 <p>ENAC E N S A Y O S Nº 51/LE147</p>	<p>Test report No: NIE: 63721REM.001A1</p>
<p>Partial Test report FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-16 Edition) & ICES-003 Issue 6 (Updated 2017-04) & Subpart C (10-1-16 Edition)</p>	
<p>(* Identification of item tested)</p>	<p>A Gateway device collecting data from sensors connected to the same Wirepas protocol mesh network as itself. The data is delivered from the device via cellular connection to a data centre / cloud.</p>
<p>(* Trademark)</p>	<p>Thingsee Gateway Global</p>
<p>(* Model and /or type reference)</p>	<p>MTXG</p>
<p>Other identification of the product</p>	<p>HW Version: 0201 SW Version: 2020.01.20.1 FCC ID: 2AEU3TSGWGBL IC: 20236-TSGWGBL</p>
<p>(* Features)</p>	<p>Passing sensor data to the internet. LED indicates operation mode. Device have a power button. Bluetooth, GPRS, EGPRS, LTE M1 band 2, 3, 4, 5, 8, 12, 13, 20, 26, 28; LTE NB1 band 2, 3, 4, 5, 8, 12, 13, 20, 26, 28.</p>
<p>Manufacturer</p>	<p>HALTIAN PRODUCTS OY Yrttipellontie 1 D, 90230. Oulu. Finland.</p>
<p>Test method requested, standard</p>	<p>FCC CFR 47, Part 15, Subpart B (10-1-16 Edition) & ICES-003 Issue 6 (Updated 2017-04) & Subpart C (10-1-16 Edition)</p>
<p>Approved by (name / position & signature)</p>	<p>Rafael López EMC Consumer & RF Lab. Manager</p>
<p>Date of issue</p>	<p>2020-04-02</p>
<p>Report template No</p>	<p>FDT08_22 (*) "Data provided by the client"</p>

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Competences and guarantees

DEKRA Testing and Certification is a testing laboratory accredited by the National Accreditation Body (ENAC - Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

DEKRA Testing and Certification is a FCC recognized accredited testing laboratory with appropriate scope of accreditation that include testing performed in this test report, FCC designation number ES0004.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification at the time of performance of the test.

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General conditions

1. This report is only referred to the item that has undergone the test.
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Uncertainty

Uncertainty (factor $k=2$) was calculated according to the DEKRA Testing and Certification internal document PODT000.

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").
2. The MTXG is used as a gateway device collecting data from sensors connected to the same Wirepas protocol mesh network as itself. The data is delivered from MTXG via Cat M1/2G/NB-Io1 cellular connection to a data center / cloud.

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples under test have been selected by: The client.

Sample S/01 is composed of the following elements:

Control N°	Description	Model	Serial N°	Date of reception
63721/004	Gateway Global device	MTXG	---	2020-01-24
63721/008	AC/DC adapter	SYS1561-1105	---	2020-01-24

Sample S/02, GSM and LTE Cat.M1, is composed of the following elements:

Control N°	Description	Model	Serial N°	Date of reception
63721/003	Gateway Global device	MTXG	---	2020-01-24
63721/008	AC/DC adapter	SYS1561-1105	---	2020-01-24

Test sample description

Ports..... :	Port name and description	Cable					
		Specified length [m]	Attached during test	Shielded			
	Micro USB power supply		<input checked="" type="checkbox"/>	<input type="checkbox"/>			
			<input type="checkbox"/>	<input type="checkbox"/>			
			<input type="checkbox"/>	<input type="checkbox"/>			
Supplementary information to the ports..... :							
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	<input type="checkbox"/>	AC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	AC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	DC: 5Vdc. USB power supply Sunny SYS1561 – 1105 (micro USB) rc					
<input type="checkbox"/>	DC:						

Rated Power	2.5W		
Clock frequencies	32768Hz, 25MHz, 32MHz		
Other parameters	Not provided data		
Software version	2020.01.20.1		
Hardware version	HW 01		
Dimensions in cm (W x H x D).....	105,8 x 62,9 x 16,2		
Mounting position	<input type="checkbox"/>	Table top equipment	
	<input checked="" type="checkbox"/>	Wall/Ceiling mounted equipment	
	<input type="checkbox"/>	Floor standing equipment	
	<input type="checkbox"/>	Hand-held equipment	
	<input type="checkbox"/>	Other:	
Modules/parts	Module/parts of test item	Type	Manufacturer
	N/A		
Accessories (not part of the test item)	Description	Type	Manufacturer
	N/A		
Documents as provided by the applicant.....	Description	File name	Issue date
	N/A		

Identification of the client

HALTIAN PRODUCTS OY
 Yrttpellontie 1 D, 90230 Oulu. Finland.

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2020-02-03
Date (finish)	2020-02-18

Document history

Report number	Date	Description
63721REM.001A1	2020-04-02	It is modified "Other identification of the product" field. IC parameter is replaced by 20236-TSGWGBL. This modification test report cancels and replaces the test report 63721REM001
63721REM.001	2020-03-20	First release

List of equipment used during the test

Control Number	Description	Model	Manufacturer	Next Calibration
4523	EMI TEST RECEIVER 20Hz-26.5GHz	ESU26	ROHDE AND SCHWARZ	2020-02-21
4612	HORN ANTENNA 1-18GHz	BBHA 9120 D	SCHWARZBECK MESS-ELEKTRONIK	2021-06-14
5152	TRANSIENT LIMITER 10DB N CONNECTOR	VTSD 9561-F	SCHWARZBECK	2020-04-15
5641	HYBRID BILOG ANTENNA 30MHz-6GHz	3142E	ETS LINDGREN	2021-07-31
6064	SEMIANECHOIC ABSORBER LINED CHAMBER	SAC-3	Frankonia	---
6126	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2020-04-03
6129	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2020-04-03
6132	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2020-04-05
6195	PRE-AMPLIFIER G>55dB 1-18GHz	AMF-7D-01001800-22-10P	NARDA	2020-02-21
6205	THREE-PHASE ARTIFICIAL NETWORK 32A	PMM L3-32	NARDA	2020-09-26
6329	SHIELDED ROOM	---	FRANKONIA	---

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

Remarks and comments

The test have been performed by the technical personnel: Antonio Ruiz, Carlos Haro & Raúl Alfaya.

Testing verdicts

Not applicable :	N/A
Pass :	P
Fail :	F
Not measured :	N/M

Summary

Emission Test		
Requirement – Test case	Verdict	Remark
Radiated emission. Electromagnetic field measure (30 KHz – 1000 MHz)	P	---
Radiated emission. Electromagnetic field measure (1 GHz – 12.75 GHz)	P	---
Radiated emission. Electromagnetic field measure (12.75 GHz – 26 GHz)	N/A	(1)
Continuous conducted emission (150 KHz – 30 MHz)	P	---
<u>Supplymentary information and remarks:</u>		
(1) Not applicable by the equipment internal work frequency.		

Appendix A: Test results

Appendix A Content

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DESCRIPTION OF THE OPERATION MODES

The operation modes described in this paragraph constitute a functionality of the sample under test for itself. The operation modes used by the samples to which the present report refers, are shown in the following table:

OPERATION MODE	DESCRIPTION
OM#01	EUT ON. Bluetooth OFF. MS in IDLE mode. LTE Cat. M1 Band 2. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#02	EUT ON. Bluetooth communication established. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#03	EUT ON. Bluetooth without communication established. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#04	EUT ON. MS in IDLE mode. GSM 850. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#05	EUT ON. MS in IDLE mode. GSM 1900. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#06	EUT ON. MS allocated a channel. GSM 850. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#07	EUT ON. MS allocated a channel. GSM 1900. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#08	EUT ON. MS in IDLE mode. LTE Cat. M1 Band 2. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#09	EUT ON. MS in IDLE mode. LTE Cat. M1 Band 4. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#10	EUT ON. MS in IDLE mode. LTE Cat. M1 Band 5. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#11	EUT ON. MS in IDLE mode. LTE Cat. M1 Band 12. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#12	EUT ON. MS in IDLE mode. LTE Cat. M1 Band 13. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#13	EUT ON. MS in IDLE mode. LTE NBloT Band 2. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#14	EUT ON. MS in IDLE mode. LTE NBloT Band 4. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#15	EUT ON. MS in IDLE mode. LTE NBloT Band 5. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#16	EUT ON. MS in IDLE mode. LTE NBloT Band 12. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#17	EUT ON. MS in IDLE mode. LTE NBloT Band 13. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#18	EUT ON. MS in traffic mode. LTE Cat. M1 Band 2. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#19	EUT ON. MS in traffic mode. LTE Cat. M1 Band 4. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#20	EUT ON. MS in traffic mode. LTE Cat. M1 Band 5. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#21	EUT ON. MS in traffic mode. LTE Cat. M1 Band 12. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#22	EUT ON. MS in traffic mode. LTE Cat. M1 Band 13. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#23	EUT ON. MS in traffic mode. LTE NBloT Band 2. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#24	EUT ON. MS in traffic mode. LTE NBloT Band 4. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#25	EUT ON. MS in traffic mode. LTE NBloT Band 5. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#26	EUT ON. MS in traffic mode. LTE NBloT Band 12. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)
OM#27	EUT ON. MS in traffic mode. LTE NBloT Band 13. Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz)

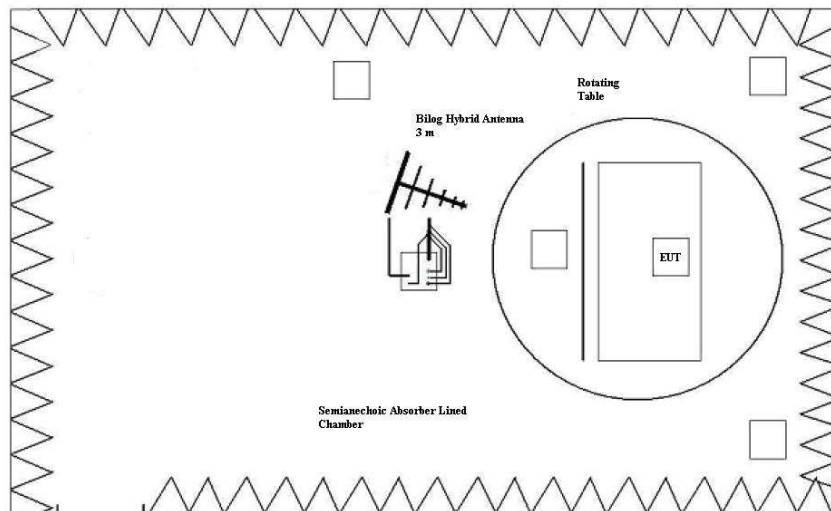
RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE

LIMITS:	Product standard:	FCC CFR 47, Part 15, Subpart B (10-1-16 Edition), Secs. 15.109 & ICES-003 Issue 6 (Updated 04-2017)
	Test standard:	FCC CFR 47, Part 15, Subpart B (10-1-16 Edition), Secs. 15.109 & ICES-003 Issue 6 (Updated 04-2017)

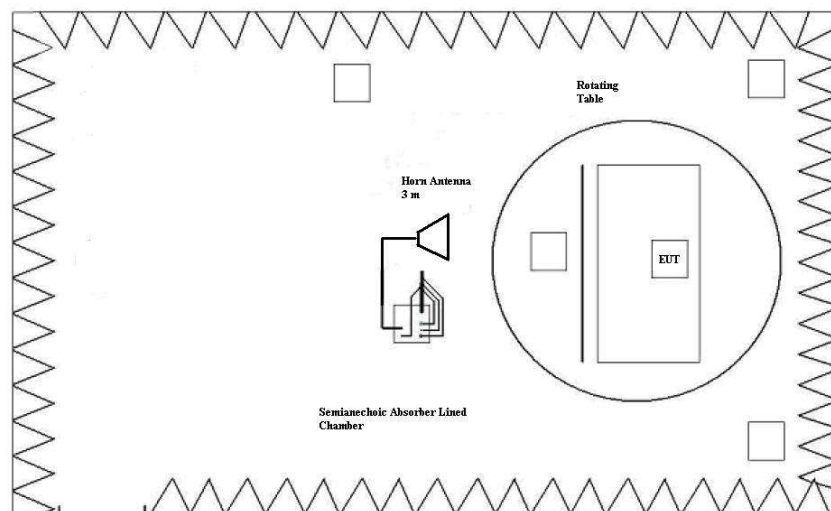
Limits of interference Class B

The applied limit for radiated emissions, 10 m distance, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-1-16 Edition), Secs. 15.109 & ICES-003 Issue 6 (Updated 04-2017) in the frequency range 30 MHz to 26 GHz for class A equipment.

Frequency range (MHz)	QP Limit for 10 m	
	($\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)
30 to 88	90	39
88 to 216	150	43.5
216 to 960	210	46
Above 960	300	49.5



Setup for measurements < 1GHz.



Setup for measurements > 1GHz.

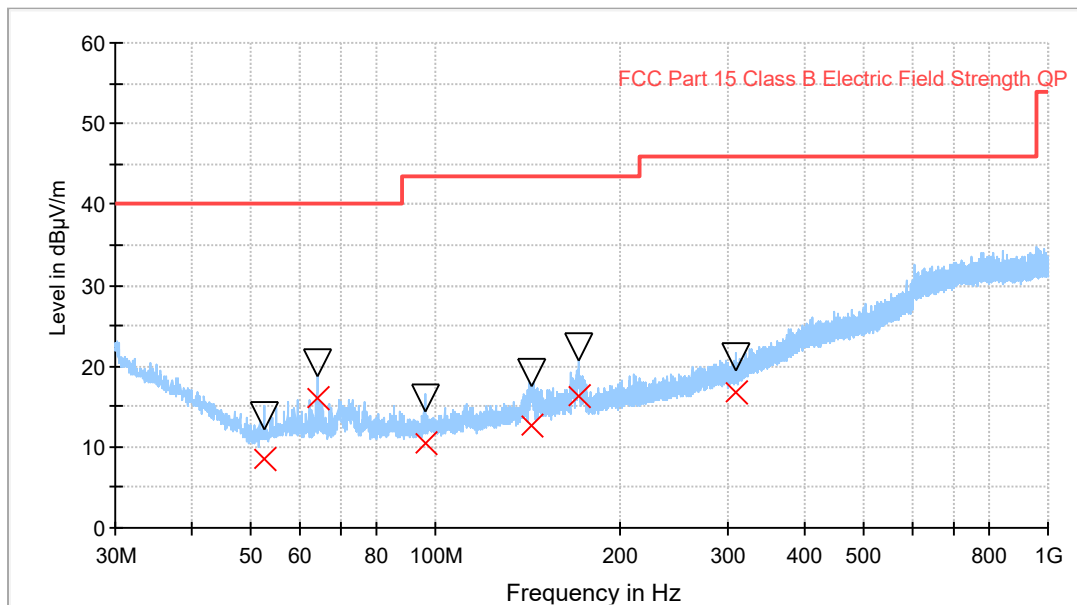
TESTED SAMPLE:	S/01
TESTED OPERATION MODES:	OM#01
TEST RESULTS:	CRmmnnRRPP: CR, Radiated Condition; mm: Sample number; nn: Operation mode; RR: Range; PP: Polarization.

CRmmnnRRPP	Description	Result
CR0101LR	Range: 30 MHz - 1000 MHz.	P
CR0101HR1_PH	Range: 1 GHz – 12.75 GHz. Horizontal Polarization.	P
CR0101HR1_PV	Range: 1 GHz – 12.75 GHz. Vertical Polarization.	P

Radiated Emission. CR0101LR

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#01
 Description: EUT ON. Bluetooth OFF. MS in IDLE mode. LTE Cat. M1 Band 2.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).

Full Spectrum



— Peak Preview
 × QuasiPeak
 — FCC Part 15 Class B Electric Field Strength QP
 ▽ MaxPeak

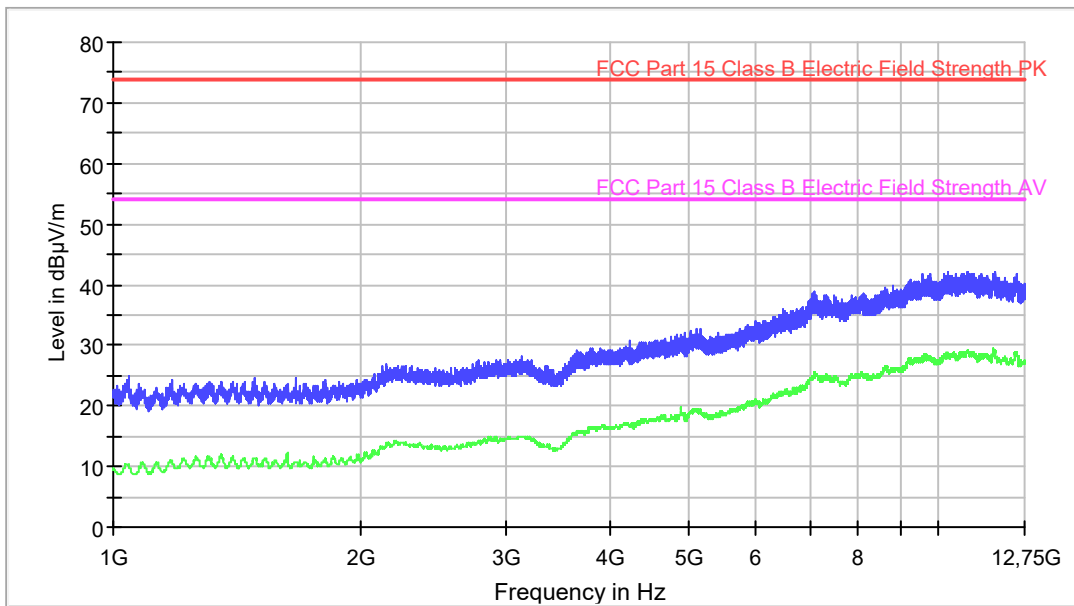
Maximizations

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
52.394000	8.49	13.77	40.00	32.51	176.0	V	-133.0
64.006000	16.02	20.46	40.00	23.98	158.0	V	-6.0
96.003000	10.42	16.00	43.52	33.10	376.0	V	79.0
143.713000	12.63	19.15	43.52	30.89	121.0	V	141.0
170.992000	16.24	22.46	43.52	27.28	107.0	V	-113.0
308.933000	18.54	21.19	46.00	31.46	328.0	H	145.0

Radiated Emission. CR0101HR1_PH

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#01
 Description: EUT ON. Bluetooth OFF. MS in IDLE mode. LTE Cat. M1 Band 2.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).

RE FCC Part 15 ClassB 1-12,75 GHz



— Average Scan — Peak Scan
 — FCC Part 15 Class B Electric Field Strength PK — FCC Part 15 Class B Electric Field Strength AV

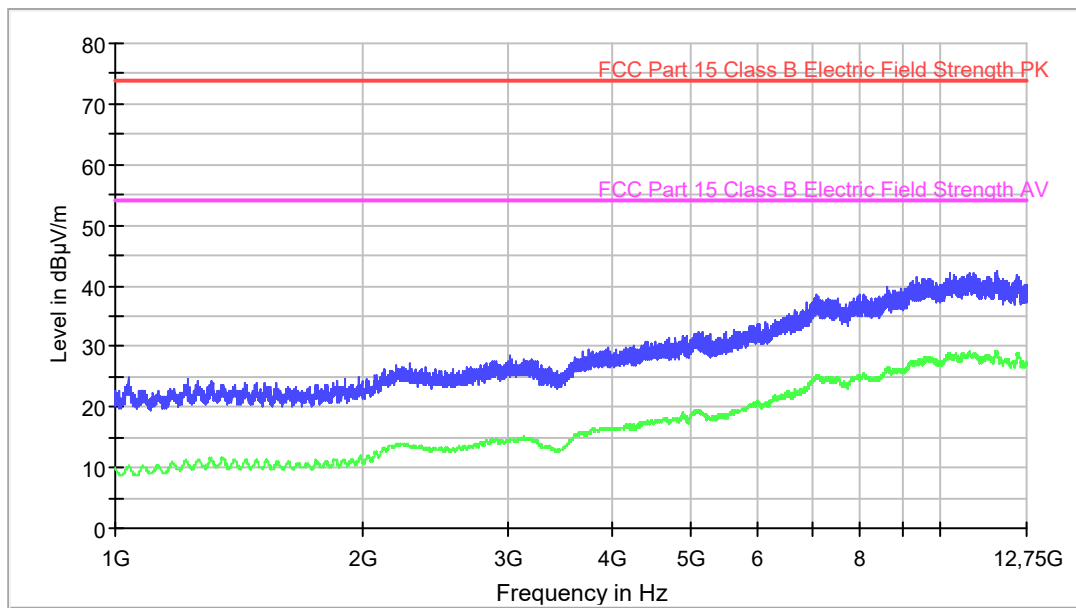
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV/m)	AVG CLRWR (dBµV/m)
1043.600000	25.0	10.1
1481.200000	24.6	11.4
2144.800000	26.8	13.4
2757.600000	27.3	13.6
3130.800000	28.1	14.9
4224.400000	30.8	16.7
5880.000000	33.4	20.5
7090.800000	38.7	25.4
9810.800000	41.9	28.0
10866.400000	42.1	28.9

Radiated Emission. CR0101HR1_PV

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#01
 Description: EUT ON. Bluetooth OFF. MS in IDLE mode. LTE Cat. M1 Band 2.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).

RE FCC Part 15 ClassB 1-12,75 GHz



— Average Scan — Peak Scan
 — FCC Part 15 Class B Electric Field Strength PK — FCC Part 15 Class B Electric Field Strength AV

Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV/m)	AVG CLRWR (dBµV/m)
1036.400000	24.9	10.2
1308.000000	24.4	11.5
2115.600000	26.3	13.3
2280.400000	27.4	13.6
3014.400000	28.6	14.9
4521.600000	30.8	17.6
5921.600000	33.5	20.5
7080.400000	38.4	24.9
9355.600000	41.4	27.5
11746.800000	42.5	29.0

CONTINUOUS CONDUCTED EMISSION

LIMITS:	Product standard :	FCC CFR 47, Part 15, Subpart B (10-1-16 Edition), Secs. 15.107; ICES-003 Issue 6 (January 2016); Subpart C (10-1-16 Edition). Sec. 15.207
	Test standard :	FCC CFR 47, Part 15, Subpart B (10-1-16 Edition), Secs. 15.107; ICES-003 Issue 6 (January 2016); Subpart C (10-1-16 Edition). Sec. 15.207

CLASS B

The applied limit for continuous conducted emissions in power leads, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-1-16 Edition), Secs. 15.107 & ICES-003 Issue 6 (January 2016) & Subpart C (10-1-16 Edition). Sec. 15.207, in the frequency range 0,15 to 30 MHz, for Class B equipment was:

Frequency range (MHz)	Limit (dB μ V)	
	Quasi-peak	Average
0,15 to 0,5	66-56*	56-46*
0,5 to 5	56	46
5 to 30	60	50

*Decreases with the logarithm of the frequency.

