

Prüfbericht-Nr.: <i>Test report No.:</i>	17058207 001	Auftrags-Nr.: <i>Order No.:</i>	164056380	Seite 1 von 30 <i>Page 1 of 30</i>
Kunden-Referenz-Nr.: <i>Client reference No.:</i>	N/A	Auftragsdatum: <i>Order date.:</i>	23.02.2016	
Auftraggeber: <i>Client:</i>	THUMBS UP(UK) LTD Unit L, Braintree Industrial Estate, Braintree Road, HA4 0EJ, Ruislip, London, United Kindom			
Prüfgegenstand: <i>Test item:</i>	BLUETOOTH SPEAKER			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	PANSPKPRM, CATSPKPRM, PUGSPKPRM, UNISPKPRM, FOXSPK, PIGSPK (PRIMARK)			
Auftrags-Inhalt: <i>Order content:</i>	FCC approval			
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.247 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209 FCC KDB Publication 447498 v06 CFR47 FCC Part 15: Subpart B Section 15.107 CFR47 FCC Part 15: Subpart B Section 15.109			
Wareneingangsdatum: <i>Date of receipt:</i>	23.02.2016			
Prüfmuster-Nr.: <i>Test sample No.:</i>	1600367 - 1600369			
Prüfzeitraum: <i>Testing period:</i>	12.02.2016 - 26.03.2016			
Ort der Prüfung: <i>Place of testing:</i>	Accurate Technology Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
26.04.2016	Ryan Yang / Senior Project Engineer	26.04.2016	Sam Lin / Technical Certifier	
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>
				Unterschrift <i>Signature</i>
Sonstiges / Other:				
FCC ID: 2AHHEBTSPEAKERS				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged:</i>		
* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend
	5 = mangelhaft			
	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	1 = very good	2 = good	3 = satisfactory	4 = sufficient
	5 = poor			
	P(ass) = passed a.m. test specifications(s)	F(ail) = failed a.m. test specifications(s)	N/A = not applicable	N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines.				
This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.				
V04				

Test Summary

5.1.1 ANTENNA REQUIREMENT*RESULT: Pass***5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER***RESULT: Pass***5.1.3 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHZ BANDWIDTH***RESULT: Pass***5.1.4 RADIATED SPURIOUS EMISSION***RESULT: Pass***5.1.5 20dB BANDWIDTH***RESULT: Pass***5.1.6 CARRIER FREQUENCY SEPARATION***RESULT: Pass***5.1.7 NUMBER OF HOPPING FREQUENCY***RESULT: Pass***5.1.8 TIME OF OCCUPANCY***RESULT: Pass***5.1.9 CONDUCTED EMISSION***RESULT: Pass***5.1.10 RADIATED EMISSION***RESULT: Pass***6.1.1 ELECTROMAGNETIC FIELDS***RESULT: Pass*

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1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results of Bluetooth 2.1+ EDR of Conducted Testing

Appendix B: Test Results of Bluetooth 2.1+ EDR of Radiated Testing

2 Test Sites

2.1 Test Facilities

Accurate Technology Co., Ltd.

F1, Bldg. A, Changyuan New Material Port Keyuan Rd., Science & Industry Park, Nanshan Shenzhen, 518057, P.R. China

FCC Registration No.: 752051

Test site Industry Canada No.: 5077A-2

The tests at the test sites have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Accurate Technology Co., Ltd.

Radio Spectrum Test				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Spectrum Analyzer	R&S	ESPI3	100396/003	09.01.2017
Spectrum Analyzer	Agilent	E7405A	MY45115511	09.01.2017
Temp. & Humid. Chamber	Gongwen	HSD-500	0109	09.01.2017
Conducted Emission				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Test Receiver	R&S	ESCS30	100307	09.01.2017
L.I.S.N.	Schwarzbeck	NLSK8126	8126431	09.01.2017
Pulse Limiter	R&S	ESH3-Z2	100815	09.01.2017
50_ Coaxial Switch	Anritsu Corp	MP59B	6200283933	09.01.2017
Radiated Emission & Spurious Emission				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Spectrum Analyzer	R&S	FSV40	101495	01.01.2017
Test Receiver	R&S	ESCS30	100307	01.01.2017
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	01.01.2017
Loop Antenna	Schwarzbeck	FMZB1516	1516131	01.01.2017
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	01.01.2017
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	01.01.2017
RF Switching Unit+PreAMP	Compliance Direction	RSU-M2	38322	01.01.2017
Pre-Amplifier	R&S	CBLU11835 40-01	3791	01.01.2017
50 Coaxial Switch	Anritsu Corp	MP59B	6200506474	01.01.2017
RF Coaxial Cable	SUHNER	N-3m	No.8	01.01.2017
RF Coaxial Cable	RESENBERGER	N-3.5m	No.9	01.01.2017
RF Coaxial Cable	SUHNER	N-6m	No.10	01.01.2017
RF Coaxial Cable	RESENBERGER	N-12m	No.11	01.01.2017
50_ Coaxial Switch	Anritsu Corp	MP59B	6200283933	01.01.2017

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table

Item		Extended Uncertainty
Conducted Emission	Disturbance Voltage (dB μ V)	U=1.94dB, k=2, σ =95%
Radiated Emission (9kHz-30MHz)	Field strength (dB μ V/m)	U=3.08dB, k=2, σ =95%
Radiated Emission (30-1000MHz)	Field strength (dB μ V/m)	U=4.42dB, k=2, σ =95%
Radiated Emission (above 1000MHz)	Field strength (dB μ V/m)	U=4.06dB, k=2, σ =95%
Radio Spectrum		\pm 0.60 dB
Ambient Temperature		25 °C
Relative Humidity		56 %
Atmospheric Pressure		101 kPa

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The Accurate Technology Co., Ltd. Test facility located at F1, Bldg. A, Changyuan New Material Port Keyuan Rd., Science & Industry Park, Nanshan Shenzhen, 518057, P.R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is a "BLUETOOTH SPEAKER" device. It supports Bluetooth 2.1+EDR wireless technology.

According to the declaration of the applicant, the electrical circuit design, PCB layout and components used are identical for all models, only the model No. and appearance are different.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

Technical Specification	Value
Kind of Equipment	BLUETOOTH SPEAKER
Type Designation	PANSPKPRM, CATSPKPRM, PUGSPKPRM, UNISPKPRM, FOXSPK, PIGSPK
Trade Mark	PRIMARK
FCC ID	2AHHEBTSPEAKERS
Operating Frequency	2402-2480 MHz
Operating Temperature Range	-10 °C ~ +55 °C
Operating Voltage	DC 3.7V via internal rechargeable lithium battery
Testing Voltage	DC 3.7V via internal rechargeable lithium battery DC 5.0V via USB port for charging
Type of Modulation	GFSK, $\pi/4$ DQPSK, 8DPSK
Channel Number	79 channels
Channel Separation	1MHz
Wireless Technology	Bluetooth 2.1 + EDR
Antenna Type	PCB Antenna
Antenna Gain	0.00 dBi

Table 3: RF Channel and Frequency of Bluetooth

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
00	2402.00	20	2422.00	40	2442.00	60	2462.00
01	2403.00	21	2423.00	41	2443.00	61	2463.00
02	2404.00	22	2424.00	42	2444.00	62	2464.00
03	2405.00	23	2425.00	43	2445.00	63	2465.00
04	2406.00	24	2426.00	44	2446.00	64	2466.00
05	2407.00	25	2427.00	45	2447.00	65	2467.00
06	2408.00	26	2428.00	46	2448.00	66	2468.00
07	2409.00	27	2429.00	47	2449.00	67	2469.00
08	2410.00	28	2430.00	48	2450.00	68	2470.00
09	2411.00	29	2431.00	49	2451.00	69	2471.00
10	2412.00	30	2432.00	50	2452.00	70	2472.00
11	2413.00	31	2433.00	51	2453.00	71	2473.00
12	2414.00	32	2434.00	52	2454.00	72	2474.00
13	2415.00	33	2435.00	53	2455.00	73	2475.00
14	2416.00	34	2436.00	54	2456.00	74	2476.00
15	2417.00	35	2437.00	55	2457.00	75	2477.00
16	2418.00	36	2438.00	56	2458.00	76	2478.00
17	2419.00	37	2439.00	57	2459.00	77	2479.00
18	2420.00	38	2440.00	58	2460.00	78	2480.00
19	2421.00	39	2441.00	59	2461.00	/	/

Table 4: Frequency Hopping Information

Technical Specification	Description
Hopping Range	Hereby we declare that the maximum frequency of this device is: 2402-2480MHz. This is according the Bluetooth Core Specification V2.1 + EDR for devices which will be operated in the USA. This was checked during the Bluetooth Qualification tests (Test Case: TRM/CA/04-E).
Hopping Sequence	Example of a 79 hopping sequence in data mode: 33,04,21,44,23,42,53,46,55,48,40,59,72,29,76,31,08,73,07,75,09,45,60,39,58,13,47,11,77,52,35,50,65,54,67,56,69,62,71,64,7,25,27,66,57,70,74,61,78,63,10,41,05,43,15,44,64,68,02,70,06,01,51,03,55,05,03,66,53,49,36,47,
Receiver input bandwidth	<p>The input bandwidth of the receiver is 1MHz. In every connection one Bluetooth device is the master and the other one is the slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master.</p> <p>Additionally the type of connection is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also the slave of the connection will use these settings.</p> <p>Repeating of a packer has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case.</p> <p>That means a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence.</p>

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, Bluetooth transmitting mode (BDR & EDR mode)
 - 1. Transmitting
 - a. Low Channel
 - b. Middle Channel
 - c. High Channel
 - 2. Receiving
- B. On, Transmitting on Hopping channel
- C. On, Bluetooth connecting mode
- D. On, Charging mode via USB port
- E. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- ID Label and Location Info
- Operation Description
- Photo Document
- User Manual
- Block Diagram
- Model Difference Letter
- Parts List
- Schematics

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.10: 2013 and ANSI C63.4: 2014

According to clause 3.1, all tests were performed on model PANSPKPRM in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 5: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
iPhone 6	Apple	MG4J2 CH/A	F17NTK2QG5MV	N/A
Notebook PC	Lenovo	ThinkPad X240	N/A	N/A
Printer	HP	HP laserjet 1015	CNFG030424	N/A

4.4 Countermeasures to Achieve EMC Compliance

Additional countermeasures to the submitted test sample(s) for Radiated Spurious Emission were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

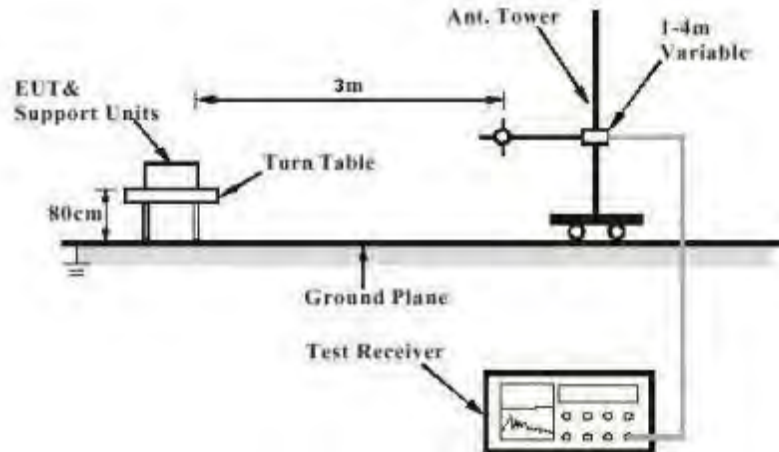


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

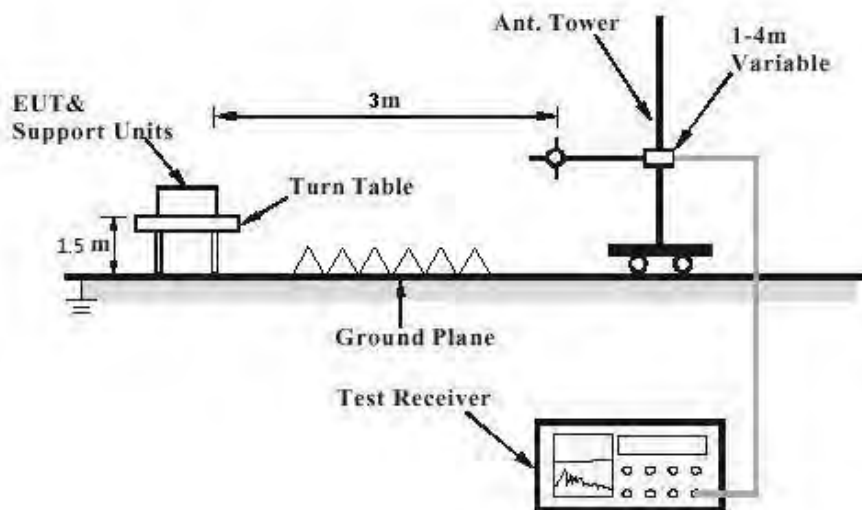


Diagram of Measurement Configuration for Mains Conduction Measurement

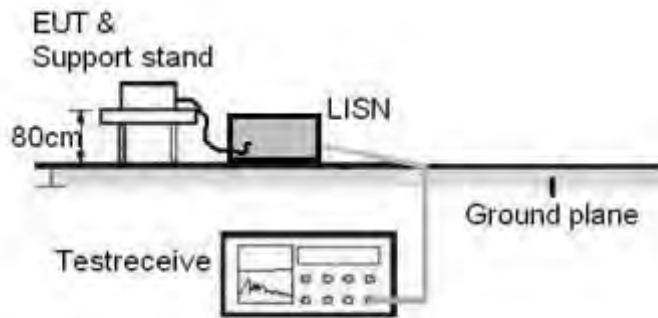
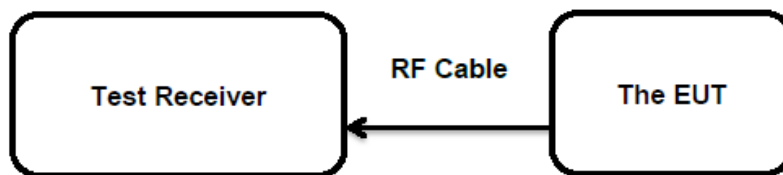


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:

Pass

Test Specification

Test standard : FCC Part 15.247(b)(4) and Part 15.203

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is 0.00 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Maximum Peak Conducted Output Power

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(b)(1)
 Basic standard : ANSI C63.10: 2013
 Limits : < 0.125 Watts
 Kind of test site : Shielded Room

Test Setup

Date of testing : 22.03.2016
 Input voltage : DC 3.7V via internal rechargeable lithium battery
 Operation mode : A.1
 Test channel : Low / Middle / High
 Ambient temperature : 25 °C
 Relative humidity : 56 %
 Atmospheric pressure : 101 kPa

Table 6: Test Result of Maximum Peak Conducted Output Power

Test Mode	Channel Frequency (MHz)	Measured Peak Output Power		Limit (W)
		(dBm)	(W)	
BDR	2402	-2.18	0.00061	< 0.125
	2441	-3.69	0.00043	
	2480	-5.05	0.00031	
EDR	2402	-1.96	0.00064	< 0.125
	2441	-3.46	0.00045	
	2480	-4.93	0.00032	
Maximum Measured Value		-1.96	0.00064	/

Note: The cable loss is taken into account in results.

For the measurement records, refer to the appendix A.

5.1.3 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.247(d)
Basic standard	: ANSI C63.10: 2013
Limits	: 20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 22.03.2016
Input voltage	: DC 3.7V via internal rechargeable lithium battery
Operation mode	: A.1
Test channel	: Low / Middle / High
Ambient temperature	: 25 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to following test plot, and compliance is achieved as well.

For the measurement records, refer to the appendix A.

5.1.4 Radiated Spurious Emission

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.247(d) & FCC Part 15.205
Basic standard	: ANSI C63.10: 2013
Limits	: Refer to 15.209(a) of FCC part 15.247(d)
Kind of test site	: 3m Semi-anechoic Chamber & 3m Full-anechoic Chamber

Test Setup

Date of testing	: 12.03.2016 & 22.03.2016
Input voltage	: DC 3.7V via internal rechargeable lithium battery
Operation mode	: A.1
Test channel	: Low / Middle / High
Ambient temperature	: 25 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101 kPa

Remark:

During the pretest the EUT was rotated through three orthogonal axes to determine the attitude that maximizes the emissions. After that the EUT was manually handled to find the orientation that has the maximum emission, which is the orientation shown in the test set-up photos.

Pre-test the EUT in continuous transmitting mode at the low (2402 MHz), middle (2441 MHz) and high (2480 MHz) channel with different data packet. Compliance test in continuous transmitting mode with BDR mode (DH5) as the worst case was found.

Testing was carried out within frequency range 9kHz to the tenth harmonics.

For the measurement records, refer to the appendix B.

5.1.5 20dB Bandwidth

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(a)(1)
 Basic standard : ANSI C63.10: 2013
 Kind of test site : Shielded Room

Test Setup

Date of testing : 22.03.2016
 Input voltage : DC 3.7V via internal rechargeable lithium battery
 Operation mode : A.1
 Test channel : Low / Middle / High
 Ambient temperature : 25 °C
 Relative humidity : 56 %
 Atmospheric pressure : 101 kPa

Table 7: Test Result of 20dB Bandwidth

Test Mode	Channel Frequency (MHz)	20dB Bandwidth (kHz)	2/3 of 20dB Bandwidth (kHz)	Limit (MHz)
BDR	2402	672.90	448.600	/
	2441	651.30	434.200	
	2480	668.60	445.733	
EDR	2402	1189.60	793.067	/
	2441	1189.60	793.067	
	2480	1211.30	807.533	
Maximum Measured Value		1211.30	807.533	/

For the measurement records, refer to the appendix A.

5.1.6 Carrier Frequency Separation

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(a)(1)
 Basic standard : ANSI C63.10: 2013
 Limits : $\geq 25\text{kHz}$ or $2/3$ of 20dB bandwidth, whichever is greater
 Kind of test site : Shielded Room

Test Setup

Date of testing : 22.03.2016
 Input voltage : DC 3.7V via internal rechargeable lithium battery
 Operation mode : B
 Test channel : Low / Middle / High
 Ambient temperature : 25 °C
 Relative humidity : 56 %
 Atmospheric pressure : 101 kPa

Table 8: Test Result of Carrier Frequency Separation

Channel	Channel Frequency (MHz)	Measured Channel Separation (KHz)	Limit (kHz)	Result
Low Channel	2402	1002.9	$\geq 25\text{kHz}$ or $2/3$ of 20dB bandwidth	Pass
Adjacency Channel	2403			
Middle Channel	2441	1002.9		Pass
Adjacency Channel	2442			
High Channel	2480	1002.9		Pass
Adjacency Channel	2479			

Note:

 The limit is maximum $2/3$ of the 20 dB bandwidth: 807.533 KHz.

For the measurement records, refer to the appendix A.

5.1.7 Number of Hopping Frequency

RESULT:**Pass****Test Specification**

Test standard : FCC part 15.247(a)(1)(iii)
Basic standard : ANSI C63.10: 2013
Limits : ≥ 15 non-overlapping channels
Kind of test site : Shielded Room

Test Setup

Date of testing : 22.03.2016
Input voltage : DC 3.7V via internal rechargeable lithium battery
Operation mode : B
Ambient temperature : 25 °C
Relative humidity : 56 %
Atmospheric pressure : 101 kPa

Table 9: Test Result of Number of Hopping Frequency

Frequency Range	Measured Quantity of Hopping Channel	Limit	Result
2402 to 2480 MHz	79	≥ 15	Pass

For the measurement records, refer to the appendix A.

5.1.8 Time of Occupancy

RESULT:
Pass
Test Specification

Test standard : FCC part 15.247(a)(1)(iii)
 Basic standard : ANSI C63.10: 2013
 Limits : < 0.4s
 Kind of test site : Shielded Room

Test Setup

Date of testing : 22.03.2016
 Input voltage : DC 3.7V via internal rechargeable lithium battery
 Operation mode : B
 Test channel : Low / Middle / High
 Ambient temperature : 25 °C
 Relative humidity : 56 %
 Atmospheric pressure : 101 kPa

Table 10: Test Result of Time of Occupancy

Test Mode	Data Packet	Pulse width (ms)	Measured Dwell time(s)	Limit (s)	Result
BDR mode	DH1	0.393	0.126	< 0.4s	Pass
	DH3	1.647	0.264		
	DH5	2.893	0.309		
EDR mode	2DH1	0.393	0.126		
	2DH3	1.647	0.264		
	2DH5	2.887	0.308		

Note:

$$\text{Dwell time} = \text{Pulse width} \times (\text{Hopping rate} / \text{Number of channels}) \times \text{Period}$$

$$\text{Period} = 0.4 \text{ (seconds/channel)} \times 79 \text{ (channel)} = 31.6 \text{ seconds}$$

For the measurement records, refer to the appendix A.

5.1.9 Conducted Emission

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.207(a) & FCC Part 15.107(a)
Basic standard	: ANSI C63.10: 2013 & ANSI C63.4: 2014
Frequency range	: 0.15 – 30MHz
Limits	: FCC Part 15.207(a) & FCC Part 15.107(a)
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 26.03.2016
Input voltage	: DC 5.0V via USB port for charging
Operation mode	: C, D
Earthing	: Not connected
Ambient temperature	: 25 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix B.

5.1.10 Radiated Emission**RESULT:****Pass****Test Specification**

Test standard	: FCC Part 15.109(a)
Basic standard	: ANSI C63.4: 2014
Frequency range	: 30 - 6000MHz
Classification	: Class B
Limits	: FCC Part 15.109(a)
Kind of test site	: 3m Semi-anechoic Chamber & 3m Full-anechoic Chamber

Test Setup

Date of testing	: 12.03.2016
Input voltage	: DC 5.0V via USB port for charging
Operation mode	: D
Earthing	: Not connected
Ambient temperature	: 23 °C
Relative humidity	: 48 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix B.

6 Safety Human Exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Electromagnetic Fields

RESULT:**Pass****Test Specification**

Test standard : FCC KDB Publication 447498 v06

Measurement Record:

The minimum distance for the EUT is less than 5mm.

Since maximum peak output power of the transmitter is $-1.96 \text{ dBm} \approx 0.64 \text{ mW} < 10 \text{ mW}$.

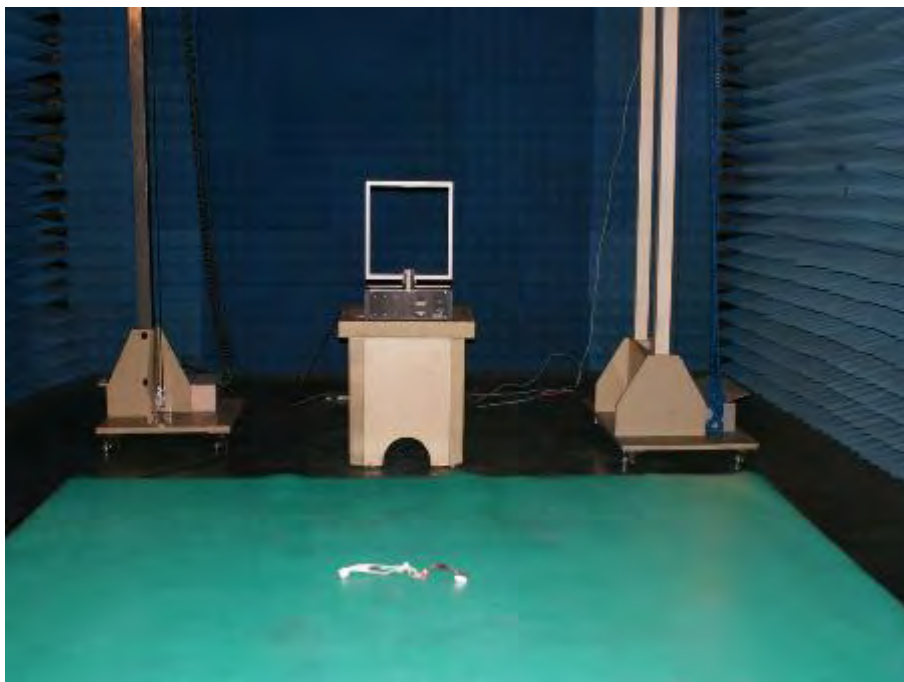
Hence the EUT is excluded from SAR evaluation according to FCC KDB Publication 447498 D01 General RF Exposure Guidance v06.

