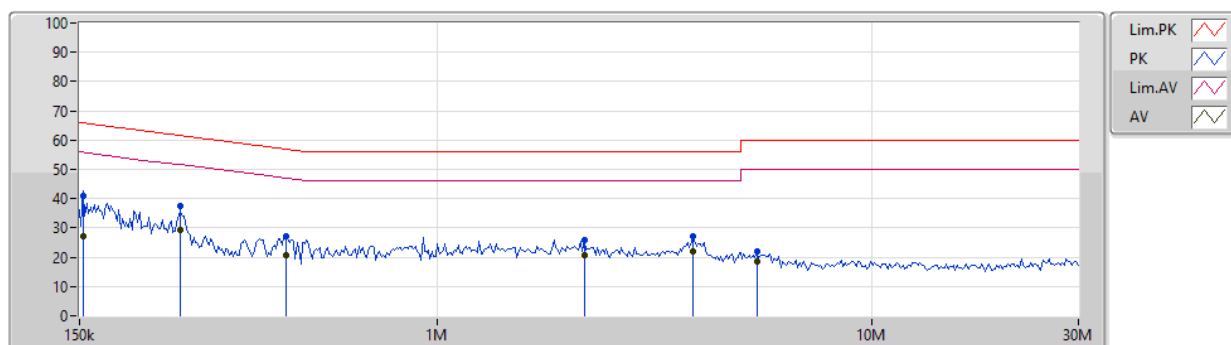
Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	30/Aug/2019	29/Aug/2020
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	1GHz ~ 18GHz 3m	30/Aug/2019	29/Aug/2020
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	22/Apr/2019	21/Apr/2020
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112D / MTJ6102-05	2678 / 001	30MHz ~ 1GHz	06/Jul/2019	05/Jul/2020
Microwave System Preamplifier	KEYSIGHT	83017A	MY53270196	1GHz ~ 26.5GHz	09/Sep/2019	08/Sep/2020
Microwave Premplifier	EMC INSTRUMENTS	EM18G40G	060604	18GHz ~ 40GHz	08/Nov/2019	07/Nov/2020
Signal Analyzer	R&S	FSP40	100305	9 kHz ~ 40 GHz	10/Jun/2019	09/Jun/2020
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	22/Mar/2019	21/Mar/2020
RF CABLE 6m	HUBER+SUHNER	SUOFLEX 104	SN 805801/4	1GHz ~ 40GHz	21/Mar/2019	20/Mar/2020
RF CABLE	HUBER+SUHNER	SUOFLEX 104	802378/4	1 GHz ~ 18 GHz	04/Jul/2019	03/Jul/2020
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1531	1GHz ~ 18GHz	09/Mar/2019	08/Mar/2020
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	15GHz ~ 40GHz	22/Mar/2019	21/Mar/2020
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	15/Mar/2019	14/Mar/2020

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Neutral
Operating Function	Adapter mode		

25/02/2020

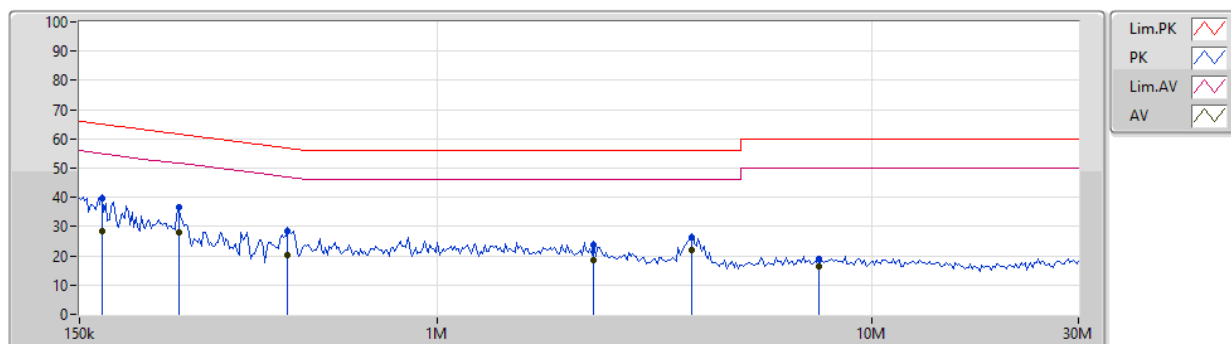


Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	153.015k	41.16	65.83	-24.67	19.63	Neutral	-	21.53	9.65	0.11	9.87			
AV	153.015k	27.10	55.83	-28.73	19.63	Neutral	-	7.47	9.65	0.11	9.87			
QP	256.712k	37.42	61.54	-24.12	19.63	Neutral	-	17.79	9.64	0.12	9.87			
AV	256.712k	29.45	51.54	-22.09	19.63	Neutral	"Worst"	9.82	9.64	0.12	9.87			
QP	448.17k	27.03	56.92	-29.89	19.63	Neutral	-	7.40	9.63	0.13	9.87			
AV	448.17k	20.69	46.92	-26.23	19.63	Neutral	-	1.06	9.63	0.13	9.87			
QP	2.18M	25.65	56.00	-30.35	19.67	Neutral	-	5.98	9.65	0.15	9.87			
AV	2.18M	20.63	46.00	-25.37	19.67	Neutral	-	0.96	9.65	0.15	9.87			
QP	3.883M	26.96	56.00	-29.04	19.73	Neutral	-	7.23	9.66	0.19	9.88			
AV	3.883M	22.10	46.00	-23.90	19.73	Neutral	-	2.37	9.66	0.19	9.88			
QP	5.446M	22.05	60.00	-37.95	19.76	Neutral	-	2.29	9.67	0.21	9.88			
AV	5.446M	18.49	50.00	-31.51	19.76	Neutral	-	-1.27	9.67	0.21	9.88			

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	Adapter mode		

25/02/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	169.024k	39.61	65.01	-24.26	19.64	Line	-	19.97	9.66	0.11	9.87			
AV	169.024k	28.25	55.01	-26.76	19.64	Line	-	8.61	9.66	0.11	9.87			
QP	254.17k	36.61	61.62	-25.01	19.64	Line	-	16.97	9.65	0.12	9.87			
AV	254.17k	28.14	51.62	-23.48	19.64	Line	"Worst"	8.50	9.65	0.12	9.87			
QP	452.651k	28.36	56.82	-28.46	19.64	Line	-	8.72	9.64	0.13	9.87			
AV	452.651k	20.37	46.82	-26.45	19.64	Line	-	0.73	9.64	0.13	9.87			
QP	2.292M	23.67	56.00	-32.33	19.68	Line	-	3.99	9.65	0.16	9.87			
AV	2.292M	18.43	46.00	-27.57	19.68	Line	-	-1.25	9.65	0.16	9.87			
QP	3.845M	26.49	56.00	-29.51	19.73	Line	-	6.76	9.66	0.19	9.88			
AV	3.845M	22.16	46.00	-23.84	19.73	Line	-	2.43	9.66	0.19	9.88			
QP	7.563M	19.10	60.00	-40.90	19.80	Line	-	-0.70	9.68	0.24	9.88			
AV	7.563M	16.33	50.00	-33.67	19.80	Line	-	-3.47	9.68	0.24	9.88			

**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)	716.25k	1.037M	1M04F1D	705k	1.036M

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;