TESTED SAMPLES:	S/01 & S/02
TESTED OPERATION MODES:	OM#02 to 27
TEST RESULTS:	CCmmnnhh: CC, Conducted Condition; mm: Sample number; nn: Operation mode; hh: wire

CCmmnnhh	DESCRIPTION	RESULT
CC01020N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0102L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC01030N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0103L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC02040N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0204L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC02050N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0205L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC02060N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0206L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC02070N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0207L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC02080N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0208L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC02090N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0209L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC02100N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0210L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC02110N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0211L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC02120N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0212L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC01130N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0113L1	Range: 150kHz – 30MHz. Phase wire noise.	P

TEST RESULTS:

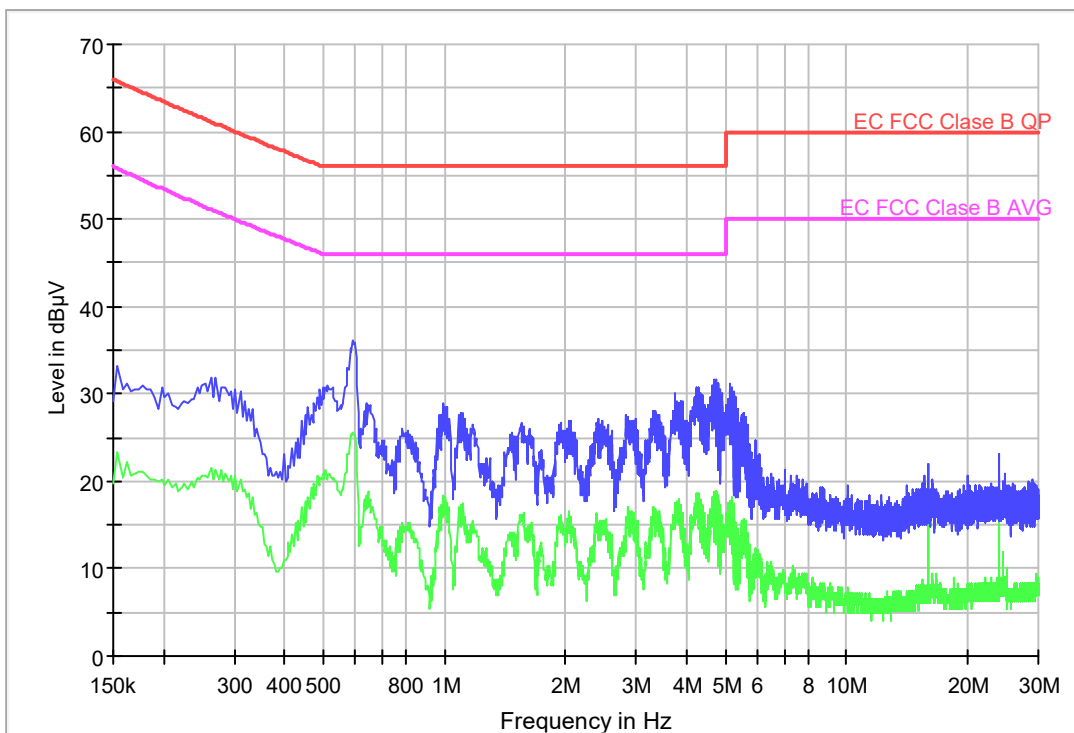
(Cont)

CCmmnnhh	DESCRIPTION	RESULT
CC01140N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0114L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC01150N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0115L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC01160N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0116L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC01170N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0117L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC02180N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0218L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC02190N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0219L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC02200N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0220L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC02210N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0221L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC02220N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0222L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC01230N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0123L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC01240N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0124L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC01250N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0125L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC01260N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0126L1	Range: 150kHz – 30MHz. Phase wire noise.	P
CC01270N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0127L1	Range: 150kHz – 30MHz. Phase wire noise.	P

Conducted Emission. CC01020N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#02
 Description: EUT ON. Bluetooth communication established.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

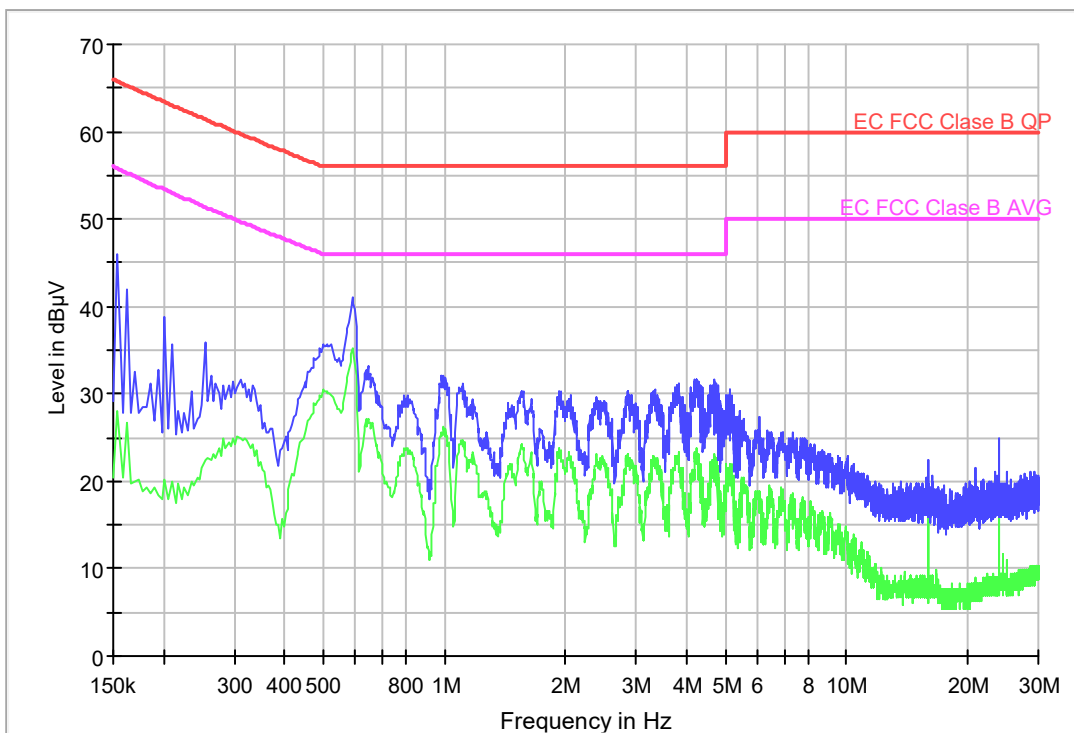
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.154000	33.2	23.3
0.270000	31.8	21.4
0.590000	36.1	25.6
0.998000	28.9	18.4
2.058000	26.8	16.0
3.342000	28.1	16.8
4.746000	31.7	13.1
7.002000	21.2	8.3
16.002000	22.0	15.8
24.002000	23.0	17.9

Conducted Emission. CC0102L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#02
 Description: EUT ON. Bluetooth communication established.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

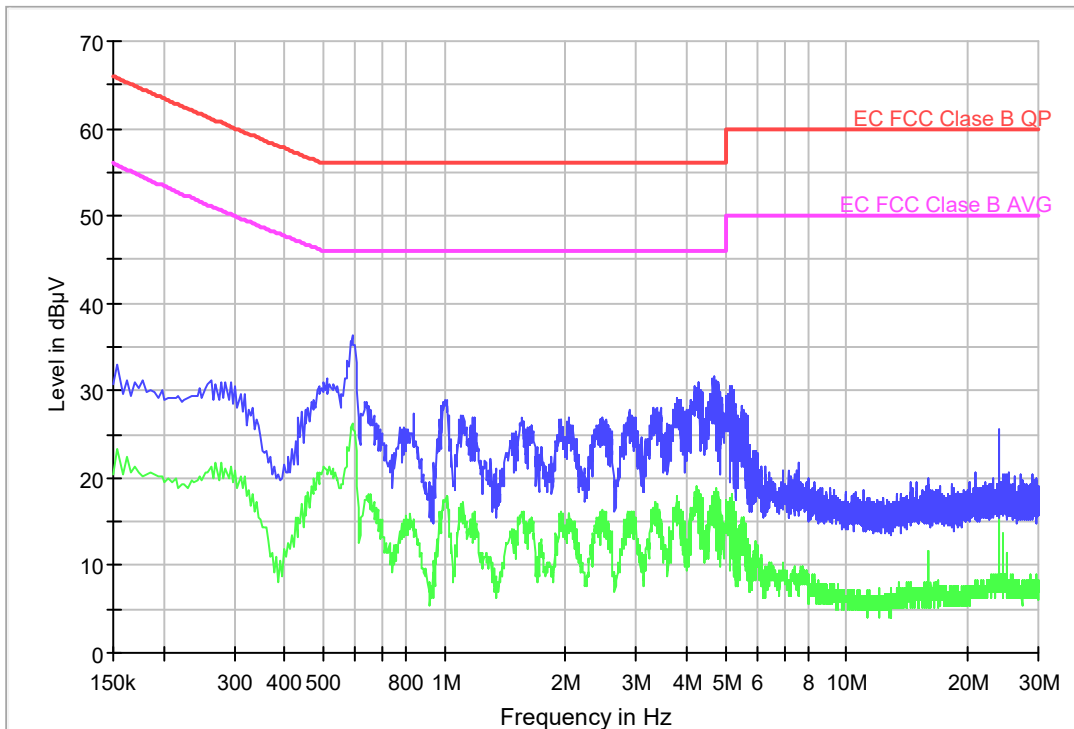
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.154000	45.9	28.1
0.262000	32.1	22.4
0.590000	41.1	35.2
0.982000	32.1	25.6
1.942000	30.2	23.6
3.330000	30.5	22.6
4.258000	31.7	23.1
6.334000	25.7	17.7
15.998000	22.4	14.7
24.002000	24.8	18.4

Conducted Emission. CC01030N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#03
 Description: EUT ON. Bluetooth without communication established.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise

FCC Part 15 Class B



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

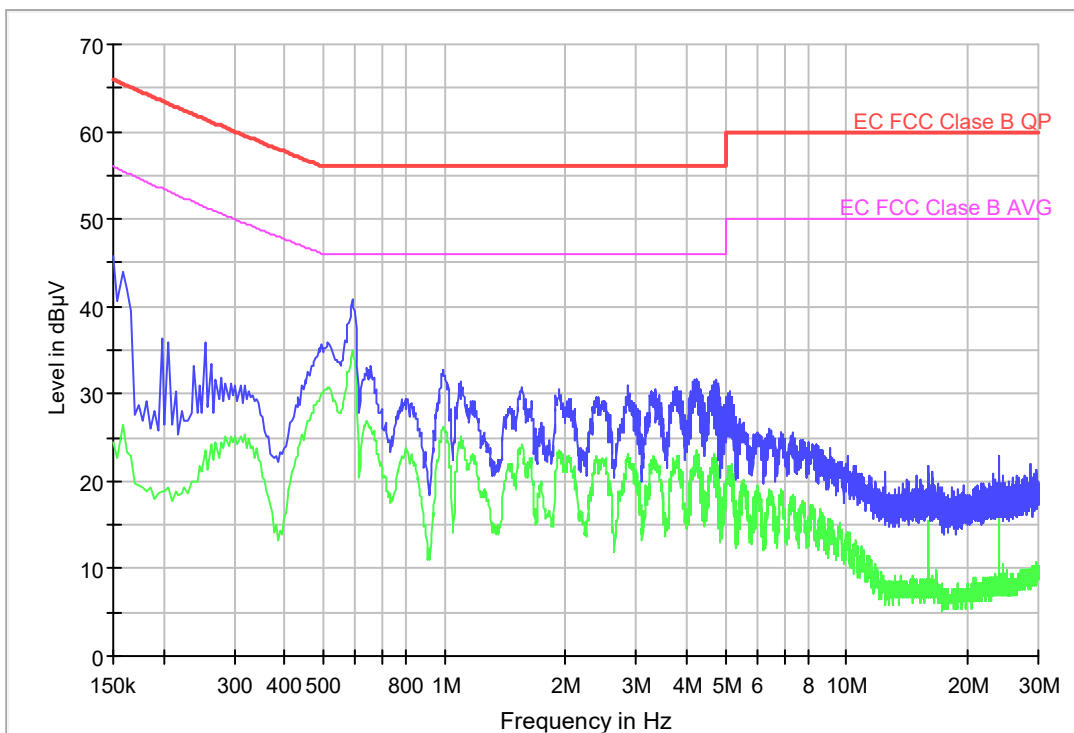
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.154000	33.0	23.3
0.262000	31.2	21.4
0.590000	36.3	26.3
1.010000	29.0	17.9
2.042000	26.9	16.0
3.366000	28.1	16.3
4.702000	31.6	18.4
7.606000	21.7	7.8
16.002000	19.9	11.7
24.002000	25.7	20.2

Conducted Emission. CC0103L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#03
 Description: EUT ON. Bluetooth without communication established.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise

FCC Part 15 Class B



— AVG_CLRWR — PK+_CLRWR
— EC FCC Class B QP — EC FCC Class B AVG

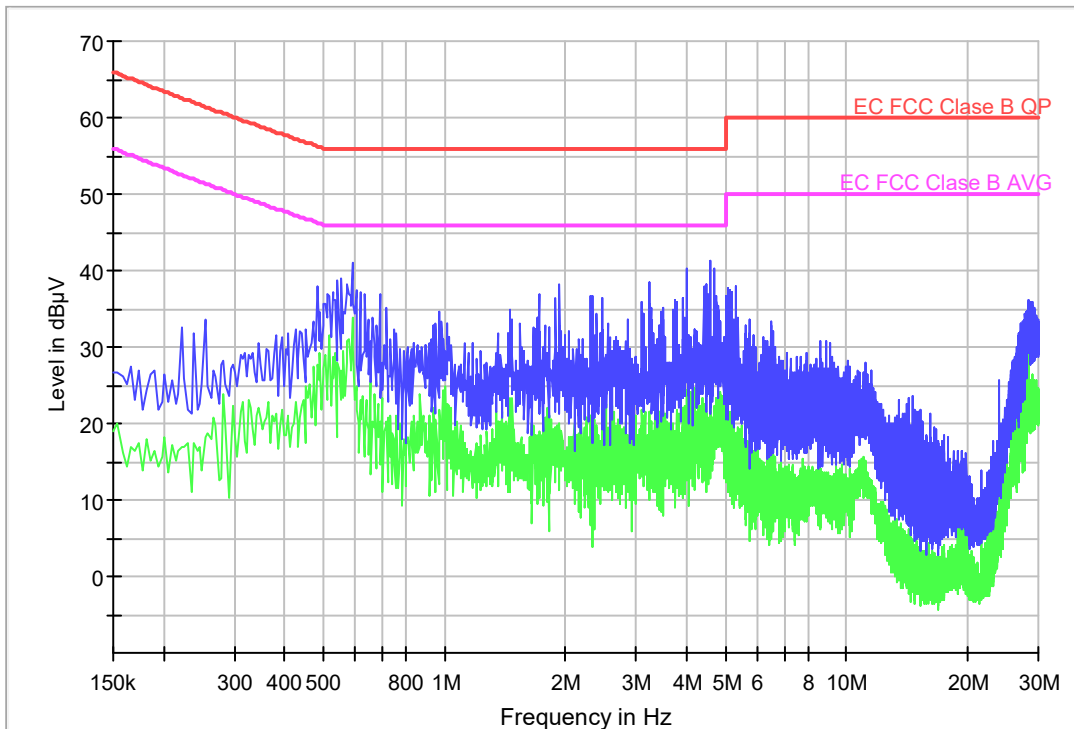
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.150000	45.8	24.5
0.262000	33.5	24.2
0.590000	40.9	35.1
0.994000	32.7	26.2
1.554000	30.7	23.8
2.862000	30.9	23.1
4.238000	31.7	23.5
6.390000	26.0	18.4
10.554000	21.8	12.5
23.998000	23.0	14.0

Conducted Emission. CC02040N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#04
 Description: EUT ON. MS in IDLE mode. GSM 850.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

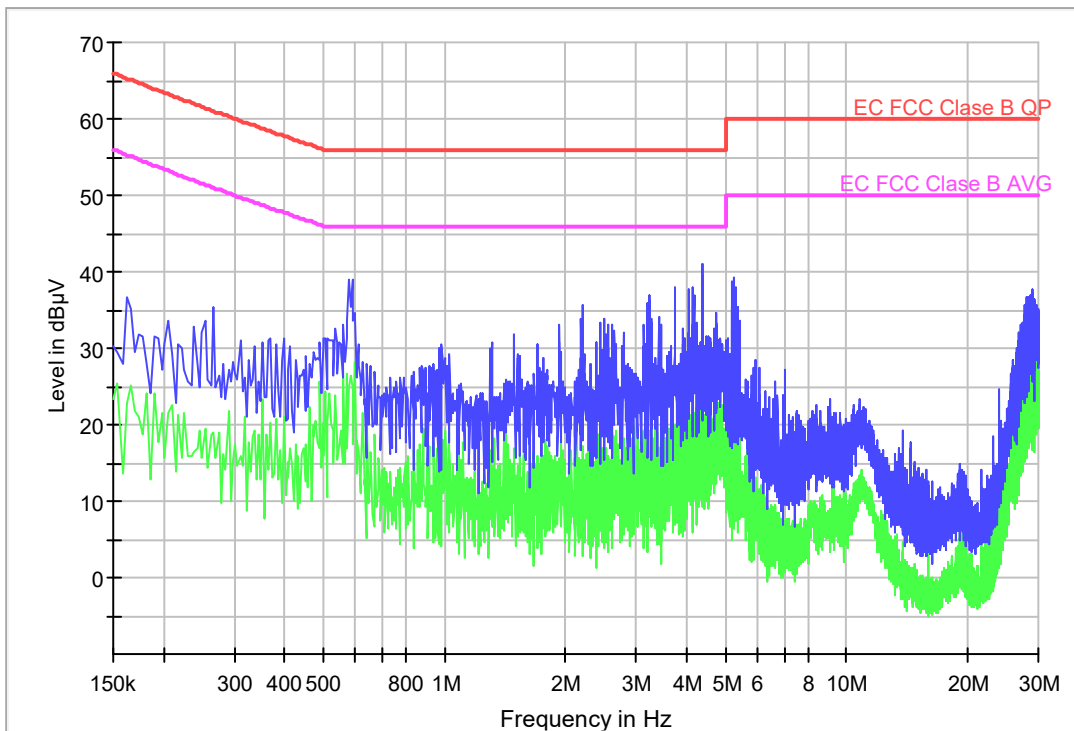
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.254000	33.6	18.2
0.426000	32.3	22.8
0.590000	41.1	33.8
0.970000	34.5	19.9
1.938000	38.1	19.5
3.242000	38.5	21.5
4.570000	41.2	22.2
6.478000	33.3	14.5
11.162000	27.8	12.7
28.238000	36.1	25.1

Conducted Emission. CC0204L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#04
 Description: EUT ON. MS in IDLE mode. GSM 850.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

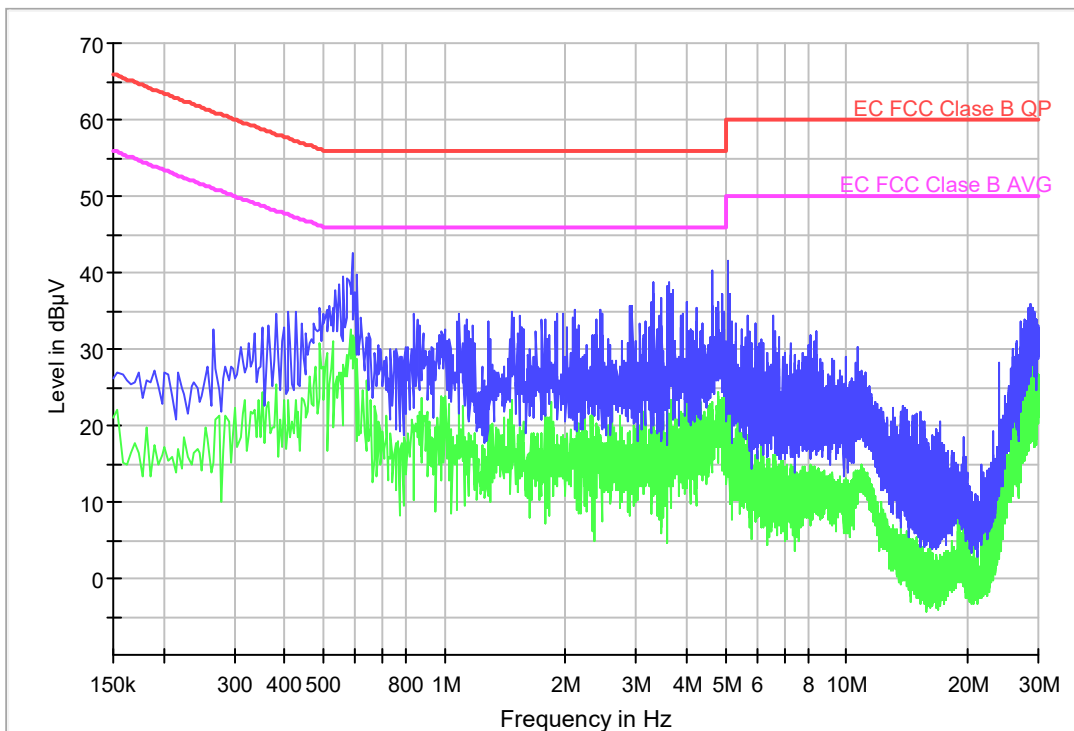
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.162000	36.7	22.9
0.266000	35.5	19.1
0.578000	39.1	24.9
0.986000	30.4	18.3
1.938000	33.0	15.4
3.238000	37.0	19.0
4.382000	41.1	23.6
7.006000	27.3	7.4
10.774000	23.4	13.0
29.114000	37.6	30.4

Conducted Emission. CC02050N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#05
 Description: EUT ON. MS in IDLE mode. GSM 1900.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