7 Photographs of the Test Set-Up

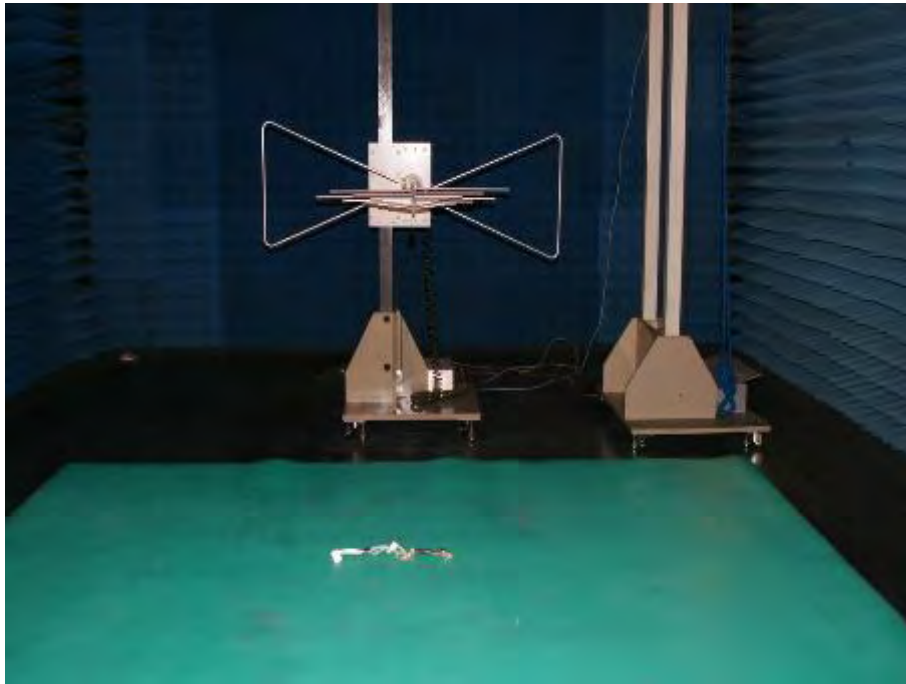
Photograph 1: Set-up for Conducted Testing



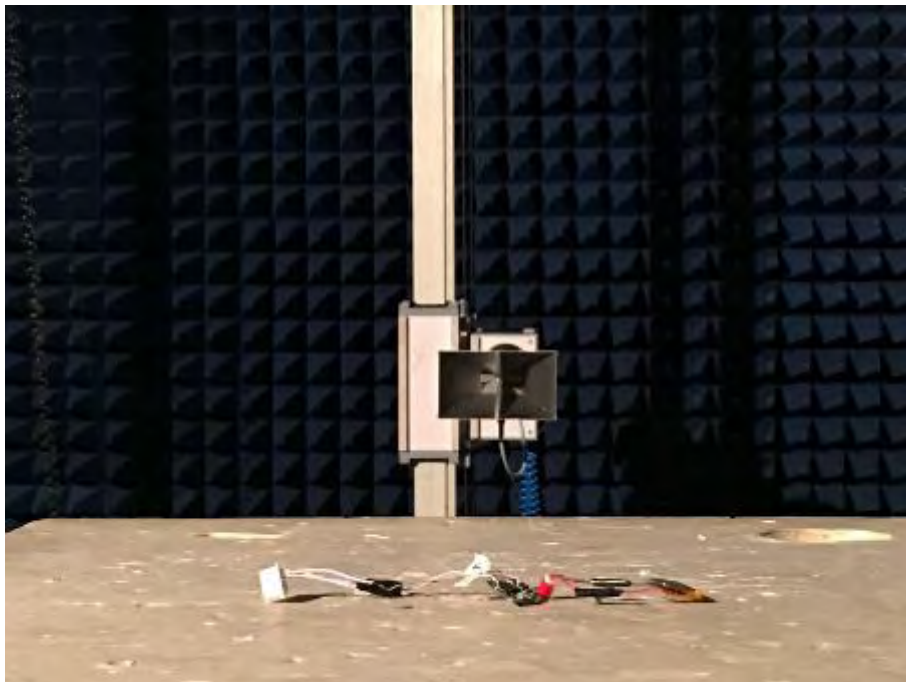
Photograph 2: Set-up for Radiated Spurious Emission (9kHz ~ 30MHz)



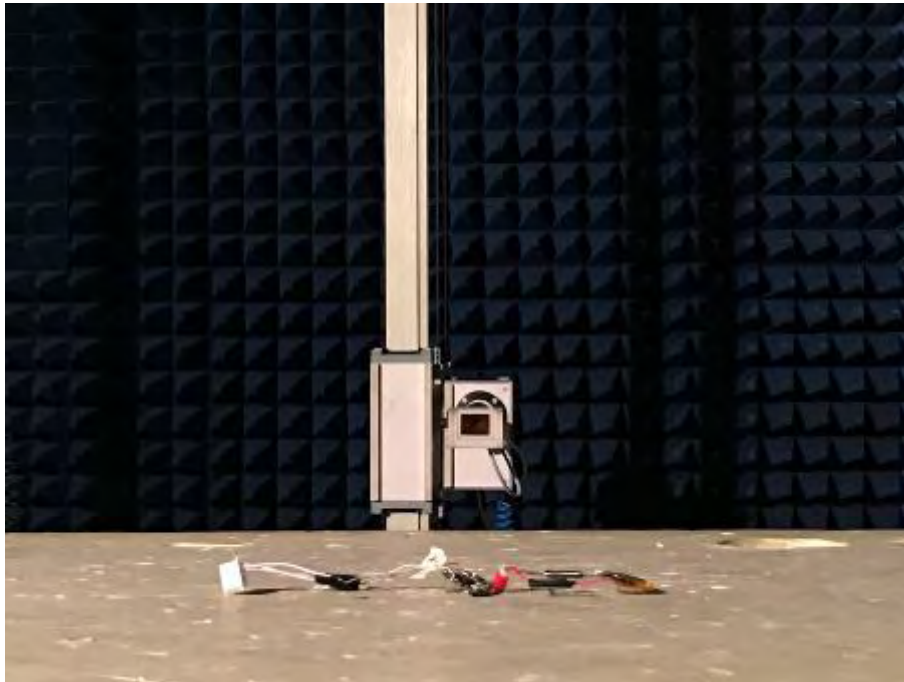
Photograph 3: Set-up for Radiated Spurious Emission (30MHz~1GHz)



Photograph 4: Set-up for Radiated Spurious Emission (1GHz ~ 18GHz)



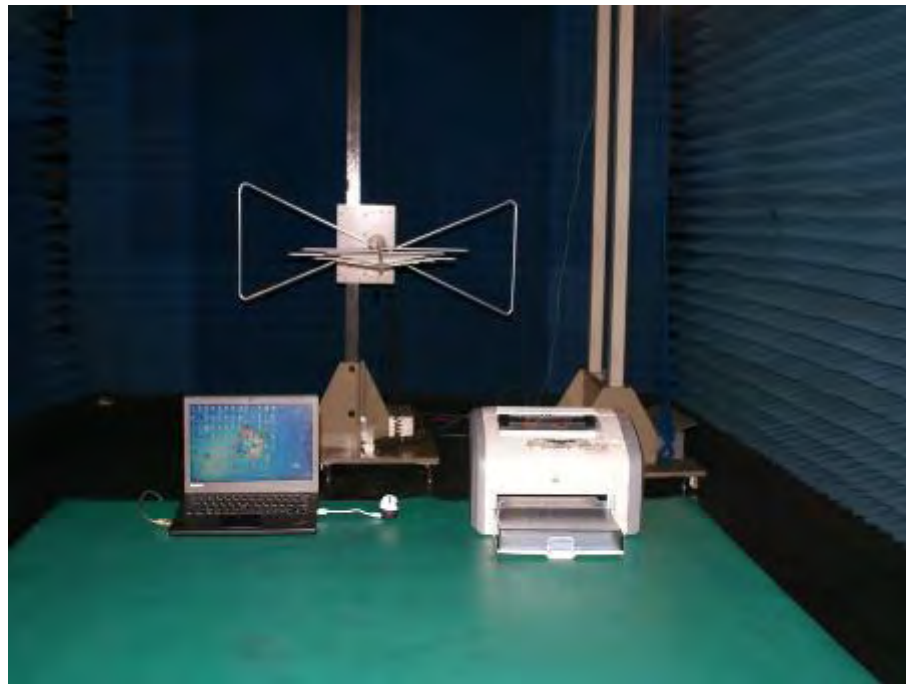
Photograph 5: Set-up for Radiated Spurious Emission (18GHz ~ 26GHz)



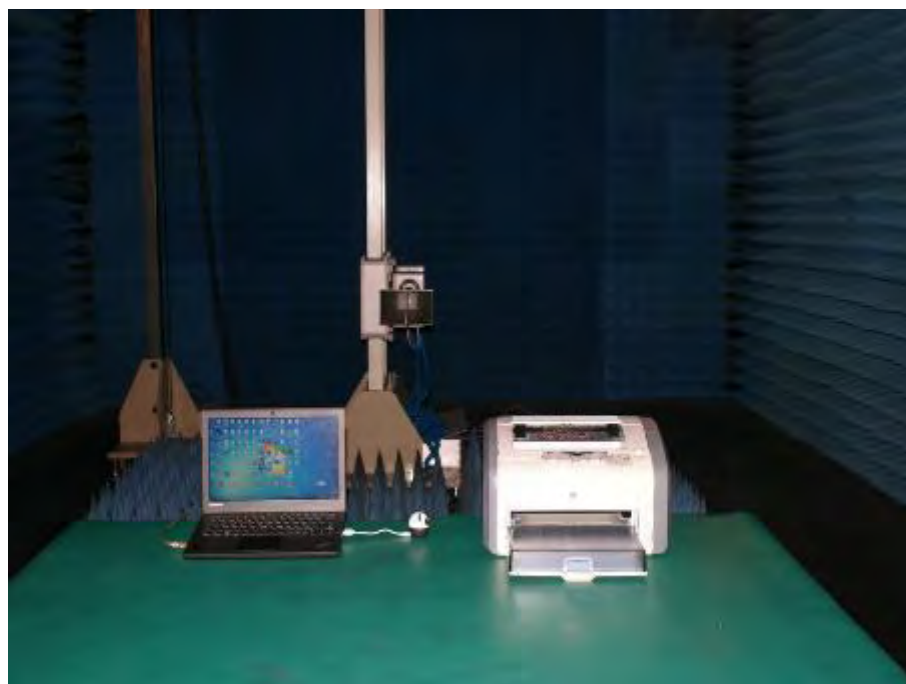
Photograph 6: Set-up for Conducted Emission



Photograph 7: Set-up for Radiated Emission (30MHz ~ 1GHz)



Photograph 8: Set-up for Radiated Emission (1GHz ~ 6GHz)



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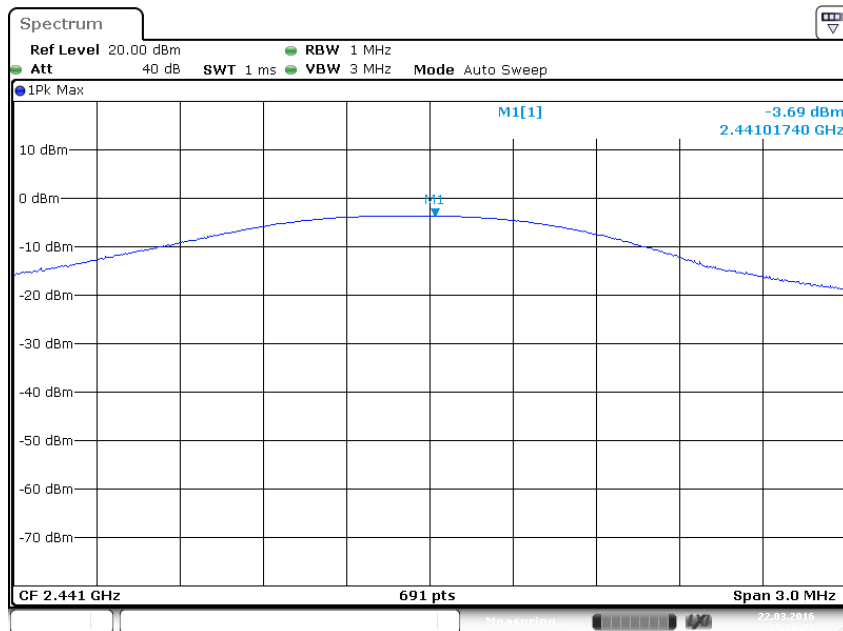
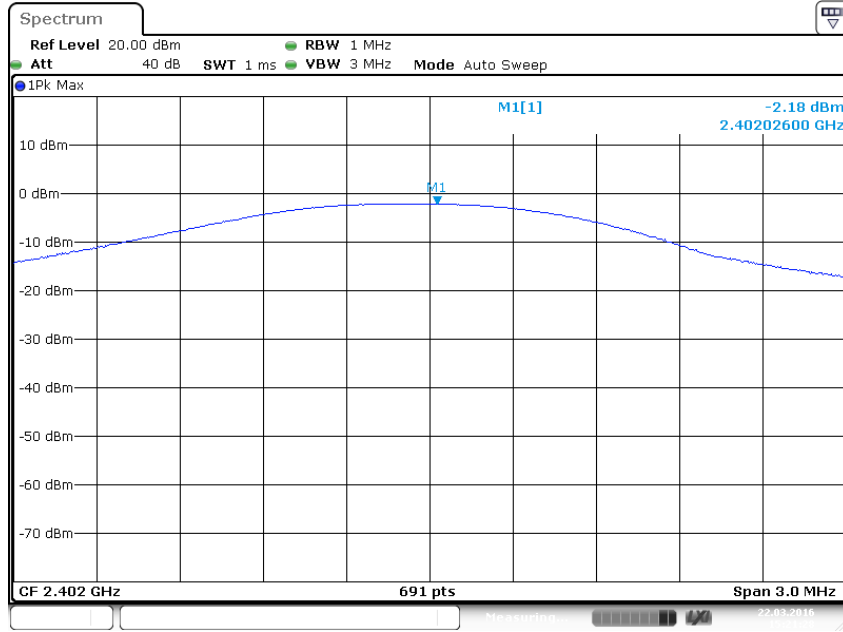
Appendix A

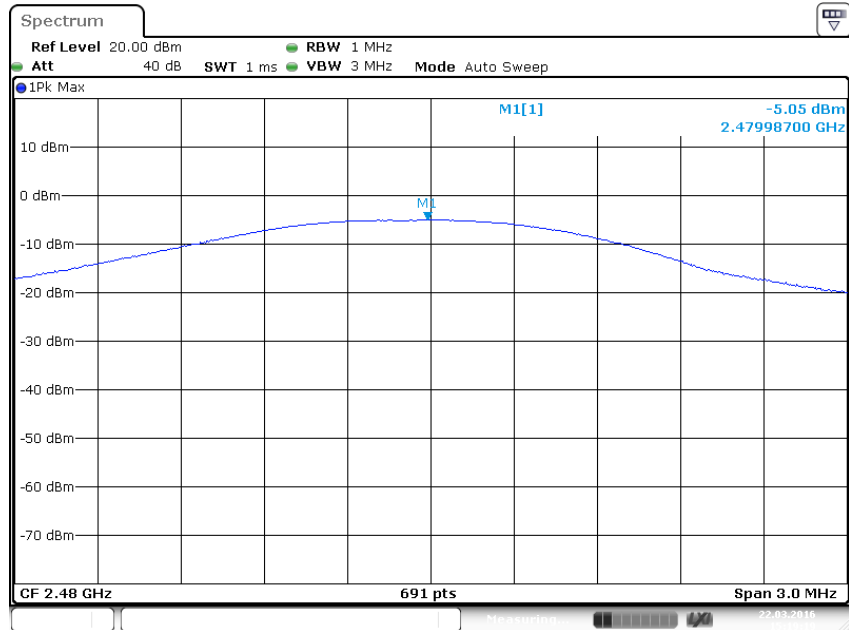
Test Results of Bluetooth 2.1+ EDR of Conducted Testing

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Appendix A.1: Maximum Peak Conducted Output Power

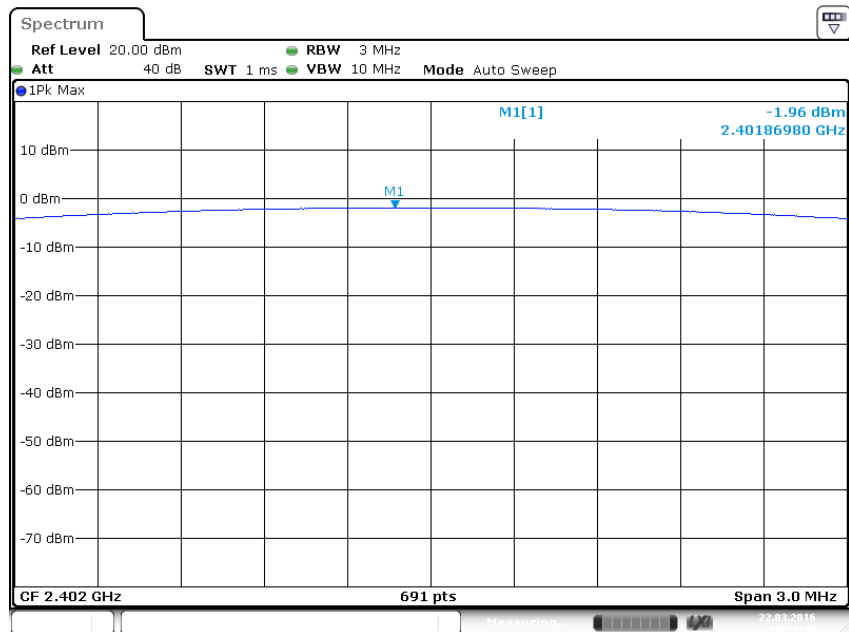
BDR Mode, DH1



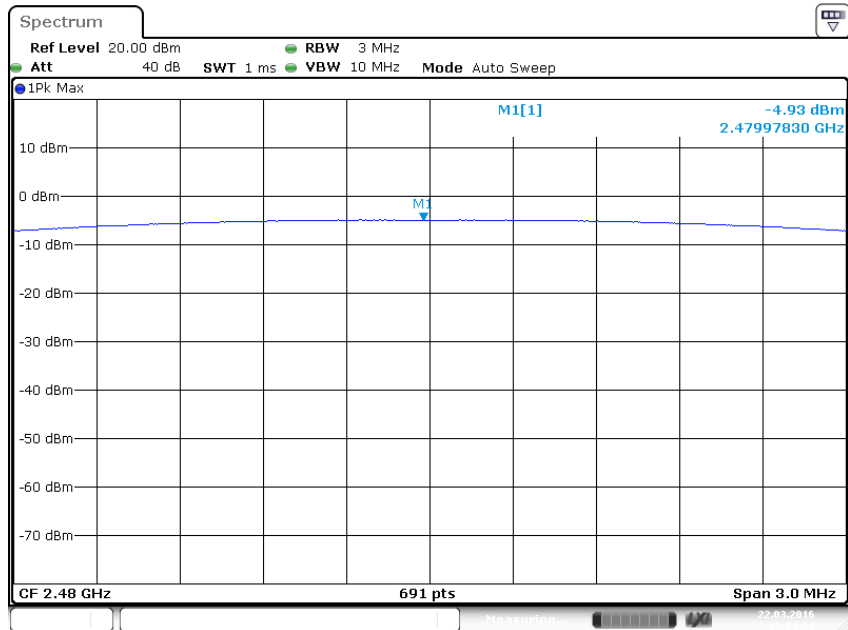
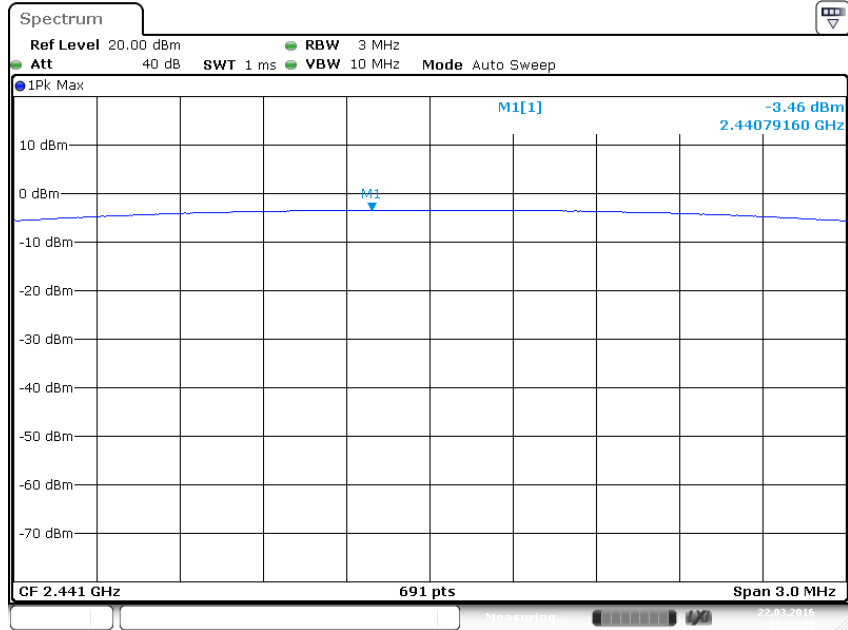


Date: 22.MAR.2016 15:19:19

EDR Mode, 3DH1

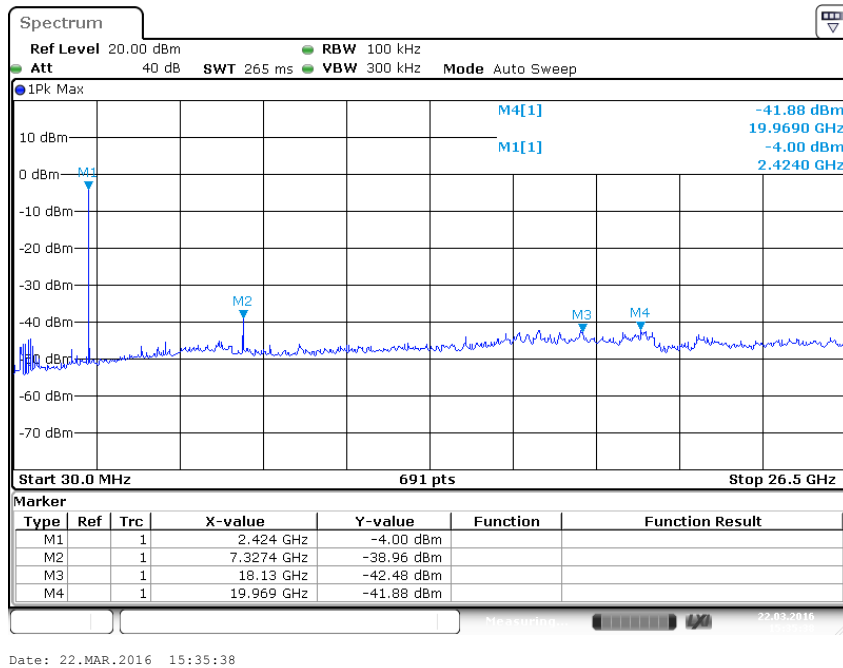
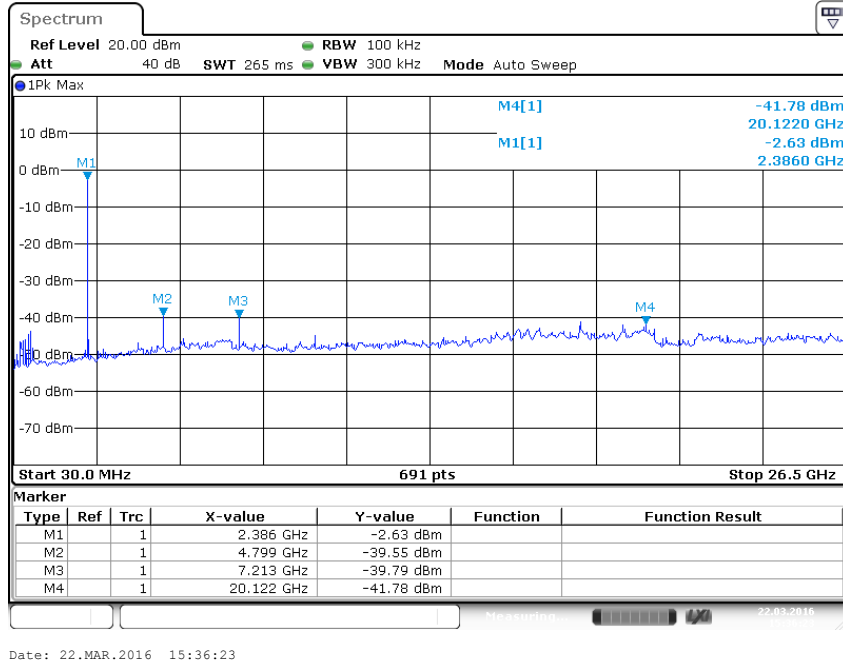