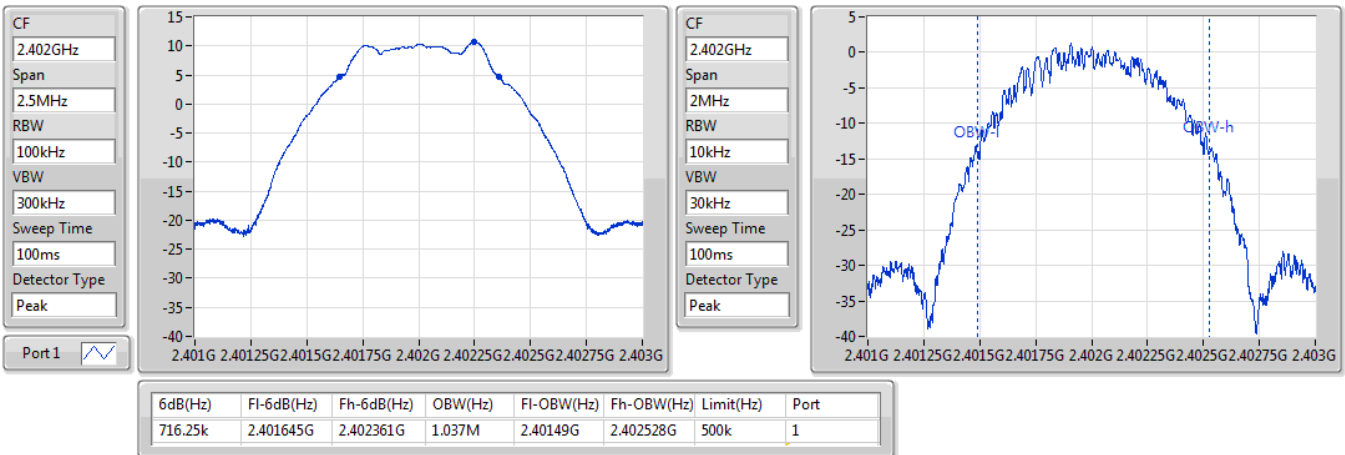
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	716.25k	1.037M
2440MHz	Pass	500k	706.25k	1.037M
2480MHz	Pass	500k	705k	1.036M

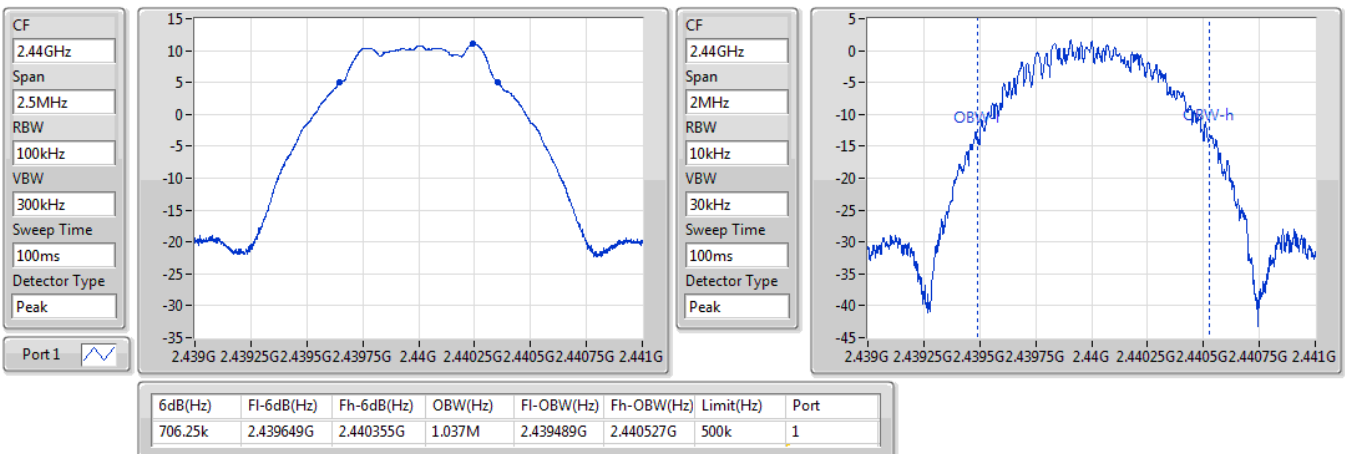
Port X-N dB = Port X 6dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

BT-LE(1Mbps)
2402MHz

24/12/2019


BT-LE(1Mbps)
2440MHz

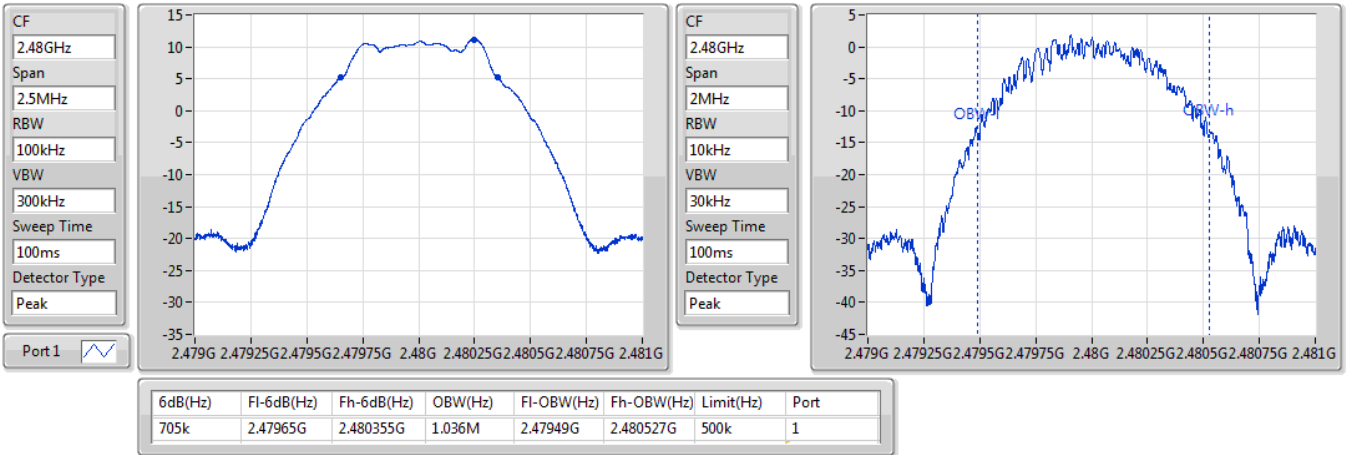
24/12/2019



BT-LE(1Mbps)

2480MHz

26/12/2019





Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	12.23	0.01671



Average Power-DTS

Appendix C

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	5.10	11.87	30.00
2440MHz	Pass	5.10	12.23	30.00
2480MHz	Pass	5.10	12.17	30.00

DG = Directional Gain; **Port X** = Port X output power



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-5.14

RBW=3 kHz.



Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	5.10	-5.70	8.00
2440MHz	Pass	5.10	-5.25	8.00
2480MHz	Pass	5.10	-5.14	8.00

DG = Directional Gain; RBW=3 kHz;

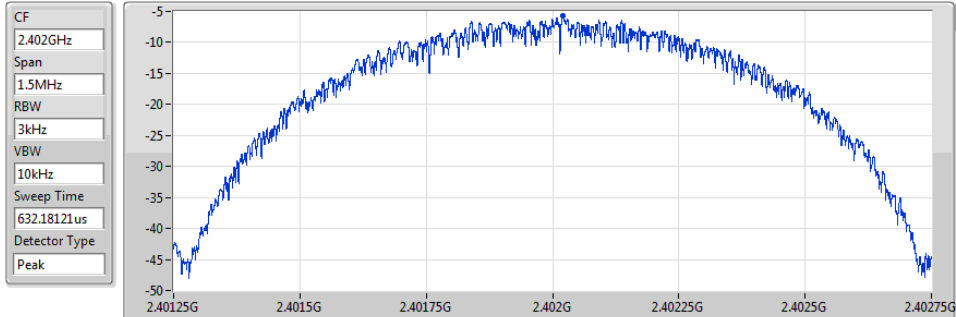
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

BT-LE(1Mbps)

PSD

2402MHz

24/12/2019



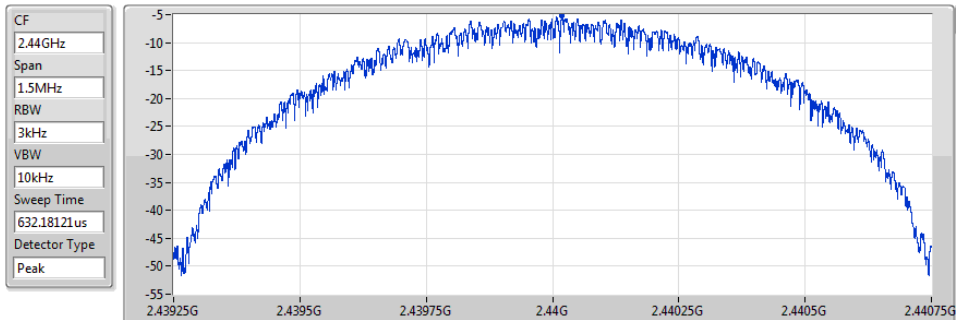
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-5.70	-5.70	-5.70

BT-LE(1Mbps)

PSD

2440MHz

24/12/2019



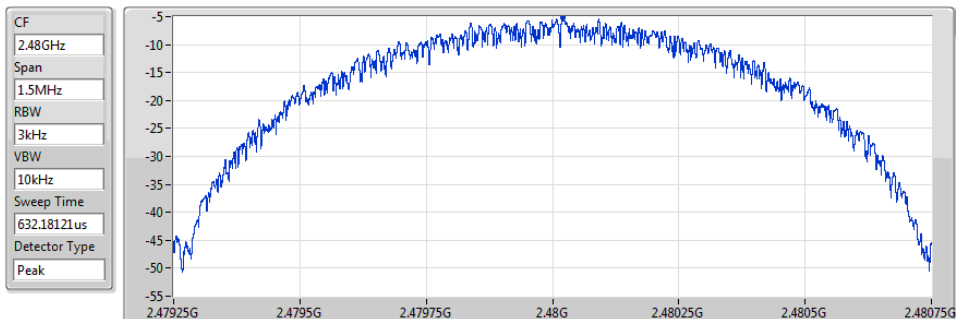
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-5.25	-5.25	-5.25

BT-LE(1Mbps)

PSD

2480MHz

26/12/2019



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-5.14	-5.14	-5.14



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)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.44025G	11.24	-18.76	947.09M	-54.51	2.39997G	-43.57	2.4G	-44.27	2.50062G	-52.01	15.26745G	-41.89	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)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.44025G	11.24	-18.76	947.09M	-54.51	2.39997G	-43.57	2.4G	-44.27	2.50062G	-52.01	15.26745G	-41.89	1
2440MHz	Pass	2.44025G	11.24	-18.76	2.0463G	-55.17	2.39179G	-53.81	2.4G	-55.28	2.49082G	-53.14	23.23965G	-41.76	1
2480MHz	Pass	2.44025G	11.24	-18.76	1.98432G	-54.60	2.39986G	-53.20	2.4835G	-48.59	2.48388G	-45.98	16.21793G	-40.58	1

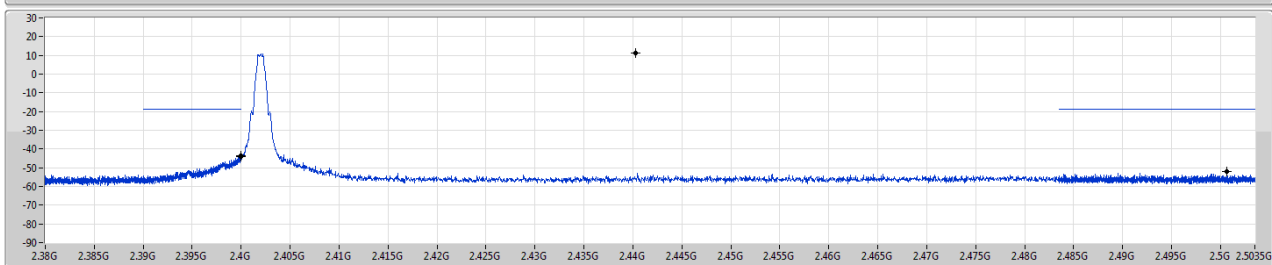
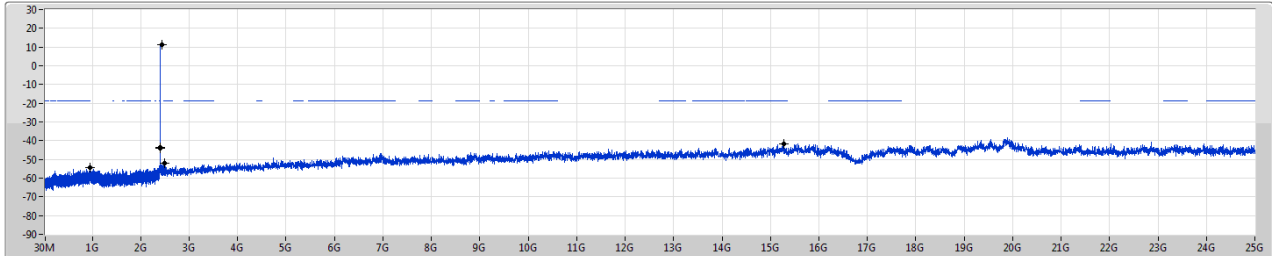
BT-LE(1Mbps)

2402MHz

CSE NdB

26/12/2019

Port1



RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak

Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44025G	11.24	-18.76	947.09M	-54.51	2.39997G	-43.57	2.4G	-44.27	2.50062G	-52.01	15.26745G	-41.89	1

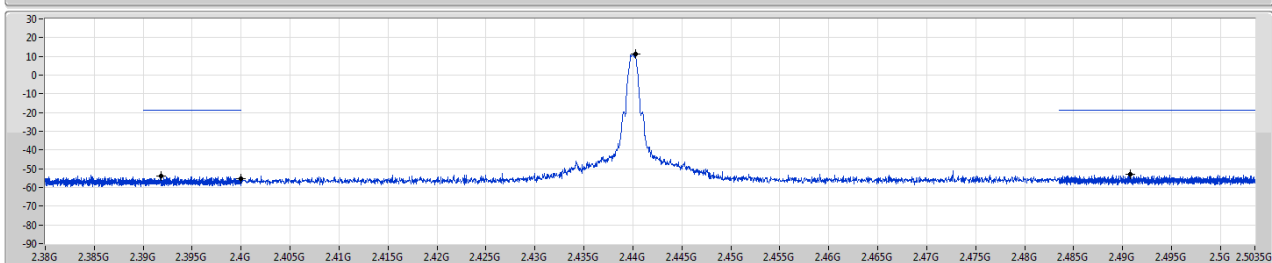
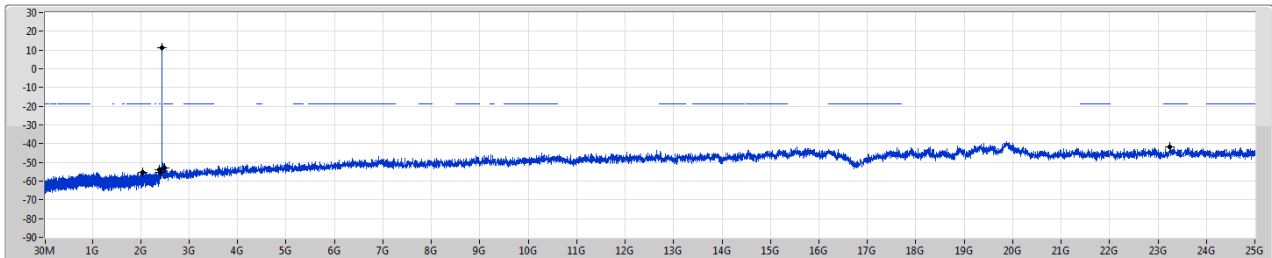
BT-LE(1Mbps)