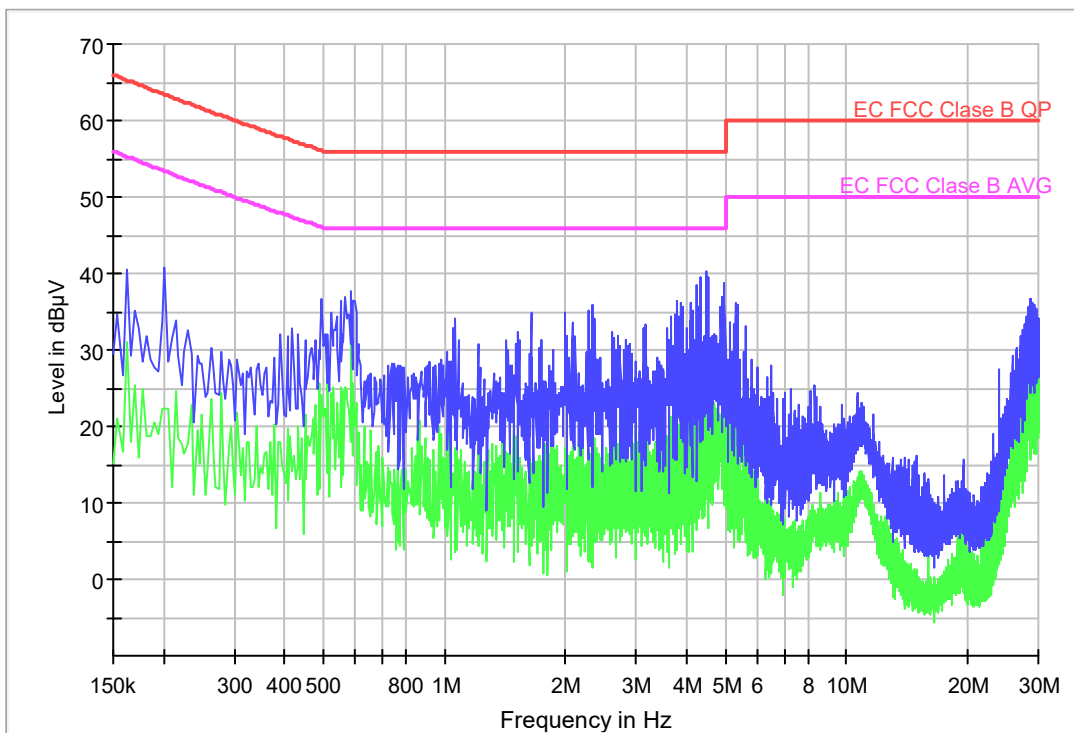
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.190000	27.3	17.3
0.410000	34.9	23.3
0.590000	42.5	31.7
0.842000	34.5	19.9
2.114000	35.1	18.2
3.298000	38.7	20.9
5.090000	41.5	21.6
6.602000	34.4	13.7
10.630000	30.3	13.6
28.682000	36.0	28.3

Conducted Emission. CC0205L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#05
 Description: EUT ON. MS in IDLE mode. GSM 1900.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

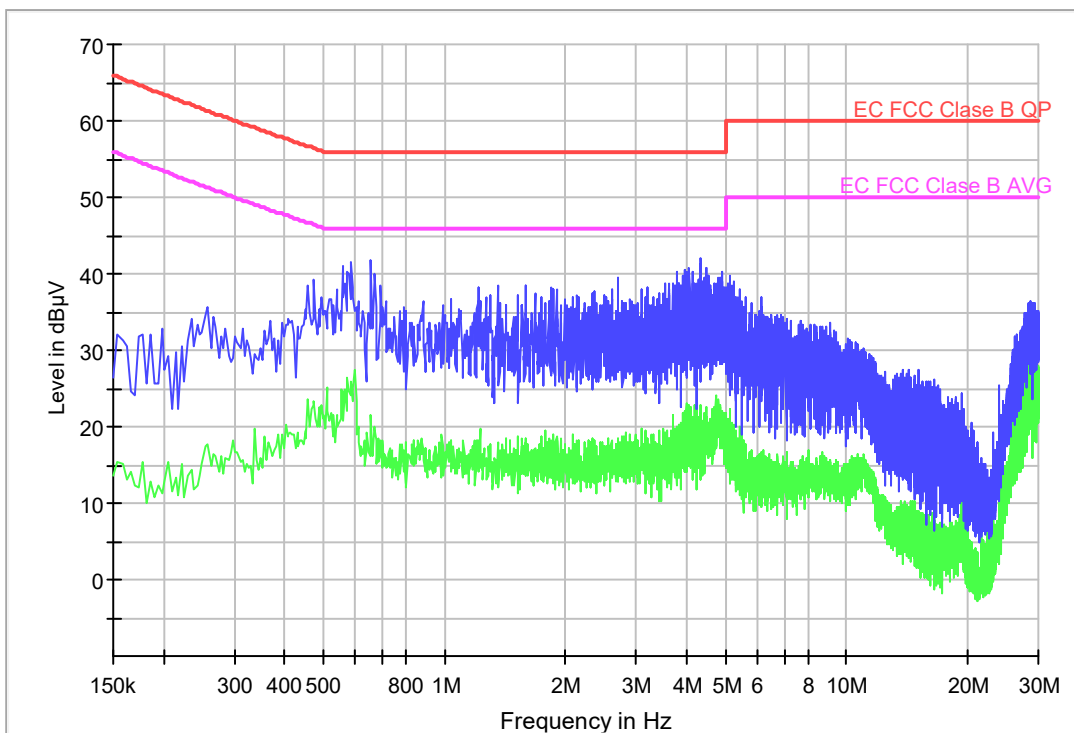
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.202000	40.7	22.3
0.418000	32.9	14.1
0.586000	37.7	32.0
1.066000	34.1	17.1
1.638000	34.8	12.8
2.342000	35.9	17.0
4.502000	40.2	18.2
6.510000	28.1	8.8
10.662000	24.3	11.3
28.686000	36.8	27.0

Conducted Emission. CC02060N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#06
 Description: EUT ON. MS allocated a channel. GSM 850.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

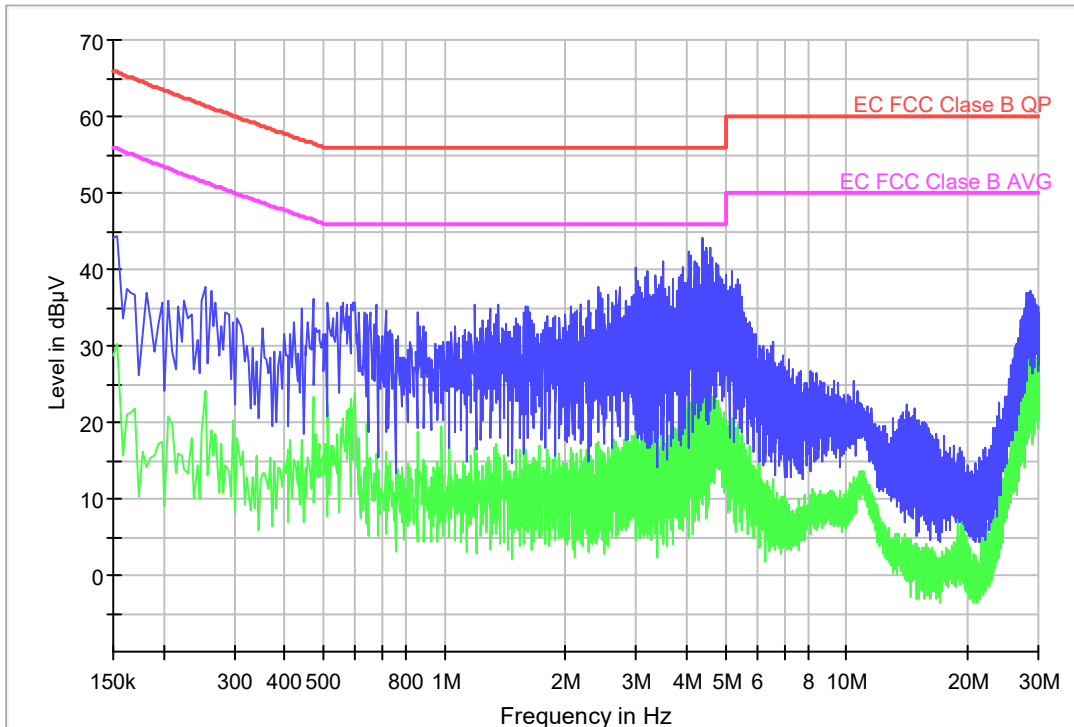
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.254000	34.5	17.3
0.258000	35.6	17.6
0.658000	41.8	21.5
1.218000	38.1	17.6
1.354000	38.5	17.9
2.694000	39.5	17.7
4.354000	42.0	21.9
6.150000	36.9	15.3
10.554000	30.9	15.9
28.674000	36.3	27.8

Conducted Emission. CC0206L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#06
 Description: EUT ON. MS allocated a channel. GSM 850.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

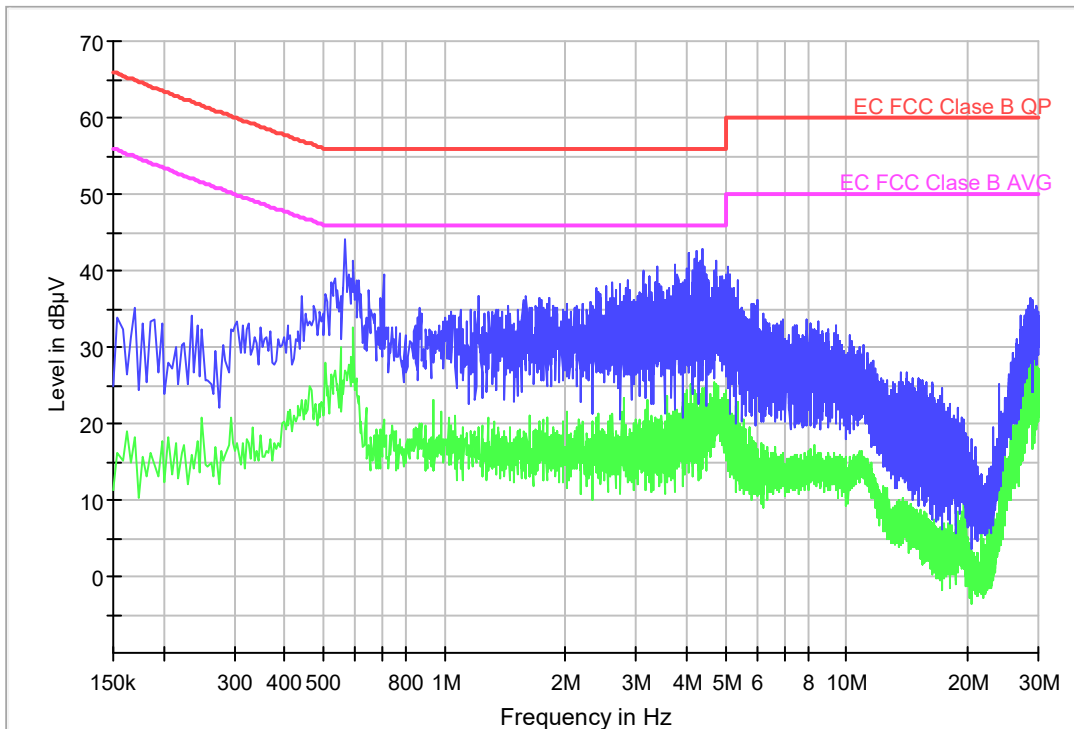
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.154000	44.3	30.3
0.262000	37.2	18.9
0.470000	36.0	23.3
1.194000	35.4	16.8
1.366000	35.4	16.0
3.494000	40.9	14.7
4.382000	44.2	23.3
6.542000	30.4	12.6
10.598000	24.0	11.1
28.654000	37.2	27.9

Conducted Emission. CC02070N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#07
 Description: EUT ON. MS allocated a channel. GSM 1900.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

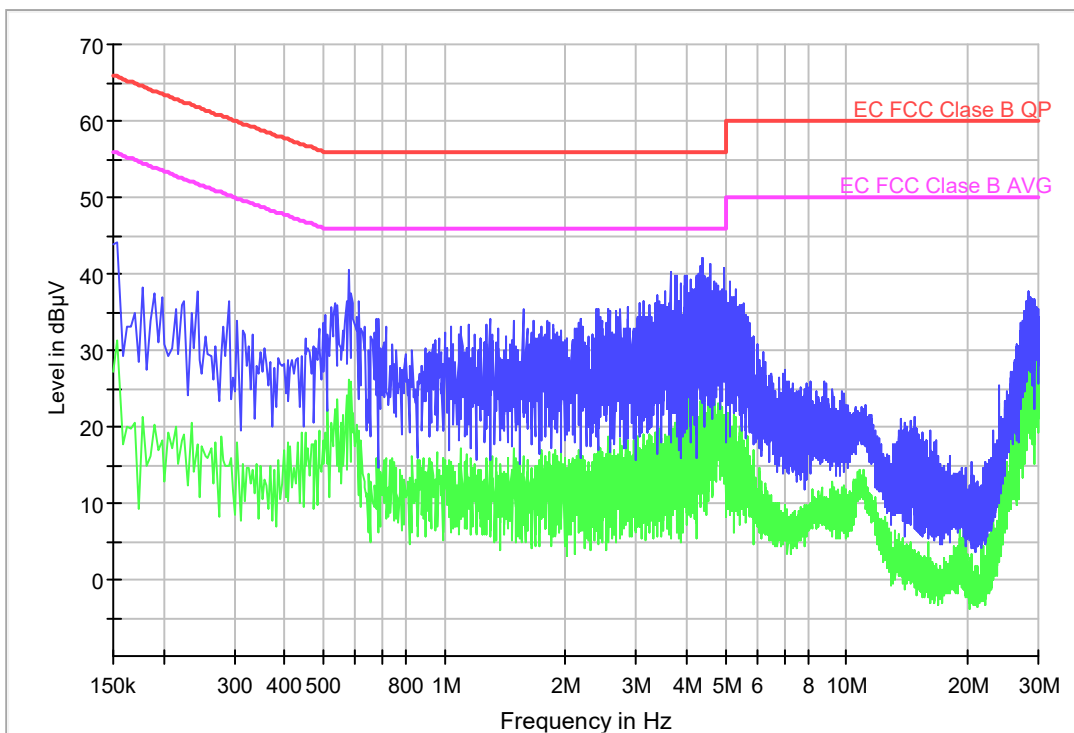
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.170000	35.1	18.2
0.306000	33.3	17.3
0.566000	44.2	27.0
1.218000	36.8	19.6
1.598000	36.7	18.7
3.382000	40.4	20.6
4.390000	42.8	23.5
6.190000	34.4	17.1
11.066000	30.3	14.0
28.626000	36.4	29.0

Conducted Emission. CC0207L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#07
 Description: EUT ON. MS allocated a channel. GSM 1900.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

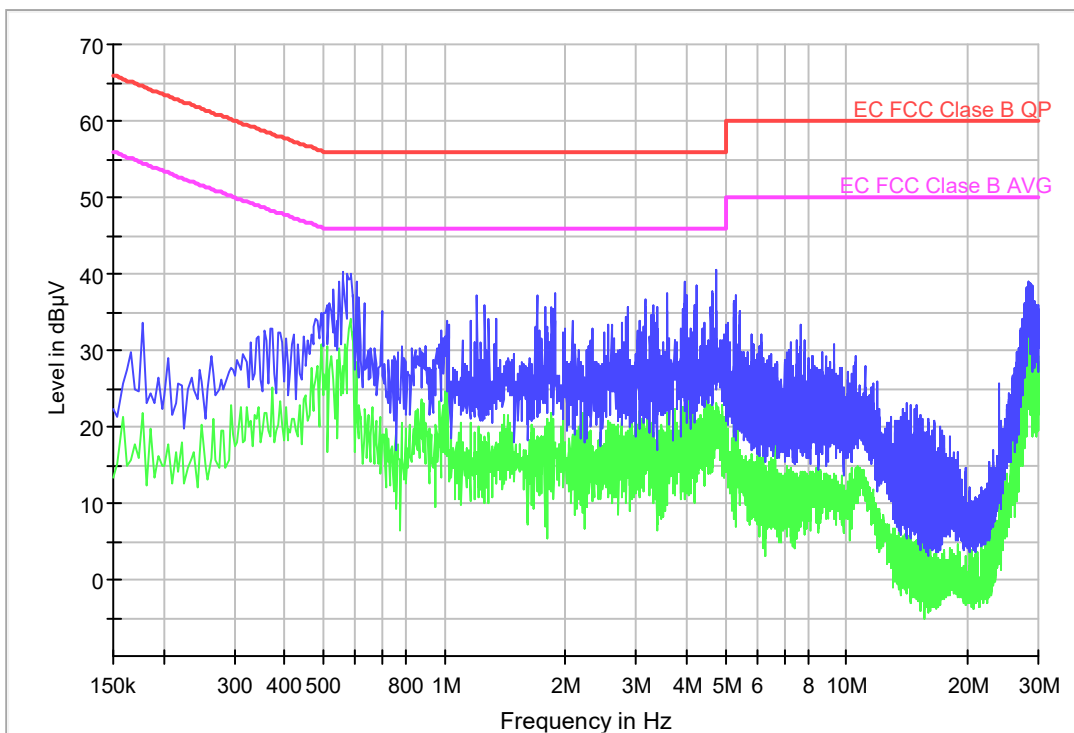
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.154000	44.1	31.2
0.290000	36.3	14.9
0.578000	40.5	26.1
1.150000	33.4	13.3
1.566000	35.3	16.0
3.526000	37.7	15.2
4.378000	42.1	23.1
6.238000	29.7	11.0
11.114000	22.7	12.0
28.318000	37.7	26.8

Conducted Emission. CC02080N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#08
 Description: EUT ON. MS in IDLE mode. LTE Cat. M1 Band 2.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

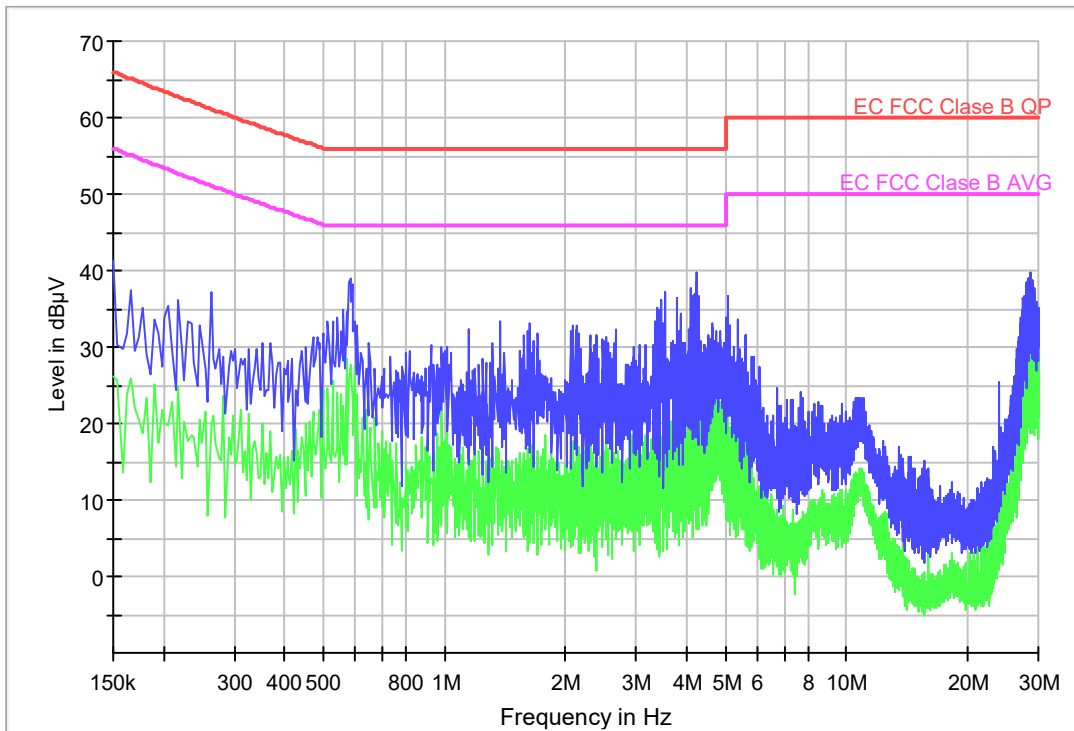
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.178000	33.5	21.7
0.374000	32.9	25.1
0.558000	40.1	27.9
1.206000	37.1	16.5
1.890000	37.4	16.9
3.582000	37.5	20.1
4.754000	40.5	23.0
7.662000	33.5	14.2
10.550000	29.1	14.3
28.438000	38.9	31.4

Conducted Emission. CC0208L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#08
 Description: EUT ON. MS in IDLE mode. LTE Cat. M1 Band 2.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

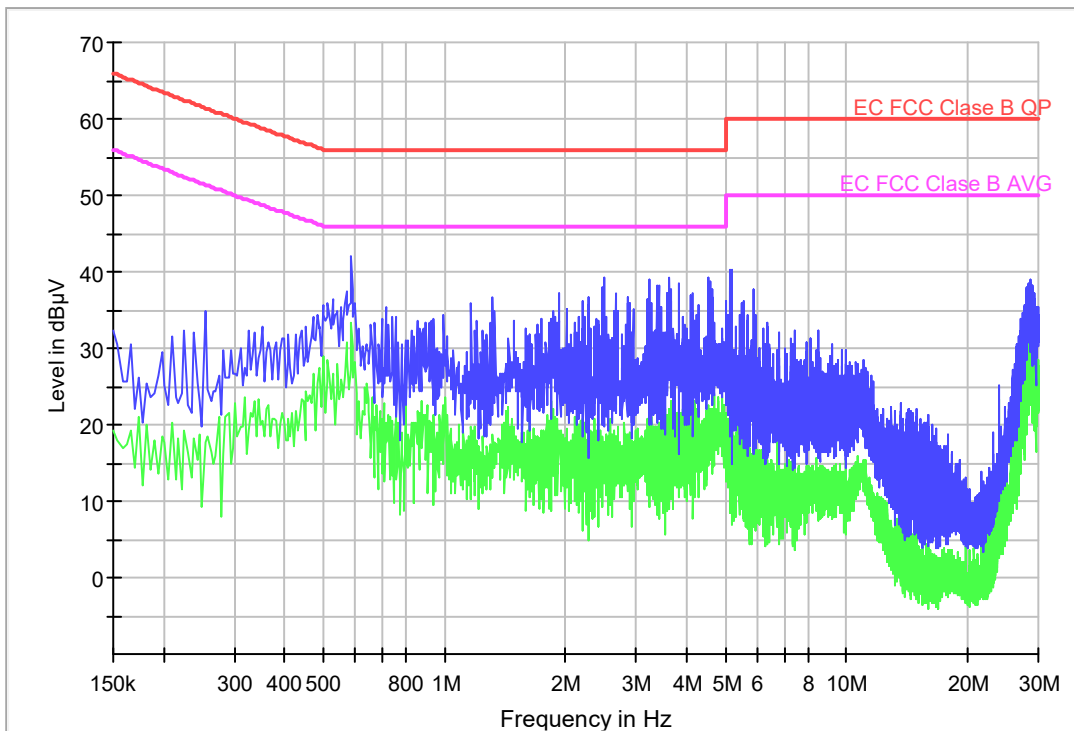
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.150000	41.3	26.1
0.262000	37.2	19.6
0.582000	38.9	27.6
1.150000	32.3	15.9
1.374000	33.2	13.4
3.534000	37.3	10.8
4.230000	39.7	19.9
6.726000	24.5	5.7
10.798000	23.3	13.2
28.718000	39.8	31.6