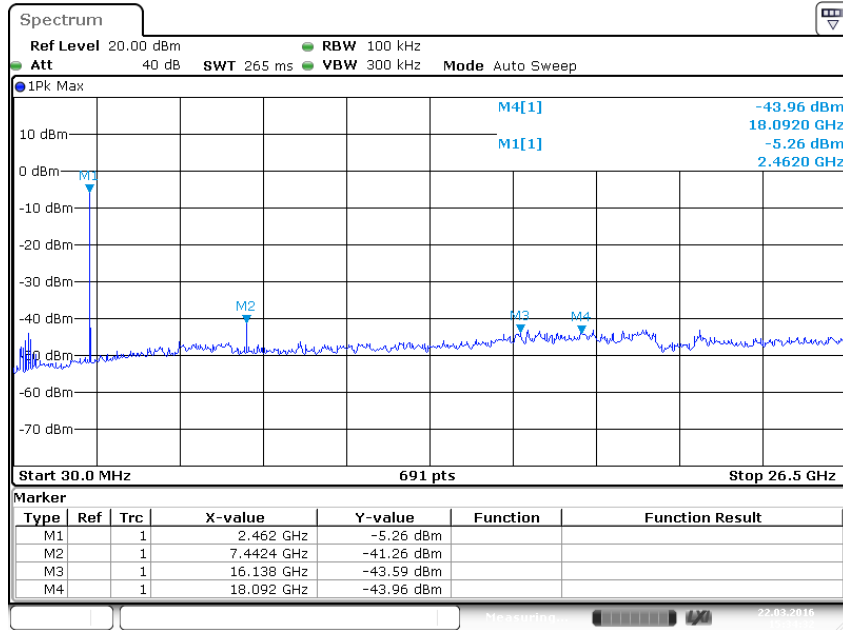
Date: 22.MAR.2016 15:22:46



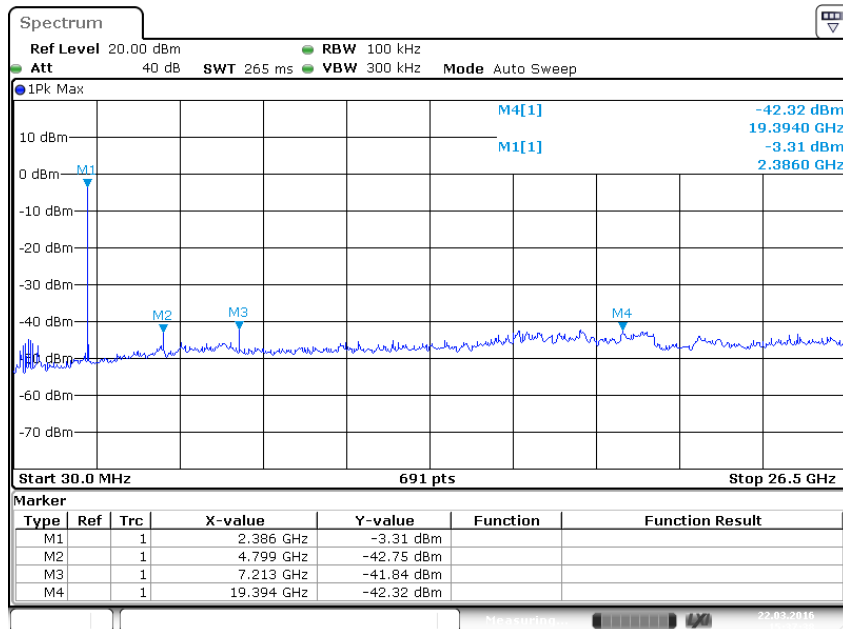
Appendix A.2: Conducted Spurious Emissions Measured in 100 kHz Bandwidth

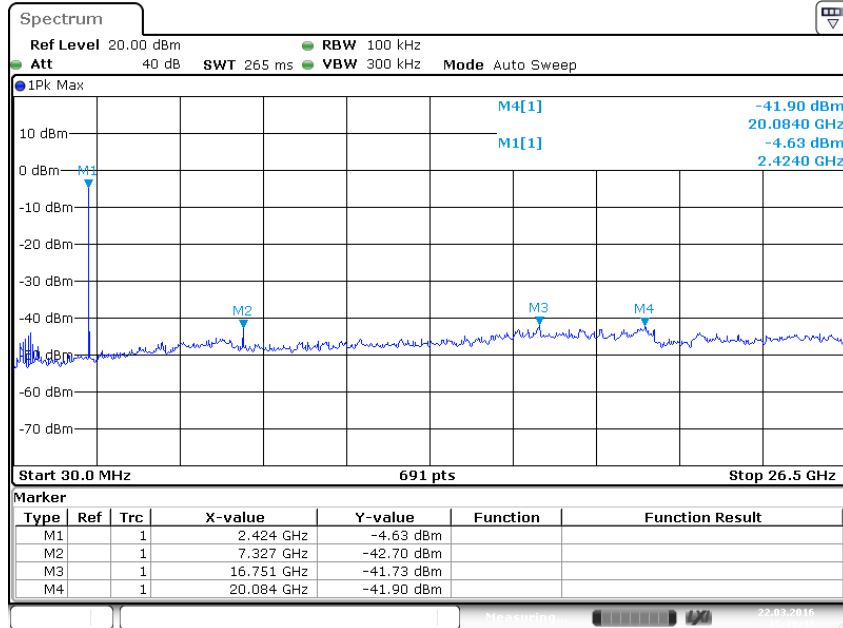
BDR Mode, DH1



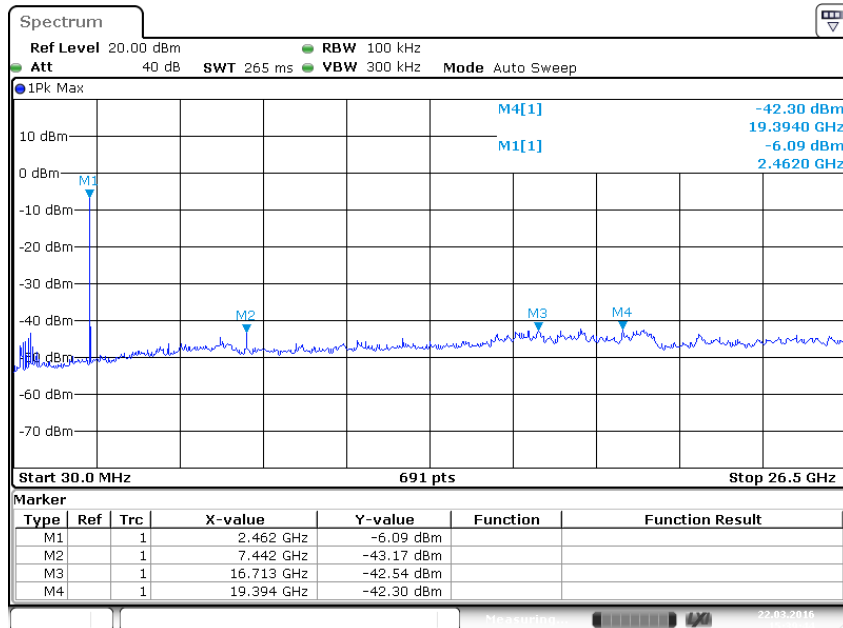


EDR Mode, 3DH1



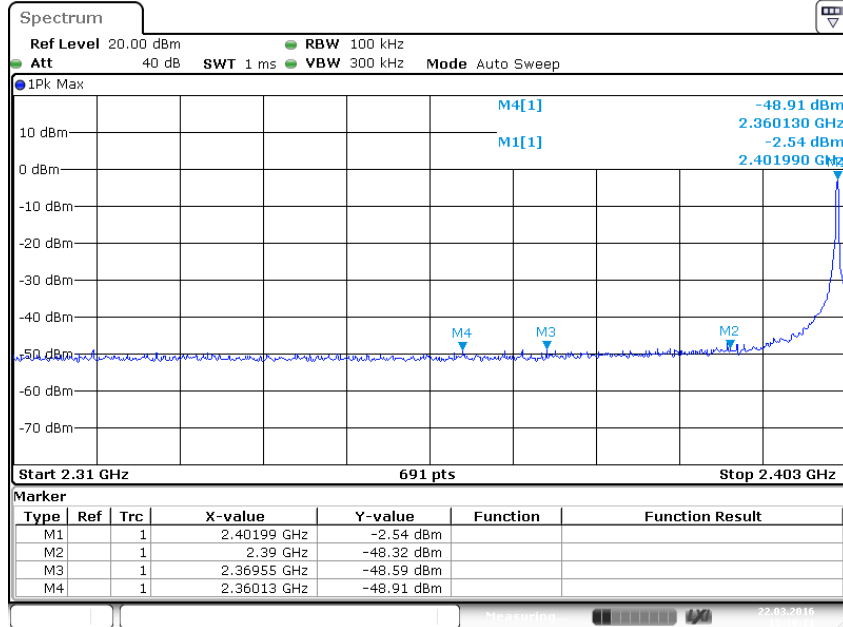


Date: 22.MAR.2016 15:38:47

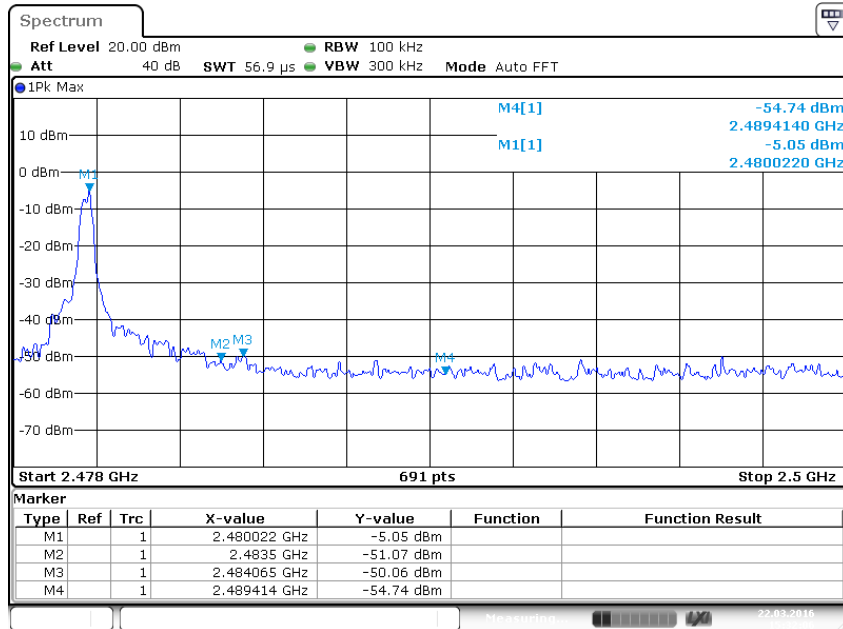


Date: 22.MAR.2016 15:39:43

BDR Mode, Band Edge

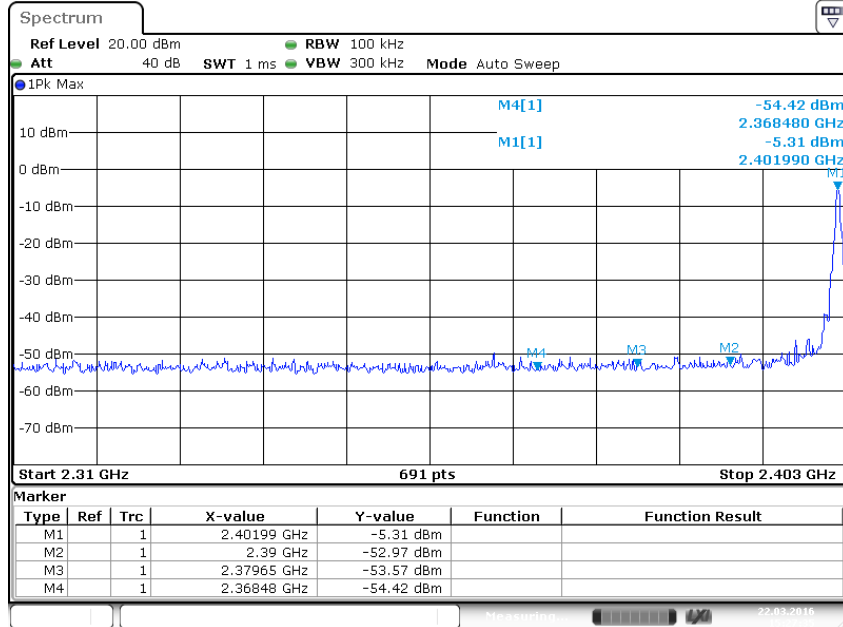


Date: 22.MAR.2016 15:30:11

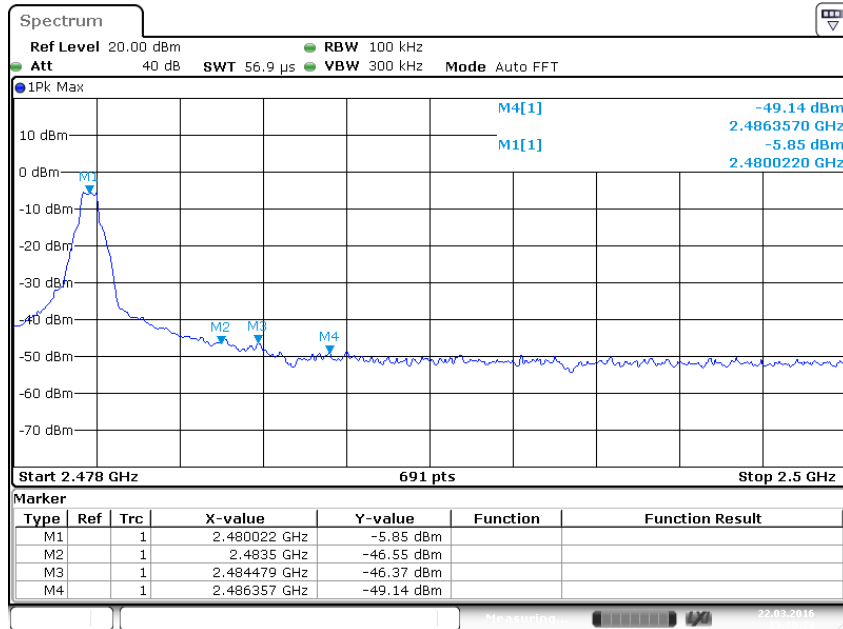


Date: 22.MAR.2016 15:32:06

EDR Mode, Band Edge



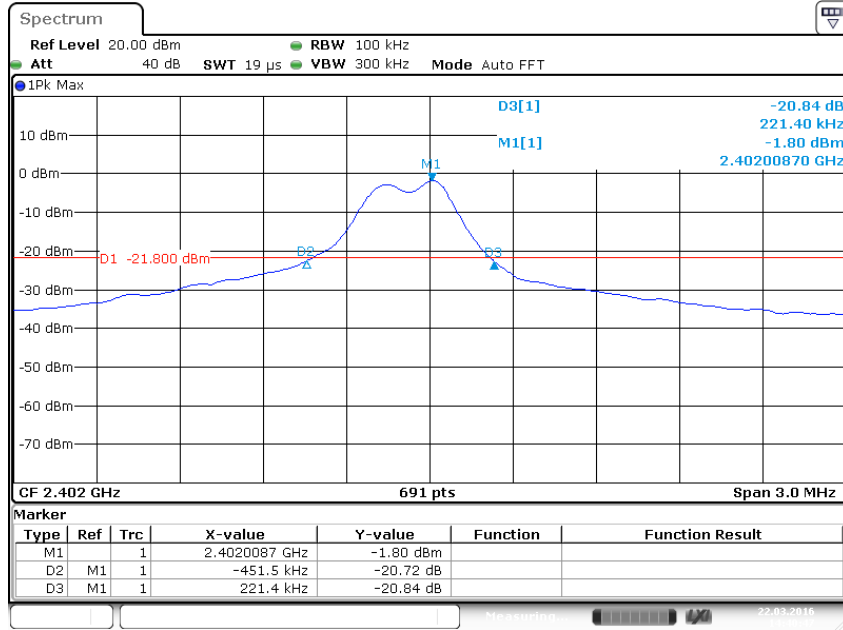
Date: 22.MAR.2016 15:27:35



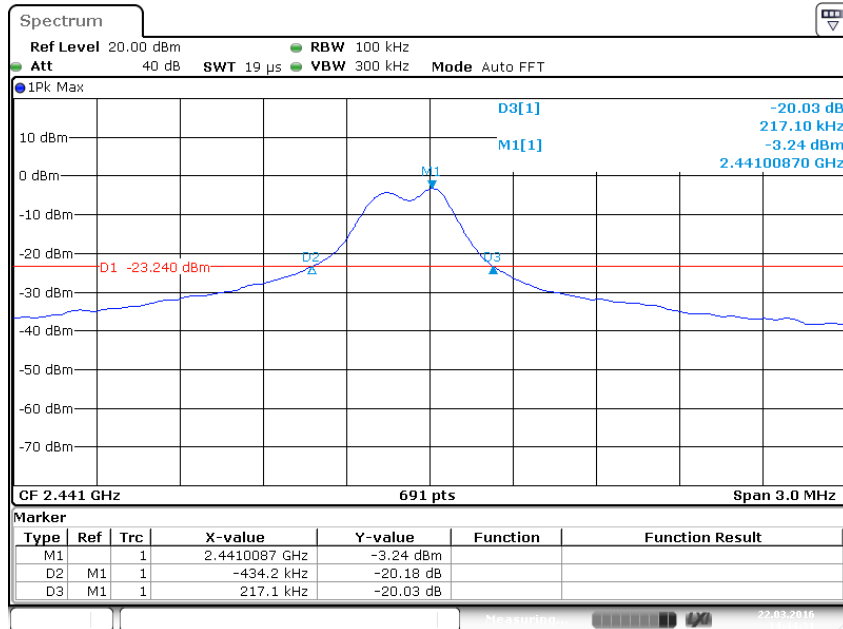
Date: 22.MAR.2016 15:26:23

Appendix A.3: 20dB Bandwidth

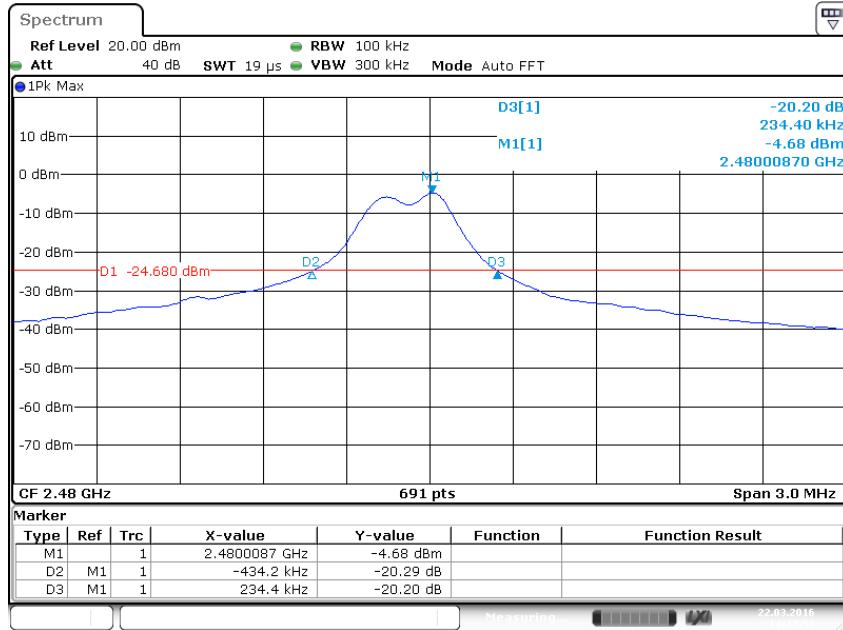
BDR Mode, DH1



Date: 22.MAR.2016 14:40:47

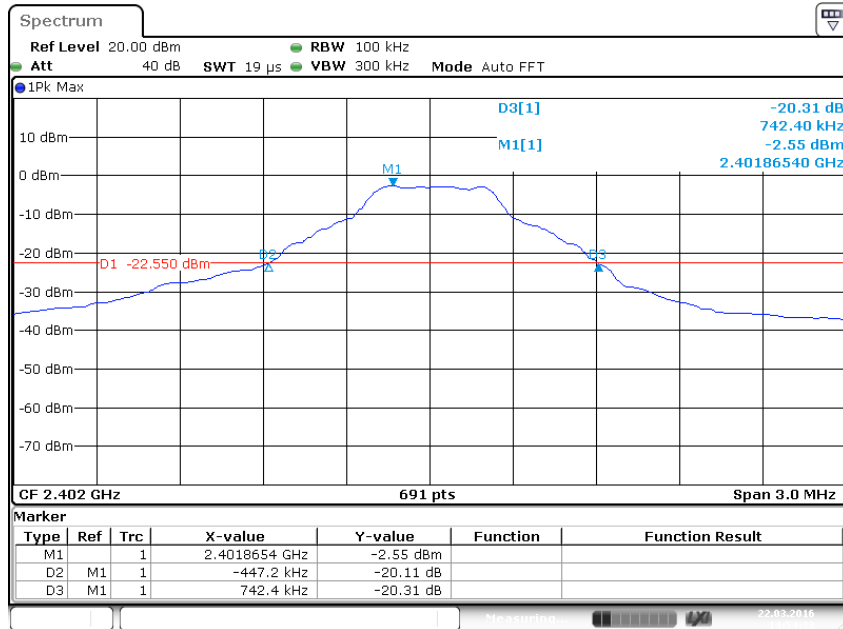


Date: 22.MAR.2016 14:44:30

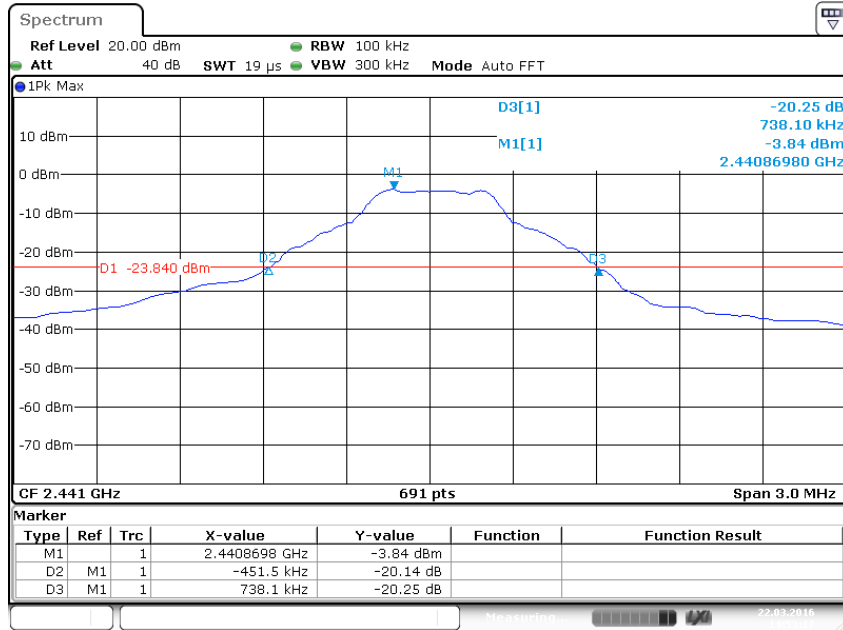


Date: 22.MAR.2016 14:47:56

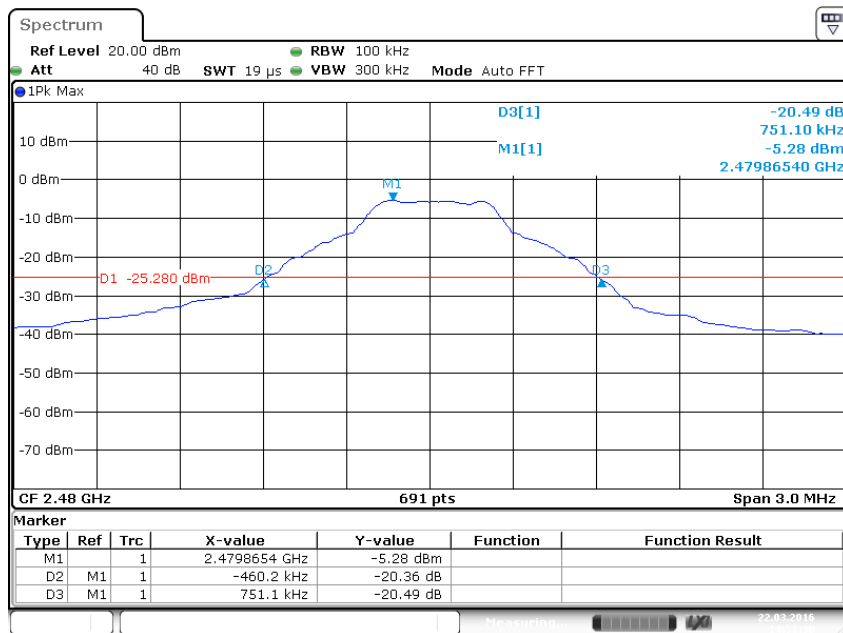
EDR Mode, 3DH1



Date: 22.MAR.2016 14:54:33



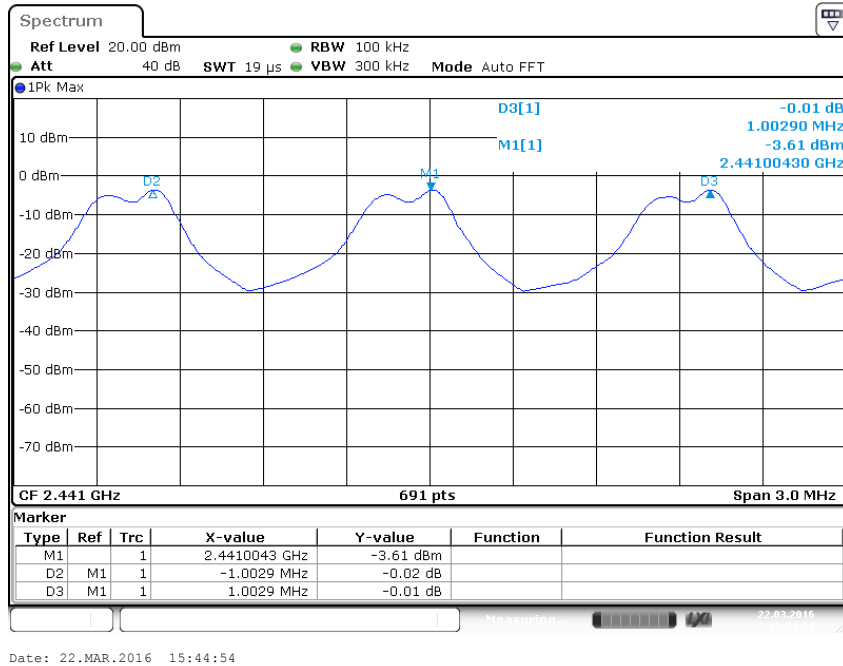
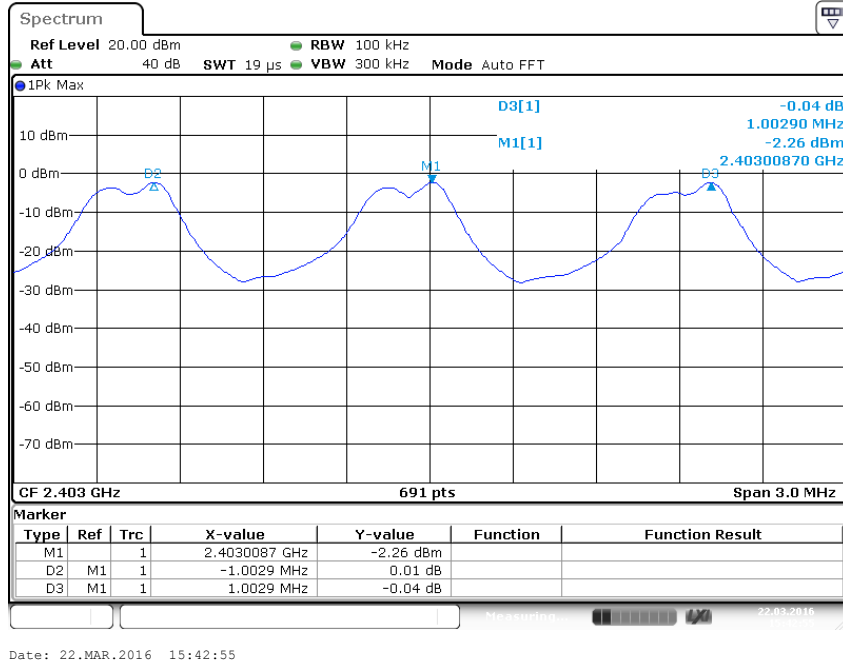
Date: 22.MAR.2016 14:53:17