2440MHz

CSE NdB

26/12/2019

Port1



RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak

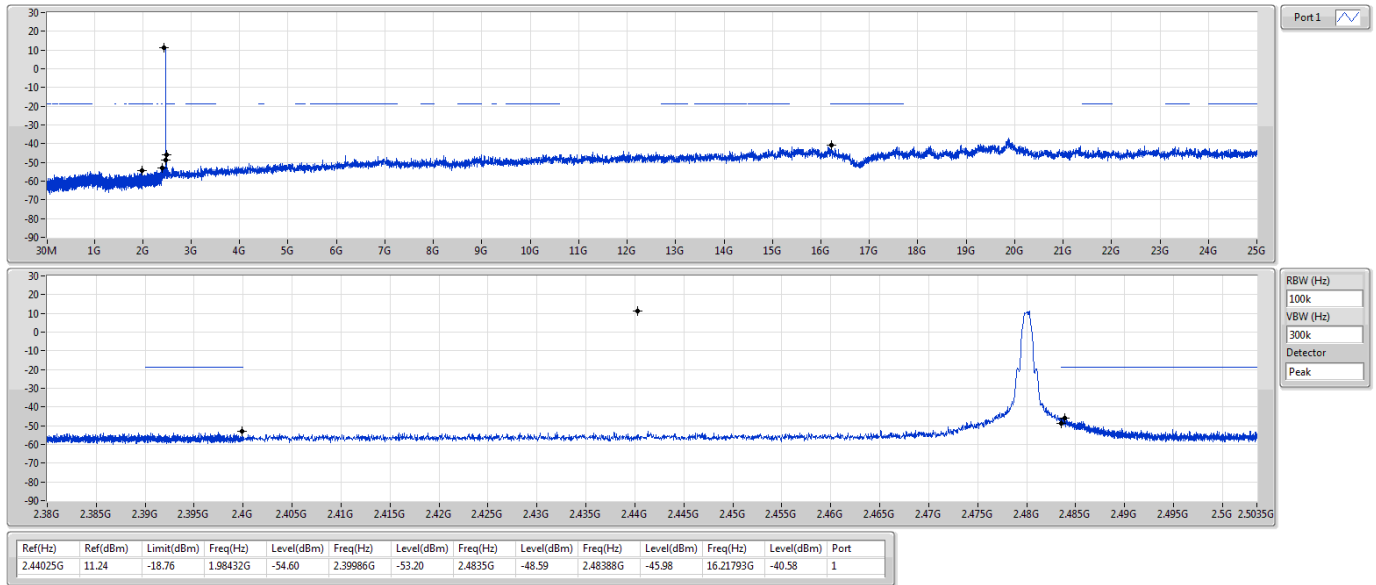
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44025G	11.24	-18.76	2.0463G	-55.17	2.39179G	-53.81	2.4G	-55.28	2.49082G	-53.14	23.23965G	-41.76	1

BT-LE(1Mbps)

2480MHz

CSE NdB

26/12/2019





Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	PK	837.04M	41.22	46.00	-4.78	3	Horizontal	0	1.00	-

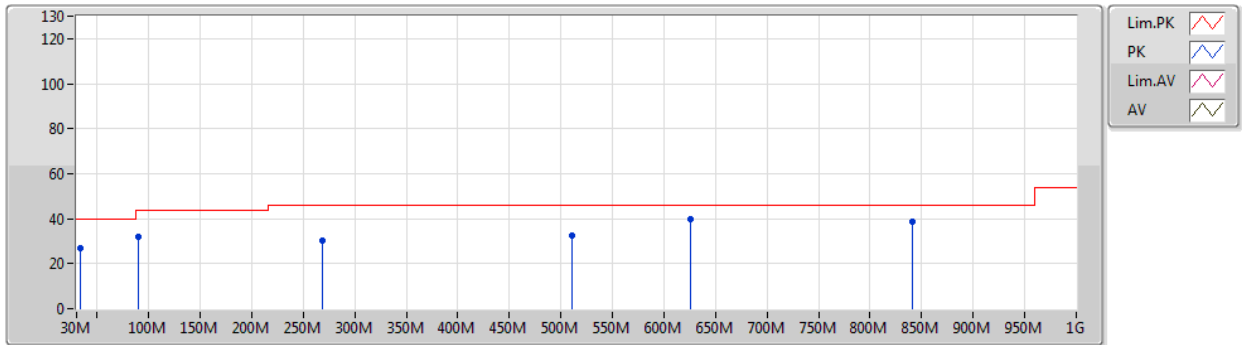
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	33.88M	26.94	40.00	-13.06	3	Vertical	360	1.00	-
2440MHz	Pass	PK	90.14M	32.13	43.50	-11.37	3	Vertical	360	1.00	-
2440MHz	Pass	PK	268.62M	30.52	46.00	-15.48	3	Vertical	360	1.00	-
2440MHz	Pass	PK	511.12M	32.63	46.00	-13.37	3	Vertical	360	1.00	-
2440MHz	Pass	PK	625.58M	40.04	46.00	-5.96	3	Vertical	360	1.00	-
2440MHz	Pass	PK	840.92M	38.81	46.00	-7.19	3	Vertical	360	1.00	-
2440MHz	Pass	PK	39.7M	25.47	40.00	-14.53	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	95.96M	26.42	43.50	-17.08	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	253.1M	31.32	46.00	-14.68	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	355.92M	30.01	46.00	-15.99	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	646.92M	35.57	46.00	-10.43	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	837.04M	41.22	46.00	-4.78	3	Horizontal	0	1.00	-

BT-LE(1Mbps)

2440MHz_Adapter

30/12/2019

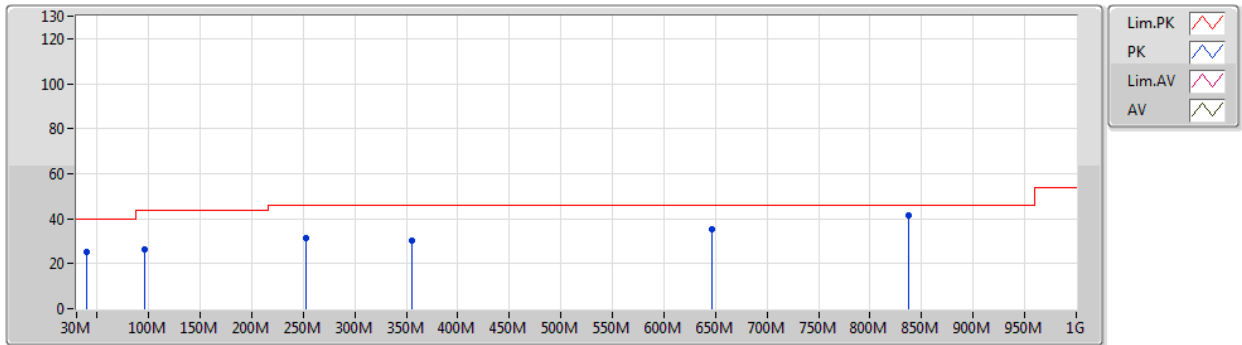


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	33.88M	26.94	40.00	-13.06	-6.72	3	Vertical	360	1.00	-	33.66	19.98	0.86	27.56
PK	90.14M	32.13	43.50	-11.37	-12.00	3	Vertical	360	1.00	-	44.13	13.98	1.43	27.41
PK	268.62M	30.52	46.00	-15.48	-5.99	3	Vertical	360	1.00	-	36.51	18.15	2.58	26.72
PK	511.12M	32.63	46.00	-13.37	-1.63	3	Vertical	360	1.00	-	34.26	22.60	3.64	27.87
PK	625.58M	40.04	46.00	-5.96	0.16	3	Vertical	360	1.00	-	39.88	24.12	4.13	28.09
PK	840.92M	38.81	46.00	-7.19	2.35	3	Vertical	360	1.00	-	36.46	25.26	4.85	27.76