Conducted Emission. CC02090N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#09
 Description: EUT ON. MS in IDLE mode. LTE Cat. M1 Band 4.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

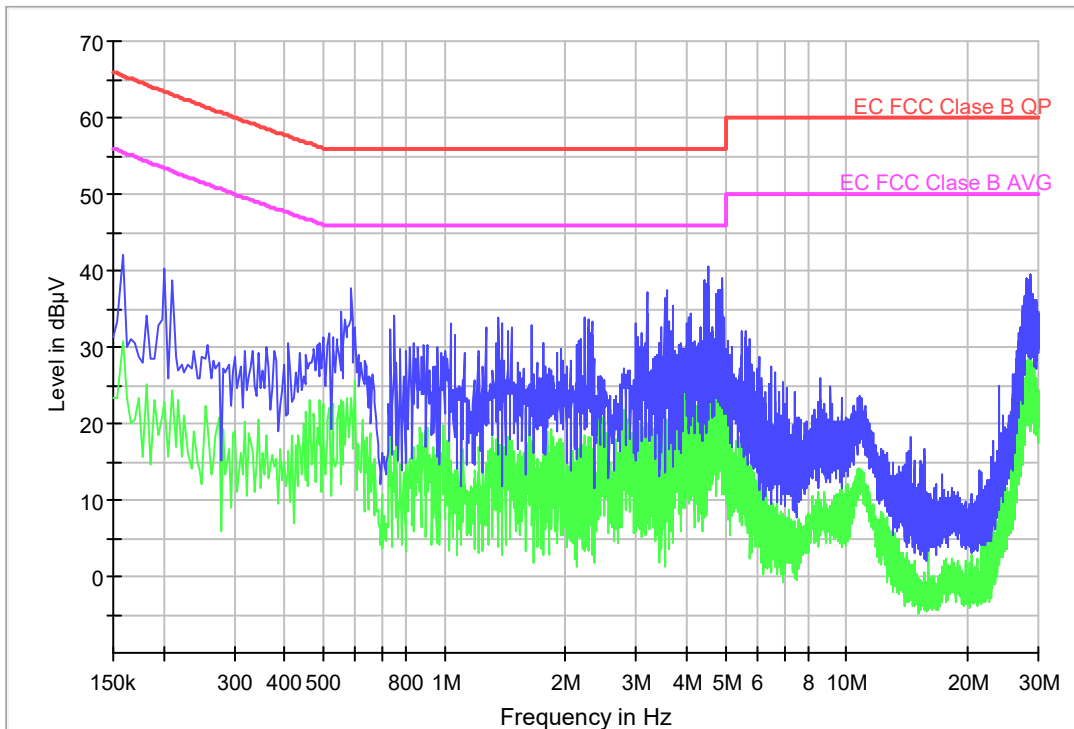
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.254000	35.0	17.7
0.354000	32.7	20.5
0.586000	42.1	33.3
1.166000	35.8	19.6
1.934000	37.1	16.9
2.494000	39.3	17.6
5.118000	40.3	22.8
6.338000	33.3	15.4
11.030000	28.4	14.6
28.686000	38.9	31.3

Conducted Emission. CC0209L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#09
 Description: EUT ON. MS in IDLE mode. LTE Cat. M1 Band 4.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

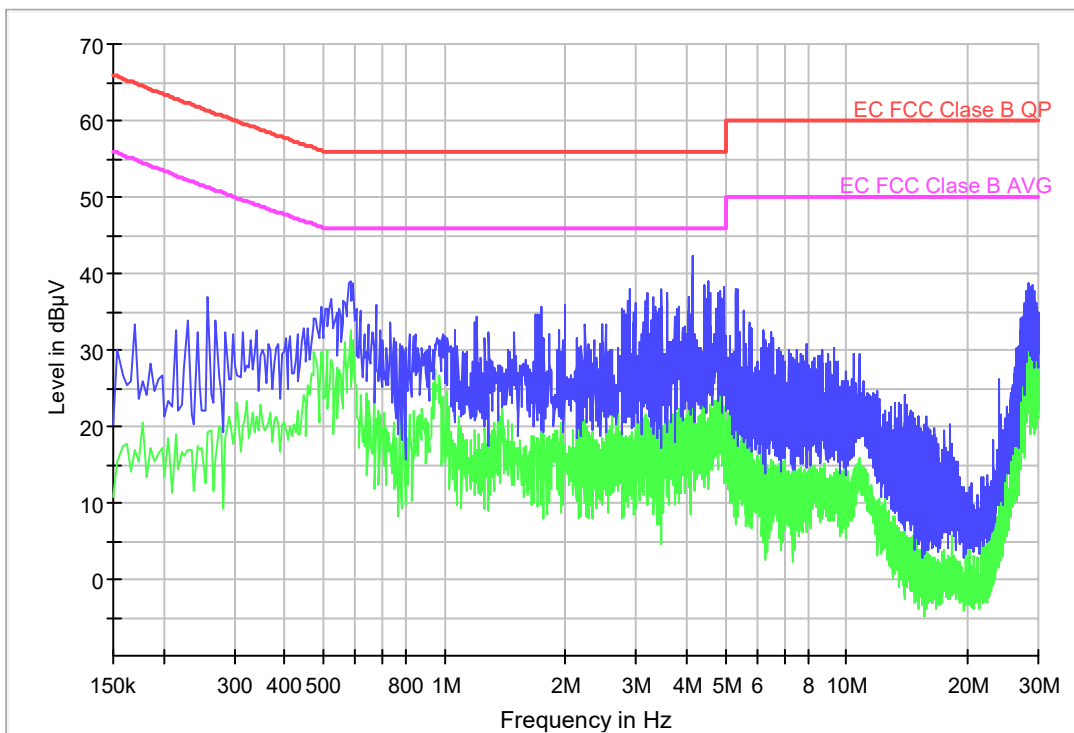
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.158000	41.9	30.8
0.410000	30.6	16.3
0.586000	37.7	23.2
0.750000	34.0	16.5
1.366000	33.7	16.5
3.562000	37.5	17.6
4.534000	40.6	18.8
6.506000	27.4	9.5
10.786000	23.7	14.2
28.686000	39.5	27.5

Conducted Emission. CC02100N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#10
 Description: EUT ON. MS in IDLE mode. LTE Cat. M1 Band 5.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

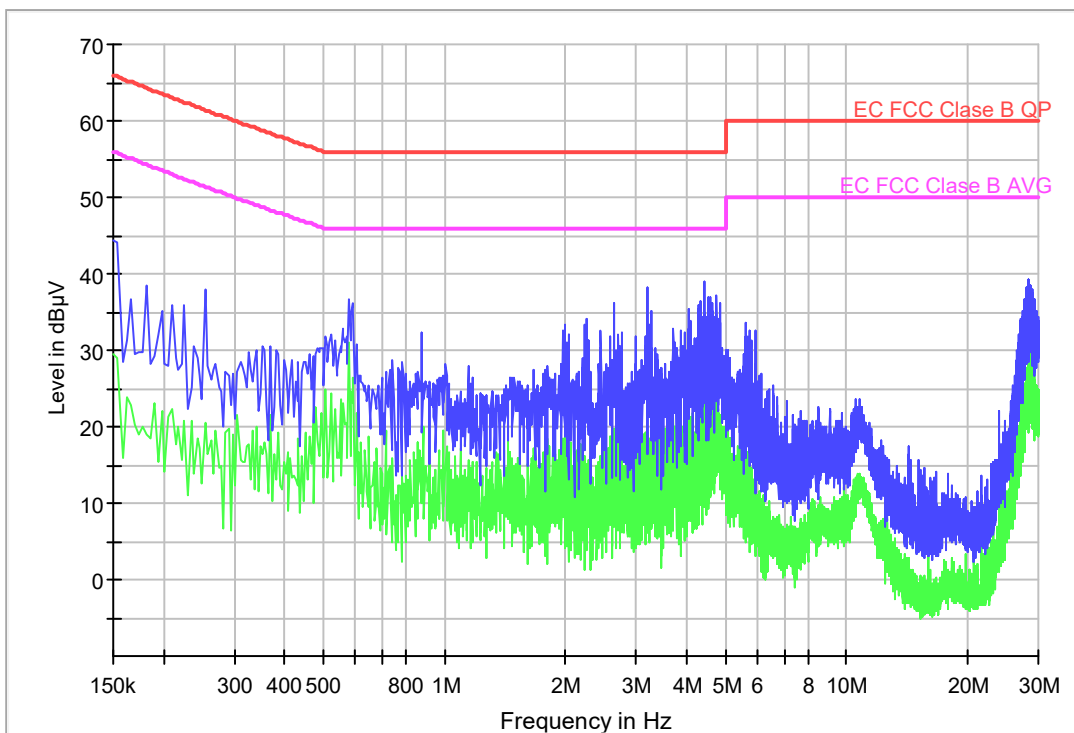
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.230000	33.8	17.0
0.258000	36.9	19.1
0.582000	39.0	32.4
1.206000	34.4	16.0
1.990000	36.0	15.3
3.478000	38.0	17.8
4.158000	42.2	20.1
6.234000	32.5	14.1
10.718000	29.4	15.9
28.362000	38.7	31.6

Conducted Emission. CC0210L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#10
 Description: EUT ON. MS in IDLE mode. LTE Cat. M1 Band 5.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

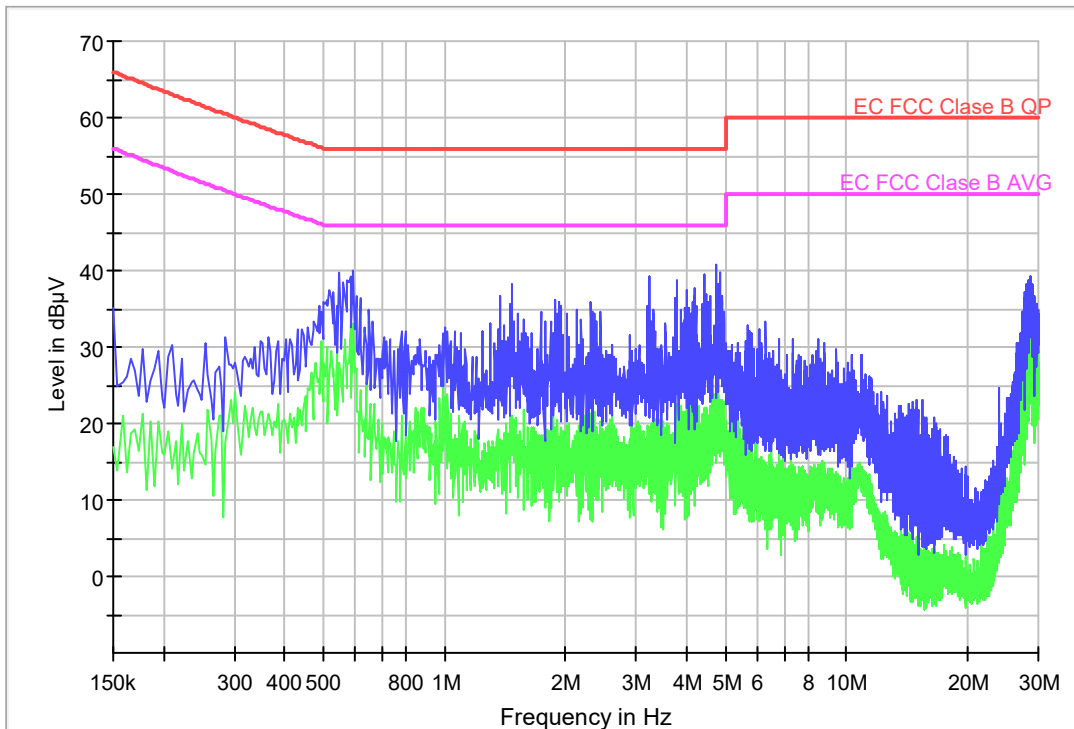
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.150000	44.3	29.4
0.370000	30.6	21.4
0.578000	36.7	31.0
0.878000	32.3	16.0
1.990000	33.3	19.2
3.190000	38.3	19.2
4.430000	39.0	21.7
6.134000	26.9	9.6
10.558000	23.7	12.3
28.206000	39.2	26.5

Conducted Emission. CC02110N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#11
 Description: EUT ON. MS in IDLE mode. LTE Cat. M1 Band 12.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

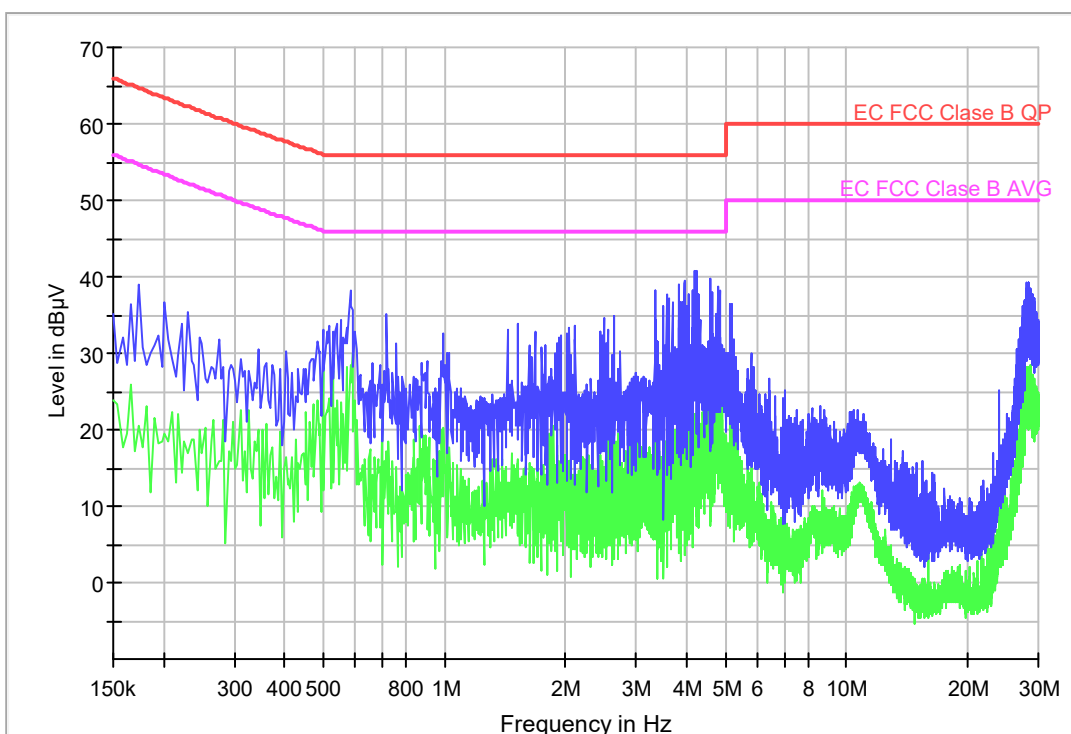
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.150000	35.1	17.0
0.430000	32.2	22.0
0.594000	40.1	33.1
1.002000	32.5	20.3
1.474000	38.1	15.9
3.234000	39.1	18.4
4.742000	40.9	23.3
6.314000	33.4	14.8
10.914000	29.0	13.8
28.734000	39.2	30.5

Conducted Emission. CC0211L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#11
 Description: EUT ON. MS in IDLE mode. LTE Cat. M1 Band 12.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

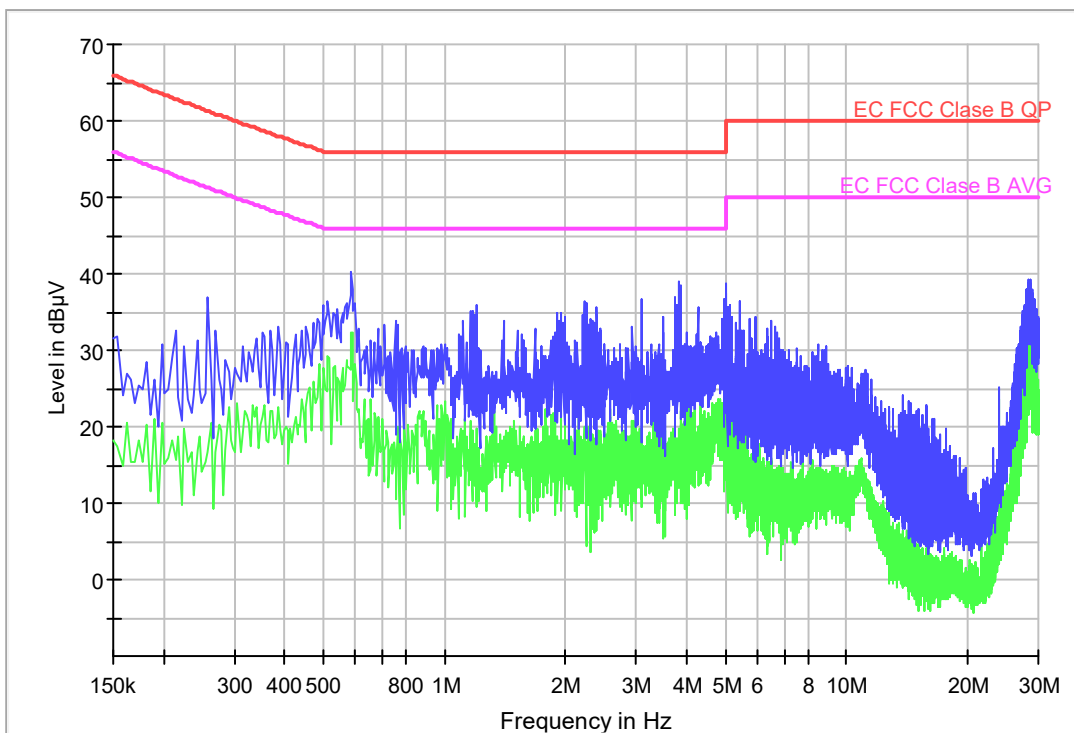
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.174000	39.1	20.6
0.274000	31.9	15.9
0.582000	38.2	28.6
0.994000	32.6	11.2
1.522000	33.7	15.4
3.358000	38.2	19.1
4.190000	40.9	22.0
6.434000	26.7	7.3
10.694000	22.6	12.2
28.510000	39.3	26.5

Conducted Emission. CC02120N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#12
 Description: EUT ON. MS in IDLE mode. LTE Cat. M1 Band 13.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

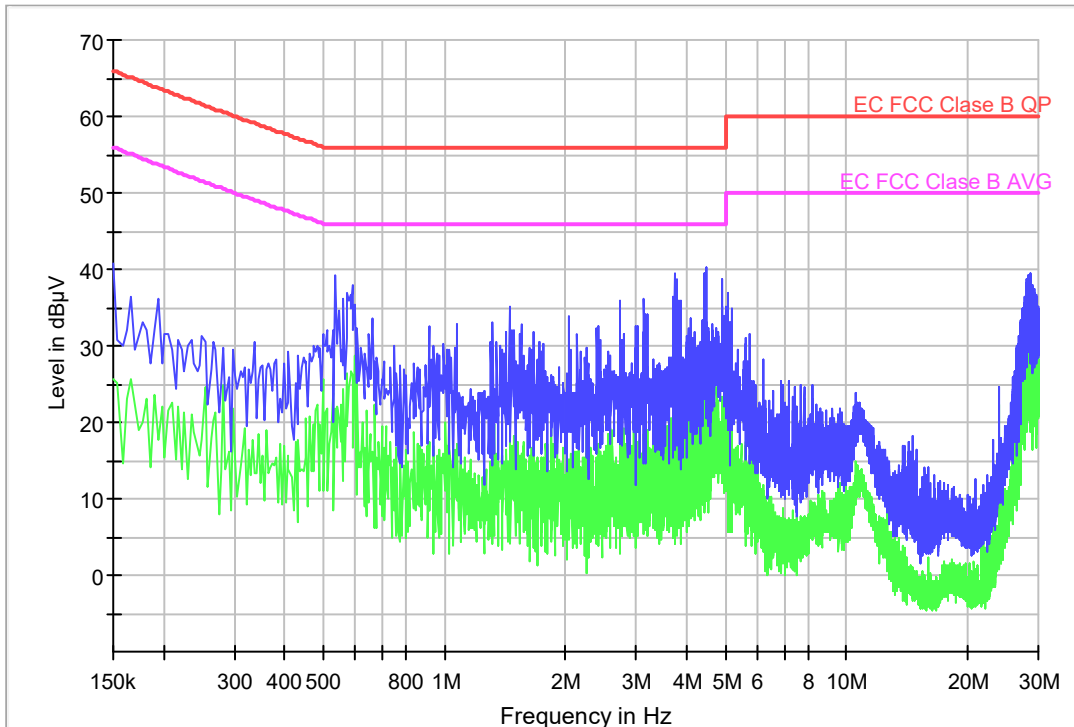
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.214000	32.7	15.7
0.258000	36.9	16.7
0.586000	40.3	32.2
1.202000	35.8	19.7
1.902000	34.8	16.5
3.094000	36.7	18.4
3.814000	38.9	18.3
6.474000	33.8	15.7
11.166000	27.4	12.1
28.562000	39.3	32.1

Conducted Emission. CC0212L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#12
 Description: EUT ON. MS in IDLE mode. LTE Cat. M1 Band 13.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