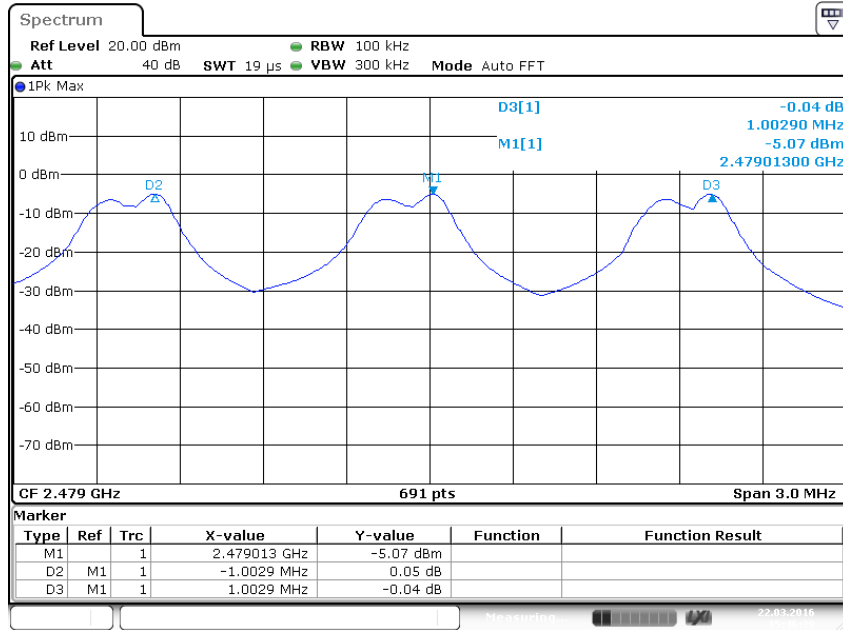


Date: 22.MAR.2016 14:51:29

Appendix A.4: Carrier Frequency Separation

Hopping Mode

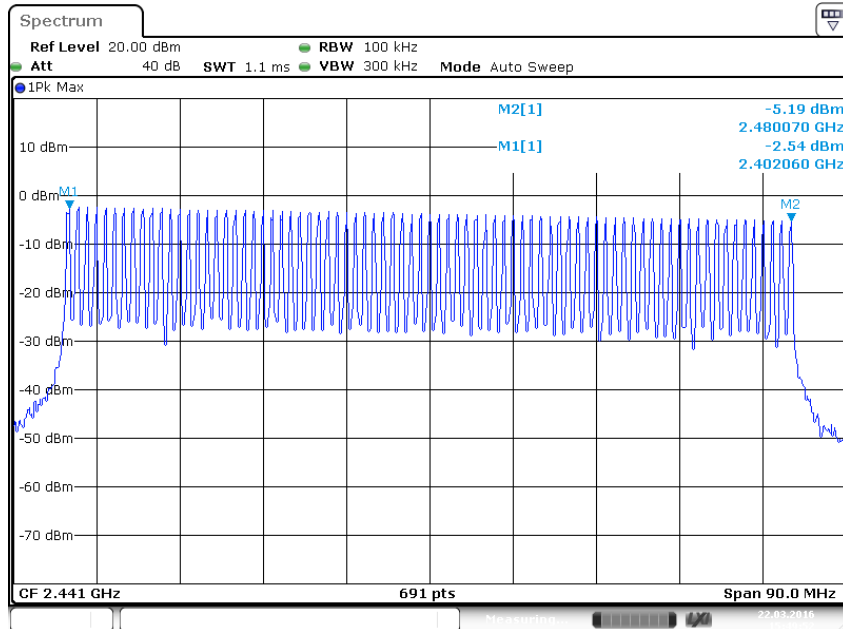




Date: 22.MAR.2016 15:46:39

Appendix A.5: Number of Hopping Frequency

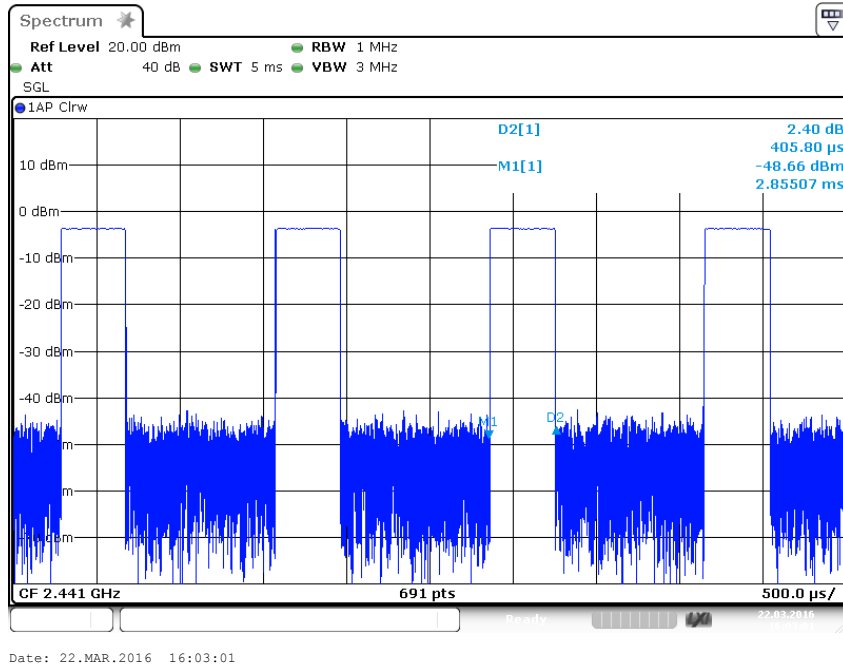
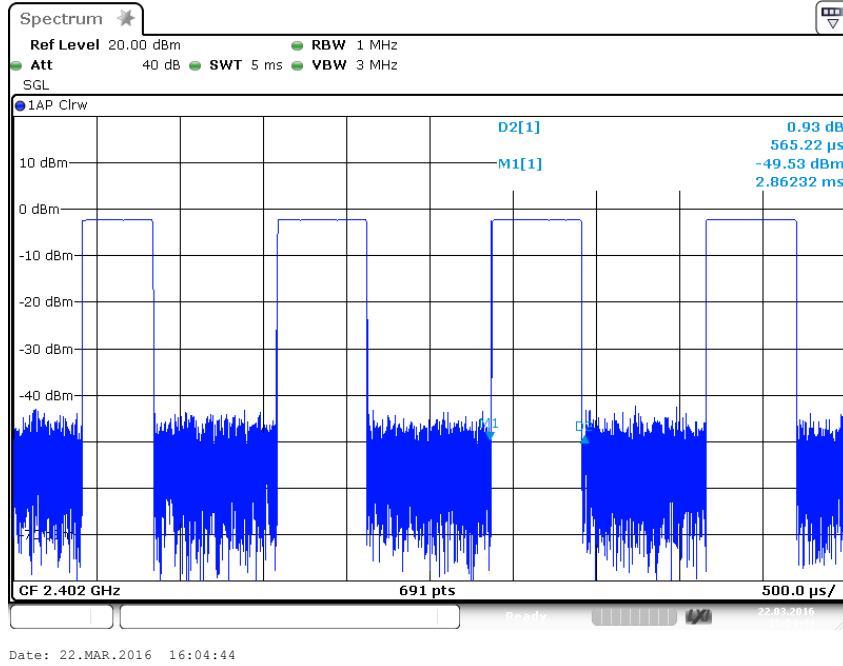
Hopping Mode

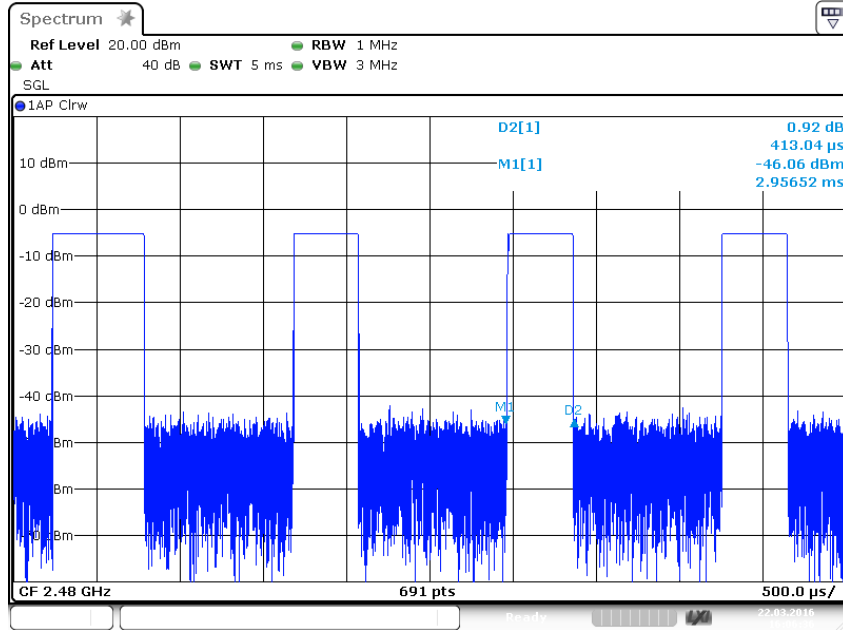


Date: 22.MAR.2016 15:49:52

Appendix A.6: Time of Occupancy

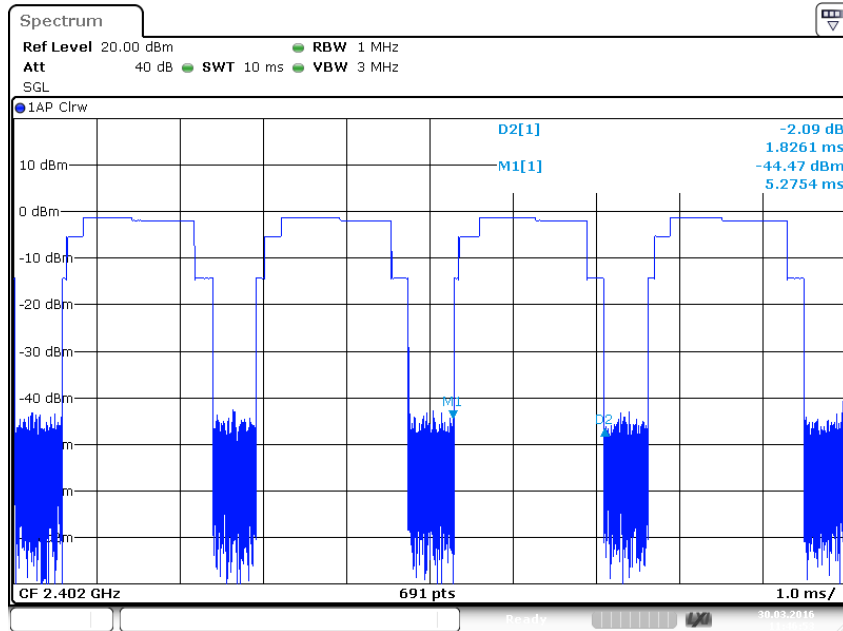
BDR Mode, DH1



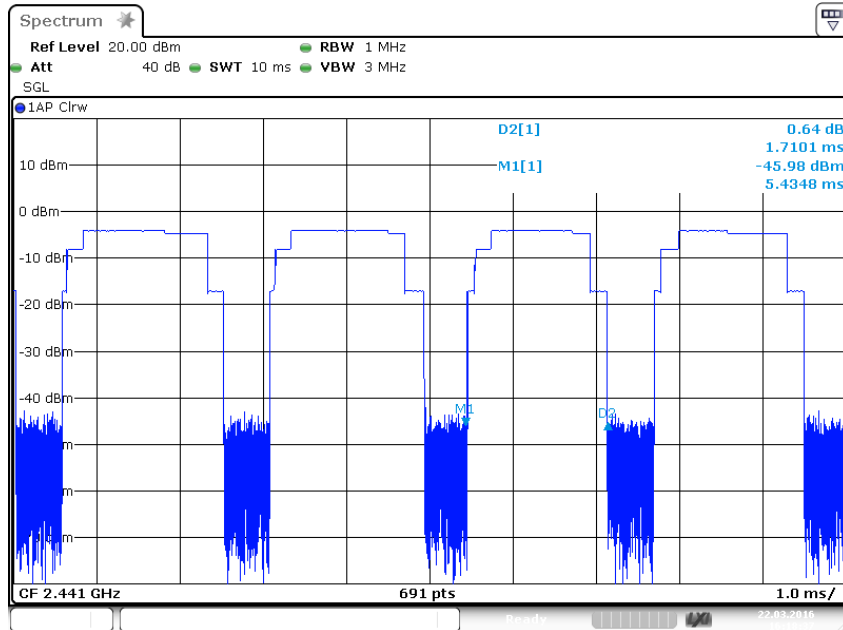


Date: 22.MAR.2016 16:06:36

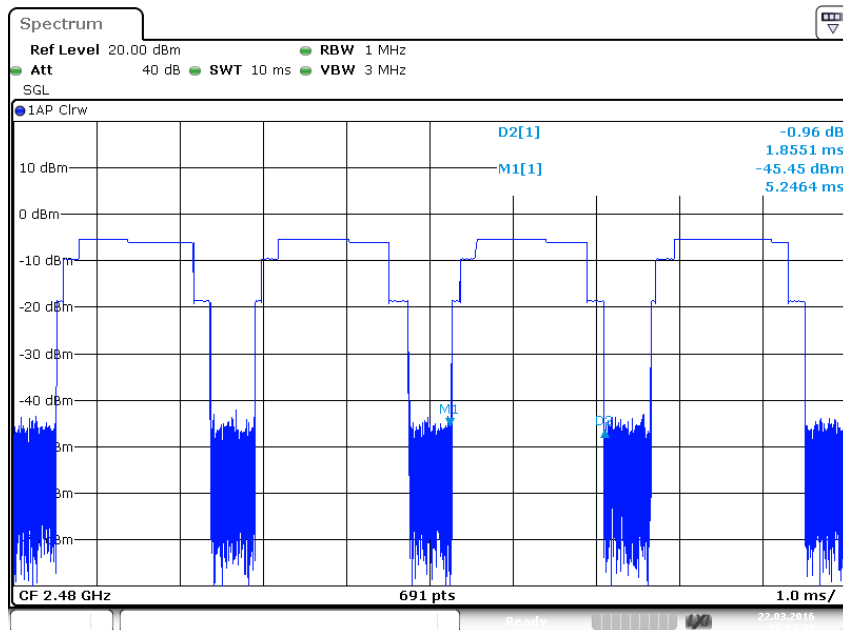
BDR Mode, DH3



Date: 30.MAR.2016 11:46:53

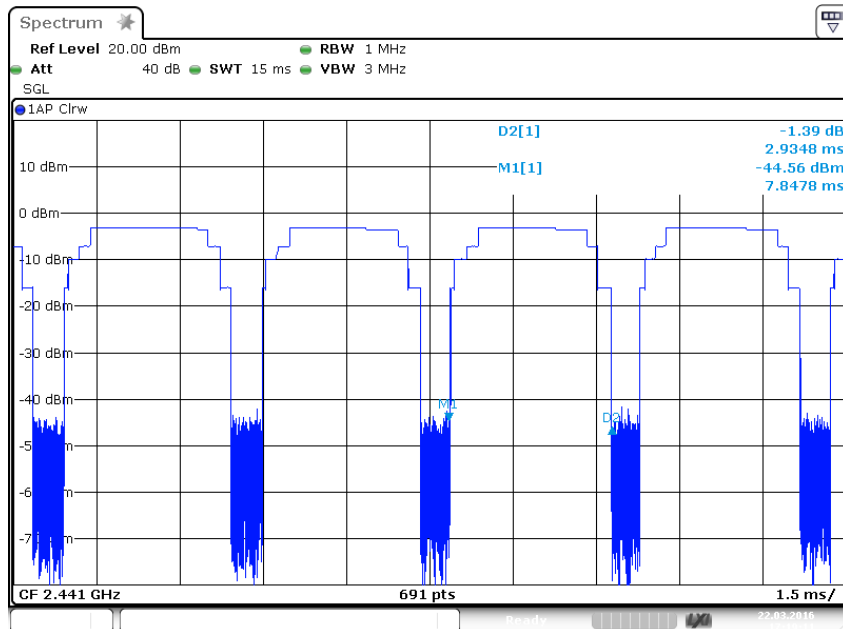
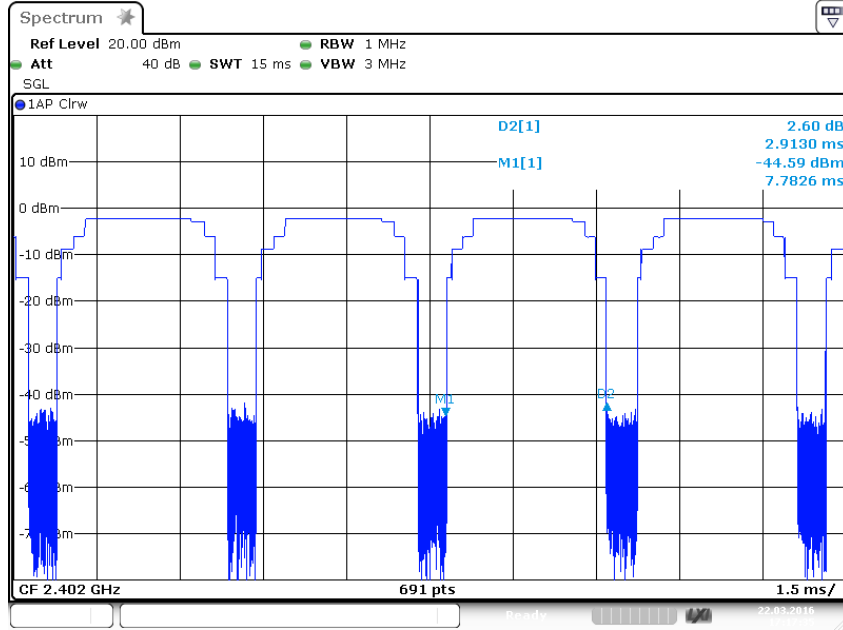