BT-LE(1Mbps)

2440MHz_Adapter

30/12/2019



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	39.7M	25.47	40.00	-14.53	-9.17	3	Horizontal	0	1.00	-	34.64	17.44	0.93	27.54
PK	95.96M	26.42	43.50	-17.08	-10.76	3	Horizontal	0	1.00	-	37.18	15.15	1.48	27.39
PK	253.1M	31.32	46.00	-14.68	-6.38	3	Horizontal	0	1.00	-	37.70	17.86	2.50	26.74
PK	355.92M	30.01	46.00	-15.99	-4.36	3	Horizontal	0	1.00	-	34.37	19.67	2.99	27.02
PK	646.92M	35.57	46.00	-10.43	0.09	3	Horizontal	0	1.00	-	35.48	24.04	4.17	28.12
PK	837.04M	41.22	46.00	-4.78	2.29	3	Horizontal	0	1.00	-	38.93	25.22	4.84	27.77



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	AV	2.4835G	53.72	54.00	-0.28	3	Vertical	0	3.00	-

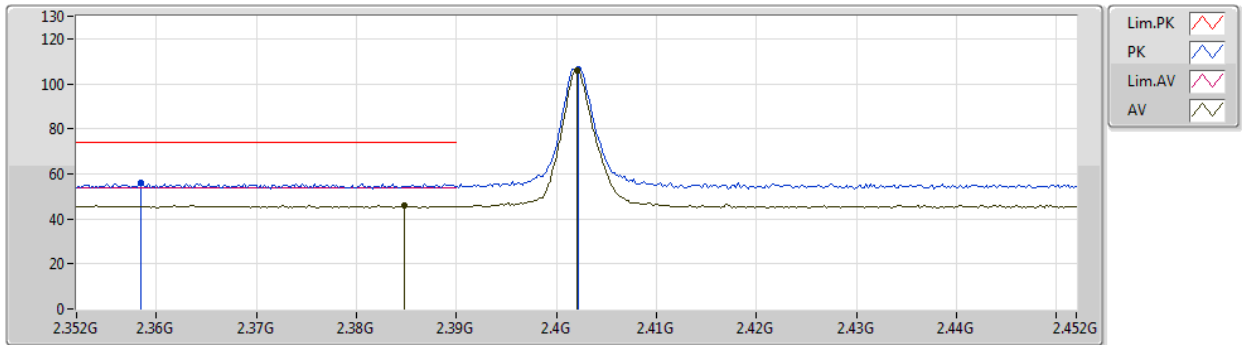
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3848G	46.07	54.00	-7.93	3	Vertical	0	2.69	-
2402MHz	Pass	AV	2.402G	105.87	Inf	-Inf	3	Vertical	0	2.69	-
2402MHz	Pass	PK	2.3584G	55.76	74.00	-18.24	3	Vertical	0	2.69	-
2402MHz	Pass	PK	2.4022G	106.71	Inf	-Inf	3	Vertical	0	2.69	-
2402MHz	Pass	AV	2.3524G	45.88	54.00	-8.12	3	Horizontal	350	1.86	-
2402MHz	Pass	AV	2.402G	103.85	Inf	-Inf	3	Horizontal	350	1.86	-
2402MHz	Pass	PK	2.365G	55.96	74.00	-18.04	3	Horizontal	350	1.86	-
2402MHz	Pass	PK	2.4024G	104.67	Inf	-Inf	3	Horizontal	350	1.86	-
2402MHz	Pass	AV	4.80397G	37.49	54.00	-16.51	3	Vertical	315	1.40	-
2402MHz	Pass	PK	4.80361G	46.13	74.00	-27.87	3	Vertical	315	1.40	-
2402MHz	Pass	AV	4.80415G	43.38	54.00	-10.62	3	Horizontal	21	1.19	-
2402MHz	Pass	PK	4.80353G	49.40	74.00	-24.60	3	Horizontal	21	1.19	-
2440MHz	Pass	AV	2.3836G	46.10	54.00	-7.90	3	Vertical	0	2.85	-
2440MHz	Pass	AV	2.44G	107.54	Inf	-Inf	3	Vertical	0	2.85	-
2440MHz	Pass	AV	2.49G	45.75	54.00	-8.25	3	Vertical	0	2.85	-
2440MHz	Pass	PK	2.3556G	56.76	74.00	-17.24	3	Vertical	0	2.85	-
2440MHz	Pass	PK	2.4404G	108.48	Inf	-Inf	3	Vertical	0	2.85	-
2440MHz	Pass	PK	2.4916G	56.27	74.00	-17.73	3	Vertical	0	2.85	-
2440MHz	Pass	AV	2.3496G	46.07	54.00	-7.93	3	Horizontal	26	2.22	-
2440MHz	Pass	AV	2.4404G	105.97	Inf	-Inf	3	Horizontal	26	2.22	-
2440MHz	Pass	AV	2.4904G	45.83	54.00	-8.17	3	Horizontal	26	2.22	-
2440MHz	Pass	PK	2.3764G	55.65	74.00	-18.35	3	Horizontal	26	2.22	-
2440MHz	Pass	PK	2.4396G	106.86	Inf	-Inf	3	Horizontal	26	2.22	-
2440MHz	Pass	PK	2.4964G	56.46	74.00	-17.54	3	Horizontal	26	2.22	-
2440MHz	Pass	AV	4.8795G	37.95	54.00	-16.05	3	Vertical	325	1.21	-
2440MHz	Pass	PK	4.88047G	46.72	74.00	-27.28	3	Vertical	325	1.21	-
2440MHz	Pass	AV	4.88005G	42.64	54.00	-11.36	3	Horizontal	26	1.05	-
2440MHz	Pass	PK	4.88005G	49.08	74.00	-24.92	3	Horizontal	26	1.05	-
2480MHz	Pass	AV	2.48G	103.35	Inf	-Inf	3	Vertical	0	3.00	-
2480MHz	Pass	AV	2.4835G	53.72	54.00	-0.28	3	Vertical	0	3.00	-
2480MHz	Pass	PK	2.4802G	104.69	Inf	-Inf	3	Vertical	0	3.00	-
2480MHz	Pass	PK	2.4835G	61.00	74.00	-13.00	3	Vertical	0	3.00	-
2480MHz	Pass	AV	2.48G	102.79	Inf	-Inf	3	Horizontal	31	2.32	-
2480MHz	Pass	AV	2.4835G	53.50	54.00	-0.50	3	Horizontal	31	2.32	-
2480MHz	Pass	PK	2.4802G	104.11	Inf	-Inf	3	Horizontal	31	2.32	-
2480MHz	Pass	PK	2.4835G	60.57	74.00	-13.43	3	Horizontal	31	2.32	-
2480MHz	Pass	AV	4.95976G	35.40	54.00	-18.60	3	Vertical	326	1.22	-
2480MHz	Pass	PK	4.95973G	45.91	74.00	-28.09	3	Vertical	326	1.22	-
2480MHz	Pass	AV	4.95995G	39.30	54.00	-14.70	3	Horizontal	22	1.78	-
2480MHz	Pass	PK	4.96033G	48.62	74.00	-25.38	3	Horizontal	22	1.78	-