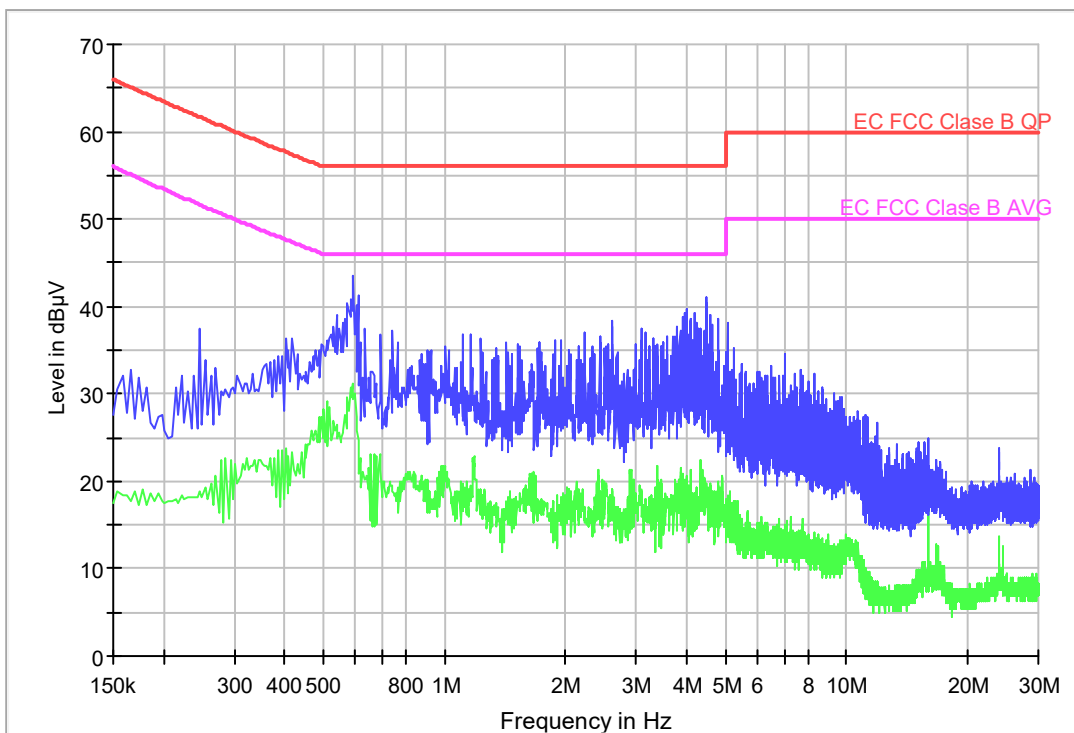
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.150000	40.7	25.6
0.338000	30.5	13.3
0.534000	39.1	21.9
1.074000	32.7	13.8
1.450000	35.0	13.7
3.142000	36.2	18.5
4.462000	40.2	23.2
6.182000	28.3	10.1
10.534000	23.7	10.9
28.762000	39.4	32.0

Conducted Emission. CC01130N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#13
 Description: EUT ON. MS in IDLE mode. LTE NBloT Band 2.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

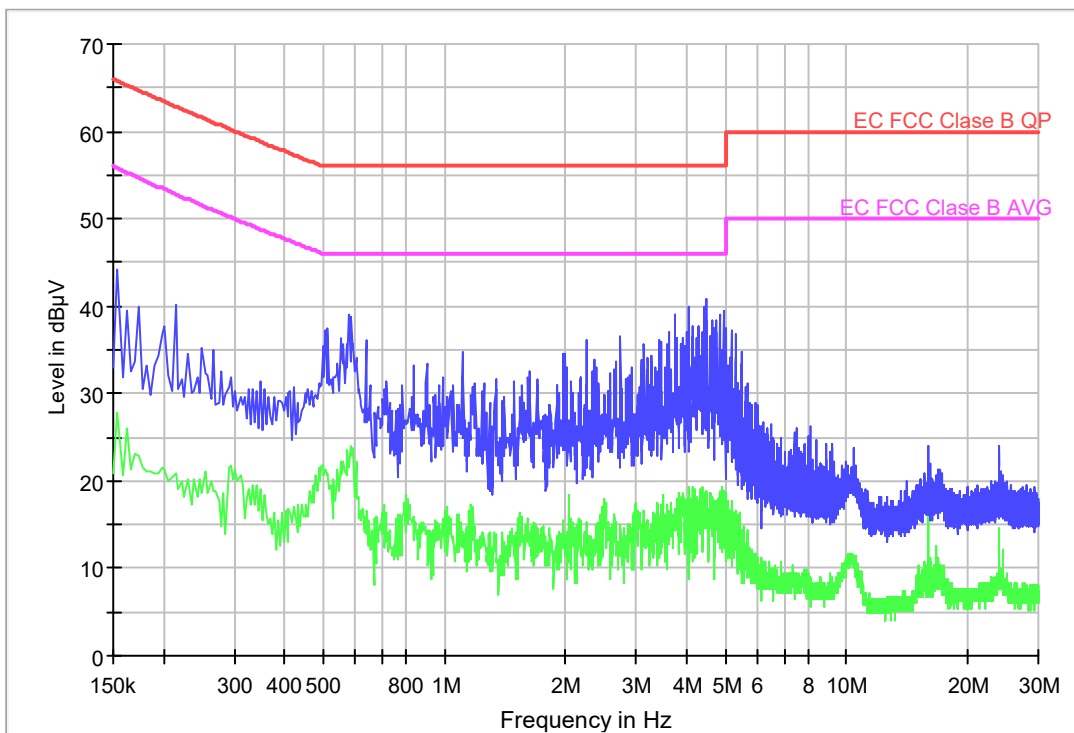
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.246000	37.4	18.7
0.418000	36.3	23.3
0.594000	43.5	29.5
0.742000	37.3	18.8
1.950000	36.2	18.1
2.622000	38.3	19.2
4.490000	41.0	19.2
7.026000	34.5	14.1
10.714000	27.9	12.9
24.002000	23.7	13.7

Conducted Emission. CC0113L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#13
 Description: EUT ON. MS in IDLE mode. LTE NBloT Band 2.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

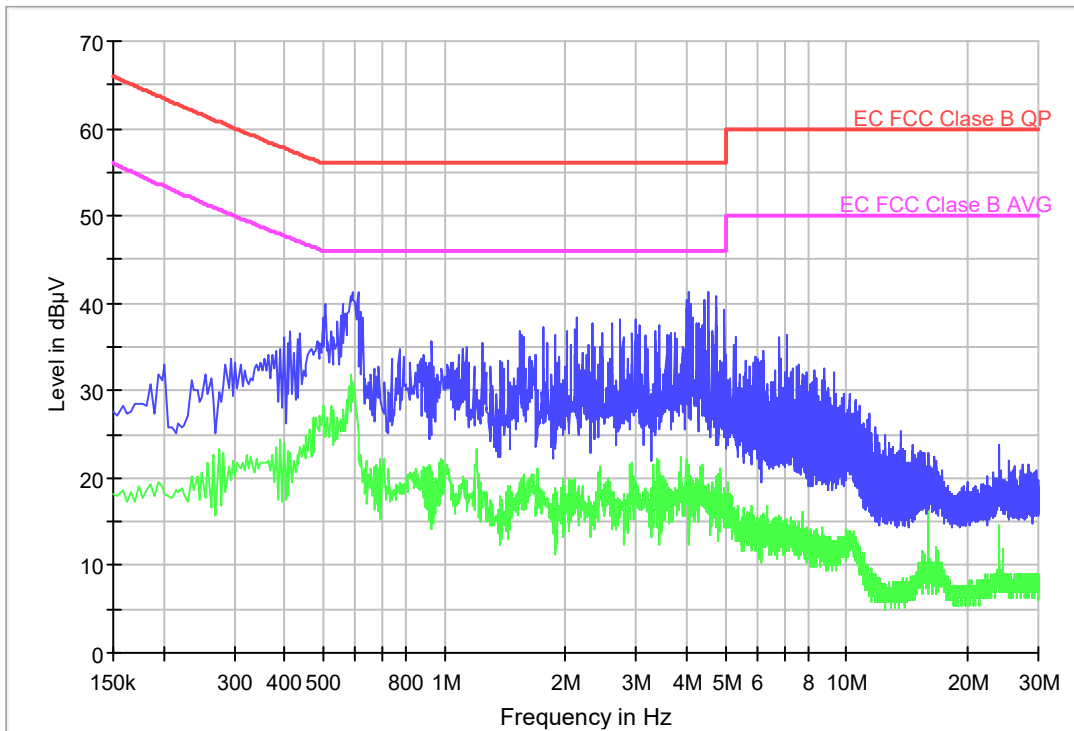
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.154000	44.2	27.8
0.266000	34.9	18.9
0.578000	39.0	21.5
1.106000	34.9	12.2
2.002000	34.6	12.3
2.746000	36.5	15.1
4.462000	40.9	18.9
6.226000	26.6	10.4
16.002000	23.9	17.7
24.002000	24.0	14.0

Conducted Emission. CC01140N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#14
 Description: EUT ON. MS in IDLE mode. LTE NB IoT Band 4.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

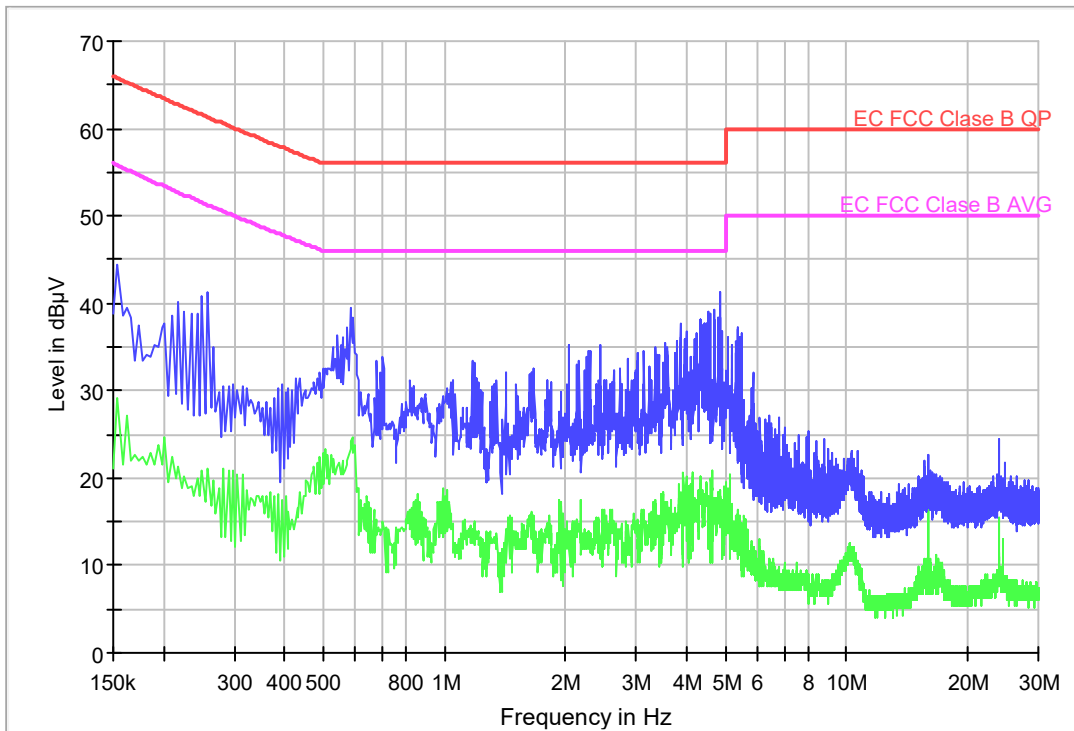
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.202000	33.1	18.2
0.414000	36.7	22.9
0.610000	41.2	25.2
0.930000	35.6	20.8
1.758000	37.3	18.1
2.126000	38.3	16.9
4.042000	41.4	18.4
7.138000	36.4	14.4
10.562000	29.0	11.4
24.022000	23.7	11.4

Conducted Emission. CC0114L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#14
 Description: EUT ON. MS in IDLE mode. LTE NB IoT Band 4.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

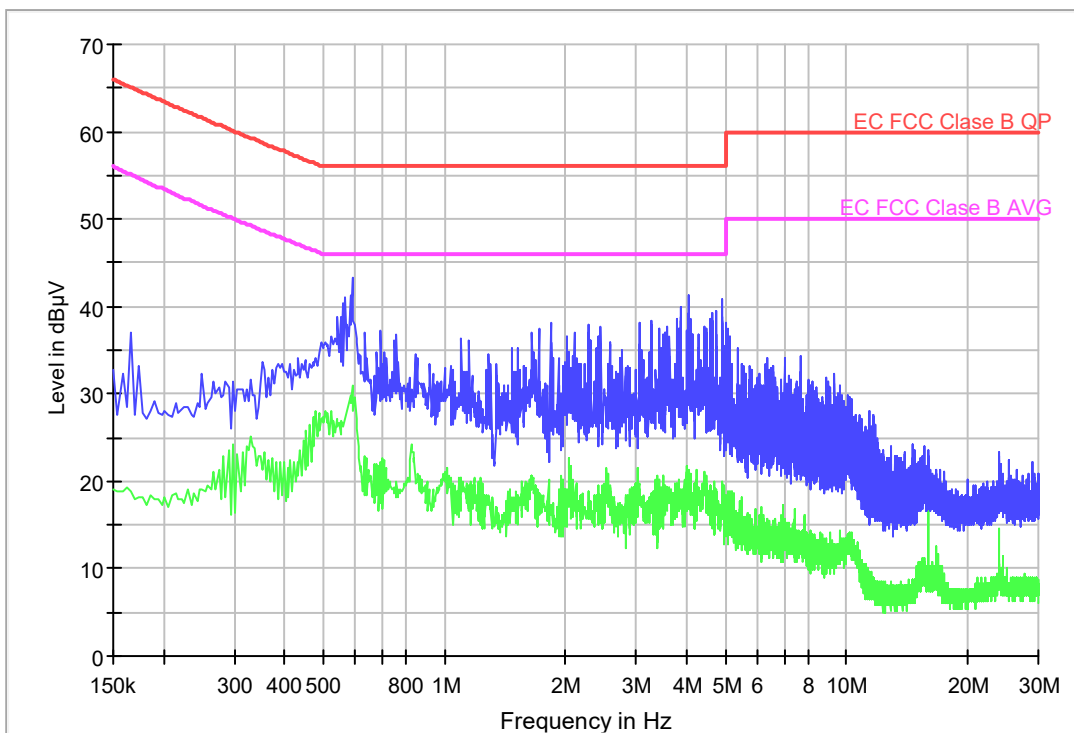
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.154000	44.5	29.1
0.258000	41.3	21.0
0.582000	39.4	23.3
1.170000	33.5	13.6
2.046000	35.1	12.6
3.546000	35.5	14.8
4.870000	41.4	17.4
6.406000	27.1	10.8
10.678000	23.1	10.0
24.002000	24.4	14.9

Conducted Emission. CC01150N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#15
 Description: EUT ON. MS in IDLE mode. LTE NB IoT Band 5.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

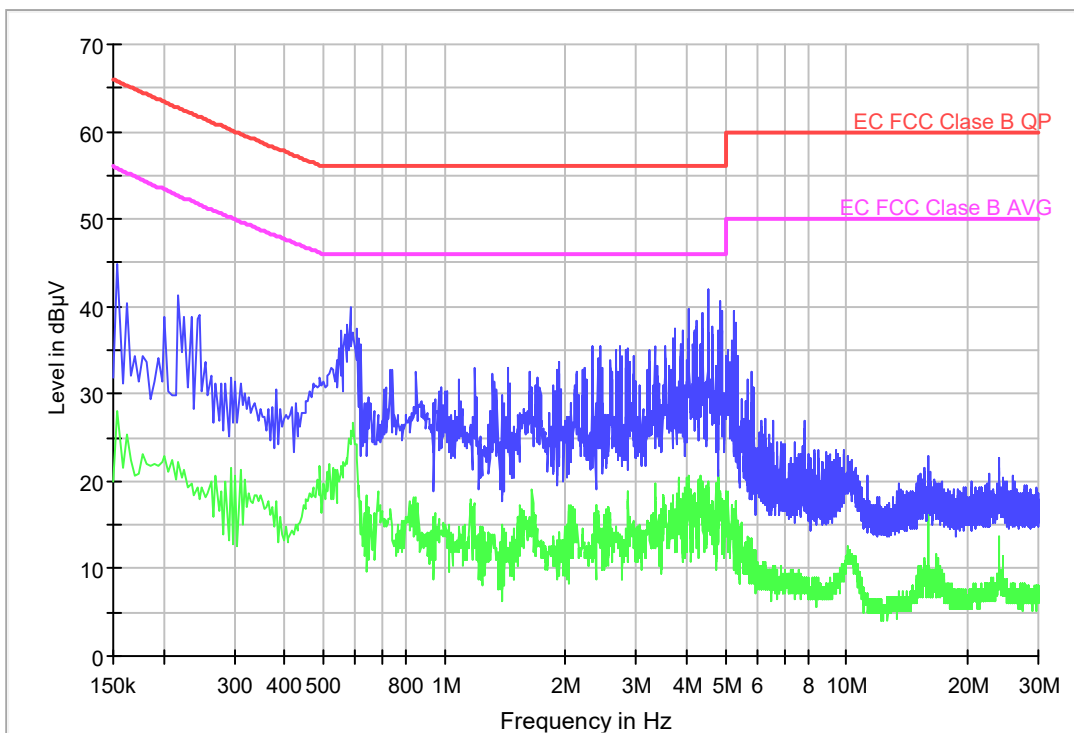
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.166000	37.0	18.7
0.354000	33.7	21.3
0.590000	43.2	31.0
0.762000	36.9	19.9
1.834000	38.1	17.3
3.258000	38.5	18.3
4.034000	41.2	20.9
7.722000	34.2	12.8
11.378000	28.0	8.5
24.010000	23.4	13.7

Conducted Emission. CC0115L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#15
 Description: EUT ON. MS in IDLE mode. LTE NBloT Band 5.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

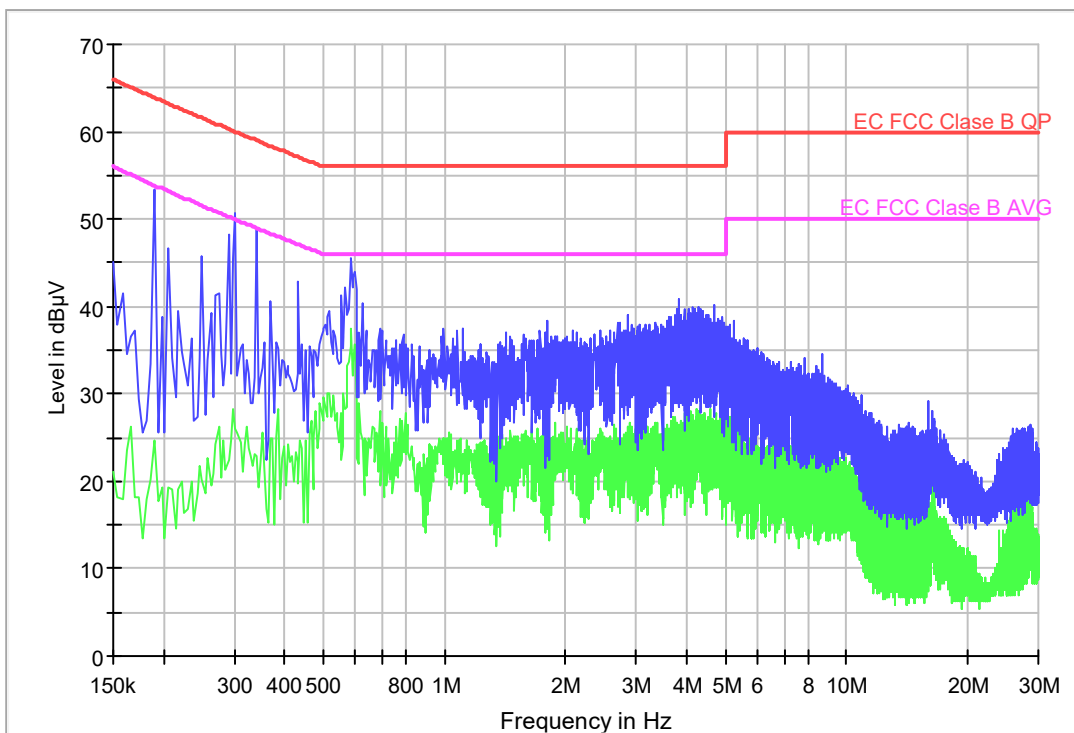
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.154000	44.8	27.9
0.262000	32.1	20.0
0.582000	39.9	24.2
1.194000	33.0	12.3
1.934000	33.6	14.2
3.554000	35.5	16.1
4.542000	42.0	18.7
6.306000	27.1	9.4
16.002000	22.8	17.9
24.002000	22.7	13.6

Conducted Emission. CC01160N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#16
 Description: EUT ON. MS in IDLE mode. LTE NB IoT Band 12.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

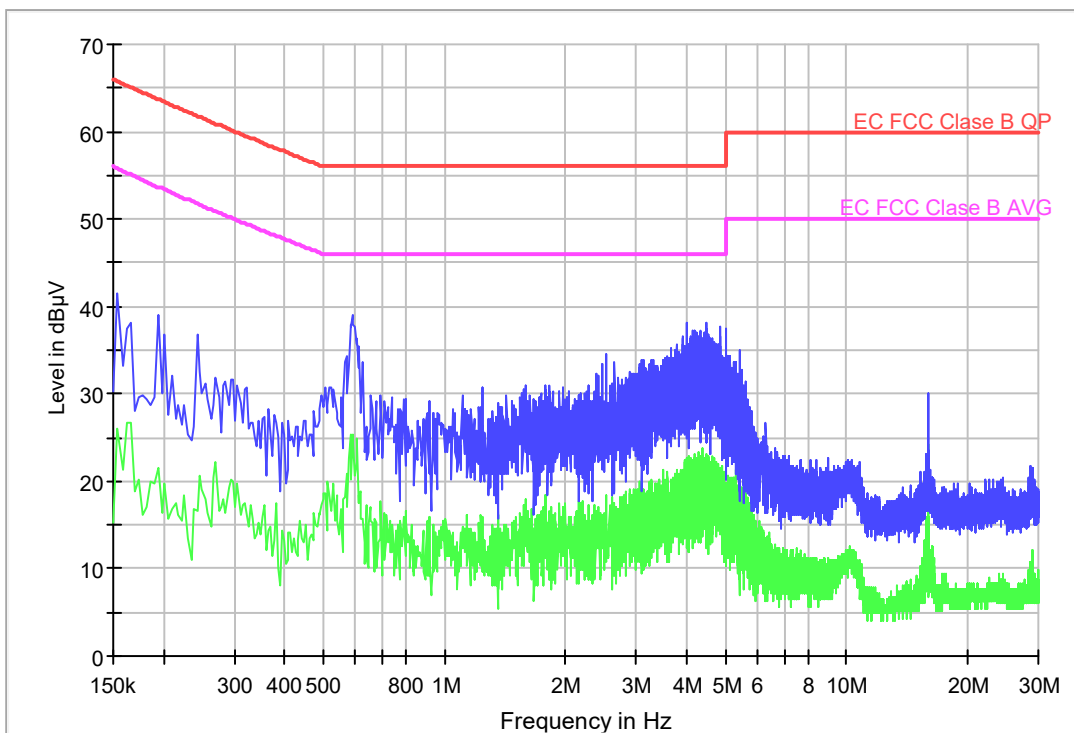
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.190000	53.4	24.6
0.302000	50.8	26.0
0.586000	45.6	37.5
1.110000	37.5	23.0
1.806000	38.3	23.8
2.862000	38.9	25.0
3.846000	40.7	25.8
6.134000	34.7	24.2
10.458000	30.0	19.1
28.678000	26.4	16.9