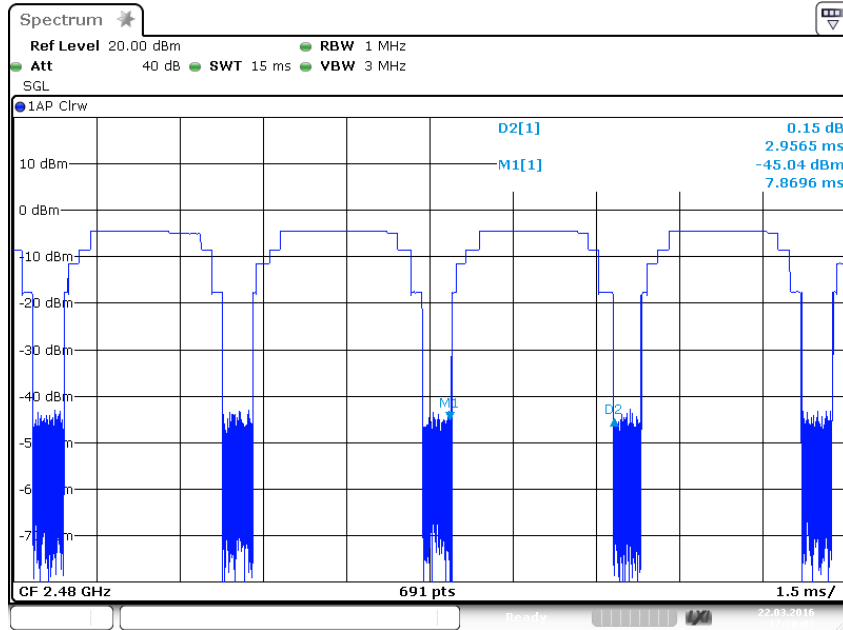
Date: 22.MAR.2016 16:18:37



Date: 22.MAR.2016 16:13:41

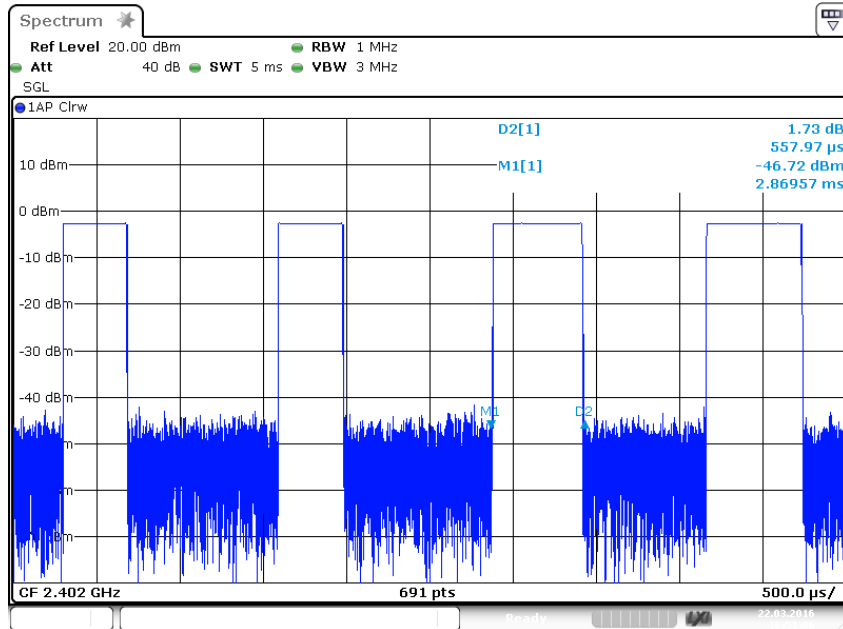
BDR Mode, DH5



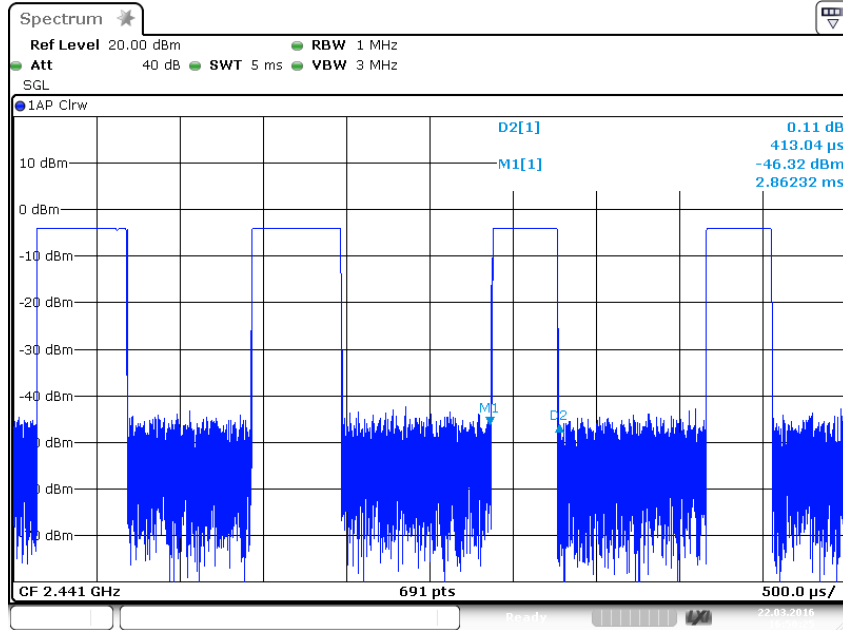


Date: 22.MAR.2016 17:20:07

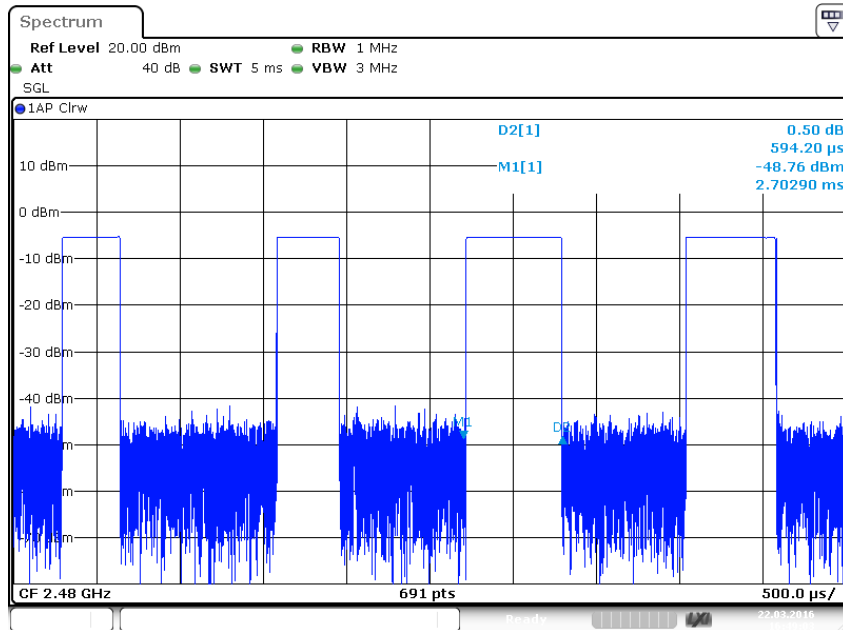
EDR Mode, 3DH1



Date: 22.MAR.2016 16:51:06

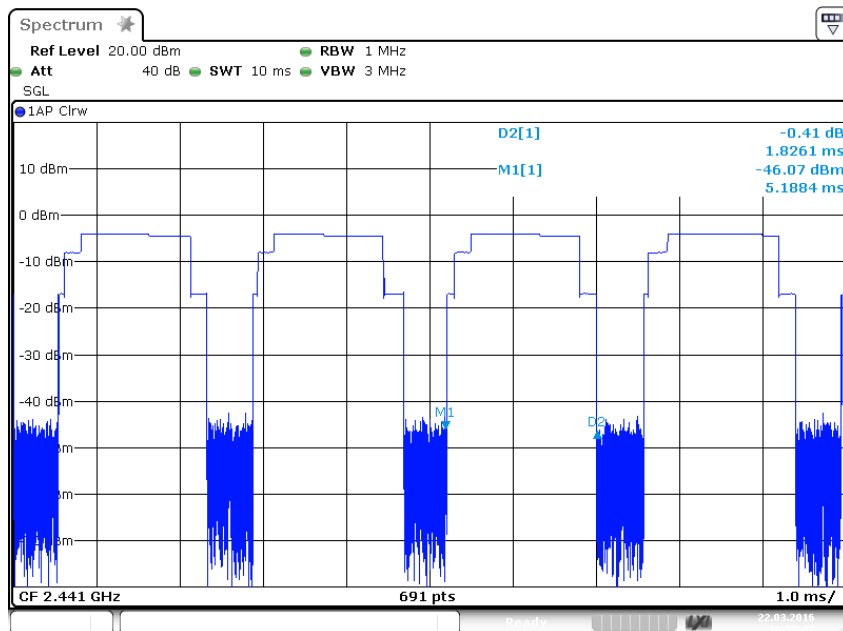
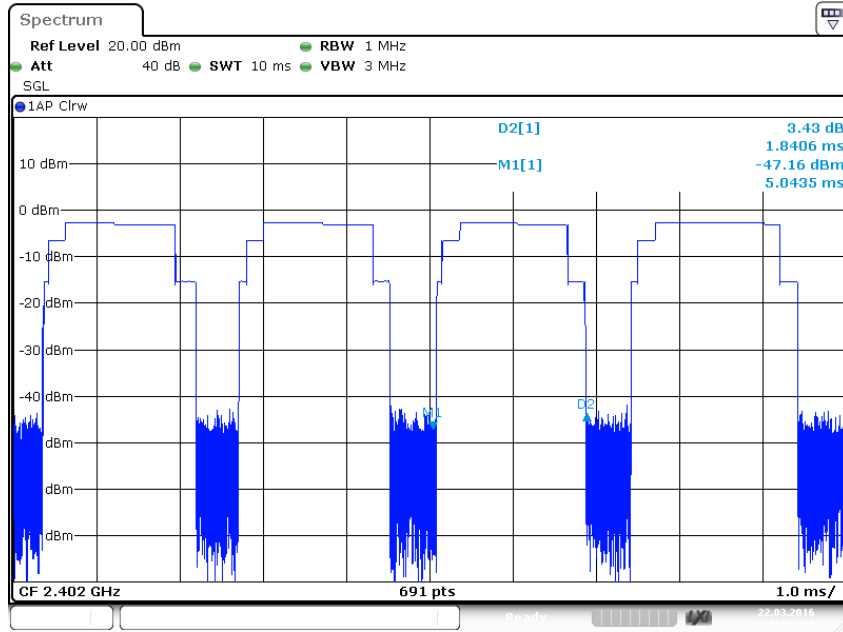


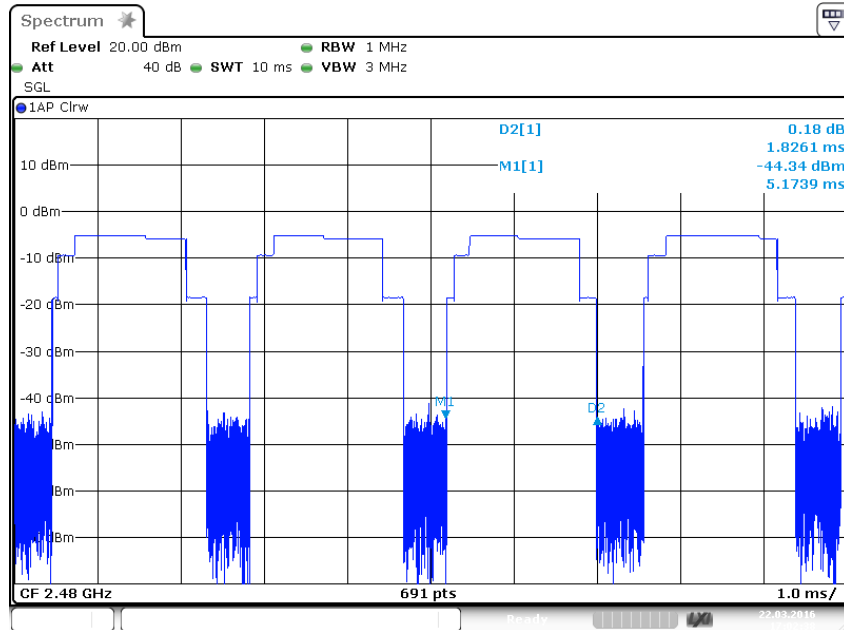
Date: 22.MAR.2016 16:50:25



Date: 22.MAR.2016 16:49:03

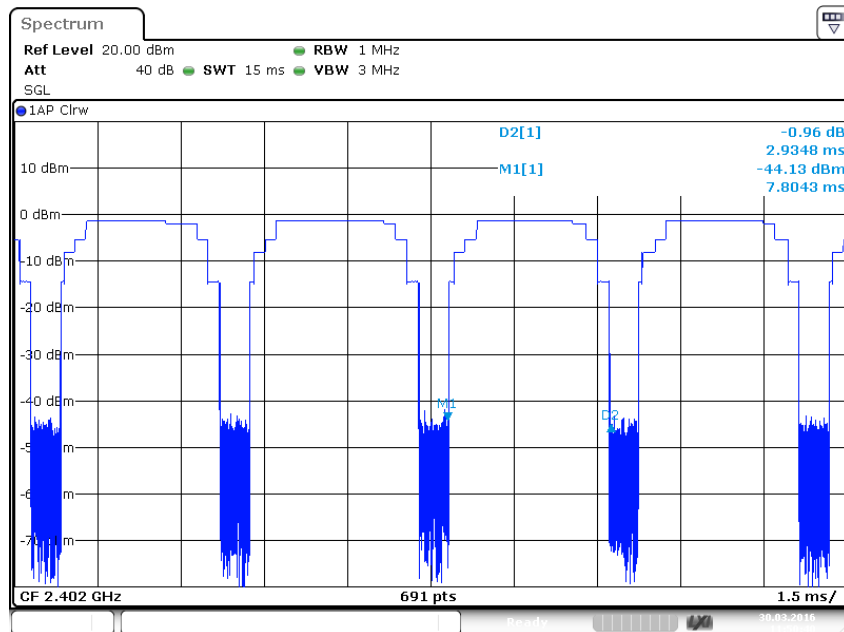
EDR Mode, 3DH3



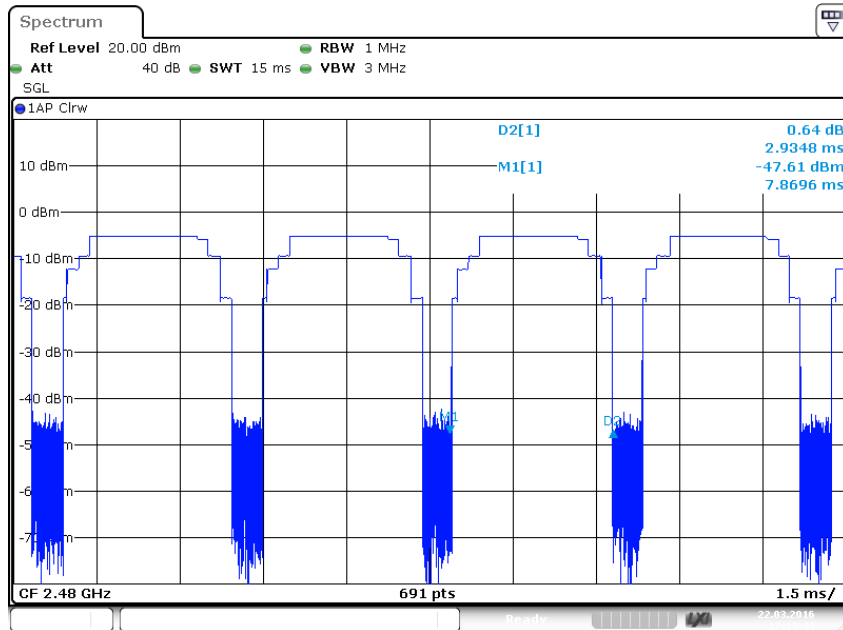
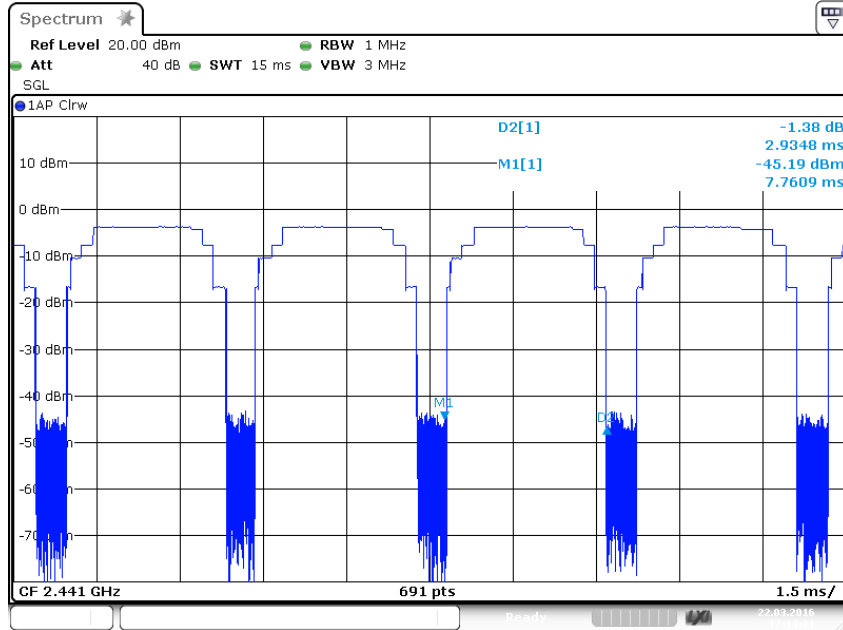


Date: 22.MAR.2016 17:02:38

EDR Mode, 3DH5



Date: 30.MAR.2016 11:50:40



Appendix B

Test Results of Bluetooth 2.1+ EDR of Radiated Testing

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Note: The measurements with active loop antenna were greater than 20dB below the limit, so Radiated Spurious Emissions (9kHz – 30MHz) tests were applied on BDR mode only.

Appendix B.1: Test Plots of Radiated Spurious Emission

9KHz - 30MHz

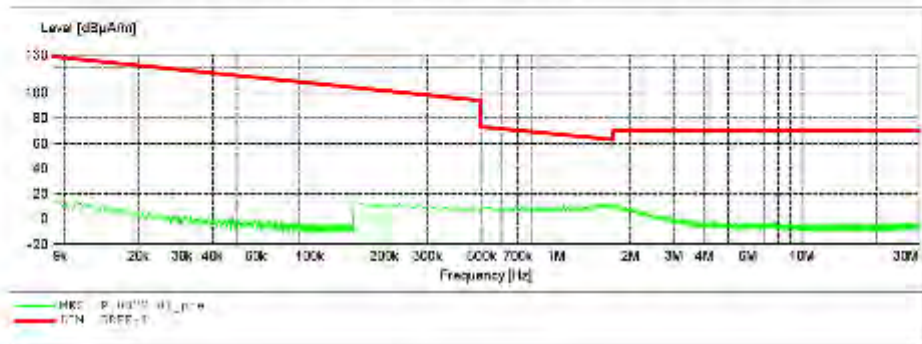
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

EUT: BLUETOOTH SPEAKER N/N:BAKSPKPSI
 Manufacturer: THUMBS UP UK LTD
 Operating Condition: TX 2402MHz
 Test Site: 2V Chamber
 Operator: LGAADE
 Test Specification: DC 2.0V
 Comment: X
 Start of Test: 2016-03-22 /

SCAN TABLE: "LFRE Fin"

Scan Description:			SUB STD VTERM: 1.0V			
Start	Stop	Step	Detector	Meas. Time	IF BANDW.	Transducer
9.0 KHz	120.0 KHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
120.0 KHz	30.0 MHz	1.0 MHz	QuasiPeak	1.0 s	0 KHz	1516M



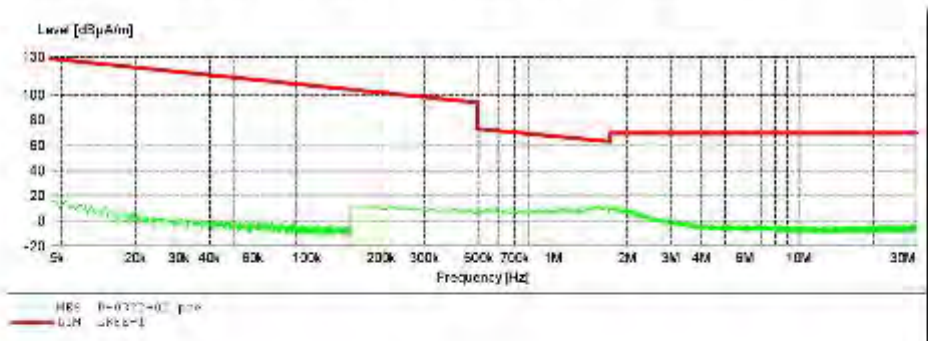
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

EUT: BLUETOOTH SPEAKER (N/N):PANSKPRM
 Manufacturer: THUMBS UP UK LTD
 Operating Condition: TX 2402MHz
 Test Site: 21 Chamber
 Operator: LGWAPB
 Test Specification: DC 3.0V
 Comment: Y
 Start of Test: 2016-3-22 /

SCAN TABLE: "LFRE Fin"

Scan Description:			SUB STD VTERM2: 1.00		IT	Transducer
Start Frequency	Stop Frequency	Step Width	Detection	Meas. Time	Bandw.	
0.0 MHz	100.0 MHz	100.0 MHz	QualPeak	1.0 s	200 Hz	1516M
1000 MHz	3000 MHz	2.0 MHz	QualPeak	1.0 s	3 MHz	1516M



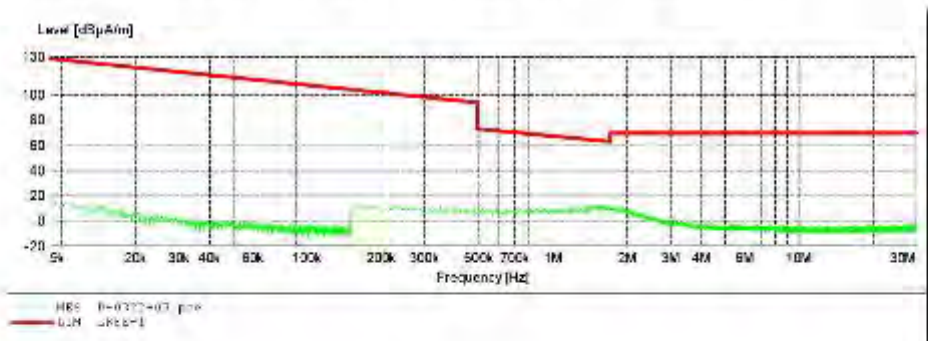
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

EUT: BLUETOOTH SPEAKER (N/N):PANSKPRM
 Manufacturer: THUMBS UP UK LTD
 Operating Condition: TX 2402MHz
 Test Site: 21 Chamber
 Operator: LGWAPB
 Test Specification: DC 3.0V
 Comment: 2
 Start of Test: 2016-3-22 /

SCAN TABLE: "LFRE Fin"

Scan Description:			SUB STD VTERM2: 1.00		IT	Transducer
Start Frequency	Stop Frequency	Step	Detection	Meas. Time	Bandw.	
0.0 MHz	100.0 MHz	100.0 MHz	QualPeak	1.0 s	200 Hz	1516M
1000 MHz	3000 MHz	2.0 MHz	QualPeak	1.0 s	3 MHz	1516M



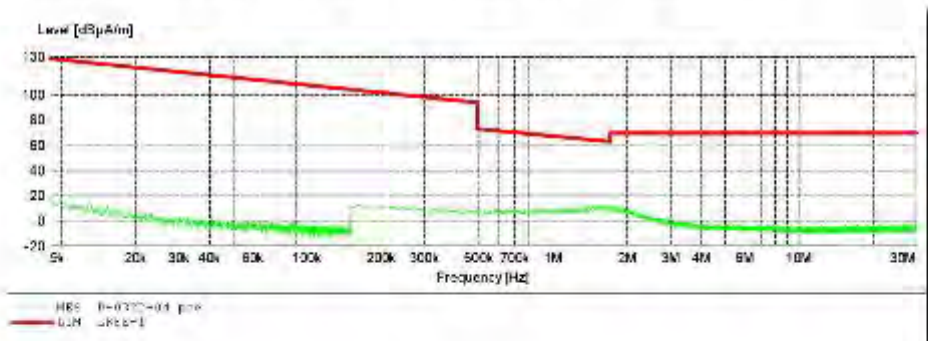
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

EUT: BLUETOOTH SPEAKER (N/N):PANSKPRM
 Manufacturer: THUMBS UP UK LTD
 Operating Condition: TX 2441MHz
 Test Site: 2F Chamber
 Operator: LGWAPB
 Test Specification: DC 3.0V
 Comment: X
 Start of Test: 2016-3-22 /

SCAN TABLE: "LFRE Fin"

Scan Description:			SUB STD VTERM2: 1.00		IT	Transducer
Start	Stop	Step	Detection	Meas. Time	Bandw.	
0.0 MHz	100.0 MHz	100.0 MHz	QualPeak	1.0 s	200 Hz	1516M
1000 MHz	3000 MHz	2.0 MHz	QualPeak	1.0 s	3 MHz	1516M



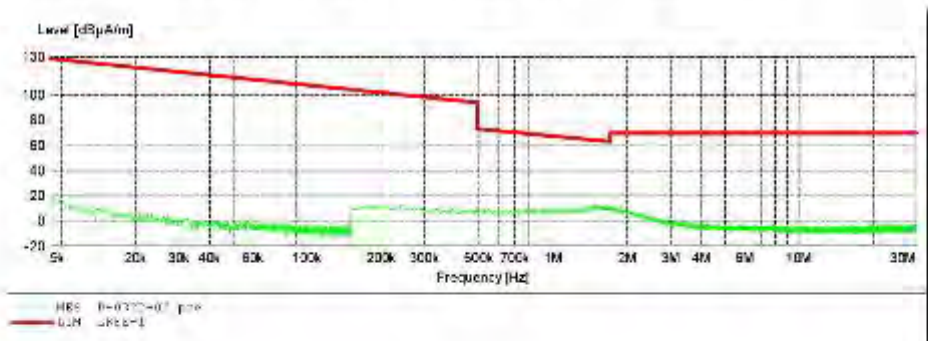
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

EUT: BLUETOOTH SPEAKER (N/N):PANSKPRM
 Manufacturer: THUMBS UP UK LTD
 Operating Condition: TX 2441MHz
 Test Site: 2F Chamber
 Operator: LGWAPB
 Test Specification: DC 3.0V
 Comment: Y
 Start of Test: 2016-3-22 /

SCAN TABLE: "LFRE Fin"

Short Description:			SUB STD VTERM2: 1.00		IT	Transducer
Start	Stop	Step	Detection	Meas. Time	Bandw.	
0.0 MHz	100.0 MHz	100.0 MHz	QualPeak	1.0 s	200 Hz	1516M
1000 MHz	3000 MHz	2.0 MHz	QualPeak	1.0 s	3 MHz	1516M



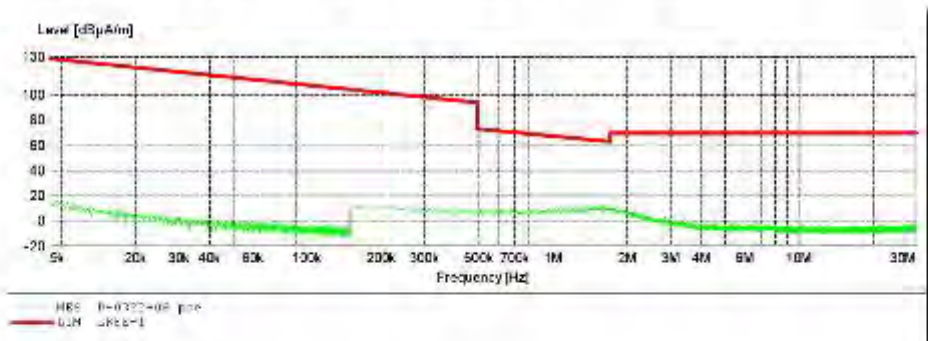
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

EUT: BLUETOOTH SPEAKER (N/N):PANSKPRM
 Manufacturer: THUMBS UP UK LTD
 Operating Condition: TX 2441MHz
 Test Site: 2F Chamber
 Operator: LGWAPB
 Test Specification: DO 2.10V
 Comment: 2
 Start of Test: 2016-3-22 /

SCAN TABLE: "LFRE Fin"

Scan Description:			SUB STD VTERM2: 1.00		IT	Transducer
Start	Stop	Step	Detection	Meas. Time	Bandw.	
0.0 MHz	100.0 MHz	100.0 MHz	QualPeak	1.0 s	200 Hz	1516M
100.0 MHz	30.0 MHz	0.0 MHz	QualPeak	1.0 s	0 MHz	1516M



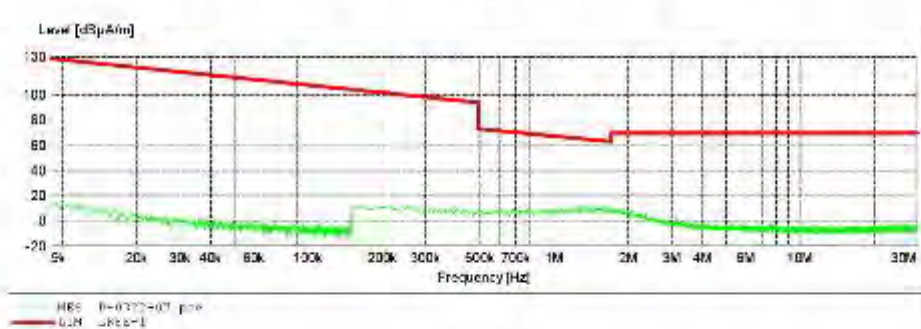
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

EUT: BLUETOOTH SPEAKER (N/N):PANSKPRM
 Manufacturer: THUMBS UP UK LTD
 Operating Condition: TX 2400MHz
 Test Site: 2F Chamber
 Operator: LGWAPB
 Test Specification: DC 3.0V
 Comment: X
 Start of Test: 2016-3-22 /

SCAN TABLE: "LFRE Fin"

Scan Description:			SUB STD VTERM2: 1.00		IT	Transducer
Start	Stop	Step	Detection	Meas. Time	Bandw.	
0.0 MHz	100.0 MHz	100.0 MHz	QuasiPeak	1.0 s	200 Hz	1516M
1000 MHz	3000 MHz	2.0 MHz	QuasiPeak	1.0 s	3 MHz	1516M



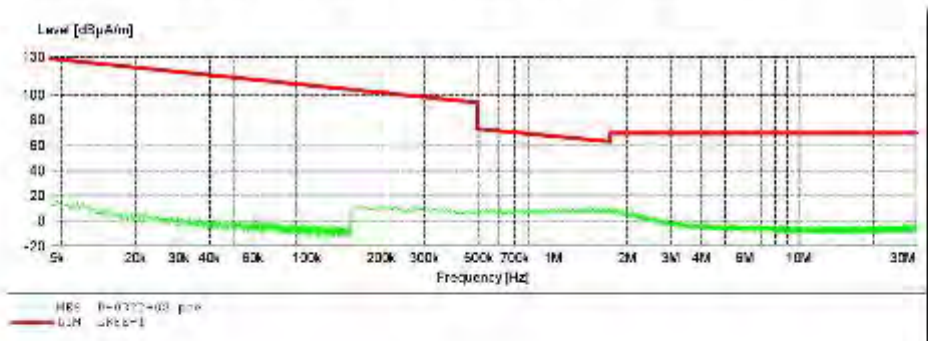
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