BT-LE(1Mbps)

2402MHz_TX

20/12/2019

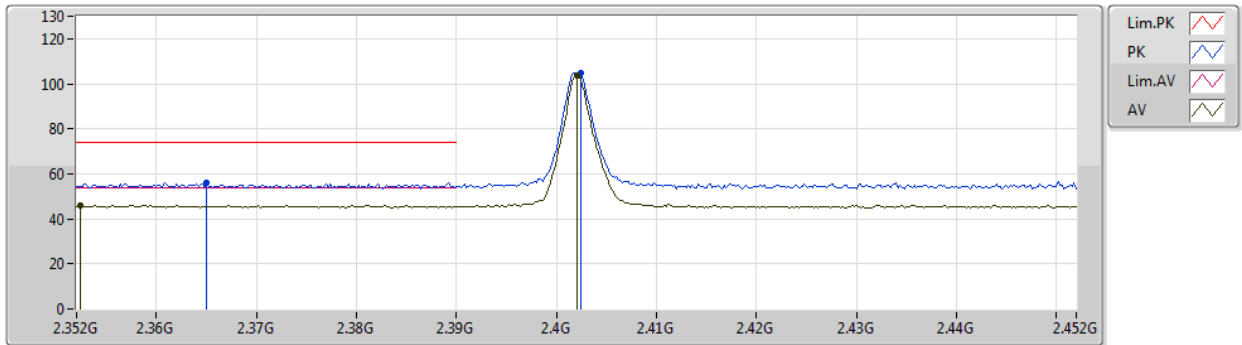


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3848G	46.07	54.00	-7.93	31.55	3	Vertical	0	2.69	-	14.52	27.56	3.99	-
AV	2.402G	105.87	Inf	-Inf	31.51	3	Vertical	0	2.69	-	74.36	27.50	4.01	-
PK	2.3584G	55.76	74.00	-18.24	31.64	3	Vertical	0	2.69	-	24.12	27.67	3.97	-
PK	2.4022G	106.71	Inf	-Inf	31.51	3	Vertical	0	2.69	-	75.20	27.50	4.01	-

BT-LE(1Mbps)

2402MHz_TX

20/12/2019

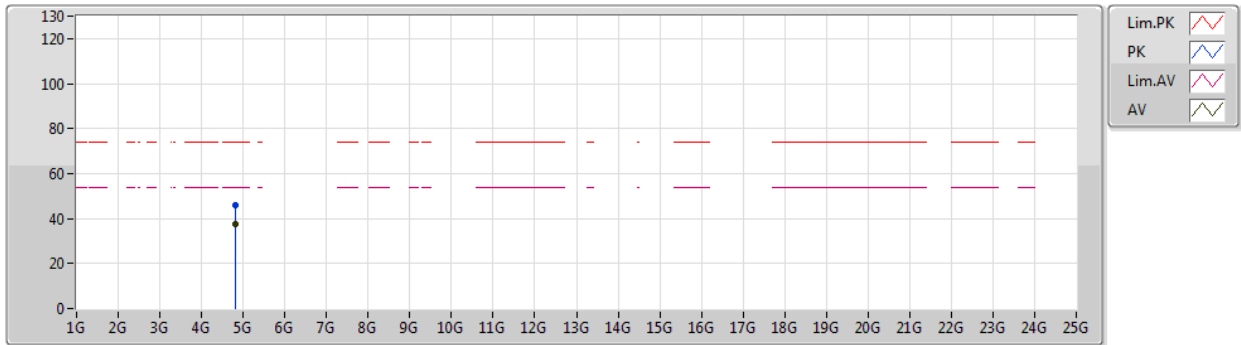


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3524G	45.88	54.00	-8.12	31.65	3	Horizontal	350	1.86	-	14.23	27.69	3.96	-
AV	2.402G	103.85	Inf	-Inf	31.51	3	Horizontal	350	1.86	-	72.34	27.50	4.01	-
PK	2.365G	55.96	74.00	-18.04	31.61	3	Horizontal	350	1.86	-	24.35	27.64	3.97	-
PK	2.4024G	104.67	Inf	-Inf	31.51	3	Horizontal	350	1.86	-	73.16	27.50	4.01	-

BT-LE(1Mbps)

2402MHz_TX

20/12/2019

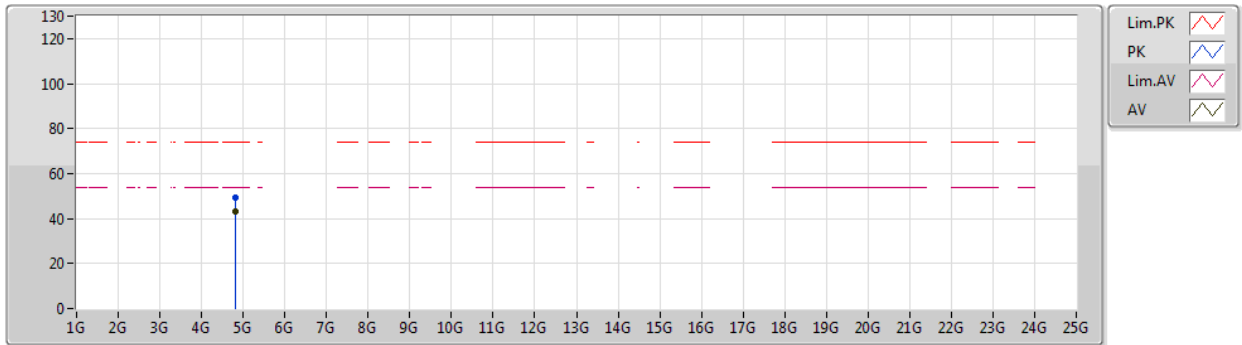


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80397G	37.49	54.00	-16.51	7.47	3	Vertical	315	1.40	-	30.02	31.10	5.78	29.41
PK	4.80361G	46.13	74.00	-27.87	7.47	3	Vertical	315	1.40	-	38.66	31.10	5.78	29.41

BT-LE(1Mbps)

2402MHz_TX

20/12/2019

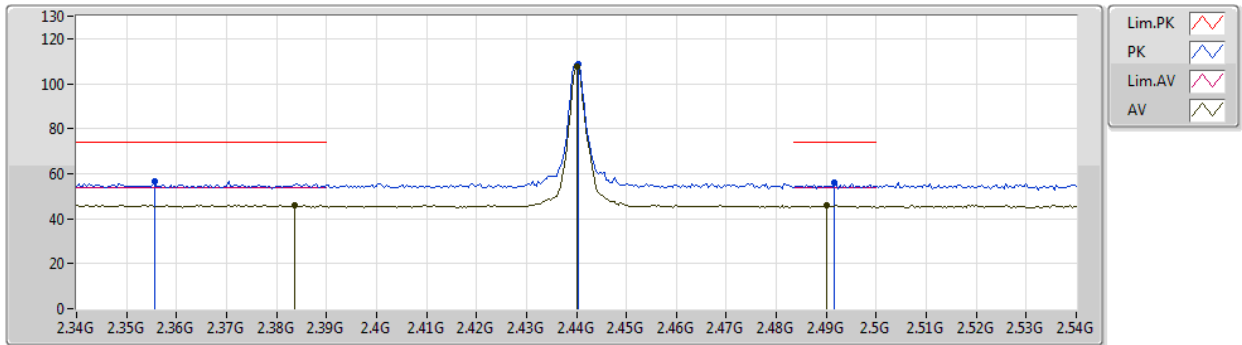


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80415G	43.38	54.00	-10.62	7.47	3	Horizontal	21	1.19	-	35.91	31.10	5.78	29.41
PK	4.80353G	49.40	74.00	-24.60	7.47	3	Horizontal	21	1.19	-	41.93	31.10	5.78	29.41