Conducted Emission. CC0116L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#16
 Description: EUT ON. MS in IDLE mode. LTE NBloT Band 12.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

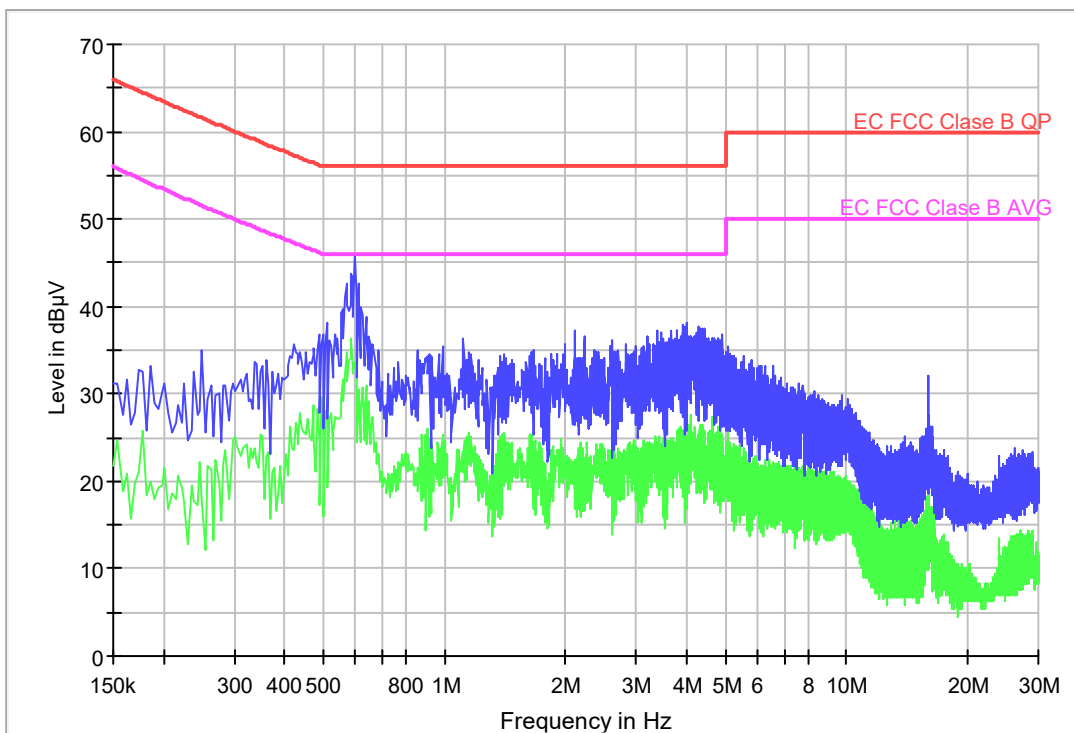
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.154000	41.5	26.1
0.270000	31.8	22.1
0.590000	39.0	25.4
1.246000	30.8	16.0
1.594000	31.0	17.9
2.534000	34.6	18.3
3.990000	38.2	19.8
6.314000	26.8	12.8
16.002000	30.1	24.3
28.814000	21.8	10.4

Conducted Emission. CC01170N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#17
 Description: EUT ON. MS in IDLE mode. LTE NBloT Band 13.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

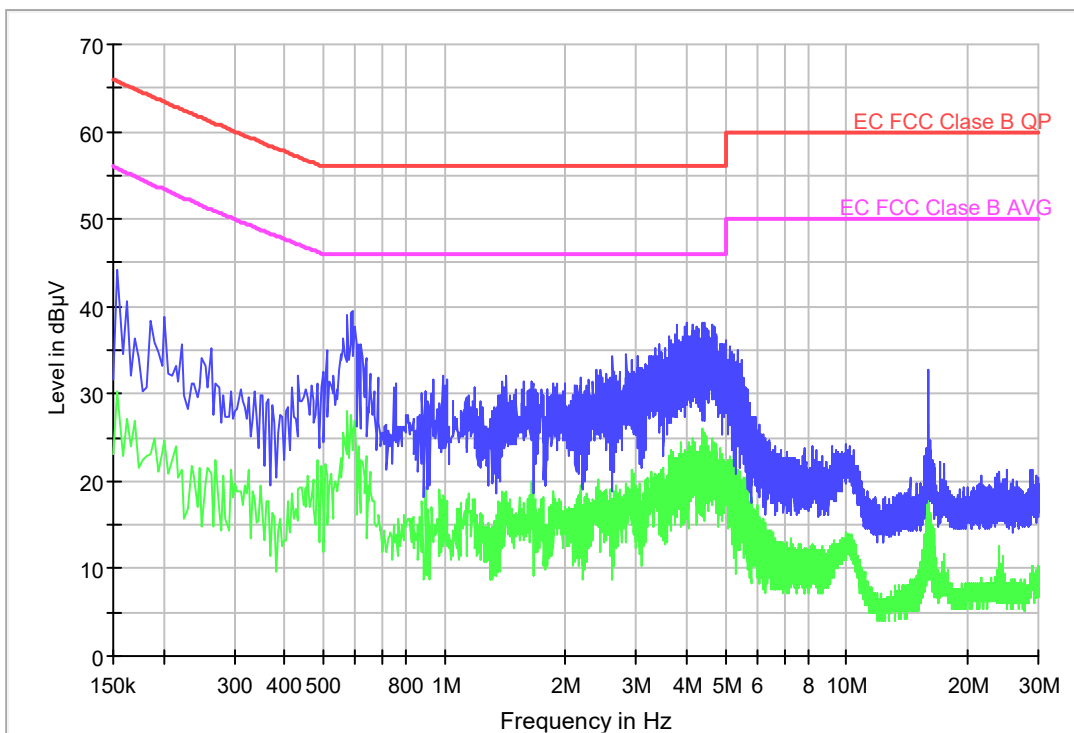
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.250000	35.0	18.0
0.422000	35.7	23.5
0.598000	46.0	33.6
1.114000	36.4	22.9
2.106000	37.3	22.1
3.382000	37.2	24.0
4.014000	38.1	20.7
6.566000	33.2	17.1
16.002000	32.1	27.5
26.242000	23.8	13.0

Conducted Emission. CC0117L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#17
 Description: EUT ON. MS in IDLE mode. LTE NBloT Band 13.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

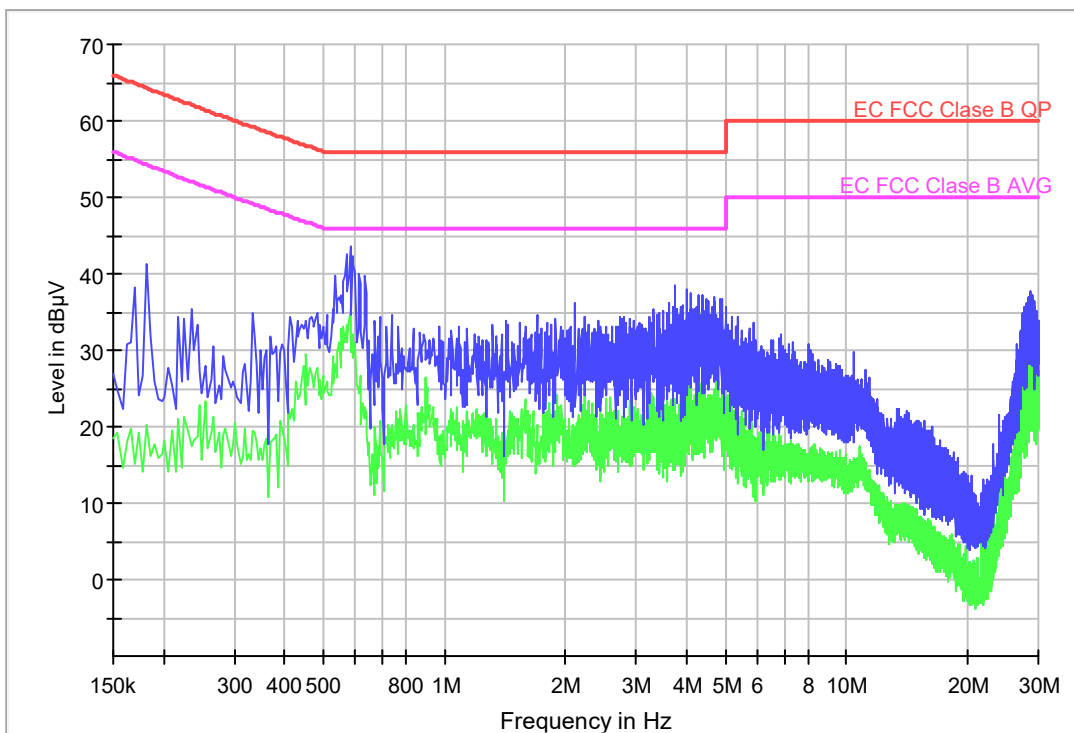
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.154000	44.1	30.3
0.262000	35.2	20.9
0.590000	39.5	23.6
0.990000	32.1	16.5
1.430000	32.0	18.8
3.426000	35.6	20.8
4.438000	38.2	25.3
6.198000	25.5	15.7
16.002000	32.8	26.5
28.786000	21.4	8.8

Conducted Emission. CC02180N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#18
 Description: EUT ON. MS in traffic mode. LTE Cat. M1 Band 2.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

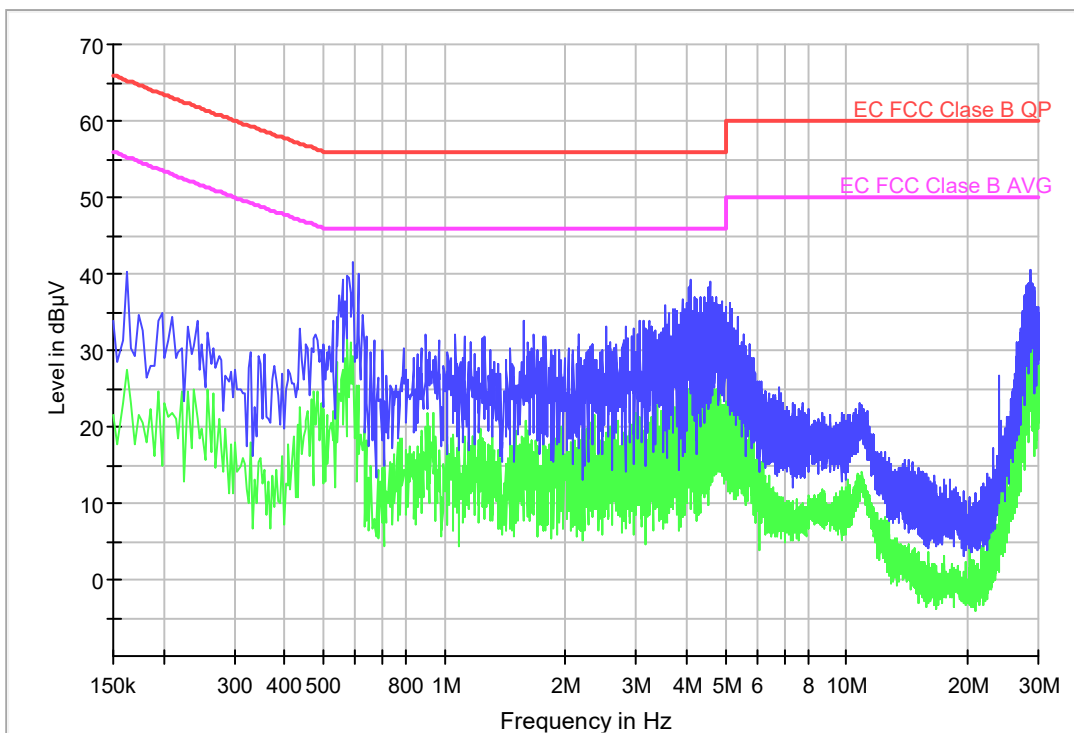
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.182000	41.3	20.3
0.334000	35.0	19.6
0.582000	43.7	35.5
0.738000	34.6	17.4
2.102000	36.2	19.2
3.326000	35.3	19.7
3.750000	38.4	23.7
6.898000	32.0	16.7
10.446000	29.7	16.0
28.686000	37.6	29.8

Conducted Emission. CC0218L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#18
 Description: EUT ON. MS in traffic mode. LTE Cat. M1 Band 2.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

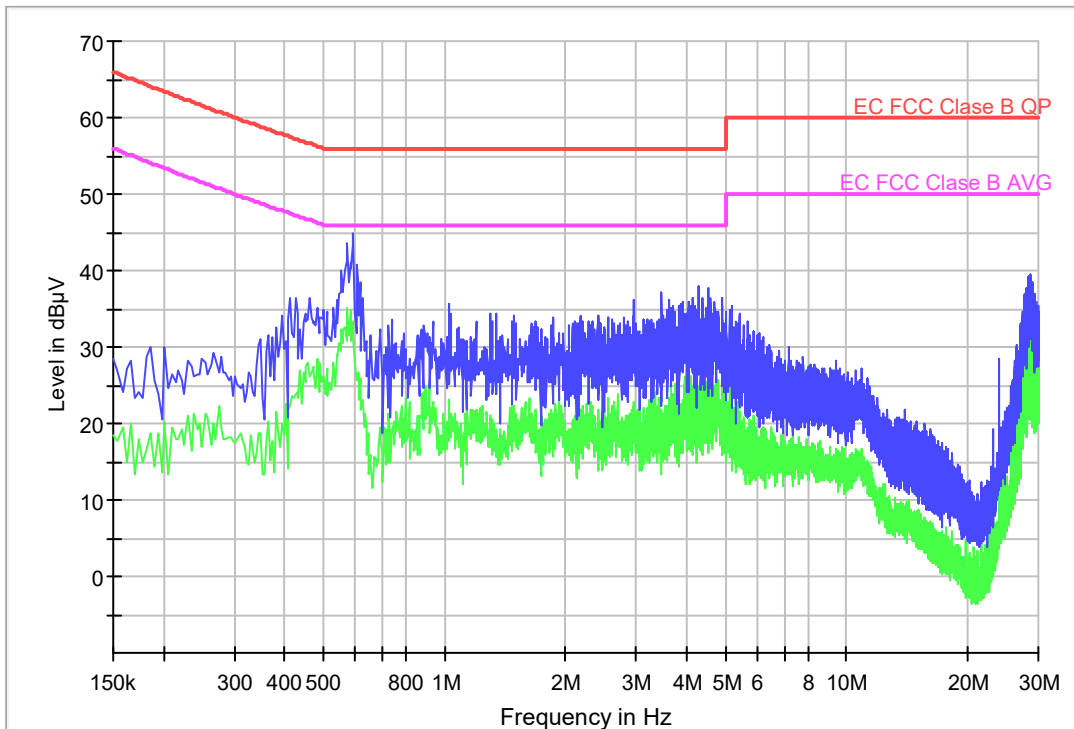
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.162000	40.4	27.5
0.258000	32.4	25.0
0.594000	41.4	29.1
0.902000	32.0	20.1
1.574000	34.0	15.9
3.558000	35.8	21.2
4.074000	39.2	22.2
6.154000	25.9	13.9
10.774000	23.1	12.6
28.686000	40.5	33.3

Conducted Emission. CC02190N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#19
 Description: EUT ON. MS in traffic mode. LTE Cat. M1 Band 4.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

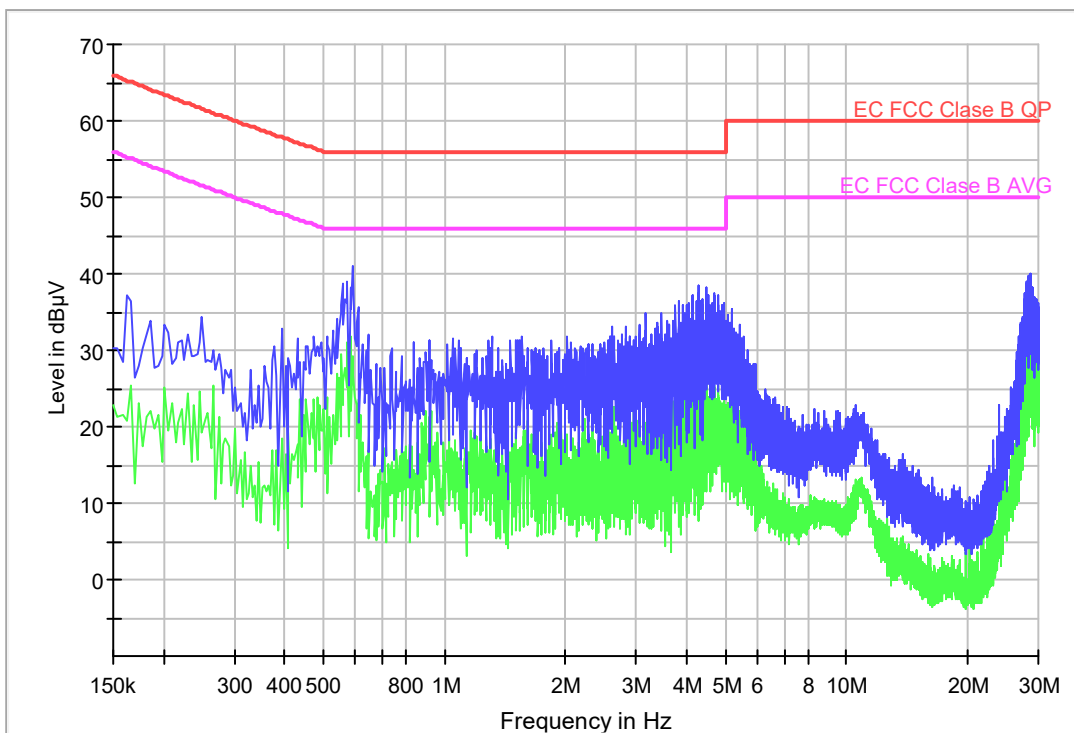
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.186000	30.1	18.8
0.426000	36.5	23.7
0.594000	45.0	31.3
1.026000	35.6	23.0
1.298000	34.3	21.0
3.478000	37.1	21.7
4.282000	37.9	24.9
6.234000	31.3	17.4
10.922000	27.1	16.7
28.690000	39.6	32.2

Conducted Emission. CC0219L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#19
 Description: EUT ON. MS in traffic mode. LTE Cat. M1 Band 4.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

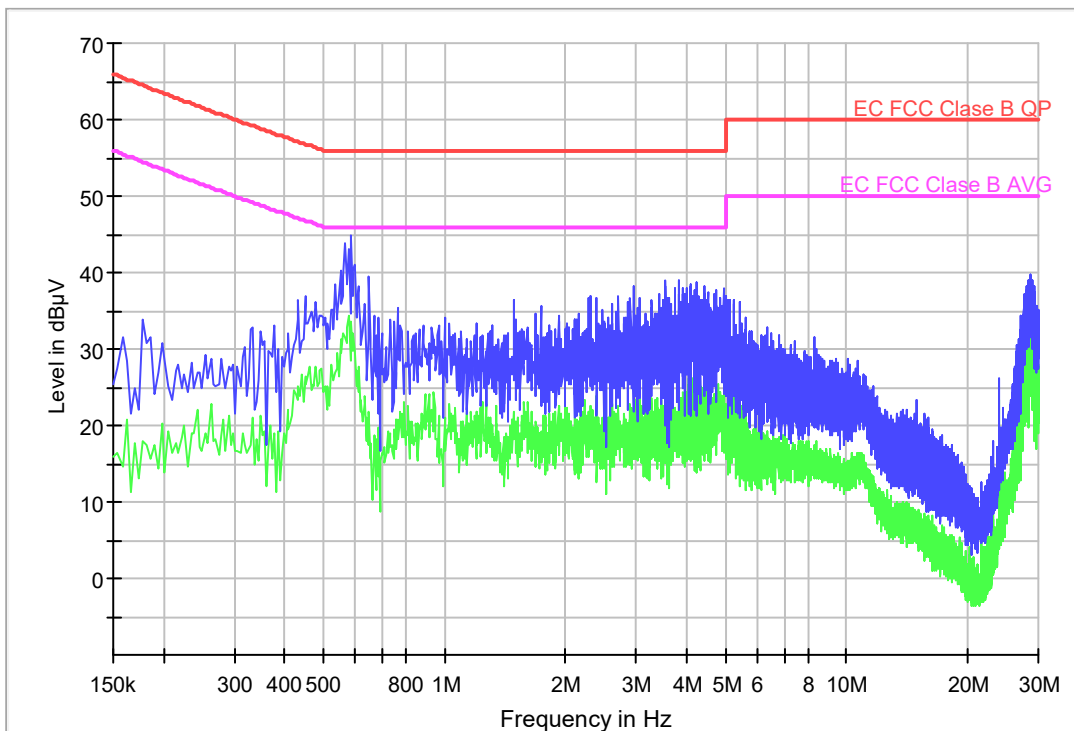
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.162000	37.3	20.8
0.394000	32.8	18.6
0.590000	41.0	29.3
1.046000	31.5	16.6
2.026000	31.9	12.8
3.478000	35.0	22.8
4.294000	38.4	26.9
6.258000	25.0	10.6
10.502000	22.8	13.0
28.674000	40.1	29.1

Conducted Emission. CC02200N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#20
 Description: EUT ON. MS in traffic mode. LTE Cat. M1 Band 5.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