EUT: BLUETOOTH SPEAKER (N/N):PANSKPRM
 Manufacturer: THUMBS UP UK LTD
 Operating Condition: TX 2400MHz
 Test Site: 2F Chamber
 Operator: LGWAPB
 Test Specification: DC 3.0V
 Comment: Y
 Start of Test: 2016-3-22 /

SCAN TABLE: "LFRE Fin"

Scan Description:			SUB STD VTERM2: 1.00		IT	Transducer
Start Frequency	Stop Frequency	Step Width	Detection	Meas. Time	Bandw.	
0.0 MHz	100.0 MHz	100.0 MHz	QualPeak	1.0 s	200 Hz	1516M
100.0 MHz	30.0 MHz	0.0 MHz	QualPeak	1.0 s	0 MHz	1516M



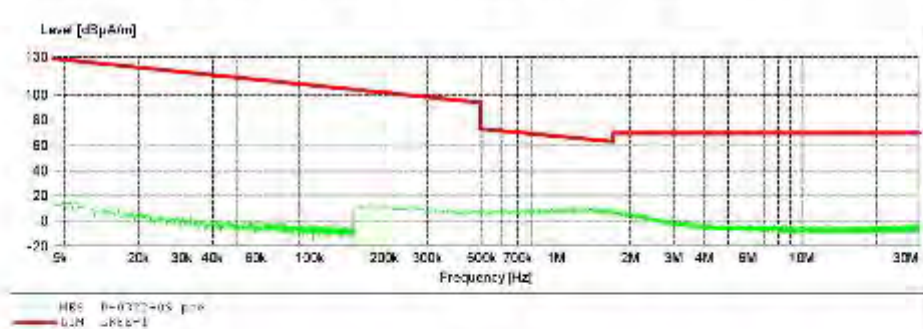
ACCURATE TECHNOLOGY CO., LTD

FCC Class B 3M Radiated

EUT: BLUETOOTH SPEAKER (N/N):PANSKPRM
 Manufacturer: THUMBS UP UK LTD
 Operating Condition: TX 2400MHz
 Test Site: 2F Chamber
 Operator: LGWAPB
 Test Specification: DC 3.0V
 Comment: 2
 Start of Test: 2016-3-22 /

SCAN TABLE: "LFRE Fin"

Short Description:			SUB STD VTERM2: 1.0V					
Start	Stop	Step	Detection	Meas. Time	IT	Bandw.	Transducer	
0.0 MHz	100.0 MHz	100.0 MHz	QuasiPeak	1.0 s	200 Hz	1516M		
100.0 MHz	30.0 MHz	0.0 MHz	QuasiPeak	1.0 s	3 MHz	1516M		



30MHz - 1GHz



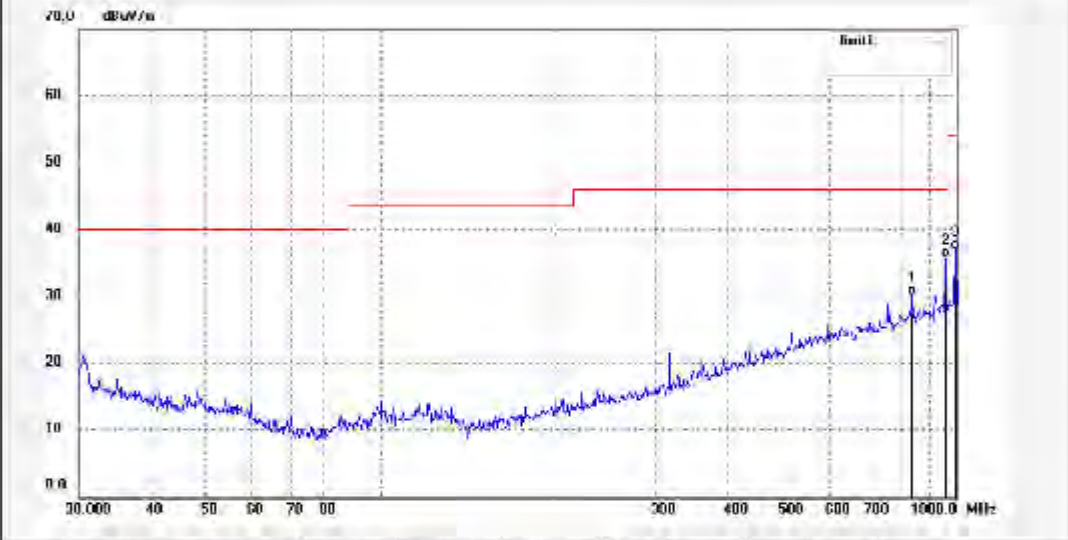
ACCURATE TECHNOLOGY CO., LTD.

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Site: 2# Chamber

Tel: +86-0755-26503290
Fax: +86-0755-26503396

Job No.: LGWADE #12/1	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/21
Temp (C)/Hum (%) 23 C / 46 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance:
Model: PANSKPRM	
Manufacturer: THUMBS UP UK LTD	
Note	



No.	Freq (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	836.2441	29.50	0.62	30.12	46.00	-15.88	QP			
2	955.4379	33.41	2.29	35.70	46.00	-10.30	QP			
3	953.0113	34.33	2.73	37.06	54.00	-16.94	QP			



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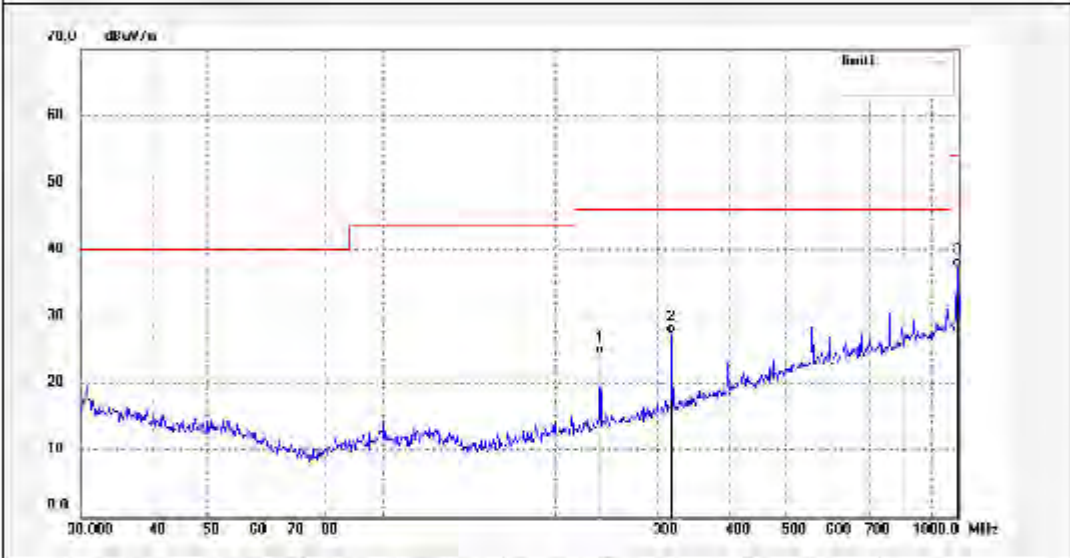
F1 Bldg A, Changyuan New Material Park Keyuan Rd,
Science & Industry Park Nanshan Shenzhen, P.R.China

Site: 2# Chamber

Tel: +86-0755-26503290

Fax: +86-0755-26503396

Job No.: LGWADE #1272	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/21
Temp.: C/Hum.(%) 23 C / 48 %	Time
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance
Model: PANSPPR3M	
Manufacturer: THUMBS UP LK LTD	
Note	



No.	Freq (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	238.2102	35.08	-10.79	24.30	46.00	-21.70	QP			
2	317.7010	36.23	-8.81	27.42	46.00	-18.58	QP			
3	953.0113	34.55	-2.73	37.28	54.00	-16.72	QP			



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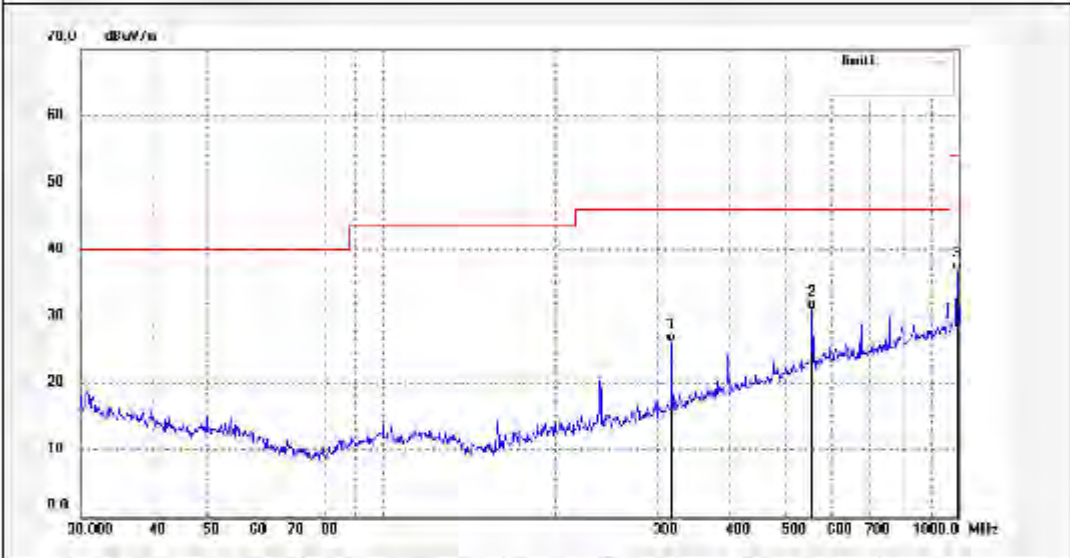
F1 Bldg A, Changyuan New Material Park Keyuan Rd,
Science & Industry Park Nanshan Shenzhen, P.R.China

Site: 2# Chamber

Tel: +86-0755-26503290

Fax: +86-0755-26503396

Job No.: LGWADE #12/3	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/21
Temp.: C/Hum.(%) 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2441MHz	Distance:
Model: PANSPPR3M	
Manufacturer: THUMBS UP UK LTD	
Note	



No.	Freq (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	317.7010	34.98	-8.81	26.18	46.00	-19.82	QP			
2	556.7744	34.60	-3.48	31.12	46.00	-14.88	QP			
3	953.0113	34.17	2.73	36.90	54.00	-17.10	QP			

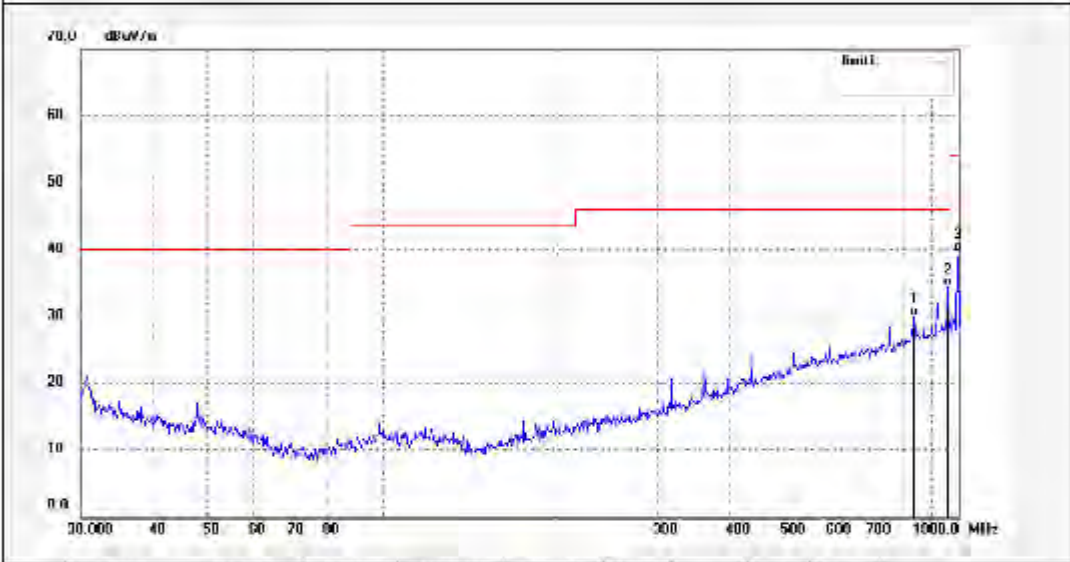


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Site: 2# Chamber
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Job No.: LGWADE #1274	Polarization: vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/21
Temp.: C/Hum (%): 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2441MHz	Distance:
Model: PANSPPR/M	
Manufacturer: THUMBS UP LK LTD	
Note	



No.	Freq (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	836.2441	39.40	0.62	30.02	46.00	-15.98	QP			
2	955.4380	32.15	2.29	34.44	46.00	-11.56	QP			
3	956.4955	36.78	2.78	39.56	54.00	-14.44	QP			



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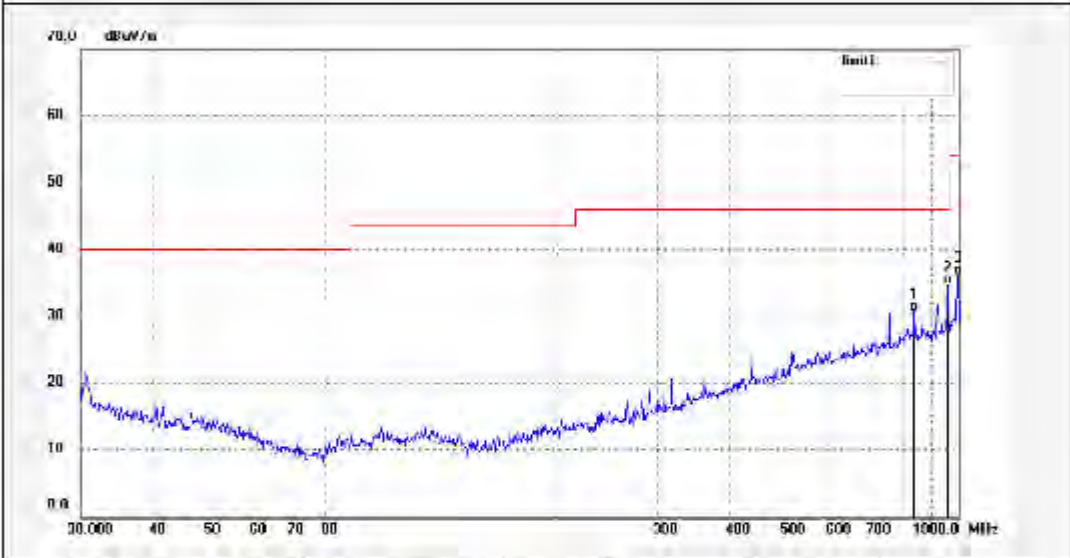
F1 Bldg. A, Changyuan New Material Park Keyuan Rd,
Science & Industry Park Nanshan Shenzhen, P.R.China

Site: 2# Chamber

Tel: +86-0755-26503290

Fax: +86-0755-26503396

Job No.: LGWADE #1275	Polarization: vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/21
Temp.: C/Hum.(%) 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2460MHz	Distance:
Model: PANSPPKRM	
Manufacturer: THUMBS UP UK LTD	
Note	



No.	Freq (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	836.2441	30.07	0.62	30.69	46.00	-15.31	QP			
2	955.4380	32.52	2.29	34.81	46.00	-11.19	QP			
3	996.4995	33.37	2.79	36.15	54.00	-17.85	QP			



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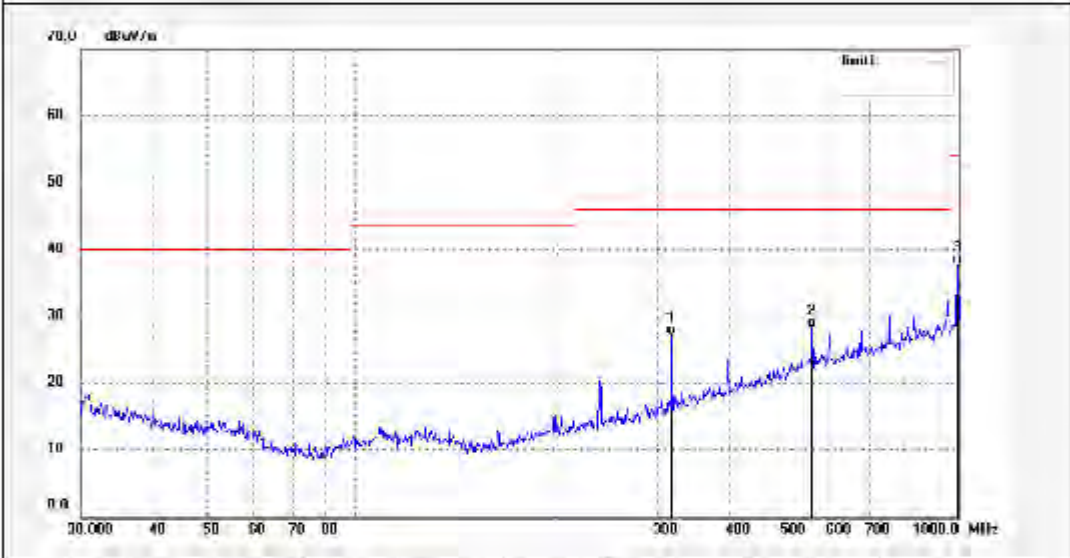
F1 Bldg A, Changyuan New Material Park Keyuan Rd,
Science & Industry Park Nanshan Shenzhen, P.R.China

Site: 2# Chamber

Tel: +86-0755-26503290

Fax: +86-0755-26503396

Job No.: LGWADE #1276	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/21
Temp.: C/Hum (%): 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2460MHz	Distance:
Model: PANSPKPRM	
Manufacturer: THUMBS UP UK LTD	
Note	



No.	Freq (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	317.7010	35.98	-8.81	27.18	46.00	-18.82	QP			
2	556.7744	31.71	-3.48	28.23	46.00	-17.77	QP			
3	953.0113	34.95	2.73	37.72	54.00	-16.28	QP			

1GHz - 18GHz



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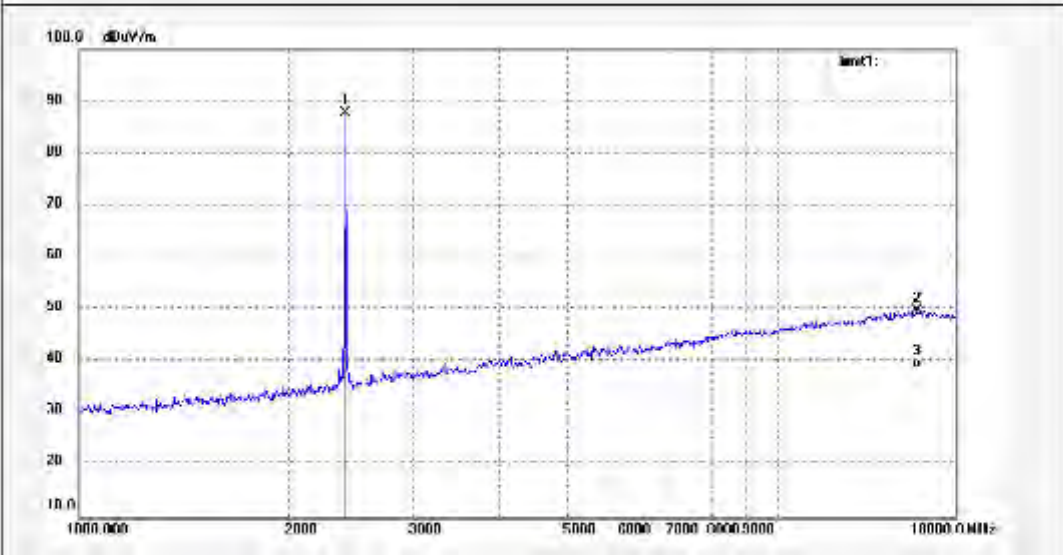
Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503296

Job No.: lgwade 41099	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%) 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer's signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: PANSFKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. [MHz]	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.002	95.14	-7.45	87.69	/	/	peak			
2	15804.663	5.71	40.04	49.75	74.00	-24.25	peak			
3	15804.663	1.35	40.04	38.69	54.00	-15.31	AVG			



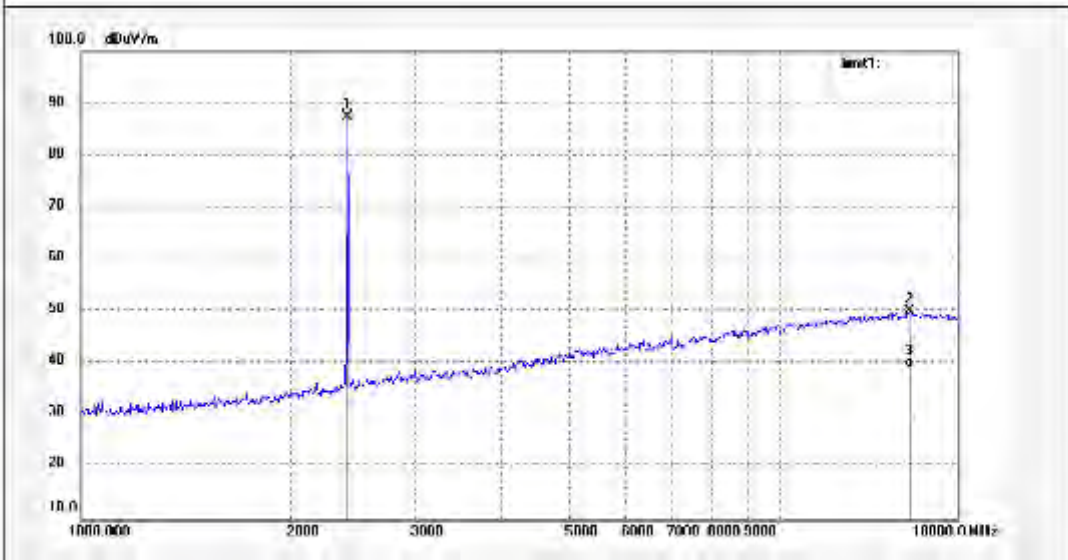
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Job No.: Igwade #1100	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/12/
Temp (°C)/Hum (%) : 23°C / 48%	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: FANSPKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	85.07	-7.45	87.52	/	/	peak			
2	15310.072	5.36	40.48	49.84	74.00	-24.16	peak			
3	15310.872	1.25	40.48	39.23	54.00	-14.77	AVG			



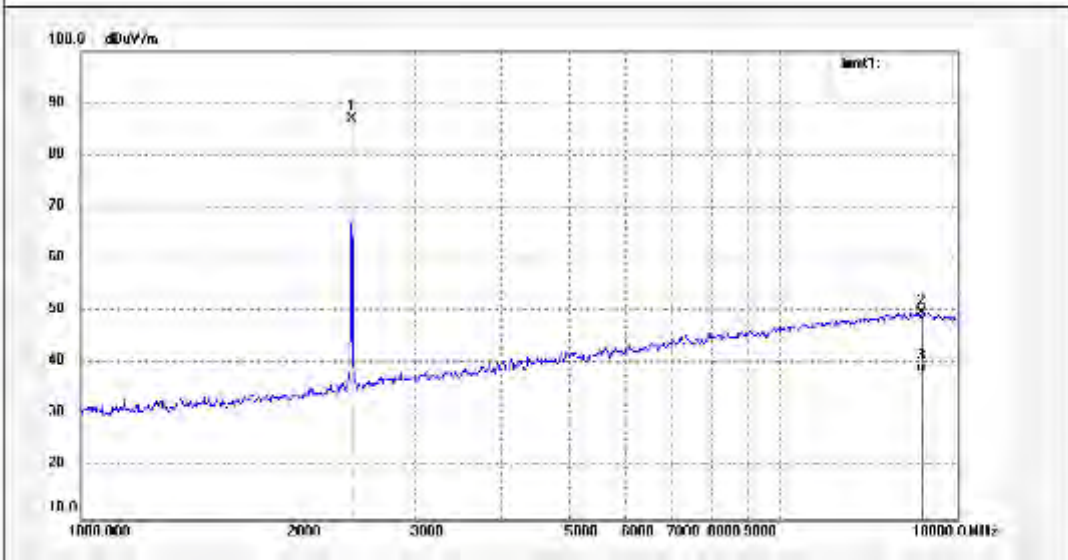
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Site: 2# Chamber
Tel: +86-0755-26503290
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Job No.: lgwade #1103	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%) : 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2441MHz	Distance: 3m
Model: FANSPKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Depth (deg.)	Remark
1	2441.000	94.51	-7.35	87.16	/	/	peak			
2	15942.303	5.65	40.01	49.86	74.00	-24.34	peak			
3	15942.303	1.81	40.01	38.20	54.00	-15.80	AVG			