BT-LE(1Mbps)

2440MHz_TX

20/12/2019

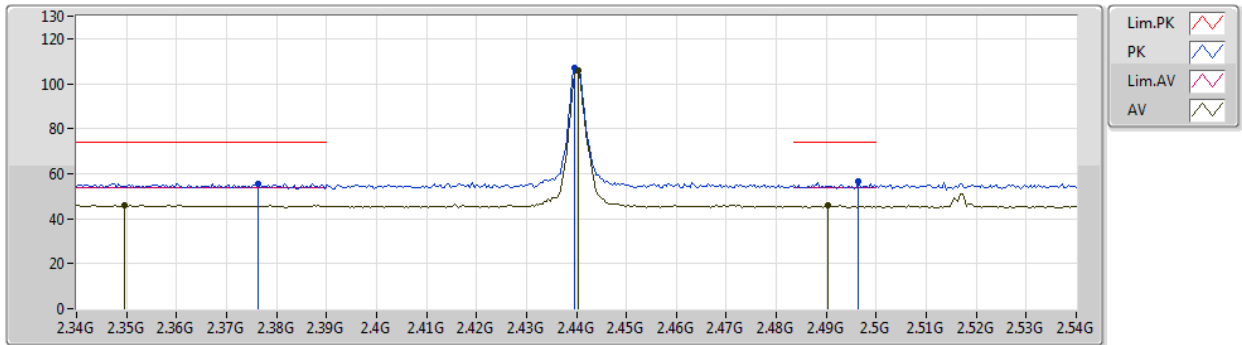


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3836G	46.10	54.00	-7.90	31.56	3	Vertical	0	2.85	-	14.54	27.57	3.99	-
AV	2.44G	107.54	Inf	-Inf	31.46	3	Vertical	0	2.85	-	76.08	27.42	4.04	-
AV	2.49G	45.75	54.00	-8.25	31.41	3	Vertical	0	2.85	-	14.34	27.32	4.09	-
PK	2.3556G	56.76	74.00	-17.24	31.64	3	Vertical	0	2.85	-	25.12	27.68	3.96	-
PK	2.4404G	108.48	Inf	-Inf	31.46	3	Vertical	0	2.85	-	77.02	27.42	4.04	-
PK	2.4916G	56.27	74.00	-17.73	31.41	3	Vertical	0	2.85	-	24.86	27.32	4.09	-

BT-LE(1Mbps)

2440MHz_TX

20/12/2019

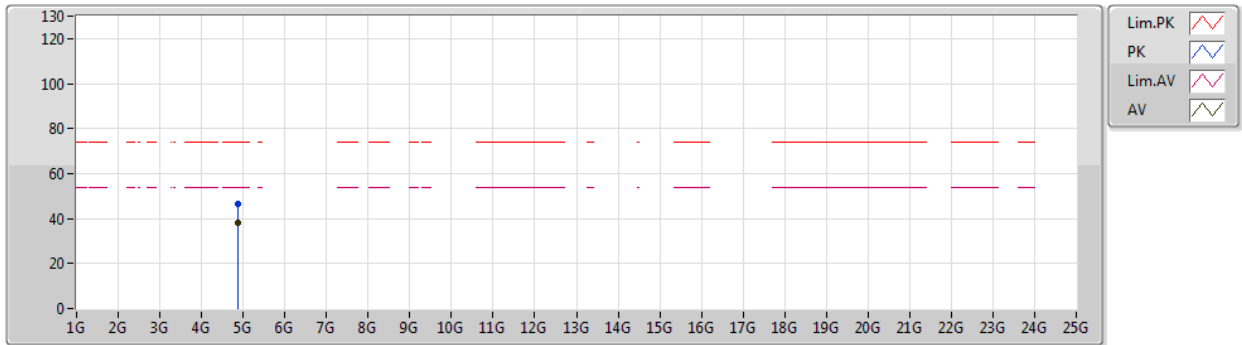


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3496G	46.07	54.00	-7.93	31.66	3	Horizontal	26	2.22	-	14.41	27.70	3.96	-
AV	2.4404G	105.97	Inf	-Inf	31.46	3	Horizontal	26	2.22	-	74.51	27.42	4.04	-
AV	2.4904G	45.83	54.00	-8.17	31.41	3	Horizontal	26	2.22	-	14.42	27.32	4.09	-
PK	2.3764G	55.65	74.00	-18.35	31.57	3	Horizontal	26	2.22	-	24.08	27.59	3.98	-
PK	2.4396G	106.86	Inf	-Inf	31.46	3	Horizontal	26	2.22	-	75.40	27.42	4.04	-
PK	2.4964G	56.46	74.00	-17.54	31.41	3	Horizontal	26	2.22	-	25.05	27.31	4.10	-

BT-LE(1Mbps)

2440MHz_TX

20/12/2019

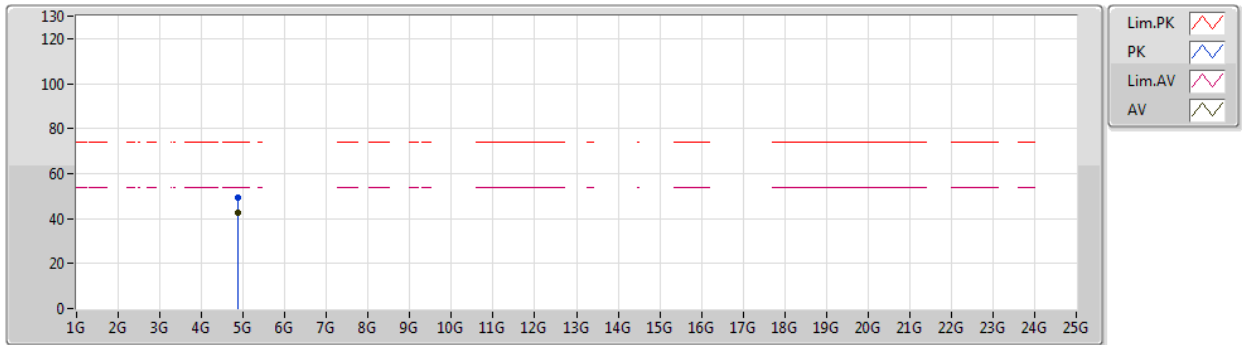


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.8795G	37.95	54.00	-16.05	7.63	3	Vertical	325	1.21	-	30.32	31.18	5.83	29.38
PK	4.88047G	46.72	74.00	-27.28	7.64	3	Vertical	325	1.21	-	39.08	31.18	5.83	29.37

BT-LE(1Mbps)