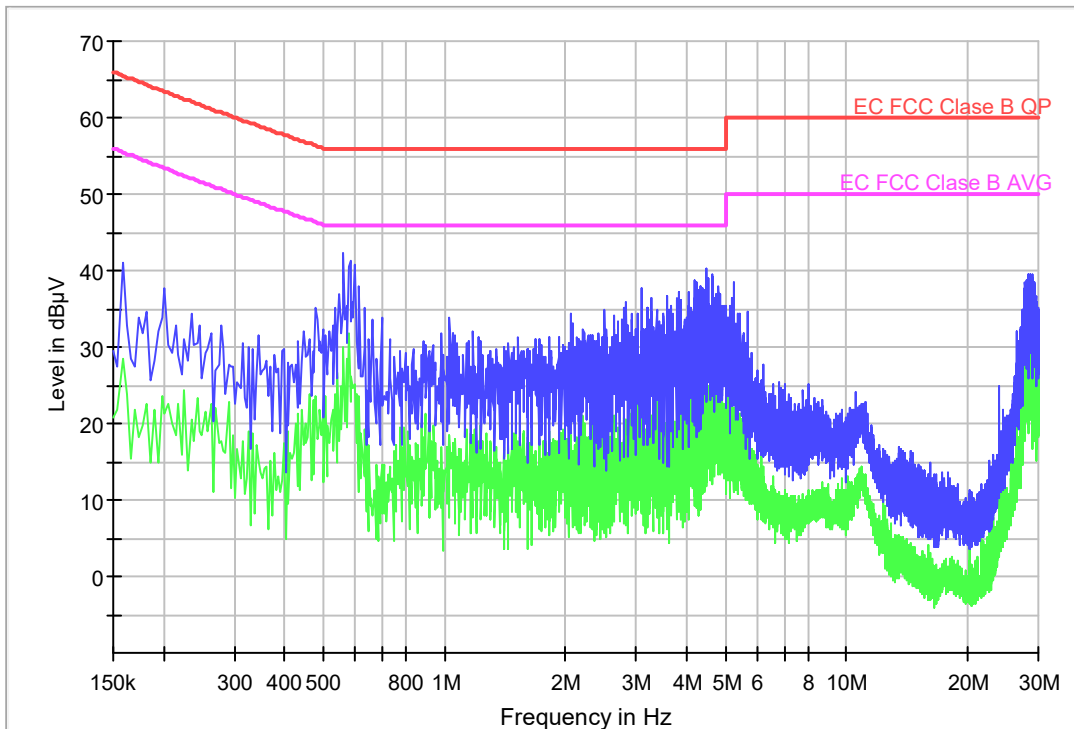
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.178000	33.9	17.9
0.430000	33.8	23.2
0.586000	44.7	33.6
0.766000	35.4	20.7
1.486000	36.3	18.4
3.558000	39.0	23.4
3.830000	38.8	25.1
6.350000	32.8	19.4
10.710000	28.4	15.1
28.622000	39.7	30.8

Conducted Emission. CC0220L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#20
 Description: EUT ON. MS in traffic mode. LTE Cat. M1 Band 5.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

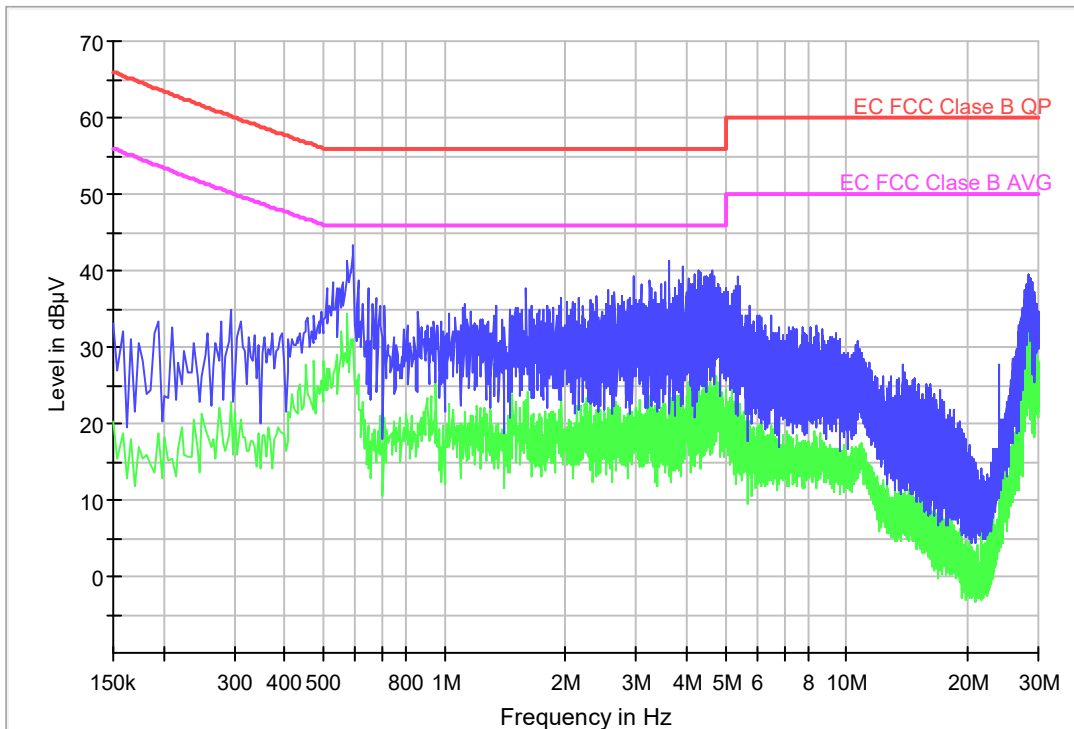
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.158000	41.0	28.4
0.278000	32.8	17.7
0.562000	42.3	30.0
1.030000	33.9	18.6
2.062000	34.4	18.5
3.094000	37.6	19.9
4.470000	40.2	24.4
6.226000	27.7	14.4
10.574000	24.2	12.3
28.370000	39.5	29.7

Conducted Emission. CC02210N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#21
 Description: EUT ON. MS in traffic mode. LTE Cat. M1 Band 12.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

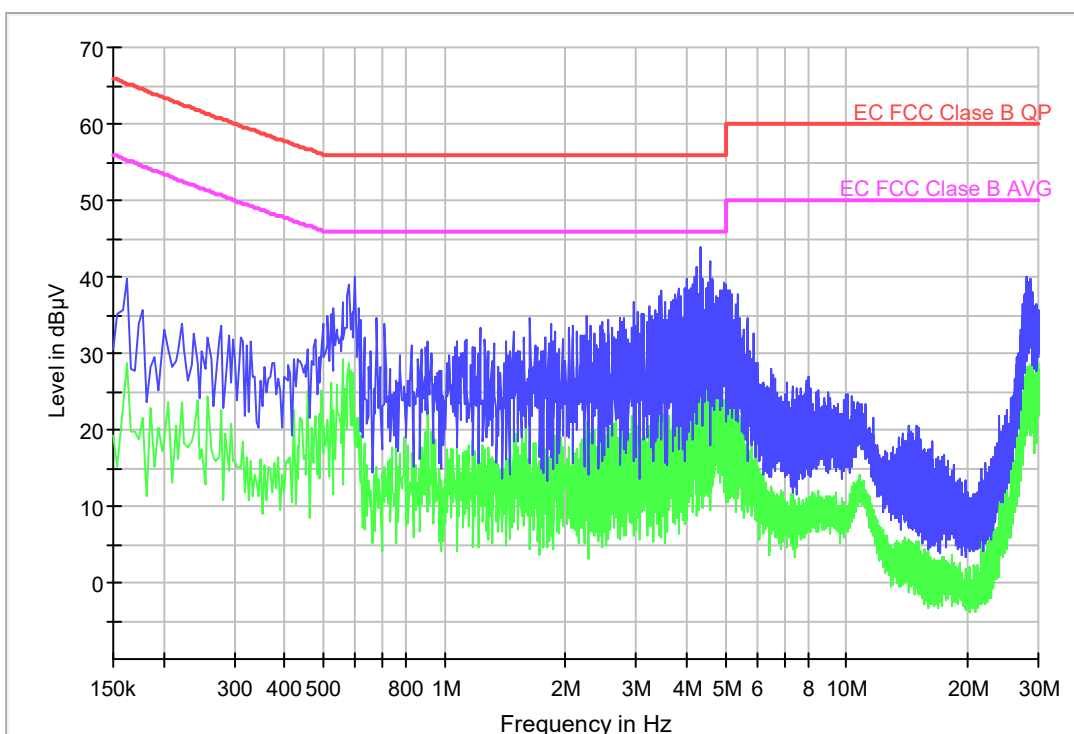
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.194000	33.4	18.7
0.294000	34.7	22.7
0.594000	43.4	30.4
1.126000	35.6	21.6
1.598000	37.7	23.1
2.962000	39.2	20.8
3.606000	41.3	22.2
6.494000	34.1	18.7
10.634000	30.7	16.7
28.378000	39.5	30.3

Conducted Emission. CC0221L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#21
 Description: EUT ON. MS in traffic mode. LTE Cat. M1 Band 12.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

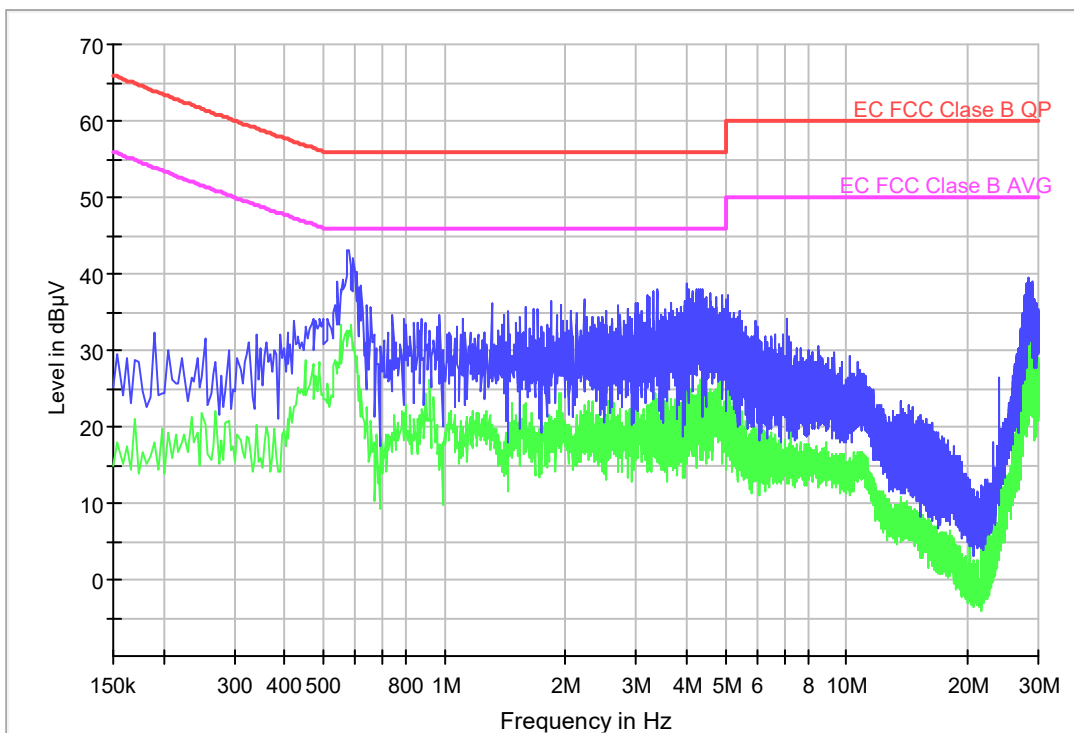
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.162000	39.7	28.8
0.278000	33.7	22.6
0.598000	40.0	18.0
1.226000	33.4	15.7
1.634000	34.7	18.4
3.478000	38.3	21.9
4.334000	43.9	25.7
6.518000	27.9	12.2
10.434000	23.7	12.4
28.002000	39.9	23.4

Conducted Emission. CC02220N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#22
 Description: EUT ON. MS in traffic mode. LTE Cat. M1 Band 13.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

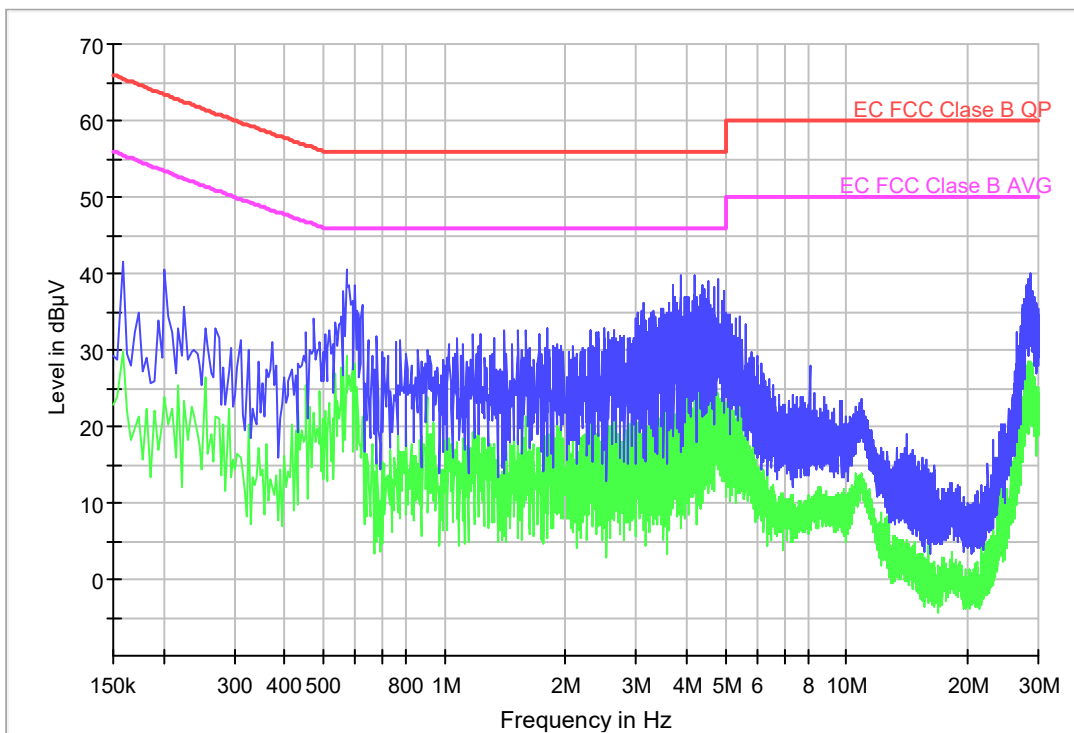
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.190000	32.4	17.9
0.422000	33.8	22.4
0.578000	43.2	32.6
0.742000	34.7	19.1
1.846000	36.5	21.4
3.378000	37.9	21.2
4.014000	38.6	23.4
7.110000	34.0	17.1
10.694000	28.3	15.9
28.490000	39.5	32.1

Conducted Emission. CC0222L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/02
 Operation mode: OM#22
 Description: EUT ON. MS in traffic mode. LTE Cat. M1 Band 13.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

EC FCC Class B ESPI CC



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

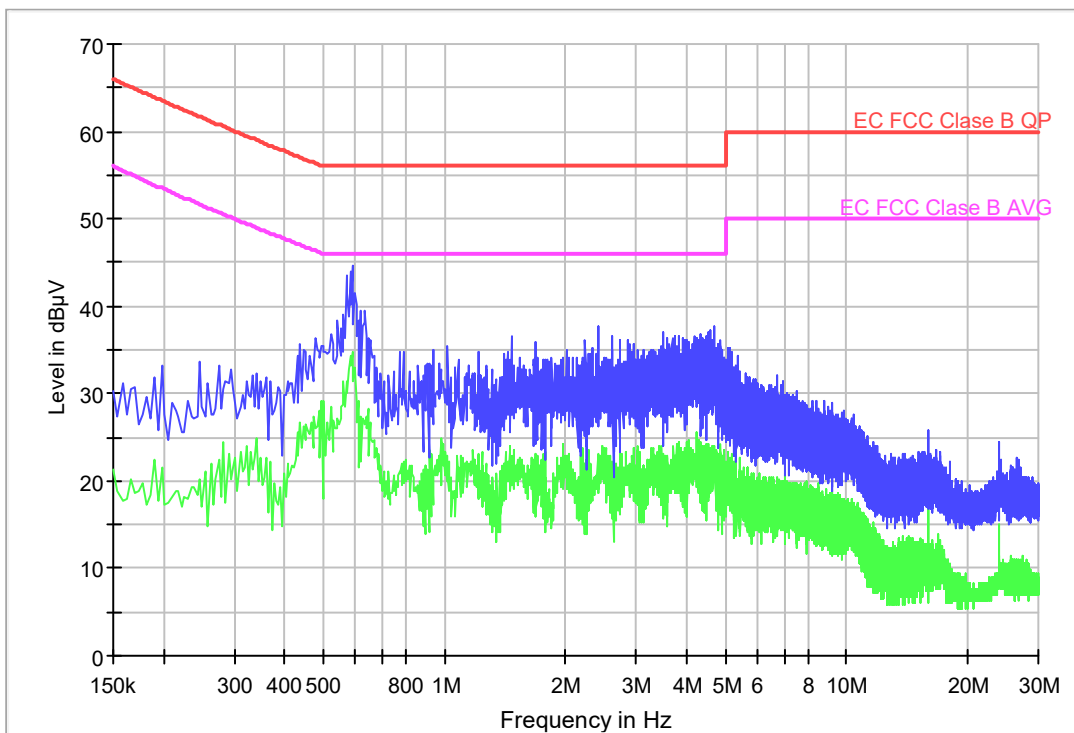
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.158000	41.6	29.8
0.270000	32.7	21.2
0.570000	40.5	29.3
1.178000	32.2	19.3
1.802000	32.8	18.5
3.134000	36.3	21.4
4.182000	39.9	25.4
6.166000	28.2	13.8
10.922000	23.6	13.8
28.682000	39.9	28.6

Conducted Emission. CC01230N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#23
 Description: EUT ON. MS in traffic mode. LTE NBIoT Band 2.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

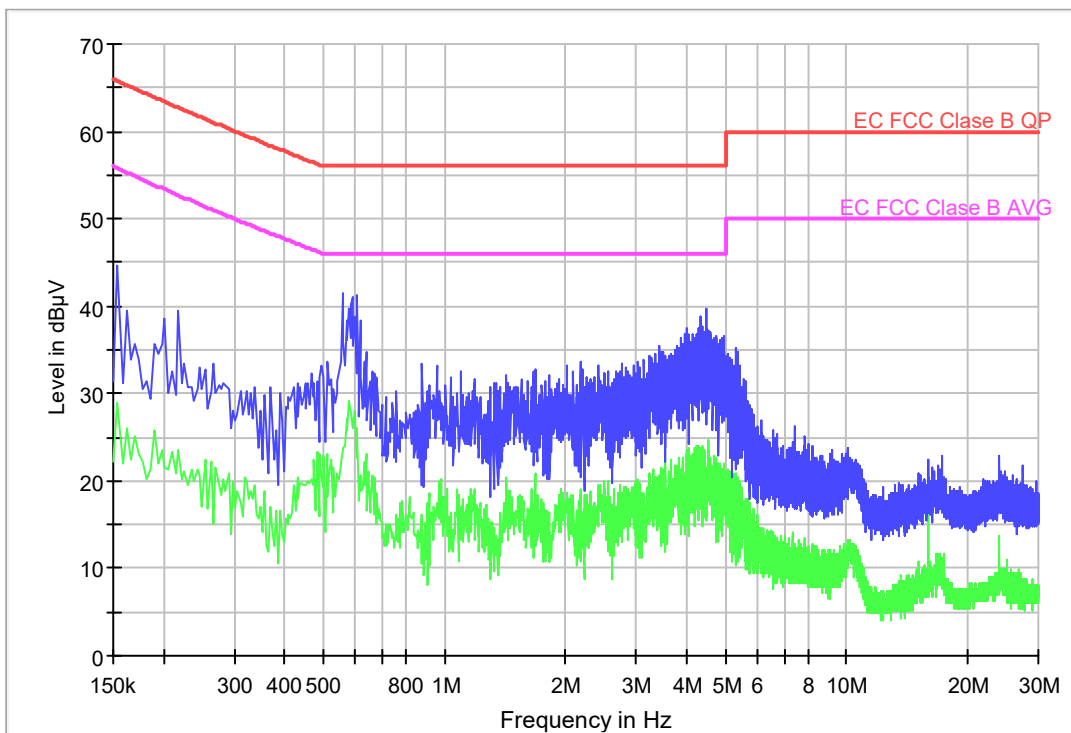
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.246000	33.6	20.2
0.430000	34.4	25.7
0.590000	44.5	34.8
1.018000	35.5	20.9
1.466000	36.6	21.9
2.410000	37.7	20.5
4.686000	37.7	23.6
6.738000	32.0	17.3
10.434000	27.7	17.0
24.002000	24.4	14.9

Conducted Emission. CC0123L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#23
 Description: EUT ON. MS in traffic mode. LTE NBIoT Band 2.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

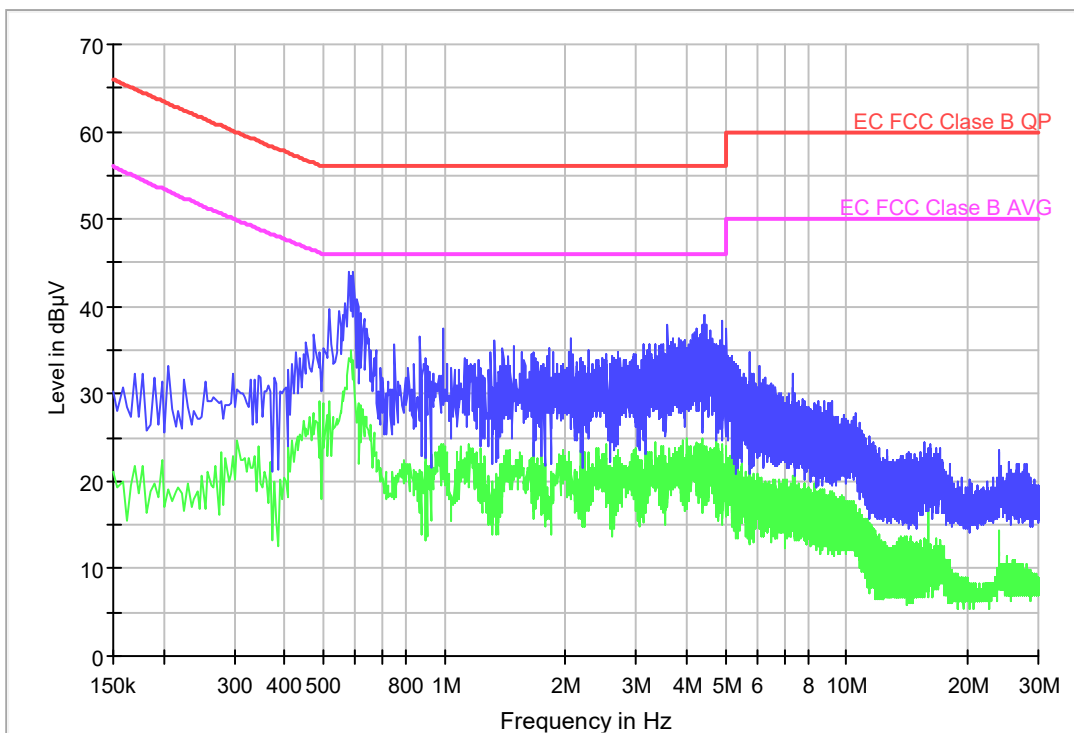
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.154000	44.7	28.9
0.266000	33.3	15.0
0.558000	41.6	23.5
0.882000	33.4	16.2
2.022000	33.3	18.7
3.430000	35.3	18.3
4.478000	39.7	21.4
6.142000	27.0	13.7
17.318000	22.9	11.3
24.006000	23.0	13.6