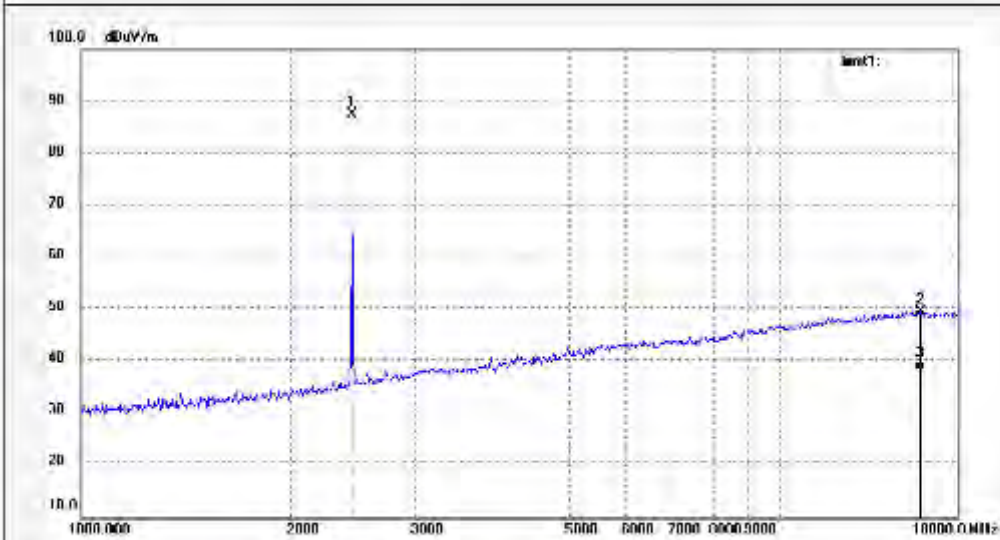
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Site: 2# Chamber
Tel: +86-0755-26503290
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Job No.: lgwade-41104	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%): 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2441MHz	Distance: 3m
Model: FANSPKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Phase (deg.)	Remark
1	2441.000	94.82	-7.35	87.47	/	/	peak			
2	15850.410	5.56	40.03	49.59	74.00	-24.41	peak			
3	15850.410	1.89	40.03	35.14	54.00	-15.66	AVG			



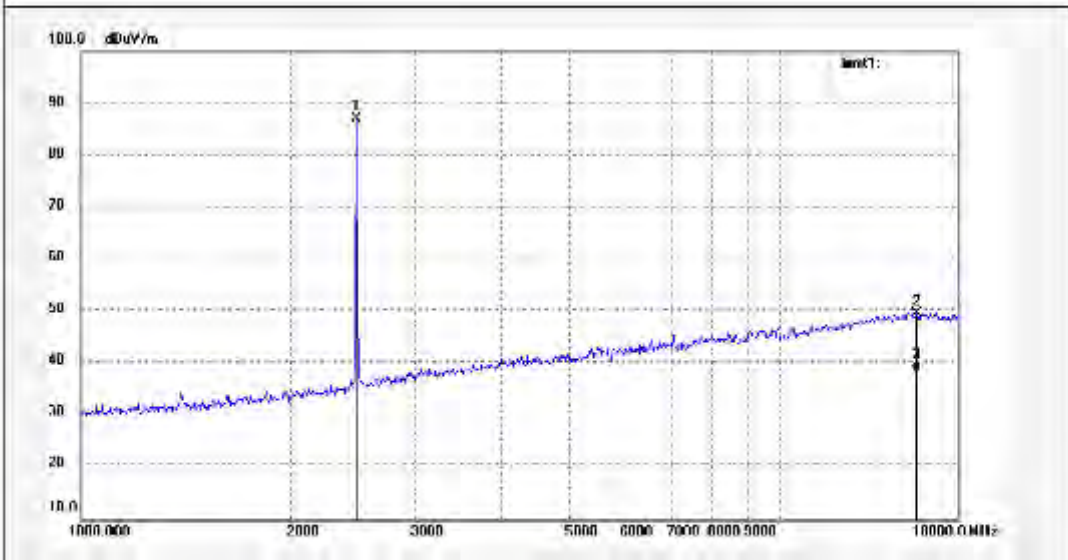
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Site: 2# Chamber
Tel: +86-0755-26503290
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Job No.: lgwade-#1105	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%): 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: FANSPKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	94.34	-7.37	86.97	/	/	peak			
2	15713.564	5.45	40.06	49.51	74.00	-24.49	peak			
3	15713.564	1.56	40.06	35.48	54.00	-18.52	AVG			



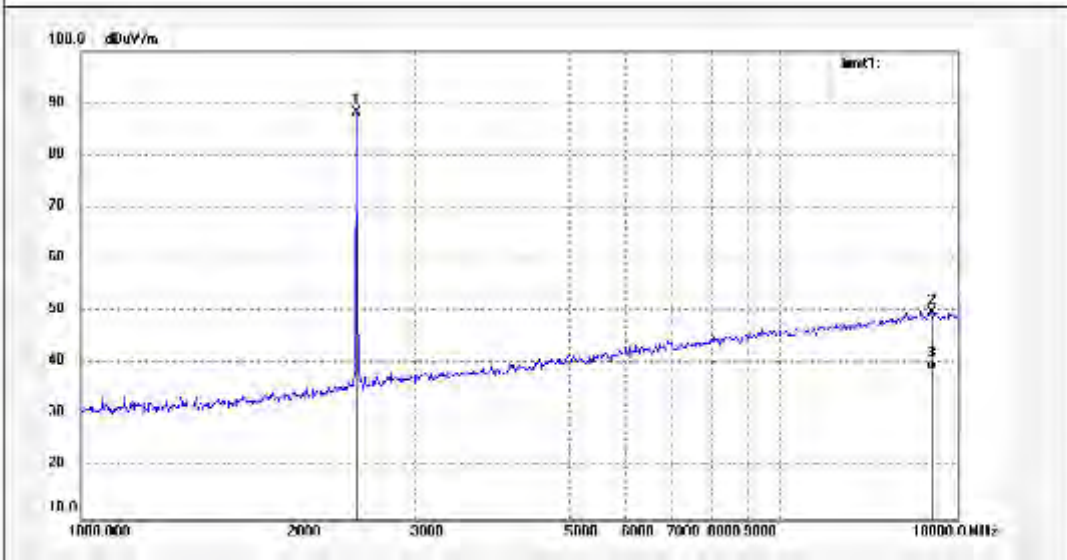
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Site: 2# Chamber
Tel: +86-0755-26503290
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Job No.: lgwade-41106	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%): 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: FANSPKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Phase (deg.)	Remark
1	2480.000	95.56	-7.37	85.19	/	/	peak			
2	16504.954	5.40	40.31	49.71	74.00	-24.29	peak			
3	16504.954	1.56	40.31	38.73	54.00	-15.27	AVG			

18GHz - 26.5GHz



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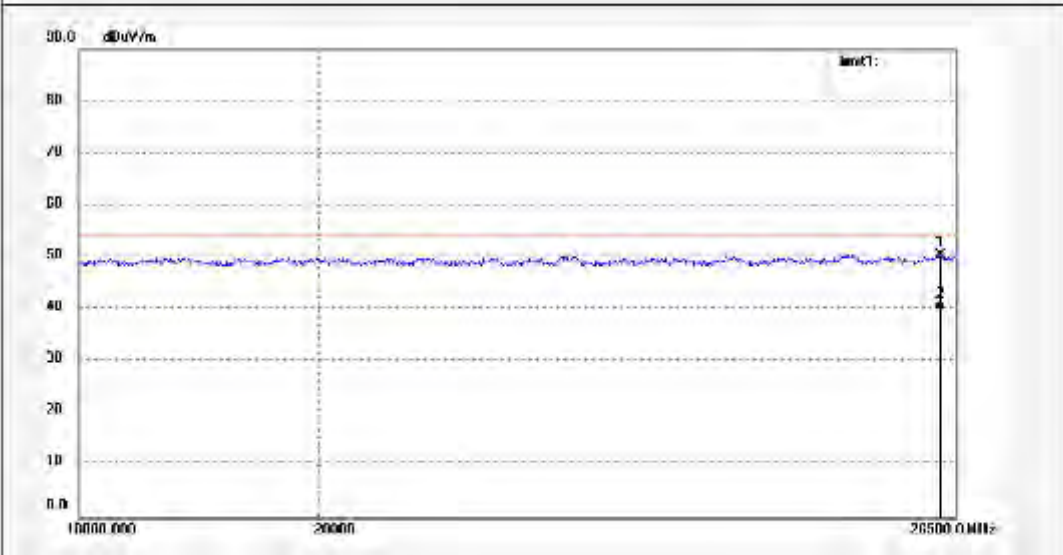
Site: 2# Chamber

Tel:+86-0755-26503290

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Job No: LGWade 41109	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/12/
Temp (°C)/Hum (%) : 23 °C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer's signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: PANSFKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26316.150	33.51	17.02	50.53	74.00	-23.47	peak			
2	26316.150	22.62	17.02	39.64	54.00	-14.36	AVG			



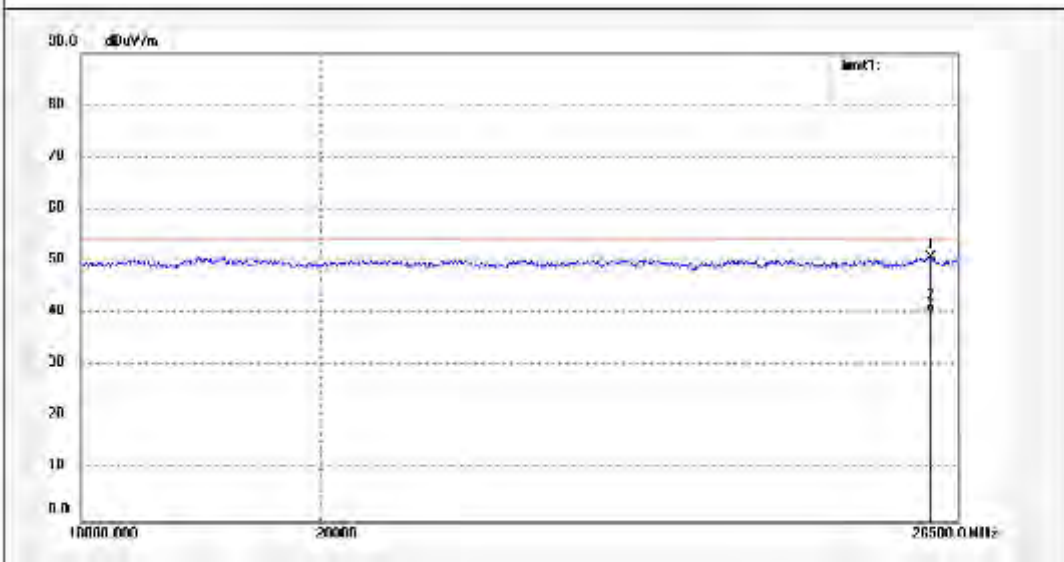
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Science & Industry Park Nanshan Shenzhen, P.R. China

Site: 2# Chamber
Tel: +86-0755-26503290
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Job No.: lgwade #1110	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%) 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: FANSPKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Depth (deg.)	Remark
1	26184.163	34.18	18.50	50.68	74.00	-23.32	peak			
2	26184.163	23.56	18.50	40.06	54.00	-13.94	AVG			



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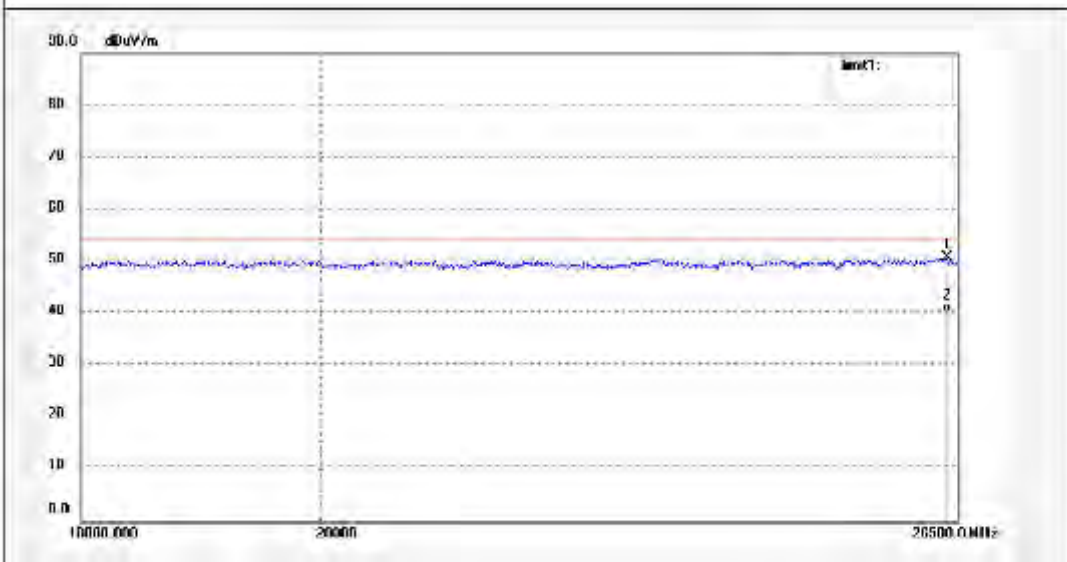
Site: 2# Chamber

Tel: +86-0755-26503290

Fax: +86-0755-26503396

Job No.: lgwade #1111	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%) 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2441MHz	Distance: 3m
Model: PANSKP3RM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Deques (deg.)	Remark
1	26367.091	34.23	16.50	50.73	74.00	-23.27	peak			
2	26367.091	23.57	16.50	40.07	54.00	-13.93	AVG			



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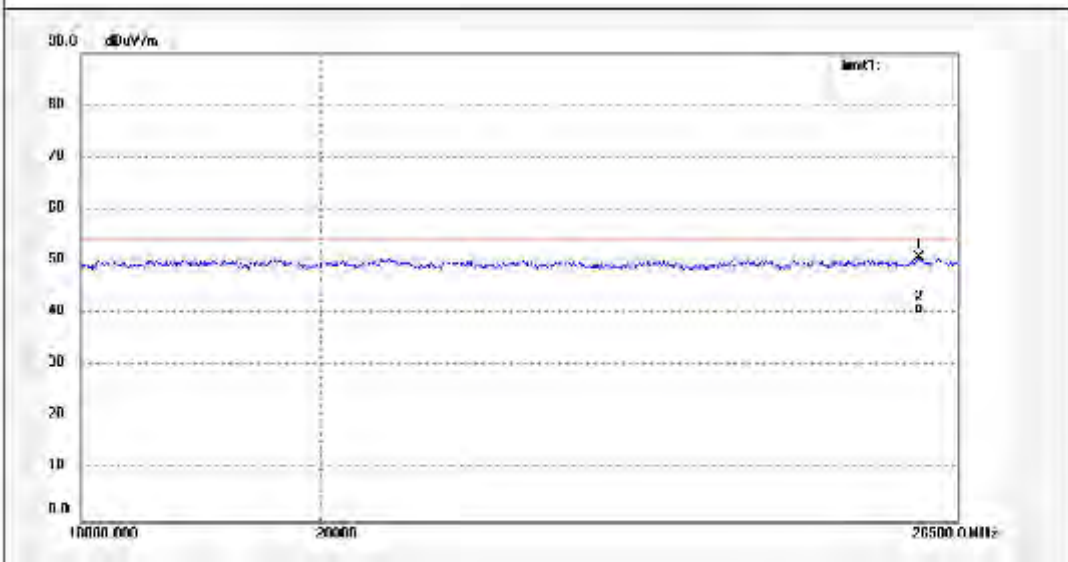
Site: 2# Chamber

Tel: +86-0755-26503290

Fax: +86-0755-26503396

Job No.: lgwade #1112	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test Item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%): 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: IX 2441MHz	Distance: 3m
Model: PANSKP3RM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26042.764	35.56	17.20	50.76	74.00	-23.24	peak			
2	26042.764	22.84	17.20	40.04	54.00	-13.96	AVG			



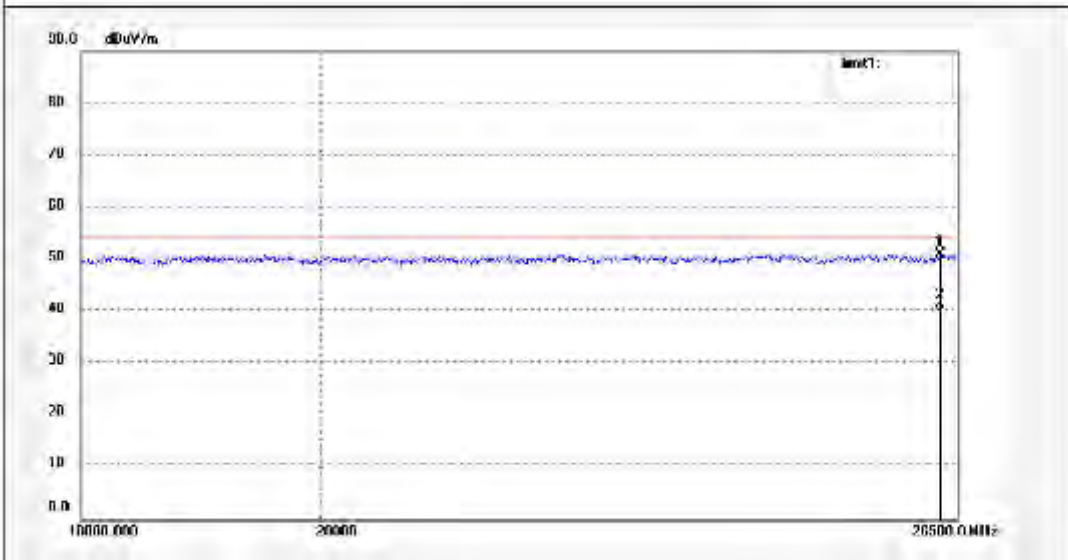
ACCURATE TECHNOLOGY CO., LTD.

F1, Bldg. A Changyuan New Material Port Keyuan Rd
Science & Industry Park Nanshan Shenzhen, P.R. China

Site: 2# Chamber
Tel: +86-0755-26503290
Fax: +86-0755-26503396

Job No.: lgwade #1113	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%) 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: FANSPKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26285.633	35.92	17.04	50.96	74.00	-23.04	peak			
2	26285.633	22.81	17.04	39.85	54.00	-14.15	AVG			



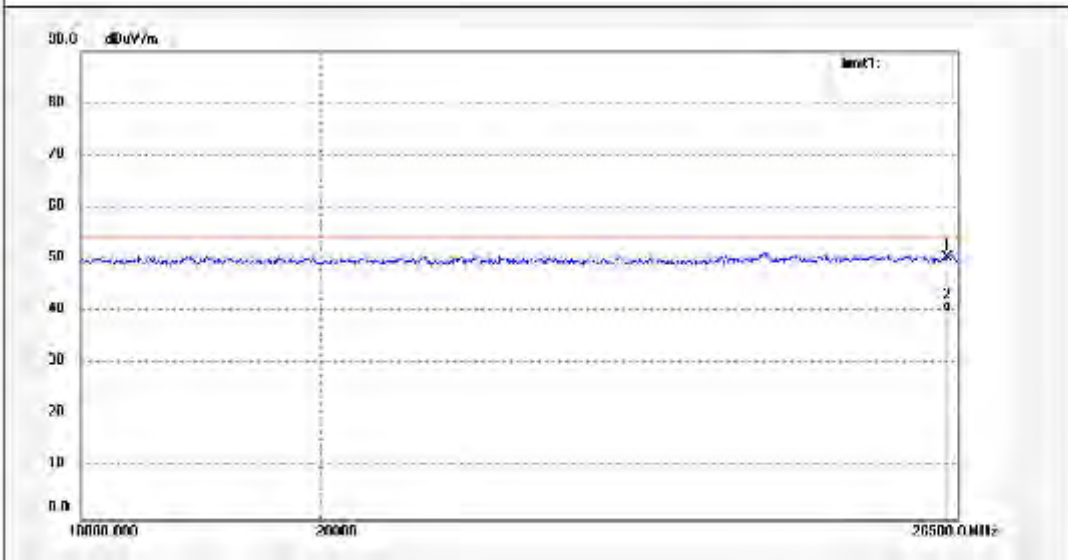
ACCURATE TECHNOLOGY CO., LTD.

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Science & Industry Park Nanshan Shenzhen, P.R. China

Site: 2# Chamber
Tel: +86-0755-26503290
Fax: +86-0755-26503396

Job No.: lgwade #1114	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test Item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%) 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: PANSKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26367.091	35.90	16.50	50.40	74.00	-23.60	peak			
2	26367.091	23.36	16.50	39.86	54.00	-14.14	AVG			

Appendix B.2: Test Plots of Band Edge (Radiated)

Low Channel



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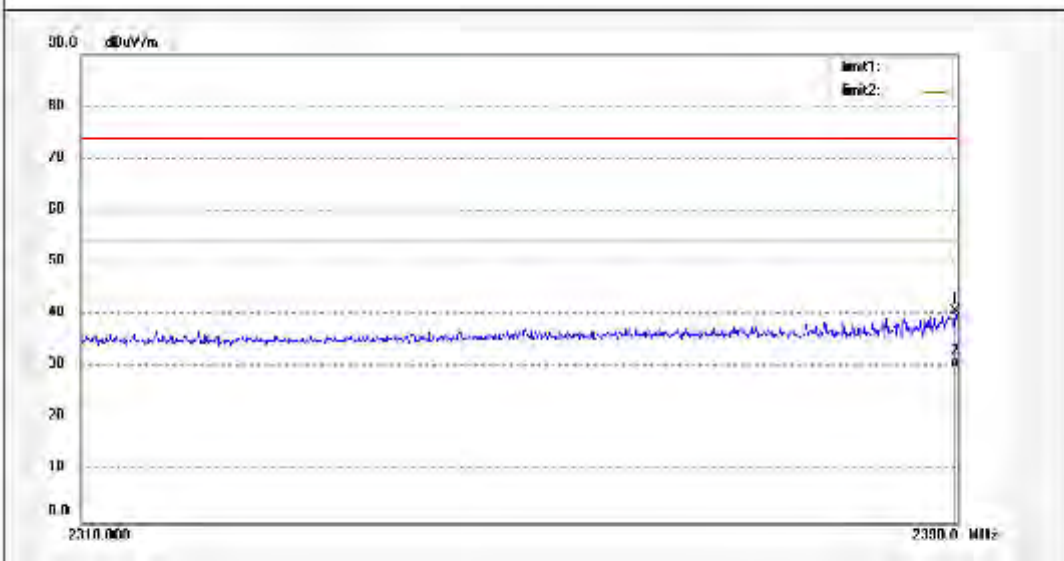
Site: 2# Chamber

Tel: +86-0755-26503290

Fax: +86-0755-26503396

Job No.: lgWade #1101	Polarization: Vertical
Standard: FCC (Band Edge)	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%) 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: FX 2402MHz	Distance: 3m
Model: FANSPKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2389.760	45.23	-7.53	40.70	74.00	-33.30	peak			
2	2389.760	37.35	-7.53	29.82	54.00	-24.18	AVG			



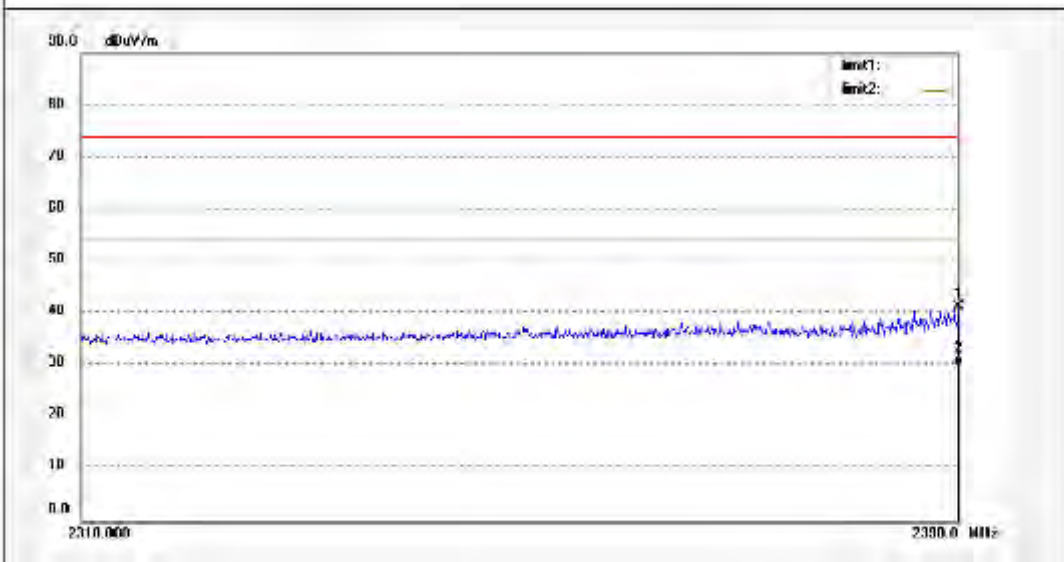
ACCURATE TECHNOLOGY CO., LTD.