20/12/2019

2440MHz_TX

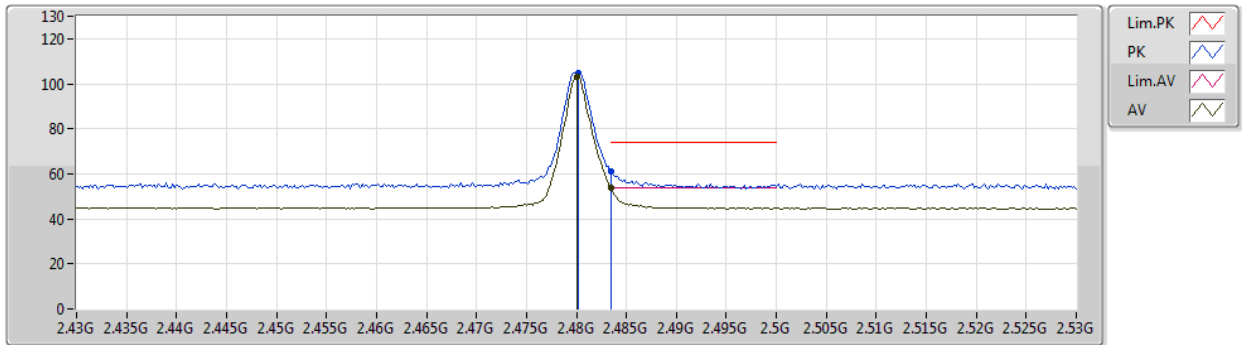


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.88005G	42.64	54.00	-11.36	7.63	3	Horizontal	26	1.05	-	35.01	31.18	5.83	29.38
PK	4.88005G	49.08	74.00	-24.92	7.63	3	Horizontal	26	1.05	-	41.45	31.18	5.83	29.38

BT-LE(1Mbps)

2480MHz_TX

20/12/2019

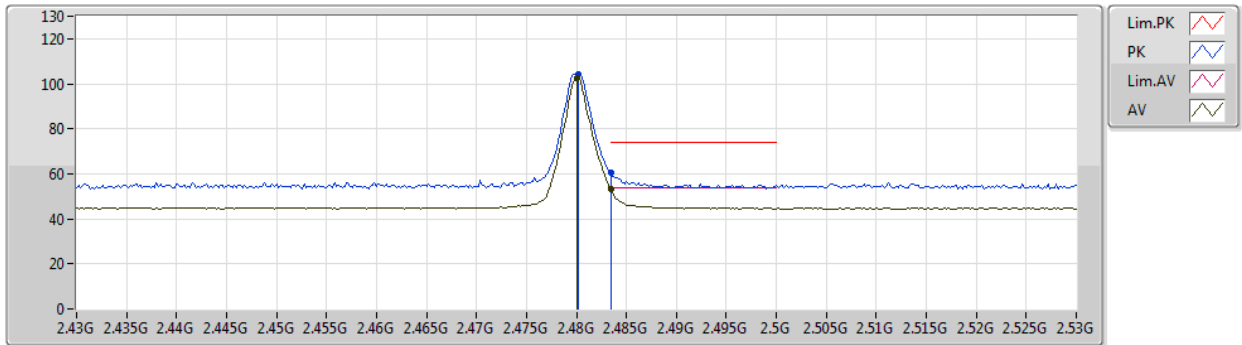


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.48G	103.35	Inf	-Inf	31.42	3	Vertical	0	3.00	-	71.93	27.34	4.08	-
AV	2.4835G	53.72	54.00	-0.28	31.41	3	Vertical	0	3.00	-	22.31	27.33	4.08	-
PK	2.4802G	104.69	Inf	-Inf	31.42	3	Vertical	0	3.00	-	73.27	27.34	4.08	-
PK	2.4835G	61.00	74.00	-13.00	31.41	3	Vertical	0	3.00	-	29.59	27.33	4.08	-

BT-LE(1Mbps)

2480MHz_TX

20/12/2019

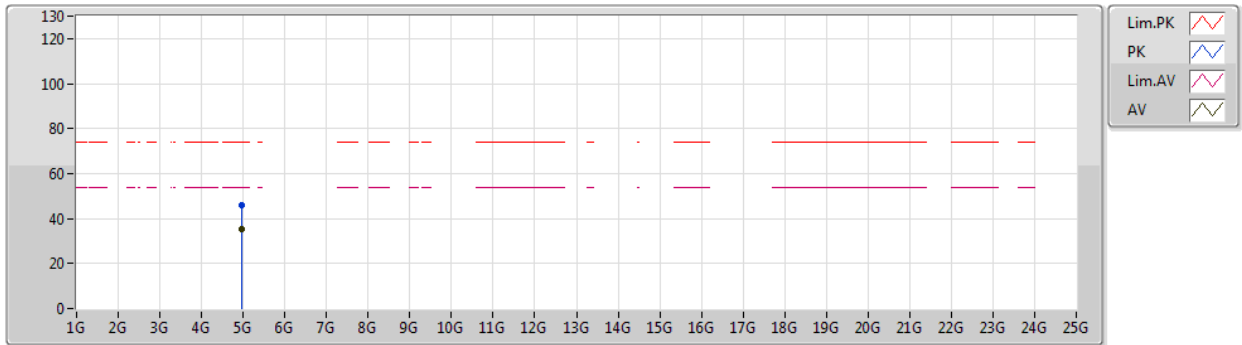


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	102.79	Inf	-Inf	31.42	3	Horizontal	31	2.32	-	71.37	27.34	4.08	-
AV	2.4835G	53.50	54.00	-0.50	31.41	3	Horizontal	31	2.32	-	22.09	27.33	4.08	-
PK	2.4802G	104.11	Inf	-Inf	31.42	3	Horizontal	31	2.32	-	72.69	27.34	4.08	-
PK	2.4835G	60.57	74.00	-13.43	31.41	3	Horizontal	31	2.32	-	29.16	27.33	4.08	-

BT-LE(1Mbps)

2480MHz_TX

20/12/2019

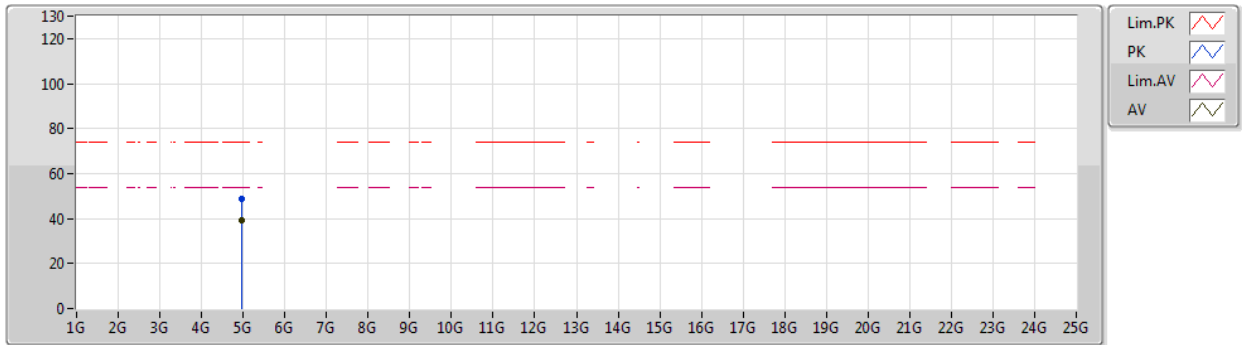


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.95976G	35.40	54.00	-18.60	7.93	3	Vertical	326	1.22	-	27.47	31.38	5.89	29.34
PK	4.95973G	45.91	74.00	-28.09	7.93	3	Vertical	326	1.22	-	37.98	31.38	5.89	29.34

BT-LE(1Mbps)

2480MHz_TX

20/12/2019



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.95995G	39.30	54.00	-14.70	7.93	3	Horizontal	22	1.78	-	31.37	31.38	5.89	29.34
PK	4.96033G	48.62	74.00	-25.38	7.93	3	Horizontal	22	1.78	-	40.69	31.38	5.89	29.34