Conducted Emission. CC01240N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#24
 Description: EUT ON. MS in traffic mode. LTE NBloT Band 4.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

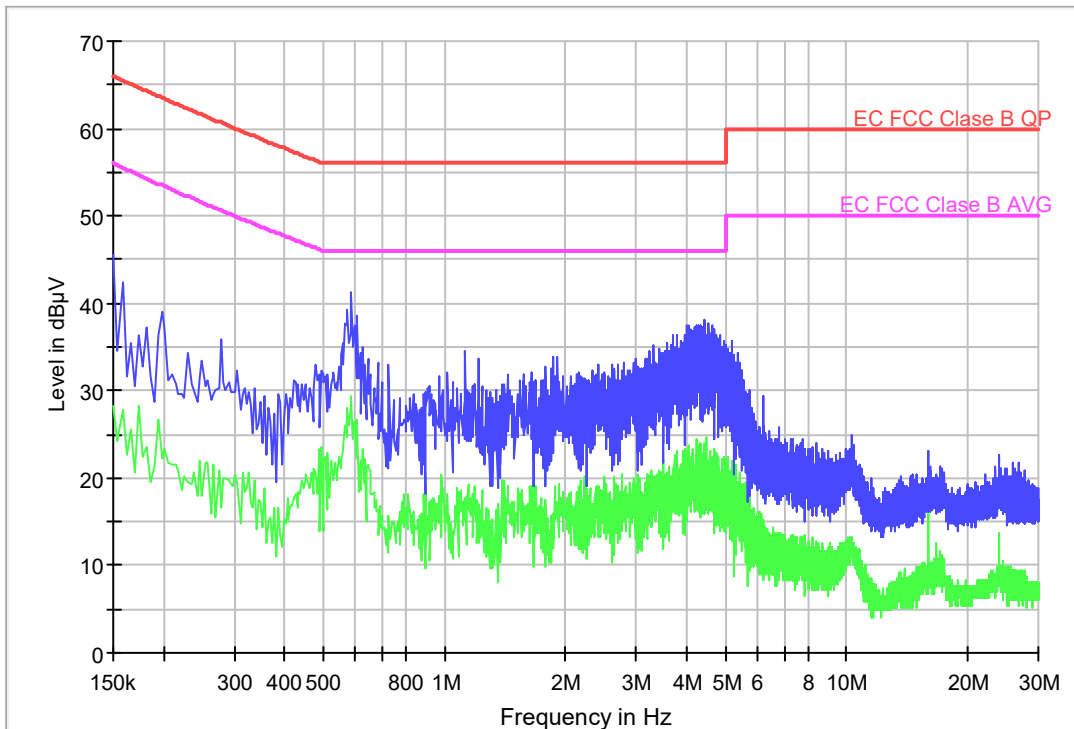
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.206000	33.3	19.1
0.426000	34.7	24.3
0.578000	44.0	34.1
0.994000	37.5	24.3
2.062000	36.3	22.2
3.598000	38.0	18.0
4.422000	39.0	23.0
7.330000	32.3	19.0
10.594000	27.9	16.5
24.022000	23.5	11.8

Conducted Emission. CC0124L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#24
 Description: EUT ON. MS in traffic mode. LTE NBloT Band 4.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

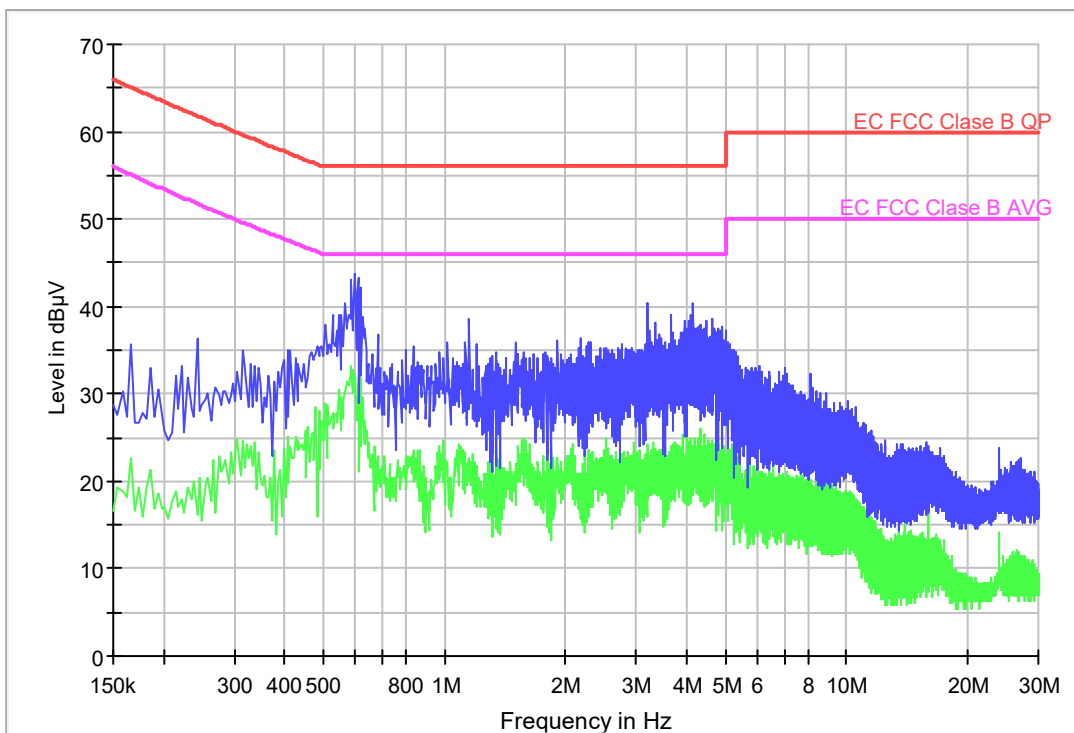
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.150000	45.5	28.3
0.278000	36.0	16.6
0.586000	41.4	29.3
1.126000	34.6	17.5
1.914000	33.8	17.1
3.570000	35.3	18.7
4.454000	38.1	24.1
6.198000	29.3	13.7
10.450000	23.8	12.2
24.006000	22.7	13.6

Conducted Emission. CC01250N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#25
 Description: EUT ON. MS in traffic mode. LTE NBIoT Band 5.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

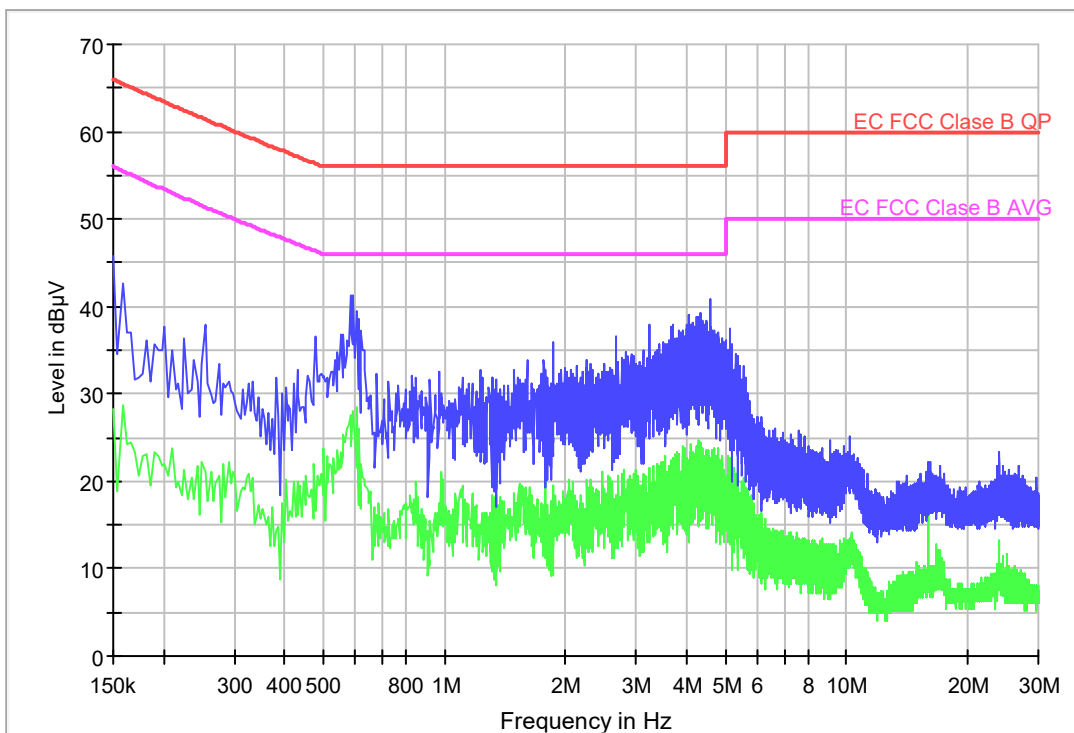
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.242000	36.4	16.2
0.414000	35.1	24.0
0.598000	43.7	31.8
1.154000	38.7	22.7
1.914000	36.2	22.6
3.202000	40.3	18.0
4.166000	40.5	22.5
7.058000	33.0	19.1
10.490000	28.4	17.0
23.998000	23.7	12.6

Conducted Emission. CC0125L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#25
 Description: EUT ON. MS in traffic mode. LTE NBIoT Band 5.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

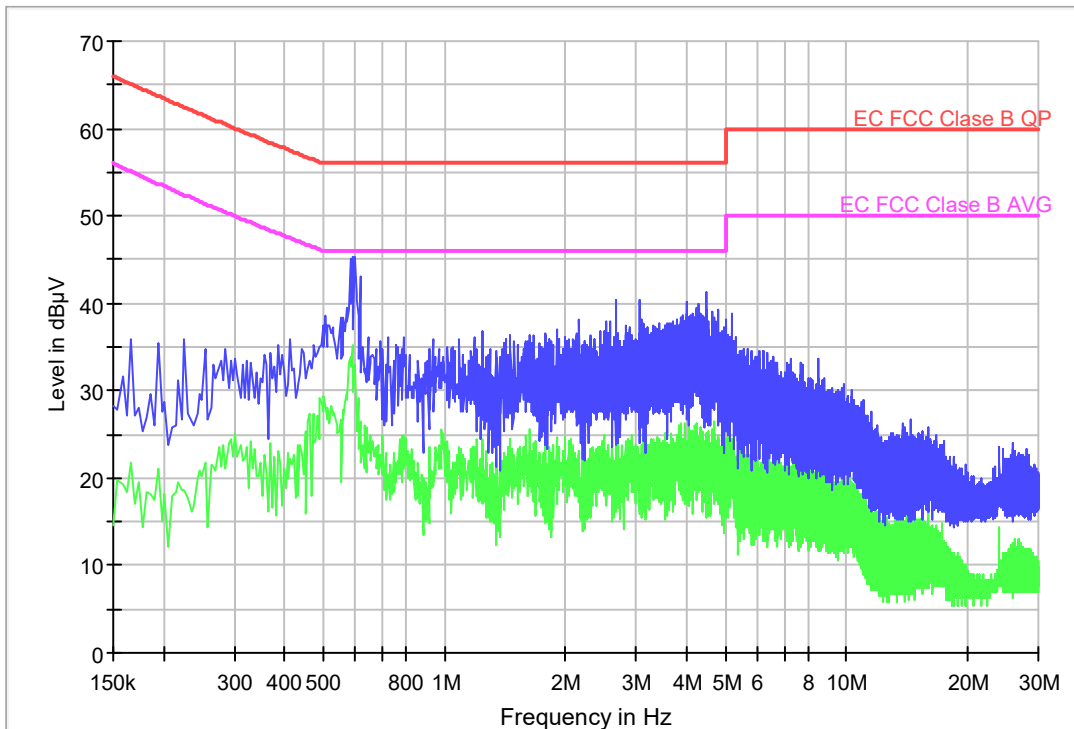
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.150000	45.9	28.2
0.274000	33.4	20.6
0.594000	41.2	28.0
1.226000	32.8	15.0
1.866000	35.9	19.5
3.226000	37.9	17.4
4.594000	40.7	21.1
6.174000	27.4	14.6
10.634000	22.5	12.2
24.002000	23.4	13.3

Conducted Emission. CC01260N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#26
 Description: EUT ON. MS in traffic mode. LTE NBloT Band 12.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

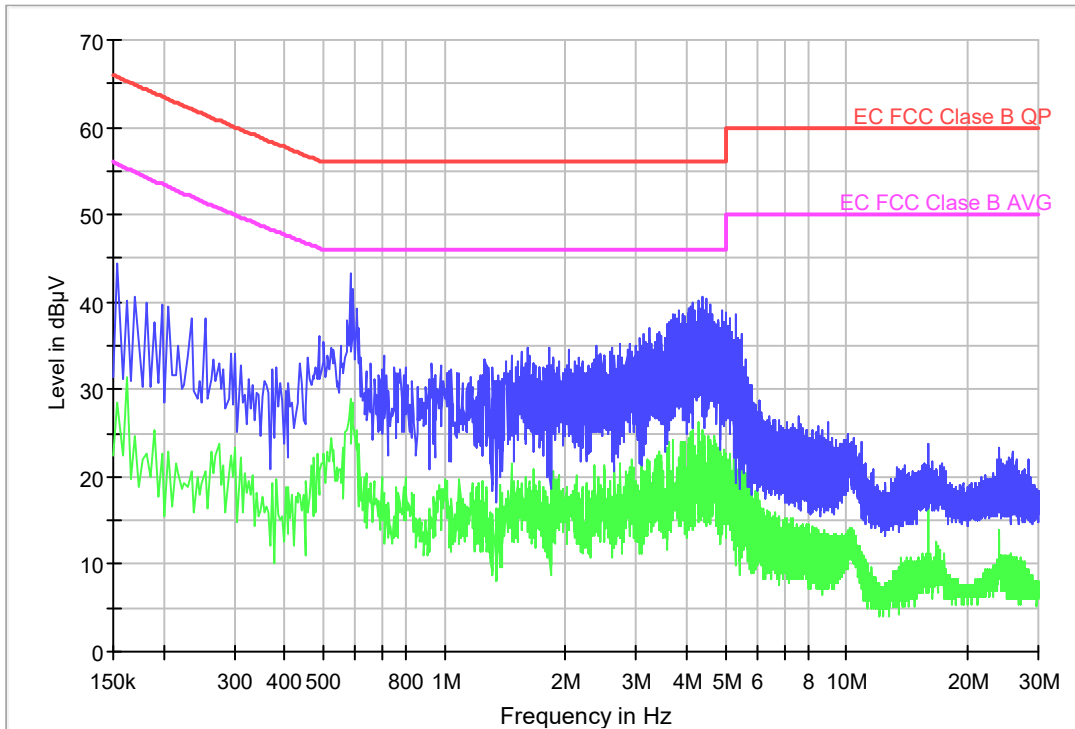
Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.226000	36.0	18.6
0.414000	35.9	22.2
0.598000	45.2	33.0
1.246000	36.9	23.8
1.898000	37.0	24.8
3.046000	40.3	21.8
4.478000	41.2	21.0
6.246000	34.5	20.8
10.966000	28.9	13.6
26.050000	24.0	12.6

Conducted Emission. CC0126L1

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#26
 Description: EUT ON. MS in traffic mode. LTE NB IoT Band 12.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Phase wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
 — EC FCC Class B QP — EC FCC Class B AVG

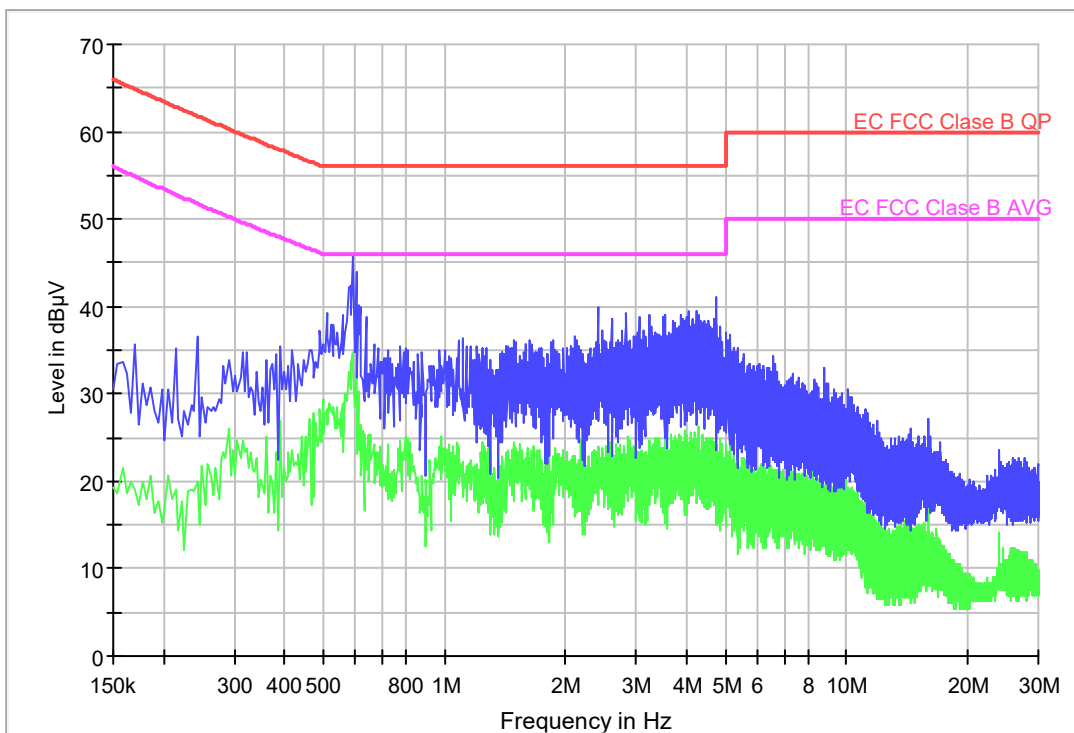
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.154000	44.5	28.4
0.302000	34.1	23.3
0.582000	43.2	28.9
0.930000	33.0	14.2
1.610000	34.9	18.6
3.582000	37.5	23.3
4.402000	40.6	25.2
6.122000	27.4	16.4
10.462000	24.5	13.6
24.002000	23.3	12.9

Conducted Emission. CC01270N

Project: 63721REM.001
 Company: HALTIAN
 Sample: S/01
 Operation mode: OM#27
 Description: EUT ON. MS in traffic mode. LTE NBIoT Band 13.
 Power supply: 5Vdc (through AC/DC adapter by 115Vac, 60Hz).
 Neutral wire noise.

FCC Part 15 Class B



— Average Scan — Peak Scan
— EC FCC Class B QP — EC FCC Class B AVG

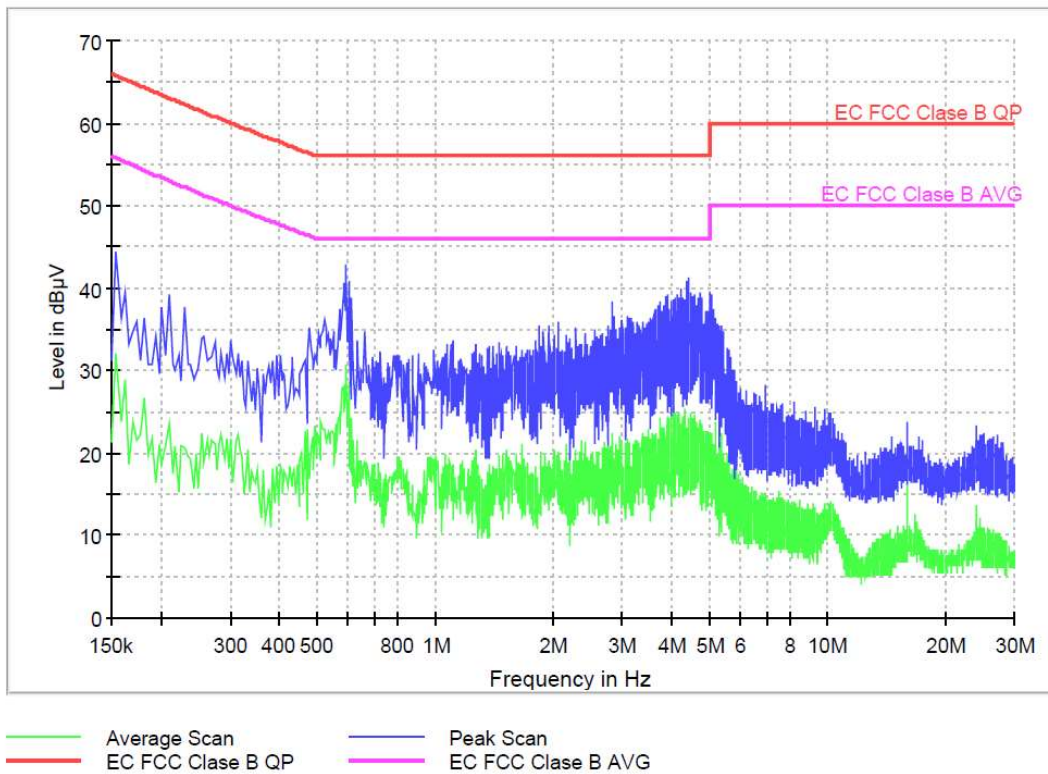
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBµV)	AVG CLRWR (dBµV)
0.242000	36.7	20.0
0.390000	35.4	26.9
0.594000	46.0	32.8
1.110000	36.3	22.1
2.114000	36.5	22.1
2.402000	39.8	24.1
4.742000	41.0	24.3
6.562000	34.3	17.5
10.466000	28.5	18.7
24.022000	23.5	12.2

Conducted Emission. CC0127L1

Project: 63721REM.001
 Company: GRANT4COM OY(FINAL CUSTOMER: HALTIAN)
 Sample: S/01
 Operation mode: OM#27
 Description: EUT ON. MS in traffic mode. LTE NBloT Band 13. Power supply: 115Vac, 60Hz. Phase wire noise.

FCC Part 15 Class B



Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.154000	44.4	32.2
0.258000	34.1	18.9
0.594000	42.9	30.7
1.106000	33.6	18.6
2.062000	35.8	17.7
2.822000	38.3	19.0
4.438000	41.2	24.0
6.926000	28.2	12.8
16.002000	23.8	18.1
24.002000	23.3	13.6