F1, Bldg. A Changyuan New Material Port Keyuan Rd
Science & Industry Park Nanshan Shenzhen, P.R. China

Site: 2# Chamber
Tel: +86-0755-26503290
Fax: +86-0755-26503396

Job No.: lgwade #1102	Polarization: Horizontal
Standard: FCC (Band Edge)	Power Source: DC 3.7V
Test Item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%) 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: LX 2402MHz	Distance: 3m
Model: FANSPKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	46.84	-7.53	41.31	74.00	-32.69	peak			
2	2390.000	37.68	-7.53	30.15	54.00	-23.85	AVG			

High Channel



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A Changyuan New Material Port Keyuan Rd
Science & Industry Park Nanshan Shenzhen,P.R.China

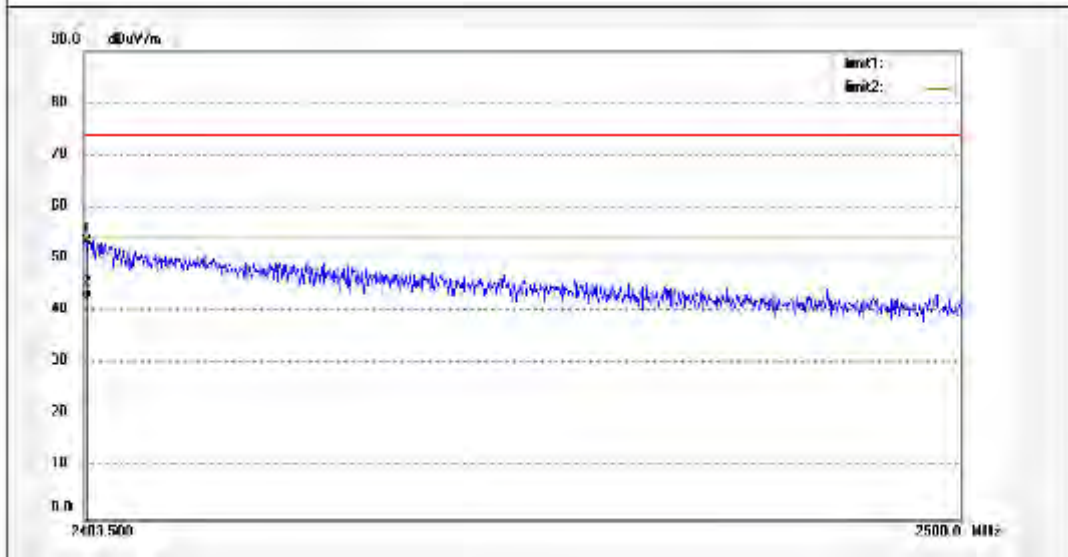
Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503296

Job No: LGWade 41107	Polarization: Horizontal
Standard: FCC (Band Edge)	Power Source: DC 3.7V
Test Item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%) 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer's signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: PANSFKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.550	60.90	-7.37	53.53	74.00	-20.47	peak			
2	2483.550	49.85	-7.37	42.48	54.00	-11.52	AVG			



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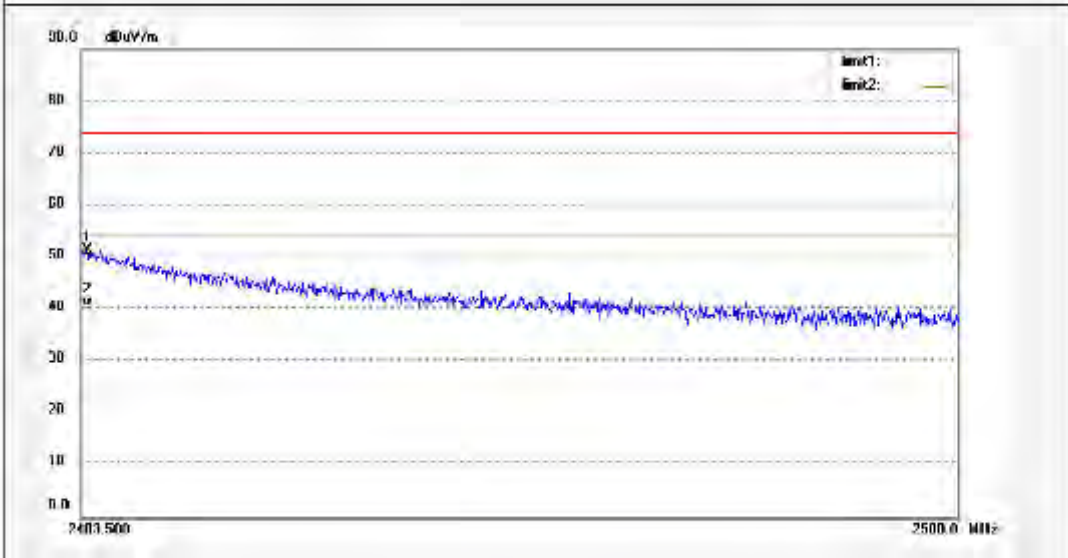
Site: 2# Chamber

Tel: +86-0755-26503290

Fax: +86-0755-26503396

Job No.: lgwade.41108	Polarization: Vertical
Standard: FCC (Band Edge)	Power Source: DC 3.7V
Test Item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%) 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: FANSPKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.615	56.76	-7.37	51.39	74.00	-22.61	peak			
2	2483.615	47.89	-7.37	40.52	54.00	-13.48	AVG			

Appendix B.3: Test Plots of Conducted Emission

C Mode

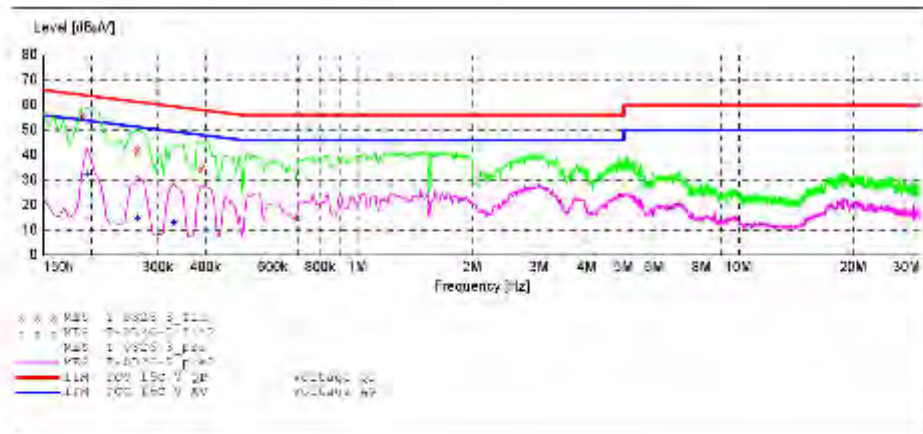
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15 C

P/N: 5107007H 88848R MAN:0000000000
 Manufacturer: THUNGS UP SA LTD
 Operating Condition: On 20' Bluebook
 Test Site: 1)Shielding Room
 Operator: 1)GABOR
 Test Specification: 3 120V/50Hz
 Comment: Main Para.
 Start of Test: 3/26/2016

SCAN TABLE: "V 9K-30MHz fin"

Start	Stop	Step	Detector	Meas. Time	IF Bands	Transducer
9.0 kHz	30.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	NSL30126 2008
100.0 kHz	30.0 MHz	1.0 MHz	Average	1.0 s	9 MHz	NSL30126 2008



MEASUREMENT RESULT: "T-0326-3_fin"

3/26/2016

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	FR
0.150000	55.60	10.0	65	9.4	QP	B	GND
0.265000	41.70	10.0	61	19.3	QP	N	GND
0.330000	34.30	10.7	60	25.7	QP	N	GND

MEASUREMENT RESULT: "T-0326-3_fin2"

3/26/2016

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	FR
0.150000	55.80	10.0	65	9.2	AV	B	GND
0.265000	44.50	10.0	61	16.5	AV	B	GND
0.330000	42.80	10.0	60	17.2	AV	B	GND

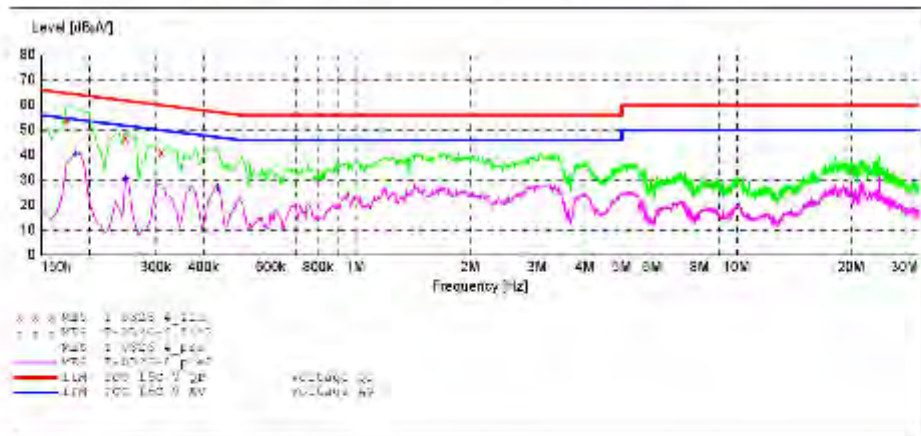
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15 C

File: 310730016_03FASPRR_MW:DA88D088M
 Manufacturer: THOMAS DE SA LTD
 Operating Condition: On W/L BlueLEDs
 Test Site: 1/Shielding Room
 Operator: L/SAAR
 Test Specification: L 120V/50Hz
 Comment: Main: Para.
 Start of Test: 3/26/2018 7

SCAN TABLE: "V 9K-30MHz fin"

Start Frequency	Stop Frequency	Step	Detector	Meas. Type	IF Bands	Transducer
9.0 kHz	30.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	NS-K9126 2008
100.0 kHz	30.0 MHz	10.0 kHz	QuasiPeak	1.0 s	9 kHz	NS-K9126 2008



MEASUREMENT RESULT: "T-0326-4_fin"

3/26/2018

Frequency MHz	Level dBµV	Bandwidth dB	Limit dBµV	Margin dB	Detector	Line	FR
0.175000	52.00	10.0	60	10.8	QP	L1	GND
0.250000	47.00	10.0	60	14.0	QP	L1	GND
0.310000	40.90	10.0	60	19.1	QP	L1	GND

MEASUREMENT RESULT: "T-0326-4_fin2"

3/26/2018

Frequency MHz	Level dBµV	Bandwidth dB	Limit dBµV	Margin dB	Detector	Line	FR
0.145000	40.30	10.0	60	14.0	AV	L1	GND
0.250000	52.80	10.0	60	21.8	AV	L1	GND
0.435000	27.00	10.0	60	33.0	AV	L1	GND

D Mode

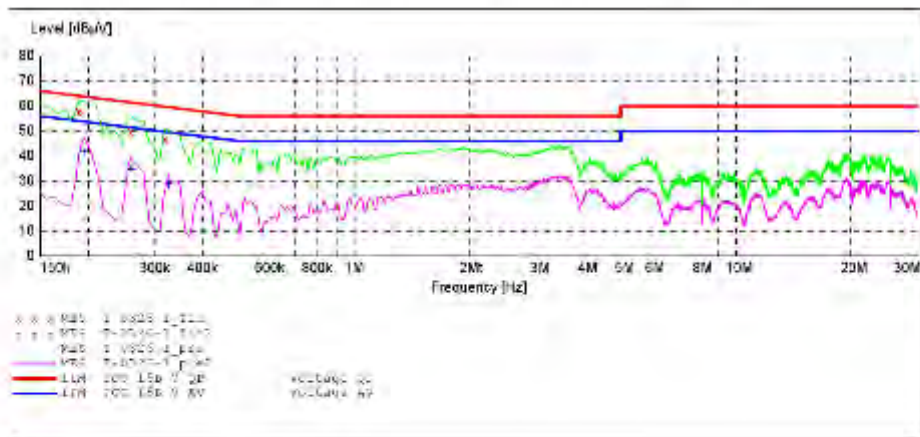
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15 B

File: 3/26/2014 09:48:00
 Manufacturer: THUNDER 28 LTD
 Operating Condition: Charging
 Test Site: 1/2 Shielding Room
 Operator: T/26/14
 Test Specification: L 120V/50Hz
 Comment:
 Start of Test: 3/26/2014 9:48:00

SCAN TABLE: "V 9K-30MHz fin"

Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	30.0 kHz	100.0 Hz	QuasiPeak 1.0 s Average	1.0 s	200 Hz	NSL30126 2008
100.0 kHz	30.0 MHz	1.0 MHz	QuasiPeak 1.0 s Average	1.0 s	9 MHz	SSL30126 2008



MEASUREMENT RESULT: "T-0326-1_fin"

Frequency MHz	Level dBµV	Bandwidth dB	Limit dBµV	Margin dB	Detector	Line	RF
0.150000	57.50	10.0	60	-6.5	QP	L1	GND
0.200000	49.50	10.0	60	-10.5	QP	L1	GND
0.320000	48.60	10.0	60	-11.4	QP	L1	GND

MEASUREMENT RESULT: "T-0326-1_fin2"

Frequency MHz	Level dBµV	Bandwidth dB	Limit dBµV	Margin dB	Detector	Line	RF
0.150000	41.50	10.0	60	-18.5	AV	L1	GND
0.200000	34.50	10.0	60	-25.5	AV	L1	GND
0.320000	28.60	10.0	60	-31.4	AV	L1	GND

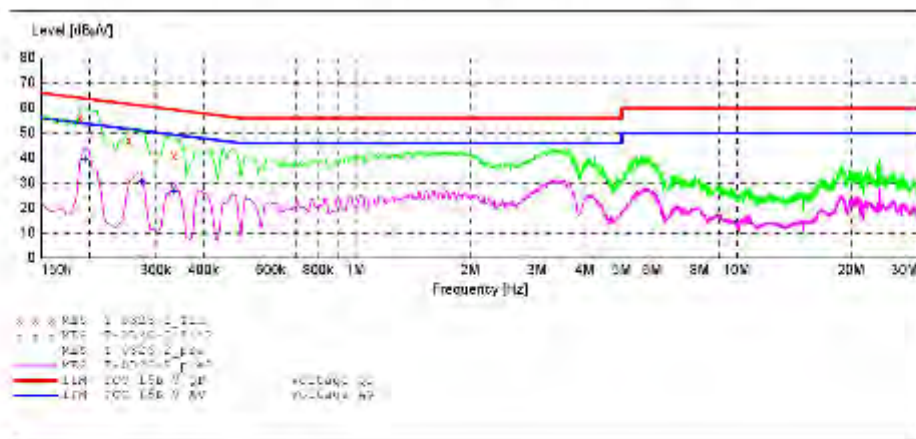
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15 B

P/N: 3047007H 3047007H M/N:DAK50K30M
 Manufacturer: THUNES DE SA LTD
 Operating Condition: Charging
 Test Site: 1420 Shielding Room
 Operator: L. WANG
 Test Specification: 3 120V/60Hz
 Comment:
 Start of Test: 3/26/2014

SCAN TABLE: "V 9K-30MHz fin"

Start Frequency	Stop Frequency	Step	Detector	Meas. Time	IF Bands	Transducer
9.0 kHz	300.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	NS-K9126 2008
100.0 kHz	30.0 MHz	10.0 kHz	AVERAGE			
100.0 kHz	30.0 MHz	10.0 kHz	QuasiPeak	1.0 s	9 kHz	NS-K9126 2008
			Average			



MEASUREMENT RESULT: "T-0326-2_fin"

3/26/2014

Frequency MHz	Level µRV	Bandwidth dB	Limit µRV	Margin dB	Detector	Line	RE
0.150000	55.00	10.0	64	8.1	QP	1	GND
0.255000	47.10	10.0	62	14.5	QP	2	GND
0.335000	40.60	10.0	59	18.7	QP	3	GND

MEASUREMENT RESULT: "T-0326-2_fin2"

3/26/2014

Frequency MHz	Level µRV	Bandwidth dB	Limit µRV	Margin dB	Detector	Line	RE
0.149500	55.60	10.0	64	14.2	AV	1	GND
0.275000	50.80	10.0	61	20.7	AV	2	GND
0.335000	28.70	10.0	59	22.9	AV	3	GND

Appendix B.4: Test Plots of Radiated Emission

D Mode



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F1, Bldg. A Changyuan New Material Port Keyuan Rd.
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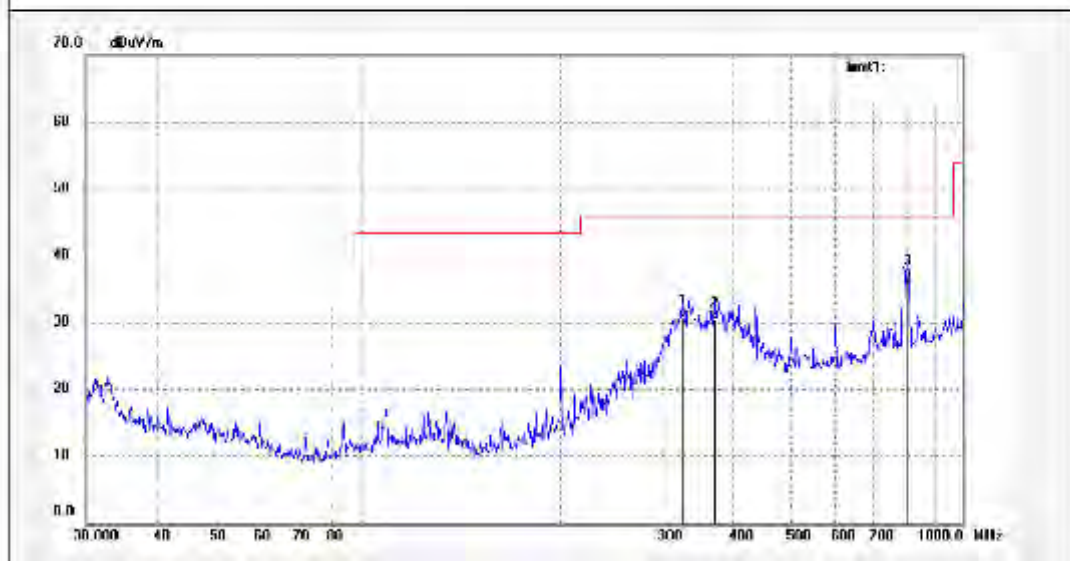
Site: 2# Chamber

Tel: +86-0755-26503290

Fax: +86-0755-26503396

Job No.: Igwade-41123	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%) 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: Charging	Distance: 3m
Model: FANSPKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Depres (deg)	Remark
1	325.5957	39.26	-8.51	30.75	46.00	-15.25	QP			
2	370.7022	37.95	-7.50	30.45	46.00	-15.55	QP			
3	801.7862	36.63	0.07	36.70	46.00	-9.30	QP			



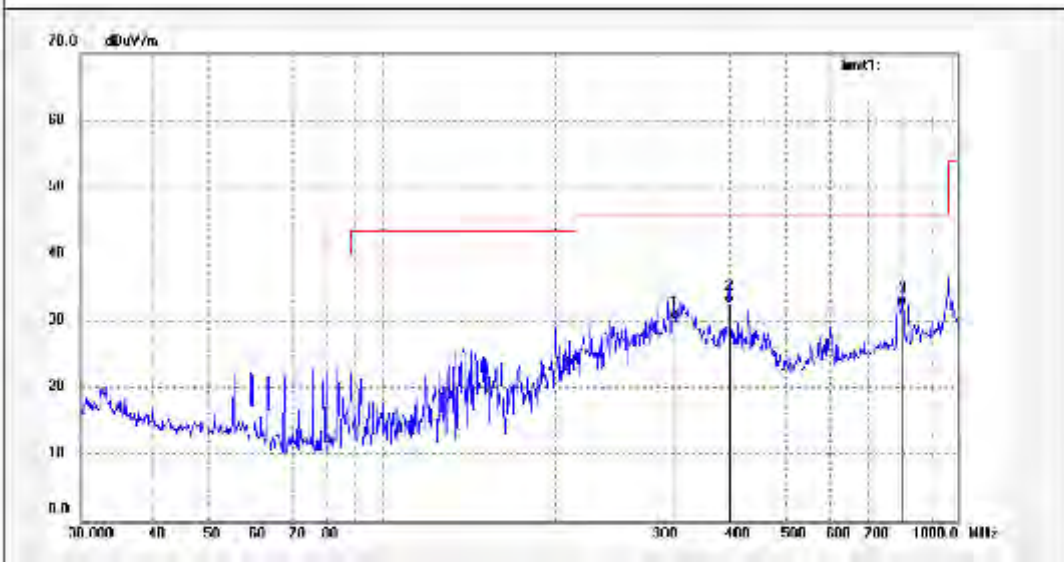
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Science & Industry Park Nanshan Shenzhen, P.R. China

Site: 2# Chamber
Tel: +86-0755-26503290
Fax: +86-0755-26503396

Job No.: lgwade #1124	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 16/03/12/
Temp (°C)/Hum (%) 23°C / 48%	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: Charging	Distance: 3m
Model: PANSKP3RM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Deques (deg.)	Remark
1	321.0607	35.85	-8.70	30.15	46.00	-15.65	QP			
2	400.4318	39.50	-6.81	32.69	46.00	-13.31	QP			
3	801.7862	32.13	0.07	32.20	46.00	-13.60	QP			



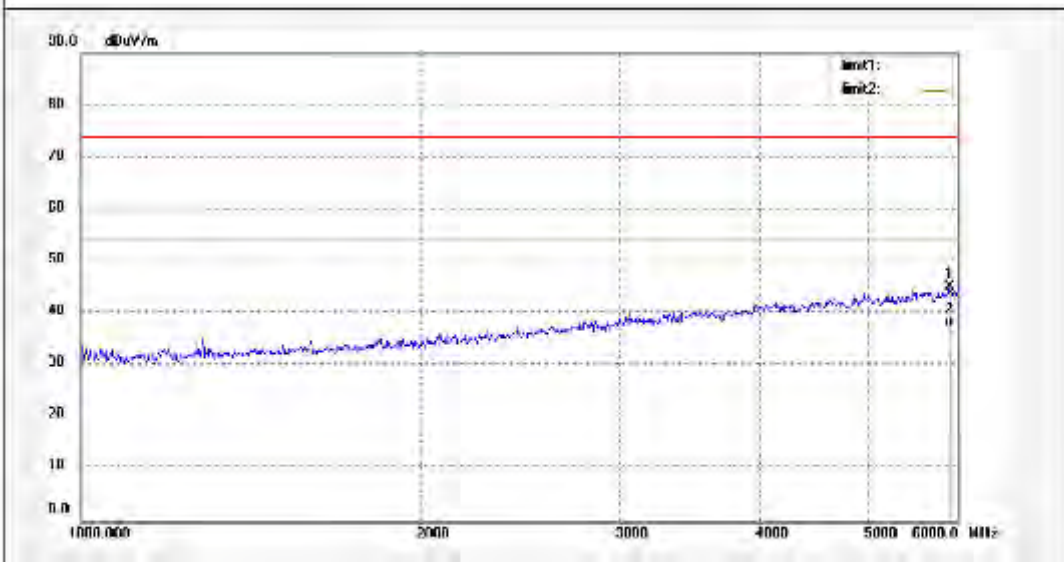
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F1, Bldg. A Changyuan New Material Port Keyuan Rd.
Science & Industry Park Nanshan Shenzhen, P.R. China

Site: 2# Chamber
Tel: +86-0755-26503290
Fax: +86-0755-26503396

Job No.: lgwade #1125	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%) 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: Charging	Distance: 3m
Model: PANSKPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Deques (deg.)	Remark
1	5893.452	45.12	-1.94	45.06	74.00	-28.94	peak			
2	5893.452	35.56	-1.94	37.50	54.00	-16.50	AVG			



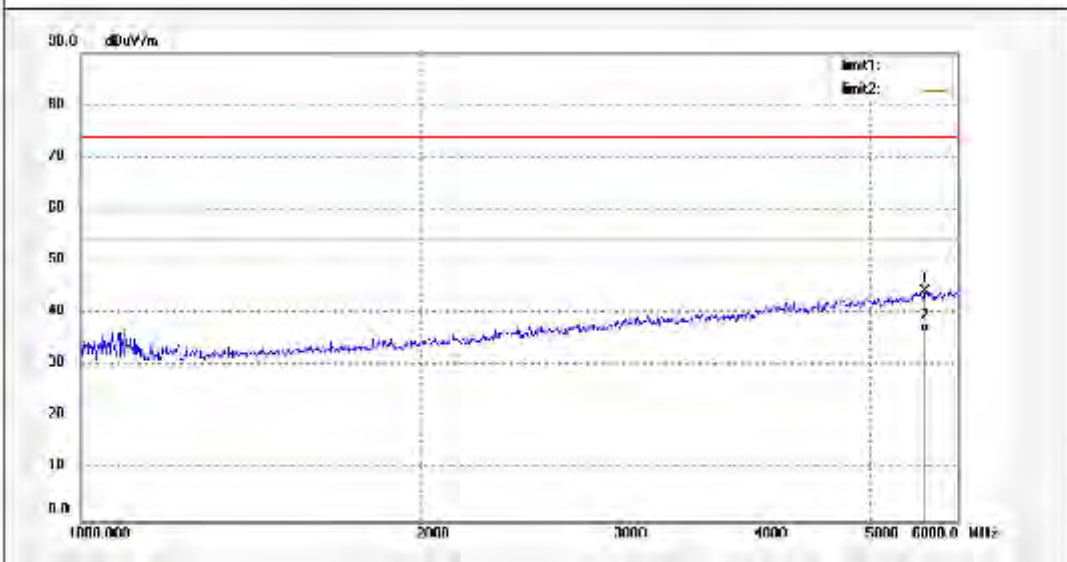
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F1, Bldg. A Changyuan New Material Port Keyuan Rd.
Science & Industry Park Nanshan Shenzhen, P.R. China

Site: 2# Chamber
Tel: +86-0755-26503290
Fax: +86-0755-26503396

Job No.: lgwade #1126	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 16/03/12/
Temp (C)/Hum (%) 23 C / 48 %	Time:
EUT: BLUETOOTH SPEAKER	Engineer Signature: LGWADE
Mode: Charging	Distance: 3m
Model: PANSKP3RM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Deques (deg.)	Remark
1	5605.076	42.68	1.44	44.12	74.00	-29.88	peak			
2	5605.076	34.94	1.44	36.38	54.00	-17.62	AVG			